

“ RETIREMENT VILLAGE”

A THESIS SUBMITTED
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FOR THE DEGREE OF

BACHELOR OF ARCHITECTURE

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***AGING IS NOT "LOST YOUTH" BUT A NEW
STAGE OF OPPORTUNITIES AND STRENGTH
BETTY FRIEDAN***

ABSTRACT

This thesis presents an analysis and application of anthropometrics and ergonomics in the retirement village to make them invulnerable for elderly people. The main objective of the thesis is to enable elderly people do their daily activities safely and without any assistance.

Living with the old people in home is a complicated phase in every family, because most of these people need assistance to perform their daily tasks majorly in the kitchens, bathrooms and rooms where most of the accidents occurs. To maintain the quality of lives of elderly people safety, comfort and physical and social health must be taken care of. Most of the older people are taken as the bunch of the problems and needs.

Elderly people generally use to stay in their own homes and societies. A well designed and assistanceenvironment can promote them to use their homes more securely, independently for longer span of time.

With the help of the collected of the data problems are identified which are faced by elderly people in doing their daily activities. It is noticed that in performing their daily tasks mainly they face problems in kitchens, bathrooms and rooms. In room and kitchens furniture is the main problem.

As per all the collected data and information a adaptable design is proposed which is more safer and more efficient to elderly people.

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ANAND YADAV

1160101007

CHAPTER 1:

INTRODUCTION

Old age or elderly is a stage of human life where human has completed its more than of 50% life. No one can define the exact boundaries of old age because every society have different views on it. Government of India adopted 'National Policy on Older Persons' in January, 1999. The policy defines 'senior citizen' or 'elderly' as a person who is of age 60 years or above.

Aging is a ubiquitous process every has to pass through it. There are approximately 600 million people over the age of 60 living on this planet. By the year 2050, this figure is expected to quadruple to two billion (Stone, 2009). A joint report by the United Nations Population Fund (UNFPA) and Help Age International in 2012 said India has around 100 million older adults and the number is expected to increase to 323 million by 2050, constituting 20 percent of the total population (HelpAge India, 2014). The elderly population (aged 60 years or above) account for 7.4% of total population in 2001 (Situation Analysis of The Elderly in India).

What is home for aged???

- Home for aged is that which fulfils basic requirements of living of old people.
- Which gives facility to live their individual lifestyle.
- In self contained dwellings.
- Where maximum care and attention is required.
also constant nursing attention.
- which gives affection and security irrespective of caste colour.

PROBLEM FACED BY THE OLD AGE PEOPLE:

ISOLATION :

- 11 per cent of those aged 65 or over are often or always lonely
- 48 per cent of those aged 65 or over say the television is their main company
- 12 per cent of those aged 65 or over say they are trapped in their own home
- The number of people aged 75 and over living alone will increase by over 40 per cent in the next 20 years

PHYSICAL PROBLEMS

- Physical problems are Due to structural & functional changes of the body.
- diseases such as cerebra vascular accidents, cardio vascular diseases, asthma, Metabolic disorders like diabetes, arthritis hypertension are peculiar to this age. Mental disorders are also common in this age.

Changing Trends in the Indian Family System

There is a tremendous increase in the population of elderly people in India at the same time the size of the family is decreasing, especially in the urban areas (HelpAge India 2013). For a long time, there were only joint families found in India in which the son takes care of his aged parents. However, in today's time the scenario has been changed in the family structure now a day's joint family system is on decline. Indian people are moving out of their ethics like caring of their parents at homes. The family system is undergoing many changes as the physical and mental health of older adults begins to decline and this has led to the issue of community care for aged parents and the emergence of old age homes in India (Lamb, 2007).

In recent years the family system is changing such as change in life style of families and a large number of aged people are going to old age homes. There is no exact figure that shows the accurate number of retirement homes in India but a estimate says it is more than 1000.

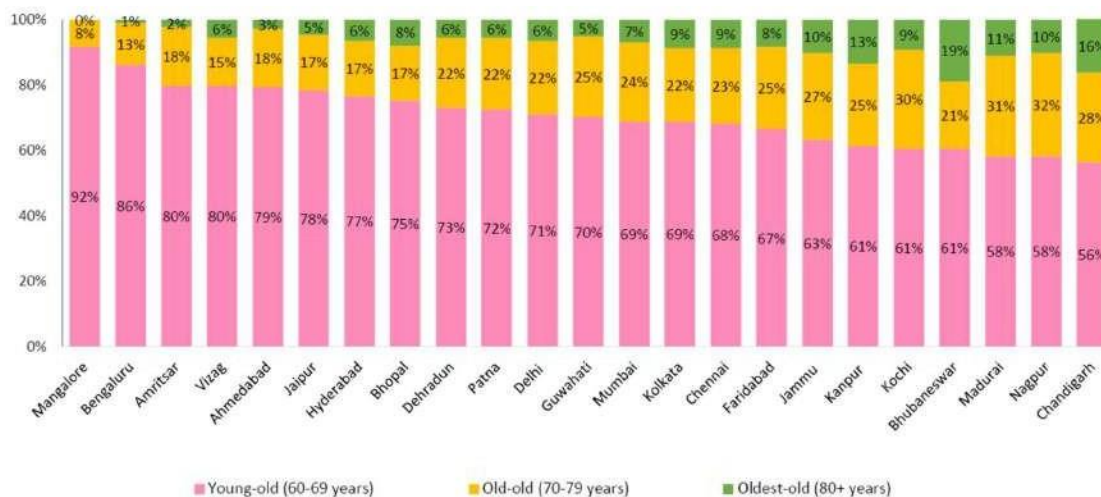
Current Scenario

In India the aged population is currently the 2nd largest in the world. The no. of people over 60 population in India will increased from 76 million to 137 million from 2001 to 2021. The table given below shows the gradual increase in the population of elderly people in India. The percent growth of the elderly population is approximately 40 from 1991 to 2001, more than double the rate of increase in general population.

Figure 1 INCREASE IN ELDERLY POPULATION

Year	Population 60+ (in millions)		
	Persons	Males	Females
1901	12.06	5.50	6.56
1911	13.17	6.18	6.99
1921	13.48	6.48	7.00
1931	14.21	6.94	7.27
1941	18.04	8.89	9.15
1951	19.61	9.67	9.94
1961	24.71	12.36	12.35
1971	32.70	16.87	15.83
1981	43.98	22.49	21.49
1991	55.30	28.23	27.07
2001	75.93	38.22	37.71

Figure 2 PERCENTAGE OF ELDERLY AGE GROUP



BACKGROUND STUDY

A retirement home can be defined as a privately-owned home which is designed to accommodate senior people after their retirement. They are built for those who want to maintain their lifestyle and also want to experience on-site support and care.

Types of retirement homes

ASSISTED LIVING

Assisted living communities are for seniors who cannot live on their own safely, but do not need as much care needed for a nursing home. They receive assistance with medications, daily living activities, housekeeping and meals. Residents have private apartments that have a limited kitchen area. Staff is available 24/7 for additional safety.

INDEPENDENT LIVING COMMUNITIES

Senior independent living communities are for seniors who are still independent with few medical problems. Residents will live in a fully equipped private apartment.

There are a variety of apartment sizes from 2 bedrooms to studio apartments. Fine dining services are also offered with a custom designed meal package. Often times, a resident can choose to pay for a certain number of meals daily. There are also frequent social outings and events for entertainment.

NURSING HOMES

Nursing homes have 24/7 skilled nursing care for the elderly who need high levels of medical assistance. 24 hours nursing services are available from a licensed nurse. Most nursing homes do provide short-term rehab stays for those who are recovering from surgery, injury, or illness. Long-term care will have high level care needs and complex medical issues that need routine nursing services. Residents will share rooms and are served meals in a central dining room unless they are too ill. There are also activities and some nursing homes have a special unit for those with Alzheimer's.

RESIDENTIAL CARE HOMES

Residential care homes are private homes that serve residents that live together and get home from live-in caretakers. These homes have assisted care services for those who want a home like community and privacy. Assistance with daily living like dressing and bathing are provided. The nursing services and amenities will vary.

Assisted Living vs. Nursing Homes

What's the Difference?



Nursing Homes

Long-term facilities that specialize in taking care of those with serious conditions that require around-the-clock care or companionship.



Assisted-Living Facilities

Provide support to residents who have issues related to aging. Residents are typically semi-independent and need assistance with just a few activities of daily living.

In Assisted Living



Accommodations feature

An average of 100 beds

Rooms and bathing areas that are private

Dining, communal, or outdoor spaces

Safety monitoring



Residents are

Varied in age but most are semi-active seniors

Sometimes just recovering from a short-term illness or injury

Coping with chronic illness that does not require invasive care

Occasionally accompanied by a spouse or a pet



Staff includes

Nurse Practitioners and specialists who prescribe changes to medication, diet, and care plans

Registered nurses to oversee medication and assess and treat health conditions

Nurse aides who help with dressing, bathing, and eating as needed

Dietary aides who plan, cook, and serve meals based on resident-specific nutritional needs

Created by Simmons School of Nursing and Health Sciences

Living at Home vs. Senior Living

As you get older, maintaining a home and your lifestyle becomes more challenging. Senior living offers a positive way to manage these challenges and live more independently.

Here are some key points to consider:

Isolation from friends. Fewer opportunities to participate in activities with others.



Social Life

The warm company of neighbors. Engaging social, cultural and educational events every day.

Rely on others' availability to run errands and get to and from appointments.



Transportation

Scheduled car or bus service always available for local appointments and errands.

Eating alone. Prepackaged meals. Difficulty following special dietary guidelines.



Dining

Dining with neighbors. Table service. Plenty of menu options prepared fresh every day. Accommodations for many special diets.

Responsibility for all household maintenance, laundry and chores.



Housekeeping

Housekeeping, linen service and maintenance provided by a professional staff.

Anxiety about if/when help will be available in case of an emergency.



Emergency Assistance

Immediate help available from a 24-hour staff on-site. Emergency alerts system in every apartment.

Little or no access to exercise programs and equipment.



Exercise/Physical Activity

Daily fitness opportunities to help increase mobility, strength and overall wellness.

Greater dependence on others for help with daily tasks. Feeling like a "bother."



Independence

Discreet support whenever needed provided by a caring staff, which leads to greater independence.

Atria SENIOR LIVING

100 1011

ERGONOMICS AND ANTHROPOMETRY

Ergonomics (from the Greek word *ergon* meaning *work*, and *nomoi* meaning *natural laws*), is the science of refining the design of products to optimize them for human use. Human characteristics, such as height, weight, and proportions are considered, as well as information about human hearing, sight, temperature preferences, and so on.

Ergonomics is the process of designing or arranging workplaces, products and systems so that they fit the people who use them.

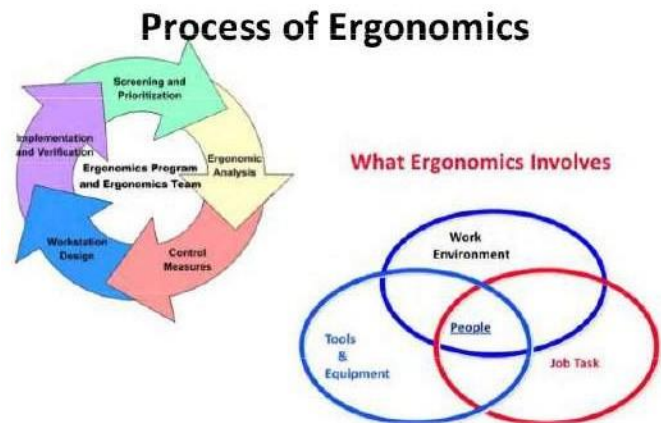
Most people have heard of ergonomics and think it is something to do with seating or with the design of car controls and instruments – and it is... but it is so much more. Ergonomics applies to the design of anything that involves people – workspaces, sports and leisure, health and safety.

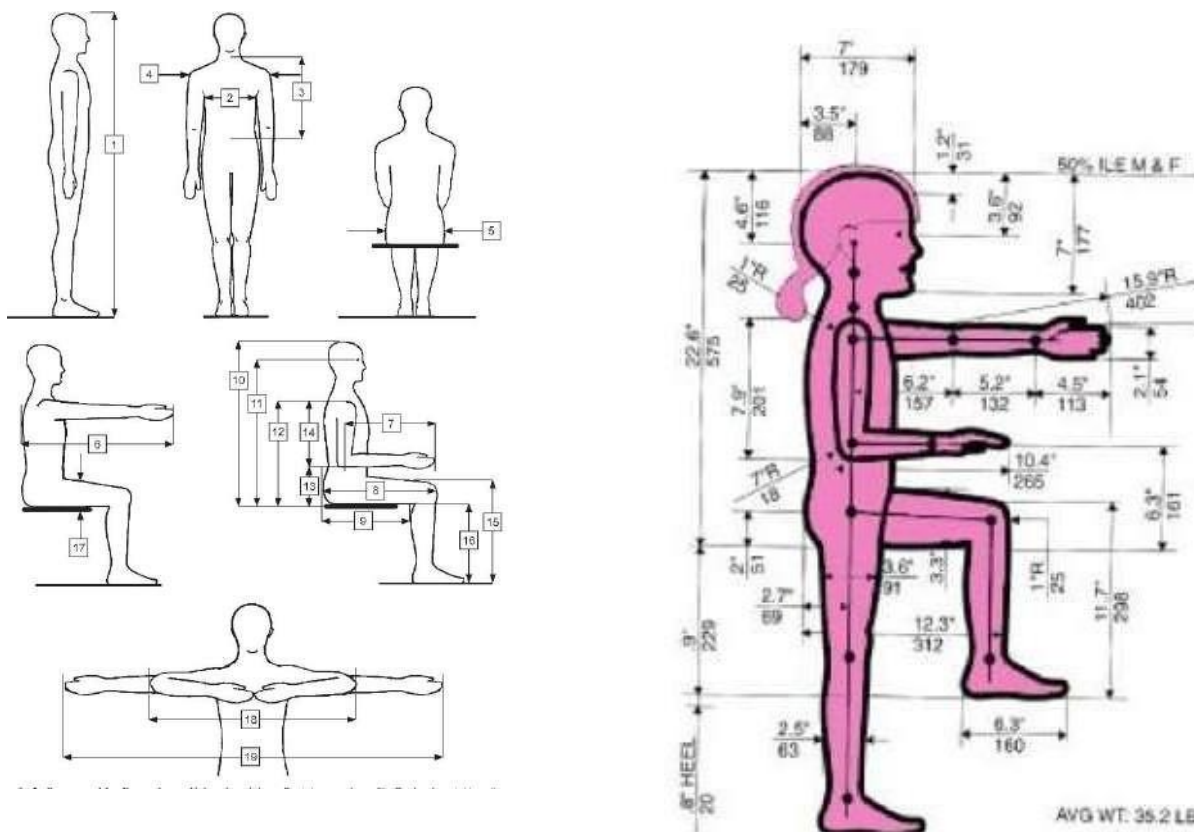
Ergonomics (or ‘human factors’ as it is referred to in North America) is a branch of science that aims to learn about human abilities and limitations, and then apply this learning to improve people’s interaction with products, systems and environments.

Ergonomics aims to improve workspaces and environments to minimise risk of injury or harm. So as technologies change, so too does the need to ensure that the tools we access for work, rest and play are designed for our body’s requirements.



Image from the International Ergonomics Association





Need of the study

Living with the old people in home is a complicated phase in every family, because most of these people need assistance to perform their daily tasks majorly in the kitchens, bathrooms and rooms where most of the accidents occurs. To maintain the quality of lives of elderly people safety, comfort and physical and social health must be taken care of. Most of the older people are taken as the bunch of the problems and needs.

Elderly people generally use to stay in their own homes and societies. A well designed and assistance environment can promote them to use their homes more securely, independently for longer span of time.

TOP 5 CAUSES OF FALLS



Impaired Vision—Cataracts and glaucoma alter depth perception, visual acuity, peripheral vision and susceptibility to glare. **Solution:** Add color and contrast to identify objects, such as grab bars and handrails.



Home Hazards—Most homes are full of falling hazards. **Solution:** Add grab bars in the bathroom, install proper railings on both sides of stairways, improve the lighting, remove loose rugs and fix uneven or cracked sidewalks.



Medication—Many drugs (i.e., sedatives, anti-depressants) reduce mental alertness, affect balance and gait and cause drops in systolic blood pressure while standing. Mixing certain medications increases these effects, causing falls. **Solution:** Have a home care professional carefully monitor medications and interactions.



Weakness, Low Balance—Weakness and lack of mobility leads to many falls. **Solution:** Exercise regularly to boost strength and muscle tone.



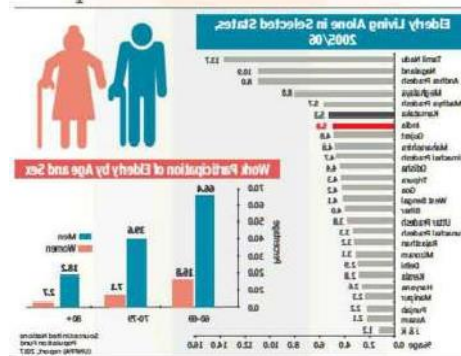
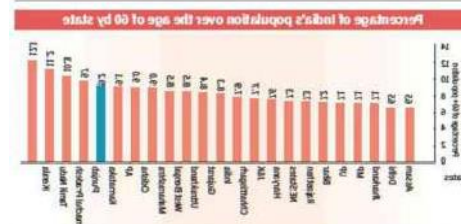
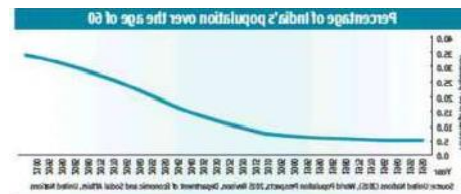
Chronic Conditions—Parkinson's, heart disease and other conditions increase the risk of falling. **Solution:** Enlist specially-trained caregivers to ensure that patients follow their treatment plans, assist them to doctor appointments and recognize red flags.

30%
80%-90% of people who fall suffer injuries to some degree. These injuries are more likely to get around at home independently by **20%**

1 IN 3
adults age 65 and older fall each year and lose valuable skills to their healthcare providers

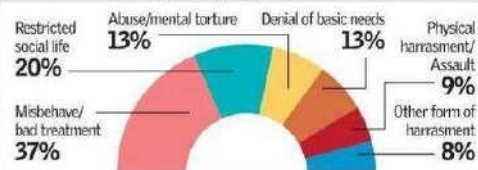
15
Every 15 seconds someone becomes a senior citizen is sent to the E.R. for a fall-related injury.

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GRIM REALITY

After retirement, many elderly people are forced to live a life of humiliation, abuses and isolation

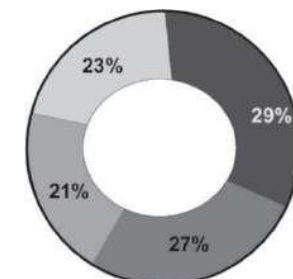


KINDS OF ELDER ABUSE:

- | | | | |
|---|--|--|---|
| <ul style="list-style-type: none"> Denial of food Denial of medical attention/medicines Abusing Humiliation | <ul style="list-style-type: none"> Beating Not allowed to meet grandchildren/outside relatives/neighbors/friends Tied in case | <ul style="list-style-type: none"> of disability Forced to do household chores Emotional blackmailing Ignoring daily needs | <ul style="list-style-type: none"> like clean clothes, proper food Snatching their belongings, even savings, useful legal documents |
|---|--|--|---|

"I rely on my son and daughter-in-law to provide meals and medicines. My daughter-in-law orders me to wash clothes and utensils and if I deny, she threatens me of not giving me meals and medicines. When they (her son's family) go out, they lock me inside the house, all alone for long hours."

—Savitri Devi, a 71-year-old widow



- Rejection by children
- Family Disputes
- No financial support
- Unavailability of Care taker

*single subject had more than one reason

EXAMPLES

SARASOTA BAY CLUB, FLORIDA, USA

Sarasota bay club is located just minutes away from some of the most beautiful water and white-sand beaches in the world. This costly retirement community justifies its sky-high pricing by providing residents with an impressively high staff-to-resident ratio, superior care and incredible five-star amenities.

Figure 3 VIEW OF SAROSATA BAY CLUB



NORTH LAKES RETIREMENT RESORT, QUEENSLAND, AUSTRALIA

Set in the heart of the picturesque North Lakes in Queensland, Australia, this upmarket retirement village is more like a resort, with everything you'd expect in a luxury retreat on offer to residents. The community boasts a heated pool, spa, gym, restaurant, library and even a hairdresser. If you fancy being a little more active you can head to the croquet lawn or bocce court for a game or two.

Figure 4 VIEW OF NORTH LAKES RETIREMENT HOMES



THE GOLDEN ESTATE

The Golden Estate is a one of a kind senior citizen home care in India offers premium living for seniors. It offers the assortment of quality care, comfort and security through the avenue of relaxed community lifestyle and warm hospitality. Your old age is a phase in your life that is meant for pure indulgence in a lifestyle that fills you with delight and brings out the best in you.

Being one of the premium senior citizen living homes, The Golden Estate has been designed in a way to offer the right blend of luxurious comfort and practical functionality. The community is a reflection of a vibrant lifestyle, where each day transforms into sheer pleasure.



ASHIANA

This retirement home is located at Bhiwadi Delhi NCR. They provide different types of facilities like Provision of medical support and trained medical staff to deal with a range of progressive illnesses such as Alzheimer's, Dementia, Arthritis.



INTRODUCTION
ABOUT CITY
AND THE
PROJECT

IDENTIFICATION OF THE SITE:

INTRODUCTION OF CITY PUNE

Pune formerly known as Poona, the official name until 1978) is the seventh most populous city in India and the second-largest city in the state of Maharashtra, with an estimated population of 7.4 million as of 2020



Pune stands out as a vibrant metropolis on the map of India. Established at the junction of the Mula and the Murtha rivers, Pune displays a baffling mixture of capitalism and culture. Popularly known as the “Cultural Capital” of Maharashtra and the “Queen of the Deccan”, this city has gone through innumerable transitions. The Architectural saga of the city has been shaped by various cultural, social, and political dynamics. The architecture of the city along with its planning and demographics has resulted in the development of the city in its present form .

Pune first gained importance as a city under the rule of Peshwas in the 18TH Century. The Peshwas while developing the city, added a unique Brahman character to its architecture. They constructed more than 25 temples, including the temple on the Parvati temple. The Parvati temple is a fortified temple on the Parvati hill, which provides mesmerizing views of the city. Intricately carved with stone, the Shikharas of the Parvati temple is built in a stepped form unlike the conventional temples of its time

View of EON IT Park area and World Trade Center

POPULATION - 6,987,077 (AS PER CENSUS 2022

SEX RATIO - 948 FEMALES PER 1000 MALES.

LITERACY RATE - 80.98 % (MALE - 88.25 % , FEMALE - 73.25 %)

DENSITY - 5,600 people per square kilometer

PROJECT BRIEF

CHAPTER 2:-

IDENTIFICATION OF THE SITE:

SITE AREA : (8.8 acres)

LANDMARKS NEAR THE SITE: Mulik Chowk

DISTANCE FROM SOME MAJOR POINTS:

- Railway station and airport are at the distance of 3kms and 8kms from the site respectively.
- SAKHARAM KUNDLIK KODRE KUTIR HOSPITAL is the nearest hospital which is at 5kms from the site on “Mundhwa Road”
- Bank of Maharashtra is at the distance of 4kms from the site on the “Mundhwa road”
-

AIM:

- A place that offers physical, mental and spiritual well being. Full of vibrant life, an epitome of care and gracious living. A place you can look forward to come home to, in every sense of the word. Where every minute detail is catered for, where you could be least bothered about mundane chores and everyday routines.
- To analyse different spaces in retirement homes/village and device appropriate strategies to make place secure and invulnerable for elderly people with respect to the anthropometry and ergonomics.

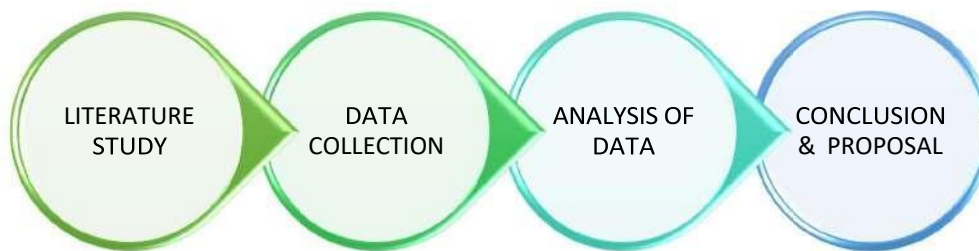
OBJECTIVE:

- To identify supportive features in retirement homes to facilitate independent living of retired people.
- To analyse those features with respect to anthropometry and ergonomics to understand the gap in the existing design.
- To devise design strategies for those supportive features and also provide spatial planning to have inclusive & adaptable approach for the retirement village.

SCOPE & LIMITATIONS:

- The main focus of the study is analysing the anthropometrical and ergonomical data for the elderly people in retirement homes.
- It gives residents to old people to live their lifestyle
- They get a choice of residential units and convenient accessible health care facility.
- It will be a place which encourages communication with same age group people.
- Which promotes social life and enhances joy for each resident.
- The study is limited to elderly people only.

METHODOLOGY



STEP 1: -Literature Study

- To understand the situation of elderly on the basis of previous studies.
- To know the present condition of the retirement homes in terms of safety of elderly people.

STEP 2: - Data Collection

Primary data

- To identify the problems faced by elderly people in their daily life with the help of interviews.
- To get an idea about their perception of how retirement homes should be by a questionnaire.
- To know how designs can be improved so that elderly people can do their activities without any assistance by taking their anthropometrical data.

Secondary data

To get an idea about the present situation of the retirement homes with the previously researches, studies, books.

STEP 3: -Analysis of data

To get the anthropometrical data for the design and research.

STEP 4: -Conclusion and proposal

Create a design proposal with the help of data which will be elderly friendly and encourage them to do their daily activities without any assistance.

SITE ANALYSIS

SITE ANALYSIS:



APPROACH: Main approach:
18m wide road (east ave)

SITE ANALYSIS

TOPOGRAPHY:

- Its a flat piece of land which is irregular in shape with no gradient.

ORIENTATION OF SITE:

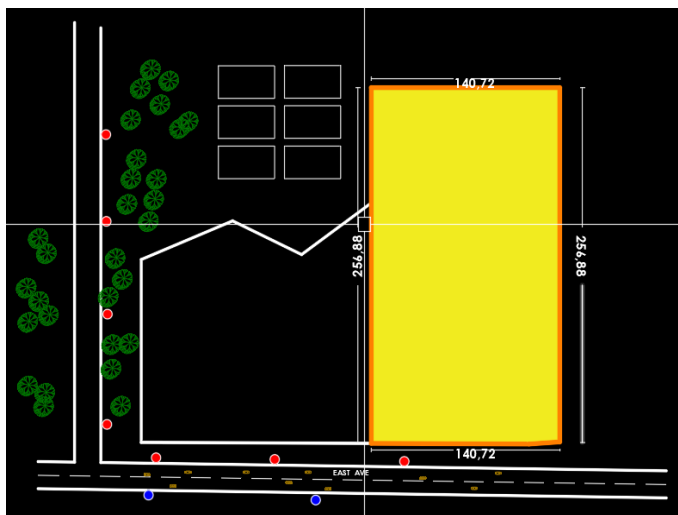
- The longer axis of the site is towards access with major road on “west” direction.

BUILT FORM:

- No built form exist on site.

FACILTIES:

- the electricity supply cables are running through all the two roads abutting the site.
- Water supply lines runs parallel to the major road.
- Manhole is near towards the longer axis of the site.



➤ Electrical lines

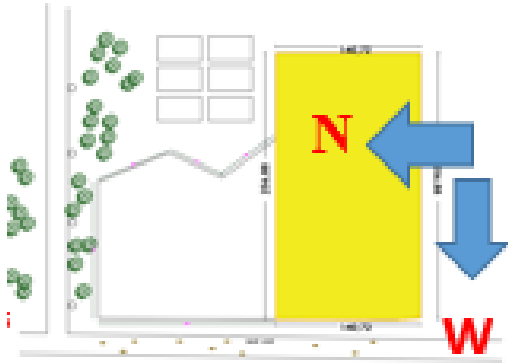
➤ Manhole



SERVICES:

- the electricity supply cables are running through all the two roads abutting the site.
- Water supply lines runs parallel to the major road.
- Manhole is near towards the longer axis of the site.

CLIMATIC DATA



- Type : wet and dry climate
- Average : 20- 28°C
- Seasons: summer, monsoon and winters
- Typical summer months: march – may
- Maximum temperature in summers: 30-38°C

Even during the hottest months, nights remains cool due to its high altitude.

