MIXED-USE BUILDING, A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE

A Thesis Submitted
in Partial Fulfillment of the Requirements
for the Degree of

MASTER OF ARCHITECTURE

by

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Under the Supervision of
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BABU BANARASI DAS UNIVERSITY LUCKNOW

June, 2022

ANNEXURE II

CERTIFICATE

It is certified that the work contained in this thesis entitled **"Mixed Use Building, A Solution to Enhance the Vitality of Urban Space",** by **Mani Kharbanda** (Roll No.-1190109009), for the award of **Master of Architecture** from Babu Banarasi Das University has been carried out under my supervision and that this work has not been submitted elsewhere for a degree.

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Annexure IV
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4. Degree for which the thesis is submitted: Master of Architecture

5. Faculty of the University to which the thesis is submitted : Prof. Varsha Verma

6. Thesis Preparation Guide was referred to for preparing the thesis. YES ☑ NO ☐

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6. Thesis Preparation Guide was referred to for preparing the thesis.	YES ☑	NO ☐
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9. The thesis has been prepared without resorting to plagiarism.	YES ☑	NO ☐
10. All sources used have been cited appropriately.	YES ☑	NO ☐
11. The thesis has not been submitted elsewhere for a degree.	YES ☑	NO ☐
12. All the corrections have been incorporated.	YES ☑	NO ☐

13. Submitted 4 hard bound copies plus one CD.

Prof. Varsha Verma
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ANNEXURE III

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ACKNOWLEDGEMNT

I bow my head with reverence to Almighty God that has showered the blessings on me to get through the whole task of the thesis to a logical end.

At the outset, I wish to thanks and express my profound gratitude, indebtedness and appreciation to my esteemed guide **Prof. Varsha Verma, Prof. Keshav Kumar Sir** and **Prof. Saurabh Saxena Sir**, for guiding me patiently through all the time and giving your valuable guidance, perspective encouragement and indispensable suggestions.

With a sense of regrad and reverence, I take this opportunity to express my deep sense of gratitude towards you in playing a important role in completion of my thesis project.

I would like to express my special thanks to my **Parents** who have always inspired,encouraged and motivated me and helped me through out the entire studies of my life.

MANI KHARBANDA

ABSTRACT

Any urban, suburban, or village development, or even a single structure, that incorporates a range of residential, commercial, cultural, institutional, or industrial purposes, where those uses are physically and functionally linked, and that offers pedestrian links, is considered the "mixed-use development" in the broadest sense. The question of how to use my property the most effectively and earn the best profits is still relevant today, even if we are naturally more concerned with greater plots of land and, consequently, larger constructions.

Depending on the size of the property, mixed use may be vertical, horizontal, or a combination of the two. In a horizontal mix, each structure would have its own envelope and be dispersed over the property. Large tracts of land are needed for such developments in order to provide separate parking, traffic circulation, and entrances. However, it is more frequent to need to develop vertically. When this happens, it becomes a matter of how and what to combine in order to give enough parking, effective circulation, and the optimum arrangement of services.

As far as the retail centre is concerned, there is no doubt that mixing a hotel with a shopping mall is a smart idea since it offers a ready supply of clients, given that the site requires the mix and that each component is made to appeal to the same socioeconomic profile.

The live/work/play dynamic is really one of the strongest justifications for blending shops, offices, entertainment, and housing.

A SOLUTION FOR IMPROVEING THE VITALITY OF URBAN SPACE: MIXED-USE BUILDING

The Research Question to be studied upon:

1. Mixed Land Use Buildings spurs revitalization, giving the character, “Sense to the Place”, thus enhancing the vitality of Urban Space.

2. Mixed Land Use buildings, promotes efficient use of land and infrastructure, which in return help in generating capital revenue and embodying the “SMART GROWTH”.

3. Mixed Land Use Buildings that can be realized regarding one of the new conceptions, represented in social capital for achieving the sustainable development.

AIM OF THE RESEARCH

The aim of this research is to demonstrate that how a single, mixed functionality use building helps in bringing the community members together and helps in strengthening the local and regional economy.

OBJECTIVES OF THE RESEARCH

1. To blend different types of uses together through site design, such as through the joint use of public areas and landscape linkages.
2. To blend different types of uses that are responsive to their surroundings and work well together in terms of building layout and street orientation.
3. To promote links between users on and off site by utilising shared access, parking, circulation connections for people on foot, bicycles, and other modes of transportation.
4. To cater the proper movement of public in the building , by providing separate access for each use of the building .
5. To cater the proper management of traffic flow, i.e. the facility of parking and its movement in the building premises.
6. Convenience of live-work-play options in a single location.
7. Greater affordable housing choices, to the travelling working people, to young and elderly, individuals and families, and people with different levels of financial means may all find housing.
8. Highest land density.
9. Highest present value of the project.

SCOPE OF THE RESEARCH

The scope of my Research study will be in creating the mix of uses that complement each other, the pedestrian and traffic flow in the building design.

LIMITATIONS OF THE RESEARCH

The Vertical Mixed-Use Building will be the only setting for the research, which will focus on the mix of uses that reacts to their environment and complements one another in the structure's architecture, pedestrian mobility, and the correct movement of the general public inside the building.

ABSTRACT

Planned mixed-use complexes have gained appeal recently, first as urban regeneration initiatives and more recently as centres for suburban growth. Despite being marketed as being more profitable and ecologically beneficial than single-use residences.

Mixed use zoning, integrates all the uses such as commercial, institutional, entertainment and all others into one area, which furthers allows for some physical and functional connections along with the pedestrian links.

A project must be pedestrian-friendly if it integrates two or more housing, business, cultural, institutional, or industrial objectives. It is among the ten principles of new urbanism, a planning strategy that tries to encourage community design and construction that is advantageous to the economy, society, population health, as well as other elements.

The Mixed Use development offers the following advantages such as :

1) It helps in generating the revenue, due to the multiple uses within the same building.

2) It encourages the integration of the multiple uses and its compatibility with each other.and thus increasing the land/ project value.

3) It helps in forming a community which has a flow of pedestrian links.

MIXED USE is:

When suitable land uses, public facilities, and utilities are layered together at different sizes and intensities, the result is a three-dimensional, pedestrian-oriented space known as a MIXED USE. People may live, work, play, and shop in one location because to the range of purposes, making it a popular destination for residents of surrounding areas.

There are three different types of mixed-use developments that it falls under:

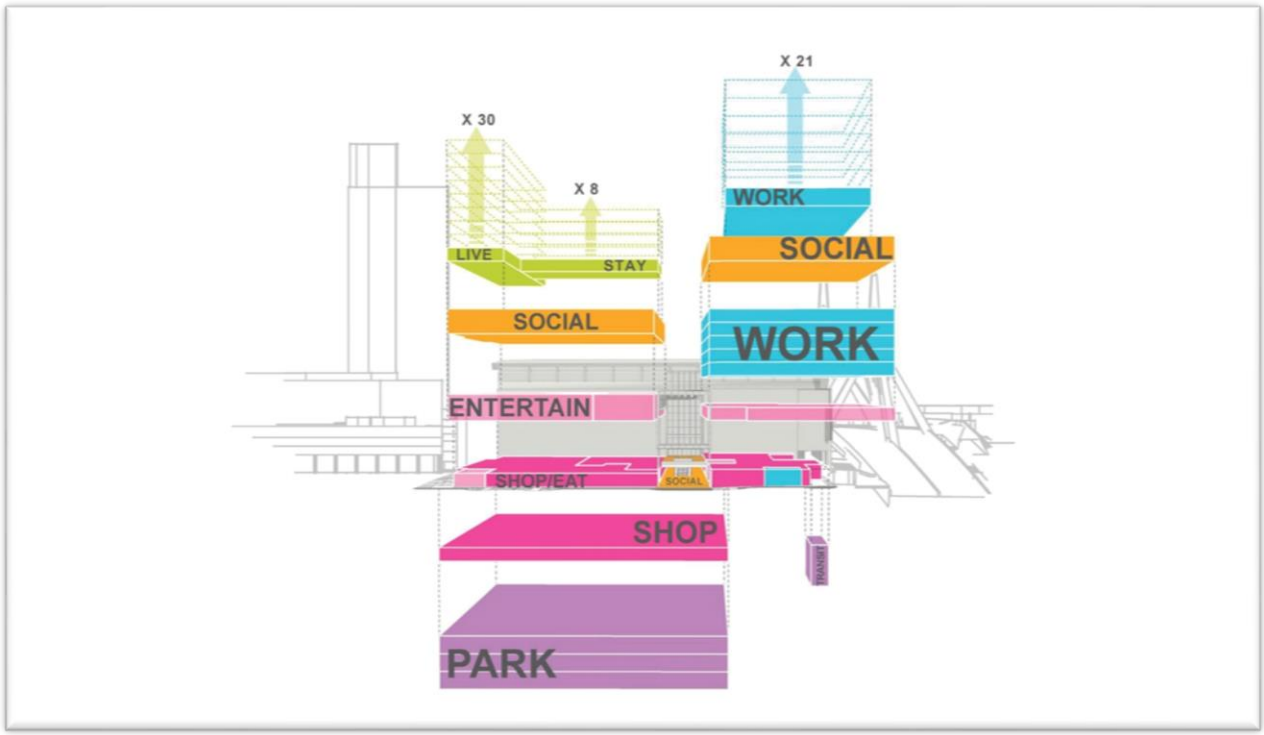
Mixed-Use Vertical Development

- Combines many purposes inside the same structure.
- It provides the public uses such as commercial uses and retail stores on the below floors whereas on the upper floors there are provision of private uses i.e. offices and the hotel rooms for the convenience of the occupants.

Development of Horizontal Mixed Use

- A project must be pedestrian-friendly if it integrates two or more housing, business, cultural, institutional, or industrial objectives.

- Mixed-use use is among the ten principles of new urbanism, a planning strategy that tries to encourage community design and construction that is advantageous to the economy, society, population health, as well as other elements.



MIXED VERTICAL USED DEVELOPMENT

A total of 30 articles from research on mixed-use and urban development are chosen and looked at. Due to the topic of urban mixed-use development, this study's technique is based on content analysis. In order to undertake notions about this technique in an orderly manner, aspects and materials of the previously chosen investigations are grouped and assessed.

Factors Acquired with a Focus on Mixed-Use Rank's Effects Literature-based factors Researchers:

1. **Reduce dependence on personal cars**

-Yang Jiang 2010 -Yosef Rafeq Jabareen 2006 -CANPZD 2006 -Philippe Barla, et al 2011 -Ayes Ozbil 2009 -Colin Vance, Ralf Hedel 2007 -Khattak, A.J.& Rodriguez, D. 2005 -Stephen. M. Wheeler 2002 -Laurence Aurbach 2006 -Eric Hoppenbrouwer 2005 -Andy Coupland 1997 -P. Christopher Zegras 2004

2. **Walking**

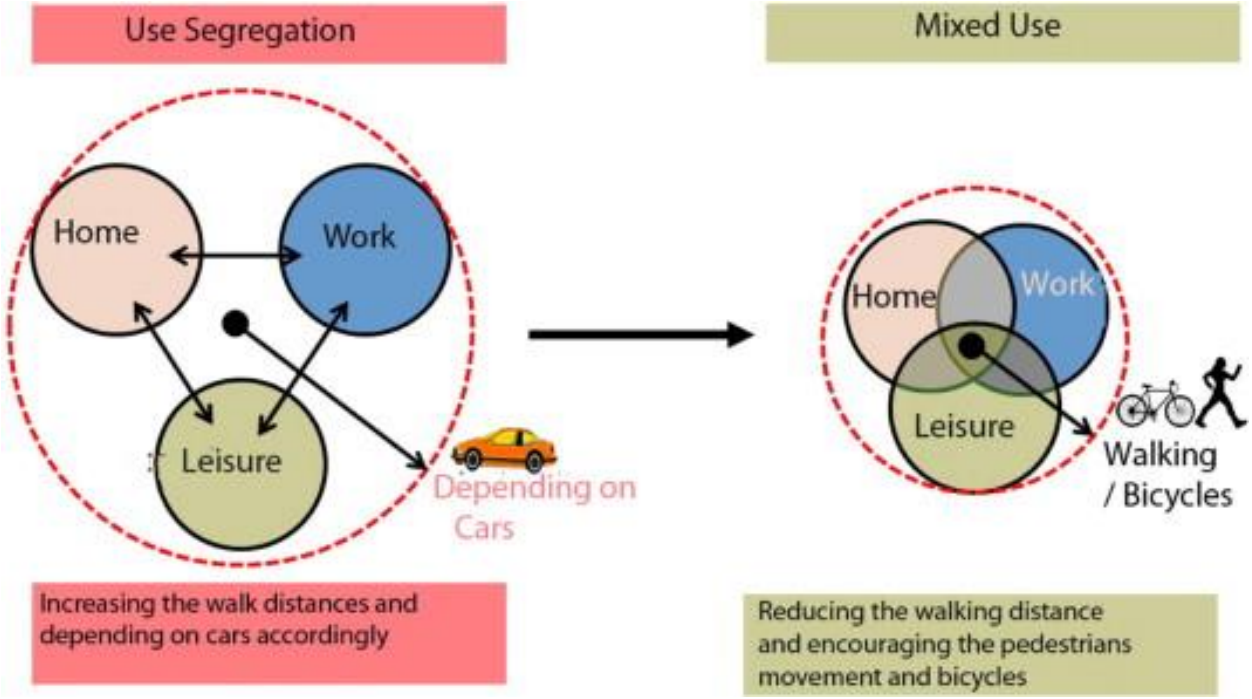
Ursula Lehner-Lierz1997 -James M. Daisa2004 -James R. Delisle. et al 2011 -Sivam, A. &Karuppannan, S. 2009 -Khattak, A.J.& Rodrig.

3. **Closeness of activities**

-Hildebrand Frey 1999 -Yang Jiang 2010 -Anne-Françoise Mariqu 2011 -Petter Naess 2003 -Yosef Rafeq Jabareen 2011 -Sonia Hirt 2007 -Valley Connections 200

4. **Green spaces and urban public**

-Arrington, G. B 2002 -SDS 2002 -J. Barry Barker 2004 -Bryan Woolley 2012 -Eric Hoppenbrouwer 2005 -HSP 2009 -Andy Coupland 1997



<u>Expected Benefits of Mixed Used Development :</u>

1. Attractive pedestrian environments enhanced social interactions and restoration of richer, more vibrant and diverse urban life.
2. By preventing extensive office growth, a composition of appropriate land uses may be created that is economically efficient.

3. Providing housing options with a wider range by offering residences adjacent to places of employment and the natural world.
4. Preserving historic structures while maintaining the scale and character of older regions.
5. Reduction in the car ownership and usage by enabling people to live near places where work, shop and play is present.
6. Better building practises and a quicker realisation of the site's potential.
7. Activities that complement one another's skills in the trade of products and services benefit service providers.
8. Longer delivery and higher construction cost of mixed-used project against single – use project.
9. Increased sustainability and energy efficiency.
10. Better A stronger sense of place.
11. Integration of services provided by the city, such as public transit.
12. Greater adaptability to changing demands, extending the long-term life of the structure.
13. Greater Economic Viability
14. A rise in tax revenue.
15. Less expensive infrastructure.
16. Savings on budget costs.
17. Locations that are healthier and more walkable.

ENVIRONMENTAL EFFECTS

1. Shorten vehicle travel (multi-purpose journeys) a decline in fuel usage and a decrease in the use of automobiles.

SOCIAL EFFECTS

1. More usage and availability, resulting more chances to utilise public transportation
2. More security and fewer crimes,
3. Improvements in life quality, urban centres, and tourist attractions.

ECONOMIC REACTIONS

1. Revitalize Downtown
2. Increase private investment

3. Promote Tourism
4. Supports Good Business Climate
5. Supply chain and production efficiency
6. Rules for using buildings and infrastructure efficiently
7. A higher interest rate and more economic output.

MIXED USED DEVELOPMENTS' HISTORY

The mediaeval villages from the fifth through the fifteenth century are perhaps the best historical example of the development that includes the live, work and play dynamics.

The mediaeval town, which was densely constructed inside high city walls, is the ideal illustration of a successful, effective neighbourhood that adheres to all the principles of mixed-use development.

As the huge wall was able to defend the city inhabitants more securely, than spreaded across the acres of land, this manner of life served to benefit them not just socially but also in terms of defence.

The notion of integrated land uses was uncommon in new projects from about the 1910s through the 1950s. Retail, employment, housing, and educational institutions were all separated from one another.

But as time passed, city planners saw a wide range of unintended consequences from the increased urban sprawl they had produced, including:

1. An increase in the number of kilometres driven by vehicles, 2. Energy use, 3. Pollution, the depletion of natural resources, 4. Ineffective infrastructure and public service expenses, 5. The collapse of central cities, and many other psychological and social consequences.

Additionally, mixed-use complexes started to reappear in the late 1970s and early 1980s. The projects, however, were far smaller in scope than their forerunners and were frequently incorporated within urban surroundings like historic districts or buildings.

Then, as a result of sustainable design, walkable urbanism, and "smart growth" programmes, mixed-use developments started to appear around the end of the 1990s and the beginning of the 2000s. They were seen as a necessary component in the development of "Livable Communities," "Traditional Neighborhood Developments," and "Transit Oriented Development."

What advantages come with a society that is more mixed-use, live, work, and play?

1. The potential for information spillover is the first of these advantages. In essence, there are more possibilities for people to interact and socialise with one another when there is a high number of residents and the workers in the small community.
2. During those social encounters, we as humans show the highest level of tacit information transmission to other people. And via the exchange of ideas, this tacit knowledge overflow can encourage innovation. The local economy therefore performs better as a result.
3. In addition, mixed-use complexes can promote additional economic growth by establishing a regional market. People will spend their hard-earned money in a limited region where they live, work, and play. The exchange of goods and services among the members in the building promotes the neighbourhood and regional economies, thus keeping people close.
4. New studies have shown that mixed use neighbourhoods and walkability encourage the development of social capital.
5. In summary, people who live in walkable neighbourhoods are more likely to have a feeling of belonging and trust their neighbours.
6. This is significant because, as humans, we require a good home life, a rewarding career, and community connection in order to live complete lives and feel content.

7. Despite the fact that community engagement has been shown to be essential to our wellbeing, there are less and fewer areas in the US where people may engage in this kind of interaction due to the expansion of automobile-oriented suburbs, which has resulted in a weakening of ties within communities.

One strategy city planners are starting to adopt to address this is the rise of mixed-use projects.

Vitality of Urban Environment

Urban vitality is a notion that includes the macro and micro aspects of the urban environment. Macro- Vitality pertains to concepts like fairness, efficiency, compatibility, adaptability, and environmental quality in addition to urban areas. Additionally, prolonged vitality results in livability.

Jane Jacobs, had following social beliefs described in her book are as follows:

1. The streets and crosswalks in a city should be considered.

2. She also suggests that racial prejudice and separation are negatively impacted by increased gatherings and crossing safety.

According to Danish architect and urban planning expert Jan Gehl, a city's beauty may be judged by how people congregate and spend their time in its public places.

Paul Zucker is an additional authority on urbanisation and has a strategy for promoting social connections and public places in cities. According to him, a square is a psychological rest stop in a city or neighbourhood that includes people's social interactions. In contrast, he emphasises social dimensions and activities as well, not only architectural and aesthetic features, of urban area design.

Additionally, according to Zucker, space is sensed through human activity experiences.

Barbosa contends that whereas private gardens lack this potential since social interactions there are mostly directed toward private social networks, public green spaces provide social benefits that may be utilised and promoted in society. Consequently, public green areas provide societal benefits like attracting people.

Public transit is seen as a priority in focused mixed-use developments, crucial component of wise growth to reduce reliance on automobiles, protect open spaces and natural resources, foster vigour and social interaction, promote economic development, and balance housing prices. Additionally, it fosters a sense of neighbourliness in residents and offers opportunity for increased social interactions.

Moreover, fostering variety and enhancing the standard of urban settings.

"Create an inviting, safe, and lively public place that attracts a wide range of people."

URBAN MARKET SQUARE

CONCLUSION:

Changing things up is best.

A multipurpose structure that responds to its surroundings' demands encourages the development of varied neighbourhoods. Although sustainable building is a compelling and significant benefit of these structures, mixed-use buildings do more than only conserve resources. They assist us in rethinking how to

"A social place that is a centre of community life."

plan urban areas so that burgeoning urbanisation becomes a benefit rather than a burden.

METHODOLOGY

1. FINALIZE THE AREA OF STUDY
2. SELECTION OF THE TOPIC
3. UNDERSTANDING THE PROJECT
4. BACKGROUND ANALYSIS
5. COLLECTION OF DATA
6. LITERATURE STUDY AND CASE STUDY
7. DATA COLLECTION FROM SECONDARY SOURCES
8. DATA ANALYSIS, SYNTHESIS OF ANALYZED DATA
9. IDENTIFICATION OF PROBLEMS
10. INTERPRETATIONS/SOLUTIONS
11. SELECTION OF SITE WITH DETAILED SITE ANALYSIS
12. FORMING REQUIREMENTS
13. EVOLUTION OF FORM
14. CONCEPTUAL DESIGN
15. PRELIMINARY DESIGN
16. FINAL DESIGN

CASE STUDY -1

KOHINOOR SQUARE , MUMBAI

1. SHIVAJIPARK, MUMBAI, INDIA, as the location

Building of the type "Mixed Use"

3. STATUS - UNDER COMPLETION UNTIL DECEMBER 2022

4. SKYSCRAPPER AS A STYLE OF ARCHITECTURE

5. THE COST IS 21 BILLION ($330 MILLION US)

6. HEIGHT: 203 m for the main building plus 142 m for residential

Building.

7. Floor Count: G+52 (Main Building)

35 stories (Residential Building)

8. 2,750,000 square feet (250,000 square feet) of floor space

255,000 square metres)

9. ELEVATORS/LIFTS – 40 were in the main building whereas 8 were there in the residence building .

10. The Architect of the building : Sandeep Shikre , GKK Works

11,000 PARKING SPACE FOR 3500 VEHICLES

12. 4.6 ACRES OF PROJECT AREA

13. F.A.R. – 13

INTRODUCTION

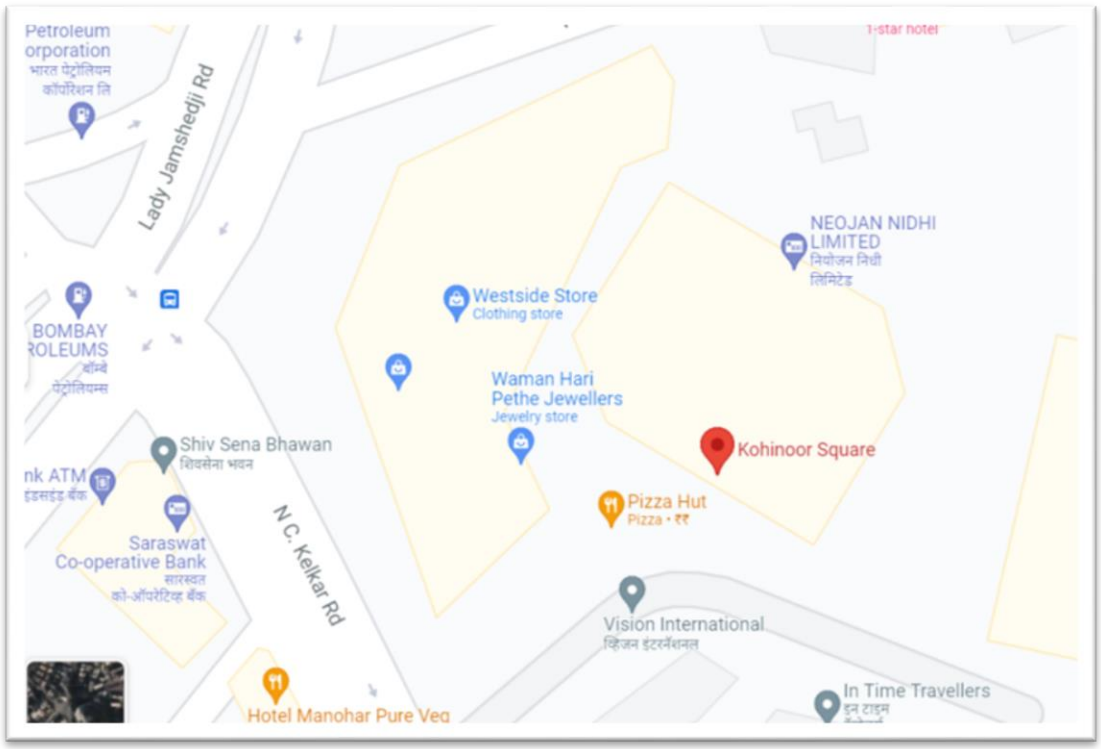
1. KOHINOOR SQUARE is a 52-storied building of height 203 metres, semi-twin mixed-use skyscraper that is located in Shivaji Park, Mumbai and the land was home to Kohinoor Mills.

2. It consists of building homes, hotels, residences, and upscale shopping malls.

3. It is amongst the highest and tallest building in India and in South Asia , 2013 as of now.

4. The building is ecologically friendly since it uses.

LOCATION MAP

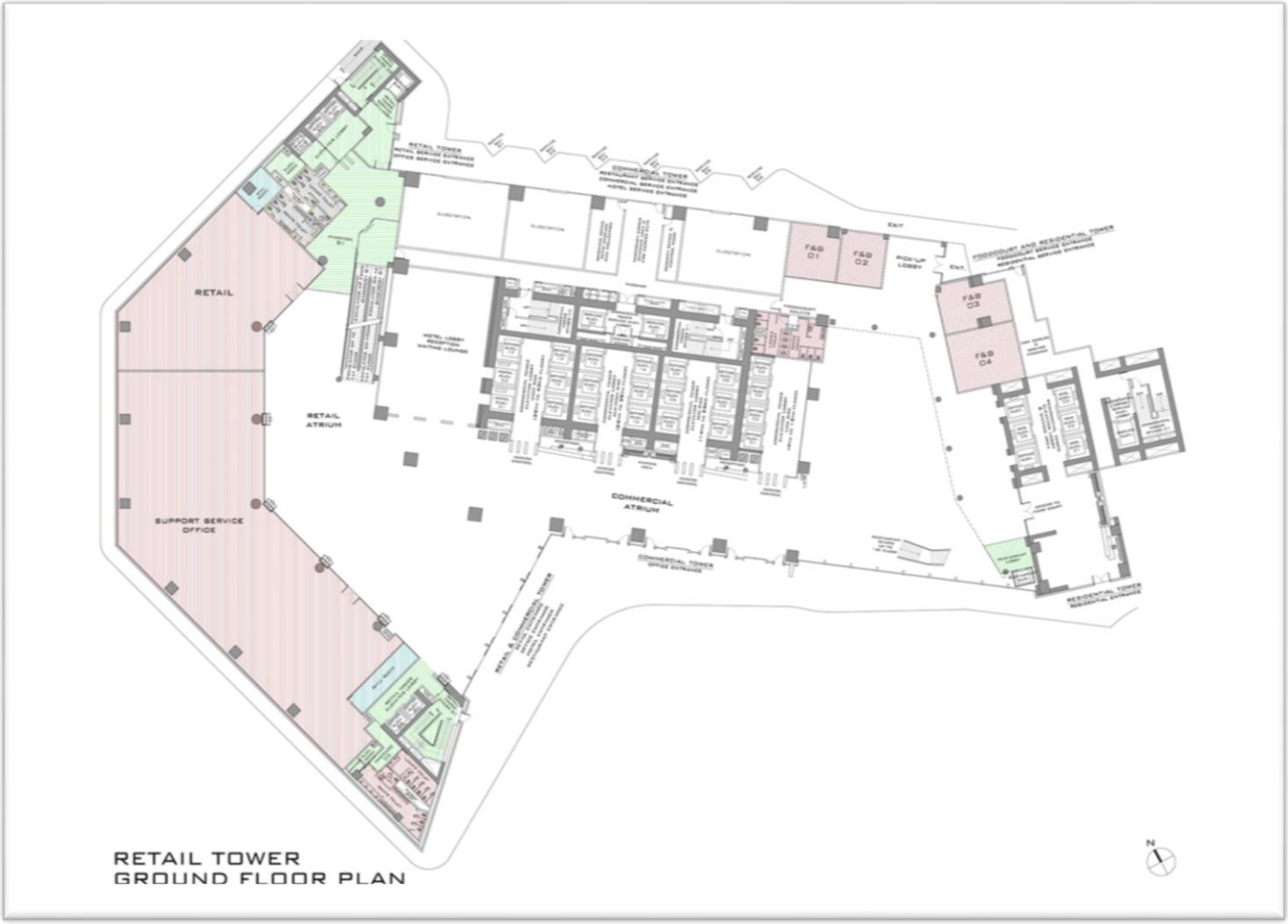


The site is situated in Dadar, Mumbai

CONNECTIVITY

1. 7 Mins Dadar station.
2. 12 Mins Matunga Road Railway Station .
3. 10 Mins Big Bazaar.
4. 5 Mins Shivaji Park.
5. 20 Mins. Bandra Kuria Complex (10 Mins from Proposed Metro Station)
6. 1 Mins Proposed Metro Station (Seepz – BKC – Colaba)
7. 8 Mins Dadar Central.
8. 30 Mins Domestic & International Airport (15 Mins From Proposed Metro Station).
9. 15 Mins Bandra Worli Sea-link.
10. 2 Kms. Radius Major Colleges & Hospitals and other Business Centres etc.

