

SHARED HOUSING FOR MILLENNIALS

THESIS

Submitted in partial fulfillment of the requirements for the award of
Bachelor of Architecture degree

By

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ENVIRONMENT**

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INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)
Accredited with Grade "A" by NAAC
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BONAFIDE CERTIFICATE

This is to certify that this Thesis Report is the bonafide work of **Gemson Vinis Gabriel (3621026)** who carried out the Thesis entitled **"Shared Housing for Millennials"** under our supervision from January 2021 to May 2021.

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(Ar.Swetha)

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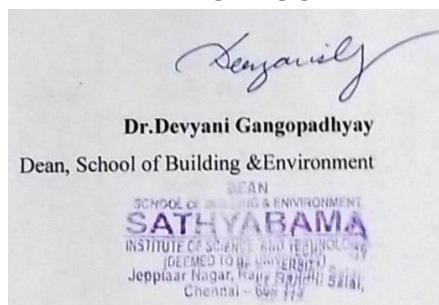
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DECLARATION

I, **Gemson Vinis Gabriel. V** hereby declare that the Thesis Report entitled “**Shared Housing for Millennials**” done by me under the guidance of **Ar.Swetha** (Internal Guide) and **Ar.Monisha** (External Guide). Sathyabama Institute of Science and Technology is submitted in partial fulfillment of the requirements for the award of Bachelor of Architecture Degree.

DATE:

PLACE: Chennai

SIGNATURE OF THE CANDIDATE

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I wish to express my thanks to all Teaching and Non-teaching staff members of the **Department of Architecture** who were helpful in many ways for the completion of the Thesis.

ABSTRACT

This project is to Shared Housing for Millennials in affordable rent rates, at a proximity to maximum facilities, engage them in activities that feels like home to every user. Shared Housings are small but a good design can make them an ideal place to live, through accurate measure of architecture, furniture and material selection and cohesive space plan.

There is a lot to think about a life in the city, as you can have everything that you need and want exact on your doorstep. But there are challenges. City real estate can be very expensive, and sometimes that means living in a smaller space. A good design must come to the rescue. And that is exactly the case with Shared Housing for millennials. In the current day urbanization these shared housing apartments act as a solution to overcrowding and urban sprawl.

Millennials are generation born between 1980-2000; they are the first generation of the digital natives, they are self-ambitious and one of the best educated generation.

India has one of the largest Millennial population and estimated as 426 million 34% of Indian population who stays in hostel and paying guest which creates a massive demand for millennials shared housing accommodation.

The Project satisfies a Millennials need in a smaller area at affordable rent rates with all amenities also create interaction between them and forms a community for them.

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CHAPTER 1

INTRODUCTION

1.1. AIM

The Aim of this project is to create a community that lets anyone from millennials like Students, Young Professionals and other individuals relocating to mount their lifestyle with people sharing a common thread.

1.2. NEED FOR PROJECT

As a lot of Millennials gather to Urban Living in pursuit of Enhanced Lives and Occupations, there is an alteration in the way we live, work and engage. Nowadays more than half the population of the world lives in cities. The Century has Perceived a Dramatic Population Move from rural to urban. The Housing stock is not increasing as fast as their migration and henceforth there is a need of Shared Housing. It is an Intentional Community contributing in an increasingly shared economy and affordability of a suitable housing solution.

1.3. DESIGN PROGRAM

The Housing Community includes individual and shared living units with shared functions and facilities that promotes complete living and wellness. It also includes different Public spaces for the Millennials. Exemplary Common Spaces like reading areas, meditating area, sports facilities, Open Air Theatres and etc.

CHAPTER 2

COST EFFECTIVE MATERIALS

The Building Construction field contributes up to 22% of our nation's total annual CO2 emissions.

Unfired earth – Building material is the very soil the structure stands on
Earth is widely used material for construction.

The Common methods used for earth construction are cob, wattle and damp, rammed earth, adobe and cut blocks. Approximately 35% of all Indian homes still use raw earth for walls.

Even today, earth is extensively used as building materials. Among other benefits of using earth for construction: one is – it's thermal insulation value, easy availability and aesthetic value.

2.1. COMPRESSED STABILIZED EARTH BLOCKS

Compressed earth blocks are made from a mechanical press to form blocks from an appropriate mixture of fairly dry in-organic sub soil, non-expansive clay and aggregates. If the blocks are stabilized with a chemical-binder such as Portland cement, they are known as compressed stabilized earth block CSEB or stabilized earth block SEB.

The CSEB does not require firing or baking like conventional fired bricks.

99% Buildings in India are made with fired bricks which leads to depletion of fertile soil underneath and it's a highly polluting industry.

2.2. ADVANTAGES OF CSEB

Minimizes Shipping Cost

Increased Efficiency and Sustainability

Process Time is Minimal (Short drying Period)

Minimizes or eliminates mortar- Reduces labor and material costs

Blocks are strong, stable, water resistant and long lasting

A single mechanical press can produce 800 to 5000 blocks, enough to build (1200sq.ft/110sq.m)

A High performance CEB press can produce 6000 to 17000 blocks.

Exteriors looks like Convention Stucco houses

Strength exceeds the Standard Concrete Blocks (1900psi)

Non-Toxic and completely natural.

Sound resistant, important feature in high density neighborhoods, residential areas adjacent to industrial zones.

Fire resistant, earth walls do not burn.

CSEB with cement stabilization – observed compressive strength at 28 days of aging with 9% cement stabilization

2.3. FINISHING OF CSEB

Completed walls need either a reinforced bond-beam/ring-beam on top/between floors.

Plaster Finish- Stucco Wire/Stucco Cement/Lime Plaster/ Left Exposed

Polycarbonate Varnish is used to provide an added layer of wet-weather protection

2.4. FOUNDATION OF CSEB

Standards for foundation are similar to brick walls

CEB walls are heavy. Footings must be at least 10-inches thick, with a minimum width that is 33% greater than the wall width.

Rubble Filled foundation trench designs with reinforced-concrete grade beam above are allowable to support CSEB construction.

CHAPTER – 3 - CASE STUDY

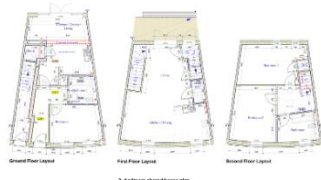
3.1. CHACO CHAPELTOWN

Case Study 1: Chaco Chapeltown



AMENITIES

- + Shared Living Units
- + Common hall and Kitchen
- + Guest Rooms
- + Garden
- + Patio
- + Play Space
- + Laundry
- + Workshop



Members are consciously committed to living as a community. Developments are designed to encourage social contact and a sense of neighbourhood among members. Common space facilitates shared activities like community meals and other amenities like laundries, heating systems, guest rooms, transport, etc may be shared. have as low a carbon footprint as possible within the constraints of our budget. eg. photovoltaics, solar thermal, rainwater harvesting



Forest Garden

The Northern part of the Chaco site gets most sunshine through out the day and suits productive Fruit and Vegetable growing. The plants soften the look of site and make a green backup to the parking.



Natural Play and Amenity

There are spaces for informal recreation, play and seating. Some spaces are more quiet and solitary, others lend themselves to a more social atmosphere.