- Monsoon season: June – October
- Maximum temperature: 22-28°C
- Winter season: starts from November
- Average temperature (daytime): 28°C
- (night time): 10°C

December and January often drops upto 5-6°C

WIND DIRECTION:

- general wind direction: from west to south west
- West to south west is responsible for the heavy monsoon.
-

VEGETATION:

There is no vegetation on the site

SOIL:

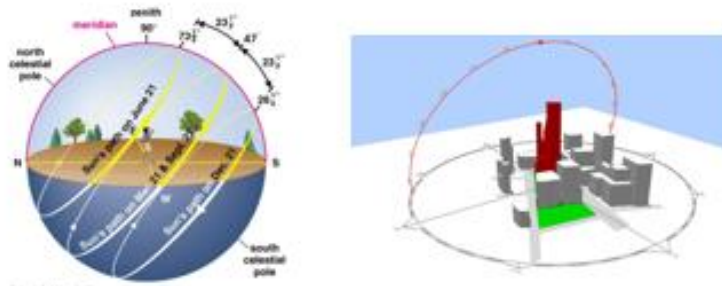
Black basalt soil

Climate data for Pune (1981-2010, extremes 1901-2012)													[hide]
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °C (°F)	35.3 (95.5)	38.9 (102.0)	42.8 (109.0)	43.3 (109.9)	43.3 (109.9)	41.7 (107.1)	36.0 (96.8)	35.0 (95.0)	36.1 (97.0)	37.8 (100.0)	36.1 (97.0)	35.0 (95.0)	43.3 (109.9)
Average high °C (°F)	29.8 (85.6)	32.1 (89.8)	35.6 (96.1)	37.6 (99.7)	36.9 (98.4)	31.9 (89.4)	28.3 (82.9)	27.6 (81.7)	29.4 (84.9)	31.5 (88.7)	30.4 (86.7)	29.2 (84.6)	31.7 (89.1)
Average low °C (°F)	11.2 (52.2)	12.2 (54.0)	15.7 (60.3)	19.6 (67.3)	22.6 (72.7)	23.1 (73.6)	22.4 (72.3)	21.7 (71.1)	20.9 (69.6)	18.4 (65.1)	14.5 (58.1)	11.5 (52.7)	17.8 (64.0)
Record low °C (°F)	1.7 (35.1)	3.9 (39.0)	7.2 (45.0)	10.6 (51.1)	13.8 (56.8)	17.0 (62.6)	18.9 (66.0)	17.2 (63.0)	13.2 (55.8)	9.4 (48.9)	4.6 (40.3)	3.3 (37.9)	1.7 (35.1)
Average rainfall mm (inches)	1.1 (0.04)	0.3 (0.01)	2.2 (0.09)	8.5 (0.33)	26.8 (1.06)	173.4 (6.83)	181.4 (7.14)	145.2 (5.72)	146.1 (5.75)	86.3 (3.40)	25.0 (0.98)	7.0 (0.28)	803.0 (31.61)
Average rainy days	0.2	0.1	0.2	0.8	1.9	9.5	12.4	9.8	8.0	4.4	1.2	0.3	48.7
Average relative humidity (%) (at 17:30 IST)	34	26	21	24	37	66	76	79	73	53	43	39	47
Mean monthly sunshine hours	294.5	282.5	300.7	303.0	313.1	183.0	114.7	111.6	177.0	244.9	264.0	279.0	2,868
Mean daily sunshine hours	9.5	10.0	9.7	10.1	10.1	6.1	3.7	3.6	5.9	7.9	8.8	9.0	7.9

Source: India Meteorological Department^{[97][98][99]}

CLIMATIC DATA

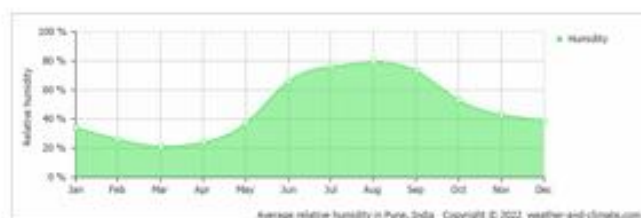
SUN PATH DIAGRAM



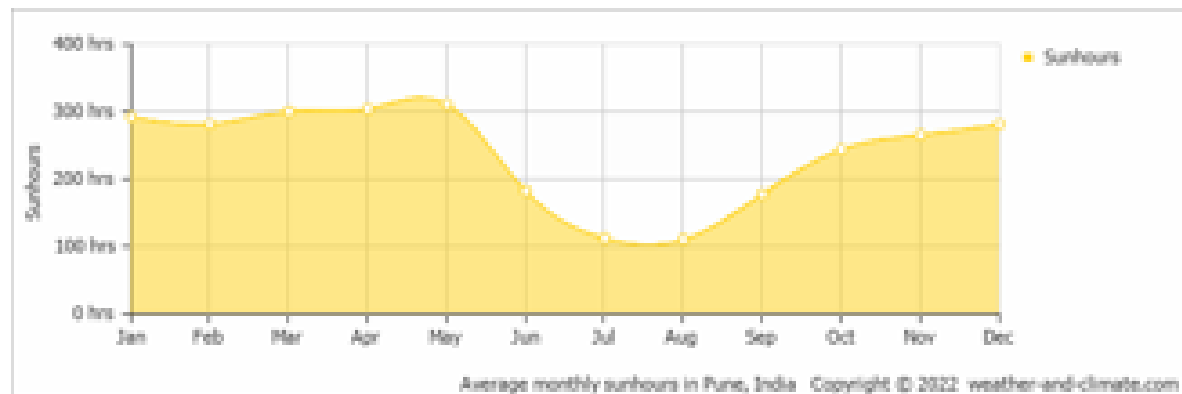
TEMPERATURE GRAPH



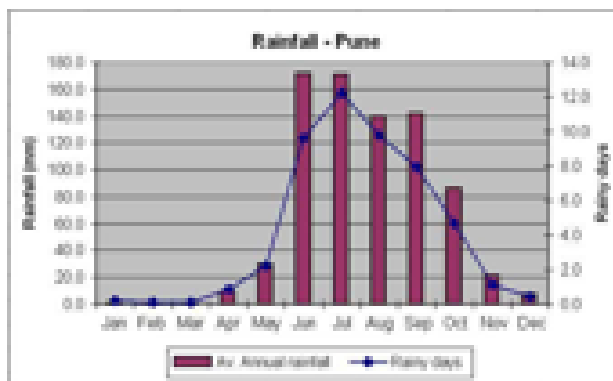
RELATIVE HUMIDITY GRAPH



SUN HOUR GRAPH



RAINFALL GRAPH



WIND SPEED GRAPH

Wind Speed in Pune, Maharashtra, India



SITE SURROUNDINGS:



Royal orchid golden suits

"SITE SURROUNDINGS"



Lifestyle shopping complex



St. bishops co-ed school



landmark garden society



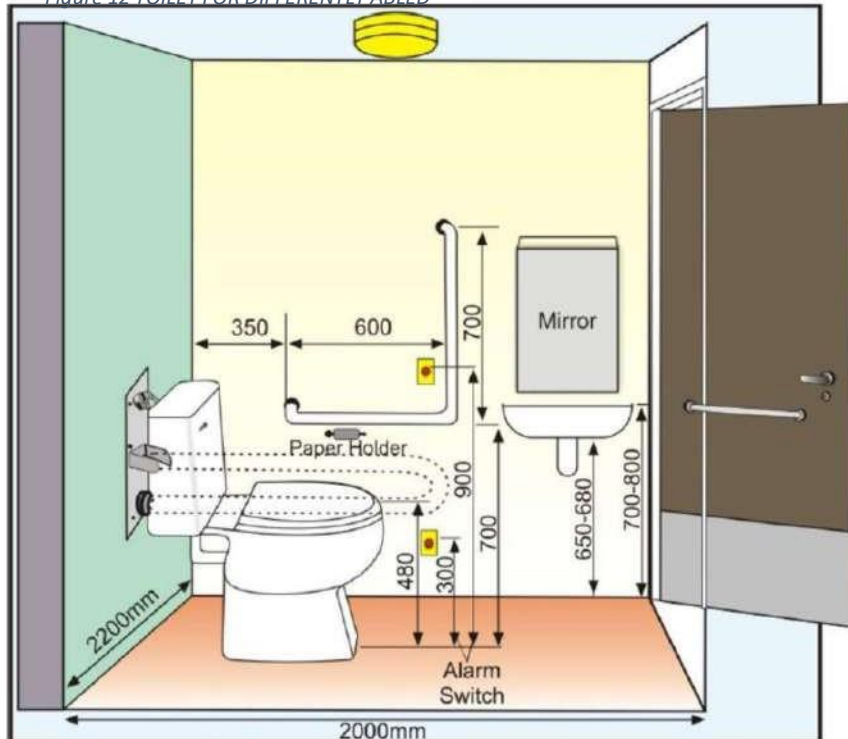
SITE PHOTOS



STANDARDS

CHAPTER 3:- STANDARDS

Figure 12 TOILET FOR DIFFERENTLY ABLED

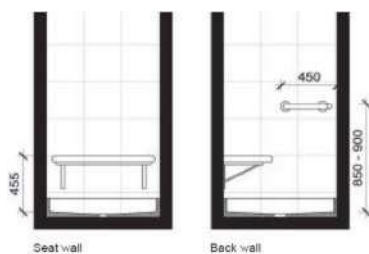


source: comparison of different guidelines 2016

Figure 11 SHOWER CUBICAL FOR DIFFERENTLY ABLED

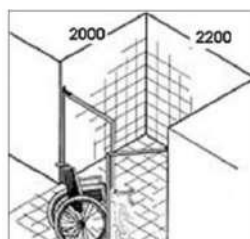


Figure 14 SEAT IN SHOWER



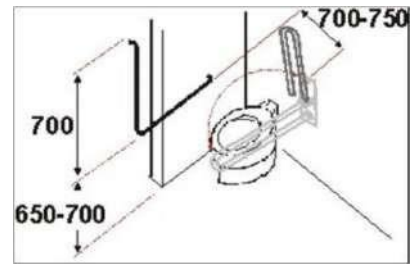
source: barrier free built environment

Figure 13 SHOWER CUBICAL ENTRANCE



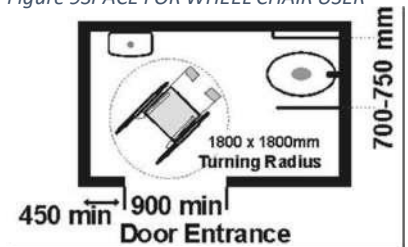
source: barrier free built environment

Figure 10 HEIGHT OF GRAB BARS



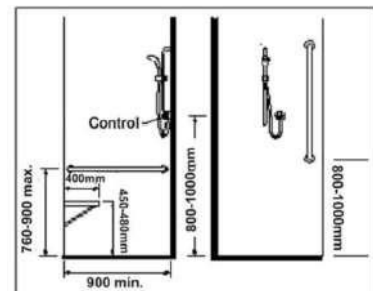
source: barrier free built environment

Figure 9 SPACE FOR WHEEL CHAIR USER



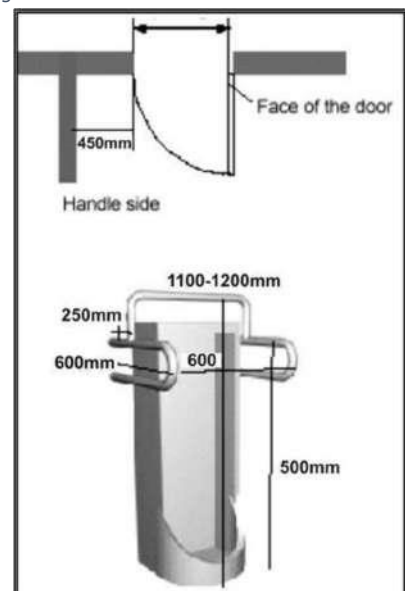
source: barrier free built environment

Figure 8 PLACEMENT OF SHOWER ACCESSORIES



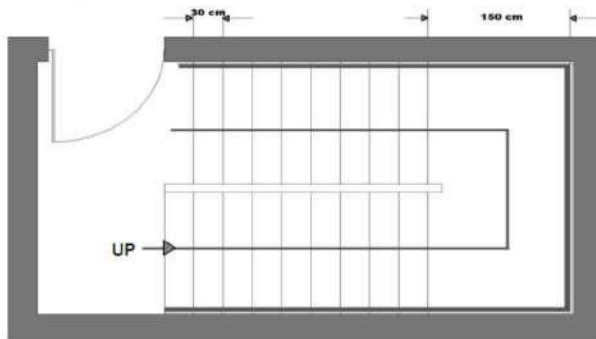
source: barrier free built environment

Figure 7 ENTERANCE OF TOILET



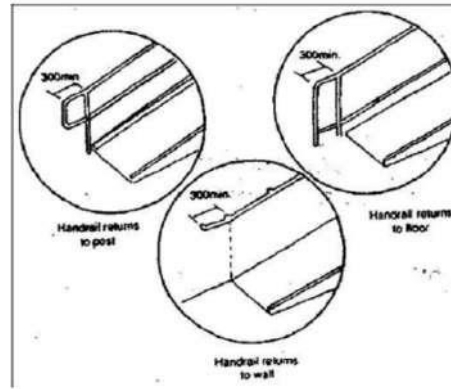
source: barrier free built environment

Figure 16 HANDRAIL FOR STAIRCASE



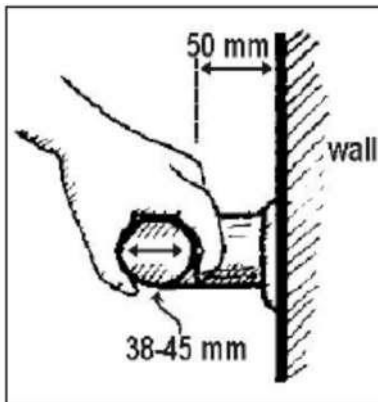
source: barrier free built environment

Figure 15 PICAL HANDRAIL EXTENSIONS



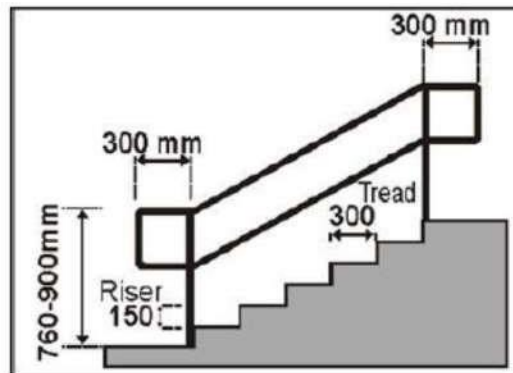
source: barrier free built environment

Figure 22 GRAB BARS DETAILS



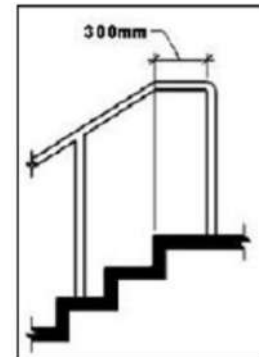
source: aged & disabled guidelines

Figure 21 HANDRAIL FOR STEPS



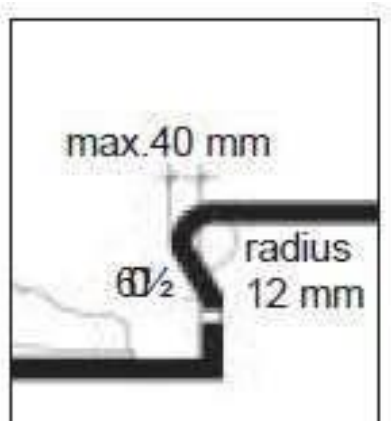
source: aged & disabled guidelines

Figure 20 HANDRAIL EXTENSIONS



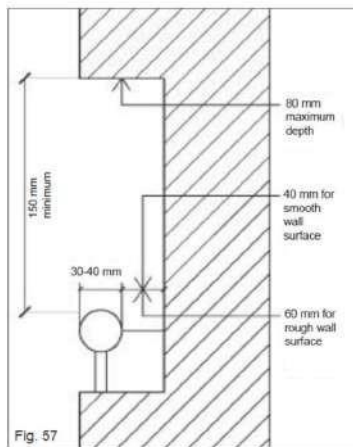
source: aged & disabled guidelines

Figure 19 NOSING DETAIL



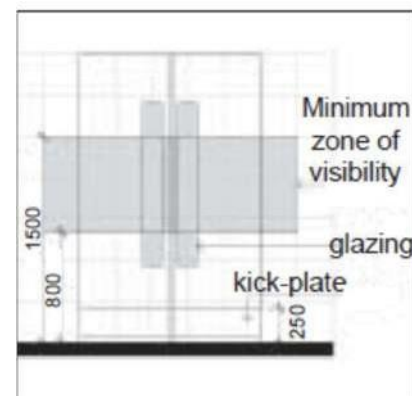
source: aged & disabled guidelines

Figure 18 HANDRAIL DETAIL



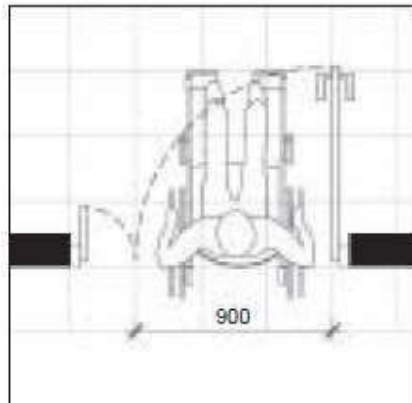
source: aged & disabled guidelines

Figure 17 DOOR DETAILS



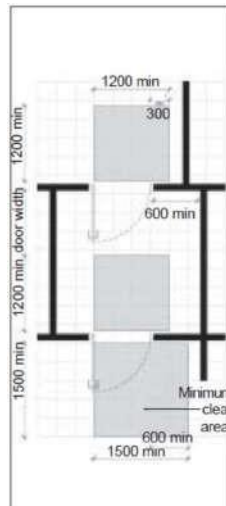
source: aged & disabled guidelines

Figure 25 DOOR CLEARANCE



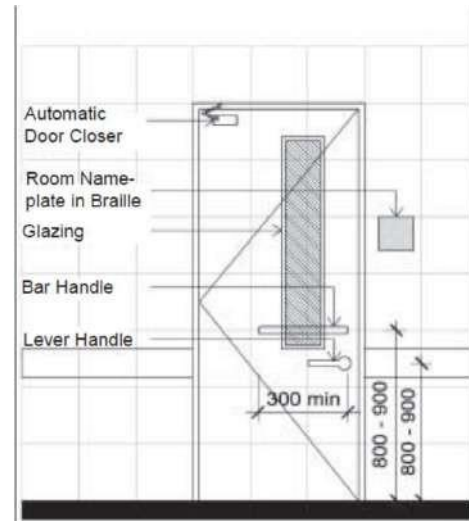
source: barrier free built environment

Figure 24 IN CASE OF VESTIBULE



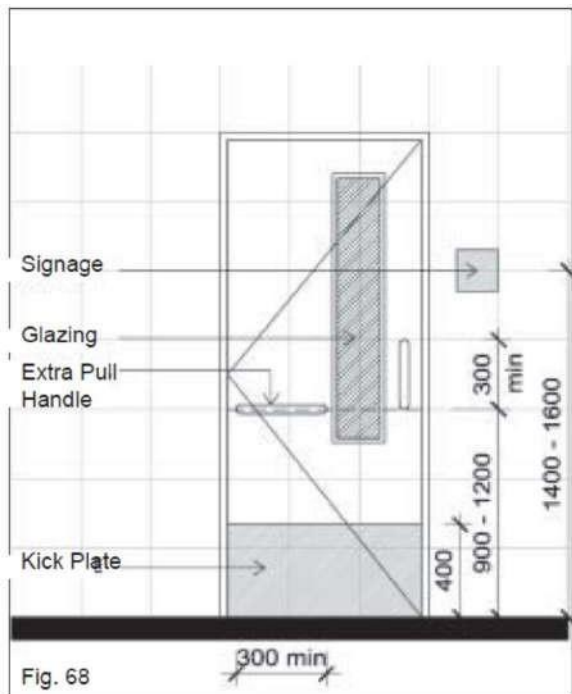
source: barrier free built environment

Figure 23 DOOR HARDWARES



source: barrier free built environment

Figure 26 DOOR HARDWARES



source: barrier free built environment

LITERATURE STUDY

CHAPTER 4: LITERATURE STUDY

LITERATURE STUDY 1:

- Understanding ergonomics of elderly people
- Problems faced by them in daily activities

Analysis and ergonomics of houses for elderly people

Introduction:

People aging is a universal phenomenon. Camarano says that it is a necessary process for everyone's life. In case of Brazil it can be a typical example that by the increase of participation of 60-year olds in total national population: 4% in 1940 compared to 8.6% in 2000 (Câmara, 2008). With the increase of life expectancy, the need has been recognized to project kitchens and bathrooms for the prevention of accidents according to identified existing risks. Living with the elderly people in any family is a very delicate span, because most of them need help to perform their activities specially in kitchens and bathrooms, where most of the accidents happens. These accidents can be avoided by family directions and some physical changes in the spaces.

Theoretical basis and data elderly and fall:

Statistics from Brazilian Health System reveals that every third person come to hospital is over 60. From that portion 75% are a consequence of accidents in homes with 34% of falls followed by some type of fracture (Câmara,

2008). Usually falls are caused by visual and postural instability at this age which is a common cause for accidents among elderly. In this age group almost one third people who are living in homes and retirement homes suffers at least one fall per year (Ministério, 2001). Old people of both the genders are usually less tall than younger people. The reach of them is shorter than young ones.

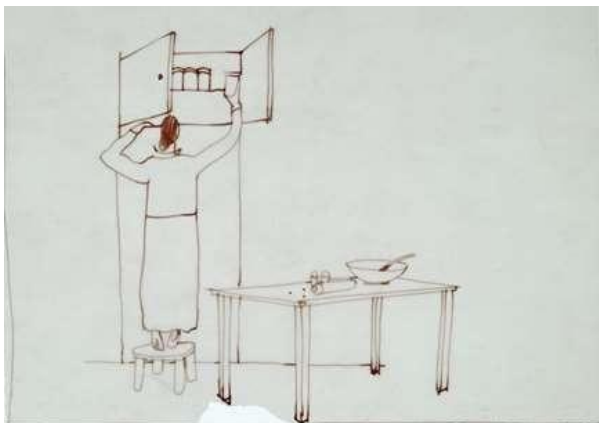
Determinant accident factors:

Health – Physical and mental conditions and observed old people habits:

Some associated factors contribute to fall at older age (80 or more); feminine gender; previous falls; immobility; less physical aptitude; inferior members, muscles weakness; weak handshake; less balance; slower walk with shorter steps; sense deficits; cognitive harms; Parkinson illness; sedatives, hypnotics and other drugs.

Other risk factors are the lack of physical activities prescribed by a professional, lack of confidence due to previous fall and factors that contribute to domestic accidents, among others, are shoes and sandals that slip easily.

Figure 27 HEIGHT OF CABINETS



source: technical drawing

Figure 28 ELDERLY FALL BECAUSE OF LESS BALANCE



Problems observed in the kitchen	Requisites	Suggestions for improvement
Lightening	Ample amount of light and switches on proper height	Adaptation of general lighting and local one (e.g. for tables, stoves and workbenches). Switches easy to use and disposed at 1.10 to 1.30 m from the floor.
Architecture	A need of a working triangle area and a good ventilation promotion.	Stove, sink and fridge disposed as such, in order to form a working triangle
Space	Space circulation and use of appliances.	To anticipate a minimum space between workbenches for people to move and work. In case of adapting cupboards and appliances to pay attention of the layout, in order not to disturb the space circulation or working activities
Floor	Places without uneven floors and door steps. Dry floors. No sliding carpets.	To keep the floor dry and/or to change it for one less sliding. Door steps must be even to floors. No use of carpets.
Kitchen	appliances Knob situated in the front side. Built-in appliances with control buttons easy to use.	To choose appliances of friendly use, with frontal knobs, big numbers and loud signals. Not to put the stove and fridge side by side.
Furniture	Attention that should be provided by the user concerning: stepping on chairs or stools, leaning on tables or chairs, or any type of appliances that might be a risk during a stand up	To avoid or change unstable chairs and stools. To avoid furniture with right edges or to put an adequate protection on them. Furniture should not mix up circulation or work space.
Workbenches	Right edges that need to be avoided if no protection provided.	To use round edges. Workbench height 85–90 cm (according to client's height).
Cupboards	Lighter and less used objects should be placed on upper shelf (with the right height).	Lower cabinets with doors and space to move the legs (or wheel chair, when necessary).

Table 2 DIFFERENT PROBLEMS AND SOLUTION IN RESIDENCE FOR ELDERLY

12	Requisites	Suggestions for improvement
Lightening	Good lightning and easy access to switches.	To adapt general lighting and local in workbenches and mirrors. Switches easy to use and disposed at 1.10 to 1.30 m from the floor.
Architecture	Adequate layout of ceramics and workbenches. Promotion of good ventilation.	Better layout for ceramics and workbenches. To make ventilation break bigger and/or to install a fan in the bathroom.
Space	A space to enable the movement of a wheel chair and a person.	To anticipate and/or adapt the space in order to enable the circulation of a wheel chair and a person.
Floor	Dry floor. Use of non skid carpets. Unevenness of the shower floor not greater than 1.5 cm. No sliding carpets.	To change the floor with a non sliding one, near the basin and the bathtub. Door steps must be even to floors. To fix the floor where it's not even. To place a nonskid carpet beside the bathtub or the shower for safety reasons.
Water closet	Height between 0.46 m and 0.50 m; simple flush.	To observe height and free spaces near the toilet. To install support bars near and beside the seat (30 cm).
workbench	Without right edges or with a protection on them. Basin with protection and support bars nearby. Switches and sockets in a dry floor (height 1.10 to 1.30 cm). Towel hangers near workbenches.	To use round edges. To install support bars on the basin. To observe the height of workbenches (to be 5 to 7 cm above clients' elbow).
Shower and bathtub	Shower and bathtub Sliding doors, support bars on the sides and front. Support stool. Height of the shower must be reachable for the smallest adult and to be high enough for taller ones	To put sliding doors in the shower box. To install support bars on the sides and in front of the shower box and bathtub. Taps, shampoos and toilet soap must be reached by someone sitting inside the bathtub. To put a stool inside the shower box.

	thus, head knocking is to be prevented.	A minimum width for the shower box should be 90 cm.
cabinets	Resistant material for the shelf insides. Frontal mirror with lights and amplifying mirror and brush storage.	Cabinets with doors and space to move the legs (or wheel chair, when necessary). Safety lockers to drawers, higher cabinets installed in the right height and with adjustable shelf.

CONCLUSION:

- ❖ LIGHTING SHOULD BE PROPER IN ALL THE SPACES
- ❖ IN KITCHEN AREA ALL THE USABLE SPACE MUST BE KEPT AS WORKING TRIANGLE
- ❖ CUPBOARDS AND OTHER FURNITURE MUST HAVE PROPER HEIGHTS FOR ELDERLY PEOPLE
- ❖ DOORS SHOULD NOT HAVE THRESHOLDS FOR ELDERLY PEOPLE
- ❖ FURNITURES MUST HAVE ROUND EDGES TO PROTECT USER FROM ANY HARM
- ❖ COUNTERS MUST HAVE CLEAR SPACE FOR WHEEL CHAIR USERS
- ❖ IN TOILETS ANTI SKID TILES MUST BE USED
- ❖ HEIGHT OF TOILET ACCESSORIES SHOULD BE AS PER THE WHEEL CHAIR USER SO THAT THEY WON'T HAVE ANY PROBLEM
- ❖ THE MIRROR OF THE BASIN MUST BE TILTED AT 15DEGREE FOR WHEEL CHAIR USER

LITERATURE STUDY 2:

CAPSLO HOMELESS SERVICES CENTRE

- To know about the various interior aspect which must be kept in mind to make interiors invulnerable for elderly people.
- To get the knowledge of spaces as per the elderly anthropometry.

Architects: Gwynne Pugh Urban Studio

Location: San Luis Obispo, CA

Client: Community Action Partnership of San Luis Obispo County, Inc. (CAPSLO)

Size: 26,000 square feet building + 26,000 square feet outdoor space

PROGRAM: The center will include community rooms, day-use service areas, kitchen and community enterprise spaces, offices, medical service and mental health areas, and dormitories. The facility will have 200 beds housing men, women and families.

DESIGN: the structure is designed around a central spine to aid in appropriate distribution of services. Security becomes increasingly stringent as one move from the west side of the building to the east.

GF: west side is dominated by public program spaces and a strong connection to the outside, while the eastern side of the building has less open access.

FF: public uses such as community rooms and service areas give way to more private and secure areas such as medical service and inter-agency office spaces.

A security monitoring desk segregates the single men's area to the west from the family rooms and women's areas to the east.

A3

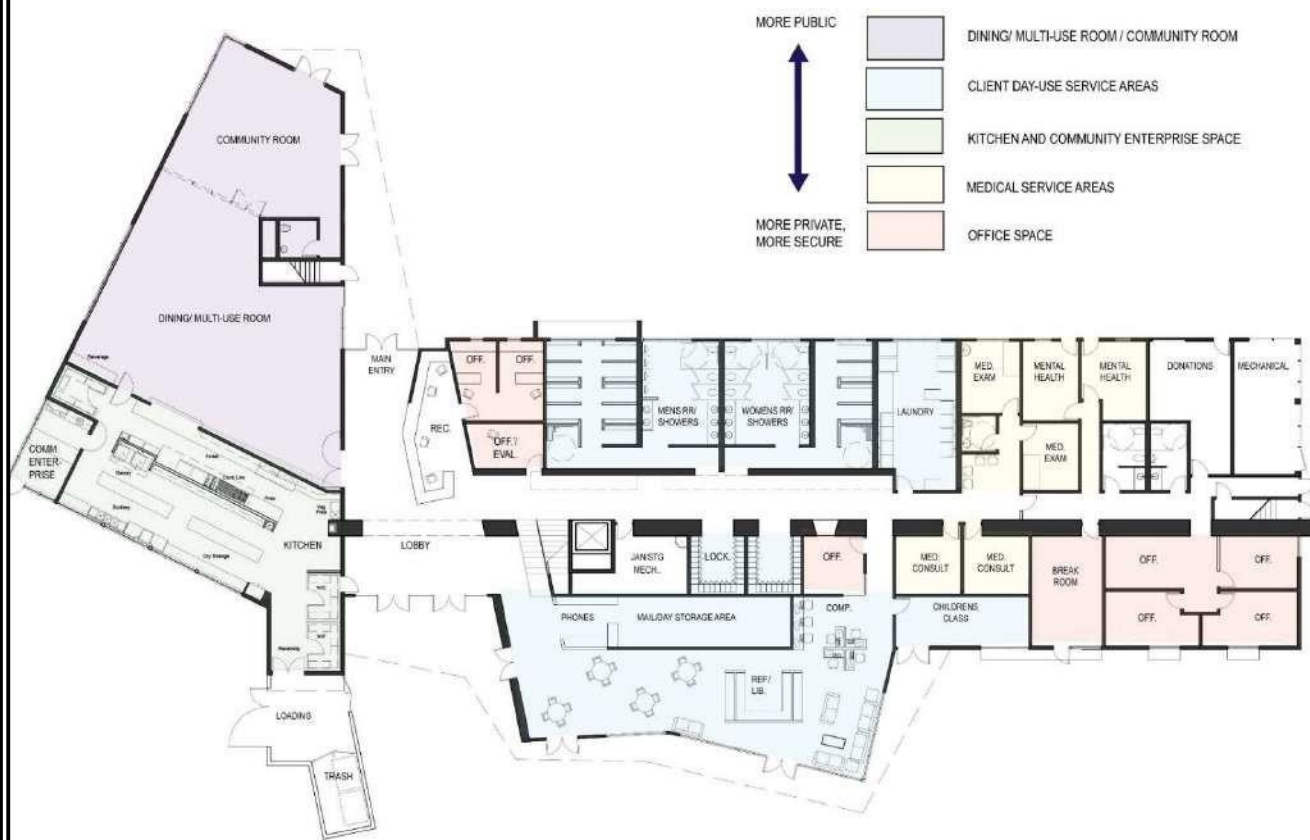


Figure 29 ACUTE ANGLES IN THE RECEPTION TABLE

1.

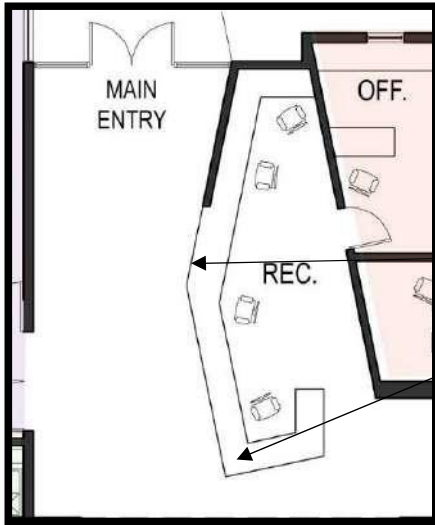
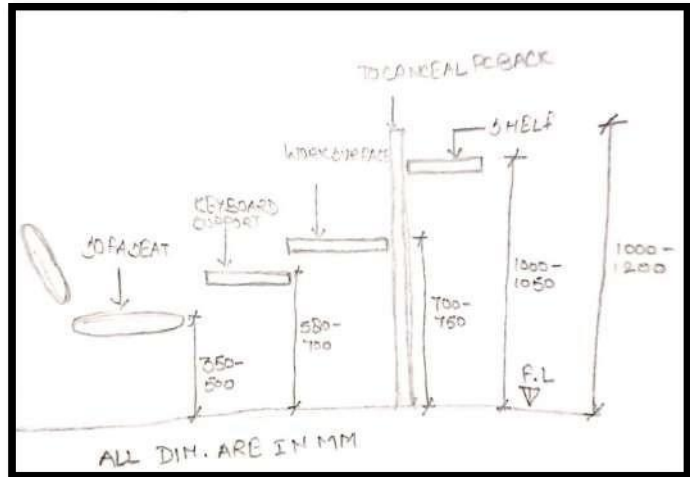


Figure 32 RECEPTION TABLE PLAN

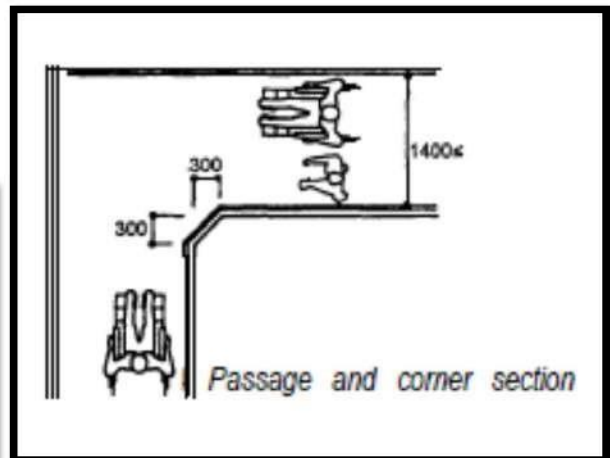
acute angles can harm anyone specially for elderly people they can be easily harmed.

