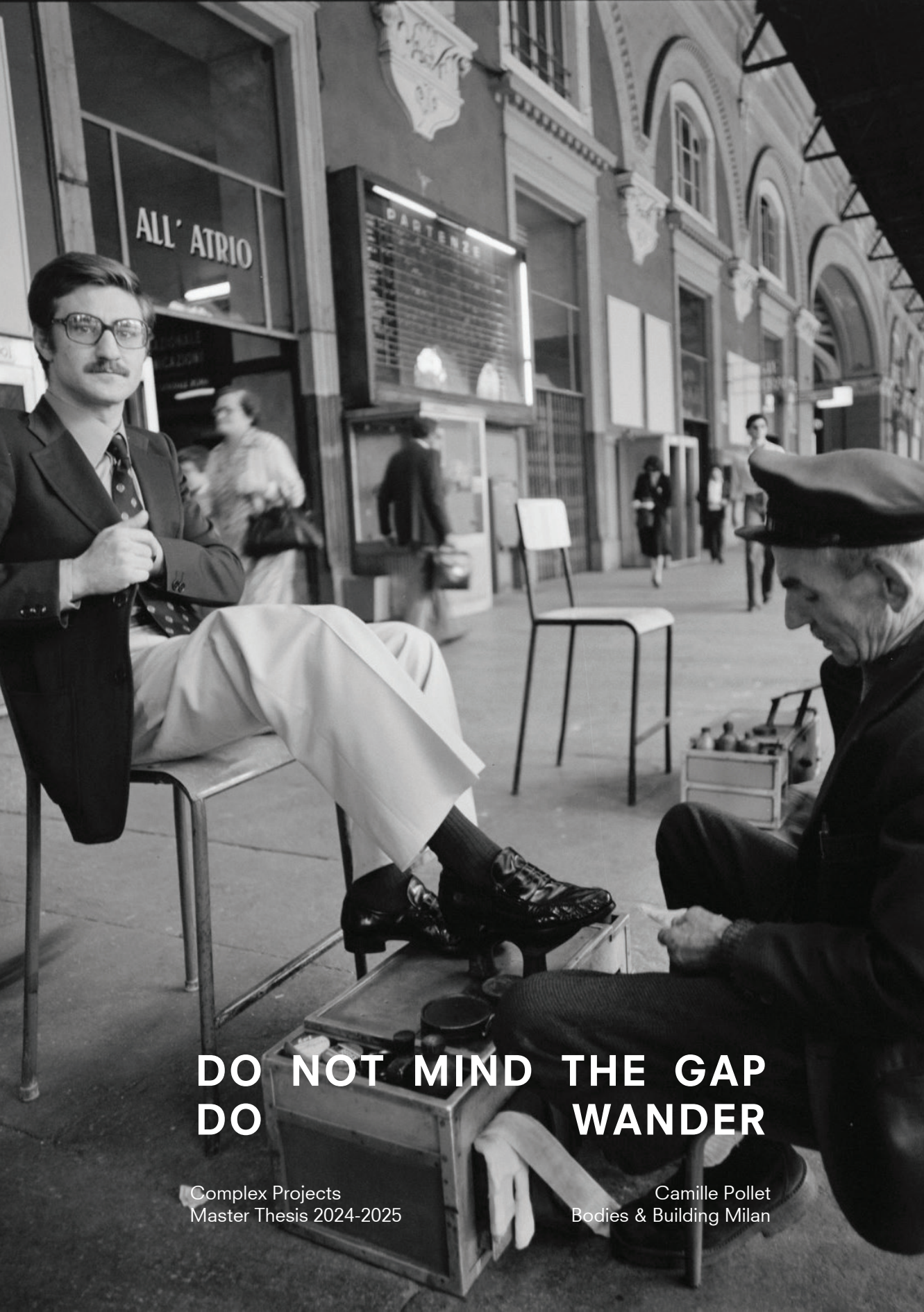


# DO NOT MIND THE GAP
# DO WANDER

Complex Projects
Master Thesis 2024-2025

Camille Pollet
Bodies & Building Milan

TU Delft

**2024-2025**

**COMPLEX PROJECTS**
**Bodies and Building Milan**
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**Bodies and Building Milan**
Health

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# INTRODUCTION

Thesis Topic
Problem Statement
Research Question(s)

# 01




Rapido
Venezia 14
6°
MARCIAPIEDE

# 01 Research Topic

The construction of train stations dates to the Industrial age, when land transportation began to replace river transportation. Initially built to transport goods across countries and even continents, rail eventually became the main mode of travel. Traditionally, architects and engineers collaborated on station design: architects focused on spaces for people, such as entrance halls and concourses, while engineers took charge of the areas meant for trains, like platforms and tracks.

Engineers approached these projects with a futuristic vision, seeing stations as opportunities to showcase the rapid technological advances of the railways. Their work often featured grand metal structures, embodying the innovation and progress of the time so much that they were often called the "cathedrals of progress" (Aubertel, 1999). Conversely, architects responsible for the passenger areas often fear this technological shift. They typically designed imposing, temple-like stone buildings at the station's front, emphasizing tradition over innovation and almost masking the modernity of the train shed behind (Dethier, 1978).

This divergence created an architectural paradox (Bowie, 1996), splitting the station into two distinct zones: one dedicated to people and the other to train. The passenger building, with its heavy stone and monumental entrance, called the "building passengers", behind it, the "train shed" sheltered both passengers and goods during boarding.

As one of the few architectural typologies that serves two distinct users - humans and trains - the train station poses unique design challenges. If both users occupy the entire building, then the building should, in theory, be designed with both in mind. Yet historically, this has not been the case.

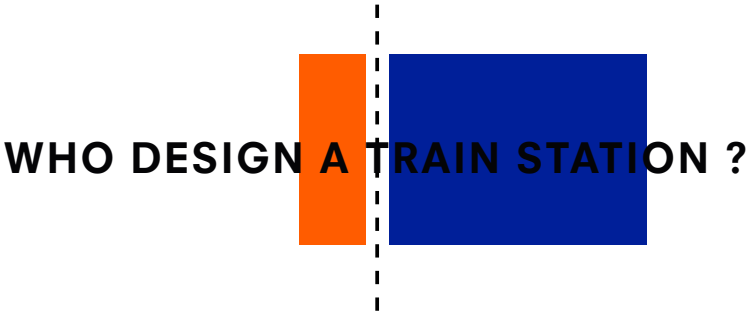


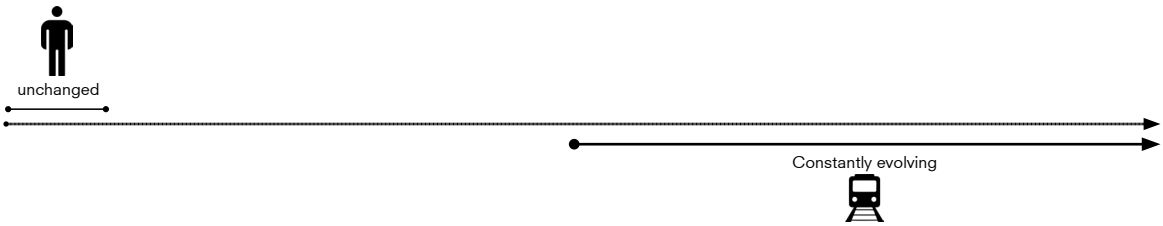

Figure 001 Milan central 'Building Passengers'
Figure 002 Milan central 'train shed'

building

train shed

Architect

Engineer






**200 years ago**



**High-speed trains**

# 02 Problem Statement

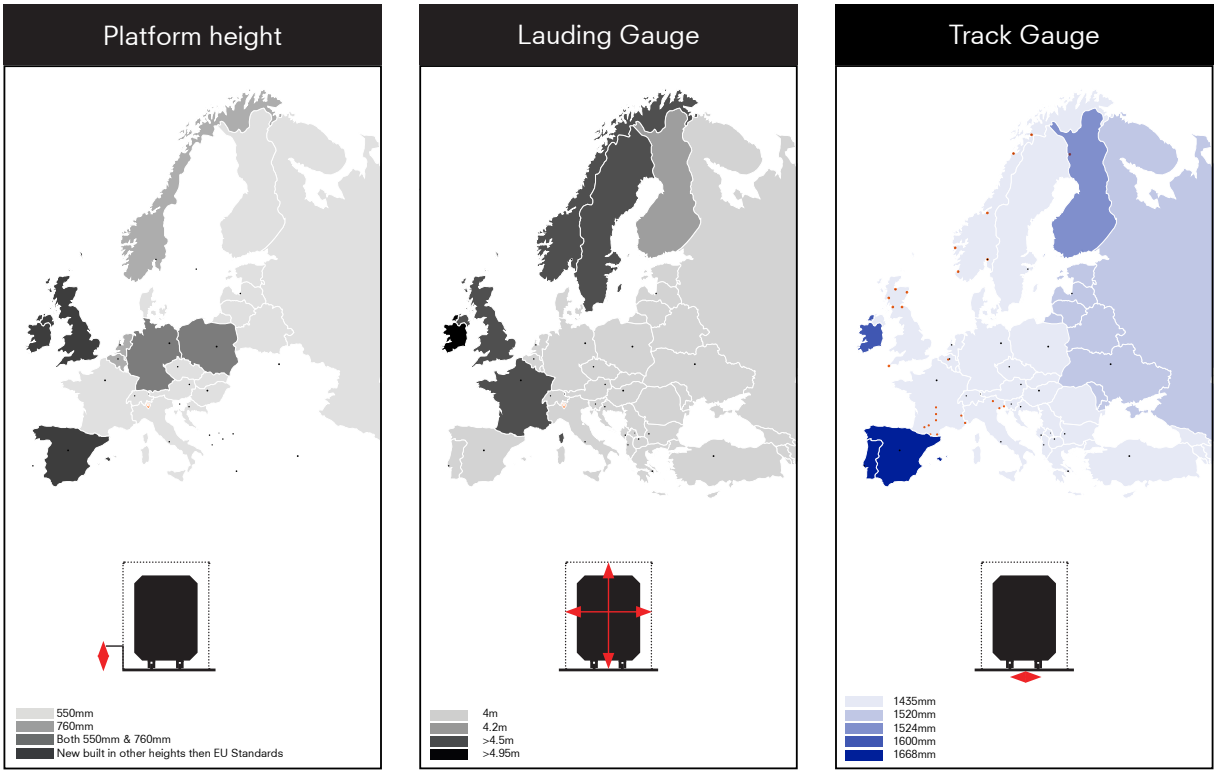
In designing a train station, should architects or engineers take the lead? Traditionally, engineers have constructed parts of the station specifically for trains, often at the expense of human scale, given that these spaces, although primarily intended for trains, are also used by people. This design approach can result in spaces that feel "dehumanized," meaning they lack a connection to human scale and comfort. The train station is unique as an architectural typology because it serves two types of users: humans and trains. The challenge lies in designing a space that acknowledges both, without prioritizing one over the other. Although it is crucial to recognize that the human user is ultimately more important than the train. Although train stations are primarily spaces of transit, where people are meant to move through rather than linger, this doesn't mean they should compromise on designing with human scale and comfort in mind.

The theoretical framework of this project examines the factors contributing to the dehumanization of train stations, exploring both physical and social dimensions.

**Physical Aspects**

One primary factor in the dehumanization of train stations is scale. This typology must accommodate two distinct users: humans and transport vehicles, specifically trains, which differ dramatically in physical size. While trains are designed with human needs in mind, they have expanded over time to accommodate growing demand, both in passenger numbers and goods volume. The addition of multiple 'cars' has increase the size of train (ex of high speed train in Milan central is 202m long) further 'separating' in scale humans to trains.

Figure 003 Diagram showing 2 distinct zones in European train stations (left)
Figure 004 Humans versus trains evolution (right)




Standardization also plays a critical role in the dehumanizing process, especially through the uniformity of physical elements platform height, lauding gauge and track gauge. Much of the station's design is tailored to the physiological needs of the train itself, pushing humans to adapt to the transport vehicle-centric spatial configurations. In doing so, stations become rigid and predictable, with limited consideration for the variability of human needs.

The relationship between static and dynamic further accentuates the disconnection between humans and trains. As technology advances, the faster the train, the more humans feel disconnected from it. For instance, a person standing on a platform may feel completely removed from the experience as a high-speed train rushes by, creating a sense of being in different worlds.

This introduces the notion of static versus dynamic: the larger the gap between these two states, the more dehumanizing the environment feels.

Figure 005 Standardisation of trains physical elements across Europe





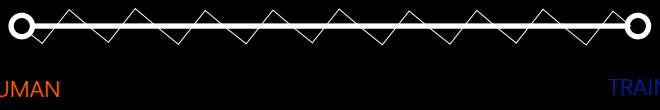
**STAY** ——— **TRANSIT**

**Social Aspects**

The dehumanization of train stations is also shaped by the standardization of time. Since the introduction of synchronized public clocks in 1855, train stations have reinforced strict time structures, positioning themselves as “temples of time.” The synchronization of personal schedules with "railway time" (Bartky, 1989) has institutionalized the need for punctuality, as trains wait for no one, forcing people to adjust their lives to fit train schedules. This forced adaptation to time-based regimentation contributes to a dehumanizing atmosphere where human rhythms must bend to the fixed, mechanical timing of train schedules.

The use of space within stations has similarly evolved to reflect a utilitarian approach that often disregards the social role stations once played. Historically, train station were vibrant public areas, supporting social interaction, commerce, and leisurely engagement. Over time, however, some parts have become restricted, with access limited to ticketed passengers and non-passenger use increasingly constrained. This shift has isolated train stations from the broader urban social life, reducing them from hubs of community interaction to sterile, transit spaces. As a result, the station experience today often feels imposed upon rather than embraced, with many people enduring (Dethier, 1978) rather than enjoying their transit time. In contrast to their historic role as engaging public spaces, modern train stations are often perceived as transitional spaces, leaving little room for the sense of community and shared experience that once characterized them.

Figure 006 Concourse Penn Station
Figure 007 Concourse Milan centrale Station


HUMAN
TRAIN




# 03 Research Question

How can the design of train stations bridge the gap between human scale and train-centered spaces?

Sub-questions:

• How can the train station redefine the human-train interface?

• How can the historical spatial use of stations be adapted in future designs to reconnect humans and trains?

• Does monumental spaces in public buildings contribute to the dehumanization of these environments, and if so, what design elements amplify this effect?

• How can the interface between humans and transport vehicles (platforms) be reimagined as more than mere transitional spaces, becoming places that prioritize human scale, and in what ways can this be achieved?

• How to reconnect the central neighbourhood of Milan to the central station ? And how to ensure that the tracks and rail infrastructure do not divide the city?

• How might the future design of Milan's train station integrate a dense high-speed rail hub, effectively replacing the domestic airport, while ensuring a comfortable, human-centered experience?

Figure 008 Shoe shiners on train station platform

# RESEARCH

Theoretical Framework
Global Relevance

# 02

# 01 Theoretical Framework

**This leads to a critical question: how can we design architectural spaces that respect and accommodate the vastly different scales and needs of both humans and trains?**

Beyond train stations, this dilemma is also apparent in other building typologies, such as car parks and bicycle storage facilities, where spaces tend to prioritize the 'vehicle user', cars and bicycles, over the human experience. In contrast, airports take a different approach, as the overall design separates humans from the transport vehicles, with airplanes physically located outside the building. Despite the large distances between gates, which are determined by the size and placement of the planes, airport design focuses more on the human scale. In the case of train stations, several elements such as platform length and height are primarily designed to meet the scale of trains, with little regard for human comfort. What architectural features, if any, are designed with human scale in mind?

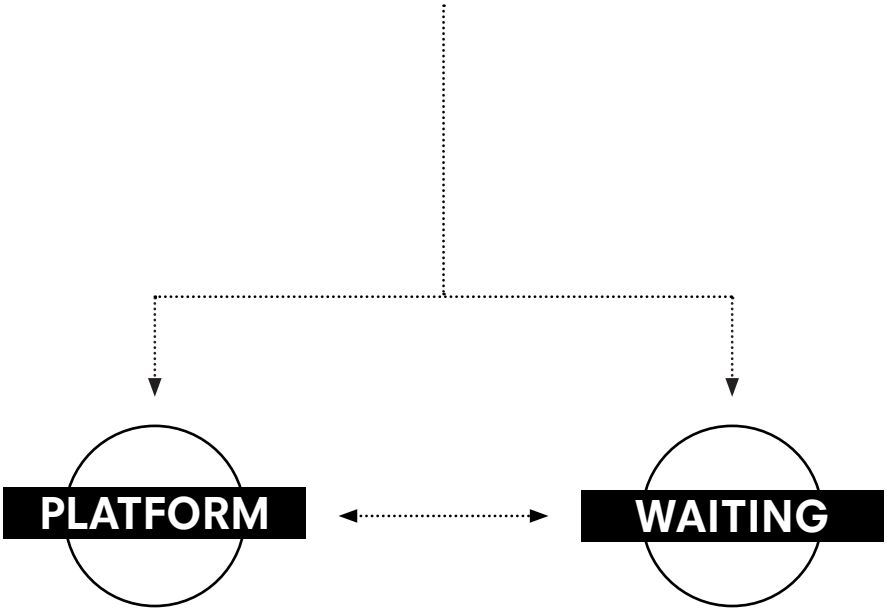
One example of architecture addressing different scales is Le Corbusier's Villa Savoye, which was designed to accommodate both the human body and the Citroën car (Benton & Levinson, 1975), suggesting that architecture can indeed serve two scales simultaneously. This raises the question: can the design solution for stations be achieved by altering the size or scale of one of the users such as making the trains smaller, as with the concept of Hyperloop stations? Hyperloop trains, being shorter and closer to a human scale, might suggest one approach. However, high-speed trains, with lengths of up to 202 meters, complicate this idea.

This evolution leads to another key question: does the design of spaces for two users humans and transport vehicles depend on adjusting the scale of one, or can it be achieved while maintaining their existing sizes? The Hyperloop project suggests a strategy of modifying the machine's scale, but does this approach does not fully address the problem. Alternatively, should humans and transport vehicles be more clearly separated, as they are in airports, where passengers and planes are physically and functionally distanced from each other? Could this separation itself be a form of humanization?

In exploring these questions, several paradoxes emerge within the train station typology:

- The architectural paradox between spaces designed for humans and spaces designed for machines.
- The paradox between static and dynamic.
- The paradox of use, where stations alternate between being empty and rushed.
- The paradox of feelings experienced in stations, such as the contrast between departing and arriving.

These paradoxes coexist within a single architectural typology, presenting the challenge of designing spaces that effectively accommodate both humans and transport vehicles. Time may serve as a potential link between the two, as humans have remained relatively unchanged over the years, while vehicles have advanced rapidly, resulting in an ever-widening gap in the human-vehicle relationship. Architecture has the potential to bridge this gap, addressing the evolving needs of both users.
The presence of these paradoxes may indeed contribute to the dehumanization of train stations, highlighting the need for design strategies that re-center the human experience within these complex environments.

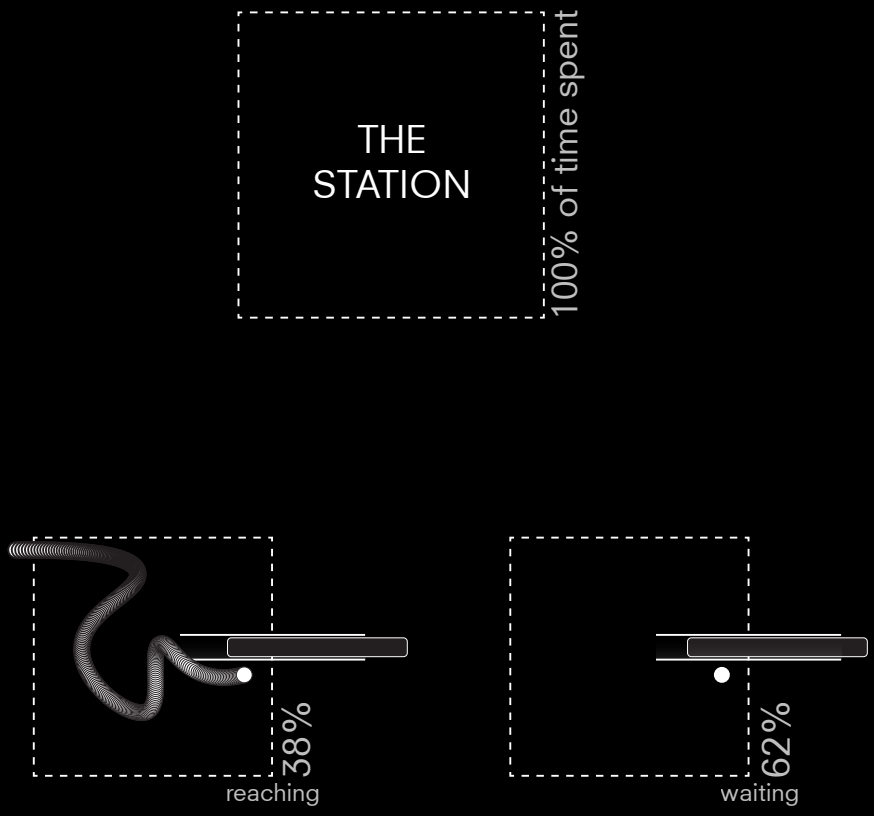



**Transitional spaces:**

The platform, both literally and conceptually, serves as a crucial link between humans and trains, playing a unique role within train station architecture. Designed to align with the height and length of trains, platforms function primarily as transitional or "liminal" spaces, often emphasizing utility over human experience. Dutch architect Aldo van Eyck introduced the term "liminal space" in architecture, referring not simply to transitional zones but to spaces fostering "ephemeral relationships between people and spatial environments" (Smith, 2001). Van Eyck's concept emphasise the brief yet meaningful interactions people have within these spaces, suggesting that they can serve as moments for connection, contemplation, or brief encounters.

In contrast, French anthropologist Marc Augé described "non-places" as spaces lacking identity, cultural reference, or user connection, prioritizing movement and efficiency over human comfort (Augé, 1995). These impersonal, utilitarian spaces often include parts of train stations, designed more for function than for creating a sense of place. Reimagining the train platform means challenging its role as a mere waiting area and exploring how it could embody both function and experience, transforming it into a meaningful connector within the station and even the city.

Beyond train stations, this concept applies to metro platforms, bus platforms, airport bridges, port deck any type of transitional space that links people to vehicles. Rethinking these interfaces offers an opportunity to design spaces that enhance the human experience while facilitating movement.


THE
STATION
100% of time spent
38%
reaching
62%
waiting







PUBLIC ..... PRIVATE















FRAGILE
FLO.
Scade


FS

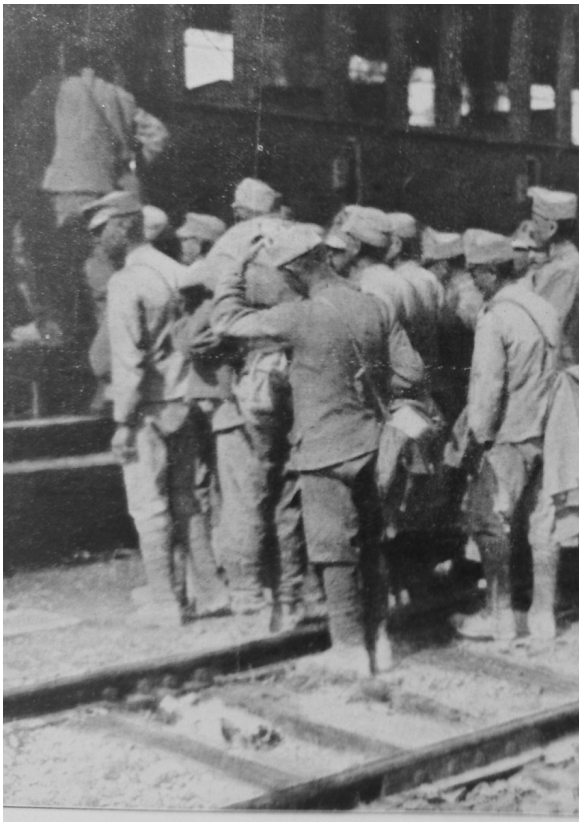










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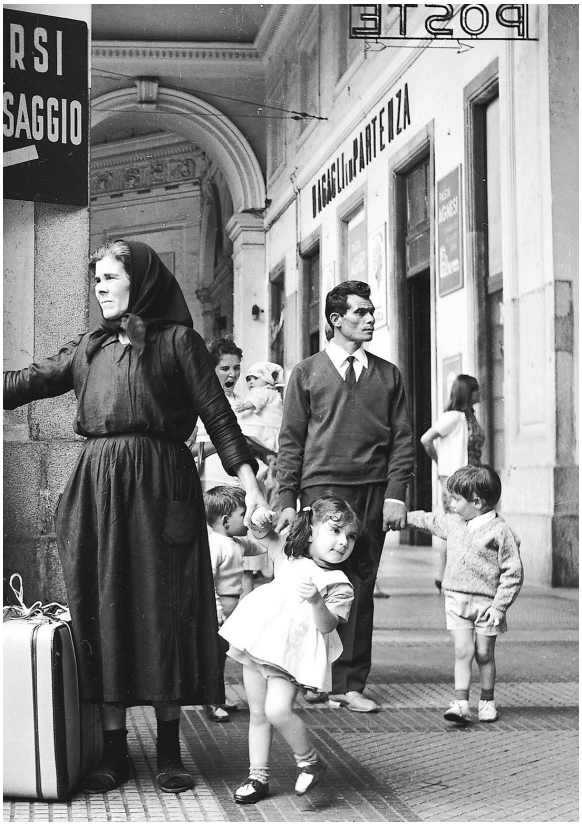

RSI
SAGGIO
BAGAGLI in PARTENZA
POSTE


PONTE NELLE ALPI-POLPET




ALL' ATRIO





# THE EVOLVING USAGE OF TRAIN PL
# SOCIETAL CHANGE



FONDAZIONE FS ITALIANE

ATFORMS REFLECTS THE BROADER
ES OVER THE YEARS

# 02 Global Relevance

### Architecture Relevance

This project explores interfaces between distinct elements within architecture, particularly examining liminal spaces, the transitional gap between the human and the train. By investigating similar typologies, such as metro platforms, bus stations, airports, and port, I'm focusing on those in-between spaces that have a clear entry and exit, guiding people from one point to another allowing to depart/arrive to the vehicle. In such spaces, if one needs a momentary pause, there's often no option but to continue to the destination or turn back. This aspect of the project highlights the architectural challenges and potential of designing for these transitional zones.

### Studio Relevance

In my research, I specifically study the human scale in relation to larger transport vehicles, like the train, and how these two scales intersect within the design of train stations. A key question in my problem statement is whether these structures are genuinely designed with the human scale in mind. If they are not, I am analyzing the architectural features that contribute to their dehumanizing qualities and proposing solutions to make these spaces more human-centered.

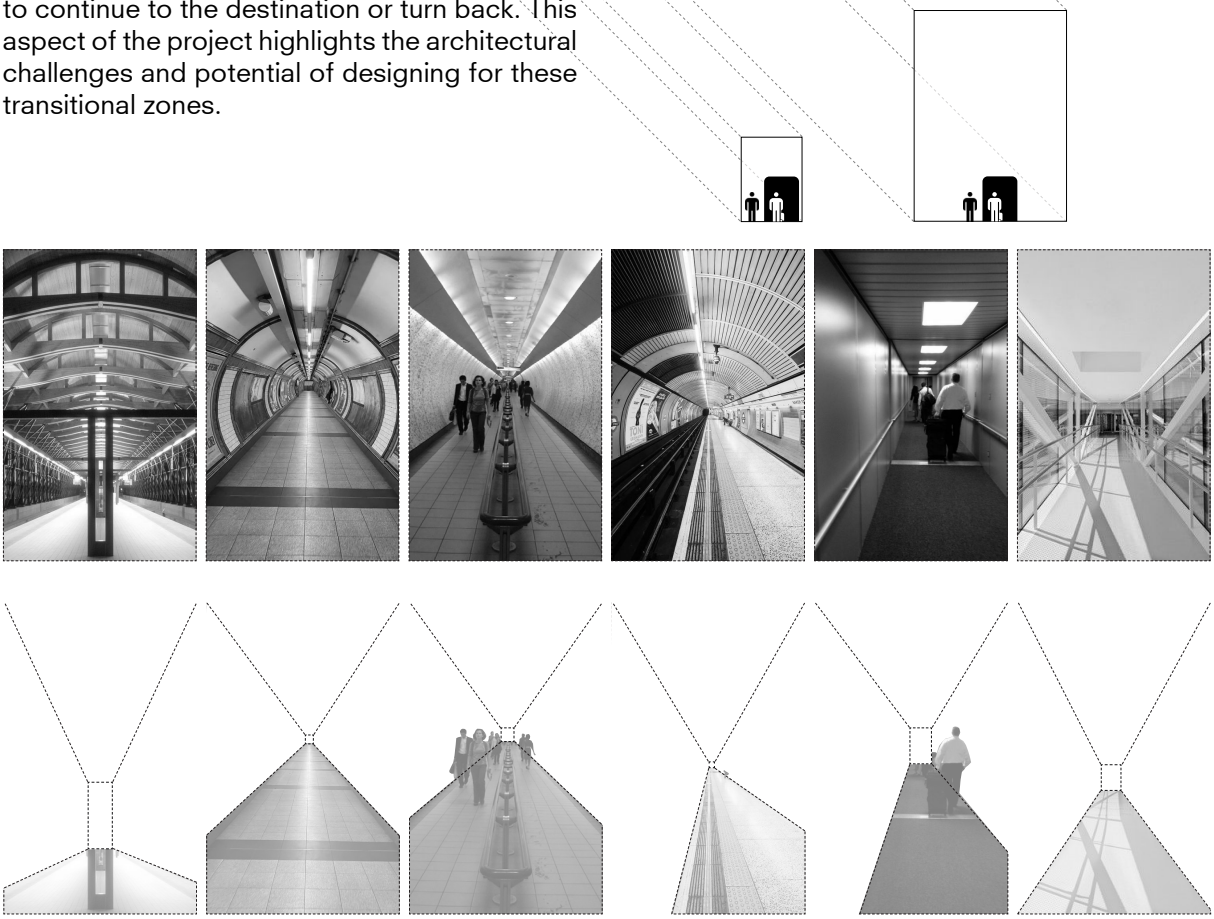
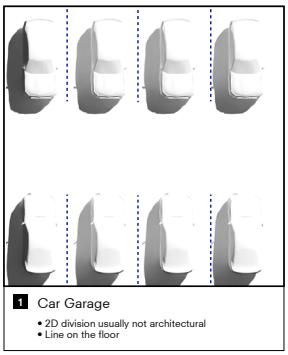
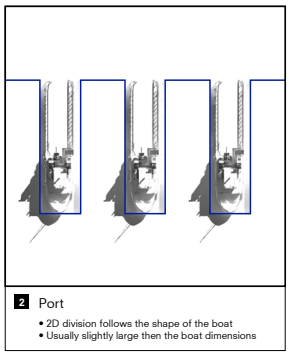


Figure 009 Transitional spaces in different typologies

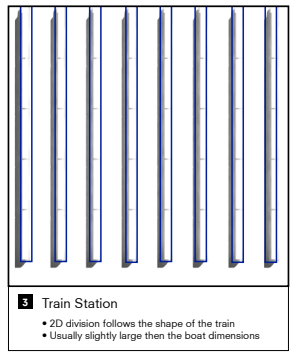
## Other vehicle typology relevance



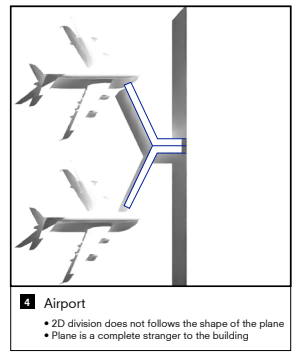
1 Car Garage
- 2D division usually not architectural
- Line on the floor



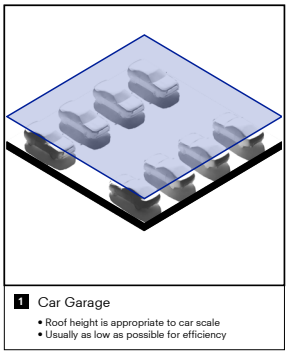
2 Port
- 2D division follows the shape of the boat
- Usually slightly large then the boat dimensions



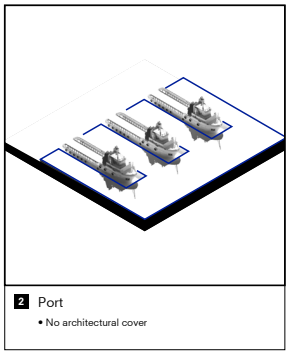
3 Train Station
- 2D division follows the shape of the train
- Usually slightly large then the boat dimensions



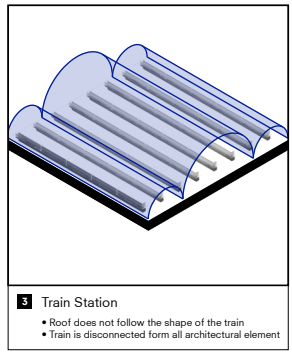
4 Airport
- 2D division does not follows the shape of the plane
- Plane is a complete stranger to the building



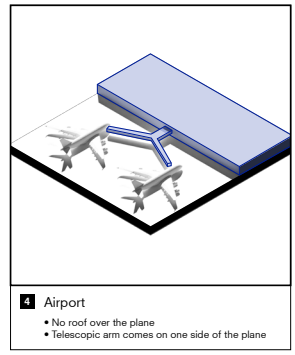
1 Car Garage
- Roof height is appropriate to car scale
- Usually as low as possible for efficiency



2 Port
- No architectural cover



3 Train Station
- Roof does not follow the shape of the train
- Train is disconnected form all architectural element



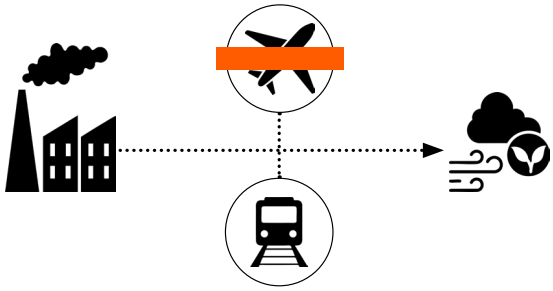
4 Airport
- No roof over the plane
- Telescopic arm comes on one side of the plane

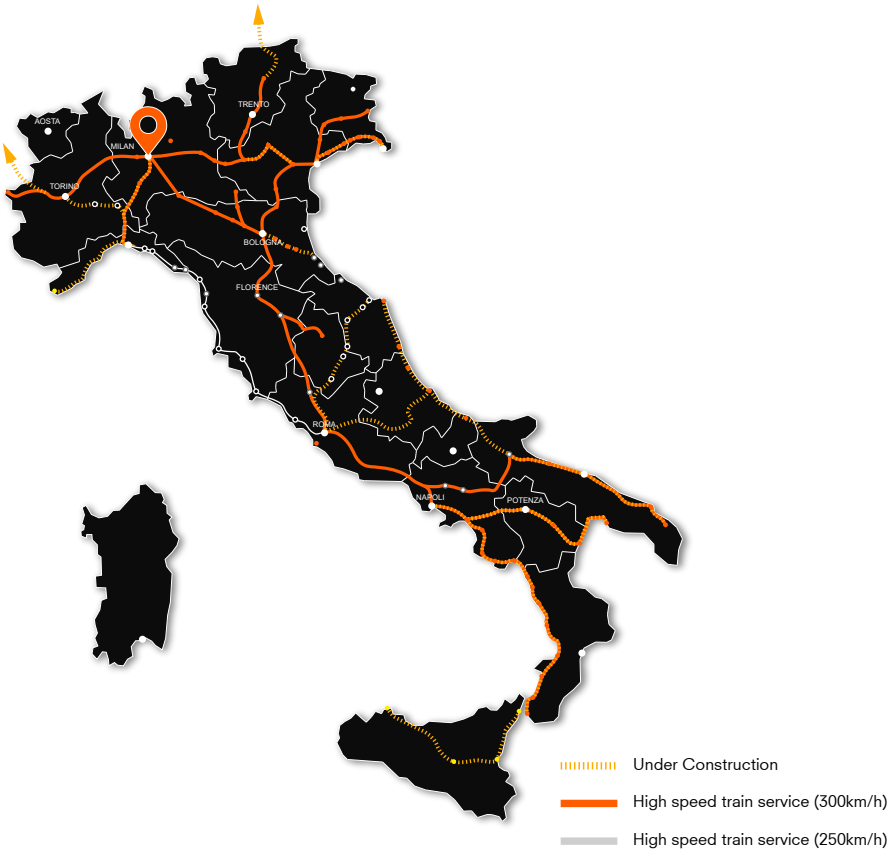
The study draws comparisons with typologies such as car garages, ports, airports, and metro stations, which similarly share the coexistence of human and vehicle-centered spaces. In two-dimensional design, architecture often follows the shape of the vehicle, as seen in train tracks or parking layouts.

However, in three-dimensional design, the relationship can be less defined. For example, in metro stations where the architecture fully accommodates the vehicle's shape, the integration of human and machine scales is seamless. In contrast, often in train stations, vehicles enter vast, undefined halls. It often create a sense of disconnection, as the train appears as a foreign object within the space. This raises the question of whether architecture should more explicitly integrate the vehicle's shape into its design. If platforms and surrounding structures adopt forms that follows the shape of the vehicle, could this enhance the relationship between human and machine scales, creating a more unified and homogeneous architectural language experience? The study seeks to explore whether this approach could reduce the perceived isolation of vehicles within architectural spaces and foster a stronger connection between the two.

## Sustainable and Milan Relevance

As high-speed rail infrastructure continues to expand in Italy, it's critical to rethink major train stations, which are set to become essential hubs for high-speed transportation. This project addresses how these stations can be designed to manage high densities of people and trains while still maintaining comfort for all users. By envisioning a future where high-speed trains replace domestic flights, this project proposes a sustainable alternative to air travel that could significantly reduce air pollution in Italy, particularly in Milan, a city currently suffering from some of the worst air quality in Europe.





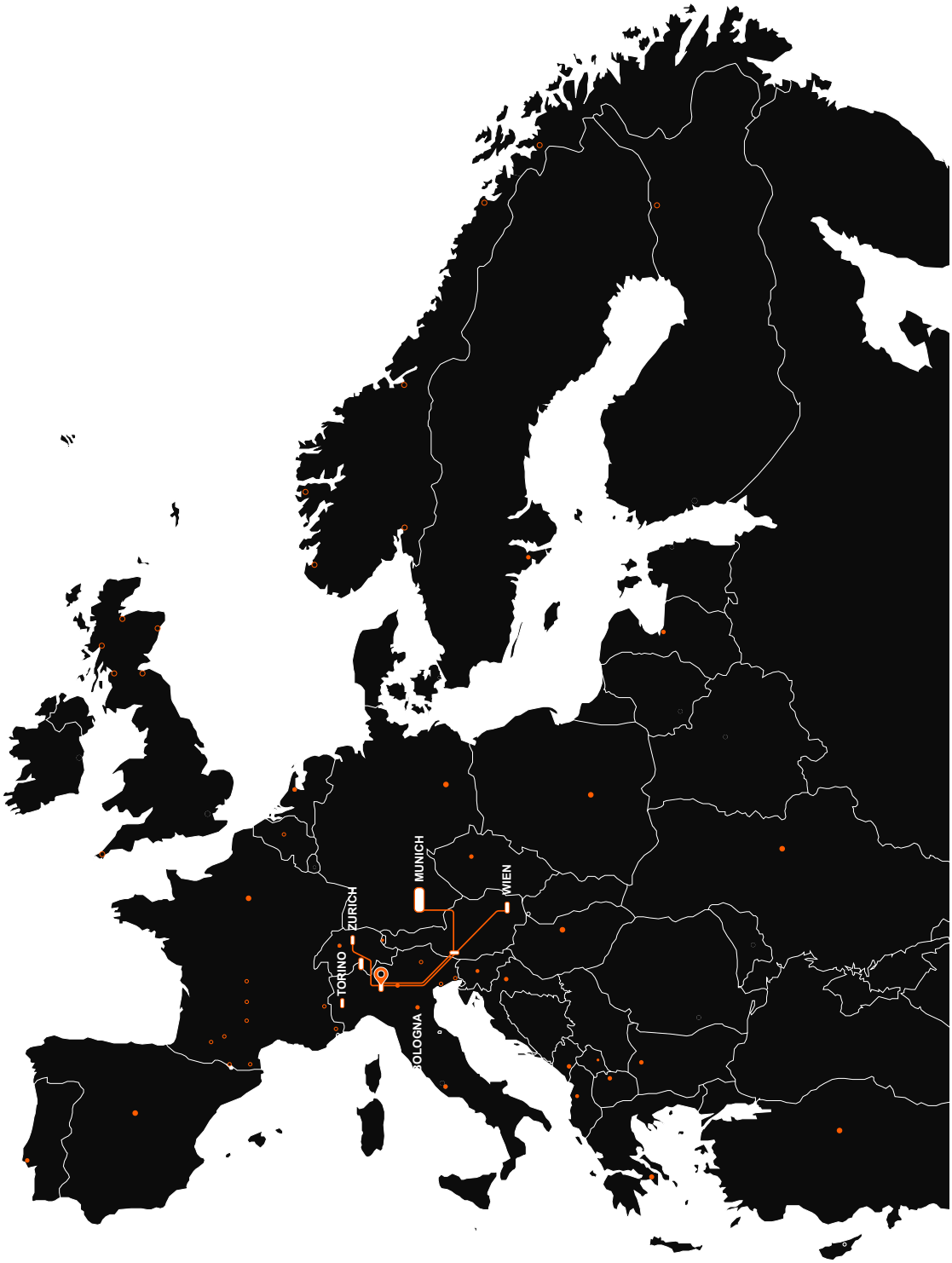



Figure 010 Italy's high-speed railway services
Figure 011 Europeans high-speed railway services from Milan Central

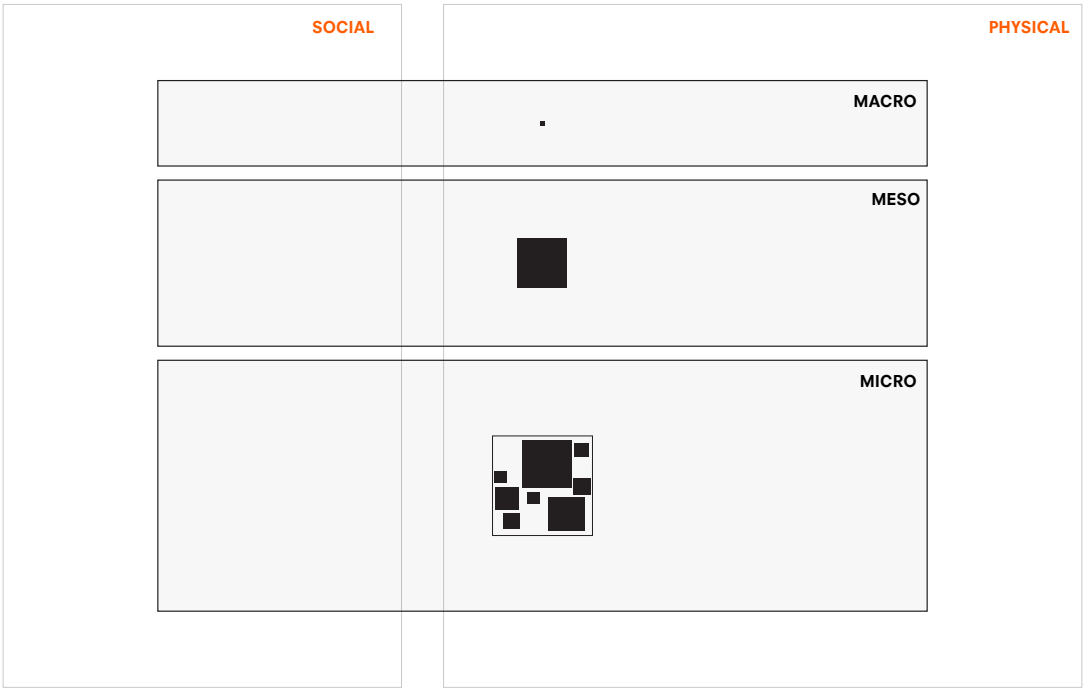
# RESEARCH METHODS

Framework (Micro, Meso, Macro)
Program
Client
Site
Conclusion

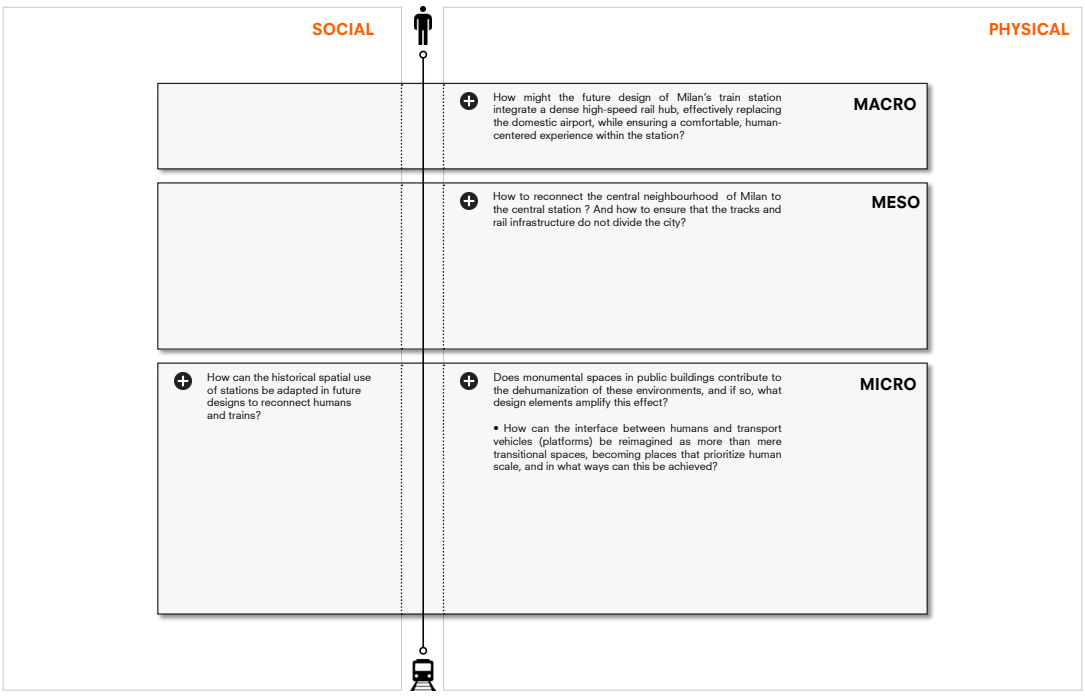
# 03

Figure 012  Research methods by scale
Figure 013  Research methods questions

# 01 Framework




In my research methods, I intend to explore both social and physical aspects of the train station design across three scales: macro, meso, and micro. Each scale offers unique insights, with a particular emphasis on the physical aspect at the meso and micro scale. Although those scales will be prioritized, the broader social and spatial contexts remain essential for a complete and coherent project.



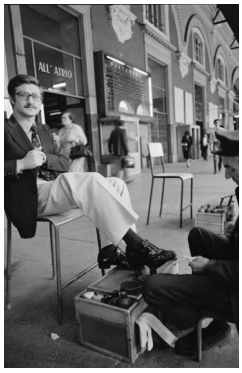
SOCIAL

How can the historical spatial use of stations be adapted in future designs to reconnect humans and trains?

MICRO

- Human pattern behaviour
- Time spent in station
- Perception of trains by human
- Human activity
- Human/industry gap

> Investigate how people behave within a station (shopping, waiting, activity) back then vs. now.
- Archives pictures
- Existing research





> Investigate the gap evolution between human and industry.
- Theory research
- Non-places

Figure 014 Social, micro Research Methods

PHYSICAL

Does monumental spaces in public buildings contribute to the dehumanization of these environments, and if so, what design elements amplify this effect?

**MICRO**

- Monumental spaces
- Domestic spaces
- Historic meaning
- Sense of belonging vs. monumental spaces

> Investigate historical monumental spaces in architecture and their meaning.
- Case studies
- Existing research



> Investigate modern monumental spaces in architecture and their meaning.
- Case studies
- Existing research



Figure 015 Physical, micro Research Methods

PHYSICAL

• How can the interface between humans and transport vehicles (platforms) be reimagined as more than mere transitional spaces, becoming places that prioritize human scale, and in what ways can this be achieved?

**MICRO**

**• Platforms/liminal spaces**
**• Visual connection**
**• Distance/proximity**
**• Other typology**

> Investigate the design of platfroms of both terminal and through station (8 built during industrial age and 8 in modern times).




> Investigate platforms in other transport typology (+ benchmarking) the interface between bodies and transport vehicle, transitional zones.
- Theory research
Metro station, bus station, airport, garage, bicycle storage, port.



Figure 016 Physical, micro Research Methods

PHYSICAL

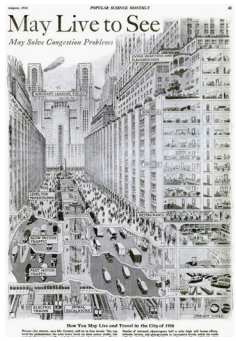
How to reconnect the central neighbourhood of Milan to the central station ? And how to ensure that the tracks and rail infrastructure do not divide the city?

**MESO**

**• Layered City**
**• Program Overlay**
**• No discernable surface (or ground floor)**

> Investigate the idea of 'no station' where train dissolves within the urban fabric.
- Reconnecting to the surrounding context
- Look for precedents that I have done a similar concept of 'city within the city'






> Investigate the surrounding typologies and use of Milan central.
- Municipality websites
- Urban planning research

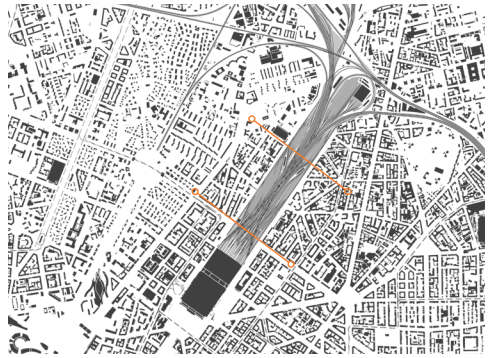


Figure 017 Physical, meso Research Methods

PHYSICAL

How might the future design of Milan's train station integrate a dense high-speed rail hub, effectively replacing the domestic airport, while ensuring a comfortable, human-centered experience?

MACRO

- **Railport**
- **High speed train hub**
- **International + regional connection**

> Investigate existing dense high-speed hub train stations.

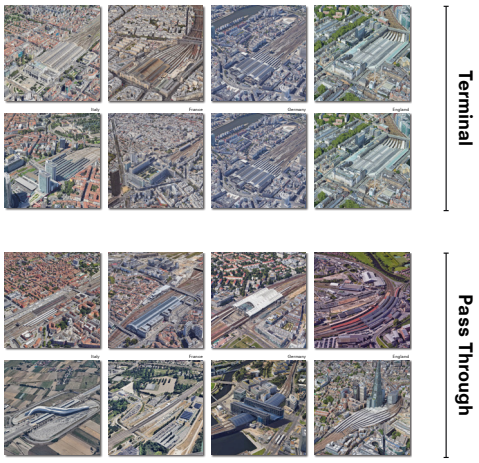



Figure 018 Physical, macro Research Methods

# 02 Program

The program for this project aims to redefine the train station beyond its traditional commercial and retail use, advocating instead for community-centered services and flexible spaces that meet passenger needs without focusing solely on consumption. To begin, I will analyze the existing layout of Milan's Central Station, which has undergone various transformations since its inauguration in 1931, to understand its original priorities, such as the spatial hierarchy within the station's expansive yard (explain with diagram). This analysis will be complemented by a cross-comparison of case studies of terminal and through-stations to identify key programmatic elements essential for a well-functioning train station. By examining how the layout typologies of terminal versus through-stations affect programmatic organization, I aim to determine if these differences directly impact the services and spaces offered within each type. Ultimately, the program for the re imagined Milan station will prioritize creating a sense of belonging, transforming it from a transit space into an engaging community hub. To achieve this, my research will include a theoretical exploration of spaces that foster belonging, an analysis of the local Milan Central area to identify gaps in current uses and potential community needs, and a study of existing mixed-use train stations that successfully blend traditional station functions with other types of public amenities.

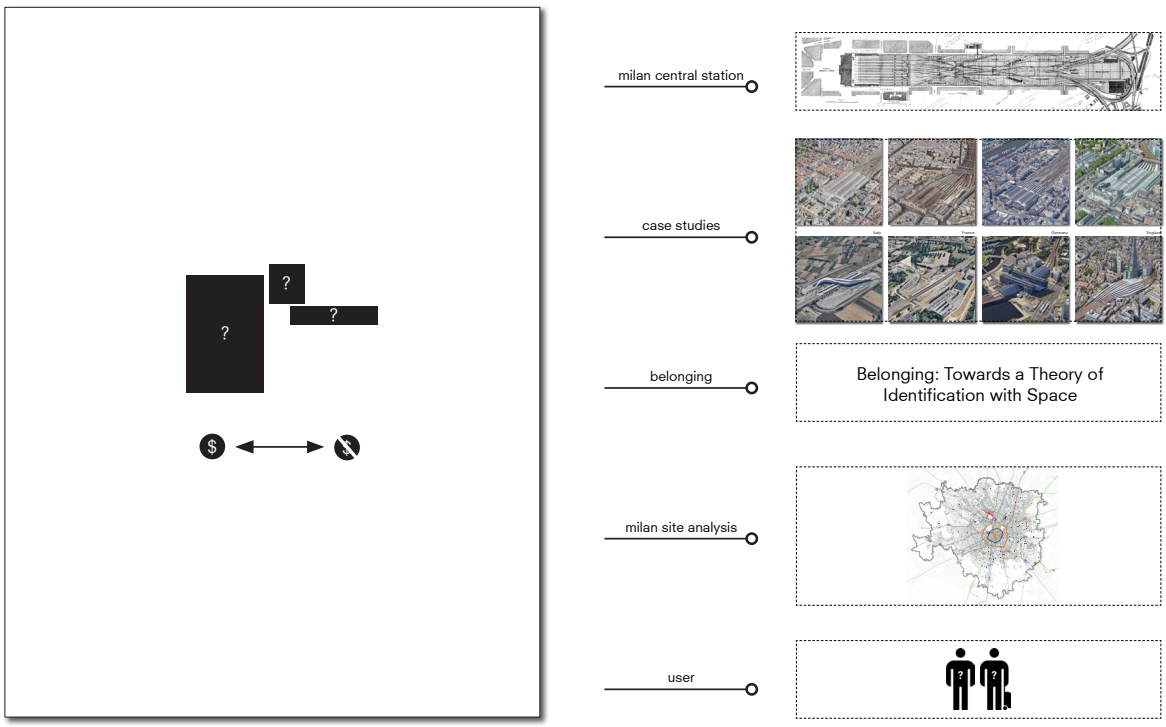



Figure 019 Research Methods for Program

# 04 Client

The project will also consider clients on both local and European levels. Initial research will focus on transportation companies across Europe, to gain insights into their long-term visions for high-speed rail and other transportation innovations. I will specifically investigate Italian transportation regulations and standards for train station design, especially those related to standardization, as understanding these requirements will be crucial for developing the future Milan station. Additionally, government and municipal objectives at the national and city levels will be examined to understand Italy and Milan's ambitions in sustainable development, social inclusivity, and architectural advancement, helping to ensure alignment with broader public goals.

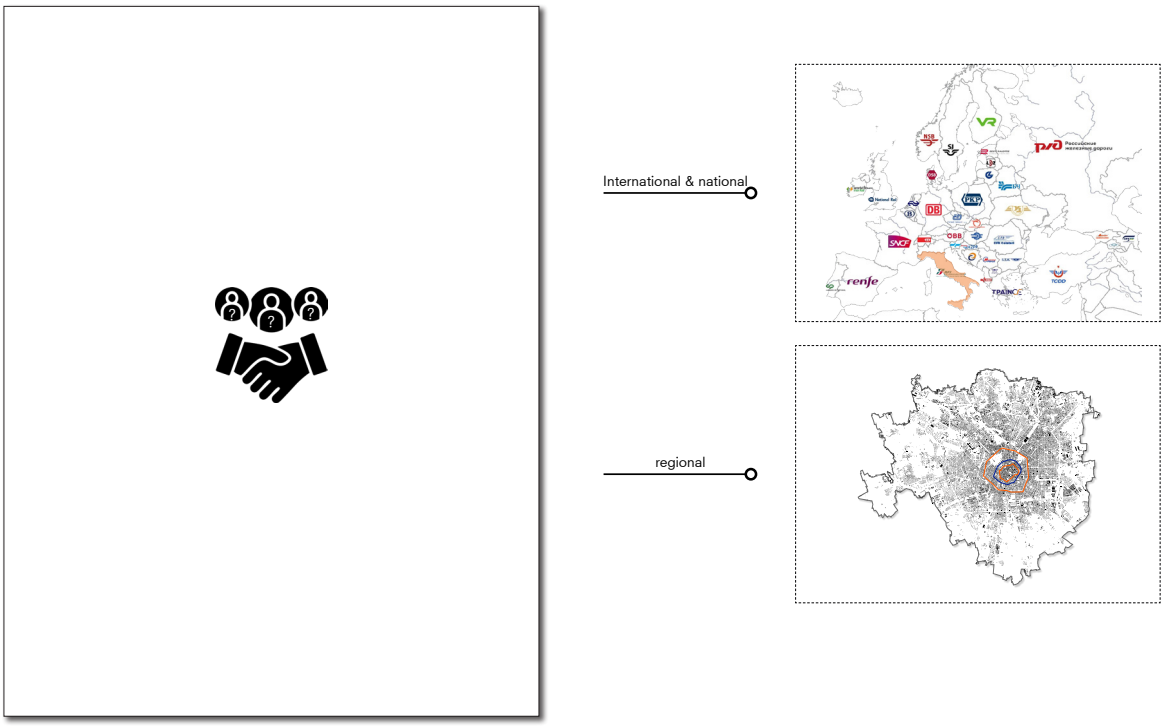



Figure 020 Research Methods for Clients

# 04 Site

The chosen site for this project is the current Milan Central Station. Research on this site will consist of a comprehensive analysis of its existing conditions, with the goal of understanding the relationship between the station and its surroundings, as well as how it integrates with the city. This analysis will involve site photography taken during field visit in Milan, detailed site mapping, analytical diagrams, and 3D modeling. By investigating the existing connections and examining how the future Milan Central Station might better integrate into its surrounding urban fabric, the project will challenge traditional station boundaries, envisioning a design with distributed entrances that dissolve into Milan's cityscape. This approach will support the creation of a station that not only serves as a transit hub but also enhances its role within the urban environment.

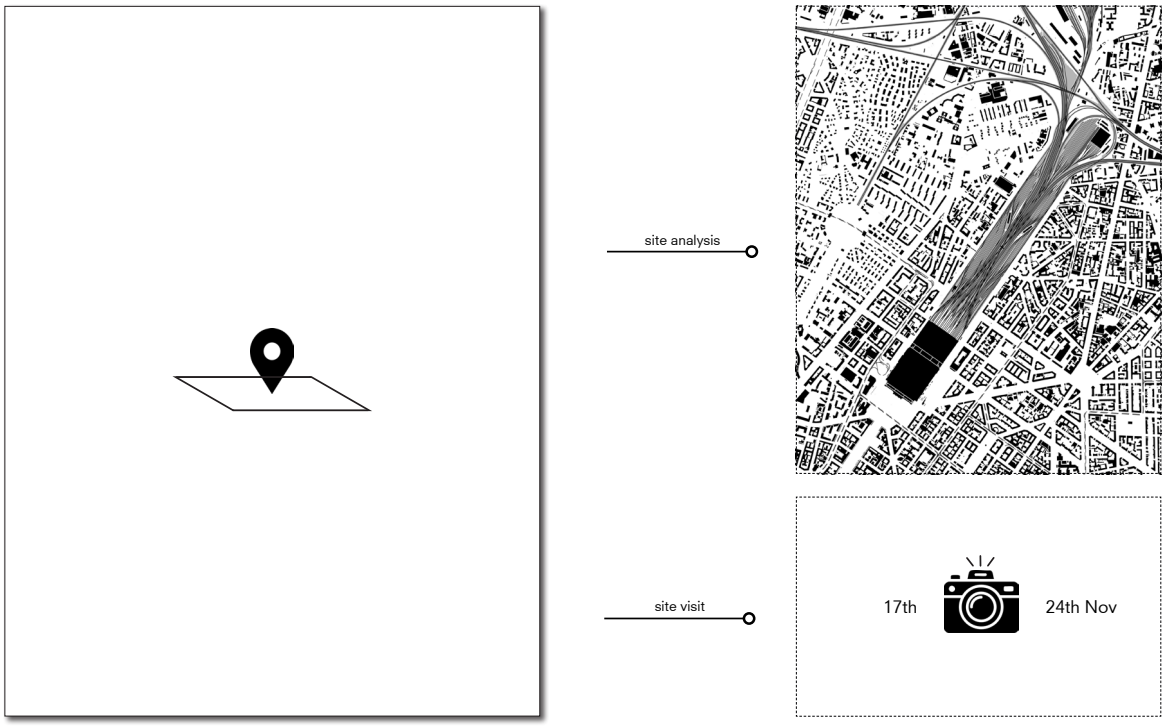
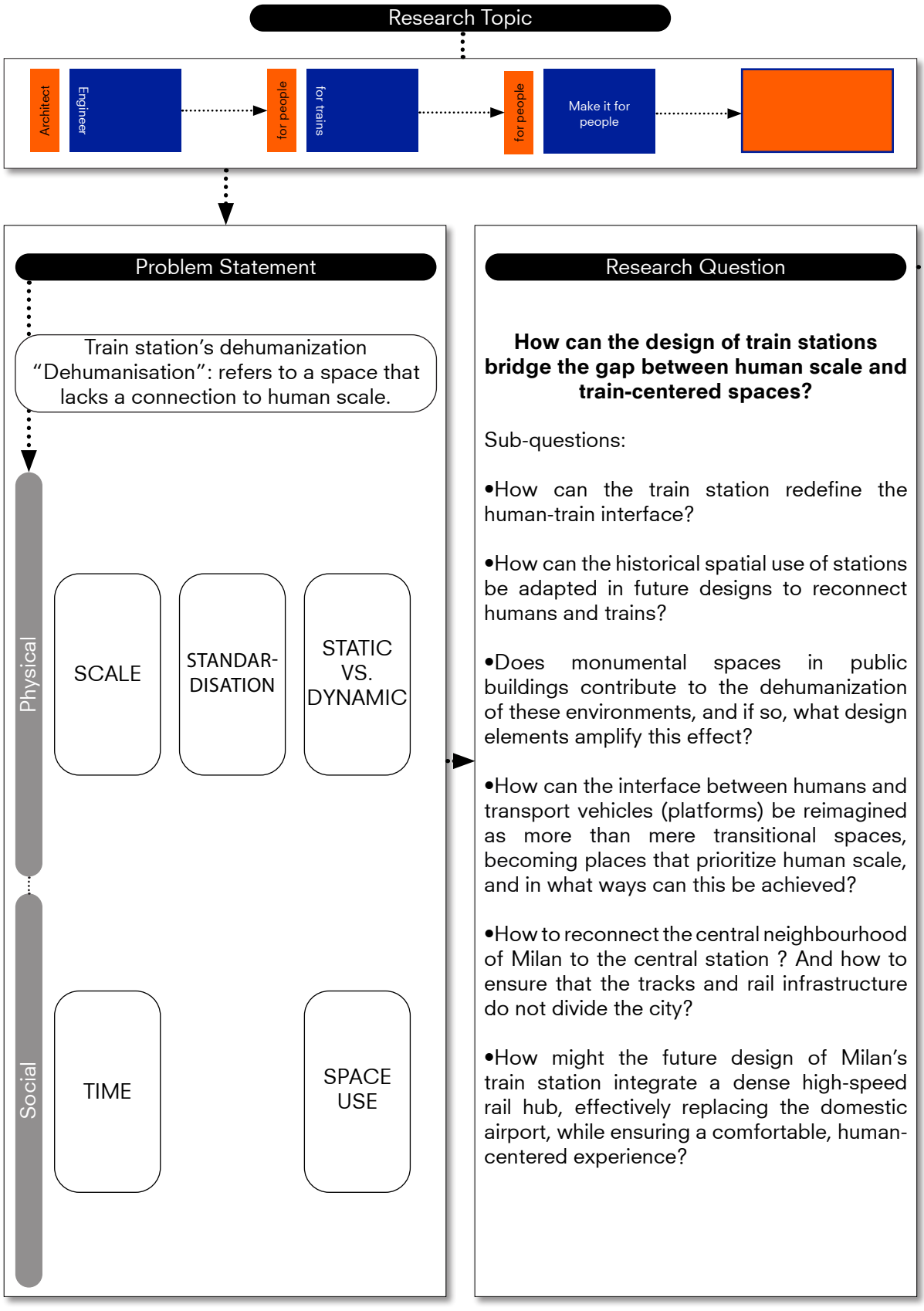



Figure 021 Research Methods for Site


Research Topic
Architect
Engineer
for people
for trains
for people
Make it for people
Problem Statement
Train station's dehumanization
"Dehumanisation": refers to a space that lacks a connection to human scale.
Physical
SCALE
STANDAR-DISATION
STATIC VS. DYNAMIC
Social
TIME
SPACE USE
Research Question
How can the design of train stations bridge the gap between human scale and train-centered spaces?
Sub-questions:
•How can the train station redefine the human-train interface?
•How can the historical spatial use of stations be adapted in future designs to reconnect humans and trains?
•Does monumental spaces in public buildings contribute to the dehumanization of these environments, and if so, what design elements amplify this effect?
•How can the interface between humans and transport vehicles (platforms) be reimagined as more than mere transitional spaces, becoming places that prioritize human scale, and in what ways can this be achieved?
•How to reconnect the central neighbourhood of Milan to the central station ? And how to ensure that the tracks and rail infrastructure do not divide the city?
•How might the future design of Milan's train station integrate a dense high-speed rail hub, effectively replacing the domestic airport, while ensuring a comfortable, human-centered experience?

## Theoretical Framework

Design of spaces for two users—humans and transport vehicles

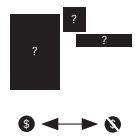
- The architectural paradox between spaces designed for humans and spaces designed for machines (building for passenger vs. train shed).
- The paradox between static and dynamic.
- The paradox of use, where stations alternate between being empty and rushed.
- The paradox of feelings experienced in stations, such as the contrast between departing and arriving.

TRANSITIONAL SPACE
-
LIMINAL SPACE
-
PLATFORM

## Research Methods

| | SOCIAL | PHYSICAL |
|---|---|---|
| MACRO | | How might the future design of Milan's train station integrate a dense high-speed rail hub, effectively replacing the domestic airport, while ensuring a comfortable, human-centered experience within the station? |
| MESO | | How to reconnect the central neighbourhood of Milan to the central station ? And how to ensure that the tracks and rail infrastructure do not divide the city? |
| MICRO | How can the historical spatial use of stations be adapted in future designs to reconnect humans and trains? | Does monumental spaces in public buildings contribute to the dehumanization of these environments, and if so, what design elements amplify this effect?<br>• How can the interface between humans and transport vehicles (platforms) be reimagined as more than mere transitional spaces, becoming places that prioritize human scale, and in what ways can this be achieved? |

Program




Site



Client



## Design Brief

# RESEARCH CONCLUSION

Based on this research, the future design of Milan Central Station will prioritize the integration of human-centered spaces with the station's operational infrastructure as it evolves into a high-speed transportation hub. To address the architectural paradox of accommodating both humans and transport vehicles, the station must bridge the gap between human scale and train-centered design. While human nature has remained largely unchanged over centuries, vehicles and technology have rapidly advanced, often outpacing our ability to adapt. This imbalance creates environments where humans struggle to keep up with the scale and speed of those.

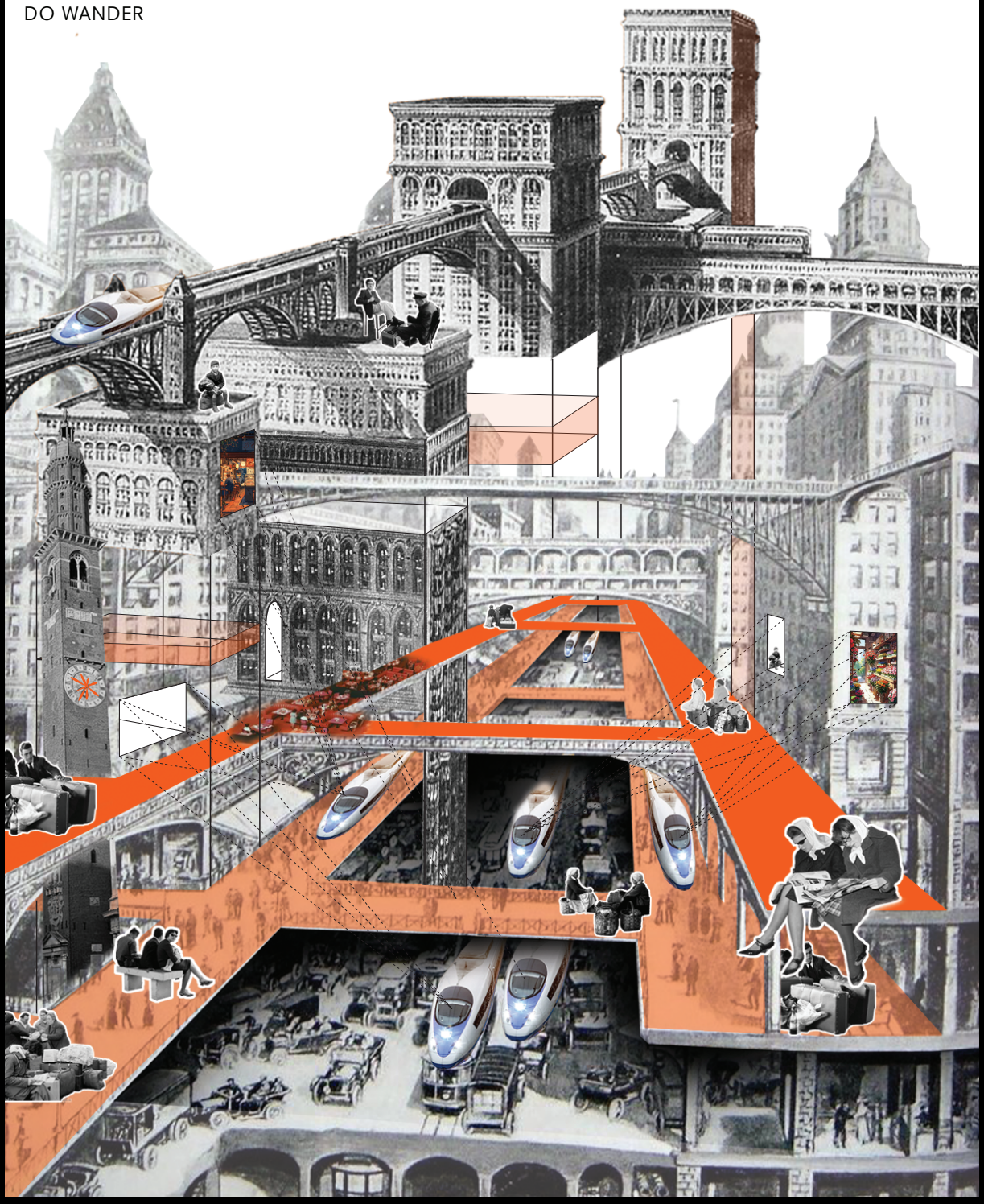
This research focuses on the interface linking the human and the train, the platform, a space associated with waiting. The future design envisions platforms as both everywhere and nowhere, placing them at the heart of the station and integral to the project's aim of balancing monumental and intimate spaces; while monumental areas evoke a sense of grandeur, they can also create a feeling of detachment. To counter this, Milan's future station will foster a sense of belonging, extending beyond commercial and retail functions. By incorporating adaptable spaces for waiting, social interaction, and community engagement, the station will transform from a passive transit area into an active, vibrant environment. Inspired by Harvey Wiley Corbett's concept of the "layered city," Milan future train station will reinvent and redefines waiting areas as urban vertical spaces, where passengers are encouraged to engage in various activities, making waiting a dynamic experience rather than a passive one.

Envisioning the station as a "city layer" rather than an isolated structure, this approach proposes a station that blends horizontally and vertically with Milan's urban fabric, creating an "urban continuum." The station of the future might even dissolve conceptually within the city, with multiple access points distributed across Milan. Such a design would allow public spaces within the station to merge seamlessly with the surrounding cityscape, maintaining a balance that respects both human and train scales to foster a sustainable community urban life.

Figure 022 Future Milan central train station vision collage

**HOW CAN THE DESIGN OF TRAIN STATIONS BRIDGE THE GAP BETWEEN HUMAN SCALE AND TRAIN-CENTERED SPACES?**

STATION RULES
DO NOT MIND THE GAP
DO WANDER



# DESIGN BRIEF

Site
Client
Program
Key Spaces

# 04

Figure 023 Milan's Central station





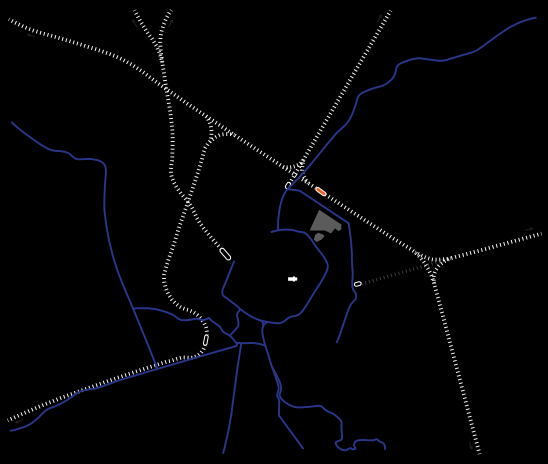
1846



1864



1873



1883



1904

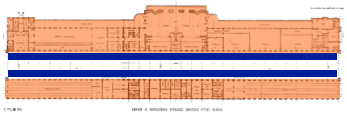


1931

Figure 024 Milan's central station map evolution



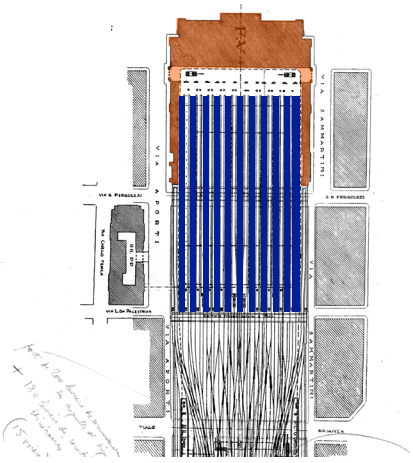
Figure 025 Milan's central through station
Figure 026 Through station floor plan 1864
Figure 027 Terminal station floor plan 1931



# 01 Site

The studio has preliminarily chosen the site for the project: Milan Central Station, located in district 2, near the boundary of district 1.

In terms of mobility, Milan Central is the third-largest train station in Europe, offering direct connections to four neighbouring countries. It is also Italy's second largest train station after Rome serving as a critical transit hub for the country. The railway network is more developed in the northern regions of Italy than in the south, making Milan Central an important station for both international and domestic travel.



Originally designed as a pass-through station, Milan Central became a terminal station in 1931. This transformation not only altered its architectural design but also resulted in the station being relocated further from the city center. Initially known as the "Gateway of the City," the station marked the city's edge, serving as a threshold for entry and exit. However, with Milan's urban expansion, the Central Station is now located at the heart of the city.

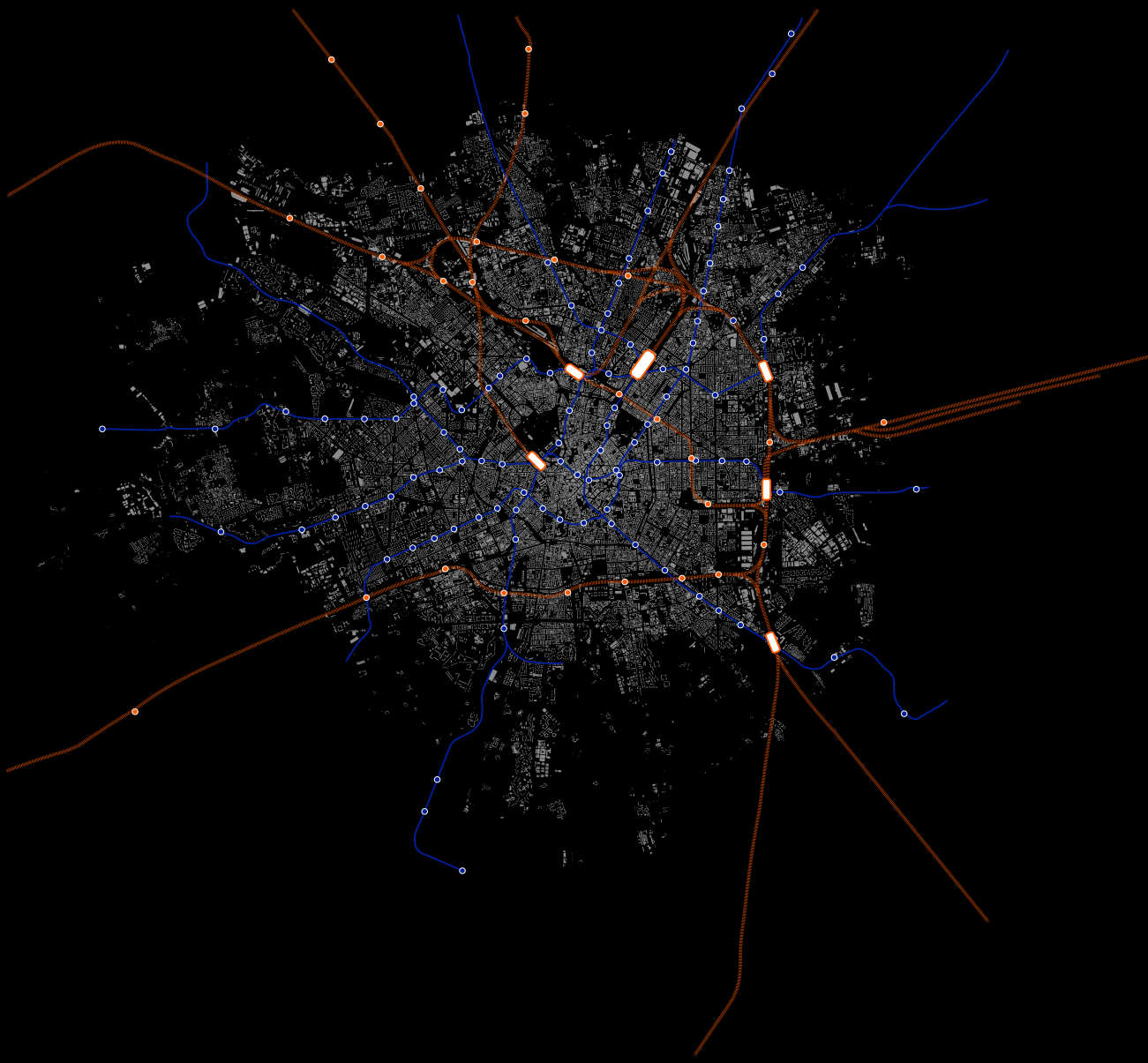
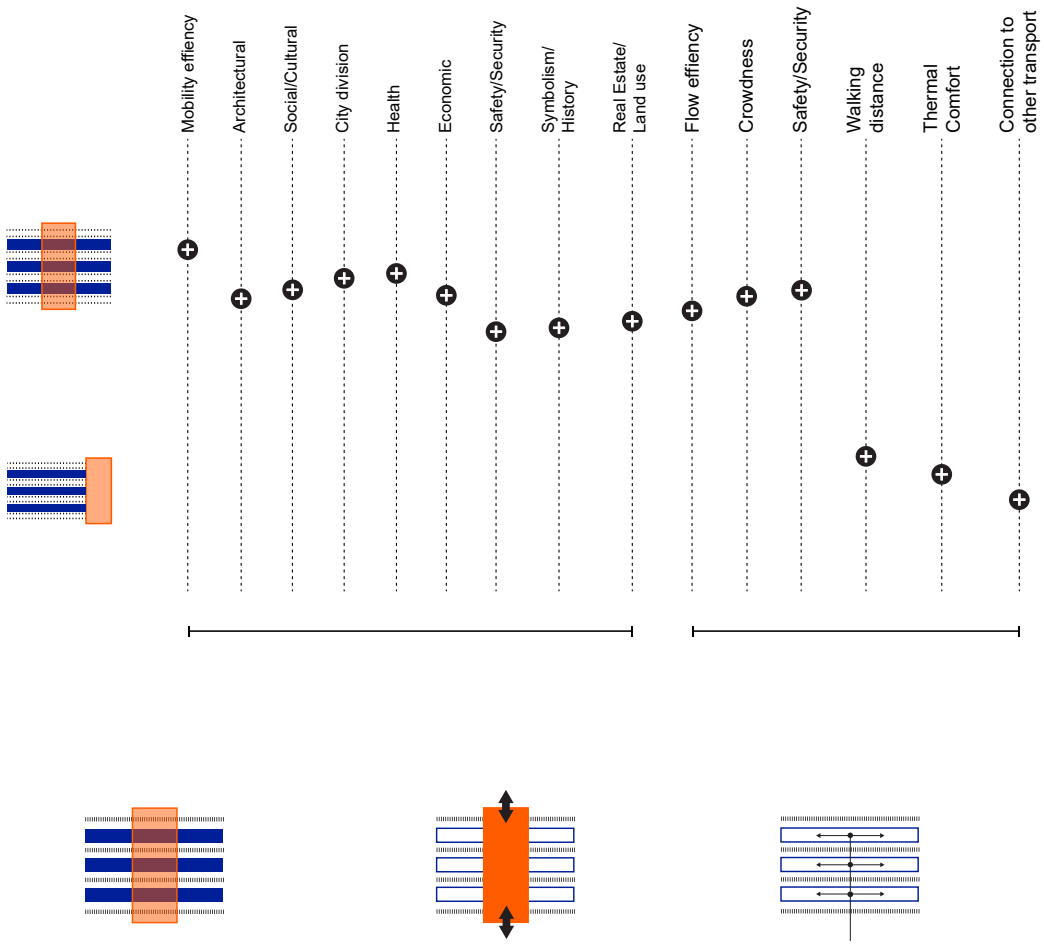



Figure 028 Milan's mobility map




# 1.1 Station Research

Milan is well-served by public transportation, with a large network of metro, bus and tram lines covering most areas of the city. The metro system includes four lines, and the city is home to six major train stations. While researching the evolution of train stations, the physical, architectural, social, and economic aspects of through stations versus terminal stations became a focus. This analysis aimed to understand the advantages of each station type and address the question:
What aspects of both through stations and terminal stations can enhance the interface between humans and trains?
The conclusion was that through stations offer several advantages, which will inform the future design. Three key aspects to implement are:

- A building embedded between tracks and rails, optimizing spatial efficiency.
- A double-entrance configuration, reducing the disconnection between the station's two sides.
- Central platform access, minimizing walking distances, an advantage over terminal stations, where access typically begins at the end of platforms.

Milan Central Station is located near Garibaldi Station, another major terminal. Both stations serve high-speed and regional trains, with Garibaldi acting as a more significant hub for metro connections. Milan Central's proximity to the central district solidifies its status as a landmark of the city, further emphasizing its importance within the urban fabric.

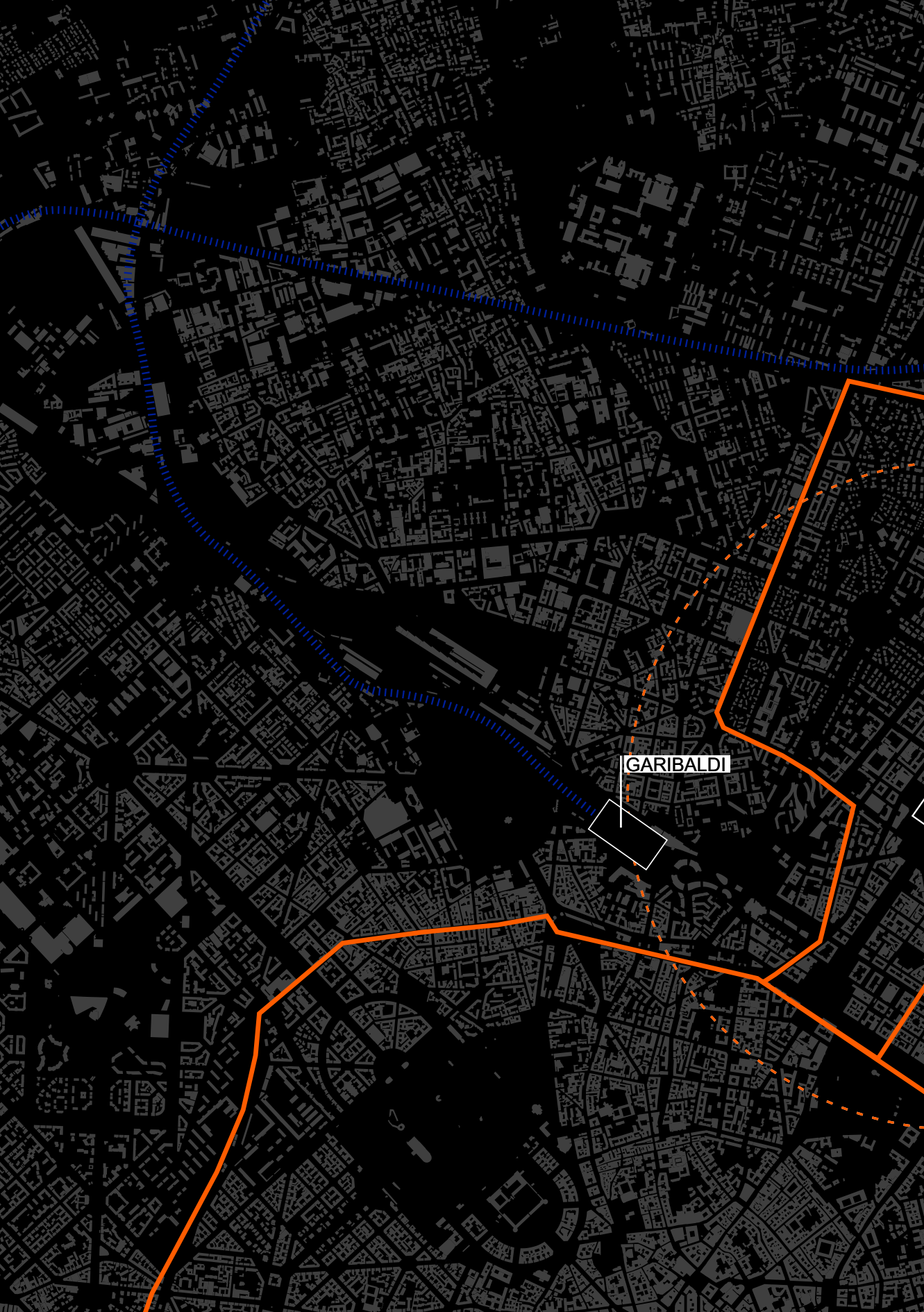

GARIBALDI




Figure 029 M scale map of Central Station

# 1.1 Site Condition

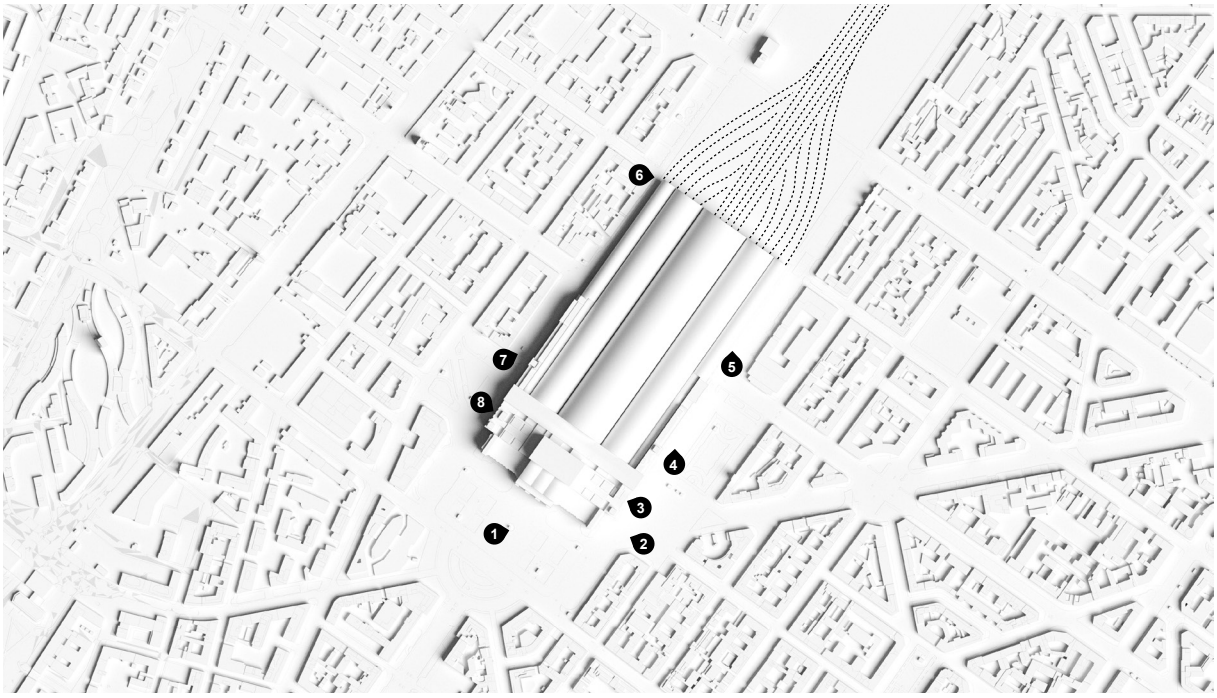



Figure 030 Site Plan



1 View from the plaza in front of the station, showcasing one of the metro entrances.



2 Side of the station cluttered with temporary barriers and numerous illegally parked vehicles.



3 Monumental side entrance, originally a car entrance in 1931, still features its open metal gate.



4 Side indoor entrance with an external weatherproof roof extension, and a new restaurant structure visible in the background.



5 View of a tunnel running below the tracks, featuring three entrances and 8-meter-high walls.



6 Restaurant in a new structure, leaving minimal space between the station wall and the street.



7 Station side with extremely limited parking availability.



8 Semi-indoor space, once a car access area, now serves as an intermediate station connection with a new underground metro link added.




Figure 031 Research site plan: car and bicycle access

# 1.2 Site car/Bycicle Access

Car access around the site is relatively convenient, unlike bicycle access, which is very limited due to the lack of dedicated routes. Parking options are limited, with one large parking area located beneath the tracks at the rear of the station.

Public spaces surrounding the station are limited, including a large plaza at the front, most of which remain underutilized and inactive.

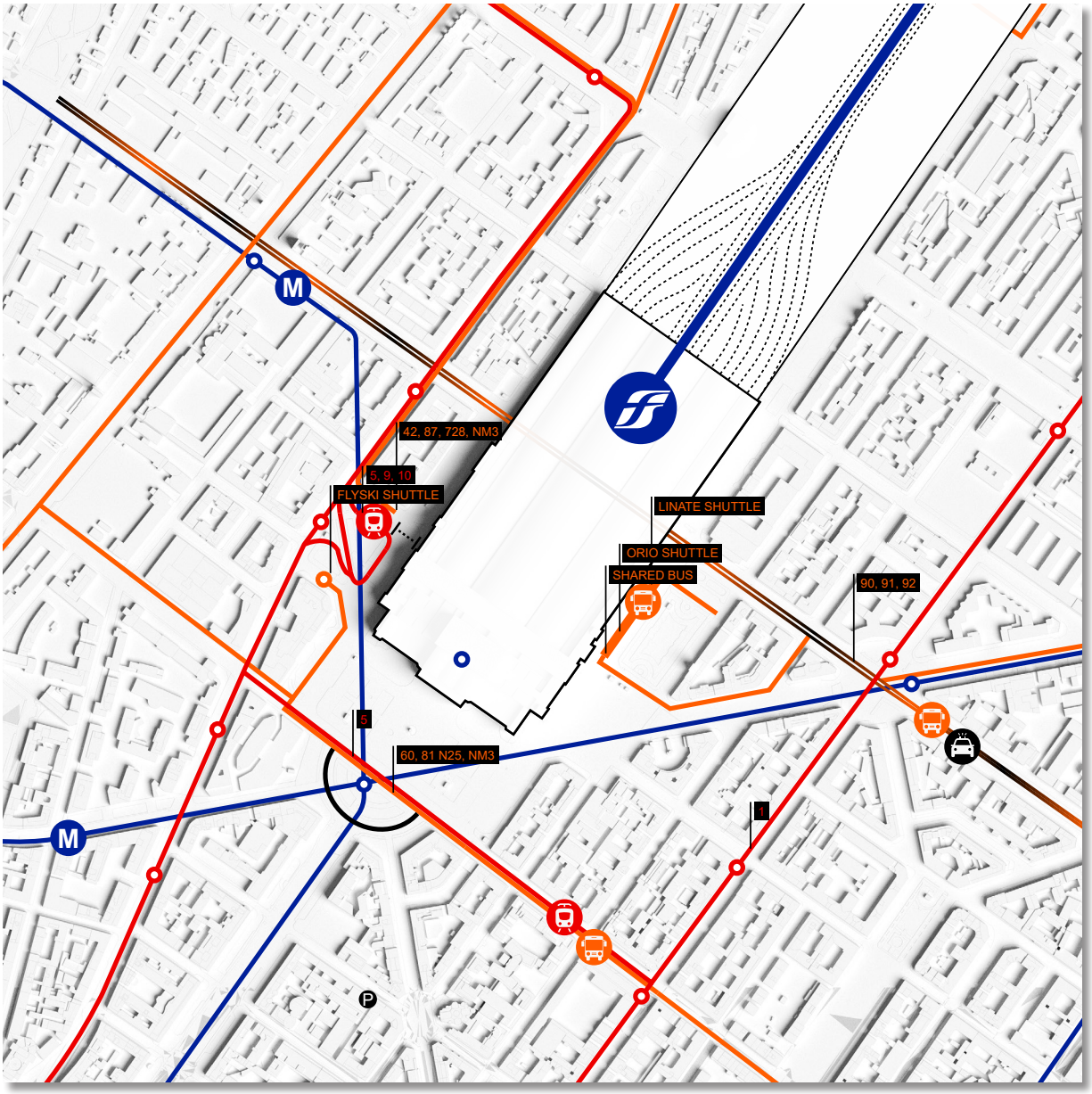



Figure 032 Research site plan: Public transport access

# 1.3 Public Transports

Milan Central Station is well-served by public transport, with buses, trams, and metro lines accessible both inside and outside the building. However, these connections are scattered around the station rather than concentrated in one location, making navigation less intuitive. Walking distances to transport nodes are generally within a 5-minute range.




