

# **INTERWEAVED CITY**

PORTA ROMANA RAILYARD DESIGN



**POLITECNICO**  
MILANO 1863

School of Architecture, Urban Planning, Construction Engineering

Master of Science in Architecture, Built Environment, Interiors

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a.a. 2020-2021



## **Our Willingness**

By extracting the elements of the Milan city and conducting classification analysis, our design proposes how to use urban planning to eliminate the obstruct between the north and south of the city caused by the horizontal railway and design a sustainable housing system for the athletes of 2026 Milan Winter Olympics.

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*our willingness*

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## 1.1 Introduction

Milan is located in the midwestern region of Pianura Padana in northern Italy. It is the largest city in northwestern Italy.

Milan is bordered by the famous Alps to the north and the Apennines parallel to the Alps to the south. At the same time, it stands by the river, on the upper Po River, which runs east-west through northern Italy. The landscape system makes the area surrounded by mountains and water, becoming an important hub connecting northern Europe with the Italian peninsula and the Mediterranean basin.

For a long time, Milan has connected the north and south of the European continent by virtue of its superior geographical location and natural environment. It has always been the only way for Northern Europe to reach central and southern Italy, and it is also an important area for competition among European powers.





**MILAN**

**PORTA ROMANA**

**Location**



## 1.2 City Development of Milan

### History

Milan was established in the 4th century BC. It was one of the independent urban republics that emerged in Italy in the early Middle Ages. During the two wars with the Roman Empire, the entire city of Milan was almost completely destroyed. In 1796, the city of Milan was occupied by Napoleon, and the following year it was built as the capital of the Republic of Milan until it was incorporated into the Kingdom of Italy in 1861.

During World War II, Milan was once occupied by Germany. On April 25, 1945, more than one hundred cities in northern Italy led by Milan revolted at the same time and drove away the German occupying forces.

After the war, Milan occupies an important position in the economic development of Italy, and the industry has developed rapidly.

The architectural form of Milan is a superposition of spatial forms in different periods. Before a reasonable study of urban renewal, it is necessary to reasonably understand the development of spatial forms in history.

### City Ring

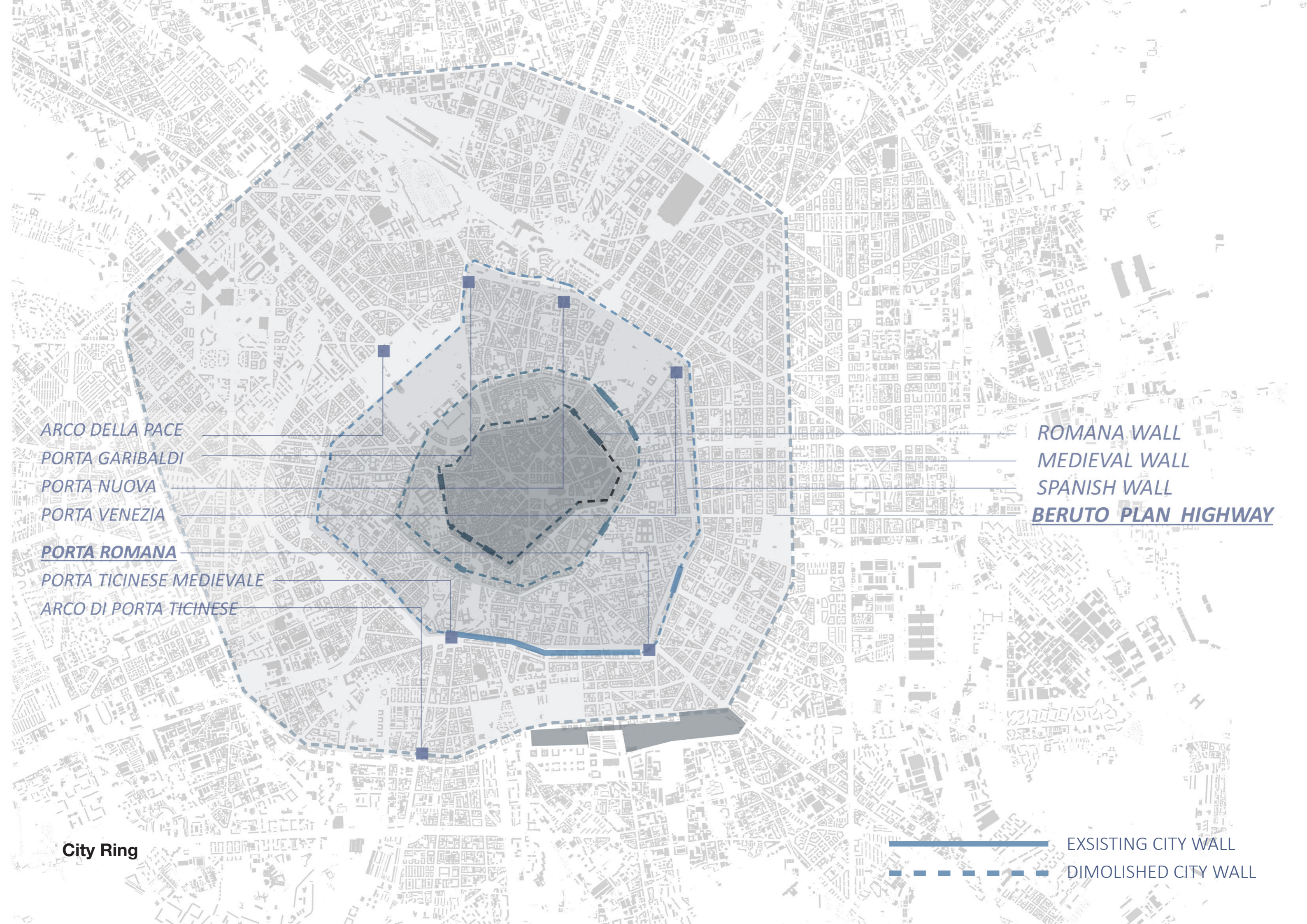
Milan, Italy had three different systems of defending walls. The oldest, Roman walls were developed in two stages, the first in the Republican and the second in the Imperial era. The second wall system was realized in the Middle Ages (12th Century), after the destruction of the city by Frederick I Barbarossa. Finally, the latest wall system was built by the Spanish rulers (16th Century). While very little remains of these walls, their structure is clearly reflected in the urbanistic layout of the city. In particular, modern Milan has two roughly circular rings of streets, namely the “Cerchia dei Navigli” and the “Cerchia dei Bastioni”, which essentially correspond to the Medieval and Spanish walls, respectively. The third ring of roads just beyond the Inner Ring Road (circonvallazione interna / “Cerchia dei Bastioni”), called the External Ring Road (circonvallazione esterna), does not owe itself to any old city walls; but was part of the 1884 Beruto Plan for the city of Milan, created and named after a municipal engineer and public servant to the local city government.

City gates were traditionally built over wall to provide a point of controlled access to defend the city in milan, these are arches obtained in the city wall perimeter, or fortified or sometimes even monumental openings. ((It is customary to divide them by categories: the doors of the Roman era, those of the medieval era and finally the Spanish ones, even if most of them were completely rebuilt during the Napoleonic hegemony.)) Some are still visible today. The function of traditional city gates has been lost, and now these city gates have become landmarks and tourist attractions.



### History





ARCO DELLA PACE

PORTA GARIBALDI

PORTA NUOVA

PORTA VENEZIA

**PORTA ROMANA**

PORTA TICINESE MEDIEVALE

ARCO DI PORTA TICINESE

ROMANA WALL

MEDIEVAL WALL

SPANISH WALL

**BERUTO PLAN HIGHWAY**

**City Ring**

EXISTING CITY WALL

DIMOLISHED CITY WALL





CENTRALE

GARIBALDI

REPUBBLICA

P. VENEZIA

LAMBRATE

DATEO

FORLANINI

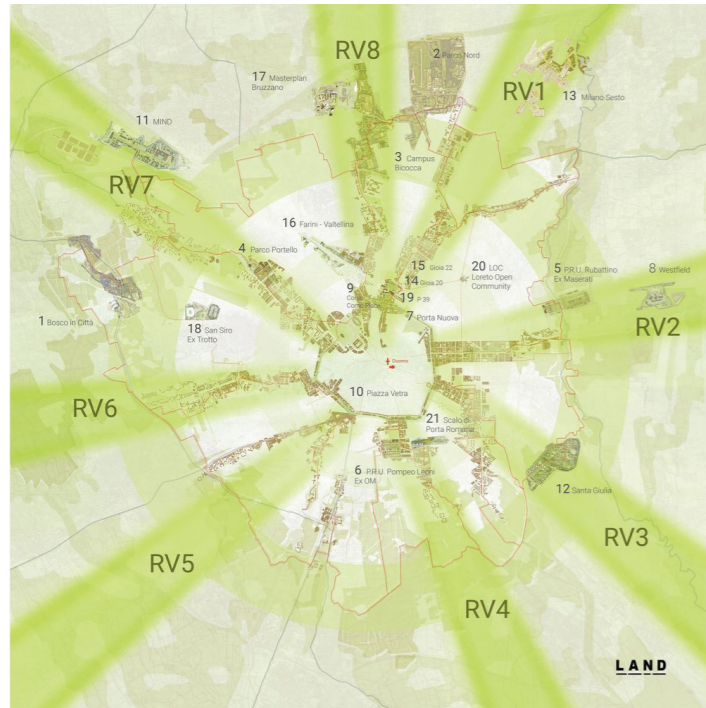
P. VITTORIA

P. GENOVA

P. ROMANA

Railway System



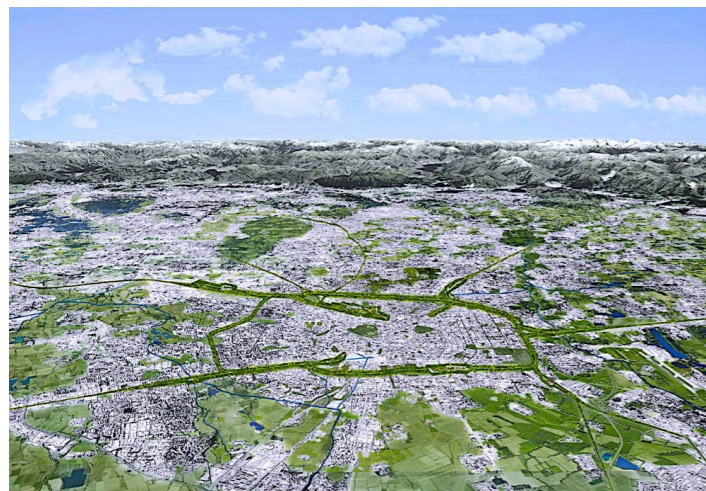


## Green Space

Attraction and inclusiveness, urban renewal, resilience, space and service quality are the basic strategies for future Milan development research and vision. In the future, Milan's urban development intends to carry out a unified and systematic design of Milan's green spaces, and coordinate the structure of Milan's urban development to connect different areas of the city.

In some proposals, they conceive of a metropolis as a vital, permeable system, which cannot and must not relegate natural spaces to mere accessories, but must instead rely on them as integral parts of master plans and future planning.

By circular or radial arrangements, with bicycle lanes and sidewalks, Milan's parks and green spaces are connected in an orderly manner, and abandoned railway sites like Porta Romana can be transformed into parks and connected with railways as a reference.



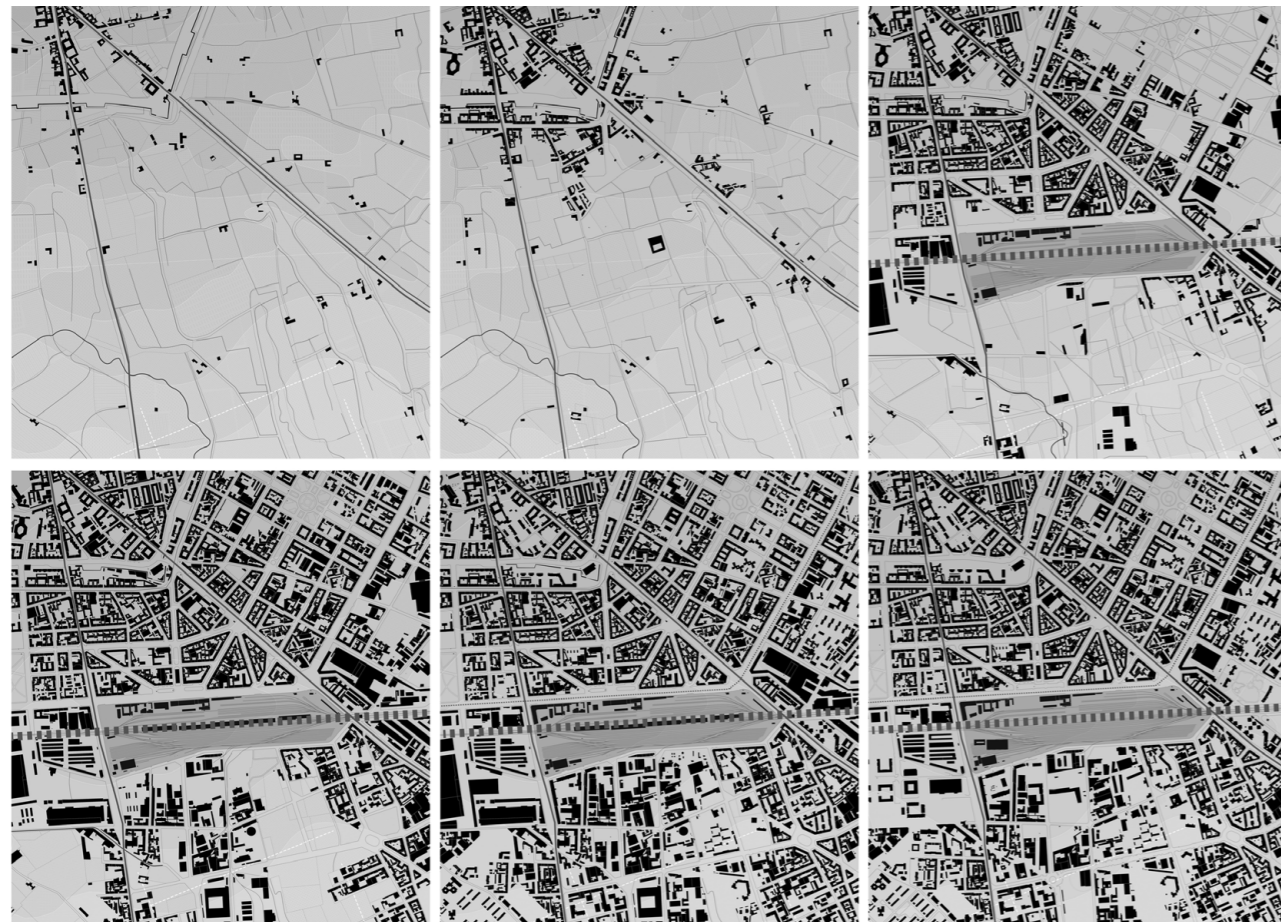


### 1.3 Status of Porta Romana

#### Development

The superposition of different spatial forms brought about by different periods formed the current Milan. Therefore, for the current urban planning of Milan, the original site of the city wall and the railway system in various periods are important parts of the city.

Porta Romana is a former city gate of Milan. Its origins can be traced further back to the Roman walls of the city, which had a corresponding “Roman Gate” roughly in the same area. Porta Romana was the first and the main imperial entrance of the entire city of Milan, as it was the starting point of the road leading to Ancient Rome. the name “Porta Romana” is used both to refer to the gate proper and to the surrounding district ,part of the Zone 4 administrative division of Milan (and bordering with zone 5), located south-east of the city centre. With the passage of history, from 1772 to 2020, the prosperity and development of Porta Romana made it a diverse community in the city.



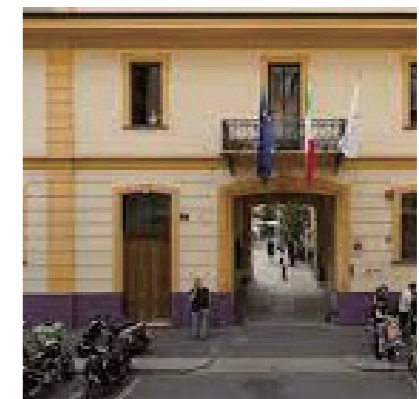
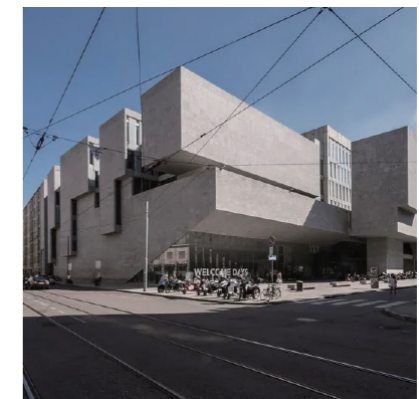
#### Surrounding Buildings

Milan’s urban development intends to carry out a unified and systematic design of Milan’s green spaces, and coordinate the structure of Milan’s urban development to connect different areas of the city.