Figure 30 RECEPTION TABLE HEIGHTS

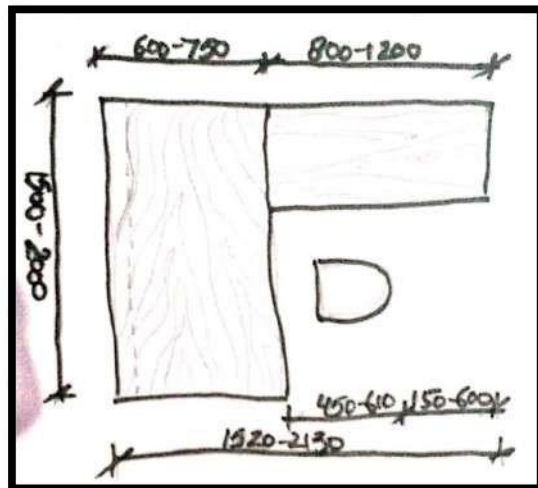


source: Neufert

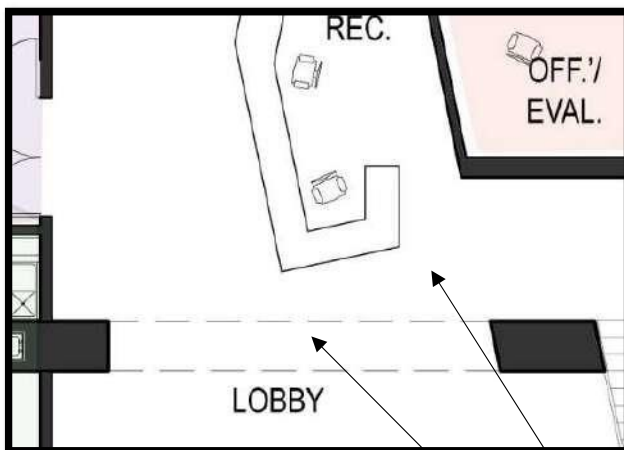
Figure 31 WHEEL CHAIR USER SPACE REQUIREMENTS



source: aged & disabled guidelines



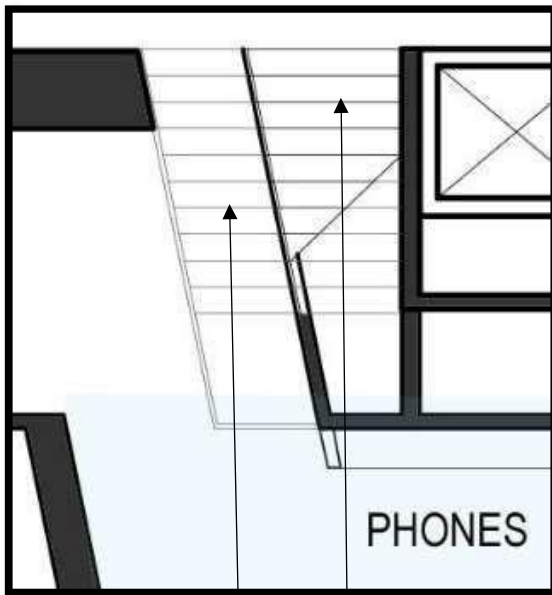
source: Neufert



No proper space for circulation wheel chair user cannot access corridor properly

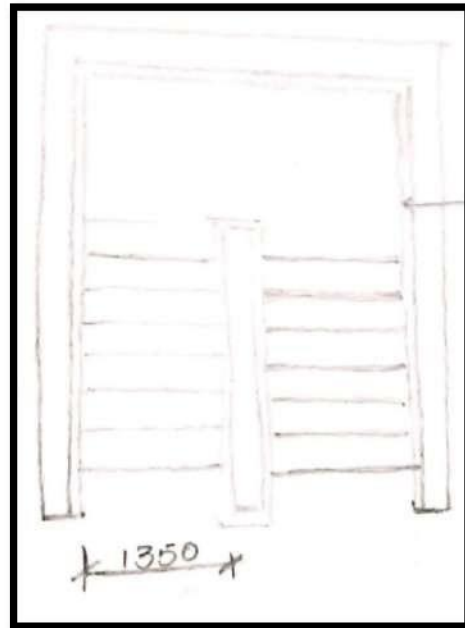
3.

Figure 34 STAIRCASE WIDTH



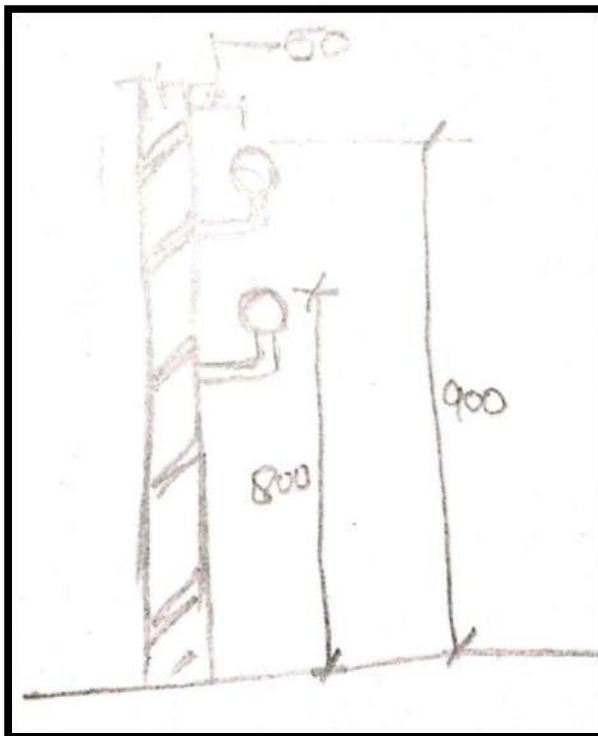
Width of the staircase varies which may be a reason of fall

Figure 33 STAIRCASE AS PER NORMS



source: aged & disabled guidelines

Figure 37 HANDRAILS HEIGHTS



source: aged & disabled guidelines

Figure 36 STAIRCASE SECTION

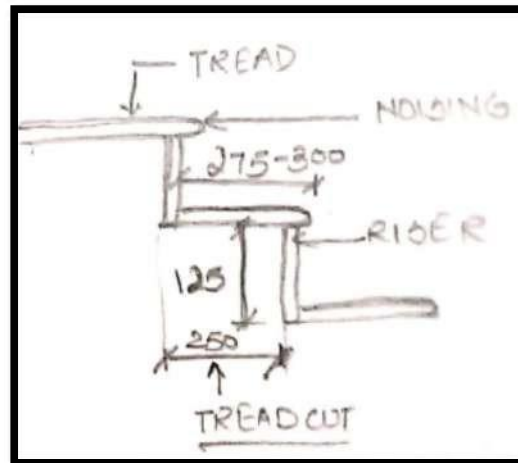
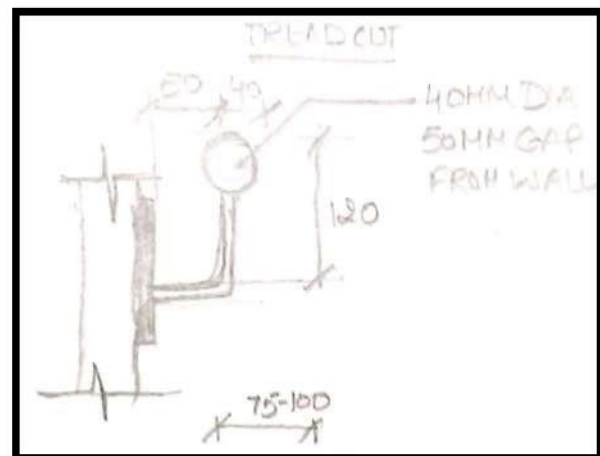


Figure 35 HANDRAIL FIXING DETAILS



source: aged & disabled guidelines 1

4 & 5.

Figure 39 OBSTRUCTION AT ENTRANCE

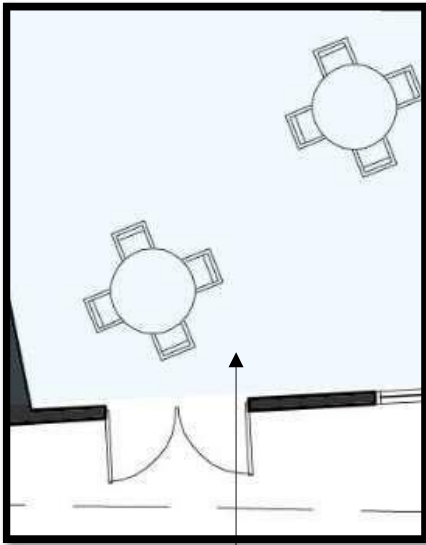
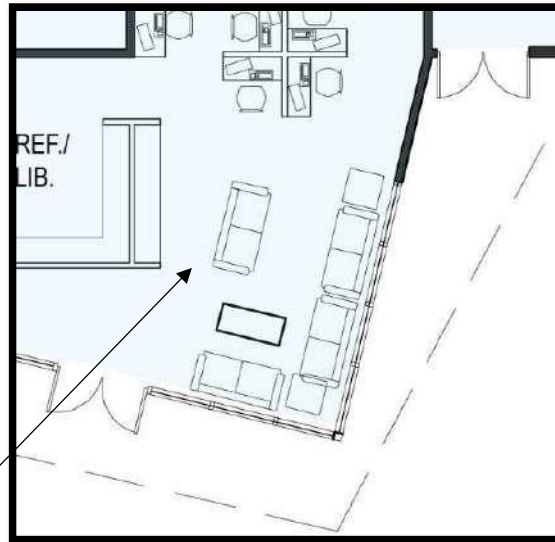
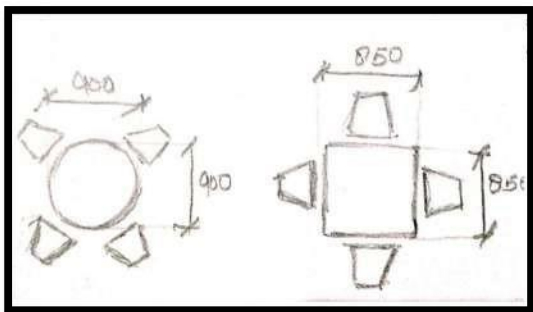


Figure 38 FURNITURE LAYOUT IS NOT PROPER FOR CIRCULATION



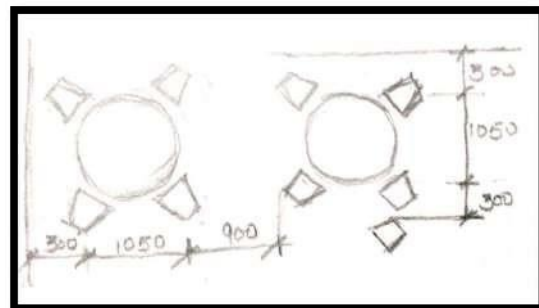
Furniture placement is not appropriate for the proper circulation

Figure 41 area requirement for circular and square table



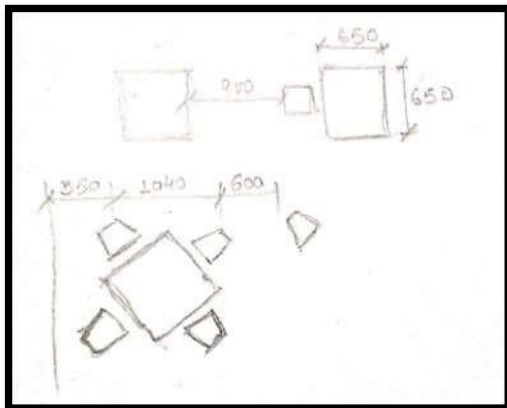
source: Neufert

Figure 40 AREA REQUIREMENT FOR CIRCULAR AND SQUARE TABLE



source: Neufert

Figure 41 AREA REQUIREMENT FOR SQUARE TABLE



source: Neufert

6 & 7.

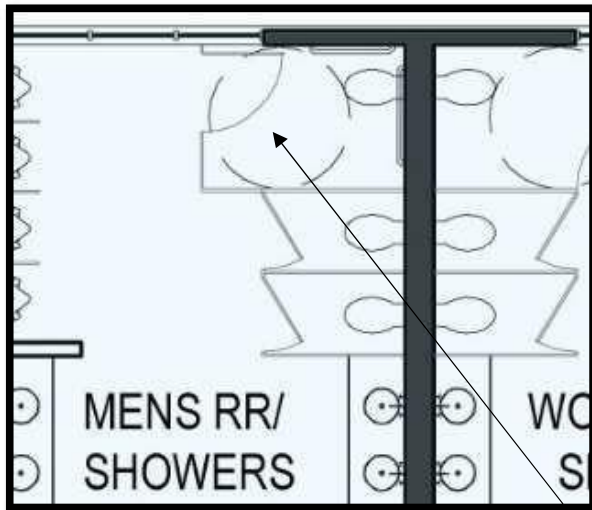


Figure 42 DOOR DETAILS

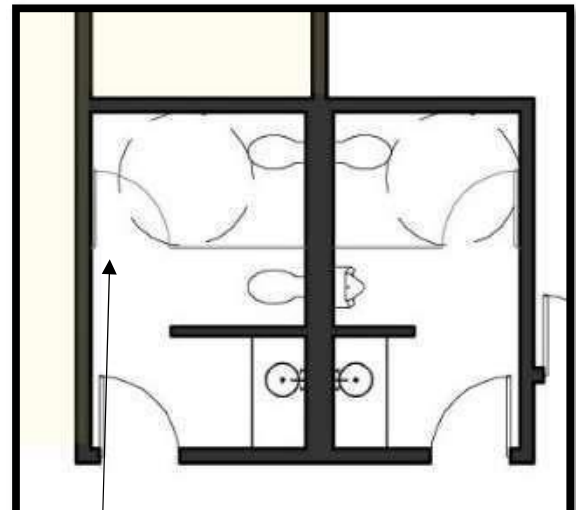
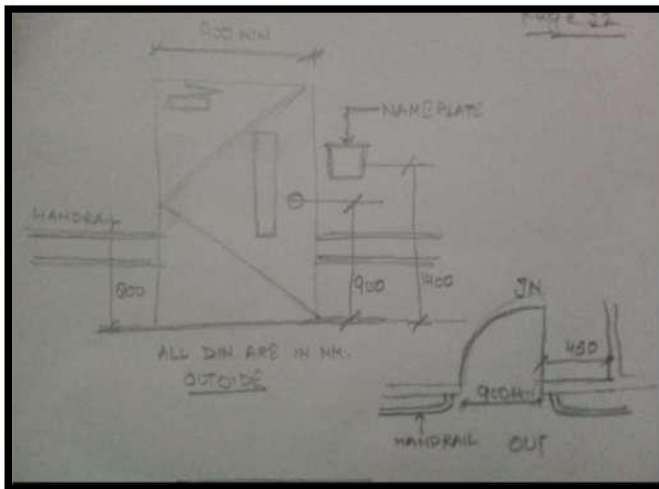
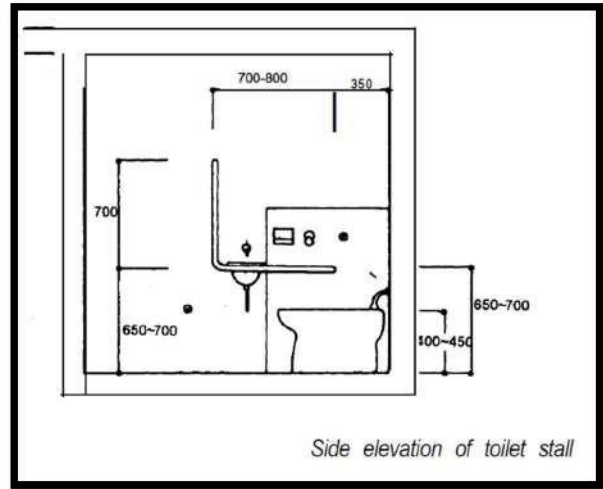


Figure 43 TOILET FIXTURE DETAILS

Door for the wheel chair user toilet is open to inside and wash basin do not have proper



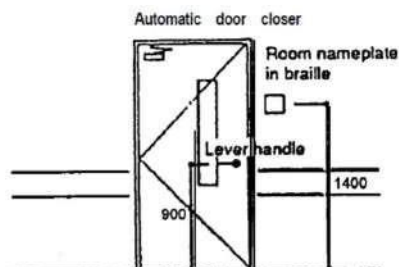
source: aged & disabled guidelines



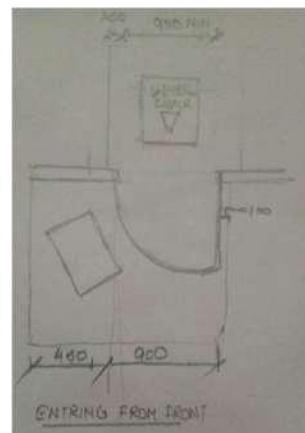
source: aged & disabled guidelines

Figure 44 DOOR PLAN FOR ENTRANCE

8. Corridors do not have proper width and handrails are also not provided in the corridor



source: aged & disabled guidelines

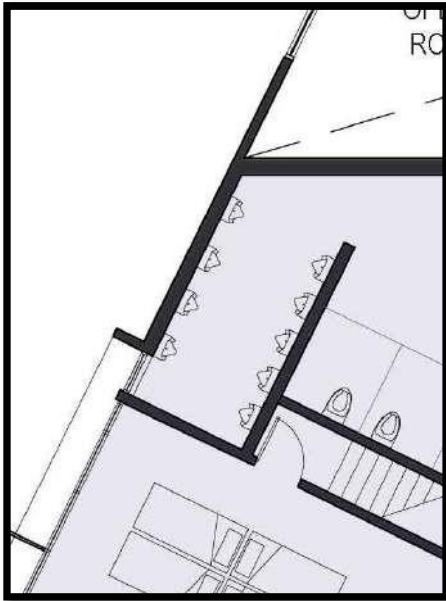


source: aged & disabled guidelines

A3

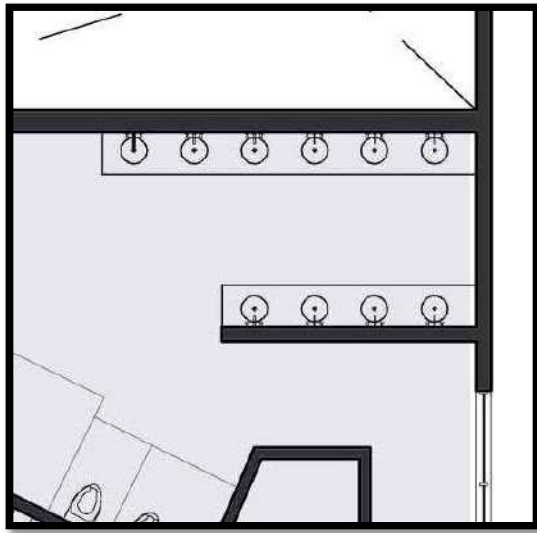
PLAN OF THE BUILDING FIRTS FLOOR

1.



spacing between the urinals is not proper

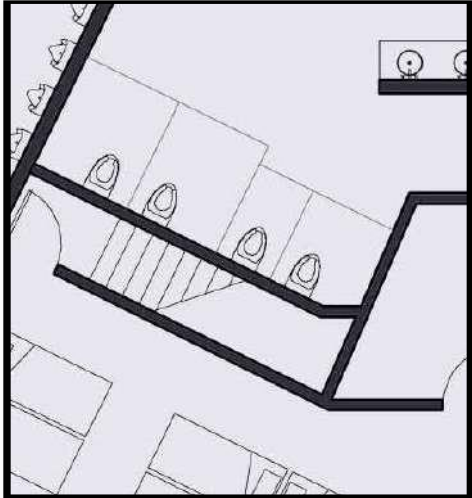
2.



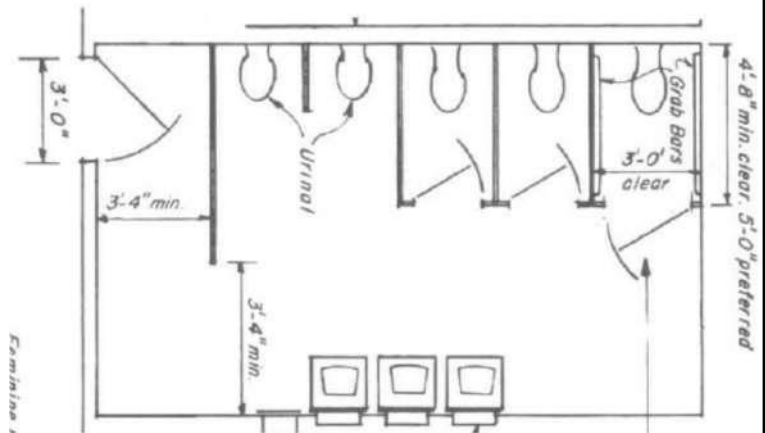
No proper arrangement of wash basins

Figure 45 SPACE REQUIREMENT FOR TOILETS

3.

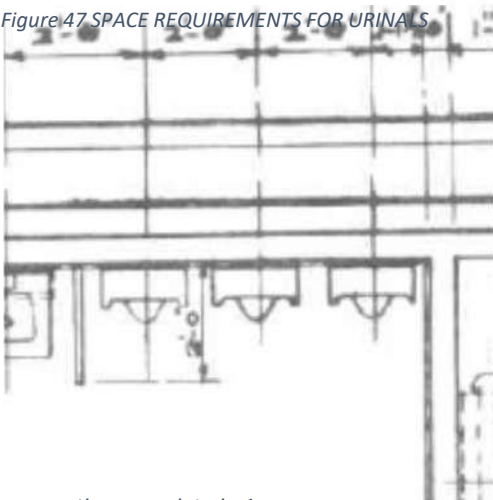


Position of wc and the cabin size



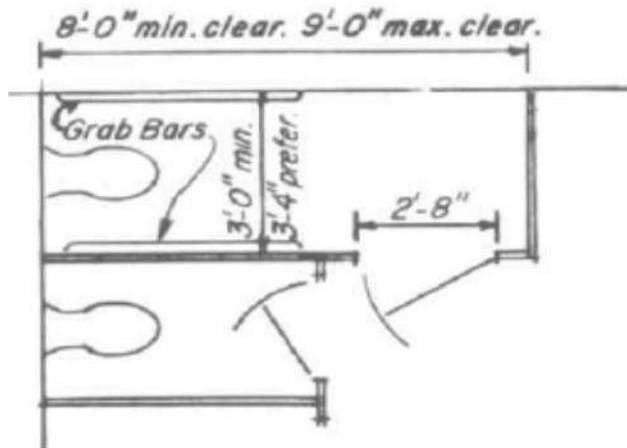
source: time saver interior1

Figure 47 SPACE REQUIREMENTS FOR URINALS



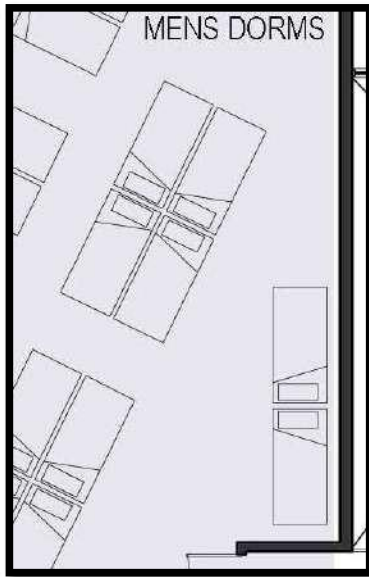
source: time saver interior1

Figure 46 MINIMUM SPACE FOR WC



source: time saver interior

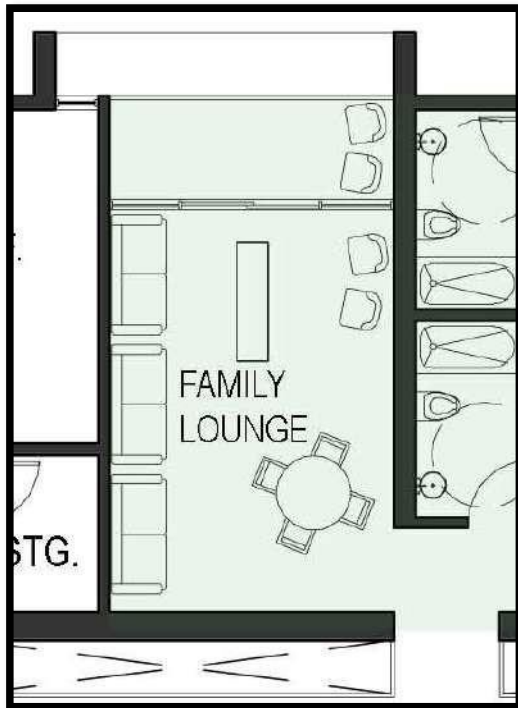
4.



Furniture placement is not appropriate

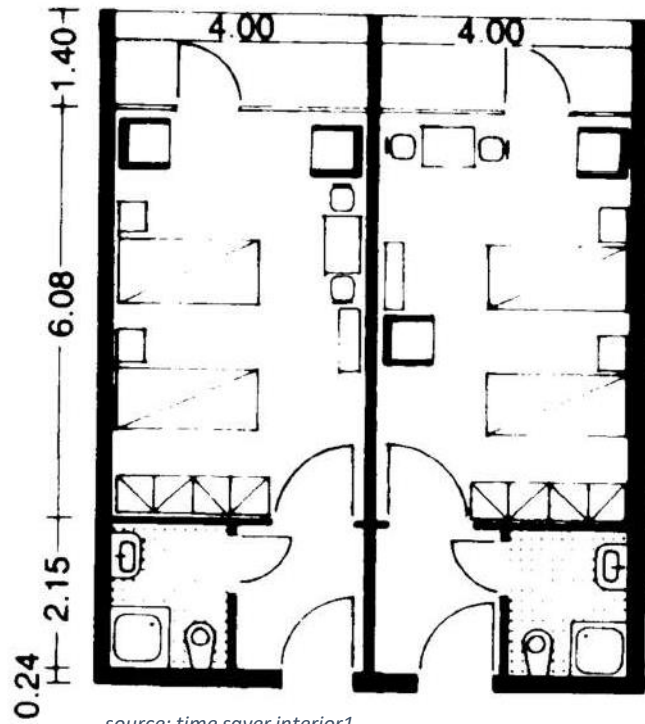
5. as shown in ground floor.

6.



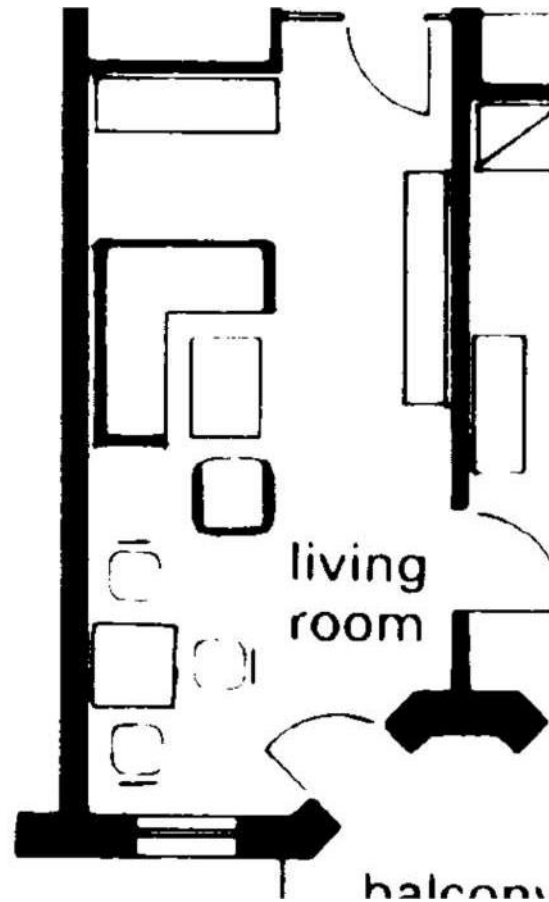
Furniture placement is not appropriate

Figure 48 SPACE REQUIREMENT FOR BEDS



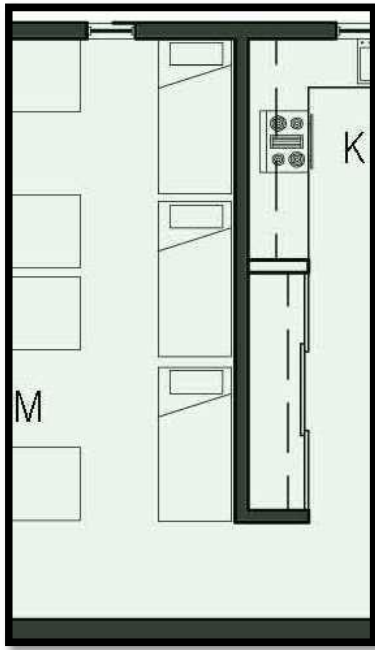
source: time saver interior1

Figure 49 SPACE REQUIREMENT FOR LIVING AREA

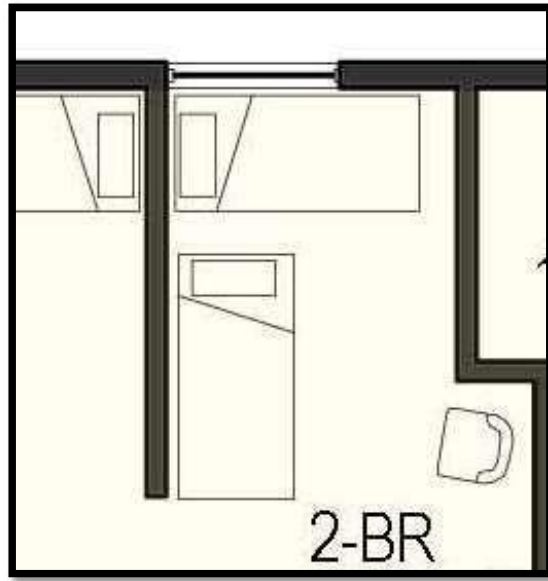


source: time saver interior1

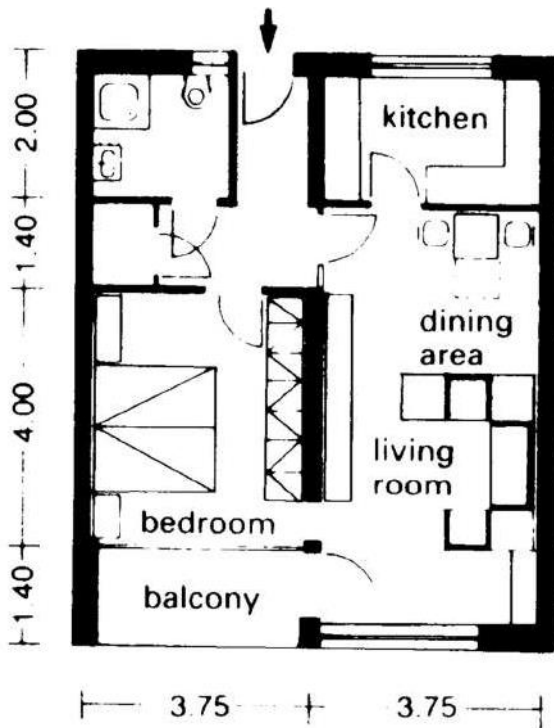
8 & 9.