Figure 033 Research site plan: walking distance

# 1.4 Walking Distance

The scattered placement of transport nodes leads to congestion in certain areas, particularly on the station's left and right sides. In contrast, the plaza at the front remains underutilized and mostly empty, highlighting an imbalance in activity across the site.

# 1.5 Milan Site Visit



19.11 visits
1 Clinica La Madonnina
2 Palazzo di Giustizia di Milano
3 FONDAMENTA
4 Fondazione Giangiacomo Feltrinelli

19.11 meeting points
Crocetta
Gerusalemme

20.11 visits
1 Triennale di Milano
2 CZA Cino Zucchi Architetti
3 Cascina Nascosta

21.11 visits
1 Arup
2 Fondazione Prada

21.11 meeting point
Missori

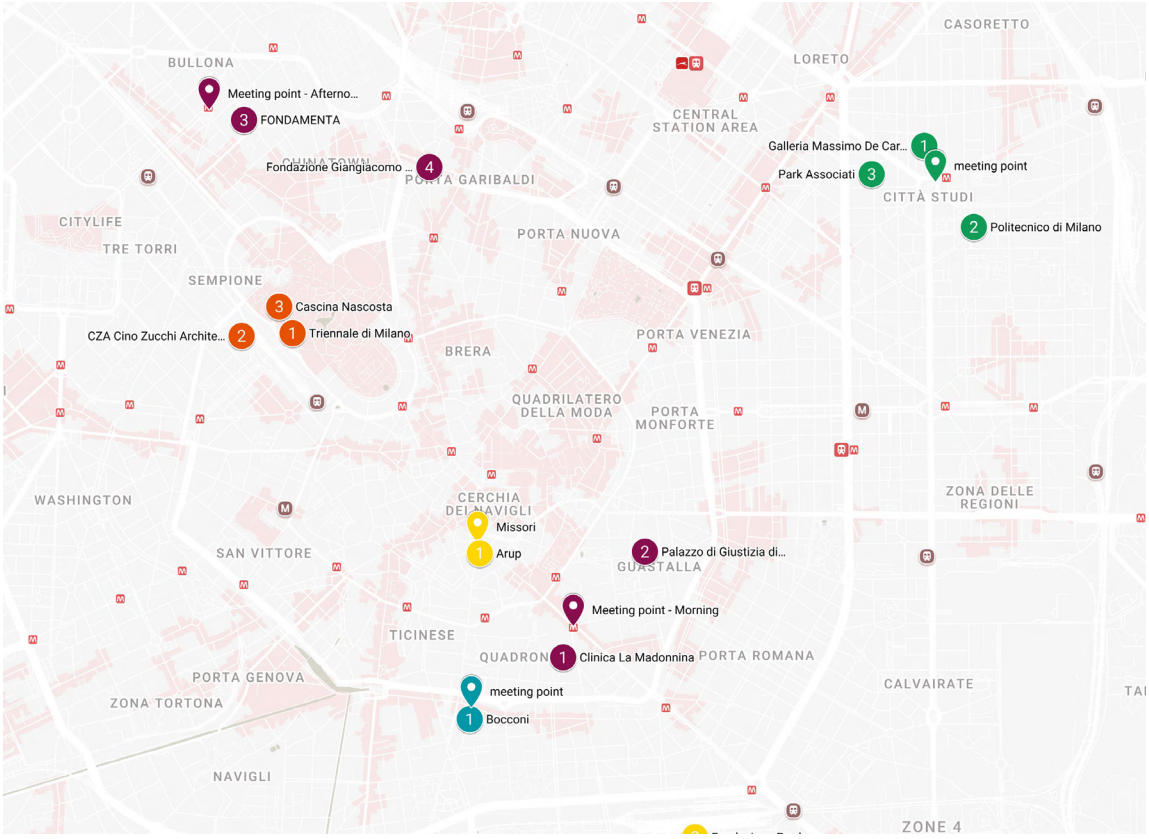
22.11 visits
1 Galleria Massimo De Carlo

21.11 meeting point
Piola

22.11 visits
1 Bocconi

22.11 meeting point
Bocconi

Figure 034 Milan Team





Milan Central Station is well-served by public transport, with buses, trams, and metro lines accessible both inside and outside the building. However, these connections are scattered around the station rather than concentrated in one location, making navigation less intuitive. Walking distances to transport nodes are generally within a 5-minute range.















BIGLIETTERIA
Partenze Departures
E' VIETATO OLTREPASSARE LA LINEA GIALLA


WASCOFFEE LAB
MACHAPORE



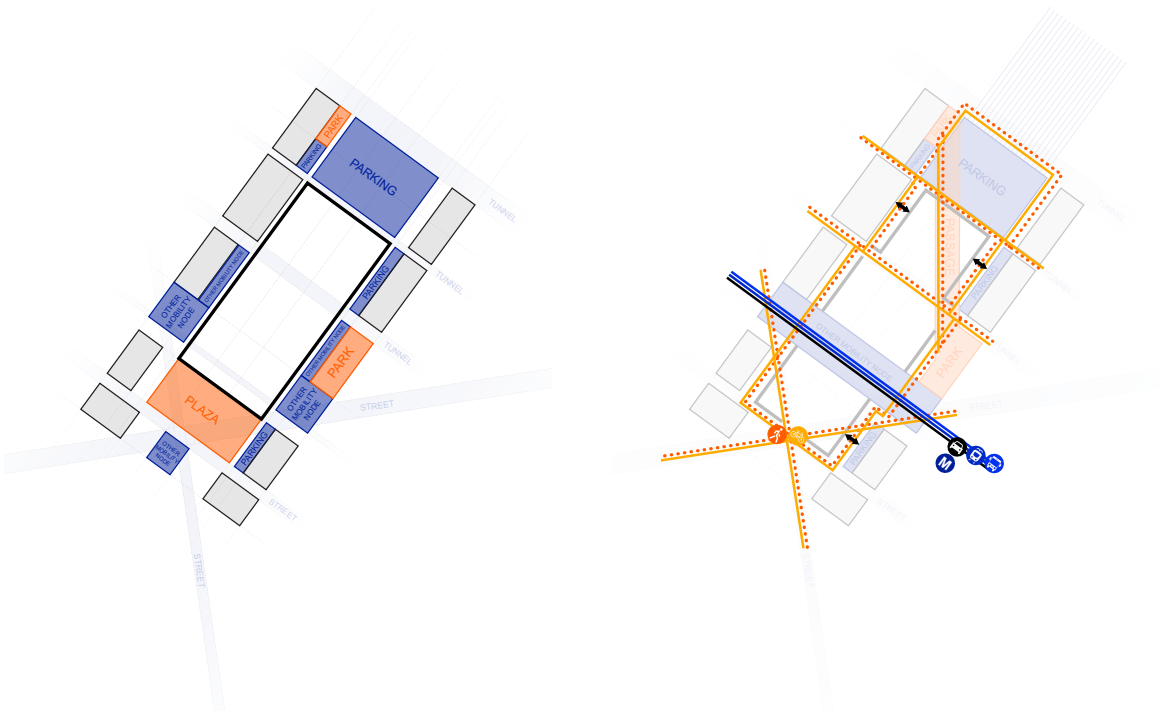
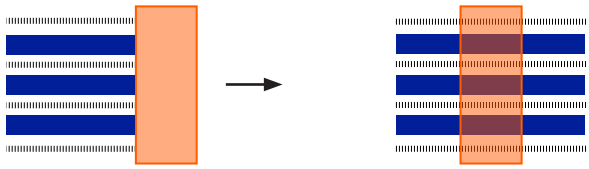



Figure 034 Existing site condition
Figure 035 Site proposal



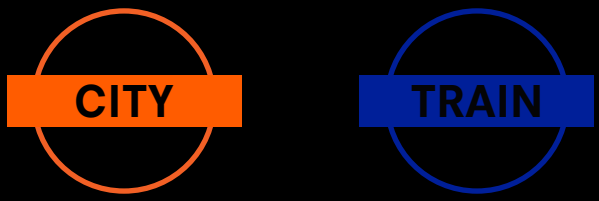
# 1.5 Proposal

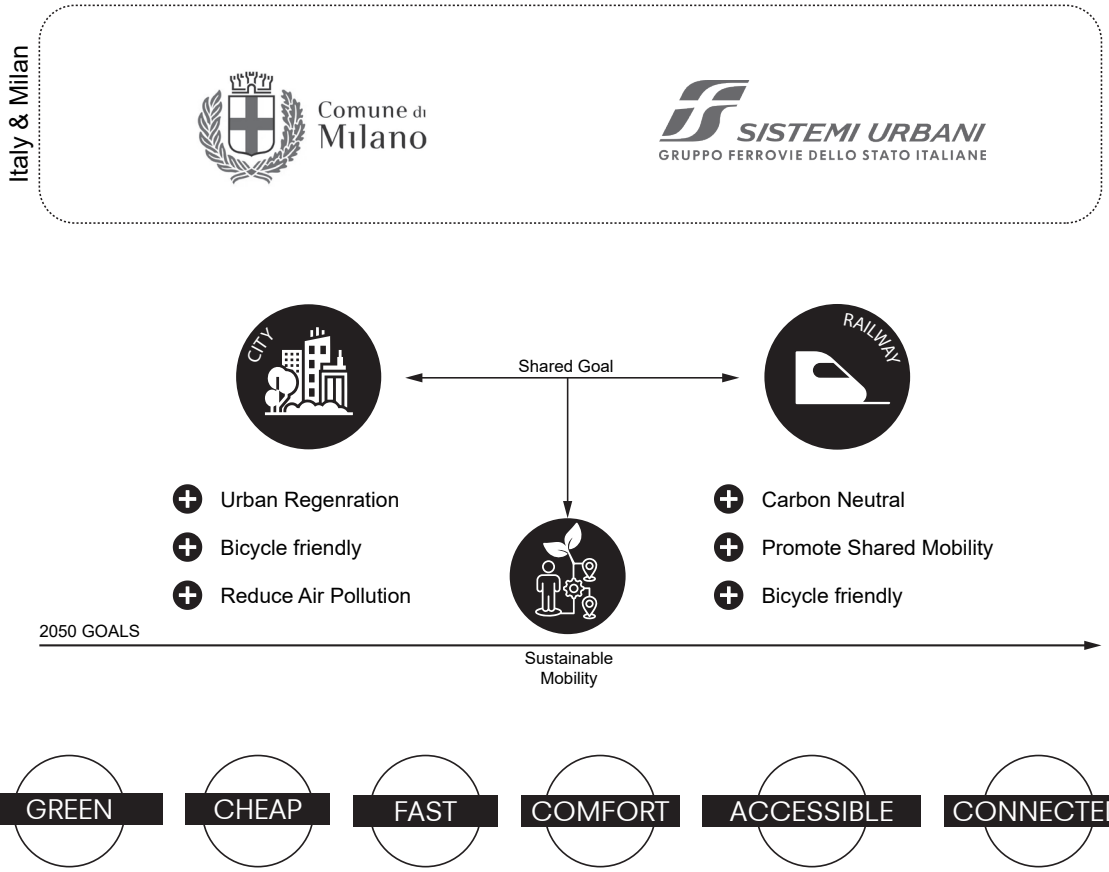
The current condition of the station offers limited connections for moving from one side of the building to the other. This lack of integration disrupts accessibility and flow across the site. To address this, the proposal seeks to combine transport connections, making navigation between different modes of transport easier and quicker.

In addition, improving walkability and bicycle connectivity across the site is a priority. This will be achieved by creating new pathways and reimagining underutilized public spaces, transforming them from transit-focused areas into vibrant, people-centered spaces. As part of the health group requirements, a new 'passage' will be introduced to better connect the two sides of the building. This addition will not only improve cross-site movement but also increase the availability of functional public spaces.




Figure 036 View indoor
Figure 037 View side exterior


CITY
TRAIN




# 02 Client

This project will involve key stakeholders, including both primary clients and users of the station. For the main clients, two critical entities will play a role: the Municipality of Milan and Ferrovie dello Stato (FS), the Italian railway company.

The Municipality of Milan, which also served as the client when the station was originally built, will represent the city's interests, focusing on the human and urban aspects of the project. Ferrovie dello Stato, responsible for Italy's railway network, will address the transportation and operational aspects of the station. Within FS, their urban development branch, FS Sistemi Urbani, will contribute to integrating railway infrastructure with urban planning.

Both stakeholders share a common vision of supporting sustainable transportation. However, sustainable mobility extends beyond merely reducing CO2 emissions from trains. It also involves creating a more affordable, comfortable, and efficient travel experience.
This vision shows the need to redefine what it means to move sustainably in the future, addressing both environmental impact and user experience.


How can we define
740 009



e sustainable mobility?



Figure 038 Bicycle new route plan from Milan municipality


CENTRAL




Figure 039 'Kilometer verde' project from Milan municipality


GRECO - BREDA
CENTRAL
LAMBRATE
PORTA ROMANA
ROGOREDO

- **50 % OF THE AREA RESERVED TO GREEN SPACES**
- **CONTRIBUTE TO IMPROVEMENT OF WELL-BEING FOR THE COMMUNITY OF THE NEIGHBORHOODS BORDERING THE RAILWAY YARDS**



**1** 0233 Scalo Farini Masterplan | Atelier Kempe Thill

atelierempethill.com



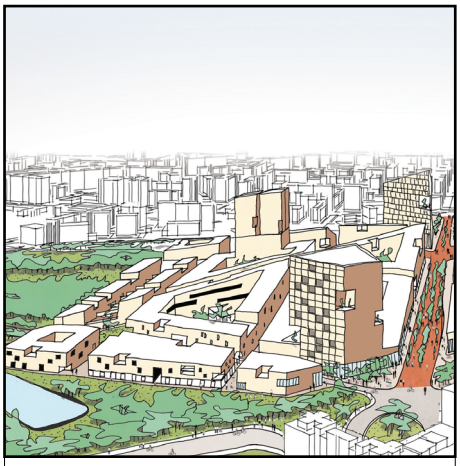
**2** Scali Farini

ww.oma.com



**3** Agenti Climatici - Laboratorio Permanente - Works

www.laboratoriopermanente.com



**4** Scali Milano - Catalysts for sustainable living

www.mecano.nl



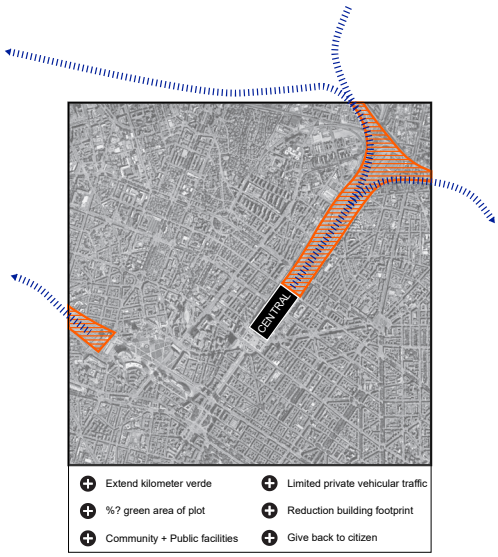




Figure 040 Extended bicycle new route plan - Proposal
Figure 041 Extended 'kilometer verde' project - Proposal

# 2.1 Milan's Municipality

The Municipality of Milan is currently seeking ambitious projects aimed at transforming the city's mobility and urban fabric. One major initiative involves promoting bicycle mobility by implementing a new network of bike paths across the city. Another project, started in 2017, seeks to revitalize abandoned railyards throughout Milan.
However, as of 2025, none of these projects have been fully realized, and Milan's Central Station and its surroundings remain excluded from these efforts.

The design briefs for these initiatives, such as the Scali Farini competition, emphasize the integration of at least 50% green space. While architects were tasked with reimagining the areas around the railyards, many projects have struggled to achieve significant integration between the yards and the broader urban architecture.

In the proposed redesign of Milan's Central Station, the aim is to extend the projects of Milan's municipality to include the station in its surroundings. This approach directly addresses my research question by bridging the gap between spaces designed for trains and those meant for humans. By creating better connections between the station's divided sides and transforming areas initially intended for train operations into more human-centered spaces, the design will harmonize urban and transit-oriented functions.

# 2.1 Italian's Railway



**The roots of sustainability in Italian rail transport: A journey from past to present**

Published november 4, 2024

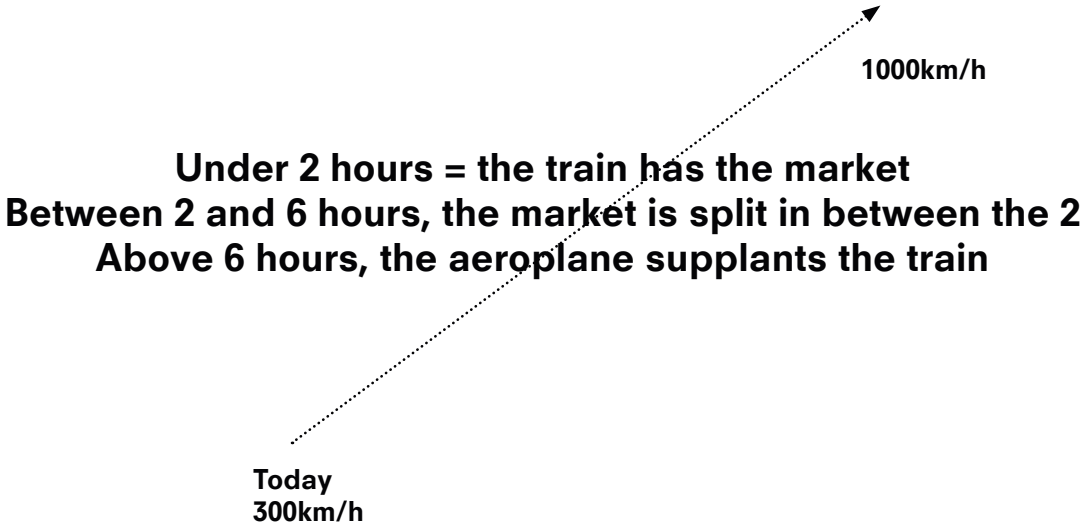
By **EU Reporter Correspondent**



**Alstom announces 63$ million investment to boost Italy's rail infrastructure and sustainability**

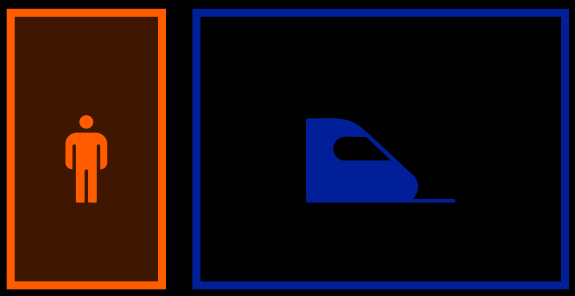
Published december 12, 2023

By **BEI and FS**




The main goal of the Italian Railways, Ferrovie dello Stato (FS), is to shift towards sustainable and "soft mobility" solutions while positioning train travel as the preferred alternative to domestic air travel.

Soft mobility emphasizes environmentally friendly, energy-efficient, and low-impact transportation methods, making trains a cornerstone of this vision. By improving the accessibility, efficiency, and comfort of train travel, FS aims to reduce dependency on private cars and short-haul flights, which contribute significantly to carbon emissions.



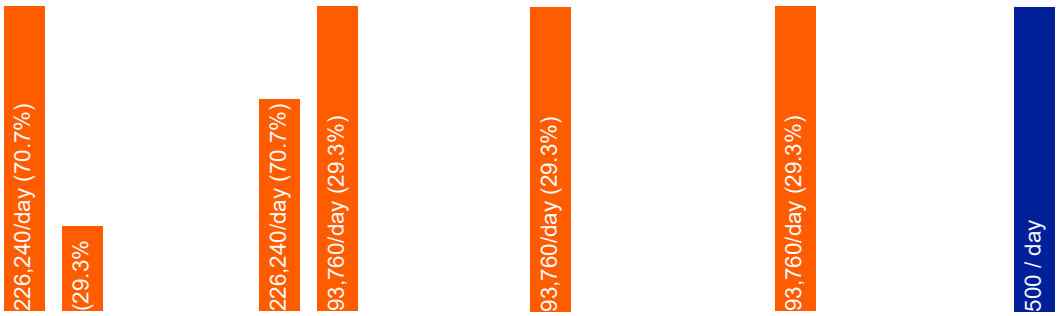
‘Sense of belonging’

‘Adapted platforms’

# 6.9 MILLION visitors

**71%** italians **29%** foreigners

**21%** occasional **79%** commuters






## 2.2 Users: People

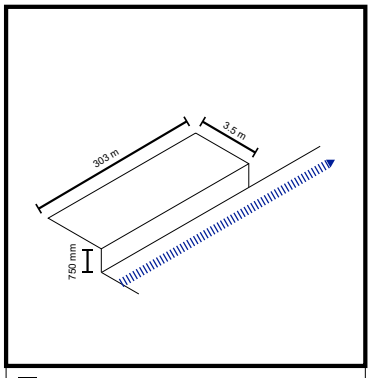
In this project, two distinct types of users are considered: humans and trains, each with differing needs and priorities. Humans seek a sense of belonging and comfort within the station, while trains require platforms that are well-adapted and efficiently designed for their operational needs.

Among the human users, we can further categorize them into passengers and visitors. Passengers can be divided into commuters - those who use the station regularly as part of their daily routine and occasional travelers, who interact with the station less frequently. Visitors, on the other hand, include individuals who come to the station for reasons beyond travel, such as meeting others, enjoying its amenities, or simply exploring.

Milan Central Station predominantly serves commuters and local residents, making it a vital hub for the city's daily life. This unique user dynamic highlights the importance of designing a station that not only meets the functional demands of trains but also fosters a welcoming and inclusive environment for the people who use it most. By addressing these varied needs, the station can become a space that balances operational efficiency with human-centered design.

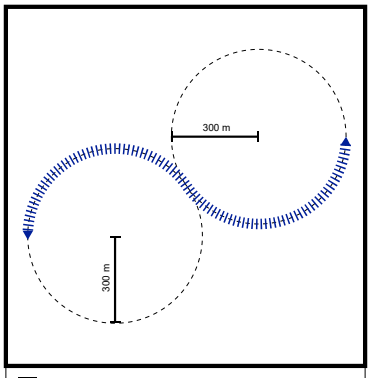


Figure 042 Split station



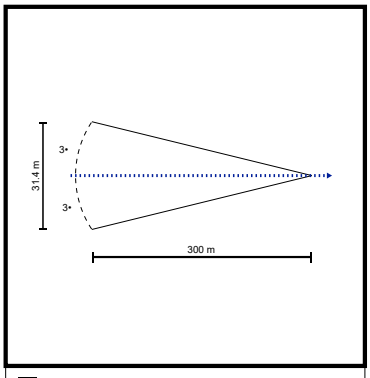

**1** Length | width | height

- Typical lauding gauge's dimensions across Europe
- Width of platforms can differ




**2** Curvature

- Maximum diameter curvature for 202meters high-speed train

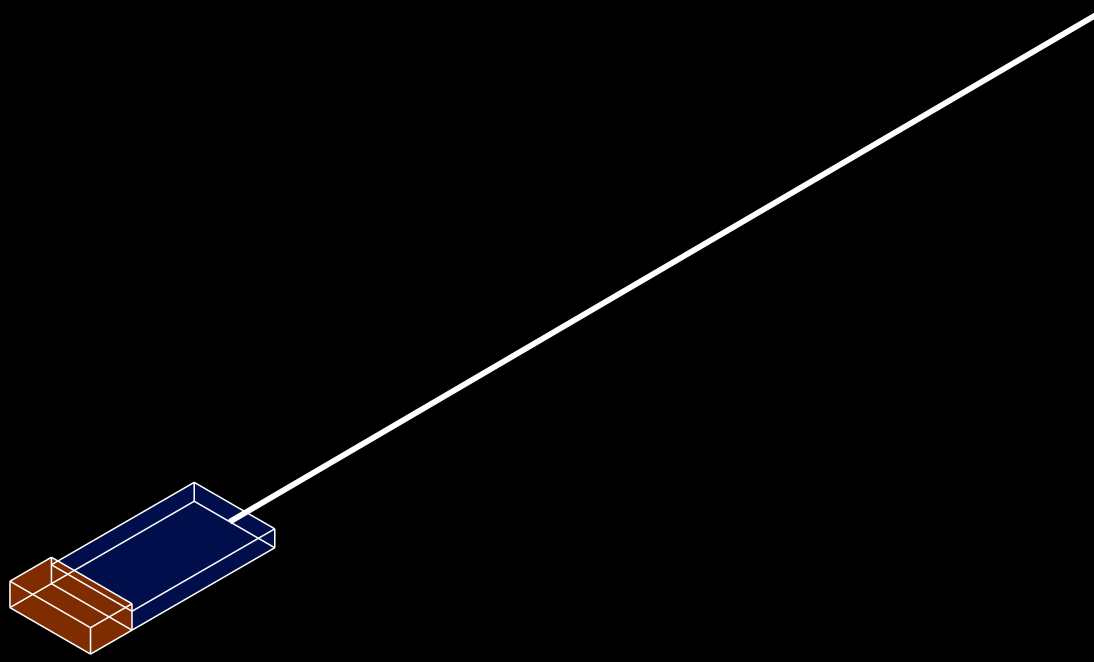


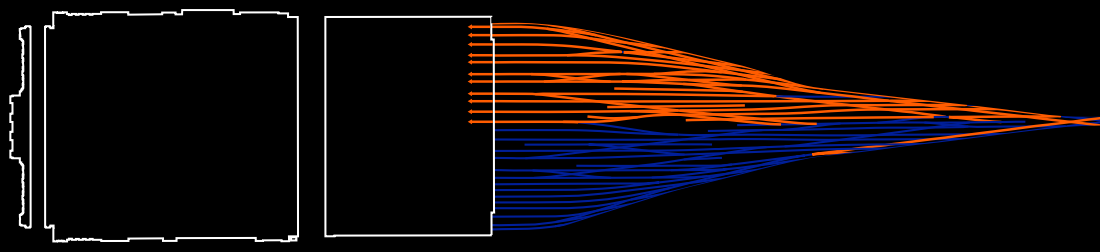

**3** Up and down

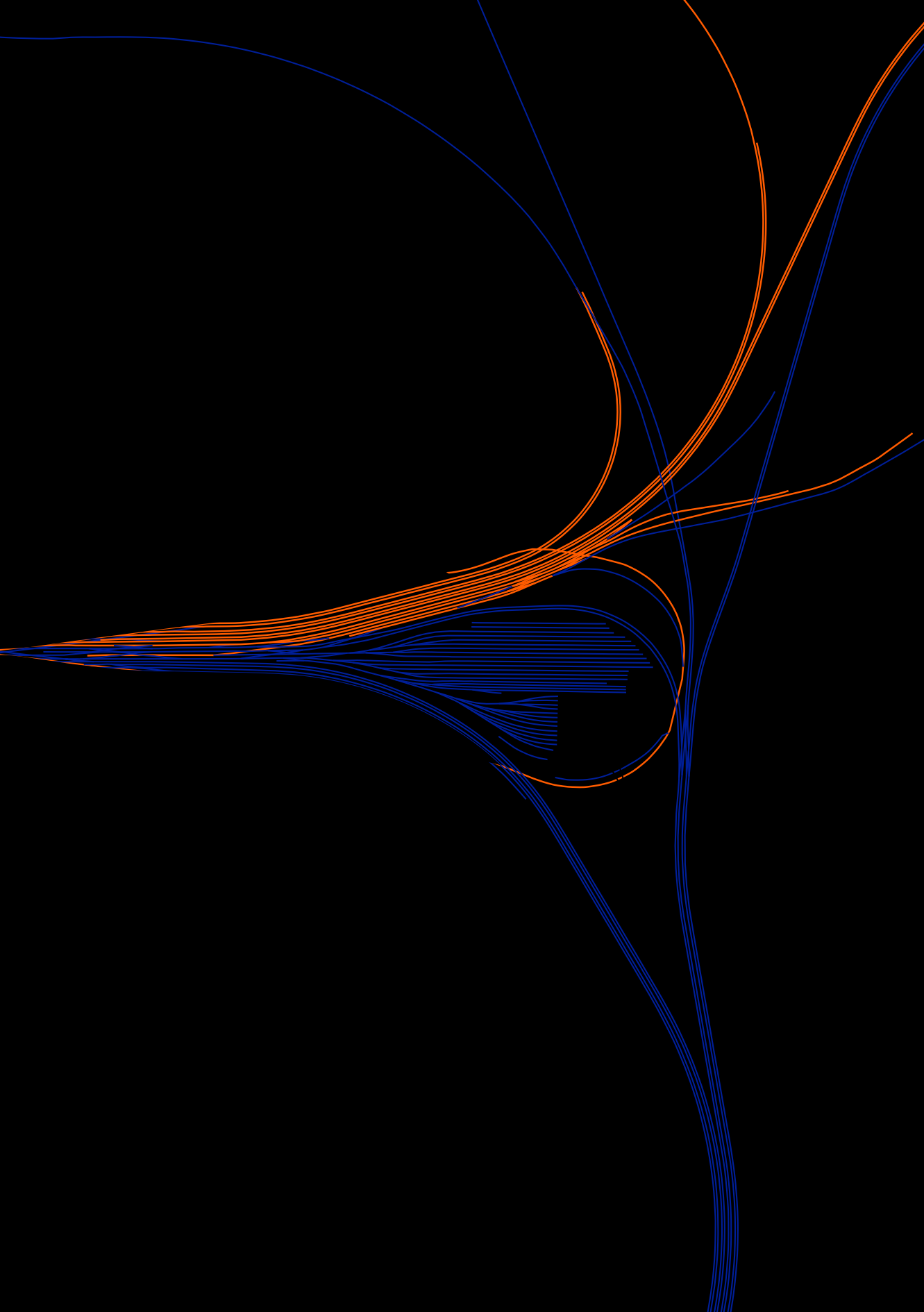
- Maximum up and down hill degree for a 202 meter long high-speed train

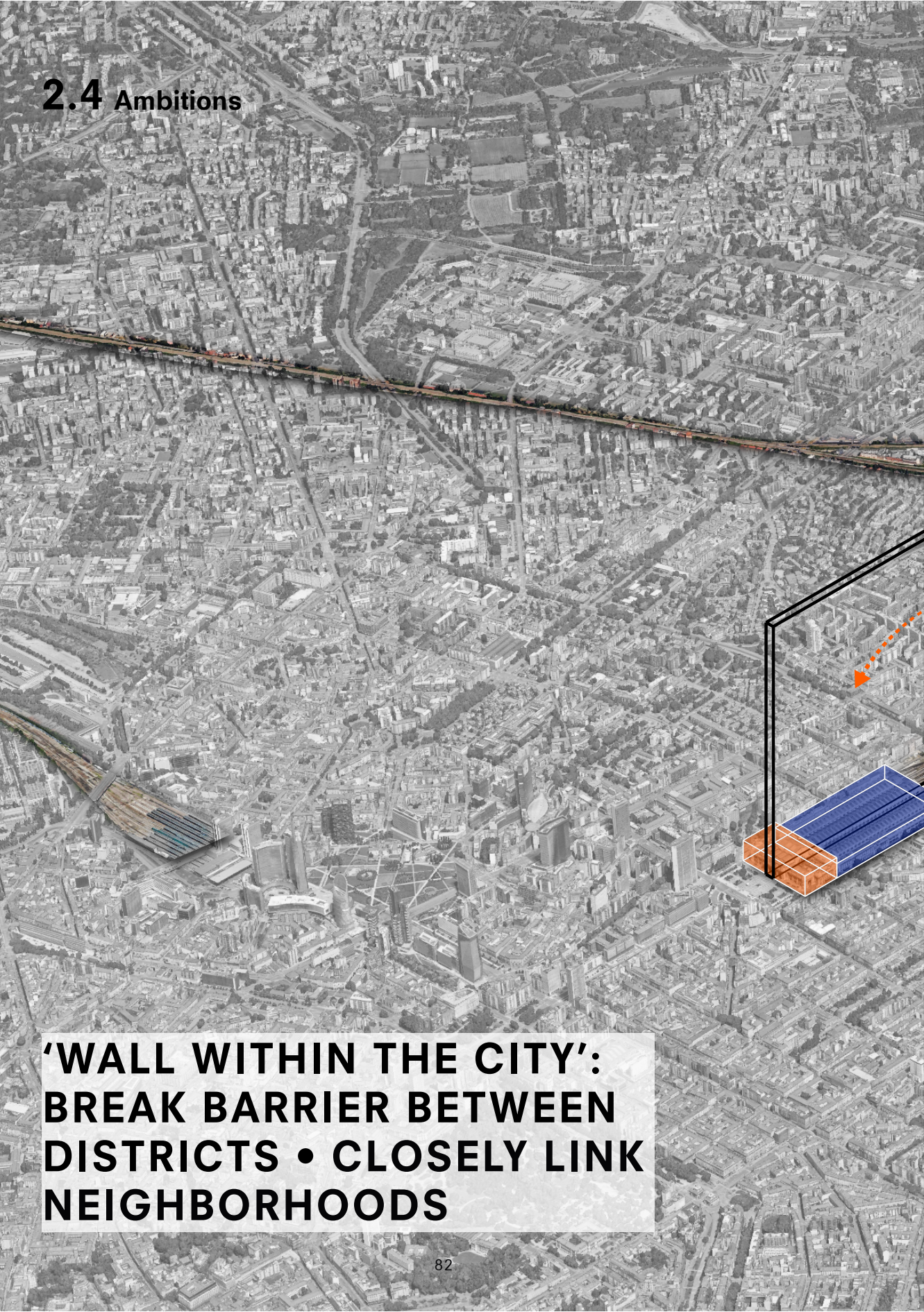
# 2.3 Users: Trains

For trains, platforms must meet specific requirements of dimensions, curvature, and height to function effectively. Currently, six tracks are allocated for high-speed trains, with the remainder serving regional trains. To support the shift from domestic air travel to train travel, the station will reconfigure to allocate 12 tracks each to high-speed and regional trains, achieving a balanced distribution. According to dimension and conformity studies, this reorganization could lead to the introduction of a split station design, where platforms are distributed across different levels. This approach would allow for wider platforms and the integration of additional programs within those.



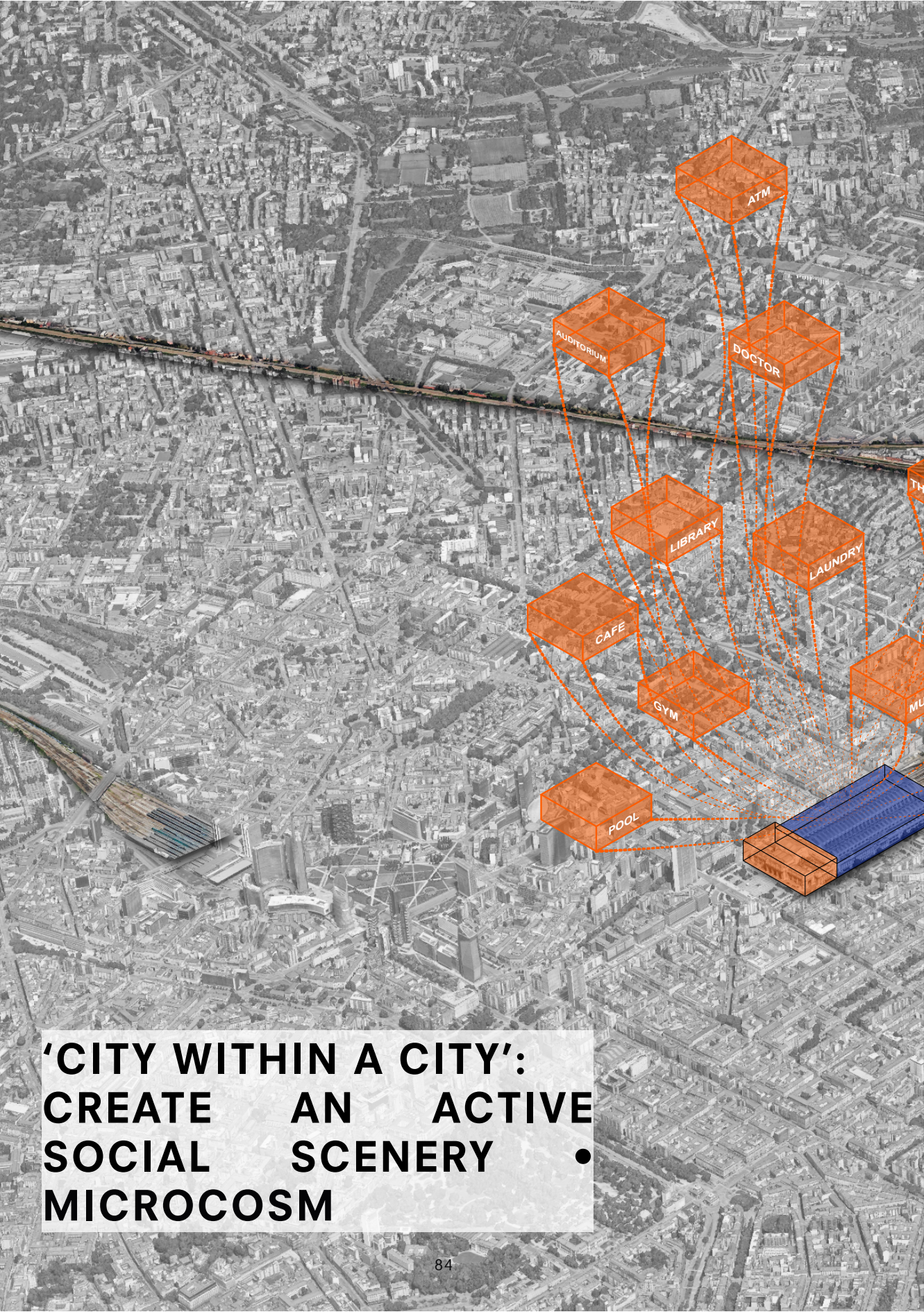






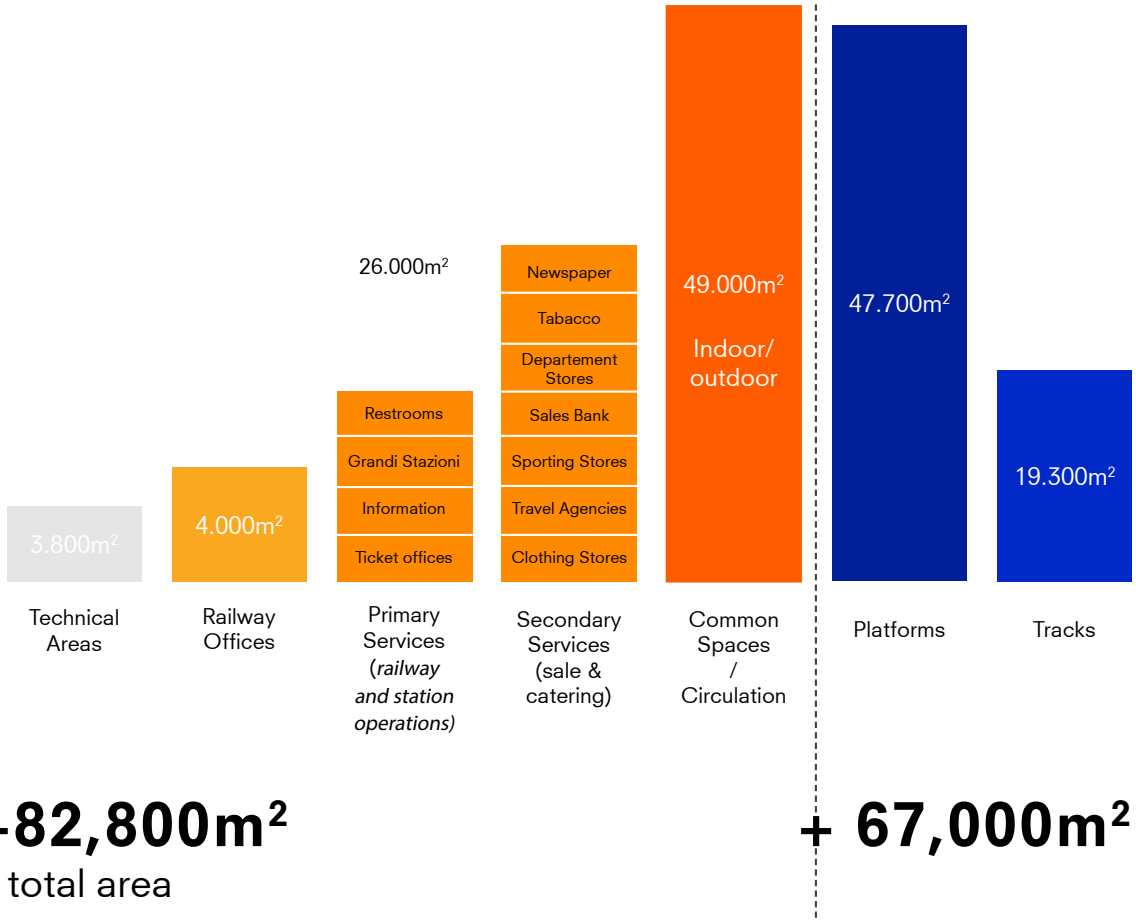
# ‘WALL WITHIN THE CITY’: BREAK BARRIER BETWEEN DISTRICTS • CLOSELY LINK NEIGHBORHOODS






# ‘CITY WITHIN A CITY’: CREATE AN ACTIVE SOCIAL SCENERY • MICROCOSM


CINEMA
OFFICE
FLORIST




**+82,800m²**
total area

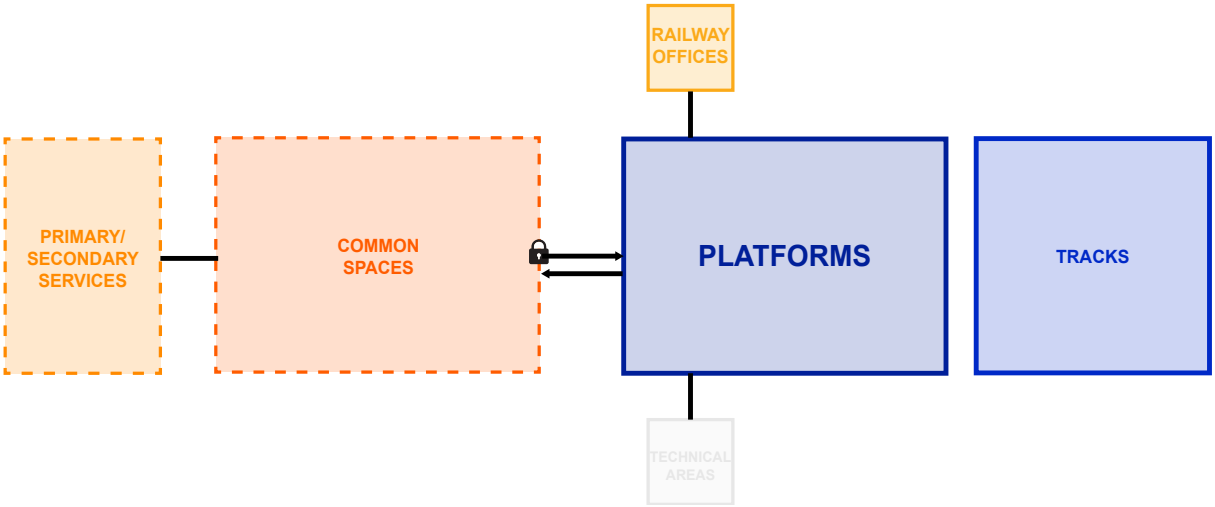
**+ 67,000m²**

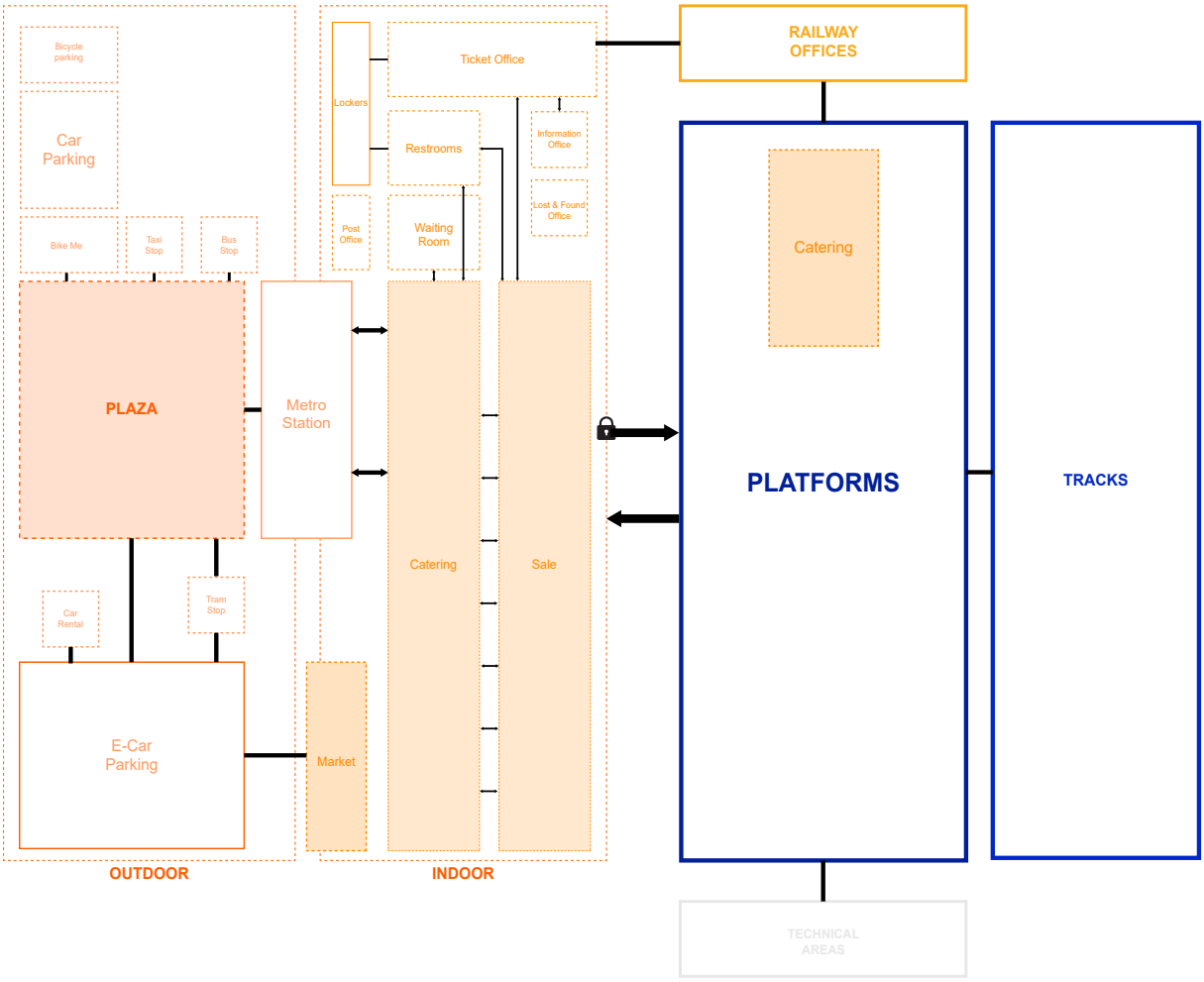
# 03 Program

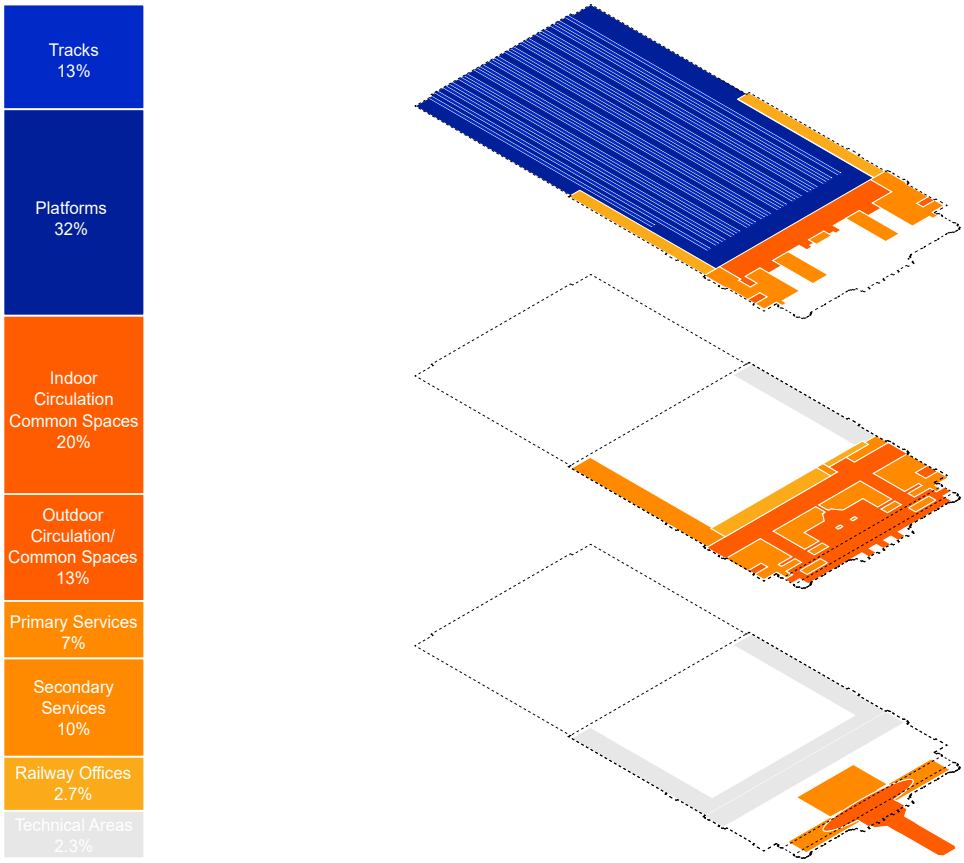
The existing Central Station covers a total area of 149,000 sqm, with the largest portion dedicated to the platforms and indoor/outdoor circulation and common spaces. In fact, the majority of the station's area is devoted to transit and circulation functions.

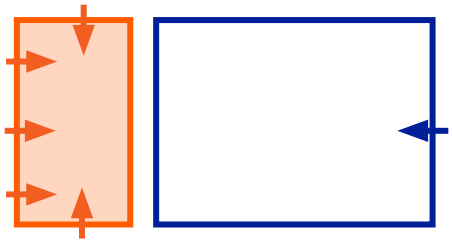
Currently, the platforms have restricted access, with a single entrance for passengers and a separate exit. The architecture distinctly separates the indoor and outdoor programs.

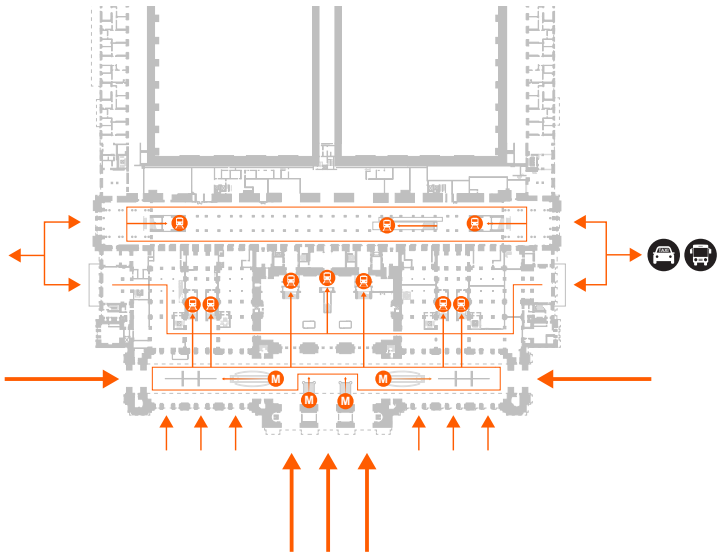
A plaza in front of the building helps channel circulation towards other public transportation stations. Commercial spaces are spread throughout the station, including within the platforms. The station appears to prioritize commercial use, offering a wide variety of retail and services to passengers and visitors before their travels.


RAILWAY OFFICES
PRIMARY/ SECONDARY SERVICES
COMMON SPACES
PLATFORMS
TRACKS
TECHNICAL AREAS

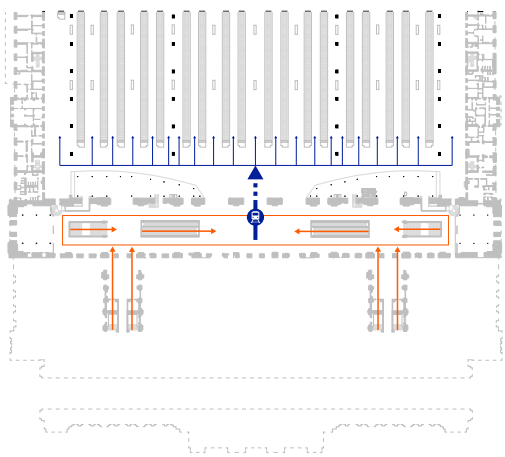

Bicycle parking
Car Parking
Bike Me
Taxi Stop
Bus Stop
PLAZA
Metro Station
Car Rental
Tram Stop
E-Car Parking
Market
OUTDOOR
Lockers
Ticket Office
Restrooms
Information Office
Post Office
Waiting Room
Lost & Found Office
Catering
Sale
INDOOR
RAILWAY OFFICES
Catering
PLATFORMS
TRACKS
TECHNICAL AREAS


Tracks
13%
Platforms
32%
Indoor
Circulation
Common Spaces
20%
Outdoor
Circulation/
Common Spaces
13%
Primary Services
7%
Secondary
Services
10%
Railway Offices
2.7%
Technical Areas
2.3%





Ground Floor



1st Floor



Roma Termini



Montparnasse



London Bridge



Afragola



Berlin



London Bridge

Figure 0? Terminal/through Station

# 3.1 Case Studies

The existing Central Station covers a total area of 149,000 sqm, with the largest portion dedicated to the platforms and indoor/outdoor circulation and common spaces. In fact, the majority of the station's area is devoted to transit and circulation functions.

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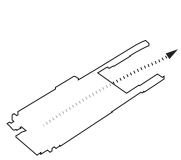
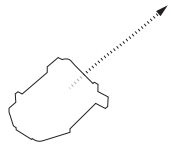
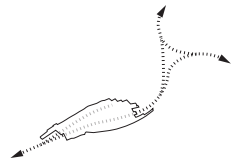


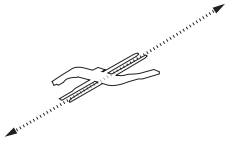
Roma Termini



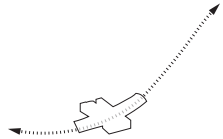
Montparnasse



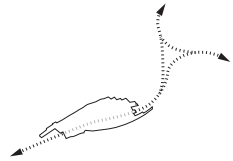
London Bridge



Afragola



Berlin



London Bridge




Roma Termini




Montparnasse




London Bridge



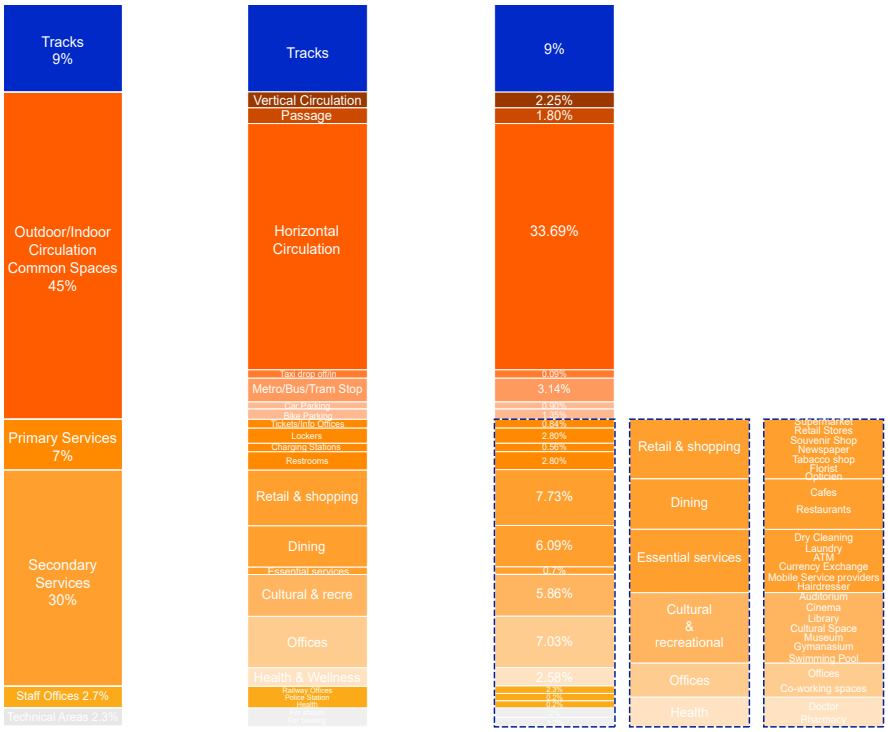

Afragola




Berlin




London Bridge



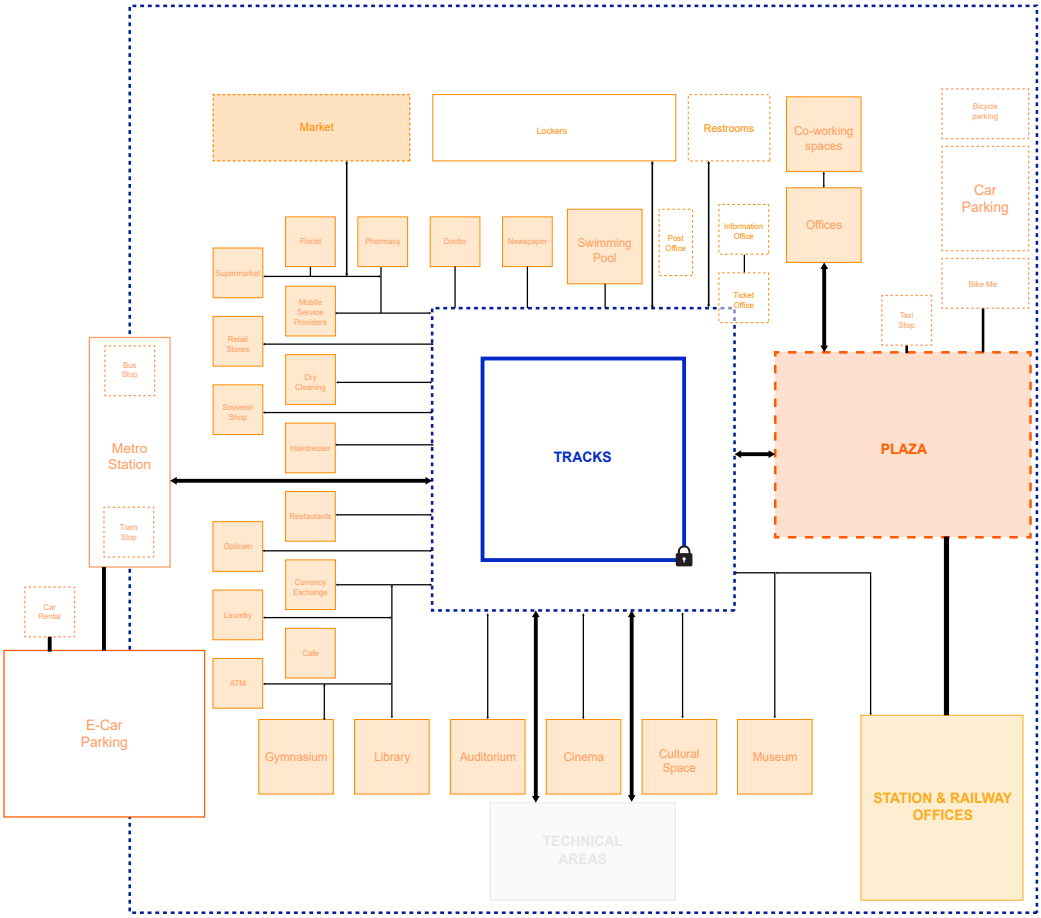

# 3.3 Proposal

The proposed program spans a total of 151.900m², which is 2.100m² larger than the existing station. However, its distribution will be quite different. A significant change is the reimagining of the platforms, which, rather than being a distinct, isolated area, are now integrated throughout the station. This approach aligns with the research, where platforms exist both nowhere and everywhere at the same time.

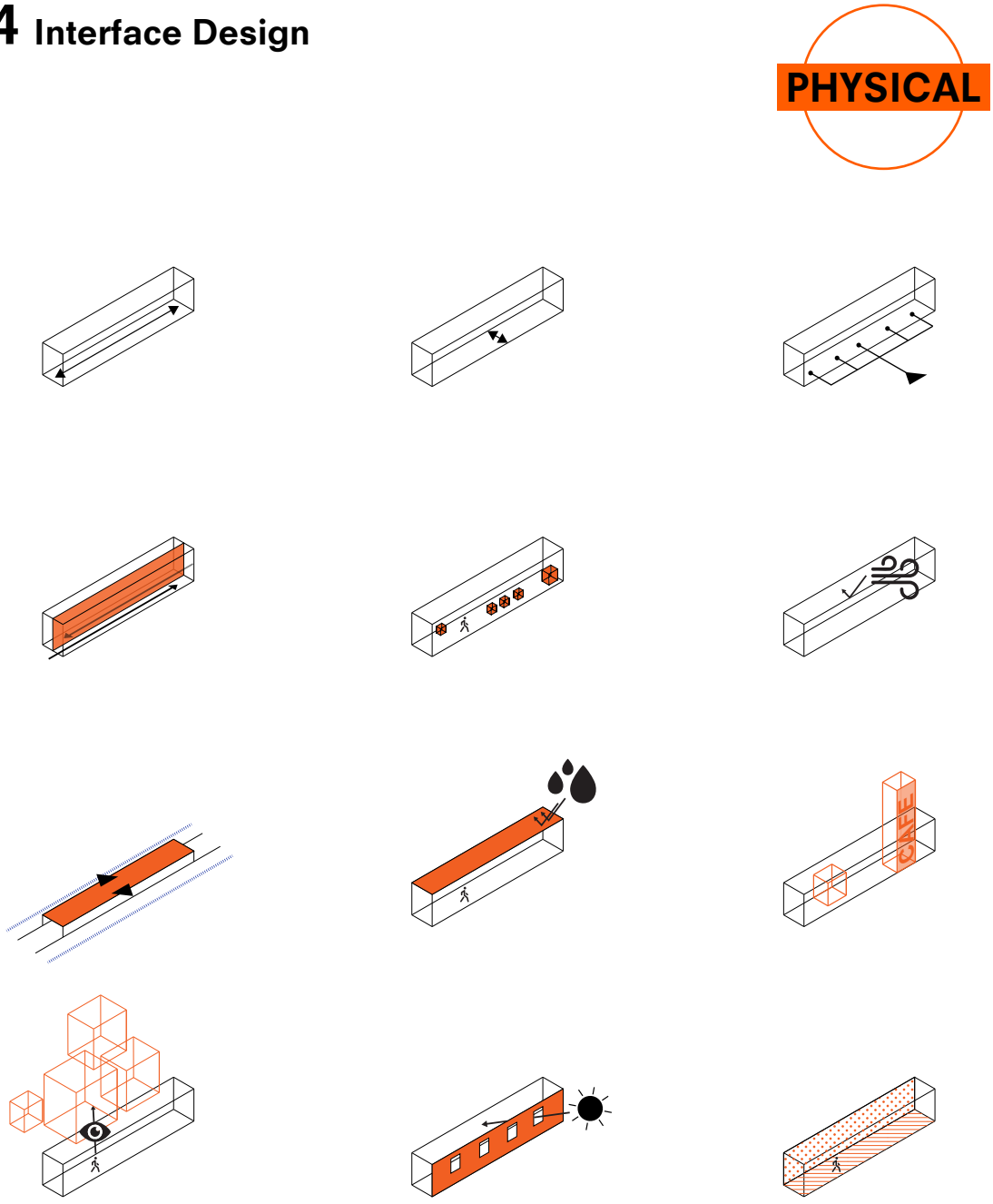
The concept of a "city within a city" is embodied by the inclusion of programs that reflect the daily and weekly needs of urban life. These are integrated into the station as part of its ‘second services’ and include:

- Retail & Shopping 6.600m²
- Dining 5.200m²
- Essential Services 600m²
- Cultural & Recreational 5.000m²
- Offices 6.000m²
- Health 2.200m²

These services, many of which already exist in the current station, will be dispersed throughout the platforms, providing multiple access points and transforming the experience of ‘waiting’. Instead of simply waiting, passengers will engage with their time in various ways, making the station a dynamic, multifunctional space.


Market
Lockers
Restrooms
Co-working spaces
Bicycle parking
Car Parking
Florist
Pharmacy
Doctor
Newspaper
Swimming Pool
Post Office
Information Office
Offices
Supermarket
Mobile Service Providers
Ticket Office
Bike Me
Taxi Stop
Retail Stores
Bus Stop
Dry Cleaning
Souvenir Shop
Metro Station
TRACKS
PLAZA
Hairdresser
Restaurants
Tram Stop
Opticien
Car Rental
Currency Exchange
Laundry
Cafe
ATM
E-Car Parking
Gymnasium
Library
Auditorium
Cinema
Cultural Space
Museum
STATION & RAILWAY OFFICES
TECHNICAL AREAS

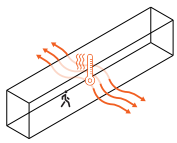
# 3.4 Interface Design

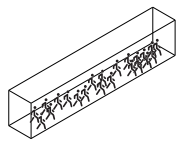


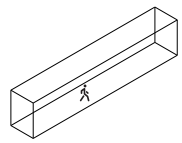

The design of a successful platform involves understanding both physical and social aspects. Physical aspects can be directly controlled through design decisions, while social factors, such as crowd behaviour and noise, are influenced indirectly. The key is to create a platform that balances these elements, ensuring functionality and comfort. These aspects can be categorized into physical elements, social dynamics, and scale considerations. By thoughtfully addressing these, an architect can design a space that enhances user experience while indirectly influencing social behaviour. The challenge lies in understanding what can be directly controlled through design and what outcomes it will produce.

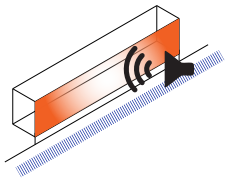


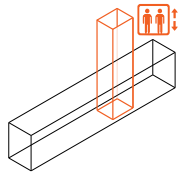
Figure 043 Existing Milan's central station platform

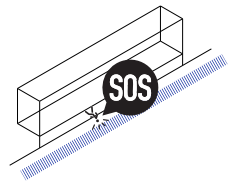


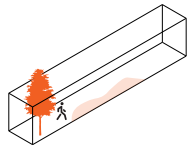






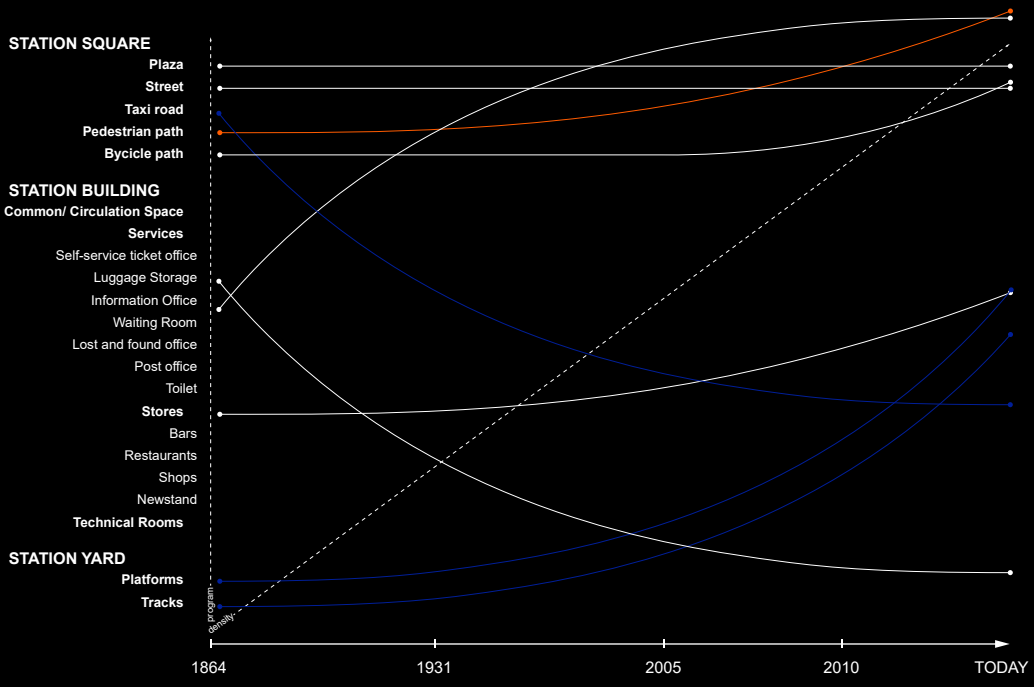




SOCIAL

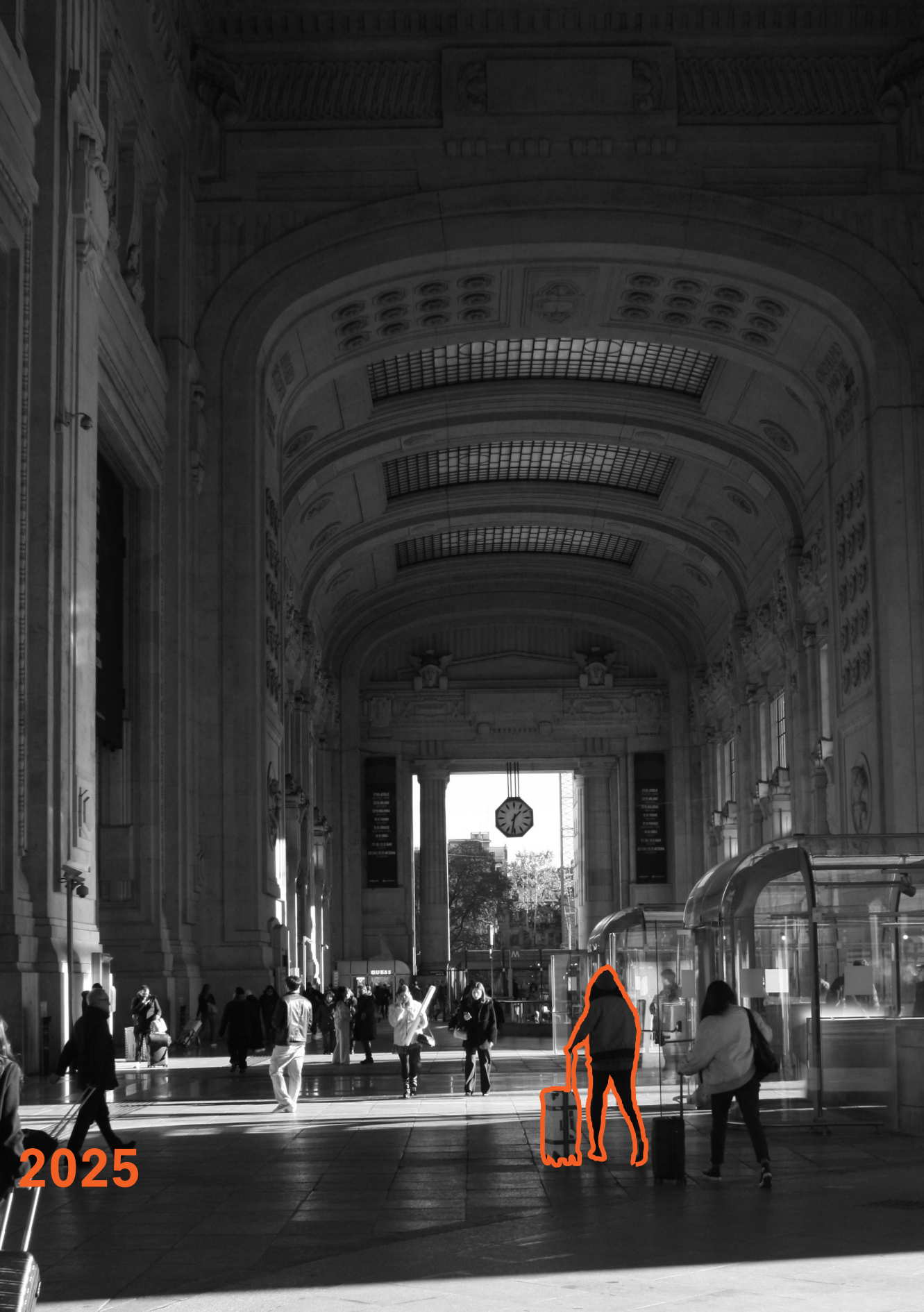
FORM FOLLOW USER ?


STATION SQUARE
Plaza
Street
Taxi road
Pedestrian path
Bycicle path
STATION BUILDING
Common/ Circulation Space
Services
Self-service ticket office
Luggage Storage
Information Office
Waiting Room
Lost and found office
Post office
Toilet
Stores
Bars
Restaurants
Shops
Newstand
Technical Rooms
STATION YARD
Platforms
Tracks
program density
1864
1931
2005
2010
TODAY




1931

Figure 046 Milan's central station car drop off 1940
Figure 047 Milan's central station pedestrian entrance 2024




2025

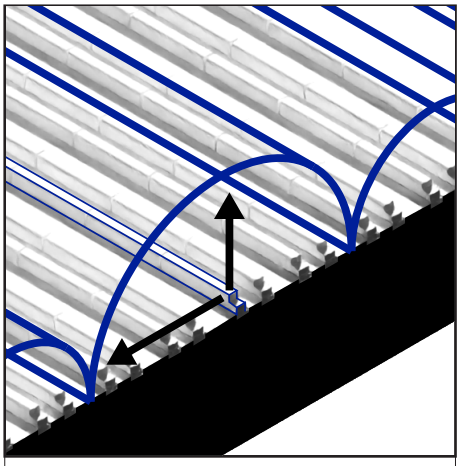




Figure 044 Elizabeth line metro station in London metro station
Figure 045 Milan's central station

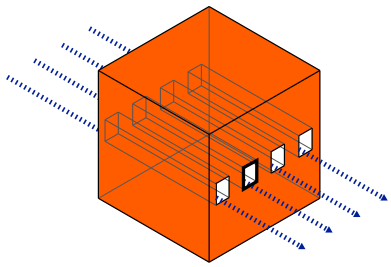
## 3.5 Form follows user

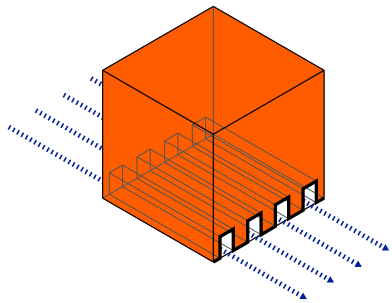
While studying the architectural language of Milan Central Station, both in the passenger building and the train shed, one question arises: Does form follow the user? In this context, it asks whether the architecture, particularly the building, should respond to the scale and form of the train, which is a key element of the station. In Milan Central, for example, the roof of the train shed does not align with the shape of the train, while in some metro stations, the architecture tends to follow the form of the subway trains. To explore this, I researched by design, drawing various options for how the passenger building could connect, meet, or intersect with the train shed. This research is critical to my thesis, as it addresses the challenge of designing architecture that accommodates two distinct types of users: passengers and trains.

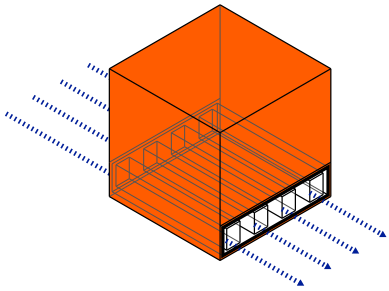


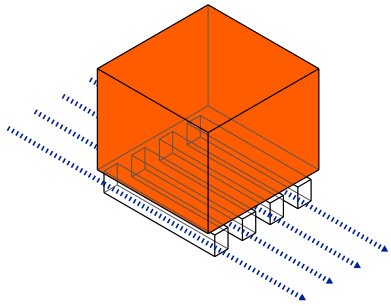
3 Milan Central Station

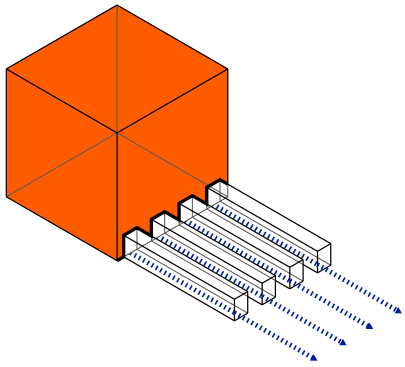
- Train shed does not follow train shape
- Train shed 10 meters high

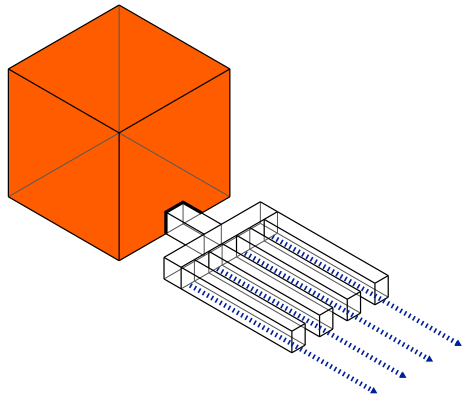




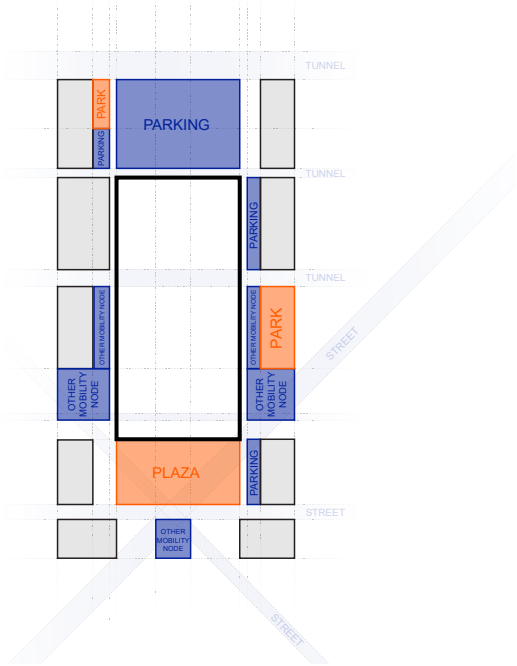




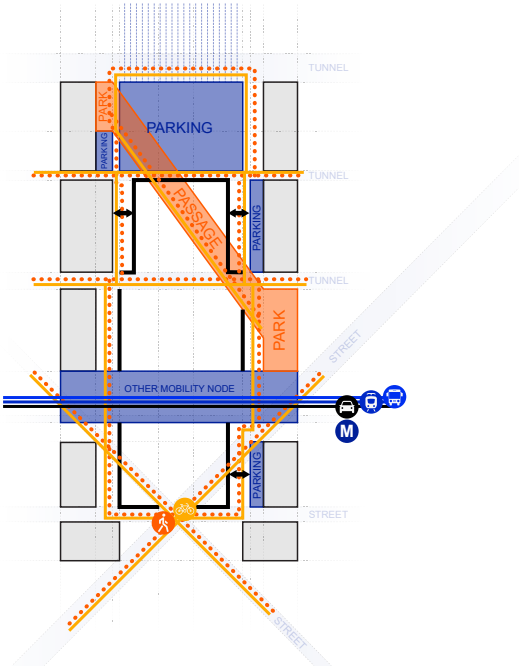




# 04 Now & Then




2025

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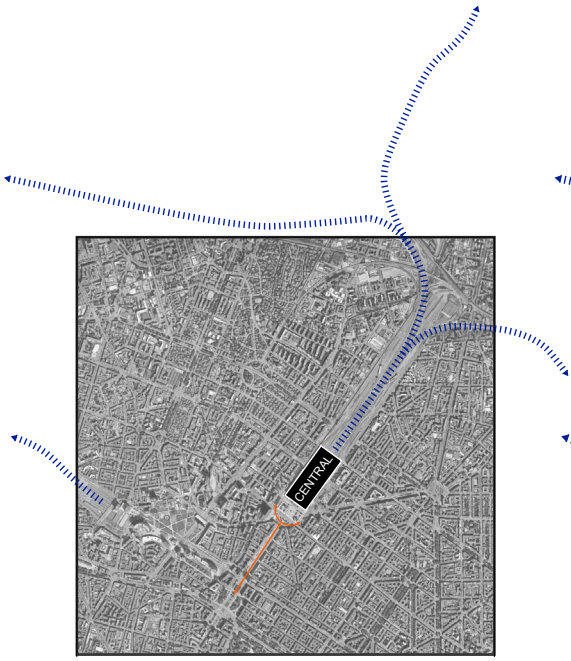


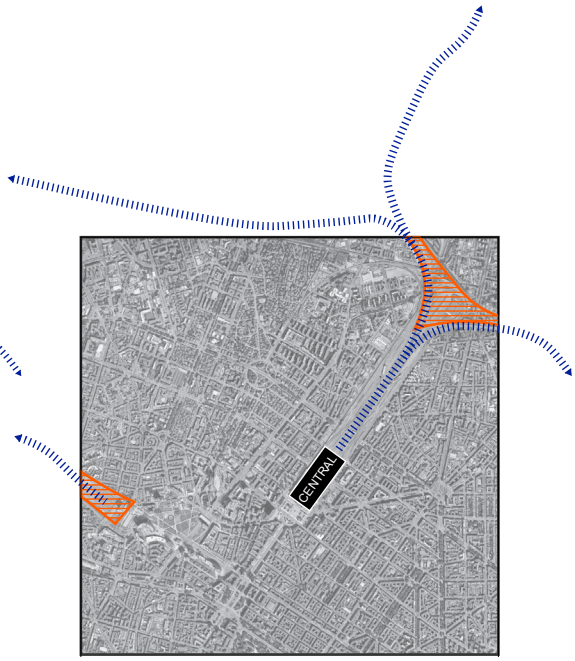


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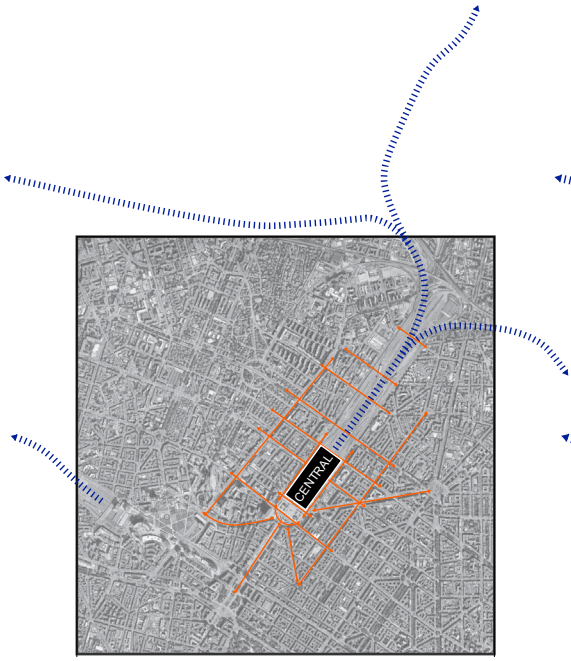


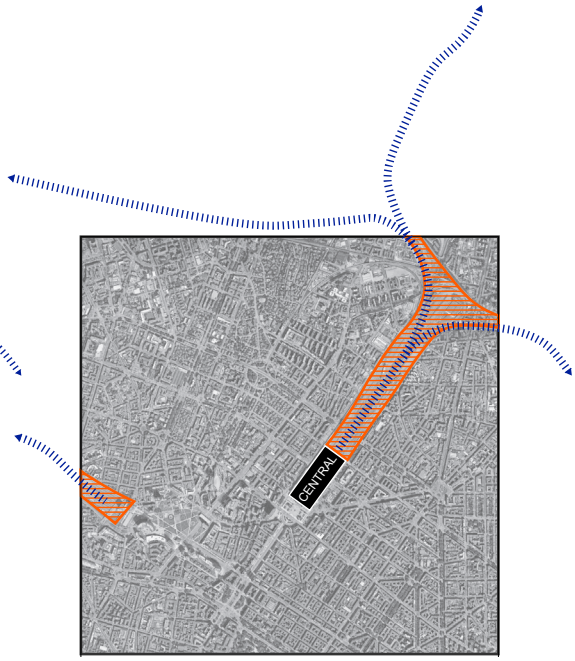


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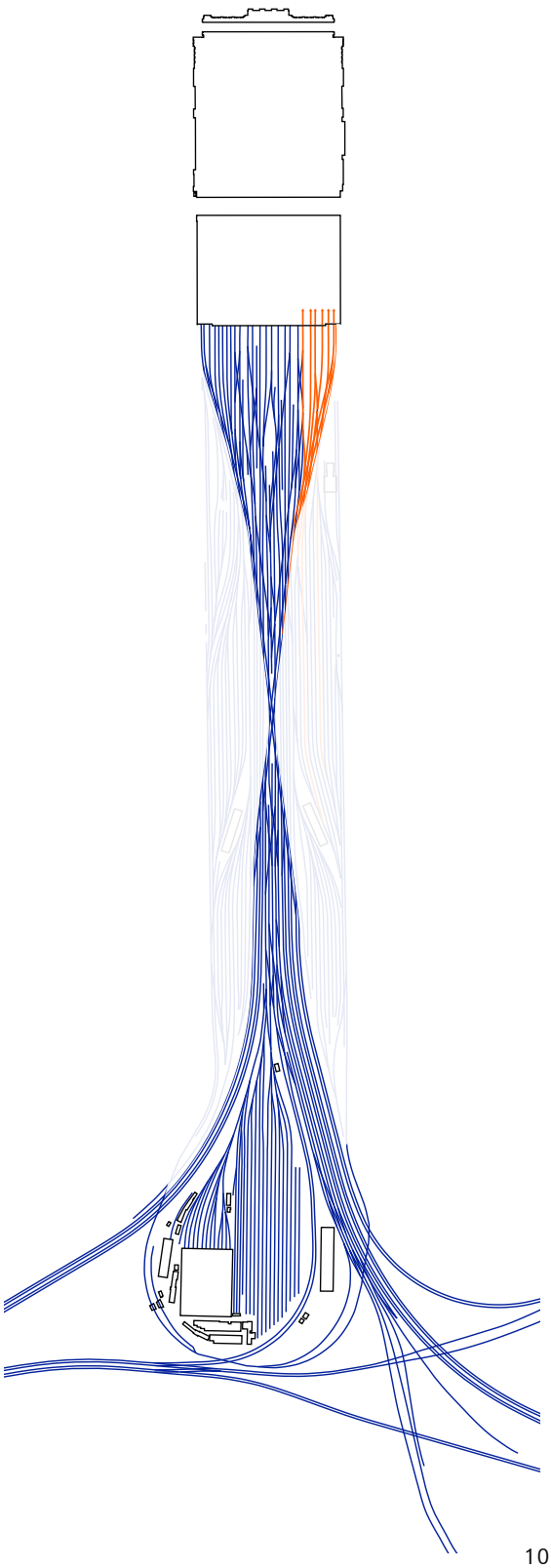

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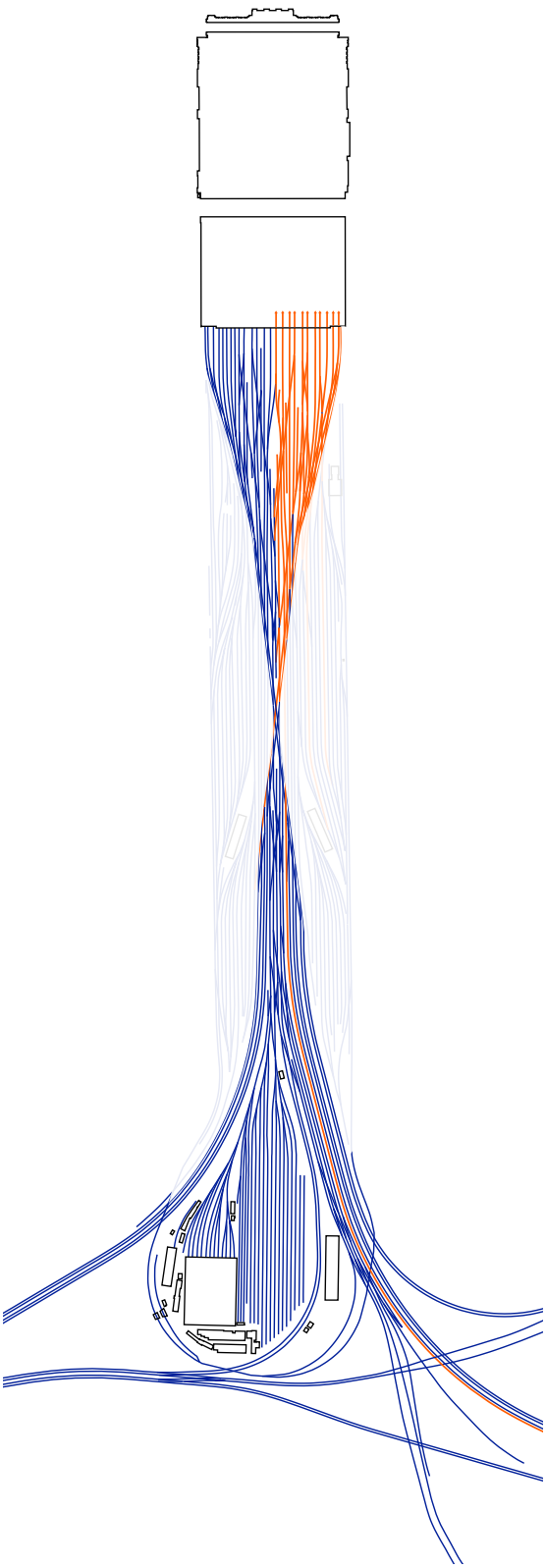
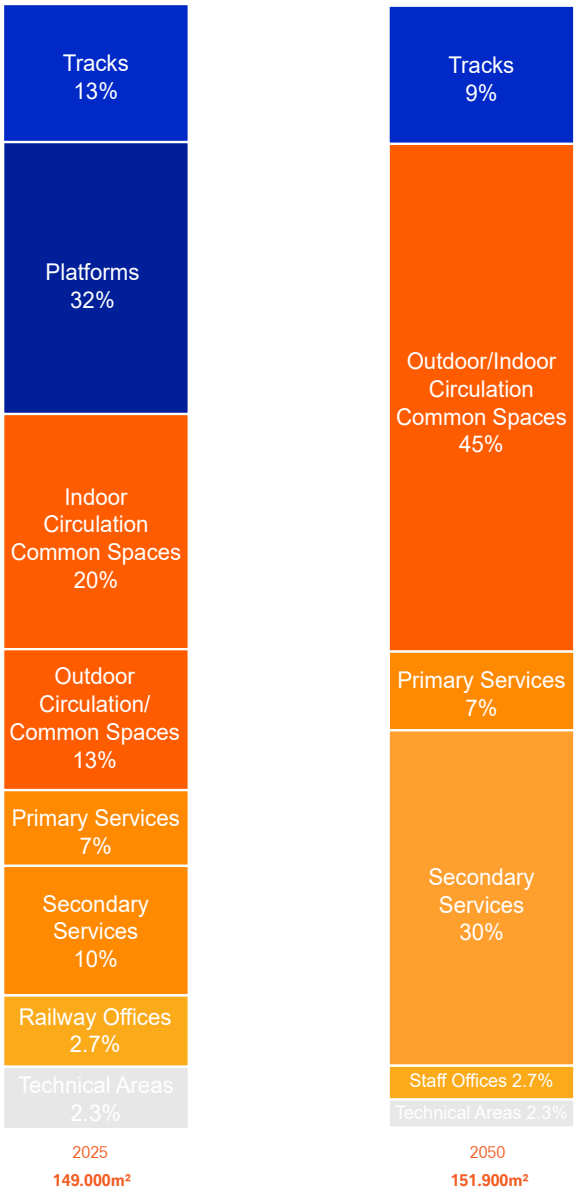
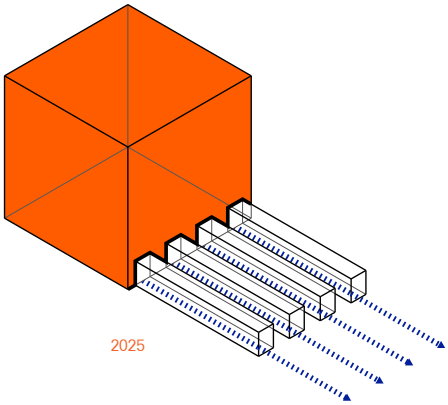



Tracks
13%
Platforms
32%
Indoor
Circulation
Common Spaces
20%
Outdoor
Circulation/
Common Spaces
13%
Primary Services
7%
Secondary
Services
10%
Railway Offices
2.7%
Technical Areas
2.3%
2025
149.000m²
Tracks
9%
Outdoor/Indoor
Circulation
Common Spaces
45%
Primary Services
7%
Secondary
Services
30%
Staff Offices 2.7%
Technical Areas 2.3%
2050
151.900m²



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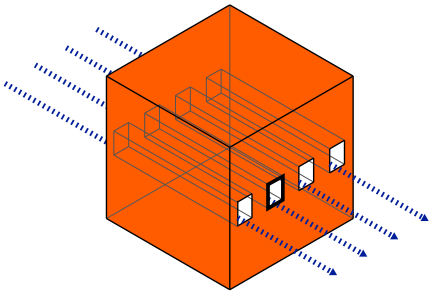

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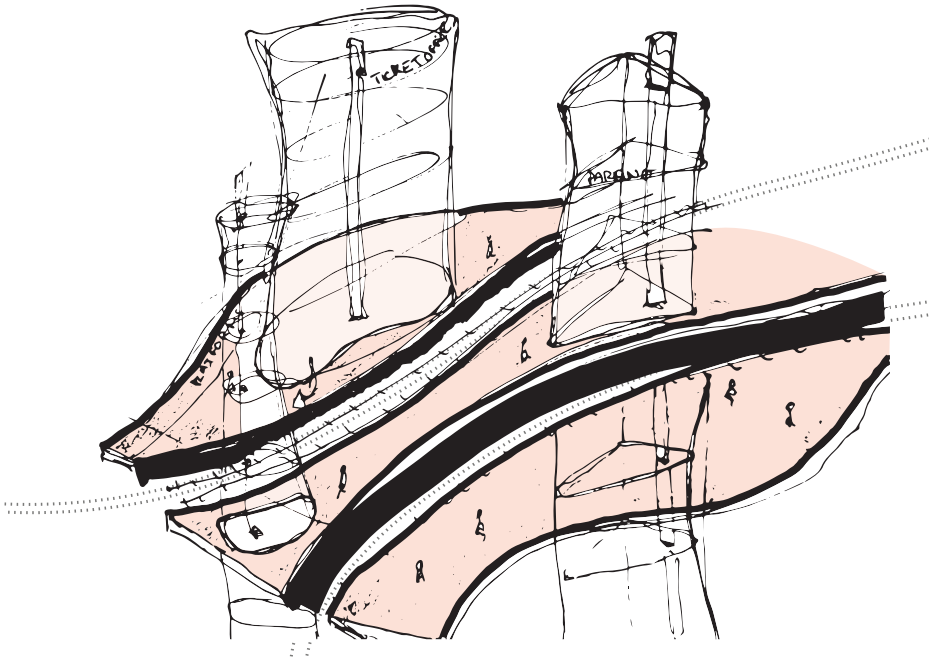
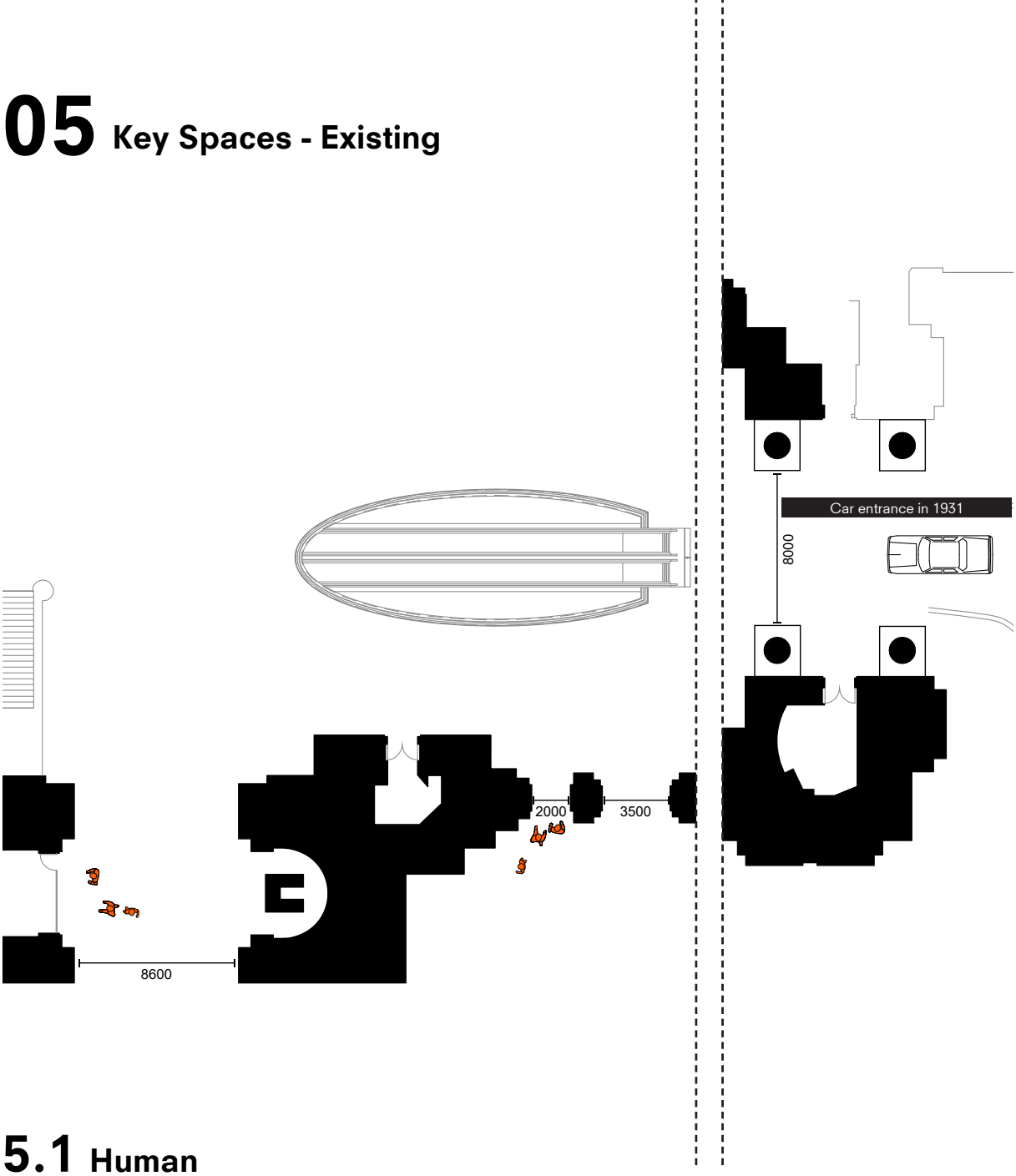
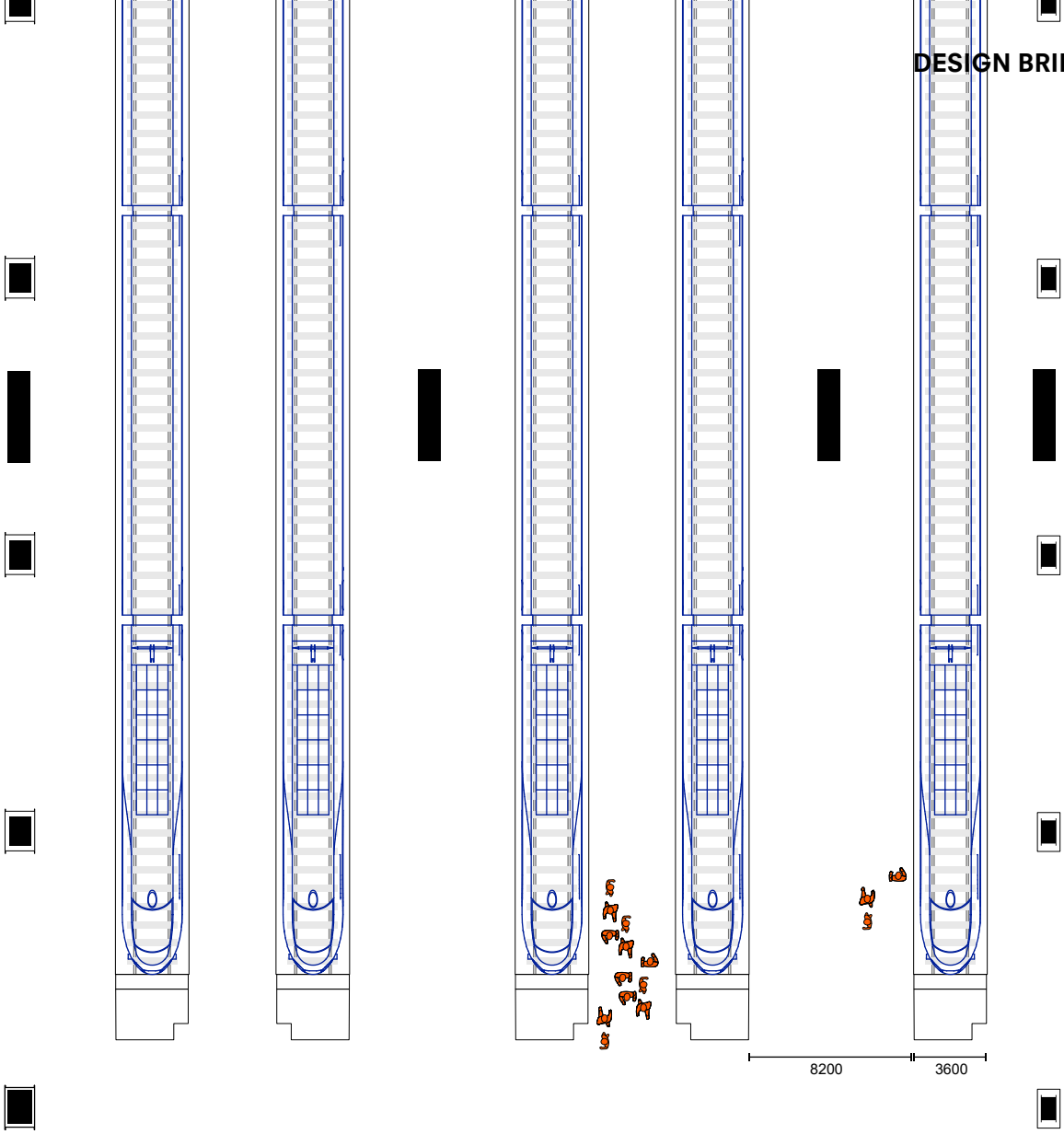


# 05 Key Spaces - Existing




## 5.1 Human

Milan Central Station has multiple entrances at the front of the building, designed to accommodate the flow of passengers. These entrances vary significantly in size, with widths ranging from 8 meters to 2 meters. Notably, the two entrances on either side of the building were originally intended as driveways for cars, allowing vehicles to access the station directly. However, with the shift to pedestrian-only use, these former car entrances have been repurposed as pathways for human movement. The imposing scale and varying dimensions of the entrances reflect a deliberate design choice, not only to manage the high volume of passengers and ensure smooth circulation but also to echo the architectural values of the era in which the station was built, marked by the monumental aesthetics of Italy's Fascist regime.