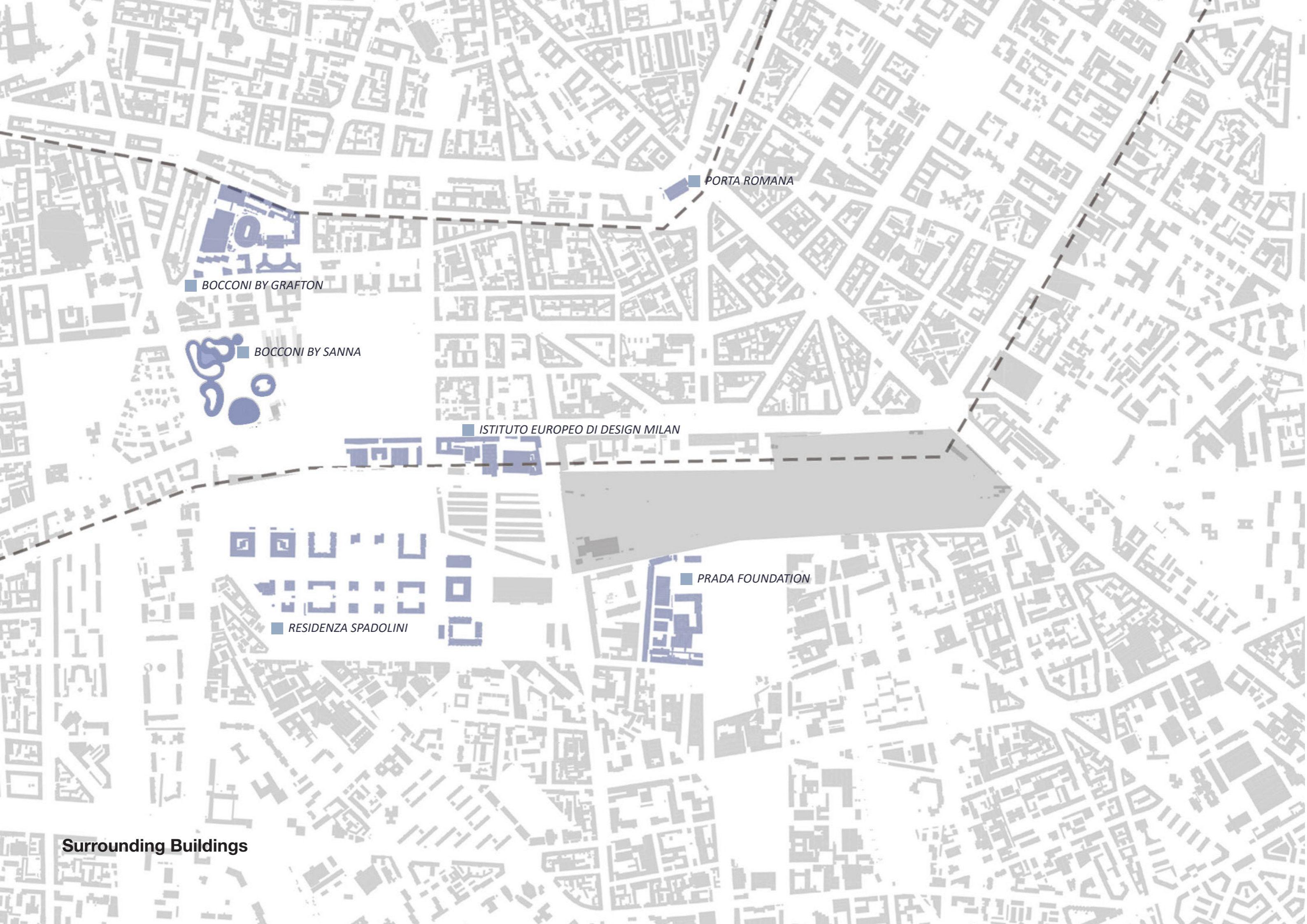
In some proposals, they conceive of a metropolis as a vital, permeable system, which cannot and must not relegate natural spaces to mere accessories, but must instead rely on them as integral parts of master plans and future planning.

ww

By circular or radial arrangements, with bicycle lanes and sidewalks, Milan’s parks and green spaces are connected in an orderly manner, and abandoned railway sites like Porta Romana can be transformed into parks and connected with railways as a reference.







PORTA ROMANA

BOCCONI BY GRAFTON

BOCCONI BY SANNA

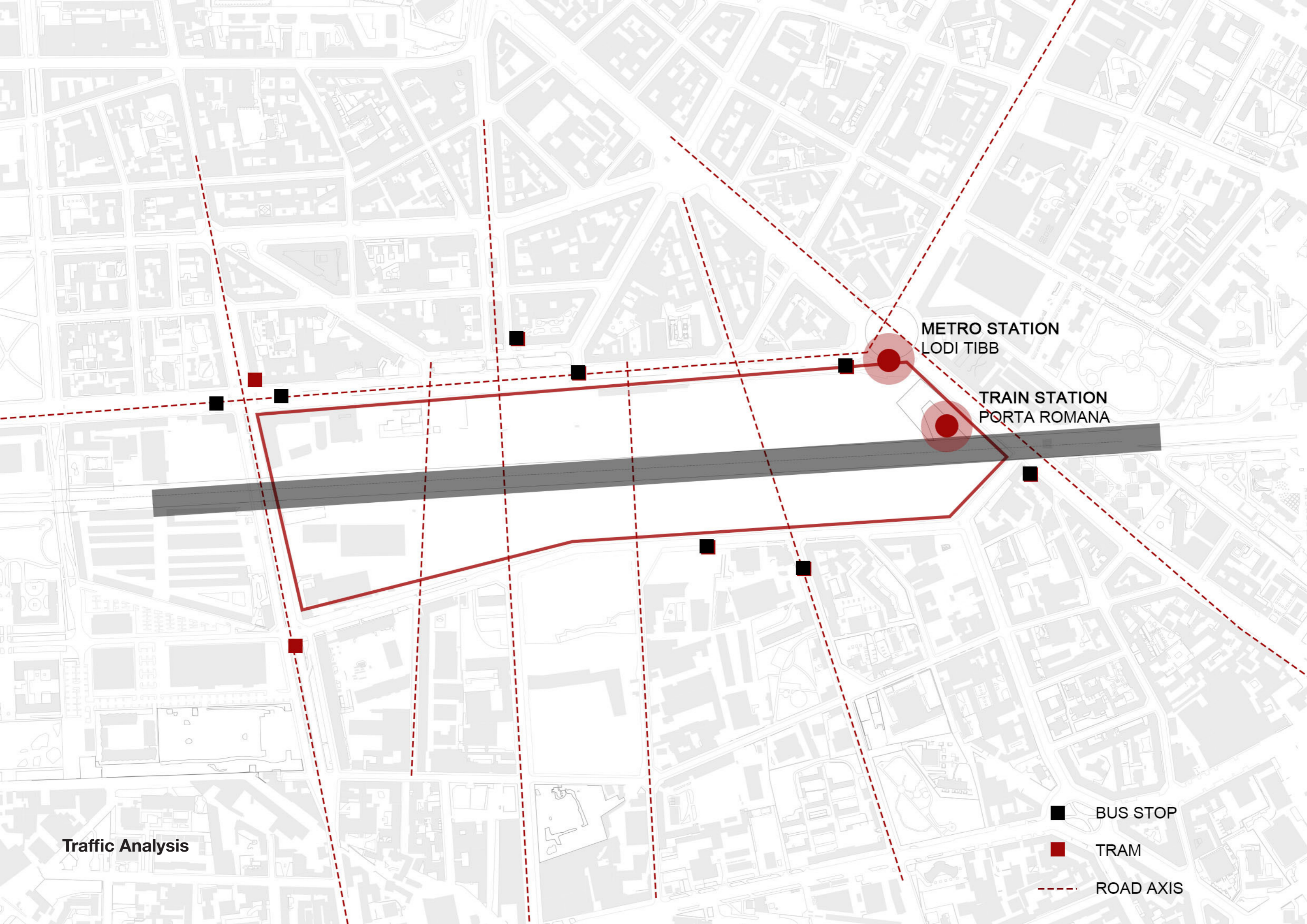
ISTITUTO EUROPEO DI DESIGN MILAN

PRADA FOUNDATION

RESIDENZA SPADOLINI

Surrounding Buildings





METRO STATION  
LODI TIBB

TRAIN STATION  
PORTA ROMANA

■ BUS STOP

■ TRAM

--- ROAD AXIS

Traffic Analysis





Borders



Railway Yard



Promana Train Station



Piazza Lodi



Lodi Tibb Metro Station



Porta Romana

Context

# Interweaved\_Olympic Village Design

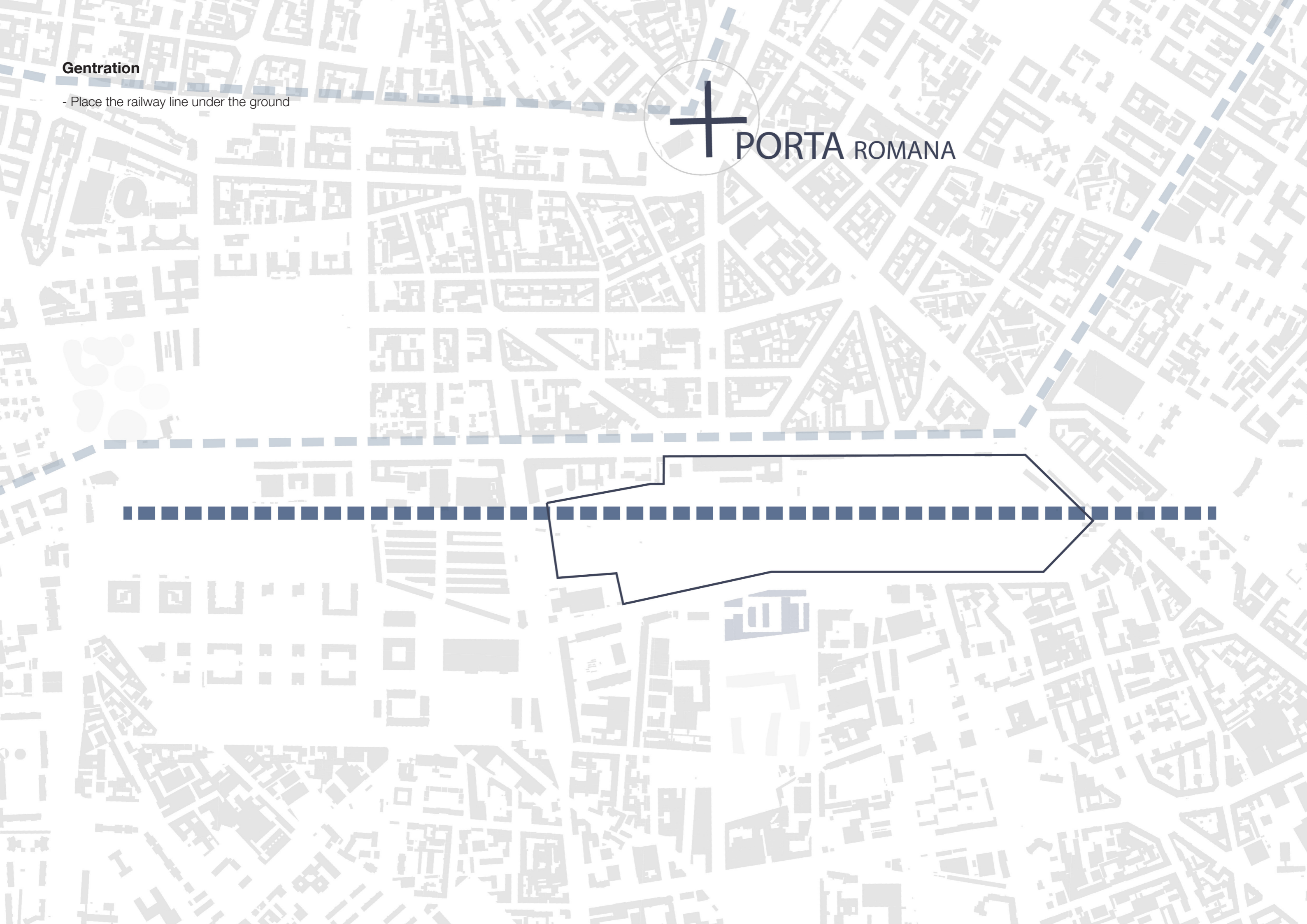


**Genetration**

- Place the railway line under the ground



PORTA ROMANA



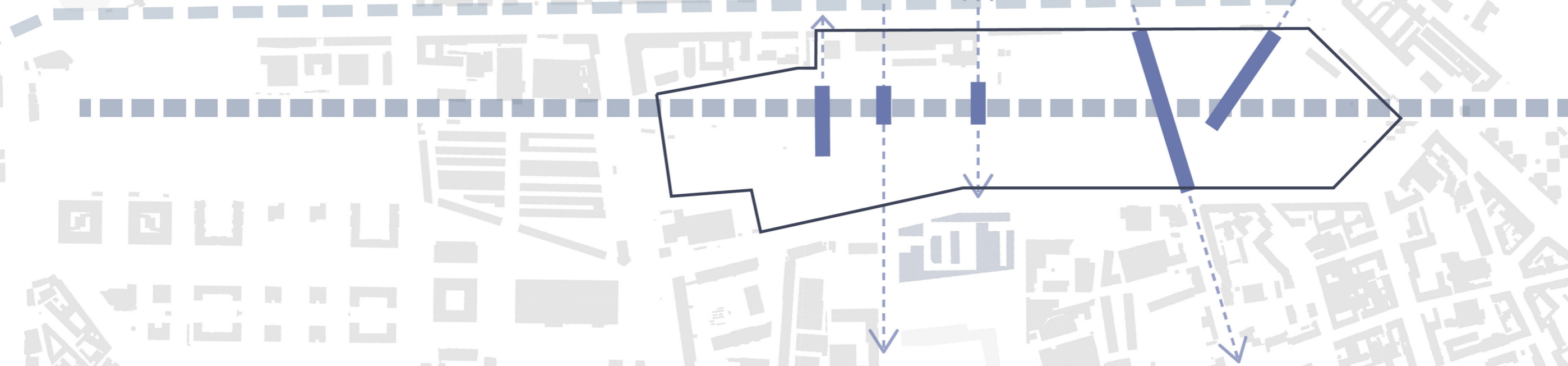
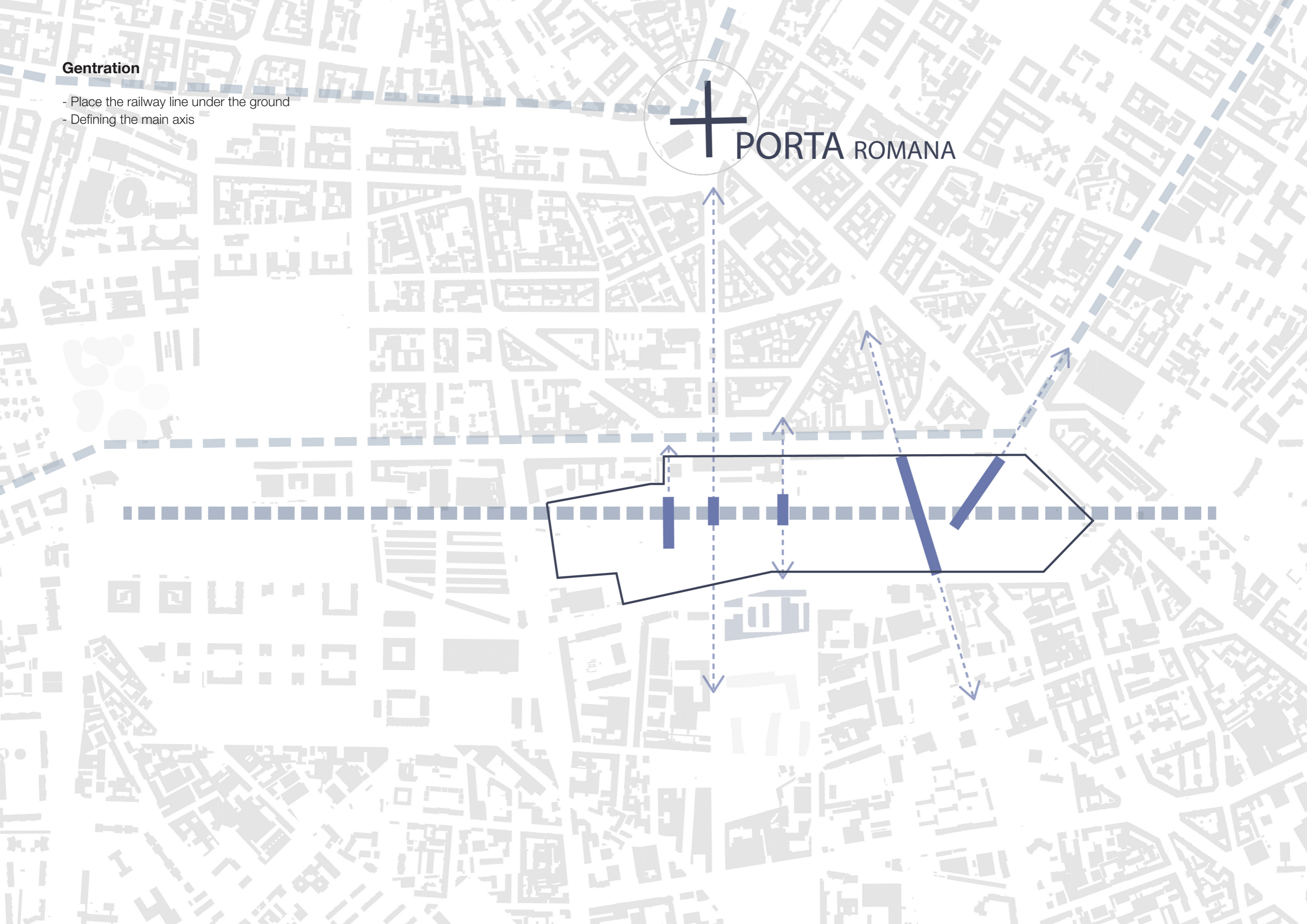


