

2022

ASHLEIGH THOELE

LA GRAELLA  
ASHLEIGH THOELE

LA GRAELLA





**Mark Clayton**  
*chair*



**Miguel Roldan**  
*committee*



**Nancy Klein**  
*committee*



**Tazim Jamal**  
*committee*



**Marcel Erminy**  
*studio*





# TABLE OF CONTENTS

<b>vii</b>	<b>Prologue</b>	<b>23</b>	<b>Design</b>
<i>vii</i>	Abstract	25	Master Plan
<i>viii</i>	Acknowledgement	27	Site Distribution
		29	Floor Plans
		33	Structure
		34	Elevation I-III
		35	Column Grid and Circulation
		37	Ramps
		41	Auditorium
		45	Elevation IV
		47	Atrium
		49	Section and Details
<b>3</b>	<b>Cultural and Historical Evolution</b>		
5	Spanish Culture		
7	Bjarke Ingels Group Proposed Plan		
<b>9</b>	<b>Site Analysis</b>	<b>51</b>	<b>Gardens</b>
11	Site Location	53	Garden Design
13	Waterfront Analysis		
15	Productive Fabrics		
16	Green Infrastructure		
17	Accessibility and Connectivity		
18	Shadow Study		
<b>19</b>	<b>Strategies</b>	<b>56</b>	<b>Conclusion</b>
21	Design Grid		
22	Design Transformation	<b>57</b>	<b>Bibliography</b>



## Abstract

Spain is a place filled with a vibrant culture, from the people who pose as live art on the streets of Las Ramblas, to those who fill those same streets late at night engaging in stimulating conversation paired with a bottle of wine. Traveling through the streets pass many quarters to the edge of Barcelona, sits the Thermal Power Plant of Sant Adria de Besos, a tall historical landmark which was the focus of a preservation fight to prevent its demolition, and only recently were the Tres Xemeneies granted heritage protection by the municipality. The Bjark Ingles Group has proposed a hypothetical solution that revitalizes the engagement of Les Tres Chimeneas.

This project investigates the history and future of the historic power plant and how the site as a connector between Barcelona and Badalona can be used to stimulate environmental, economic, and social factors for the community and tourists alike. The cultural center created aims to transform the post-industrial land into an urban public space where those who visit can engage in a unique, but also educational experience that explores the history of culture for the Spanish region that translates from both the interior and the exterior of the site.





# ACKNOWLEDGEMENT

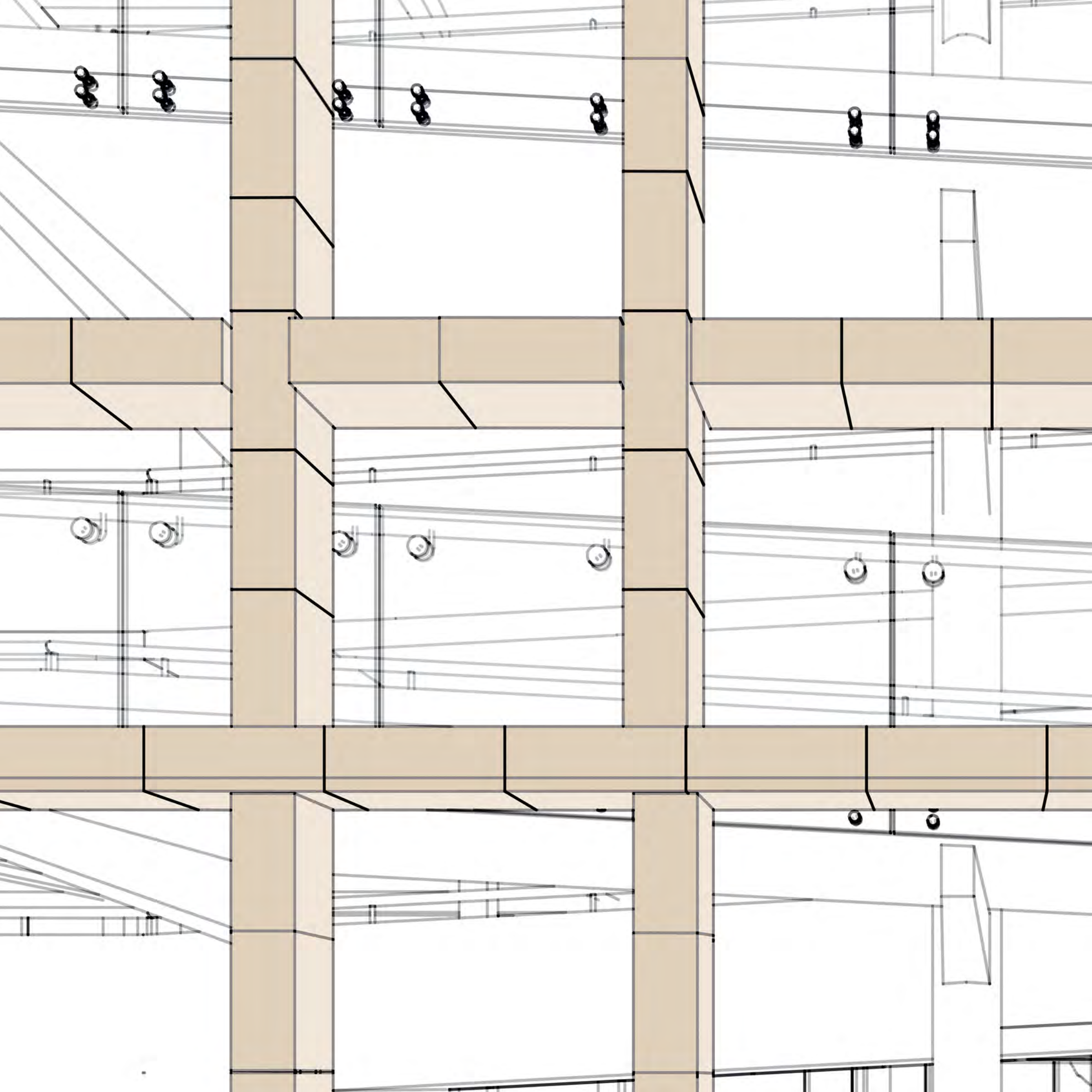
To my professors over the past six years....  
Thank you for teaching me valuable skills and tools both in the classroom and outside.

To my friends and family....  
Thank you for being a shoulder and the biggest support team.

To grad gals....  
Thank you for being the main reason that the past two years were possible.

To God...  
Thank you for the opportunities you have blessed me with.

To myself past, present, and future...  
Never forget how much you accomplished and never stop growing in your talents.



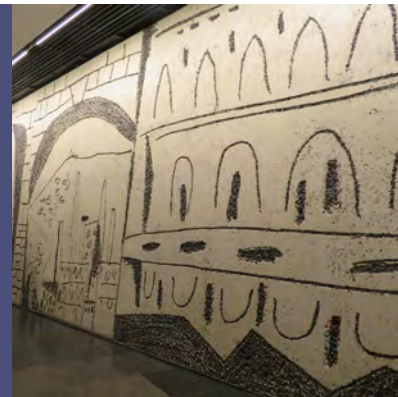
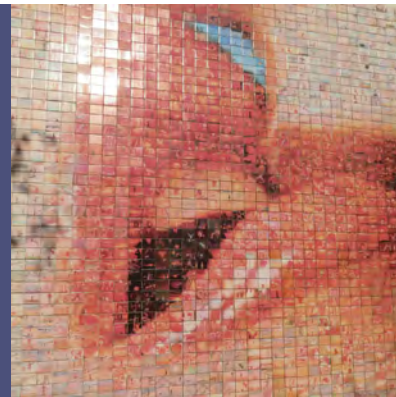
The background is a detailed architectural line drawing of a building's interior structure. It features a grid of vertical columns and horizontal beams. The columns are shaded in a light tan color, while the beams are represented by thin black lines. The drawing shows a perspective view of the structure, with lines converging towards the top. There are several pairs of small black circles, possibly representing lights or sensors, mounted on the beams. The overall style is technical and precise.

**Cultural and Historical Evolution**

**Evolució Cultural i Històrica**



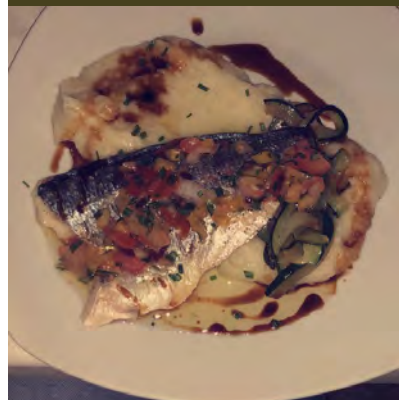
MUSIC



ART



# GASTRONOMY



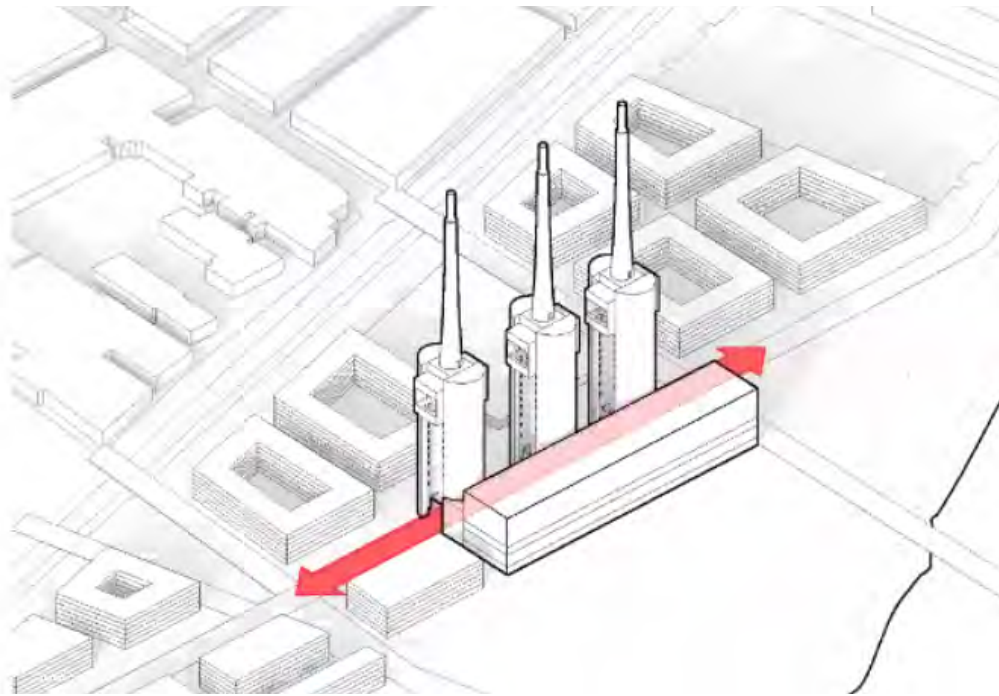


Fig. 1.4 Recognition of Diagonal within the Turbine Hall and Three Chimneys

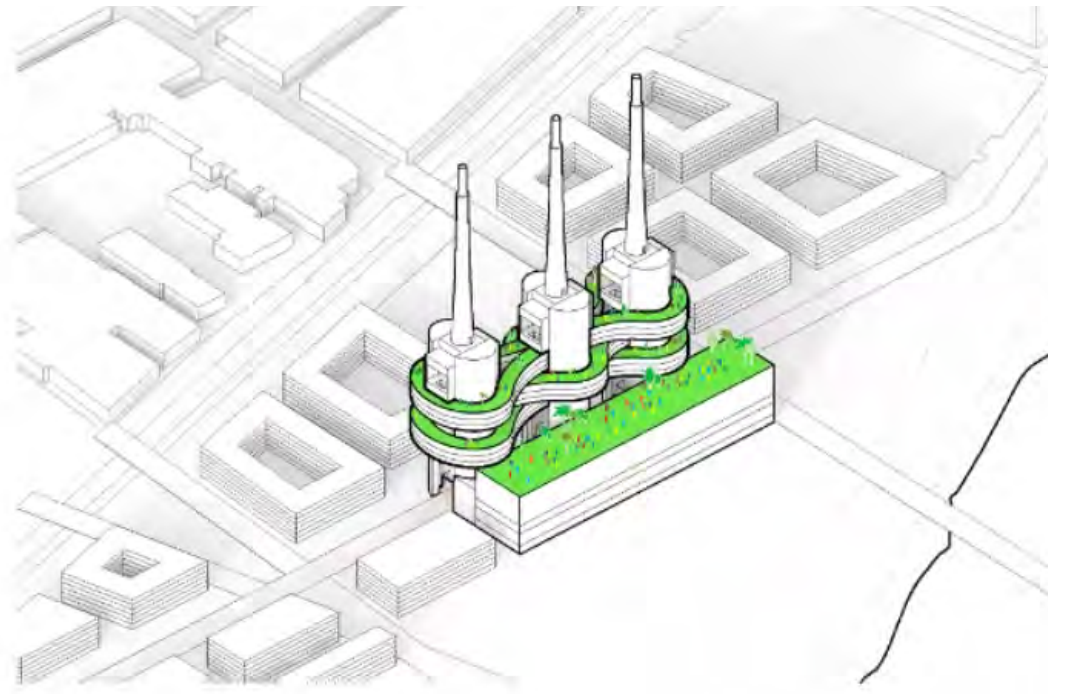


Fig. 1.5 Proposed Concept of Racetrack integrated with Turbine Hall



**TURBINE 2.0 BOX 2**



**WRAP RACETRACK**



**WEAVE**

Fig. 1.6 Concept Study of Proposal

## BJARKE INGELS GROUP PROPOSED PLAN

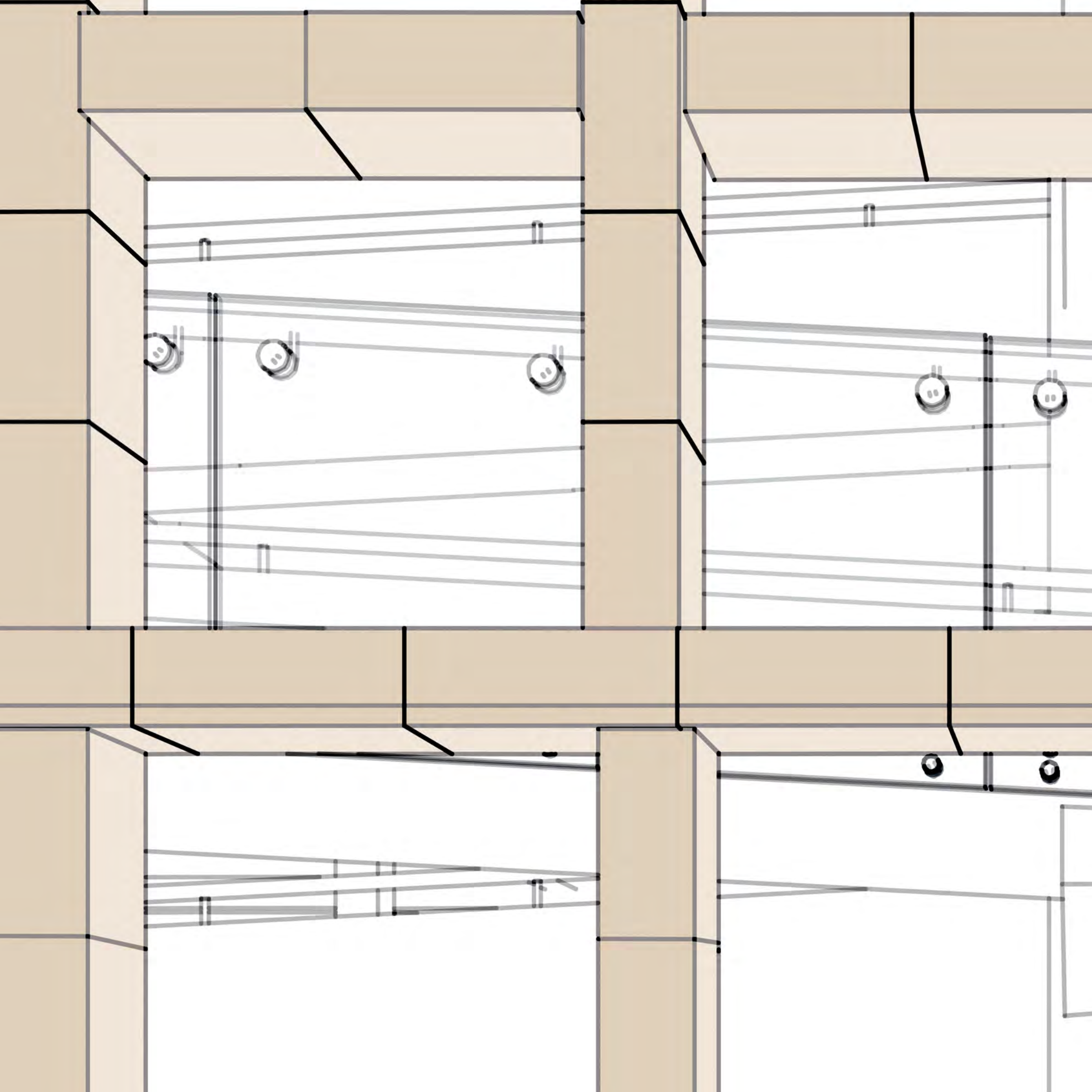
In 2018, the Bjarke Ingels Group created a hypothetical renovation plan for The Three Xemenies in the Sant Adria de Besos Area. The site and the historical thermal power plant were declared a structure of “good local cultural interest.” In late summer of 2020, the Plan Director Urbanistico, which is an urban master plan of the three chimneys sector that reflects the will to transform both the building and the immediate surroundings, was approved. The BIG

created a proposal of their own based on their innovative and resourceful thinking that combined the energy of the turbine hall with the recreational aspect of a weaving racetrack among the towering chimneys. The cultural center on the site takes into account the proposed idea from the BIG group to create a destination of social and education interest for tourists and locals.

