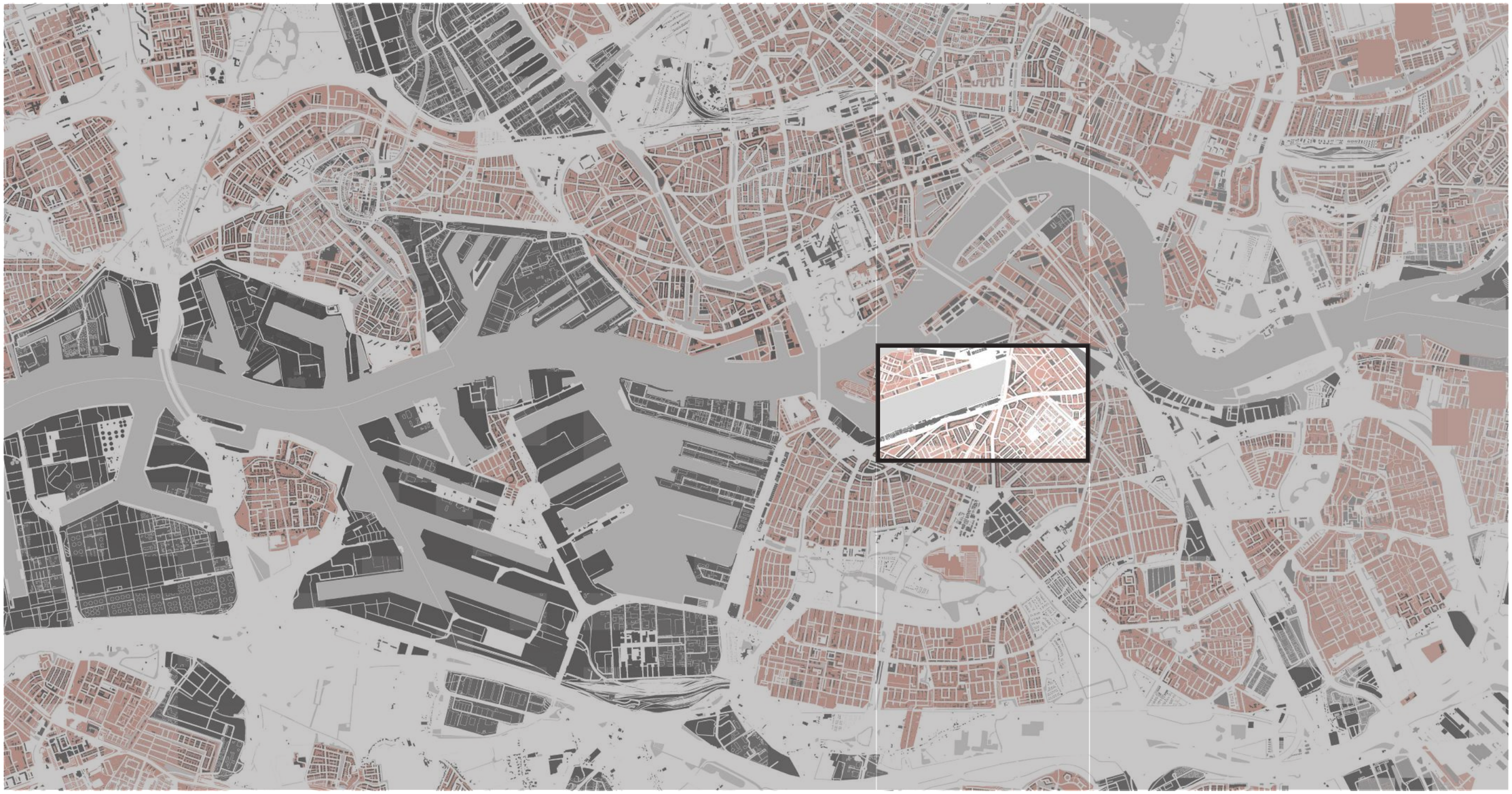
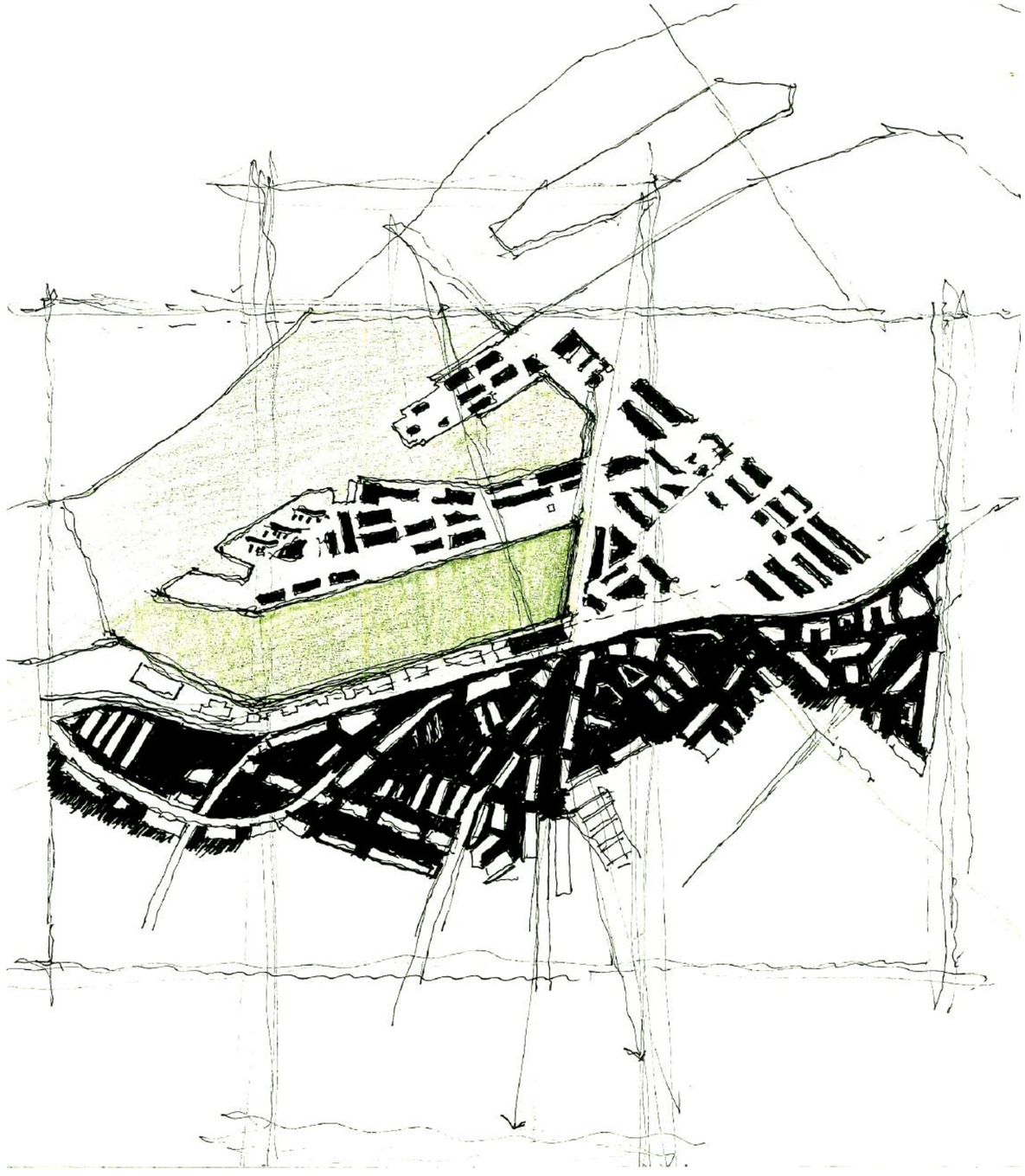
Graansilo Maashaven



Urban Configuration



Part I

Research

Introduction

Historical overview

Research question

Analysis

Analysis (present)

Value Assessment

Design question

Part II

Process

Methodology

Programme

Design Approach

Design

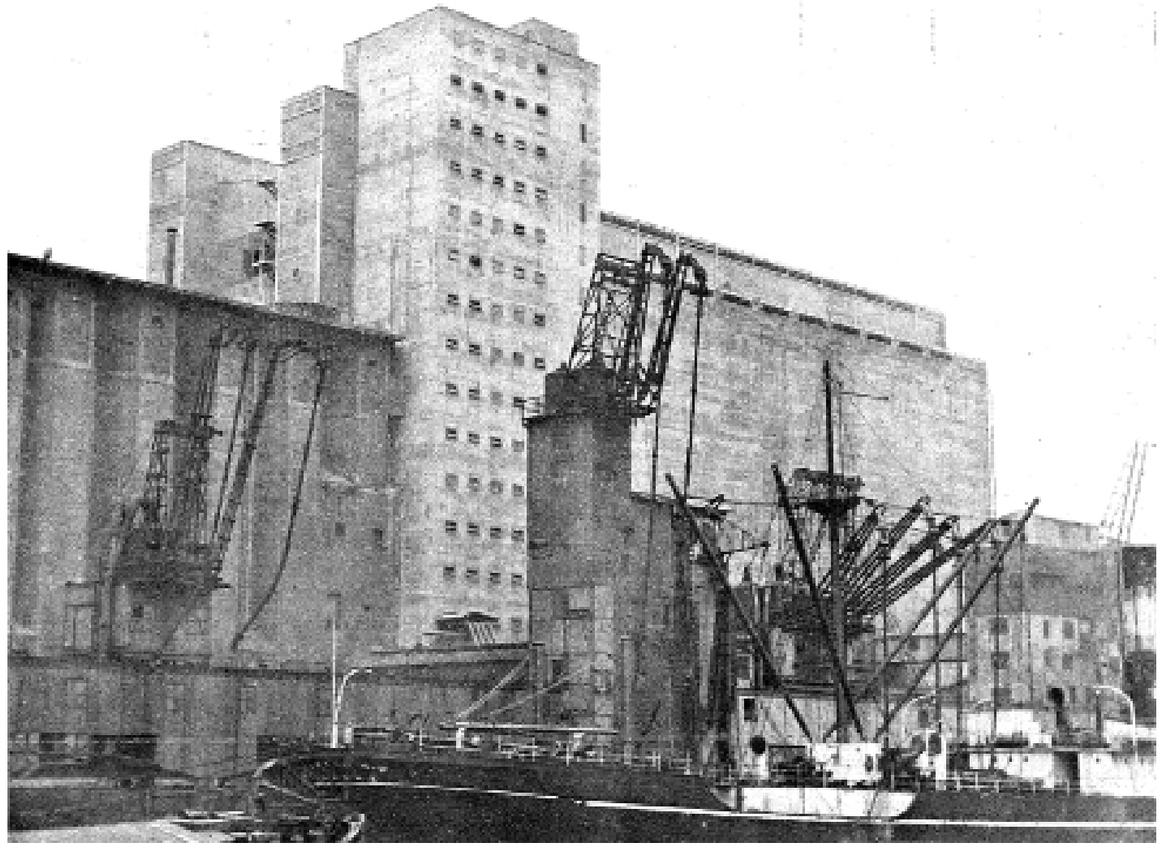
Main Interventions

Design Elaboration

Reflections

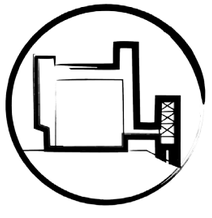
Maassilo: major silo complex

storage, processing and distribution of grain

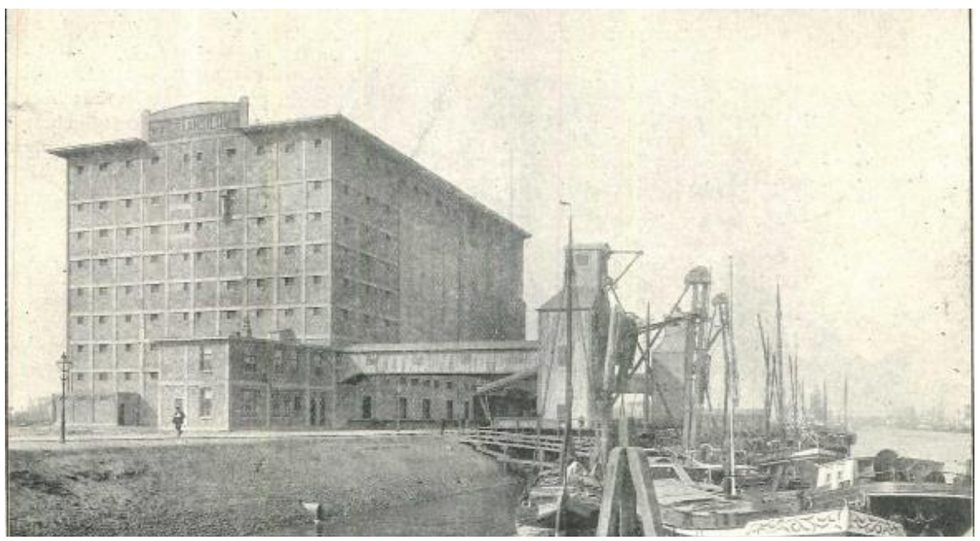


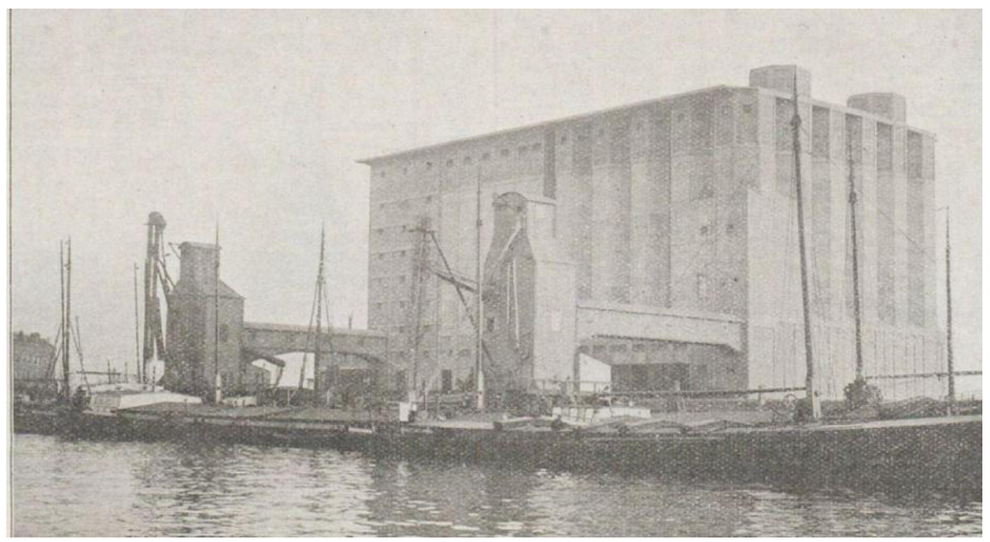
Developed into an ensemble

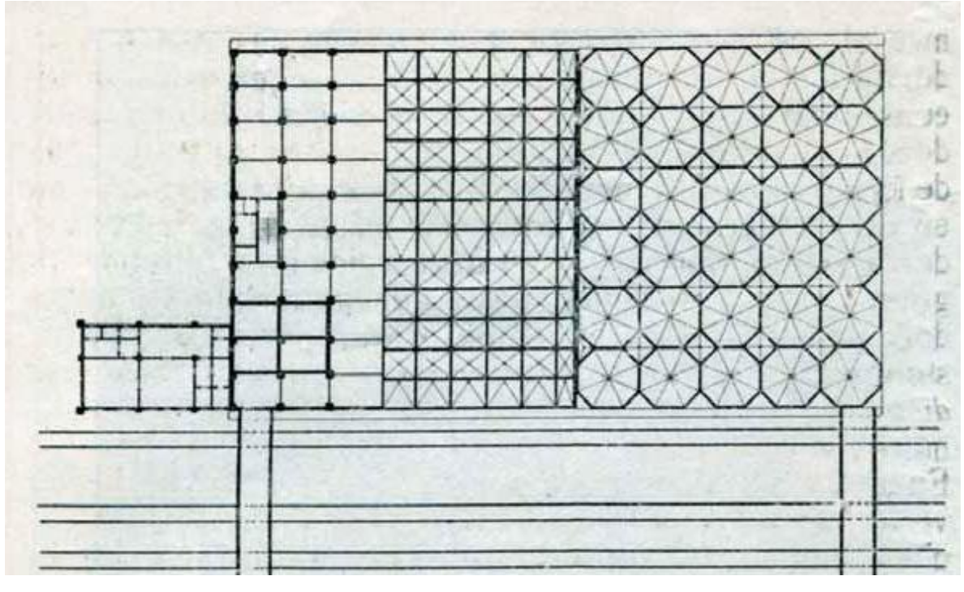
relationship to the waterfront

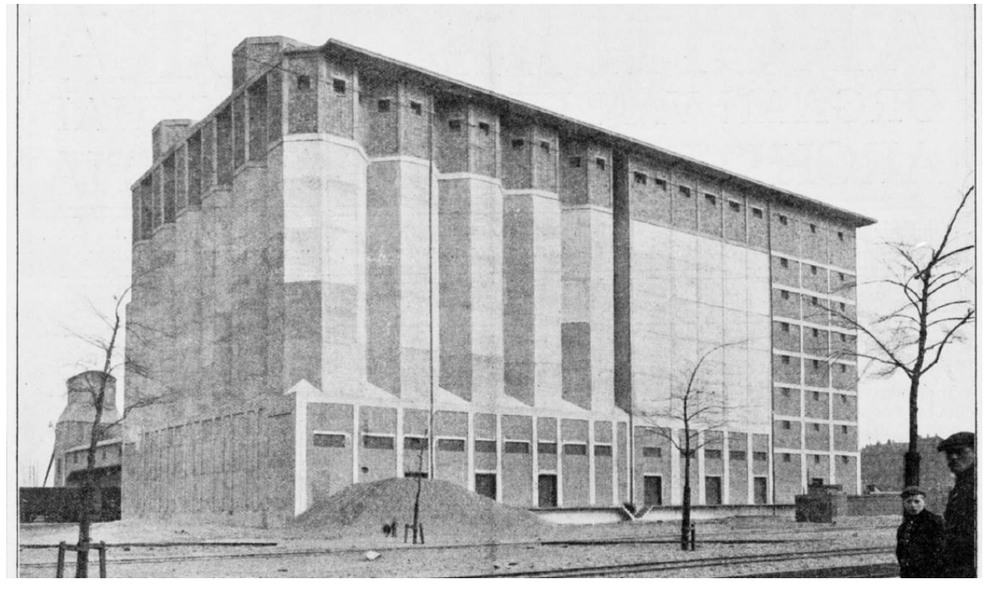


Building phases: 1910 J.P. Stok





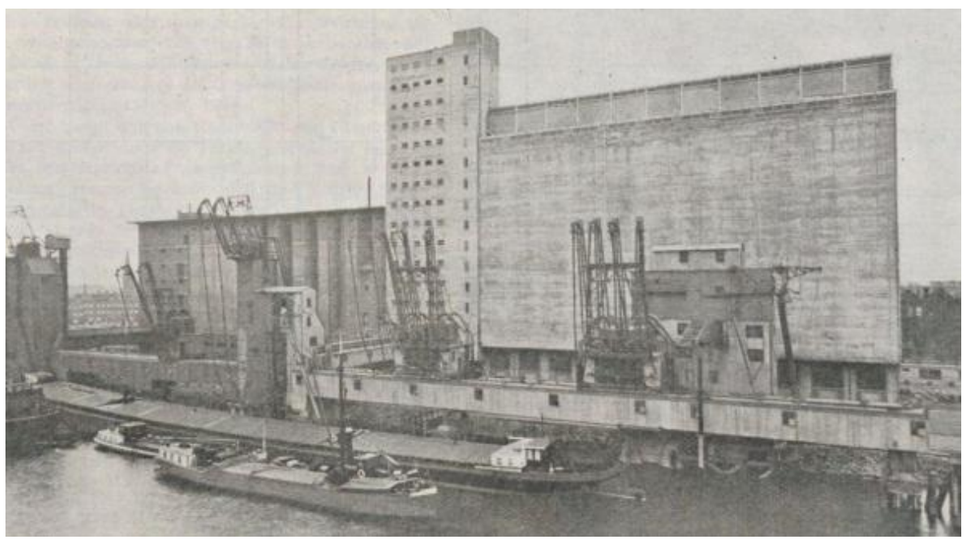


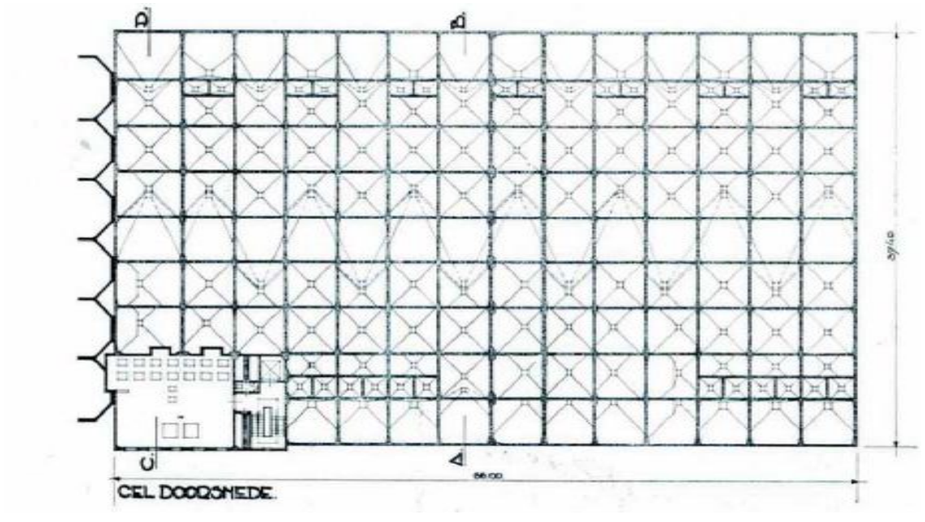


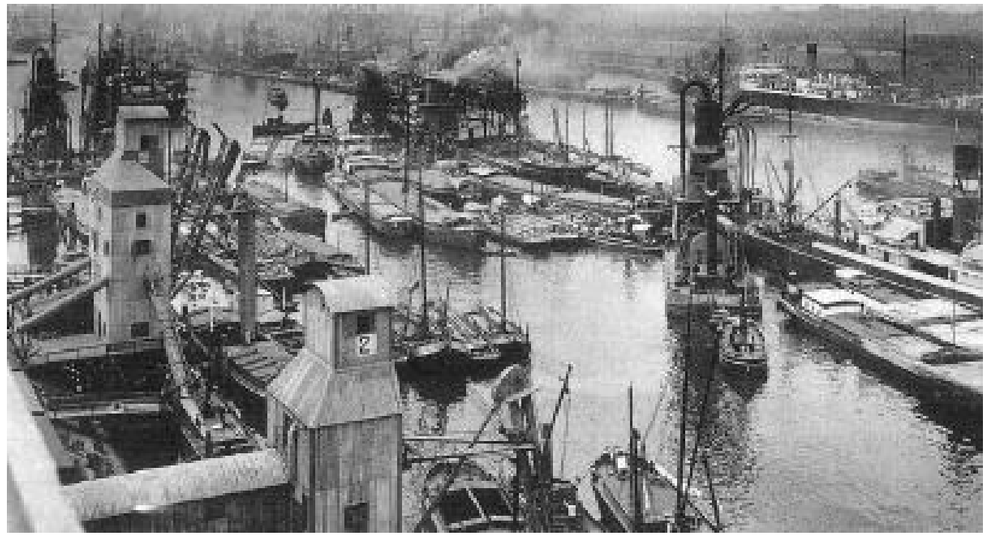
Commissioner: N. V. Rotterdam grain silo society

