

# **OLD AGE HOME AND ORPHANAGE**

*A THESIS*

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

By

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**DEPARTMENT OF ARCHITECTURE  
SCHOOL OF BUILDING AND ENVIRONMENT**

# **SATHYABAMA**

**INSTITUTE OF SCIENCE AND TECHNOLOGY  
(DEEMED TO BE UNIVERSITY) Accredited**

**With Grade “A” by NAAC**

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CHENNAI - 600 119**

**MAY 2024**



# SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

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## DEPARTMENT OF ARCHITECTURE

### BONAFIDE CERTIFICATE

This is to certify that Thesis Report is the bonafide work of **Jyothika. b (39210033)** who carried out the Thesis entitled "**Old Age Home and Orphanage**" under our supervision from December 2023 to May 2024.

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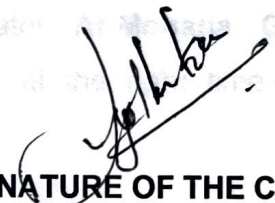
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## DECLARATION

I, **JYOTHIKA.B** hereby declare that the Thesis Report entitled "Old Age Home and Orphanage)" done by me under the guidance of **Ar. Anitha Murugan** (Internal Guide), **Ar. Ramesh Kumar** (Internal Review Member) and **Ar. Sakthivel** (External Guide) Sathyabama Institute of Science and Technology is submitted in partial fulfillment of the requirements for the award of Bachelor of Architecture Degree.

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PLACE: Chennai

  
SIGNATURE OF THE CANDIDATE

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I convey my thanks to **Dr.Devyani Gangopadhyay**, Dean and Head of the Department, School of Building and Environment, Our Design Chair **Dr.Suresh Kuppuswamy**, Thesis Coordinator **Ar.Mohana Gopiraj** for providing me necessary support and details at the right time during the progressive reviews.

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**JYOTHIKA.B**

## **THESIS SYNOPSIS**

The integration of an old age home and an orphanage within a single facility presents a pioneering approach to community living, leveraging the strengths and addressing the needs of two distinct yet complementary populations. This innovative project aims to create a nurturing environment where the elderly and orphaned children can coexist, interact, and support each other, fostering a sense of belonging and purpose for all residents. The design of the facility focuses on creating a harmonious balance between vibrant, social spaces and serene, quiet areas, ensuring that both groups can thrive according to their unique requirements. Shared spaces such as gardens, activity rooms, and dining areas are strategically planned to encourage intergenerational interactions, allowing the elderly to impart wisdom and experience, while the children offer energy and companionship. Specialized zones within the facility cater to the specific needs of each demographic, with the admin block centrally located to ensure efficient management and accessibility. Emphasizing sustainability, the facility incorporates passive cooling techniques, rainwater harvesting, and a sewage treatment plant, reflecting a commitment to environmental stewardship. Through careful planning, thoughtful design, and a holistic approach to community living, this combined old age home and orphanage aims to set a new standard in residential care, promoting emotional well-being, social integration, and a higher quality of life for all its residents.

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# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 INTRODUCTION**

Sensitivity is a thread that runs through both youth and old age in every aspect of the human experience. The twilight years of seniors frequently struggle with loneliness and isolation, while the innocence of orphans longs for the warmth of familial relationships. This thesis aims to plant its seeds in the rich soil of intergenerational relationships. By investigating the architectural fusion of old-age facilities and orphans, we explore the potential for establishing reciprocal relationships, promoting meaningful exchanges, and eventually changing the fabric of care and community.