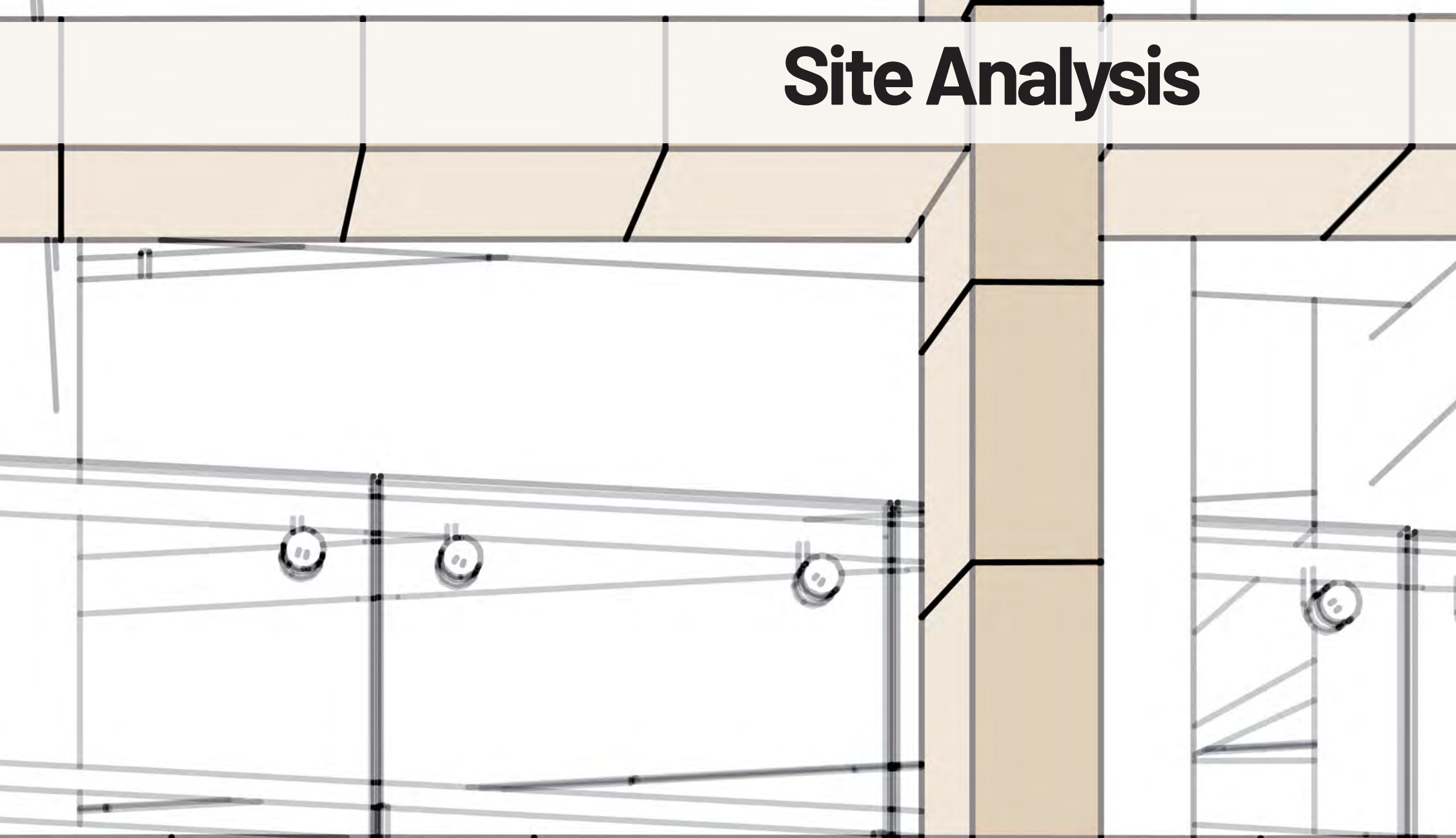


Fig. 1.7 Concept Rendering of Use of Space





# Site Analysis



# Anàlisi del Lloc

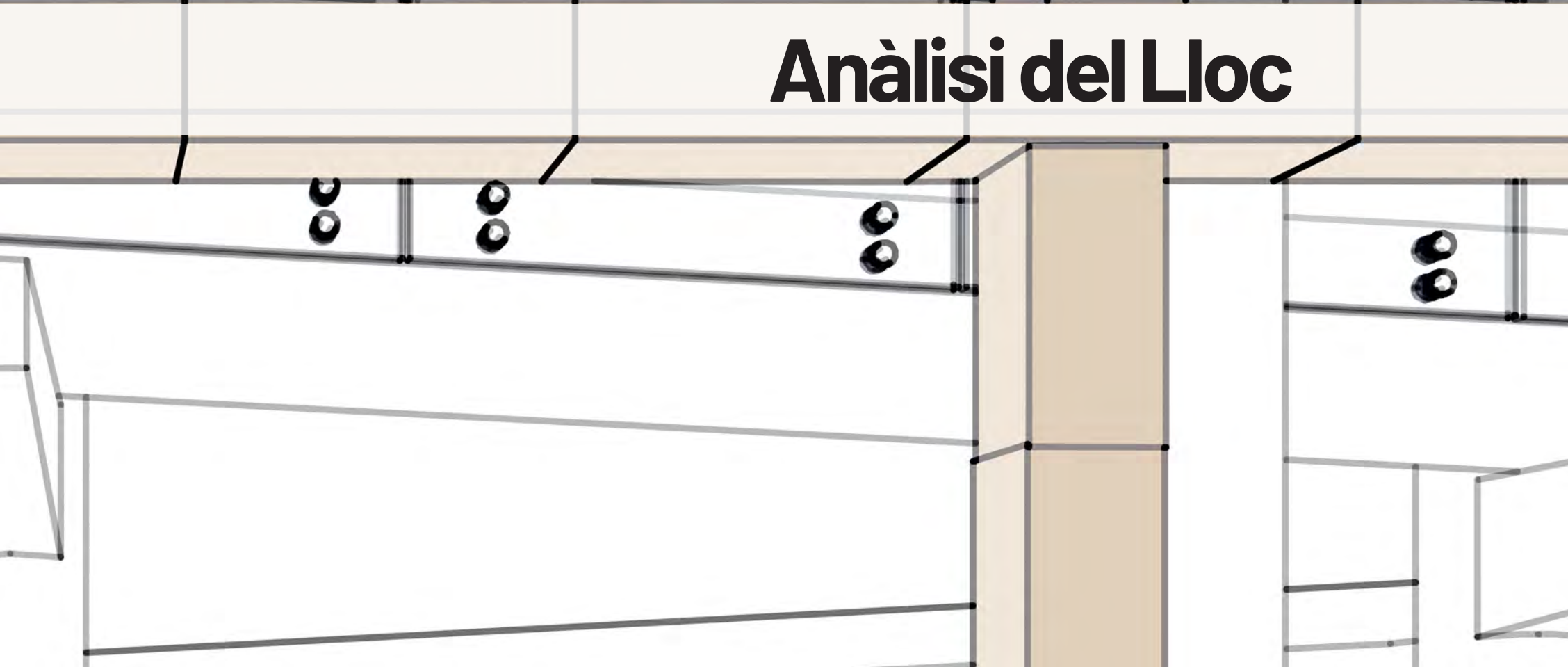


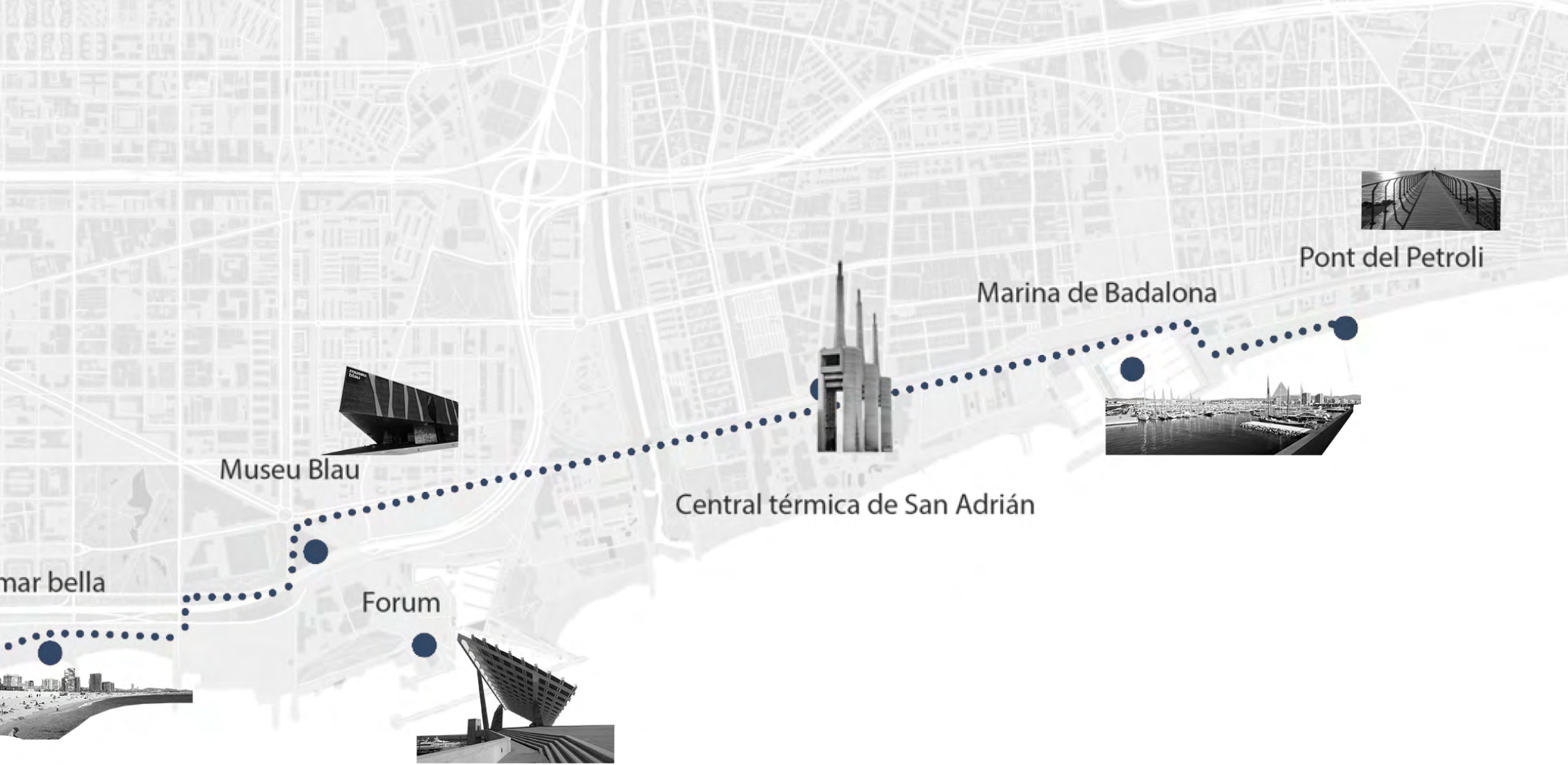




Fig 2.2 Site Reference Photos

# Waterfront Analysis





# Productive Fabrics

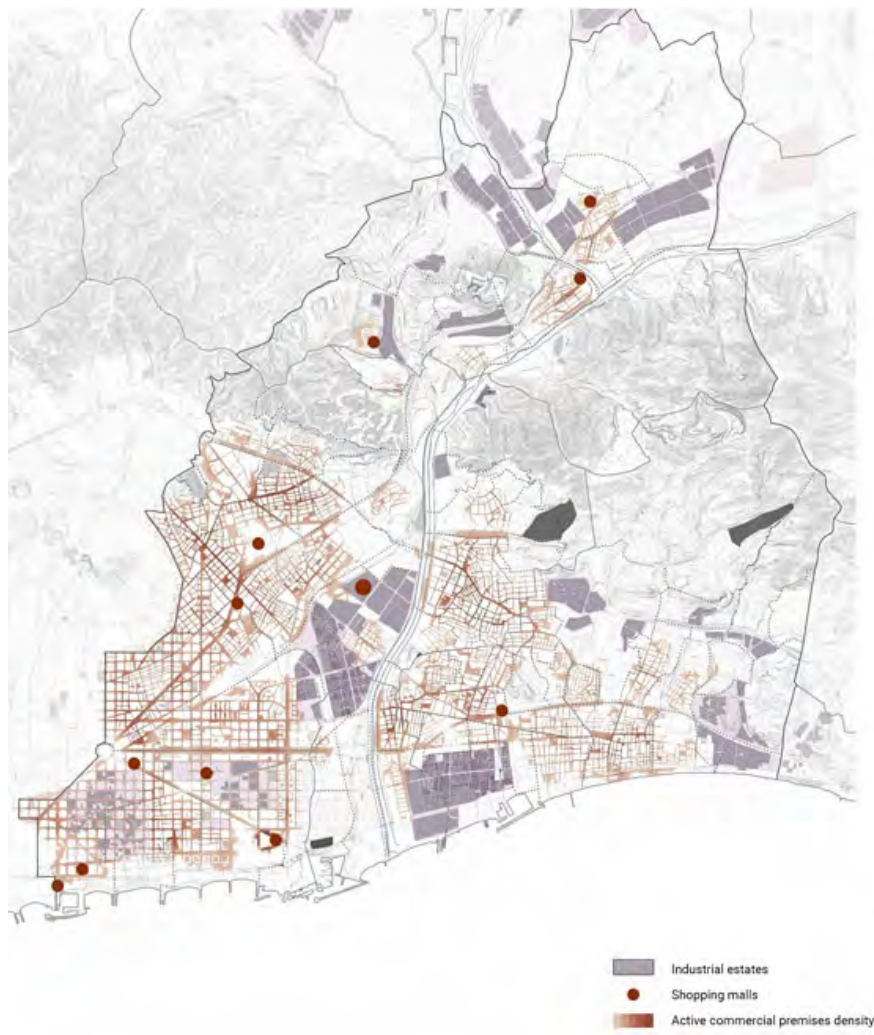


Fig 2.4 Trade Density, PAEs knowledge centers

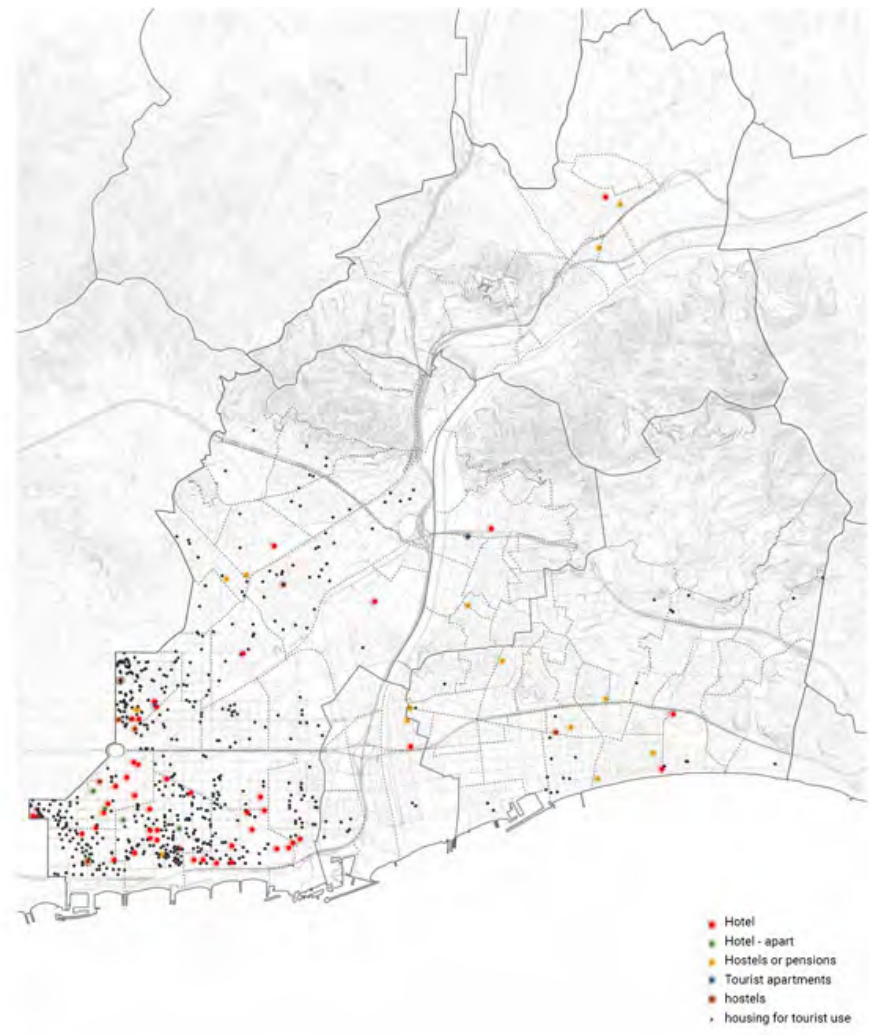


Fig 2.5 Economic activities: Tourist Accommodation

# Green Infrastructure



Fig 2.6 Green infrastructure: Impact on infrastructure

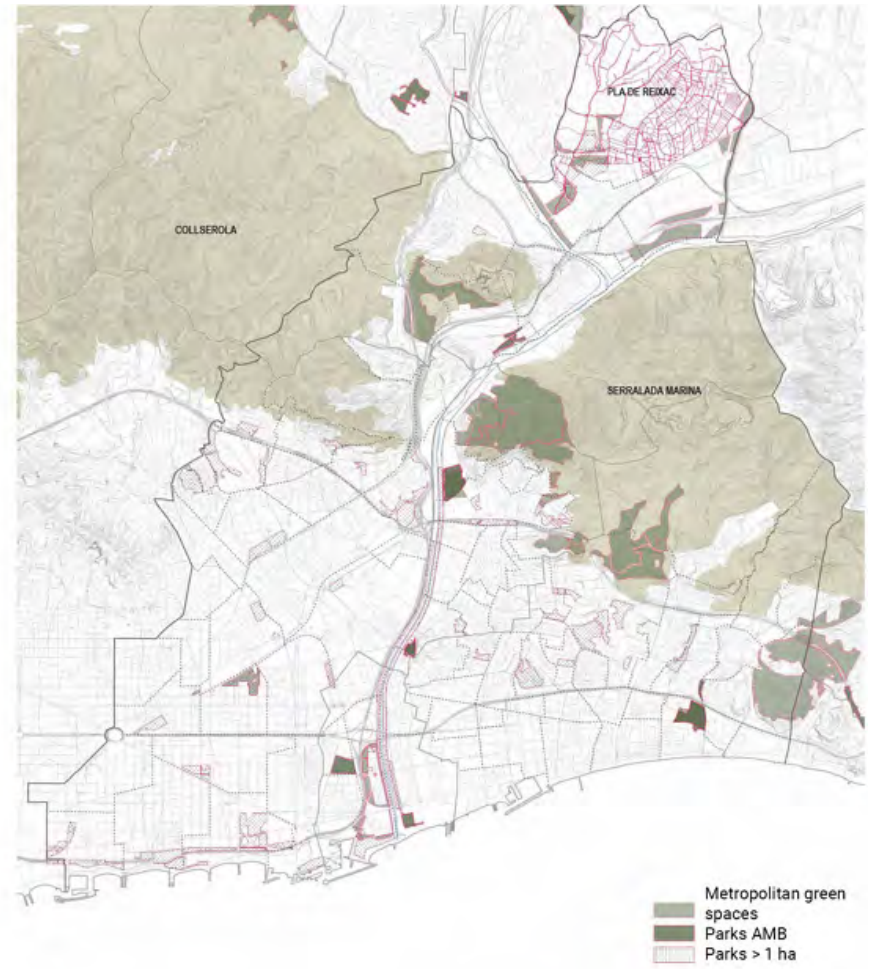


Fig 2.7 Metropolitan parks and green spaces



# Accessibility and Connectivity

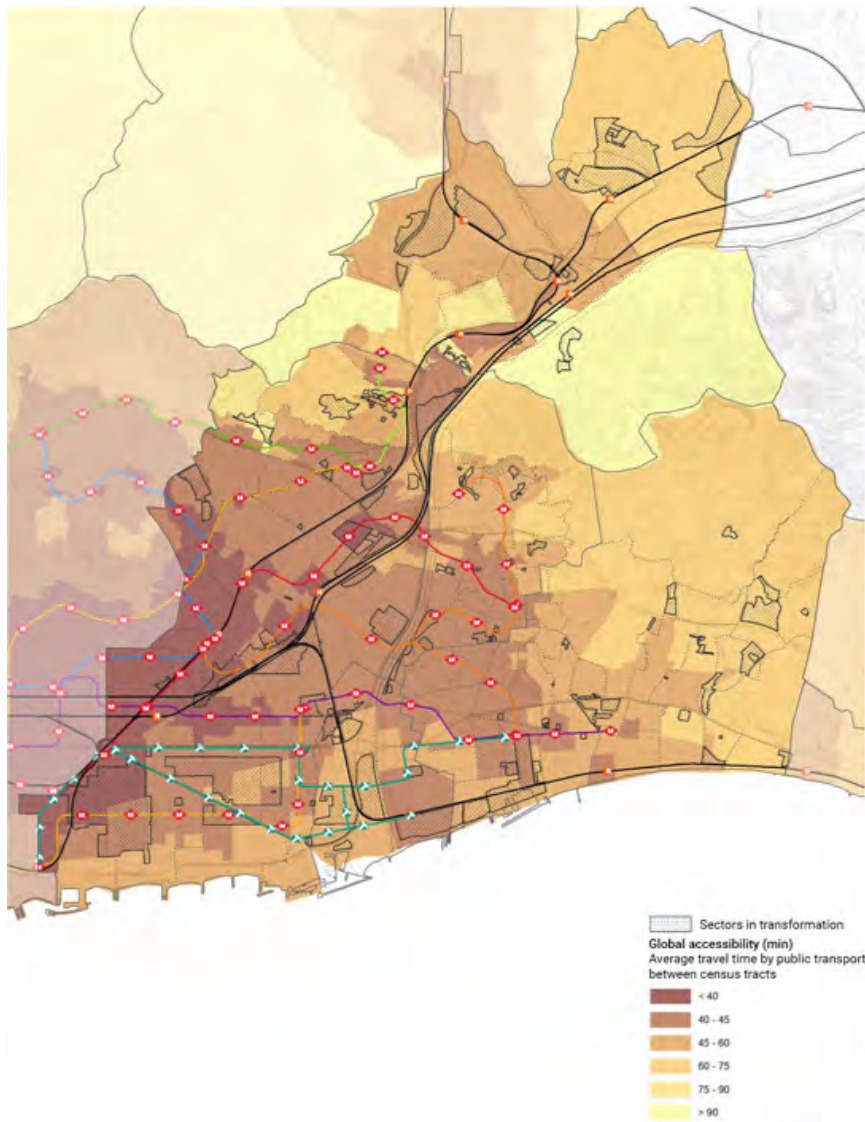


Fig 2.8 Accessibility in public transportation -Sectors in transformation



Fig 2.9 Pedestrian mobility- Critical points

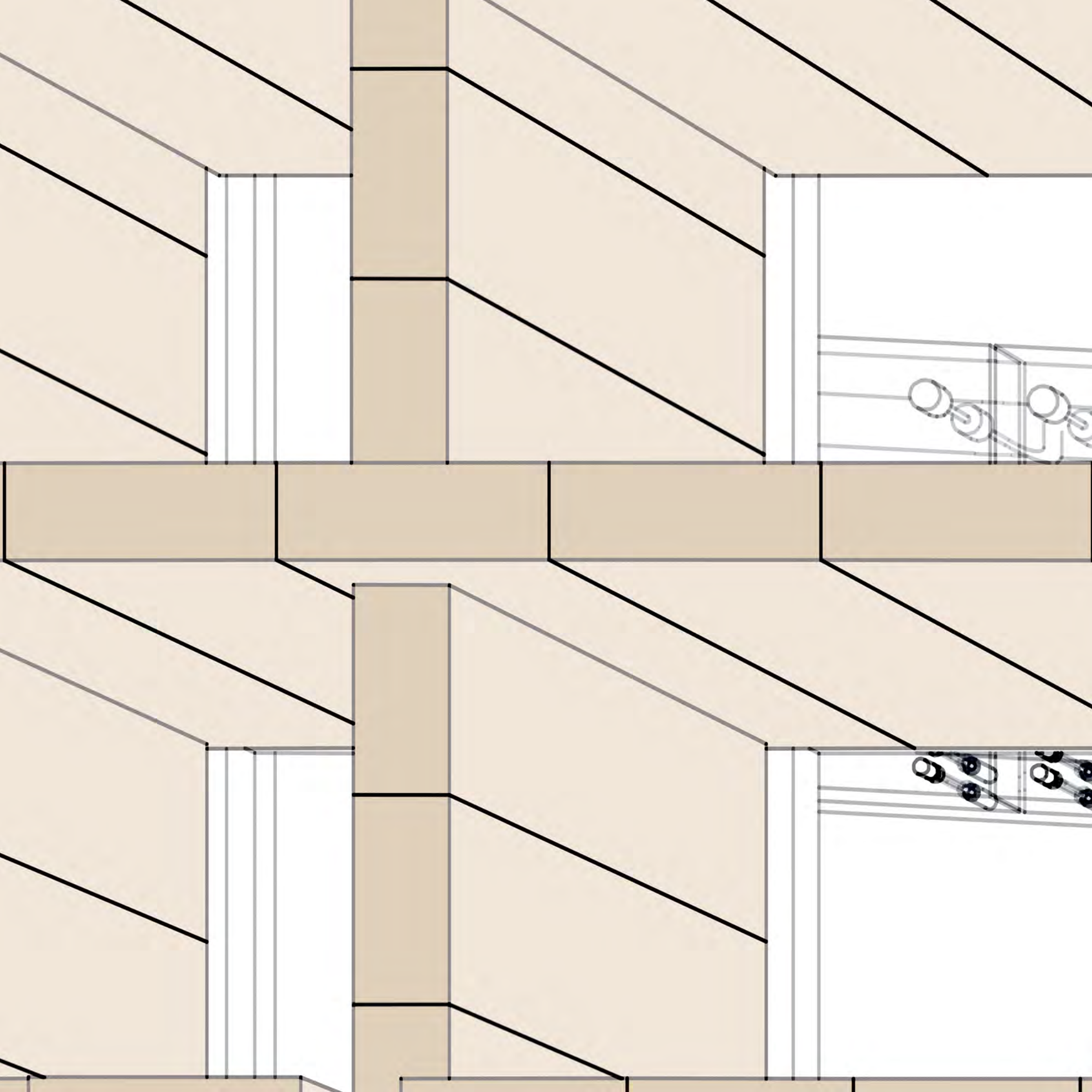
# Shadow Study



Fig 2.10 Shadow study during winter



Fig 2.11 Shadow Study during summer



The background of the image is a detailed architectural drawing of a building's interior, showing a perspective view of a hallway or room with columns and structural beams. The drawing is rendered in black lines on a light beige background. A central white rectangular box contains the text 'Strategies | Estratègies'.