**Genetration**

- Place the railway line under the ground
- Defining the main axis



PORTA ROMANA



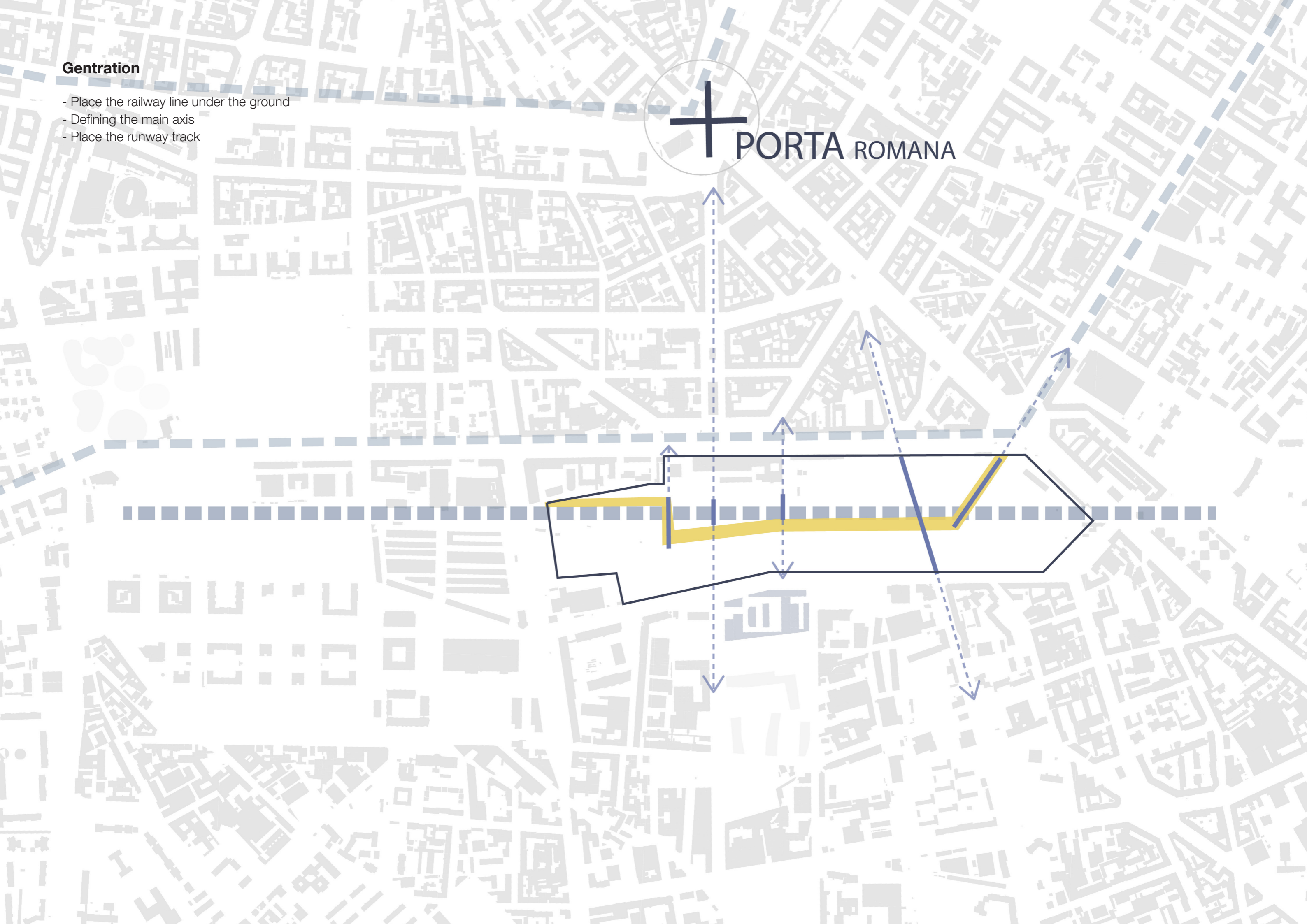


## Genration

- Place the railway line under the ground
- Defining the main axis
- Place the runway track



PORTA ROMANA



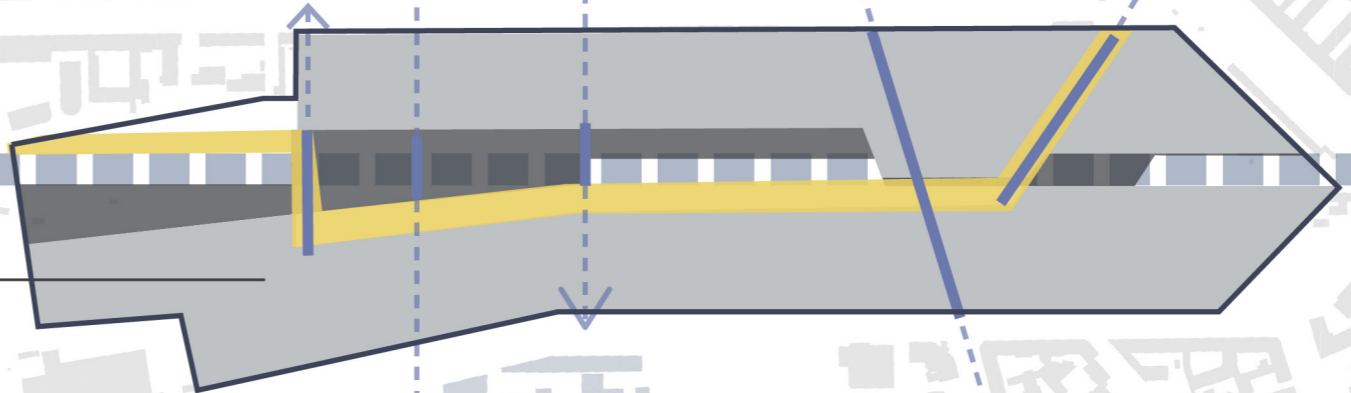


### Generation

- Place the railway line under the ground
- Defining the main axis
- Place the runway track
- Defining the vertical elevation (-4.5M)



City Level Ground: ±0.00 ←





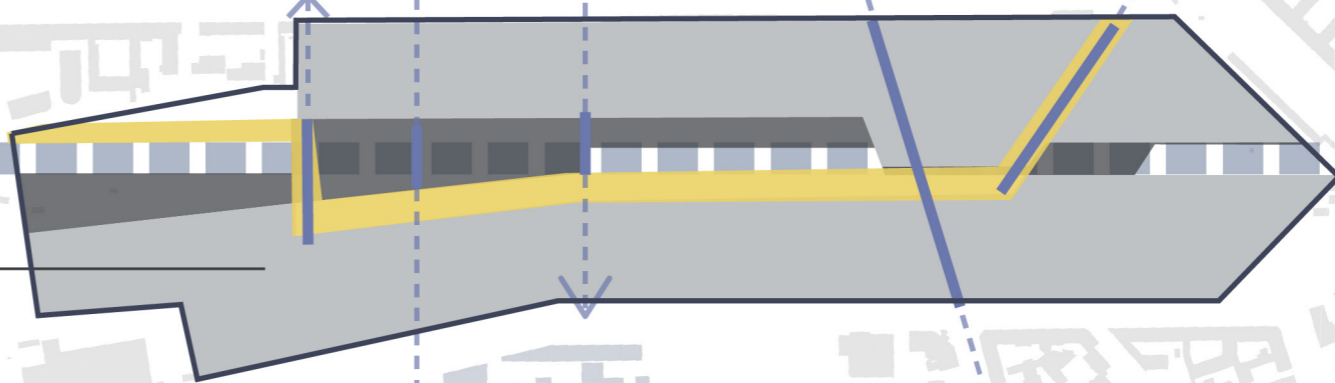
## Generation

- Place the railway line under the ground
- Defining the main axis
- Place the runway track
- Defining the vertical elevation (-4.5M)
- Defining the vertical elevation ( $\pm 0.00M$ )



PORTA ROMANA

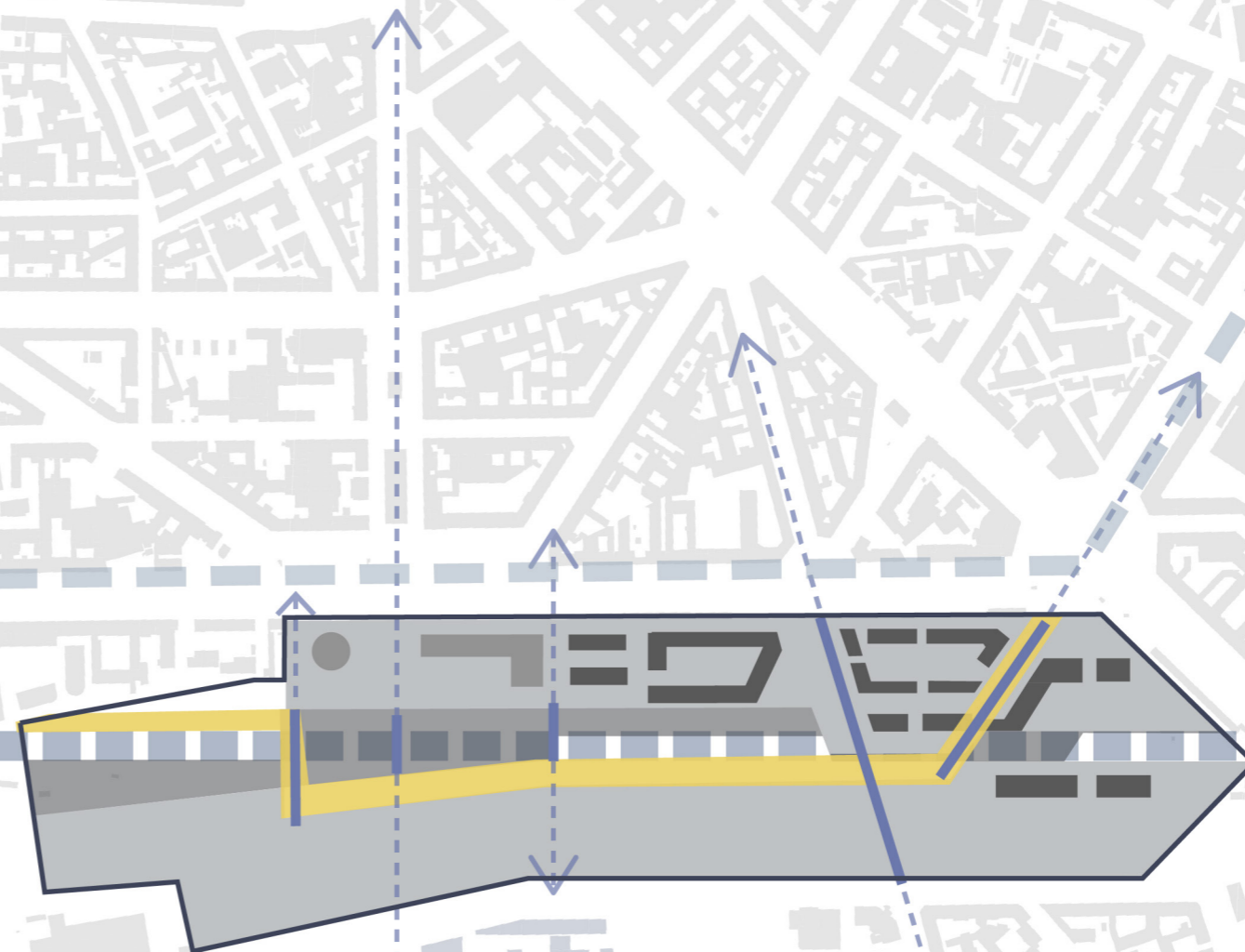
City Level Ground:  $\pm 0.00$  ←





## Genration

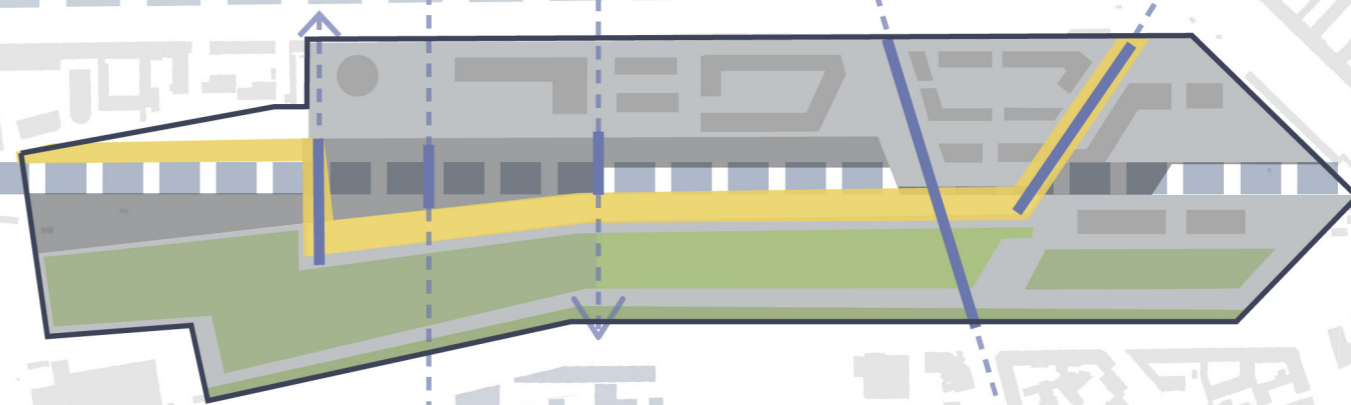
- Place the railway line under the ground
- Defining the main axis
- Place the runway track
- Defining the vertical elevation (-4.5M)
- Defining the vertical elevation ( $\pm 0.00M$ )
- Growing the building area





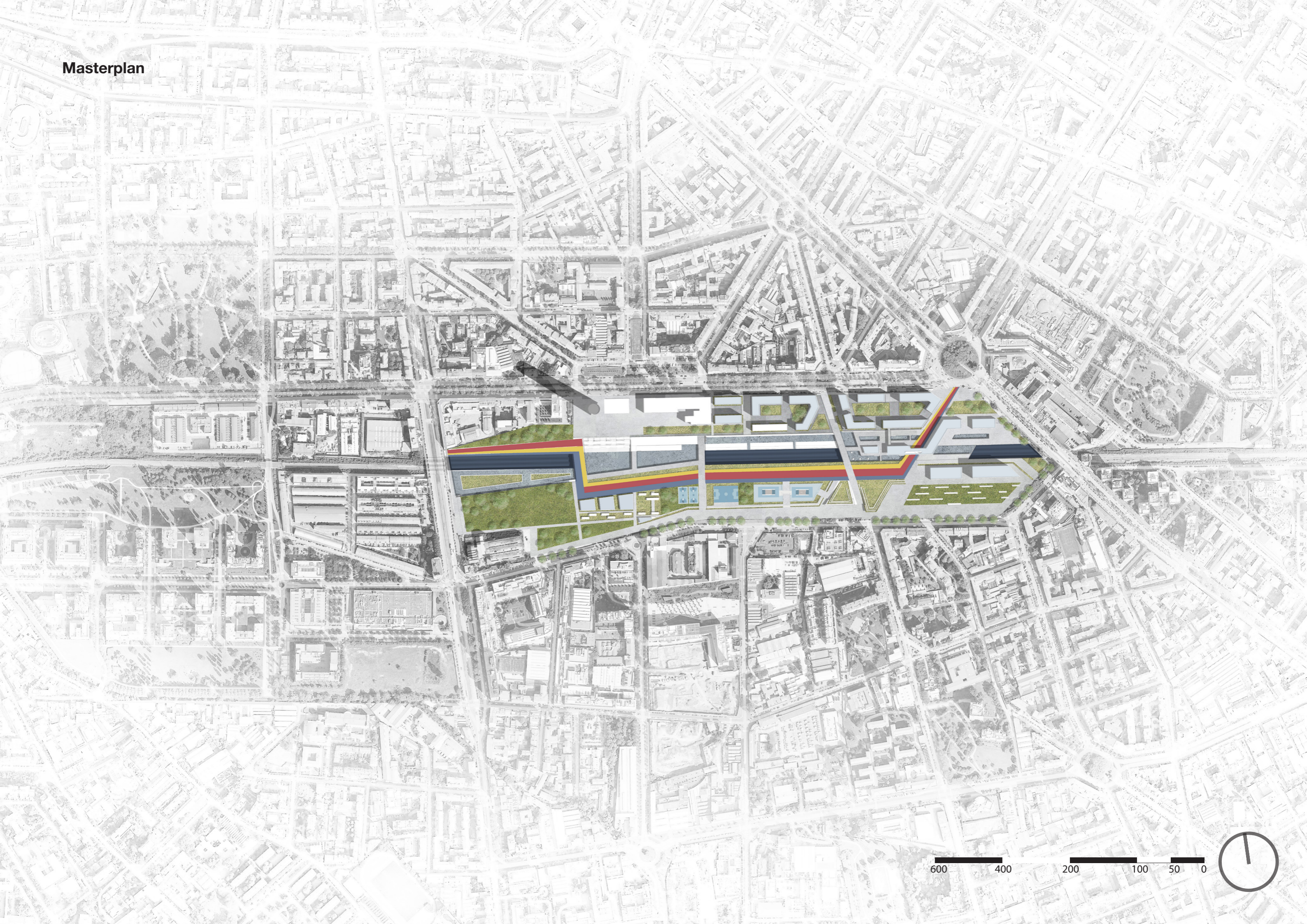
## Genration

- Place the railway line under the ground
- Defining the main axis
- Place the runway track
- Defining the vertical elevation (-4.5M)
- Defining the vertical elevation ( $\pm 0.00M$ )
- Growing the building area
- Growing the public&green area