THE SITE PLAN



THE GROUND FLOOR PLAN

1. The main building's first five stories are occupied by a high-end shopping centre, while the following 47 storeys are home to a five-star hotel and business offices. On the fifth story of the main structure, there is a five-star hotel.

Fig 3.101 Typical Floor Plan(office)
http://www.kohinoorsquare.in/offices/floor-plan.html

403 – 805.58ft^2

404 – 891.15ft^2

405 – 1110.20ft^2

406 – 1012.78ft^2

407 – 1008.48ft^2

408 – 1349.81ft^2

409 – 909.13ft^2

410 – 912.25ft^2

411 – 912.25ft^2

412 – 854.66ft^2

Gents Toilet 322.91ft^2

Ladies Toilet 322.91ft^2

Pantry – 51.66ft^2

501 – 805.58ft^2

502 – 885.12ft^2

503 – 901.70ft^2

504 – 912.25ft^2

505 – 1154.22ft^2

506 – 1036.79ft^2

507 – 1208.37ft^2

Gents Toilet 322.91ft^2

Ladies Toilet 322.91ft^2

Pantry – 51.66ft^2

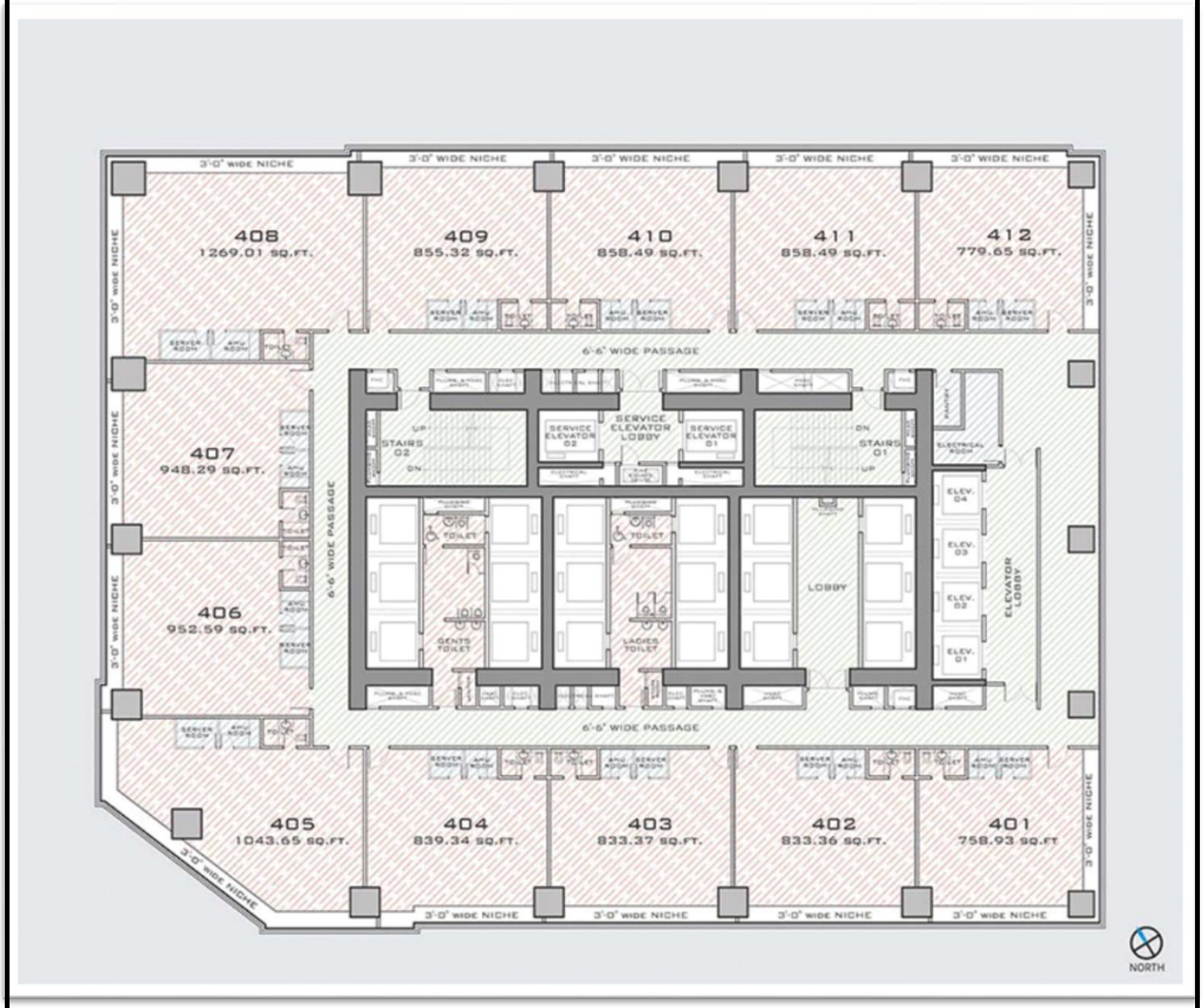
Electrical room – 13.5ft^2

Electric room – 77.5ft^2

Server room – 199.13ft^2

AHU room – 199.13ft^2

Refuge area – 1291.66ft^2



THE OFFICE TOWERS PLAN

CENTRAL CORE OFFICE TOWERS INCLUDE:

1. Lobbies with 6 elevators serving floors 25 to 39.
2. In the absence of a lift lobby, spaces between the elevators are utilised as restrooms, with dust on either side.

3. Two of the six lifts in this set are also accessible from lower floors.
4. A single elevator lobby with four lifts serving the first through 24th floors and two service elevators
5. The 24th floor has a lift bank.
6. The centre also contains two stairs.

Residence Building

1. 13 Stories of underground parking

2. There are 132 houses.

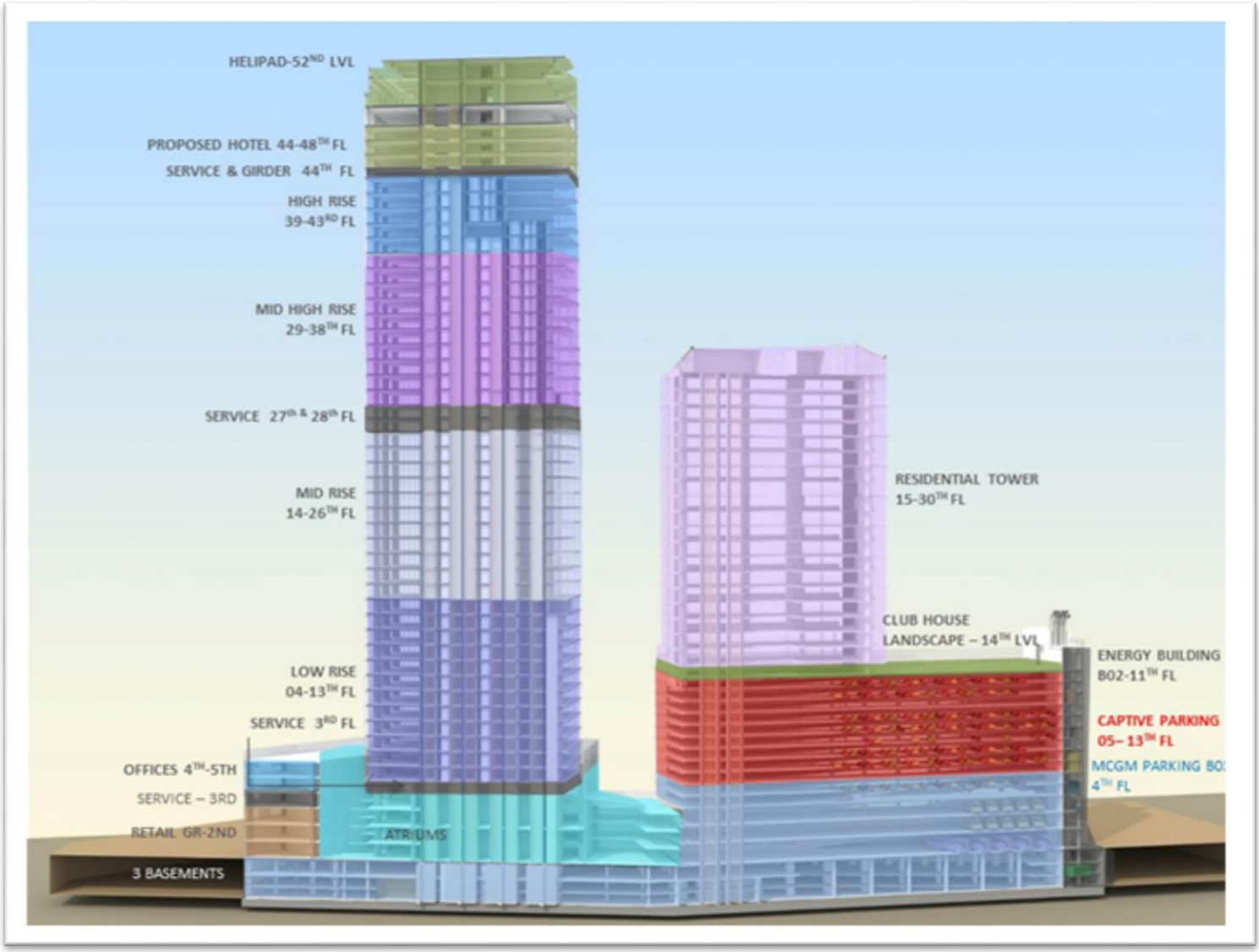
3. Each floor has 8 flats.

4. The upper few stories have four flats each floor.

5. 3 elevators and 1 service elevator.

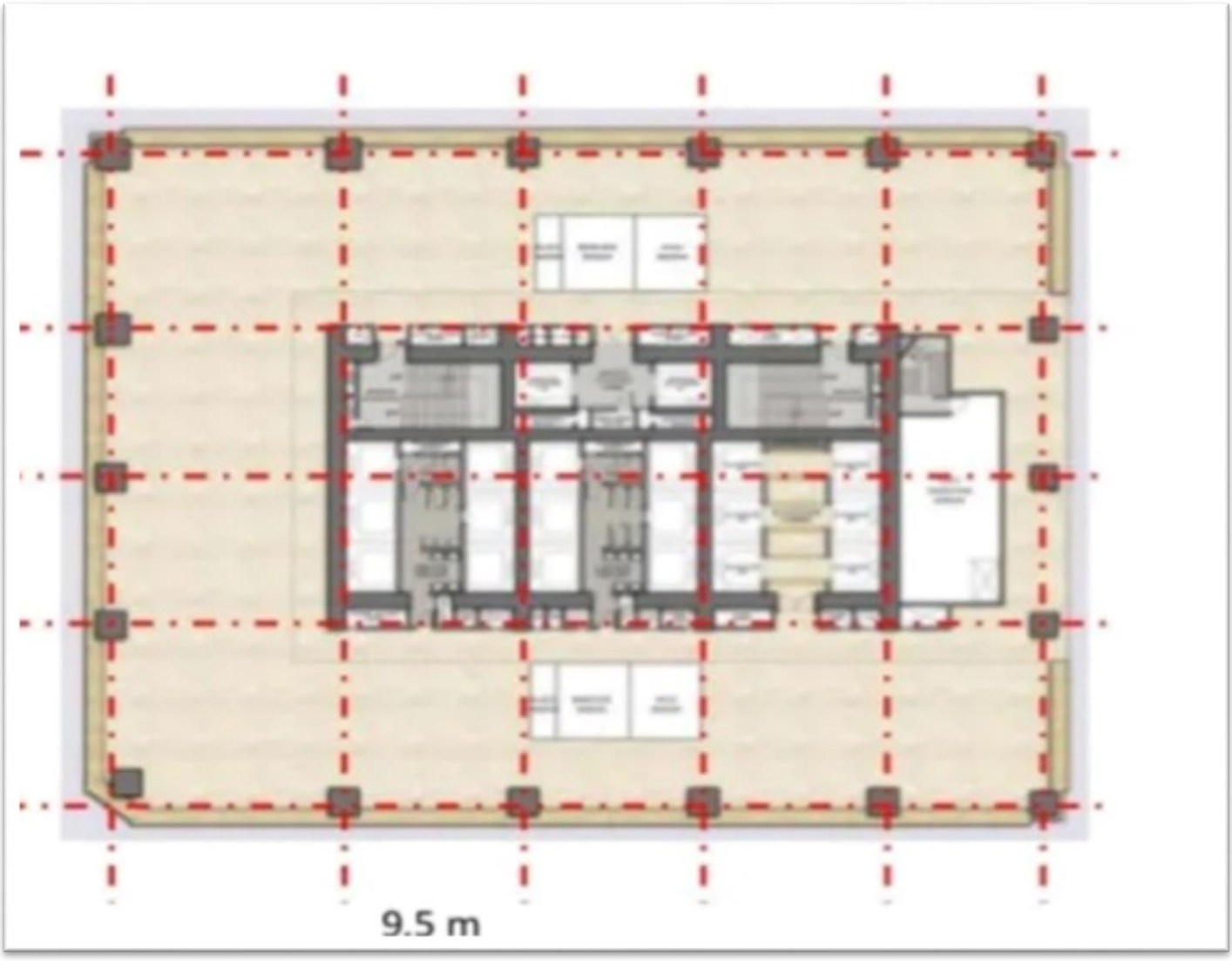
6. There are also two staircases in the centre.

The 3 BHK Flat Residential Building



The Schematic Section of the Building

The Structure of the Building



1. The spandrel beams, concrete slab, and post-tensioned concrete slab make up the structure.

2. There are 9.5 M in between each column's centre and centre on average.

3. The column is 1.8x1.8M in size.

4. The tube system operates on the premise that lateral loads may be accommodated in a structure.

The Sustainable Features

SUSTAINABLE FEATURES

1. gather rainwater
2. Controls for dumming and daylight harvesting
3. Reusing grey and black water
4. Ecologically friendly materials
5. Rooftop garden
6. Energy Center
7. The use of native landscape
8. Localized waste water treatment
9. Sorting and gathering recyclables.
10. Organic Ventilation

This building has received the gold leadership in LEED for the environment sustainability and the platinum rating in the LEED. Beginning in the early 2009, work on the Kohinoor Square was scheduled to be finished in march 2013.

The Façade of Kohinoor Square Building.

1. Facetted unitized aluminium curtain walls make up the facade, and the skyscraper will have facades made of double glass that function well.

2. The diamond-shaped margins of the building, which include aluminium flashing and LED lights, are a distinctive feature and complicate the exterior design.

3. All of the eyewear is articulated and can withstand 4.5 to 5.0 Kpa of design wind pressure.

4. Using technology like insulated glass that spans the entire floor for traping the heat and optimising the natural light in the building, as well as an the automatic function of diming the daylight sun, the building's design makes it ecologically friendly.

5. To serve as peaceful and rejuvenating breakout spaces, the double heighted sky gardens and the double heighted green lush terraces present.

6. The grey water system, the storm water and the rainwater system.

CASE STUDY-2

SUPERTECH SUPERNOVA, NOIDA

Project Details -

1. Noida, India, is the location.
2. Sort: Mixed usage Status
3. Construction site
4. The project spans 114.75 acres.
5. There are five or more retail skyscrapers.
6. Open space accounts for 70%
7. There are 80 storeys.
8. Number of units: 5708
9. 2021 is the anticipated completion year.
10. FAR - 4
11. Conceived by Benoy Architects
12. In 2012, construction began.
13. Built-up area: 50,000 square feet

INTRODUCTION

1. In Noida, India, a supertall mixed-use skyscraper called Supernova Spira is being built.

2. It is situated in Sector 94, Amrapali Marg, Noida, close to Amity University.

3. Supertech Supernova is consisted of all current facilities, including tastefully decorated apartments with contemporary conveniences such as a club, jogging path, pool, and more. It was constructed with renowned clientele who demand a lavish lifestyle in mind.

4. Including branded homes, serviced apartments, a five-star hotel, and commercial, residential, and luxury retail areas.

5. Two significant towers in Supertech Supernova, Nova East and Nova West, are intended to house flats for residents, provide furnished apartments with 2 and 3 bedrooms in sizes of 1330 and 2040 square feet, respectively.

Astralis (Commercial)

1. Ground plus 28 floors.

2. Double-height entry foyer from the ground to the second floor.

3. The third floor is a waiting area.

4. Club on the fourth floor.

5. Lockable spaces are available from Fifth to Twenty-third.

6. The floors 24, 26, 27, and 28 are virtual spaces.

7. 25^{th} is the service floor.

The Residential building i.e. the Nova east and the Nova west

1. Ground Floor with the 35 Floor, with the 2, 3 bedrooms.

2. Entrance Lobby with double height from Ground to second floor.

3. A waiting area is on the third floor.

4. Club, or fourth floor.

5. 2BHK and 6. 3BHK from floors 5 to 30.

6. Penthouse from floors 31 to 35.

Spira (Residential)

1. Spira (Residential)Ground+80 Floor. - From Ground to 2nd i.e Double Height Entrance Lobby. –
2. 3rd Floor is a Waiting Area.
3. 4th Floor i.e. Club.
4. Divided into Four Parts - Spira Residency, Spira Suits, Spira Residency and Spira Sky Villas.

The COMMERCIAL BUILIDNG i.e. the Queen Tower

1. Ground + 40 Floor. - The whole building is in under Armani Design Apartments and JW Marriot Hotel.

The Retail shops Building -

1. Total Area is 10 Lakhs sq. ft.
2. From Ground to 2nd Floor i.e Mall.
3. 3rd Floor is a Podium Park which includes 5 Clubs ,
4. 7 Swimming Pools, Food court and Multiplexes.
5. International Brands in 3 Lakhs sq.ft area.
6. Inox Multiplex 10 Screens.
7. Indian Brands in 7 Lakhs sq.ft. of area.

A SELECTION CRITERION

The largest project in North India, SuperTech Supernova is the splendour project. It is a mixed-use development it covers 500,000 square feet.

It is the only project in Delhi NCR to date that can sustain this variety of land uses all in one place. Understanding how to combine various land uses in one location and better effectively design the spaces may be gained by studying this enormous undertaking.

LOCATION MAP

THE SITE PLAN

Floors	Use	Floors	Use
78	Helipad	19-48	Studio floors
77	Observatory roof	18	Service floor
76	Observatory Function area	5-17	Appartment floors
75	Observatory F&b	4	Service floor
74	Observatory public gallery/skywalk/VIP lounge	3	Podium
73	Service floor	2	Meeting/function/AHU
65-72	Service appartments	1	Mall shop units
54-64	Hotel floors	0	Double ht. lobby for Apts/studio/hotel
53	Service floor	B1	Plant room
49-52	Hotel floors	B2-B3	Double ht. chillarplant,cooling tower

THE FLOOR USE CHART

Building ground floor plan

BUILDING FLOOR PLANS i.e.

5th , 10th,15th and 20th

Building Floor Plans i.e.

6th , 16th and 26th

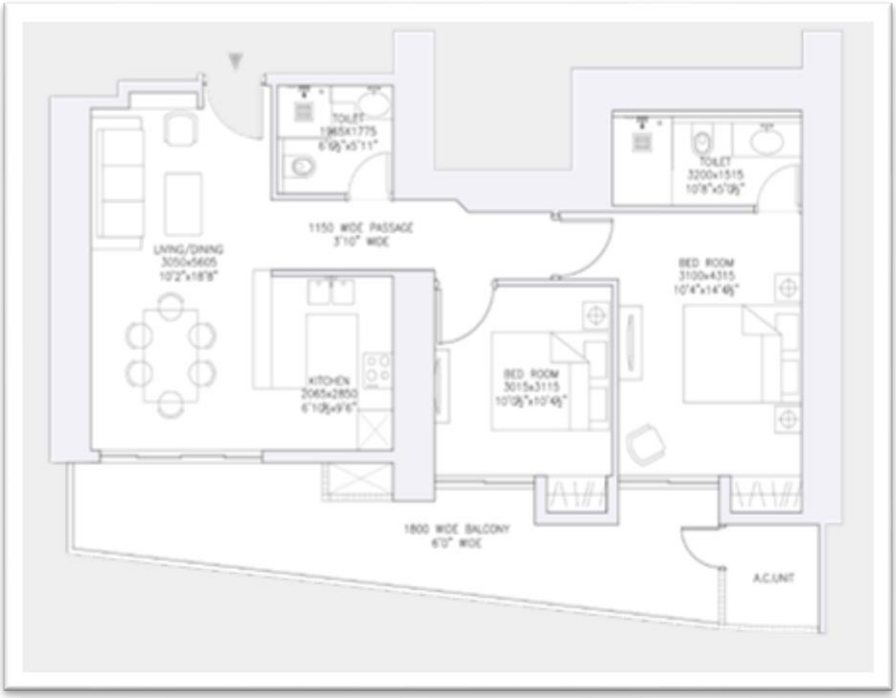
Building Floor Plans OF THE 12TH TO 23RD FLOOR PLANS

BUILDING FLOOR PLAN OF THE 11TH FLOOR

Abbreviation	Area(sq.m)	Abbreviation	Area(sq.m)
Office 1	190	Office 12	43.5
Office 2	78.5	Office 12A	43.5
Office 2A	78.5	Office 14	143
Office 3	190	Office 15	68.5
Office 4	50	Office 15A	68.5
Office 5	54	Office 16	143
Office 6	45.5	Office 17	43.5
Office 7	43.5	Office 18	43.5
Office 8	43.5	Office 19	43.5
Office 9	43.5	Office 20	43.5
Office 10	43.5	Office 21	43.5
Office 11	43.5	Office 22	43.5
Office 23	43.5	Office 25	54
Office 24	45.5	Office 26	50

AREA CHART OF THE OFFICES

ON THE OFFICE FLOOR AREA

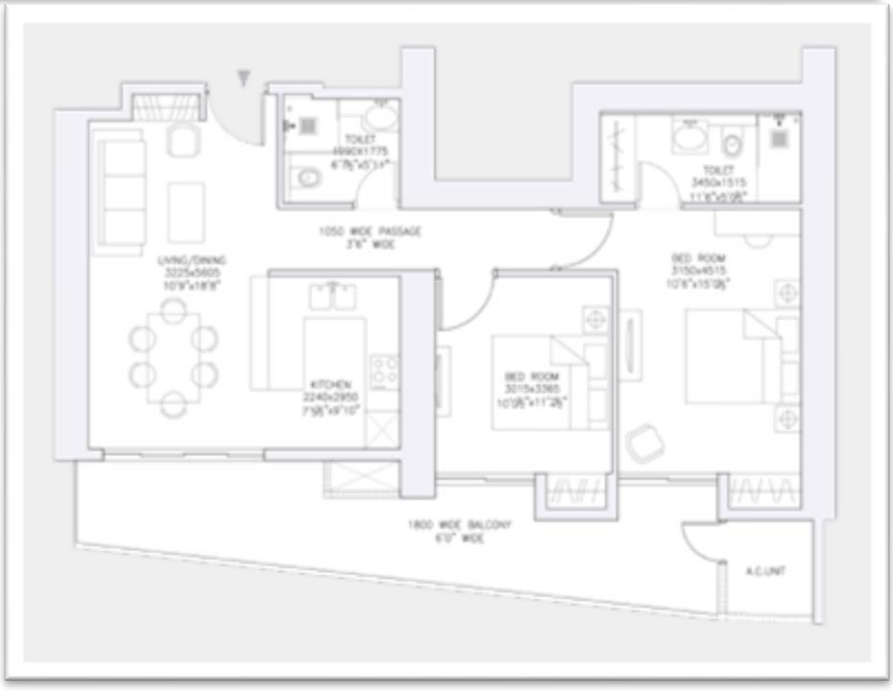


2BHK AND 3BHK

2A AND 2B

3A AND 3B

OF SUPER AREA 1350 SQ.FT



2 BHK 5TH TO 37TH FLOOR PLANS

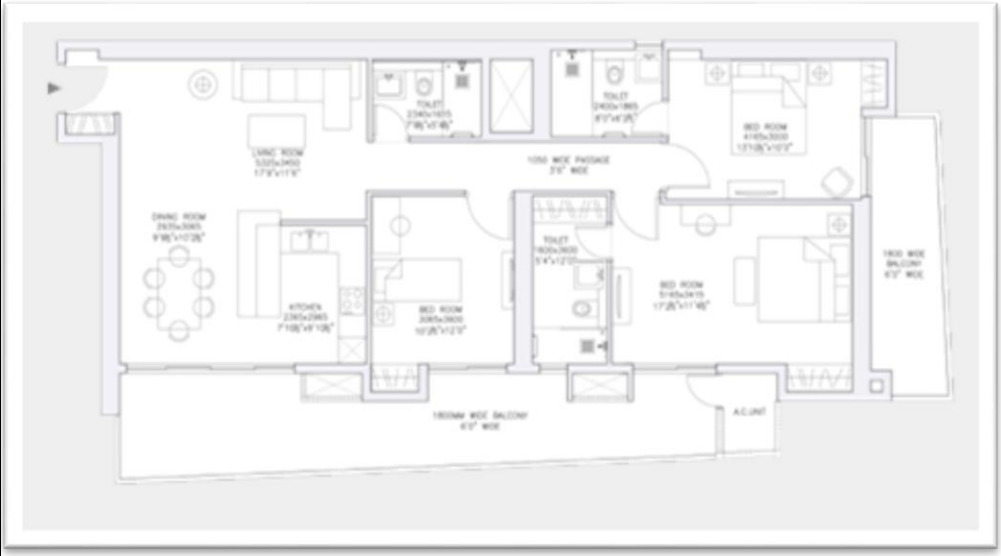
SUPER AREA OF 1380 SQ.FT.

