

# In the Belly of the Beast

the Maassilo

*Marcus de Moes*

P5 - March 12th, 2021



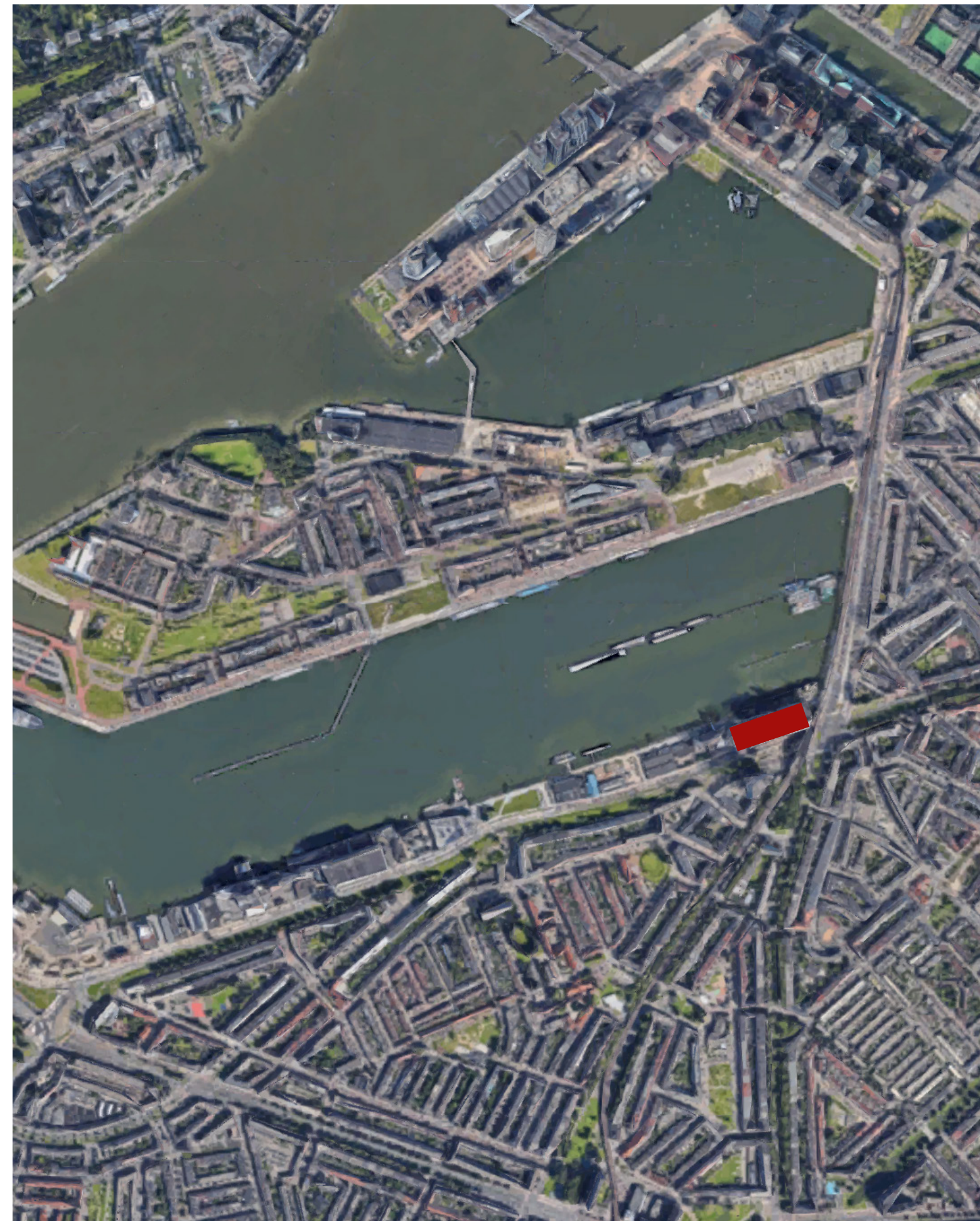
Source: <https://rotterdampartners.nl/venues/maassilo/>



# Table of Content

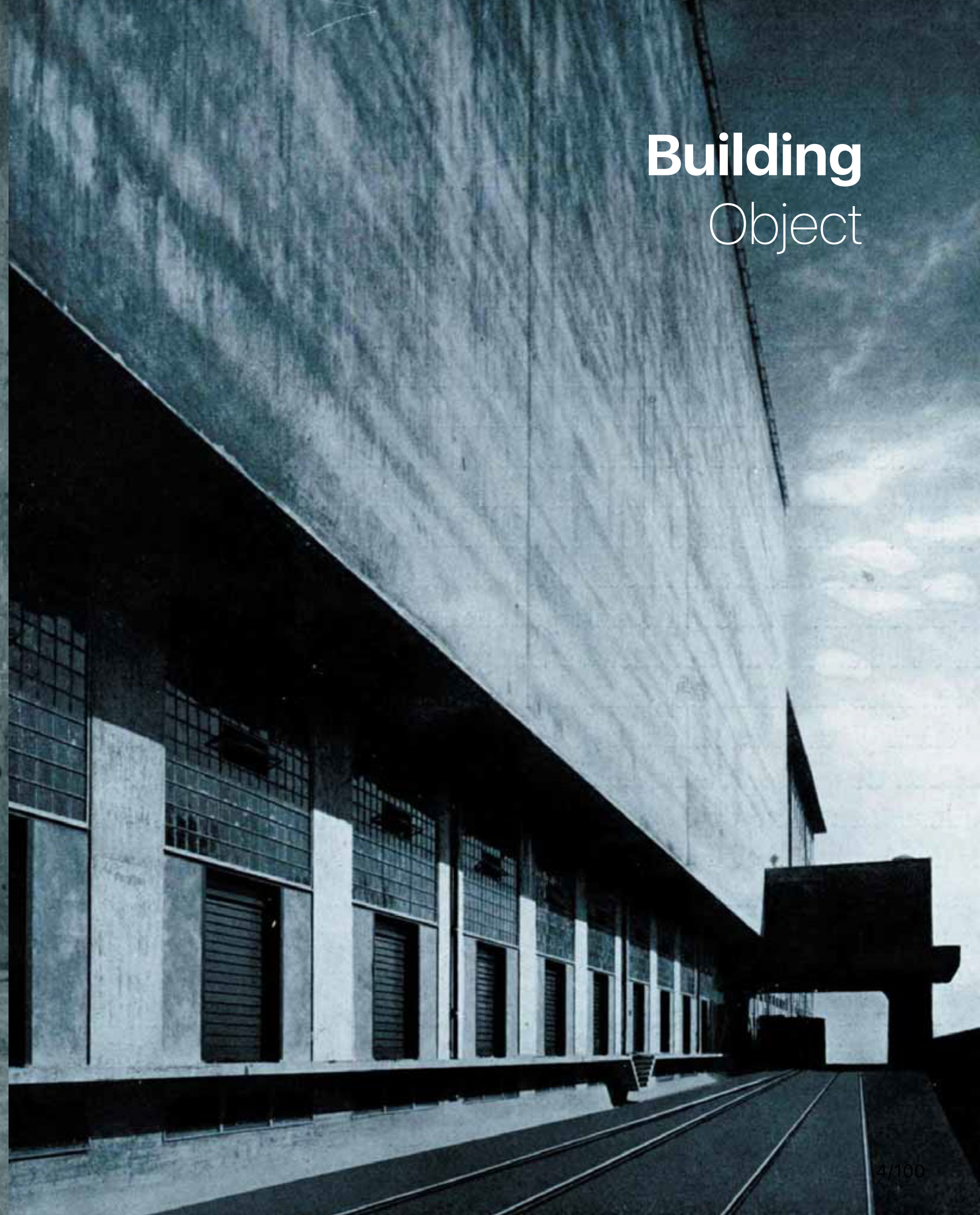
03	20	30
Building Analysis	Cultural Value Assesment	Research Conclusions
33	38	41
Program	Spatial Narrative	Conceptual Design
50	58	96
Design Approach	Technical Design	Reflection





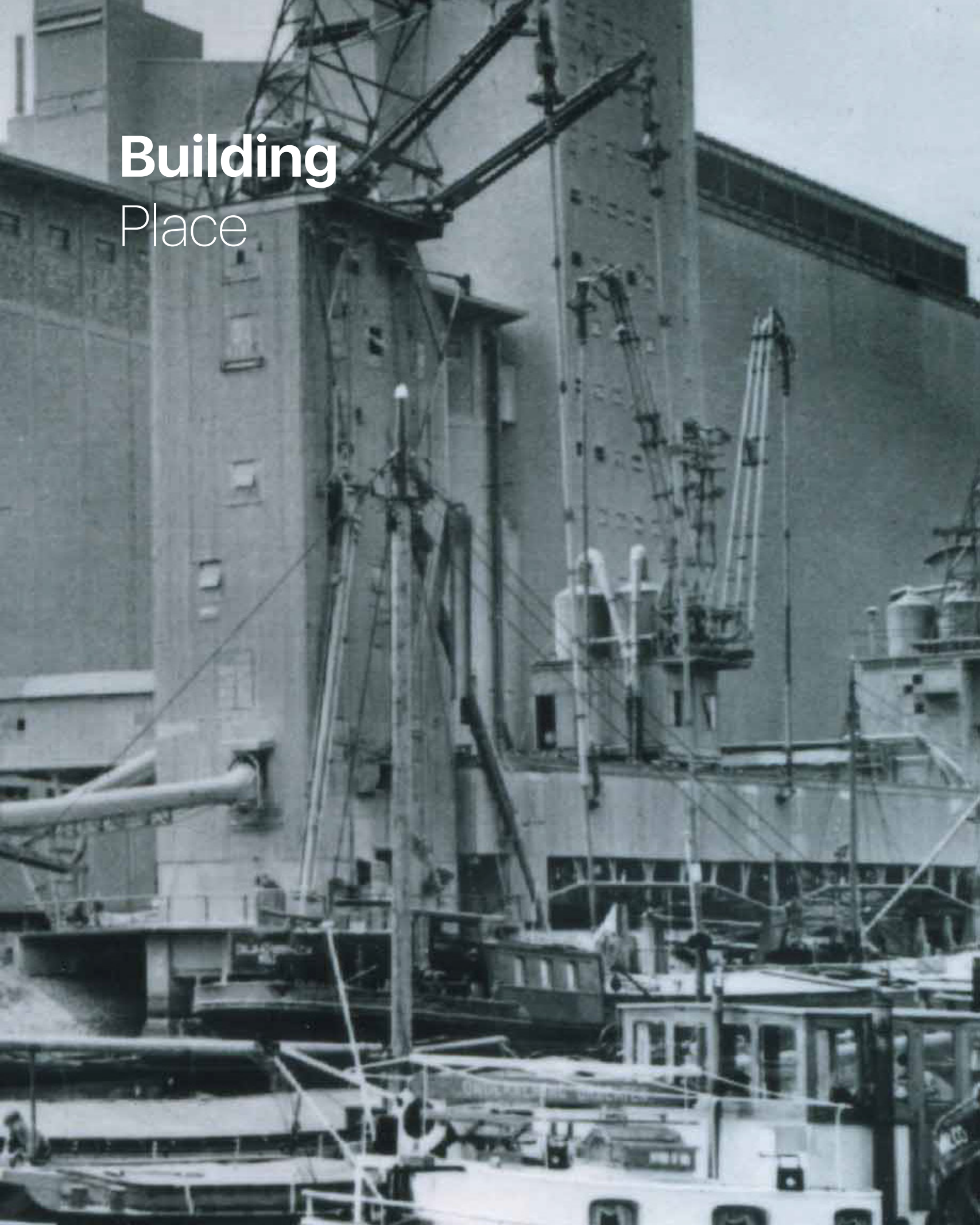


# Building Object





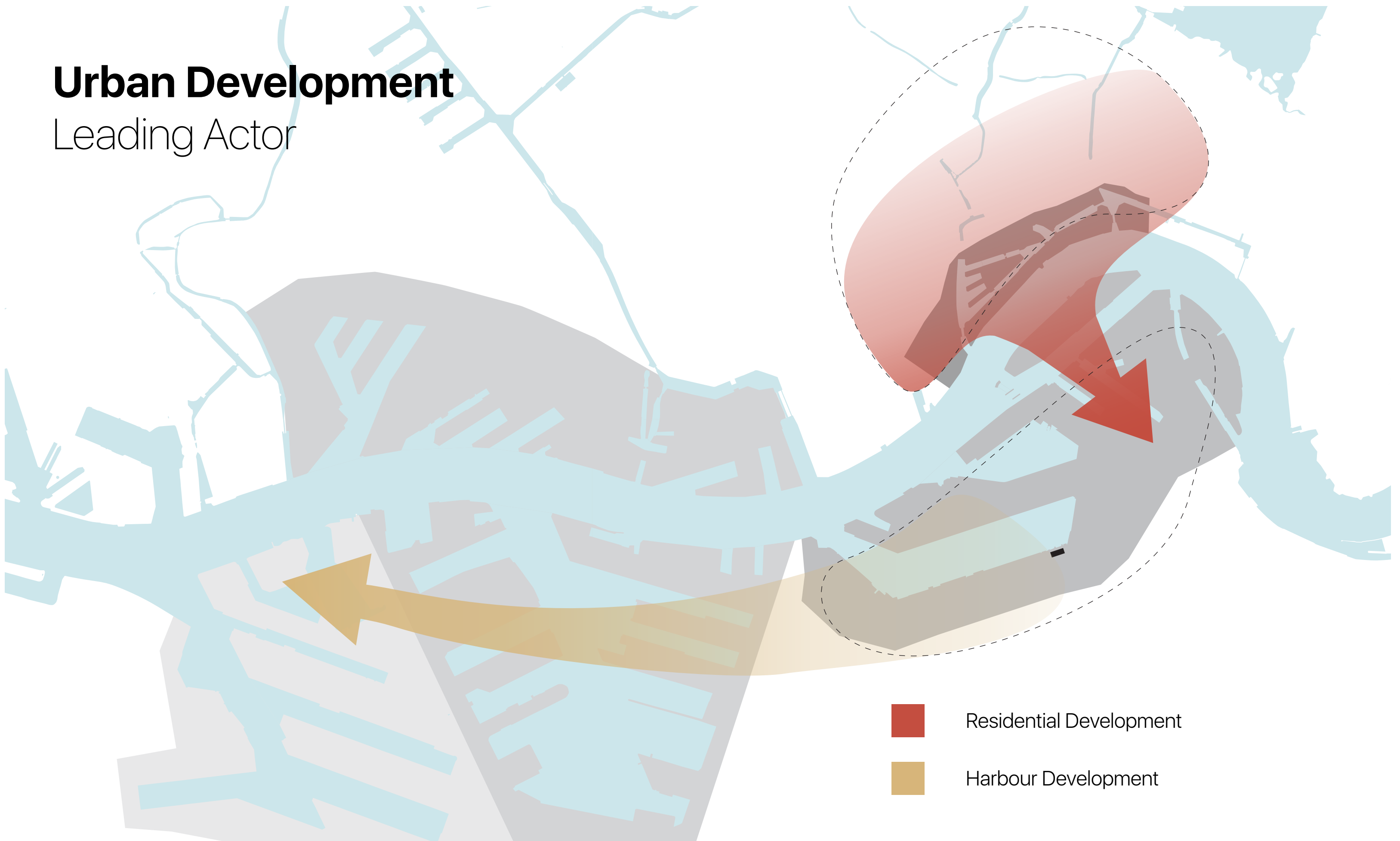
# Building Place





# Urban Development

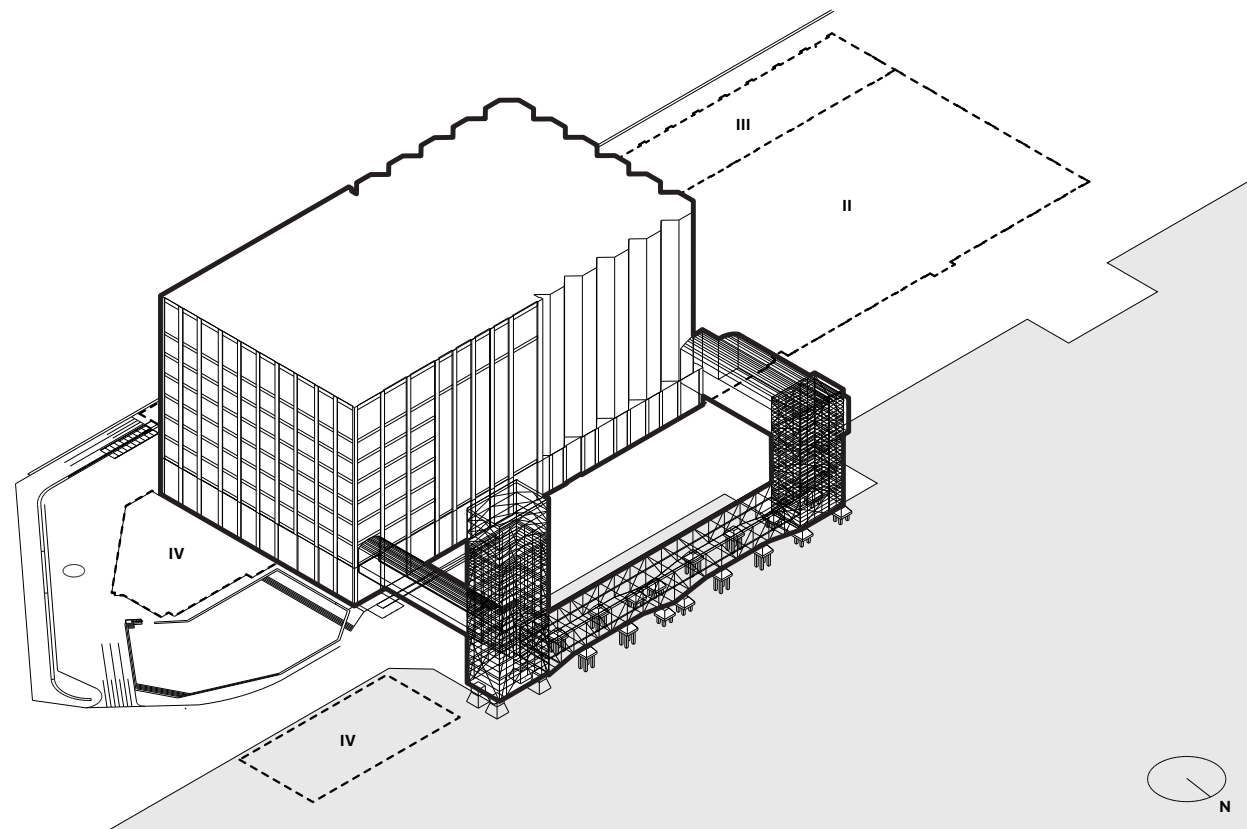
Leading Actor



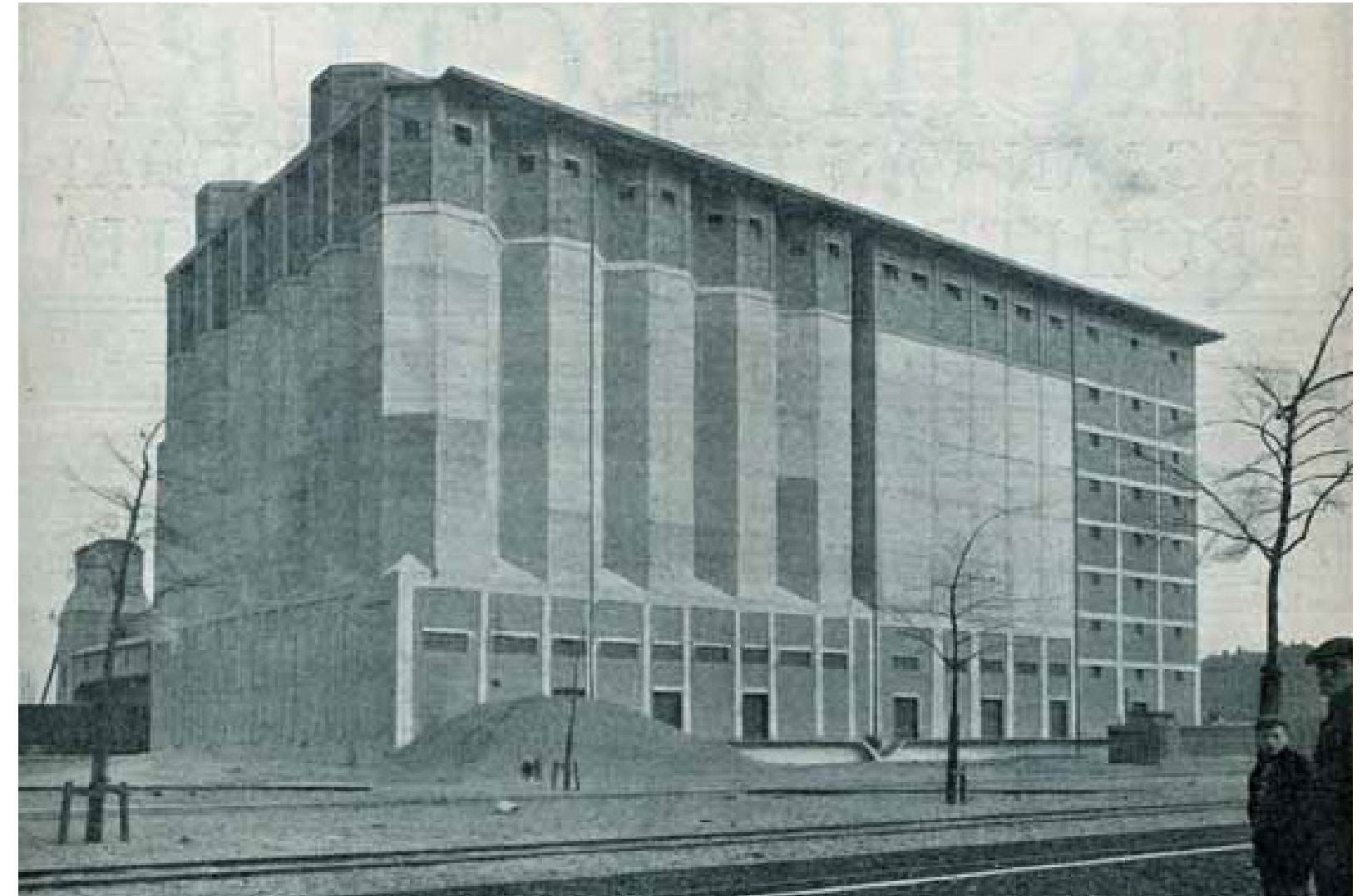


# Phase I

1910



*Architect - J.P. Stok*

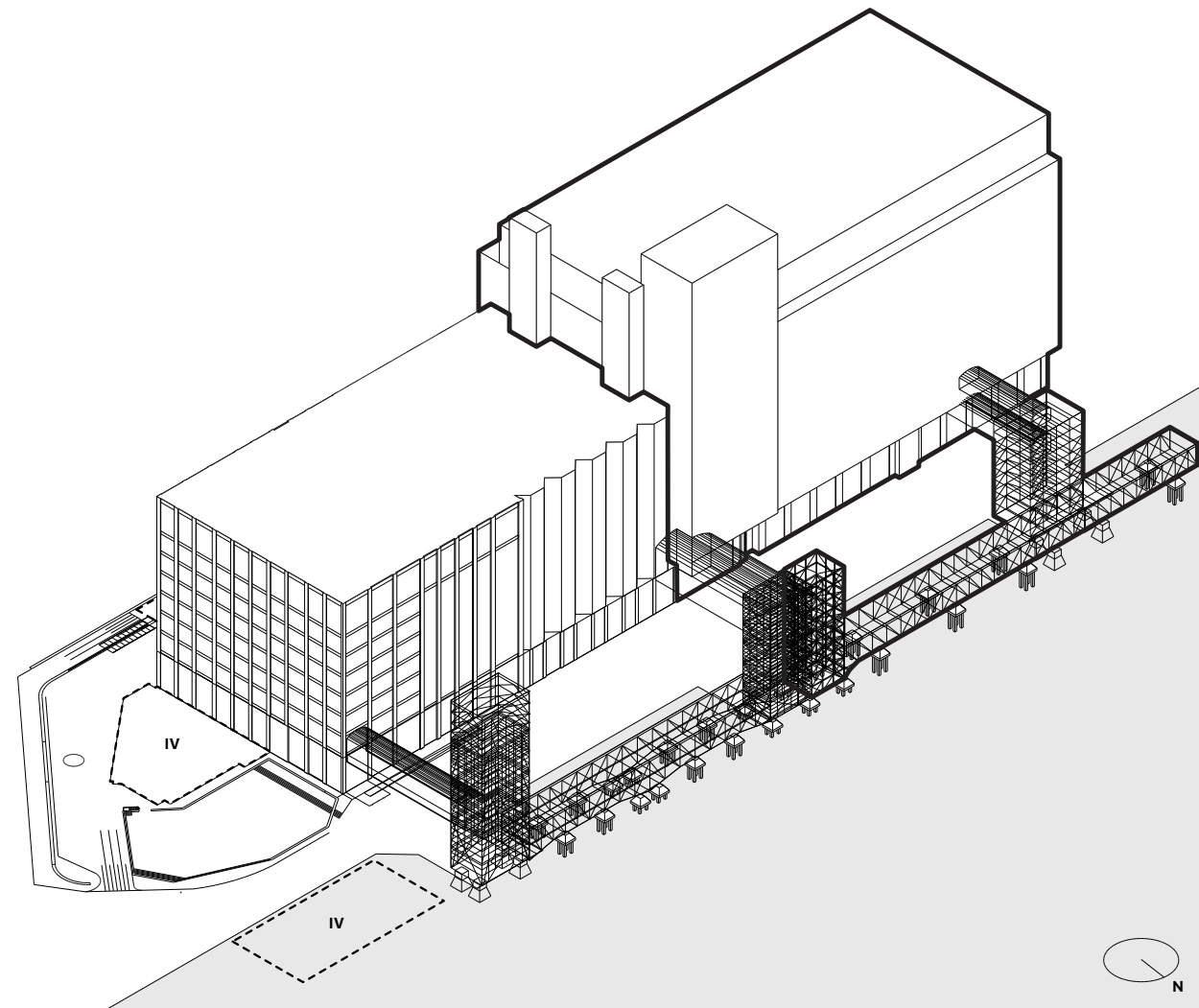


*Place of labor*

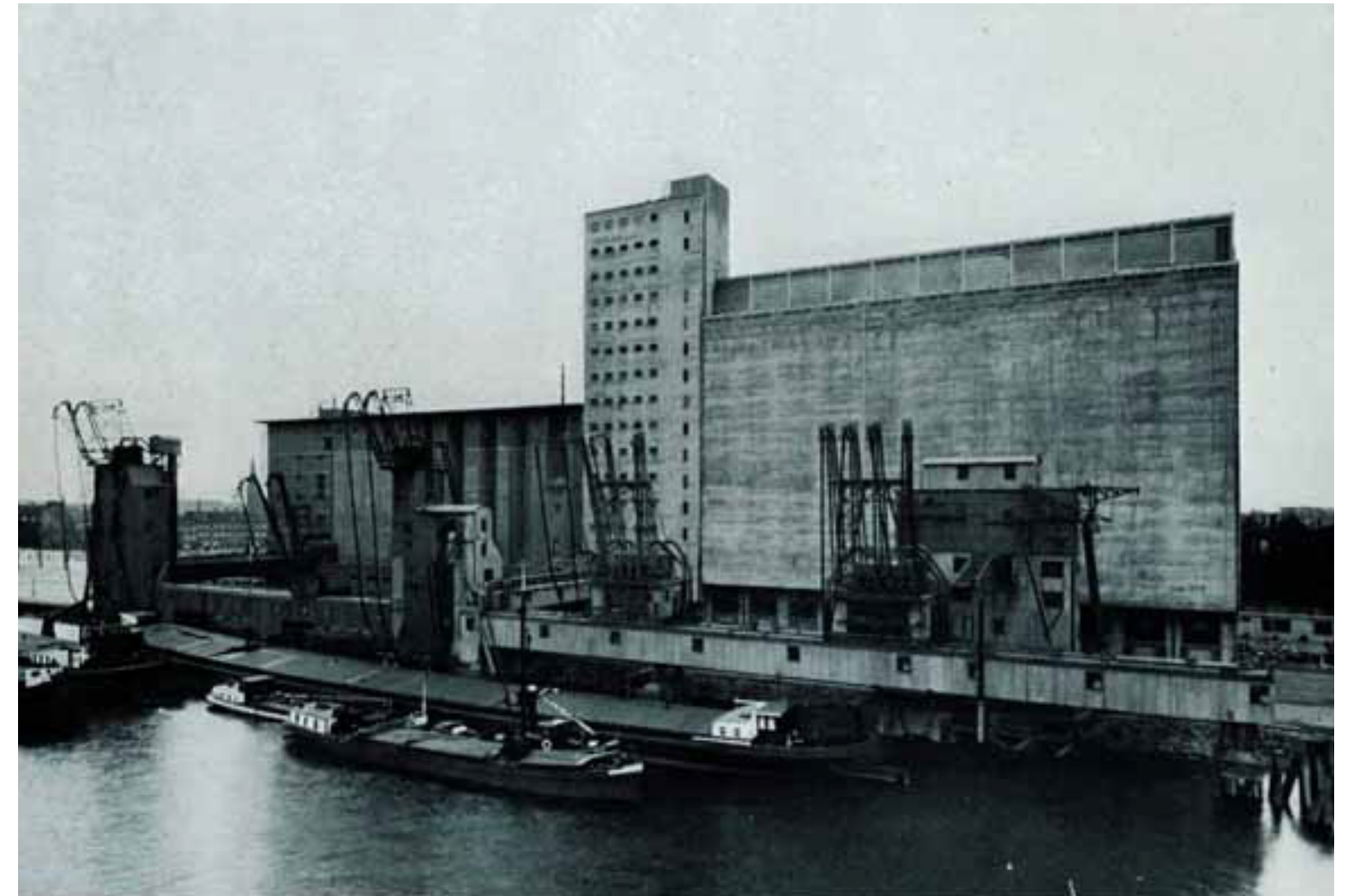


# Phase II

1930



*Architects - Brinkman & van der Vlugt*

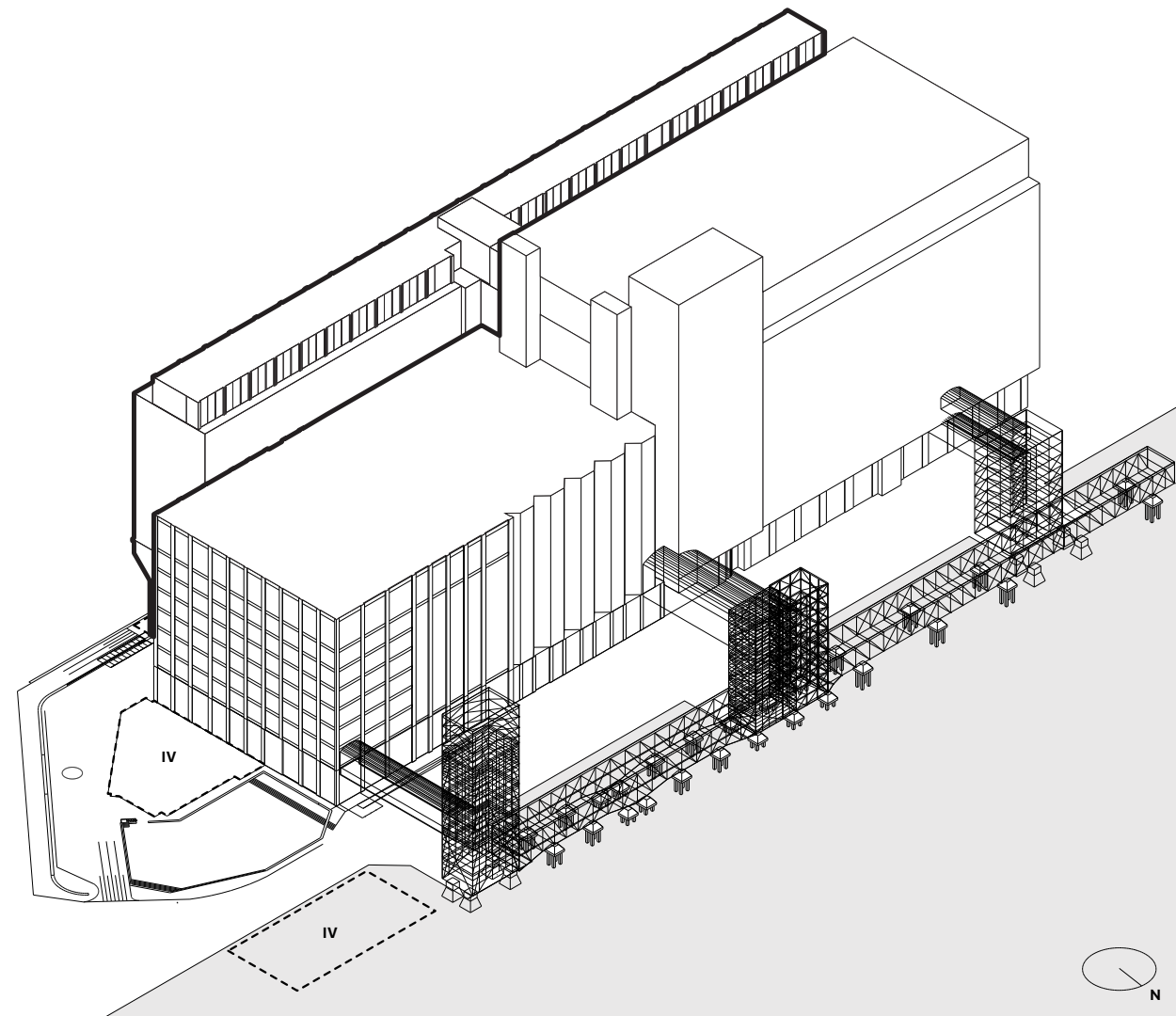


*Place of labor*



# Phase III

1951



*Architects - A.G. & J.D. Postma*

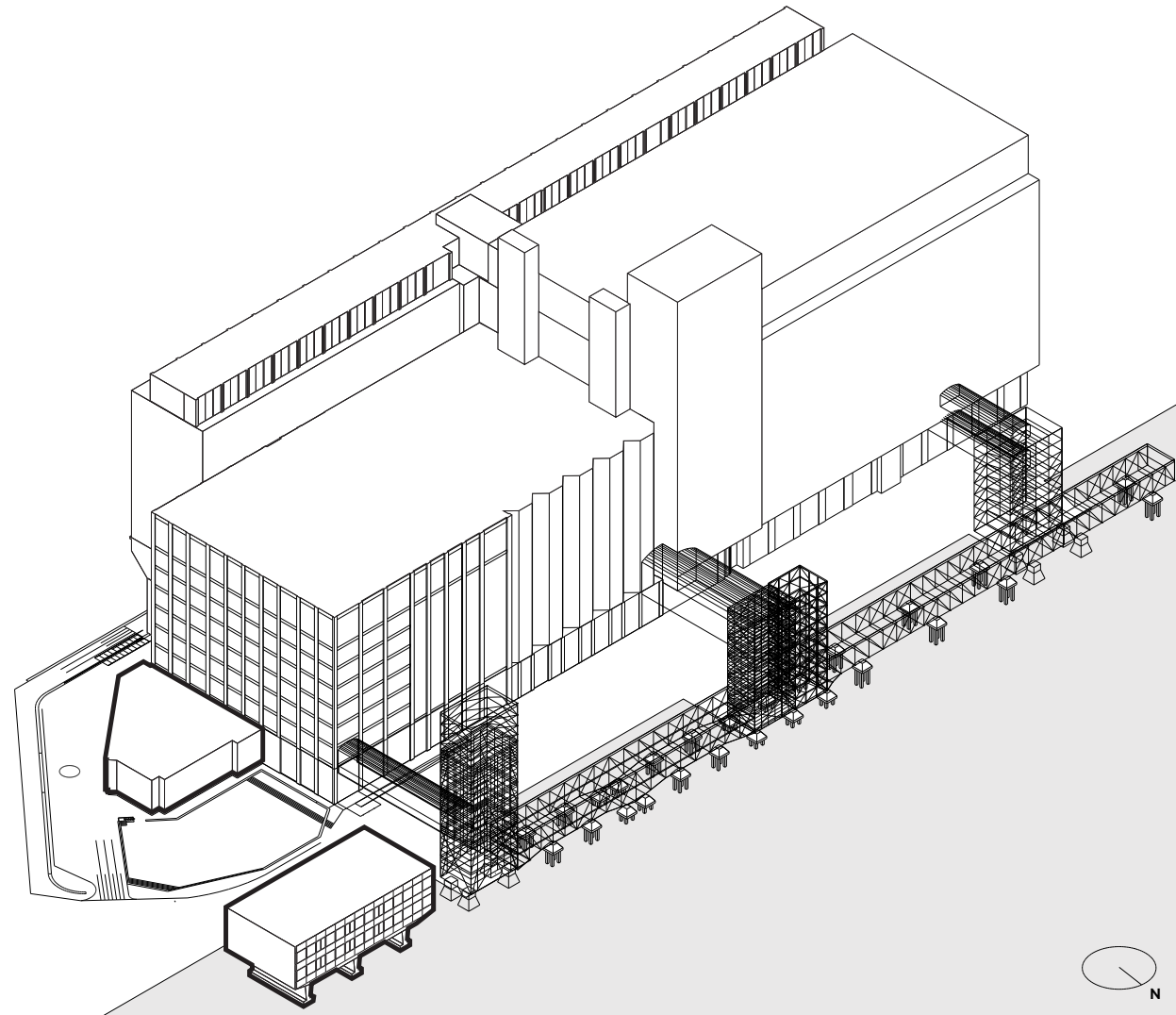


*Place of labor*



# Phase IV

1963



*Architect - H. Haan*

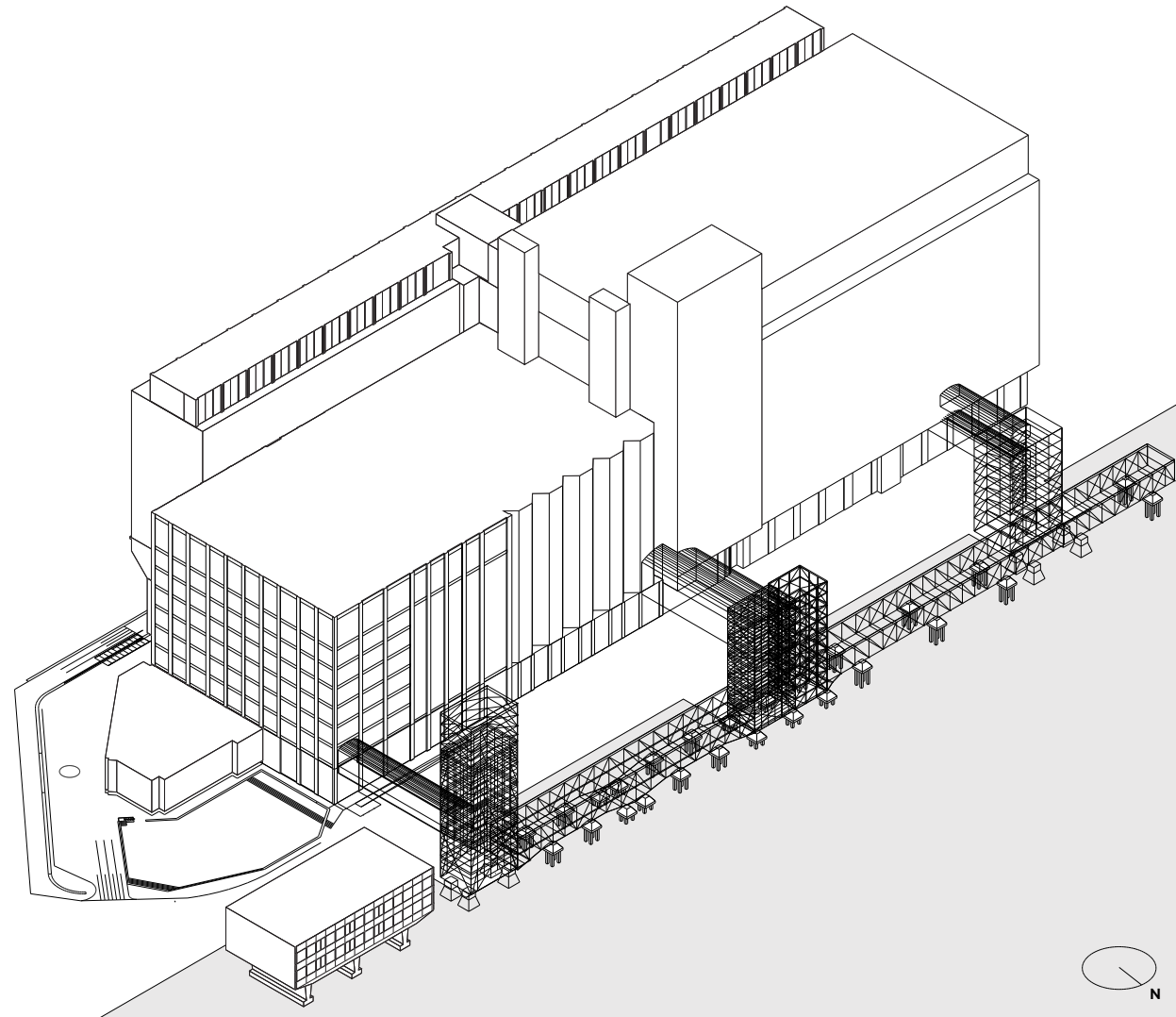


*Place of labor*



# Phase V

2003



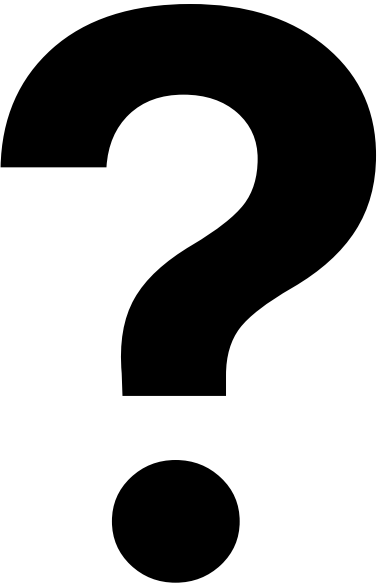
*Architects - K. Hanenberg, H. de Jong, IOB & HUB*