# 5.2 Train

The train enters the station through the train shed and its designated tracks, which function as the "entrance doors" for the train. The loading gauge, precisely 3600 mm wide, perfectly matches the train's dimensions. In contrast, entrances for humans are deliberately much larger than the human body to allow for greater comfort and flow.

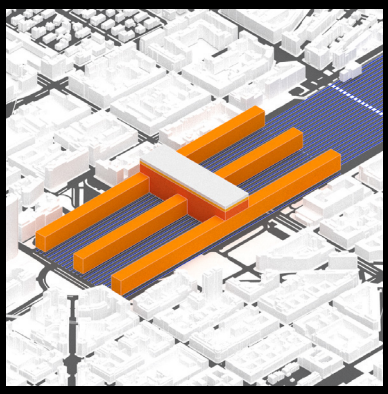
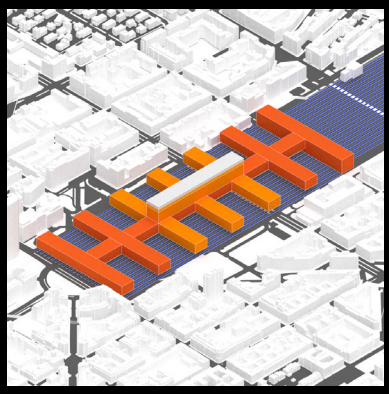
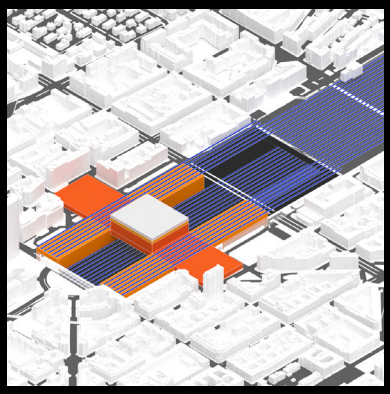
# CONCLUSION




The total area for the project is 118,700 m². Through research and analysis of the site, clients, and program, massing models have been developed to align with the project's goals and ambitions.

The massing strategy for the site integrates aspects of a through station within a terminal station, bringing together various modes of transport and creating a more compact station where all programs are in close proximity to each other. For the program, the massing reflects the concept of a "city within a city," with different functions scattered across the site, mimicking a small urban fabric.

Over the next few months, these nine massing models will be refined, building upon previous research to shape the final design.

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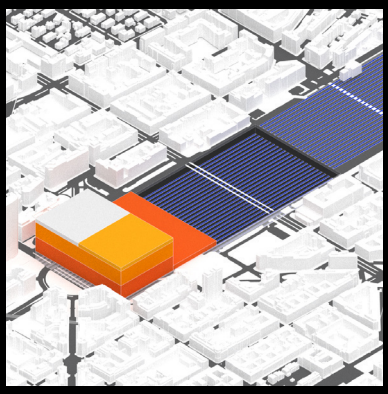
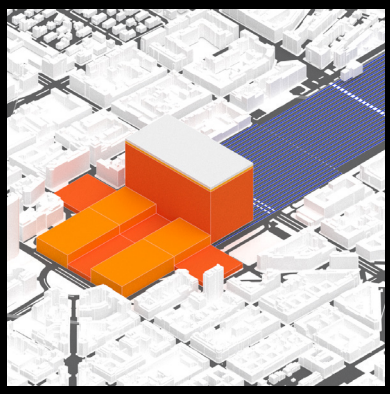
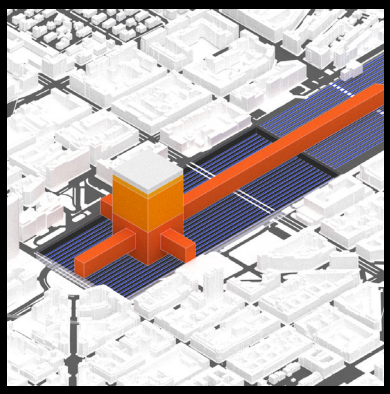
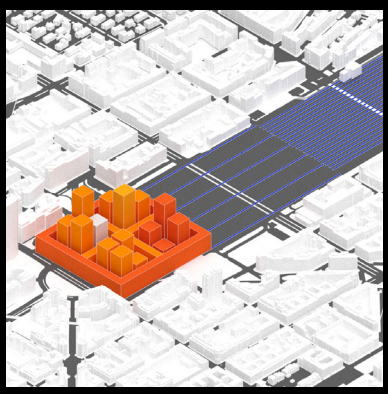
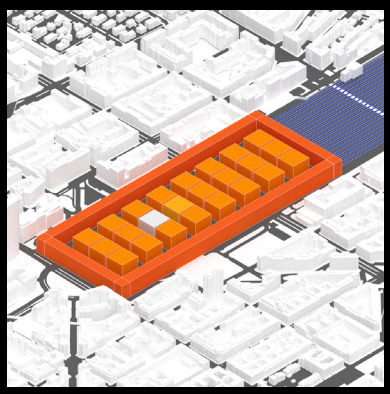
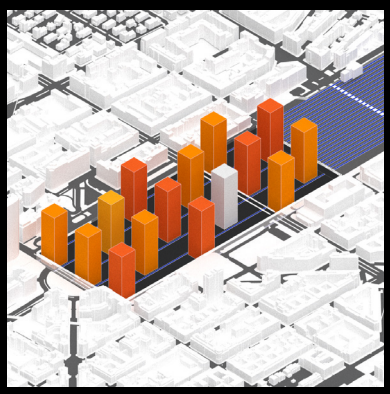




Client

Program

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**VIDEO:**

Benton, T. (Writer), & Levinson, N. (Director). (1975, June 14). A305/13: *Le Corbusier: Villa Savoye* [Television broadcast]. BBC/Open University.


**FIGURES:**

Figure 001 FS Italiane. (n.d.). *Stations: hubs of the future* [Photograph]. FS Italiane. Retrieved November 01, 2024, from https://www.fsitaliane.it/content/fsitaliane/en/innovation/integrated-mobility/stations--hubs-of-the-future.html

Figure 002 Ferrovie dello Stato Italiane. (n.d.). *FS Italiane photo album* [Photograph collection]. Flickr. Retrieved September 26, 2024, from https://www.flickr.com/photos/ferroviedellostato/albums/72157633600803646

Figure 003 Original Illustration

Figure 004 Original Illustration

Figure 005 Original Illustration

Figure 006 Edited by Author

Figure 007 Edited by Author

Figure 008 Ferrovie dello Stato Italiane. (n.d.). *FS Italiane photo album* [Photograph collection]. Flickr. Retrieved September 26, 2024, from https://www.flickr.com/photos/ferroviedellostato/albums/72157633600803646

Figure 009 Original Illustration

Figure 010 Original Illustration

Figure 011 Original Illustration

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# DESIGN PROCESS

Preliminary Design Research
Design Strategies
Design Process

# 06







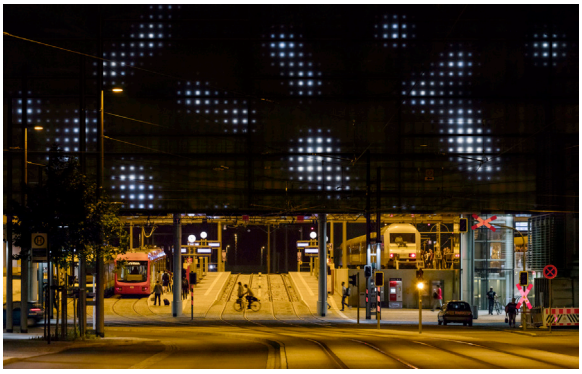


Figure 047 Oostende Station, visual connection to lower floor
Figure 048 Oostende Station, accessible ramp
Figure 049 Station as urban continum
Figure 050 Structure hovering tracks
Figure 051 Trams part of the architecture

# 01 Design Research

## 1.1 References

When researching relevant precedents, I focused on mobility typologies that enhance and emphasize the relationship between people and vehicles.

One such reference is Oostende Station by Dietmar Feichtinger Architects, completed in 2019 in Belgium. Here, several tracks and trains are positioned at street level, strengthening the physical and visual relationship between users and trains. The design also features large circular openings in the ground plane, allowing



visual connections to the underground floor and introducing a playful interaction between levels.

Another example is Chemnitz Central Station, designed by Gruntuch Ernst Architects in 2016. This project, an extension of the existing train station to connect with the tram network, functions as an urban continuum. The result is a fluid public space, sheltered under an "urban canopy," where the tram platforms act as a natural continuation of the adjacent street. In this context, the tram becomes "the passenger of the street," blurring the boundary between vehicles and pedestrians and reducing the spatial gap between them.

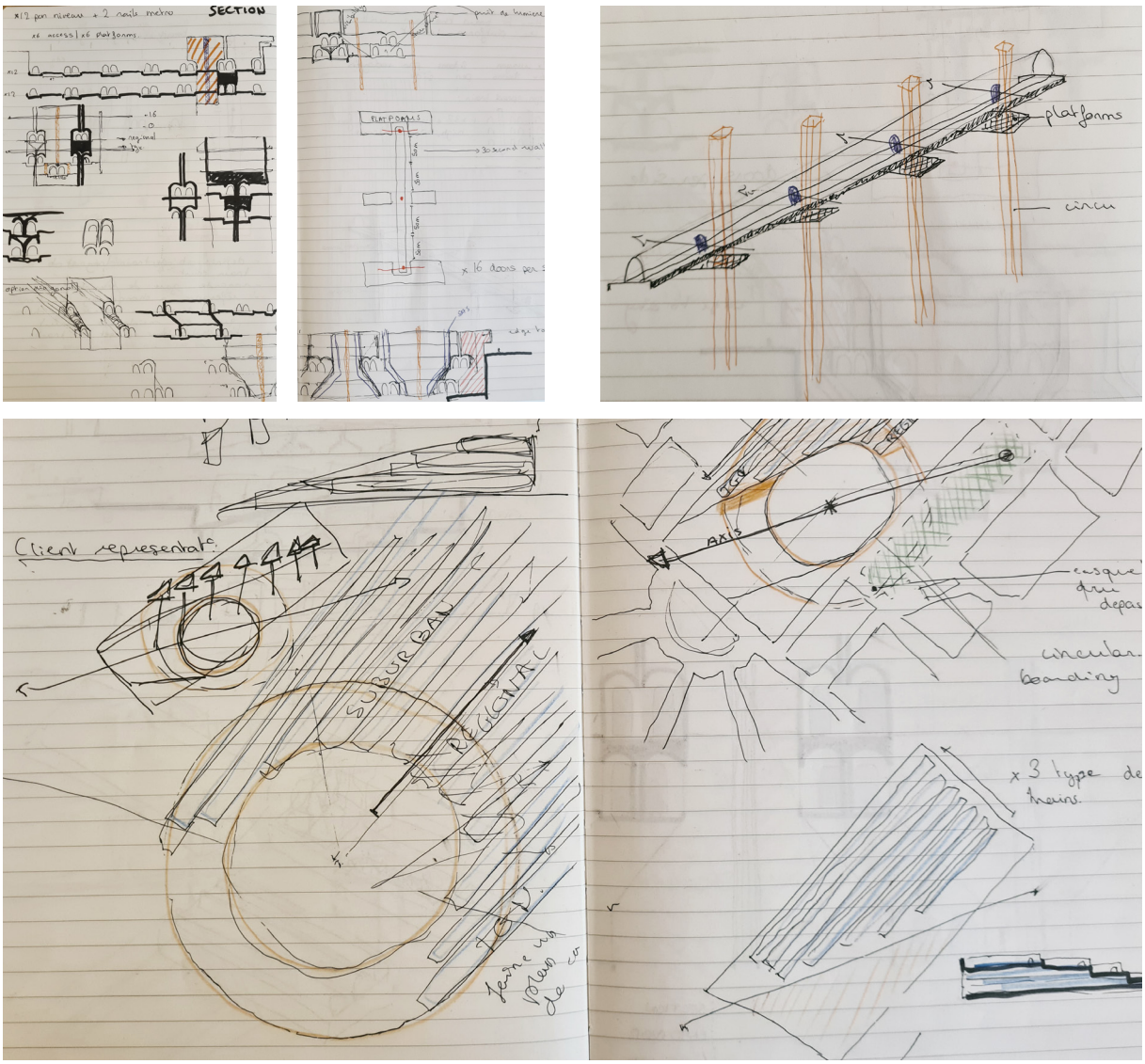



Figure 052 Concept Sketch

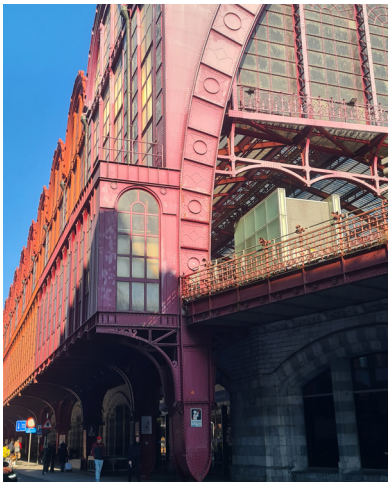







Figure 053 Antwerp station facade
Figure 054 Split Station
Figure 055 Indoor opening for train visual connection

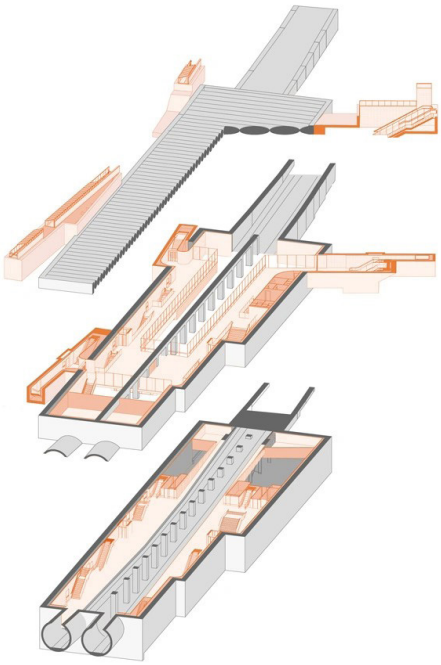







Figure 056 Split level allow for both a terminal and through station
Figure 057 Indoor opening for train visual connection

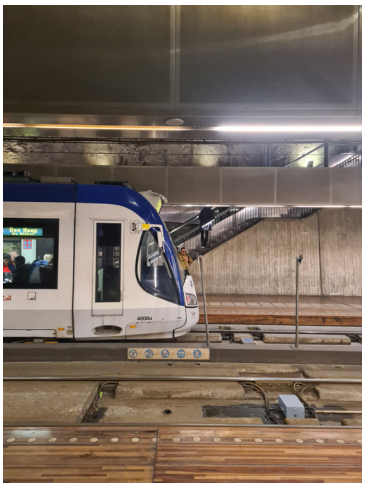
# 1.2 Antwerp Station - Split Station

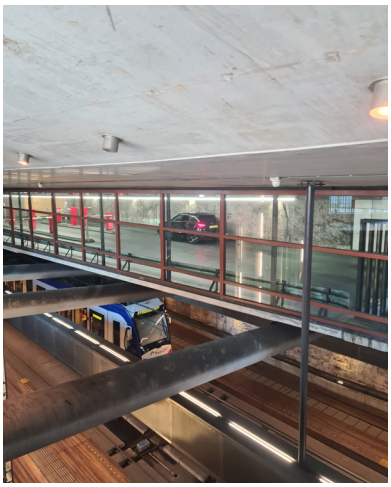
Inspired by the idea of transforming Milan Central Station into a 'split station' - to reduce the number of tracks at ground level - the renovation of Antwerp Central Station provides an ideal precedent. The station features three distinct levels serving different types of trains: terminal platforms at the top, and through-station platforms below. A key architectural move is the interior wall design, which enables constant visual connections between all levels, fostering spatial continuity and legibility within the station.

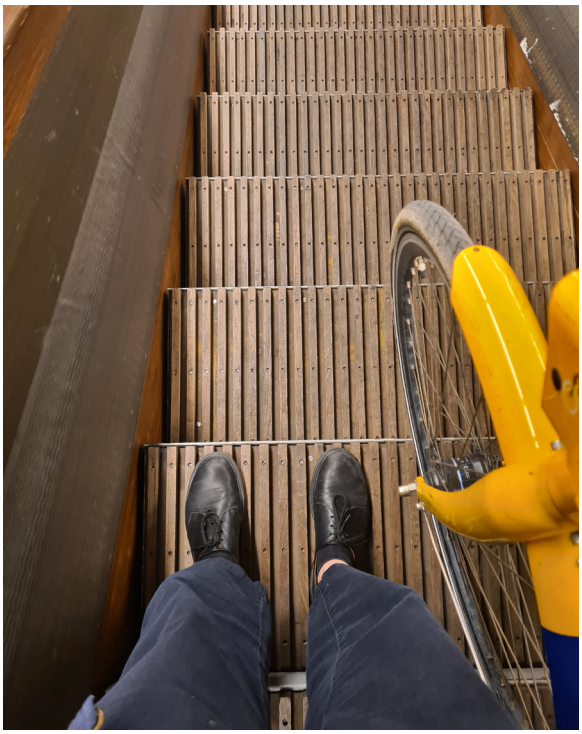
# 1.3 Timber in mobility typology

The use of timber in mobility infrastructures such as train and tram stations, bicycle parking, or car parks remains relatively rare. This is often due to concerns about maintenance, cleaning, and durability. Nevertheless, the integration of timber can significantly enhance spatial quality by introducing warmth and a sense of domesticity to otherwise utilitarian urban environments. The examples studied illustrate how timber can soften the perception of large-scale infrastructure and bring human-scale materiality into mobility typologies.









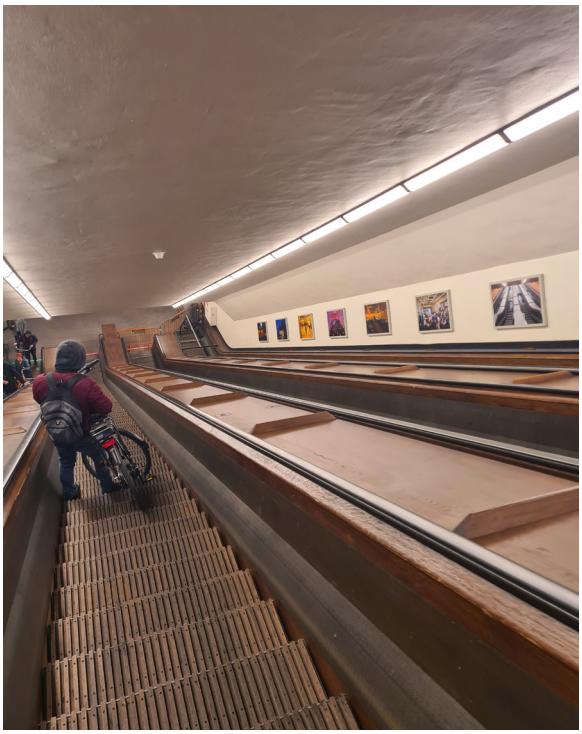


Figure 058 The hague tram stop by OMA
Figure 059 Timber flooring
Figure 060 Split level for differnet mobility
Figure 061 Maastunnel Rotterdam
Figure 062 Timber flooring in mobility typology

# 1.4 Material References

The new Milan Central Station incorporates two main material strategies. Stone will be used in the area defined as the 'village,' evoking a sense of domesticity and connecting the site to natural, timeless materials. In contrast, steel and other metals materials typically associated with technology and machinery, will be used in areas directly linked to the railway infrastructure. This material juxtaposition reflects the dual identity of the station: as both a place of human activity and a machine for movement.

## Urban Morphology



## Village





Figure 063 Use of Natural Stone
Figure 064 H&dM, elevated structure for visual connection to old city center
Figure 065 COBE work with ground topography

# Machine









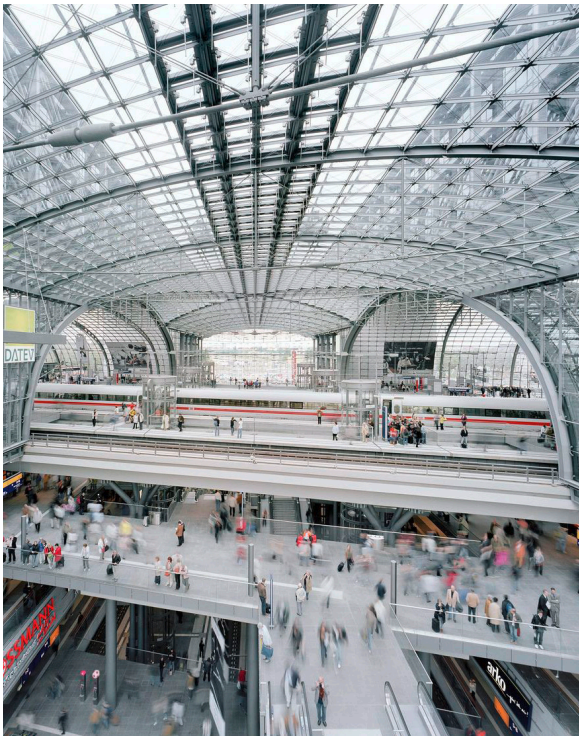
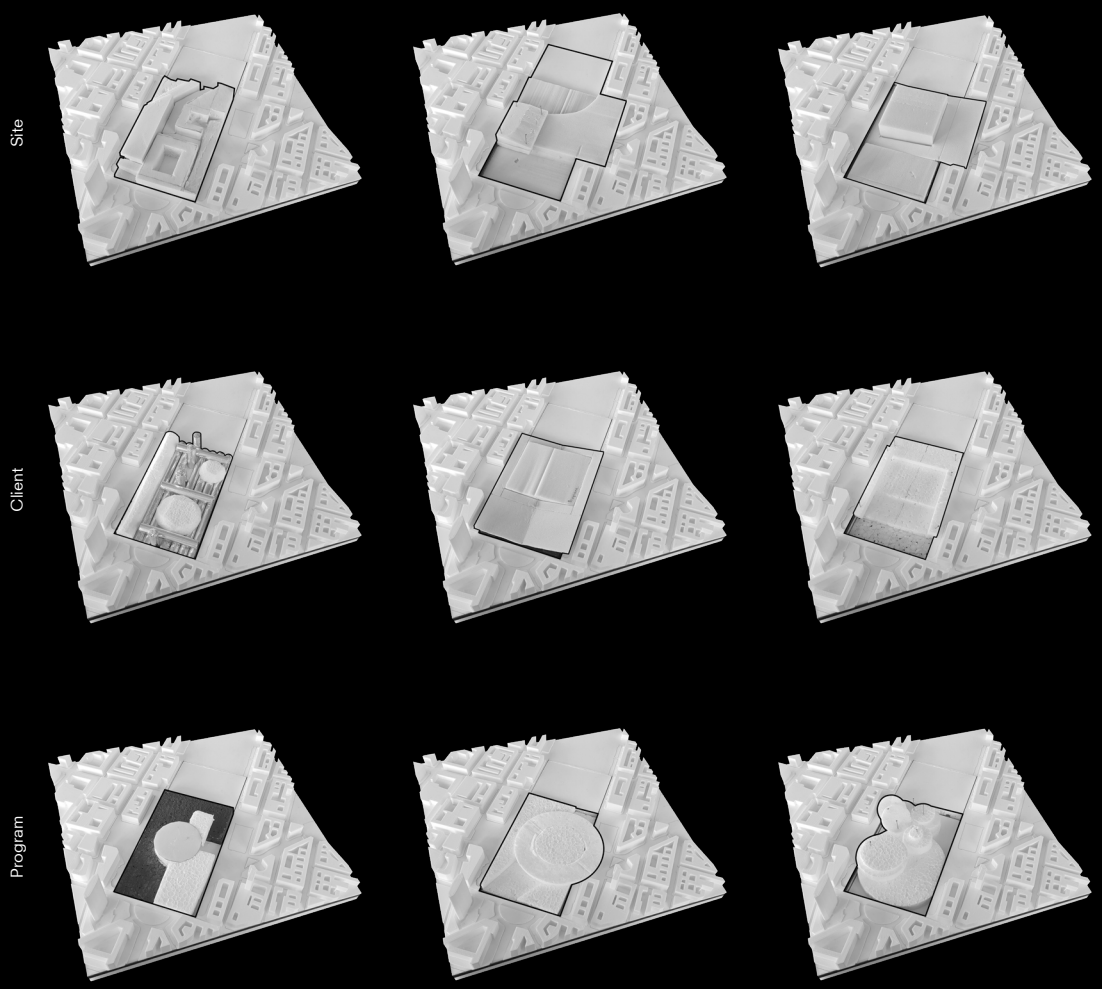


Figure 066 Renzo piano double skin glass & steel facade
Figure 067 Expo Cultural par, China, steel structure
Figure 068 Scale and proporting, urban park covered

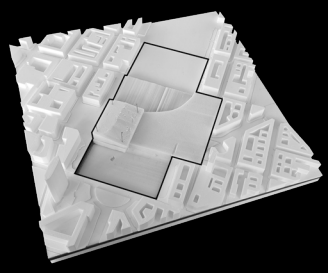
Figure 069 Renzo Piano overhang canopy
Figure 070 Berlin Central split station

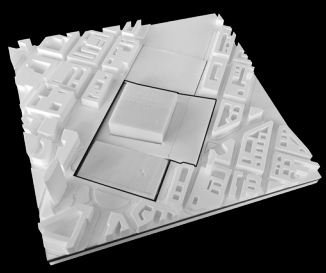
# 1.5 Massing Iterations



Site





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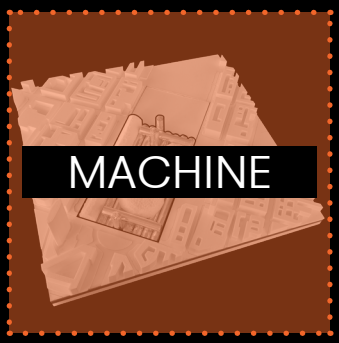


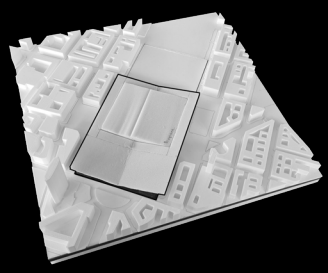

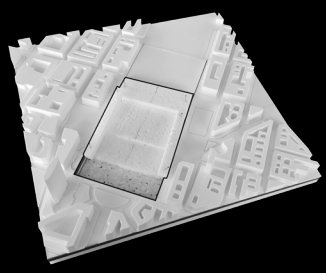

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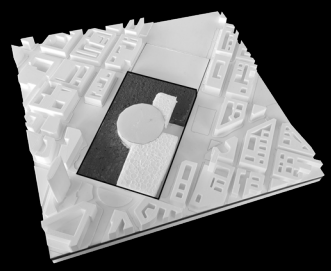
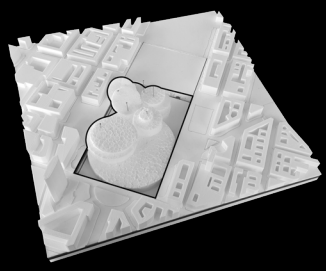




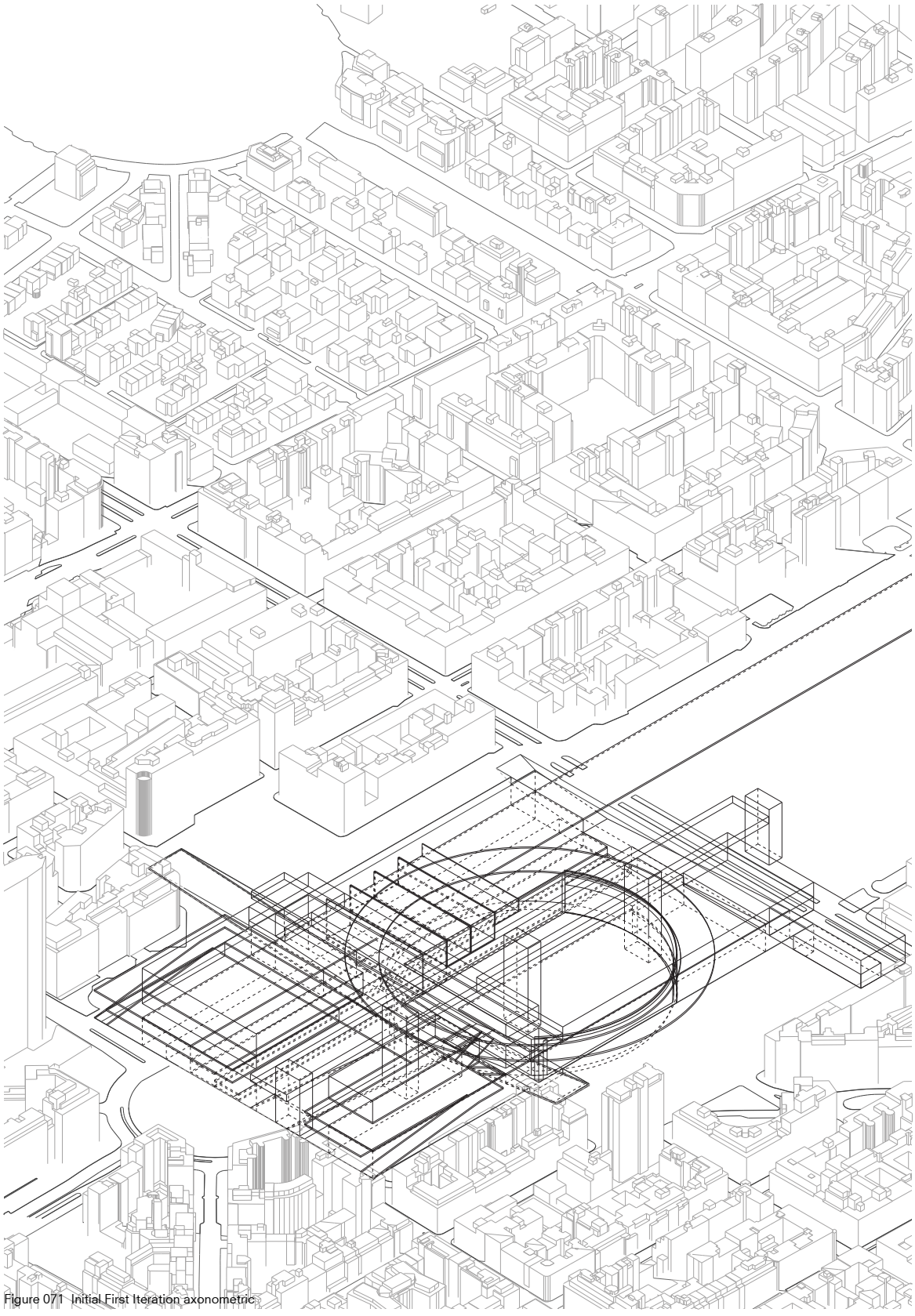


Figure 071 Initial First Iteration axonometric

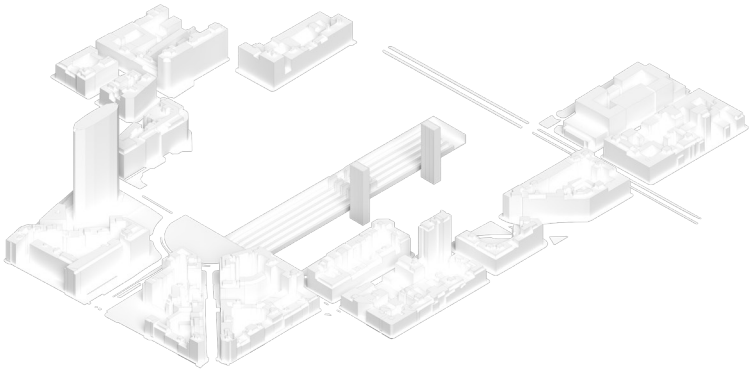
# 02 Design Research

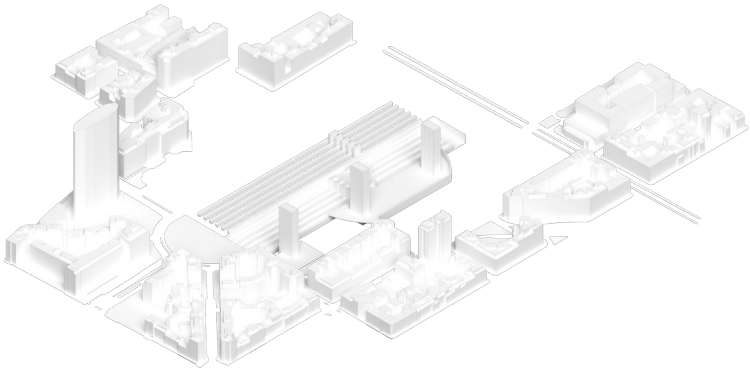
The design process began with extensive physical model-making, allowing experimentation with massing across three categories: Site, Client, and Program. This iterative exploration led to a tripartite conceptual framework:

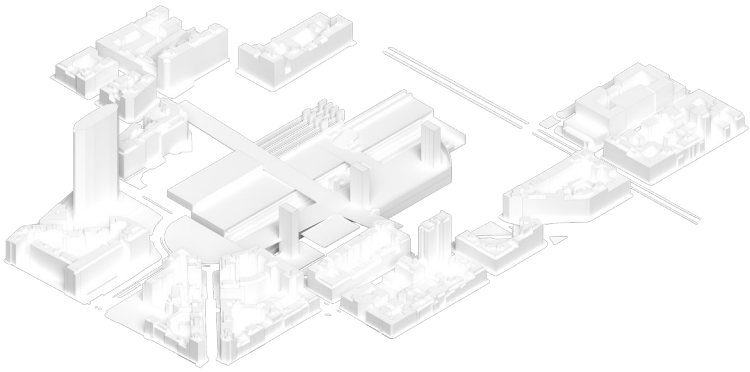
- The Village, representing the human-scale, contextual approach aligned with the surrounding city fabric.

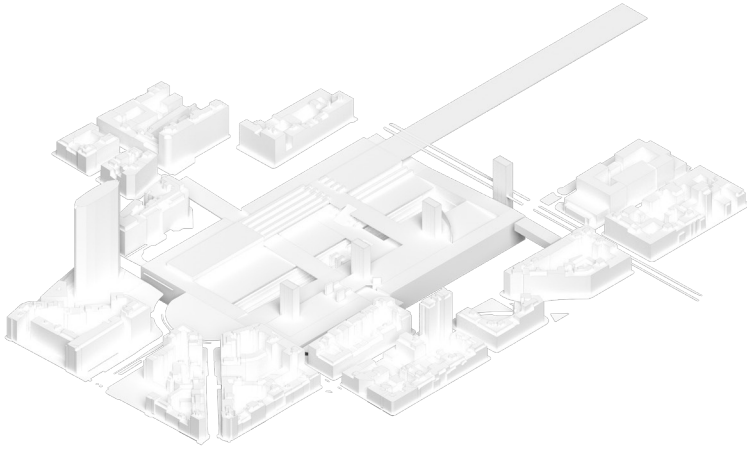
- The Machine, representing the railway company and the broader future of rail travel.

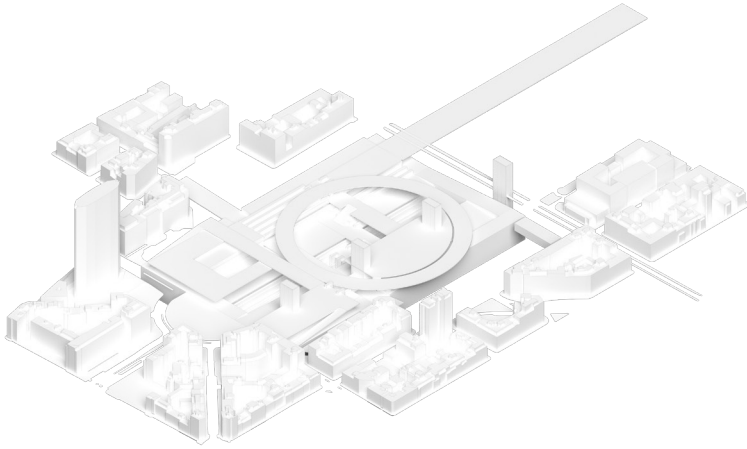
- The Platform, reimagined through a circular configuration that offers improved visibility and spatial efficiency, accommodating trains of varying lengths and enhancing the boarding experience.

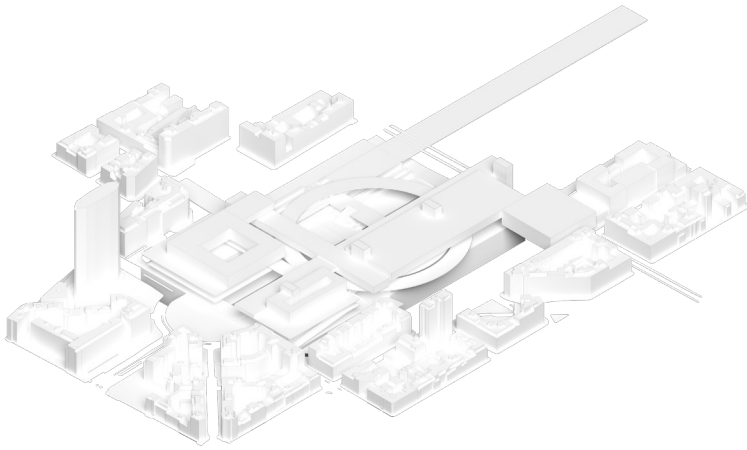




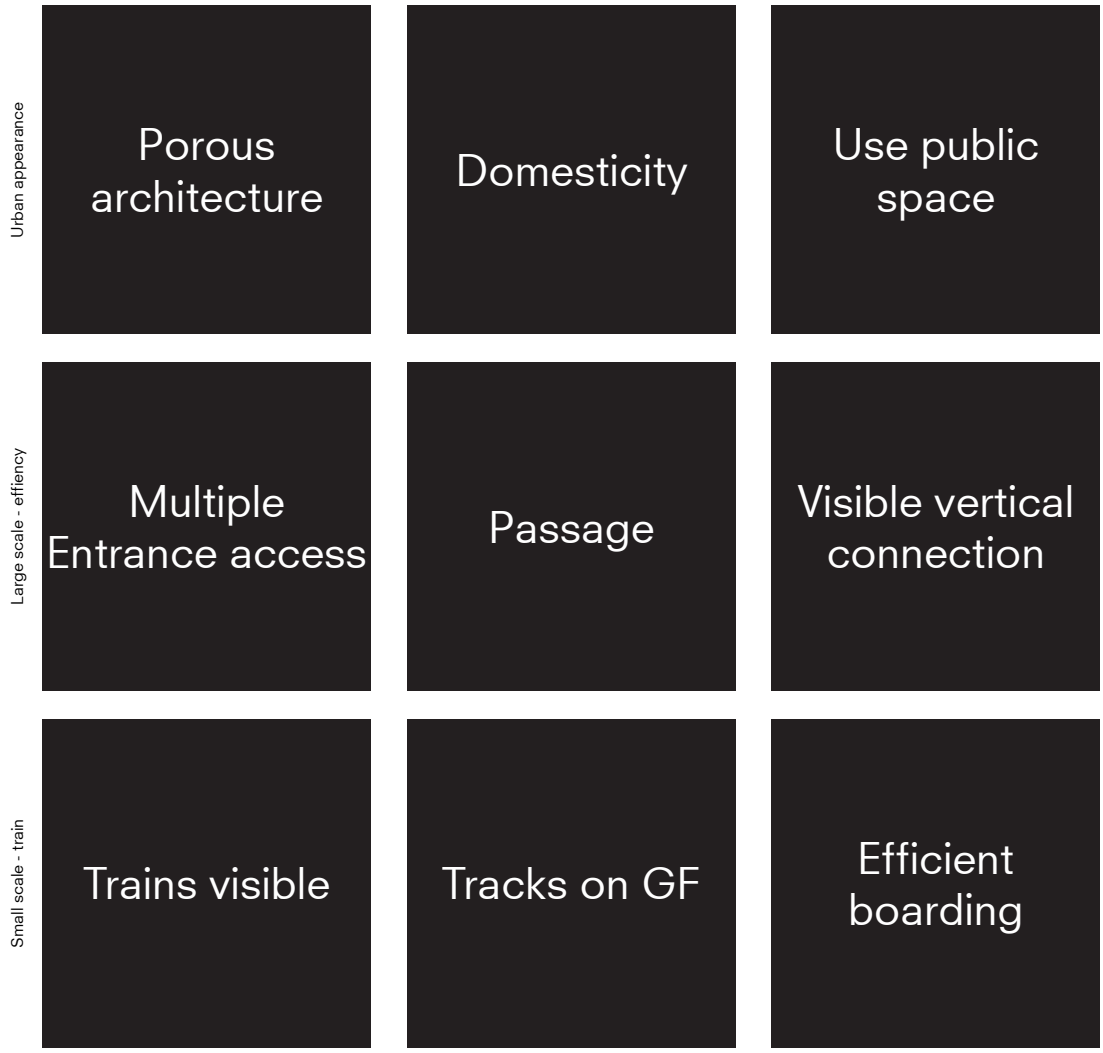








## 2.1 References Design Startegies



Urban appearance




Domesticity




Large scale - effiency

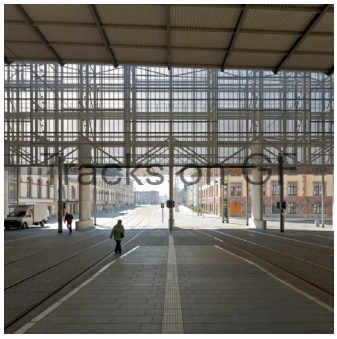
Multiple
Entrance access

Passage

Visible vertical
connection

Small scale - train

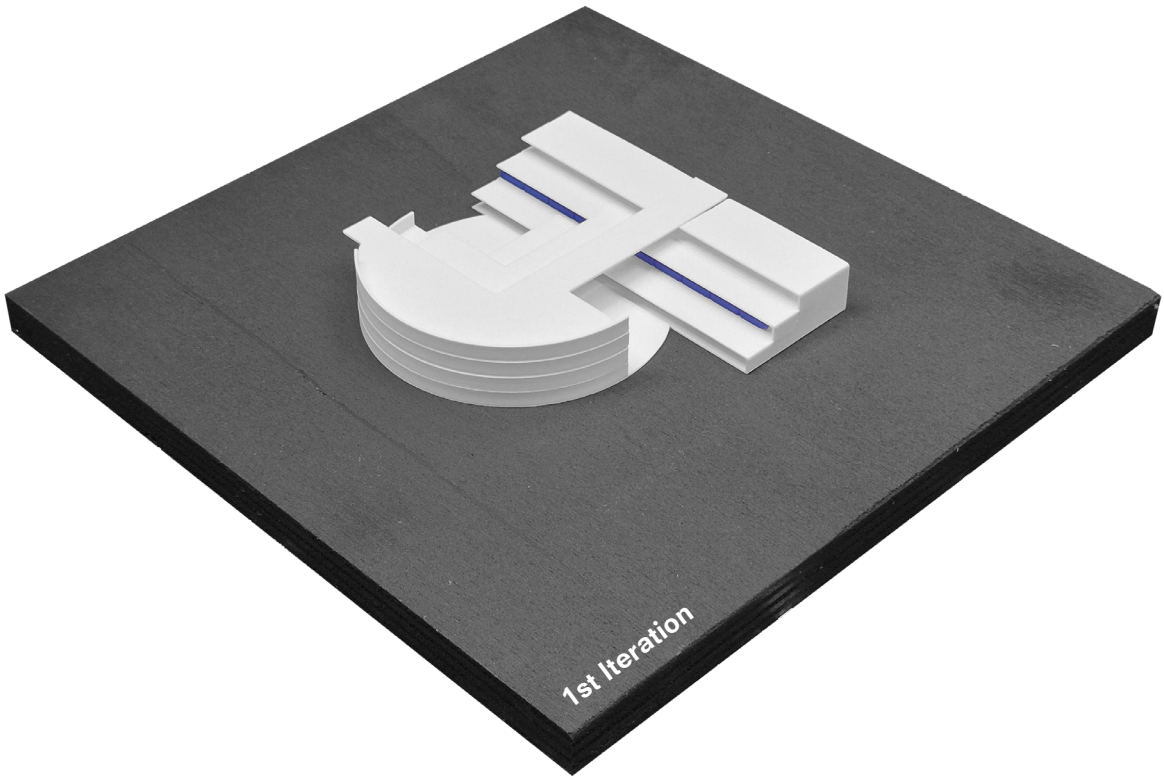


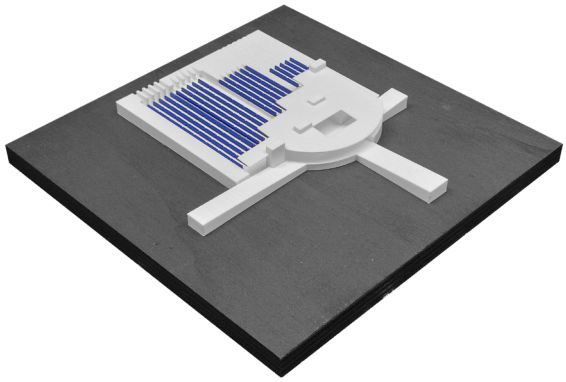


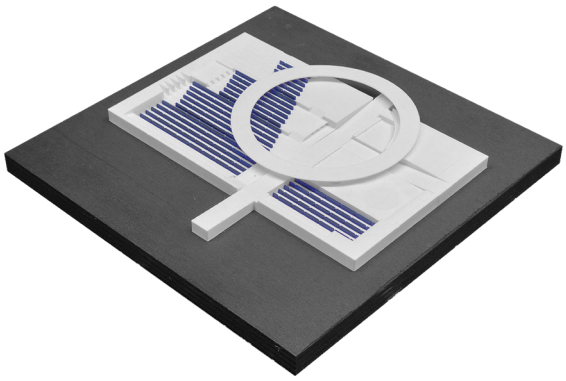

# 2.2 Trains/Station Relationship

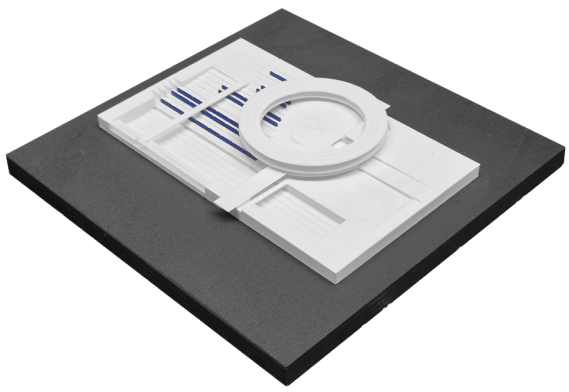
During the initial weeks of design research, I focused specifically on exploring the relationship between the train tracks and the spaces where passengers board.
The following models illustrate the iterative massing process that led to the final design, beginning with a relatively complex configuration and gradually evolving into an efficient spatial system. This final outcome achieves a seamless flow and clear superposition of levels within the train station.

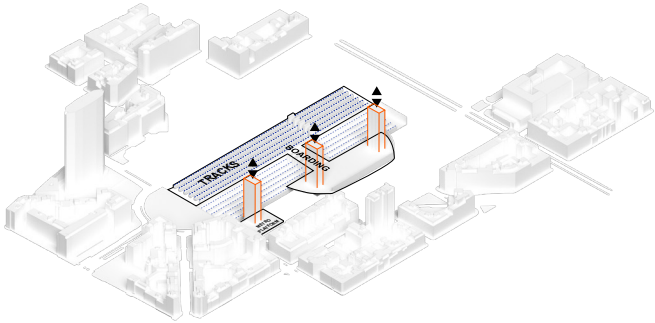








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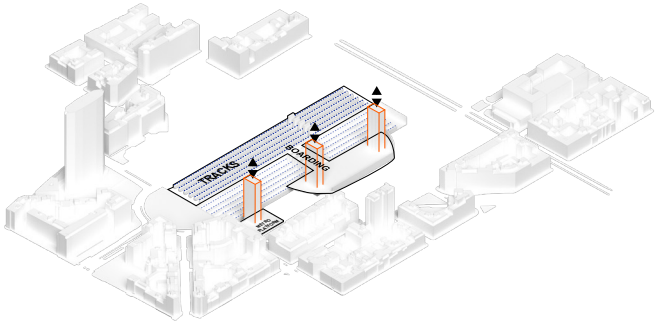
BOARDING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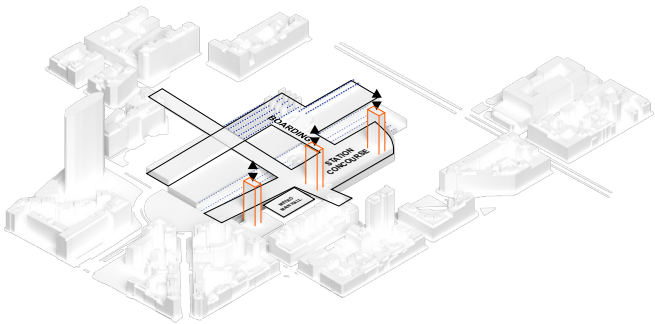
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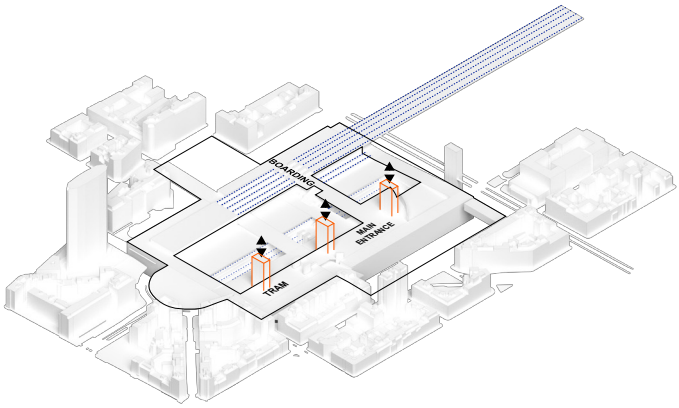
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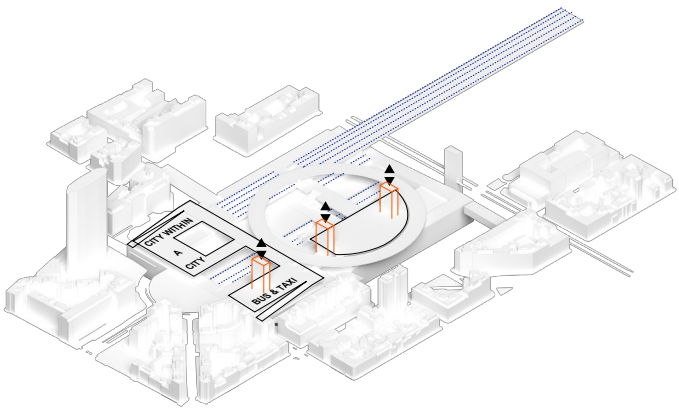
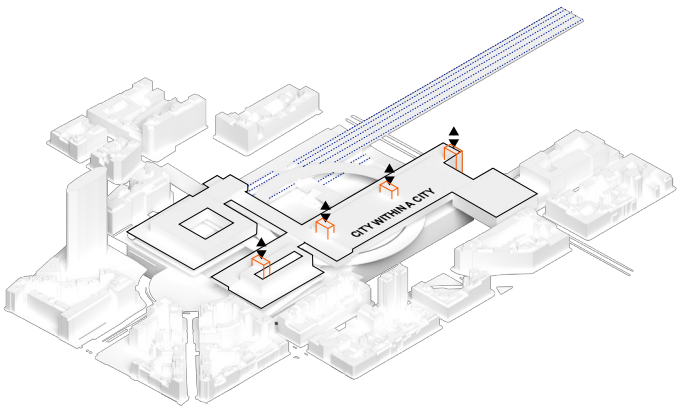
MAIN ENTRANCE
TRAM


CITY WITHIN A CITY
BUS & TAXI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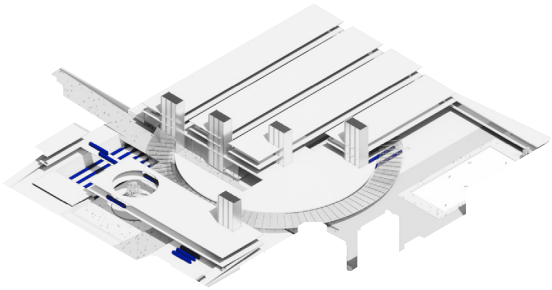

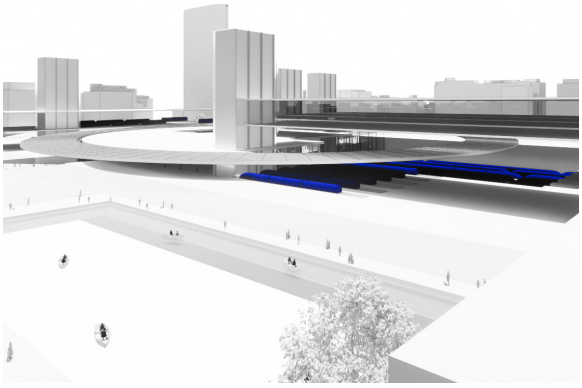

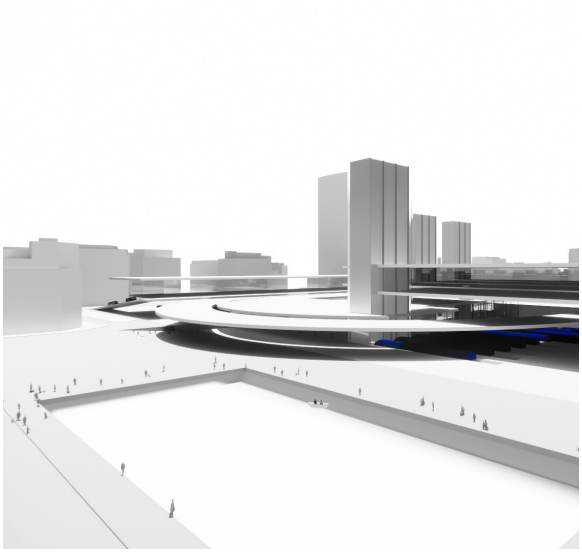

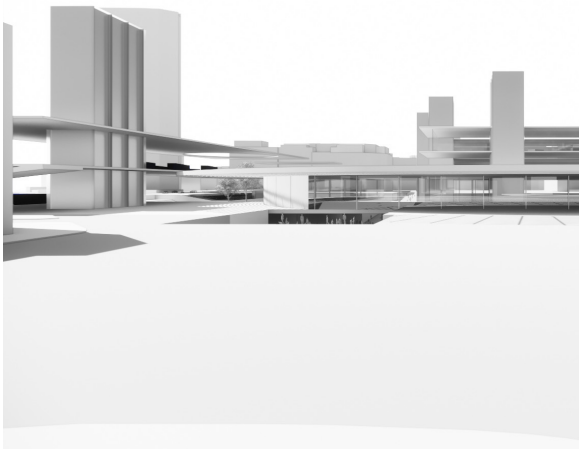



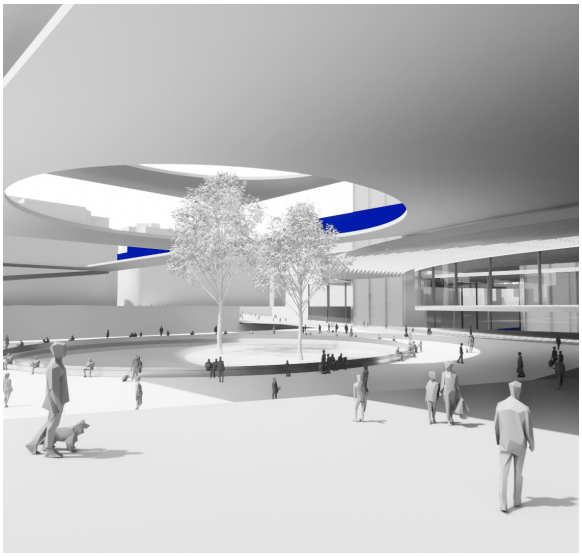

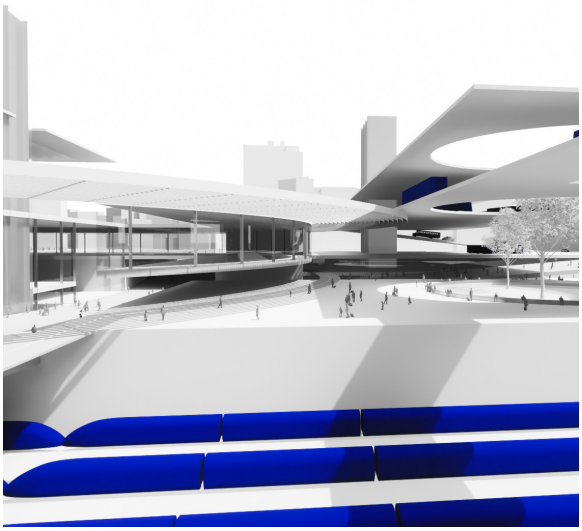

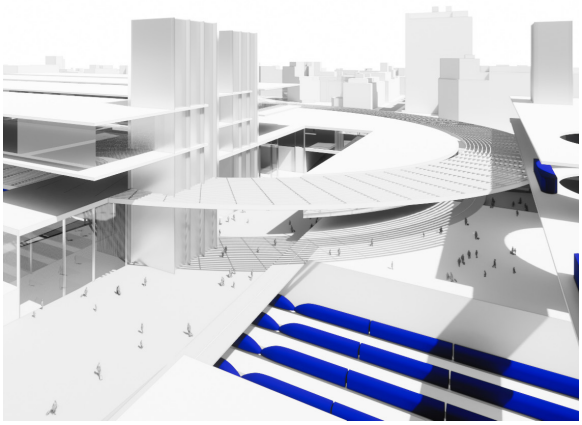

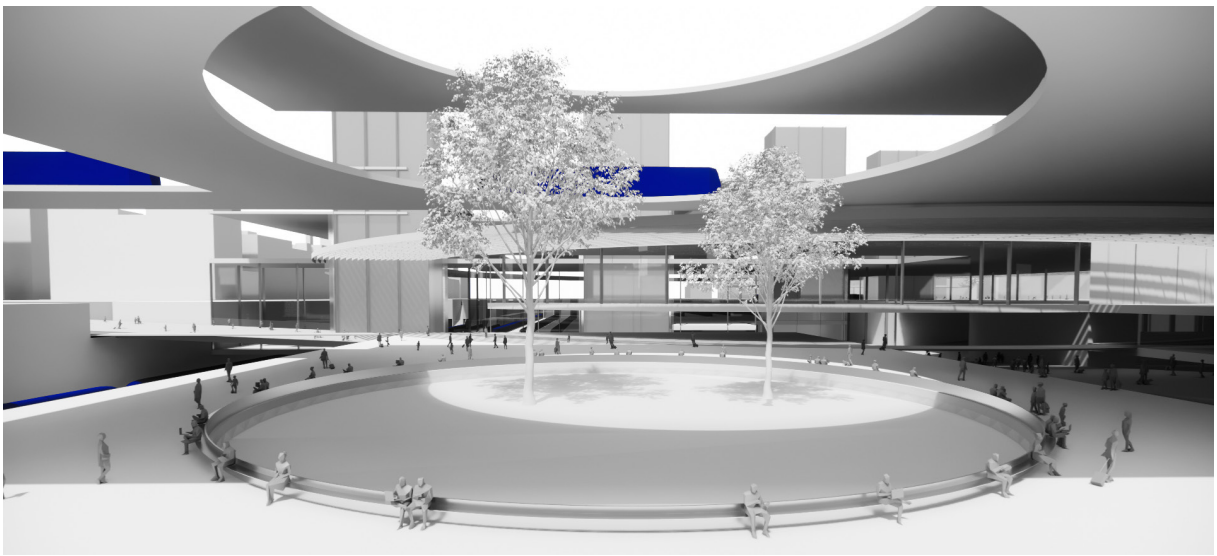

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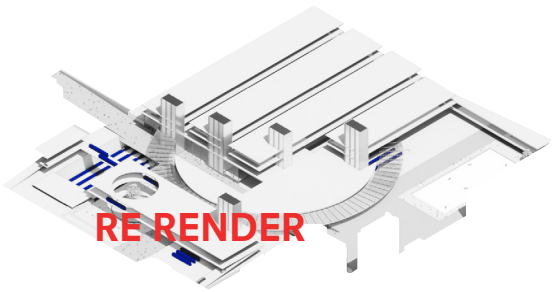




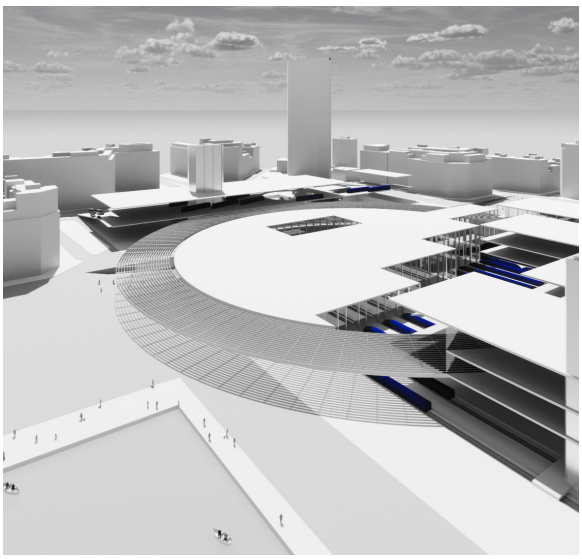

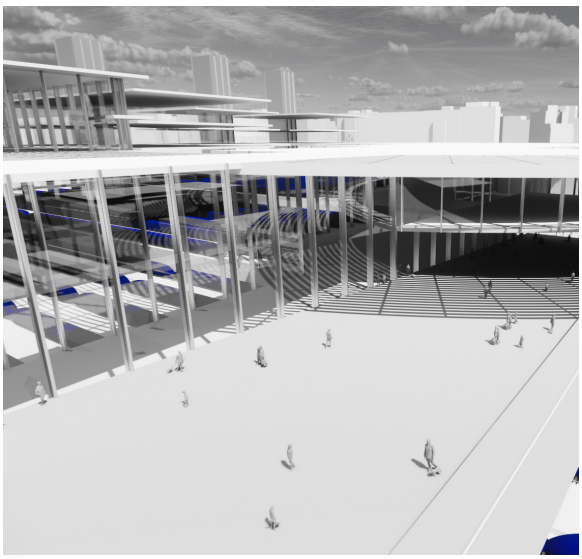

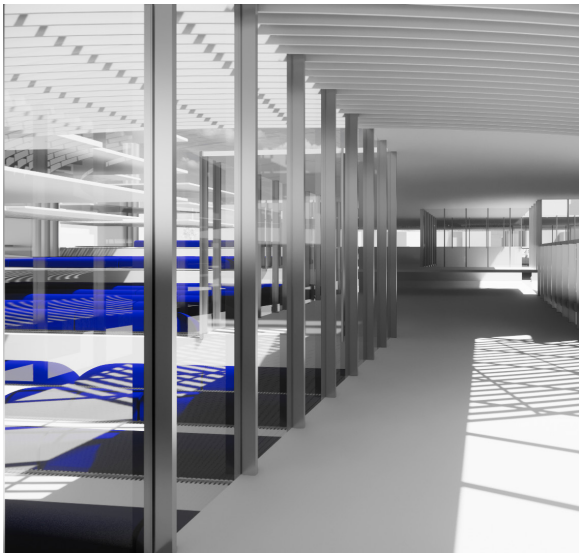

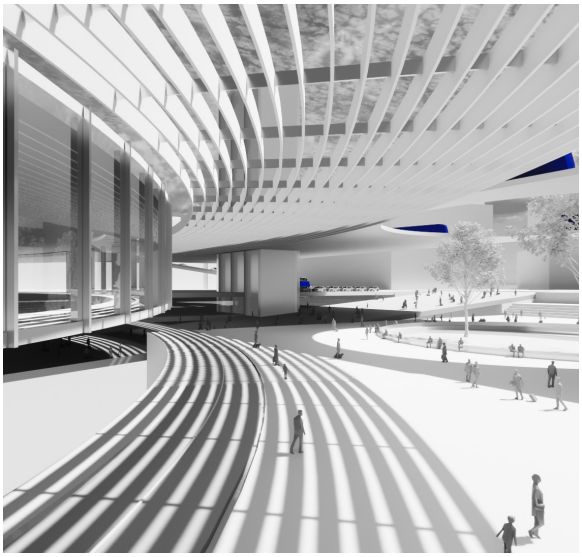

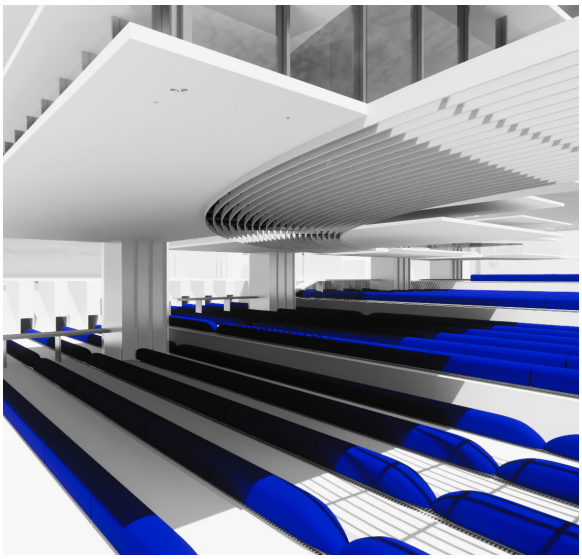

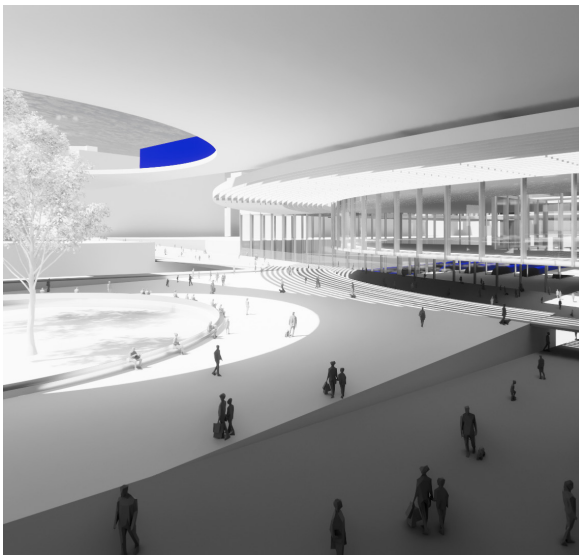

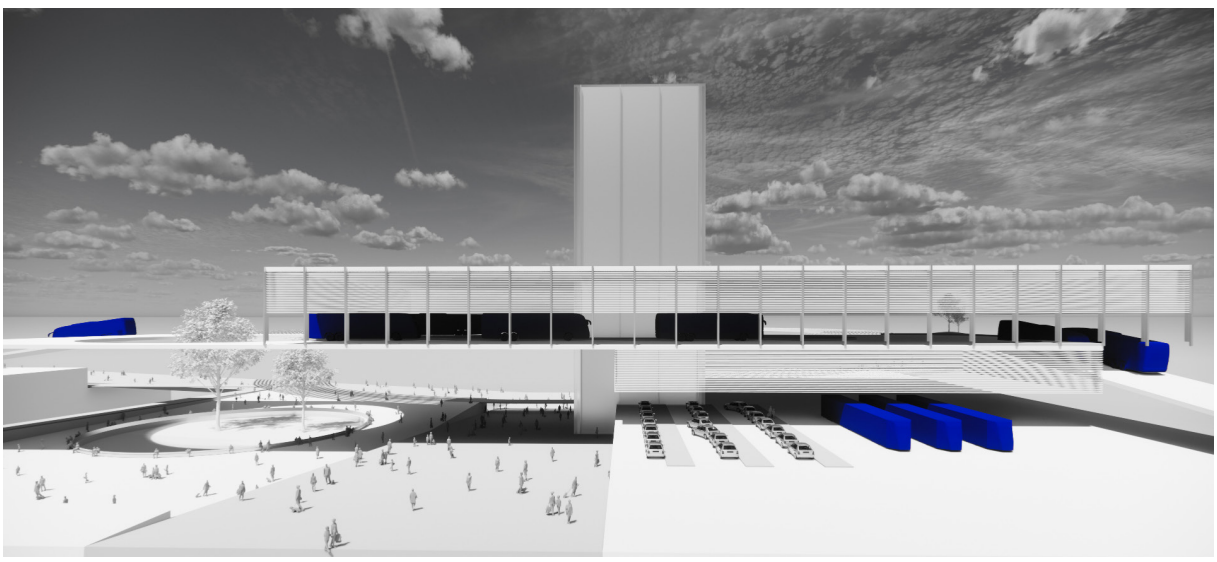

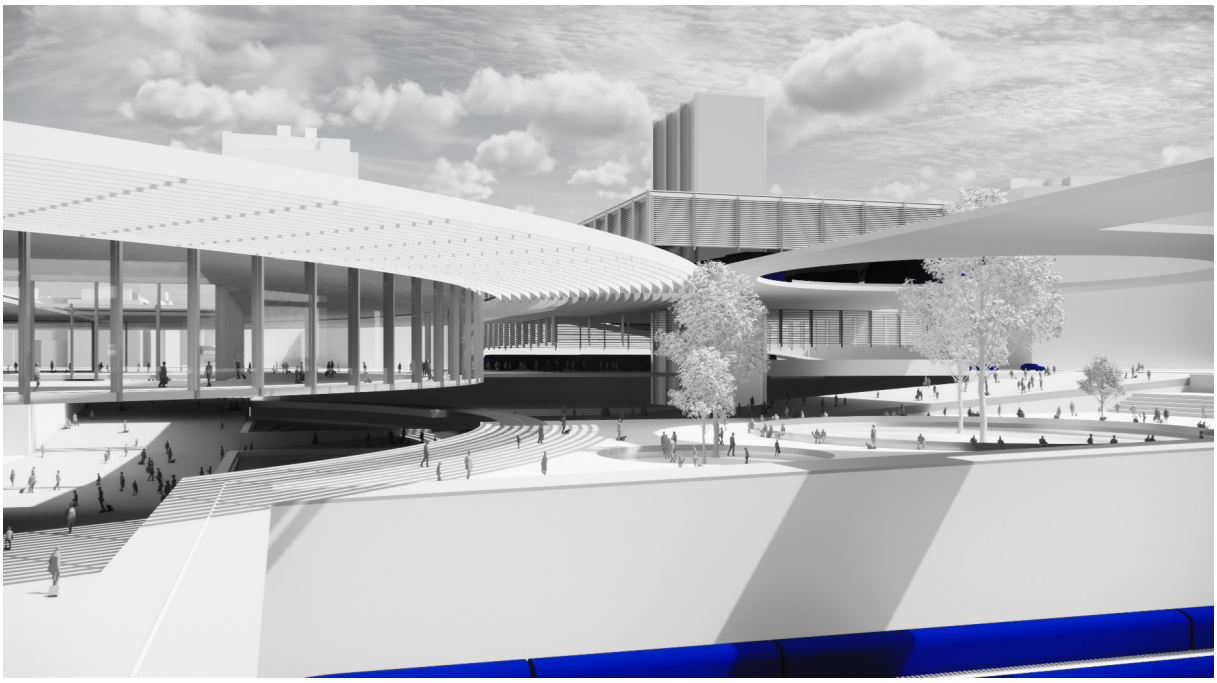

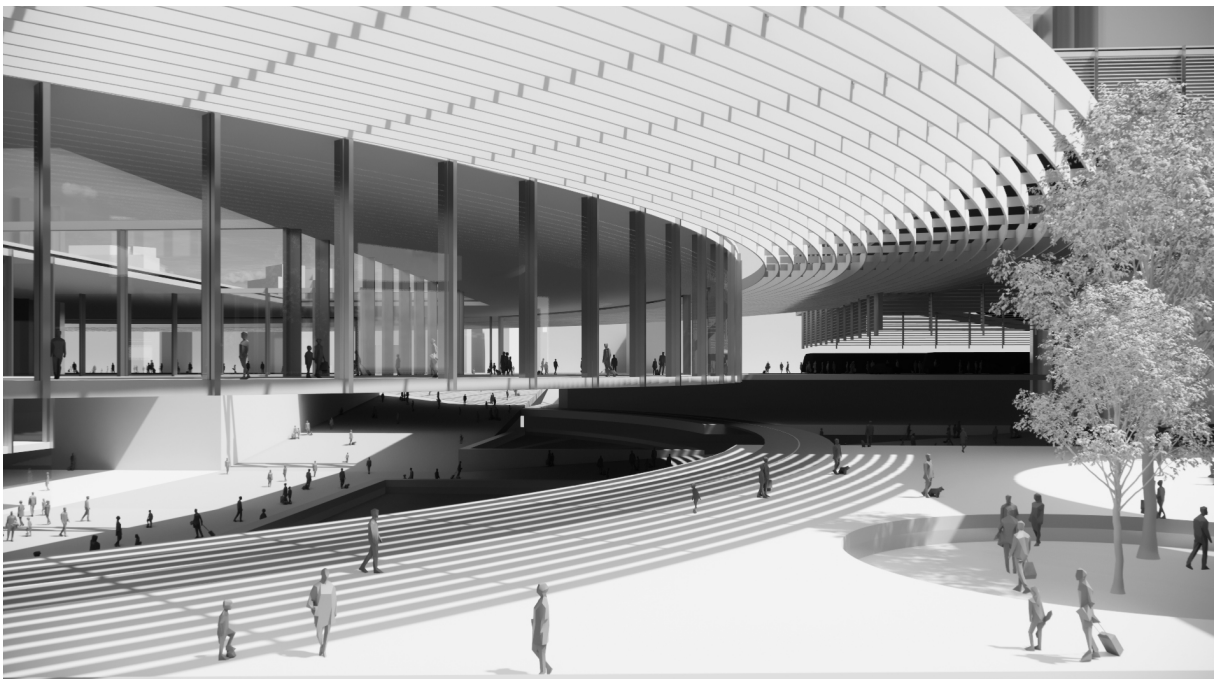

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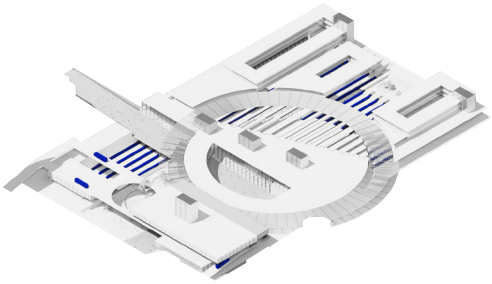

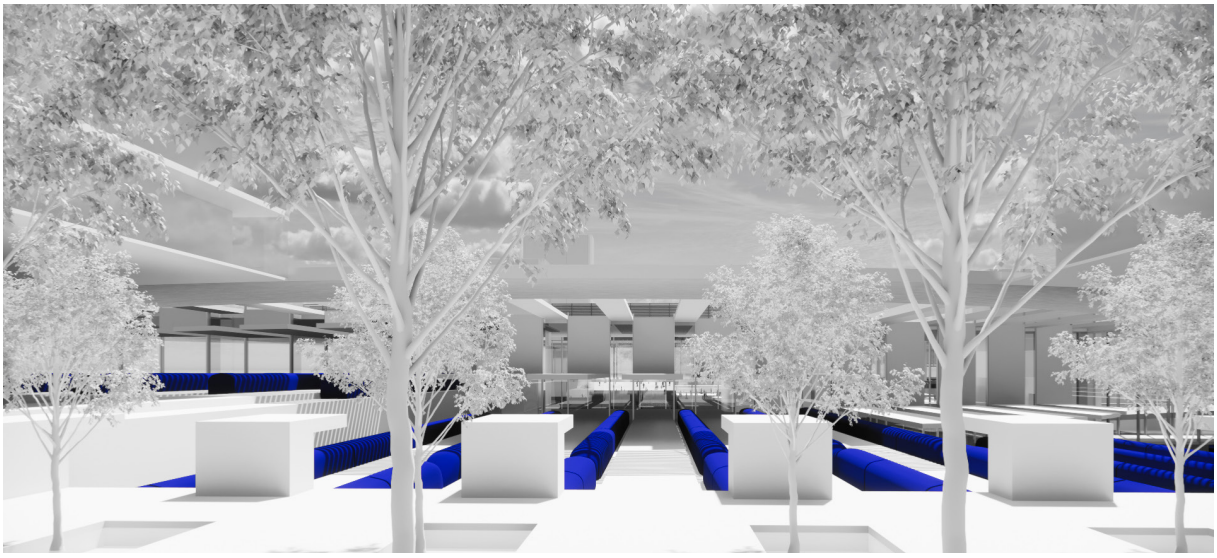

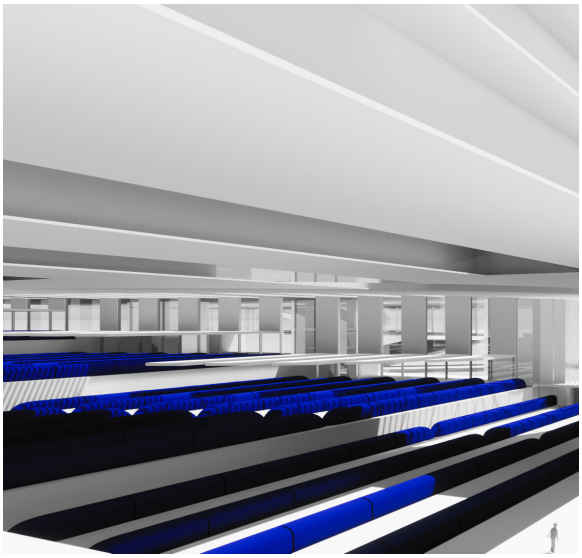



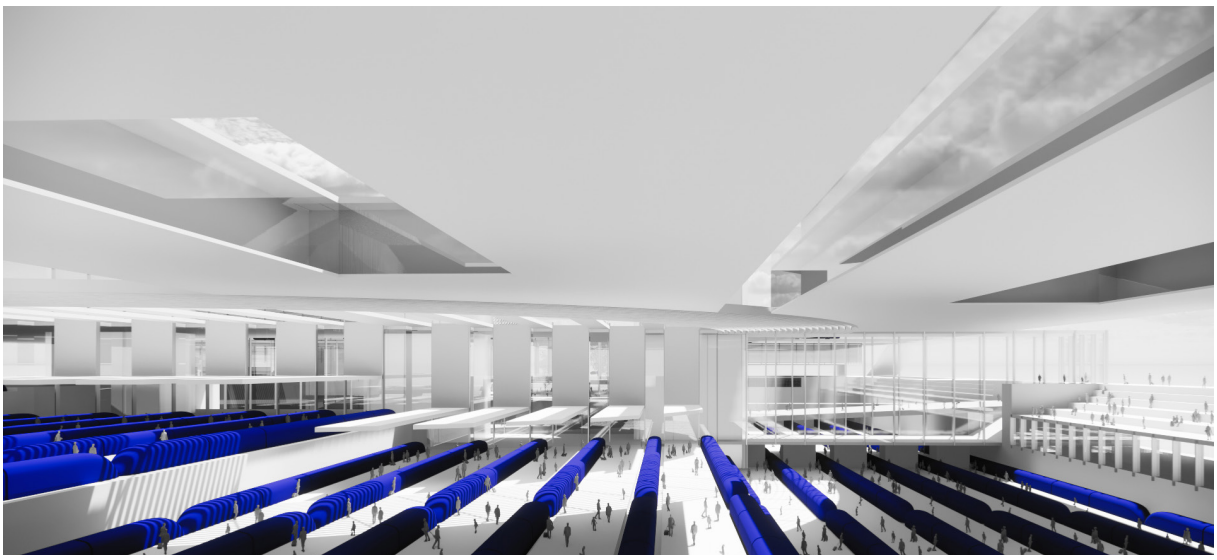

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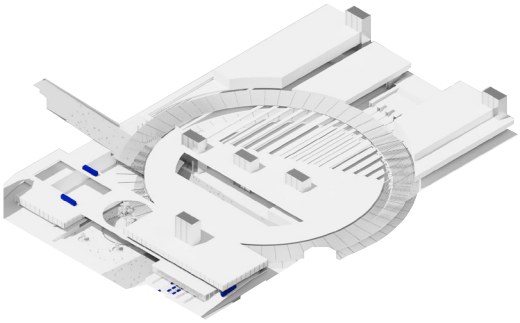
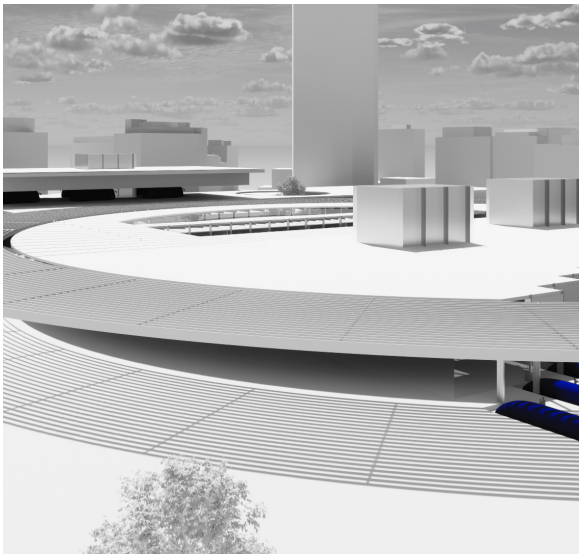
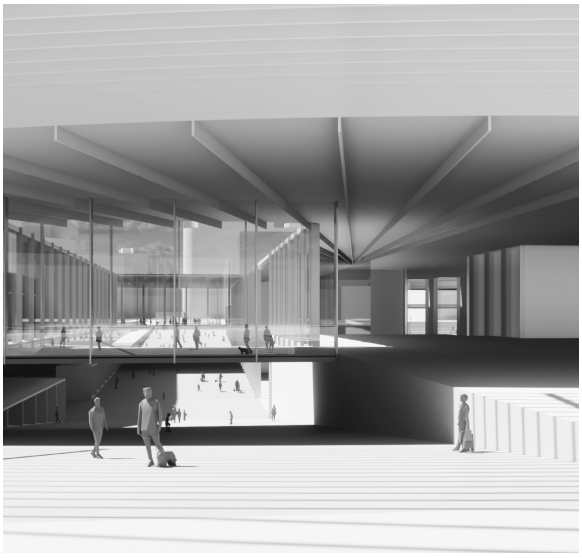
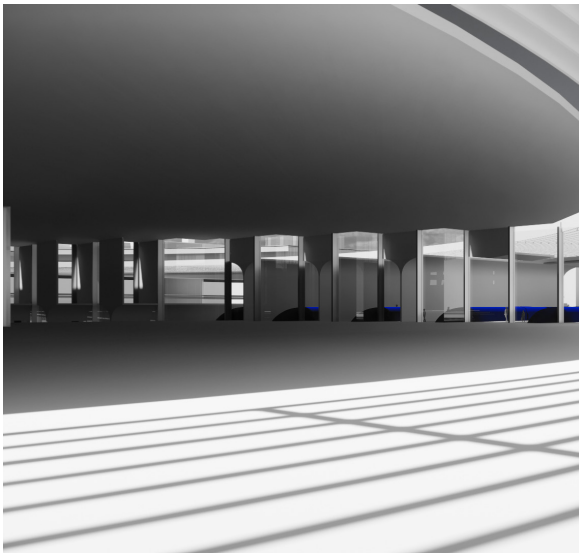
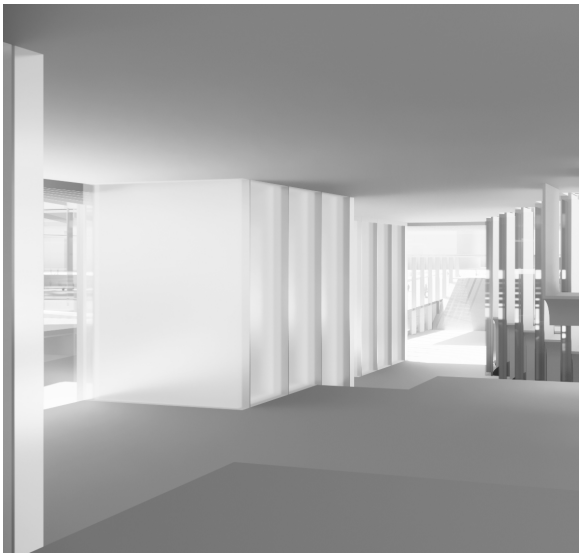
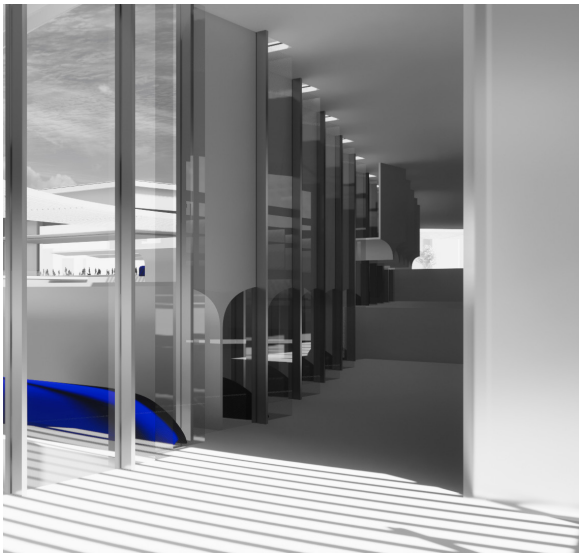


