P5 |

TRANSPORT HUBS AS PUBLIC SPACE

Transforming the public space surrounding Brussels-South Railway Station

Mike van Weerdenburg - 4679040

STATIONS

Public Space

Used by a large amount of travellers each day

STATIONS

Public Space

Works great

STATIONS

Public Space

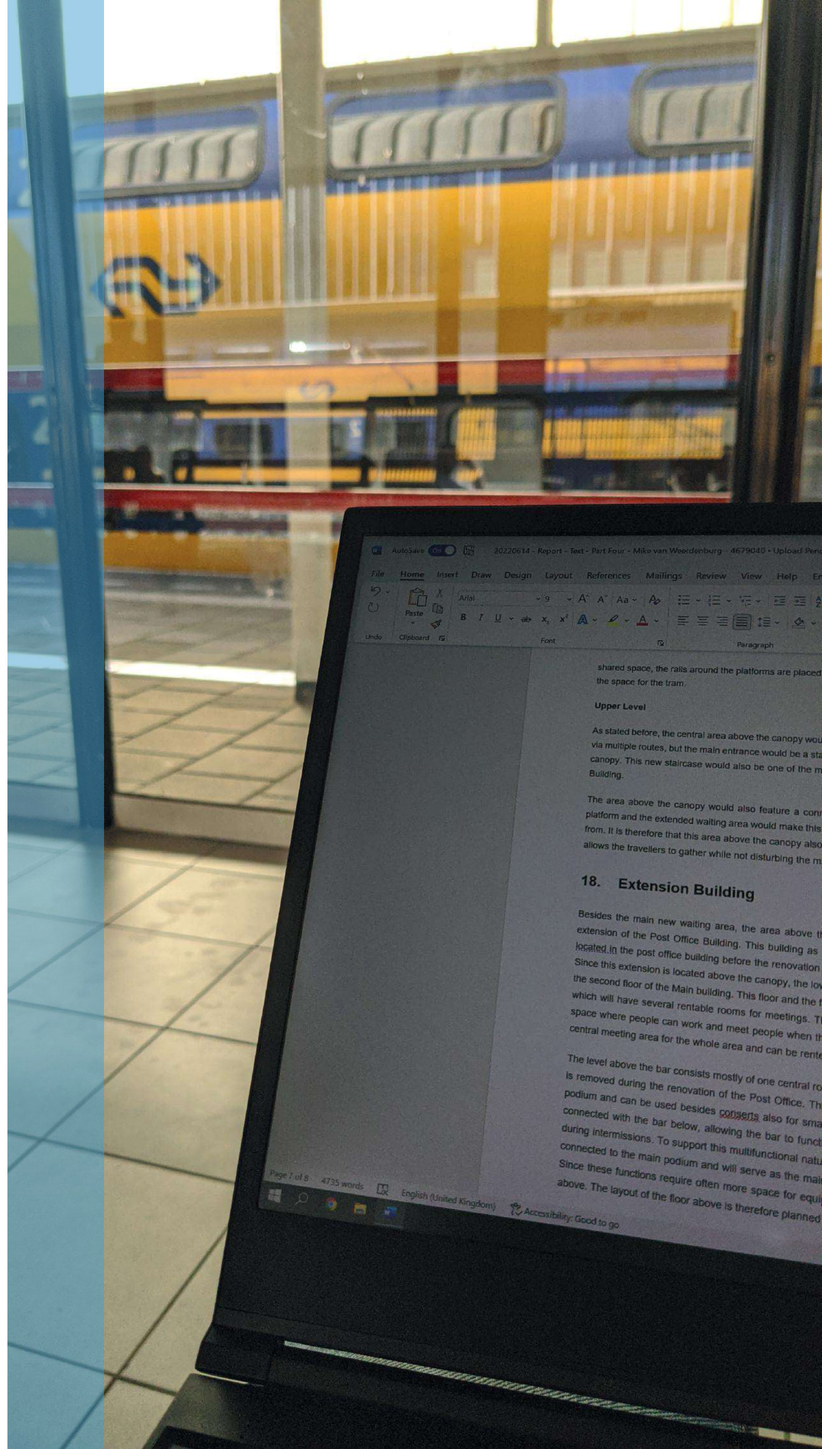
Works great, until you need it

STATIONS

Public Space

Works great, until you need it

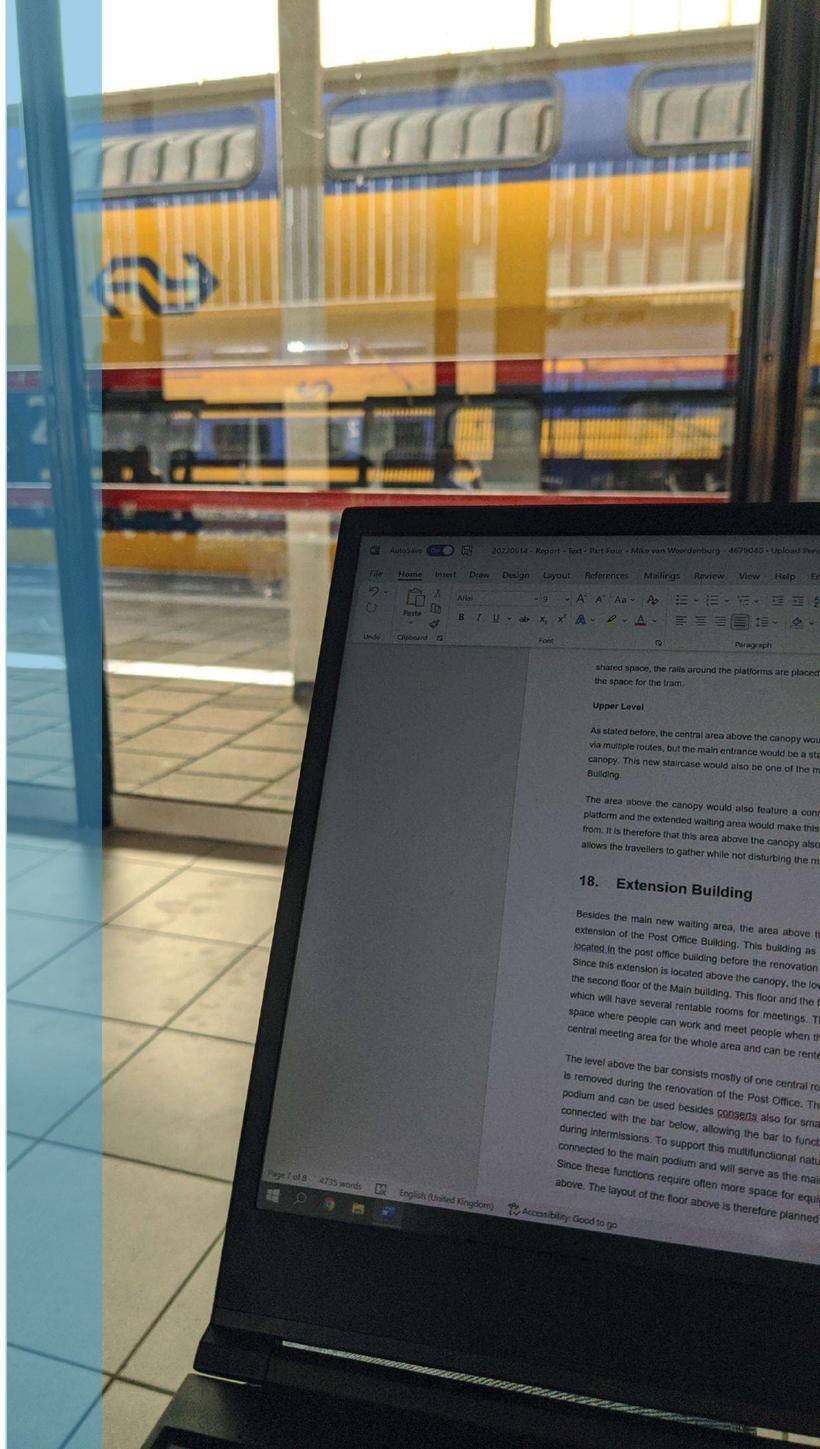
The public area often falls short when you are forced to spend time there, while these are the moments that the space needs to deliver.



RESEARCH

Main Goal:

To understand what is missing in the current stations and transport hubs and what can be done to improve it



RESEARCH

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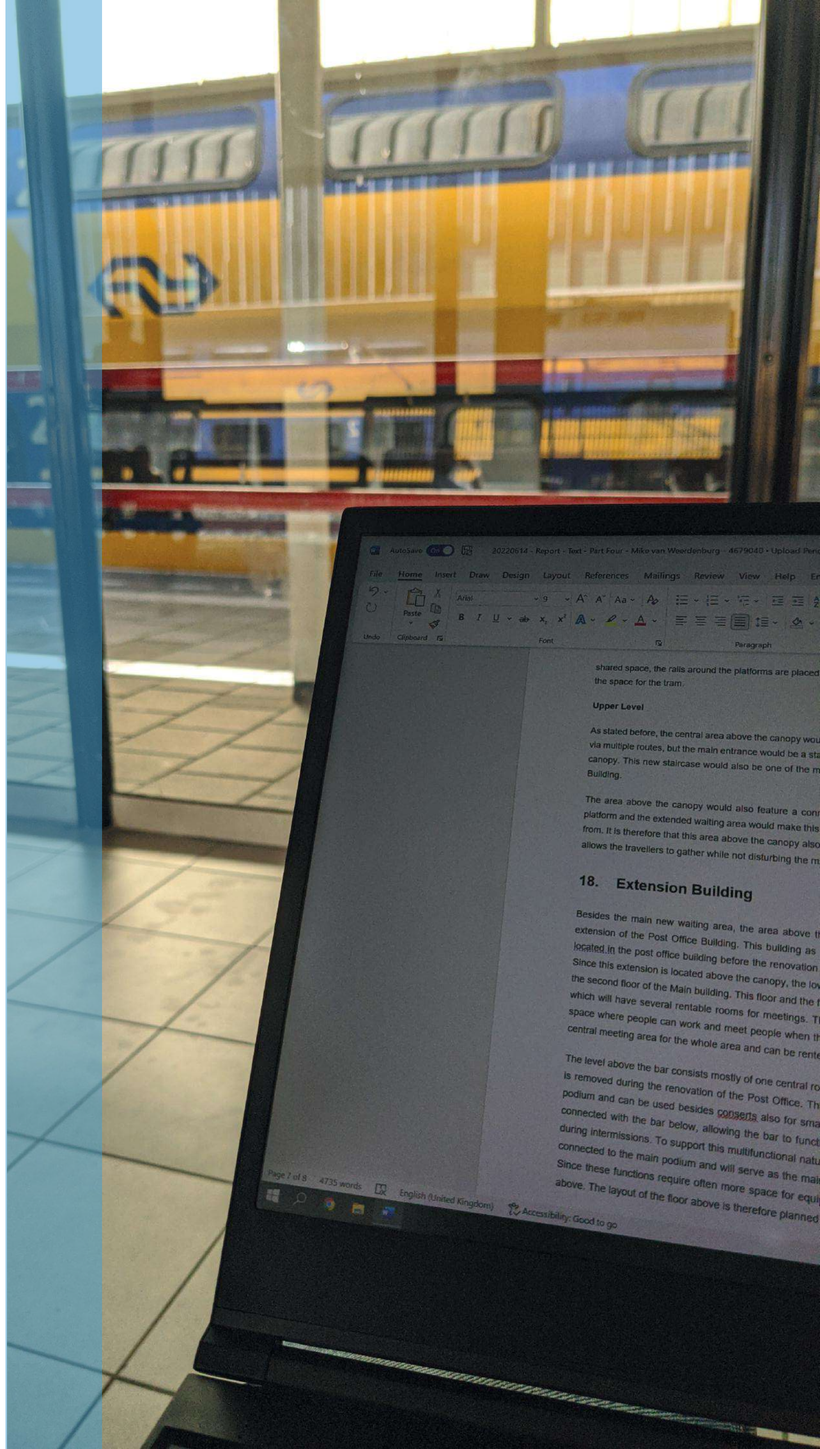
Main Research Question:

“How can architecture contribute to the spatial layout and experience of public space in European intermodal transportation hubs of the future?



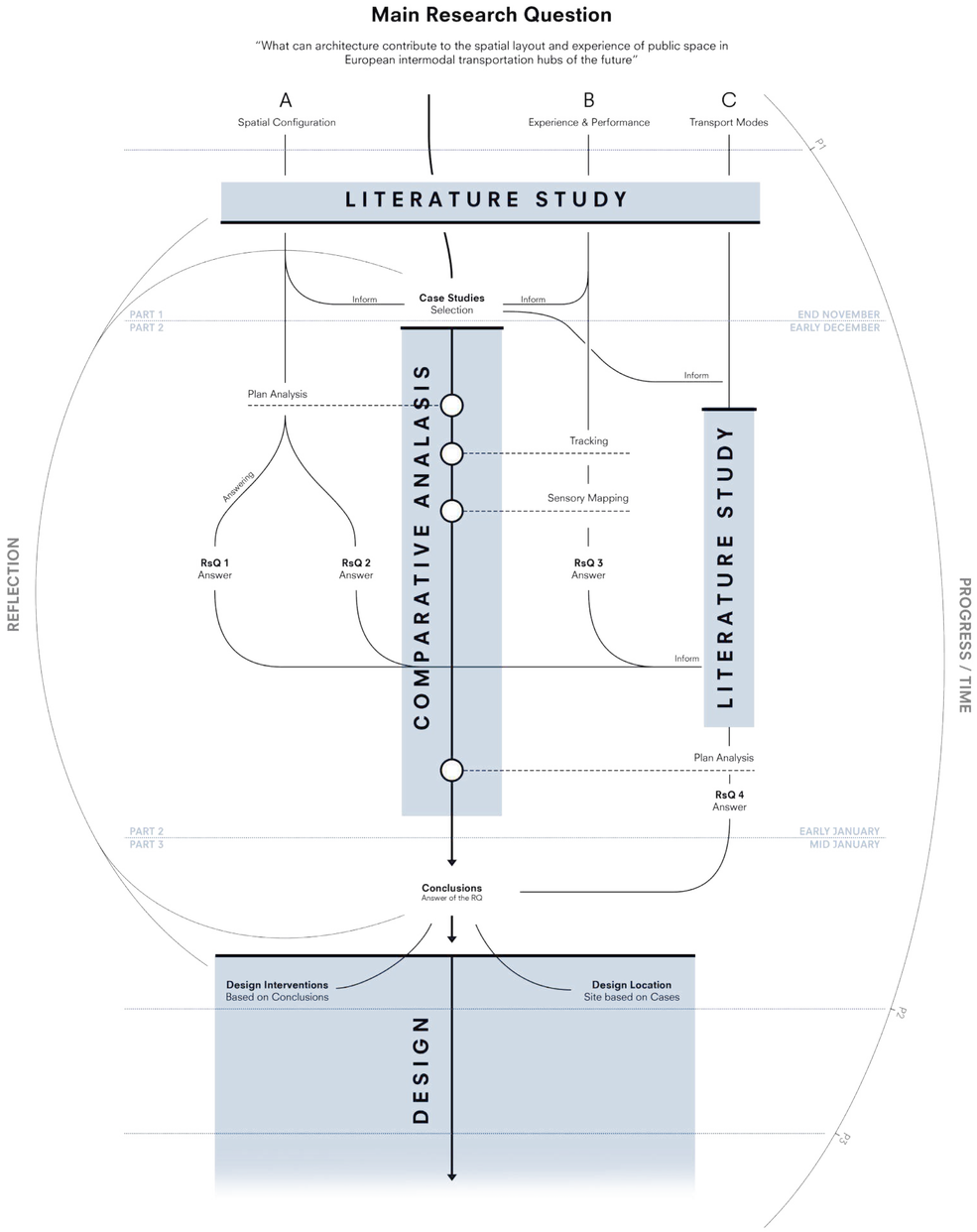
METHODS

Three main methods:

Literature Study

Case Study Analysis

Redesign



RESEARCH

LITERATURE

Two Main Problems:

LITERATURE

Two Main Problems:

Integration

Diversity

LITERATURE

Two Main Problems:

Integration

Diversity

SELECTION

Four Cases

SELECTION

Four Cases

Hamburg Hauptbahnhof

SELECTION

Four Cases

Hamburg Hauptbahnhof

Berlin Ostkreuz

SELECTION

Four Cases

Hamburg Hauptbahnhof

Berlin Ostkreuz

Gare de Paris-Austerlitz

SELECTION

Four Cases

Hamburg Hauptbahnhof

Berlin Ostkreuz

Gare de Paris-Austerlitz

Brussel-Zuid / Bruxelles-Midi

ANALYSIS

Main Concept:

Concept by Bertolini

ANALYSIS

Main Concept:

Concept by Bertolini

NODE VS. PLACE

ANALYSIS

Main Concept:

NODE


Galerie Horta
Hortagalerij
DUNKIN'
COFFEE & DONUTS
VACCIN
METRO
Taxi
Place Horta
Horta-plein

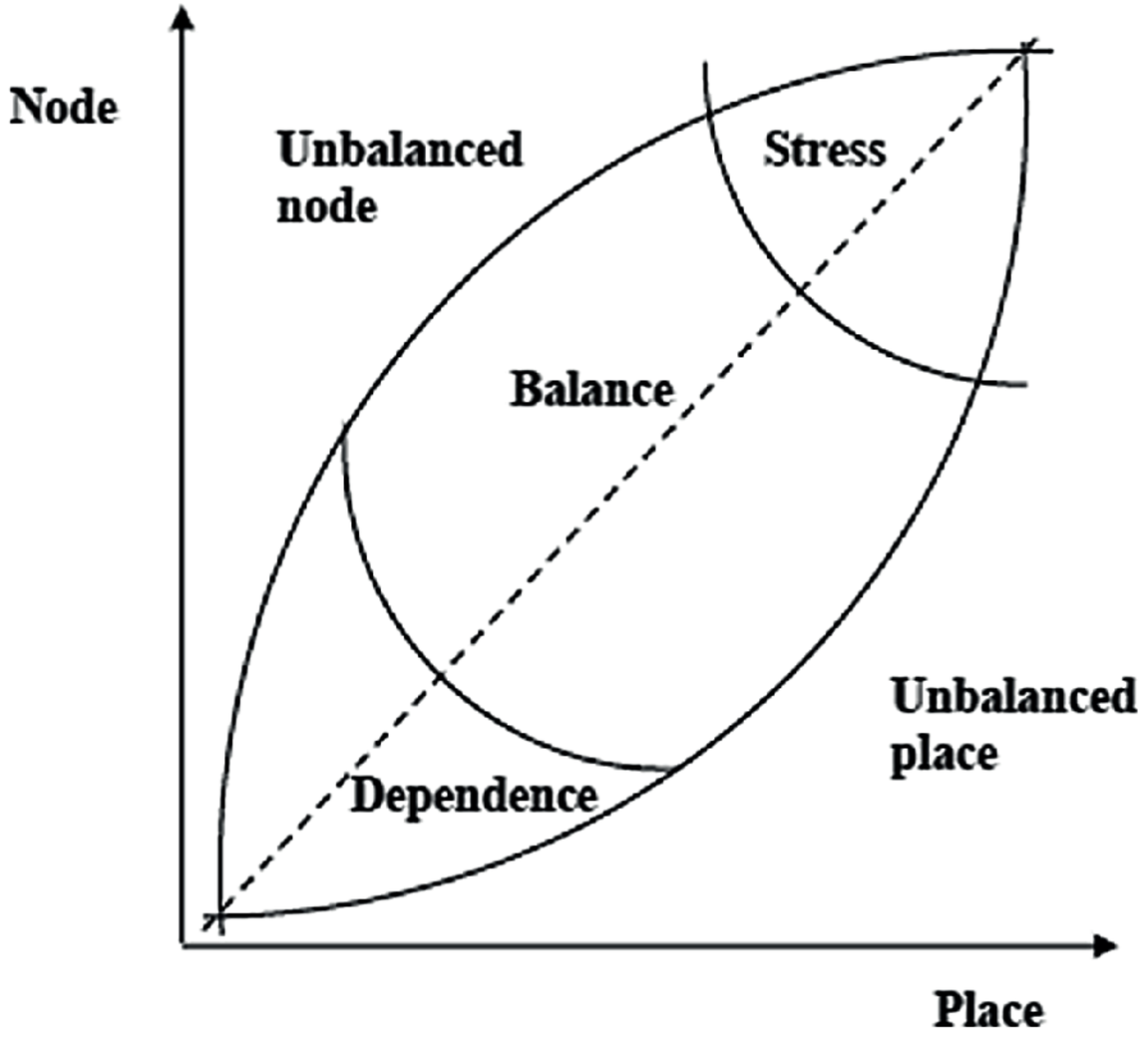
PLACE

ANALYSIS

Main Concept:

Node vs. Place

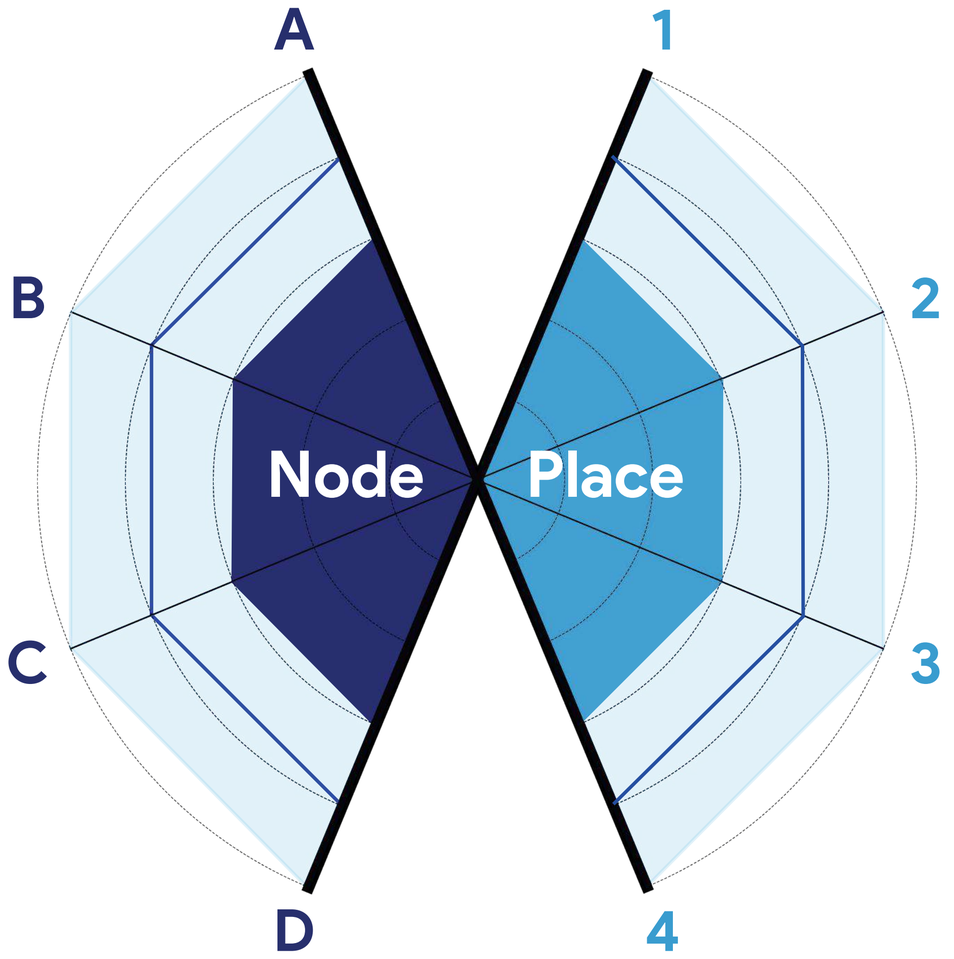
These two aspects should be in balance with each other.
Stations can be placed in the model created by Bertolini.



ANALYSIS

Redeveloped Model

A new model was created to more accurately study these aspects with the public space central



ANALYSIS

Redeveloped Model

A new model was created to more accurately study these aspects with the public space central

Node:

A | Slow traffic

B | Transport network

C | Station reach

D | Transport facilities

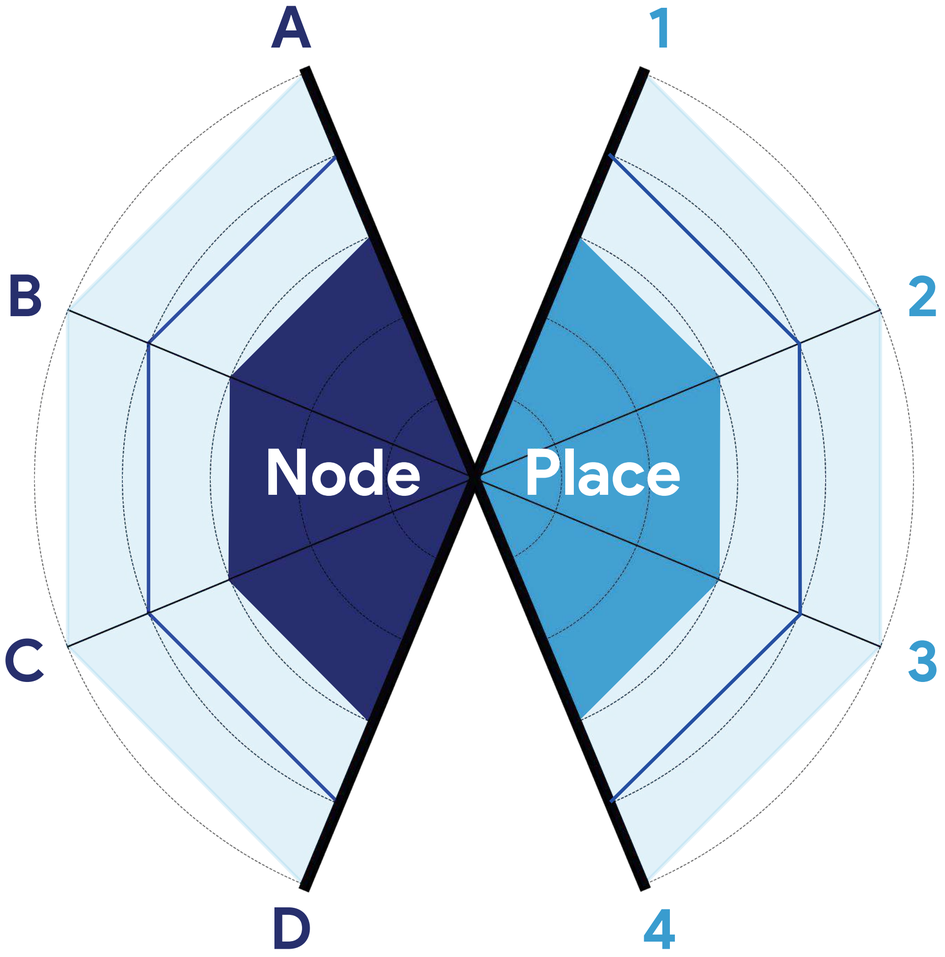
Place:

1 | Centrality

2 | Spatial performance

3 | Station functions

4 | Amenities

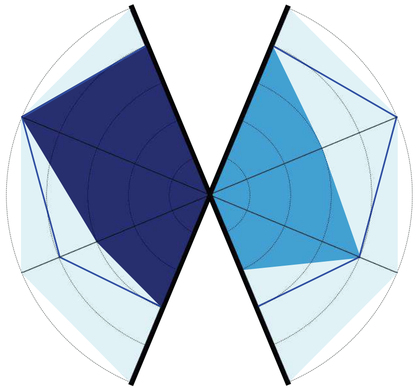


RESULTS

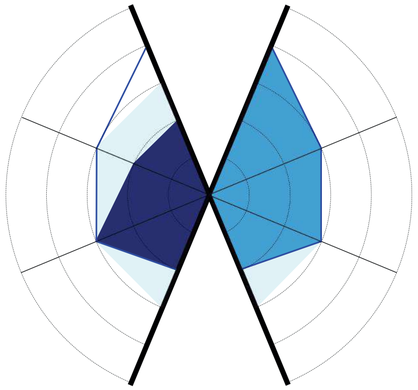
Models:

Using the model to determine the quality of the Node and
Place of the case studies:

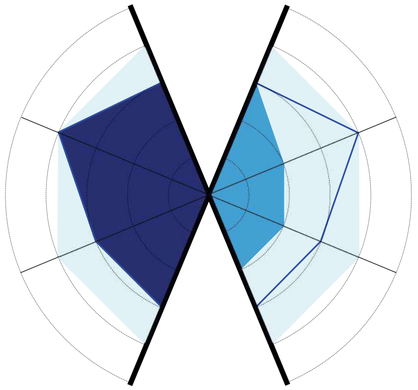
Hamburg Hbf.



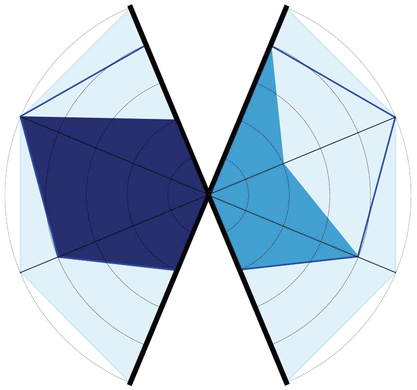
Ostkreuz



Gare d'Austerlitz



Brussels-South



RESULTS

Main Lessons:

The Public area is often nothing more than an area.

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The connections between different modes are often the places that lack the most quality, but they should be prioritised.

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Main Lessons:

The Public area is often nothing more than an area.

The connections between different modes are often the places that lack the most quality, but they should be prioritised.

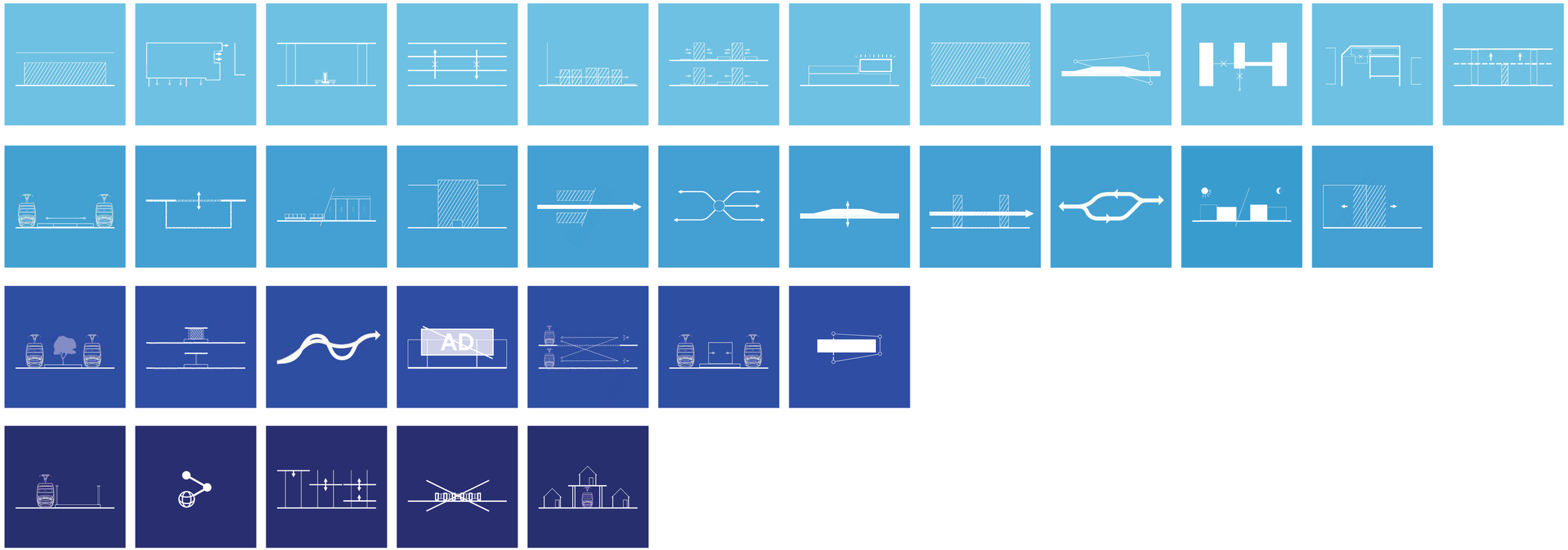
Public Space is more than the main public area.

Transport hubs should be more than a transport hub and shopping centre.

RESULTS

Design Aspects

These design aspects have been established to help guide the redesign in the right direction



BRUSSELS-SOUTH RAILWAY STATION

LOCATION

Brussel / Bruxelles / Brussels

Three main stations, established after the construction of the North-South connection

THE STATION

The Building

Multiple reconstructions

THE STATION

The Building

THE STATION

The Post Office

The current South-east side of the station. This building has been abandoned for some time

P5 | Brussels-South

THE STATION

The International Terminal

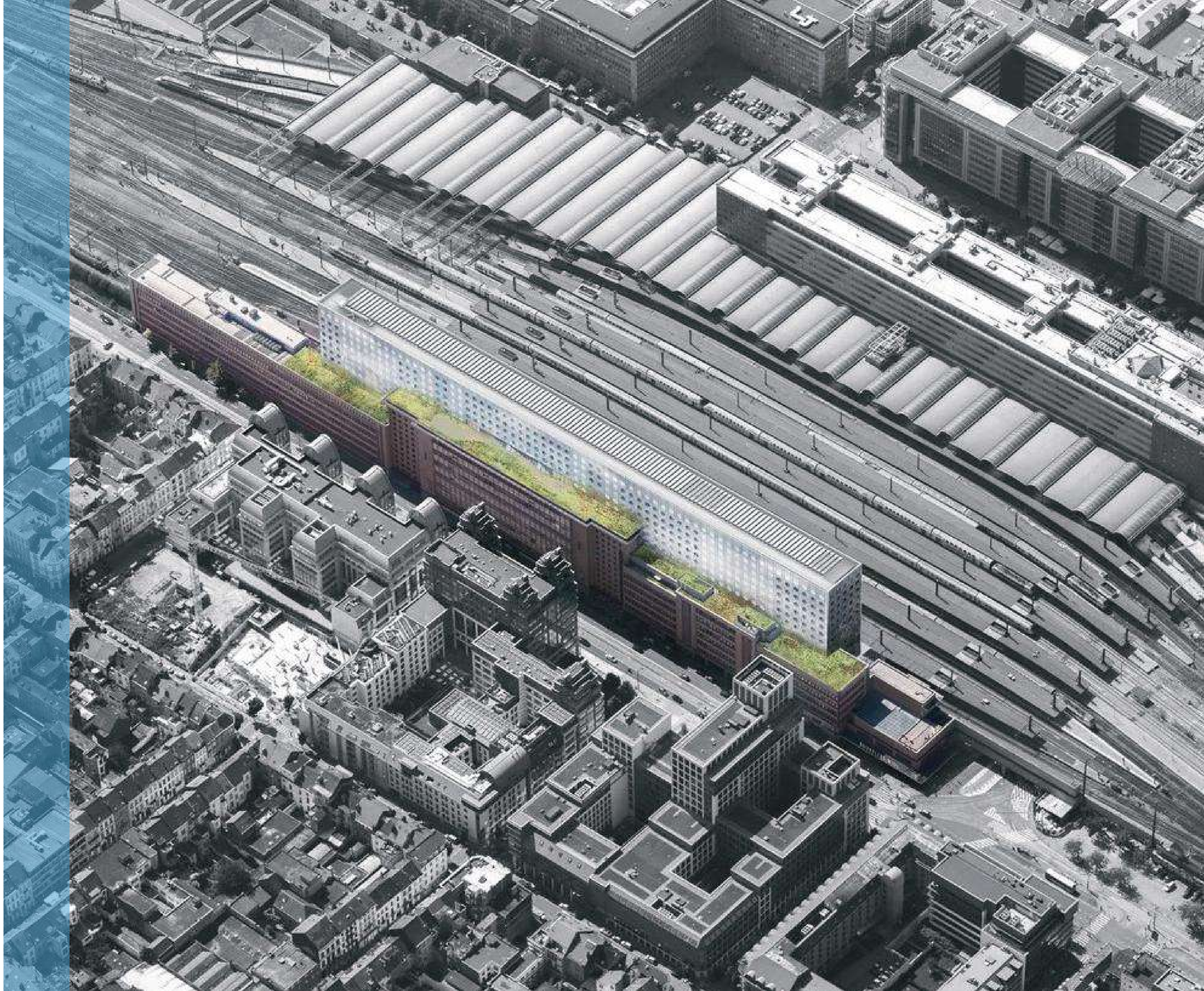
The current North-west side of the station, dedicated to the international terminal and border patrols.

P5 | Brussels-South

THE STATION

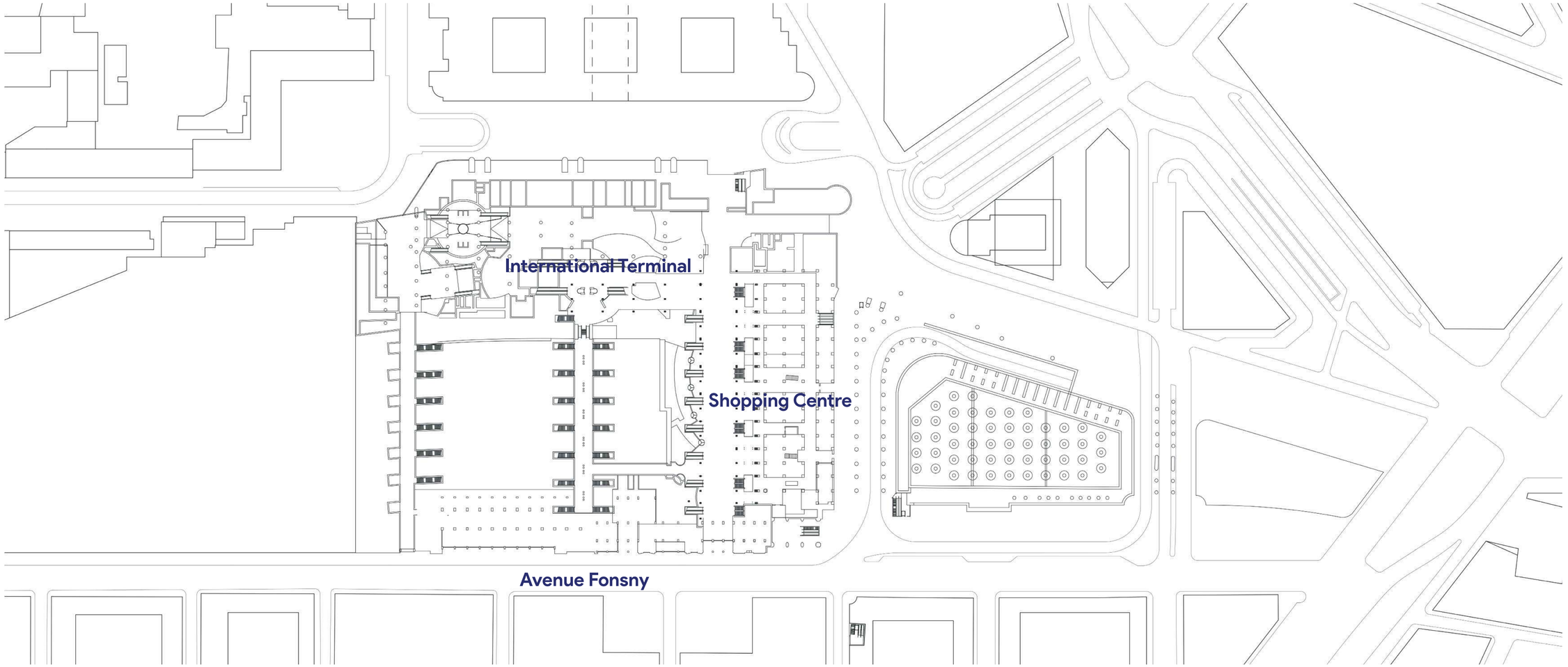
The new office

A new expansion and renovation of the Post-Office building by OMA will house the new offices of NMBS / SCNB.



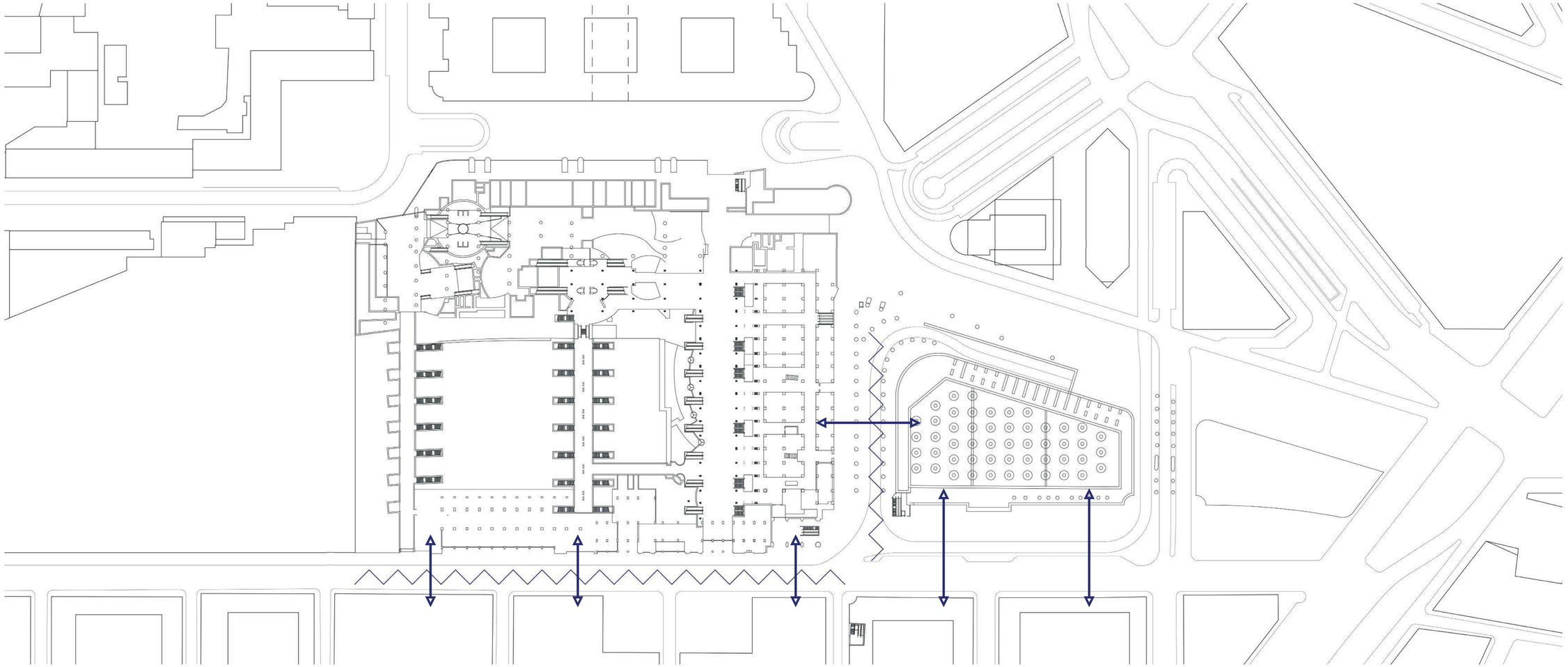
THE CURRENT STATION

Layout



THE CURRENT STATION

Plan of Attack



THE CURRENT STATION

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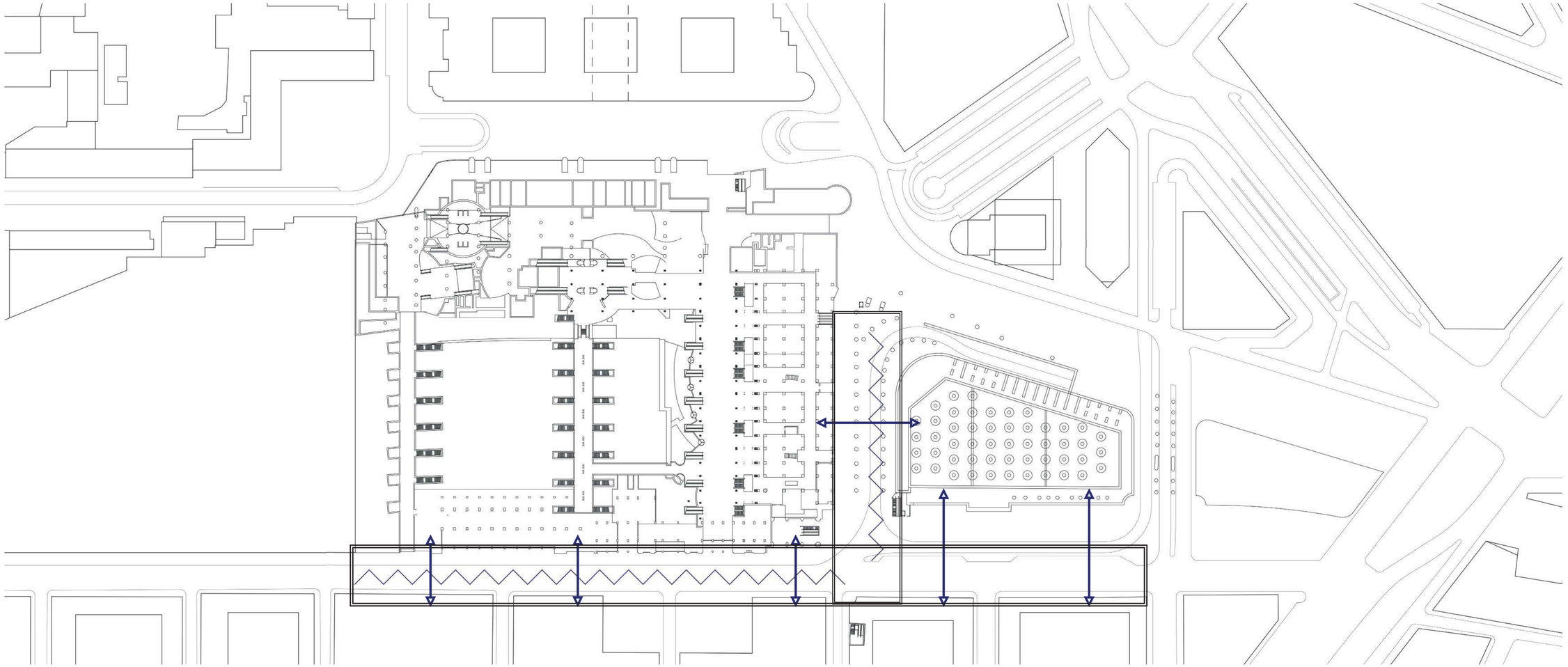
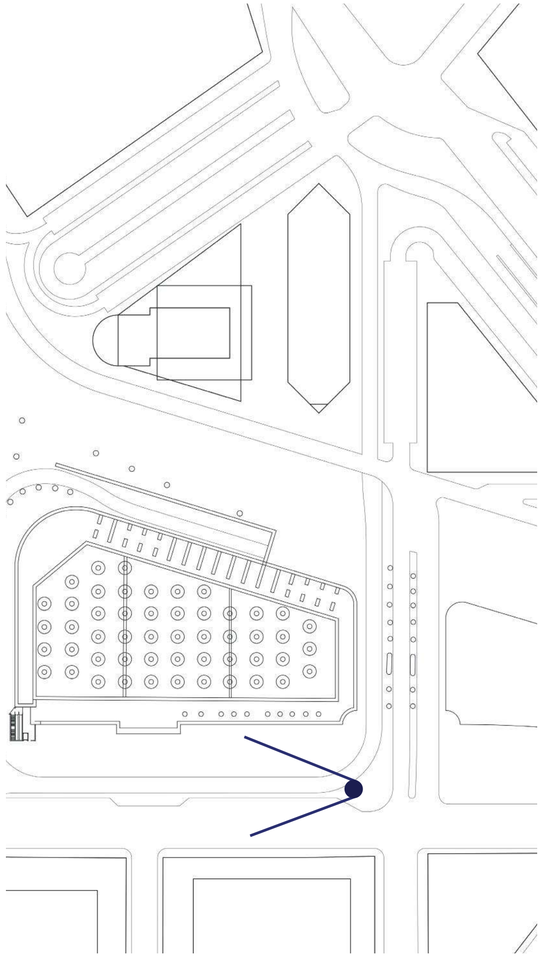