Capacity: 20.000 tones **Style-Typology**: Post-eclecticism

Building phases: 1931 J. A. Brinkman & L.C. Van der Vlugt





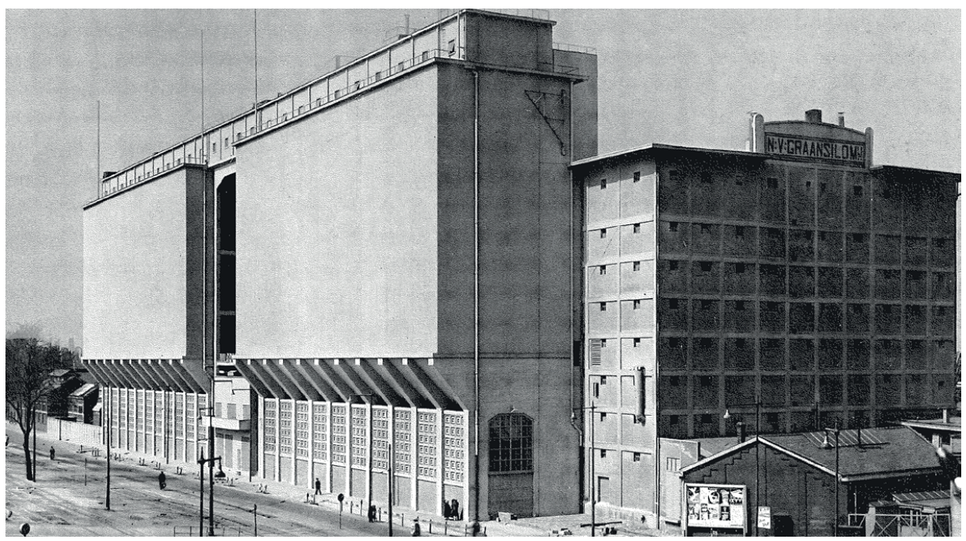


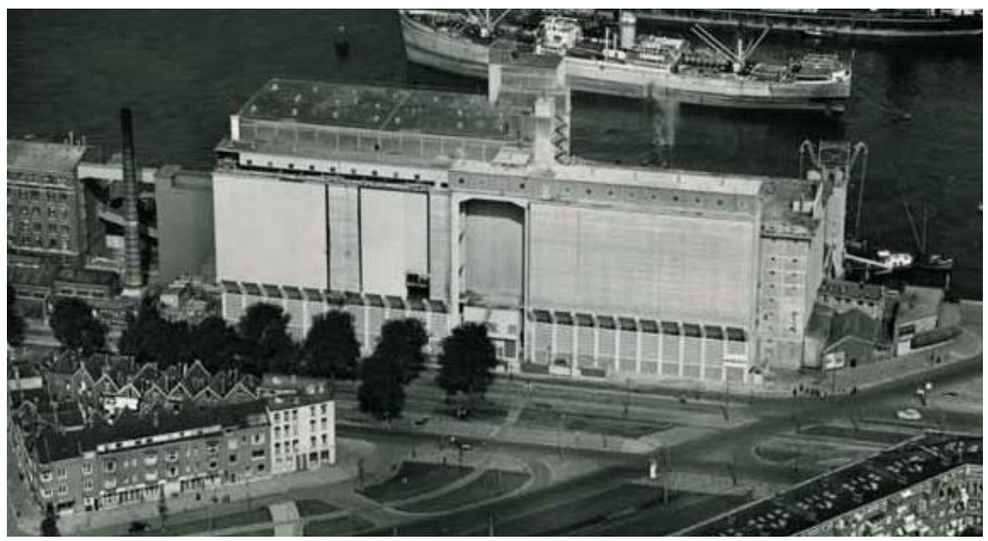
Commissioner: (AVG) Grain elevator company

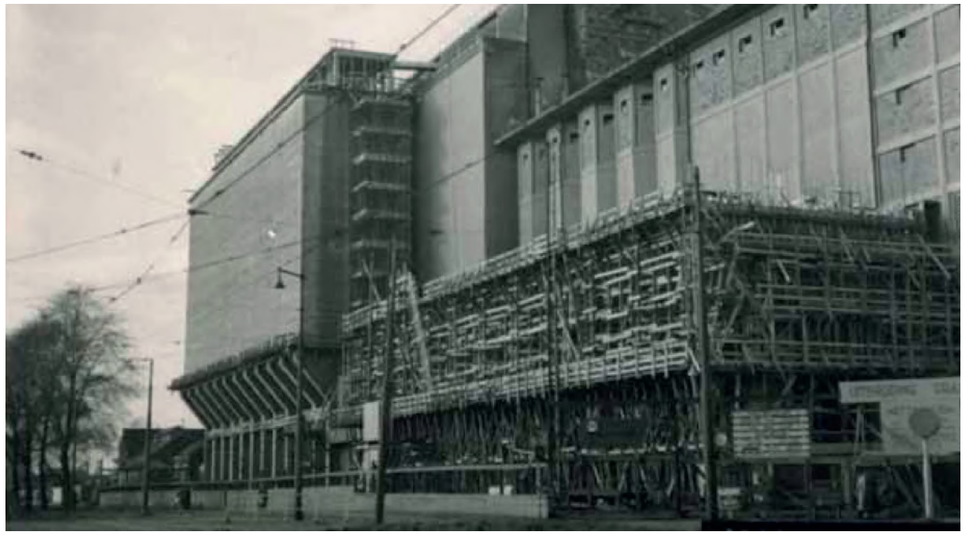
Capacity: 44.000 tones

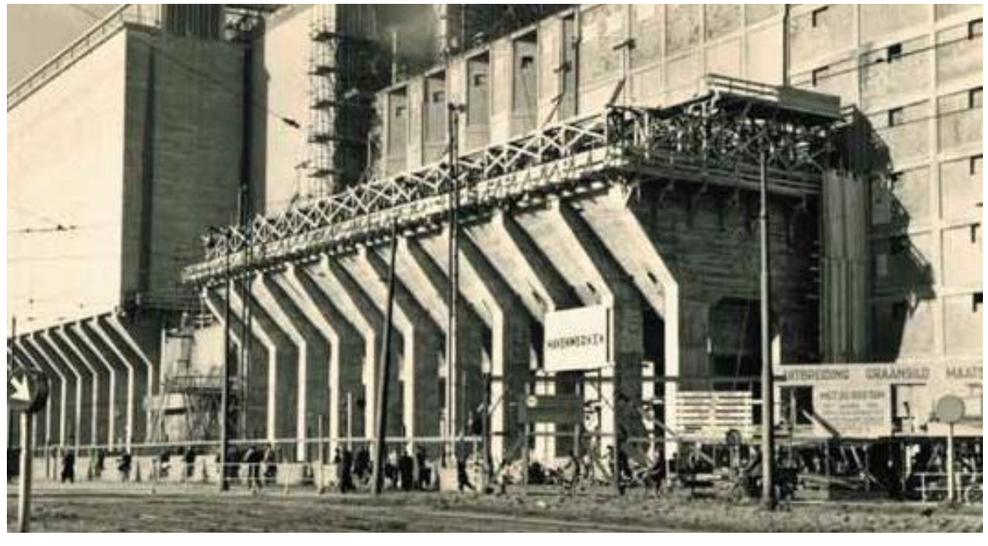
Style-Typology: New Objectivity

Building phases: 1951 J. D. Postma







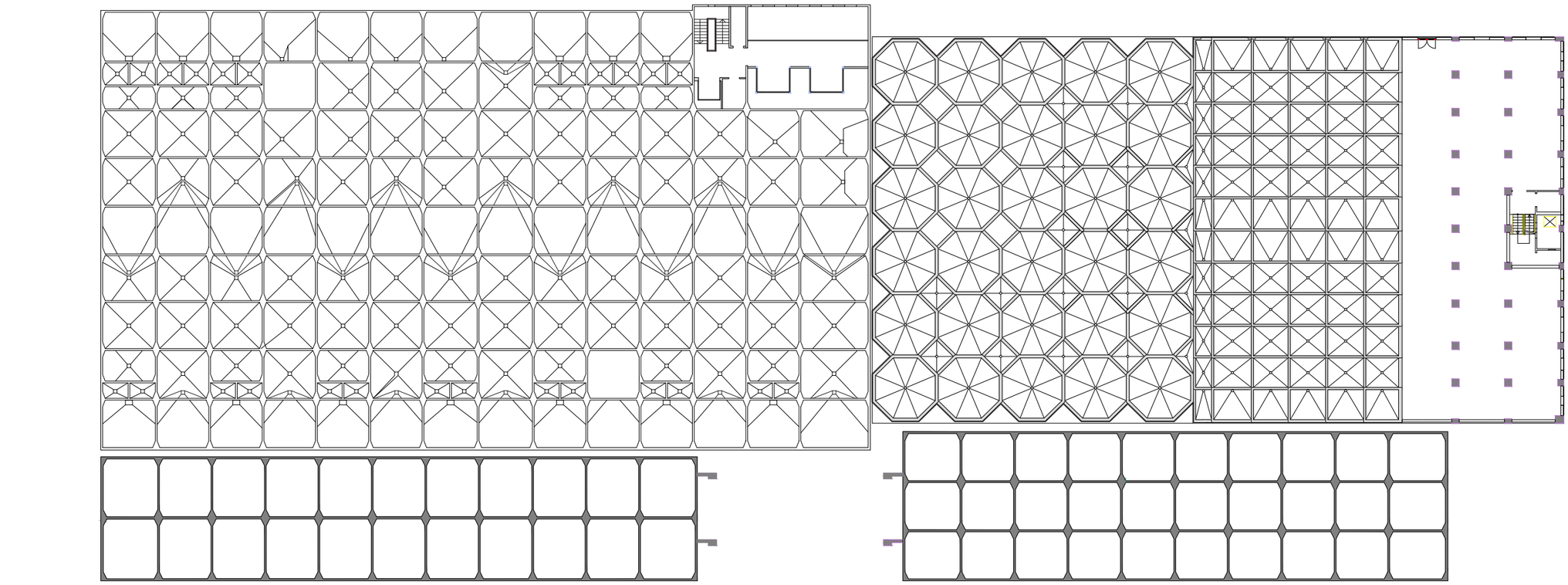


Commissioner: (AVG) Grain elevator company

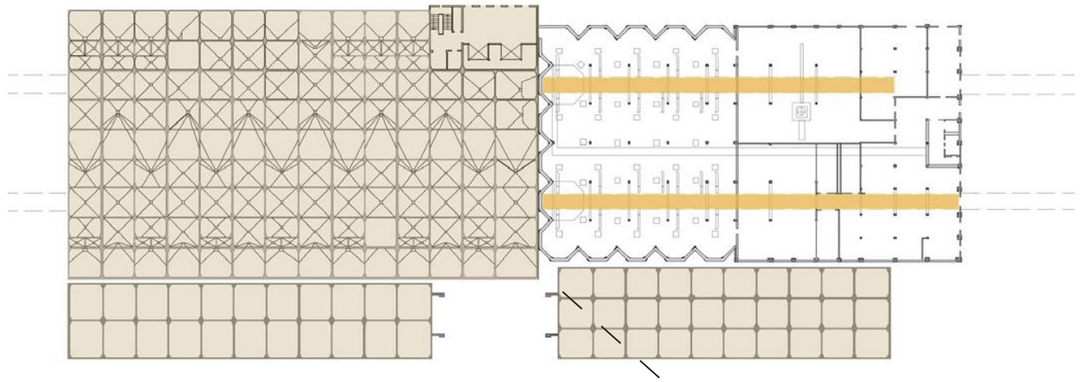
Capacity: 22.000 tones **Style-Typology**: Modernism

A monolythic construction

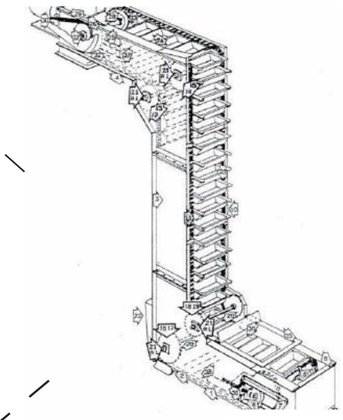
largest in-situ construction in Europe

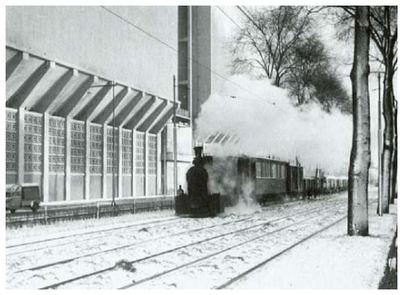


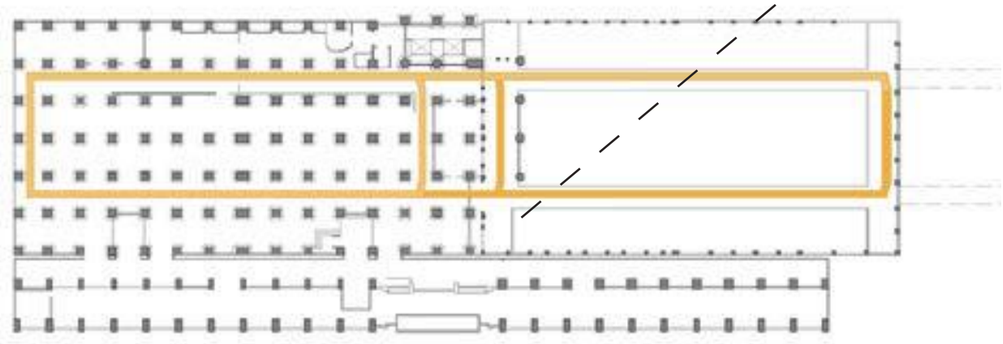
Process



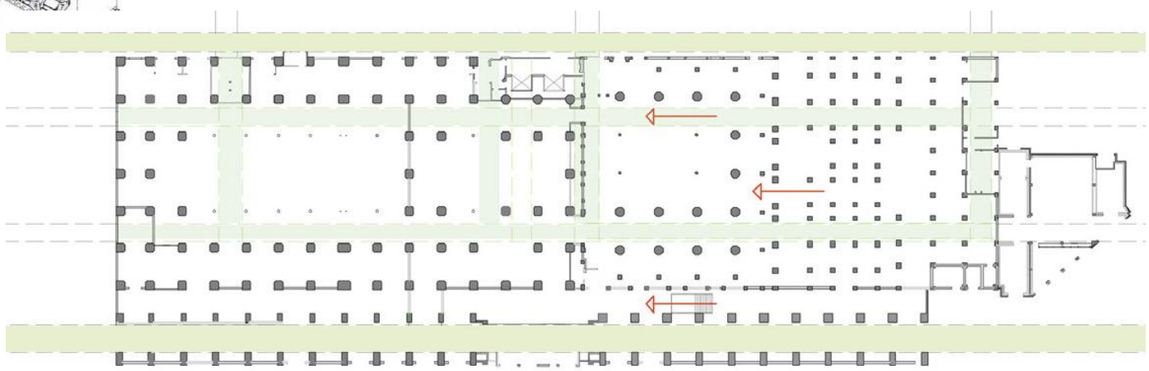
Attic levels





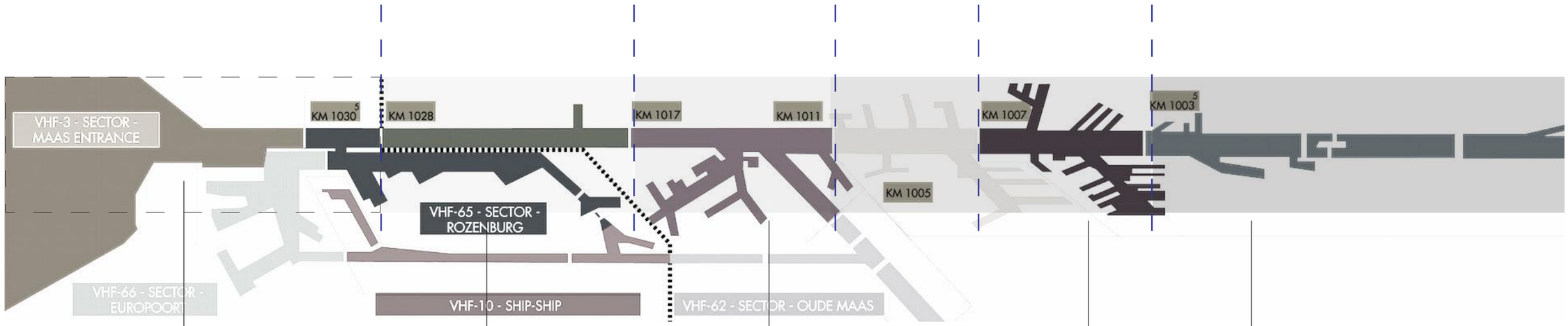


Basement



Ground floor

Historical Development: Movement of Industry



Maasvlakte

Europoort

Botlek

Waalhaven

Maashaven

Present

-NOW&WOW dance club-
first tenant of the newly owned building

Future plans

Urban challenge

Strategic location

Industrial Heritage

City scale

Catalyst location

Necessity for flexibility- social resilience

Site scale

Inhibiting site conditions

limited open space, daylight condintions

Research question

How can the Maassilo act both as an **object** of historical continuity, and **urban mediator**?

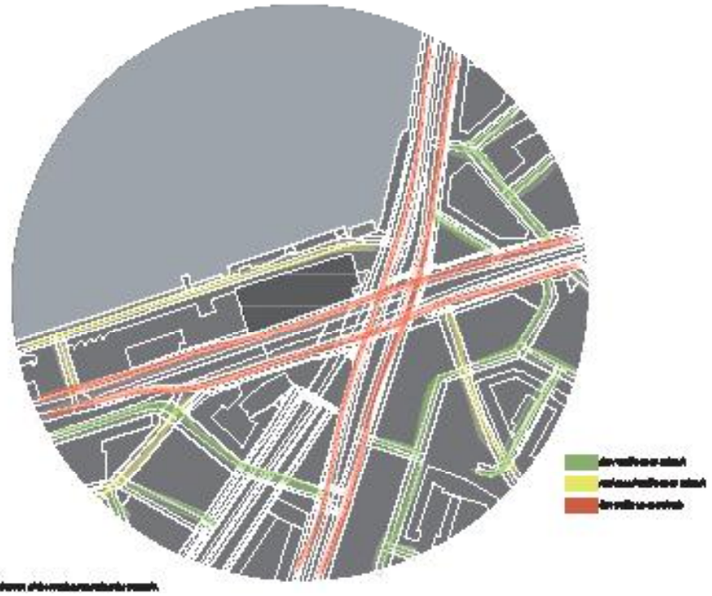
mixed-use approach
combining both public and private

