P5: Graduation Report

AR3AP100 | MSc4 | Public Building Graduation Studio
The New Museum | Art + the City Re-Wired | Rotterdam Zuid

The New Museum for Contemporary Technology

Daul Chung
[5010314]

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Main mentor: Henk Bultstra_Architectural Design
Second mentor: Florian Eckardt_Building Technology
Third mentor: Sang Lee_Theory Research

Table Of Contents

1. Process Documentation

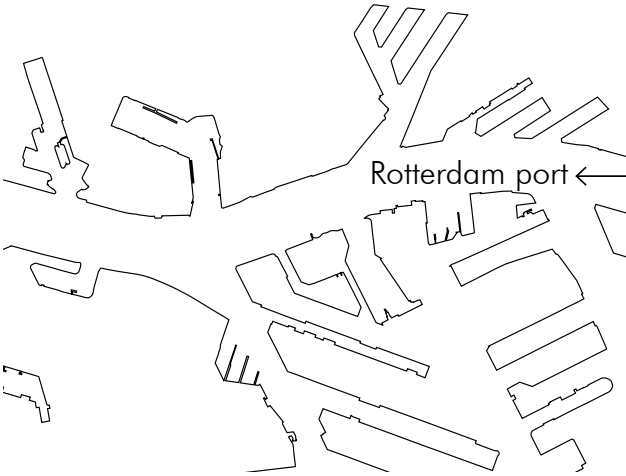
- From P2
- Site
- Pavilions
- The Spine
- The Roof
- Structural Concept
- Climate Concept

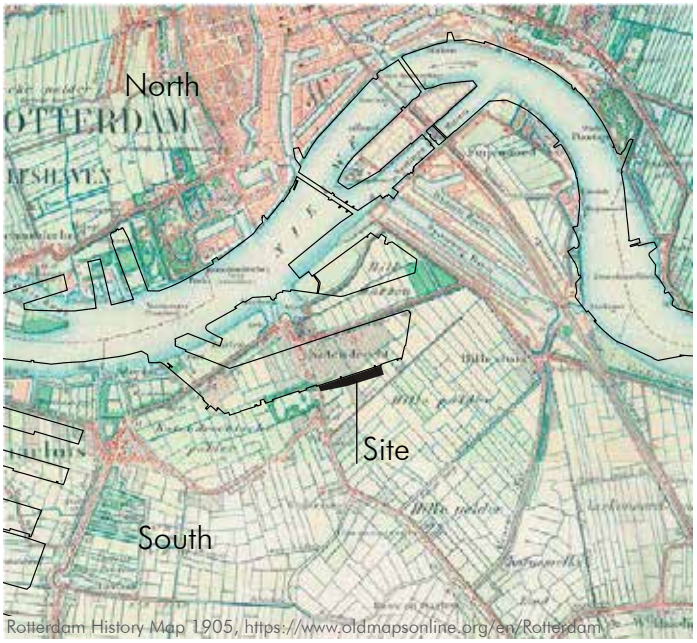

Site

The site is located on the south side of the Maas river, Rotterdam South.
First of all, I took a look at the historical layers of the site.
Until 1905, the site was a polder. It was muddy, swamp and creeks in the peat landscape.

In 1905, the Maas river was constructed as a harbor for barges.Along the quays, silos and warehouses were built. In 1940, at the beginning of the Second World War, Rotterdam was devastated by a German bombing raid. The site location was not directly destroyed, but the whole Rotterdam had to start from scratch of war to become the contemporary city that we know today. However, this image of Rotterdam is limited to Rotterdam North.

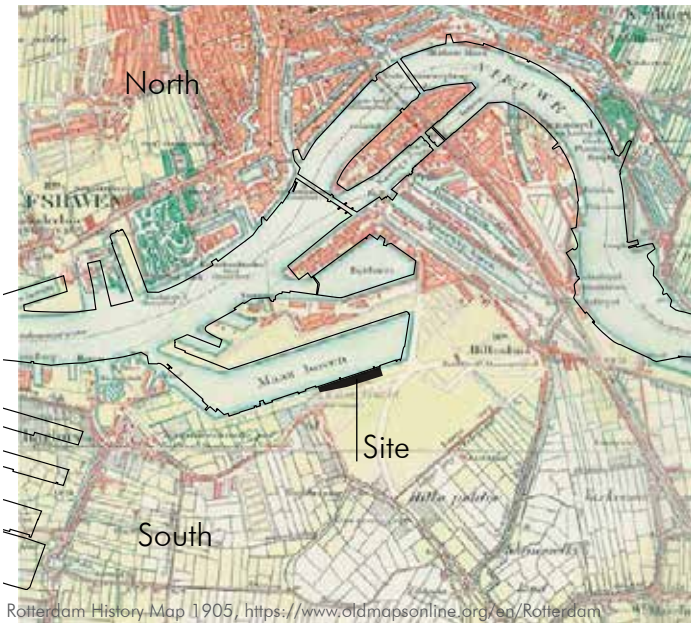
Rotterdam South is not a separate administrative unit, although there is a national consortium that has received substantial national funding for housing, education, and employment programs.
Currently, the port for barges has been underutilised since the port of Rotterdam has historically migrated farther west. But, Maashaven is a central transportation hub that has the potential to be bustling with life. Therefore, the site with the Maas river is ready to transform to the New Museum as a public building with more connections.



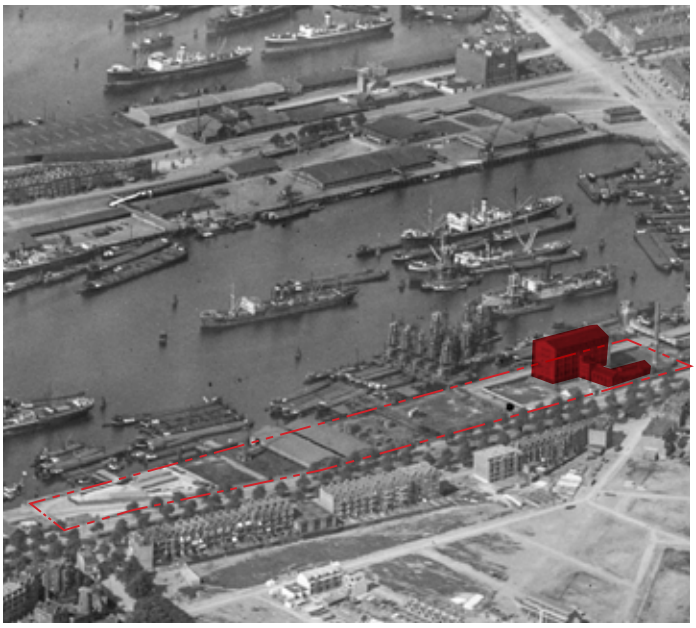


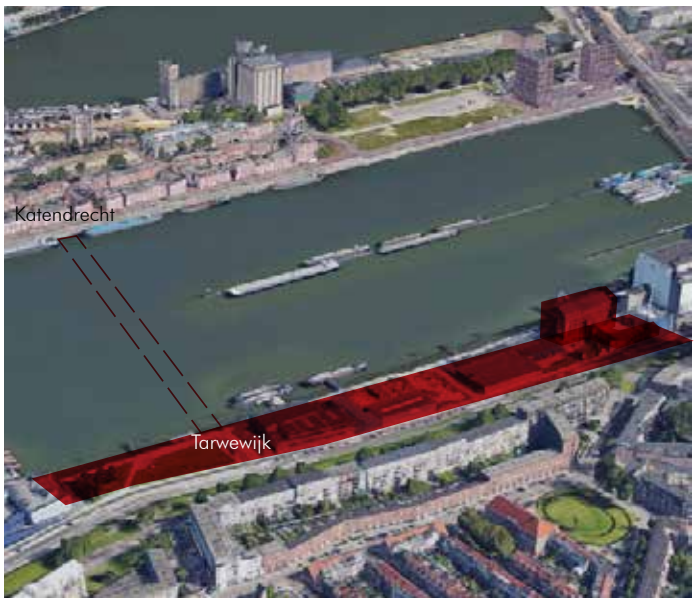
Rotterdam History Map 1905, https://www.oldmapsonline.org/en/Rotterdam


Image from Guest Lecture RIVER AS A TIDAL PARK by Marit Janse De Urbanisten Rotterdam



Rotterdam History Map 1905, https://www.oldmapsonline.org/en/Rotterdam





Rotterdam as a Contemporary City
In the history of Rotterdam, Pre-war Rotterdam had substandard living conditions. At the beginning of the Second World War, Rotterdam was devastated by a German bombing raid. Therefore, Rotterdam had to start from scratches of war to become a city that we know today. In this aspect, Rotterdam is a Contemporary City.

Rotterdam as an International City
Today's Rotterdam is Netherlands' number one city of architecture with the latest high-profile buildings and illustrious icons. In cultural aspects, there are several museums such as Museum Boijmans on Museumpark, Kunsthal, Het Nieuwe Instituut, Rotterdam Museum and so on.

However, these international Rotterdard images are limited to Rotterdam North.

Rotterdam South as a city with bright future
Currently, Rotterdam South has a low education degree, low income, high crime rate, bad health and safety. The south is in many ways worse than the north. Therefore, there is mental distance between Rotterdam North and South even though North and South are physically well connected by infrastructures. To reduce the gap between North and South, and to make Rotterdam South a pleasant place to live, the Government has planned developing Rotterdam South such as National Program Rotterdam South-(NPRZ). They also planned to develop Hart Van Zuid and Stadionpark as nodes which can connect to Rotterdam Center and other parts of Rotterdam.
And the site for the New Museum can be a part of a bright future strategy for Rotterdam South.

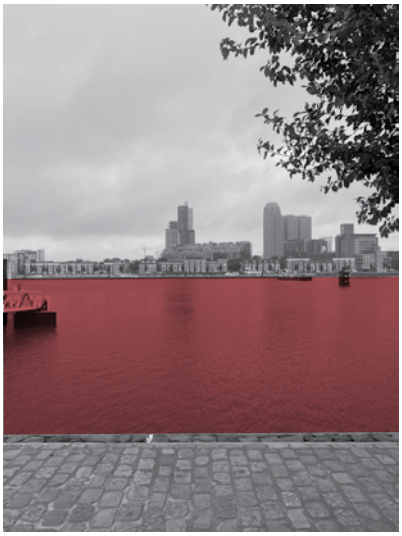
Collage of art in public areas Rotterdam from Thematic Research: Culture

Iconic buildings in Rotterdam - collage from Thematic Research: Power

Collage of art in public areas Rotterdam from Thematic Research: Culture

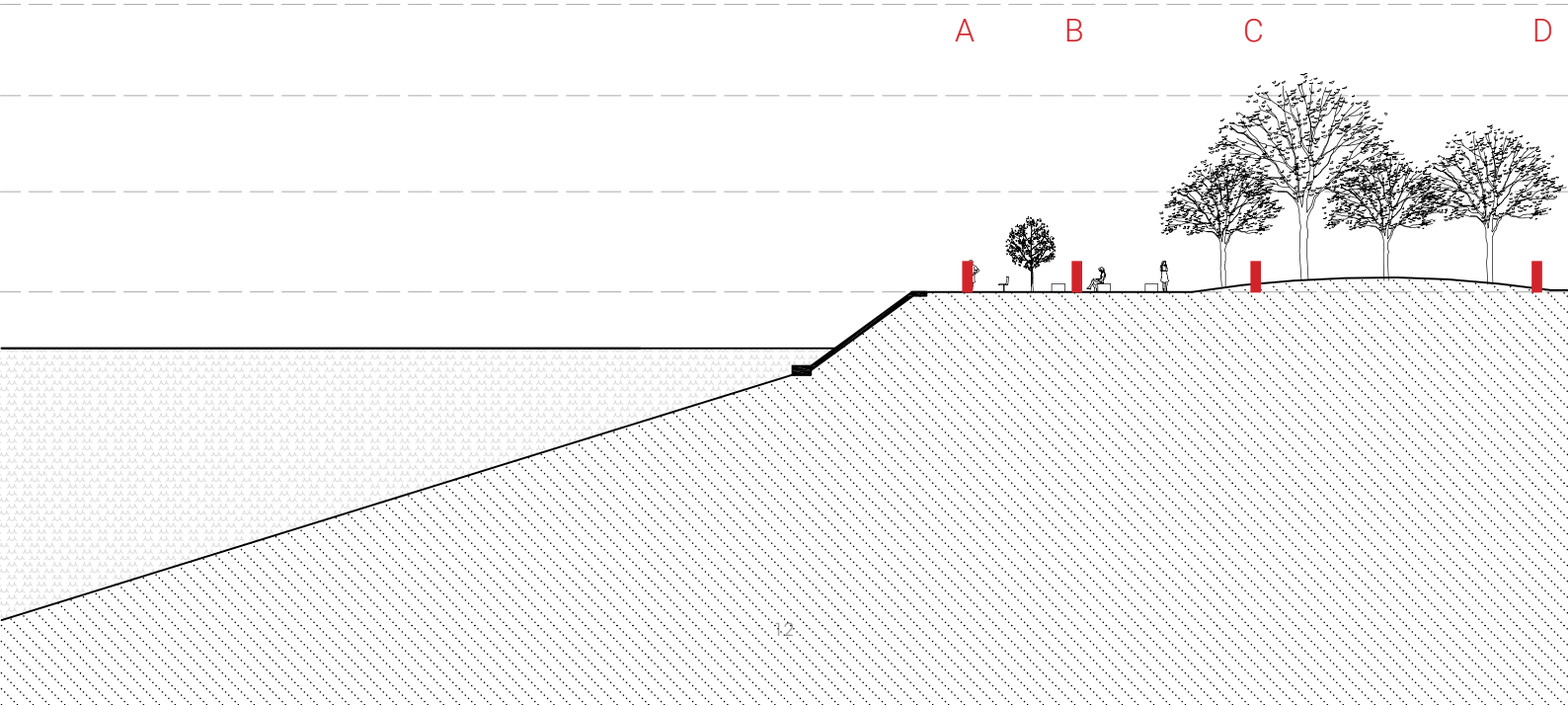
A

B



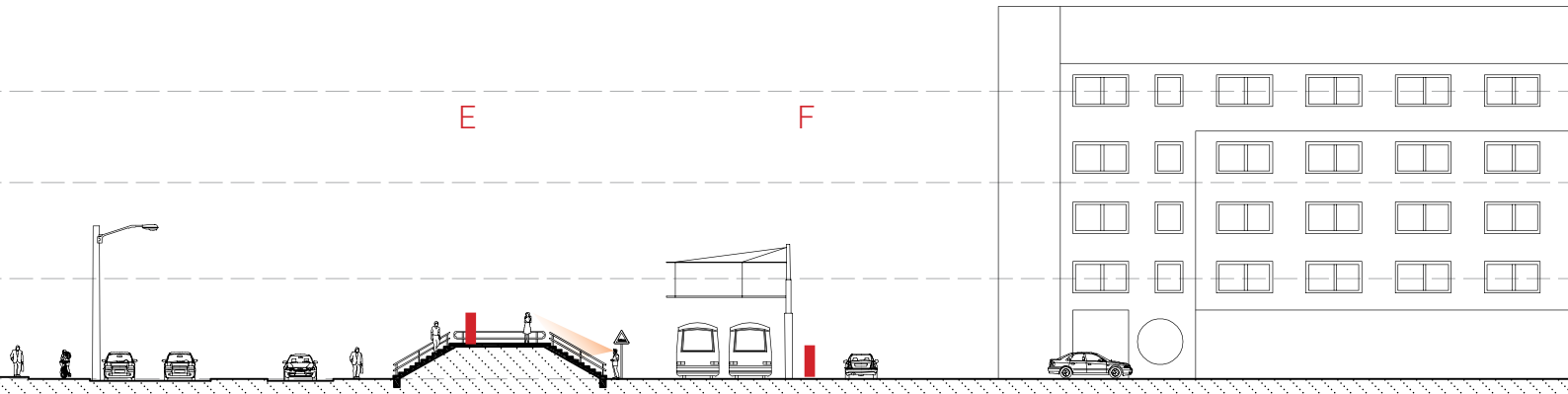
C

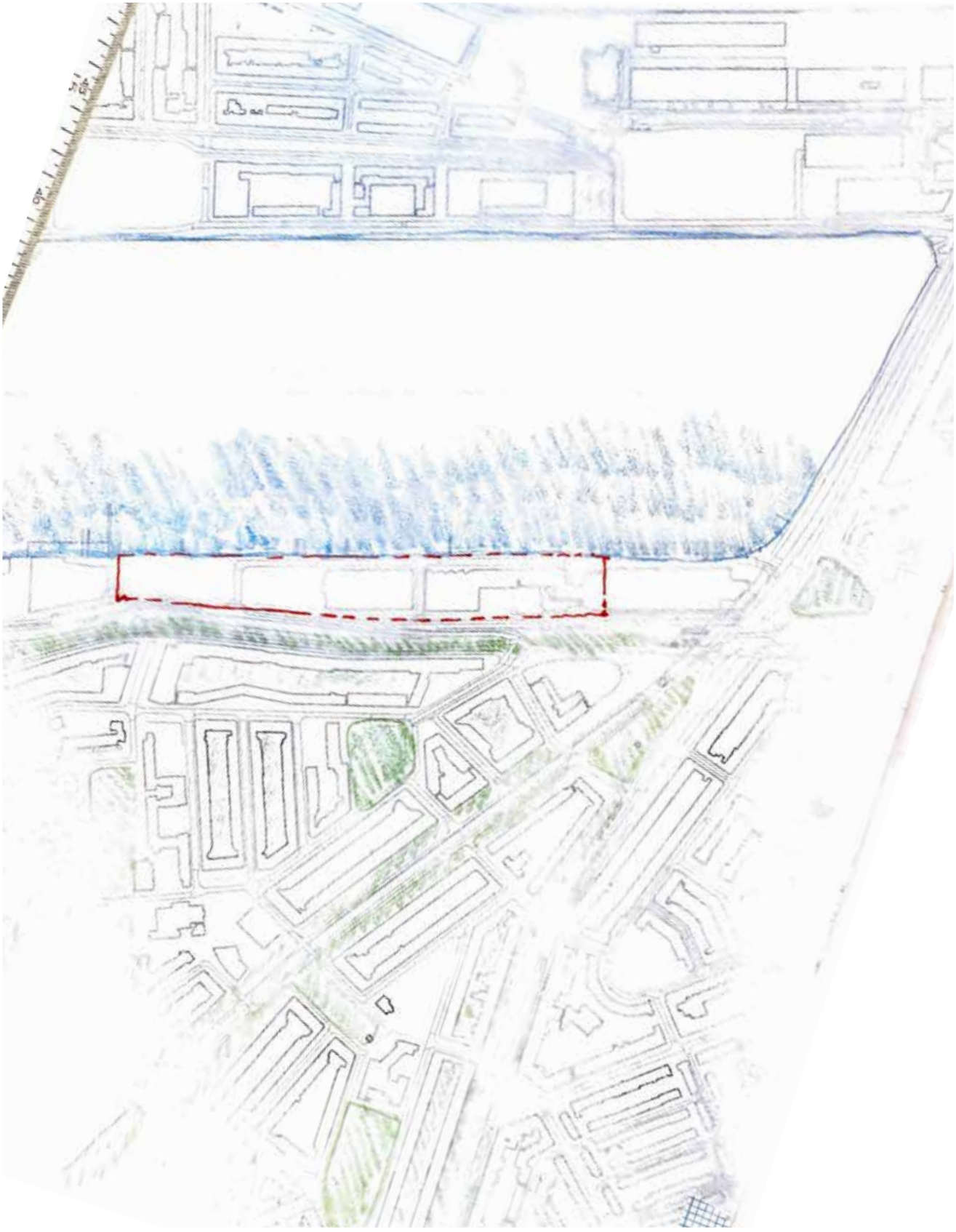
D

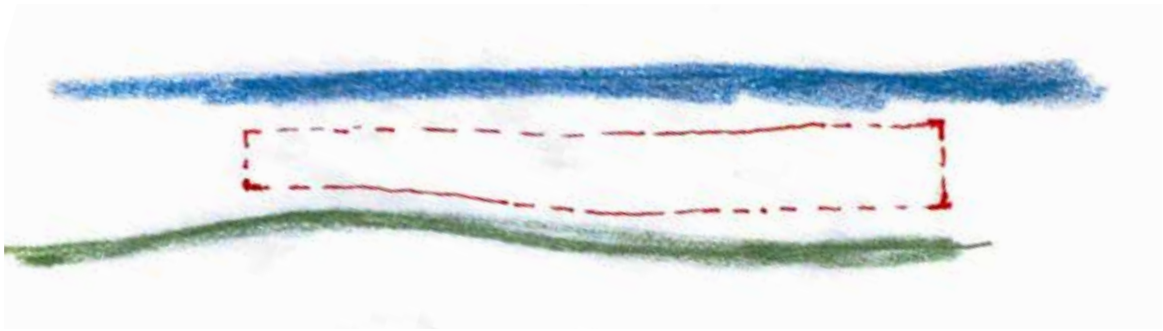


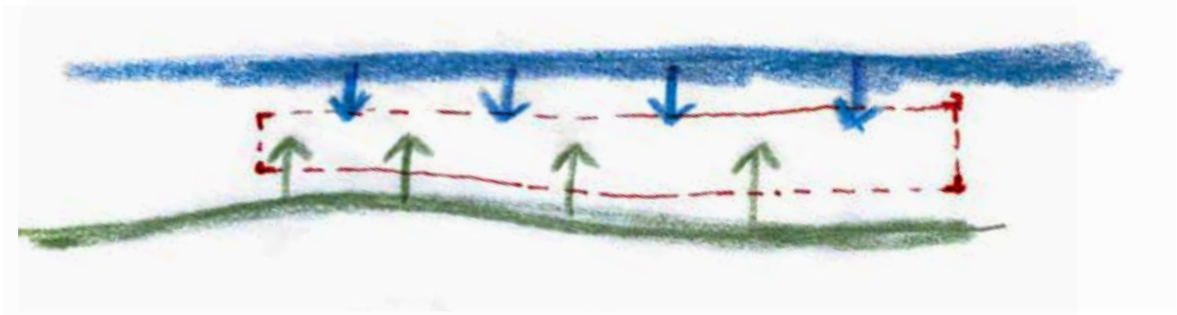
E

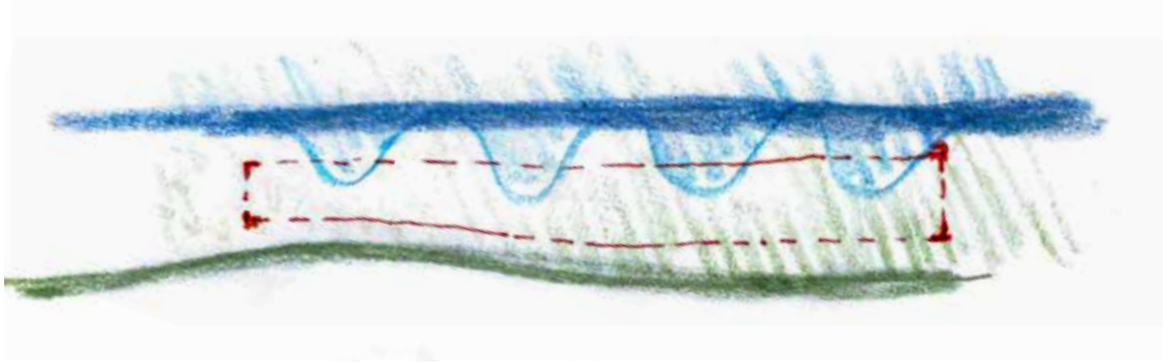
F









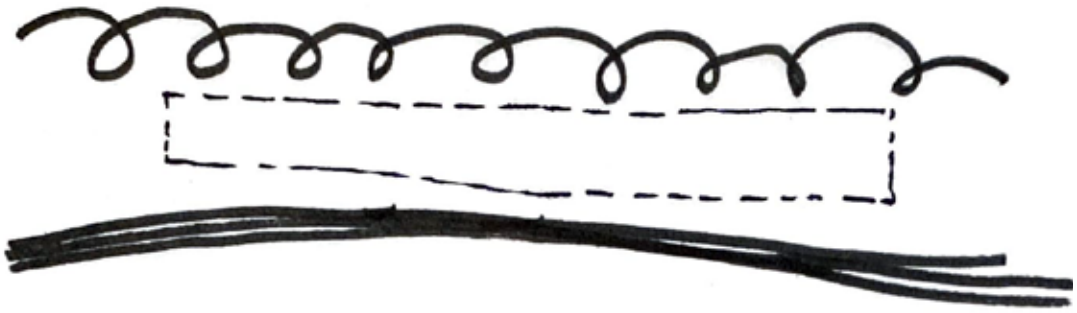


STEP01

WATER

SITE

GREEN
(DIKE)



STEP02

WATER

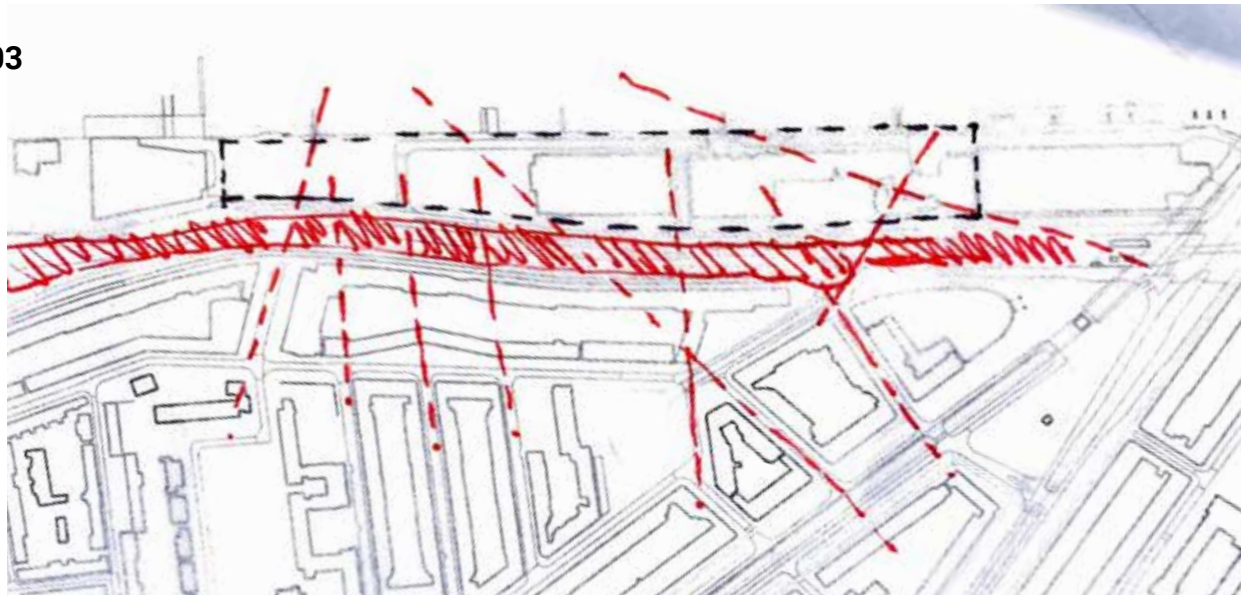
SITE

GREEN
(DIKE)

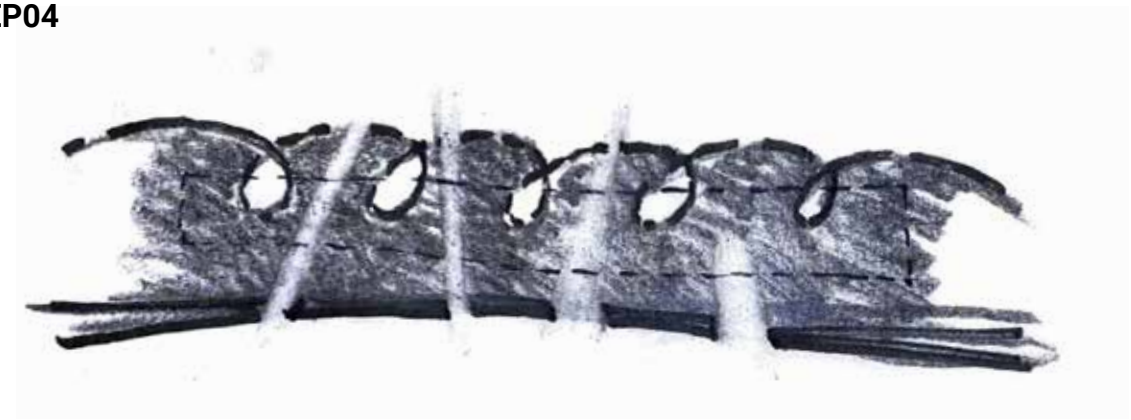
Soft

Hard

STEP03

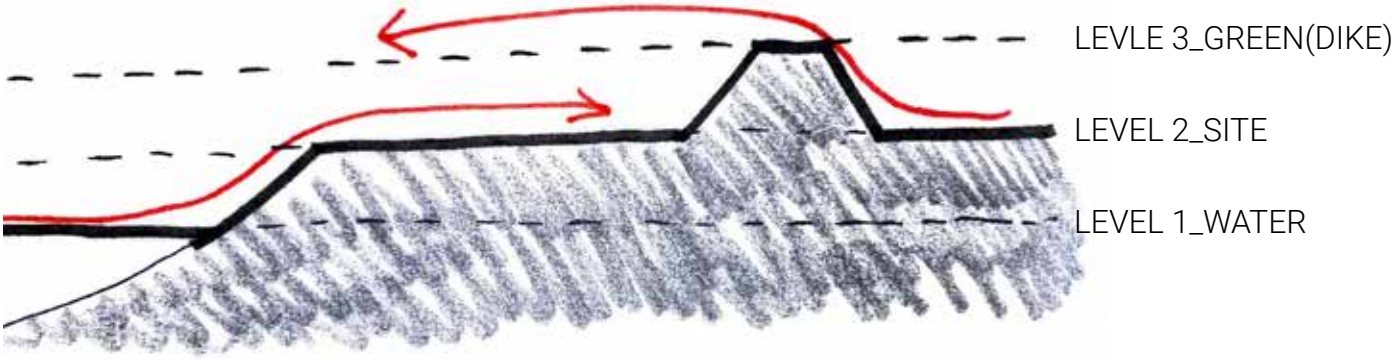


STEP04

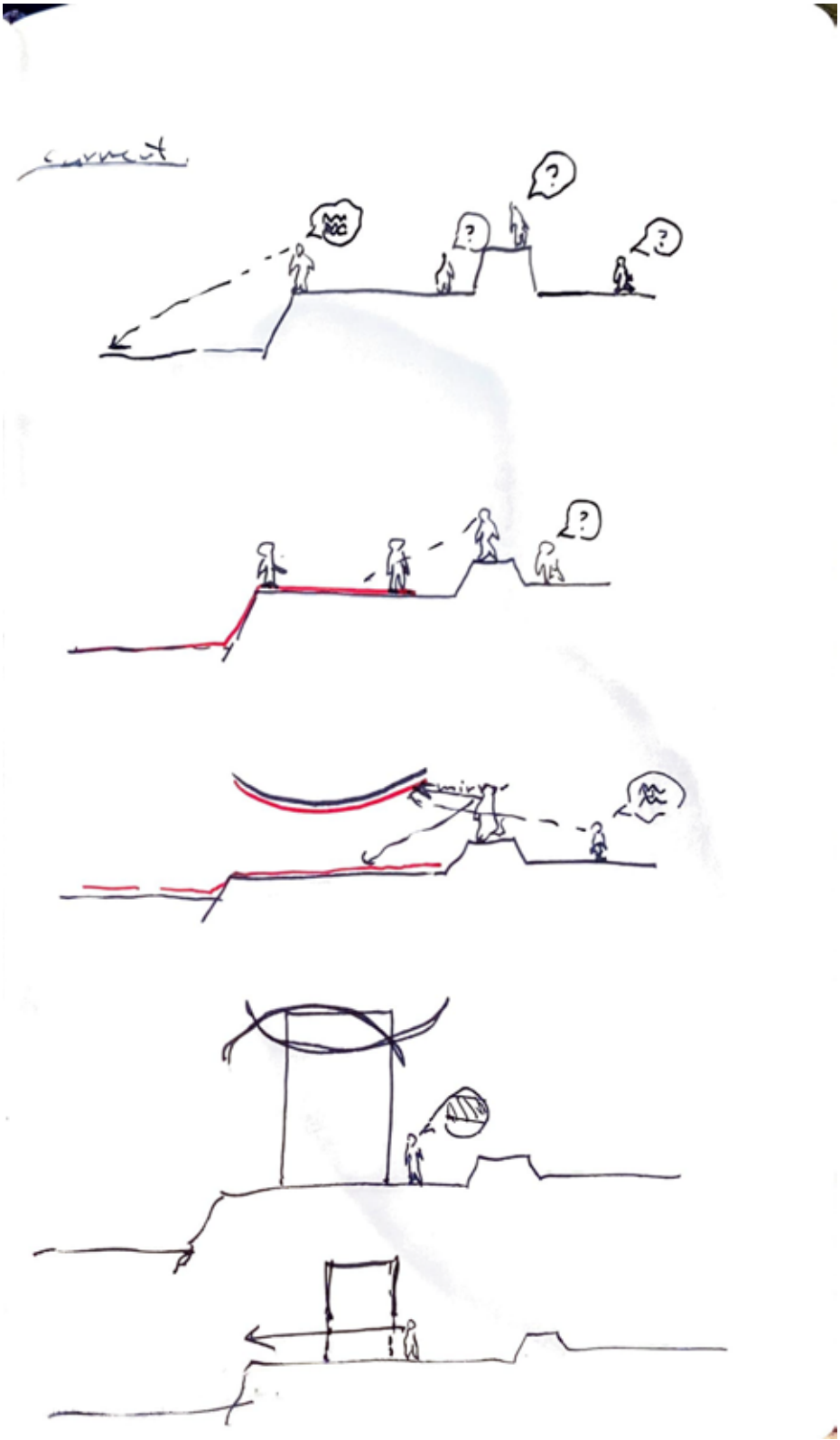


STEP05

SECTION




paid facility
: \ unpaid facility.
droog?
Principle


current
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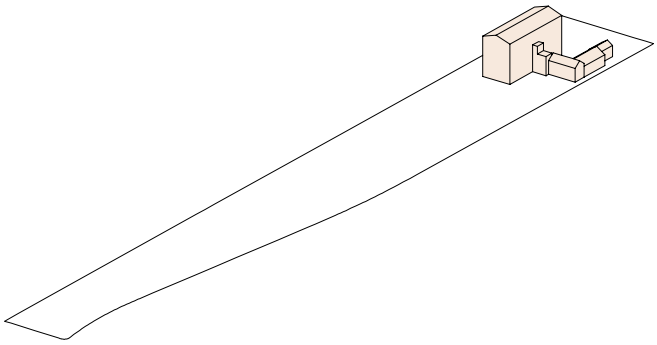
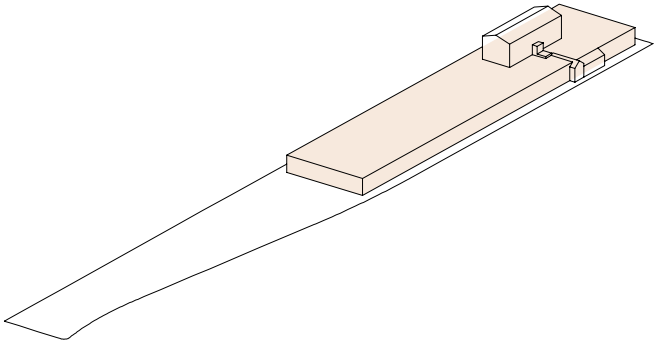


Remediation



Volume (12100m^2)

New media does not completely separate from the past. During 1980-1990, all image-making techniques were computerized and thus all images were converted into composites.

Quaker Oak building is designed as a composite building.

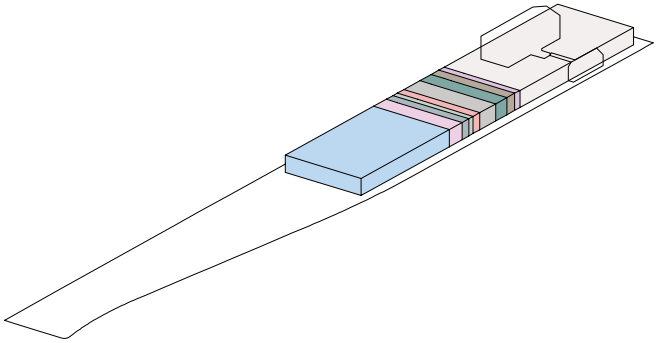
ART MUSEUM, 12,000 m2
We take the Preliminary Area Schedule of the Guggenheim Helsinki Des
Competition 92014) as OUR point of departure*:

ASSIGNED AREAS:

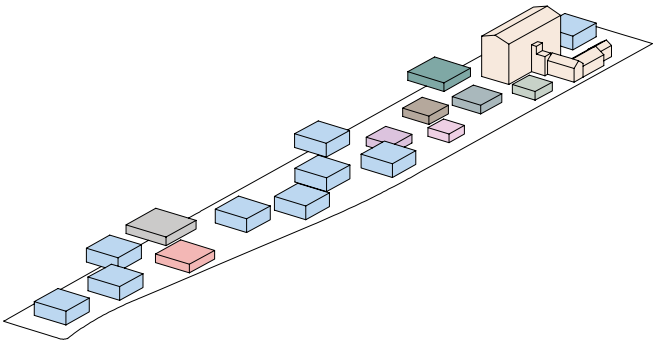
	Net Square Meters	Net AreaGross.
Exhibition	3,920	56%
Programs and Events	565	8%
Multi-purpose Zone	300	4%
Visitor Services	190	3%
Retail	300	4%
Dining	700	10%
Offices	500	7%
Collections Storage and Management	350	5%
Maintenance and Operations	230	3%
Total Assigned Areas:	7,055	100%

UNASSIGNED AREAS: 5,045

Total Gross Museum Area	12,100
TOTAL BUILDING AREA	12,100 Gross Square Meters



Program



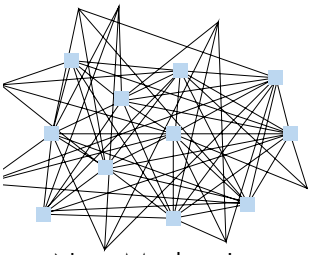
Segments of program

New media is the conversion of analog media to digital. In contrast to continuous analog media, digitally encoded media is fragmented.

The New Museum is not a continuous building, but a segmented building.

Order of apperance

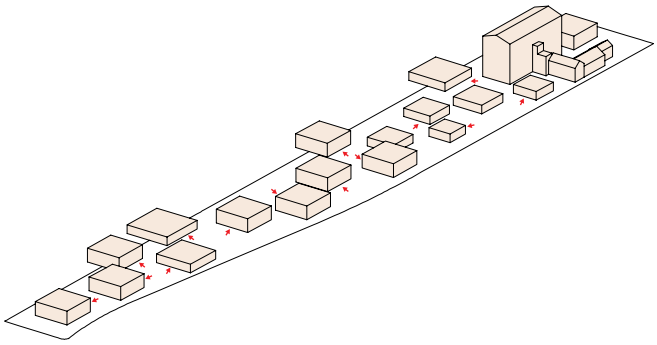
Analog media: Fixed

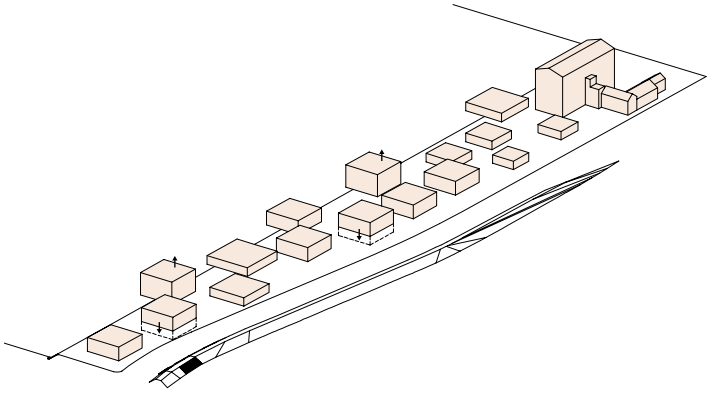


New Media: Interaction

New media is interactive. In contrast to media in the past, where the order of appearance is fixed, users can interact with media objects. In the process of interaction, the user can choose which elements to display and which path to follow, thus creating a unique work. In this way, the user becomes a co-writer of the work.

When analog media was exhibited, the collection could be seen at a glance, but digital media cannot be seen at a glance and visitors must continue to explore to discover.

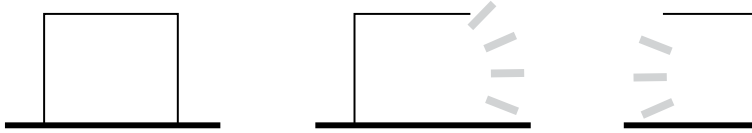


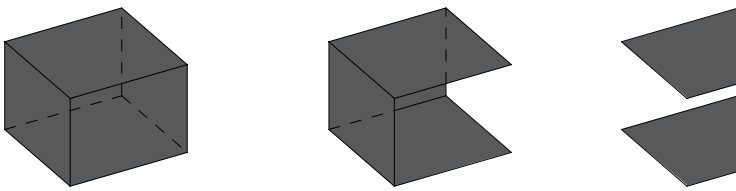


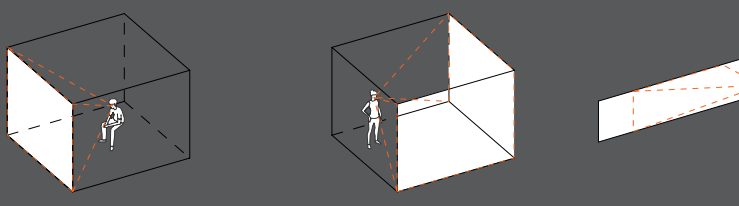
Exhibition Space

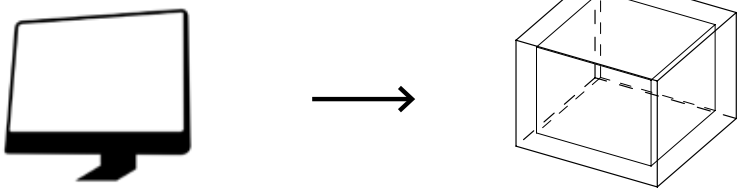
All digital media (text, still images, audiovisual materials with temporality, and model 3D objects) are in the same digital code. Because of this, different media types can be displayed on one machine, a computer, a multimedia display tool.

In a museum that exhibits digital media, you can see all of the exhibits in one exhibition space equipped with a computer.