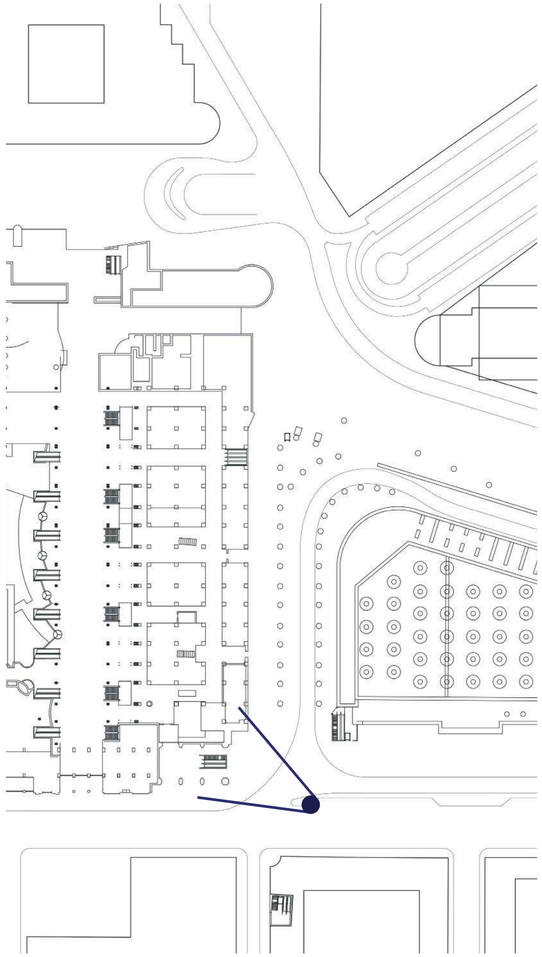
APPROACH

Arriving from the centre



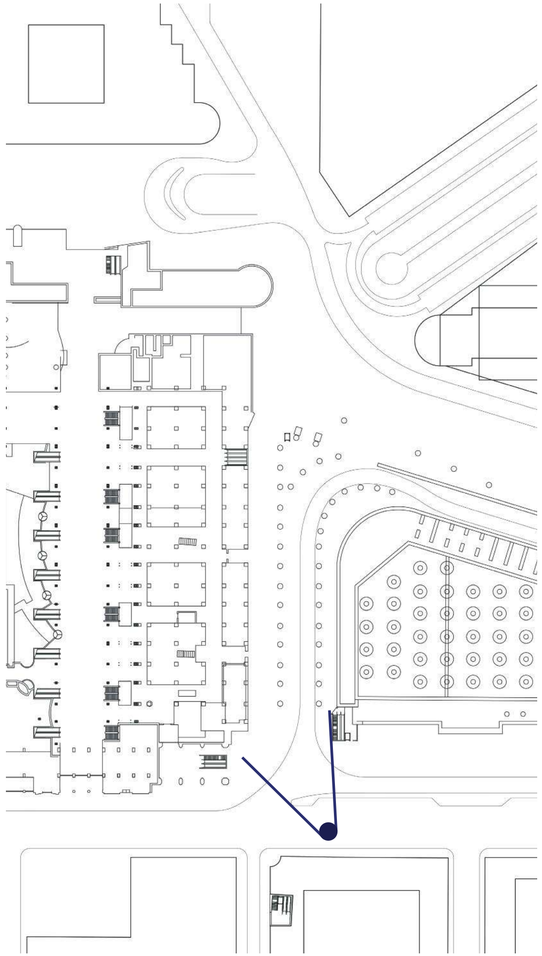
APPROACH

The central interchange



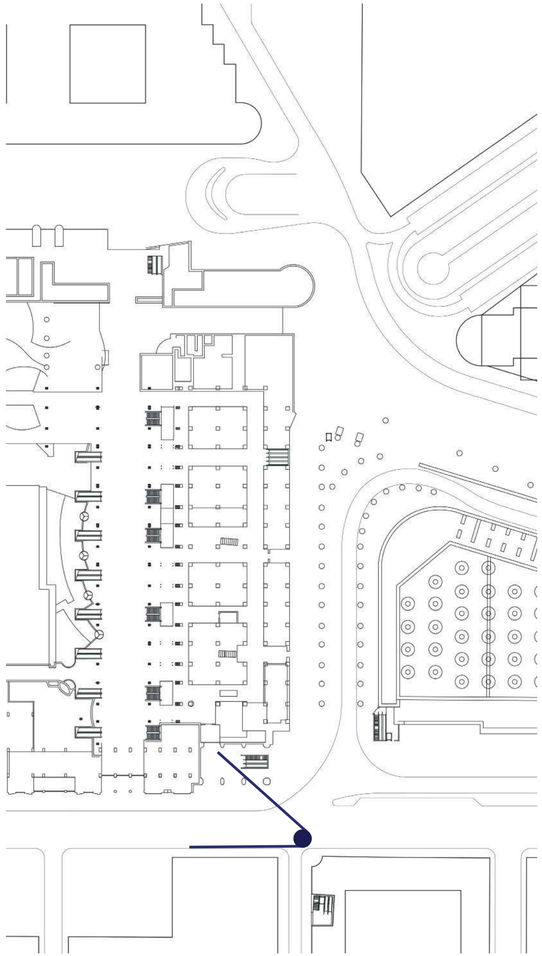
APPROACH

The entrance



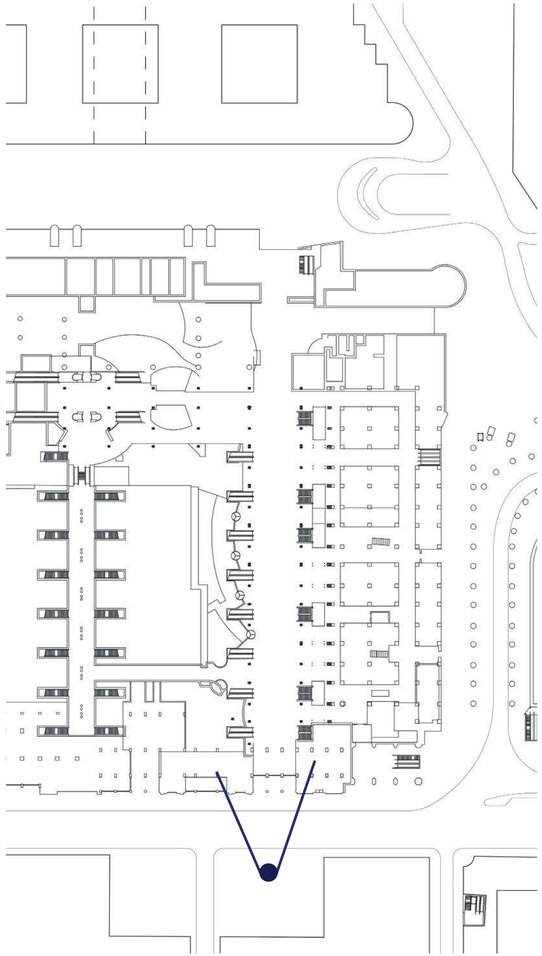
APPROACH

Avenue Fonsny



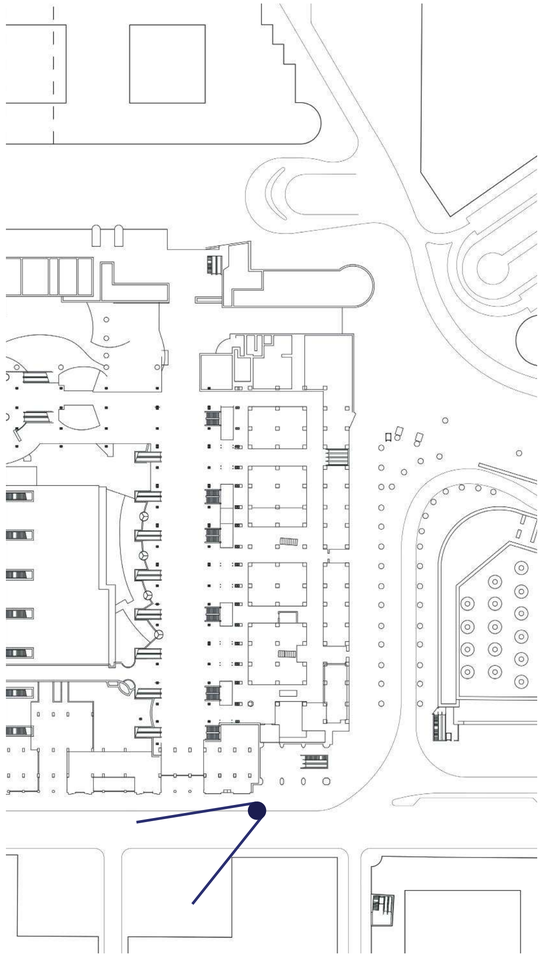
APPROACH

The main entrance



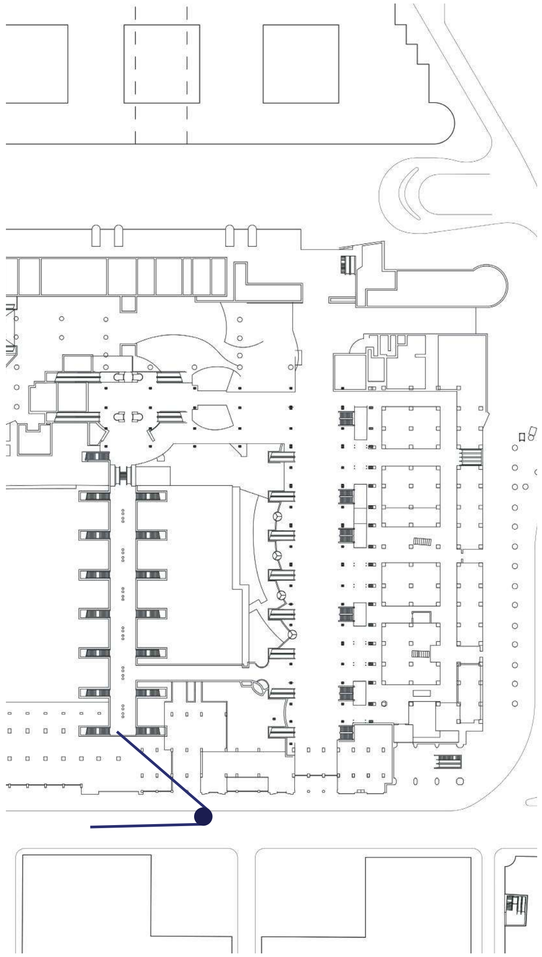
APPROACH

Fonsny Square



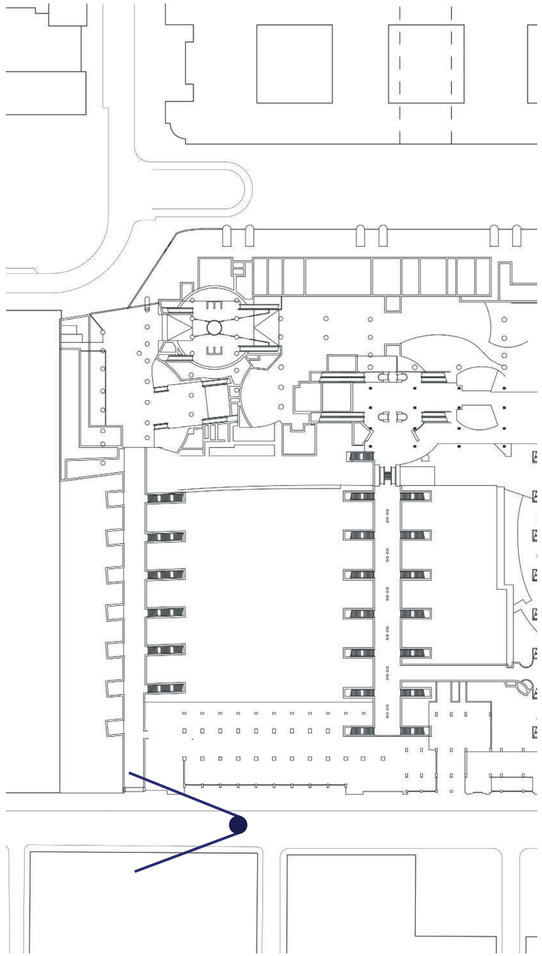
APPROACH

The current state



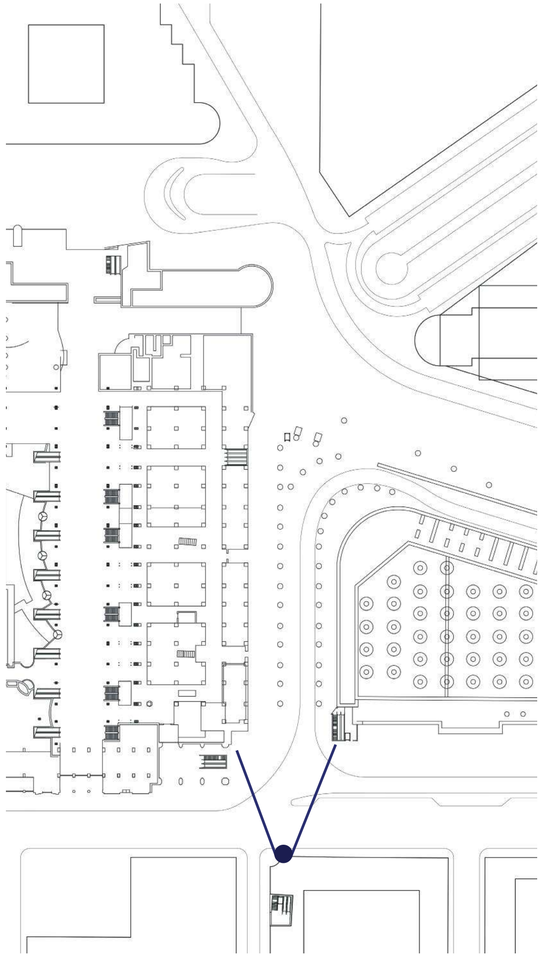
APPROACH

Avenue Fonsny



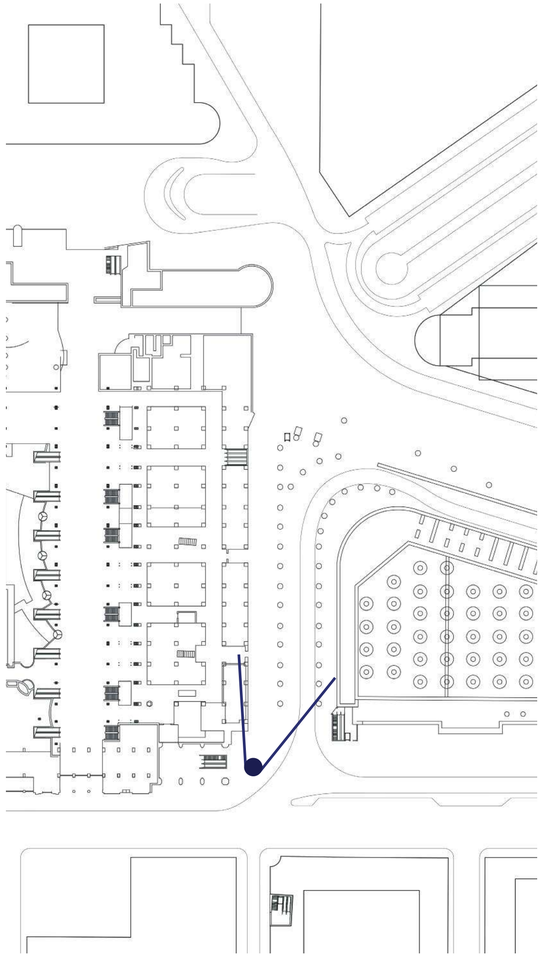
APPROACH

Covered Street



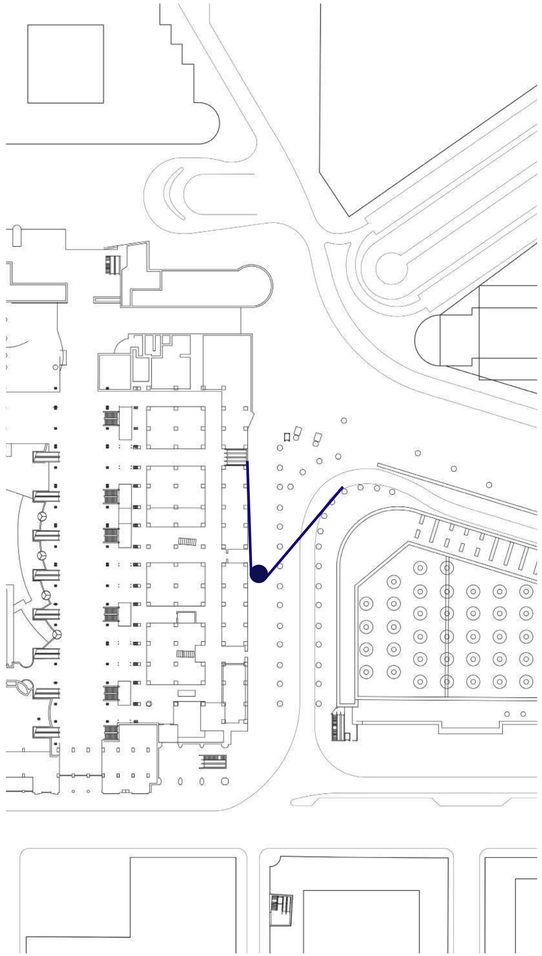
APPROACH

The inside



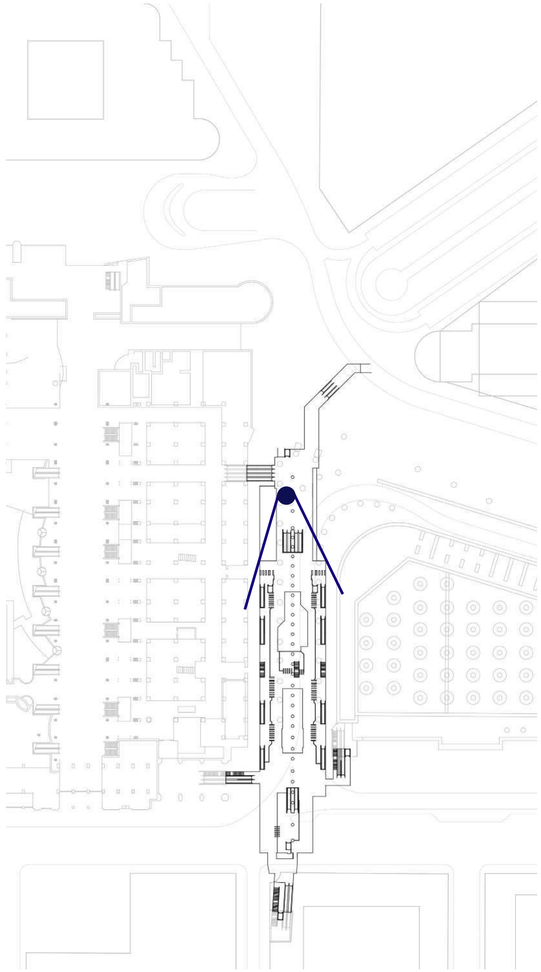
APPROACH

Experience



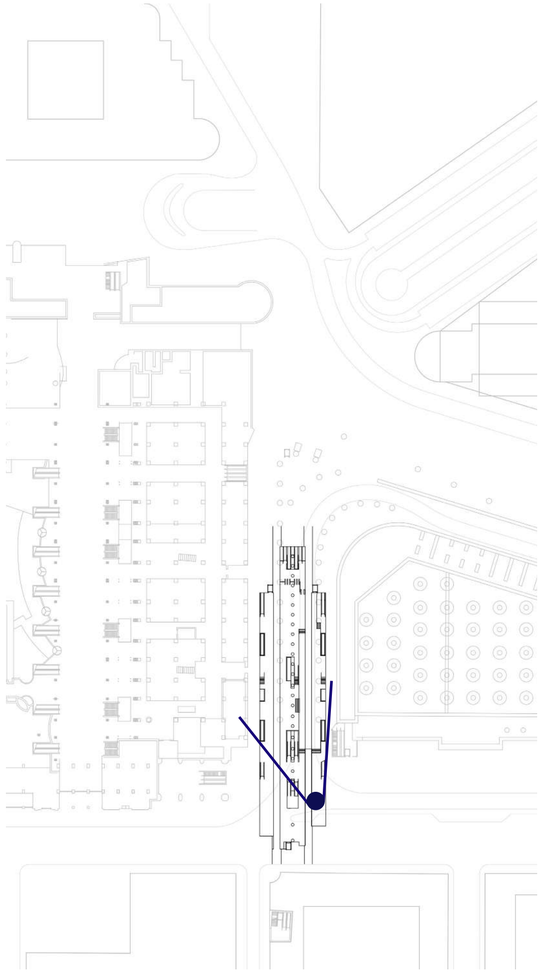
APPROACH

Ticket Hall



APPROACH

The Platform



APPROACH

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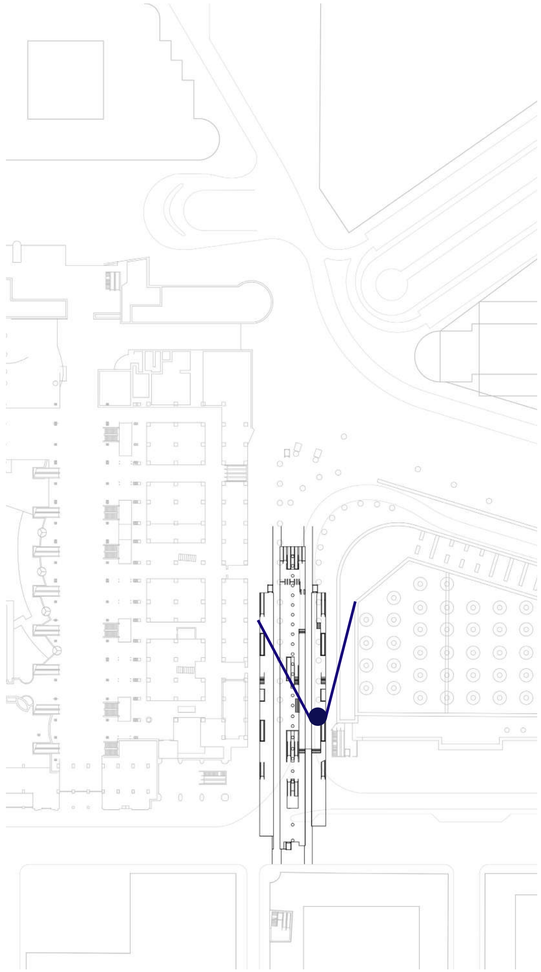


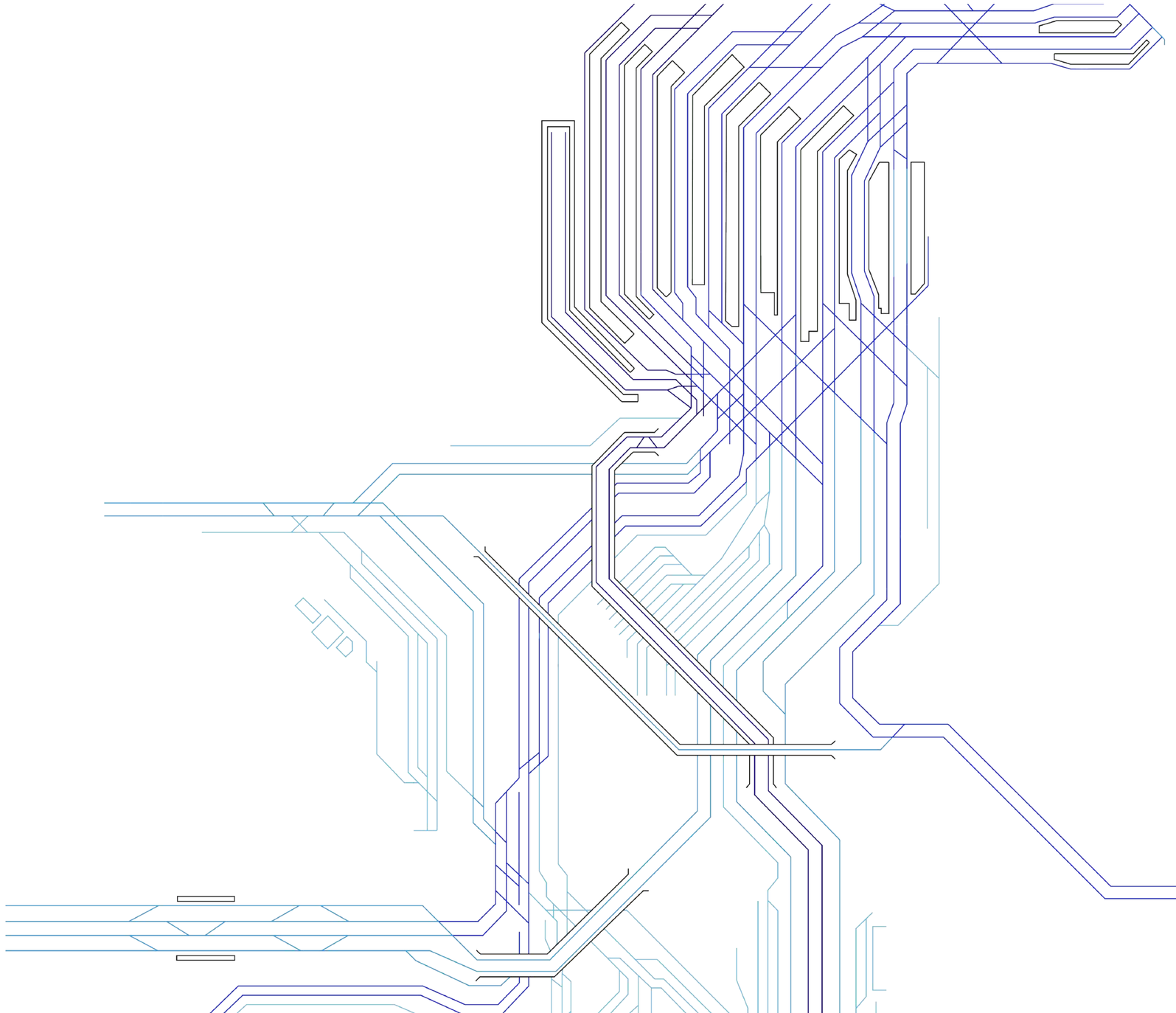
DESIGN APPROACH

CENTRAL THEME

How to change the station?

NODE VS. PLACE

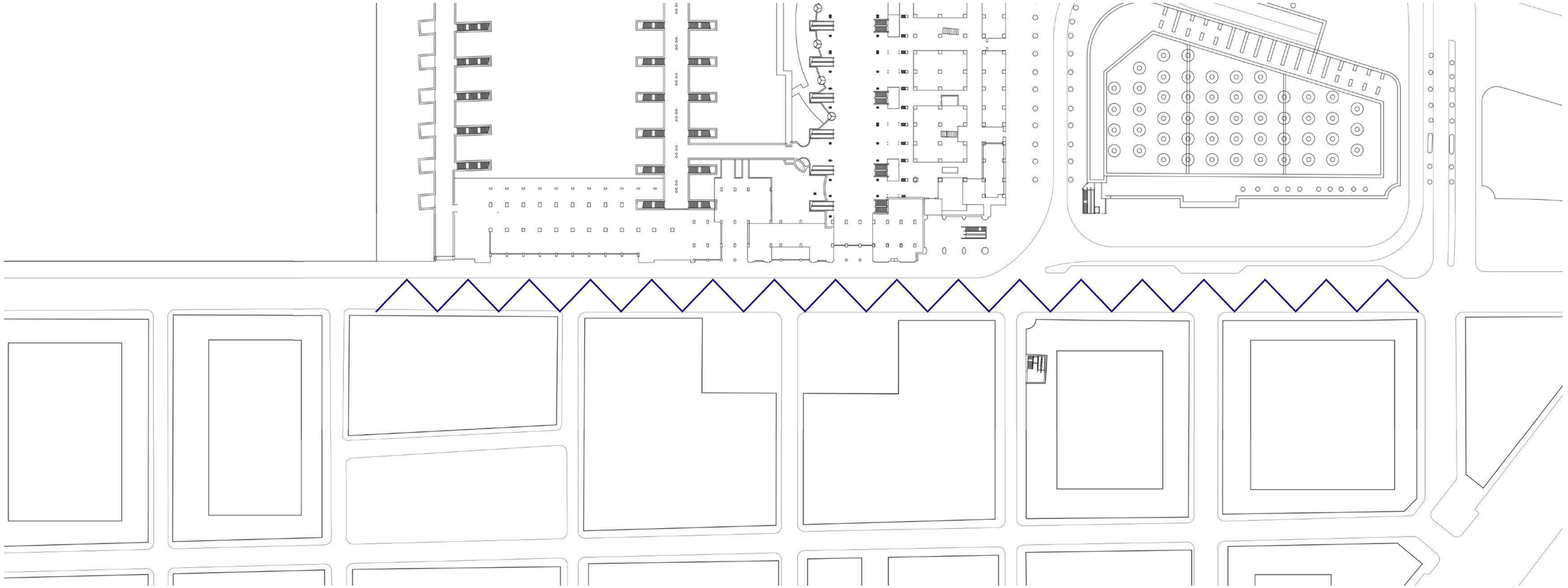
NODE



AVENUE FONSNY

New Situation

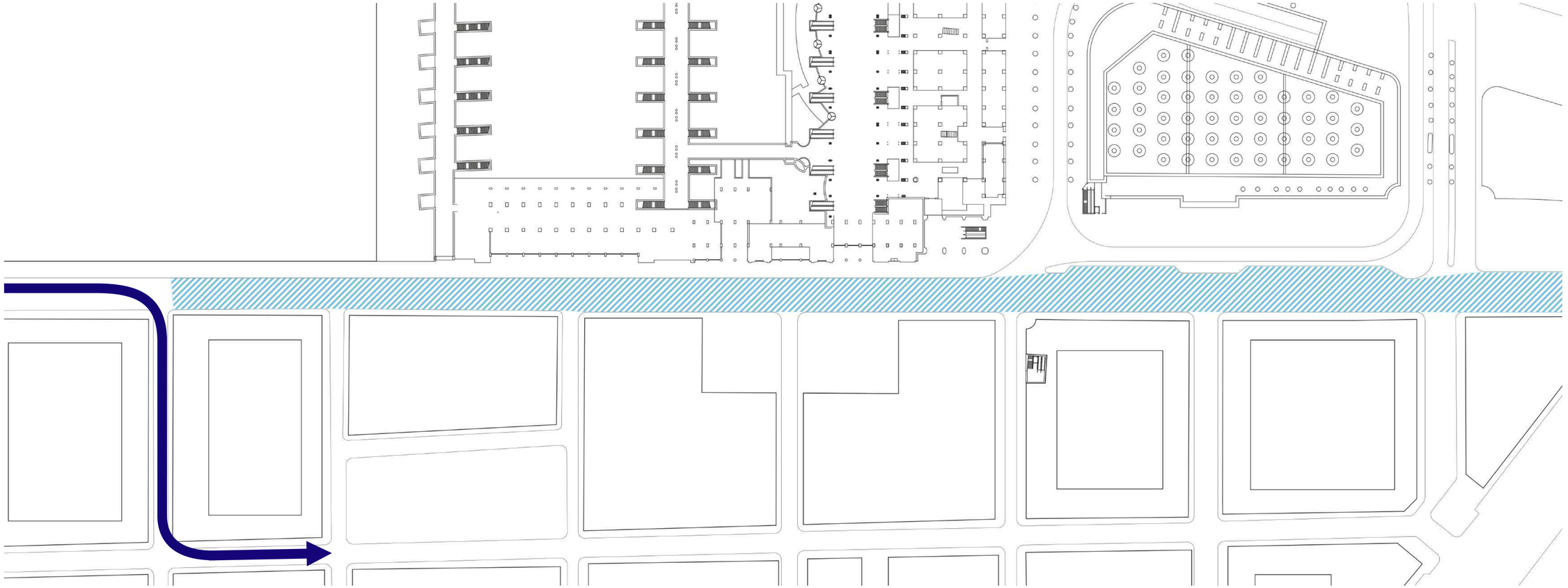
Large barrier created by Bus, Tram and Cars



AVENUE FONSNY

Current Barrier

Large barrier created by Bus, Tram and Cars



P5 | Node

COVERED STREET

Current Barrier

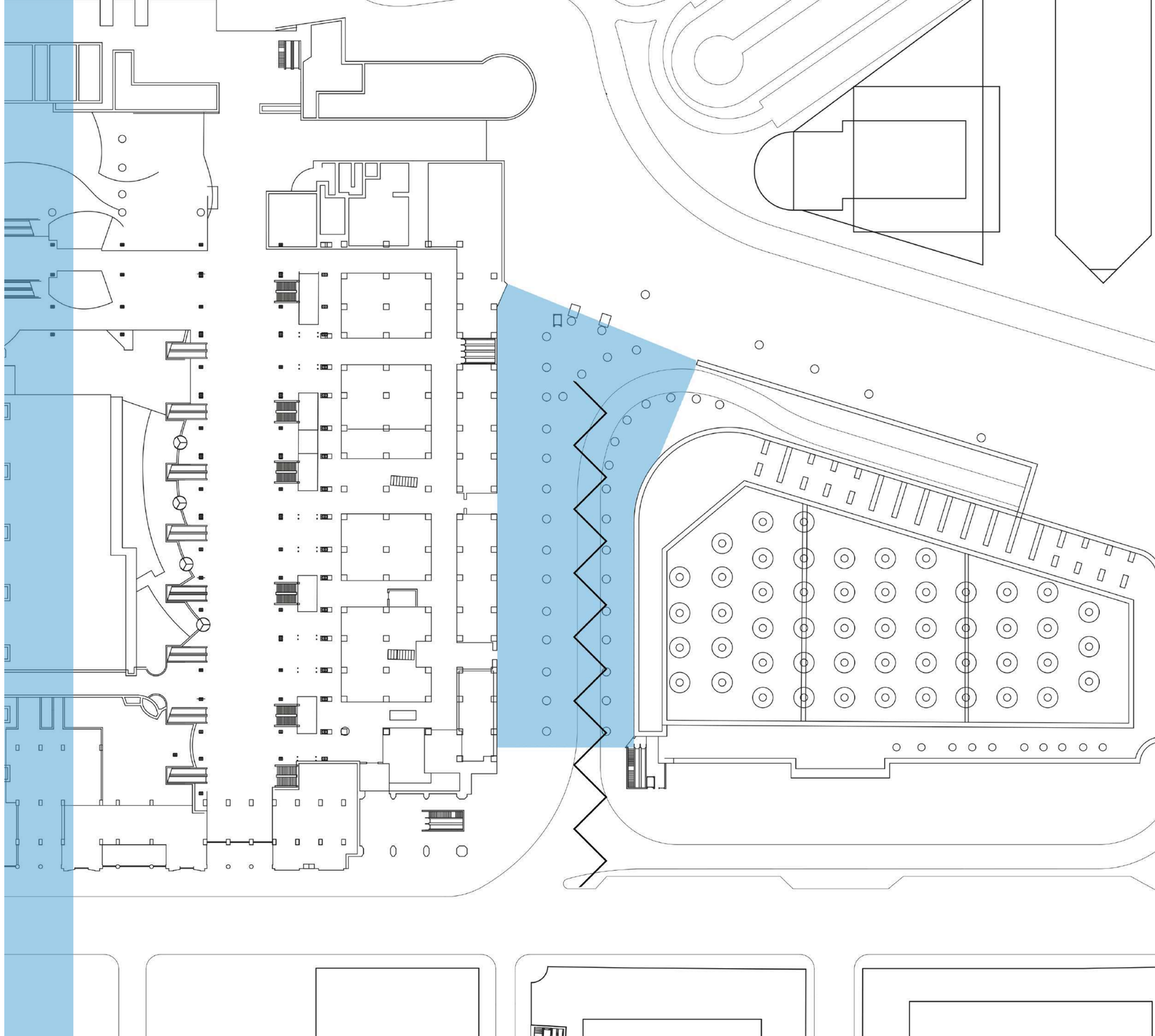
Large barrier created by Bus, Tram and Taxi's

+

Lack of Daylight

Lack of Connections

Lack of Quality Routes

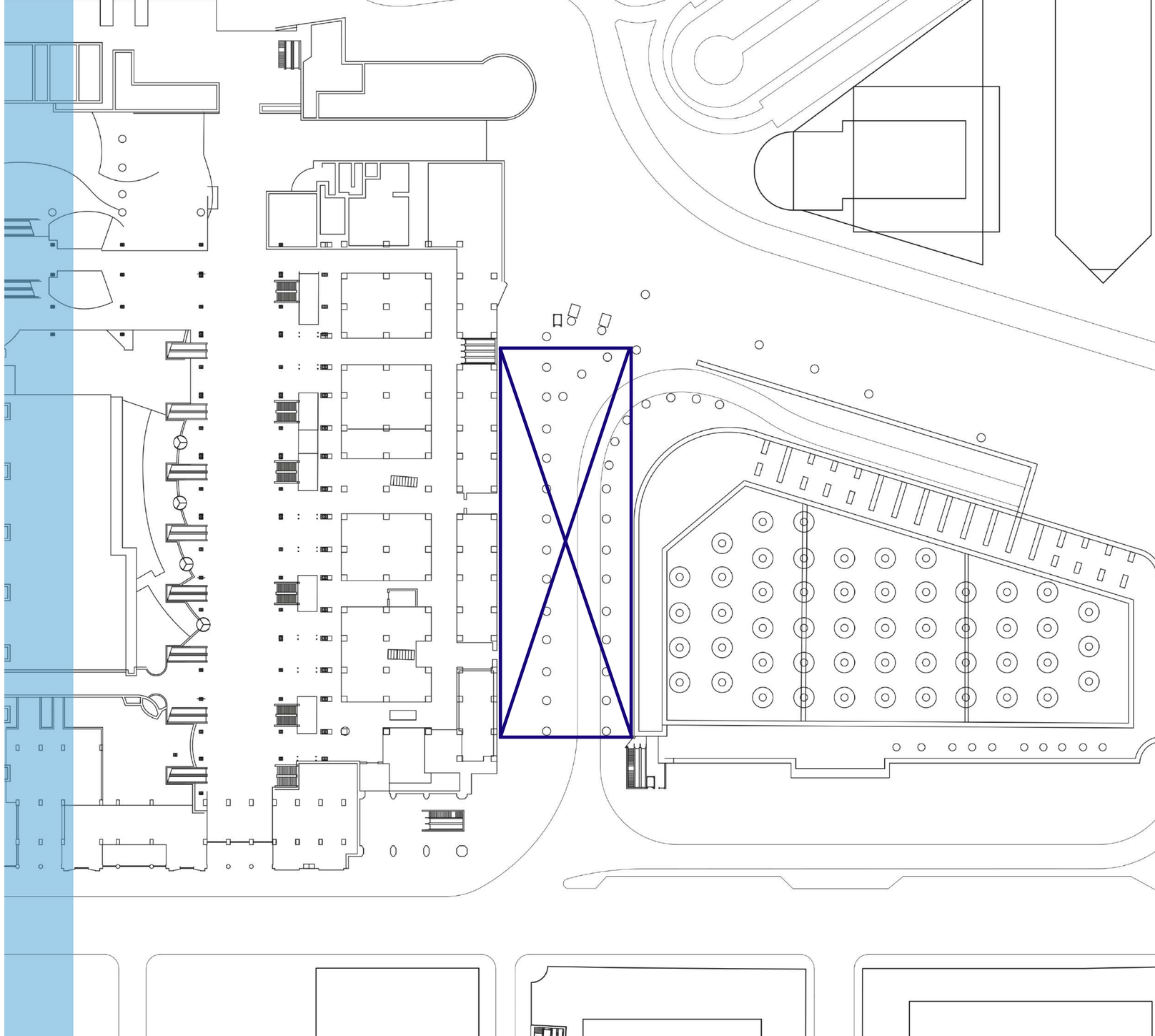


P5 | Node

COVERED STREET

Proposal:

Create a void

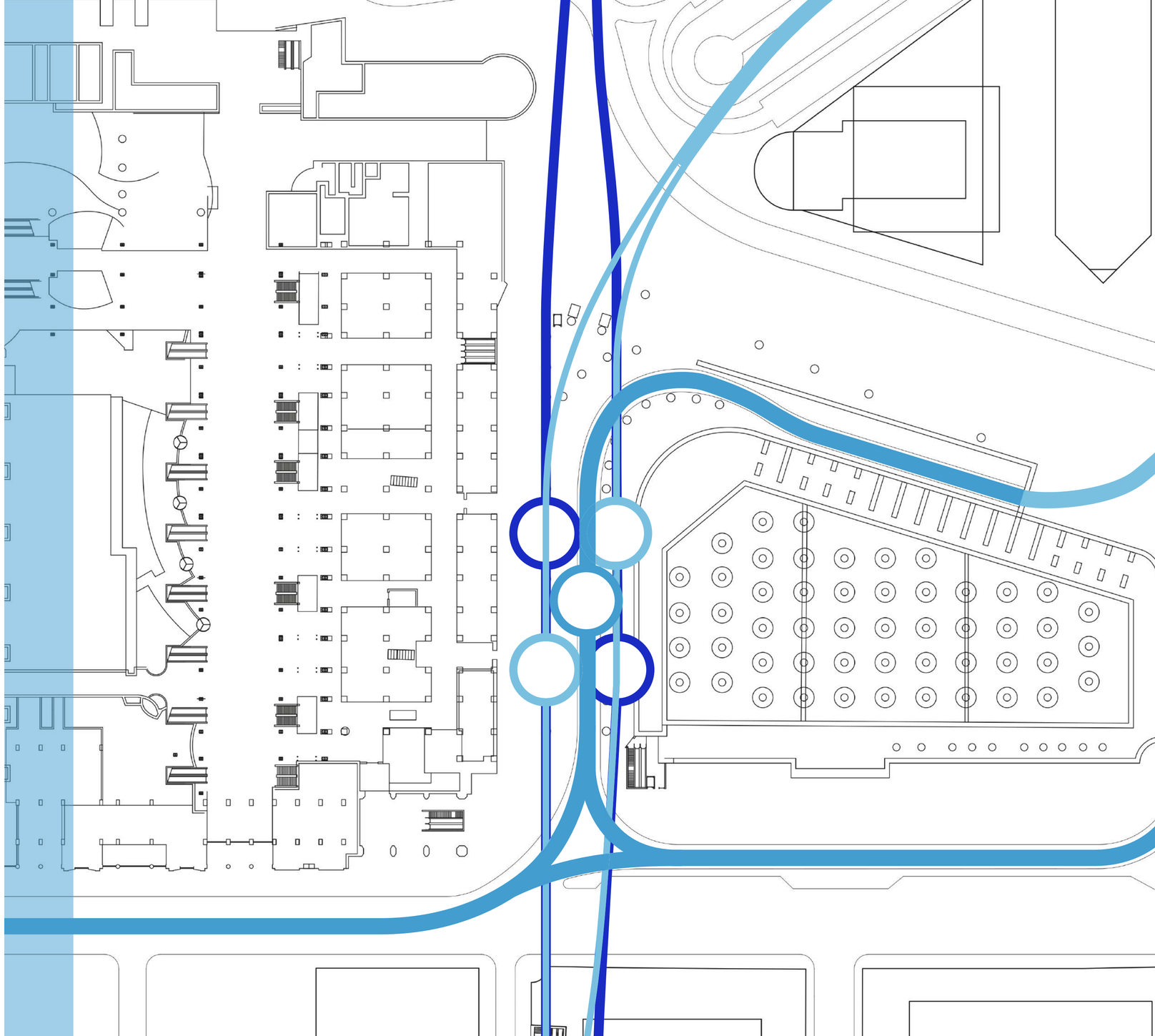


P5 | Node

COVERED STREET

The Network

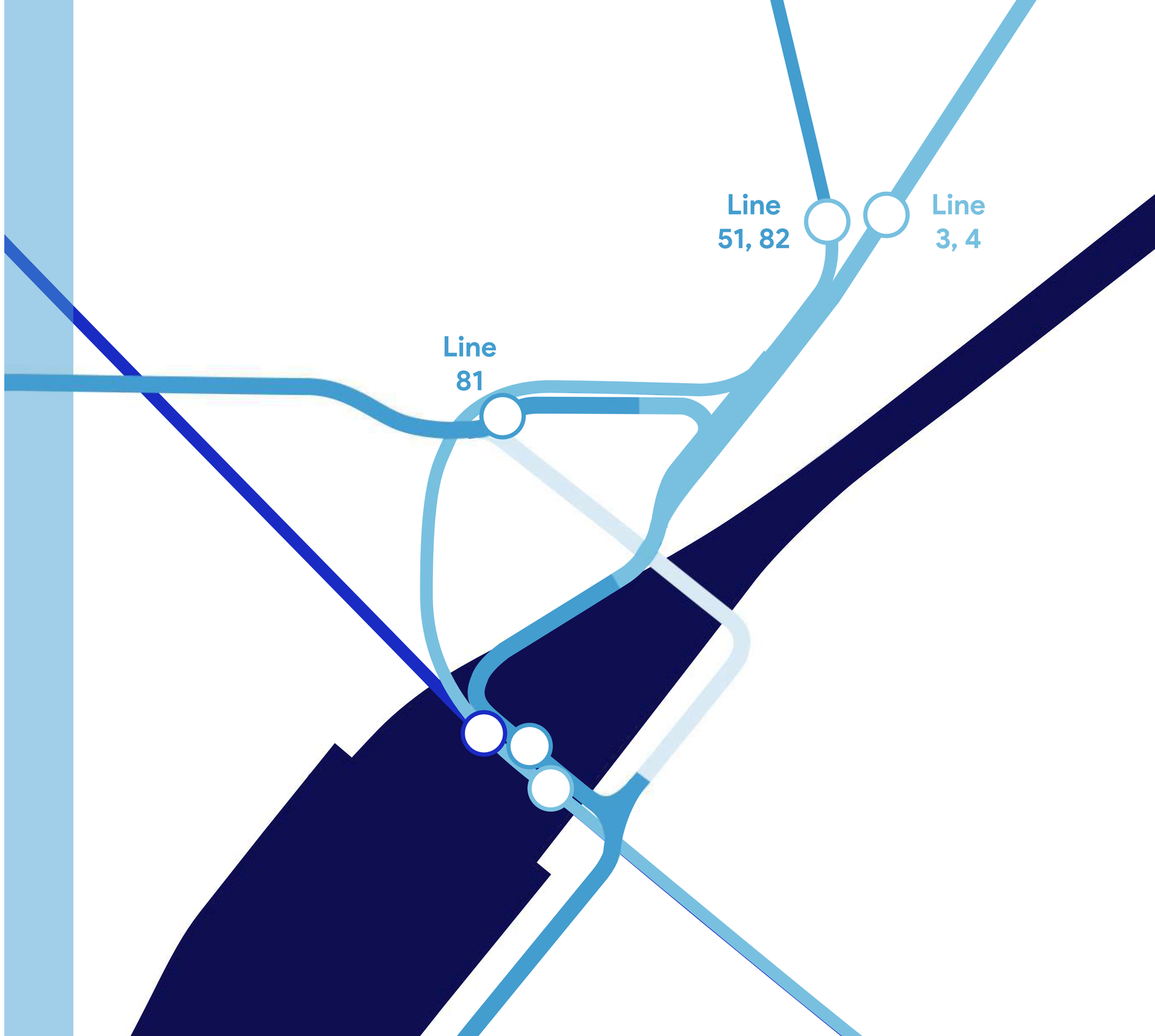
The amount of stops currently in the street



COVERED STREET

Possibilities

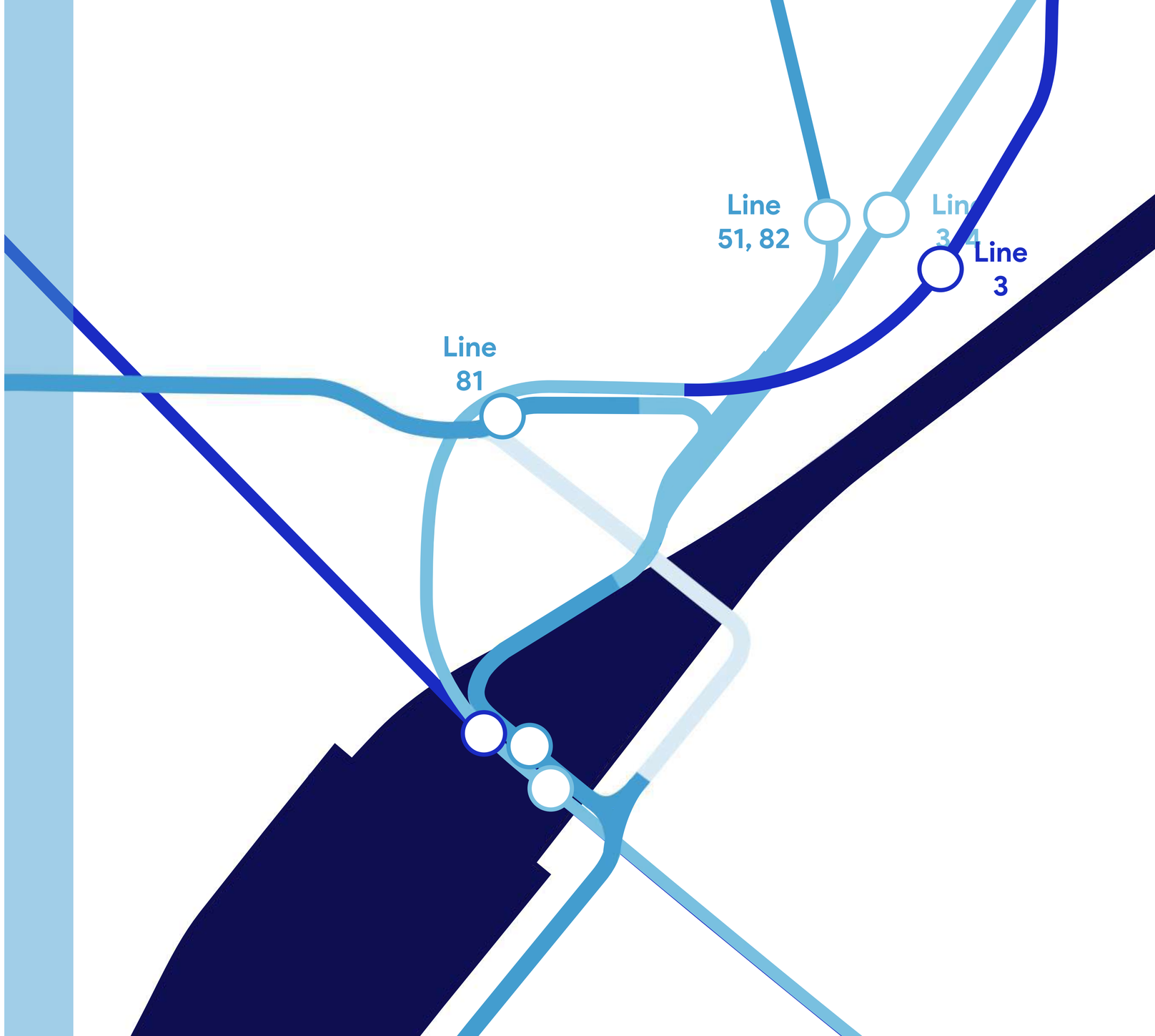
The network on a bigger scale



COVERED STREET

Future Changes

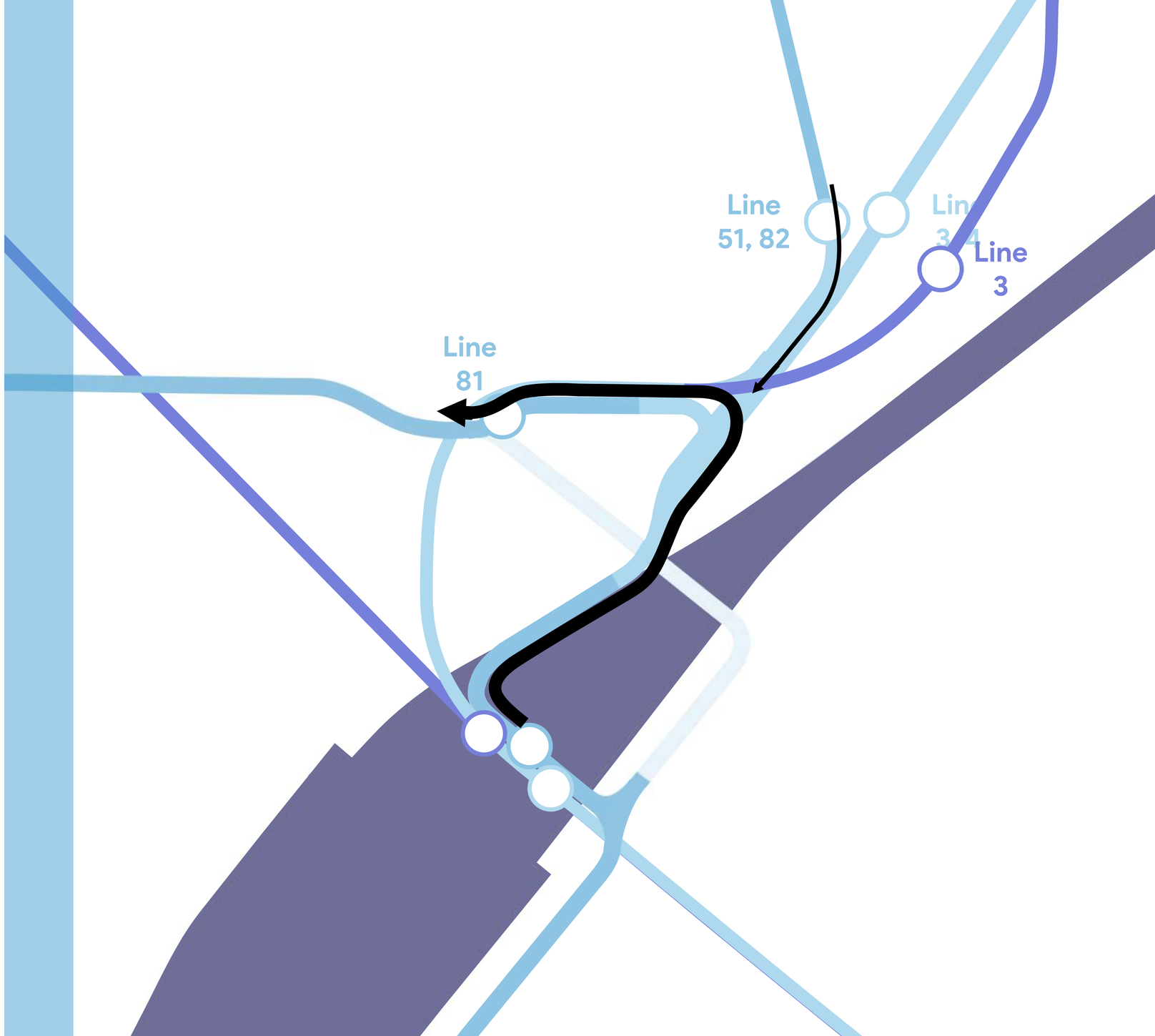
The transformation of a Pre-Metro line to a regular Metro Line, with the addition of a new station.



COVERED STREET

Current Route

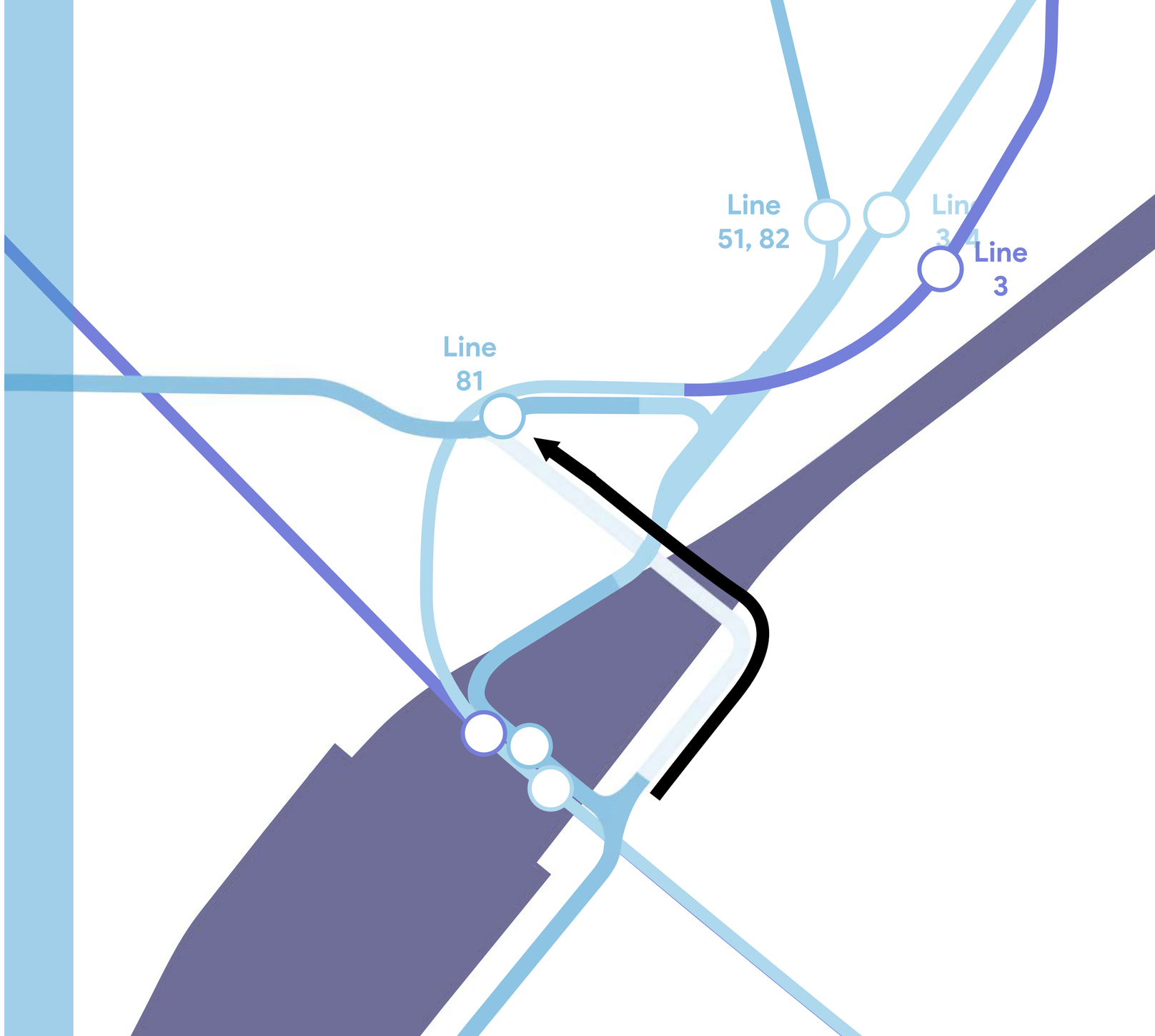
Weird, Confusing and Disorientating



COVERED STREET

Proposed Routes

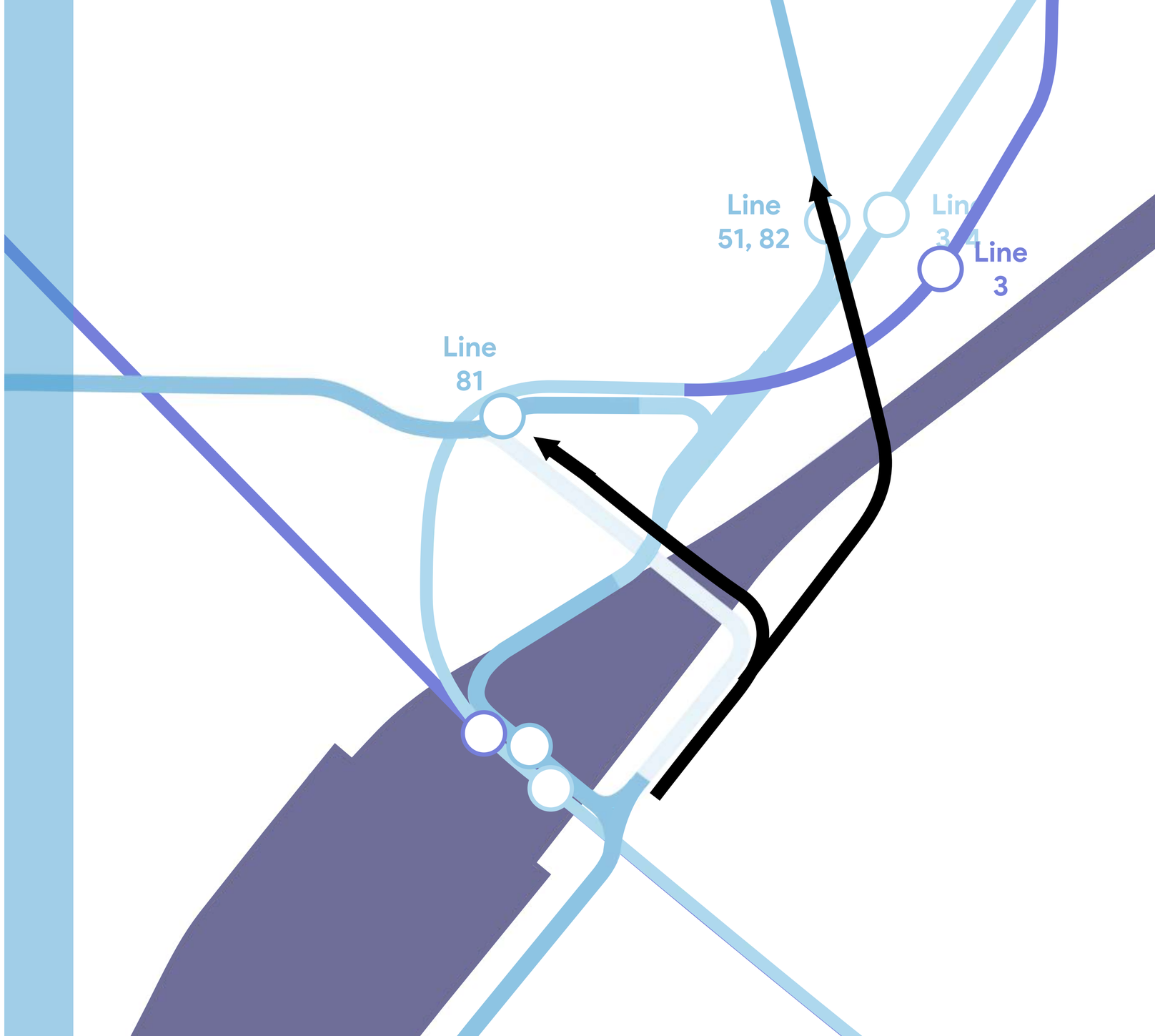
Using (mostly) existing infrastructure



COVERED STREET

Proposed Routes

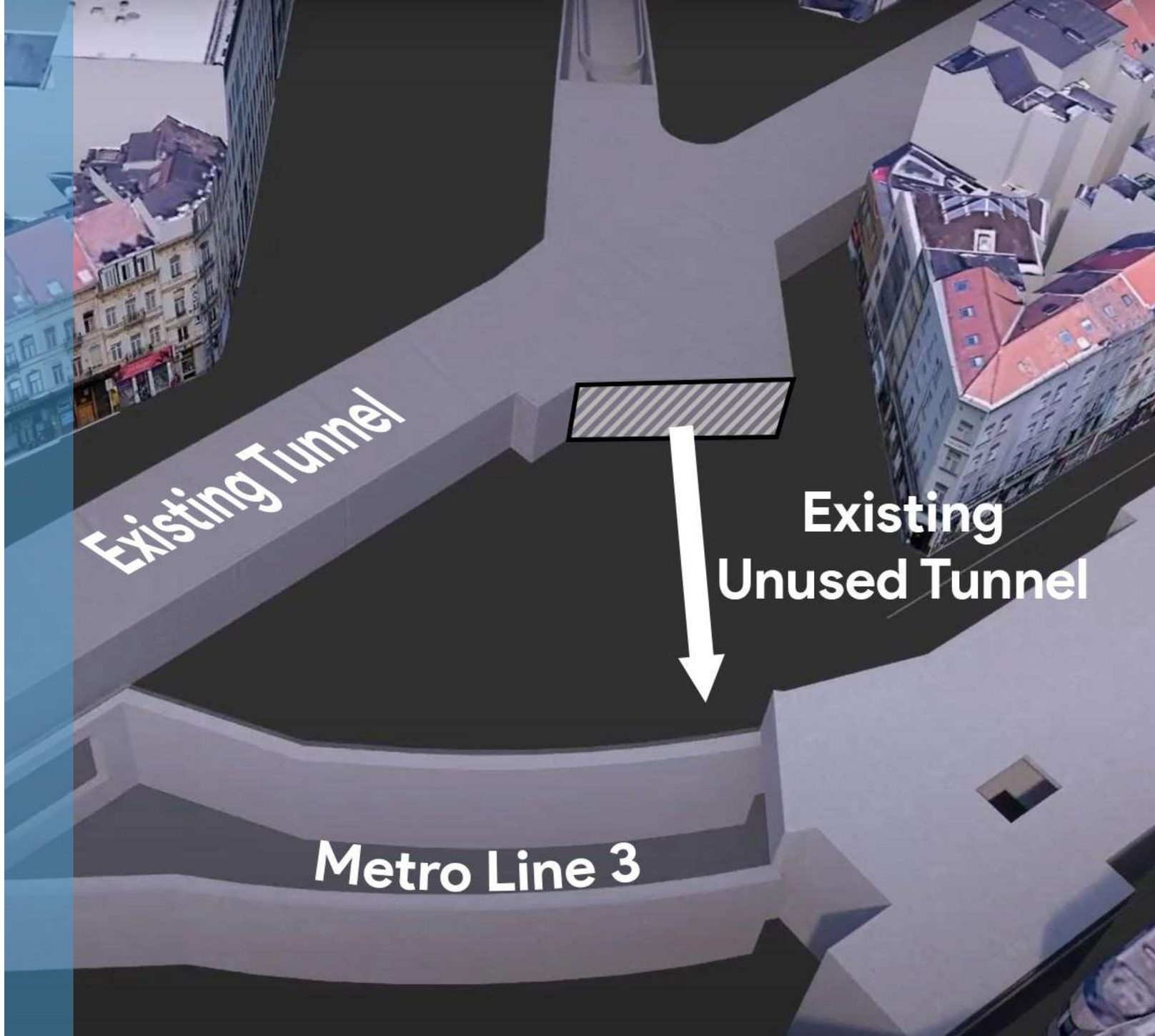
Using (mostly) existing infrastructure. Using an existing tunnel the other line can also be rerouted



COVERED STREET

Proposed Routes

The unused tunnel should still be in place, the new metro tunnel will go underneath it.