*Place of (social) refuge*



**Phase VI**  
2021

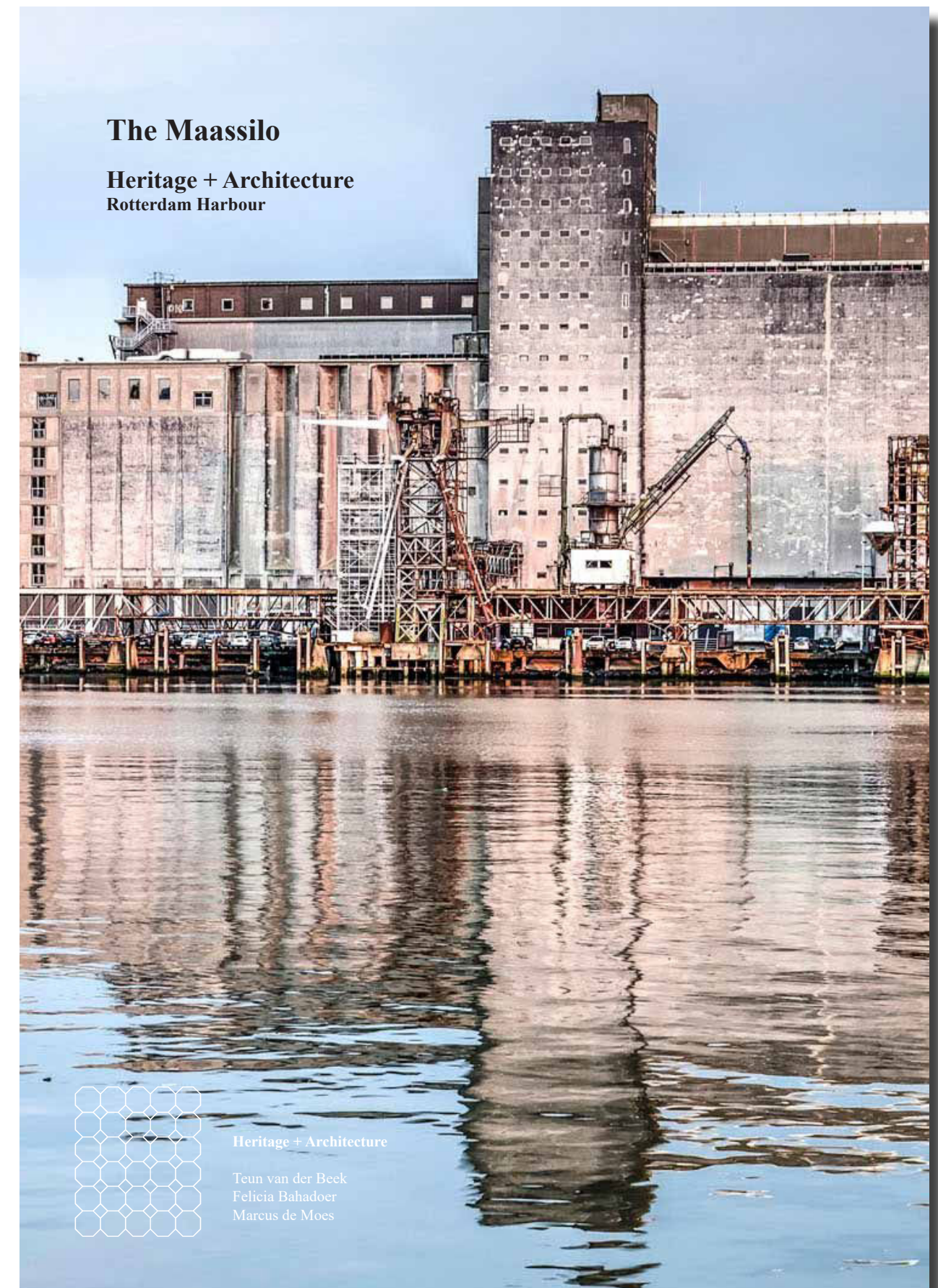




# Building vs. Machine

Mechanical composition

Mechanical operation

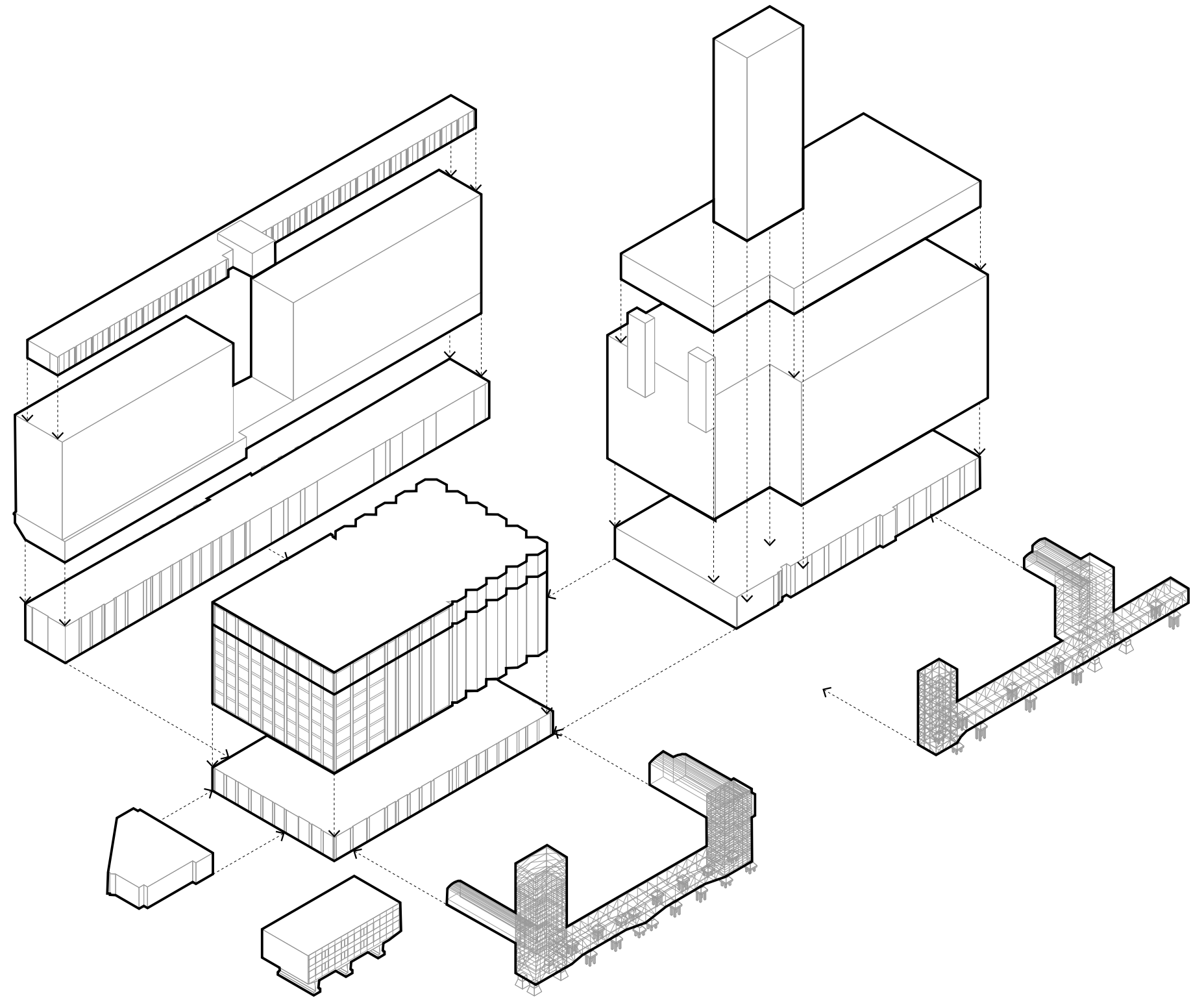




# Anatomy of Volumes

*Composition of Volumes*

*Tripartition*



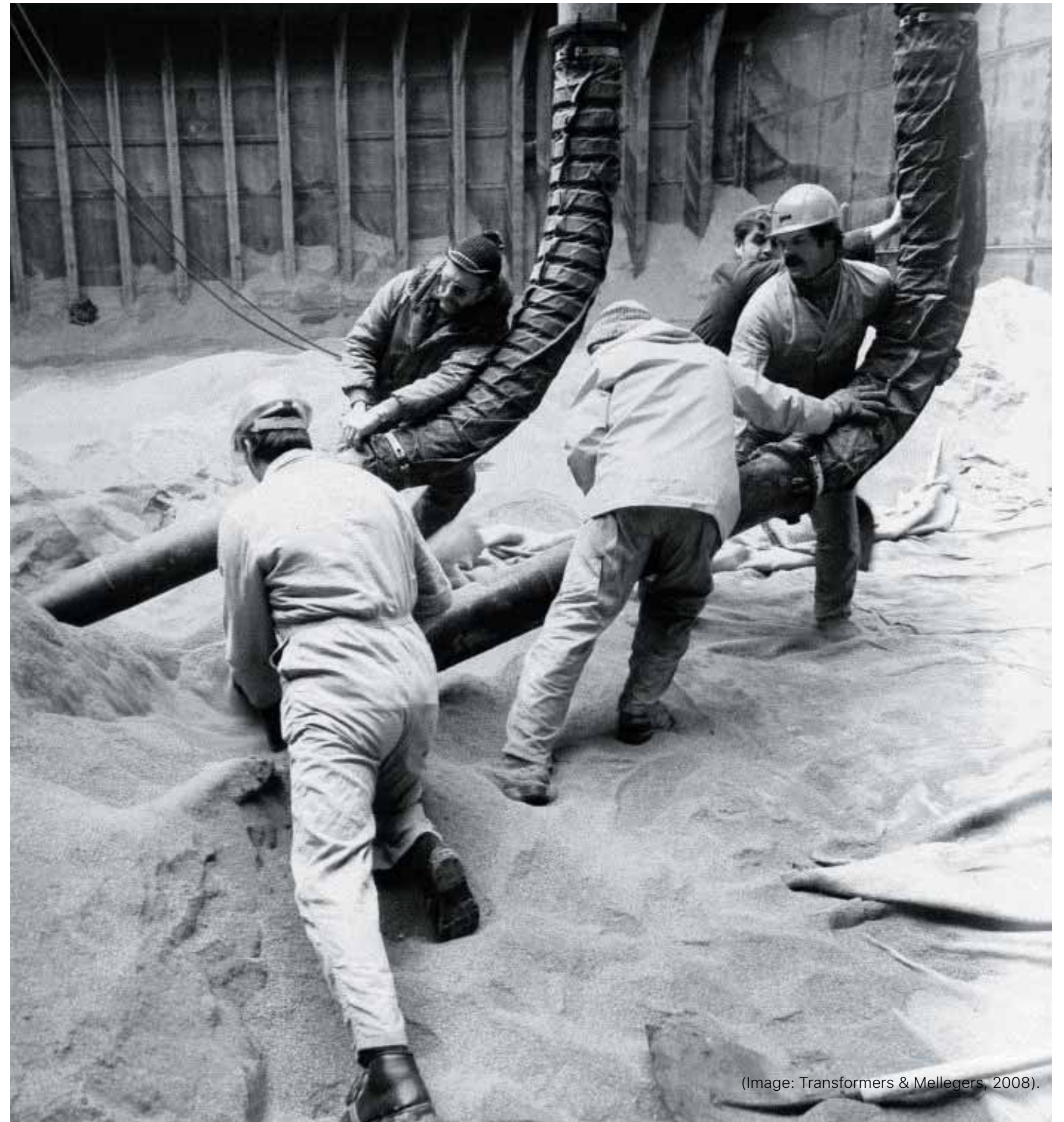


# The Building as a Machine

*From boat to silo to land*

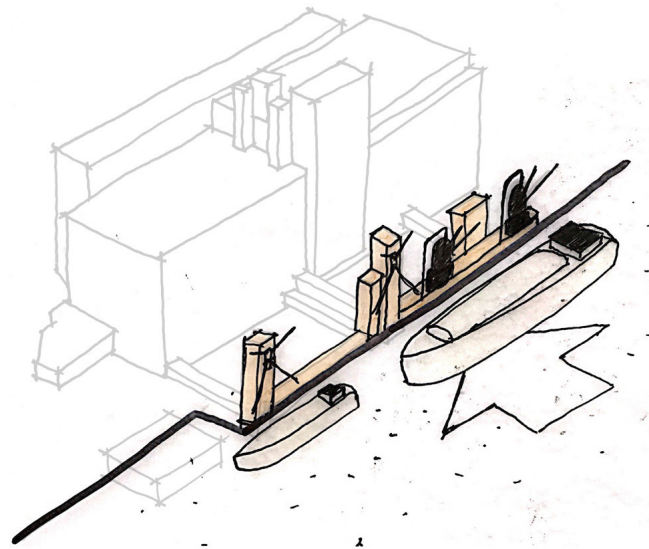
*Machines*

*Research Approach (Incentive)*

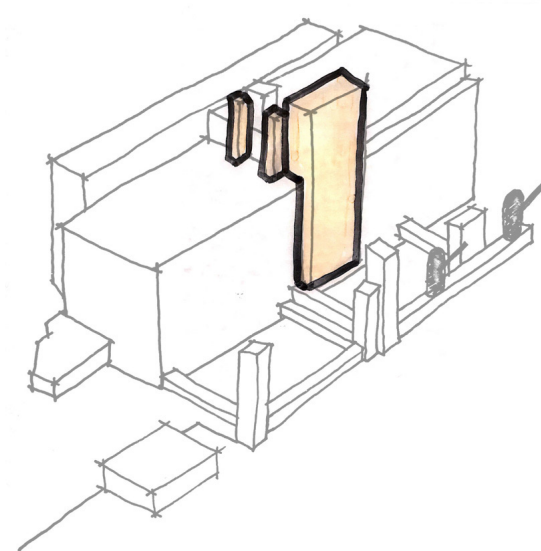


(Image: Transformers & Mellegers, 2008).

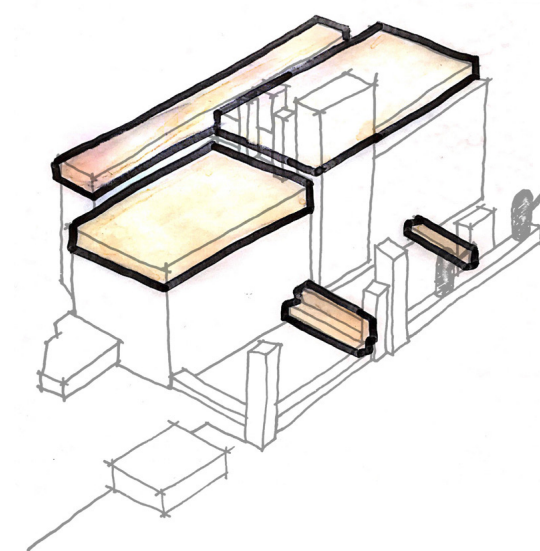




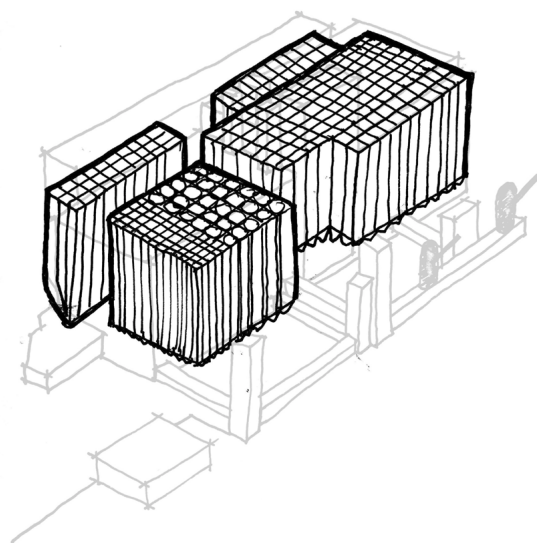
1. Arrival of Goods



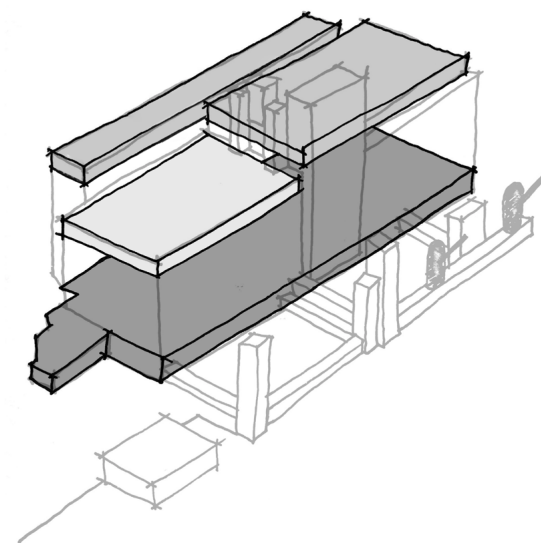
2. Vertical Transport



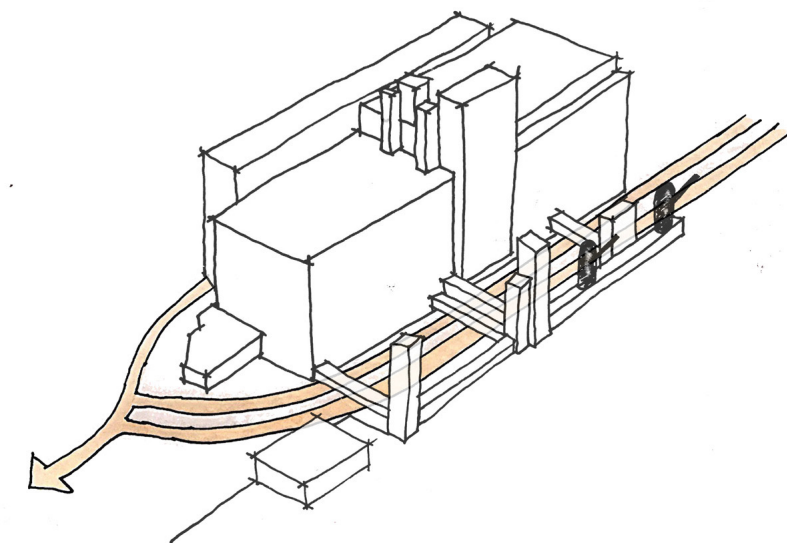
3. Horizontal Transport



4. Storage



5. Supply and Discharge



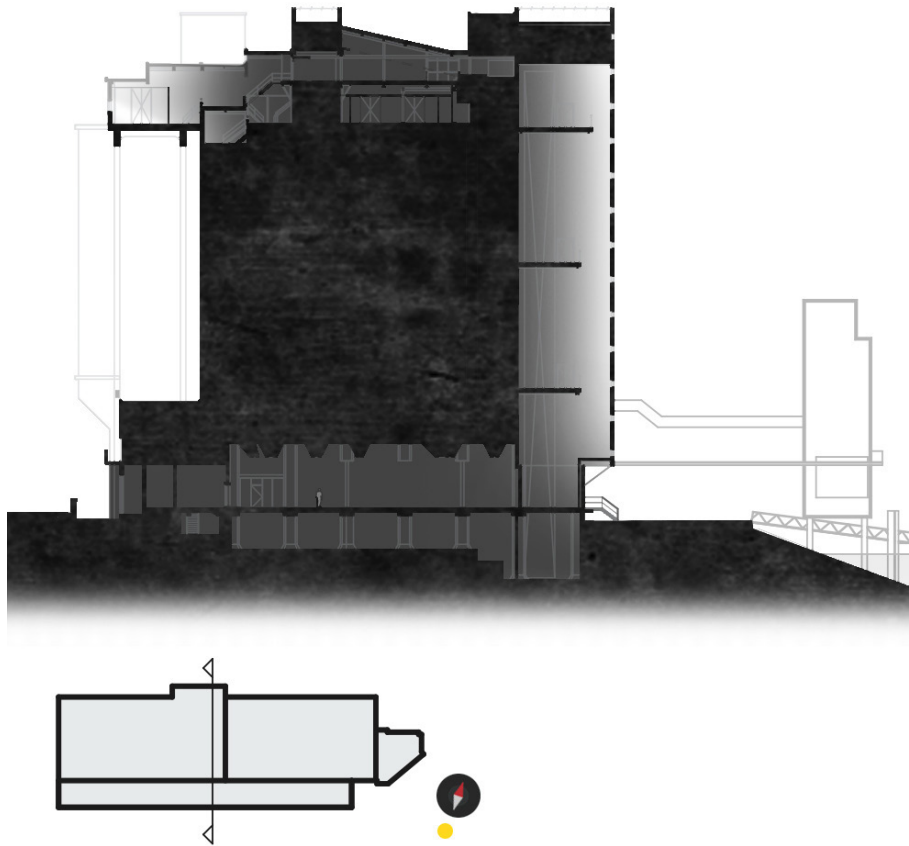
6. Departure of Goods



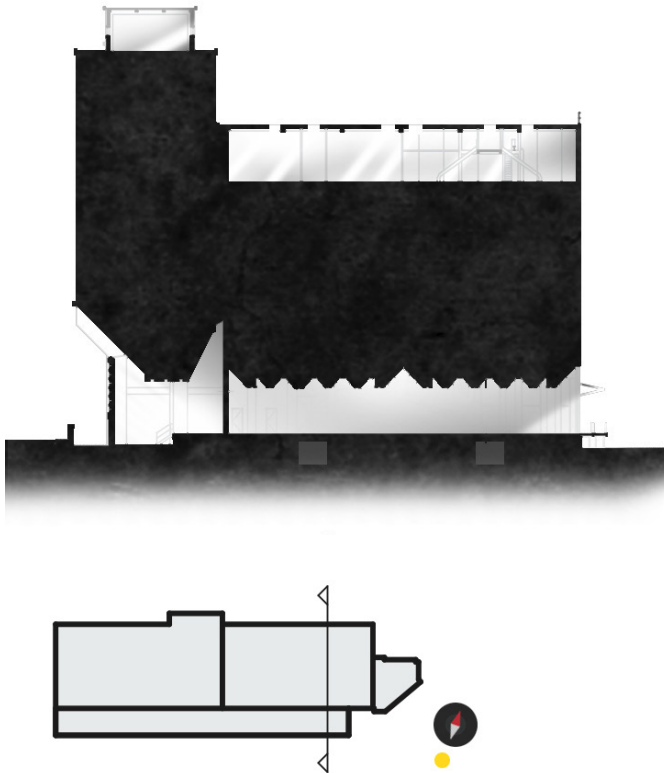
# Unused Volume

*Density of the Volume*

*Daylight*



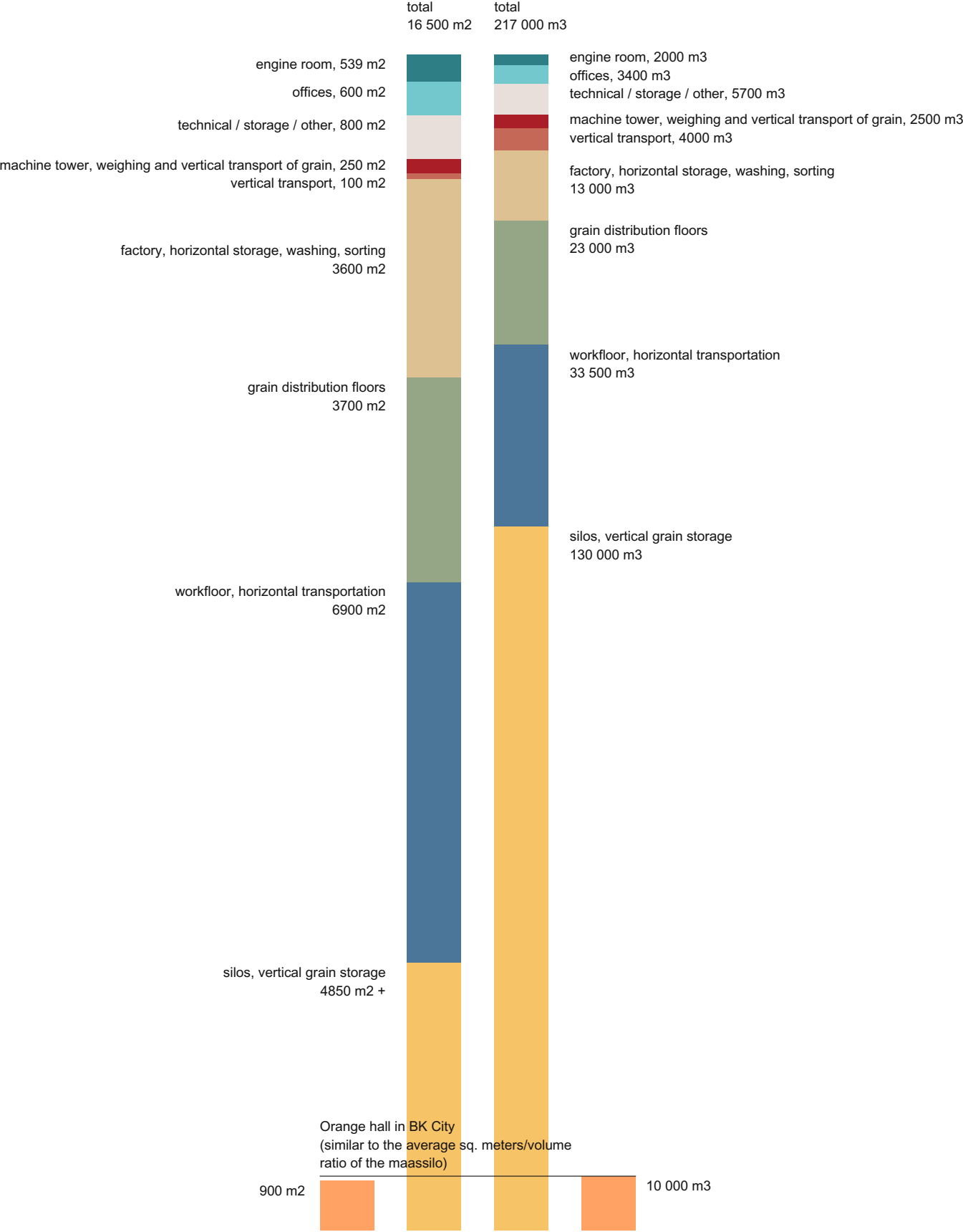
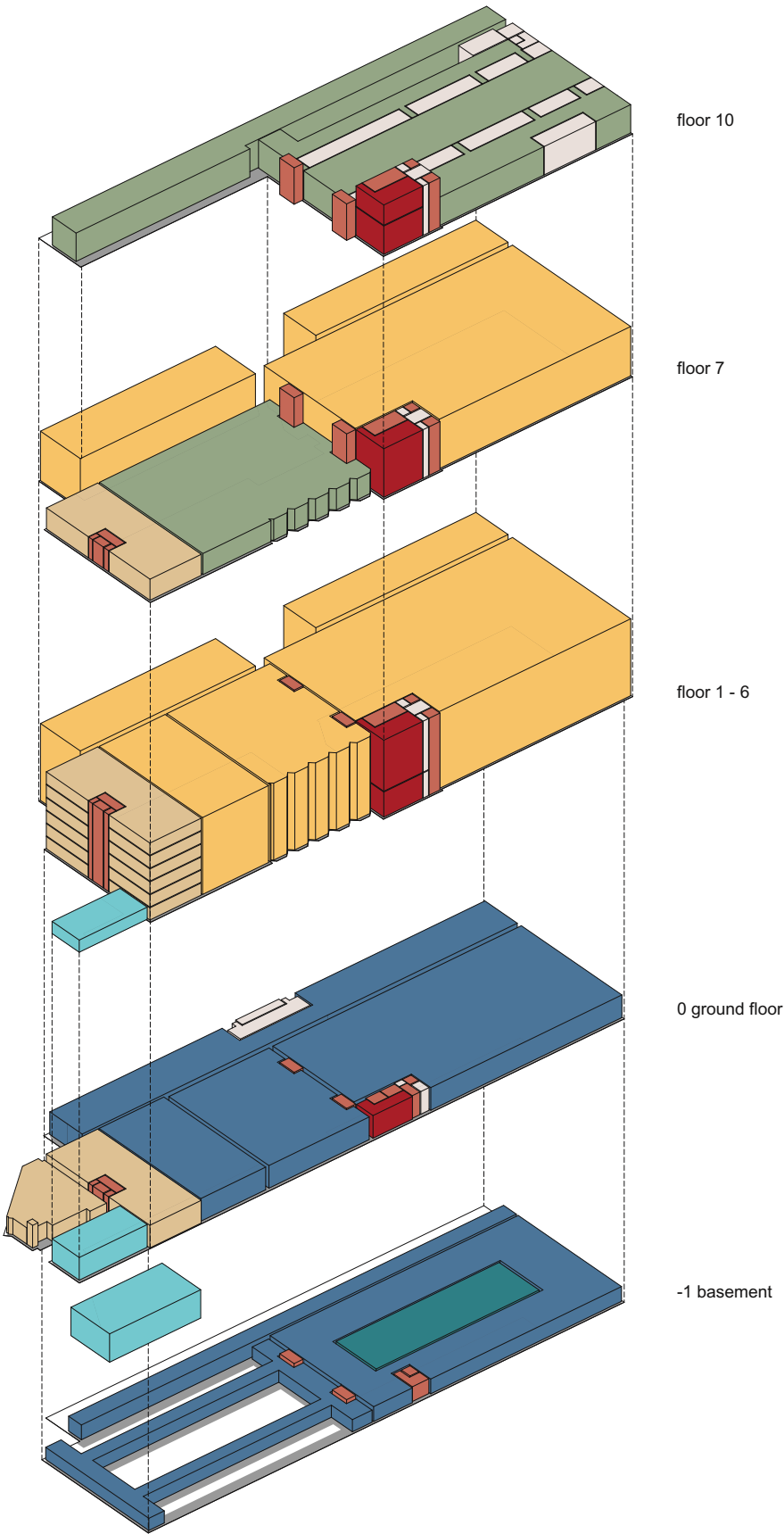
Cross Section BB (1930)



Cross Section DD (1910)

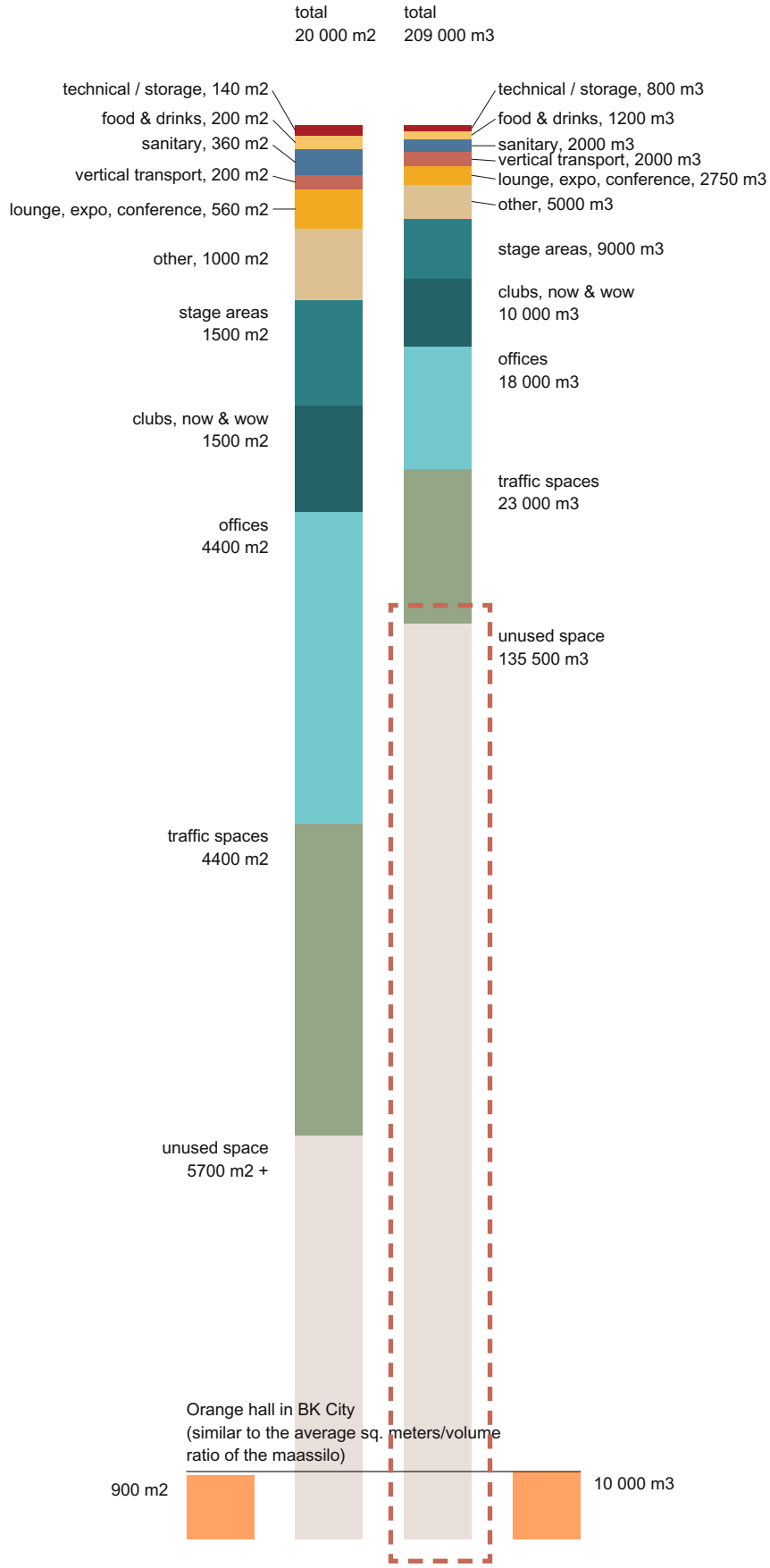
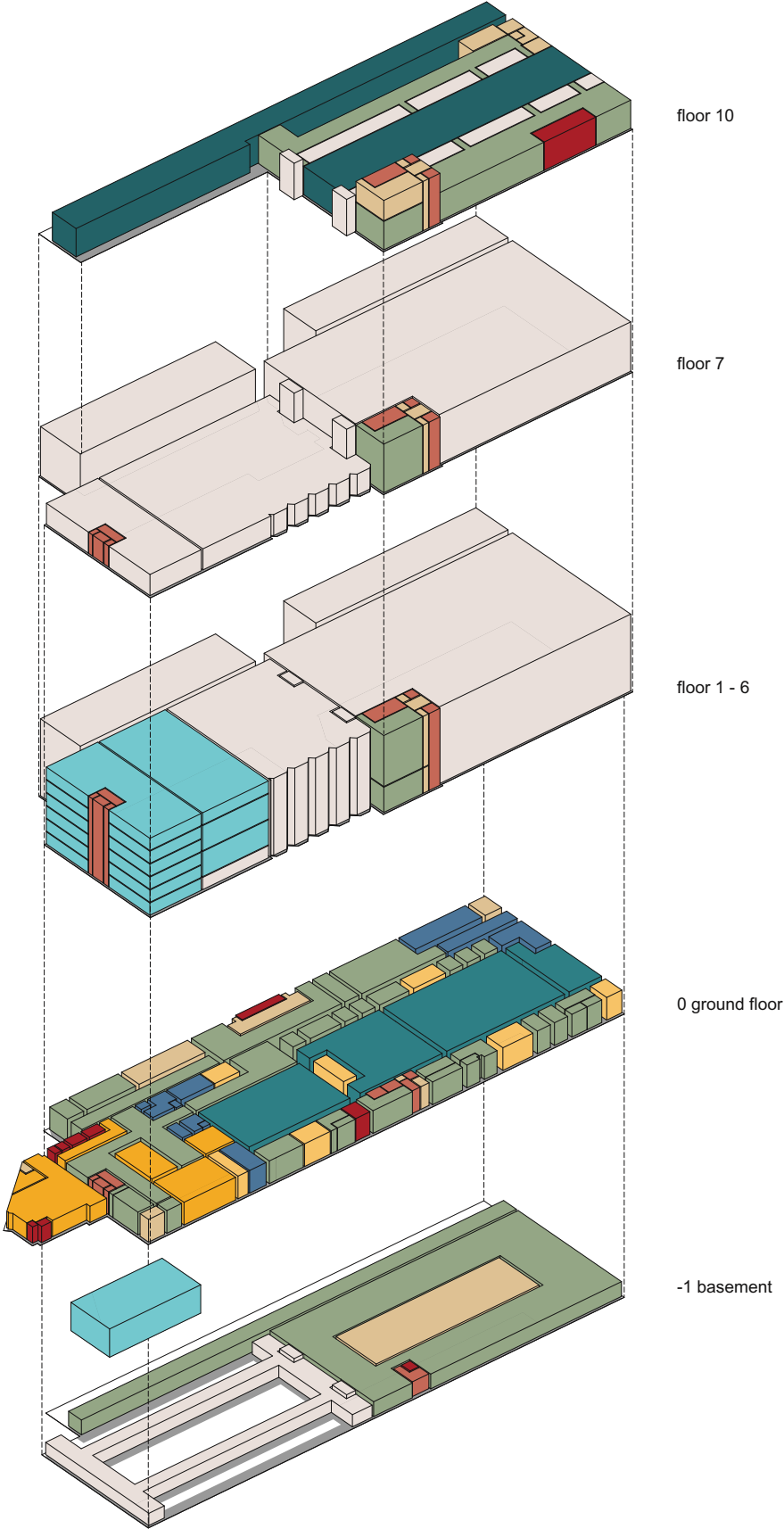


Historical Situation





Contemporary Situation





Is the Maassilo ***cultural heritage***?