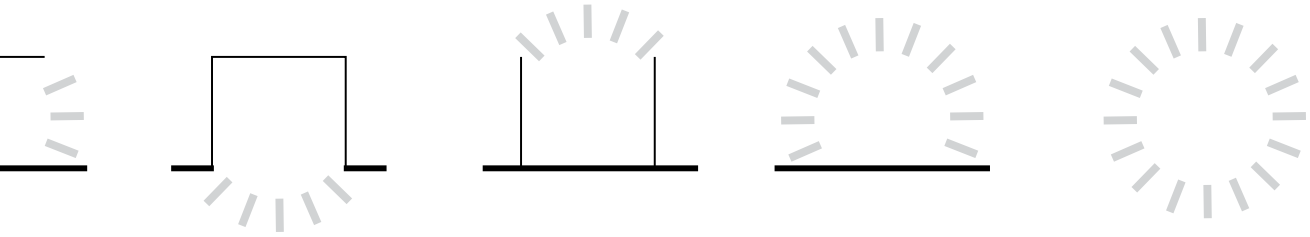


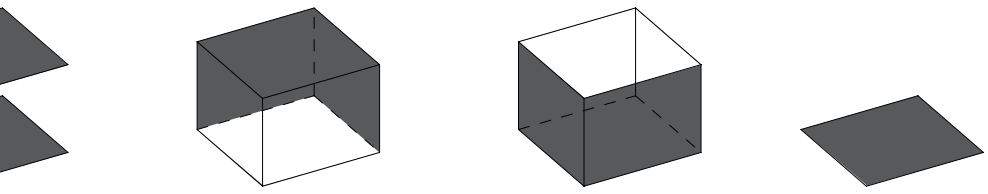


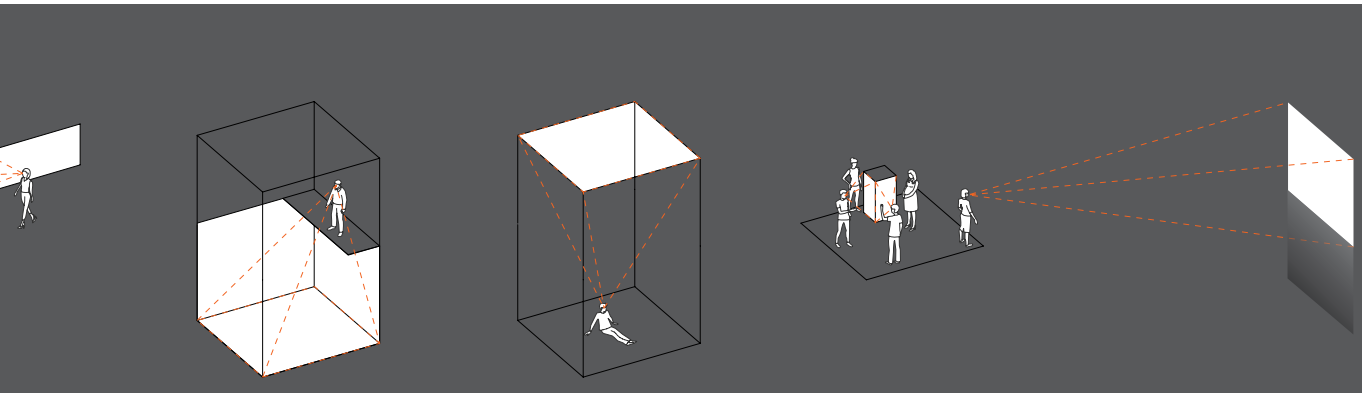


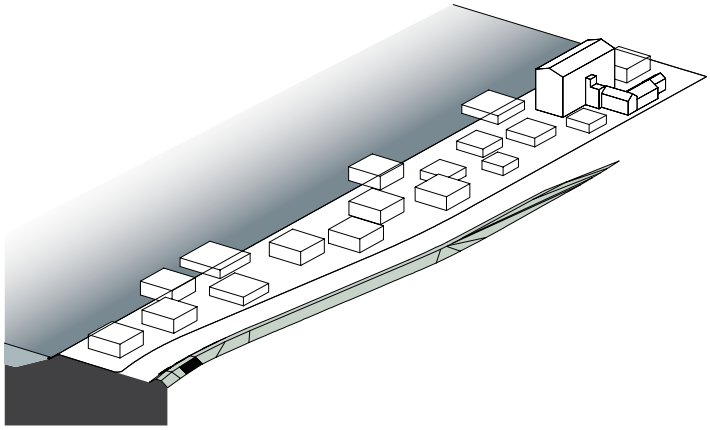
Screen

Surfaces
INNER & OUTER

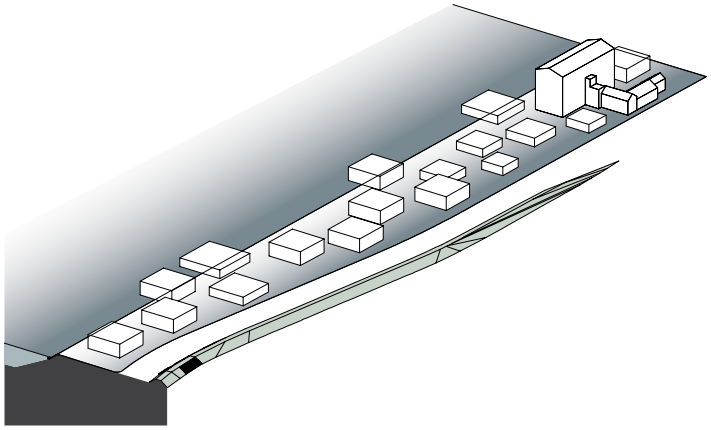




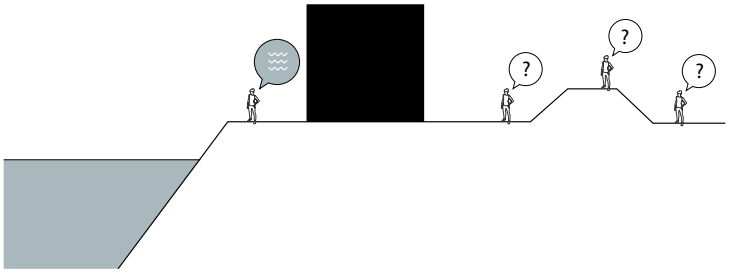


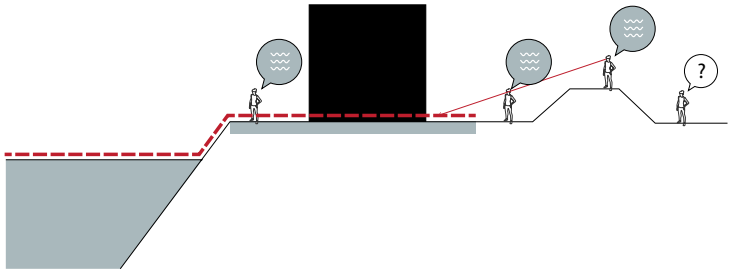


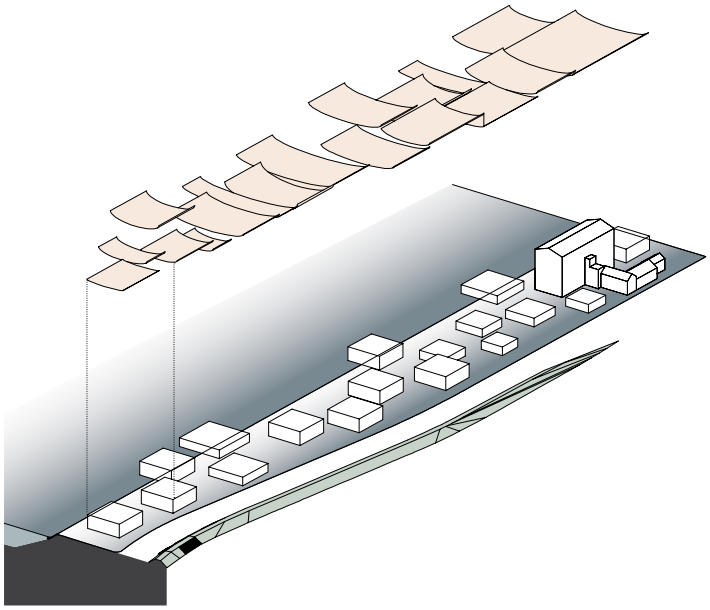
Disconnection of
River | Site | Dike

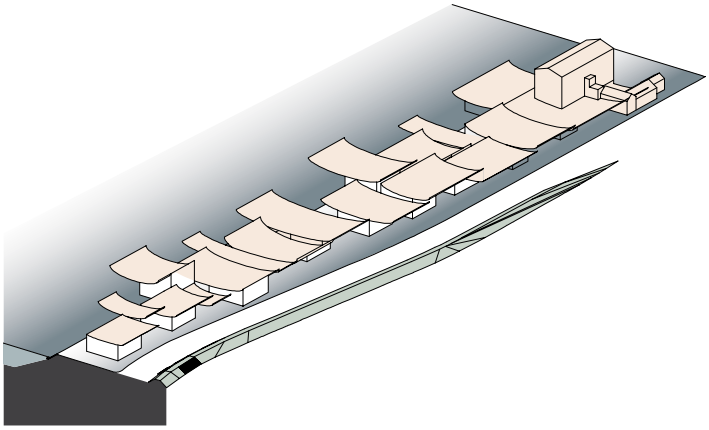


Bringing river to the site

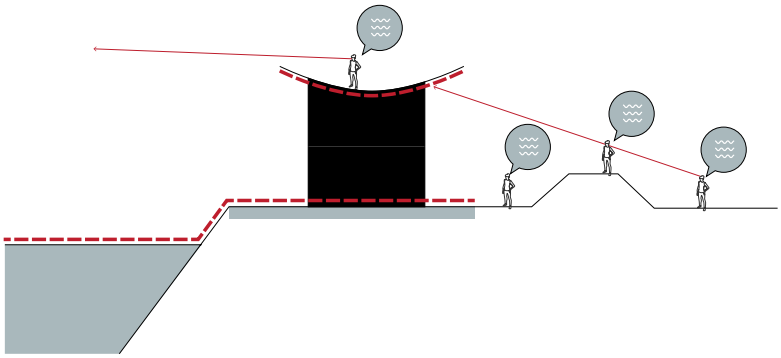


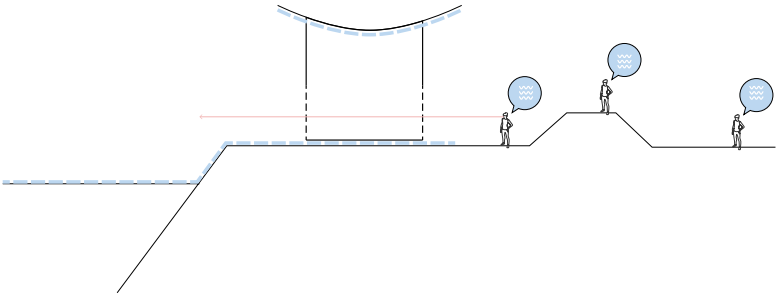


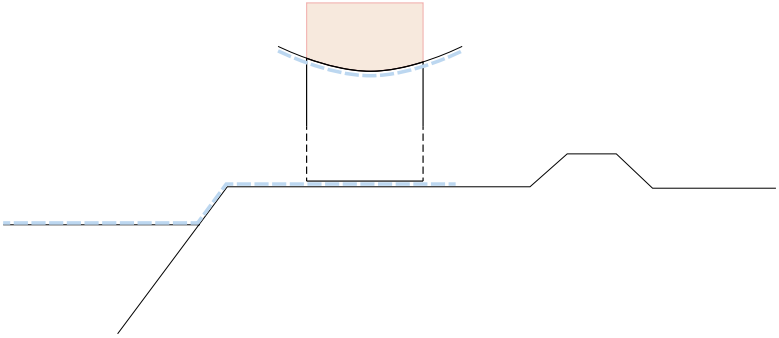


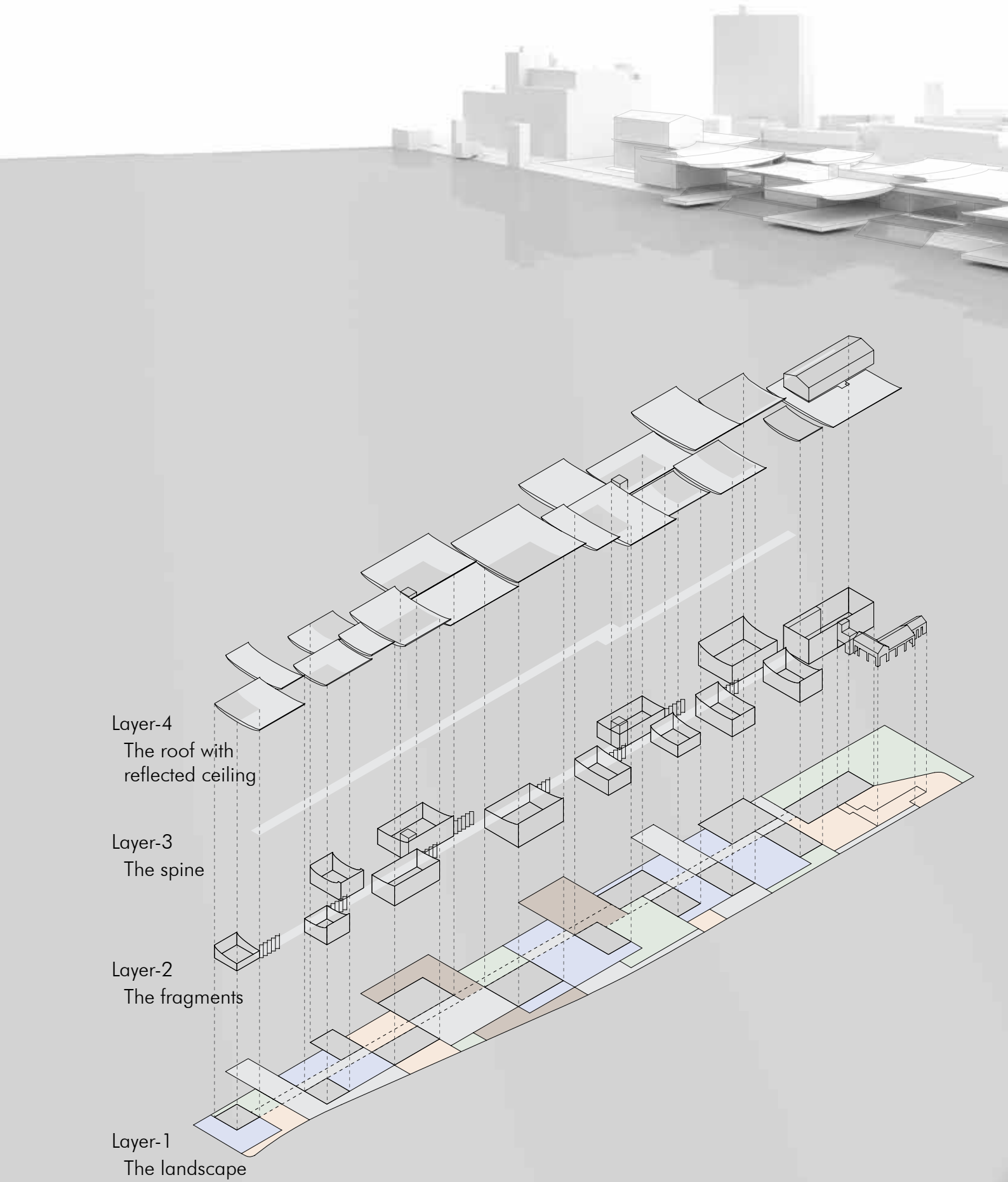


Bringing river to the canopy
(reflection)

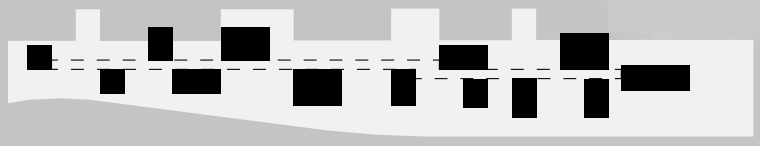




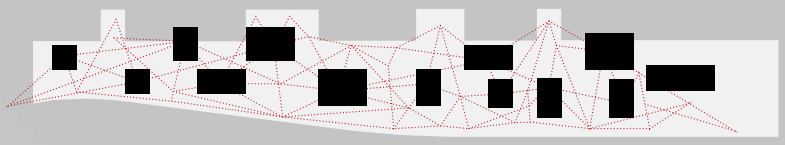



Layer-4
The roof with
reflected ceiling
Layer-3
The spine
Layer-2
The fragments
Layer-1
The landscape

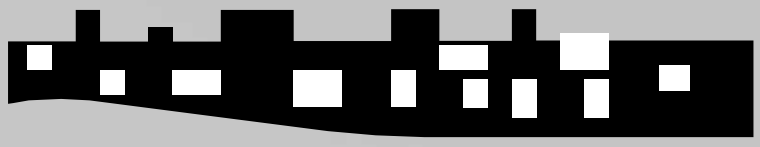
Program + Hidden Corridor



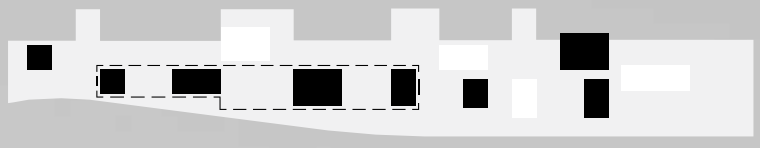
Interactive Circulation



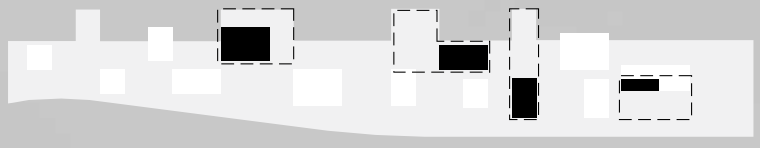
Public Space

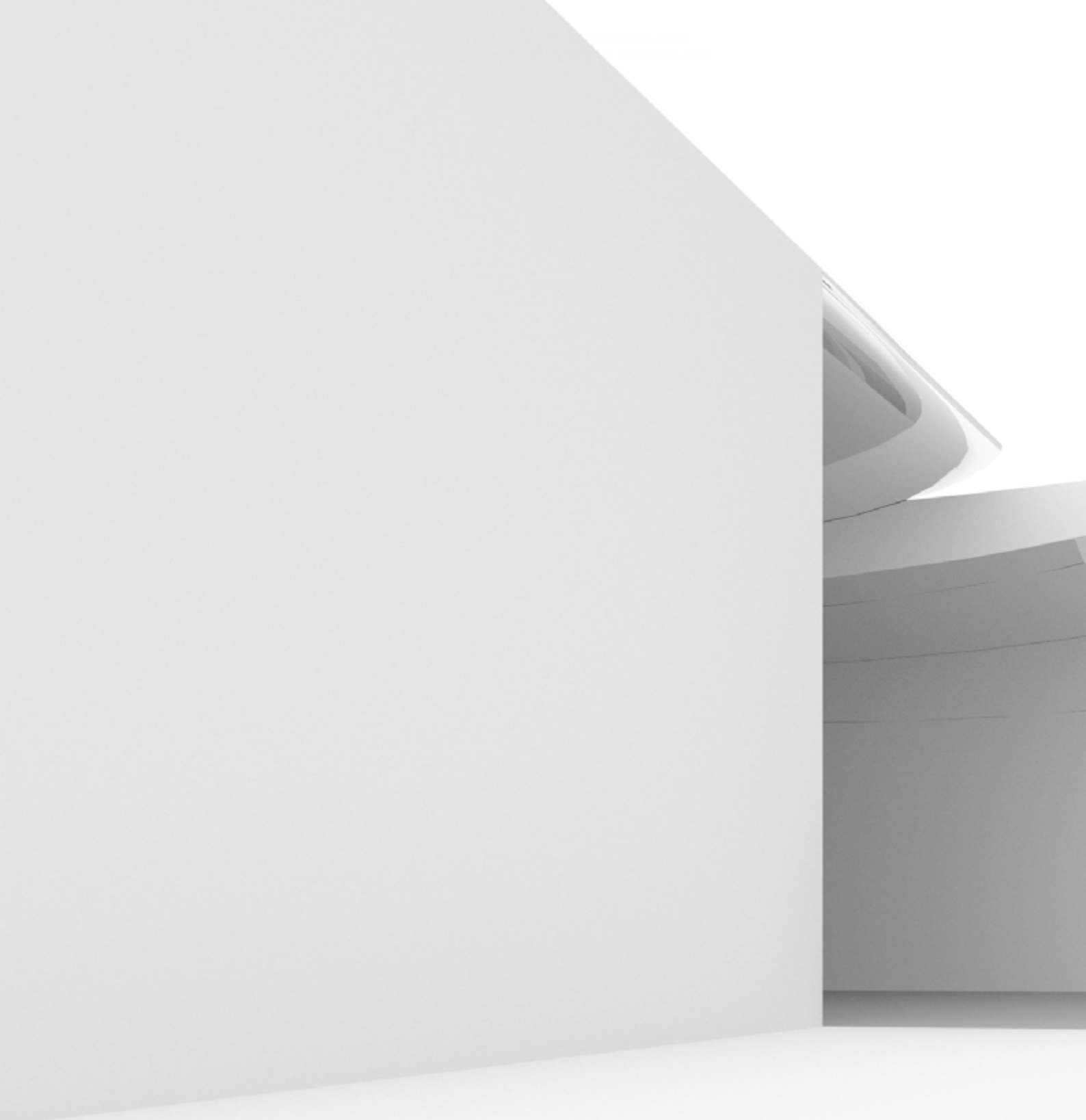


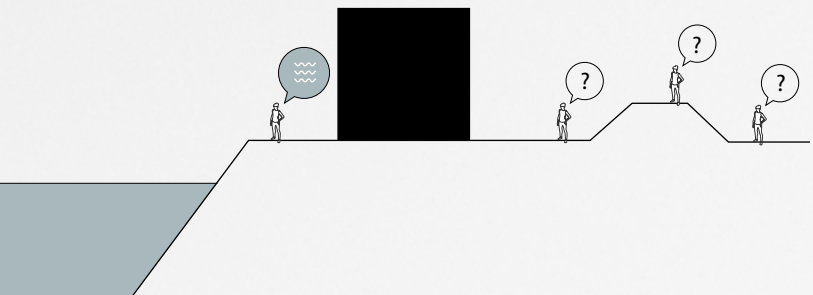
Resilient Exhibition Space

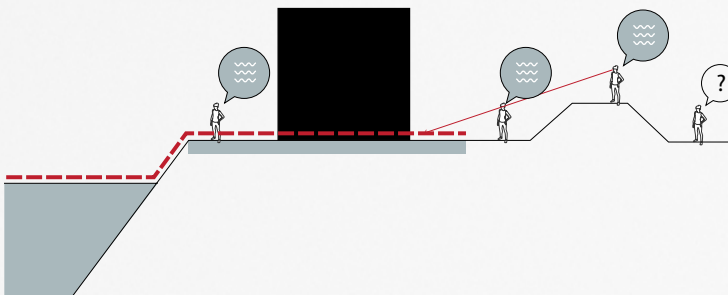


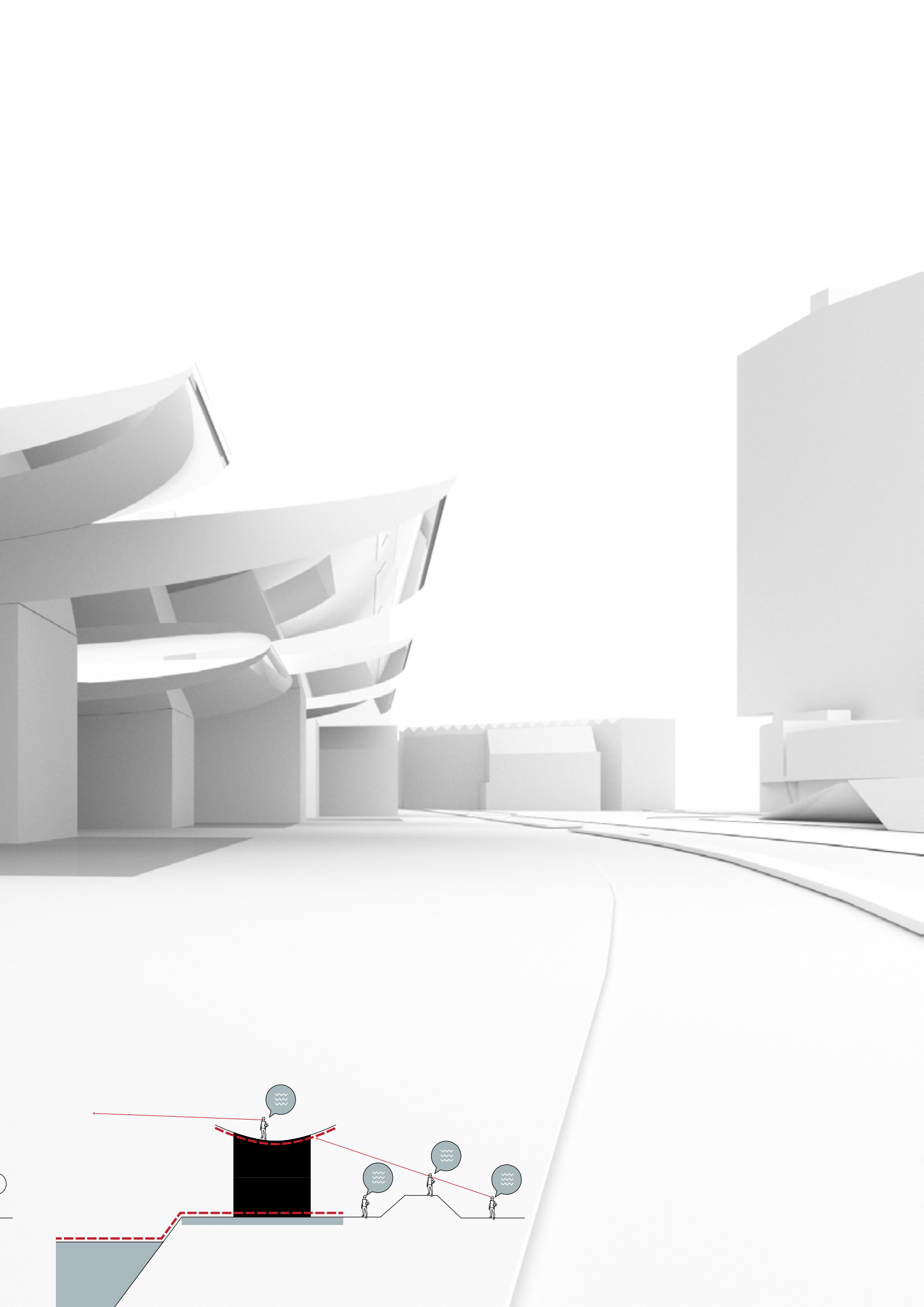
Resilient Space: Restaurant/Eventhall/Multi-purpose/Visitor Center

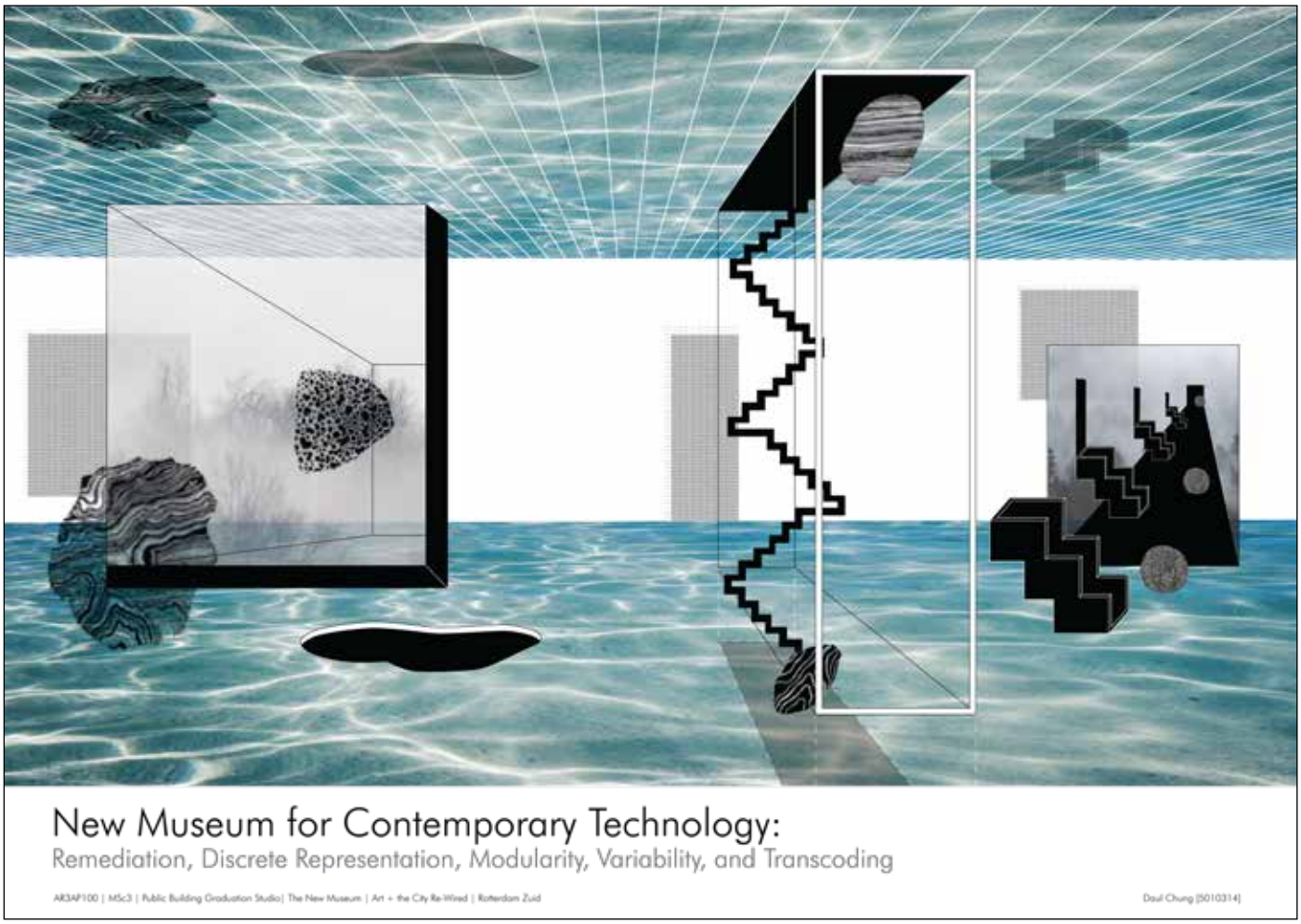




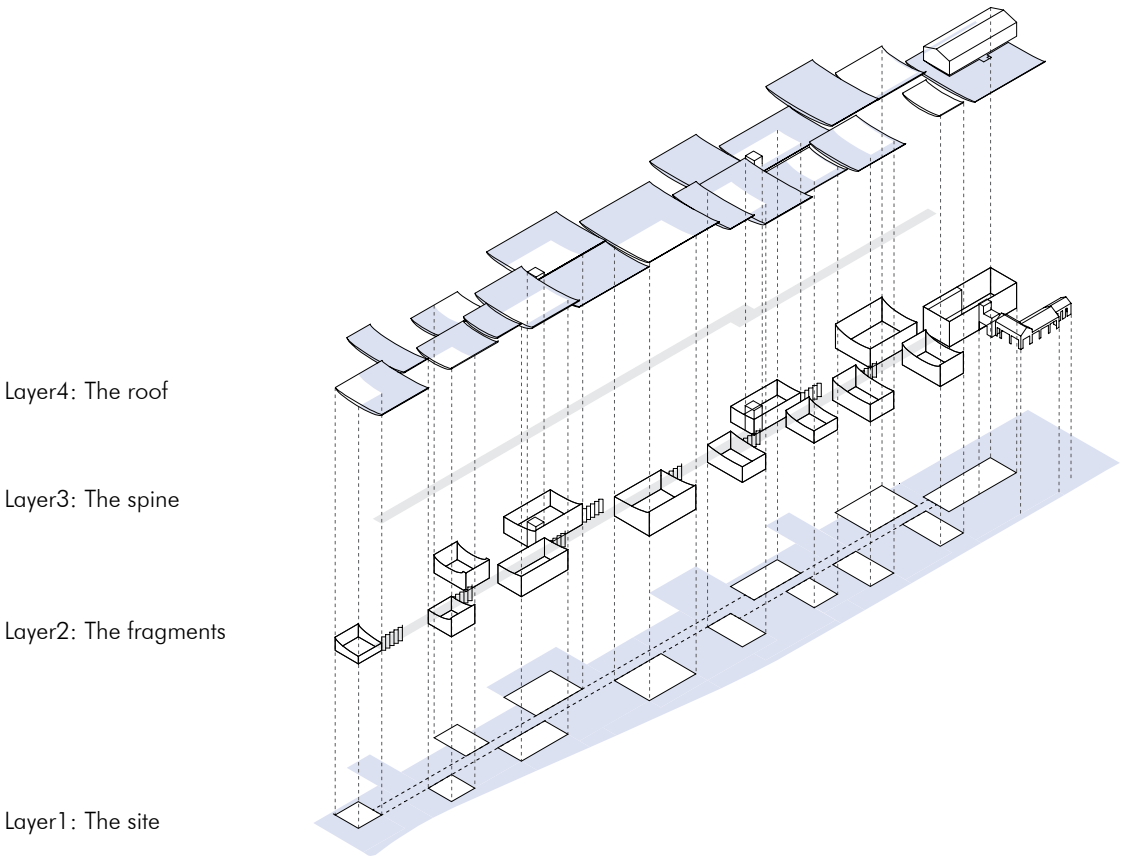






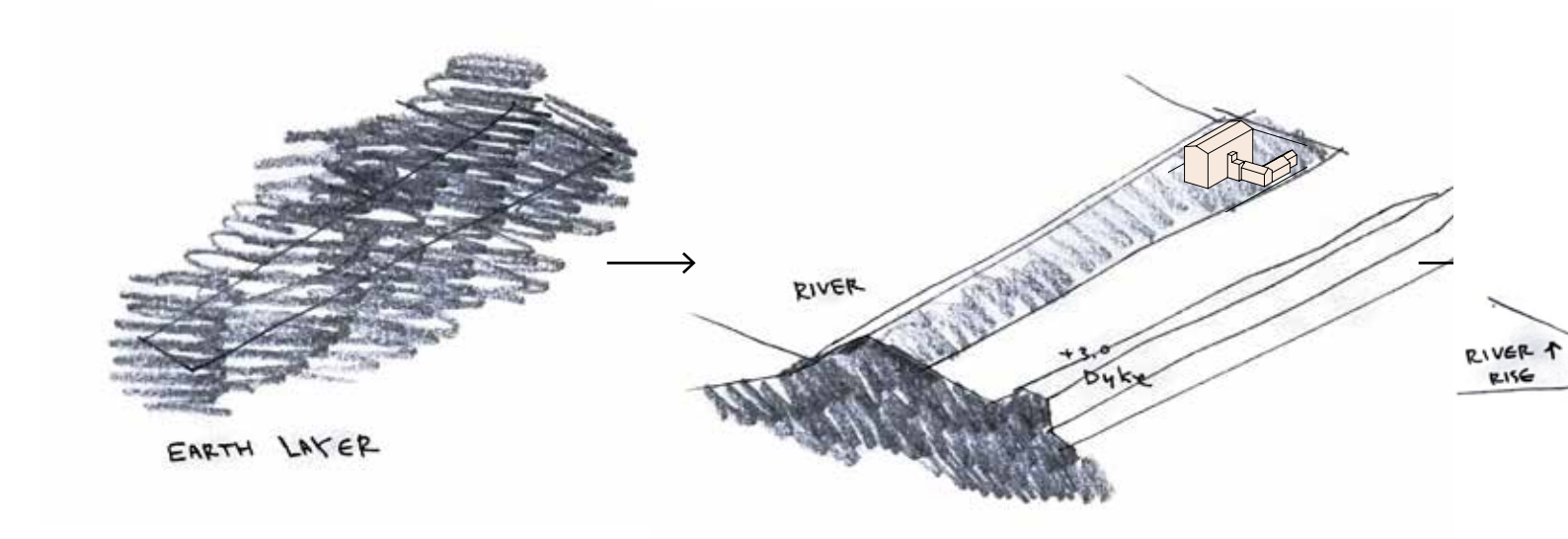


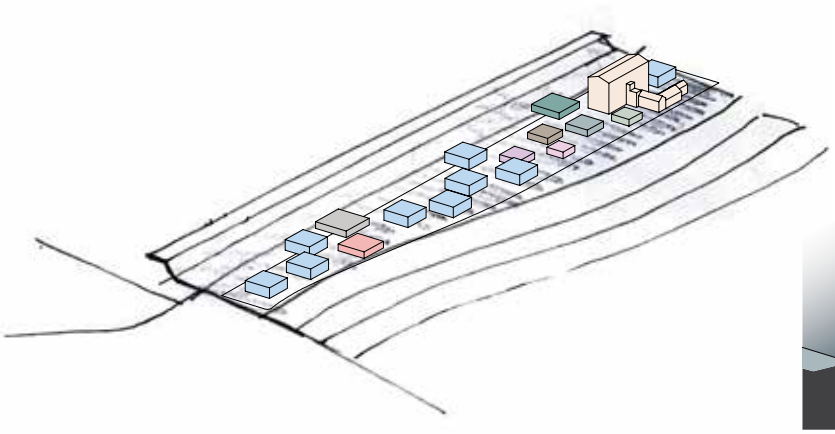
The NEW Museum aims to express new art forms in today's technology. I believe that when the technology is changed, not only the way of adopting the new art forms but also the place of presenting the new art is changed for better understanding of new art forms using contemporary technology. Based on research, the collection for contemporary technology starts from the last 30 years when the internet and personal computer started to be common. So it can be also called New Media Art or Digital Art. I tried to transform the characteristics of New Media to architectural language. The implementation of new art forms for contemporary technology is Remediation, Discrete Representation, Modularity, Variability, and Transcoding.

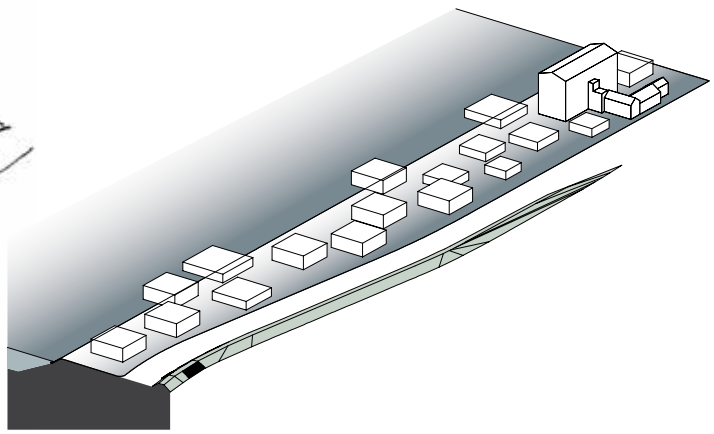


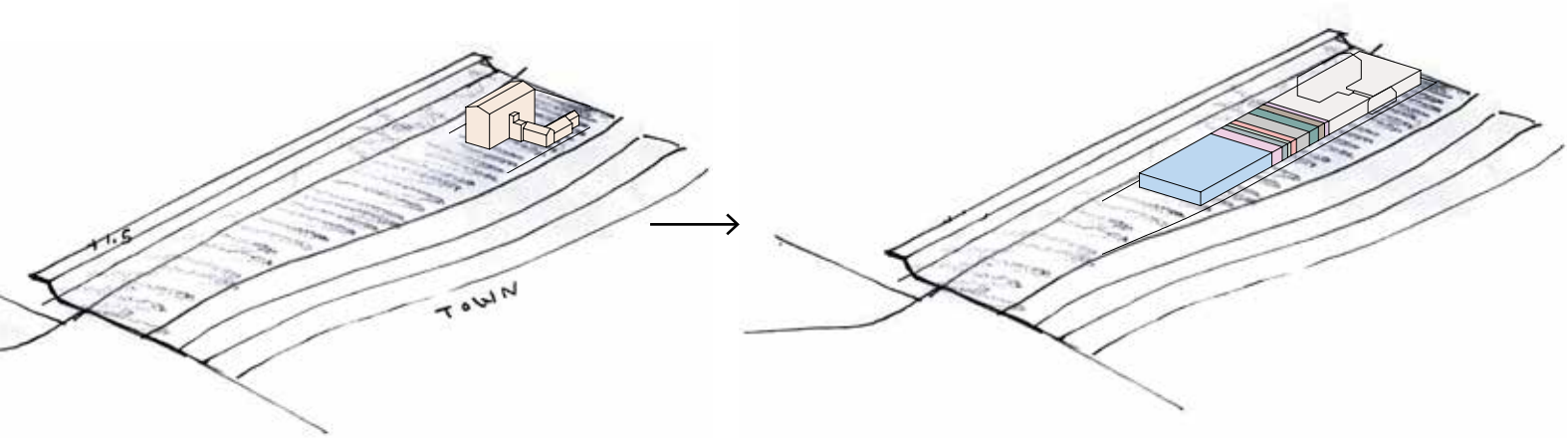
Therefore, the manifesto represents The New Museum for Contemporary Technology. It shows a blurring atmosphere made by the landscape and the roof ceiling with floating solid elements. It shall contain meanings of the five implementations of New Media: Remediation, Discrete Representation, Modularity, Variability, and Transcoding. The current design (P2) results turn out too orderly and densely than the manifesto. The relation between the manifesto and the design strategy shall be four elements: the site, the fragments, the spine, and the roof ceiling. The site shall present a mixture of the river and the green dike as remediation. The fragments indicate building masses as discrete representation. Along the spine, the new museum works as multiplicity with modularity and variability. And the roof ceiling creates that the new museum itself can be new media art as transcoding. What is happening under the roof can be showing on the surface of the roof ceiling. The manifesto will be a concept diagram which shows design strategy and it will be a final design.