### **1.2 NEED OF THE PROJECT**

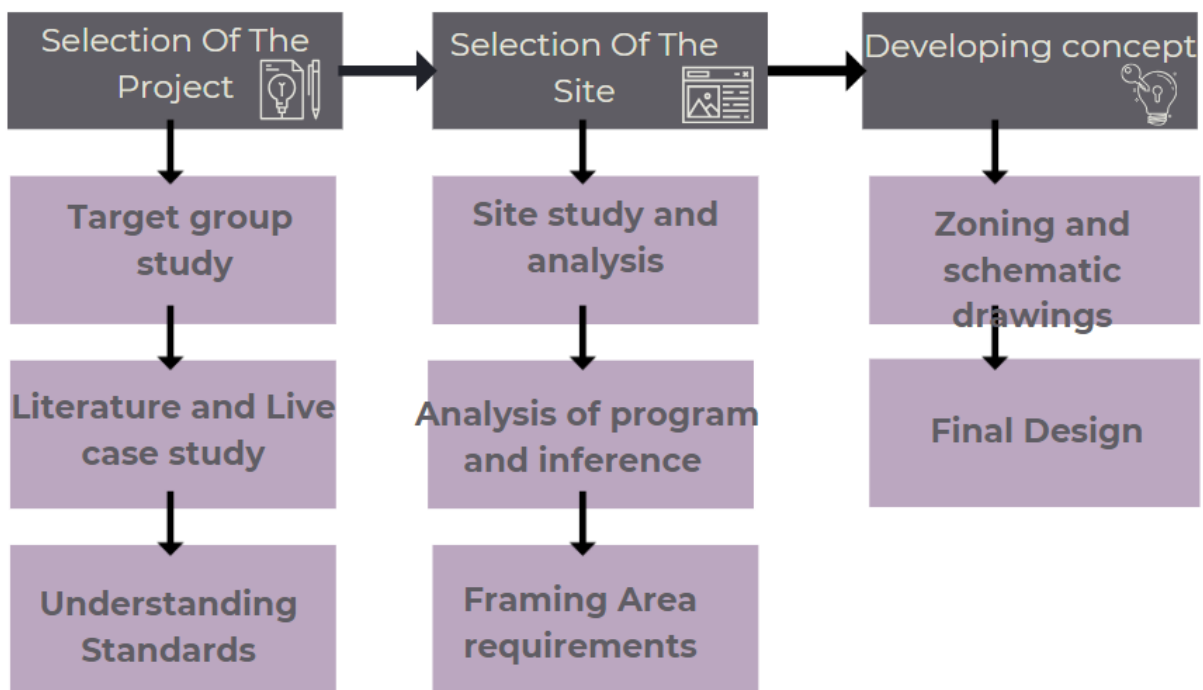
Orphanages and old-age homes both fulfill critical roles in society, each catering to vulnerable populations with unique needs. Their importance cannot be overstated, encompassing various social, emotional, and practical aspects:

- -According to statistics by The International Children's Charity has found that 4% of India's child population (20 million) were orphans out of which South India contributes to 3.47 million.
- to give homeless people a chance to live freely and independently
- To encourage dialogue and interaction between the two typologies

### 1.3 AIM AND OBJECTIVE

Aim Fostering Intergenerational Connection: Create an architectural environment that encourages open communication and assistance between elderly people and those who reside in orphanages. This could include co-living options, activity areas, or even common courtyards. Design an orphanage and old age home that prioritizes the mental and physical well-being of its residents

### 1.4 METHODOLOGY



*Plate 1.1: Plan of Tamaraikulam*

## CHAPTER 2

# LITERATURE CASE STUDIES

## 2.1 TAMARAIKULAM ELDER'S VILLAGE

Location - Cuddalore, India

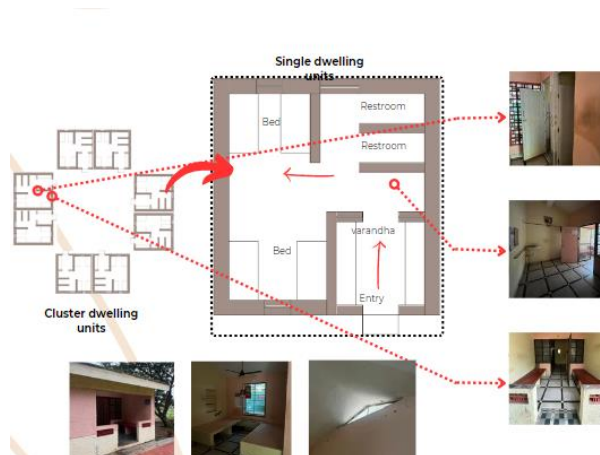
Architect- Madhavanayakkar [NGO - Help AgeIndia

completion – 2014

### 2.1.1 SPACIAL ANALYSIS:

This village is for the elders affected by Tsunami and abandoned old aged people in and around Tamilnadu and Kerala.

The old aged people inside the community does shared works like gardening, watering the plants, cooking etc Community for old aged abandoned people who lives with dignity on their own. Main essence is the landscape usage as lotus pond, organic farm etc. Concept of open, semi open, closed spaces makes the design more interesting. Activities provided helps in active ageing of the residents.



*Fig 2.2: Plan of Tamaraikulam*



*Fig 2.3: Site plan and pictures*



*Fig 2.4 Site pictures*

#### 2.1.2 MATERIAL USED:

- Concrete,
- Terracotta roof tiles

Site is located in such a way that it is away from the main city yet close to the neighbourhood and the products from farming can be sold out to the neighbourhood nearby.

## 2.2 VOLUNTARIAT HOME FOR THE HOMELESS

Location: Pondicherry

Architect: Anupama kundoo

Year: 2011

Site area:450 sqm

Style: Low-cost mud kiln housing

Status: Completed

### 2.2.1 SPACIAL ANALYSIS:

Minimalist design, Scale of the building acts as a space which gives a homely feeling. Whereas a huge space gives a feeling of fear of getting lost. Material played an important in the design. This project aims in achieving low impact housing solutions to serve the homeless children. The whole construction was done with locally available materials and using traditional techniques. 15 children and 5 foster parents.



*Fig 2.5: MODEL*

## MODULES

Catenary shaped domes are used and then the whole structure is burnt to obtained as brick load bearing structure. The modules vary in size according to cluster programs with minimum 4 children and 1 foster parent.