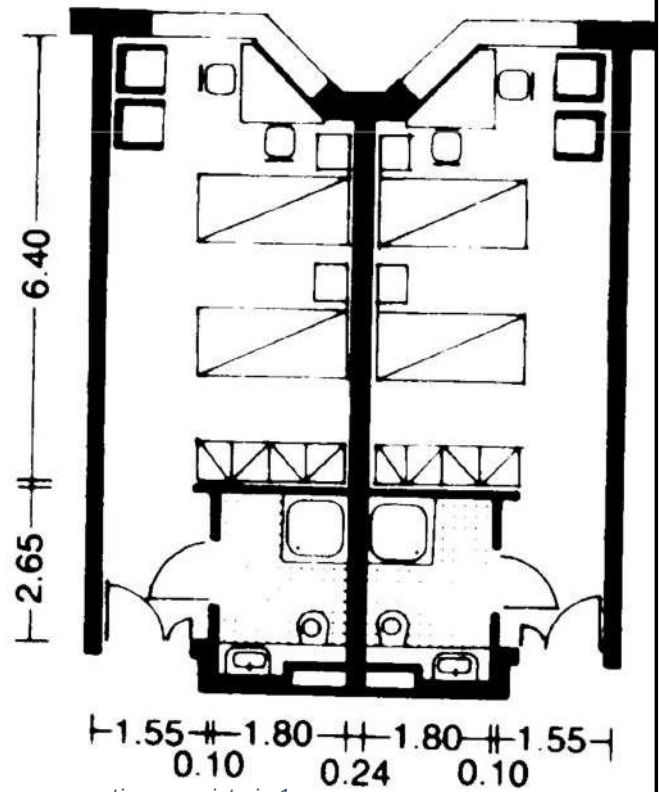
Furniture layout



Furniture layout



source: time saver interior1



source: time saver interior1

CONCLUSION:

- ❖ NO ACUTE ANGLES SHOULD BE THERE IN ANY FURNITURE OR IN BUILDING
- ❖ PROPER CIRCULATION SHOULD BE THERE FOR WHEEL CHAIR USERS
- ❖ STAIRCASE SHOULD BE AT LEAST 4'-0" WIDE AND MUST HAVE HANDRAILS
- ❖ NOSING MUST BE PROVIDED AT THE STEPS
- ❖ HANDRAIL MUST BE OF AT LEAST 3'-0" IN HEIGHT
- ❖ PLACEMENT OF THE FURNITURE SHOULD BE SUCH THAT NO USER WILL FACE PROBLEM. WHEEL CHAIR USER SHOULD BE KEPT IN MIND WHILE PLACING THE FURNITURE
- ❖ TOILET DOOR MUST BE OPEN TO OUTSIDE OF WHEELCHAIR USER TOILET
- ❖ TOILET DOOR MUST BE AT LEAST OF 3'-0" WIDE
- ❖ TOILETS MUST HAVE GRAB BARS FOR WHEEL CHAIR USERS

LITERATURE STUDY : 02

GROUP HOME IN NOBORIBETSU COMPANIONSHIP IN GROUP HOME

- To get the knowledge of circulation

Architects: SouFujimoto Architects

Location: Hokkaido, Japan

Principal Use: Group home for elderly

Year: 2006

Structure material: Wood

Site Area: 1,637 sqm

Constructed Area: 745 sqm

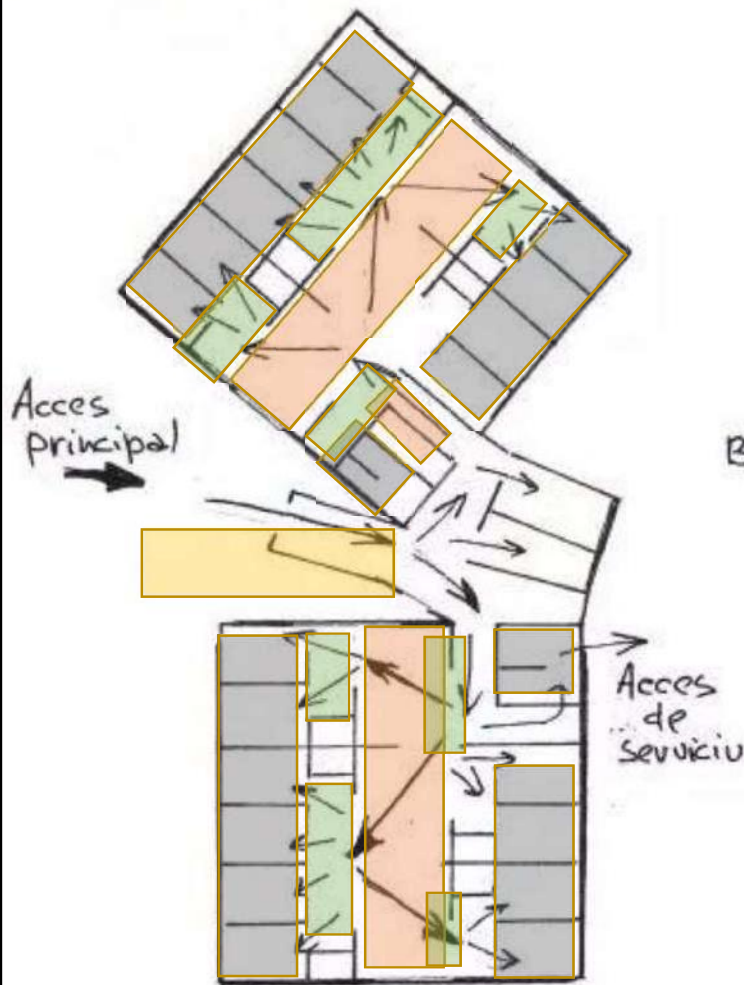
project statement: The building is divided into two units across the entrance. Each unit has 9 bedrooms, so 18 elderly in total live with the staff.

CIRCULATION

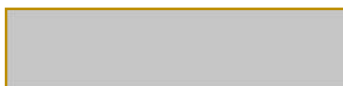
There is a big frame of 3x3 parallel crosses. The frame of space is made from the grid swinging gently perpendicularly. The intonation of a place is produced by being connected and separated.

A certain part serves as a place of a spread of living and dining room, and in somewhere else, the place of the end which was surrounded by the wall and settle down is produced.

Circulația.



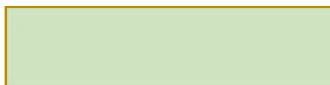
- Circulație în zig-zag
percepție treptată a spațiului
în profunzime.
- Spații traversate pe diagonală.



PRIVATE SPACES

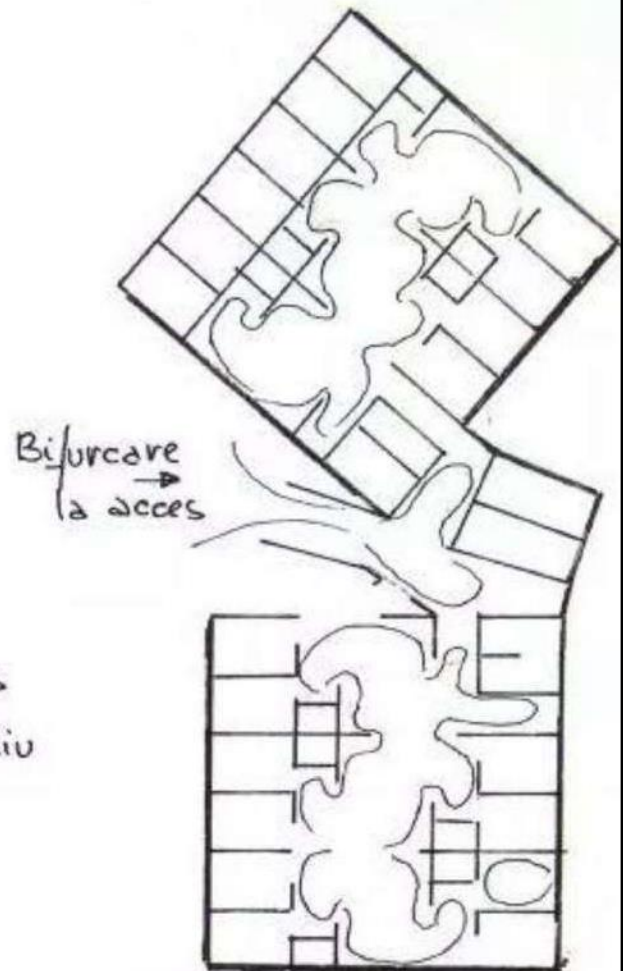


COMMON SPACE FOR CIRCULATION



SEMI PRIVATE SPACE FOR CIRCULATION

Limite spațiale



- Spațiu fluid.
- Mai multe spații devin
un spațiu unitar, continuu
și perceput succesiv.

FLOOR PLAN

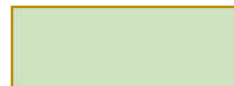




PRIVATE SPACES



COMMON AREAS



SEMI PRIVATE AREAS



PUBLIC SPACES

SPACE BIFURCATION



Literature Study 02:

To know the problems related to anthropometry in design.
To find out the solution related to them.

S.NO.	TYPE	TITLE	YEAR	METHODOLOGY	RESULT
1	Journal	Anthropometry for Design for the Elderly	2015	<ul style="list-style-type: none"> ❖ Interviews ❖ Taking live anthropometrical data by measurement ❖ Selection of body dimensions 	<ul style="list-style-type: none"> • 22 necessary anthropometrical dimensions • Correlation between body parts
2	Thesis	Ergonomics at Home	2014	<ul style="list-style-type: none"> ❖ Interviews ❖ Case studies ❖ Videos observation 	<ul style="list-style-type: none"> • Efforts should be made to prevent fall in toilets • Efforts should be made to develop the arm- and leg rests to be easier • Stairs should be built only when absolutely necessary
3	Dissertation	New models for future retirement: a study of college/university linked retirement communities	2003	<ul style="list-style-type: none"> ❖ Data collection by previous studies ❖ Selection of retirement communities as research sites 	<ul style="list-style-type: none"> • new model of retirement would generate attitudinal changes toward aging and retirement from the negative stereotype of older adults being dependent
4	Journal	Status of the Elderly and Emergence of Old Age Homes in India	2018	<ul style="list-style-type: none"> ❖ Collection of data from archives 	<ul style="list-style-type: none"> • need to take care of older adults, with a focus on social and

					mental well-being, economic and social security and elder abuse.
--	--	--	--	--	--

5	Report	Housing retirement in	2017	❖ Interviews ❖ Survey	
6	Dissertation	Care for the elderly through meaningful architecture	2013	❖ Primary research study ❖ Secondary research study	<ul style="list-style-type: none"> • Improvement should be done in design for making the place elderly friendly • Grab bars should be added • Ramps must be added
7	Research paper	Ergonomic Assessment of Old Age Homes in North India	2014	❖ Interviews ❖ Measurements	<ul style="list-style-type: none"> • doors, windows, switches, power outlets, sink, toilets, bathroom, handrail, storage spaces were not comfortable to the elderly people • Toilet seat heights (range, 390-410 mm) are of standard type but not specially designed for elderly users. • Most doors open towards

					<p>the inside (uncomfortable for users), posing problems if accidents occur inside.</p> <ul style="list-style-type: none"> The floorings of the habitat rooms were not specific, smooth and of grease proof material (skid resistance tiles) particularly in bath with water closets to avoid any accidental slips/falls.
--	--	--	--	--	--

8	Research paper	Age friendly kitchens: a study based on social history and ergonomics	2011	❖ Interview	<ul style="list-style-type: none"> Lack of space, storage or poor layout e.g. need oven nearer to sink Cleaning, opening and closing windows Cleaning hob. Lighting Fridge/freezer Access to Sink i.e. cannot get legs under for seated use; too large to reach in properly Access to cupboards <p>All these were creating problems</p>
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CONCLUSION LITERATURE STUDY:

After literature study of different articles, thesis, books, journals, dissertations following problems and solutions are identified in elderly living spaces

S.NO.	FIXTURE	PROBLEM
1	SWITCH BOARDS	The height of the switch boards is not proper No switchboards near beds
2	KITCHEN	The counter height is not according to elderly people Difficulty in reaching the cabinets Difficulty in using the sink
3	DOOR	height and width of the door are not appropriate, height of the lock and knob is not as per need
4	WINDOW	Sill level of the windows is not as per the elderly people It is difficult for them to open the windows
5	TOILETS	No grab bars are there in toilets Height of wc and basin is not suitable for elderly people In most of the cases door open to inside cause problem No anti-skid tiles are provided and no rubber mats Vanity have sharp edges No sufficient light in toilets No two-way switches are there Storage height is not proper Attached toilets and bathrooms are there cause problem for elderly people
6	STORAGE	Height of the storage is not proper

CASE STUDY

CHAPTER 5

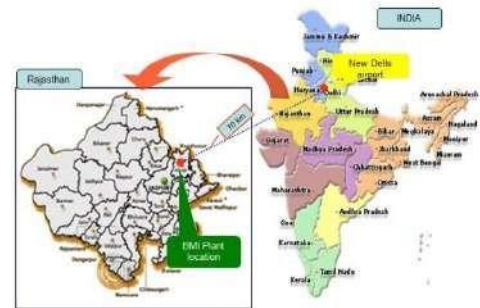
CASE STUDY 01 :- ASHIANA SENIOR LIVING ,BHIWADI,HARYANA

Location: Bhiwadi, Harayana

Principal Use: Group home for elderly

Year: 2005

- ☐ 83bhk flats are in use at present in Tulsi apartments-total area 1570 sqft.
- ☐ 6 2bhk flats are there in manjari with total area of 1250 sqft.
- ☐ 2 1bhk flats are on site named as vrinda with total area of 850 sqft.



SITE PLAN: ASHIANA SENIOR LIVING



TULSI 3BHK FLATS



9 & 15 VRINDA 1 BHK FLATS, 2 BHK FLATS REST OF ALL

WHY THIS SITE

- One of the largest senior living with over 140 old people.
- As per my survey users are not able to do there daily life activities without facing difficulties.
- There is a scope of work by which the interior can be make more elderly friendly.

Questionnaire filled by the user to know about the problems they face in their daily life activities

1. Could you tell me which age group you belong to? Are you between:

- 65–69 years
- 70–74 years
- 75–79 years
- 80–84 years
- 85–89 years
- 90 years and over

2. Are you male or female?

- Male
- Female
- Refused

3. What is your marital status?

Are you:

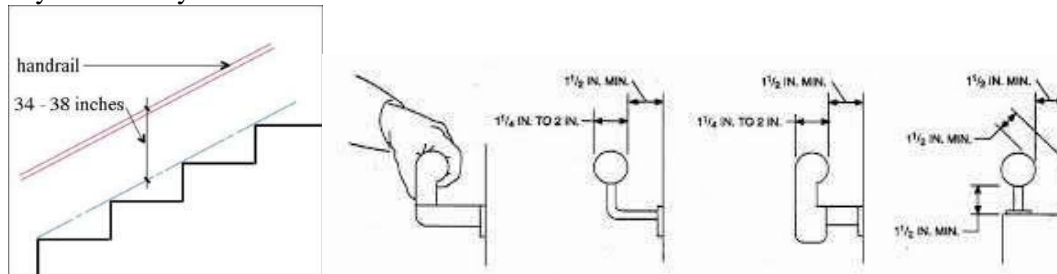
1. married
2. Widowed
3. Divorced
4. Separated
5. Refused.

DAILY ACTIVITIES

4. Does your health limit you climbing several flights of stairs?

☐ Agree ☐ strongly agree ☐ neutral ☐ disagree ☐ strongly disagree

If yes then do you need handrail



5. Can you do household duties like laundry, vacuuming, or dusting on your own?

☐ Agree ☐ strongly agree ☐ neutral ☐ disagree ☐ strongly disagree

6. Can you do home maintenance or gardening tasks on your own?

☐ Agree ☐ strongly agree ☐ neutral ☐ disagree ☐ strongly disagree

7. Do you think you need help with any household duties, personal care, or other tasks at home?

☐ Agree ☐ strongly agree ☐ neutral ☐ disagree ☐ strongly disagree

10. What tasks do you need help with?

1. Household duties (includes laundry, vacuuming, cleaning)
2. Personal care (showering, bathing, dressing, getting to the toilet)

3. Meals at home.
4. Home maintenance/modification or gardening
5. Day care services
6. Special transport to shopping, errands, medical visits
7. Respite Services
8. Any other tasks (specify)

8. What is the main reason you are not receiving help with these tasks from community services?

1. Did not know community services were available
2. Need not important enough now
3. Won't ask – too proud
4. Unable to arrange service
5. No service are available
6. Not eligible for service
7. Service costs too much
8. Service doesn't provide sufficient hours
9. Language/cultural barriers
10. Other (specify) _____
11. Don't know
12. Refused

9. Are you able to work in natural light provided to you?

☐ Agree ☐ strongly agree ☐ neutral ☐ disagree ☐ strongly disagree

10. Are you able to operate switch boards in your rooms?

☐ Agree ☐ strongly agree ☐ neutral ☐ disagree ☐ strongly disagree

TOILET

11. Do you have grab bars in your toilets?

☐ Agree ☐ strongly agree ☐ neutral ☐ disagree ☐ strongly disagree

If yes in which side



12. Do you feel any problem in using toilet fixtures like wc, basin?

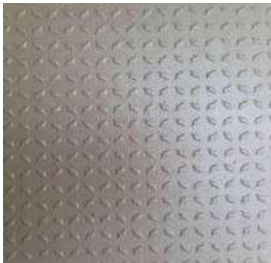
☐ Agree ☐ strongly agree ☐ neutral ☐ disagree ☐ strongly disagree

13. Do you need help or supervision with personal care such as showering or bathing, dressing, or getting to the toilet?

☐ Agree ☐ strongly agree ☐ neutral ☐ disagree ☐ strongly disagree

14. Do the toilets have anti-skid tiles?

☐ Agree ☐ strongly agree ☐ neutral ☐ disagree ☐ strongly disagree



KITCHEN

15. Do you have any difficulty in working in kitchen?

☐ Agree ☐ strongly agree ☐ neutral ☐ disagree ☐ strongly disagree

16. Are you able to reach the overhead cabinets?

☐ Agree ☐ strongly agree ☐ neutral ☐ disagree ☐ strongly disagree

17. Are you able to clean your utensils in sink?

☐ Agree ☐ strongly agree ☐ neutral ☐ disagree ☐ strongly disagree

18. Can you open the door without anyone's assistance?

☐ Agree ☐ strongly agree ☐ neutral ☐ disagree ☐ strongly disagree

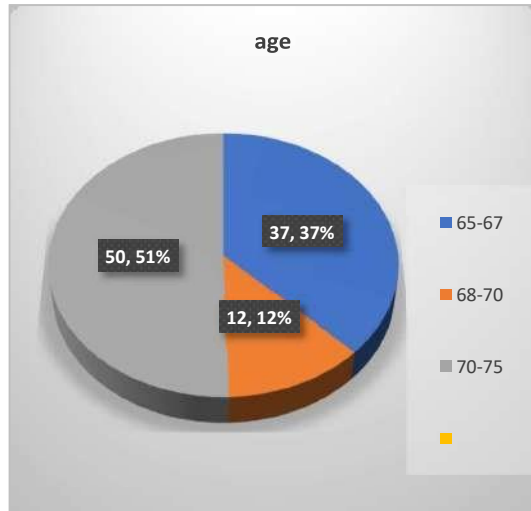
19. Are you comfortable with the heights of the furniture's?

☐ Agree ☐ strongly agree ☐ neutral ☐ disagree ☐ strongly disagree

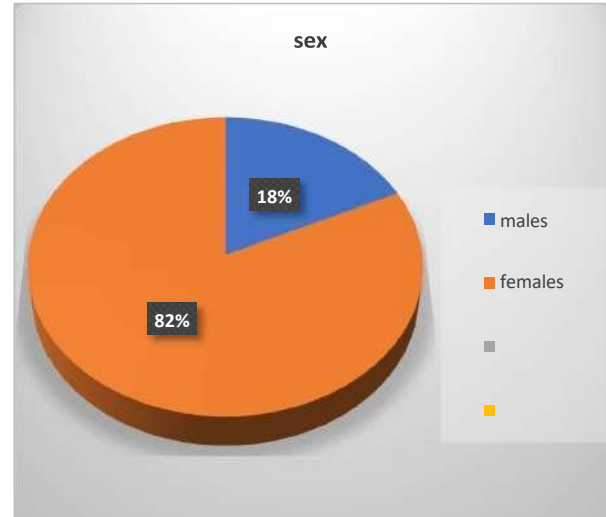
20. Can you prepare all your meals on your own?

☐ Agree ☐ strongly agree ☐ neutral ☐ disagree ☐ strongly disagree

Q1.could you tell me which age group you belong to?



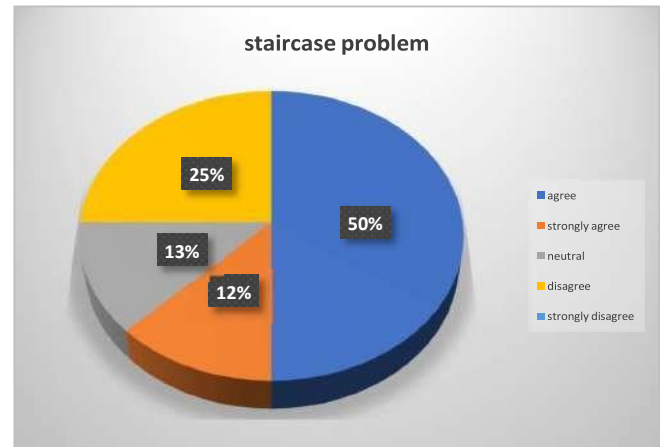
Q2. are you male or female?



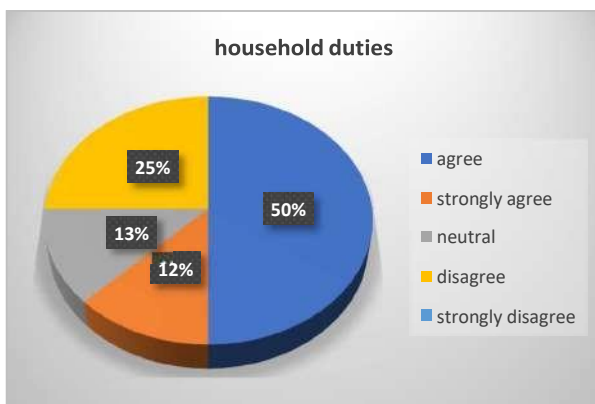
Q3.what is your marital status?



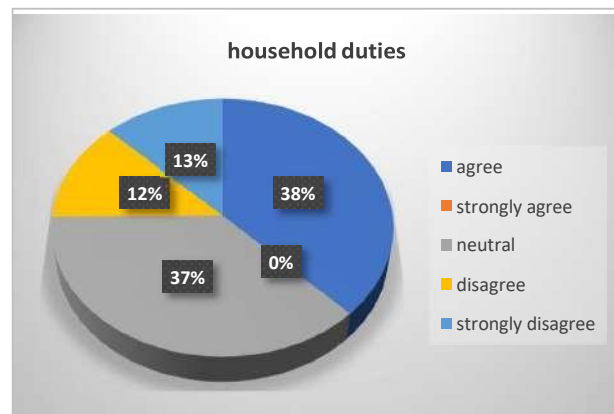
Q4. Does your health limit you to climbing several flights of stairs?



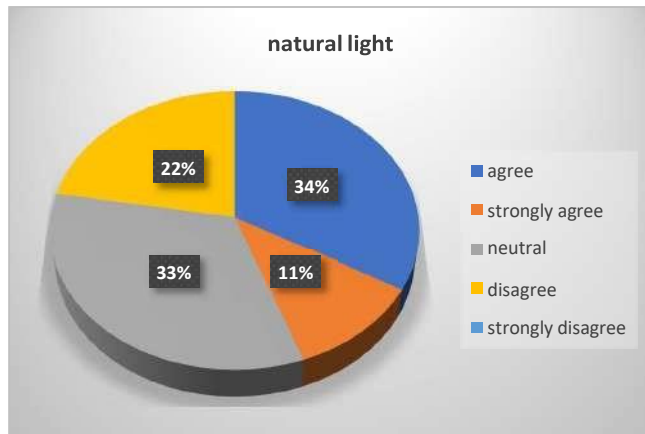
Q5.can you do house hold duties like laundry, vacuuming, or dusting on your own?



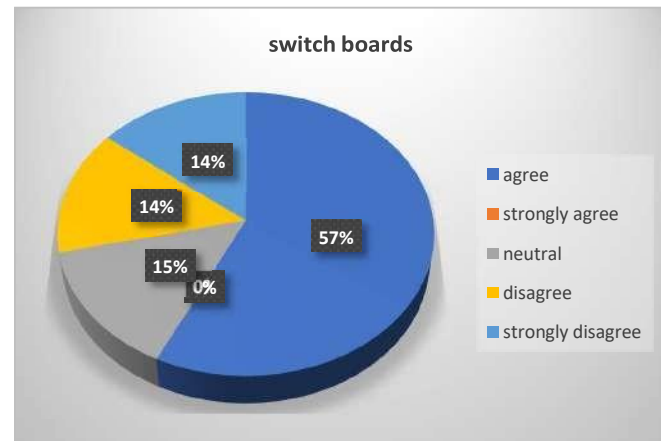
Q6.do you think you need help with any household duties, personal care, or other tasks at home?



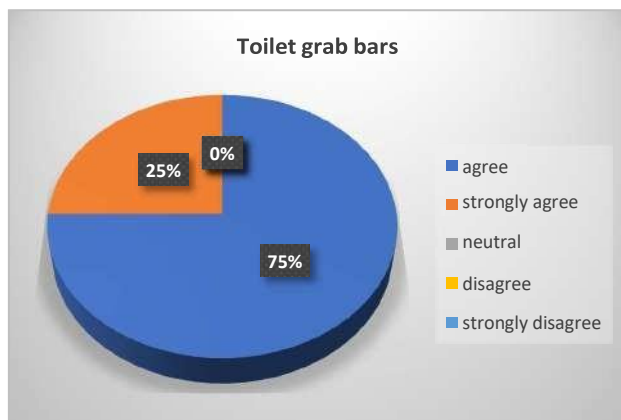
Q7. are you able to work in natural light provided to you?



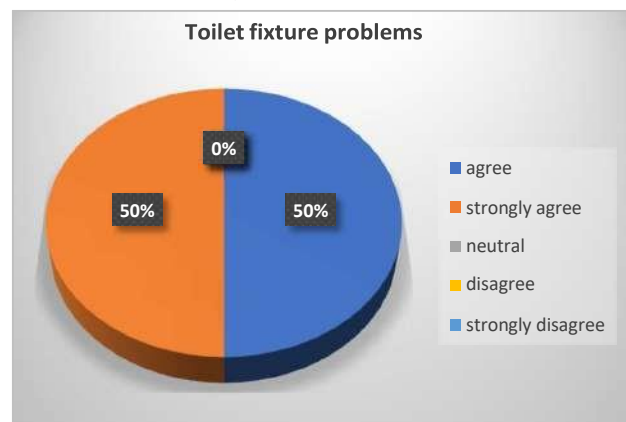
Q8. are you able to operate switch boards in your rooms?



Q9. do you have grab bars in your toilets?

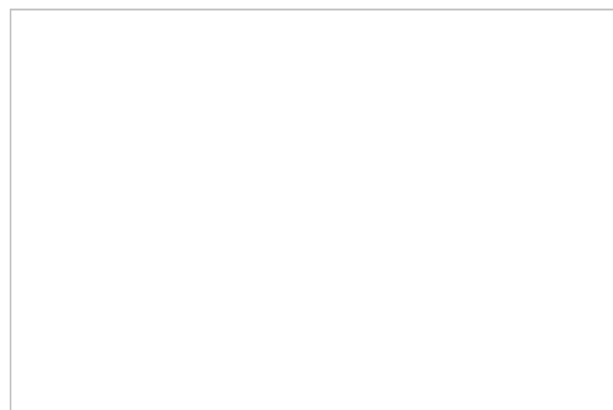


Q10. do you feel any problem in using toilet fixtures like wc, basin etc?

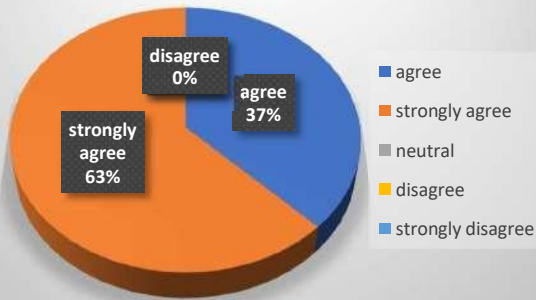


Q11. do you need help or supervision with personal care such as showering or bathing, dressing?

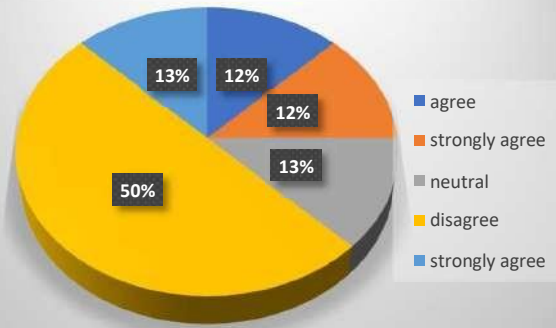
Q12. do the toilet have anti-skid tiles?



supervision for care

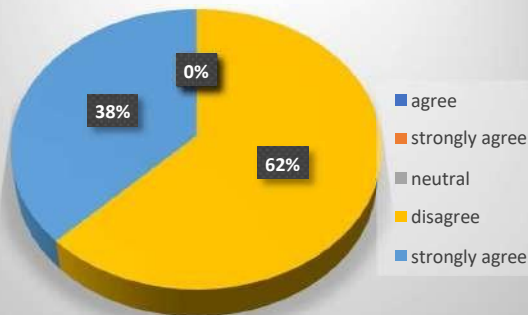


Anti-skid tiles toilet



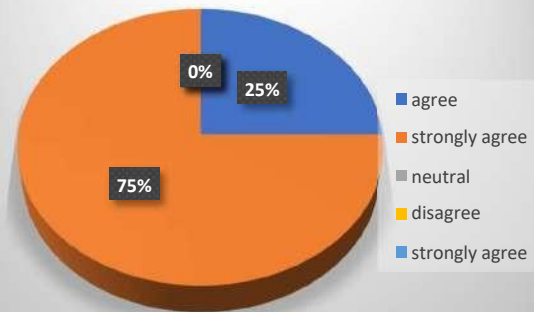
Q13.do you have any difficulty in working in kitchen?