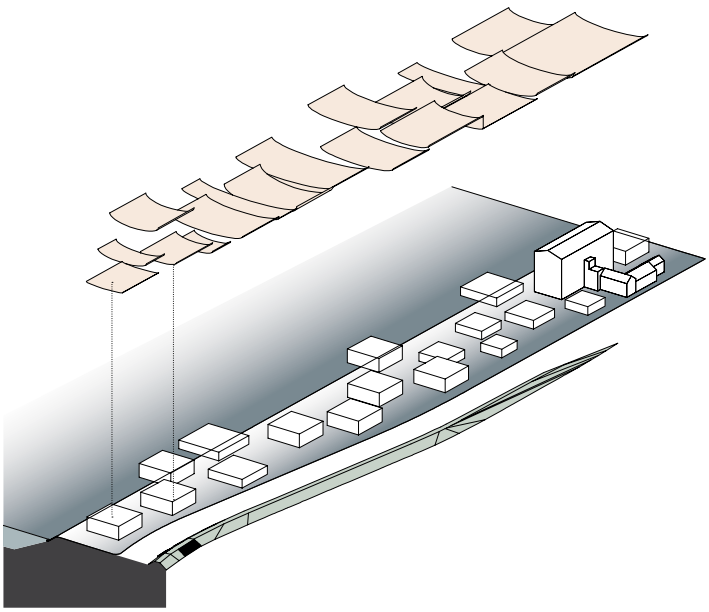
Site

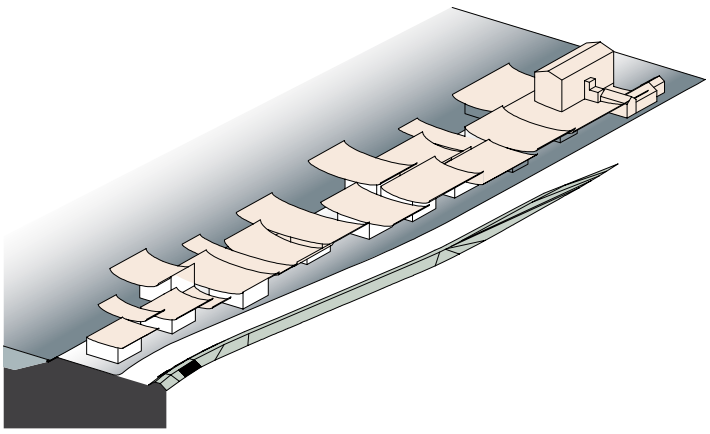

EARTH LAYER
RIVER
+3.0
Dyke
RIVER ↑
RISE



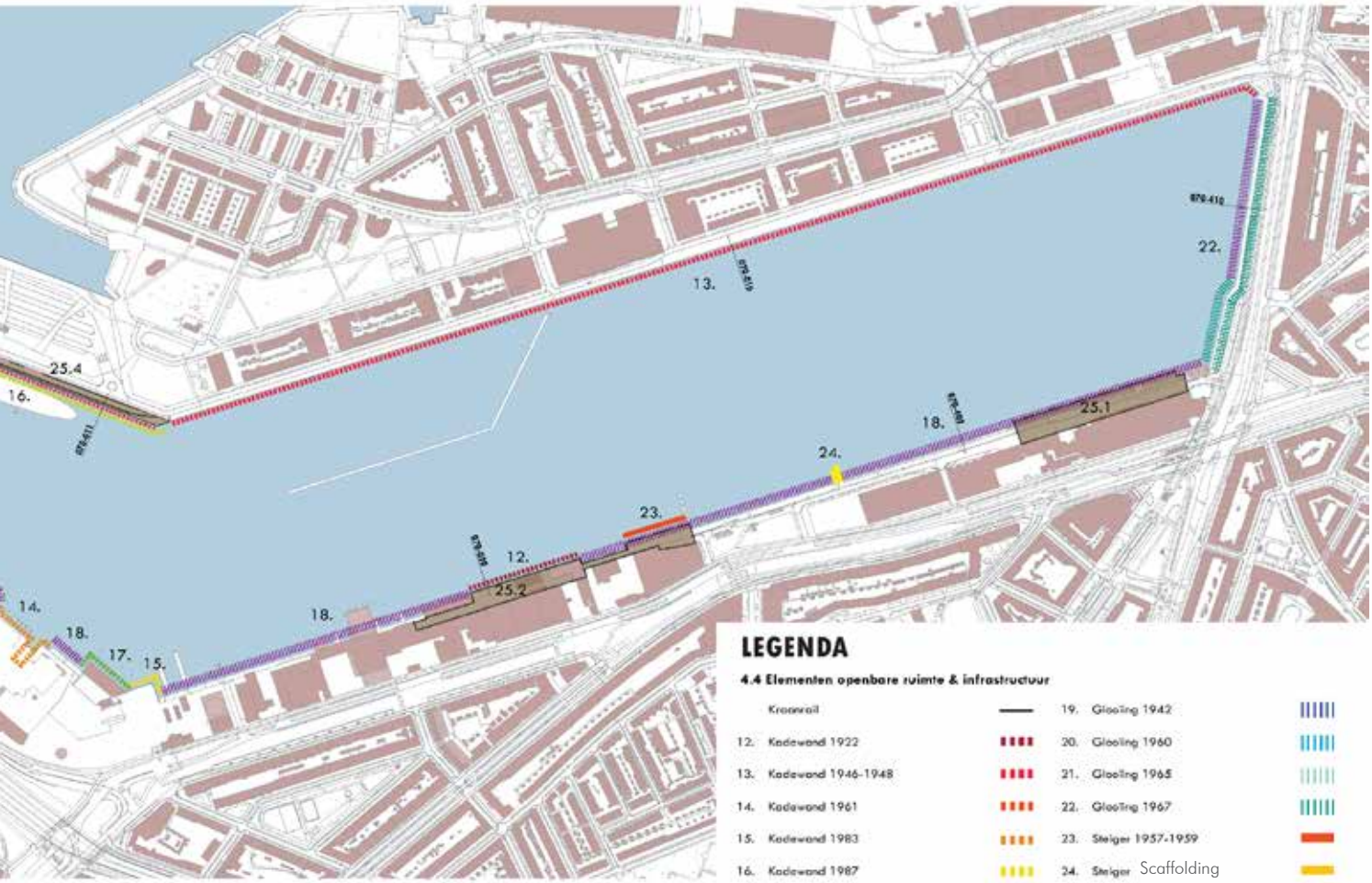



+1.5
TOWN





RUIMTE & INFRASTRUCTUUR

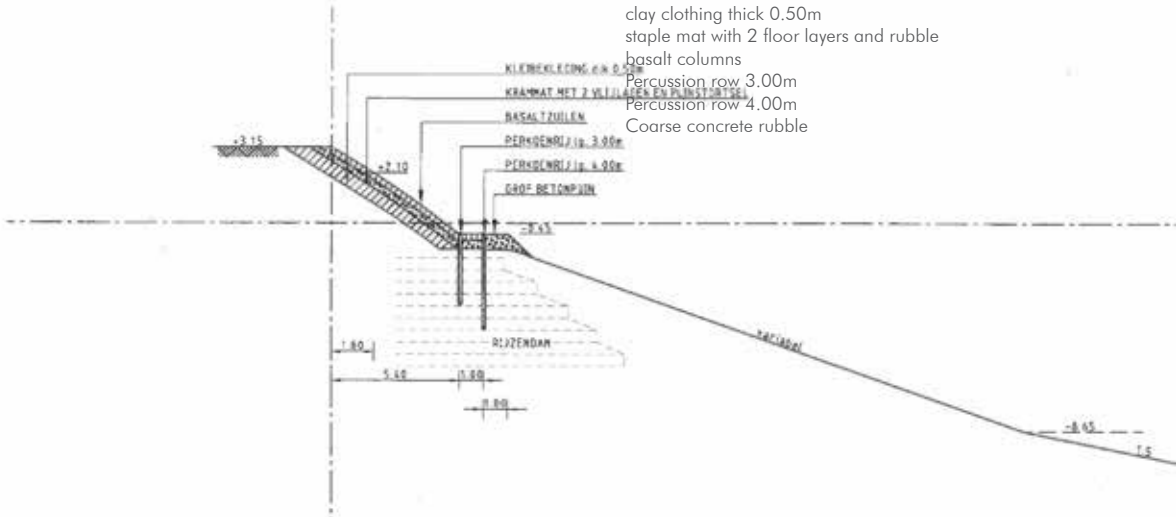


LEGENDA

4.4 Elementen openbare ruimte & infrastructuur

	Kraanrail	19.	Glooiing 1942
12.	Kadewand 1922	20.	Glooiing 1960
13.	Kadewand 1946-1948	21.	Glooiing 1965
14.	Kadewand 1961	22.	Glooiing 1967
15.	Kadewand 1983	23.	Steiger 1957-1959
16.	Kadewand 1987	24.	Steiger Scaffolding
17.	Kadewand 1995	25.	Kade- en bedrijfsvloerinrichtingen
18.	Glooiing 1905		

Glooiing 070-402 (18)



clay clothing thick 0.50m
staple mat with 2 floor layers and rubble
basalt columns
Percussion row 3.00m
Percussion row 4.00m
Coarse concrete rubble

4.4.2 HISTORISCHE GLOOIINGEN

Glooiingen Maashaven ZZ/WZ 1900-1905
(kaart nr. 18)

De met basaltzuilen bekleedde steenglooiingen aan de zuidzijde van de Maashaven zijn voor het overgrote deel intact gebleven. Omdat deze zijde bestemd werd voor functies die geen harde kadewanden vereisten, ontwikkelde zich hier nooit een lange aaneengesloten kadewand. Desondanks was men met de rijzendammen wel voorbereid op mogelijke kadewanden en kon men deze aanleggen. Dit gebeurde echter uitsluitend bij Quick Dispatch. Aan de westzijde is ook nog een deel aanwezig.

Schepen meerden hier op enige afstand van de kade aan bij dukdalven en werden geleegd door elevatoren of lostorens.

De glooiingen bestonden uit krammatten op een dikke laag klei, waarover de basaltzuilen werden verdeeld. Met perkoenpalen (rondhouten palen) werd deze glooiing verankerd in de rijzendam.

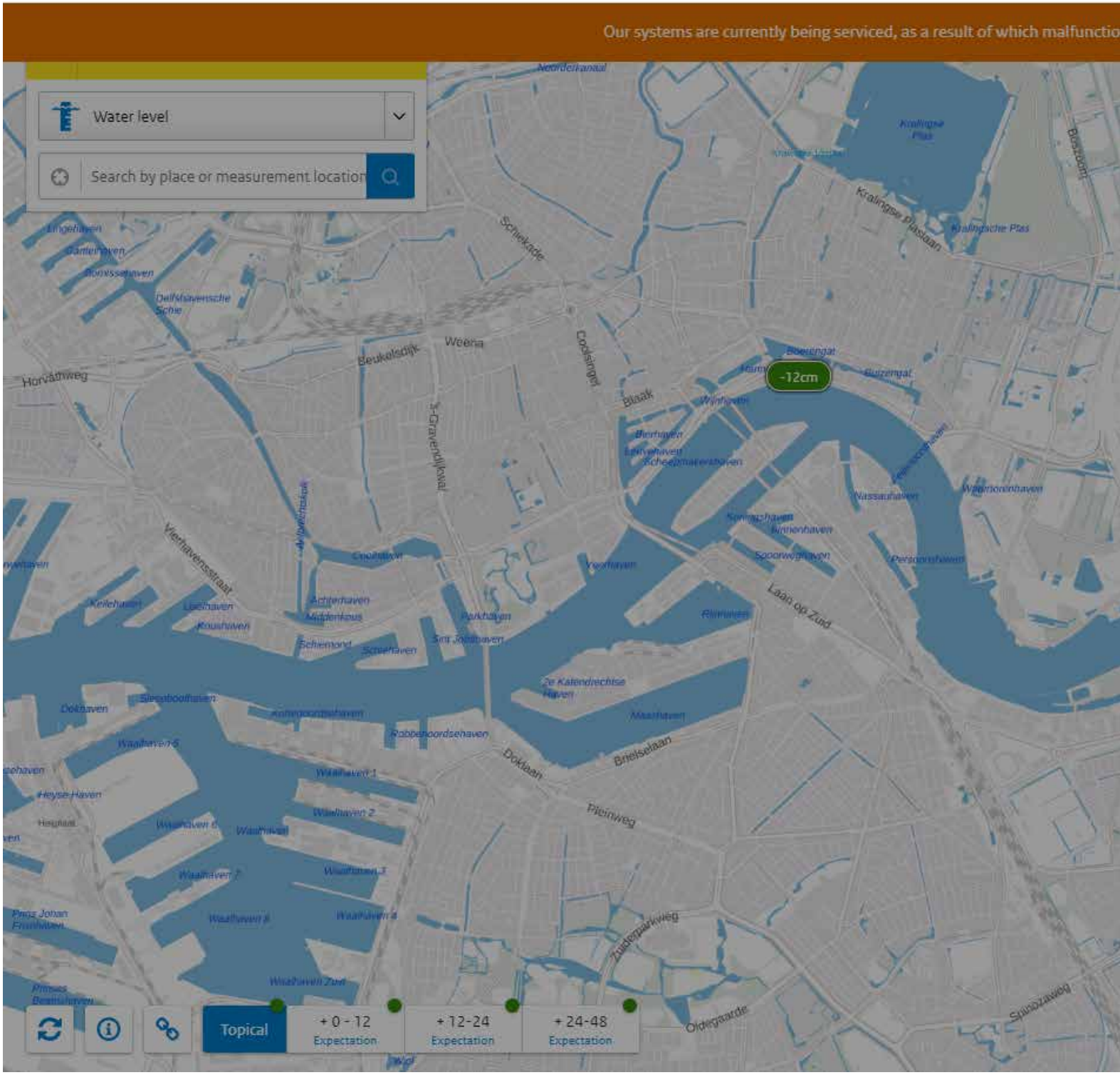
Slopes Maashaven ZZ / WZ 1900-1905
(map no. 18)
The stone slopes on the south side of the Maashaven, covered with basalt columns, have largely remained intact. Because this side was intended for functions that did not require hard quay walls, a long continuous quay wall never developed here. Nevertheless, with the rise dams, people were prepared for possible quay walls and could be constructed. However, this only happened with Quick Dispatch. A part is also present on the west side.

Ships moored here at some distance from the quay at dolphins and were emptied by elevators or discharge towers.

The slopes consisted of staple mats on a thick layer of clay, over which the basalt columns were distributed. This slope was anchored in the Rijzendam with percussion posts (round wooden posts).

Cultuurhistorische verkenning Maa

Steenglooiing ter hoogte van Quaker Oats en Karwei, 2018. <Flexus AWC>


Our systems are currently being serviced, as a result of which malfunctio
Water level
Search by place or measurement location
-12cm
Topical
+ 0 - 12
Expectation
+ 12-24
Expectation
+ 24-48
Expectation

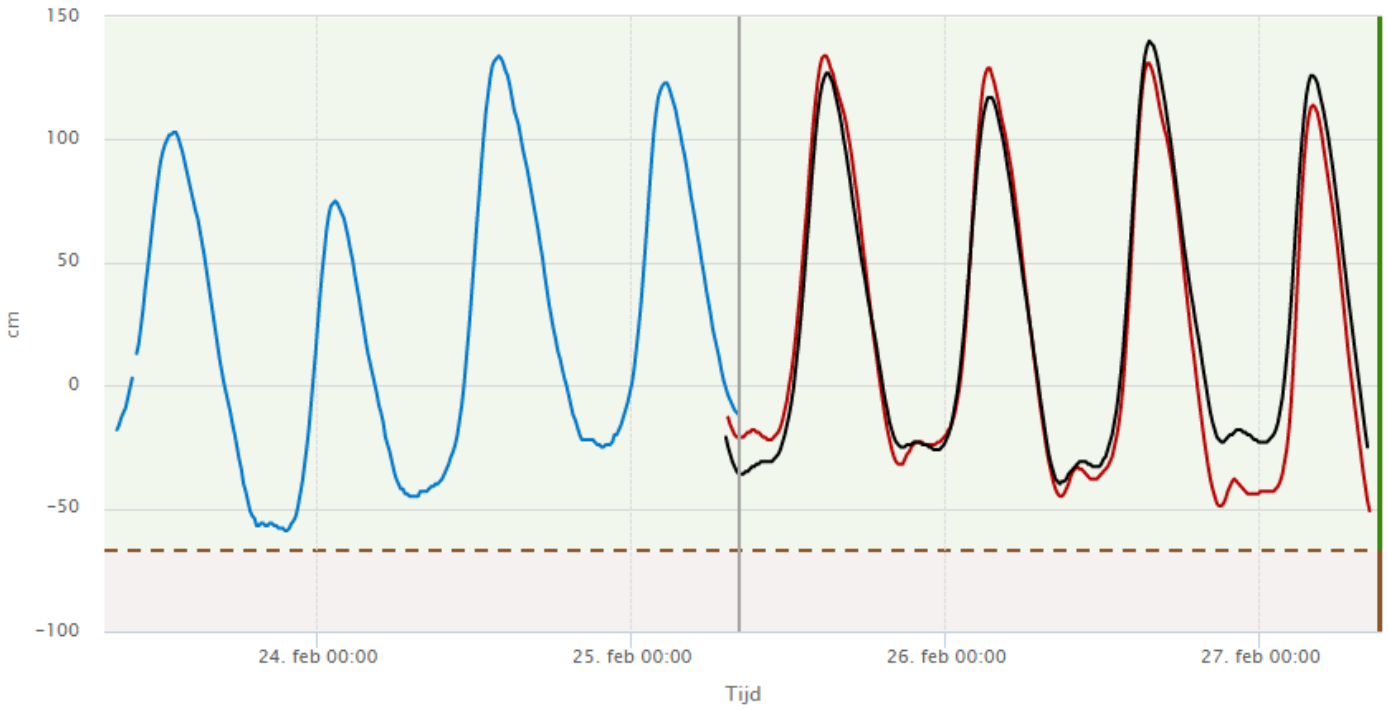
ns may occ

Rotterdam

Water level Surface water

Rotterdam | Last measurement: **-12cm** on 02/25/2021, 08:10:00

Chart Table | 2 days back, 2 days ahead | Refresh | Save | Export / Sharing



Display limit values

Water level Surface water in relation to Normal Amsterdam Level in cm
Water level expected Surface water in relation to Normal Amsterdam Level in cm
Water level astronomical Surface water relative to Normal Amsterdam Level in cm
Low water (<-67cm)
Normal (-67 to 200cm)
Slightly raised (> 200cm)
Increased water level (> 220cm)
High water / Storm surge (> 290cm)
Extremely high water (> 325cm)

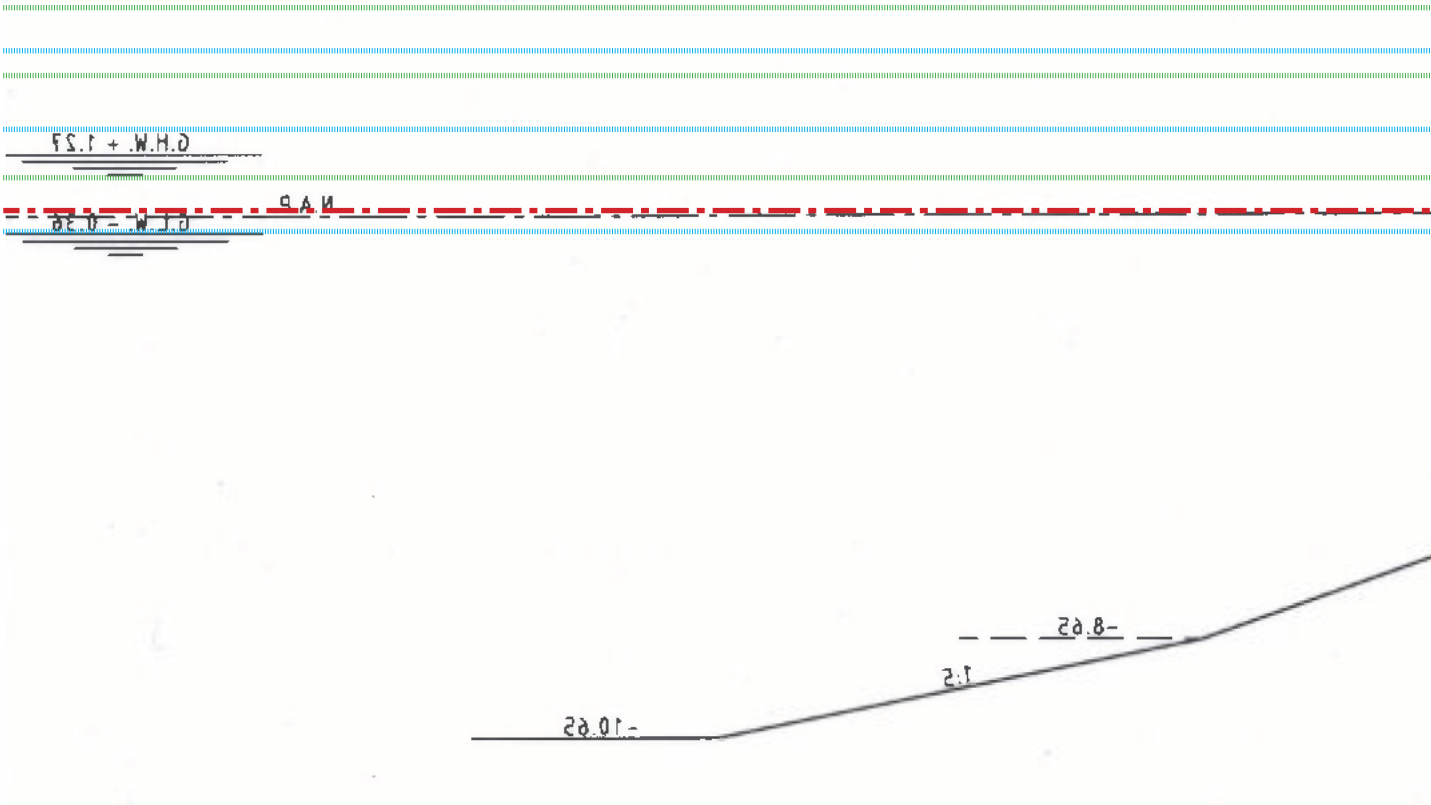
Related measurements

Wind speed in m / s (Rotterdam Airport) **3.23**
25-02-2021, 08:00:00

Rivers
Flow increases in winter,
However lower water levels in summer

Sea level
Sea level rise by 40 cm by 2050 and 100 cm by 2100. This causes high-water levels to rise in Rotterdam

https://www.rotterdam.nl/wonen-leven/rotterdams-weerwoord/Urgentiedocument-2020_EN.pdf

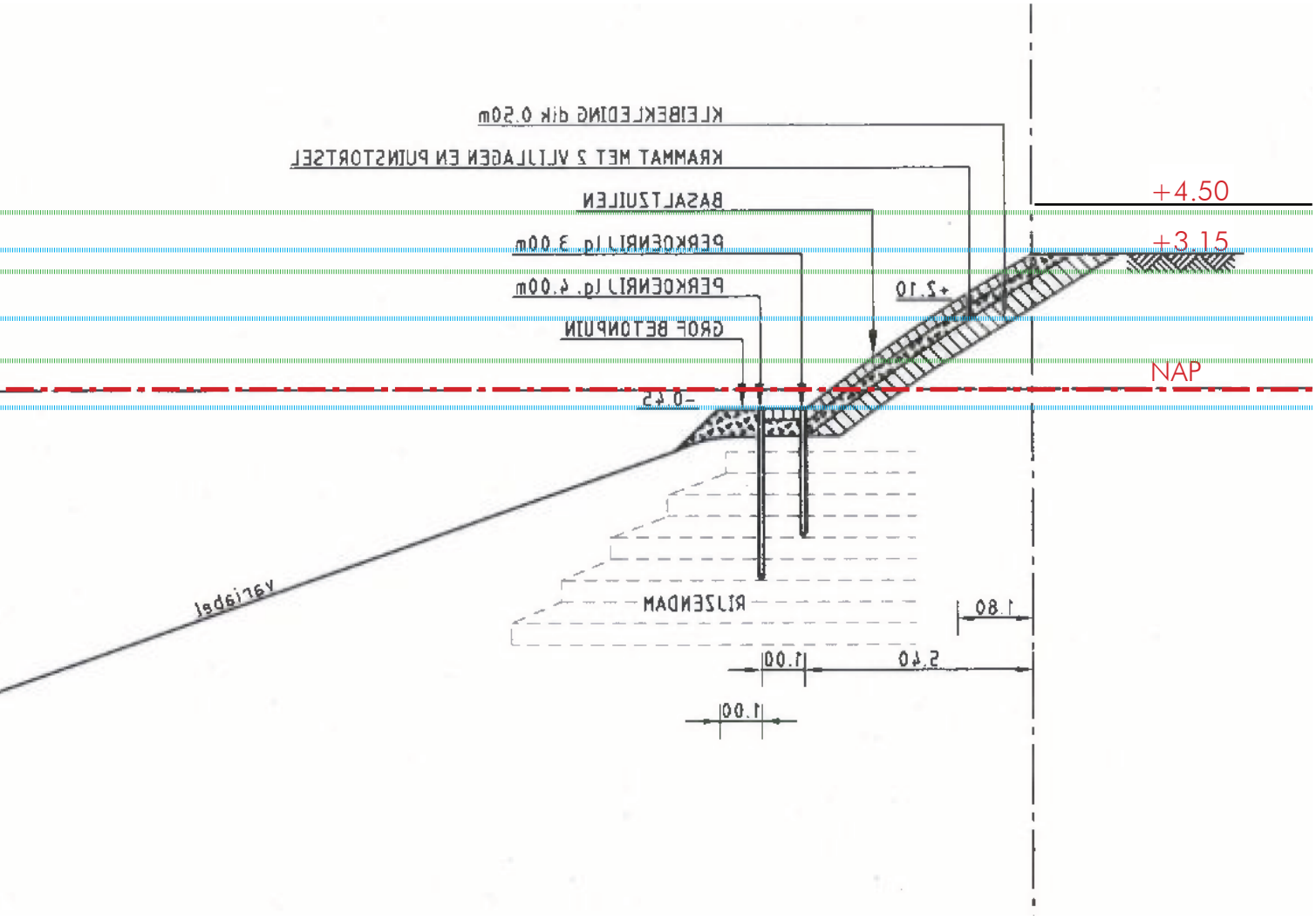


Current water level (2021)

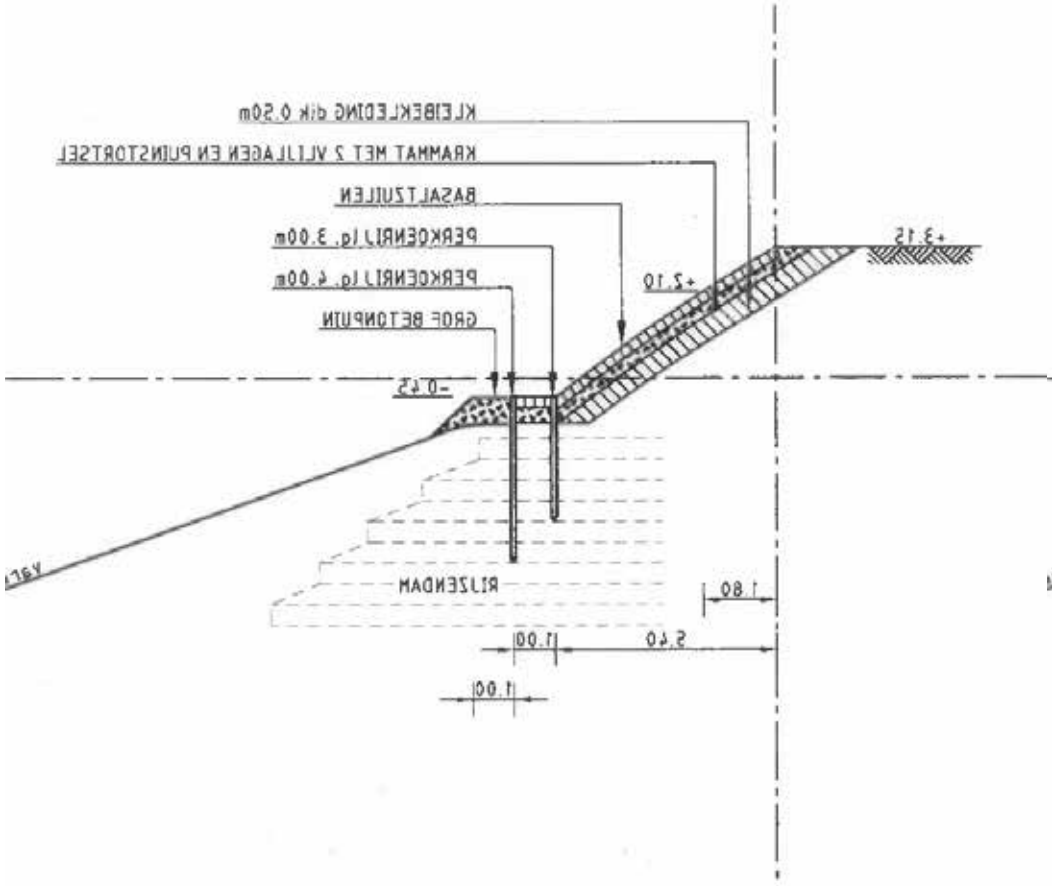
- Extremely high +325
- Normal+200
- Noraml-67

2100

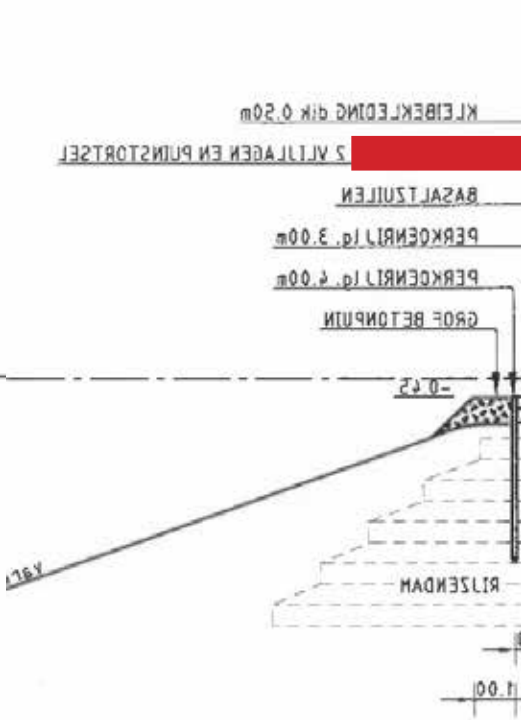
- Extremely high +425
- Normal+300
- Noraml+37



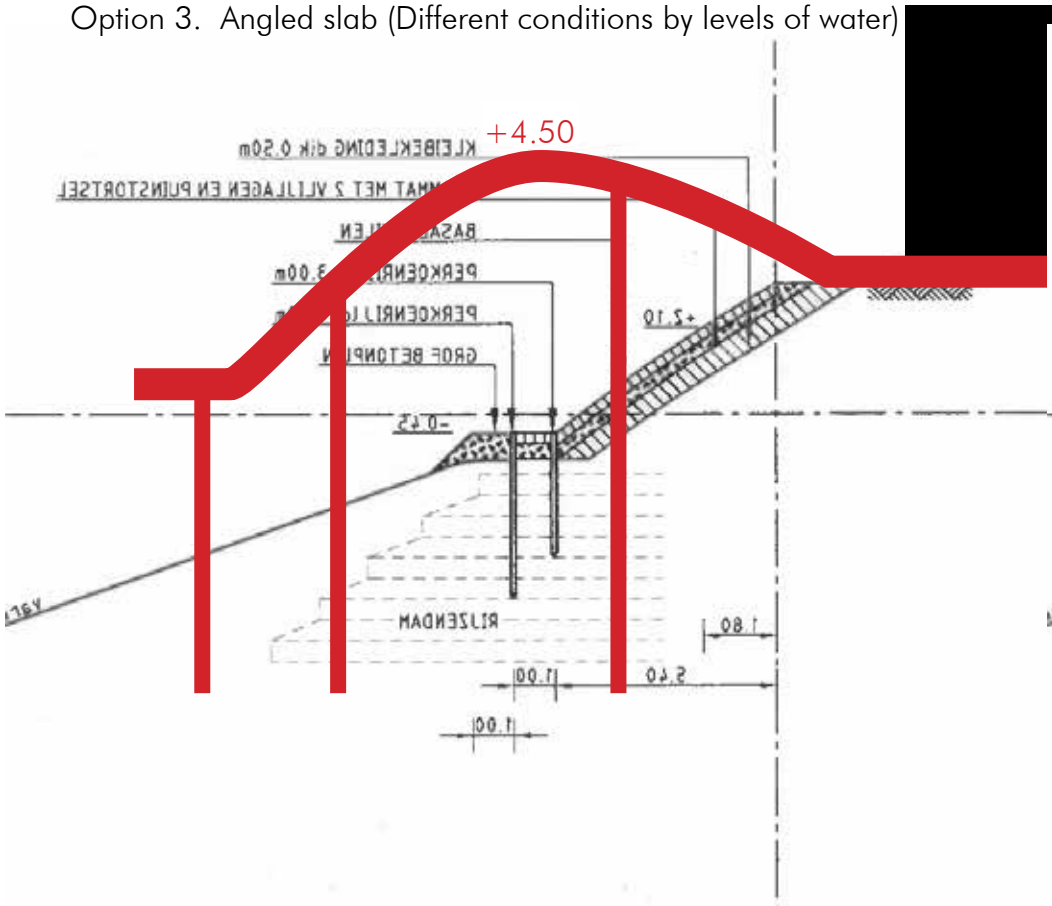
Original slope



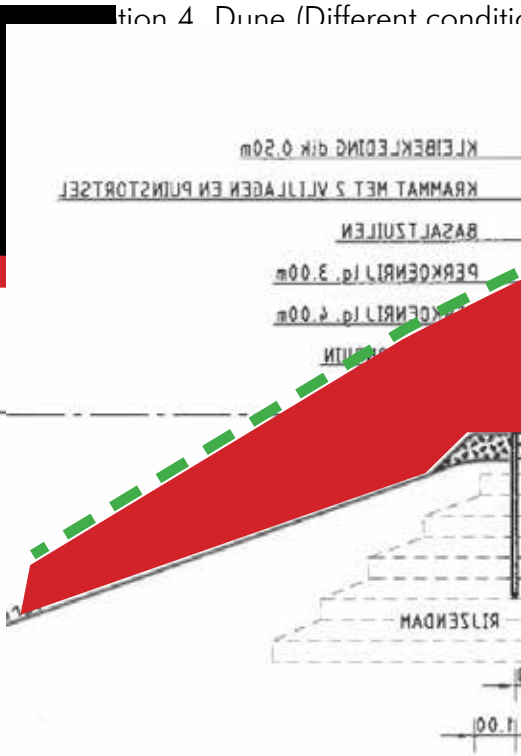
Option 1. Flat slab



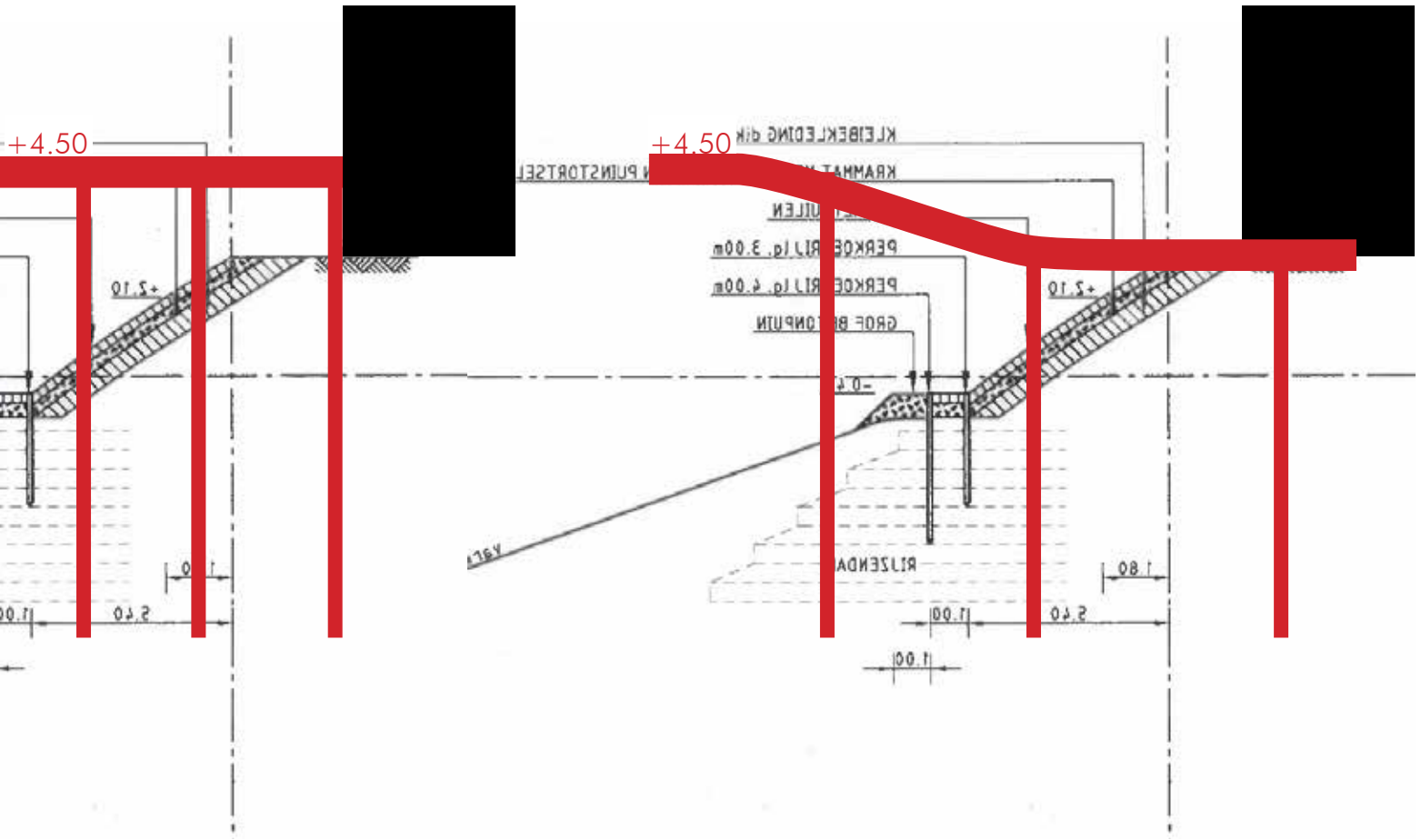
Option 3. Angled slab (Different conditions by levels of water)



Option 4. Dune (Different conditi

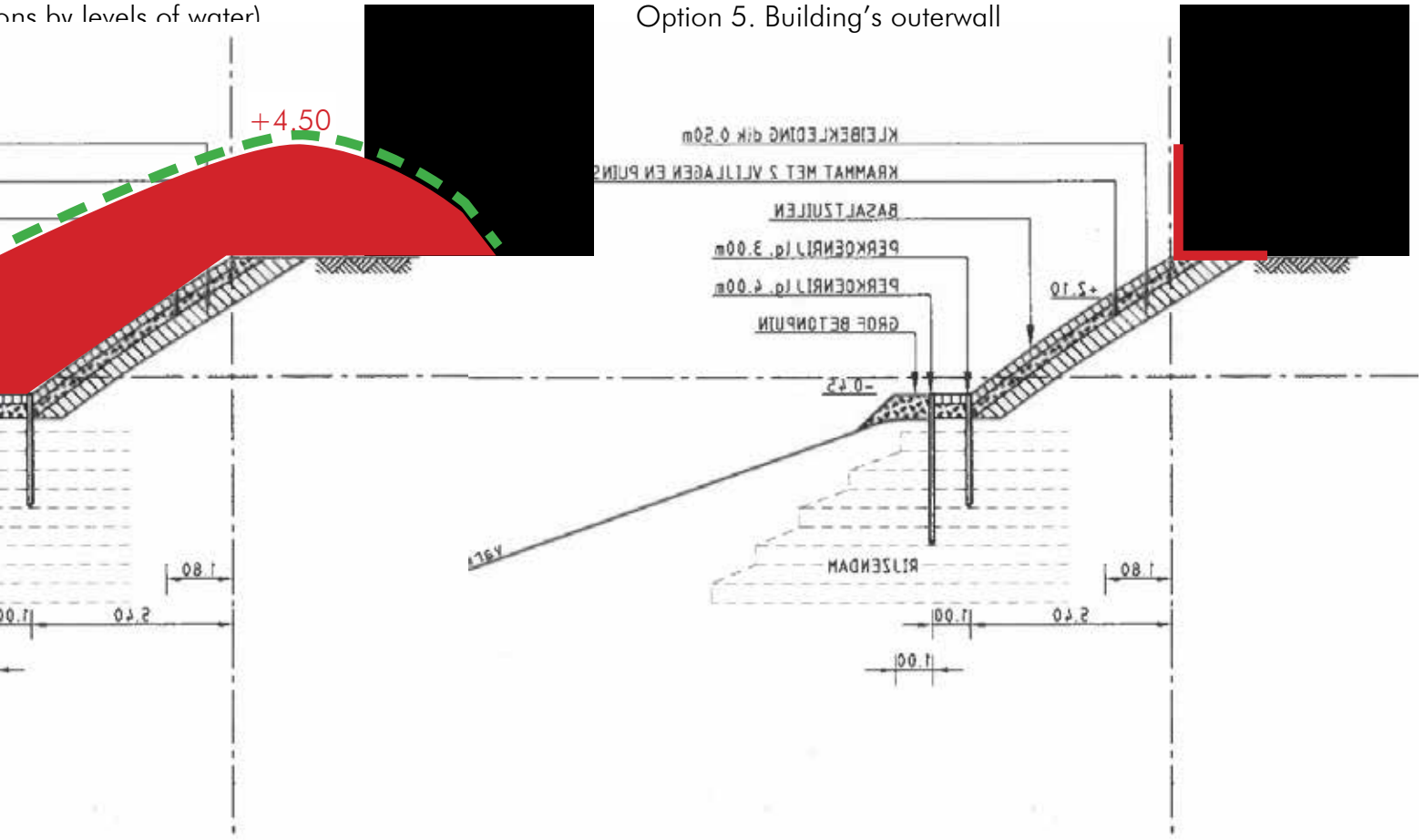


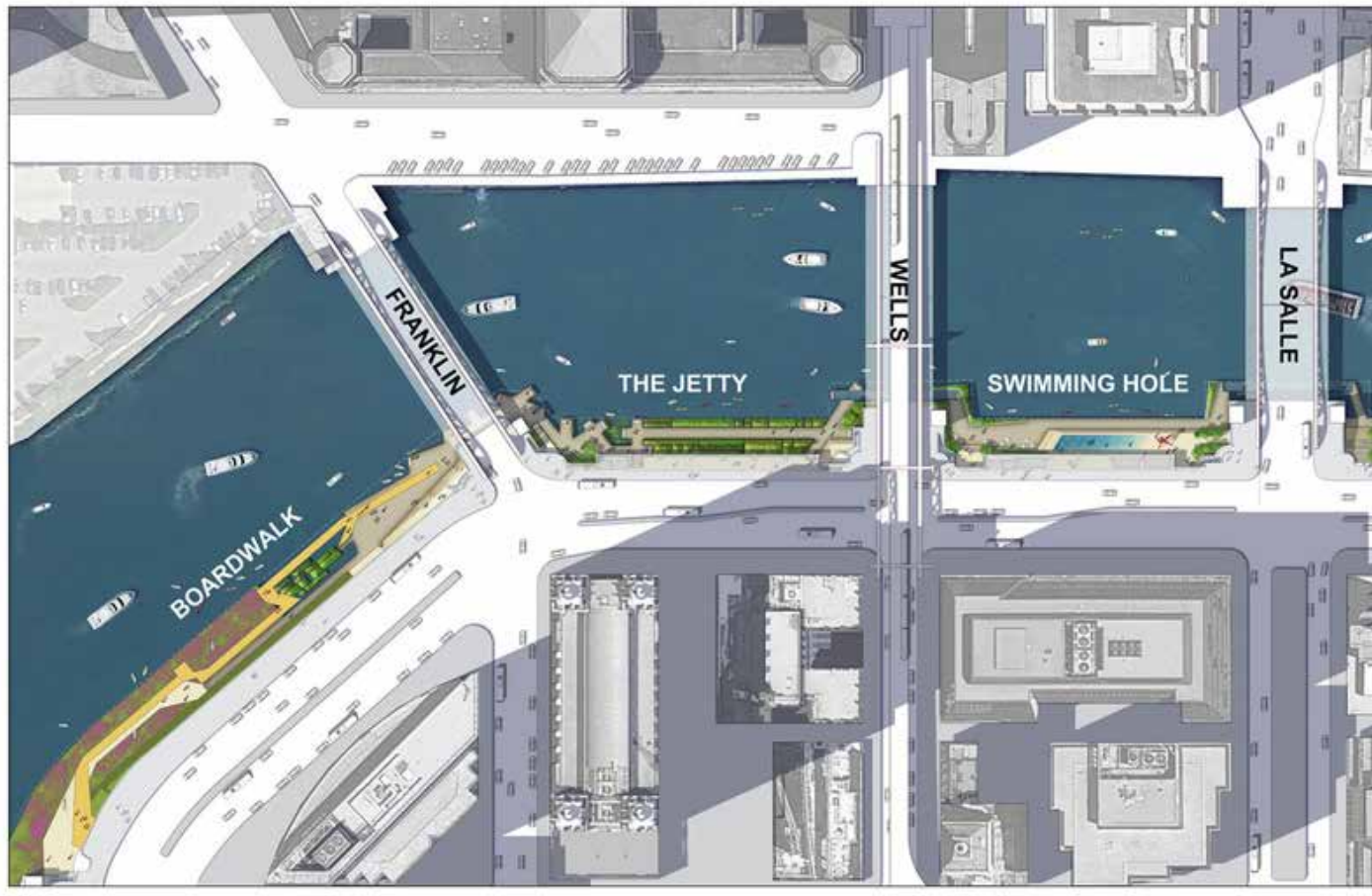
Option 2. Angled slab



ons by levels of water)

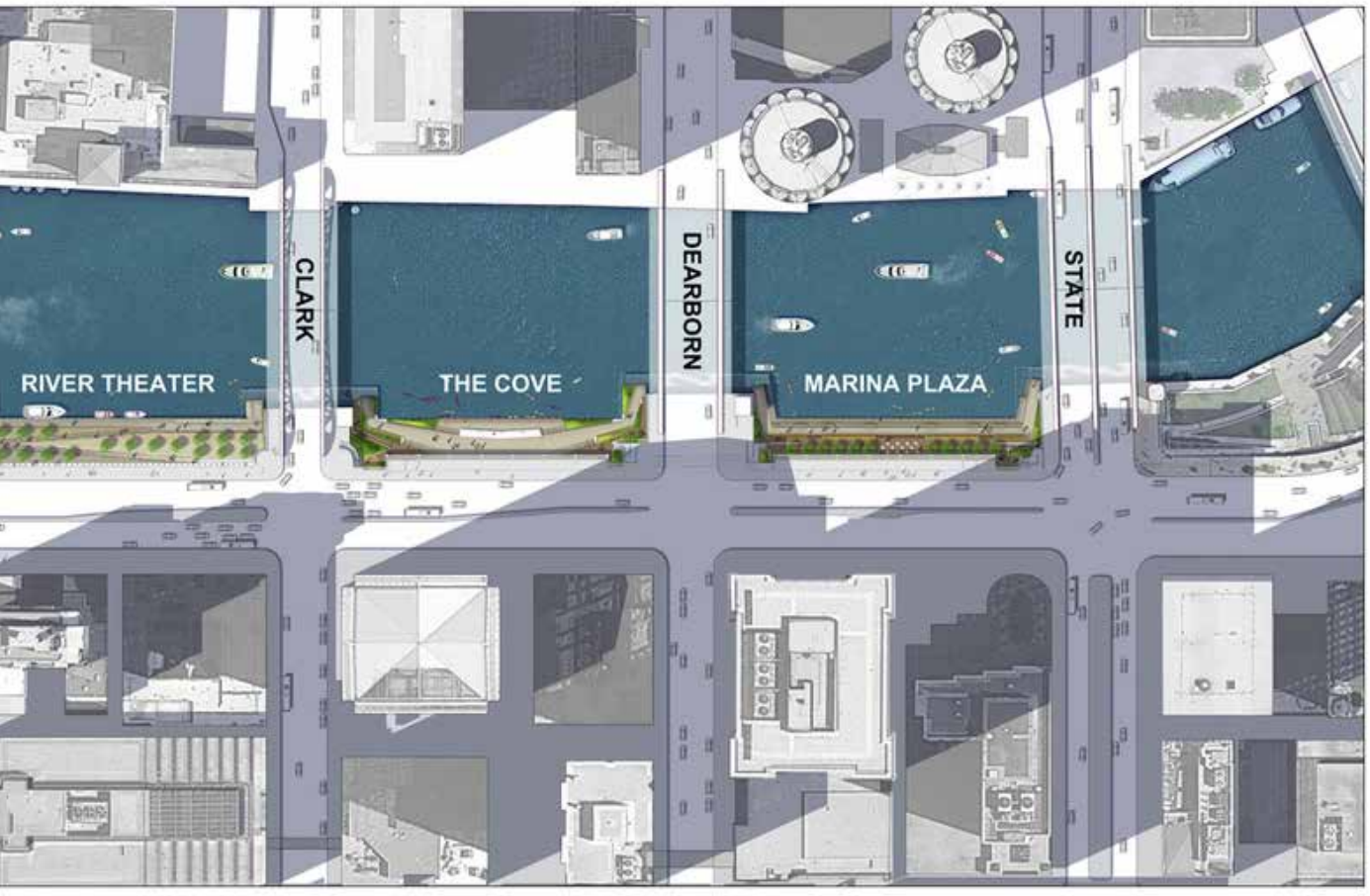
Option 5. Building's outerwall





Chicago Riverwalk, 2015
Architects: Alfred Benesch & Company, Chicago Department of Transportation, Jacobs Ryan Associates, R

https://www.archdaily.com/780307/chicago-riverwalk-chicago-department-of-transportation-plus-ross-barney-architects-plus-sasaki-associates-plus-jacobs-ryan-associates-plus-alf