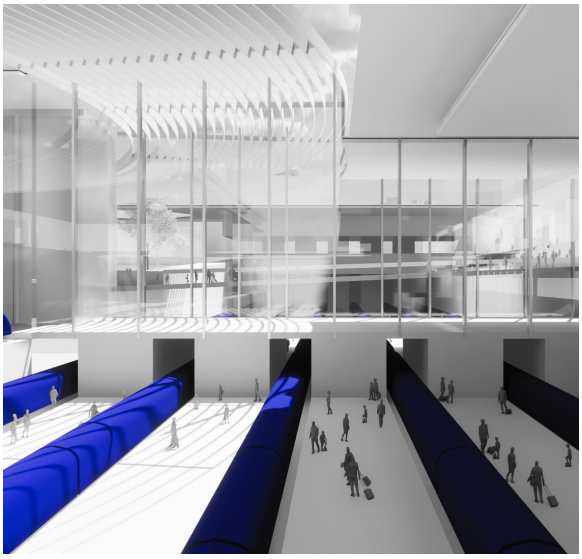






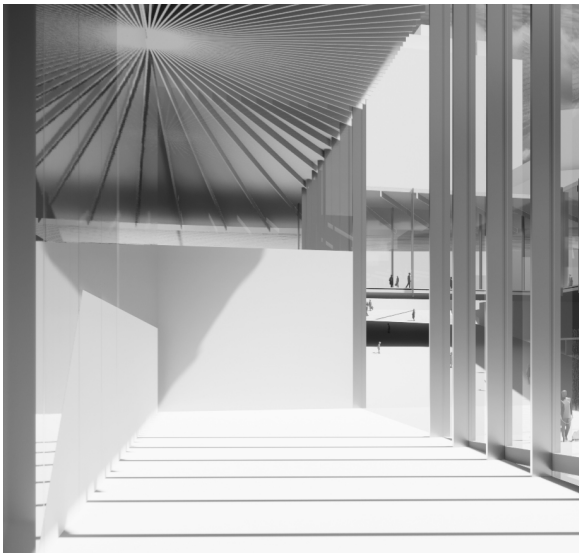


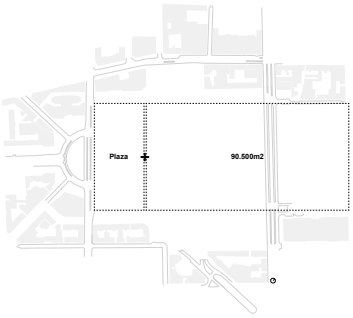


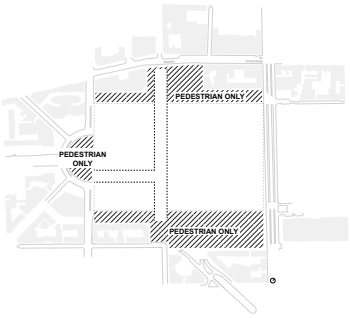









Plaza
90.500m2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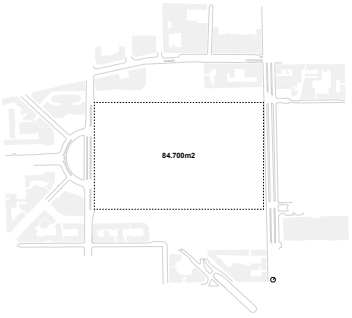
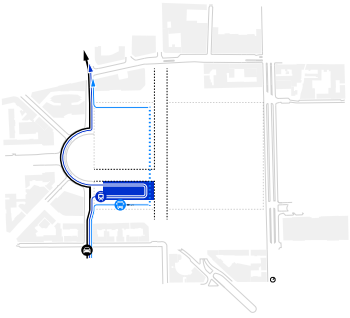
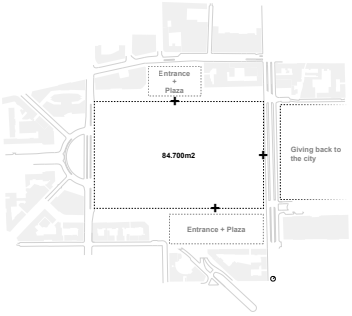
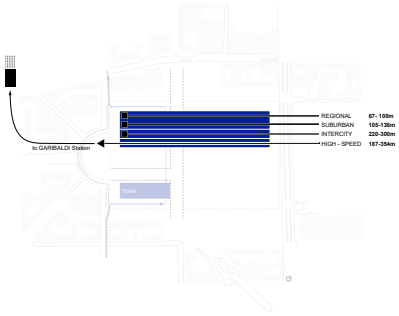
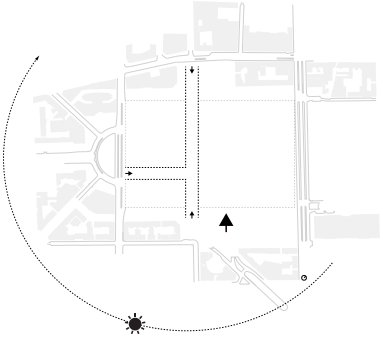
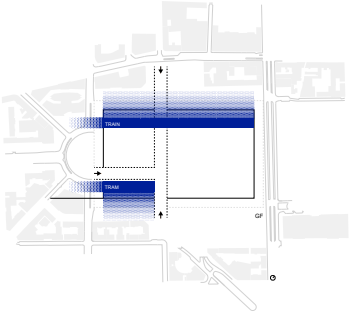

84.700m2




Entrance
+
Plaza
84.700m2
Giving back to
the city
Entrance + Plaza


REGIONAL
67 - 100m
SUBURBAN
105-136m
INTERCITY
220-300m
HIGH - SPEED
187-354m
to GARIBALDI Station

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TRAM
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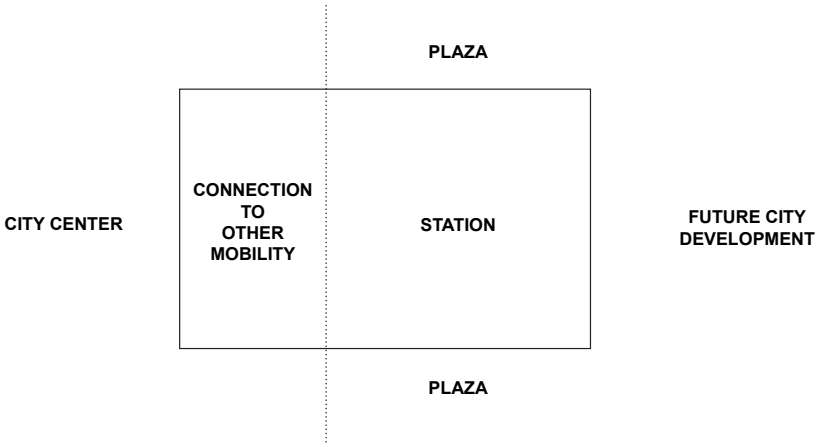
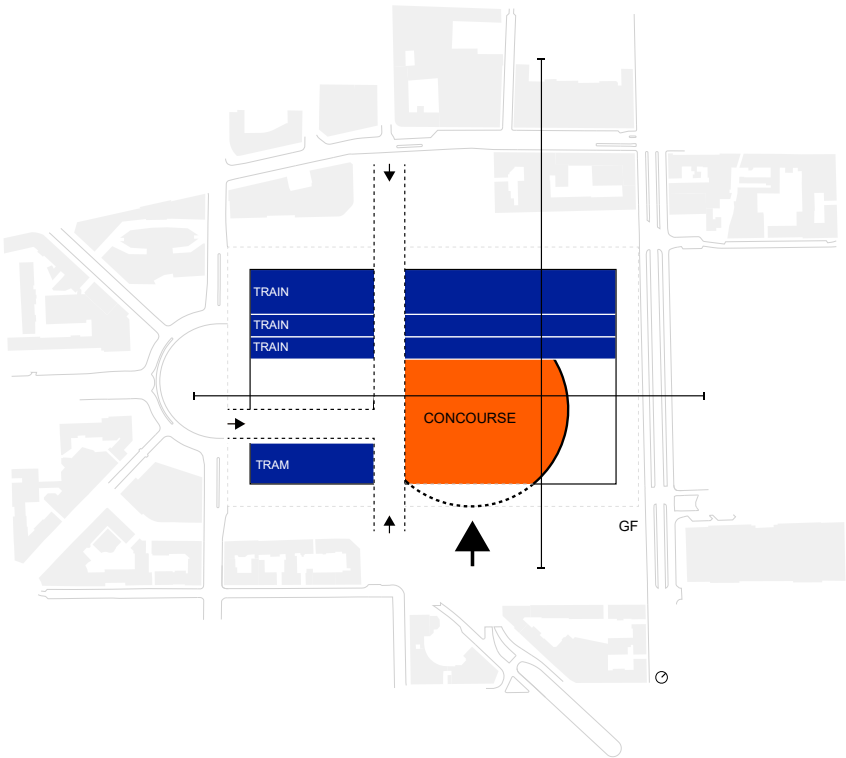
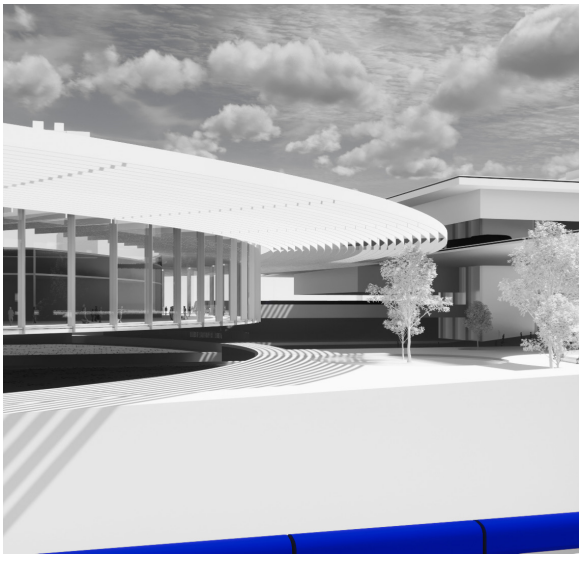


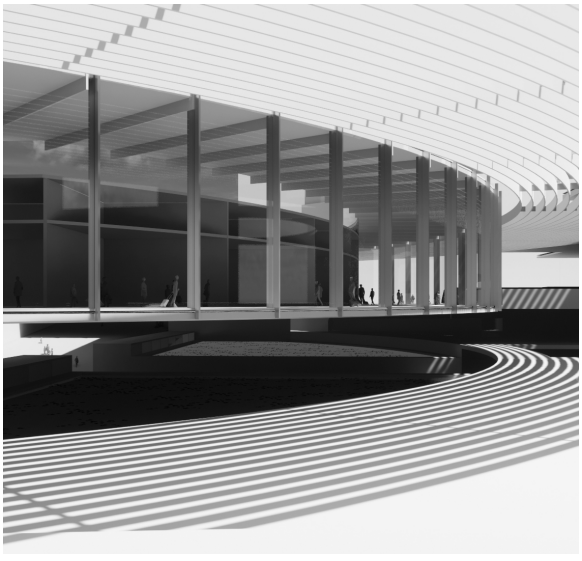

# 3.5 Concept Plan

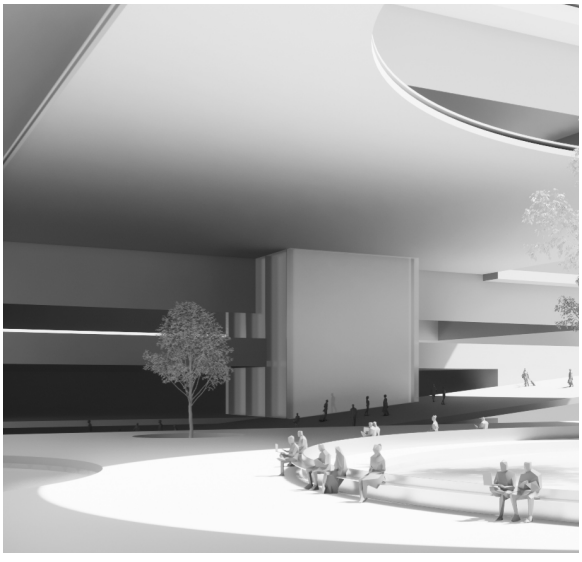


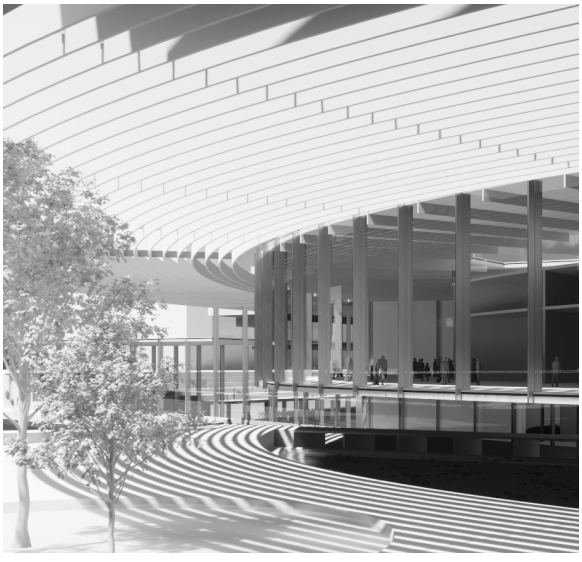


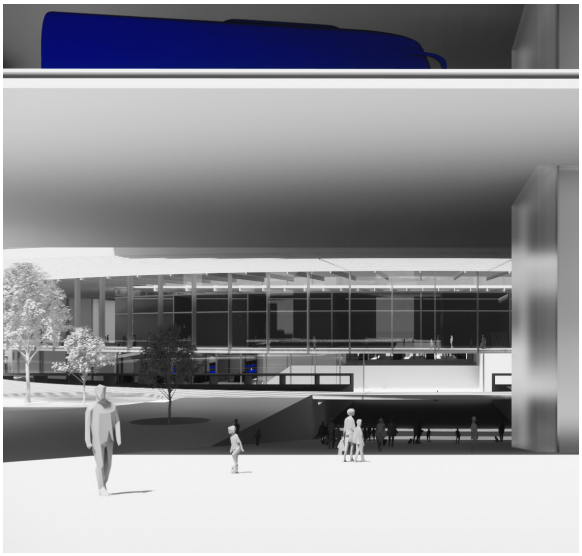


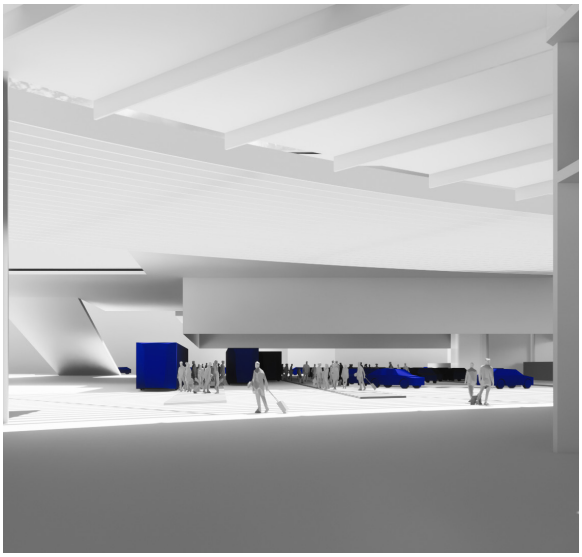


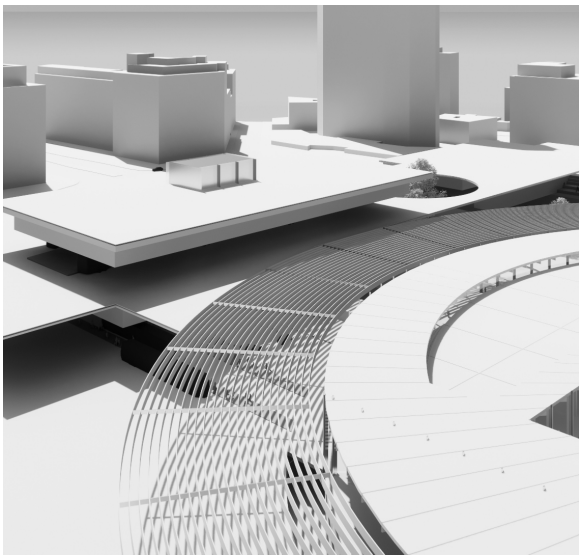


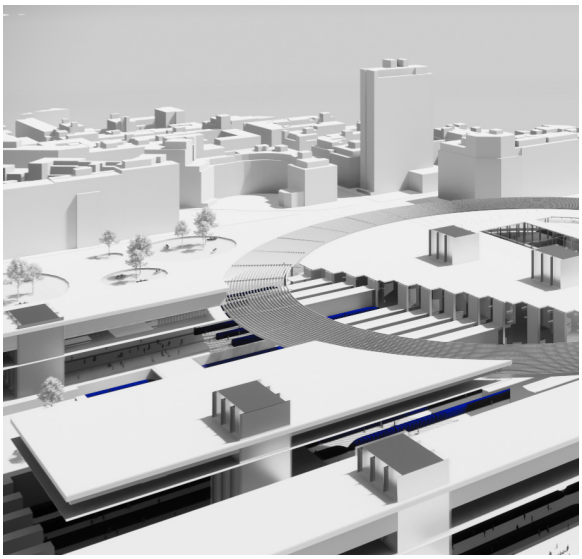




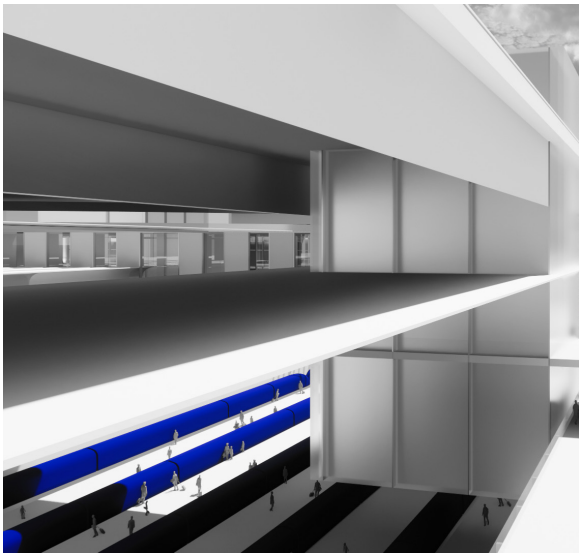


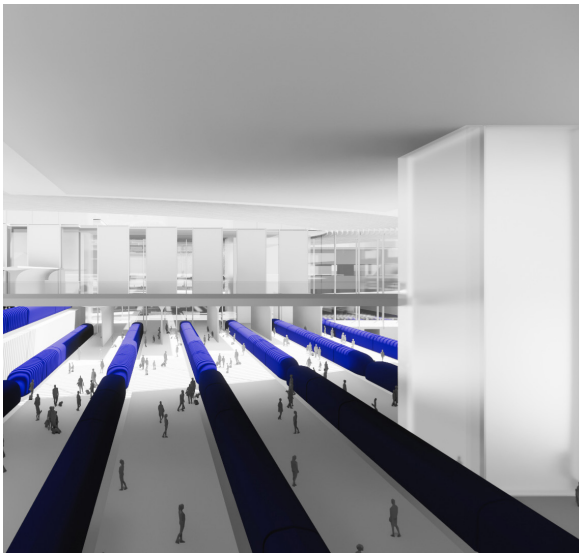


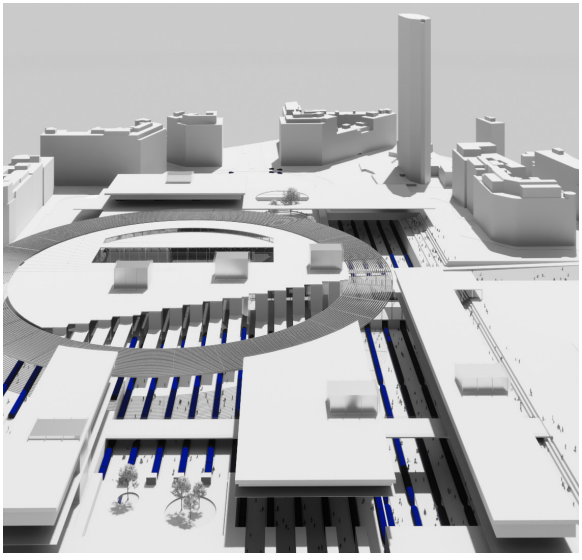


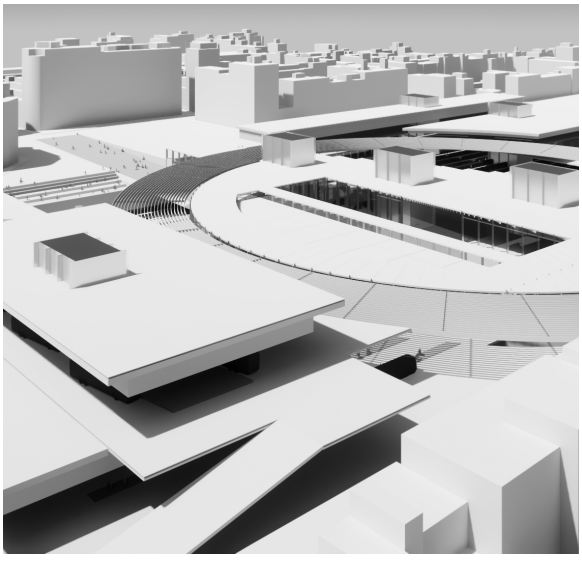


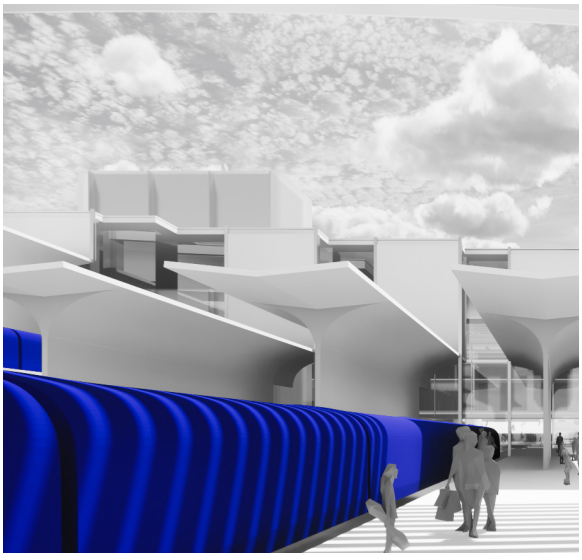


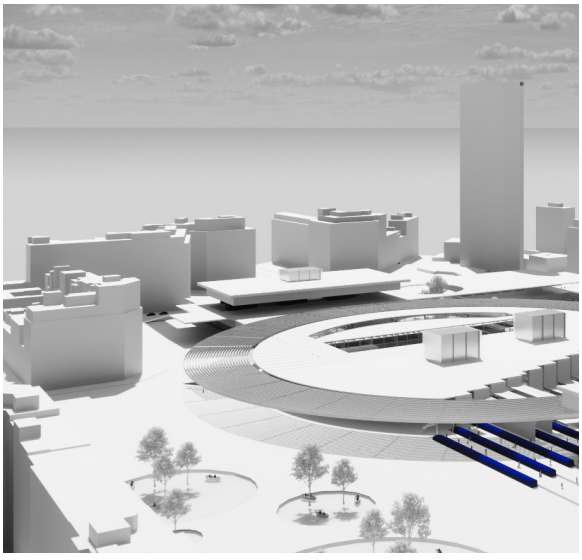


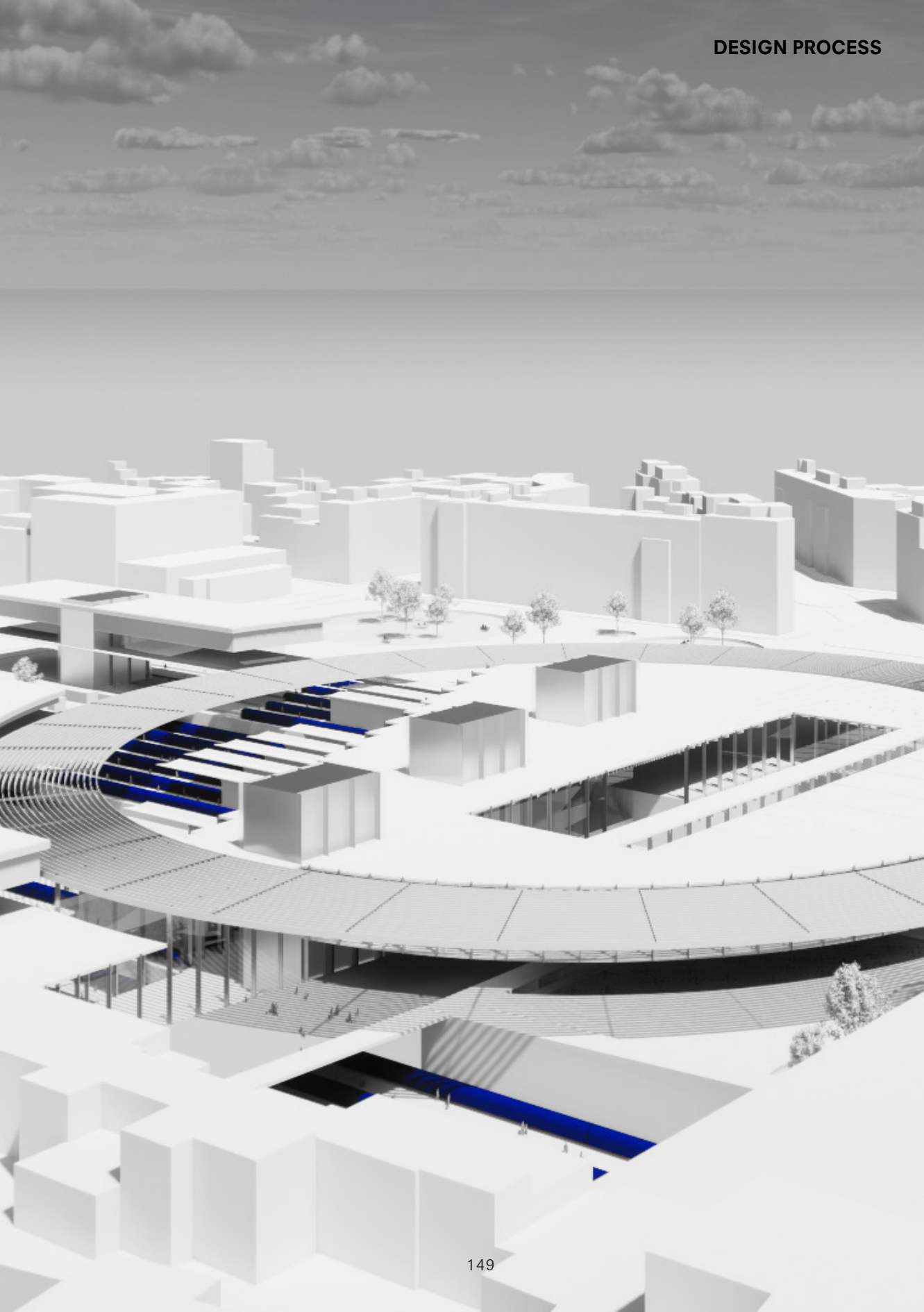












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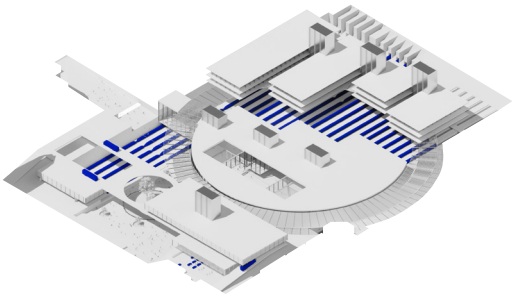

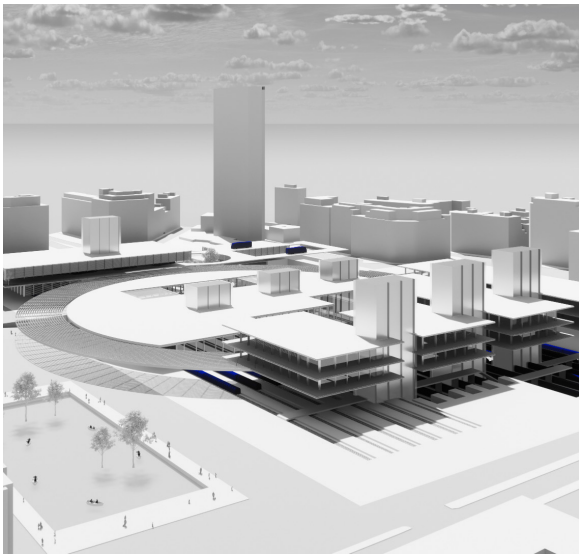

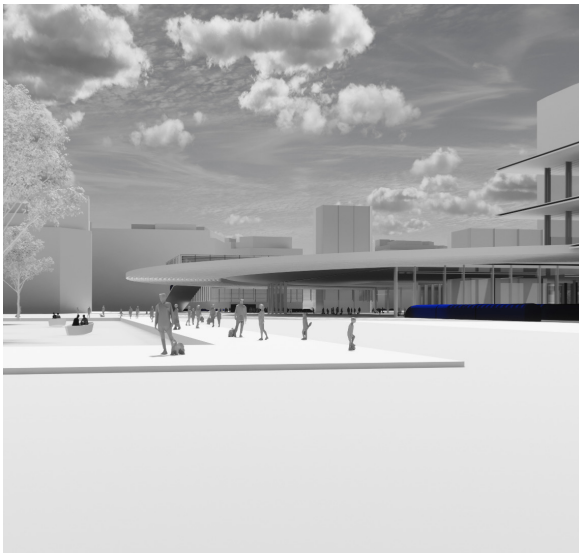

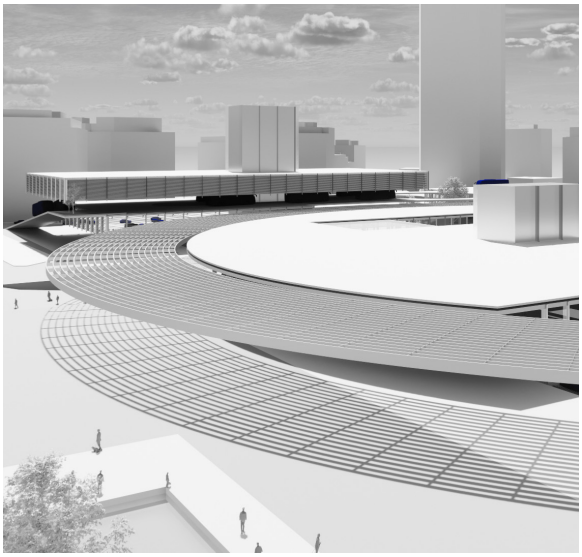

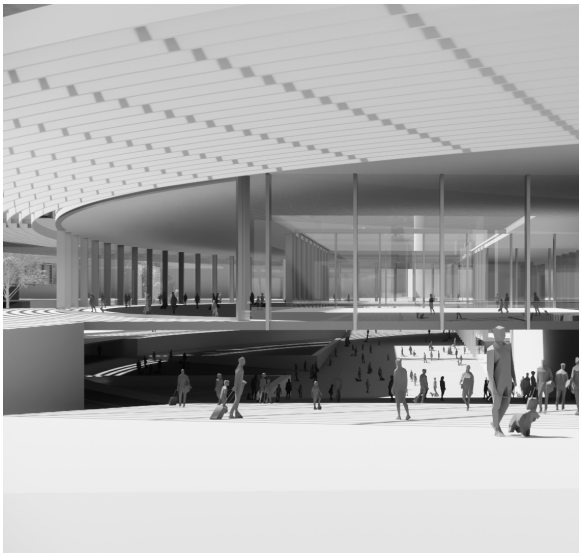

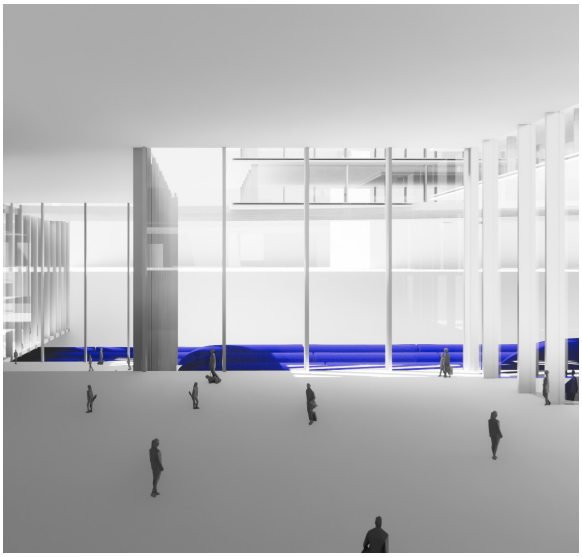

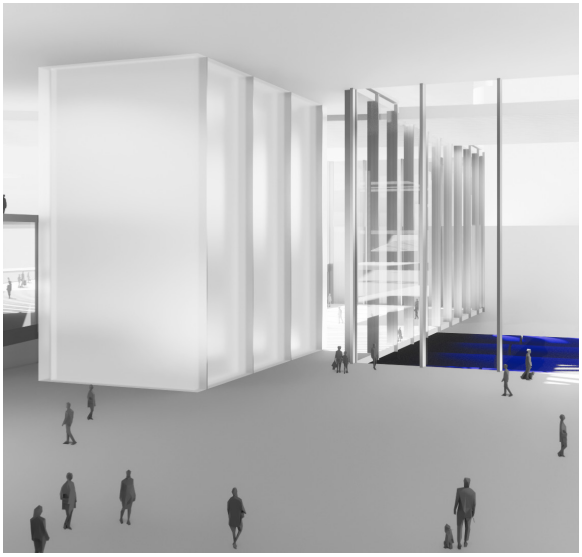



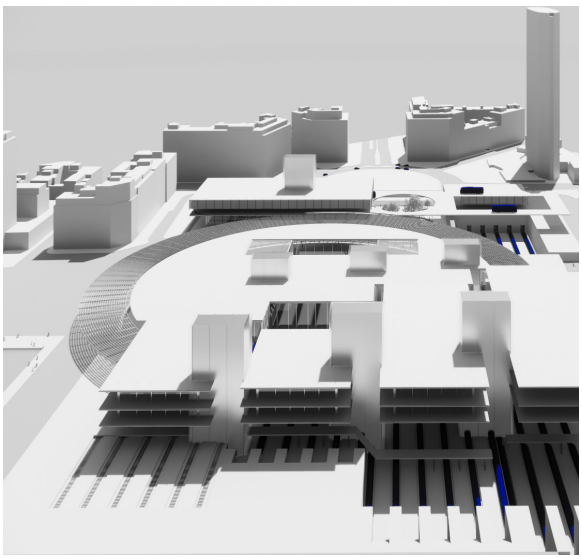

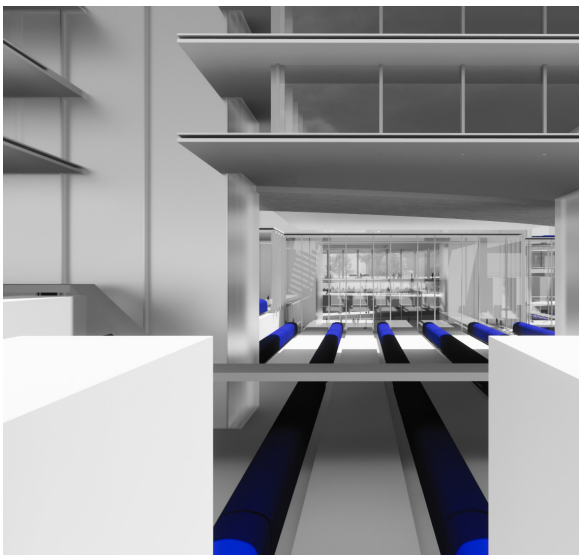

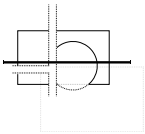

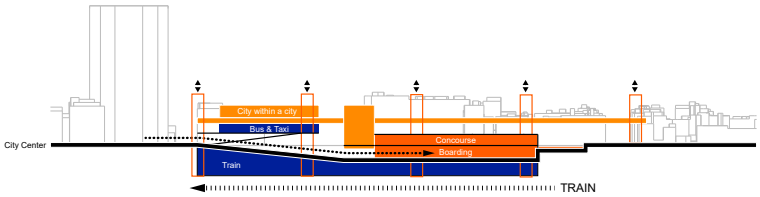
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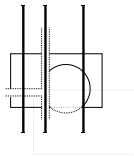
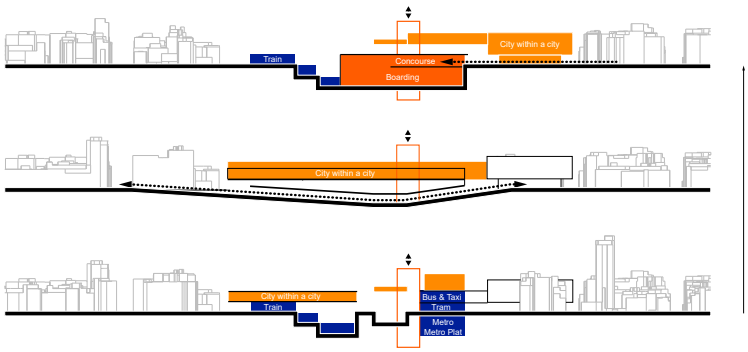
Concourse
Boarding
City Center
Train
TRAIN

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Concourse
Boarding
City within a city
City within a city
City within a city
Train
Bus & Taxi
Train
Metro
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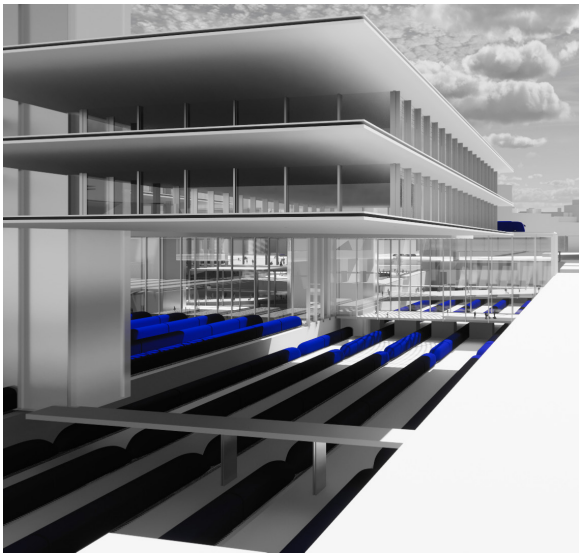

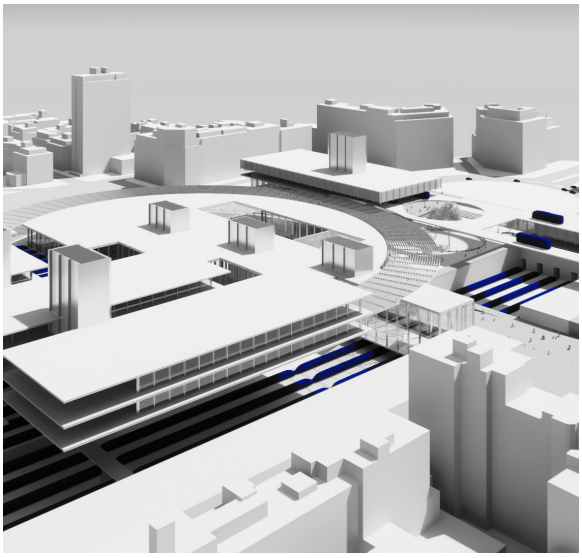

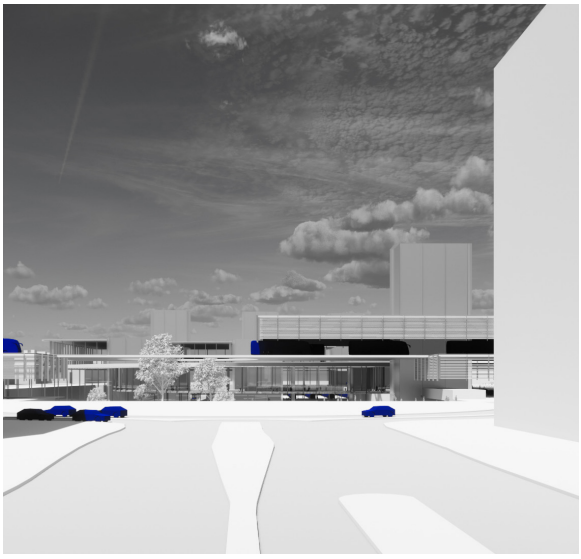

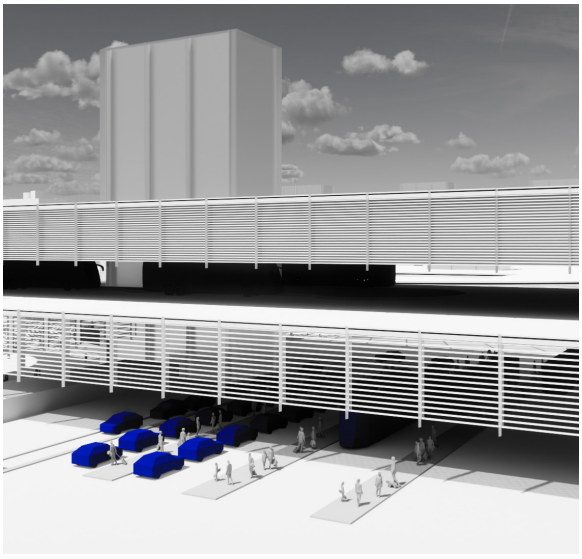

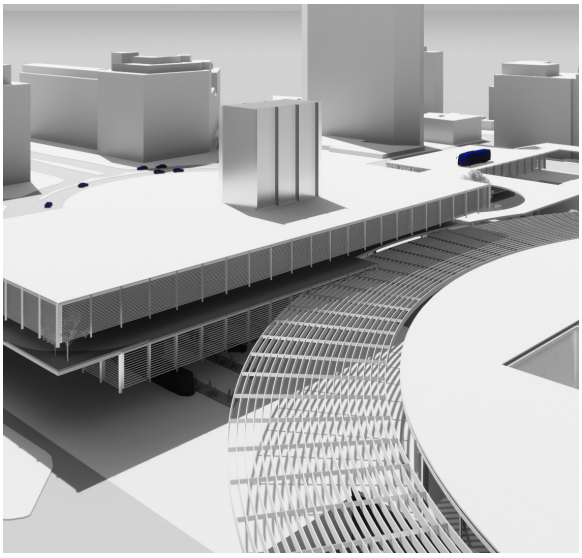

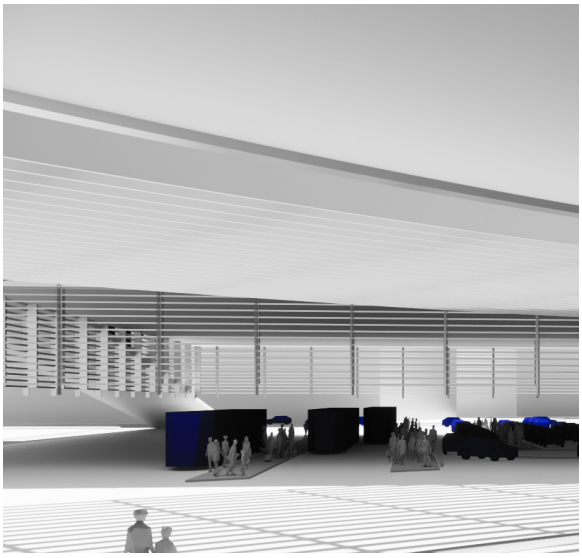

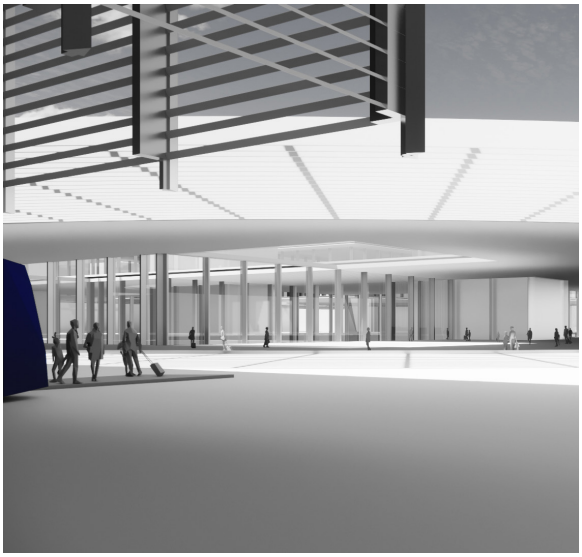

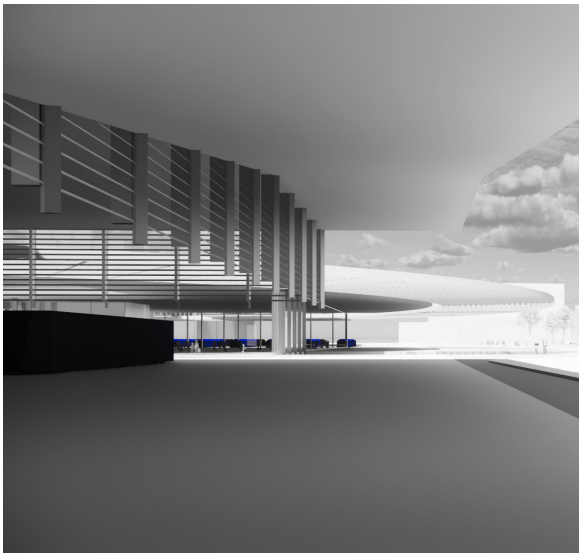

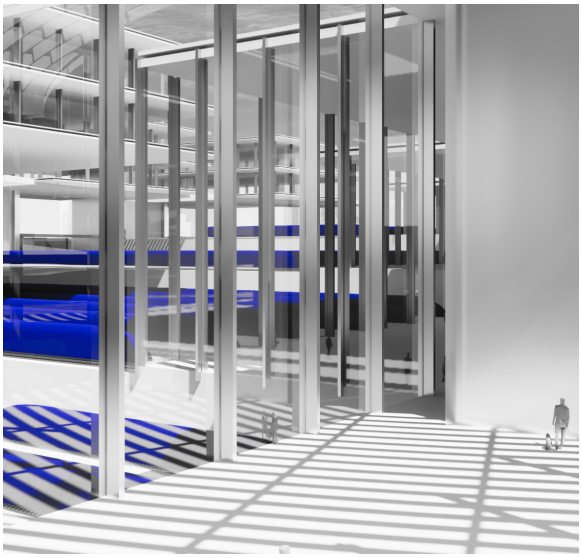

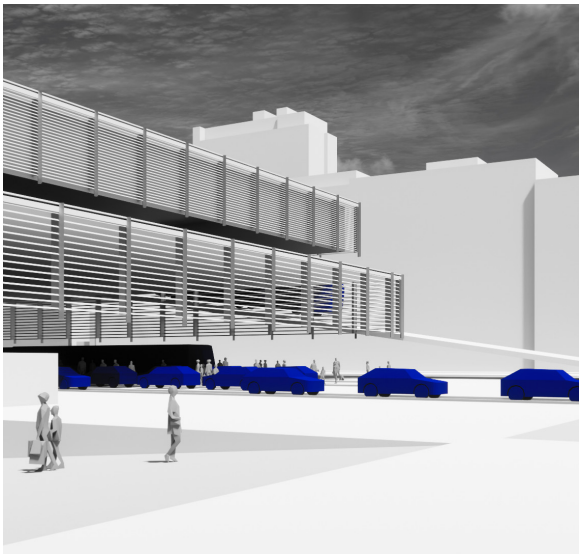

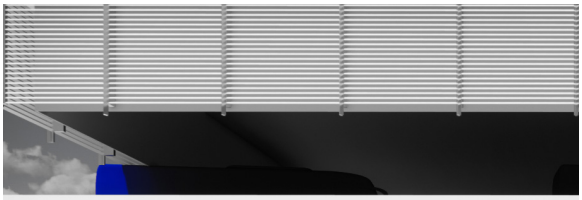

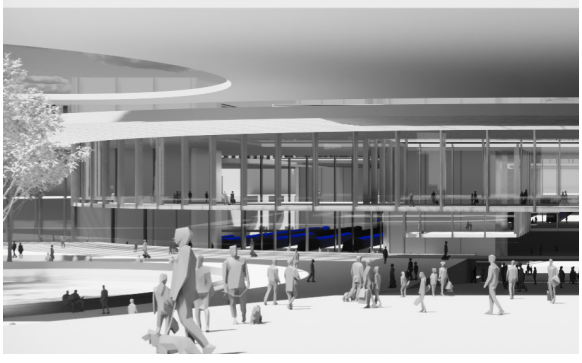

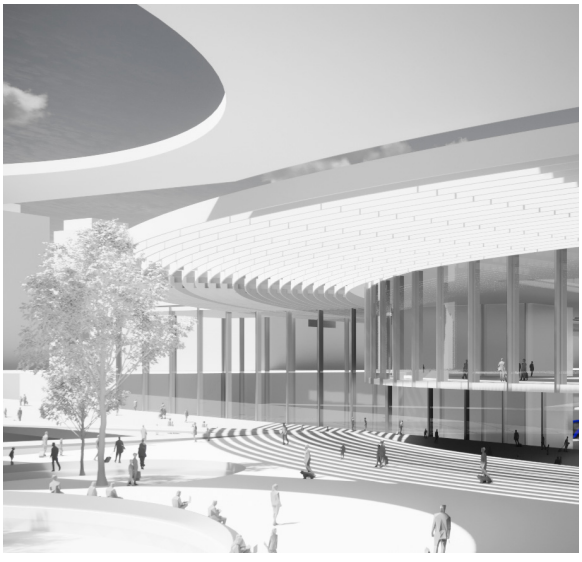

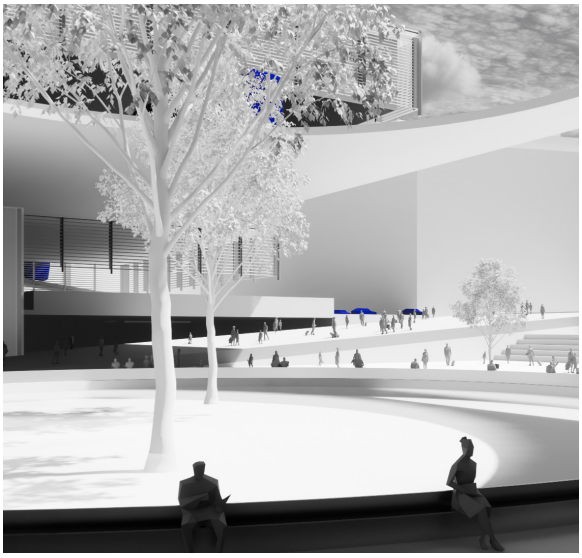

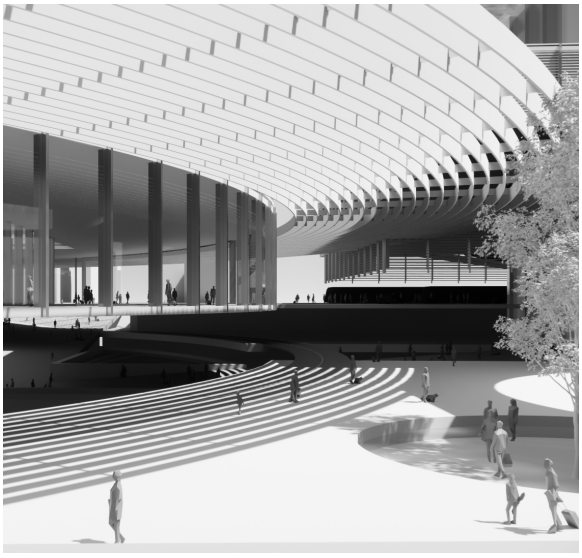

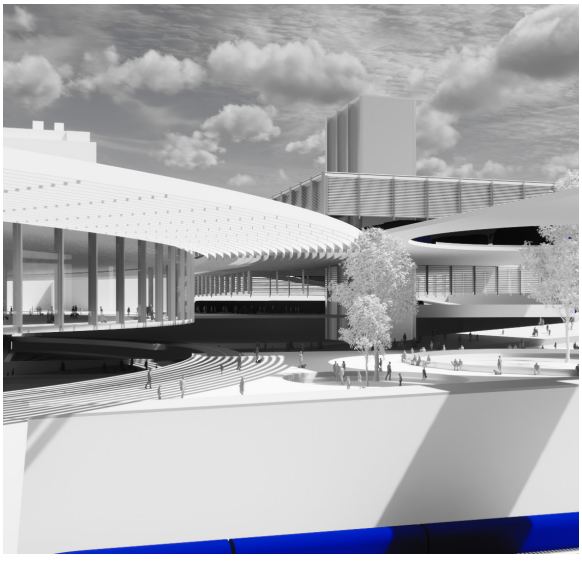



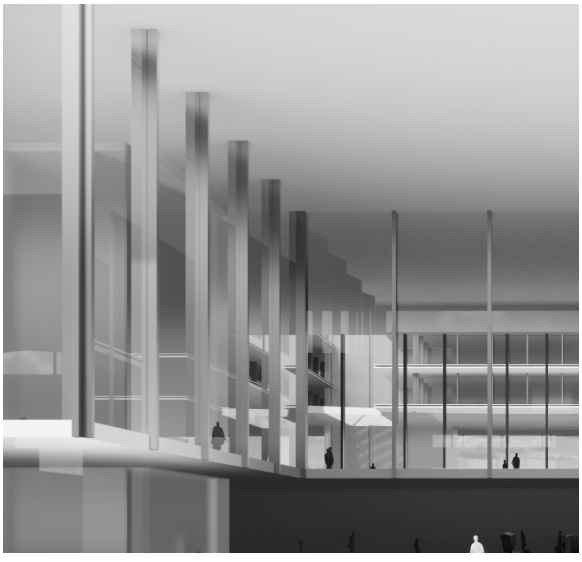





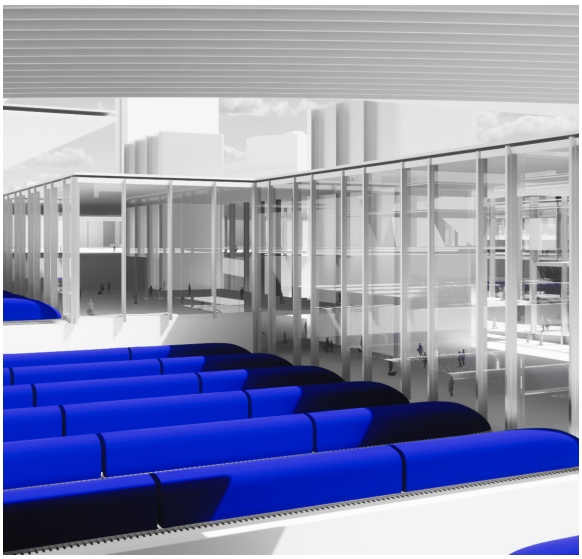

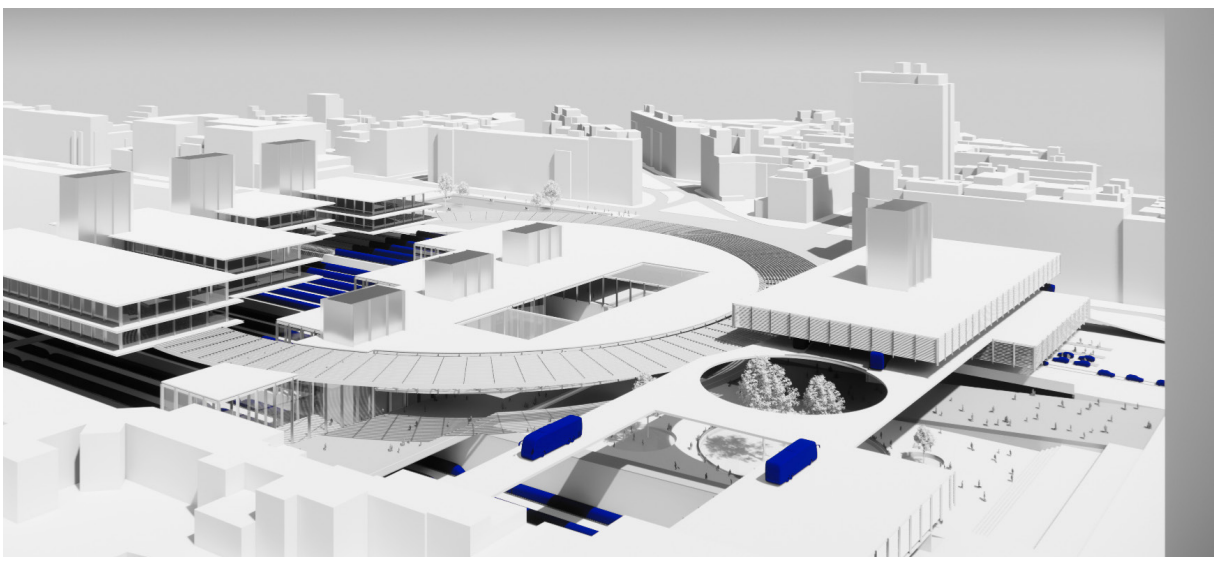

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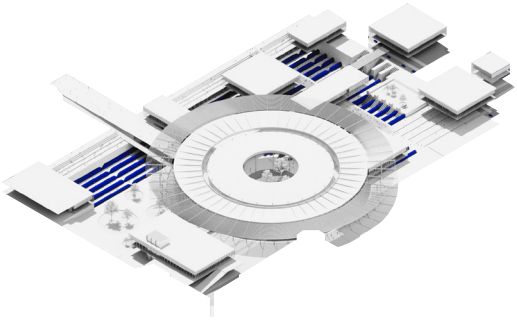
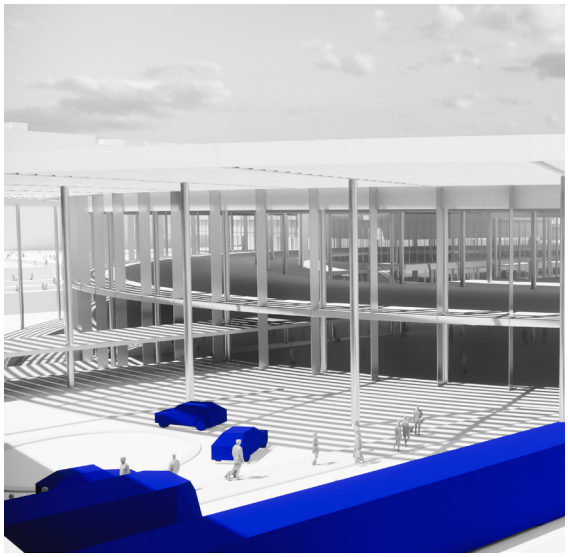
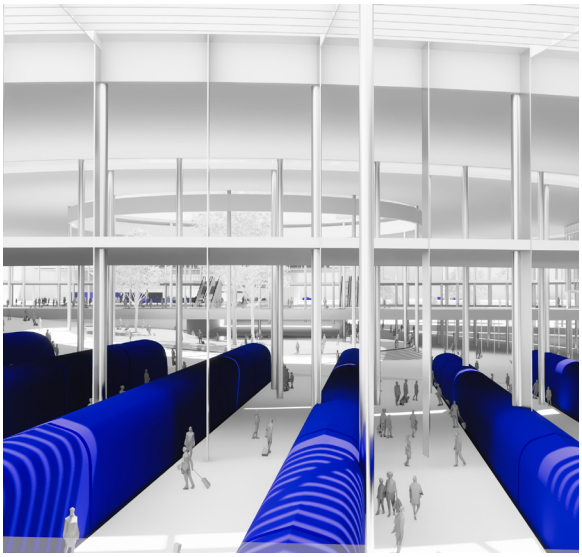
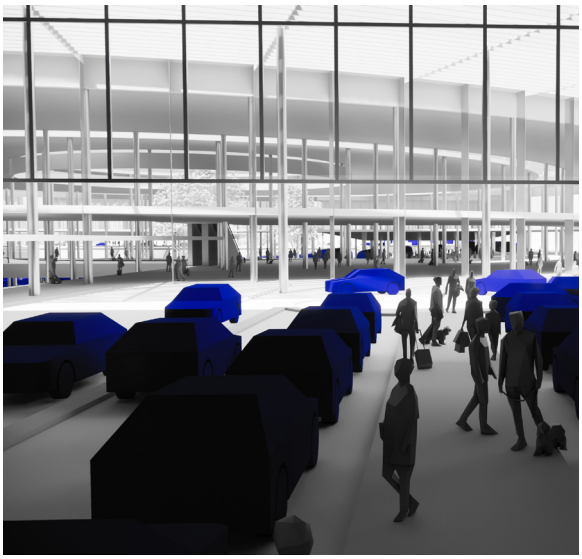
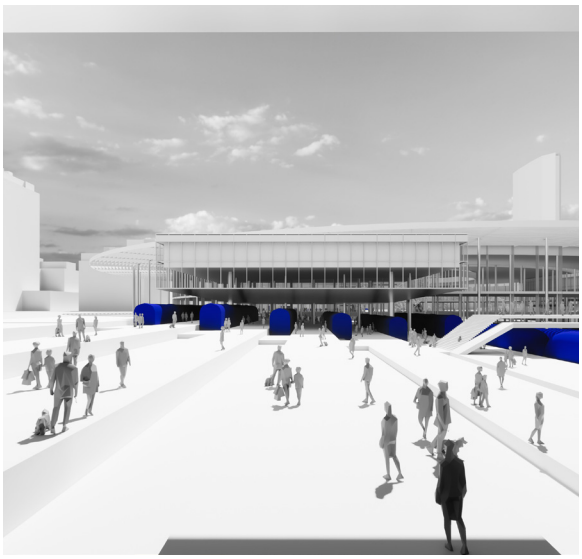


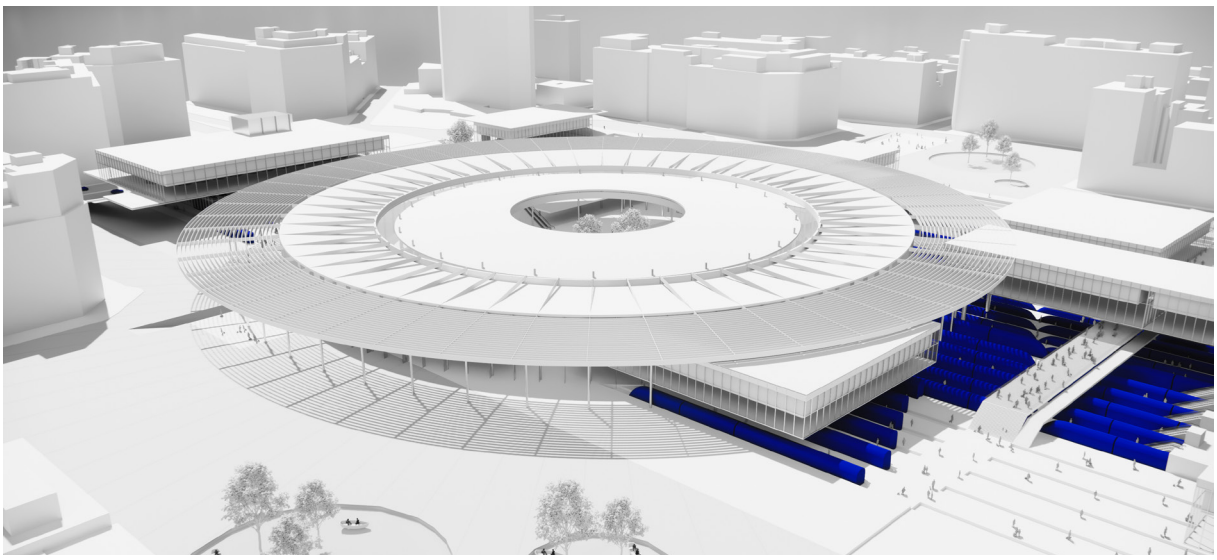


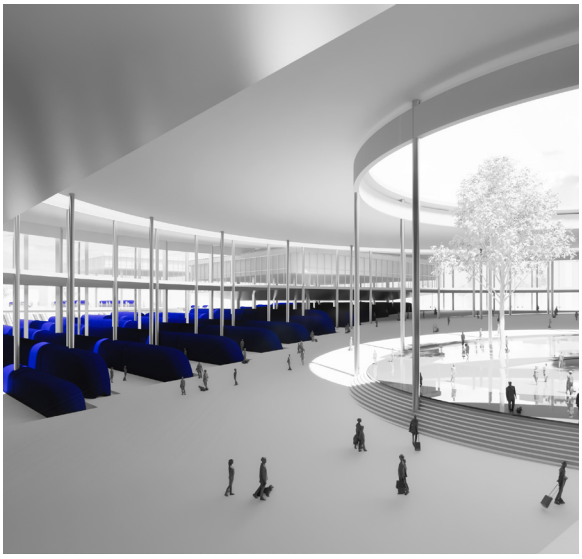


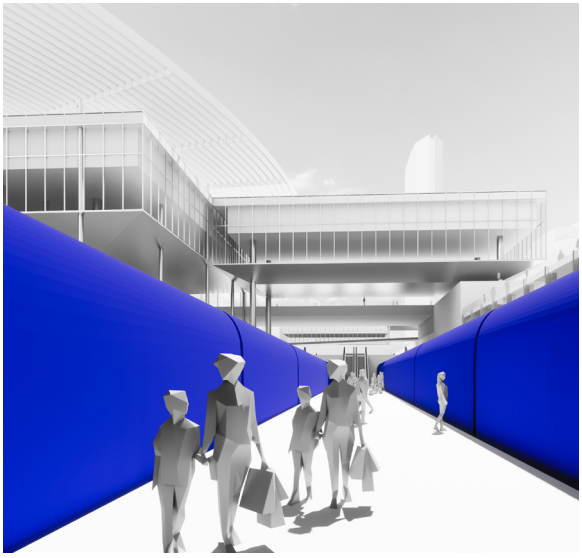


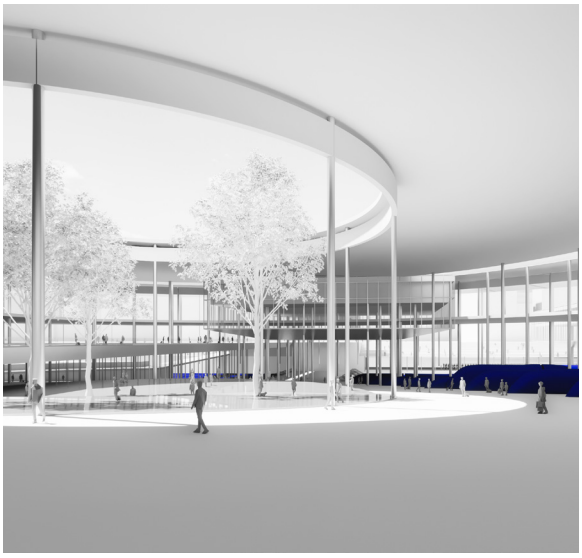


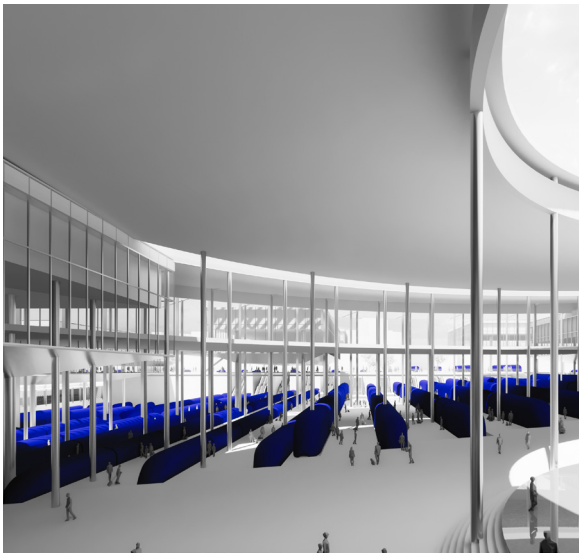


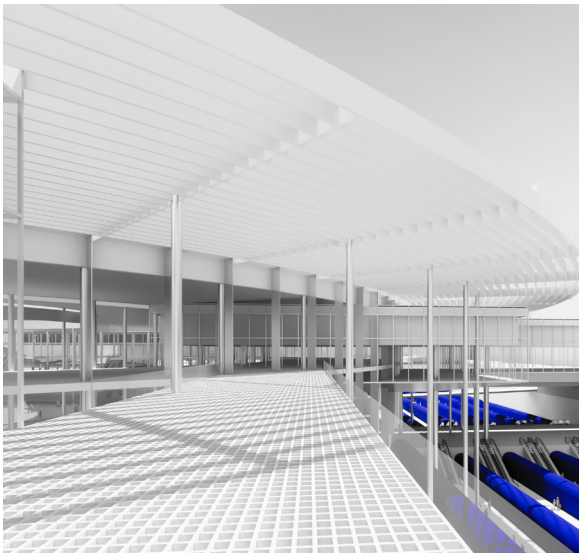


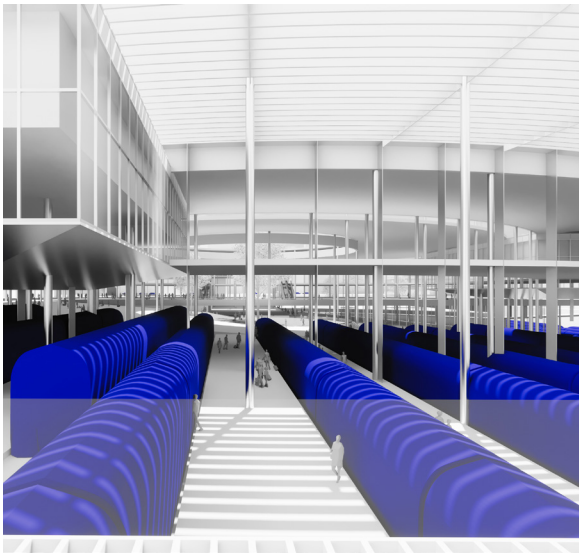


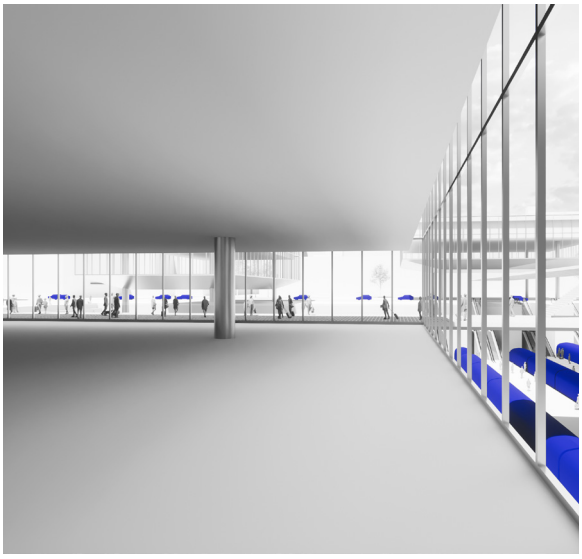


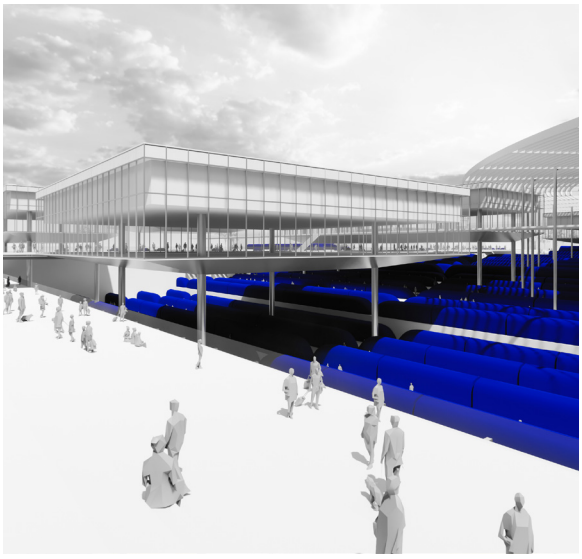


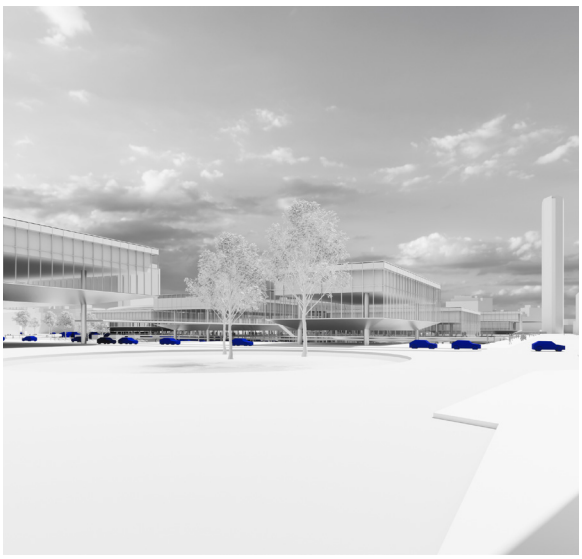


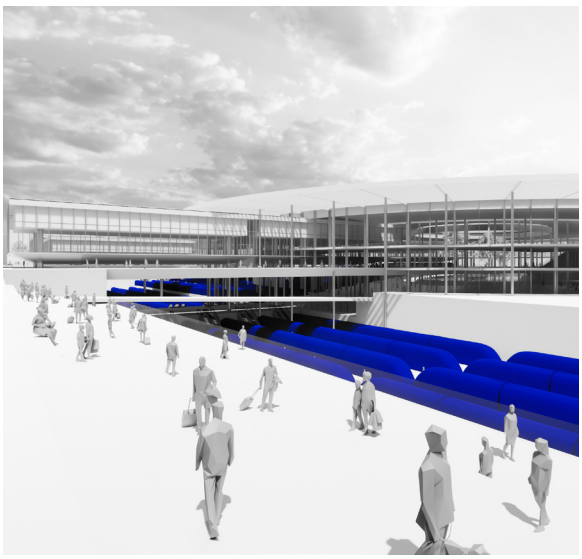


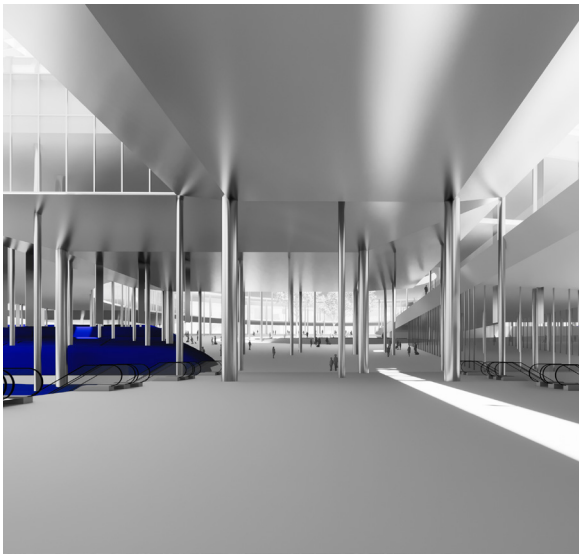


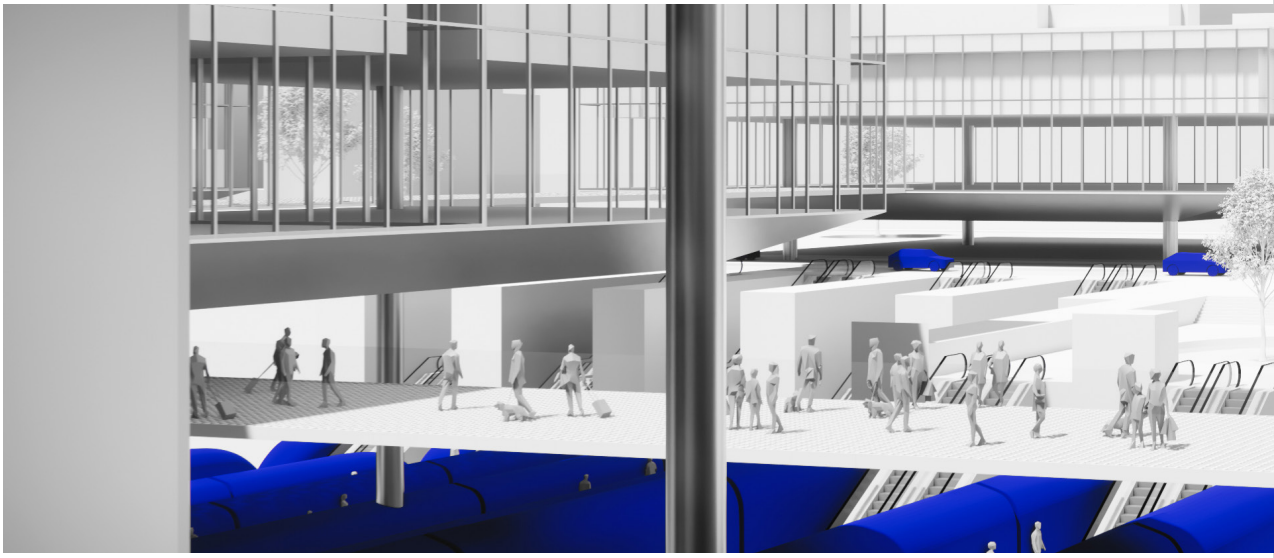


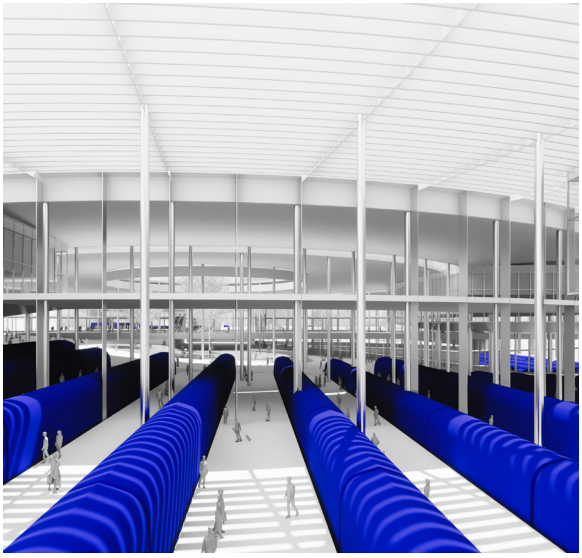


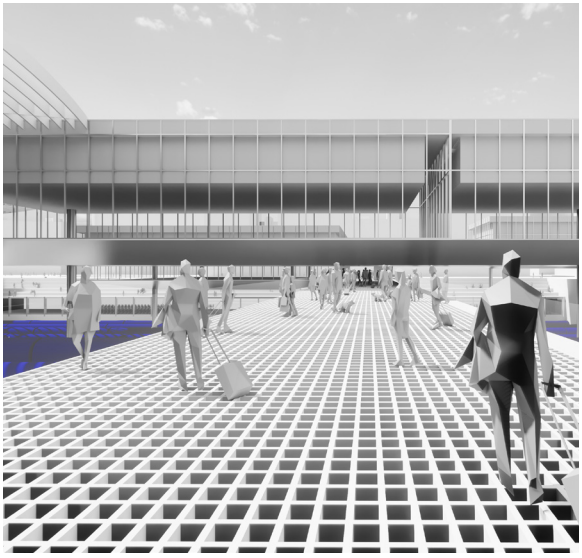




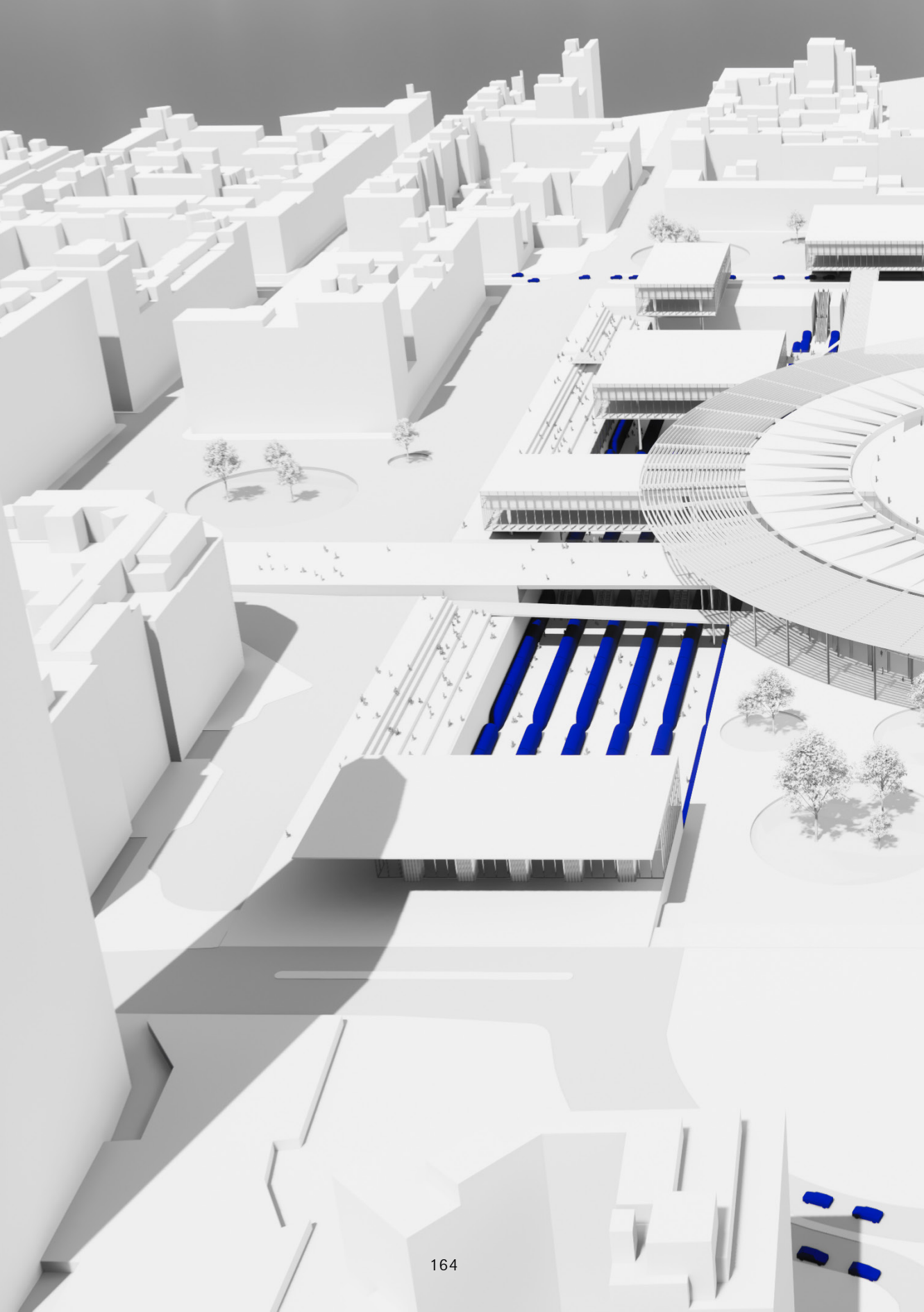


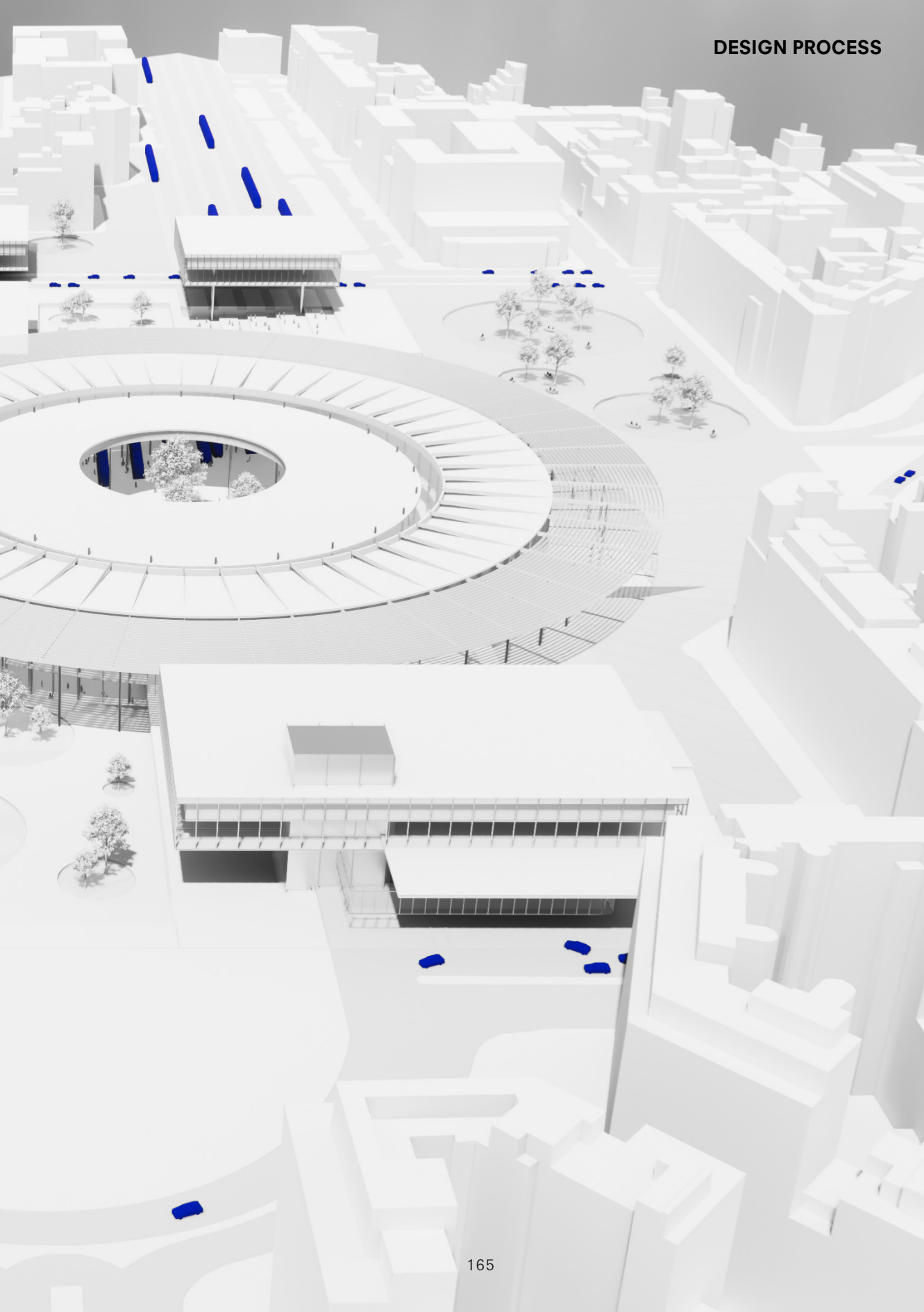


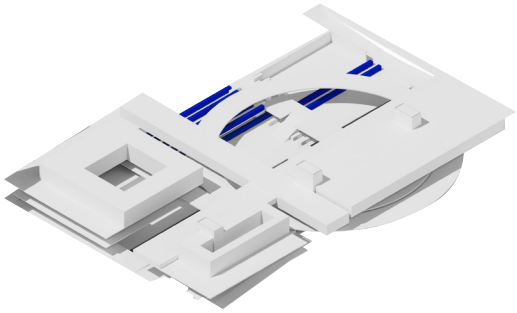


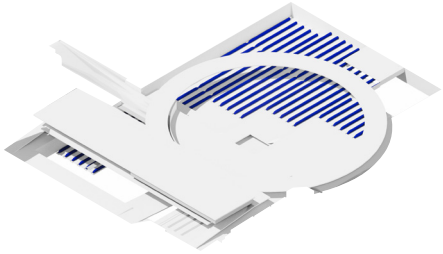


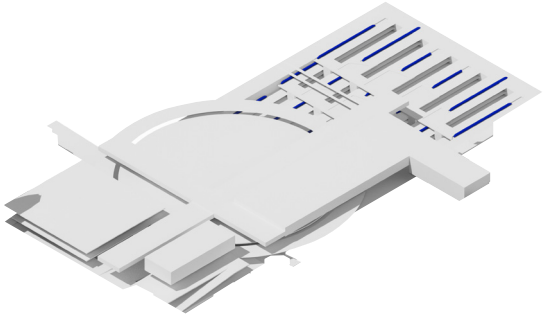


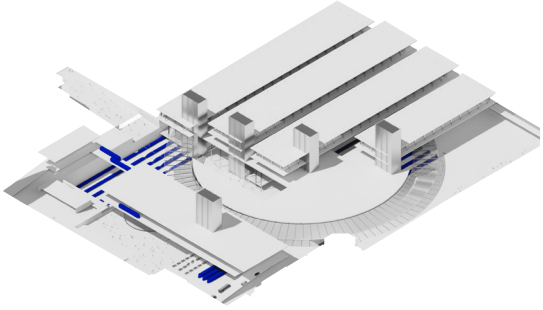


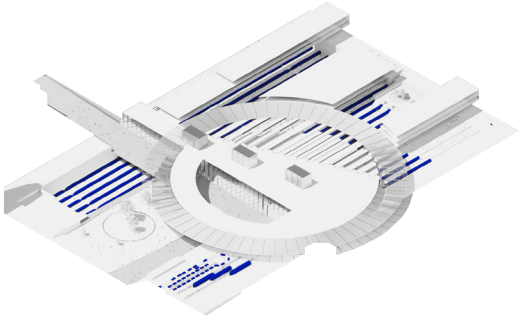


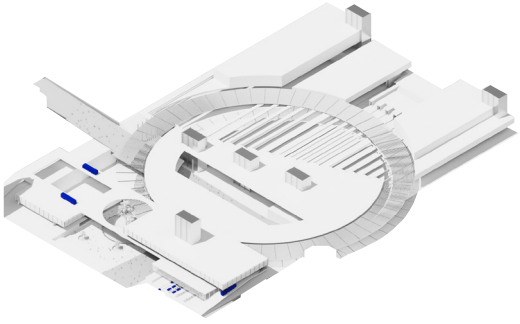


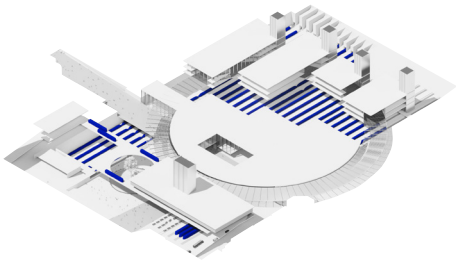


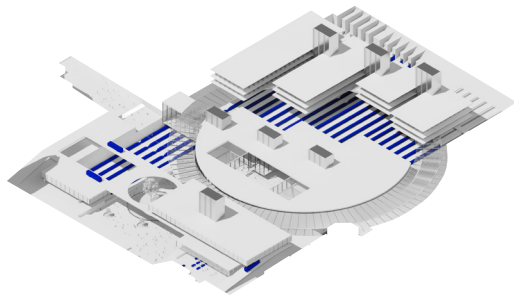


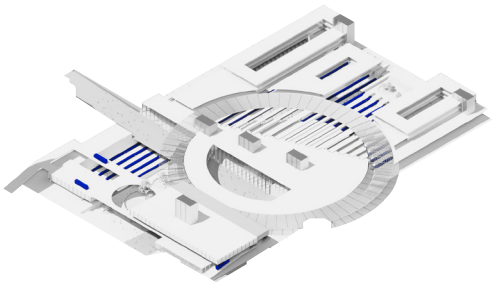


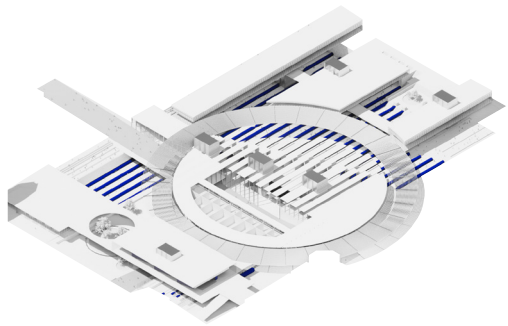


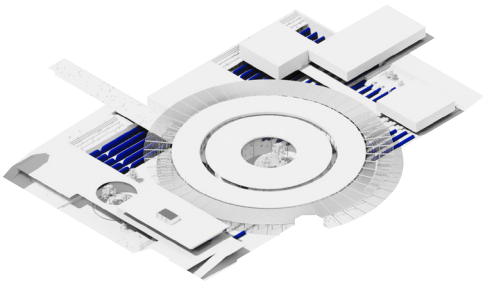


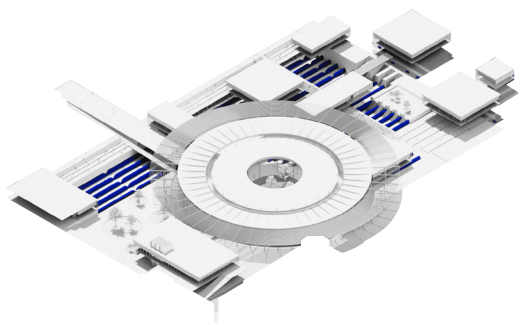












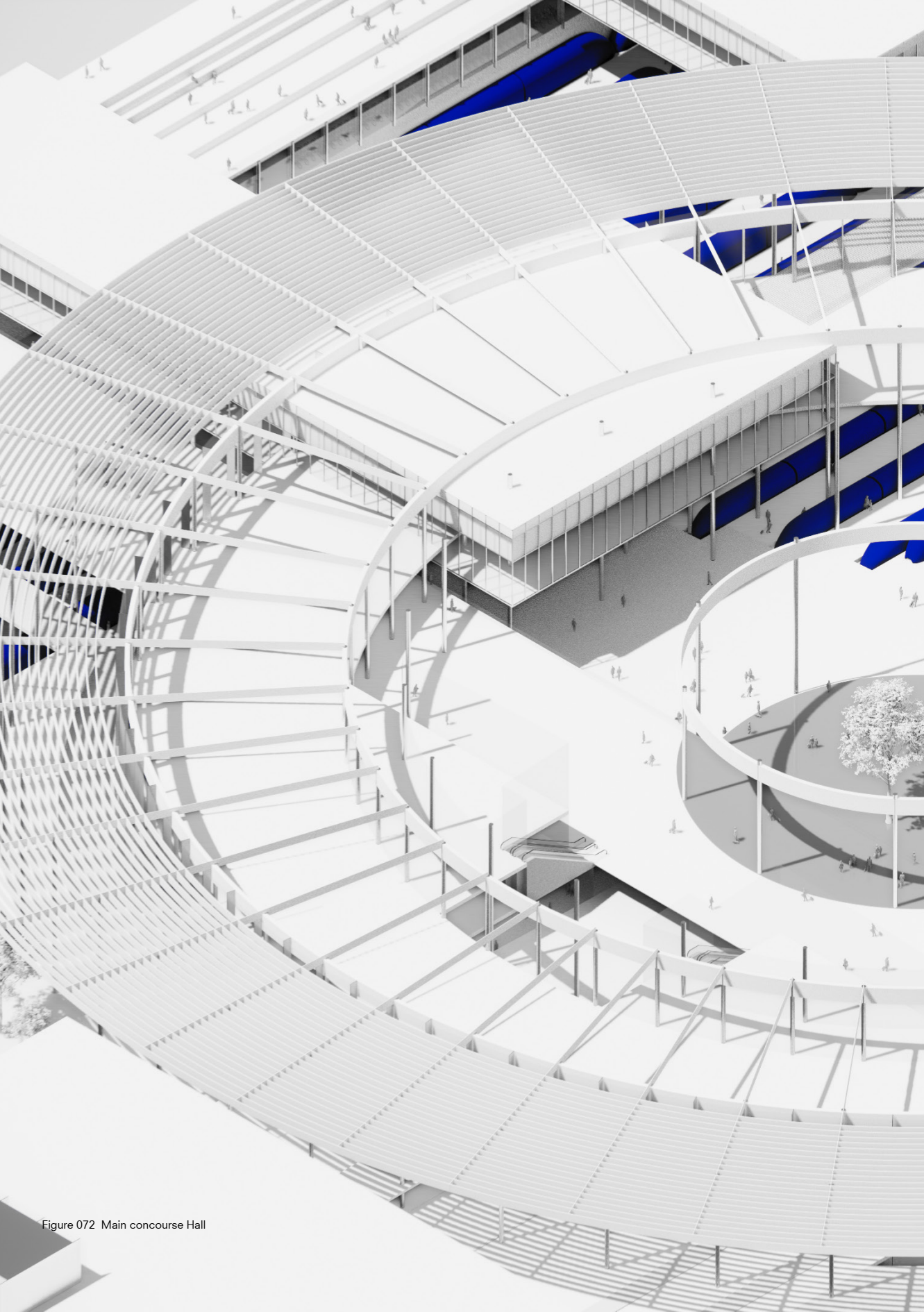


Figure 072  Main concourse Hall

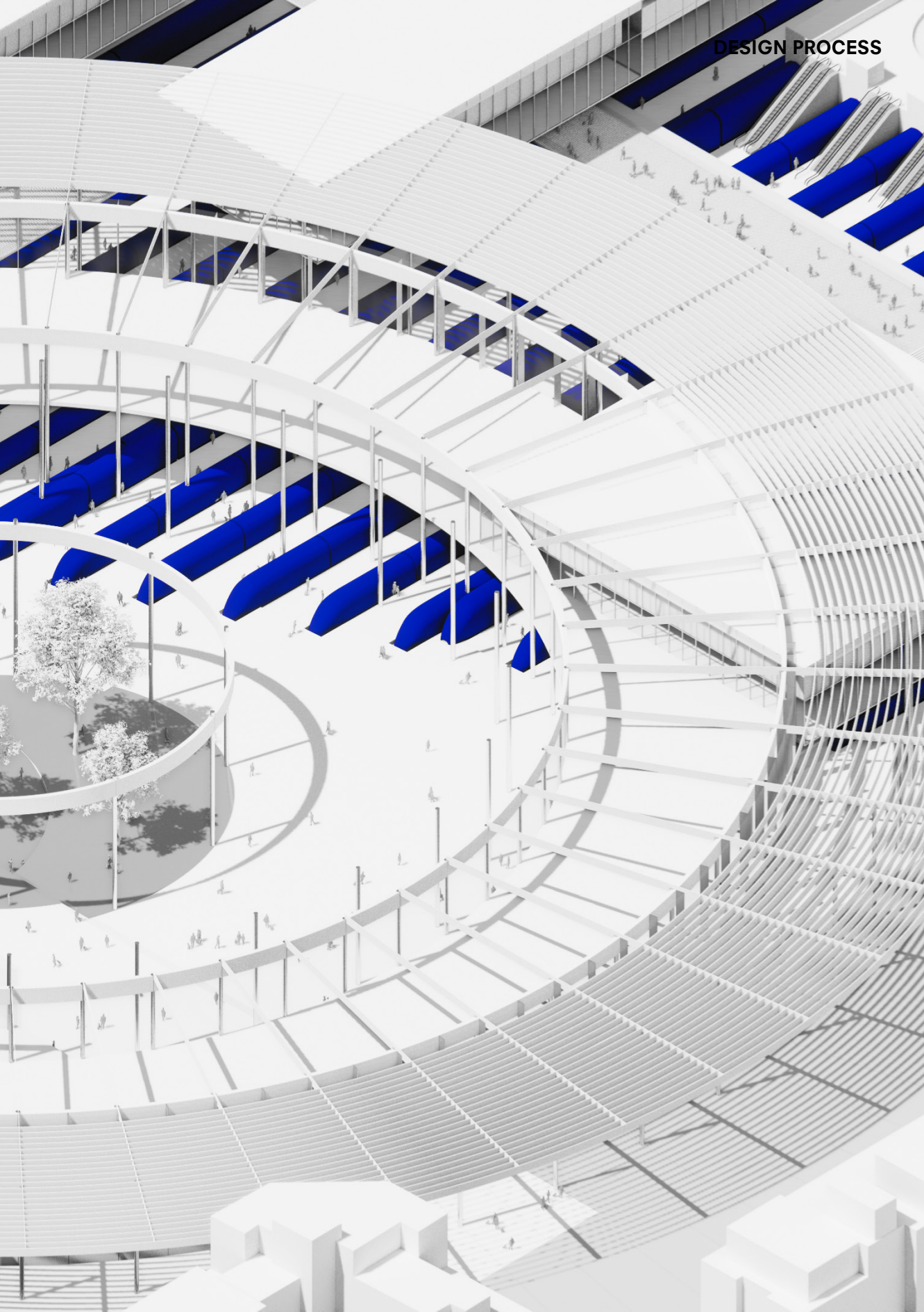
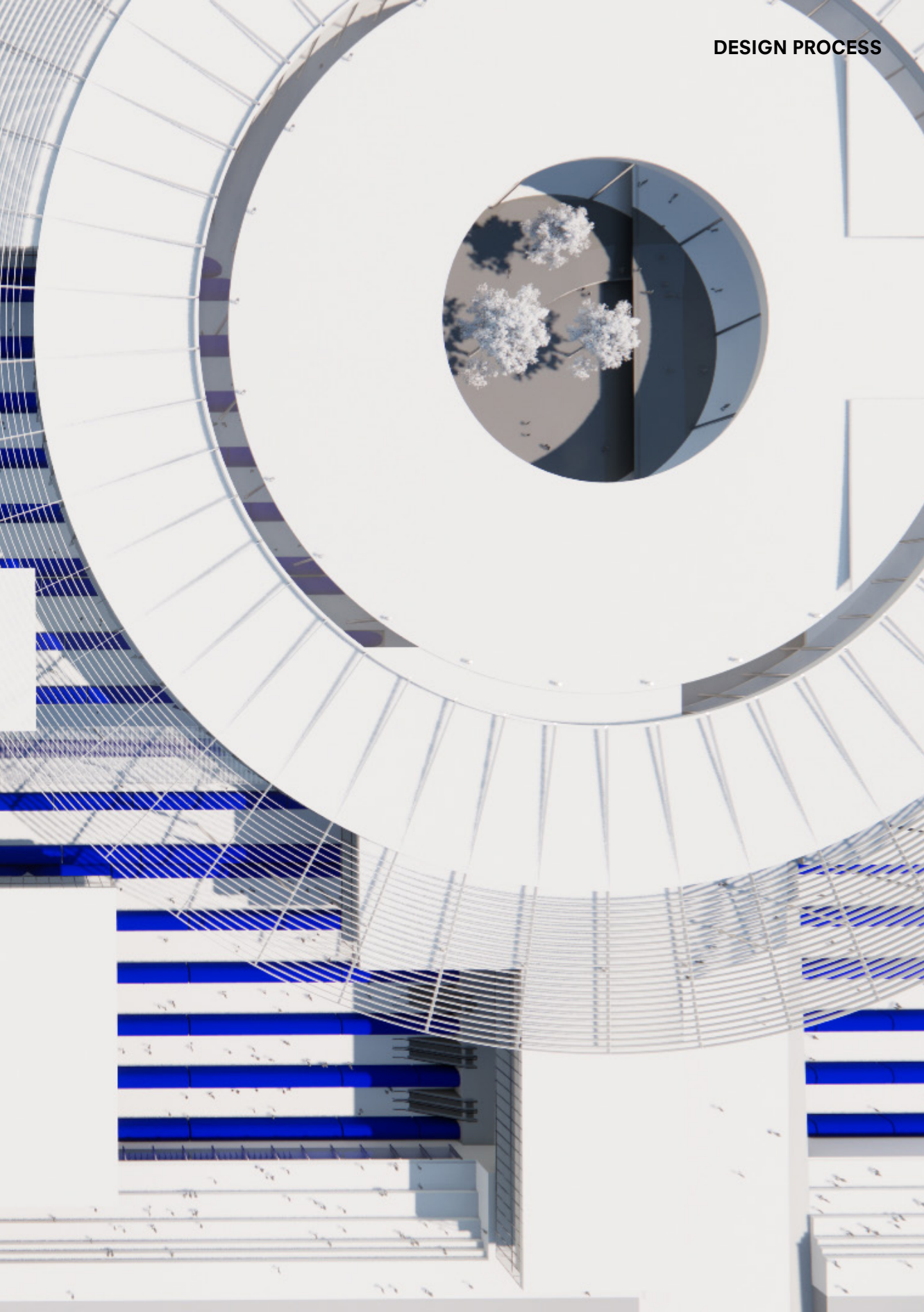


