

ATTAINABLE HOUSING FOR MIDDLE CLASS

THESIS

Submitted in partial fulfilment 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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JUNE 2021



BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of Vasanth kumar v (3621086) who carried out the project entitled “Attainable Housing for Middle Class” under our supervision from January 2021 to June 2021.

Internal Guide

(Ar. Shobana)

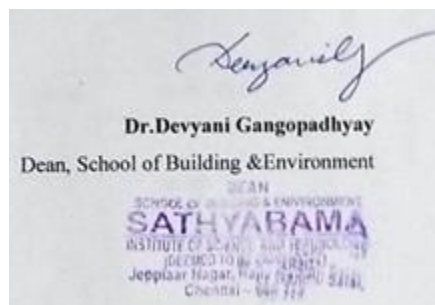
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Submitted for Viva voce Examination held on

Internal Examiner

External Examiner

DECLARATION

I, **V. VASANTH KUMAR** hereby declare that the Project Report entitled “**Attainable Housing for Middle class**” done by me under the guidance of **Ar. shobana** (Internal Guide), **Dr. Devyani Gangopadhyay** (Internal Review Member) and _____ (External Guide). Sathyabama Institute of Science and Technology is submitted in partial fulfilment of the requirements for the award of Bachelor of Architecture Degree.

DATE:

PLACE: Chennai
ACKNOWLEDGEMENT

SIGNATURE OF THE CANDIDATE

I am pleased to acknowledge my sincere thanks to Board of Management of **Sathyabama Institute of Science and Technology** for their kind encouragement in doing this project and for completing it successfully. I am grateful to them.

I convey my thanks to **Dr. Devyani Gangopadhyay**, Dean and Head of the Department, **Dr. Suresh Kuppuswamy**, Design Chair of School of Building and Environment,

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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 project.

ABSTRACT

With one in every six Indian middle-class individuals living in informal squatter settlements, the need for additional affordable housing is expanding dramatically in India.

Several government programmes for inexpensive housing exist, although serious shortages exist in every Indian state.

In India, shortages are caused by real estate marketing and rapid population expansion. People are turning to rental property as a result of the shortages and the private sector's expensive price.

As a result, the majority of the middle-class lives in rented housing.

My thesis project is about a Proposal for an Attainable housings for middle income group, any family's fantasy is to own a home.

A lovely home is a reflection of their own personality and social profile. It is a common desire these days for people to own their own home.

A house is a universal sign that is common to all people. Nothing is more valuable than having a nice, clean, and stable home.

As a result, my plan provides an incentive for middle-income people to buy a home, fulfilling half of their wishes.

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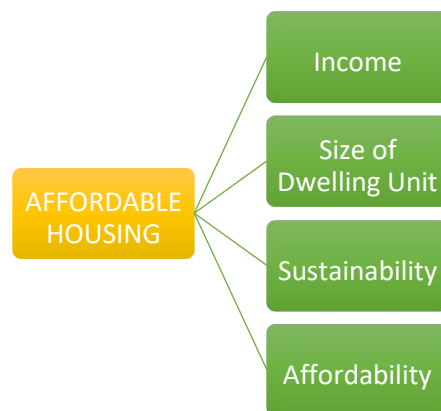
CHAPTER -1

1. INTRODUCTION

My thesis project is about a Proposal for an Attainable housings for middle income group, any family's fantasy is to own a home. A lovely home is a reflection of their own personality and social profile. It is a common desire these days for people to own their own home. A house is a universal sign that is common to all people. Nothing is more valuable than having a nice, clean, and stable home. As a result, my plan provides an incentive for middle-income people to buy a home, fulfilling half of their wishes.

1.1 AFFORDABLE HOUSING

The term “attainable” is close to the word affordable. When anything is affordable, that means that it is priced inexpensive enough that most people can afford it. You have enough money to pay for anything if you can afford it. Housing that is affordable is housing for the masses. It is essentially a measure taken by builders to construct houses at a cheaper cost for the general population of our country. Apart from the flat at a lower price, it provides the buyers with the dual advantage of easy living and proximity to the venue. The buyer's family income and the house's price are used to determine the house's affordability. The buyer's family income and the house's price are used to determine the house's affordability. The standard of architecture is not sacrificed in the name of affordability. In recent years, there has been a revolution in the real estate industry due to a shift in emphasis on affordable housing.



1.1.1 AFFORDABILITY STATUS IN INDIA

Housing units that are available to people with incomes below the median household income are referred to as affordable housing. Low-income and middle-income families in India have access to subsidised housing. There are numerous opportunities to purchase a home in India, but due to the huge population and multiple income classes (EWS, LIG, MIG, and HIG), housing and sectors are selling their homes for high prices, which are out of reach for certain income groups, especially the EWS and LIG. A variety of considerations go into determining 'how inexpensive is a house?' Affordability is determined by a number of variables.

1. monthly income,
2. cash reserves to cover down payment and closing costs,
3. monthly expenses,
4. credit profile.

Some middle-income people can afford houses, but not all. Owing to India's large population and 28 percent middle income community, government schemes for MIGs are few and far between. In India, subsidised housing for MIGs is reserved in the state and districts where vacancies exist. There are still a no units available for bachelors and families.

1.2 MIDDLE CLASS

In such communities, the middle class is characterised as those who earn between 75 and 125 percent of the median income. Lower middle-income economies have a GNI per capita of between RS.75,535 and RS.2,94,922, whereas upper middle-income economies have a GNI per capita of between RS.2,94,922 and RS.9,13,933 (2021). 75 percent of the world's population lives in middle-income economies, and 62 percent of the world's poor live there.

1.2.1 MIDDLE CLASS GROWTH

The Indian middle class will emerge as a true force to be reckoned with. By 2030, India's economy will shift from one dominated by the poor to one dominated by the middle class. In 2030, almost 80% of households will be middle-income, up from about 50% currently. In 2030, the middle class will account for 75% of all consumer spending. By 2025, India's middle class is expected to rise exponentially from 80 million people today to 580 million people, or 41% of the population. This would increase demand for the minerals and energy supplies used to build new infrastructure and towns, as well as to power homes and industries. The middle-class accounts for 28% of India's population, with 14% being lower middle class and 14% being upper middle class. As of 2016, approximately 121 million Indian households were classified as middle-income, with total annual incomes ranging from 5,57,300/- RS to 10,00,000/- RS. The middle class, according to economists from Mumbai University in India, is described as people who spend between Rs 150 and Rs 800 per day. About half of India's 1.3 billion people now live in the middle class.

Low – Rs 70,069 or less, Lower-middle – Rs 70,137 to Rs 2,73,098, Upper-middle – Rs 2,73,167 to Rs 8,45,955, High – Rs 8,46,023 or more are the four income classes used by the Bank. There are 80 high-income economies, 60 upper-middle-income economies, 47 lower-middle-income economies, and 31 low-income economies of the 218 economies. Every year on the first of July, the classification is revised.

The Indian middle-class accounts for 300–350 million people. India has massive income inequality, as it is home to some of the world's wealthiest people at the same time.

1.2.2 MIDDLE CLASS HOUSING

There are two types of home buyers that qualify for the Middle-Income Group (MIG). MIG-I, which is for homebuyers with an annual income between Rs 6 lakh and Rs 12 lakh, MIG II is for home buyers with an annual income of between Rs 12 lakh and Rs 18 lakh.

Under the current CLSS, MIGs with annual earnings between Rs. 6.00 lakhs and Rs. 18.00 lakhs a year are eligible for interest subsidies on housing loans (MIG). For loans for the building or purchase of a house with a carpet area of 120 sq. ft., an interest subsidy may be given.

Middle Income Group (MIG) - I:

MIG - I households have an annual income ranging from Rs. 6,00,001 (Rupees Six Lakh One) to Rs. 12,00,000 (Rupees Twelve Lakh One) (Rupees Twelve Lakh).

Middle Income Group (MIG) - II:

MIG - II households have an annual income of between Rs.12,00,001 (Rupees Twelve Lakh One) and Rs.18,00,000 (Rupees Eighteen Thousand) (Rupees Eighteen Lakh).

Eligibility

All statutory towns as per census 2011 and Towns /planning and development area notified subsequently.
» Interest Subsidy:

Particulars	MIG I	MIG II
Household income (₹ p.a.)	6,00,001.00 to 12,00,000.00	12,00,001.00 to 18,00,000.00
Interest subsidy (% p.a.)	4%	3%
Eligible housing loan amount for interest subsidy (₹)	9,00,000.00	12,00,000.00
Dwelling unit carpet area	Up to 160 sq. m	Up to 200 sq. m

To be eligible to receive central assistance under CLSS for MIG:
» The beneficiary family should not own a pucca house either in his/her name or in the name of any member of his/her family in any part of India.
» The beneficiary family should not have availed of central assistance under any housing scheme from Government of India.

Figure 1.1 middle class eligibility chart

1.2.3 HOUSING SHORTAGES

A housing crisis, in general, meets supply and demand economic concepts.

The primary cause of the housing crisis is a lack of housing construction; however, other contributing factors include:

The population is growing.

Because of changing habits, more people are living alone or in small families.

1. According to a study sent to the Ministry of Housing and Urban Poverty Alleviation (MHUPA) by a technical committee, India's urban housing deficit in 2012 was reported to be n Aside from those who live in dilapidated housing, 80 percent of these families live in crowded housing.

2. According to the survey, nearly 1 million households live in kutcha houses that are unfit for human habitation.
3. Although more than half a million families are homeless, early 18.78 million households.



One of the top 15 states for housing shortages is TAMIL NADU. There Is Now a 1.25 million urban housing deficit in Tamil Nadu, but the bad news is that there are almost 0.69 million empty houses in the state. Tamil Nadu ranks fifth among the top 15 states in terms of housing scarcity.



Figure 1.2 Top 15 states of housing shortages

The economic and social costs of high levels of investor and speculator activity in real estate are important. It raises house costs, pushing those who can't afford it farther out to the outskirts. In 2012, India's housing crisis in urban areas, which included the homeless and people living in dilapidated and congested housing, was reported to be 18.78 million units. At the same time, 11.09 million homes were built. In urban India, 60 percent of the housing deficit was constructed but unused, largely because developers were waiting for a return.

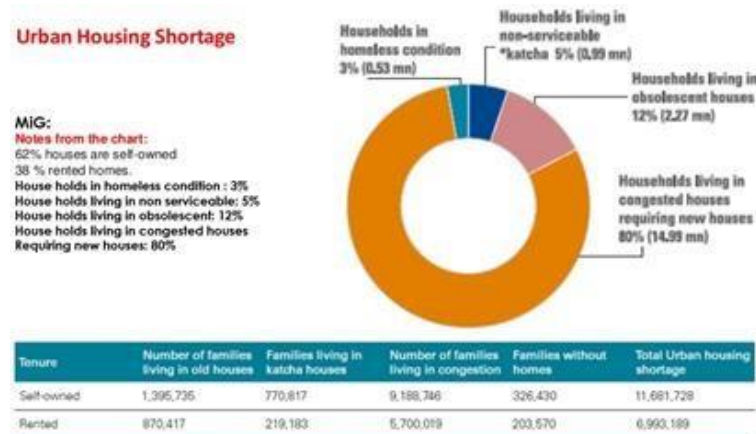


Figure 1.3 Urban housing shortage & self-owned, rental chart

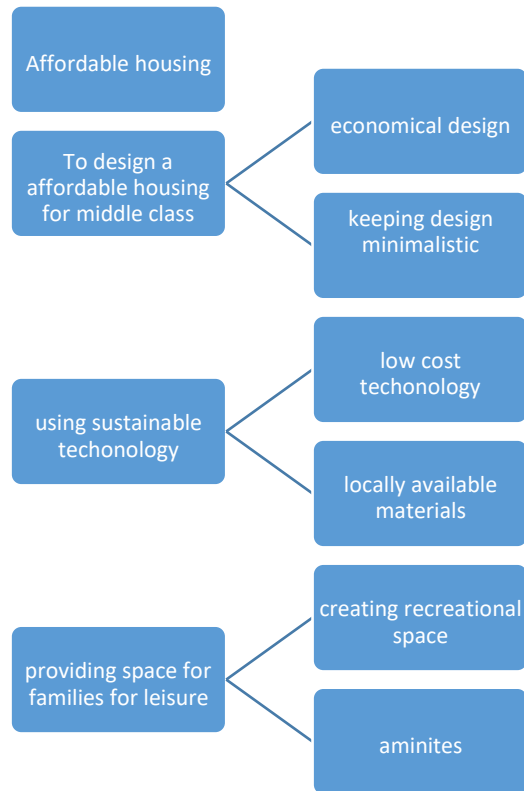
1.3 AIM

to prevent shortage of housing vacancies, to plan housing that is both inexpensive to build and affordable to the inhabitants

1.4 OBJECTIVE

- Creating affordable housing for the quickly expanding middle class
- Creating low-maintenance accommodation is a goal of sustainable housing design.
- Designing a project that does not sacrifice quality of life while remaining affordable

1.5 METHODOLOGY



1.5 LIMITATIONS

The project is proposed under a government system, and all construction standards and codes are governed by the NBC - national building codes, as well as the government's "Pradhan Mantri Awas Yojana" for low-cost housing.