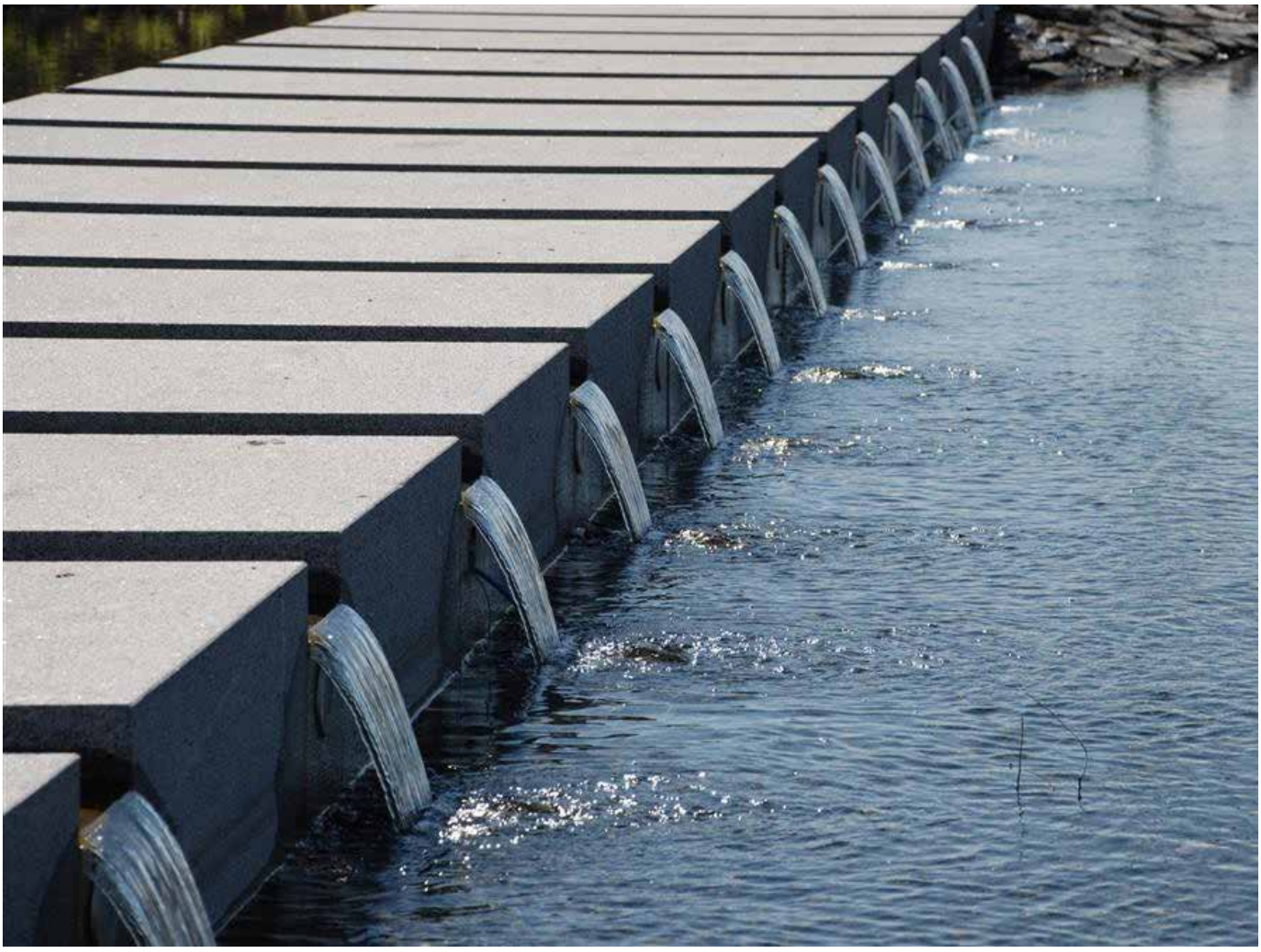


Ross Barney Architects; Landscape Architects: Sasaki

red-benesch-and-company?ad_medium=gallery

Perreux River Banks by BASE Landscape Architecture
Paris/ France

http://landezine.com/index.php/2015/01/perreux-banks-by-base/



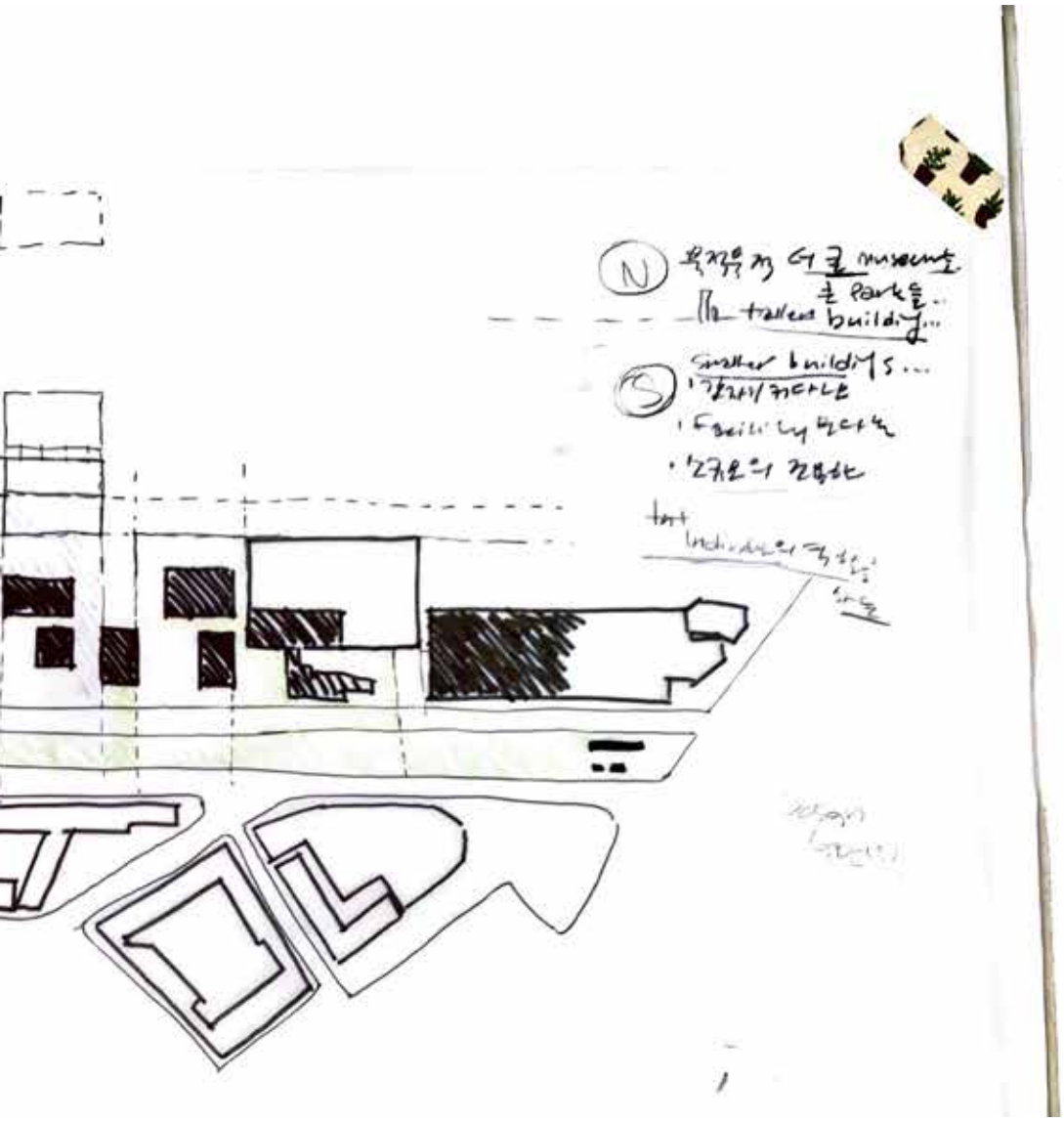
Nansen Park / Bjørbekk & Lindheim
OSLO, NORWAY

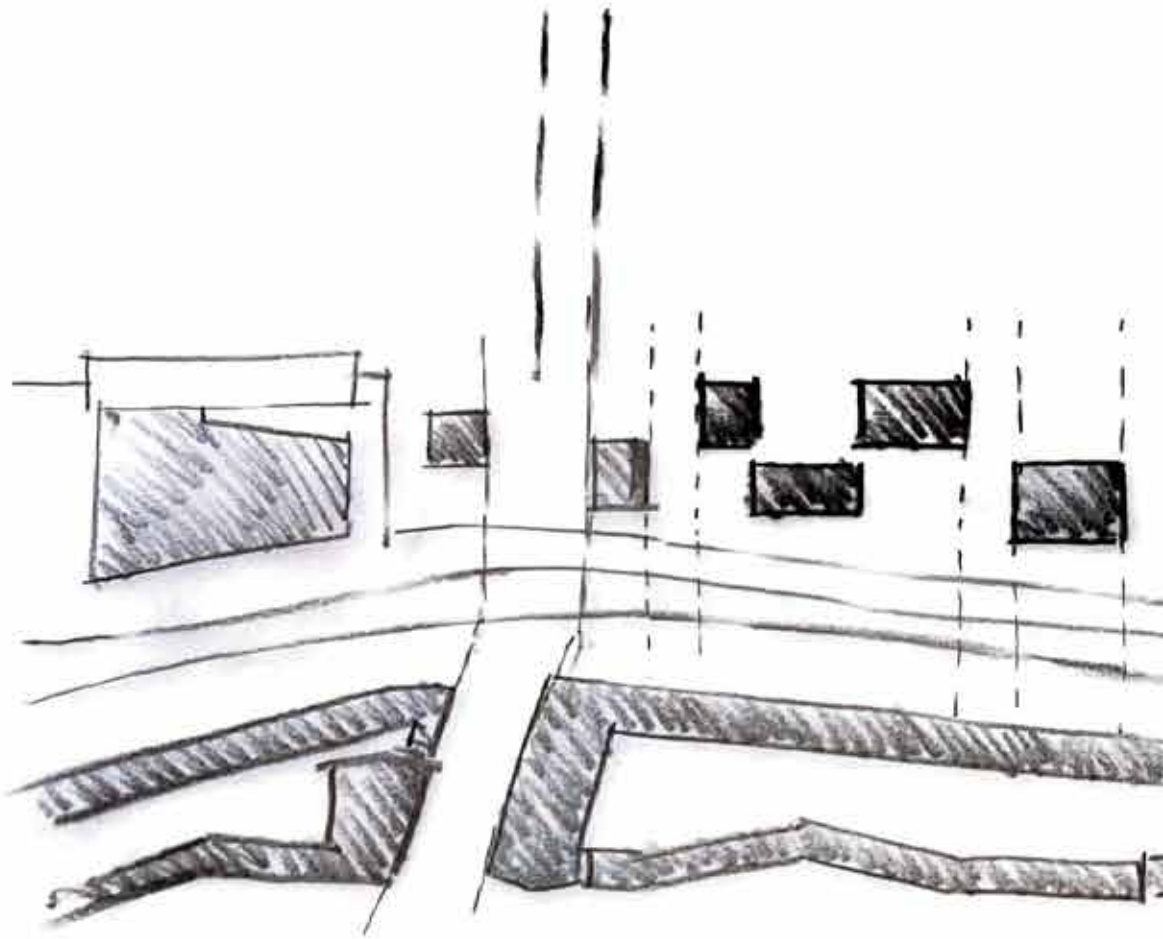
"Nansen Park / Bjørbekk & Lindheim" 02 Sep 2009. ArchDaily. Accessed 2 Mar 2021. <https://www.archdaily.com/33706/nansen-park-bj%25c3%25b8rbekk-lindheim> ISSN 0719-8884

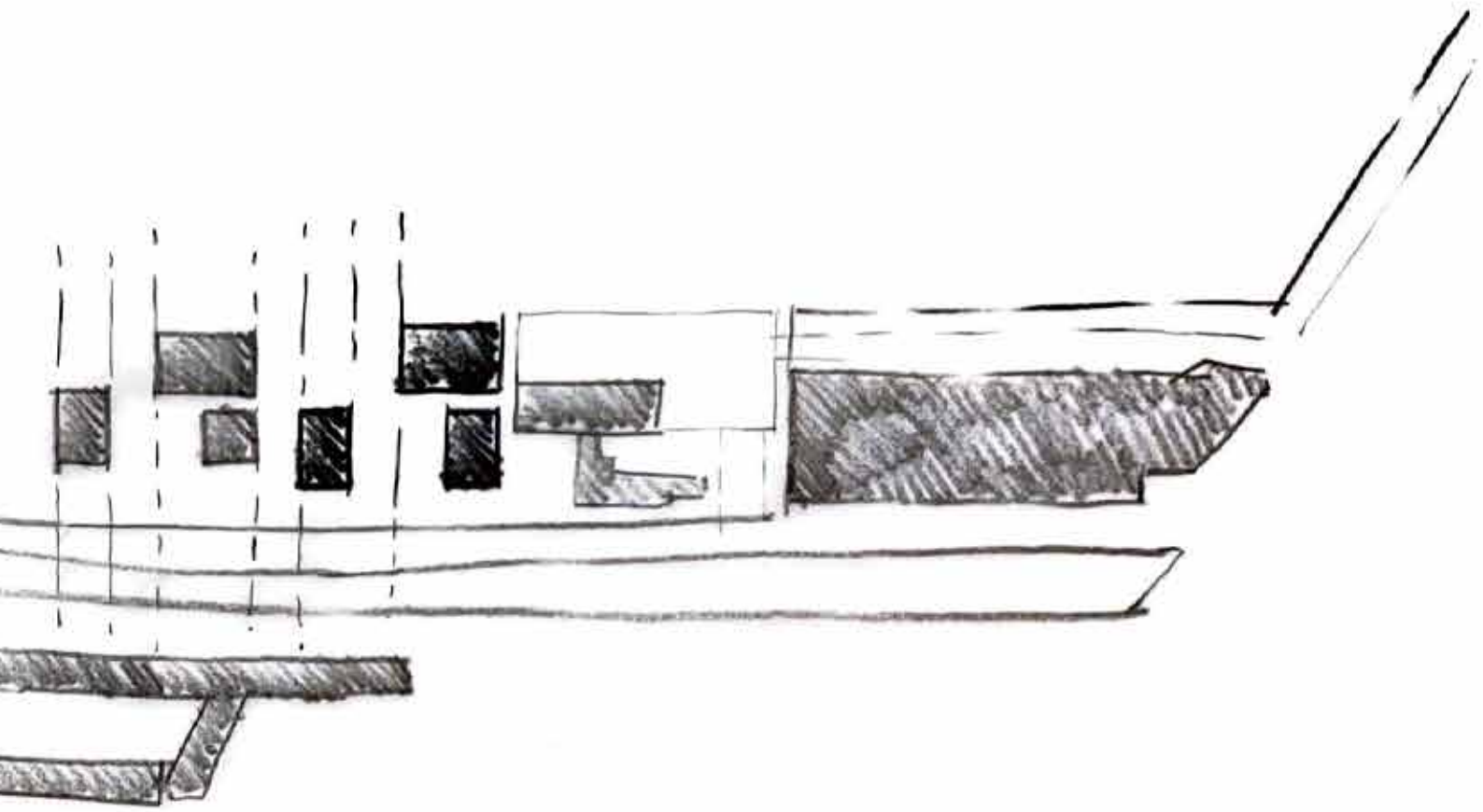
Roofpark Vierhavenstrip, by Buro Sant en Co
Rotterdam

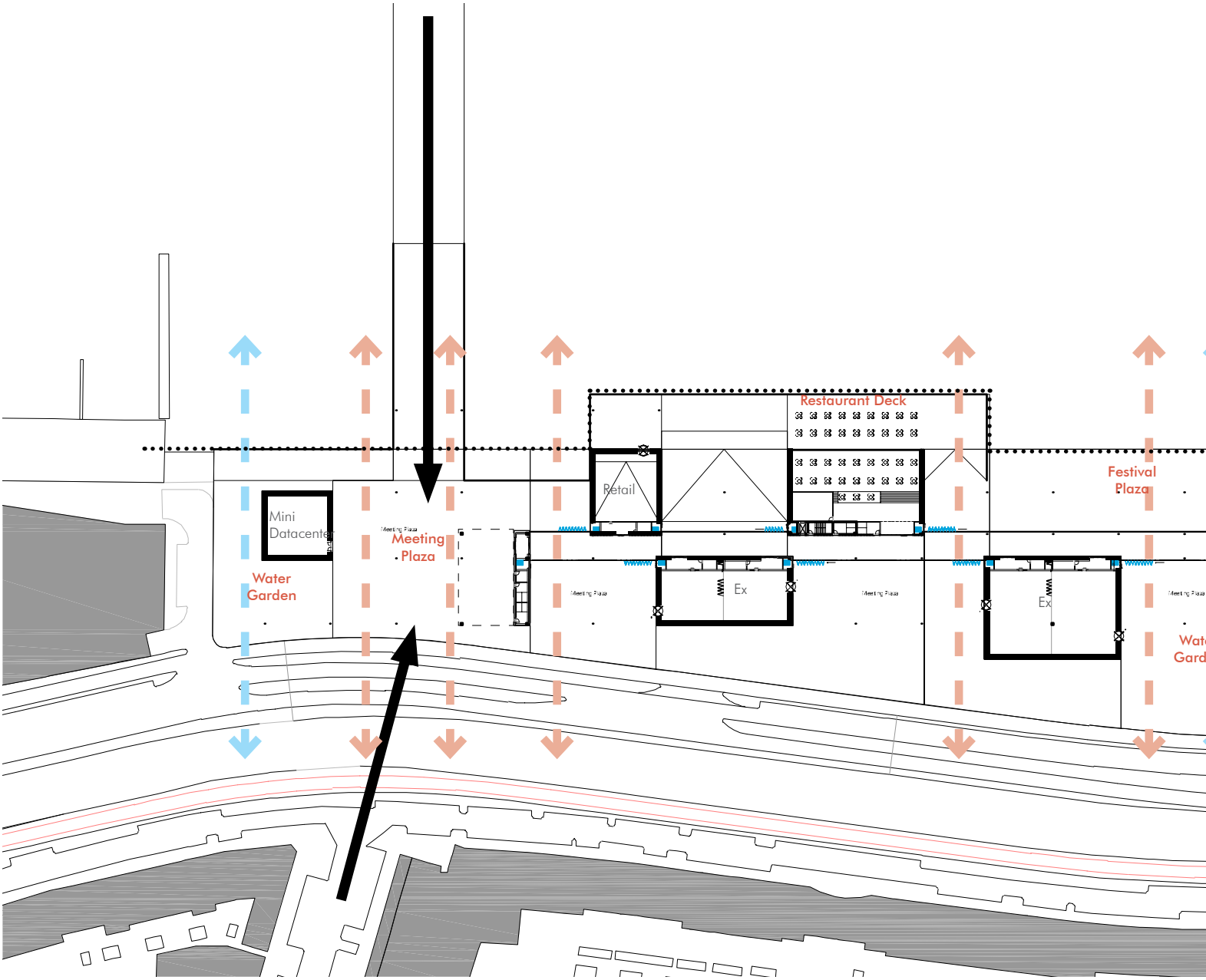
https://land8.com/roofpark-vierhavenstrip-reunites-indoor-and-outdoor-urban-life/


Ground
Ceiling
LATER + White
Movement + Mirror
- Bridge
- Plaza
Public Art + Media Ceiling
Park (Green) + Permeable Ceiling


N
S
Smaller buildings...



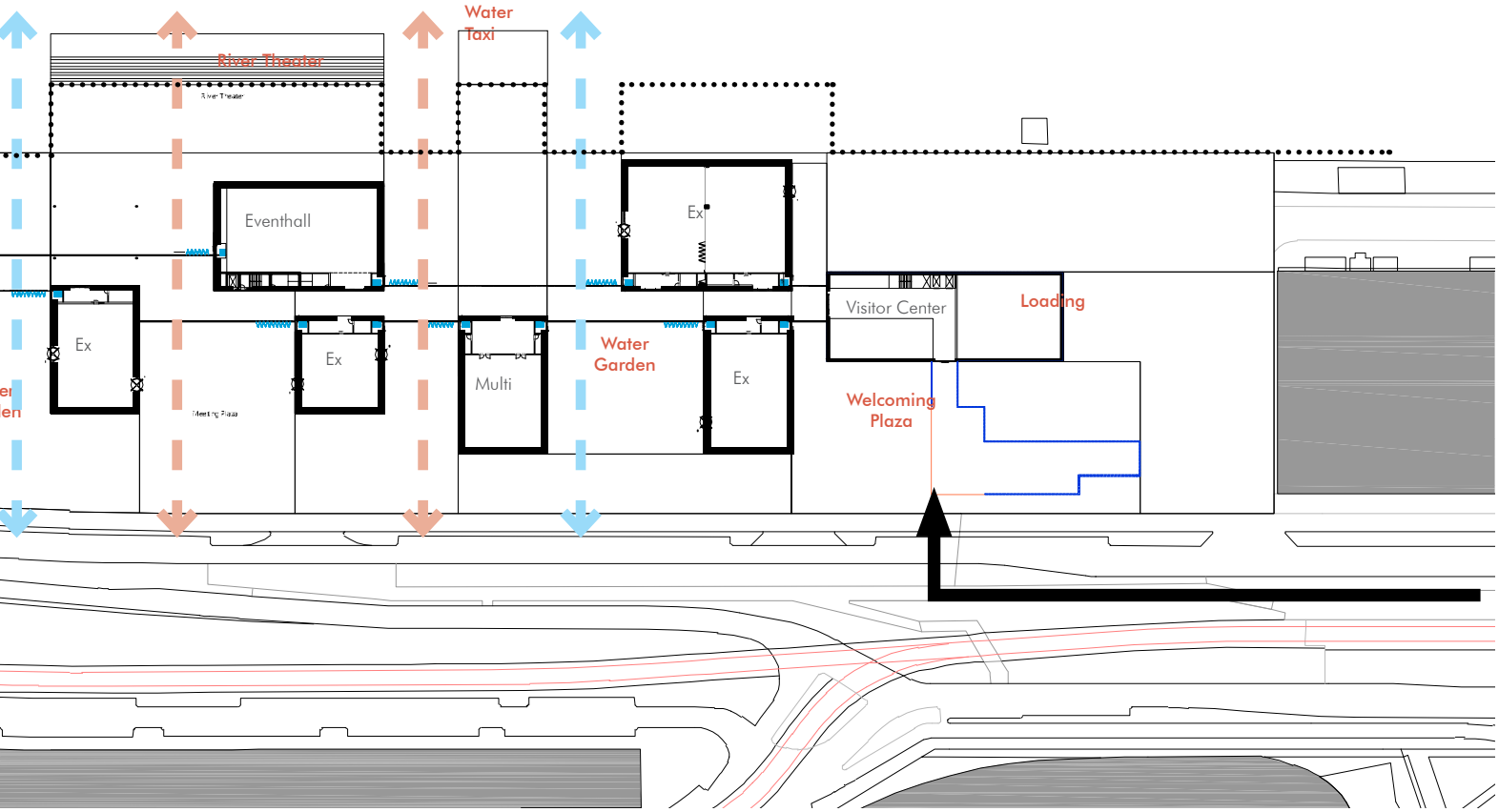




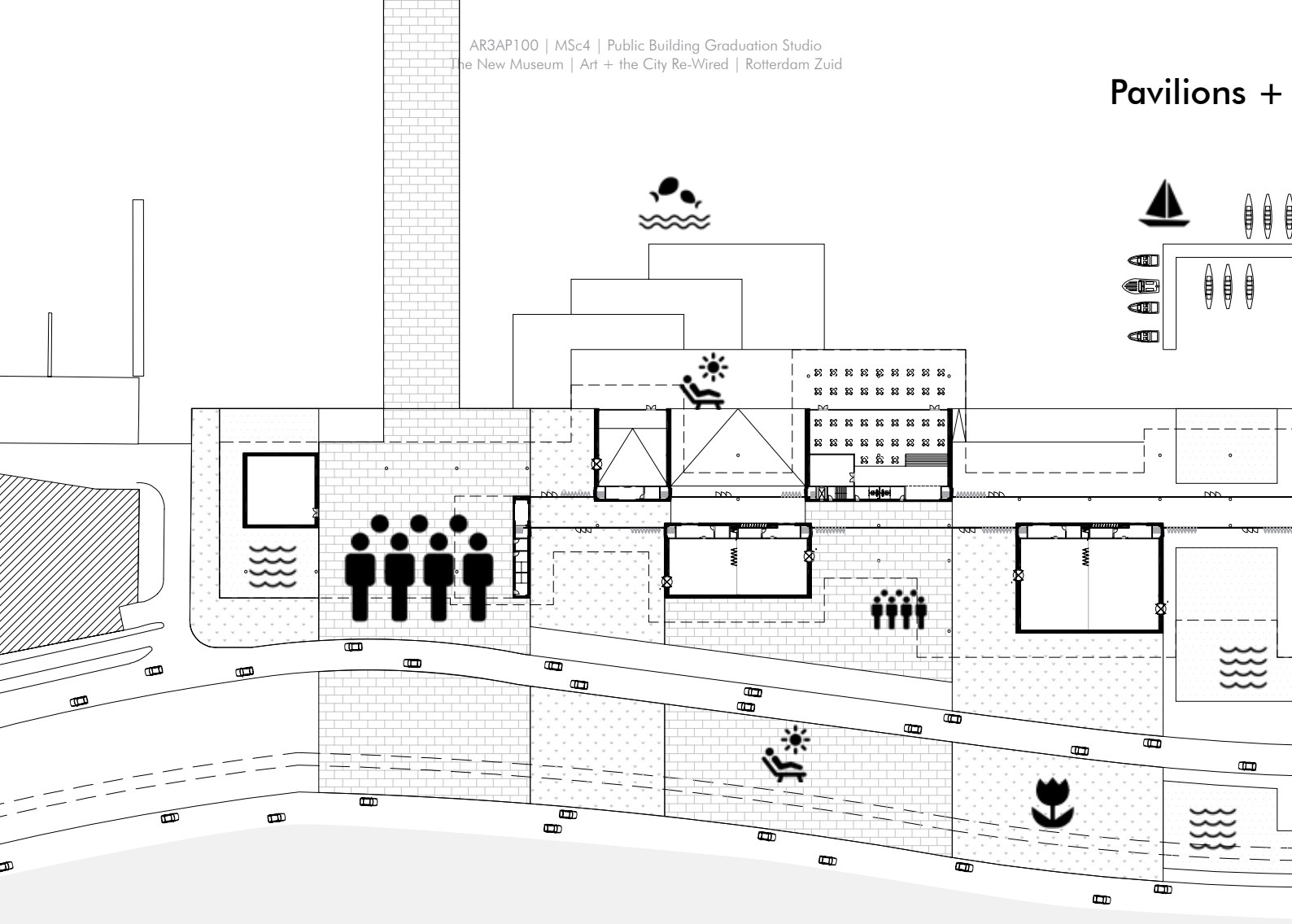
Level +1500

Porous view

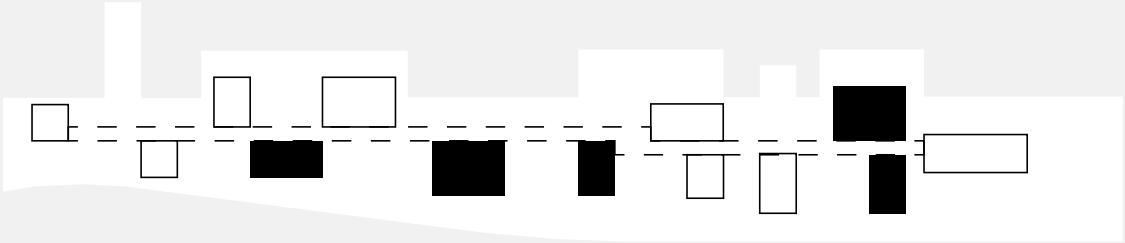
Porous view + Pass


Water
Taxi
River Theater
Eventhall
Ex
Ex
Ex
Ex
Multi
Water
Garden
Visitor Center
Loading
Welcoming
Plaza

Pavilions +

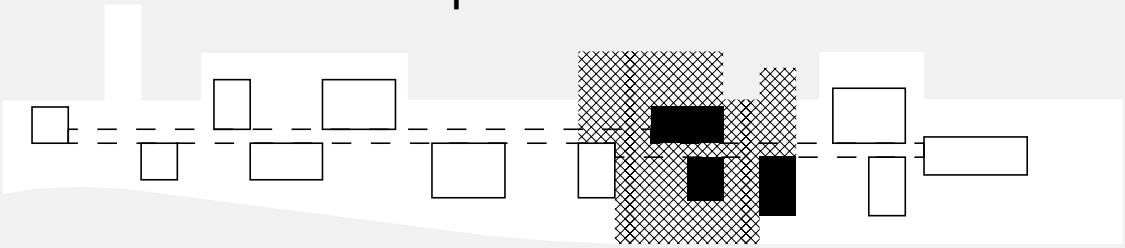


Exhibition Pavilions



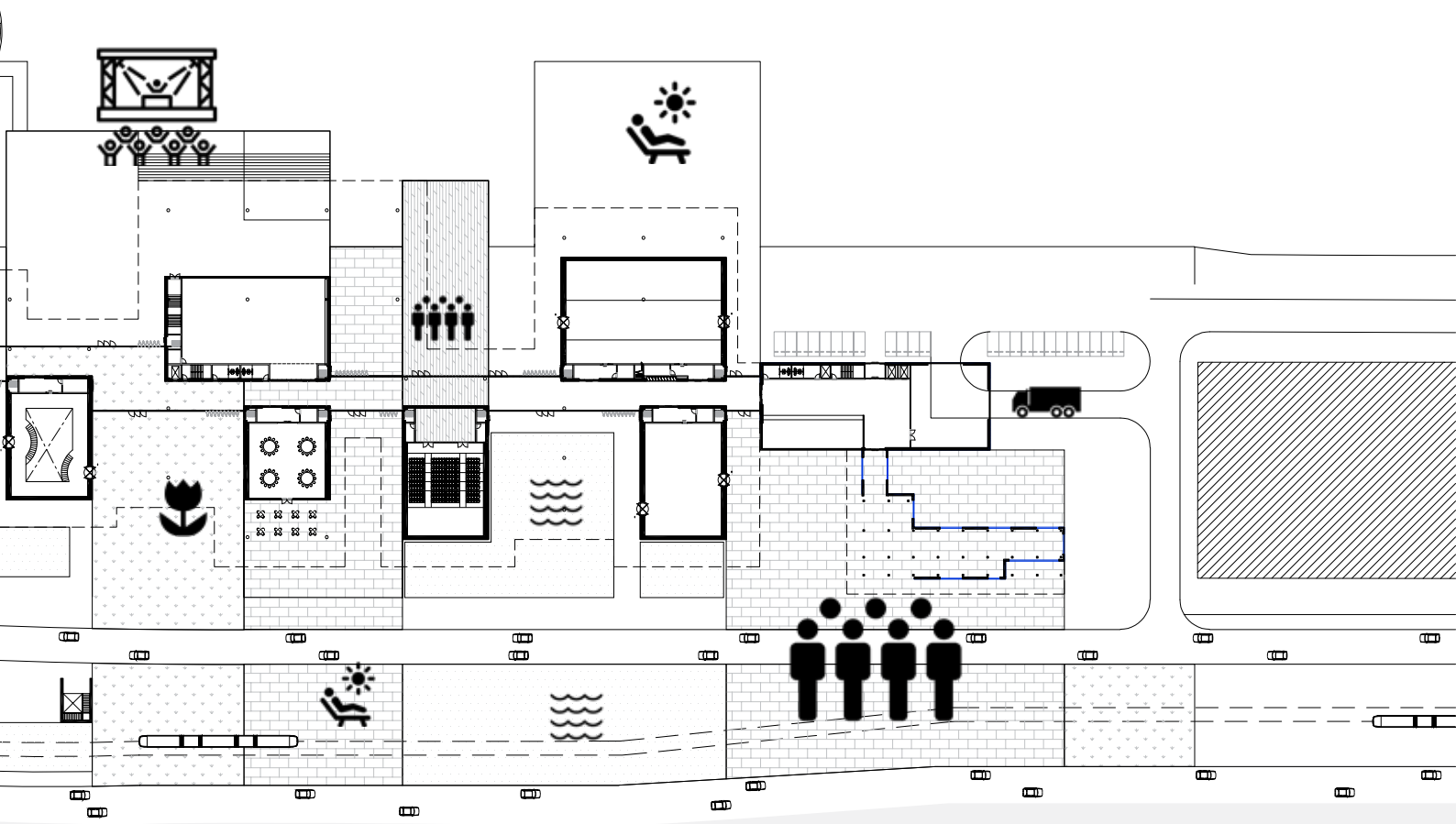
There are 5 exhibition pavilions with different physical types and sizes.

Special Pavilions

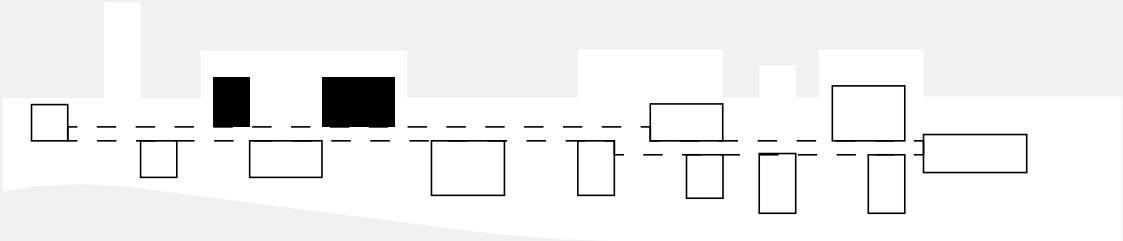


Special Pavioions such as Workshop, Event hall, and Multi-purpose hall can be extended to the interspaces.

Interspaces

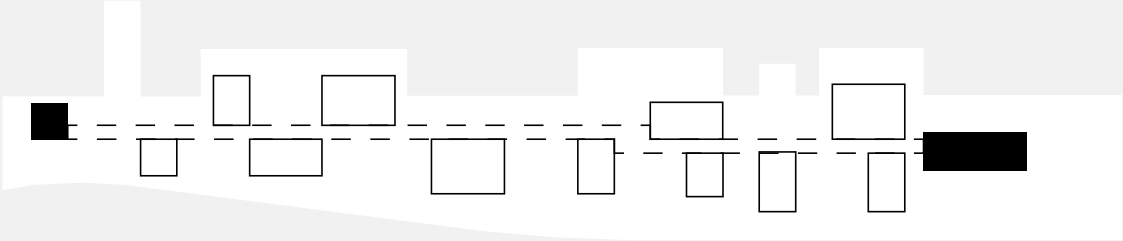


Retail Pavilions



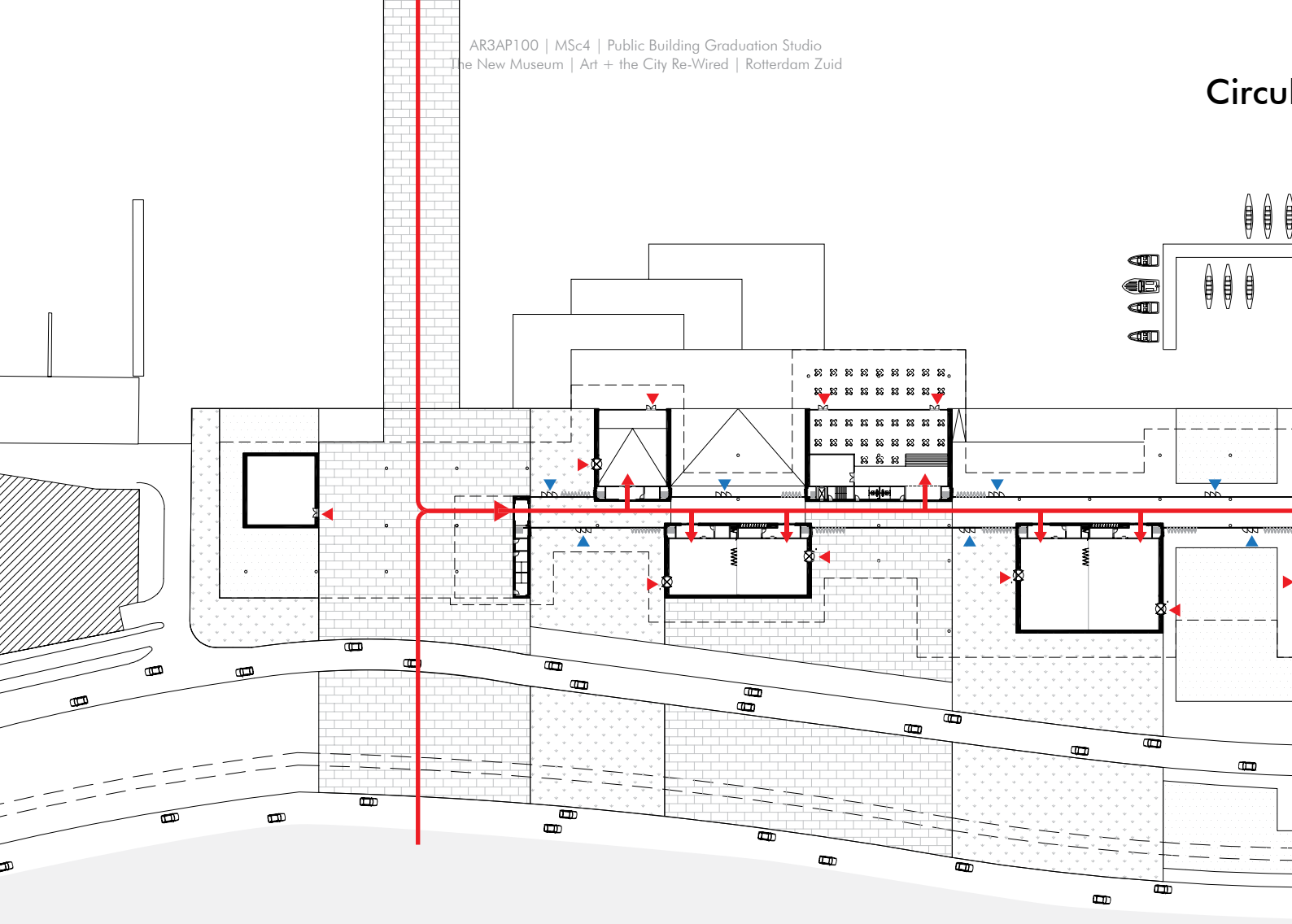
Retail and Restaurant pavilion is located in waterfront side for viewing.

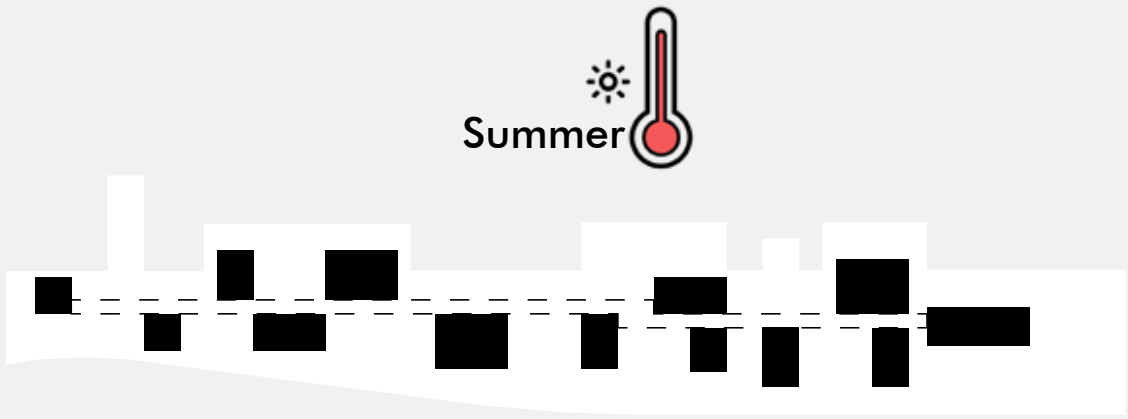
Service Pavilions



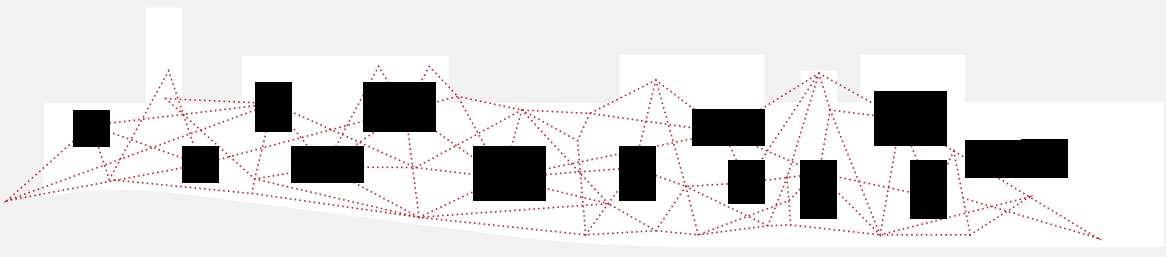
At the two end, there are service pavilions: Mini Data Center for digital archive / Back of house (office, loading, machine room)

Circul



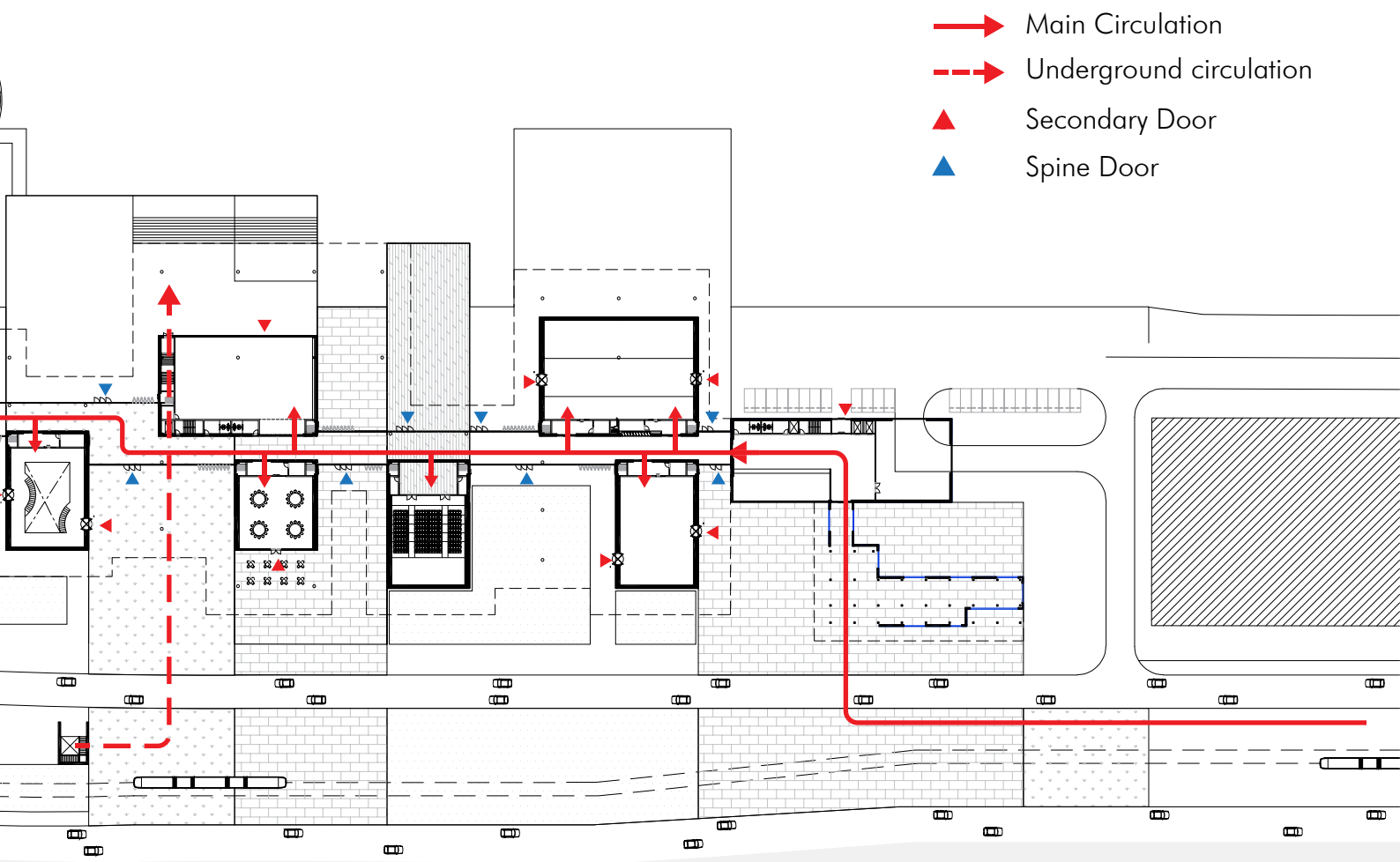


During summer, the spine disappears to provide more outdoor spaces.