*Fig 2.6(a),(b): CONSTRUCTION*

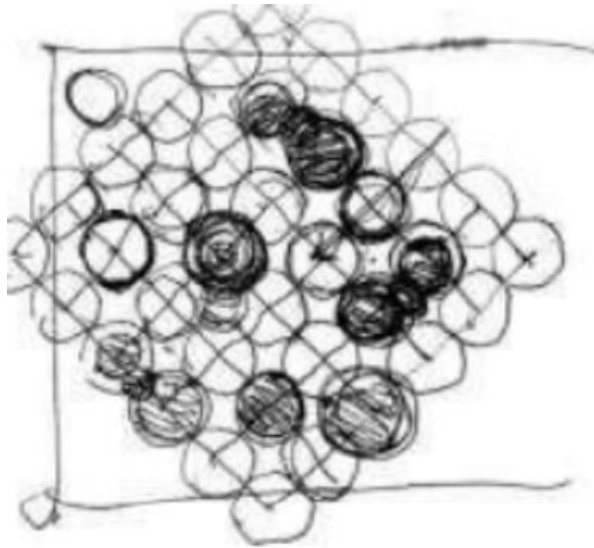
### 2.2.2 MATERIAL USED:

- Bicycle wheels
- Glass bottles
- Glass chai cups
- Terracotta water pots

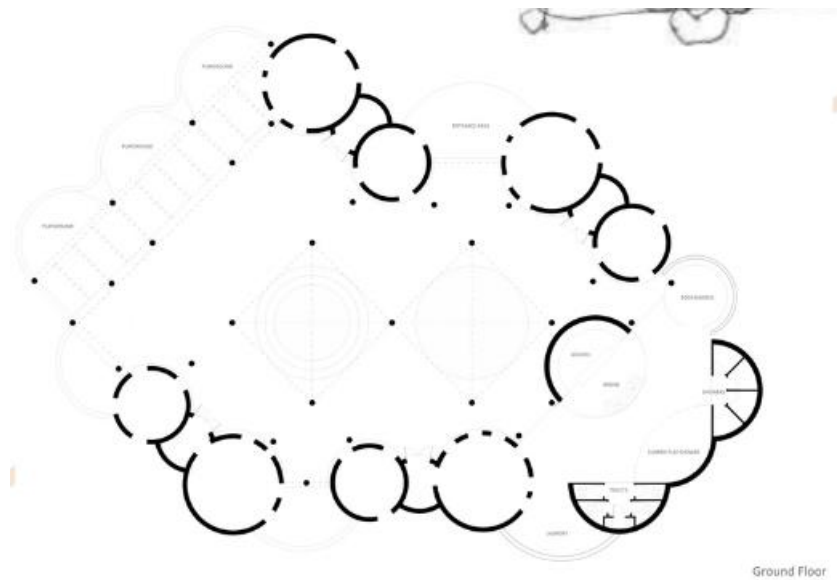
- Mud bricks
- mud mortar
- Ceramic tiles.

## DESIGN PROGRAM

- Rooms for stay
- Laundry space
- Shower area,
- Toilets
- Rock garden
- Locker rooms
- Play area.