# **Strategies | Estratègies**

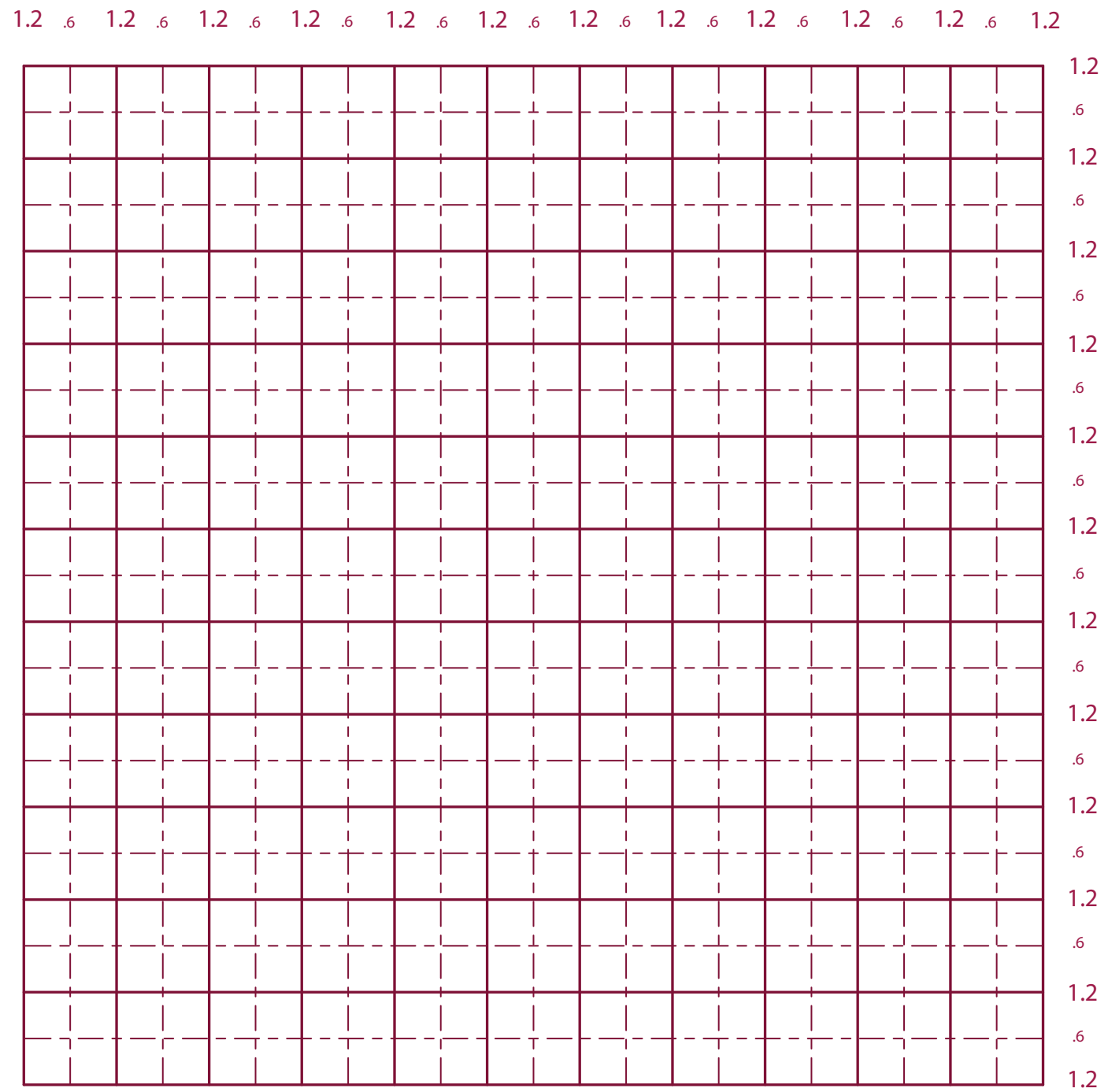
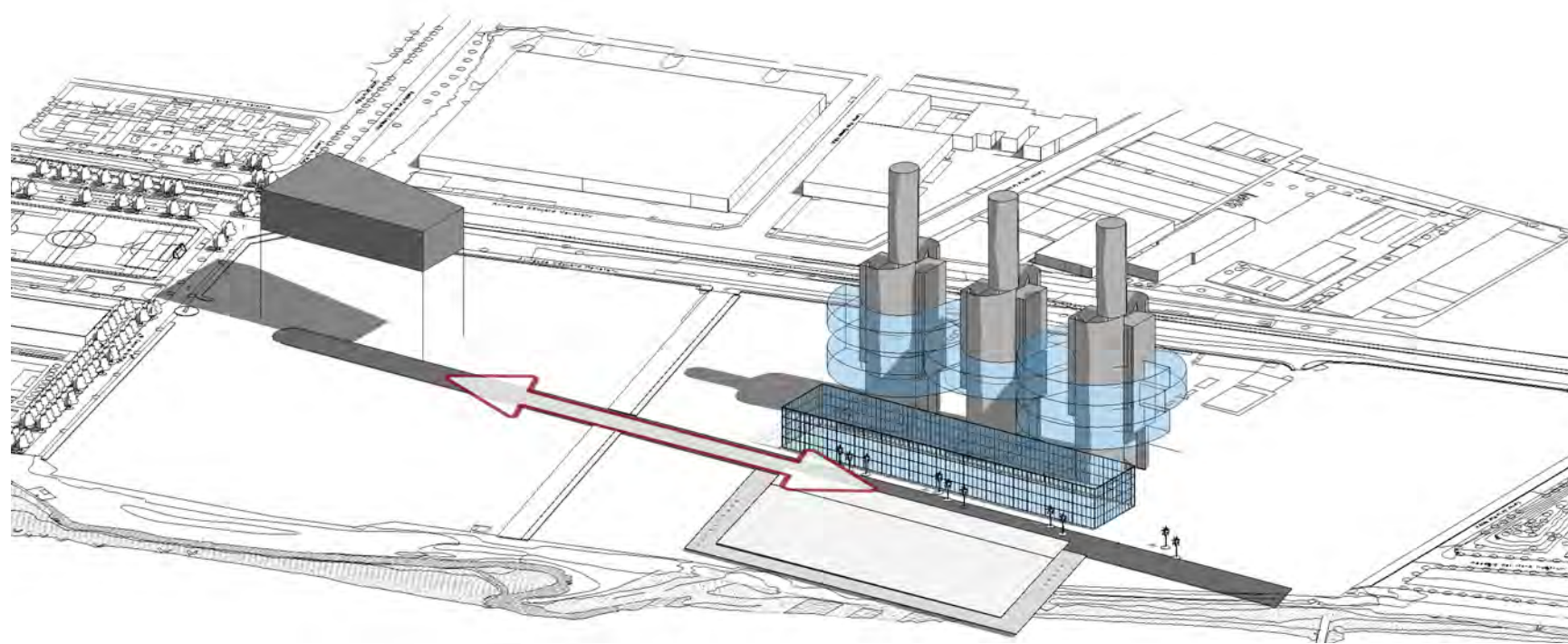
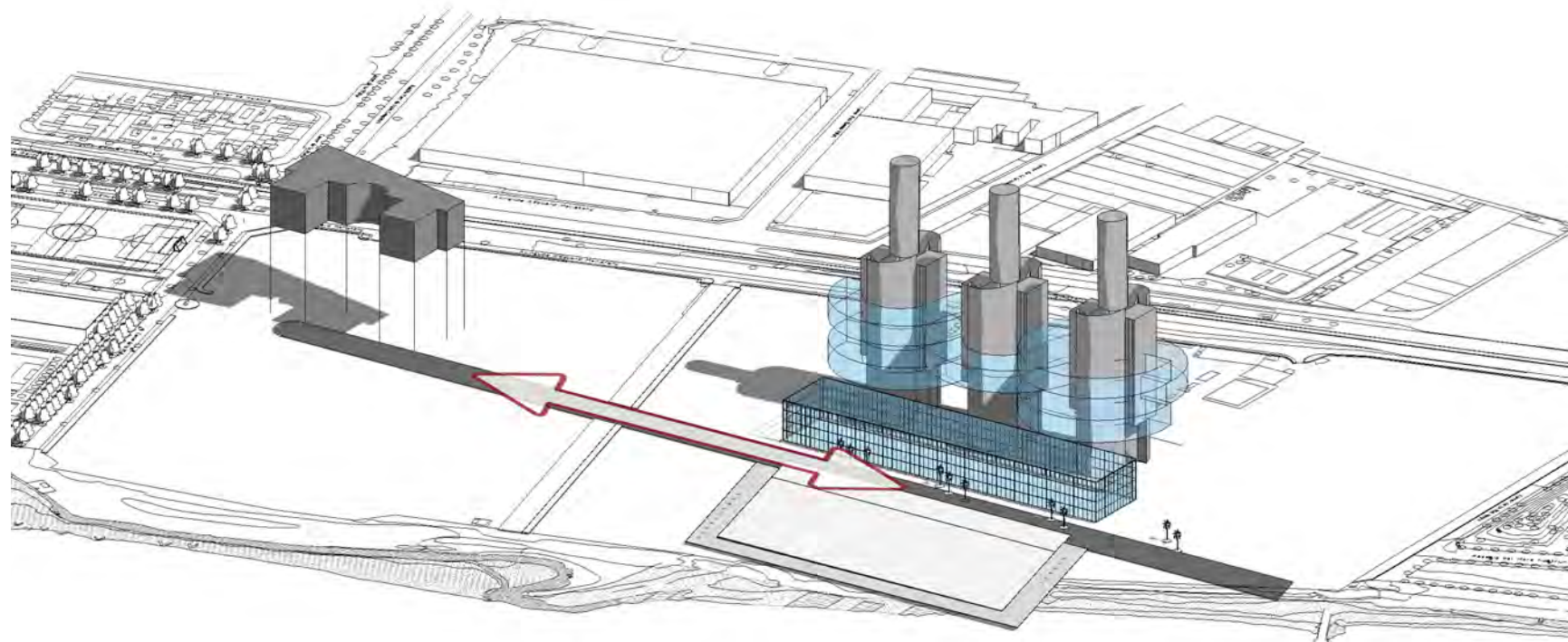


Fig 3.1 Grid used to generate patterns in structure, facade, etc.

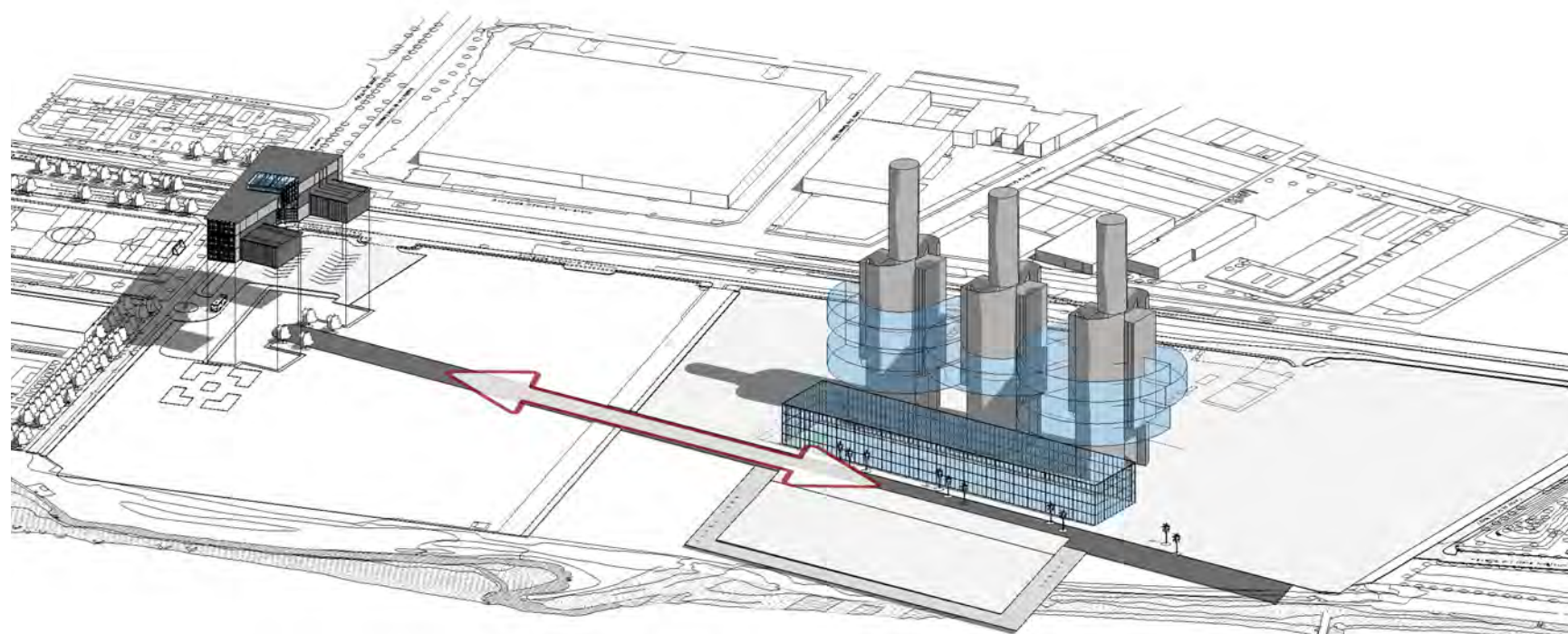
The process of the building shape started with identifying the diagonal of the power plant and forming a connection between the two sites. The building form was then generated by creating a solid form based on that diagonal.

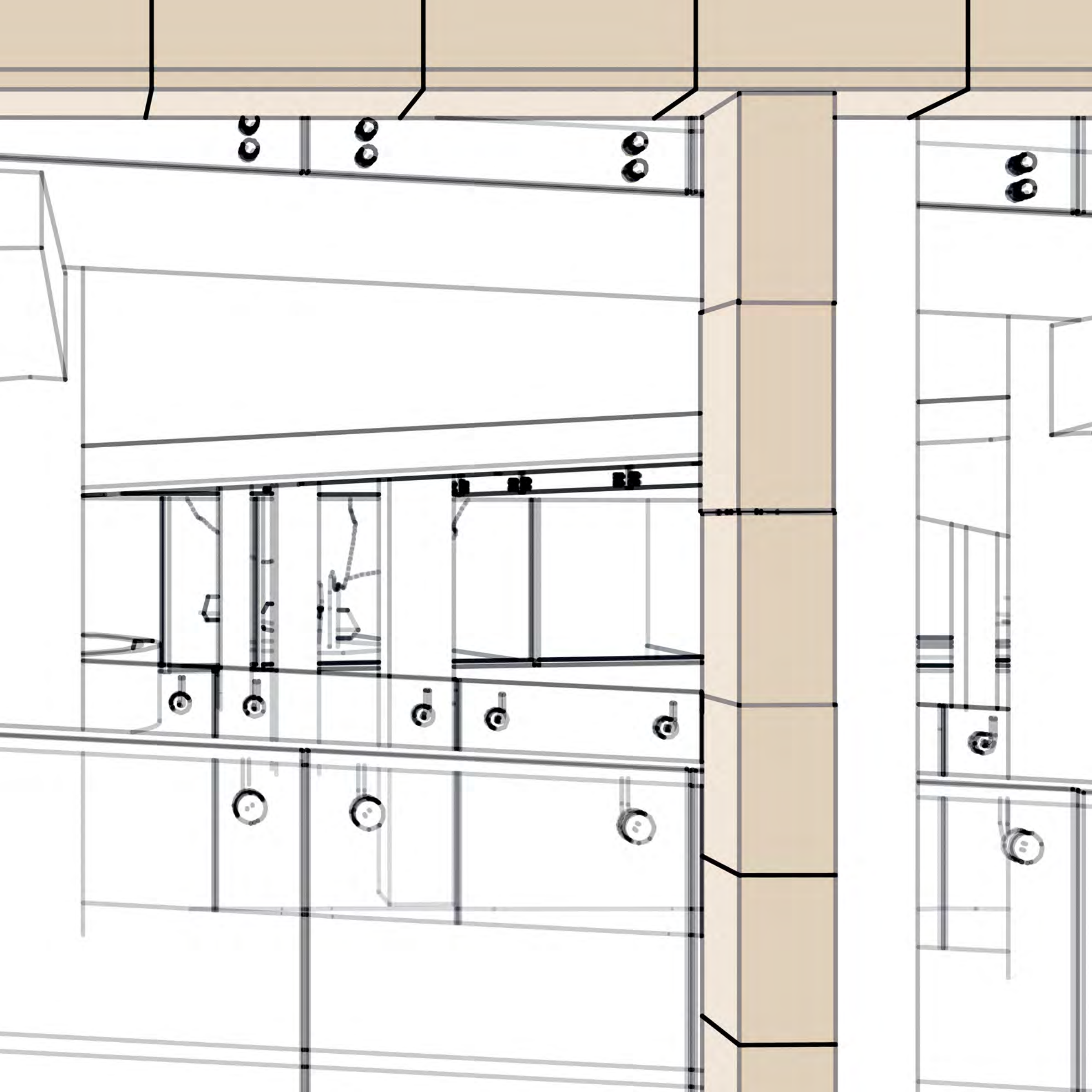


Cutting out a void to place a central glass core was a way to have the main functions hug the central atrium and have the two legs of the building create that enclosure space.



Turning the building creates an opportunity for the glass atrium to provide an entrance and exit on both sides of the building, coming from the street or from the power plant. The legs of the building also now frame its neighbor and provide that enclosure that now wraps around the original diagonal that was created.





The image is a detailed architectural floor plan of a building. A prominent feature is a large, light-brown shaded vertical column that runs through the center of the plan. The building's layout is defined by a network of black lines representing walls, doors, and structural elements. Several rooms are visible, each containing a pair of black circles representing doors. The plan shows a complex arrangement of spaces, including what appears to be a large open area on the right side and several smaller, more enclosed rooms on the left and bottom. The overall style is technical and precise, typical of a professional architectural drawing.