Surroundings: Tarwewijk and Bloemhof

Views from Tarwewijk

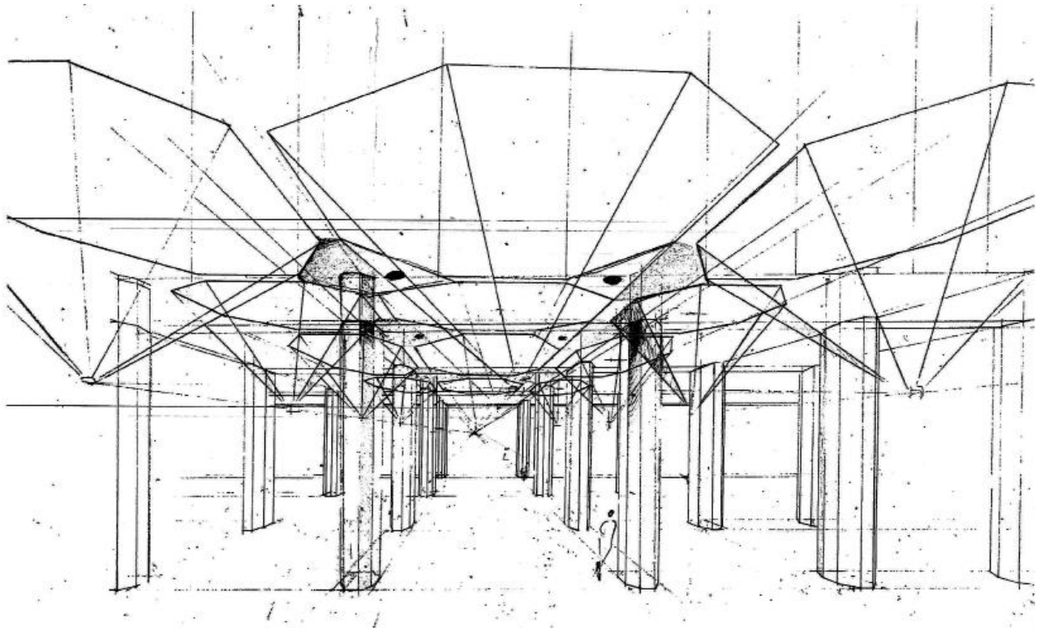
Site: Current conditions

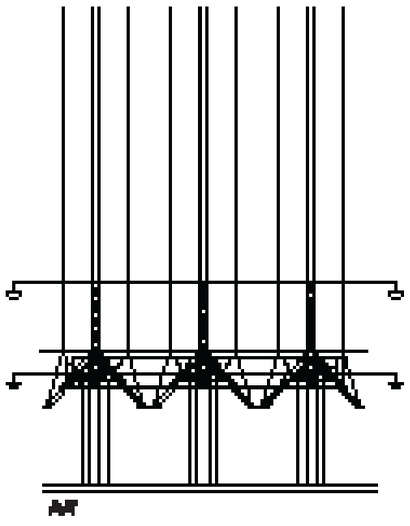
Traffic

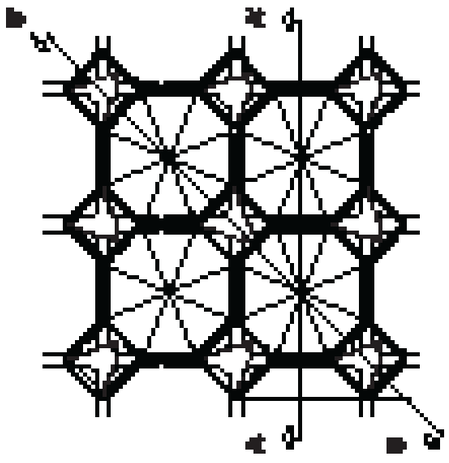


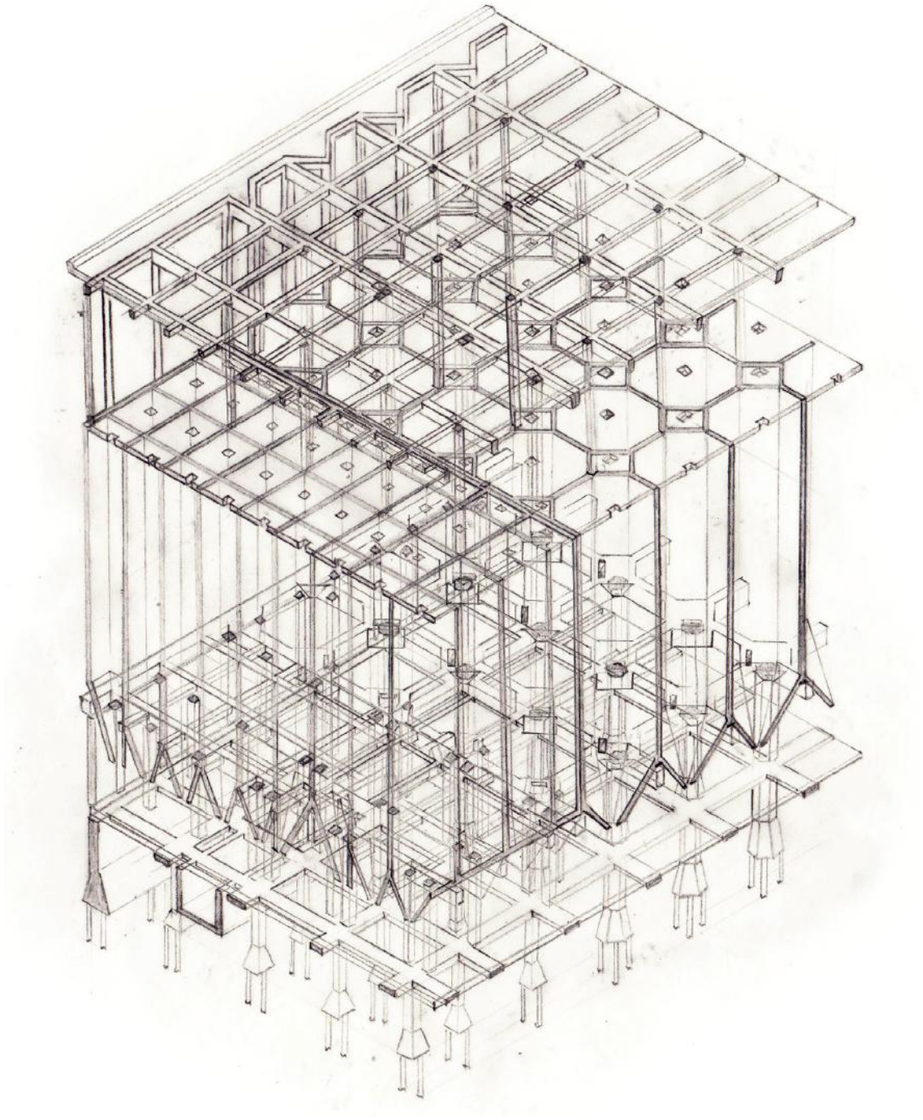
Accessibility

Structural studies: Monolythic construction



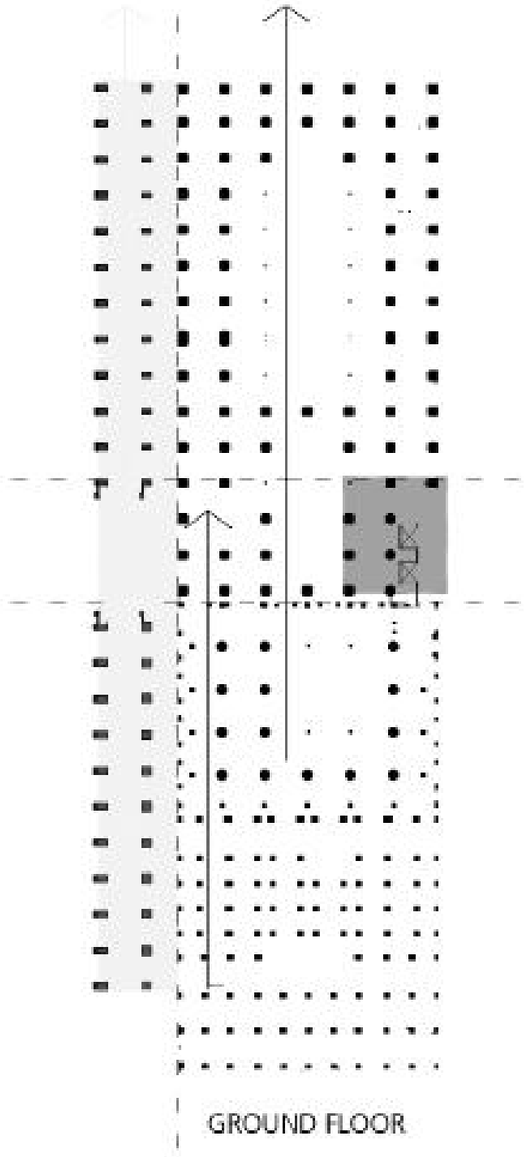


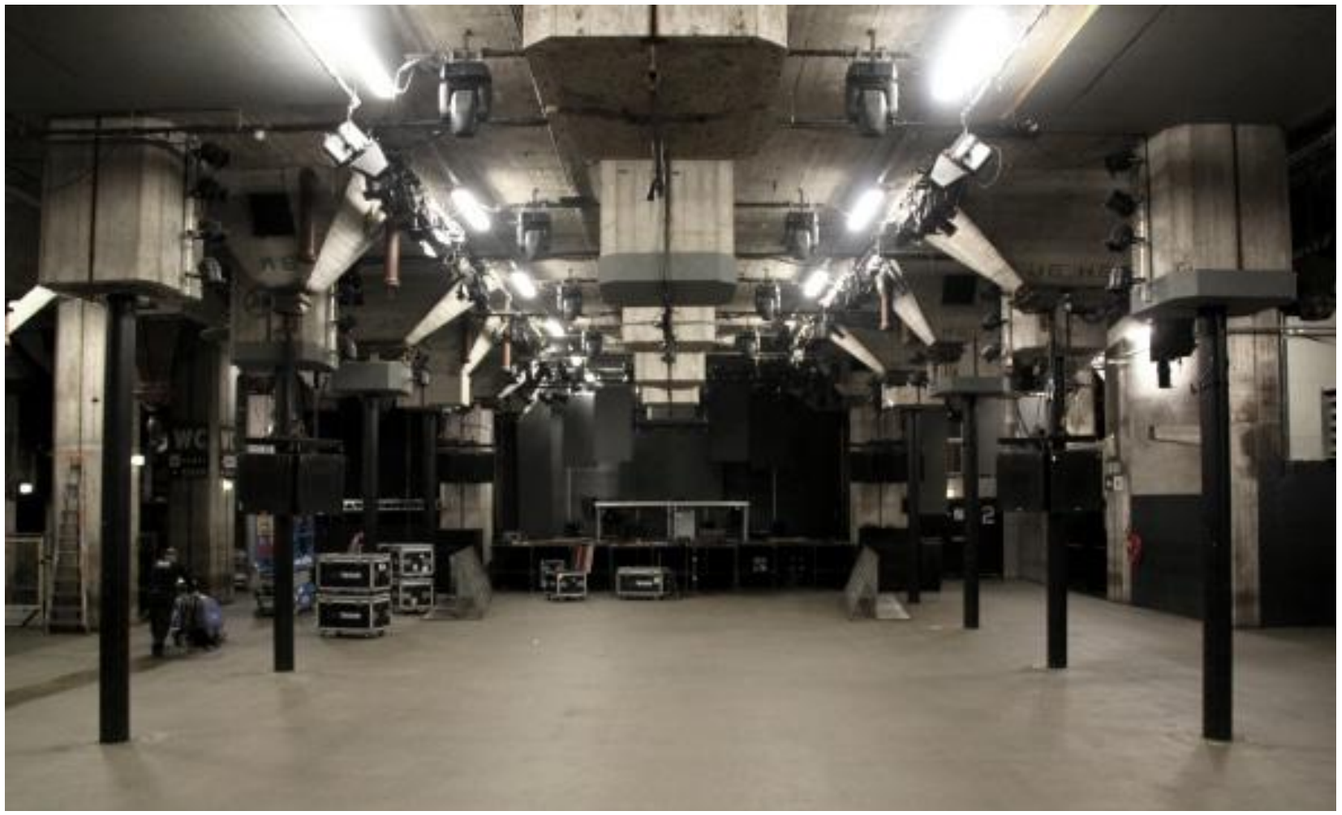


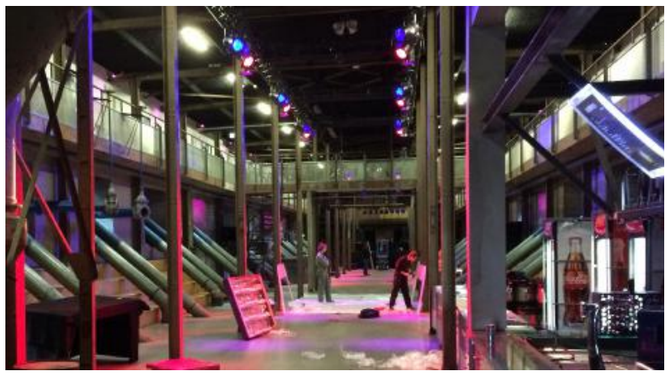


Axonometric study of the silos of the 1st phase, by David van Weeghel

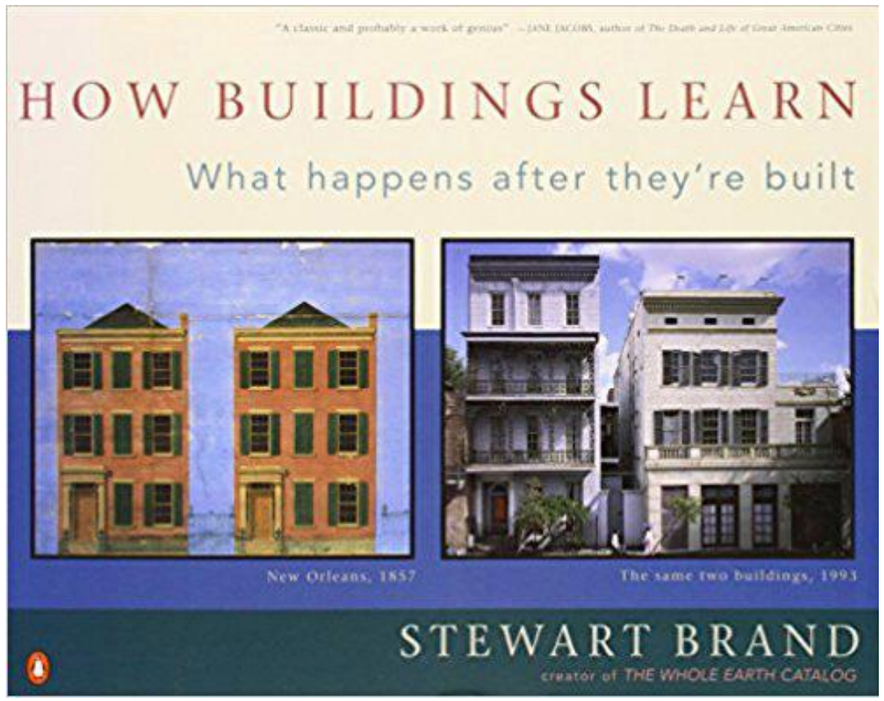
Space plan

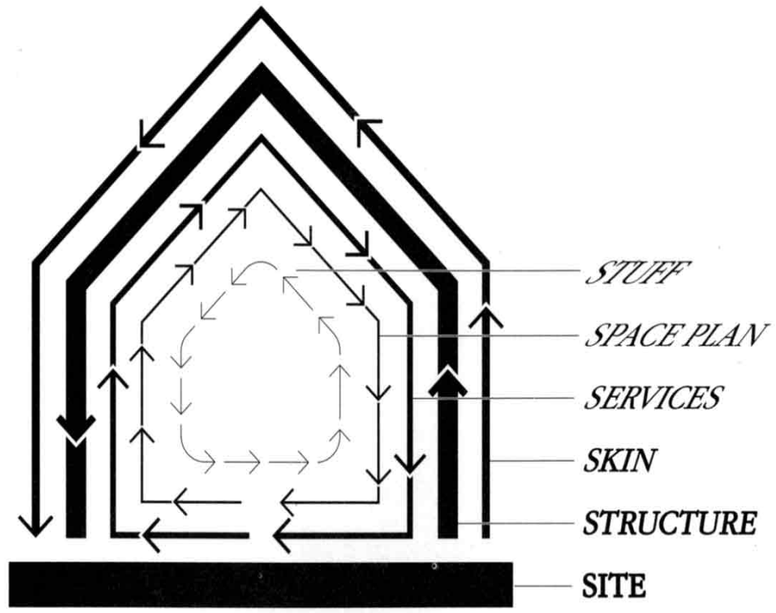






Building Analysis: Approach

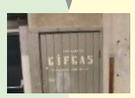
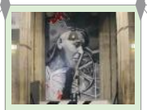




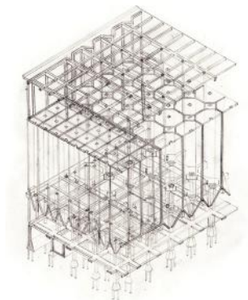
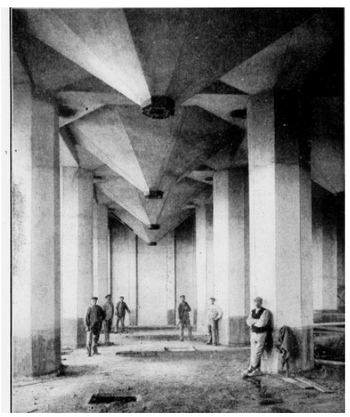
Value Assessment

VALUE MATRIX

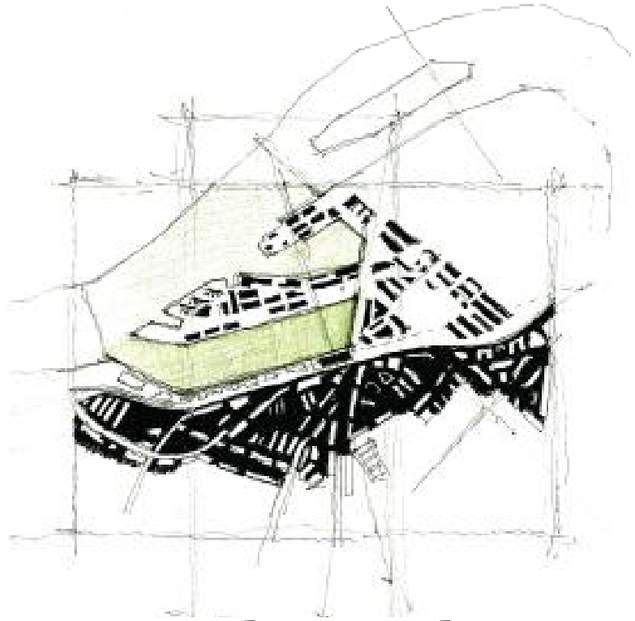
MAASSILO, ROTTERDAM

	Age Value	Historical Value	Intentional Commemorative Value	Newness Value	Art Value	Rarity Value	Use Value	Aesthetic Value
Surroundings		 The Rotterdam south area is characterized by its former harbour function. Several morphological elements (old train tracks, roads, harbours and docked boats) that characterize the surroundings of the Maassilo.	 The names of streets, harbours and neighbourhoods refer to the history of the area. "Maashaven" for instance, refers to the previous harbour function. Or "Tarwewijk" as we see on the map the name of the neighbourhood.	 A lot of new buildings (especially on the Kop-van-Zuid by famous architects) bring new activities to Rotterdam-Zuid. These buildings function as a catalist for the development of the area.			 Due to the development of new connections with the center, the area gained a good location within the urban fabric of the Rotterdam. With the harbour-industry disappearing, the area remains with lots of space for further development.	 The new high-rise buildings that have been constructed over the last two decades create an interesting contrast with the original industrial buildings.
Site	 Rust, algea, and decay are visible on the structures of the unrestored elevator towers.	 The building complex, together with the elevator towers and connecting bridges form an almost total ensemble (train tracks are missing) in which the process of grain storage and distribution took place.	 Sofar two Elevator towers have been restored in 2015. They have been brought back to an original state which is clearly an act of commemoration.			 The total ensemble of fixed elevator towers, moving elevators, supporting bridge structure and the connection with the building complex is rarely found in the Netherlands.		  The building has always functioned as a resilient mass in a vibrant industrial setting. The abandonment of activity evokes the image of an empty stage.
Spatial Composition		 The different volumes give an impression of the development of the company, the economy and of the building as a whole. However this unclear to the untrained eye.						
Skin	 Weathered surfaces, decay, damage on mainly plaster and rust on steel is visible on different parts of the facades.	 Since civil works and industrial buildings became part of the architectural discourse in the beginning of the 20th century, the silo buildings are important works in the oeuvre of the different architect. For Haan the office building was a bit less important being 1 of many.	 The original sign of the east-facade on the building by J.P. Stok has recently been restored from to the original as it was built in 1910. And next to the entrance door on the same building there is a sign indicating the company details.		 The architectural styles that are represented in the facade express the architects artistic intentions. J.P. Stok 's facade for instance, expresses the different functions on the inside. The 35 x 55 meter painting called "Flyers of hope for universal Love" by the spiritual artist Lisa Lux on the 3rd-phase building is literally a piece of art.	 There is no trace of any identical 'plofroosters' like the ones in the third building by J.D. Postma which make it very unique.		 To prevent noise pollution from the club to the neighbouring houses the 'plofroosters' where covered by steel boards on the inside. Consequently the aesthetic appearance of the light coming in through these grills has been lost. Another element are the octoganol ribs of the silo's that emphasize the brutalistic appearance.
Structure	 The structure shows clear decay, has been worn out and damaged on several places and the concrete surface has gotten dirty after the hundred years of usage.	 The development of the technological possibilities in these concrete superstructures is remarkable. The 'plofdak' that has been used in the 2nd phase, the base structure for the office by H. Haan but also the increased height of silo's in later phases are examples.		 The big columns have been cut away on the groundfloor and some have been replaced with new thinner columns in order to create more space for the Now and Wow music club.	RELATED		 Due to the intervention with new columns bigger space is currently available that could easily be used in several ways. Besides that the structures is designed to bear the load of 86 million kilos grain. This loadbearing capacity offers great opportunities.	 The structure contributes to the industrial feel due to its rough finish and the big scale that is less related to human and more to machine. The structure is the building hence it makes the athmosphere.
Space Plan		 The space plan is highly related to the original function of the building. Hence the layout plays an important part in understanding the way the building was used.					 **low use value.** Together all silos form 80% of the actual building volume. The use value of these spaces is verry low at the moment. Its a great challange for the future redesign.	 The functional layout of the building as an ensemble of rigid grids results in a repetition of elements. Consequently a 'pressing' symmetry can be experienced in many parts of the building.
Surfaces	 Many surfaces, including signs, are damage or even worn out to the point that they are no longer readable. This clearly shows they are from another time.	The codes painted on the Silo's, the blue and yellow silo, and signs like 'gifgas' on the door give an impression of the strictly functional original usage.		 Graffiti artworks on the ground floor and on the 10th floor in the 010 Factory have been made during the renovations. The graffiti on the ground floor was commissioned by Pepsi MAX and carried out by graffitinetwerk. Its still unclear which artist did the artworks in the 010 Factory.		 **low use value.** In its previous function the funnels strictly fulfilled the purpose of unloading grain out of the silo's. Due to its specific function its very difficult to come up with a new use for these funnels.	**aesthetic value.** As an ending of the Silos, in a way the funnels form the ceiling that is so characteristic for almost the entire ground floor space. The shape of these surfaces hint at an unknown presence behind those surfaces. Despite that, the funnels have a very unique and striking appearance.
Services/Stuff	 Mainly rust and decay but also damage is visible on machinery and utilities around the building.	 The machinery and utilities give an impression of the previous function of the building. The elevator system that was used to blow grain through pipes to the top of the building where one of the first of its kind and very unique at the time.	 During the renovations some of the machinery has purposely been put together to be exhibited. The chalk board in the control room on the 2nd phase building shows a grid of different silo's and the type of grain stored inside. The board is sprayed with a substance that preserves the chalk and makes it un-erasable.				 The buildings was never designed to host vast amounts of people. For the new club, ventilation systems have been introduced during the renovation. These run through some of the silos and provide the spaces with enough fresh air.	

Analysis Summary

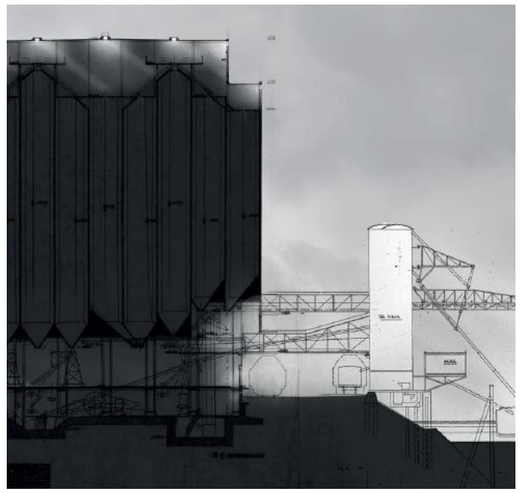
Brand's layers		Key Values		Key Words
Surroundings **Site** **Spatial Composition**	———	**Rarity value**		Fragmented/ Duality Ensemble
Structure **Skin**	———	**Historical value**		Monolythic/ Phases/ Technology/ New Objectivity
Space Plan **Surfaces** **Services**	———	**Aesthetical value**		Colonnade, Funnels, Conveyors, Conceilment

Key Discussions

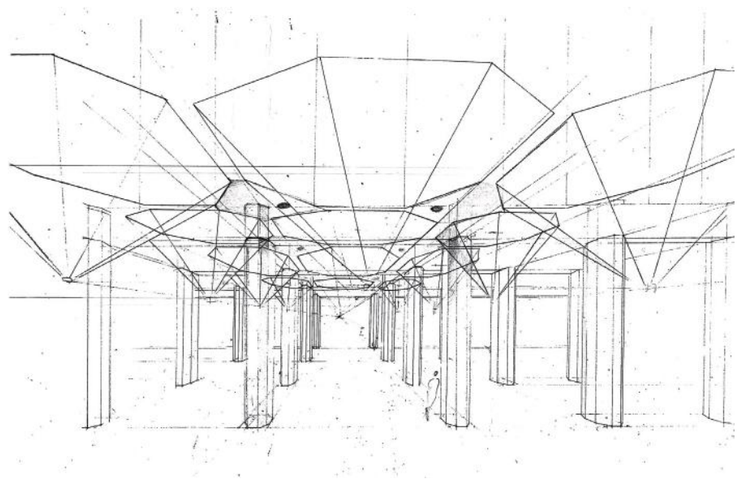


north & south

public & private



mass & movement

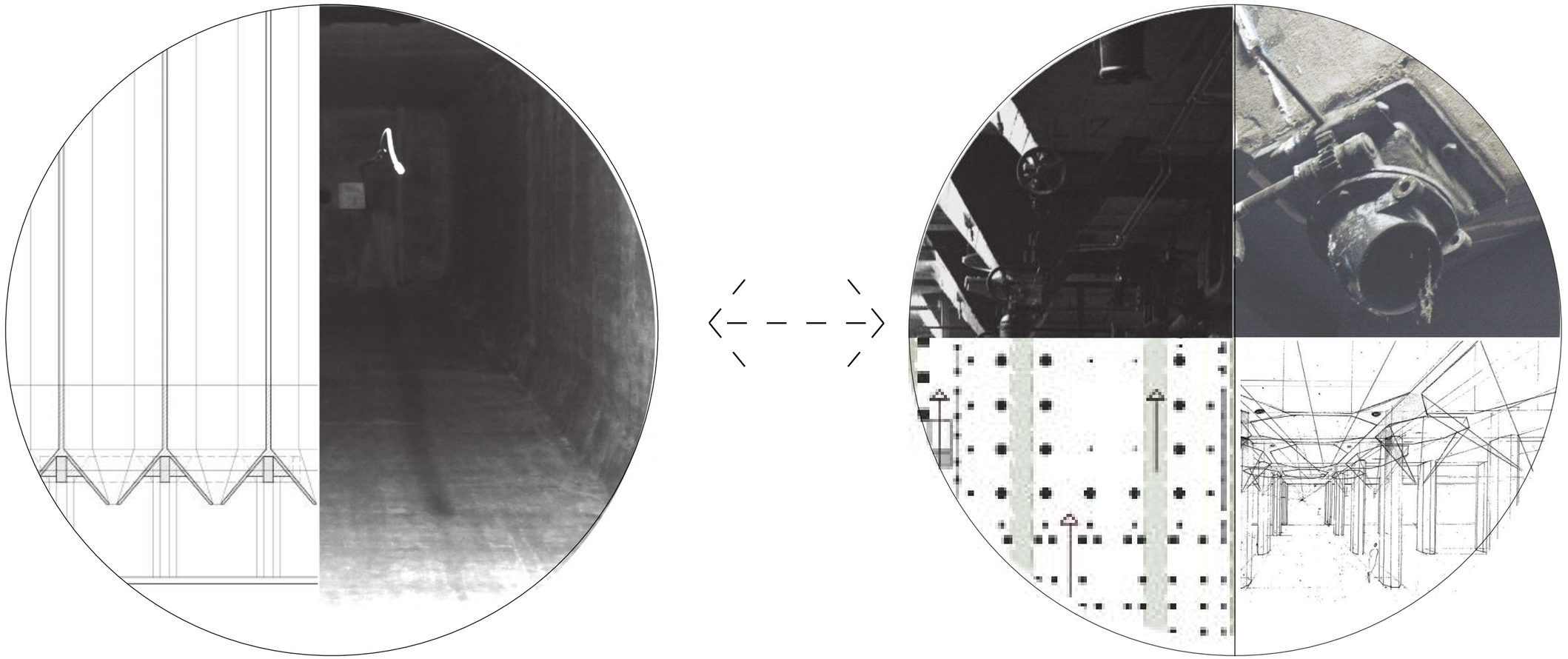


readability & conceilment

Silo challenge

Silo cells- 80%

Space plan-20%



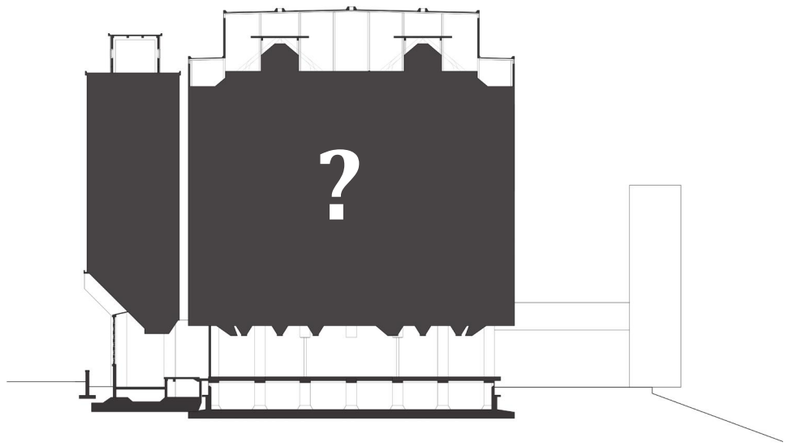
Conceiled

Exposed

Design question

How can a new hierarchy of public and private compartments, allow internal movement and daylight conditions without compromising the building's closed-off character?