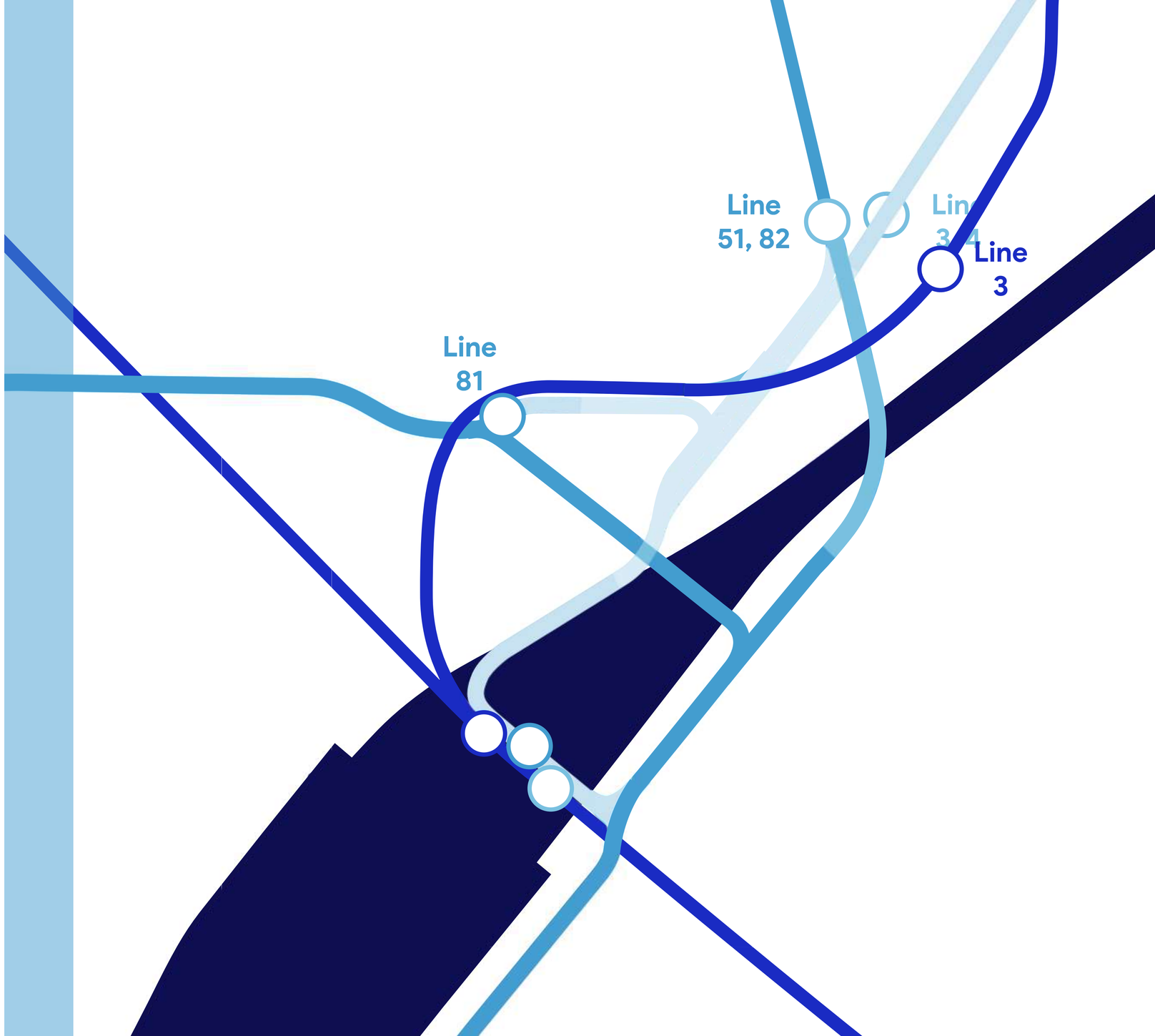


P5 | Node

COVERED STREET

Improved Route

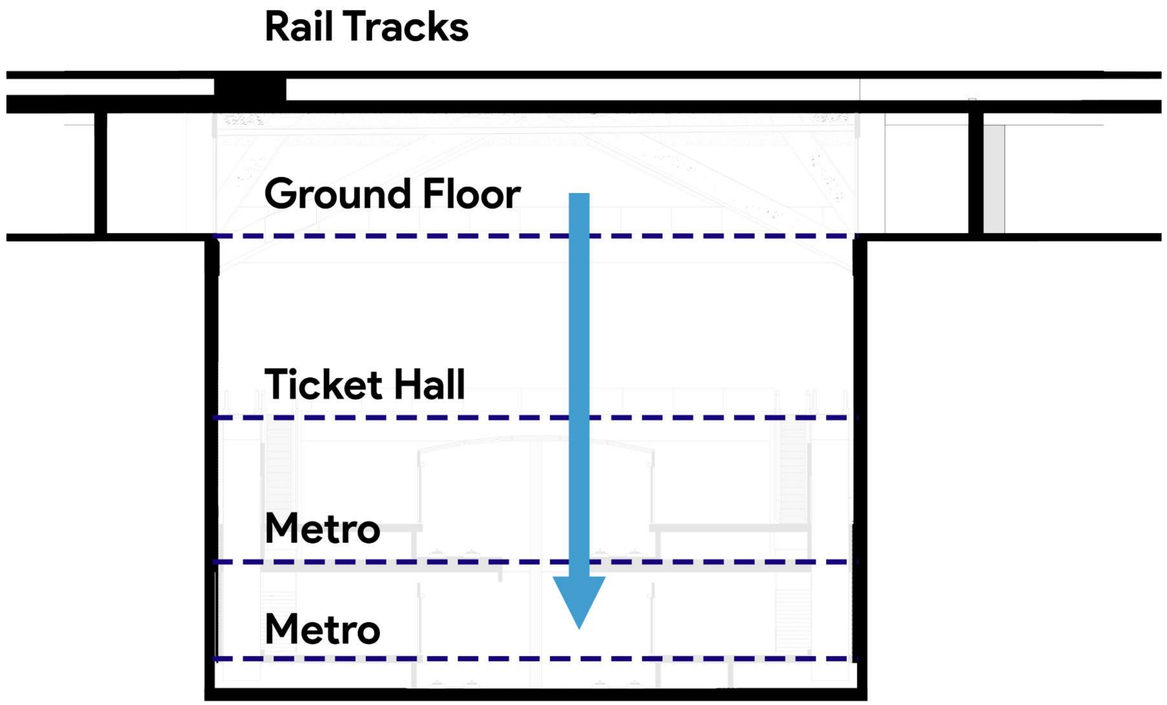
This removes all the tram lines from the Covered street and the complicated street underground.



COVERED STREET

Connections

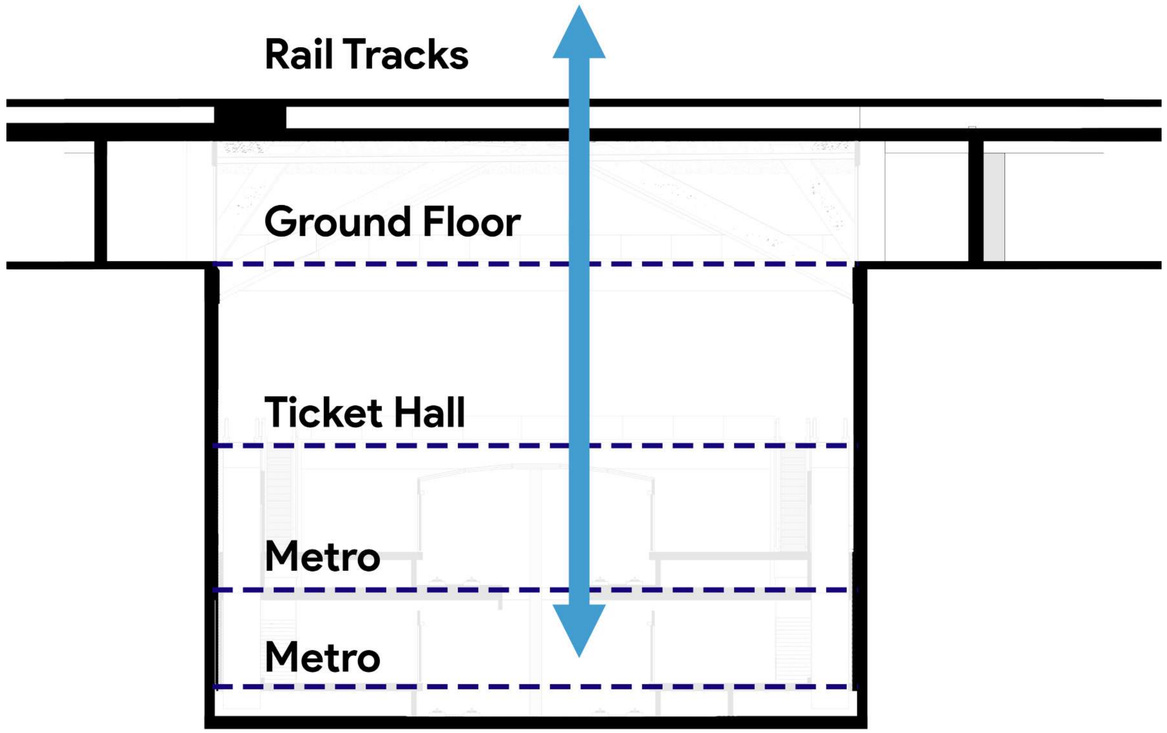
It allows for opportunity, but not enough



COVERED STREET

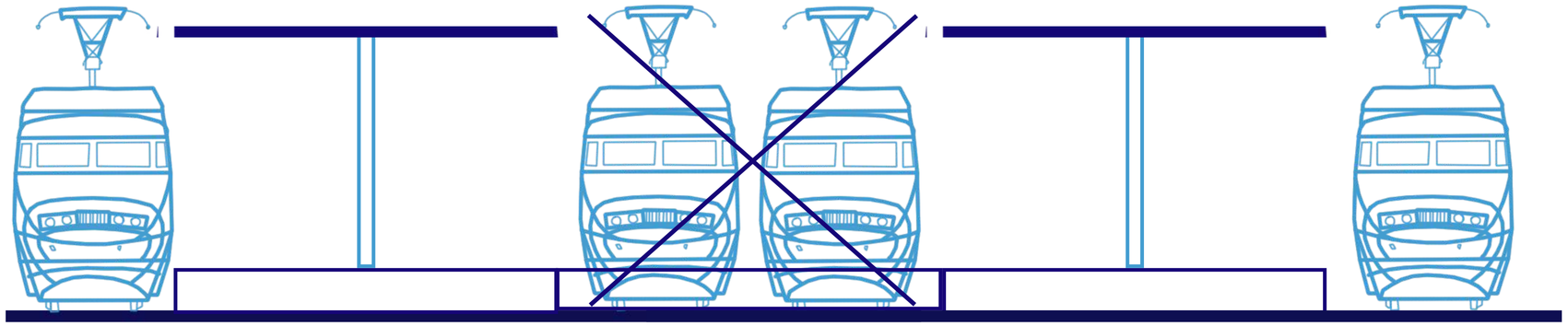
Connections

Creating a void in the train deck allows for light to go inside this massive underground area and it establishes a connection between the two transport modes



PROPOSAL

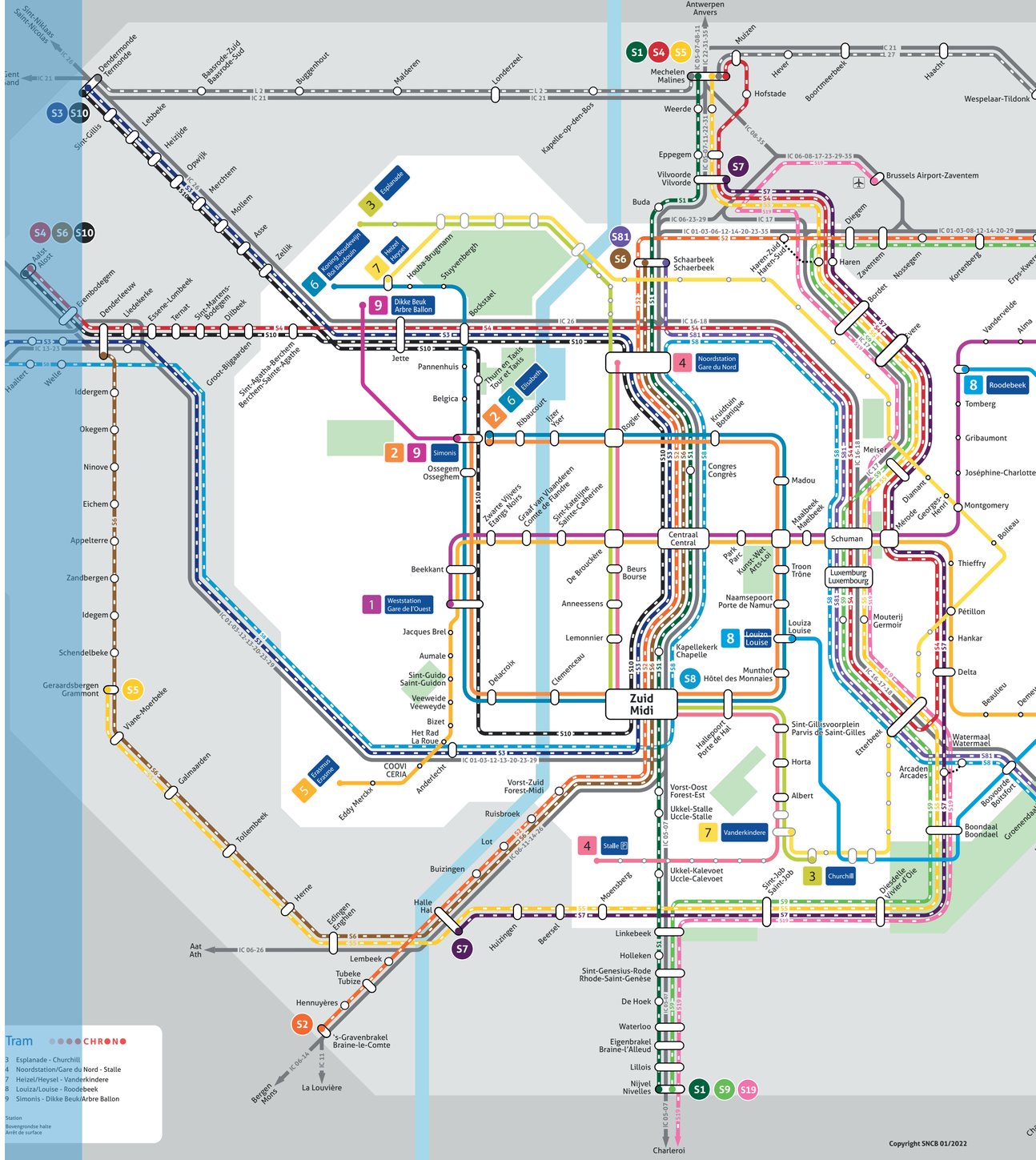
Remove half of the amount of tracks



SPLITTING THE STATION

S-Trains and Mainline

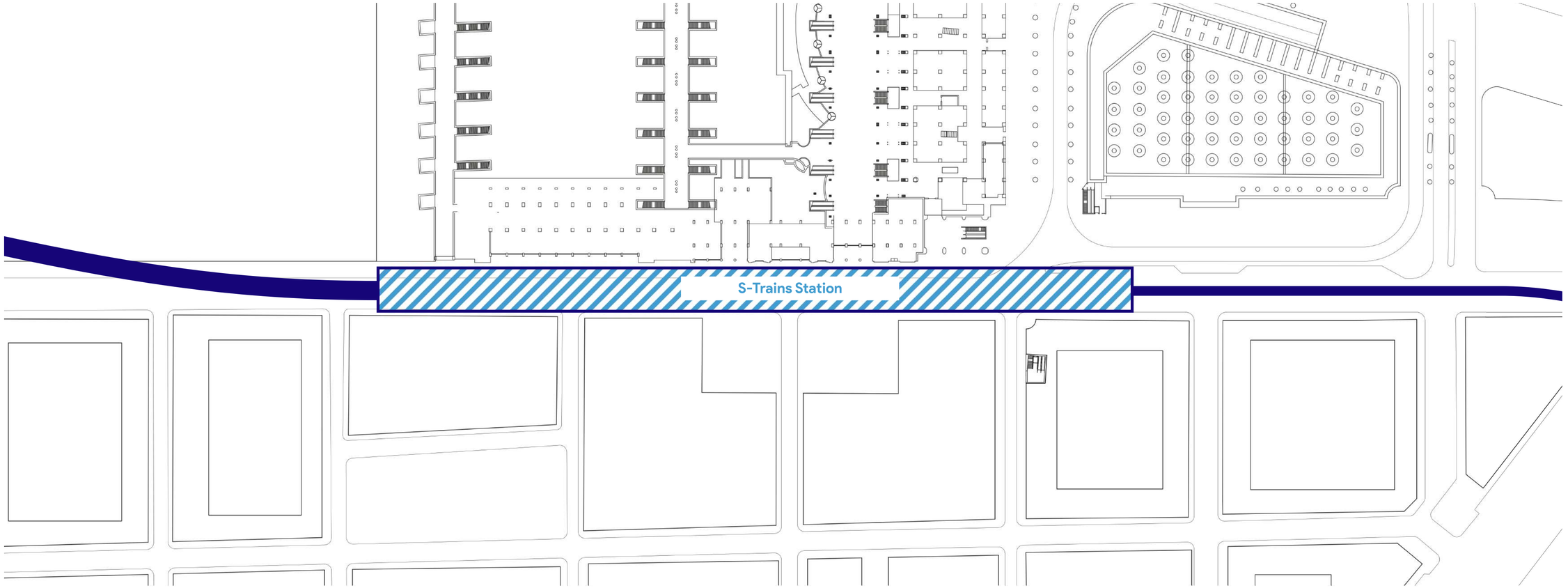
To be able to do this, the local S-trains will be separated from the mainline stations



S-TRAIN STATION

New Location

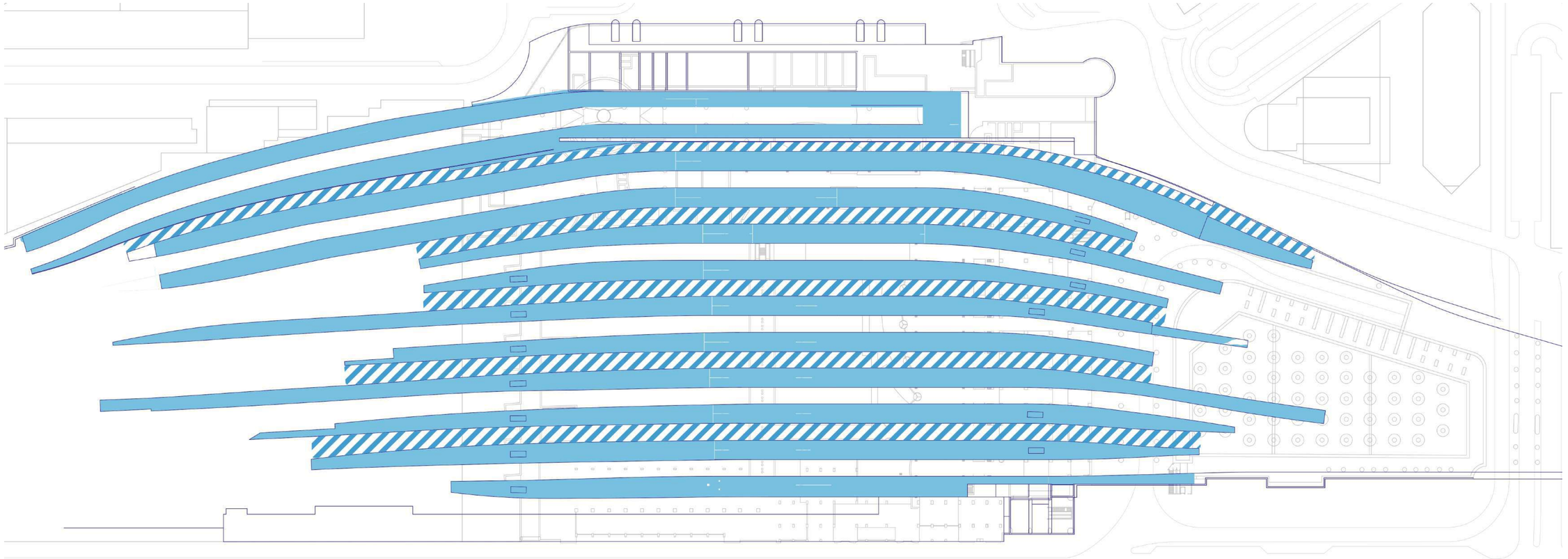
This allows the station to run more frequently and reduce the capacity loss



PLATFORMS

Creating better platforms

The space inbetween can be used for voids,



BENEFITS

Advantages:

It allows for a better connection with the levels below

It allows for more space on the platform

It allows for more light for the levels below

It allows the S-train network to stand on its own and connect better with the other local transport system

It allows for a better optimised S-train station with higher frequency

It optimises the tram routes around the area

PLACE

CREATION OF A PLACE

Central Goal:

Create more quality spaces around the station

CREATION OF A PLACE

Central Goal:

Create more quality spaces around the station

Based on:

- Different Users
- Different Uses
- Different traveling speed

Each area should be connected with the station and support the station

AVENUE FONSNY

OBJECTIVE

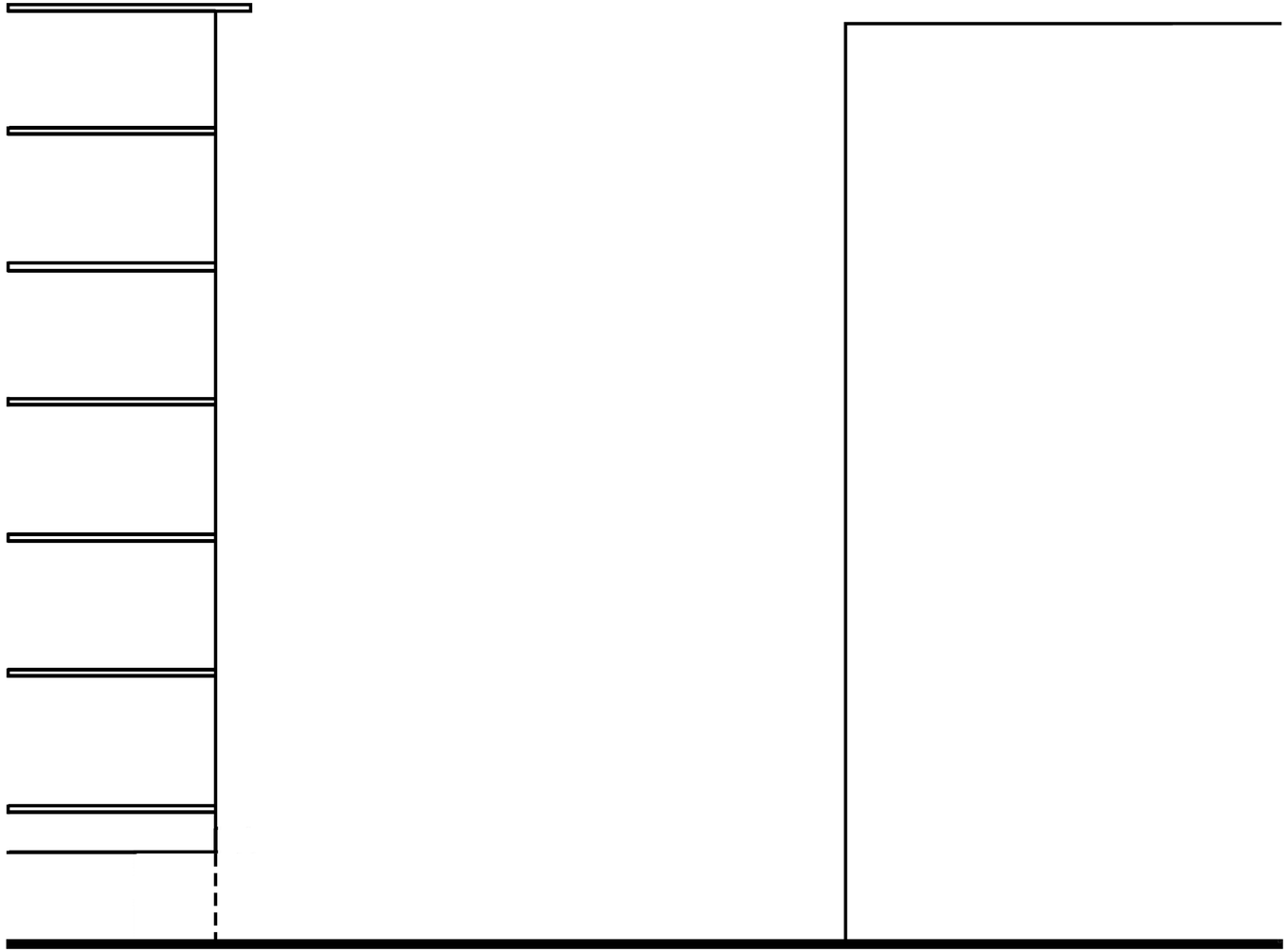
Central Goal:

Create more quality spaces around the station

HYBRID SPACE

Design Concept

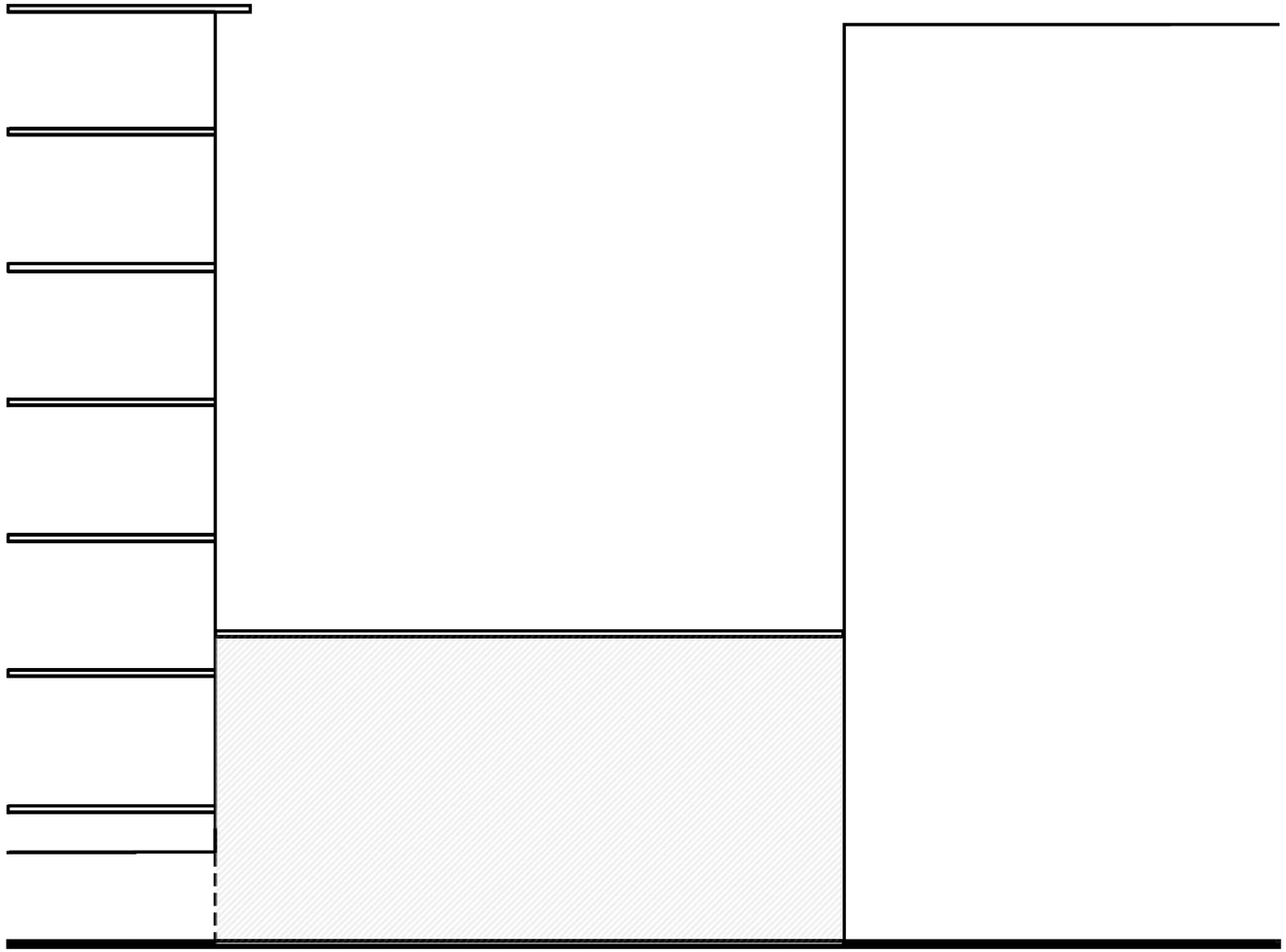
The creation of a Hybrid Space:
A space that can be considered part of the station building while it is still outside



HYBRID SPACE

Design Concept

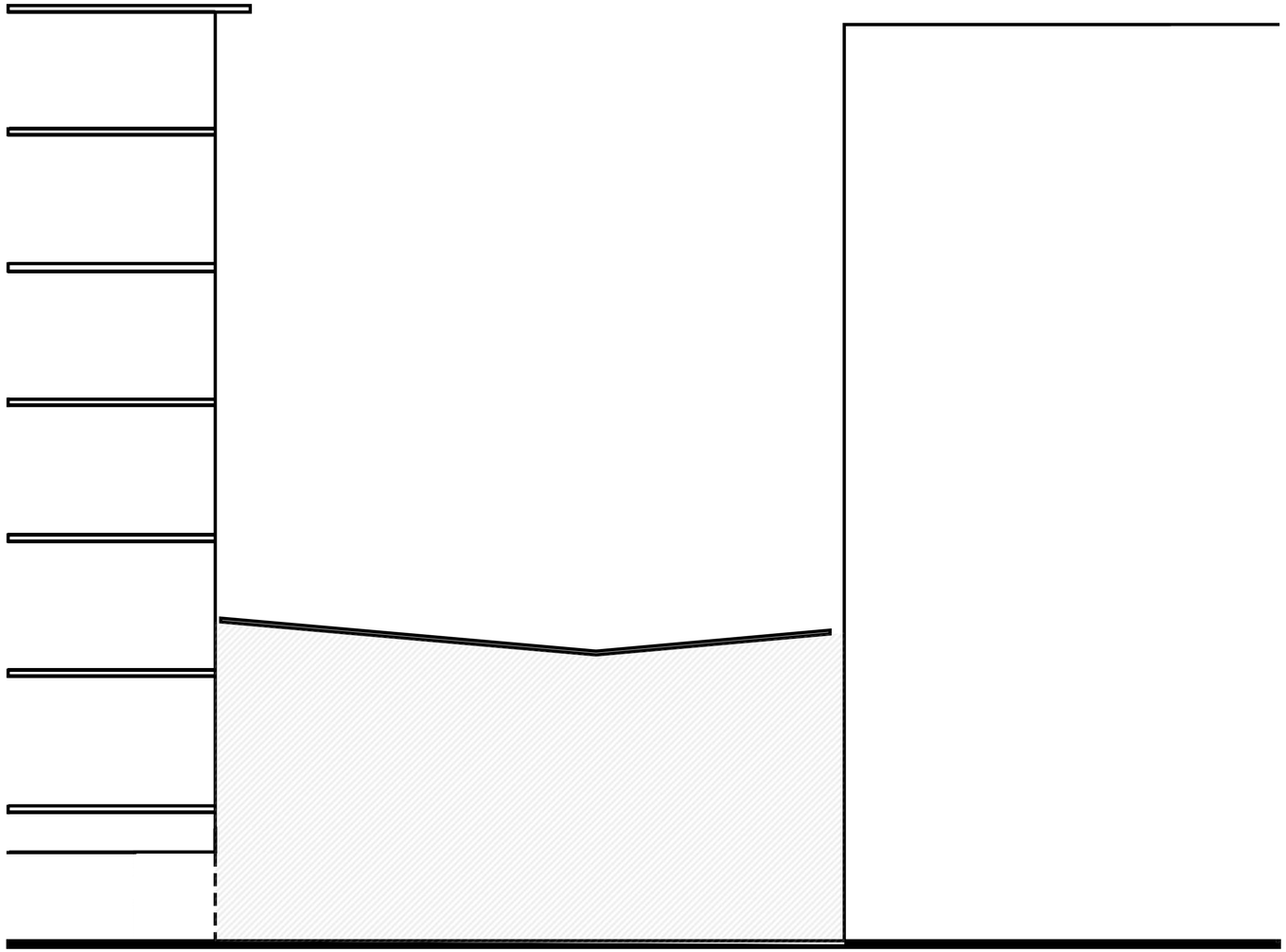
This space is created by enclosing the space from above with a canopy,



HYBRID SPACE

Design Concept

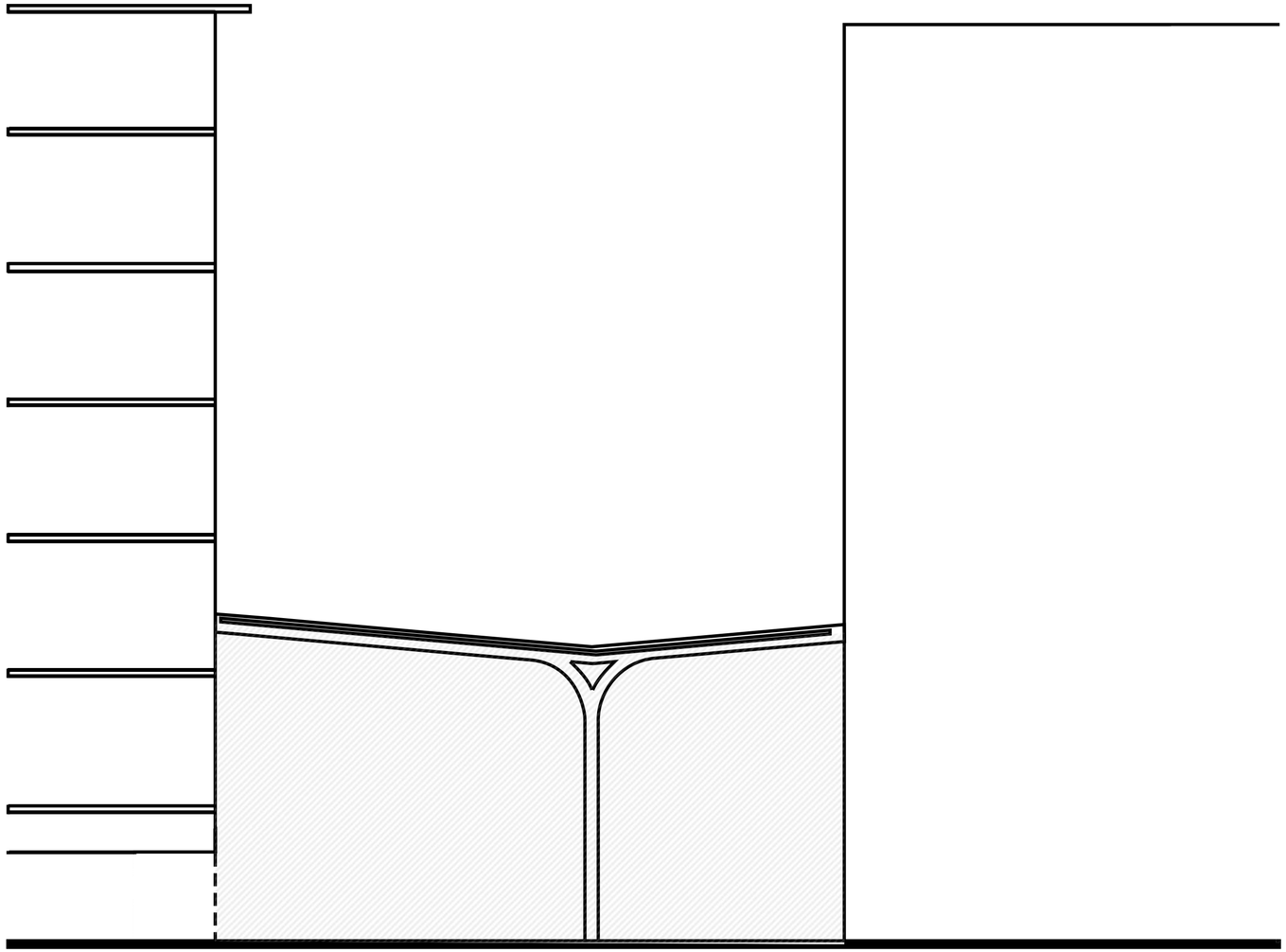
This canopy will be connected with the surrounding buildings on smaller areas of the street, enclosing it without creating two separate spaces in the street.



HYBRID SPACE

Design Concept

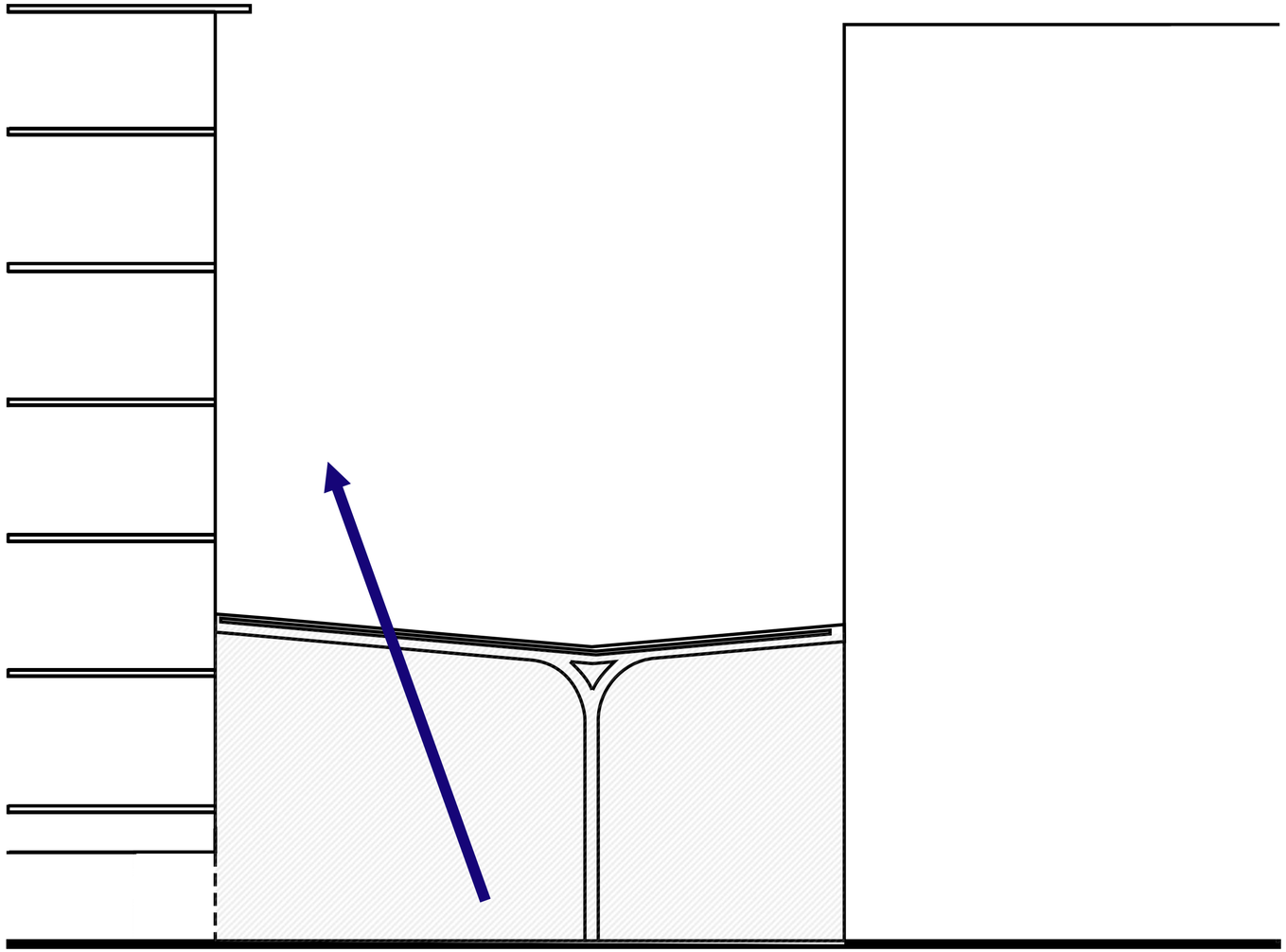
This canopy protects the area from rain and extends the station forwards. It will be made from glass with translucent solar panels



HYBRID SPACE

Design Concept

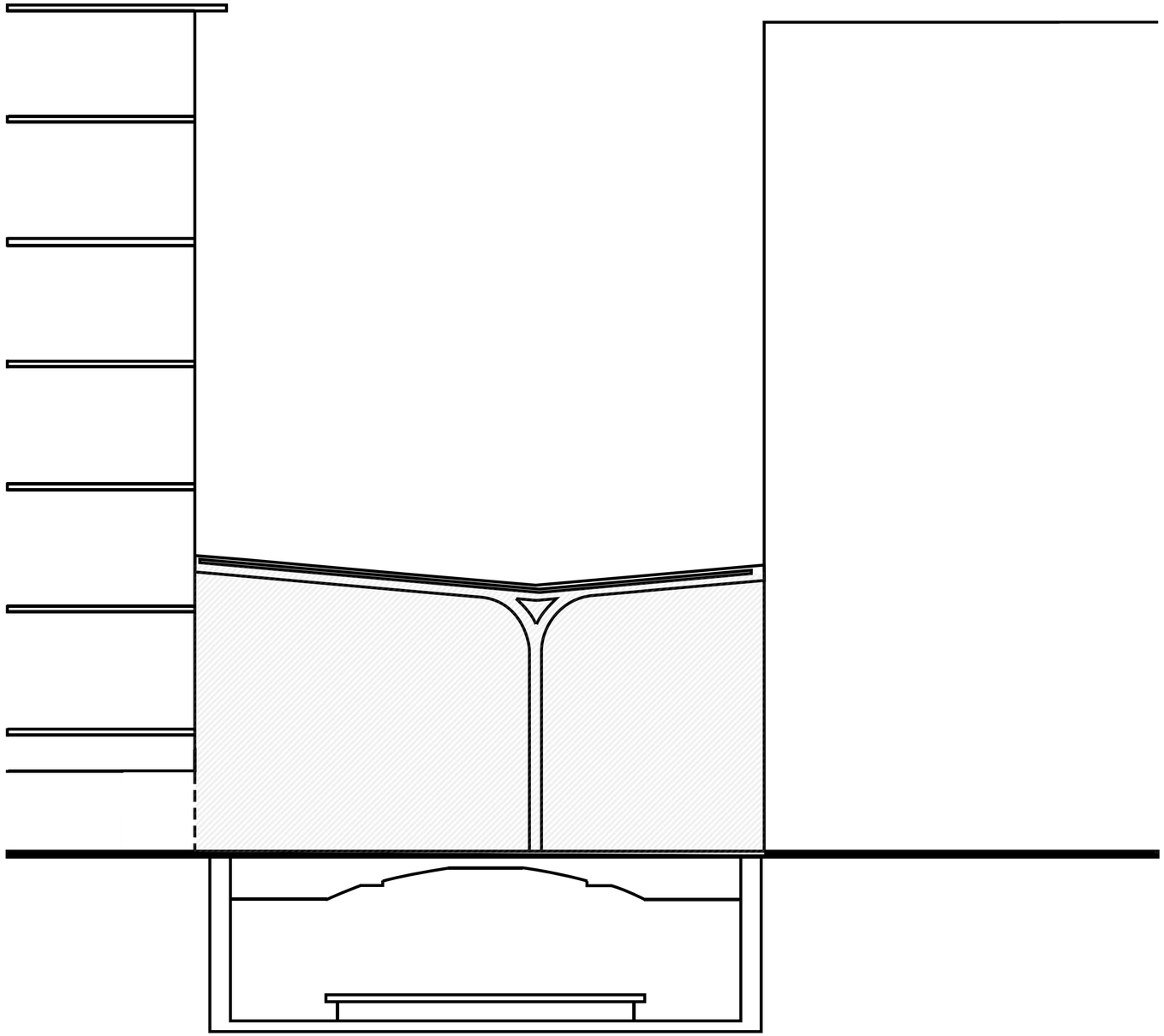
This allows for energy collection and it will not block views to the buildings



HYBRID SPACE

Design Concept

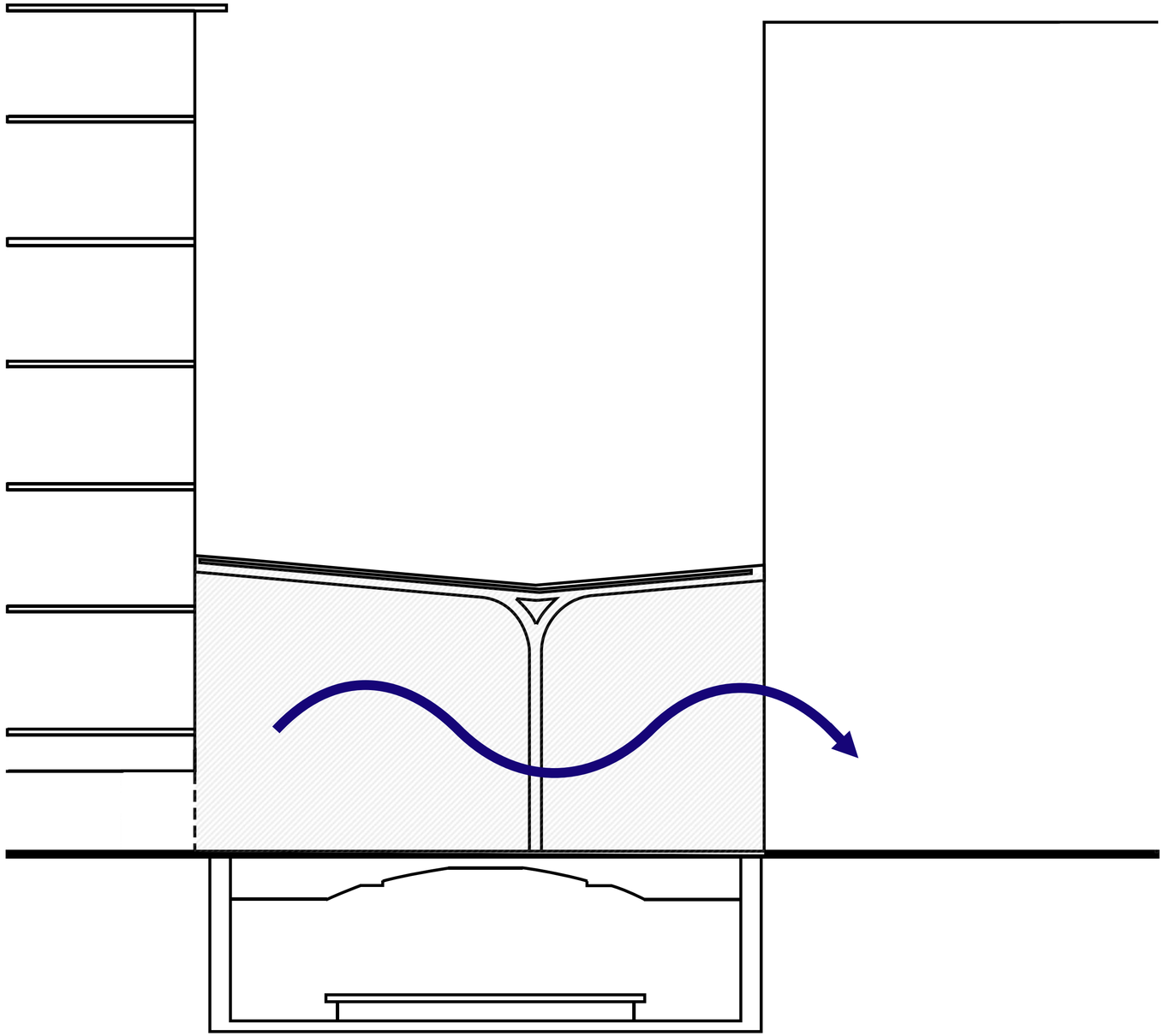
This new space will host the new entrances to the S-train station and new improved connections to the existing station



HYBRID SPACE

Design Concept

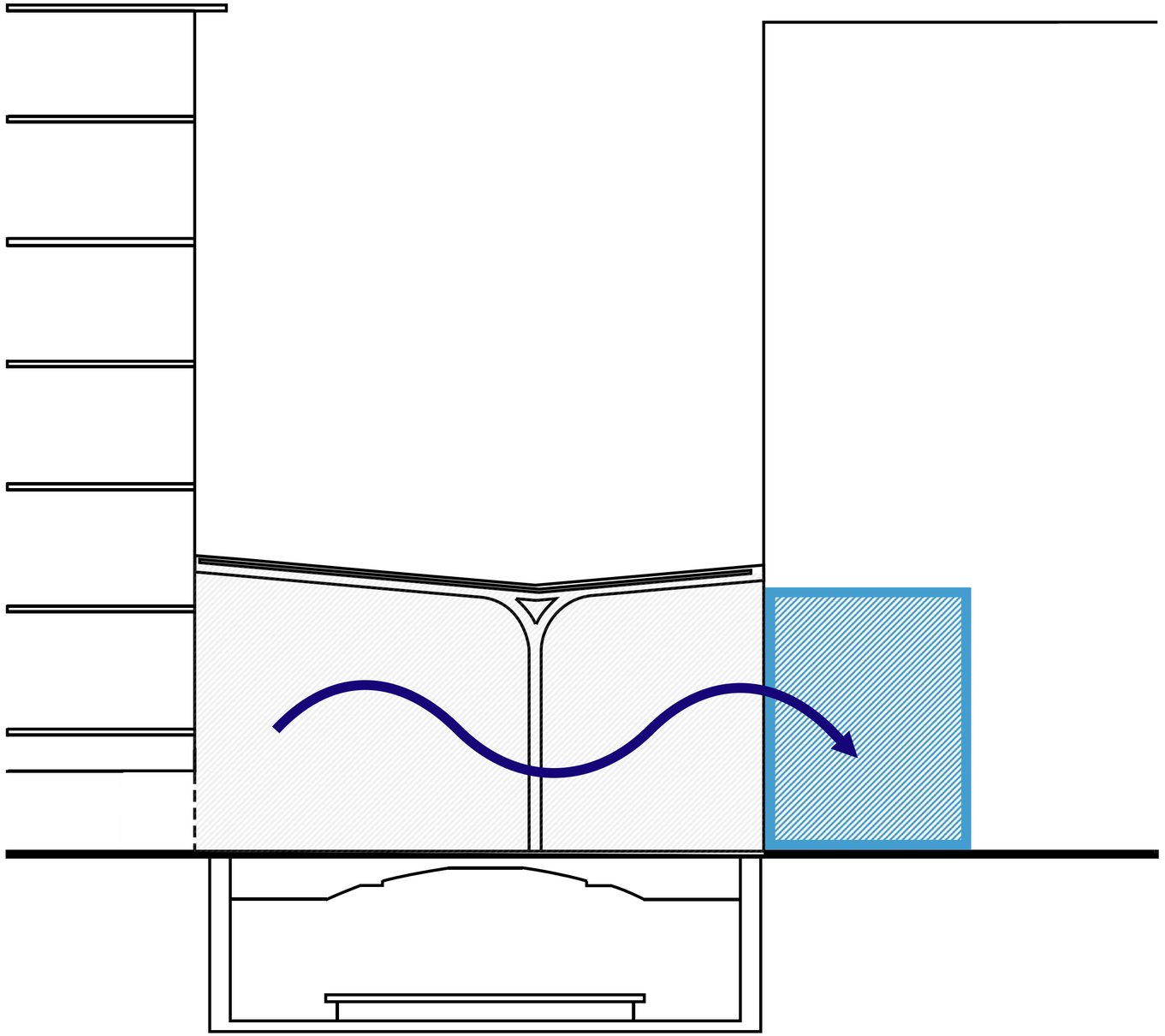
The increased activity in this space increases the value of the surrounding building



HYBRID SPACE

Design Concept

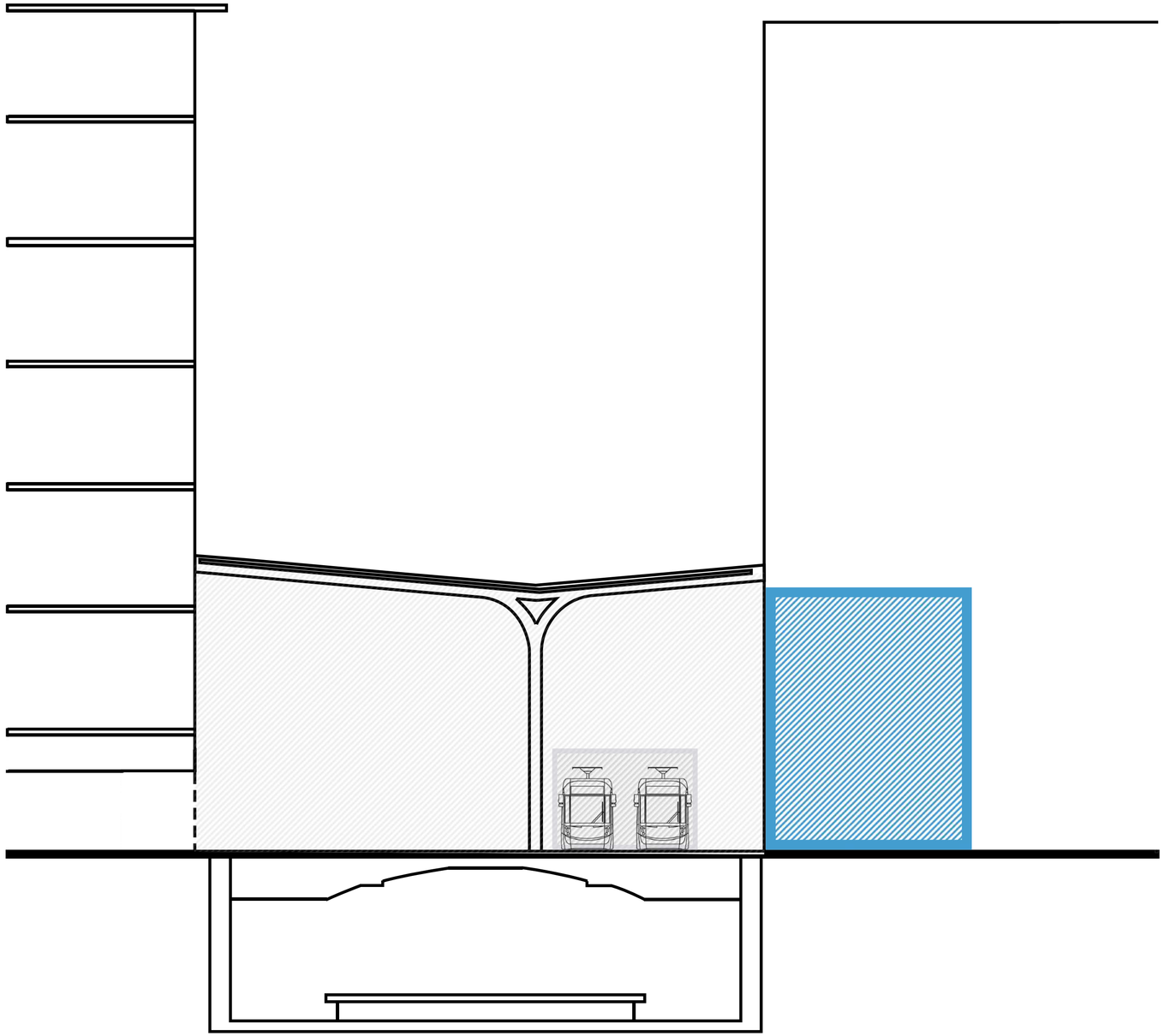
This will stimulate the owners to activate the plinths in the building with different functions and reducing the monoculture in the area.