**Design  
Disseny**



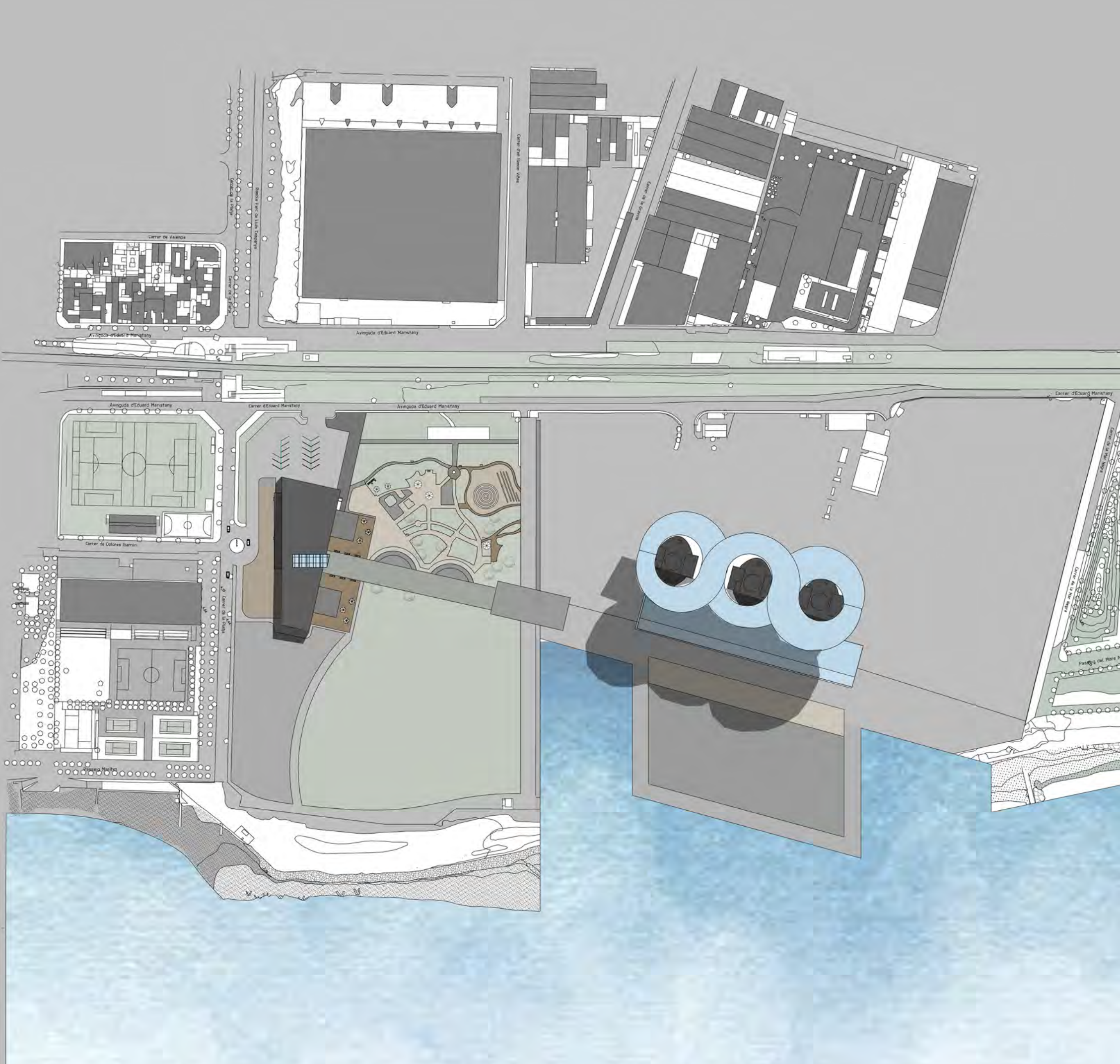
## PLA DIRECTOR PROPOSAT | PROPOSED MASTER PLAN

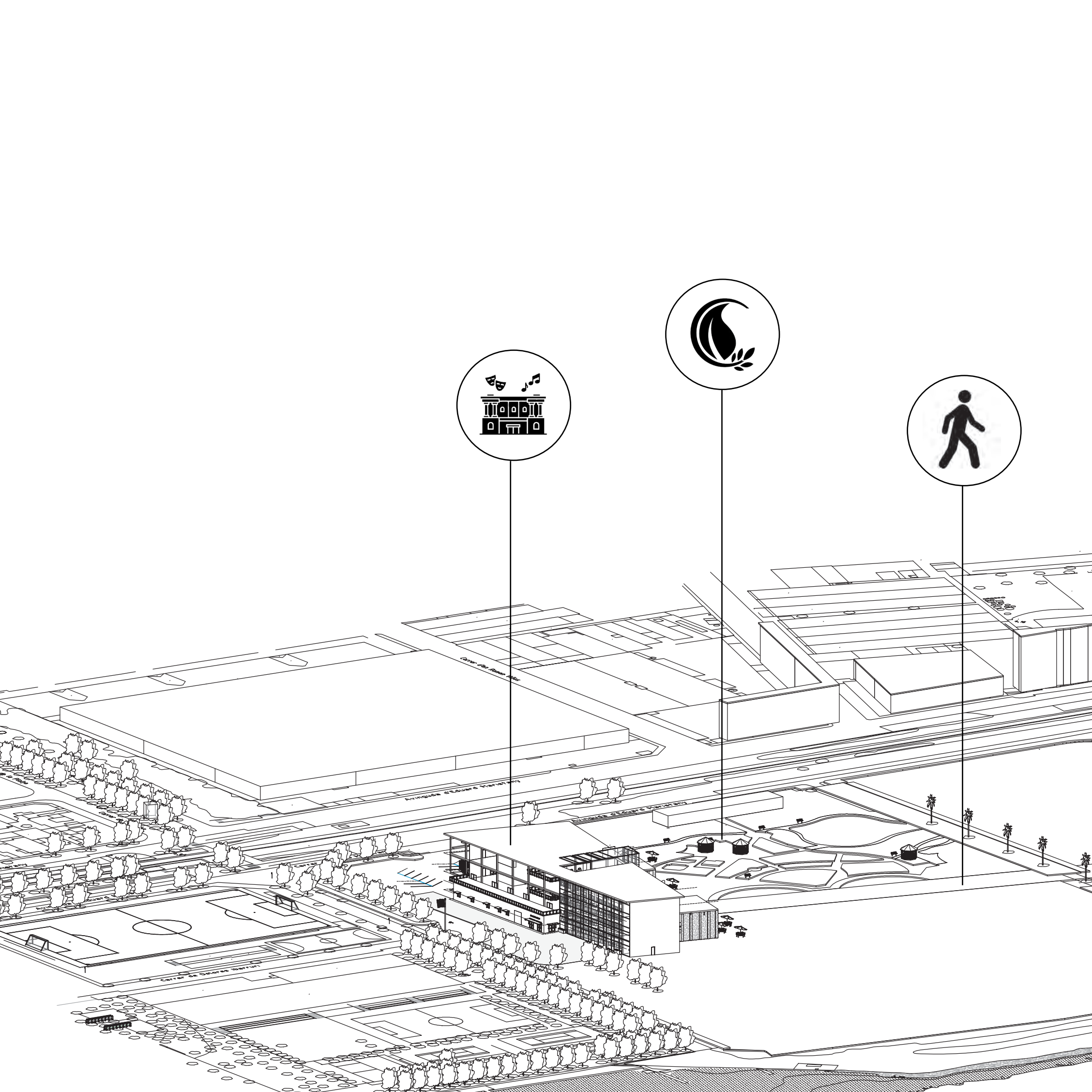
The proposed master plan of the site is created based on factors of where the general population lives and works, the diagonal created in the design strategies, the transportation access, and finally the external factors that influence the design such as solar and wind. The site reconfigures the path down (street next to soccer field) into a roundabout where the exit options now include the soccer area, straight down to the beach, and then around to the front of the building for a drop off location. Then once can proceed to exit upon the point of entry, or travel into the parking lot to park. Entrances and exits are also provided within the circulation of the small parking lot. Next to, but connected to the parking lot, there is a drop off location for loading dock items.

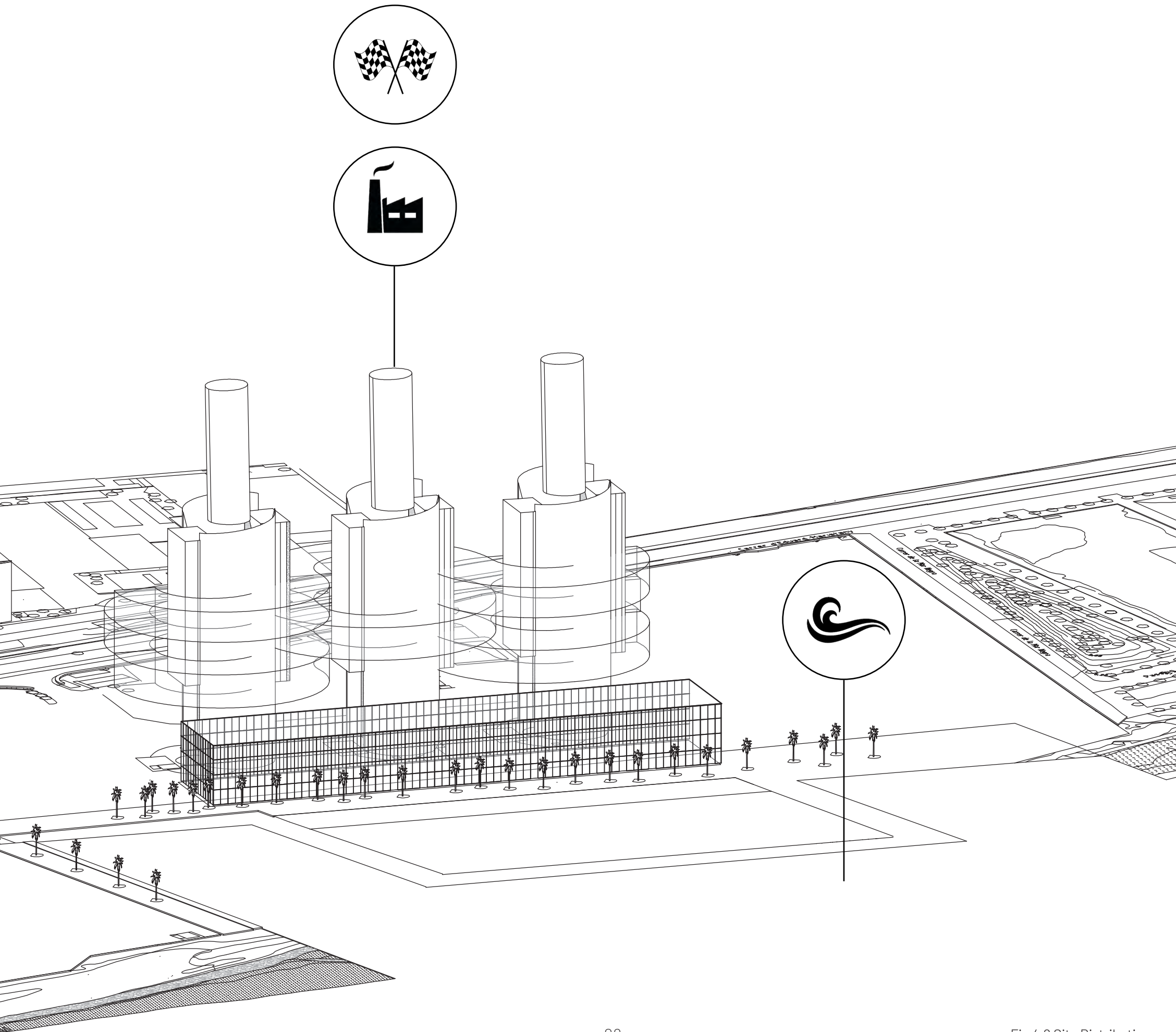
Beyond that point, the site becomes inaccessible to vehicles, and becomes a walking destination only. There is a hardscape plaza in both the front and the back of the building, while the plazas in the back provide shaded seating tables to be enjoyed during cool months. A main feature of the site is the educational garden broken up into categories of vegetables, fruits, herbs, and more. Many points of seating areas and change of materials emphasize the changing of the different types of items grown here.

Along the major diagonal from La Graella to Les Xemeneies, there is concrete seating provided to stop and gather items together that were picked from the garden or bought at the market. The seating also faces the direction of the sea to sit back and watch the waves come upon the shore. The major diagonal is intended to be populated with vendors selling antiques, art, food, or even books to celebrate Sant Jordi in the neighboring town of Barcelona. At the point of intersection between the two sites, there is a covered and shaded area that lends itself to the idea of the market, but in a shaded area. Both borders on the ends of the site also have a walking path directly to the sea that is uninterrupted from the beginning of the site to the end.

The site of the Three Chimneys creates a plaza in the front of the building, and then extends itself out onto piers that elevate it from the water, almost like the breakwaters found along the edges of the Mediterranean Sea. The water is then brought within the normal borders of the site to create a convergence and infiltration of the normal boundaries. Because of the size of the site that exists in the area, there is plenty of ideas and future plans for this site to be a major cultural hub and a central attraction for those to come from Barcelona and Badalona.







# MUSIC

## ADMINISTRATION

- 1 INFORMATION STATION
- 2 ART COORDINATOR
- 3 BOOKING MANAGER
- 4 ADMINISTRATION
- 5 MEETING ROOM
- 6 BUILDING MANAGER

## PERFORMANCE

- 8 DANCE REHEARSAL SPACE
- 9 REHEARSAL SPACE
- 12 RECORDING STUDIO
- 13 ISO A ROOM
- 14 LIVE ROOM
- 15 ISO B ROOM
- 16 CONTROL BOOTH
- 21 PREFUNCTION
- 22 AUDITORIUM

## SERVICES

- 7 EGRESS STAIRS
- 10 STORAGE
- 11 LOADING DOCK
- 17 WOMEN'S
- 18 MEN'S
- 19 MECHANICAL
- 20 LOBBY



Ground Floor  
0 1.2 0 4.8

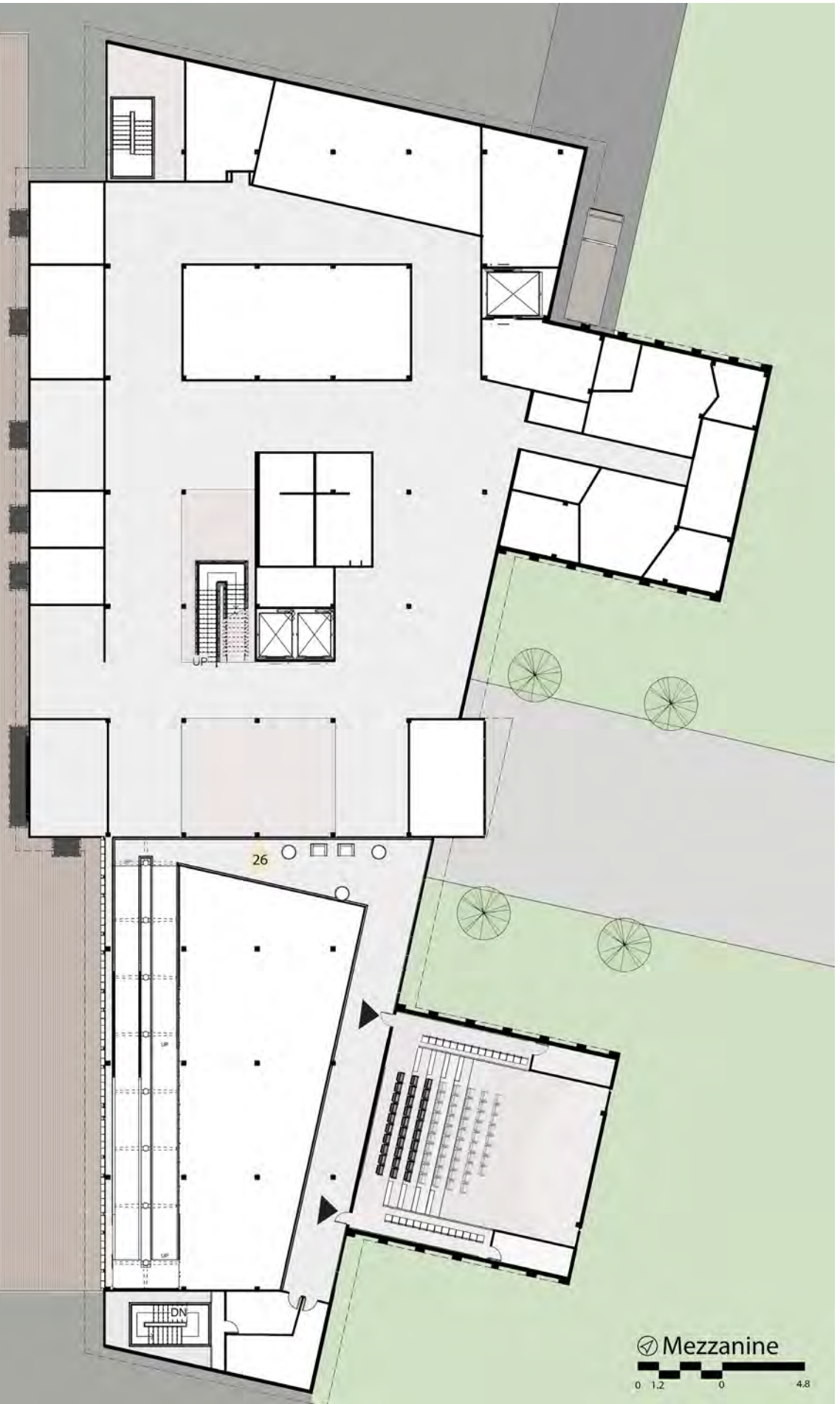
Fig 4.3 Ground Floor Plan

# MEZZANINE

## LOUNGE

26 LOUNGE SEATING

▶ AUDITORIUM ENTRANCE



Mezzanine  
0 1.2 0 4.8

Fig 4.4 Mezzanine Floor Plan

# ART

## EDUCATION

- 21 POTTERY & CERAMICS CLASS
- 22 ART CLASSROOMS

## MEDIA

- 24 ART GALLERY
- 25 VIDEO ROOM

## SERVICES

- 7 EGRESS STAIRS
- 10 STORAGE
- 17 WOMEN'S
- 18 MEN'S
- 19 MECHANICAL
- 23 FOOD PREPARATION AREA



Fig 4.5 Second Floor Plan

# GASTRONOMY

## EDUCATION

- 27 INGREDIENT ROOM
- 28 COOKING CLASSROOM
- 29 SHOWROOM
- 30 OVEN GALLERY
- 36 DEMONSTRATION KITCHEN

## LEISURE

- 31 CHEF TASTING ROOM
- 33 WINE ALCOVE
- 34 RESTAURANT
- 35 BAR

## SERVICES

- 7 EGRESS STAIRS
- 10 STORAGE
- 17 WOMEN'S
- 18 MEN'S
- 19 MECHANICAL
- 32 KITCHEN
- 37 JANITOR'S CLOSET



Third Floor  
0 1.2 0 4.8

Fig 4.6 Third Floor Plan



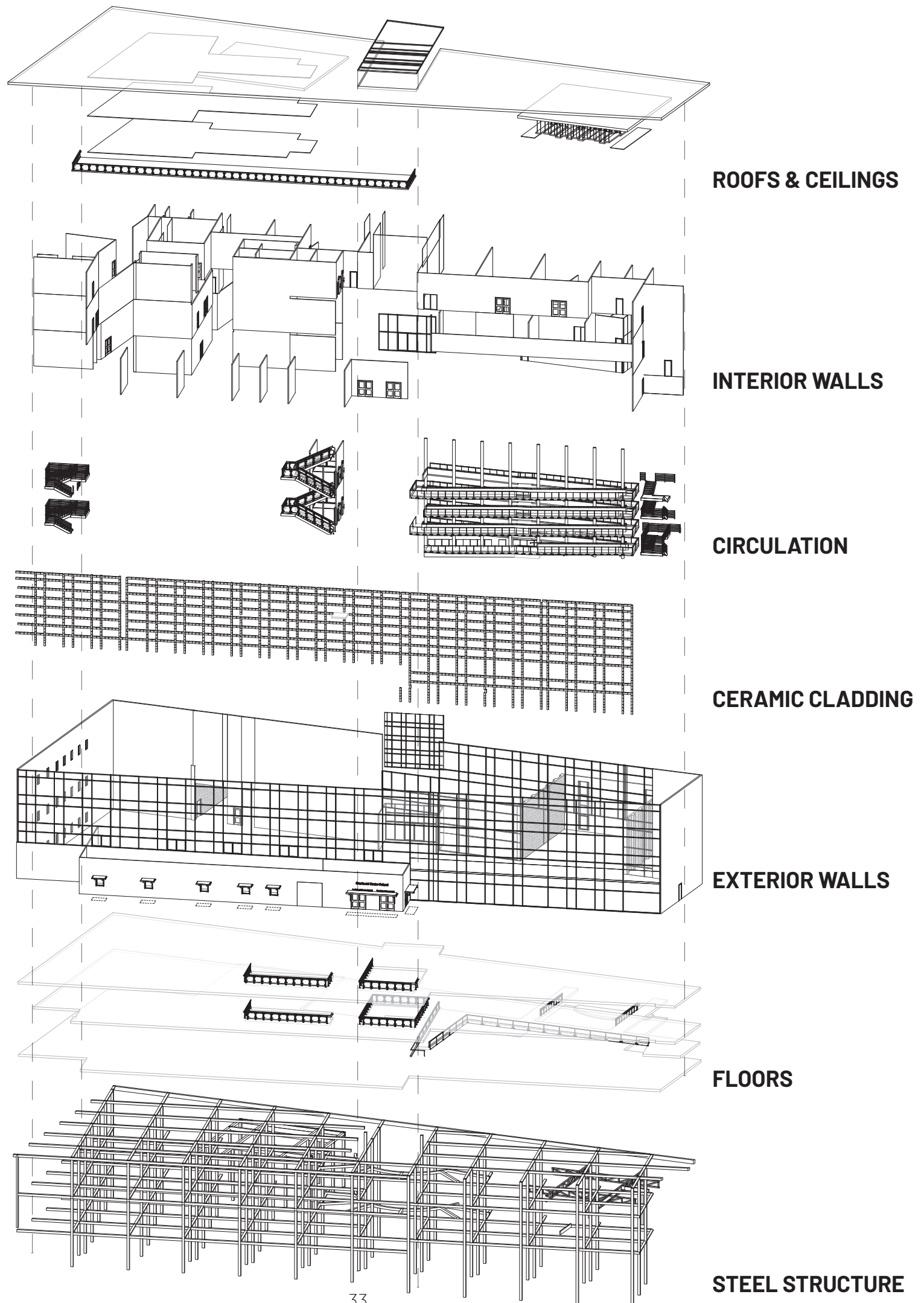
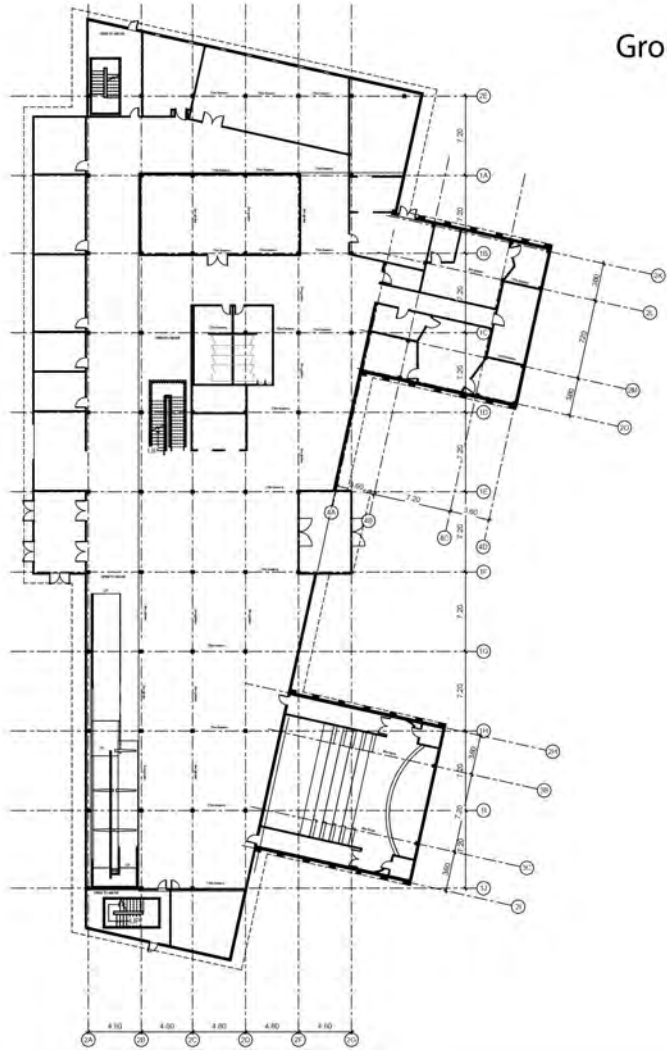