Kitchen problems



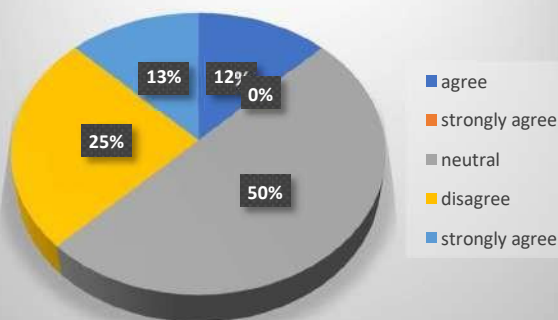
Q14.are you able to reach the overhead cabinets?

Over head in kitchen



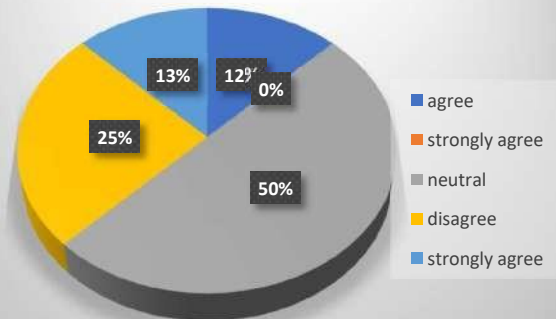
Q15.are you able to clean your utensils in sink?

sink use problem



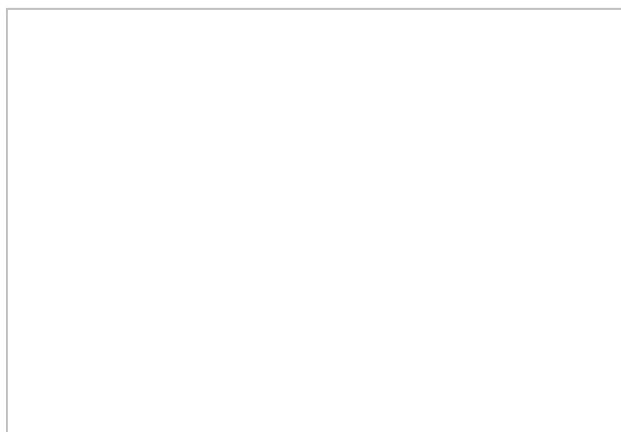
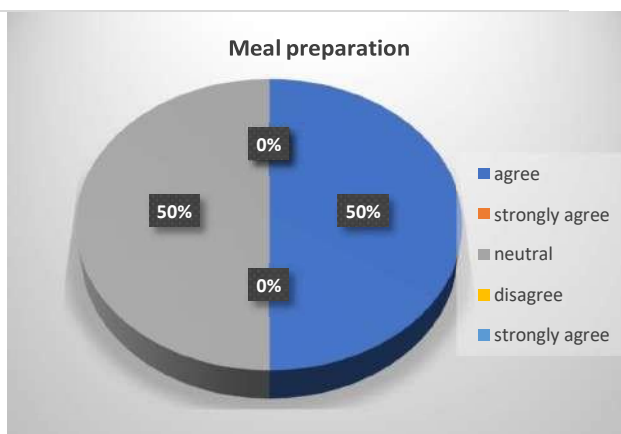
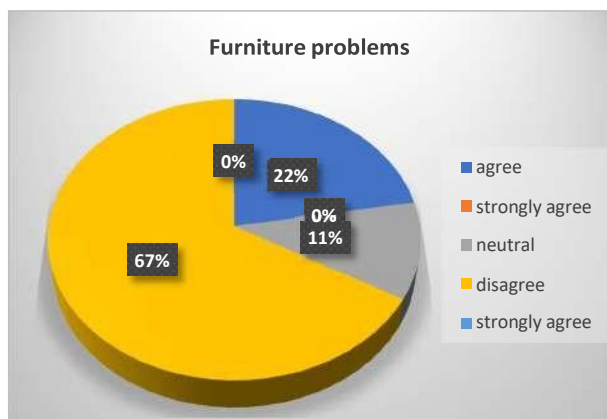
Q16.can you open the door without anyone's assistance?

sink use problem

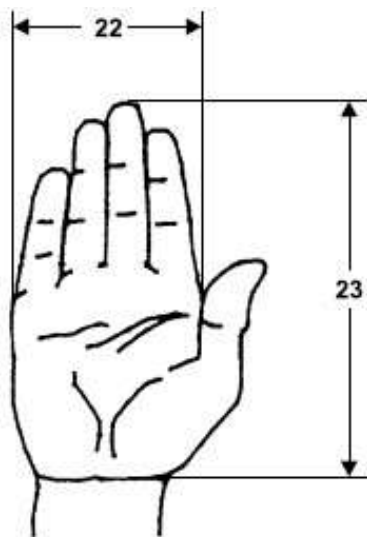
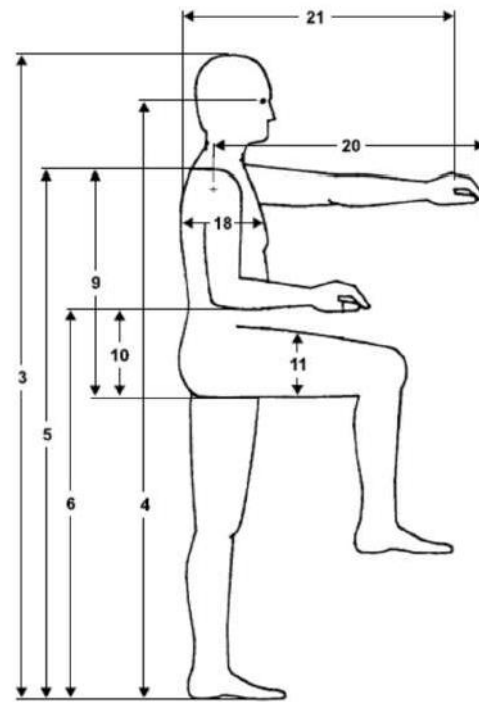
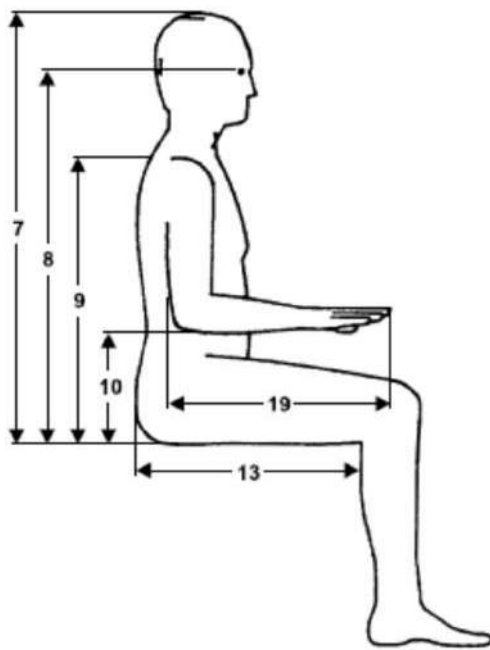


Q17.are you comfortable with the heights of the furniture's?

Q18.can you prepare all your meals on your own?



Anthropometrical dimension which are collected from the users



DIM. NO	DIMENSIONS	1	2	3	M
1	AGE	68	65	72	68.3
2	WEIGHT	-	-	-	
3	TOTAL HEIGHT	1521	1550	1530	1533
4	EYE LEVEL	1496	1420	1417	1444.3
5	SHOULDER HEIGHT	1276	1281	1270	1275.7
6	ELBOW HEIGHT	955	962	950	955.7
7	SITTING HEIGHT	785	790	790	788.3
8	SITTING EYE LEVEL	670	683	720	691
9	SITTING SHOULDER LEVEL	530	538	540	536
10	SITTING ELBOW HEIGHT	210	220	210	213.3
11	THIGH THICKNESS	94	96	90	93.3
12	HIP-KNEE LENGTH	532	535	528	531.7
13	HIP POPLITEAL LENGTH	440	450	440	443.3
14	KNEE HEIGHT	478	480	480	479.3
15	POPLITEAL HEIGHT	382	383	375	380
16	SHOULDER WIDTH	360	360	358	359.3
17	HIP WIDTH	340	320	337	332.3
18	CHEST DEPTH	-	-	-	-
19	ELBOW –FINGERTIP LENGTH	390	390	382	387.3
20	UPPER LIMB LENGTH	740	740	750	743.3
21	SHOULDER GRIP LENGHT	645	650	660	651.7
22	HAND LENGHT	169	170	170	169.7
23	HAND WIDTH	75	80	80	78.3

NOTE:- M IS MEAN OF ALL THE DIMENSIONS TAKEN

DIM. NO	DIMENSIONS	1	2	3	4	5	M
1	AGE	66	72	75	70	65	69.6
2	WEIGHT	-	-	-	-	-	-
3	TOTAL HEIGHT	1700	1650	1760	1650	1590	1670
4	EYE LEVEL	1550	1520	1521	1500	1432	1504.6
5	SHOULDER HEIGH	1395	1390	1401	1385	1267	1367.6
6	ELBOW HEIGHT	1060	1030	1079	1042	989	1040
7	SITTING HEIGHT	859	850	858	839	768	834.8
8	SITTING EYE LEVEL	785	804	760	725	698	754.4
9	SITTING SHOULDER LEVEL	600	580	599	572	533	576.8
10	SITTING ELBOW HEIGHT	243	230	240	222	196	226.2
11	THIGH THICKNESS	110	105	110	100	80	101
12	HIP-KNEE LENGTH	560	550	580	557	472	543.8
13	HIP POPLITEAL LENGTH	468	453	475	450	382	445.6
14	KNEE HEIGHT	525	500	522	505	487	507.8
15	POPLITEAL HEIGHT	423	425	449	430	388	423
16	SHOULDER WIDTH	405	400	423	405	358	398.2
17	HIP WIDTH	348	331	340	325	304	329.6
18	CHEST DEPTH	237	200	220	215	192	212.8
19	ELBOW –FINGERTIP LENGTH	435	420	442	428	390	423
20	UPPER LIMB LENGTH	798	760	791	771	679	759.8
21	SHOULDER GRIP LENGHT	671	650	670	648	439	6156
22	HAND LENGHT	197	189	192	179	175	186.4
23	HAND WIDTH	96	82	81	76	82	834

MATERIAL SPECIFICATION

FURNITURE

- Most of the furniture was upholstered wooden furniture
- Wooden wardrobe are provided in all bedrooms

FLOORING

- Drawing Ceramic tiles matt finish(2' x 2')
- Dining Ceramic tiles (2' x 2')
- Bedroom Ceramic tiles matt finish(2' x 2')
- Balconies Ceramic tiles (anti skid)

BATHROOMS

- Walls have Ceramic tiles up to lintel level
- Flooring Ceramic tiles (anti skid) 2'x2'
- A wash basin with granite counter top
- Wooden towel rack in all master bathrooms & stainless steel towel rod in other.
- Grab bars of stainless steel only in master toilet.
- Single lever CP fitting are used

KITCHEN

- In Flooring anti skid Ceramic tiles are used
- Kitchen counter top have granite & stainless steel single bowl sink is provided in kitchen
- Walls 2 feet ceramic tiles dado above counter top

DOOR HANDLES

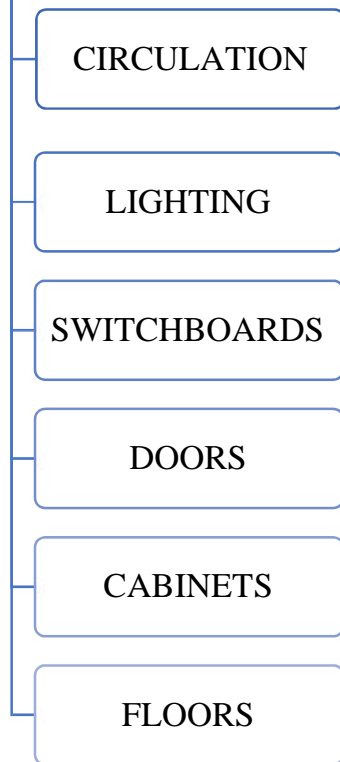
- baby lock handles of stainless steel

ELECTRICAL

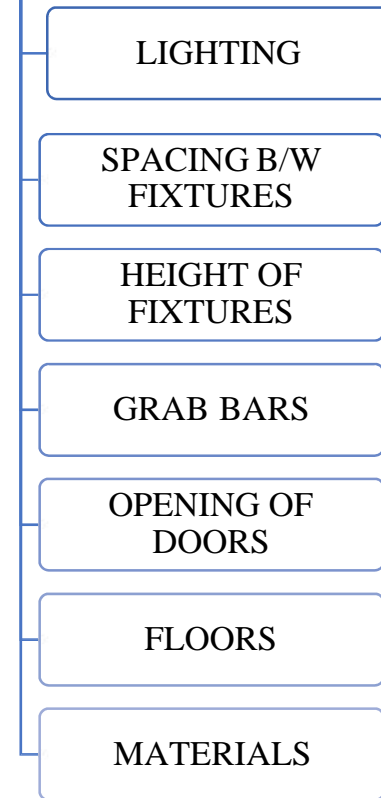
- Modular electrical switches with sockets and LED
-

PROBLEMS IDENTIFIED FACED BY THE USERS

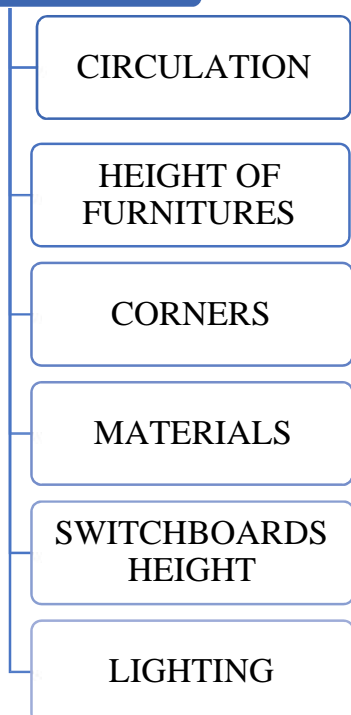
KITCHEN



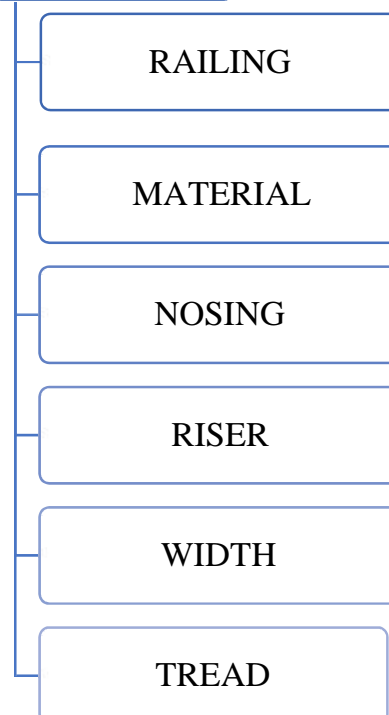
TOILETS

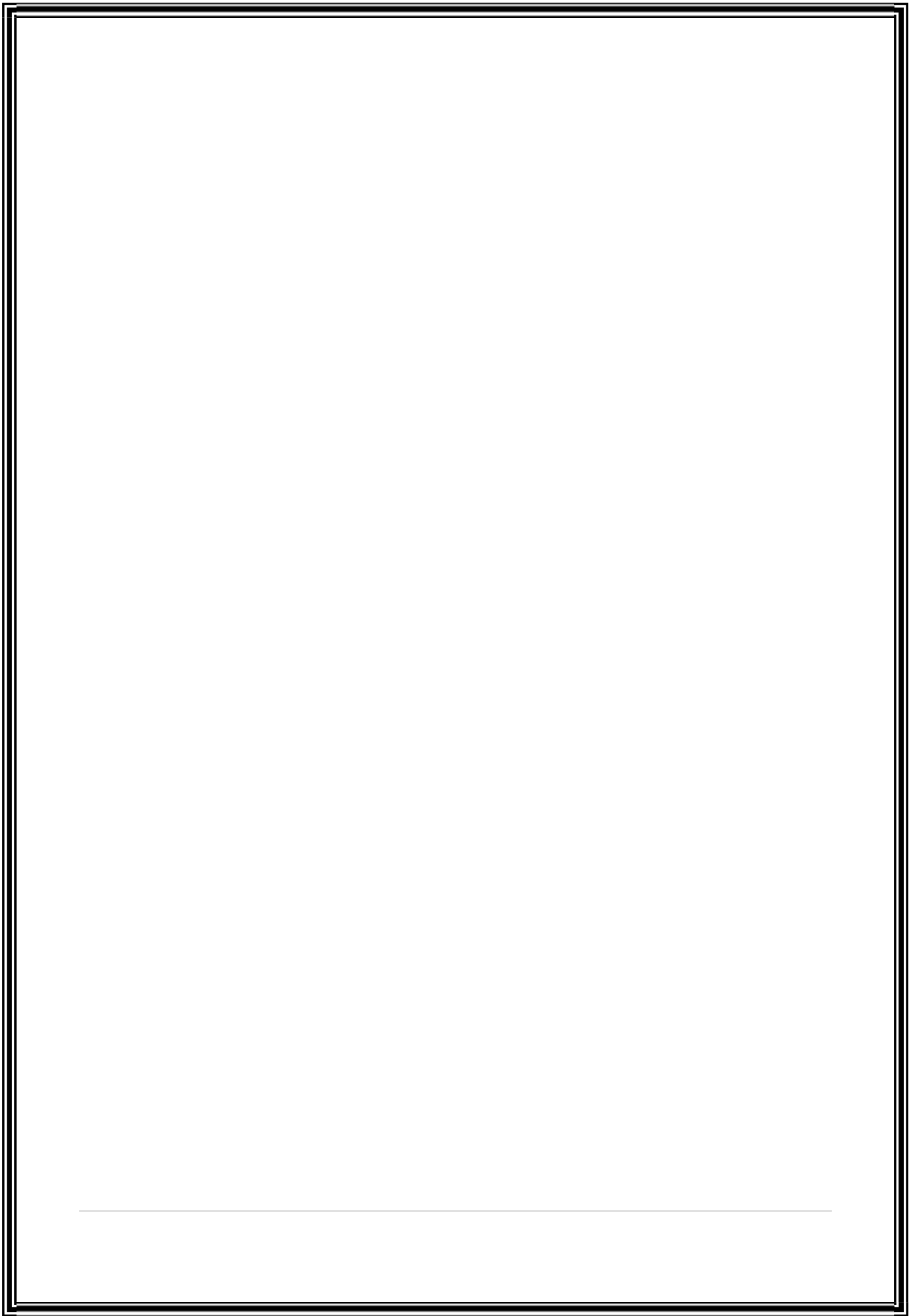


ROOMS

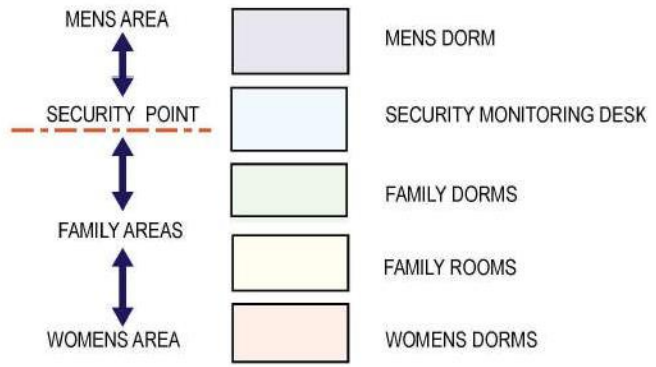


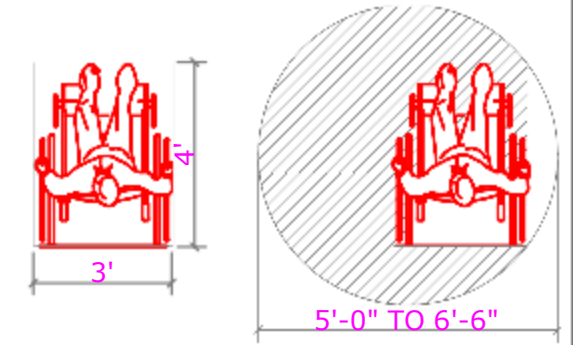
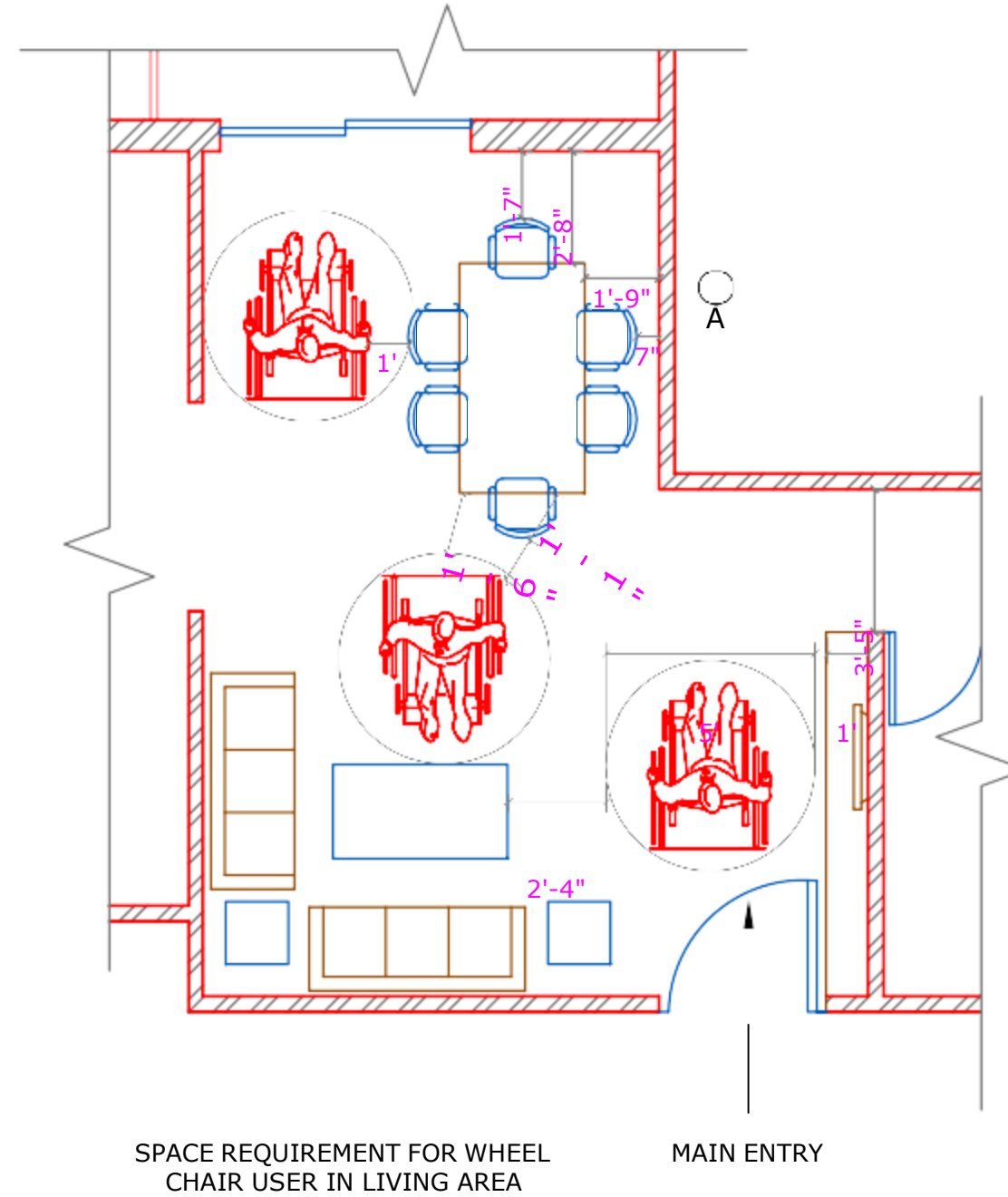
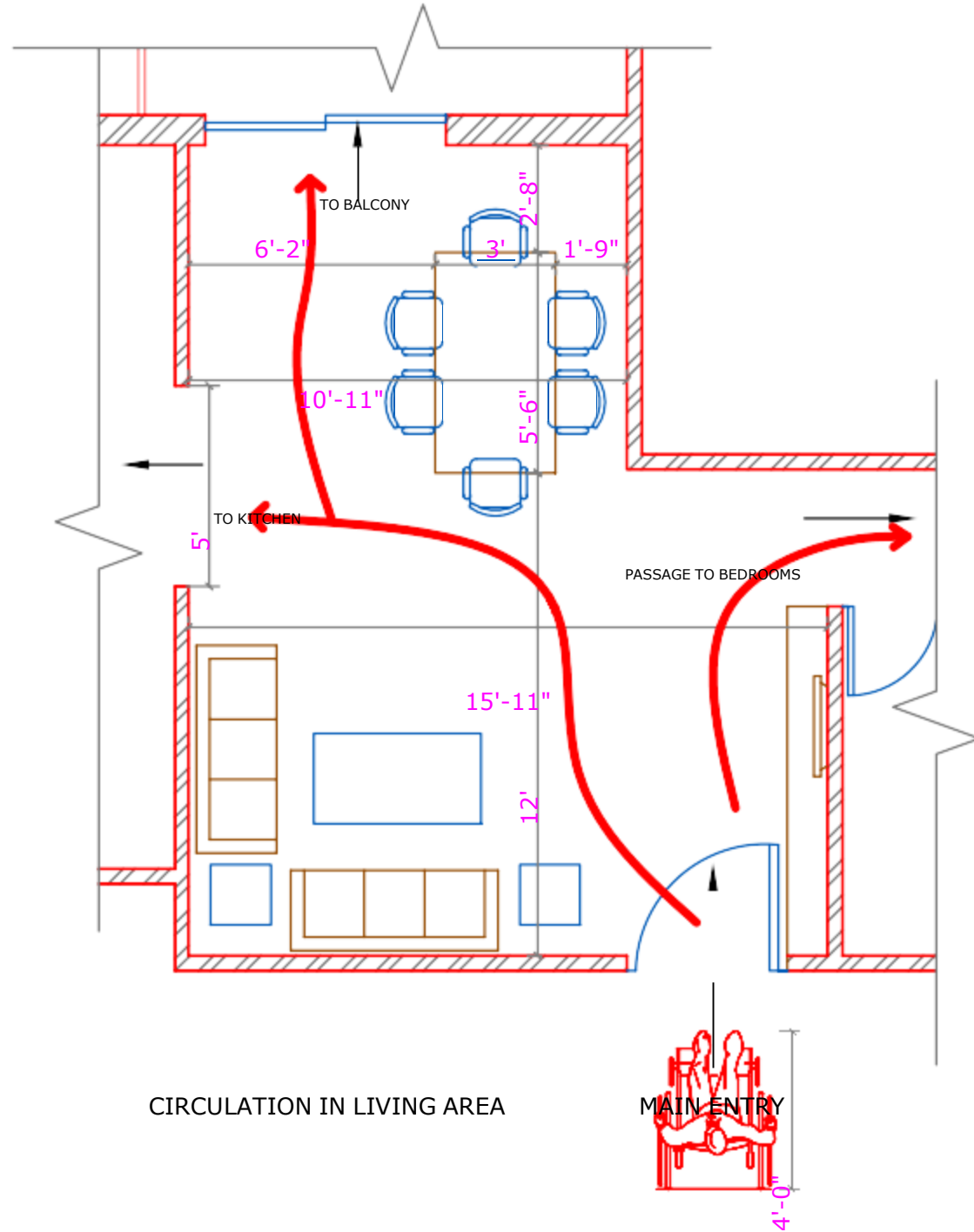
STAIRCASE



