

2.5 PRECEDENT STUDY AND ANALYSIS

UBM Housing, Jakarta, Indonesia

Architects: ID-EA

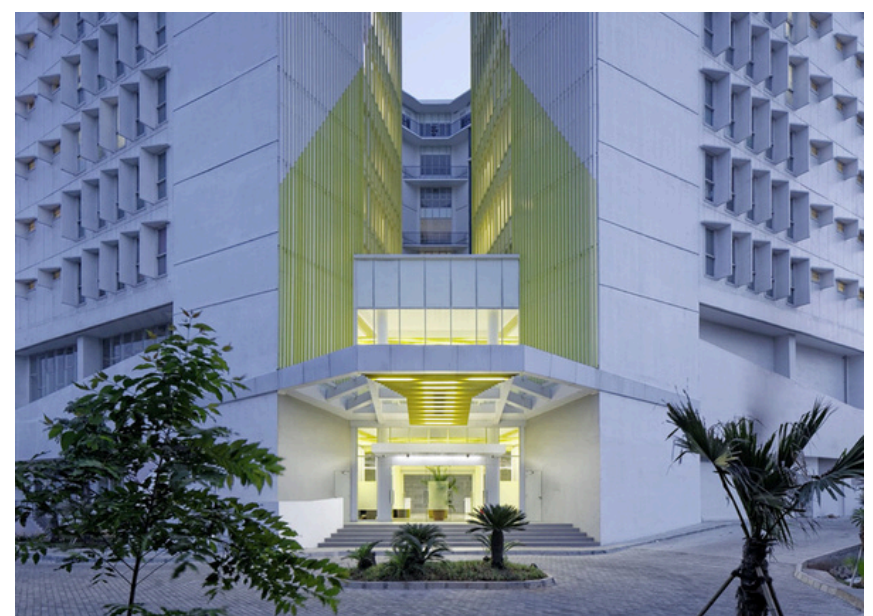
Year: 2014

Source: archdaily.com

The project approaches the challenge of urban density and housing cost problems by developing a vibrant urban center in a livable high-density environment while encouraging community spirit by providing interaction spaces and visual connections without sacrificing privacy. The design addresses concerns of shared space and social needs in a contemporary society and simultaneously responds to issues of shared living and individuality by offering a multiplicity of indoor/outdoor spaces specific to the tropical context.

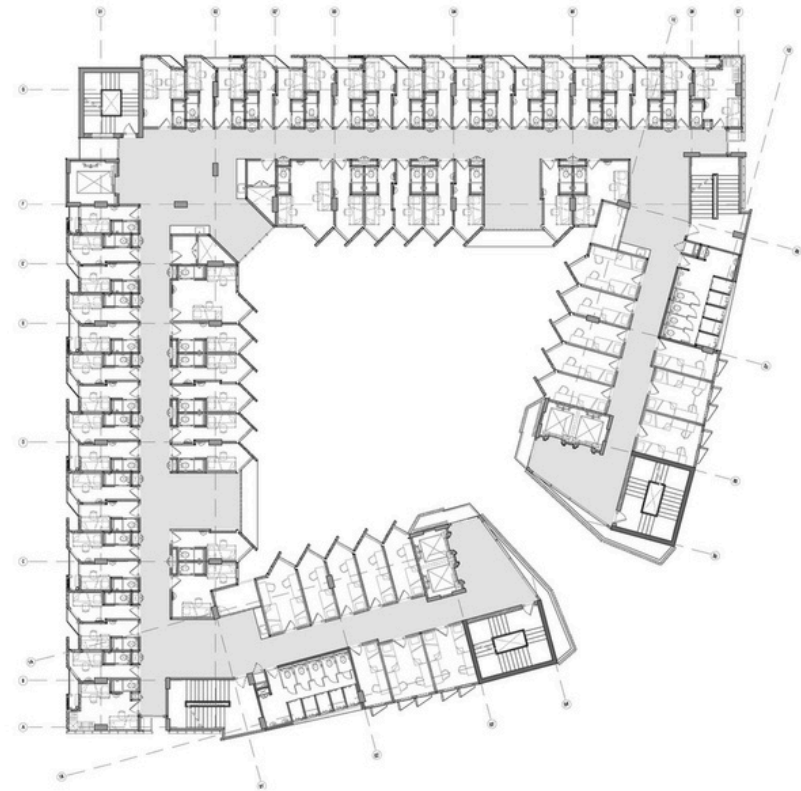
Naturally lit units are placed on the perimeter of the site as a thin mass wrapping an open inner space that uses a simple design strategy to create a center courtyard with attractive functional as well as aesthetic qualities. Units are connected with open-air double-loaded corridors with openings towards south corners for elevator lobbies, north corners for kitchens and more openings towards the courtyard for shared spaces to allow for cross ventilation and daylight to penetrate into the corridors which also help to break down the long corridor walking experience. Tall and narrow windows spanning from floor to ceiling were chosen to emit light as high up as possible, while still allowing for reflections on the floors for the units.

A modular façade system together with prefabricated concrete elements allows for an affordable and rational construction. It also visually allows for a system to project the university's branding identity. Colorful stripes camouflage the facades' massive volume along the inner courtyard. By distributing the vertical stripe of color accents, the volume appears varied, yet part of a whole. Architectural projections on the façade also give a depth and lightness while allowing the necessary sun and rain protection. The projections along inner courtyard's façade were rotated to act as privacy screen for the units.



Lesson Learned

These flats successfully accommodate high densities that are livable while encouraging community spirit by providing spaces for interaction and visual connection without sacrificing privacy. This flat responds to the tropical climate with natural lighting placed in the corners of the building. The thin mass arrangement encloses the central courtyard with attractive functional and aesthetic qualities. The units are connected by single loaded corridors to maximize the number of residences. Each unit has a sloping facade facing north and south to obtain optimal sunlight. The modular facade system together with prefabricated concrete elements allows affordable and rational construction.



Grüne Mitte Housing, Düsseldorf, Germany

Architects: MVRDV and LOLA

Source: archdaily.com

Located in Flingern-Süd near a busy road, the property currently houses a supermarket, an underutilized shopping center, and a parking park complex that was built 11 years ago. The site is adjacent to Kiefernstraße, a well-known area known for its colorful street art and history of squatting since the 1980s. To that, the involvement and participation of the diverse Flingern-Süd neighborhood and the immediate neighbors is crucial to the project's success.

This paved the way for an extensive participation process, where the developer's concepts were considered within the desires of the residents and the objectives of the city planning office. Workshops were facilitated by MVRDV and LOLA, involving interviews with residents, group brainstorming sessions, and visualized walk-throughs. Interestingly, the studios held a separate workshop concentrating solely on additions for youth and an online conference where the design team modeled suggestions in real-time.

This approach produced several community needs, including maintaining the supermarket as an important social hub, enhancing connectivity to nearby regions, and incorporating public spaces to foster an inclusive social atmosphere. Residents were asked to assess three basic plans; the "Grüne Mitte" design, which consists of blocks encircling a central green space, proved to be the most well-liked and consecutively.

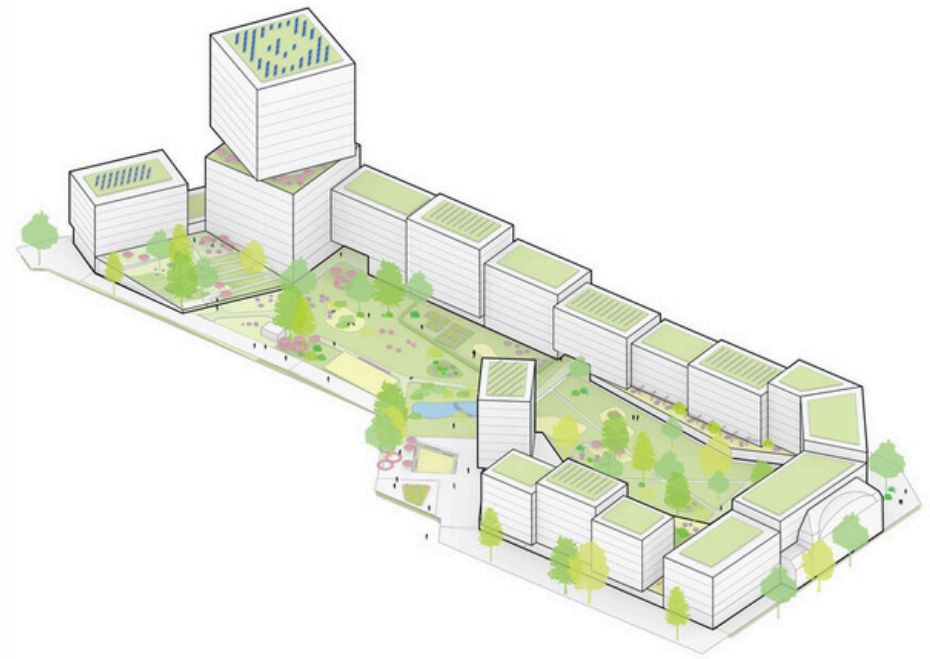


The center green area reduces the percentage of paved or built surfaces from 98 to 62 percent, serving as a communal hub for the residents. With its diverse attractions, the area aims to promote biodiversity and foster a comfortable microclimate. Aside from greenery, the area accommodates a variety of facilities, ranging from stalls to sports amenities and play areas. To make the project economically feasible, a spatial compromise was found involving an office high-rise on the southwest corner, which the city's high-rise committee approved.