HYBRID SPACE

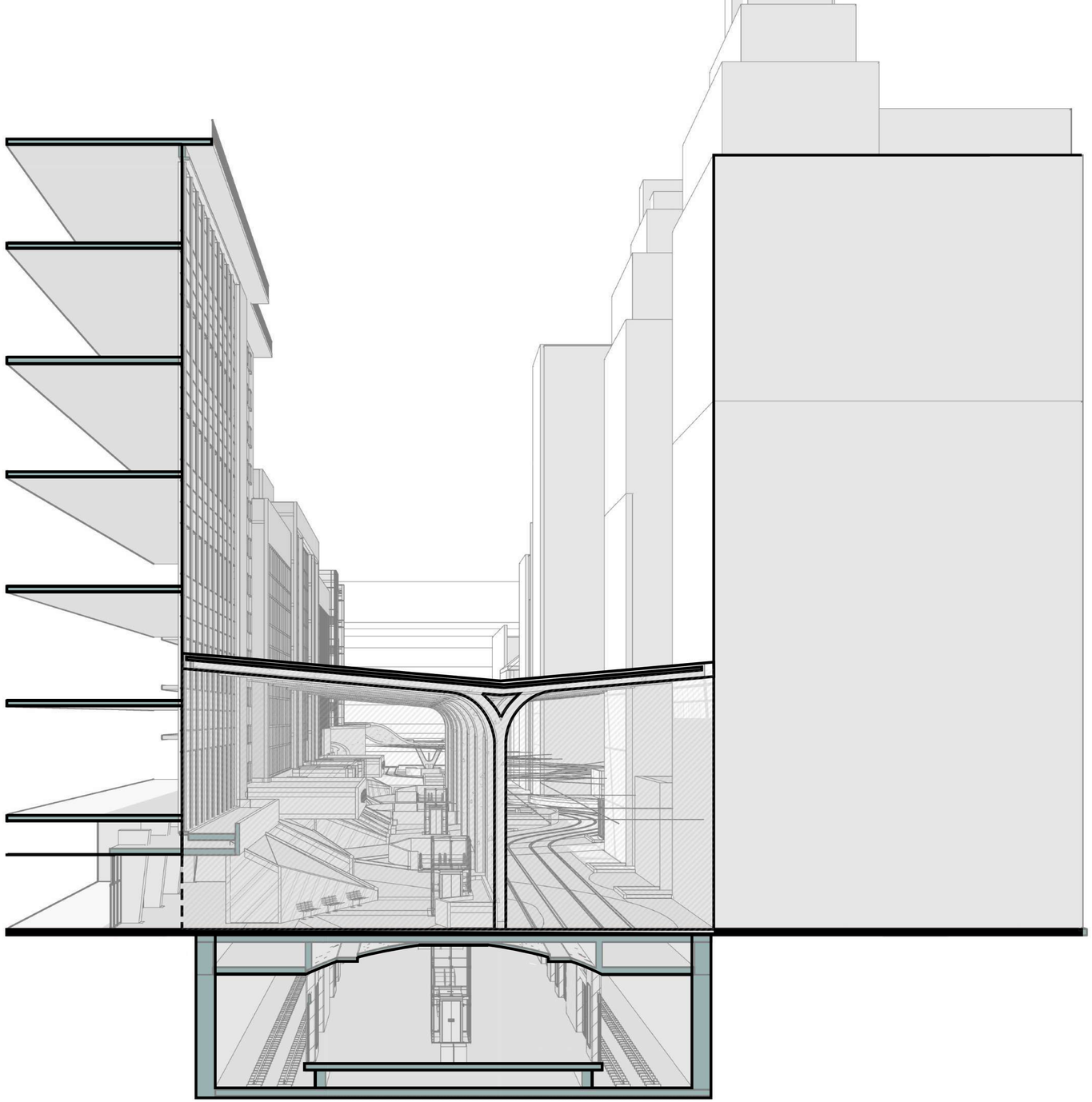
Design Concept

Within the street, the main tram line will remain as discussed earlier. They will share the space with the pedestrians and cyclists, creating a shared space.



HYBRID SPACE

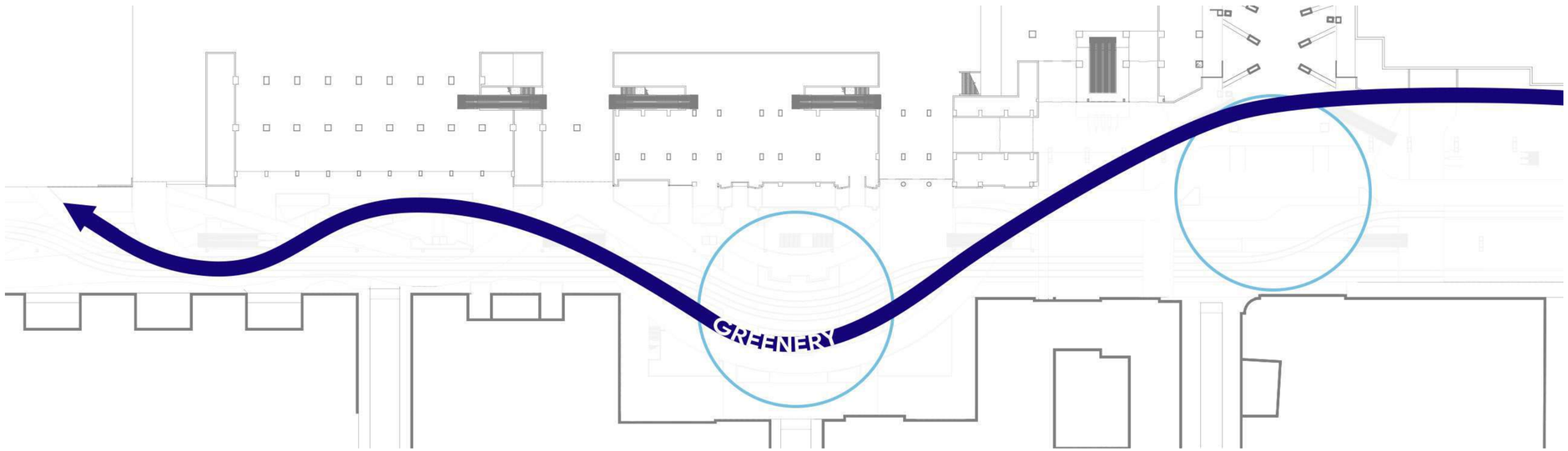
Design Concept

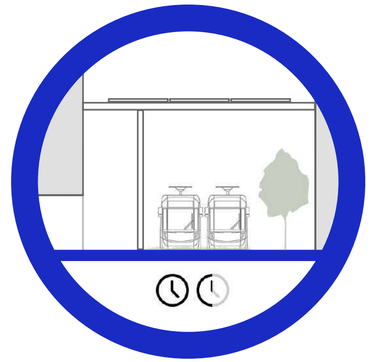


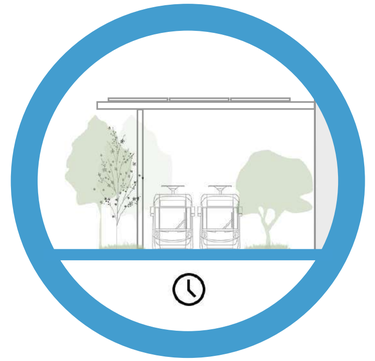
HYBRID SPACE

Design Concept

As for the design of the street itself, the aim is to create a quieter area for a slower speed of travel, contrasting the busy inside and underground with a large amount of greenery and seating areas.



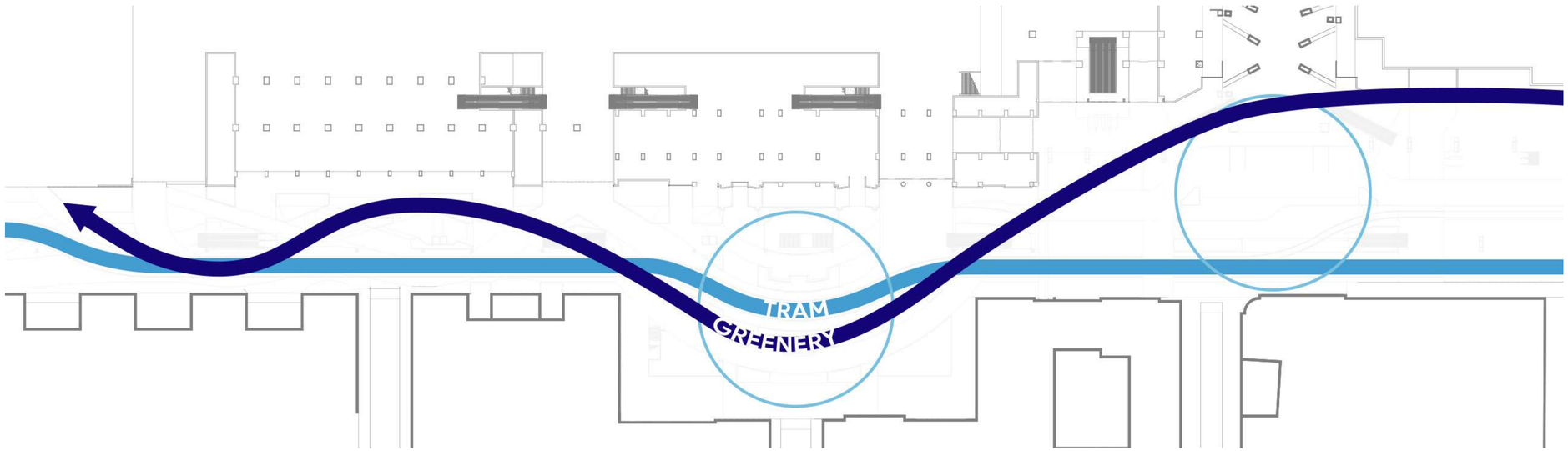


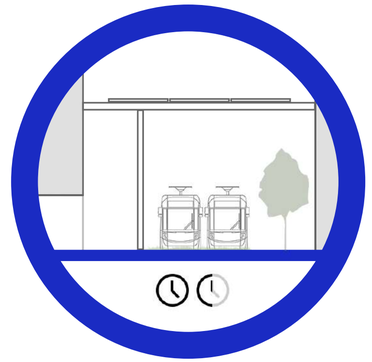


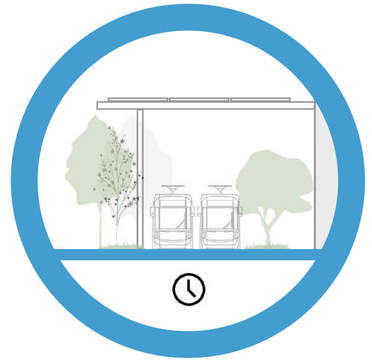
HYBRID SPACE

Design Concept

The design reflects this with a central meandering flow through the street. To stimulate this slower pace, the tram in the shared space will curve through the Fonsny Square to keep the speed low.



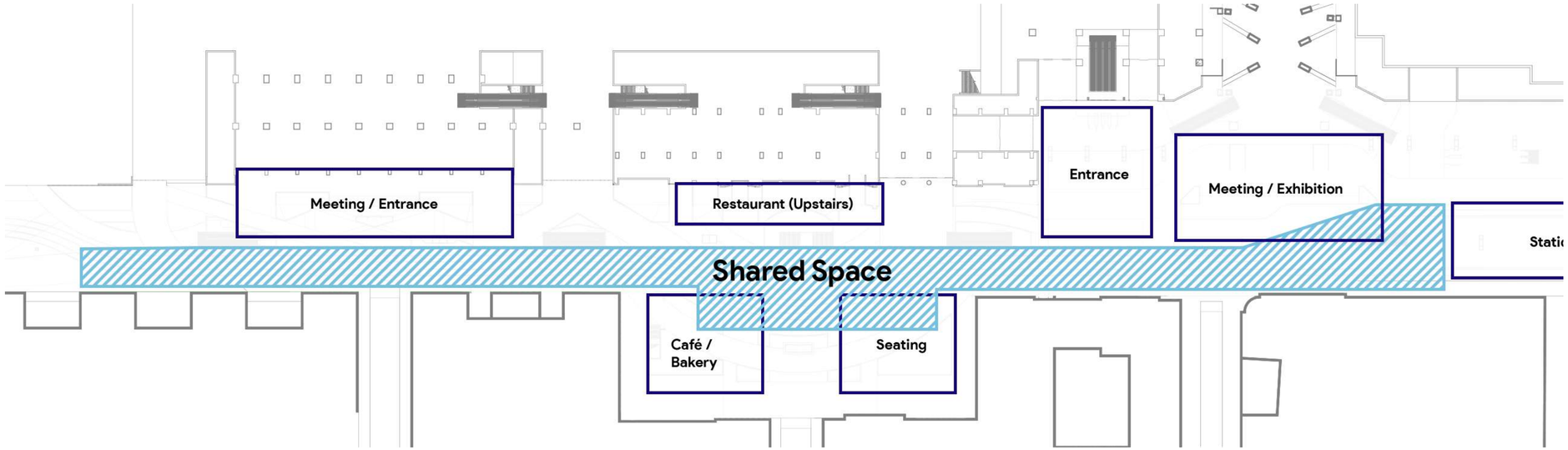


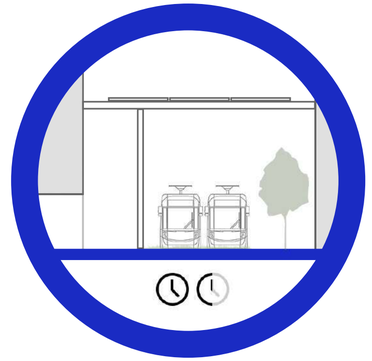


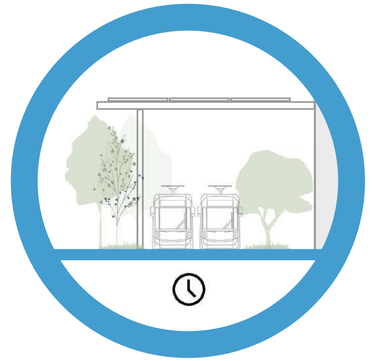
HYBRID SPACE

Design Concept

This quieter street is stimulated with extra functions in the Post-office building and a new café in the middle of the square.

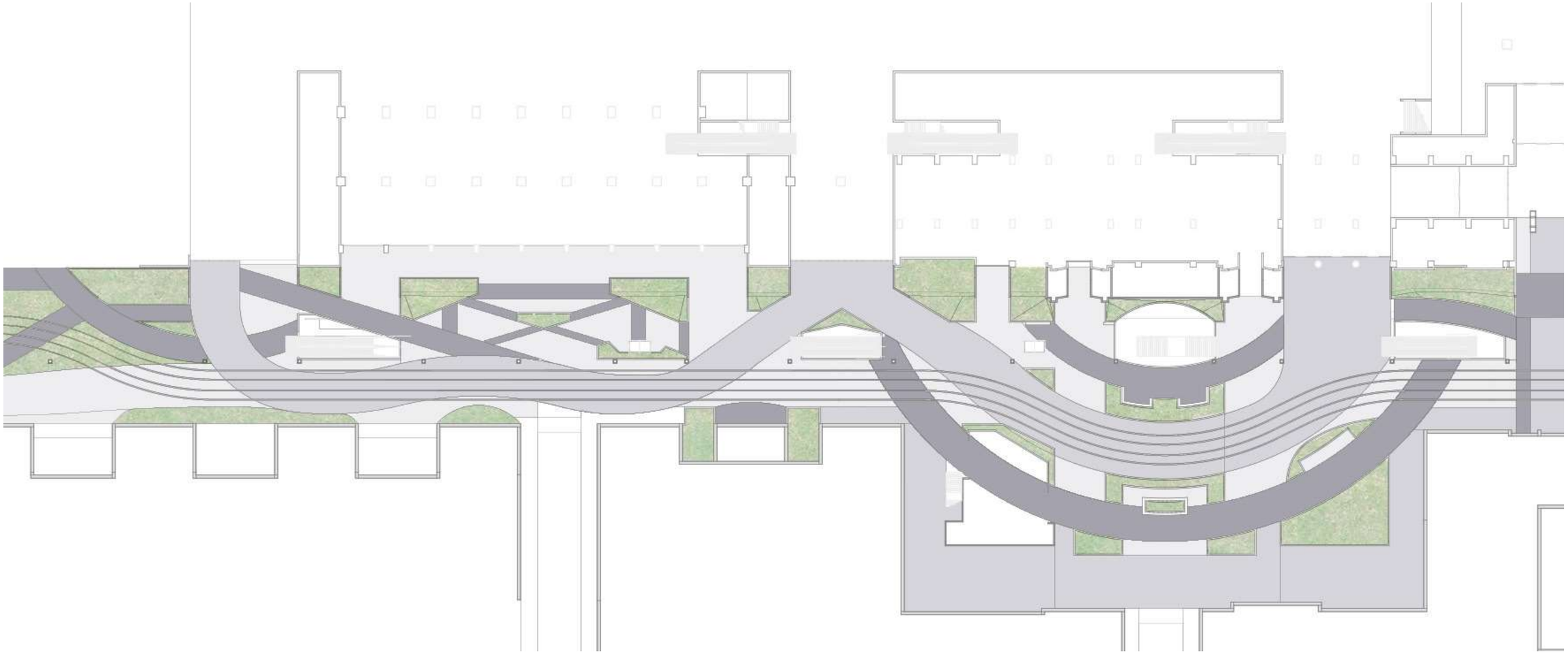




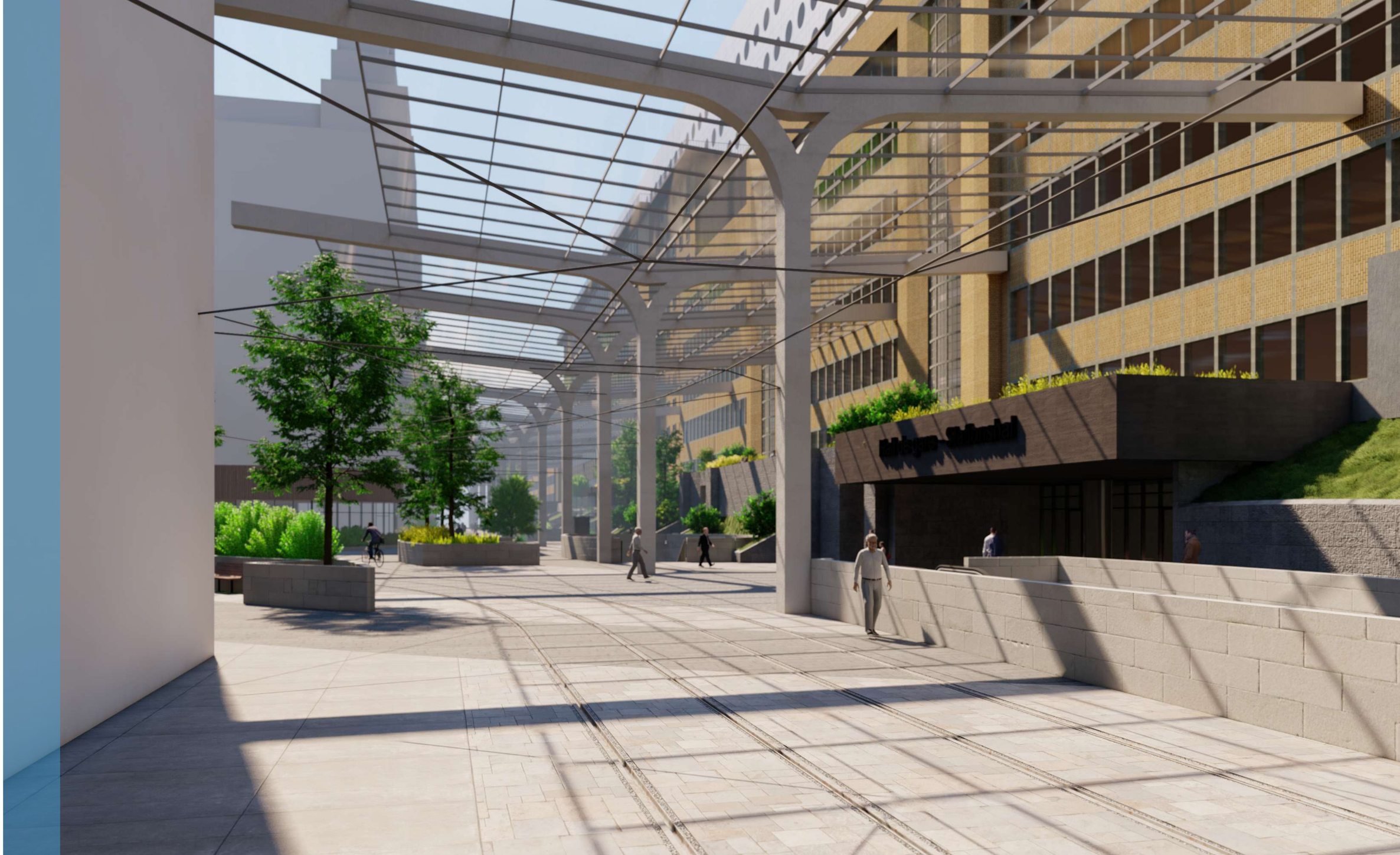


DESIGN

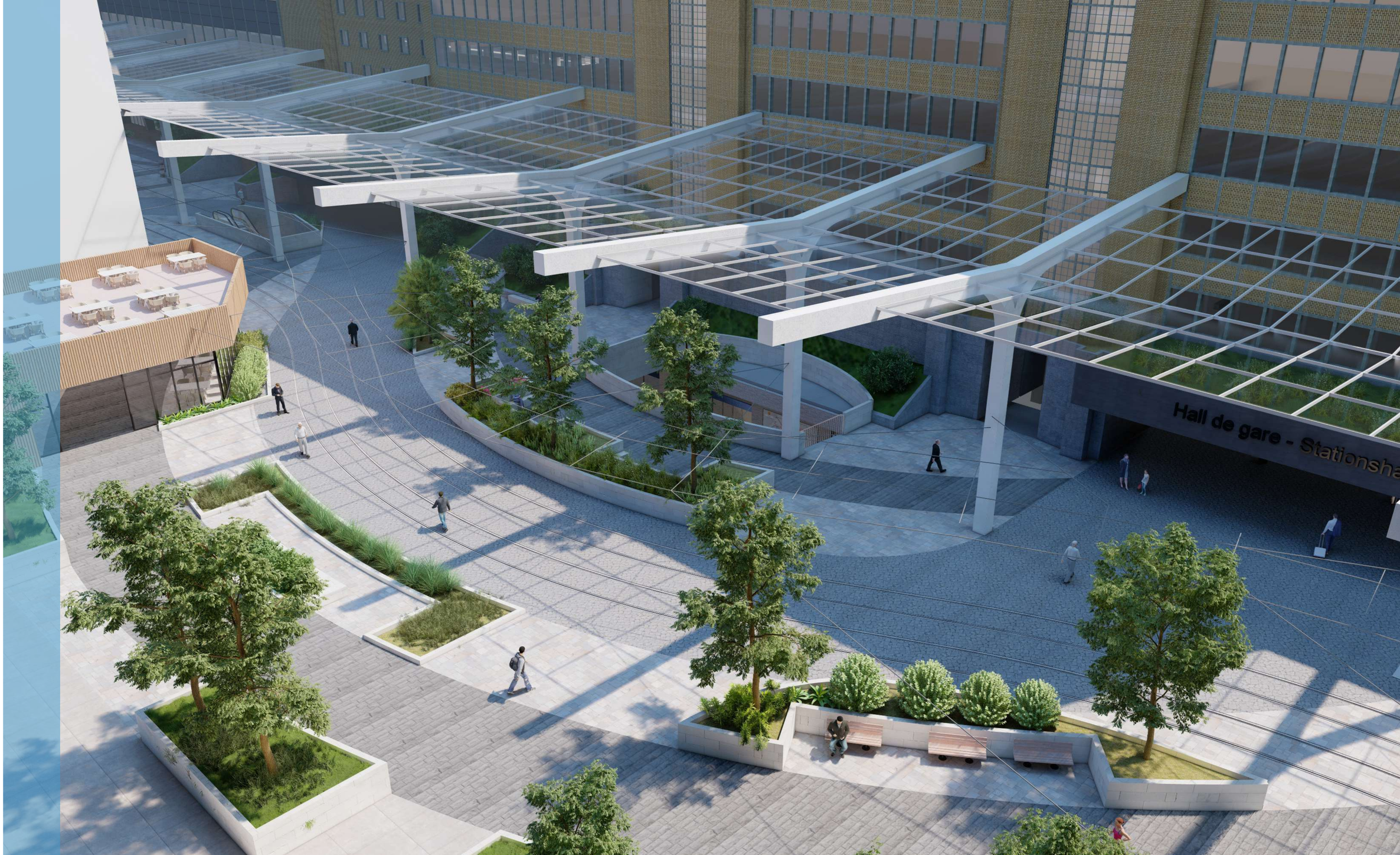
Layout



AVENUE FONSNY



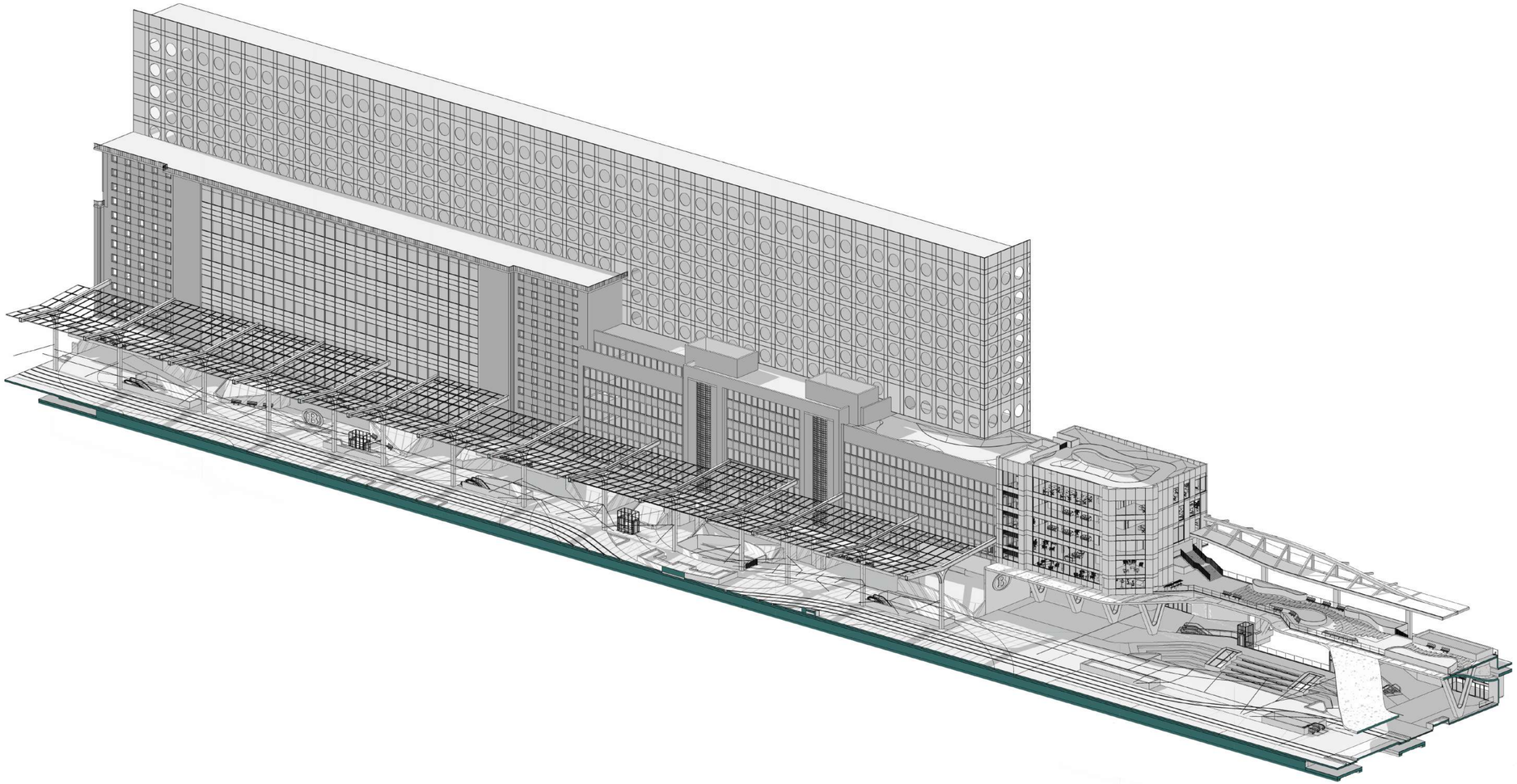
AVENUE FONSNY



AVENUE FONSNY

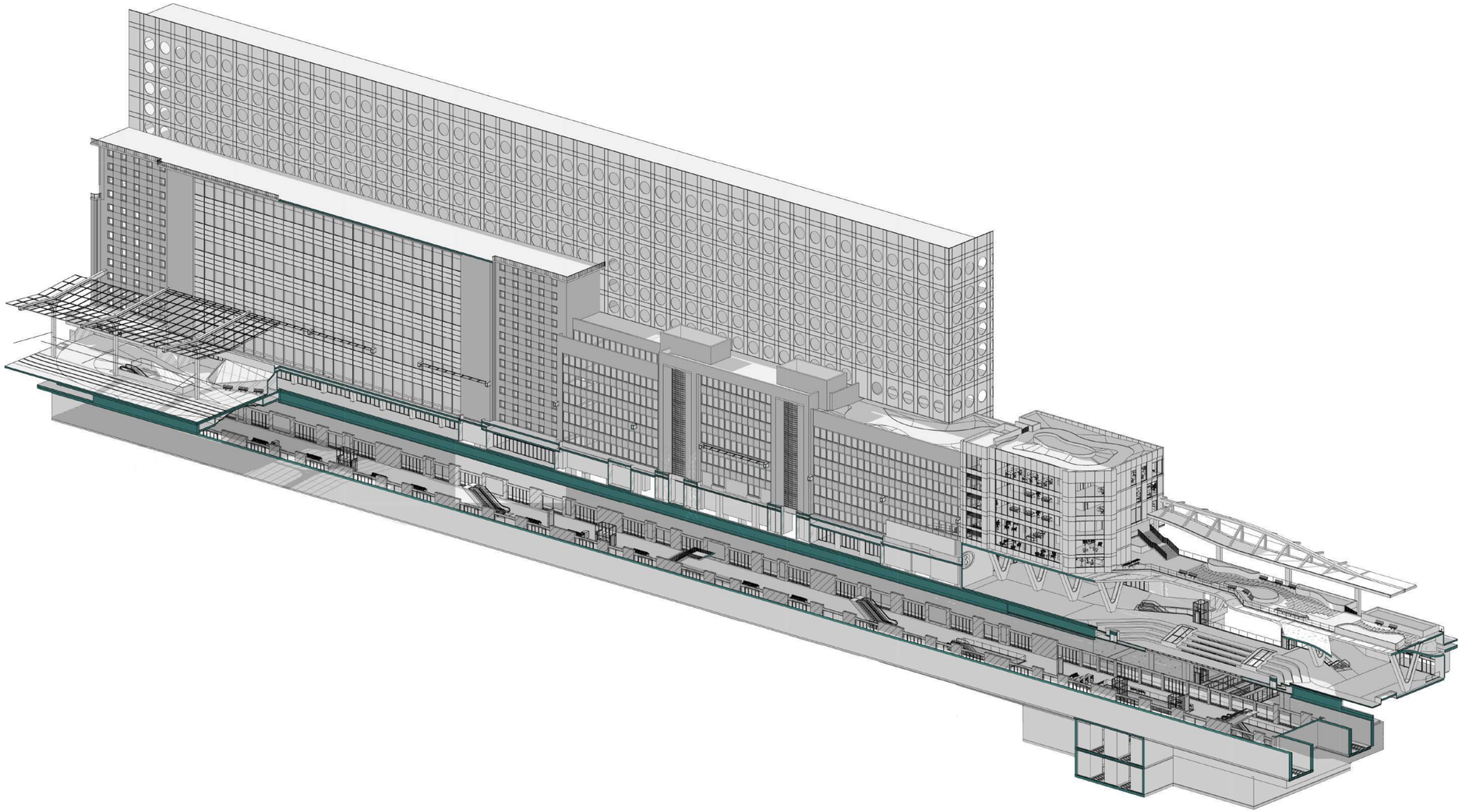
S-TRAIN STATION

Location



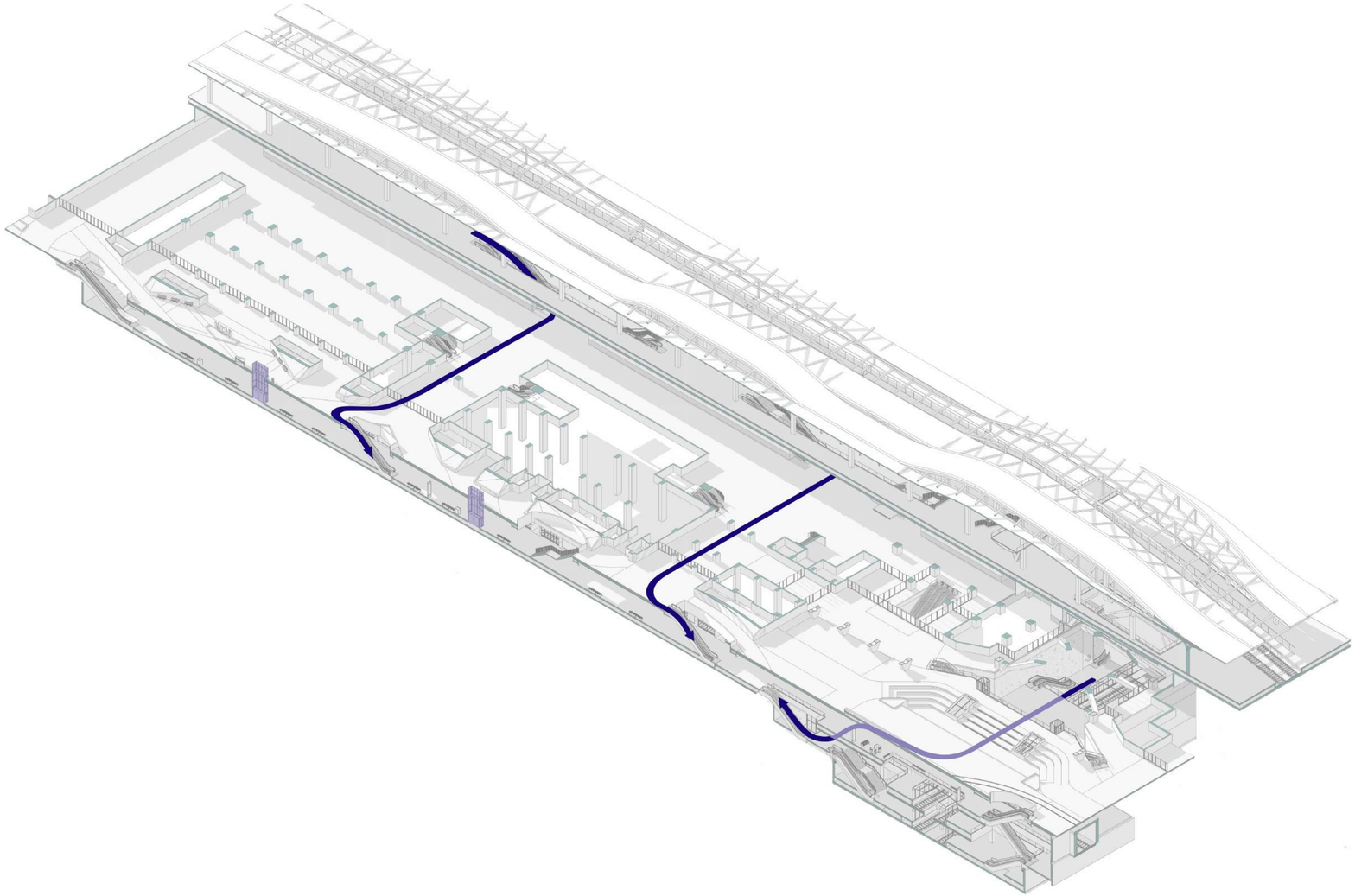
S-TRAIN STATION

Location



S-TRAIN STATION

Access Routes



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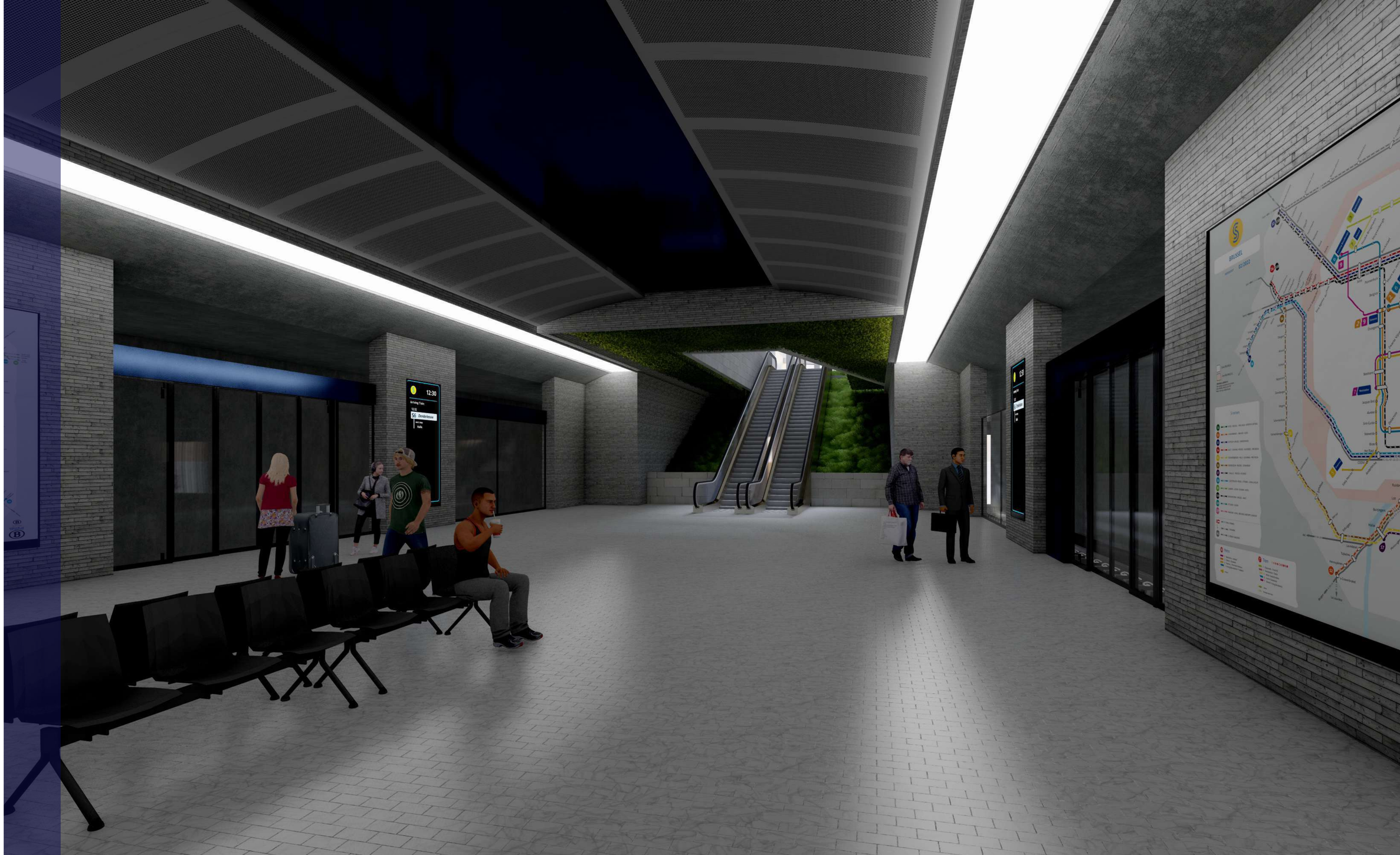
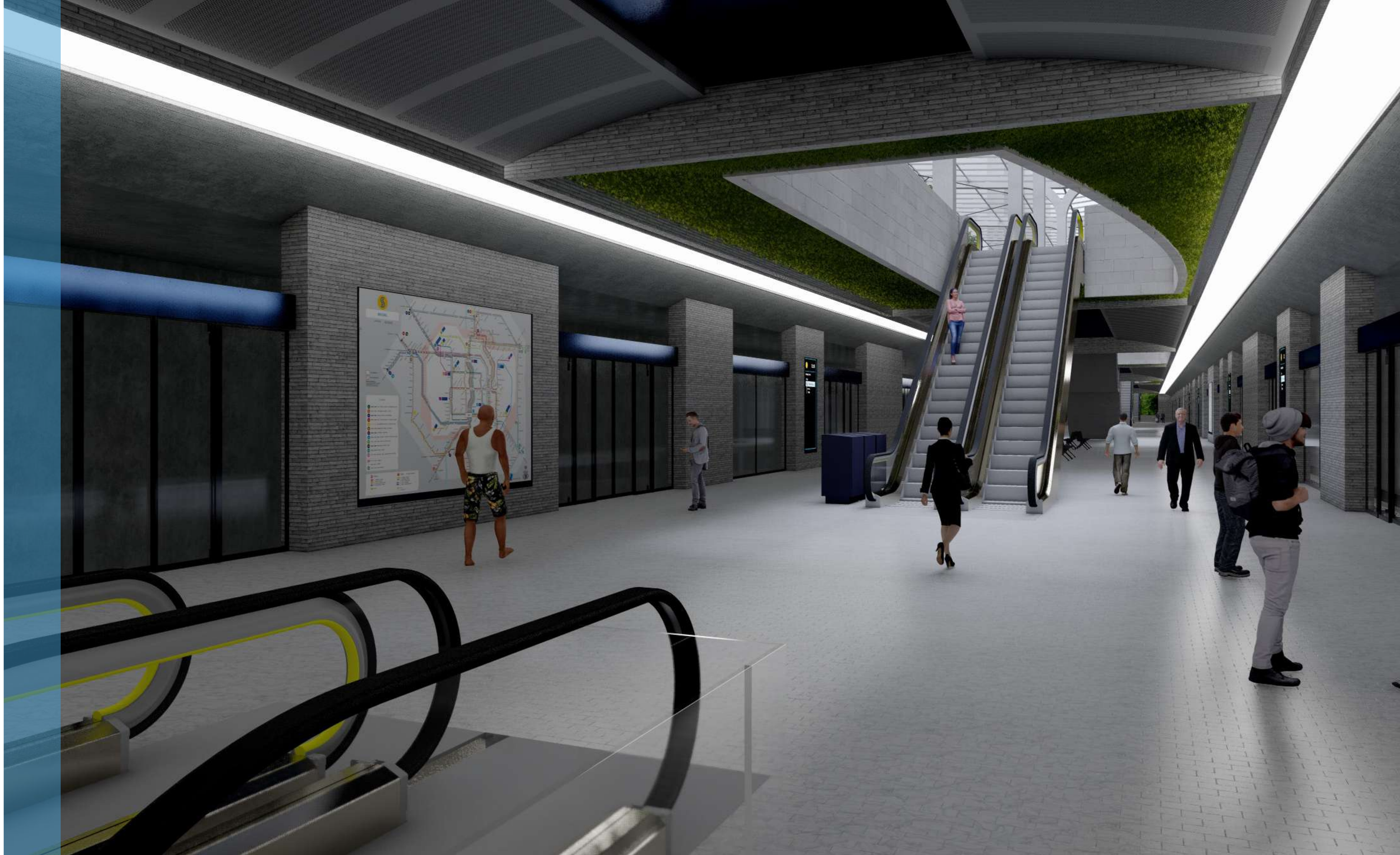
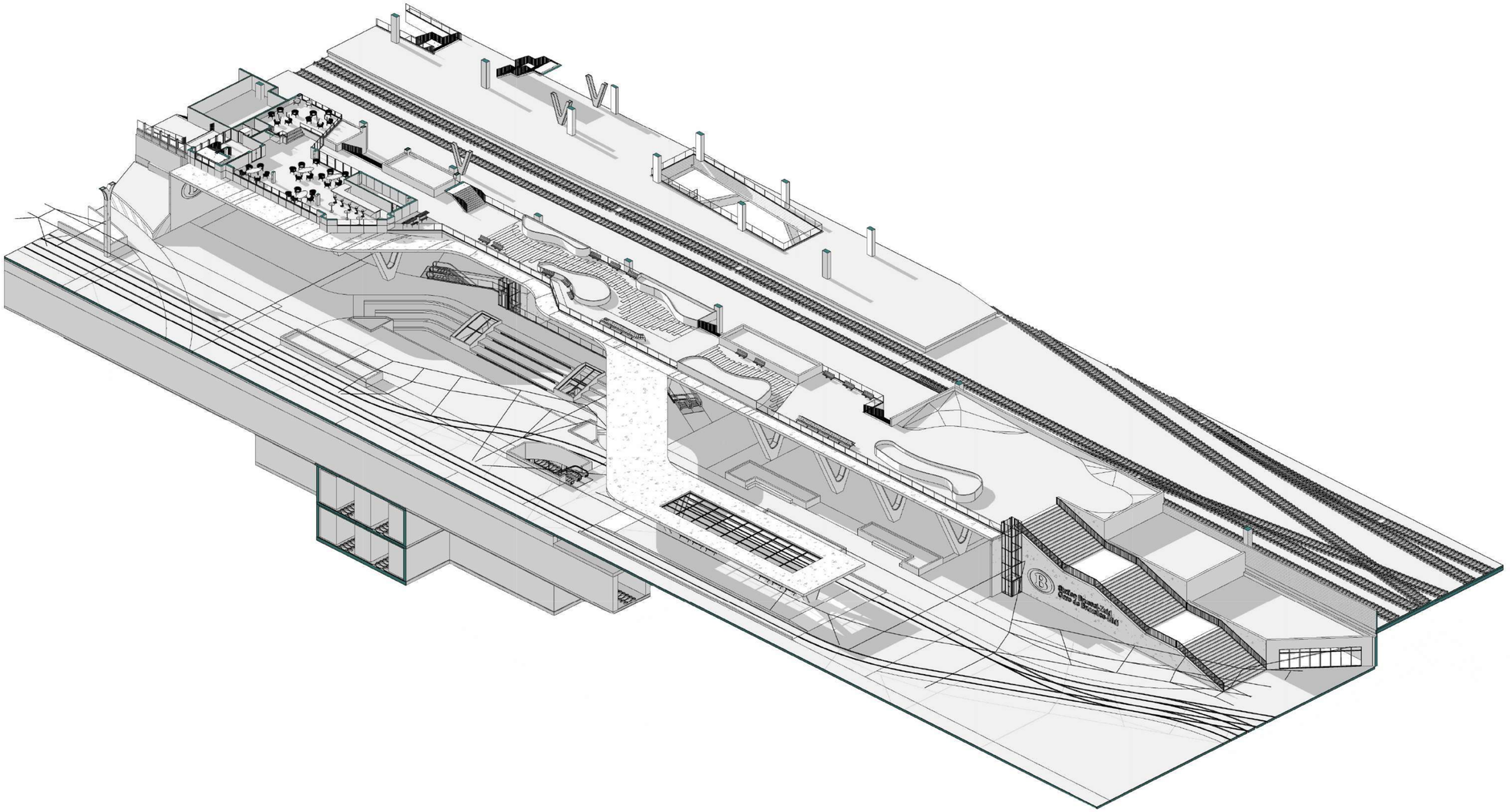


S-TRAIN STATION



THE ENTRANCE

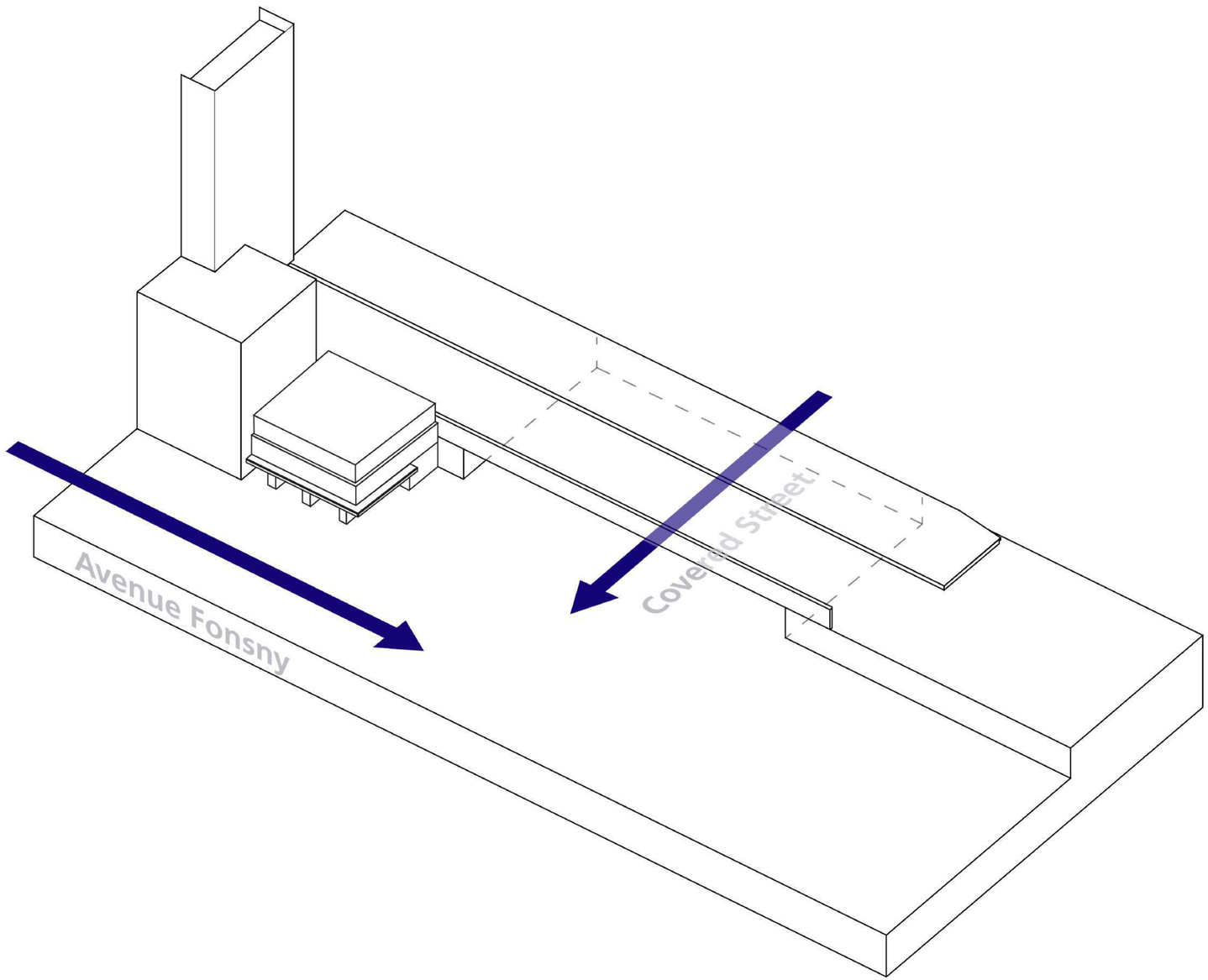


INTERSECTION

Design Concept

Integration

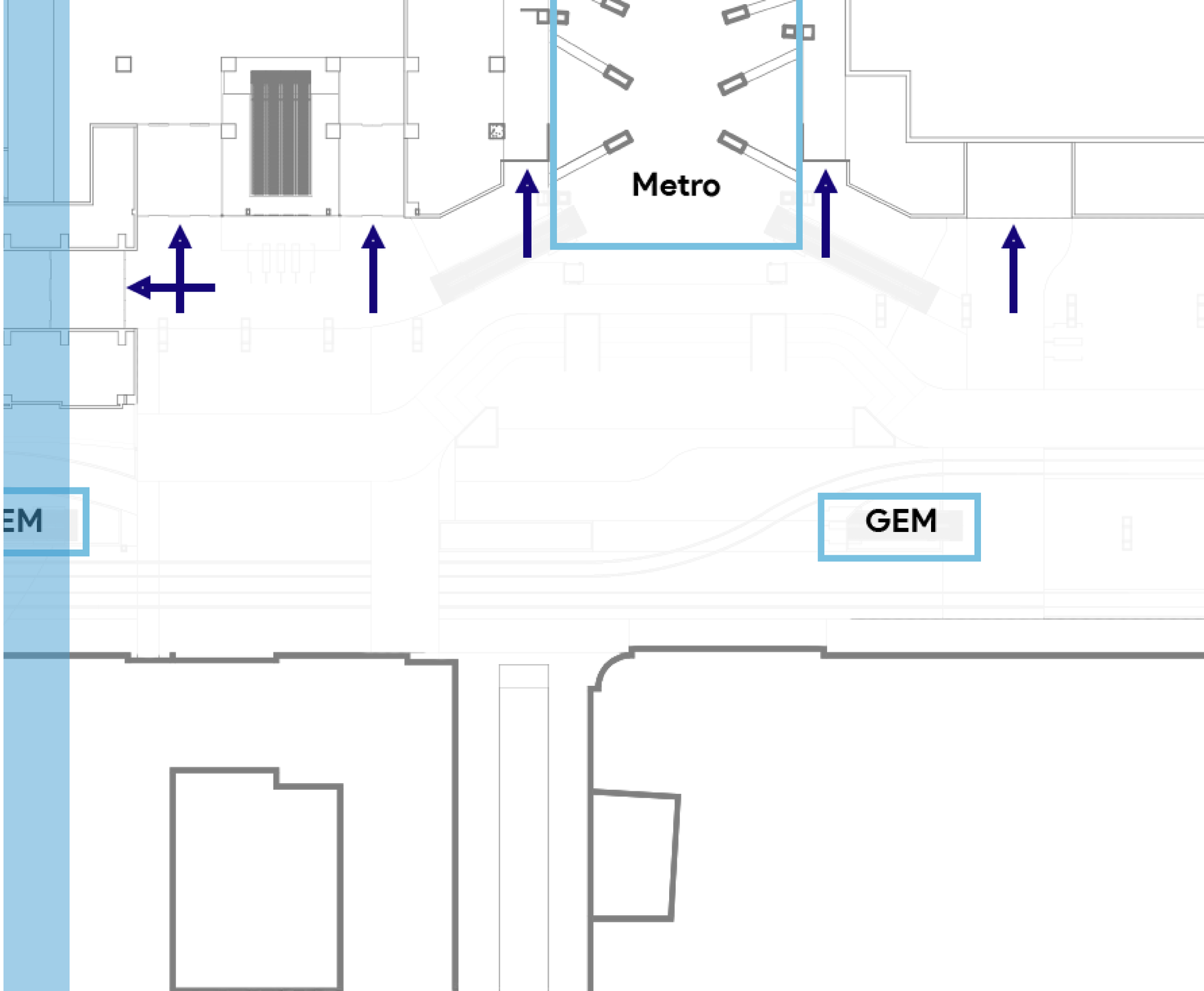
Diversity



INTERSECTION

Entrances

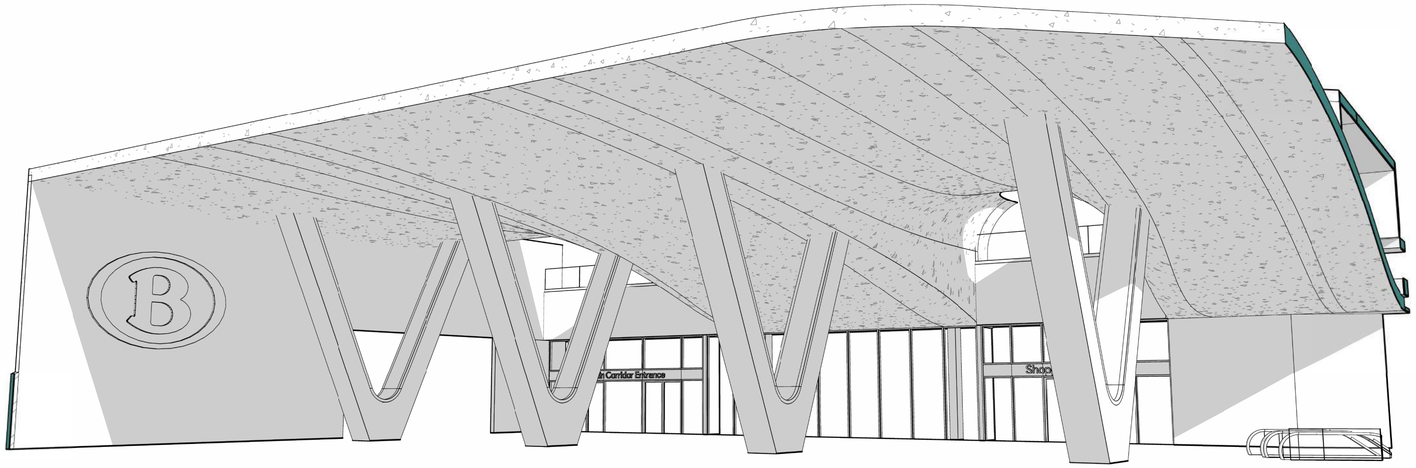
The main entrances in this area



INTERSECTION

Canopy

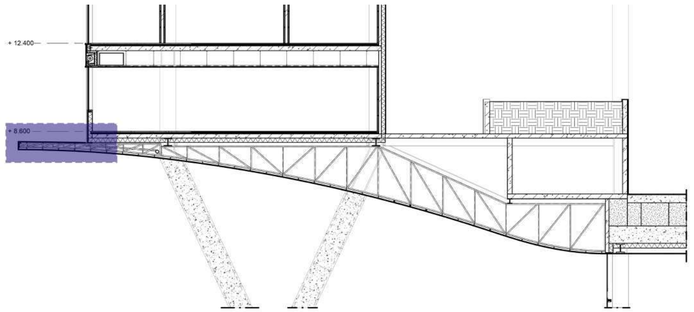
A new canopy is created that combines all these entrances under one roof. The canopy will be a curved structure, guiding people inside.