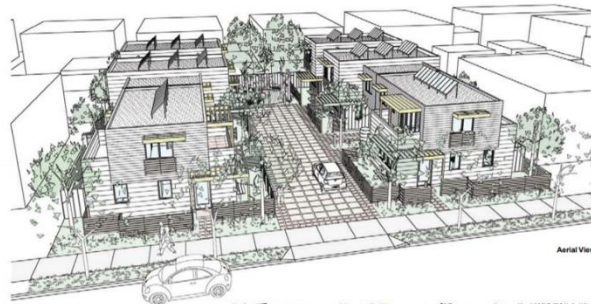


Backyards and Patio

To the rear of all shared living units there is a defined private yard space of around 4.5m deep and each property is separated by a timber screen panel which will afford some privacy. These yards are a mixture of patio paving and some planting beds which forms a green boundary line. Each backyard also incorporates rain water harvesting and a steel bike store.



3.2. INNER PORTLAND INFILL SITE



AMENITIES

- + Shared Courts
- + Common Play Area
- + Private Patio with trees
- + Carport/Play Area
- + Vegetated Bioswale
- + Rainwater Harvesting

Natural Ventilation, Solar Panels,
Porous Concrete and Planted Basin
Universal design- housing for all ages
Central Courtyard=Social Interaction
Garden has shading and seats

Vernacular/Local Material
Urban Infill Site
Public Courtyard Connects to street.
Efficient heating and cooling



Case Study 2: Inner Portland Infill Site



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CASE STUDY

3.3. THE COLLECTIVE OLD OAK – LONDON UNITED KINGDOM



CASE STUDY 1- The Collective Old Oak- London, United Kingdom

ARCHITECTS : PLP Architecture
LOCATION : London, United Kingdom
YEAR BUILT : 2016
SIZE : 52,493 sq.ft
USER GROUP : Young Professionals (age 21-35 yrs)

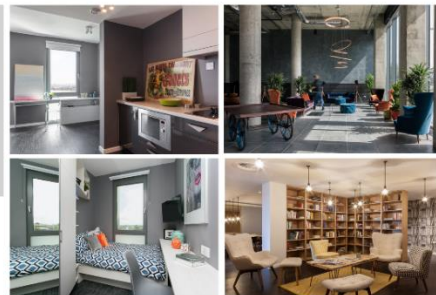
The Collective Old Oak is the world's largest shared living block with 550 bedrooms and numerous amenities.

Communal Living Areas are used for events and parties to encourage a community atmosphere.

The 11-storey facility is laid out with communal lounges, kitchens and bathrooms on each floor.

Two apartments, called "twodios" share a small kitchenette, and there is a larger communal kitchen shared by 30-70 residents on each floor.

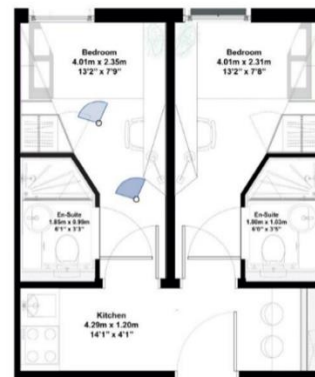
The shared-living spaces focus more on shared experience than individual amenities.



AMENITIES

- + Rooftop Terrace
- + Communal Kitchens and Lounges
- + Gym
- + Restaurant
- + Spa
- + Laundrette
- + Co-Working Space

In cities such as London, shared-living appeals to millennials who are settling down later and remaining commitment-free and transient for longer than any previous generation.



SITE ANALYSIS

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3.4. LUCIEN CORNIL STUDENT RESIDENCE

A+ Architecture

Marseille, France

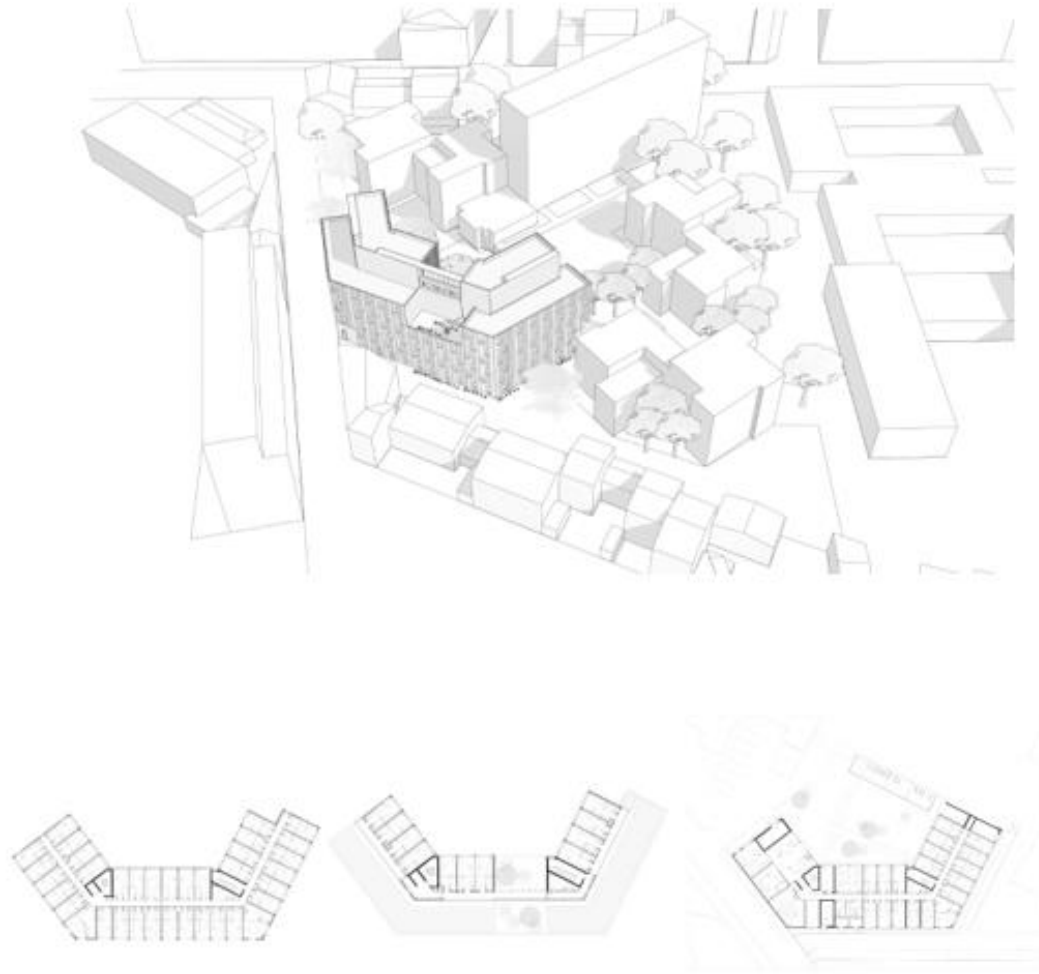
12000 sq.m



Key Features

- This **eight-floor student residence** is the fruit of a successful environmental and construction period.
- Its sensitive urban approach makes this **200-room** structure **a functional building, comfortable and opening out towards the city**
- Most of the rooms are directed towards the enclosed garden, a genuinely relaxing indoor garden, on the street side, the openings are **positioned along the less noisy alley**.
- Consisting of **three wings**, the design benefits from a very high ground floor and attics on the top two levels as well as **quality shared spaces**.
- In a **dense area**, the location and choice of space occupied have enabled the communal areas, the circulation areas and the views to provide a functional building that opens up onto the city.