# Remains of Spirit





# Historical Remnants

*Historical Value*

*Identity*

*Unique Spirit*







# Vulnerability or Fragility



# Palace of Concrete

*Rarity Value*

*Scars*

*Display of Structural Power*

*Monumental*







1964

(Image: <https://nl.pinterest.com/pin/324681454381535203/>)





2015

(Image: <https://siebeswart.photoshelter.com/image/100094yKMLSAjghE>)





Facade Tarwewijk



Facade Maashaven



# Cultural Values

Use & Rarity Value:

*Unique position adjacent to the Maashaven*

Historical Value:

*Historic remnants of harbor/ industrial activities*

Use & Rarity Value:

*The overdimensioned structure*

Art Value:

*Iconic octagonal shaped facades*

Rarity Value:

*The vastness and monumentality of the complex*



Source; <https://onthegrid.city/rotterdam/zuid/maassilo>



# Cultural Values

Use & Rarity Value:

*Unique position adjacent to the Maashaven*

Historical Value:

*Historic remnants of harbor/ industrial activities*

Use & Rarity Value:

*The overdimensioned structure*

Art Value:

*Iconic octagonal shaped facades*

Rarity Value:

*The vastness and monumentality of the complex*



Source; <https://onthegrid.city/rotterdam/zuid/maassilo>



# The Conclusions

*The conclusions:*

*Severed relation with the adjacent harbor*

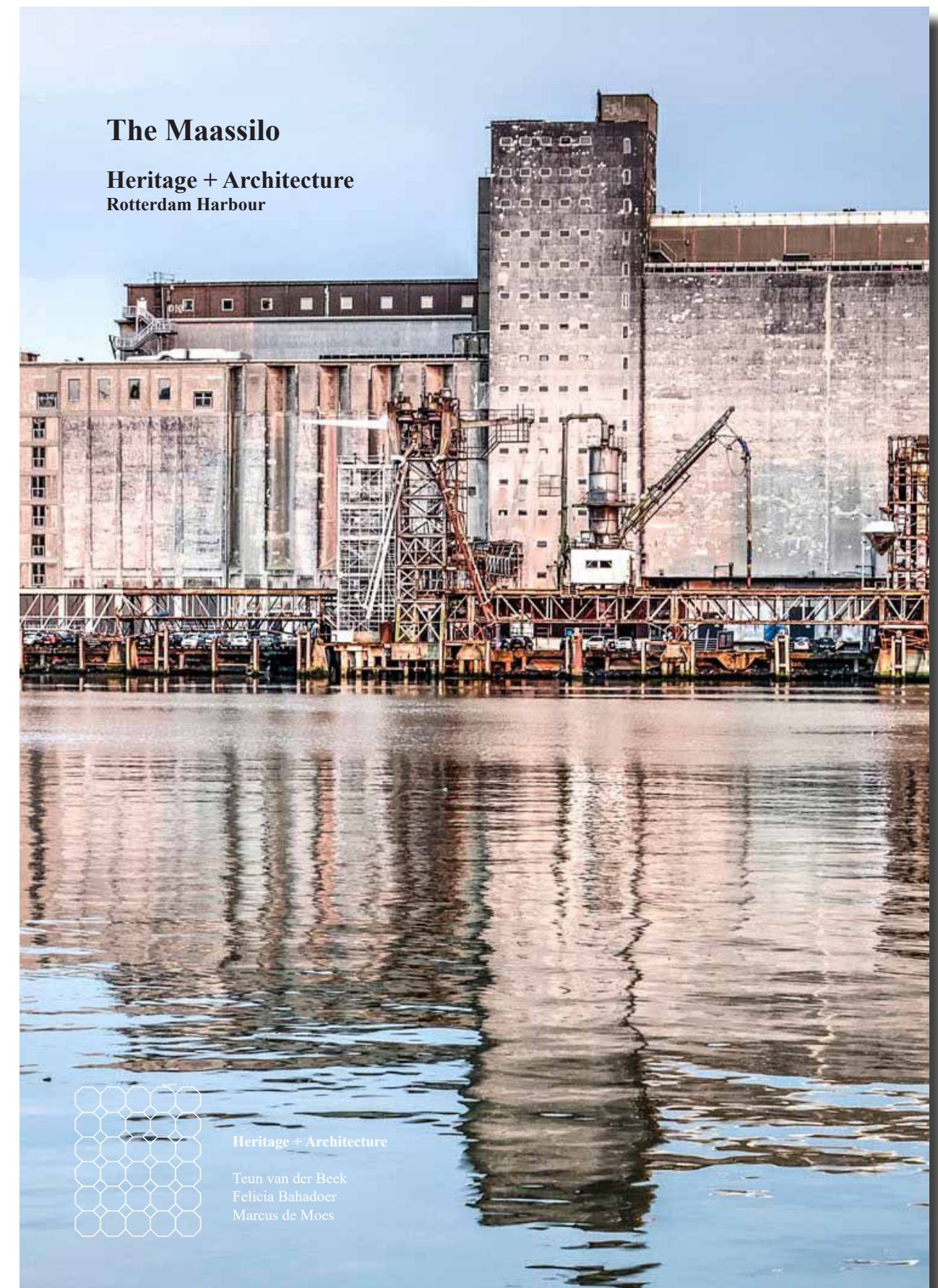
*Proportioned for industry*

*Limited accessibility*

*Extremely dense volume*

*No clear routing*

*Construction = Skin = Material*





"How can you re-design the Maassilo into a public space that incorporates both the ***human scale*** as the ***urban scale***?"



## The aim / goal

*Restoring the relation with the adjacent harbor*

*Design according to the human scale*

*Make the building more accessible*

*Open up the dense volume*

*Create a navigable building*



Source: Transformers (2007). Cultuurhistorische Verkenning Graansilo Maashaven.



# The Program



## Why a cultural function?

*Broaden and enlarge public reach*

*Interconnectivity*

*Development of Rotterdam South*





# Why a museum?

*Conclusions and limitations from research*

*Inverted project*

*Natural versus Artificial lighting*





# What kind of museum?

*Improvement existing museums*

*Affinity with Rotterdam*

*Subsidiary support*

*Restoring relation with the harbor*

Maritiem Museum



Source; [https://qwa.nl/projecten/musea/maritiem\\_museum.html](https://qwa.nl/projecten/musea/maritiem_museum.html)

Total surface: **5.130 m2**  
Exhibition Space: 1.300 m2  
Depot Space: 1.300 m2

Rotterdam Museum



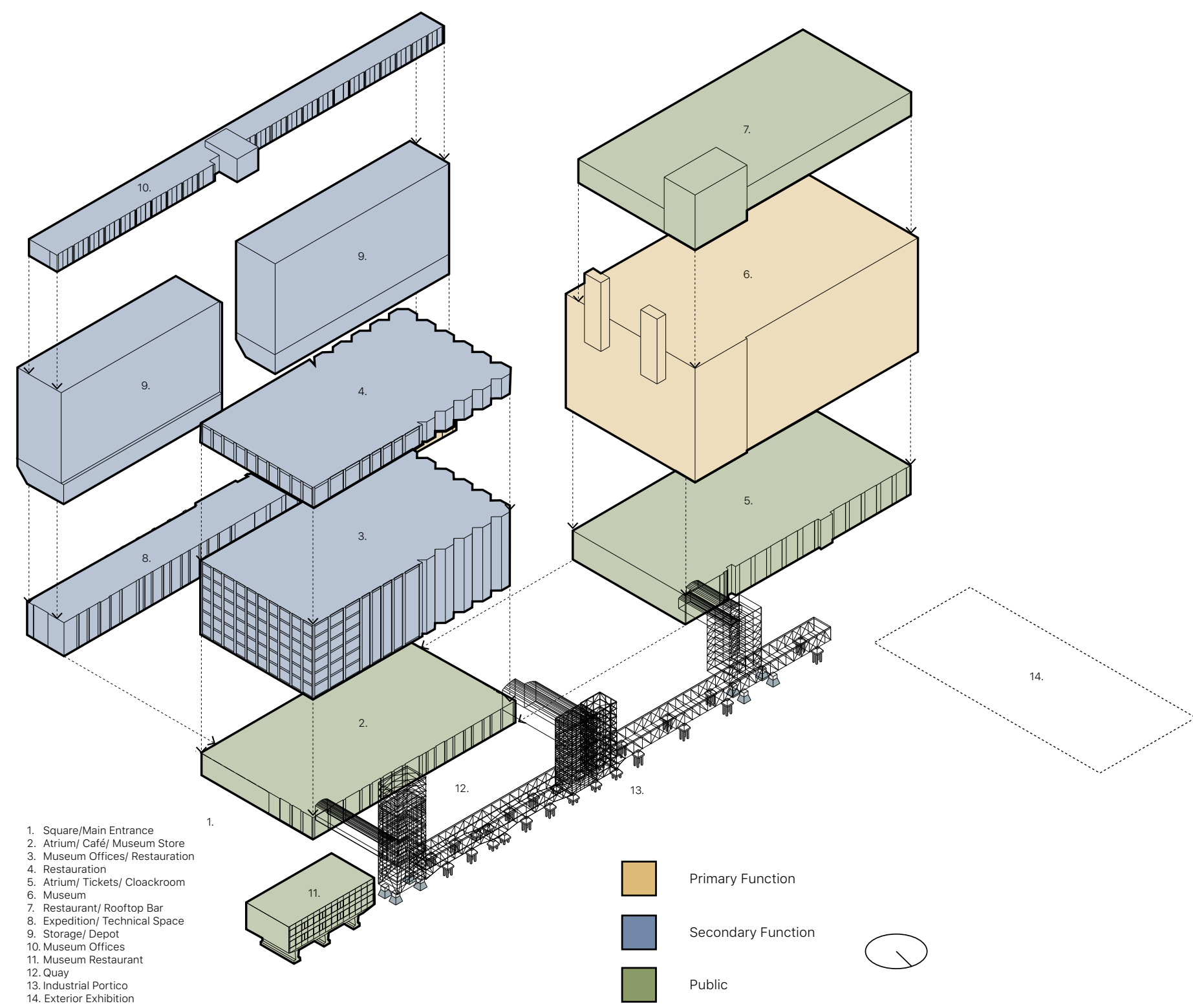
Source; <https://www.ad.nl/rotterdam/doek-valt-voor-museum-rotterdam-maar-deze-instellingen-krijgen-wel-geld~a-f7adbb8/?referrer=https%3A%2F%2Fwww.google.com%2F>

Total Surface: **1.615 m2**  
Exhibition Space: 1.100 m2



# The Program

Cultural Hub:  
Primary functions;  
Museum  
Secondary functions





# **The Narrative**

(Result of Research and Cultural Value Assessment)



## Verisimilitude

As though I awakened on a summer gale  
Filled with airy voices whispering  
voraciously  
Blustering swiftly underneath the  
dangling sail  
Thy shallow waves leaving the hull in  
agony

Morning was humming  
And we sailed against the current  
effortlessly  
As if it drew us in, like the soaring  
sounds of singing sirens  
Once more into the odorous fog of  
morning labors  
As the river paved our serpent path

And from the meadows rose a beast  
The salt glaring on its freckled skin  
Which curtain out the day with scars  
and wounds  
Of days forgotten past  
Under no veneer who dare to aspire  
Bare and naked on the quay  
And weathered with an houndstooth  
cloth,  
And a metal claw leaps in the edges of  
the steeply bank with a shivering sound  
While gulls are circling, chanting  
Orphean-like above its crown  
Lauding choruses over this harvesting  
town

I never had behold such magnificent  
sight  
That usurped the morning light and  
swallowed it whole  
While blooming fairly right  
The dusty light burning bright  
Pounding endlessly on its Nemean skin

And in its shade,  
Like ants, or bees or wasps  
Soothing her eternal sleep  
And breathing her breath and glancing  
her views  
The grain-sized dockworkers were  
feeding their queen  
While her dormant visage smiled never  
to be seen

She roars sick with famine  
That echoes through her lungs  
In the depths of her core  
Dance those small kernels for love and  
for song

And as she grew, far beyond the reach of  
the sun  
With tides of grain and the ashes of the  
earth  
That gave her heart to all who she birth  
She bore those children that outgrew  
her  
Feeding under the breath of the river  
always to be near

And the day will come that the son of  
my son  
Sees her rise that will obscure the light  
of the sun  
Her mysteries forgone, as well as her  
lust  
But there will be a time when rise,  
Oh rise she must.

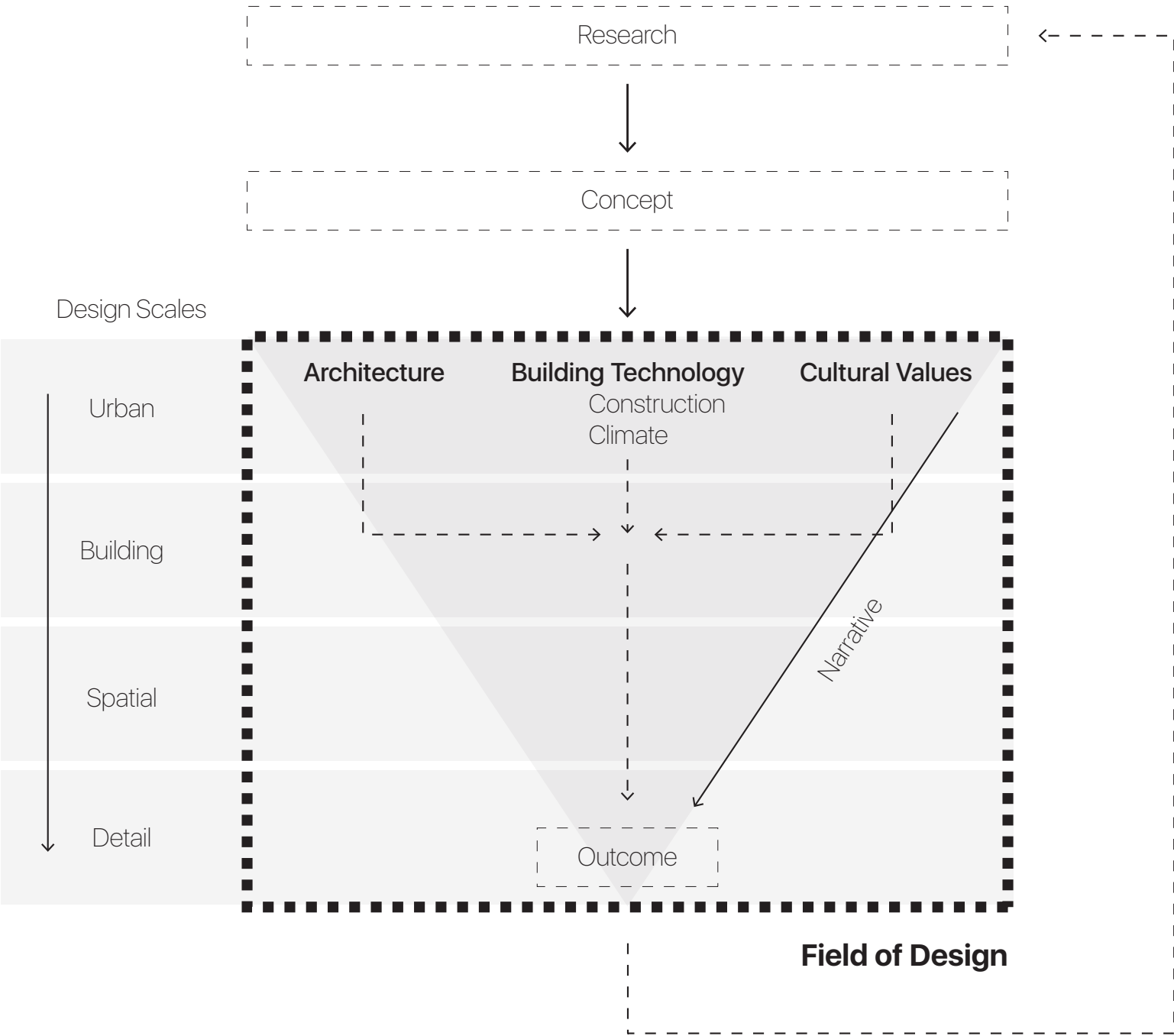
(Marcus de Moes, 2020)





# Design Framework

*Complexity of the Building*  
*Guidance Tool for Designing*





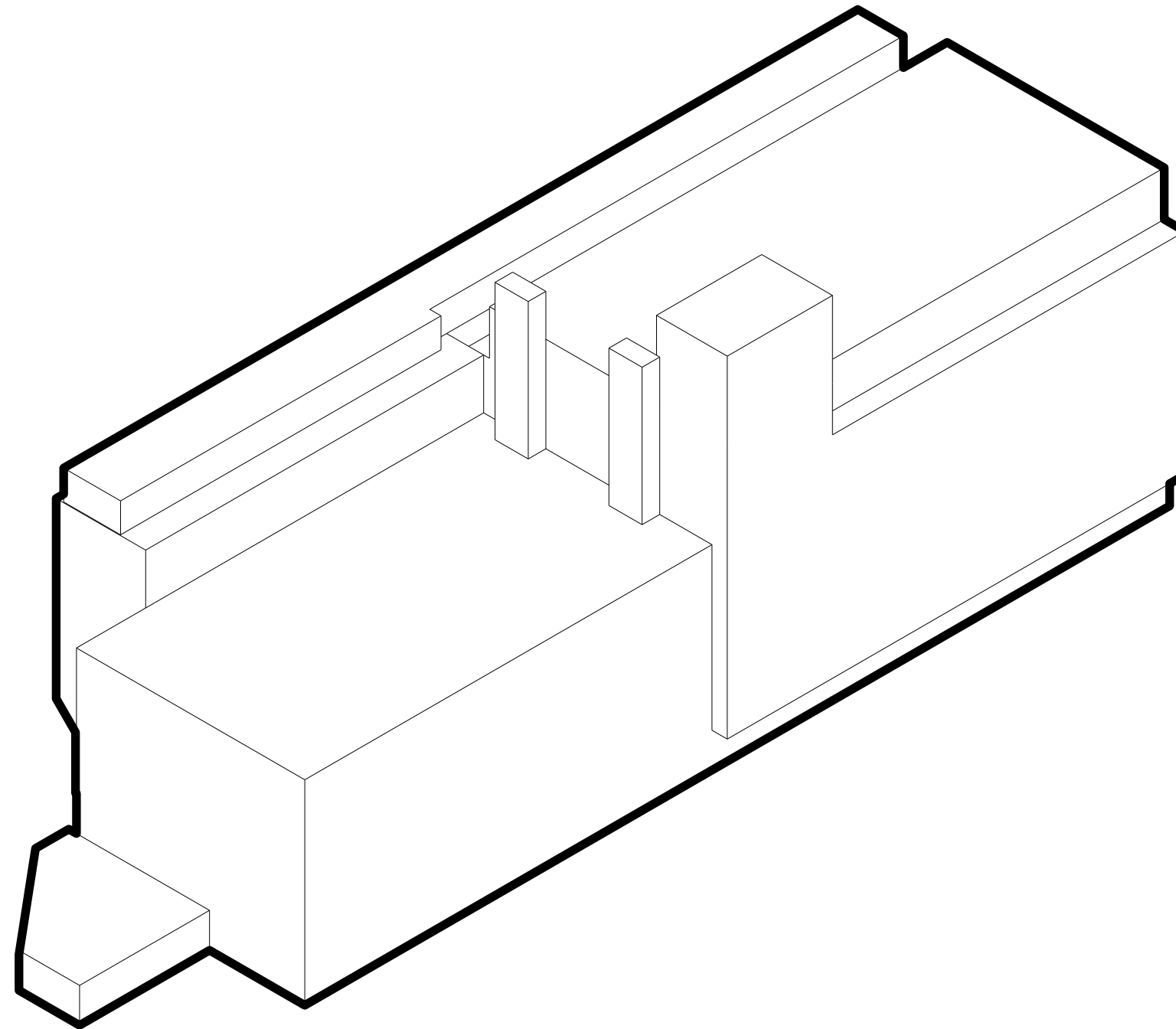
# Conceptual Design



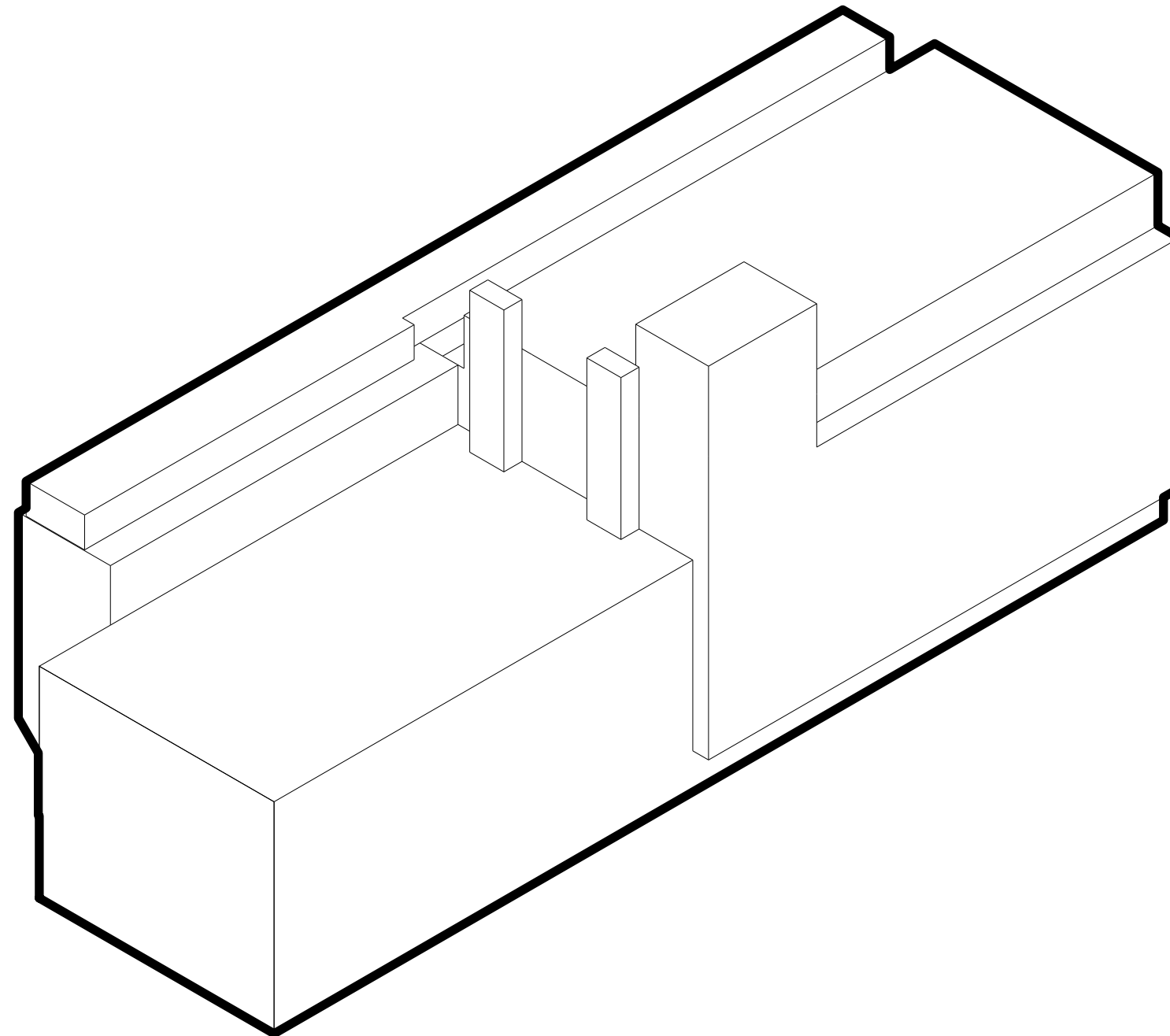
“Sectional drawings are the only way to comprehend the building. Hence the building only exists in its section.”

Intervention = Section

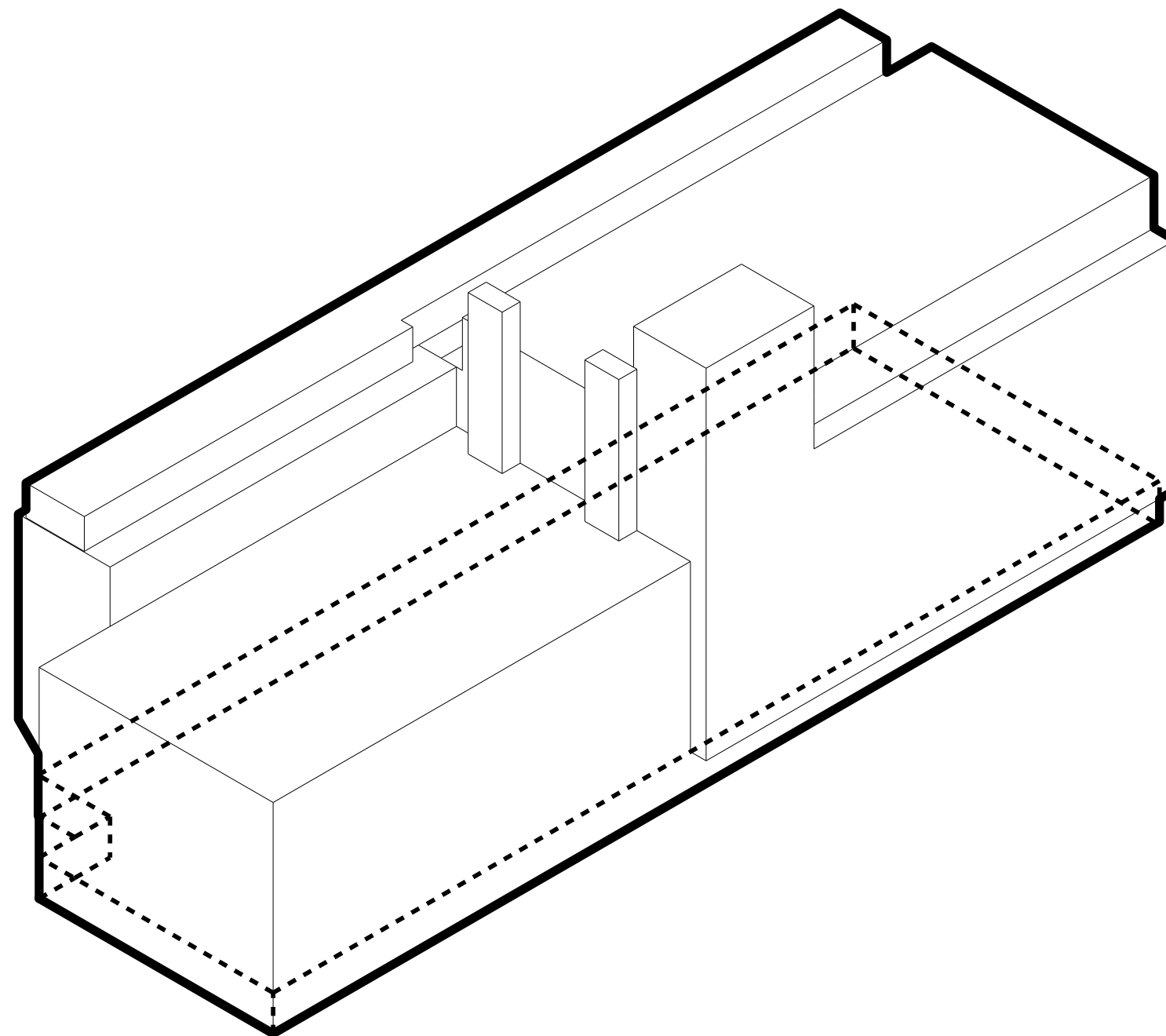




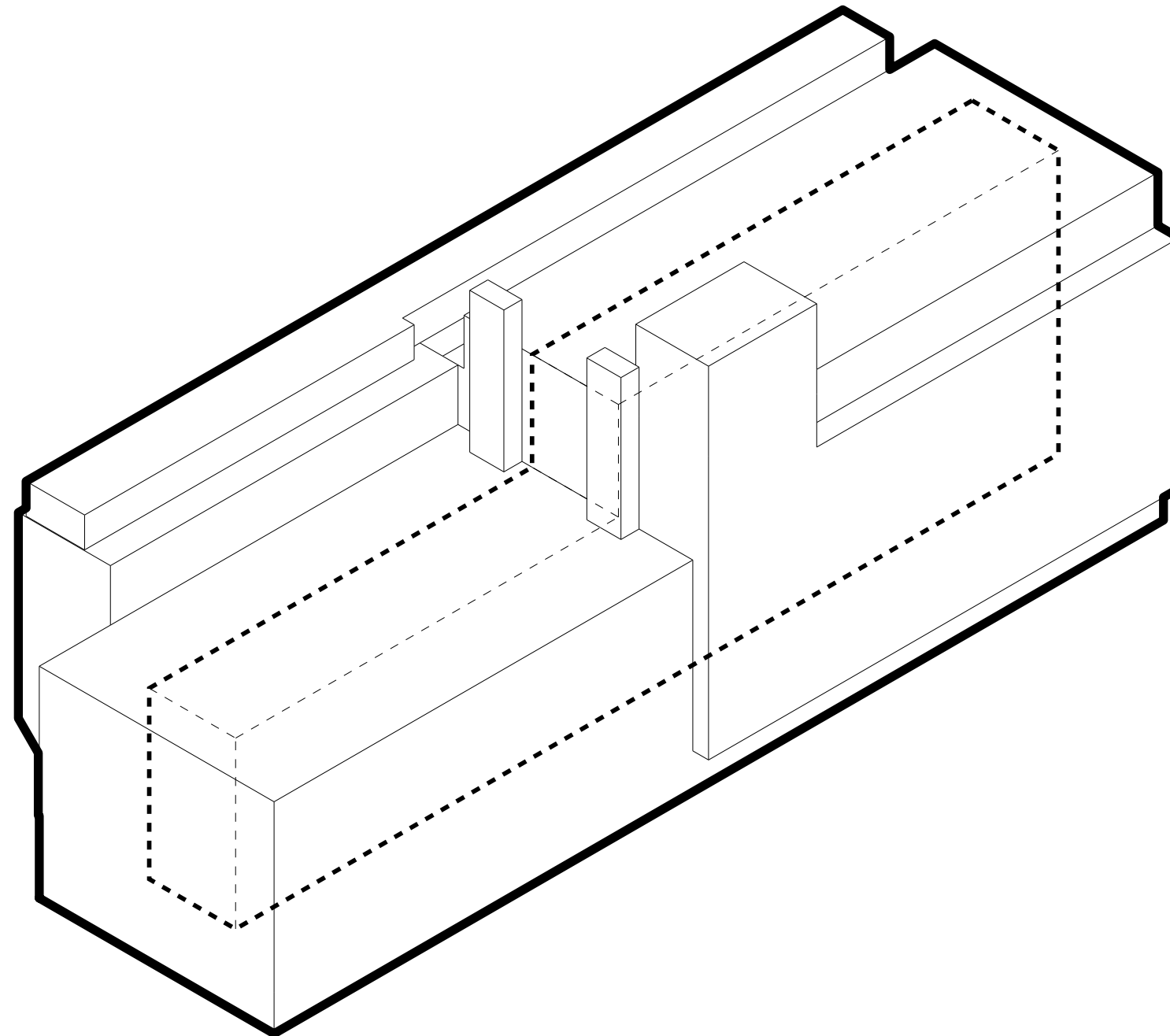




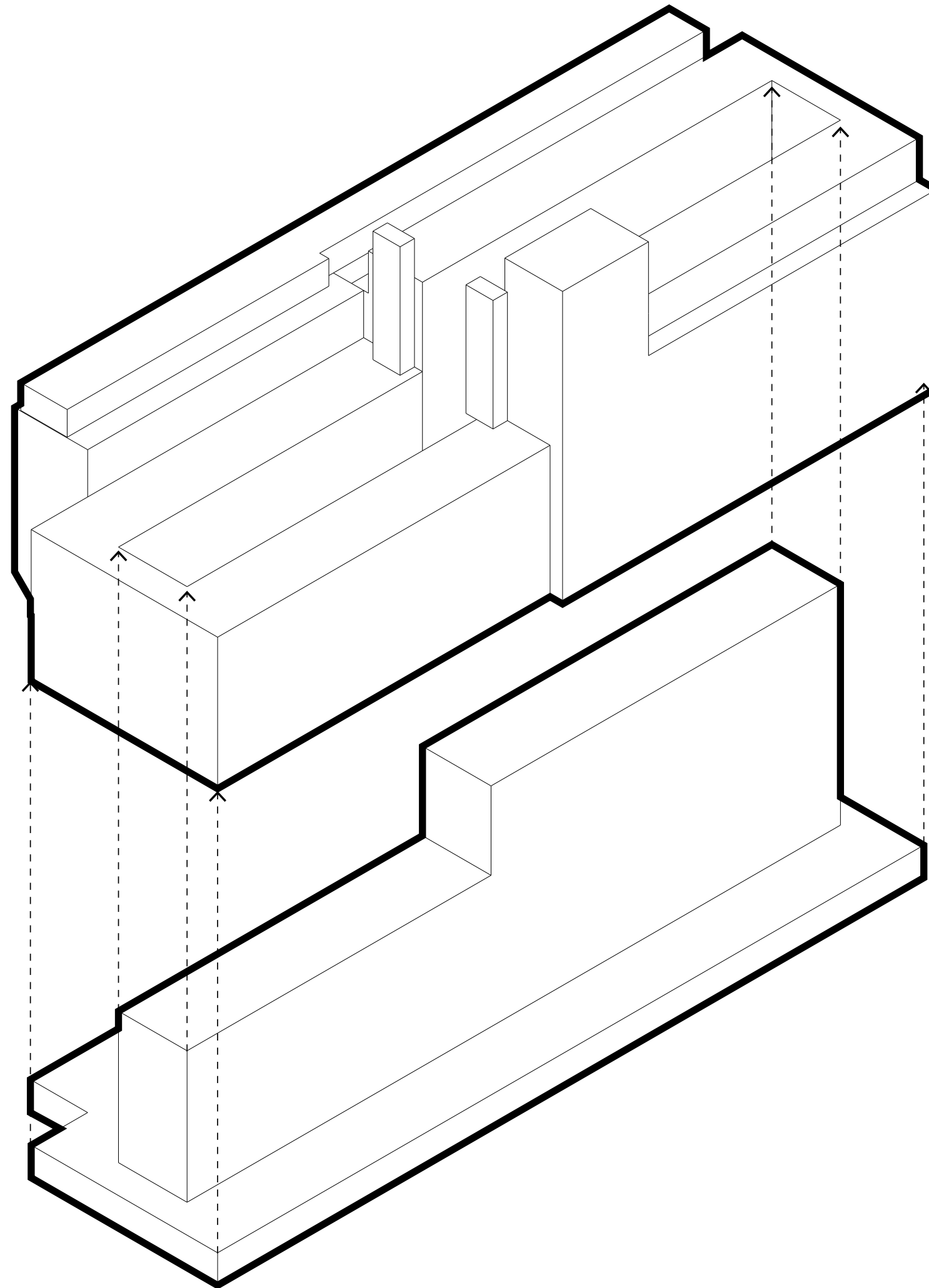




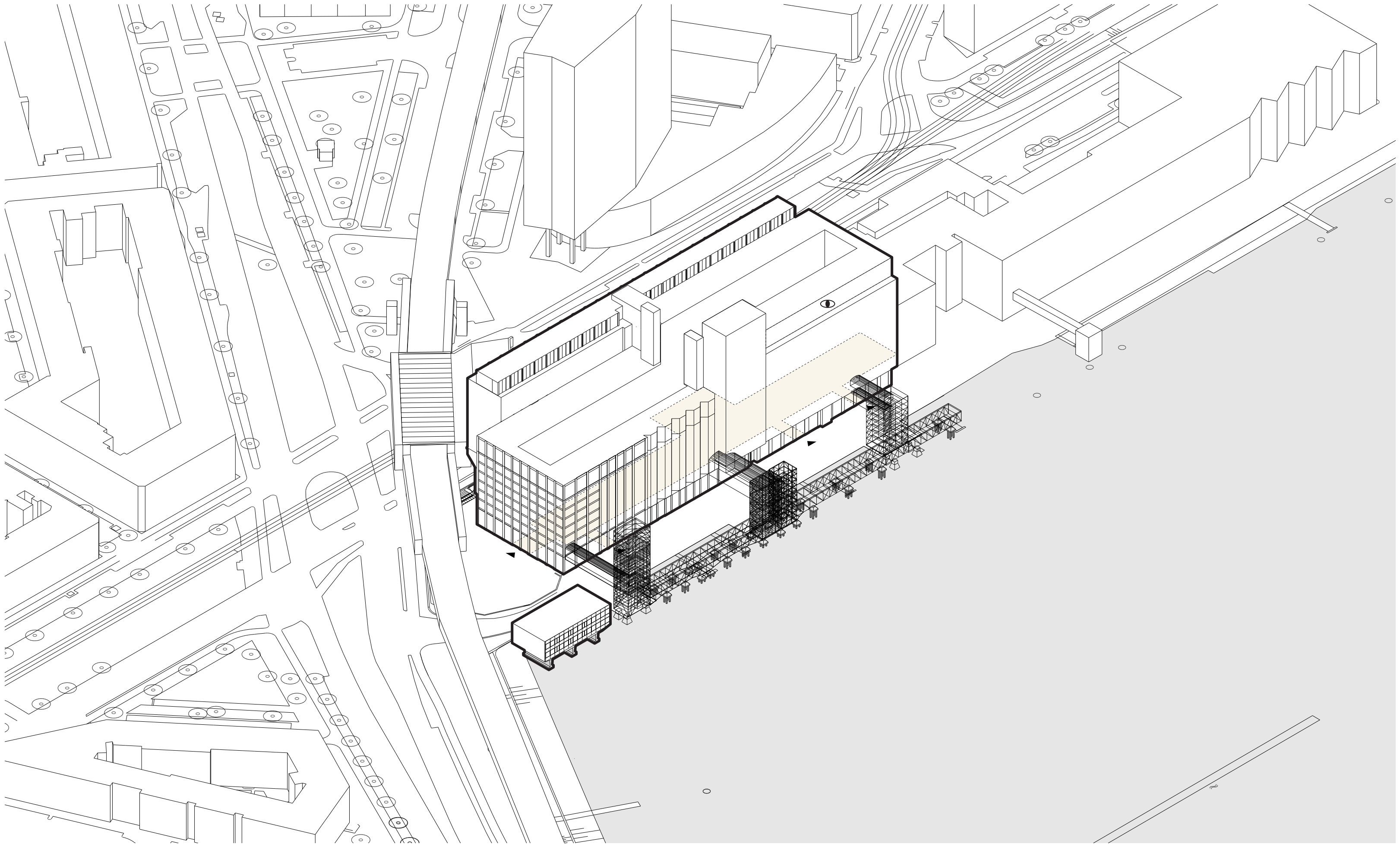




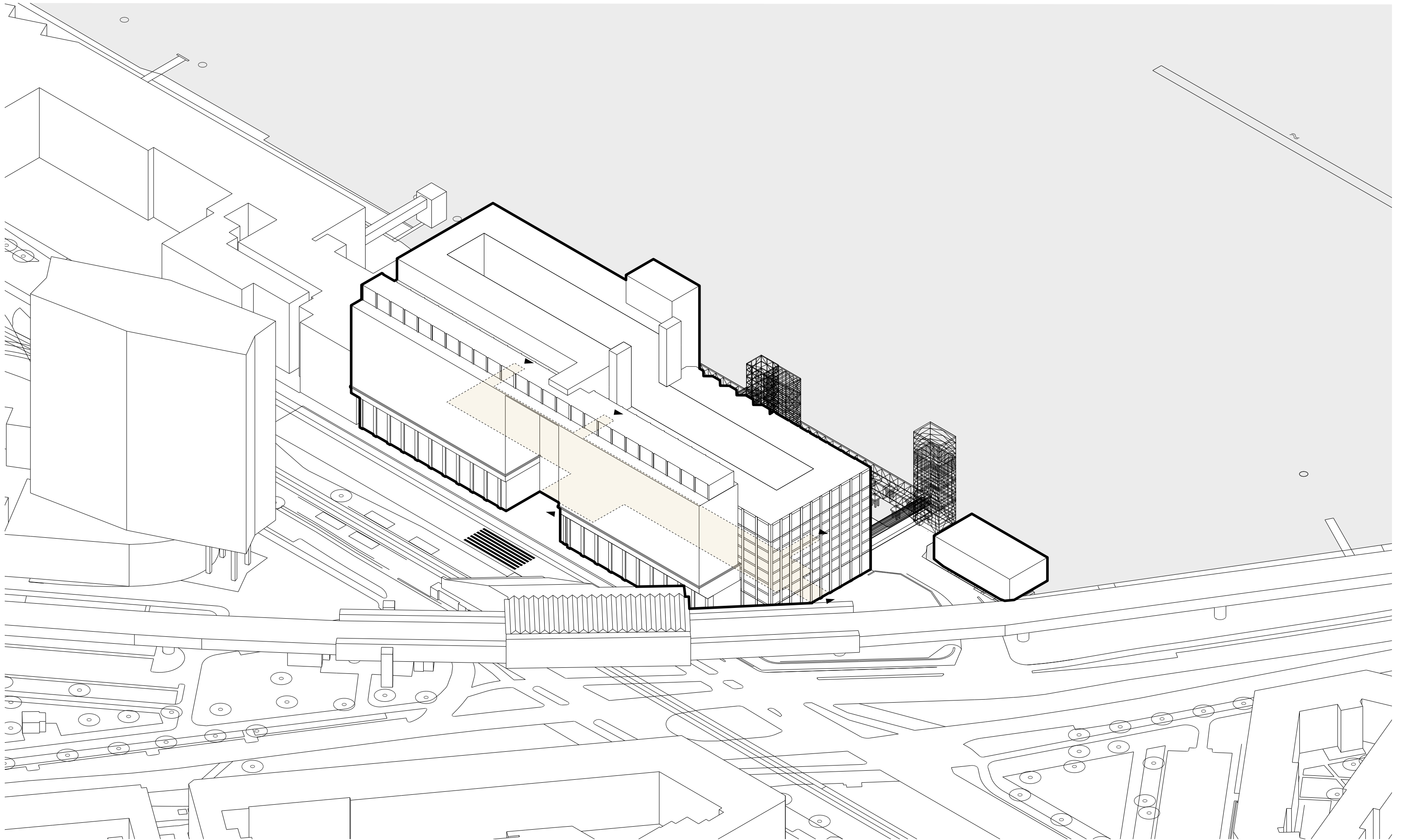














# Tidal Park

*Docking places for inland shipping*

*Buffer zone*

*Softening the urban tissue*



(Image: <https://archief12.archiefweb.eu/archives/archiefweb/20200816092233/http://www.rotterdam.nl/wonen-leven/getijdenpark/Getijdenpark.pdf>).