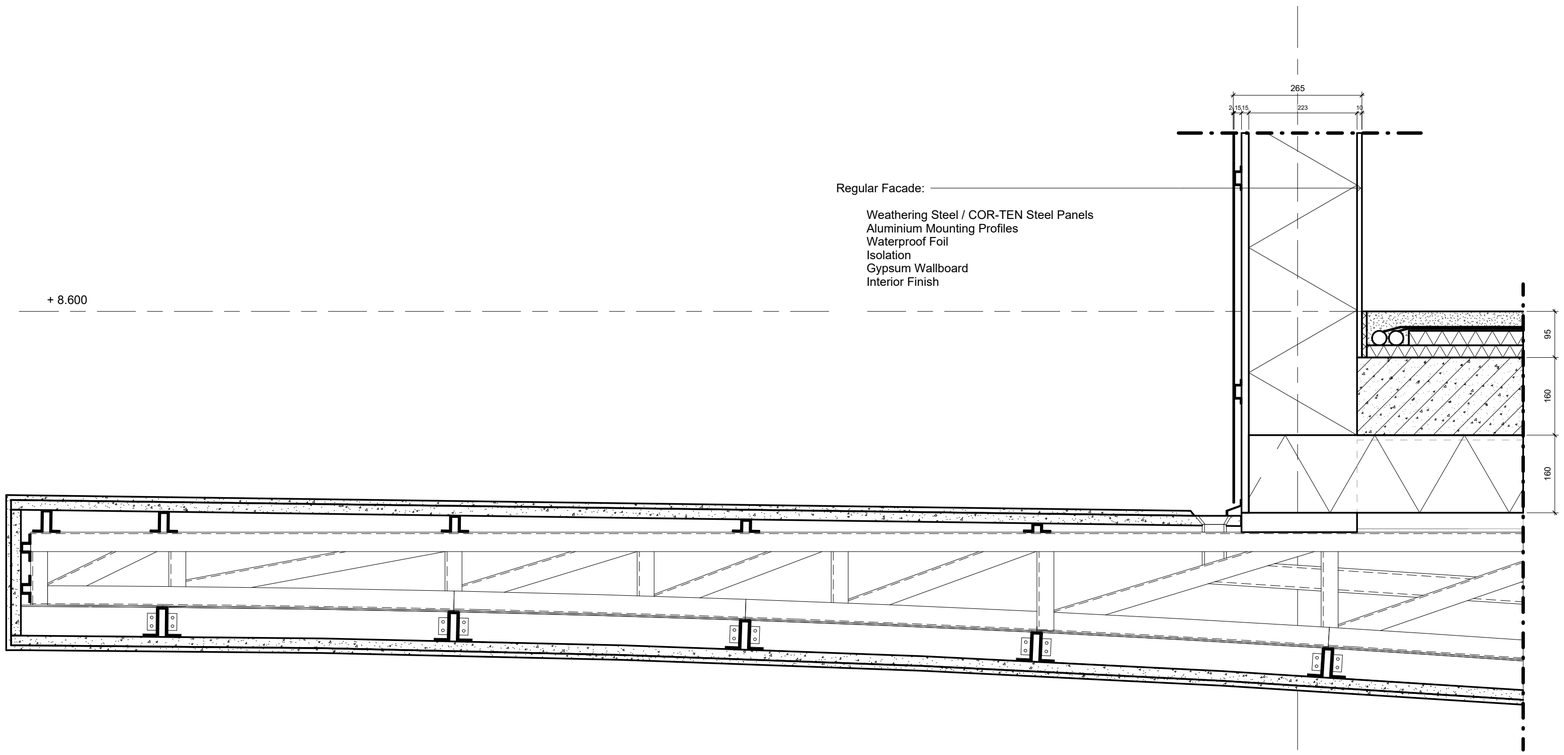


INTERSECTION

Canopy

This complex form will be supported by a truss system and several V-shaped pillars.

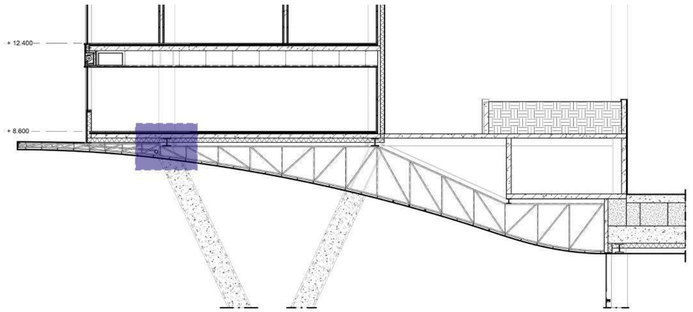


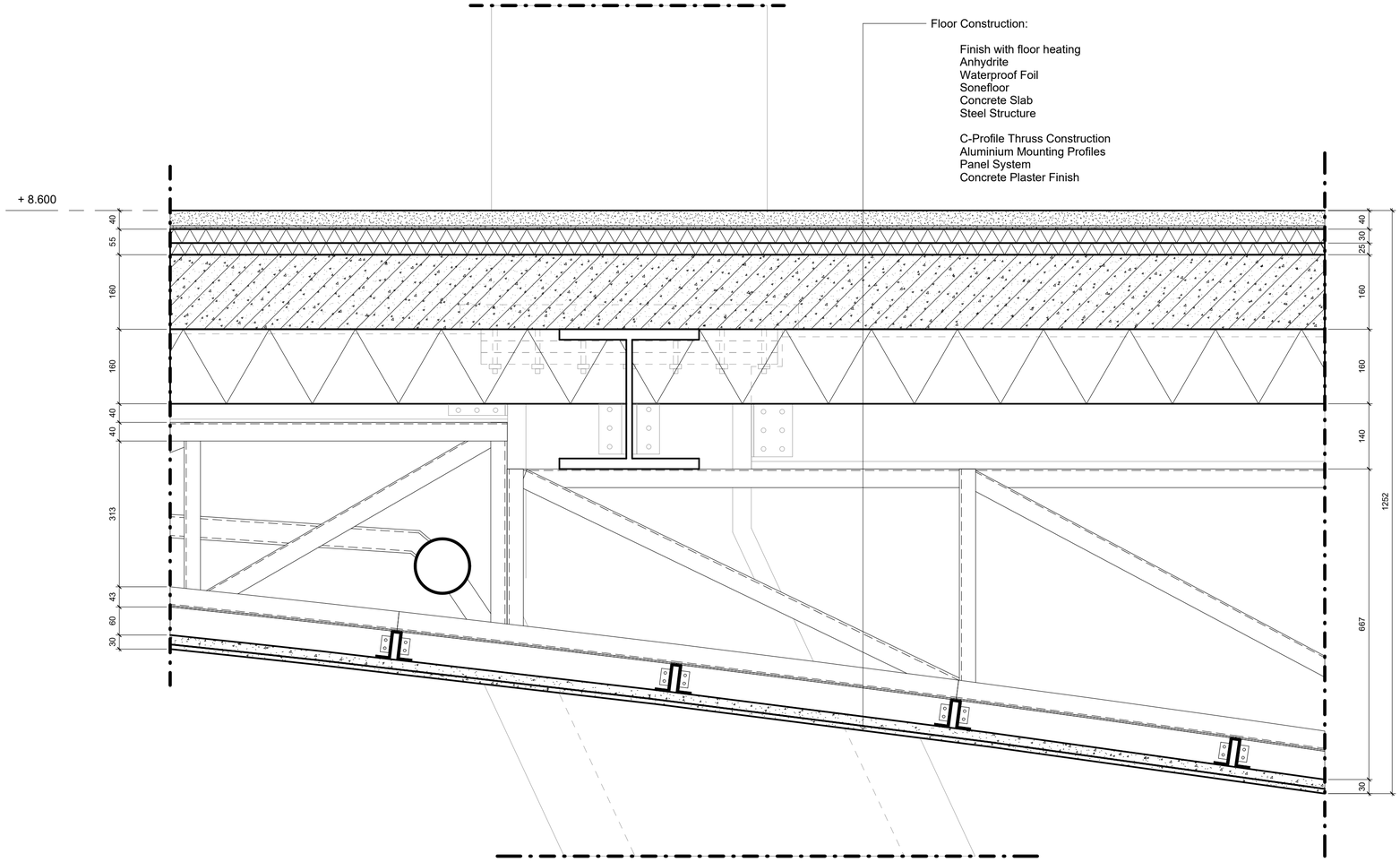


INTERSECTION

Canopy

The canopy will be finished off with cement plaster, made using recycled concrete and will give this canopy the feeling of one single element.

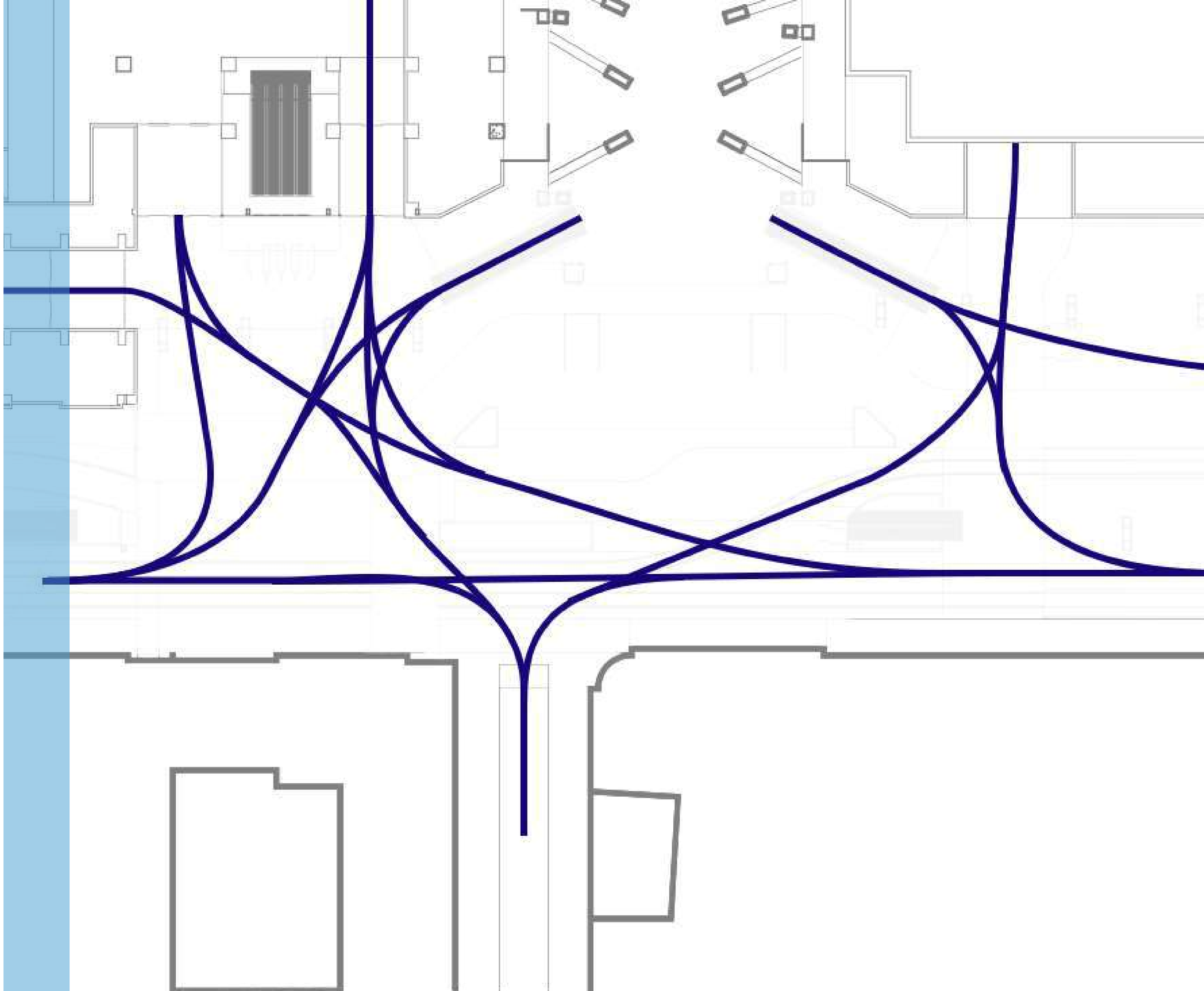




INTERSECTION

Multifunctional Space

The main walkway around this area

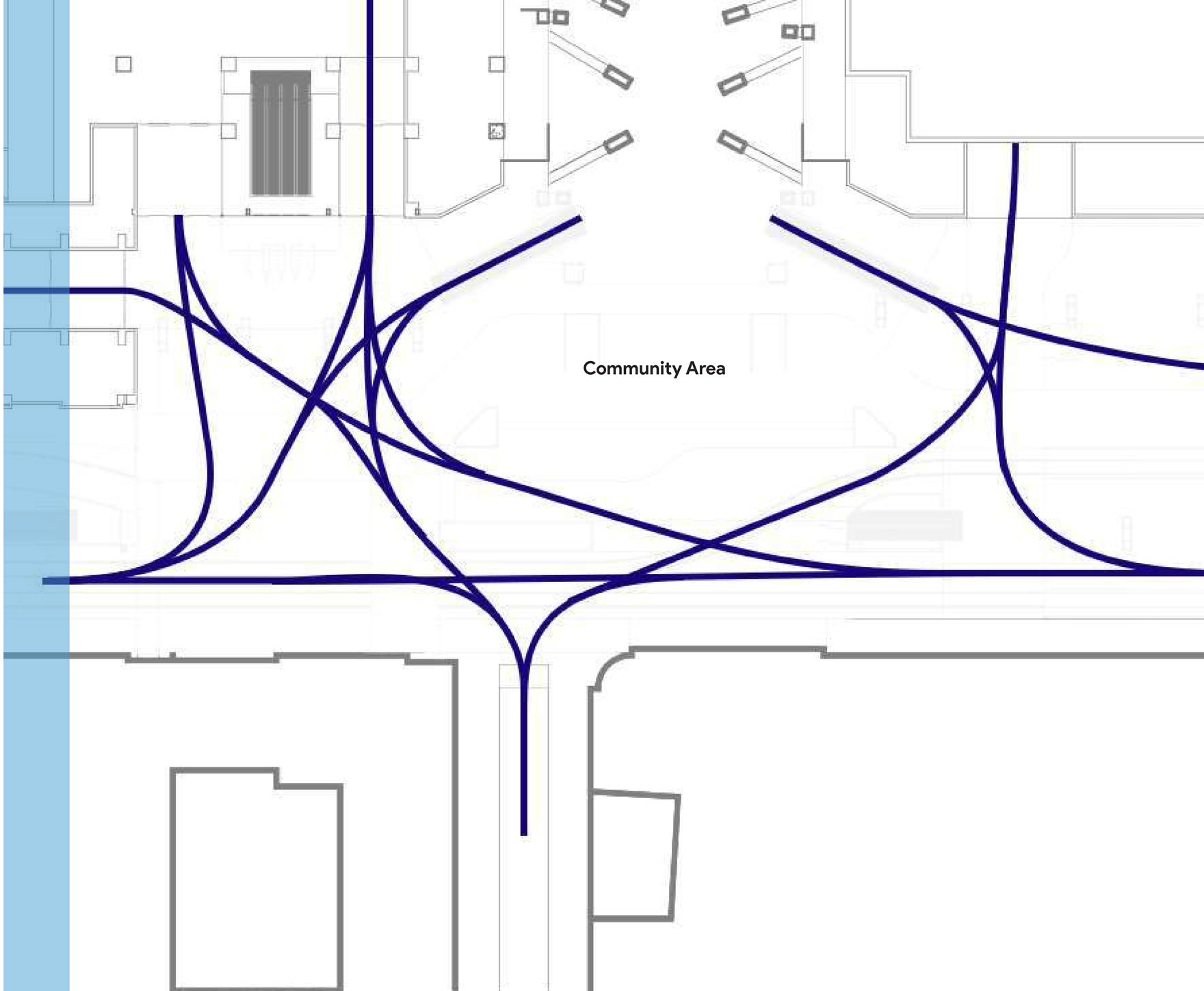


INTERSECTION

Multifunctional Space

This space can be used by the local area to promote activities or have expositions and in general act as a gathering space for the community.

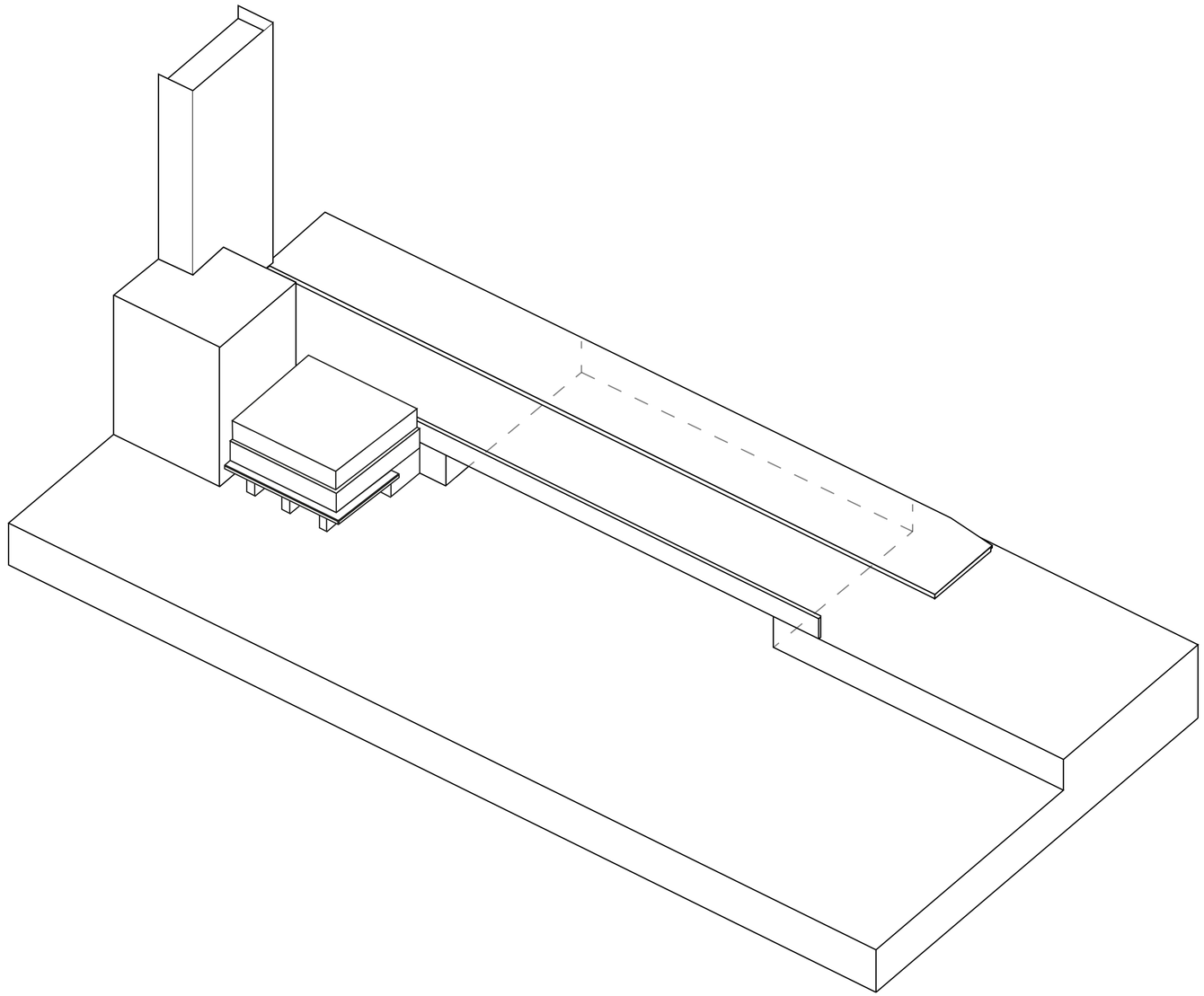
Placing this area in the middle of the main entrance allows travellers to see where they have arrived and can interact with the local community.



INTERSECTION

Design Concept:

- Removal of current Buildings
- Central community area
- New Entrance
- Tram Stop
- Green Roof
- Extension Building
- New Roof



CONCEPT

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Central community area

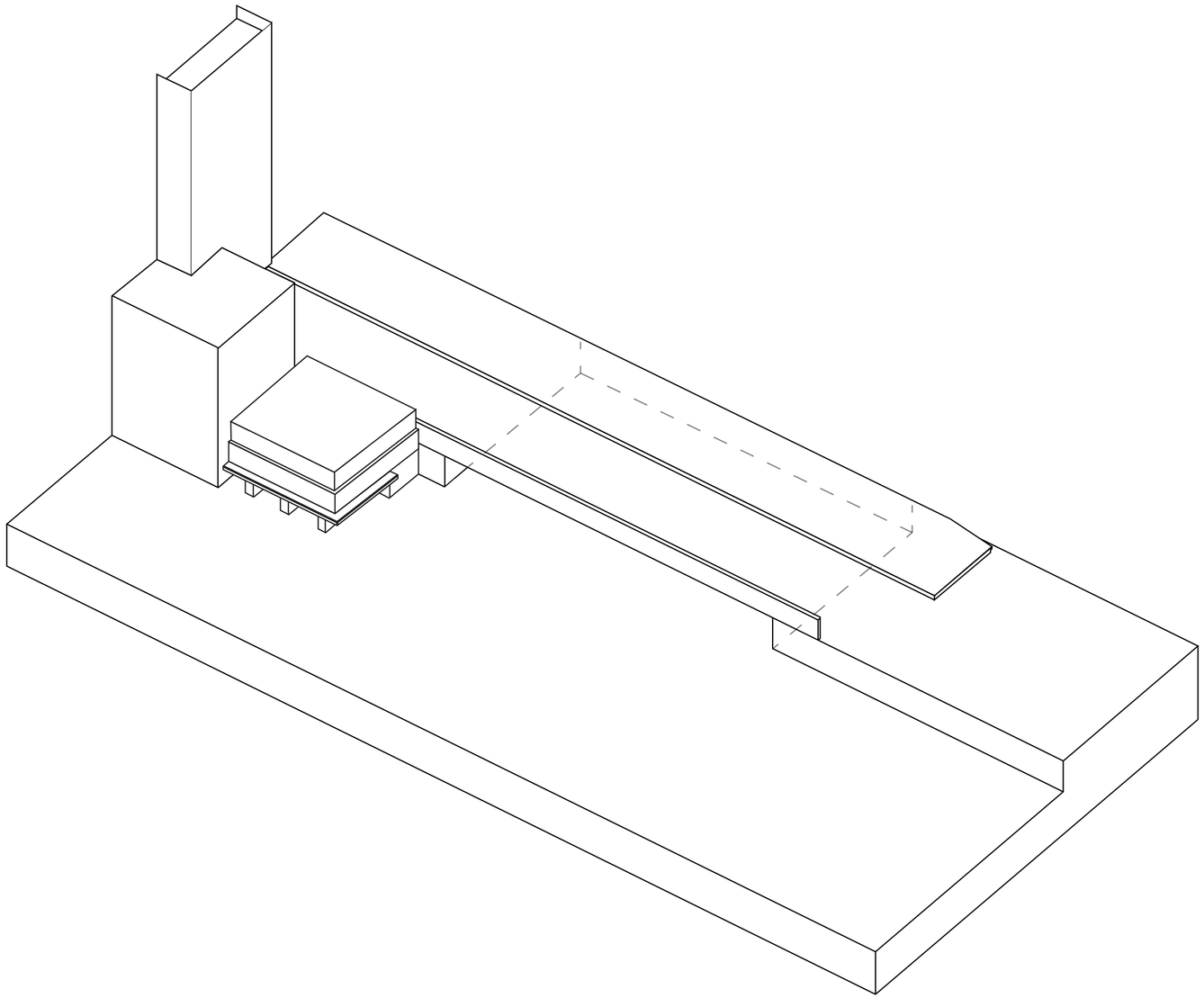
New Entrance

Tram Stop

Green Roof

Extension Building

New Roof



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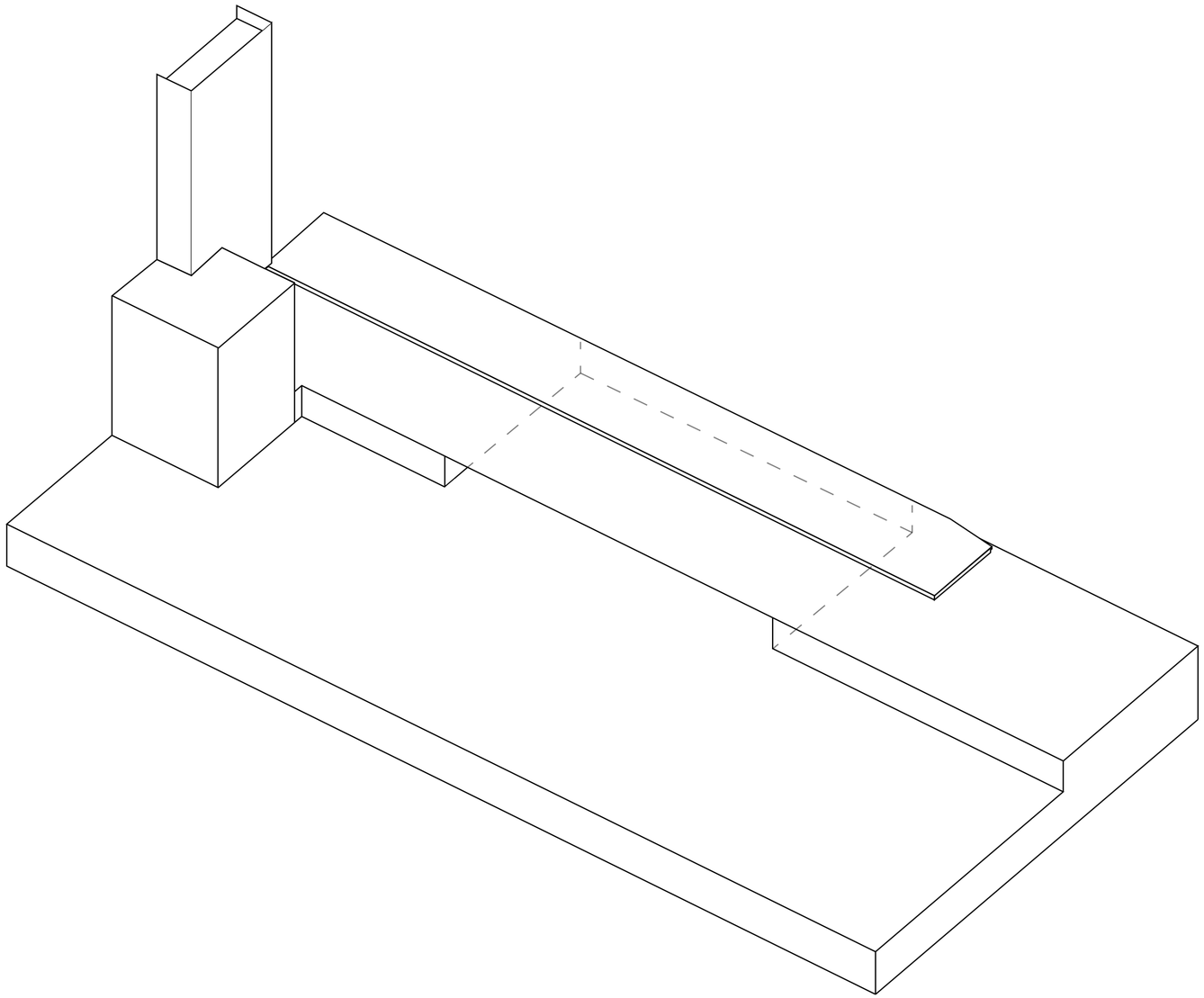

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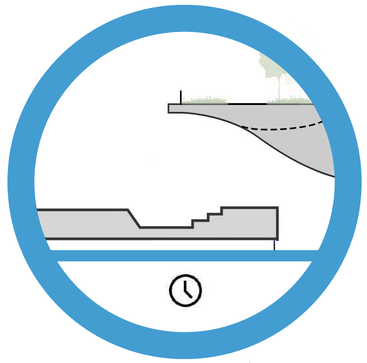

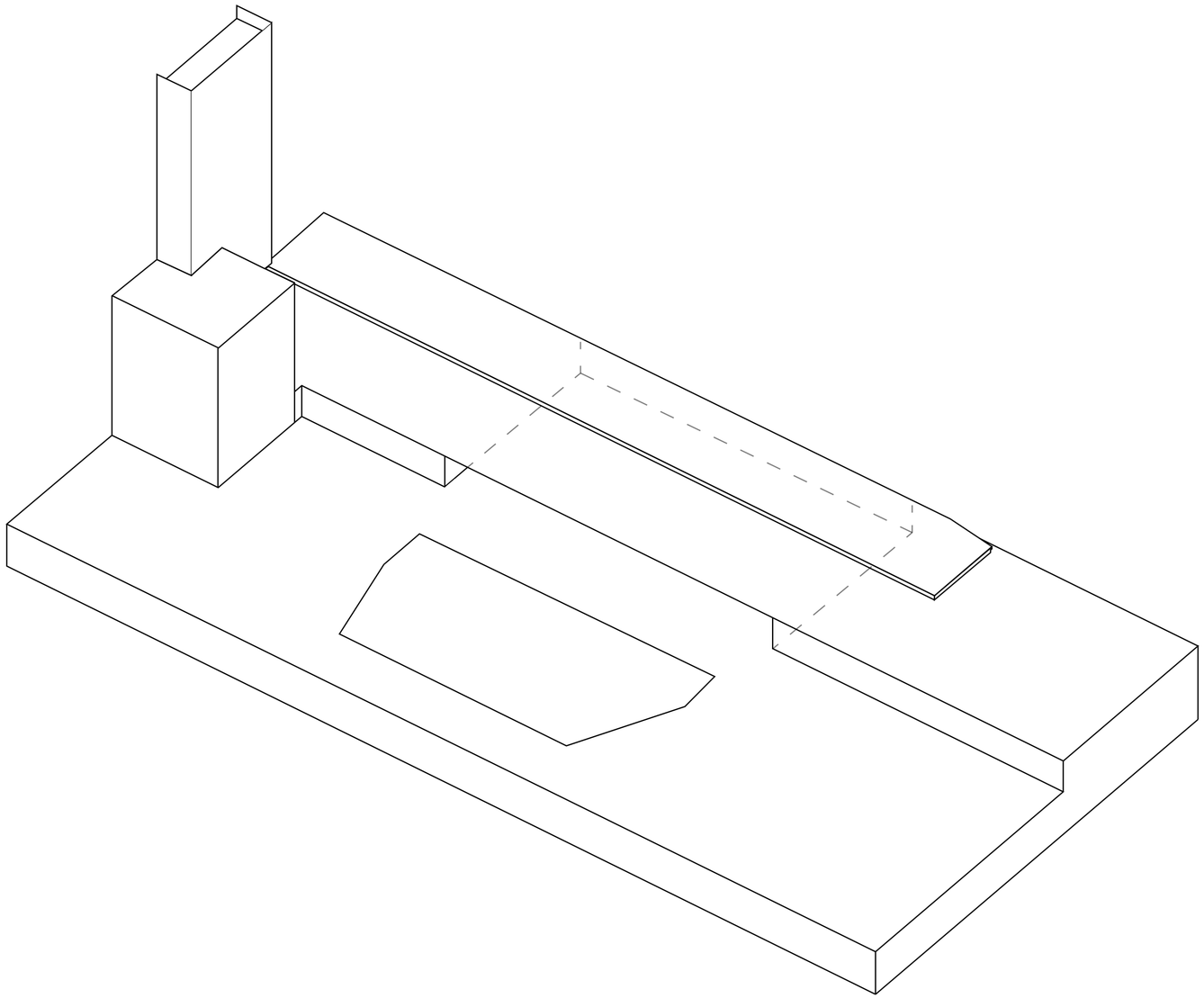

CONCEPT

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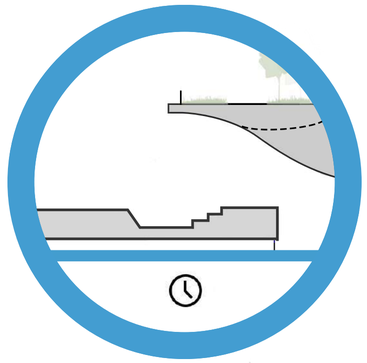

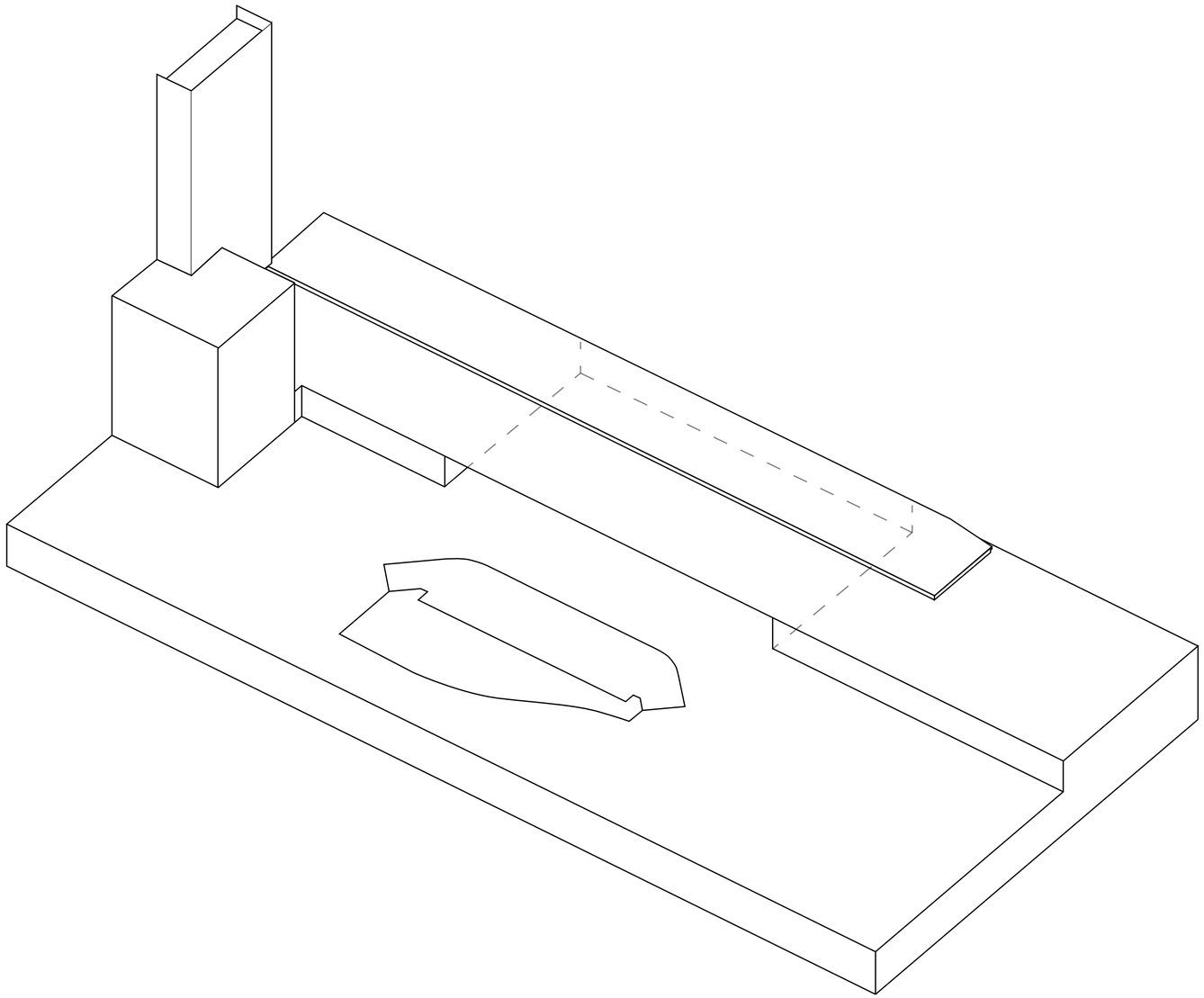

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Tram Stop

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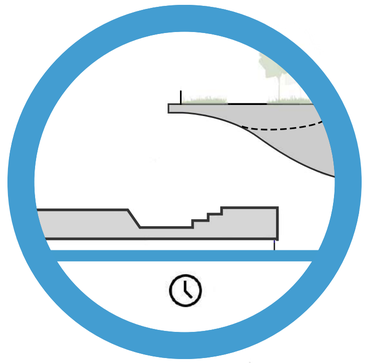

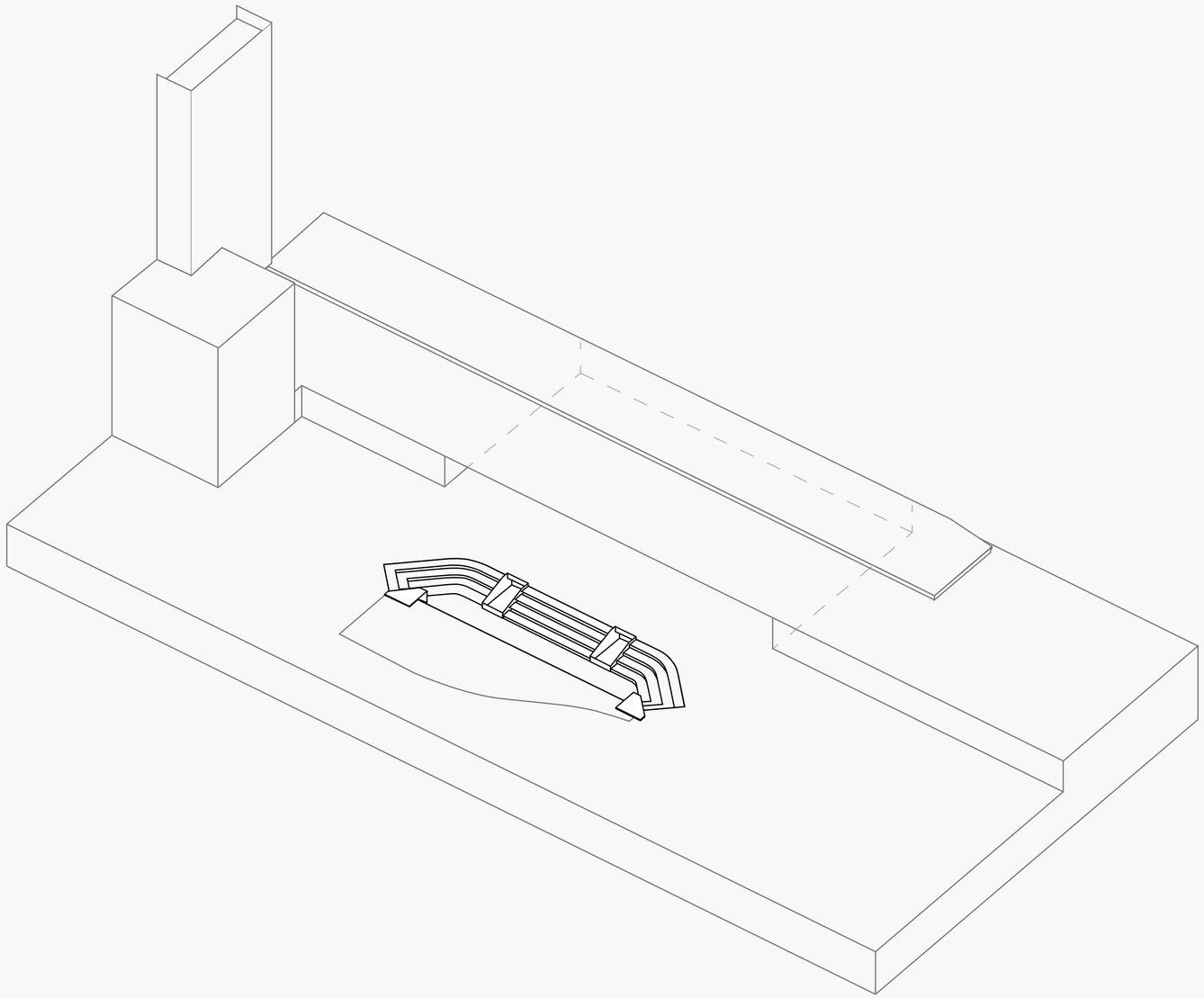

CONCEPT

Design Concept:

- Removal of current Buildings
- Central community Area
- **New Entrance**
- Tram Stop
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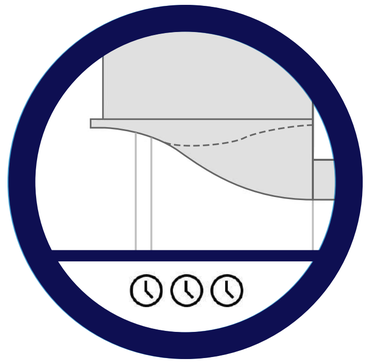

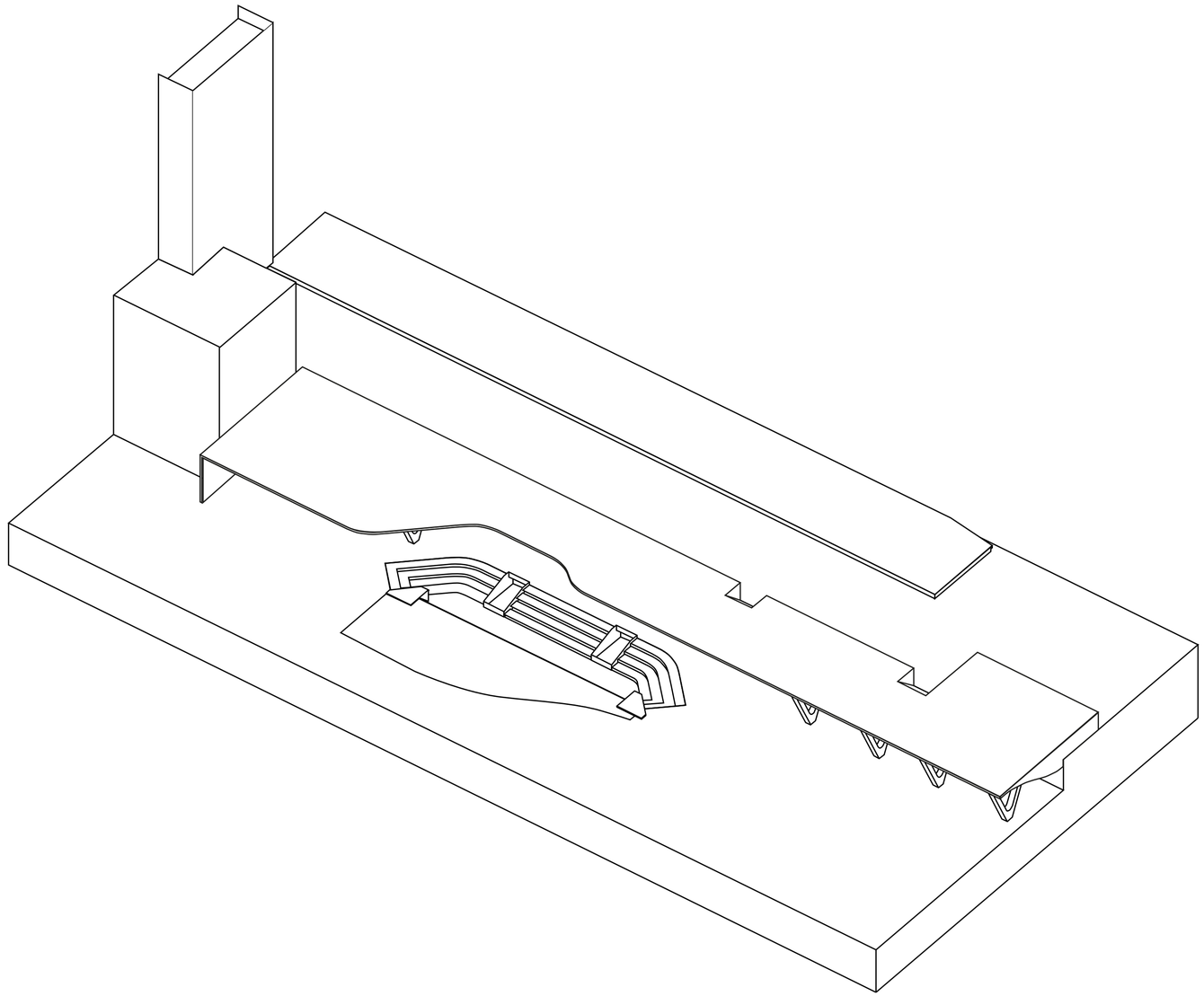

CONCEPT

Design Concept:

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- **Tram Stop**
- Green Roof
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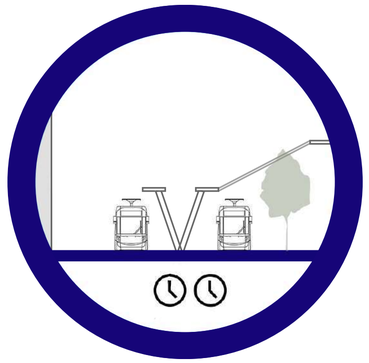

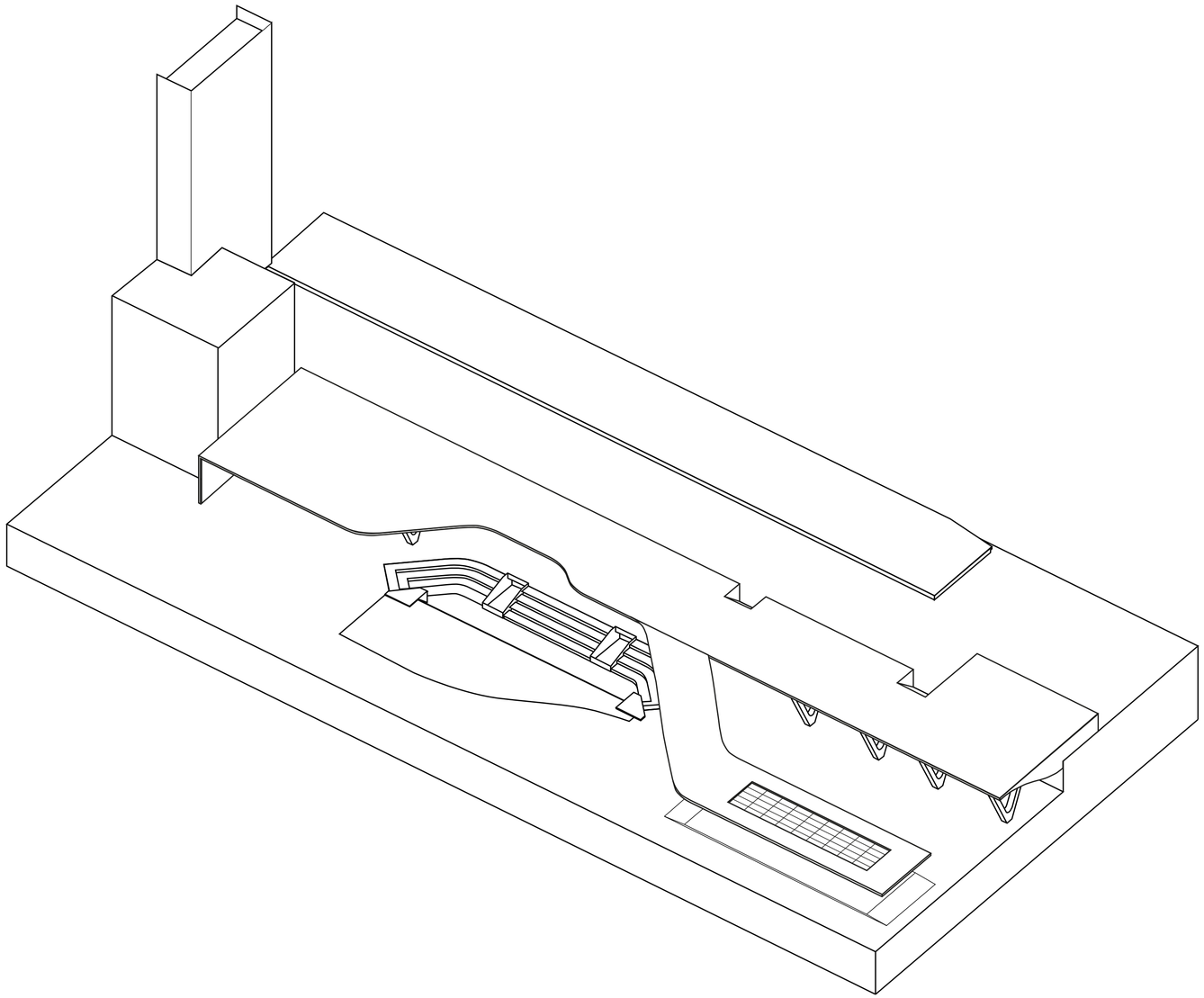

CONCEPT

Design Concept:

- Removal of current Buildings
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- Extension Building
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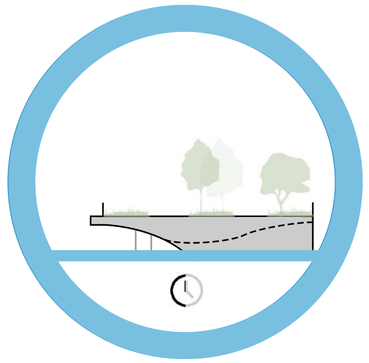