After a community input process, the high-rise was designed to be 17 stories tall with two stacked blocks. This design was chosen to meet the community's needs and blend in with the neighborhood's salient features. Additionally, the community's feedback also led to the project's sustainable elements, including cross-laminated timber flooring, photovoltaic panels, green roofs, and an urban mining strategy for recycling parts from the previous shopping center.

Lesson Learned

This vertical residence with an adaptive reuse and participatory approach fulfills several community needs, including maintaining the supermarket as an important social center, improving connectivity to nearby areas, and utilizing public spaces to foster an inclusive social atmosphere. Good connectivity between spaces is connected to green areas within the building mass. Green areas reduce the percentage of paved or built surfaces from 98 to 62 percent, thus functioning as a communal center for its residents. With its various attractions, this area aims to promote biodiversity and foster a comfortable microclimate. To make this project economically feasible, there are office buildings and on the southwest corner and commercial areas on the ground floor.



Havenkade Nijmegen Social Housing

Architects: architectuurcentrale Thijs Asselbergs, vanOmmeren-architecten

year: 2023

Source: archdaily

Located by the harbor along the Waal River, is the most recent residential addition to Nijmegen's urban silhouette. The development is part of the larger urban transformation plan for the Waalfront area, the city's former industrial district. The project is a joint initiative, notable for its diversity in housing types. It comprises 324 apartments, including 164 social rent units for housing corporations Talis and Portaal, designed by architectuurcentrale Thijs Asselbergs and Van Ommeren Associates (VOA).

Within a recognizable masonry ensemble, a versatile mix of housing has been created. Characteristics are the two-story high entrances that form the connection between the new city street and the courtyard within the building block. The exterior has a robust masonry character, while the courtyard is detailed in a more neutral way that serves as a basis for the vegetation to flourish.

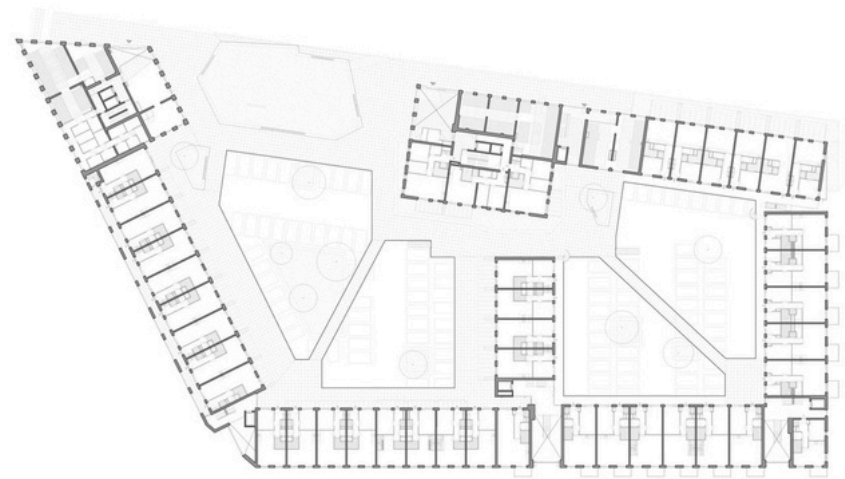
There is an urgent need for more affordable housing in general but in particular compact apartments for starters and single occupants. The collaborating architectural firms, aTa and VOA, see tailor-made standardized construction and modular construction as the solution for the future. Series-produced housing projects consisting of diversity in housing typologies create architectural enrichment with lasting value. In the Havenkade project, social housing is designed with the same attention and thoughtfulness as all other housing types. The variety of housing typologies on the Havenkade – living by the water, the street, or the courtyard and the range of sizes of apartments and maisonettes – offer diverse housing options for the Nijmegen community.



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Lesson Learned

Affordable housing built in a sustainable modular manner. This vertical housing is built without a parking basement by placing parking on the ground floor but balanced with green areas, for ease of user circulation there is a bridge on the 2nd floor to access all sides of the building quickly and easily. The balcony in this design also serves as shading for the rooms below. The landscape design combines the need for mobility infrastructure, green environment, and vegetative environment, the site is located at the intersection of the harbor view, the Waal River is connected to the main cycling route equipped with bicycle parking facilities inside the building.



Jiaxing Train Station

Architects: MAD Architect

Source: archdaily.com

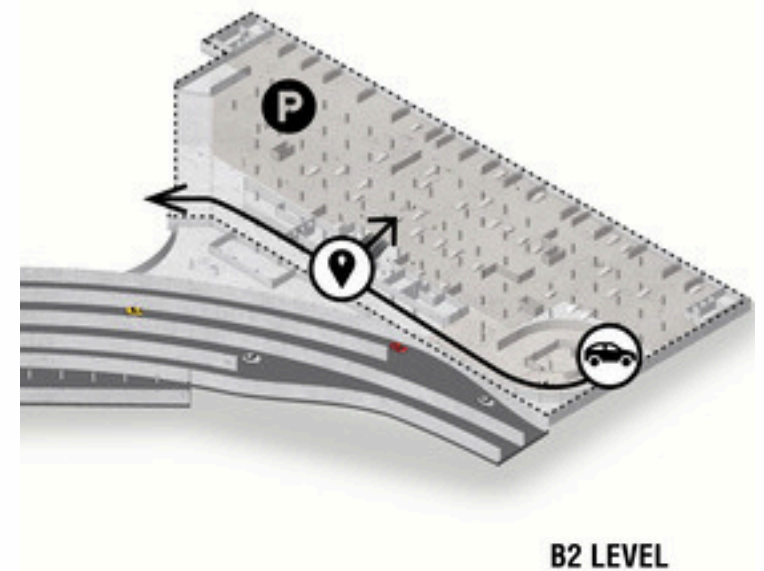
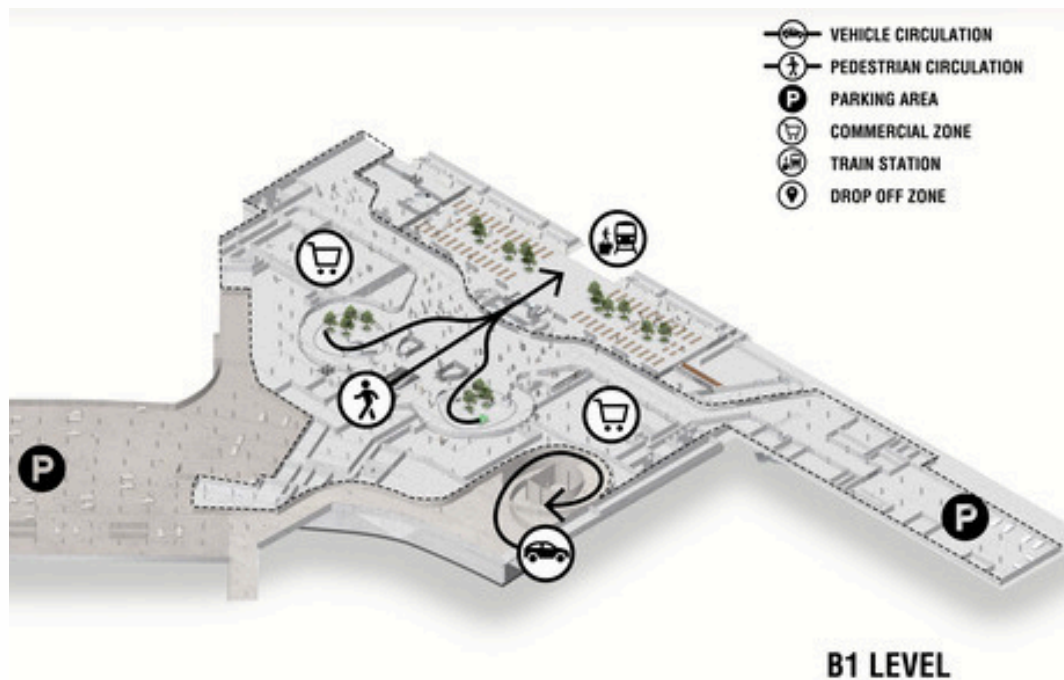
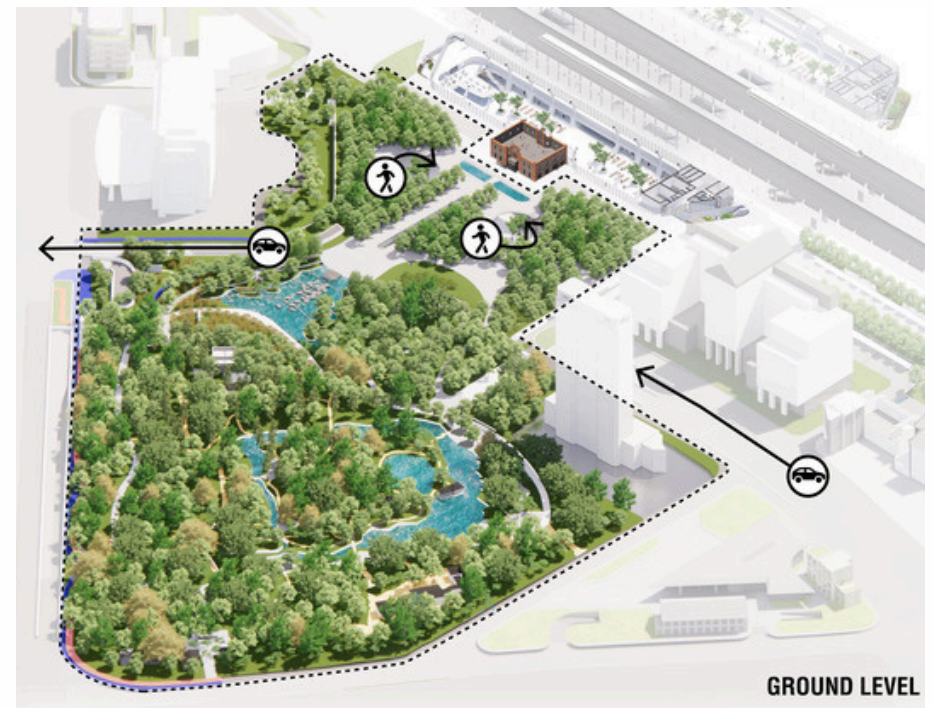