Programme



Cultural value

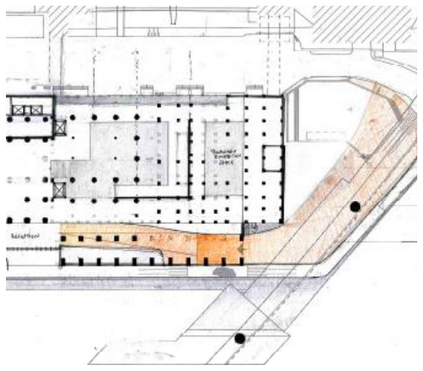
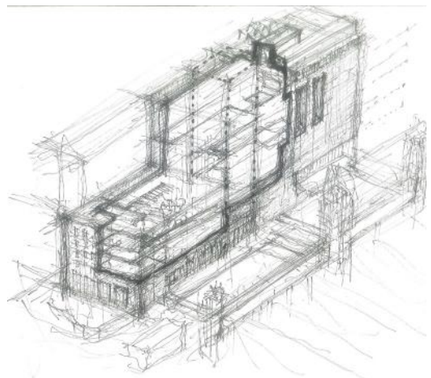
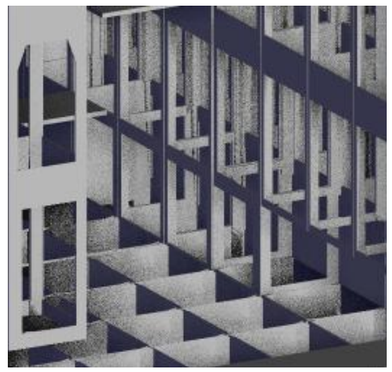
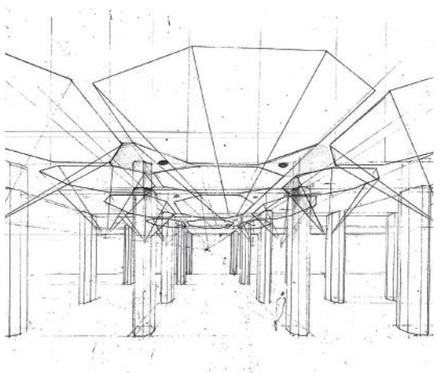
Creating:

1. new floor space
2. integrated circulation
3. generous daylight conditions

Highlighting:

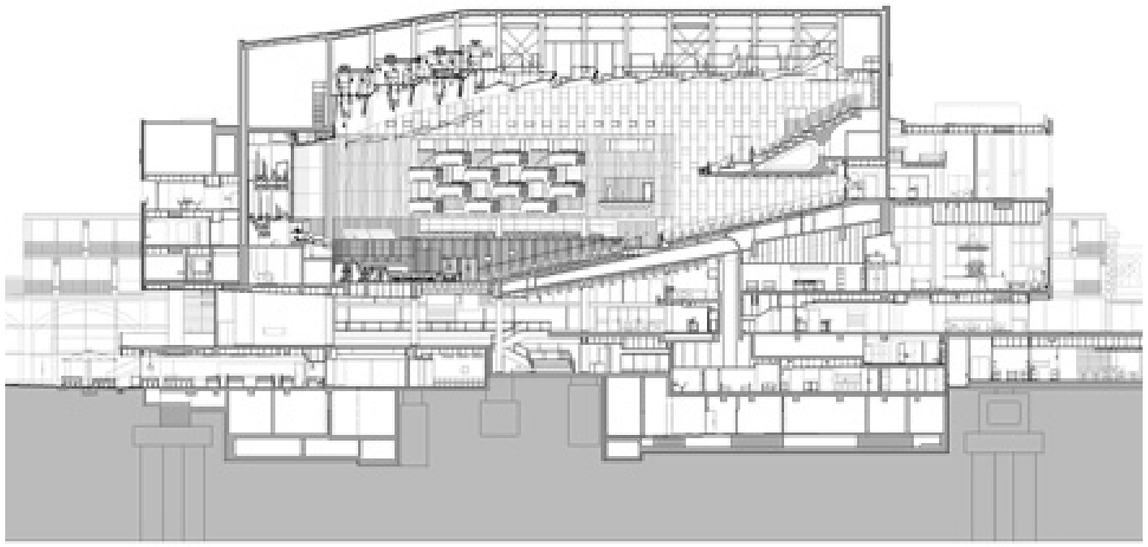
ensemble
closed-off

Methodology: Scales-Emphasis of interventions

SITE	VOLUME (spatial composition)	STRUCTURE	SKIN	SPACE PLAN
				
Public character of Stok phase. Experience of the waterfront - new entrance and car access	Ensemble of existing buildings. creating new in-between zones and a central void and new internal facade	Tectonic language of silo cells to guide the design of new spatial compartments	New facade interventions to serve (as much as possible) the existing closed-off character	Allow a more continuous experience of the existing ground floor colonnade. Deploy footprint of the conveyor belts as a general circulation system

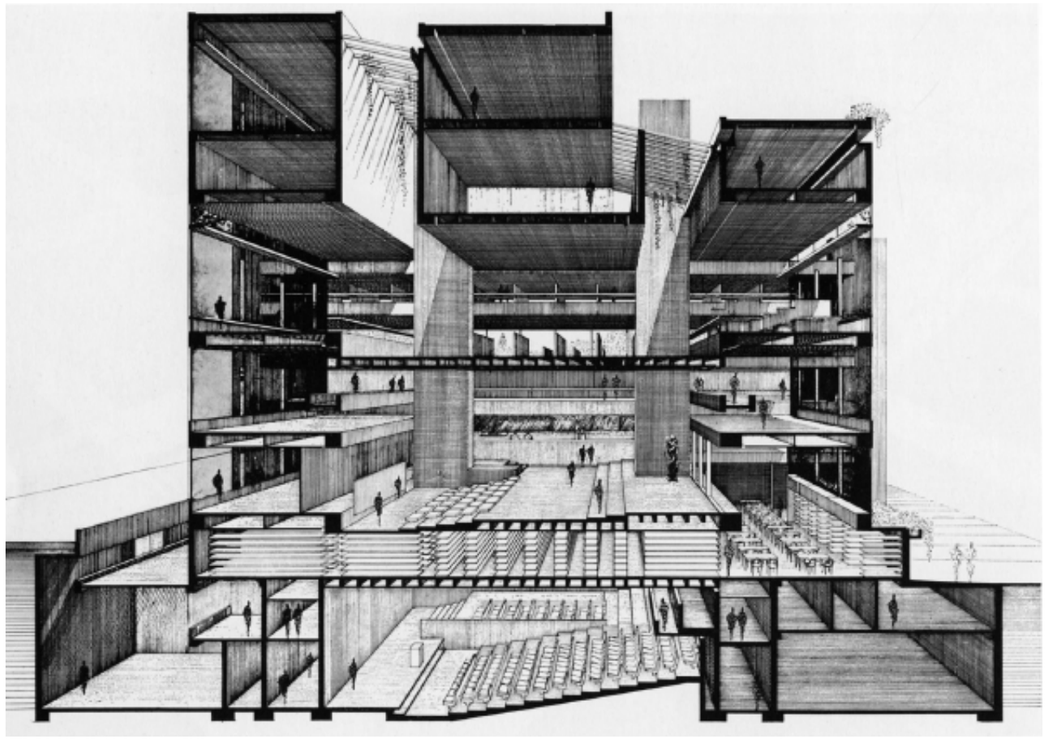
Methodology: references

Circulation



Royal Festival Hall

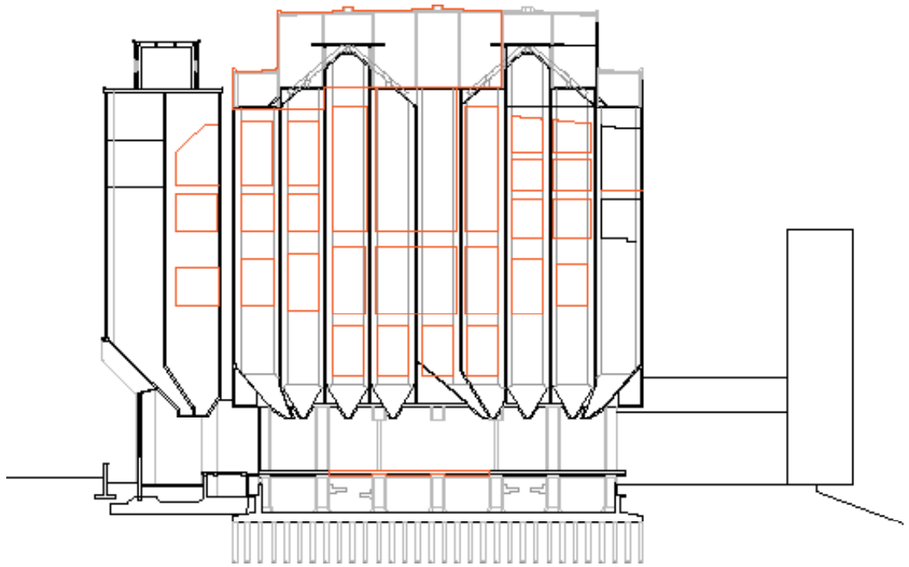
Daylight

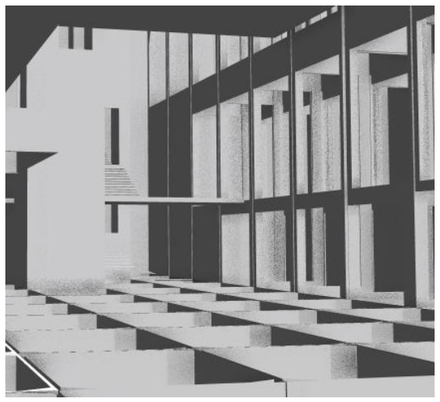


Yale School of Architecture

Methodology: Silo structure as guideline

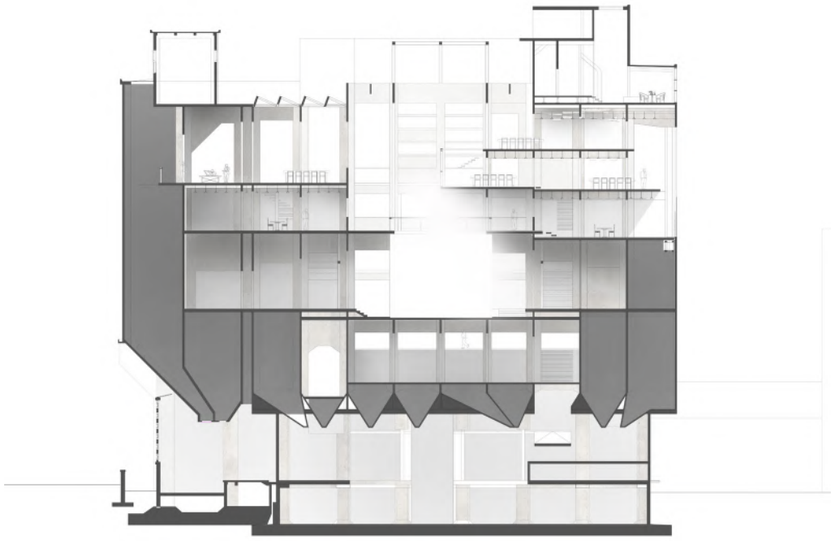
Curving-out

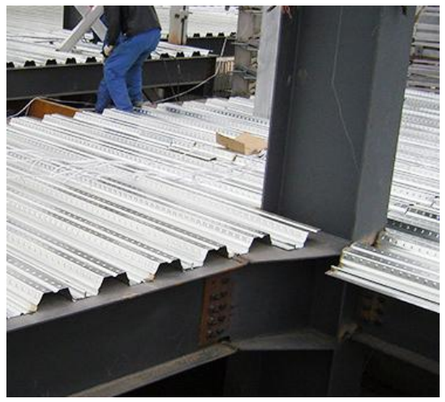


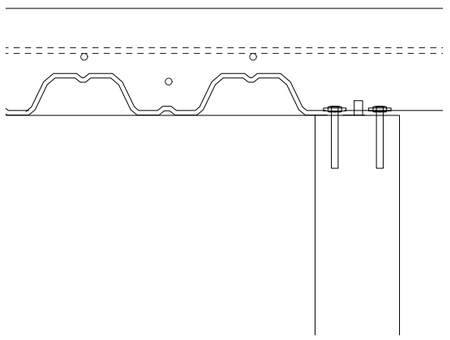


&

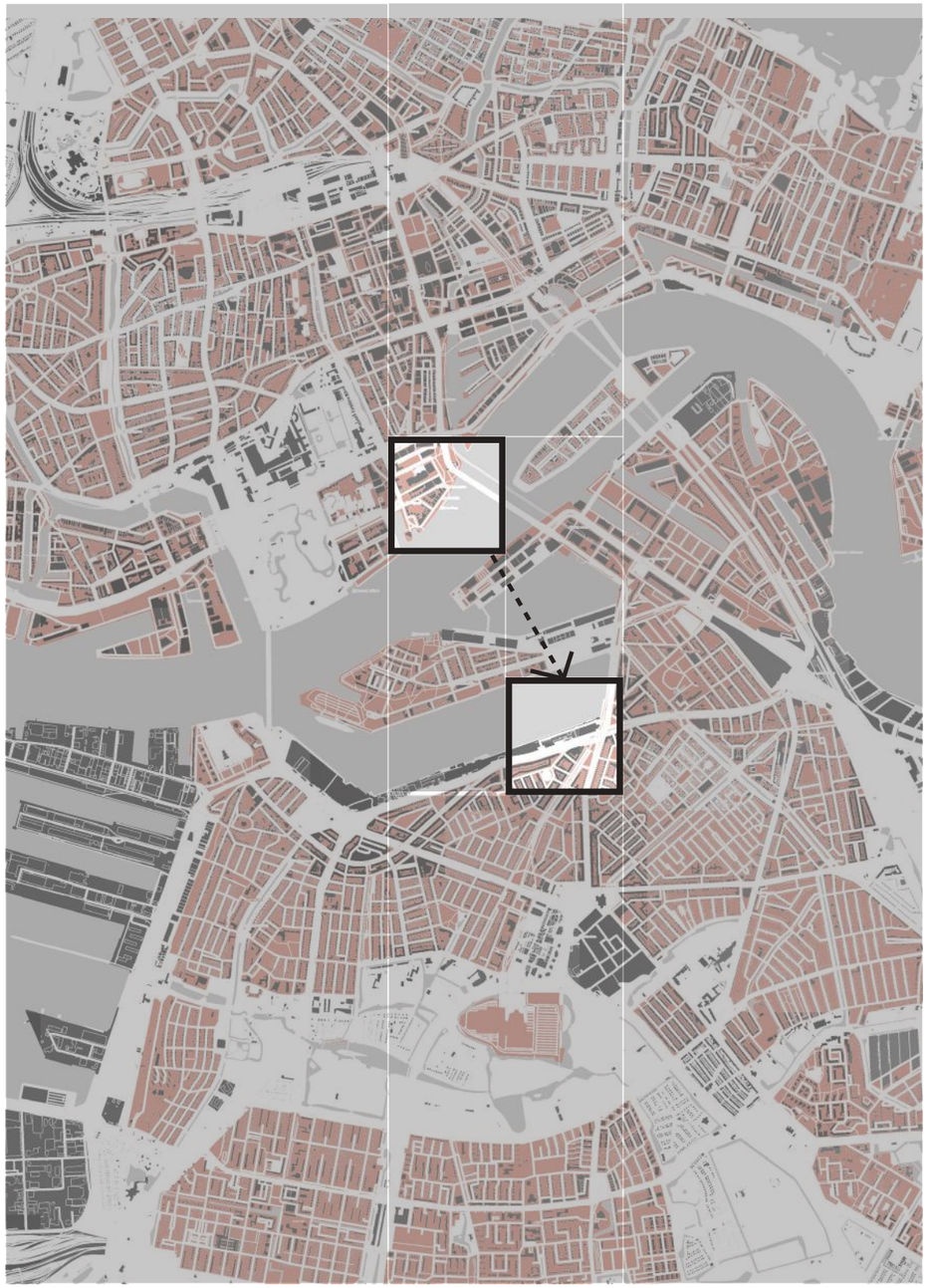
Floor construction/mezzanines







Programme: Transshipment Society

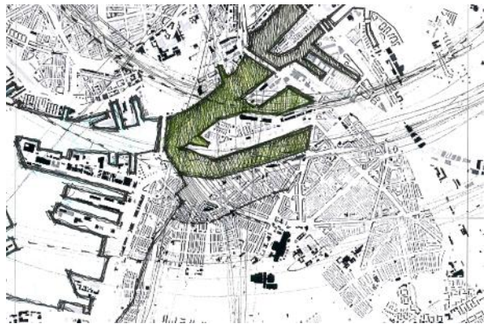


CBRB Headquarters

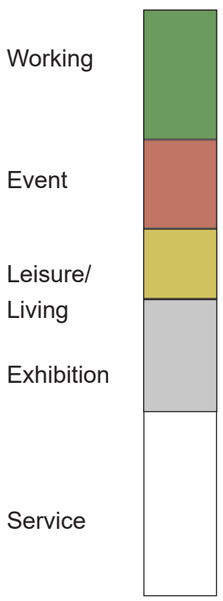
European members meeting point

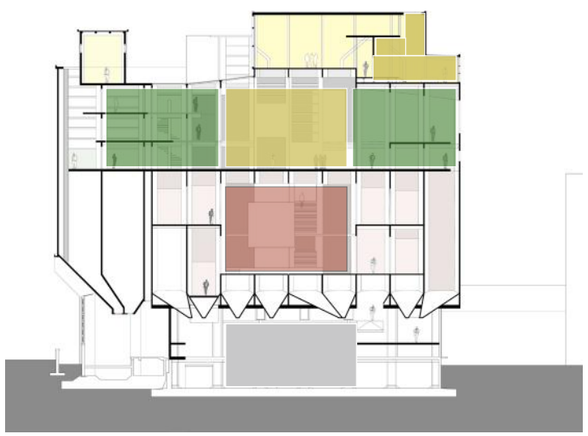
Public interior

Programme: breakdown

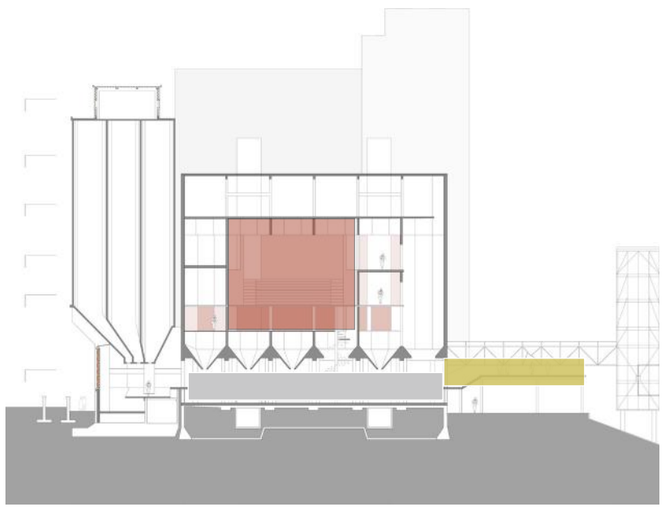
	Established relations	Main functions	Logistics	
Municipality scale		Public interior-Exhibition	Public hall Temporary exhibition space Service areas Parking space	1080 m2 540 m2 400 m2
		Library/Learning Center	Entrance hall Old machinery exhibition Service areas	380 m2 450 m2
National scale & European scale		Central Bureau voor de Rijn & Binnen-vaart (CBRB) : Central office for the Rhine & inland navigation	Main conference/ seminar space Board rooms Archive Office space Leisure/ Living space Headquarters Service areas Public Archive/ Library	350 m2 400 m2 175 m2 750 m2 180 m2 150 m2 800 m2
			Auditorium Storage Service areas Main event space Service areas	430 m2 120 m2 215 m2 670 m2 750 m2
		European Barge Union (EBU) : repre-senting barge owners & operators & inland navigation associations, shaped commitees **Central Commission for the naviga-tion of the Rhine (CCNR)**: carrying the main patronage	Foyer Service areas	730 m2 900 m2 450 m2
			Reception hall Bar/ Restaurant Representatives' rooms Terrace Service areas Laundry/ Drying Staff Kitchen space Storage	230 m2 340 m2 470 m2 170 m2 100 m2 85 m2 315 m2
				11900 m2