CHAPTER -2 2. LITRATURE CASE STUDY

2.1 TARA HOUSING

2.2 ARANYA HOUSING

2.3 SHEIKH SARAI HOUSING

2.4 SOCIAL HOUSING IN TARRAGONA

2.5 MONTERREY HOUSING

Case study

01

Tara housing



Location : Alaknanda, New Delhi

Architect : Charles Correa

Area : 3.7 acres

No of units : 160 units of 2&3 bedrooms

Density of population : 375 people per hectare

Program : Residential center for MIC

Client : Tara cooperative group housing society

Year : 1975 - 1978

Structural system : Reinforced concrete, brick wall

SITE

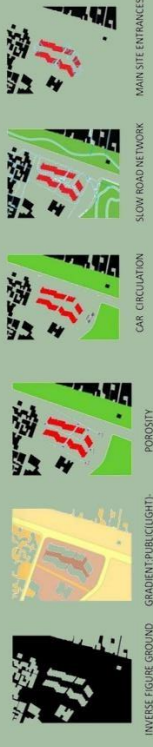


Site surroundings:

- Park and Forest
- School
- Bank
- Mandir
- Church
- Apartments

SITE EVALUATION

The building turns its back on the street to prevent noise, dust from the high flow vehicles. Being staked as a row, central garden, big overhangs and sharp edges, all give these buildings a sense of Indian characteristic under hot sun, full of light without suffering from high temperature.

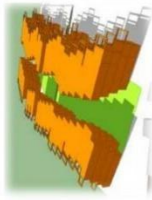


Attainable housing for middle class



BUILDING :

The duplex units are accessed either at ground floor or second floor levels by outdoor stair cases. Two kinds of flat: two-bedroom flats- 84 sq. m (3 m wide, 6 m high with two floors and 15 m long), three-bedroom flats -130 sq. m. Each unit is provided an open terrace which is protected by a pergola and big overhangs. Two sides of the project are connected by staircases.

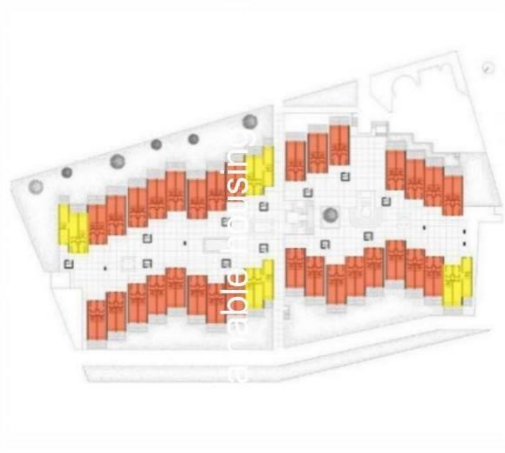


TWO BEDROOM FLAT
THREE BEDROOM FLAT



CONCEPT :

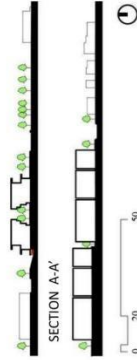
The concept of building allows people to access directly to the interior garden. Everyone also has their own open-to-sky terraces with full filled shadow. By taking advantages of sun, wind directions and open spaces, hence lighting access and ventilation to each dwelling are maximized.



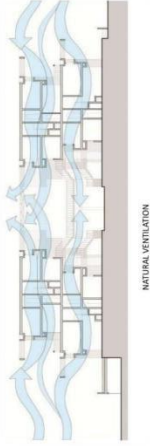
A creative vernacular typology in terms of arranging and piling the singular flat into united blocks. They provide thermal relief to inhabitants during the harsh summer sun, with big overhangs over the units and a central garden, allowing infiltration of ample light within the units while preventing high temperatures. By separating the outside world and providing an interior garden, the building preserves the private life of families within. Only pedestrians are allowed to enter the housing group and the parking lot features in the back of the building. The project takes big advantages from natural resources like lighting and ventilation and all families share these features equally. Indian architectural elements are illustrated with the use of concrete bands, panels of exposed brick, portals, overhangs and shape edges.



ELEVATION :



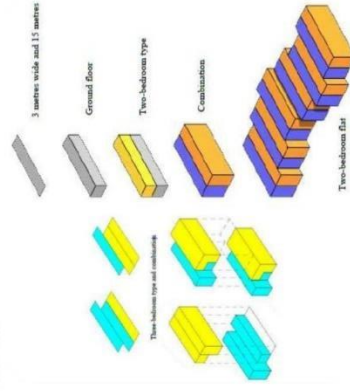
SECTION A-A'



Attainable housing for middle class

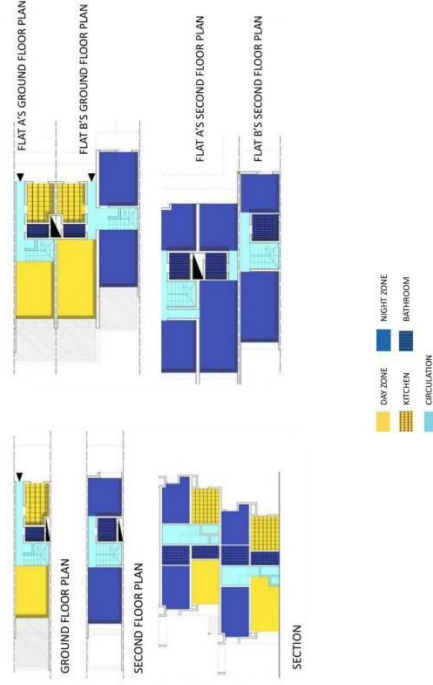
D W E L L I N G :

The dwellings are grouped into small and medium blocks. Some blocks are assembled only by two-bedroom flat, some are combined between two-bedroom type and three-bedroom type. It creates the diversity of form but still maintains the logic of dwellings' functions. There are just 16 three bedroom flats so that it is not sufficient for families which have more than 4 members.



TWO BEDROOM TYPE: GROUND FLOOR PLAN

The complex is formed due to the combination between pairs of accommodation units. The second floor which is larger than the ground one with a big overhang that rises further approximately 6 m gives the mixture between shadow and light. The duplex above is also push back hence front of the below one is protected too. In that way, the whole central garden is full filled with

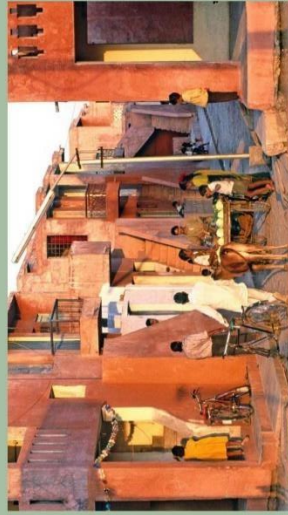


THREE BEDROOM TYPE:

In the shape of "L", this type seems to be difficult to attach in the middle of a cluster and all of them are located in the outer-most.

02

Aranya Housing



location : 6km from the Centre of Indore city, M.P

Architect : Balkrishna Doshi

Area : 100,000 m²

Project Associate - Mr. Himanshu Parikh

Structural Engineer - M/s Stein Doshi & Bhalla

Program : Residential center for mixed users

Client : Indore Development Authority

Year : 1989

Project Cost - Rs. 100 Million

Award - Aga Khan award for Architecture in 1996

S I T E

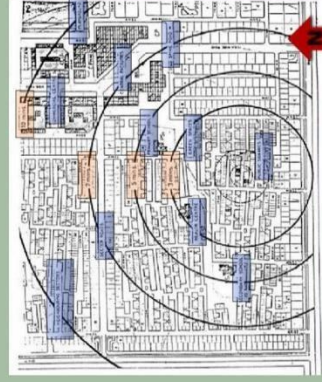


To improve and upgrade the existing slum area. To provide serviced sites for new housing developments instead of building complete houses. To provide for 6,500 residential plots ranging in size from 35m² for EWS to 475m² for high income groups

Financial Aspects: The idea was to mix some middle income plots with EWS plots to use the profits to raise capital towards development of local trades
Funding 100% public sources, Sales Local sources National Sources International Sources

The general objectives of Aranya were to: Create a township with a sense of continuity and fundamental values of security in a good living environment. Achieve a community character by establishing harmony between the built environment and the people. Create a balanced community of various socio-economic groups to evolve a framework through design.

A M E N I T I E S

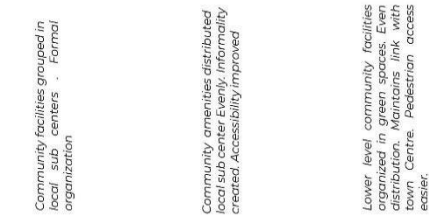


Attainable housing for middle class

DISTRIBUTION OF AMENITIES:

Community facilities grouped in local sub centers . Formal organization

town Centre. Pedestrian access easier.



a five story building. Central Spine 6 Sectors Town Hall Mixed Use Zone N

Control



Condition	Percentage of correct responses
1	85
2	80
3	75
4	70
5	65

Income Group



03

Sheikh sarai housing



Location : New Delhi, India

Architect : Raj Rewal

Area : 35 acres

No of units : 550

Density of population : 100 apartments per hectare

Program : Residential center for MIG

Client : Delhi Development Authority (DDA)

Year : 1982

Climate: Semi arid with high variation in summer and winter. Monsoon in summer months



DESIGN INSPIRATION

1. The design finds a connection with the historical realities of cities of Udaipur and Jaisalmer in Rajasthan.
2. It has the characteristic of urban fabric of India and which are distinguished by the density of the town and for the close relationship between open and closed spaces.



DESIGN ASPECTS

URBAN FABRIC

1. The **peripheral roads** are connected to **parking squares**
2. The **central spine** of the layout is reserved for **narrow, shaded pedestrian pathways**
3. The layout plan follows traditional methods of **creating shade** and **cross ventilation**

STREETS

1. The plan of Sheikh Sarai is based on **narrow shaded streets** linking variety of clusters
2. The streets are broken up into **smaller units**, so there are pauses, points of rest and changing vistas

ROOF TERRACES

1. Private roof terraces and courtyards are an integral design component of housing for the Sheikh Sarai Complex

Attainable housing for middle class



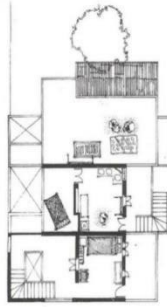
DWELLING :

At the dwelling level, a service core was provided with the prime objective that the basic house when complete will be sensitive to the lifestyle of daily needs of individuals with the freedom to integrate indoor and outdoor spaces with privacy within and from outside the homes, by designing optional plans.