3BHK

3A AND 3B APARTMENT

3BHK 5TH TO 24TH FLOORS

OF SUPER AREA -2105 SQ.FT.

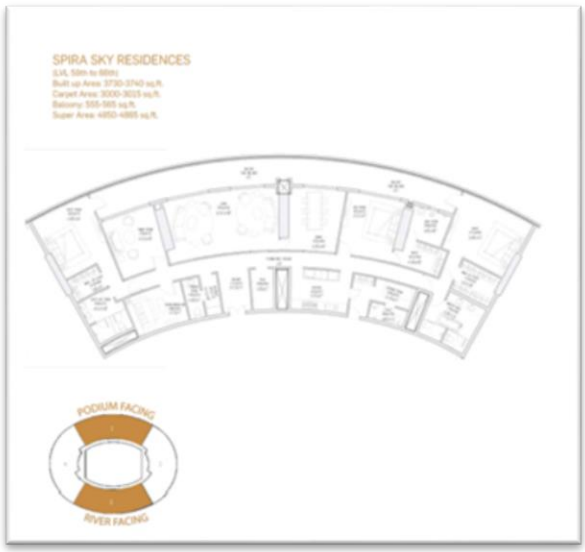


3 BHK

3A AND 3B APARTMENT

3BHK 5TH TO 37TH FLOORS

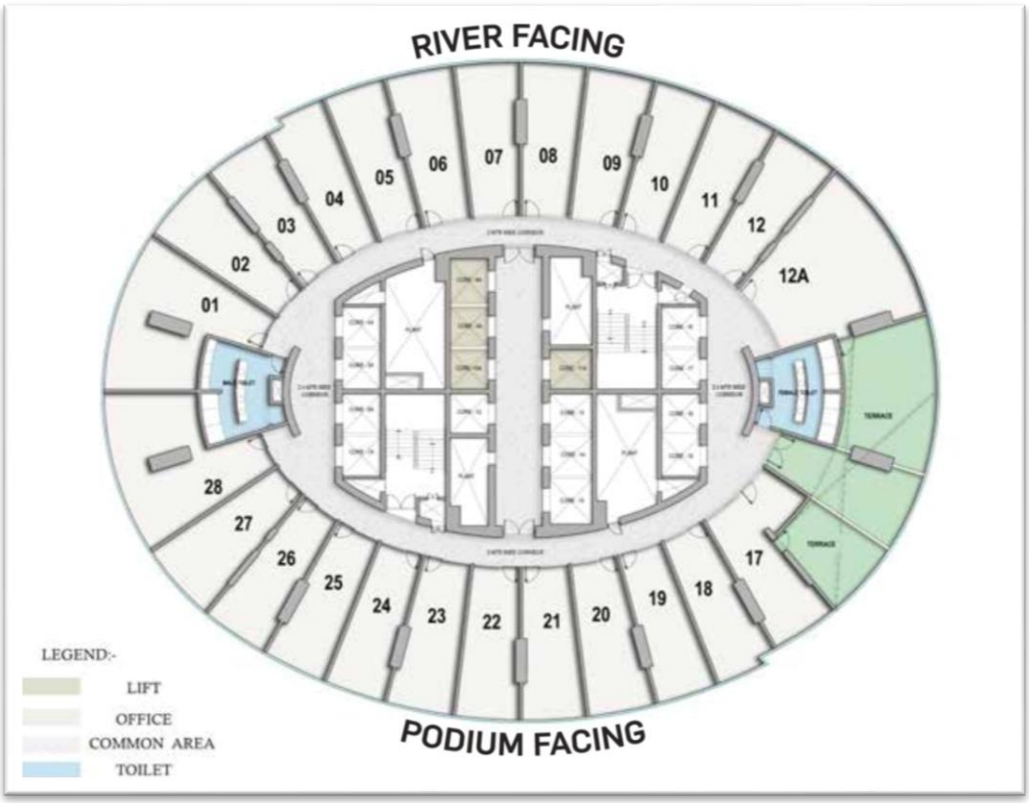
OF SUPER AREA -2105 SQ.FT.



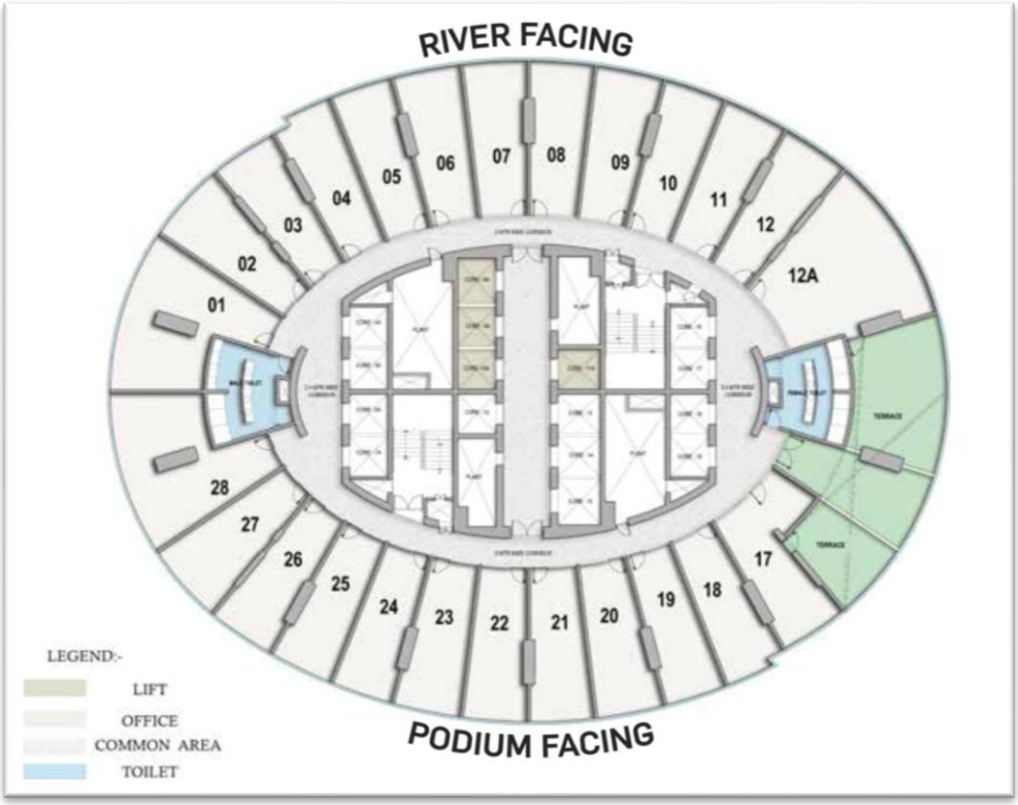
SPIRA SKY

RESIDENCES

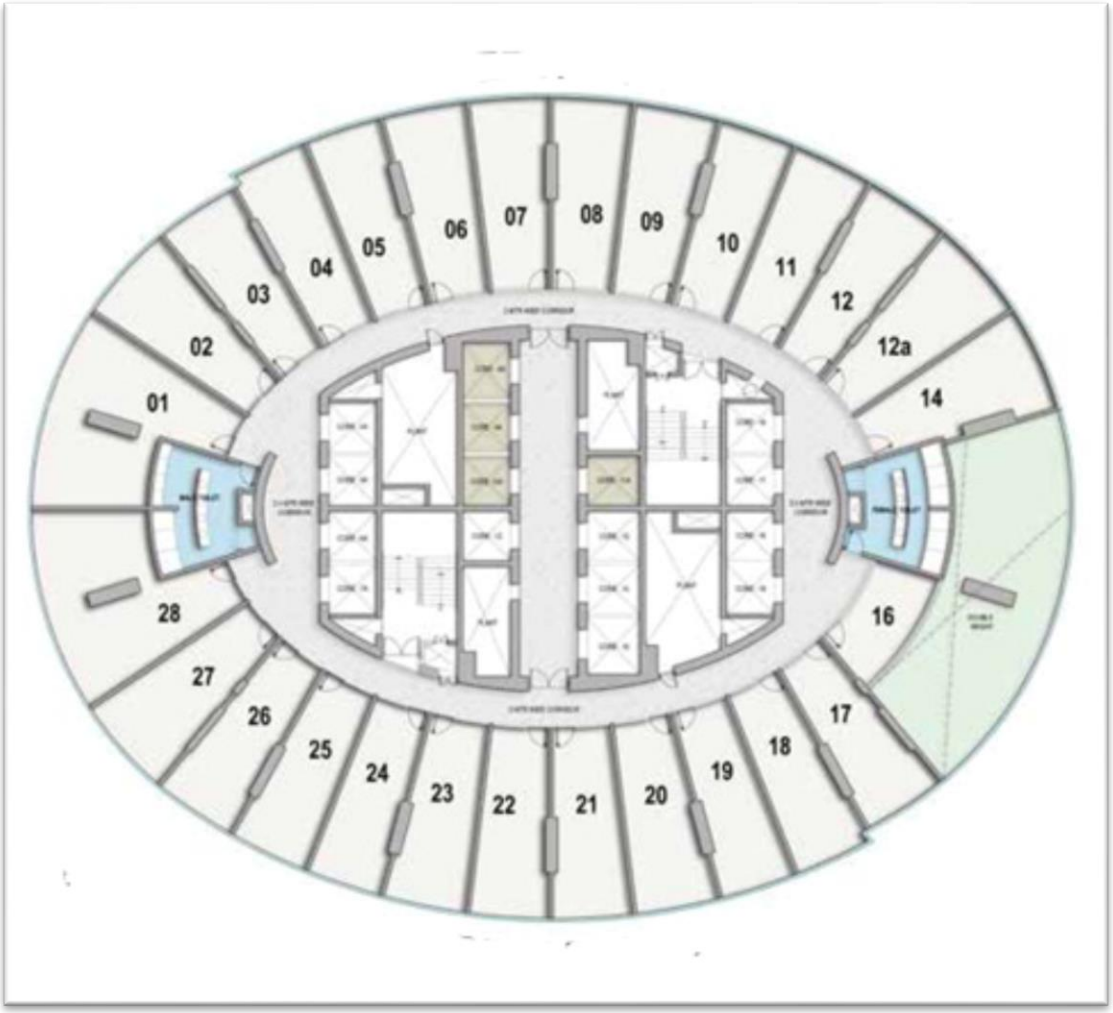
SPIRA OFFICE SPACES



47^{TH} TO 56^{TH} BUILDING FLOOR PLANS



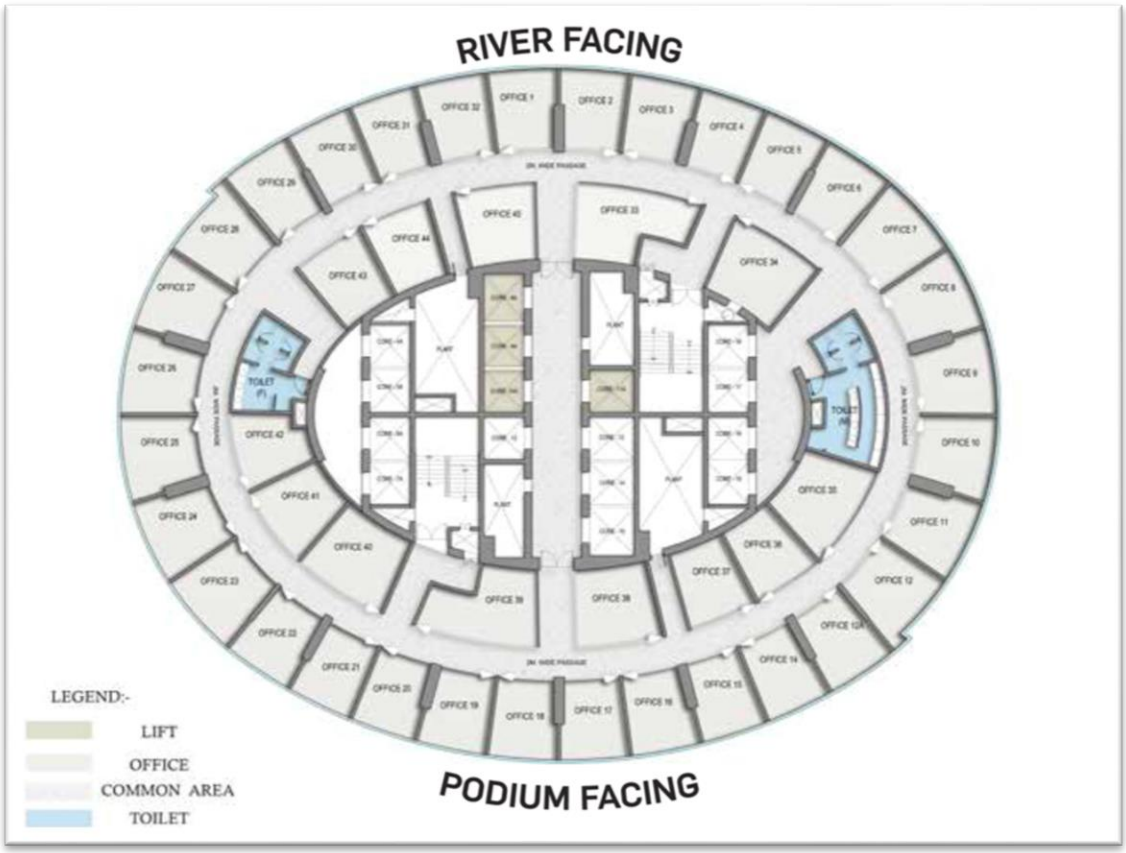
49^{TH} TO 54^{TH} BUILDING FLOOR PLANS



BUILDING

FLOOR PLANS

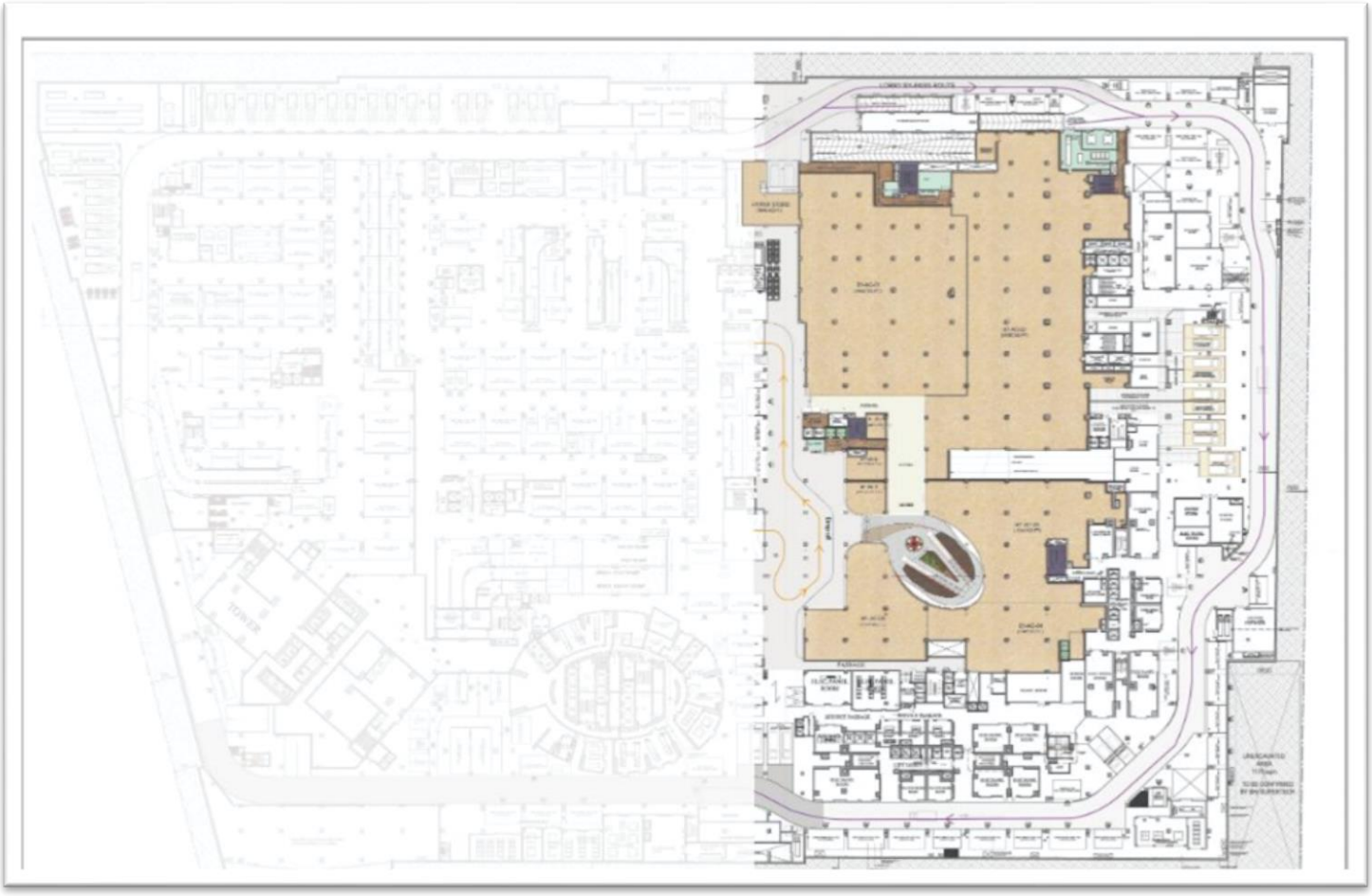
FROM 50TH TO 58TH FLOOR



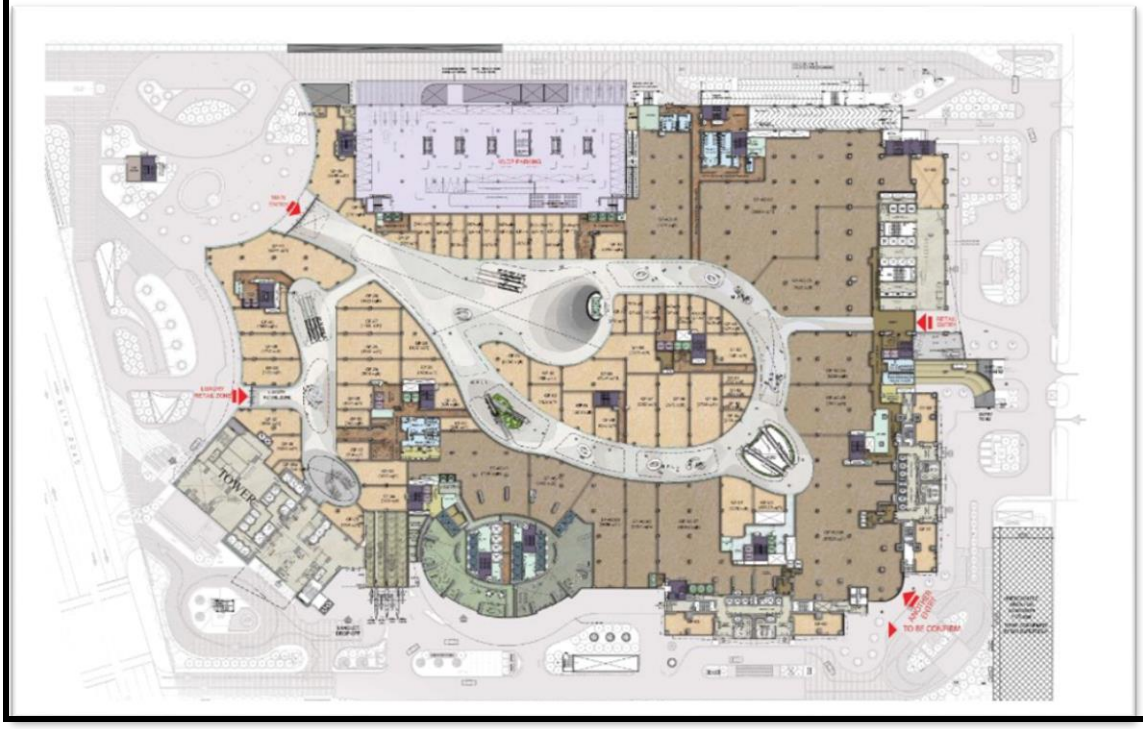
FLOOR PLANS

OF 57TH,58TH

HYPERNOVA

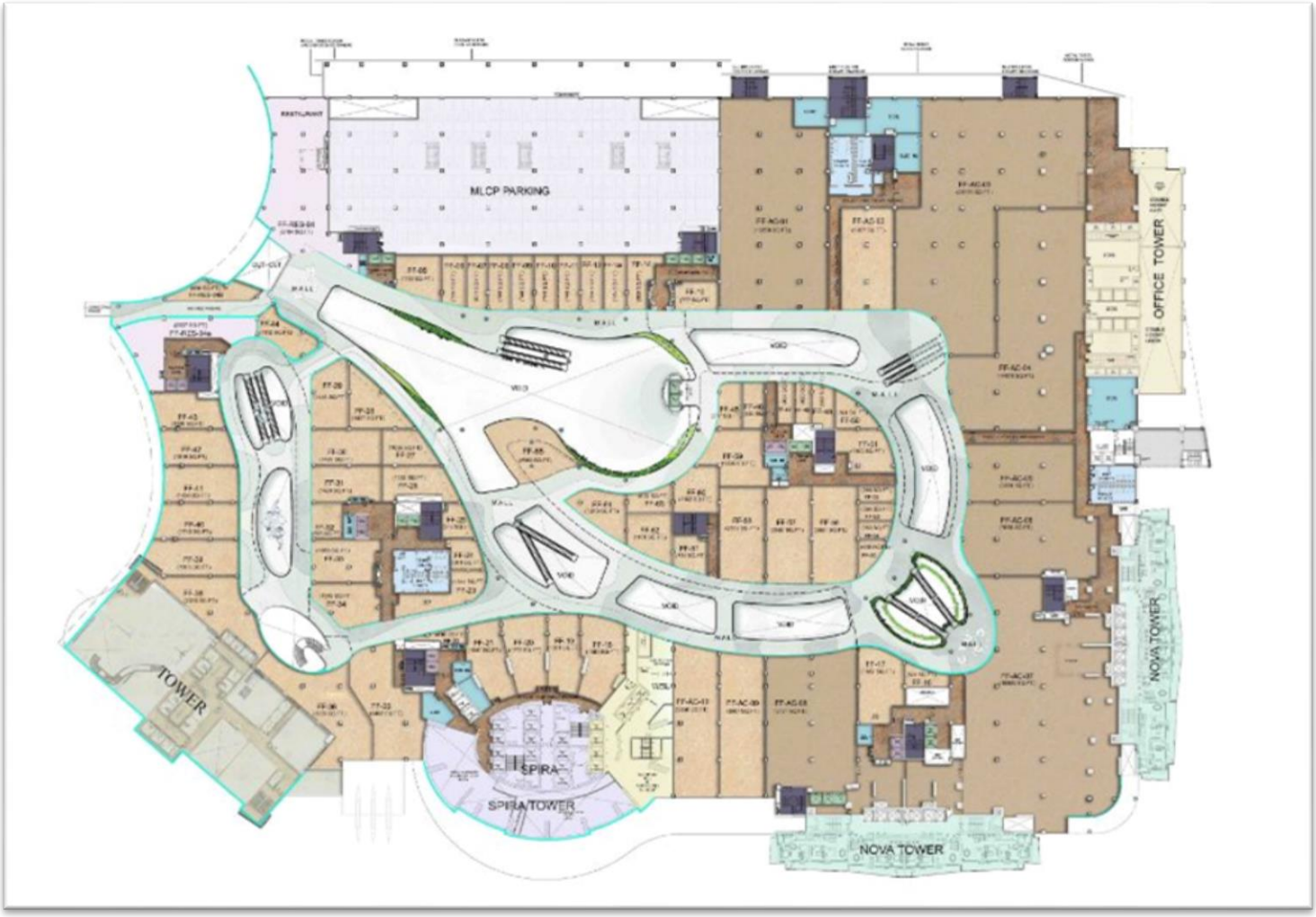


BASEMENT FLOOR PLAN

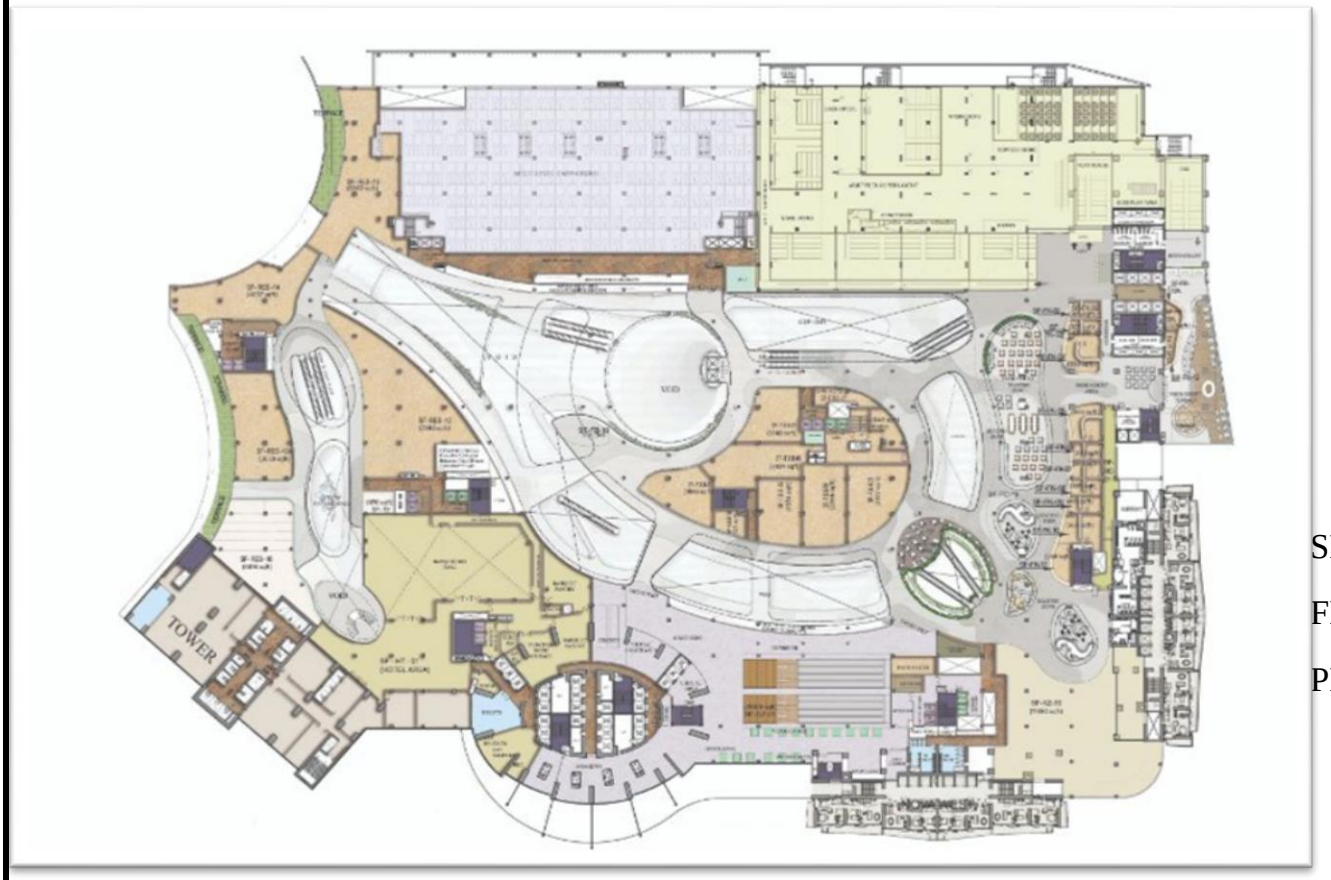


GROUND

FLOOR PLAN



RETAIL FIRST FLOOR PLAN



RETAIL SECOND FLOOR PLAN

"COMMERCIAL RETAIL SPACE OF SUPERTECH NOVA, INDIA".