Floor Plans

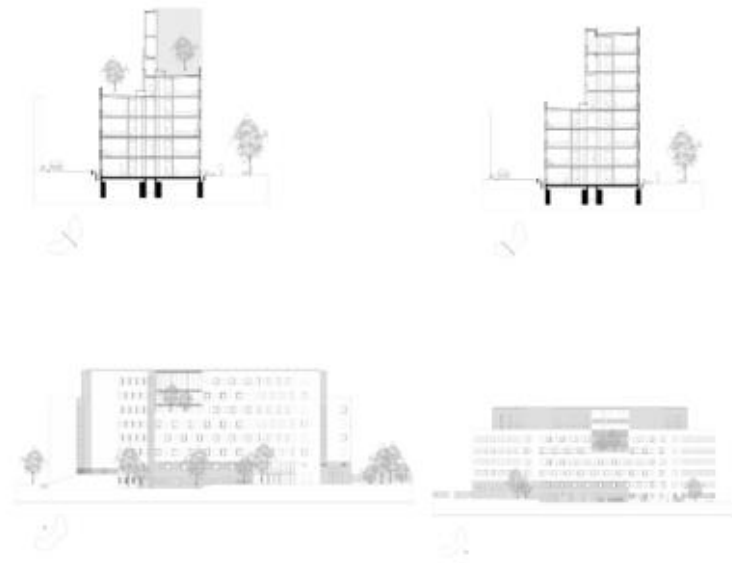


The landscaped interior garden, mainly pointing towards the city, is **given over to meetings**

The wooden structure combined with a **sensitive and functional architecture** provides a solution very much of its time; innovative and in-tune with the environment.

The graduation of the building heights of the project will interact with the surrounding buildings and leave them with **space to breath despite the density of the area.**

Section and Elevation



Site Plan



3.5. STUDIO DARLINGHURST

CatsEye Bay Design

Sydney, Australia

36 sq.m



Key Features

- Walking into the studio, the visitor is first lead around a **bold, sinuous and uncompromising form** – which also functions as generous **wardrobe space**
- Then swoops around to reveal the **essentials required to sleep, sit and store**.
- Similarly, a curved endpiece to the kitchen bench resolves the cook/ eat/talk/wash up functions quite simply, **blending them into one space**, and concealing the detail with a strong curved form.
- **The location and orientation** of the larger joinery unit within the space was **key**.
- **Materials** are an important part of **how the apartment works, and feels**. Wood, tiles, painted surfaces and fabrics have been carefully chosen.



Floor Plans



Sections



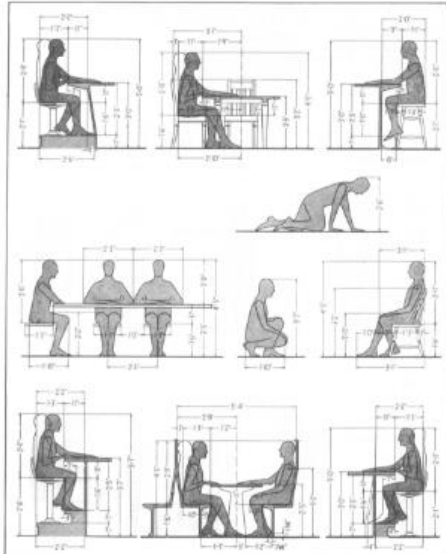
Conceptual Model



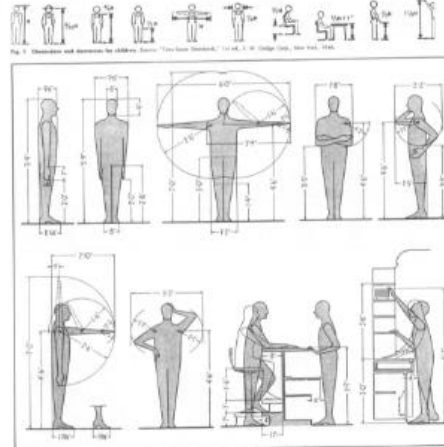
CHAPTER 4—STANDARDS

4.1 ANTHROPOMETRICS

Residential
DIMENSIONS OF THE HUMAN FIGURE



ANTHROPOMETRICS



DIMENSIONS OF ADULTS

The dimensions and clearances shown for the average adult (Fig. 2) represent minimum requirements for use in planning building layouts and furnishings. If possible, clearances should be increased to allow comfortable accommodations for persons larger than average. The height of table tops shown on the next page is 2 ft 5 in.; some authorities prefer 2 ft 6 in., or sometimes 2 ft 6 1/2 in.

Since doorways and passageways must normally be dimensioned to permit the movement of furniture, they should seldom be designed merely on the basis of the average adult. (See section of this book relating to furniture sizes.)

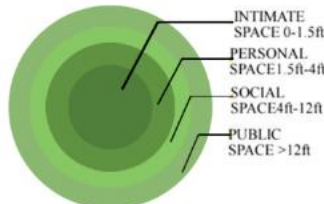
DIMENSIONS OF CHILDREN

Children do not have the same physical proportions as adults, especially during their early years, and their heights vary greatly, but their space requirements can be approximated from the following table and from Fig. 1. (For heights of children's furniture and equipment, see section on "Schools.")

Average Height of Children			
Age	Height, in.	Age	Height, in.
3	44	11	56
4	46	12	58
5	48	13	60
6	50	14	62
7	52	15	64
8	54	16	66

According to Jay Sheller, "Typ house builder and enthusiast... most adults are between 4'11" and 6'2" tall. This means an approximately 85% of the population (small house book)."

4.2. SPATIAL REQUIREMENTS SPATIAL REQUIREMENTS



INTIMATE SPACE : 0-1.5 FT

Generally kept by people who share level of comfort with one another... (e.g. close friends, partners)

PERSONAL SPACE -1.5-4 FT

kept by casual friends a close social relationship, easily facilitates conversation, (friends, co-workers)

SOCIAL SPACE : 4-12 FT

Used by who know each other but do not share a close relationship.

PUBLIC SPACE >12 FT

Maintained by those whose only relation is near proximity for distance are generally kept between those who don't know one another to minimize discomfort or fear.