Fig 4.7 Structure of Building



Fig 4.8 Elevations

## Ground Floor Structure and Circulation



### MUSIC

#### ADMINISTRATION

- 1 INFORMATION STATION
- 2 ART COORDINATOR
- 3 BOOKING MANAGER
- 4 ADMINISTRATION
- 5 MEETING ROOM
- 6 BUILDING MANAGER

#### PERFORMANCE

- 8 DANCE REHEARSAL SPACE
- 9 REHEARSAL SPACE
- 12 RECORDING STUDIO
- 13 ISO A ROOM
- 14 LIVE ROOM
- 15 ISO B ROOM
- 16 CONTROL BOOTH
- 21 PREFUNCTION
- 22 AUDITORIUM

#### SERVICES

- 7 EGRESS STAIRS
- 10 STORAGE
- 11 LOADING DOCK
- 17 WOMEN'S
- 18 MEN'S
- 19 MECHANICAL
- 20 LOBBY

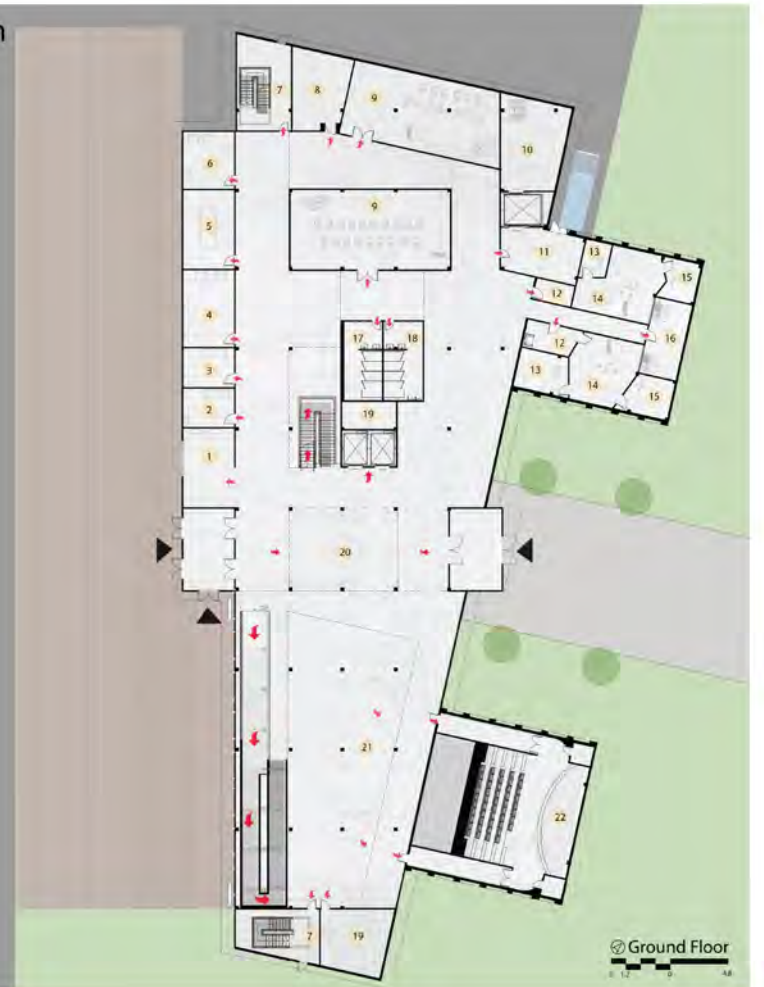
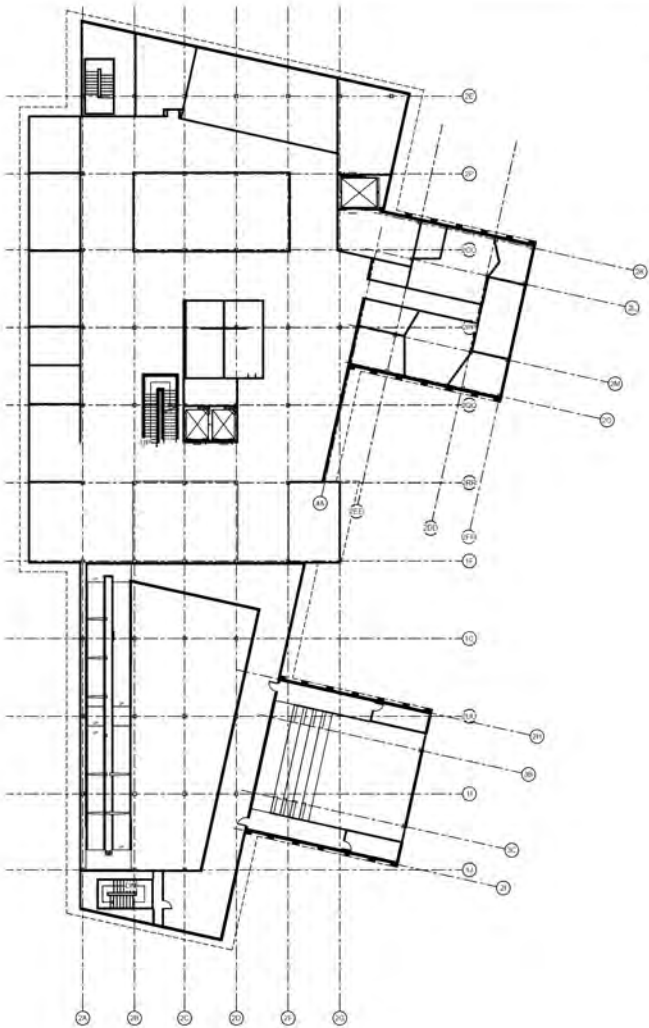


Fig 4.9 Ground Floor Column Grid and Circulation

## Mezzanine Structure and Circulation



### MEZZANINE

#### LOUNGE

- 26 LOUNGE SEATING
- ▶ AUDITORIUM ENTRANCE

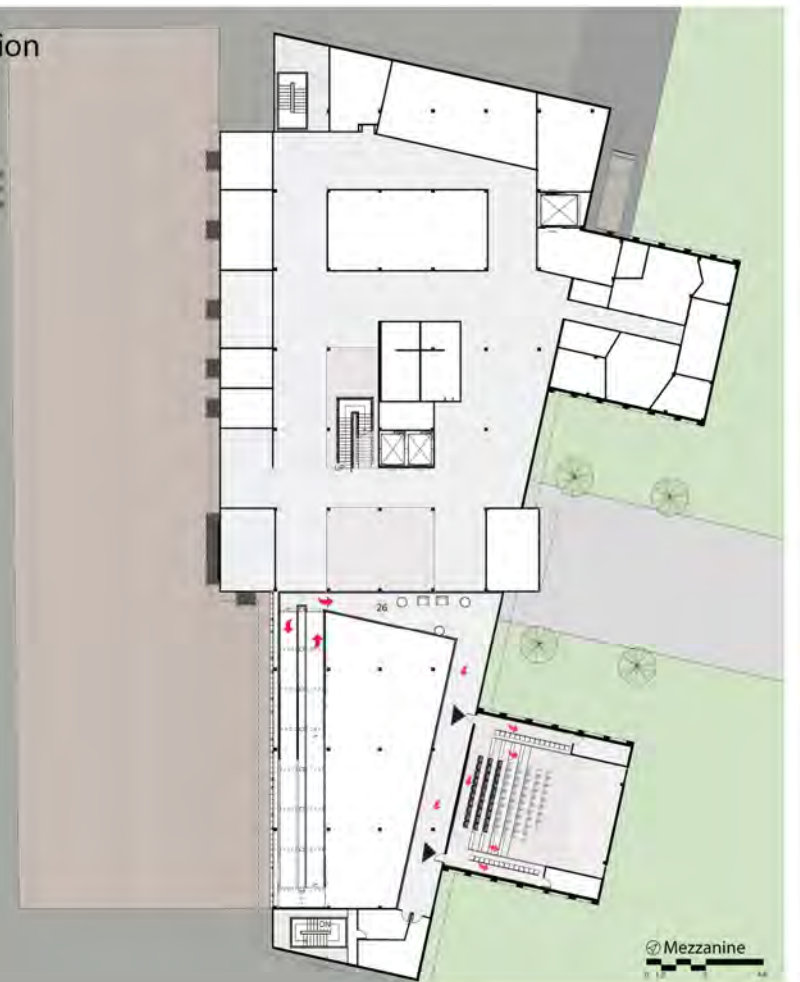
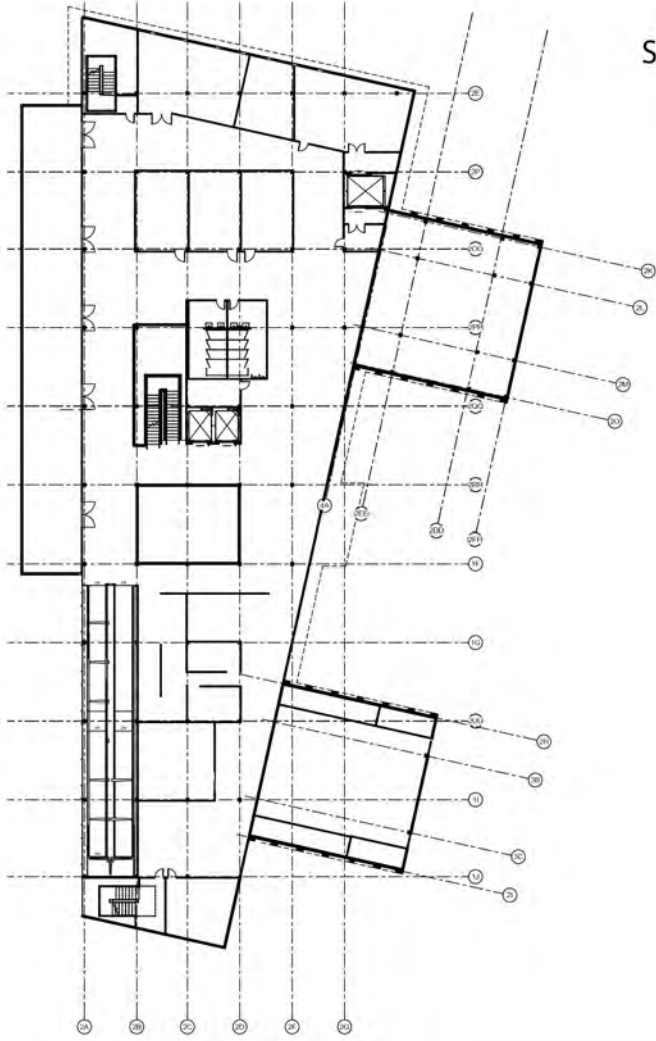


Fig 4.10 Mezzanine Column Grid and Circulation

## Second Floor Plan Structure and Circulation



### ART

#### EDUCATION

- 21 POTTERY & CERAMICS CLASS
- 22 ART CLASSROOMS

#### MEDIA

- 24 ART GALLERY
- 25 VIDEO ROOM

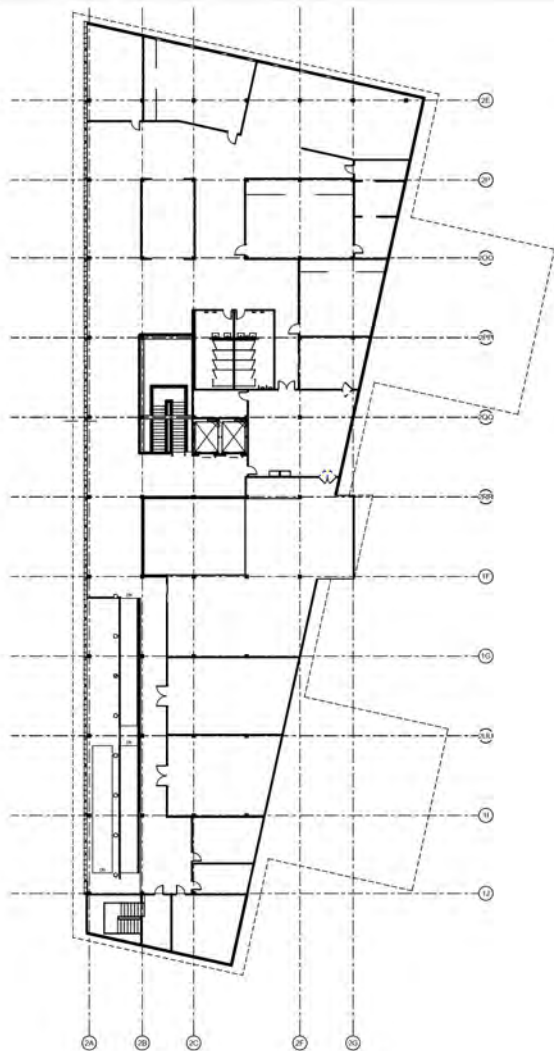
#### SERVICES

- 7 EGRESS STAIRS
- 10 STORAGE
- 17 WOMEN'S
- 18 MEN'S
- 19 MECHANICAL
- 23 FOOD PREPARATION AREA



Fig 4.11 Second Floor Column Grid and Circulation

## Third Floor Plan Structure and Circulation



### GASTRONOMY

#### EDUCATION

- 27 INGREDIENT ROOM
- 28 COOKING CLASSROOM
- 29 SHOWROOM
- 30 OVEN GALLERY
- 36 DEMONSTRATION KITCHEN

#### LEISURE

- 31 CHEF TASTING ROOM
- 33 WINE ALCOVE
- 34 RESTAURANT
- 35 BAR

#### SERVICES

- 7 EGRESS STAIRS
- 10 STORAGE
- 17 WOMEN'S
- 18 MEN'S
- 19 MECHANICAL
- 32 KITCHEN
- 37 JANITOR'S CLOSET



Fig 4.12 Third Floor Column Grid and Circulation

Fig 4.13 Ramp Detail Section

2A

2B

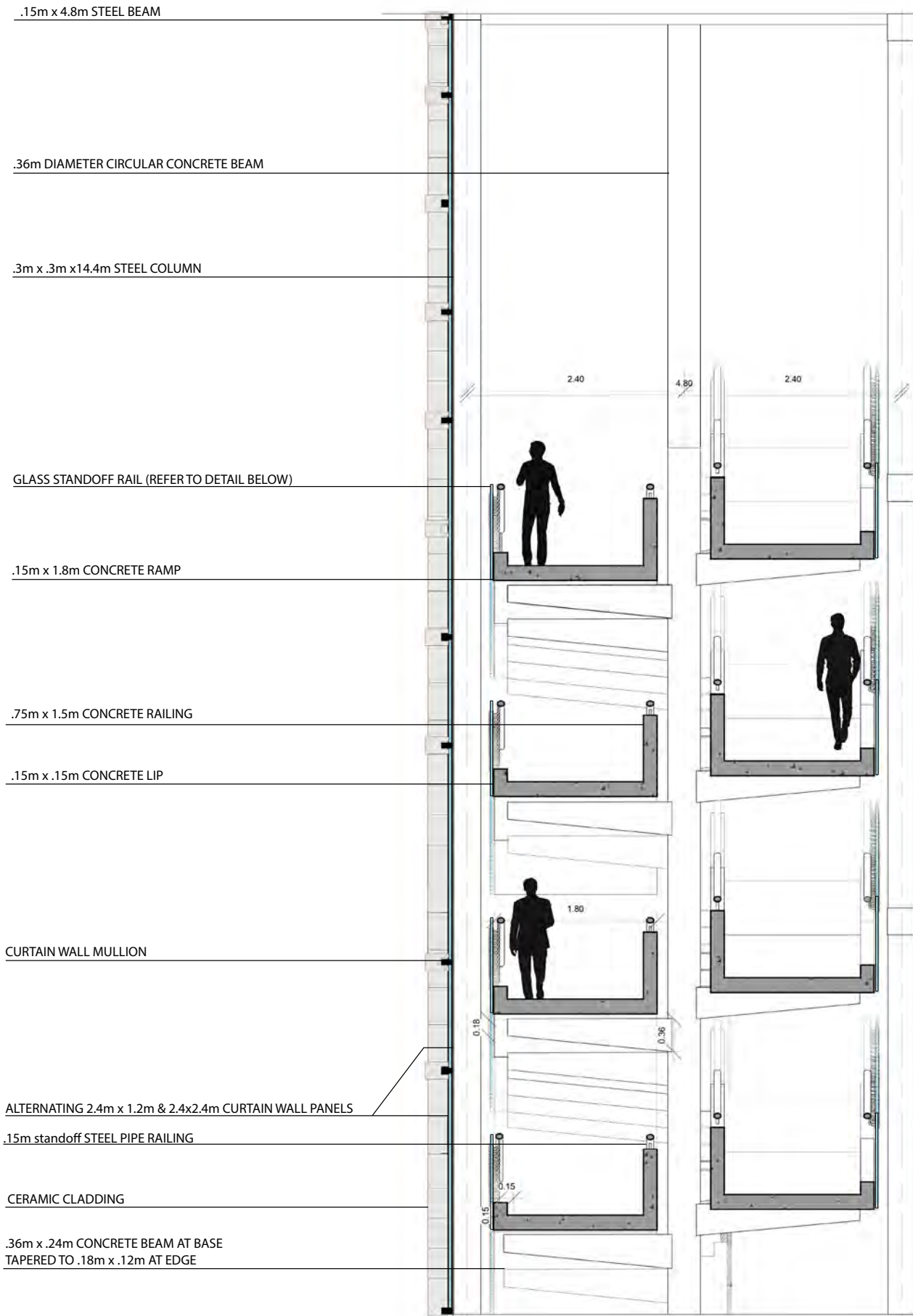
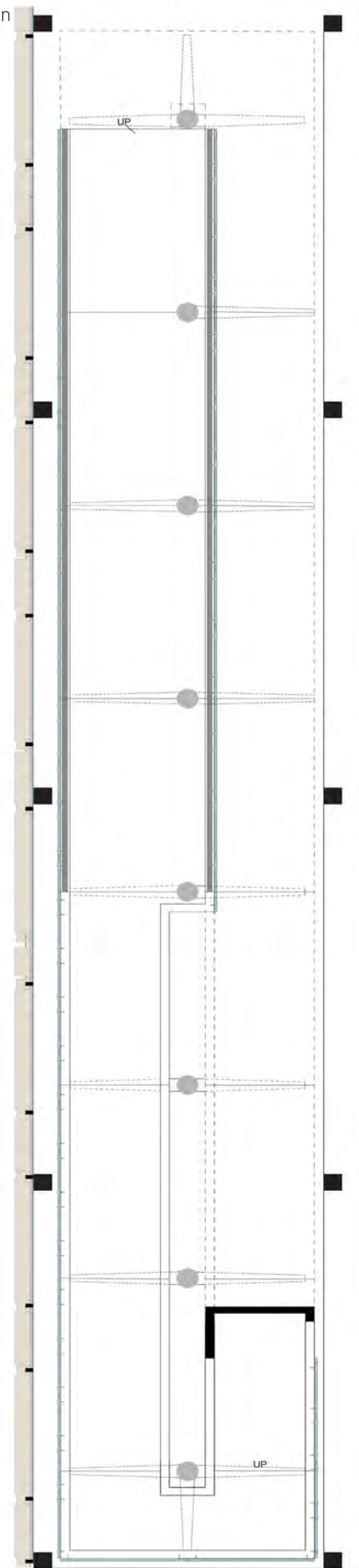


Fig. 4.14 Ramp Ground Plan



# LES RAMPES | THE RAMPS

Upon entering the building and standing in the middle of the airy atrium, the staple of the ramps are an inviting feature to experience the journey to each floor. In a way, the ramps are a desire for itself to pay tribute to the winding proposal by the Bjarke Ingles Group for the three chimneys that stand next door.