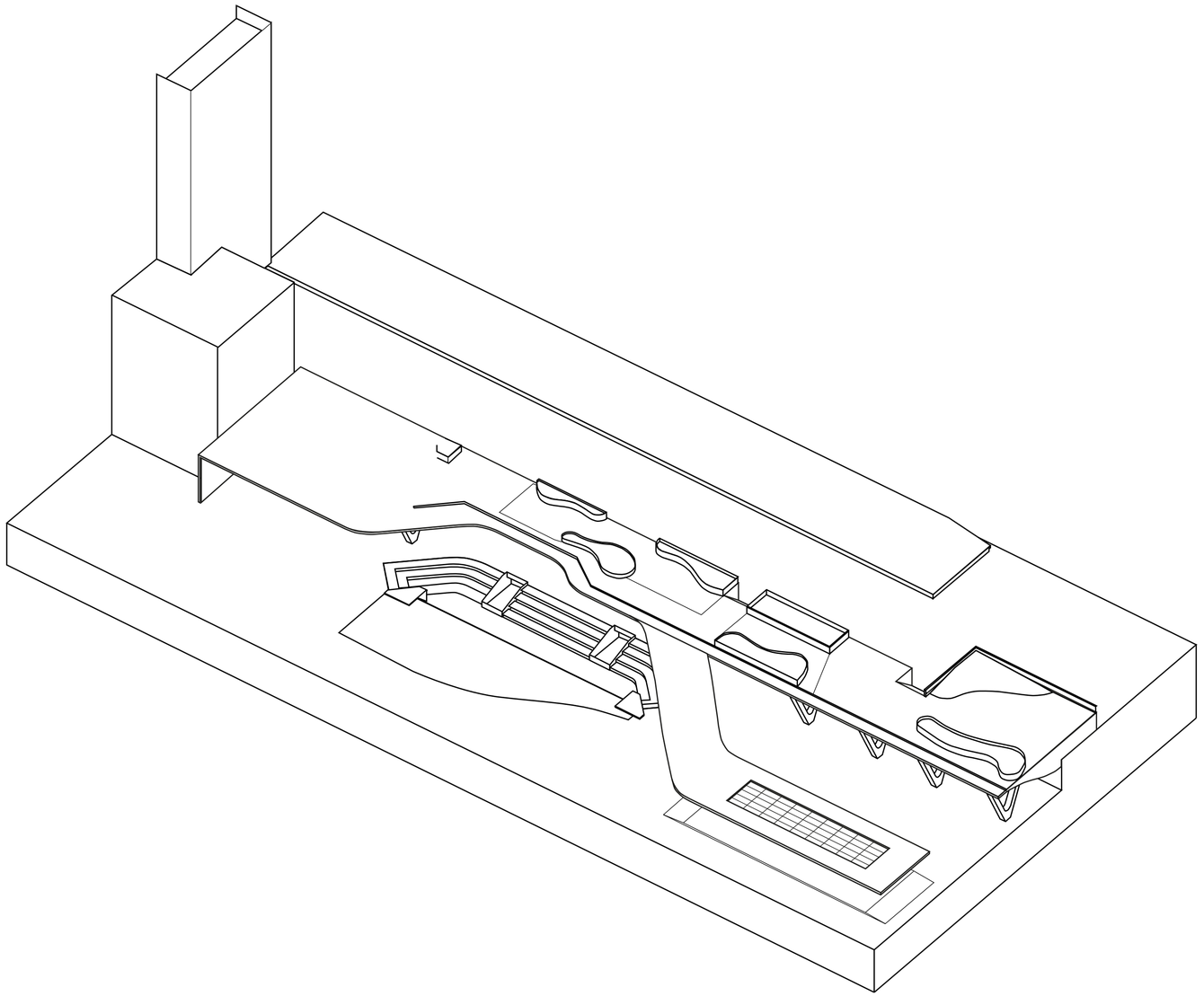

CONCEPT

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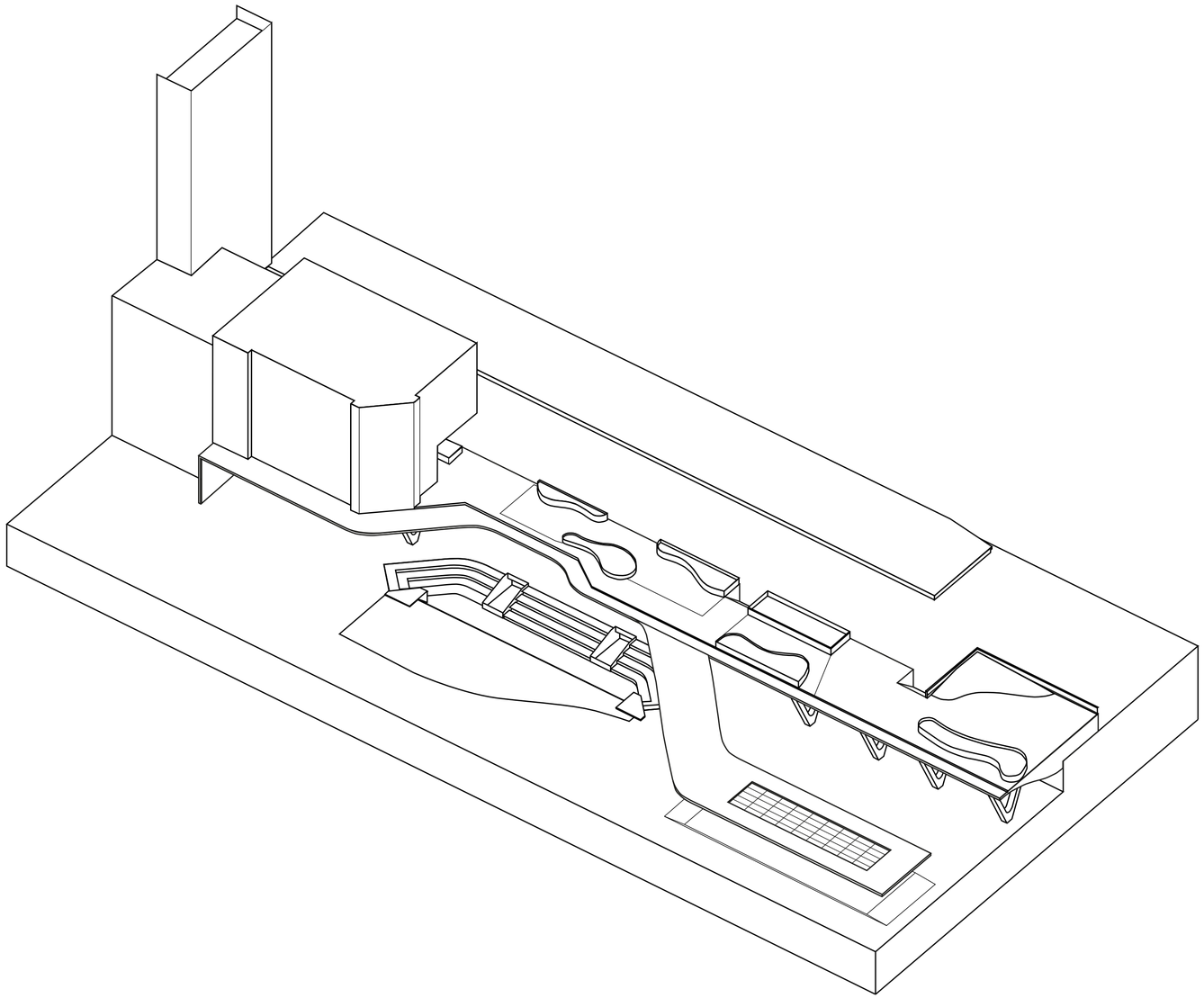
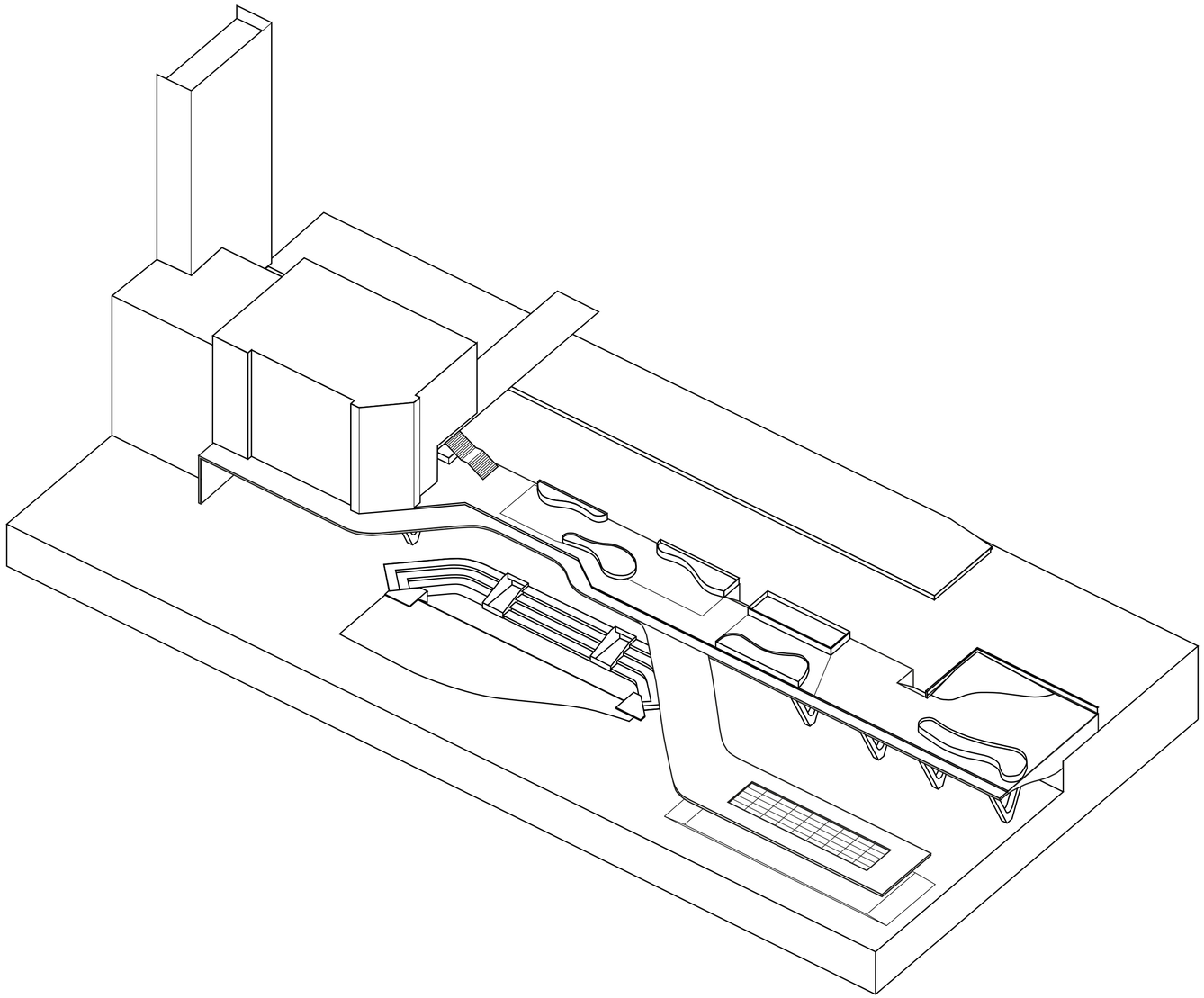
- **Extension Building**
- New Roof



CONCEPT

Design Concept:

- Removal of current Buildings
- Central community Area
- New Entrance
- Tram Stop
- Green Roof
- **Extension Building**
- New Roof



CONCEPT

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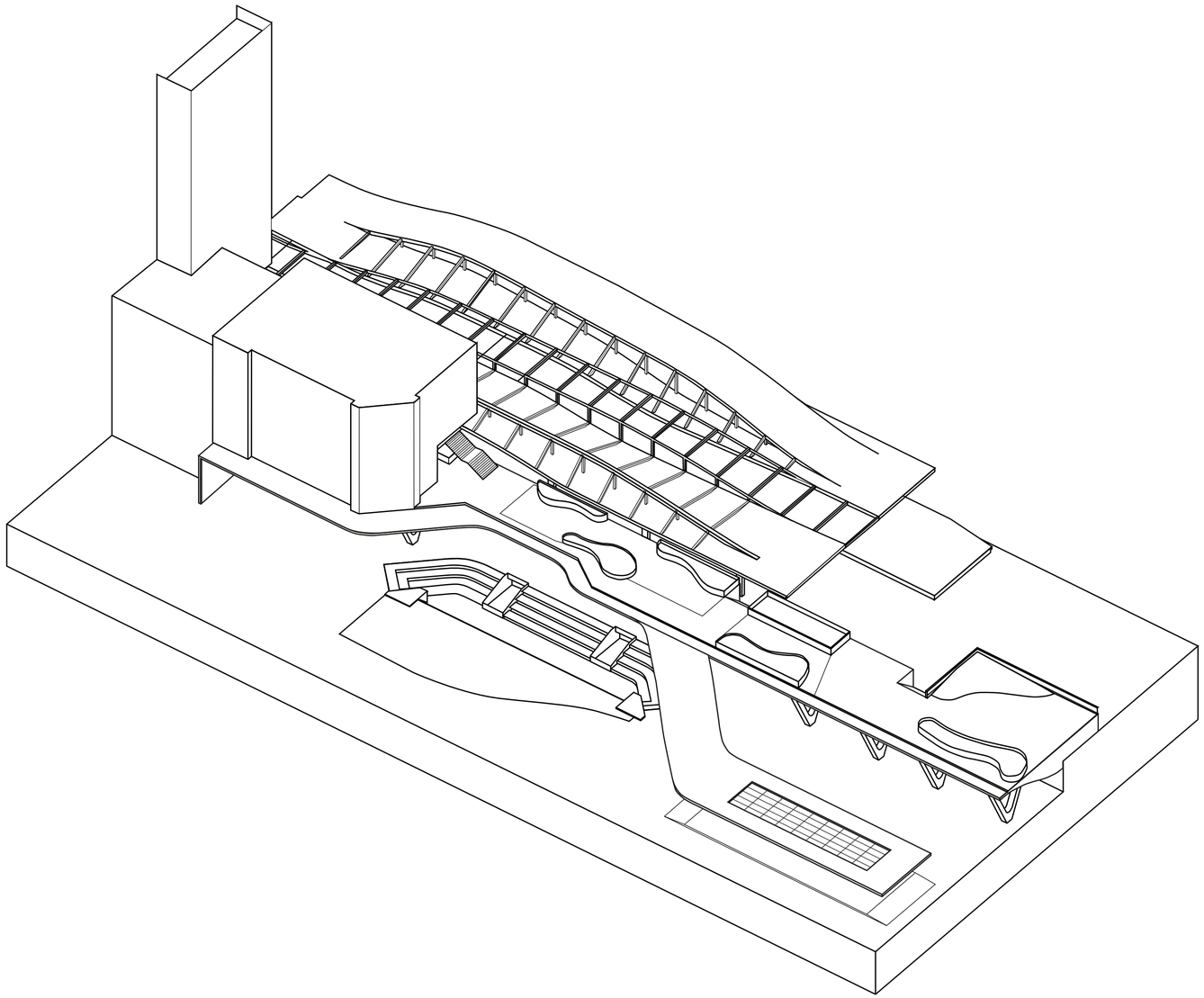

CONCEPT

Design Concept:

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- Central community Area
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- Tram Stop
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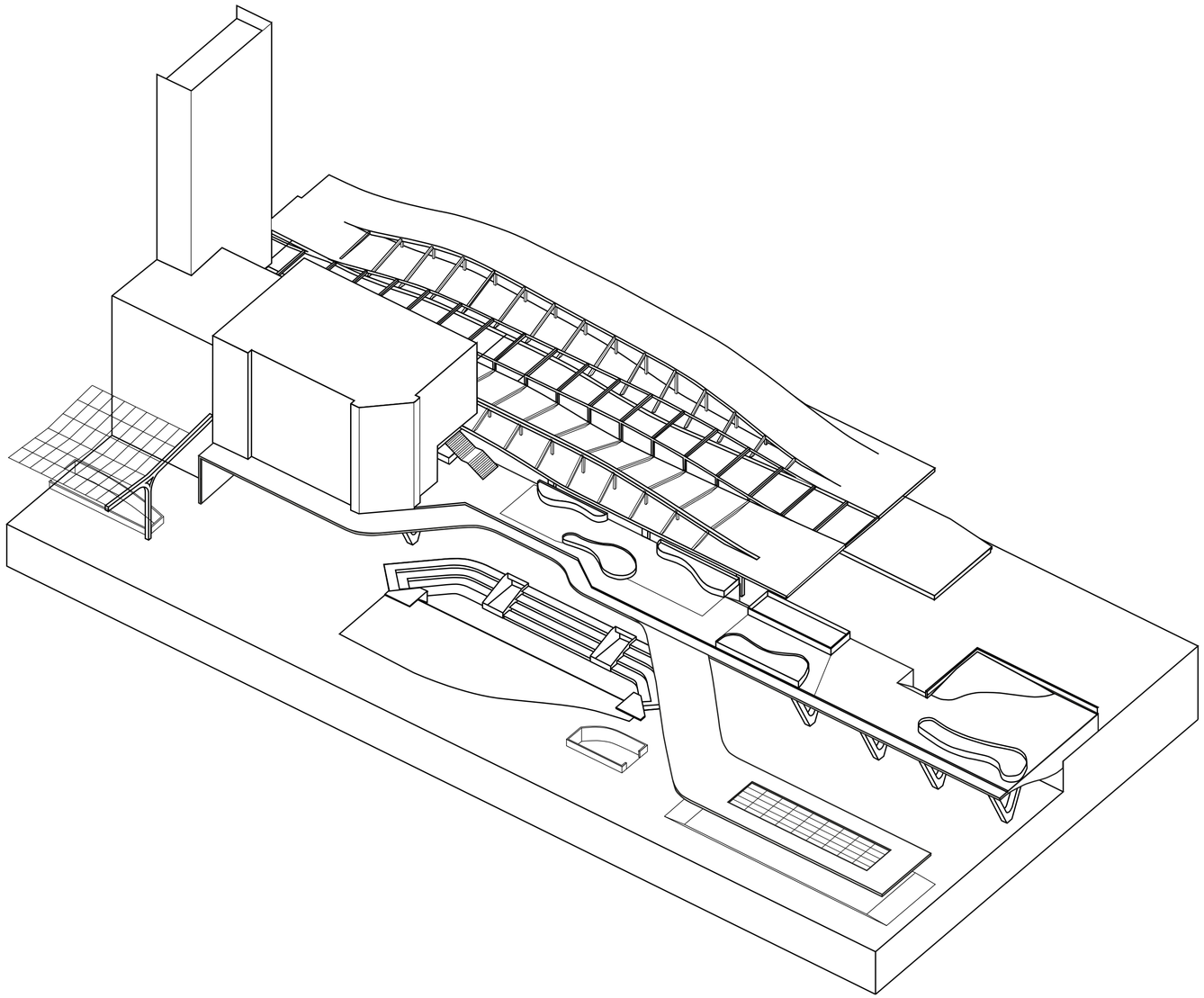
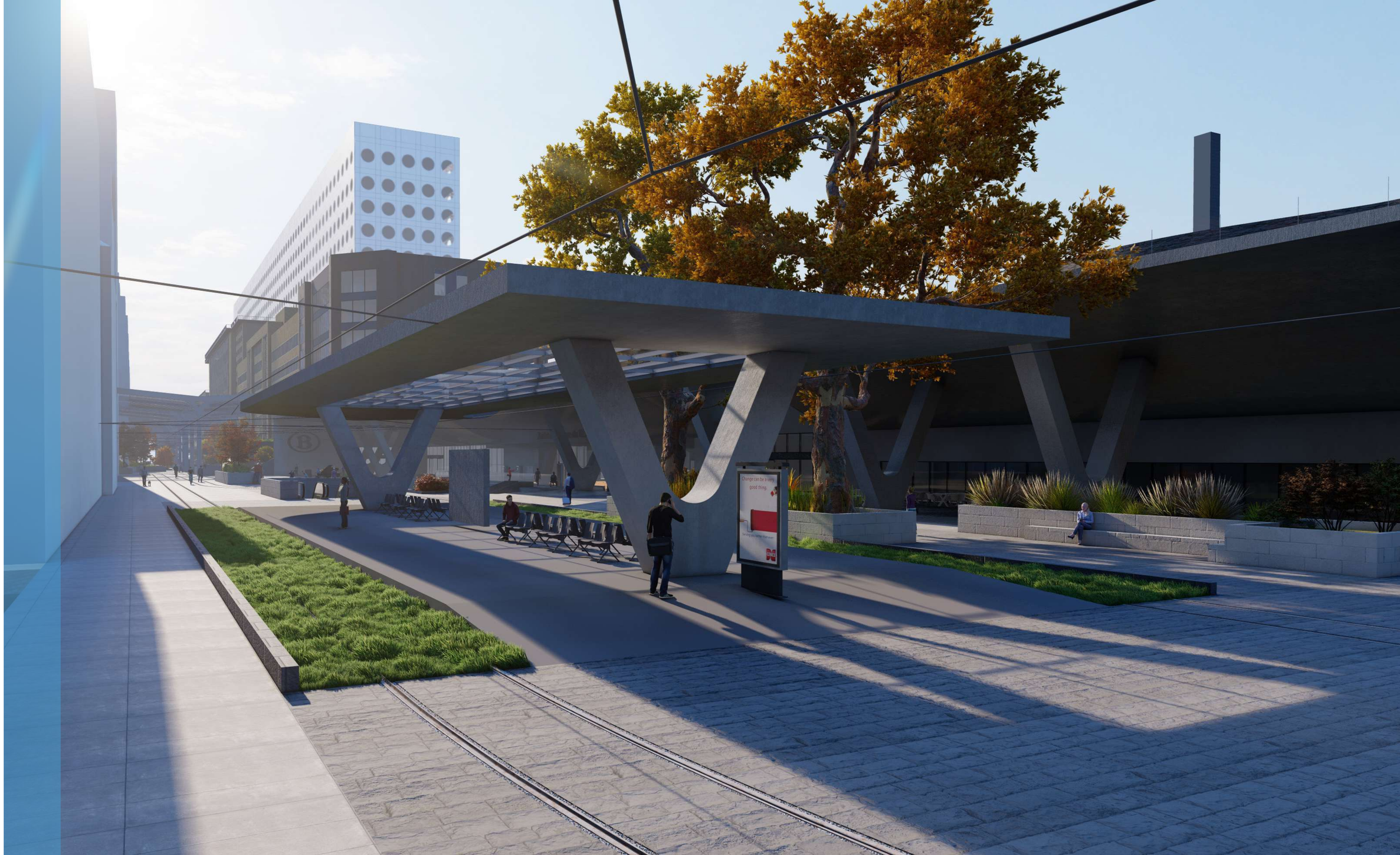


APPROACH

APPROACH

TRAM STOP

TRAM STOP



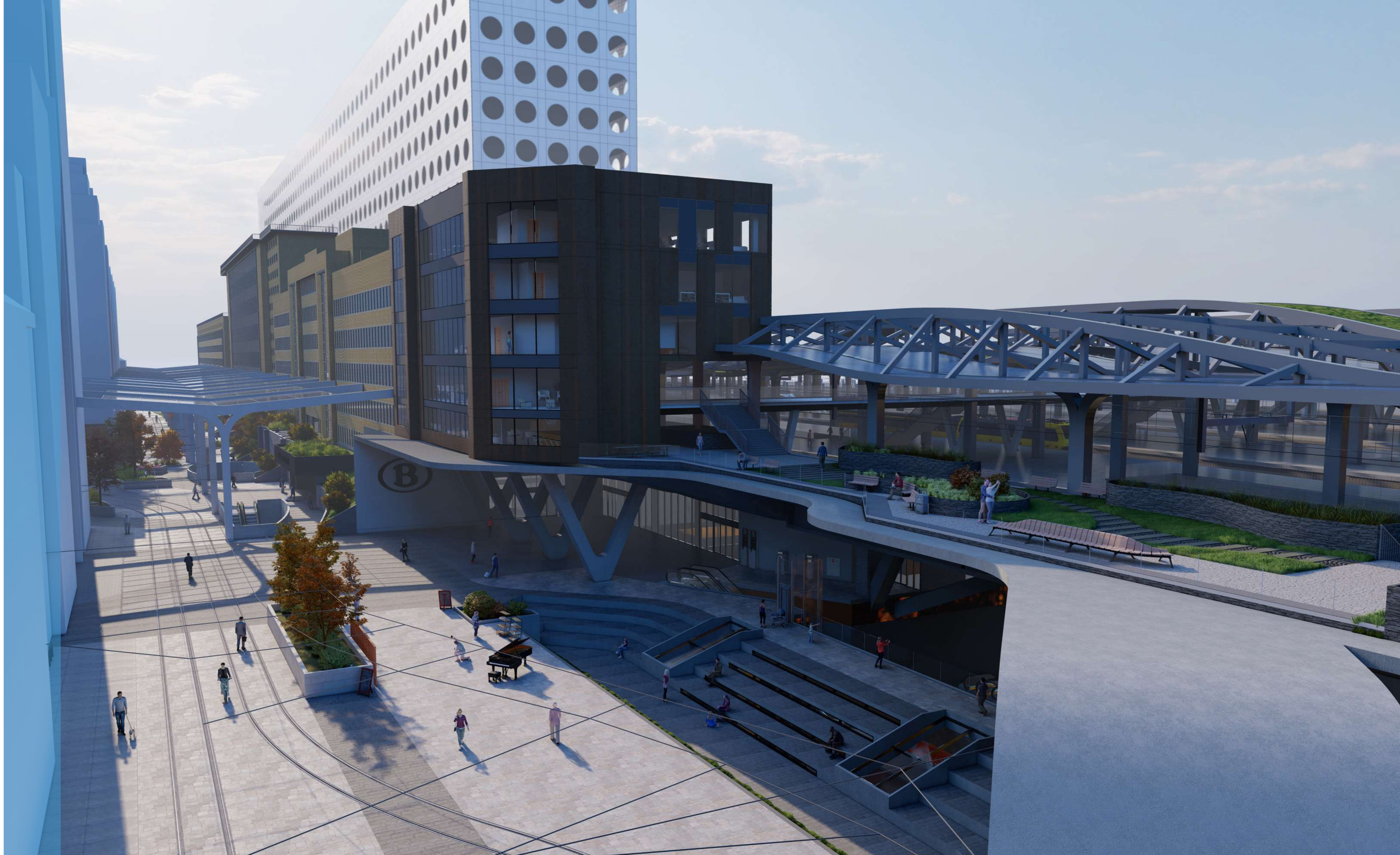
INTERSECTION

INTERSECTION

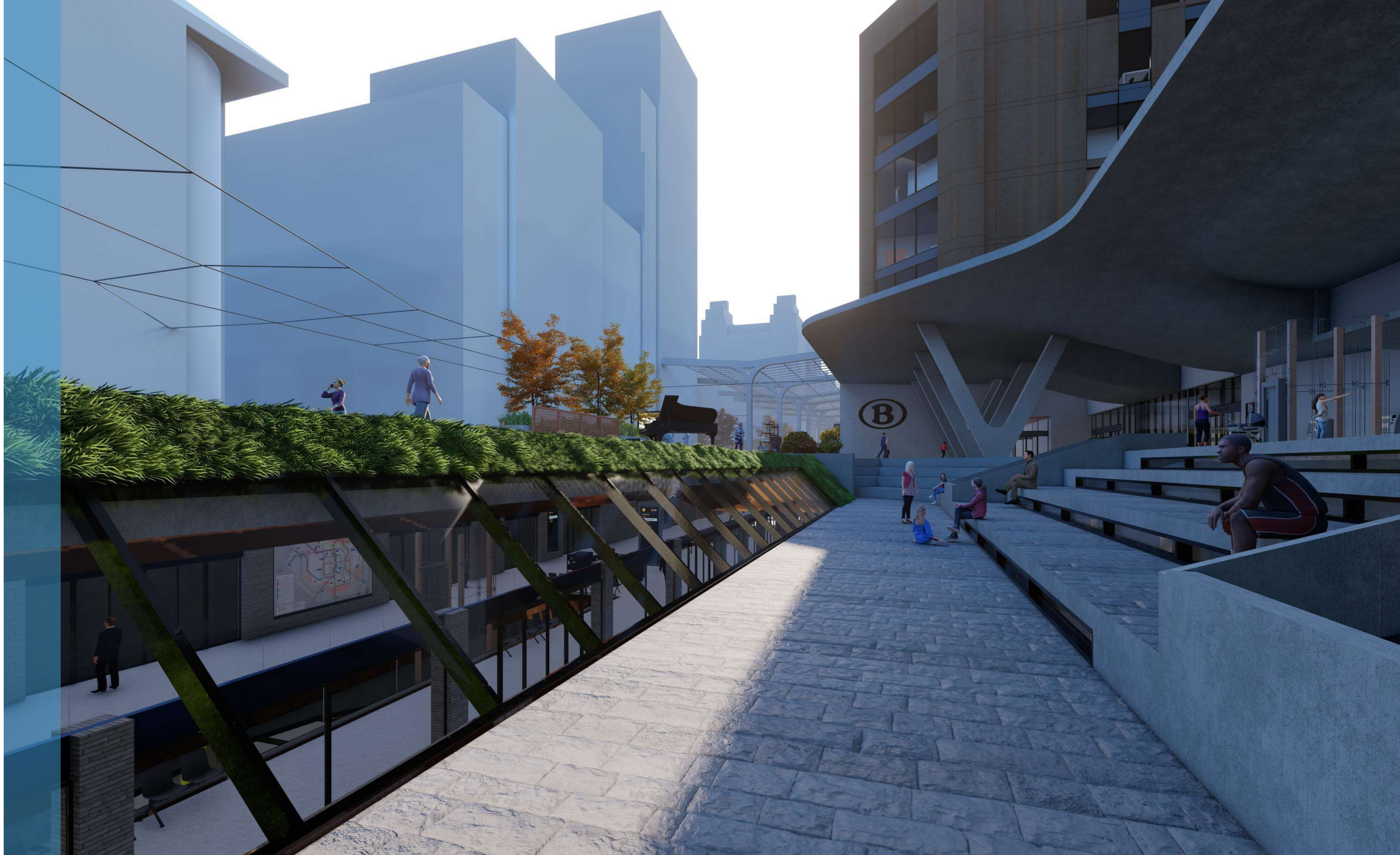
ENTRANCE

ENTRANCE

SQUARE

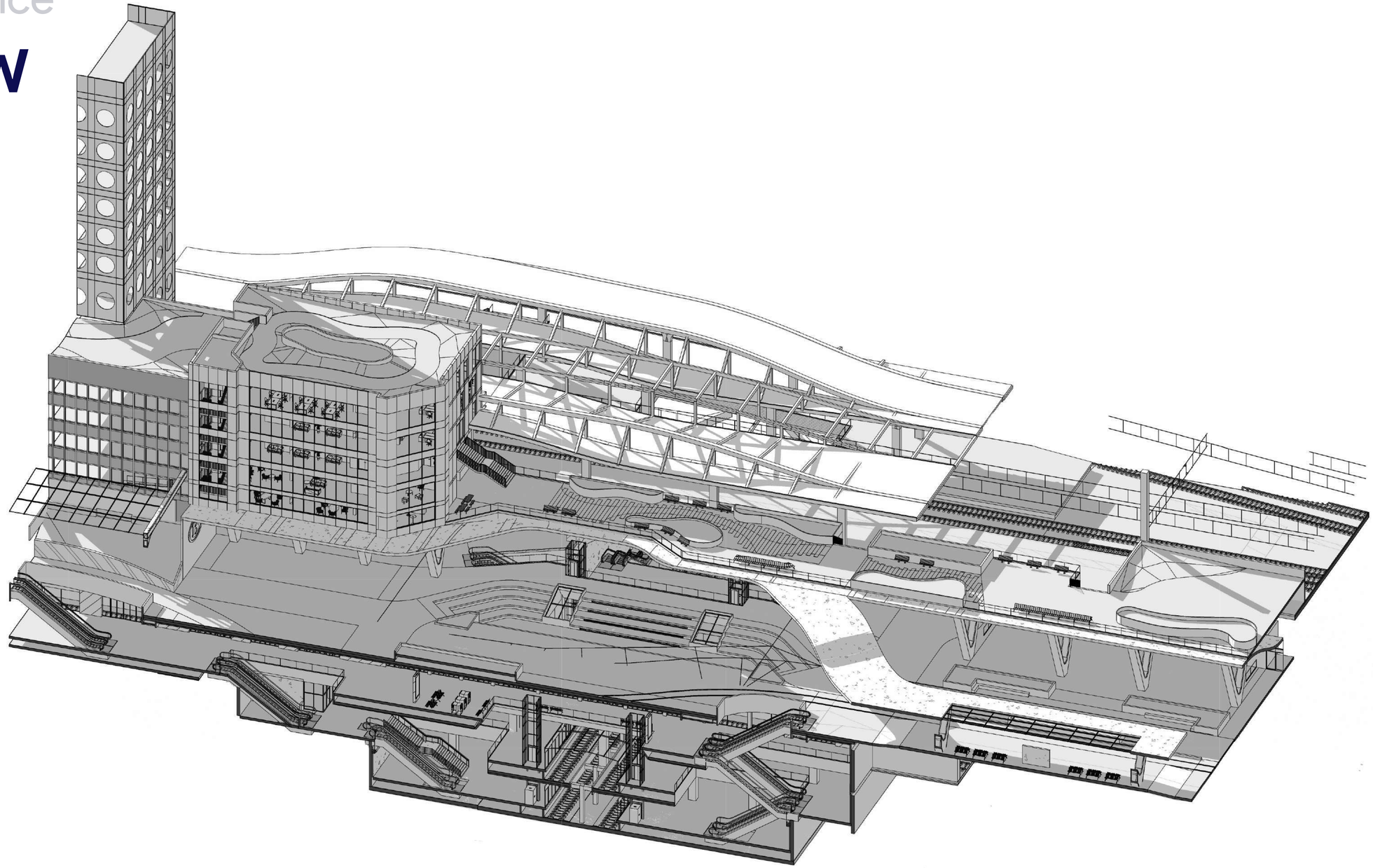


COMMUNITY AREA



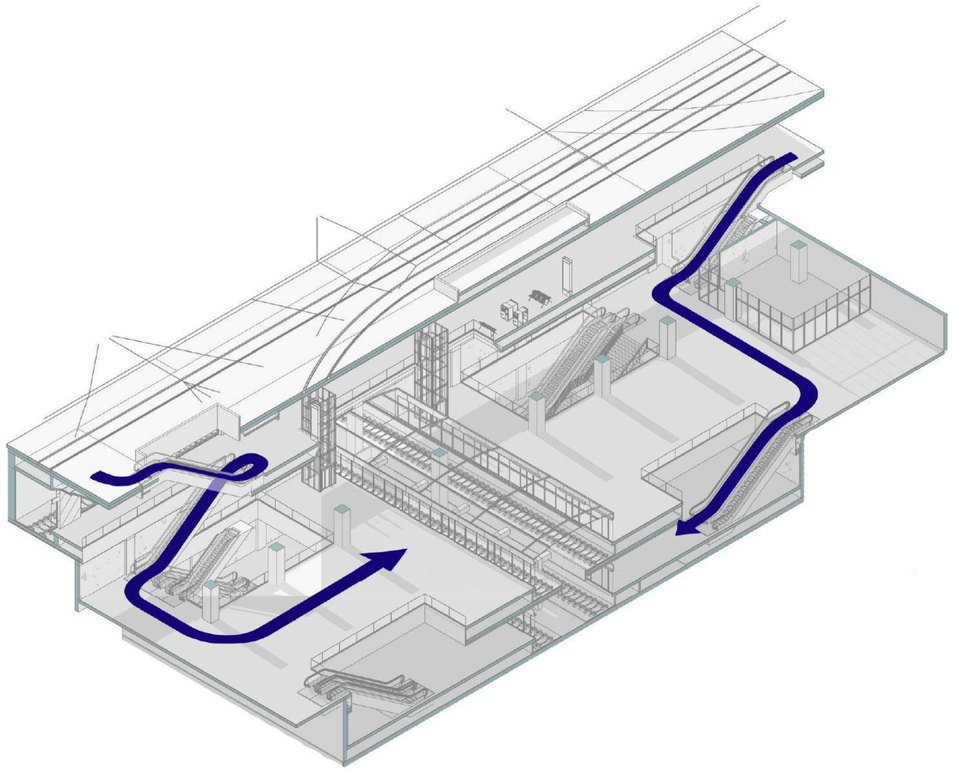
OVERVIEW

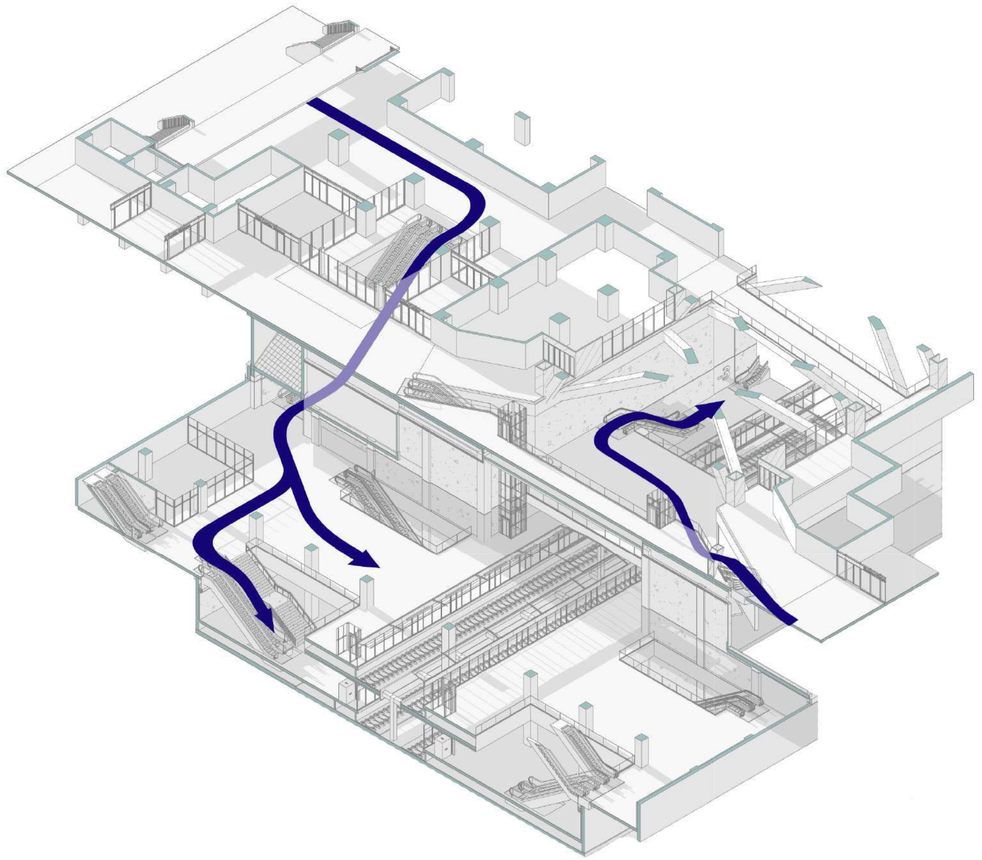
Fragment



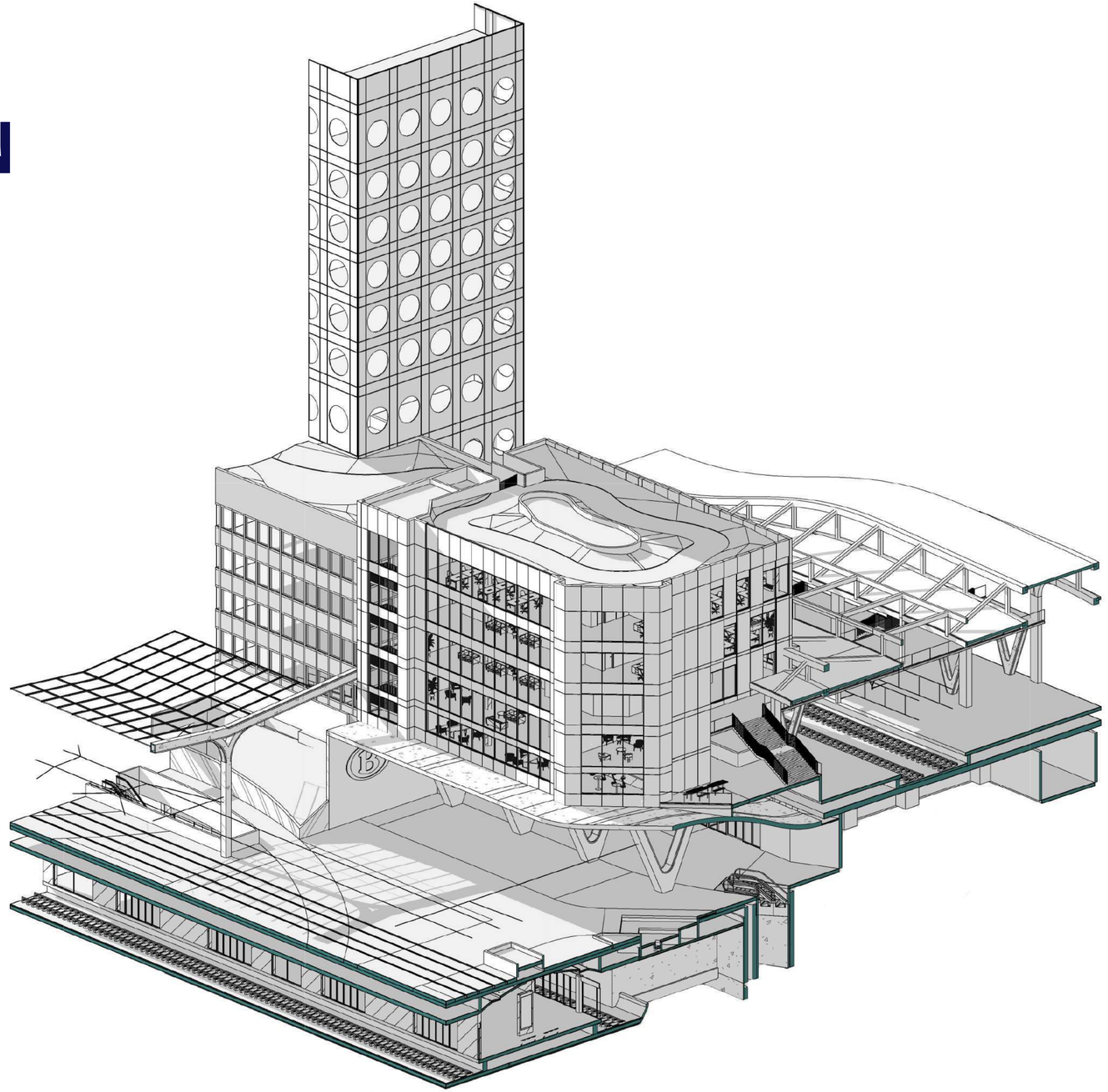
ACCESS

Metro Station





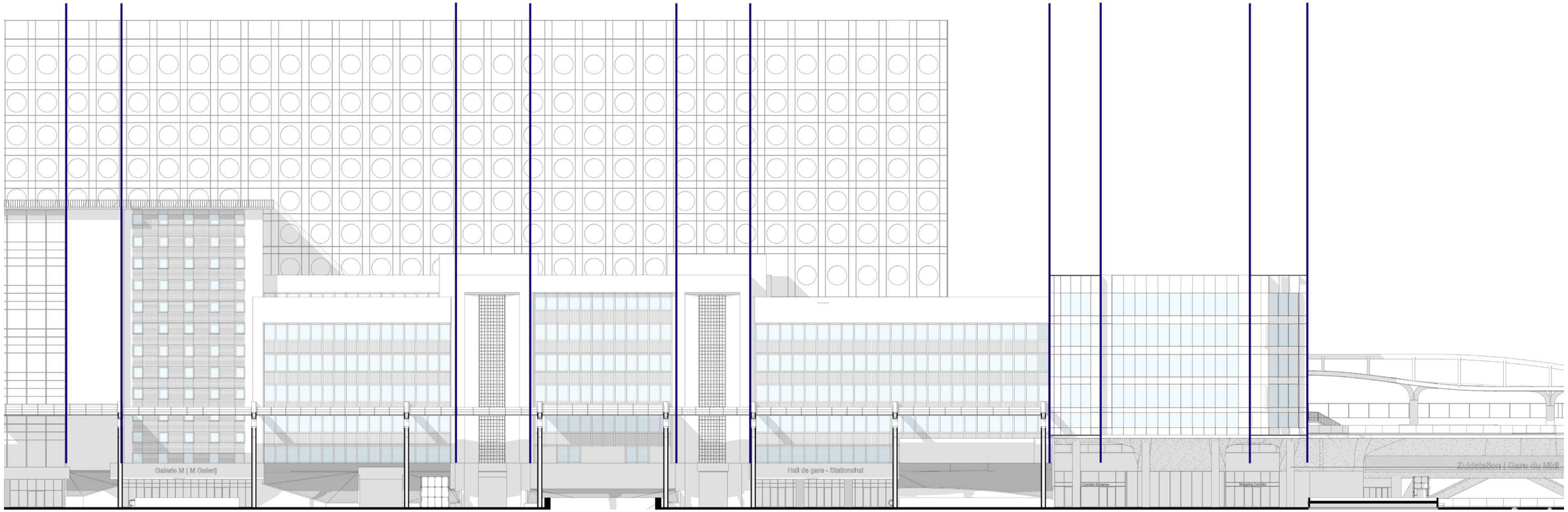
THE EXTENSION



DESIGN

Rhythm in the building

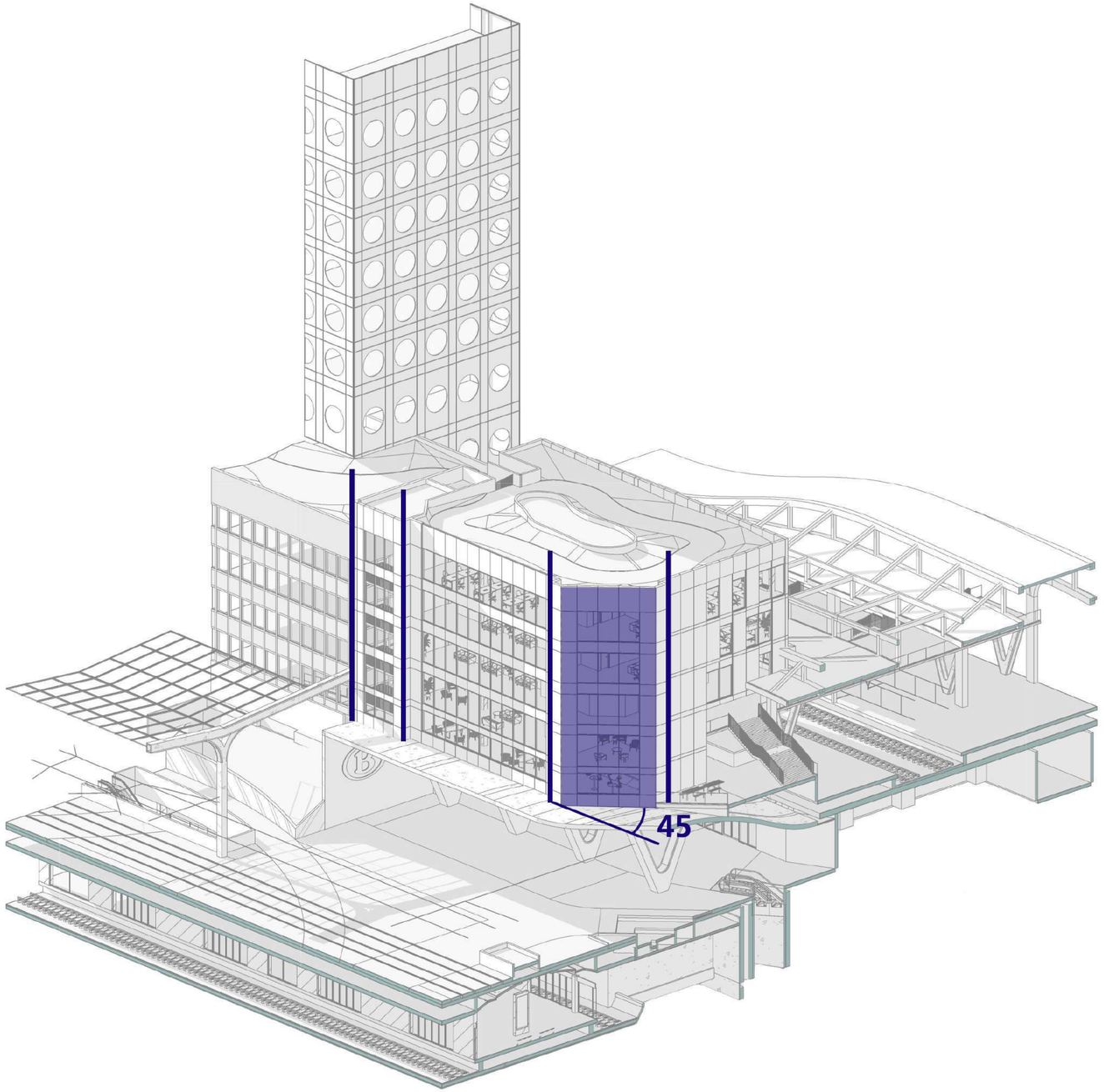
Continued in the new building



DESIGN

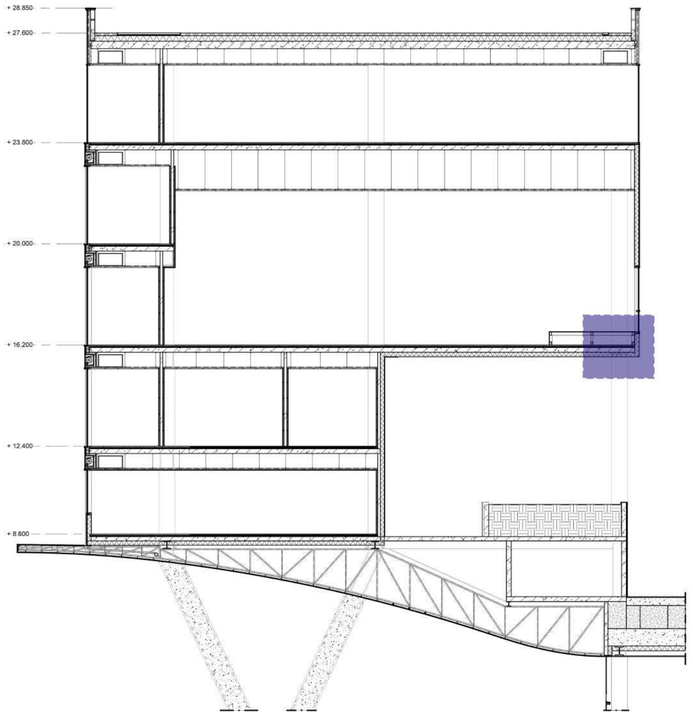
Rhythm and Ending

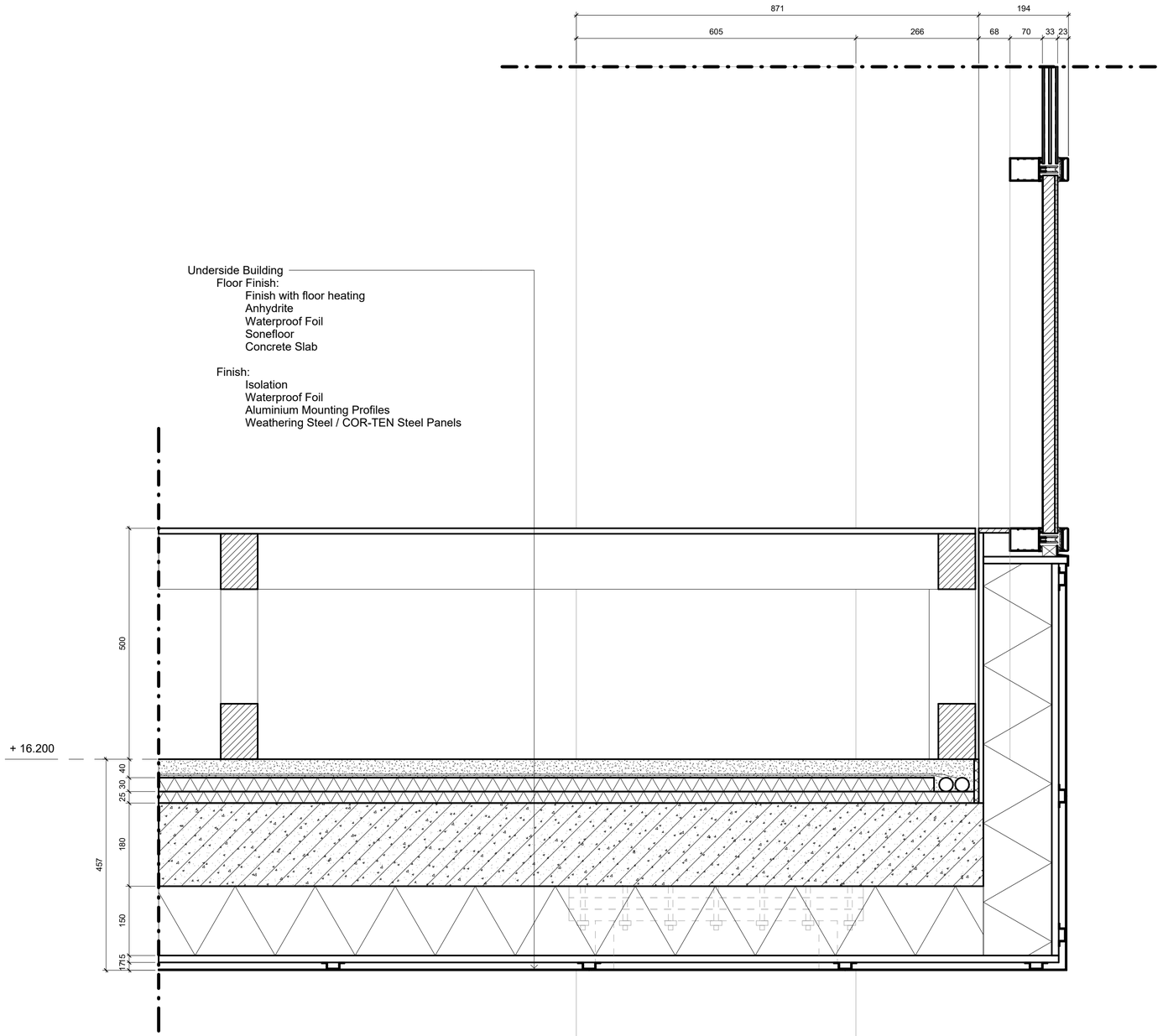
The building will feature a slanted end to create an end to the long building