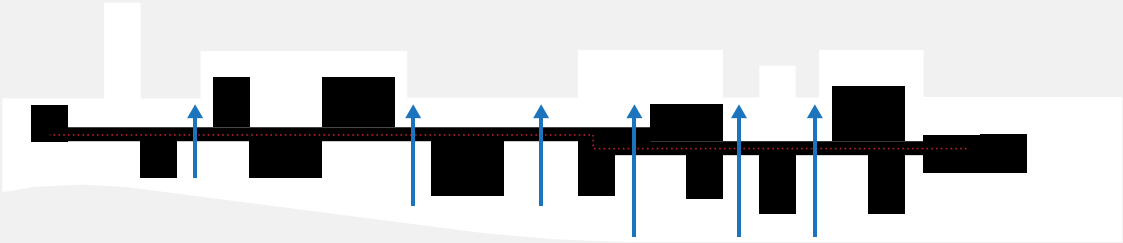
During summer, it is meant to be interactive as much as possible.

lation



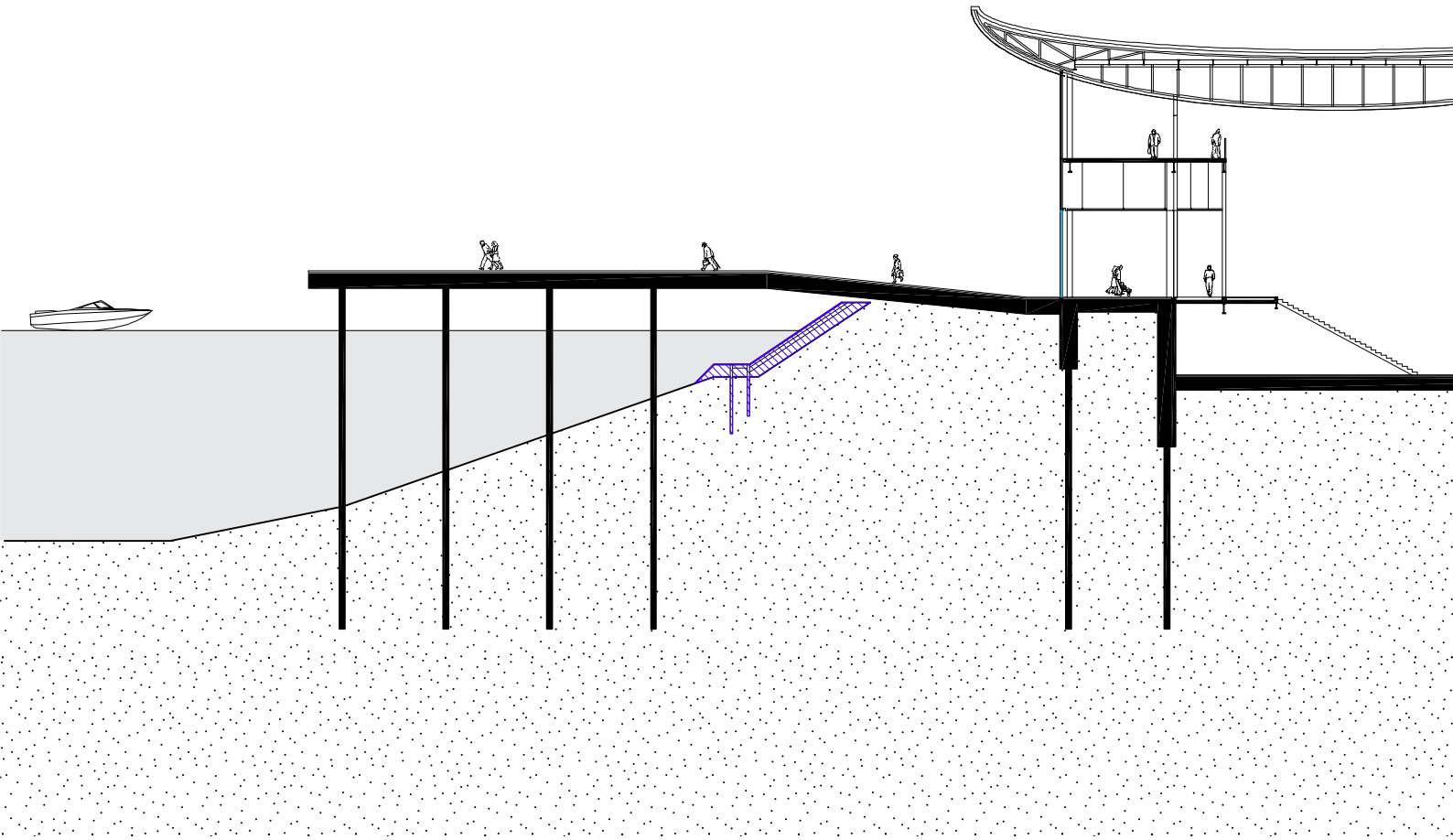
Winter

During winter, the spine appears to provide comfortable temperature.



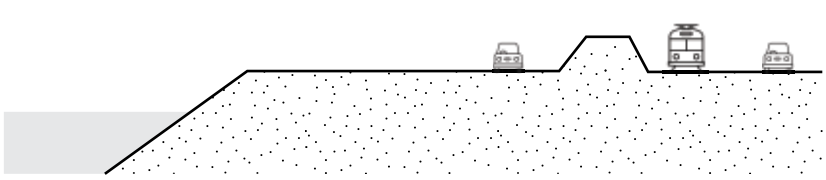
During winter, the main circulation is the spine. However, there are several doors to reach the waterfront.

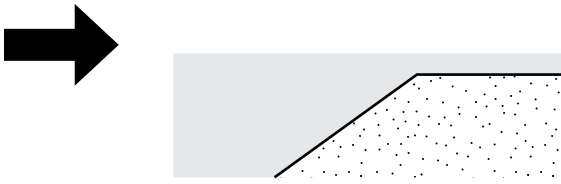
River | New Dike | Pavilion

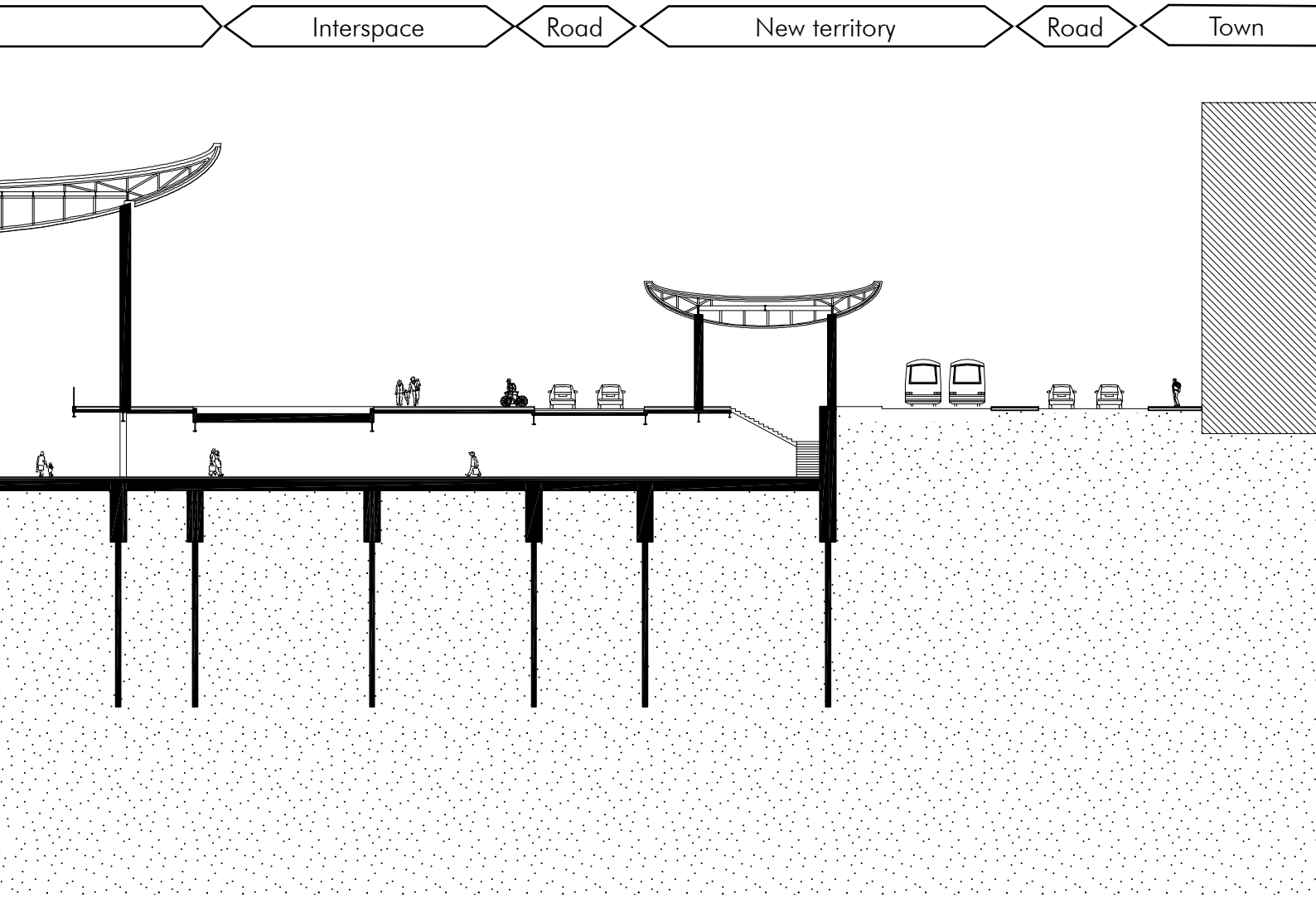


Current situation shows that there are three levels: the river, the site, and the dike.

Due to climate cha
2050 and 100cm
ter levels to rise in

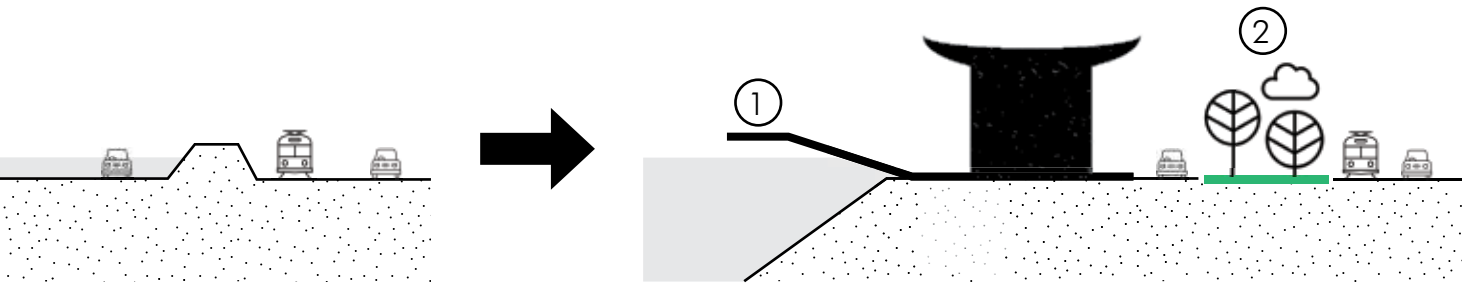


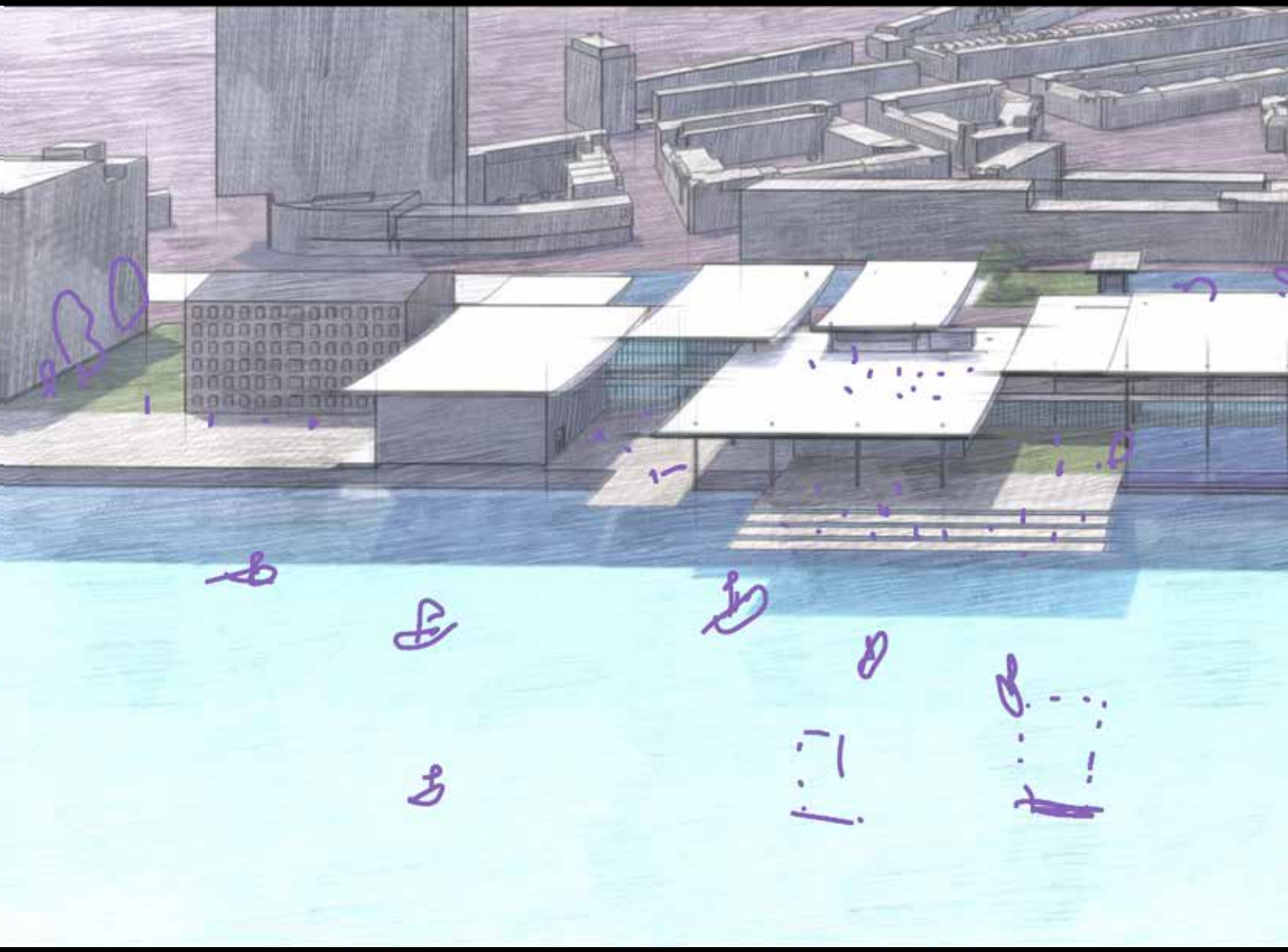


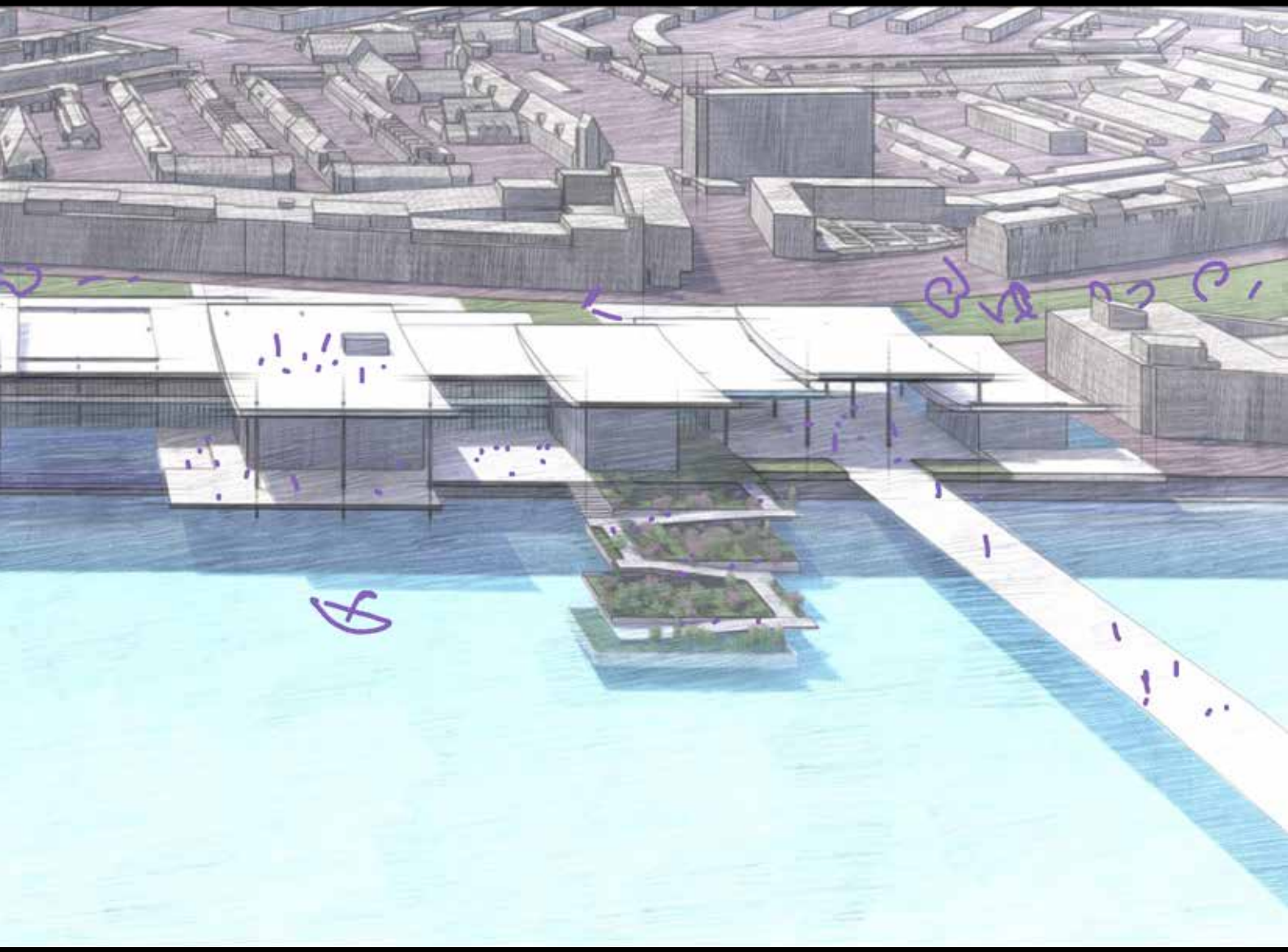


ange, sea level will rise 40cm by
by 2100. This causes high-wa-
Rotterdam.

When the new dike which is 1.5m higher than current level is installed, existing old dike can be removed and new territory is made.

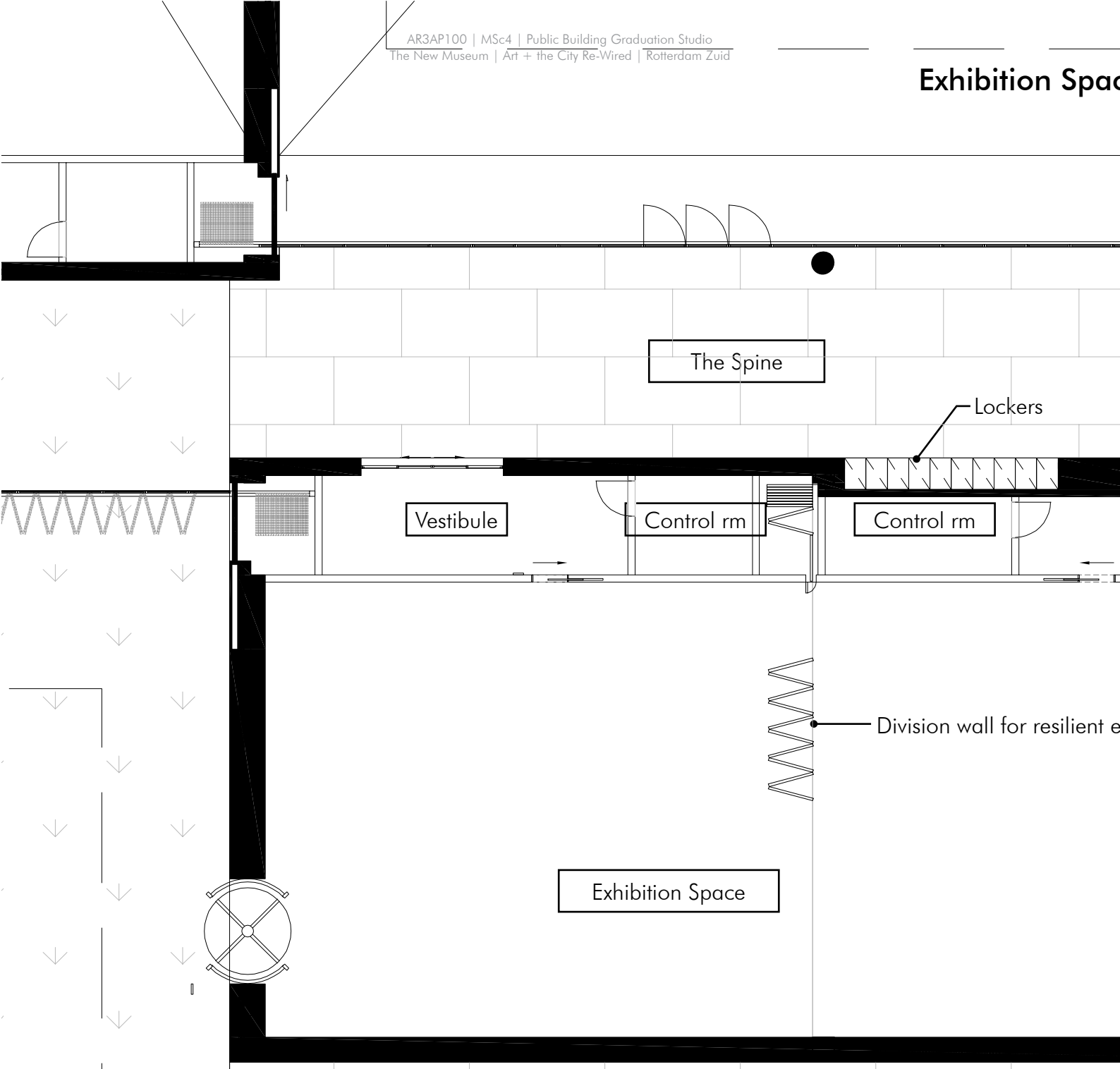






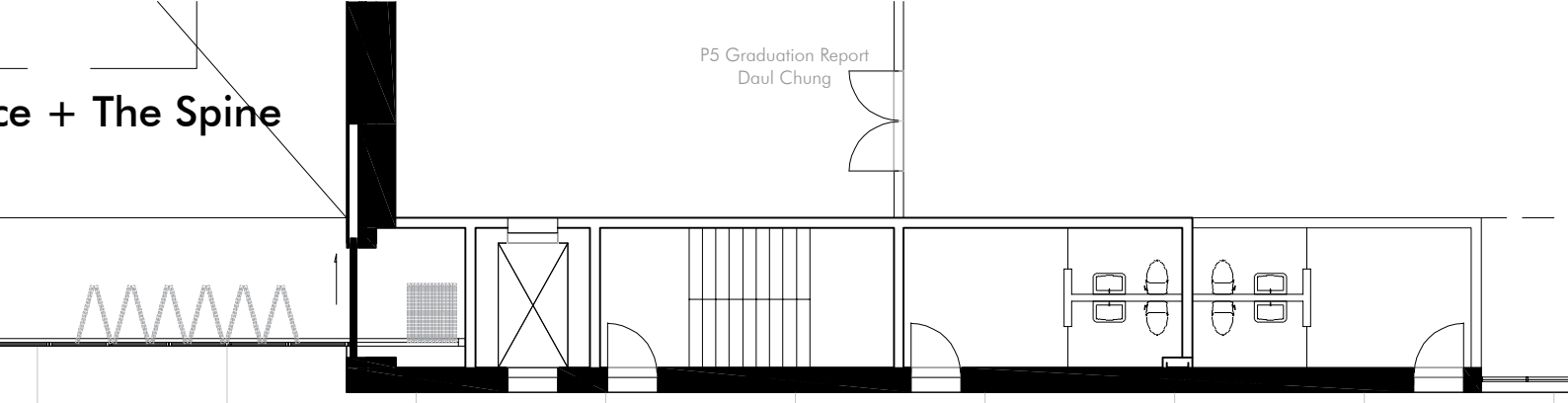
Pavilions

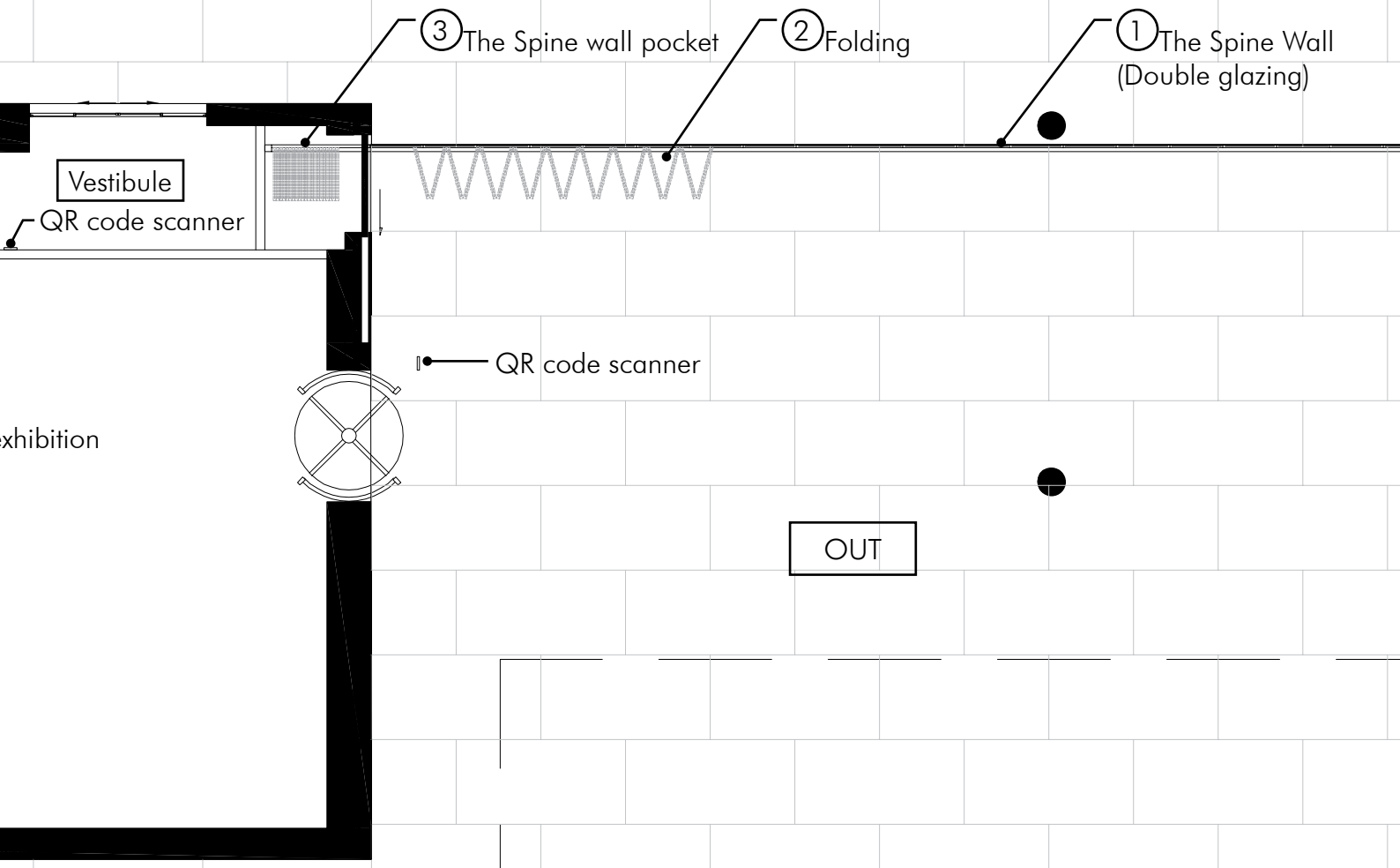
Exhibition Spac

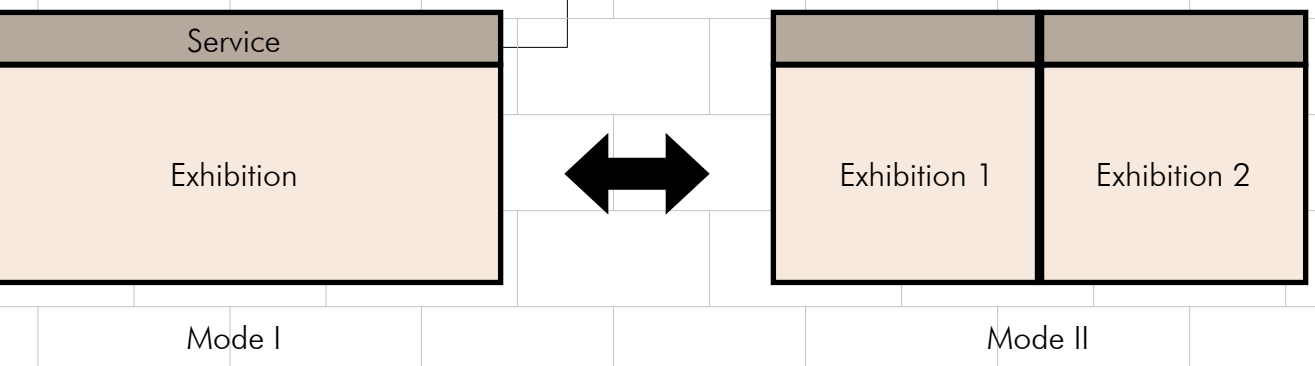


The moveable spine wall needs a pocket to hide these folding walls. The pavilions are designed to be integrated with the pocket and service zone such as vestibule for visitors to be ready for surprise, control rooms or computer rooms for new media art, lockers to store coats and bags, toilets, and etc.

ce + The Spine

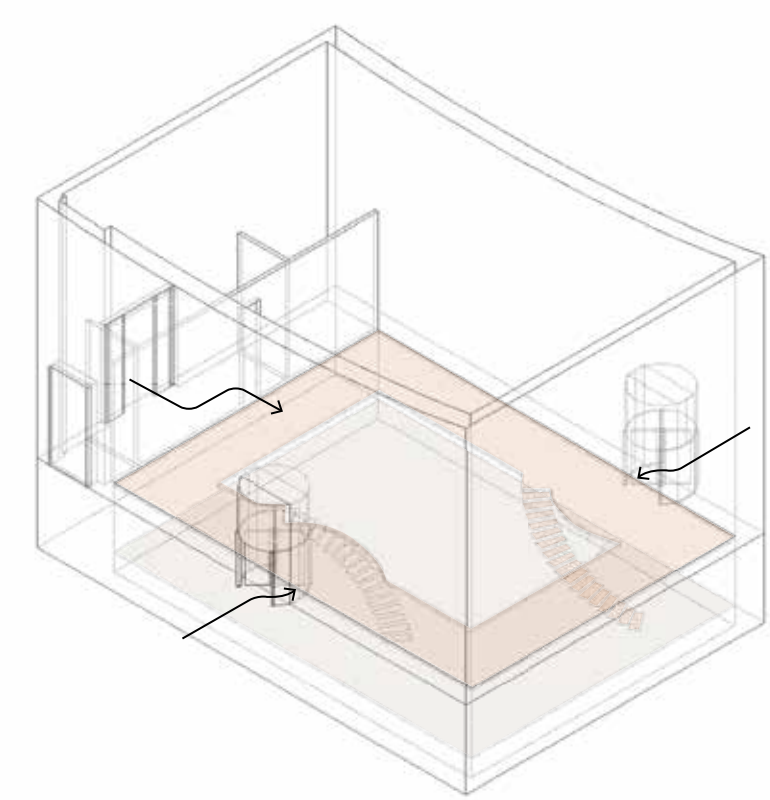



3 The Spine wall pocket
2 Folding
1 The Spine Wall
(Double glazing)
Vestibule
QR code scanner
QR code scanner
xhibition
OUT

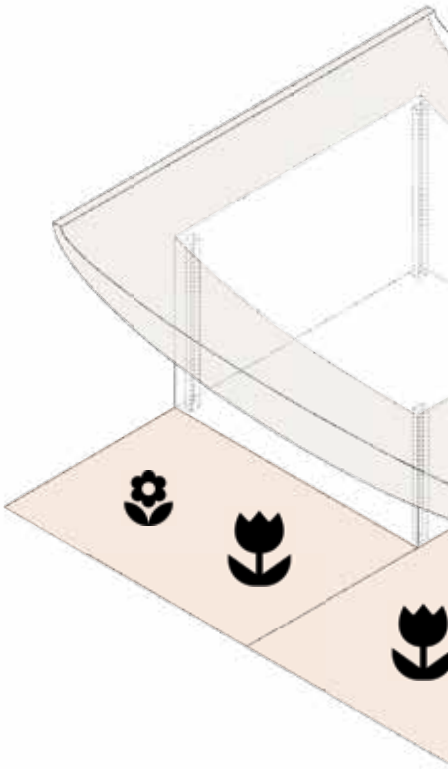

Service
Exhibition
Exhibition 1
Exhibition 2
Mode I
Mode II

Curation ar

Exhibition Pavilion 1:
Immersive experience

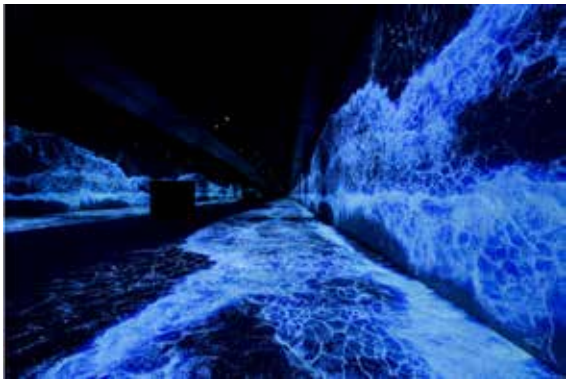


Exhibition Interspace:



Ground Floor:

Cindy Pease Roe
Giant Suspended Jellyfish

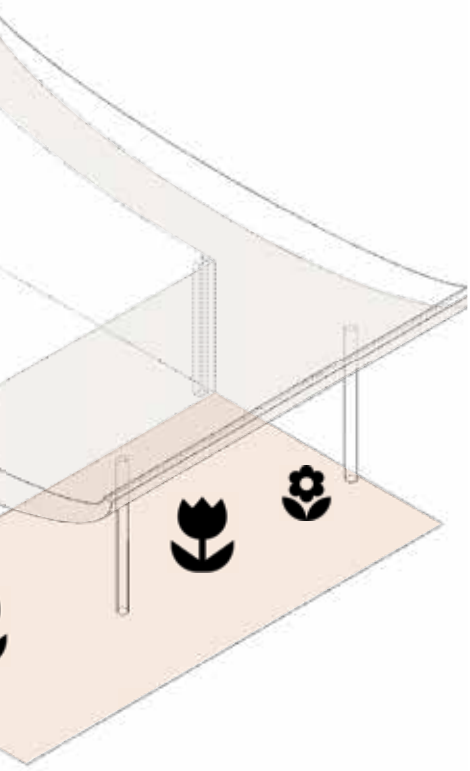


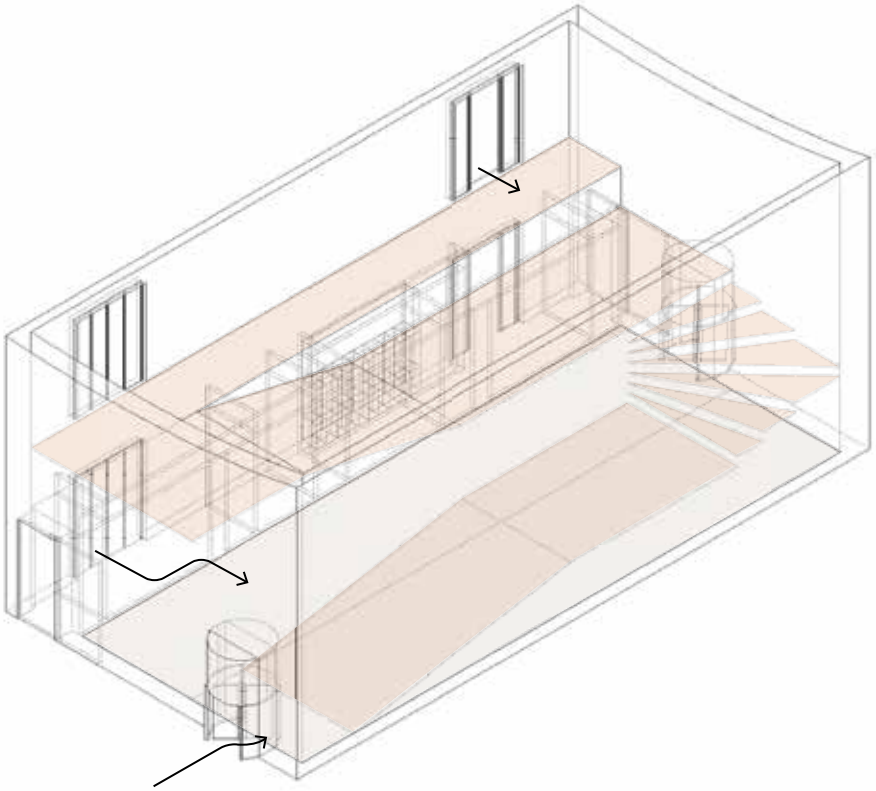
Basement Floor:

A'strict
Starry Beach

nd Museum

Exhibition Pavilion 2:
Journey experience





Day

Night

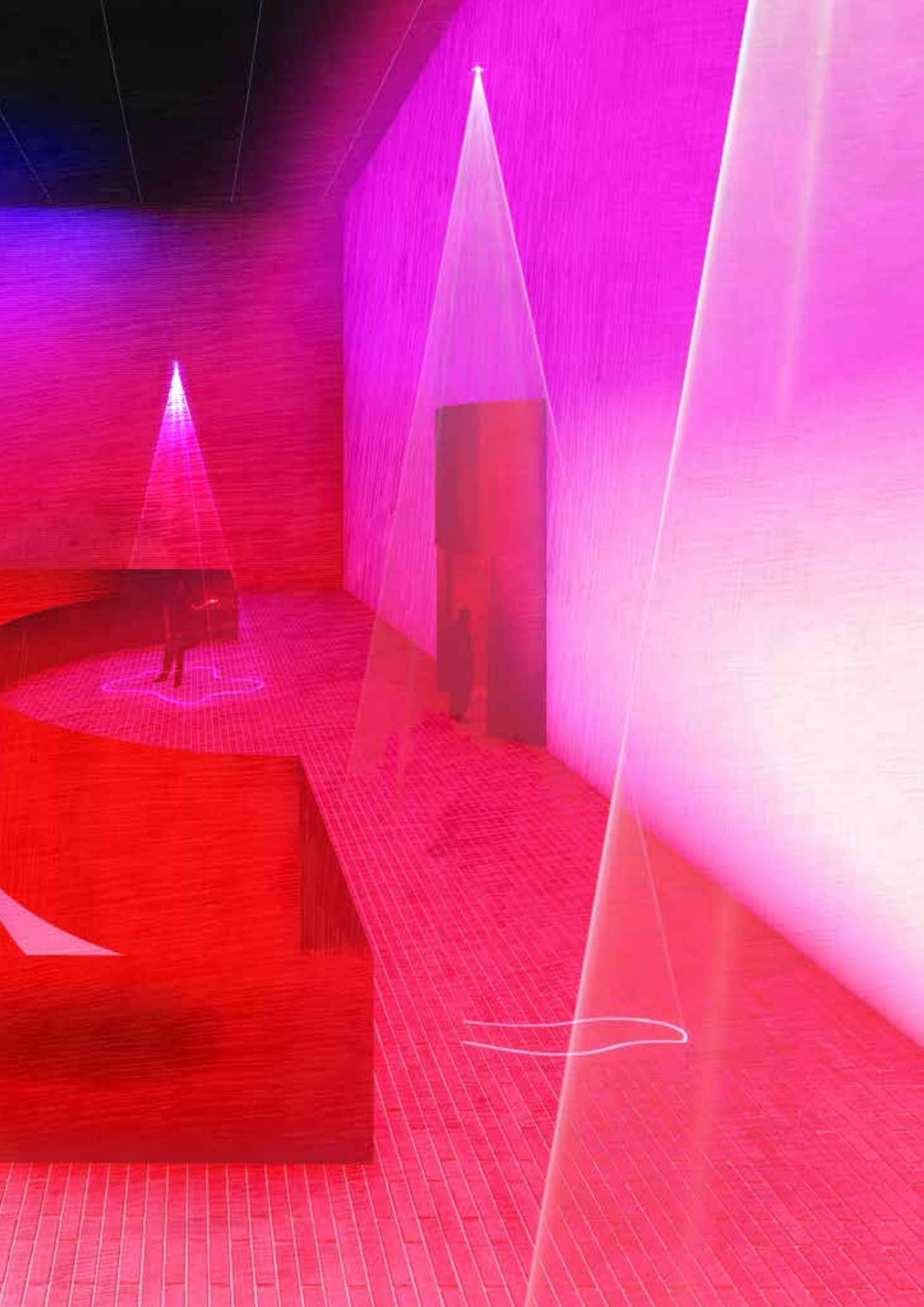
Roosegaarde
GLOW

step 1

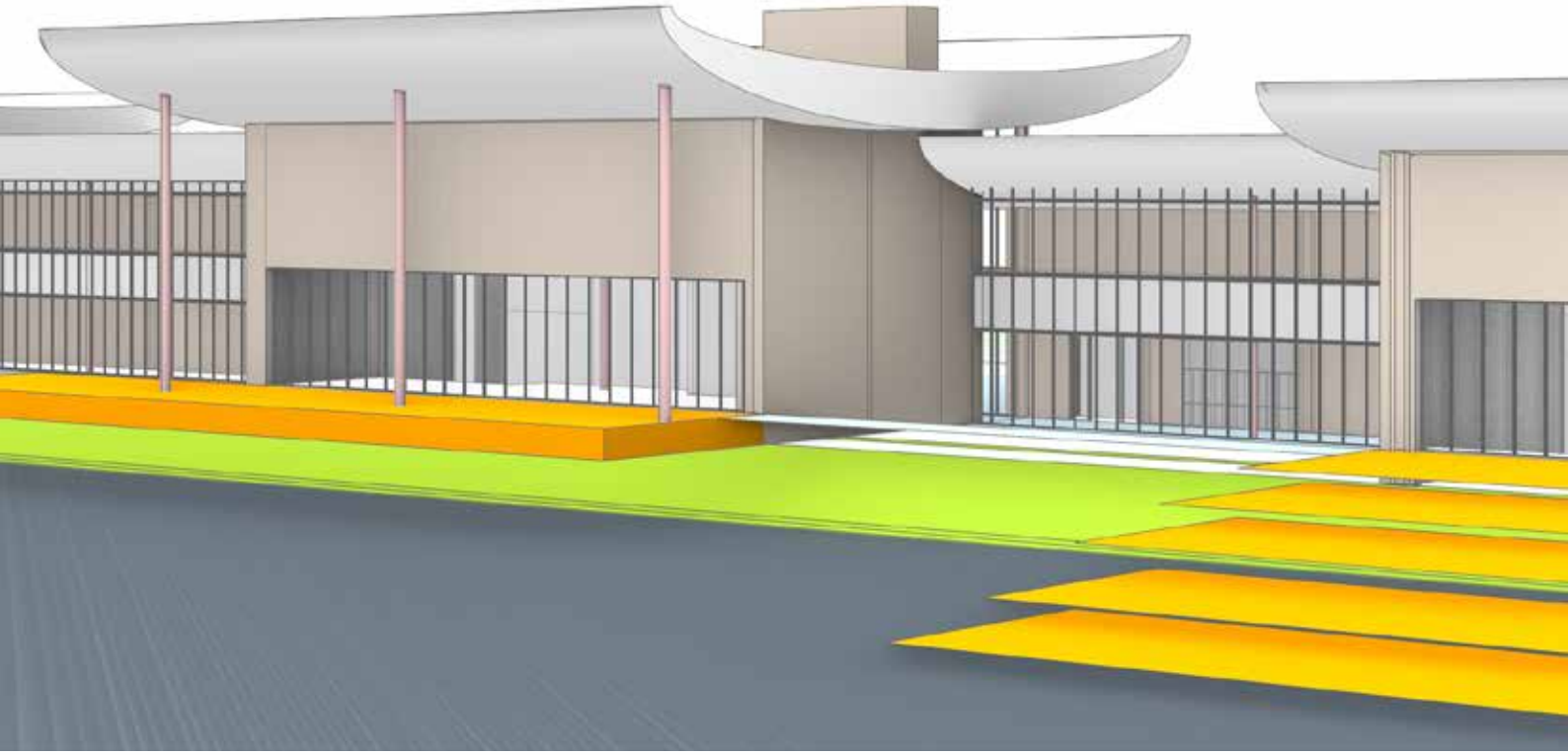
step 2

step 3

Studio DRIFT
MATERIALISM
A SCULPTURE ON REVERSED ENGINEERING

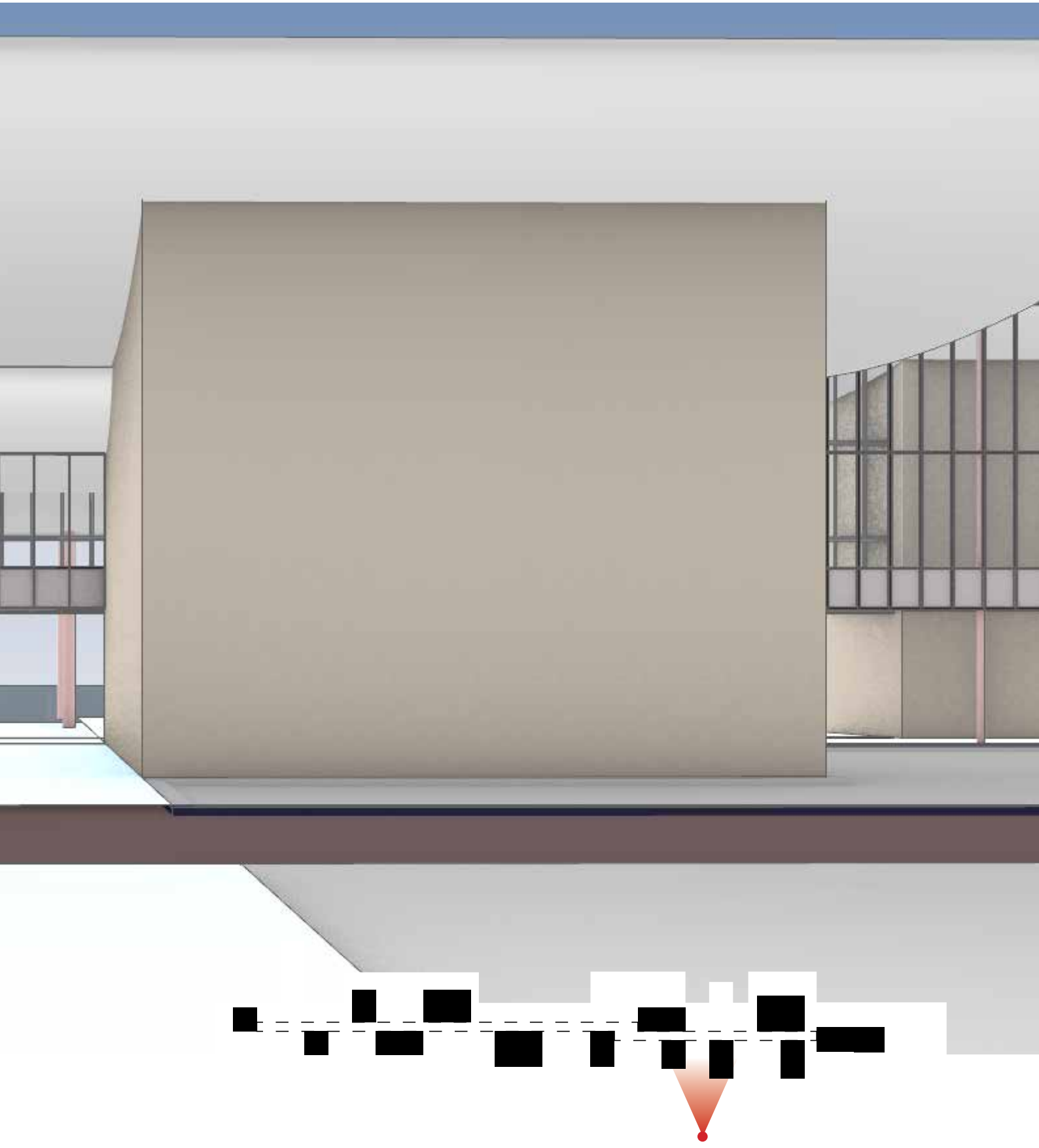



Exhibition
Eventhall

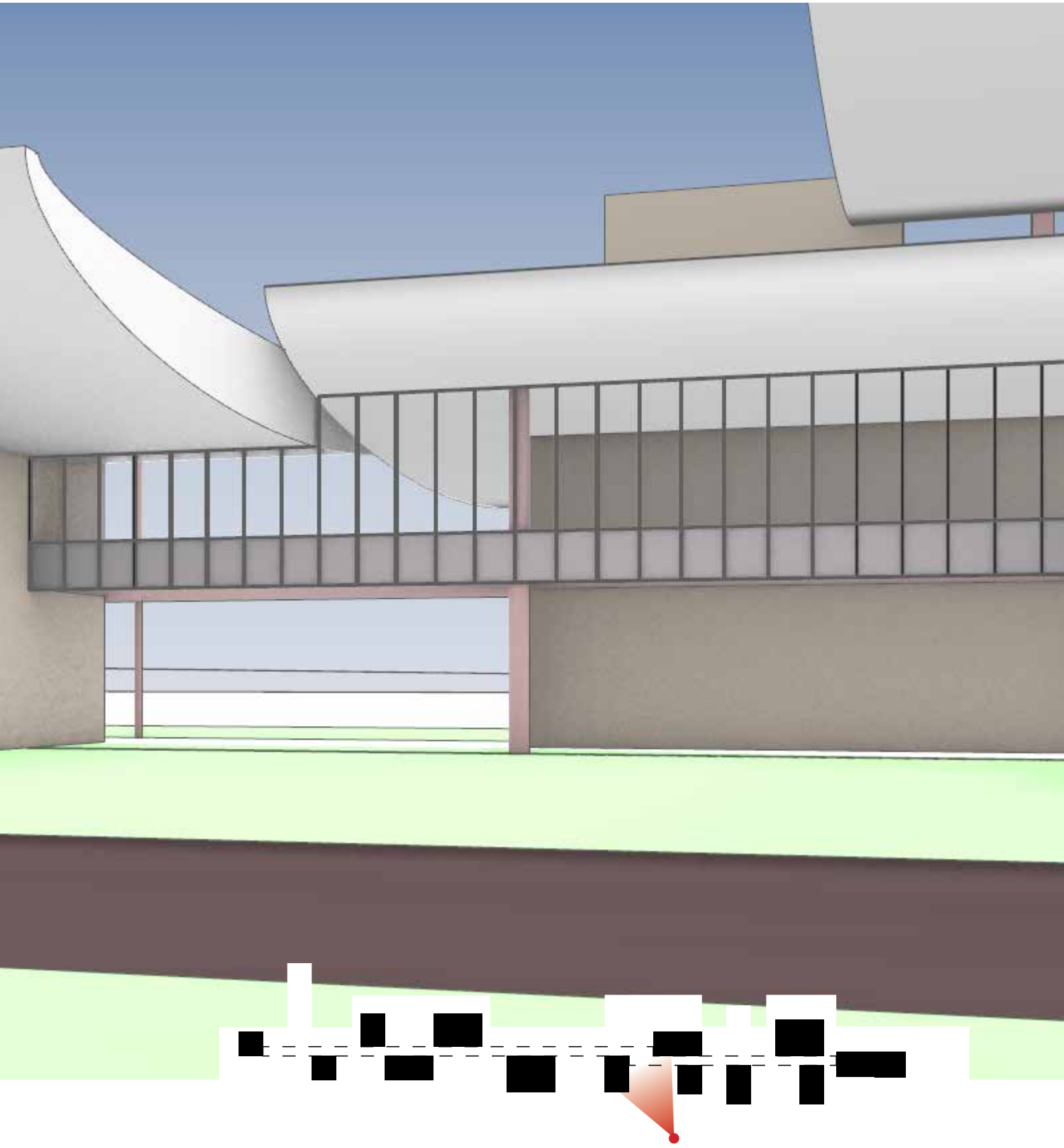


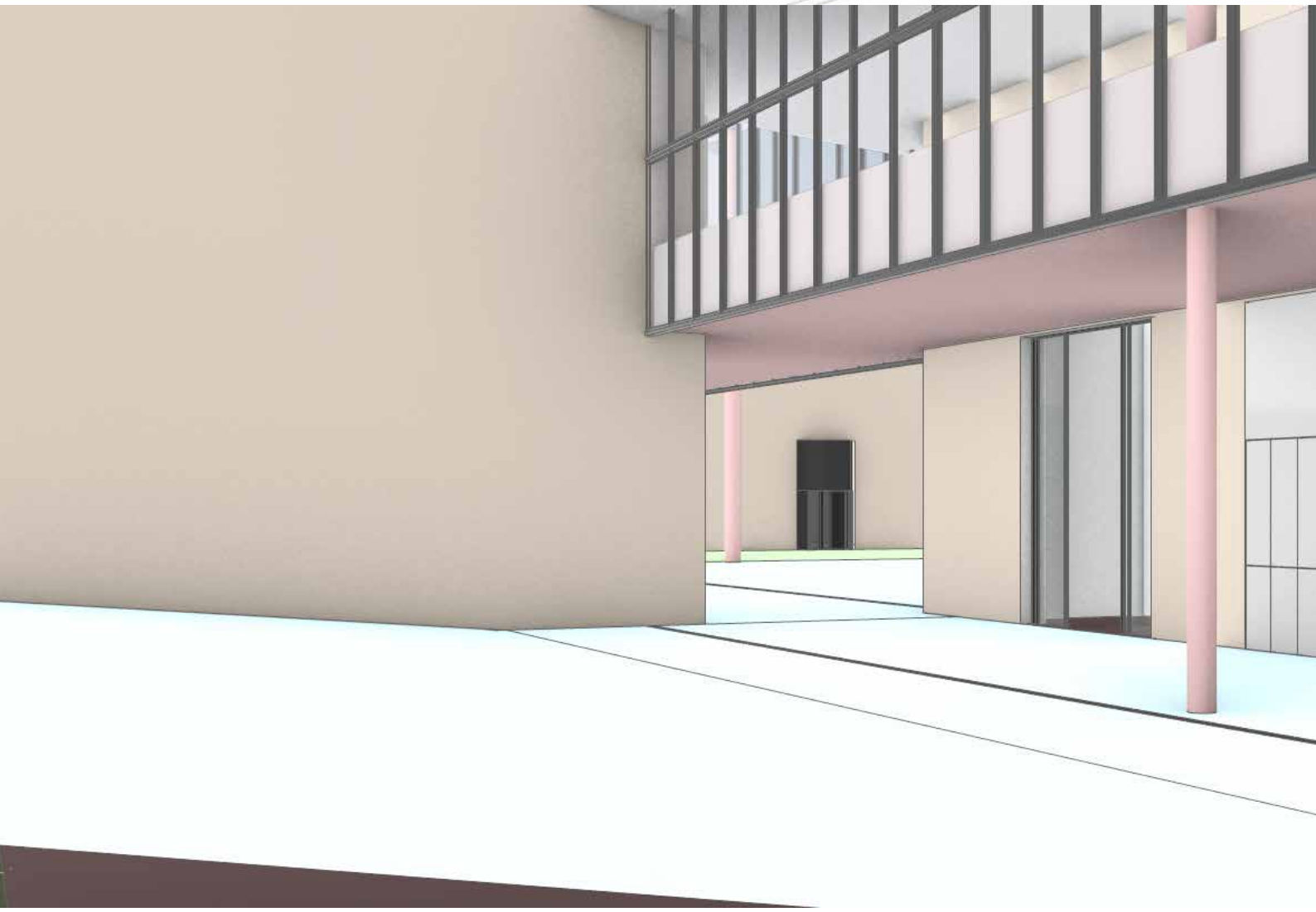

Restaurant

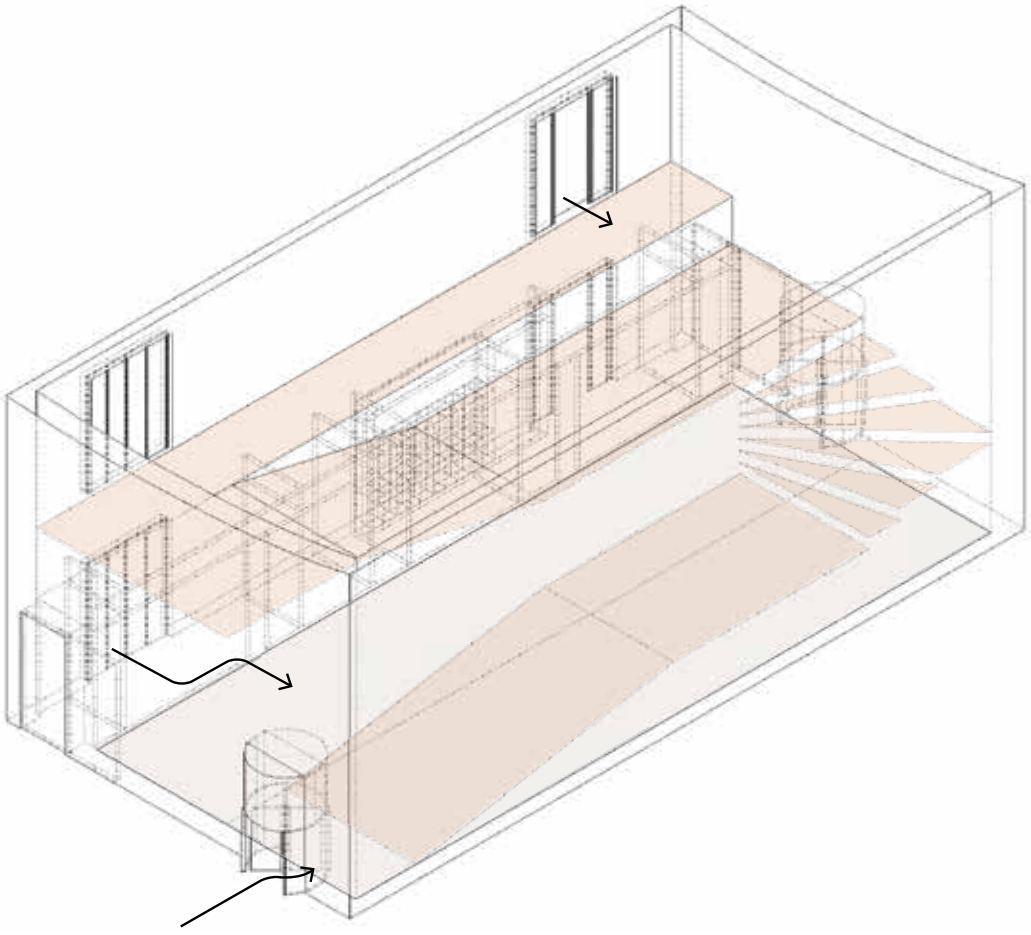

V-4

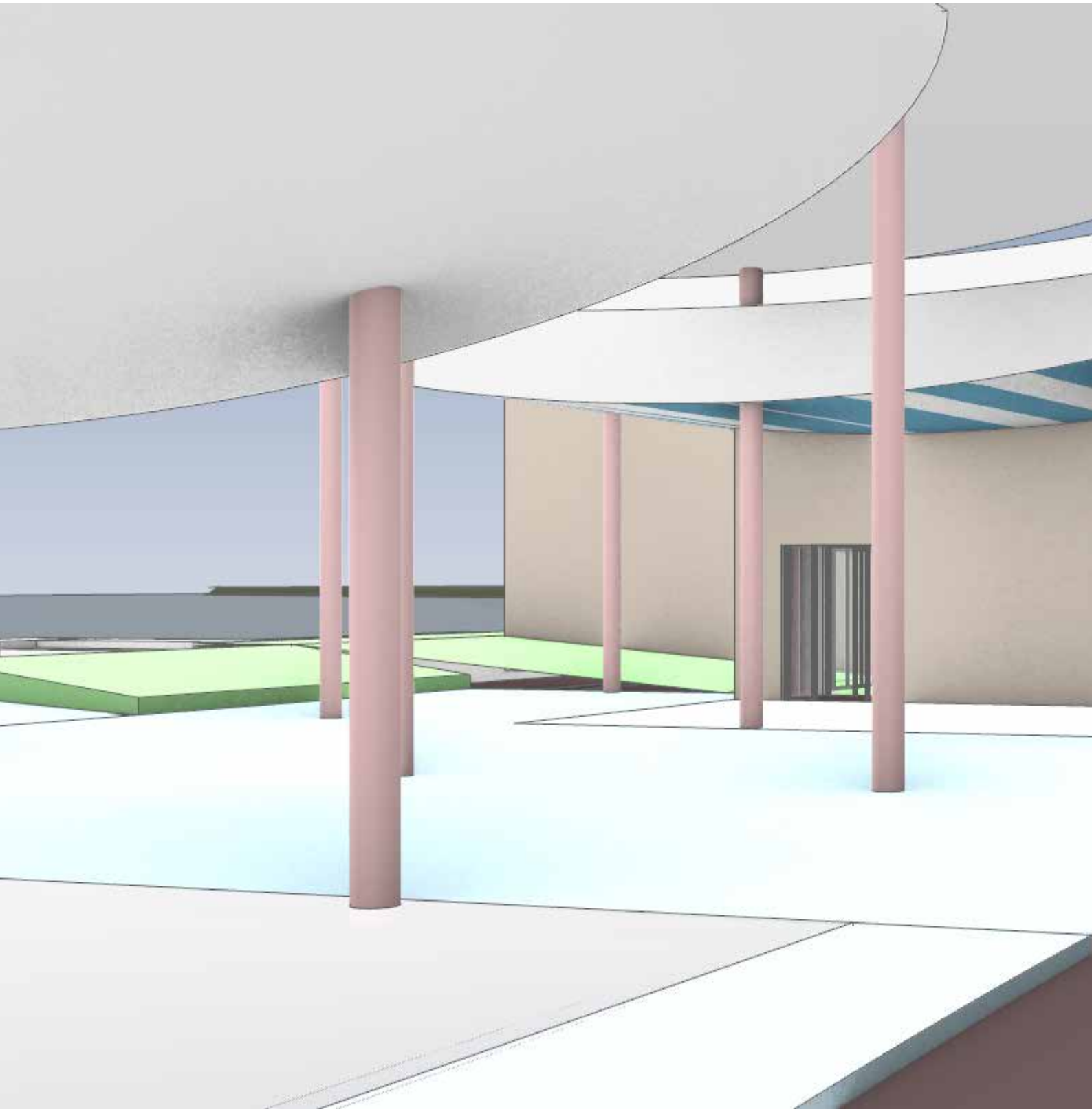


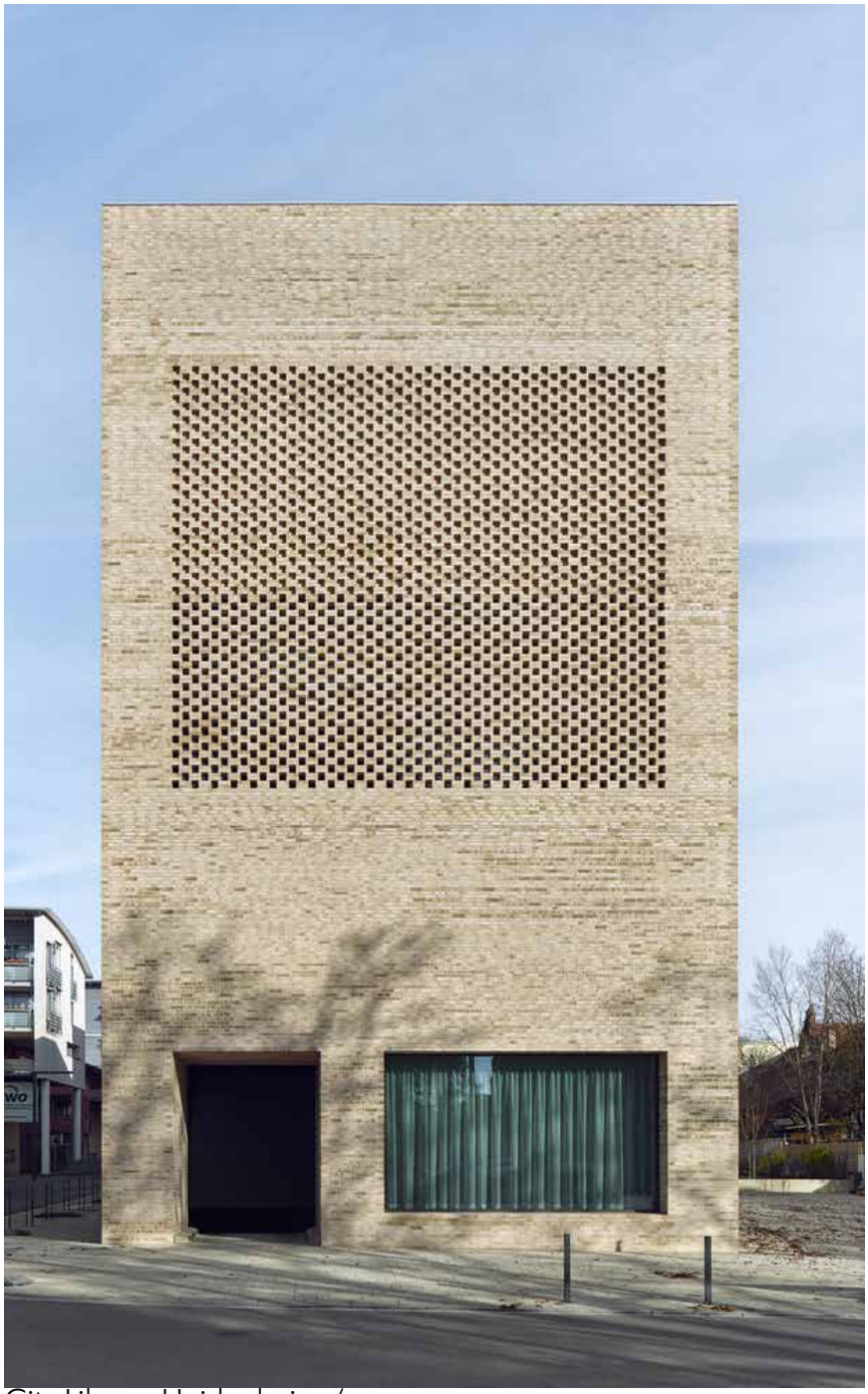

V-4





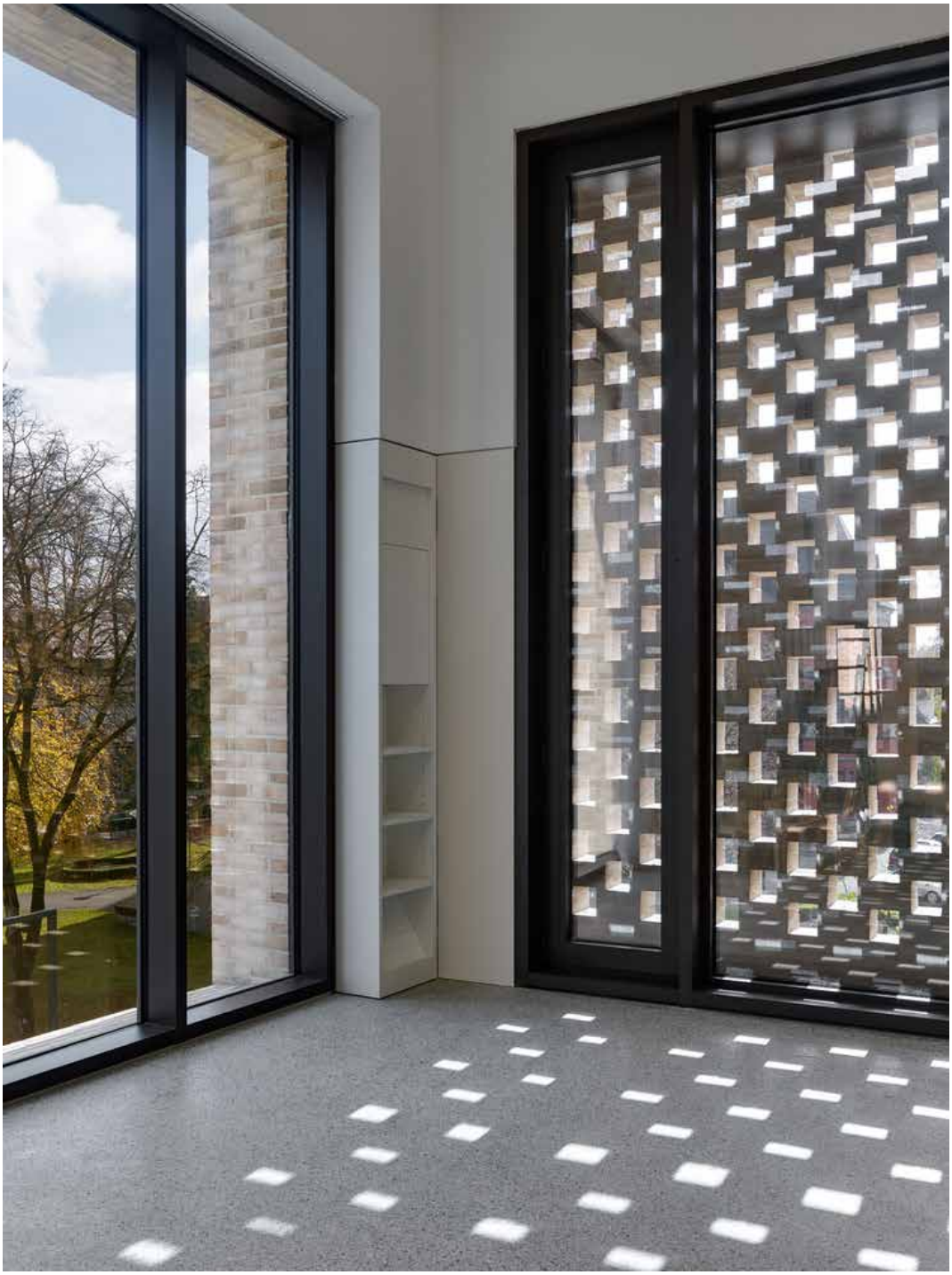


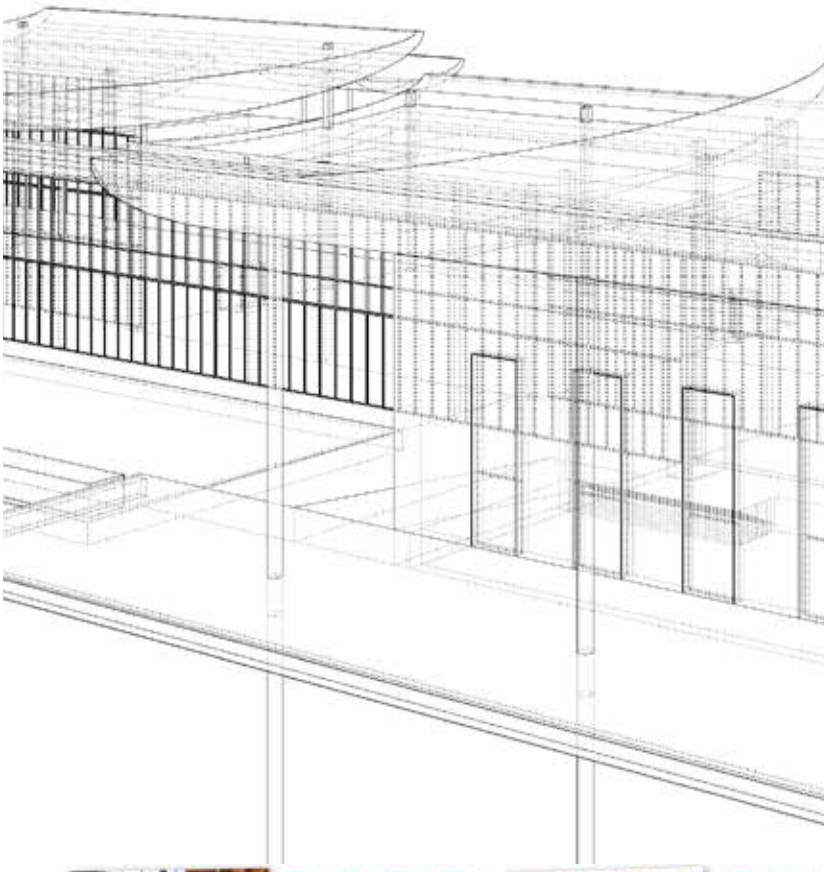




City Library Heidenheim /
Max Dudler

Cite: "City Library Heidenheim / Max Dudler" 26 Mar 2018. ArchDaily. Accessed 19 Apr 2021. <https://www.archdaily.com/891245/city-library-heidenheim-max-dudler> ISSN 0719-8884



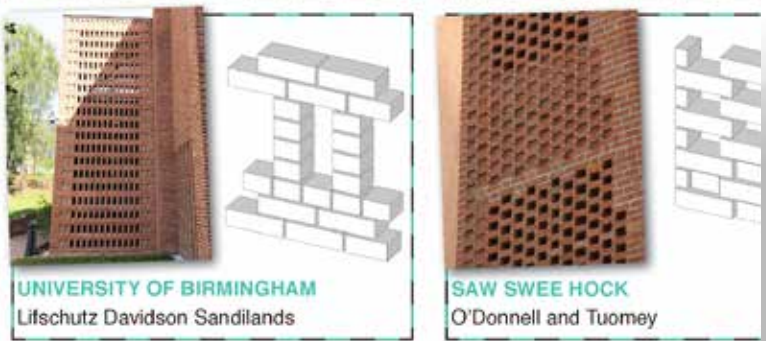


HIGHGATE JUNIOR SCHOOL
Architype

BARRETT'S GROVE
Amin Taha

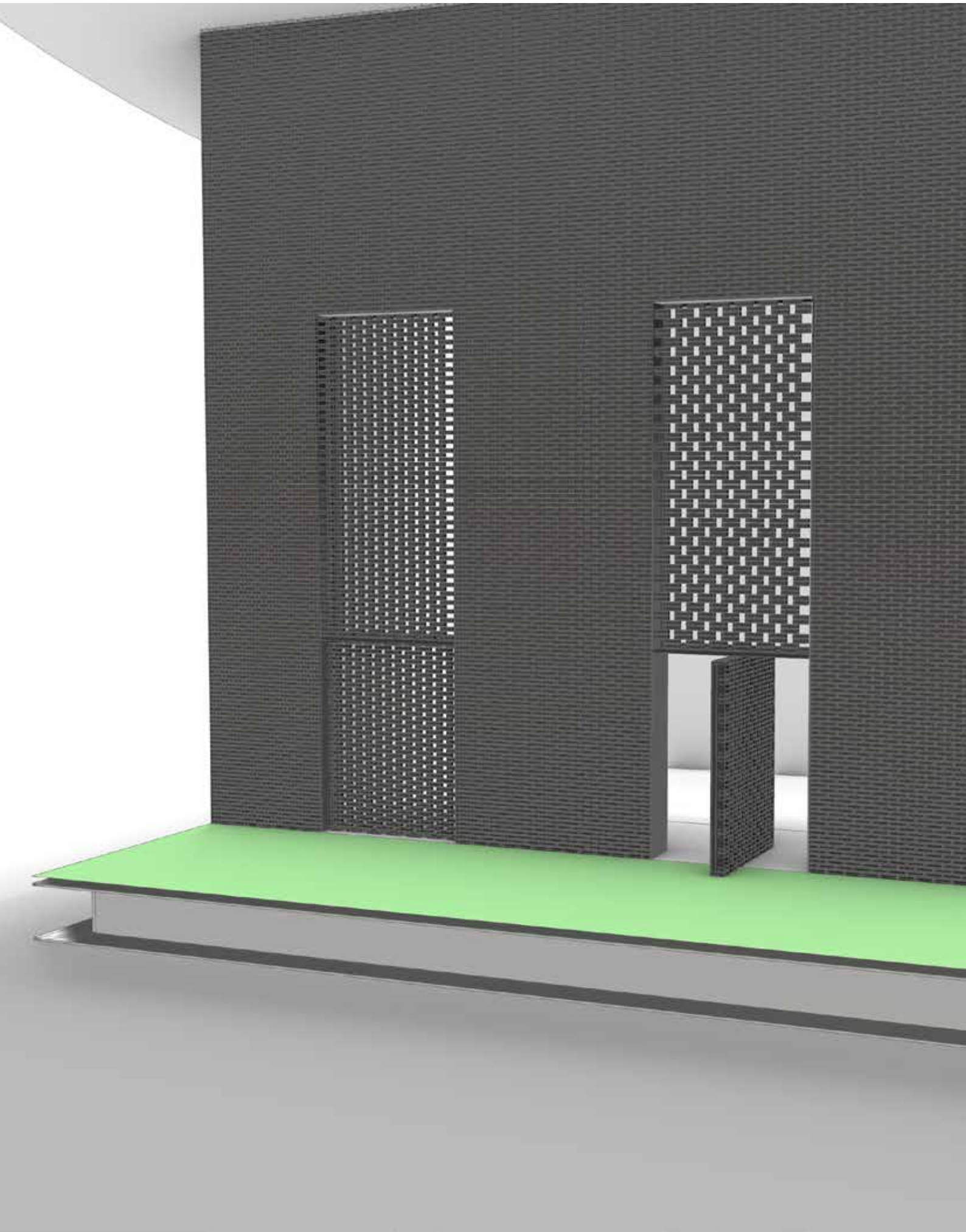
STOREY'S FIELD
MUMA

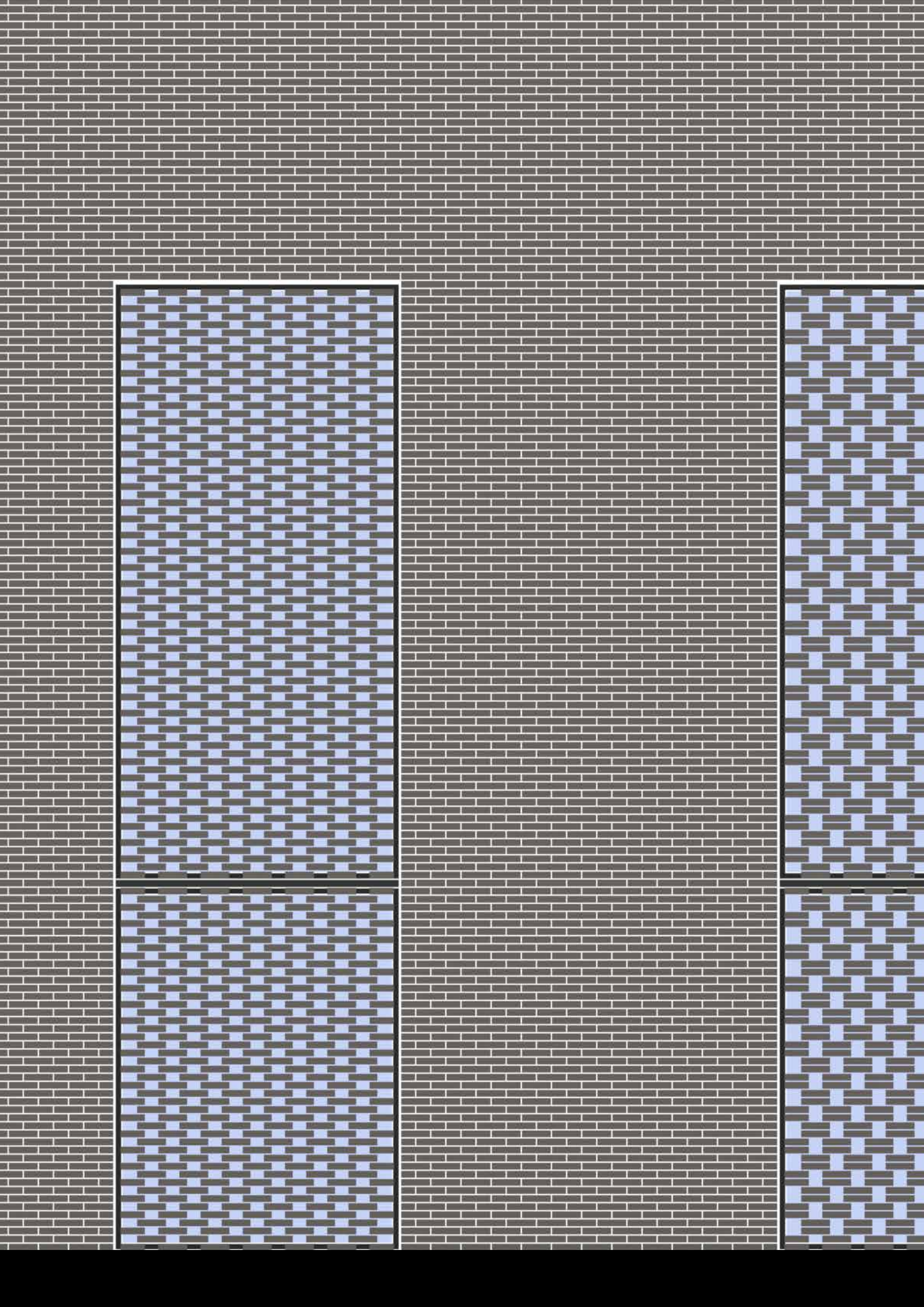
MAGGIE'S CENTRE MONKLAND
Reiach & Hall

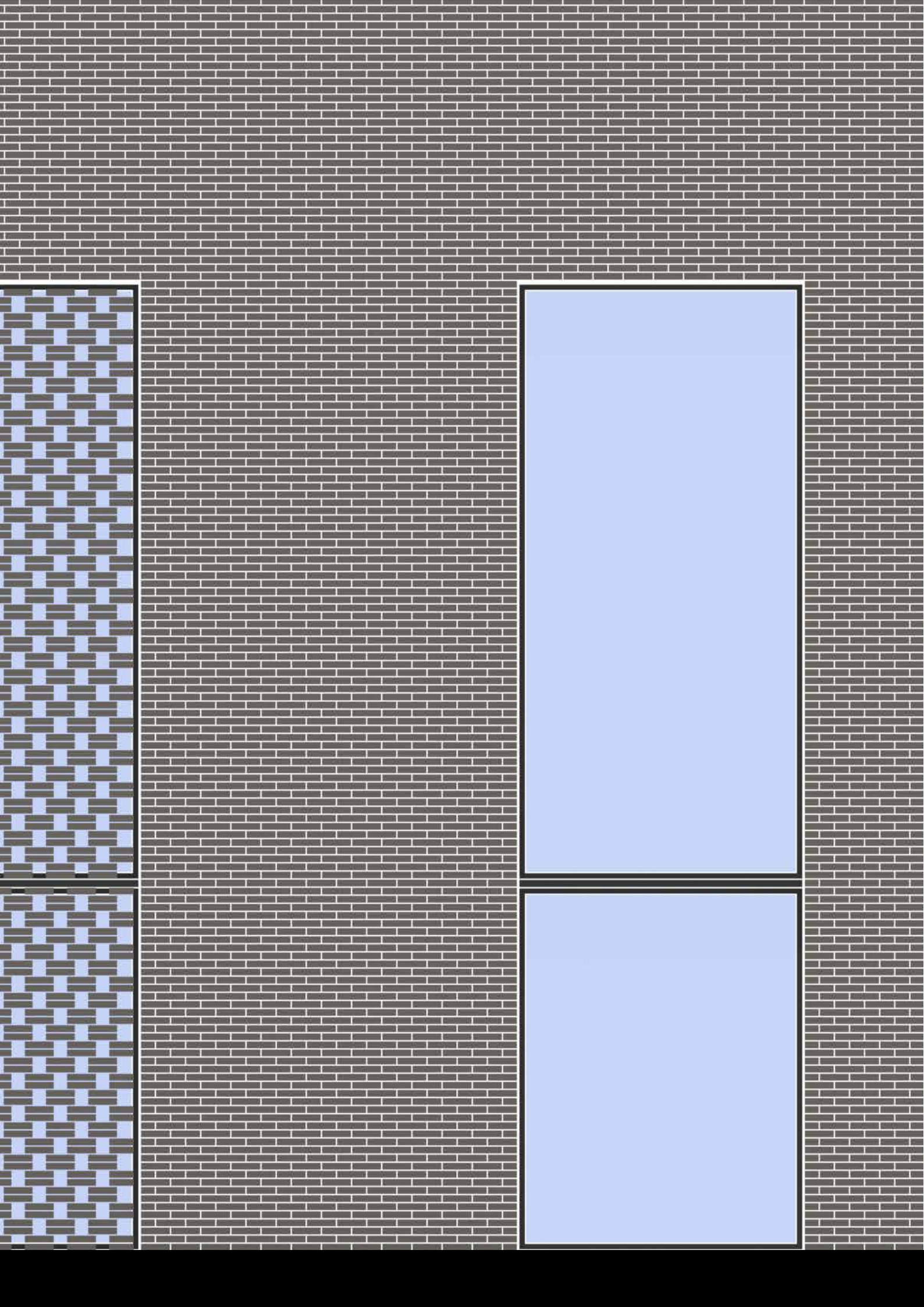


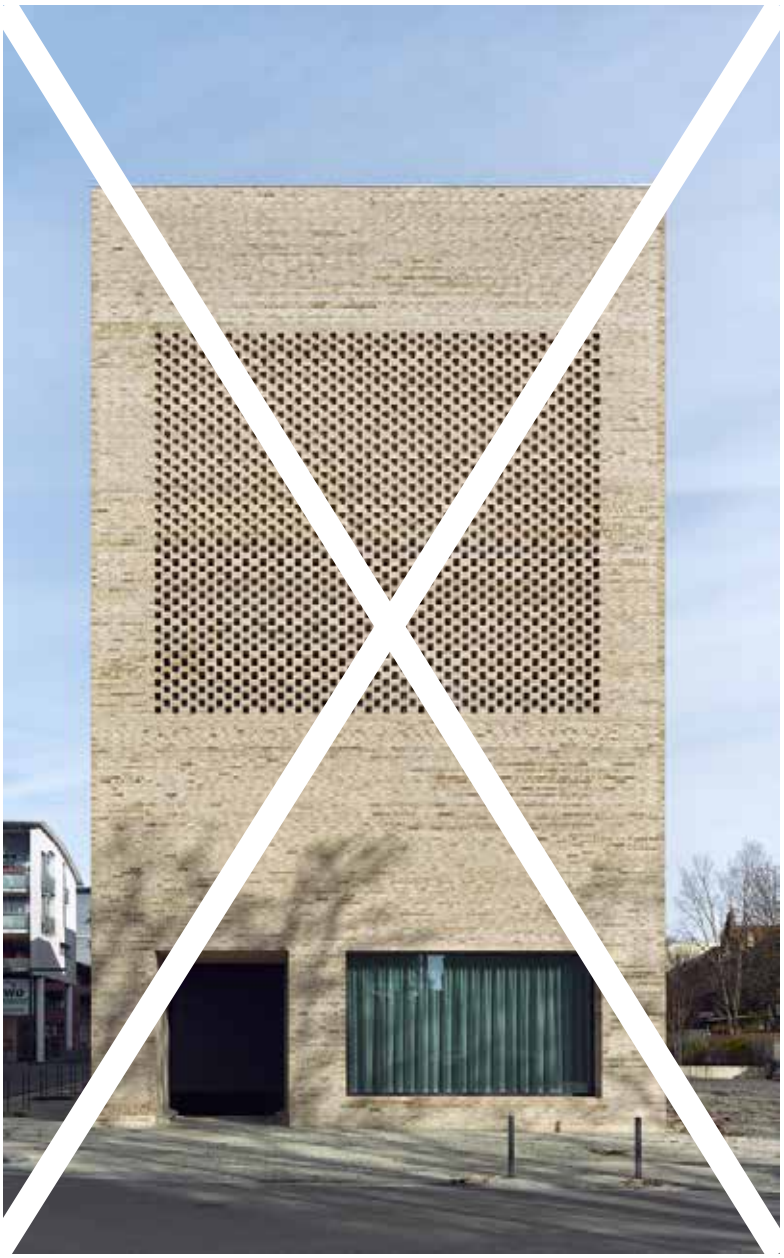
UNIVERSITY OF BIRMINGHAM
Lifschutz Davidson Sandilands