"LANDSCAPE DESIGN OF SUPERTECH NOVA, INDIA".

LANDSCAPE ELEMENTS

1. Rooftop gardens and a patio with landscaping.
2. Gymnasium.
3. Clubhouse.
4. A swimming pool within.
5. A library and cigar lounge.
6. Individual terraces
7. Fast, automatic elevators.
8. Cafes and restaurants.

Structural Details

Suites Spira

1. Concrete raft foundation with a 4.1 m depth.
2. 229 piles, each 52 metres deep.
3. The concrete utilised is M80 grade.
4. The column is 1200 mm by 4000 mm.
5. Fe500 steel bars with a 40mm diameter are used.
6. There are no pre-cast buildings in use.

Information on the structure of Nova Residences

1. Concrete raft foundation at a depth of 2.5 metres.
2. The column measures 600 mm by 600 mm in size.
3. Capitals are given for the core region, and beams are just on the borders.
4. Retarders of BSF are employed as additives.

SUPERTECH NOVA, FEATURES

1. Spectacular podium level with great event platforms and lush gardens.
2. The podium has skylights.
3. The structure has enough natural light because the rooms are situated outside.
4. Access is made simple by central cores.
5. Separate entrances and exits for each vertical.
6. Facilities for observatory decks.

7. Vastu is incorporated into the design.
8. The existence of spacious balconies
9. Implementing rainwater collection.
10. Expensive flats.

LITERATURE STUDY-1

LINKED HYBRID, CHINA

INTRODUCTION

1. Steven Holl Architects has designed Linked Hybrid, which is a mixed-use complex comprising of the 8 towers.

2. The project includes apartments, a hotel, a movie theatre, a kindergarten, a school, an u nderground parking garage, commercial areas, and a public green space.
It was named as the best tall buildings in the Asia and Australia catergory 2009.

Project Text for Linked Hybrid Beijing, China, 2003–2009

Linked Hybrid Project Text 2003 to 2009 in Beijing, China

By creating a permeable urban space that is friendly and open to the public from all sides, the 220,000 square metre Linked Hybrid complex in Beijing hopes to offset the increasing urbanisation of China. It makes it a "open city inside a city." The public urban space encourages encounters and interactions in areas that are open to the public and can be found in settings that are commercial, residential, educational, or recreational.

The ground level has various open spaces.

Everyone to pass through, including residents and visitors.

These roads feature "micro-urbanisms" of little shops that also make the neighbourhood surrounding them more lively.

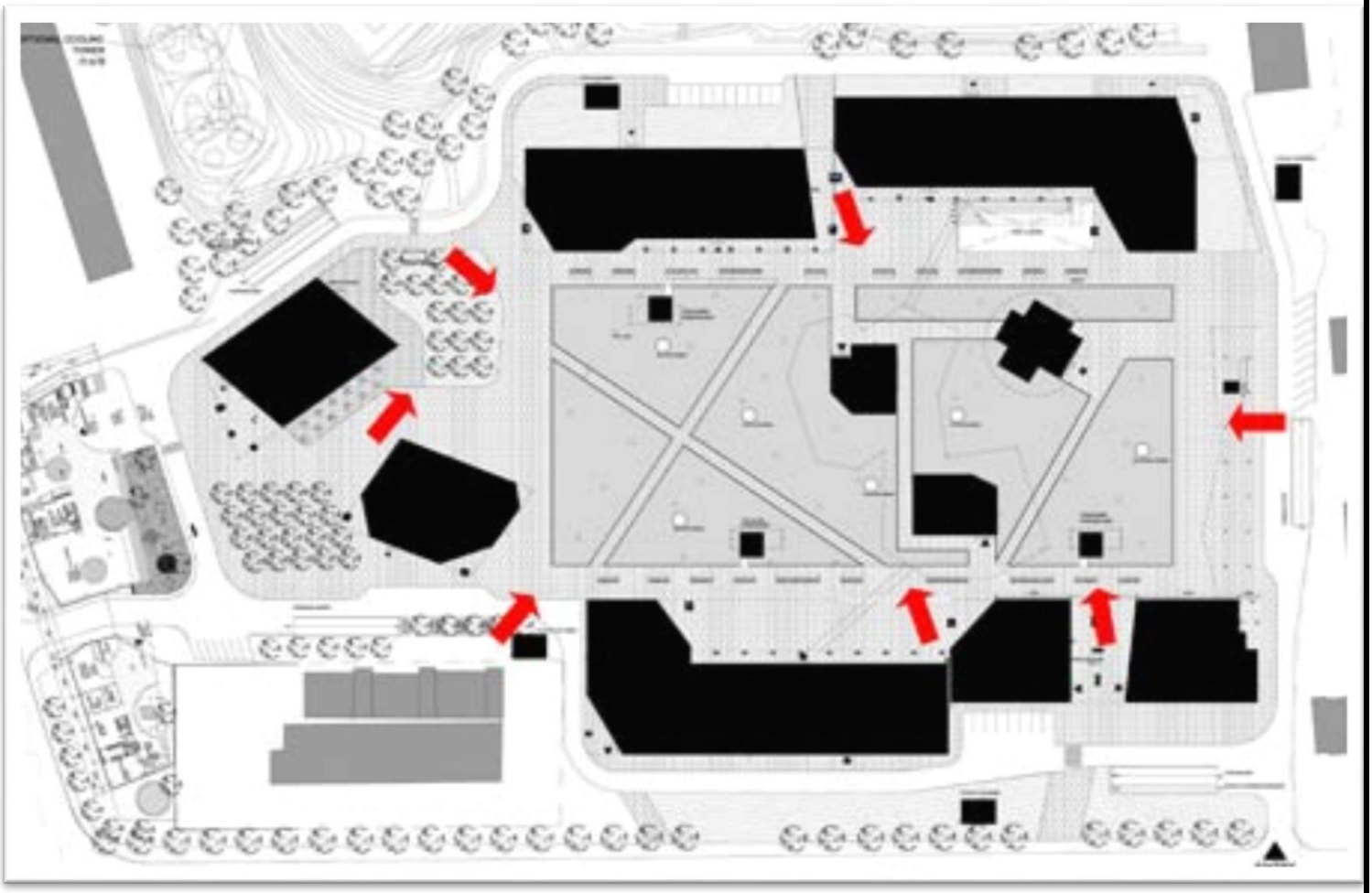
Elevators move you to another set of routes on higher levels like a "jump cut."
A multipurpose network of skybridges connects the eight residential towers with the hotel tower, offering amenities like a pool, a fitness centre, a café, a gallery, etc.
from the 18th level and provides views of the developing metropolis.

Programmatically, this loop strives to be more complex than a straightforward linear loop.
We anticipate that the base-loop and public sky-
loop will frequently produce arbitrary connections, operating as social condensers in a distinctive urban experience for both residents and visitors.

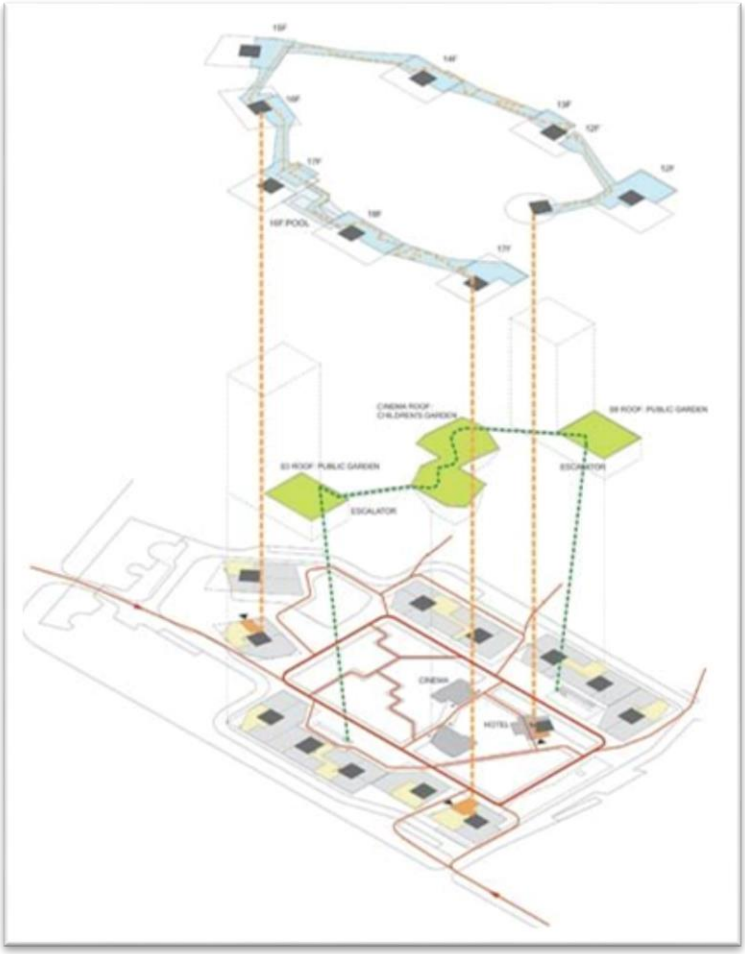
The layout of the towers is based on how the body feels as it moves through space, taking movement, time, and sequence into consideration. The angle of view changes with a little right curve and a slight rise. The surrounding towers symbolise a common ambition; rather than viewing towers as isolated objects or private islands in a city that is increasingly being privatised, we seek for new "Z" dimension urban sectors that strive for individuation in urban living while impacting public space.

THE SITE PLAN

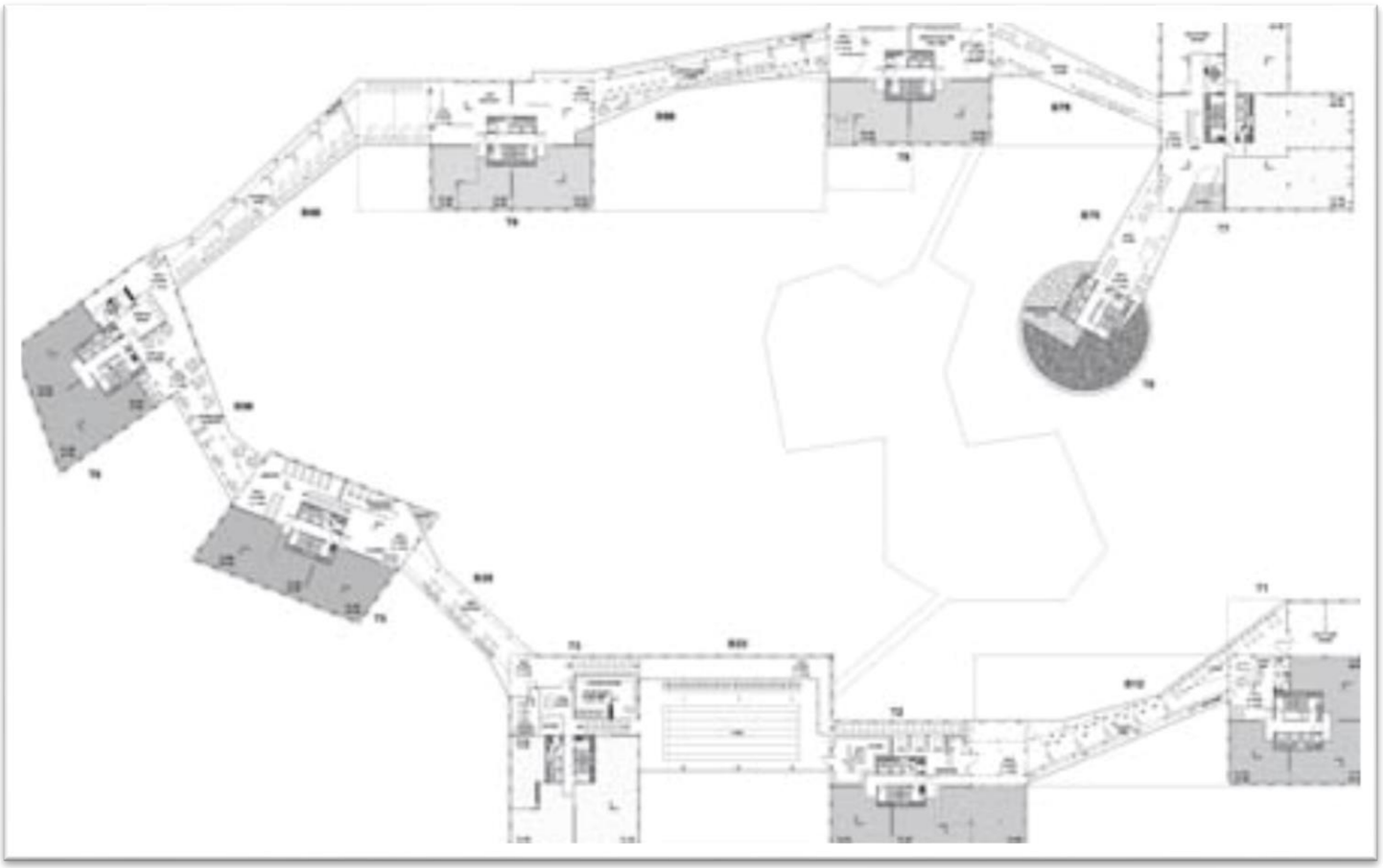
660 geo-thermal wells at a depth of 100 metres provide heating and cooling for Linked Hybrid, one of the largest green residential construction projects. The large urban space in the project's centre is activated by a greywater recycling pond with water lilies and grasses, in which the cinematheque and the hotel appear to float. In the winter, the pool freezes over and becomes an ice skating rink.



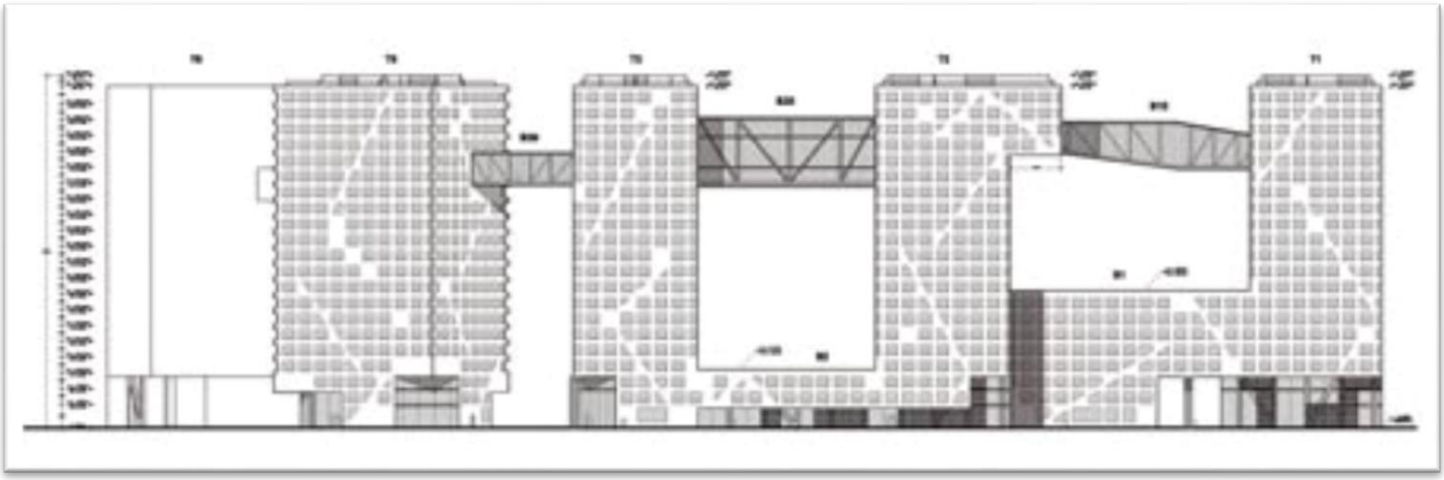
The cinematheque acts as a meeting place as well as a point of interest for visitors. With projections on its exteriors, the cinematheque's design floats on the reflection it creates in the little pond.



The building's first level, which offers views of the surrounding area, is kept accessible to the public. A chromatic dimension is inspired by the Chinese Buddhist architecture's polychromy.



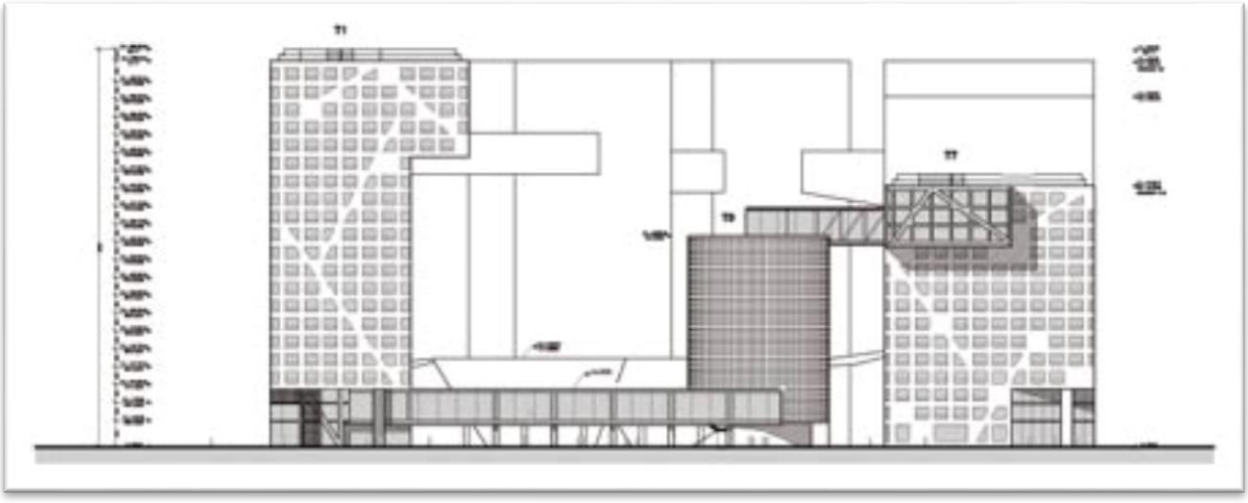
Water is recycled throughout the whole project. The big reflecting pond is filled with this grey water, which is then pumped into tanks equipped with UV filters and utilised to irrigate the landscaping. Five landscaped mounds to the north include recreational features and were created by reusing the soil dug up for the new building. The kindergarten is interwoven with the "Mound of Childhood," which has a gateway leading into it. A basketball court, a skateboard and rollerblade area, and other amenities are located on the "Mound of Adolescence.



GREEN SHEET

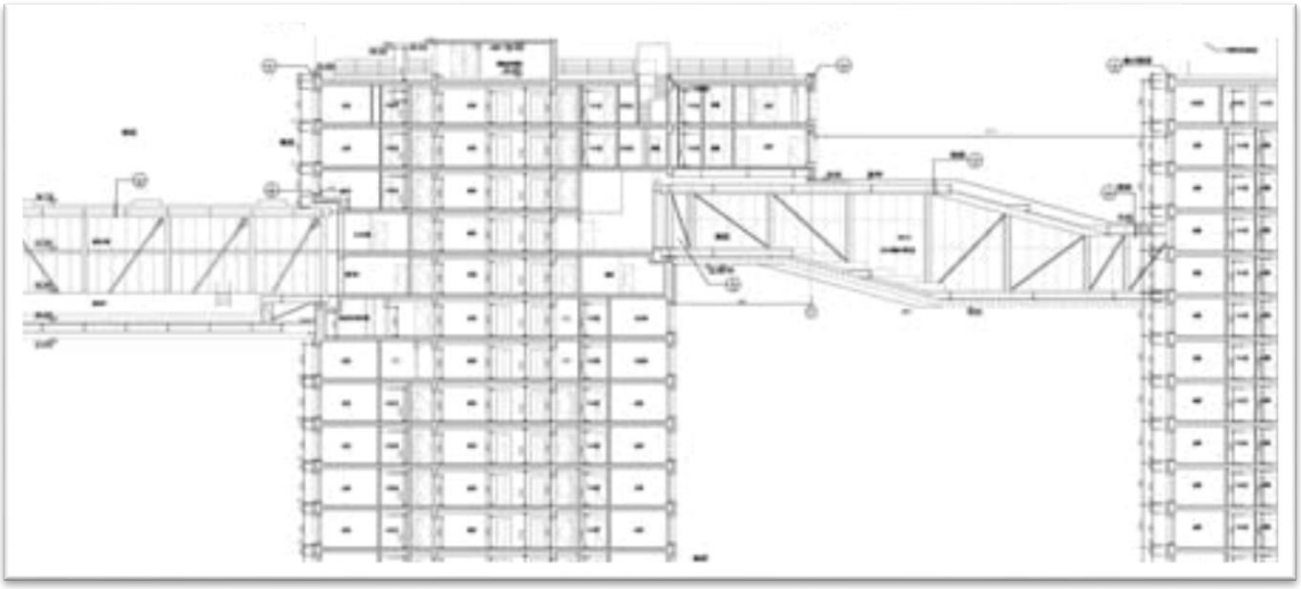
The goal of sustainable design

The desired spatiality and passing experience of Linked Hybrid has a significant influence on its sustainability. It is intended to be a "open city inside a city", an inviting combination of public and private space that promotes resource sharing and lessens the need for inefficient forms of transportation. It is an urban oasis that shows tranquil, natural areas can survive in a rapidly growing city like Beijing. Achieving LEED Gold Certification is the goal of this project.



WATER CONSERVATION

There will be a daily decrease in potable water use of 41% as a consequence of recycling an estimated 220,000 litres of grey water from all dwelling units for use in flushing toilets, watering lawns and green roofs, and pond water rebalancing.



FLOW OF ENERGY

Its ground source heat pump system, one of the largest in residential construction, is Linked Hybrid's most innovative creation. The system, which is composed of 660 geothermal wells positioned 100 metres below the basement foundation, supplies 70 percent of the complex's yearly heating and cooling requirements. As a result of the underground wells' replacement of the above-ground space traditionally needed for the cooling towers, more green space is now accessible, noise pollution has decreased, and the CO2 emissions from traditional heating and cooling systems have been drastically reduced.

HIGH PERFORMANCE BUILDINSYSTEMS

The project boasts exterior window louvers and low-e coated glass for solar gain and heat control, as well as a high-performance building envelope and integrated

slab heating and cooling system.

INDOOR ENVIRONMENTAL QUALITY

Linked Hybrid makes use of a technique called displacement ventilation, in which air that is slightly below desired temperature in a room is released from the floor. The cooler air displaces the warmer air, causing it to be released from the room and resulting in a cooler overall space and a fresh breathing Environment.

FACT SHEET

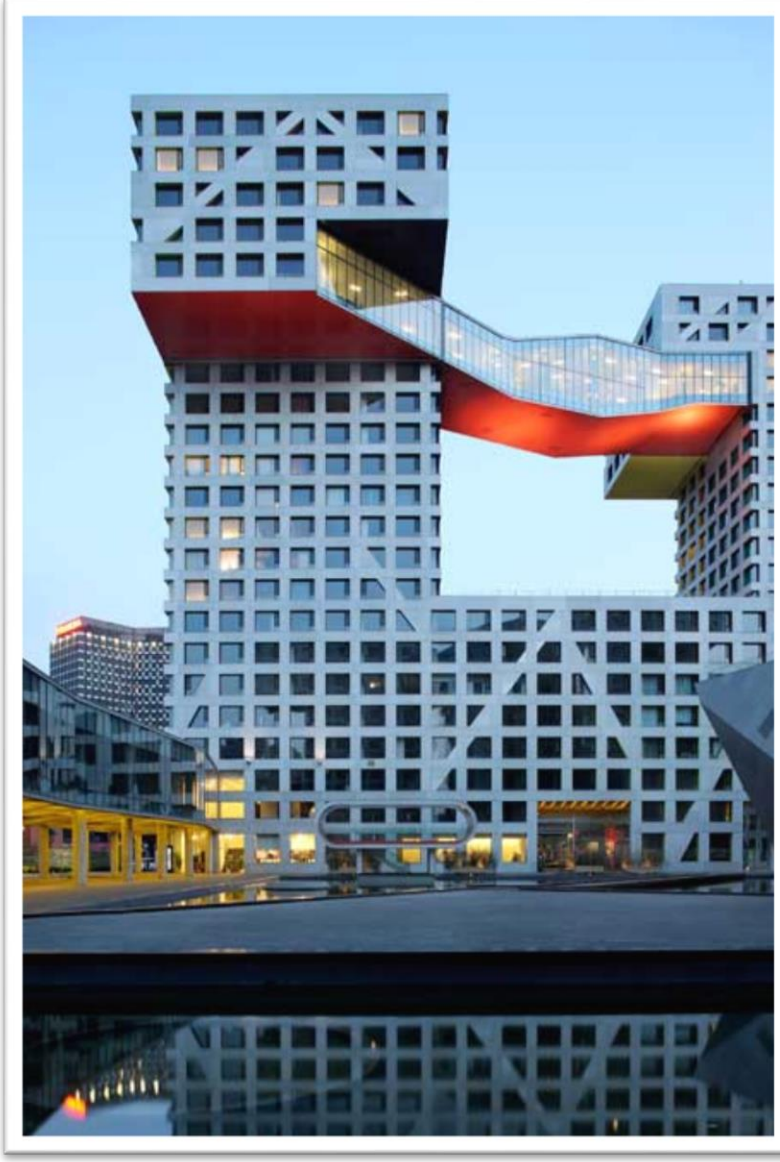
Program: 750 apartments, public green space, commercial zones, hotel, cinemateque, kindergarten, Montessori school, underground Parking.