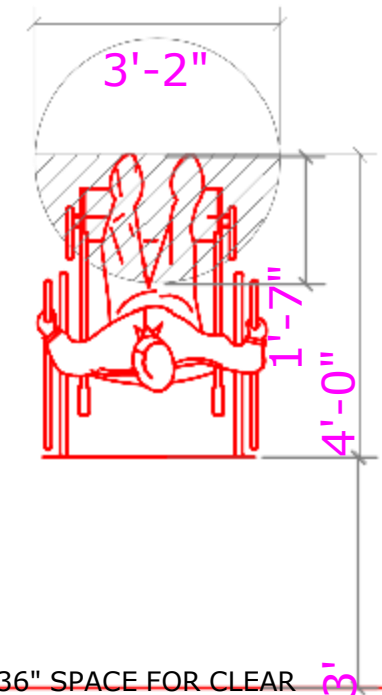




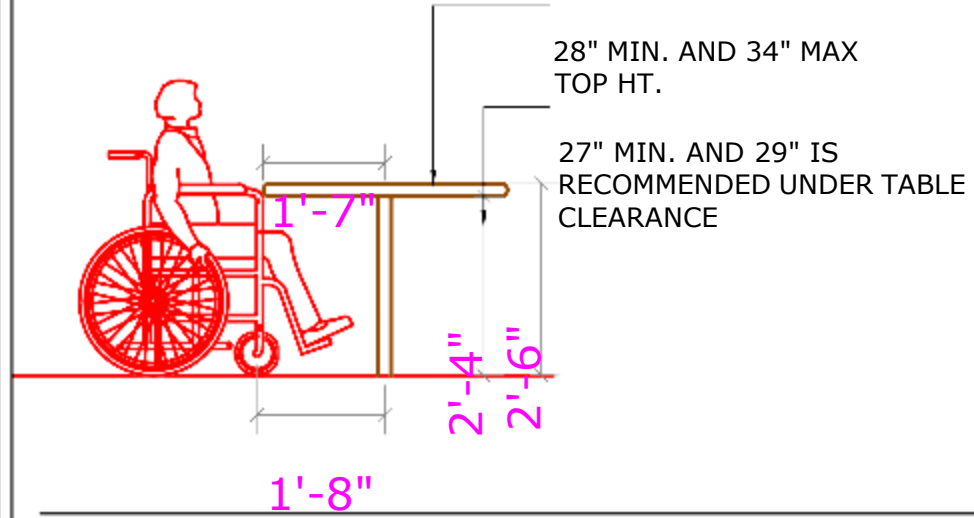
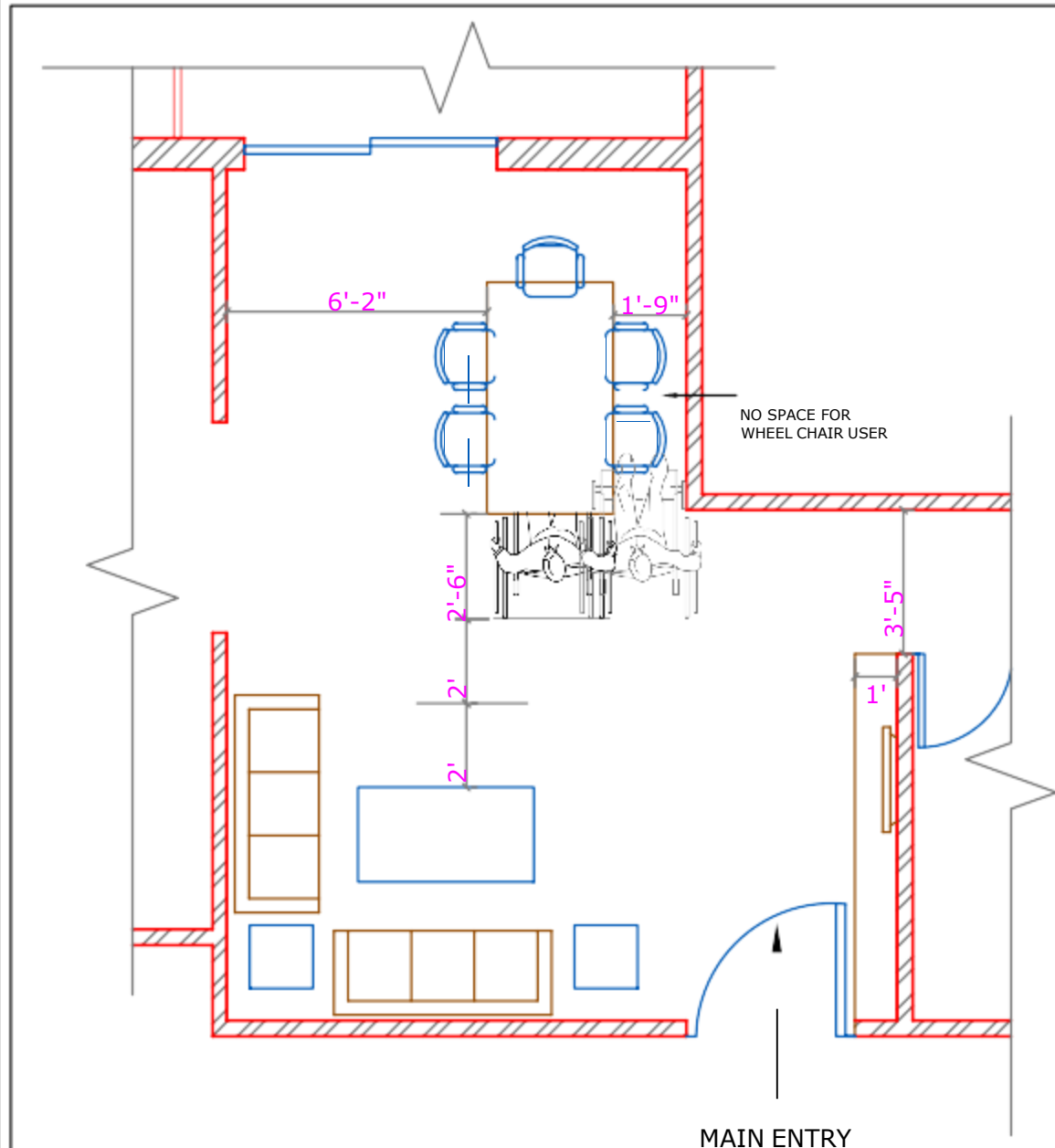




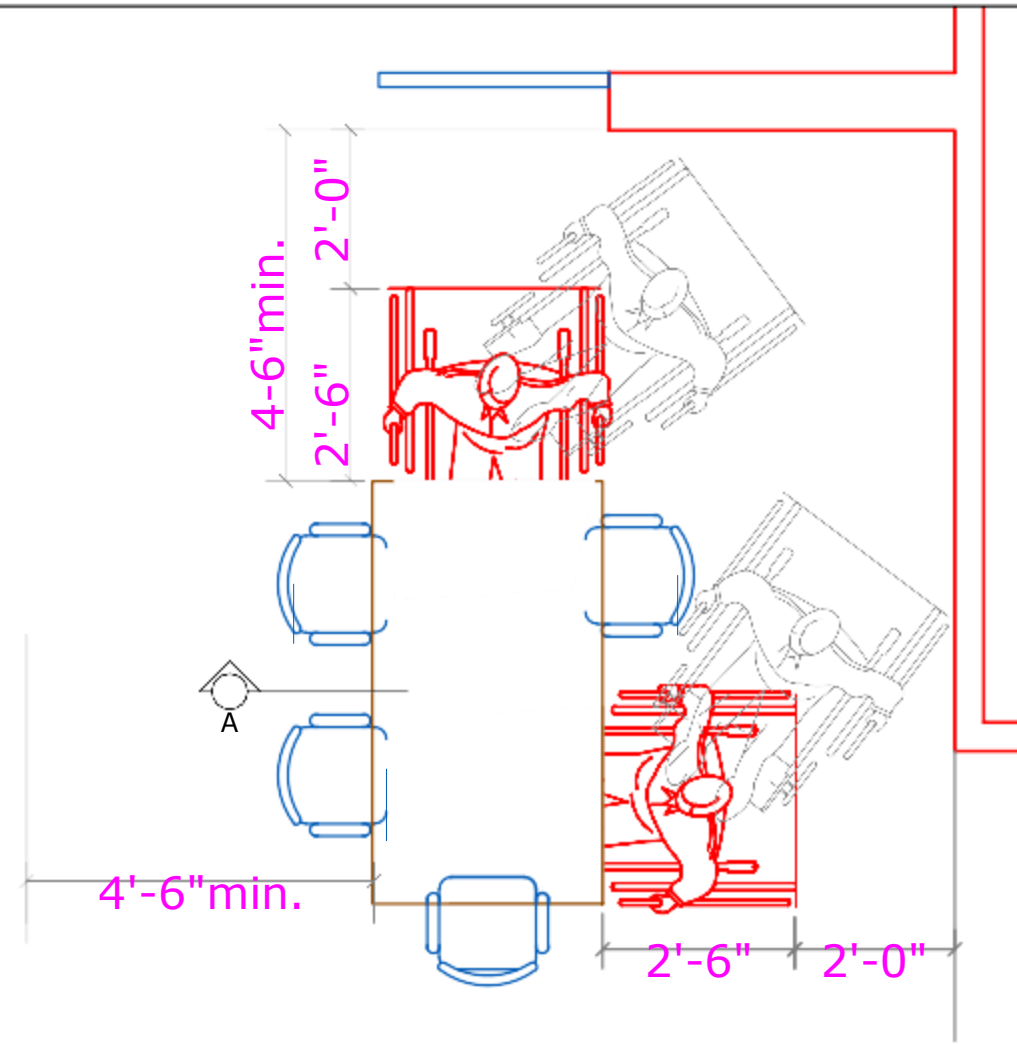
WHEEL CHAIR SPACE REQUIREMENT



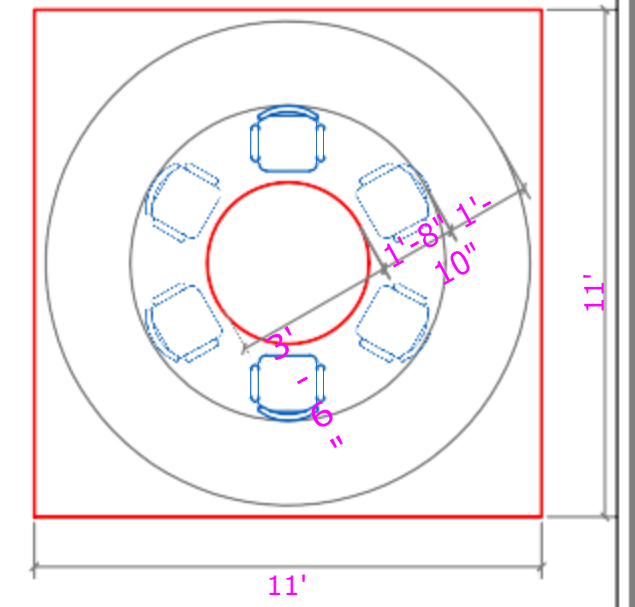
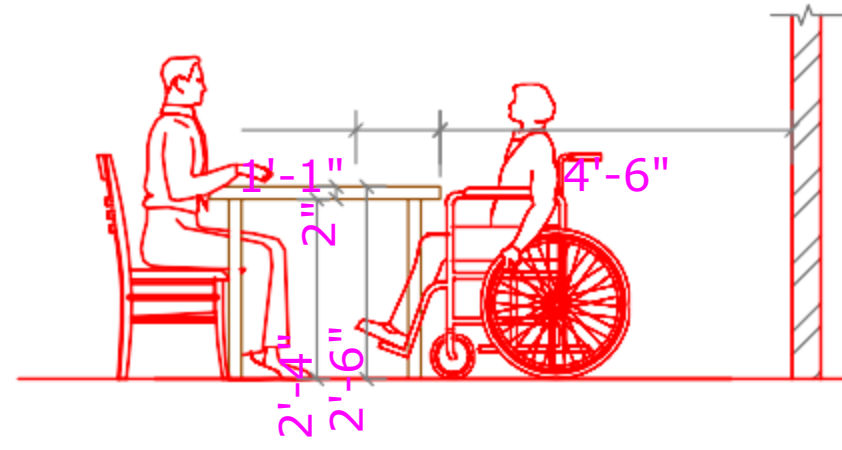
WHEEL CHAIR USER CLARENCE SPACE



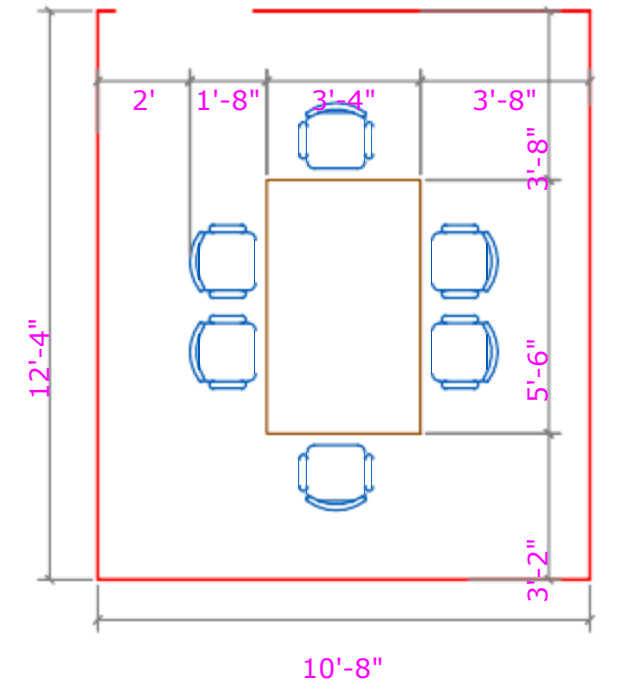
WHEEL CHAIR USER CLARENCE SPACE
DINING REQUIREMENT FOR WHEEL CHAIR USER AND NORMAL PEOPLE