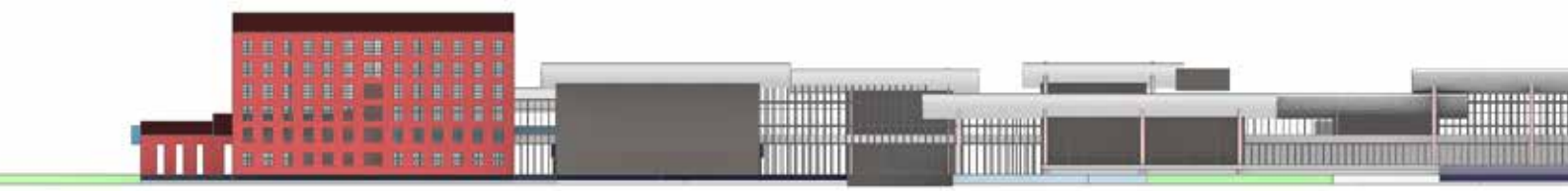
SAW SWEE HOCK
O'Donnell and Tuomey

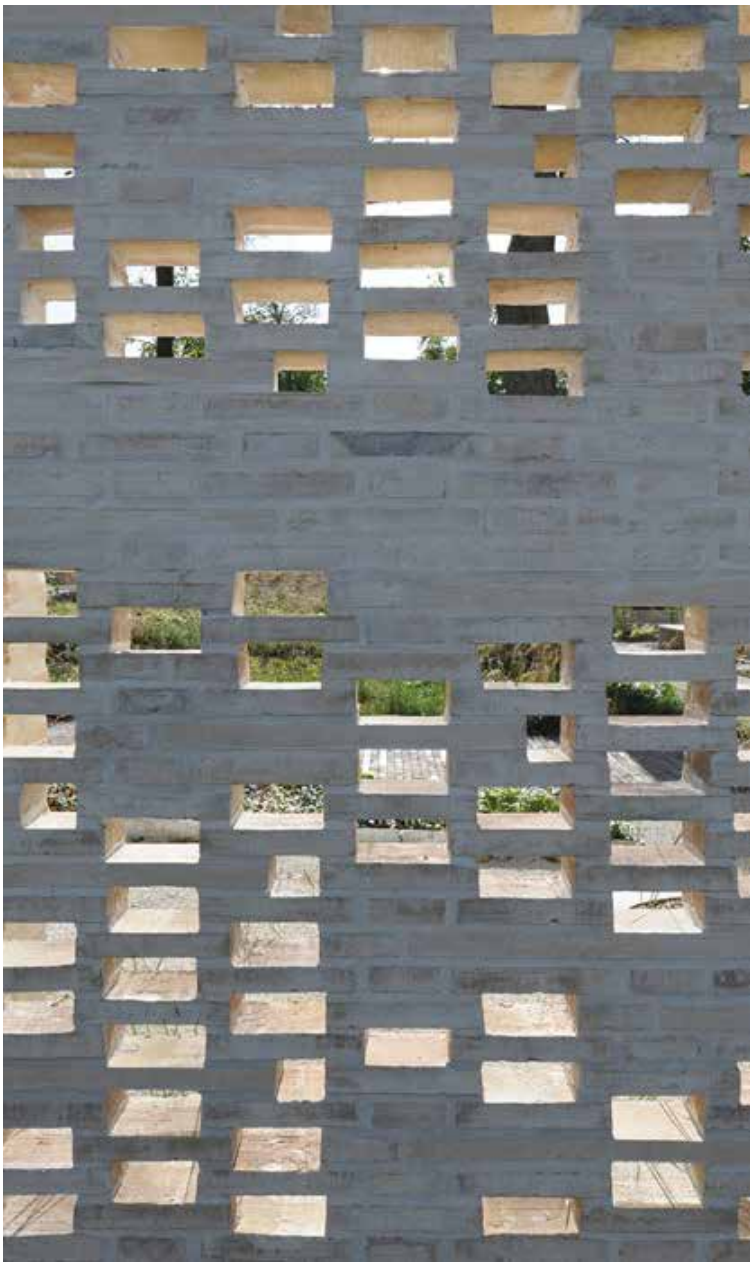












Wall M

Concept Image

Guest Lecture RIVER AS A TIDAL PARK by Marit Janse De Urbanisten Rotterdam 21.03.04

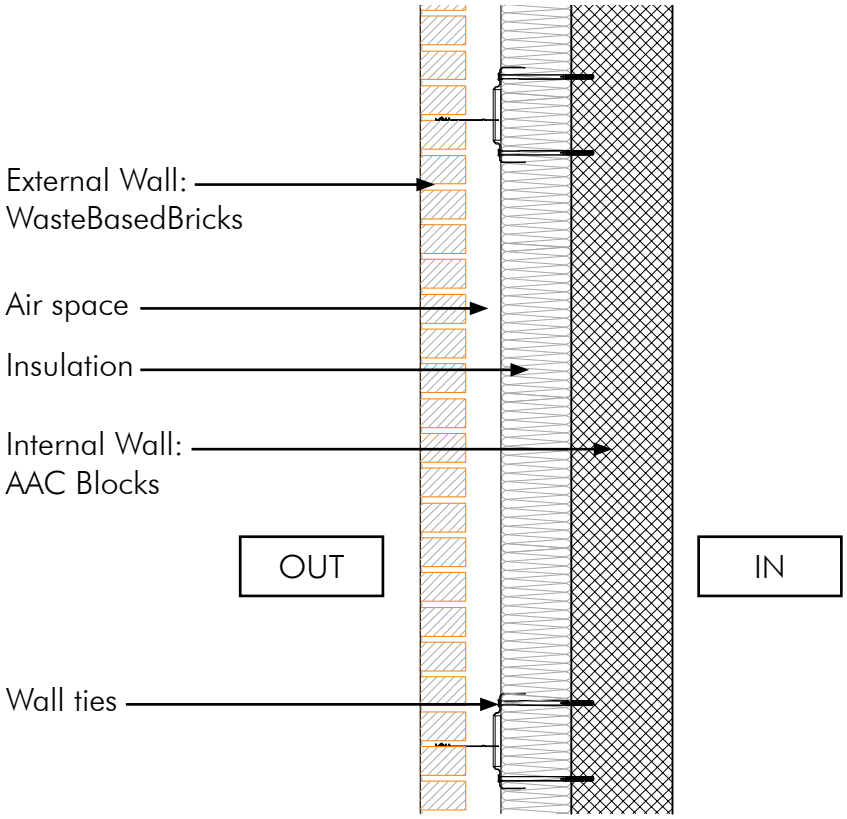
External Wall:
WasteBasedBricks




WasteBasedBricks which are produced from Netherlands based company are made from at le
waste. It is upcycling 91 kg waste / m2 and CO2 compensated production.

aterials

External Wall Section Detail

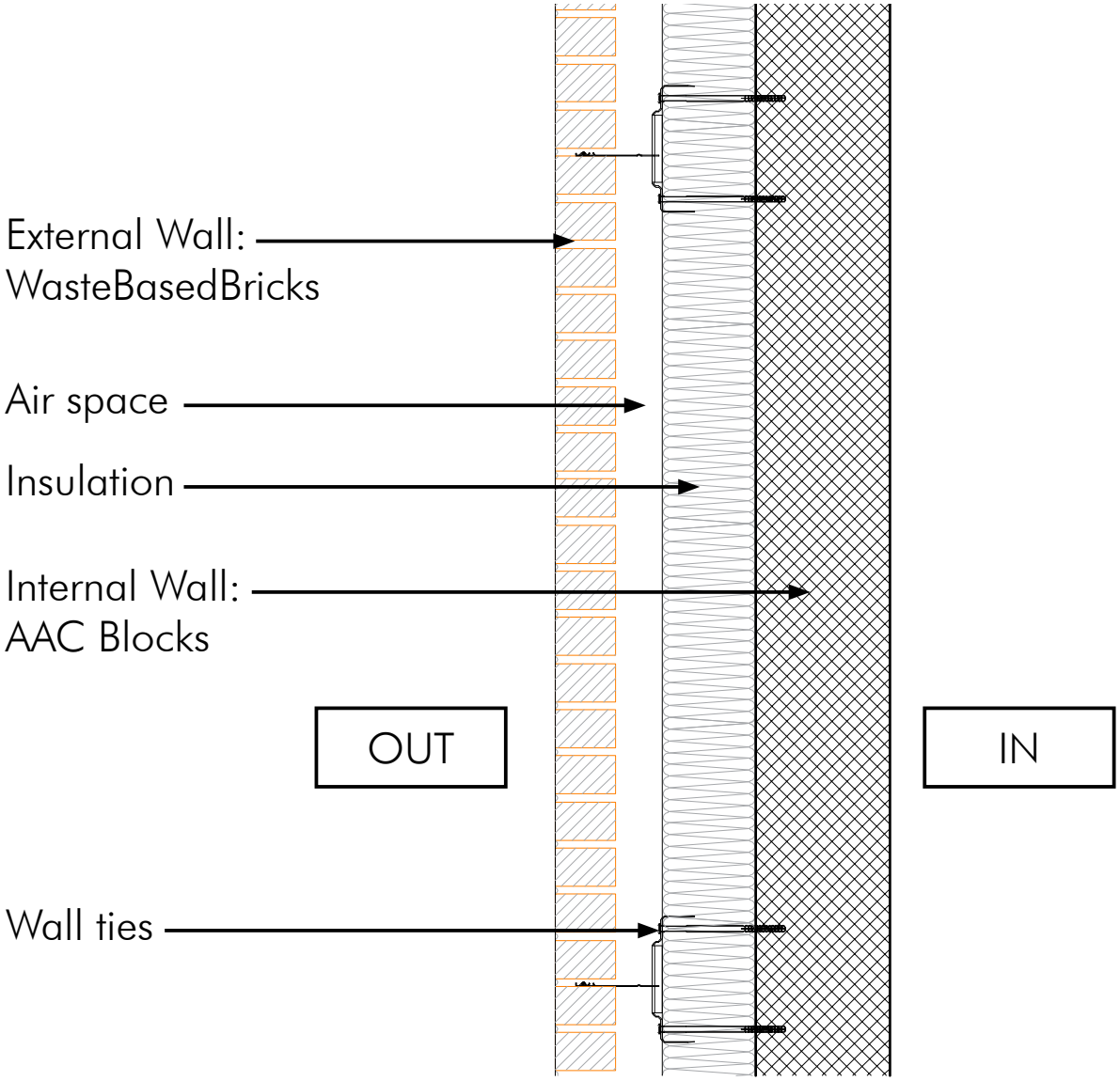


Internal Wall:
AAC Blocks

ast 60%

Compared to solid concrete blocks, AAC Blocks are low weight, high strength, and dimensional accuracy. AAC Blocks are used for load bearing as well as non-load bearing walls. It is made out of cement, sand, lime, gypsum, aluminium powder, water, flyash and an aeration agent. Waste of the AAC block is recycled and used again. Less amount of CO2 is emitted in the atmosphere.

External Wall Section Detail



Solid Concrete Blocks vs. AAC Blocks

	Concrete Blocks	CLC Blocks	AACBlocks
Uses	Both load bearing as well as non-load bearing walls	Build walls of low cost housing & internal partition walls Structures which require good sound insulation properties	Load bearingn as well as non-load bearing walls
Raw materials	Mixture of portland cement, water, sand and gravel	Cement, fly ash, water & foaming agent	Mixture of cement, sand, lime, gypsum, aluminum powder, water, flyash and an aeration agent
Dry Density	1800 to 2500 kg/m3	800 to 1800 kg/m3	451 to 1000 kg/m3
Compressive strength	4 to 5 N/mm2	2.5 to 25 N/mm2	2 to 7 N/mm2
Environmental Impact	Use considerable amout of water Less amount of CO2 is emitted in atmosphere	Utilize fly ash and helps in reducing solid waste for dumping Conserve top soil Very low amount of CO2 is emitted	Wasted of the AAC block is recycled and used again Less amount of CO2 is emitted in atmosphere

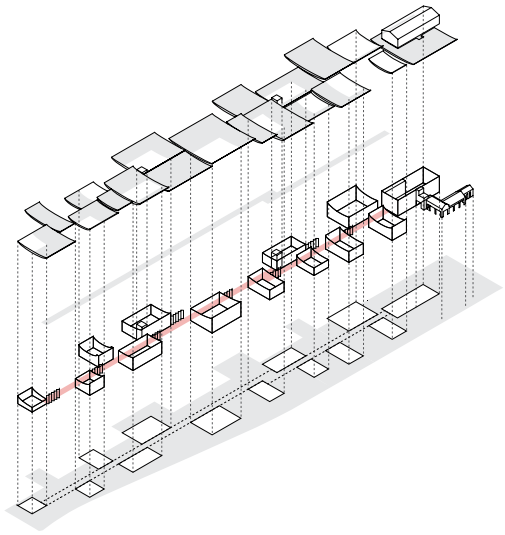
The Spine

Alternative-1
Sliding window doors

Alternative-2
Folding window doors

https://rabel.com.cy/aluminium-systems/rabel-3710-hea

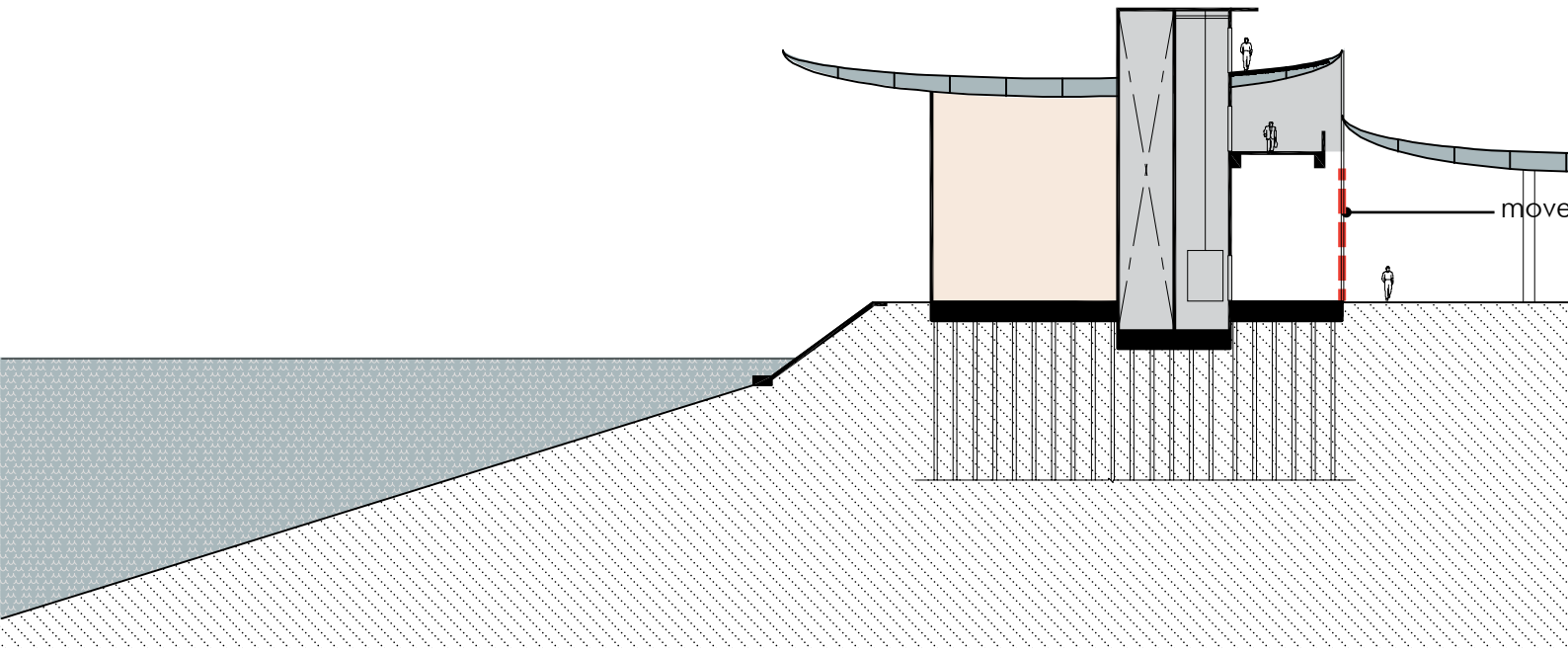
The Spine



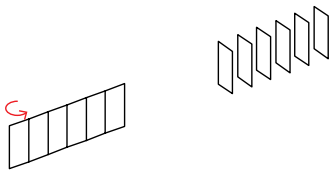
Alternative-3

Pivot hinge window doors

vy-duty-bi-folding-super-thermal-system



A



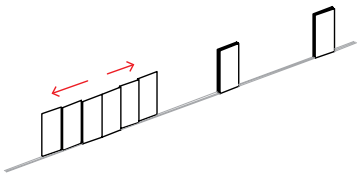
Pivot hinge walls

Pro
·Automatic or Manual

Con
·does not disappear

X

B



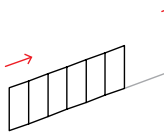
Sliding walls

Pro
·Automatic or Manual
·can be disappeared 100%

Con
·too many layers
·needs a space to hide at the end of the rail

X

C

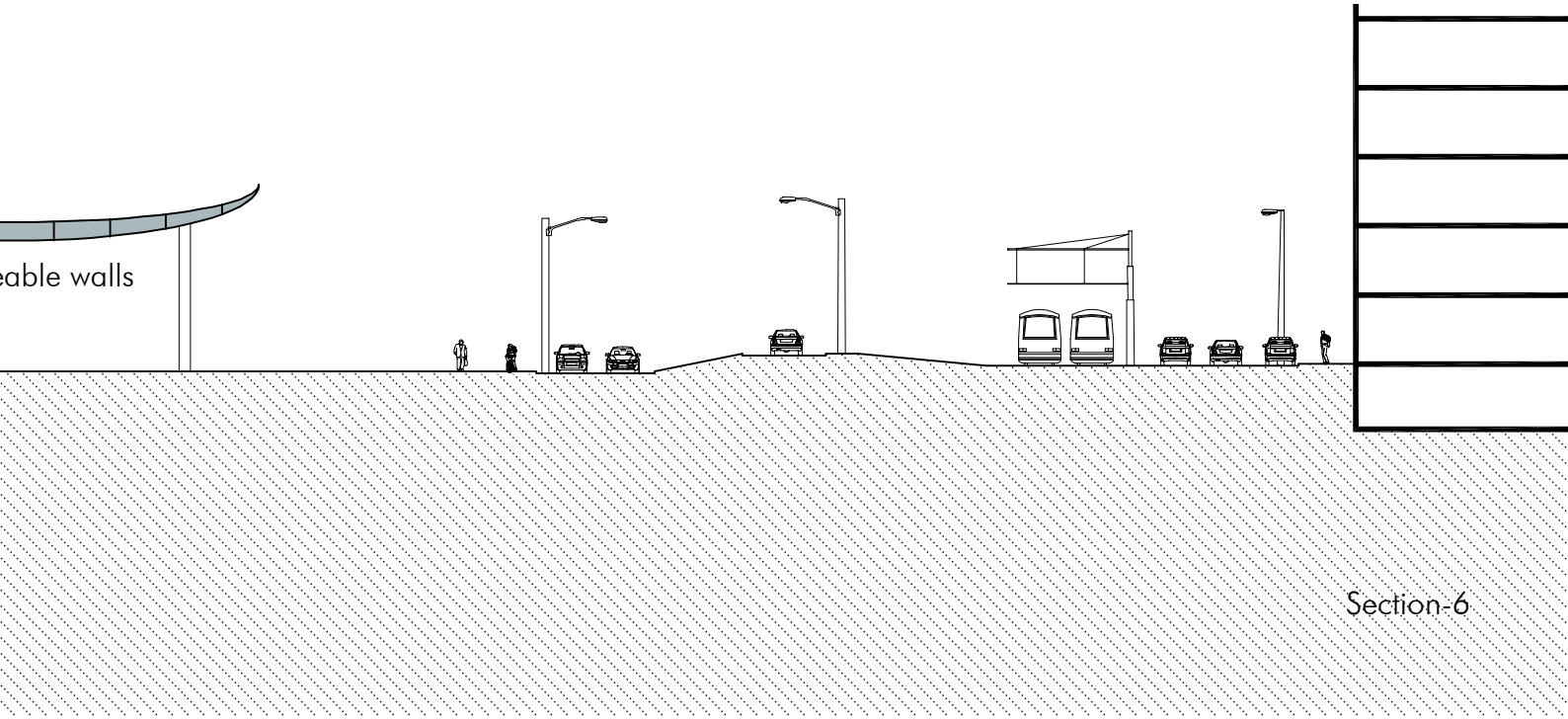


Folding walls

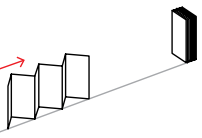
Pro
·Automatic or
·can be disap

Con
·needs a spac
end of the rai

O



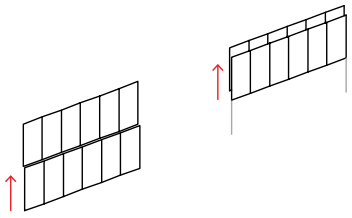
Section-6



Manual
peared 100%

e to hide at the
l

D



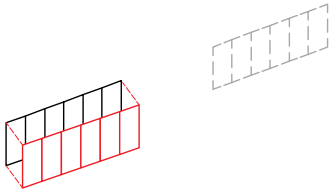
Lifting walls

Pro
·Automatic
·can use 1st floor
·does not need extra space to hide

Con
·can be seen

○

E



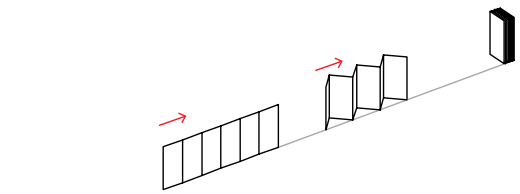
Removeable walls

Pro
·Manual
·can be disappeared 100%

Con
·needs a space to store
·not easy to change

△

Folding walls



1 → 2 → 3

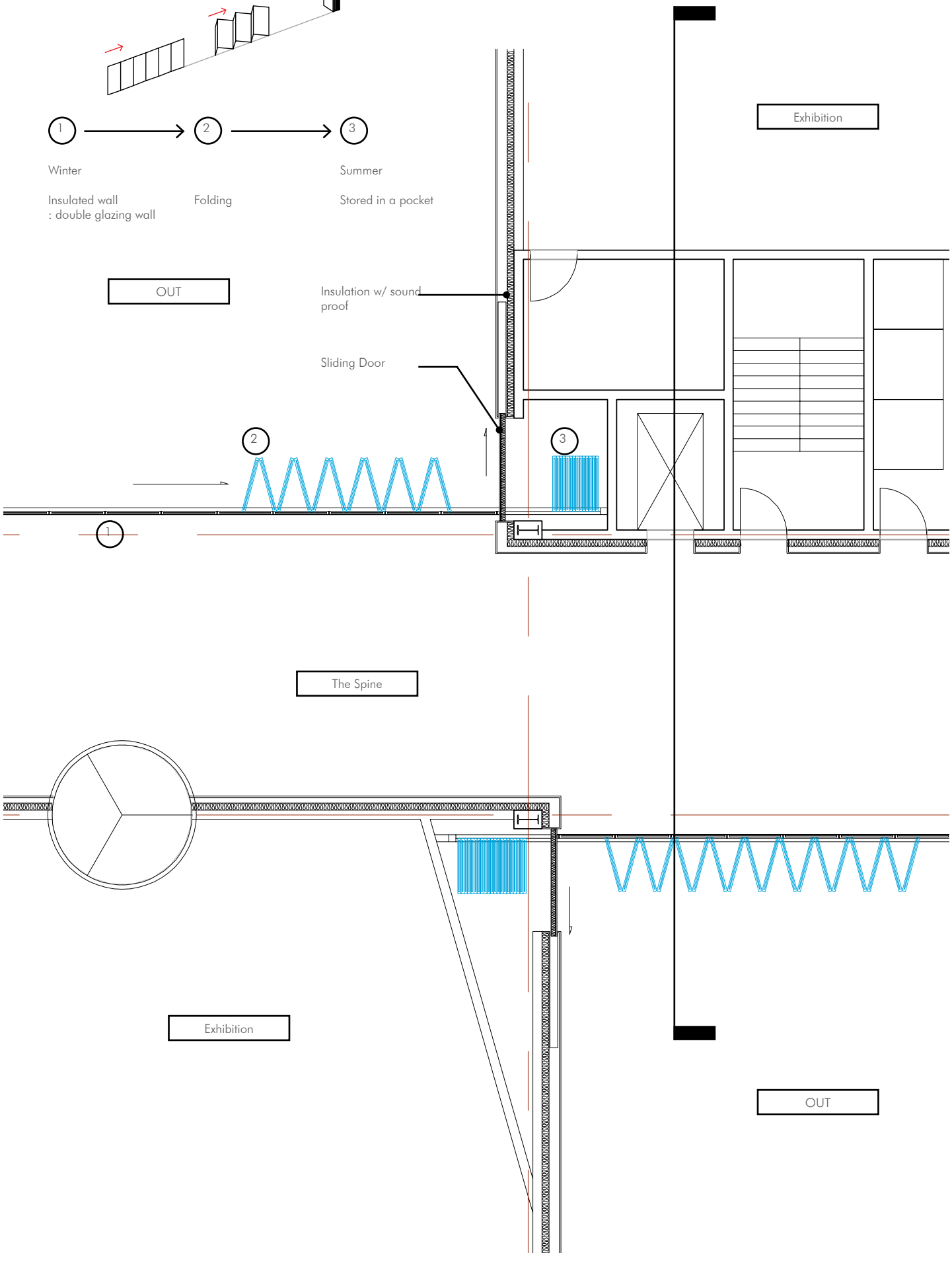
Winter

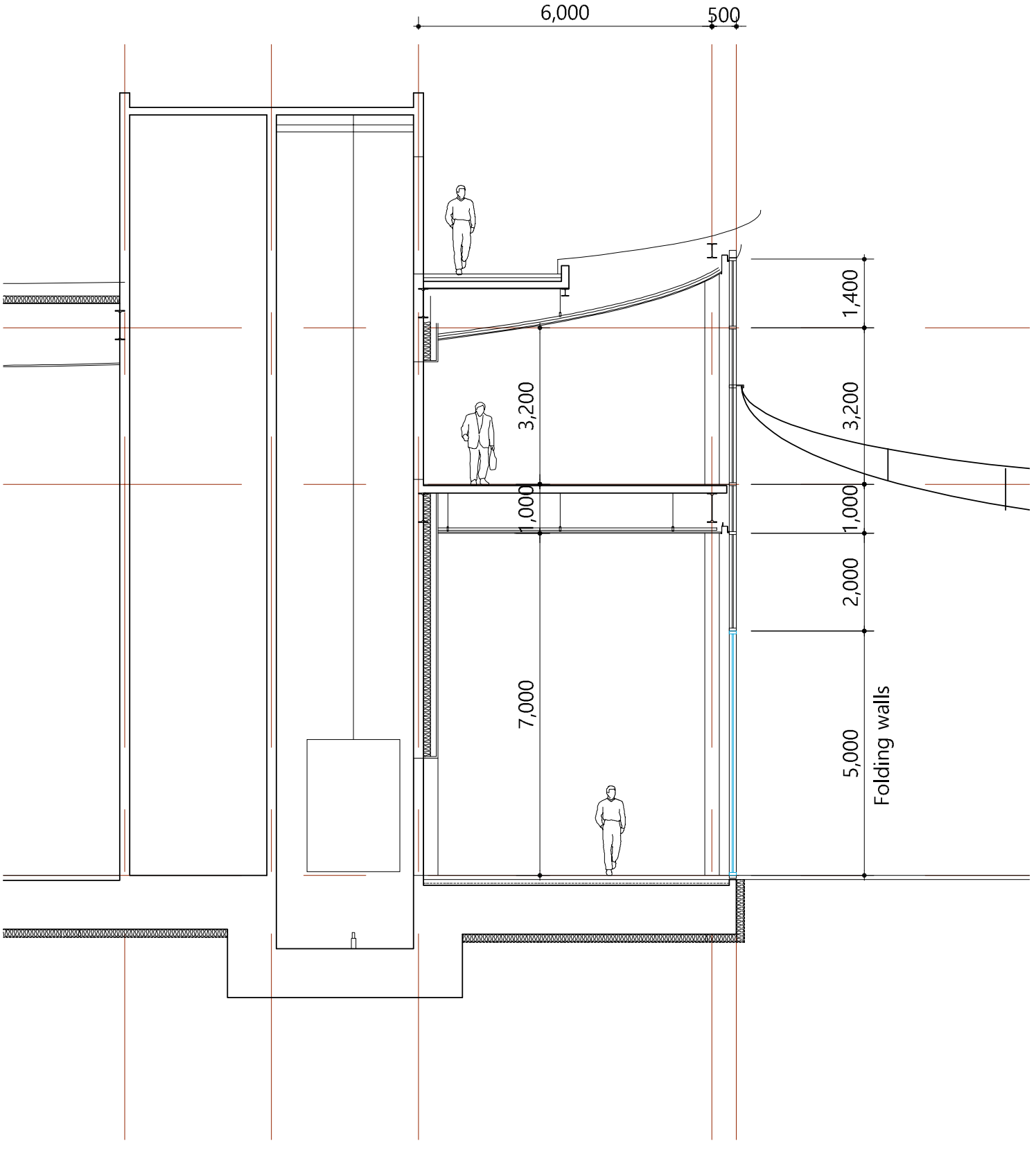
Insulated wall
: double glazing wall

Folding

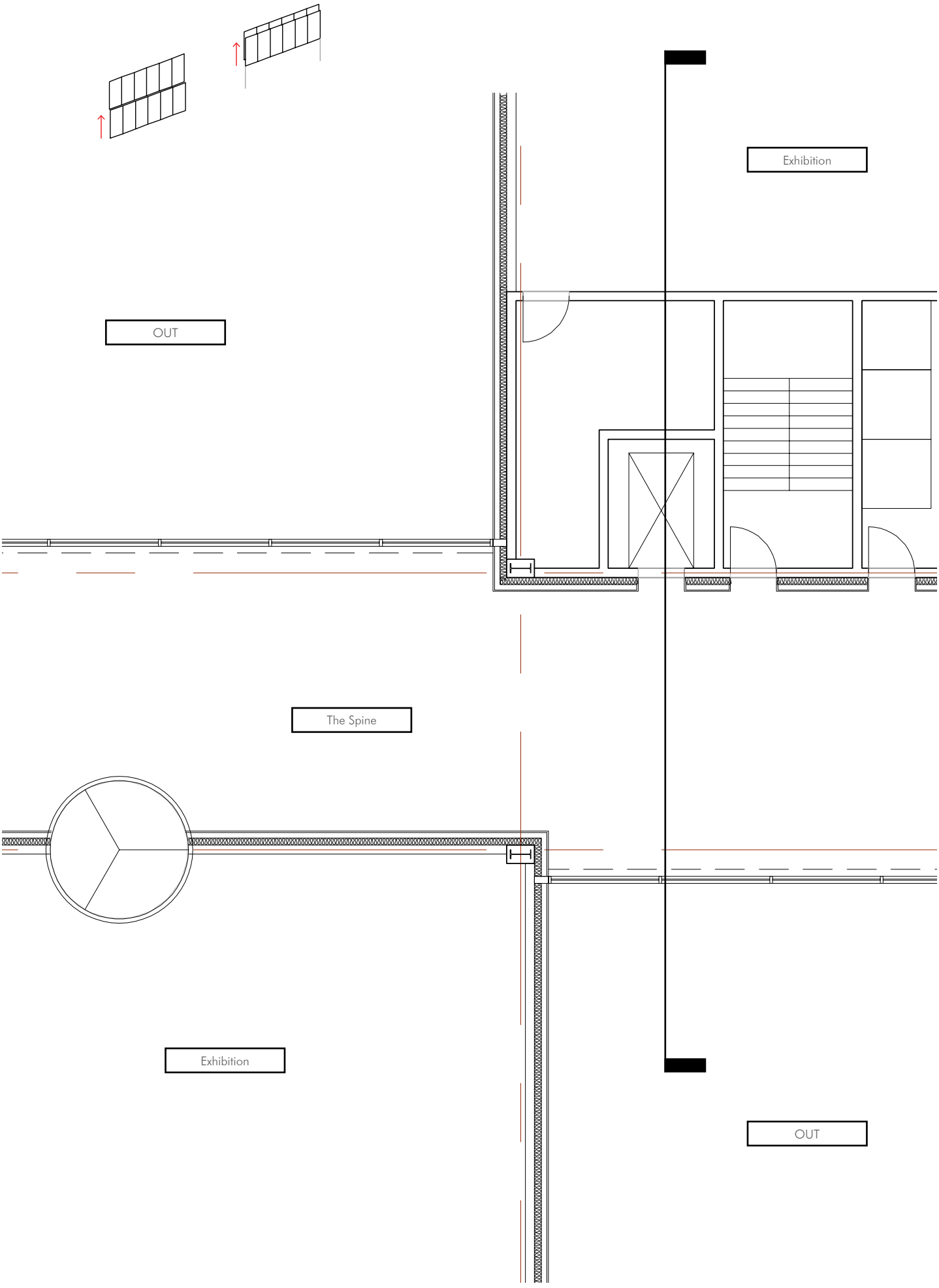
Summer

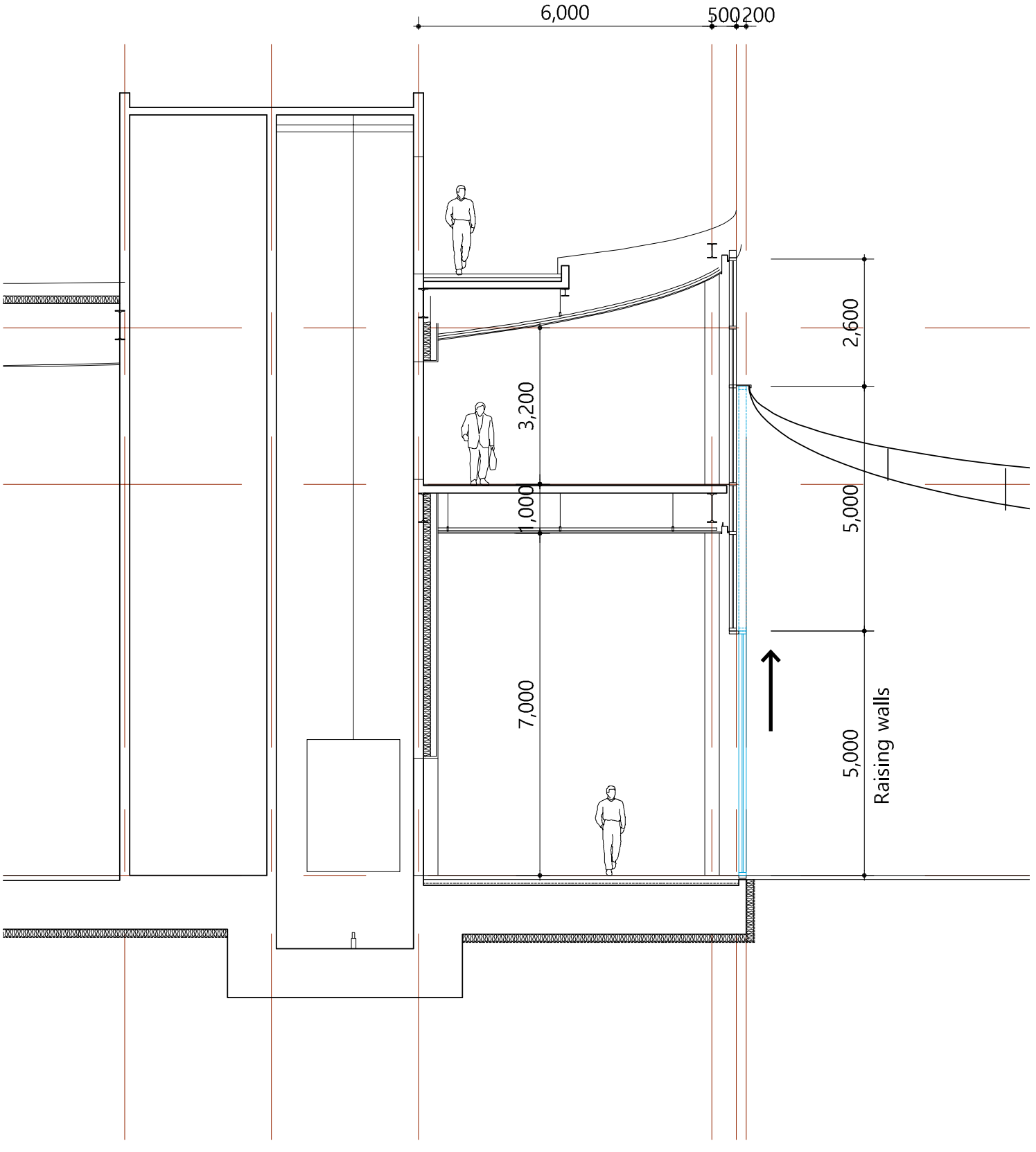
Stored in a pocket




6,000
500
1,400
3,200
1,000
2,000
5,000
3,200
1,000
7,000
Folding walls

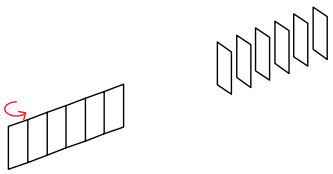
Lifting walls




6,000
500
200
2,600
3,200
1,000
5,000
7,000
5,000
Raising walls

The Spin

A



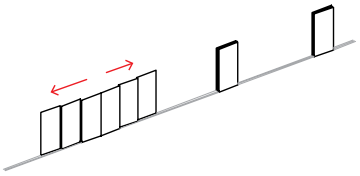
Pivot hinge walls

Pro
·Automatic or Manual

Con
·does not disappear

X

B



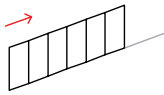
Sliding walls

Pro
·Automatic or Manual
·can be disappeared 100%

Con
·too many layers
·needs a space to hide at the end of the rail

X

C



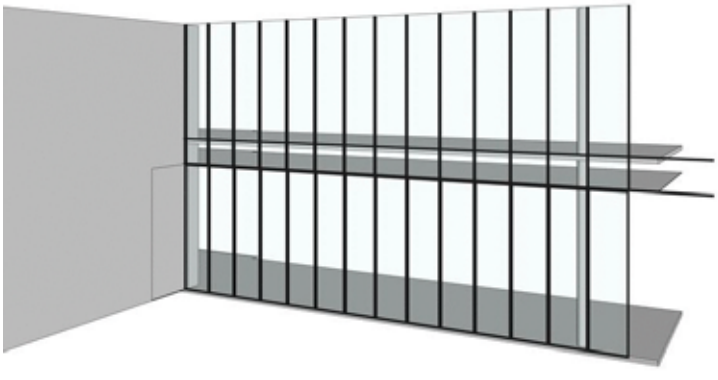
Folding walls

Pro
·Manual
·can be disap

Con
·needs a spac
end of the rai

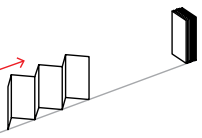
O

C



D-

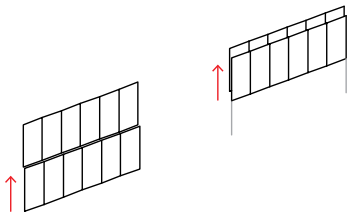
e System



peared 100%

e to hide at the
l

D



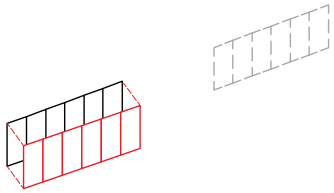
Lifting walls

Pro
·Automatic
·can use 1st floor
·does not need extra space to hide

Con
·Automatic: requires electricity
·can be seen

Δ

E



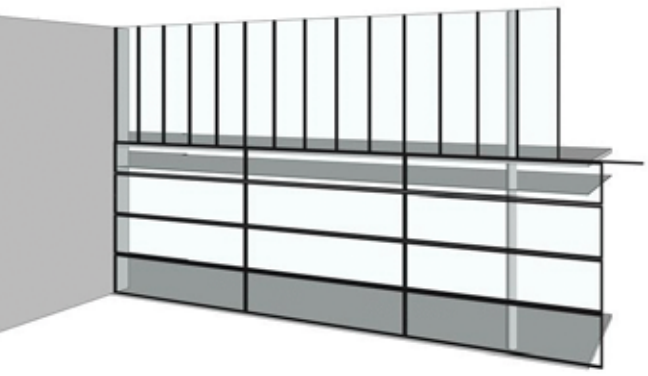
Removeable walls

Pro
·Manual
·can be disappeared 100%

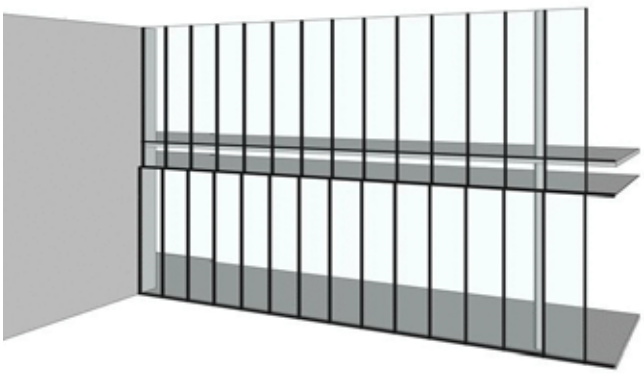
Con
·needs a space to store
·not easy to change