DESIGN

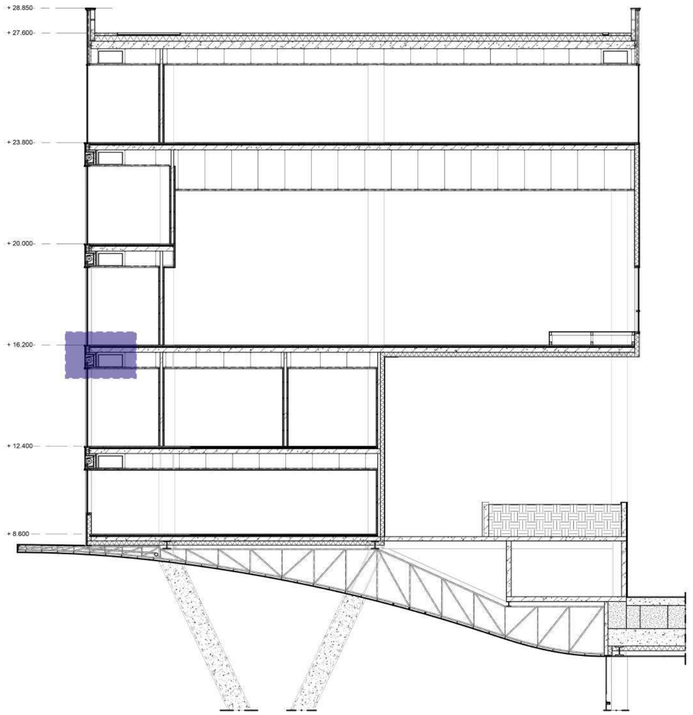
Facade Detail

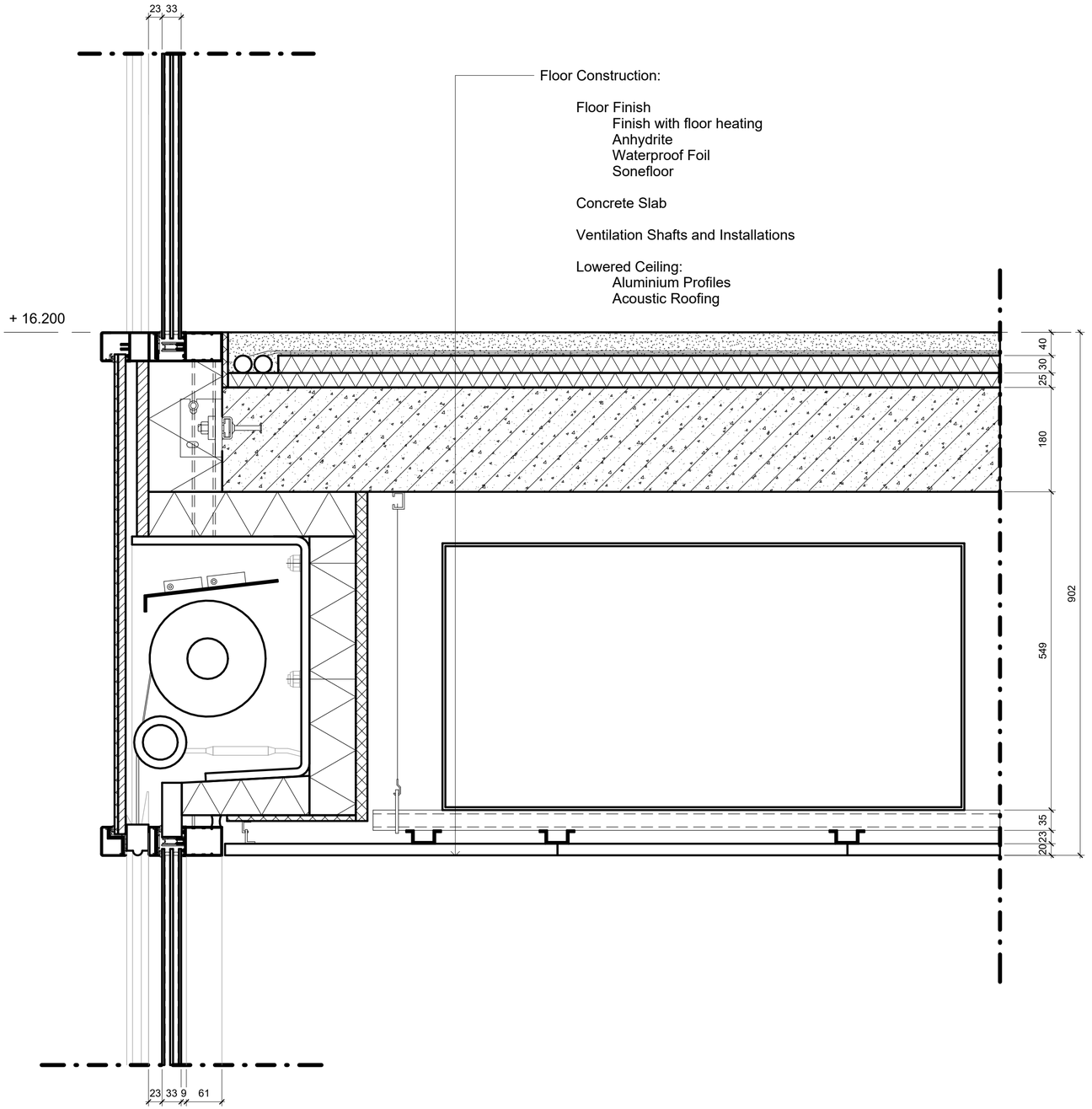




DESIGN

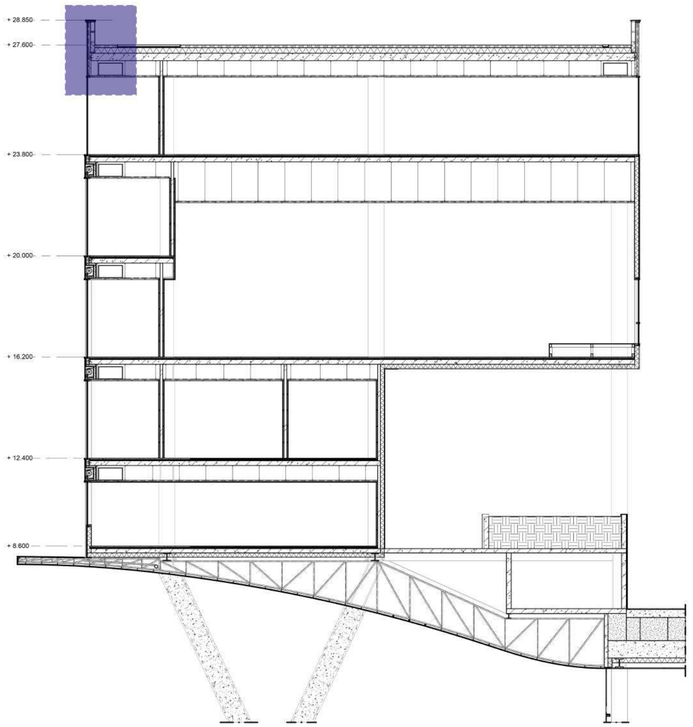
Floor connection

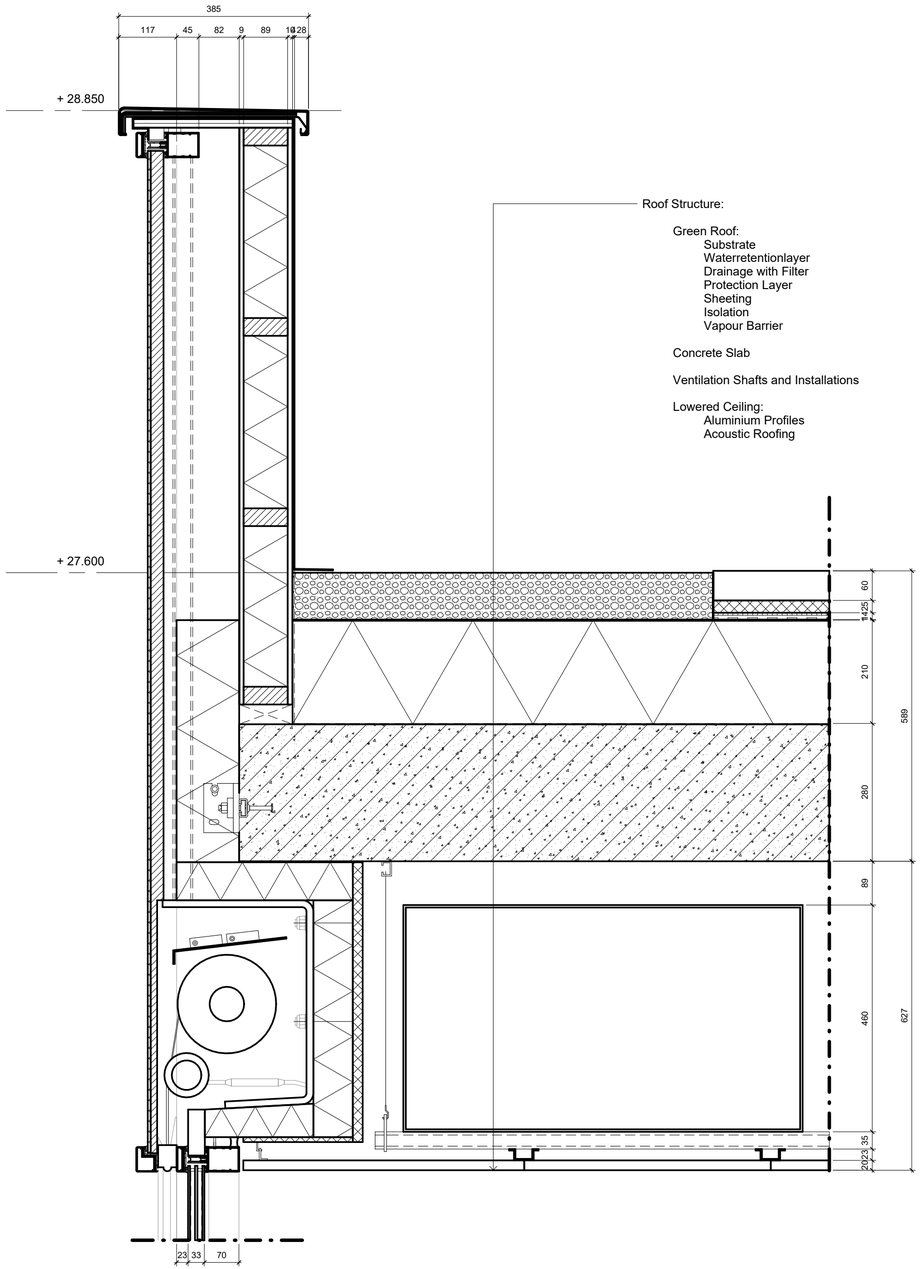




DESIGN

Roof Connection

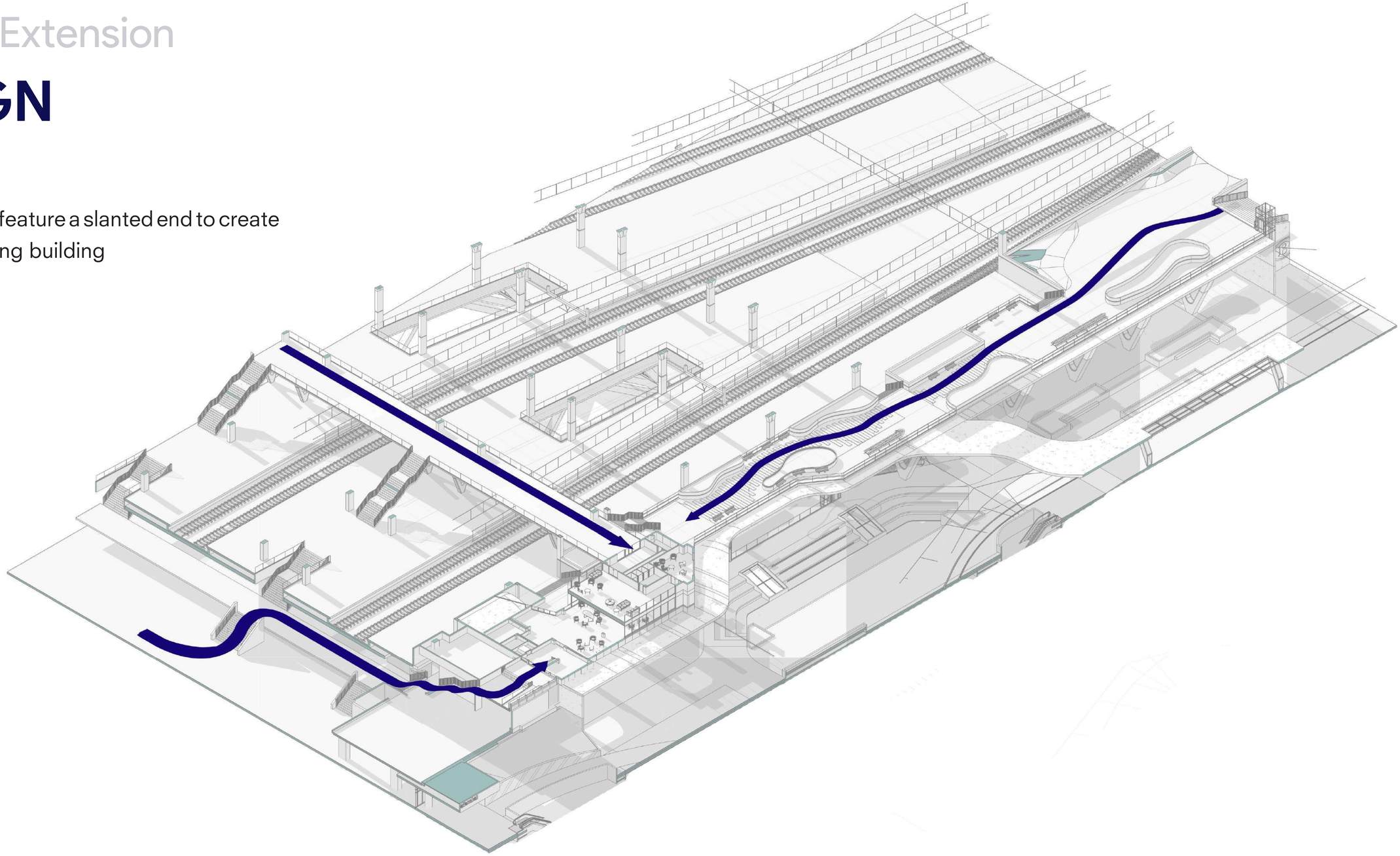




DESIGN

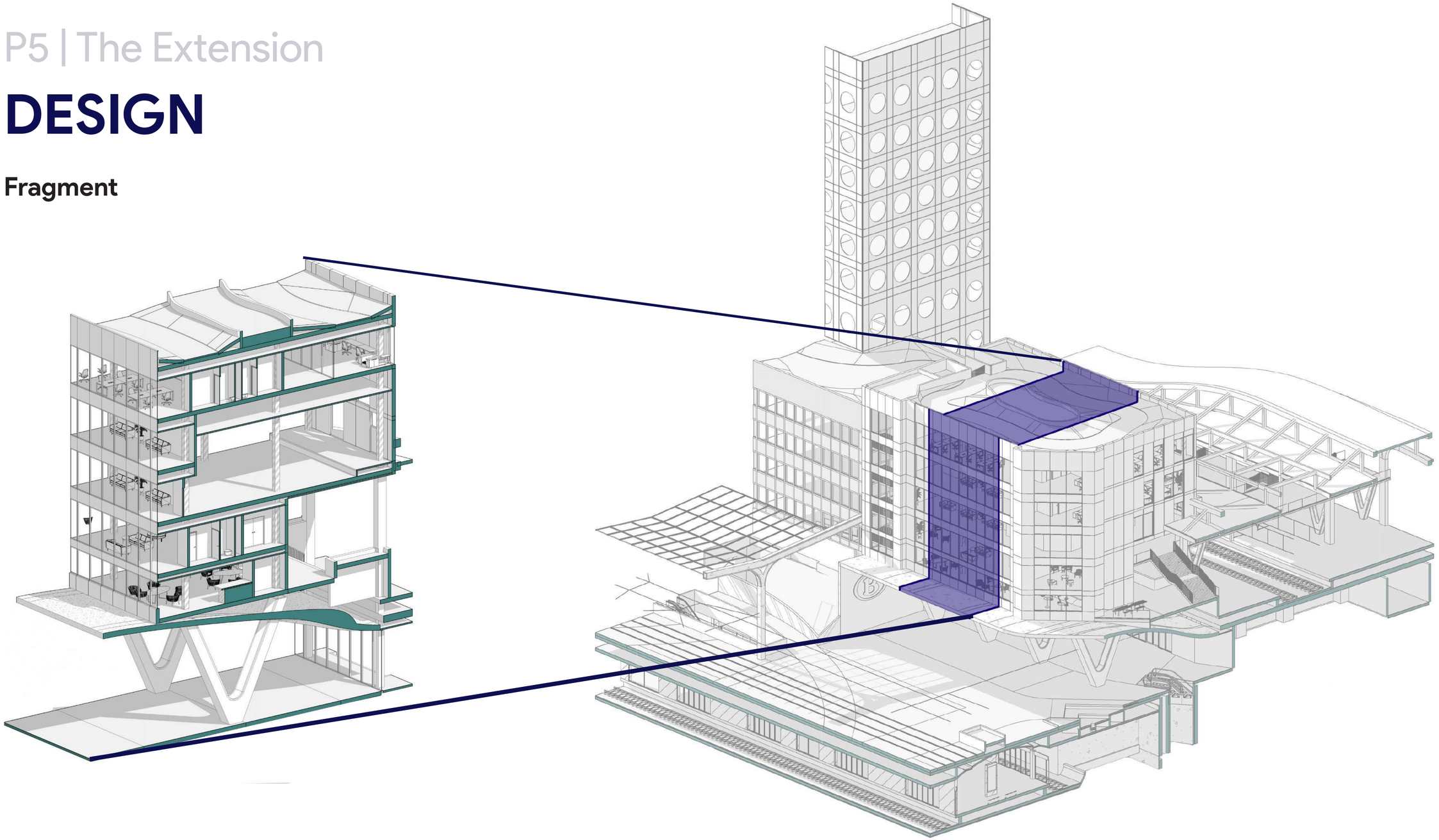
Circulation

The building will feature a slanted end to create an end to the long building



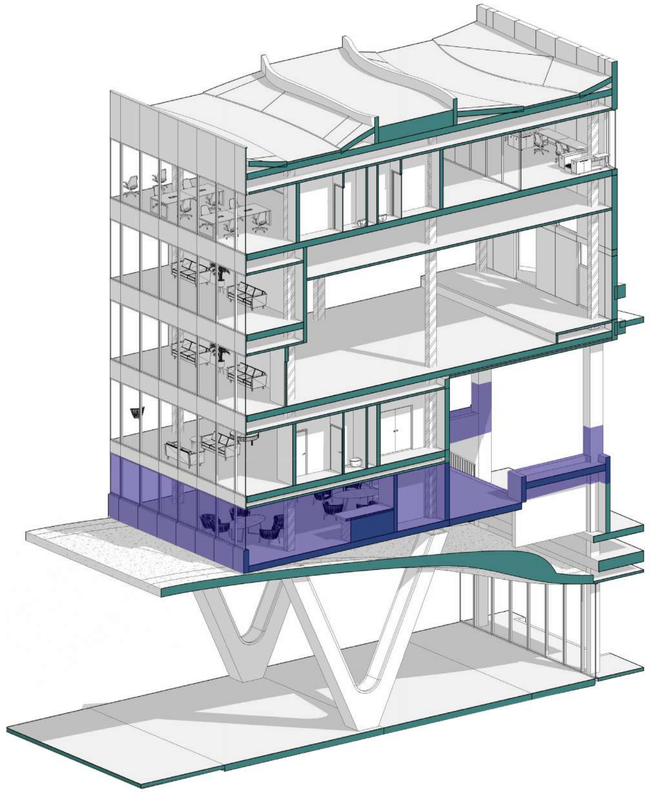
DESIGN

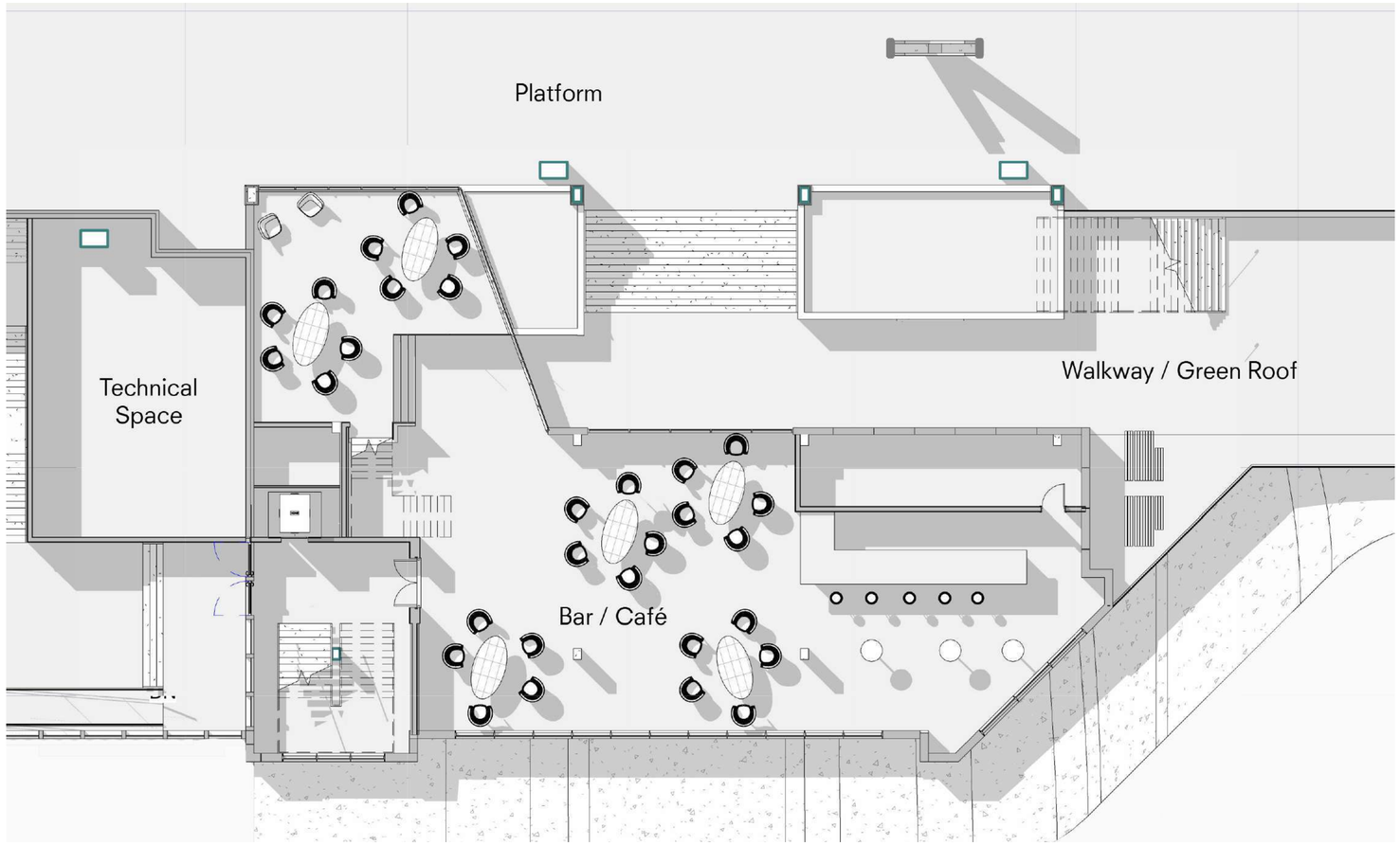
Fragment



DESIGN

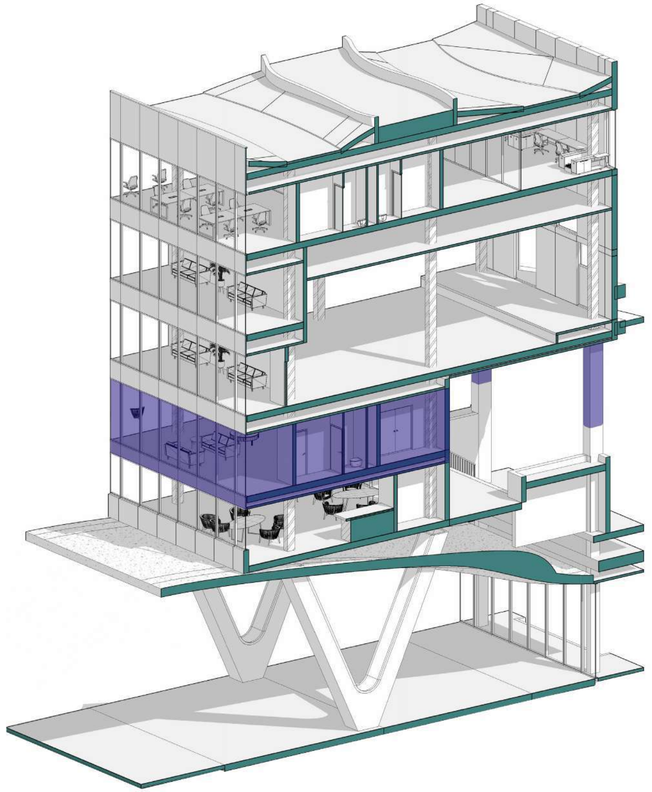
First Floor

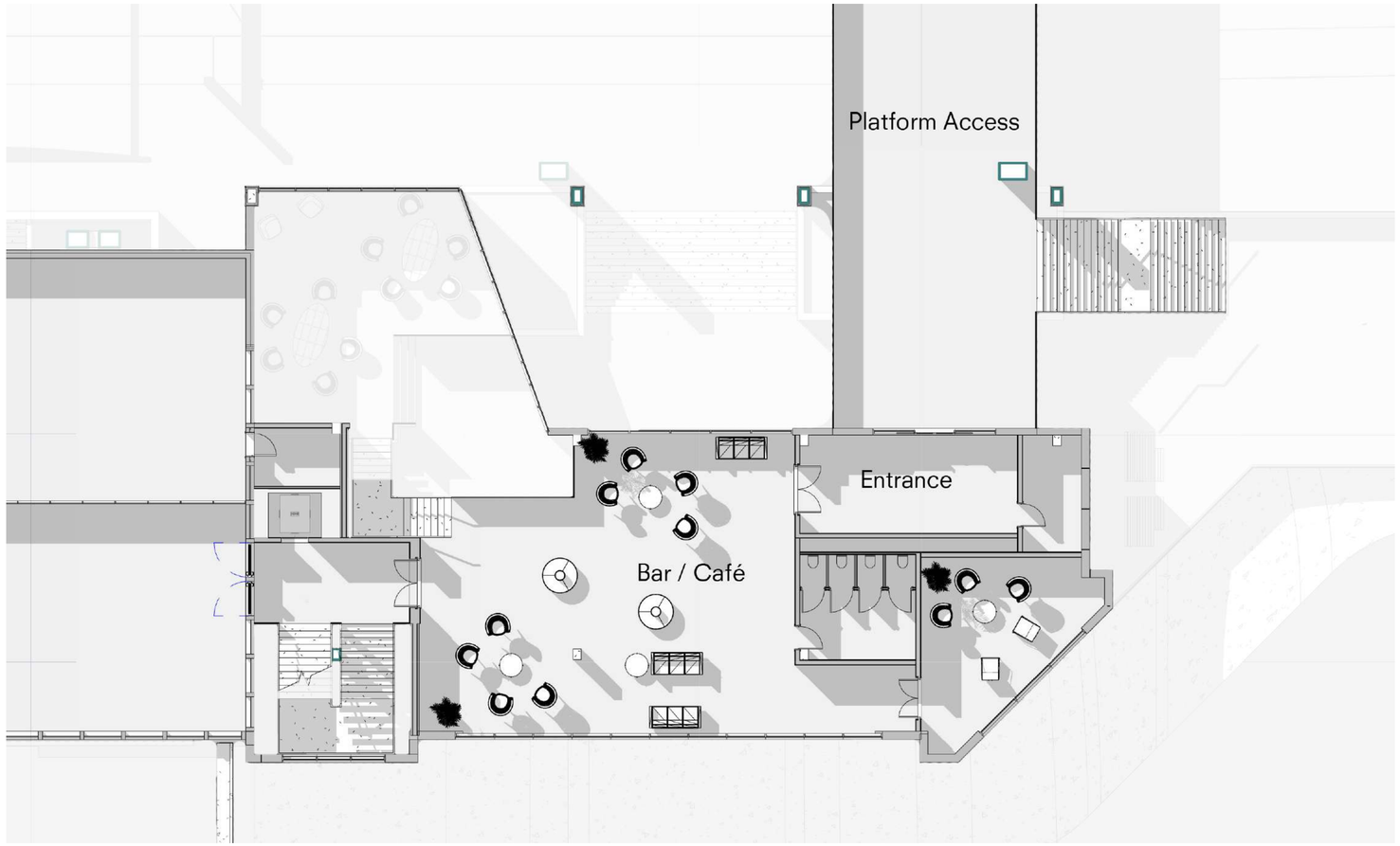




DESIGN

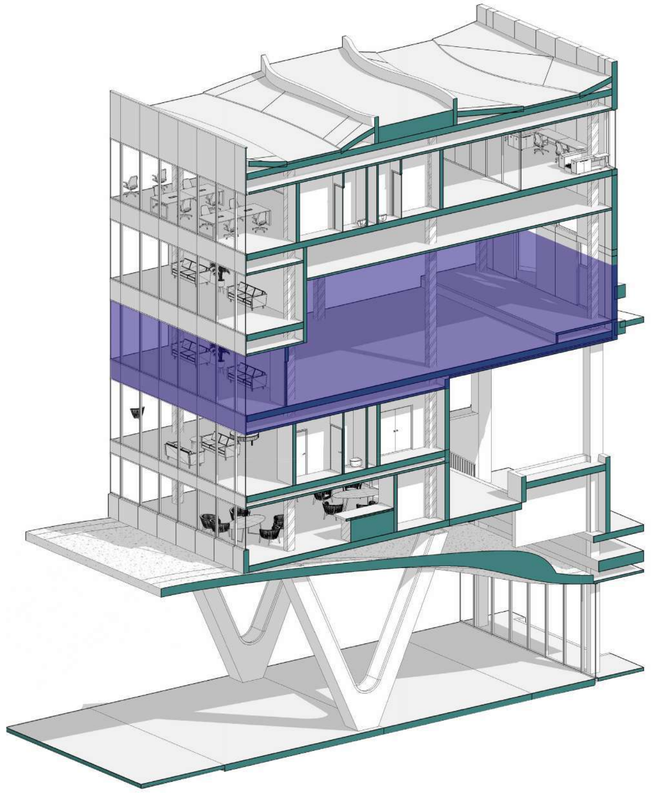
Second Floor

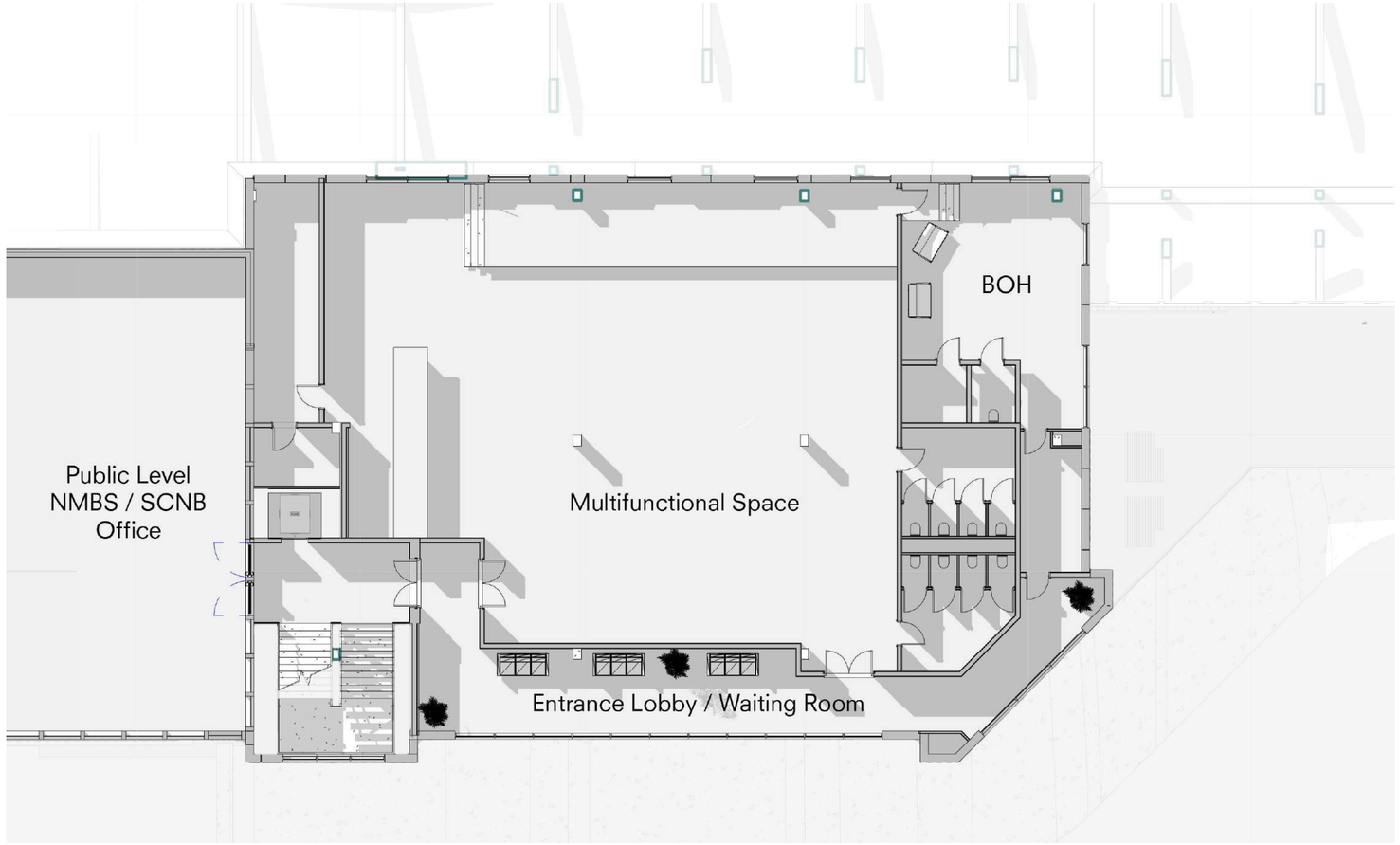




DESIGN

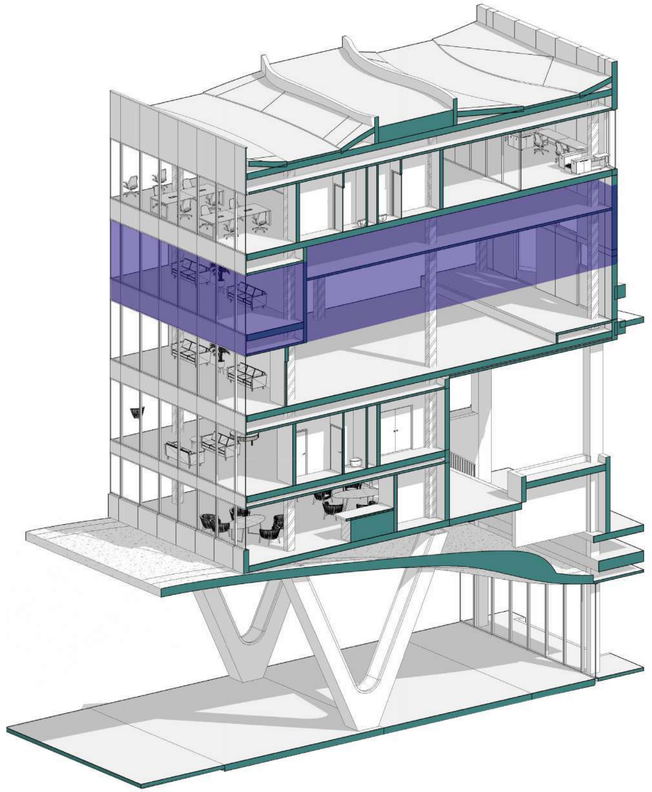
Third Floor

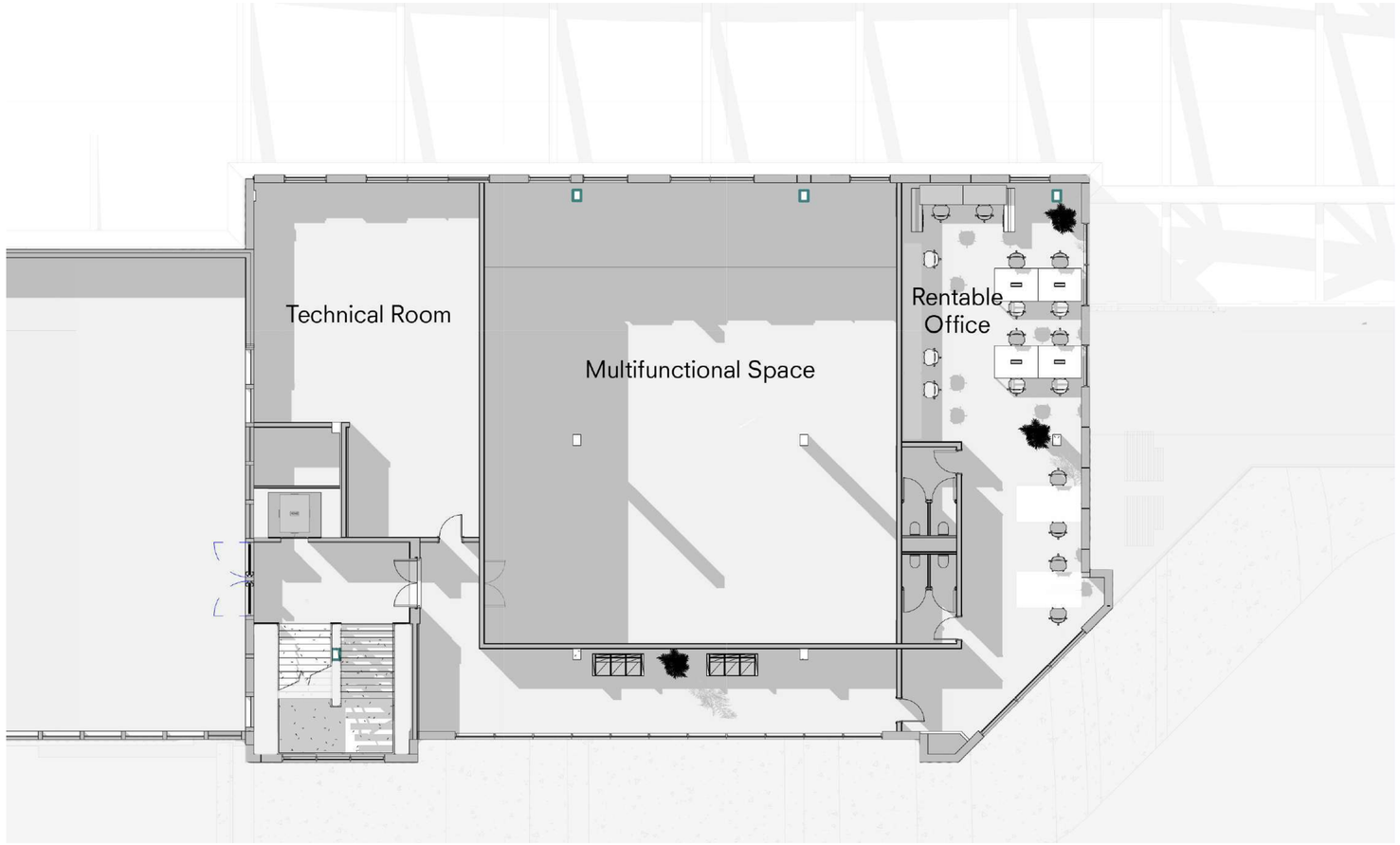




DESIGN

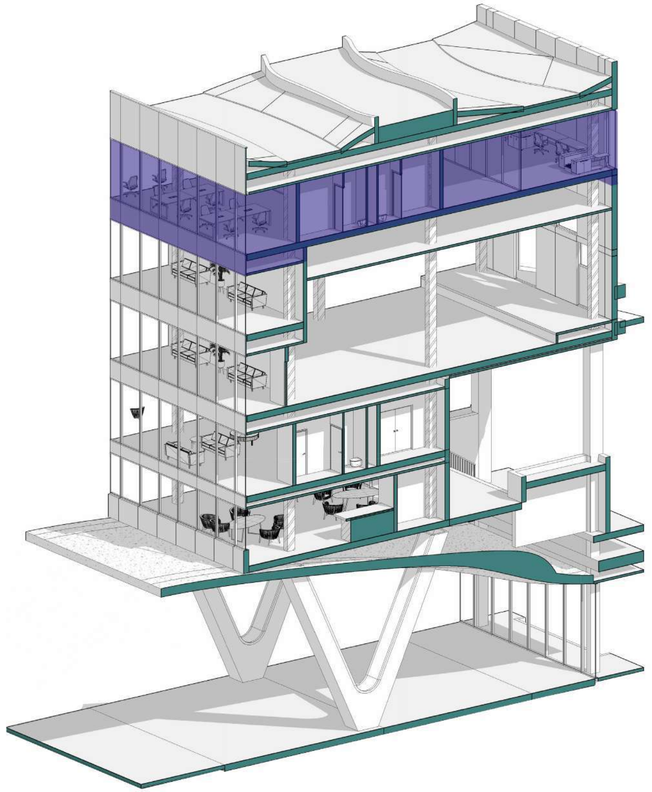
Fourth Floor

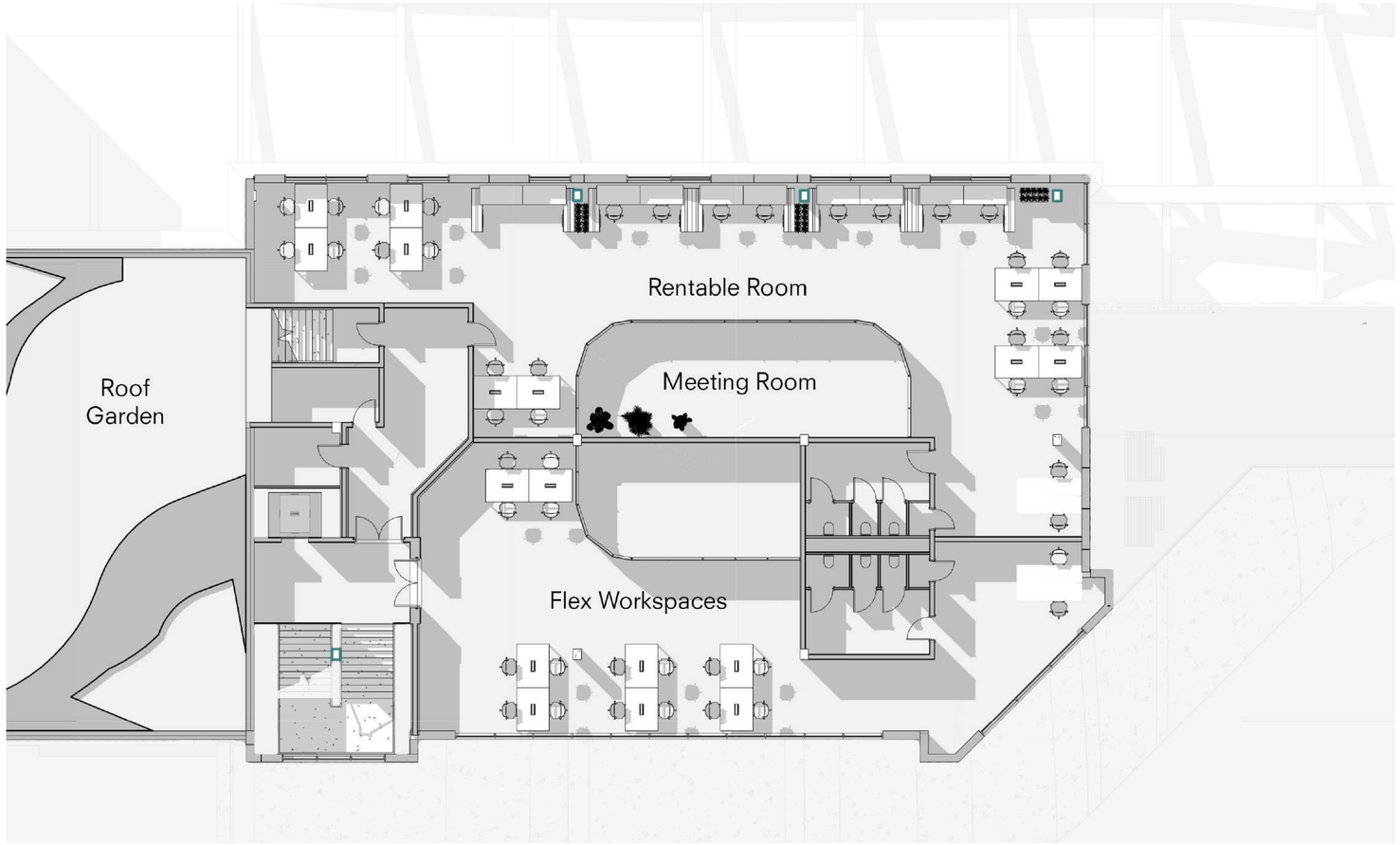




DESIGN

Fifth Floor



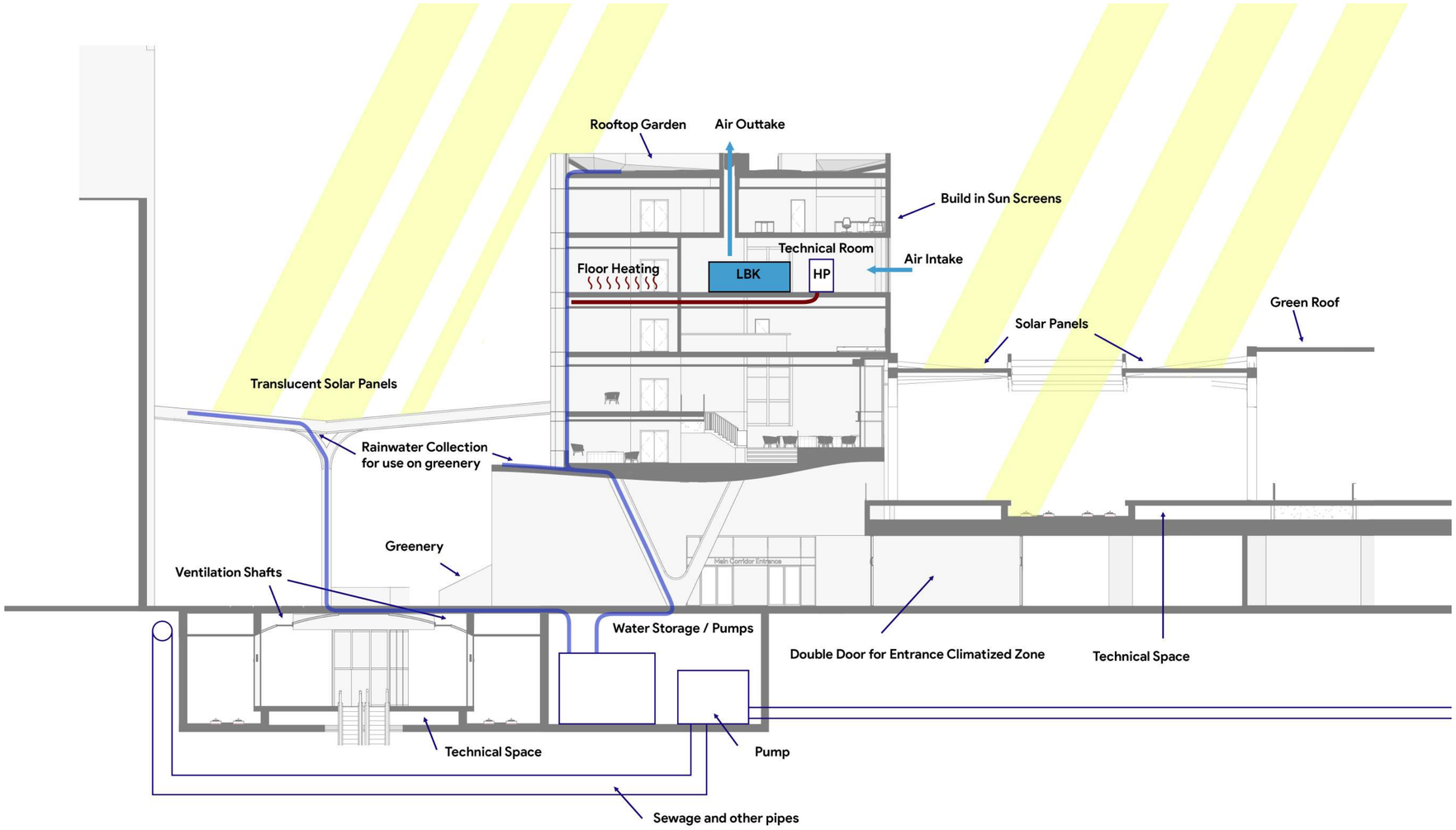


CLIMATE SYSTEM

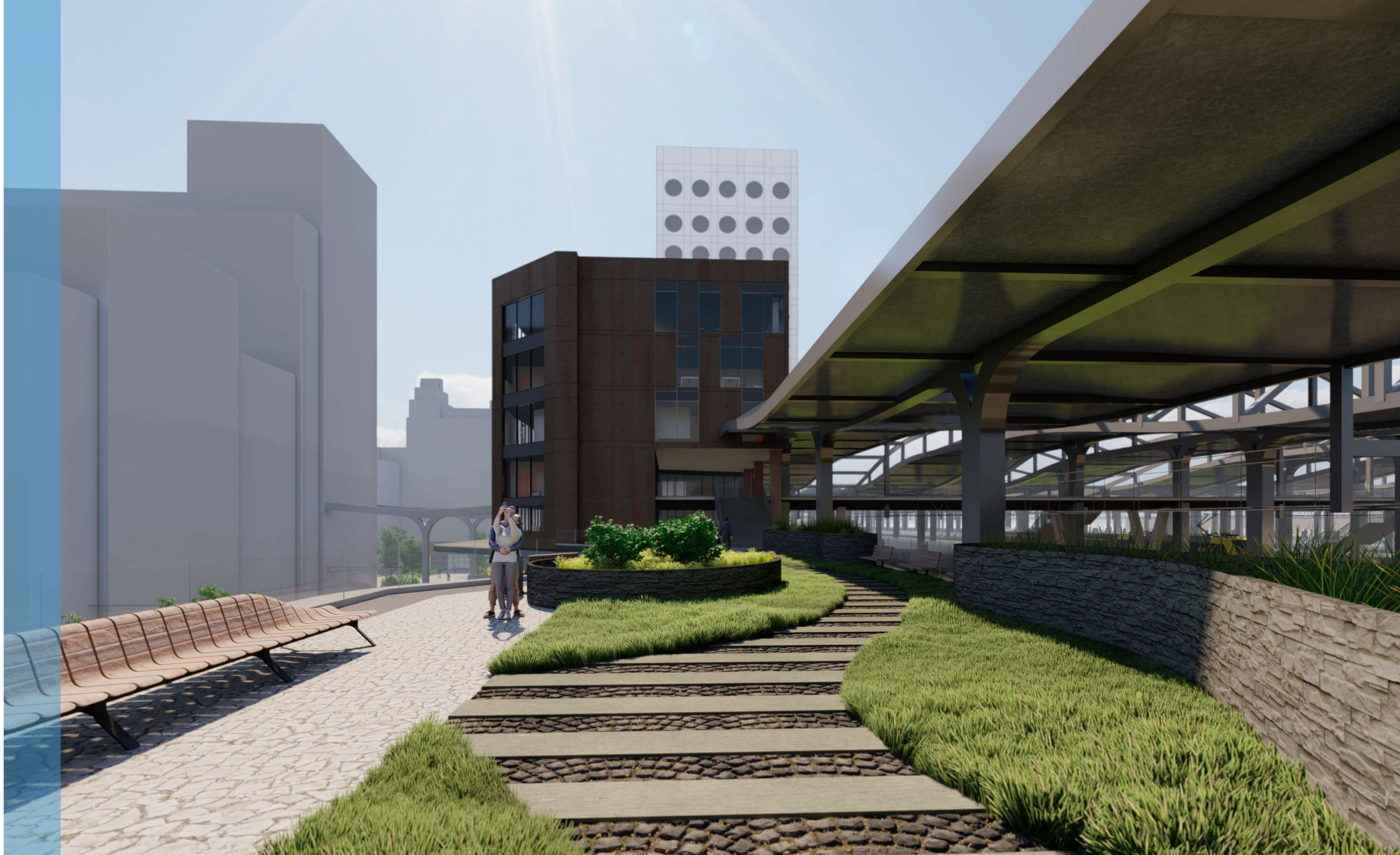
Overview

The building uses a Heat Pump system located on the fourth floor for heating the building.

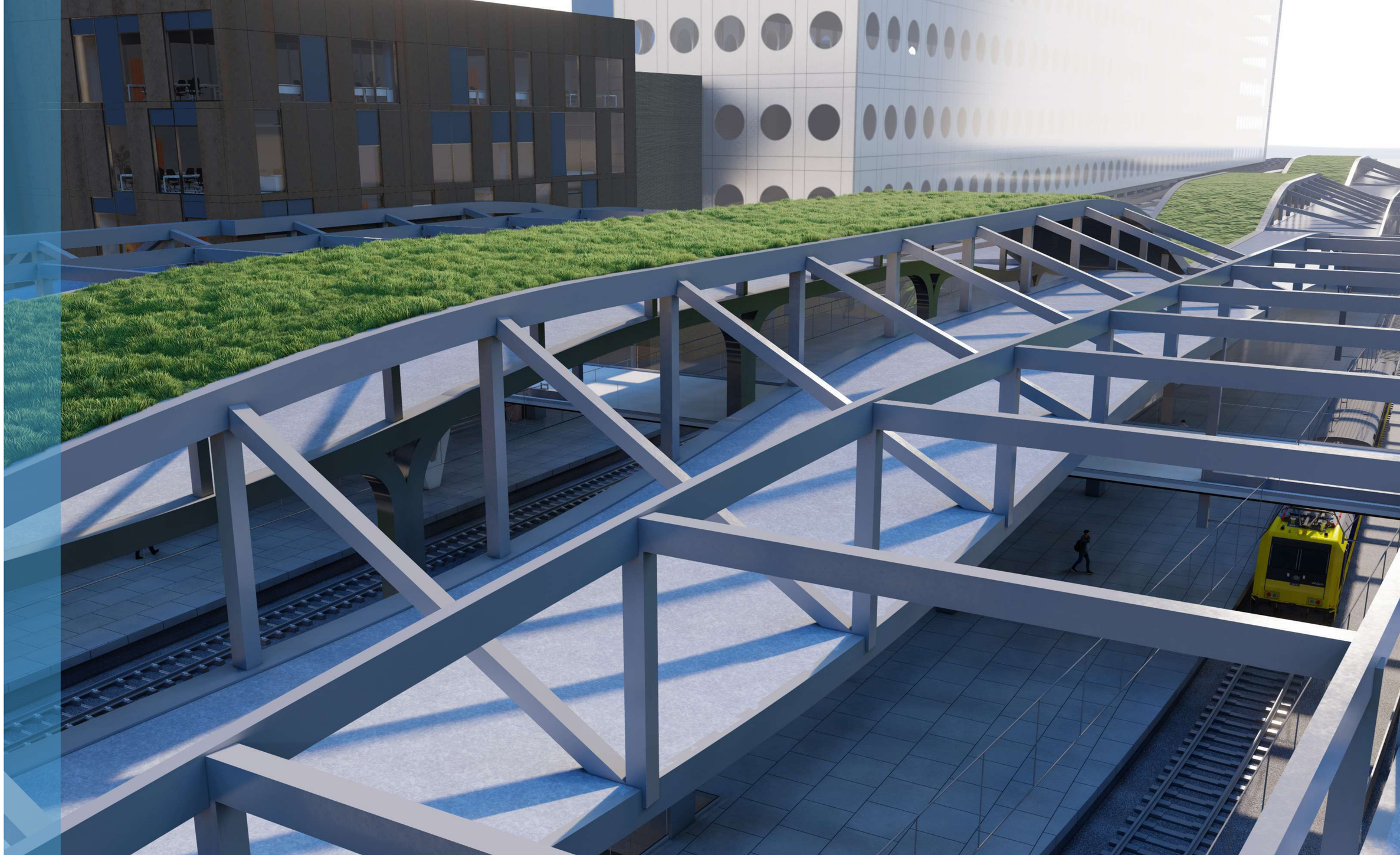
The new roofs of the design are used to collect rainwater, that will be stored underground.