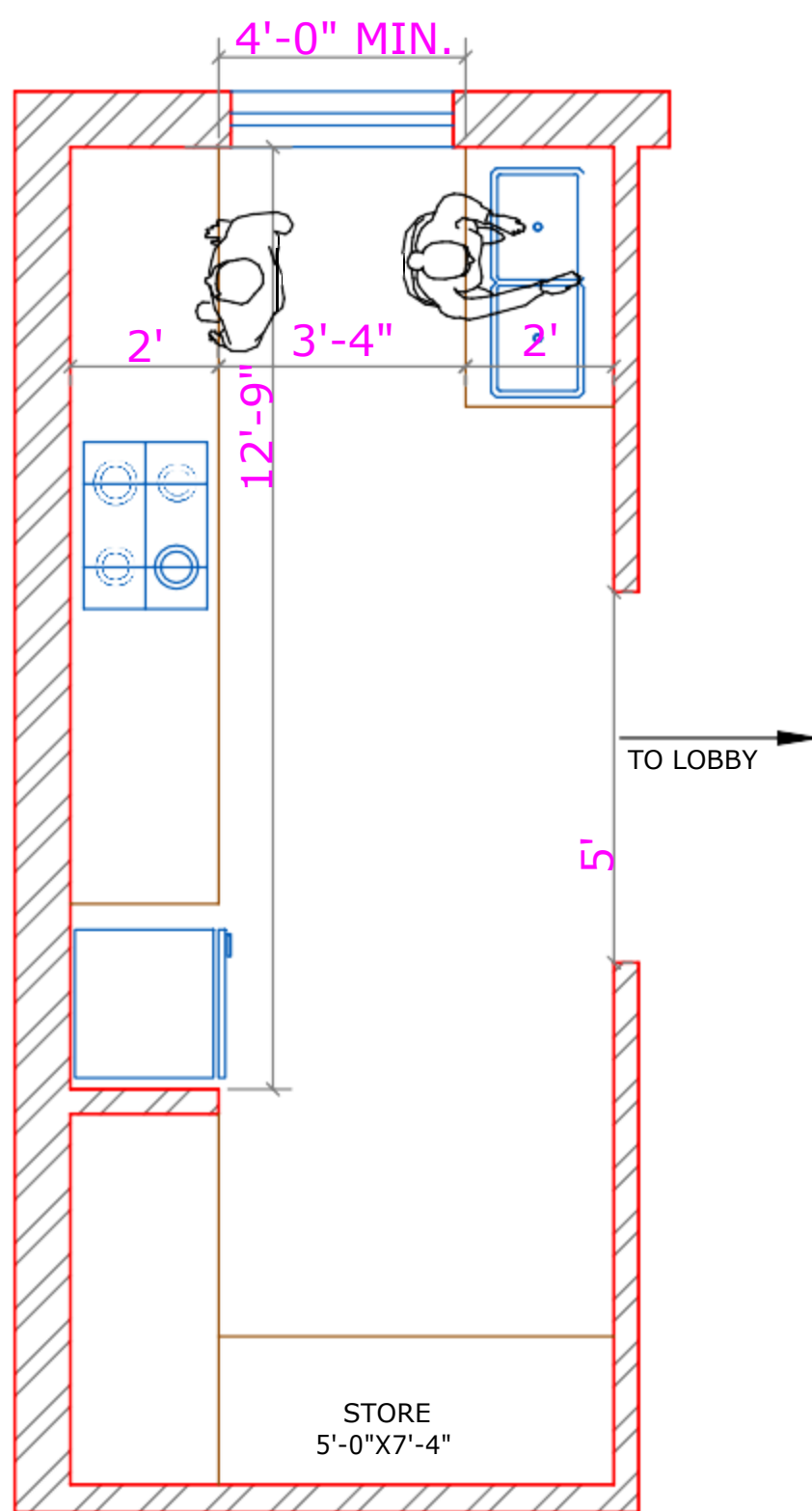
CIRCULATION OF WHEEL CHAIR AT POINT A



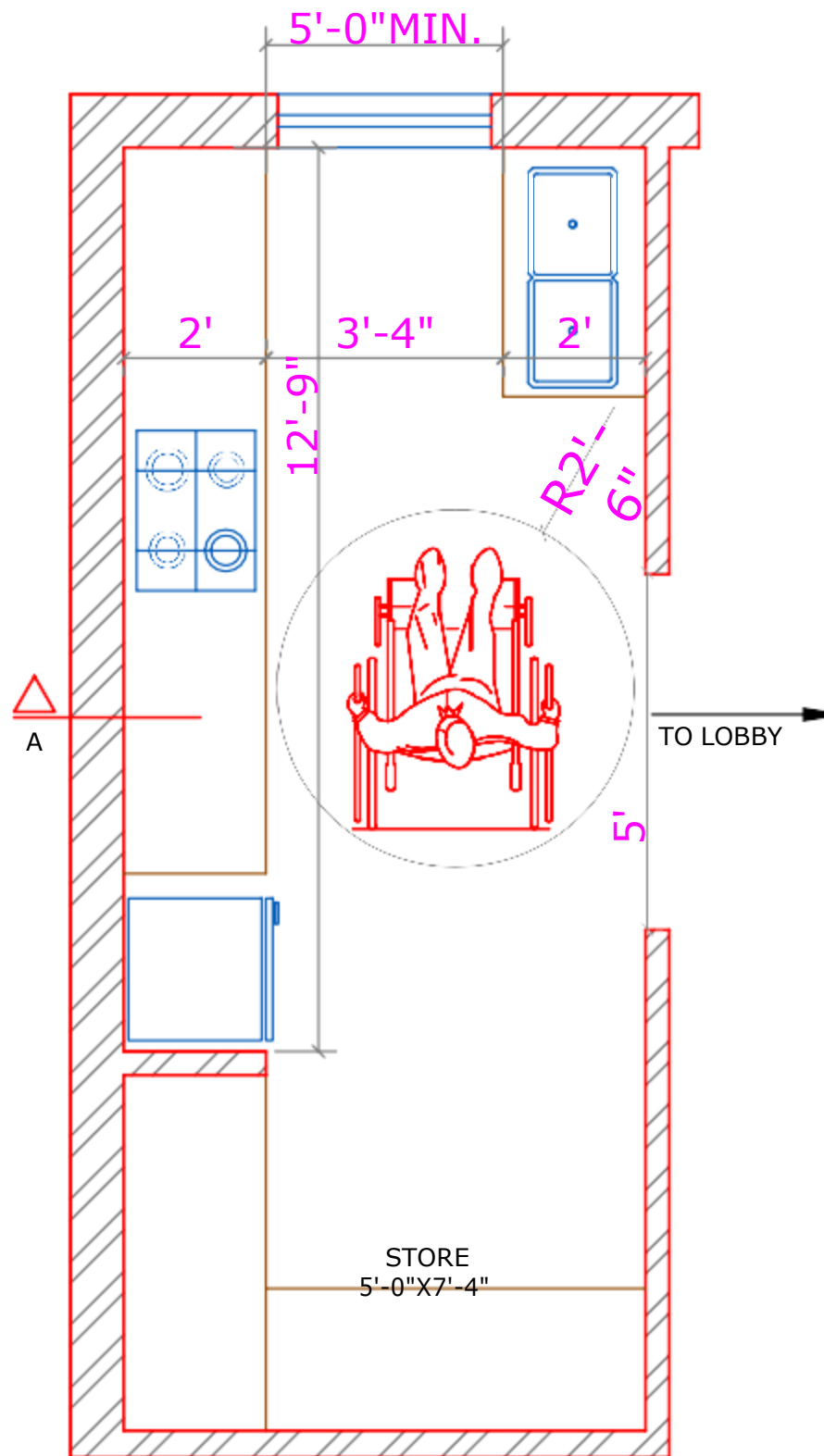
CIRCULAR DINING TABLE SPACE REQUIREMENT WITH CIRCULATION



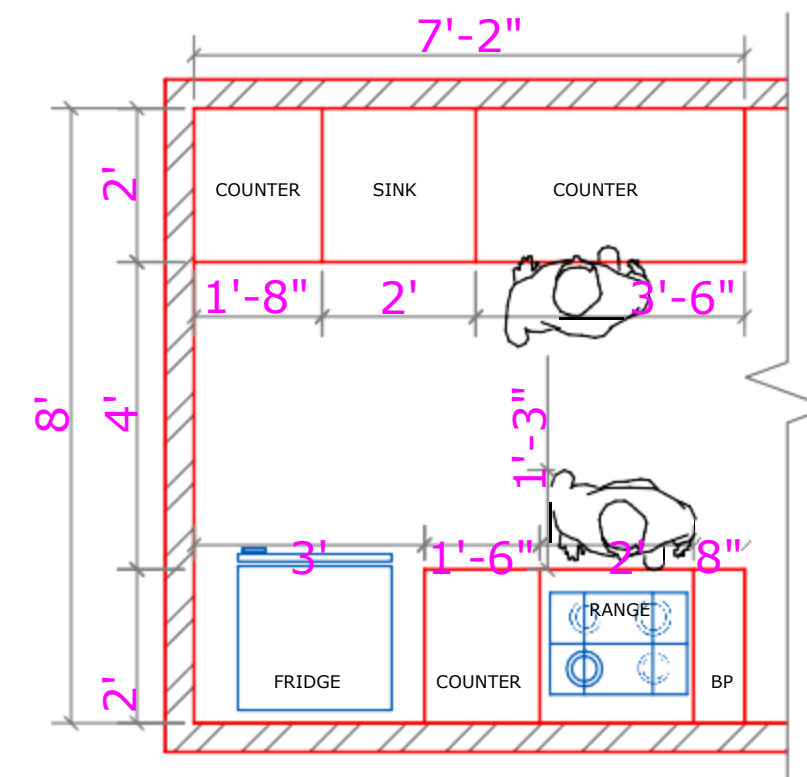
RECTANGULAR DINING TABLE SPACE REQUIREMENT WITH CIRCULATION



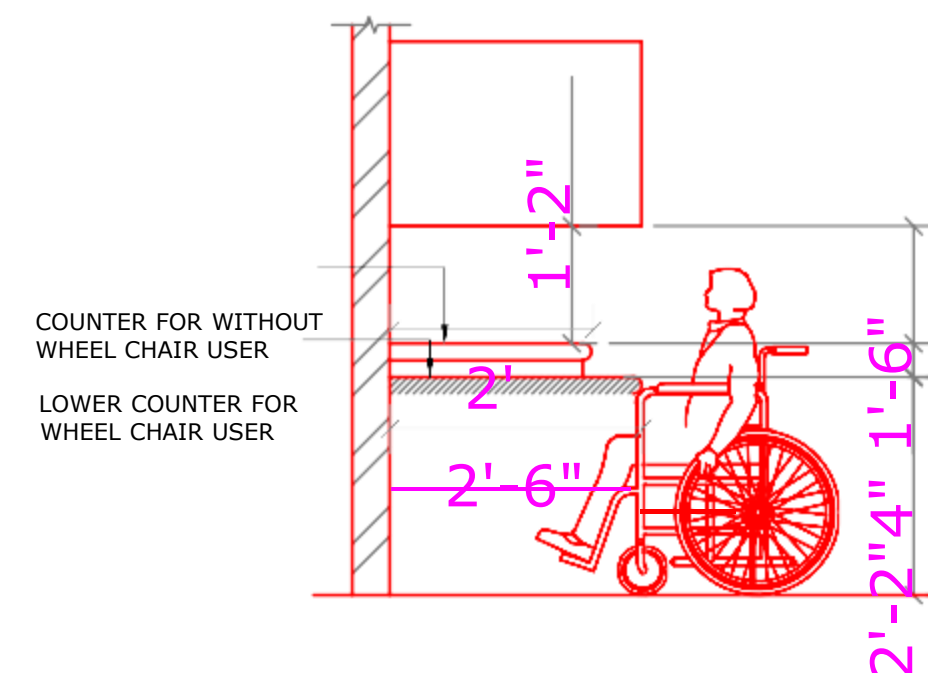
PRESENT KITCHEN LAYOUT



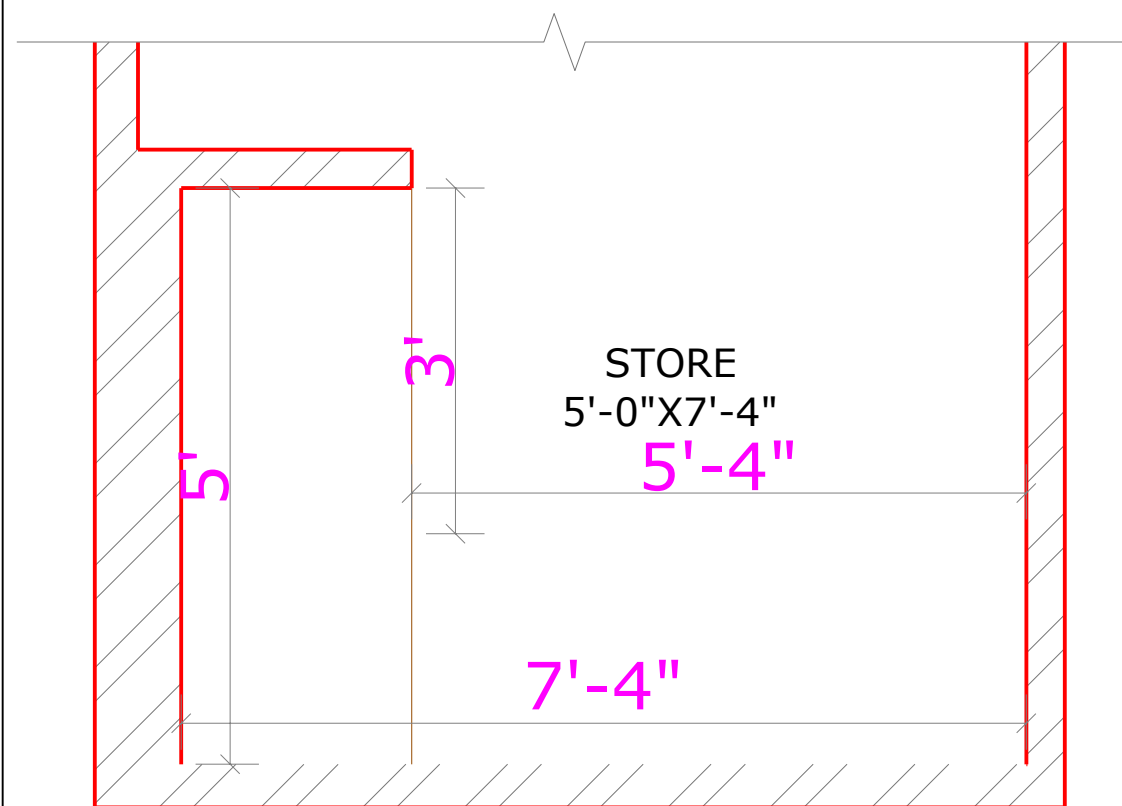
NO SPACE FOR WHEEL CHAIR USER



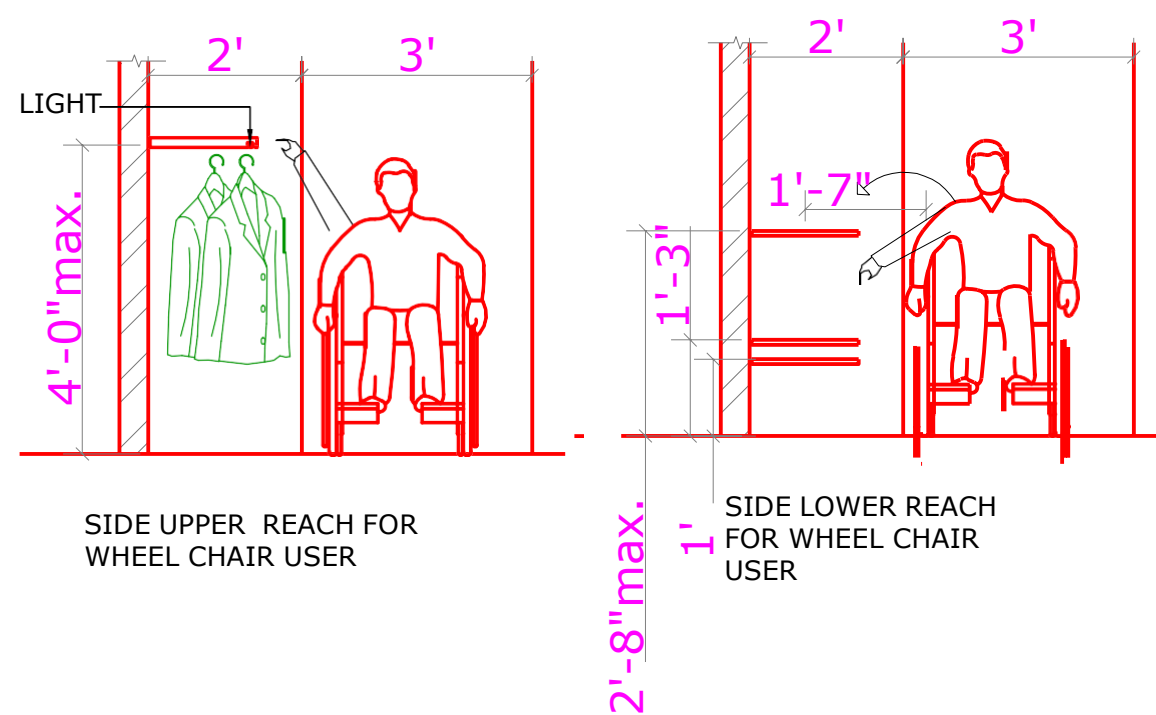
MINIMUM AREA REQUIRED FOR KICHEN



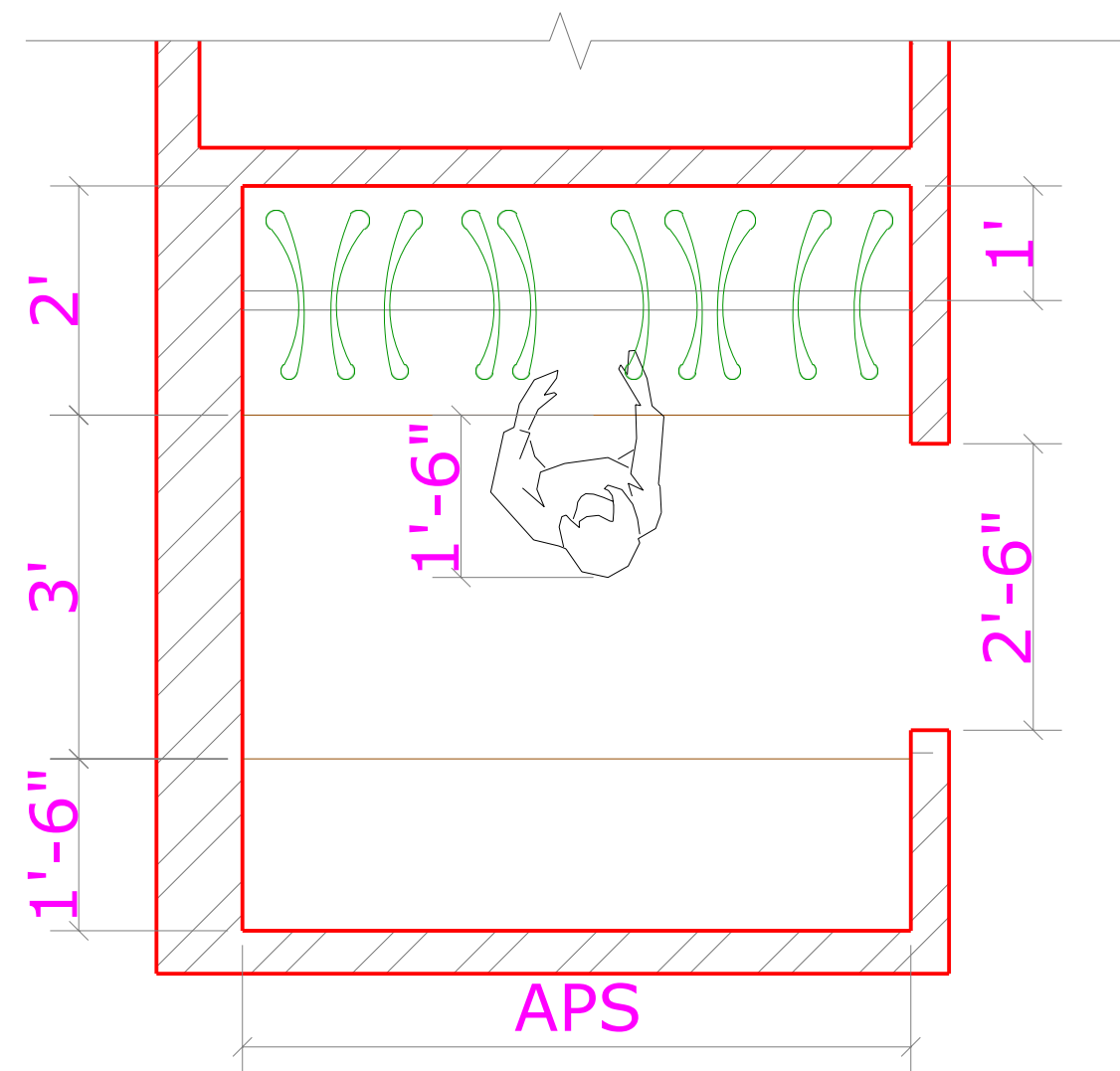
SECTION SHOWING COUNTERS FOR BOTH WHEEL CHAIR USER AND NORMAL PERSON



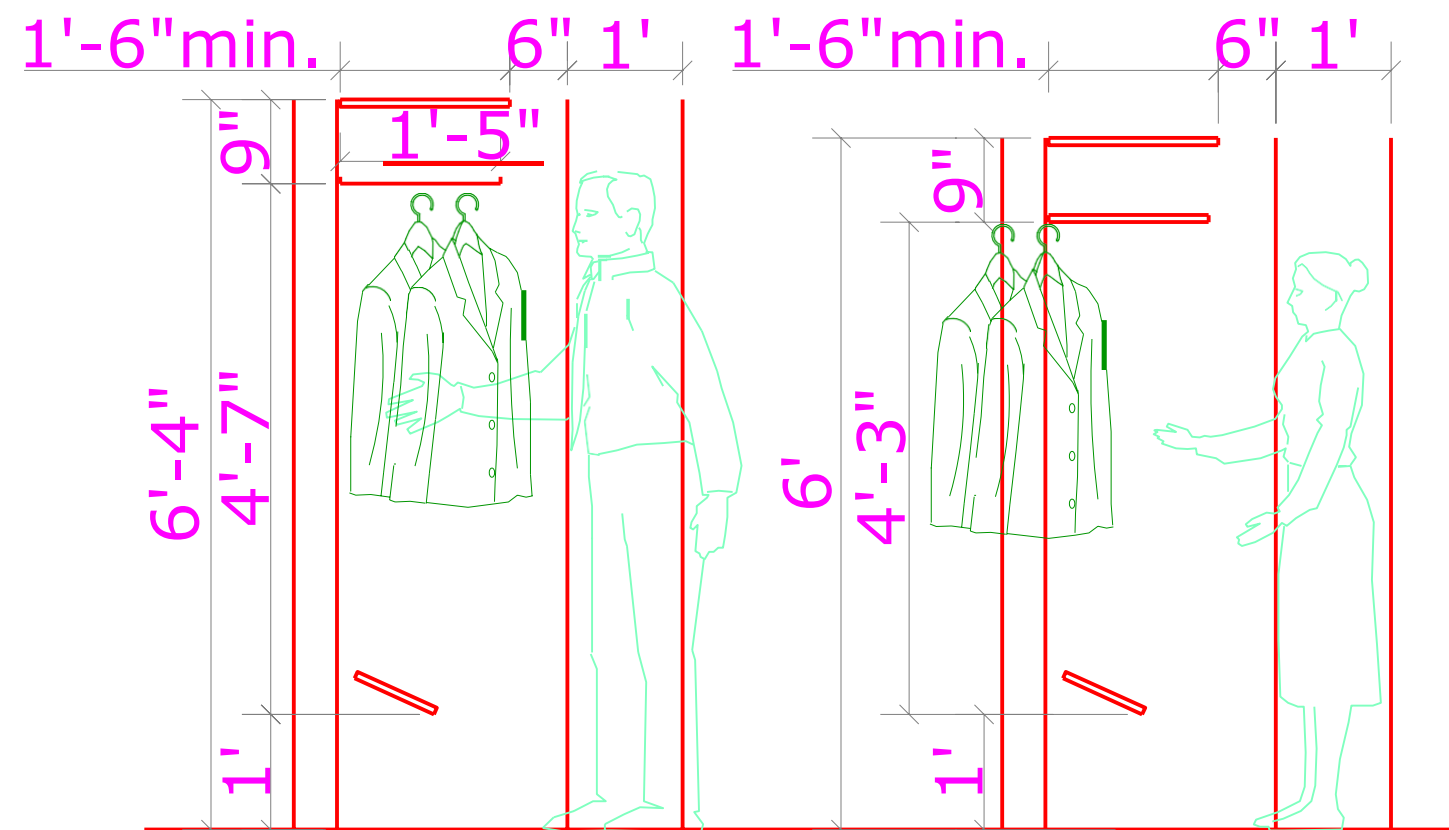
PRESENT STORE LAYOUT



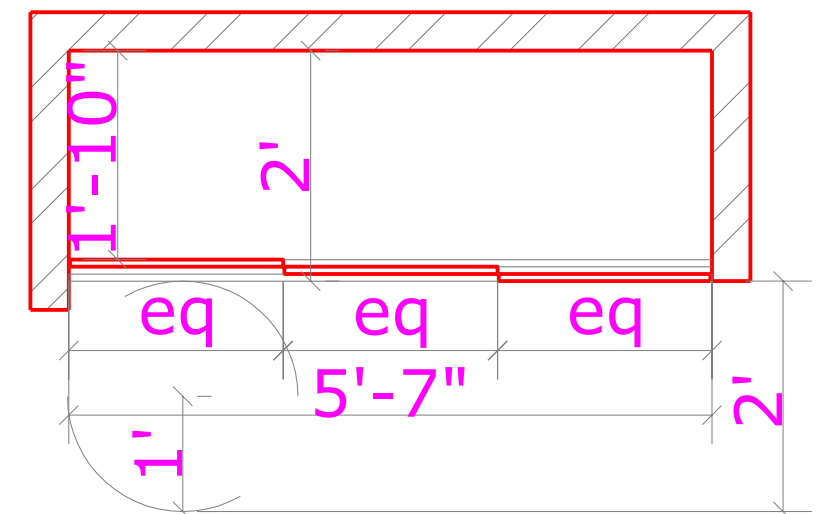
STORE



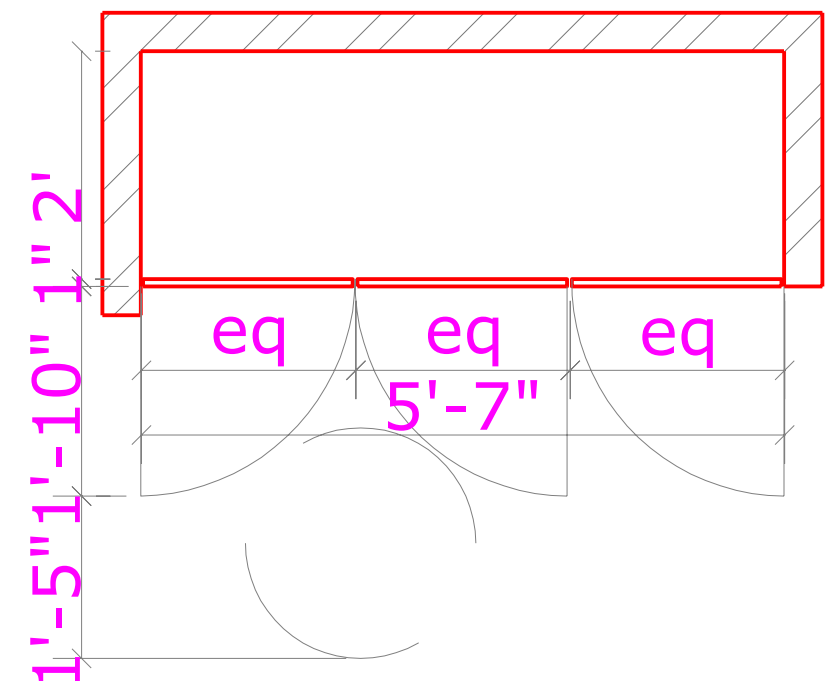
MINIMUM AREA REQUIREMENTS



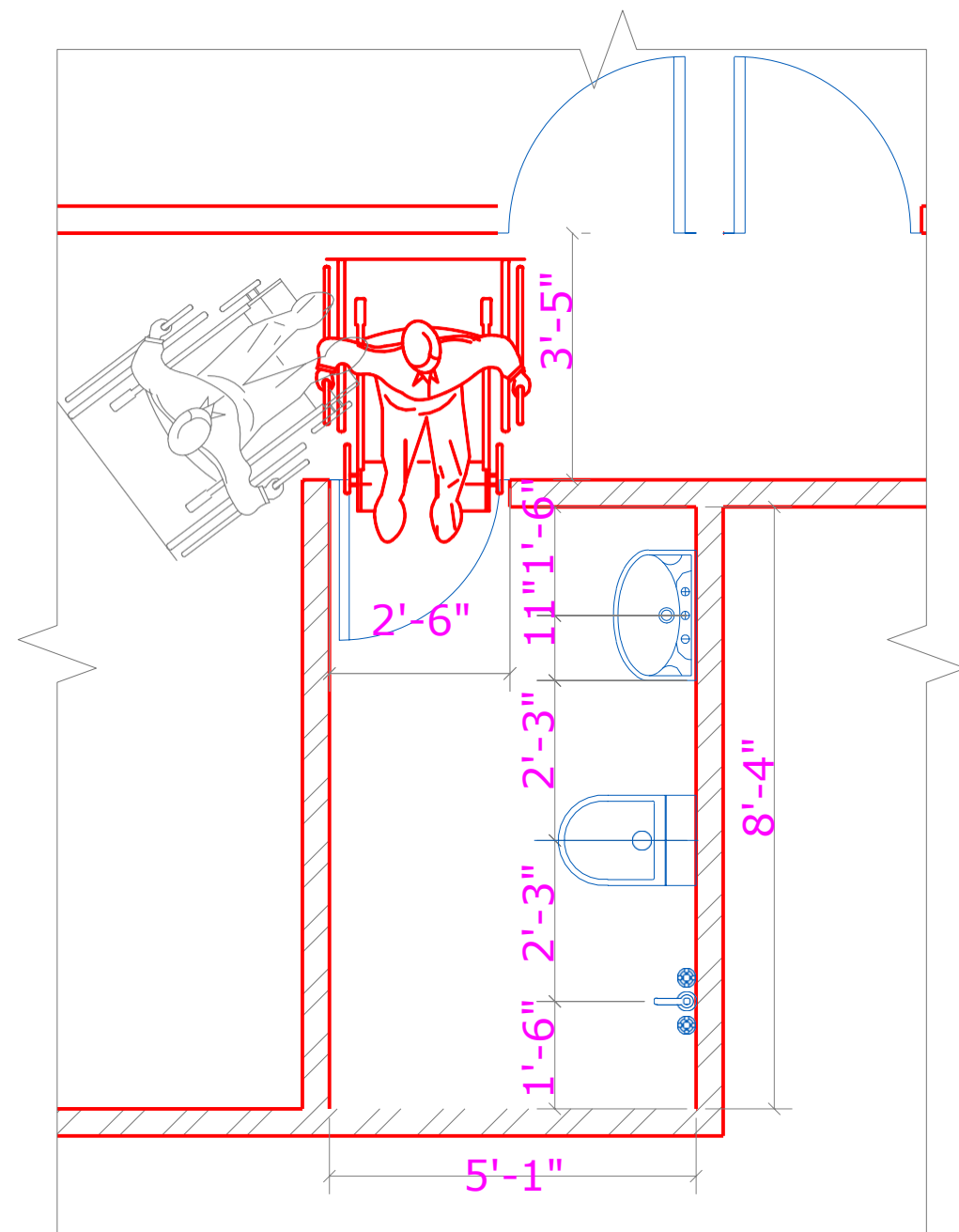
HEIGHTS OF WARDROBE AS PER NORMAL PEOPLE



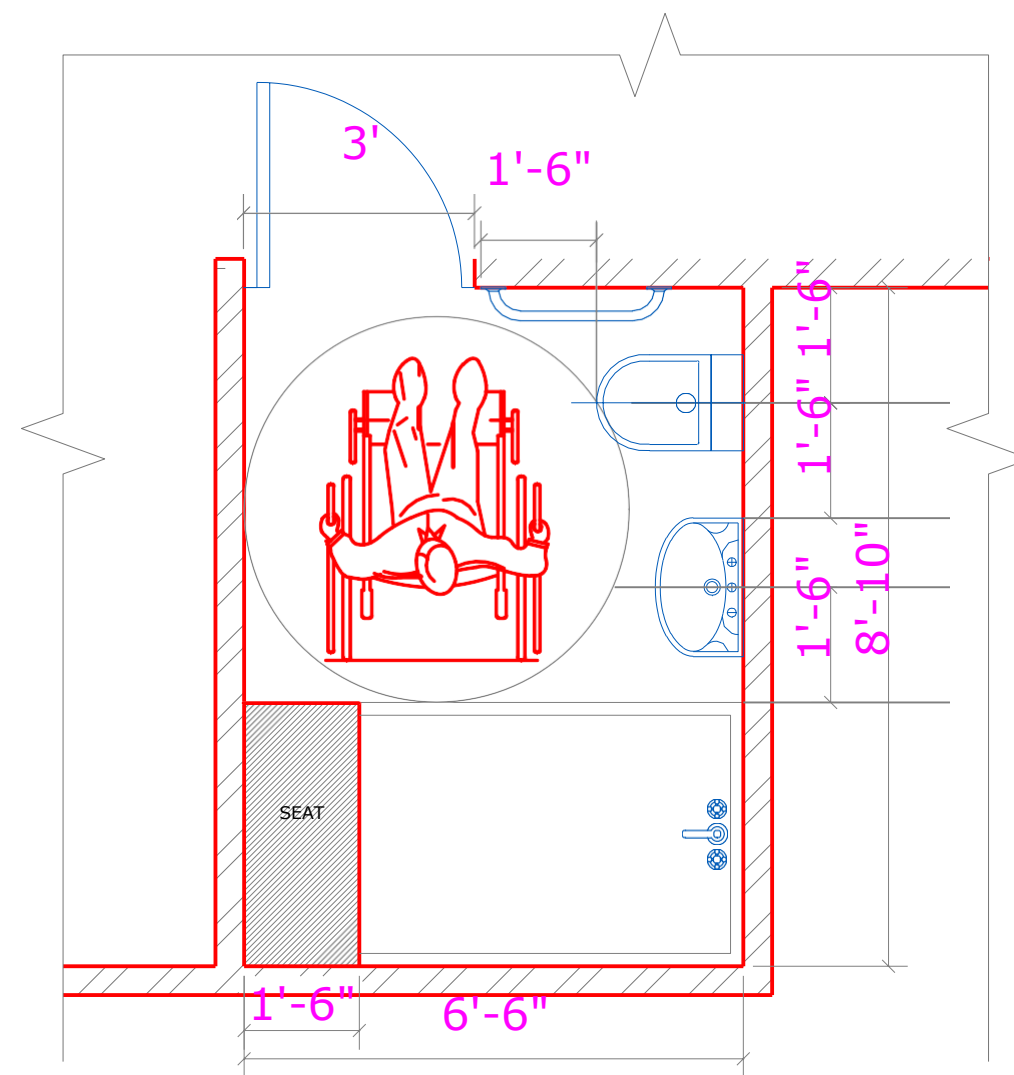
SPACE REQUIREMENT FOR SLIDING SHUTTER



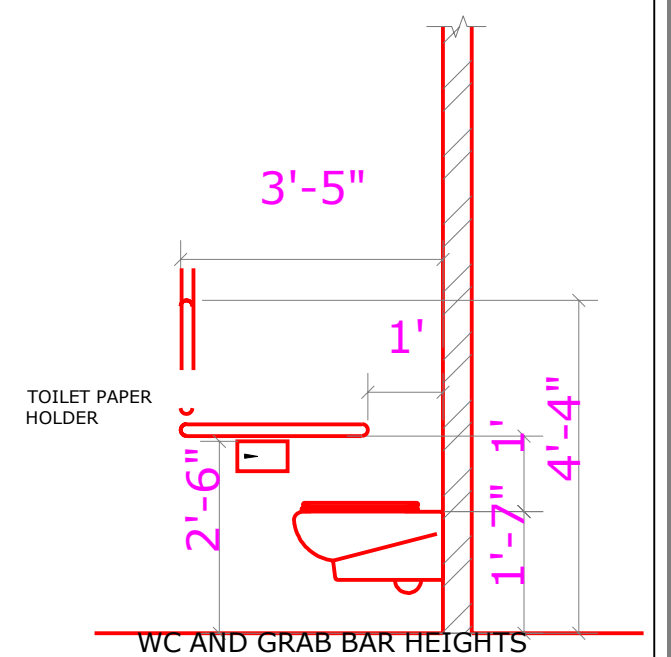
SPACE REQUIREMENT FOR OPENABLE SHUTTER



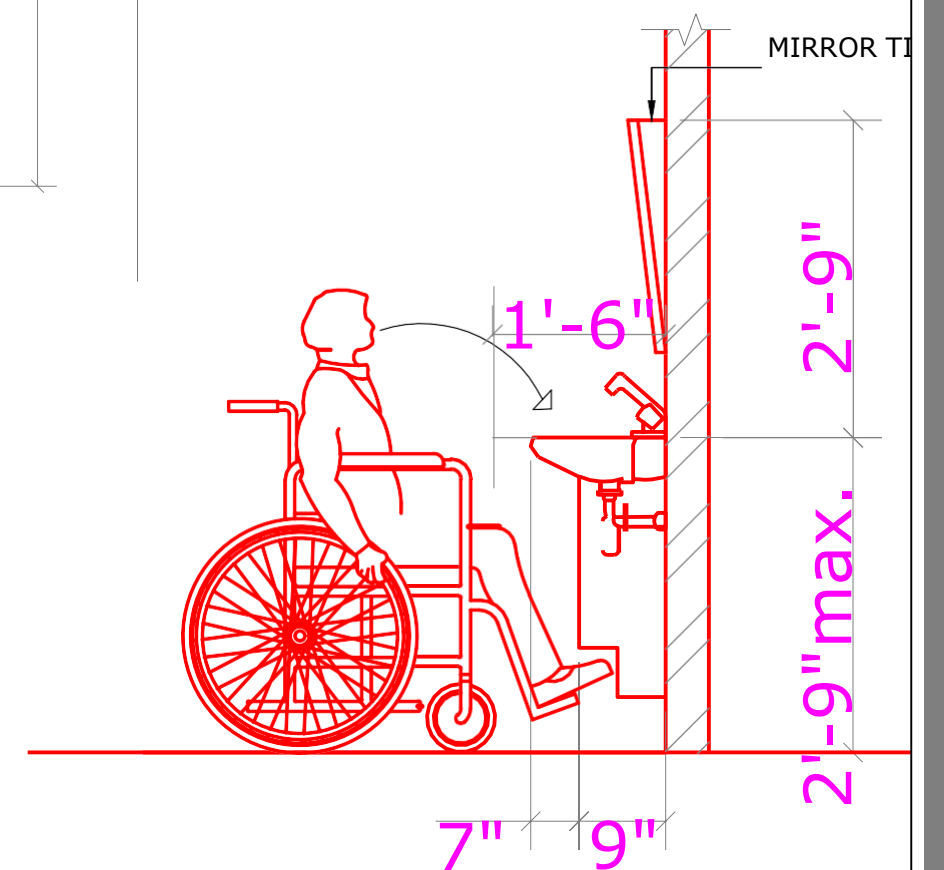
PRESENT TOILET LAYOUT



MINIMUM AREA REQUIREMENT FOR TOILET

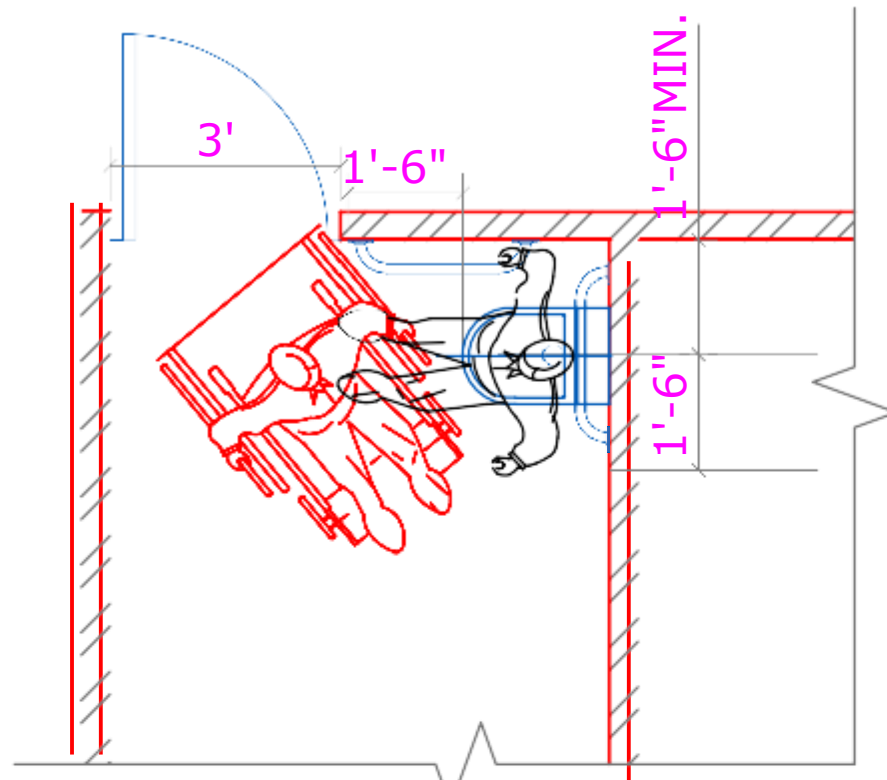


WC AND GRAB BAR HEIGHTS

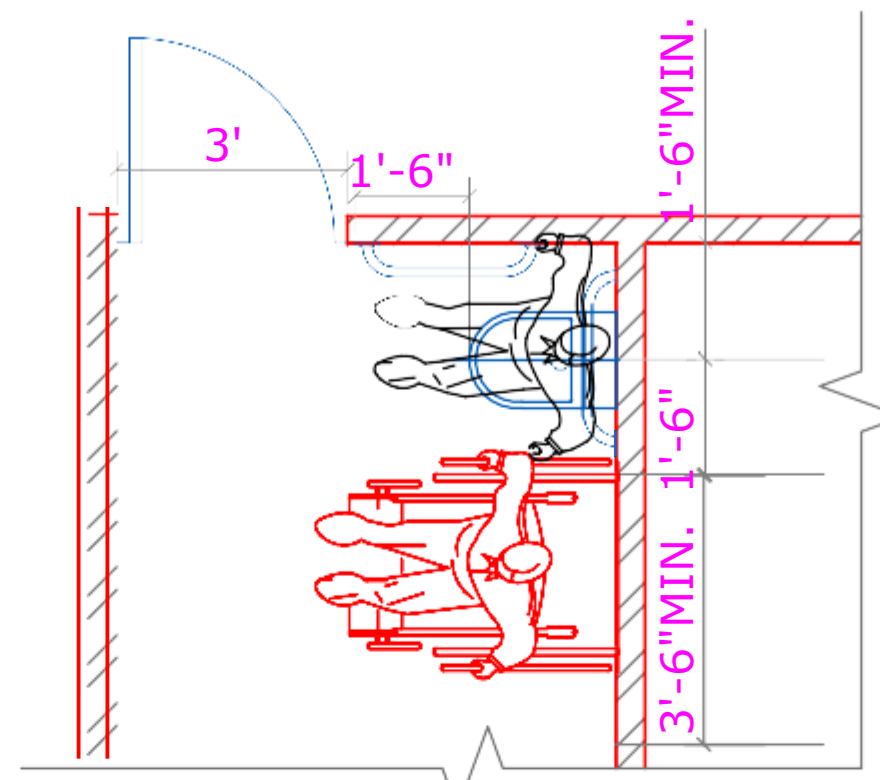


WASH BASIN HEIGHTS AND CLEARANCE SPACE REQUIREMENT

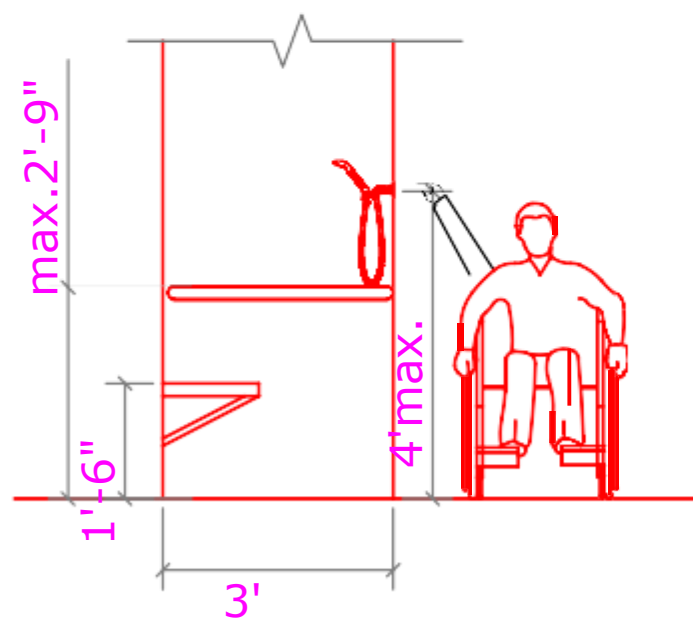
TOILET



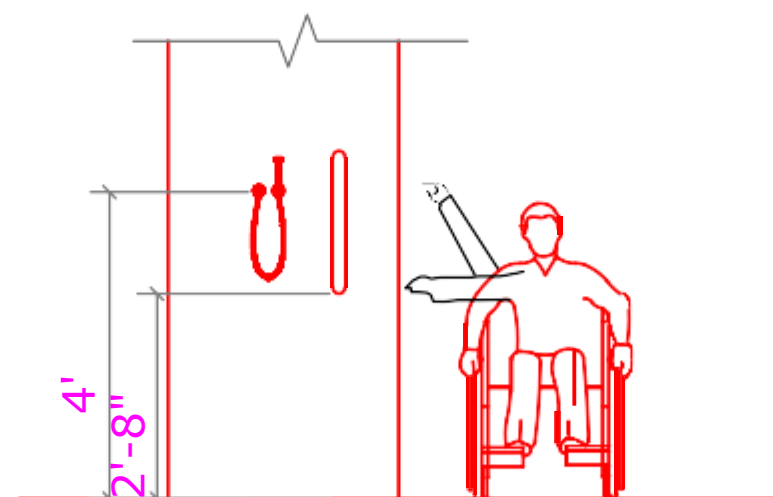
DIAGONAL TRANSFER



SIDE TRANSFER



HEIGHTS FOR SHOWER CONTROLS



CONCEPT:

TOPIC :- RETIREMENT VILLAGE.....

CONCEPT:

DESIGN TRANSLATION –

THIS CHAPTER ILLUSTRATES THE STEPS TAKEN FROM RESEARCH TO EVOLUTION OF THE DESIGN CONCEPT. THEREAFTER THE INITIAL DESIGN CONCEPT SHOULD BE ELABORATELY DISCUSSED WITH THE HELP OF IMAGES .

INTRODUCTION -

AGING IS NOW RECOGNIZED AS A MAJOR GLOBAL, ECONOMIC AND HUMANITARIAN ISSUE . THE MOBILE INSTITUTION AND OUR INDIAN GOVERNMENT ARE JOINTLY PROVIDING MANY SCHEMES FOR BENEFITS OF SENIOR CITIZENS . SO THE BASIC NEED OF SENIOR CITIZENS, WHO NEEDS CARE , IS FULFILLED BY CREATING OLD AGE HOME AND MAKES THEM BUSY IN THEIR CREATIVE WORK PROVIDED FOR THEIR PSYCHOLOGICAL NEED.



VISION -

- To provide an INTERACTIVE ENVIRONMENT for the aged .
- To develop a COMMUNITY ORGANISATION.
- To create an INDEPENDENT ENVIRONMENT and get MONETARY HELP Design COMMON SPACES .



THE CONCEPT OF THIS PROJECT IS FORM BASED "HAND IN SHAPE OF SECURING ELDERLY"

*TO DESIGN A SITE FULL OF EXPERIENCES AND DIFFERENT FEELING

* EACH AND EVERY CORNER OF THE SITE TELLS A DIFFERENT STORY AND CHARACTER



THE UPPER HAND DEFINES THE 'RECREATIONAL BLOCK (MAIN BLOCK)

THIS DEFINES THE HEALTH CLUB, WHICH CREATE THE POSTITIVE AMBIENCE OF THE WHOLE SITE

THIS GREEN BELT PROVIDE THE WALKING AND TALKING SESSIONS WHITCH HELD B/W PEOPLE WHICH CREATES THE FAMILIER ATMOSPHERE IN THIS LIVING SPACE.