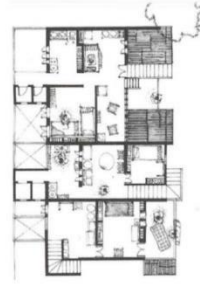
Priority was also given to the orientation, light, ventilation and climatic control; to future scope for vertical expansion and the provision of subletting and commercial options; and the use of appropriate utility technology, materials and construction methods



PLAN AND ELEVATION :



3 House Plan



Floor Plan



Group

Group	Income	Plot size	no. of plots	Population	Percentage
EWS I	200	35	1962	19620	
EWS II	300	35	1500	15000	66.35%
EWS III	400	35	800	8000	
LIG I	450	44	182	910	
LIG II	500	55	617	3085	10.82%
LIG III	600	93	265	2950	
MIG I	1100	139	626	6260	13.87%
MIG II	1800	223	265	2650	
HIG I	1800	325	180	1850	
HIG II	1800	474	75	750	9.02%

HIERARCHY OF STREETS

Segregation of vehicular and pedestrian traffic. Hierarchy is based on the volume of the traffic and activities. The roads suit human scale to avoid traffic 40m 60m 30m 12m 15m 9.5m 4.5m 15m. Vehicular access in the form of rectilinear and formal roads in the hierarchy of 4.5m wide to 15m wide road draw the vehicles outwardly. Pedestrian access in the form of informal inter linked open spaces draws people inwardly. This achieves a clear and safe segregation of vehicular and pedestrian movements.

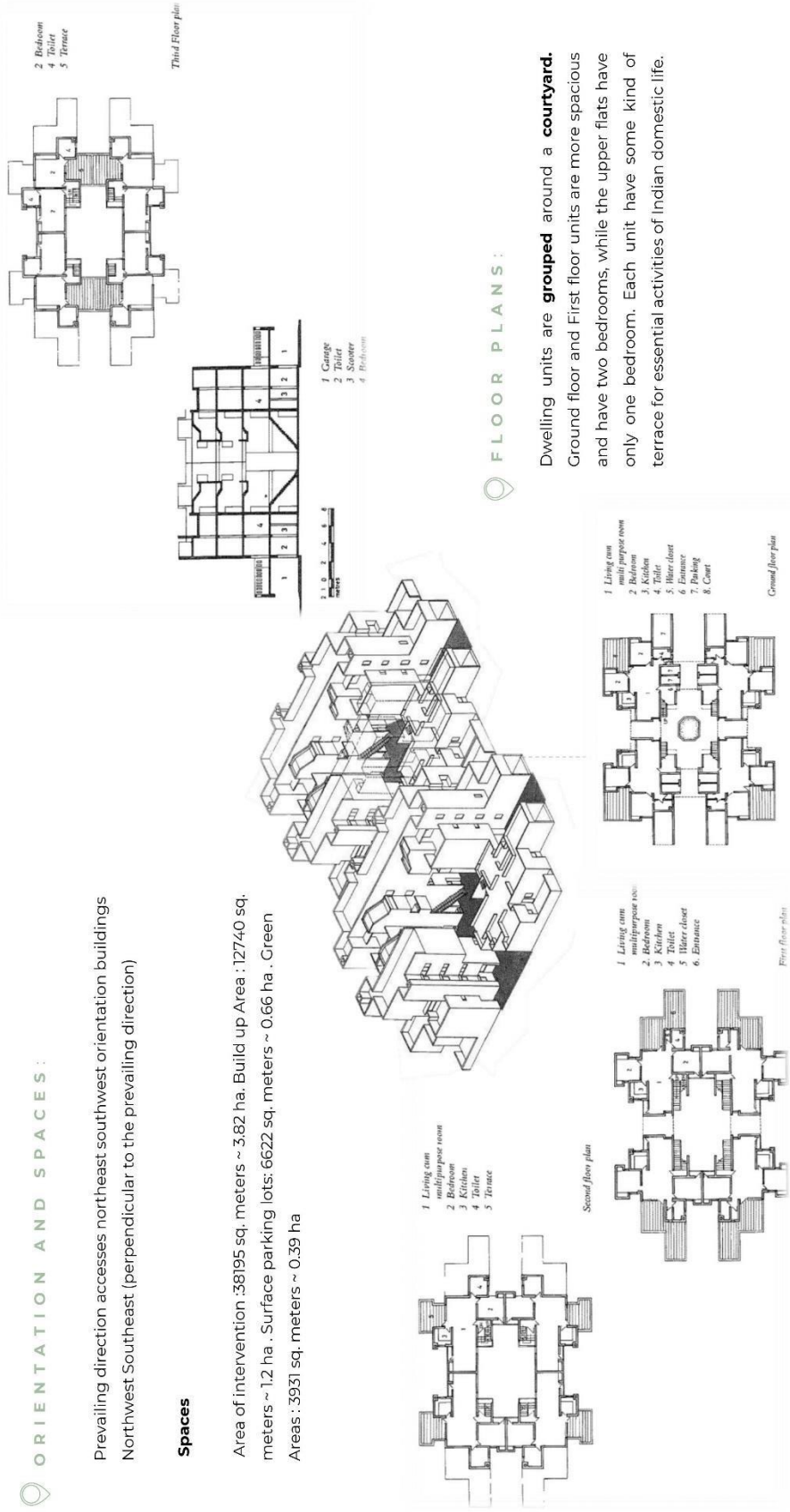
Attainable housing for middle class

ORIENTATION AND SPACES :

Prevailing direction accesses northeast southwest orientation buildings Northwest Southeast (perpendicular to the prevailing direction)

Spaces

Area of intervention : 38195 sq. meters ~ 3.82 ha. Build up Area : 12740 sq. meters ~ 1.2 ha . Surface parking lots: 6622 sq. meters ~ 0.66 ha . Green Areas : 3931 sq. meters ~ 0.39 ha



Dwelling units are **grouped** around a **courtyard**. Ground floor and First floor units are more spacious and have two bedrooms, while the upper flats have only one bedroom. Each unit have some kind of terrace for essential activities of Indian domestic life.

Attainable housing for middle class

04

52 social housing in tarragona



Architects : | guerrero architects

Location : tarragona , spain

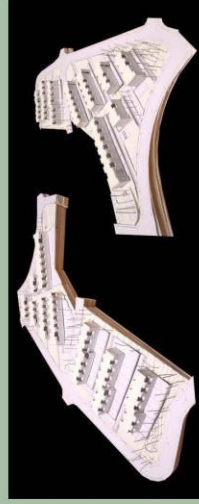
Architect in charge : Aguilera| guerrero architects

Design team : anton armengol tua

Area : 4,706 sqm

Year : 2013

Q SITE



The Project, municipal commissioned to build 4,516m²HP. The place is located to the North of the city, in an environment of crop fields and wooded area of great landscape and visual quality, configured in a building housing single-family homes under an urban layout quite orderly and understandable. Decide how to invest and give shape to 4516 m² Constructible, Colonize the place meant to adapt it to our purposes, "to the impact of architecture". It was, in some ways, to understand which attributes of the place would have been retained and which would have to disappear or transformed.

Analysis of the surface to build , to achieve a sustainable , proportionate , and equitable distribution among proposed dwellings . The first operations , in groupings of "built masses" and its placement on the ground . It was thought as a big geometrical grid , a geometrical grid as a tool of rationally on the natural world and as the technical principle that facilitates the construction , economical building + technical rationality . Clear differentiation of the proposal , with respect to the surrounding urban , says his condition of ENCLAVE .

PLAN AND ELEVATION:

The proposal we presented will be organized starting from the introduction of 6 (32vpo) and 3(20vpo) blocks respectively in each solar, formed through the use of typology of housing in duplex. The block type models its length depending on the relative position in the solar and the number of houses built in. The choice of a duplex allowed us to explore a compositional and organizational strategy that were able to give the set a "dynamic unit" or "unitary multiplicity" in which the privacy of each user's space will become in the formation of the new skyline of the slopes of the place.



05 Monterrey Housing



Architects: ELEMENTAL

Area: 6591 m²

Year: 2010

Engineering: Area of projects and technological innovation.

Client: Instituto de la Vivienda de Nuevo León (INVNL)

Urbanization & Specialization: Area of projects and technological innovation

Initial House Area: 40 sqm

Expanded House Area: 58.75 sqm

Initial Duplex Area: 40 sqm

Expanded Duplex Area: 76.60 sqm



The project in Elemental Monterrey in Mexico was funded by the state government of Nuevo León. This project designed by Alejandro Aravena of Elemental architectural studio was awarded as Brit Insurance Architectural Award in 2010. There is a total of 70 homes. The housings are an incremental complex with three stories with single houses of 40 m². The houses were built for low income households. Meanwhile, the cheapest houses cost about 30,000 dollars.

The project came up with reduced initial cost of 20,000 dollars, making it clearly cheaper. Initially, the building contains a continuous floor cover and a space between each building, but the open system lets the families to upgrade and expand their dwellings.

The floor layout of the development was made to leave an option for self-building choice since the building is porous. It gives more options for users to expand the spaces according to their needs and also with respect to the urban development. For instance, the expanding options can be a singular duplex with spaces between buildings. This increases privacy and security and gives freedom to expand the space.

05 Monterrey Housing



Architects: ELEMENTAL

Area: 6591 m²

Year: 2010

Engineering: Area of projects and technological innovation.

Client: Instituto de la Vivienda de Nuevo León (IVNL)

Urbanization & Specialization: Area of projects and technological innovation

Initial House Area: 40 sqm

Expanded House Area: 58,75 sqm

Initial Duplex Area: 40 sqm

Expanded Duplex Area: 76,60 sqm

📍 SITE



The project in Elemental Monterrey in Mexico was funded by the state government of Nuevo León. This project designed by Alejandro Aravena of Elemental architectural studio was awarded as Brit Insurance Architectural Award in 2010. There is a total of 70 homes. The housings are an incremental complex with three stories with single houses of 40 m². The houses were built for low income households. Meanwhile, the cheapest houses cost about 30,000 dollars.

The project come up with reduced initial cost of 20,000 dollars, making it clearly cheaper. Initially, the building contains a continuous floor cover and a space between each building, but the open system lets the families to upgrade and expand their dwellings.

The floor layout of the development was made to leave an option for self-building choice since the building is porous. It gives more options for users to expand the spaces according to their needs and also with respect to the urban development. For instance, the expanding options can be a singular duplex with spaces between buildings. This increases privacy and security and gives freedom to expand the space.

CHAPTER – 3

3. SITE

STUDY

3.1 LOCATION

1. This site was chosen mostly because of its location.
2. “KEELKATALAI” (a middle-class hub) is a suburb in Chennai, Tamil Nadu, that is part of the Pallavaram municipality.
3. It is a suburban neighbourhood that caters to the needs of middle-income families.
4. The chosen area is a thriving area with major new projects on the way and is well-served by services like schools, parks, and markets.
5. Some middle-class families were crowded into rentals in a single area due to a lack of affordable housing due to cost and vacancy.
6. As a result, if I make a proposal on this site, middle-class families will be able to buy their own home and follow their dreams instead of living in crowded and leased accommodation.

3.2 SITE

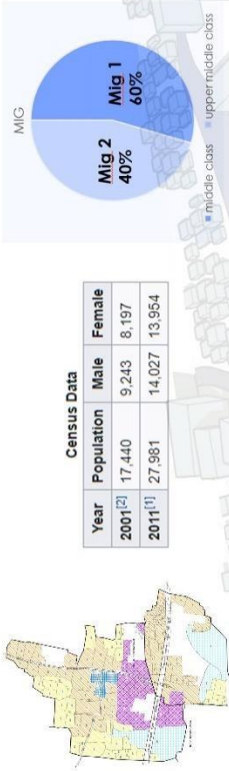
1. The site I selected is about 11 acres in size and is owned by a private construction company (45,000 SQM).
2. They have a proposal in place for a possible affordable apartment in the area.