Floor area: (square) 2383797sf/221462sm

Floor area: (square) above 1753775sf/162931sm

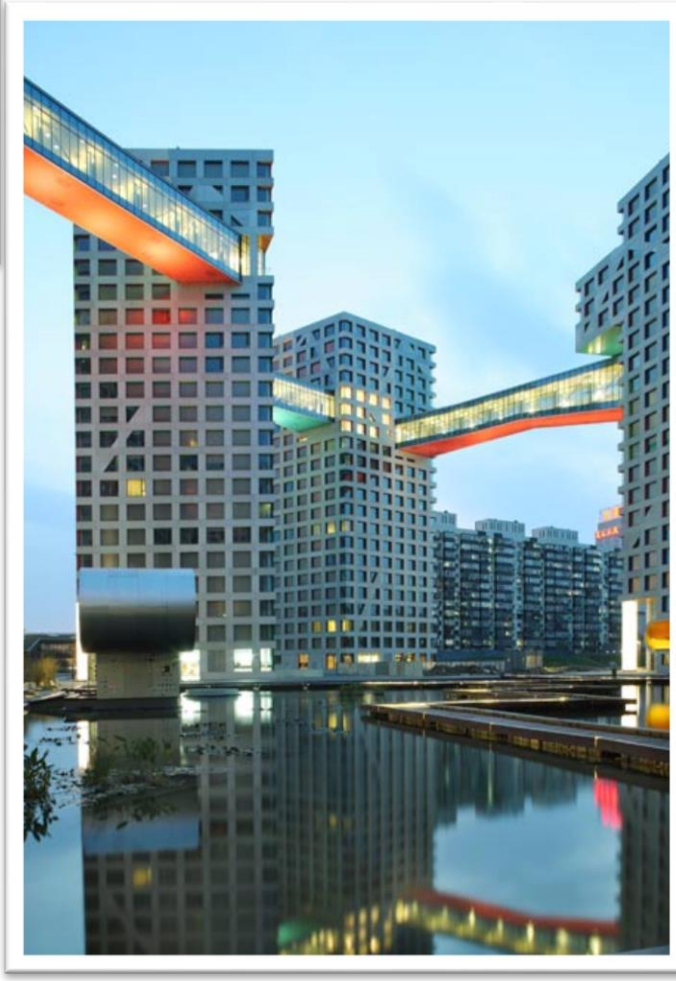
Floor area: (square) below 629635sf/58495sm

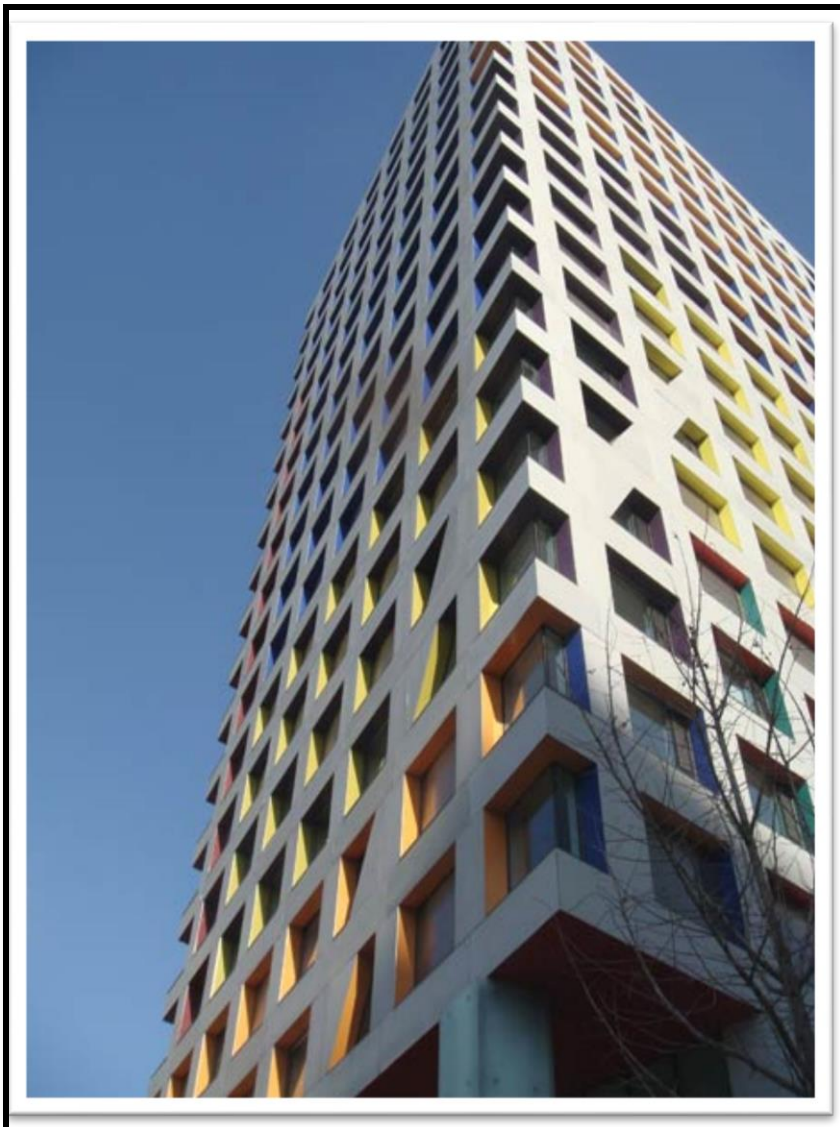
Building area (square) 2368060sf/220000sm



The hotel tower and the eight residential building are connected by a network of multipurpose "sky bridges."

“The architects are aiming to achieve LEED Gold Certification, making Linked Hybrid one of the largest green residential projects.”





“Geothermal wells 100m below the foundations provide heating in the winter and aid cooling during the summer.”

“A pond in the centre of the complex holds recycled greywater from the buildings and will freeze over in the winter, transforming into a public ice rink.”

LITERATURE STUDY -2

SOUTH BEACH TOWER, SINGAPORE

PROJECT DETAILS

Project specifics :

1. The developer is South Beach Consortium, a partnership between City Developments Limited and IOI Properties Group Bernhard.

2. 38 Beach Road is the location.

3. 510,000 square feet total NLA

4. Design and architecture firm Foster + Partners

5. 15,600 to 19,200 square feet is the average floor plate (34 stories).

6. **Environmentally Friendly Elements as follows :**

In addition to its spectacular environmental canopy filter, South Beach offers other sustainable elements with a focus on eco design. In order to save energy, South Beach has incorporated solar thermal panels, photovoltaic cells, a waste-heat recovery system, and energy-efficient fixtures. Louvres that block the sun's rays and double-glazed windows further reduce solar heat intake. In order to collect prevailing winds and direct air flow down to the lower components of the complex to cool the ground level areas, the building shape and slanting façades of the towers were designed and erected in this manner. The urban heat island effect is further lessened by carefully placed sky gardens and vertical green walls covered with luxuriant vegetation. Water-saving fixtures and fittings have been added, and rainfall that has fallen on the towers and canopy is collected and reused for irrigation.

South Beach, a mixed-use building on Beach Road, located next to Singapore's CBD. A joint venture between City Developments Limited and IOI Properties Group Berhad will function without any hiccups. Thanks to Singapore's extensive network of roads and expressways, Orchard Road and Changi Airport are both accessible from the city's major business zone, which includes Raffles Place and the Marina Bay Financial Centre, within a 15-minute drive.

LOCATION MAP

INTRODUCTION

A residential and commercial complex called South Beach Tower is located on Singapore CBD, on Beach Road. It consists of an office tower, a hotel tower run by JW Marriott Hotels, a shopping mall, and homes. The project calls for the restoration of four historic structures, including a portion of the The Non-Commissioned Officers' Club building and the former Beach Road Camp. Esplanade MRT station provides access to it.

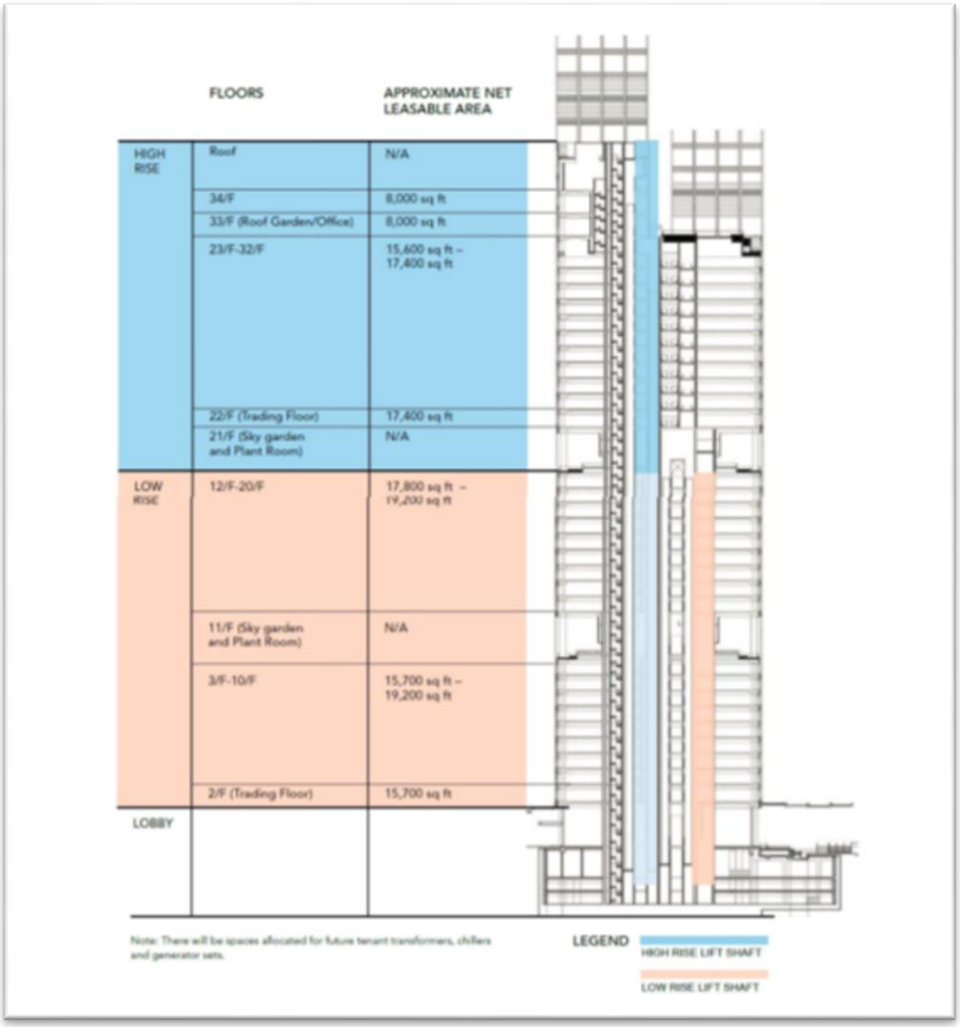
THE SITE PLAN

THE ARCHITECTURAL FEATURES

The project includes two new, 45- and 42-story skyscrapers that hold residences, offices, and two upscale hotels. The former Beach Road Camp's original, preserved military structures were renovated for purposes in retail and hospitality, including event spaces. The project provided at least 46,450 square metres (500,000 square feet) of new office space and 700–800 hotel rooms.

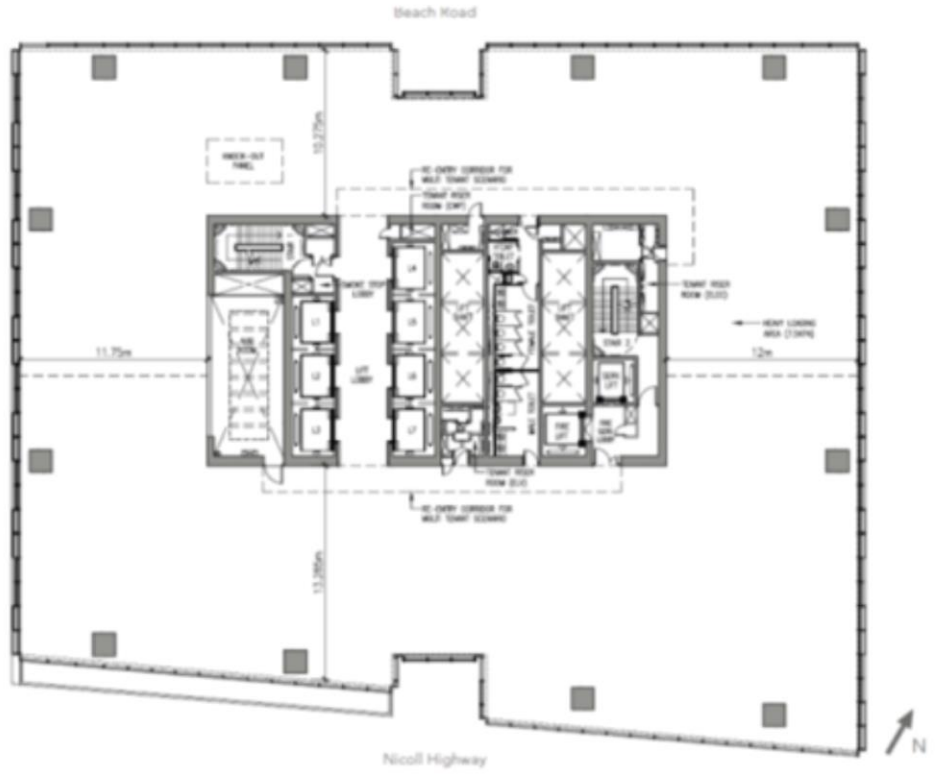
The canopies has large waves-like peaks and valleys as it rises and falls. One conservation block is surrounded by certain portions of the canopy, which also cover it, while another part of the canopy appears to go inside the block. The canopy appears to be rising in other areas as well.

To increase street level vitality and facilitate easy movement for people, the first layer will be designed with a network of internal roadways. All ways typical of the neighbourhood around Sea Street may be found in the block plan. Additionally, it will have recessed courtyards, gardens with tiers of stores, and eateries.



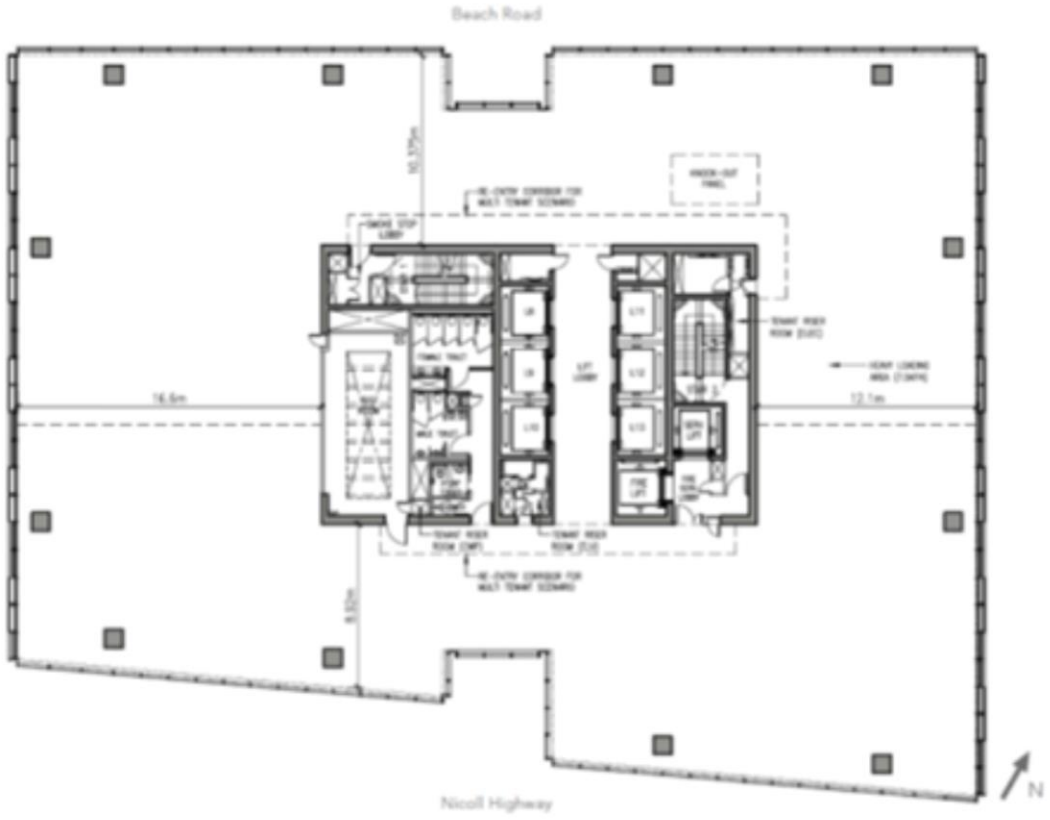
Low Rise (Level 2 – 20)

Approximately 15,700 sqft – 19,200 sqft



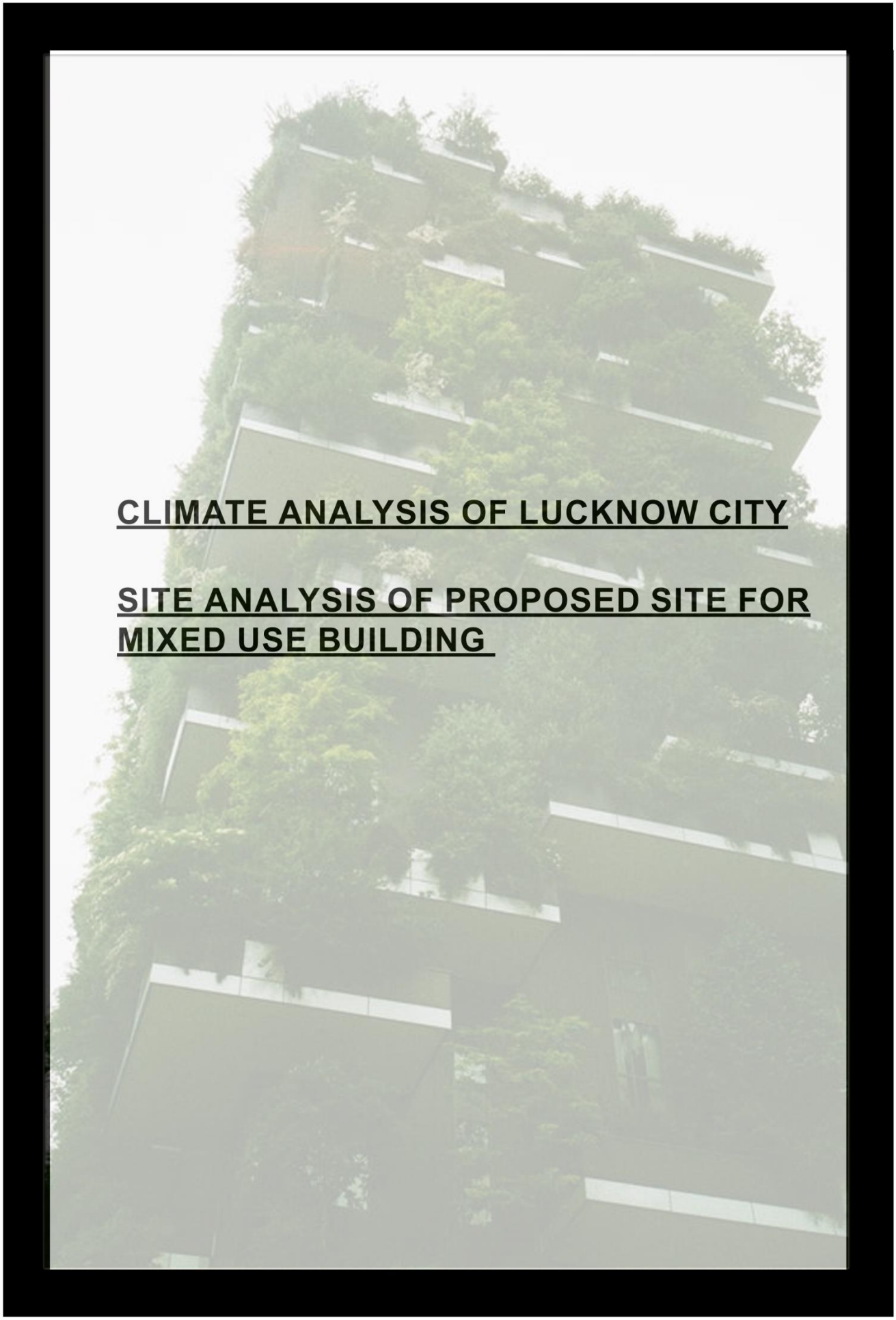
High Rise (Level 22 - 34)

Approximately 15,600 sqft – 17,400 sqft



CRITERIA	CASE STUDY - 1 KOHINOOR SQUARE, MUMBAI	CASE STUDY - 2 SUPERTECH SUPERNOVA, NOIDA	LITERATURE STUDY - 1 LINKED HYBRID, CHINA	LITERATURE STUDY - 2 SOUTH BEACH TOWER, SINGAPORE
1. ARCHITECT	SANDEEP SHIKRE	BENOY ARCHITECTS	STEVEN HOLL ARCHITECTS	ARCHITECTURAL FIRM AND ID FIRM FOSTER + PARTNERS
2. CLIENT	KOHINOOR GROUP UNDER KOHINOOR CTNL INFRASTRUCTURE CORPORATION	Supertech Group	Modern Green Development Co., Ltd. Beijing	South Beach Consortium (Joint Venture – City Developments Limited and IOI Properties Group Berhad)
3. LOCATION	MUMBAI	SECTOR 94, NOIDA	BEIJING, CHINA	Beach Road bordering Singapore's Central Business District.
4. CLIMATE	TROPICAL , WET & DRY CLIAMTE	COMPOSITE CLIMATE	CONTINENTAL CLIMATE	
2. SITE AREA	4.6 ACES F.A.R. - 13	114.75 ACRES F.A.R. - 4	2,20,000 SQUARE-METER	510,000 SQ.FT.
3. LAND USE	MIXED LAND USE	MIXED LAND USE	MIXED LAND USE	MIXED LAND USE
4. FACILITY STATEMENT	Houses, Hotels , Residences , and a high end shopping malls	Commercial, Residences and Luxury Retail spaces, 5 Star Hotel, Branded Residences and Serviced Apartments	Apartments, a hotel, cinema, kindergarten, school, underground car park, commercial zones and a public green space.	Our historic buildings on site with two new towers to feature approximately 510,000 sq.ft. of office space, 190 luxury residences, a 634-room JW Marriott Hotel and around 32,000 sq.ft. of retail space.
5. DESCRIPTION	G+52 (MAIN BUILDING),35 STOREYED RESIDENTIAL BUILDING, 203 meters building design makes it environmentally friendly ,using technologies such as floor –to- ceiling insulated glazing to contain heat and maximize natural light, and an Automatic daylight diming system.	Retail Shops and 5 towers namely Astralis, Nova east, Nova west, Spira and Queen tower. Supertech Supernova has two main towers Nova East and Nova West which are reserved for residential apartments and 2 BHK and 3 BHK furnished apartments variants with sizes 1330 sq ft & 2040 sq ft, modern conveniences such as a clubhouse, jogging track, swimming pool and more.	A series of multi-functional "skybridges" connect the eight residential towers and the hotel tower.Geothermal wells 100m below the foundations provide heating in the winter and aid cooling during the summer. A pond in the centre of the complex holds recycled greywater from the buildings and will freeze over in the winter, transforming into a public ice rink.The earth excavated during the construction of the project has been landscaped to create a series of mounds housing public recreational areas.	It is composed of a hotel tower managed by JW Marriott Hotels, an office tower, shops, and residences. The project includes the restoration of four conservation buildings The project has added at least 46,450 square metres (500,000 square feet) of new office space and about 700 to 800 hotel rooms.45 storeys and 42 storeys tall, which house two luxury hotels, offices and apartments. The original conserved military buildings of the old Beach Road Camp were restored for retail and hotel-related uses such as function rooms.
6. MATERIAL USED	Unitized Aluminium Curtain Walls with provisions for high performance double glass facades on the tower.	Flowing curves and shining facades of the design which also incorporates Vaastu principles. All five link to a spectacular podium level that features lush gardens and attractive event platforms.Skylight podium Landscape Terrace and Rooftop Gardens.	Project boasts exterior window louvers and low-e coated glass for solar gain and heat control, as well as a high-performance building envelope and integrated slab heating and cooling system. For Indoor air quality use of technique, Displacement Ventilation.	Building shape and slanting façades of the towers are oriented and designed to catch prevailing winds and direct air flow down to the lower areas of the development to cool the ground level spaces, while sun-shading louvers and double -glazed glass further helpto reduce solar heat.Moreover, strategically-positioned sky gardens and vertical green walls planted with lush foliage help to minimise the urban heat island effect.
7.CERTIFICATION	Leadership in energy and environmental design platinum for environment sustainability a Gold Leed certification from Green Building Council.	LEED CERTIFIED GREEN BUILDING.	The architects are aiming to achieve LEED Gold Certification, making Linked Hybrid one of the largest green residential projects.	South Beach has won two green mark platinum awards and is set to be the new defining structure in Singapore's vibrant skyline.
8. PARKING	3500 CARS BASEMENT PARKING	BASEMENT PARKING	BASEMENT PARKING	BASEMENT PARKING

PROJECT TITLE - MIXED USE BUILDING, A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	SHEET TITLE - COMPARITIVE CHART DRAWING INFERENCES OF CASE STUDIES & LITERATURE STUDIES	SUBMITTED BY- MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER	ROLL NO - 1190109009 BBD UNIVERSITY SCHOOL OF PLANING & ARCHITECTURE	THESIS GUIDE - AR. VARSHA VERMA

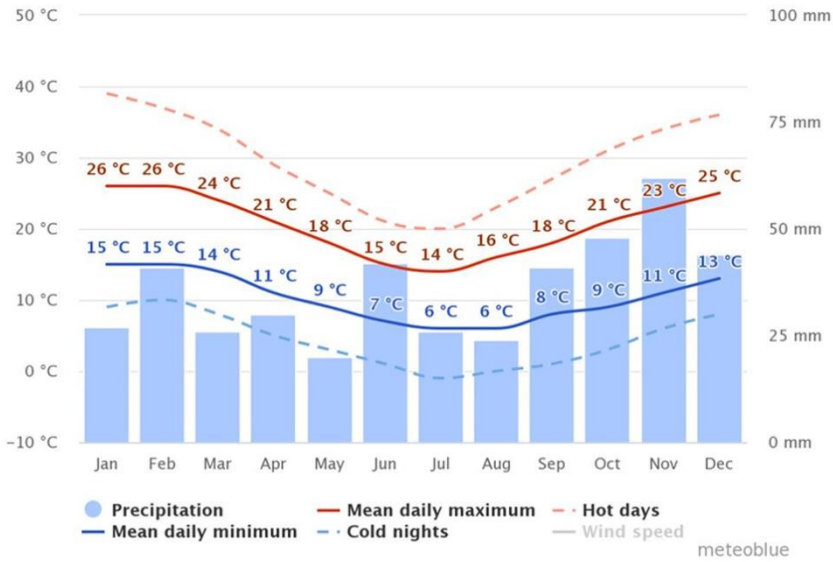


CLIMATE ANALYSIS OF LUCKNOW CITY

SITE ANALYSIS OF PROPOSED SITE FOR MIXED USE BUILDING

Climate Analysis - Lucknow City

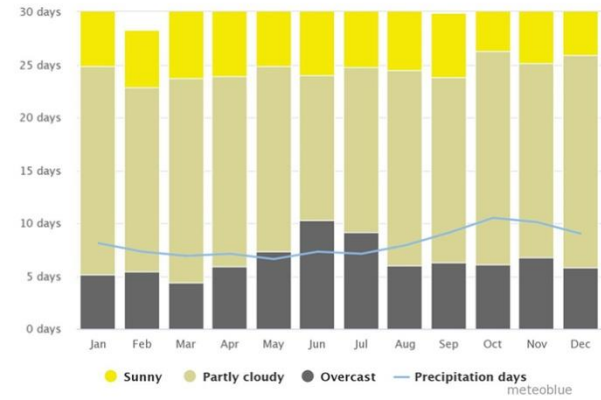
INDIA MAP SHOWING
LUCKNOW CITY



LOCATION	LUCKNOW
LATITUDE	26° 51' 0.0000" N
LONGITUDE	80° 56' 59.9892" E
ALTITUDE	123 m

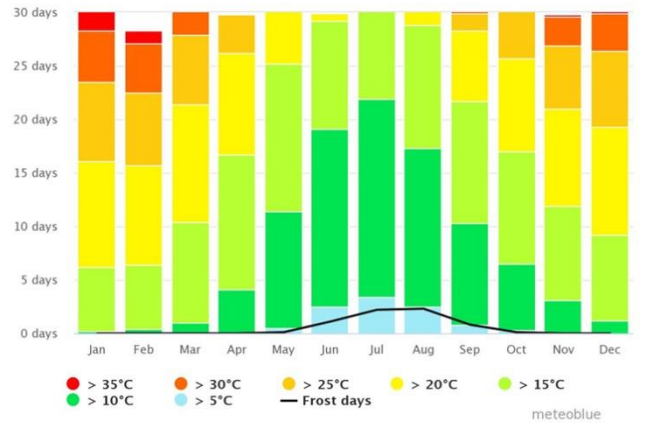
AVERAGE TEMPERATURE AND PRECIPITATION

LUCKNOW HAS A COMPOSITE CLIMATE WITH COOL,DRY WINTERS WITH MEAN MONTHLY MINIMUM TEMPERATURE OF OF 5 DEGREE CELSIUS IN WINTERSFROM MID-NOVEMBER TO FEBRUARY AND DRY, HOT SUMMERS WITH THUNDERSTORMS FROM LATE MARCH TO JUNE, MARKED BY MEAN MONTHLYMAXIMUM TEMPERATURE OF 45 DEGREE CELSIUS IN SUMMERS MOREOVER THERE ARE ABOUT 4-6 DAYS OF HEAT WAVE WHEN THE MAXIMUM TEMPERATURE OF A DAY RISES TO 4-6 CELSIUS ABOVE NORMAL VALUES IN SUMMER AND THE TEMPERATURE MAY FALL TO 3-4 DEGREE CELSIUS.