(audience, people waiting for bus)

MINIMUM SPATIAL REQUIREMENTS

(small house book)

Door Height: 6'2" minimum
Door Width: 1'5" minimum
Bed Width: 2'8" minimum
Bed Length: 6'3" minimum
Counter Height: 2'8" minimum/ 3'2" maximum
Counter Depth: 1'4" minimum/ 2'6" maximum
Room or Hallway Width: 1'8" minimum

Door Knob Height: 2'9" minimum/ 3'4" maximum
Lavatory Height: 2'8" minimum/ 3'3" maximum
Control Knob Height: 2'6" minimum/ 6'0" maximum
High Shelf: 6'2" maximum/ Desk/Table Height: 1'0" minimum/ 2'7" maximum
Desk/Table Depth: 1'0" minimum/ 2'8" maximum

Plinth

(NBC 2016 Volume 1)

Habitable Room

MAIN BUILDING		INTERIOR COURTYARD	
450mm		150	
HEIGHT (Floor to lowest point of ceiling)		ROOM SIZES	
All rooms	2.75 m	No. of rooms	Area 9.5 sq m
Pitched roof (clear height)	2.75 m	One room	width 2.4 m
Pitched roof (head room)	2.4 m	One room area	9.5 sq m
Air conditioned	2.4 m	Two rooms	Other room area 7.5 sq m
			width 2.1

LIVING AREAS

LIVING AREAS

Planning Considerations

- Through traffic should be separated from activity centers.
- Openings should be located so as to give enough wall space for various furniture arrangements.
- Convenient access should be provided to doors, windows, electric outlets, thermostats, and supply grills.

Furniture Clearances

To assure adequate space for convenient use of furniture in the living area, not less than the following clearances should be observed:

- 60 in. between facing seating
- 24 in. where circulation occurs between furniture
- 30 in. for use of desk
- 36 in. for main traffic
- 60 in. between television set and seating

Seating arranged around a 10-ft diameter circle (Fig. 1) makes a comfortable grouping for conversation. Figure 2 indicates clearances, circulation, and conversation areas.

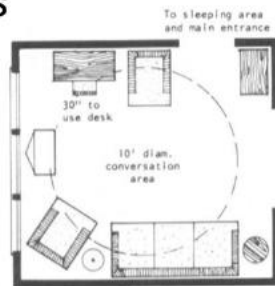


Fig. 1 Plan. Source: "Manual of Acceptable Practices," Vol. 4, U.S. Dept. of Housing and Urban Development, 1973.

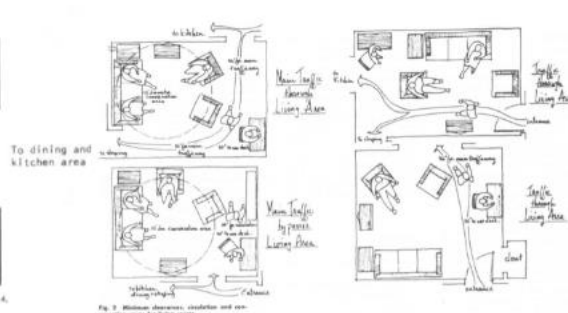


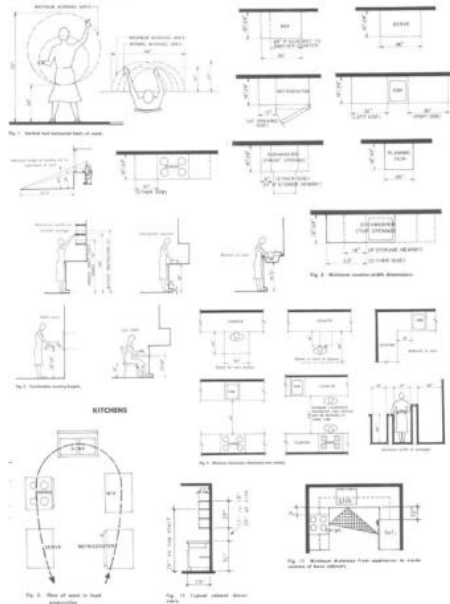
Fig. 2 Minimum clearances, circulation and conversation areas for living areas.

4.3. KITCHEN AND BATHROOM STANDARDS

KITCHEN

DESCRIPTION	AREA	WIDTH
Kitchen without dining	5 sqm	1.8 m
Kitchen with store	4.5 sqm	1.8 m
Kitchen with dining	7.5 sqm	2.1 m
HEIGHT (Floor to lowest point of ceiling)	2.75 m	

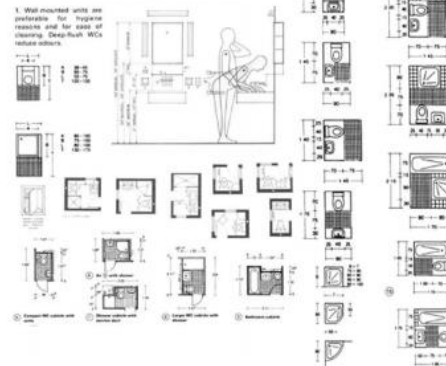
- a) unless separately provided in a pantry, means for the washing of kitchen utensils which shall lead directly or through a sink to a gully and trapped connection to the waste pipe;
b) an impervious floor;
c) a flue, if found necessary; and



BATHROOM

DESCRIPTION	AREA	WIDTH
Bathroom	1.8 sq m	1.2 m
water closet	1.1 sqm	0.9 m
Bath and water-closet	2.8 sqm	1.2 m
HEIGHT (Floor to lowest point of ceiling)	2.1 m	

- Every bathroom or water-closet shall,
a) be so situated that at least one of its walls shall open to external air;
b) not be directly over or under any room other than another water-closet, washing place, bath or terrace, unless it has a water-tight floor;
c) have the platform or seat made of water-tight non-absorbent material;
d) be enclosed by walls or partitions and the surface of every such wall or partition shall be finished with a smooth impervious material to a height of not less than 1 m above the floor of such a room;
e) be provided with an impervious floor covering, sloping towards the drain with a suitable grade and not towards Verandah or any other room; and
f) have a window or ventilator, opening to a shaft or open space, of area not less than 0.3 m² with side not less than 0.3 m.



4.4. FURNITURES

FURNITURE

GENERAL

Typical furniture group units

While the typical furniture arrangements presented in the following pages by no means cover the entire range of possibilities, they do cover the fundamental ones to which eating, dining, and sleeping spaces are added. From the suggested reference furniture arrangements can be developed to suit any particular problem or set of problems with which a designer may be confronted.

Furniture sizes may vary slightly. Those indicated are the averages commonly met with in upper middle-class homes, and are little affected by changes in style or color matters of individual preference.

Specific space allowances

In studying furniture groupings, it becomes obvious that certain clearances are required. Spacing, lines, or parts of all, form types develop naturally between furniture group units. Minimum distances for comfort have been established by numerous planners. These, and in some cases, maximum distances based upon requirements for human dimensions, have been incorporated in the diagrams. A listing of these generally applicable to all rooms follows.

1. Single passage (not a traffic lane) between two objects, such as a sofa and coffee table: 18 in. is the minimum.
2. Single passage (not a traffic lane) between two objects, such as a sofa and coffee table: 18 in. is the minimum.

between two objects, top height or over 2 ft to 2 ft 8 in. is the minimum.

3. General traffic flow: 3 ft 6 in. is the practical minimum. As rooms increase in size, this minimum increases. In order to preserve the open scale of the room, the traffic flow between an entrance door and a major group unit is preferably generous in width. It is desirable to place doors so that the central portion of rooms do not become major traffic ways between different parts of the house.

4. Seating areas, unified the distance between a desk and a wall: 2 ft is a minimum clearance, which permits one person to sit back of an occupied chair. This minimum does not constitute a major traffic lane.