Figure 073 Plan View



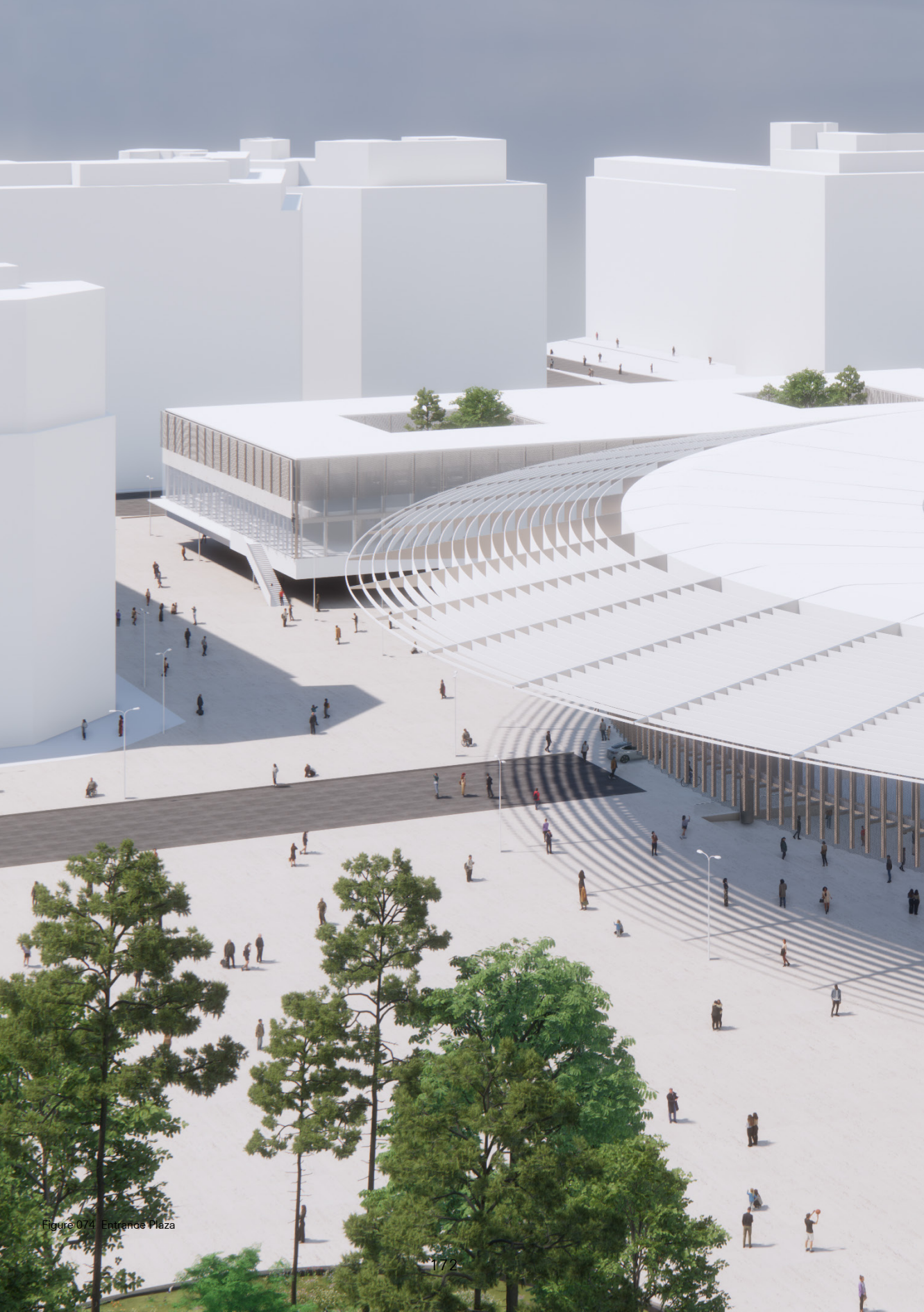


Figure 074 Entrance Plaza

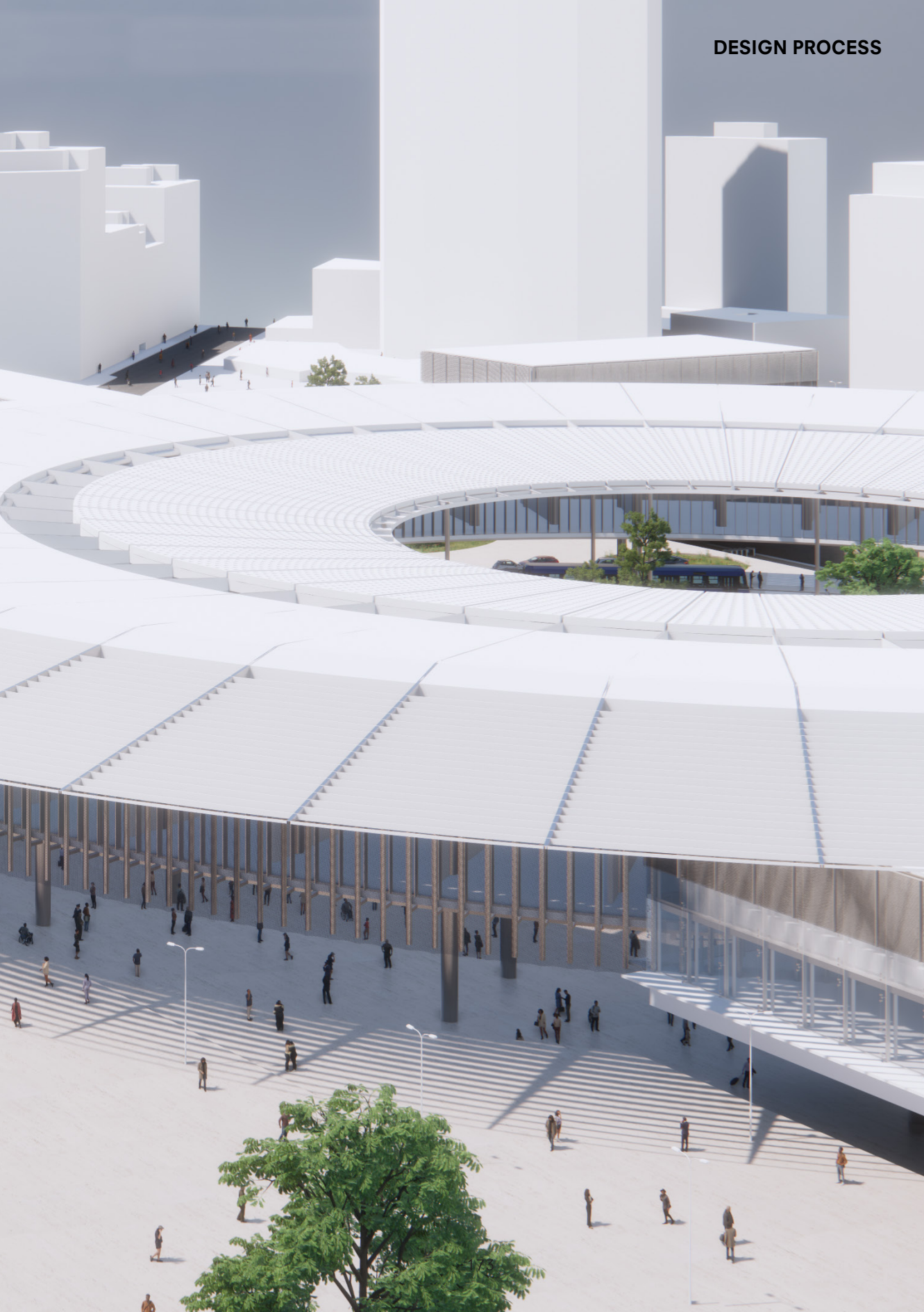




Figure 075  Main Entrance

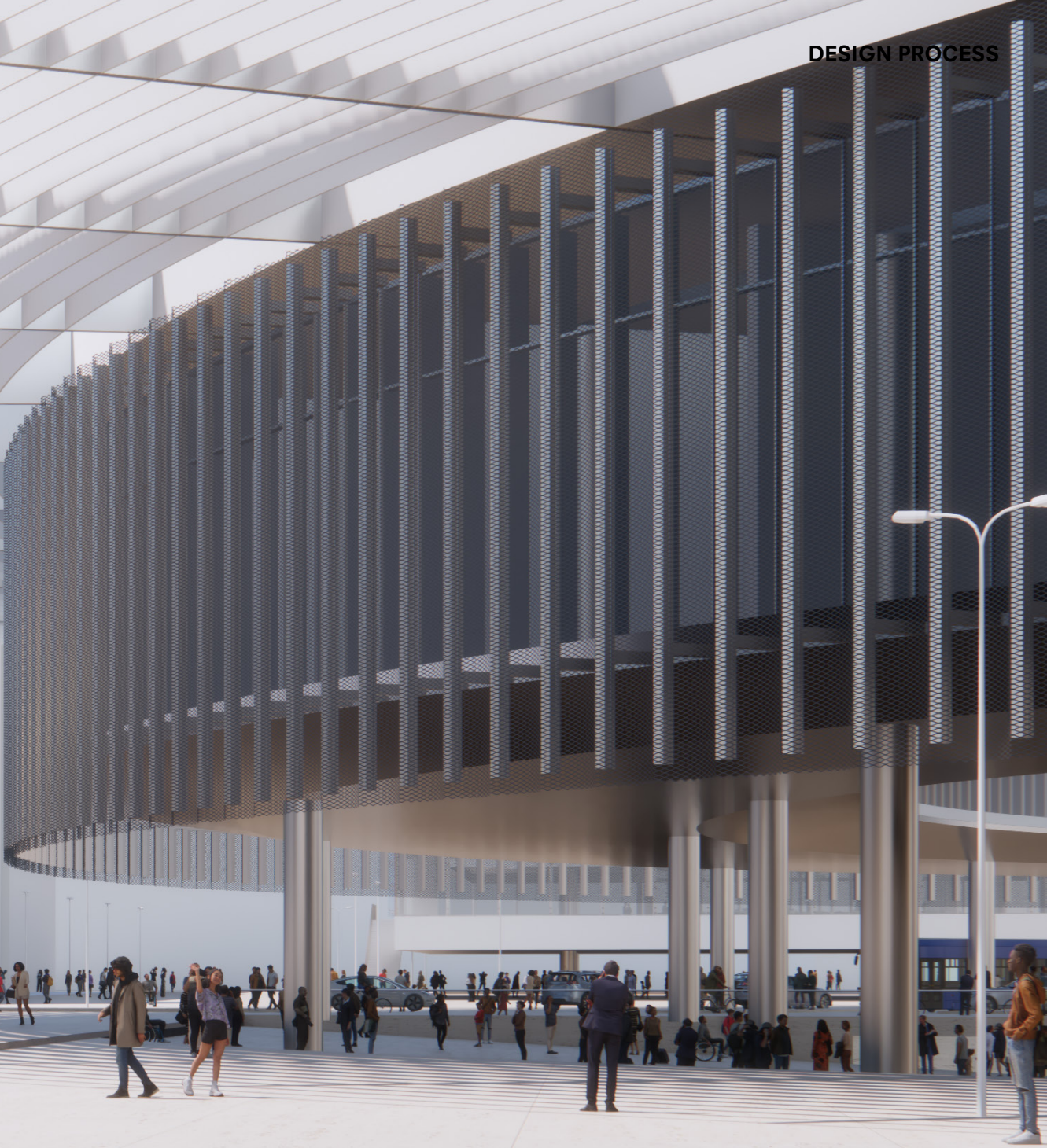




Figure 076 Passage & Concourse hall access





Figure 077  Passage

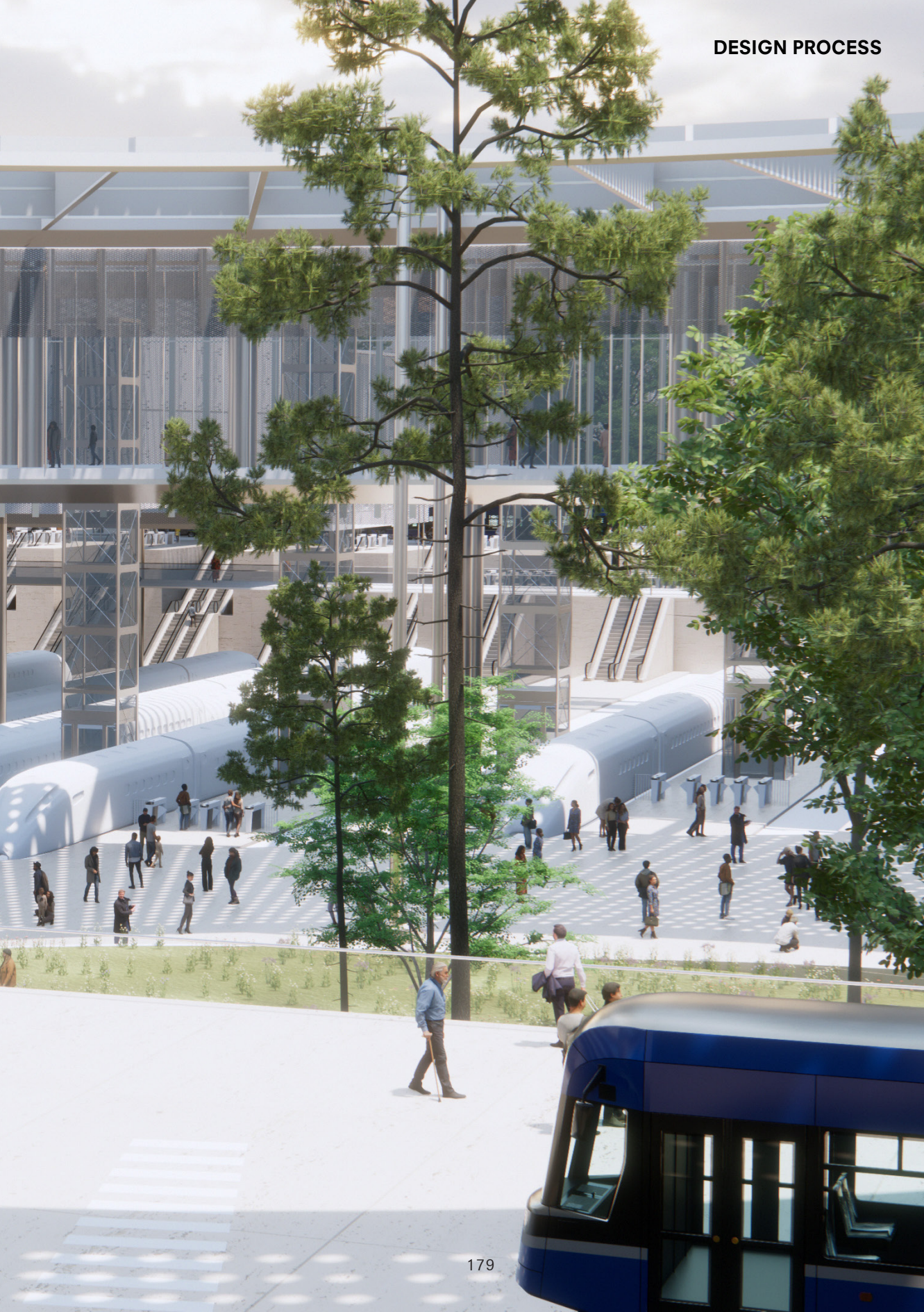




Figure 078  Concourse Hall



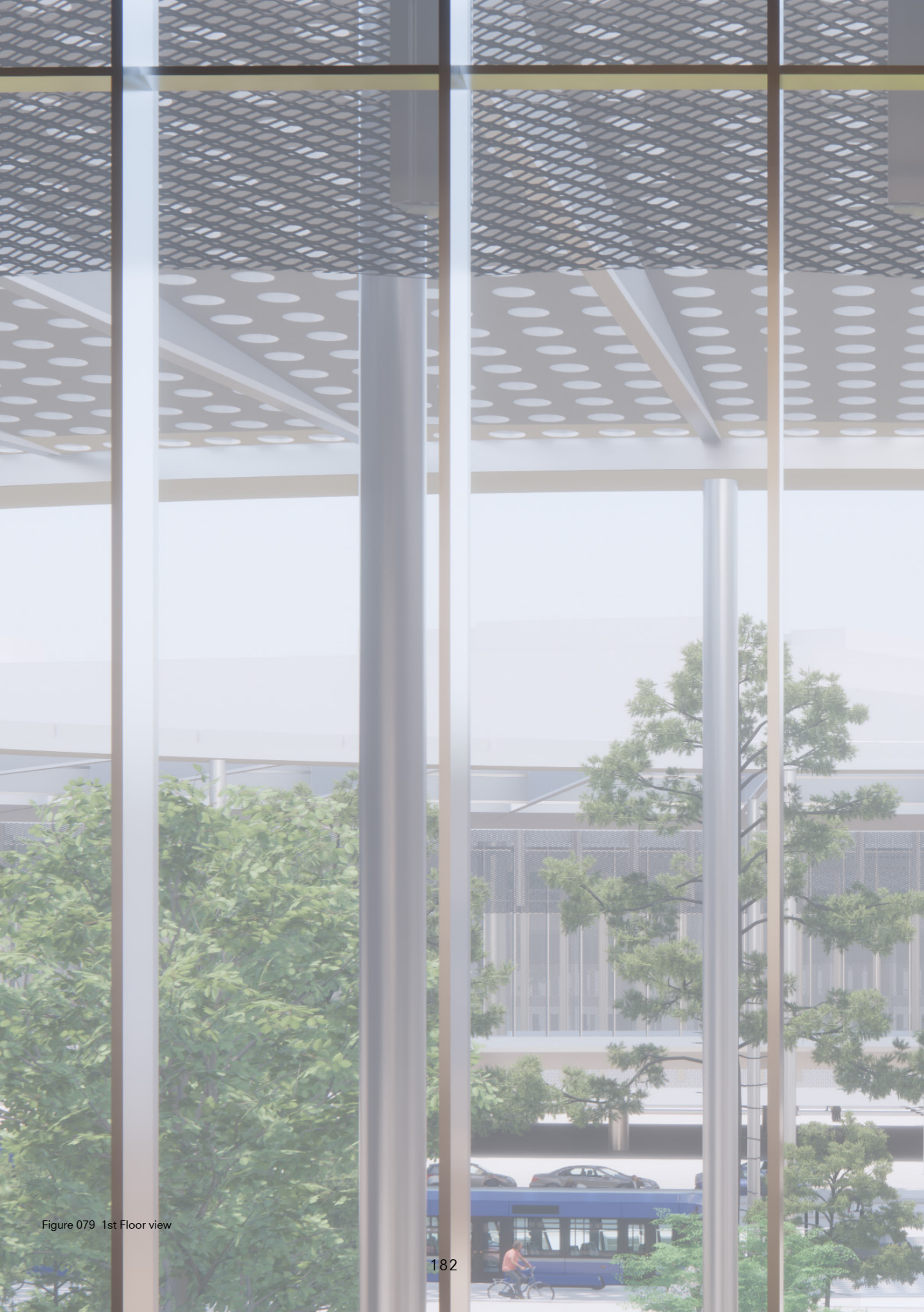


Figure 079 1st Floor view

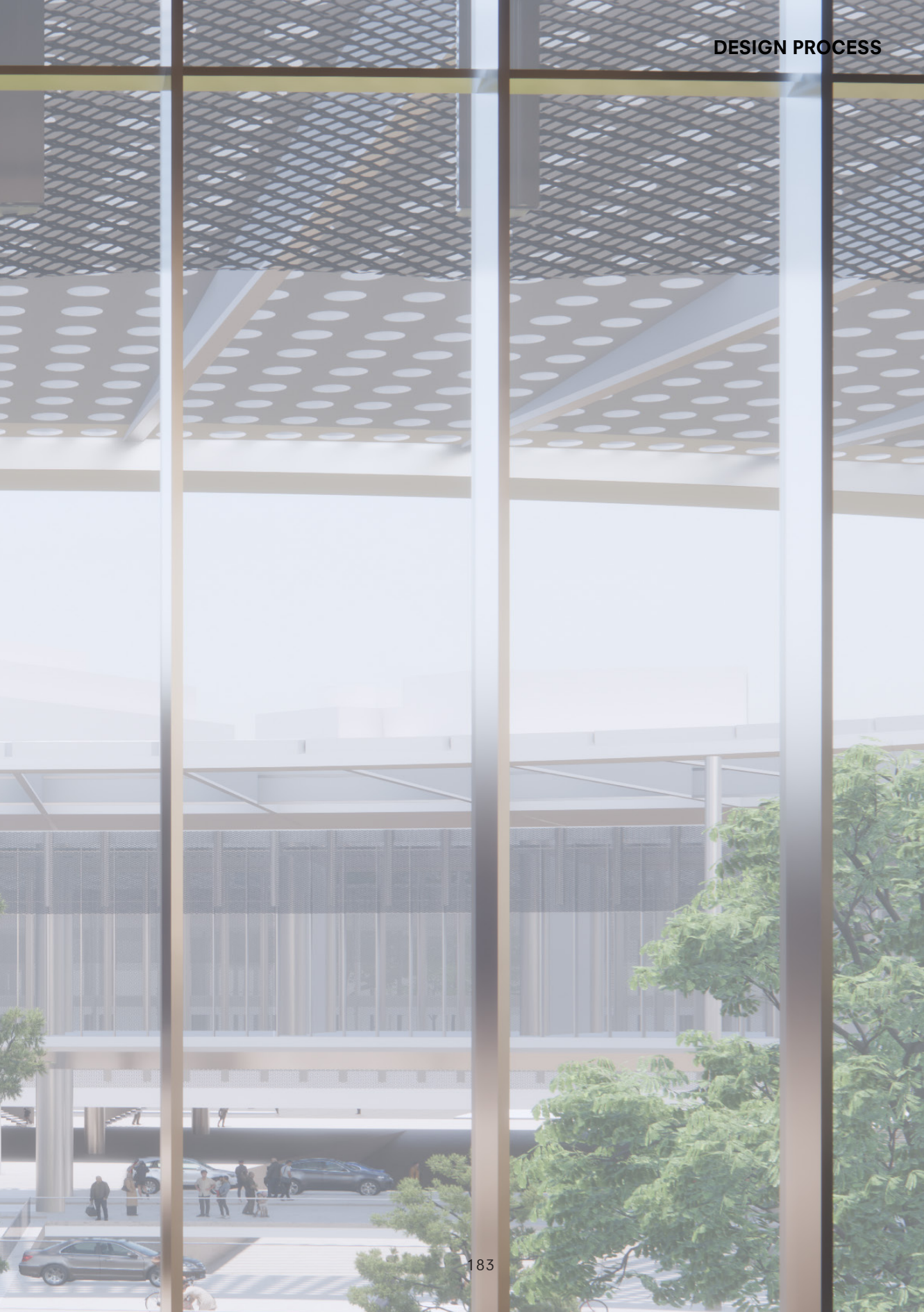




Figure 080 Gate Access



Figure 081 Platform



Figure 082 City Within a city Entrance





Figure 083 City Within a city

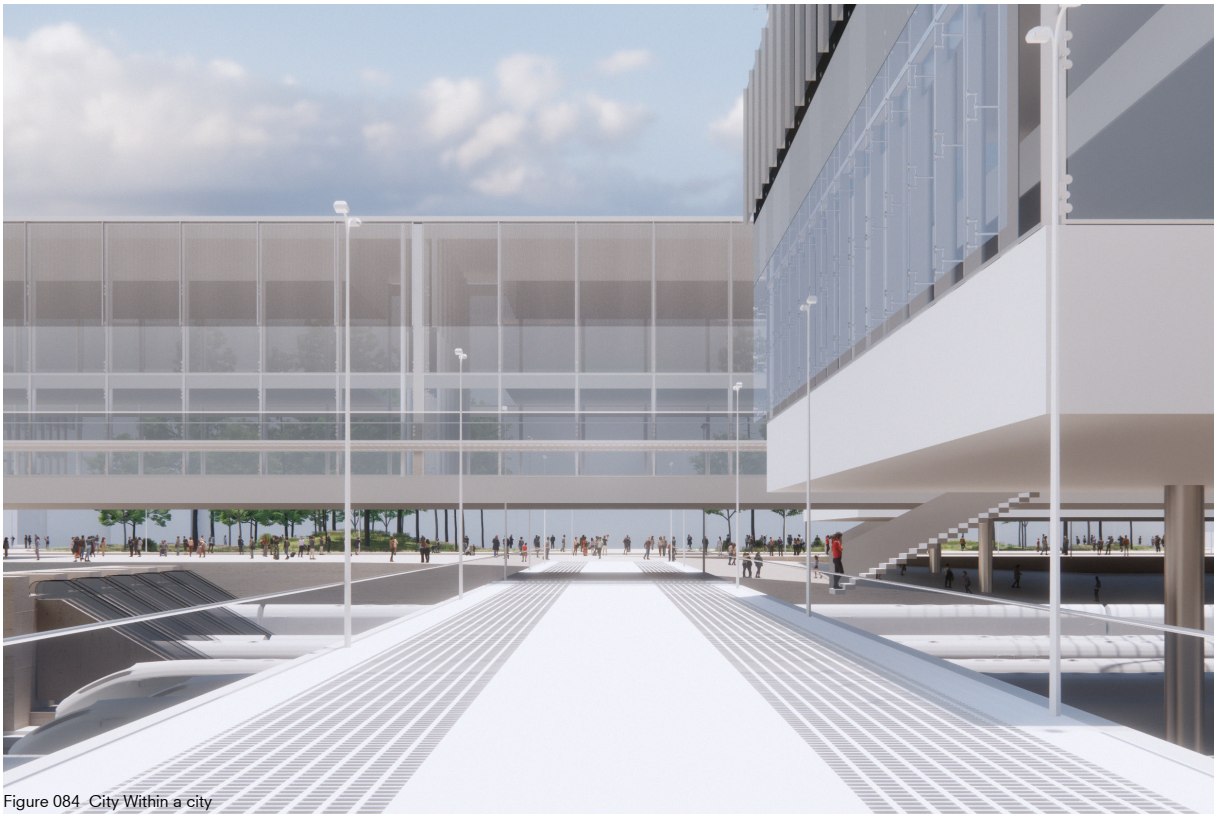


Figure 084 City Within a city



Figure 085 Central Courtyard

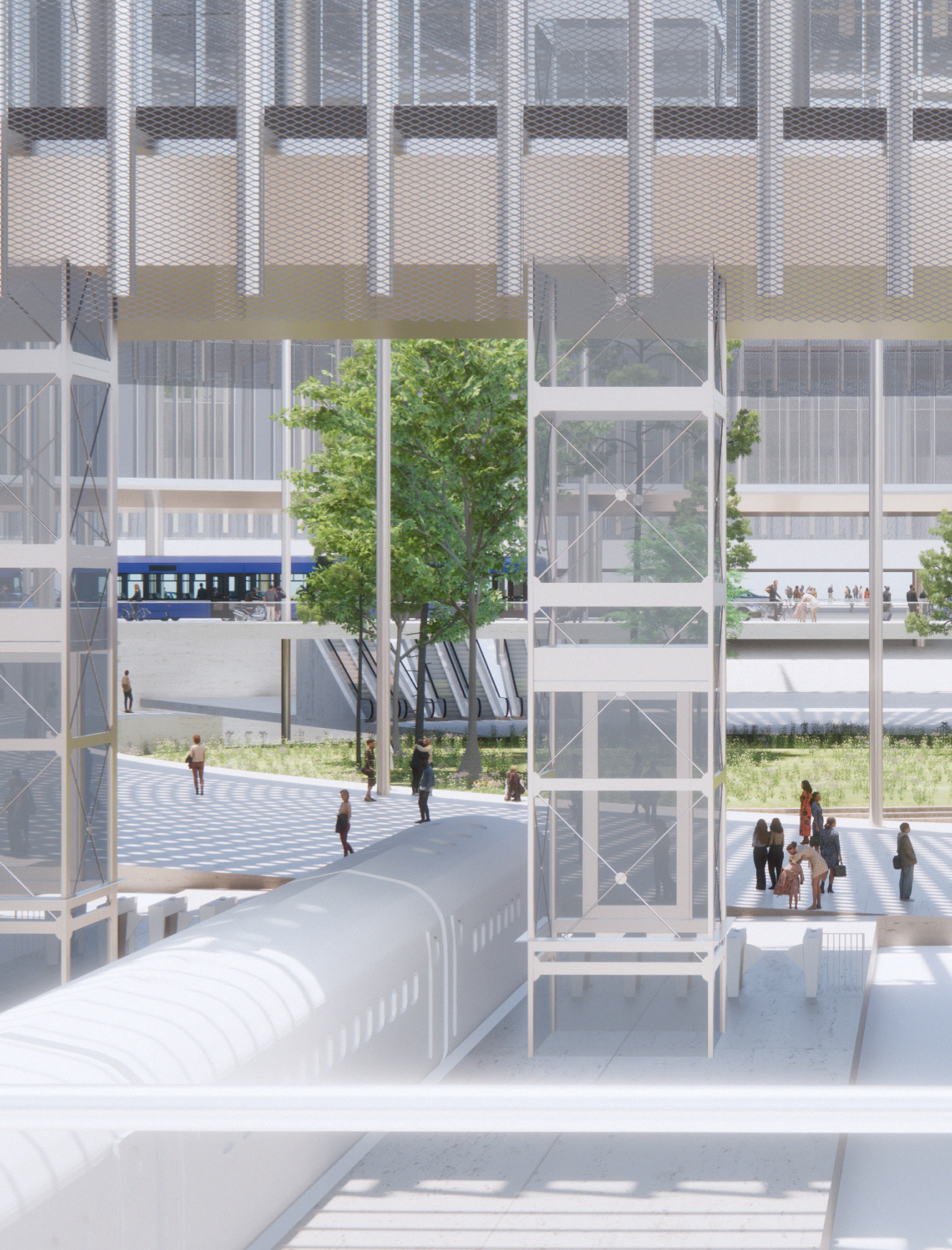
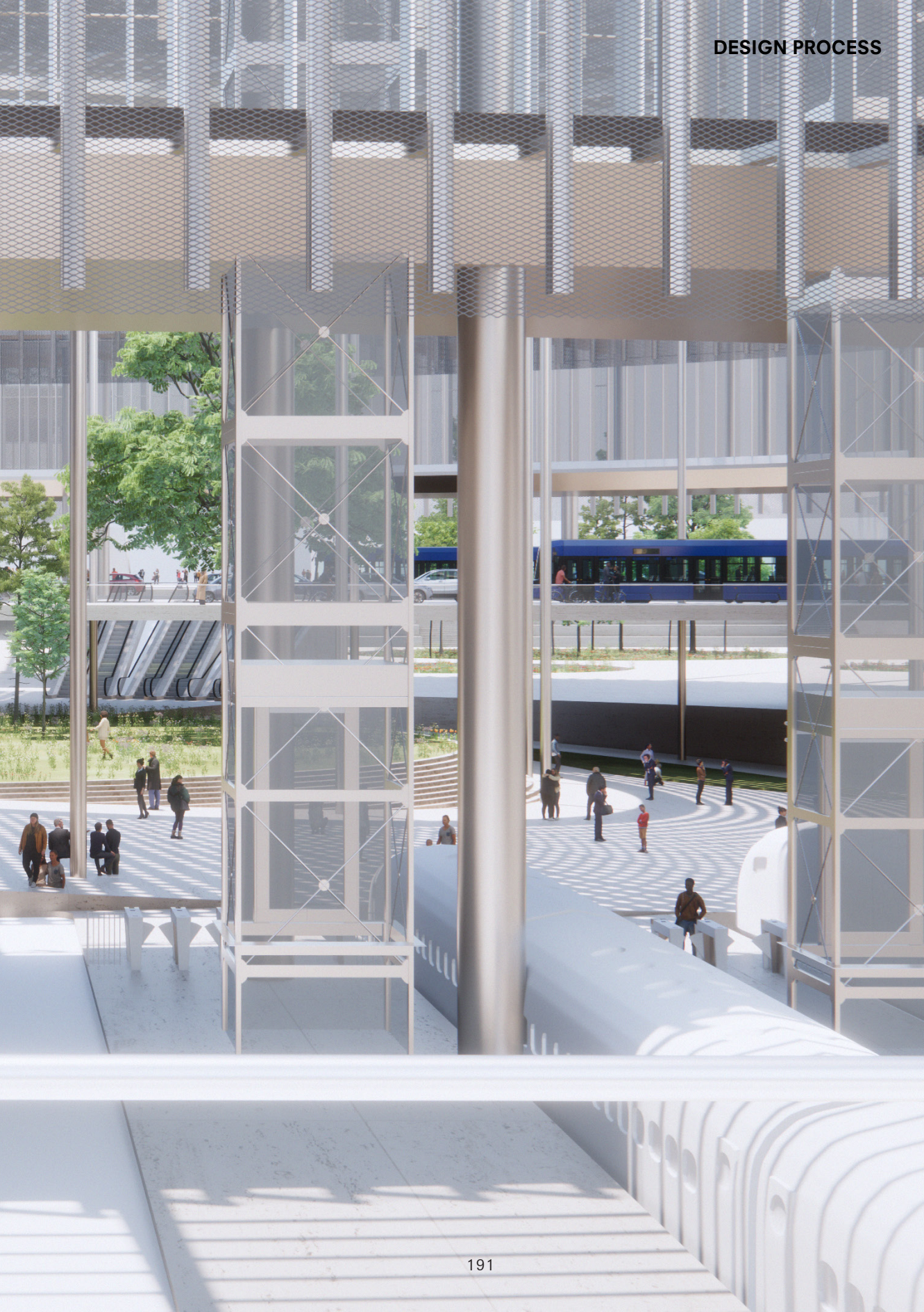


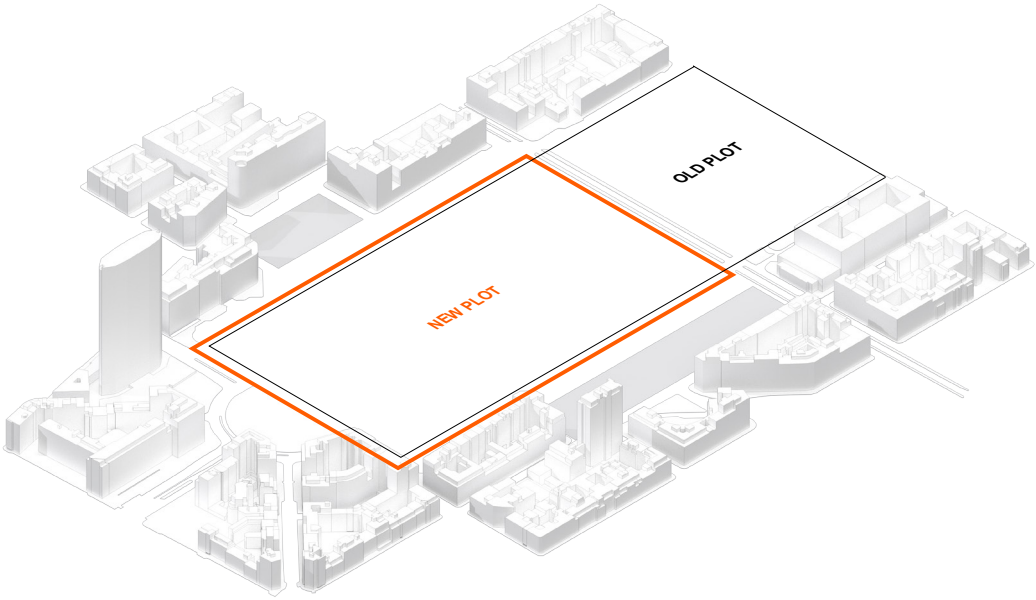
Figure 086 Central Courtyard

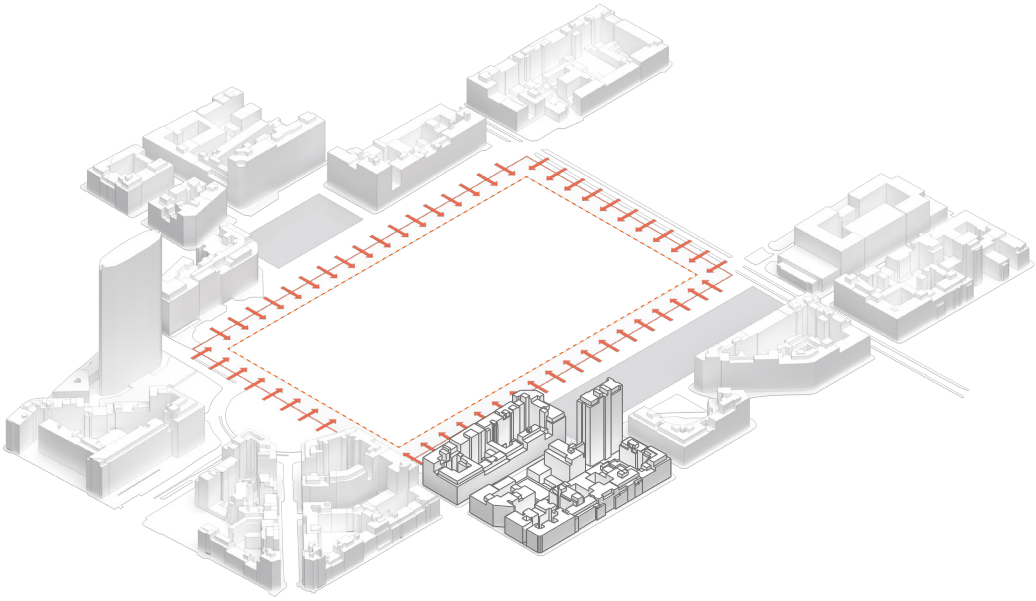


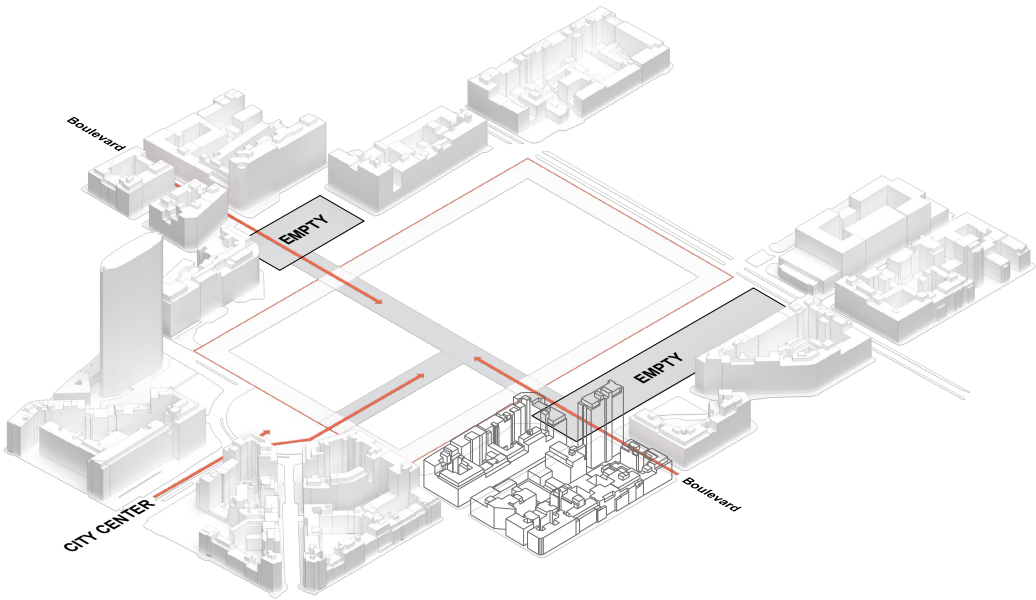
# DESIGN

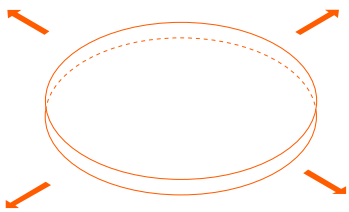
Form massing
Program
Flows
Climate/Environment/Atmorsphere Zones
Structure
Landscape Strategy
Physical Model
Conclusion

# 07


OLD PLOT
NEW PLOT

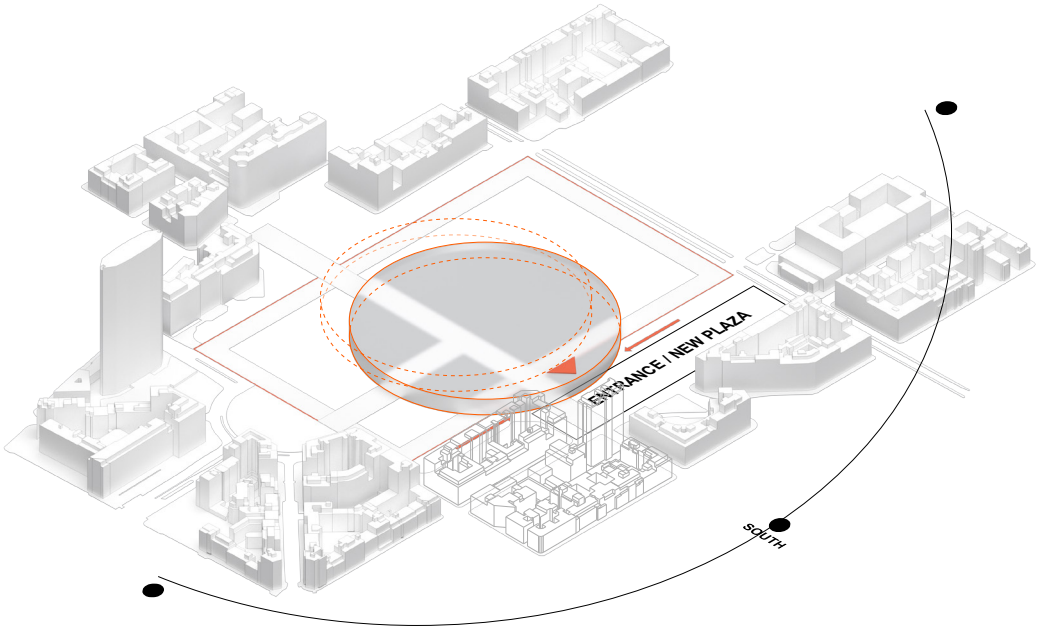


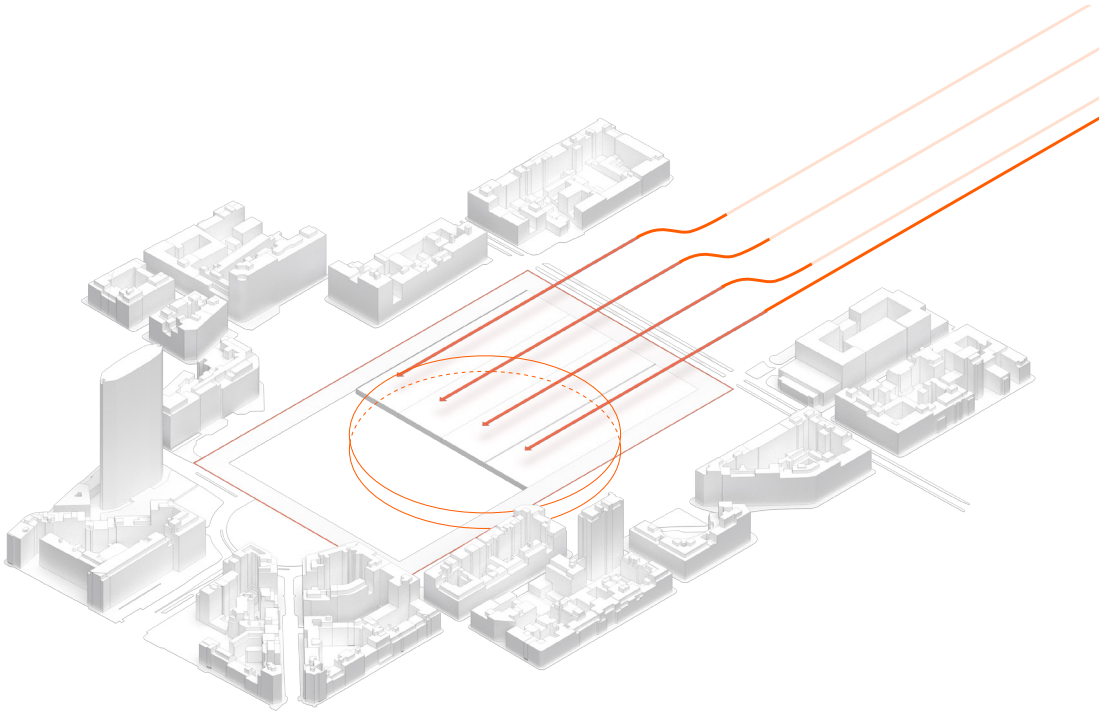


# 01 Form Meaning

The station is conceived around a circular form, symbolizing continuity and connection to the city. This form supports the vision of a multi-sided station, unlike the existing terminal which facilitates multiple access points and promotes permeability across the urban fabric. By doing so, the station acts not as a barrier but as a connector, bridging neighborhoods previously divided by rail infrastructure.


ENTRANCE / NEW PLAZA
SOUTH



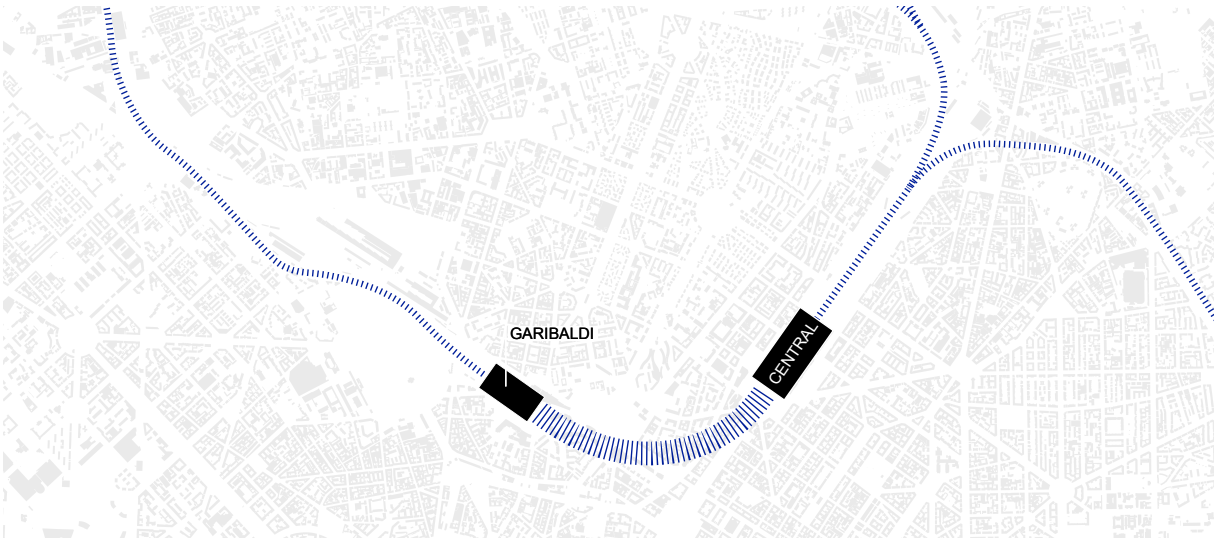



Figure 087 Through station from Centrale Station to Garibaldi Station

The track layout is divided into four sectors based on train type and length: three terminal zones and one pass-through zone. The through-platform is designed to accommodate high-speed trains and relieve traffic pressure. This section is also linked to the nearby Garibaldi Station, creating a complementary transit system within Milan.

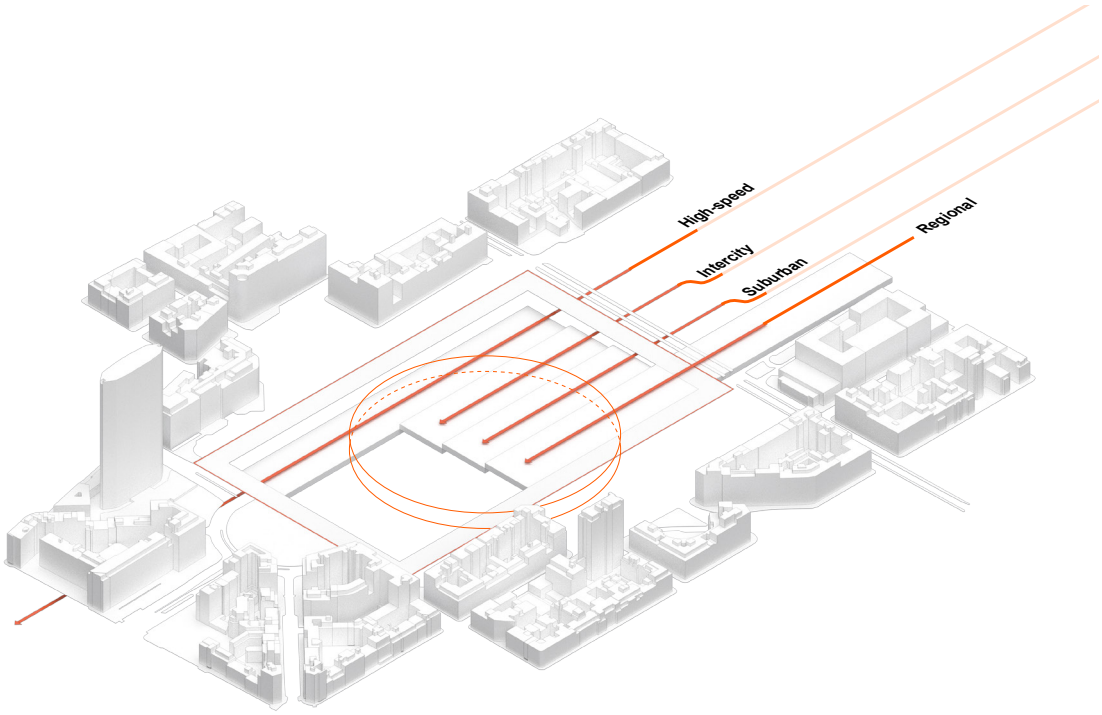
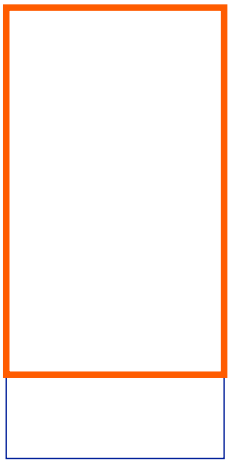





Figure 088 Elizabeth line metro station in London metro station
Figure 089 Milan's central station

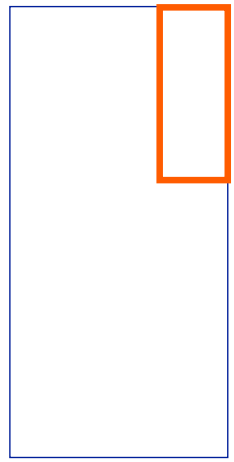
# 1.2 Given back to city

The reorganization of tracks onto multiple levels frees up approximately 200,000 square meters of land at ground level. This space is returned to the municipality of Milan for future urban development, aimed at reconnecting the two sides of the station that were once divided. This move aligns with broader urban strategies to reintegrate infrastructure into the life of the city.



**BEFORE**

63.700 m²

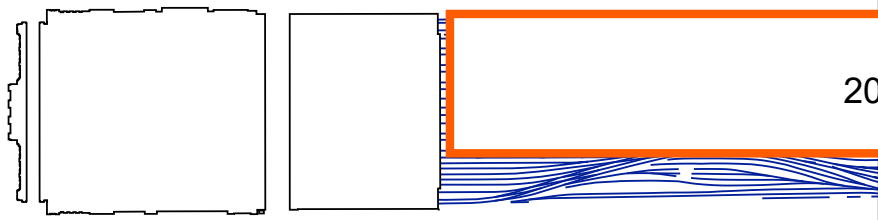


**AFTER**

5.800 m²



Figure 090 Elizabeth line metro station in London metro station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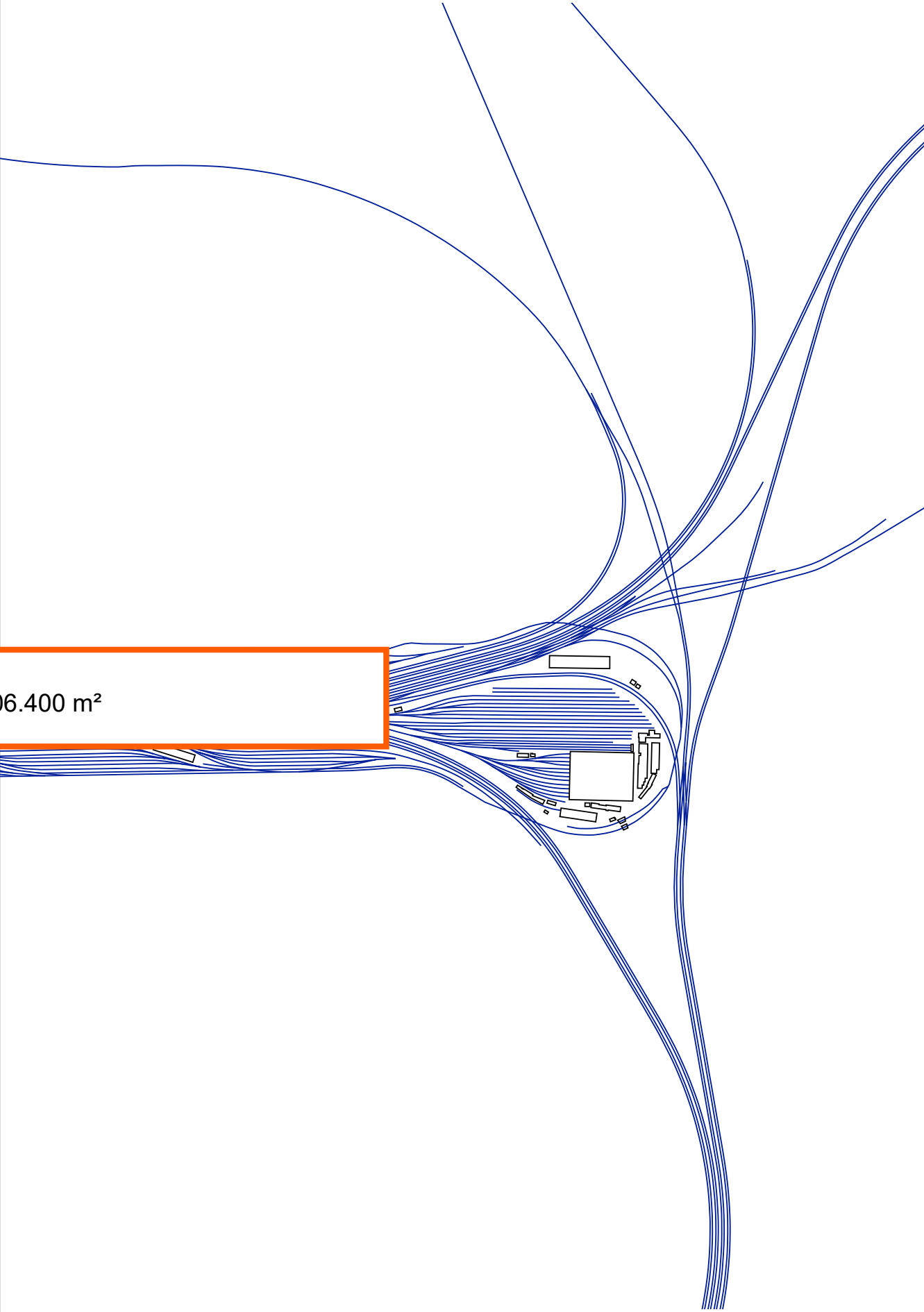
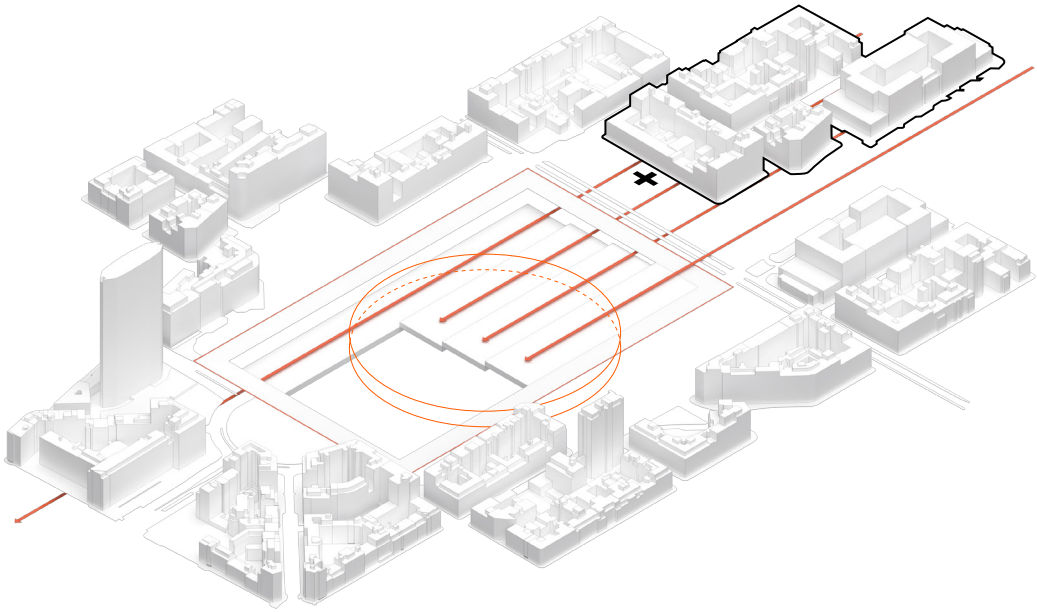
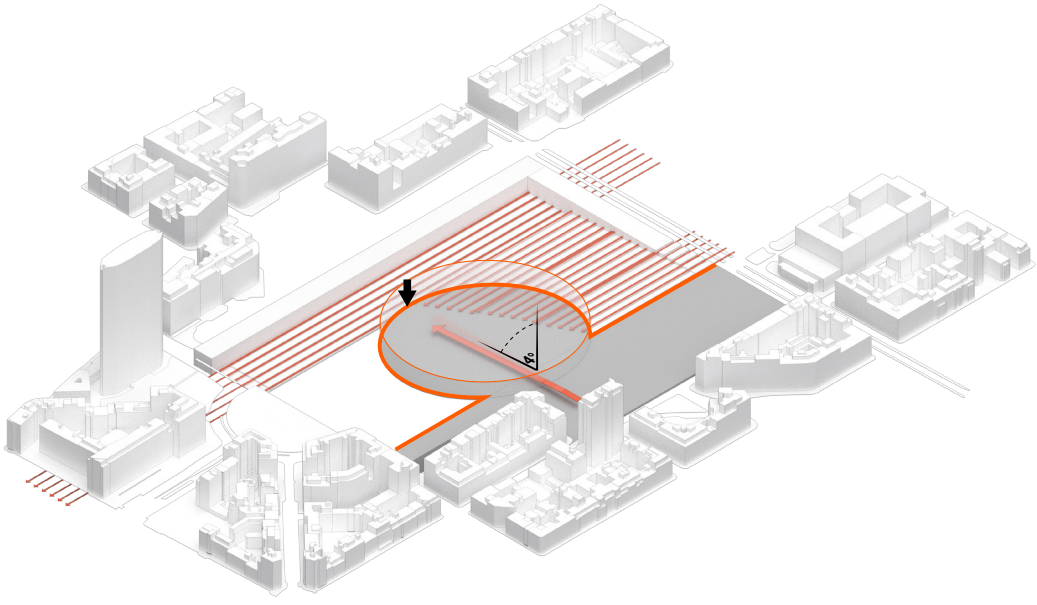
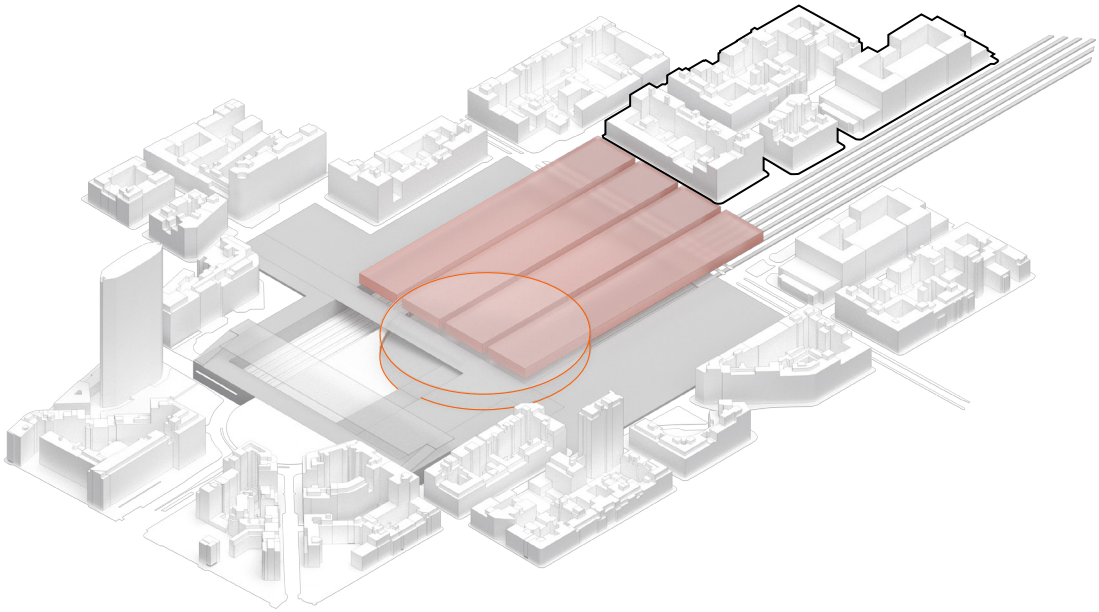
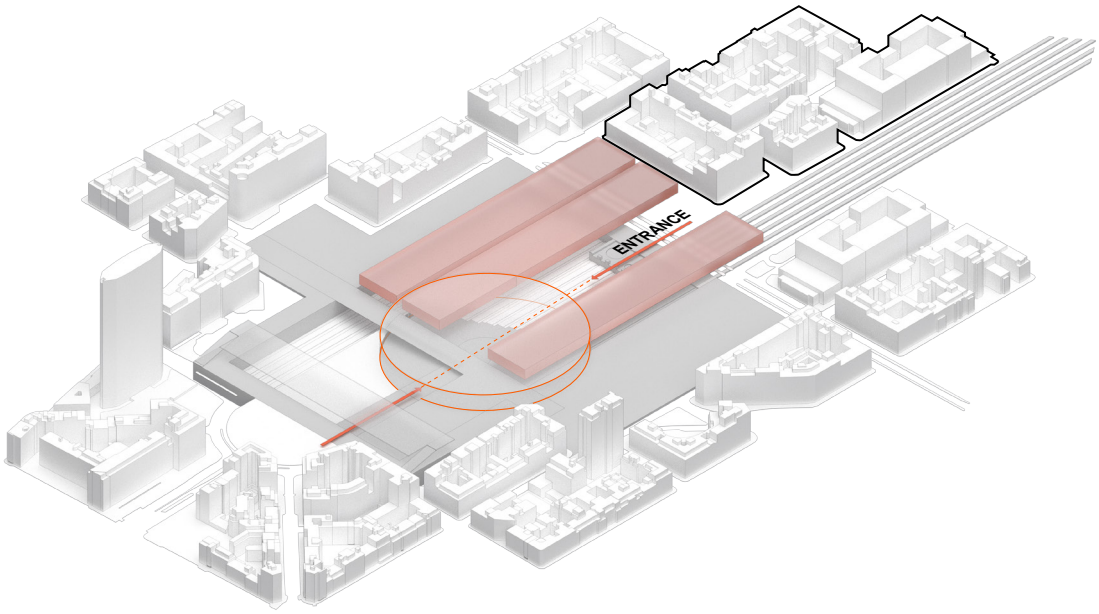
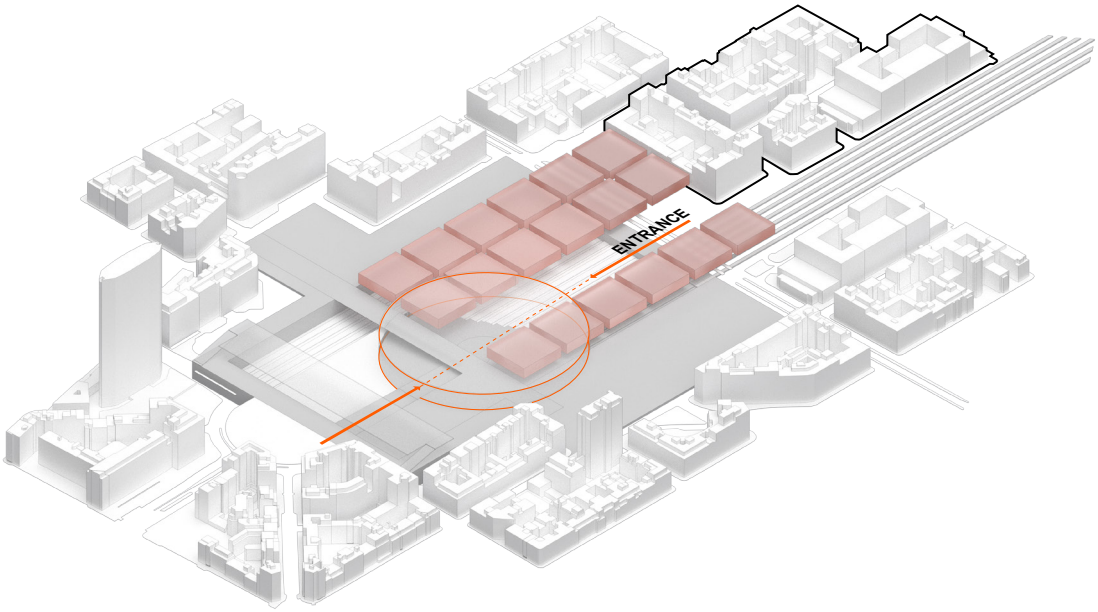

06.400 m²

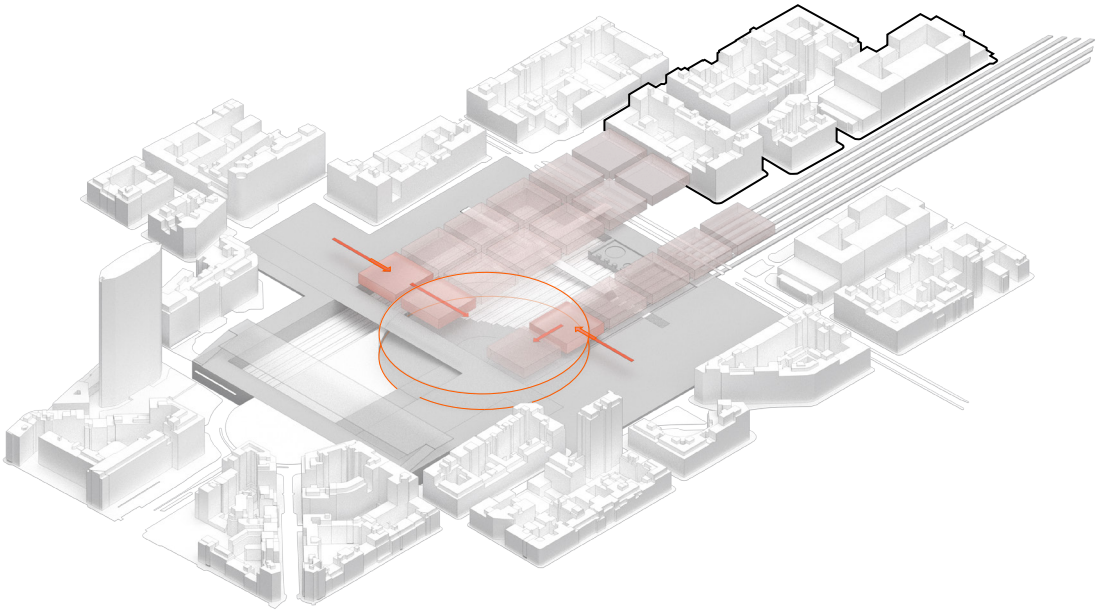


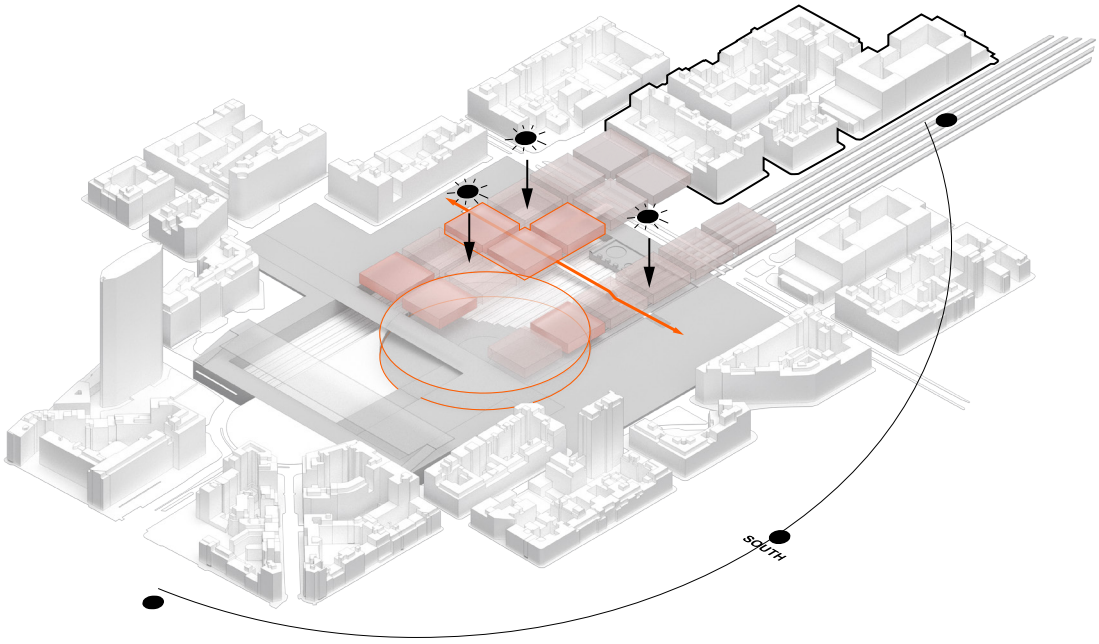

45°

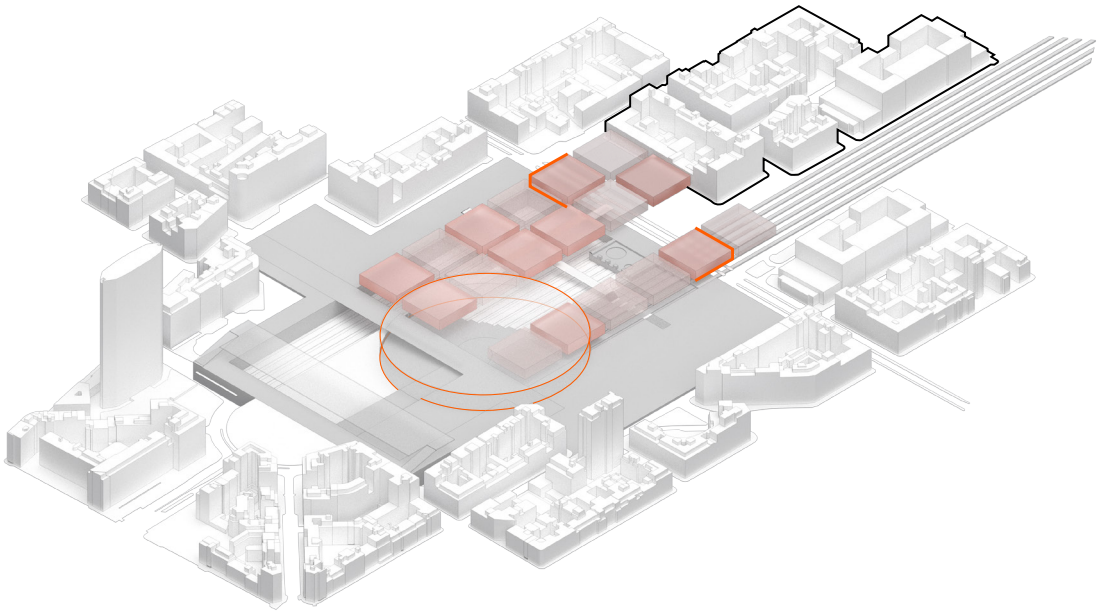



ENTRANCE


ENTRANCE




SOUTH



# 02 Program

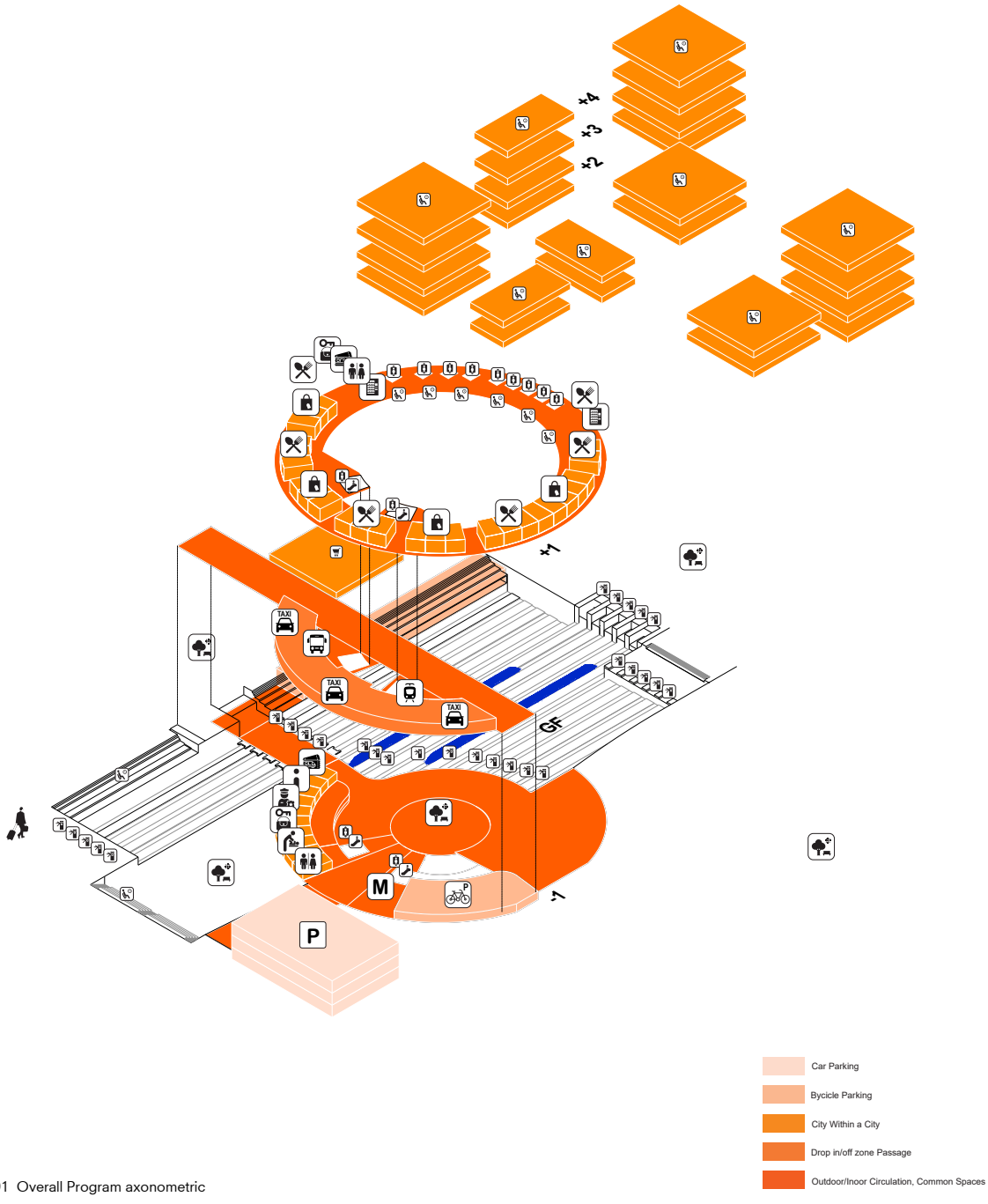
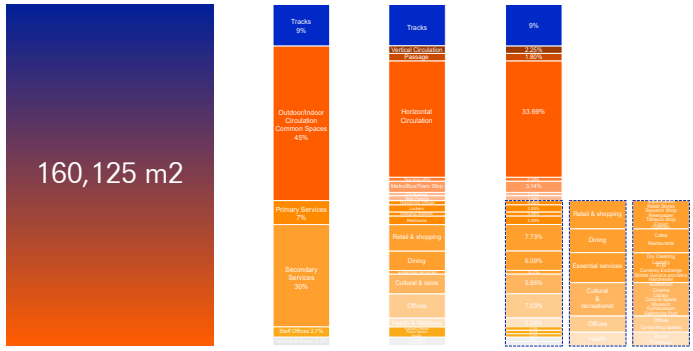



Figure 091 Overall Program axonometric



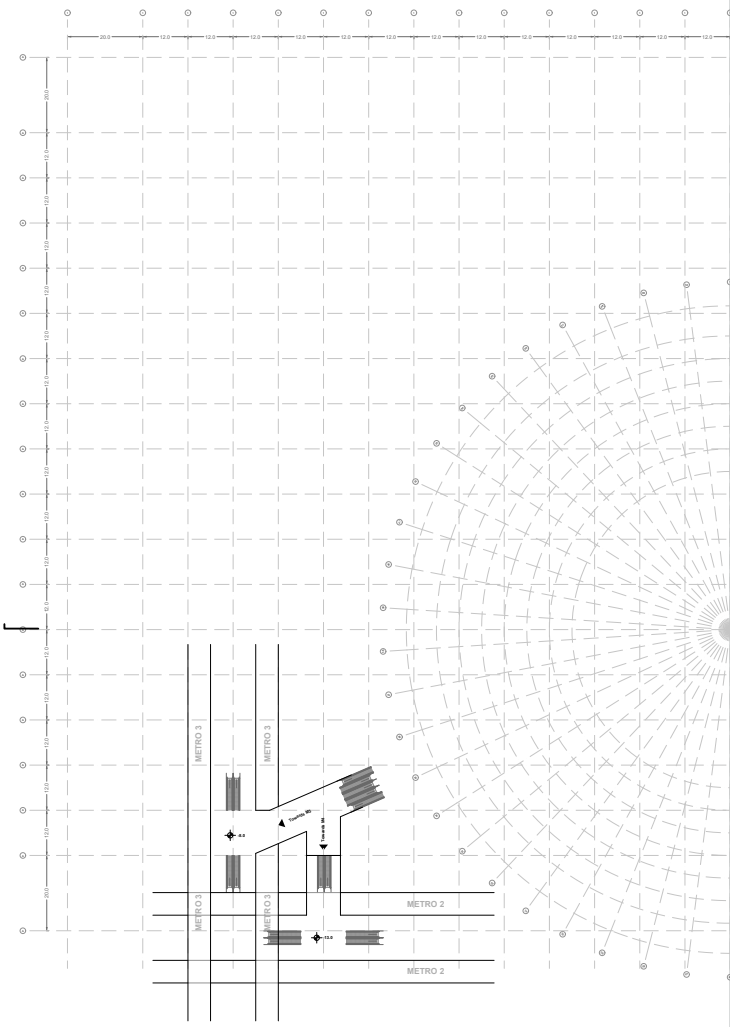

# 2.1 Overall

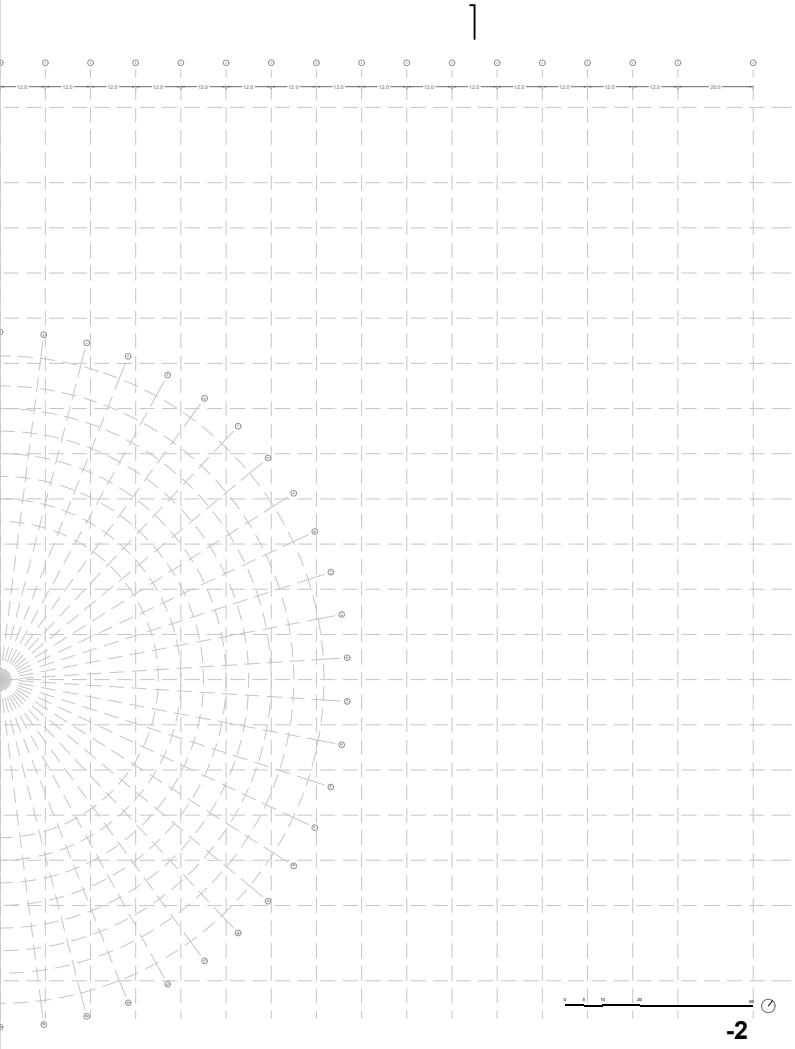
The total program area of the future Milan Central Station amounts to 160,125 m².

- Level -1 features a large sloped concourse hall granting access to all platforms. This level also houses essential station services, metro access, and two bicycle storage facilities.

- Ground Floor contains a public passage connecting the station with its surroundings and includes drop-off and pick-up zones for trams, taxis, and buses.

- First Floor accommodates secondary station services, including commercial and retail spaces, embodying the “city within a city” concept and offering comfortable areas to wait, shop, or socialize.

