

URBAN STRATEGY
IN INDIA

BIOPHILIC RESIDENTIAL COMPLEX

Ateliér Kordovský - Vrbata

Project by
Akshatha Ravi Kumar







BIOPHILIC ARCHITECTURE

Biophilic design is a concept used within the building architecture to increase occupant connectivity to the natural environment through the use of direct nature, indirect nature, and space and place conditions. Used at both the building and city-scale, it is argued that this idea has health, environmental, and economic benefits for building occupants and urban environments, with few drawbacks. Although its name was coined in recent history, indicators of biophilic design have been seen in architecture from as far back as the Hanging Gardens of Babylon.



Czech Technical University Prague
Faculty of Architecture

BIOPHILIC RESIDENTIAL COMPLEX

IN INDIA



Master Thesis

Author: Akshatha Ravi Kumar
Supervisor: doc. Ing. arch. Petr Kordovský
Ateliér Kordovský – Vrbata
Summer Semester 2020



CZECH TECHNICAL UNIVERSITY IN PRAGUE FACULTY OF ARCHITECTURE	
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TITLE OF THE DIPLOMA WORK / DIPLOMA PROJECT (IN CZECH LANGUAGE)	
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Diploma Work / Diploma Project Supervisor	Ústav: Department Ateliér Kordovský – Vrbata doc. Ing. arch. Petr Kordovský
Diploma Work / Diploma Project Opponent	
Key Words (Czech)	Biophilia, residential complex, mixed users, indigenous material, climatic response .
Annotation (Czech)	
Annotation (English)	This project is a design proposal for a residential design competition that was hosted in Bangalore, India. The competition was hosted by a medical university to facilitate international students, working members and large families. Along with matching the requirements of the brief, the project also addresses 2 main issues in Bangalore City, - the growing pressure on residential sector and deteriorating greenscape of the city. The project is based on contextual and climatic response.

The Author's Declaration

I declare that I have elaborated the submitted diploma work / diploma project independently and that I have stated all the used information sources in coherence with the "Methodological Instruction for Ethical Preparation of University Final Works".

(The complete text of the methodological instruction is available for download on <http://www.fa.cvut.cz/En>)

In Prague on
Signature of the Diploma Project Author

This document is an essential and obligatory part of the diploma project / portfolio / CD.

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Czech Technical University in Prague, Faculty of Architecture

ASSIGNMENT of the Diploma project

Master degree – ARCHITECTURE & URBANISM.

Date of Birth: 07/04/1995

Academic Year / Semester: 2019/2020 – SUMMER SEMESTER

Department Number / Name: 15128

Diploma Project Tutor: Doc. Ing. Arch. Petr Kordovsky

Diploma Project Theme:

See the Application Form for DP – Biophilic Residential Complex.

Assignment of the Diploma Project:

1/description of the project assignment and the expected solution objective

2/description of the final result, outputs and elaboration scales

3/list of further agreed-upon parts of the project (model)

To this list further attachments can be added according if necessary.

- (1) The project is a design proposal for a competition that is hosted in Bangalore, Karnataka, India. Along with matching the requirements of the competition brief, the project also aims at addressing 2 main issues in Bangalore city – growing urban population → lack of space for economical housing & – deterioration of the city's green spaces.

Date and Signature of the Student:

Akshatha RaviKumar.

Date and Signature of the Diploma Project Tutor:

(27/04/2020).

Date and Signature of the Dean of FA CTU:

(2) Outputs -

- Analysis (context & site)
- Climatic analysis
- Plans, sections, elevations
- detailed drawings
- structural drawings.
- Physical Model.
- Visualisation of proposed design and its spaces.

(3) Working Scheme -

- Contextual study
- Site analysis
- Design and Area Program
- concept development.
- Zoning & Spaces
- form development
- Design Process
- final Proposal

↳ Plans, sections, elevations, model

ACKNOWLEDGEMENT

First and foremost, I have to thank my family for their endless love and being the biggest support throughout my life.

The development of this project has been an intensive adventure. Having an architectural base from India, it has been very inspiring to learn about strategies from all over the world. Challenging, though satisfying has been the whole process. Thus, it wouldn't have been possible without the help of some amazing people I came across on my way.

I would like to express my sincere gratitude to my mentor doc. Ing. arch. Petr Kordovský, who has been so inspiring, full of energy, and bright. He always managed to motivate and inspire me to overcome all obstacles throughout this diploma project.

I dedicate this book to my mother Sudha.

ABSTRACT

It is a common concept for people to move into big established cities in search of better living opportunities. But most often what we don't consider is the pressure that the city is going through because of massive rates of urbanization and immigration.

There are certain cases where some very strong character of the city is washed out to cater to the expanding demand of its occupancy.

One such city is BANGALORE.

Bangalore is well known around the world as the Silicon City of India. But over the years it has lost one very integral title - "The Garden City".

I still remember walking on the streets of this green city as a child and being amazed by how a metropolitan could still breath such freshness. It is a pity that the present-day urban scenario has put so much pressure on the housing segment, that acres of city greenscape is being cleared to accommodate more people.

As a young architect, I have always waited for an opportunity to work on a project that would help me bring light upon this situation.

In 2019, Sri Sathya Sai Institute of Higher Medical Sciences hosted a design competition to create a residential complex as part of the university facility. Although the competition was won by one of the leading architects in the city, I choose the same parameters of the design brief to make my proposition.

This project focuses on the concept of biophilia, vertical buildings, indigenous and minimalistic materials and passive techniques for a residential complex of a mixed user group.

The project can mostly be termed as "ARCHITECTURE THAT CONNECTS PEOPLE AND NATURE IN THE BUILT ENVIRONMENT of a metropolitan city."

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PROJECT

In 2019, Sri Sathya Sai Institute of Higher Medical Sciences hosted a design competition to create a residential complex as part of the university facility. Although the competition was won by one of the leading architects in the city, the winning design was just another glassy modern building just like the many other housing apartments in the city.