LIVING ROOM

Typical furniture groups in the living room are as follows:

1. Primary conversation group: chairs and sofa usually grouped around the fireplace.

2. Secondary conversation group: chairs and sofa used at end of room or in corner.

3. Reading group or group chair, ottoman, lamp, table.

4. Writing or study group: desk, lamp, one or two chairs, bookcase.

5. Music group: piano, bench, storage space.

6. Some groups serve table and bar chairs.

7. Television group: television set and seating for several people.

According to the plan of a house and the usage allotted to the living room, two or three or all of the furniture group units may be included. The fireplace is so closely associated with living room furniture that it has been included in all schemes.

Clearances

Traffic clearance in living rooms are important, since numbers of people use the room, and narrow lines between furniture group units are uncomfortable. An adequate traffic lane between the main entrance and the major seating group is 3 ft 6 in. wide. A 4 ft 8 in. is preferred. The minimum clearance between facing pieces of furniture in a fireplace group is 4 ft 8 in. for a fireplace 3 ft wide. For every inch added to the size of the fireplace, 1 in. is added to the minimum clearance space.

If a wide sofa is placed directly opposite the fireplace, this group is often spread. A full clearance is usually computed the maximum because it is difficult to carry on a conversation over a greater distance.

A considerable flexibility in location of doors and windows is possible, and all wall places can be utilized. Doors facing a fireplace are to be avoided in order that the furniture group may be concentrated around the fireplace opening.

LIVING ROOM—FURNITURE SIZES AND CLEARANCES

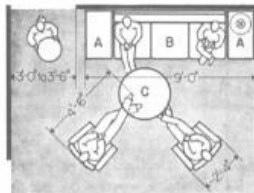
Since in the small house for general living activities must often serve a wide variety of functions, furniture can add greatly to the usefulness of living areas if it is adaptable in type and size to a number of different purposes.

Accompanying these are working plans for providing sufficient space for general living activities. Dimensioned information includes only a few of many available sizes and types of furniture. Dimensions of groups refer to dimensions necessary for comfortable and convenient use.

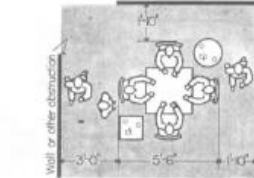
necessary planning considerations include provision of adequate floor and wall space for furniture groupings, integration of wallpapers, base colors of wallcoverings, size of windows, and a minimum of flexibility.

Doors in constant use should be placed so that traffic between them will not interfere with furniture groupings.

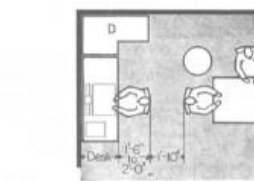
Flexibility implies the varying uses to which space may be put. The furniture group of the right, for instance, requires approximately the same floor space as the corresponding group, the sofa, before may be a convertible bed. Thus, flexibility of other items—such as recreation, sleeping, dining and even storage—may be applicable equally to living rooms.



Sofa Sizes (B):
7'0" to 7'6" deep
4'0" to 7'0" long
(Love Seats)
2'0" to 2'10" deep
2'0" to 4'0" long
End Tables (A):
1'0" to 1'6" wide
1'0" to 1'6" long
Occasional Table (C):
2'0" to 2'4" square
round, oval, glass-top, etc.

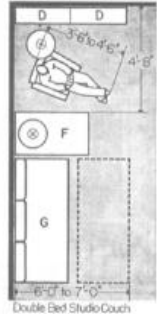


Desk Tables:
2'0" to 2'4" square
folding type 1'0" wide
fixed table (center wall)
Side Chairs:
1'0" to 1'6" wide
1'0" to 1'10" deep



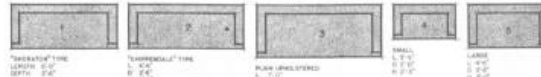
Desk, Sliding Top:
2'0" to 2'6" wide
1'0" to 2'0" deep
Writing Desk:
2'0" to 2'4" wide
1'0" to 2'4" deep
Secretariat:
2'0" to 2'6" wide
1'0" to 2'6" deep

Convertible Sofa-Beds (B): 7'0" to 7'6" deep, 8'0" to 8'6" long
Living Room Tables (F): 1'0" to 1'6" wide, 1'4" to 1'10" long
Easy Chairs (Wing): 2'4" to 2'10" square, 2'4" to 2'10" long
Book Cases (B): 2'0" to 2'4" wide, 10" to 17" deep



Double Bed Studio Couch

SOFAS



"Standard" Type
LENGTH: 6'0"
DEPTH: 3'0"
HEIGHT: 2'0"

"Convertible" Type
L: 4'0"
D: 2'0"
H: 2'0"

Small
L: 3'0"
D: 1'0"
H: 1'0"

Large
L: 7'0"
D: 3'0"
H: 2'0"

CHAIRS



Chair
L: 2'0"
D: 1'0"
H: 2'0"

Occasional
L: 2'0"
D: 1'0"
H: 2'0"

Wing
L: 2'0"
D: 1'0"
H: 2'0"

Side Chair
L: 1'0"
D: 1'0"
H: 2'0"

Unupholstered
L: 1'0"
D: 1'0"
H: 2'0"

Unupholstered
L: 1'0"
D: 1'0"
H: 2'0"

Unupholstered
L: 1'0"
D: 1'0"
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Unupholstered
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Unupholstered
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H: 2'0"

APPLIANCE SIZES

Refrigerator Dimensions:

Avg. - 68 1/4" H x 29 3/4" W x 31 3/4" D

Small - 34" H x 19" W x 20 1/2" D

X-Small - 17" H x 19" W x 20 1/2" D

Range Dimensions:

Avg. - 29 3/4" W x 46 1/2" H x 24"

Small - 21 3/8" W x 16 11/16" H x 20" D

(R.V. Style) Washer:

23 3/8" W x 33 1/4" H x 22 1/8" D

Dryer:

23 3/8" W x 33 1/4" H x 22 1/8" D

Water Heater:

6-Gallon - 17 3/4" H x 16" Diameter

Tankless - 29 3/4" H x 18 1/4" W x 9" D

12-Gallon - 22 3/4" H x 16" Diameter

Shower:

Avg. - 30" W x 80" H x 30" D

Small - 24" W x 72" H x 24" D

Tub:

Avg. - 60" W x 18" H x 30" D

Small - 48" W x 24" H x 30" D

Toilet:

Avg. - 20" W x 29" H x 30" D

Small - 18" W x 29" H x 24"