3.3 ARCHITECTURAL PROGRAM

ARCHITECTURAL PROGRAM

POPULATION DENSITY IN KEELKATTALAI :

Keelkattalai is a suburb in the south of Chennai, Tamil Nadu under the Pallavaram municipality. It is a residential locality catering to the needs of the middle income groups



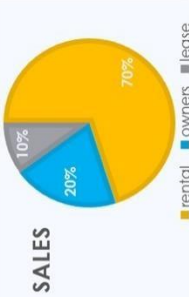
Statistics As of 2011 Census of India, Keelkattalai had a population of 27,981, especially 60% of middle income group 1 and 40% of middle income 2. In Keelkattalai, there are several different types of middle-class consumers, and these people live in the congested city. This place has a large number of IT and government employees.

EXISTING RESIDENCIAL USER ANALYSIS IN KEELKATTALAI :

In Keelkattalai, nearly 18,000 residential buildings have been constructed, with the majority of the houses being occupied by owners and renters; however, some are still vacant due to the high population density in the city. Since many homes are small and narrow, people live in congested areas.



Owing to the proximity to IT sectors and government offices, these houses are populated by both government employees and IT workers. As a result, many people who live in rented housing have many opportunities to buy their own homes. As a result, many middle-class people surround this neighborhood have many opportunities to own homes.



MIG USER ANALYSIS IN KEELKATTALAI :

Who all can afford houses in keelkattalai??

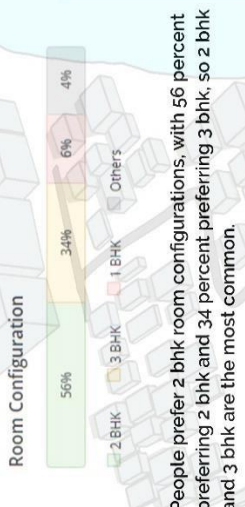
- Hospitals :**
 - There are **totally 4 hospitals**
 - Doctors, Nurses, Security Cleaners and workers
- Schools :**
 - There are **totally 5 schools**
 - Teachers, Drivers, Security Cleaners and Workers
- Banks :**
 - There are **totally 3 banks**
 - Bank staffs, Security, Cleaners and workers
- Bus depot :**
 - There is **one bus depot**
 - Drivers, Staffs, Security Cleaners and Workers
- Theatre :**
 - There is **only one theatre**
 - staffs, owners, Security Cleaners and workers
- Hotels and Restaurants :**
 - There are **many hotels/restaurants**
 - owners, staffs, Cleaners and workers
- Petrol bunks :**
 - There are **6 petrol, Security**
 - bunks, Staffs, Cleaners and Workers



WHO ALL CAN AFFORD ?

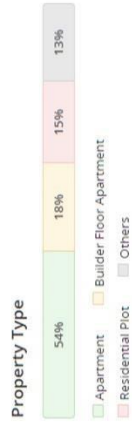
- IT EMPLOYEE
- GOVERNMENT EMPLOYEE
- PERSON WHO LIVES ON RENT OR LEASE
- KEELKATTALAI WORKERS AND STAFFS FROM SEVERAL DIFFERENT FIELDS

MIG PREFERRED UNITS CONFIGURATIONS :



People prefer 2 bnh room configurations, with 56 percent preferring 2 bnh and 34 percent preferring 3 bnh, so 2 bnh and 3 bnh are the most common.

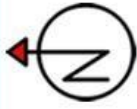
MIG PREFERRED PROPERTY TYPES :



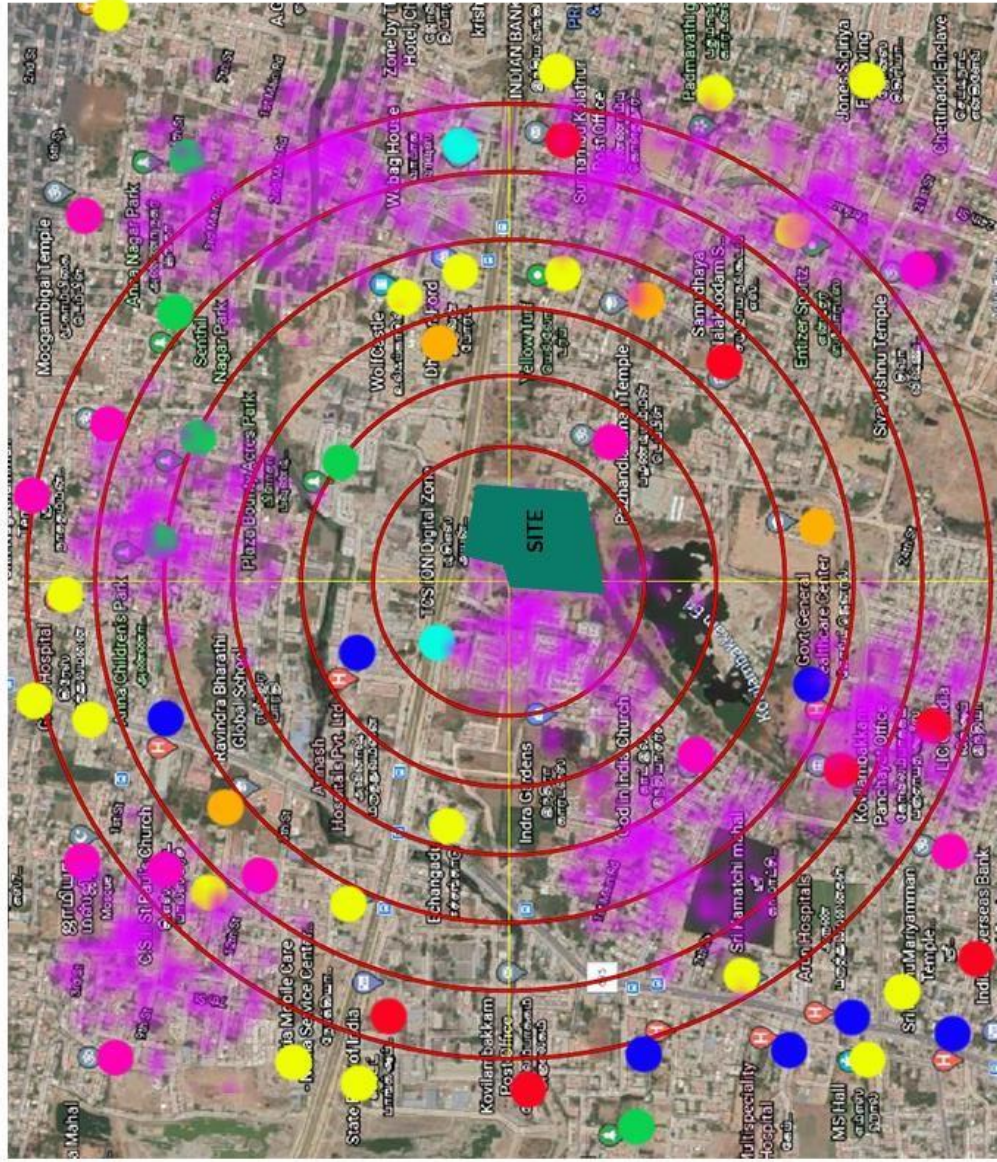
People prefer apartments over plots, flats, and single-family homes.

ATTAINABLE HOUSING FOR MIDDLE CLASS

OPPORTUNITIES AROUND 2 KM RADIUS



- GOVERNMENT BUILDING
- PRIVATE HOSPITALS
- GOVERNMENT HOSPITALS
- PRIVATE SCHOOL
- MIDDLE CLASS RESIDENCES
- RELIGIOUS BUILDINGS
- COMMERCIAL BUILDINGS
- PARKS



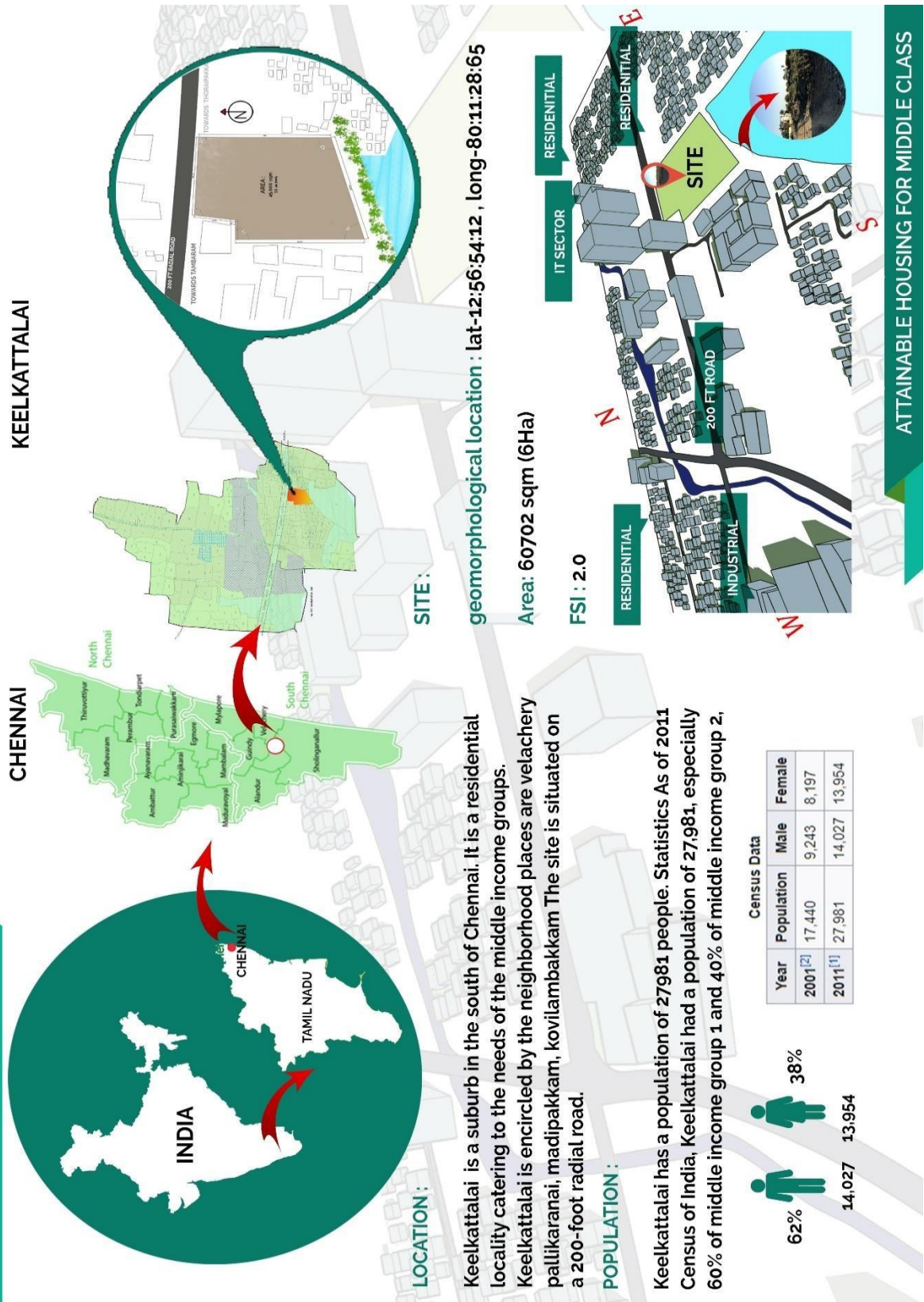
ANALYSIS :

IN ACCORDANCE WITH A 2KM RADIUS THERE ARE MANY OPPORTUNITIES FOR MIDDLE-CLASS PEOPLE IN THIS REGION, AS WELL AS MANY GOVERNMENT EMPLOYEES AND IT WORKERS. THERE ARE A LOT OF MIDDLE CLASS RESIDENCES DOWN HERE, WHICH MAKES IT EASIER TO AFFORD THE HOUSES.

THIS AREA IS WELL EQUIPPED WITH PLenty OF AMENITIES FOR PEOPLE LIVING HERE, AND THERE ARE A LOT OF COMMERCIAL PLACES.