The original Jiaxing Train Station was built in 1907 and destroyed a few decades later. A new station was built in 1995, but it was equipped with outdated and insufficient passenger facilities in the context of a quickly developing city. MAD Architects intervention recreates the image of the 1907 station and couples it with a “floating” metal roof to accommodate the expanded facilities. The reconstruction of the old station house is based on large amounts of historical data, and it uses approximately 210,000 red and green locally sourced bricks. The overall design strives to offer a more human-centric and efficient solution. Behind the recreated station, a glass façade creates a clean and minimal expression.

The interior is also understated, clad in clad with anodized aluminum honeycomb panels in the waiting hall, ceiling, and tunnel walls to absorb excess noise. All utilities are subtly embedded into the overall expression. Most of the main functions are organized underground to allow for the expansion of its forest-like surroundings. Over 1,500 trees have been planted across the site. A square in the southern part of the site organizes buildings dedicated to culture and commerce. These functional areas are scattered across the hills, appearing as floating rings, while a central lawn is expected to become a venue for various outdoor events such as concerts and festivals.

Lesson Learned:

This train station integrated with a plaza accommodates transportation and commercial functions. The entry and exit platforms for visitors, the commercial area, and the waiting room—are located underground. This breaks the traditional station design thinking and creates a new typology. By placing these important functions on the ground floor, MAD Architect's plaza plan is able to bring the concept of a forest station by planting more than 1,500 trees on the street surface. This design responds to the latest developments in transportation technology, while creating a comfortable and easy-to-navigate space for its users. All spaces in the plaza are integrated so that they are friendly to pedestrians and cyclists. In addition, there is a parking lot for visitors who do Park and Ride.



Hudson Yards (New York City, USA)

Hudson Yards is the largest private real estate development in the history of the United States and the largest development in New York City since Rockefeller Center. The site will include more than 18 million square feet of commercial and residential space, more than 100 shops, a collection of restaurants, approximately 4,000 residences, The Shed, New York’s first arts center to commission new work across the performing arts, visual arts, and popular culture, 14 acres of public open space, a 750-seat public school and an Equinox Hotel® with more than 200 rooms—all offering unparalleled amenities for residents, employees and guests. The development of Hudson Yards will create more than 23,000 construction jobs. Hudson Yards will also have a substantial economic impact on the New York City economy. Once fully operational, the development will contribute nearly \$19 billion annually to New York City’s Gross Domestic Product (GDP), accounting for 2.5 percent of the citywide GDP. It will also contribute nearly \$500 million annually in City taxes. Companies and buildings at Hudson Yards will bring 55,752 direct jobs to the new West Side neighborhood.



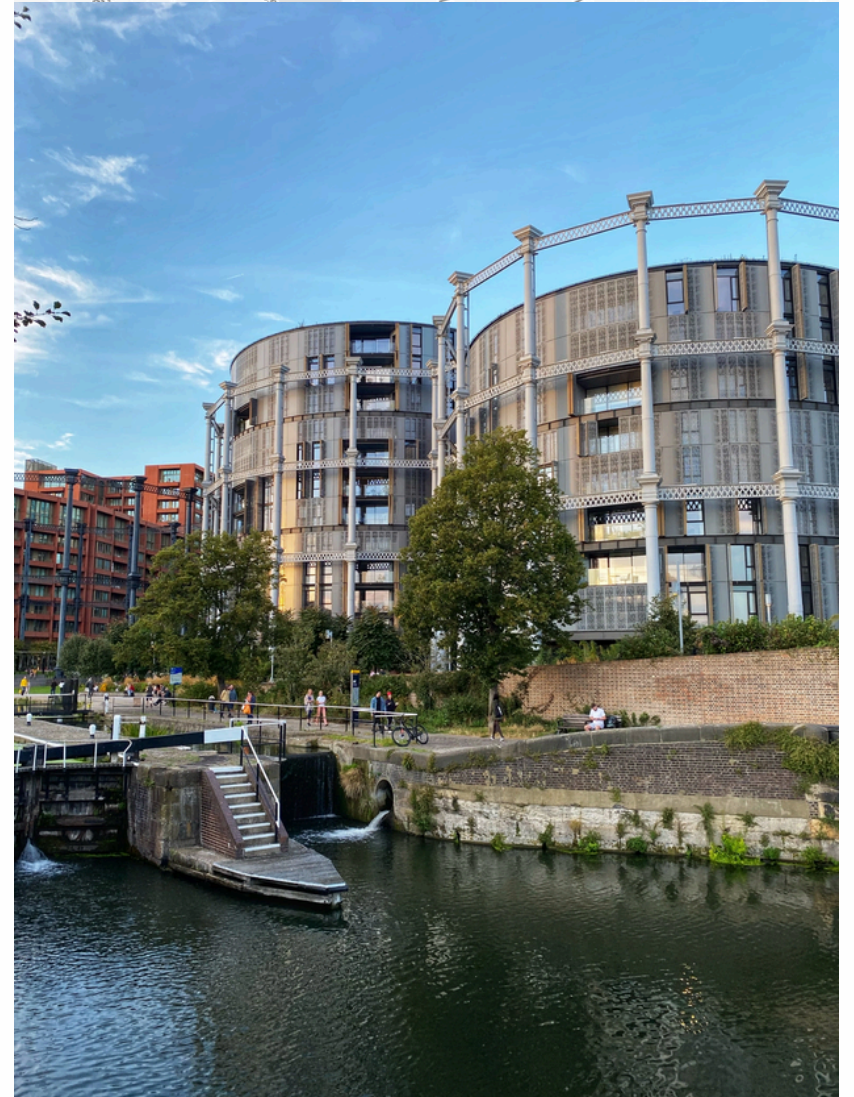
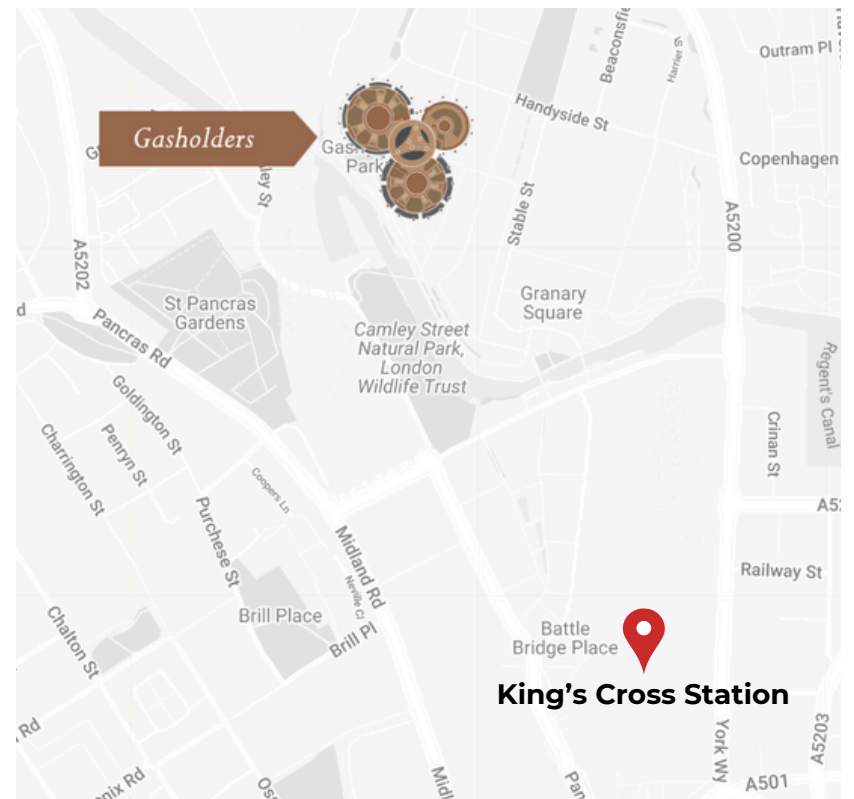
WESTERN YARD	
Office	2,000,000
Residential	4,000,000
Retail	100,000
School	120,000
6,220,000 GSF	