DINING

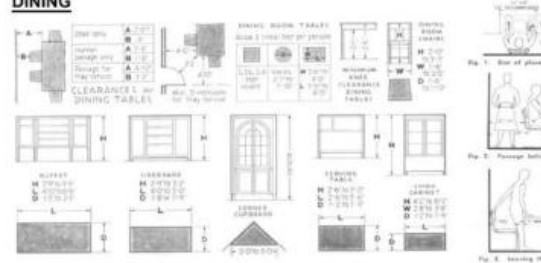
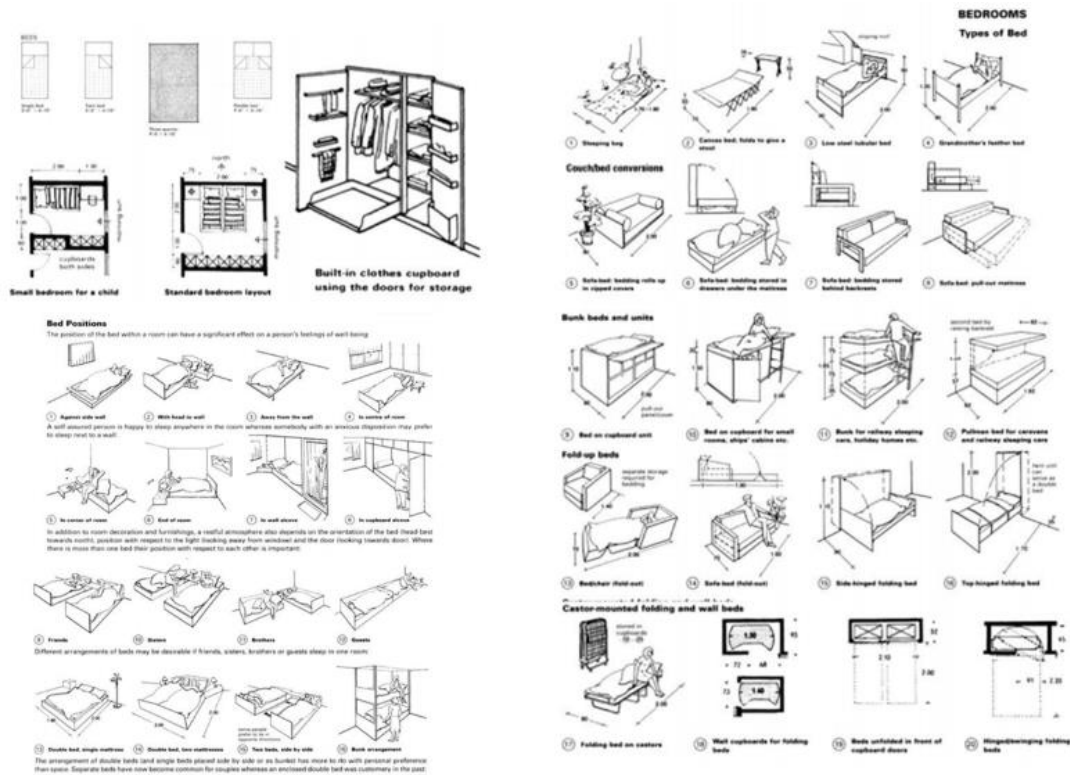


Fig. 1. Star of place setting

Fig. 2. Four-place setting

Fig. 3. Dining table

4.5. BEDROOM



4.6. MEZZANINE FLOOR, LEDGE/LOFT, STAIRCASE AND SHADING DEVICES

MEZZANINE FLOOR

DESCRIPTION	SIZE
Height	2.2 m
size	9.5 sqm

LEDGE/LOFT

Height : The minimum head-room of ledge or Tand/loft shall be 2.2 m. The maximum height of loft shall be 1.5 m.

Size : A ledge or TAND/loft in a habitable room shall not cover more than 25 percent of the area of the floor on which it is constructed and shall not interfere with the ventilation of the room under any circumstances

STAIRCASE

The following criteria shall be adopted for internal individual staircase:

- a) Minimum clear width:
- 1) 2 storeyed straight : 0.60 m
 - 2) 2 storeyed winding : 0.75 m
 - 3) 3 or more storeyed straight : 0.75 m
 - 4) 3 or more storeyed winding : 0.90 m

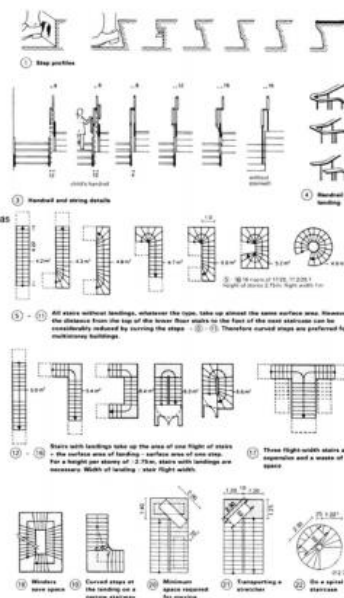
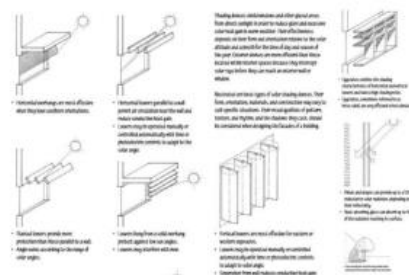
- b) Riser : 200 mm, Max

- c) Tread
- 1) 2 storeyed : 225 mm, Min
 - 2) 3 storeyed or more : 250 mm, Min

This could be reduced to 200 mm as the clear tread between perpend, with possibility of open riser as well as nosing and inclined riser to have an effective tread of 225 mm.

- d) Head room The minimum clear head room shall be 2.1 m.

SHADING DEVICES



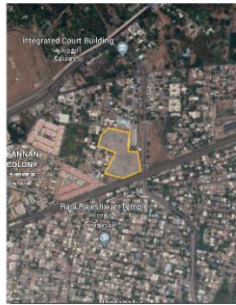
LIGHTING AND VENTILATION

c) one-fifth of the floor area for cold climate.

-
- Figure 1 shows a 3D grid with dimensions 10x10x10. The grid is divided into smaller cells. The points are distributed throughout the volume, with some clusters and some empty space. The points are represented by small black dots.

CHAPTER 5-SITE ANALYSIS

5.1. CONTEXTUAL ANALYSIS

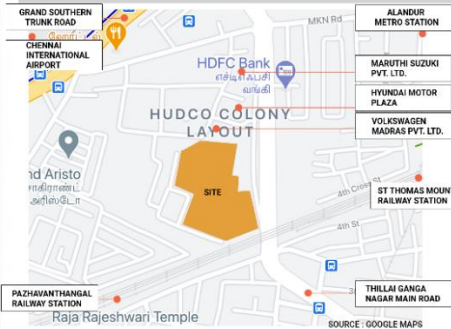


SOURCE : GOOGLE EARTH

SITE - HUDCO COLONY LAYOUT, ALANDUR (Ward A)

STATE TAMILNADU
CITY CHENNAI
GEOGRAPHIC COORDINATES
LATITUDINAL PARALLELS - 12.9933685 deg N
LONGITUDINAL MERIDIANS - 80.1926556 deg E
TEMPERATURE 29.7 deg C (Average)
 32 deg C (Summer)
 20 deg C (Winter)

SITE SURROUNDING
NORTH Volkswagen Madras Pvt. Ltd.
SOUTH Pazhavanthangal- St. Thomas Mount
EAST Thillai Ganga Nagar Main Road
 (Inner Ring Road)
WEST Morrison Street



Objective of ALANDUR Master Plan 2026

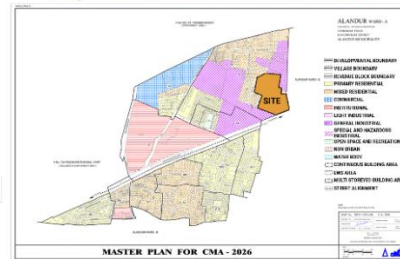
Socially Beneficial
 Regionally Connected
 Environmentally Sustainable

Financially Viable
 Institutionally Executable
 Politically Acceptable



SITE PHOTOS

Proposed Land-Use of Alandur Ward-A



SOURCE : CMDAMAPS.TN.NIC.IN

The Present Land Use shows that most areas of our site falls under the Mixed Residential Zone and surrounded by General Industrial and Institutional Zones.
 The Plan is used for promoting integrated development of the Urban Centre by rationalizing its pattern of land use.
 The Plan offers futuristic solutions by laying down agenda for its growth and development.