COMMERCIAL WORKERS ARE IN THIS REGION, SO THERE ARE MANY OPPORTUNITIES FOR THE MIDDLE CLASS TO BUY HOUSING ON THIS SITE, ACCORDING TO RADAR ANALYSIS.

SITE ANALYSIS



SITE ANALYSIS

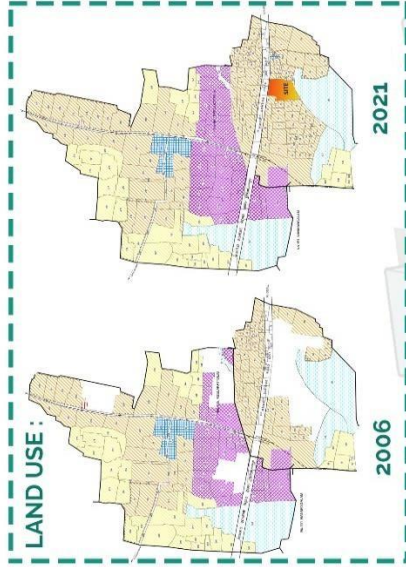
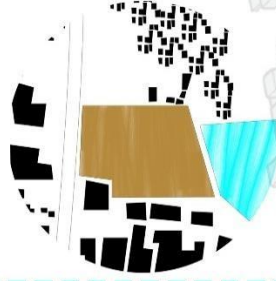


FIGURE AND GROUND:



As a result, there is a proper increase in mixed residence, primary residence, and commercial from 2006 to 2021. and there is a major development in a selected site area where there is a proper growth of mixed residential group, as well as having many businesses and it parks has opportunities for mig residents.

ROAD (ACCESS TO SITE):

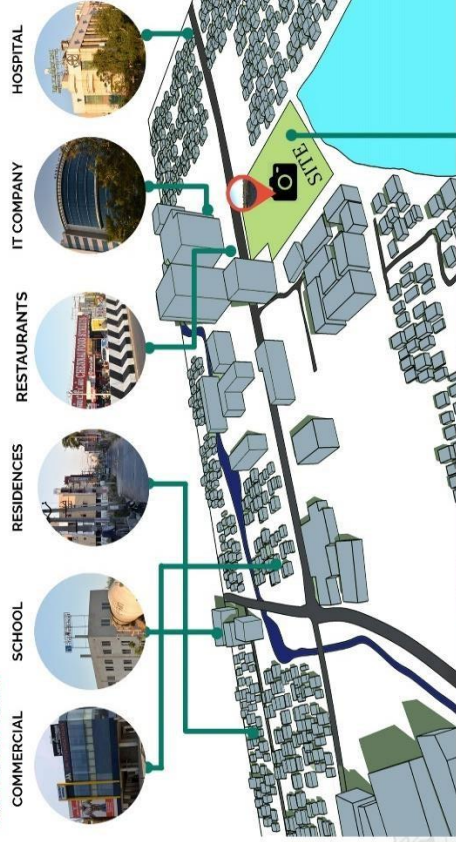


200 FT RADIAL ROAD VIEW (1) 200 FT RADIAL ROAD VIEW (2)

The main road (200ft radial road) that connects medavakkam, tambaram, chrompet, keelkatali, and madipakkam 200 ft radial road is one of the most active road Madipakkamkeelkatali, kovilambakkam, medavakkam, Velachery, Thoraipakkam, chrompet and tambaram are eight major bus routes that are well connected to the city by Chennai Metropolitan Transport corporation.



AMENITIES :



SITE VIEWS :



STRENGTHS

The site is one of the best places for housing because it has a wide variety of needed amenities, is close to parks, and has a lot of potential buyers in MIG and upper LIG where the city's housing needs are high.

WEAKNESSES

Traffic congestion is possible due to the main junction.

OPPORTUNITIES

Future transportation facilities can turn this area into a major hotspot. this area is developing and will grow into a mixed use region with equal growth in residential, commercial and economical areas.

THREATS

During rains, water from reservoirs in Namangalam, Kilkattalai, and Kovilambakkam breaks up and flows into Narayanapuram Lake. As a result, there is a significant risk of floods in certain parts of Kilkattalai.

ATTAINABLE HOUSING FOR MIDDLE CLASS

SITE ANALYSIS

NOISE AND ODOUR :

There is noise in and around the site since it is located near the main road (200 ft radial road).

TRAFFIC AND POLLUTION :

The main road (200ft radial road) that connects medavakkam, tambaram, chromptet, keelkatali, and madipakkam causes traffic. Owing to the involvement of many IT businesses, traffic is heavy during peak hours. In addition The place has pollution concerns. As a result of vehicular activity, the front portion of the site is filled with smoke. Absence of industries is an advantage of the lesser pollution of the site.

CONTOUR :

The site is flat, or to put it another way, the contour of the site is level, since there are only minor rises of 0.5m.

VEGETATION :

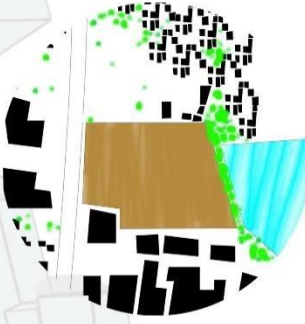
barren land with some trees around the site boundary

SOIL TYPE :

Clay soil surrounds this area entirely.



SOIL



VEGETATION



ATTAINABLE HOUSING FOR MIDDLE CLASS

SITE ANALYSIS

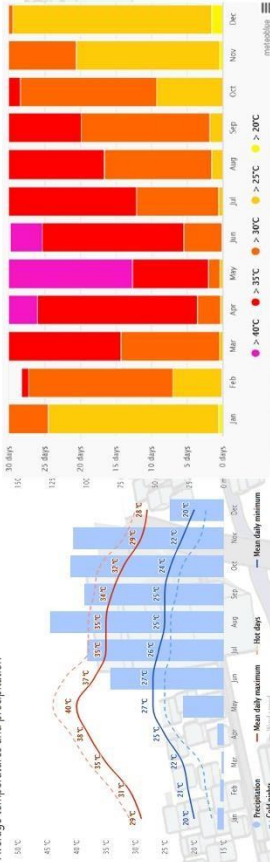
CLIMATE:

The city's three seasons are illiberally described as hot, hotter, and hottest. For eight months of the year, the weather in Chennai is hot and humid, with the remaining four months being cooler. The monsoon season in Chennai lasts from October to December.

- Maximum temperature -38 to 42 °C.(May and June)

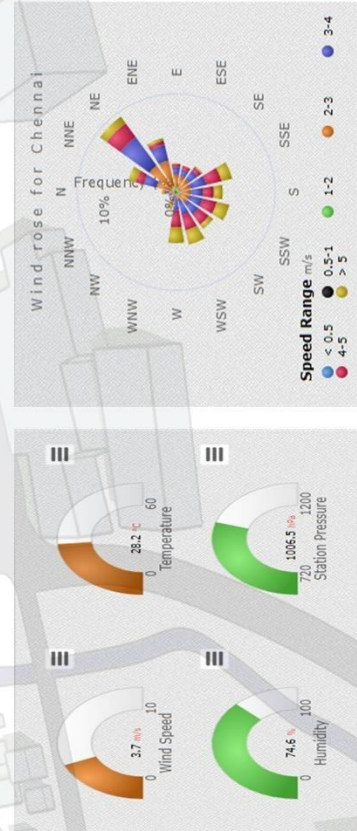
- Minimum temperature -18 to 20 °C.(January)

Average temperatures and precipitation



WIND:

The predominant wind direction is clearly known From south east to north west in summer and vice versa in winter.



CHAPTER - 4

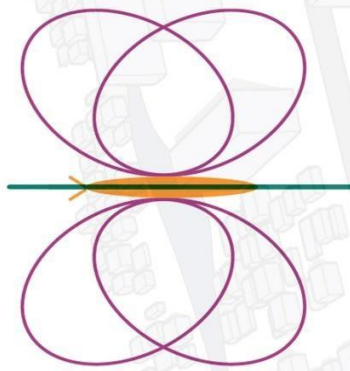
4. CONCEPT

4.1 CONCEPT SHEET

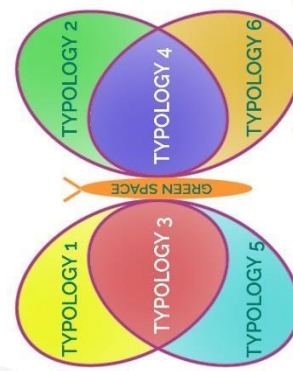
CONCEPT

INSPIRATION FROM ARCHITECTURAL PRINCIPAL

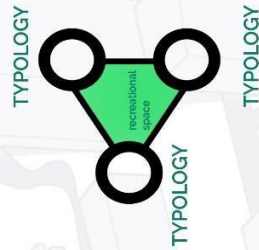
BUTTERFLY - "SYMMETRY"



The reflection of shared forms, shapes, or angles around a central line or point called the axis is referred to as symmetry. Symmetrical elements are those that mirror each other around an axis.



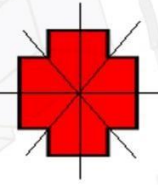
CONNECTIVITY :



The green space can be experienced by both clusters and residents at all times.

STREETS :

RADIAL SYMMETRY



Roads are radial and symmetrical, and they link to green space in all four directions.

CLUSTERS AND BLOCKS

INTER LINK :



There are no distinctions between mig 1 and mig 2; all units are interconnected, and people and families are socially interconnected.

GATHERING SPACE

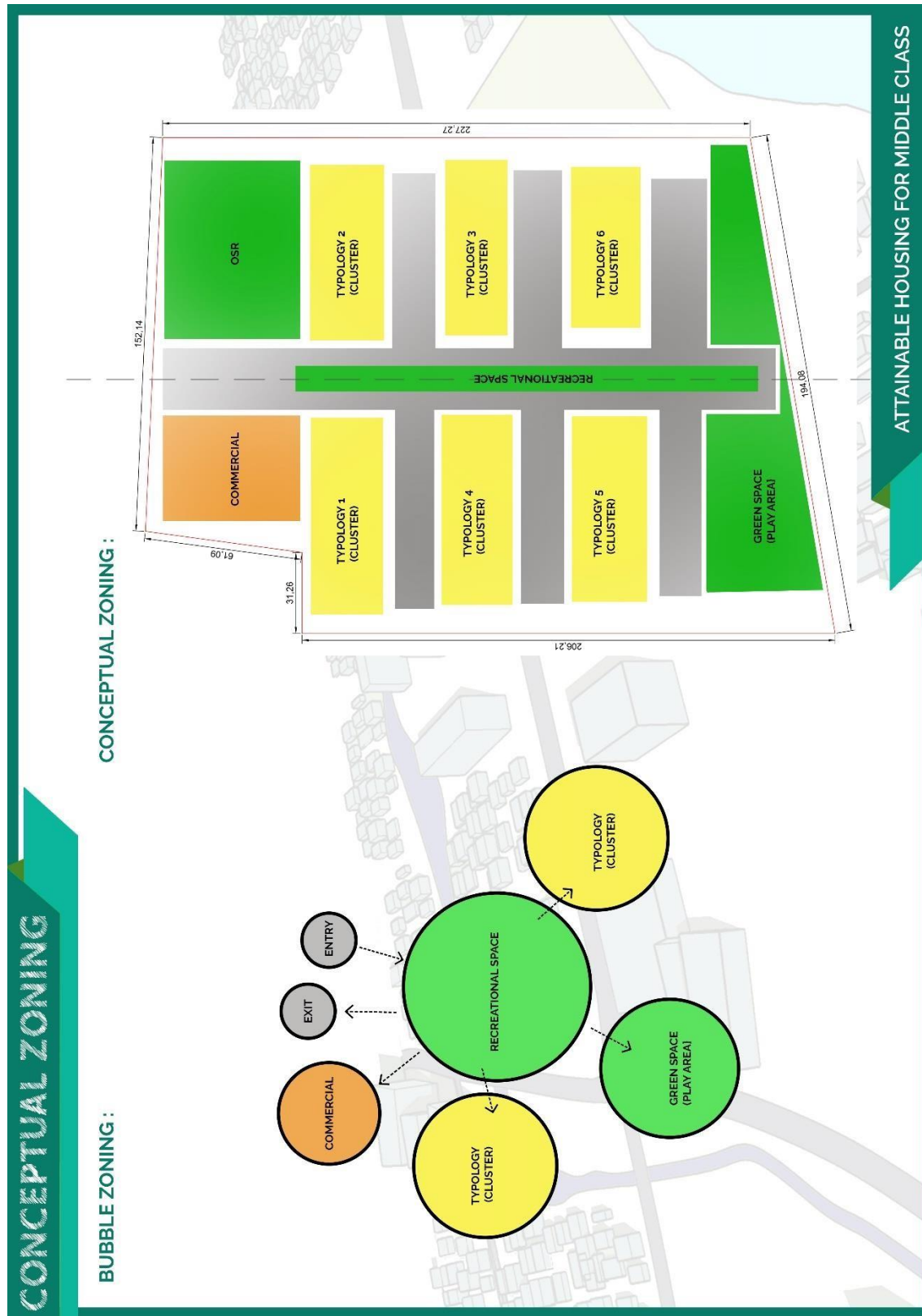
step well concept



The purpose of gathering areas is to encourage increased social contact. Step chairs are meant to allow people to relax and chat while simultaneously acting as a step well to collect rainwater.