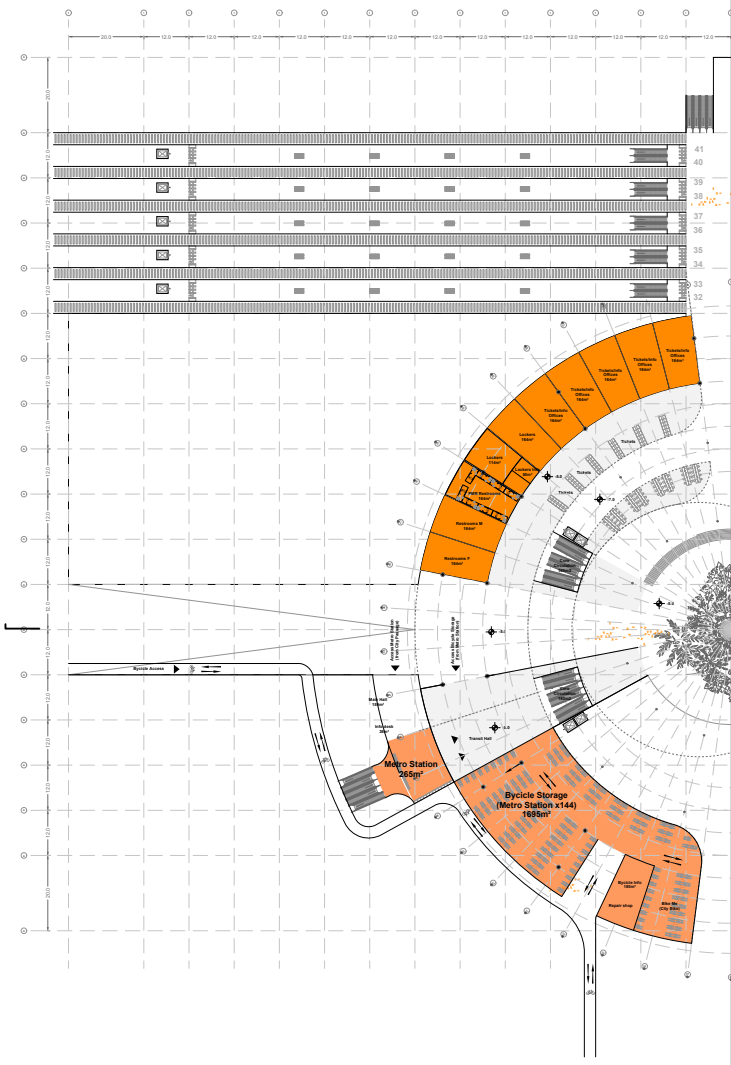

MÉTRO 3
MÉTRO 1
MÉTRO 2
MÉTRO 2
MÉTRO 2

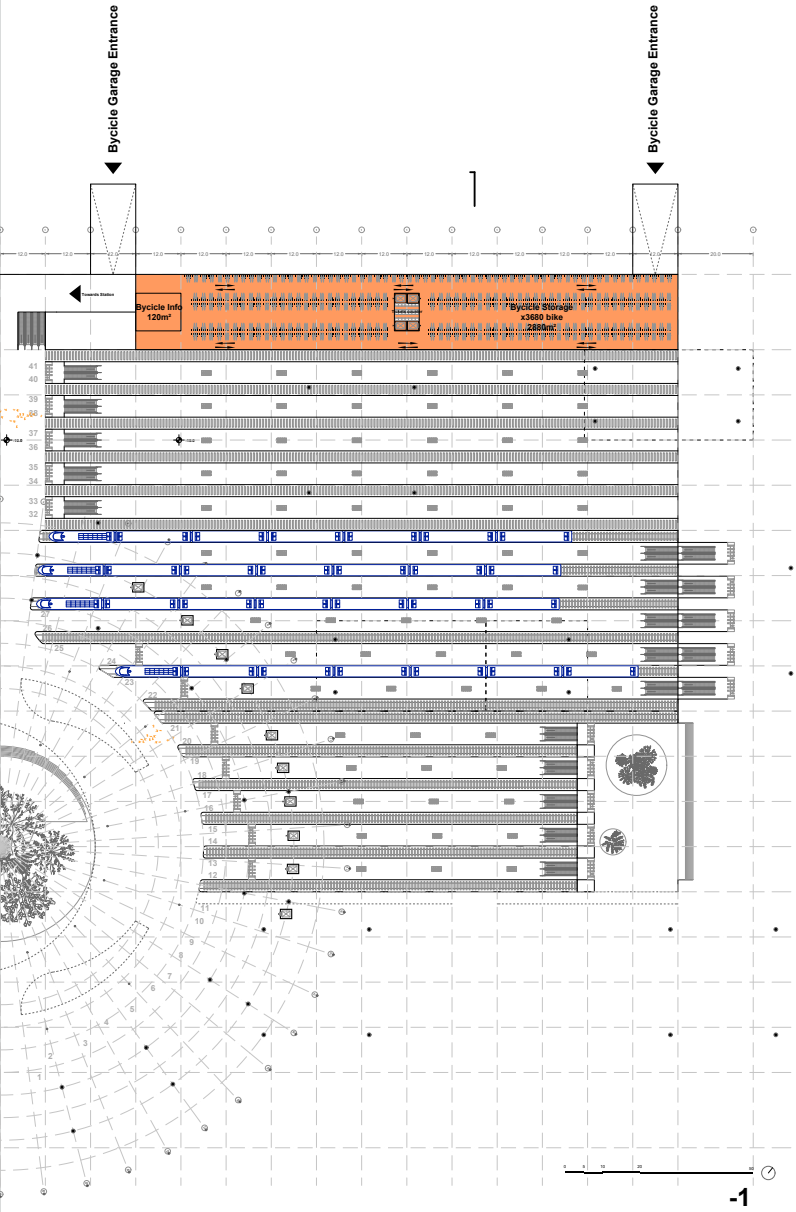



AA'

BB'

CC'

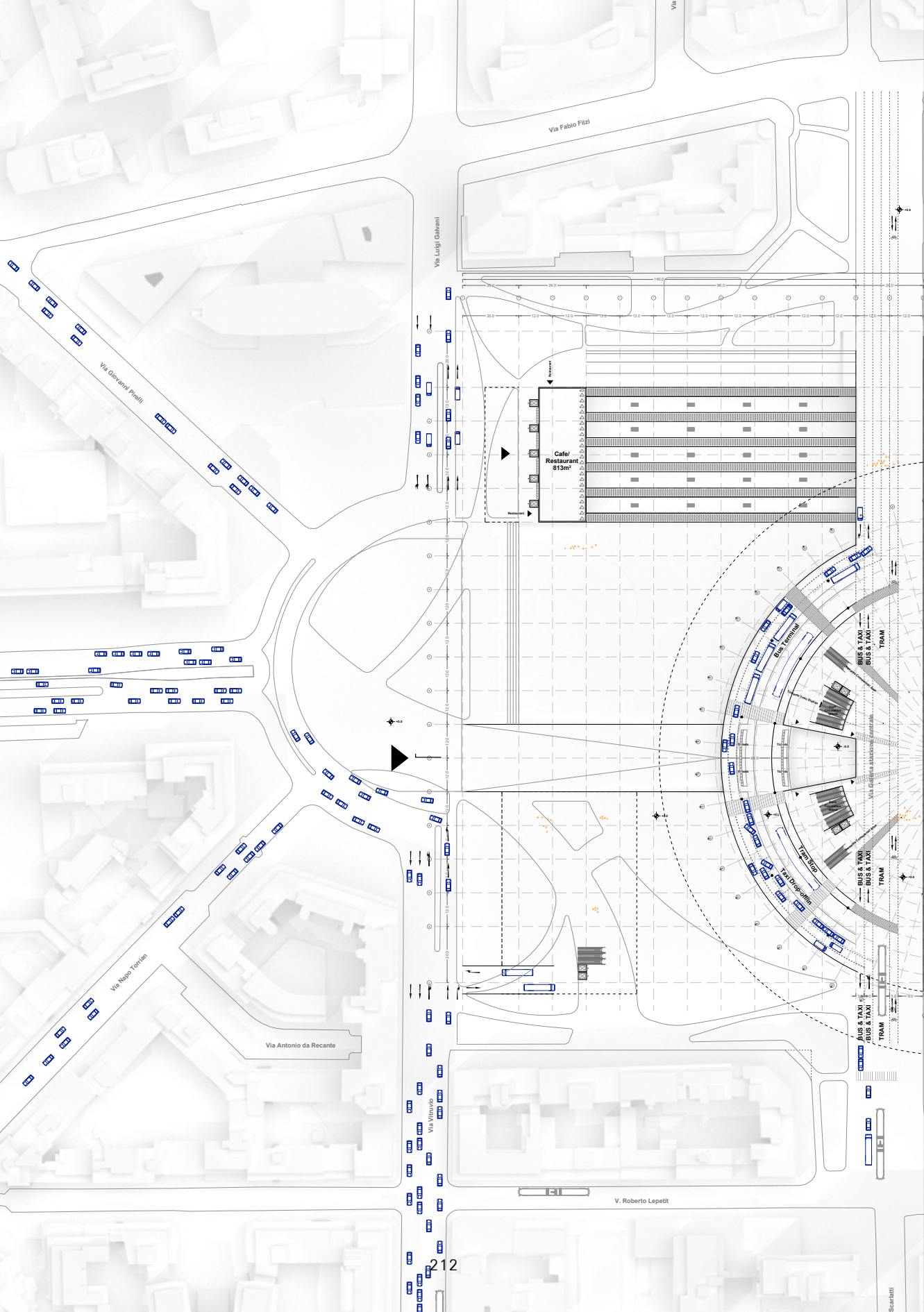

Metro Station
265m²
Bycicle Storage
(Metro Station x144)
1695m²

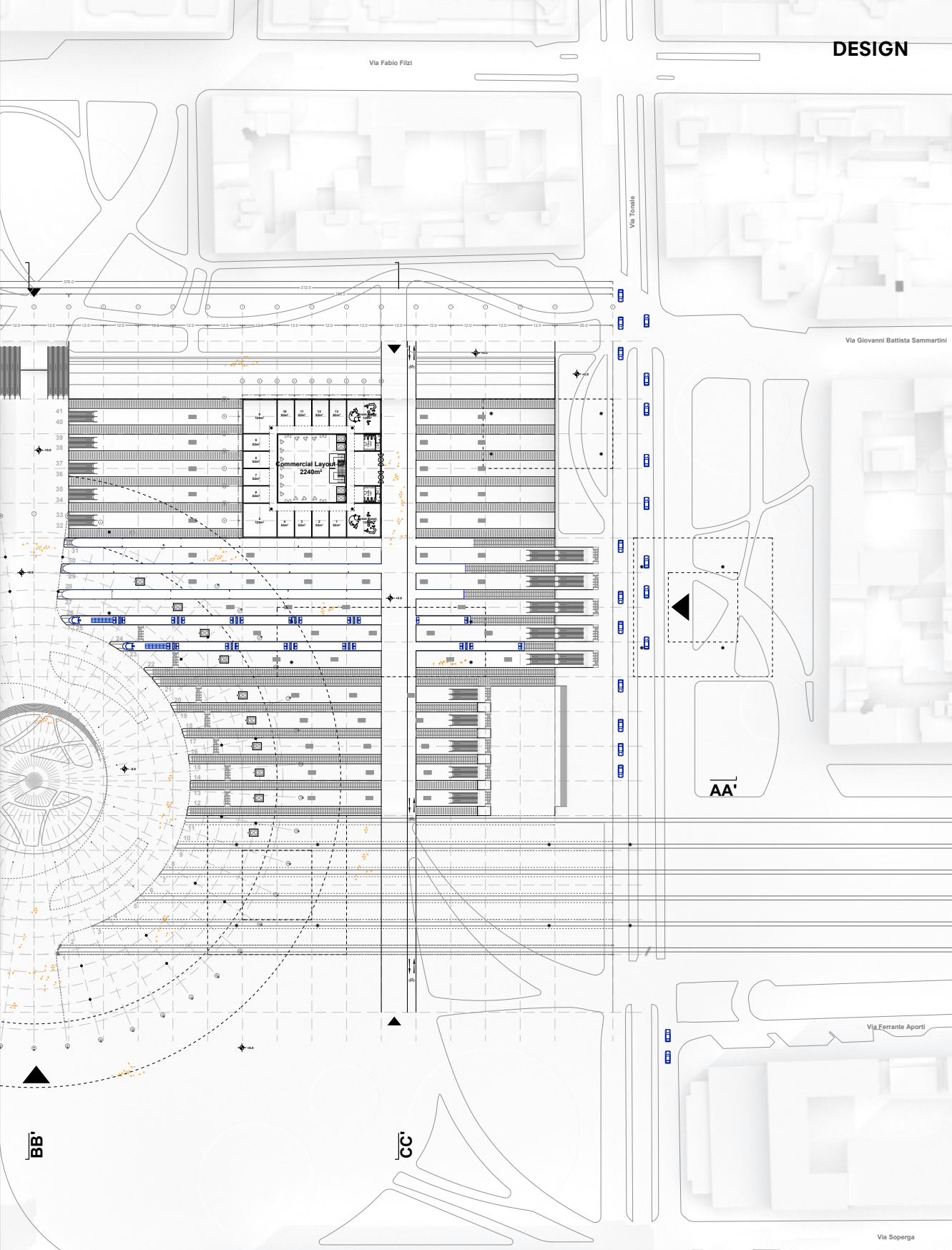

Bycicle Garage Entrance
Bycicle Garage Entrance
Towards Station
Bycicle Info
120m²
Bycicle Storage
x3680 bike
2880mc
-1

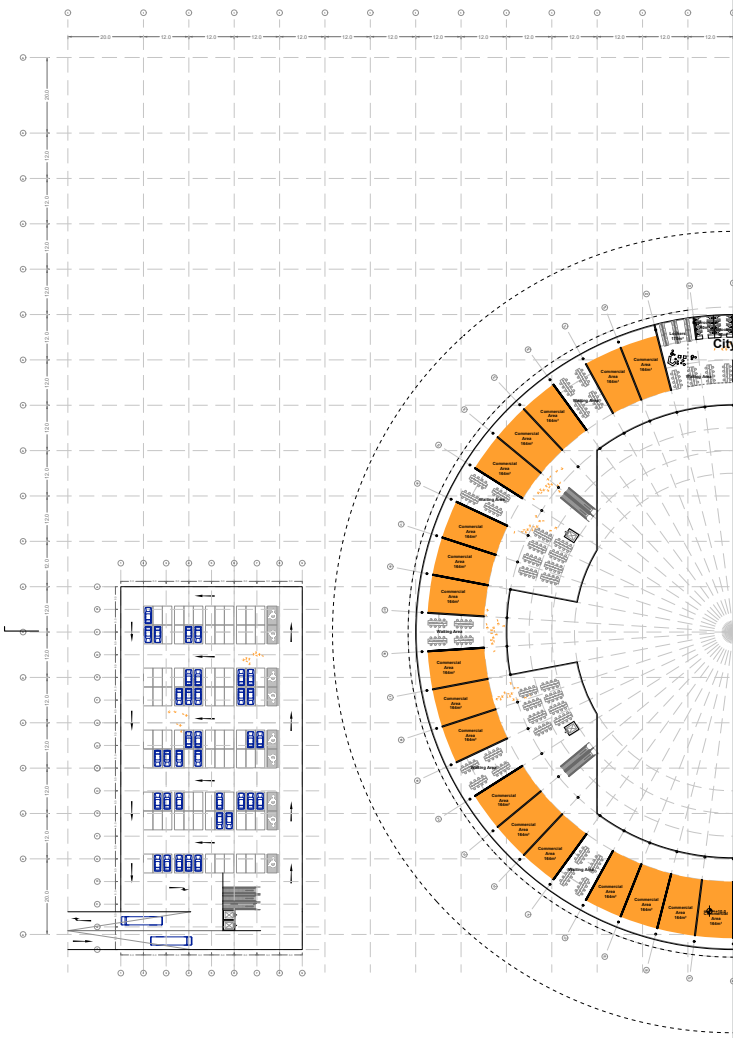
AA'

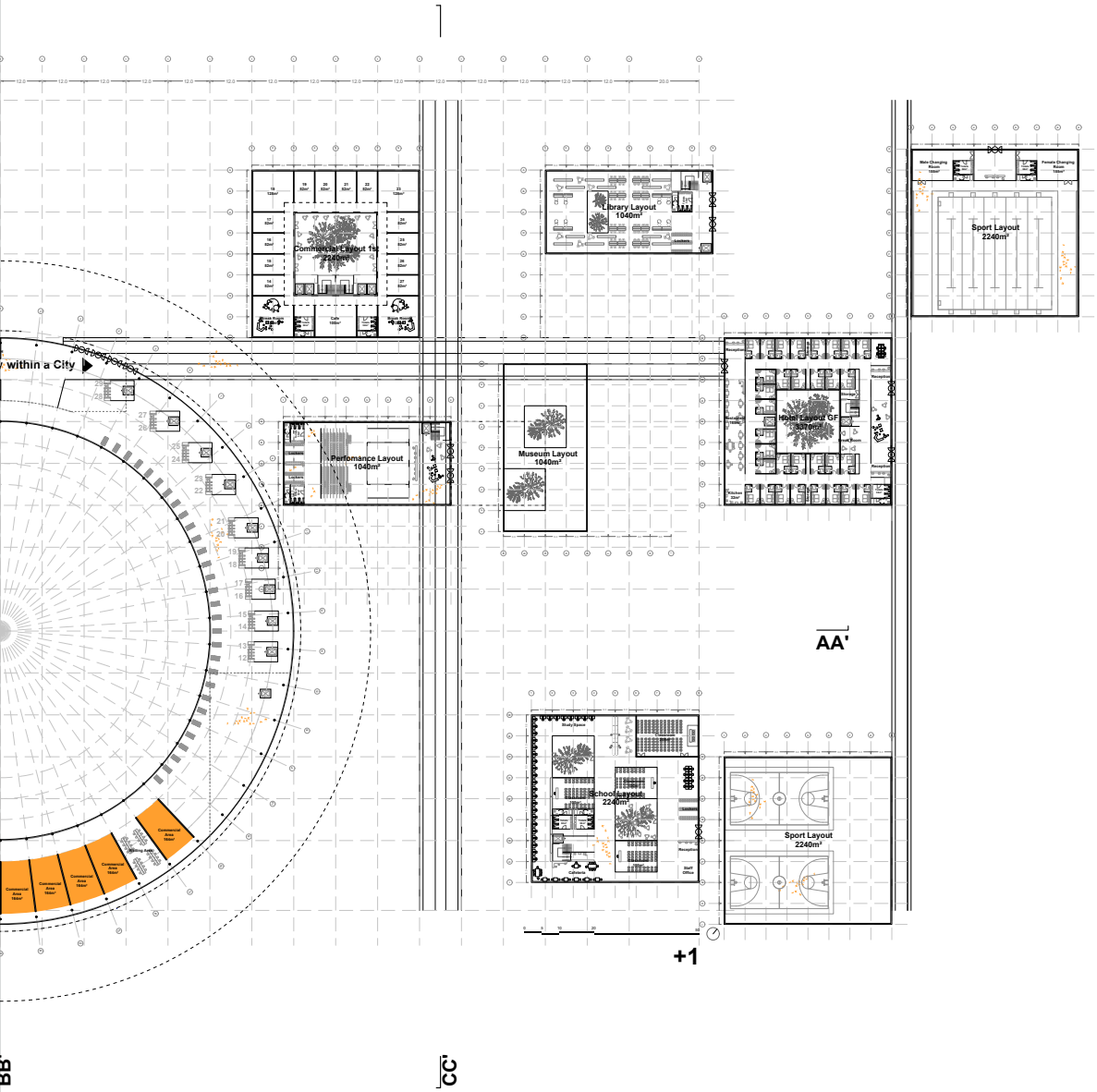
BB'

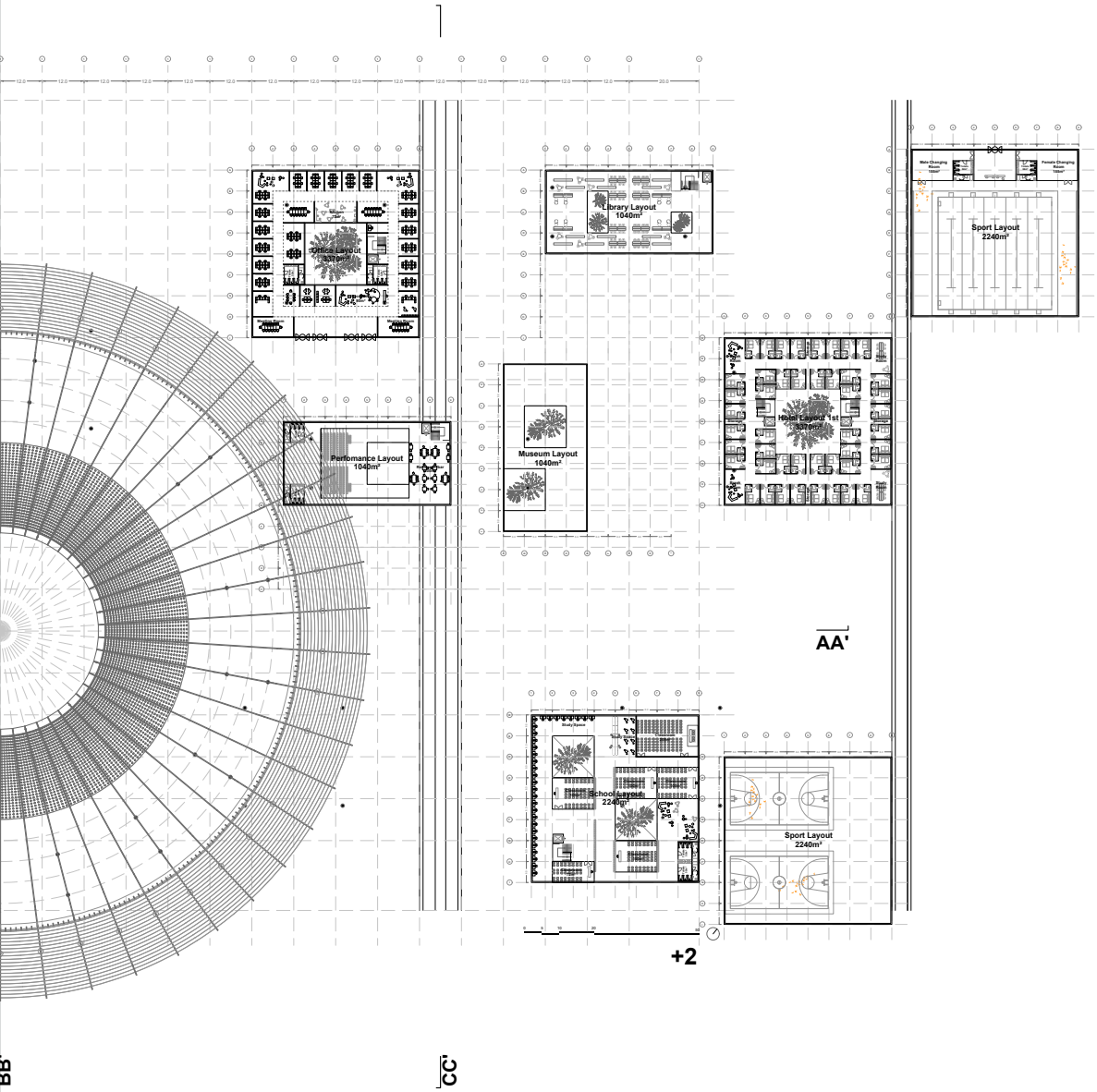
CC'

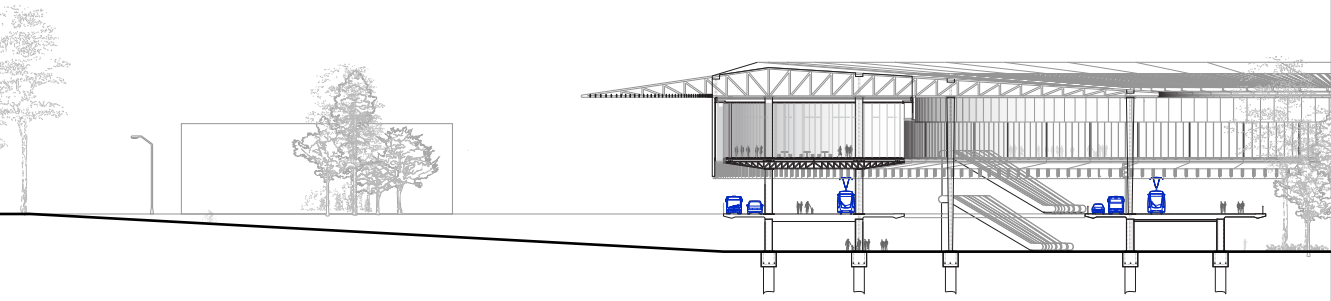

Via Fabio Filzi
Via Luigi Galvani
Via Giovanni Pirelli
Via Napo Torrian
Via Antonio da Recante
Via Vitruvio
V. Roberto Lepetit
Cafe/
Restaurant
813m²
Restaurant
Bus Terminal
BUS & TAXI
BUS & TAXI
TRAM
Via Galleria stazione Centrale
Tram Stop
Taxi Drop-offs
BUS & TAXI
BUS & TAXI
TRAM
BUS & TAXI
BUS & TAXI
TRAM

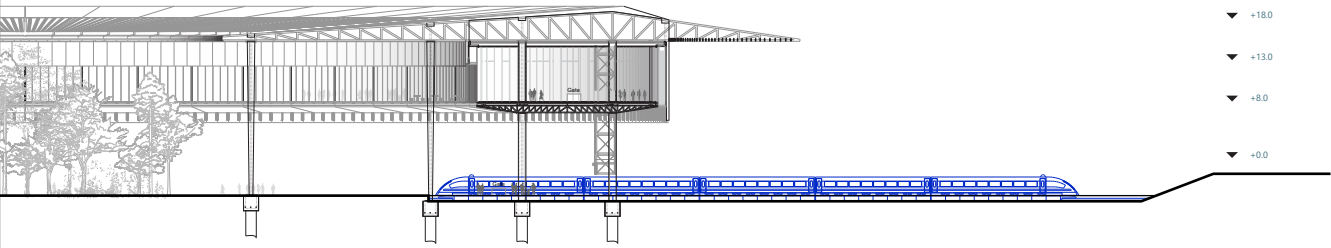

Via Fabio Filzi
Via Tonale
Via Giovanni Battista Sammartini
Commercial Layout GF
2240m²
AA'
BB'
CC'
Via Ferrante Aporti
Via Soperga


Commercial Area 180m²
Waiting Area

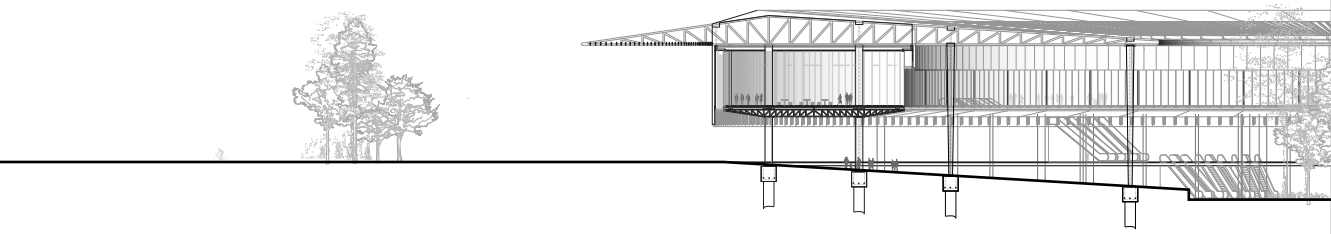

Commercial Layout 1st
2240m²
Library Layout
1040m²
Sport Layout
2240m²
within a City
Performance Layout
1040m²
Museum Layout
1040m²
Hotel Layout GF
3370m²
AA'
School Layouts
2240m²
Sport Layout
2240m²
+1
BB'
CC'

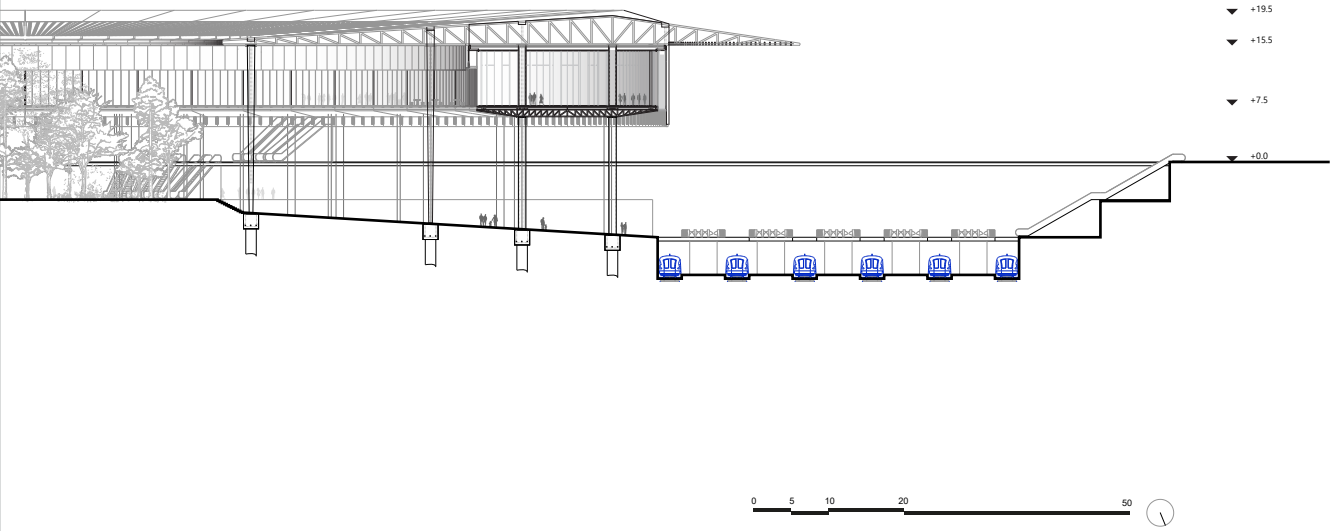

Office Layout
337m²
Library Layout
1040m²
Sport Layout
2240m²
Performance Layout
1040m²
Museum Layout
1040m²
Hotel Layout 1st
337m²
AA'
School Layout
2240m²
Sport Layout
2240m²
+2
BB'
CC'




+18.0
+13.0
+8.0
+0.0


0
5
10
20
50



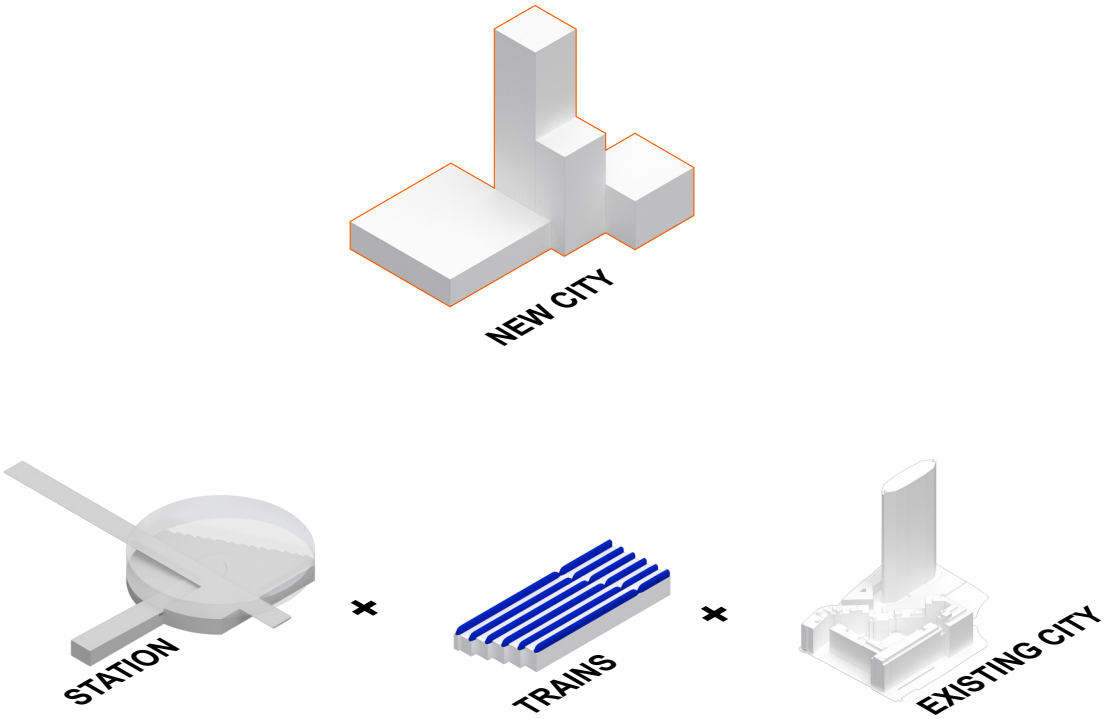

+19.5
+15.5
+7.5
+0.0

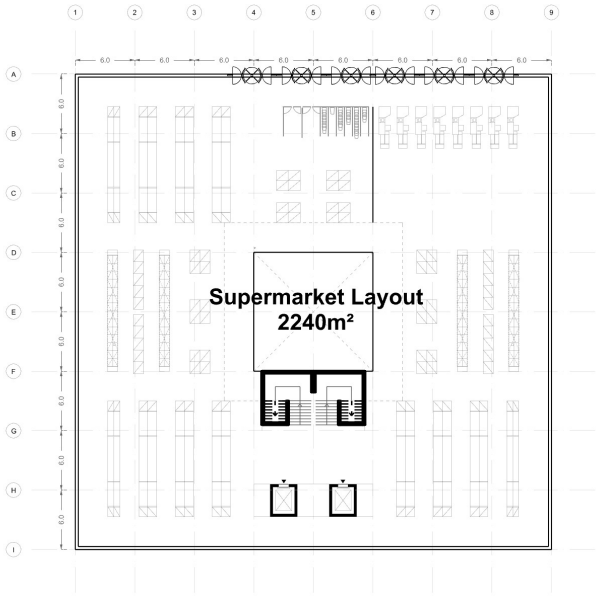

0
5
10
20
50

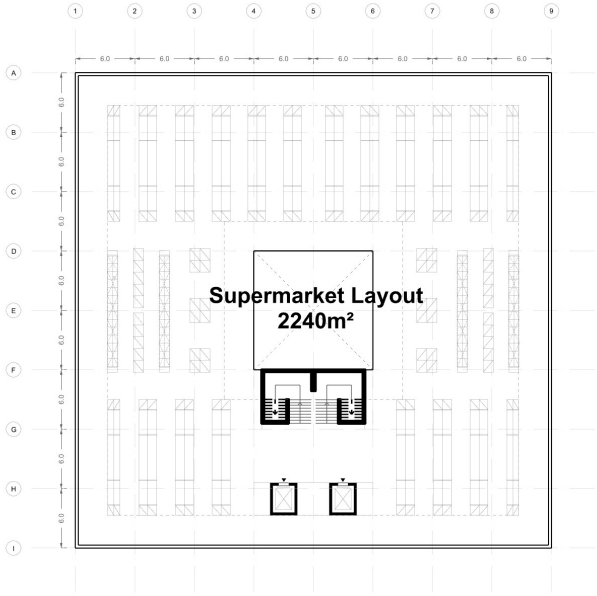
# 1.2 City within a city

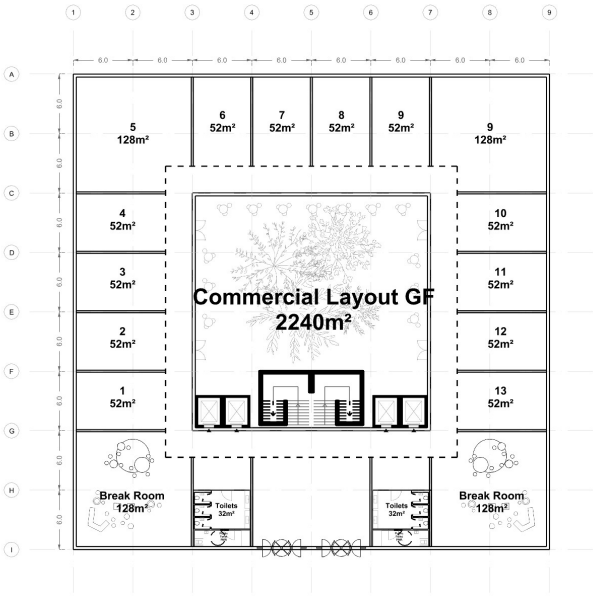


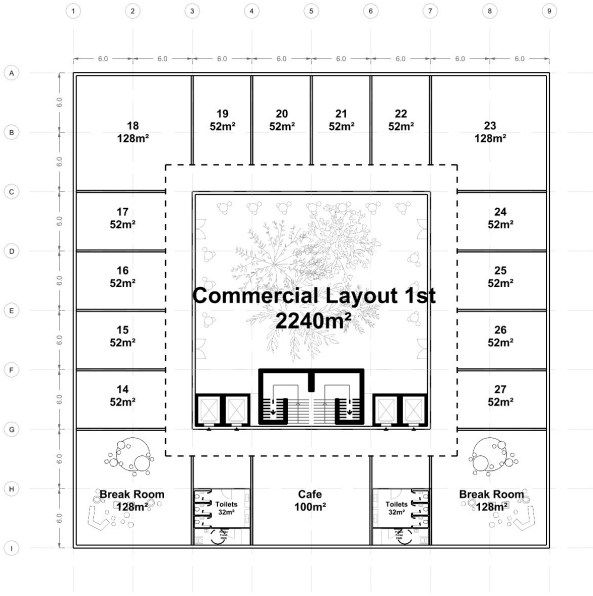

The “city within a city” program introduces diverse functions typical of a small urban settlement. In response to the limited amenities currently available in the area, the station integrates uses such as a hotel, supermarket, school, and sports facilities. This allows both locals and travelers to occupy the station in more meaningful ways. It also marks the beginning of a new urban development over the tracks, enriching this predominantly office-oriented district with more varied and accessible public programs.

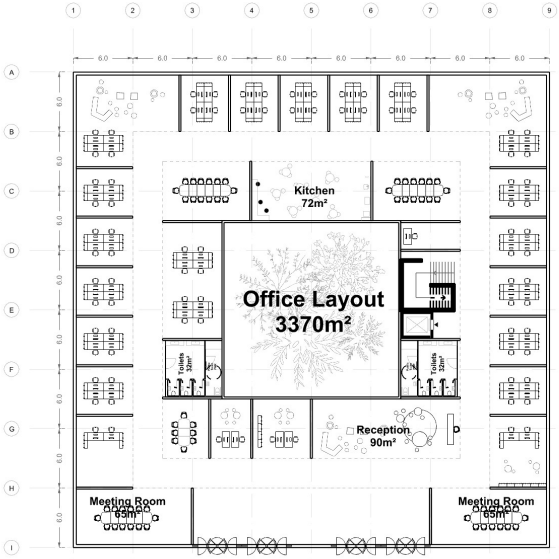

NEW CITY
STATION
TRAINS
EXISTING CITY

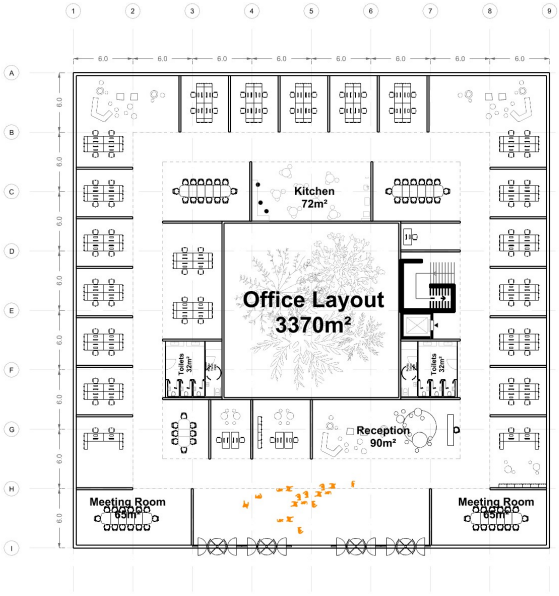

Supermarket Layout
2240m²

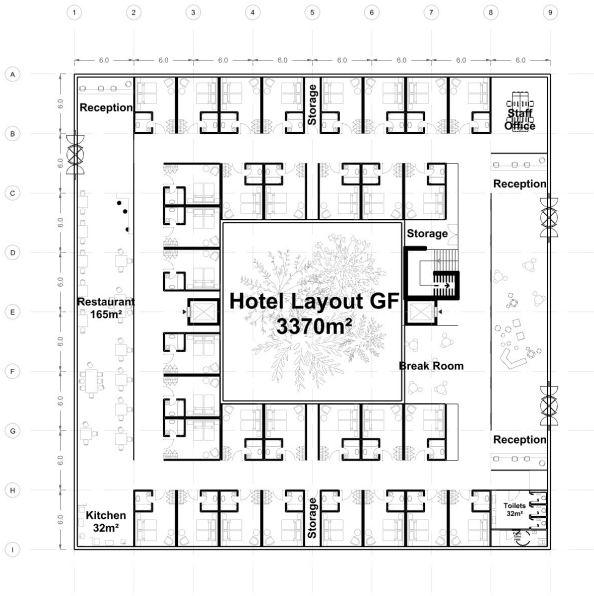

Supermarket Layout
2240m²

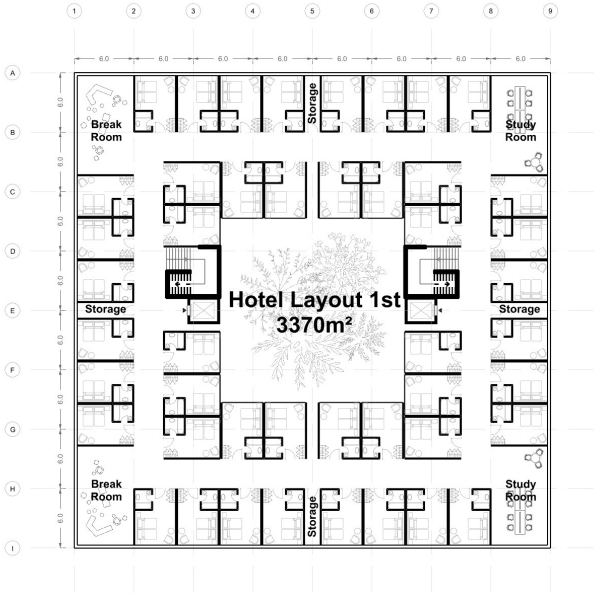

Commercial Layout GF
2240m²
5
128m²
6
52m²
7
52m²
8
52m²
9
52m²
9
128m²
4
52m²
3
52m²
2
52m²
1
52m²
10
52m²
11
52m²
12
52m²
13
52m²
Break Room
128m²
Toilets
32m²
Toilets
32m²
Break Room
128m²

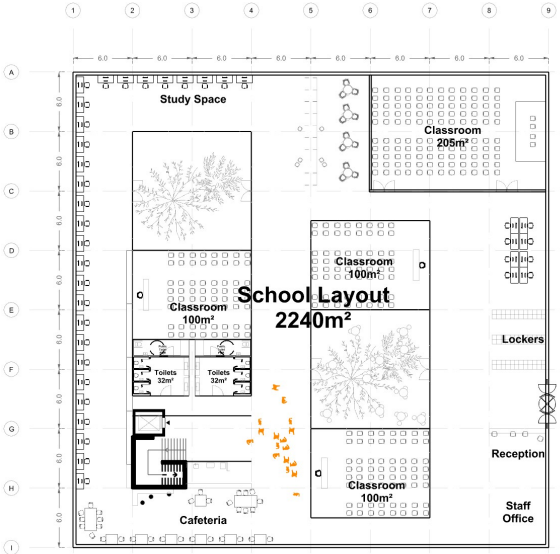

Commercial Layout 1st
2240m²
18
128m²
19
52m²
20
52m²
21
52m²
22
52m²
23
128m²
17
52m²
16
52m²
15
52m²
14
52m²
24
52m²
25
52m²
26
52m²
27
52m²
Break Room
128m²
Toilets
32m²
Cafe
100m²
Toilets
32m²
Break Room
128m²

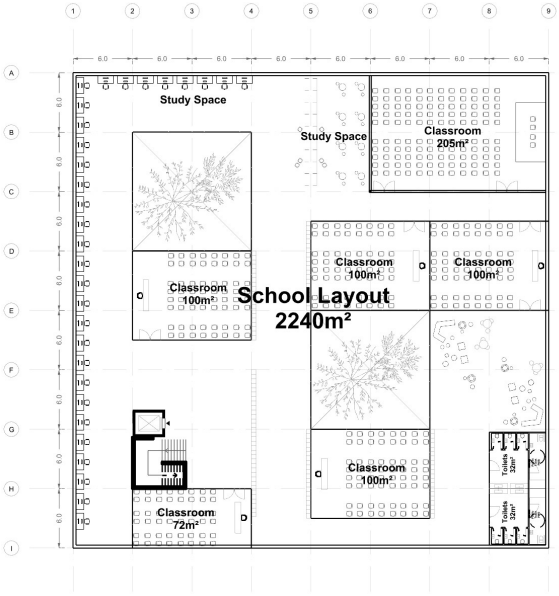

Kitchen
72m²
Office Layout
3370m²
Toilets
Toilets
Reception
90m²
Meeting Room
65m²
Meeting Room
65m²

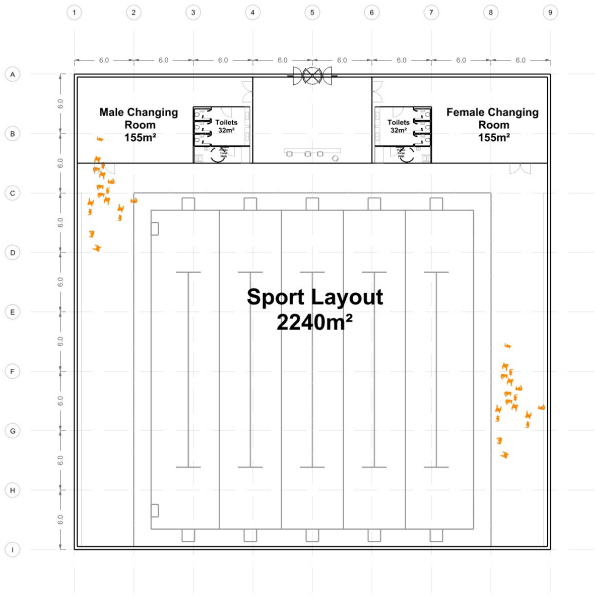

Kitchen
72m²
Office Layout
3370m²
Toilets
Toilets
Reception
90m²
Meeting Room
65m²
Meeting Room
65m²

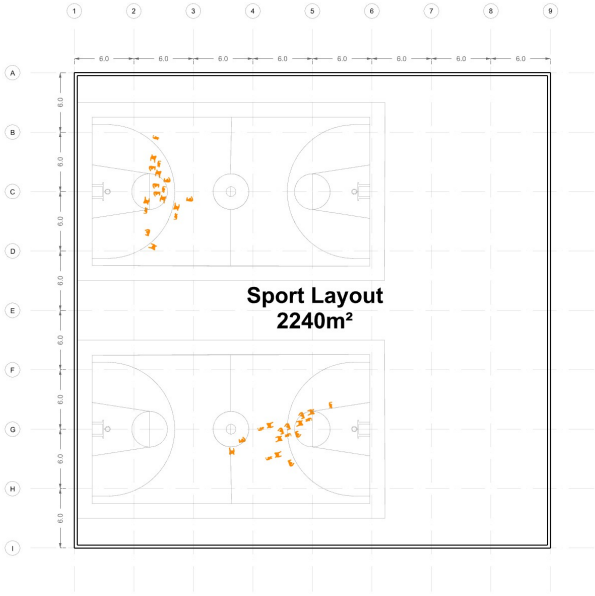

Reception
Storage
Staff Office
Reception
Storage
Restaurant 165m²
Hotel Layout GF 3370m²
Break Room
Reception
Kitchen 32m²
Storage
Toilets 32m²

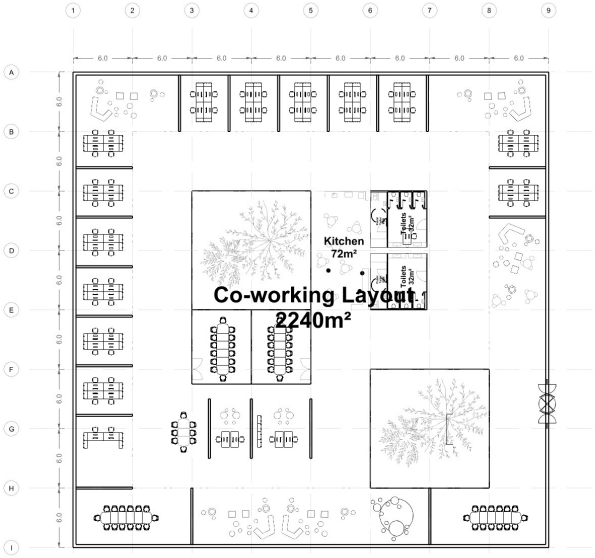

Storage
Break Room
Study Room
Storage
Hotel Layout 1st 3370m²
Storage
Break Room
Storage
Study Room

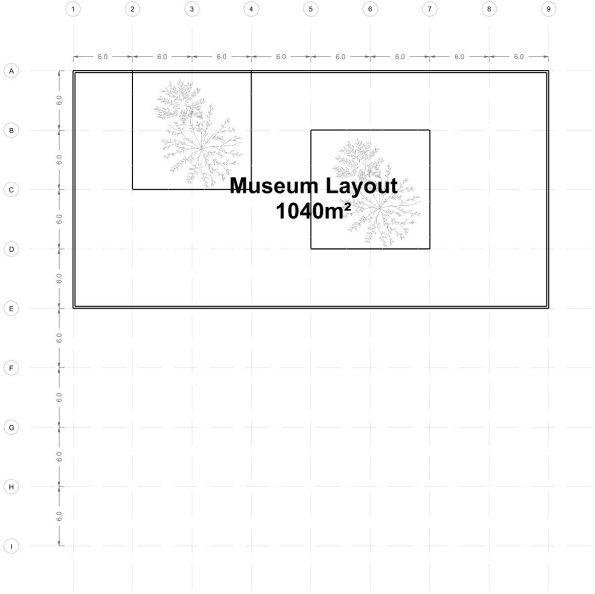

Study Space
Classroom
205m²
Classroom
100m²
Classroom
100m²
School Layout
2240m²
Lockers
Toilets
32m²
Toilets
32m²
Reception
Classroom
100m²
Staff
Office
Cafeteria

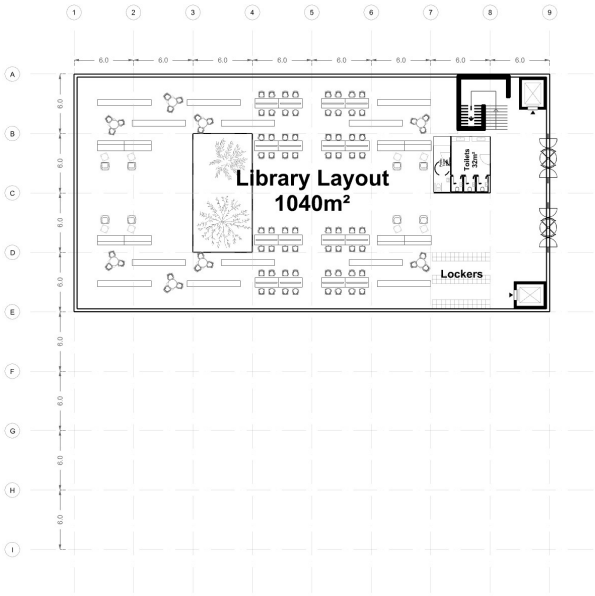

Study Space
Study Space
Classroom
205m²
Classroom
100m²
Classroom
100m²
Classroom
100m²
School Layout
2240m²
Classroom
100m²
Toilets
Toilets
Classroom
72m²

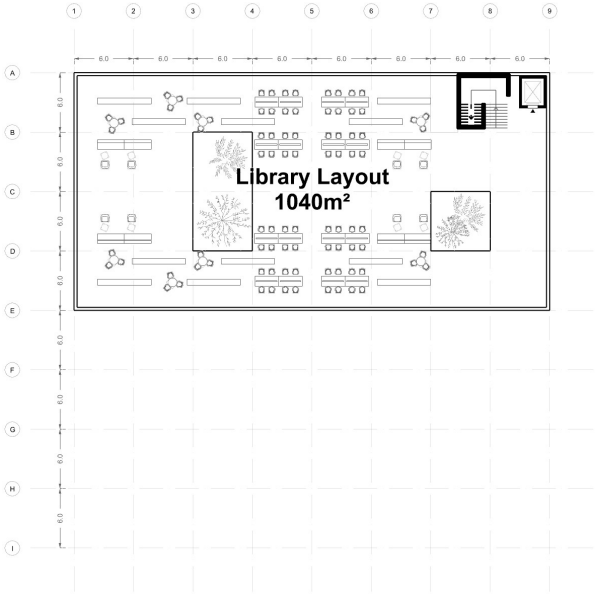

Male Changing Room 155m²
Toilets 32m²
Toilets 32m²
Female Changing Room 155m²
Sport Layout 2240m²


Sport Layout 2240m²


Kitchen
72m²
Toilets
32m²
Toilets
32m²
Co-working Layout
2240m²


Museum Layout
1040m²


Library Layout
1040m²
Toilets
32m²
Lockers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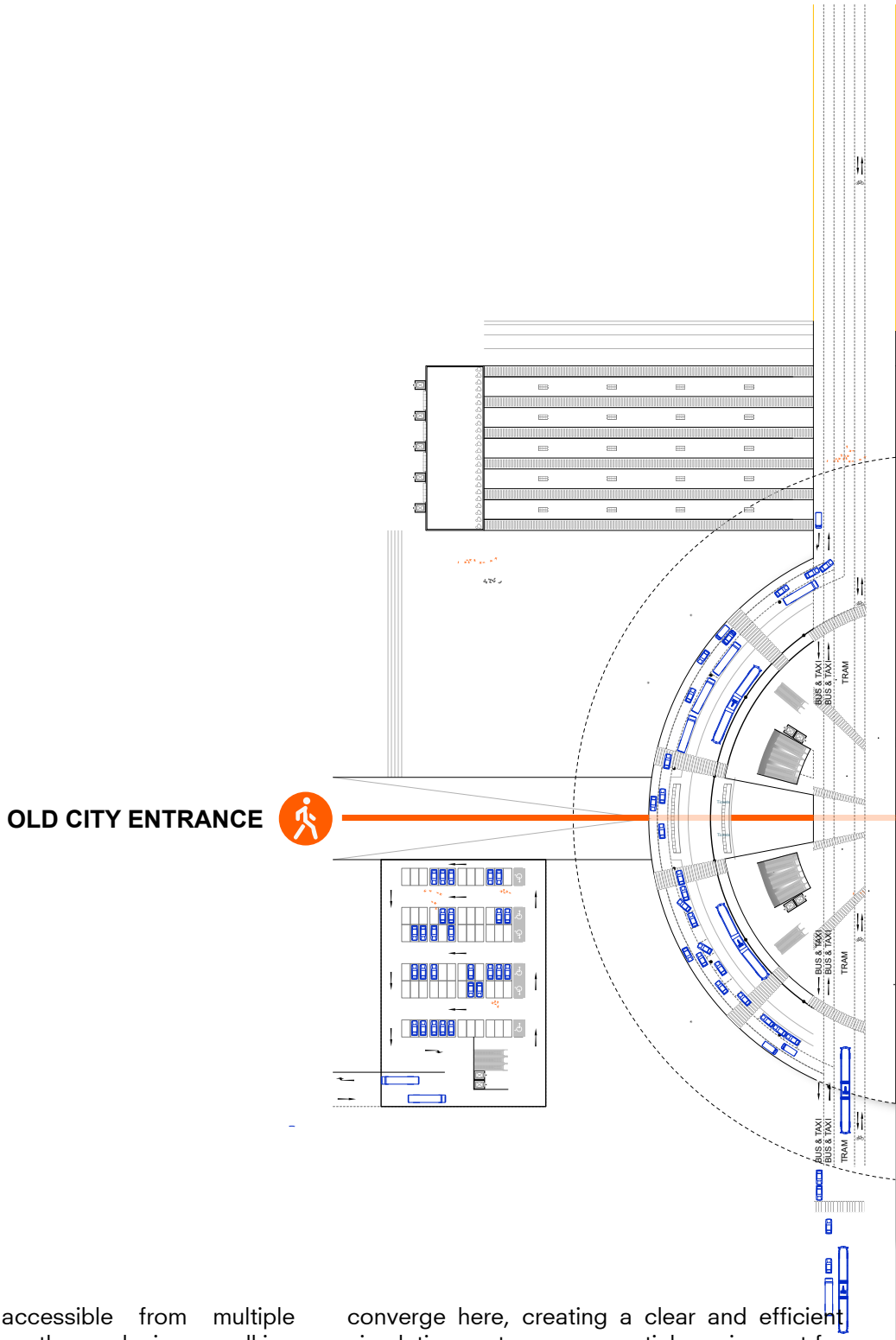
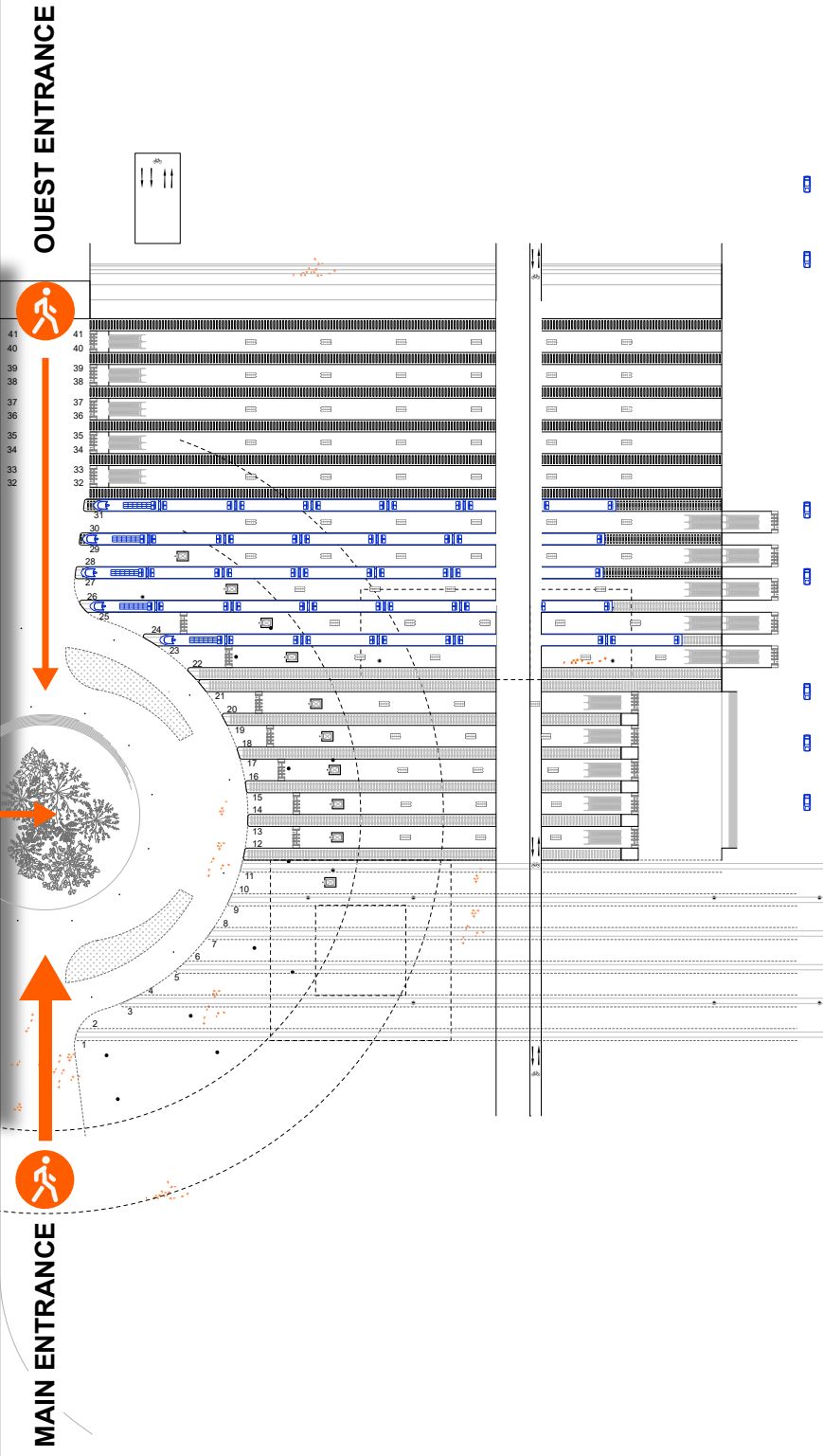
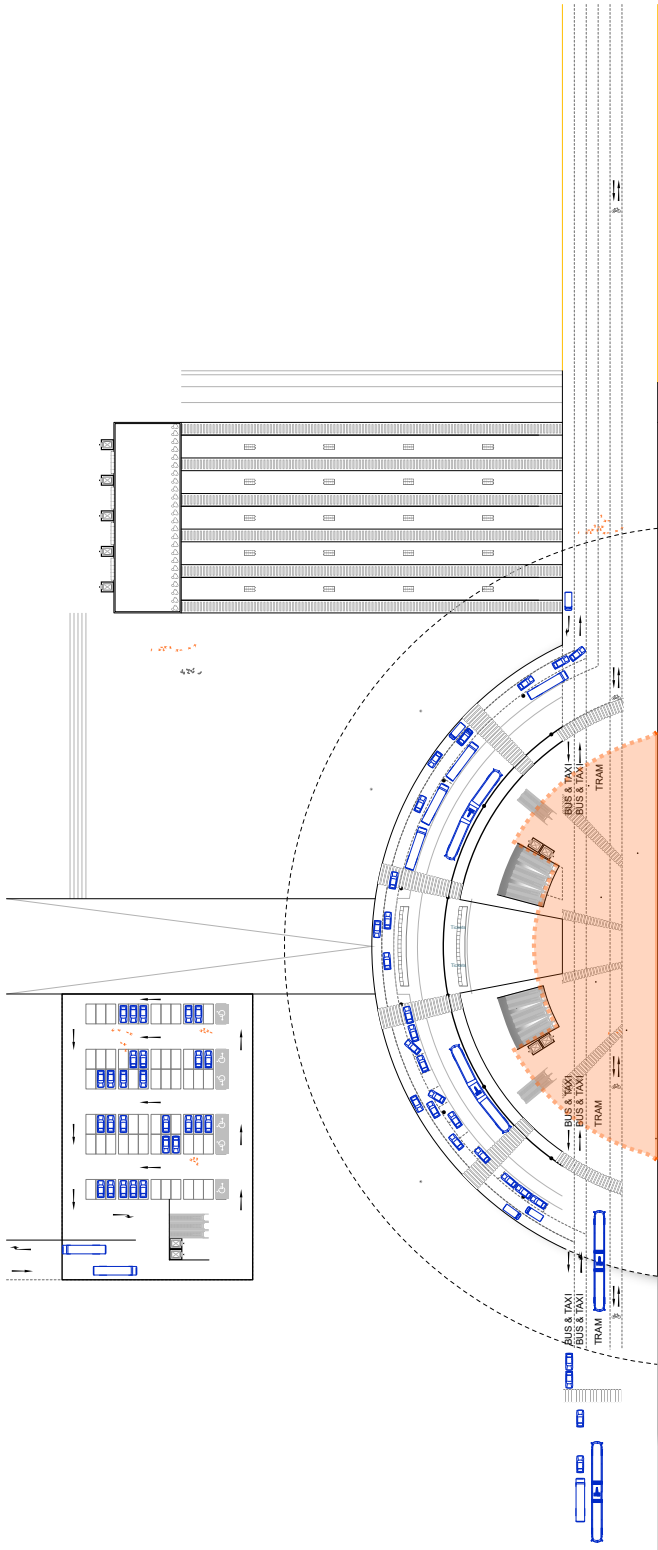
1040m²

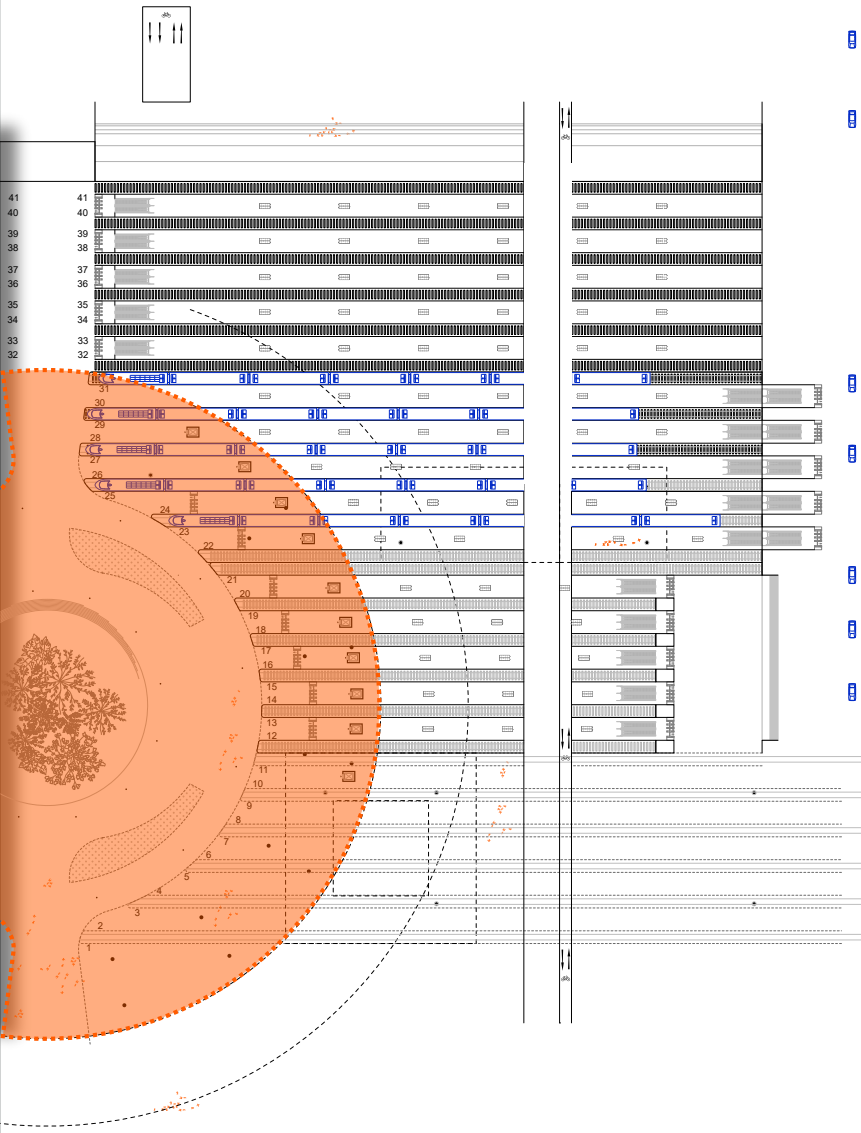


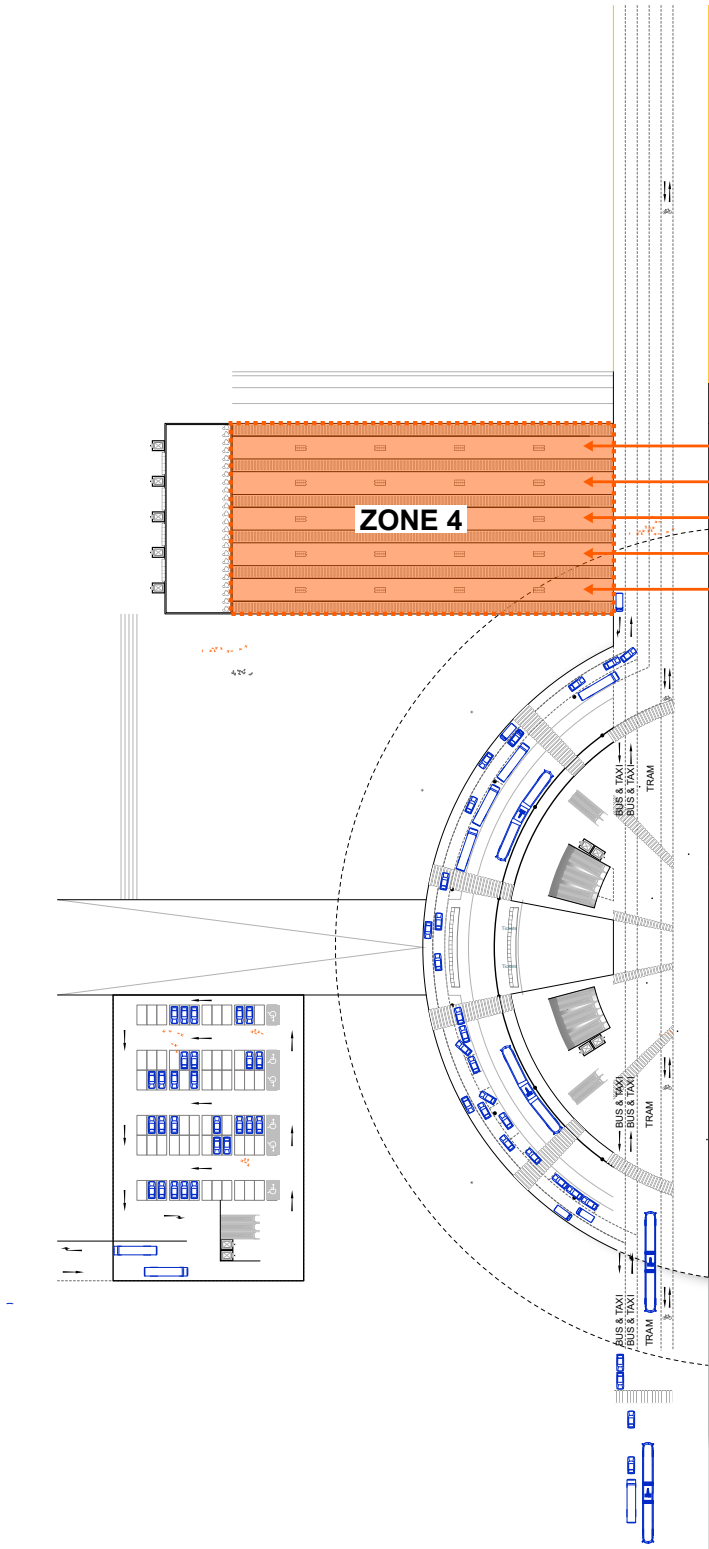

# 03 Flow

The station is accessible from multiple directions, significantly reducing walking distances and enhancing connectivity. The main entrance in the southeast directs visitors into the gently sloping concourse hall. All entry points converge here, creating a clear and efficient circulation system, an essential requirement for any mobility-based typology.


OUEST ENTRANCE
MAIN ENTRANCE


BUS & TAXI
BUS & TAXI
TRAM
BUS & TAXI
BUS & TAXI
TRAM
BUS & TAXI
BUS & TAXI
TRAM

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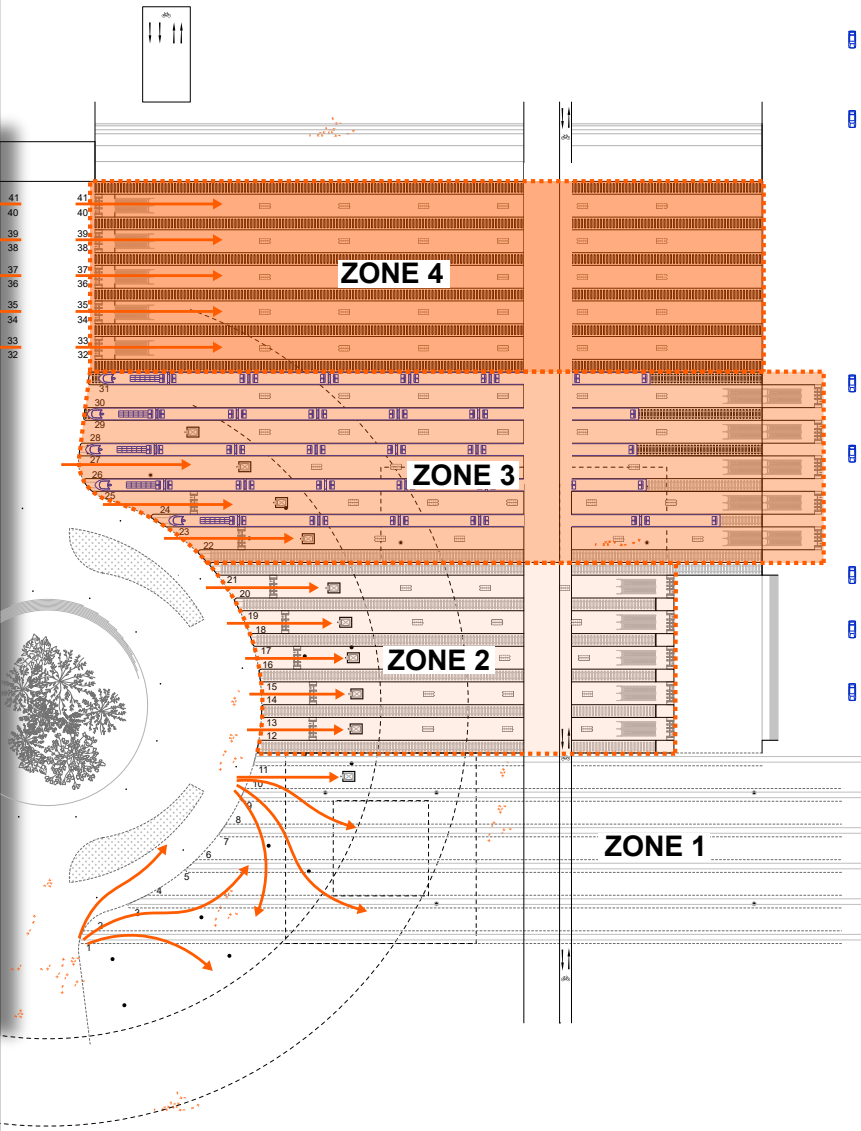
BUS & TAXI
BUS & TAXI
TRAM
BUS & TAXI
BUS & TAXI
TRAM
BUS & TAXI
BUS & TAXI
TRAM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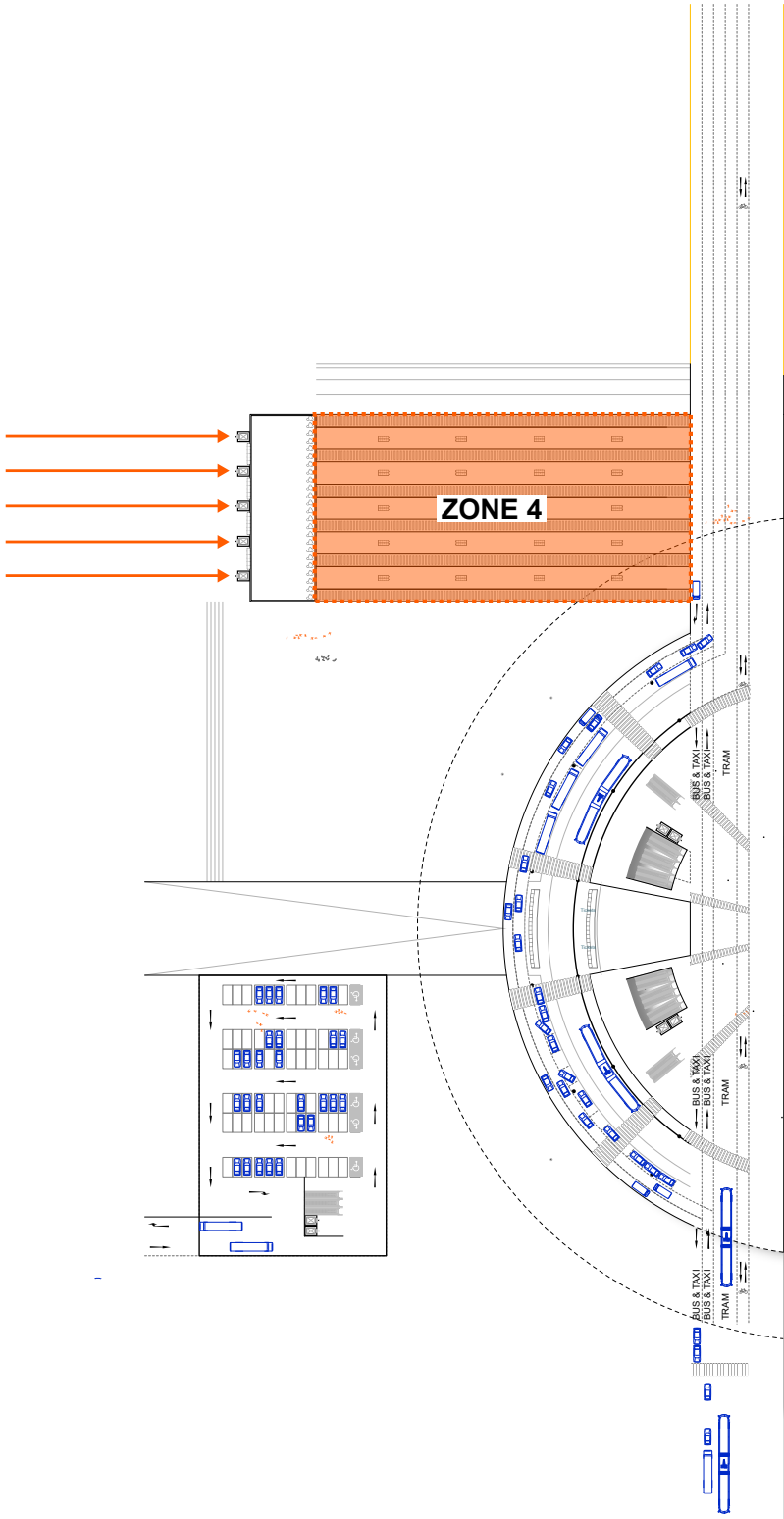
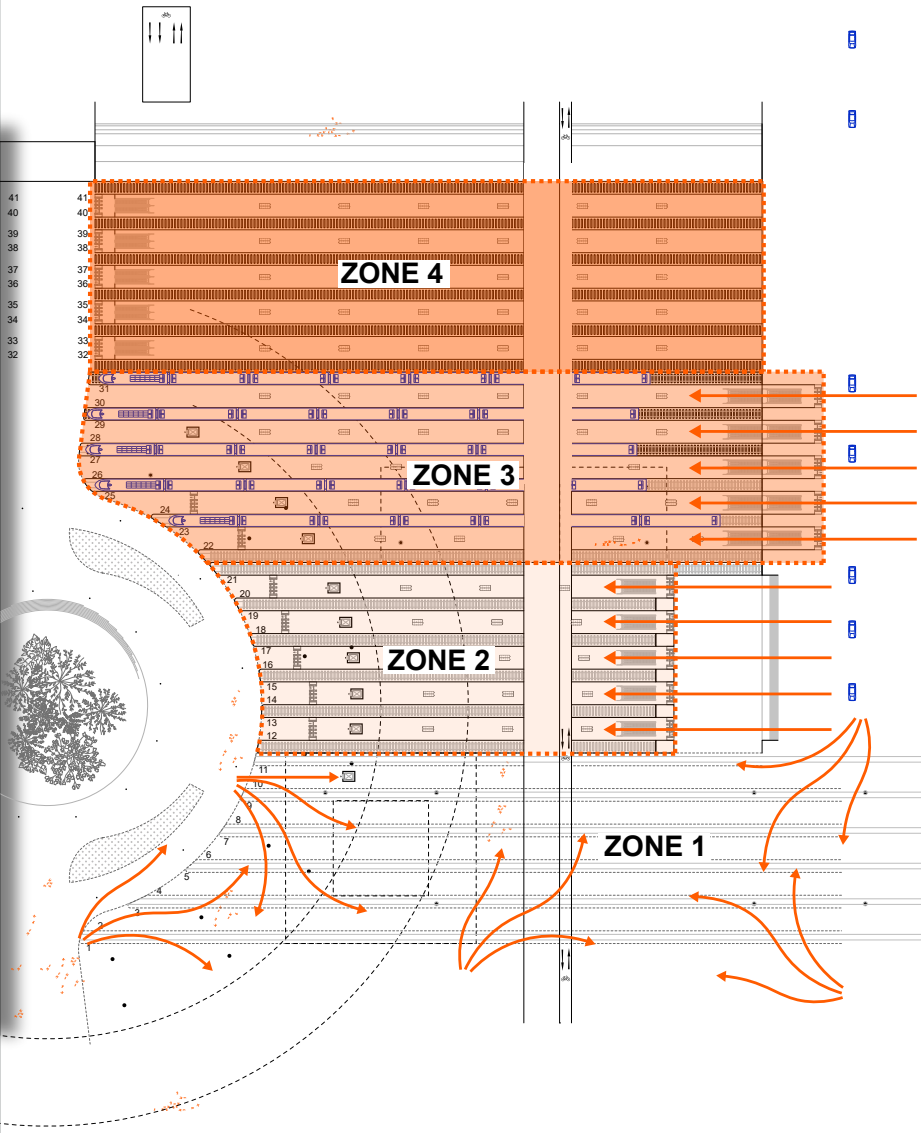
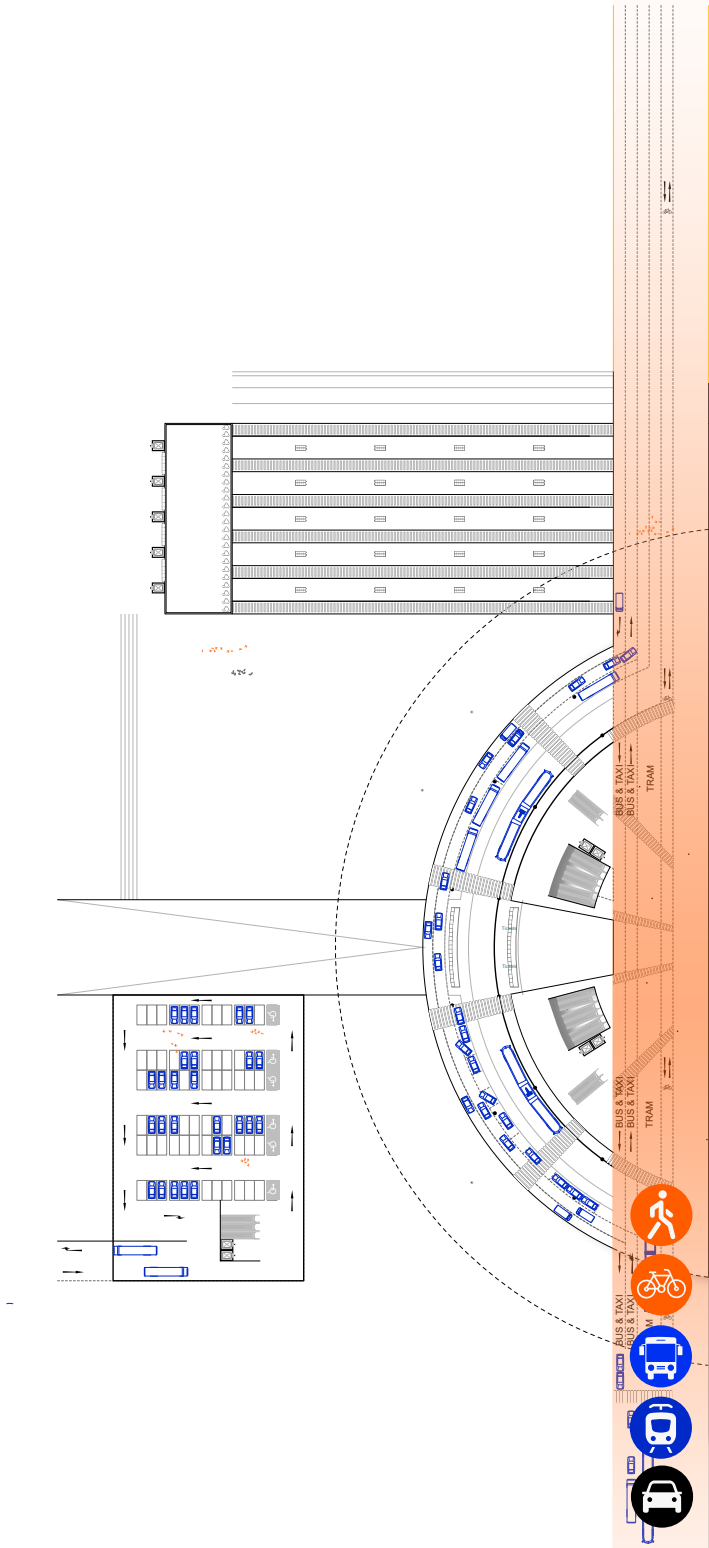
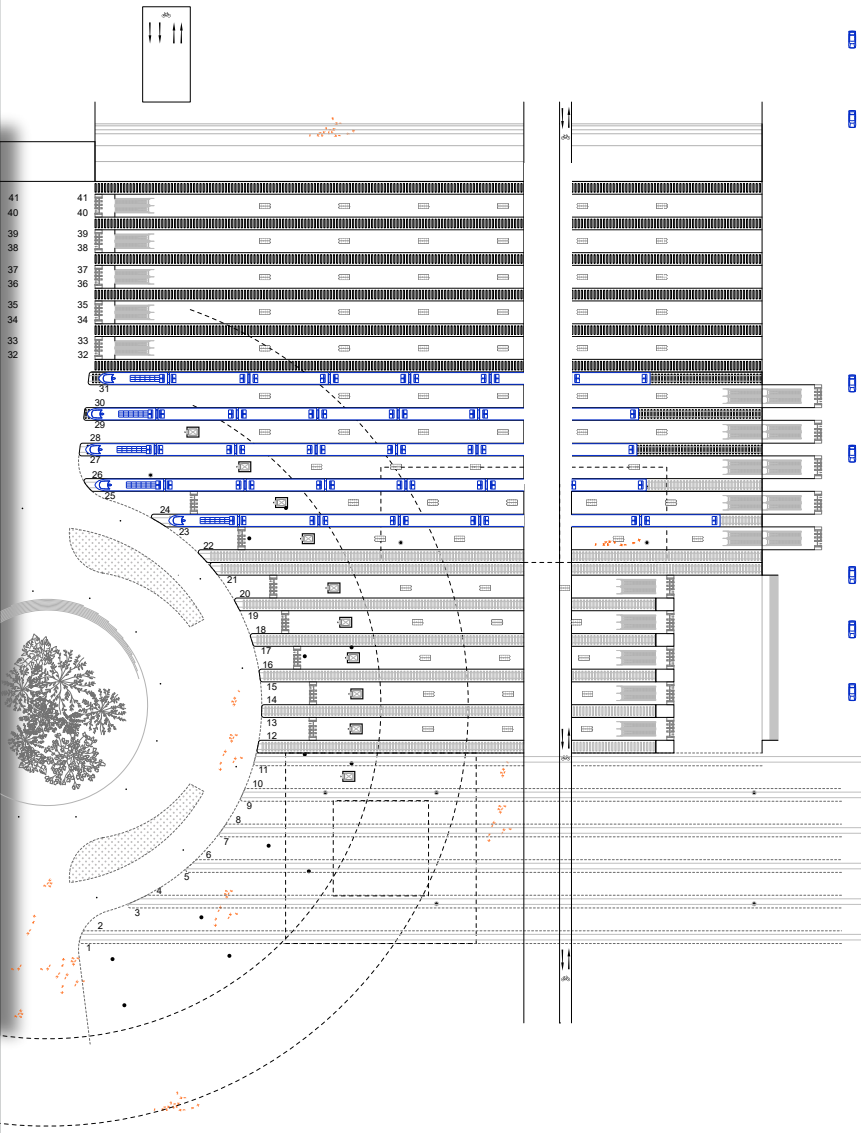
ZONE 3
ZONE 2
ZONE 1

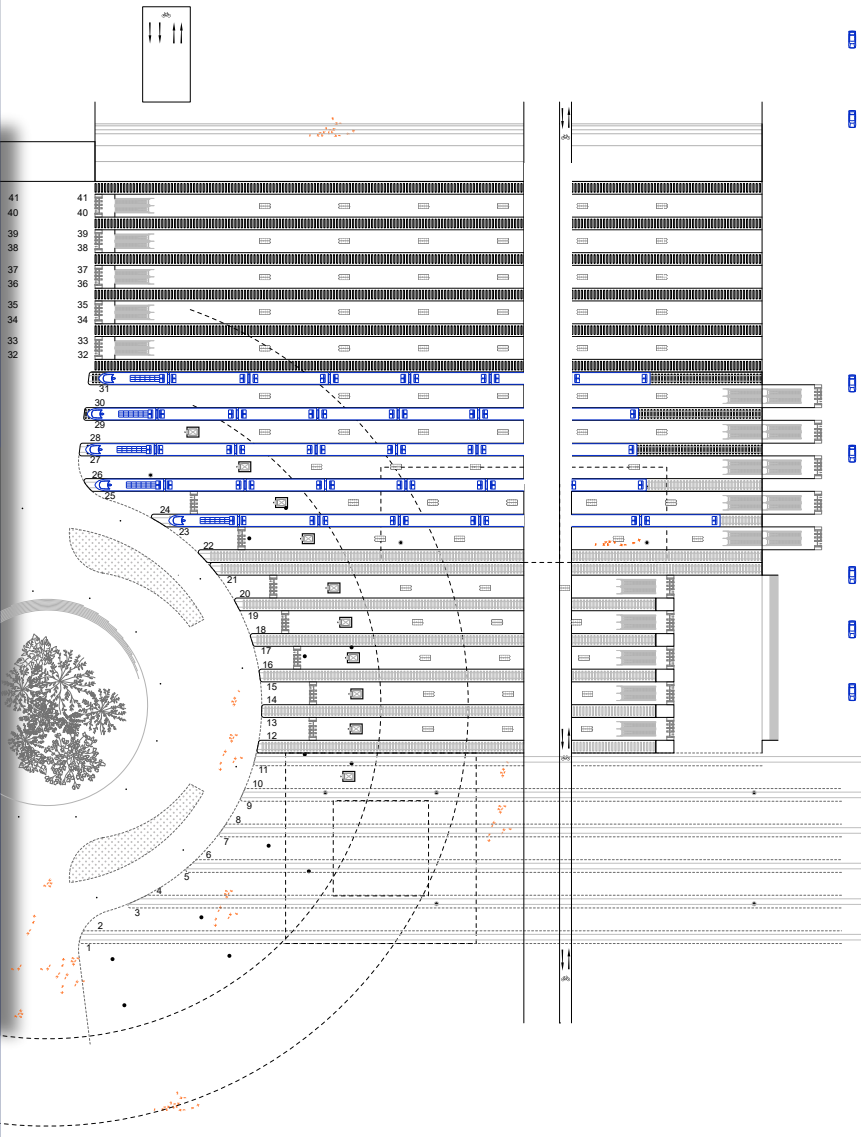

ZONE 4
BUS & TAXI
BUS & TAXI
TRAM
BUS & TAXI
BUS & TAXI
TRAM
BUS & TAXI
BUS & TAXI
TRAM

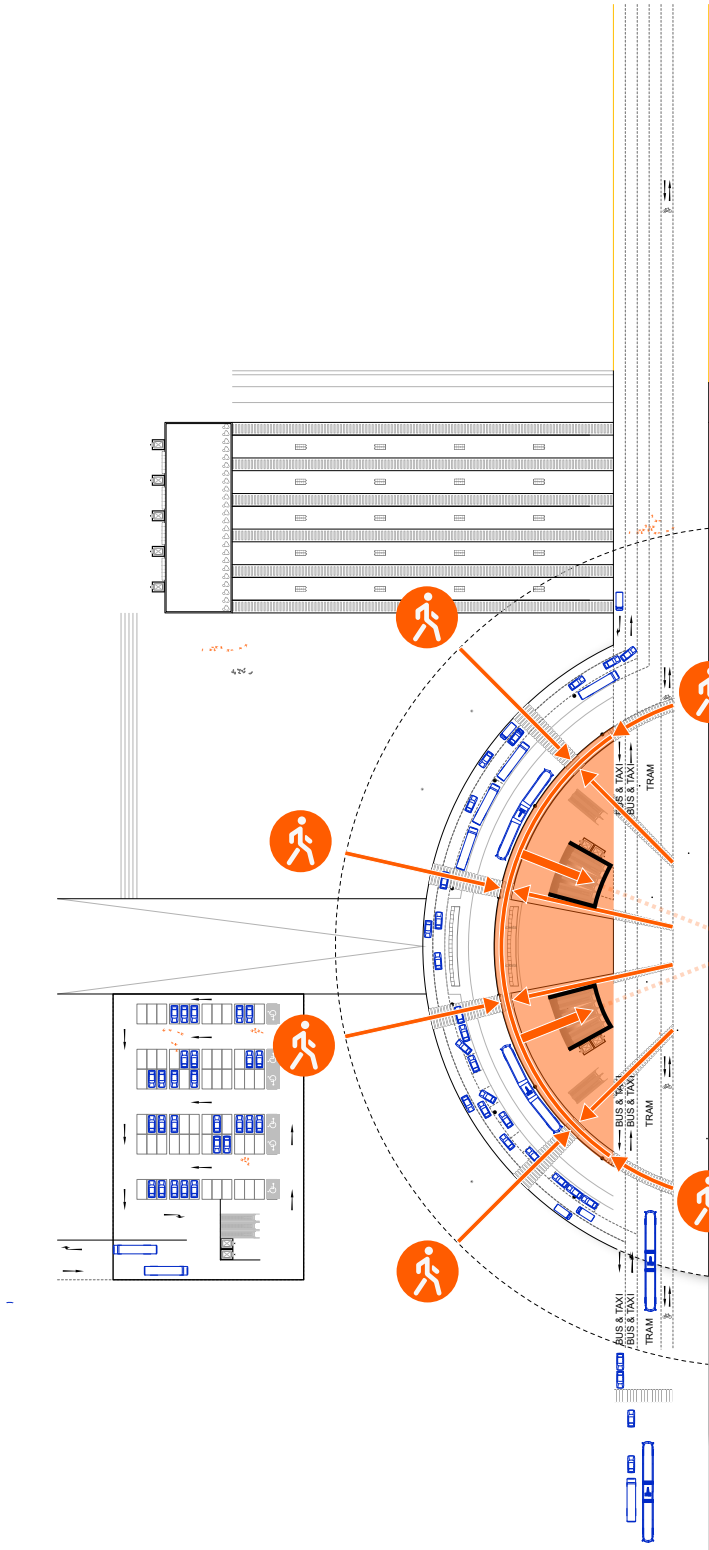

ZONE 4
ZONE 3
ZONE 2
ZONE 1


BUS & TAXI
BUS & TAXI
TRAM
BUS & TAXI
BUS & TAXI
TRAM
BUS & TAXI
BUS & TAXI
TRAM



DROP IN/OFF
BUS & TAXI
BUS & TAXI
TRAM
BUS & TAXI
BUS & TAXI
TRAM
BUS & TAXI
BUS & TAXI
TRAM




BUS & TAXI
BUS & TAXI
TRAM
BUS & TAXI
BUS & TAXI
TRAM
BUS & TAXI
BUS & TAXI
TRAM

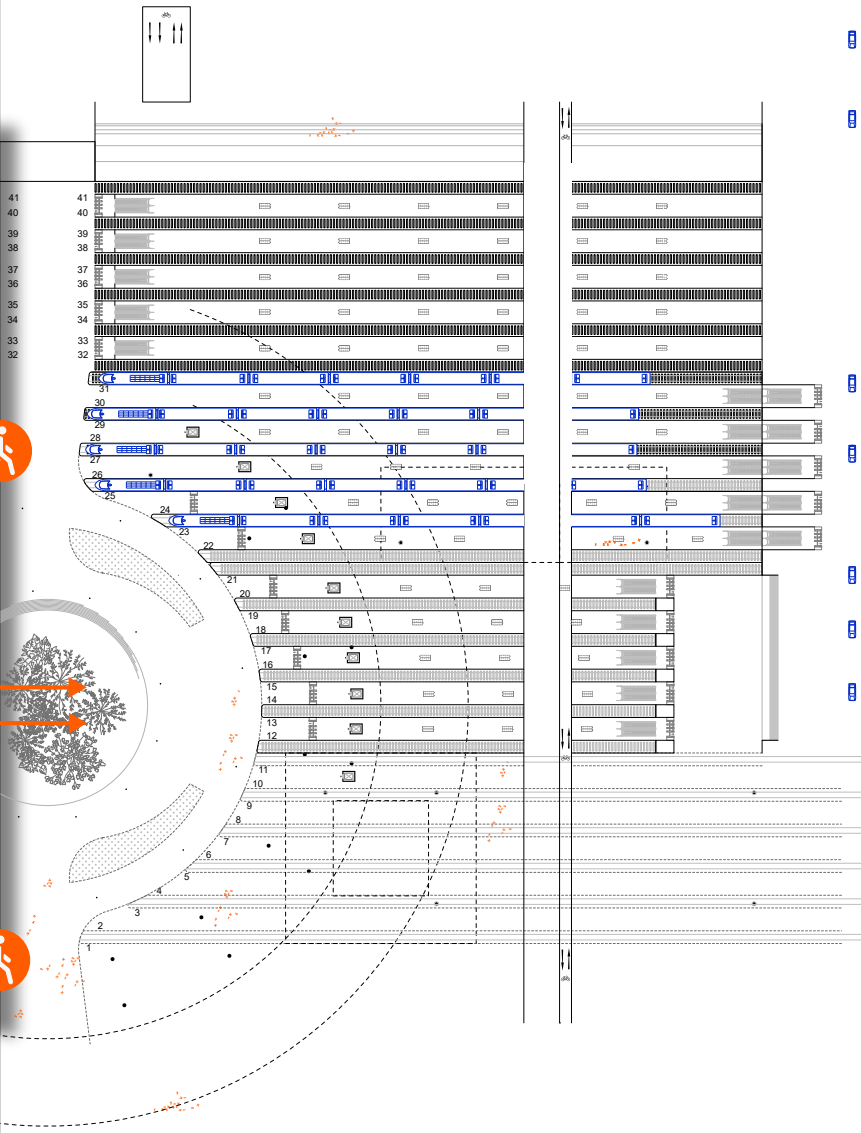




Figure 092 Drop in/off zone



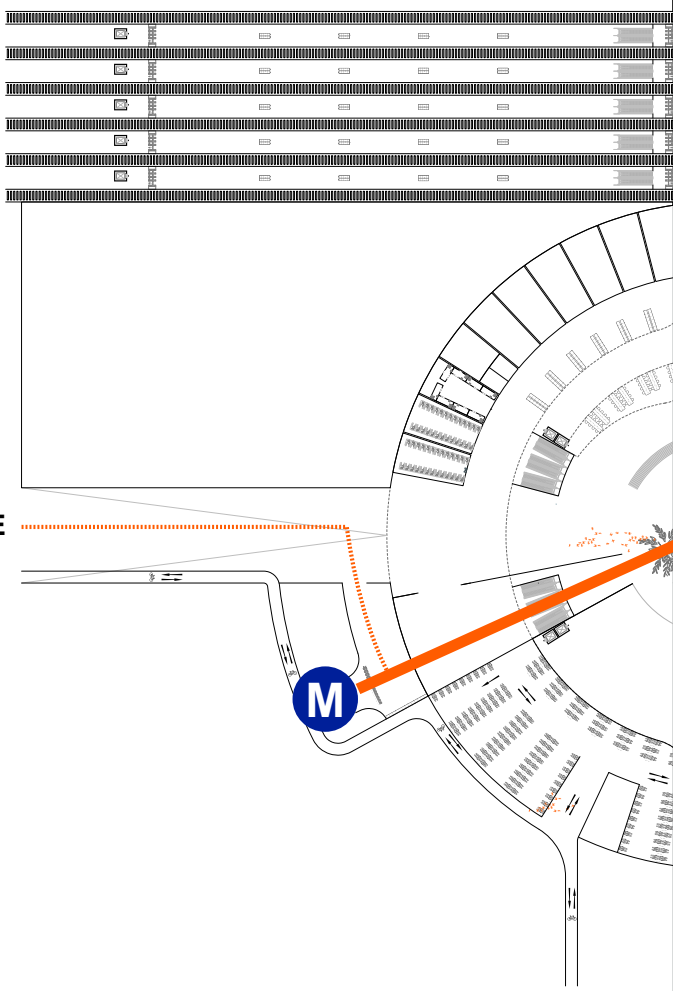
Figure 093 Main Concourse Hall



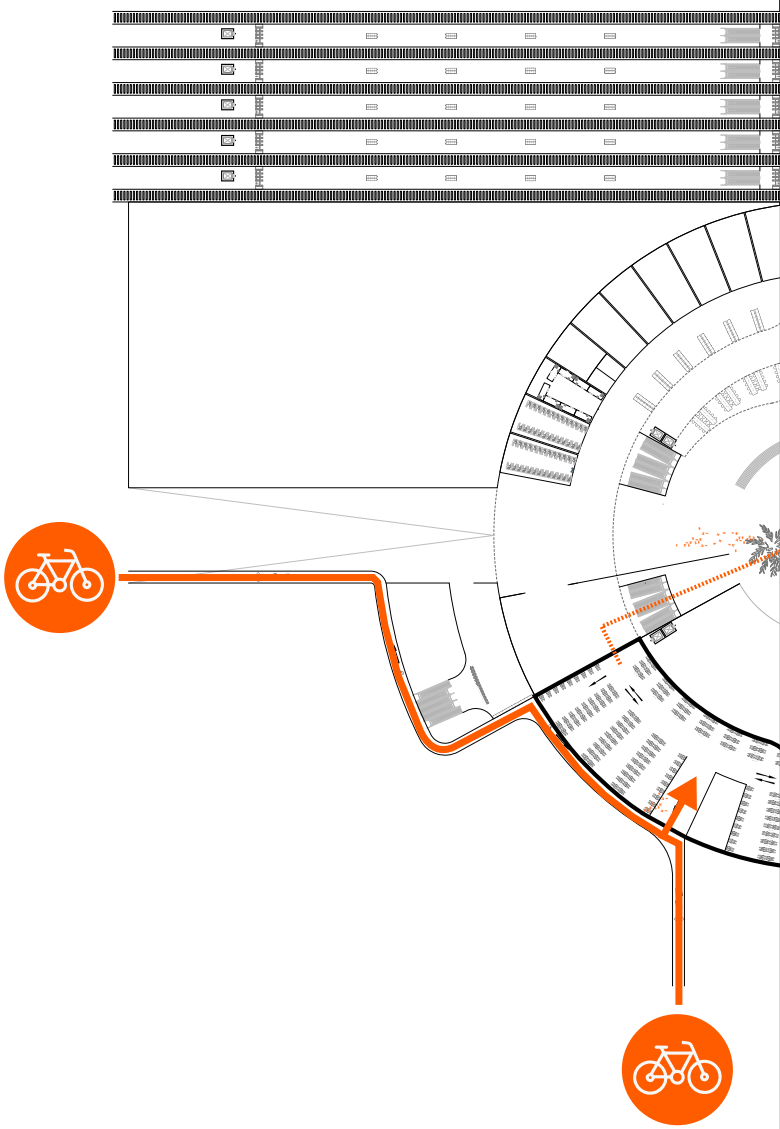
Figure 094 Ciruclation down for train access