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HOW DO WE REACH THE SITE?



Nearby Railway Stations Include
 Palavanthangal Railway Station
 St Thomas Mount Railway Station
 Alandur Metro Station

Palavanthangal Railway Station is the nearest to the site.
 The Station is elevated at 13m above the sea level
 In Alandur Metro Station there is a added parking area for private vehicles



Nearby Bus Stops Include
 Thillai Ganga Nagar Bus Stop
 Alandur Depot
 Alandur Bus Stop

70C 51D 111 G70 21G B18 18M E18 70 G18
 M45 52 60A 52K 18A 1B 154B 18R 52B 52P

The Alandur MTC Depot is one of the most active terminus which runs multiple number of city buses between Anna Square and Nanganallur Bus Terminus everyday.

Shared Public Transports are also available through out the day in the site.



Chennai International Airport

The Site is just 4 kms from the Chennai International Airport.

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SITE CIRCULATION

SITE ENTRY:

Primary Entry : Jawaharlal Nehru Road (12m)
Secondary Entry : Morrison Street (8m)



MACRO LEVEL LANDMARK AREAS

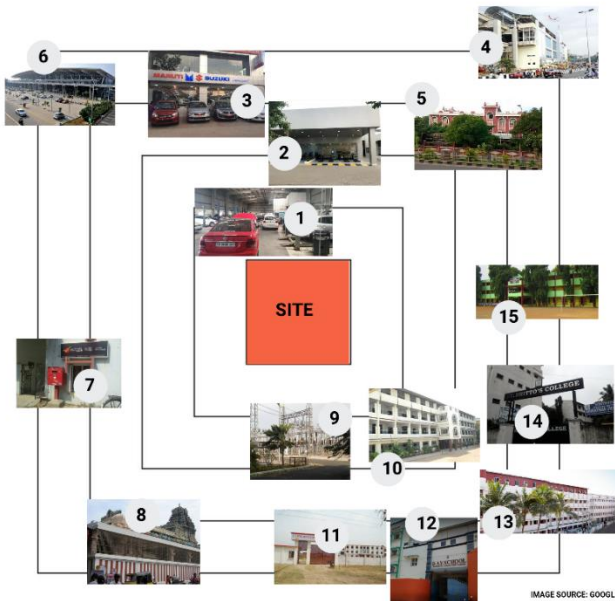
Our Site is surrounded by 5 Areas, which includes the following

- 1. ALANDUR** This is the zone where the site is located. Alandur is a zone of Chennai corporation, and an urban node in Chennai district in Guindy division in the state of Tamil Nadu. The town agglomeration of Alandur will have an estimated population of 300,000 by the year 2030.
- 2. PALAVANTHANGAL** This zone is located south west of the site. Palavanthangal is a southern neighbourhood of Chennai, India. It is served by the Pazhavanthangal railway station of the Beach-Tambaram suburban railway route in Chennai. It is one of the neighborhoods that is very close to the Chennai International Airport.
- 3. ST. THOMAS MOUNT** St. Thomas Mount is the Northern neighbourhood of the site. Integration of the Metro and MRTS with the suburban station in the neighbourhood, is expected to make the suburb the city's largest transit hub after Chennai Central
- 4. ADAMBAKKAM** Adambakkam is the zone located on the South East of the site. It has Numerous Educational Institutions and is primarily one of the most populated residential locality situated in South Chennai.
- 5. NANGANALLUR** Nanganallur is the zone which is located on the immediate south of the site. It represents with a significant number. As a result of Chennai's booming IT business and setting up of IT parks in the suburbs, a lot of people have moved into suburbs like Nanganallur.

SITE ANALYSIS

5.2. MACRO LEVEL ANALYSIS

MACRO LEVEL LANDMARKS



- 1.Volkswagen Madras Pvt. Ltd.
- 2.Hyundai Motor Plaza
- 3.Maruthi Suzuki Pvt. Ltd.
- 4.Alanadur Metro Station
- 5.Integrated Court Building Alandur
- 6.Chennai International Airport
- 7.Palavanthangal Post Office
- 8.Nanganallur Anjaneyar Temple
- 9.TNEB Office
- 10.Prist University Chennai
- 11.Natraj Institute of Science and Tech
- 12.DAV School
- 13.St. Britto's Academy
- 14.St. Britto's College
- 15.AJS Nidhi Higher Secondary School

Our site is surrounded by many landmarks on all the sides.
The Site is mostly surrounded with numerous Institutions and Industries which has a large Millennial population of Students, Young Professionals and Backpackers.

IMAGE SOURCE: GOOGLE

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SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY

SITE ANALYSIS

5.3. CLIMATE ANALYSIS

SITE TOPOGRAPHY

SITE CONTOUR

Overall slope of the site varies from 3 to 8m. Morrison Street is situated at a low point when Compared to other structures whereas south west zone and south east zone seems to be present at a high level when compared to other zones of the site. The Central Zone is the most Highest point of the site.



Lowest Point

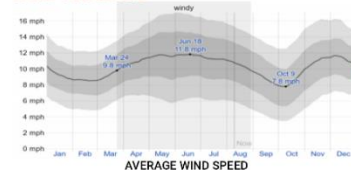


Highest Point

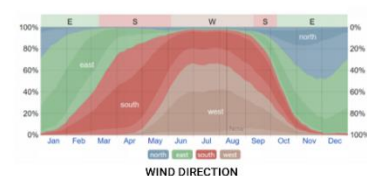
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CLIMATE ANALYSIS

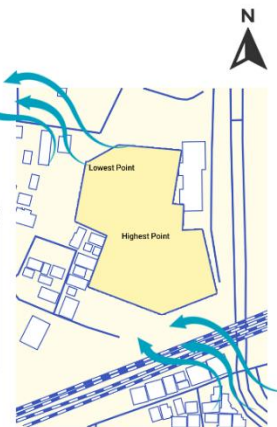
WIND ANALYSIS



The wind is most often from the South for 2.8 months, from March to June and for 4.0 weeks, from September to October, with a peak percentage of 81% on April. The wind is most often from the East for 5.1 months, from October to March, with a peak percentage of 70% on January



The windier part of the year lasts for from March to August, with average wind speeds of more than 9.8 miles per hour. The windiest day of the year is June, with an average hourly wind speed of 11.8 miles per hour



Predominant wind direction : SE - NW
Average wind speed - 7 kts

SITE ANALYSIS

SITE TOPOGRAPHY

SITE CONTOUR

Overall slope of the site varies from 3 to 8m. Morrison Street is situated at a low point when Compared to other structures whereas south west zone and south east zone seems to be present at a high level when compared to other zones of the site. The Central Zone is the most Highest point of the site.