ATTAINABLE HOUSING FOR MIDDLE CLASS

4.2 CONCEPT ZONING



4.3 AREA STATEMENT

AREA STATEMENT :

AREA STATEMENT:				
MIG 1: APARTMENT				
PROGRAMME	AREA IN SQM	UNITS	BUILT UP	TOTAL BUILT UP SQM
Dwelling unit: 1 BHK TYPE 1 1. Hall 2. Kitchen 3. Bedroom 4. Restroom 5. Balcony	82 SQM	120 UNITS	518 SQM	5180 SQM
Dwelling unit: 1BHK TYPE 3 1. Hall 2. Kitchen 3. 2 bedrooms 4. Restroom 5. Balcony	32 SQM	36 UNITS	155 SQM	1620 SQM
Dwelling unit: 2 BHK TYPE 2 AND 4 5. Hall 6. Kitchen 7. 2 bedrooms 8. Restroom 9. Balcony	47 SQM	80 UNITS	186 SQM	6000 SQM
Dwelling unit: 2 BHK TYPE 5 10. Hall 11. Kitchen 12. 2 bedrooms 13. Restroom 14. Balcony	52 SQM	180 UNITS	260 SQM	11,020 SQM
			TOTAL = 1100 SQM	TOTAL = 24000 SQM
MIG 2: APARTMENT				
Dwelling unit: 3BHK TYPE 3, 3 AND 4 1. Hall 2. Kitchen 3. 2 Bedrooms 4. Restroom 5. balcony	58 SQM	164 UNITS	216 SQM	9510 SQM
Dwelling unit: 2BHK TYPE 3 AND 5 1. Hall 2. Kitchen 3. 2 Bedroom 4. Restroom 5. balcony	60 SQM	216 UNITS	544 SQM	28288 SQM
Dwelling unit: 2BHK TYPE 5 1. Hall 2. Kitchen 3. 2 Bedroom 4. Restroom 5. balcony	52 SQM	280 UNITS	290 SQM	11,600 SQM
Dwelling unit: 3BHK TYPE 4 1. Hall 2. Kitchen 3. 3 Bedroom 4. Restroom 5. balcony	80 SQM	16 UNITS	178 SQM	2048 SQM
			TOTAL = 1178 SQM	TOTAL = 51,446 SQM
			BUILT UP AREA = 5000 SQM	TOTAL BUILT UP AREA = 75,446 SQM
AMENITIES				
Amenities: 1. Play ground 2. Swimming pool 3. parking	Parking = 8000 SQM Playground = 2000 SQM Swimming pool = 50 SQM	1		10,000 SQM
COMMERCIAL:				
1. SUPER MARKET 2. FOOD COURT 3. GYM 4. INDOOR GAMES 5. MEETING HALL	5000 SQM	1		5000 SQM

FSI : 2

TOTAL NUMBERS OF UNITS : 714 UNITS

SITE AREA : 45,000 SQM

TOTAL BUILT UP AREA : 75,446 SQM

FSI ACHIVED : 1.7

THESIS TOPIC :

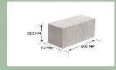
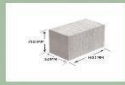
ATTAINABLE HOUSING FOR MIDDLE CLASS

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4.3 MATERIAL STUDY

MATERIAL STUDY :

Parameters	Clay Brick	AAC Light Weight Block	Clay Brick	AAC Light Weight Block
Also Known as	Red bricks, Chamber bricks, Table mould bricks, Clay wire-cut bricks	AAC blocks, Autoclaved aerated concrete blocks	3 Inch = 9in x 3in x 3in 	4 Inch = 24in x 4in x 8in 
Composition	Soil, Sand, Lime or other concrete materials	M Sand, Cement, and Coarse Aggregates	6 Inch = 9in x 6in x 3in 	6 Inch = 24in x 6in x 8in 
Weight (kgs)	3 Inch = 3 - 3.5 Kgs 6 Inch = 4.5 - 5 kgs	4 Inch = 9 - 9.5 kgs 6 Inch = 12.5 - 13 kgs 8 Inch = 14 - 14.6 kgs		8 Inch = 24in x 8in x 8in 
Advantages	Zero maintenance cost, fire resistant	High thermal insulation power, environmentally friendly Grade 1 = 4N/mm ² Grade 2 = 3N/mm ²		
Strength	2.5 - 3 N/mm ²			
Colour	Red	Grey		
Load carrying capacity	Yes	No		
No. of bricks/ blocks required per square meter	43 Nos.	8 Nos		

Costs can be cut in the following areas:-

- 1) Use a thinner wall idea to reduce plinth area. Solid concrete block wall, for example, 15 cm thick.
- 2) Instead of burnt brick, use locally accessible material in a creative manner, such as earth cement blocks.
- 3) Instead of burning bricks, use energy-efficient materials that require less energy, such as concrete blocks.
- 4) Use ecologically friendly materials to replace traditional construction components, such as R.C.C. door and window frames instead of wood frames.
- 5) Pre-plan each component of a home and rationalize the design process to reduce the size of each component in the structure.
- 6) Waste of materials due to demolition of an unexpected component of a house may be prevented by designing each and every component of the home.
- 7) Each housing component must be examined to determine whether it is essential; if it is not, the component should not be employed.

Chajjas and Lintals

For modest spans, typical R.C.C. lintels can be substituted with brick arches, which save construction costs by up to 40% when compared to the traditional way of construction. The external wall surfaces of brick masonry may be given an excellent architectural pleasant look by using arches of various forms.

Roofing is an important part of any home.

Roofing for residential structures is usually done with R.C.C. slabs that are 5" (12.5) thick. Roofing construction costs can be decreased by 20 to 25% by using rationally planned in-situ building procedures such as infill slabs and precast parts.

Completion of Tasks

The cost of finishing goods such as sanitation, electrical, and painting vary based on the type and quality of materials used in the structure, and cost reduction is up to personal preference.