The ramps are composed of eight circular concrete columns that follow the overall 7.2m spacing of the column grid in their own way. Prefabricated with these columns are the tapered beams that provide the support for the ramps to rest on. The railings of the ramp are inspired by Le Corbusier's Carpenter Center at Harvard University. The inside of the railing is prefabricated with the ramp, while the outside of the ramp is standoff glass with a floating balustrade.

Each entrance and exit off the ramp wraps back to the center of the building 4.2m up from the last floor, however the first ramp does connect to the mezzanine that provides an entrance to the auditorium.



Fig 4.15 Le Corbusier's Carpenter Center Harvard University

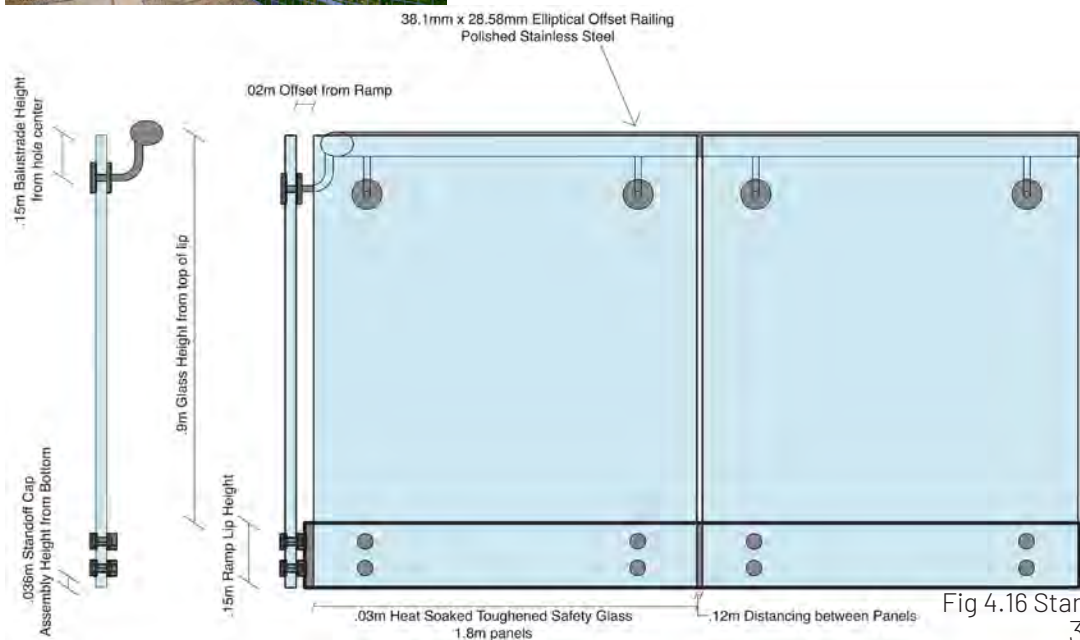


Fig 4.16 Standoff Glass Railing Detail



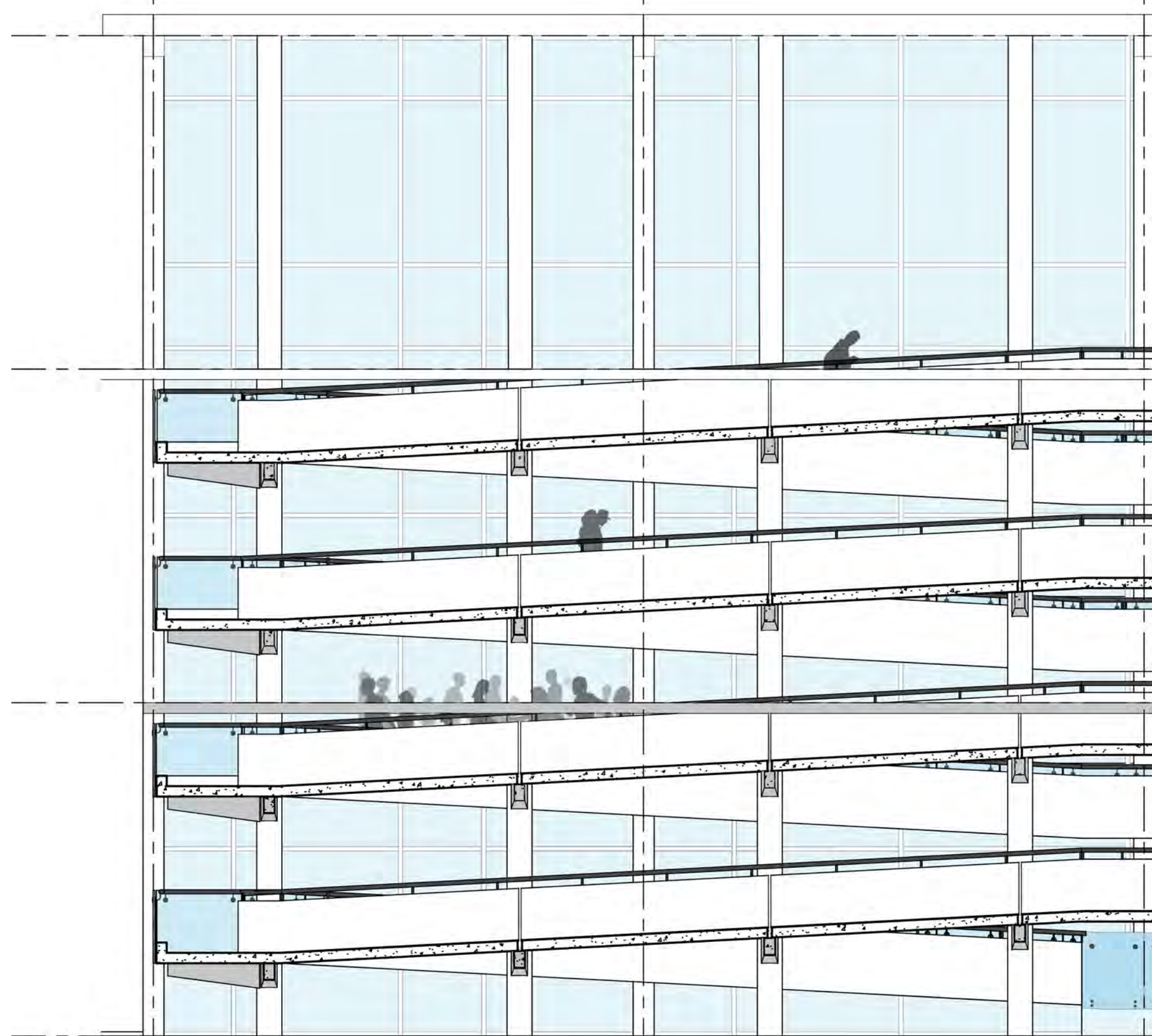
1J

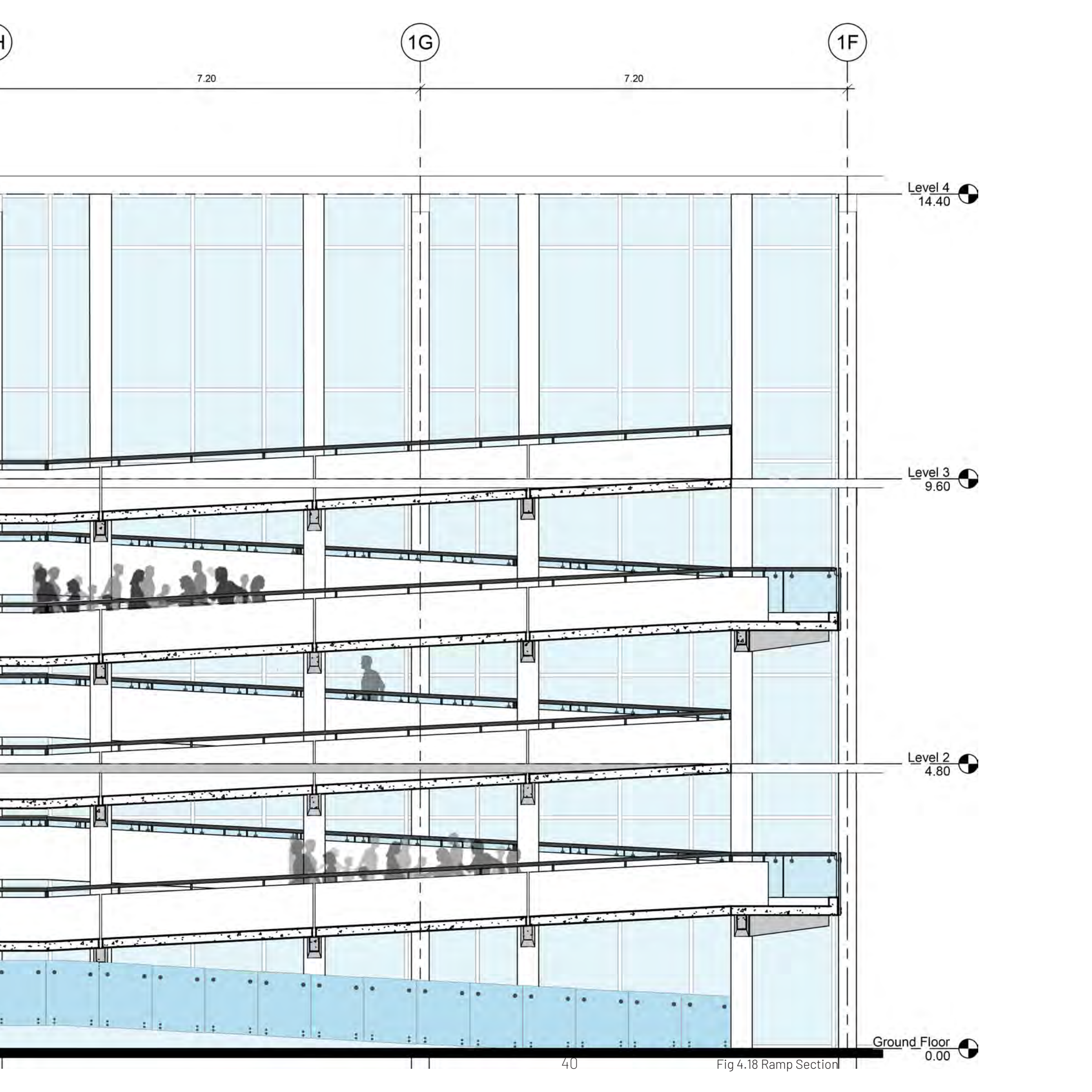
1I

1H

7.20

7.20





1G

1F

7.20

7.20

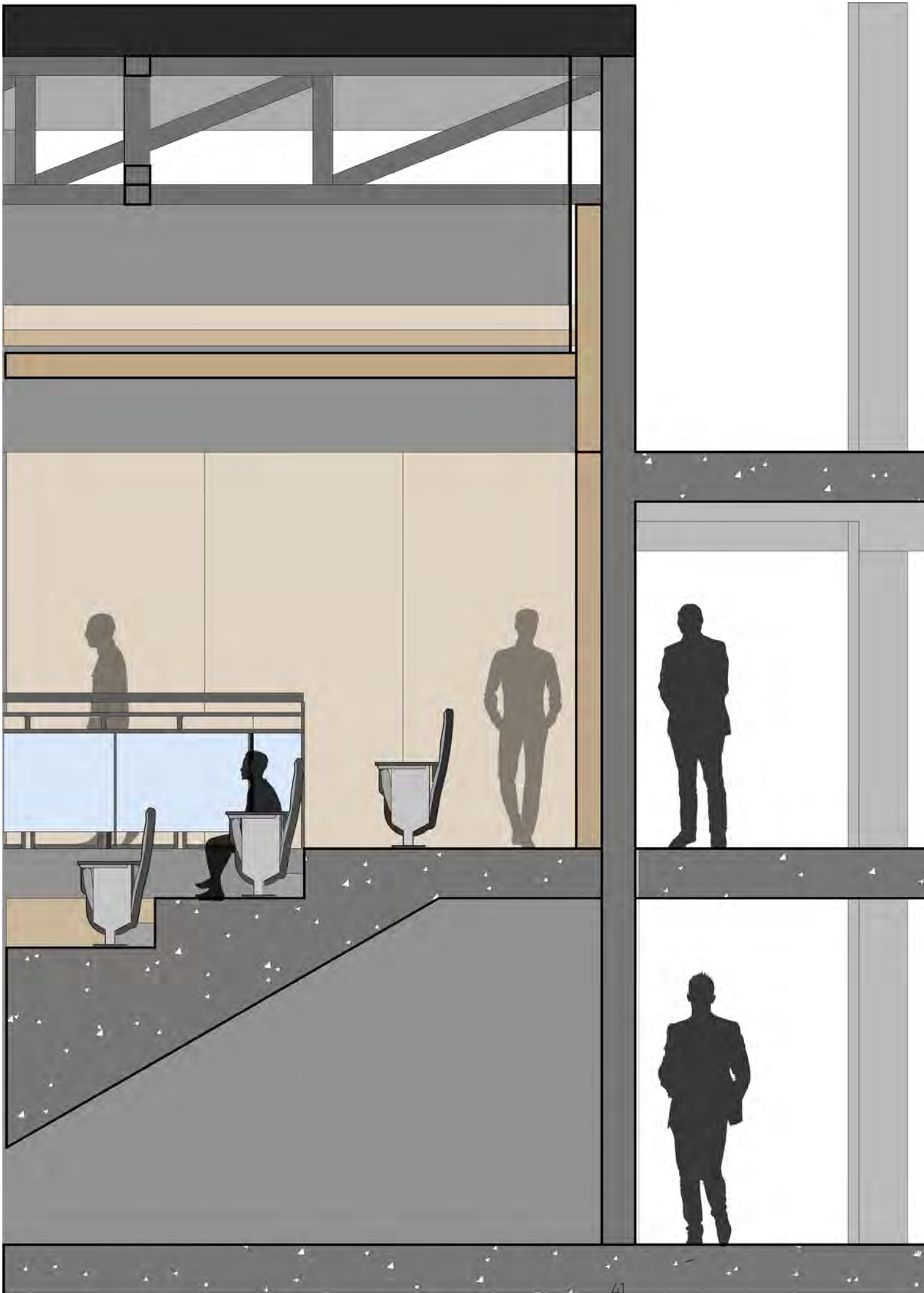
Level 4  
14.40

Level 3  
9.60

Level 2  
4.80

Ground Floor  
0.00





The mezzanine is connected to the auditorium, and provides a secondary point of entrance at the halfway point. The main points of entrance are at the base of the ground floor.

The mezzanine entrance wraps around the auditorium for a small balcony, and the last row of seating is doubled to provide ample walking space behind the spectators.

The span of the auditorium follows the structure grid in its own way by removing some of the interior columns to create longer spans.

The trusses run perpendicular to each other across the atrium and are hidden beyond drop wooden panels that can be raised and lowered for acoustical purposes depending on the level of the performance. The walls of the auditorium are also padded with acoustical padding for absorption purposes.

# L'AUDITORI | THE AUDITORIUM

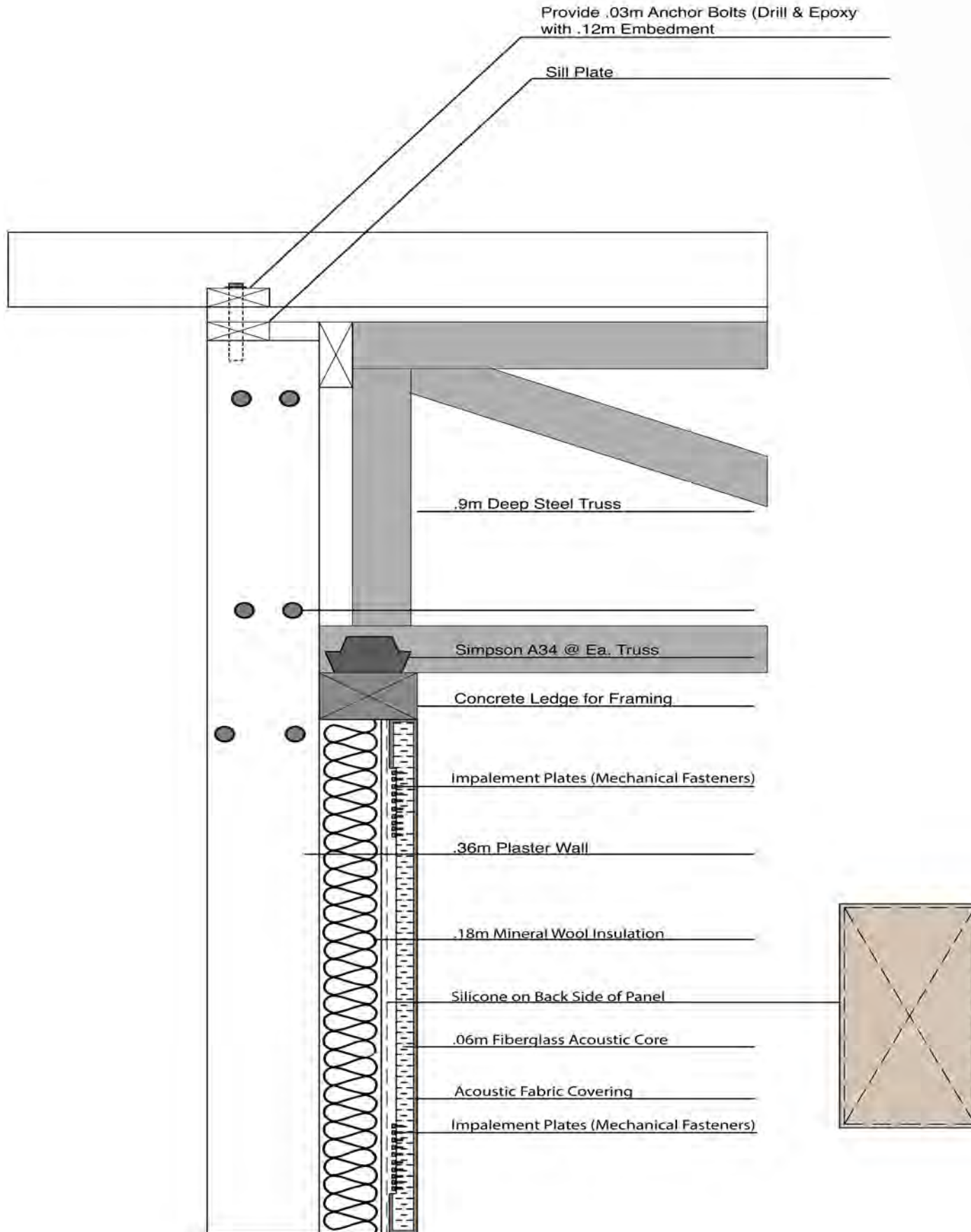


Fig 4.2 Truss Detail

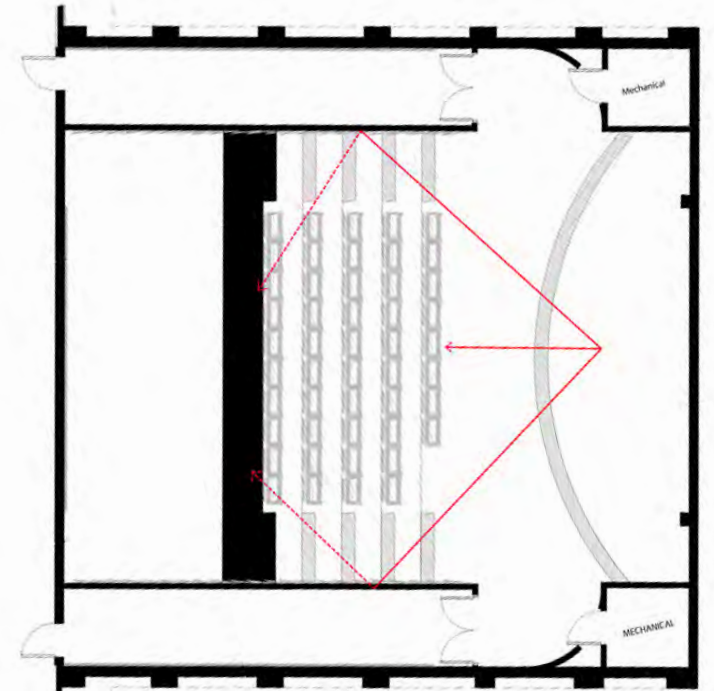


Fig 4.21 Acoustic Reverberation

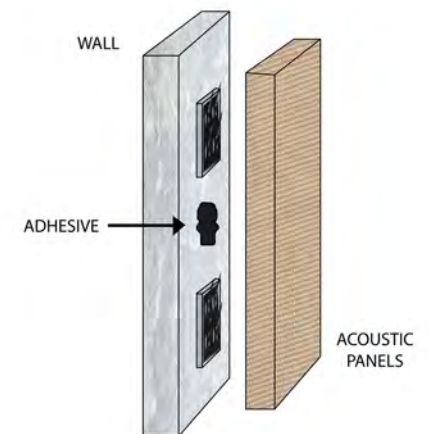
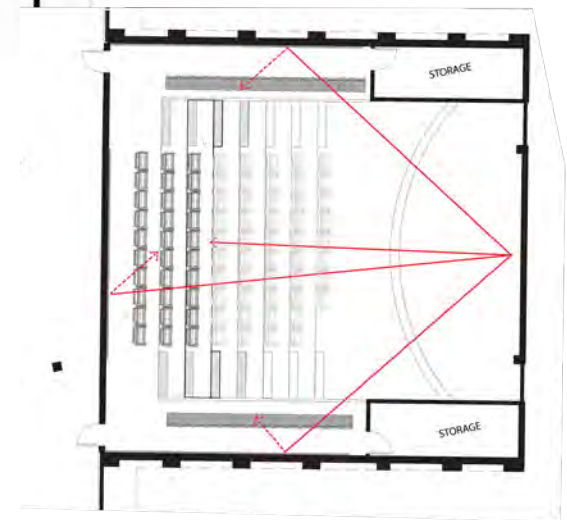