Masterplan

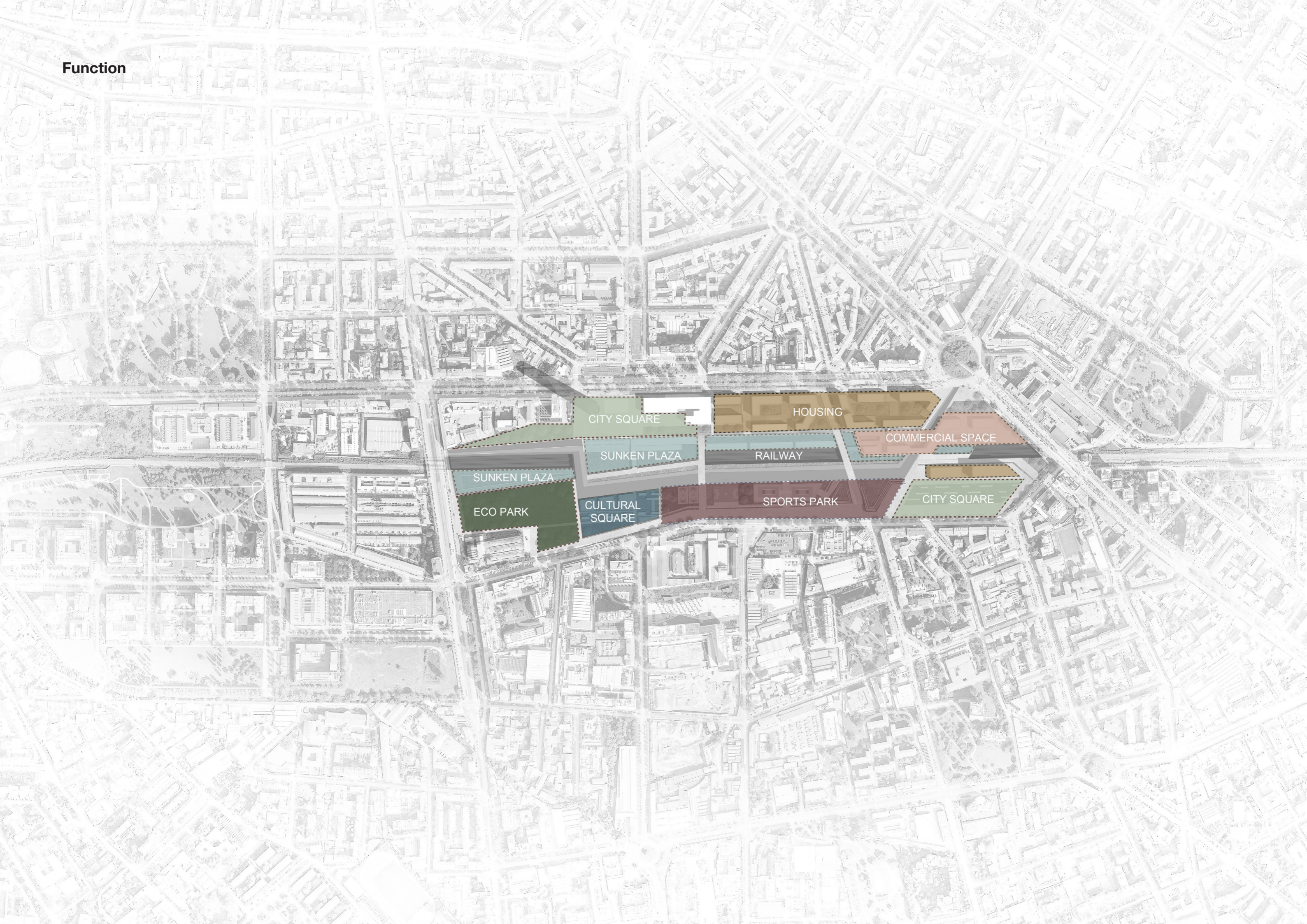


600 400 200 100 50 0





Function



CITY SQUARE

HOUSING

COMMERCIAL SPACE

SUNKEN PLAZA

RAILWAY

SUNKEN PLAZA

ECO PARK

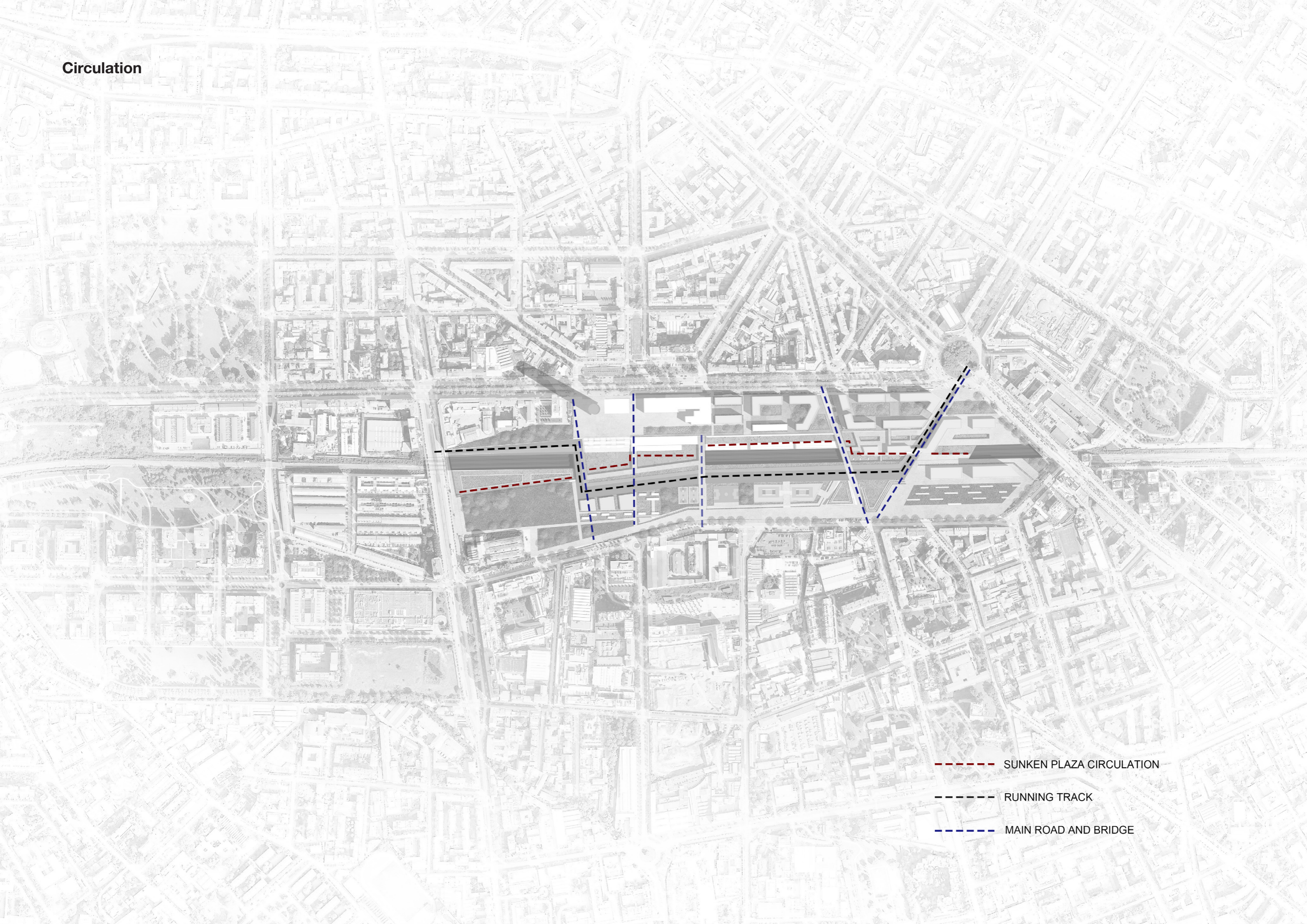
CULTURAL SQUARE

SPORTS PARK

CITY SQUARE



Circulation



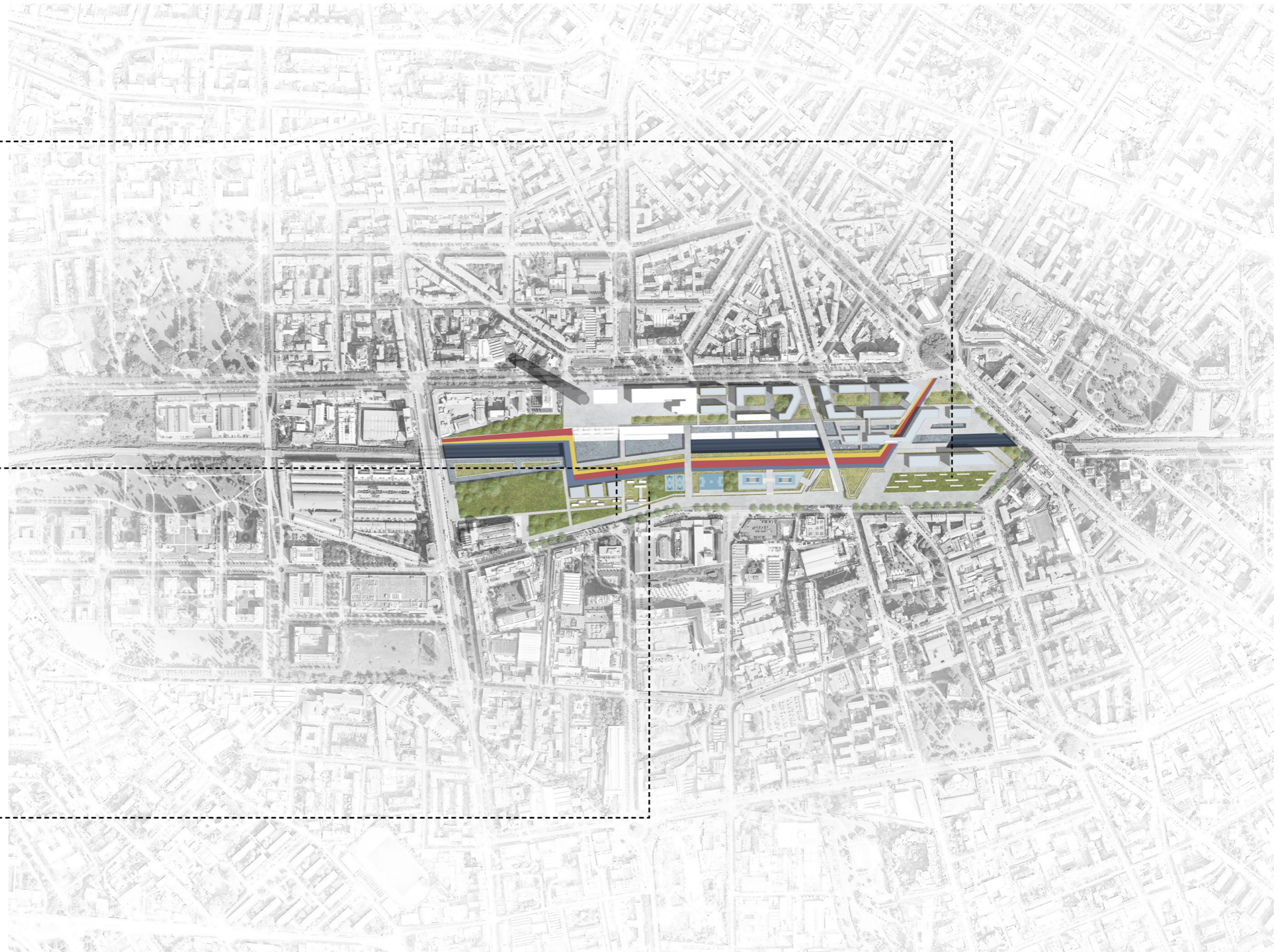
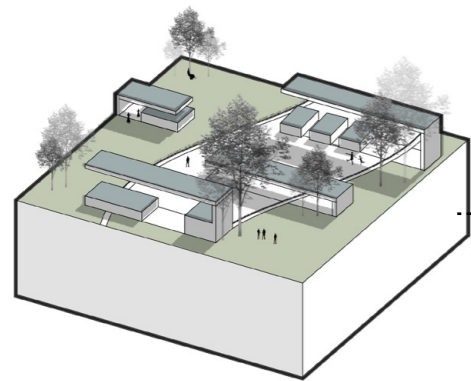
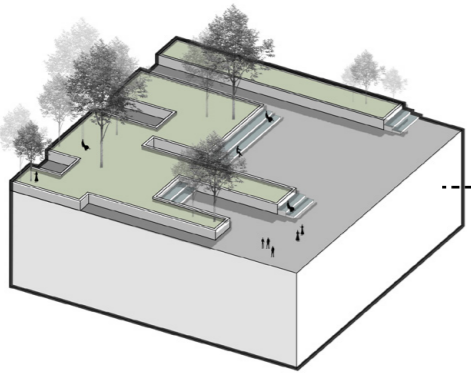
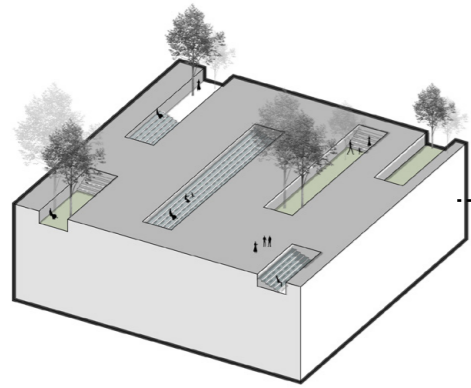
----- SUNKEN PLAZA CIRCULATION