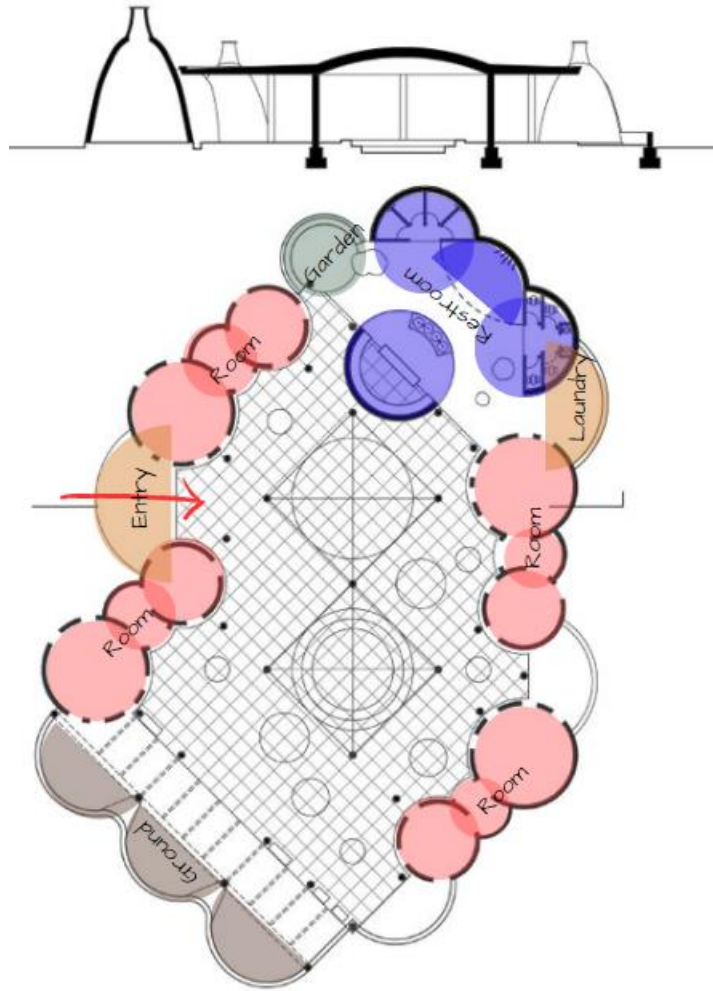


*Fig 2.6 SKETCH*



*Fig 2.7: PLAN*

- The house takes 3 - 4 days to burn. D HOUSES
- Catenary shaped domes are used to get the best structural stability before firing when it functions as an earth building; during firing which is an unstable stage of vitrification process and after firing as a brick load bearing structure. The domes are various sizes according to the cluster program which includes one foster parent per 4 children.
- A fired house or a fire-established mud house is in principle a mud house built with mud bricks and mud mortar that is cooked after building as a whole to achieve the strength of brick. The interior space of the structure is stuffed with further mud bricks or other ceramic products such as tiles, and fired as if it were a kiln.
- Typically kiln walls absorb about 40% of the heat generated. In this technology, the house is the kiln, and the 'heat loss' is directed towards firing the house and stabilizing it from water damage. The fuel cost is largely accountable to the products inside. The strength of brick in principle would be achieved for the piece of mud. Further, the cement in the mortar mix would become unnecessary.



*Fig 2.8: ZONING AND SECTION*



*Plate 2.9: CONSTRUCTION*

## 2.3 SOS CHILDREN'S VILLAGE

Architect:- Mistry architects.

Plot area:- 6 acres

Location:- Bannerghatta road, Bangalore, Karnataka, India.

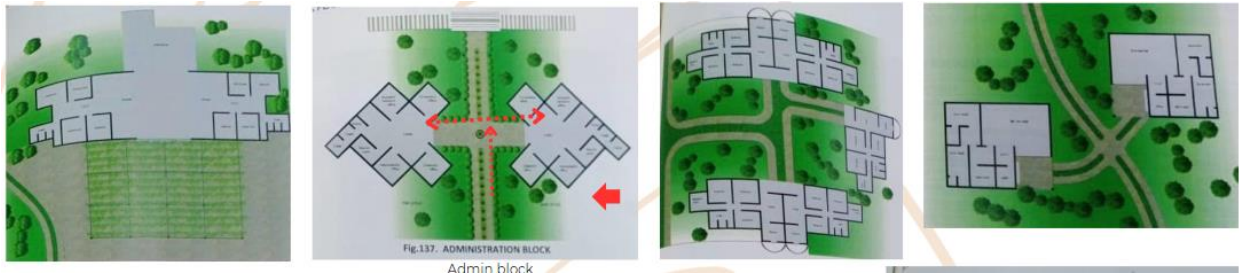
Built up area:- 33000 Sq.ft.

Climate:- Hot and humid.

Year of completion:- 1991

### 2.3.1 SPACIAL ANALYSIS:

At SOS Children's Villages India, we are committed to the welfare of parentless and abandoned children as well as working out ways to strengthen families and communities as a preventive measure in the fight against abandonment and social neglect..



*Fig 2.10(a),(b),(c),(d): Plan of SOS CHILDREN'S VILLAGE*

### 2.3.2 MATERIAL USED:

- Thick granite stone walls
- Gable roof- Manglore tiles
- Red oxide cement flooring
- Exposed stone load- bearing walls
- .Grey granite stone

- family strengthening programmes are an important way of building on the families' and communities' resources, their ability to self-organise themselves and their responsibility for the well-being of the children.
- Equal rights to education and training for children are another important area of our work. Pre-school care for children, schooling and vocational training are the key to the future
- To ensure that children enjoy these basic rights. SOS Children's Villages has kindergartens, day-care centres, schools and vocational training centres
- Creating mutual interaction and creating home friendly environment through interactive spaces
- Cost effective usage of materials available
- A typical local component should be given to the project
- Buildings should be simple and solid They are designed to be used for a long time and they should be easily maintained.
- The buildings should be planned with heart to give the feeling that they are a home



*Fig 2.11 site pictures 01*



*Fig 2.12:site pictures 02*

PLANNING OF SOS VILLAGE, BANGLORE the land allocated, with minim les on the doddakamanahalli main road Lots of trees in and around the site which will help to keep the climate col even in summers an also act a butter for sound of vehicles as main road is adjacent to site. High rise buildings one the, south western site of the site which does not allow the direct sun to enter the site, keeping the site area cool. Construction of the building began in 1989 and was completed in 1991. It was an attempt to create a serene environment, with quality care, with the purpose of bringing together women and children, to rebuild their shattered lives. Much of this was achieved through the design of architectural spaces that would complement the body and mind to be in peace, where sensitivity to context becomes imperative. As we enter, there are two separate parkings on either side, on the right hand side for the visitors and another on the left hand side for the sos office members. As we move further, rough granite stone pathways, with space down the middle for flower beds, criss cross the entire area, making patterns. The entrance is welcomed by the administrative offices on either sides. On the right side is the main office with a waiting lounge which is semi-private, where the visitors are allowed to wait and on the other side is the FSP office which is completely private, only sos office members are allowed.