Fig 4.22 Acoustic Panel Connection

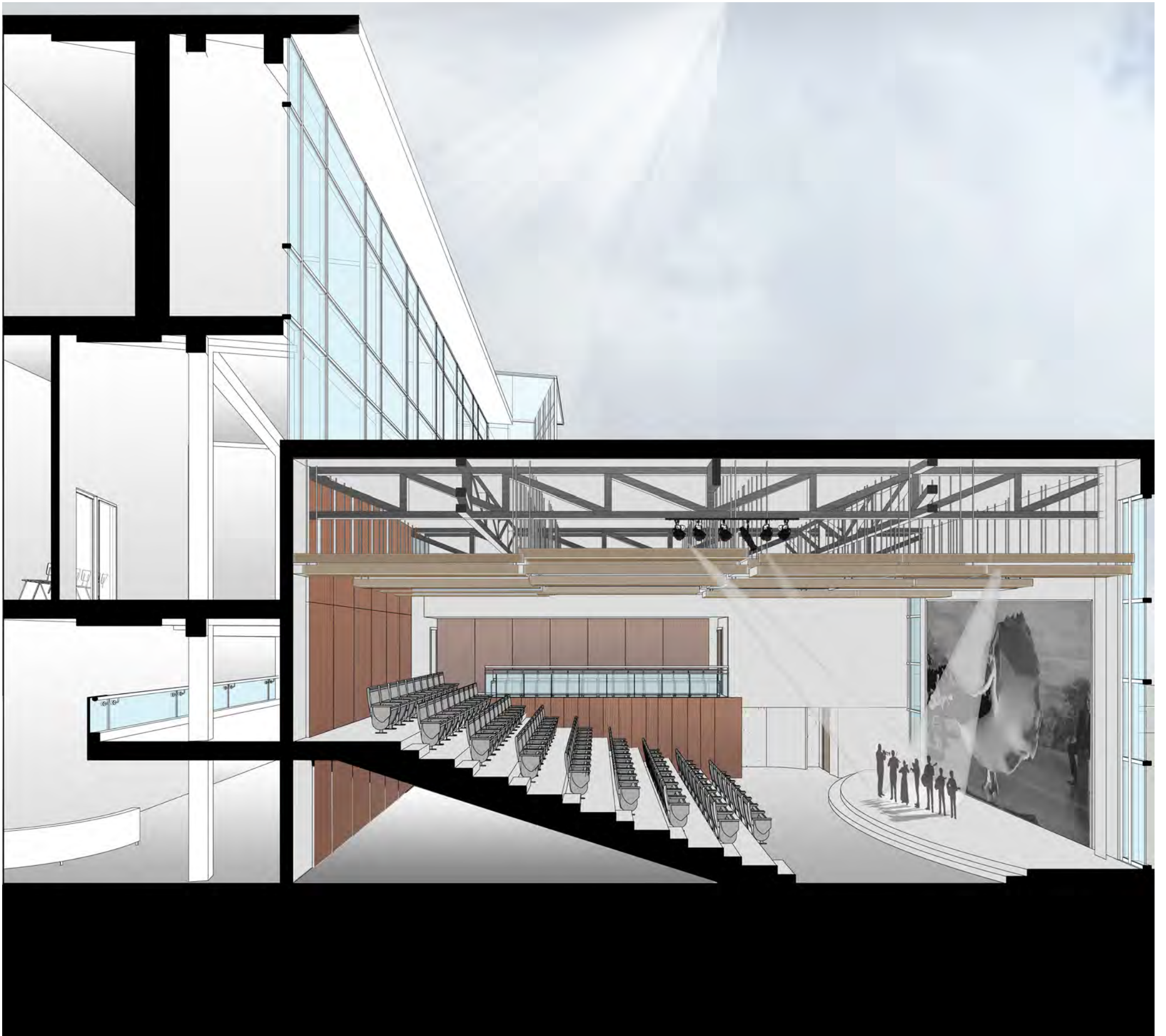


Fig 4.23 Auditorium Perspective Section

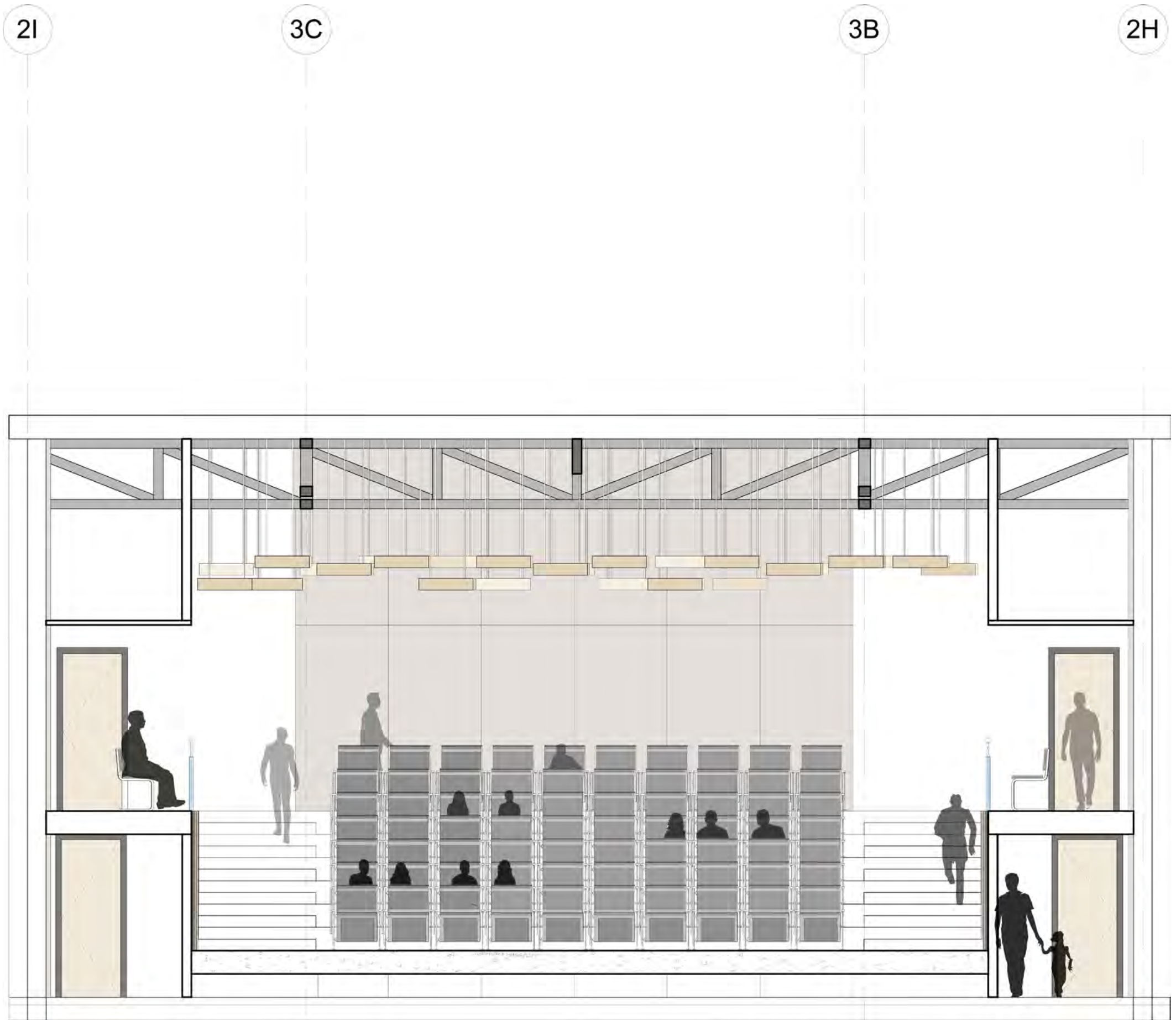
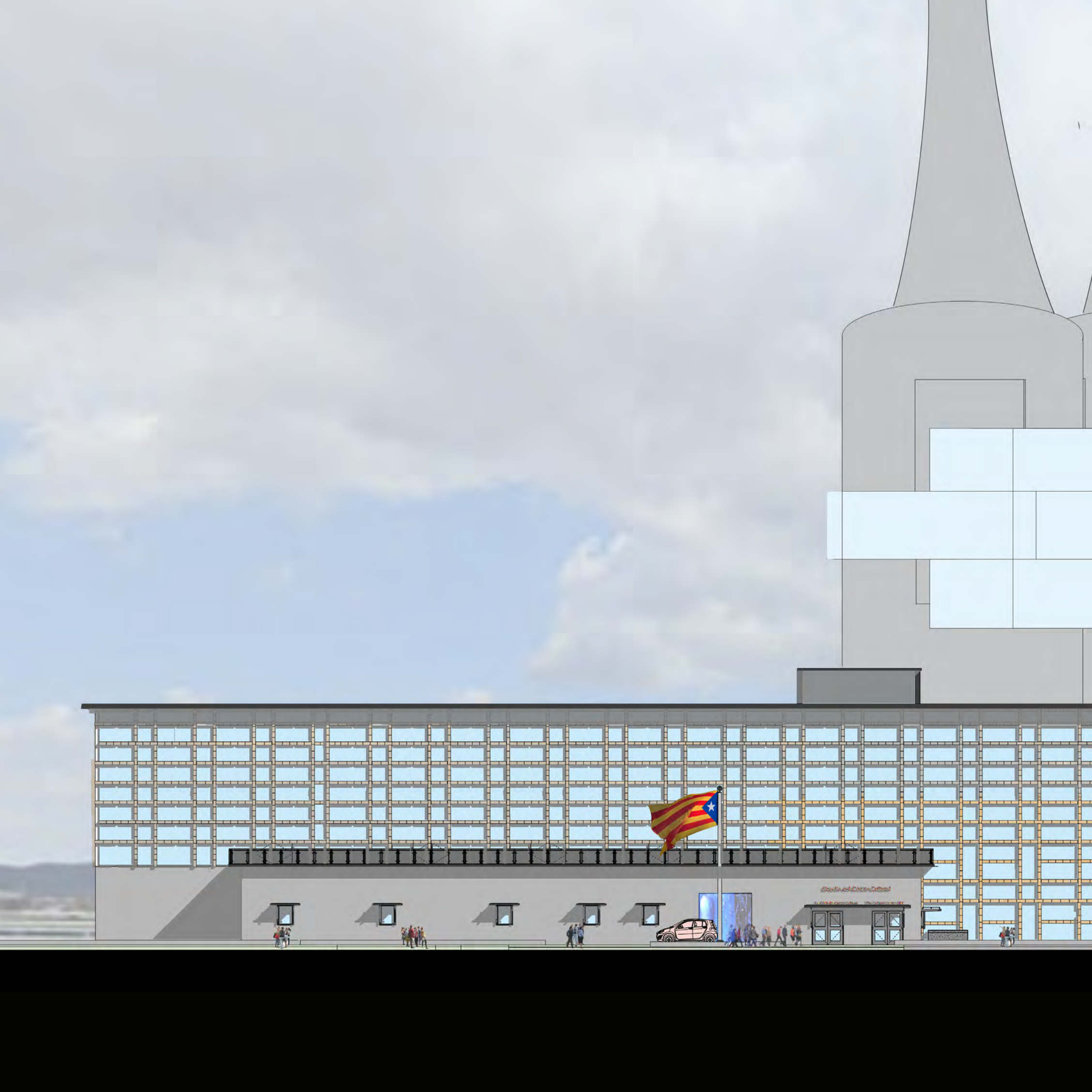
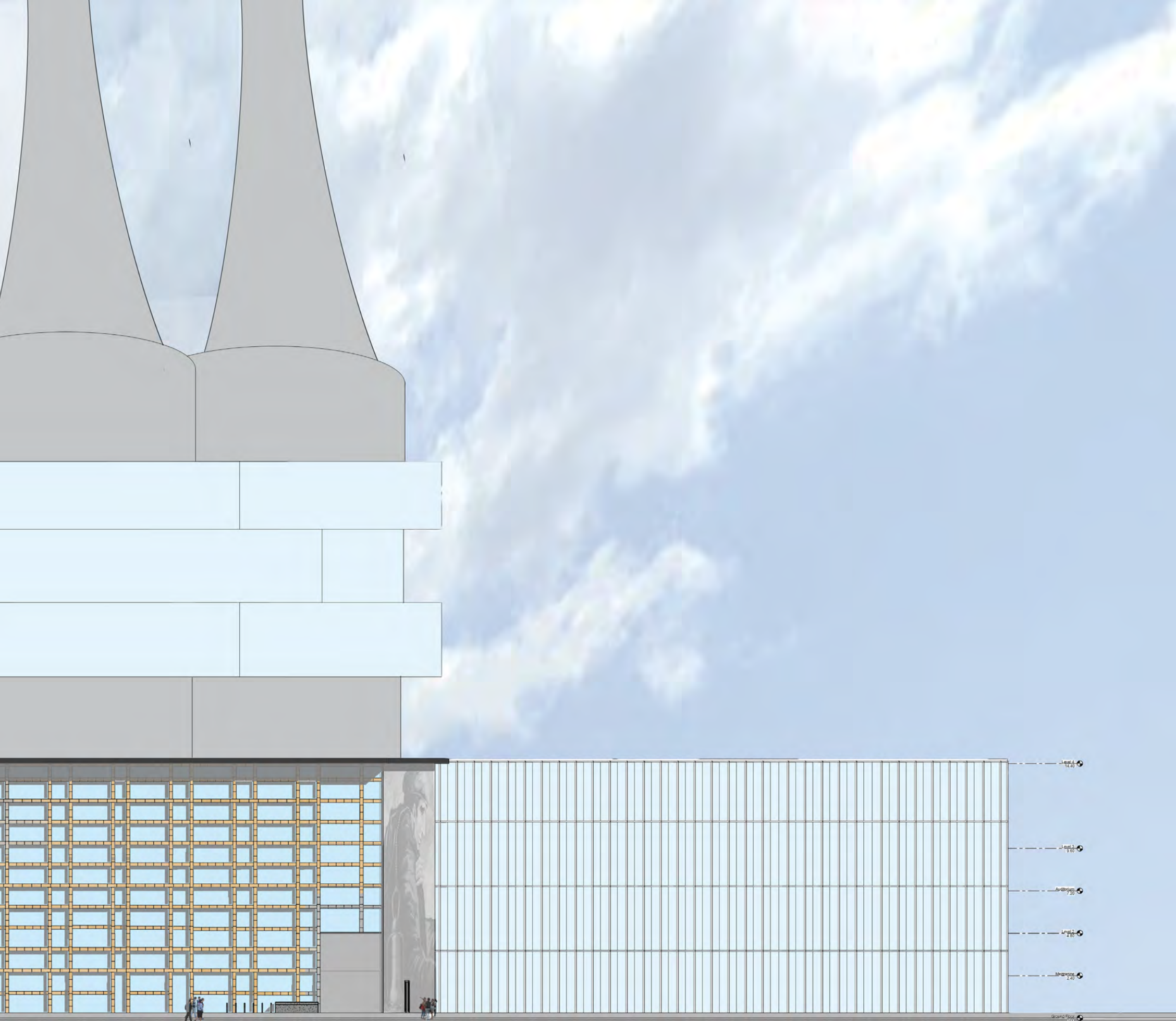


Fig 4.24 Auditorium Section

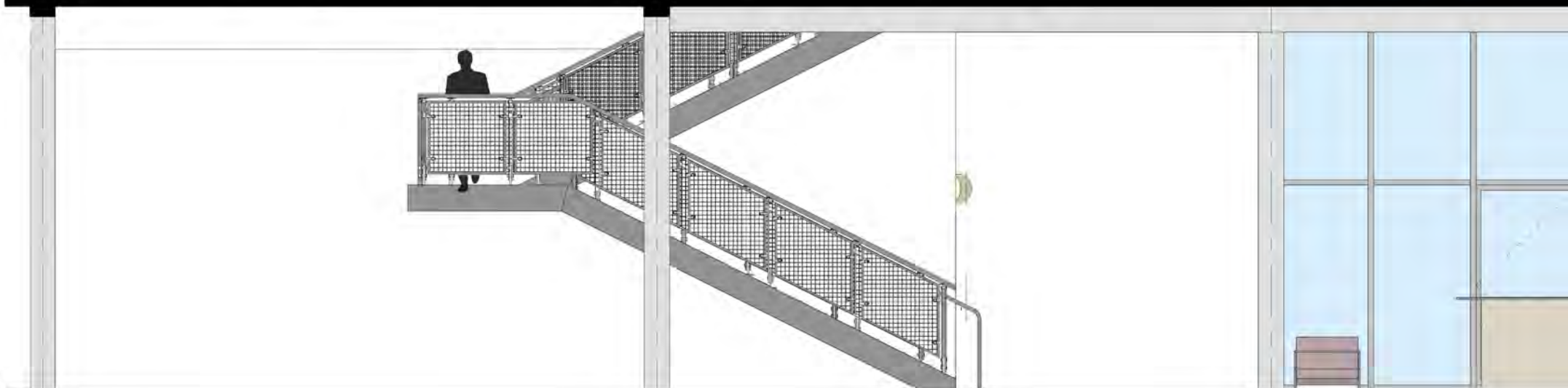
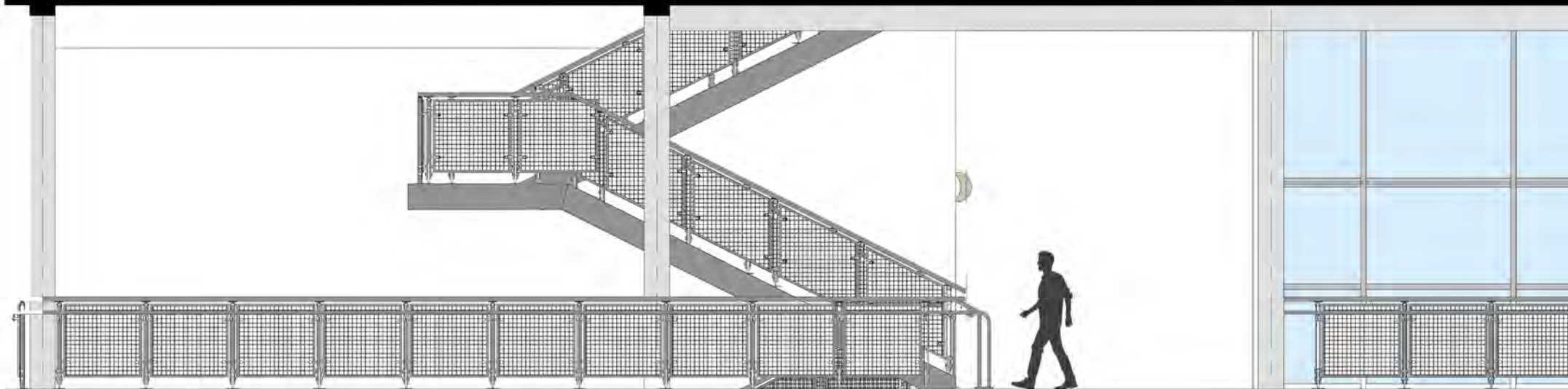