----- RUNNING TRACK

----- MAIN ROAD AND BRIDGE

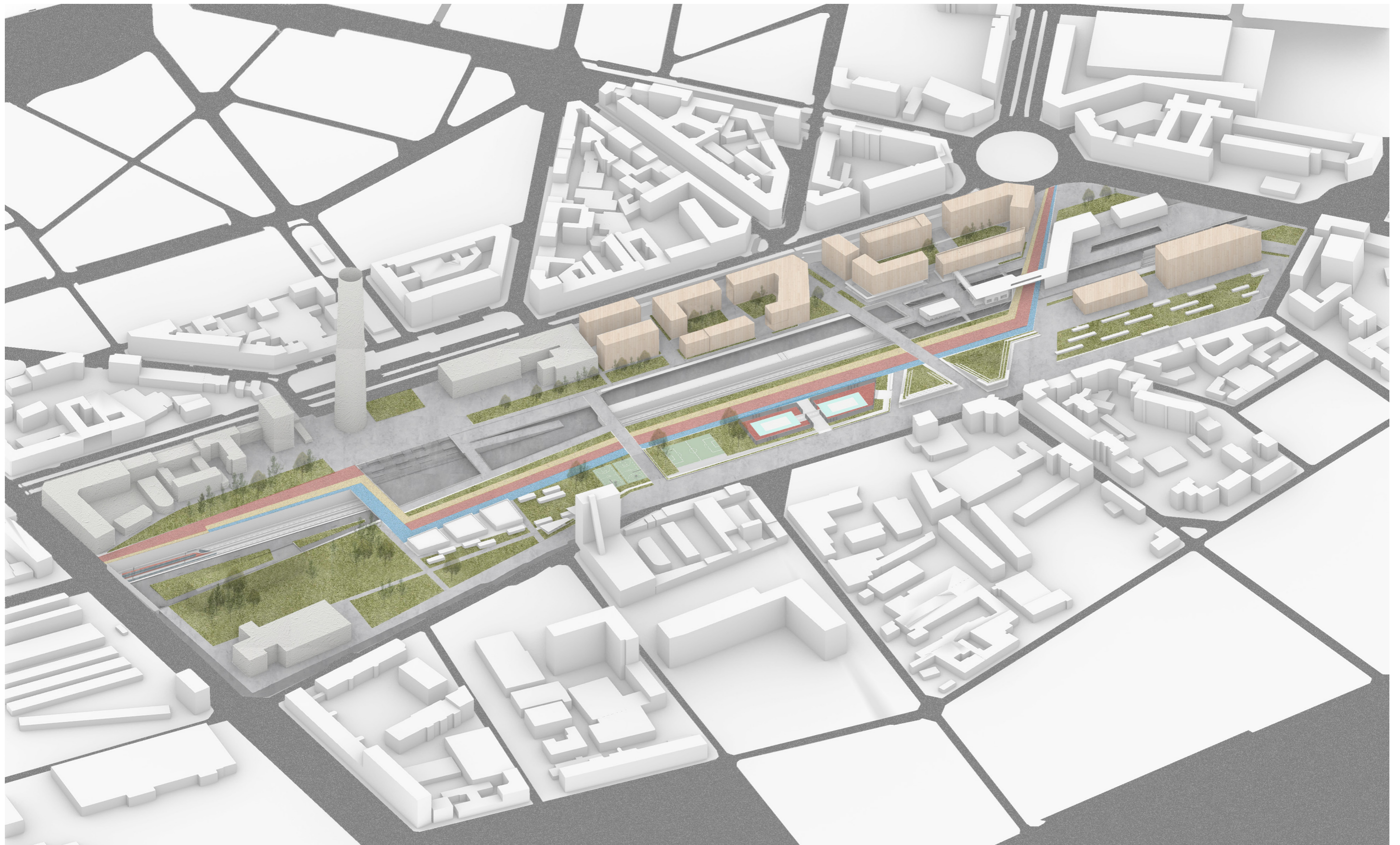


# Detail Axonometric View



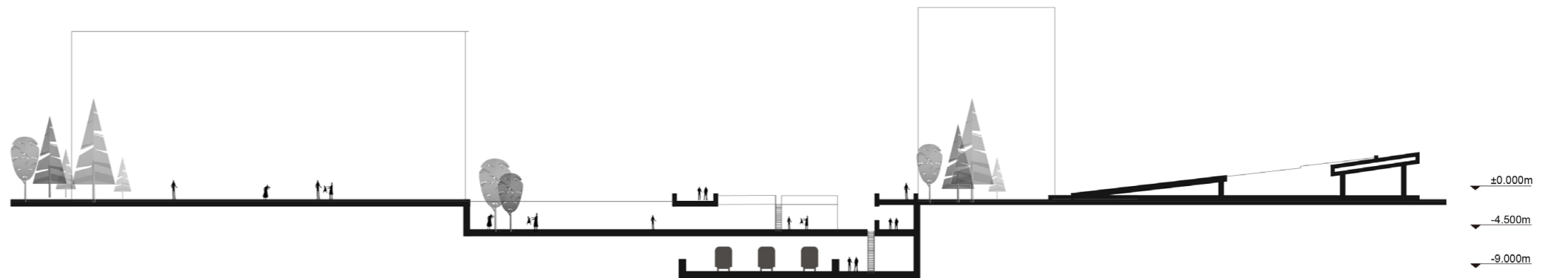
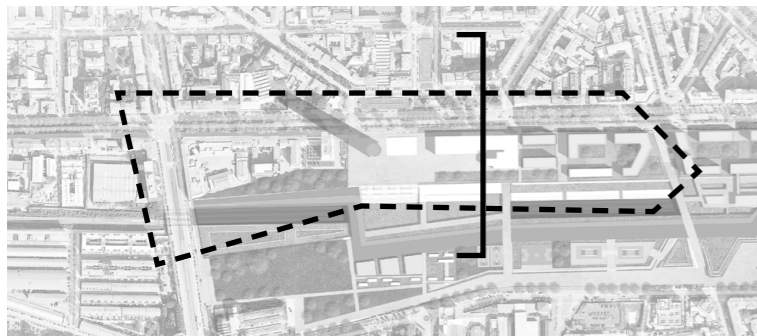
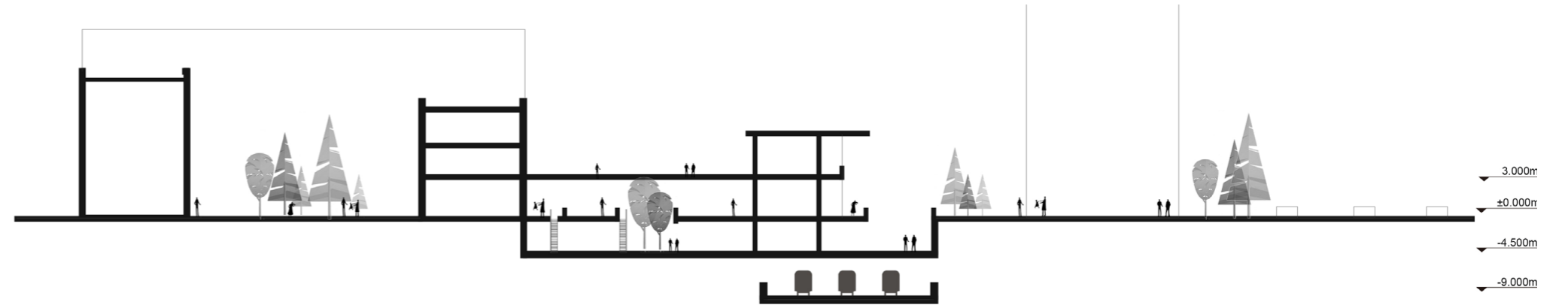
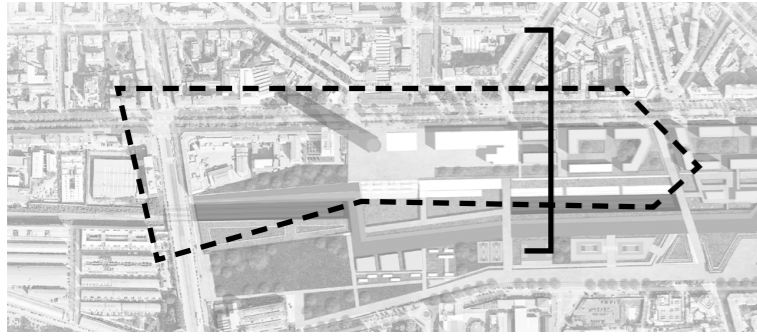


Bird View

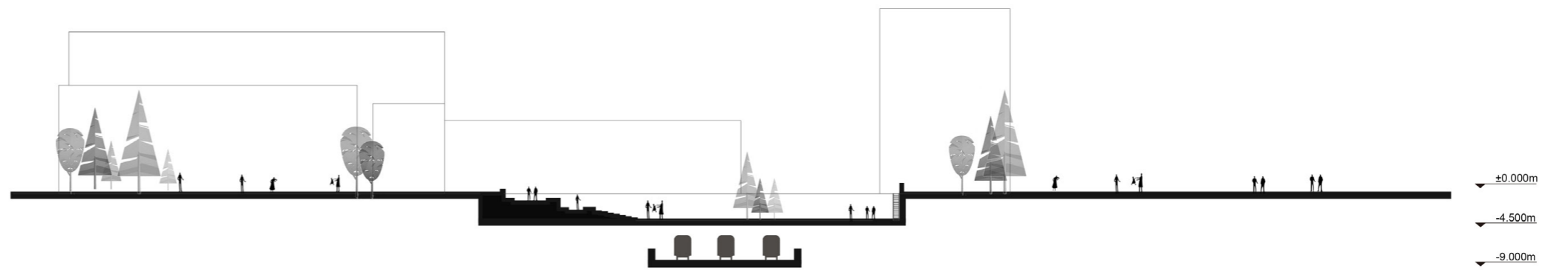
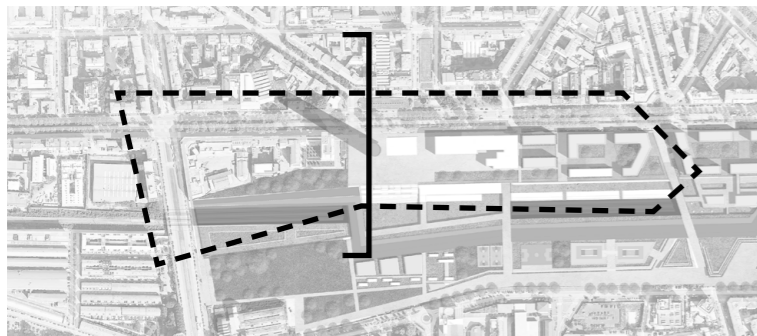
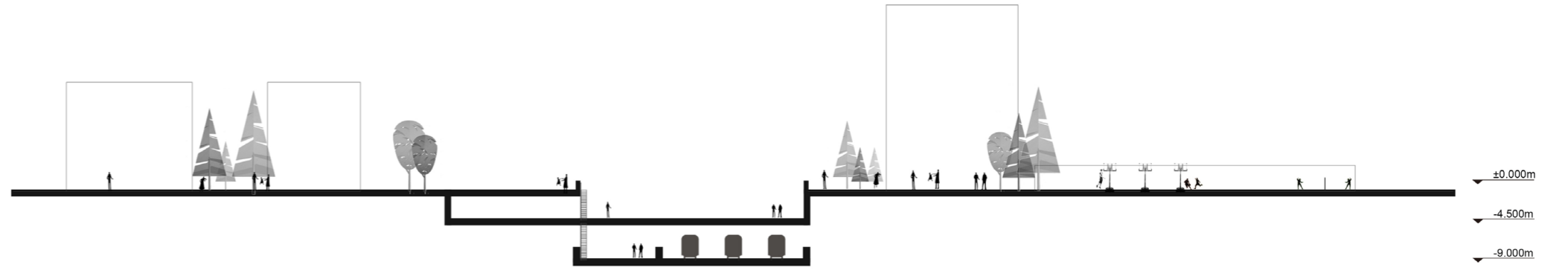
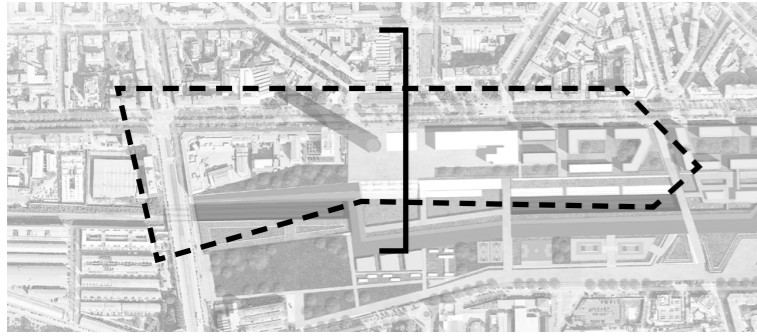




# Site Section

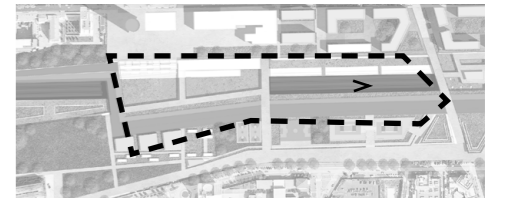


# Site Section



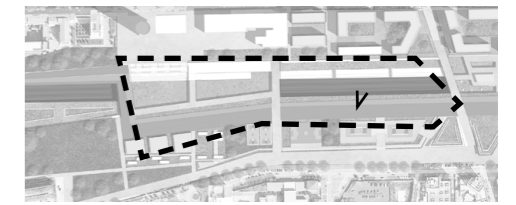


Views





Views

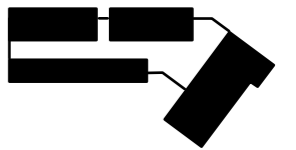


# Togetherness\_Housing design

Types Of Units Housing



Model

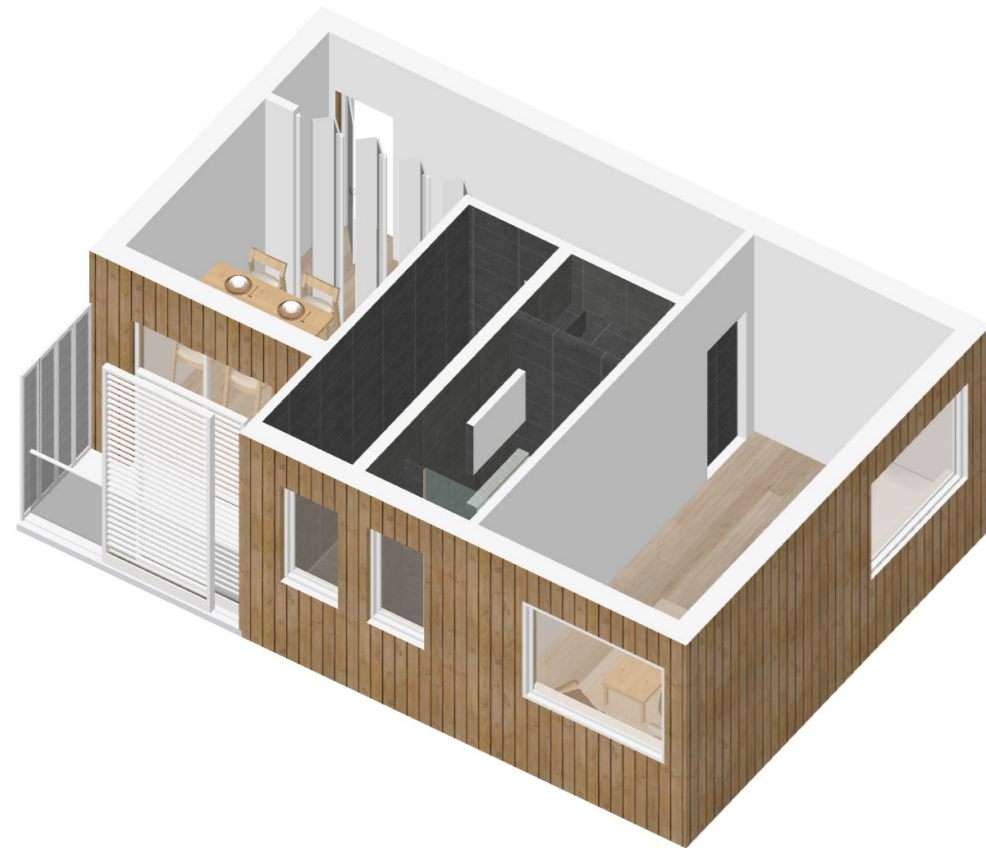
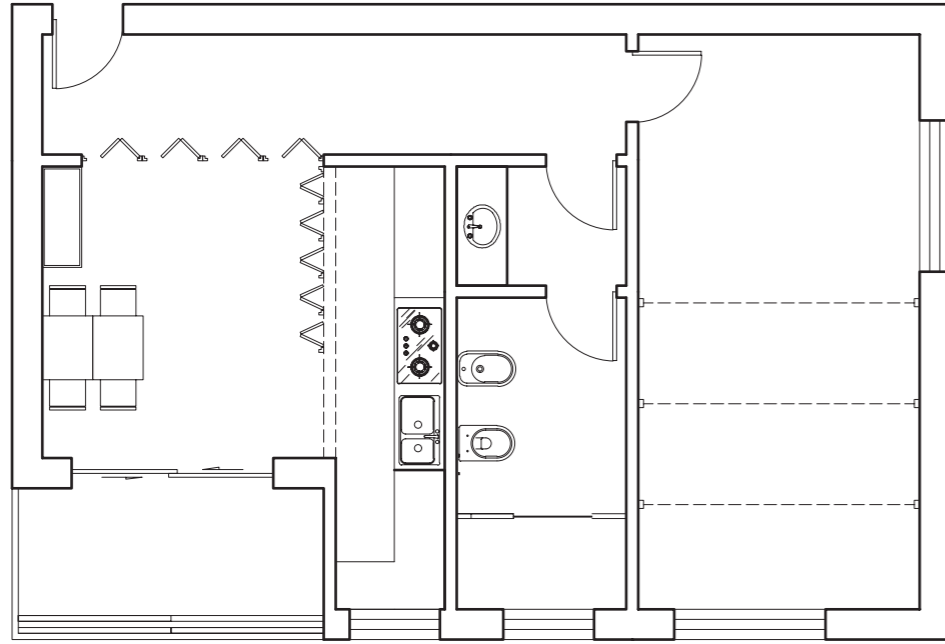