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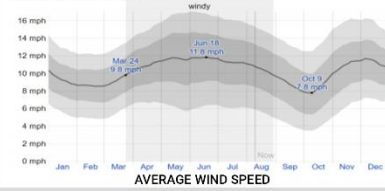


Highest Point

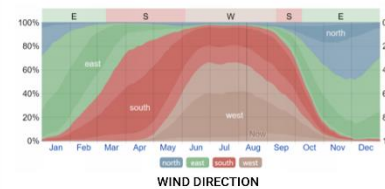
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CLIMATE ANALYSIS

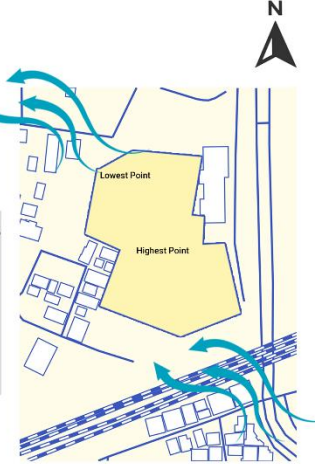
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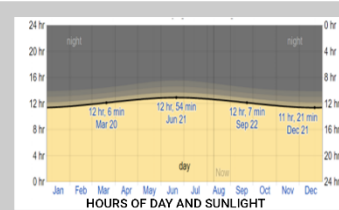


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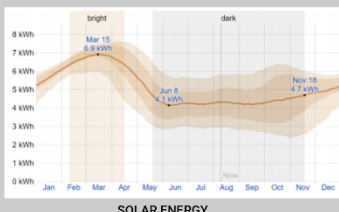


Predominant wind direction : SE - NW
Average wind speed – 7 kts

SOLAR ANALYSIS



SUMMER : March to June
Avg. day length – 12 : 45 : 13
Solar noon – 12 : 05(87.5 deg.)
Sunrise – 5 : 43 sunset – 18 : 27



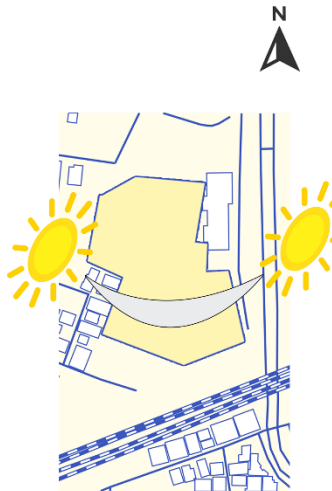
The brighter period of the year from February to April, with an average daily incident shortwave energy per square meter above 6.4 kWh. The brightest day of the year is March, with an average of 6.9 kWh.

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FACTORS AFFECTING THE LOCAL CLIMATE

URBAN HEAT PROFILE

When urban and suburban areas lose land surface and naturally occurring vegetation, heat can no longer easily escape. Tall buildings, concrete, and asphalt trap heat and contribute to the warming effect. Waste heat from energy use is another source of additional heat. Since the site does not have any artificial ground cover like tar roads, cement pavements. No urban heat effect is caused by the site to the surrounding areas.



Sun direction : East to West

MONSOON: July to December
Avg. day length – 12 : 03 : 24
Solar noon – 11 : 54(70.8 deg.)
Sunrise – 6 : 08 sunset – 17 : 52



SOLAR AND WIND CONDITION

Sun does not touch the north side Of the hemisphere. No direct solar radiation Is present on northern side. There is ample amount of vegetation spanning From SW – northern part of the site and this Belt absorbs tmeperature and harsh lighting. However normal daylight is available.

SITE ANALYSIS

FACTORS AFFECTING THE LOCAL CLIMATE

VEGETATION

Trees and tree belts contribute to the change in climate since they influence the air flow across the site. In this site there is a tree belt which spans from the South west side to the south east of the site

GROUND COVER CONDITION

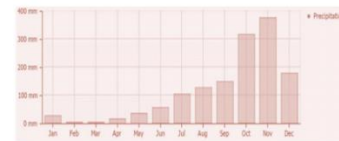
This factor affects the Reflectance , permeability and soil Temperature , these affect the vegetation which results in change in climate. Eg. Shrubs,grass,Trees etc



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MACRO CLIMATE OF THE SITE

PERCIPITATION



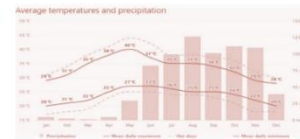
A lot of rain (rainy season) falls in the months: July, August, September, October, November and December. Chennai has dry periods in February, March and April. On average, November is the wettest month. On average, February is the driest month. The average amount of annual precipitation is: 999.9mm (39.37 in)

HUMIDITY



On average, November is the most humid. On average, June is the least humid month. The average annual percentage of humidity is: 70.0%

AVERAGE TEMPERATURE



The "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month for Chennai. Likewise, "mean daily minimum" (solid blue line) shows the average minimum temperature. Hot days and cold nights (dashed red and blue lines) show the average of the hottest day and coldest night of each month of the last 30 years

DAYLIGHT AND SUNSHINE HOURS



The month with the longest days is June (Average daylight: 12.9h). The month with shortest days is December (Average daylight: 11.4h). The month with most sunshine is April (Average sunshine: 9.7h). The month with least sunshine is July (Average sunshine: 6h).

SITE ANALYSIS

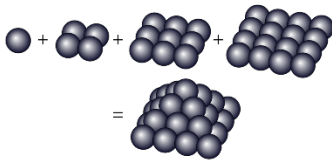
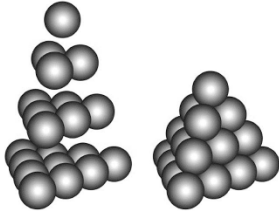
5.4. SITE PHOTOS



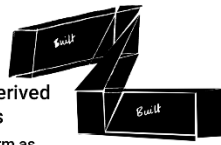
5.5. DESIGN CONCEPT

SPHERE PACKING

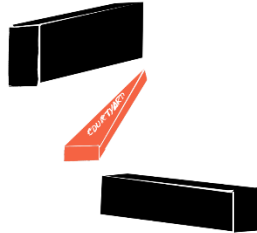
#Most Densely packed,
solid and balanced formation
#Face Centred Cubic Packing



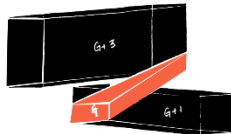
Stage #1
Basic Form Derived
From Analysis
#Orienting an Form as
per Zoning



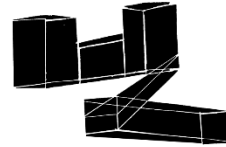
Stage #2
Simplifying
#Private
#Semi-Private
#Public



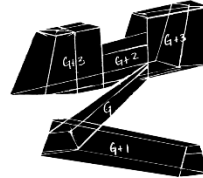
Stage #3
Combined



Stage #4
Framed
#Variation in Levels
for better Natural Ventilation



Stage #5
Bevelled
#attain Sphere Packing, with
Alternative usages like
Vertical Gardening.



Stage #6 and #7
Pixelate and Extrude
#Gets more Densified,
Extrudings like Balconies