West Elevation



Fig 4.25 Elevation







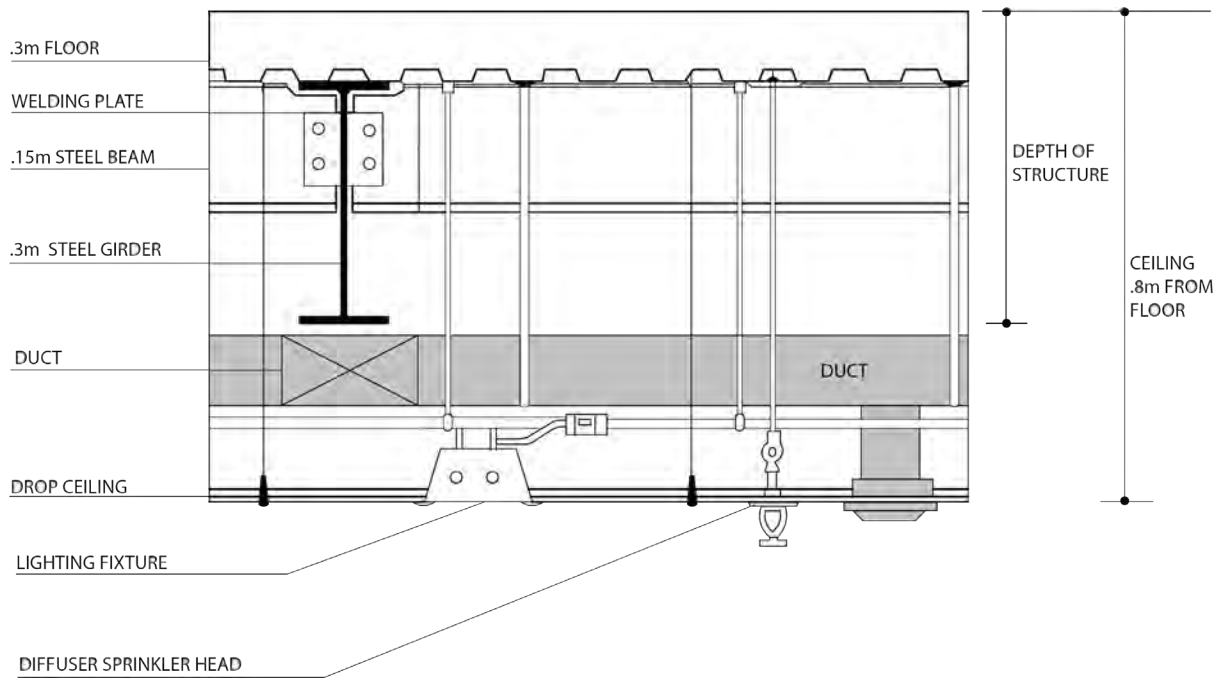


Fig 4.27 Ceiling Detail

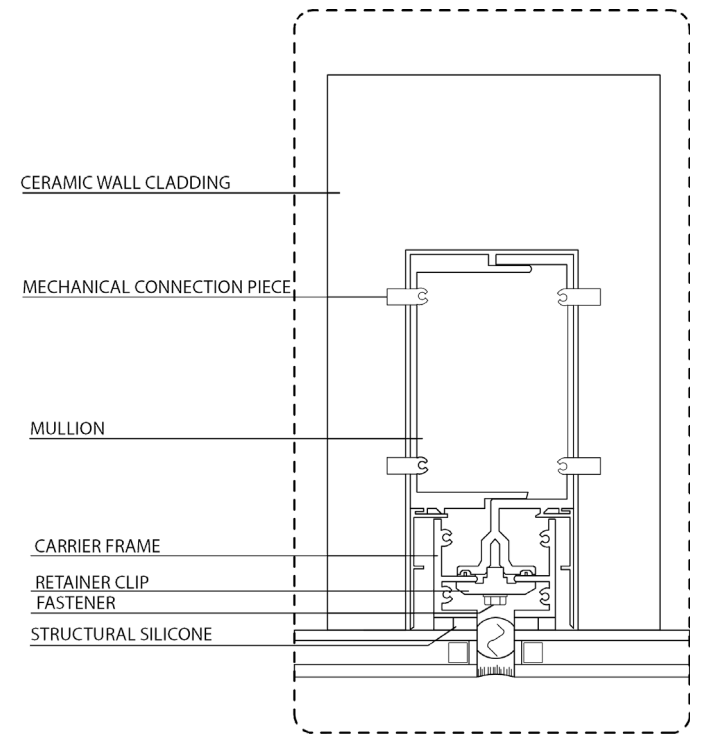
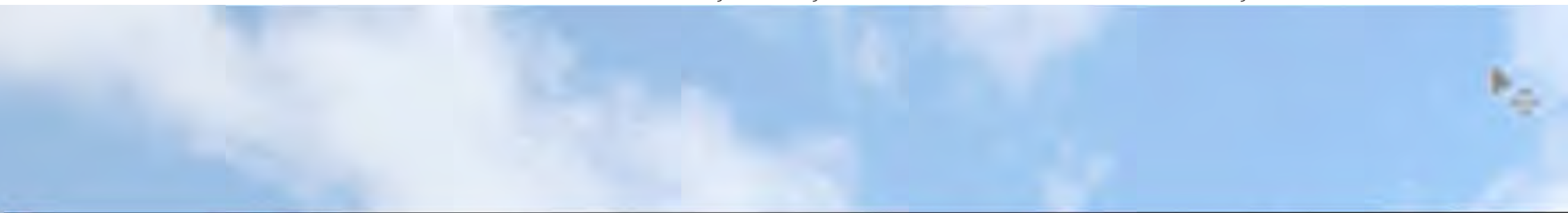


Fig 4.28 Ceramic Connection Detail



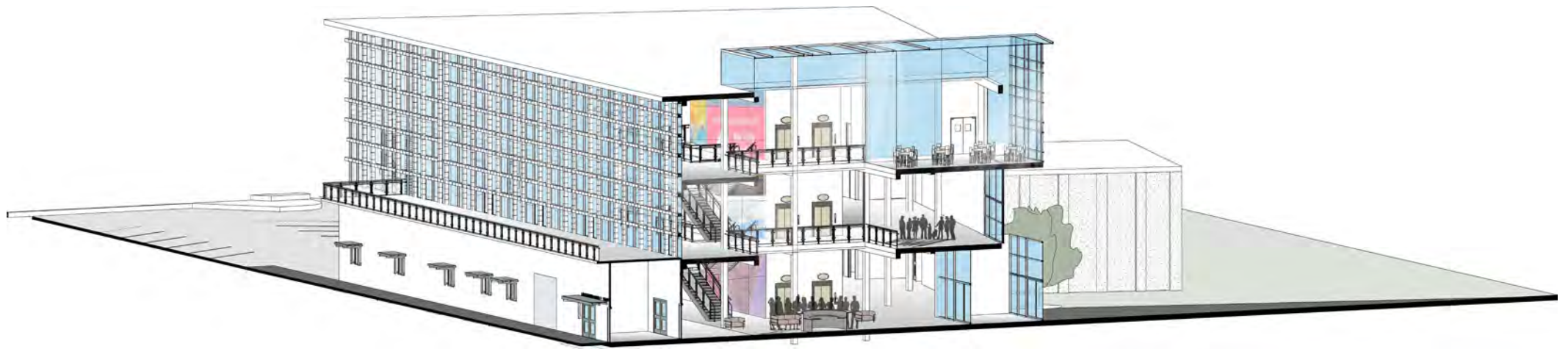


Fig 4.29 Perspective Section

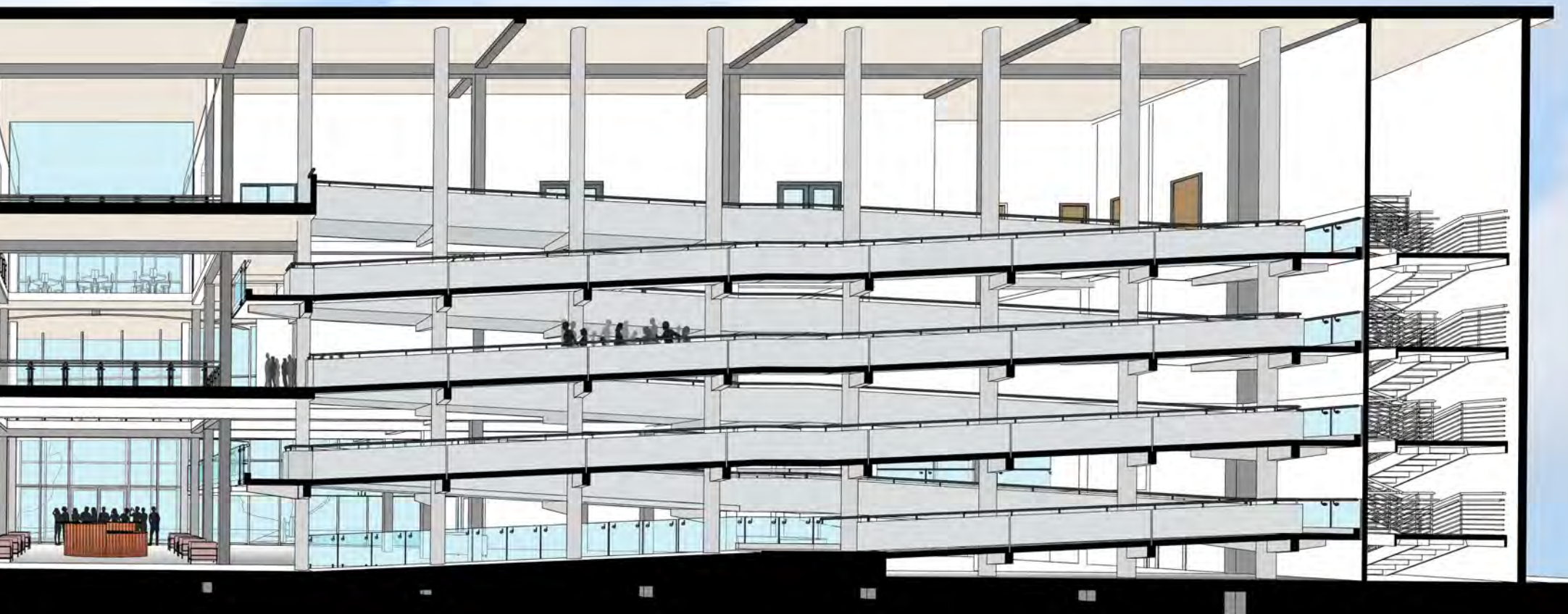
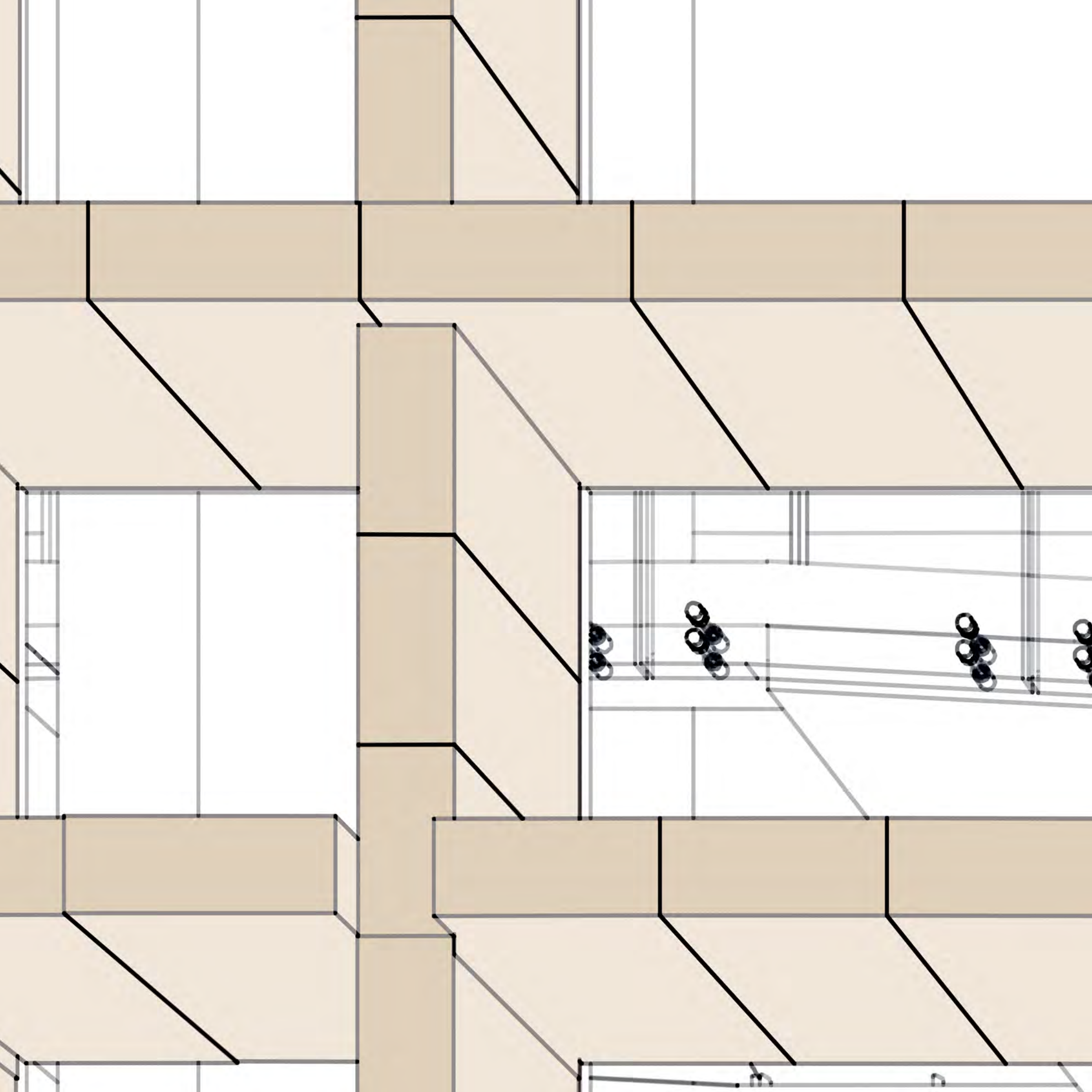


Fig 4.3 Long Section





The image shows a detailed architectural floor plan of a building. The plan is divided into several rooms and corridors. A central vertical corridor runs through the middle. On either side of this corridor, there are rooms with various shapes and sizes. Some rooms have diagonal lines, possibly representing windows or structural elements. In the center of the plan, there are two garden areas, each containing several small black circles representing plants or trees. The word 'Gardens' is written in a large, bold, black font in the upper right quadrant, and the word 'Jardins' is written in a similar font in the lower right quadrant. The overall style is a clean, technical architectural drawing.

**Gardens**

**Jardins**

## GREENS



SEA LETTUCE

*Grown all year; Large Blooms in Summer*



COMMON PURSLANE

*Grown late spring-late summer*



NETTLE

*Grown May-September*



ROCK SAMPHIRE

*Grown all year*



COMMON SORREL

*Grown early spring-mid summer*

## VEGETABLES



ARTICHOKES

*Start of harvest in late July*



BEETROOT

*Mid April-late June*



CARROTS

*Mid March-Last Frost*



GARLIC

*Fall and Spring*



LEEKS

*Fall-late Winter*



POTATOES

*January-June*



RADISHES

*Fall and Spring*



SPINACH

*Fall-Spring*

## HERBS



BASIL

*Early Spring-late Summer*



OREGANO

*Spring*



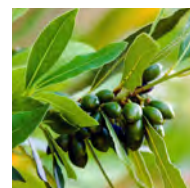
CILANTRO

*Fall and Spring*



ROSEMARY

*Spring and Summer*



LAUREL

*March-October*



PARSLEY

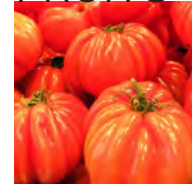
*Spring-Summer*



THYME

*Spring-early Summer*

## FRUITS



TOMATOES

*Spring-mid Fall*



APPLES

*mid August-late October*



PEARS

*August-October*



PEACHES

*May-late September*



APRICOTS

*October-February*



CHERRIES

*Late March-half of April*



HAZELNUTS

*Late Winter-early Spring*

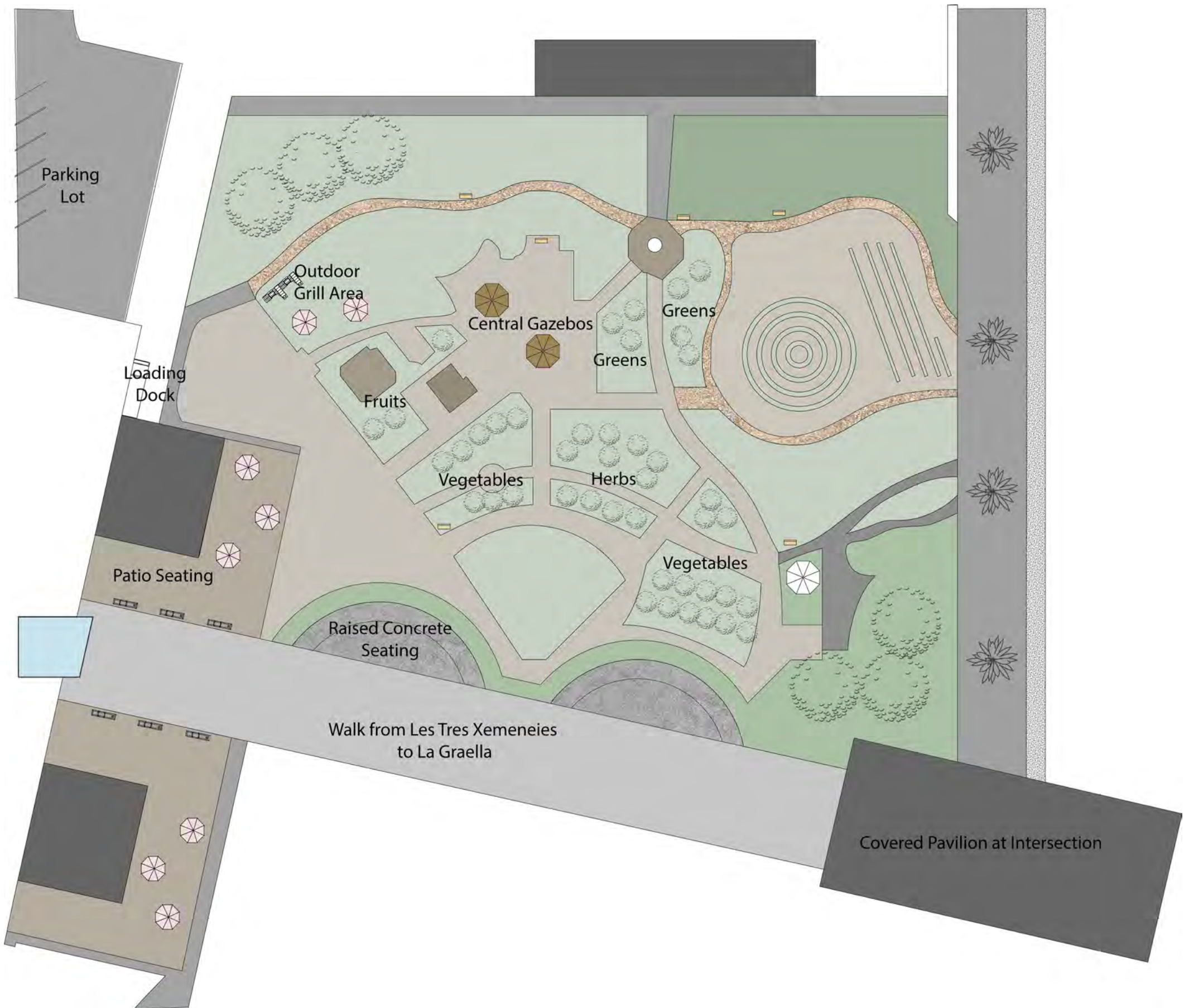


Fig 5.1 Garden Layout Plan



## LOOKING AHEAD...

With Barcelona continuing to grow, the goal of this project is to attract both locals and tourists to move or visit outside of the metropolis. The activities, resources, and educational aspects of both La Graella and of the proposed BIG regeneration of The Three Chimneys create an ultimate destination hub of social interaction. With how large the site is, its' position along the coastline, and the connection to its' surroundings, the opportunity for this project to grow and host festivals, holidays, and events that are important to the community is largely present.



Fig 6 Exterior



Fig 7 Restaurant



Fig 8 Auditorium Prefunction



# BIBLIOGRAPHY

First Page Image. Stefano Perego Photography

Music, Art, and Gastronomy Images. Author, Andrea Aponte, Lauren White, 2019, 2021; p. 3-4

Fig 1.4-Fig 1.7. The Bjarke Ingels Group, 2020; p. 7-8

Fig 2.1. The landuse map of Barcelona, showing the site in its zonification context. This map also shows the limits of municipalities within the region. Source: <https://www.amb.cat/s/home.html>, 2021; p.11

Fig 2.2. Stefano Perego Photography

Fig 2.3. The Regeneration of Postindustrial Landscape. The Central Tèrmica de Sant Adrià de Besòs. Edited by the author, 2022; p. 13-14

Fig 2.4-Fig 2.11. Atles Besòs 2017, 2022; p. 15-18

Fig 4.15. Clayhaus Photography

(Gencat, 2017) -Església de Sant Joan Baptista. Inventari del Patrimoni Arquitectònic. Direcció General del Patrimoni Cultural de la Generalitat de Catalunya, 2022

Map of the Industrial Heritage of Catalonia drawn up by the Museum of Science and Technology of Catalonia available at: <http://mnactec.cat/assets/uploads/press/dossier-150-elements-baixa.pdf>, 2022