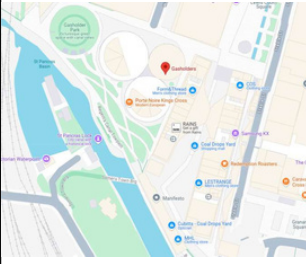
EASTERN YARD	
10 Hudson Yards	1,800,000
30 Hudson Yards	2,600,000
50 Hudson Yards	2,900,000
55 Hudson Yards	1,300,000
The Shops & Restaurants	1,000,000*
Retail Pavilion	50,000
Hotel	220,000
Residential	1,870,000
The Shed	200,000

11,940,000 GSF

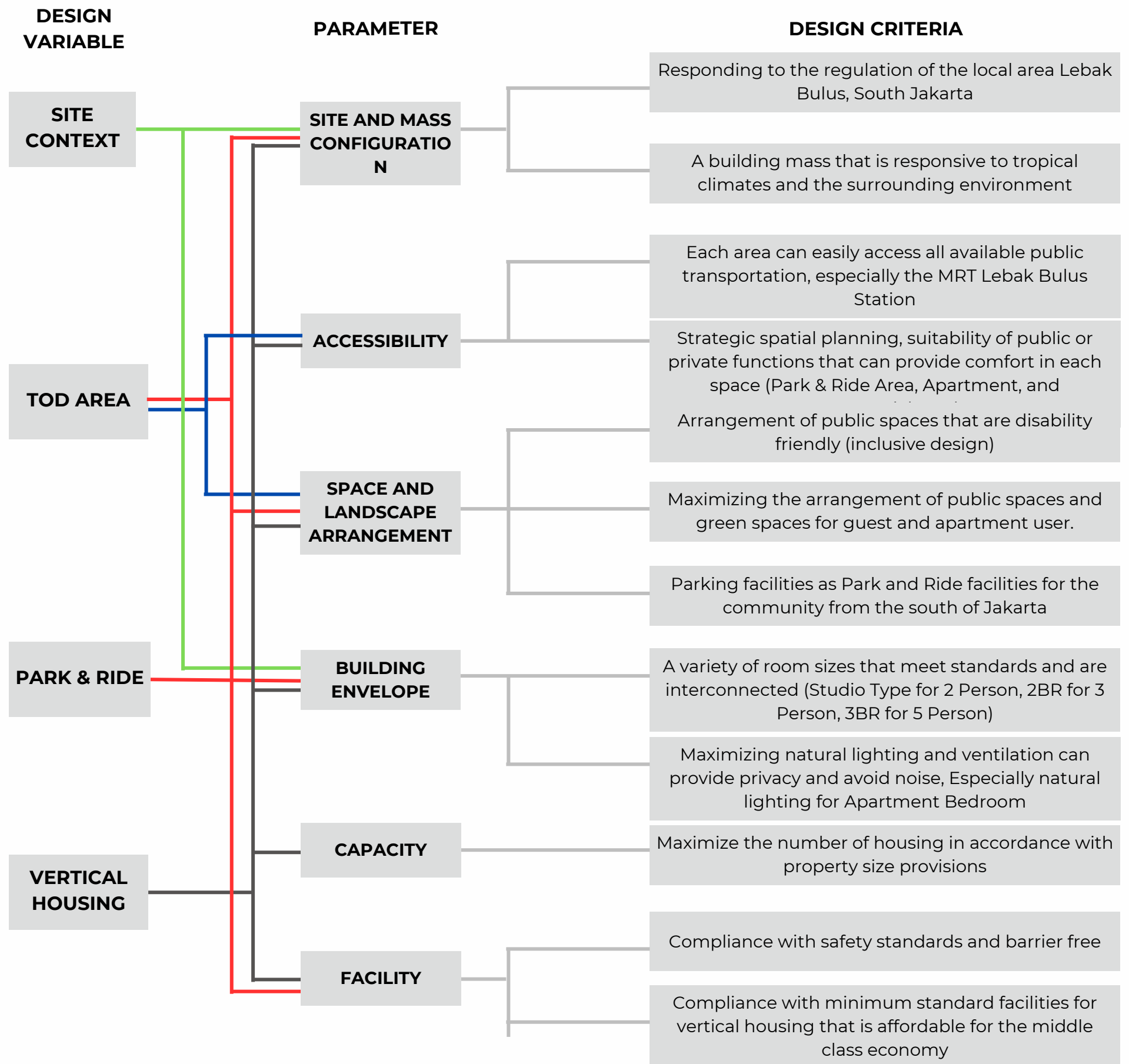
Gasholders Apartment (King's Cross, London)

The Gasholders Apartments in King's Cross, London, is a prime example of adaptive reuse and modern architectural innovation. Designed by WilkinsonEyre, this project transformed 19th-century Grade II-listed gas holder frames into luxury residential apartments, preserving their historical significance while introducing contemporary living spaces. The development consists of three cylindrical buildings housed within the restored guide frames, featuring interiors by Jonathan Tuckey Design that blend industrial aesthetics with modern luxury. As part of the King's Cross regeneration project, the Gasholders Apartments contribute to the area's vibrant mixed-use character, integrating residential, commercial, and cultural spaces. With high-end amenities such as a spa, gym, screening room, and a rooftop garden offering panoramic views of London, the project highlights sustainable practices, including energy-efficient systems and adaptive reuse. It stands as a testament to how historical preservation can coexist with urban innovation, creating a unique and sustainable residential landmark.



TOD Criteria	Design Implementation	Precedent				Solution
		Hudson Yards	Design Application	Gasholders Apartment	Design Application	
Walk	Pedestrian Facility	<p>simple, direct and intuitive connections that support user mobility to, from and between stations that are free of motorized vehicles</p> 	<p>- The following pedestrian path is located above the main road so that pedestrians are not disturbed by motor vehicles.</p> <p>- The pedestrian path provided in every side of the building and have direct access to each building.</p>		<p>The pedestrian paths applied to the area create a good connection between building functions, so that one flower and another building are integrated with each other.</p>	<p>Elevated pedestrian paths connected to buildings enhance safety and convenience. Integrated into a seamless pedestrian network, they improve connectivity between spaces, making the environment more functional, walkable, and sustainable.</p>
	Crossing Facility	<p>Provide Zebra cross and overpass at every crossroads</p> 	<p>- There is a pedestrian bridge above the crossroads</p> <p>- There is a barrier free access to the bridge such as elevator for difable user</p>		<p>By narrowing the roadway, the space available for vehicles is reduced, which forces drivers to slow down. This helps to make the environment safer for pedestrians and cyclists, as it reduces the chances of high-speed accidents. The narrower road also gives pedestrians a shorter crossing distance and may encourage more cautious driving behavior as vehicles navigate through</p>	<p>Integrating an elevated pedestrian bridge with barrier-free access and narrowing roadways improves safety, accessibility, and comfort. This design promotes safe pedestrian movement, encourages cautious driving, and creates a more pedestrian-friendly, inclusive urban environment.</p>
Cycle	Cycling Facility	<p>Provide cycling paths and bicycle parking</p> 	<p>- There is Bicycle parking and cycling path along the street</p>		<p>- There is Bicycle parking and cycling path along the street</p>	<p>Integrating bicycle parking boosts functionality, promotes sustainable transportation, and benefits individuals, businesses, and the environment, creating a healthier, eco-friendly, and accessible urban space.</p>
Transit	Number of Trasportation Mode	<p>Integrate the development area with existing public transportation and also provide a special area for pick-up for online transportation users.</p> 	<p>There is a Subway station which is directly connected within the site</p>		<p>There is a train station which can be reached in 10 minutes on foot.</p>	<p>A well-connected pedestrian path from a building to a train station enhances accessibility, encourages walking, and supports sustainable transportation. It can serve as a transportation hub for people who prefer a combination of walking and using trains for longer commutes.</p>
Mix	Number of Land Used Type	<p>Development of mixed functions within a walking radius of each station, namely commercial, office, institutional, residential and public facilities</p> 	<p>There is 6 Function Type:</p> <ol style="list-style-type: none"> 1. Office 2. Commercial use: Shopping Center, Restaurant, and Hotel 3. Apartment 4. Public Space 5. Green Open Space 6. Art and Performance Center 		<p>There is 4 Function Type:</p> <ol style="list-style-type: none"> 1. Commercial use: Shopping Center, Restaurant, and Hotel 2. Apartment 3. Public Space 4. Green Open Space 	<p>A well-designed mixed-use complex integrates a variety of functions seamlessly, creating a vibrant, sustainable, and inclusive environment. By carefully considering site context, accessibility, flexibility, and community needs, the complex can enhance urban livability while</p>
	Non-Residential and Residential Ratio	<p>The size of land used for non-residential purposes must be larger than residential purposes so that land use becomes more efficient for the community.</p> 	<p>The area used for residential areas is only 15.6% of the total site area</p>		<p>The area is used by combining 4 functions, but for the apartment function, it only uses around 25% of the total site.</p>	<p>Vertical housing effectively balances residential and non-residential areas in mixed-use developments. By stacking residential units above commercial or office spaces, it maximizes land use, creates an active streetscape, and ensures efficient coexistence of both functions. This approach promotes sustainable, compact urban development while maintaining strong community connections.</p>