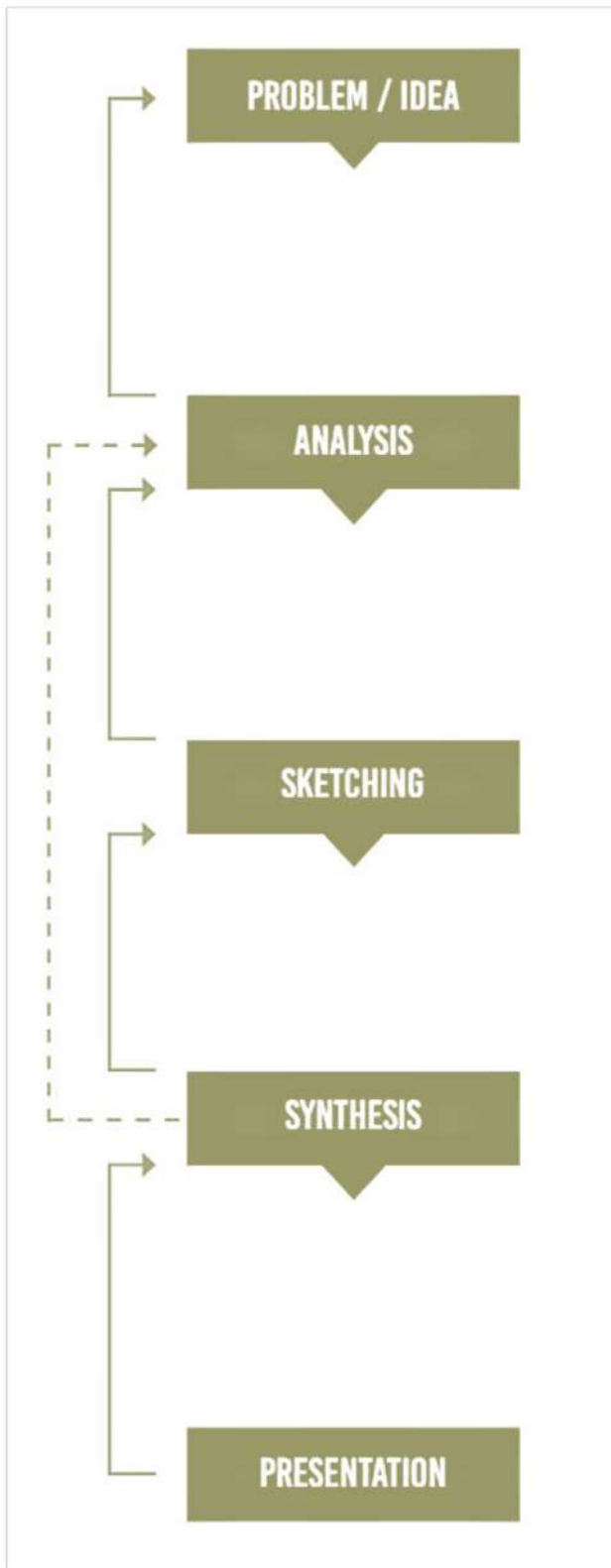
I choose the same parameters of the design brief to make my proposition in a more passive way that speaks more about the authenticity of the context. Also addressing 2 critical issues that have always been my concern in Bangalore city—



Housing complex that was proposed to be built on the site, construction is to start soon.

The requirements for this competition was –

- **Mixed housing complex for different user groups –**
 - Large families
 - Small families / working individuals
 - International students from the university
- **Amenities –**
 - Fitness and Healthcare Centre
 - Work Space / meeting lounges
 - Atrium
- **Community Spaces (Sharing Floor) -**
 - Provision / departmental stores
 - Restaurant
 - Outdoor and Indoor leisure space
 - Library
 - Canteen / Café
 - Activity rooms
 - OAT
 - Multipurpose hall
- **Expanding parking**



METHODOLOGY

The design process is a model used to describe the different phases which are reviewed when making the diploma project. It is not a one-way process, which means that you can return to one of the earlier phases if you are not satisfied or can not move forward in the design process.

In this project, the process started by doing the analysis phase, where site studies were made in the given area, as well as research of the user group, after which a program was created with the relevant requirements of the given competition design brief.

Throughout the sketching phase, the design process was used several times. In the end, the design has been “beaten” during the process with different urban architectural and environmental factors and is now standing strong on the master plan.

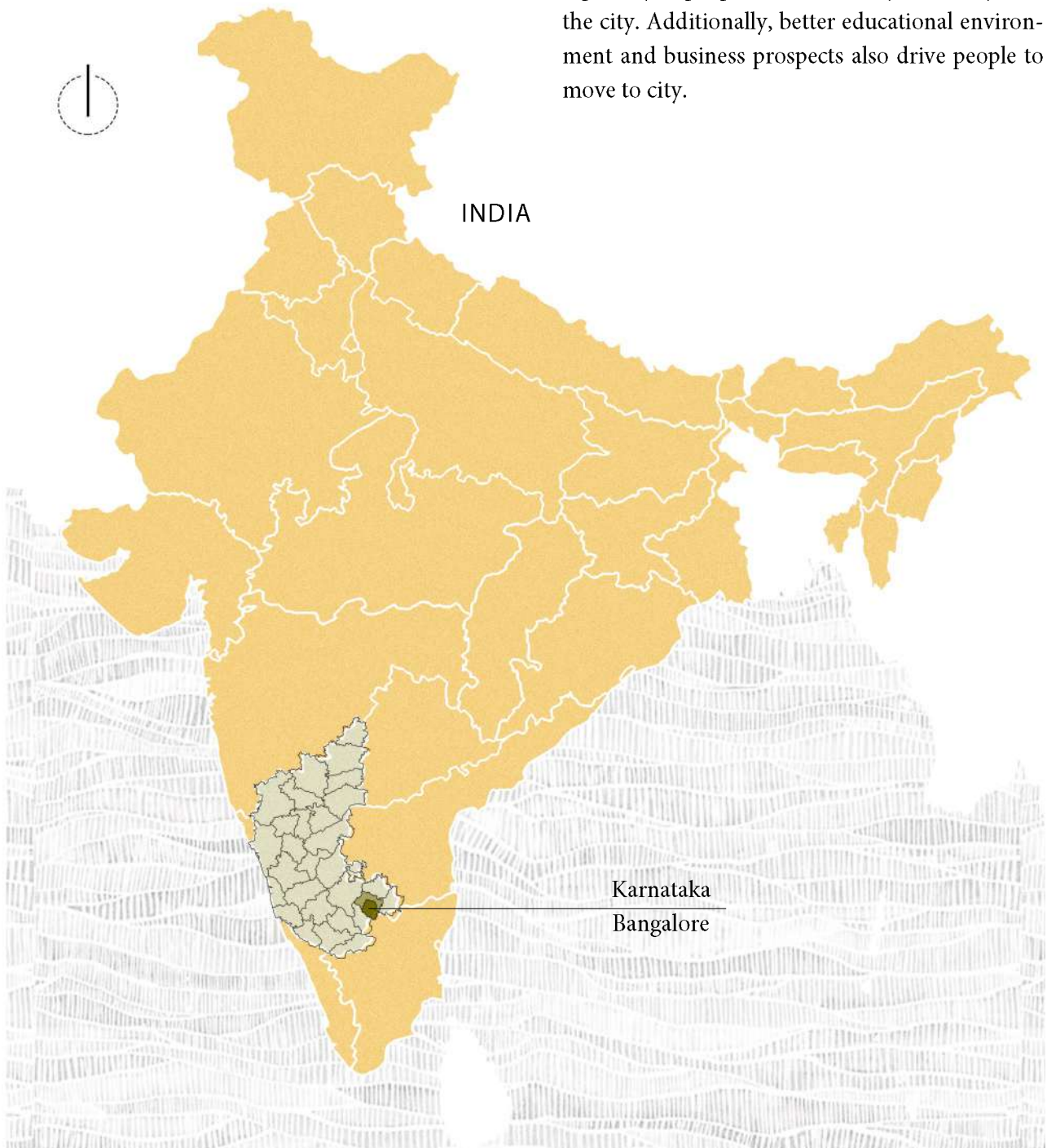
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LOCATION

Bengaluru (also called Bangalore) is the capital of India's southern Karnataka state. Being the center of India's high-tech industry, the city is also known for its parks and nightlife.

Because of its burgeoning IT industries, Bangalore is nicknamed as India's "Silicon City." Also, it is an international air hub.