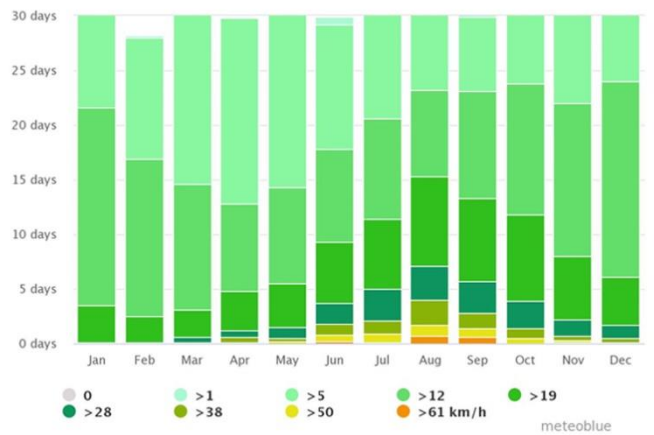


CLOUDY SUNNY AND PRECIPITATION

PRECIPITATION AMOUNTS



MAXIMUM TEMPERATURES

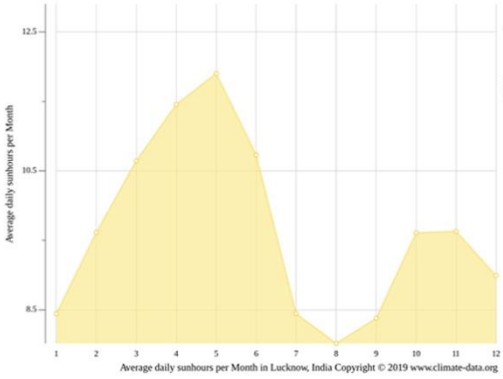


WIND SPEED

PROJECT TITLE -	SHEET TITLE -	SUBMITTED BY-		THESIS GUIDE -
MIXED USE BUILDING, A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	CLIMATE ANALYSIS OF LUCKNOW CITY	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER MASTERS IN ARCHITECTURE	BBD UNIVERSITY SCHOOL OF PLANNING AND ARCHITECTURE	AR. VARSHA VERMA

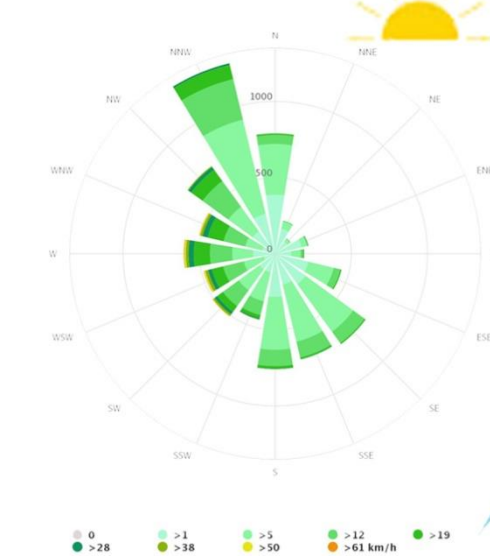
Climate Analysis - Lucknow City

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	14.9 °C (58.9) °F	18.6 °C (65.4) °F	24.3 °C (75.7) °F	30.3 °C (86.6) °F	32.8 °C (91.1) °F	32.3 °C (90.2) °F	29 °C (84.1) °F	28.4 °C (83.1) °F	27.7 °C (81.8) °F	25.5 °C (77.9) °F	21.2 °C (70.1) °F	16.4 °C (61.6) °F
Min. Temperature °C (°F)	9.1 °C (48.3) °F	12.2 °C (54) °F	16.9 °C (62.4) °F	22.6 °C (72.6) °F	26.1 °C (78.9) °F	27.5 °C (81.5) °F	26.2 °C (79.2) °F	25.8 °C (78.4) °F	24.5 °C (76.2) °F	20 °C (68) °F	14.9 °C (58.8) °F	10.3 °C (50.6) °F
Max. Temperature °C (°F)	21.3 °C (70.3) °F	25.2 °C (77.4) °F	31.5 °C (88.8) °F	37.7 °C (99.9) °F	39.2 °C (102.6) °F	37.1 °C (98.9) °F	32.3 °C (90.2) °F	31.7 °C (89) °F	31.4 °C (88.5) °F	31.1 °C (88) °F	27.7 °C (81.9) °F	23.1 °C (73.5) °F
Precipitation / Rainfall mm (in)	19 (0.7)	25 (1)	14 (0.6)	9 (0.4)	17 (0.7)	129 (5.1)	310 (12.2)	265 (10.4)	165 (6.5)	34 (1.3)	2 (0.1)	10 (0.4)
Humidity(%)	67%	60%	44%	30%	38%	54%	79%	82%	80%	66%	58%	64%
Rainy days (d)	2	2	2	2	3	8	18	18	13	2	0	1
avg. Sun hours (hours)	8.4	9.6	10.6	11.5	11.9	10.7	8.4	8.0	8.4	9.6	9.6	9.0

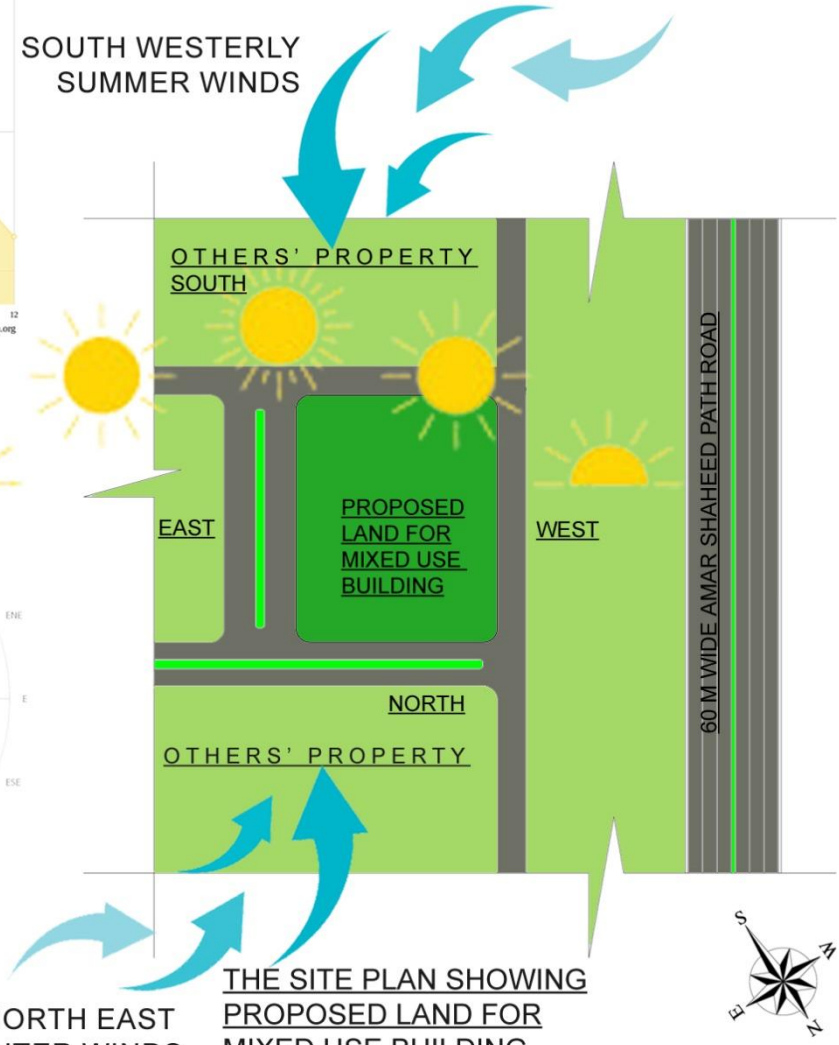


GRAPH SHOWING THE SUNSHINE HOURS IN LUCKNOW

CHART SHOWING THE CLIMATE ANALYSIS OF LUCKNOW



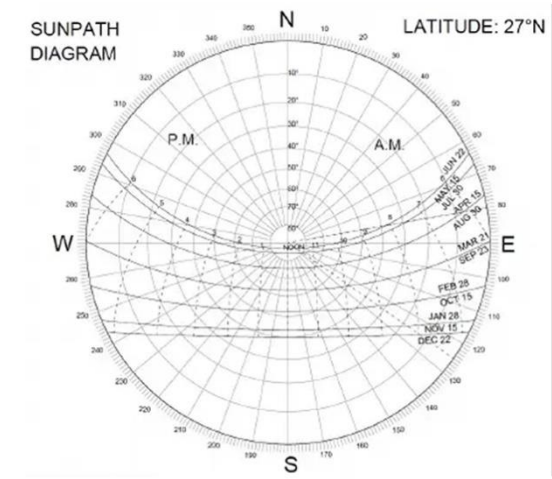
THE WIND ROSE

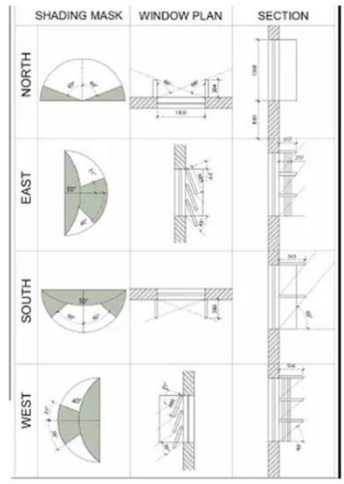


THE SITE PLAN SHOWING PROPOSED LAND FOR MIXED USE BUILDING

PROJECT TITLE -	SHEET TITLE -	SUBMITTED BY -		THESIS GUIDE -
MIXED USE BUILDING, A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	CLIMATE ANALYSIS OF LUCKNOW CITY	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER MASTERS IN ARCHITECTURE ROLL NO - 1190109009	BBD UNIVERSITY SCHOOL OF PLANING & ARCHITECTURE	AR. VARSHA VERMA

Climate Analysis - Lucknow City





THE SUN PATH DIAGRAM OF LUCKNOW CITY

THE SUN SHADING RECOMENDATION ACCORDING TO LUCKNOW CLIMATE

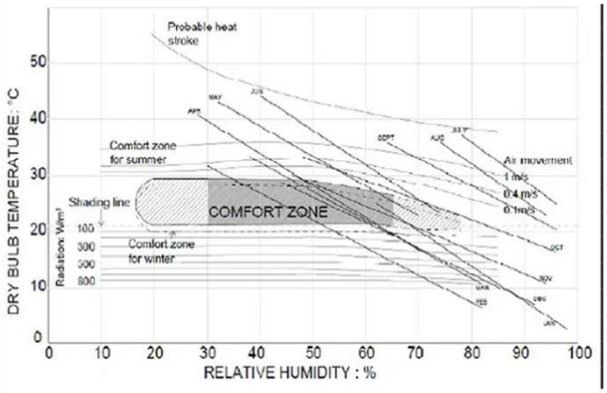


TABLE I
INFERENCES FROM BIOCLIMATIC CHART

Month	Comfort	Radiation needed	Shading needed	Air movement needed	Prevailing wind directions
January	20%	60%	10%	×	WNW
February	30%	30%	25%	10%	NW
March	30%	5%	50%	12%	NW
April	25%	×	85%	40%	E
May	5%	×	100%	90%	E
June	×	×	100%	100%	E
July	×	×	100%	100%	E
August	×	×	100%	100%	N
September	×	×	100%	100%	WNW
October	×	×	80%	90%	W
November	30%	25%	20%	×	N
December	35%	50%	10%	×	NW

INFERENCES DRAWN BY MANHONEY TABLE

DESIGN SPECIFICATIONS FOR BUILDING IN LUCKNOW CITY

ELEMENTS WITH RECOMMENDATIONS

1) LAYOUT: ORIENTATION NORTH AND SOUTH (LONG AXIS EAST-WEST)

2) SPACING: OPEN SPACING FOR BREEZE PENETRATION BUT PROTECTION FORM HOT AND COLD WIND

3) AIR MOVEMENT: ROOMS SINGLE BANKED WITH PERMANENT PROVISION FOR AIR MOVEMENT.

4) OPENINGS: RECOMMENDED WINDOW TO WALL RATIO (WWR)

15-25% IN NORTH AND SOUTH WALL AT BODY HEIGHT ON WINDWARD SIDE.

MOREOVER DIRECT SUNLIGHT SHOULD BE EXCLUDED WITH PROPER PROTECTION FROM RAIN.

5) WALLS: HEAVY EXTERNAL AND INTERNAL WALLS WITH OVER 8 HOURS TIME LAG.

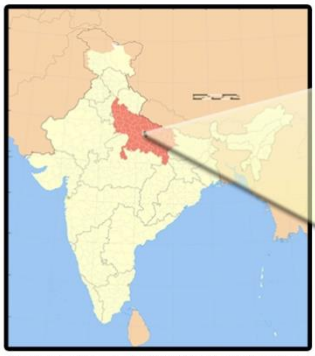
6) ROOFS: HEAVY ROOFS WITH OVER 8 HOURS TIME-LAG.

7) OUTDOOR SLEEPING: SPACE FOR OUT SEATING AND SLEEPING

8) RAIN PROTECTION: PROTECTION FROM RAIN WITH ADEQUATE RAINWATER DRAINAGE.

PROJECT TITLE -	SHEET TITLE -	SUBMITTED BY-		THESIS GUIDE -
MIXED USE BUILDING, A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	CLIMATE ANALYSIS OF LUCKNOW CITY	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER MASTERS IN ARCHITECTURE ROLL NO - 1190109009	BBD UNIVERSITY SCHOOL OF PLANNING AND ARCHITECTURE	AR. VARSHA VERMA

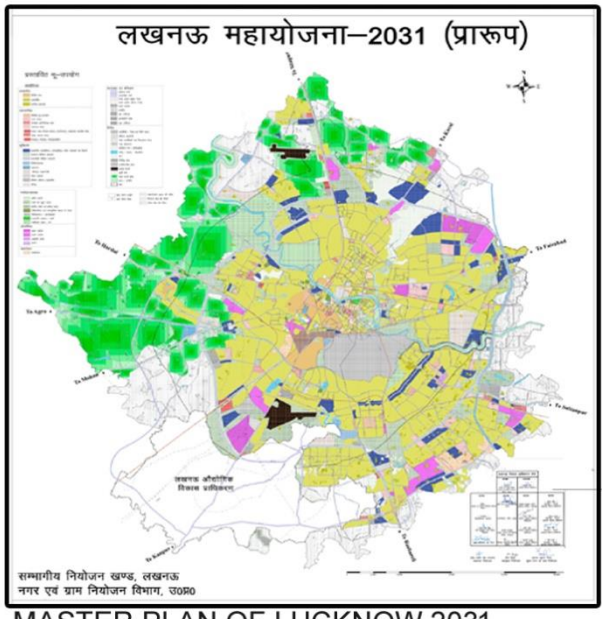
Site Analysis- Proposed Land for Mixed Use building



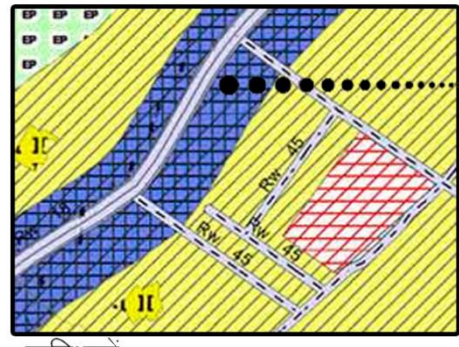
INDIA MAP SHOWING LUCKNOW CITY

LUCKNOW PLAN

GOOGLE IMAGE OF THE PROPOSED SITE



MASTER PLAN OF LUCKNOW 2031



PROPOSED LAND FOR MIXED USE BUILDING

सुविधायें

प्रस्तावित सामाजिक / सांस्कृतिक / शोध संस्थायें एवं सेंवायें

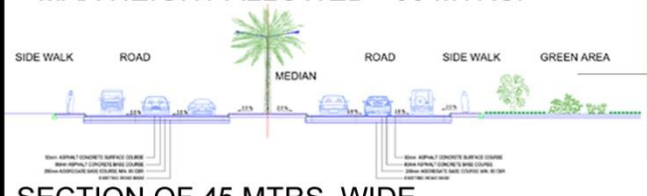
ENLARGE PLAN OF PROPOSED SITE ON MASTER PLAN

BUILDING BYE LAWS

SETBACKS

FRONT - 15M WIDE
REAR - 10 M WIDE
SIDES - 10 M WIDE ON BOTH SIDES

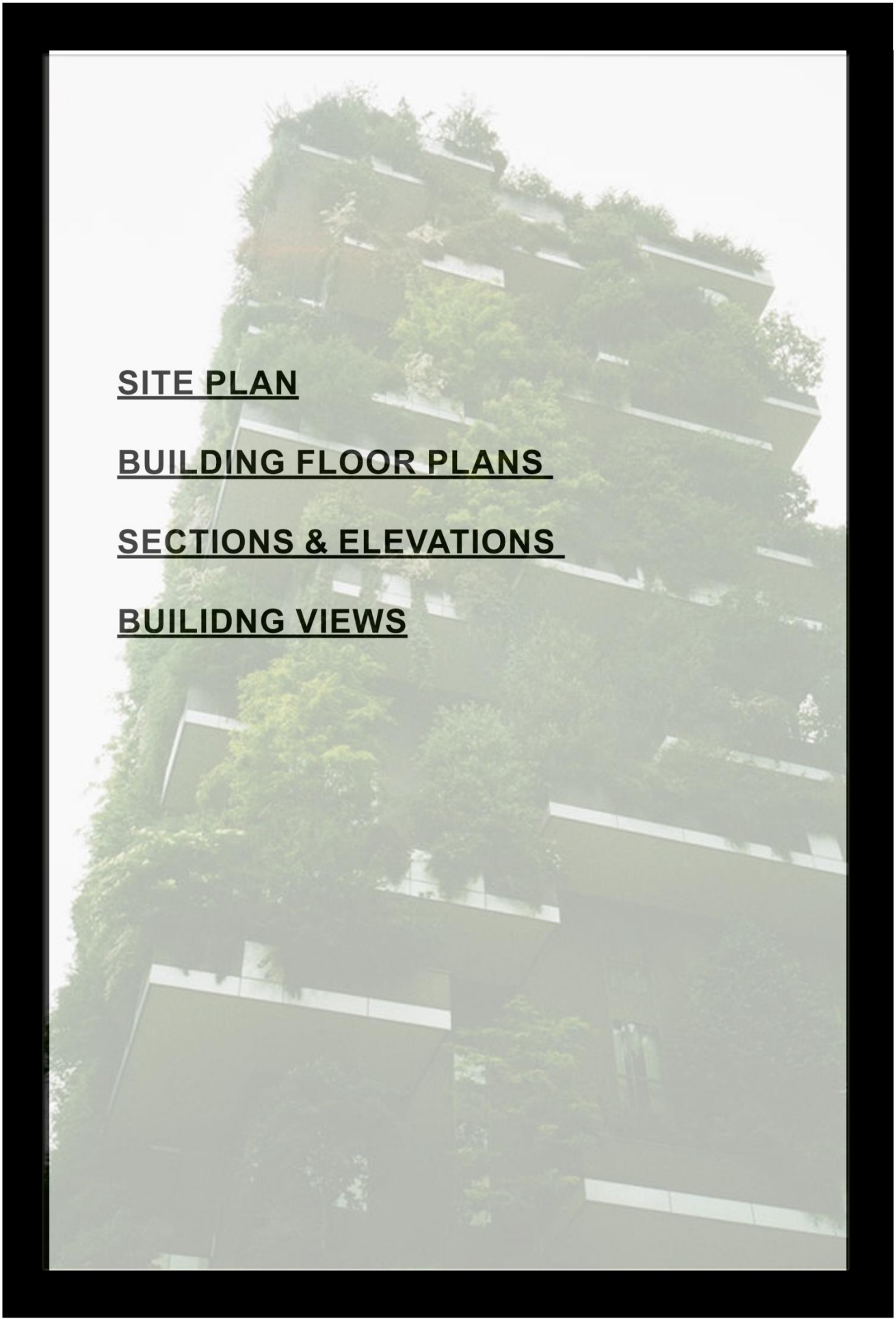
PERMISSIBLE G.C. - 45%
PERMISSIBLE F.A.R. - 2.0
E.C.S. - 2 (2 CARS ON 100 SQ.MTRS).
MAX HEIGHT ALLOWED - 50 MTRS.



SECTION OF 45 MTRS. WIDE ROAD ENTERING TO THE PROPOSED SITE

THE SITE PLAN SHOWING PROPOSED LAND FOR MIXED USE BUILDING

PROJECT TITLE -	SHEET TITLE -	SUBMITTED BY-		THESIS GUIDE -
MIXED USE BUILDING, A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	SITE ANALYSIS	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER MASTERS IN ARCHITECTURE ROLL NO - 1190109009	BBD UNIVERSITY SCHOOL OF PLANNING & ARCHITECTURE	AR. VARSHA VERMA



SITE PLAN

BUILDING FLOOR PLANS

SECTIONS & ELEVATIONS

BUILIDNG VIEWS

TOTAL PLOT AREA = 16,507.160 SQ.MTRS.
PERMISSIBLE GROUND COVERAGE (45%) = 7428.22 SQ.MTRS.
PERMISSIBLE F.A.R. (2.0) = 33,014.12 SQ.MTRS.

PROJECT TITLE - MIXED USE BUILDING, A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	SHEET TITLE - MIXED-USE BUILDING SITE PLAN	NORTH -	SUBMITTED BY- MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER	ROLL NO - 1190109009 BBD UNIVERSITY SCHOOL OF PLANING & ARCHITECTURE	THESIS GUIDE - AR. VARSHA VERMA

AREA STATEMENT		
S.NO.	PARTICULARS	AREA IN SQ.MTRS.
S.NO.		
1	TOTAL PLOT AREA	16,507.160 SQ.MTRS.
2	PERMISSIBLE GROUND COVERAGE (45%)	7,428.22 SQ.MTRS.
3	PERMISSIBLE F.A.R. (2.0)	33, 014.32 SQ.MTRS.
4	COVERED AREA OF GROUND FLOOR	4,620.48 SQ.MTRS.
5	COVERED AREA OF FIRST FLOOR	4,620.48 SQ.MTRS.
6	COVERED AREA OF SECOND FLOOR	4,620.48 SQ.MTRS.
7	COVERED AREA OF THIRD FLOOR	4,620.48 SQ.MTRS.
8	COVERED AREA OF FOURTH FLOOR	
9	COVERED AREA OF FIFTH FLOOR	4,620.48 SQ.MTRS.
10	COVERED AREA OF SIXTH FLOOR	4,620.48 SQ.MTRS.
11	COVERED AREA OF SEVENTH FLOOR	4,620.48 SQ.MTRS.
12	COVERED AREA OF EIGTH FLOOR	4,620.48 SQ.MTRS.
13	TOTAL COVERED AREA OF ALL THE FLOORS	33,014.32 SQ.MTRS.
14	BASEMENT FLOOR AREA (NON- F.A.R.)	16,394.67 SQ.MTRS.
15	PARKING CALCULATION	
16	COVERED AREA OF ALL RETAIL FLOORS	13,861.44 SQ.MTRS.
17	CARS REQUIRED @ 3 E.C.S.	((13,861.44*3)/100))
		415.84
		416 Cars
18	COVERED AREA OF ALL OFFICE FLOORS	9,240.46 SQ.MTRS.
	CARS REQUIRED @1.5 E.C.S.	((9,240.46*1.5)/100))
		138.61 CARS
		139 CARS
19	COVERED AREA OF ALL BANQUET & CONFERENCE FL	
		4,620.48
20	CARS REQUIRED @ 2 E.C.S.	((4,620.48*2)/100))
		92.40 CARS
		93 CARS
21	NO. OF MULTIPLEX SEATS	1092 SEATS
	CARS REQUIRED @ 1 CAR ON 10 SEATS	1092/10
		10.92
		11 CARS
22	NO. OF HOTEL ROOMS	17 ROOMS
	CARS REQUIRED @ 1 CAR ON 2 ROOMS	(17/2)
		8.5
		9 CARS
23	HENCE , TOTAL NO. OF CARS REQUIRED	668 CARS

24	NO. OF CARS PROVIDED	743 CARS
25	IN BASEMENT	
26	MECHANICAL CAR PARKING	272 CARS
27	SINGLE CAR PARKING	249 CARS
28	OPEN CAR PARKING	243 CARS

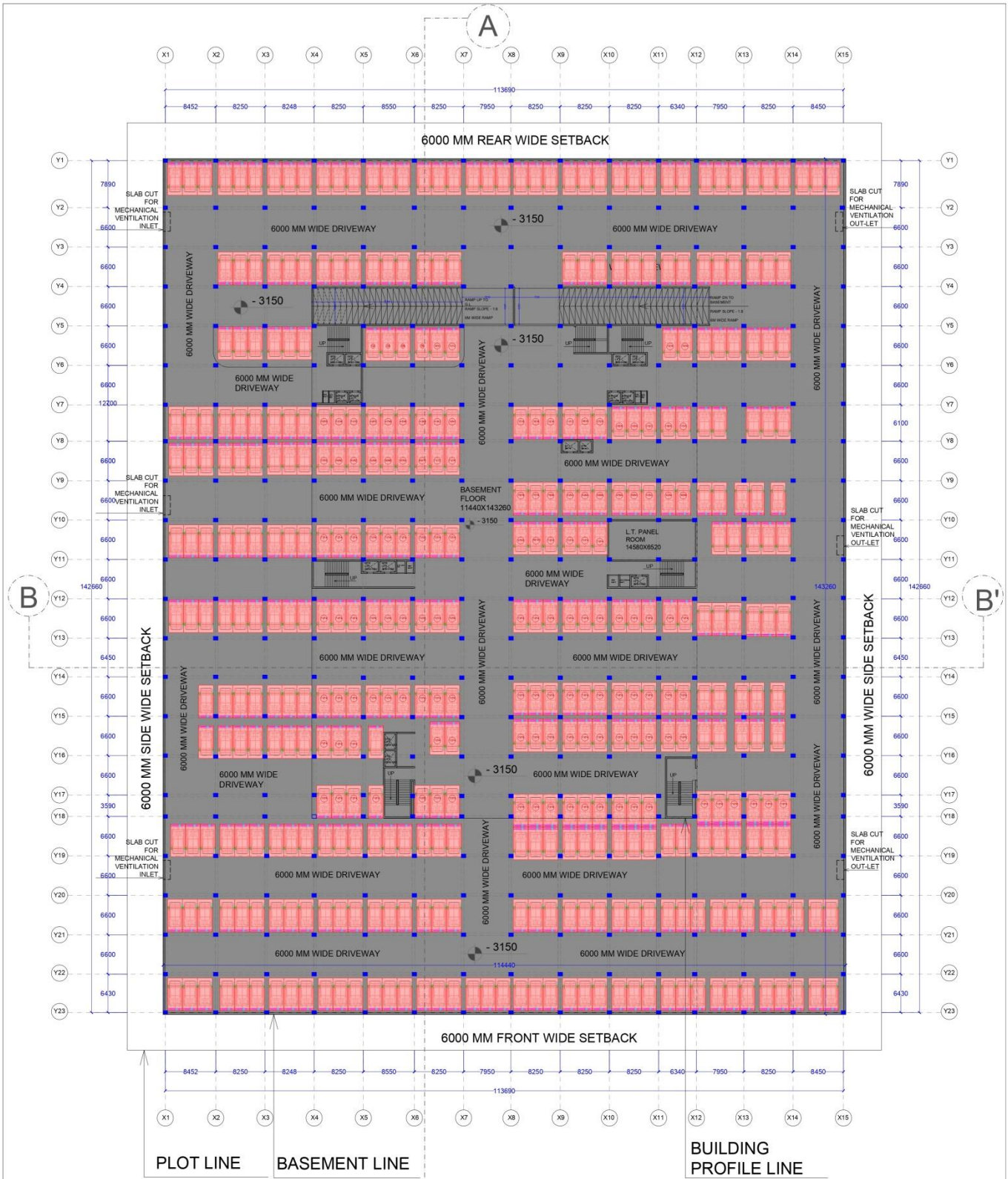
PROJECT TITLE -

MIXED USE BUILDING, A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE

SHEET TITLE -

AREA STATEMENT OF MIXED USE BUILDING

MANI KHARBANDA
ROLL NO. - 1190109009
M.ARCH 3RD YEAR 6TH SEMESTER
SCHOOL OF PLANNING & ARCHITECTURE
BBD UNIVERSITY, LUCKNOW.