## **2.4 NOOMDO ORPHANAGE**

Architect:- Association Dolai

Location:- Burkina Faso

Built up area:- 4,000 sqm

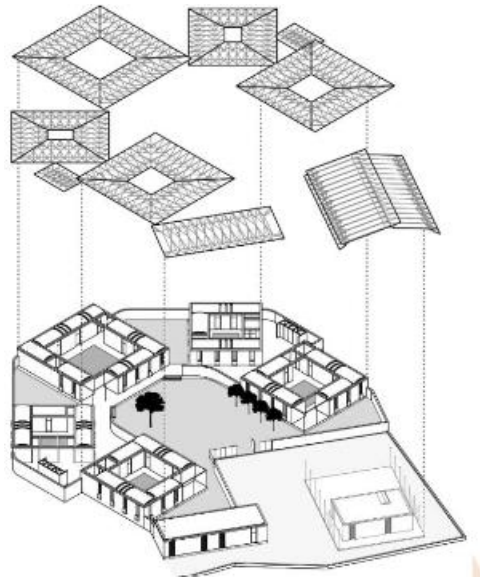
Climate:- Hot and humid.

Year of completion:- 2013-2016

### **2.4.1 SPACIAL ANALYSIS:**

Noomdo lies 2 km outside the village mimicking the nearby residence with a small communal outdoor space at the centre and surrounded by rooms. Architecture in this building is sensitive to the needs and the privacy of the users and also maintaining the security for the kids and control for the staff.

Villages in a scattered pattern but each cluster has a common courtyard and shared spaces. The building is constructed by mimicking the nearby village. Groups of 10-12 houses with common courtyard and interaction spaces.



*Fig 2.13: EXPLODED VIEW*

Cluster type planning which facilitates interaction and monitoring children will be easier Concept of double envelope roofs are seen to minimize heat and bring in more natural ventilation. Space frames and steel roofing's are mostly used



*Fig 2.14: PLAN Noomdo*

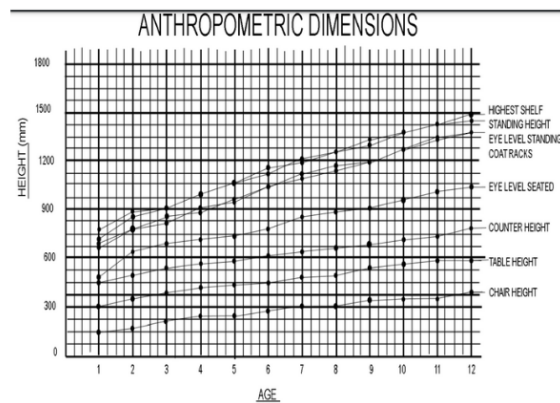


*Fig 2.15: site pictures 03*

## CHAPTER 3

### DATA COLLECTION AND STANDARDS

#### 3.1 DESIGN STANDARDS AND ANTHROPOMETRIC DATA:



*Plate 3.1: ANTHROPOMETRIC DIMENSIONS*

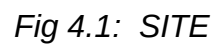


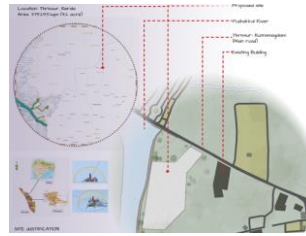
Maximum slope and rise: 1:16 to 1:20 is preferred if space is available; the maximum is 1:12.



## SITE STUDY AND ANALYSIS

Site is located in Puzhakkal in Thrissur district, Kerala .Site is in the center of the village on the highway road. Total site is 37529sq.m





*Fig 4.2: SITE*

## 4.2 SITE JUSTIFICATION AND FEASIBILITY:

Connection to Nature and Environmental Awareness.

Improved Sleep Quality:

The calming atmosphere of the waterfront can help reduce stress and anxiety, leading to more restful sleep.

By incorporating the unique benefits of a water front location into the design, architects and designers can create a truly nurturing and supportive environment for both children and the elderly.

sensory Engagement and Stimulation:

The calming and serene atmosphere of the water front can provide a sense of peace and tranquility, reducing sensory overload and promoting relaxation.

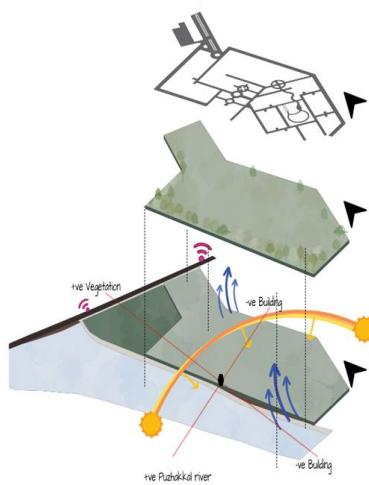
Social interaction and Community Building

Waterfront facilities can provide shared outdoor spaces that encourage social interaction and community building among residents, staff, and visitors.