The livelihood is better in Bangalore with the rapid pace of urbanization. The expected real income in urban areas is larger than that in rural areas, especially as people are more likely to find a job in the city. Additionally, better educational environment and business prospects also drive people to move to city.





The urban fabric of Bangalore City.

*Site district.
Whitefield, Bangalore, India.*



WHAT IS THE PROBLEM ?

Although there are a number of problems faced by the over-populated city, these are the 2 main problems that instigated this thesis project.

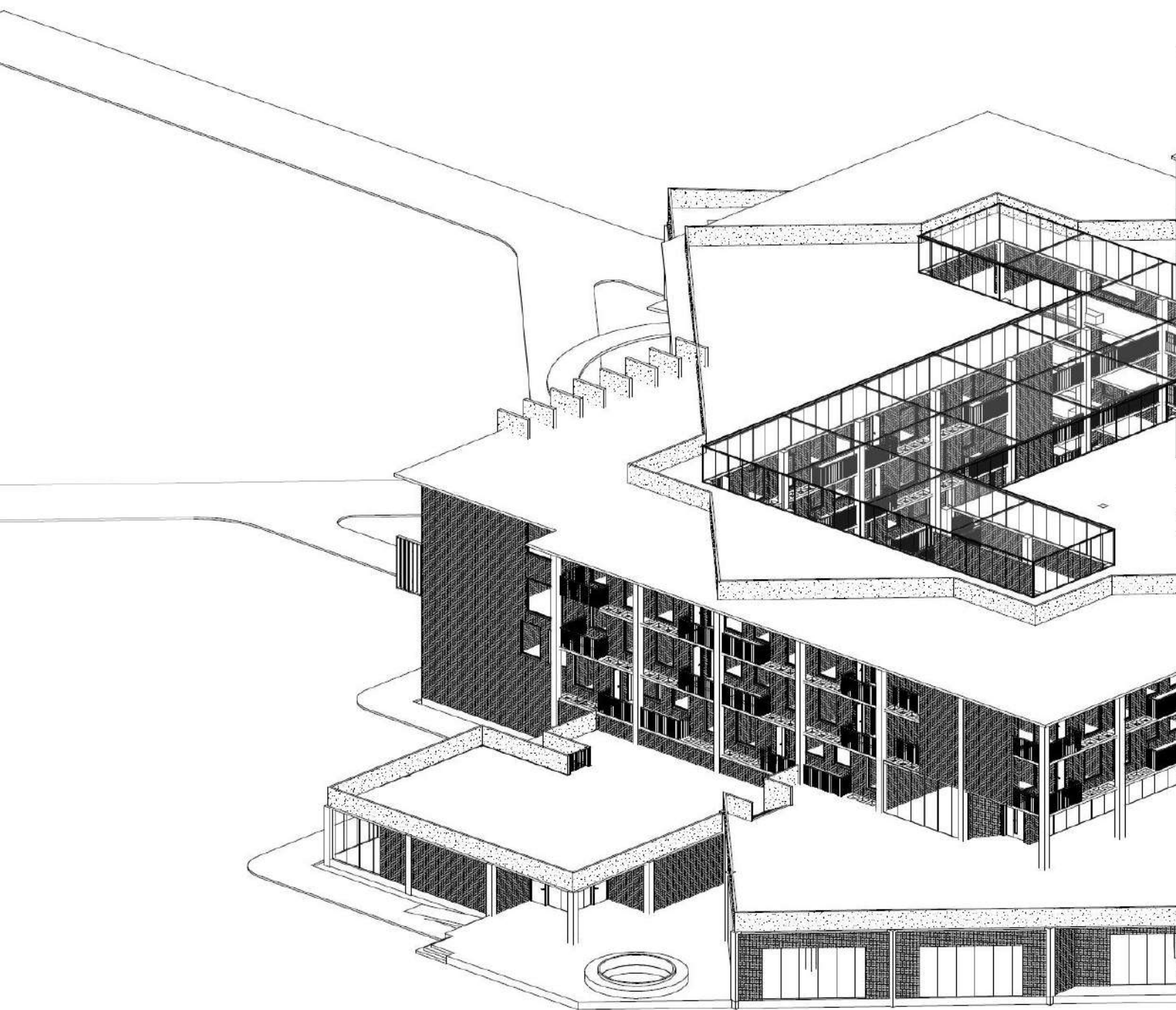
CITY'S GREEN COUNT

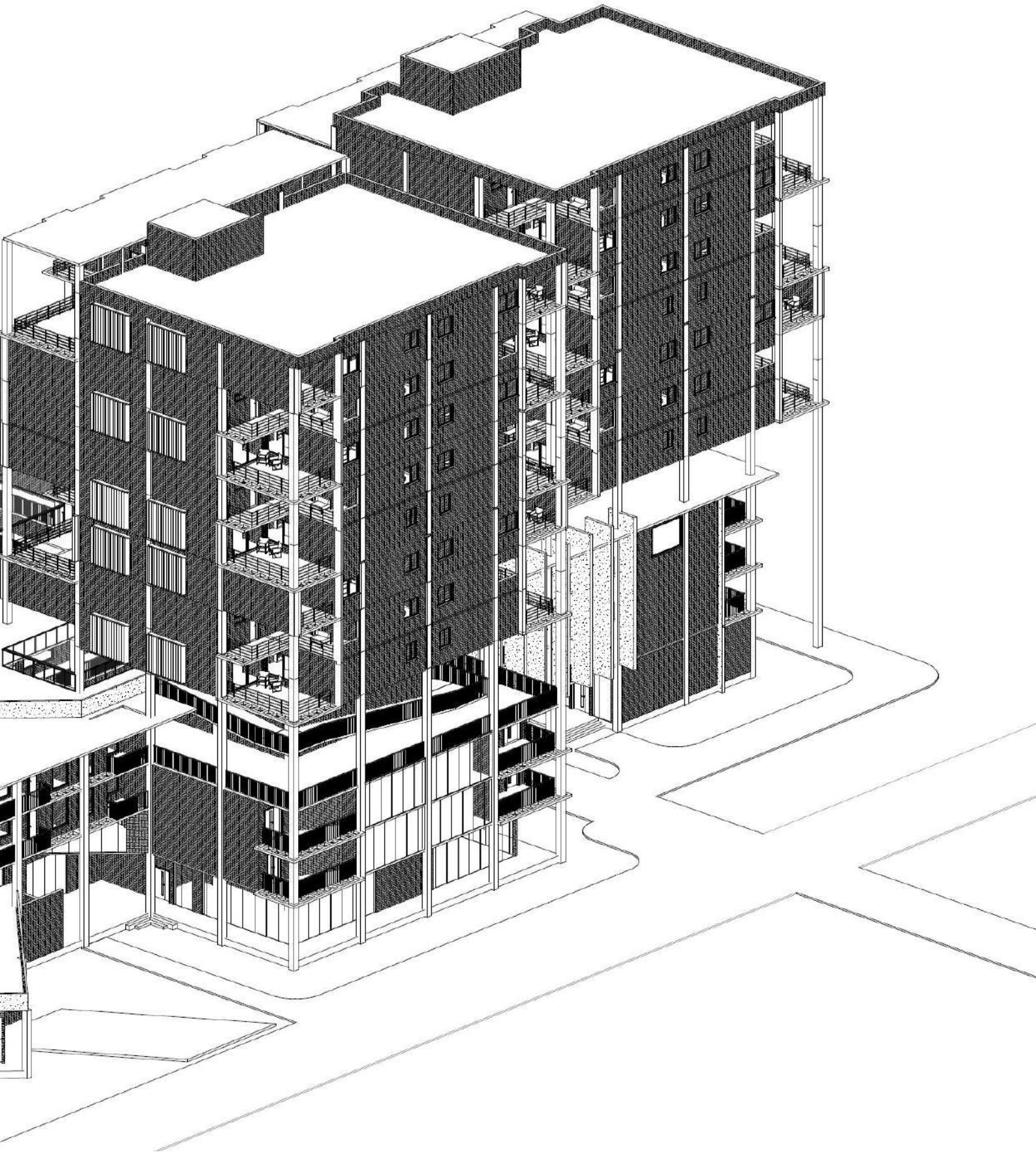
Bangalore City, which was formerly known as Garden City, is now losing its green patches due to urbanization. In 2017, the percentage of parks and open spaces including lakes and water tanks was approximately 2.5-3%, much lower than 4.4% in 2018. Many of these tanks have now been converted to infrastructures as a result of rapid urbanization, such as bus stands, stadiums and playgrounds, etc... Government is now planting more tree saplings along the trenches to provide green canopy for the area but it is still just one initiative towards the great loss.