2.5 DESIGN PROBLEM MAPPING



PROBLEM FORMULATION

- 1) How to design vertical housing for the lower middle class to maximize the number of residential spaces in the TOD MRT Lebak Bulus area, Kec. Kby. Old, South Jakarta, DKI Jakarta?
- 2) How is the Park and Ride designed to facilitate the people of southern Jakarta with a providing public and commercial space so as to maximize the potential of the TOD area?

DESIGN CONCEPT

This design adopts the concept of Transit-Oriented Development (TOD), with a focus on vertical housing integrated with park-and-ride facilities at the Lebak Bulus MRT station in Jakarta. The goal is to create an efficient, connected, and sustainable urban environment that addresses issues such as limited land, traffic congestion, and the need for affordable housing in strategic locations.

The vertical housing approach maximizes the use of limited land, providing high-density housing while maintaining open spaces. By positioning the housing near public transit, it reduces dependence on private vehicles and encourages the use of mass transportation. The integration of park-and-ride facilities further supports this by offering convenient parking spaces connected directly to the MRT station.

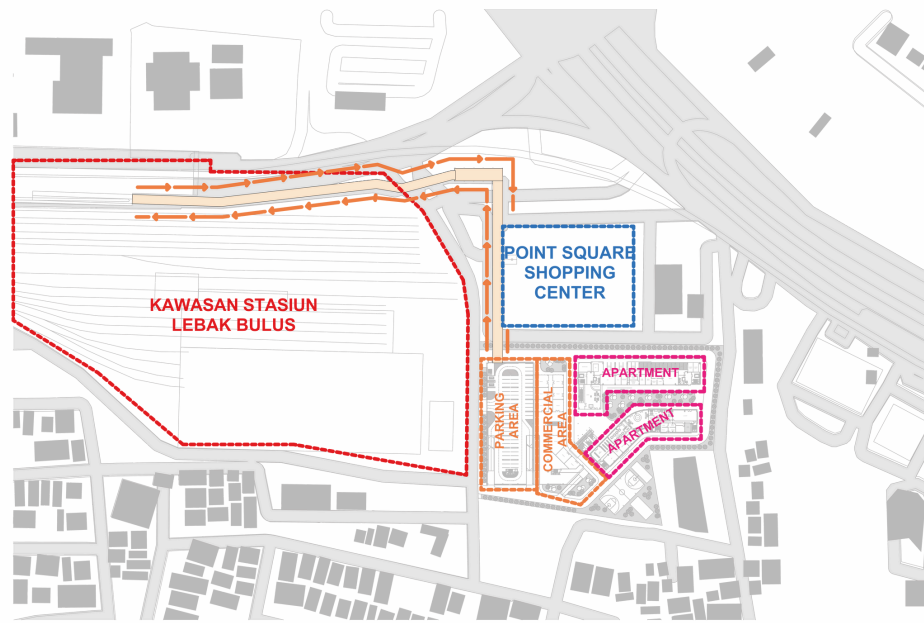
Affordable housing for the lower-middle class is a key focus, with units designed for various household sizes and budgets. This allows residents to live in a well-connected area at a more affordable cost compared to city-center housing.

Additionally, the design includes public spaces like plazas and green areas to foster community interaction and improve quality of life. Sustainable design features, such as natural lighting, ventilation, and eco-friendly materials, are incorporated to reduce energy consumption and support environmental goals.

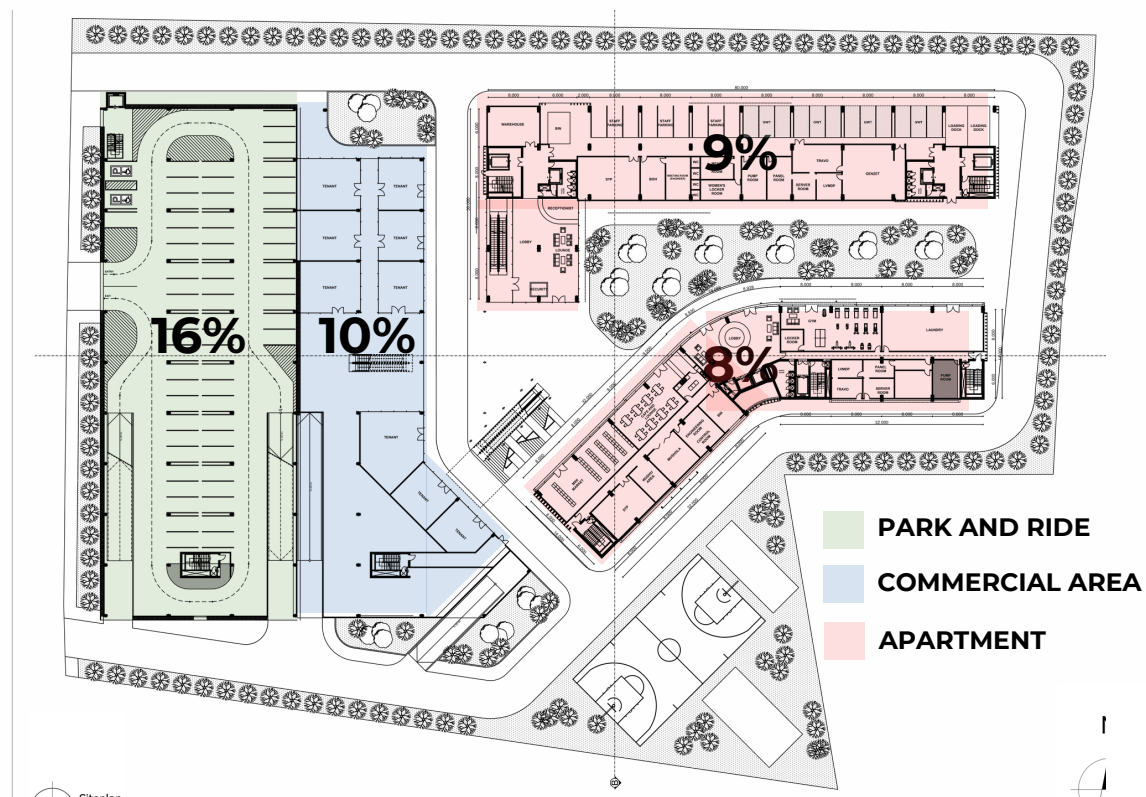
Located in South Jakarta, near office and entertainment hubs, the design offers an urban lifestyle that allows residents to live and work efficiently in the city, reducing commuting time and costs. This integrated approach creates a sustainable, inclusive, and convenient urban environment that addresses Jakarta's growing challenges.

3 DESIGN PROBLEM SOLVING

3.1 SITE SELECTION AND ZONING



The site selection for this final project aligns with the TOD concept, following the standard TOD radius of 800 meters. The chosen site is located 400 meters from the MRT Lebak Bulus station, which can be reached within a 6-minute walk, ensuring accessibility and compliance with TOD principles.