Community

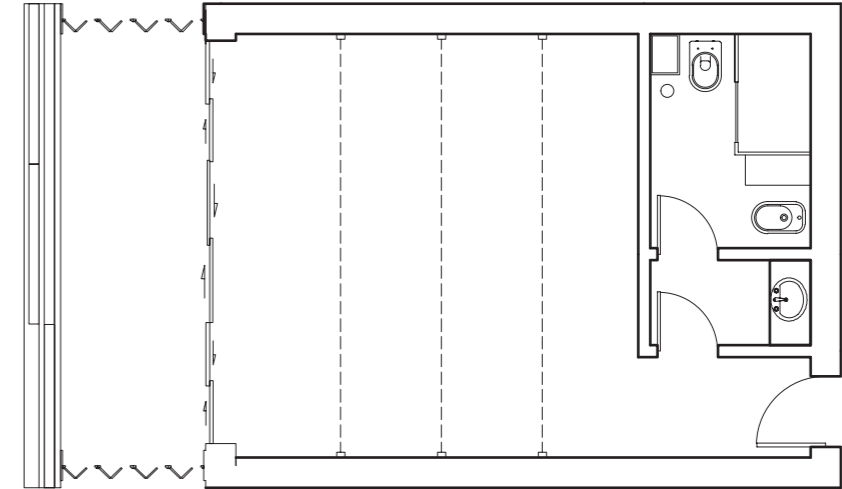




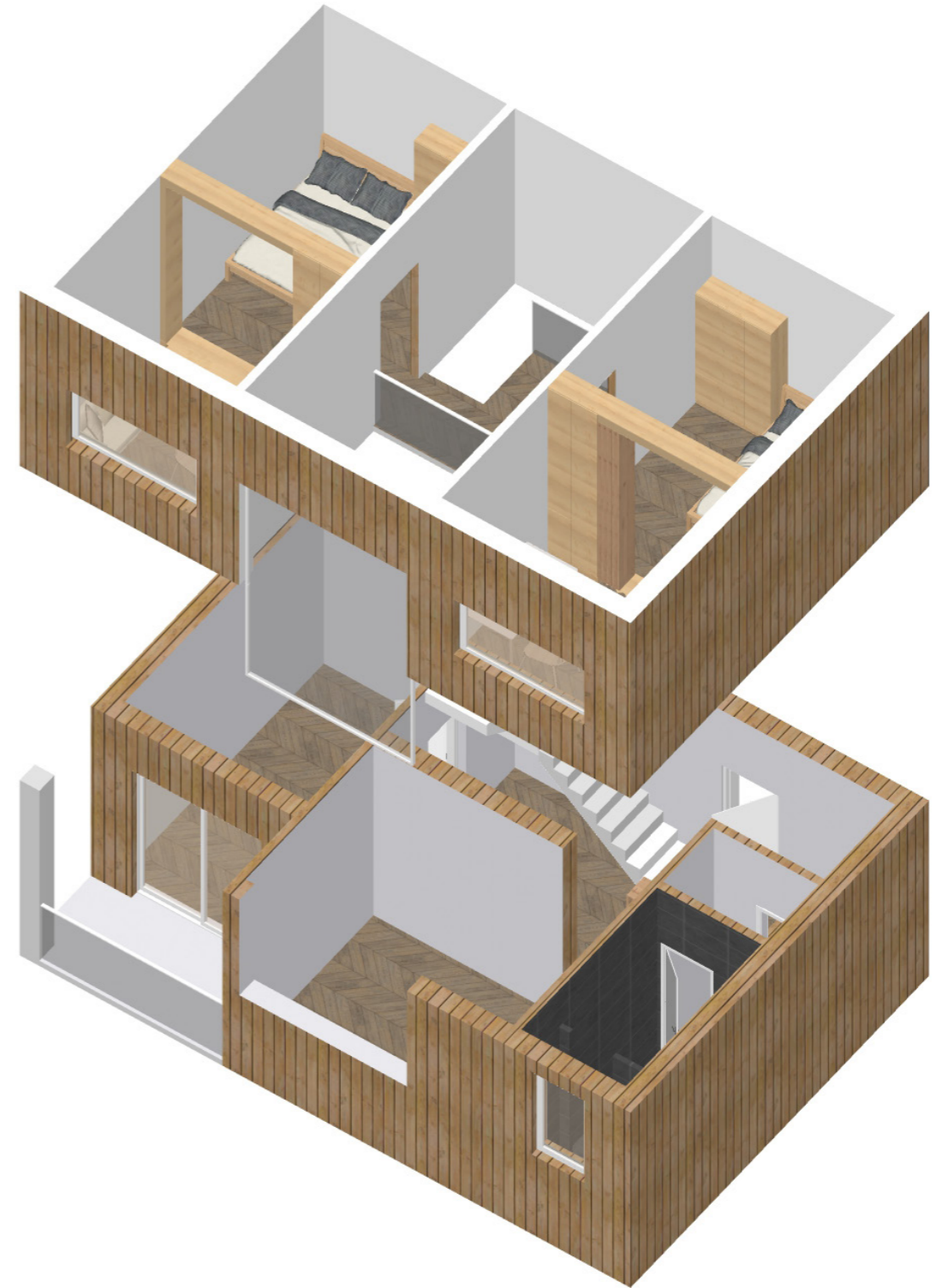
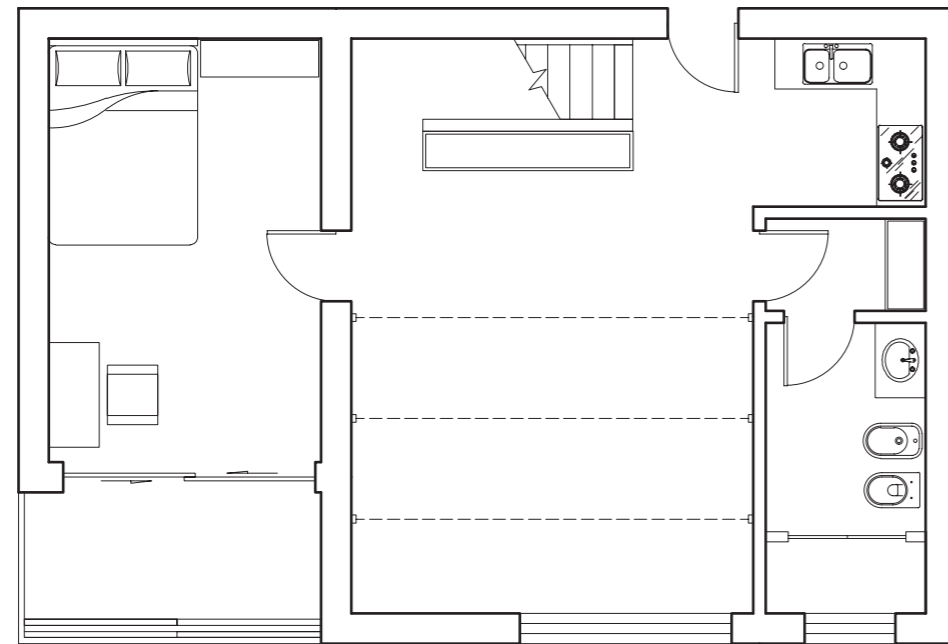
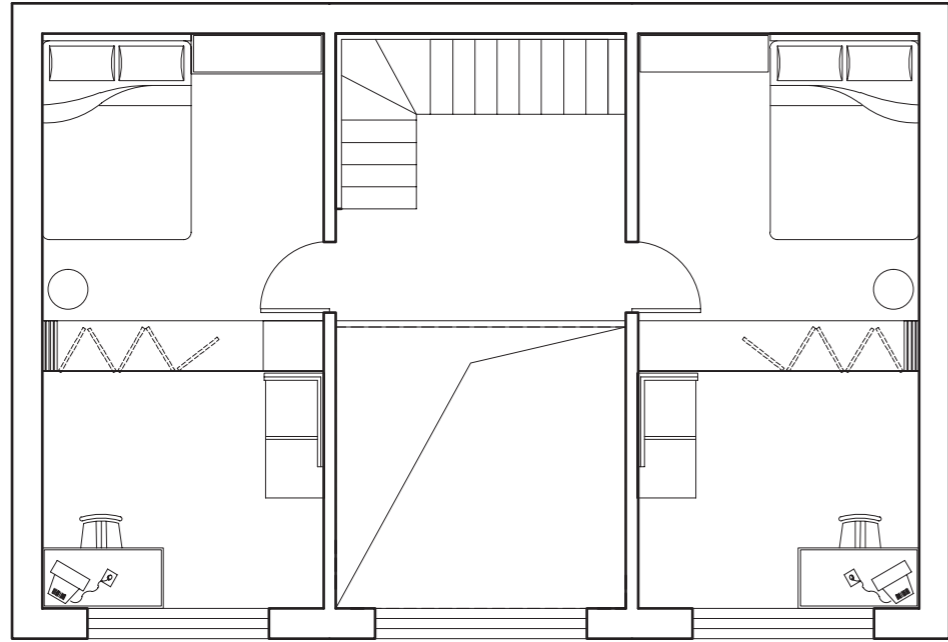
Units Typology 1



Units Typology 2

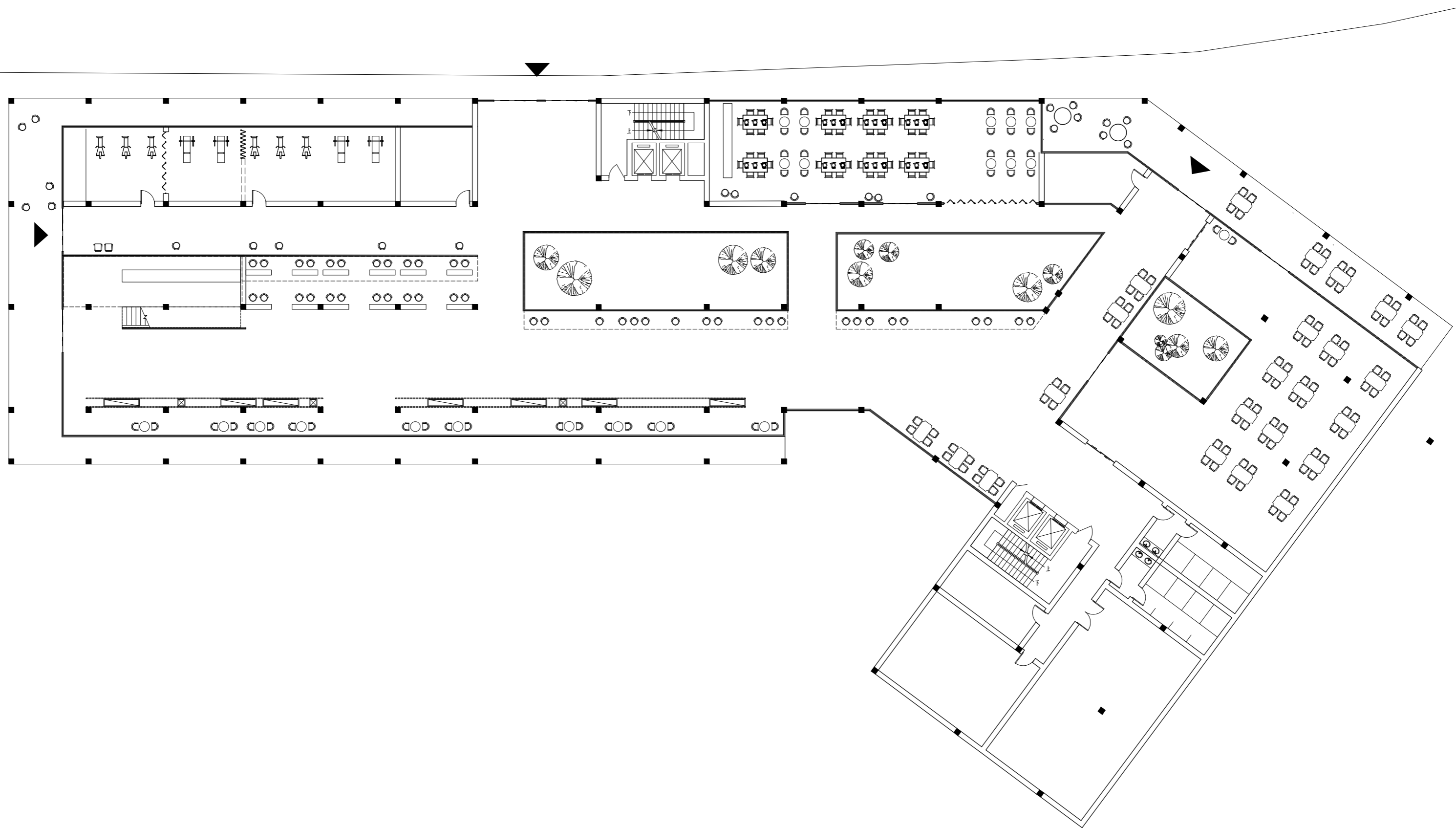


# Units Typology 3



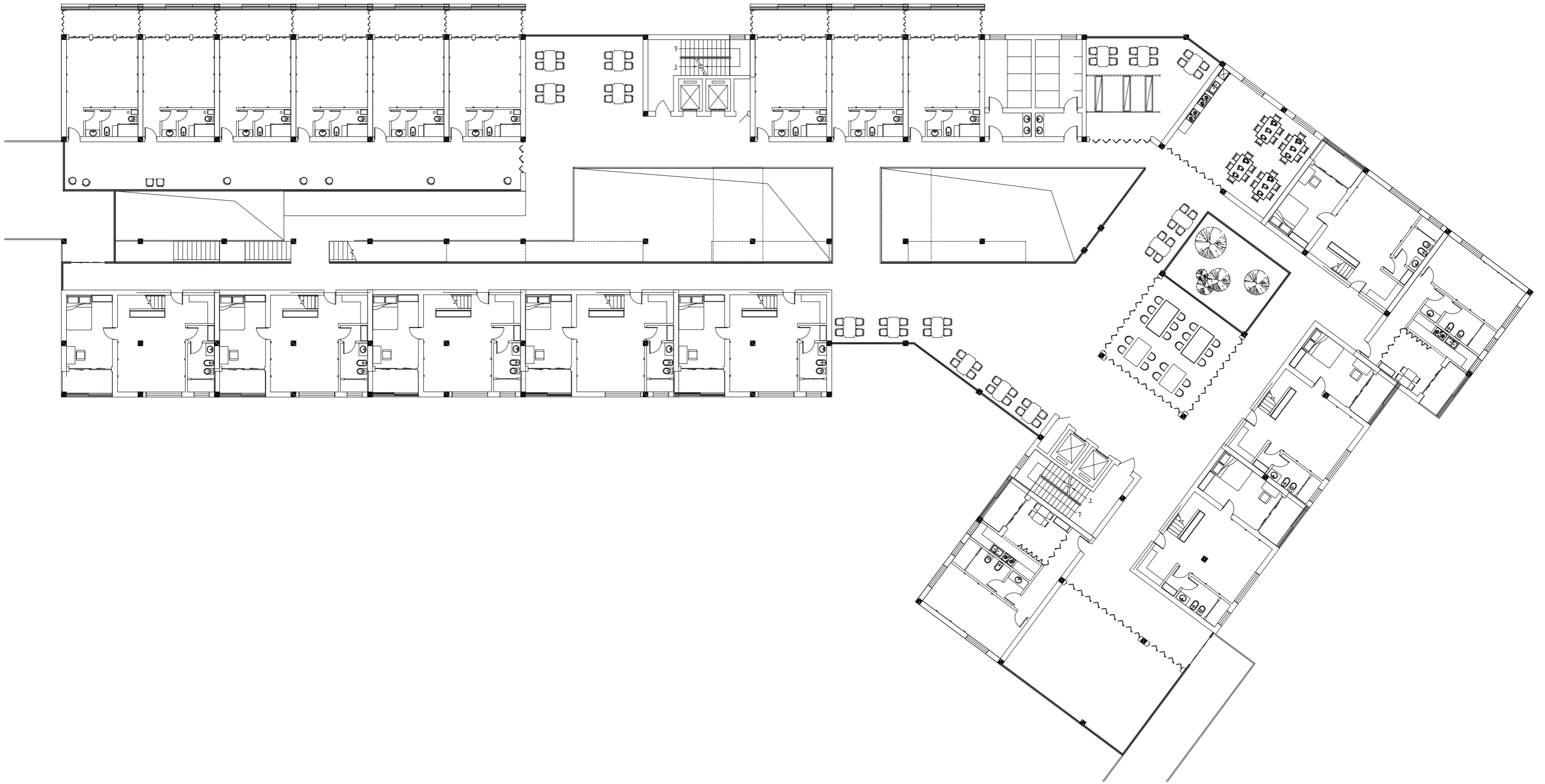


Ground Floor

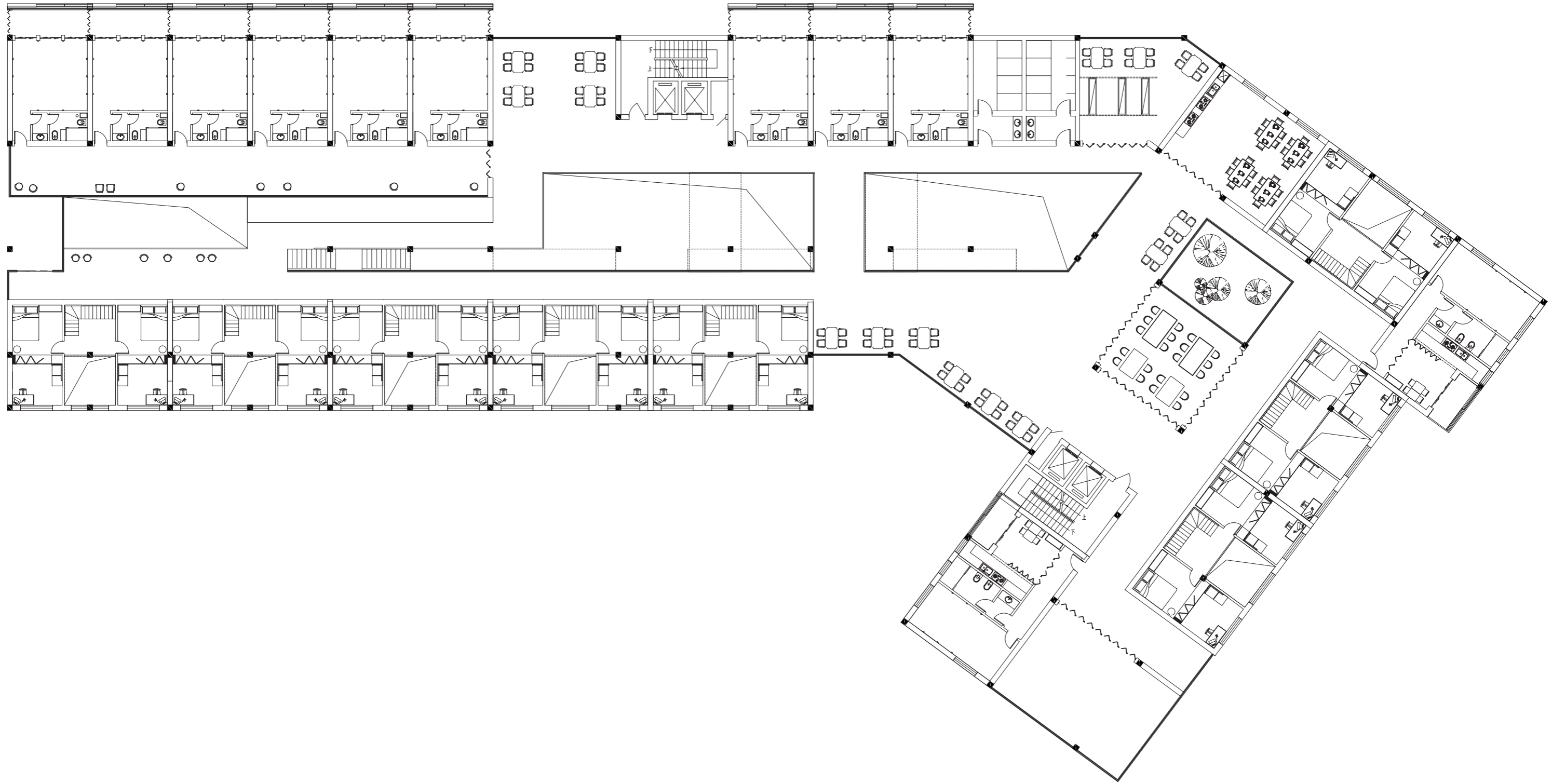




1F







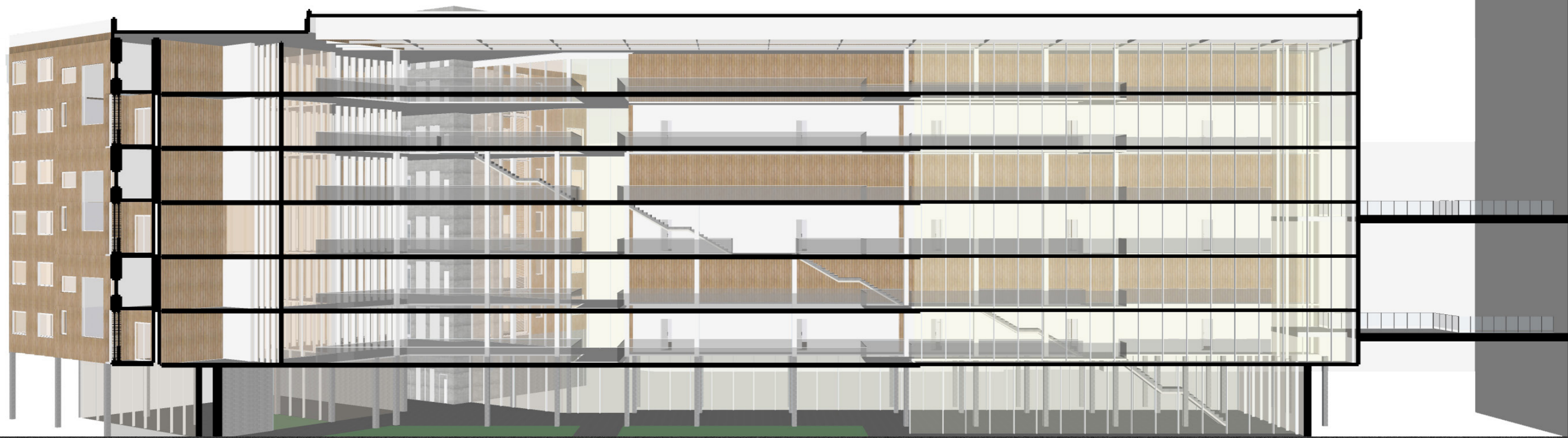
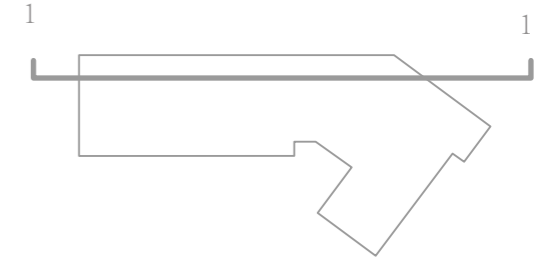