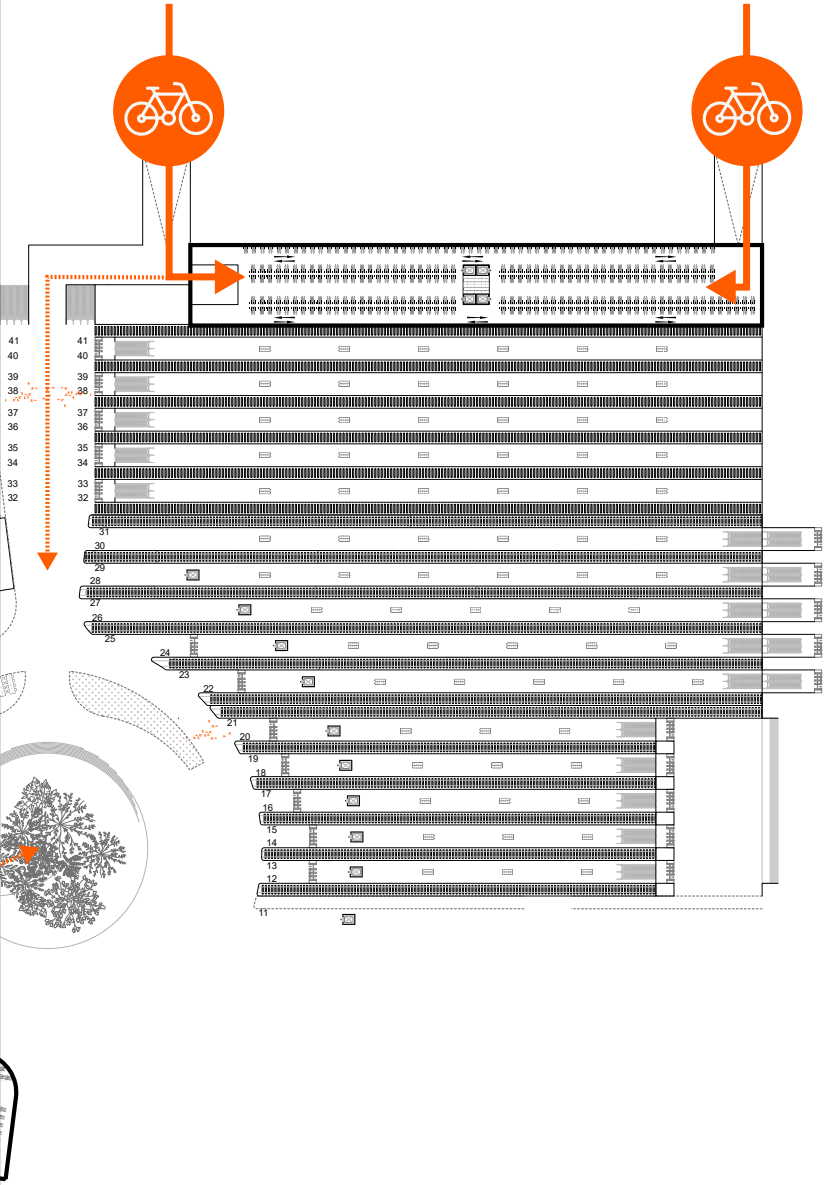


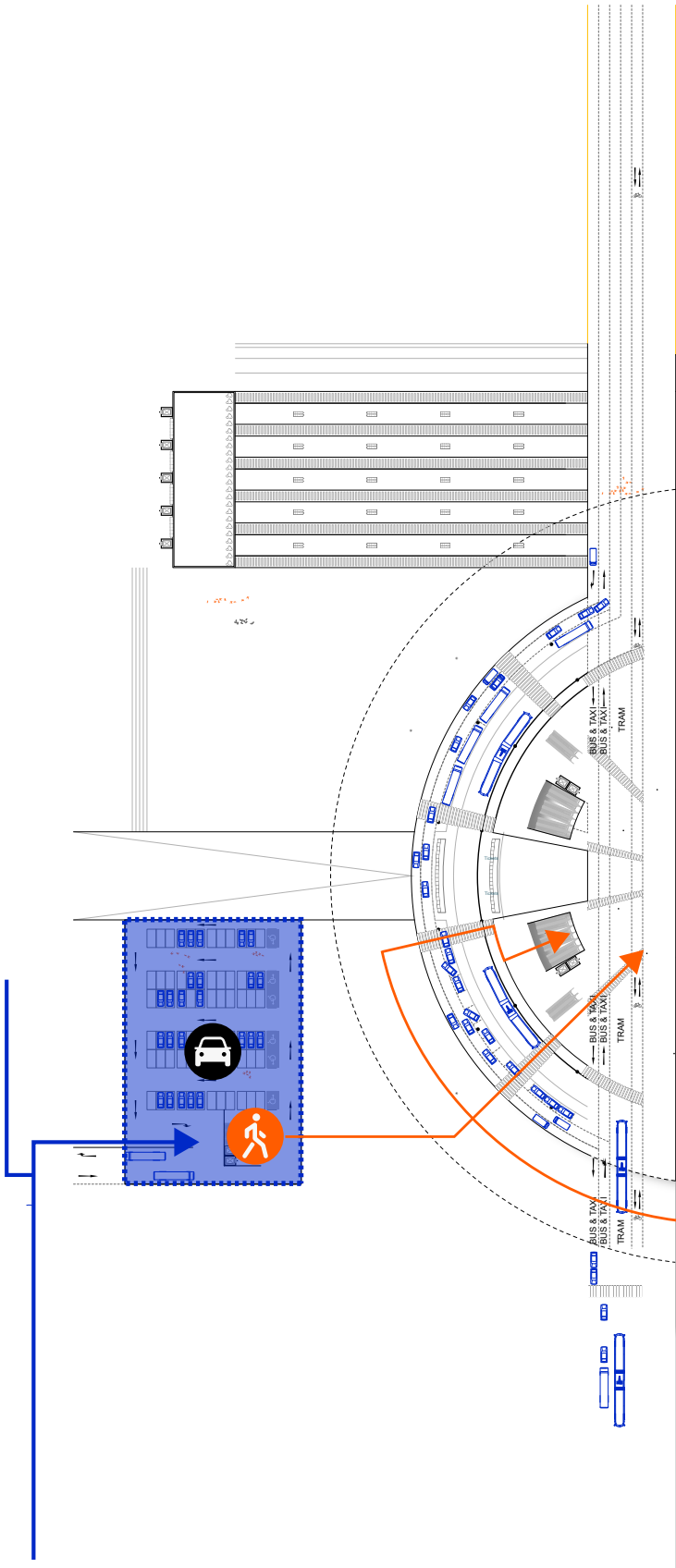
Figure 095 Central Courtyard

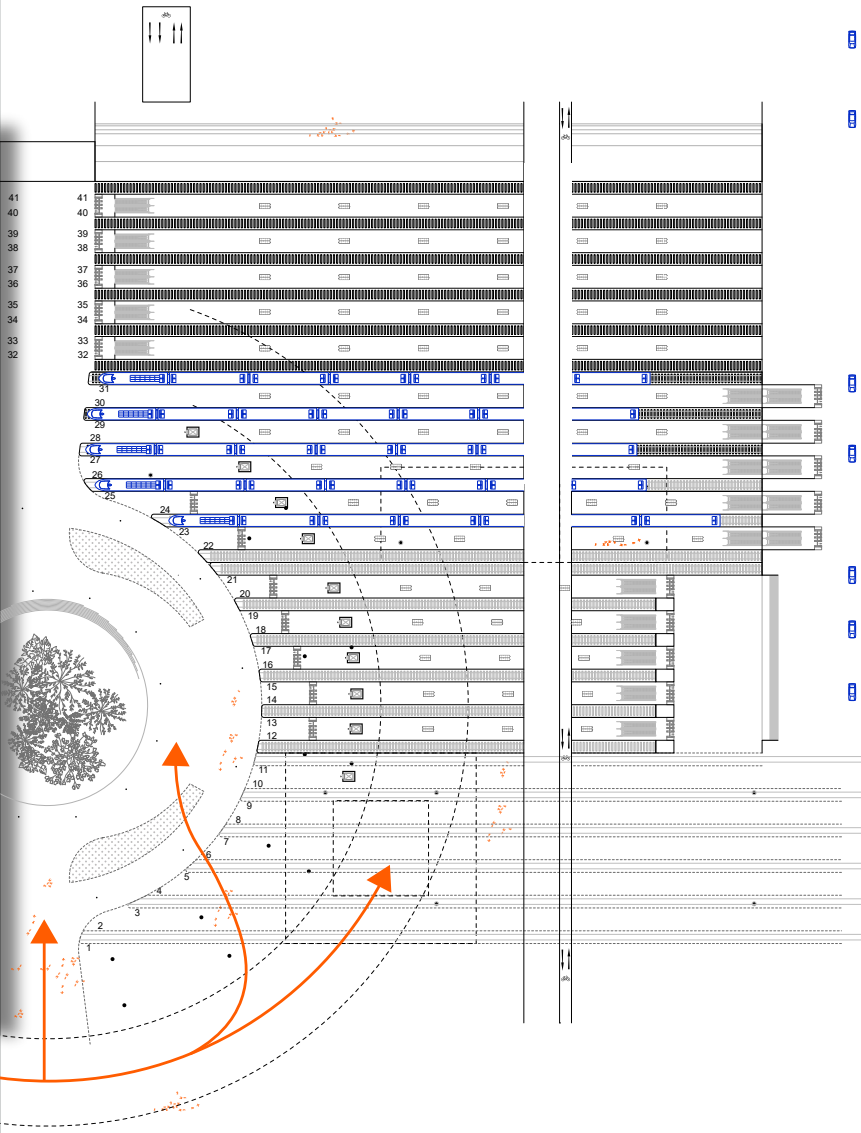

OLD CITY ENTRANCE
M

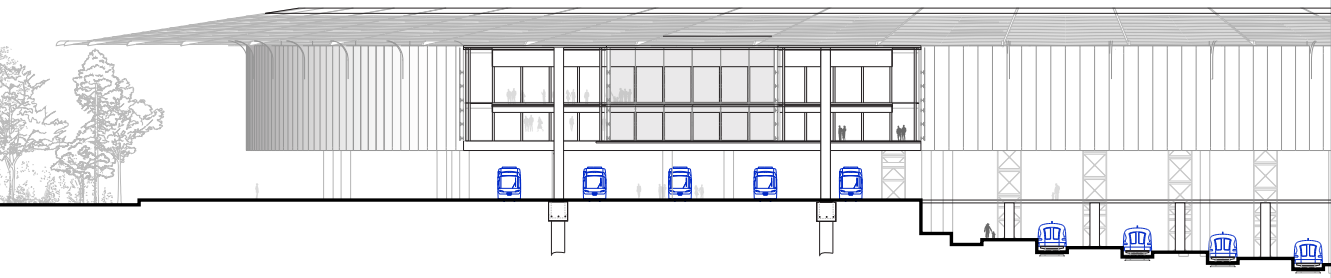


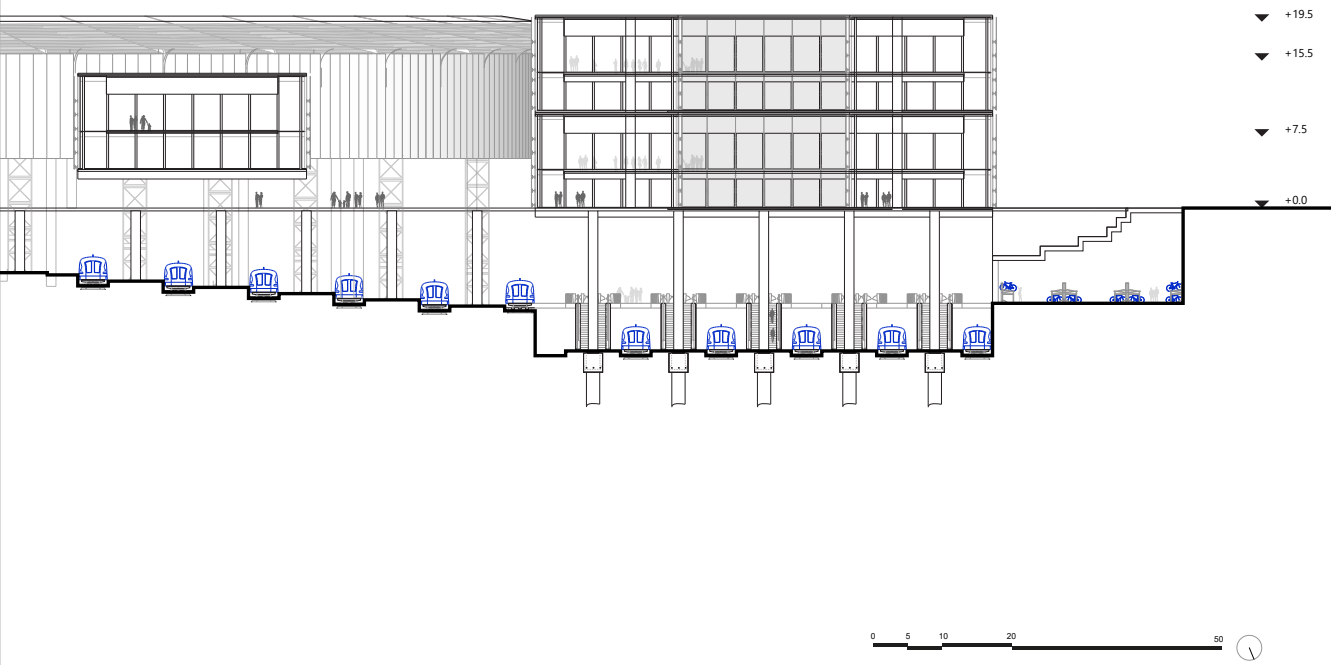





BUS & TAXI
BUS & TAXI
TRAM
BUS & TAXI
BUS & TAXI
TRAM
BUS & TAXI
BUS & TAXI
TRAM



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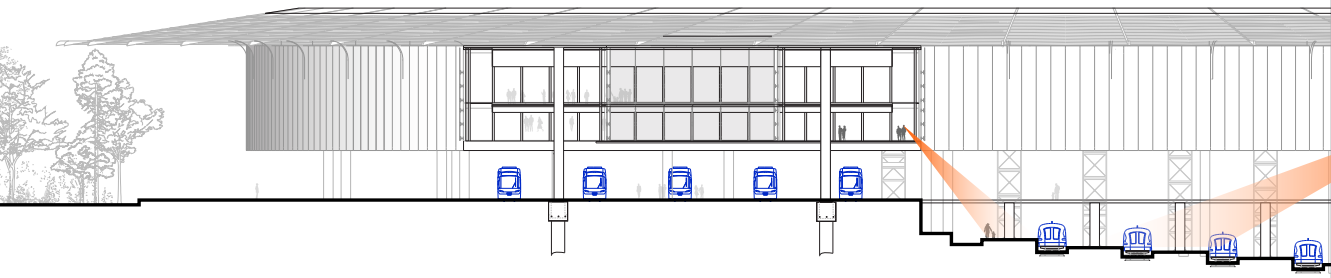
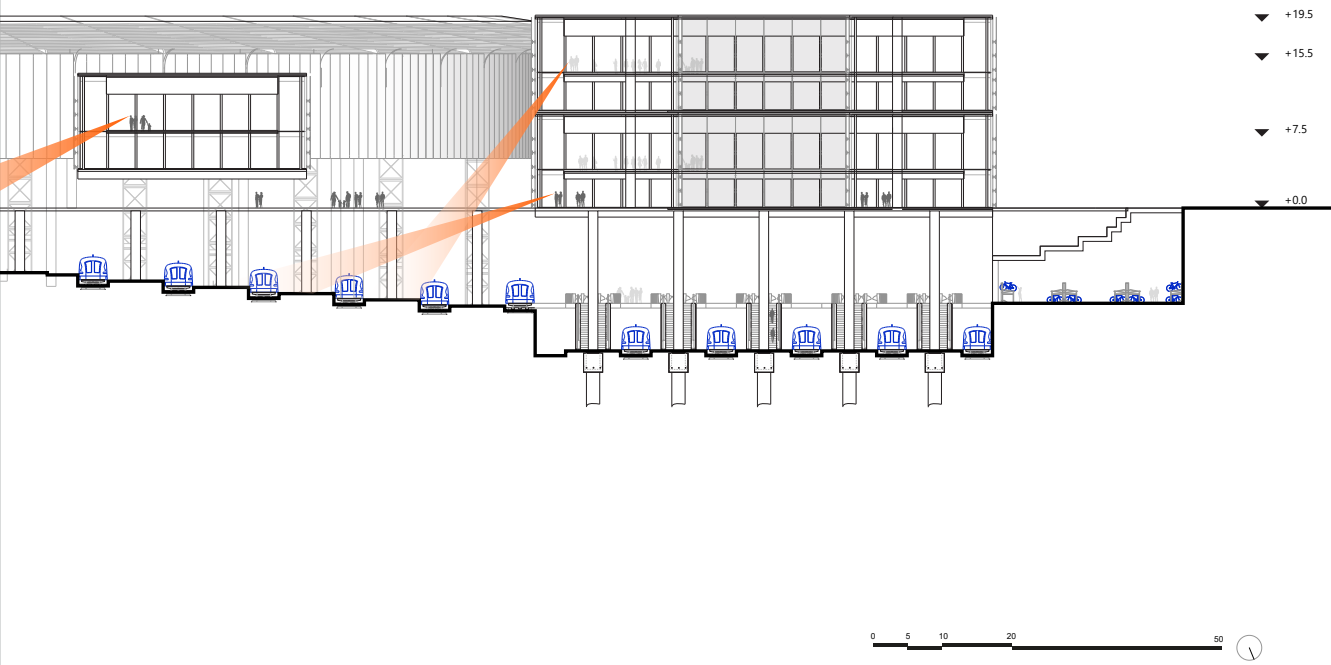
+15.5
+7.5
+0.0
0
5
10
20
50

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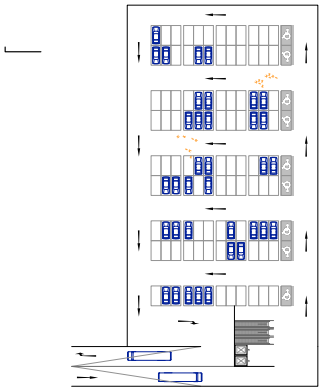

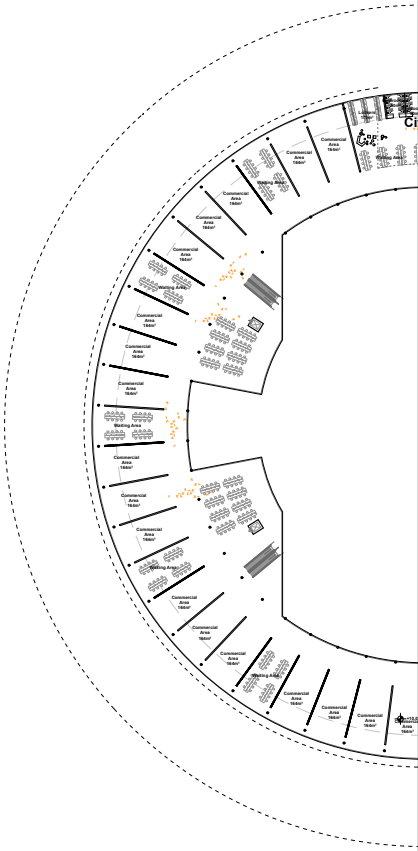

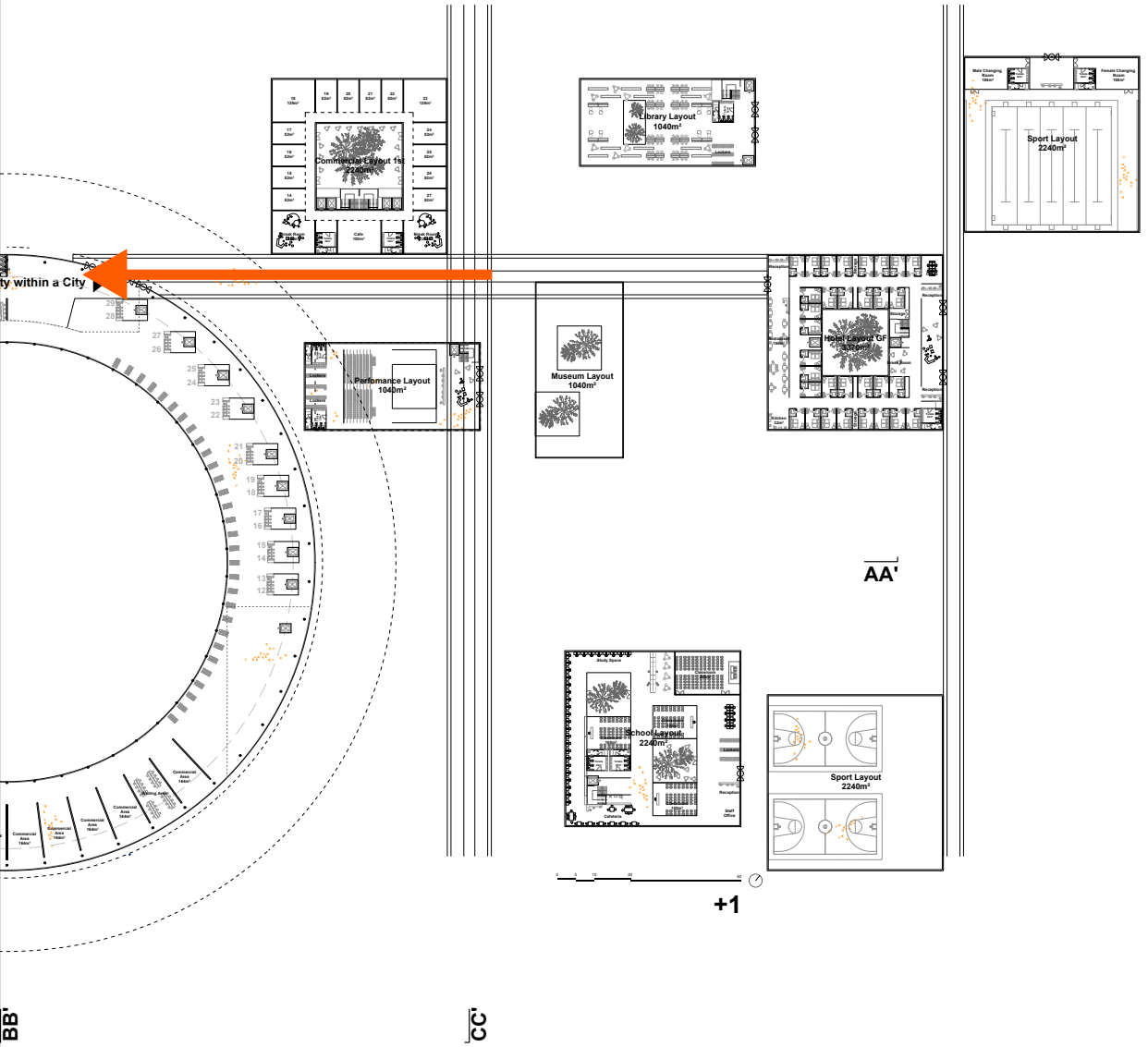
Commercial Layout 1st
2240m²
Library Layout
1040m²
Sport Layout
2240m²
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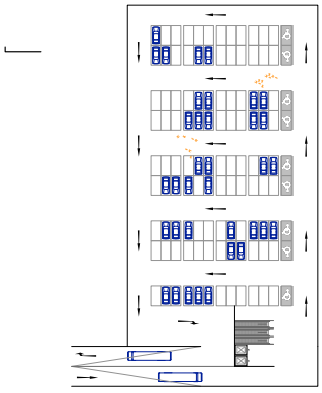
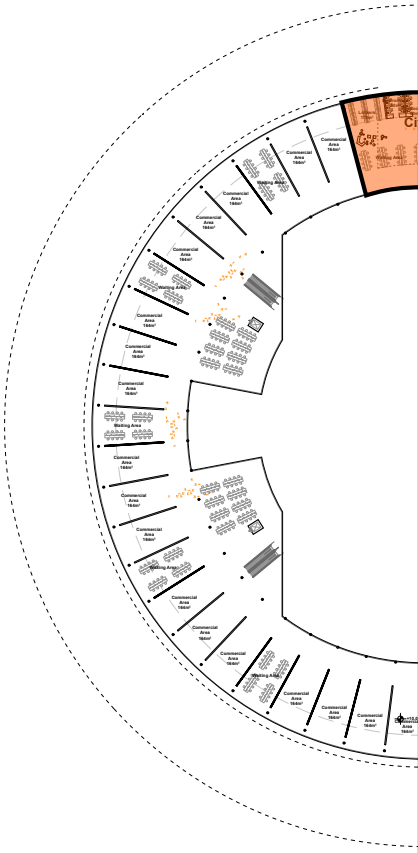
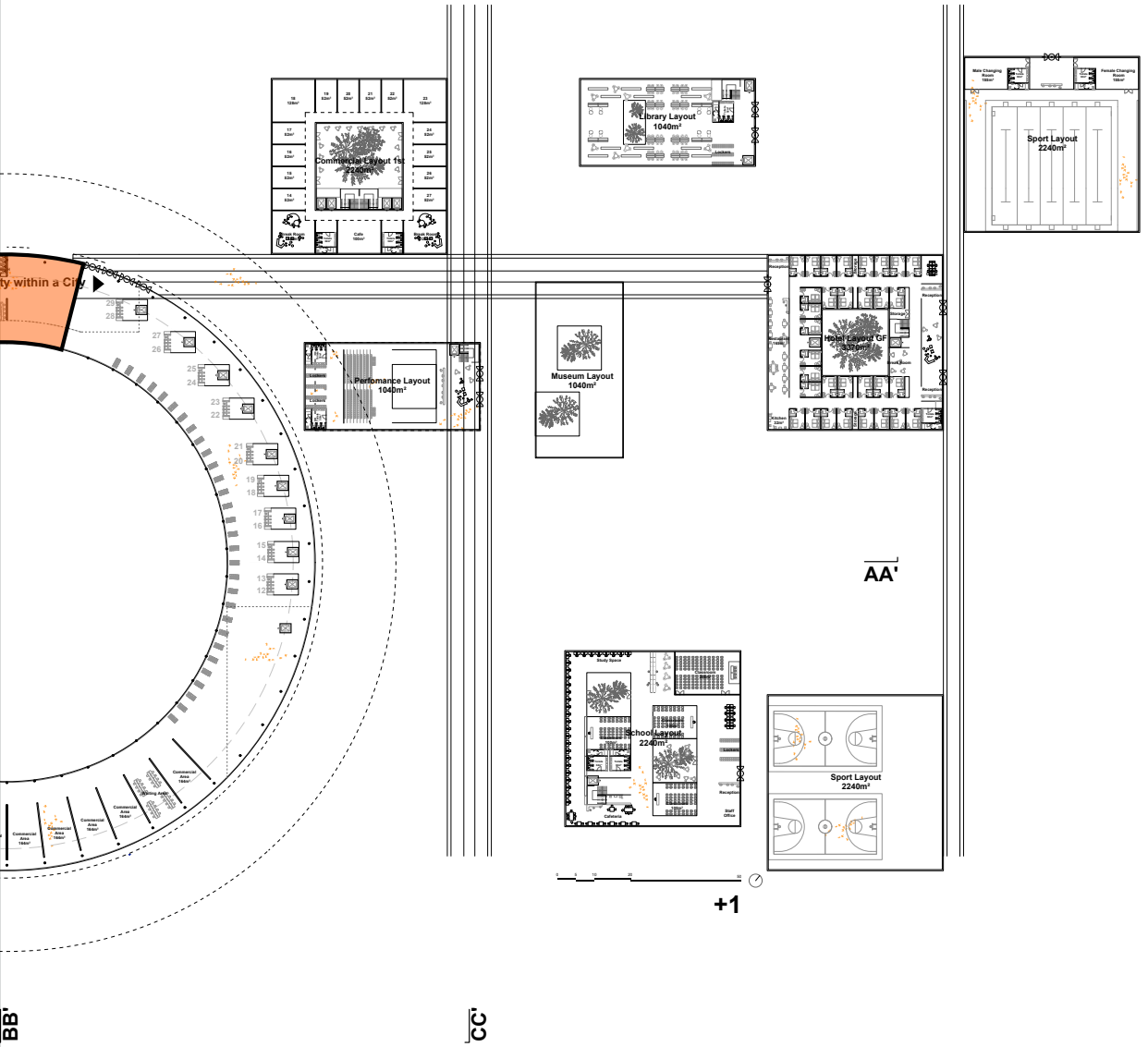
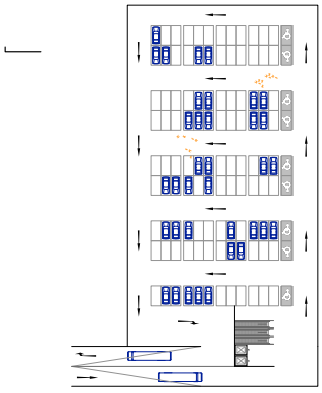
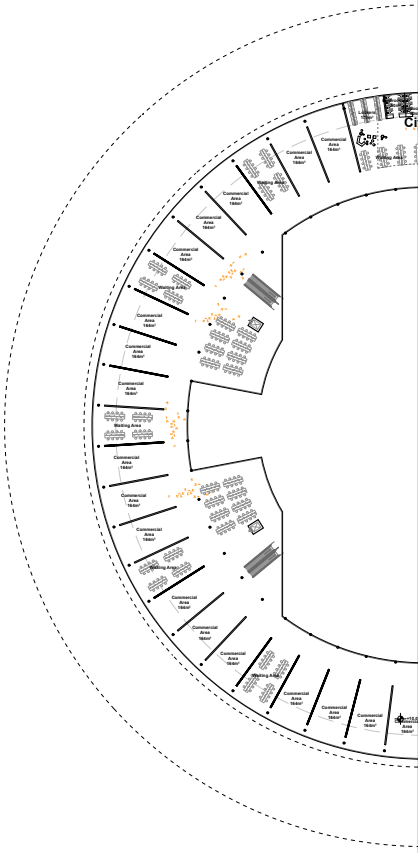
Performance Layout
1040m²
Museum Layout
1040m²
Hotel Layout GF
330m²
AA'
School Layout
2240m²
Sport Layout
2240m²
+1
BB'
CC'

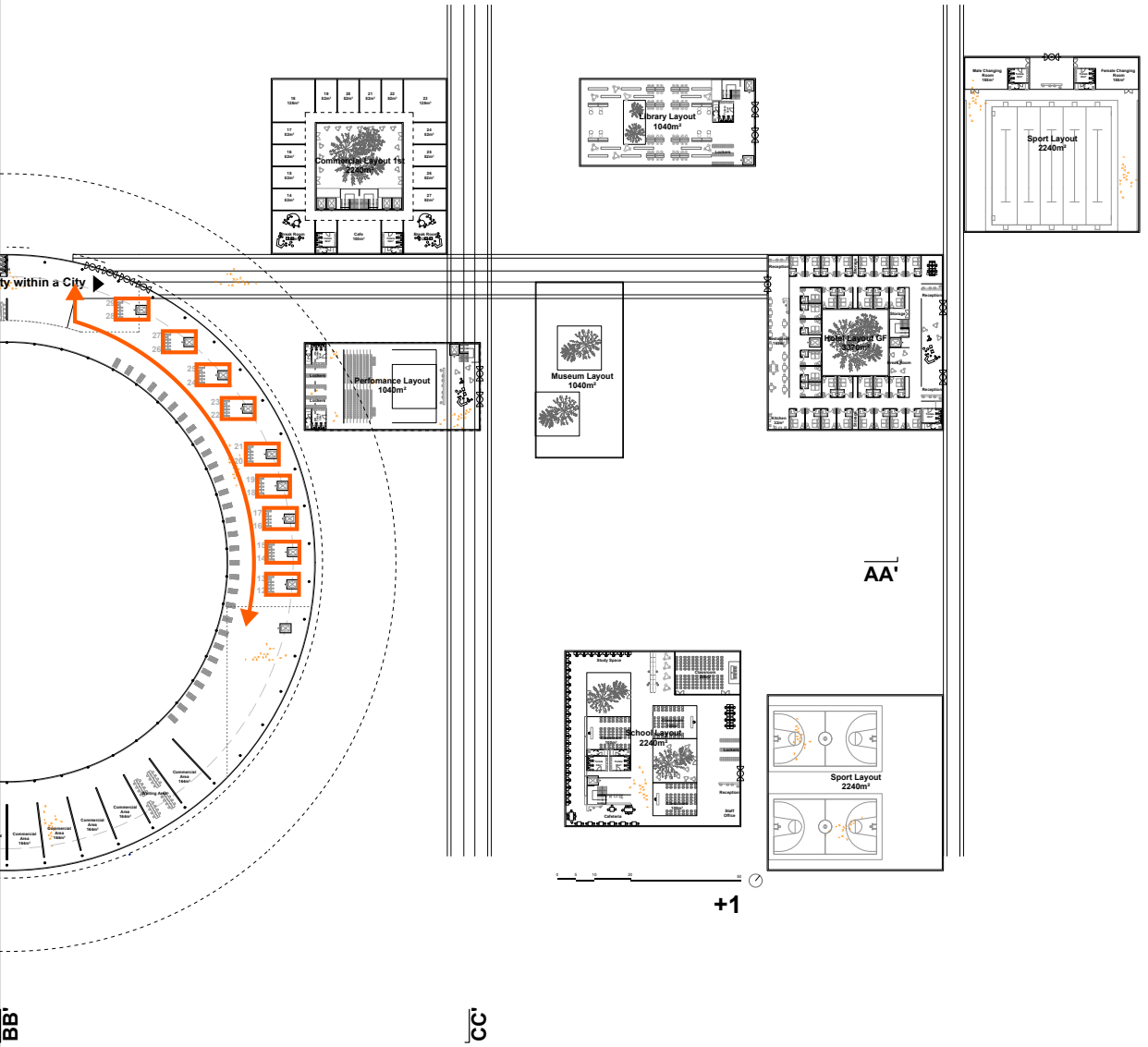





Commercial Layout 1st
2240m²
Library Layout
1040m²
Sport Layout
2240m²
Performance Layout
1040m²
Museum Layout
1040m²
Hotel Layout GF
330m²
AA'
School Layout
2240m²
Sport Layout
2240m²
+1
BB'
CC'



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Library Layout
1040m²
Sport Layout
2240m²
ty within a City
Performance Layout
1040m²
Museum Layout
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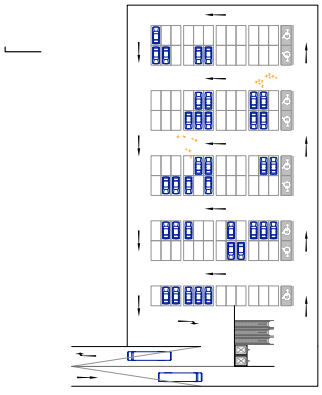
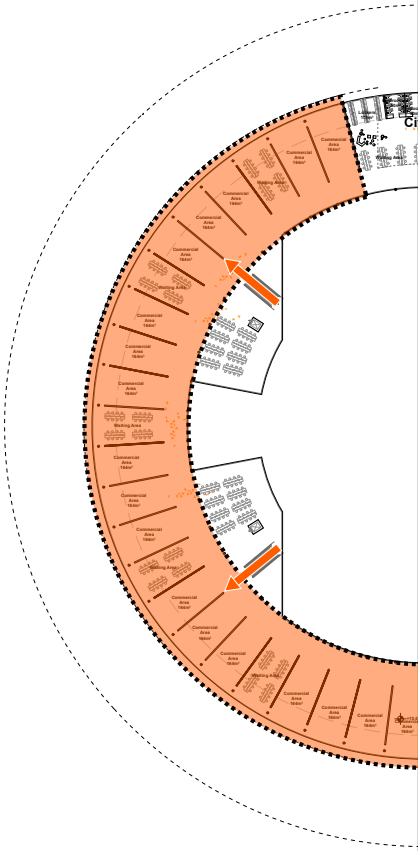
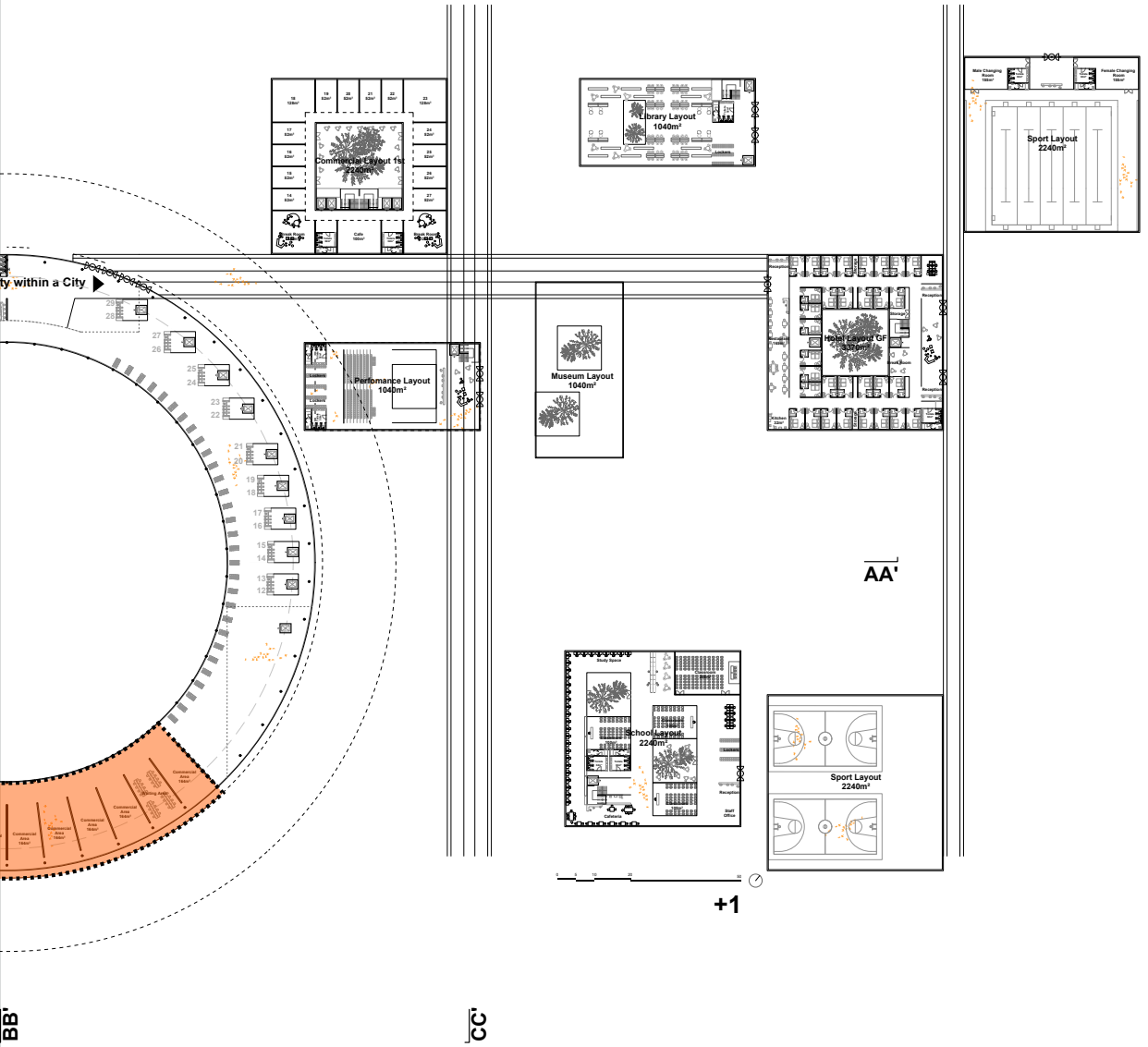
Hotel Layout GF
1320m²
AA'
School Layout
2240m²
Sport Layout
2240m²
+1
BB'
CC'



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Library Layout
1040m²
Sport Layout
2240m²
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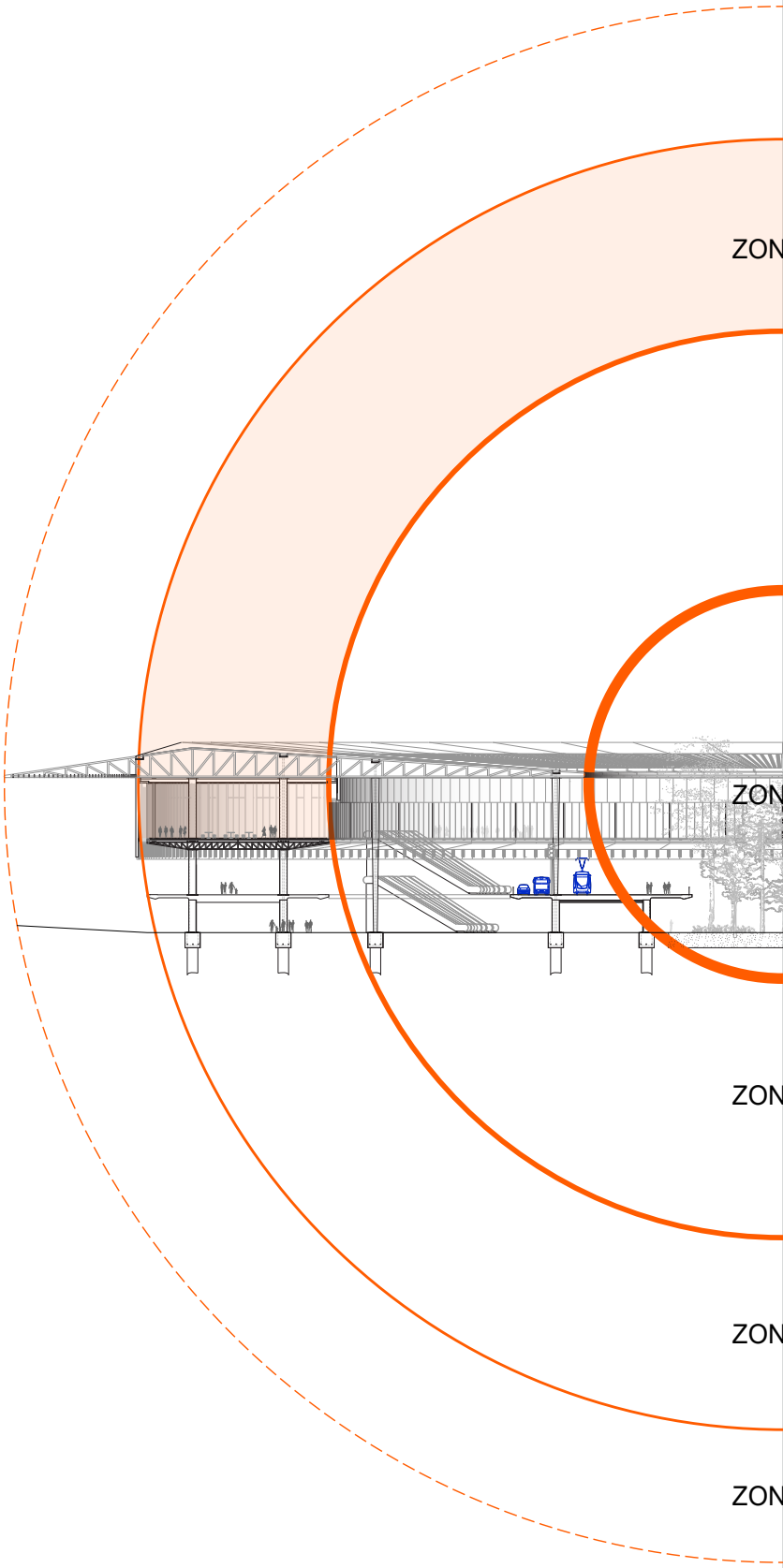
Performance Layout
1040m²
Museum Layout
1040m²
Hotel Layout GF
3320m²
AA'
School Layout
2240m²
Sport Layout
2240m²
+1
BB'
CC'







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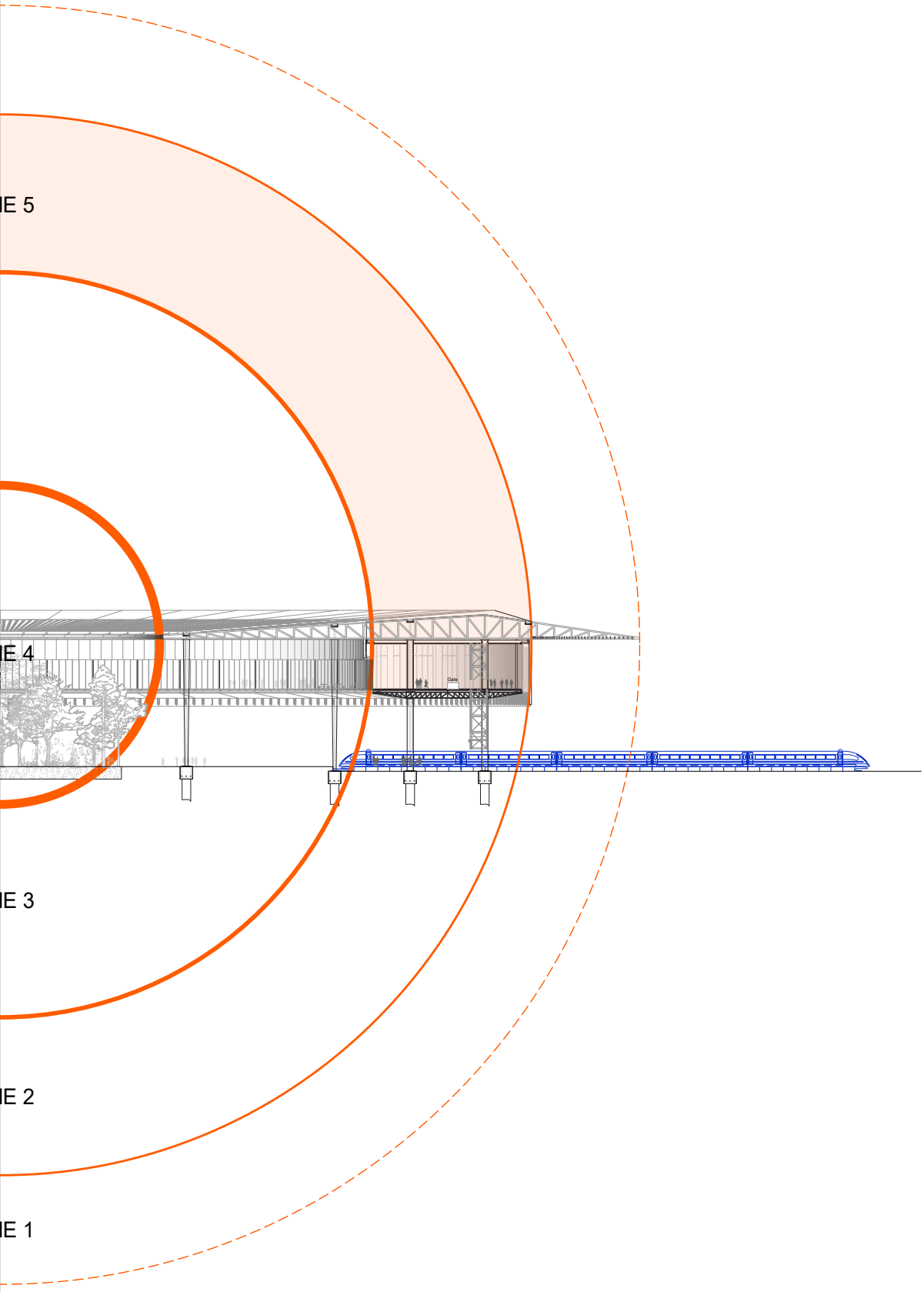
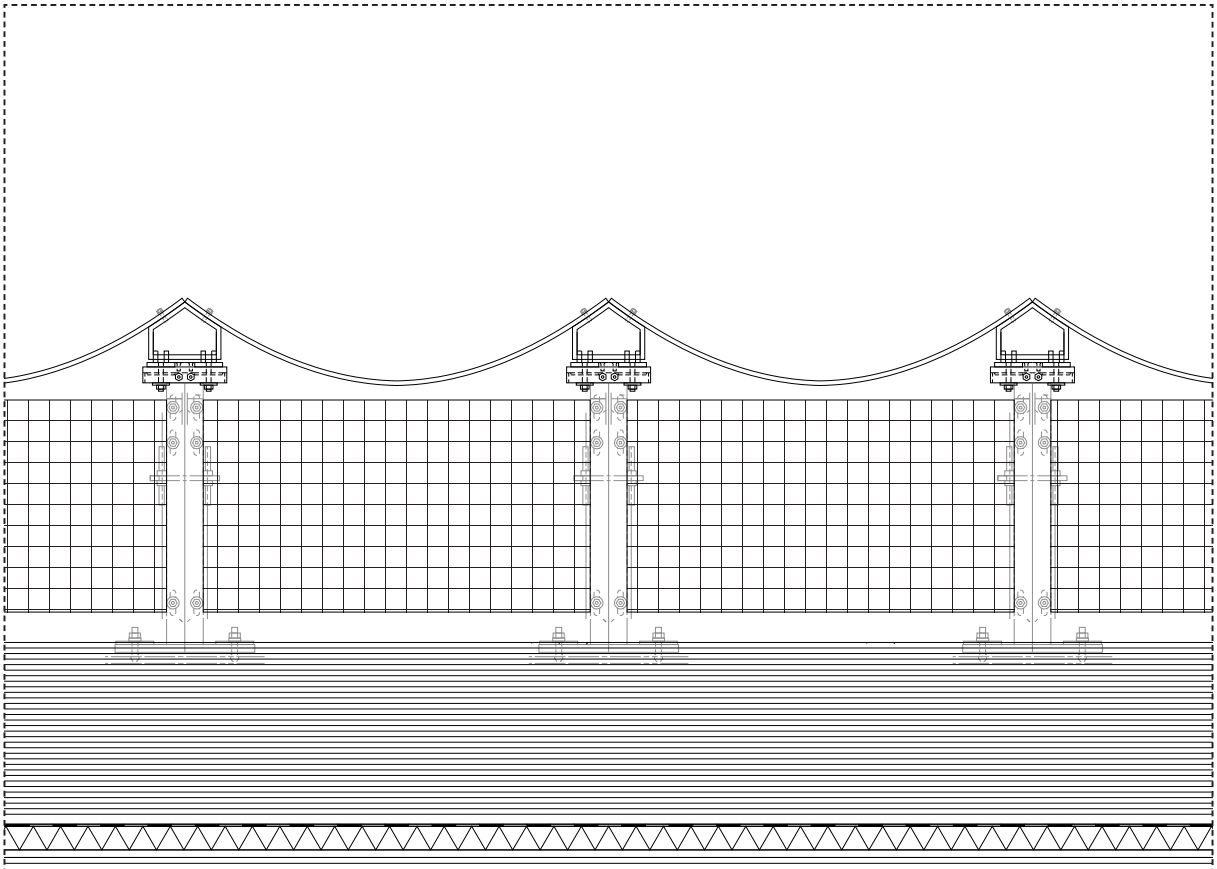

IE 5
IE 4
IE 3
IE 2
IE 1

# 04 Zones

## 4.1 Zone 1: Transition



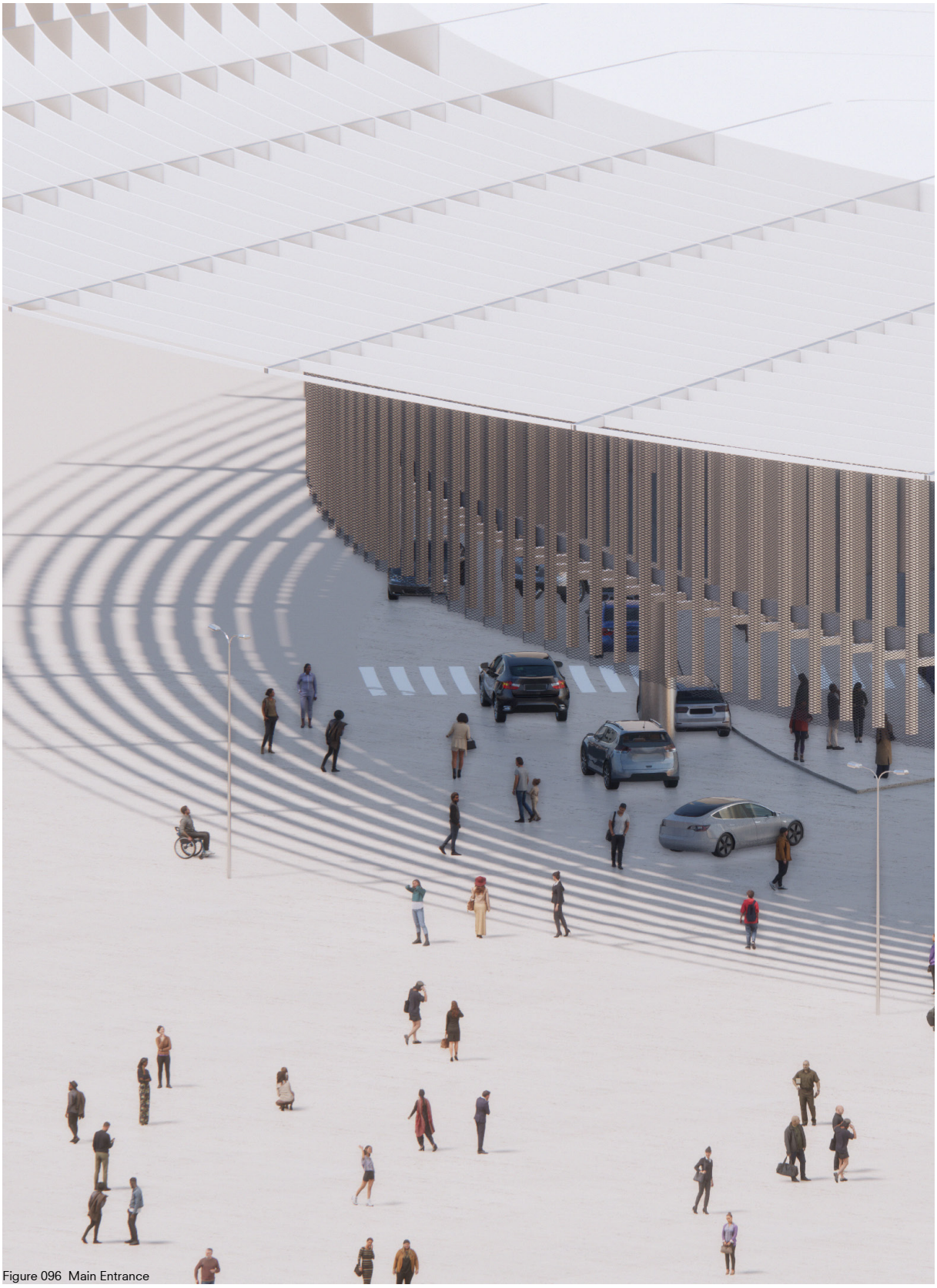
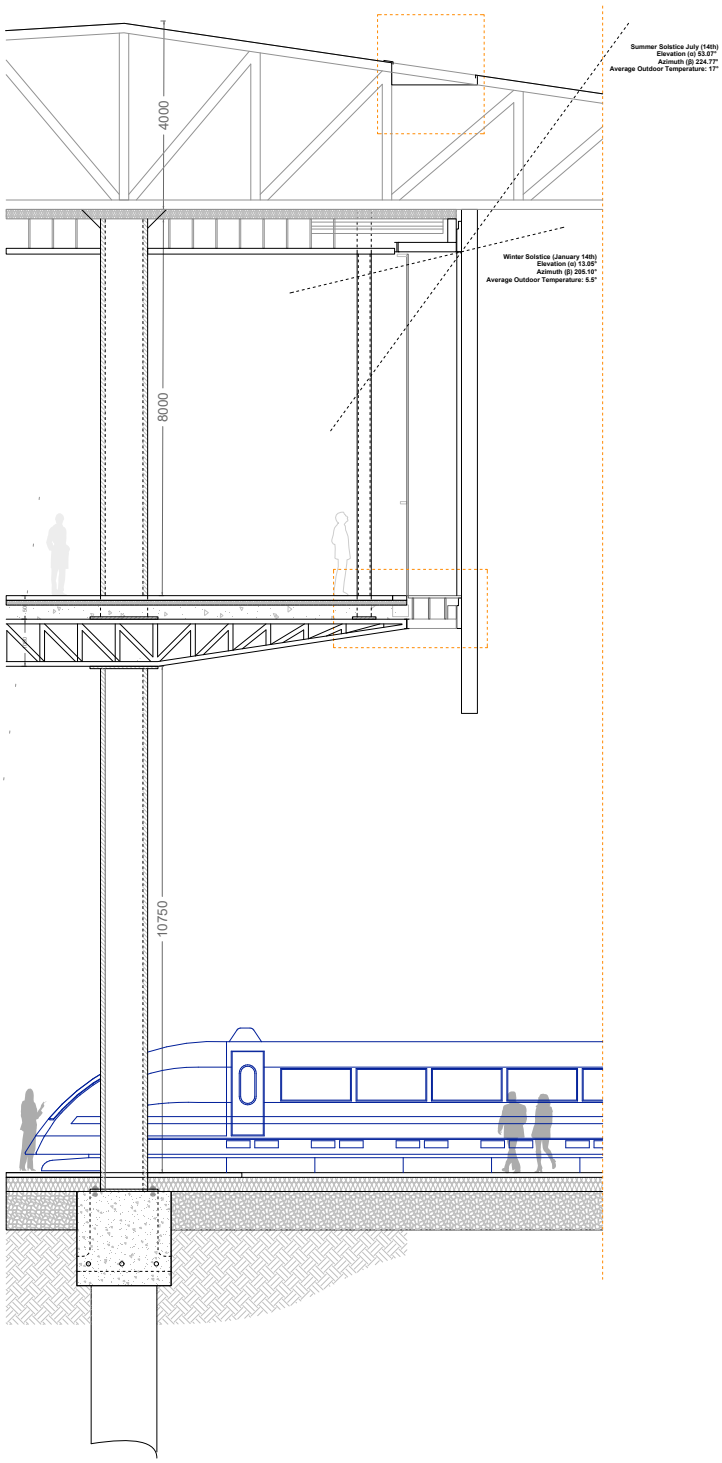
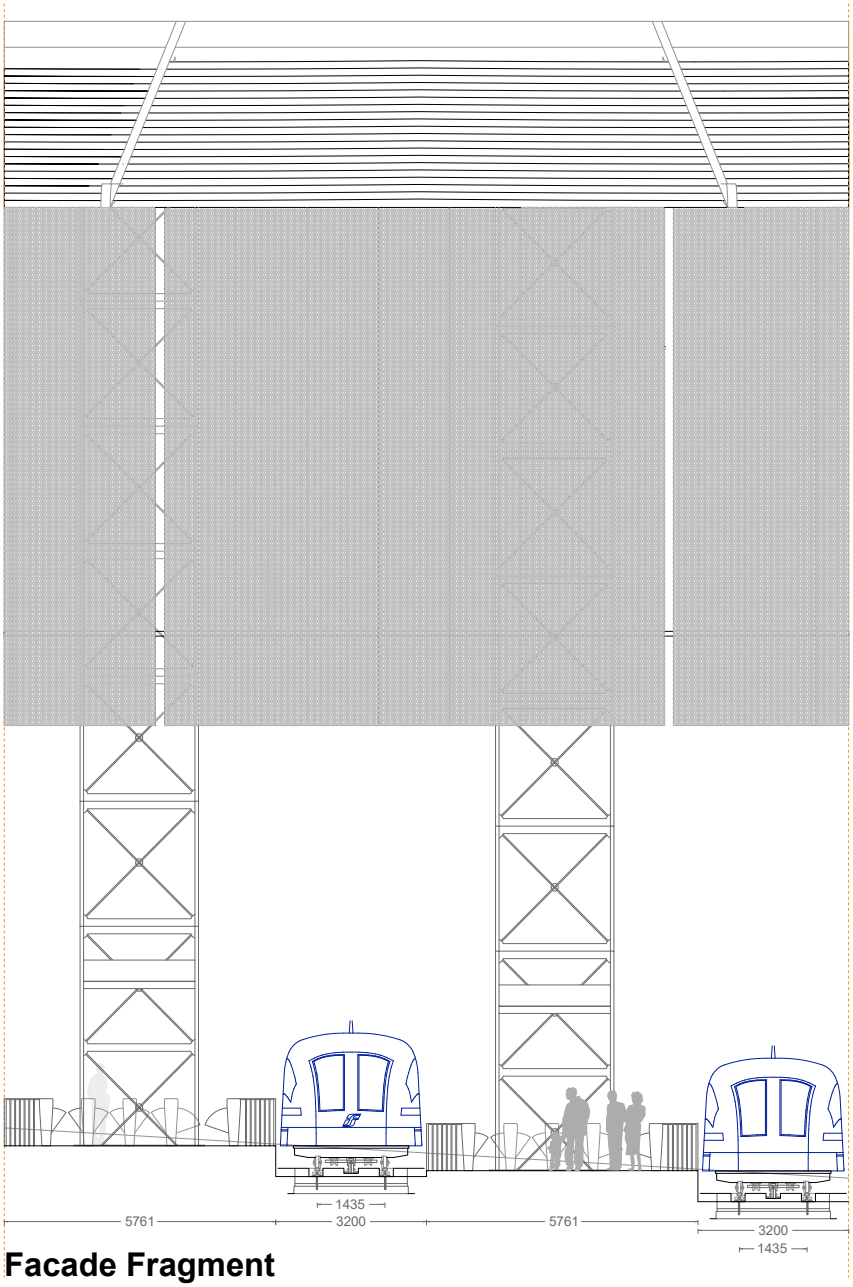


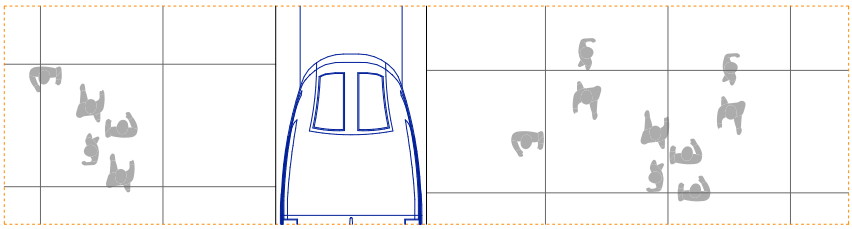
Figure 096 Main Entrance



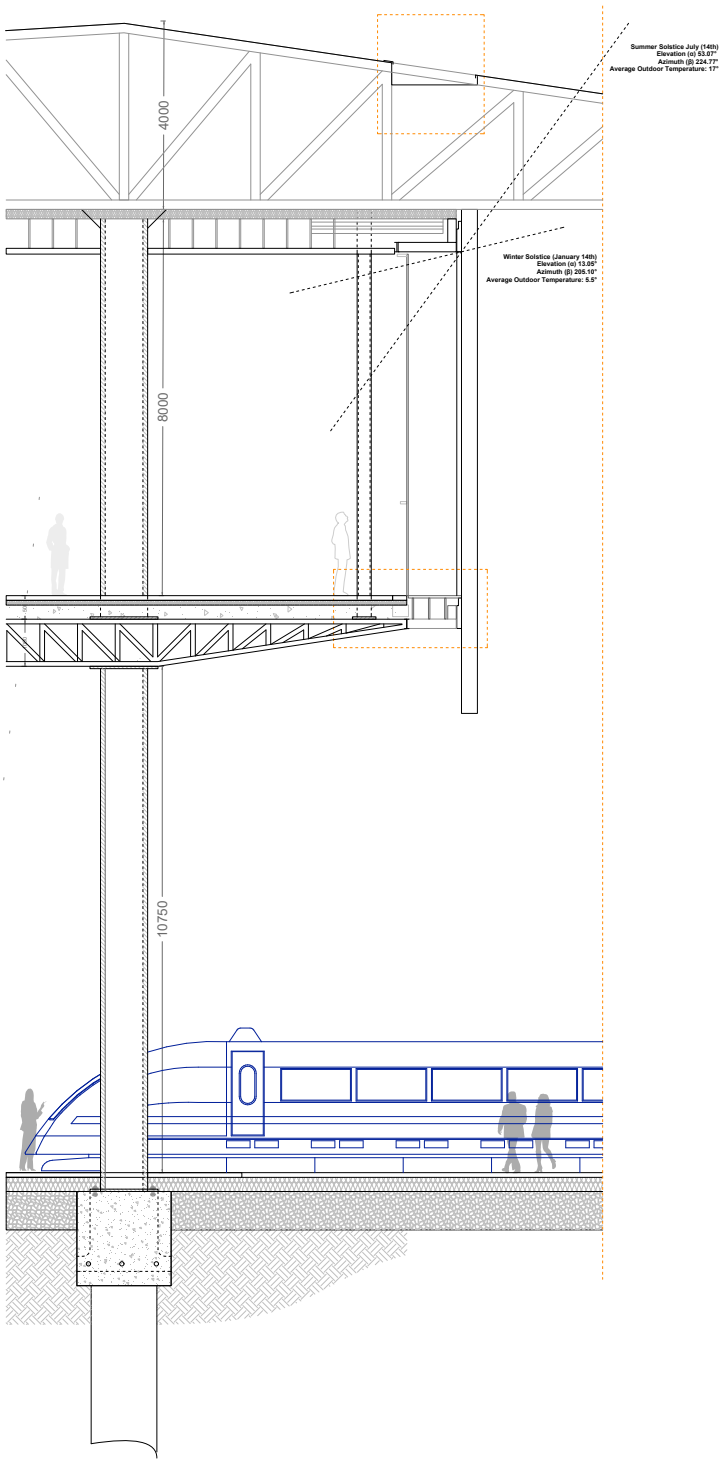

## Section Detail



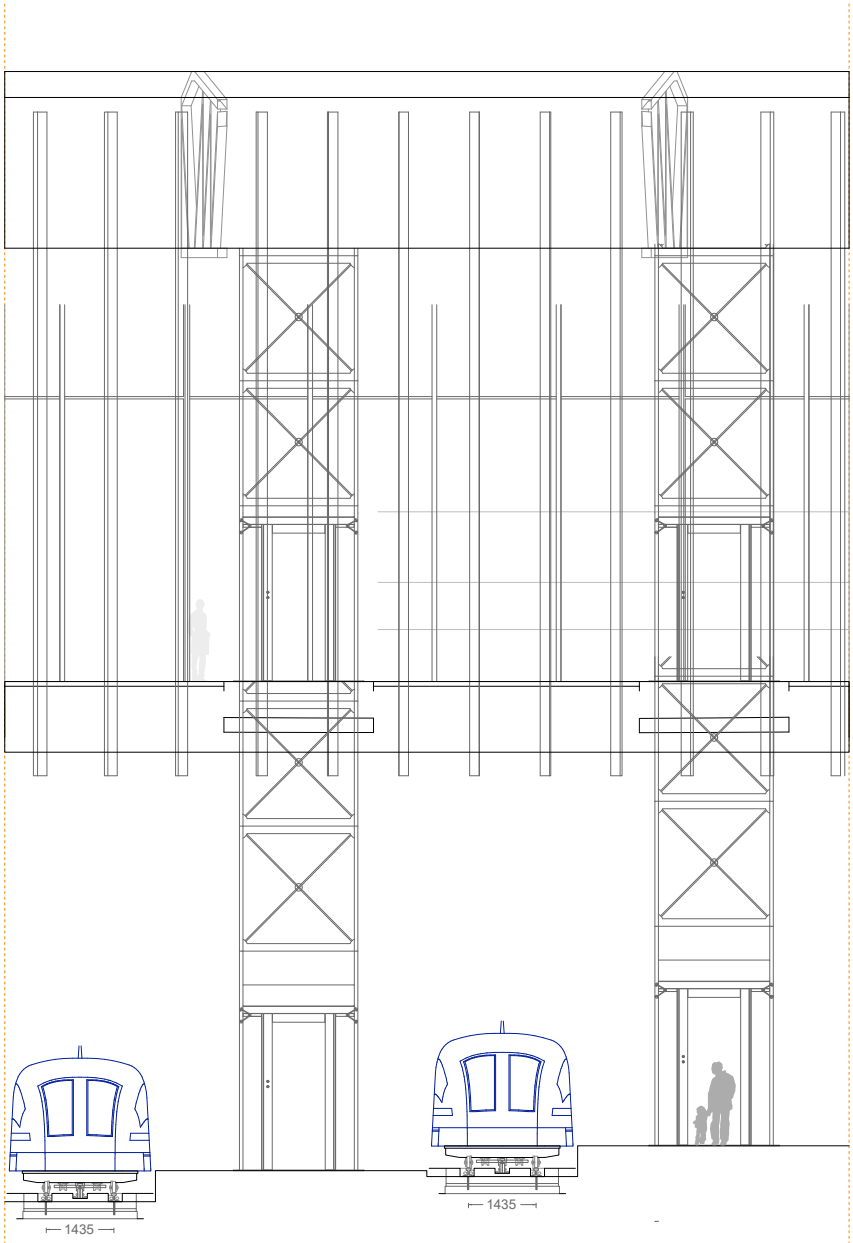

**Facade Fragment**



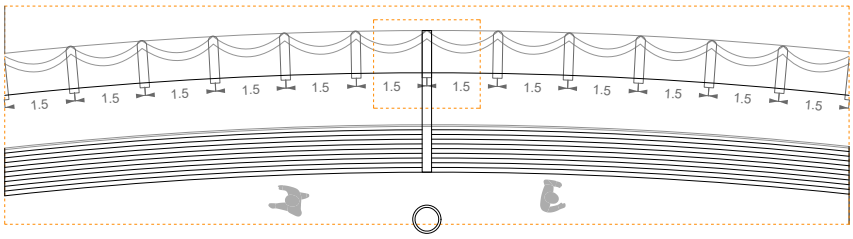
**GF Plan Facade Fragment**




## Section Detail




**Interior Fragment**




**1st Plan Facade Fragment**

# 4.2 Zone 2: Covered

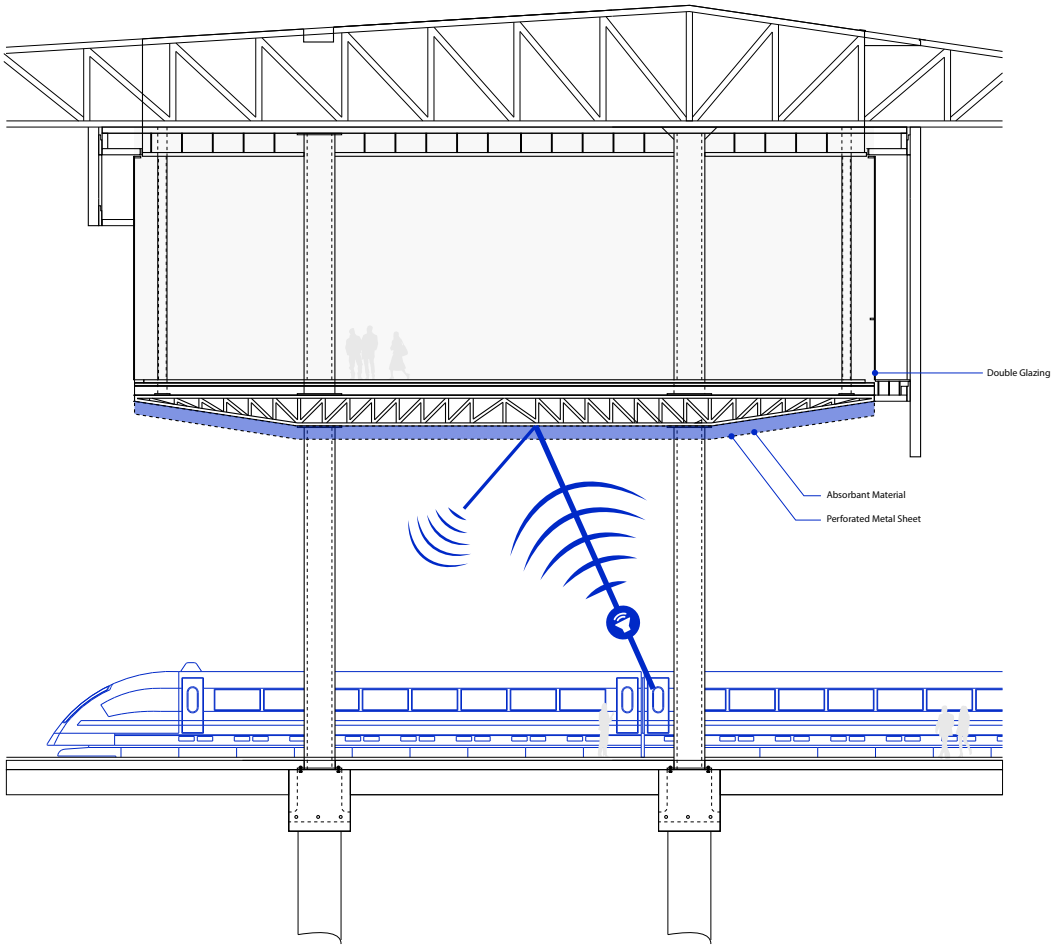




Figure 097 Drop in/off zone

## 4.3 Zone 3: Covered

The station is accessible from multiple directions, significantly reducing walking distances and enhancing connectivity. The main entrance in the southeast directs visitors into the gently sloping concourse hall. All entry points converge here, creating a clear and efficient circulation system, an essential requirement for any mobility-based typology.

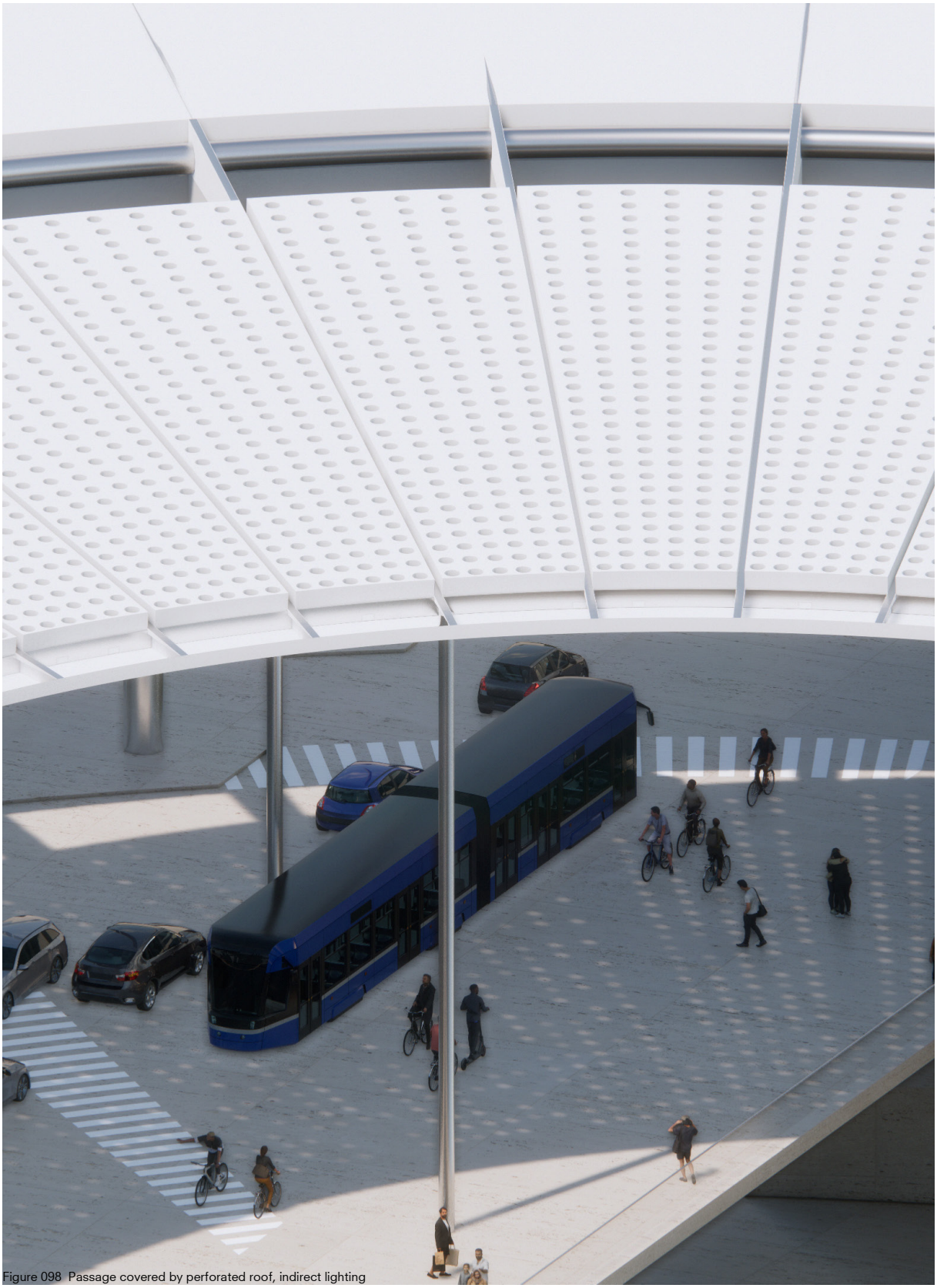


Figure 098 Passage covered by perforated roof, indirect lighting

## 4.4 Zone 4: Exposed

The station is accessible from multiple directions, significantly reducing walking distances and enhancing connectivity. The main entrance in the southeast directs visitors into the gently sloping concourse hall. All entry points converge here, creating a clear and efficient circulation system, an essential requirement for any mobility-based typology.