*Fig 4.3: Site view*

### 4.3 SITE ANALYSIS:



*Fig 4.4: Site view*

Arrangement of the building is with respect to passive cooling techniques can significantly enhance comfort levels for residents while minimizing energy consumption.

- Orientation
- Building Massing
- Shading
- Natural Ventilation
- Materials and Insulation



*Fig 4.5: SITE SECTION*

## CHAPTER 5

### ARCHITECTURAL DESIGN

#### 5.1 SPATIAL REQUIREMENTS

| PROGRAMME                        |                      | AREA IN sqm                | UNIT              | TOTAL         |
|----------------------------------|----------------------|----------------------------|-------------------|---------------|
| <b>ADMINISTRATION</b> -417.6sqm  |                      |                            |                   |               |
|                                  | Office Cum Reception | 40.8                       | 1                 | 40.8          |
|                                  | Director's Office    | 11.5                       | 1                 | 11.5          |
|                                  | Guest Room           | 23.8                       | 1                 | 23.8          |
|                                  | Pantry               | 27.6                       | 1                 | 27.6          |
|                                  | Courtyard            | 23                         | 1                 | 23            |
|                                  | Lobby/ Foyer         |                            |                   |               |
|                                  | Rest room            | 13.2                       | 2                 | 26.4          |
|                                  | File room            | 7.8                        | 1                 | 7.8           |
|                                  | Meeting Area         | 28.6                       | 1                 | 28.6          |
|                                  |                      |                            |                   | <b>189.5</b>  |
| <b>CLINIC</b> -409.2sqm          |                      |                            |                   |               |
|                                  | 303sqm               |                            |                   |               |
|                                  | Lab & Pharmacy       | 13.5                       | 1                 | 13.5          |
|                                  | Check up             | 9                          | 1                 | 9             |
|                                  | Staff room           | 13.3                       | 1                 | 13.3          |
|                                  | Emergency            | 27.9                       | 1                 | 27.9          |
|                                  | Ward                 | 99                         | 2                 | 198           |
|                                  | Room                 | 34                         | 3                 | 102           |
|                                  | Bath room            | 5.42                       | 2                 | 10.84         |
|                                  | Toilet               | 1.7                        | 6                 | 10.2          |
|                                  | Wash                 | 5.4                        | 2                 | 10.8          |
|                                  |                      |                            |                   | <b>395.54</b> |
| <b>RECREATION HALL</b>           |                      |                            |                   |               |
|                                  | Hall                 | 543                        | 1                 | 543           |
|                                  | Electric room        | 6                          | 1                 | 6             |
|                                  | Den & Foyer          | 101                        | 1                 | 101           |
|                                  |                      |                            |                   | <b>650</b>    |
| <b>RESIDENCE</b> -234.9sqm #0    |                      |                            |                   |               |
|                                  | Room 01              | 16                         | 2                 | 32            |
|                                  | Room 02              | 29.6                       | 4                 | 118.4         |
|                                  | Room 03              | 34.6                       | 2                 | 69.2          |
|                                  |                      |                            |                   | <b>219.6</b>  |
| <b>ACCOMMODATION</b> -17.4sqm #2 |                      |                            |                   |               |
|                                  | Bedroom cum Living   | 18                         | 2                 | 36            |
|                                  | Rest room            | 6.5                        | 2                 | 13            |
|                                  | Dining (common)      | 12.2                       | 1                 | 12.2          |
|                                  | Verandah (common)    | 11.6                       | 1                 | 11.6          |
|                                  | Courtyard (Open)     | 8.3                        | 2                 | 16.6          |
|                                  |                      |                            |                   | <b>89.4</b>   |
| <b>EXPO</b> -394.2sqm            |                      |                            |                   |               |
|                                  | Hall                 | 374                        |                   |               |
|                                  | Rest room            | 10.1                       | 2                 | 20.2          |
| <b>SKILL DEVELOPMENT</b>         |                      |                            |                   |               |
|                                  | Hall                 | 271sqm                     | 1                 | 271           |
| <b>DINING</b> -474sqm            |                      |                            |                   |               |
|                                  | Dining area          | 120                        | 2                 | 240           |
|                                  | Foyer                | 42.9                       | 1                 | 42.9          |
|                                  | Kitchen              | 53.8                       | 1                 | 53.8          |
|                                  | Wash                 | 10.5                       | 1                 | 10.5          |
|                                  | Path                 | 20                         | 1                 | 20            |
| <b>SEATING</b>                   | Verandah             | 11.6                       | 1                 | 11.6          |
|                                  |                      |                            |                   | <b>378.8</b>  |
|                                  |                      | <b>TOTAL BUILD UP AREA</b> | <b>5075.8 sqm</b> |               |

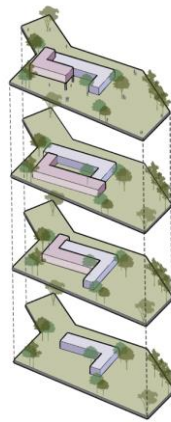
Fig 5.1: Area requirements

## 5.2 CONCEPT

"SOLID" and "VOID" as a design concept can create a harmonious and enriching environment for both children and elderly residents in an orphanage and old age home. This concept can provide numerous benefits in terms of landscape integration, building design, and overall wellbeing of residents.