North Facade



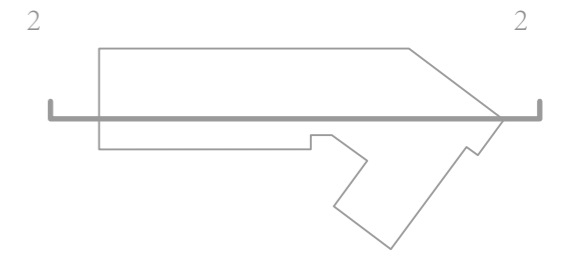


Section 1-1



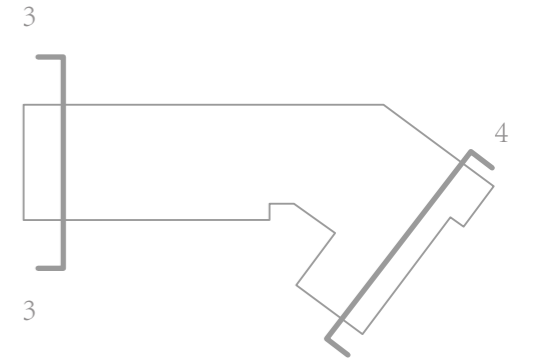


Section 2-2



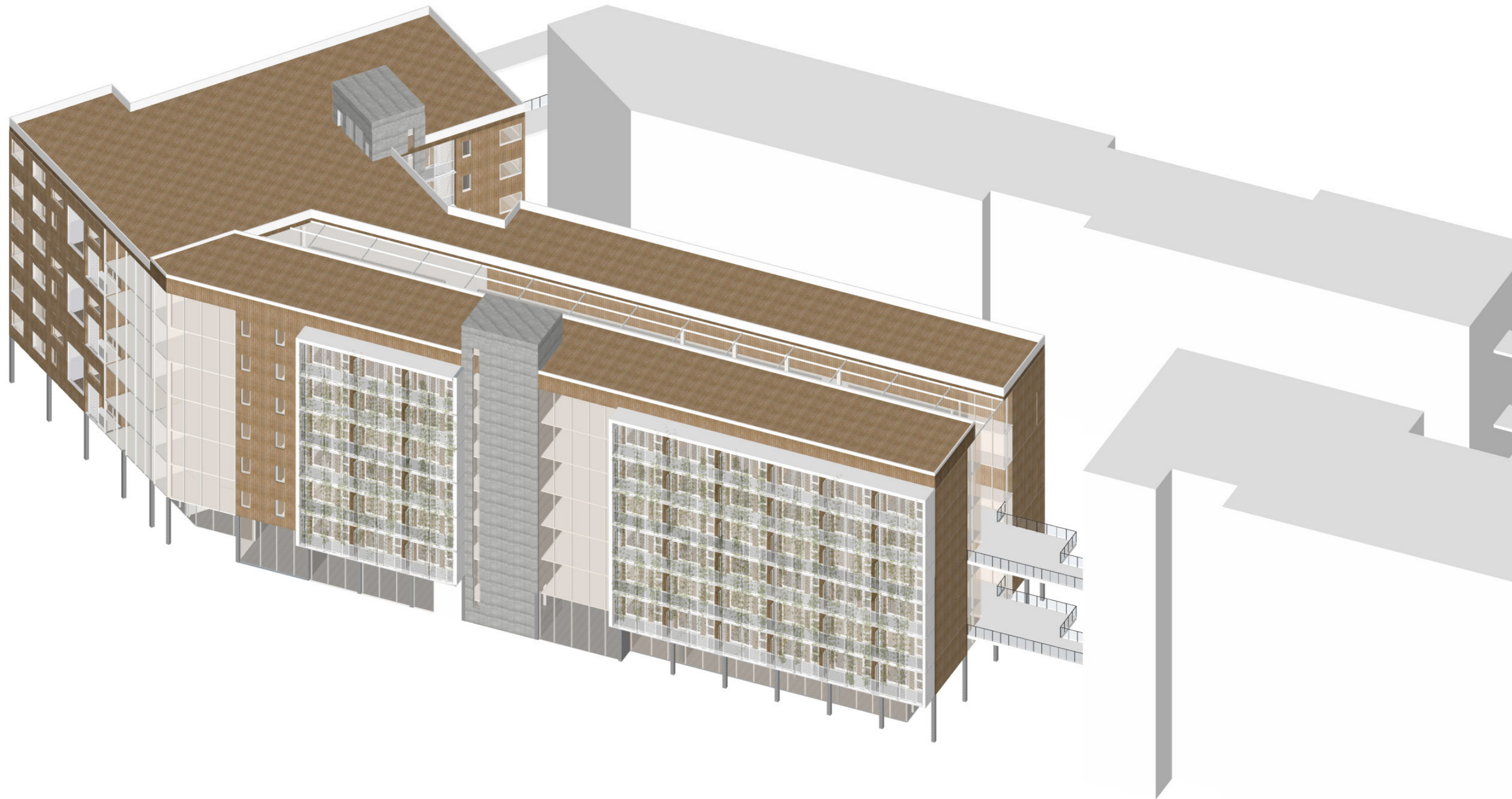


North Facade





Axonometric





Perspective



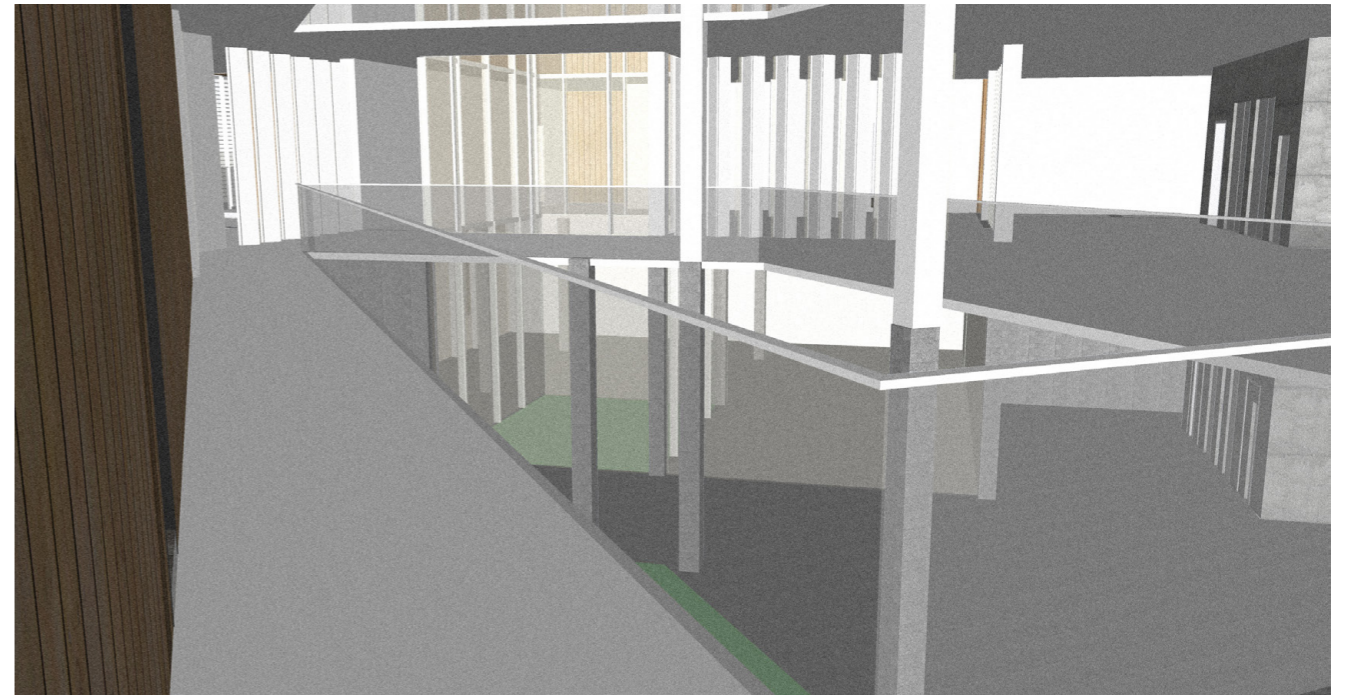
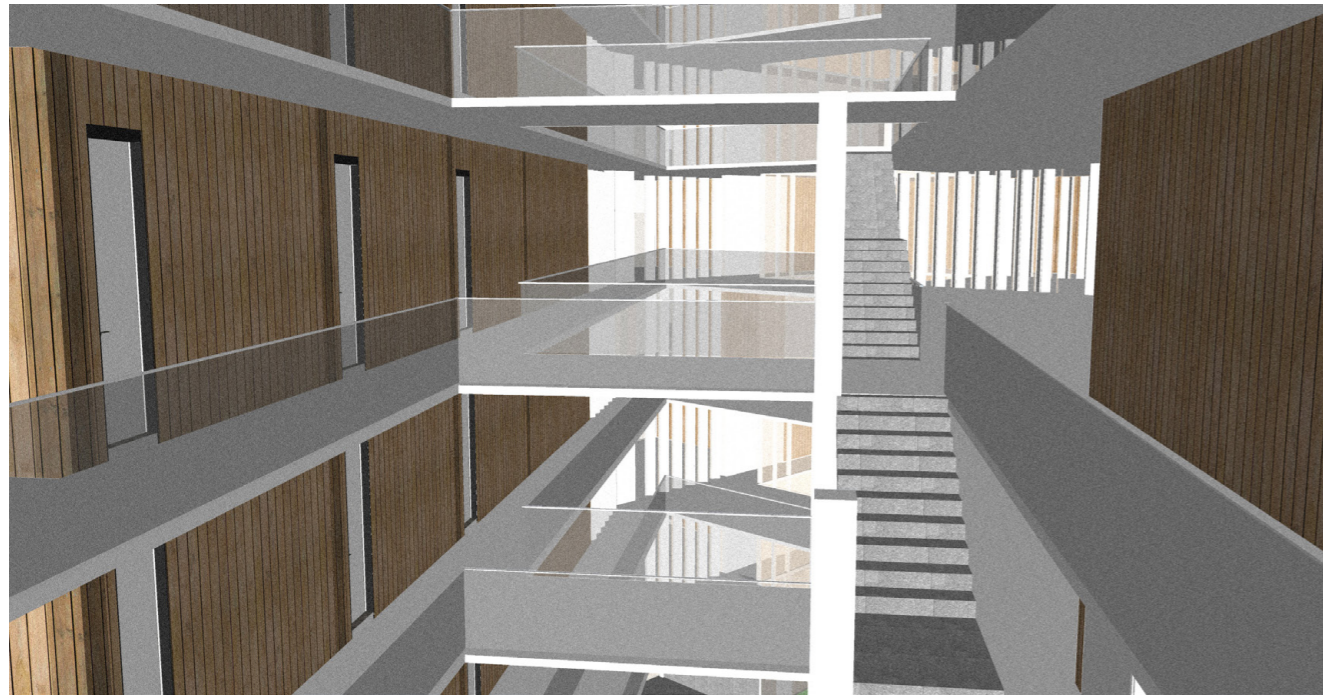


Interiors For Units





# Interiors For Common Space

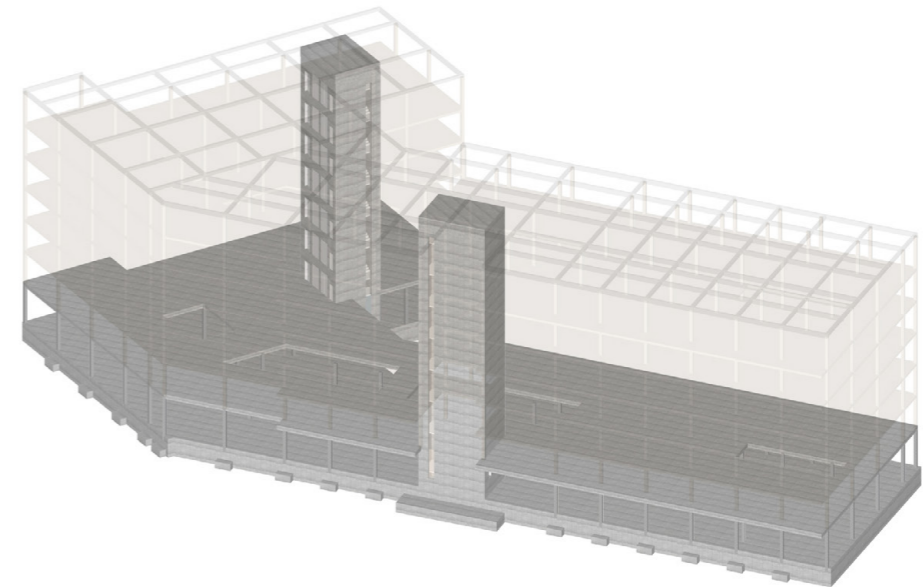
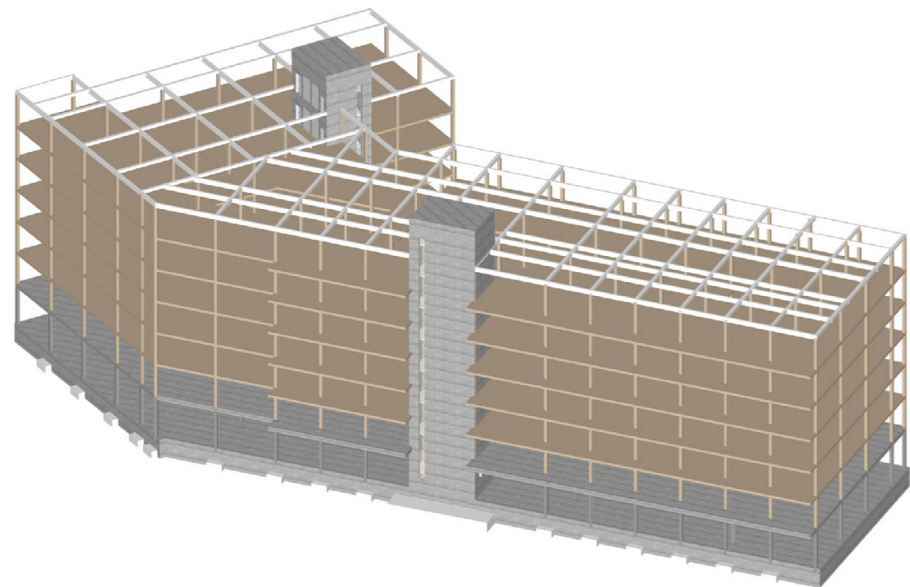
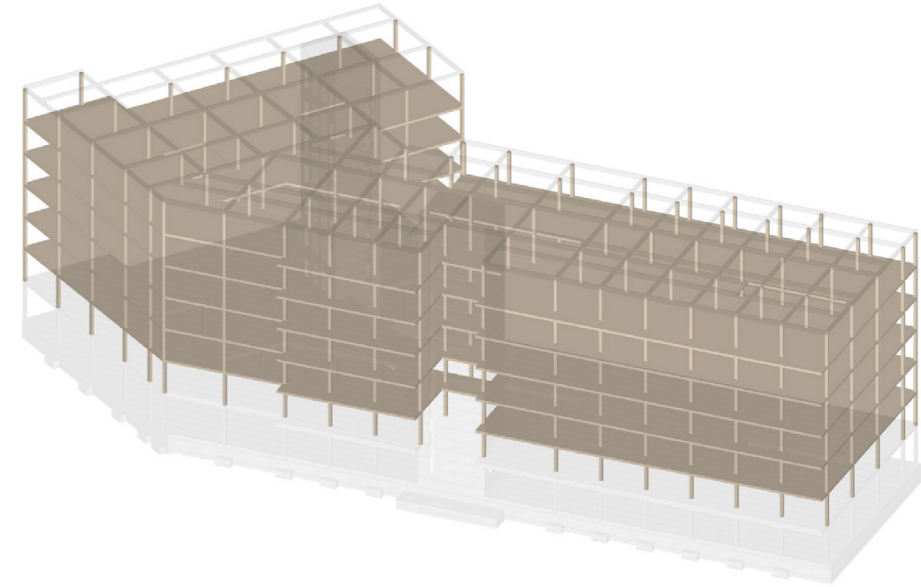
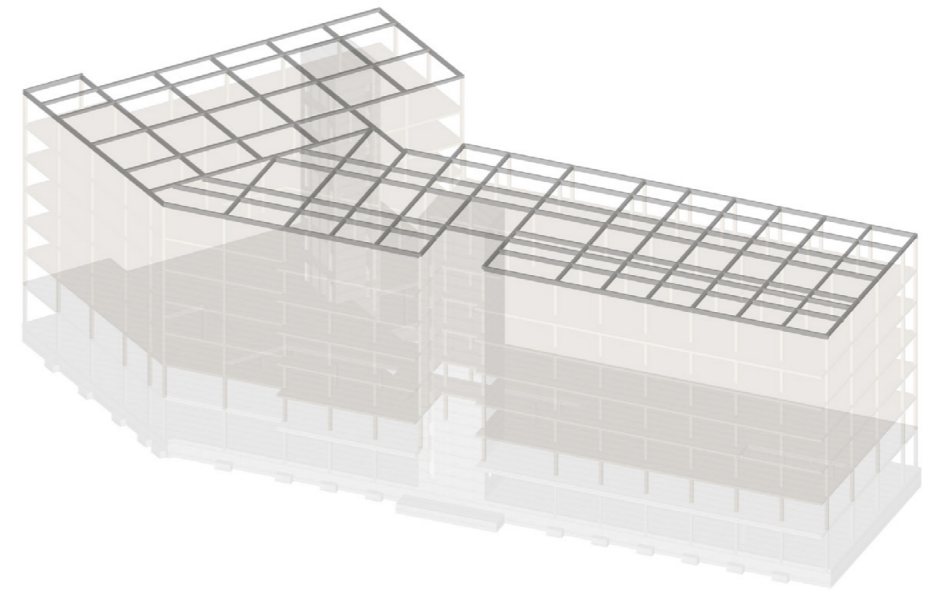