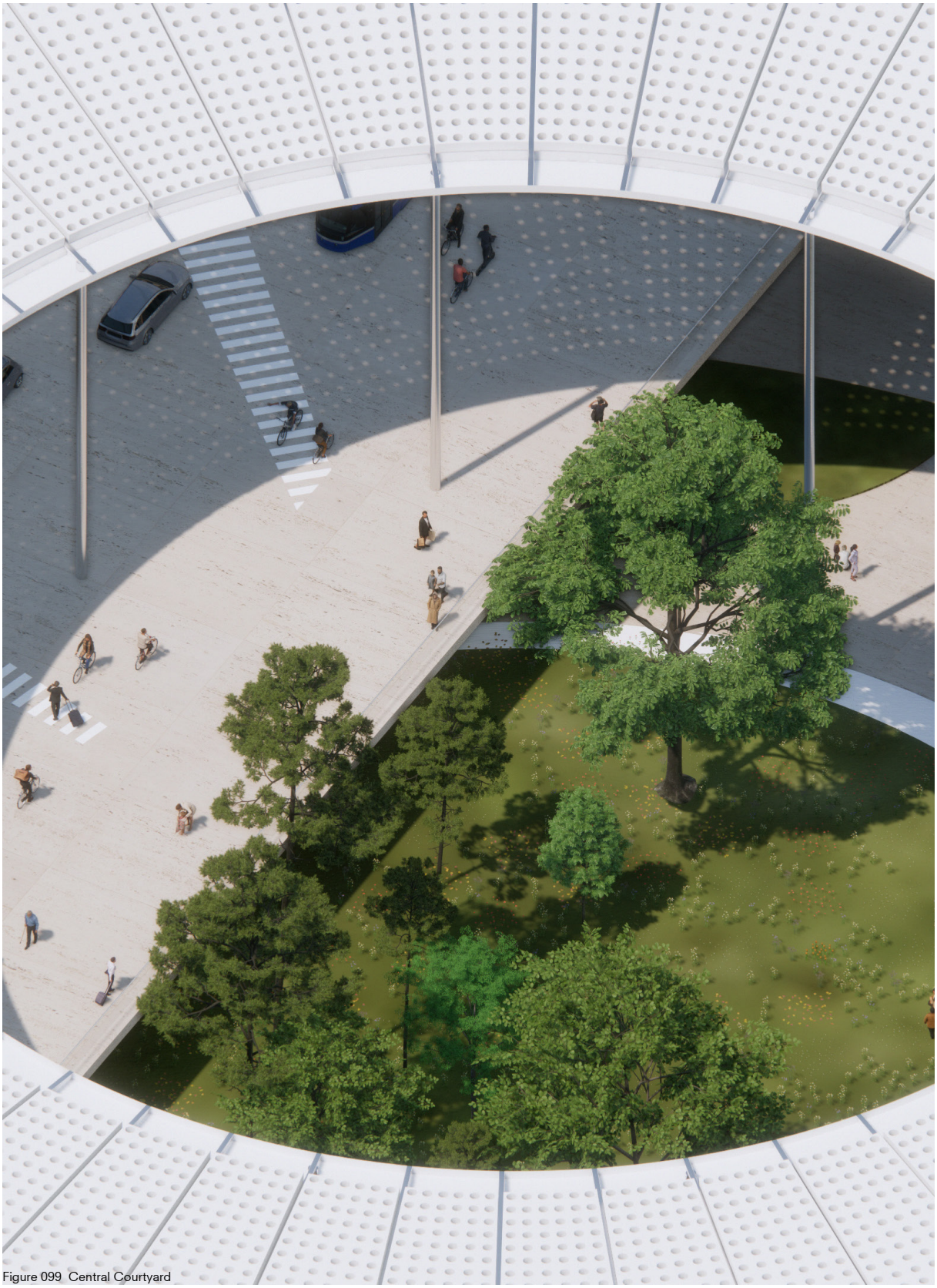
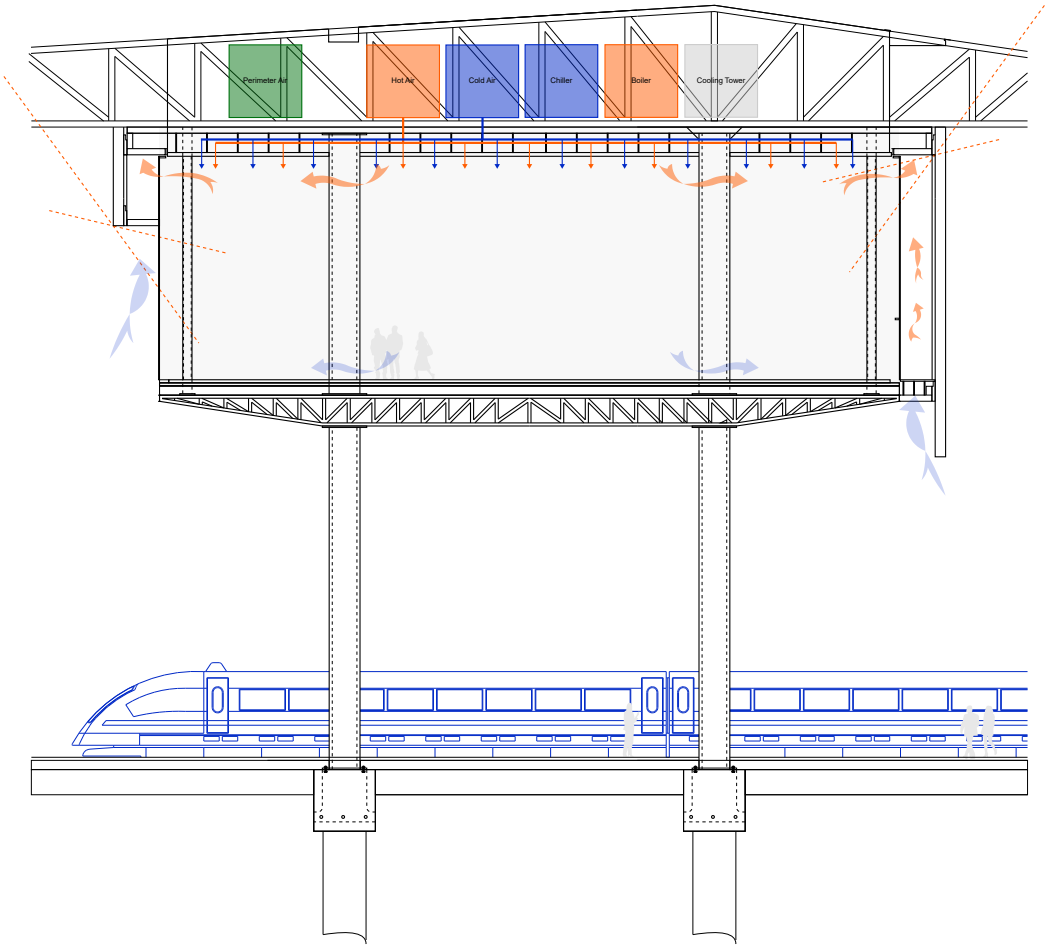


Figure 099 Central Courtyard

# 4.4 Zone 5: Indoor



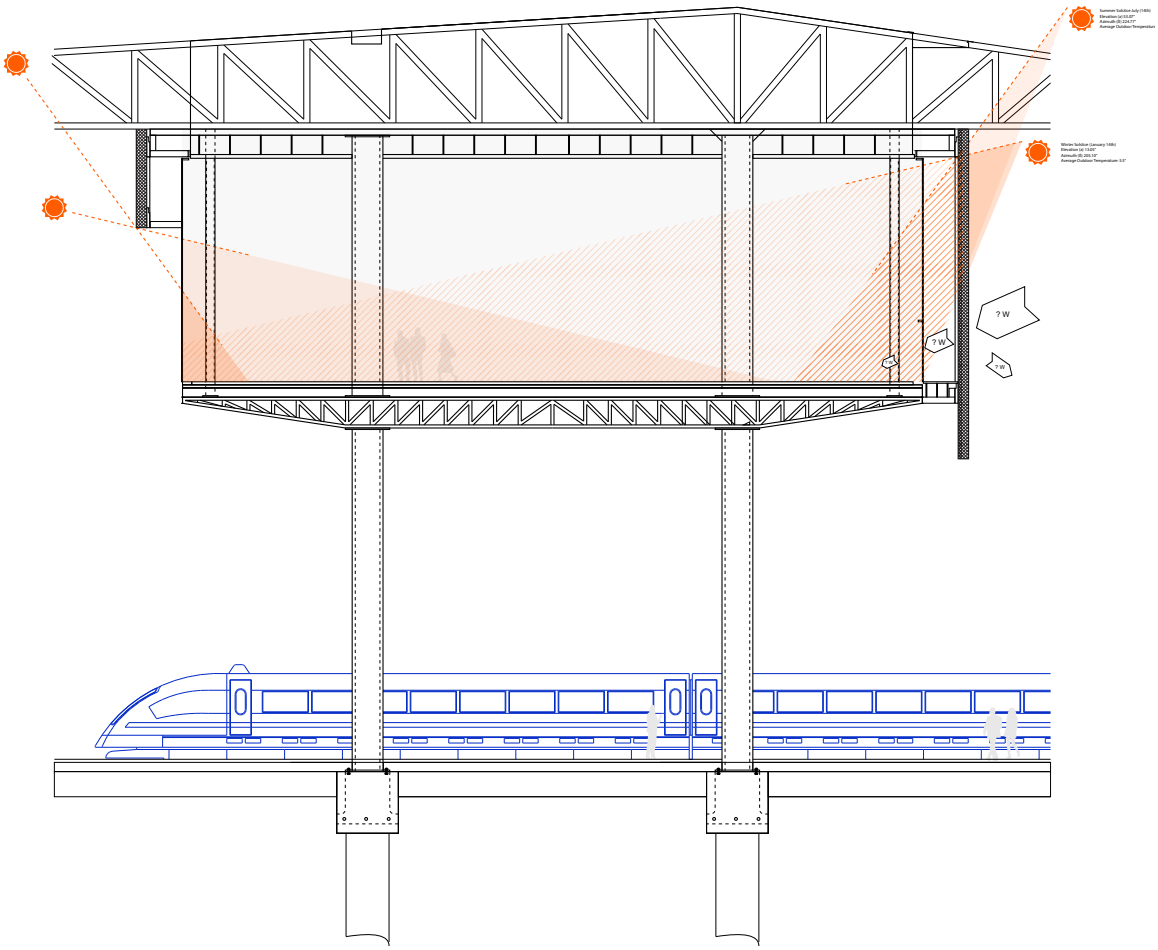

Summer Solstice July (16th)
Elevation (a) 53.07°
Azimuth (B) 224.77°
Average Outdoor Temperature
Winter Solstice (January 16th)
Elevation (a) 13.07°
Azimuth (B) 203.10°
Average Outdoor Temperature: 3.5°
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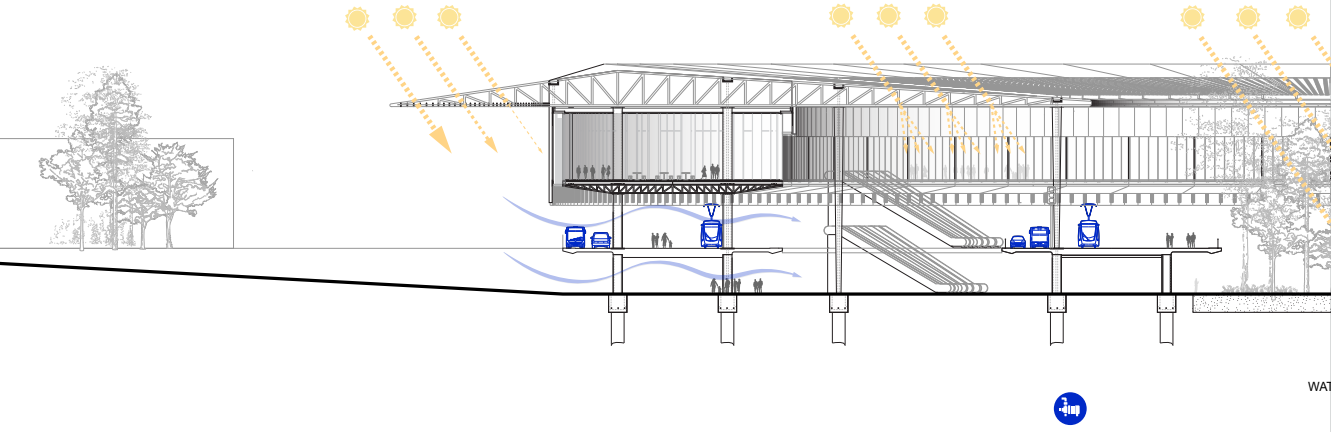
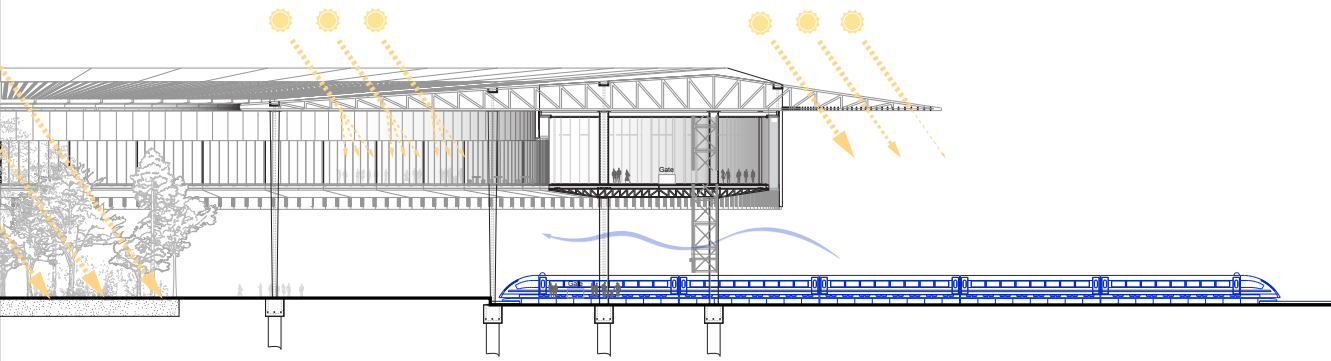
Figure 100 Concc





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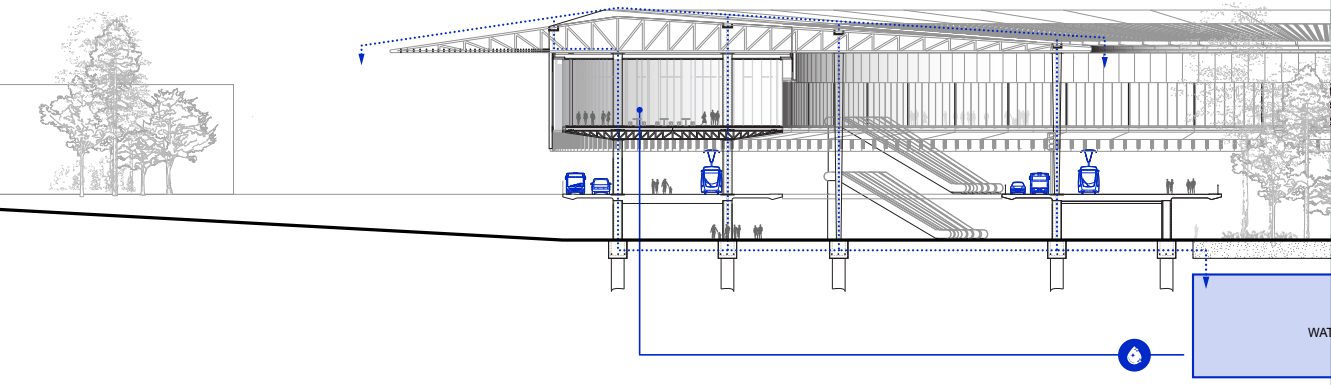
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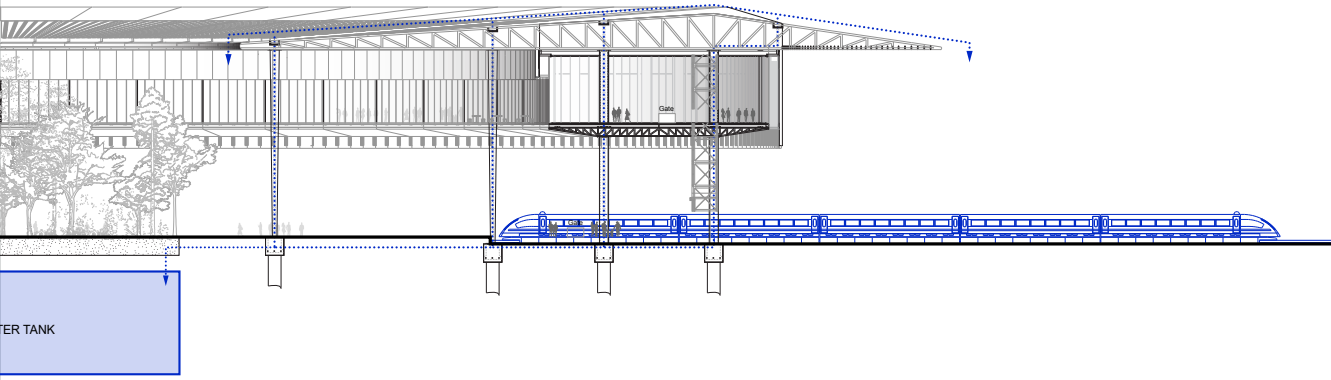
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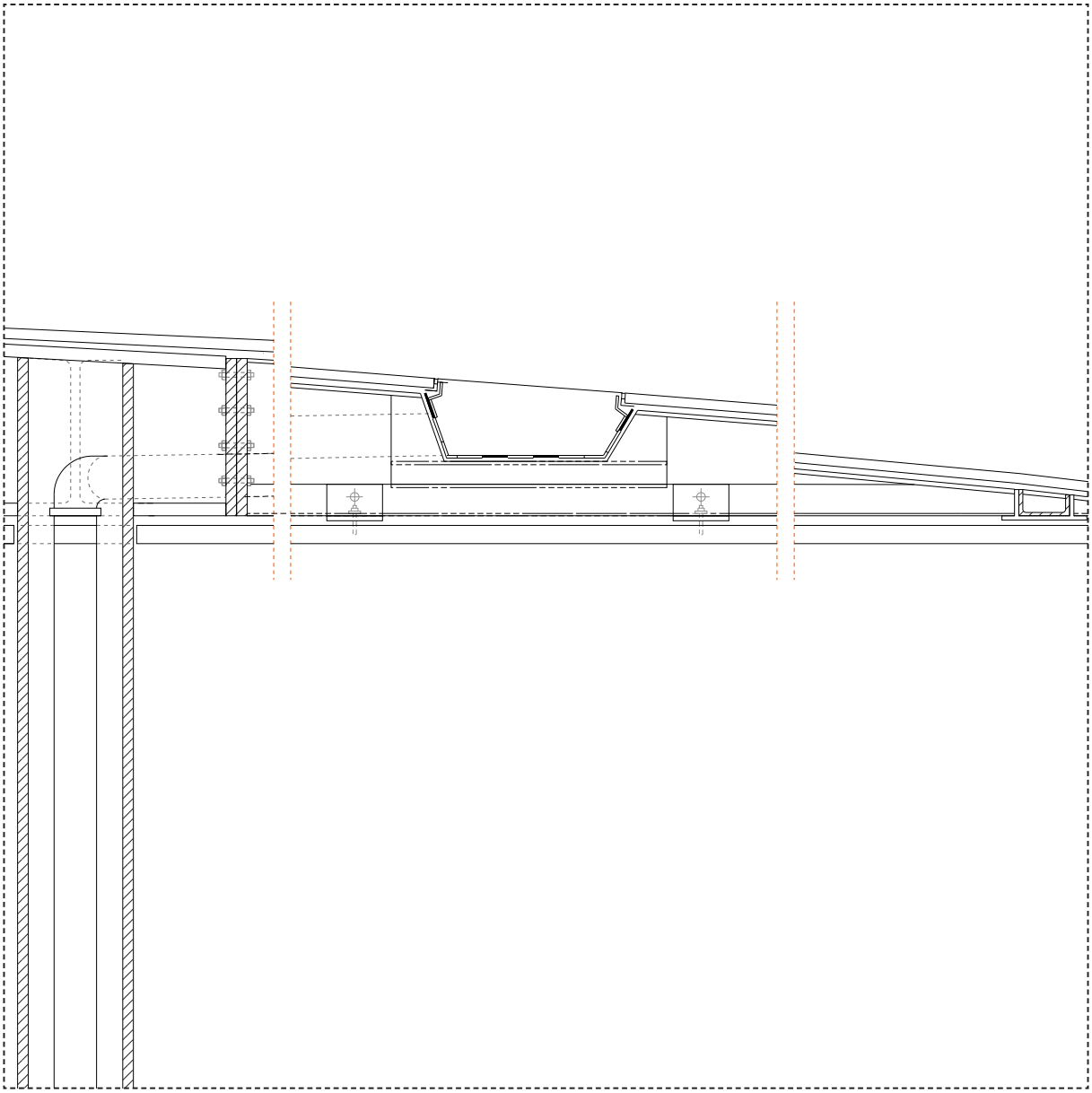
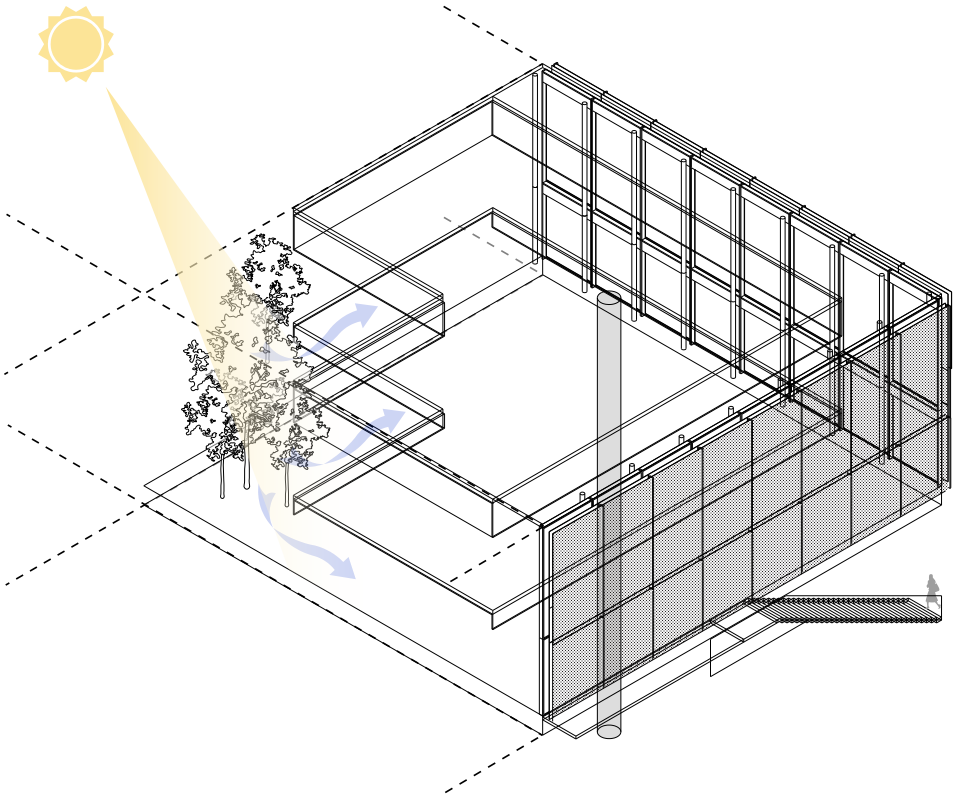
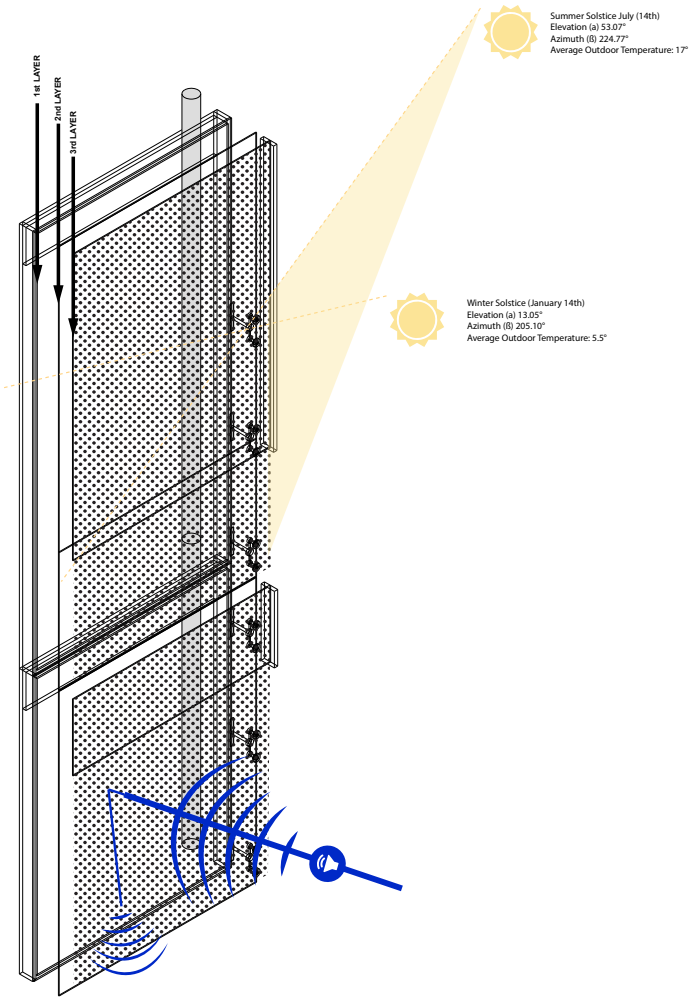


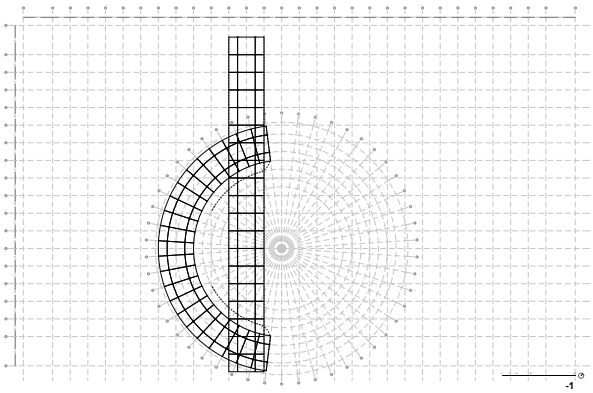


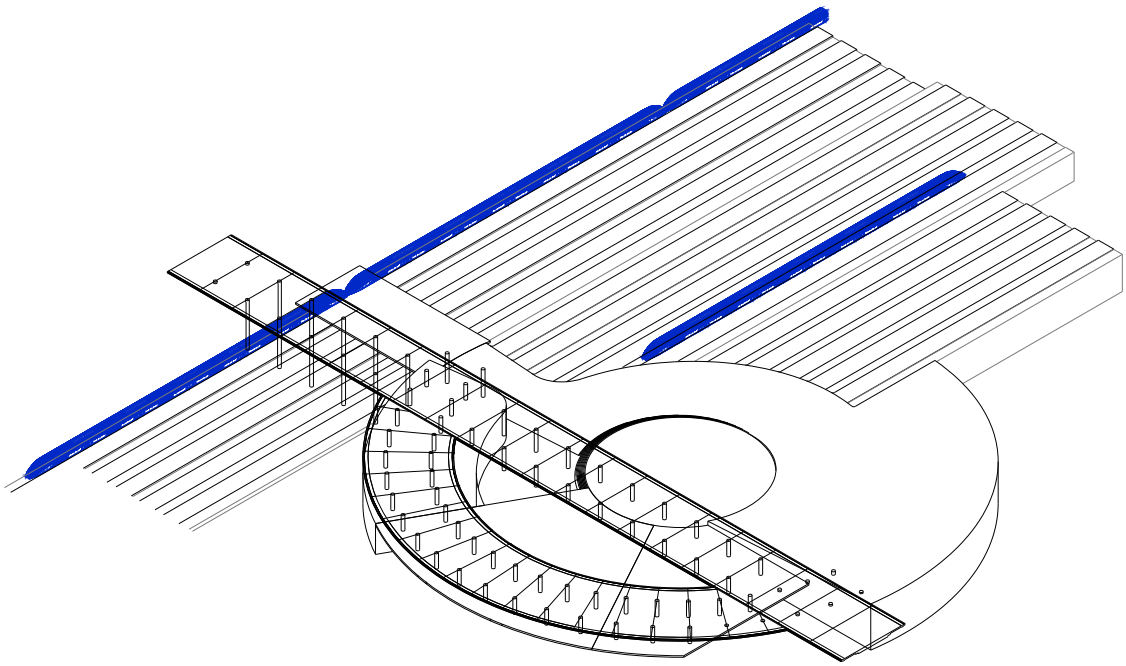

1st LAYER
2nd LAYER
3rd LAYER
Summer Solstice July (14th)
Elevation (a) 53.07°
Azimuth (ß) 224.77°
Average Outdoor Temperature: 17°
Winter Solstice (January 14th)
Elevation (a) 13.05°
Azimuth (ß) 205.10°
Average Outdoor Temperature: 5.5°

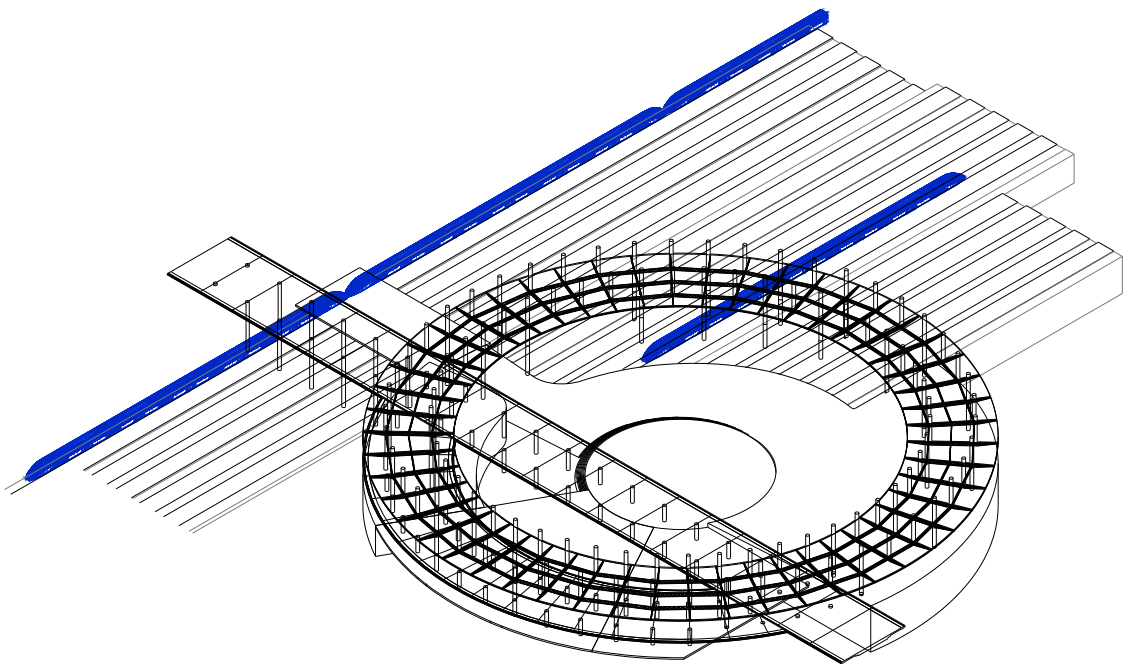


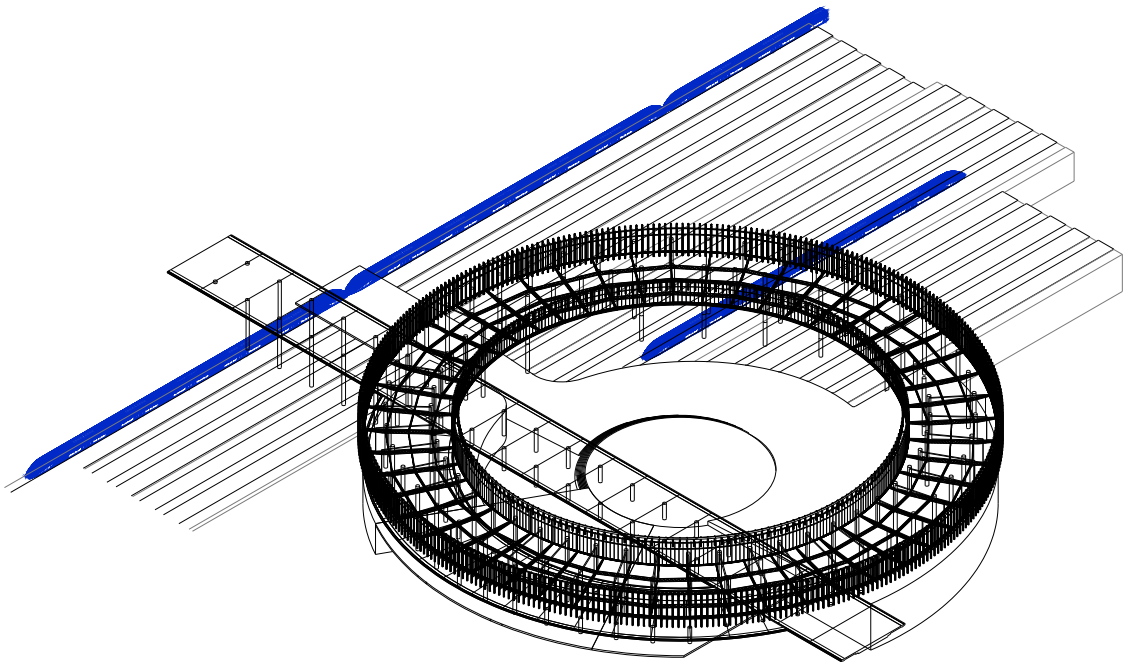


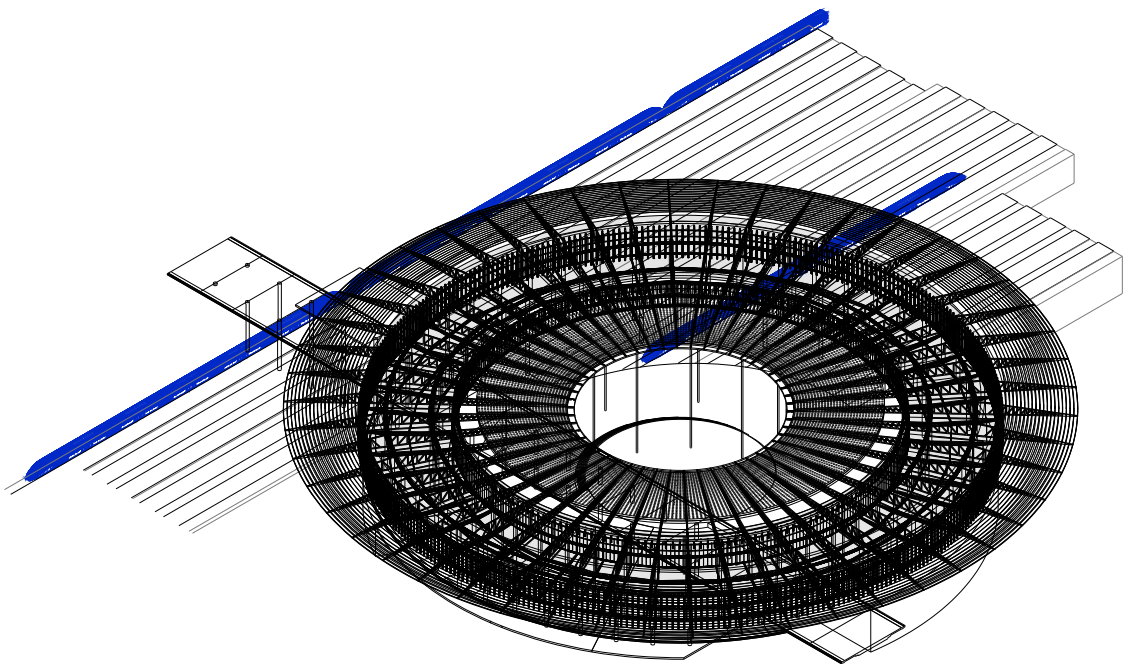
# 05 Structure









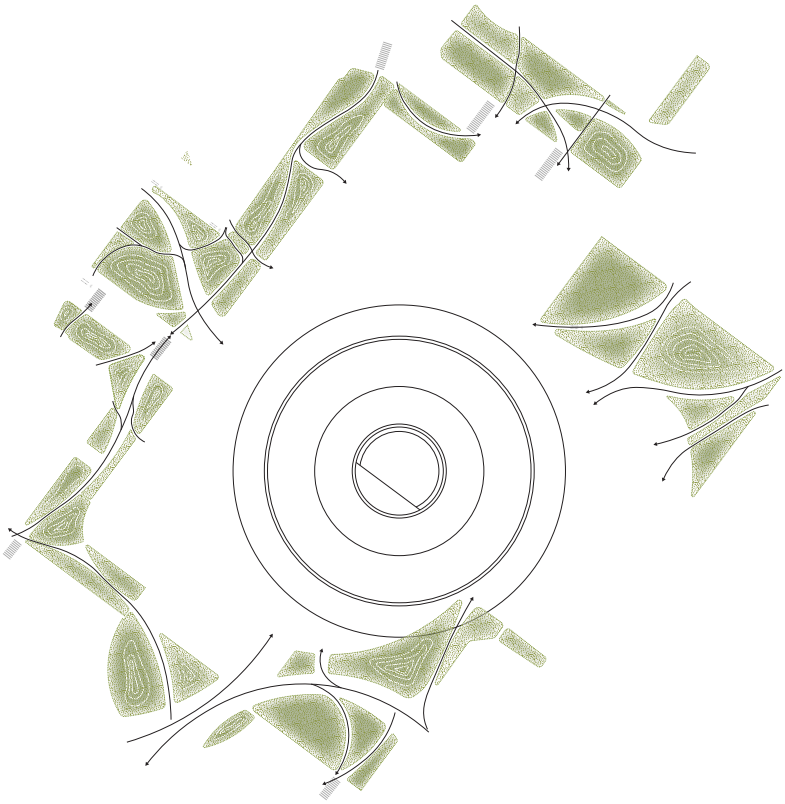


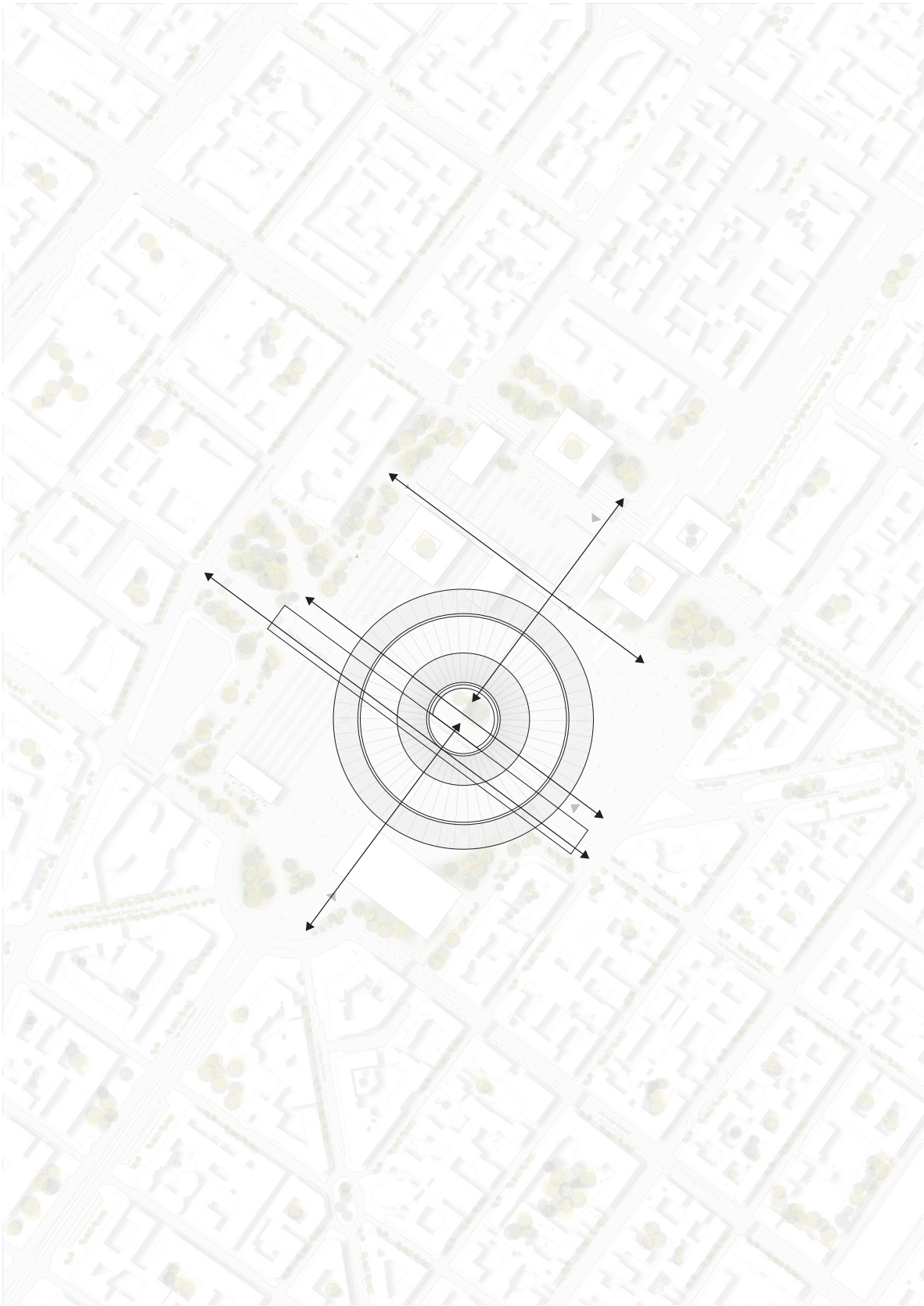
# 06 Landscape Strategy

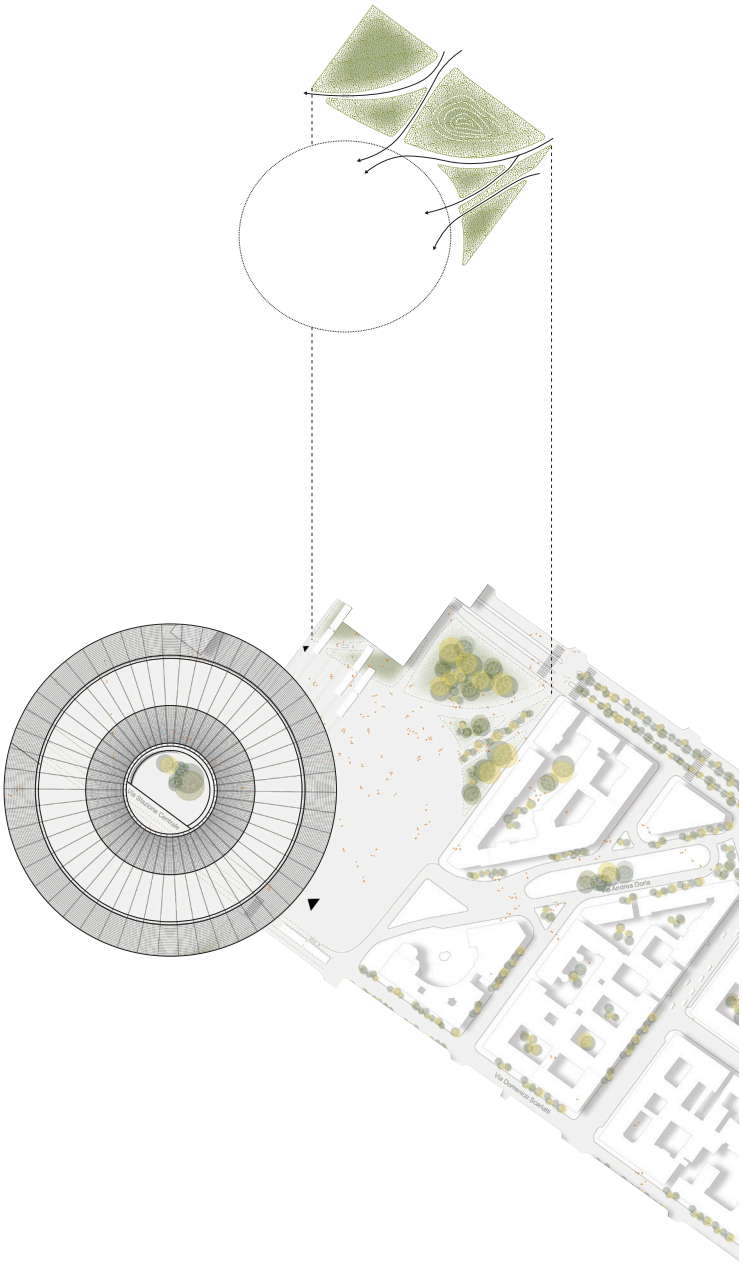
Two distinct landscape strategies were developed for the station:

1. Rapid Flow Paths: Direct and efficient circulation routes that prioritize speed and connectivity, supporting the station’s transit function.

2. Slow Paths: Meandering and contemplative routes designed to encourage wandering, aligned with the thesis' broader exploration of slowing down in transit spaces.



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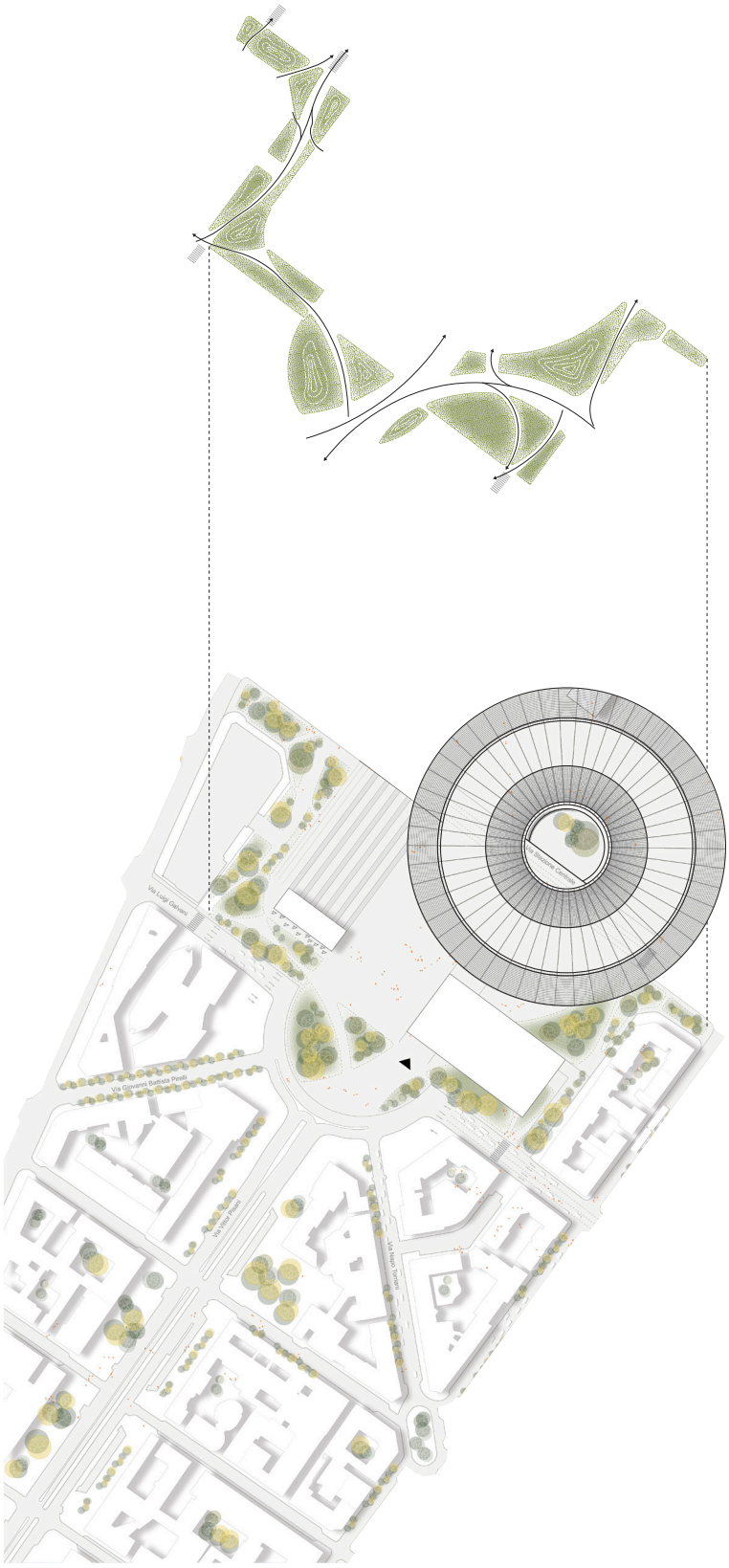
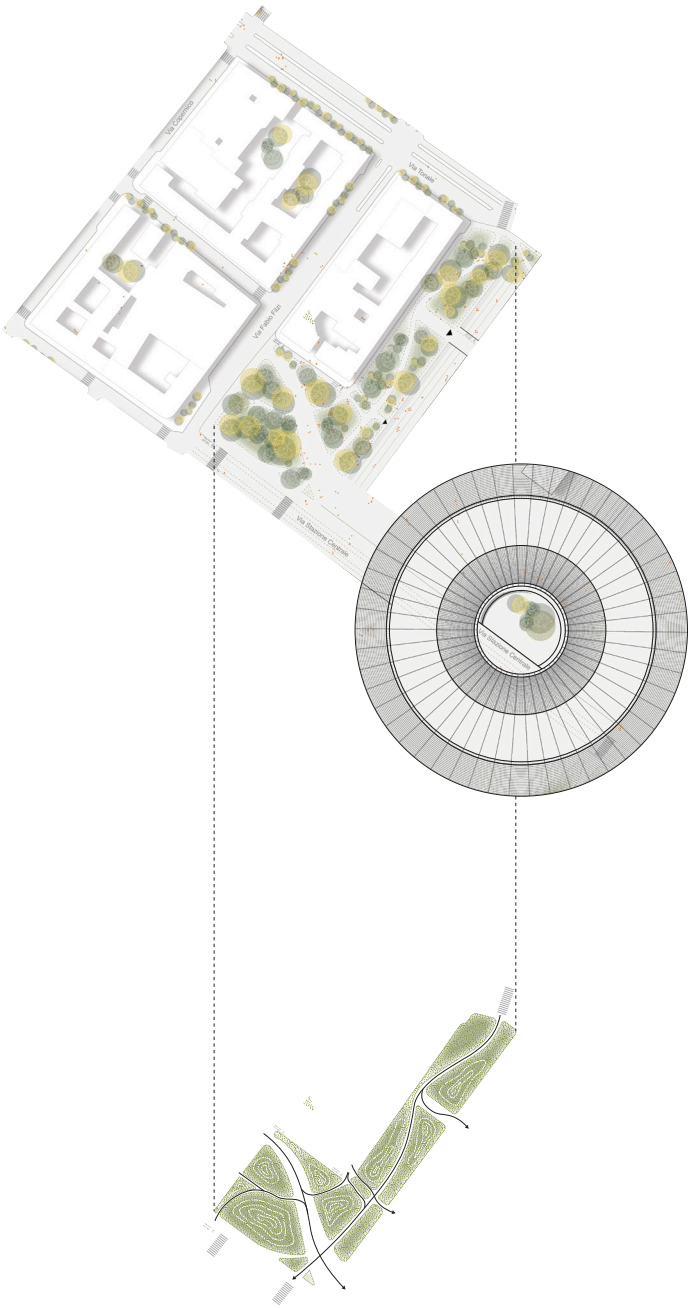
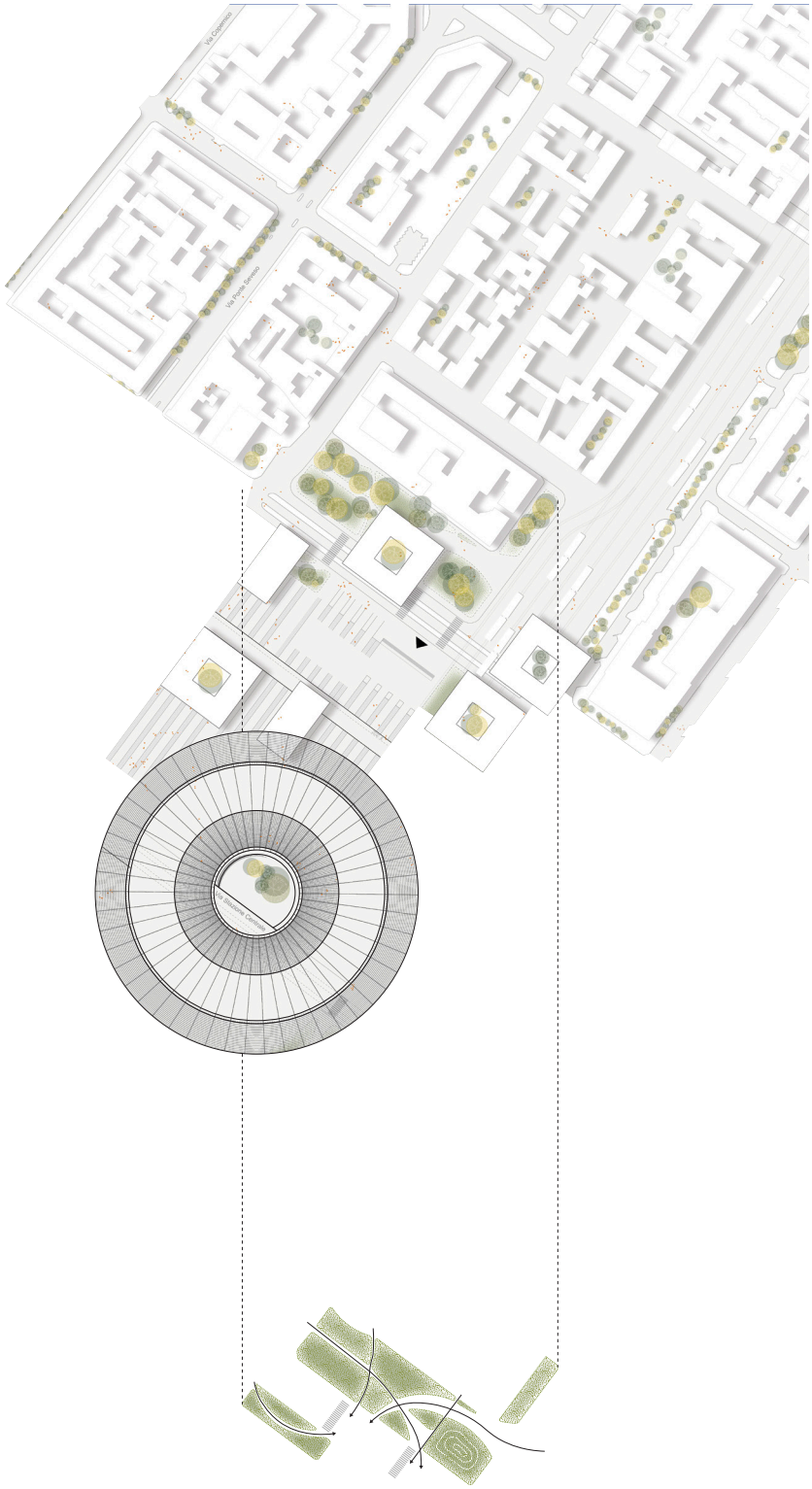
Via Domenico Scarlatti

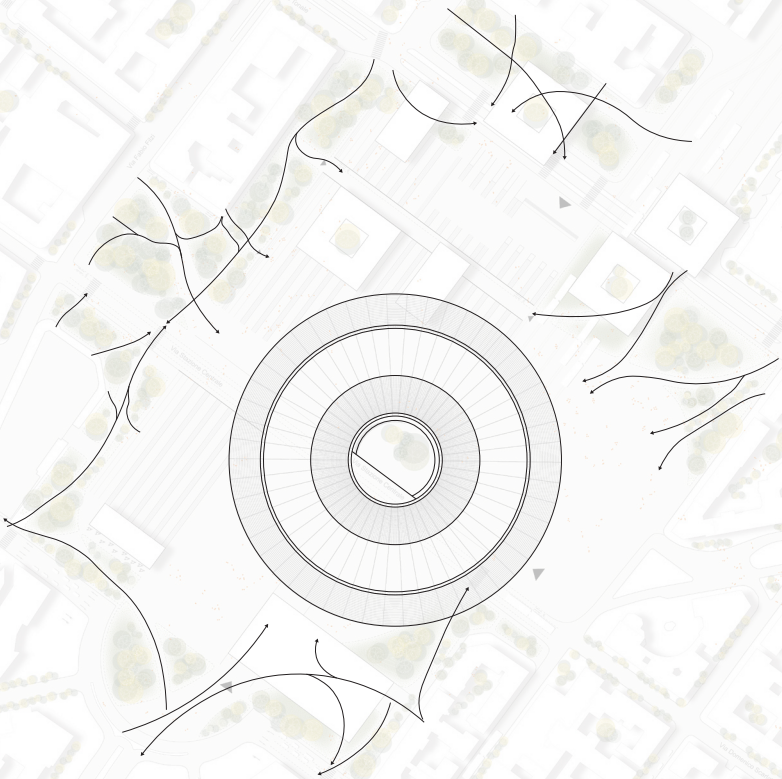

Via Luigi Cadorna
Via Giovanni Battista Pirelli
Via Filippo Turati

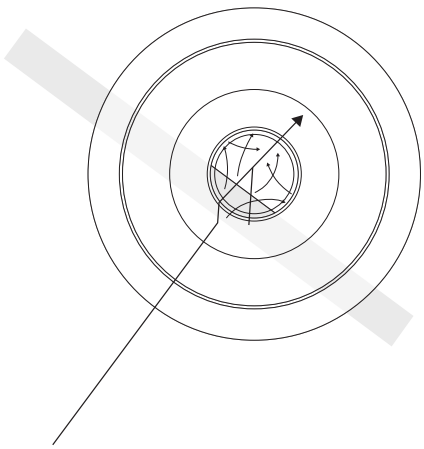

Via Copernico
Via Torale
Via Fabio Filzi
Via Stazione Centrale
Via Stazione Centrale


Via Copernico
Via Ponte Seresio
Via Stazione Centrale

# 6.1 Central Courtyard

At the heart of the station lies a central courtyard, shared with the main concourse. This courtyard acts as an urban oasis within the busy station environment, integrating greenery and natural light. It features both fast and slow circulation paths, echoing the dual landscape strategy and offering moments of pause amid movement.





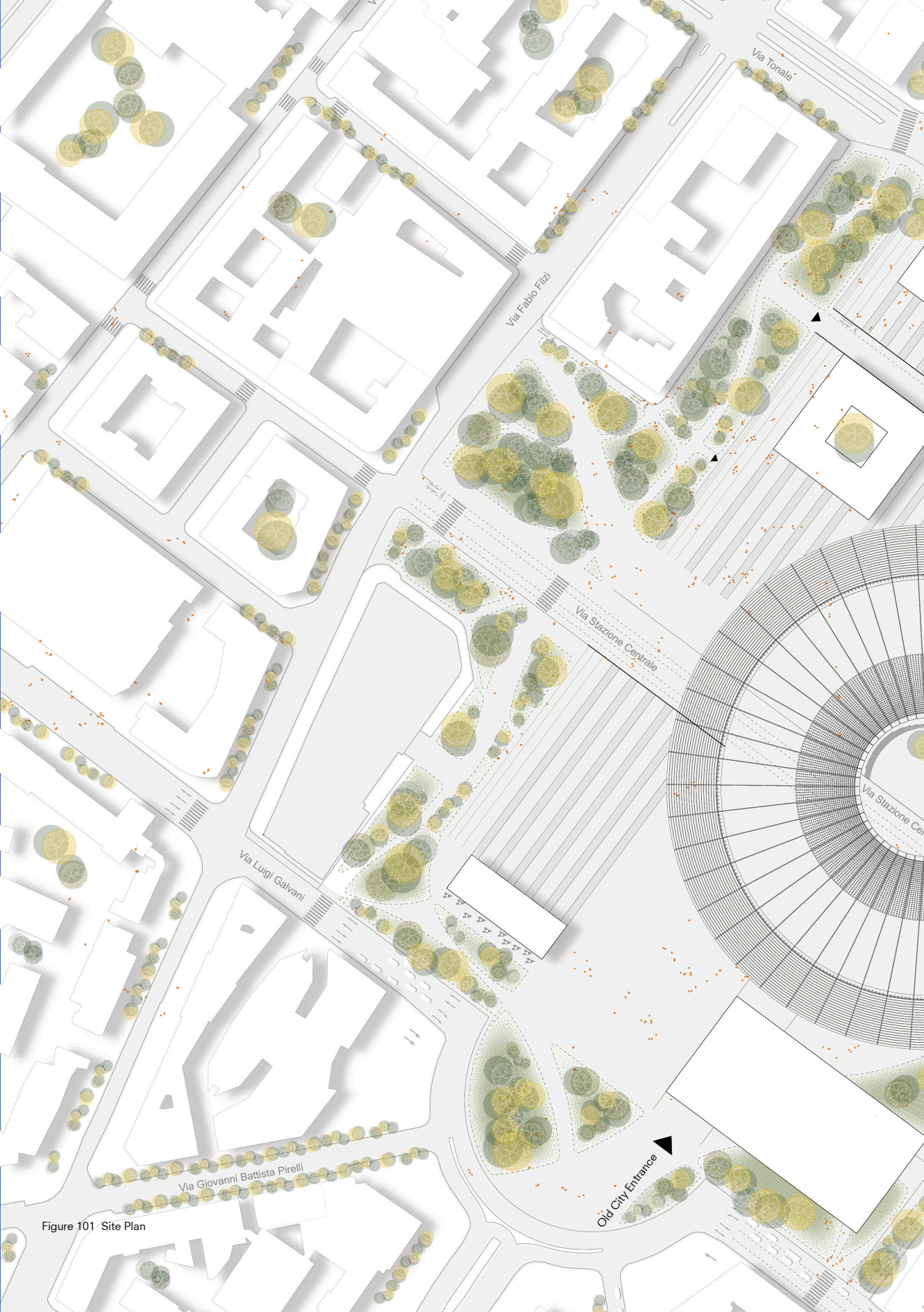
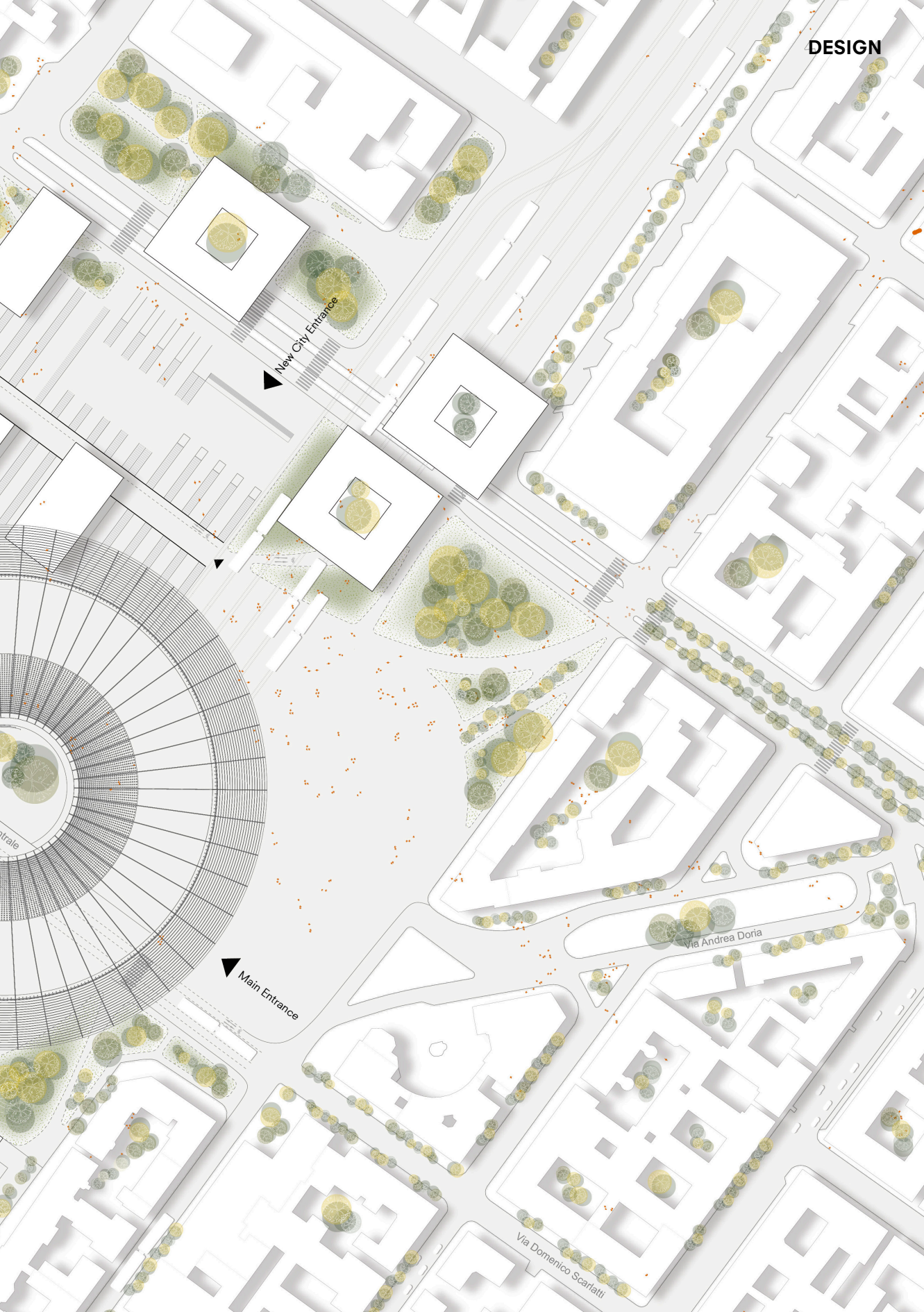
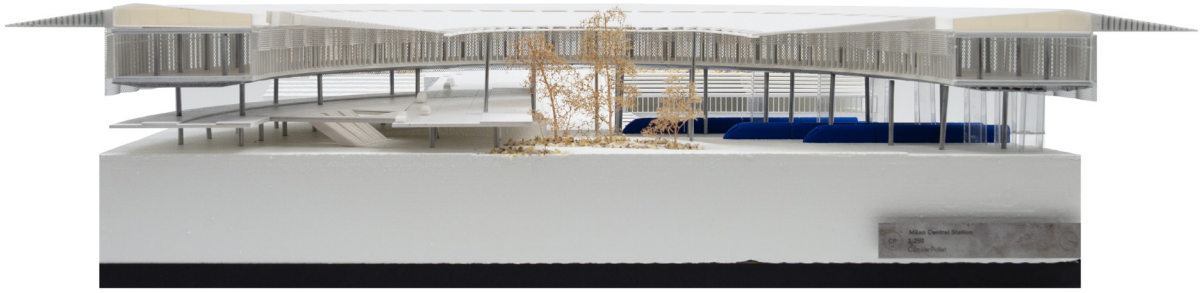
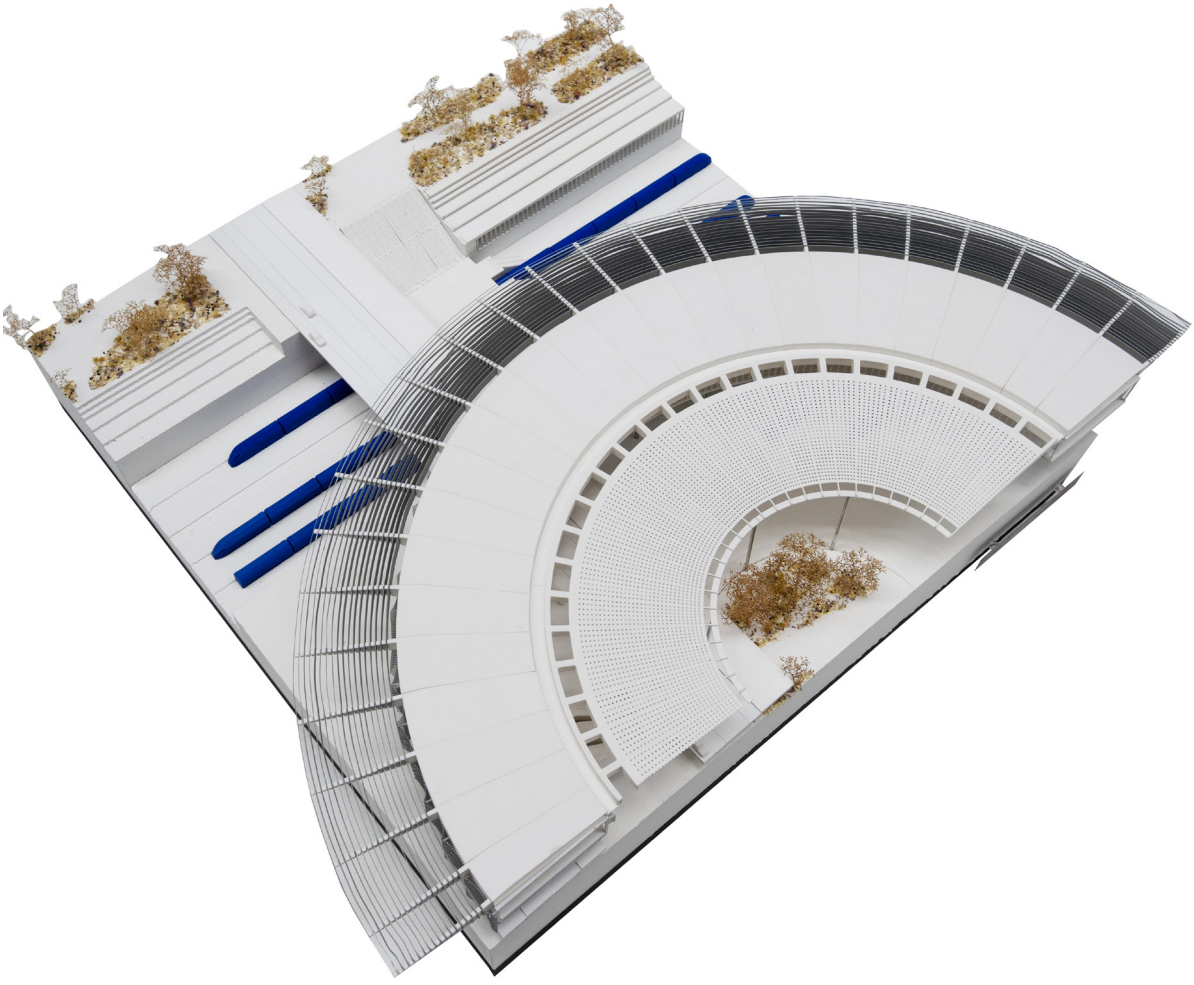



Figure 101 Site Plan


New City Entrance
Main Entrance
Via Andrea Doria
Via Domenico Scarlatti

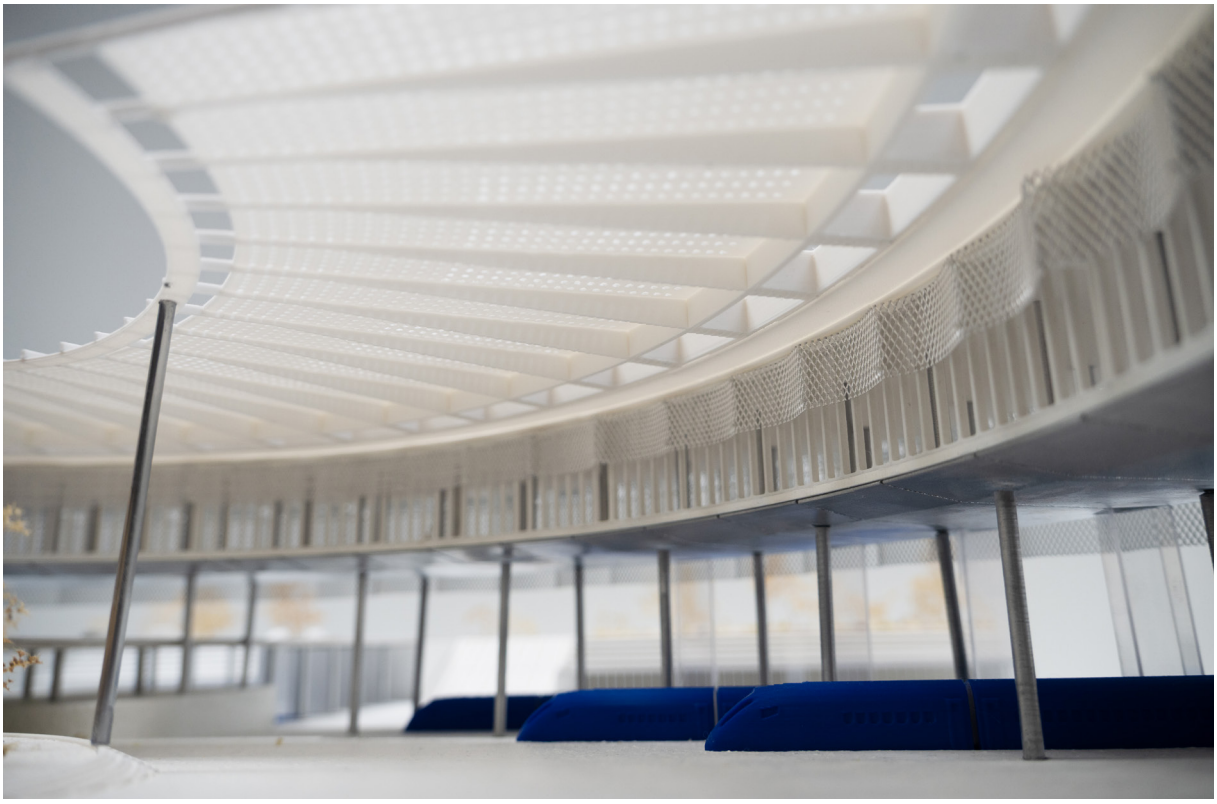
# 07 Physical Model



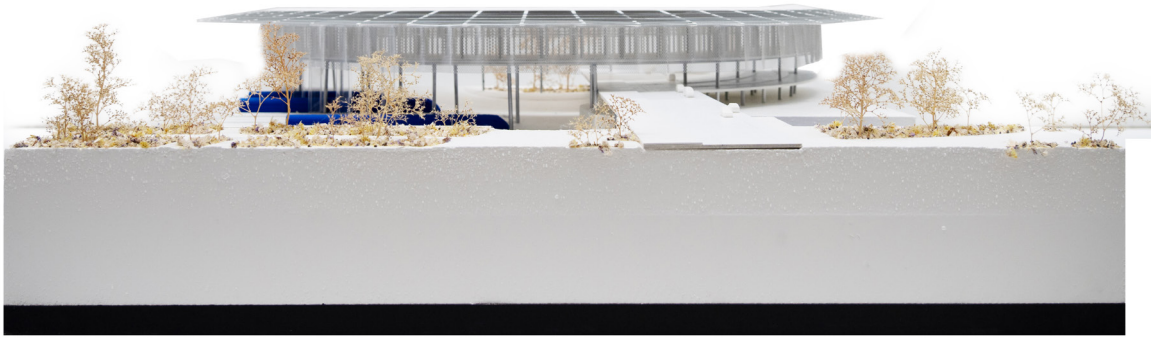


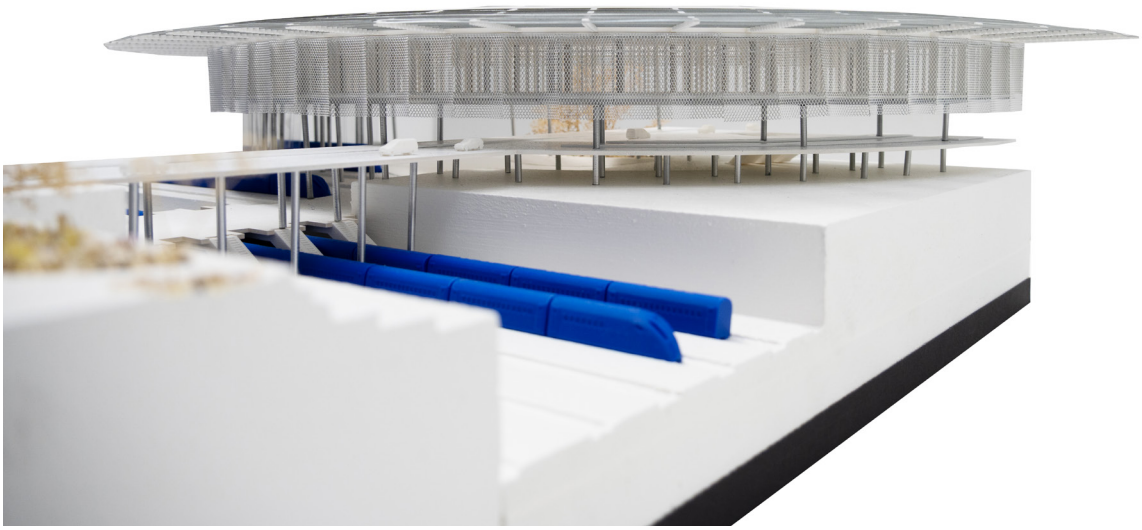








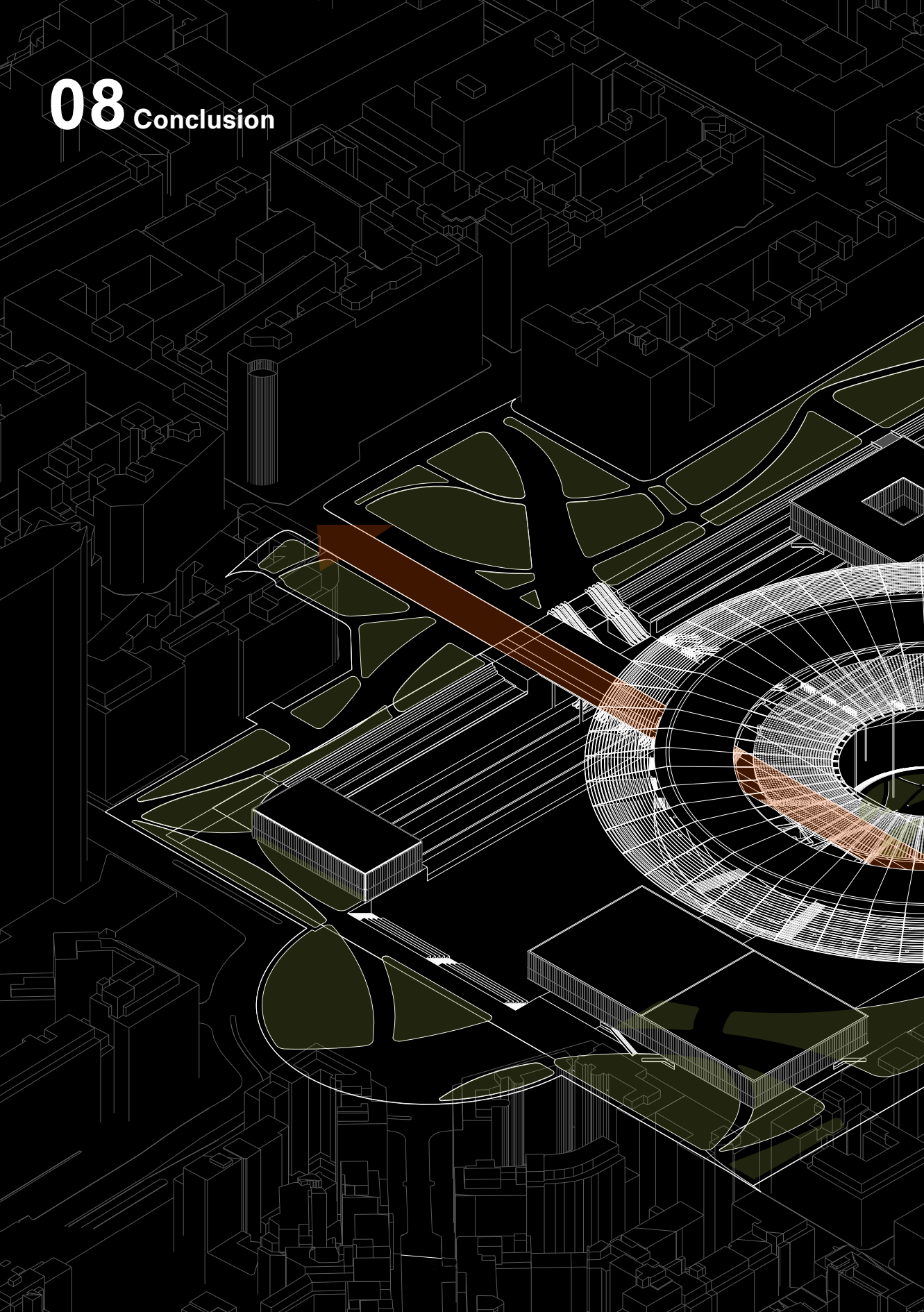


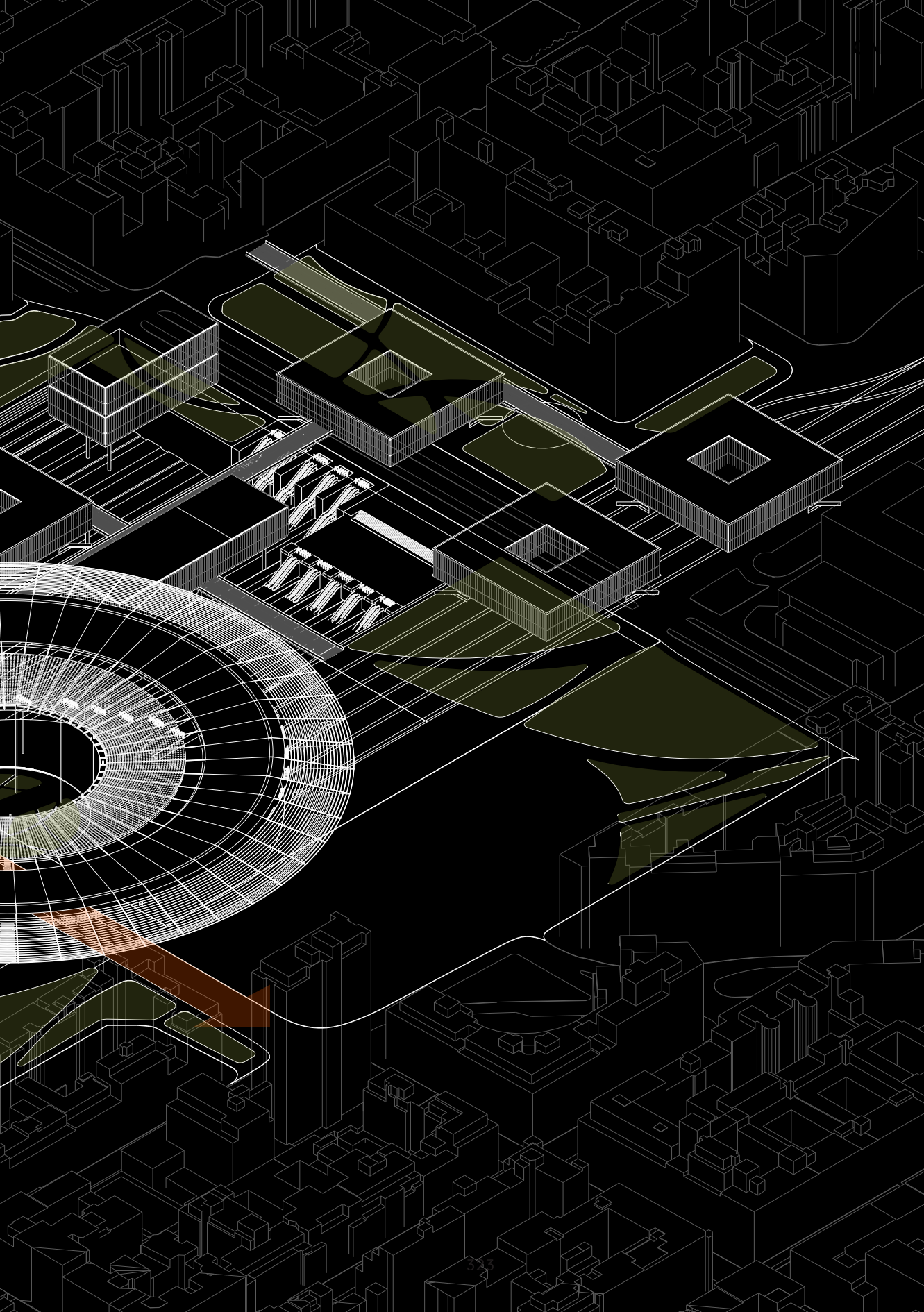


# CONCLUSION

# 08

# 08 Conclusion





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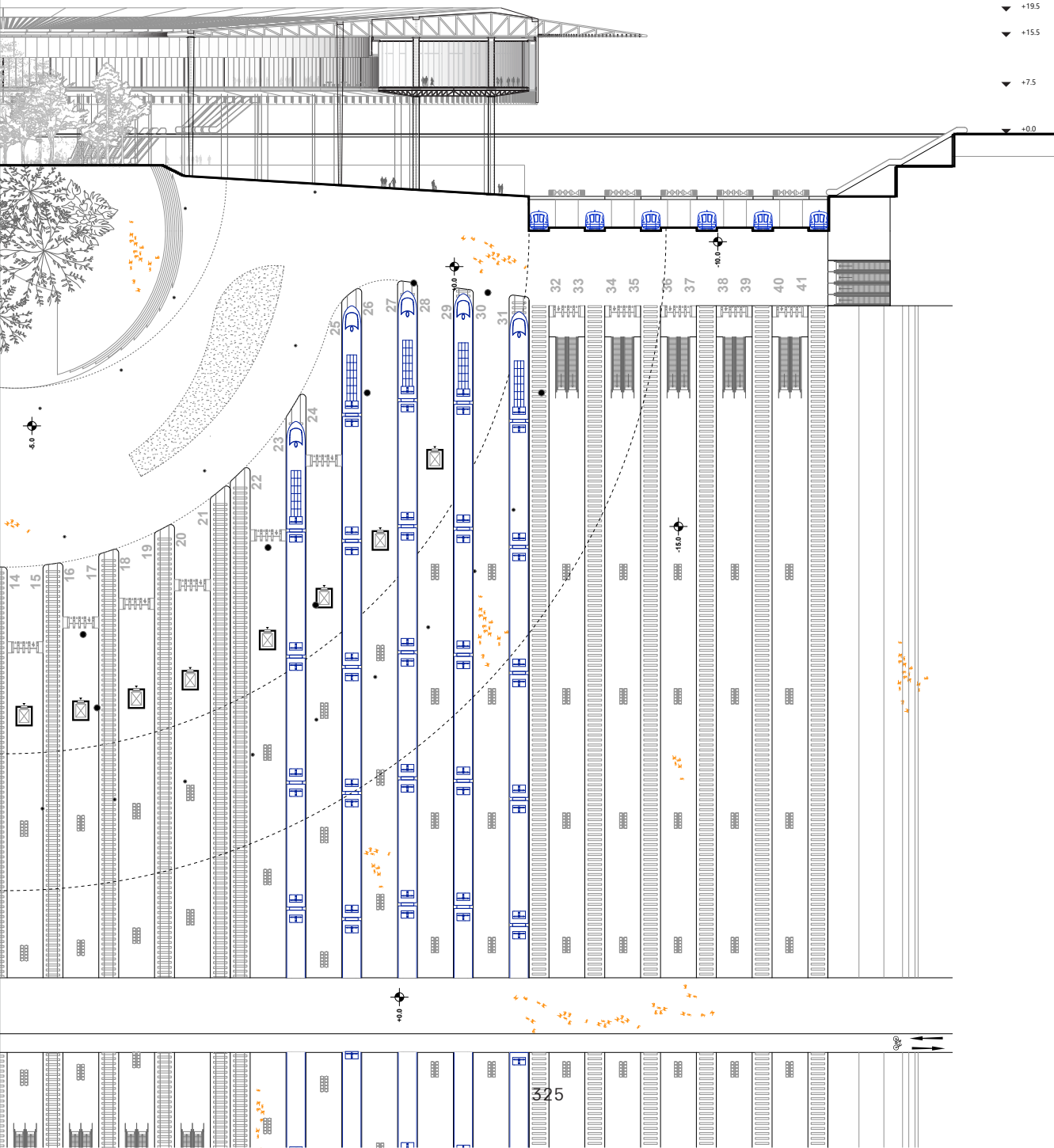
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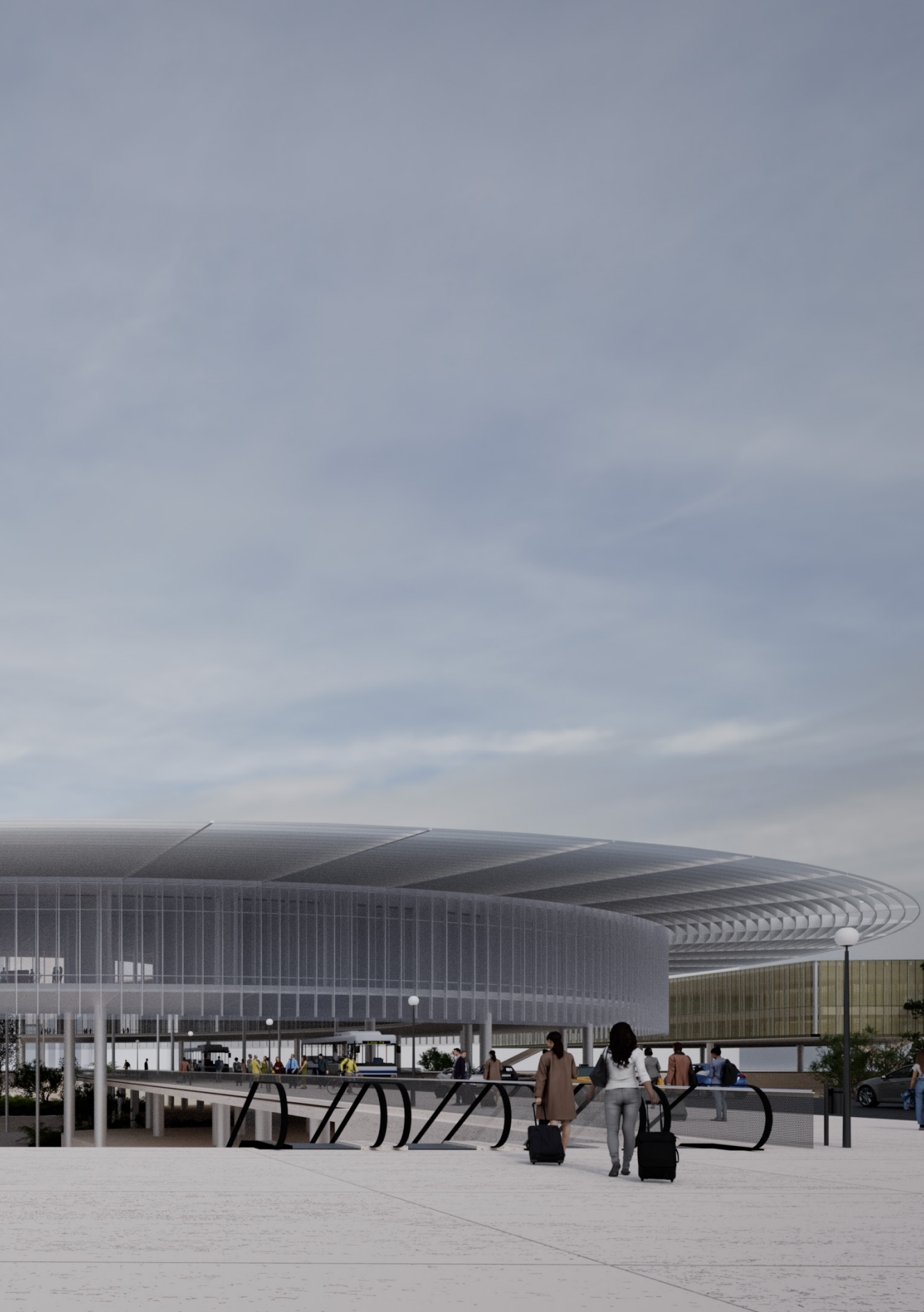

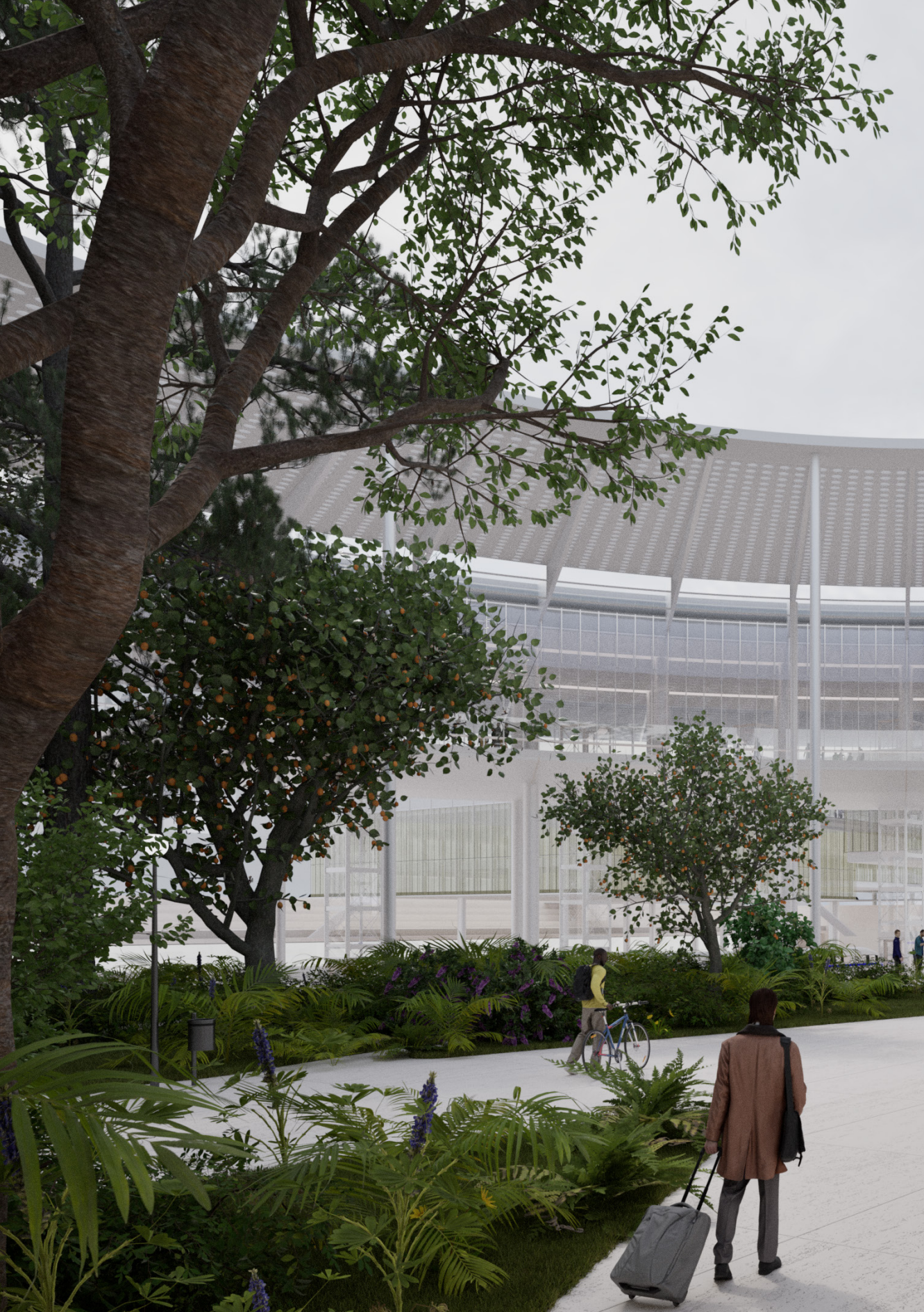























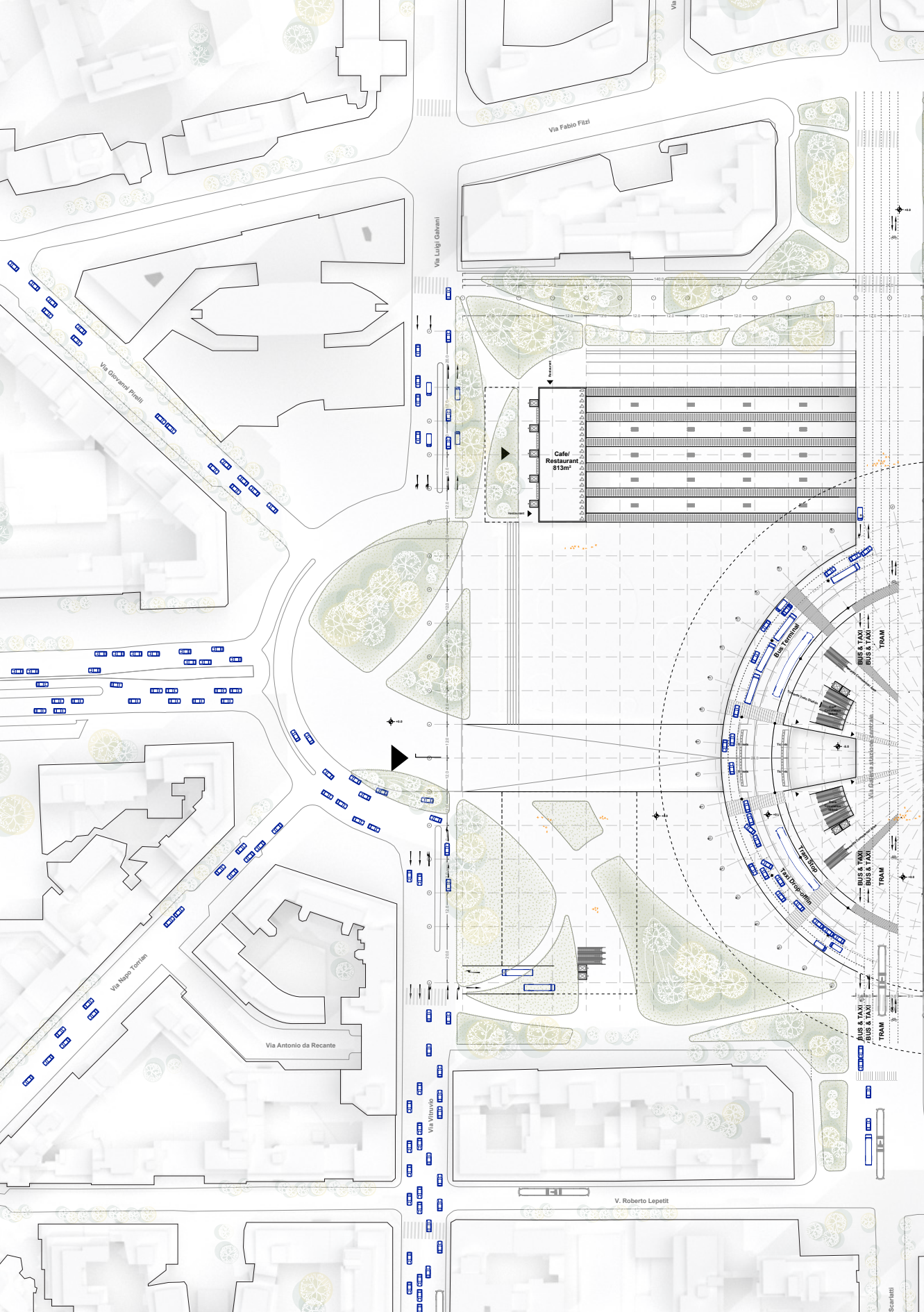
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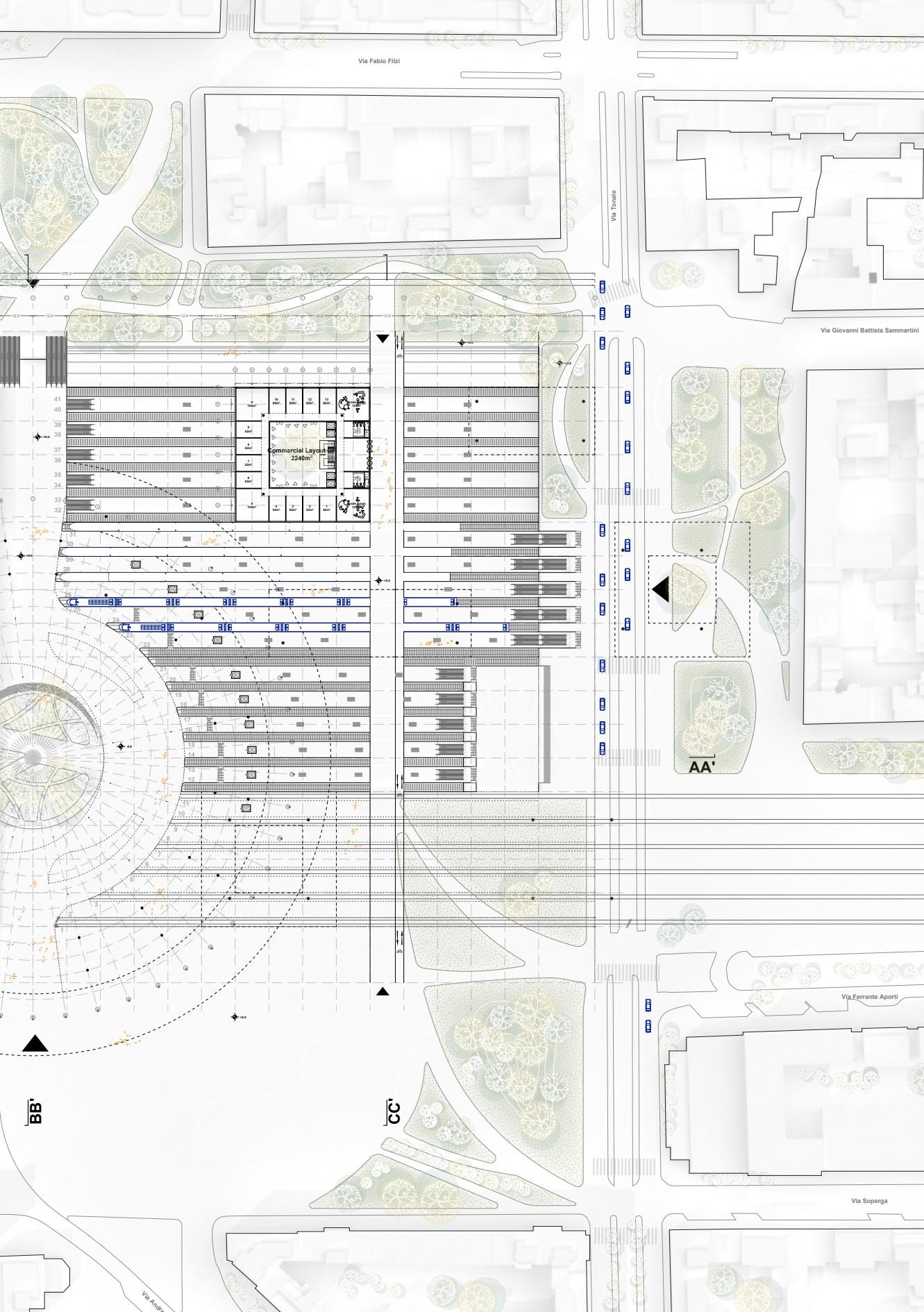
Via Luigi Galvani
Via Giovanni Pirelli
Via Napo Torrian
Via Antonio da Recante
Via Vitruvio
V. Roberto Lepetit
Via Galleria stazione Centrale
Cafe/
Restaurant
813m²
Restaurant
Bus Terminal
Tram Stop
Taxi Drop-off
BUS & TAXI
TRAM


Via Fabio Filzi
Via Tonale
Via Giovanni Battista Sammartini
Commercial Layout GF
2240m²
AA'
BB'
CC'
Via Ferrante Aporti
Via Soperga

# REFLECTION PAPER

**Research Question: How can the design of train stations bridge the gap between human space and train-centered spaces?**

**Aspect 1: The Relationship Between Research and Design**

The research explores the spatial and conceptual disconnect between human-centered spaces and train-centered infrastructure. It focuses on how architectural design can recalibrate the station environment so that trains are not isolated or hidden from the spatial experience but instead become visible and integrated elements of a broader urban and civic framework. Traditional station designs tend to compartmentalize functions, platforms for trains, halls for people, resulting in a fragmented spatial narrative. The design instead seeks to reconfigure the station hall as a shared domain, where the train enters into a human-scaled space rather than the reverse. In this way, the station transforms from a neutral transit shell into an inhabited and expressive civic environment.

Trains are brought visually and physically closer to users by treating the platform area not as a peripheral utility but as part of the main spatial continuum of the station. The design allows trains to enter the hall, not through concealed corridors but through an open and legible structure where their movement becomes part of the spatial experience. This strategy evokes the historical role of the station as a place of wonder and fascination with machines, restoring a degree of spectacle and engagement lost in the contemporary functionalist approach.

The design creates a space where trains are present but do not dominate, where movement does not erase the possibility of pause, and where the public realm reclaims its place within a transit environment.

**Aspect 2: The Relationship Between the Graduation Topic and the Studio**

This project directly aligns with the studio's focus on health and human experience in large-scale public architecture. The thesis centers on the scale and proportion of buildings that must accommodate both large vehicles and the people who use them. It investigates whether current station typologies prioritize operational efficiency over human comfort and seeks alternatives that reconcile both scales without compromising either.

Drawing comparisons with other hybrid typologies, parking garages, airports, metro stations, and ports, the analysis highlights how some spatial systems accommodate vehicles while remaining intuitive and navigable for people, while others create alienating, oversized environments. In two-dimensional planning, infrastructure often conforms strictly to the logic of the vehicle. However, in three-dimensional form-making, there exists more freedom to reintroduce architectural qualities responsive to human perception and behavior.

The thesis focuses on re-scaling the station in favor of human experience without sacrificing the operational needs of high-speed rail. Through the introduction of layered public spaces, permeability, and visual continuity, the station becomes more than a node in the transport network, it evolves into a complex urban structure that hosts multiple rhythms of daily life, extending its utility beyond transit.

**Aspect 3: Research Method and Approach Chosen by the Student in Relation to the Graduation Studio**

The project is grounded in research-by-design, using spatial experimentation as the primary tool to test, evaluate, and refine architectural hypotheses. Iterative design was central to this process, involving continuous testing of how circulation, visibility, and thresholds influence user perception. The early stages involved mapping the disconnects between machine- and human-centered spaces in precedent projects.

Each design phase was informed by critical reflection on spatial diagrams, movement

patterns, and scale relationships. Physical and digital models were used to examine how people interact with large infrastructure and how design interventions can create moments of intimacy within vast spaces. This iterative process allowed architectural choices to emerge from a continuous dialogue between research findings and design intuition, resulting in a proposal that evolves directly from the core research question.

**Aspect 4: Relationship Between the Graduation Project and the Wider Social, Professional, and Scientific Relevance**

This graduation project contributes to a wider architectural discourse on liminality, infrastructure, and the integration of civic life into transport environments. It focuses on the station as a transitional space, neither origin nor destination, but a threshold that mediates between the personal and the mechanical. These spaces are typically designed to facilitate flow and efficiency, but rarely support lingering or other forms of spatial engagement. The thesis challenges this norm by proposing a model where the station can be experienced both as a place of passage and of presence.
From a professional perspective, the project raises questions about the role of architects in shaping future transport infrastructure. As high-speed rail gains prominence, particularly in countries like Italy, stations will no longer function merely as terminals but as strategic nodes within urban and regional networks. These hubs must accommodate growing flows of people while maintaining safety, legibility, and comfort. The project addresses this demand by prioritizing user experience and rethinking spatial hierarchies to enhance usability without diminishing the operational logic of rail systems.
The scientific relevance of the work lies in its contribution to the understanding of human-machine spatial interactions. It frames the problem not as a dichotomy between humans and machines, but as a design opportunity to create layered, legible, and inclusive environments. By investigating how infrastructure can support a wide range of social functions, not just transit, the thesis opens avenues for sustainable urban growth. The project imagines a future in which high-speed rail replaces short-haul air travel, especially in pollution-heavy regions such as Milan. The design anticipates the ecological and urban potential of rail-based mobility, proposing infrastructure that is environmentally responsible and socially generous.

**Aspect 5: Ethical Issues and Dilemmas Encountered During Graduation**

One of the most significant design decisions with ethical implications was the introduction of a subtle, continuous slope throughout the station. This gesture eliminates the need for elevators or escalators to access platforms, enhancing accessibility for all users, including those with reduced mobility, strollers, or luggage. While it may seem like a minor intervention, it reflects a broader ethical stance: that infrastructure should serve diverse bodies and needs without creating barriers. The slope becomes both a technical and symbolic tool, a way to physically and conceptually bridge the gap between levels, between people and trains, and between utilitarian movement and architectural experience.



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