# Heritage Position

(Derived from Cultural Value Assessment)

*"By preserving the exterior of the building, the project becomes inverted."*

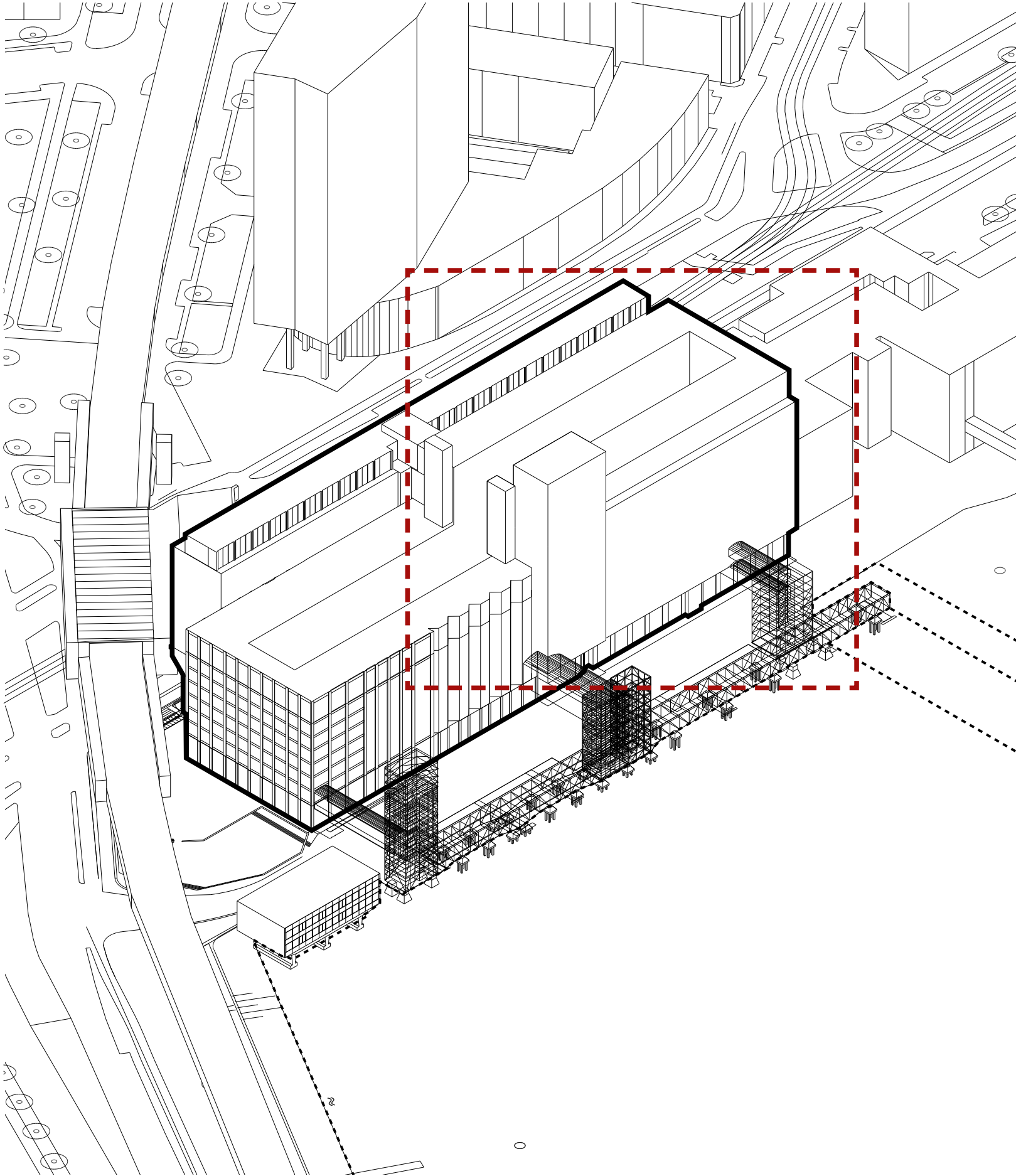
(Restoration + Reconstruction)