PRESSURE ON RESIDENTIAL SECTOR

Due to urban and rural migration, lack of infrastructure becomes a major impediment to the urbanization in Bangalore. "District administration is facing the challenging task of providing necessary infrastructure for related economic activities, trade, commerce and housing facilities". The rural poverty will transfer to urban poverty when large amount of illiterate and unskilled migrations move into urban areas. City may suffer from urban poverty, unemployment and housing shortage because of the incapability to accommodate migrants within the city premises.

MUNICIPAL PLAN



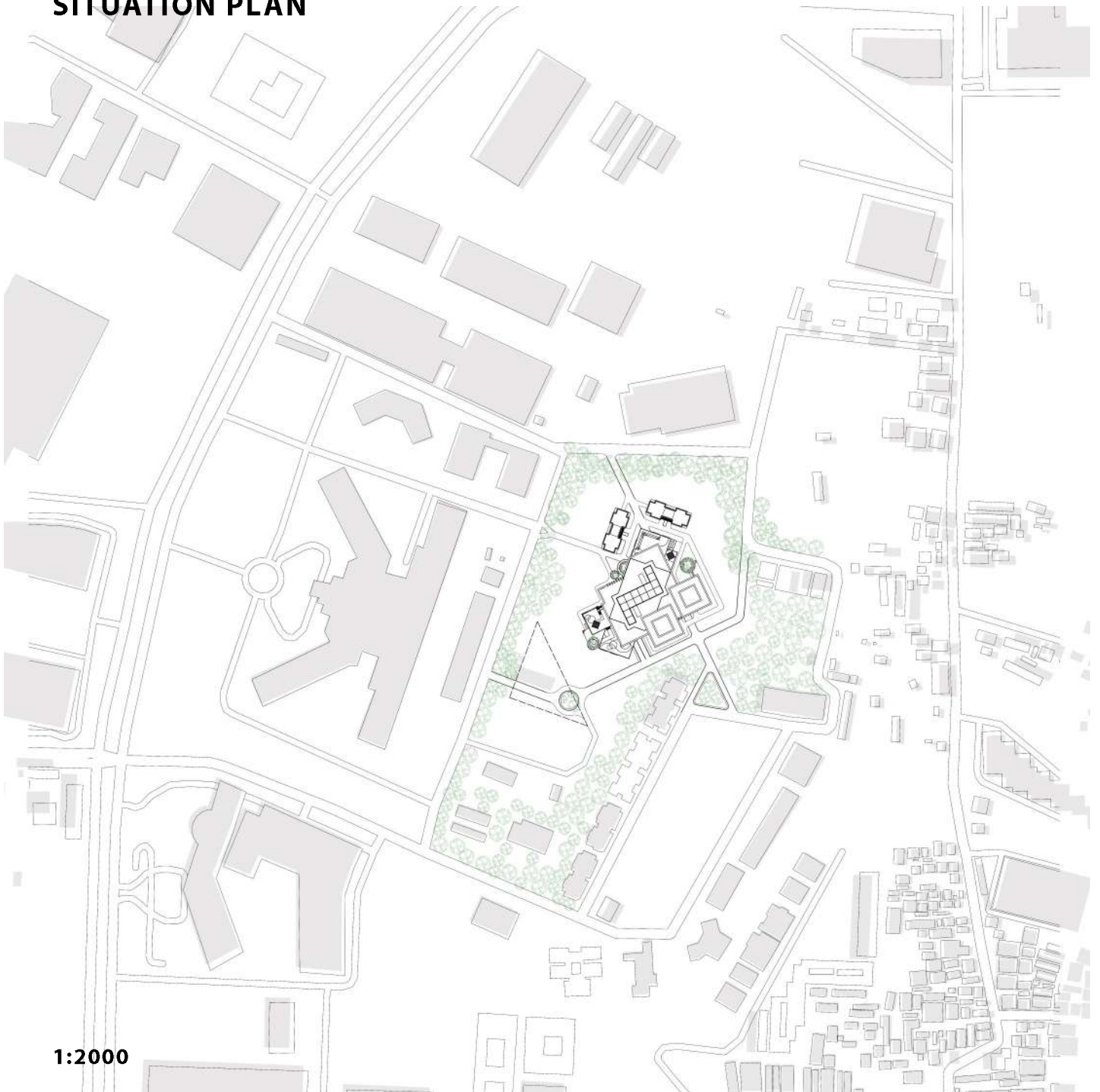




DESIGN

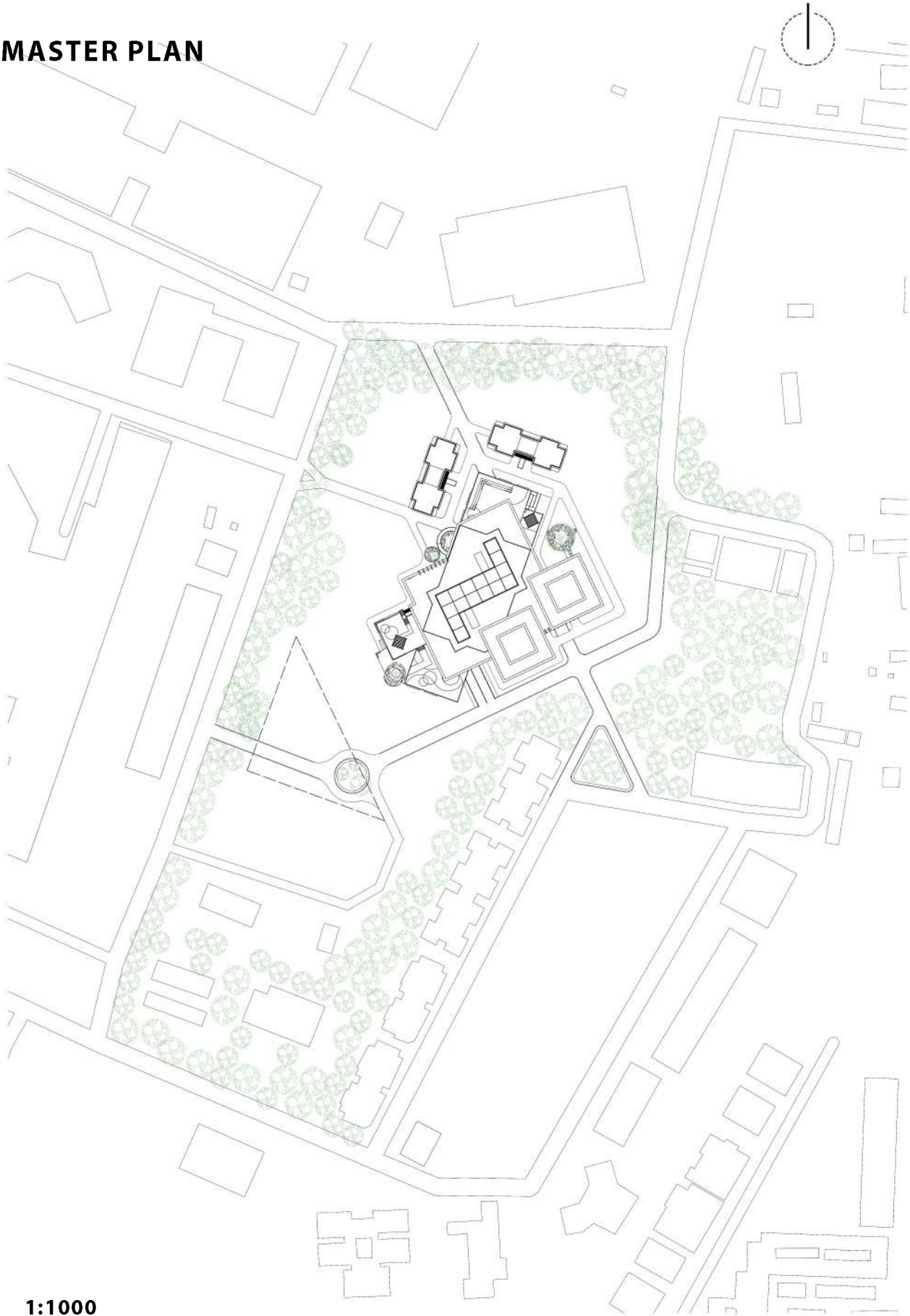


SITUATION PLAN



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MASTER PLAN



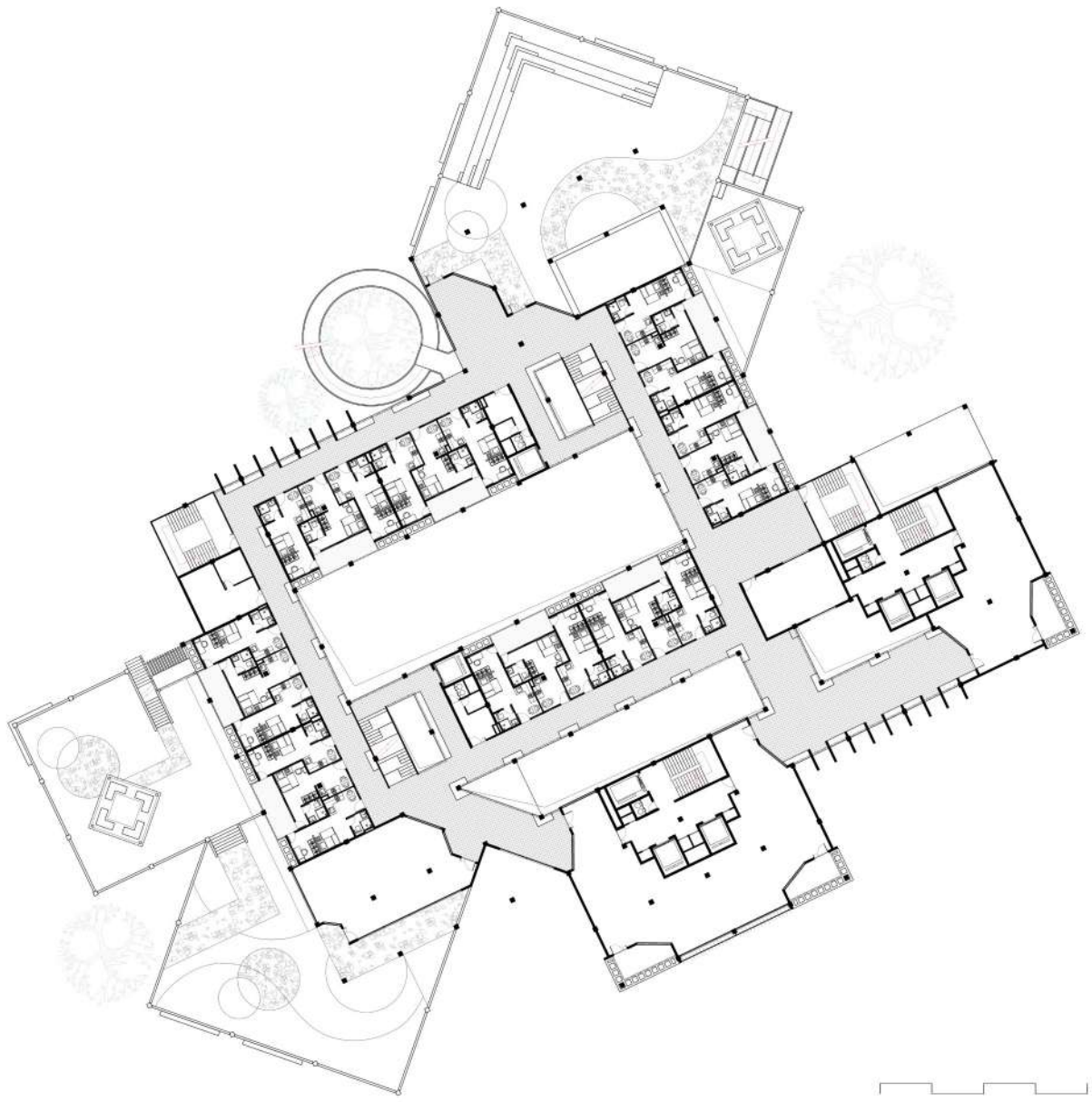
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GROUND FLOOR