## Case Study



Structural Concept

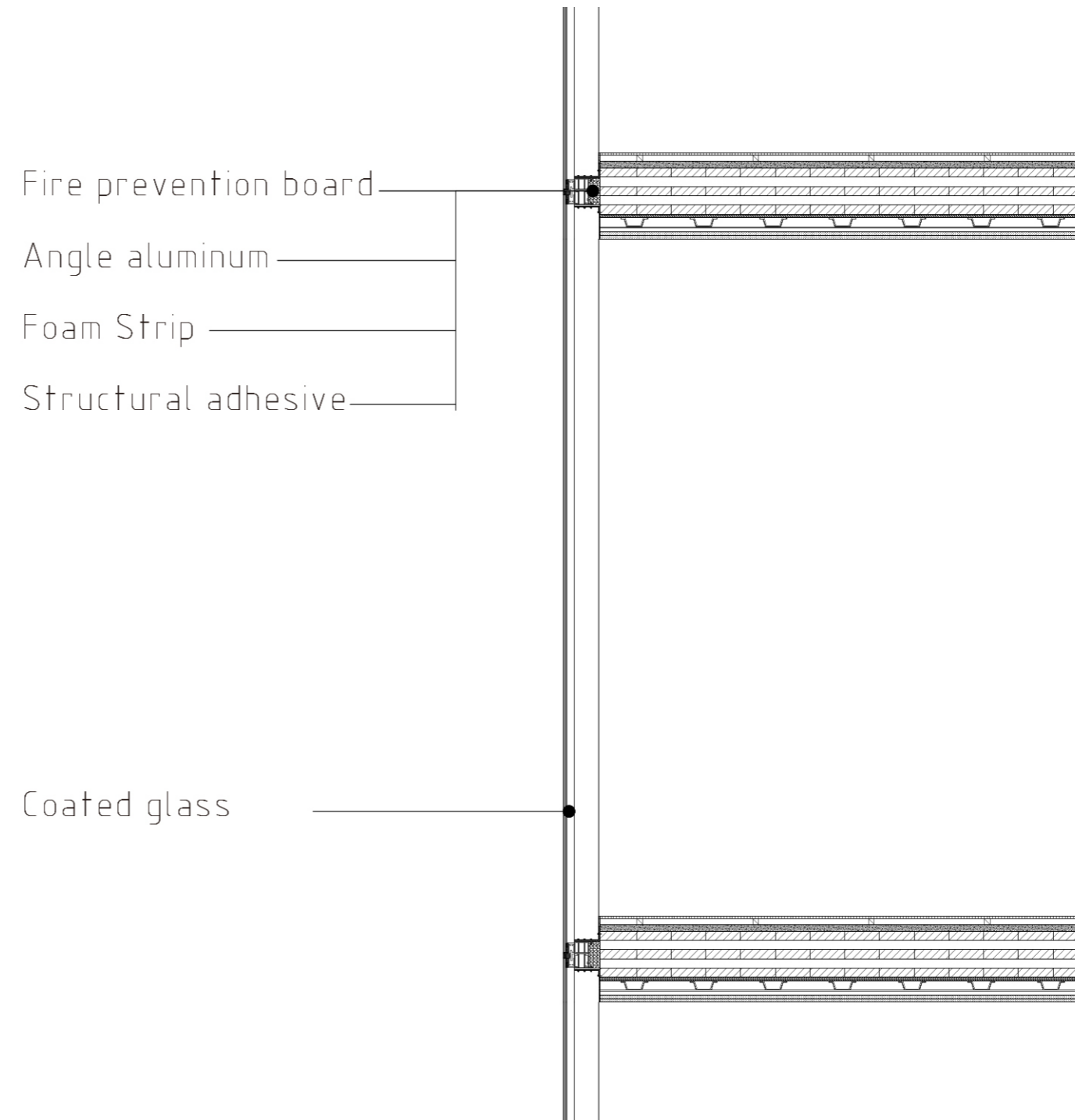




## Materials Choices

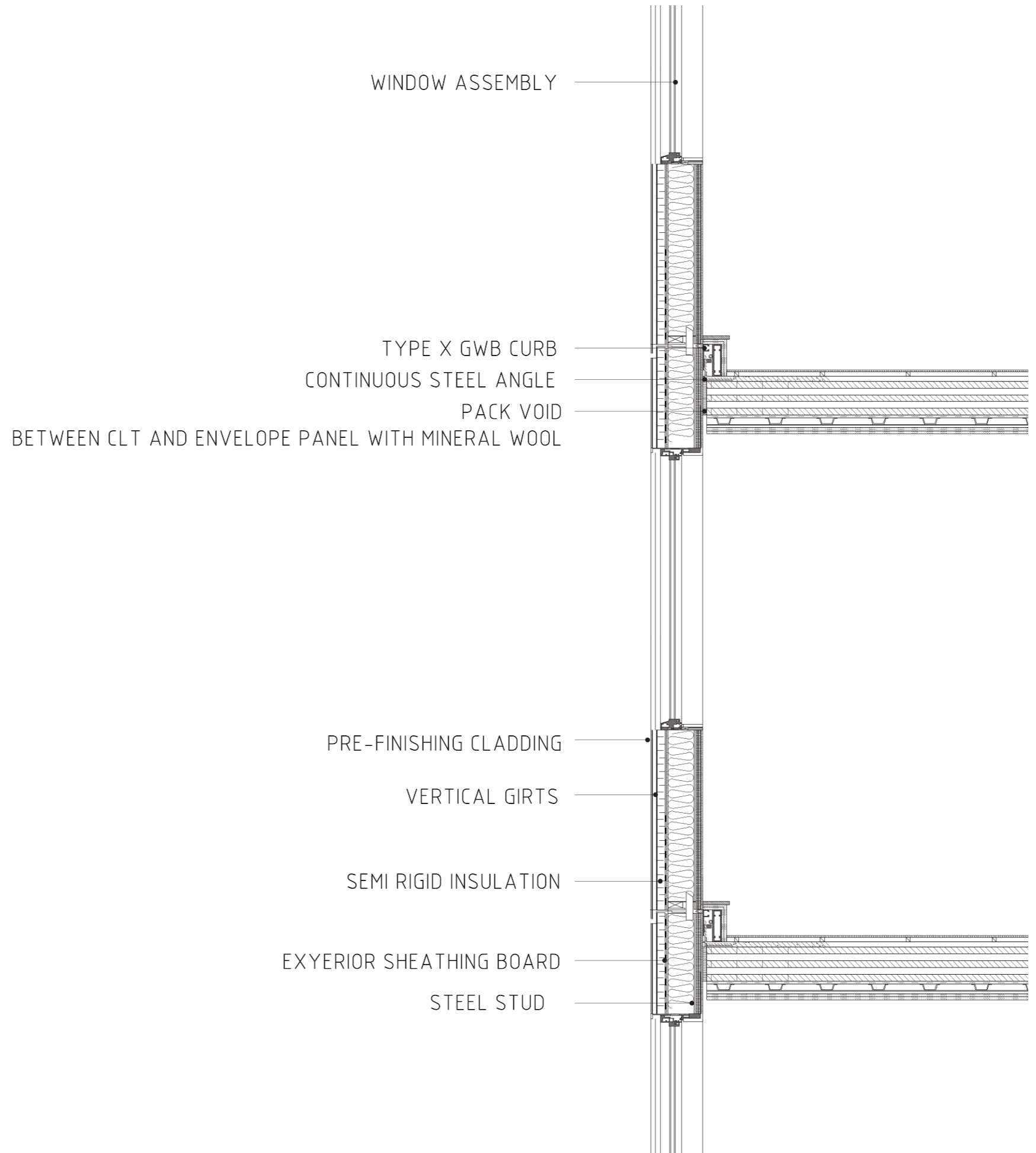


# Curtain Walla



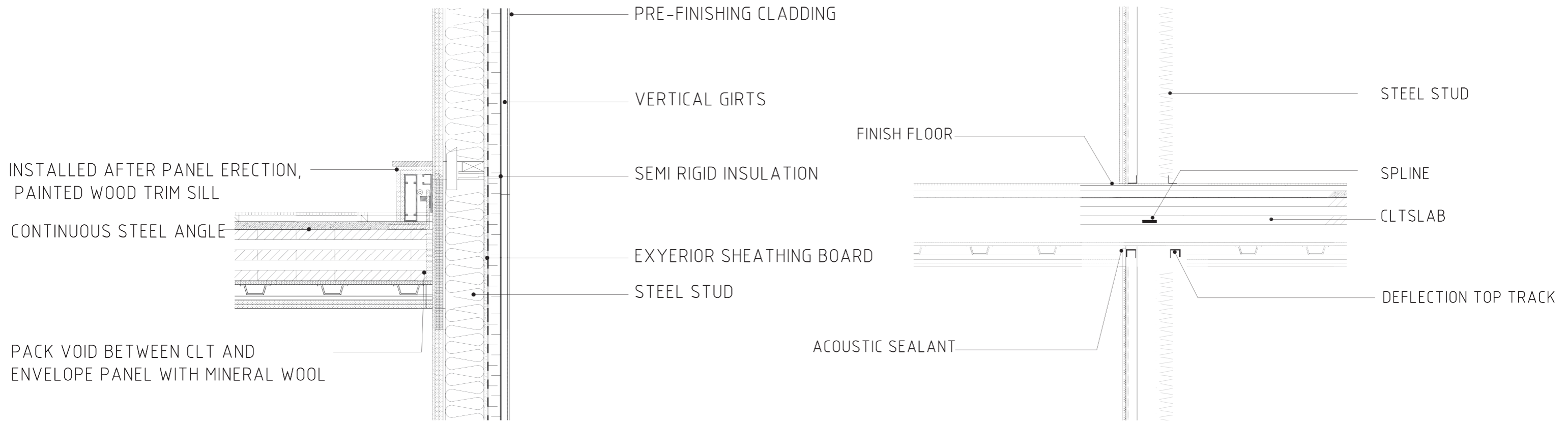


# Pre-Fabricated Envelope Panel





# Structural Connections





Balcony / Movable Facade



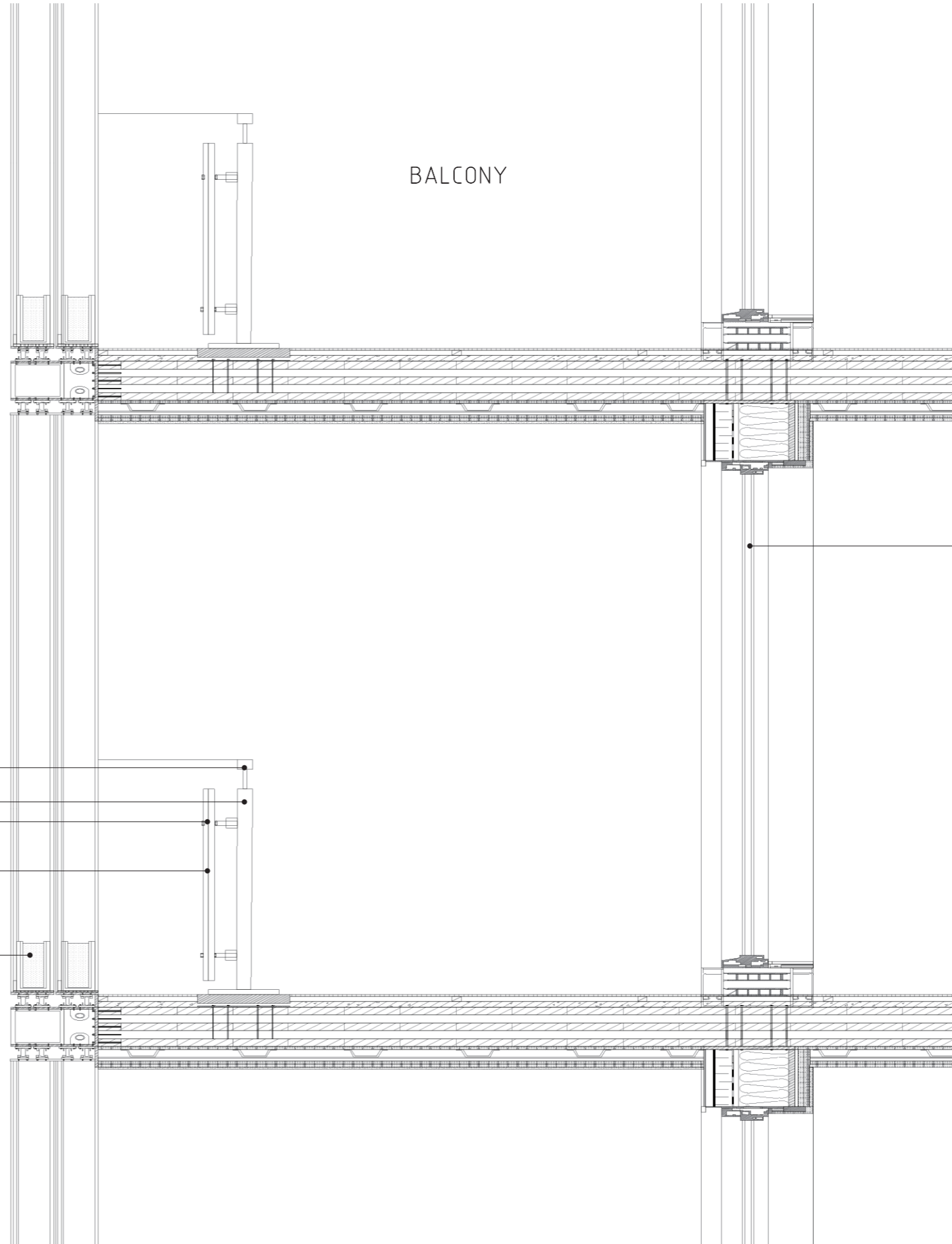
OUTDOOR

BALCONY

INDOOR

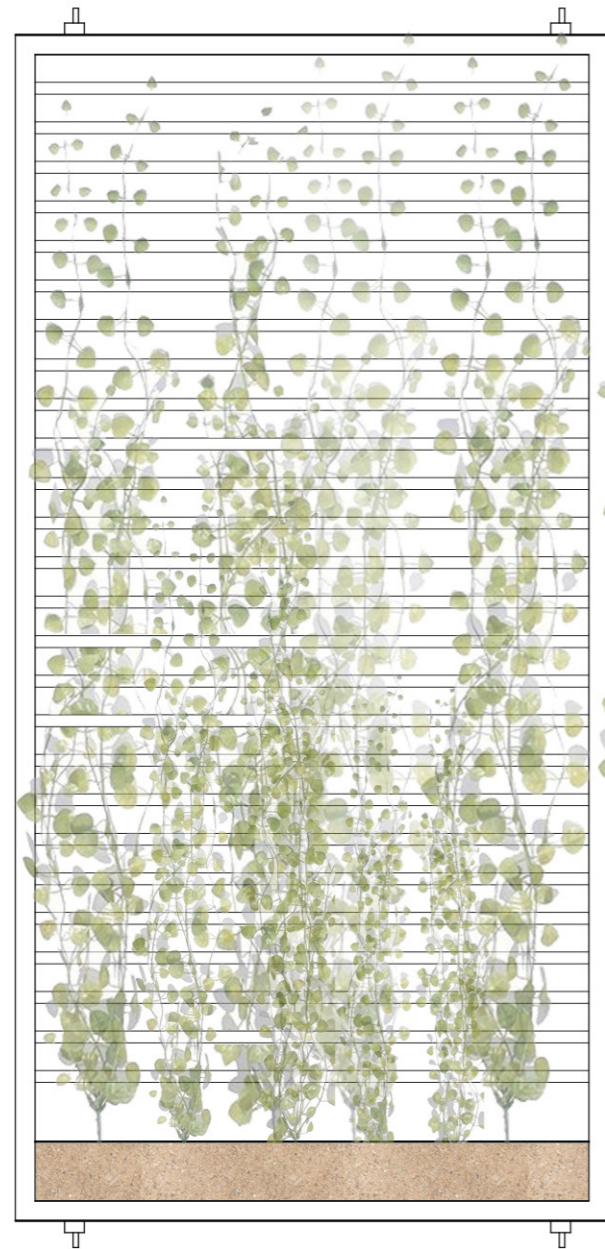
SLIDING DOOR

- STAINLESS STEEL HANDRAIL
- STAINLESS STEEL PILLAR
- STAINLESS STEEL CLAW POINT
- STALINITE
- SOIL
- GEOTEXTILE FILTER
- DRAINAGE LAYER
- WATER PROOFING





Balcony / Movable Facade



1.5m



3m





# Section Detail