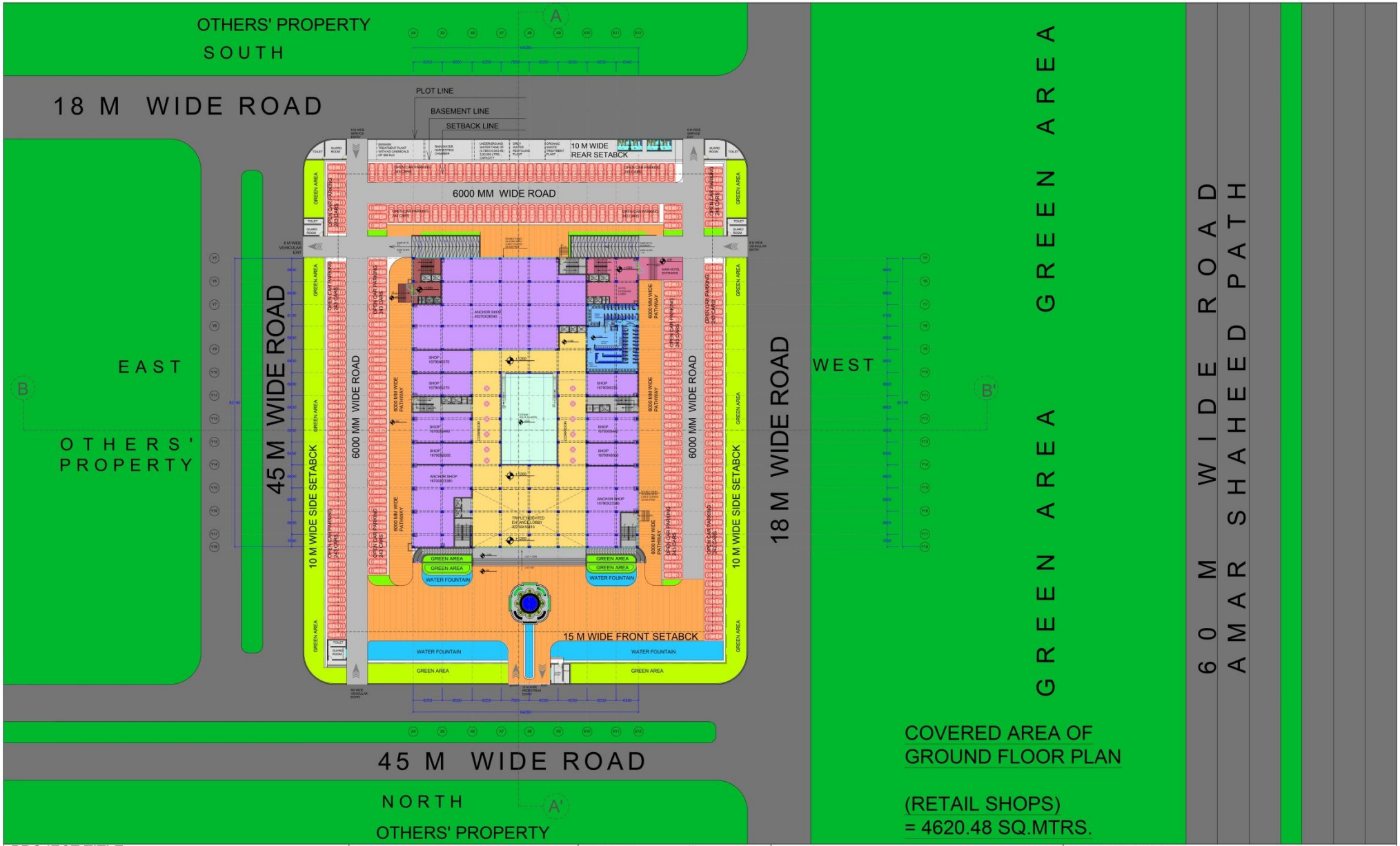
CAR PARKING PROVIDED

MECHANICAL CAR PARKING = 136X2 = 272 CARS
SINGLE CAR PARKING =249 CARS
TOTAL CARS = 521 CARS

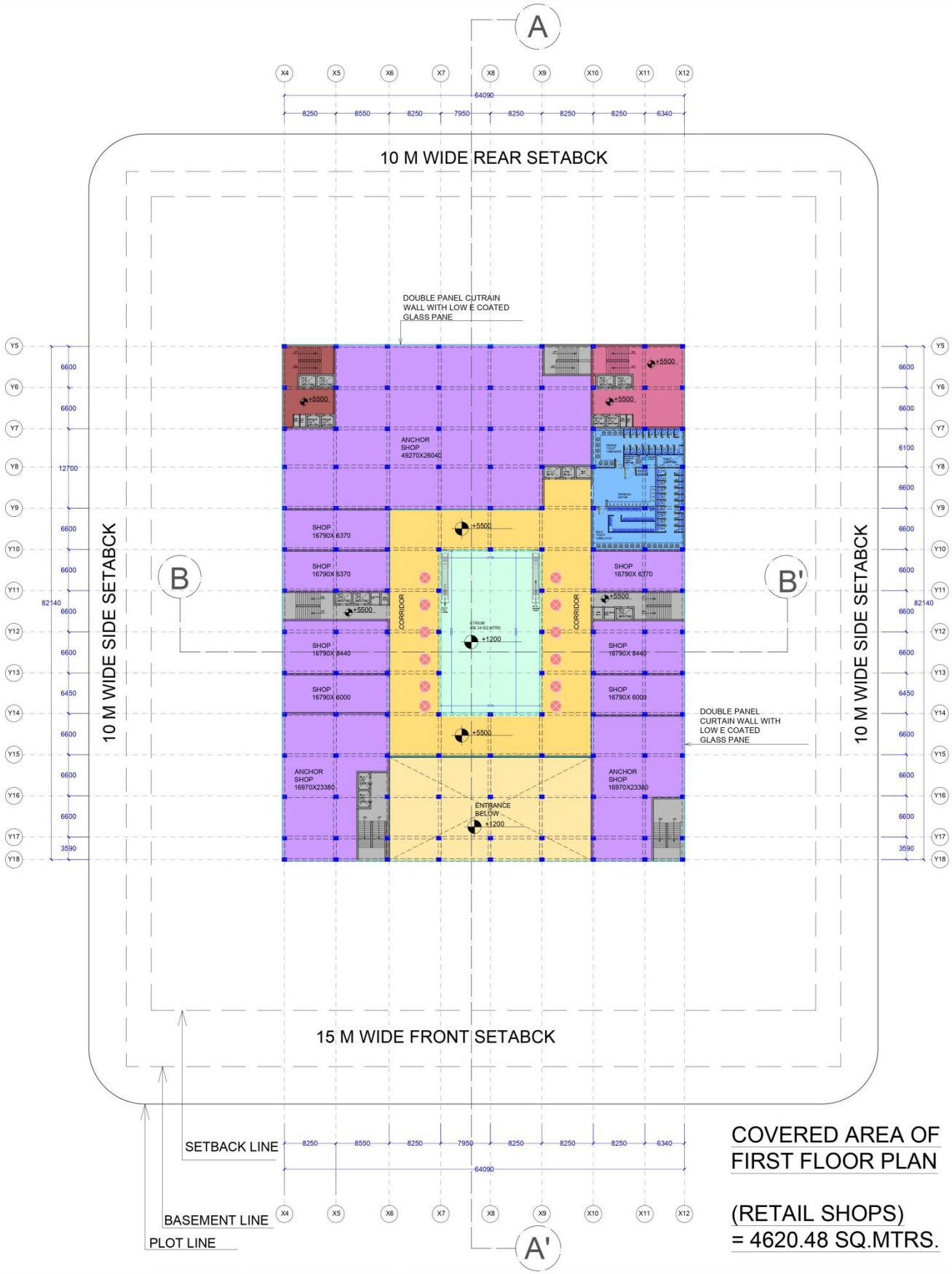
BASEMENT FLOOR PLAN

BASEMENT FLOOR AREA
(NON - F.A.R.) = 1639.46 SQ.MTRS.

PROJECT TITLE -	DRAWING TITLE -	NORTH -	NOTE-	SUBMITTED BY-
MIXED USE BUILDING , A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	BASEMENT FLOOR PLAN		ALL DIMENSIONS ARE IN MM	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER ROLL NO. - 1190109009 BBD UNIVERSITY SCHOOL OF PLANNING AND ARCHITECTURE



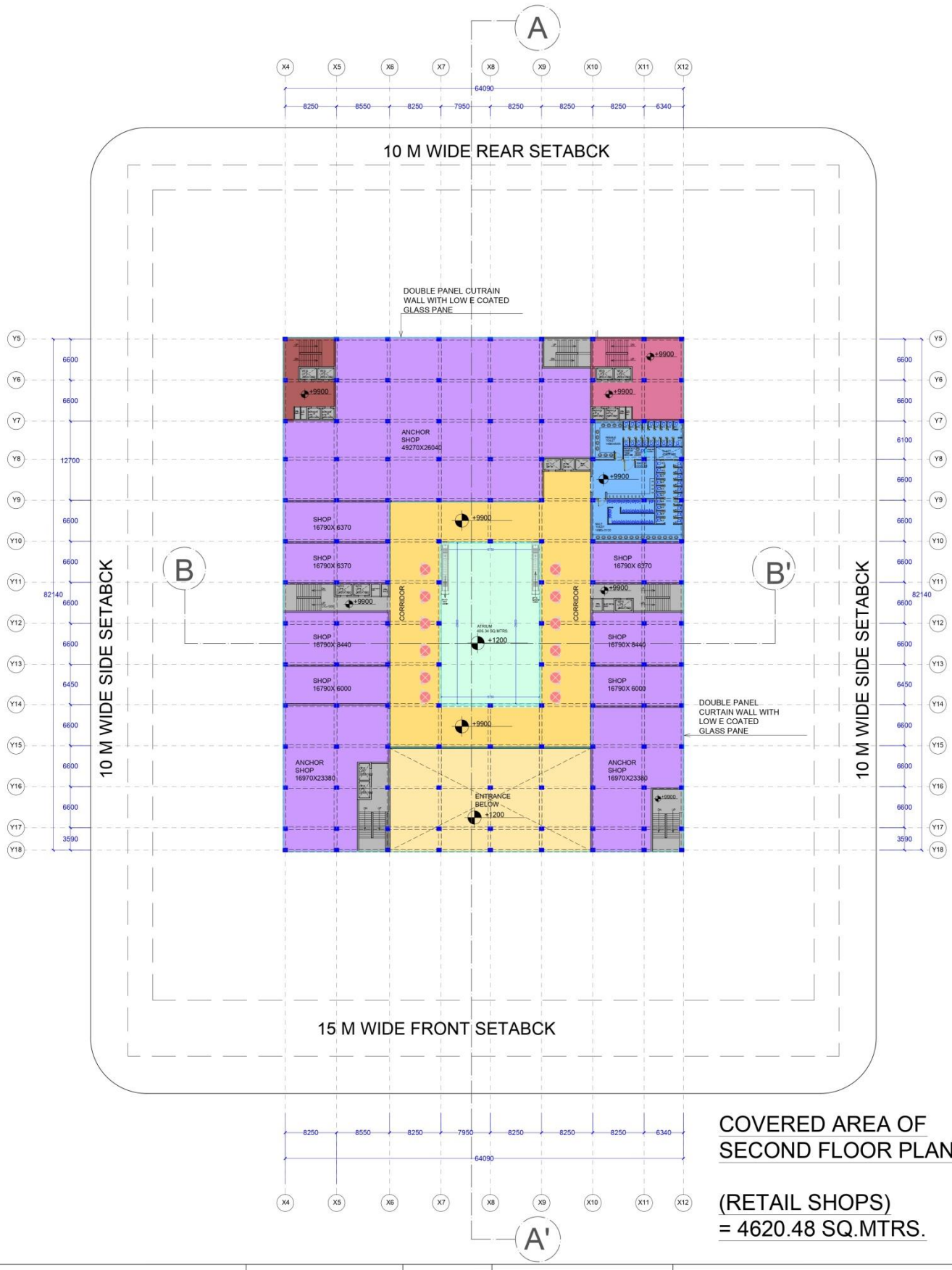
PROJECT TITLE -	DRAWING TITLE -	NORTH -	NOTE-	SUBMITTED BY-
MIXED USE BUILDING , A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	GROUND FLOOR PLAN		ALL DIMENSIONS ARE IN MM	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER ROLL NO. - 1190109009 BBD UNIVERSITY SCHOOL OF PLANNING AND ARCHITECTURE



COVERED AREA OF FIRST FLOOR PLAN

(RETAIL SHOPS)
= 4620.48 SQ.MTRS.

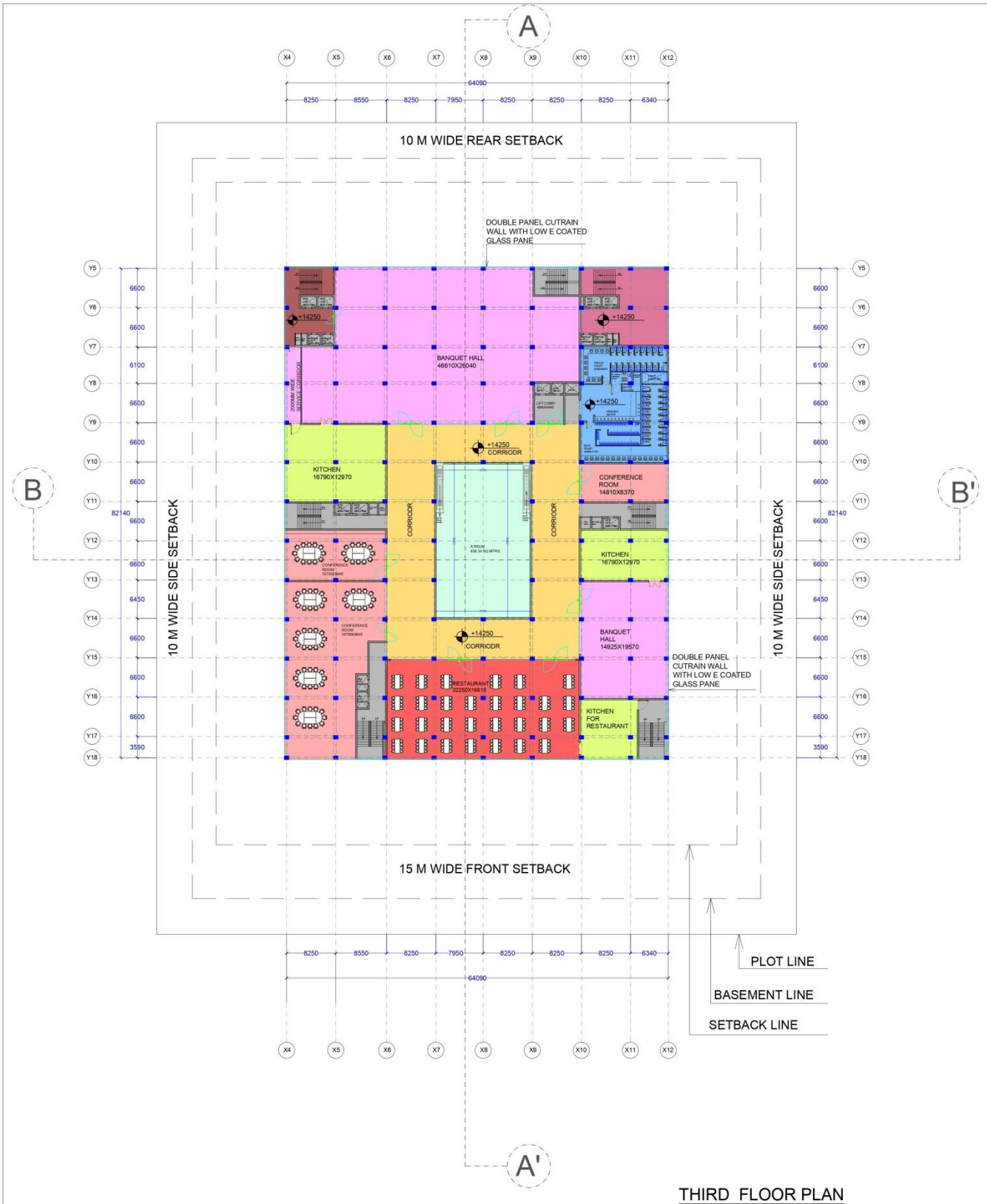
PROJECT TITLE -	DRAWING TITLE -	NORTH -	NOTE-	SUBMITTED BY-
MIXED USE BUILDING , A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	FIRST FLOOR PLAN (RETAIL SHOPS)	N	ALL DIMENSIONS ARE IN MM	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER ROLL NO. - 1190109009 BBD UNIVERSITY SCHOOL OF PLANNING AND ARCHITECTURE



COVERED AREA OF SECOND FLOOR PLAN

(RETAIL SHOPS) = 4620.48 SQ.MTRS.

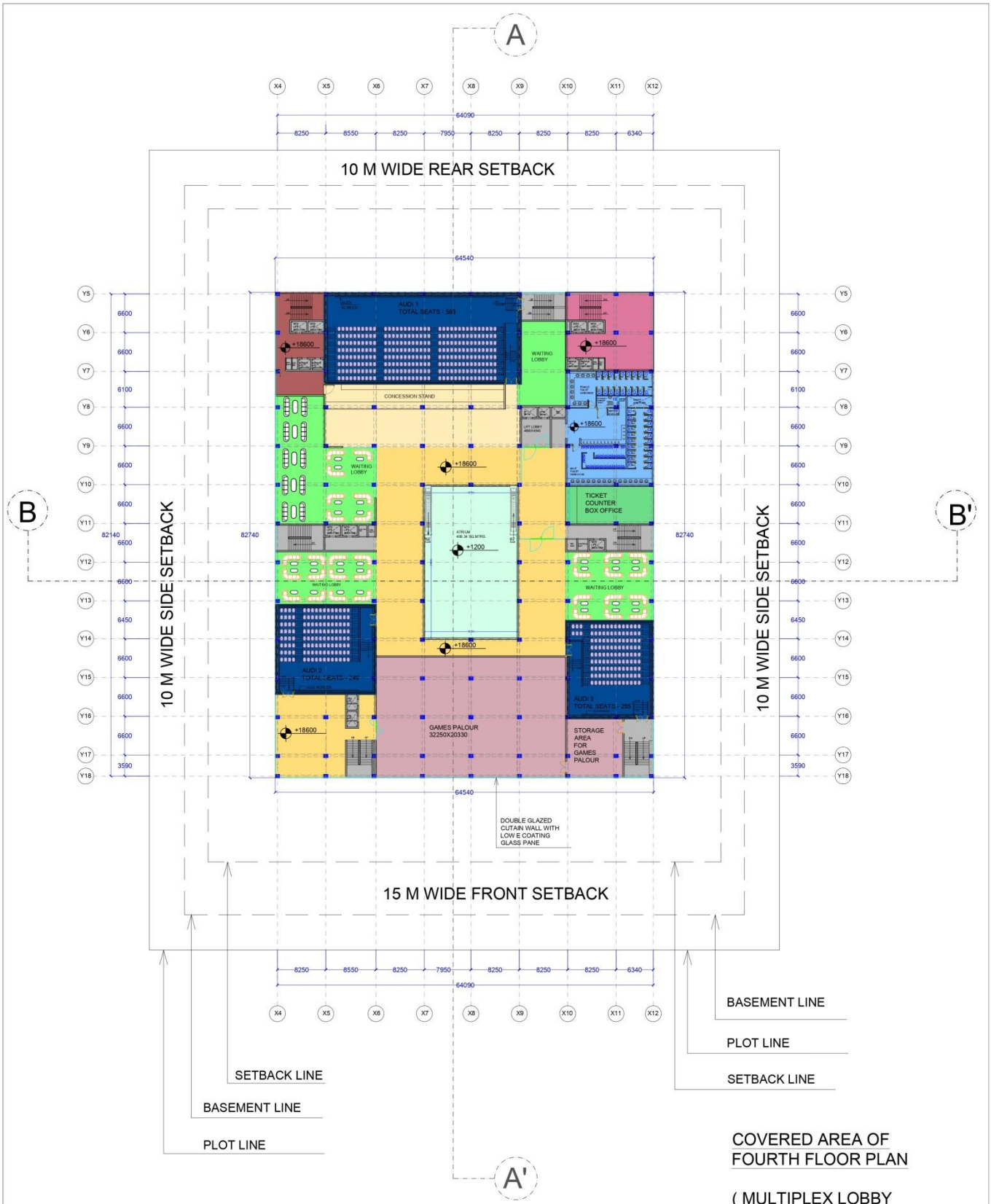
PROJECT TITLE -	DRAWING TITLE -	NORTH -	NOTE-	SUBMITTED BY-
MIXED USE BUILDING , A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	SECOND FLOOR PLAN (RETAIL SHOPS)	N	ALL DIMENSIONS ARE IN MM	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER ROLL NO. - 1190109009 BBD UNIVERSITY SCHOOL OF PLANNING AND ARCHITECTURE



THIRD FLOOR PLAN

COVERED AREA OF THIRD FLOOR
= 4620.48 SQ.MTRS.

PROJECT TITLE -	DRAWING TITLE -	NORTH -	NOTE-	SUBMITTED BY-
MIXED USE BUILDING , A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	THIRD FLOOR PLAN	N	ALL DIMENSIONS ARE IN MM	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER ROLL NO. - 1190109009 BBD UNIVERSITY SCHOOL OF PLANNING AND ARCHITECTURE

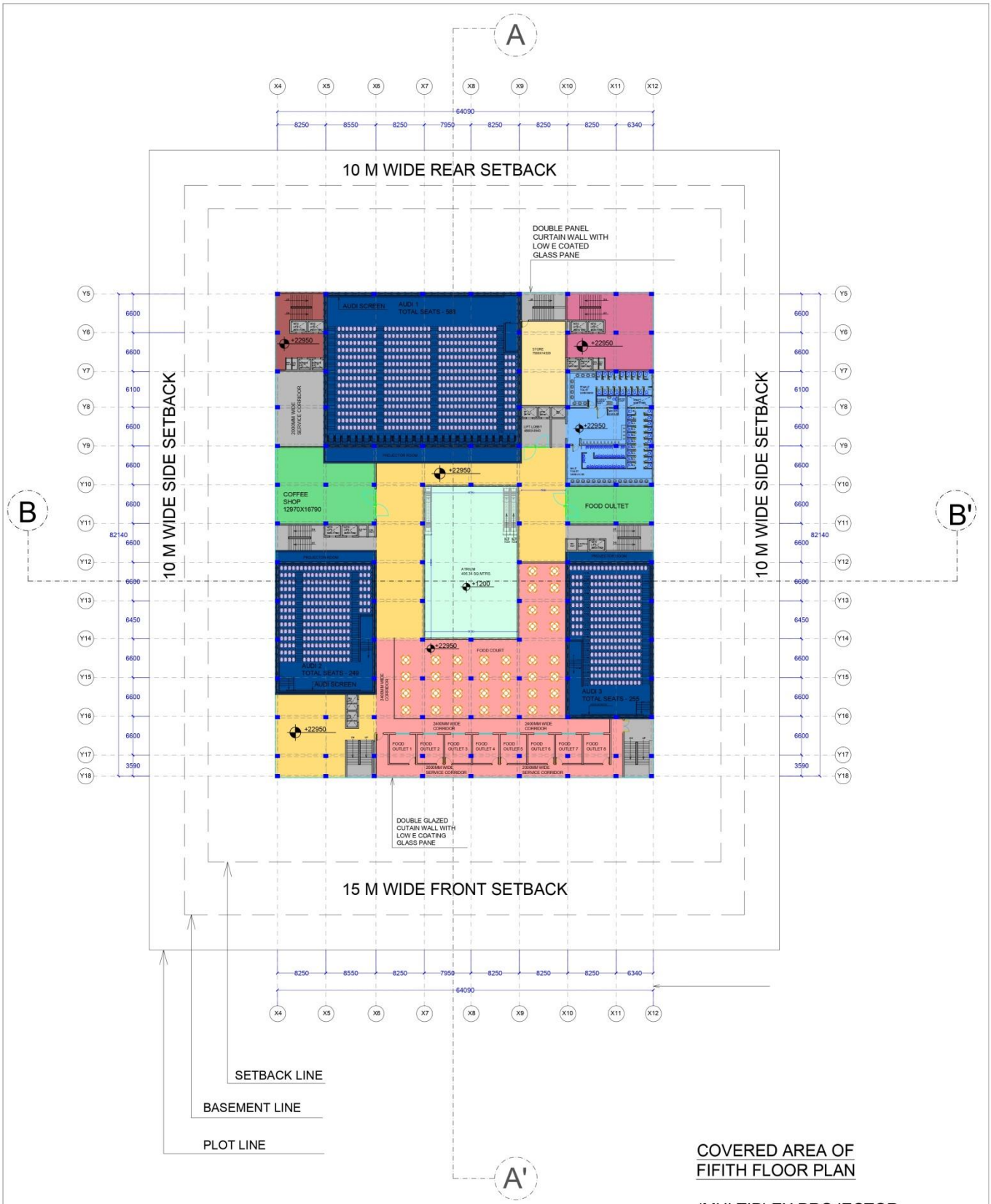


COVERED AREA OF FOURTH FLOOR PLAN

(MULTIPLEX LOBBY LEVEL PLAN)
= 4680.48 SQ.MTRS.