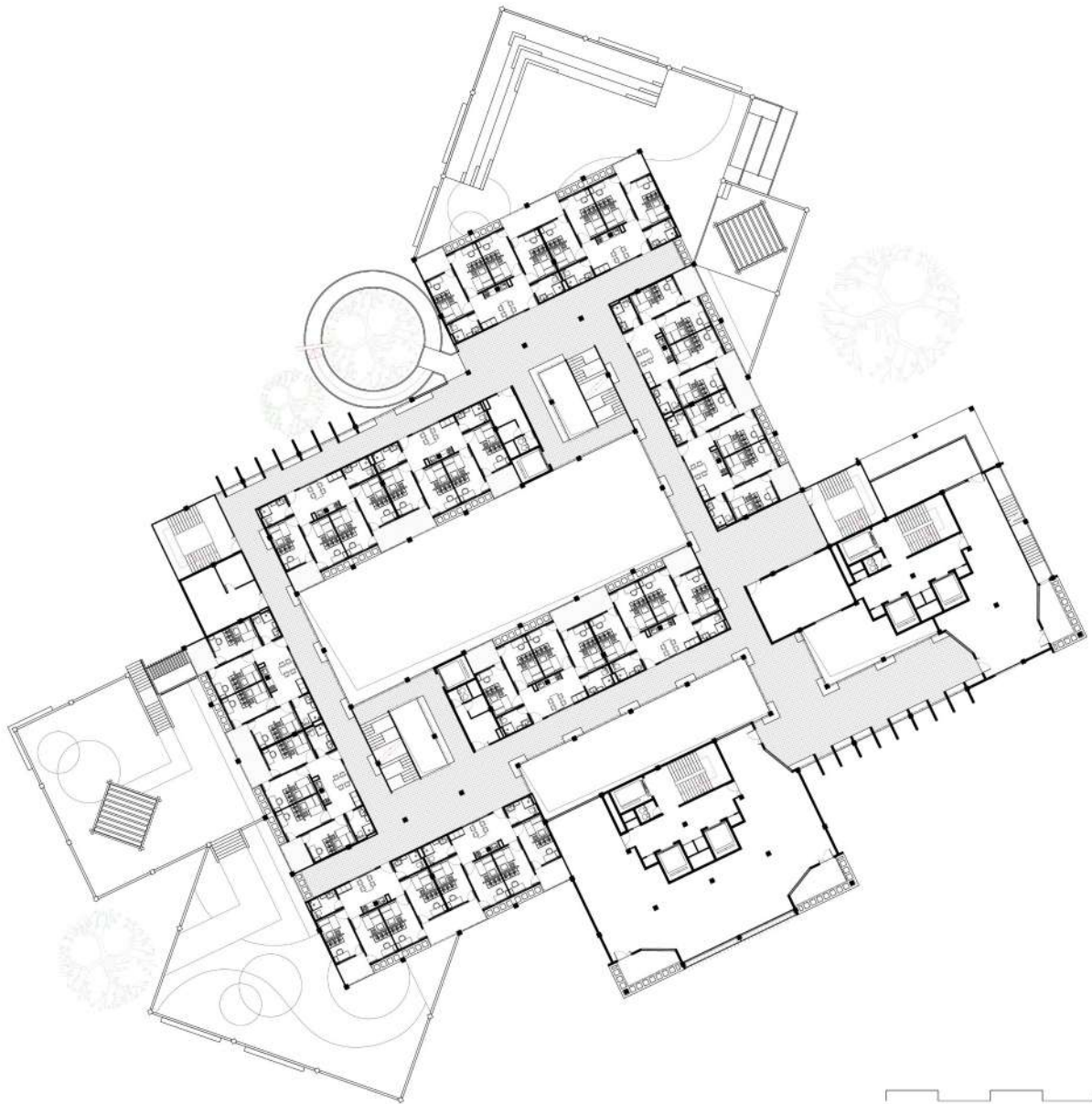
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STUDENT HOUSING—1ST FLOOR



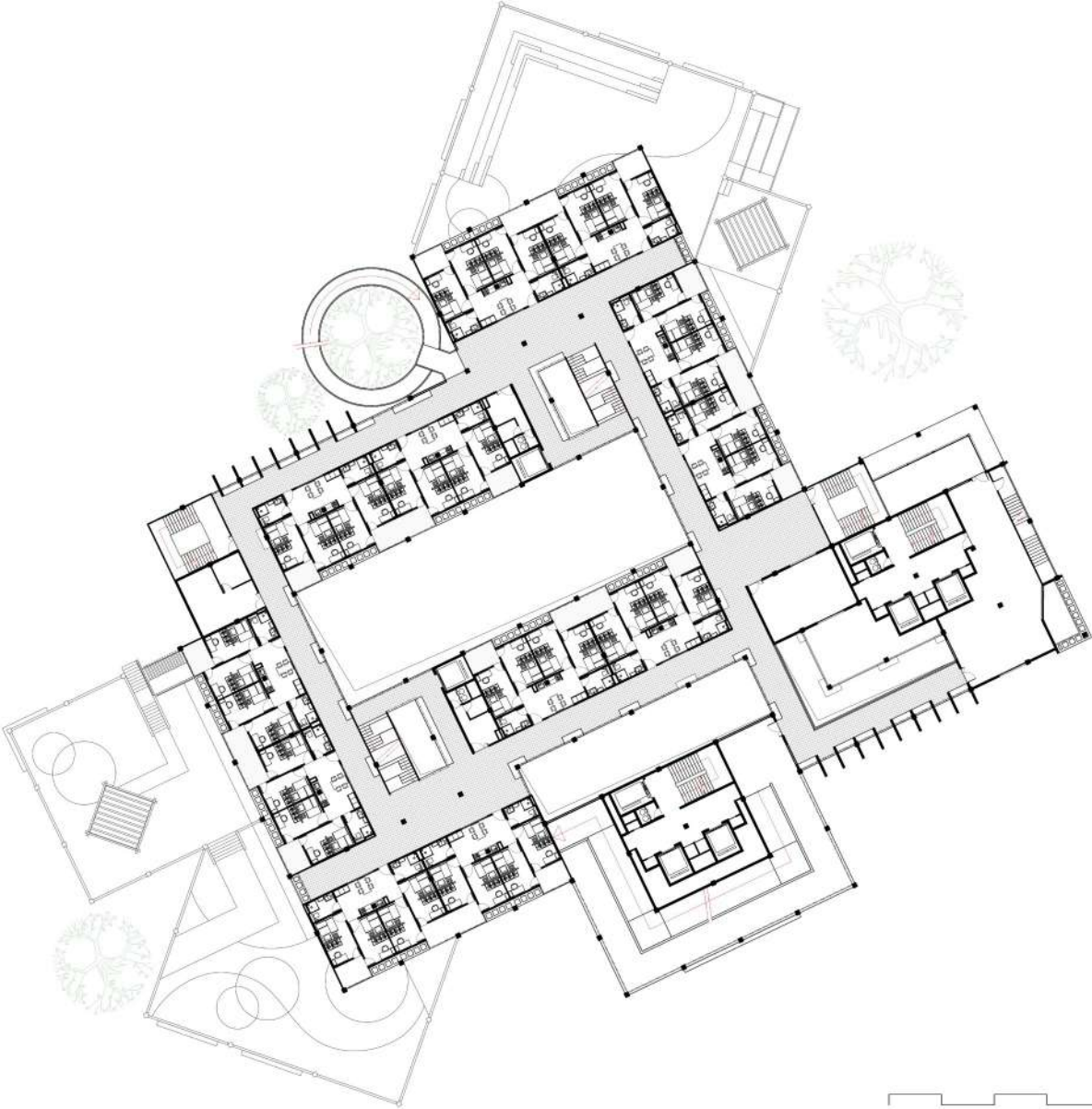
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STUDENT HOUSING—2ST FLOOR