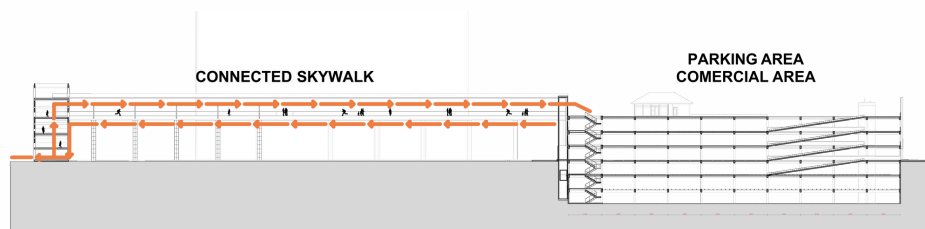
SITE AREA : 15,983 sqm
 BCR <55% : 8,790 sqm
 FAR 6.84 : 60,123 sqm
 KDH >20% : 3,197 sqm
 KTB <60% : 9,590 sqm
 Building Height: Max 32 Floor

SITE AREA : 15,983 sqm
 BCR Final 43% : 6,926 sqm
 FAR Final 6.84 : 39,492 sqm
 KDH Final 23% : 3,676 sqm
 KTB Final 26% : 4,115 sqm
 Building Height: 12 Floor

APARTMENT AND PARK AND RIDE MASTERPLAN

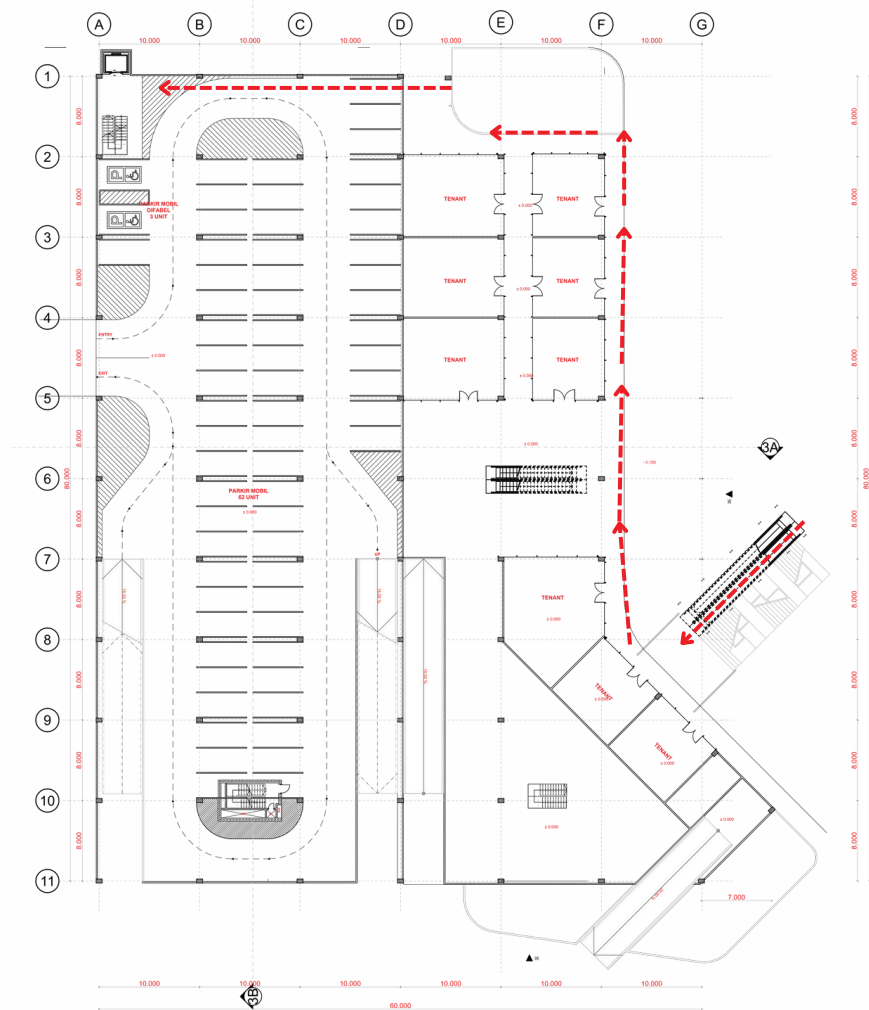


3.2 INTEGRATION OF PUBLIC SPACE WITH PUBLIC TRANSPORTATION STATION

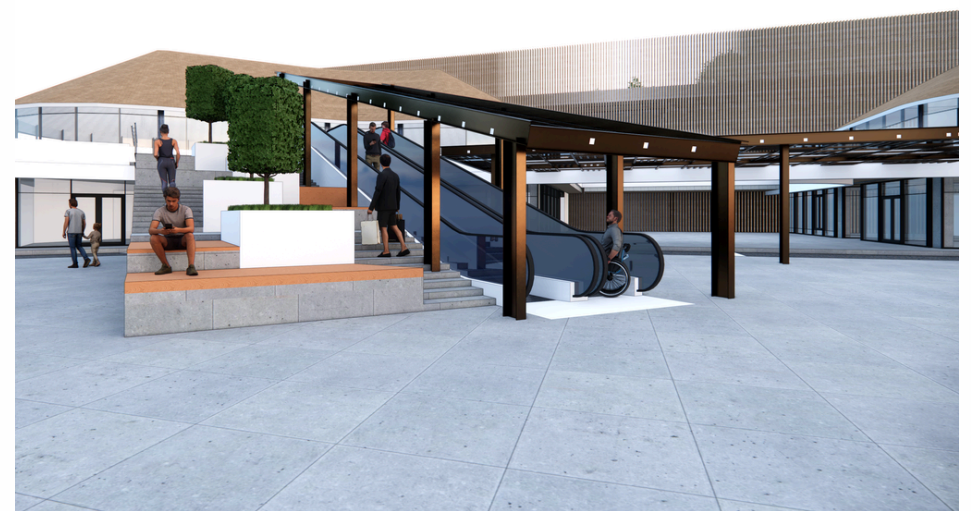


Connectivity Between Park-and-Ride Areas, Commercial Zones, and Public Transport Stations via Skywalks

A skywalk is a pedestrian bridge that provides safe, elevated access between different functional areas, such as park-and-ride facilities, commercial zones, and public transport stations. This integration ensures seamless movement for users while maintaining efficiency and convenience within a transit-oriented development (TOD).

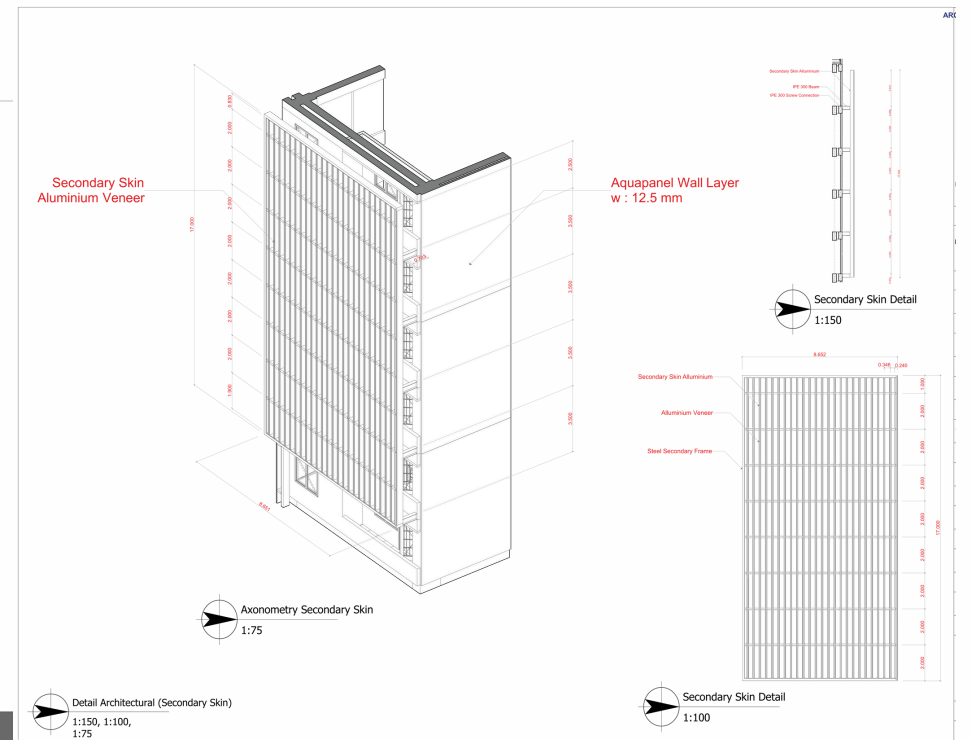
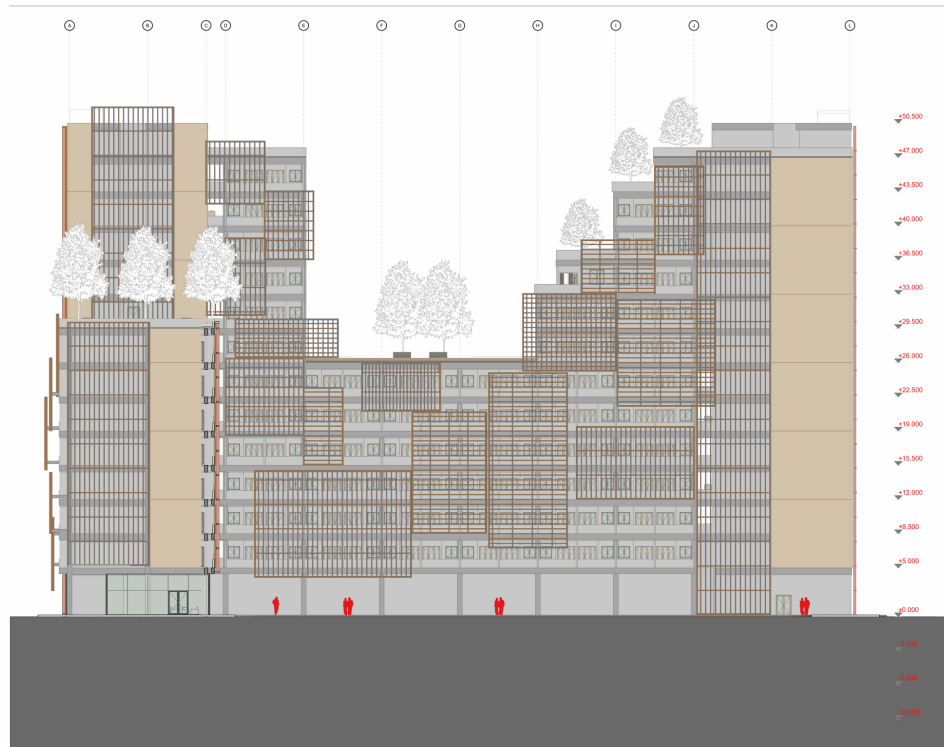