# **Design (Approach)**

# Narrowed Scope

*Size of the Building*





# What is the 'Void'?

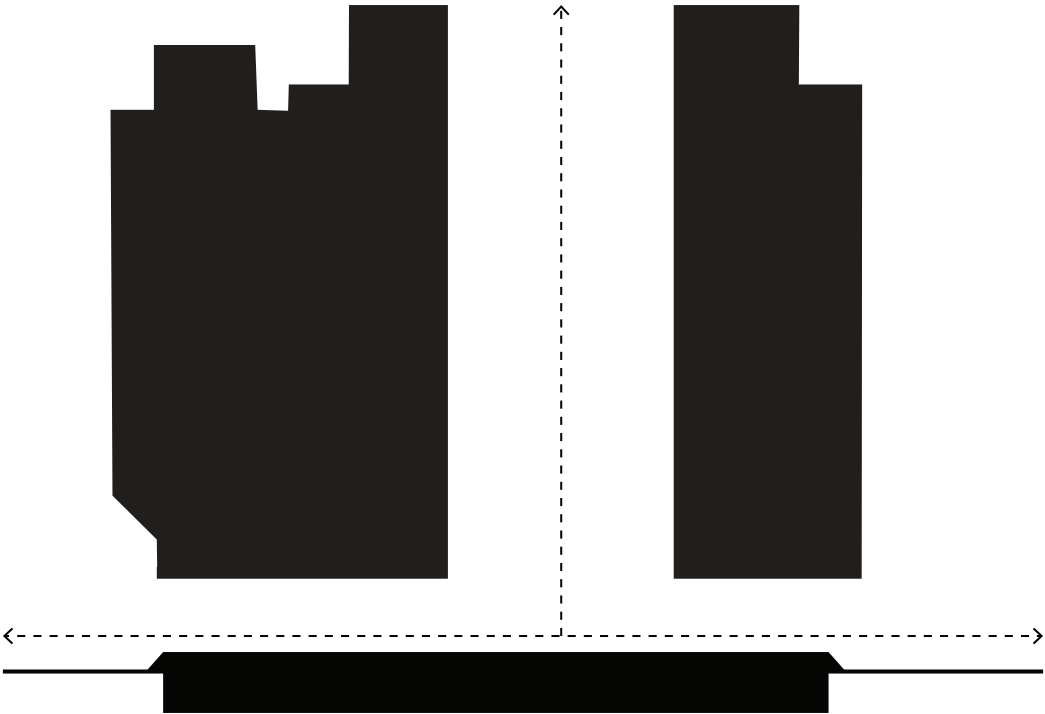
*Stratification of history*

*Space of contemplation*

*Daylight*

*Monumental*

*Navigation*



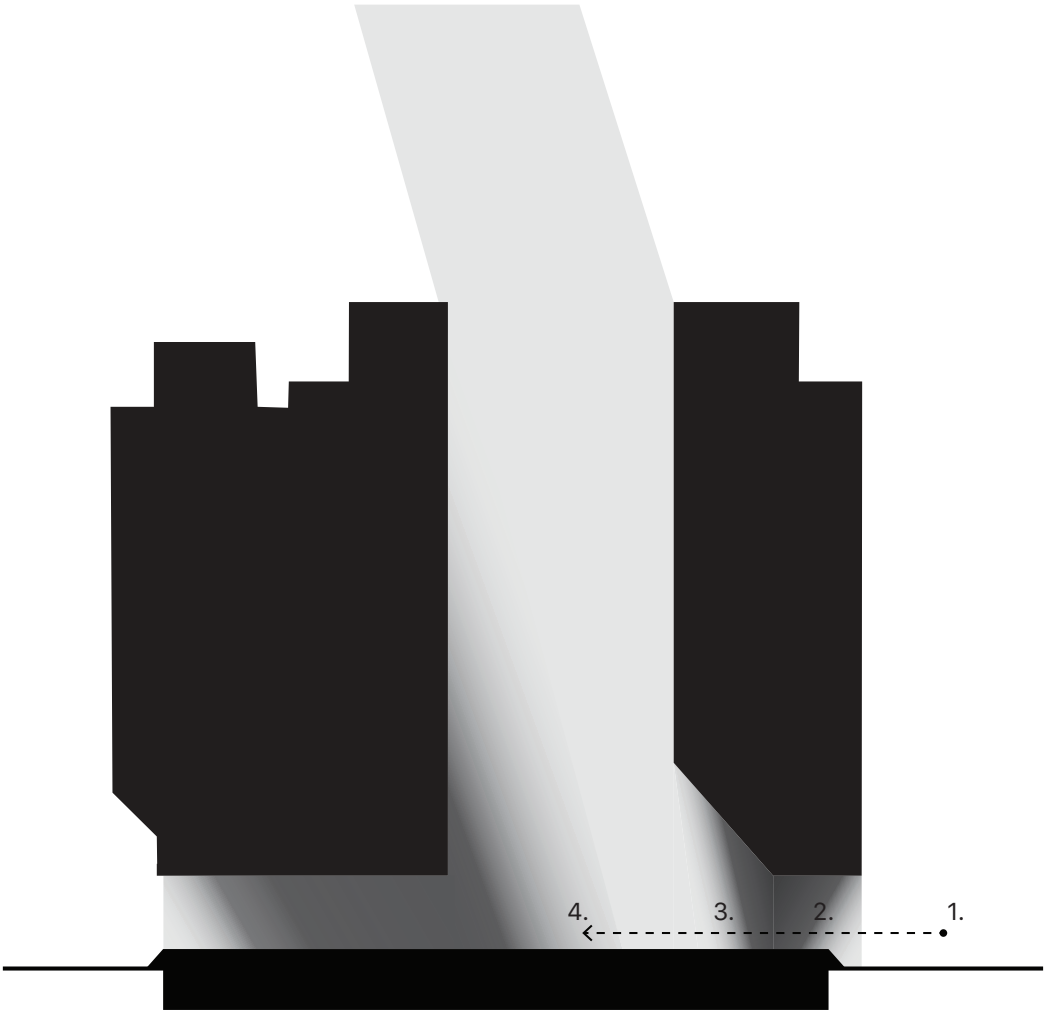
# Spatial Sequence

*Accessibility*

*Navigation*

*Daylight*

*Monumentality*



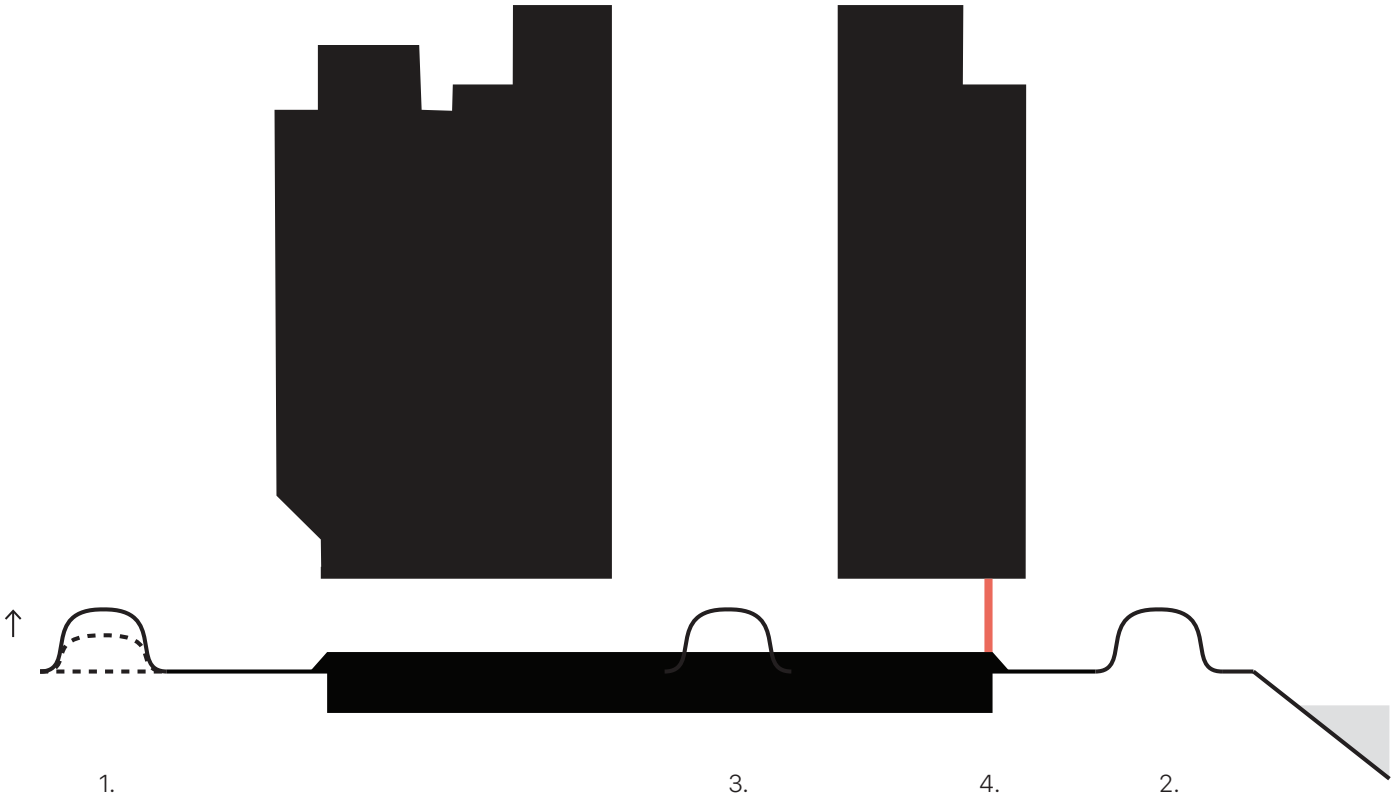


# Primary Flood Defense

*Outside to Inside*

*Relation with the water(front)*

*Relation with the neighborhood*

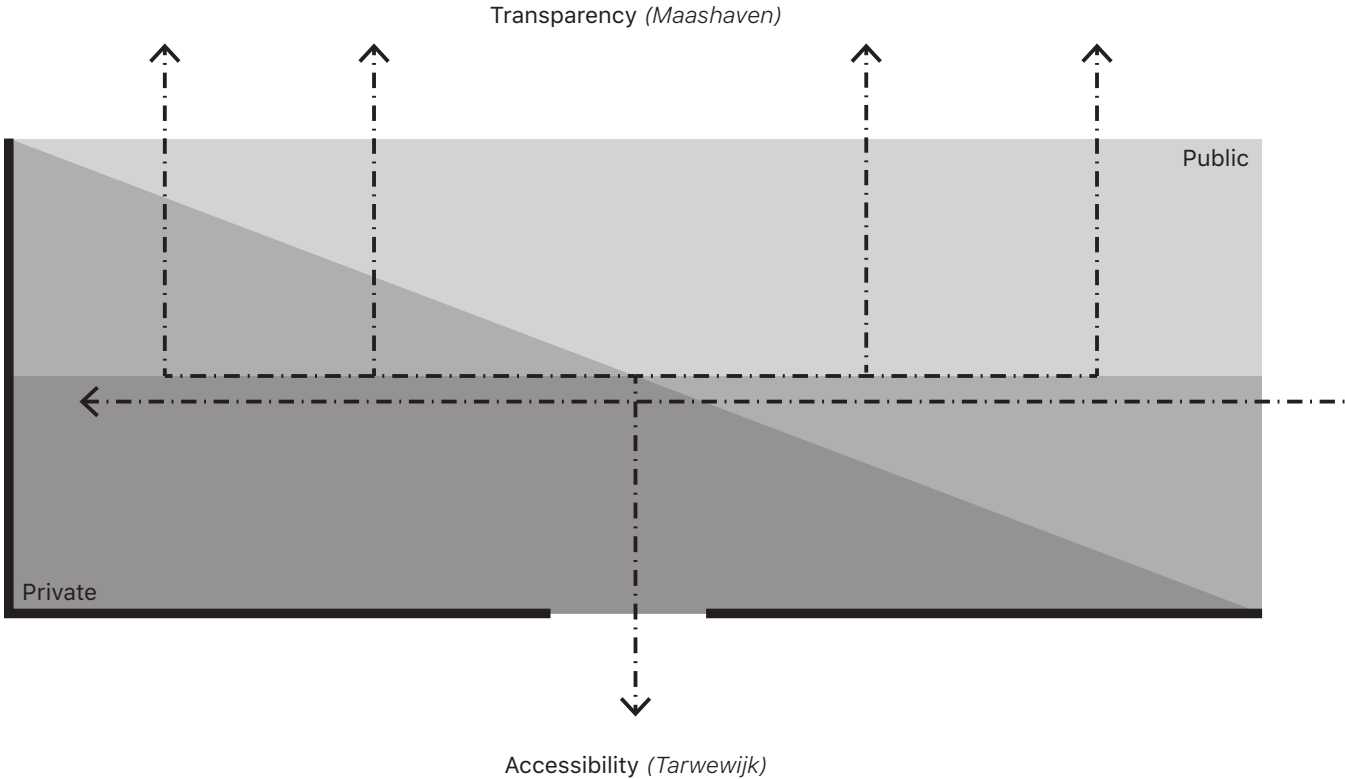


# Relation + Organization

Public - Private

Transparency

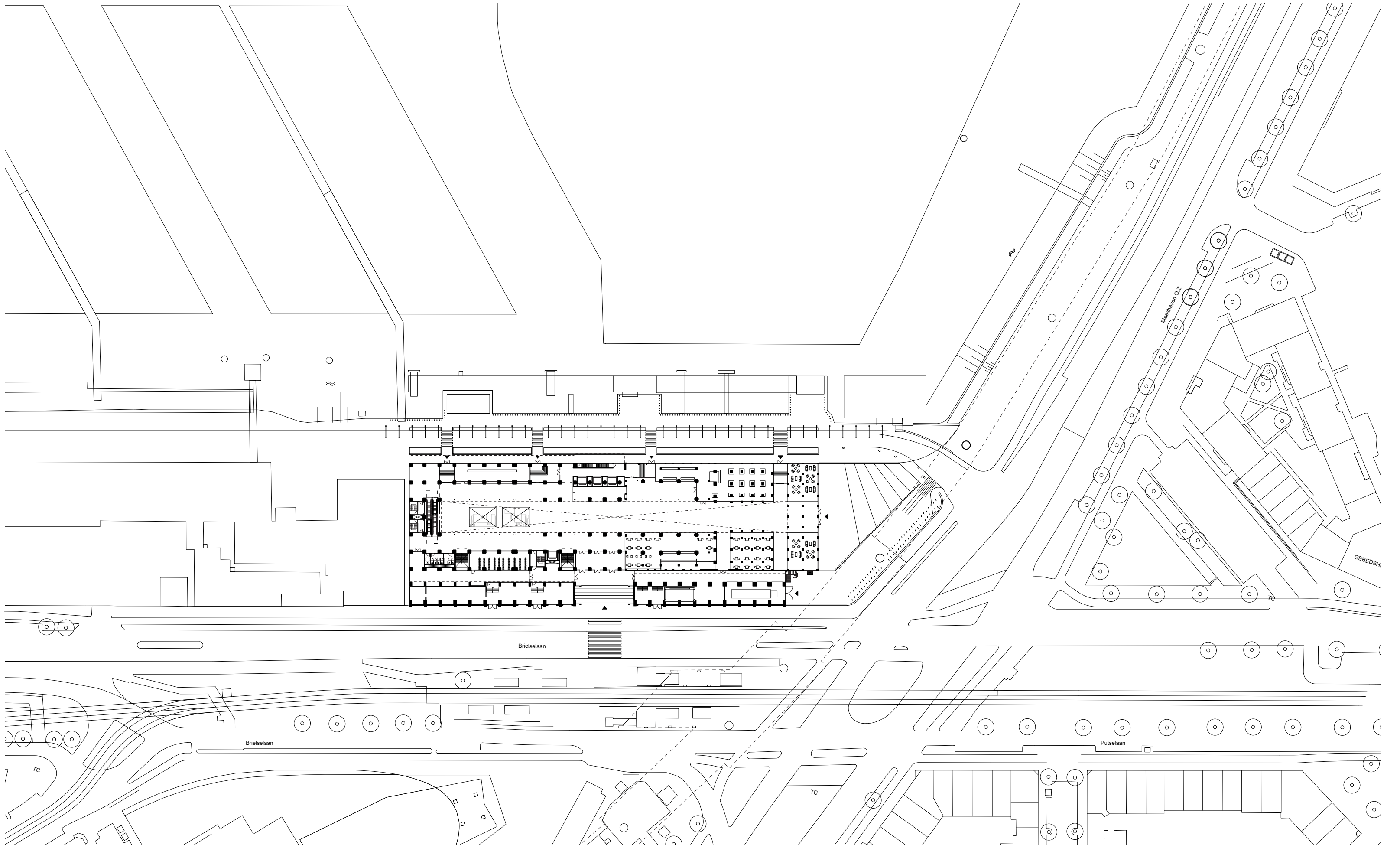
Accessibility



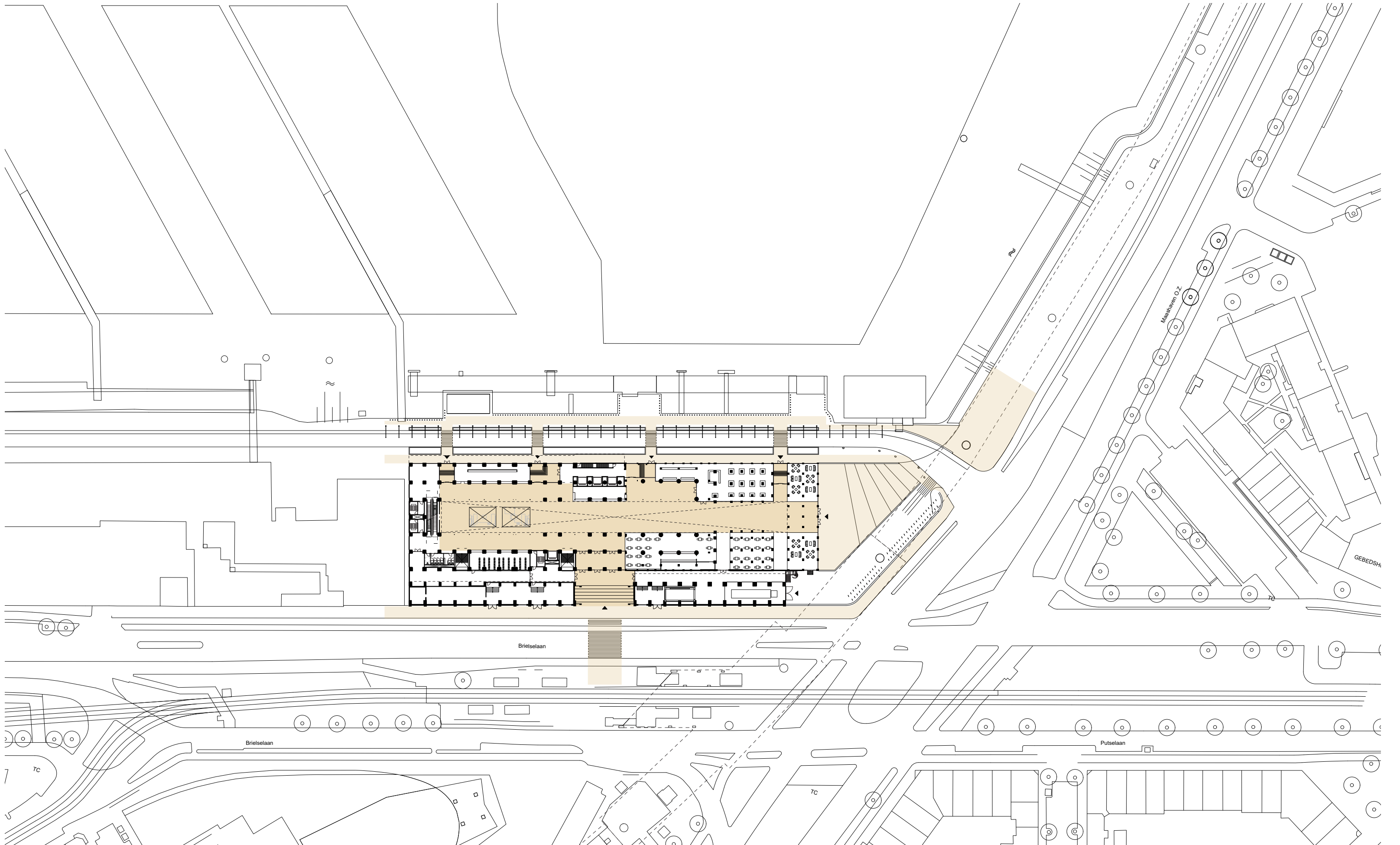
Schematic Plan View



## **(Exterior/Contextual) Design**











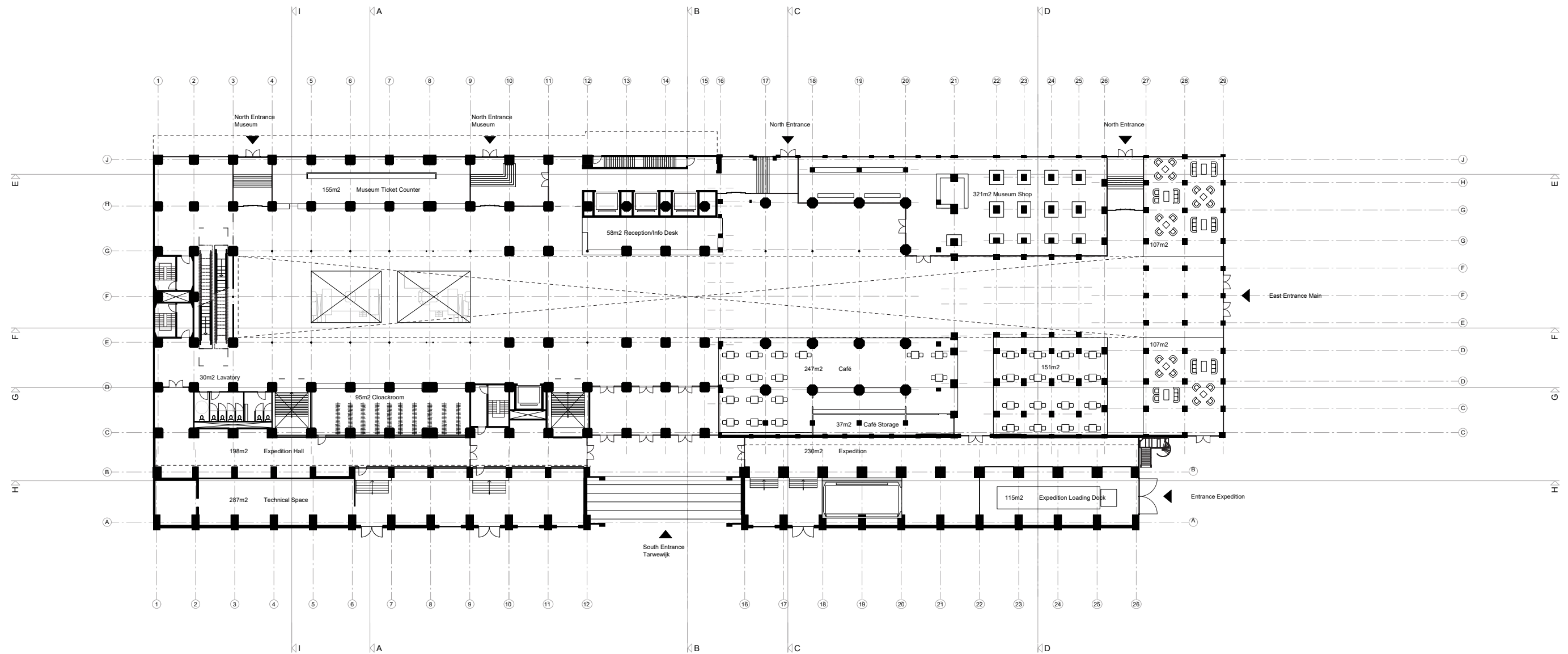






# **(Interior) Design**





Plan Ground Floor (0)  
scale 1:500











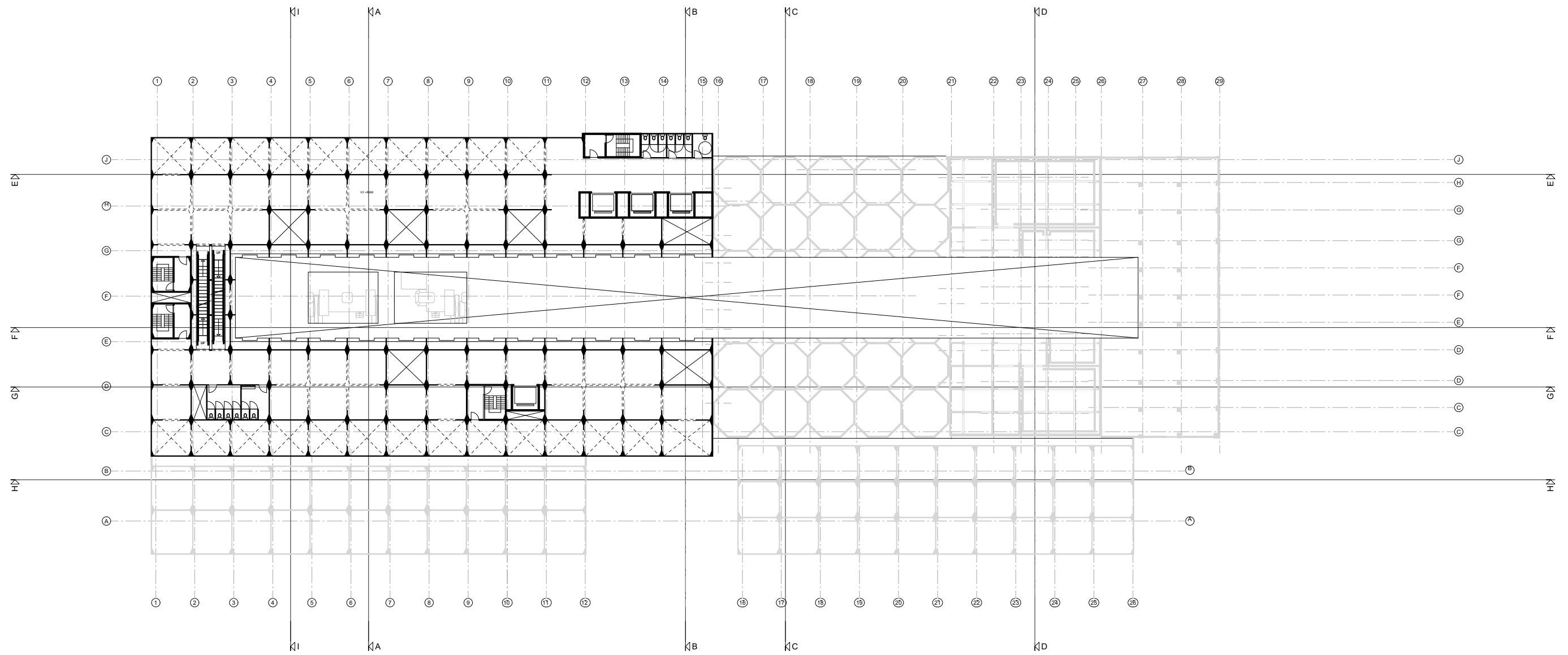




Rm

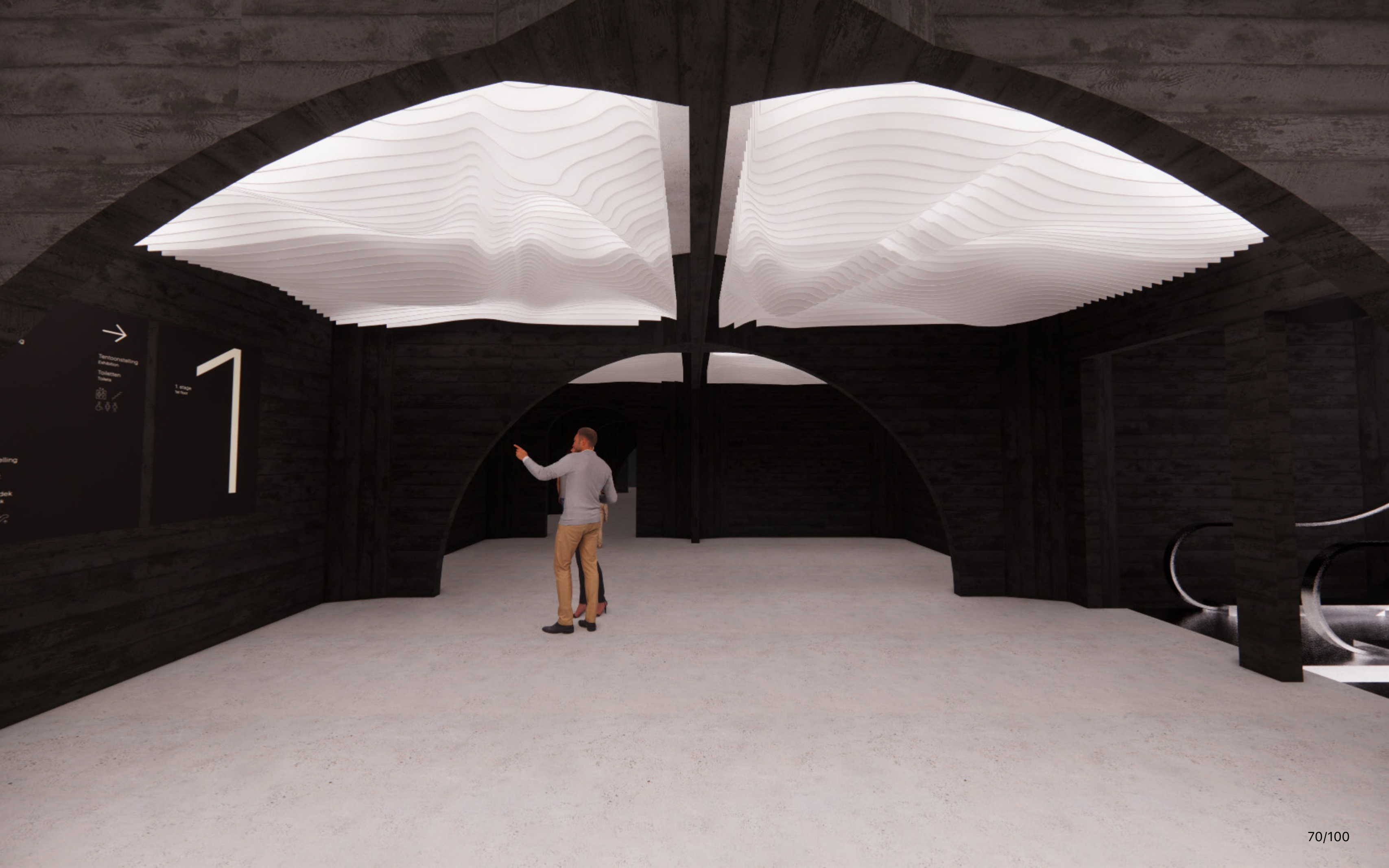
Rotterdam  
Maritime  
Museum



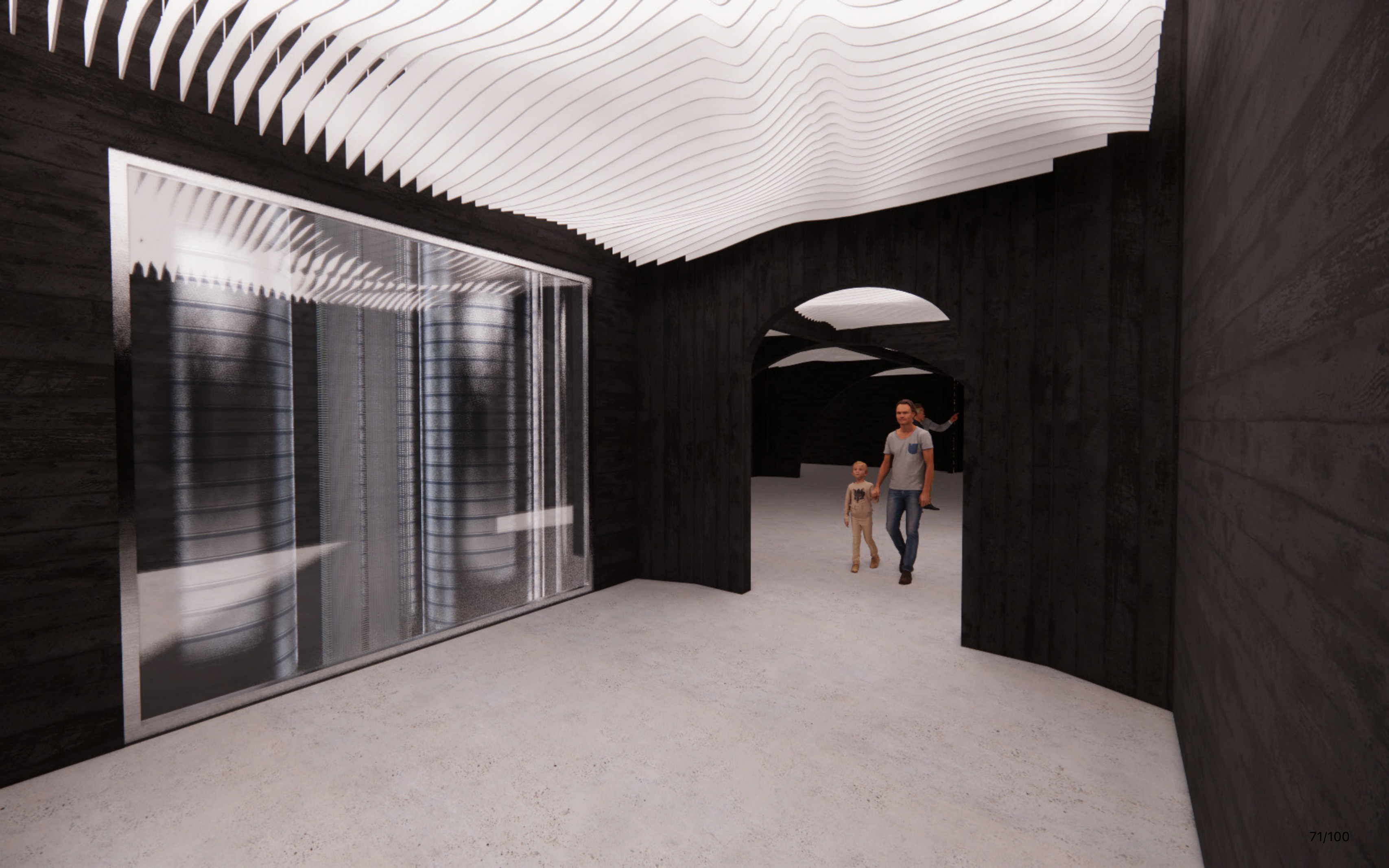


Plan First Floor (+1)  
scale 1:500

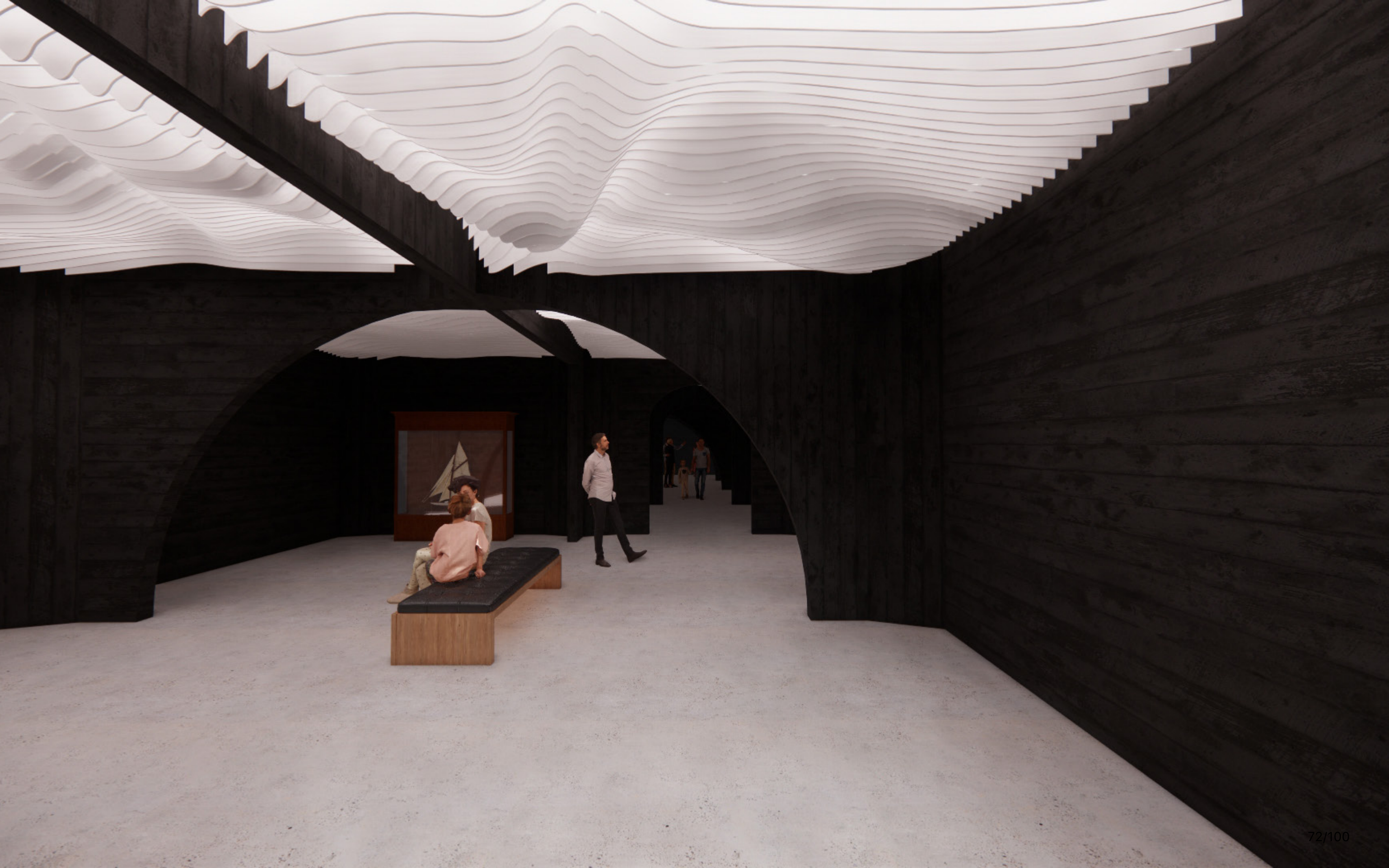


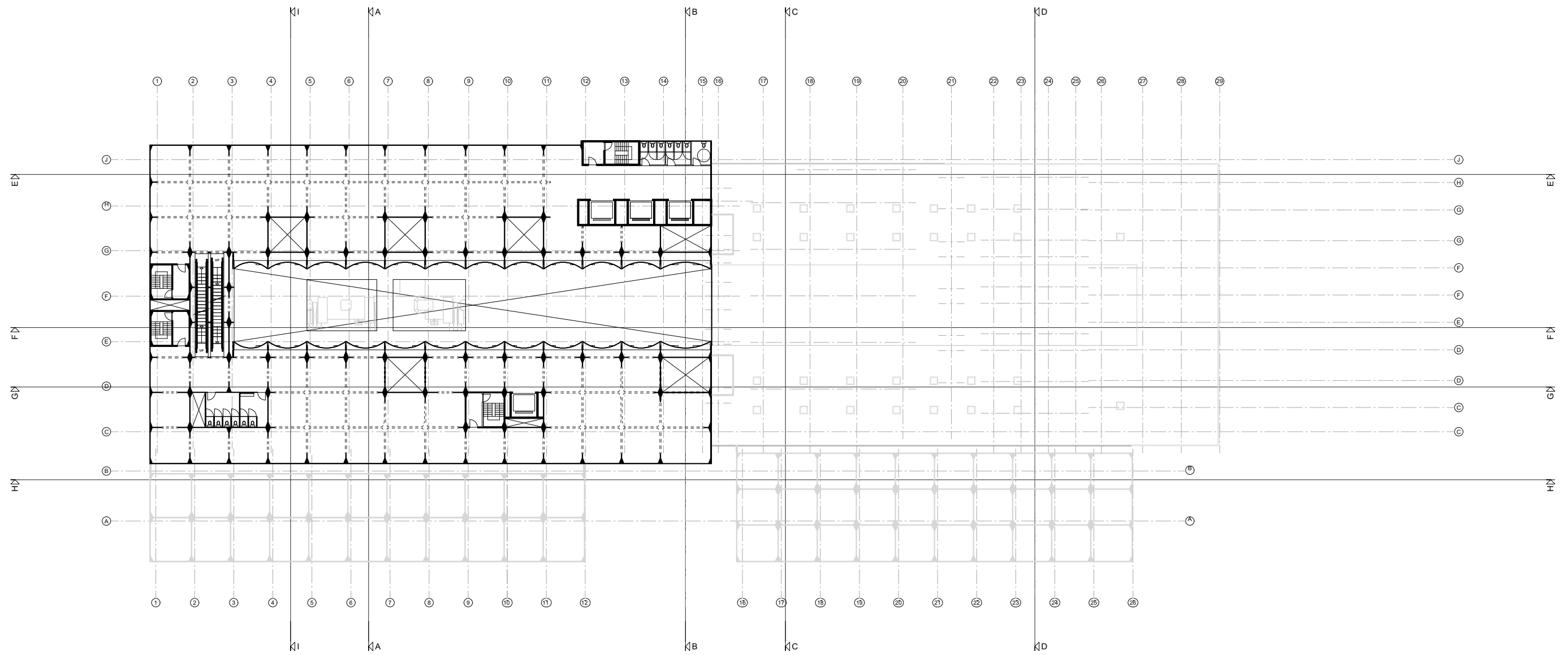






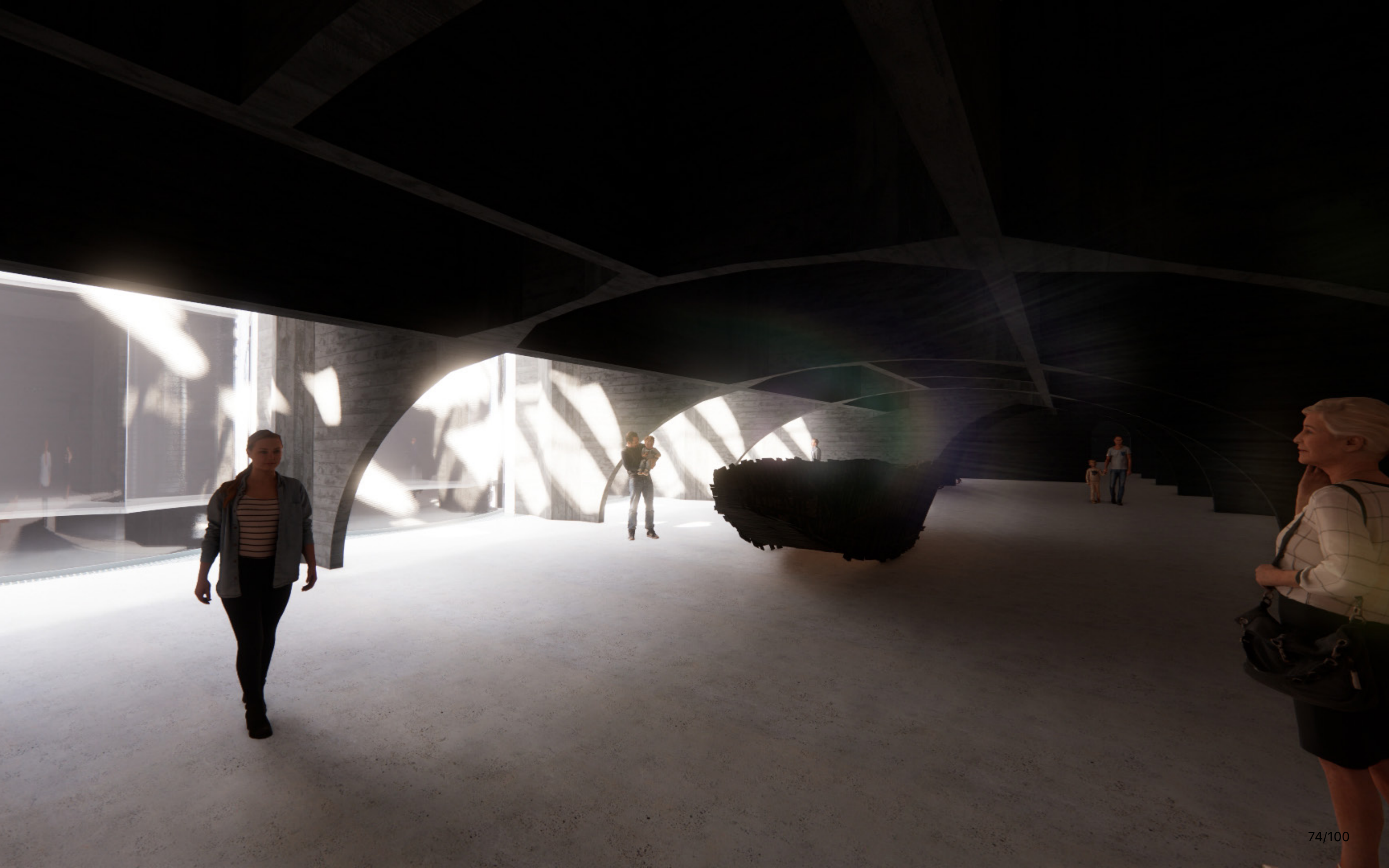






Plan Fourth Floor (+4)  
scale 1:500



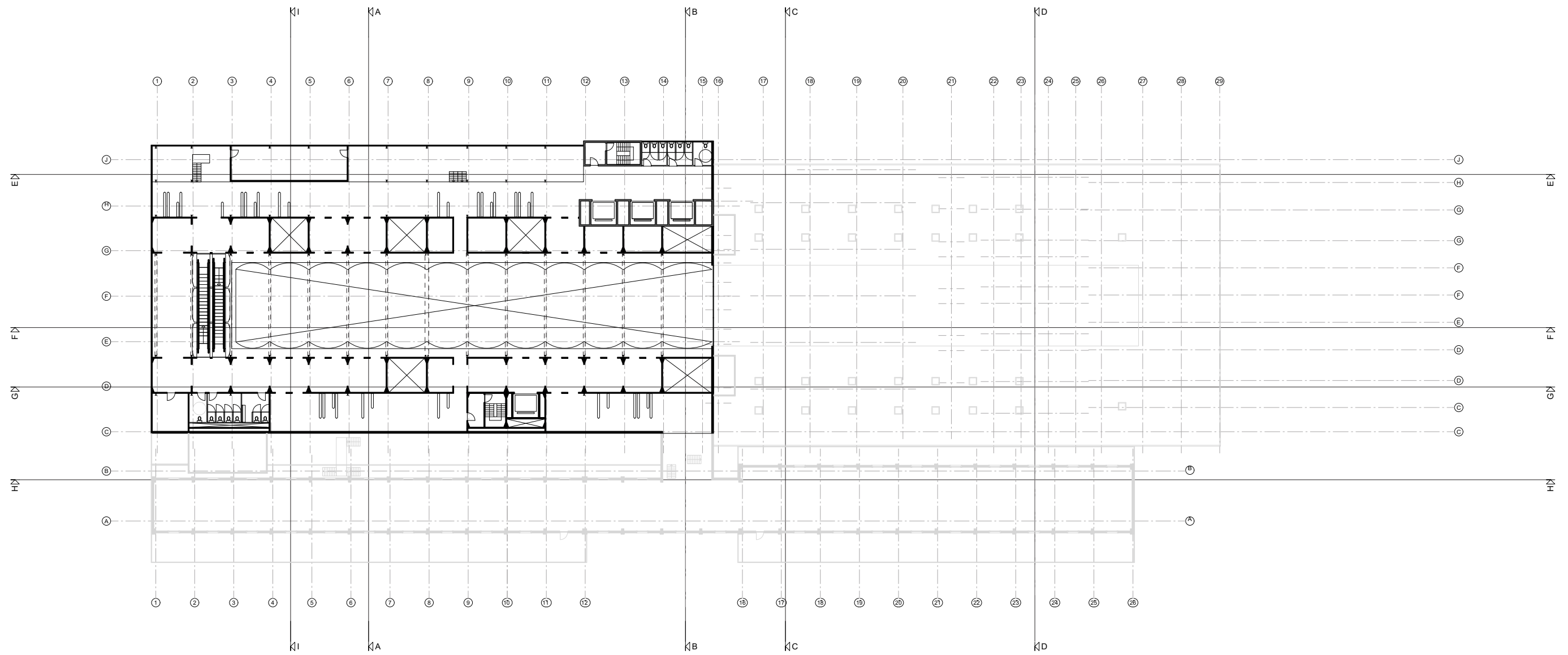












Plan Fifth Floor (+5)  
scale 1:500

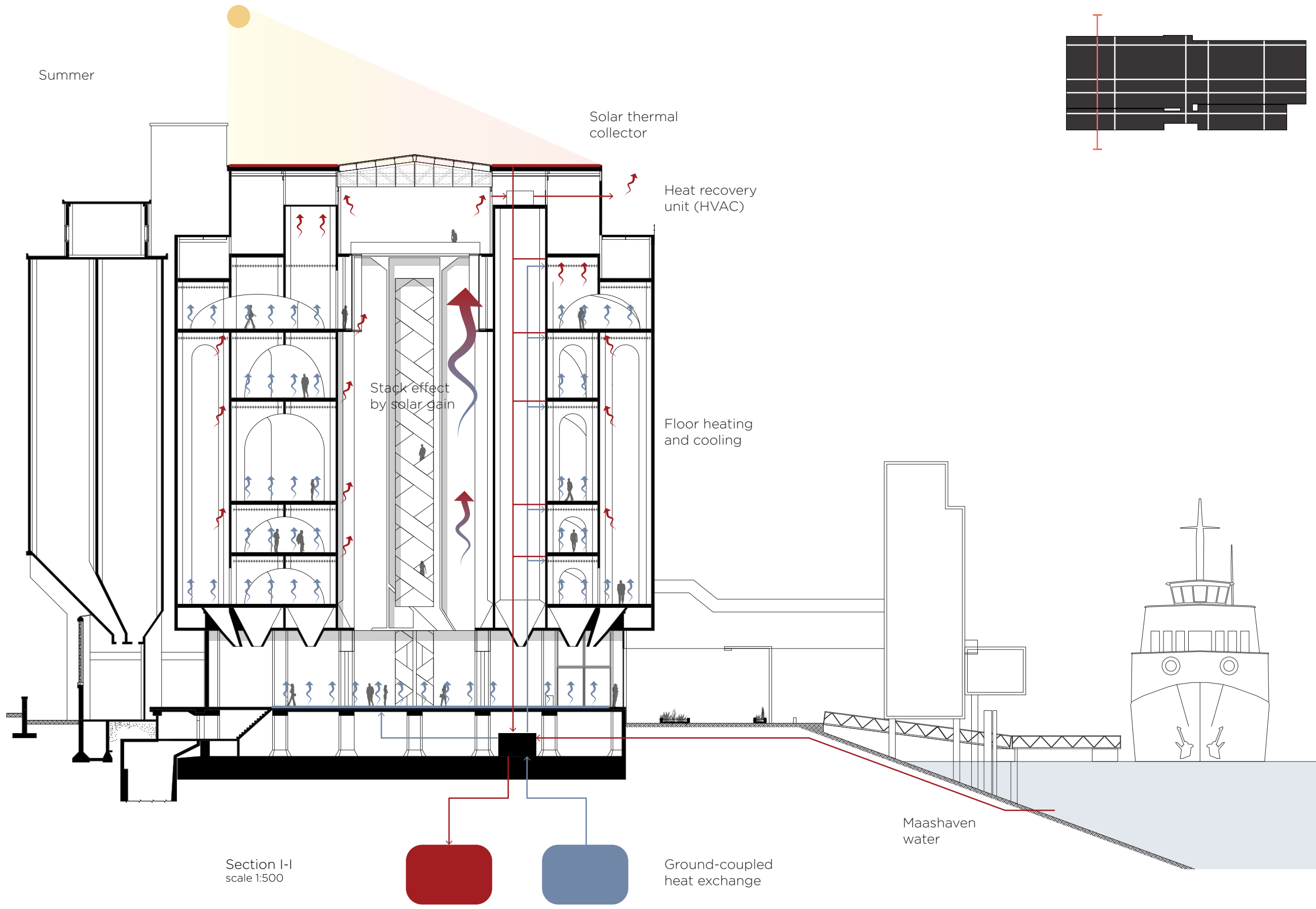




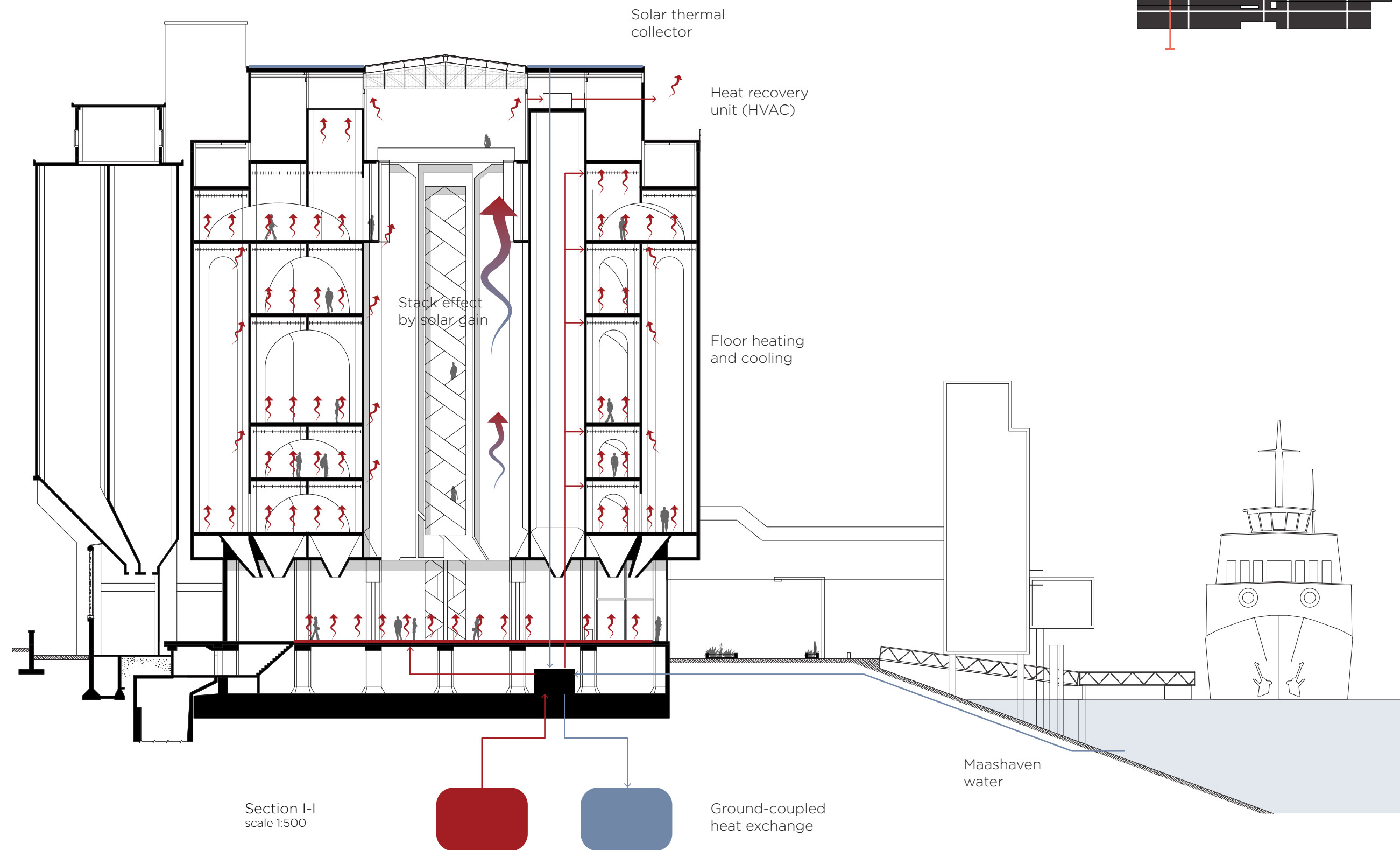


# Climatic Design





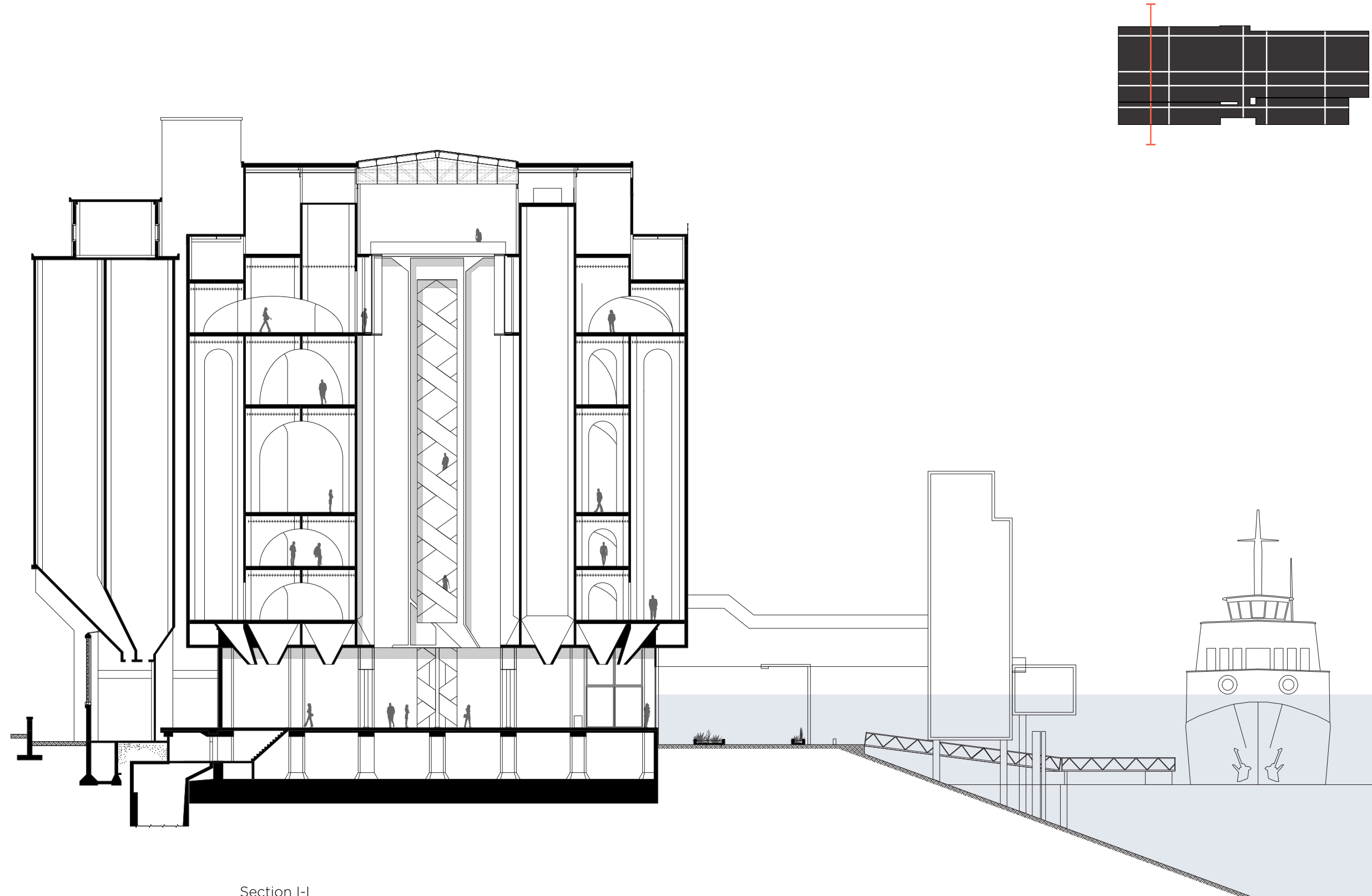
Winter





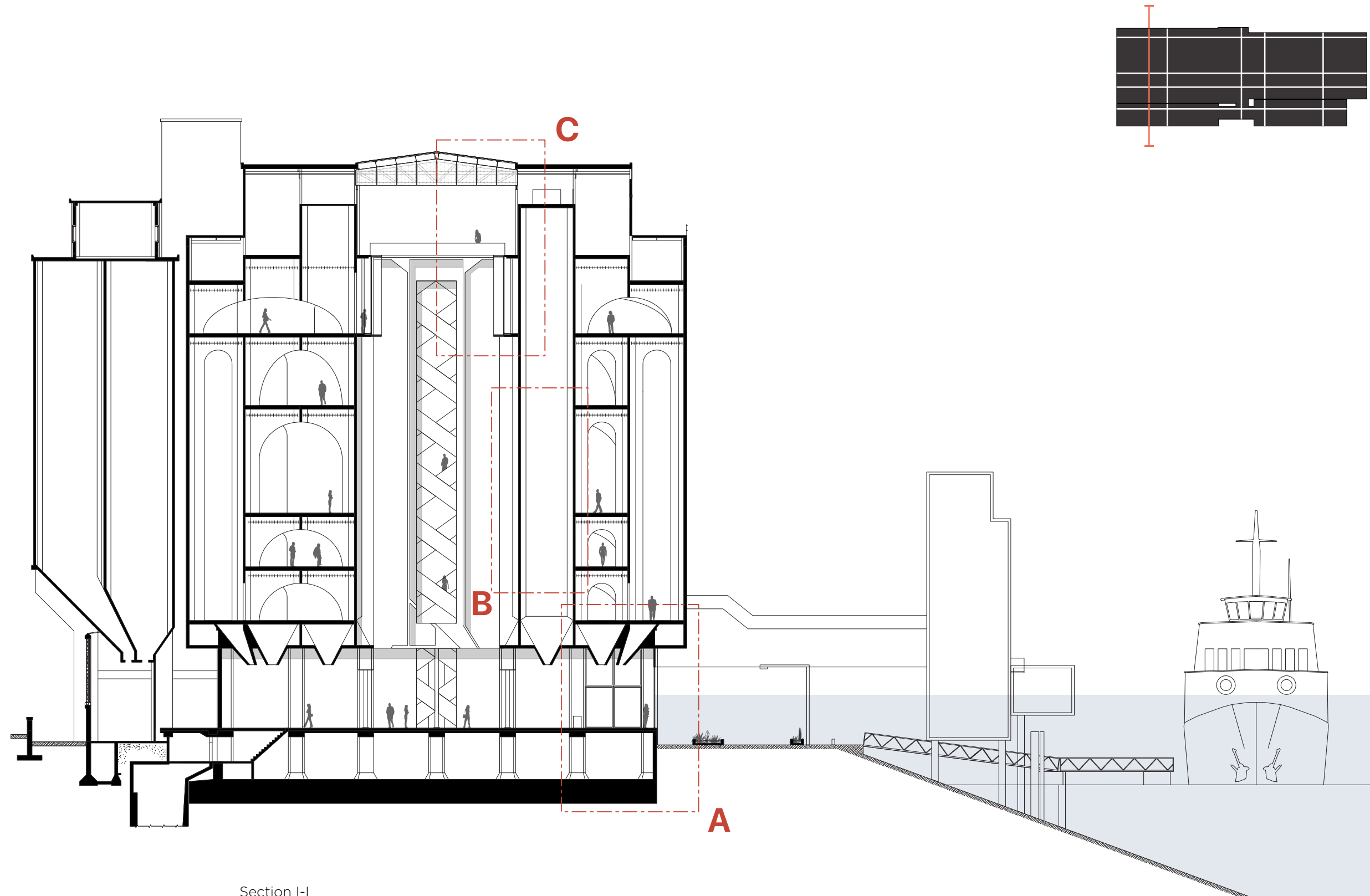
# **Technical Drawings**

(Designing through different Scales, From Urban to Detail)