Programme: Adjustments

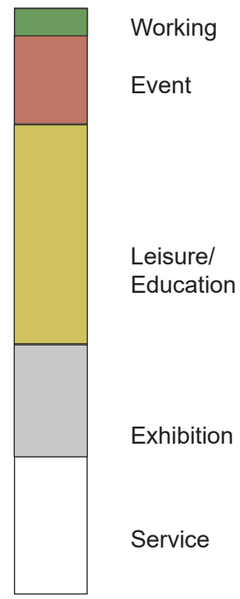


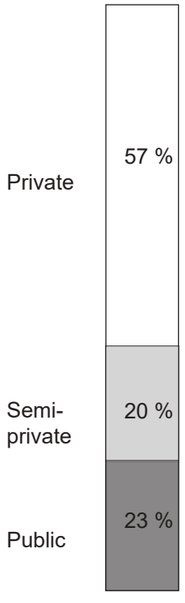


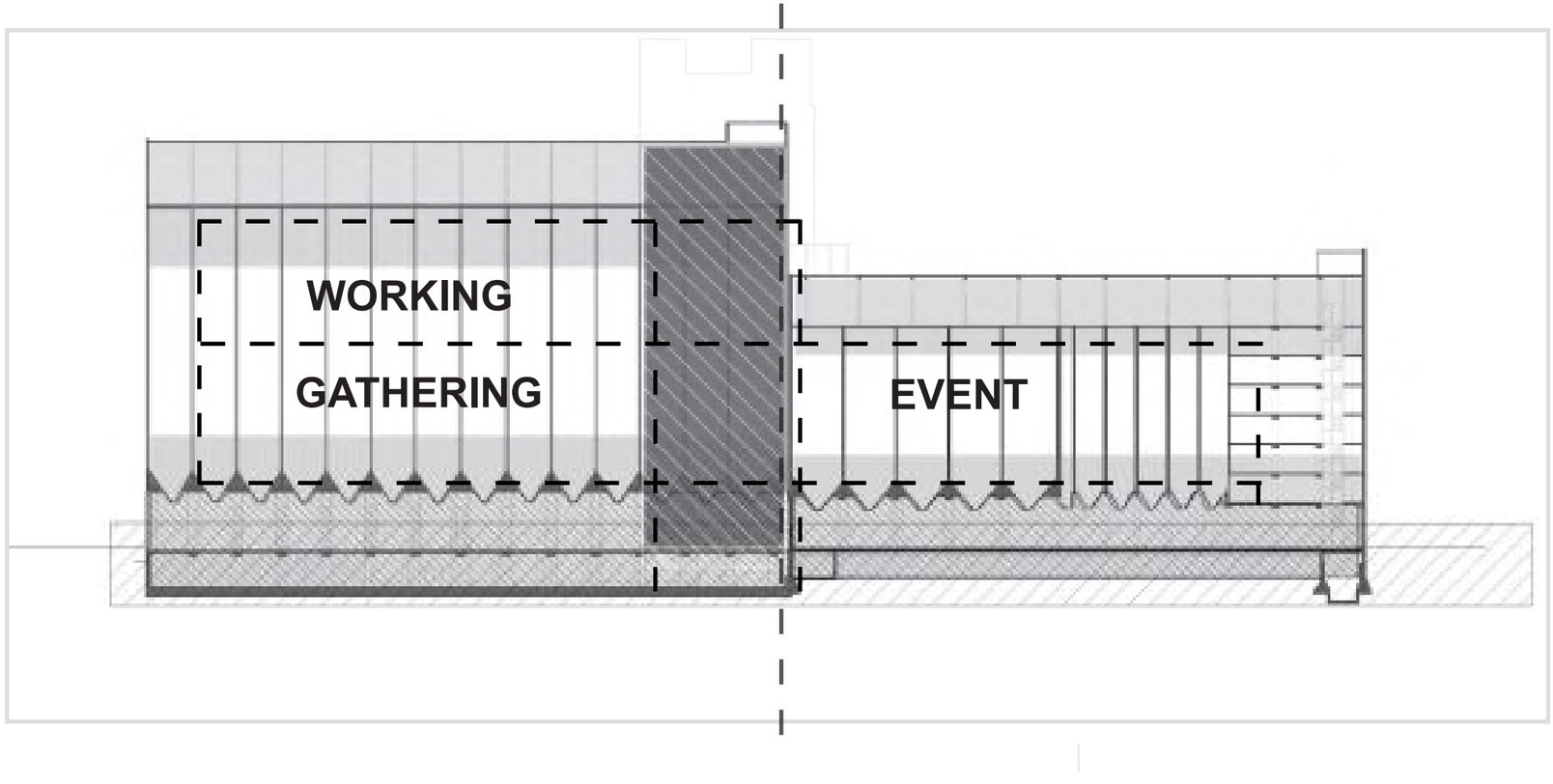
Brinkmann

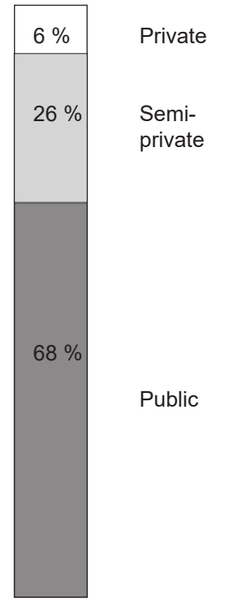


Stok

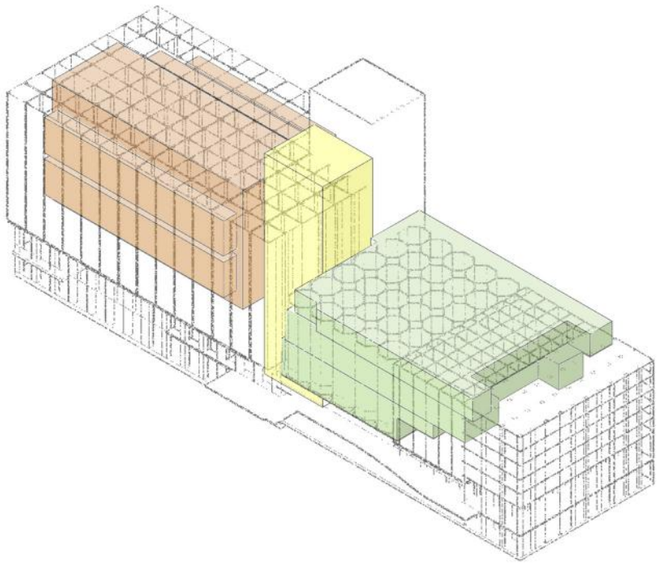








Design Approach: Starting Points

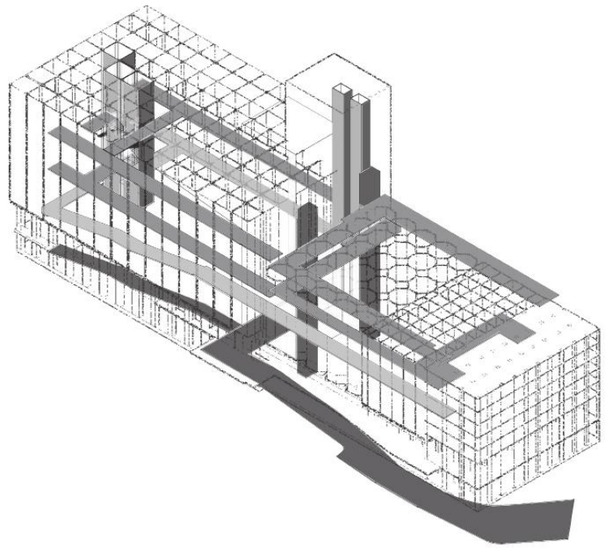


Ensemble
(Public & Private)

Emphasis of public & private profiles in Stok & Brinkmann

Closed- off
(Daylight)

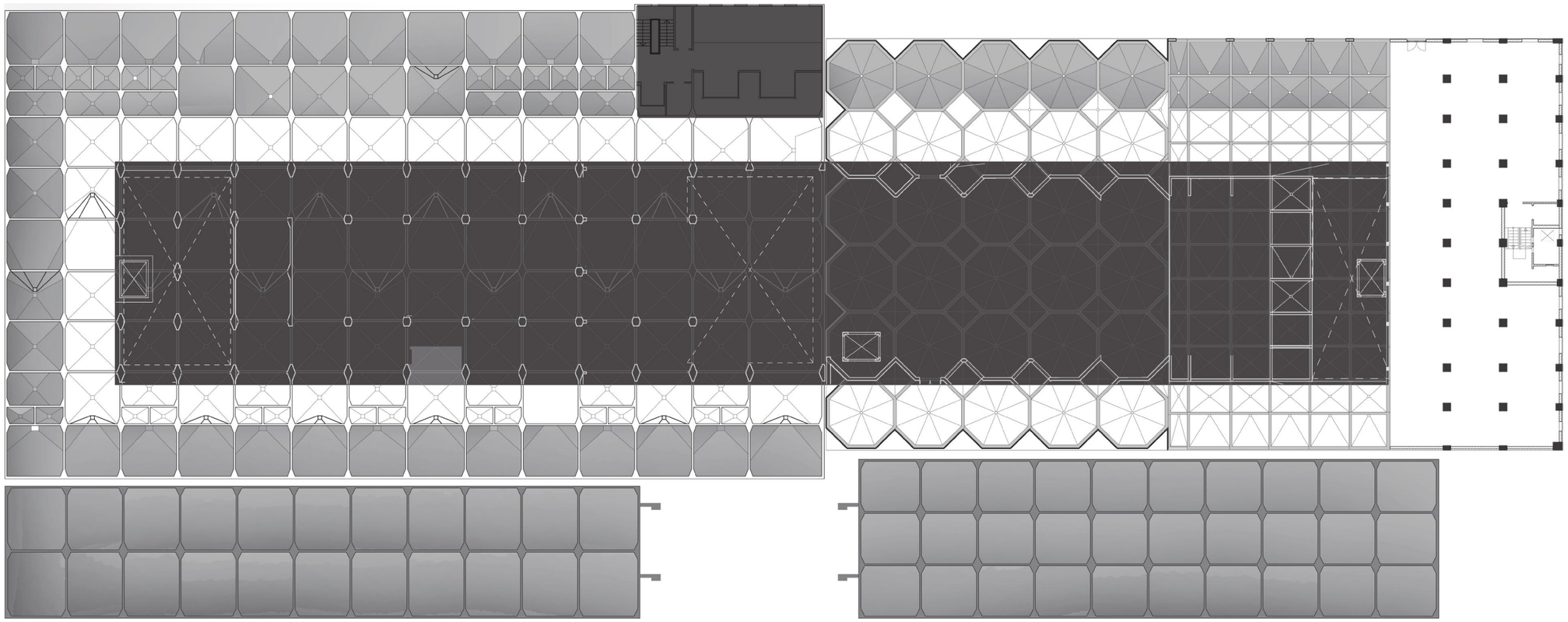
Main openings from the roof for providing both diffused and direct daylight

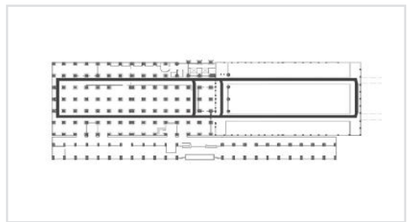


Internal Movement
(conveyor belts)

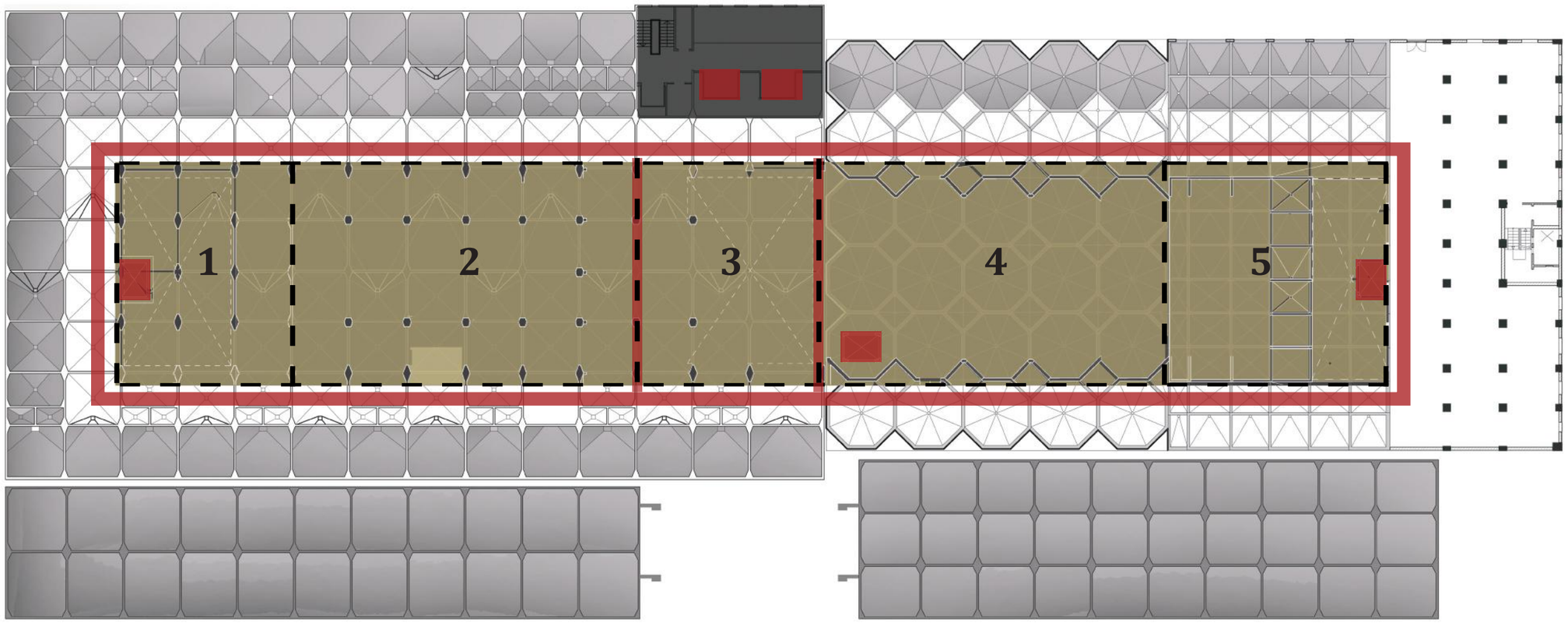
Circulation ‘merging’ the two buildings based on the past movement of the conveyor belts

Design Approach: Spatial Sequence



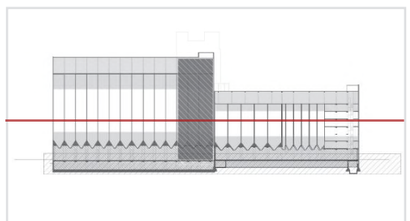


Design Approach: Spatial Sequence



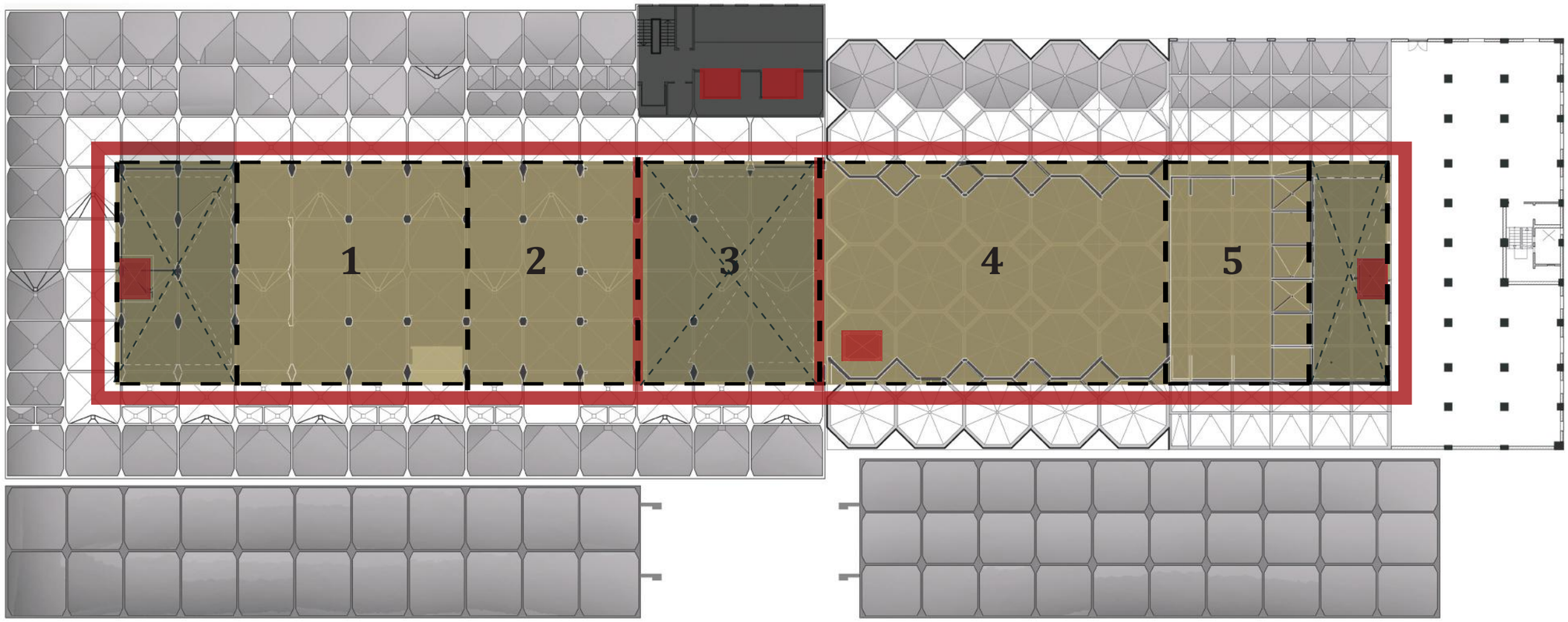
Main levels

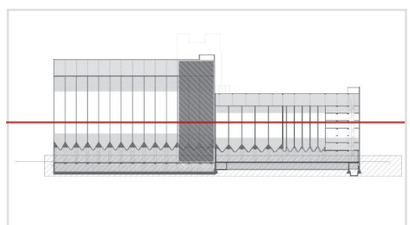
spatial sequence &
circulation



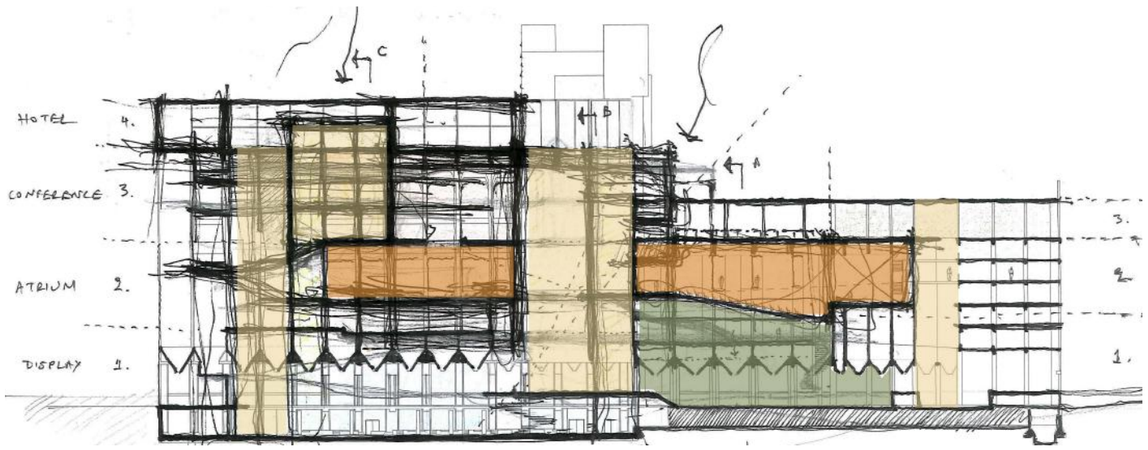
Design Approach: Spatial Sequence

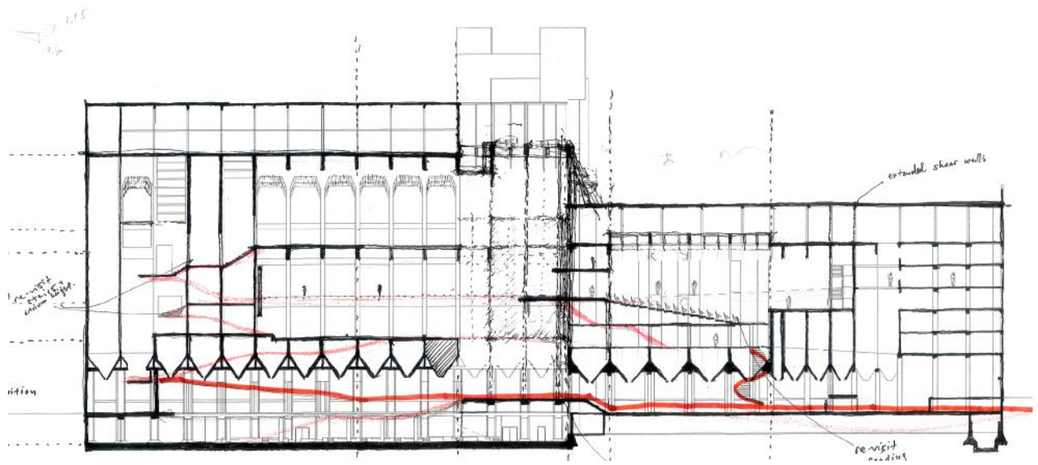
Main levels- voids



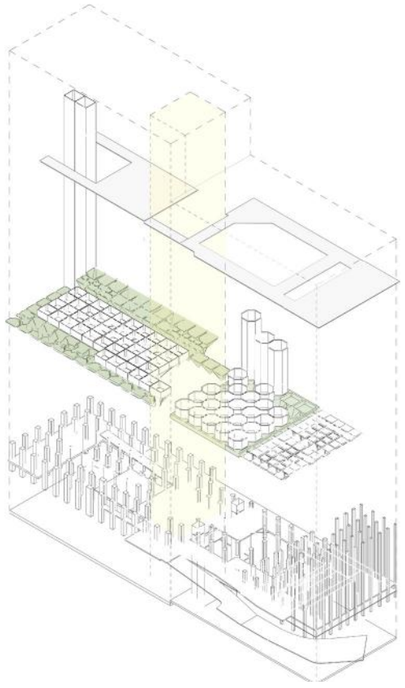


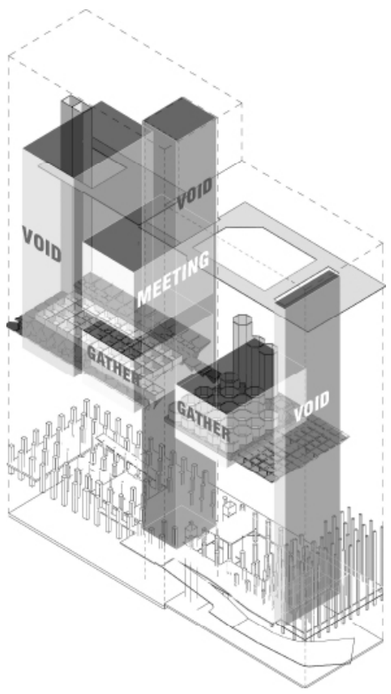
Design Approach: Further Investigation of new zones