THIS HAND SYMBOLISES THE ADMINISTRATIVE BLOCK , DISPENSARY BLOCK ,FOR MEDICAL & HEALTH CARE FACILITIES ,WORKSHOP

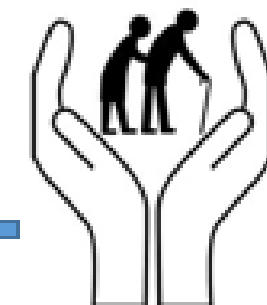
BUILDING BLOCK ARE MADE OF COMBINATION OF MANY GEOMETRICAL SHAPES WITH A LOT OF GREEN AREA FOR PEOPLE 'S CONGREGATION

ACTIVITES OF ELDERLY PEOPLE

GARDENING
BIRD-WATCHING
WALKING
YOGA
SOCIALIZEING

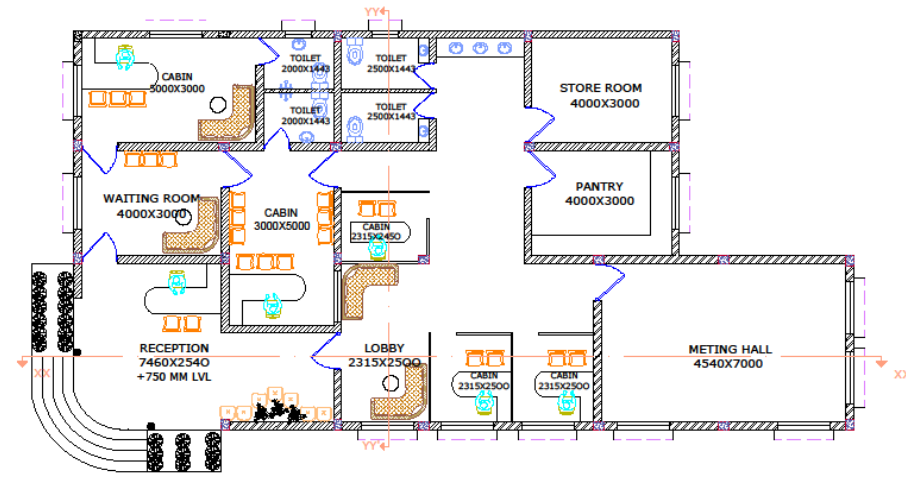
THESITE IS DIVIDE INTO SIX PARTS

ADMINISTRATION BLOCK
MAIN BLOCK
HEALTH CLUB
DISPENSARY
WORKSHOP
STAFF RESIDENTIAL BLOCK
SERVENT QUARTERS

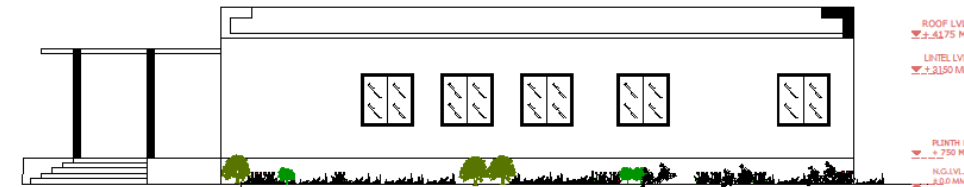


GUIDED BY – AR. SATYAM SIRVASTAVA

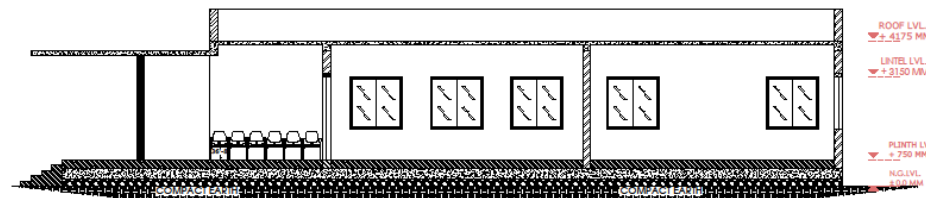
THESIS BY _ANAND YADAV /1160101007/ B.ARCH 5 YEAR B.B.D UNIVERSITY



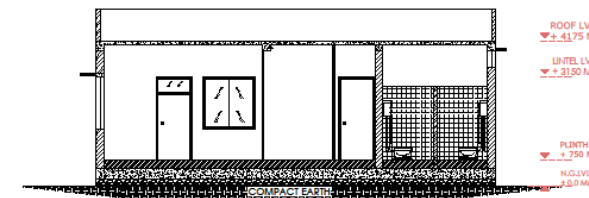
GROUND FLOOR PLAN



FRONT ELEVATION



SECTION AT XX-XX'

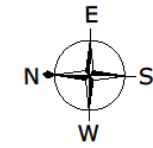


SECTION AT YY-YY'

ADMINISTRATION BLOCK

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RETIREMENT VILLAGE

THESIS TOPIC-

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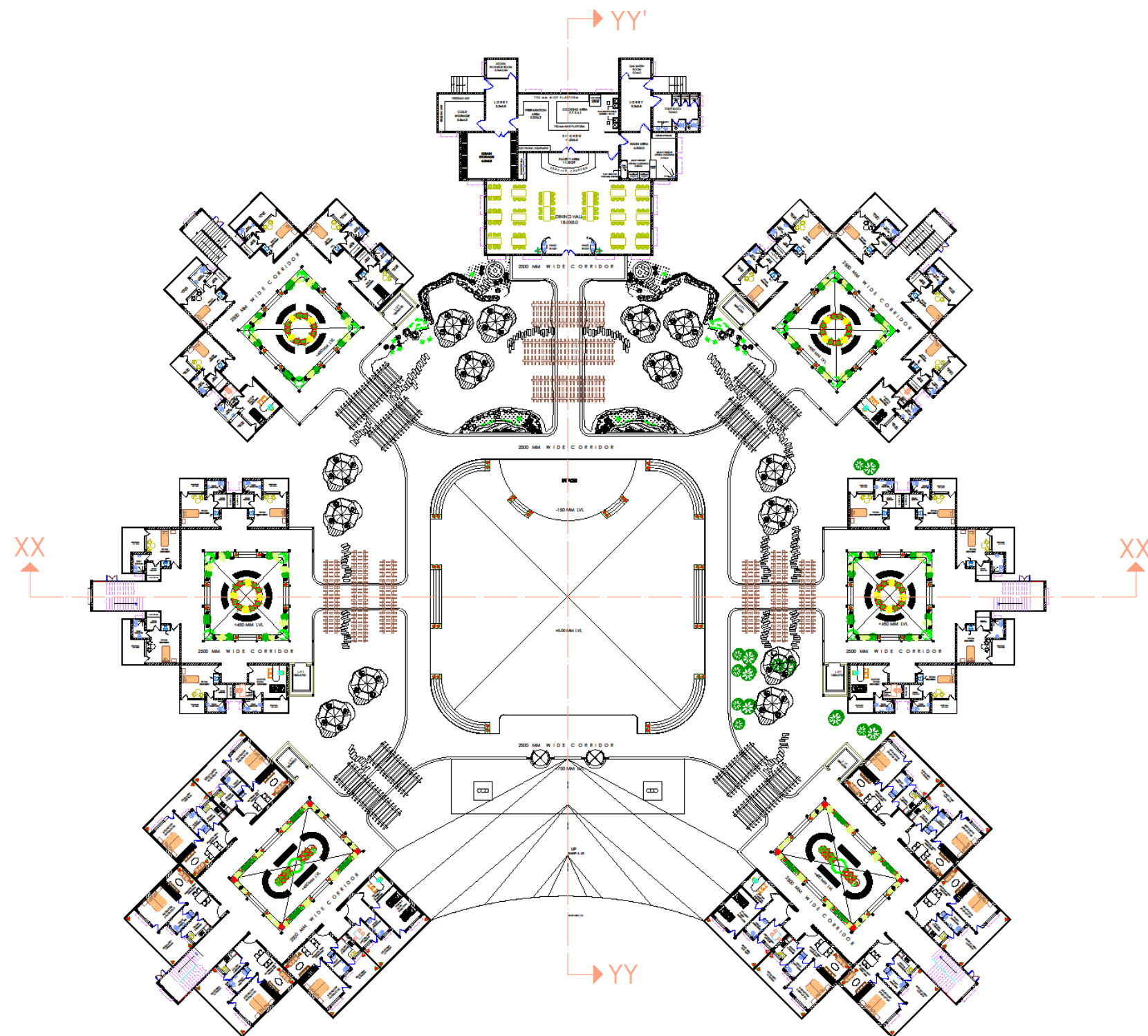
DIMENSIONS-
MM

DATE -

SHEET NO-

SIGN

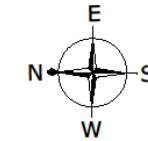
REMARK



MAIN BLOCK GROUND FLOOR PLAN

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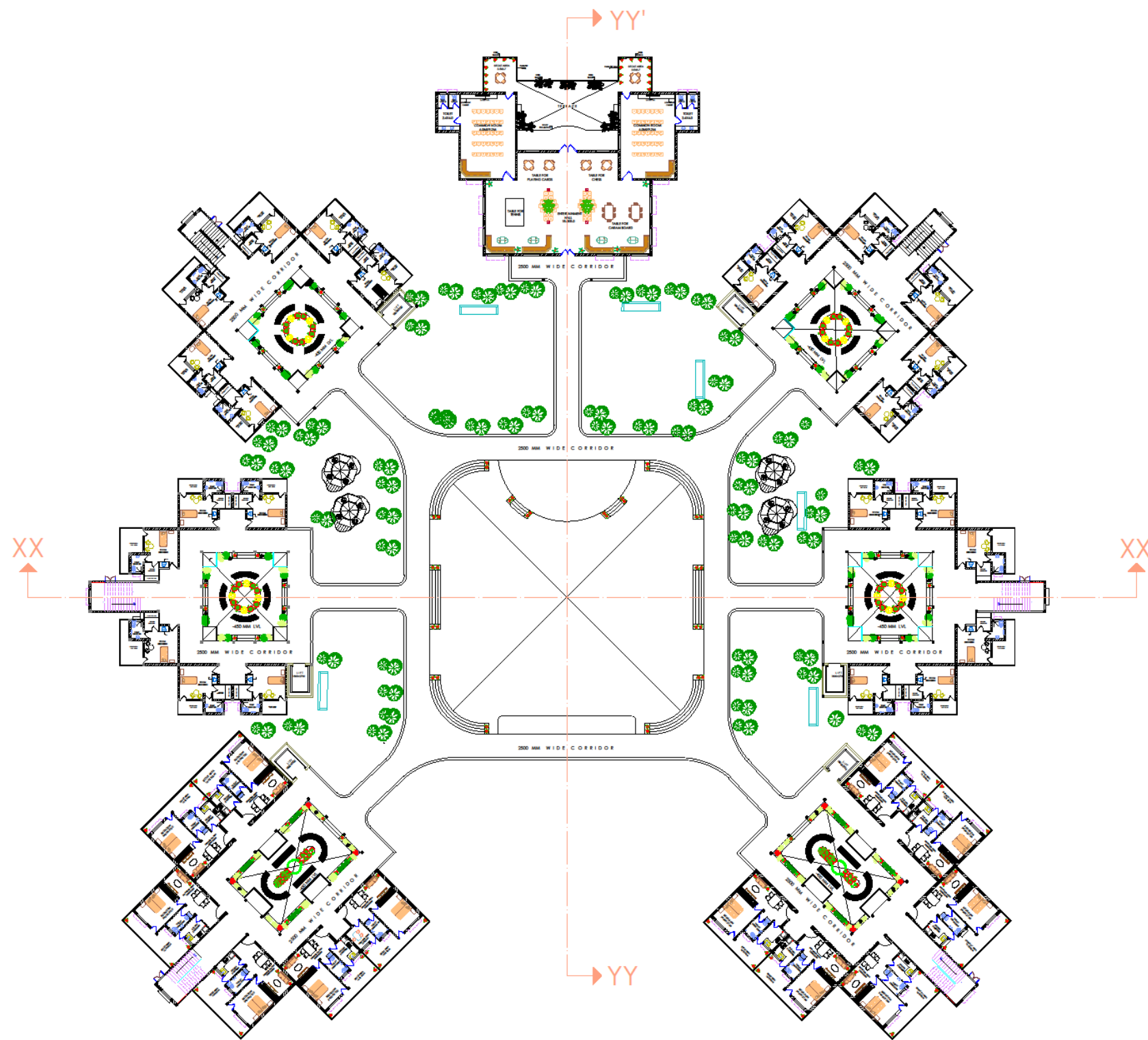
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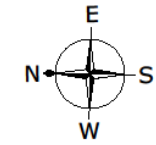
REMARK



MAIN BLOCK FIRST FLOOR PLAN

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DIMENSIONS-
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DATE-

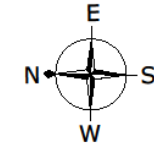
SHEET NO-

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REMARK

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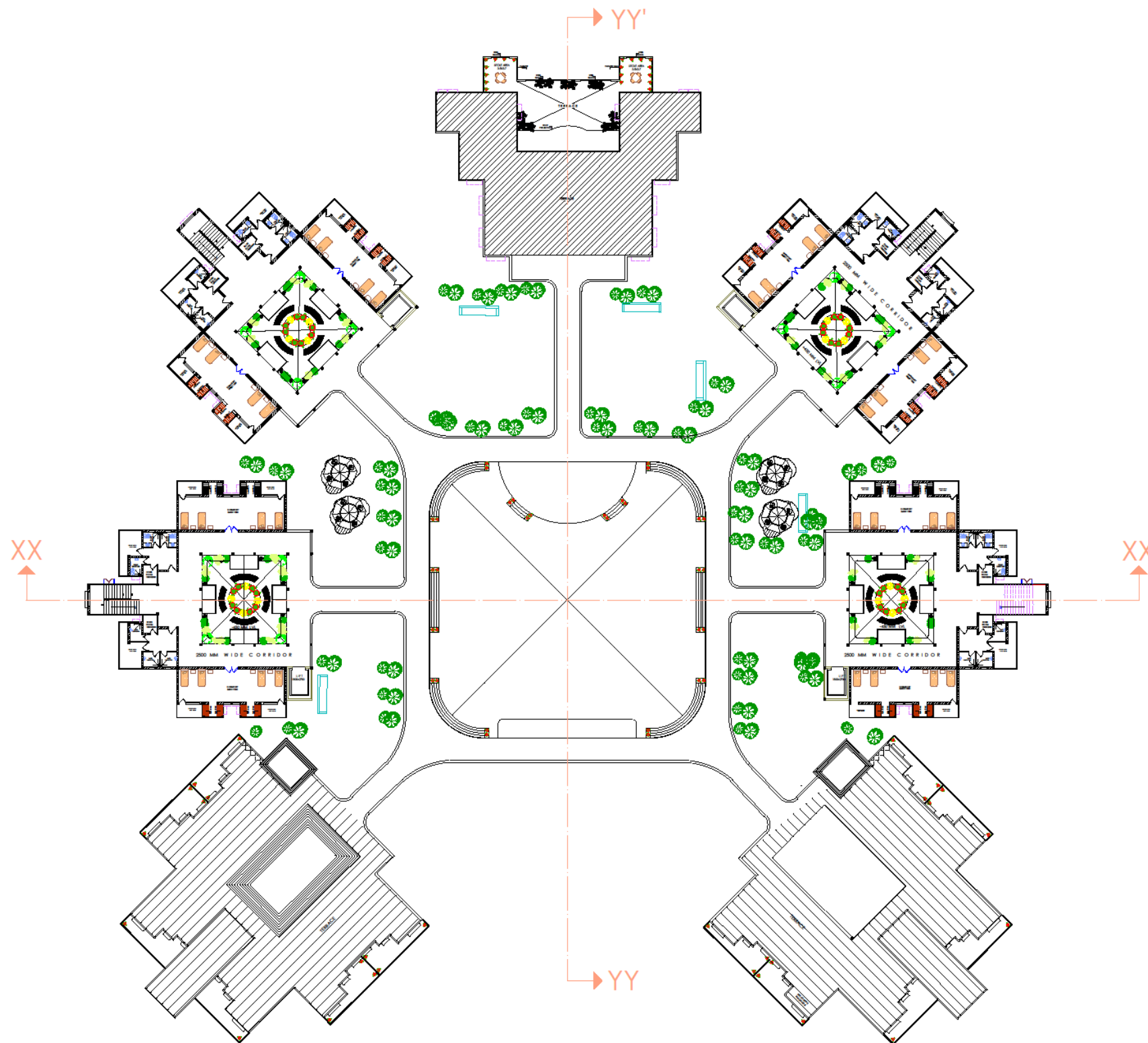
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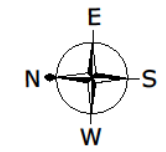
REMARK



MAIN BLOCK SECOND FLOOR PLAN

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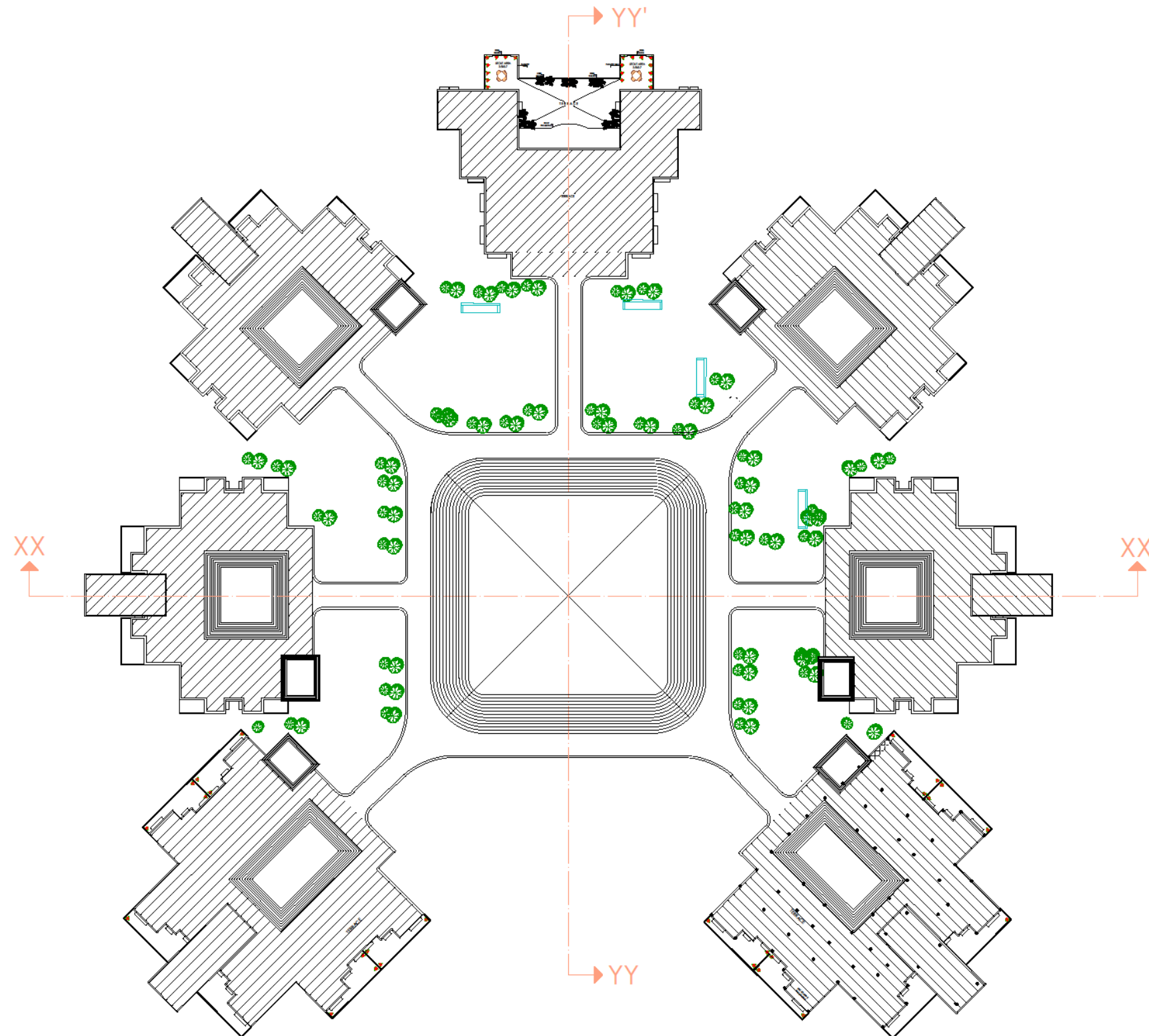
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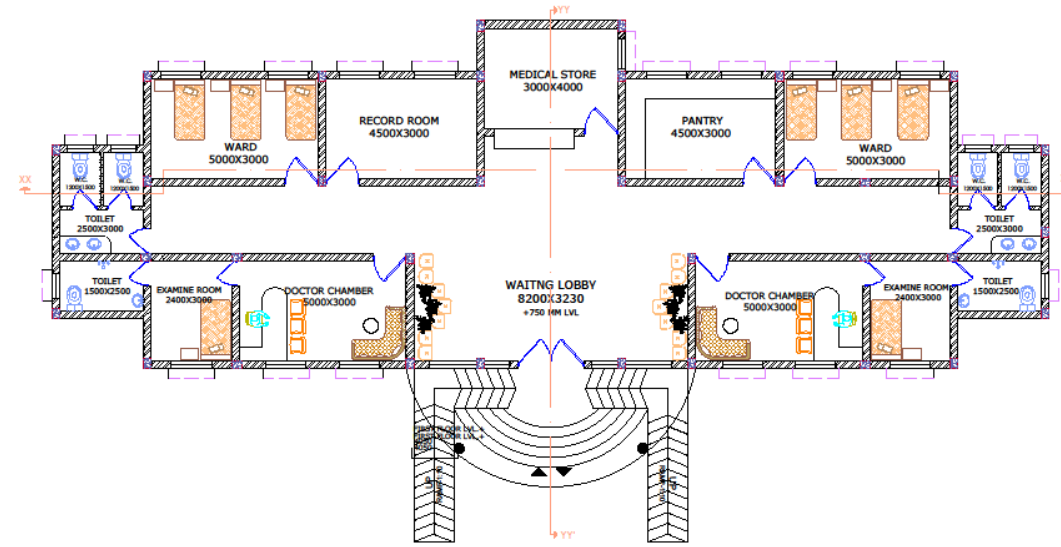
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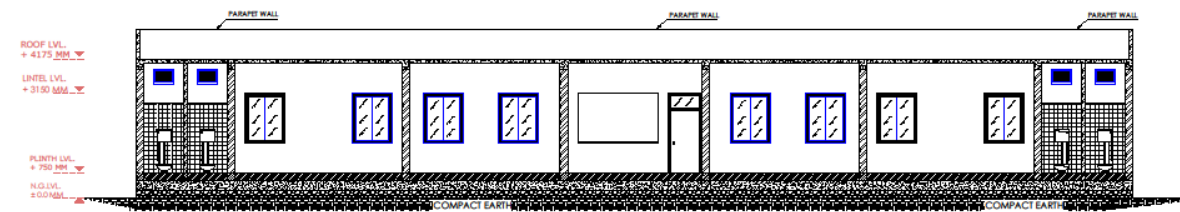
REMARK



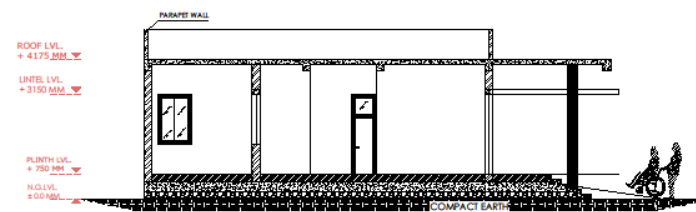
MAIN BLOCK TERRACE FLOOR PLAN



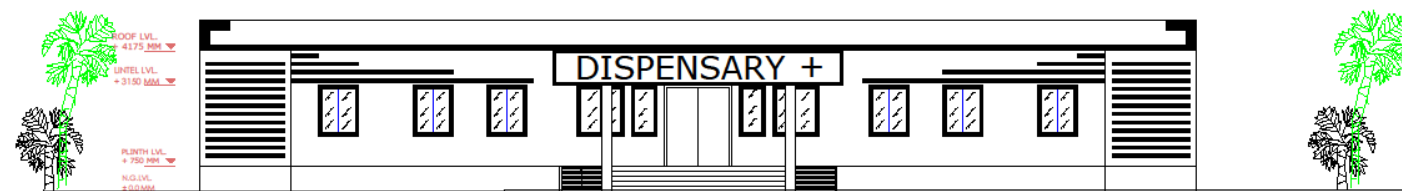
GROUND FLOOR PLAN



SECTION AT XX-XX'



SECTION AT YY-YY'

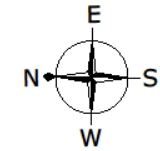


FRONT ELEVATION

DISPENSARY BLOCK

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DIMENSIONS-
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DATE -

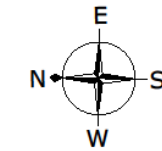
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SIGN

REMARK

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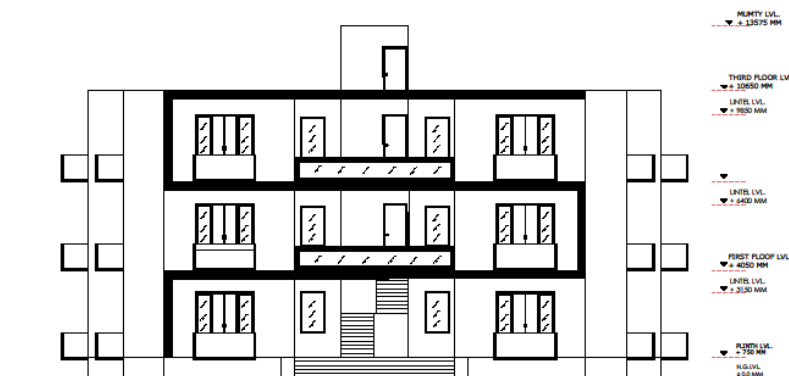
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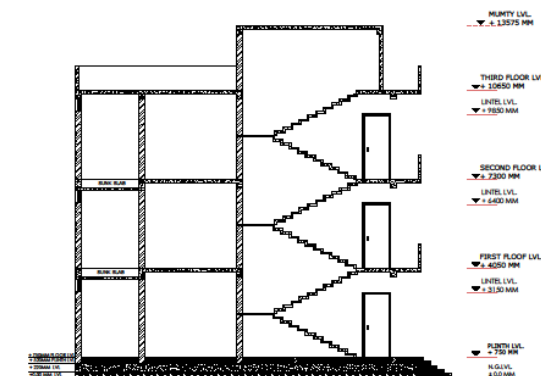
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SIGN

REMARK



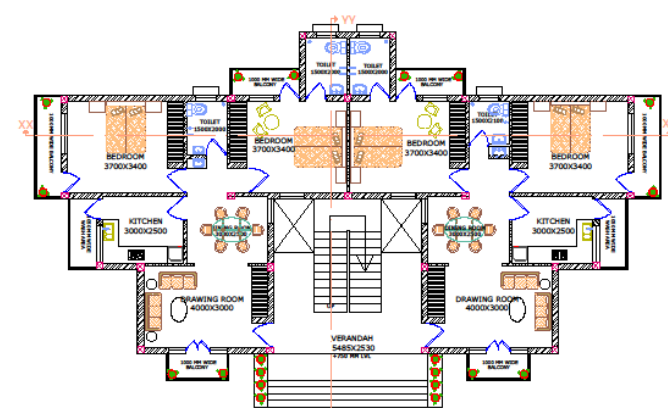
FRONT ELEVATION



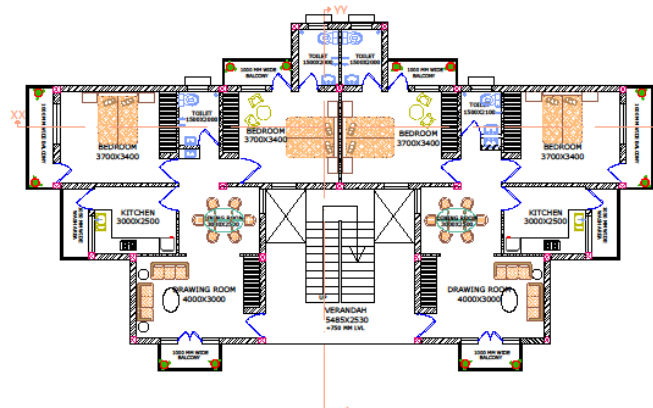
SECTION AT YY-YY'



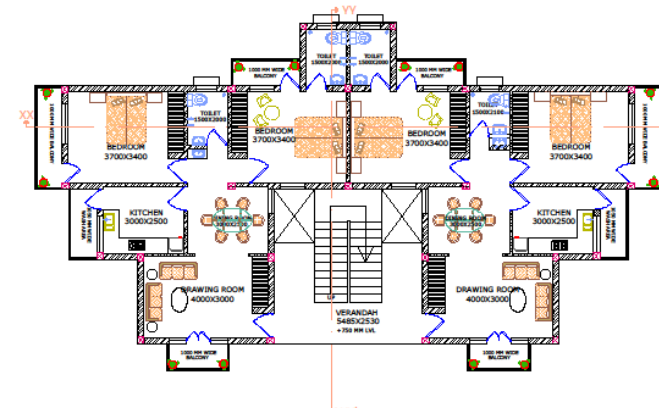
SECTION AT XX-XX'



TYPICAL FLOOR PLAN

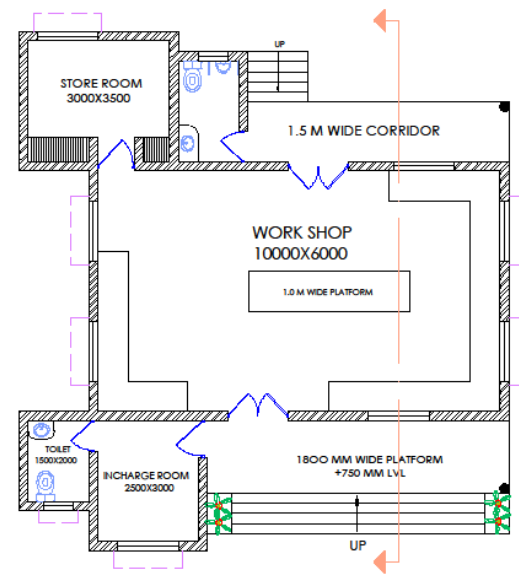


1 FLOOR PLAN

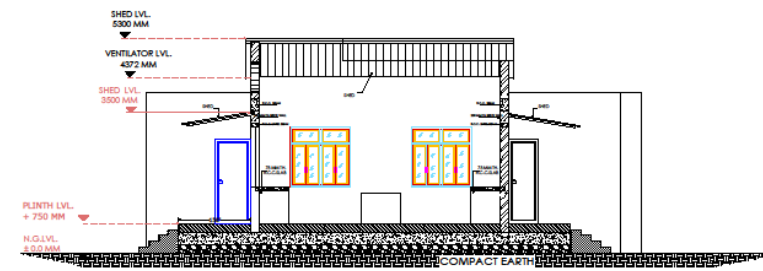


2 FLOOR PLAN

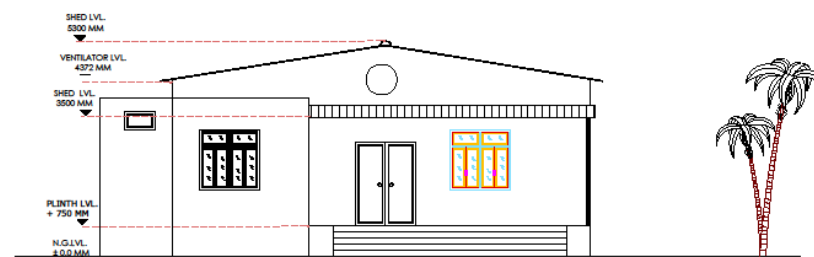
STAFF RESIDENCE MBLOCK



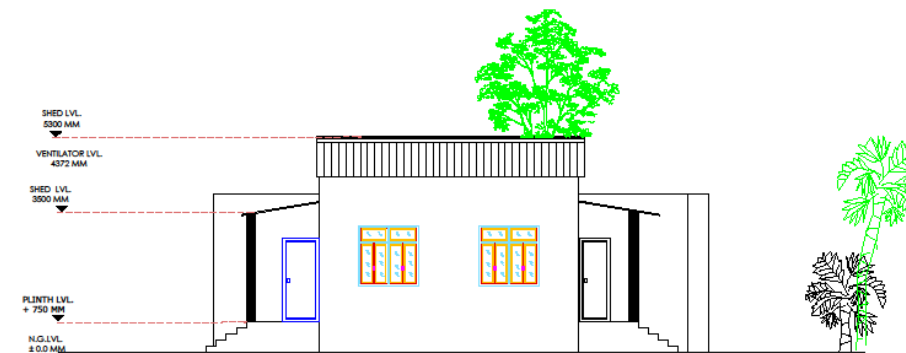
GROUND FLOOR PLAN



SECTION AT YY-YY'



FRONT ELEVATION

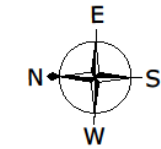


SIDE ELEVATION

WORKSHOP BLOCK

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THESIS



RETIREMENT VILLAGE

THESIS TOPIC-

THESIS GUIDE -
AR. SATYAM SRIVASTAVA

ANAND YADAV

B.ARCH 5th YEAR , 10TH SEM.

2021-2022

ROLL NO - 1160101007

SCALE-
1:100

DIMENSIONS-
MM

DATE -

SHEET NO-

SIGN

REMARK