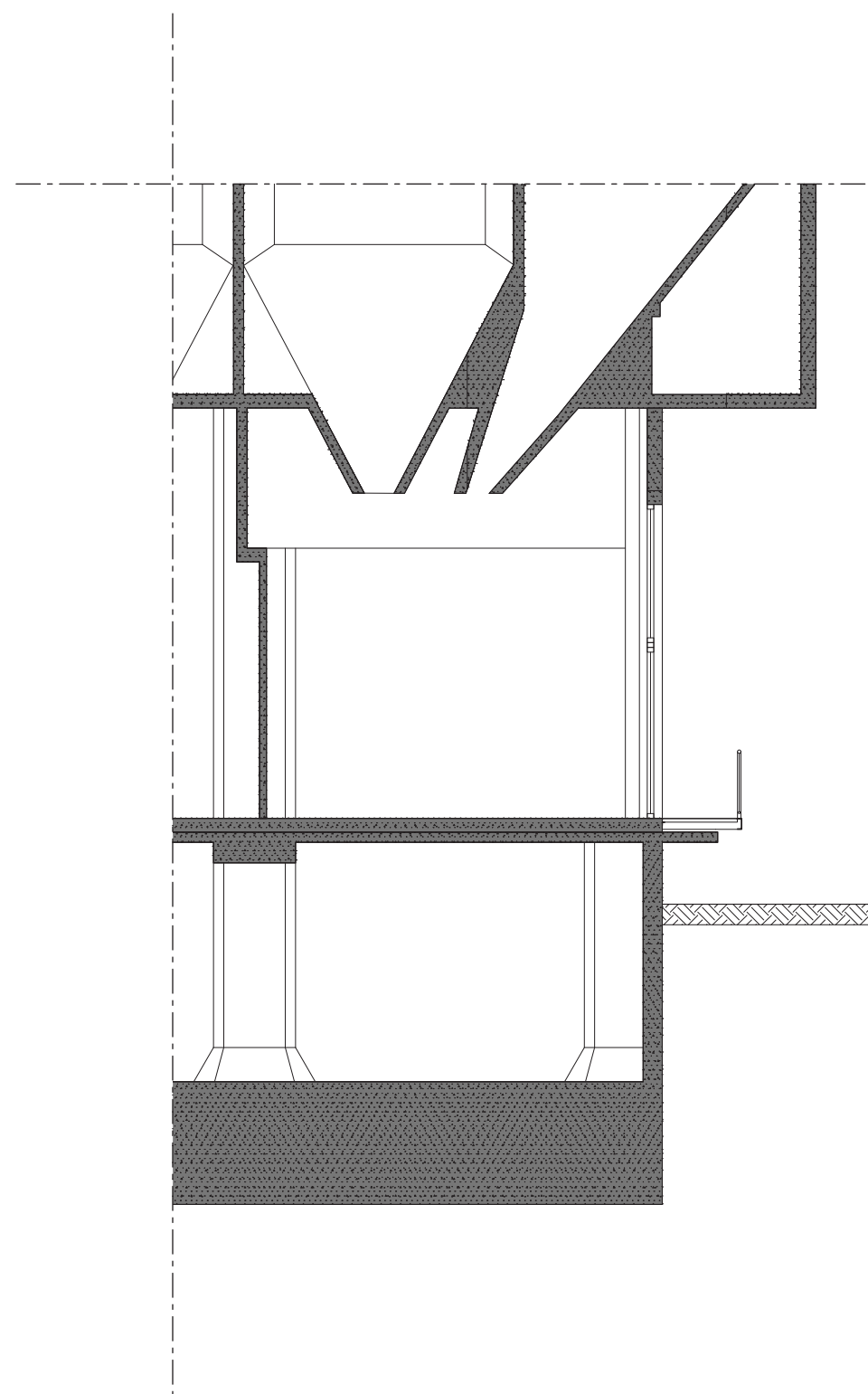


Section I-I  
scale 1:500





Section I-I  
scale 1:500

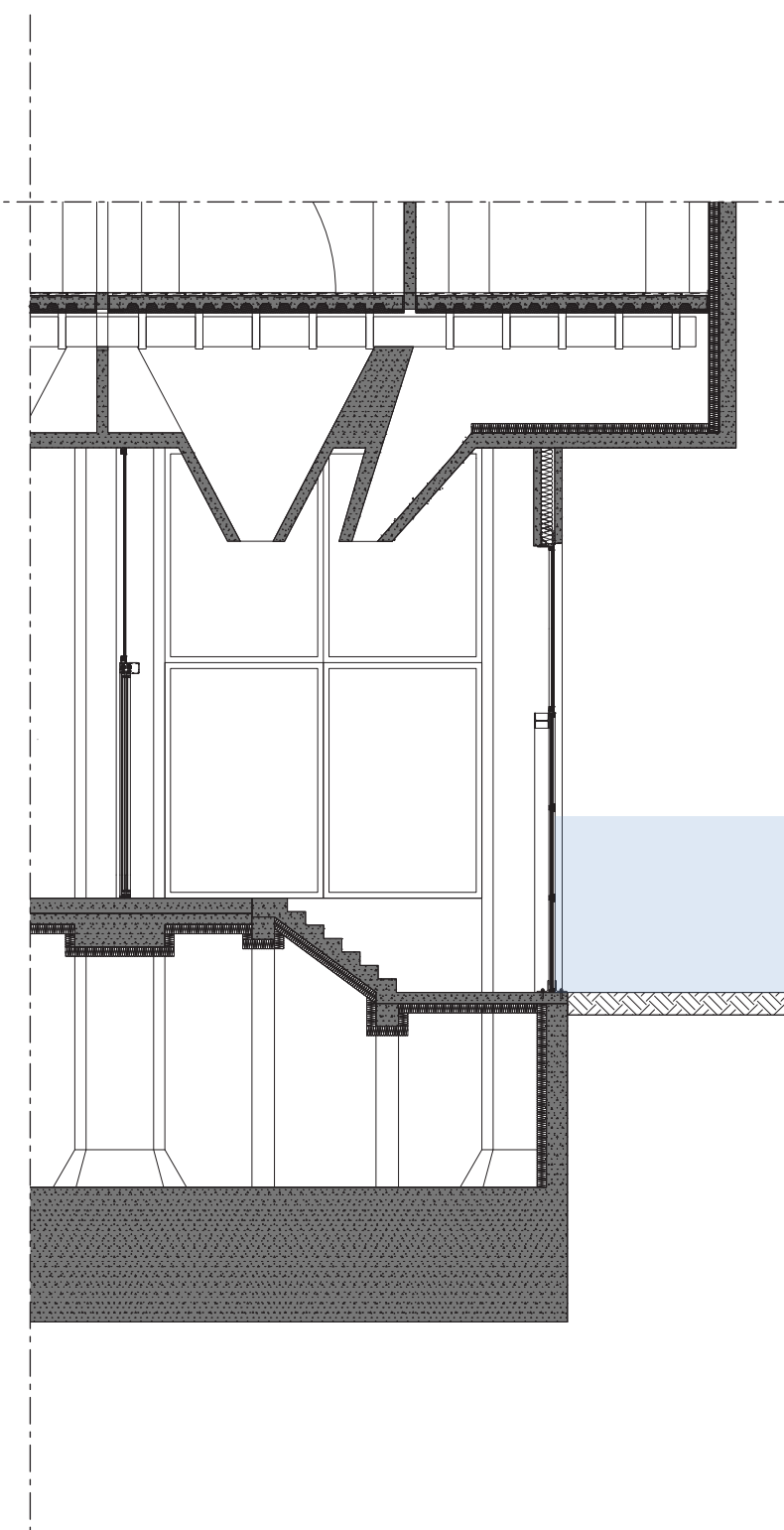


Existing

+ 8.066

+ P=0.00

- 3.850



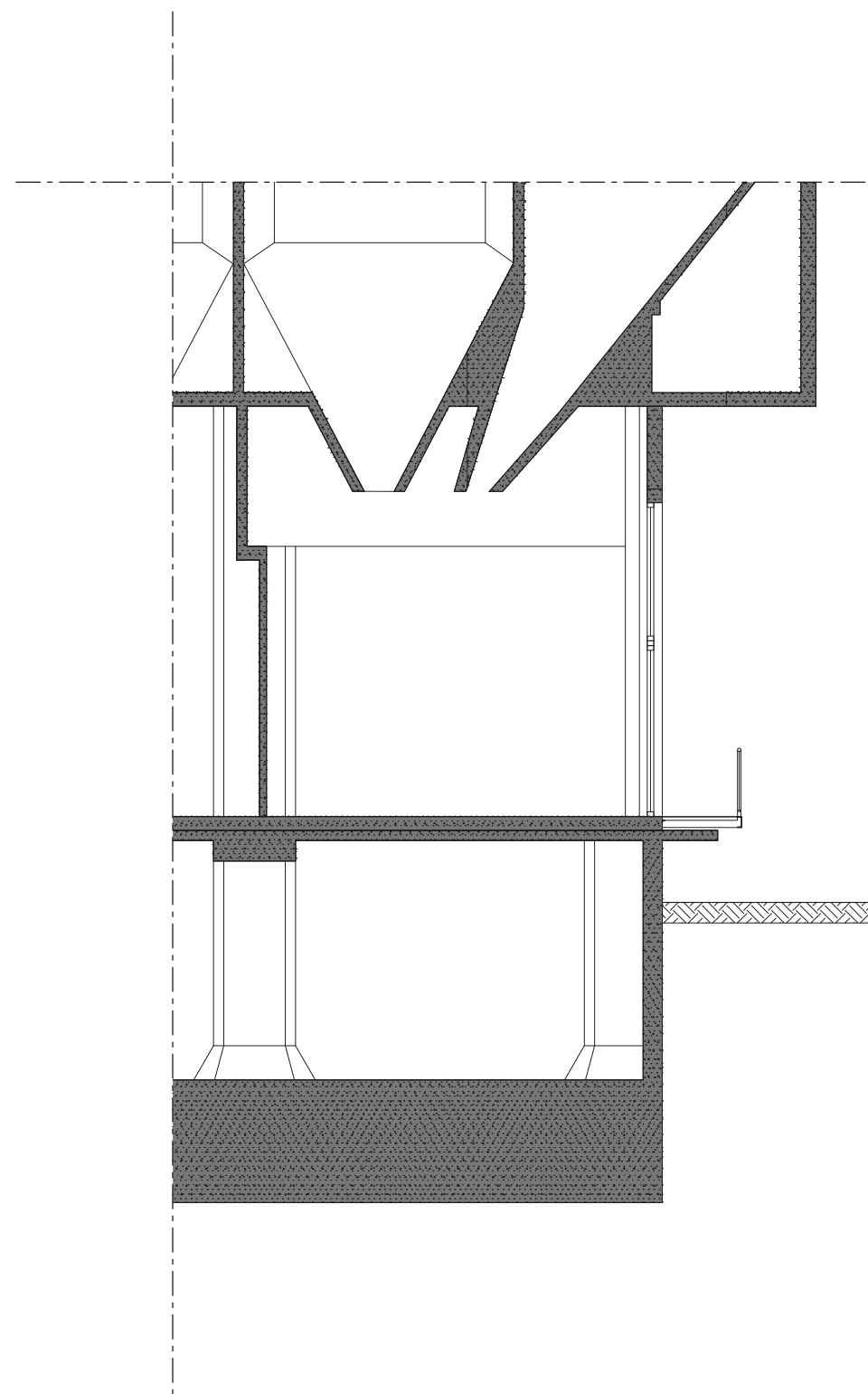
Design

+ 2.500

New flood barrier able to withstand a water height of max. 1.65 meters above current barrier height.

Scale 1:100



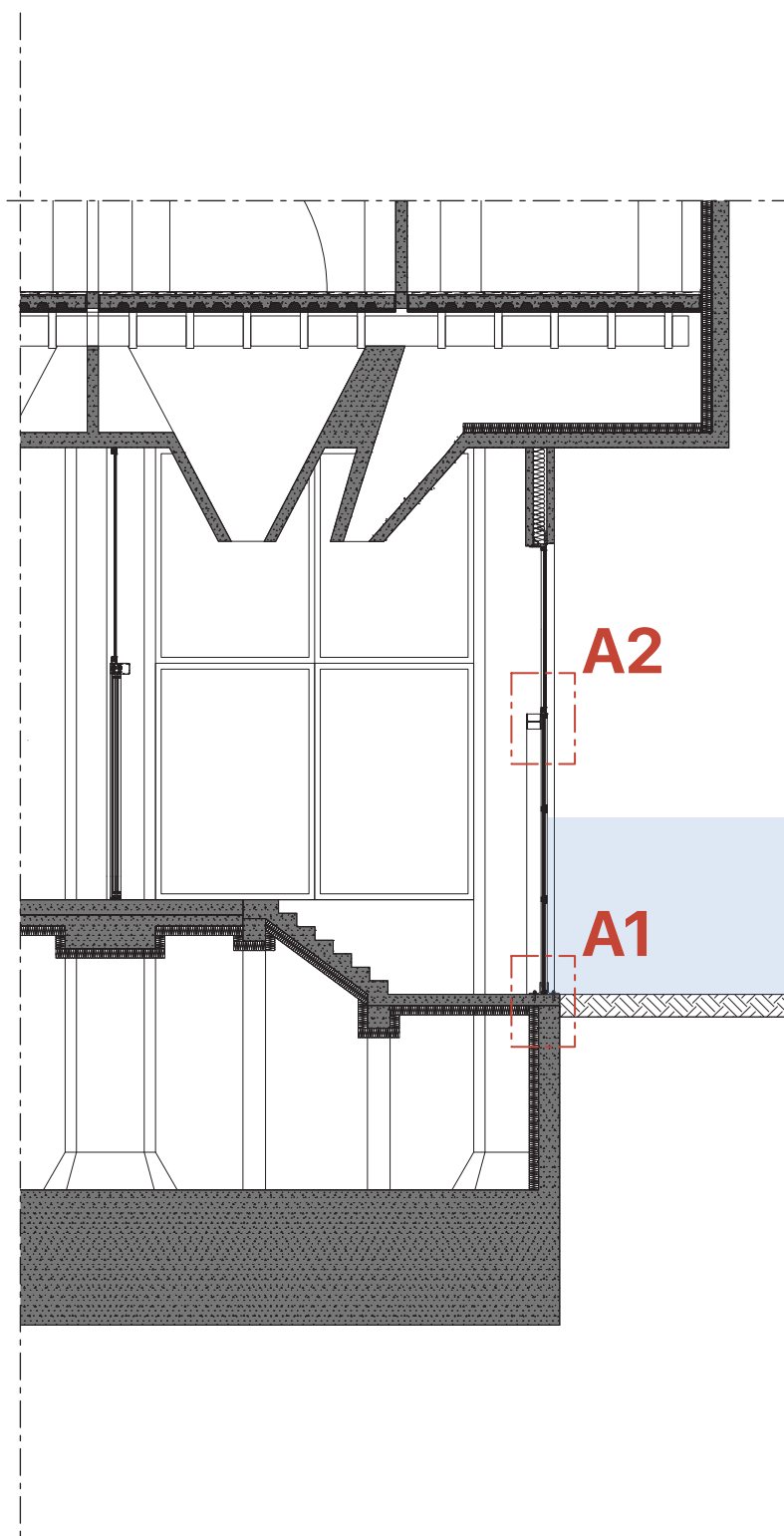


Existing

+ 8.066

+ P=0.00

- 3.850



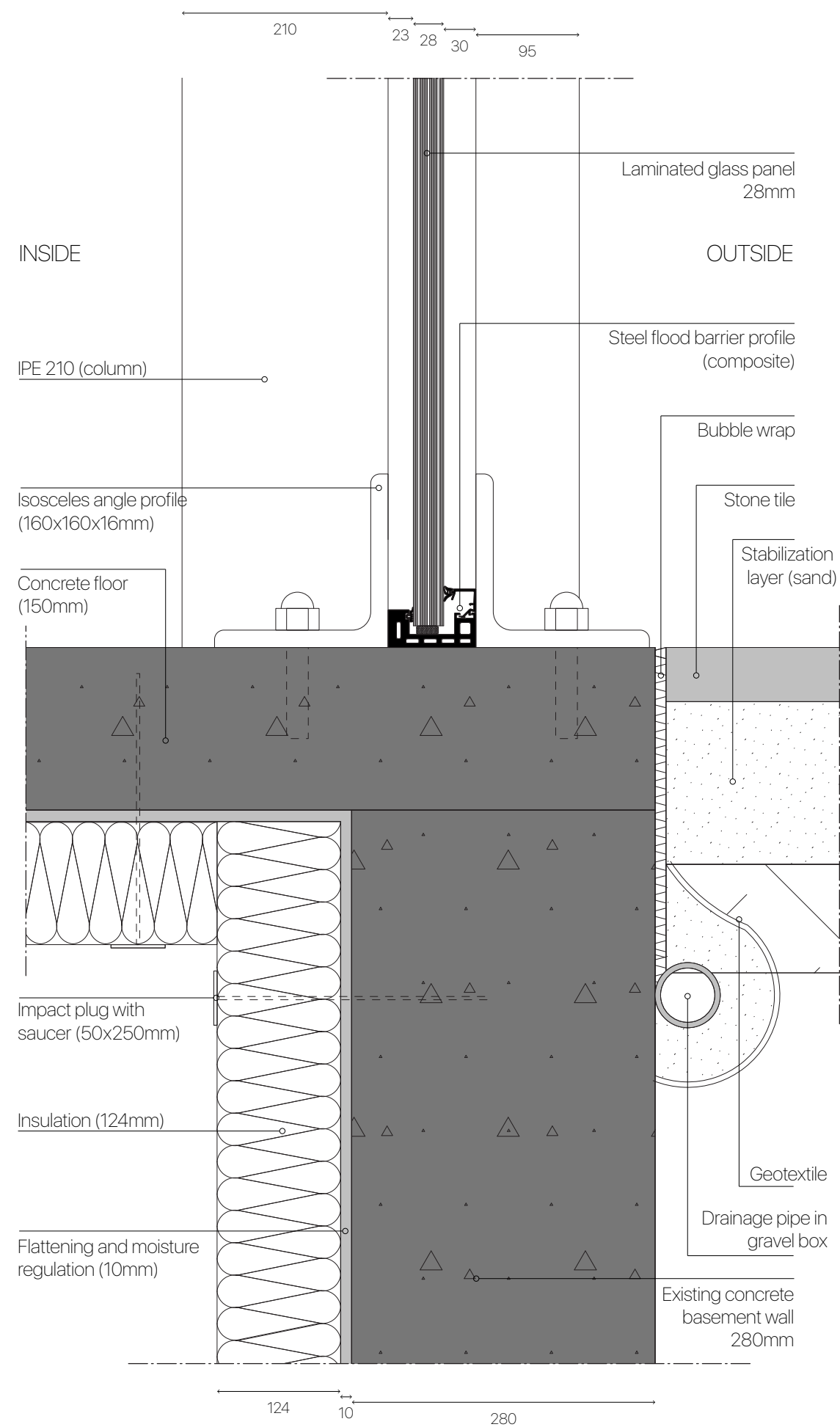
Design

+ 2.500

New flood barrier able to withstand a water height of max. 1.65 meters above current barrier height.

Scale 1:100



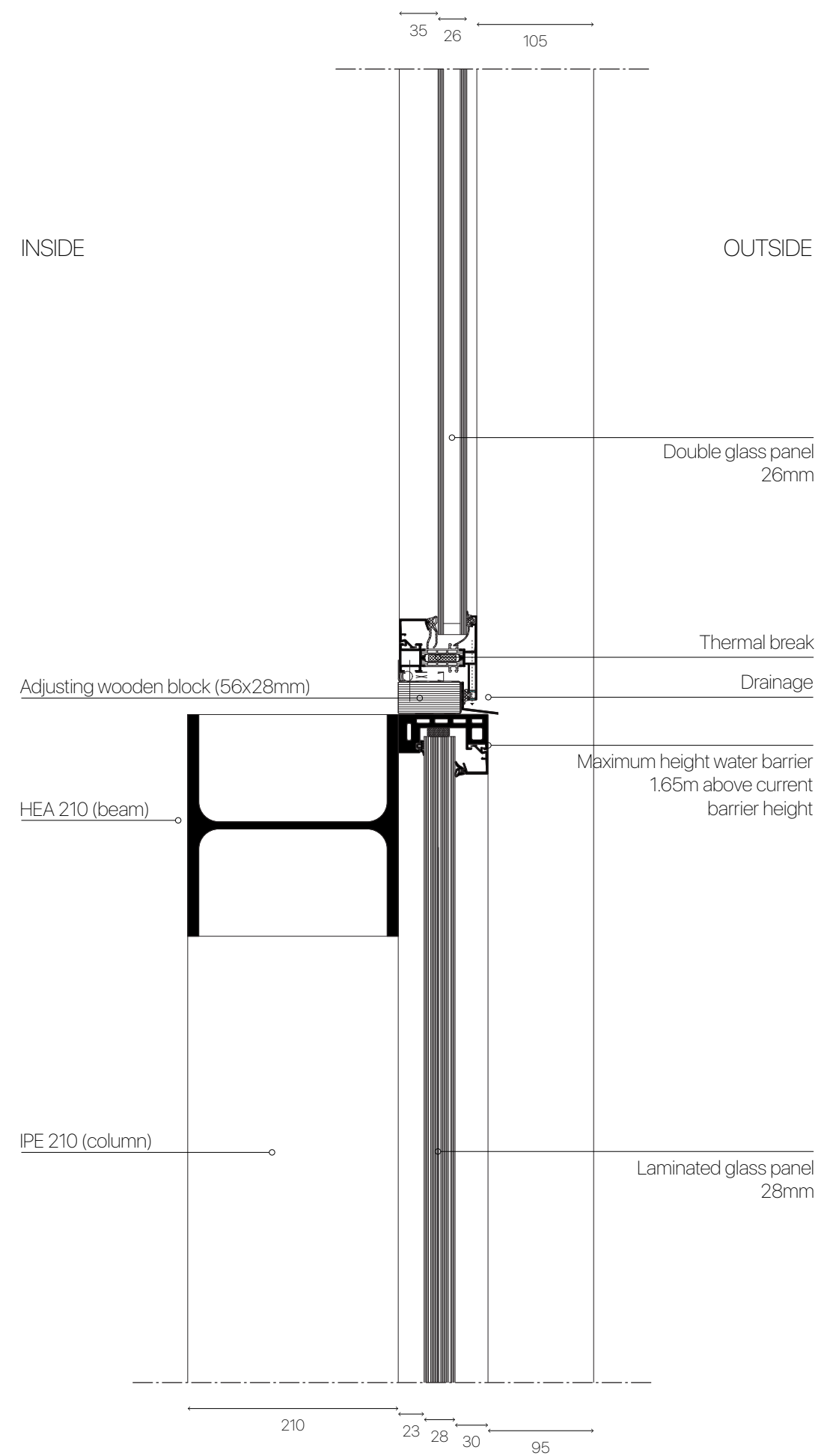


Source; <https://aquobex.com/products-list/product-e/>



Render (Flooding)

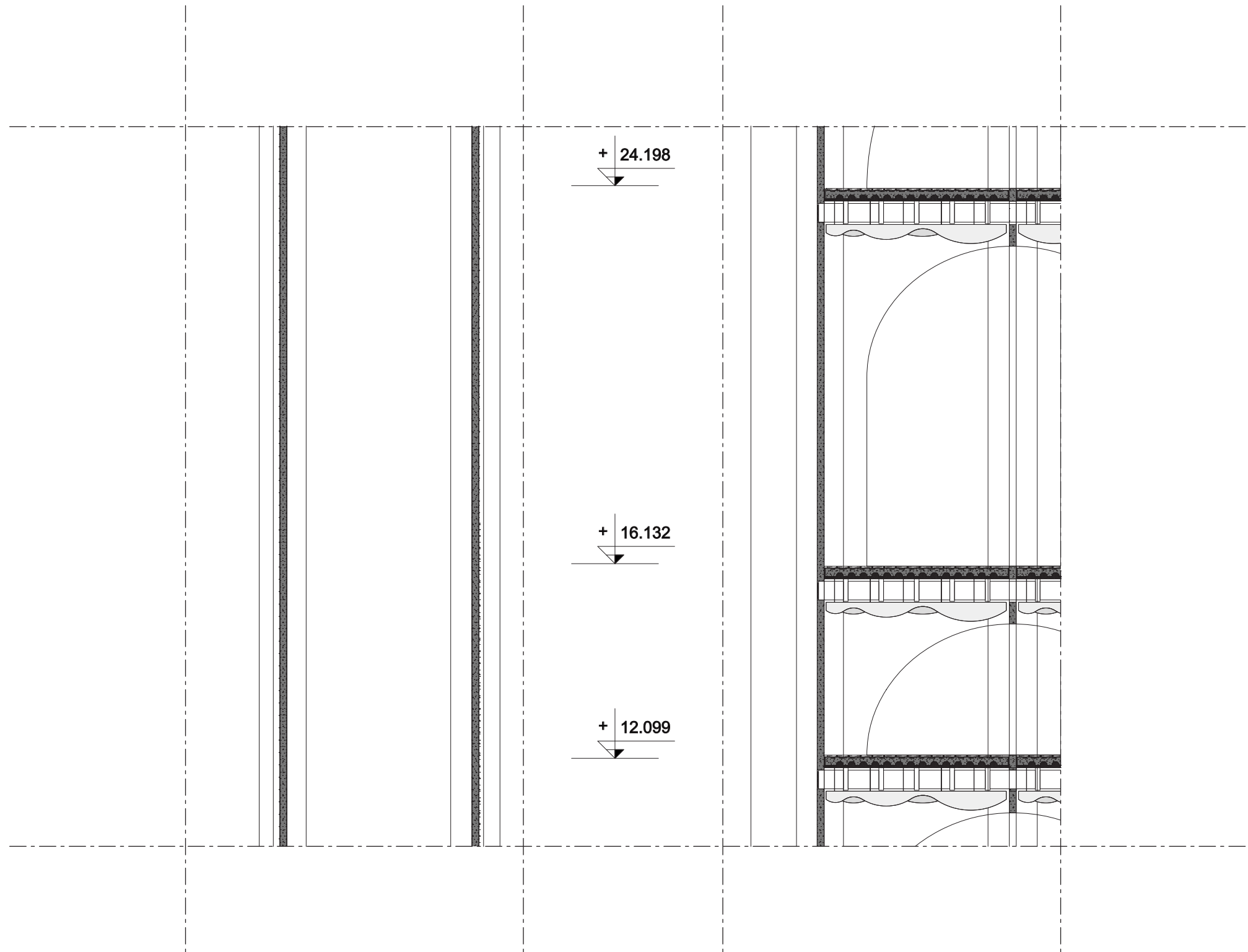




Source; <https://aquobex.com/products-list/product-e/>



Render (Flooding)

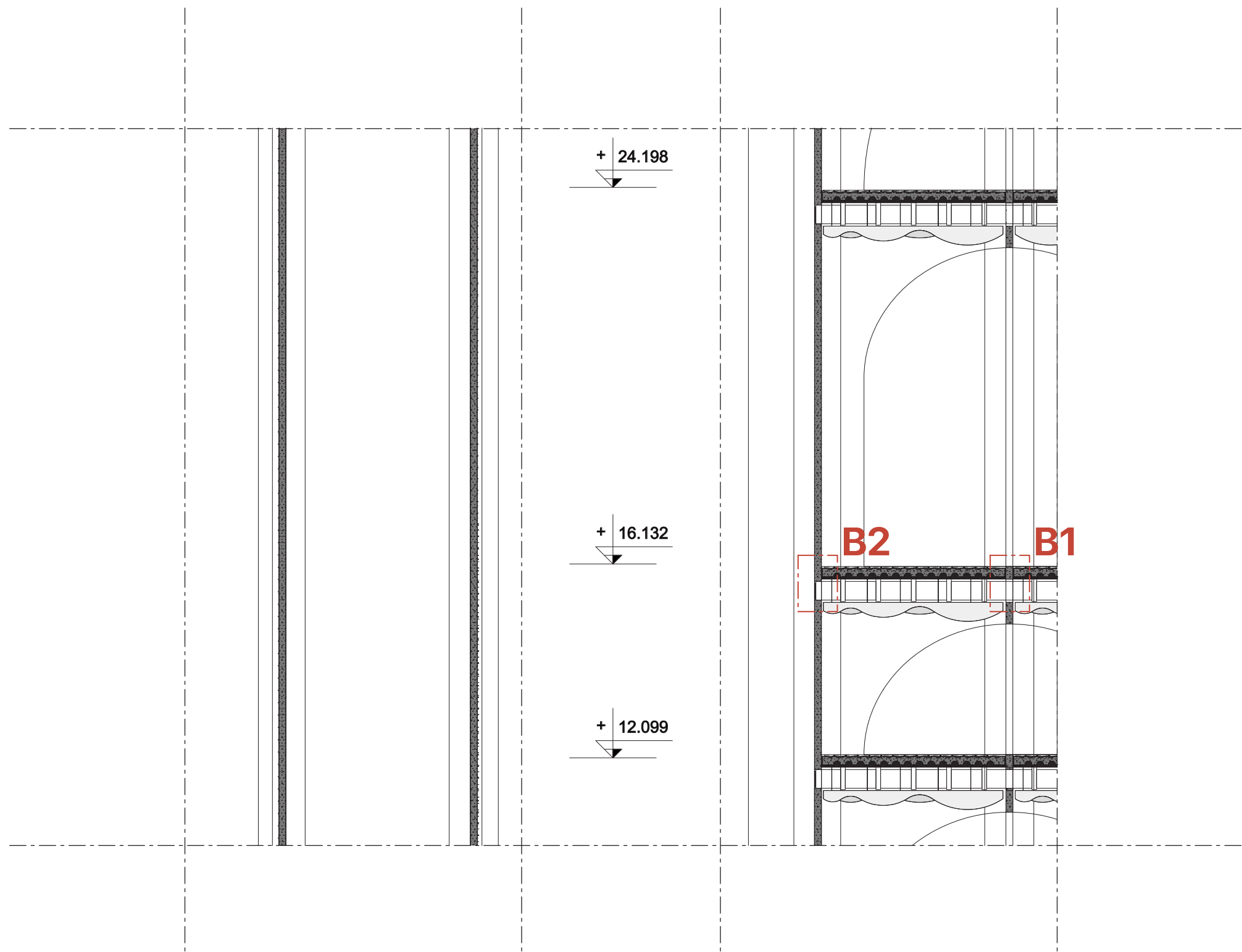


Existing

Design

Scale 1:100

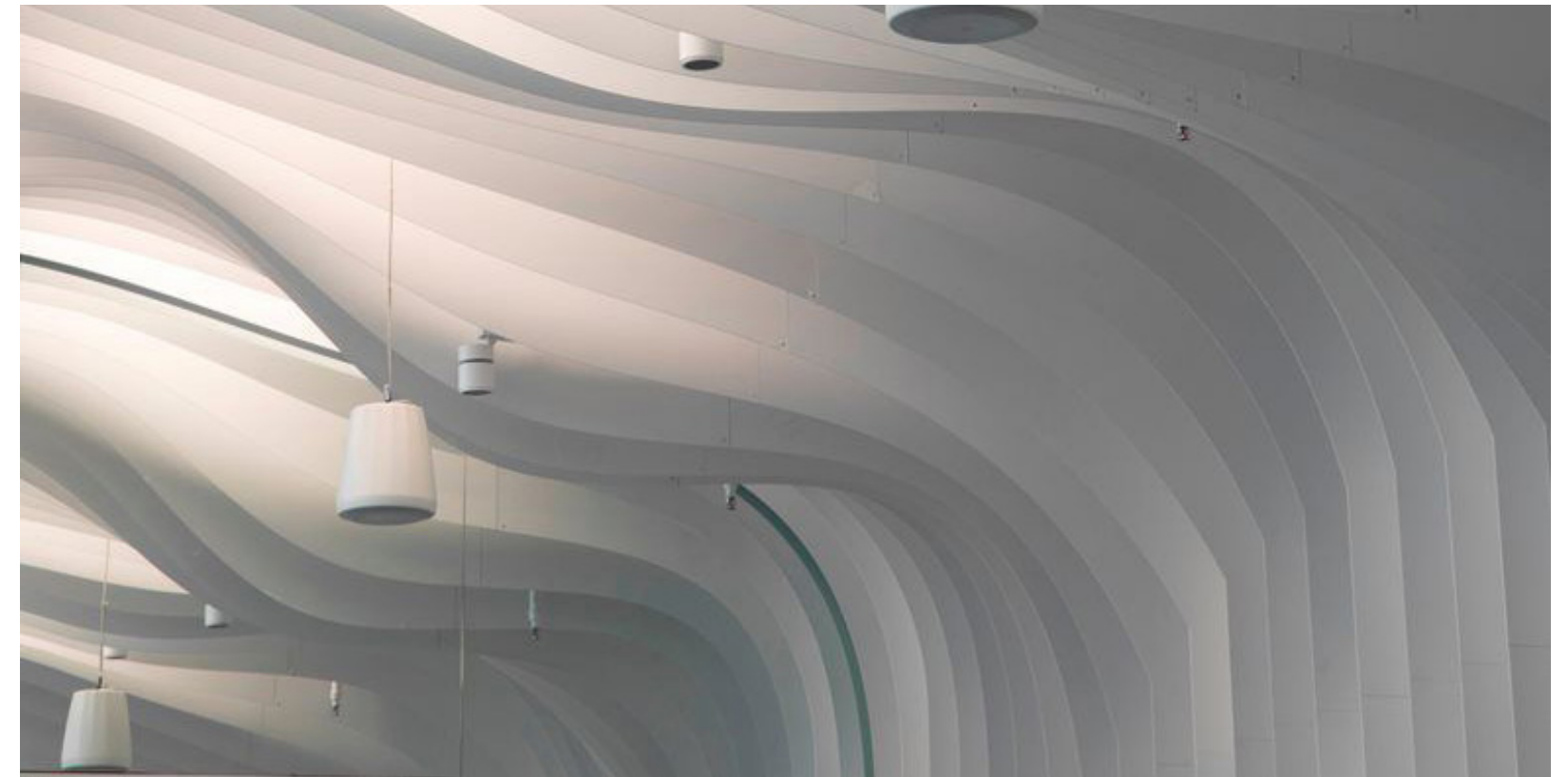
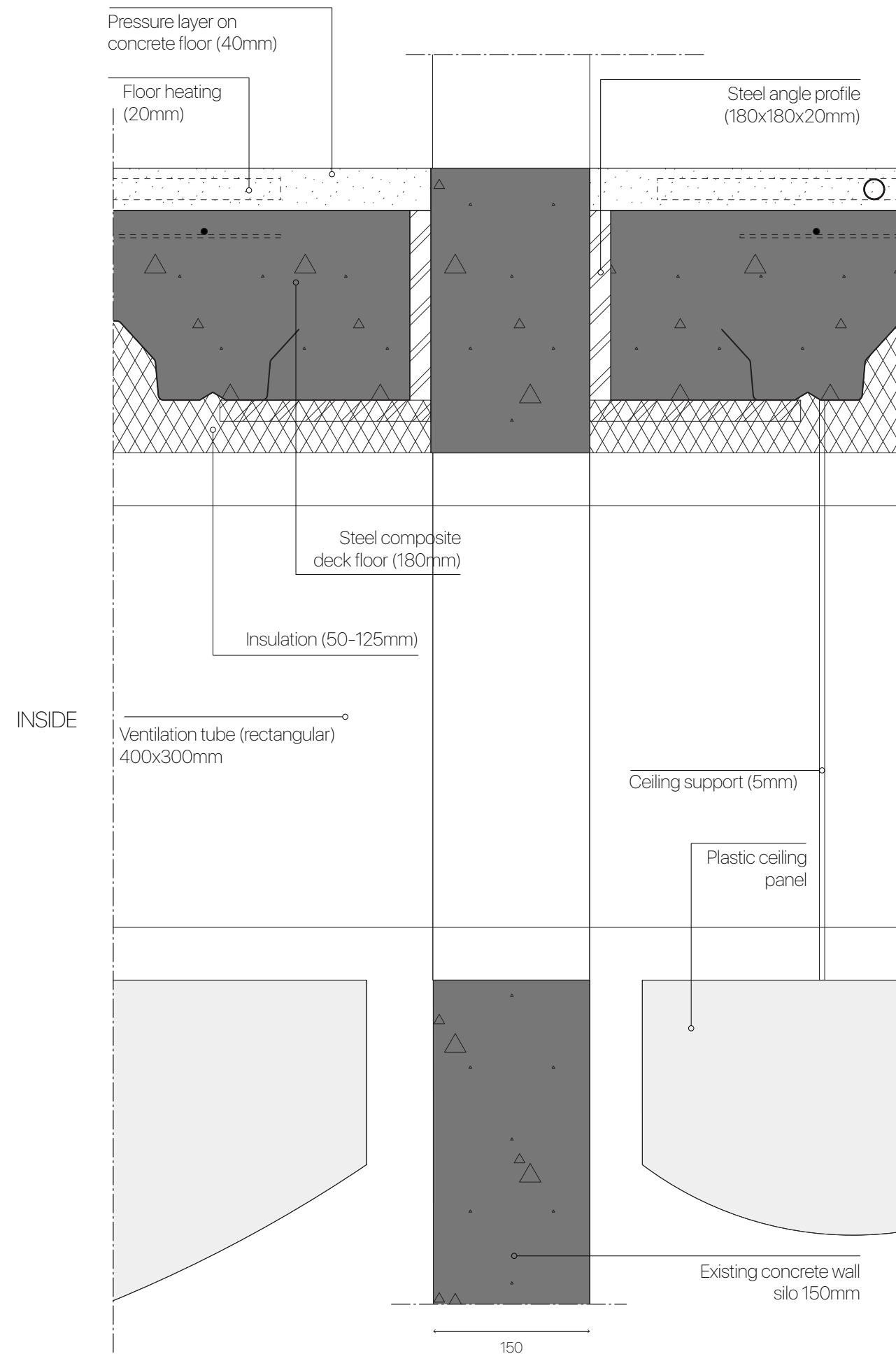




Existing

Design

Scale 1:100

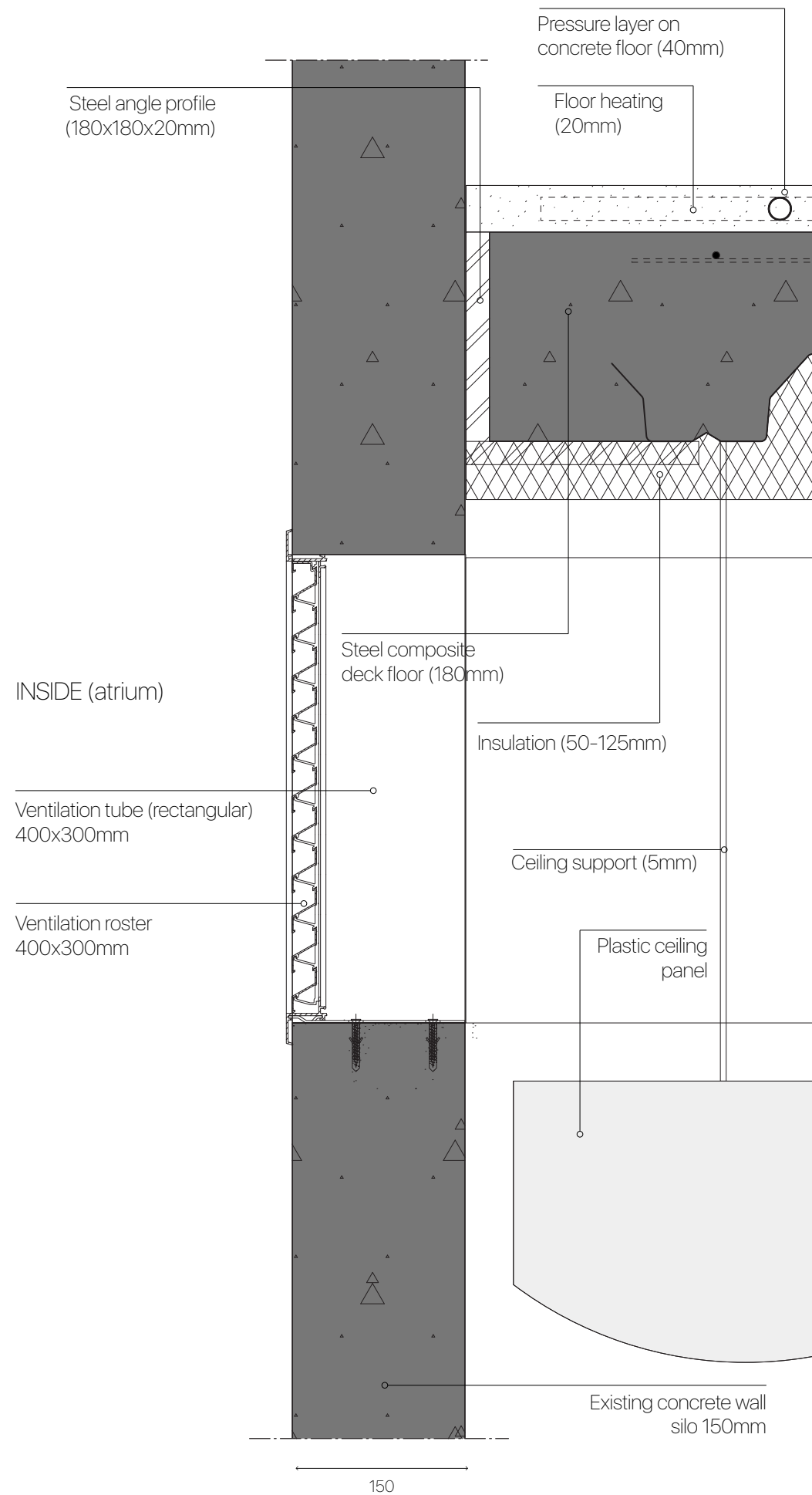


Source; <https://www10.aeccafe.com/blogs/arch-showcase/2019/10/28/google-event-space-in-sao-paulo-brazil-by-bcmf-arquitetos/>



Render (Flooding)