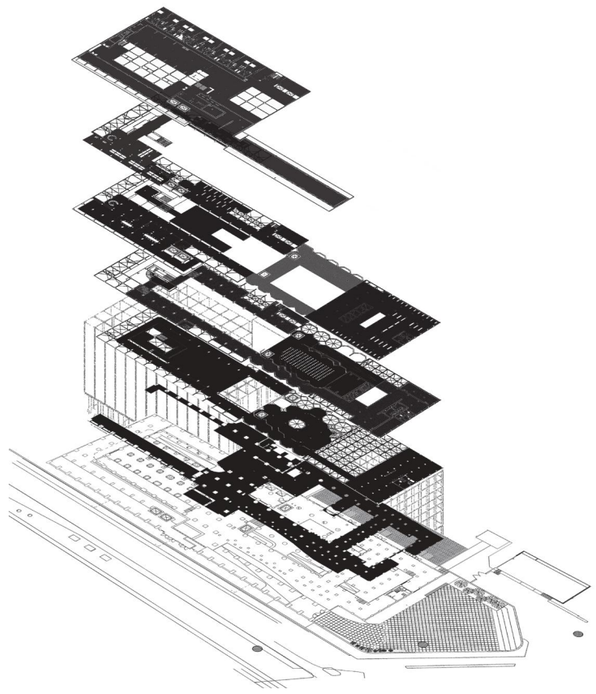


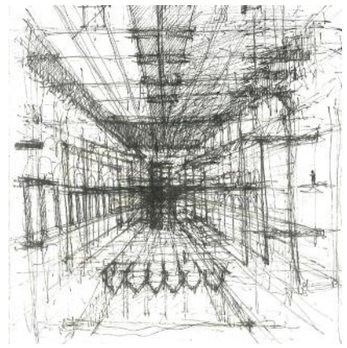


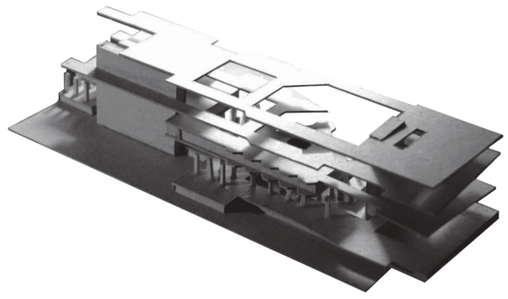
Studies of main volumes and circulation



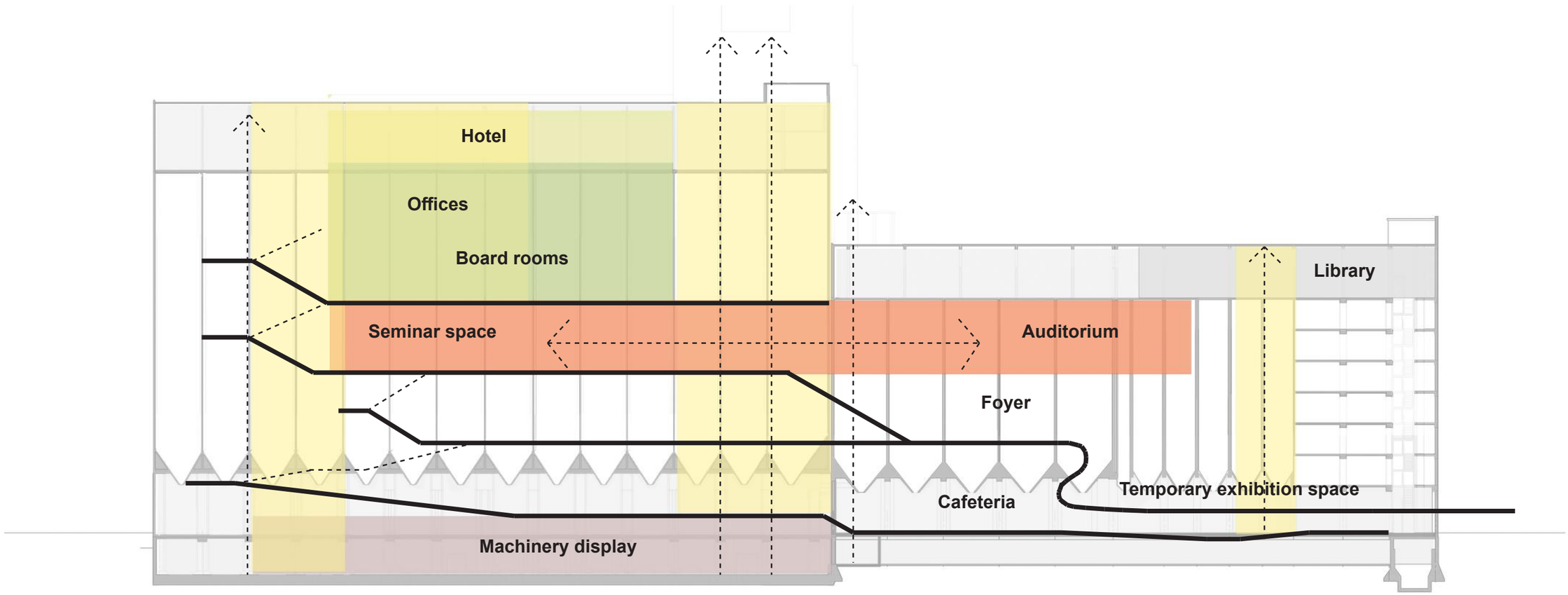




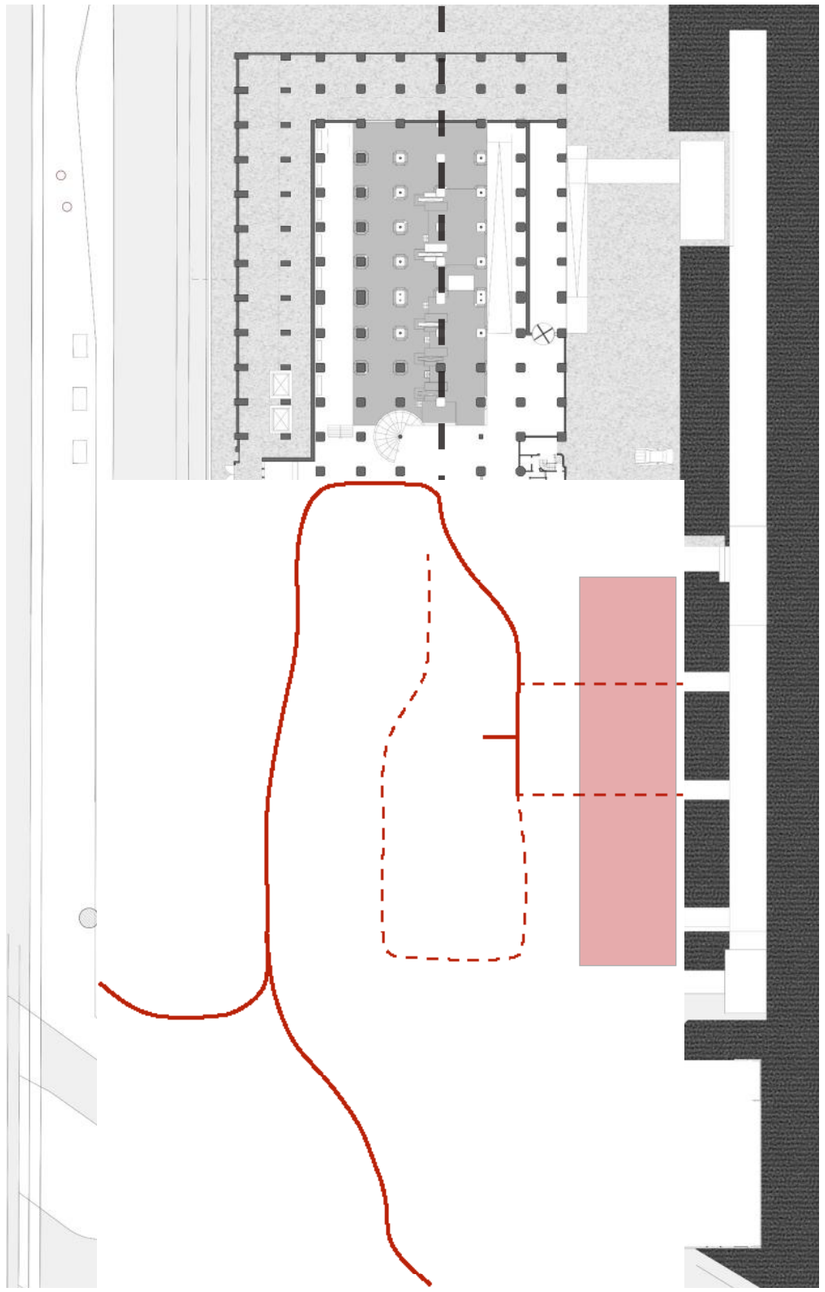




Design Approach: Concluded scheme



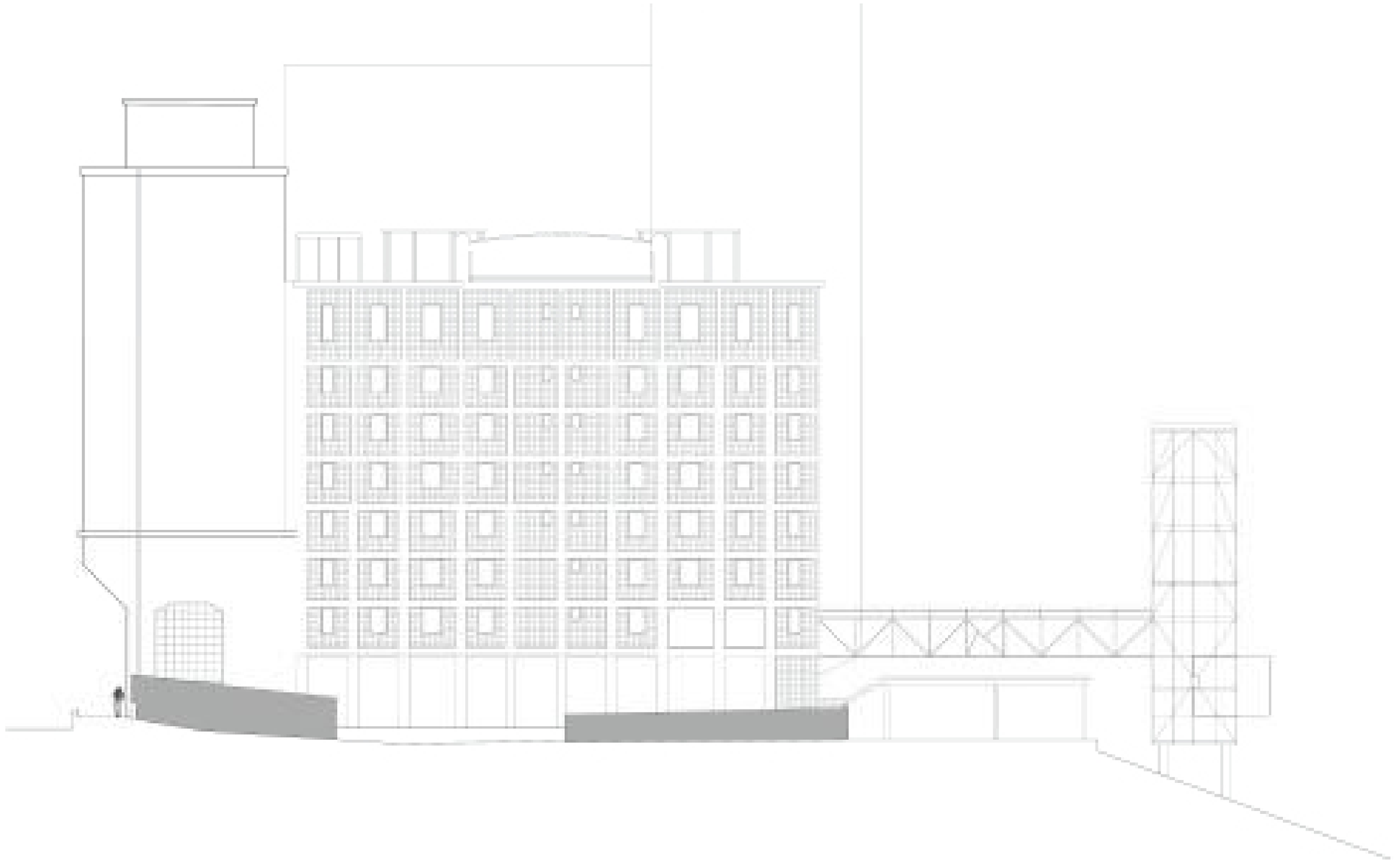
Main interventions: Ground floor



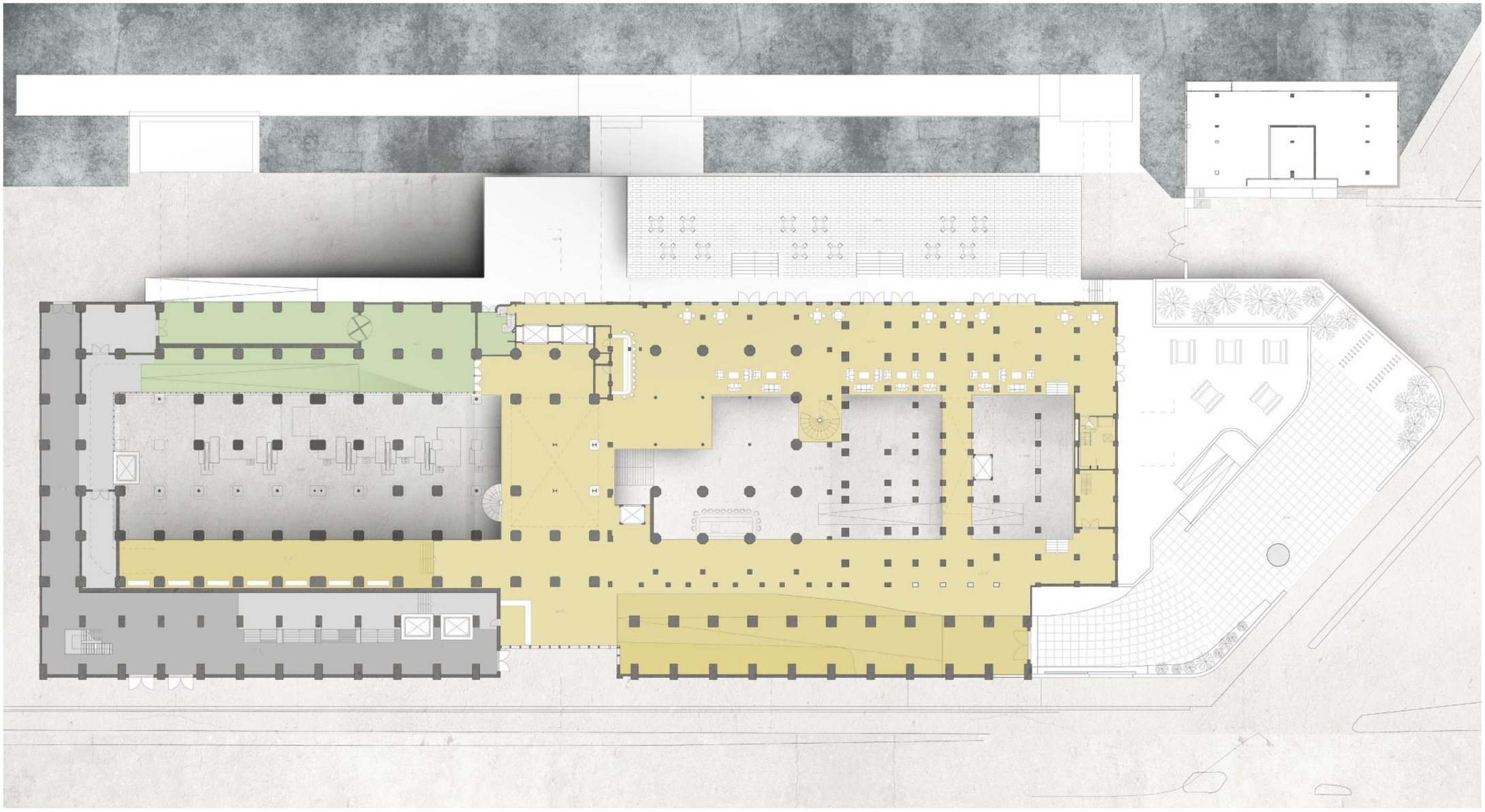
New entrance

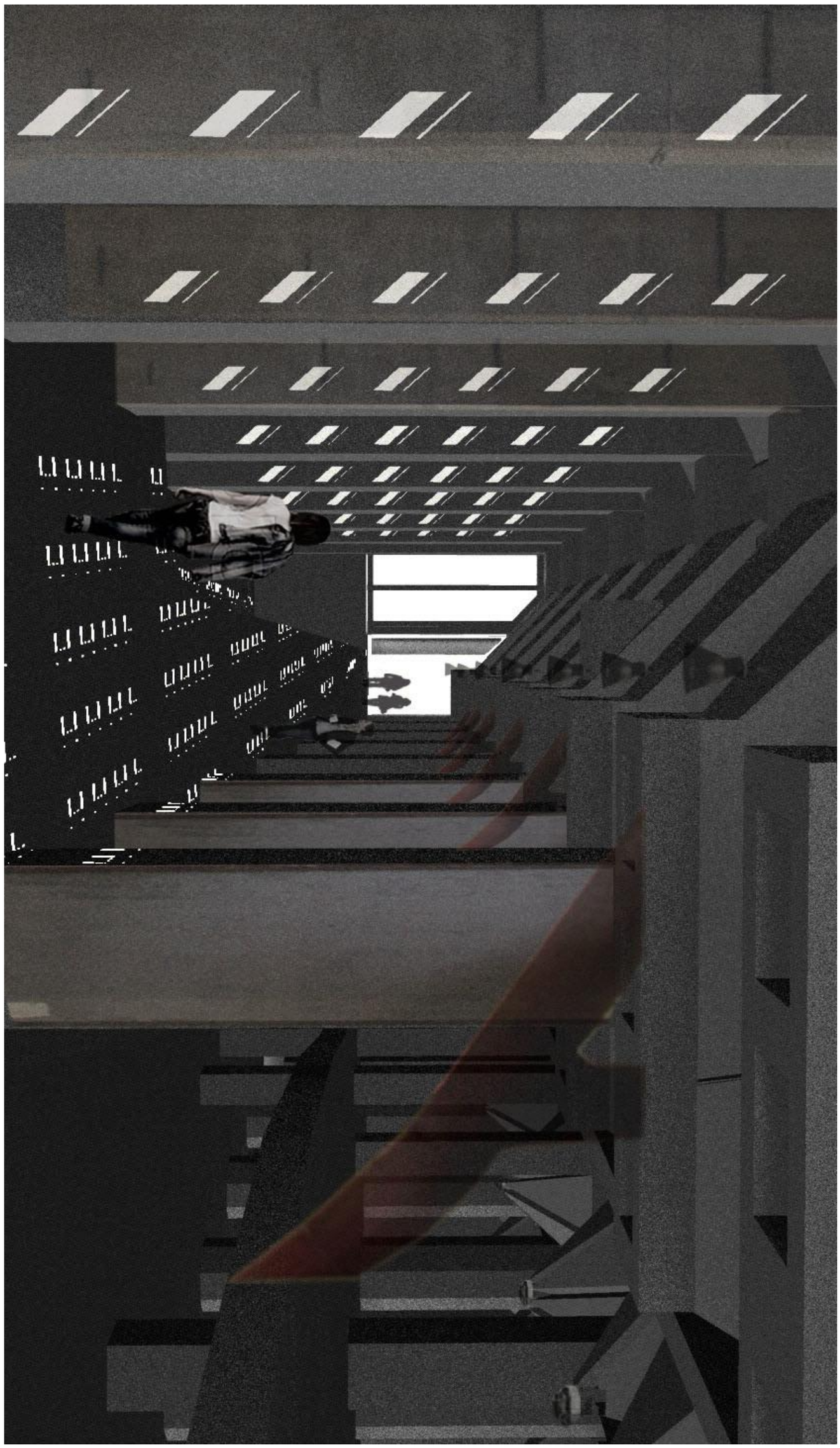
New relation to the waterfront

Main interventions: Ground floor

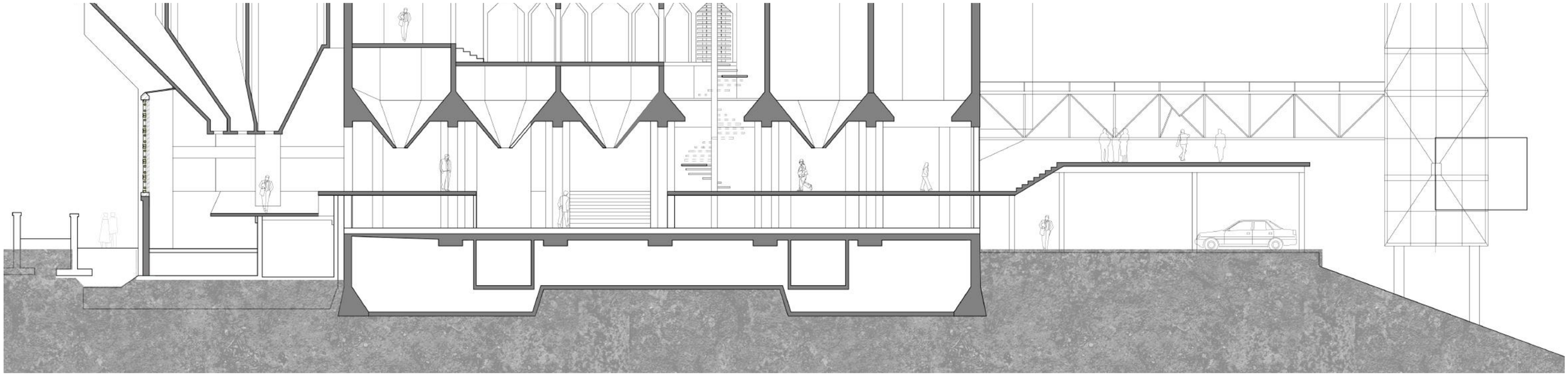


Main interventions: Ground floor

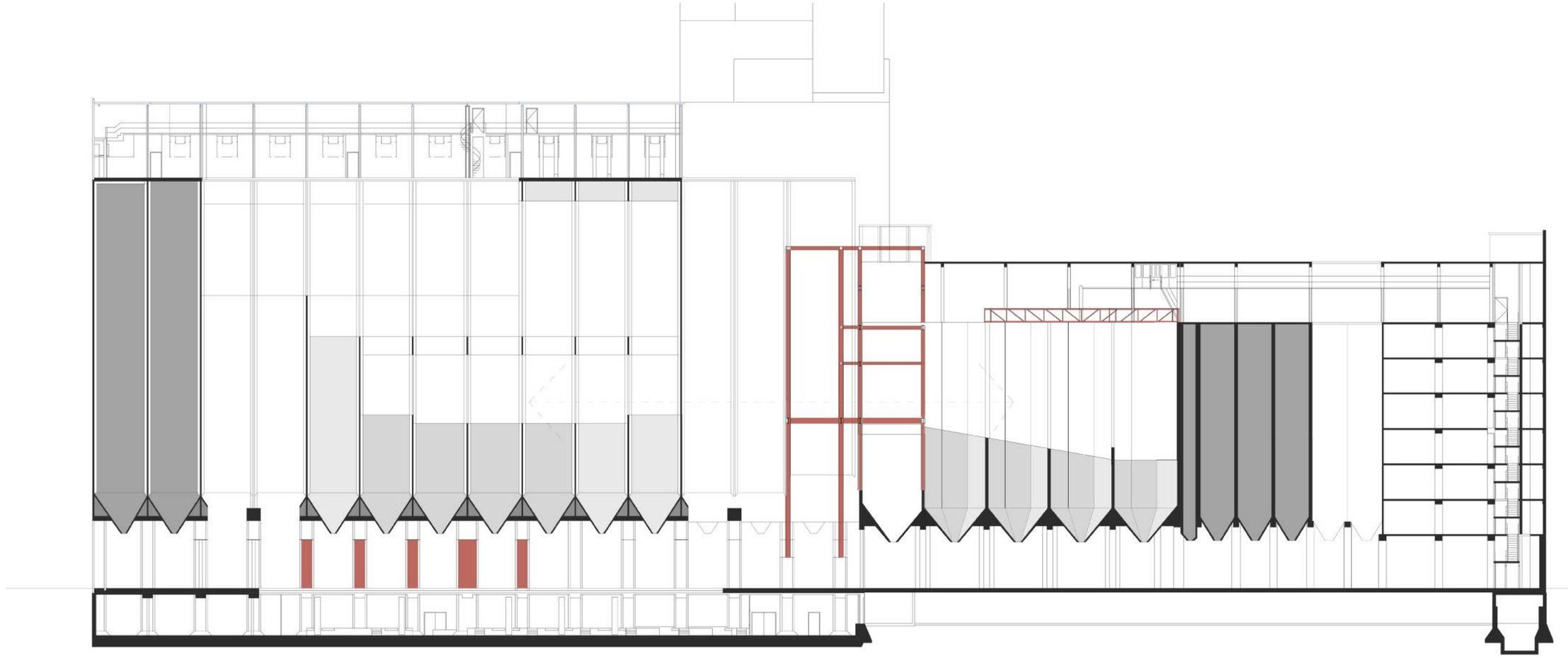




Main interventions: Ground floor

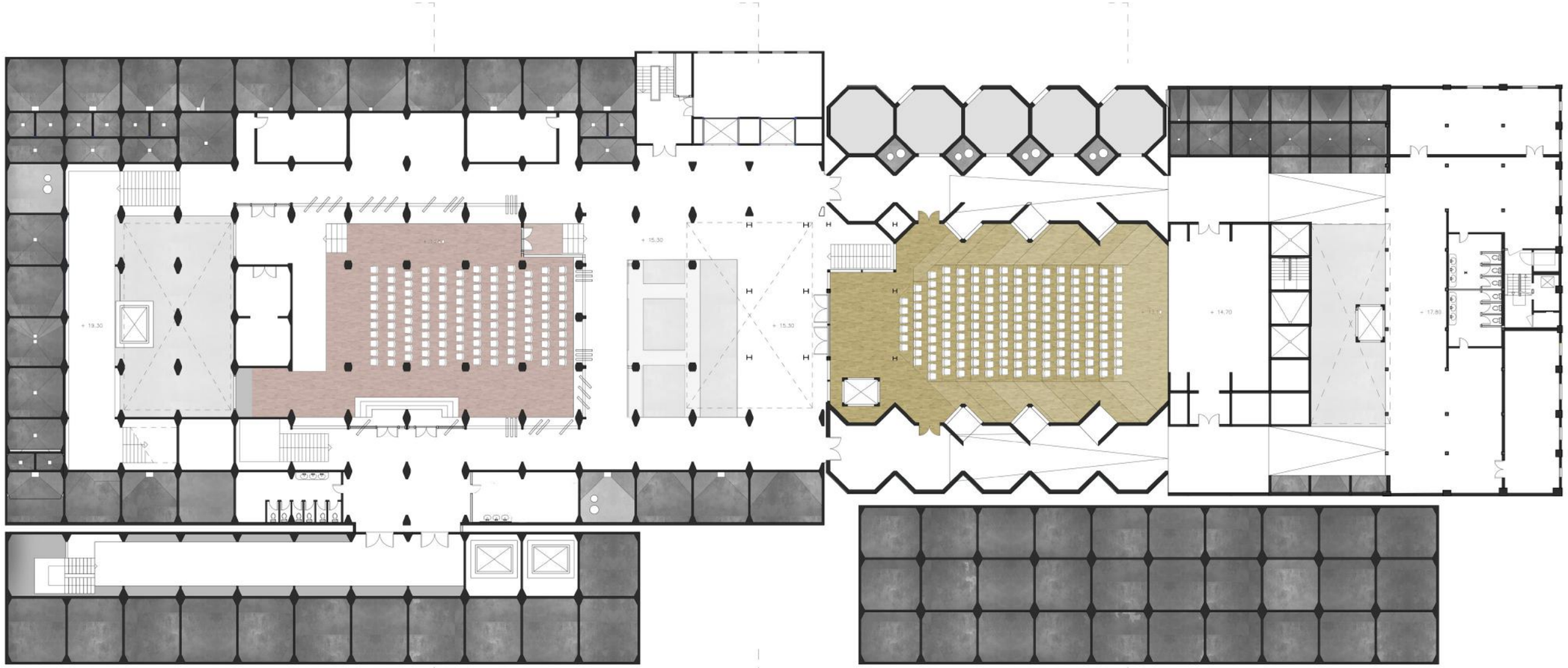


Main interventions: First cut-outs and new load bearing elements

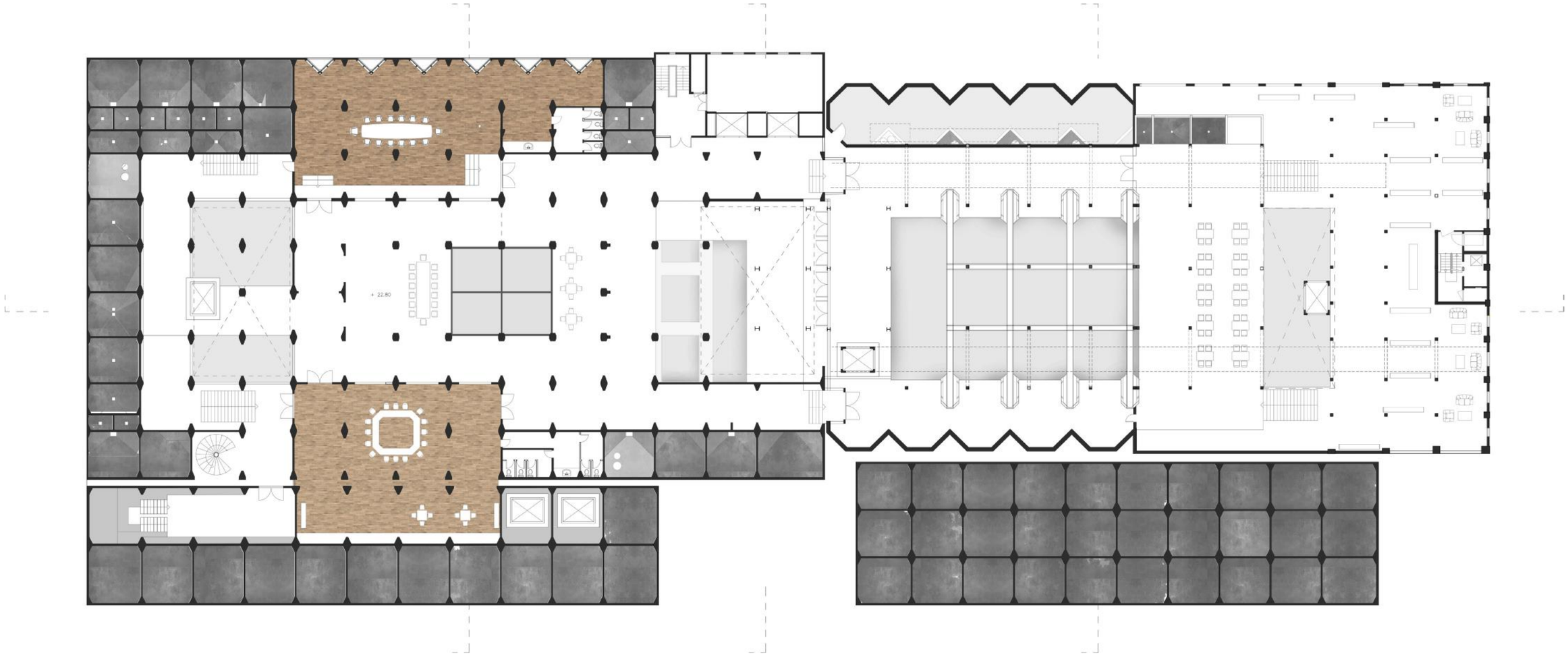