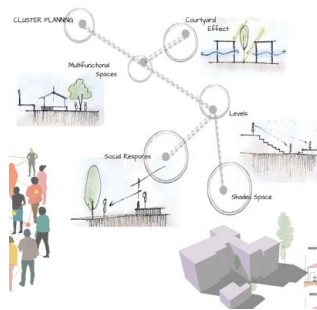
Nature Connection: Voids' can represent open spaces for gardens, courtyards, and play areas, connecting residents to nature and promoting physical activity and mental well-being. Sunlight penetration through these voids can create pleasant and vibrant spaces.

Privacy and Security: Solids' can represent enclosed volumes for private rooms, quiet zones, and staff areas, ensuring privacy and security for both children and elderly residents.

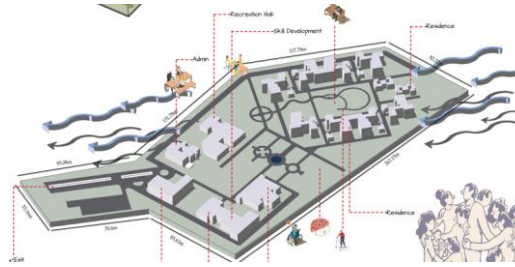


*Fig 5.2: CONCEPT*

### 5.2.1 Strategies can be followed at site level:



*Fig 5.2: PLANNING*



*Fig 5.3: MASSING*



*Fig 5.4: SITE PLAN*

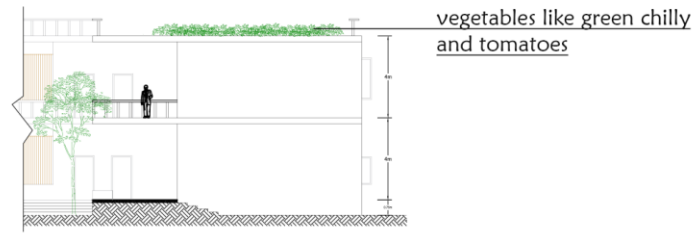
## 5.2.2 Passive design strategies:

### (a) Courtyard effect –

Courtyard can be microclimate modifier and controller it helps in evaporative cooling and increase of heat loss through ventilation. Usually open to the sky. The heat transfer that takes place within a courtyard is affected greatly by - the Airflow, thermal mass, solar radiation. Due to the incident solar radiation in the courtyard the air in it becomes warmer and rises up to replace it cool air from the ground level floors the rough the louvered openings of the room the producing the air flow

### (b) Green roofing systems –

These are roofs covered with vegetation and soil and also functions by providing shading, insulation, evapotranspiration, and acts as thermal mass



*Fig 5.6: Green roofing system*

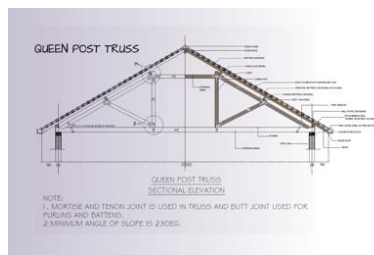
#### 5.2.4 Materials :



*Fig 5.7: MATERIALS USED*

#### (c) Roof system –

The roof is having clay tile roof, which is typically used in Kerala architecture which helps to cool the interior and also to slop down the rain.