An elevated skywalk integrated with travelator access (moving walkways) is a pedestrian pathway system designed to enhance mobility for people of all ages and abilities, ensuring universal design. Universal design refers to the concept of creating environments that are accessible, usable, and welcoming to everyone, regardless of physical abilities or age. Combining elevated skywalks with travelators makes urban spaces more inclusive, improving accessibility while maintaining efficient and safe movement within the built environment.



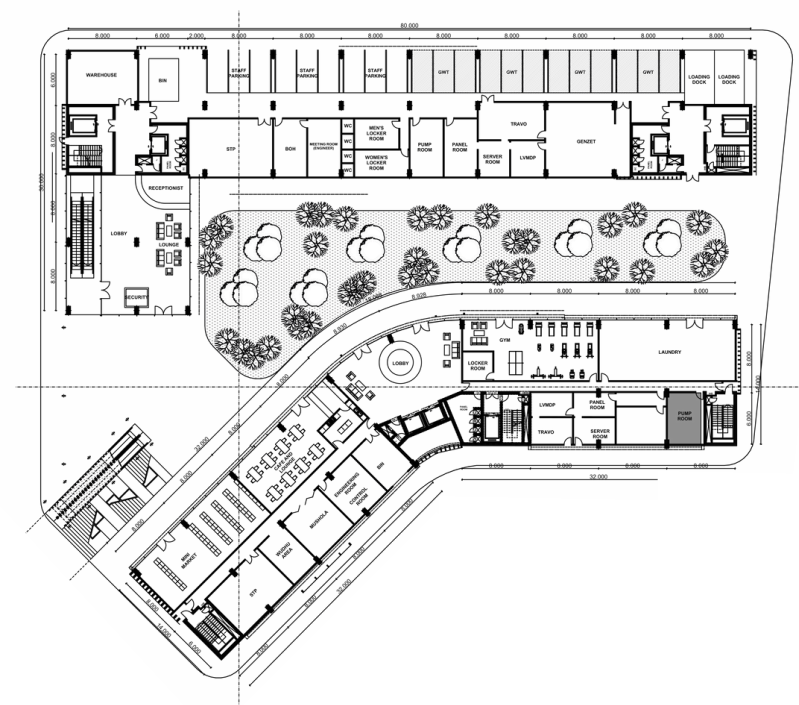
3.3 APARTMENT DESIGN CONCEPT

Building Facade

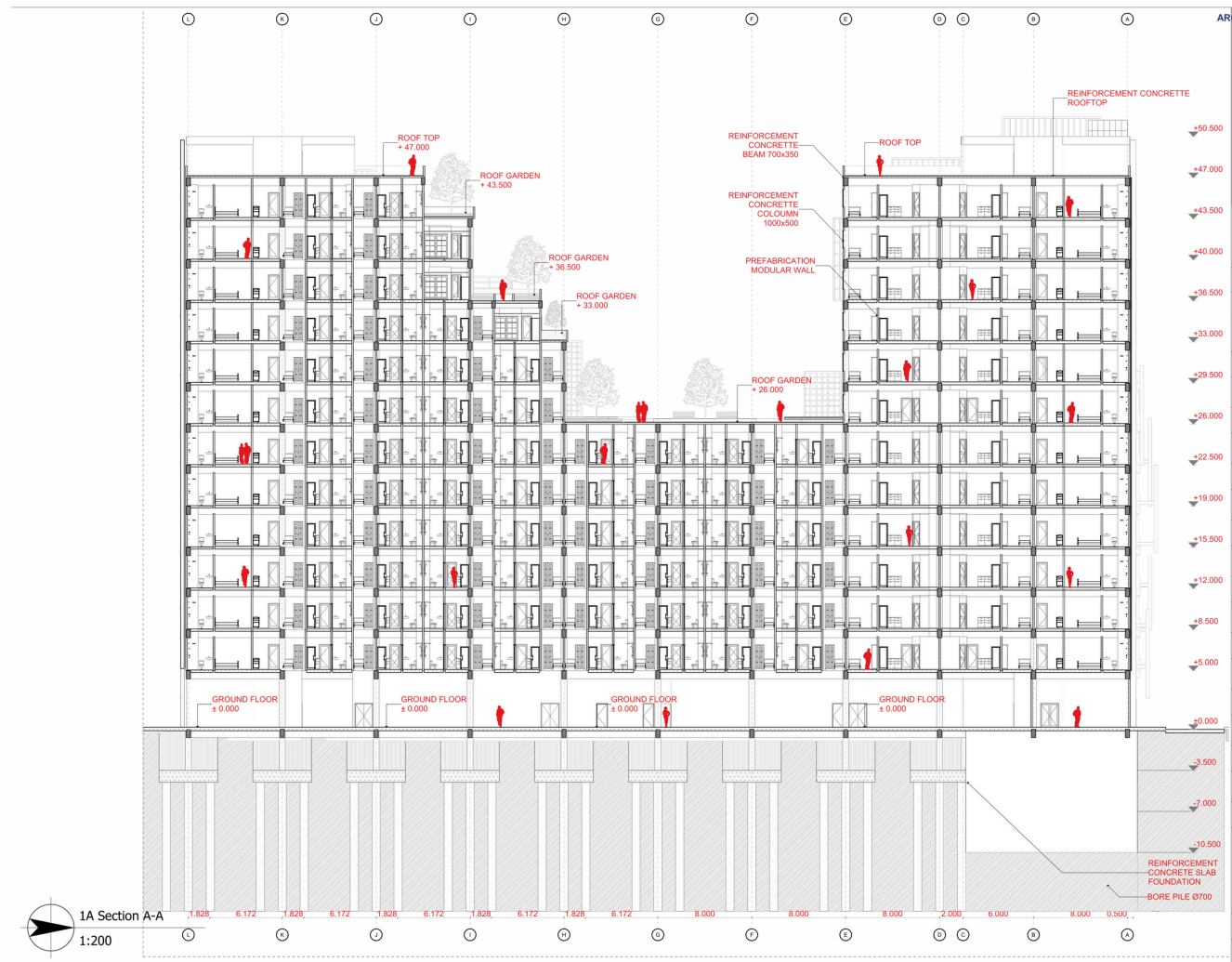
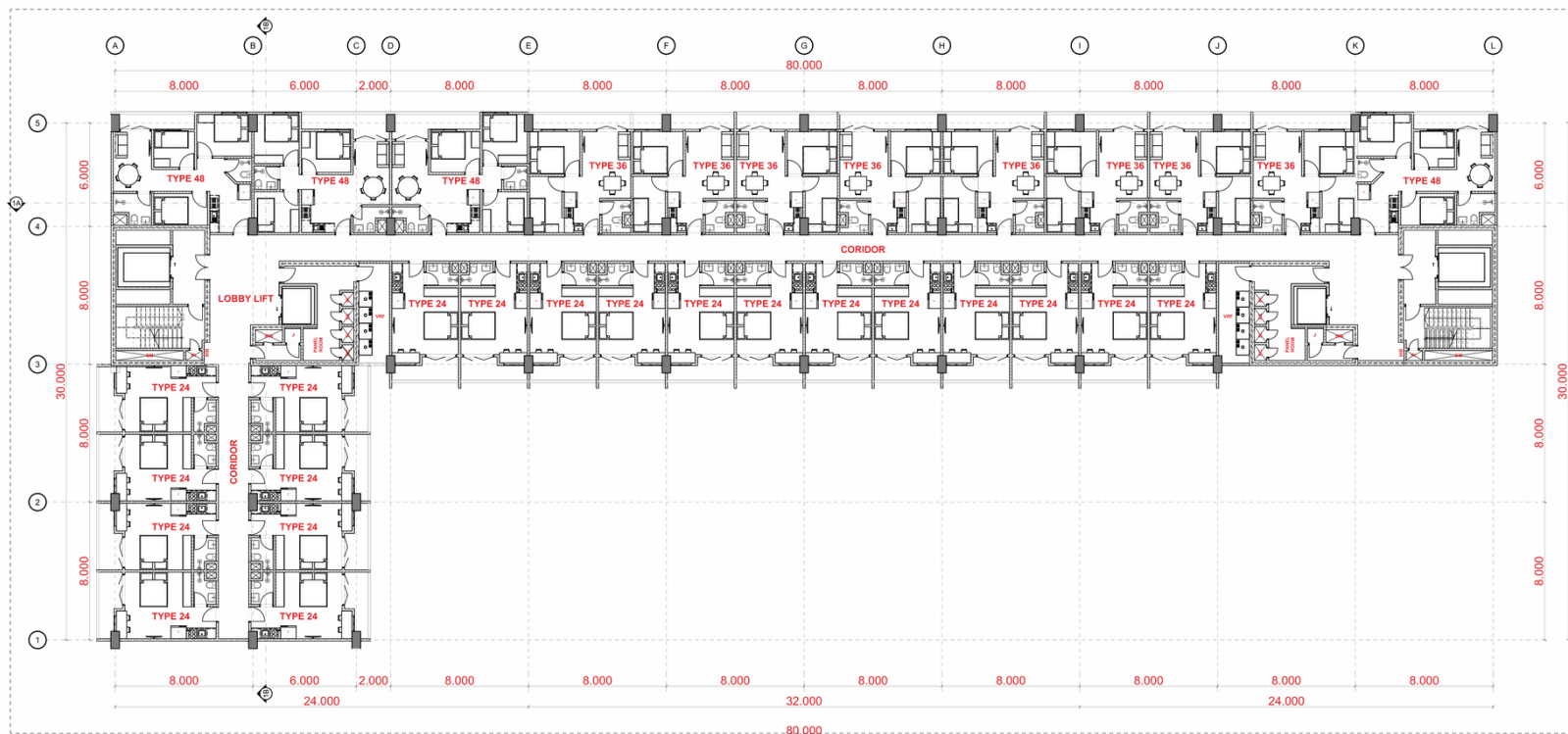