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CHAPTER - 5
5. MASTER PLAN

5.1 MASTER PLAN

5.2 SITE SECTION ELEVATION

5.3 TYPE 1 FLOOR PLAN

5.4 TYPE 1 SECTION AND ELEVATIONS

5.5 TYPE 2 FLOOR PLAN

5.6 TYPE 2 SECTION AND ELEVATIONS

5.7 TYPE 3 FLOOR PLAN

5.8 TYPE 3 SECTION AND ELEVATIONS

5.9 TYPE 4 FLOOR PLAN

5.10 TYPE 4 SECTION AND ELEVATIONS

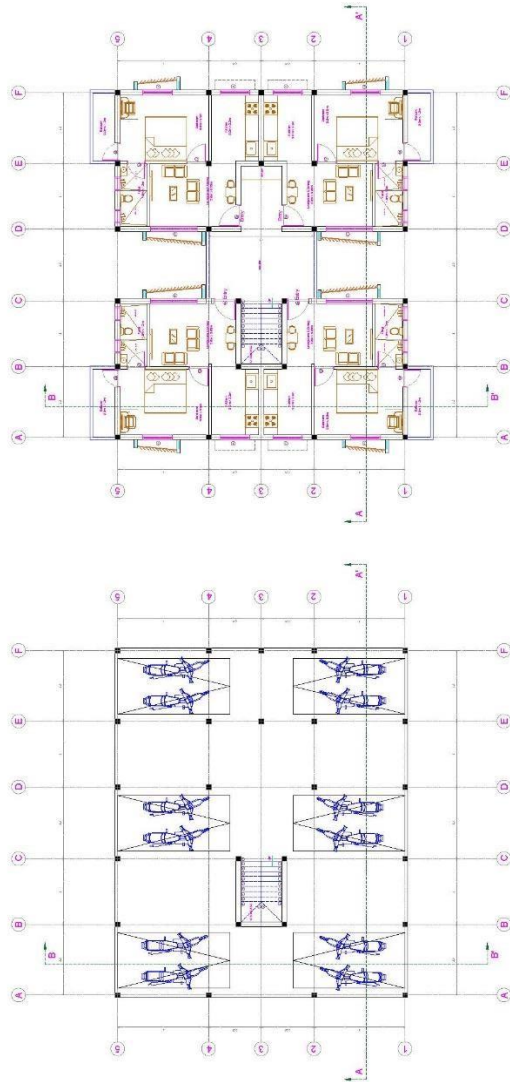
5.11 TYPE 5 FLOOR PLAN

5.12 TYPE 5 SECTION AND ELEVATIONS

5.13 VIEWS

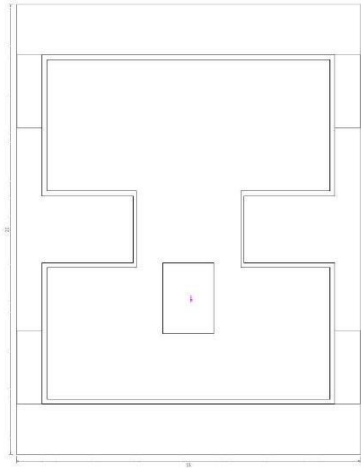


TYPE 1 HOUSING



STILT PLAN

FIRST, SECOND & THIRD FLOOR PLAN



TERRACE FLOOR PLAN

3

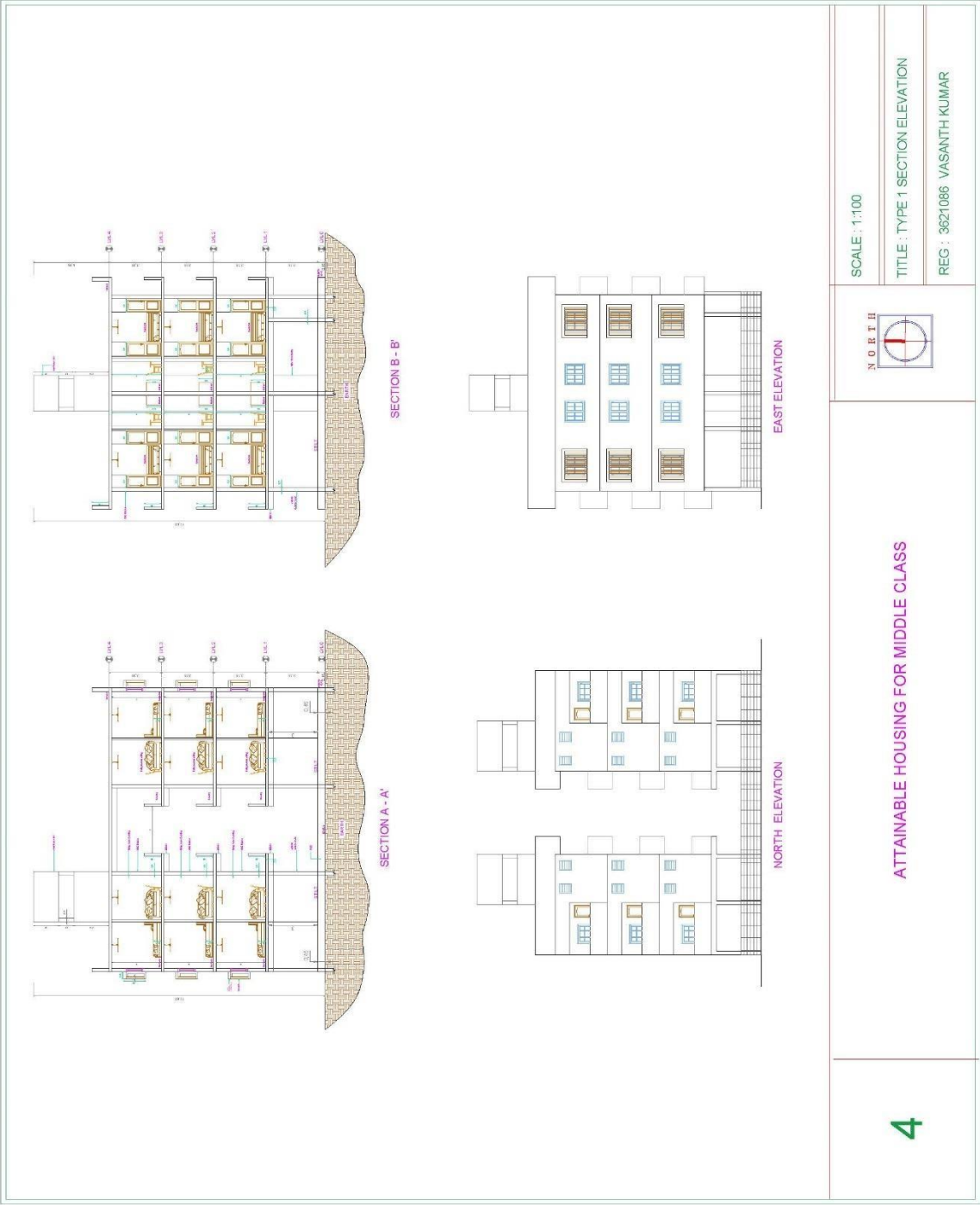
ATTAINABLE HOUSING FOR MIDDLE CLASS



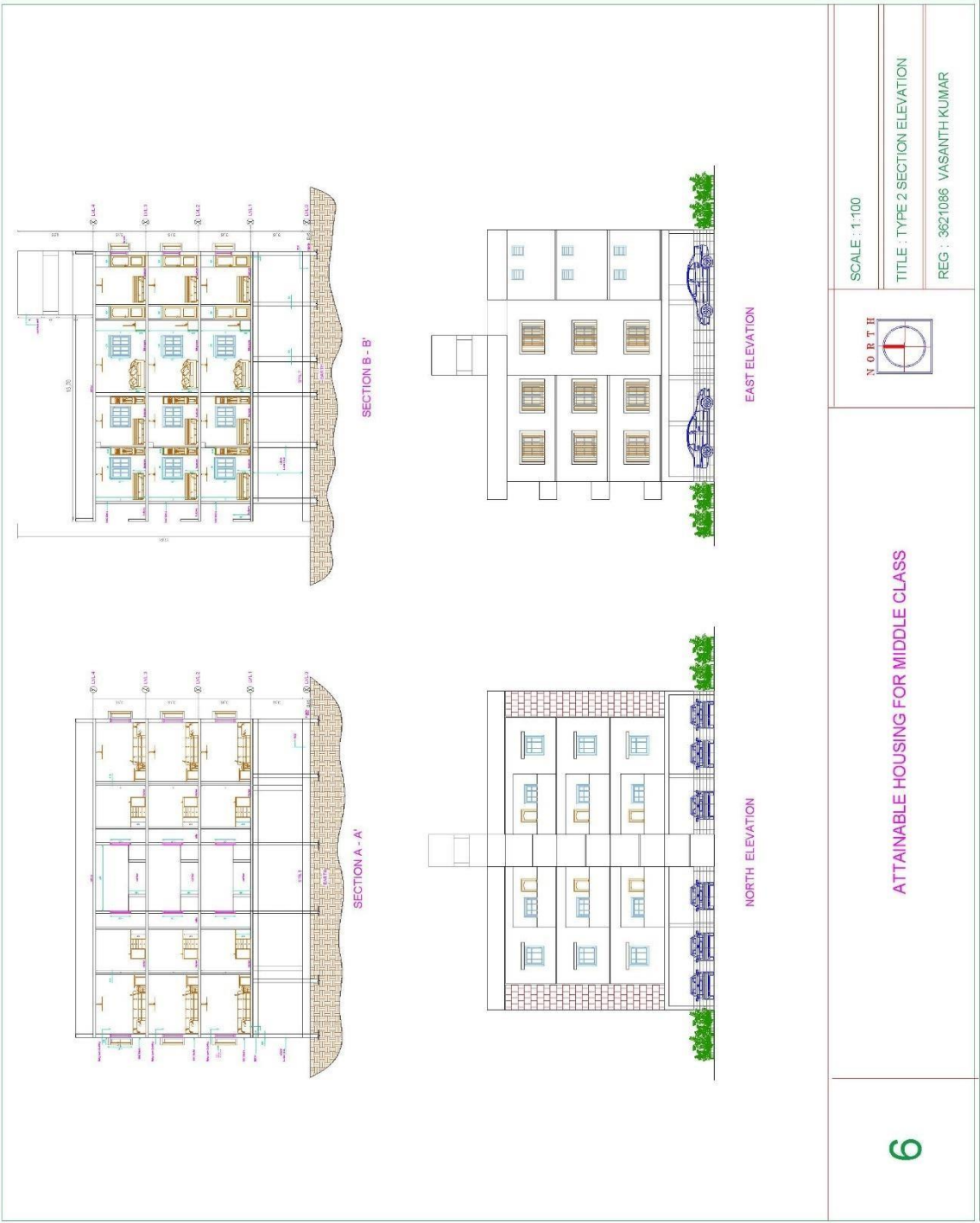
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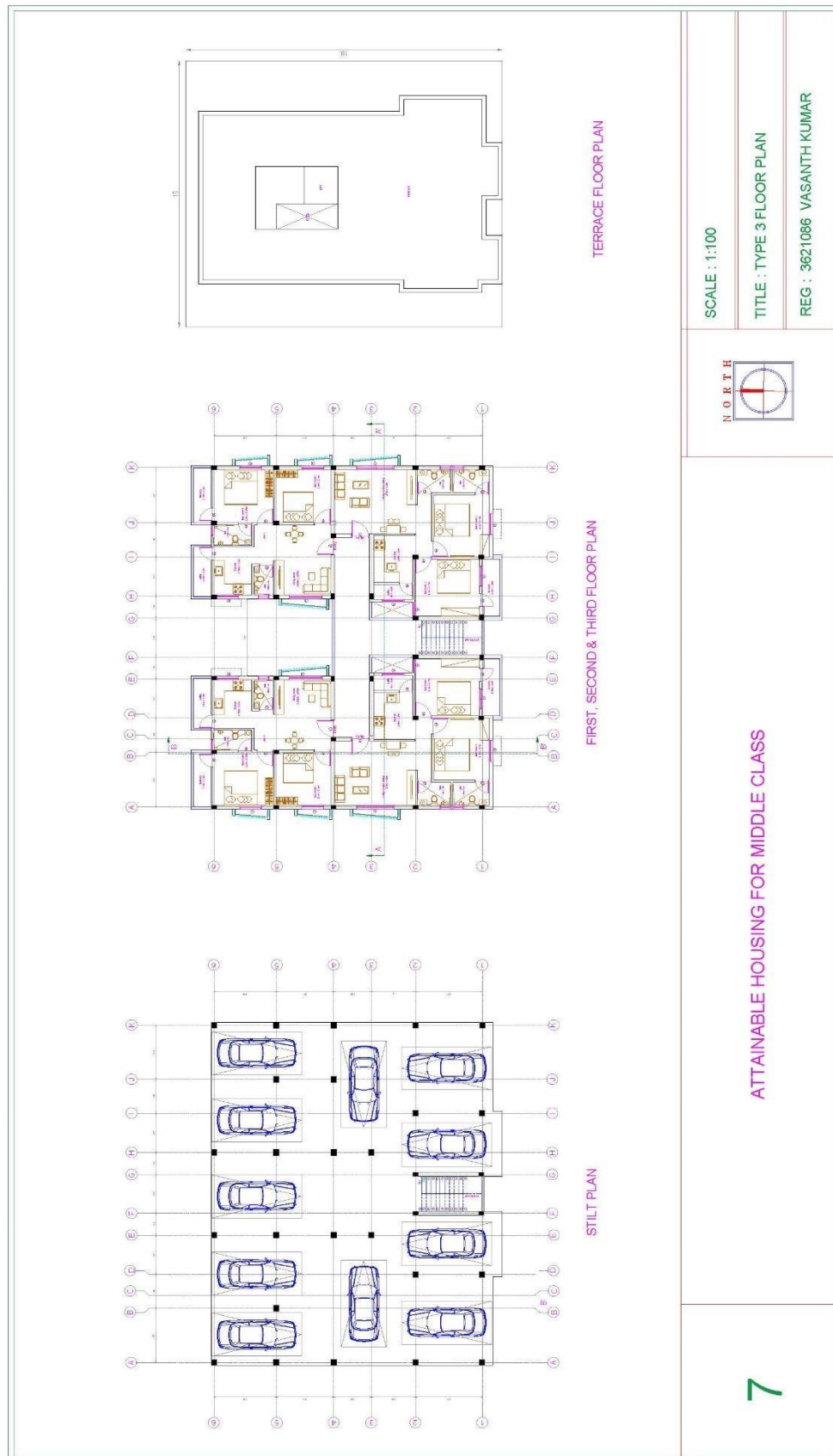
TITLE : TYPE 1 FLOOR PLAN