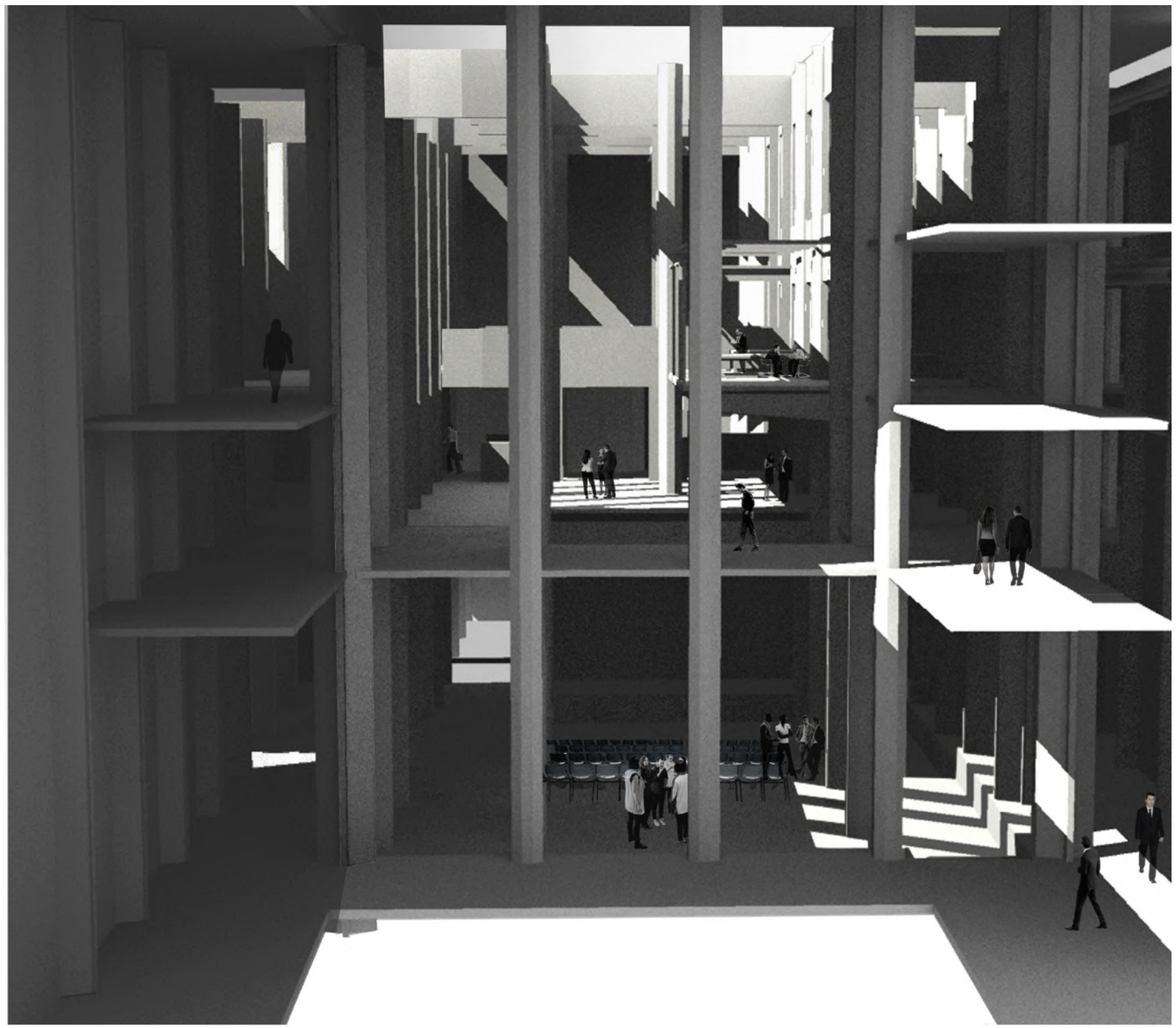
Main interventions: New floors and programme adjustments

Main interventions: Main levels

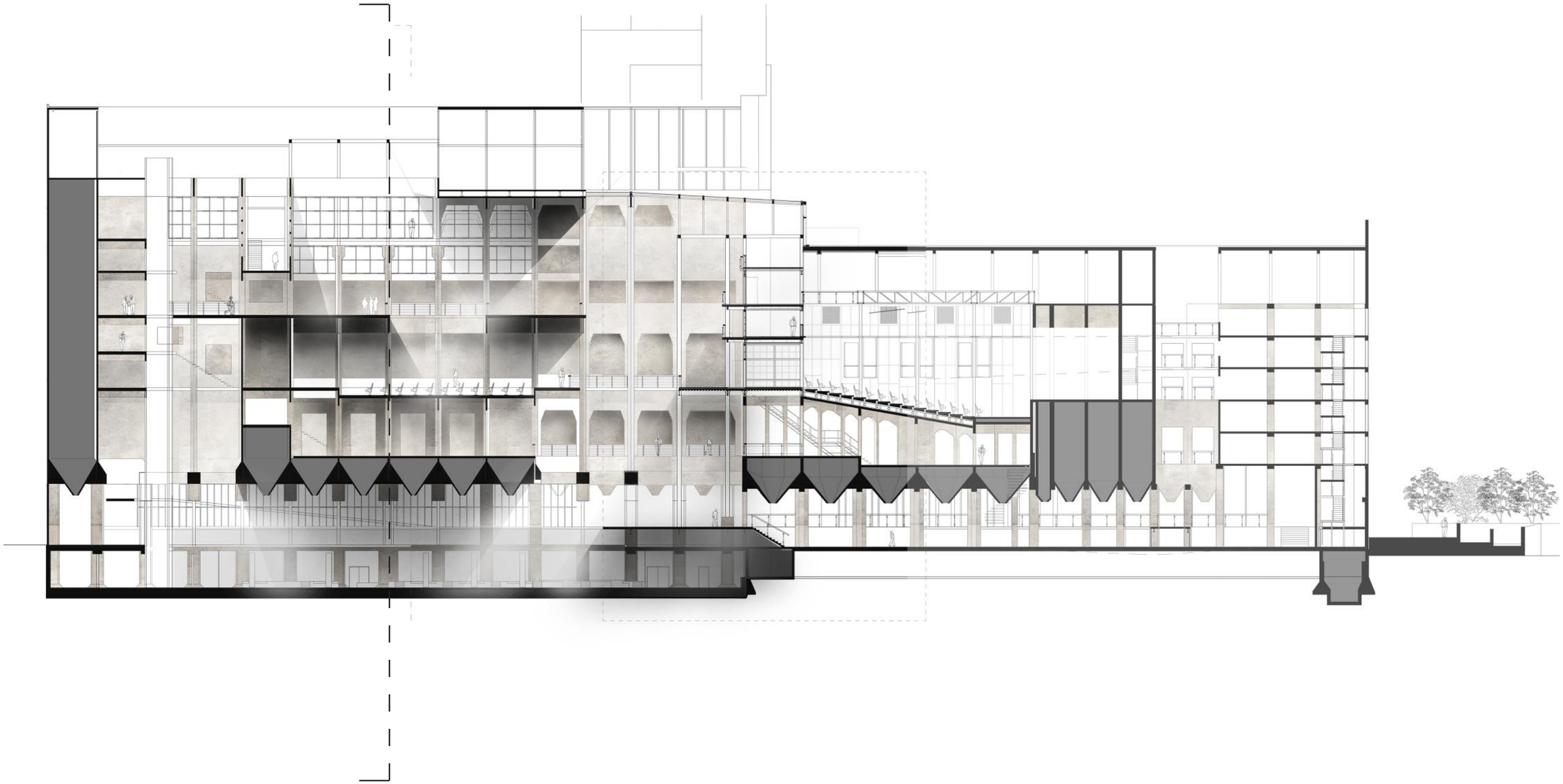


Main interventions: Main levels

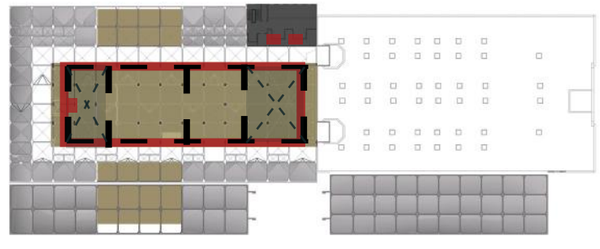




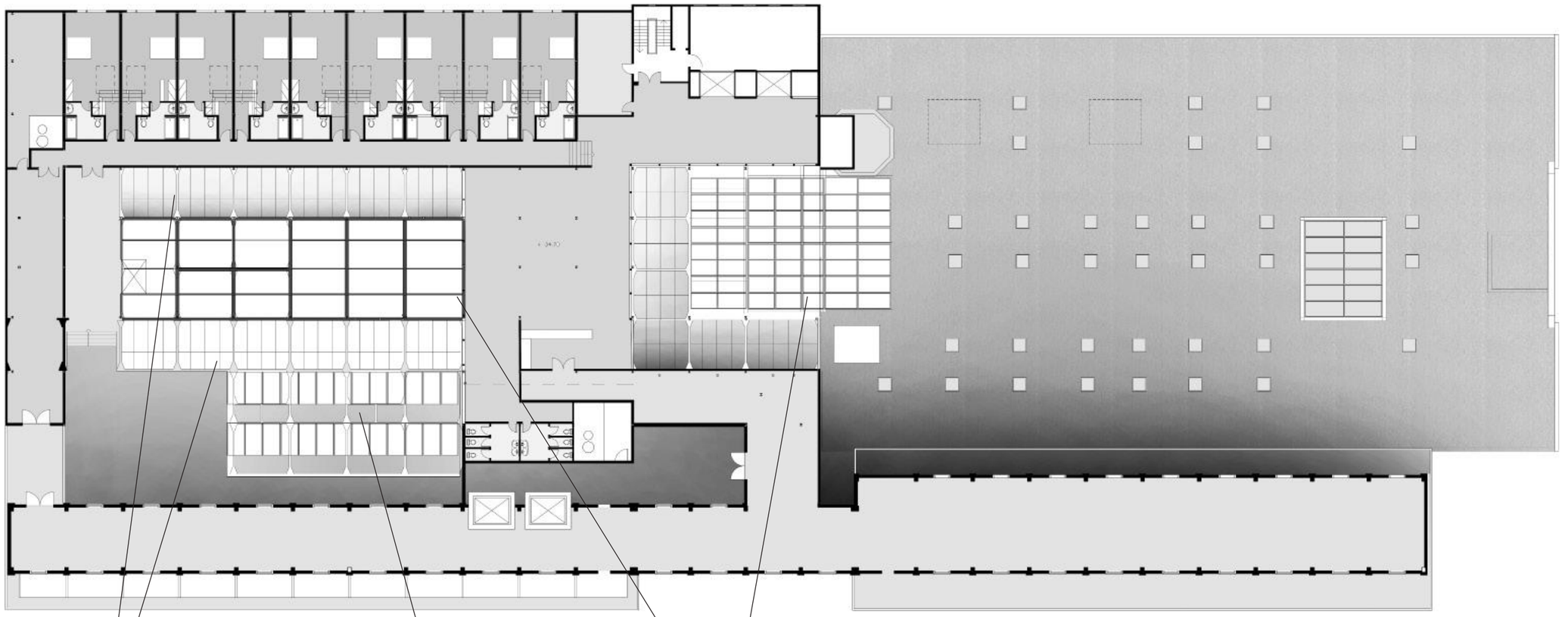
Daylight conditions



Design Elaboration: upper levels



Design Elaboration: roof articulation

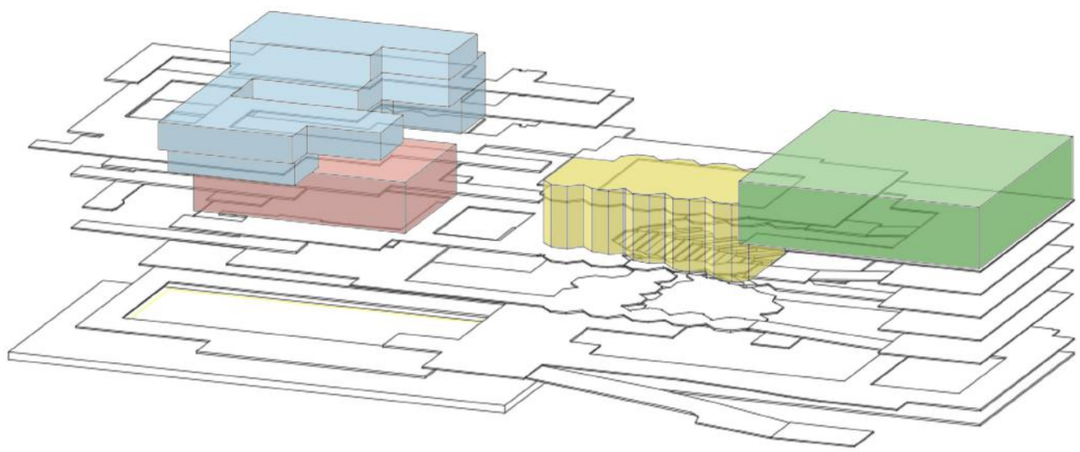


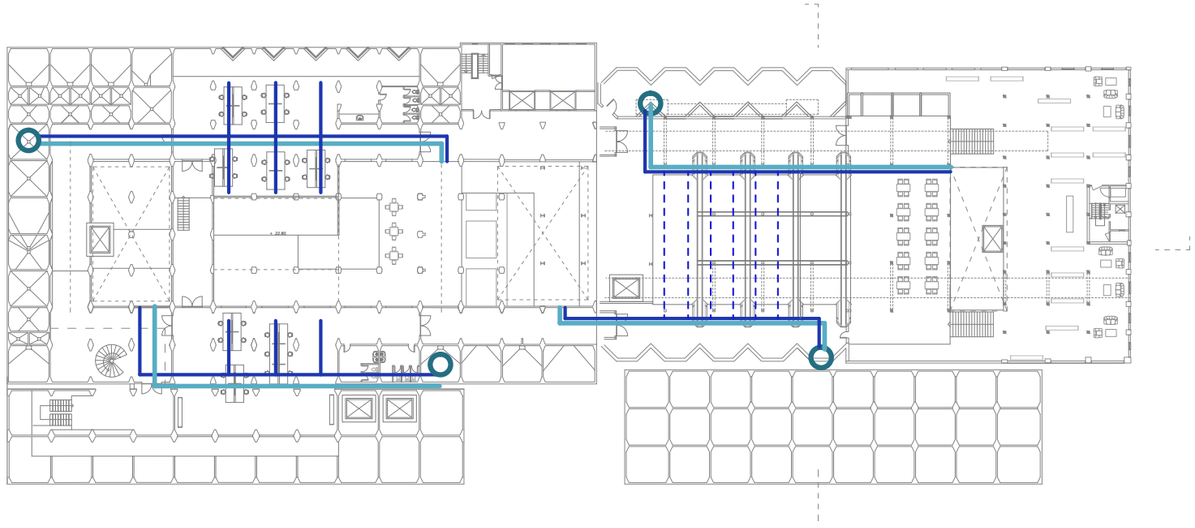
Secondary openings

Pitched roof

Main skylights

Climate zones

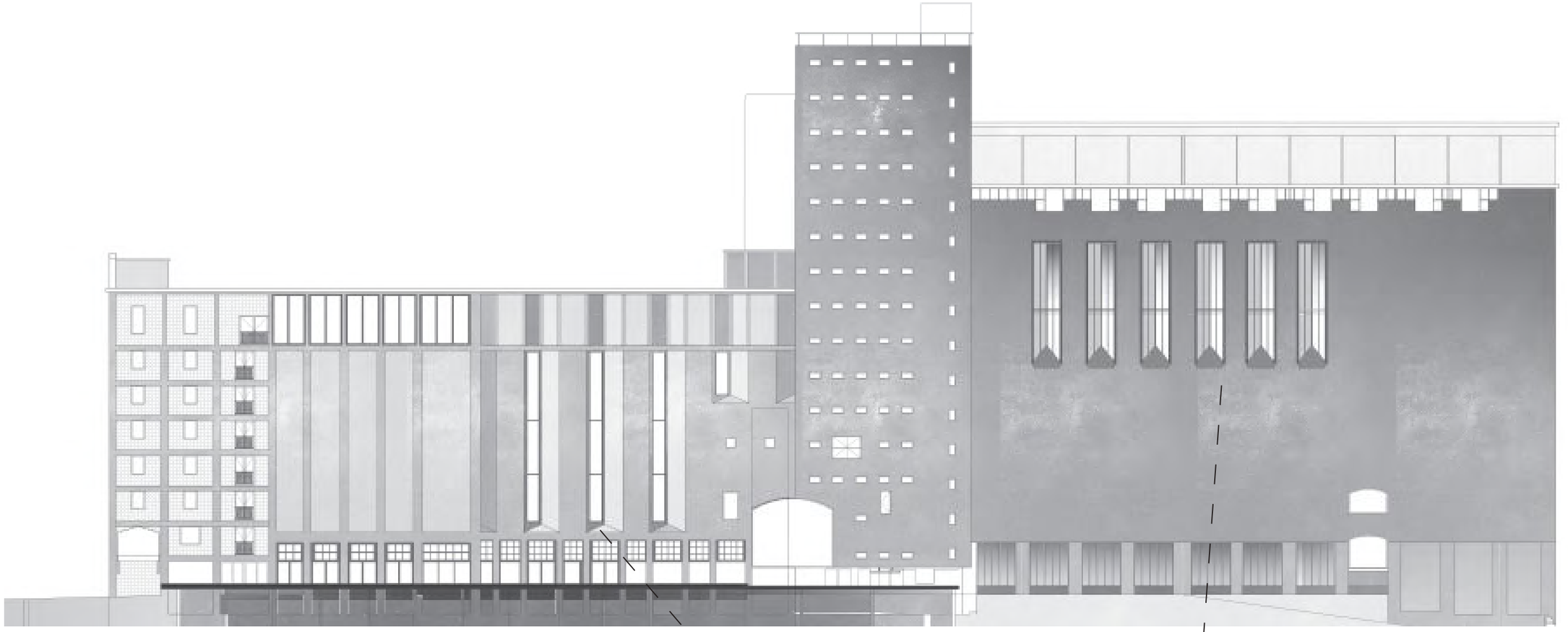


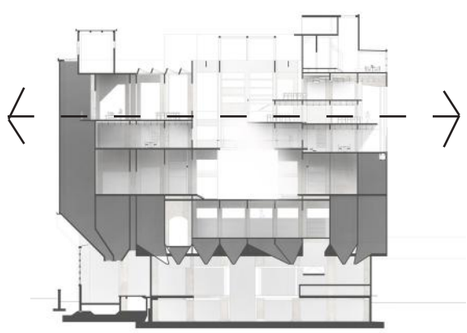


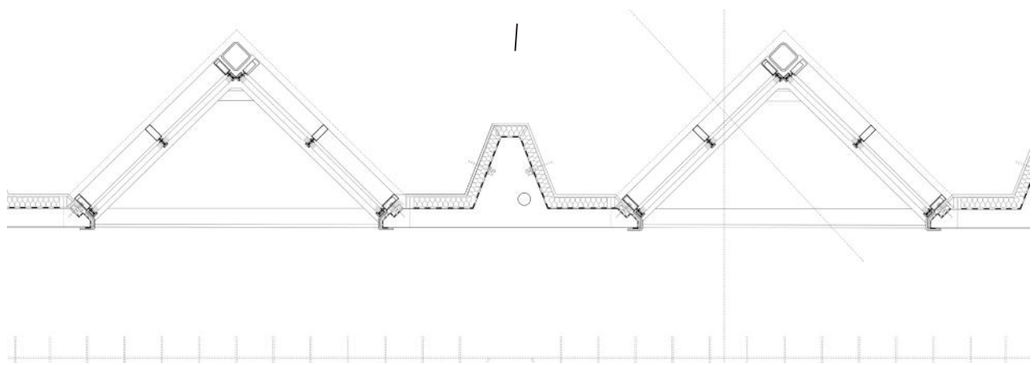
Air flows

	Temperature	Air flow
Auditorium	sum 21- 25 win. 25-30	800 fpm
Seminar room	sum 21- 25 win. 25-30	800 fpm
Library	sum 21- 25 win. 25-30	1200 fpm
Offices	sum 24- 26 win. 22- 24	1200 fpm