Green Roof and Inner Court

In the apartment design, the integration of an inner court and green roof significantly enhances both the aesthetic and environmental quality of the space. The inner court, located within the building, provides residents with a peaceful green retreat, offering natural light and ventilation while promoting social interaction. It helps reduce the reliance on artificial lighting and cooling, contributing to the building's energy efficiency. The green roof, on the other hand, serves multiple sustainable purposes, such as managing stormwater, reducing the urban heat island effect, and supporting biodiversity. It also offers thermal insulation, which reduces energy consumption, and provides residents with a recreational space that offers panoramic views of the nature. Together, these elements not only support sustainable urban living but also foster a stronger connection between nature and the urban environment, improving the overall well-being and quality of life for the residents.



APARTMENT FLOOR PLAN



BEDROOM TYPE



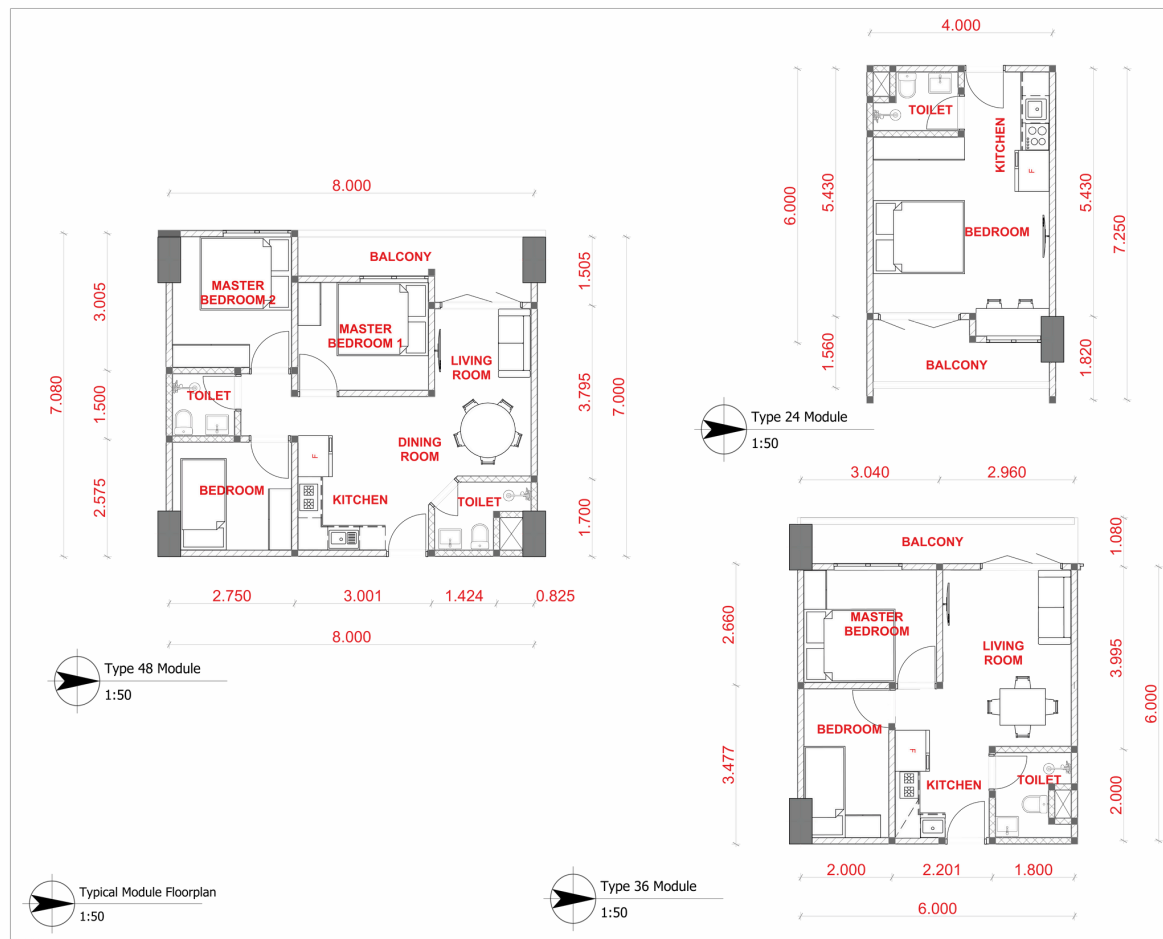
Studio Type Room: 24 SQM
For 1-2 Person



2BR Type Room: 36 SQM
For 3 Person



3BR Type Room: 48 SQM
For 5 Person



Apartment A:
type 24: 157
type 36: 68
type 48: 48

Apartment B:
type 24: 140
type 36: 28
type 48: 14

Total Room: 455
Type 24: 297
Type 36: 96
Type 48: 62

The data presented above represents the distribution of different room types in two phases of development. In "Apartment A," there are 157 units of the 24 SQM studio-type rooms, 68 units of the 36 SQM two-bedroom rooms, and 48 units of the 48 SQM three-bedroom rooms. Similarly, in "Apartment B," the numbers decrease to 140 units for the studio-type, 28 units for the two-bedroom, and 14 units for the three-bedroom rooms. This distribution reflects the planning considerations for accommodating varying family sizes and living preferences in the TOD MRT Lebak Bulus project. The strategic allocation aims to optimize space usage and ensure a balanced living environment for future residents, promoting a sustainable urban lifestyle that aligns with the principles of transit-oriented development.