*Fig 5.8: Construction of roof system*

### 5.3 DETAILED DRAWINGS

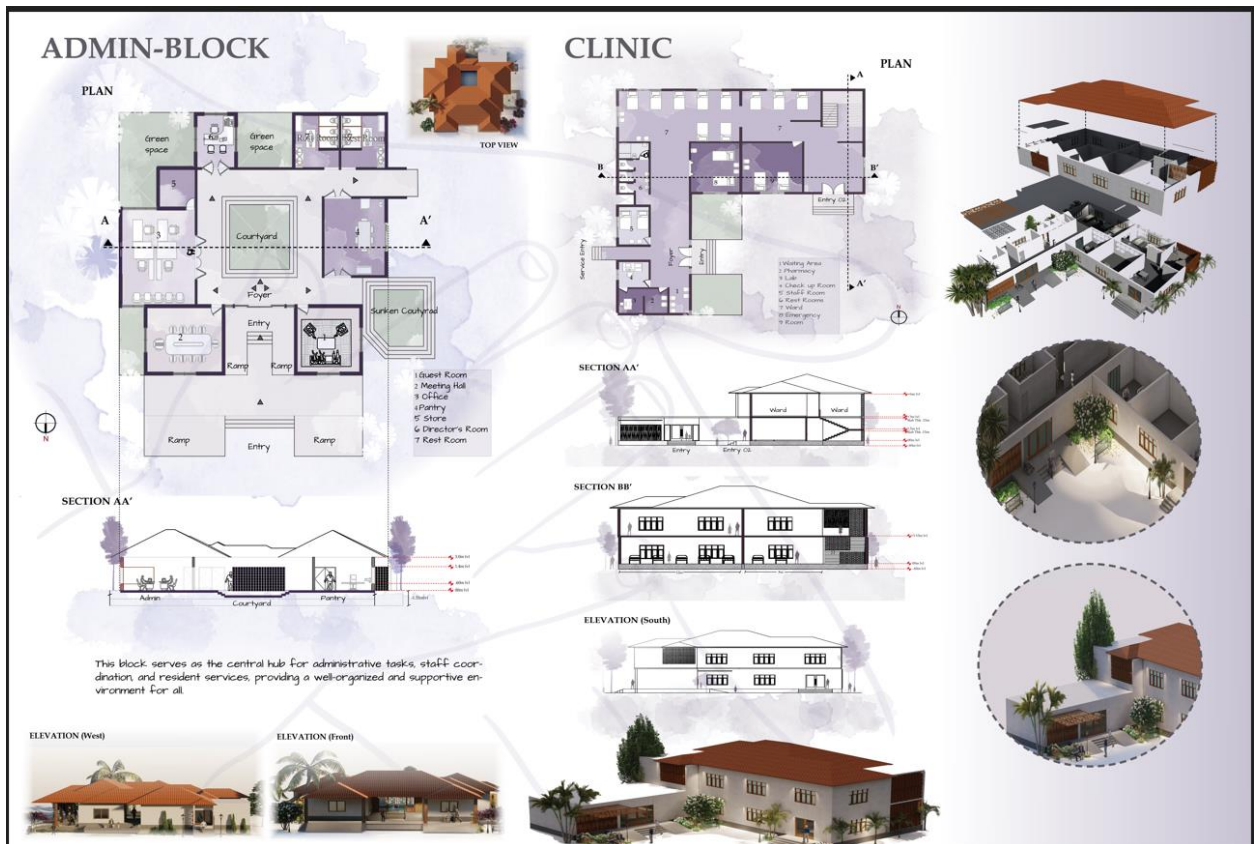
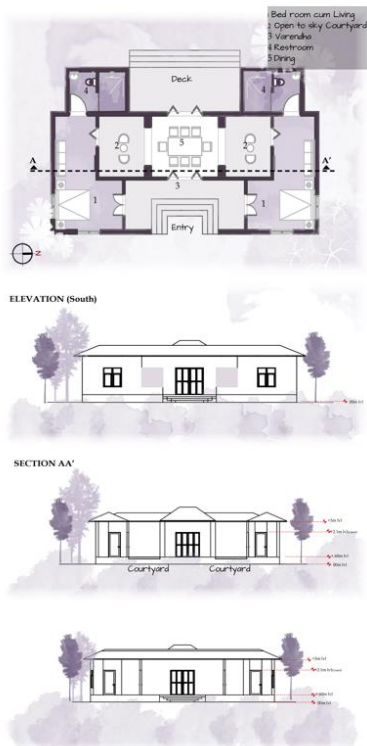


Plate 5.1: PLAN , SECTION AND ELEVATION

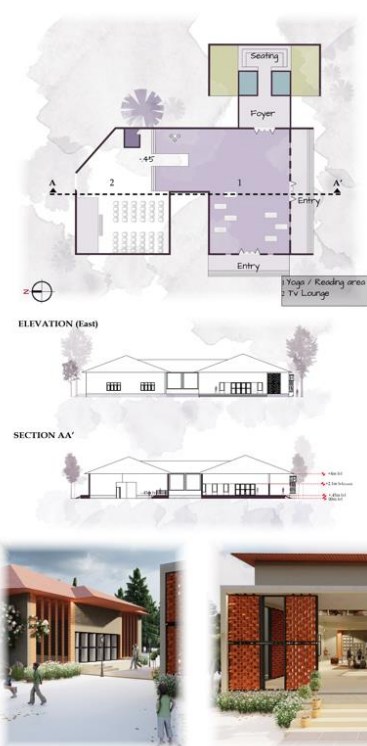


*Plate 5.2 PLAN , SECTION AND ELEVATION*

## ACCOMMODATION



## RECREATION HALL



## SKILL DEVELOPMENT & EXPO



Plate 5.3: PLAN ,SECTION AND ELEVATION

## 5.4 MODEL:



Fig 5.12

: Over all site view from the top

## CHAPTER 6

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