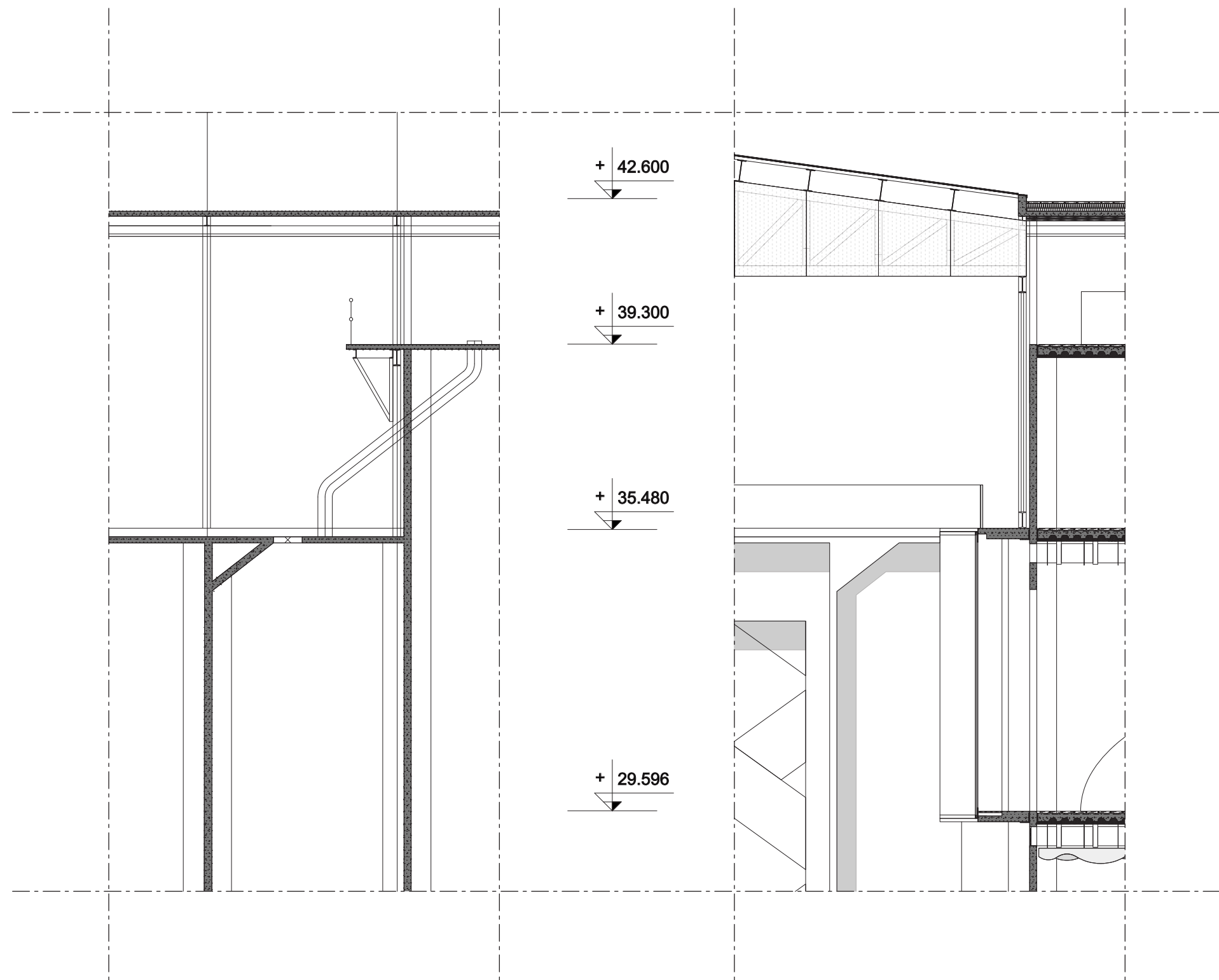
INSIDE



Source; <https://www10.aeccafe.com/blogs/arch-showcase/2019/10/28/google-event-space-in-sao-paulo-brazil-by-bcmf-arquitetos/>



Render (Flooding)

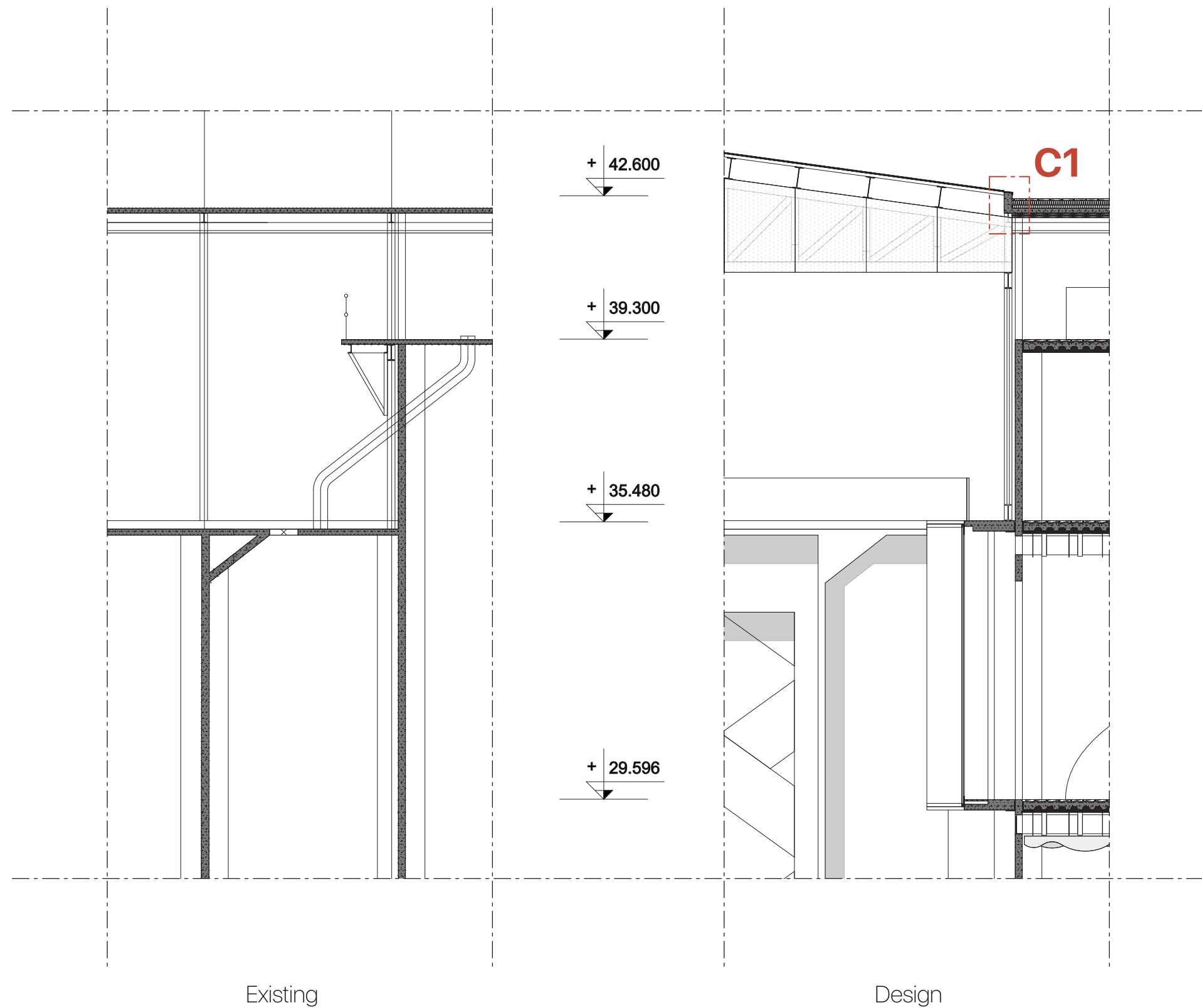


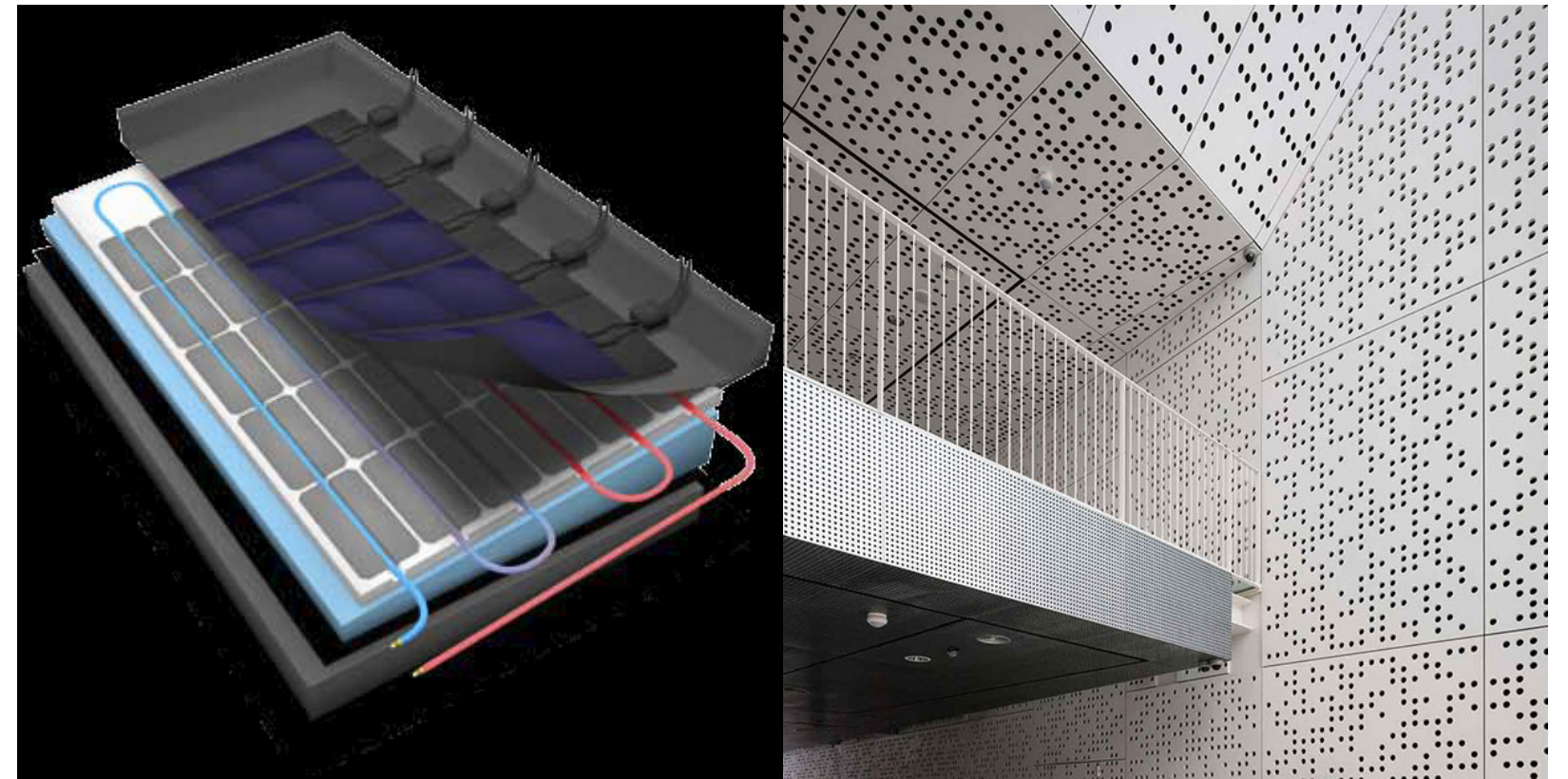
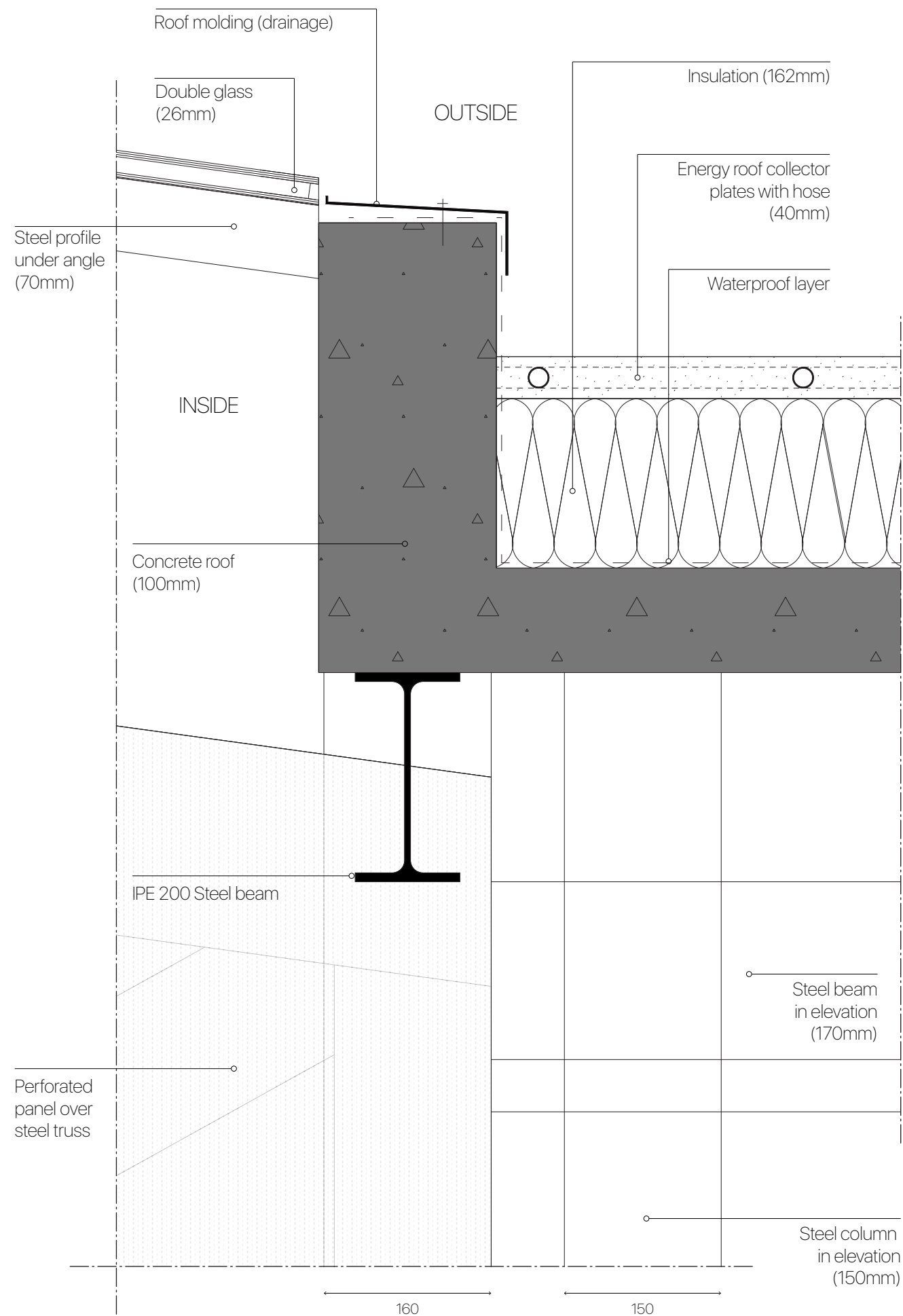
Existing

Design

Scale 1:100







Source; [https://www.energiedak.nl/library/download/Brochure\\_Energiedak\\_6\\_pag\\_.pdf](https://www.energiedak.nl/library/download/Brochure_Energiedak_6_pag_.pdf)  
 Source; <https://www.winow.cc/product/perforated-aluminium-sheets-for-building/>



Render (Flooding)



## The aim / goal

*Restoring the relation with the adjacent harbor*

*Design according to the human scale*

*Make the building more accessible*

*Open up the dense volume*

*Create a navigable building*

## Reflection + Prospects

*Reflection:*

*Integrated design*

*Narrow 'the scope' was too late*

*Possible Prospects:*

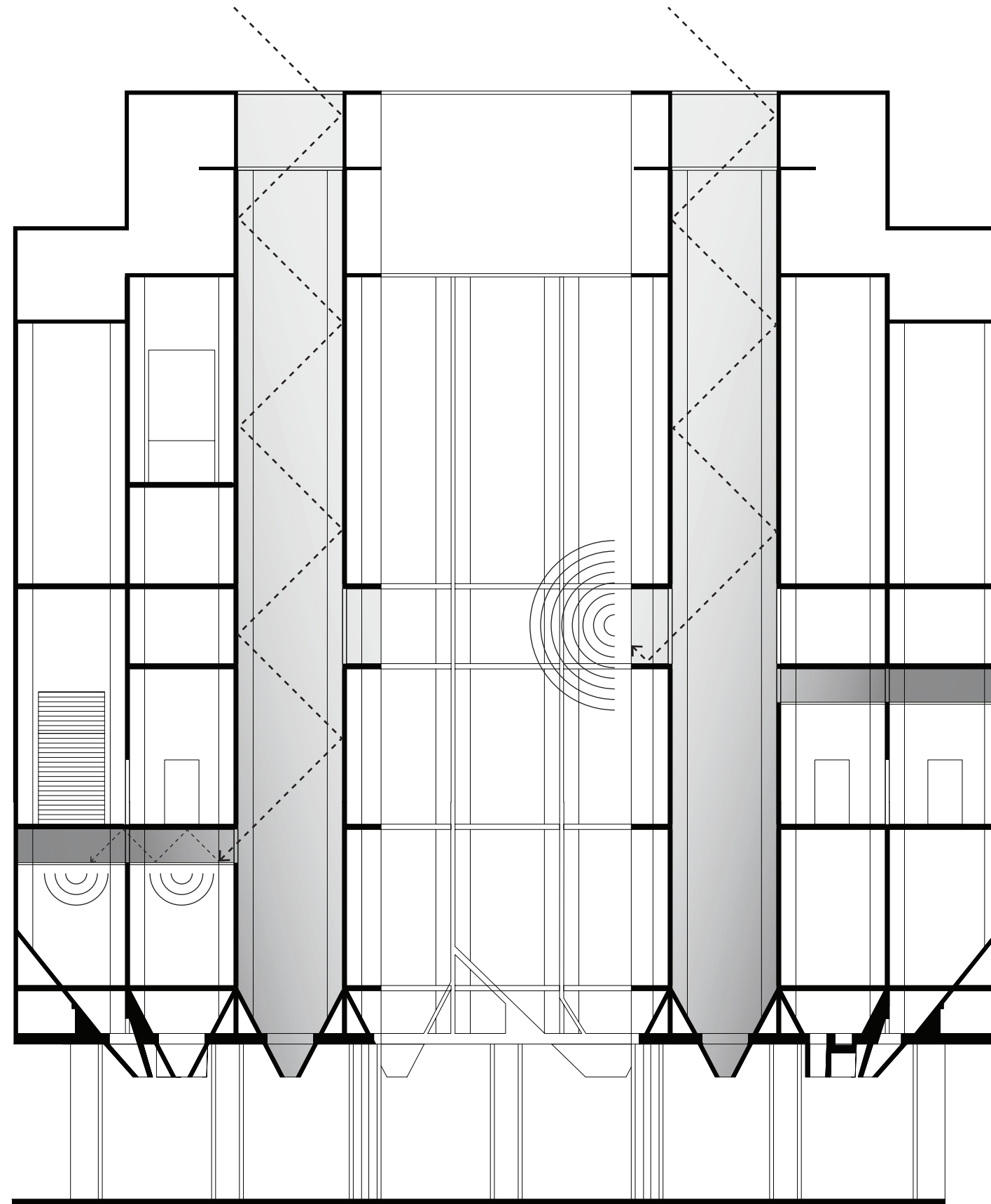
*Relation exhibition space and atrium*

*Silo as a light tube*









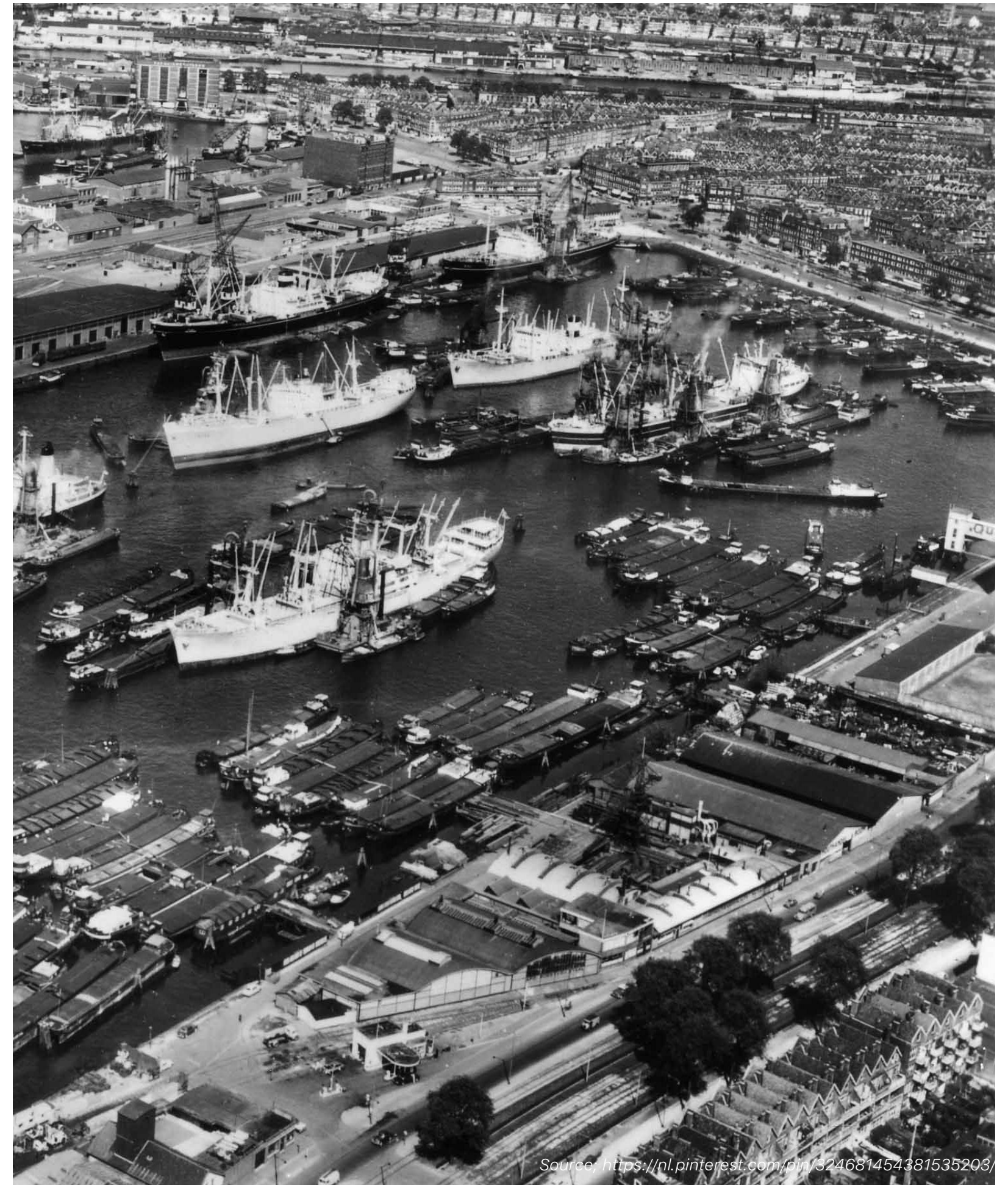
“Thank you.”



# Appendix

‘Het graan stroomde zoo snel in de lichters, het leek dikke gele olie. Zij lagen daar stil en vraatzuchtig, zij hadden het heele schip in hun macht, het bloedde aan hun zuignappen dood.’

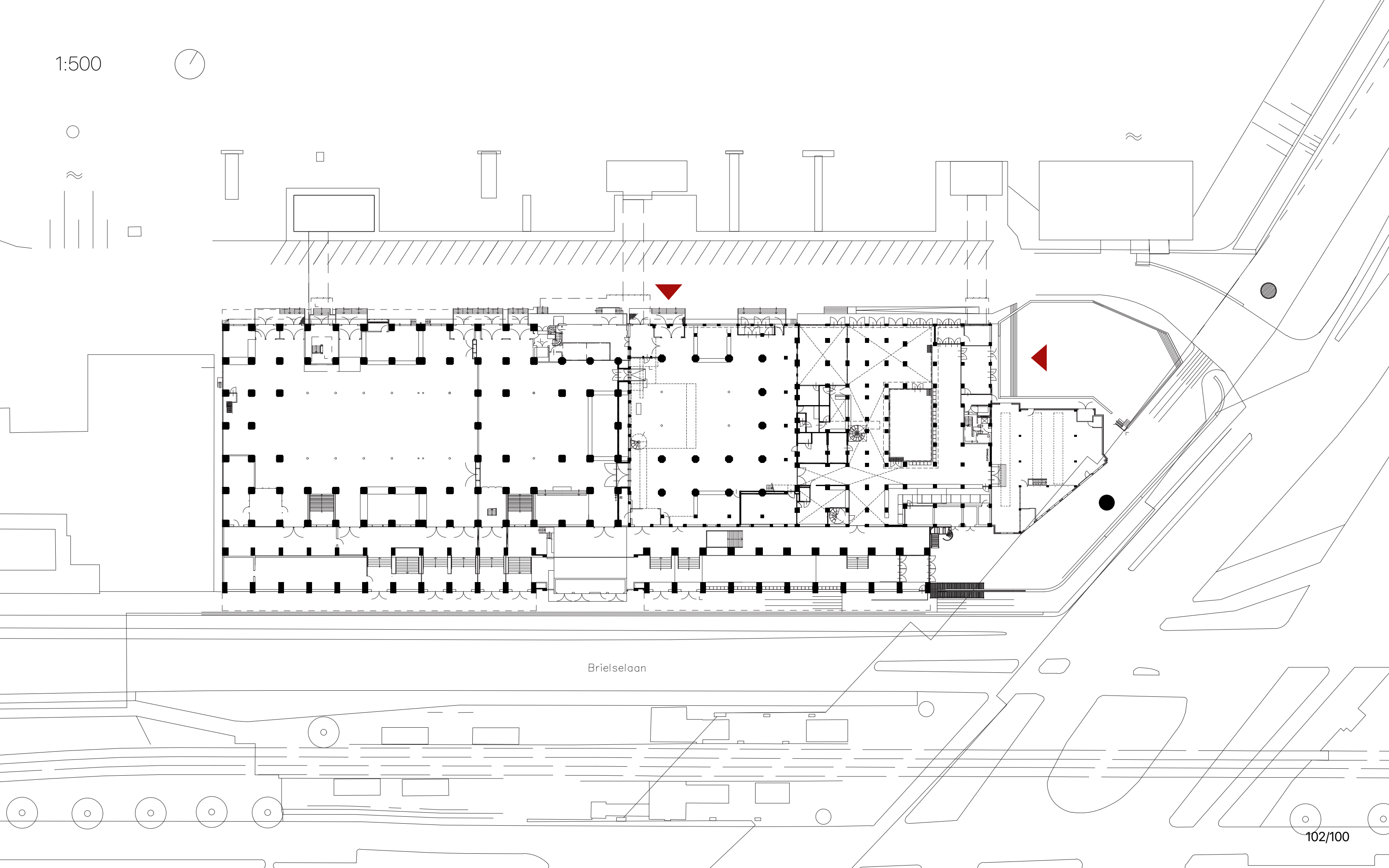
*Ferdinand Bordewijk, Karakter (1938)*



Source: <https://nl.pinterest.com/pin/324681454381535203/>



1:500

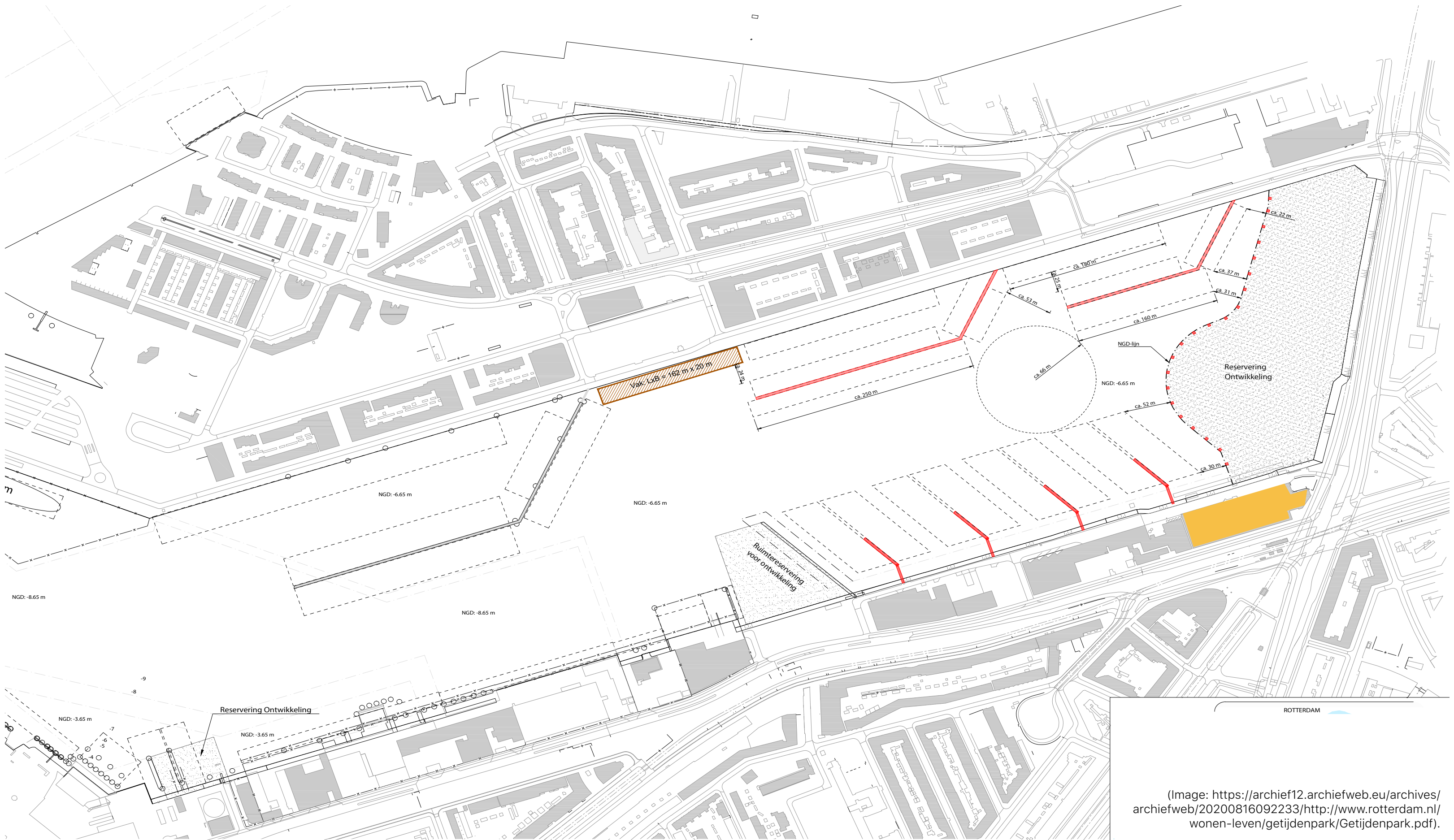


Brielselaan









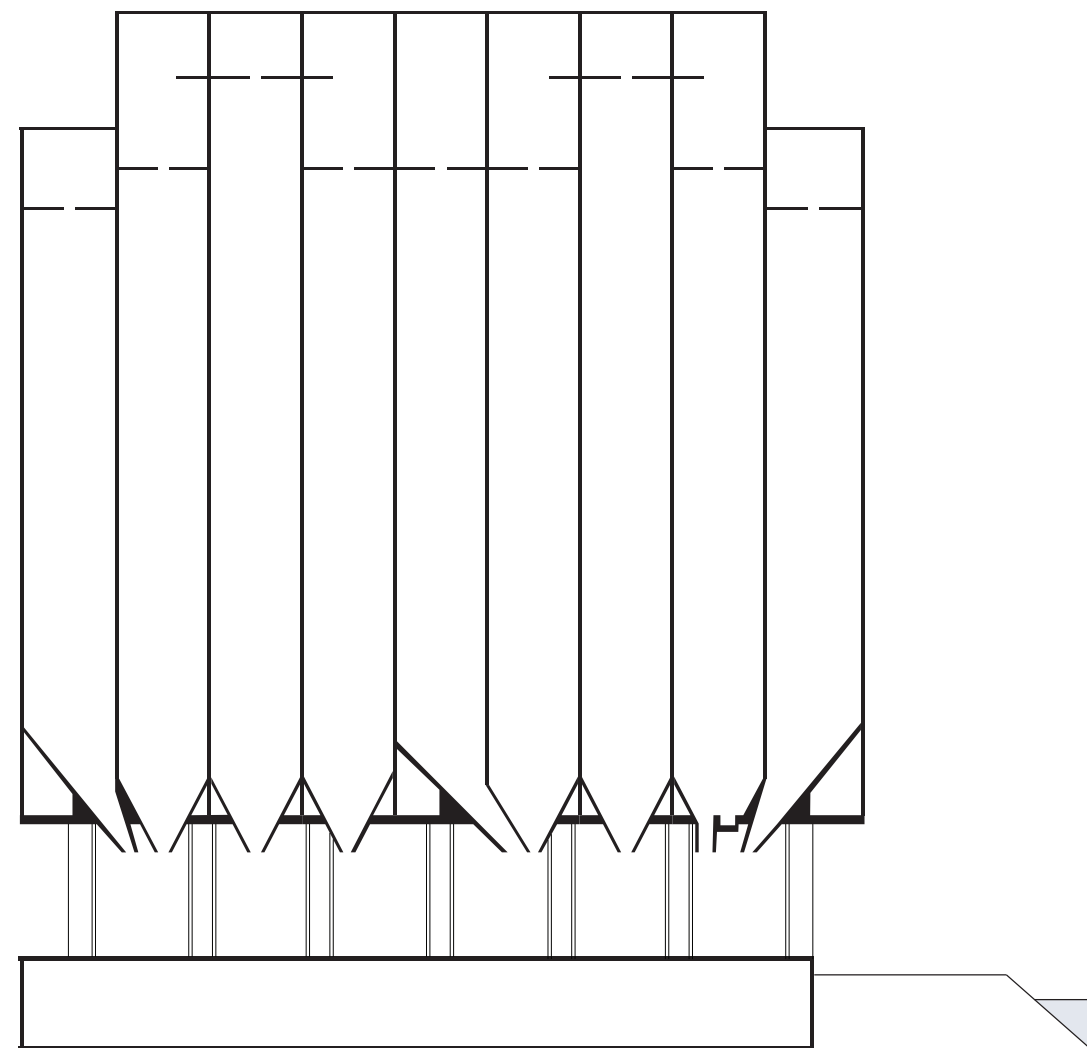
(Image: <https://archief12.archiefweb.eu/archives/archiefweb/20200816092233/http://www.rotterdam.nl/wonen-leven/getijdenpark/Getijdenpark.pdf>).