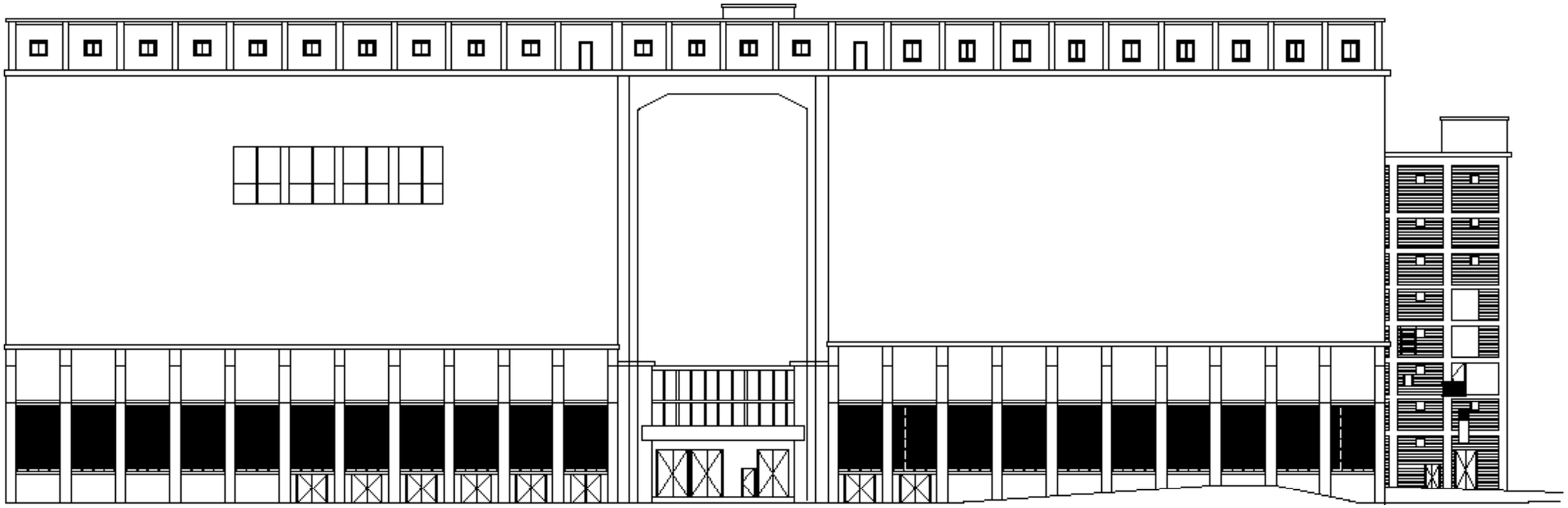
Facade strategy: waterfront

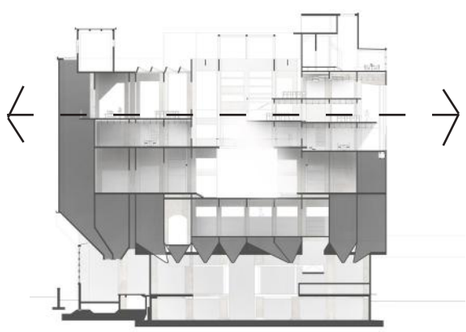




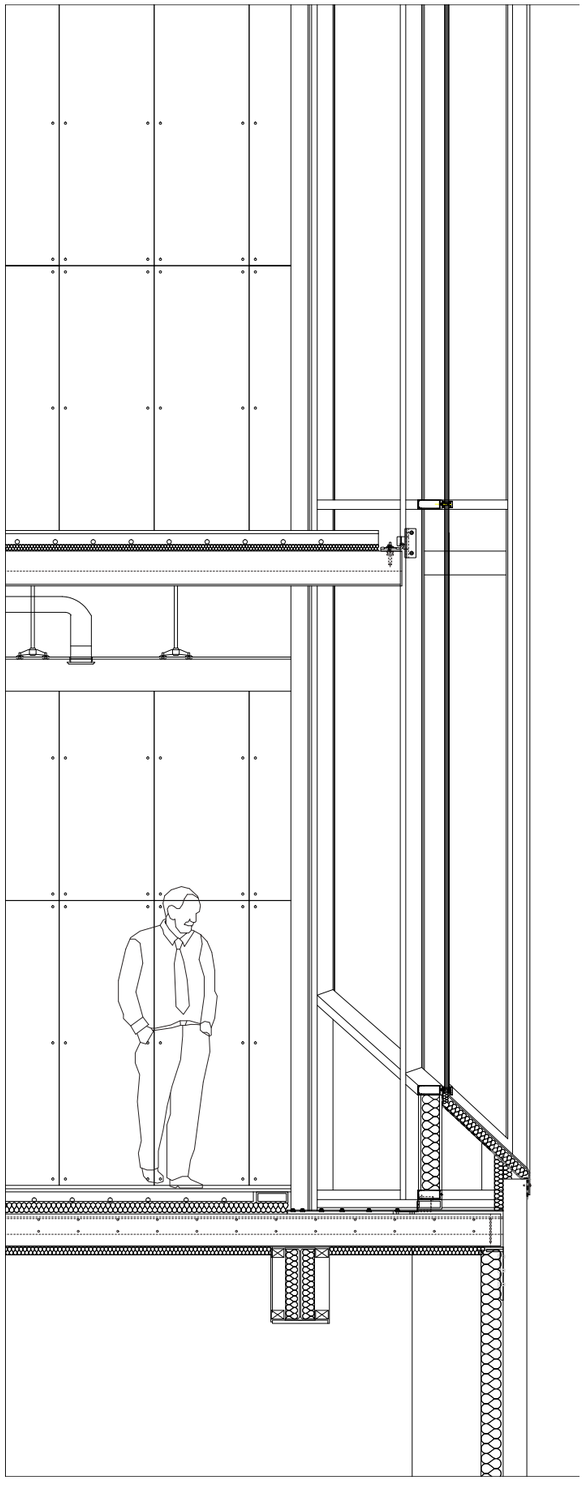


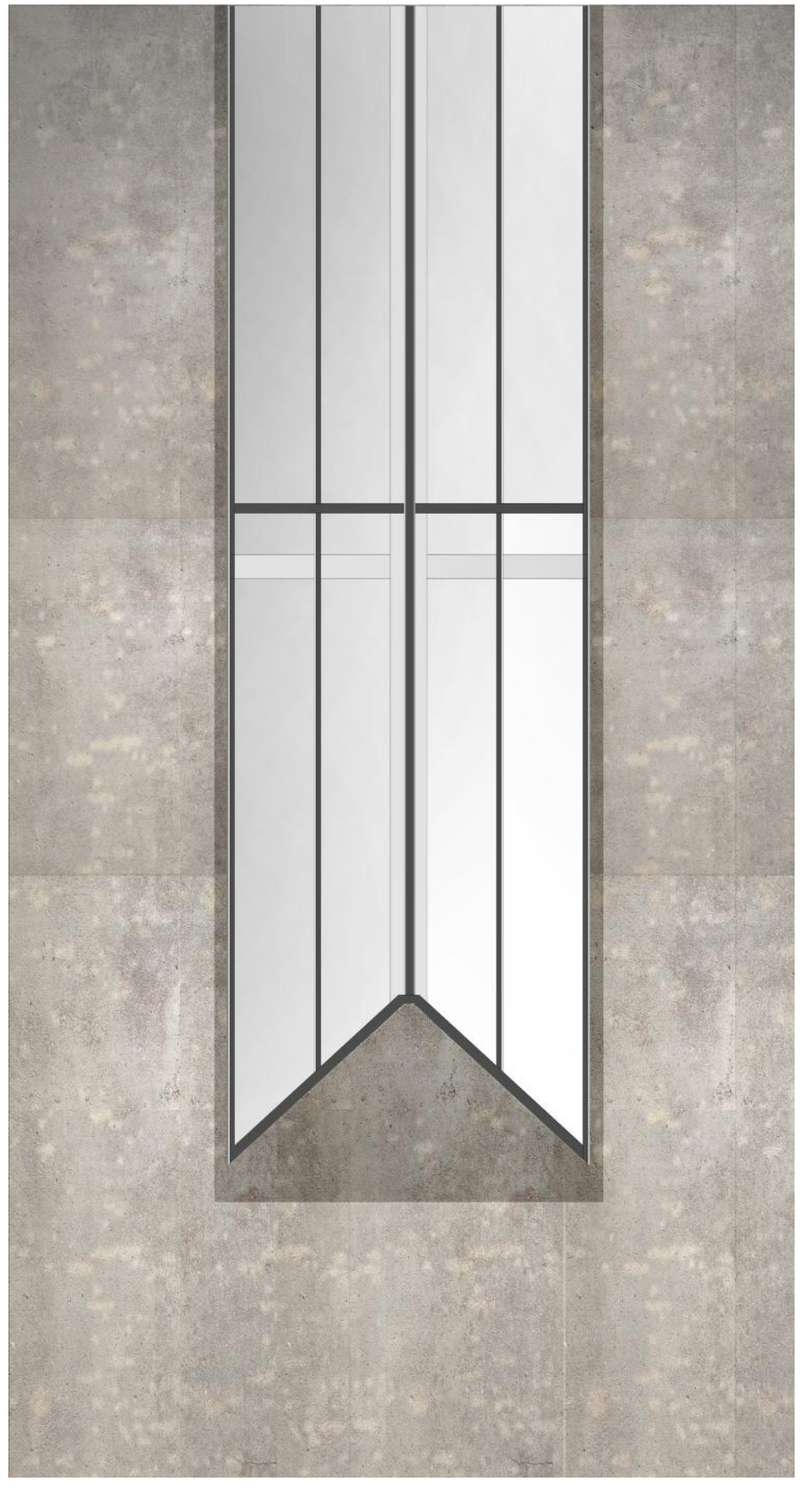
Facade strategy: back facade



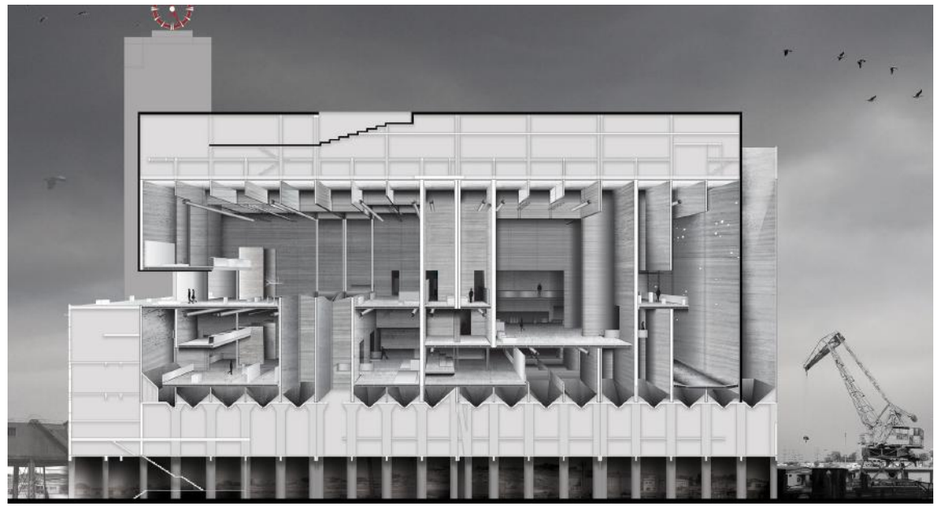


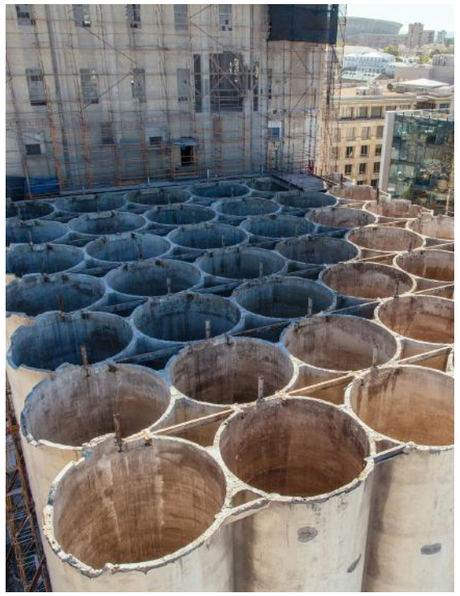
Facade articulation

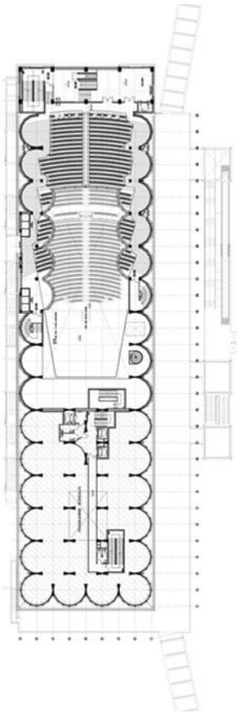




Reflections: a still unchartered territory







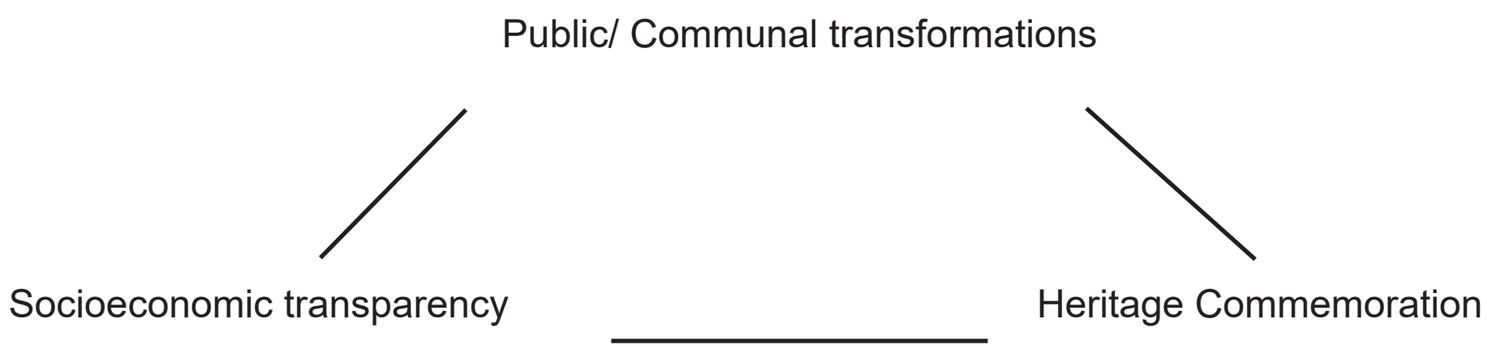
Reflections: main discussion points

Programme

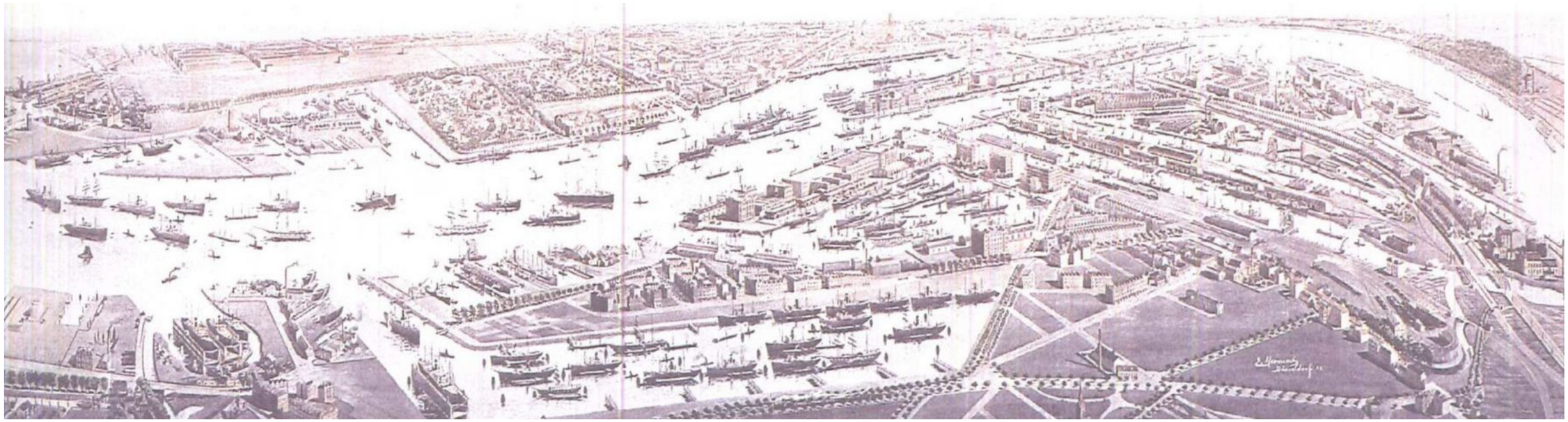
1. In cases of post-industrial settings of such multilayered historical context and diverse social context, the re-use appoach should investigate a new function, which however allows , new functions to develop and be defined by the needs of the surrounding communities.

Intervention strategy

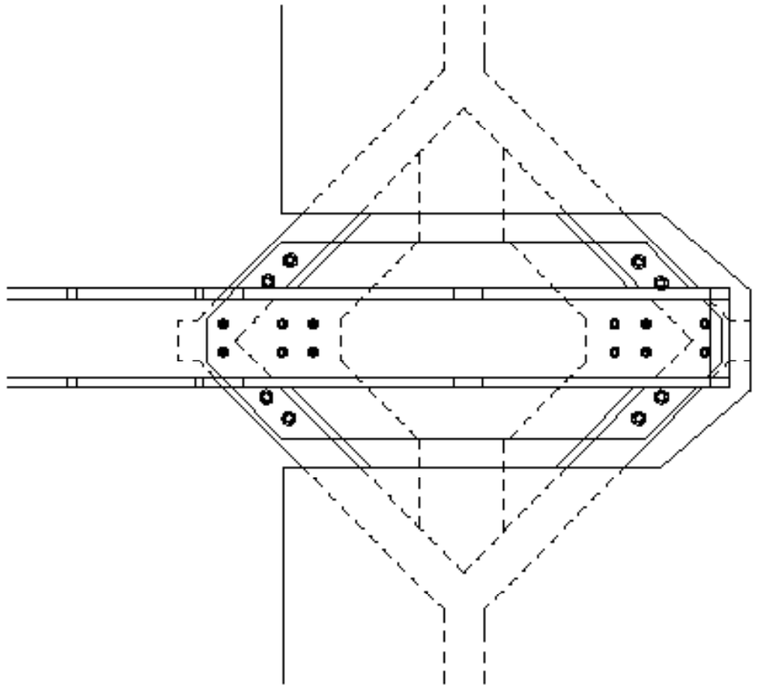
2. Particularly looking at cases of such immense scale such as the Maassilo, a good design strategy would be to work in **layers,** constructing a language/hierarchy of interventions, deploying a strategy of multiple scales (from site to surface e.t.c) which remains consistent with the existing spatial qualities.
(That involving the solution of objective necessities, such as new circulation and daylight , to more subjective and commemorative interventions (such as the facade).

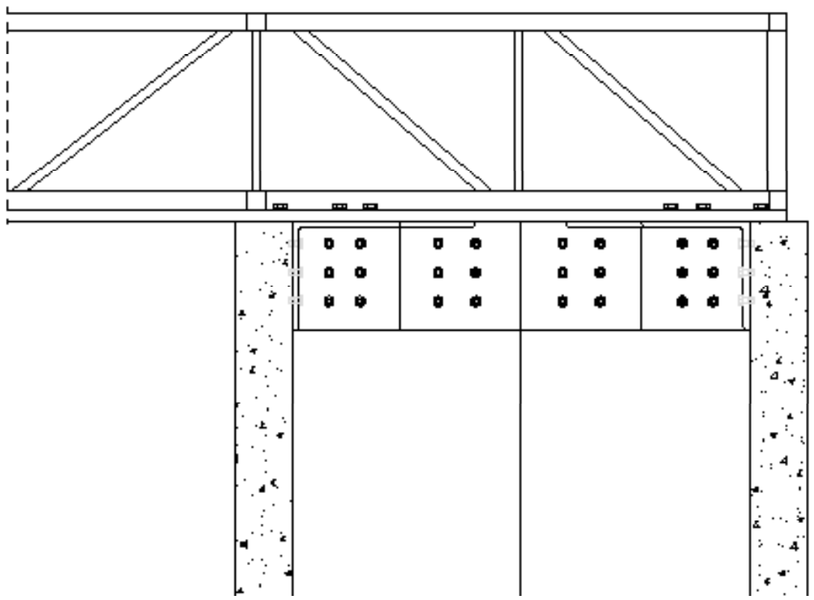


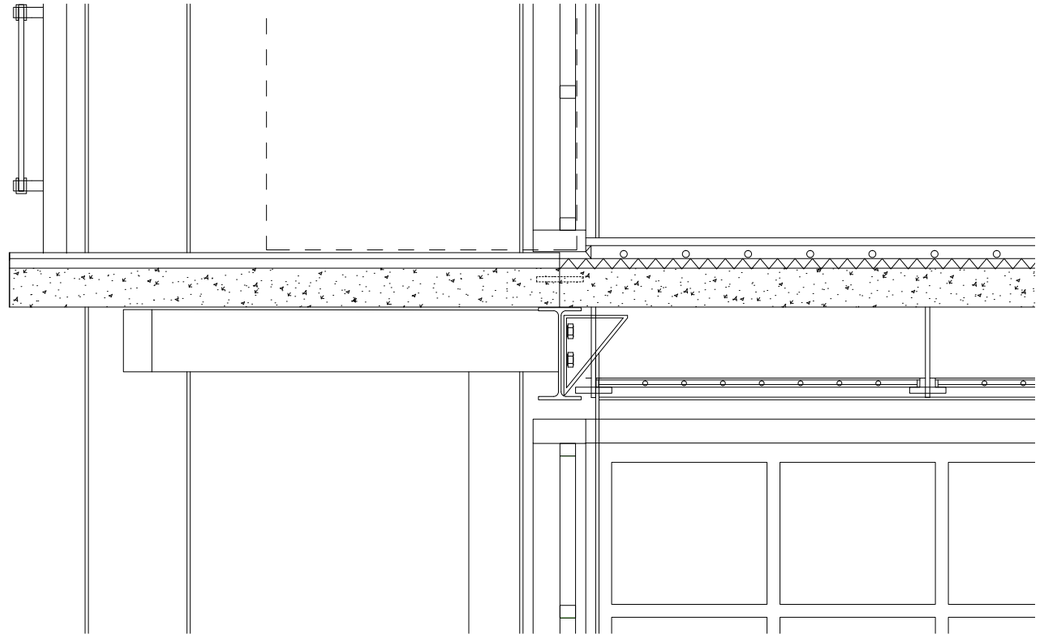
Thank you

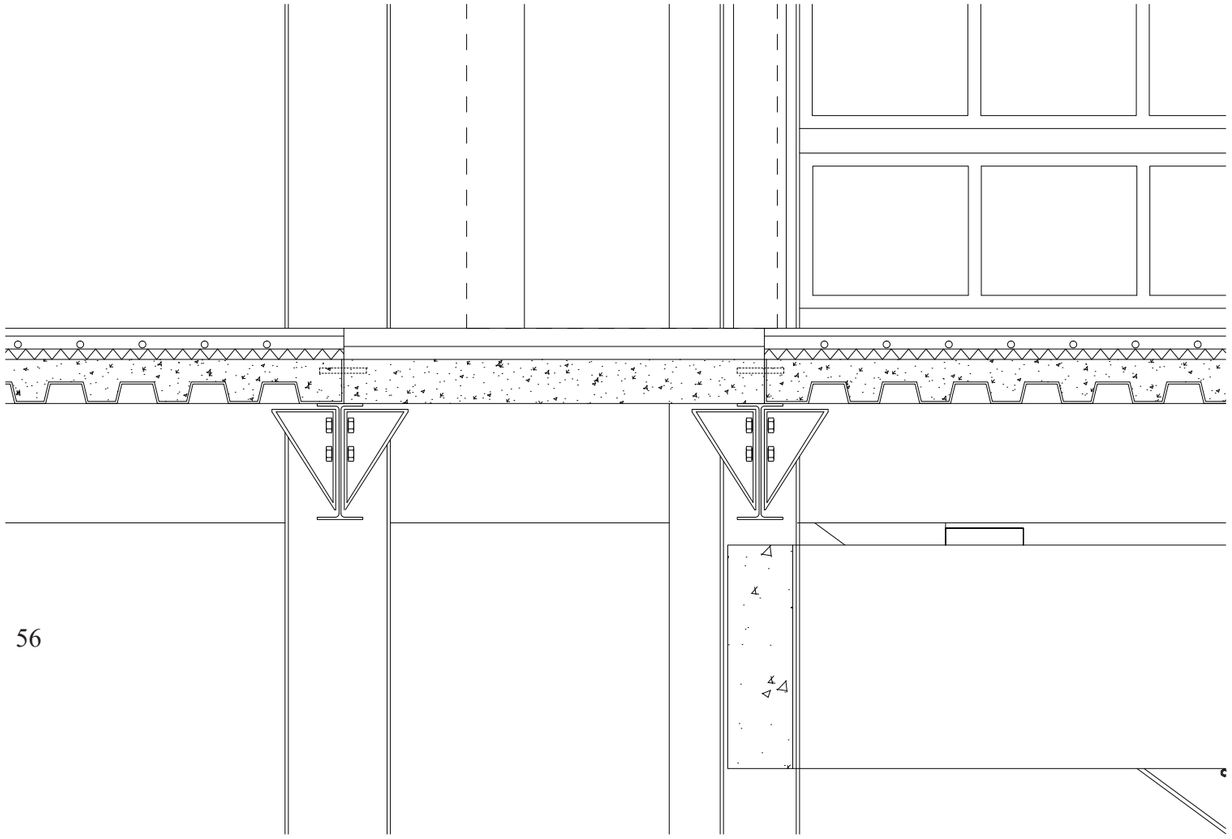


Interventions: Connections









Interventions: Strategy

Brinkmann-
Multiple cut-outs

Connection-
New structure

Stok- Partial,
Big scale in-
tervention