NO . OF AUDI = 3
TOTAL NO. OF SEATS IN 3 AUDIS = 1092 SEATS

PROJECT TITLE -	DRAWING TITLE -	NORTH -	NOTE-	SUBMITTED BY-
MIXED USE BUILDING , A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	FOURTH FLOOR PLAN (MULTIPLEX LOBBY LEVEL PLAN)	N	ALL DIMENSIONS ARE IN MM	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER ROLL NO. - 1190109009 BBD UNIVERSITY SCHOOL OF PLANNING AND ARCHITECTURE

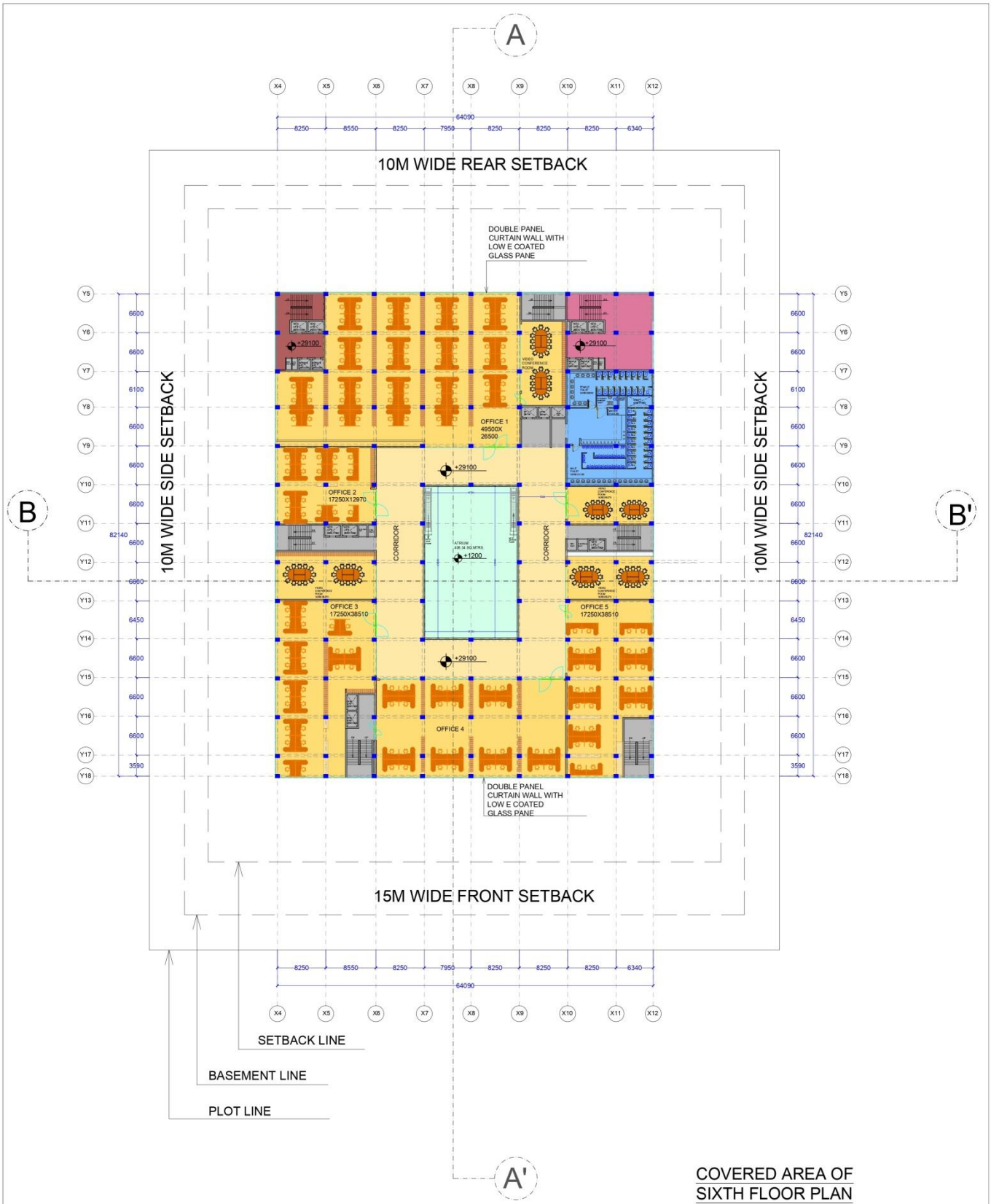


NO . OF AUDI = 3
TOTAL NO. OF SEATS IN 3 AUDIS = 1092 SEATS

COVERED AREA OF FIFITH FLOOR PLAN

(MULTIPLEX PROJECTOR LEVEL PLAN AND FOOD COURT) = 4620.48 SQ.MTRS.

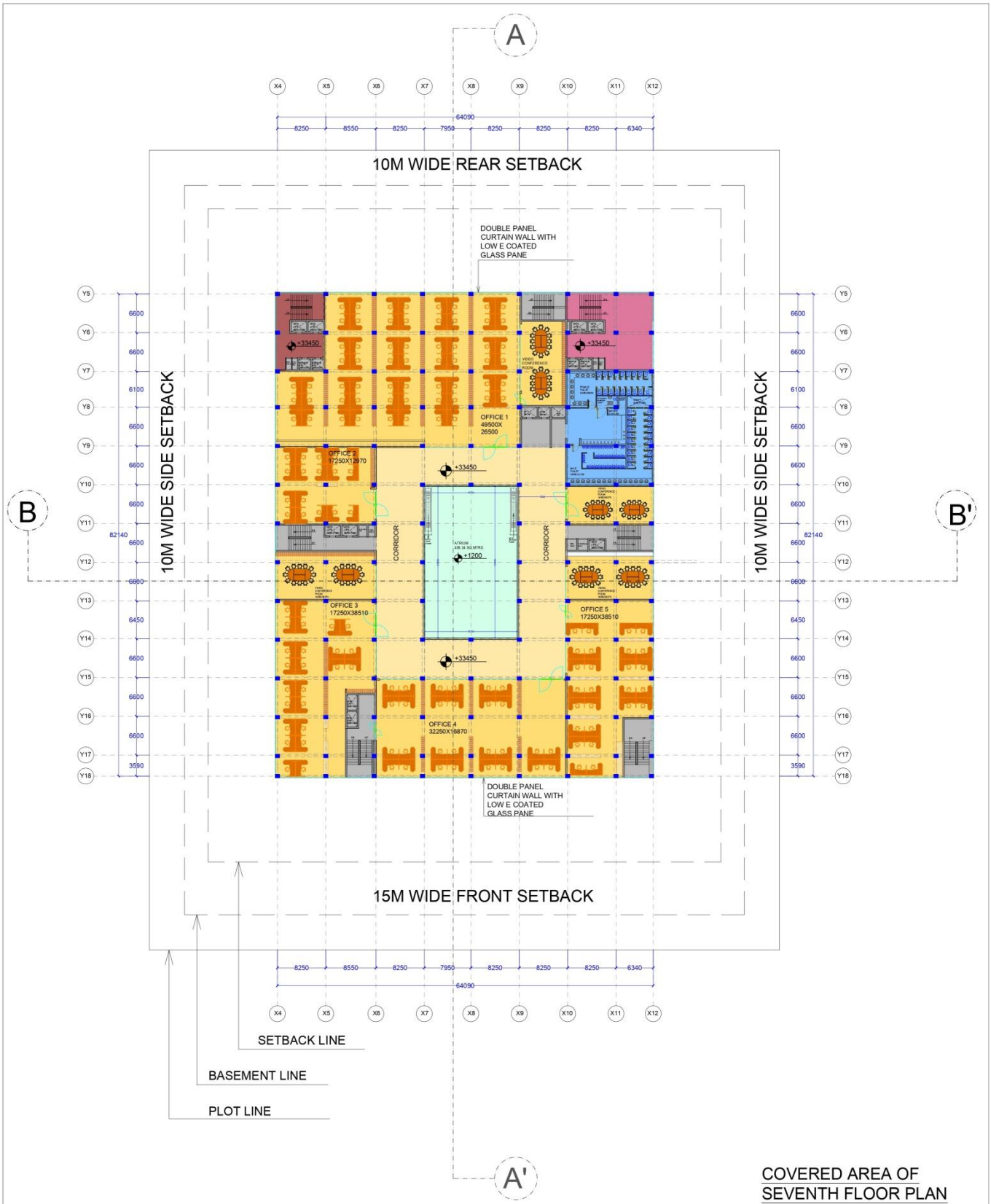
PROJECT TITLE -	DRAWING TITLE -	NORTH -	NOTE-	SUBMITTED BY-
MIXED USE BUILDING , A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	FIFTH FLOOR PLAN (MULTIPLEX PROJECTOR LEVEL PLAN AND FOOD COURT)		ALL DIMENSIONS ARE IN MM	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER ROLL NO. - 1190109009 BBD UNIVERSITY SCHOOL OF PLANNING AND ARCHITECTURE



COVERED AREA OF SIXTH FLOOR PLAN

(OFFICE FLOOR)
= 4620.48 SQ.MTRS.

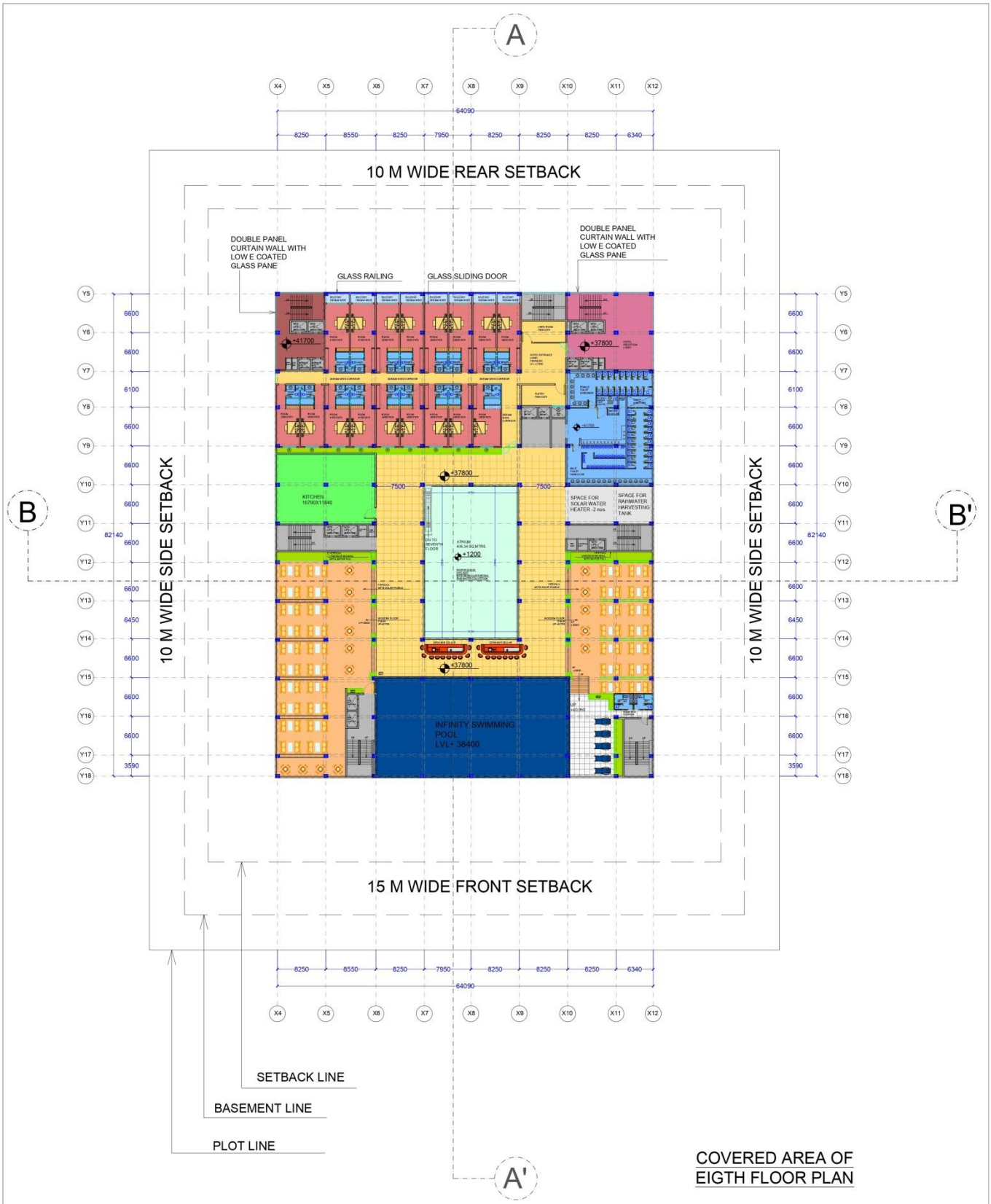
PROJECT TITLE -	DRAWING TITLE -	NORTH -	NOTE-	SUBMITTED BY-
MIXED USE BUILDING , A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	SIXTH FLOOR PLAN (OFFICE FLOOR)	N	ALL DIMENSIONS ARE IN MM	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER ROLL NO. - 1190109009 BBD UNIVERSITY SCHOOL OF PLANNING AND ARCHITECTURE



COVERED AREA OF SEVENTH FLOOR PLAN

(OFFICE FLOOR)
= 4620.48 SQ.MTRS.

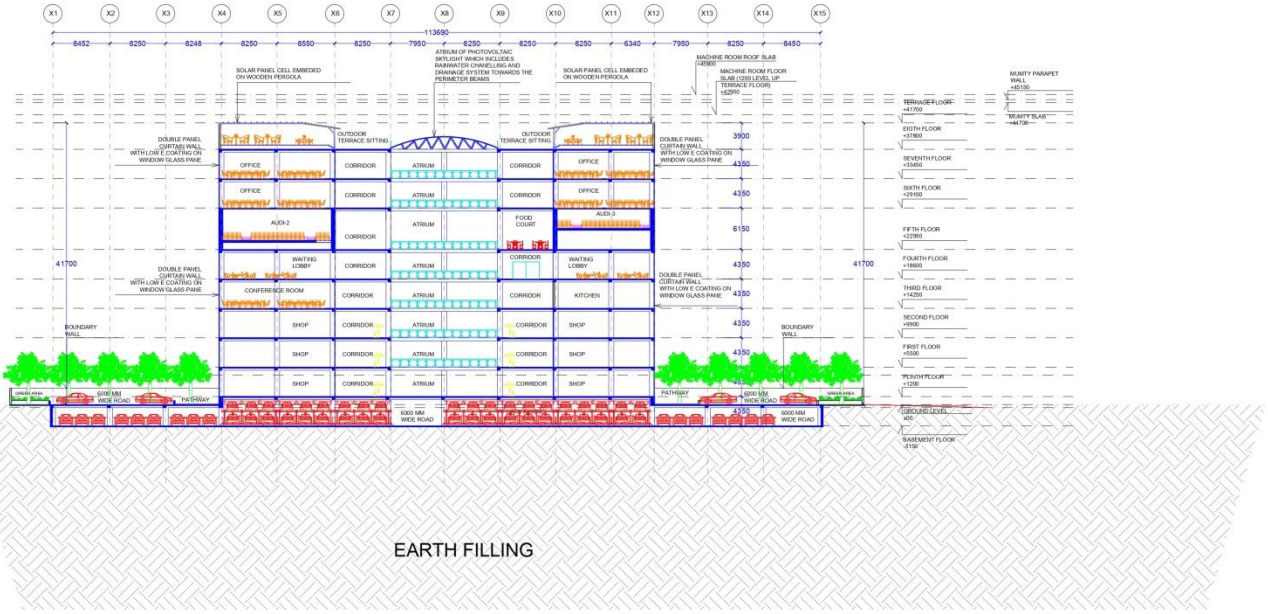
PROJECT TITLE -	DRAWING TITLE -	NORTH -	DATE -	SUBMITTED BY-
MIXED USE BUILDING , A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	SEVENTH FLOOR PLAN (OFFICE FLOOR)	N	30TH MARCH , 2022 NOTE- ALL DIMENSIONS ARE IN MM	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER ROLL NO. - 1190109009 BBD UNIVERSITY SCHOOL OF PLANNING AND ARCHITECTURE



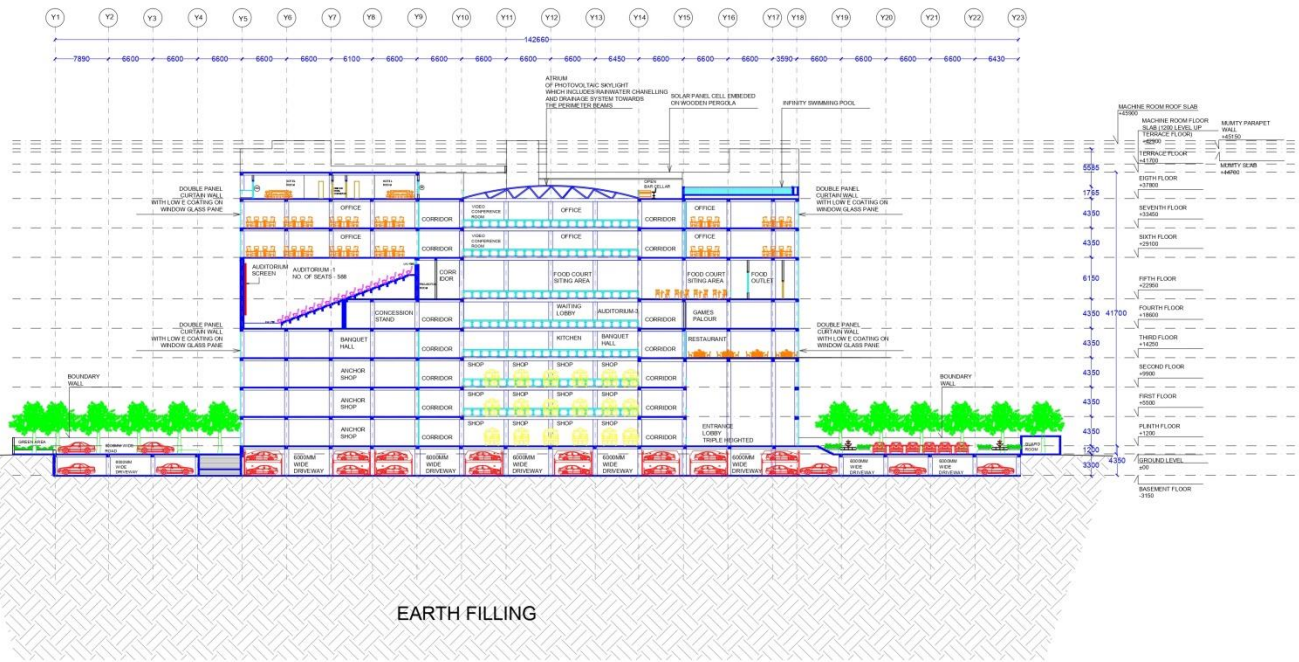
COVERED AREA OF EIGTH FLOOR PLAN

(HOTEL ROOMS & TERRACE OUTDOOR SITING)
= 1864.17 SQ.MTRS.

PROJECT TITLE -	DRAWING TITLE -	NORTH -	NOTE-	SUBMITTED BY-
MIXED USE BUILDING , A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	EIGTH FLOOR PLAN (HOTEL ROOMS AND TERRACE OUTDOOR SITING)	N	ALL DIMENSIONS ARE IN MM	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER ROLL NO. - 1190109009 BBD UNIVERSITY SCHOOL OF PLANNING AND ARCHITECTURE



SECTION BB'



SECTION AA'

PROJECT TITLE -	DRAWING TITLE -	NOTE-	SUBMITTED BY-
MIXED USE BUILDING , A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	SECTION AA' AND SECTION BB'	ALL DIMENSIONS ARE IN MM	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER ROLL NO. - 1190109009 BBD UNIVERSITY SCHOOL OF PLANNING AND ARCHITECTURE

MUMTY PARAPET WALL LEVEL
+ 45150

EIGTH FLOOR LEVEL
+ 37800

SEVENTH FLOOR LEVEL
+ 33450

SIXTH FLOOR LEVEL
+ 29100

FIFTH FLOOR LEVEL
+22950

FOURTH FLOOR LEVEL
+18600

THIRD FLOOR LEVEL
+14250

SECOND FLOOR LEVEL
+9900

FIRST FLOOR LEVEL
+5500

PLINTH FLOOR LEVEL
+1200

GROUND LEVEL

00

FRONT ELEVATION

TERRAACE FLOOR LEVEL
+ 41700

EIGTH FLOOR LEVEL
+ 37800

SEVENTH FLOOR LEVEL
+ 33450

SIXTH FLOOR LEVEL
+ 29100

FIFTH FLOOR LEVEL
+22950

FOURTH FLOOR LEVEL
+18600

THIRD FLOOR LEVEL
+14250

SECOND FLOOR LEVEL
+9900

FIRST FLOOR LEVEL
+5500

PLINTH FLOOR LEVEL
+1200

GROUND LEVEL

00

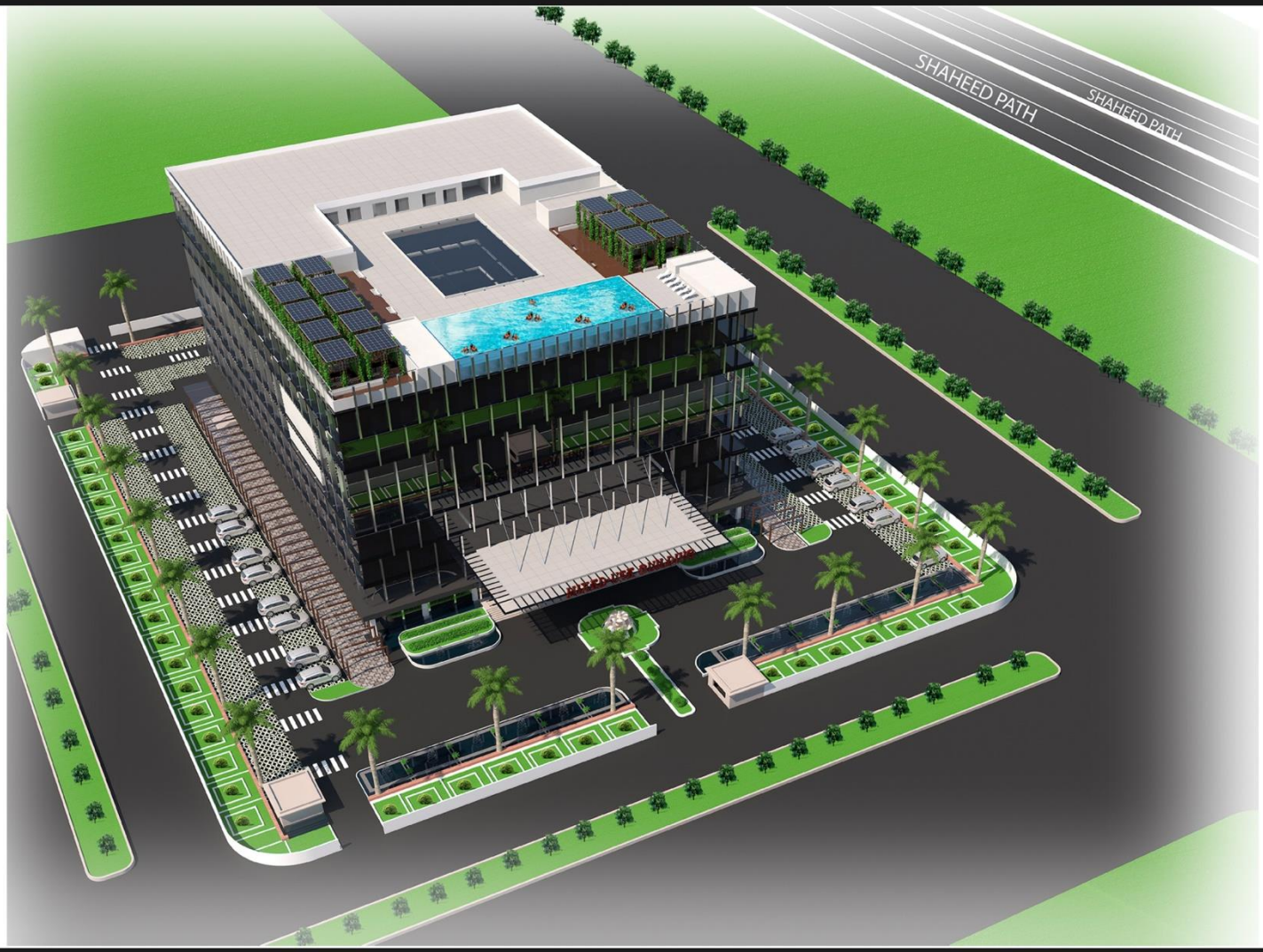
REAR ELEVATION

PROJECT TITLE -	SHEET TITLE -	SUBMITTED BY -	BBD UNIVERSITY	THESIS GUIDE -
MIXED USE BUILDING, A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	FRONT AND REAR ELEVATIONS	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER ROLL NO - 1190109009	SCHOOL OF PLANNING & ARCHITECTURE	AR. VARSHA VERMA

LEFT SIDE ELEVATION

RIGHT SIDE ELEVATION

PROJECT TITLE -	SHEET TITLE -	SUBMITTED BY -	BBD UNIVERSITY	THESIS GUIDE -
MIXED USE BUILDING, A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	LEFT AND RIGHT ELEVATIONS	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER ROLL NO - 1190109009	SCHOOL OF PLANNING & ARCHITECTURE	AR. VARSHA VERMA



PROJECT TITLE - MIXED USE BUILDING, A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	SHEET TITLE - MIXED-USE BUILDING SITE VIEW	SUBMITTED BY- MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER	ROLL NO - 1190109009 BBD UNIVERSITY SCHOOL OF PLANING & ARCHITECTURE	THESIS GUIDE - AR. VARSHA VERMA

PROJECT TITLE -	SHEET TITLE -	SUBMITTED BY-		THESIS GUIDE -
MIXED USE BUILDING, A SOLUTION TO ENHANCE THE VITALITY OF URBAN SPACE	MIXED-USE BUILDING PERSPECTIVE VIEW	MANI KHARBANDA M.ARCH 3RD YEAR 6TH SEMESTER	ROLL NO - 1190109009 BBD UNIVERSITY SCHOOL OF PLANING & ARCHITECTURE	AR. VARSHA VERMA