# **Constructive Design Approach**

# Contemporary Condition

*Long Vertical Silo's*  
*Dense Volume*

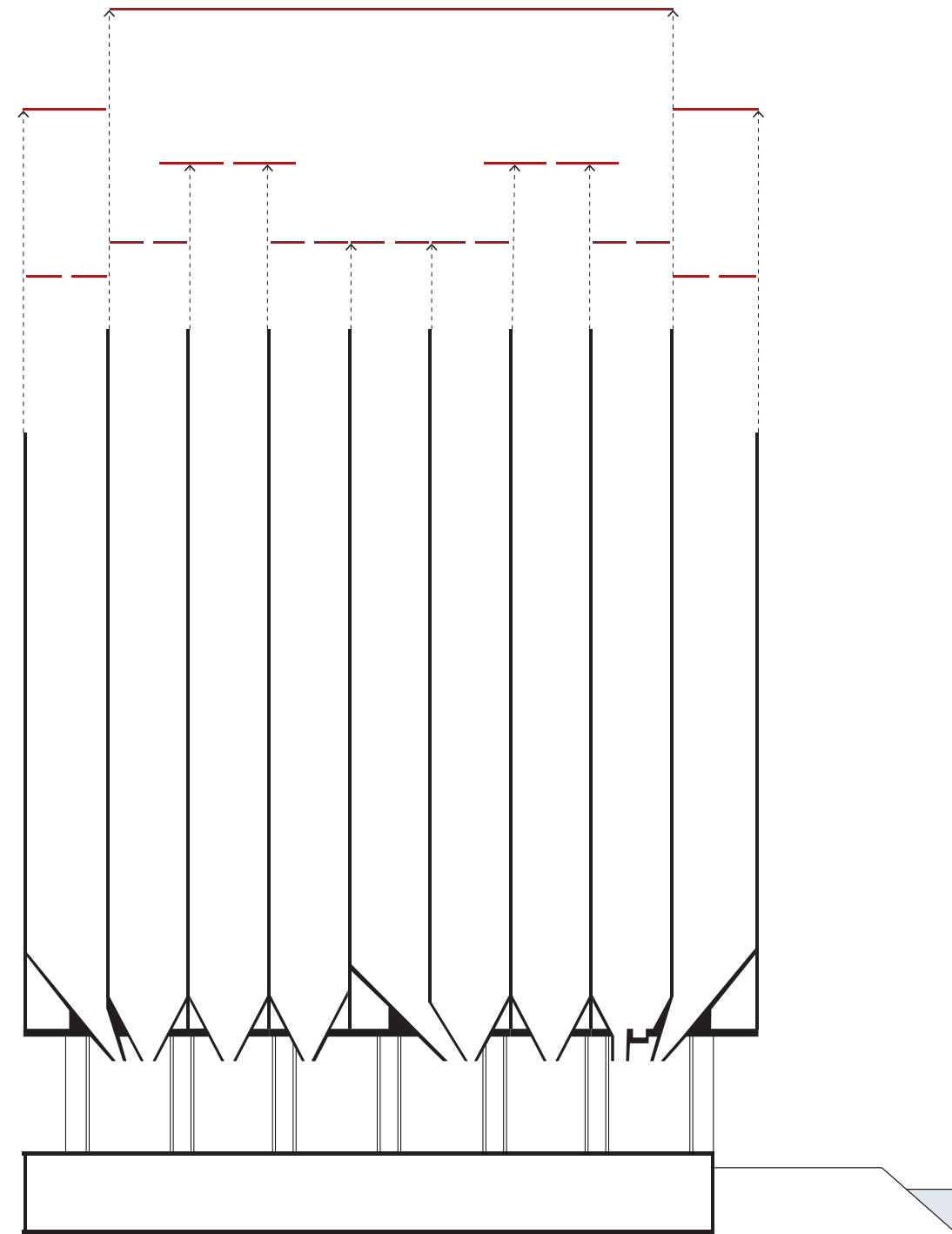




# Removal Roof + Top Layer

Accessibility

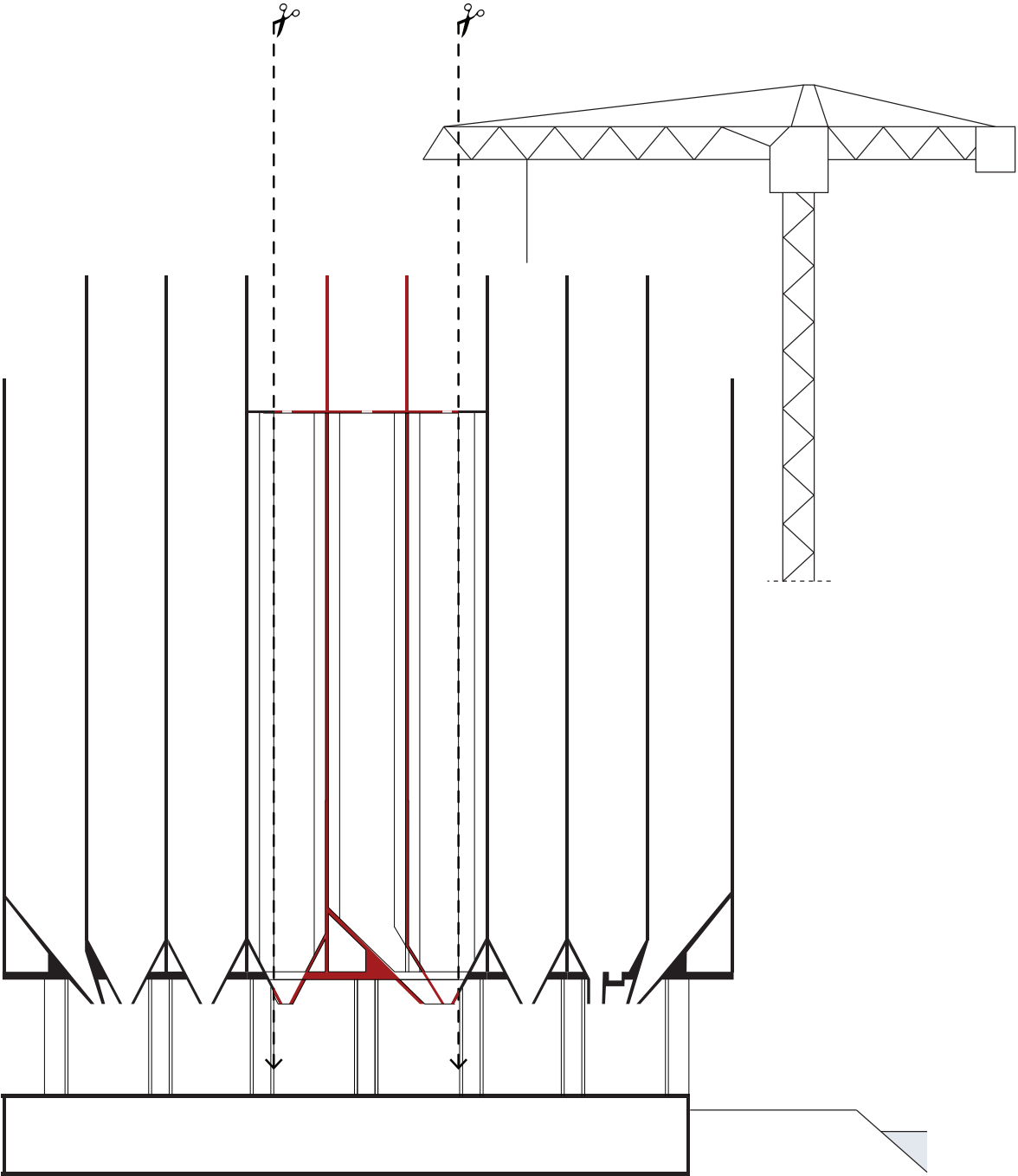
New Roof Construction



# Removal Silo's

*Opening up the Volume*

*Daylight*





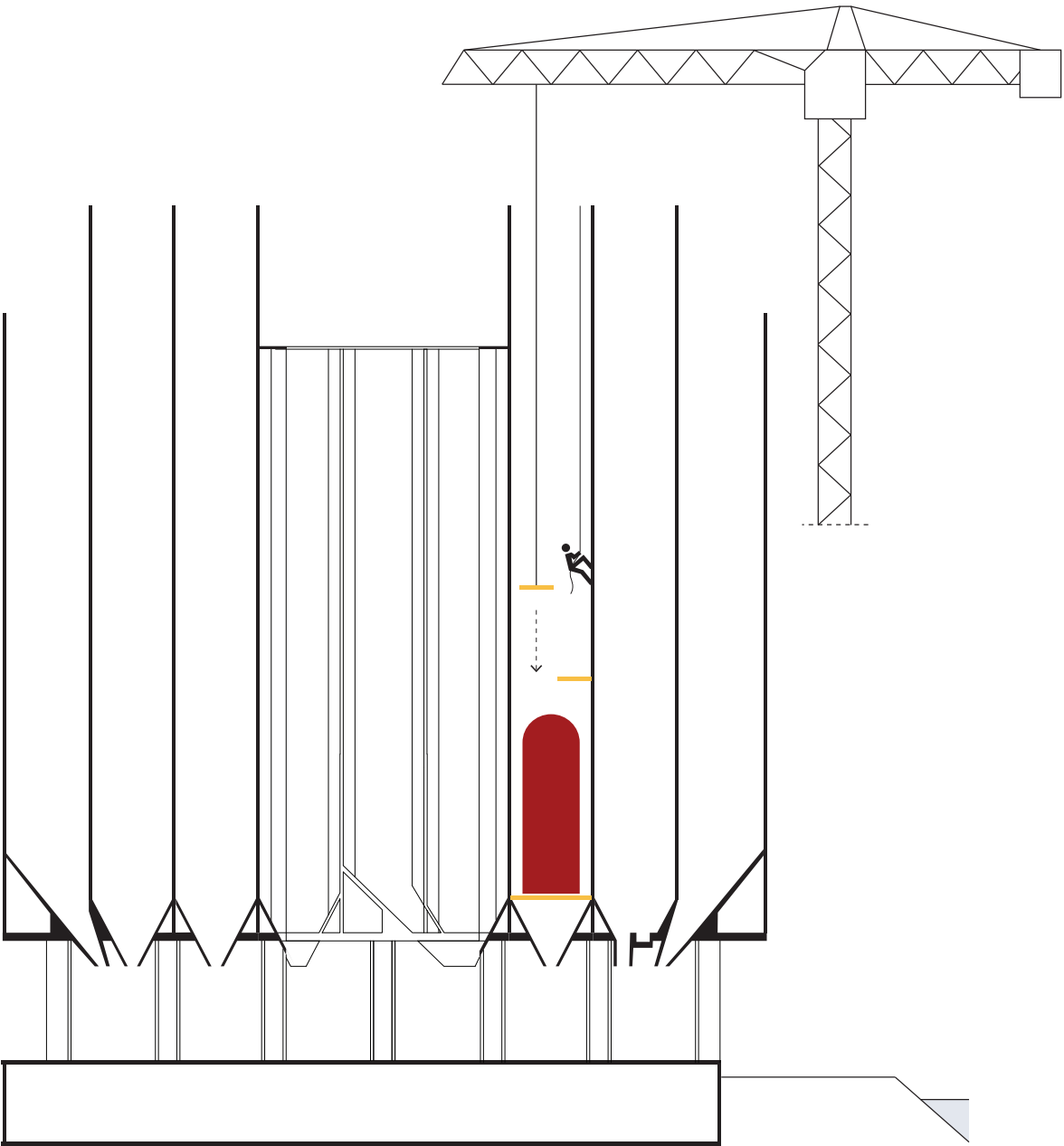
# Manufacturability

*Construction Crane*

*Rappelling Construction Workers*

*Composite Steel Deck Floor*

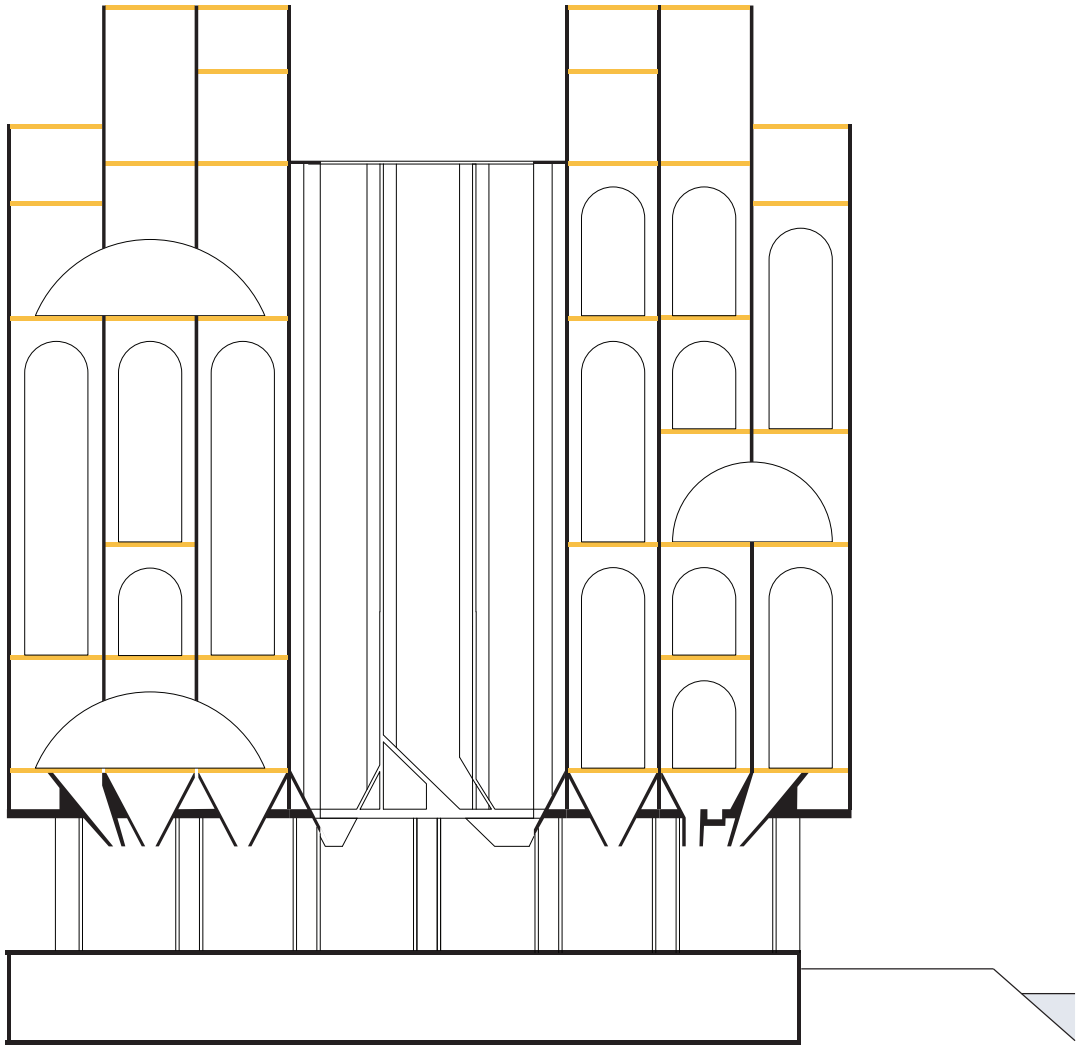
*Wire Saw Cuts*



# Floor Composition

*Only Removal*

*Arches*

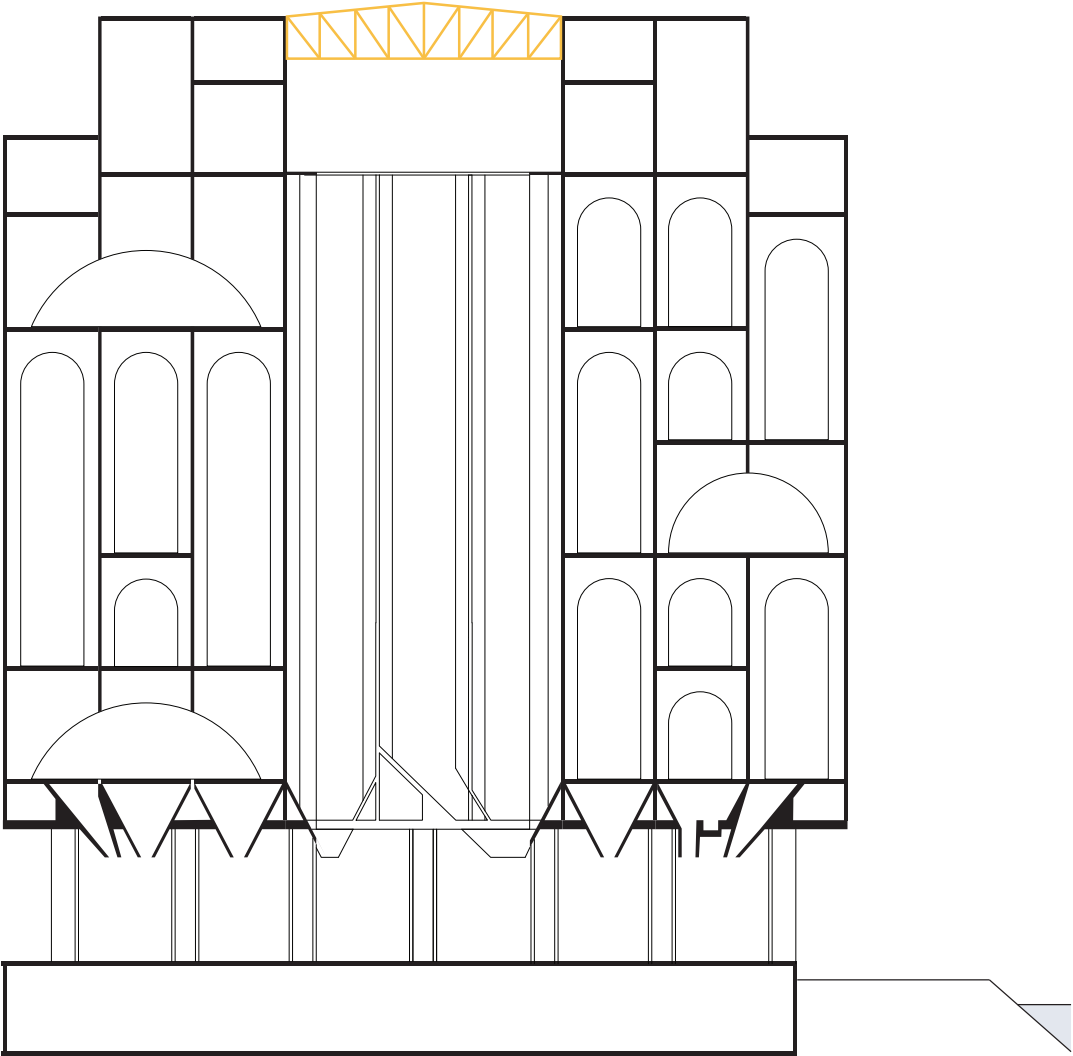




# Atrium Roof

*Lattice Girder*

*Glass Panels*



# **Architectural Design Approach**

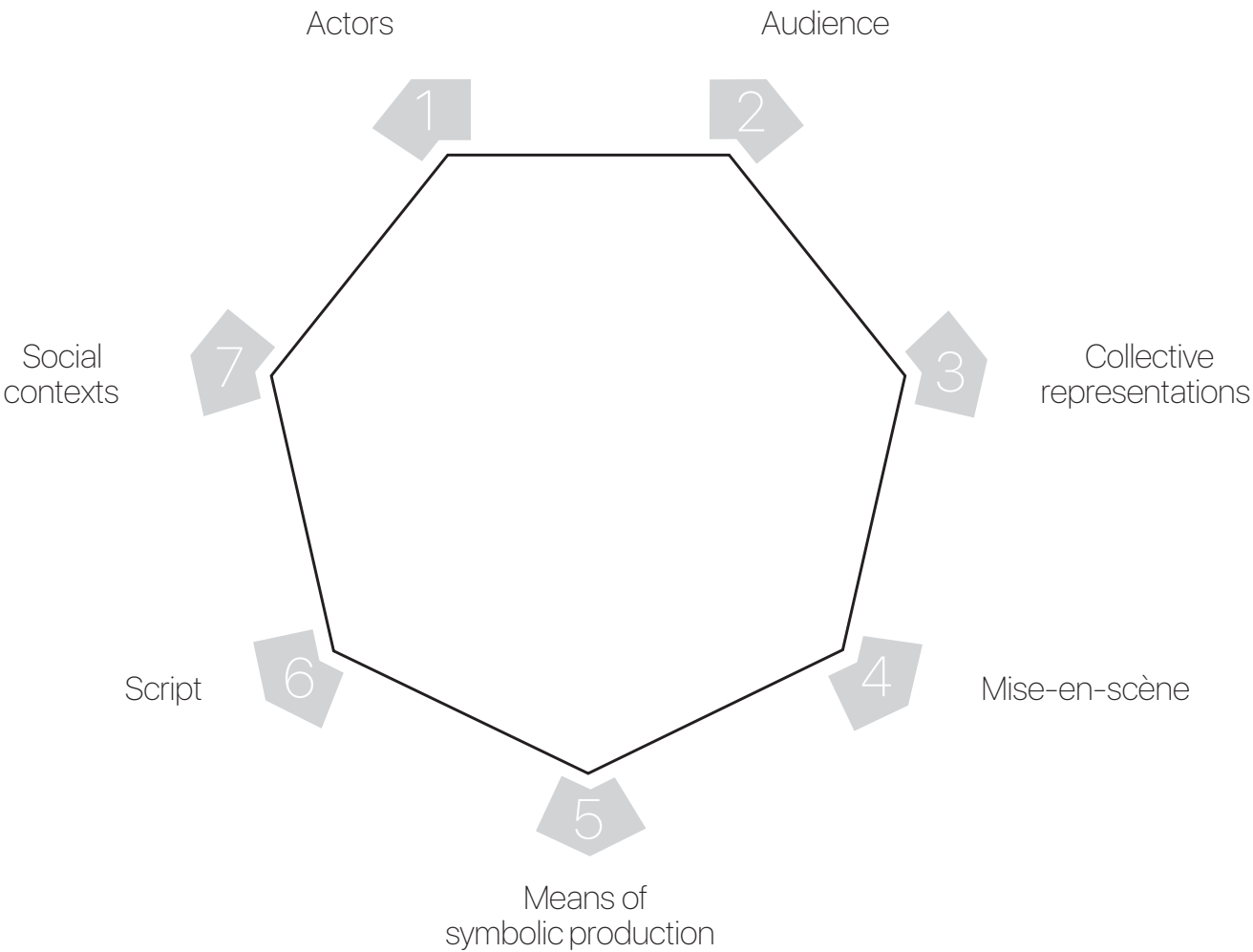
(Experience, Composition of Spaces)



# A. Performance Heptagram

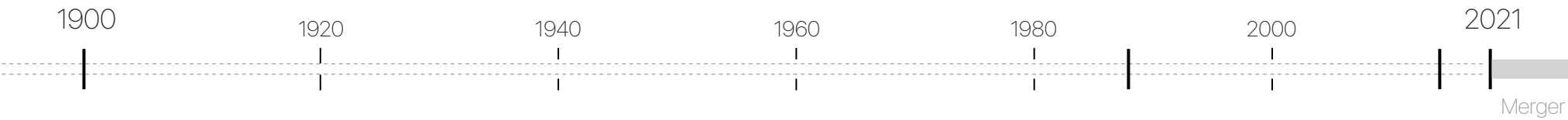
Museum performance (How does it operate?)

Expierence of the visitor



The museum performance heptagram / Hoebink D.

Source; Roos, J., Hoebink, D. en Arjen Kok. *Metamorphosis: The transformation of Dutch Museums.* Delft: TU Delft: Heritage & Architecture, 2019

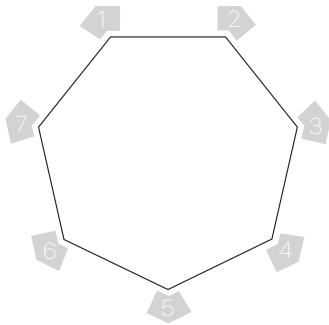


1986  
Maritime Museum  
1<sup>st</sup> museum

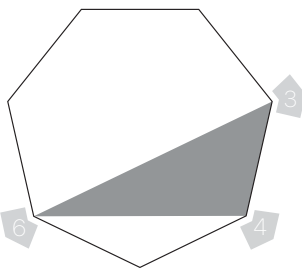
2016  
Rotterdam Museum  
2<sup>nd</sup> museum

2021  
Rotterdam Museum of Maritime History  
merged museum

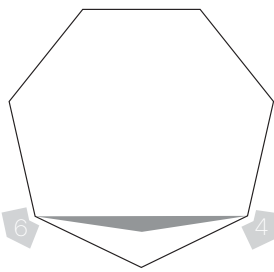
Museum as a performance



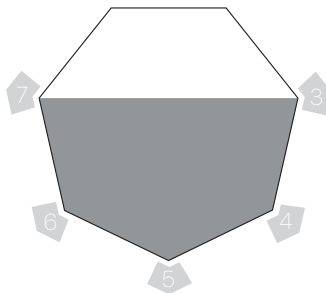
- 1 Actor
- 2 Public
- 3 Collective representations
- 4 Mise-en-scène
- 5 Means of symbolic production
- 6 Script
- 7 Social contexts



Objects exhibited by form, use and subject, without strong unity in their coherence and chronology. Strong contrast between the exterior and interior collection.



Objects displayed in a fragmented composition, with no apparent sequence. Exhibition of the collections incoherent with the original identity of the museum.

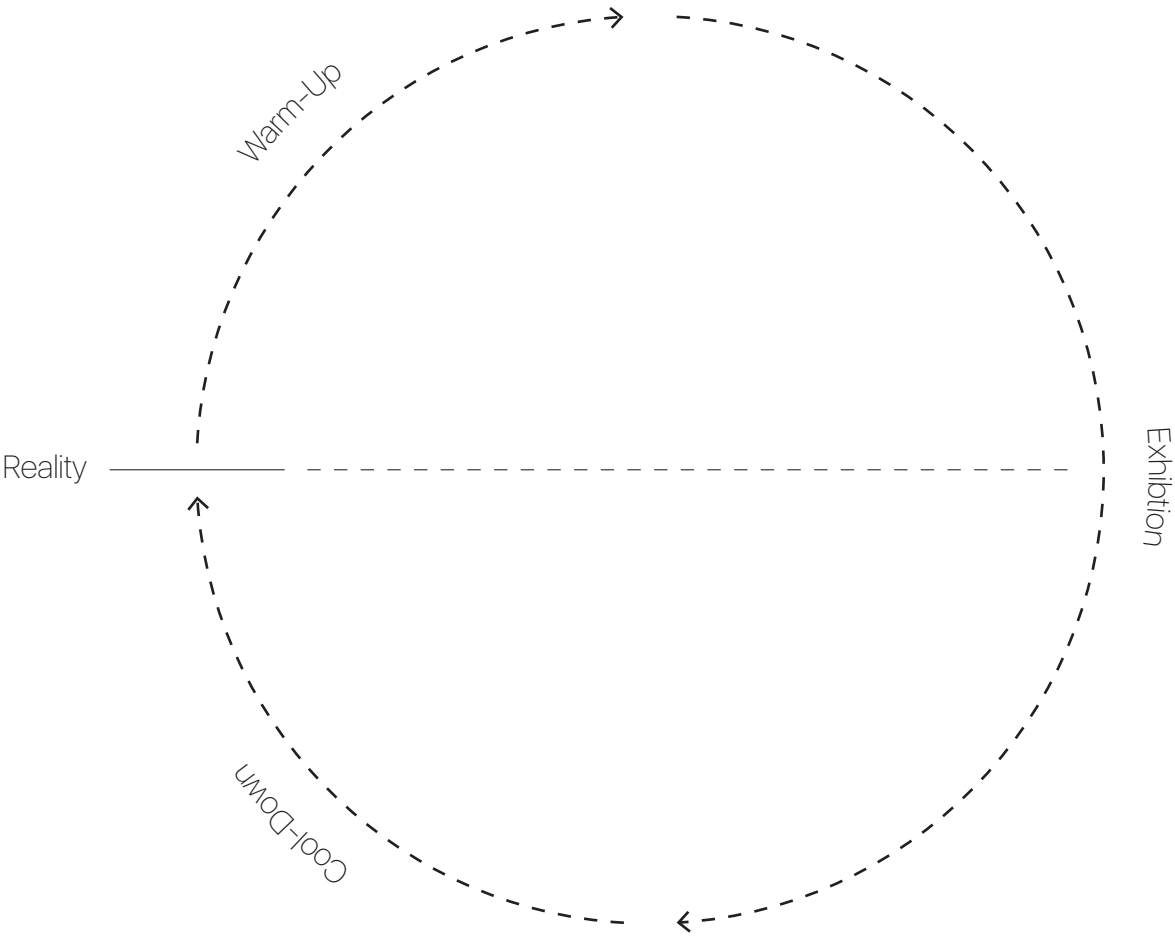


Objects displayed by form, use and subject. Coherent relation between the human and industrial scale. Strong representation of both their individual as their collective importance within their exhibitions.



# B. Warm Up & Cool Down

*Transitional Spaces*  
*Everyday Life versus Performance*  
*Experience of the Visitor*



Warm-Up Spaces:

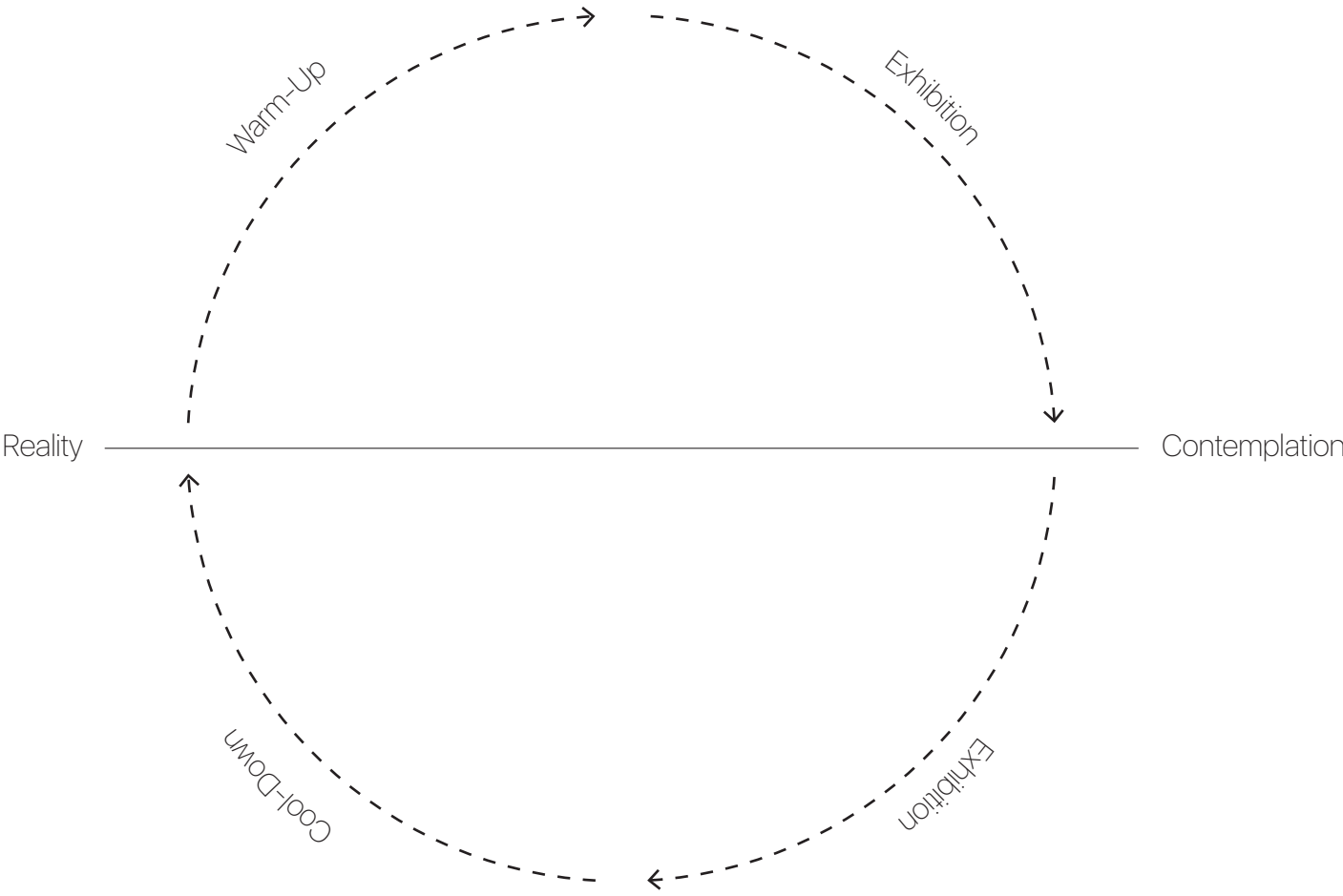
- Café
- Cloakroom
- Restroom
- Ticket/Info Counter
- Atrium

Cool-Down Spaces:

- Museum Store
- Café
- Restaurant
- Cloakroom
- Restroom
- Atrium

# B. Intermediate Space

Moment of Contemplation (Pause)



Warm-Up Spaces:

- Café
- Cloakroom
- Restroom
- Ticket/Info Counter
- Atrium

Cool-Down Spaces:

- Museum Store
- Café
- Restaurant
- Cloakroom
- Restroom
- Atrium

Intermediate Spaces:

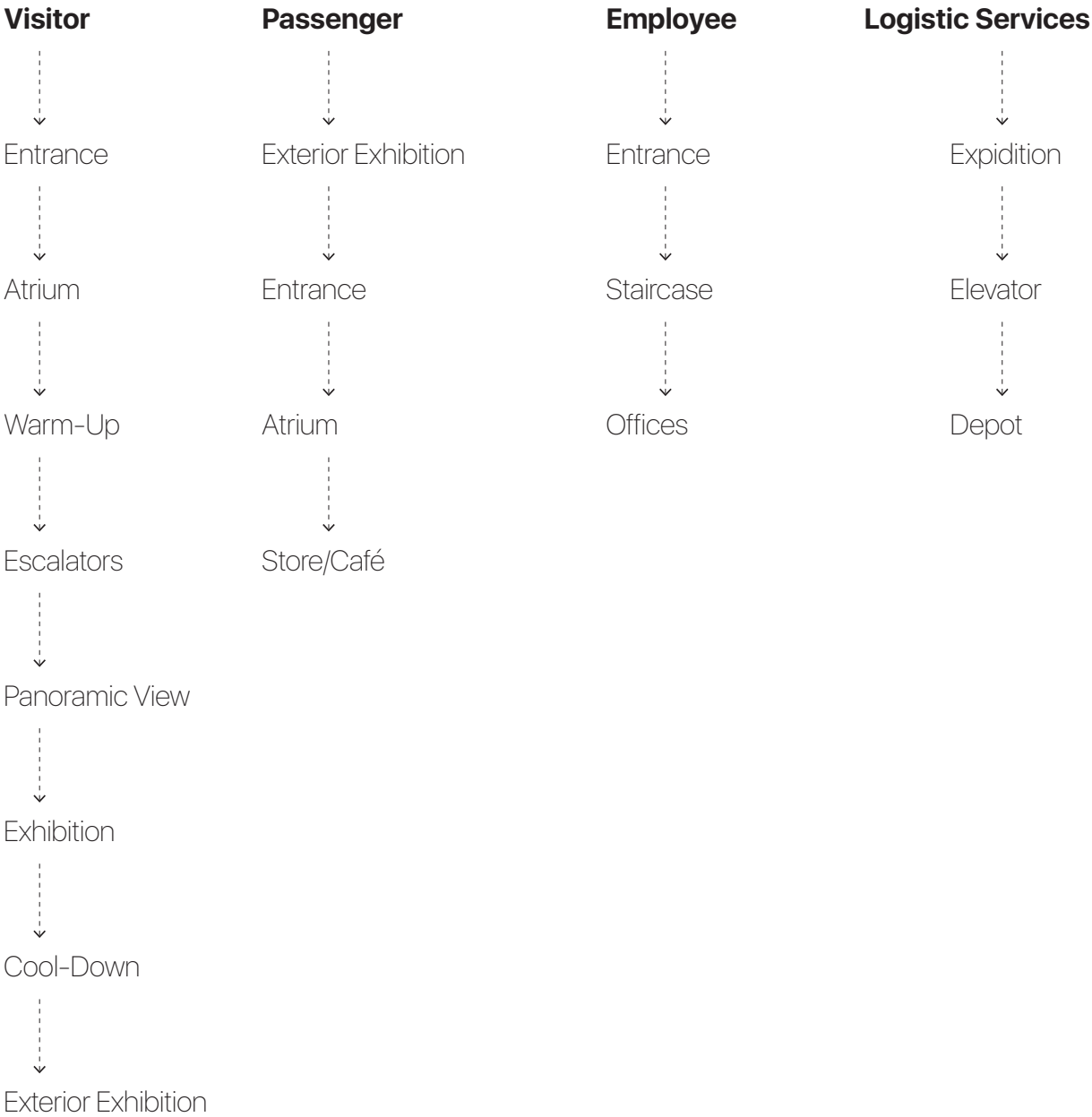
- Atrium
- Escalators
- Pause Spaces



# C. Sequences of Use

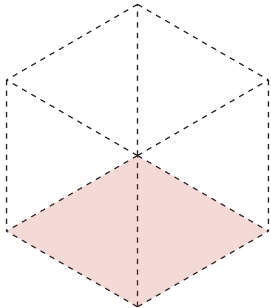
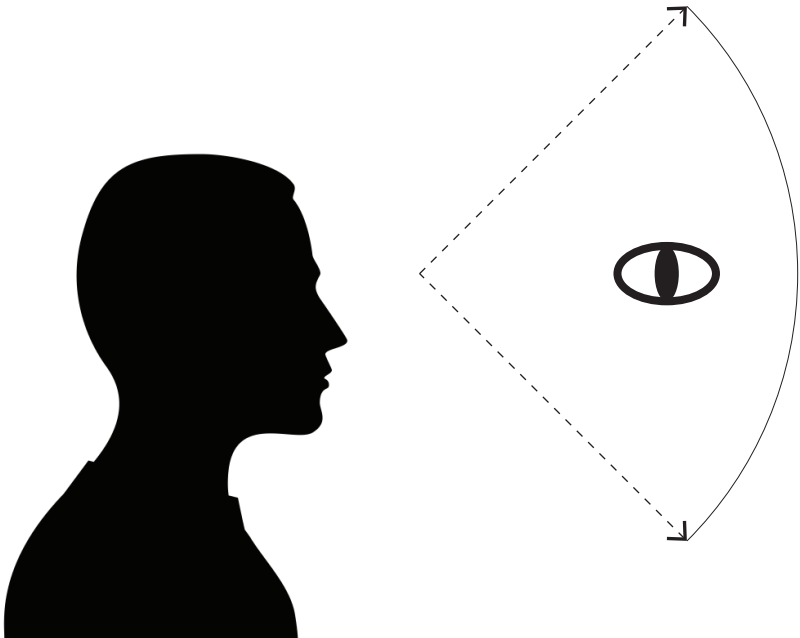
*Different characters, different needs*

*Subsequency of spaces*



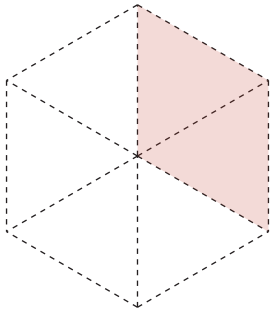
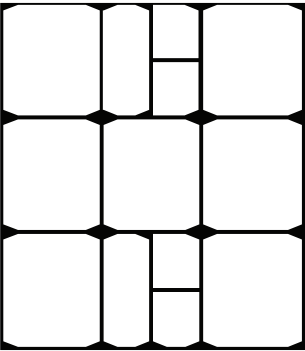
# D. Forms & Expression

Form Language  
Emphasis on Line of Sight



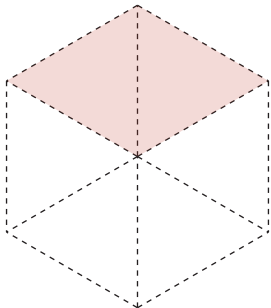
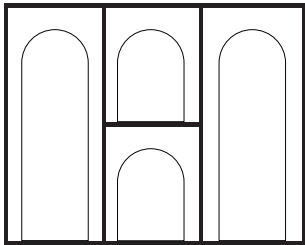
Plan:

Pure Forms  
Rational  
Stasis



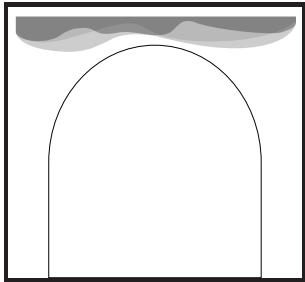
Section:

Hybrid  
Movement  
Navigation  
Spatial Relations



Ceiling Elevation:

Organic  
Experience of Space  
Verticality

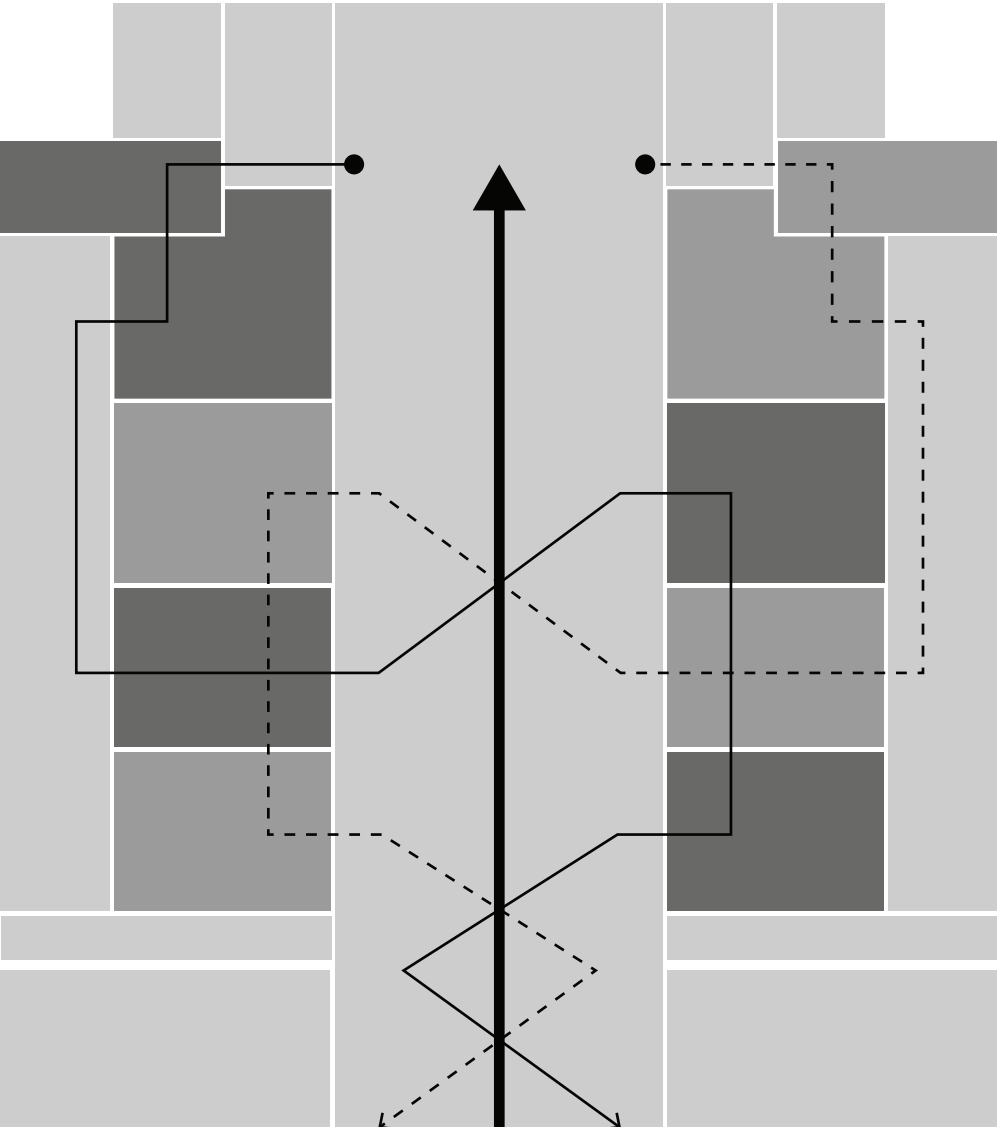




# Routing

*Double Helix*

*Denial and Reward*



# Renders