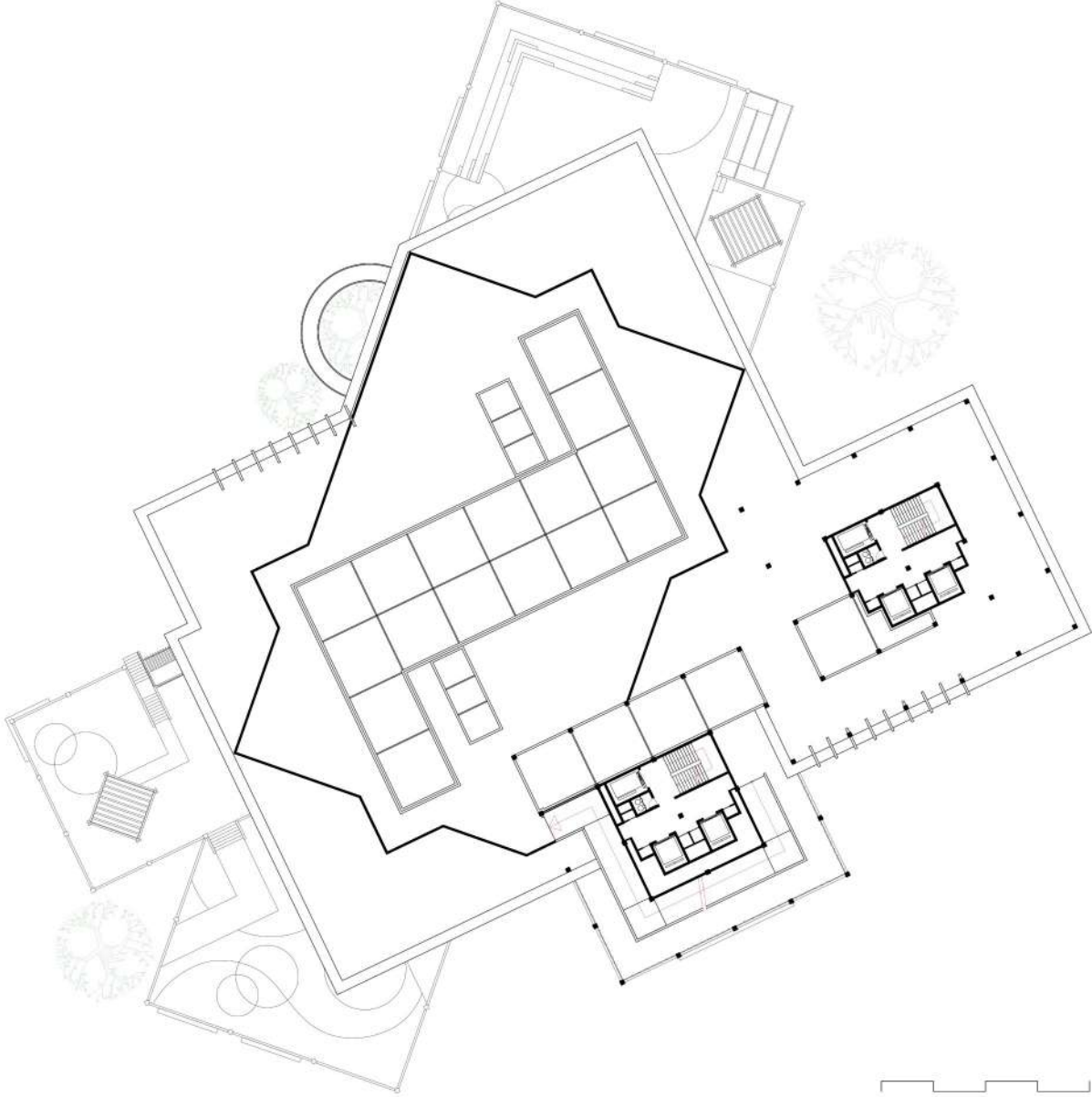
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STUDENT HOUSING—3ST FLOOR



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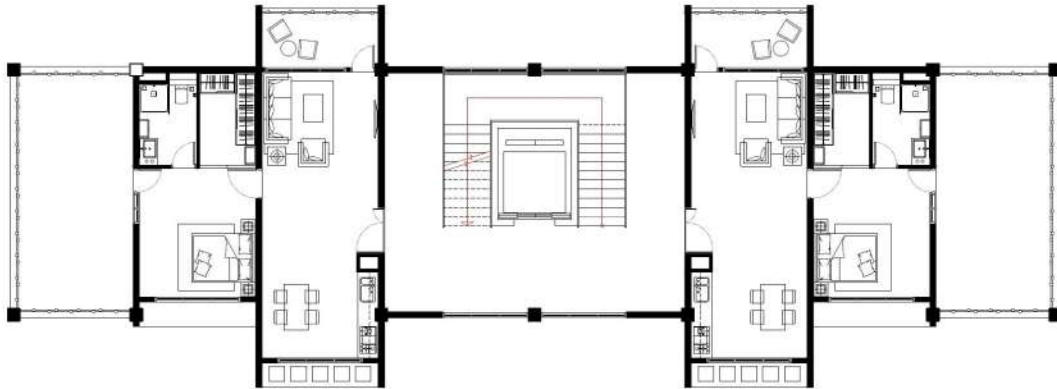
STUDENT HOUSING—ROOF