GREEN ROOF



TRAIN STATION ROOF

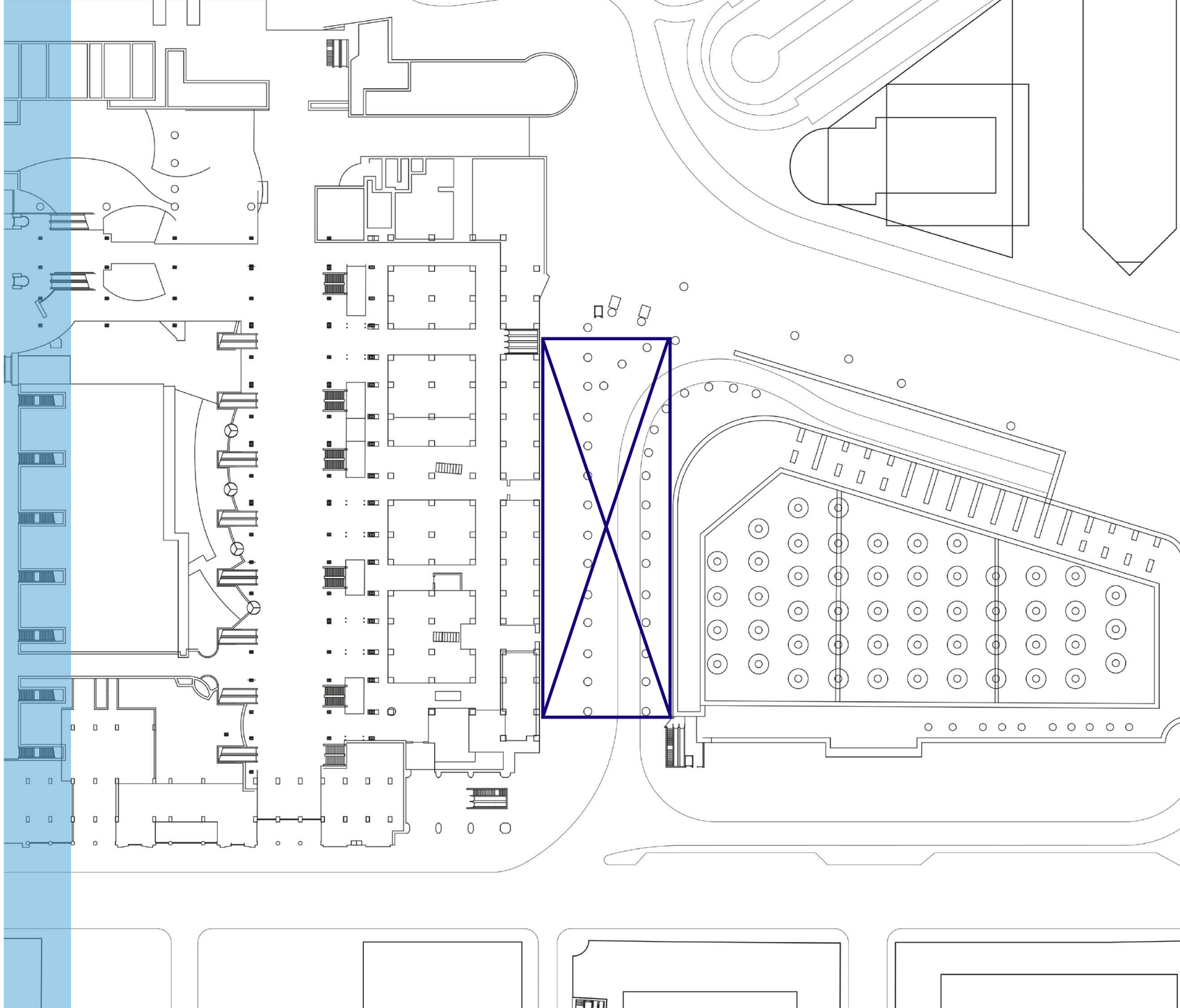


THE COVERED STREET

OBJECTIVE

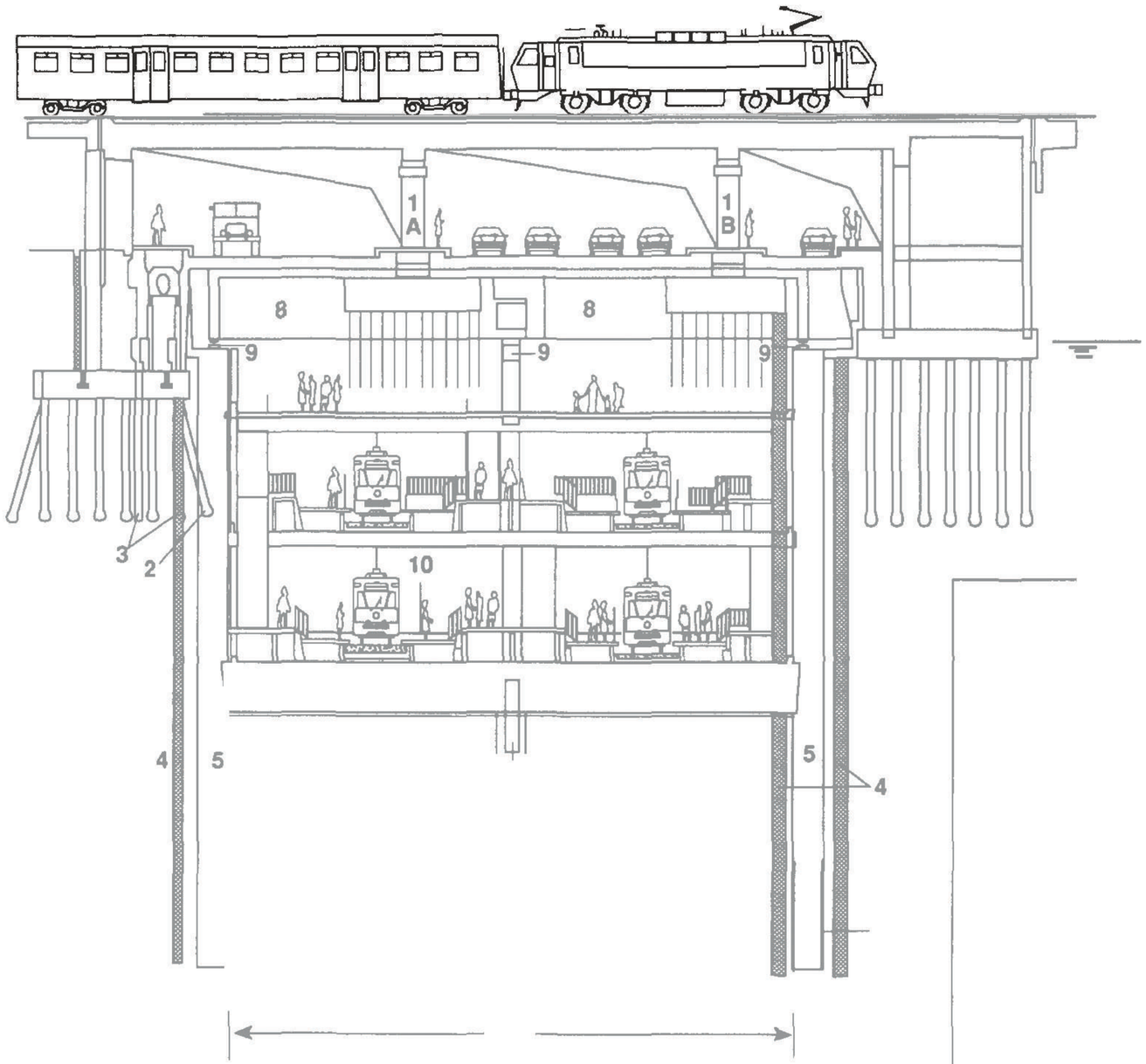
Using the new possibilities

Creation of a large open space



STRUCTURE

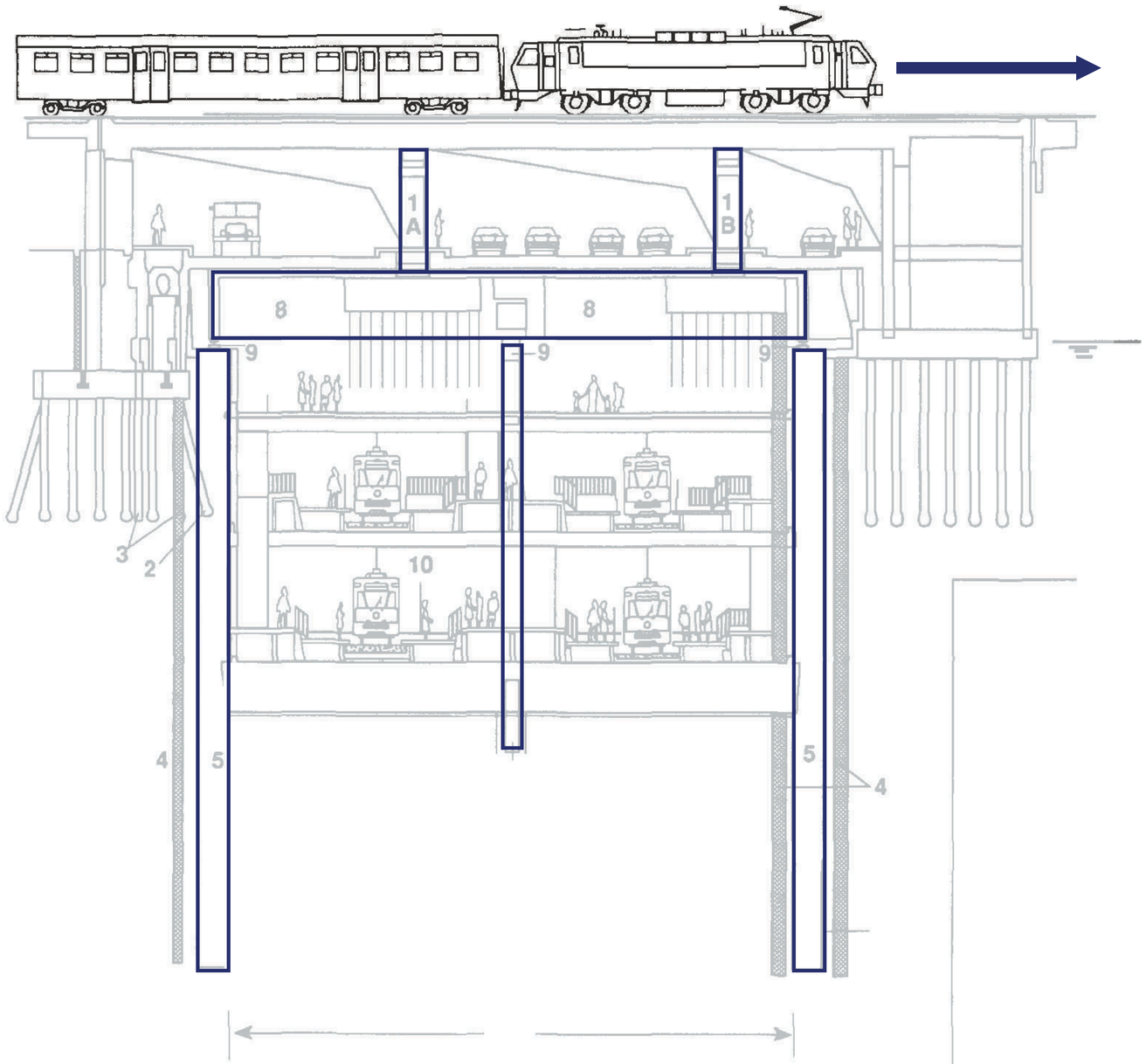
The Existing Structure



STRUCTURE

The Existing Structure

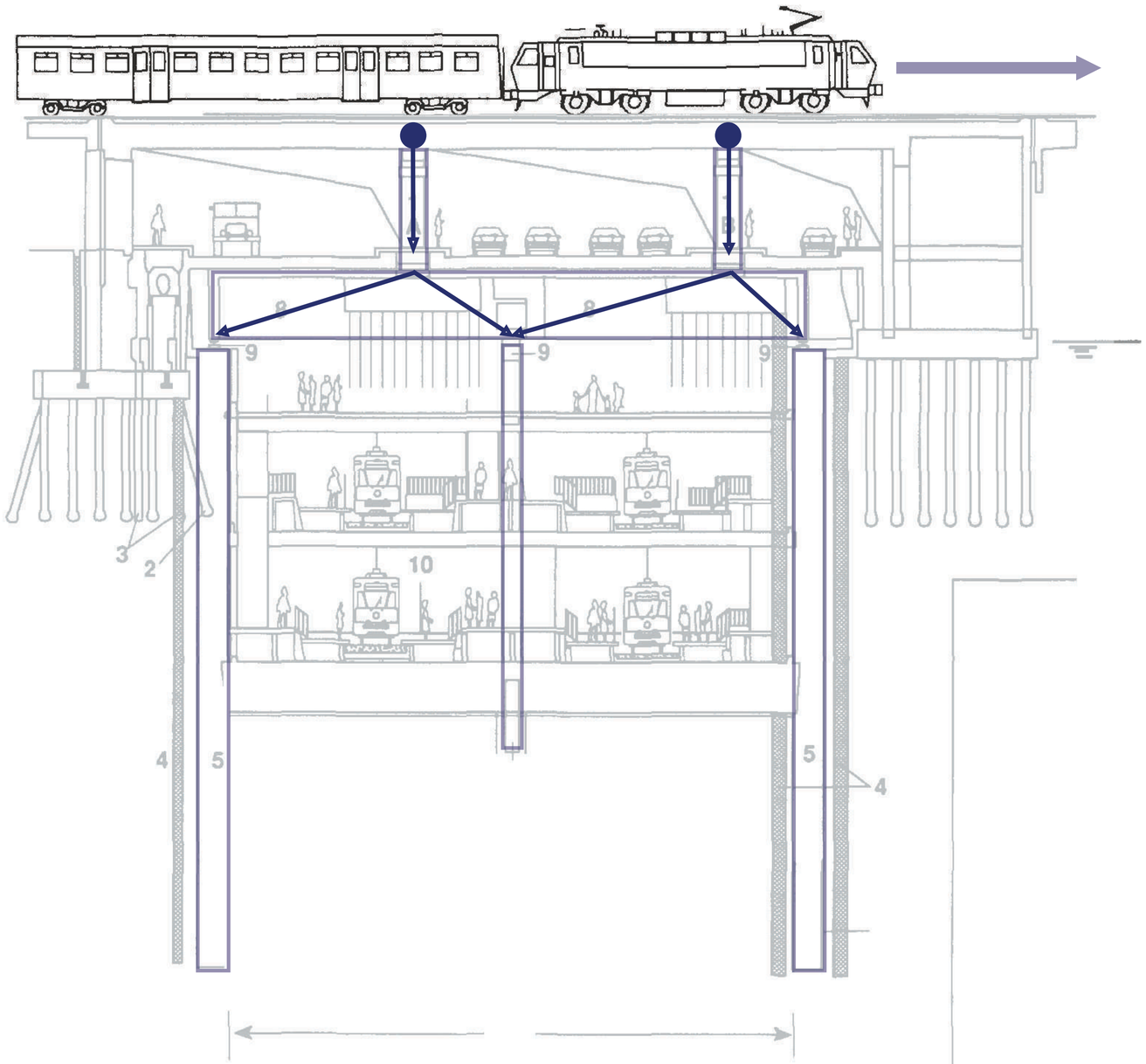
The current main elements



STRUCTURE

The Existing Structure

The forces are transferred to the retaining walls



STRUCTURE

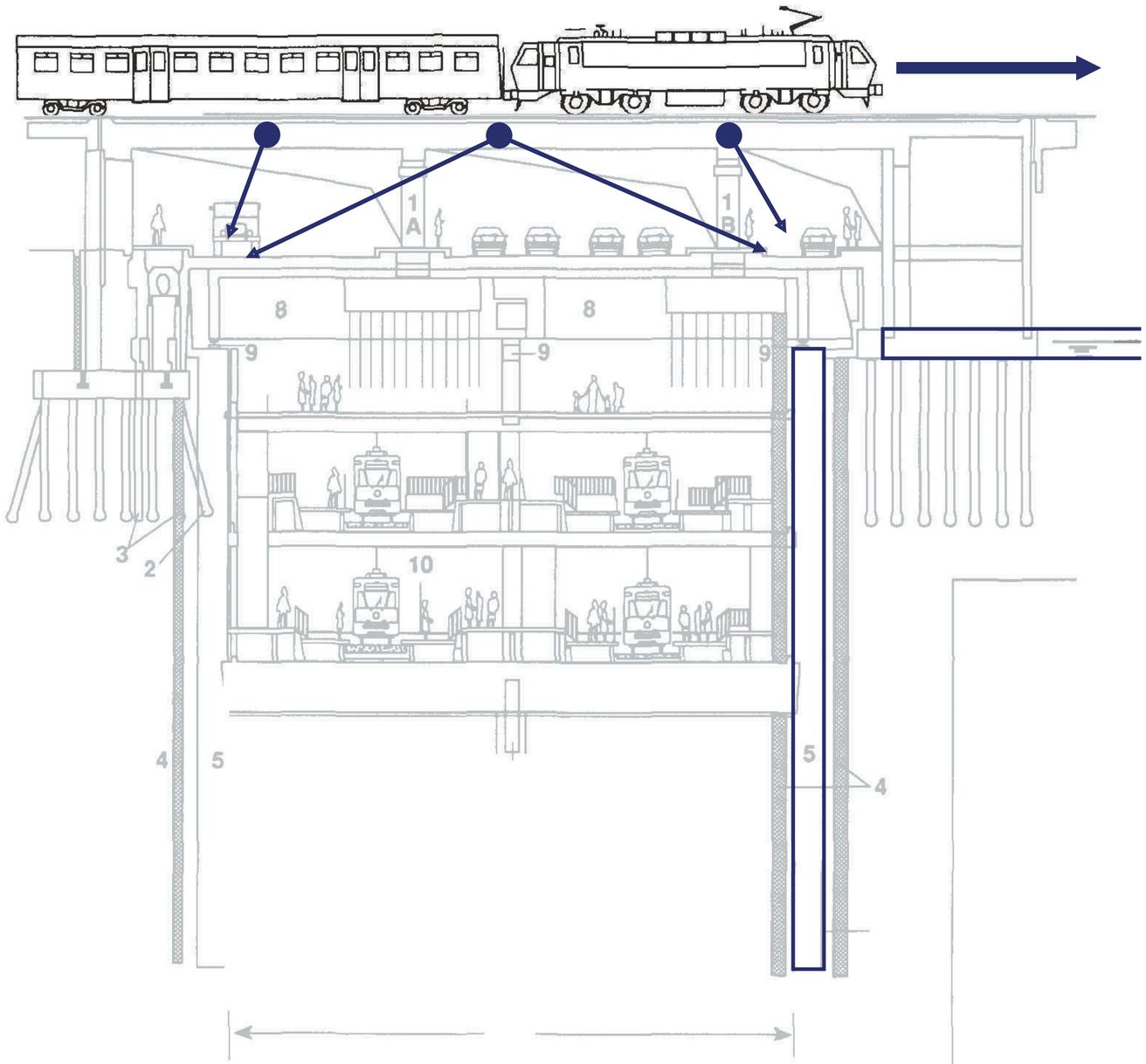
The Existing Structure

The current system is still visible in the ceiling of the ticket hall

STRUCTURE

The New Structure

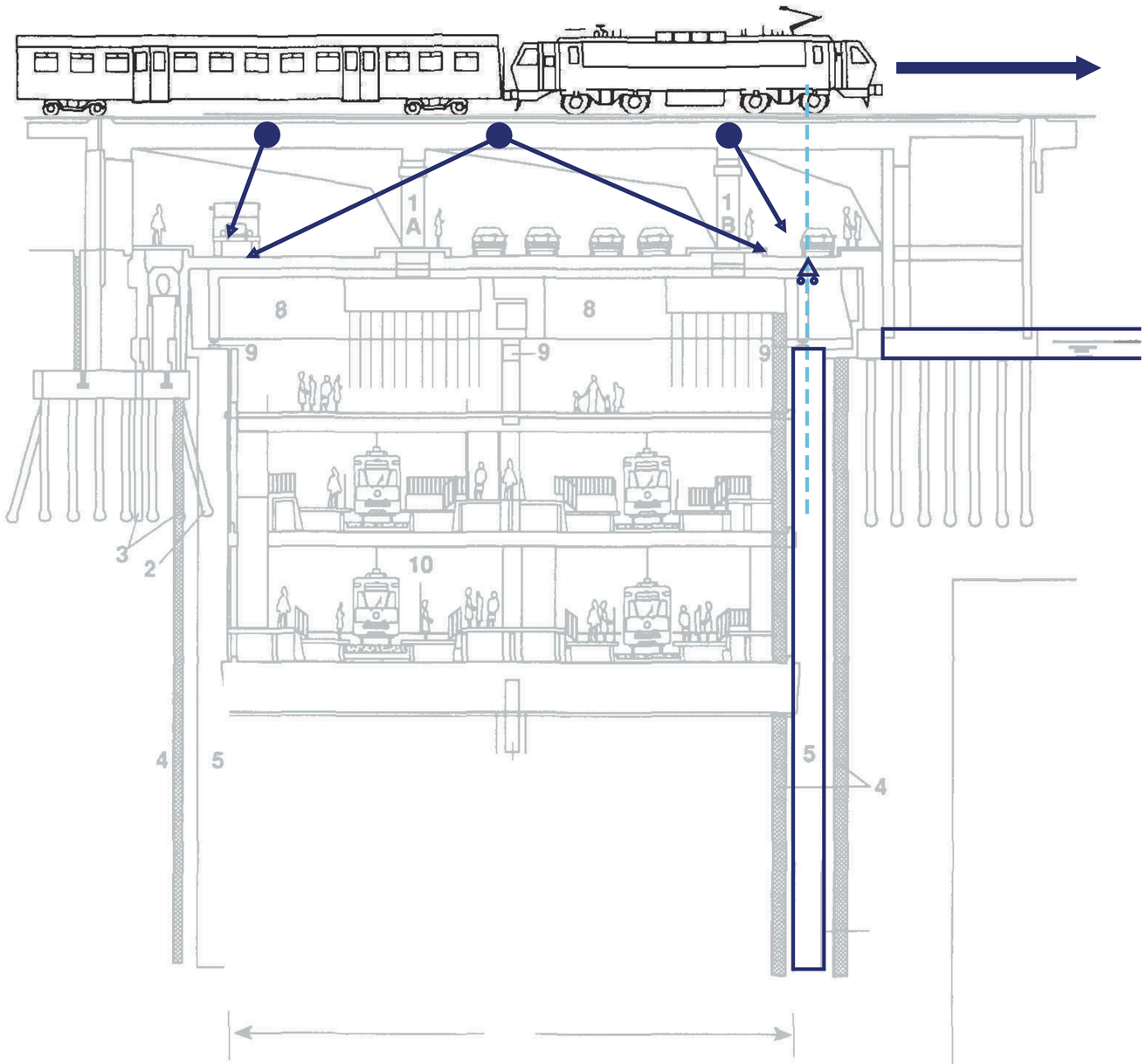
To allow for the changes, the new proposal is to make simplify this idea, moving the forces directly towards the retaining wall and foundation slab



STRUCTURE

The New Structure

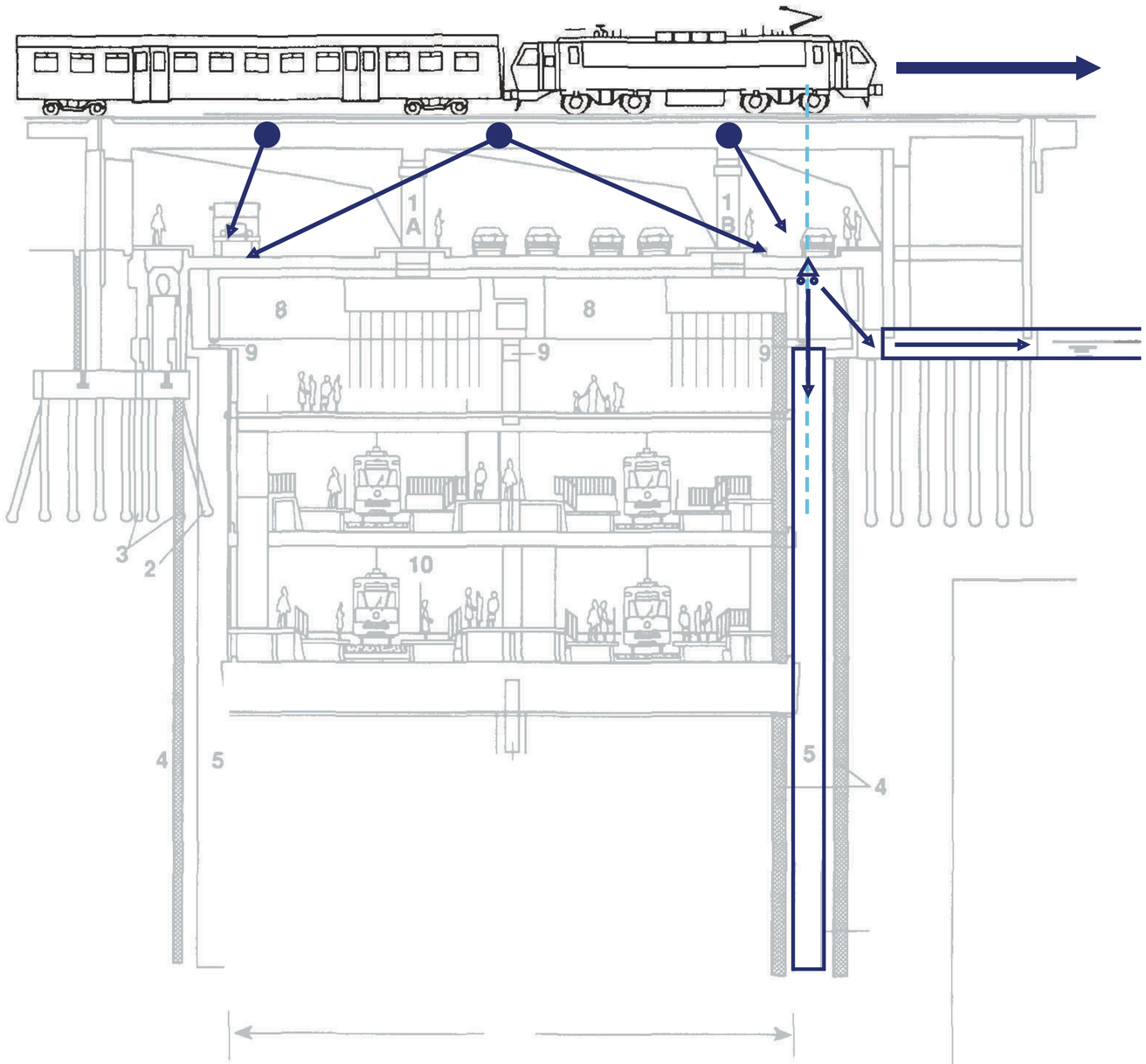
The structure will be mounted with roll joints to prevent excessive stress



STRUCTURE

The New Structure

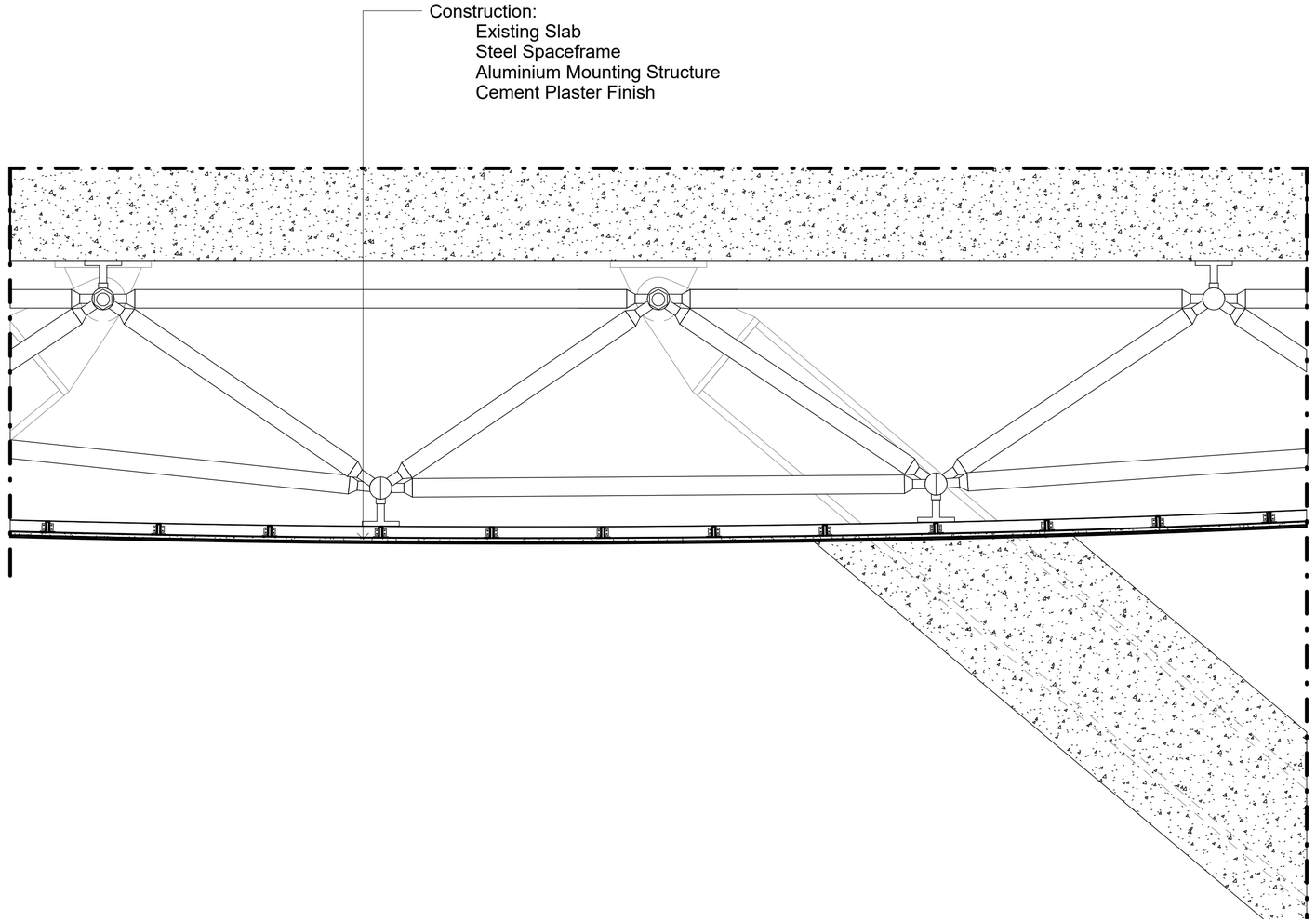
This new structure will be slanted, which allows it to also transfer the loads of breaking and accelerating trains.



STRUCTURE

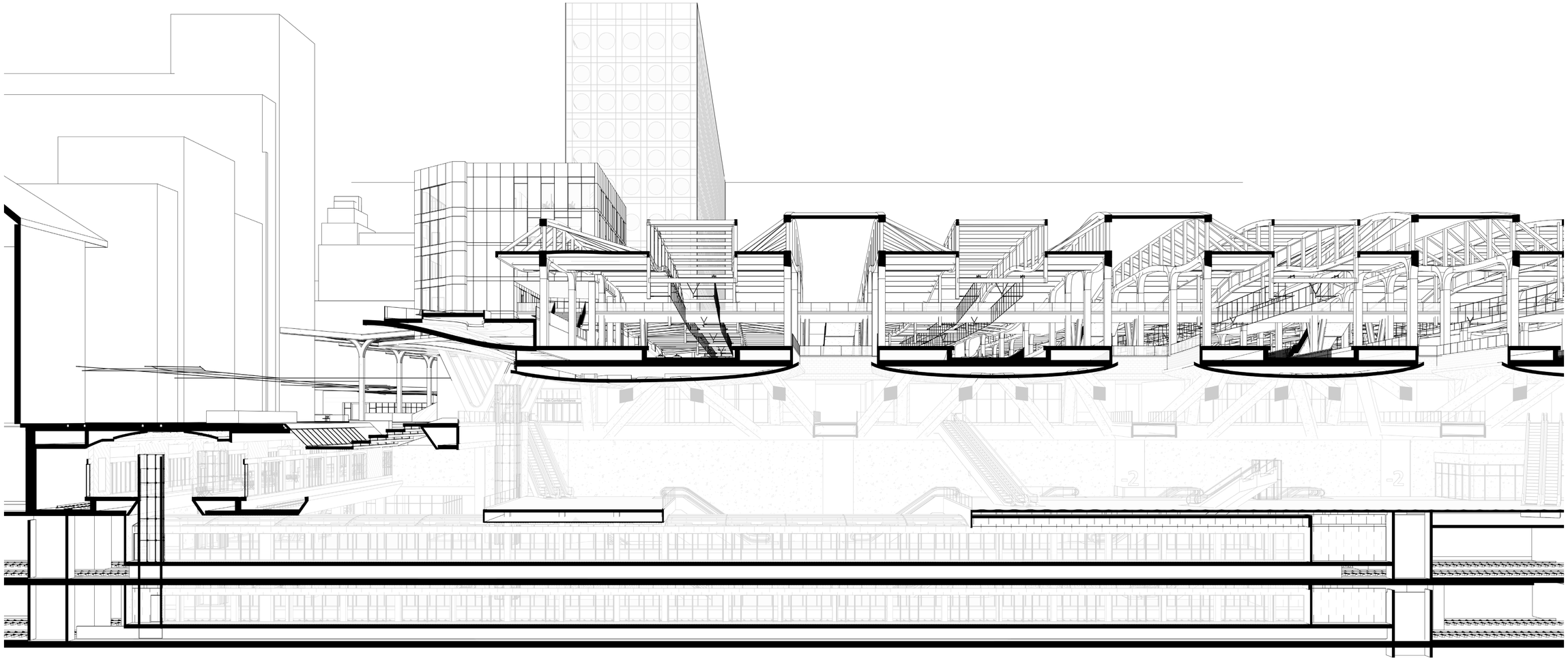
The New Structure

Since the new structure connects on different areas to the bridge, a new substructure will be created to help transfer the load towards the new mounting points.



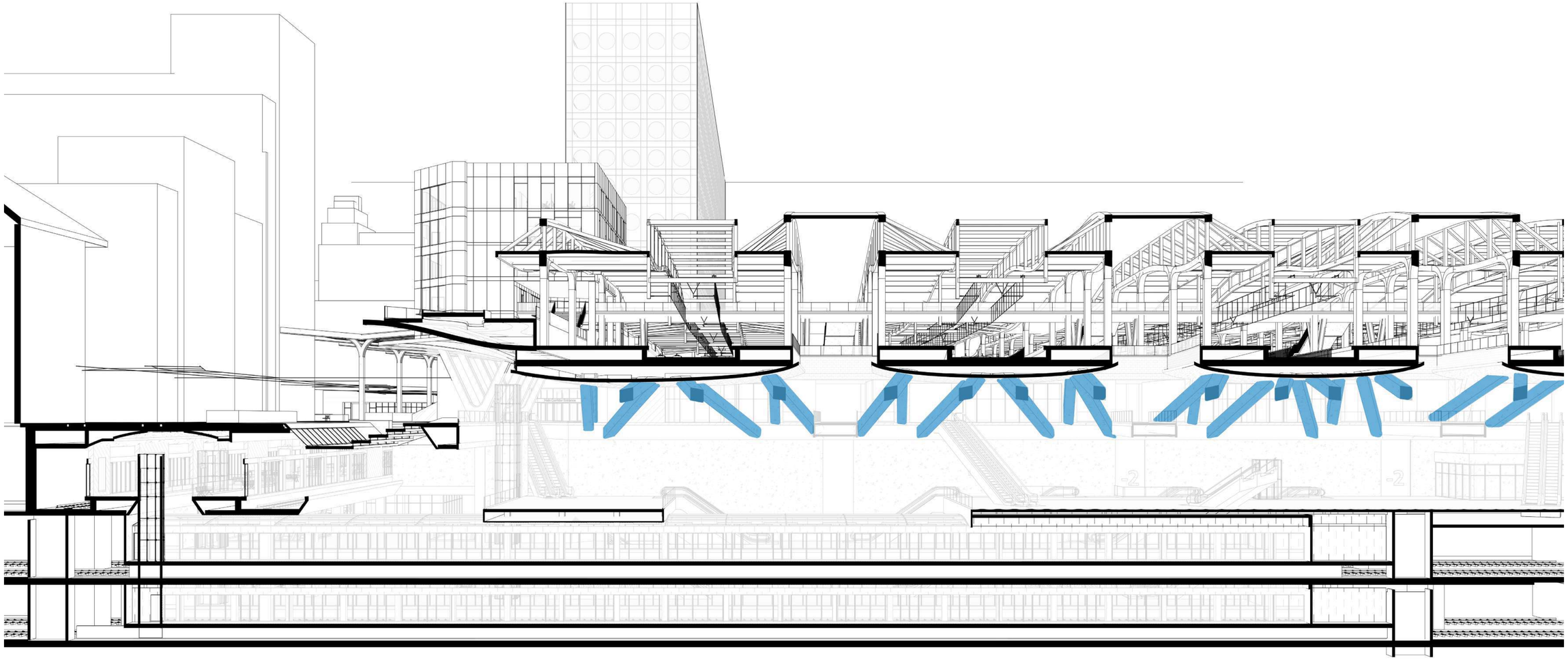
DESIGN

Section



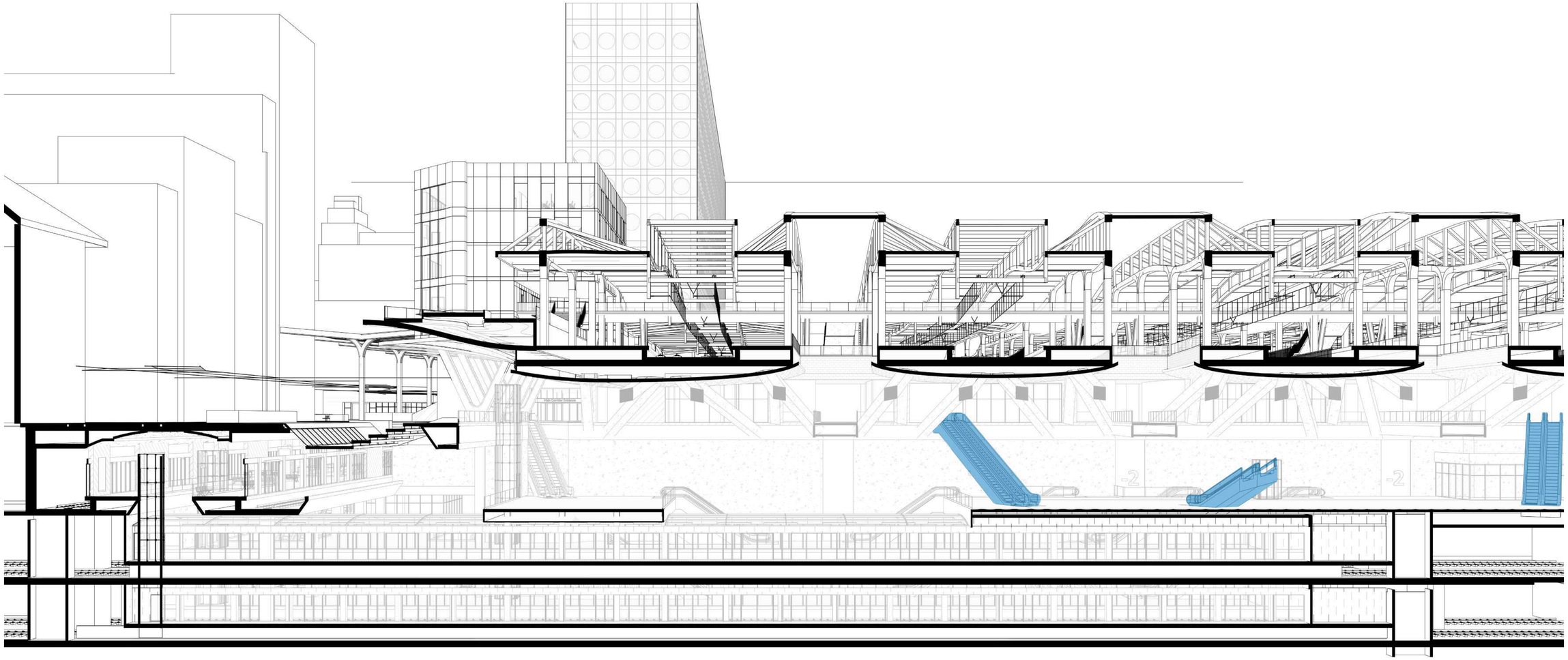
DESIGN

Structure



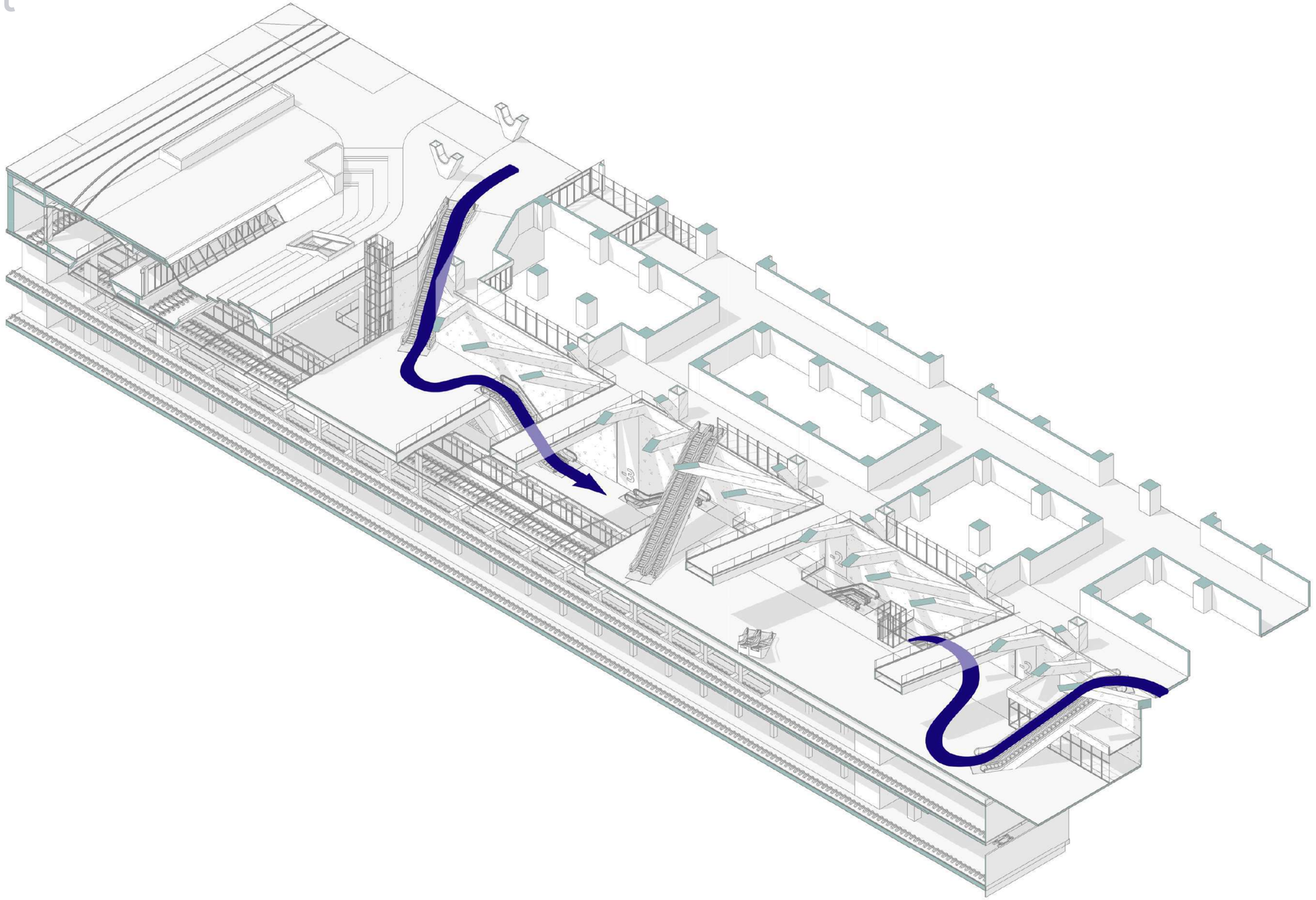
DESIGN

Escalators



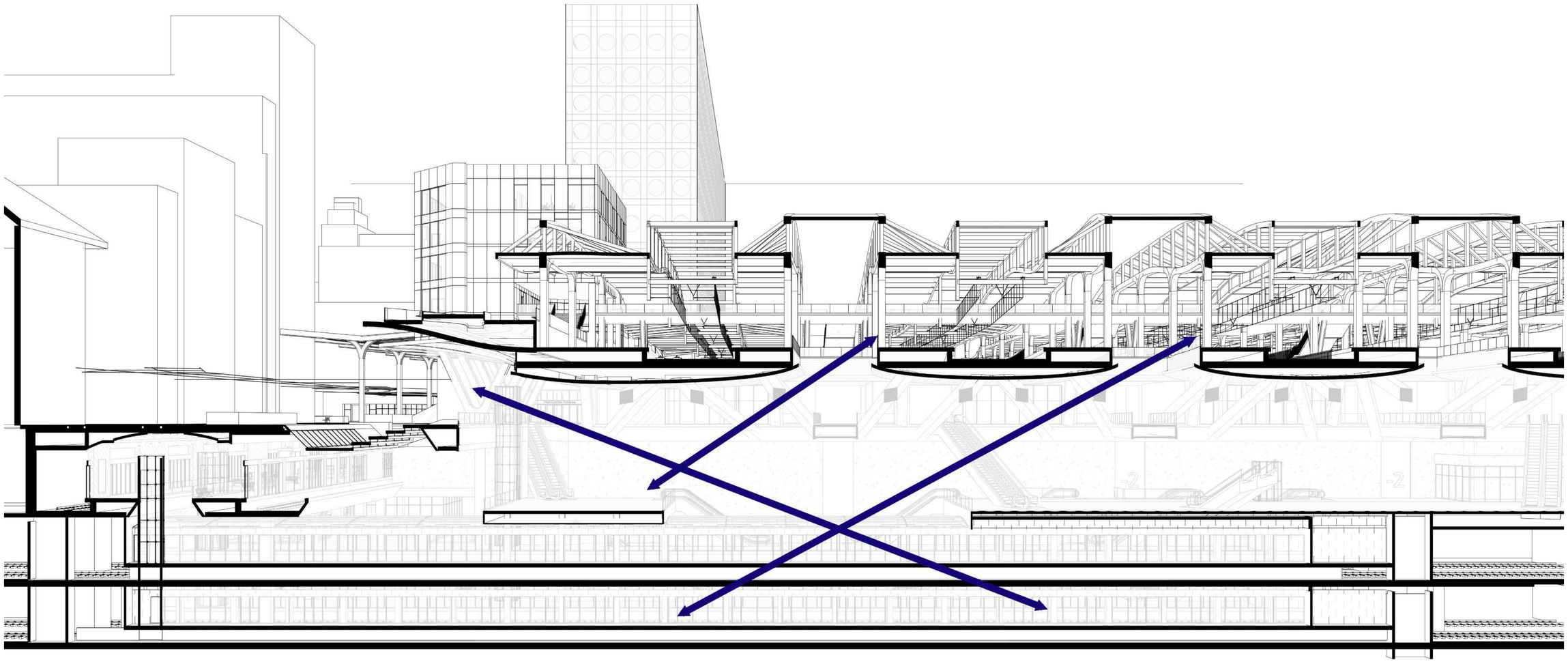
DESIGN

Circulation



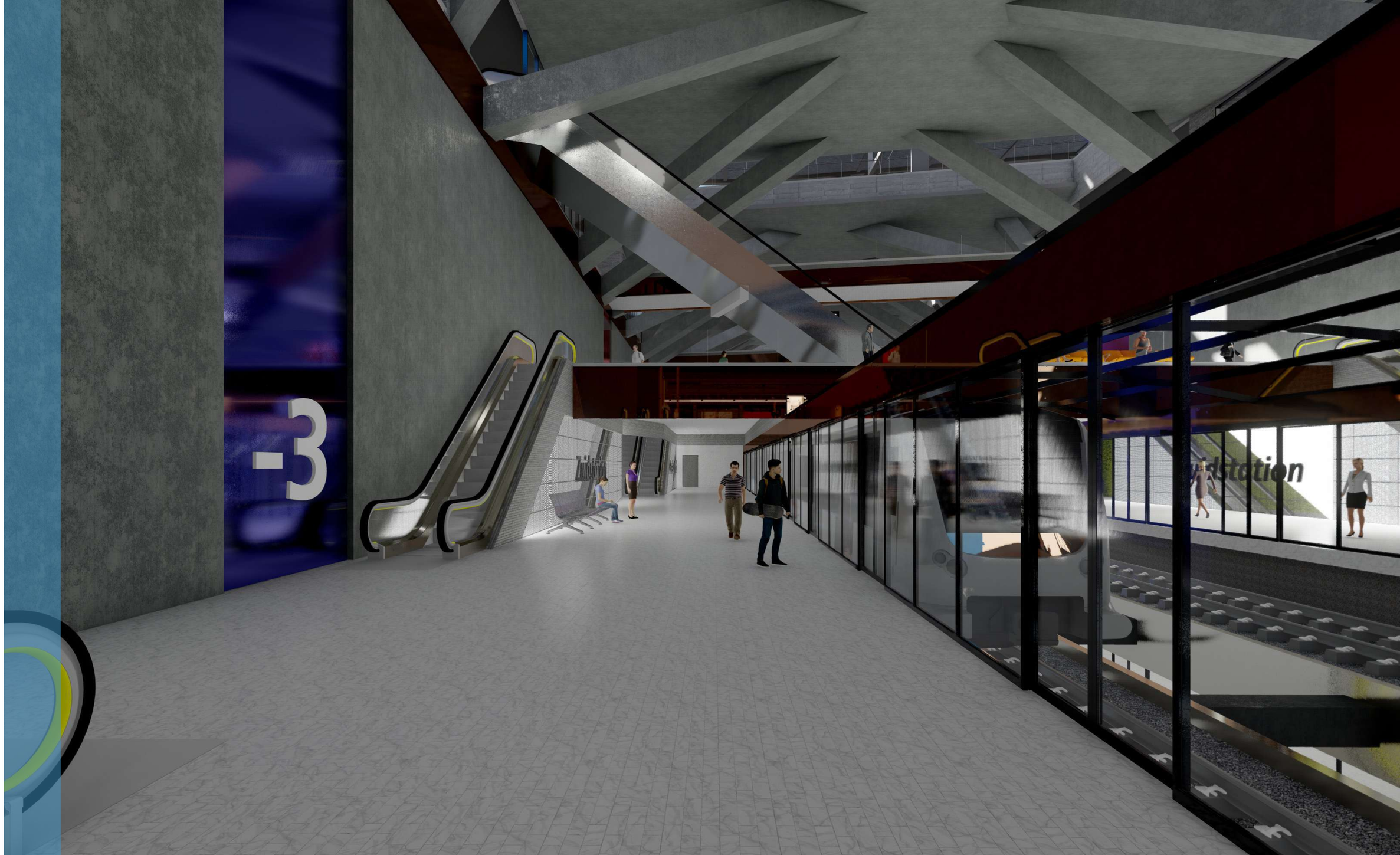
DESIGN

Viewing Angles

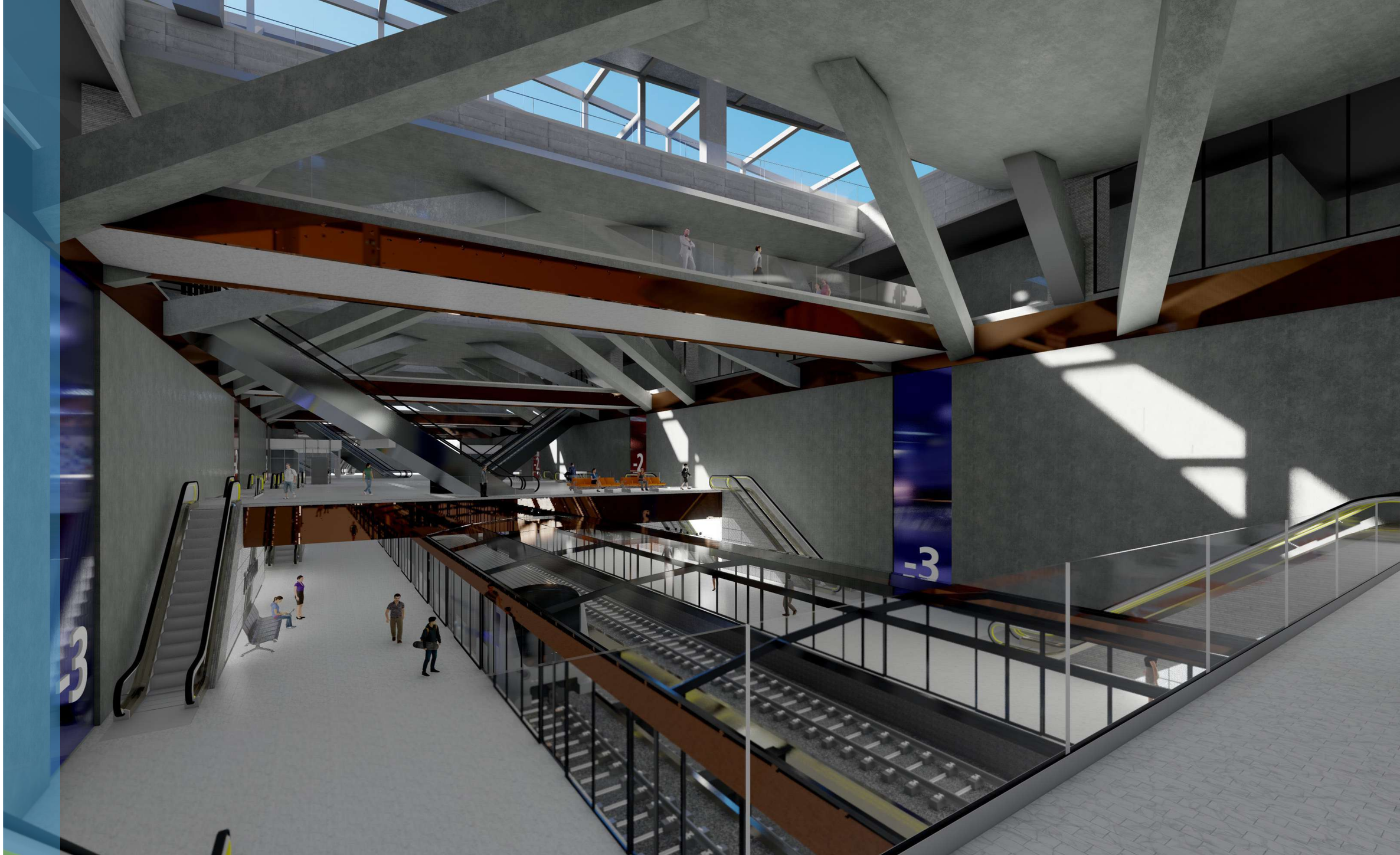


METRO STATION

METRO STATION



METRO STATION



METRO STATION

CONCLUSION

RESEARCH QUESTION

Main Research Question:

“How can architecture contribute to the spatial layout and experience of public space in European intermodal transportation hubs of the future?

CONCLUSION

CONCLUSION

P5 |

THE END