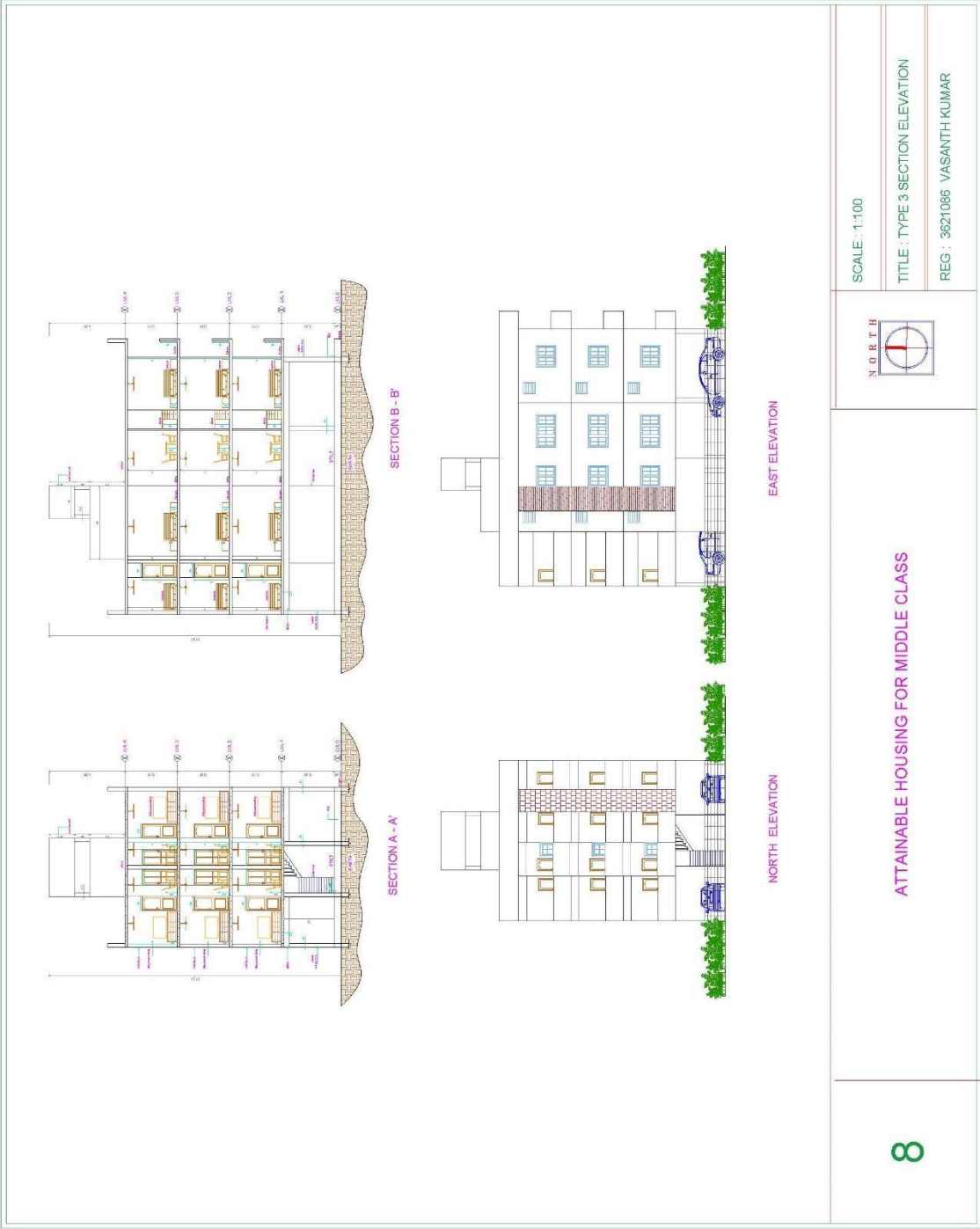
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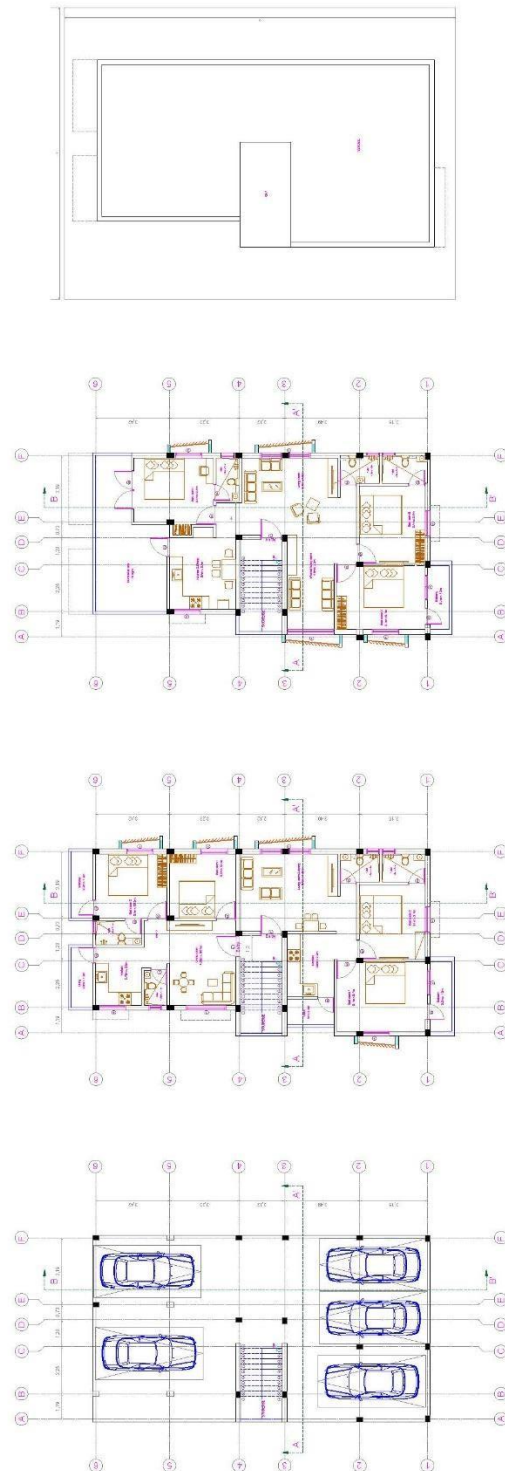












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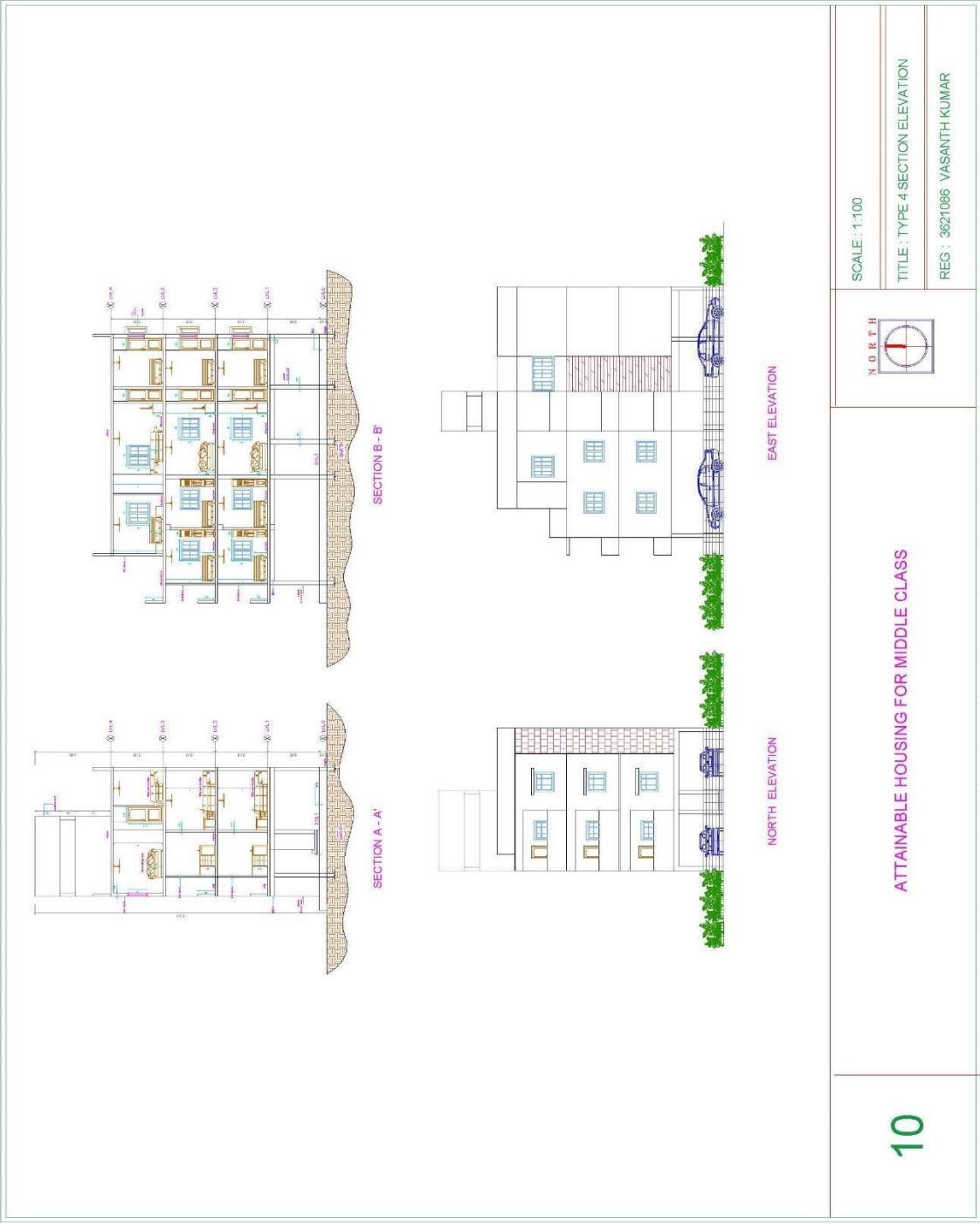
TITLE : TYPE 4 FLOOR PLAN

REG : 3621086 VASANTH KUMAR

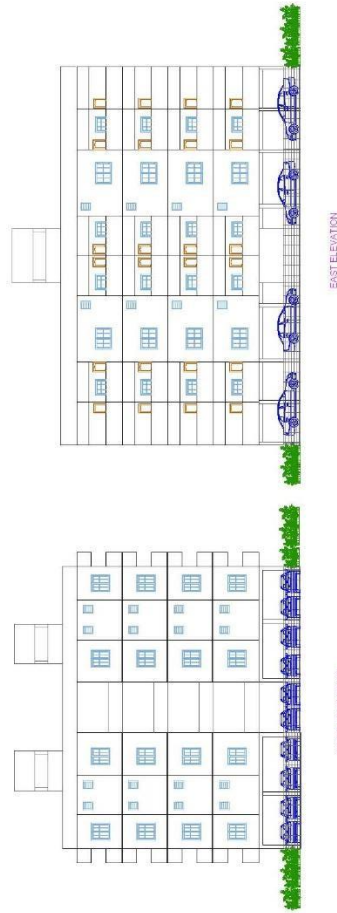
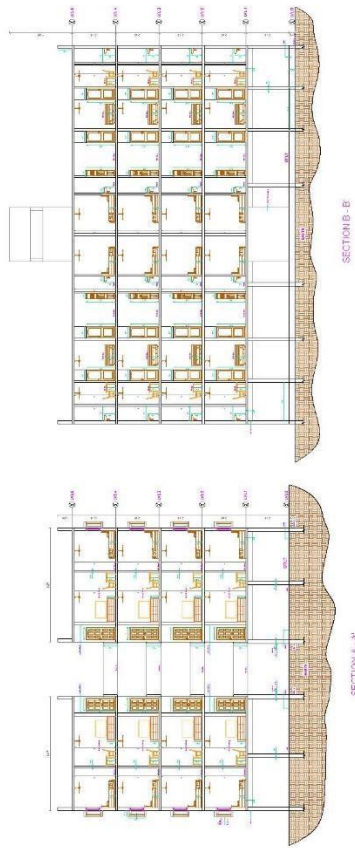


ATTAINABLE HOUSING FOR MIDDLE CLASS

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SCALE : 1/100		TITLE : TYPE 5 SECTION ELEVATION
REG : 3621086 VASANTH KUMAR	ATTAINABLE HOUSING FOR MIDDLE CLASS	





HOUSING ENTRY VIEW



CENTRAL GARDEN AERIAL VIEWS



CENTRAL GARDEN VIEWS

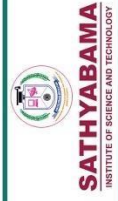


GARDEN SEATING VIEW

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TYPE 1 HOUSING



TYPE 1 CLUSTERS



type 1 street view



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TYPE 2 HOUSING



TYPE 2 CLUSTERS



type 2 street view



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IEWS

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TYPE 3 HOUSING



TYPE 3 CLUSTERS



type 3 street view



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VIEWS

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TYPE 4 HOUSING



TYPE 4 CLUSTERS



type 4 street view

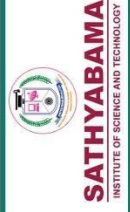


THESIS TOPIC :

ATTAINABLE HOUSING FOR MIDDLE CLASS

VIEWS

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TYPE 5 HOUSING



TYPE 5 CLUSTERS



type 5 street view



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HOUSING AERIAL VIEW



SITE TOP VIEW



PLAY AREA



CLUB HOUSE

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VIEWS

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6 REFERANCE

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