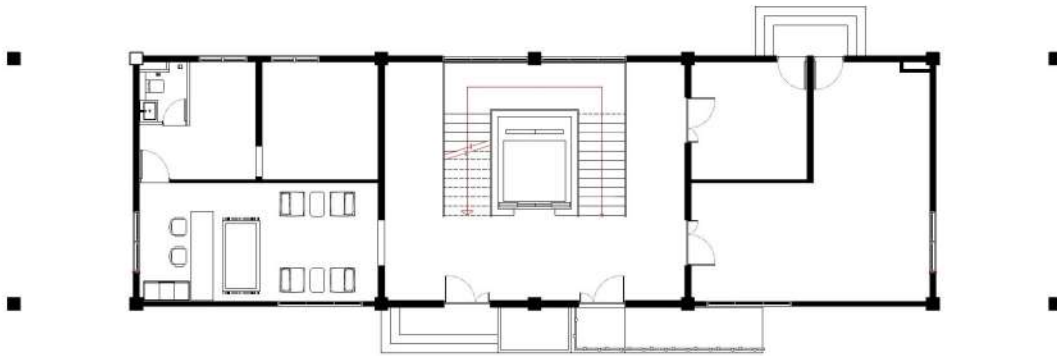
STUDENT HOUSING—SECTIONS

STUDENT HOUSING—ELEVATIONS

SERVICE APARTMENTS



FIRST FLOOR



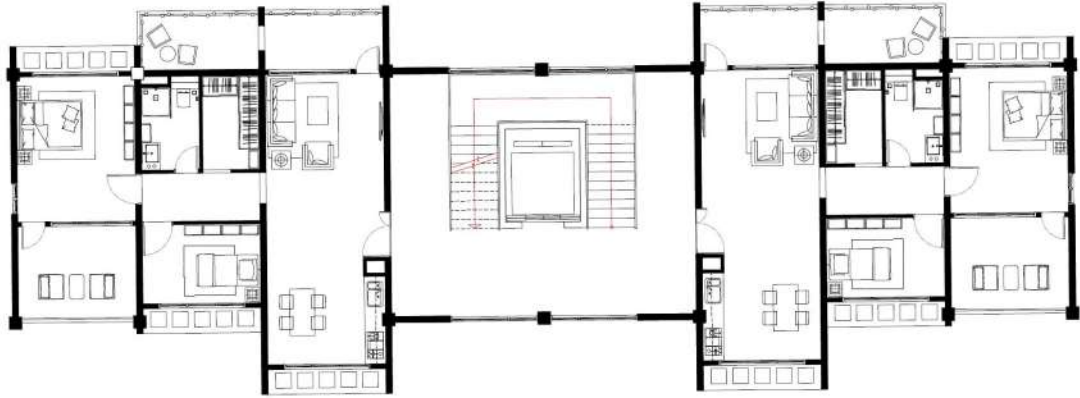
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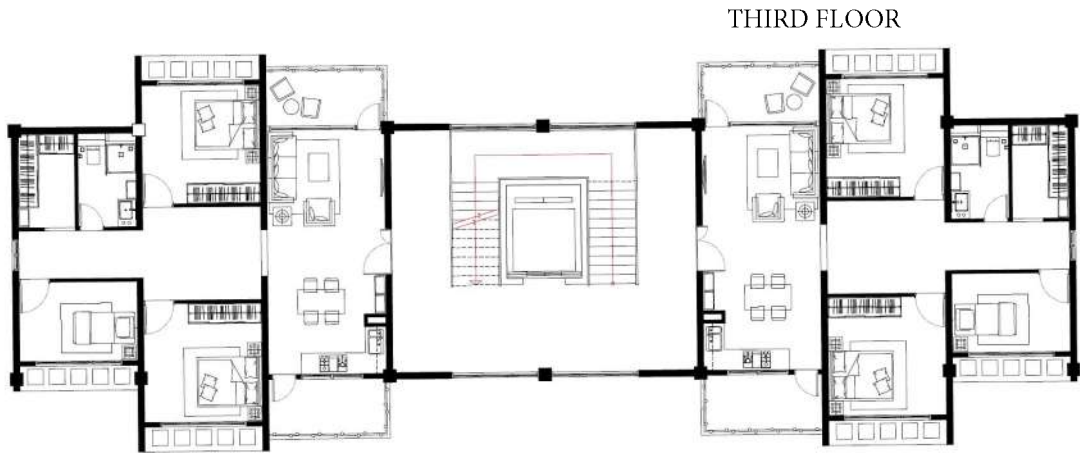
SECTION



Elevation -1



SECOND FLOOR



THIRD FLOOR

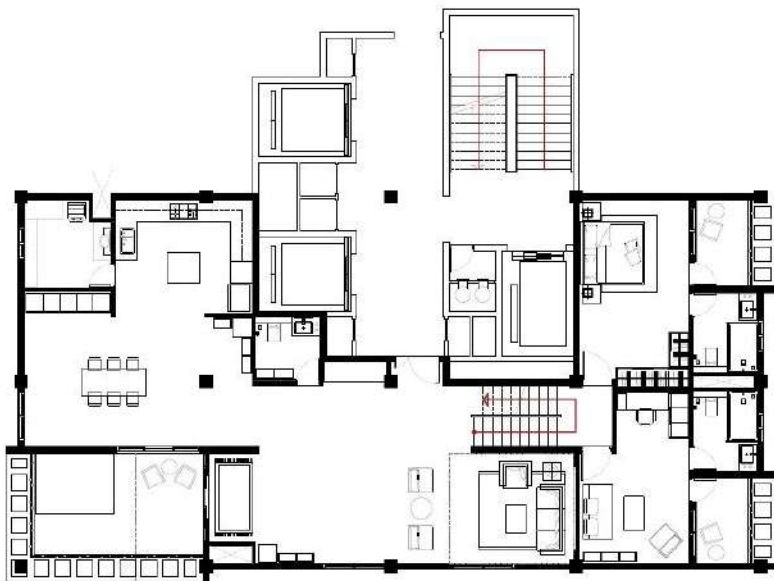


Elevation -2

FAMILY HOUSING—TYPE 1



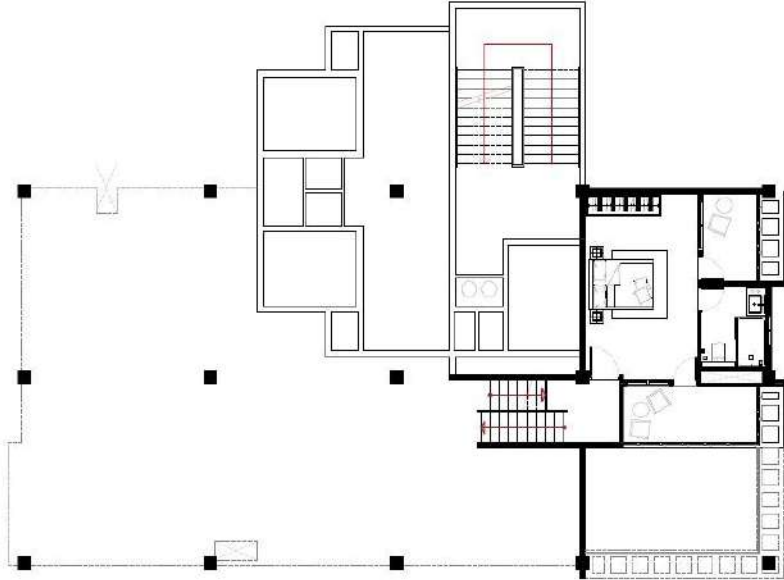
Level 2



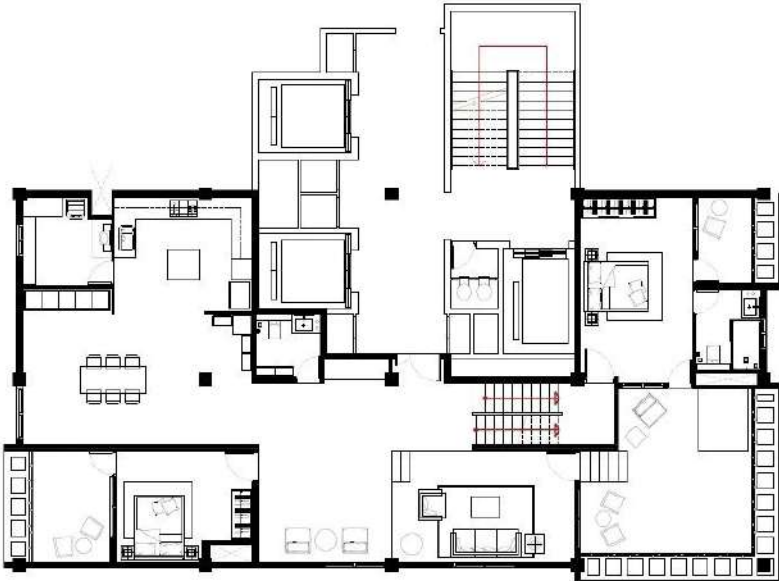
Level 1



FAMILY HOUSING—TYPE 2



Level 2



Level 1



FAMILY HOUSING—TYPE 3