Δ

-1



D



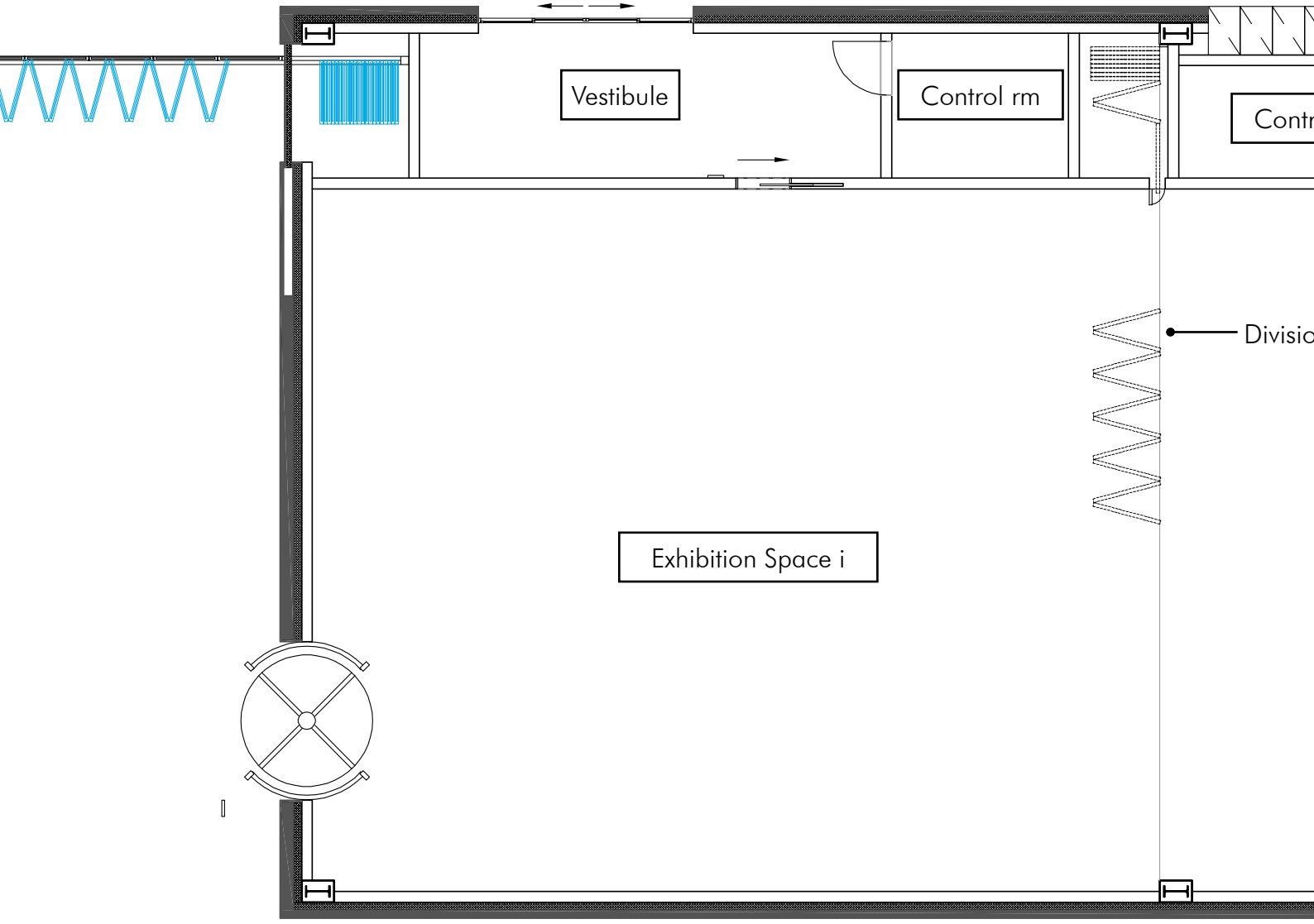
Technical Specifications

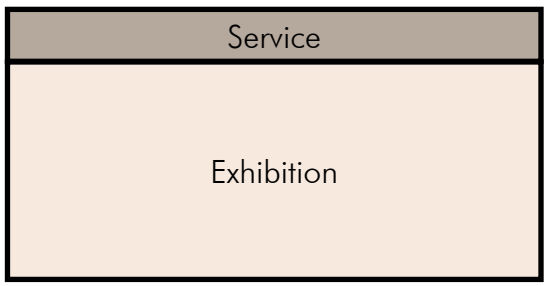
Technical characteristics

Frame Height	**35 / 49 / 71 / 90** mm
Sash Depth	**60** mm
Sash Height	**60** mm
Type	**Fold & Slide**
Max. Weight per Sash	**260** Kg
Max. Sash Width	**1.2** m
Max. Sash Height	**5** m
Glazing Width Possibilities	**32** mm
Maximum Locking Points	**3**
Thermal Break Width	**16-24** mm
Sealing Type	**4 Gaskets**

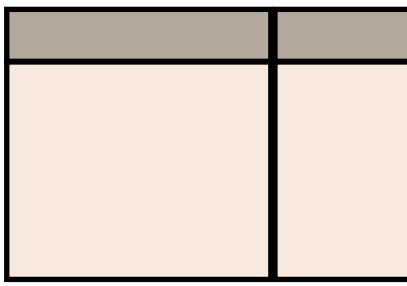
Performances

Fabrication Thermal Transmittance EN ISO 10077-2 (U_w)	**≥1.6** W/(m^2K)

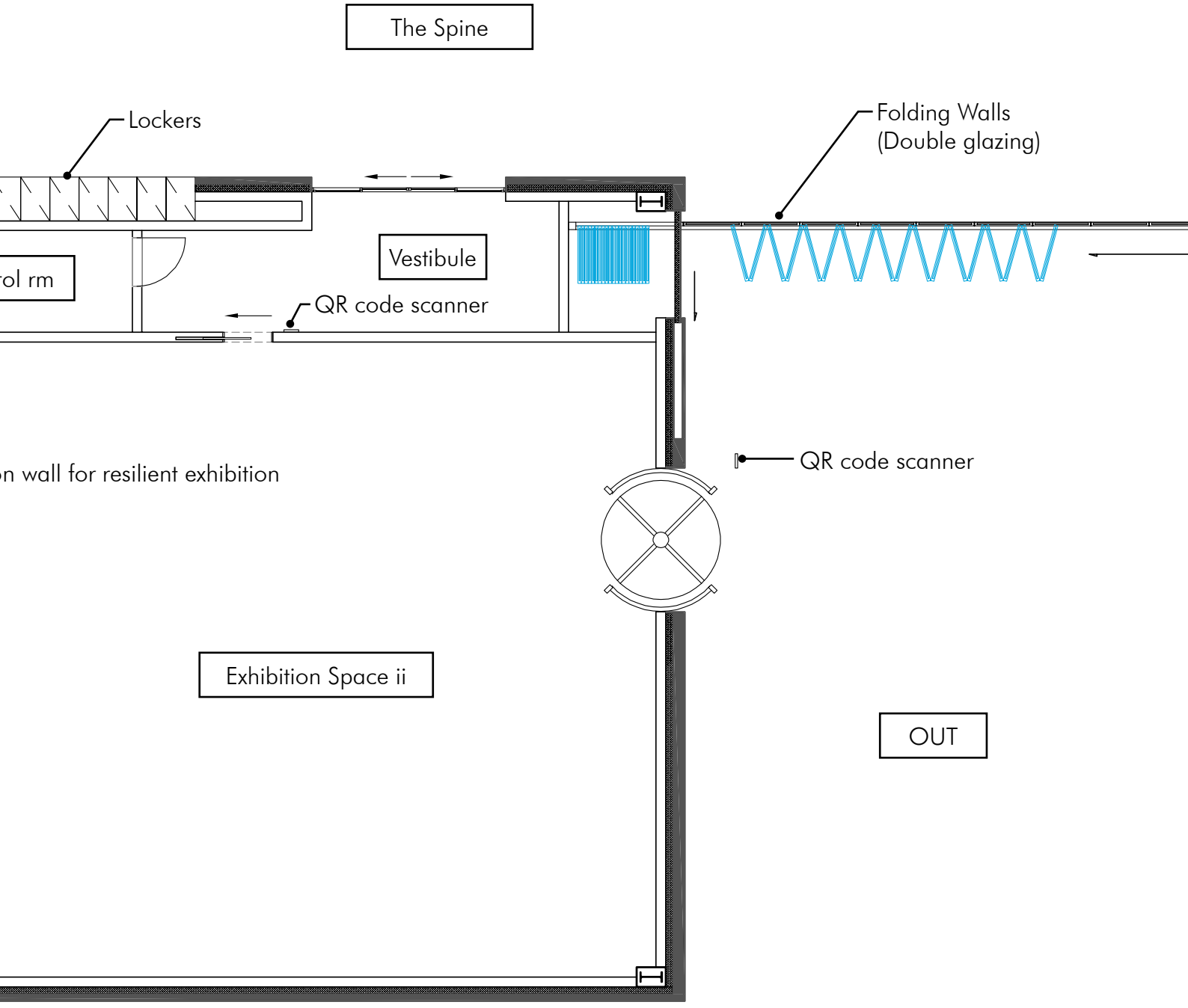


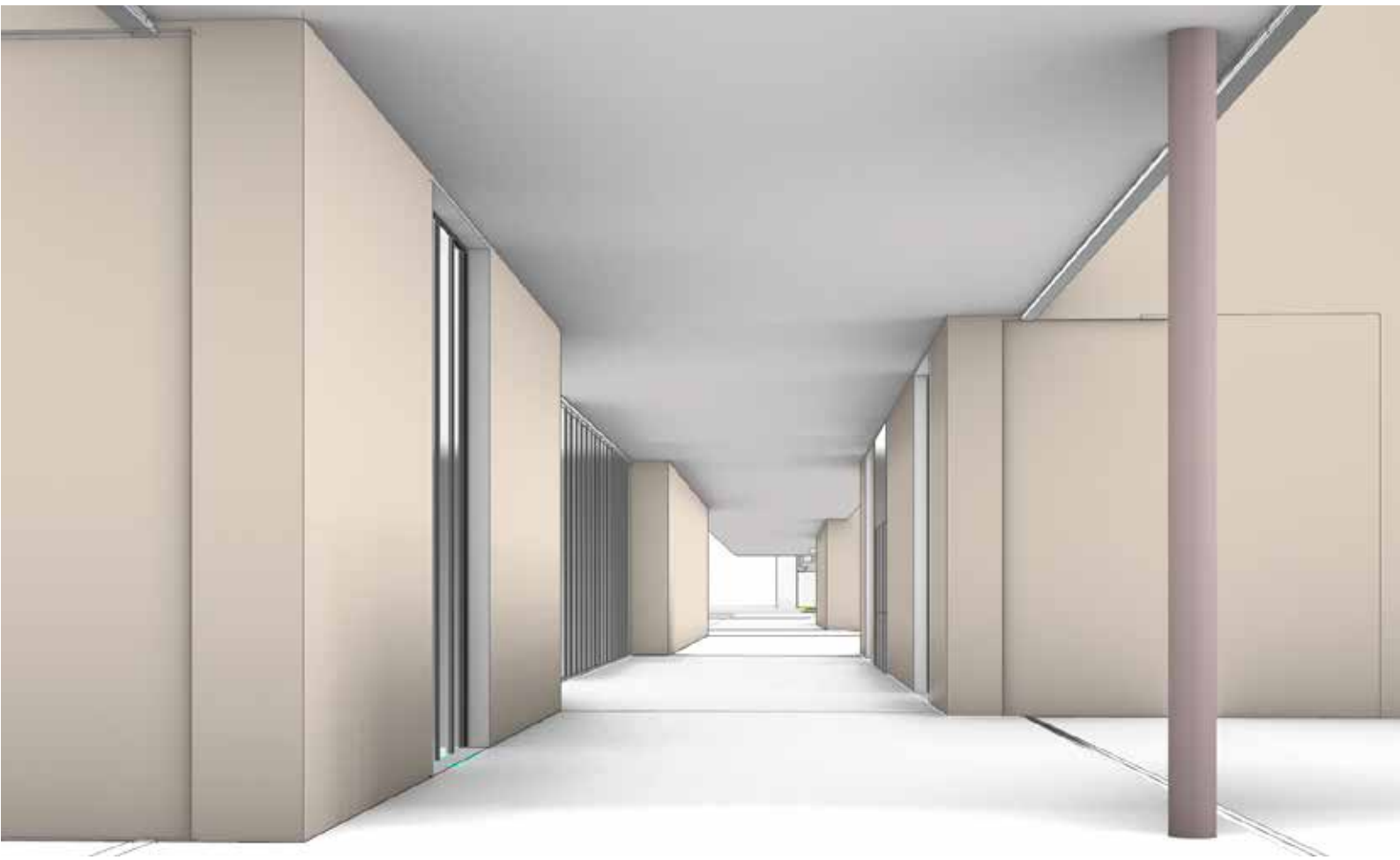


Mode I

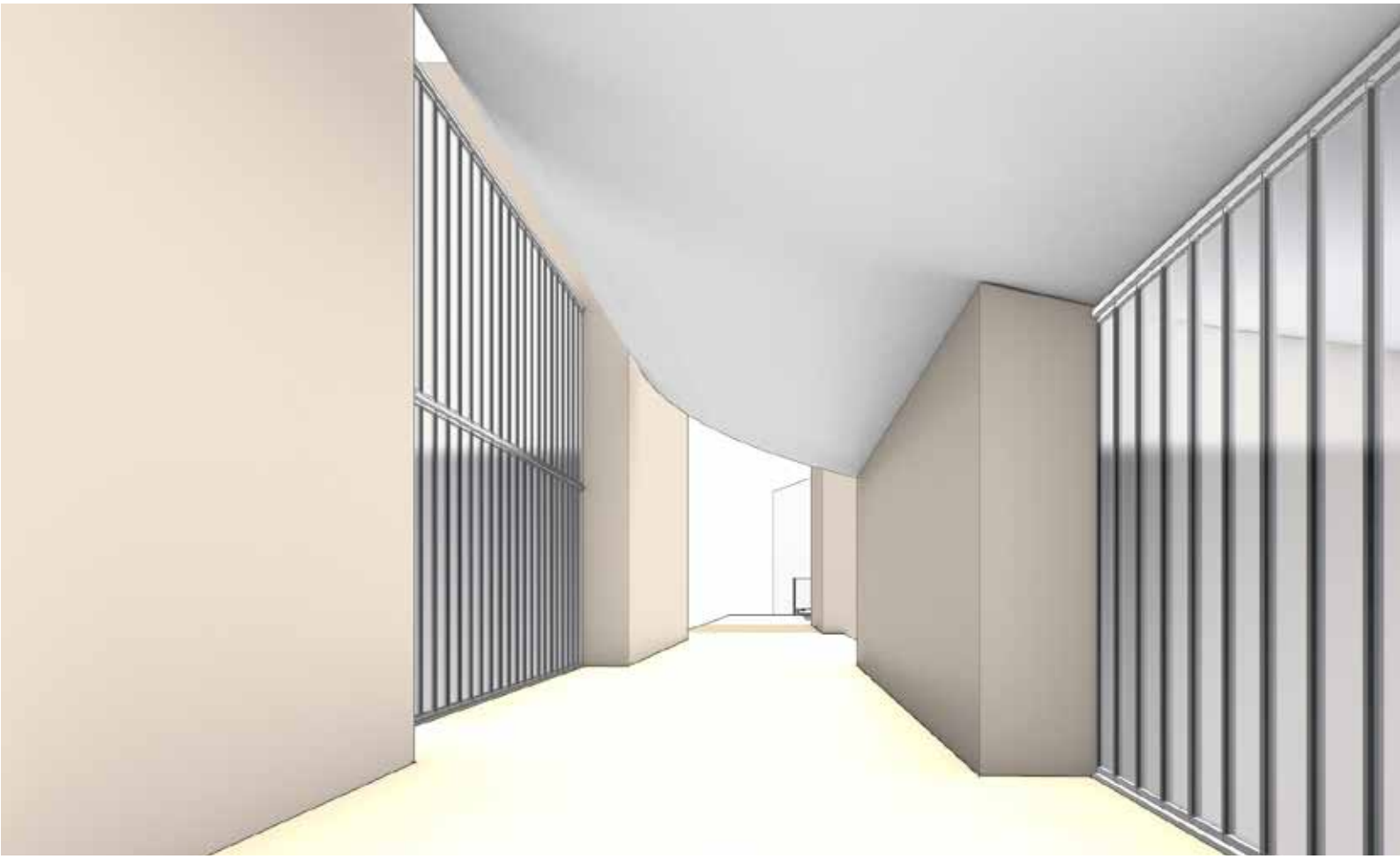


Mode II


The Spine
Lockers
Folding Walls
(Double glazing)
Vestibule
QR code scanner
QR code scanner
Exhibition Space ii
OUT



GF The Spine - Summer



1st F The Spine

GF The Spine - Winter

The S

Spine

Winter

People can stay in the spine at a comfortable temperature while enjoying exhibitions.They can also use doors in the spine to move in and out to the waterfront and the town.

Summer

In good weather, the spine disappears and the indoor space becomes outdoor space for more interactive activities.

The S

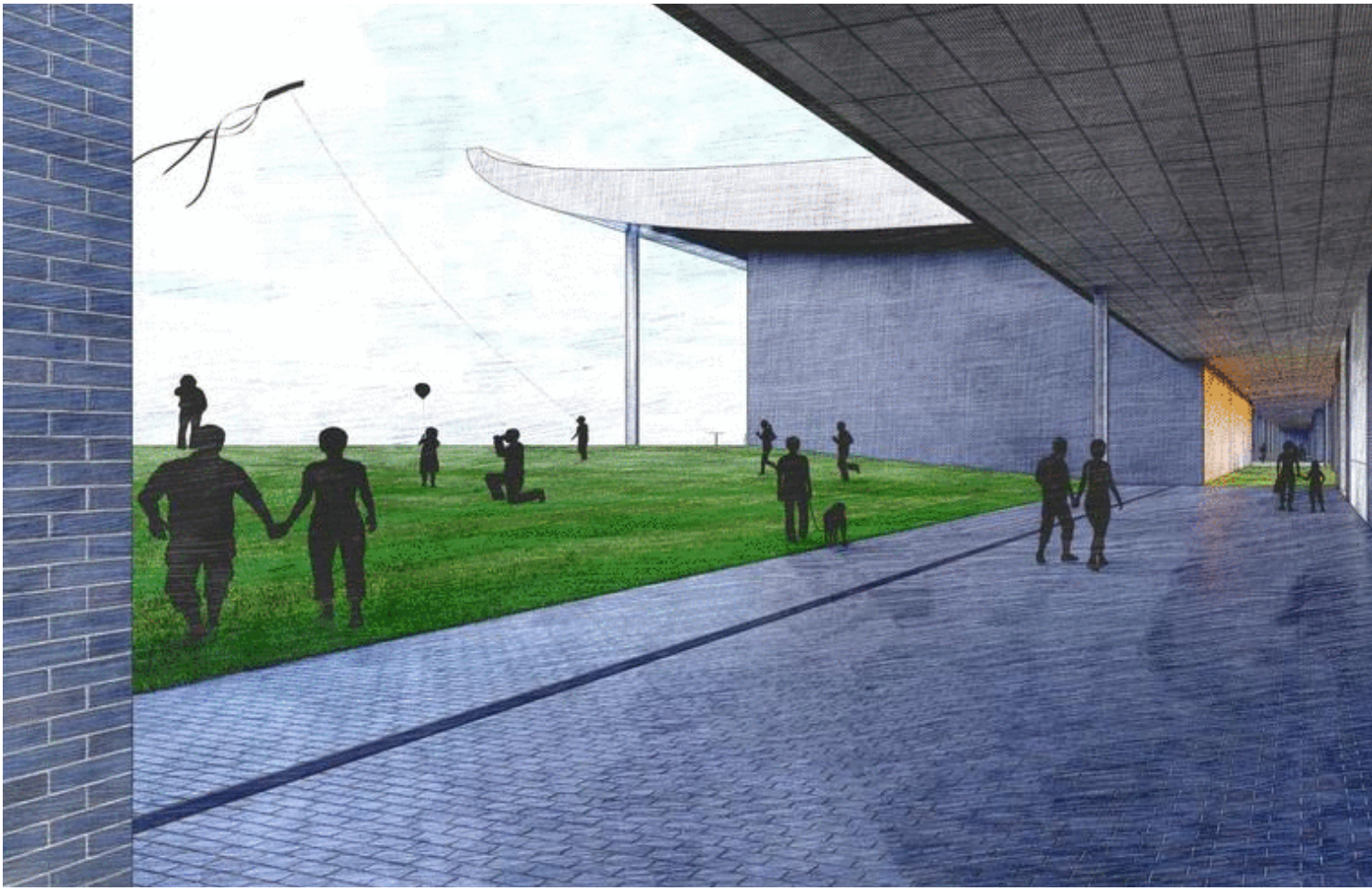
Spine

Winter

Due to cold weather, the spine is closed to keep the building warm. Since it's material has high transparency, it gives an open view.

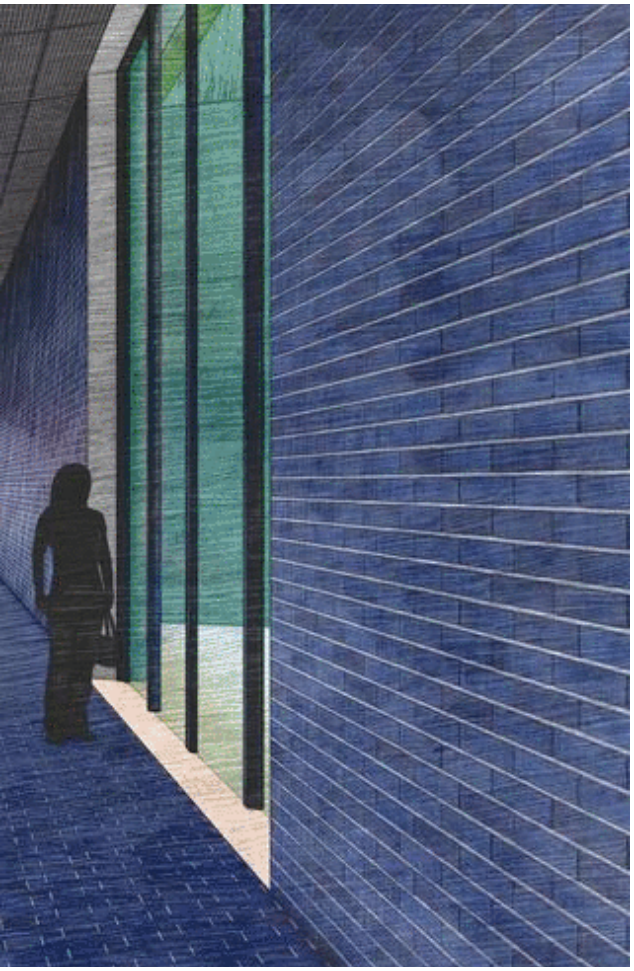
Summer

When the temperature is comfortable enough, the spine disappears to create a porous view and it welcomes people to the waterfront easily.



Winter

People can stay in the spine at a comfortable temperature while enjoying exhibitions.They can also use doors in the spine to move in and out to the waterfront and the town.



Summer

In good weather, the spine disappears and the indoor space becomes outdoor space for more interactive activities.

The Roof

Effect: Subtle

Material: White matte concrete

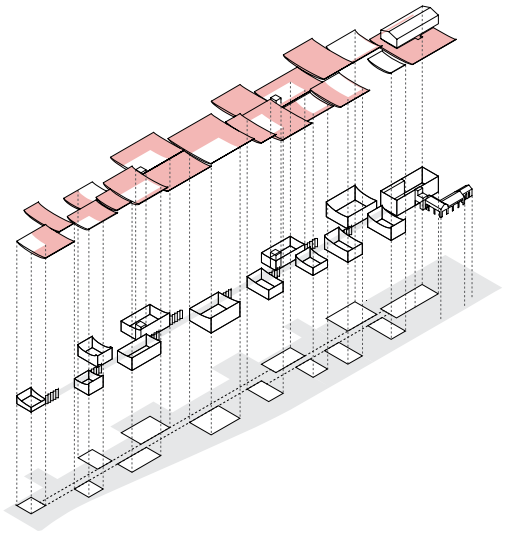
Blurring Reflection

White steel plate

Blurring (middle) Re

Ripple metal panel

The Roof



flection

High Reflection

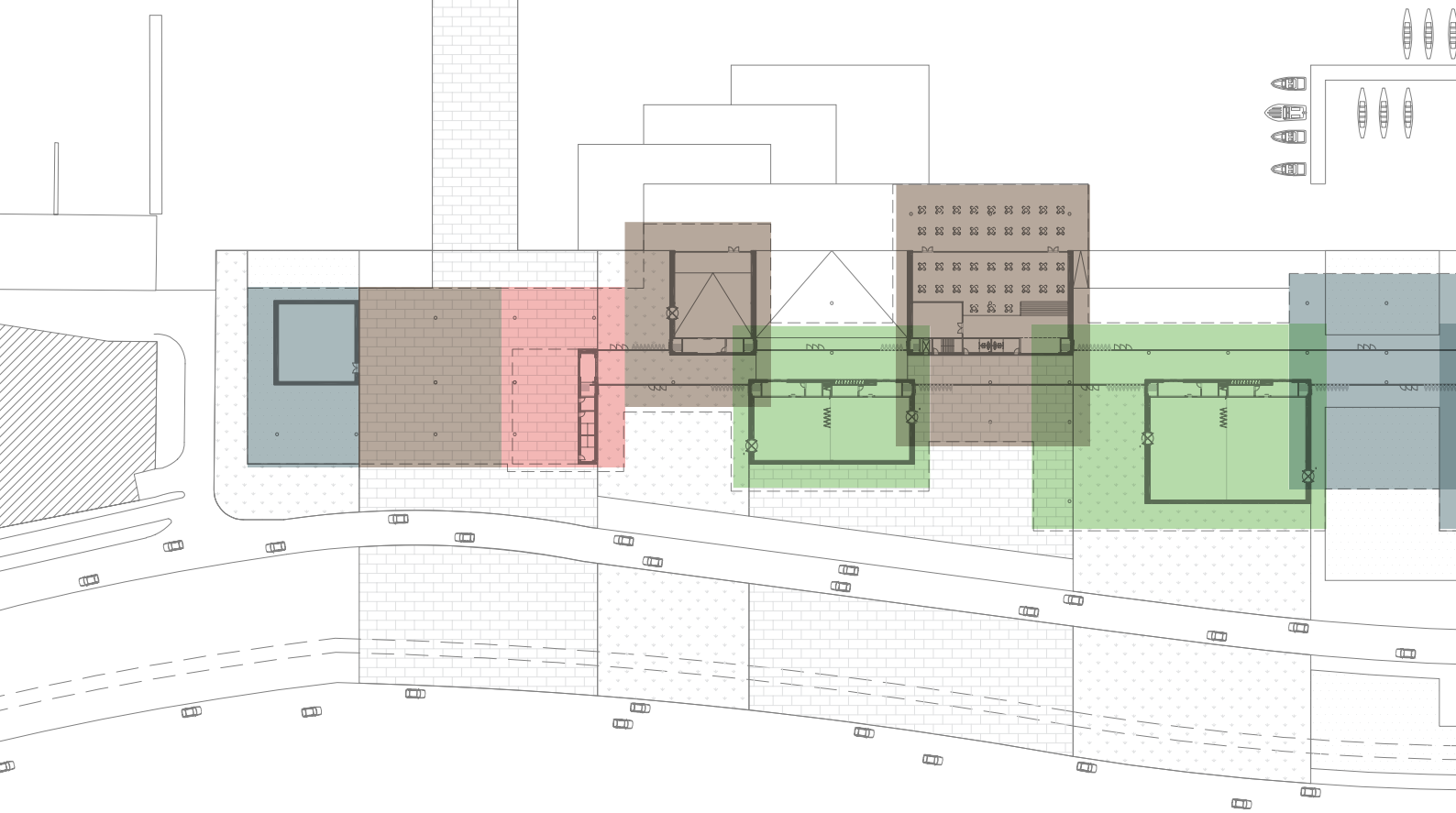
Stainless steel panel

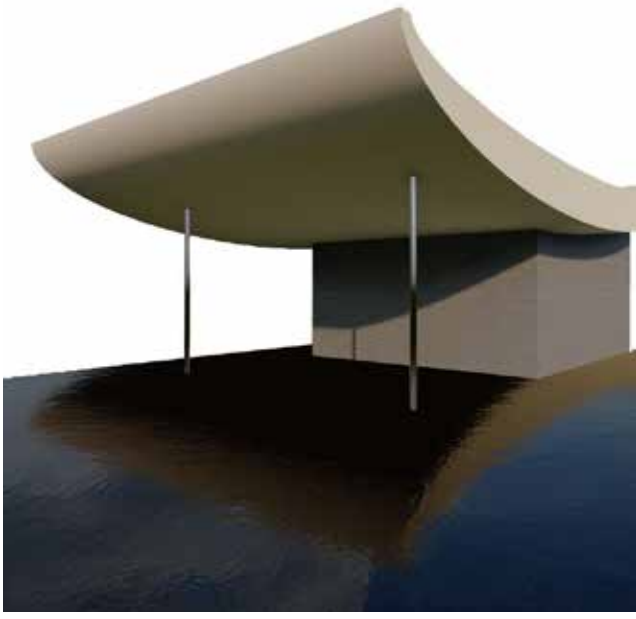
Media Facade

LED panel

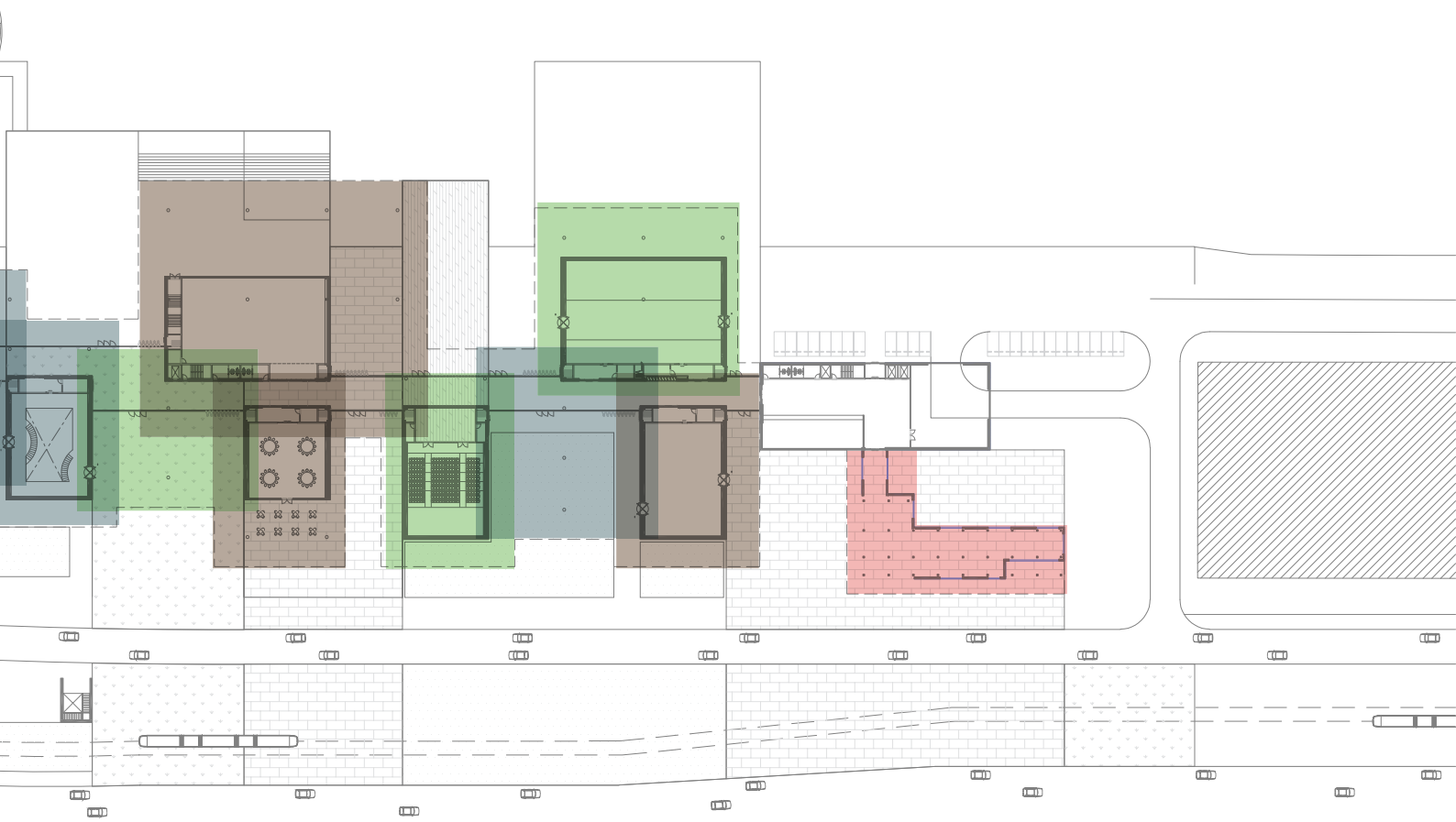
Clear Image

Activities an



	TYPE A	TYPE B
Roof materials:	Mirror Stainless Steel	Matt Ceiling
		
Activities:	Movement	Water Garden

nd Materials



TYPE C

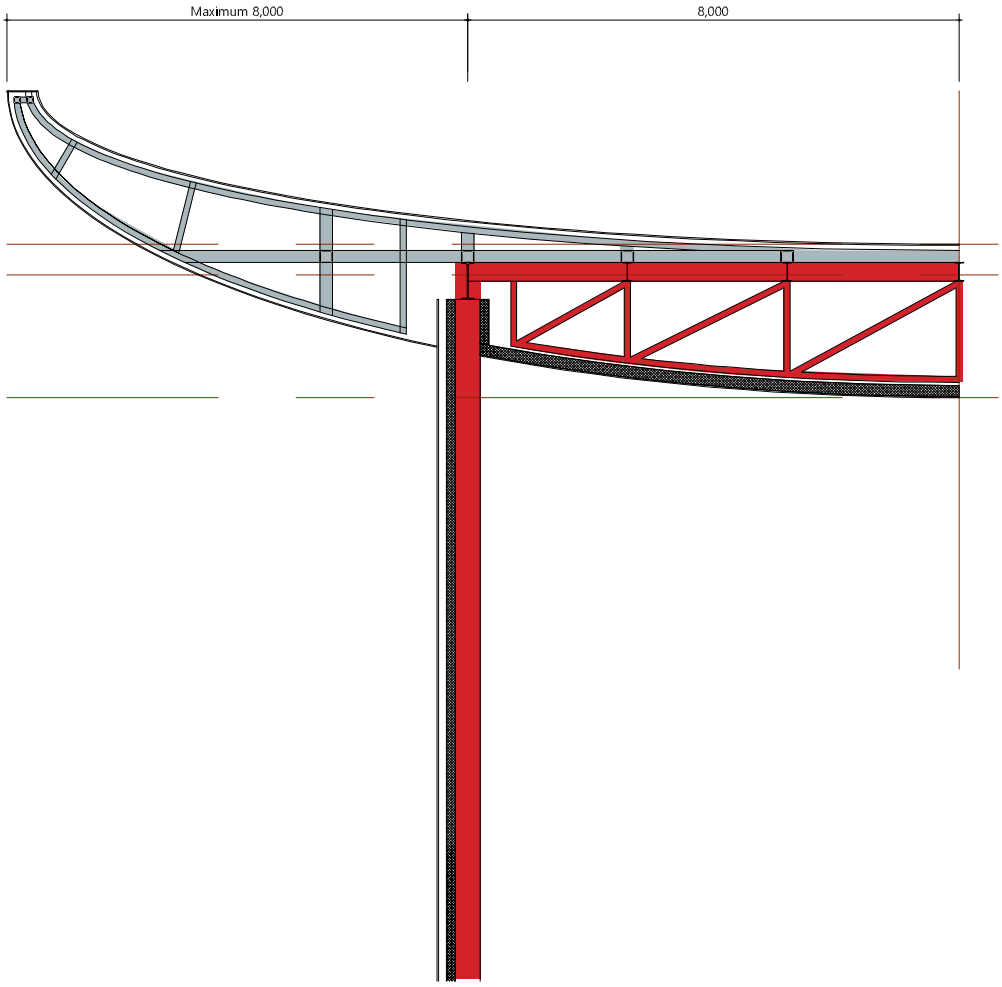
Perforated Ceiling

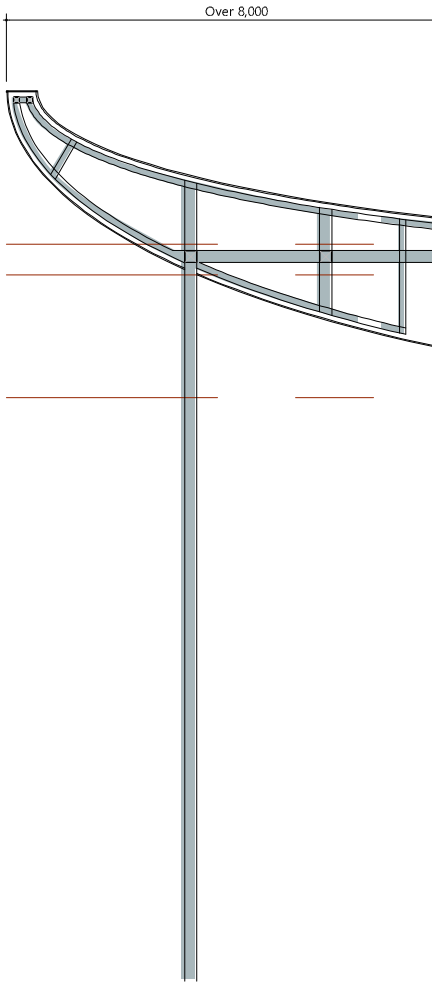
Green Garden

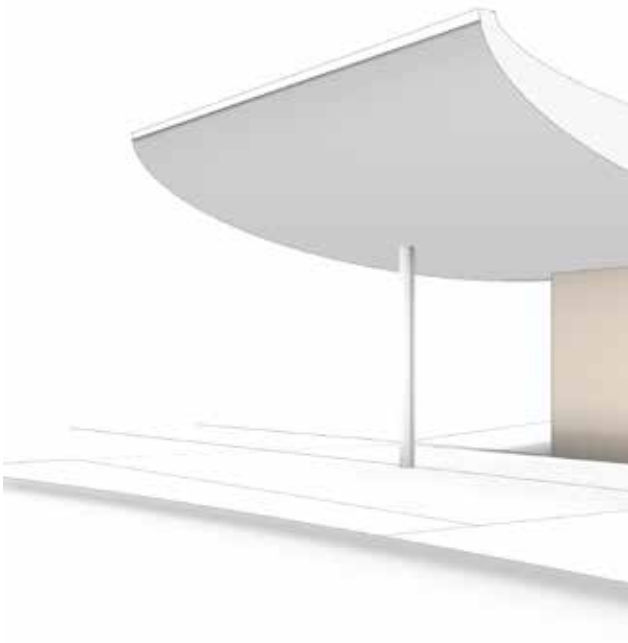
TYPE D

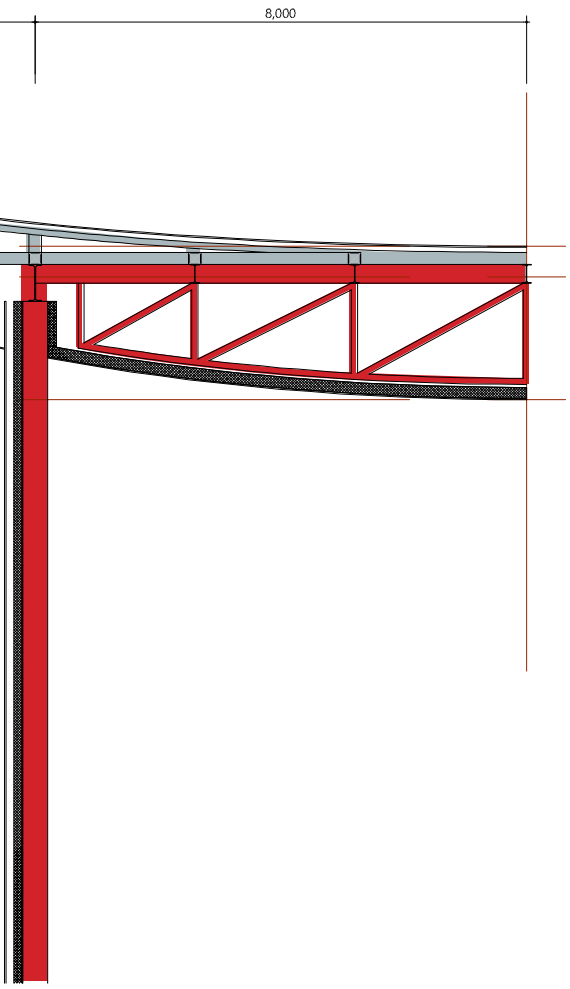
Media Ceiling

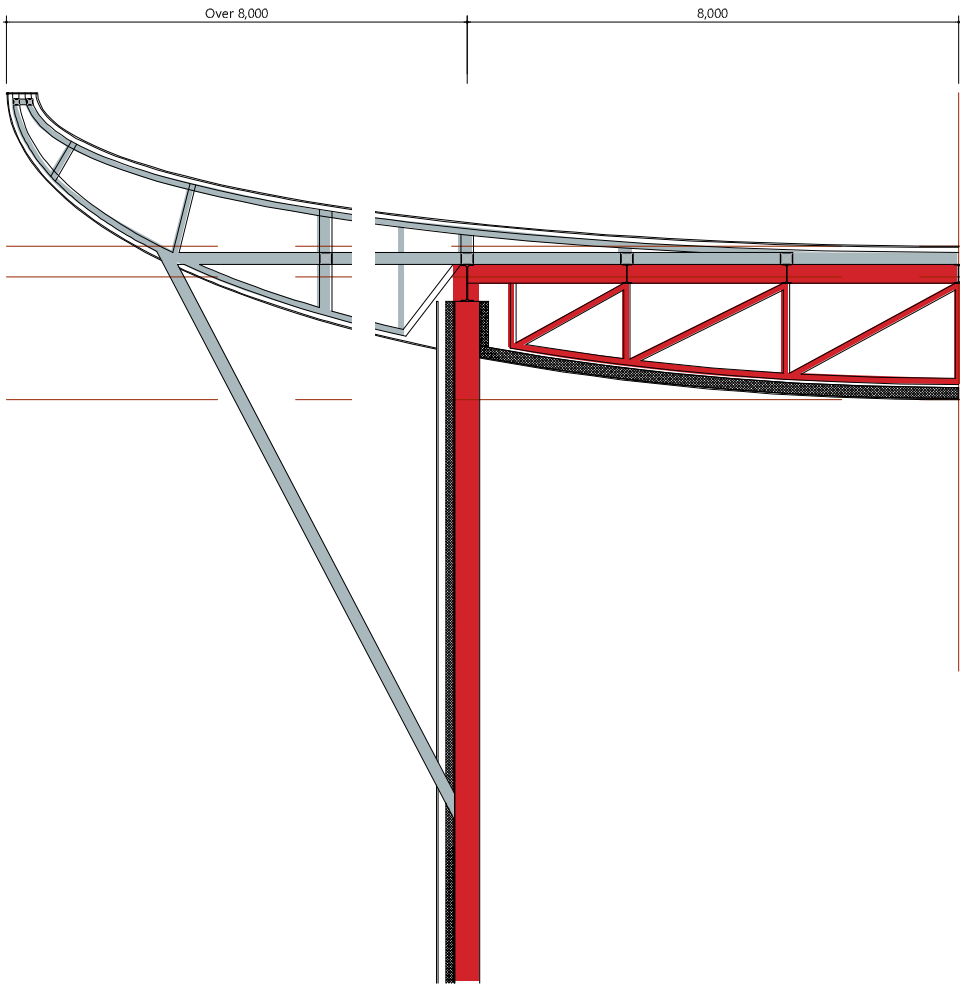
Main Entrance

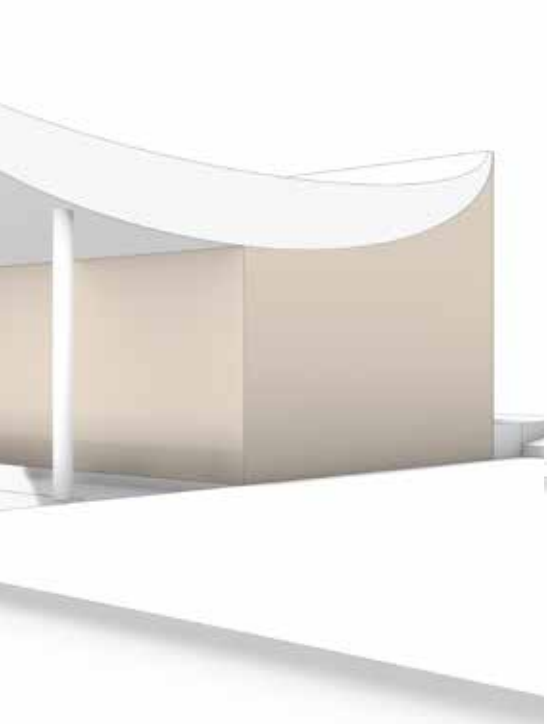

Maximum 8,000
8,000

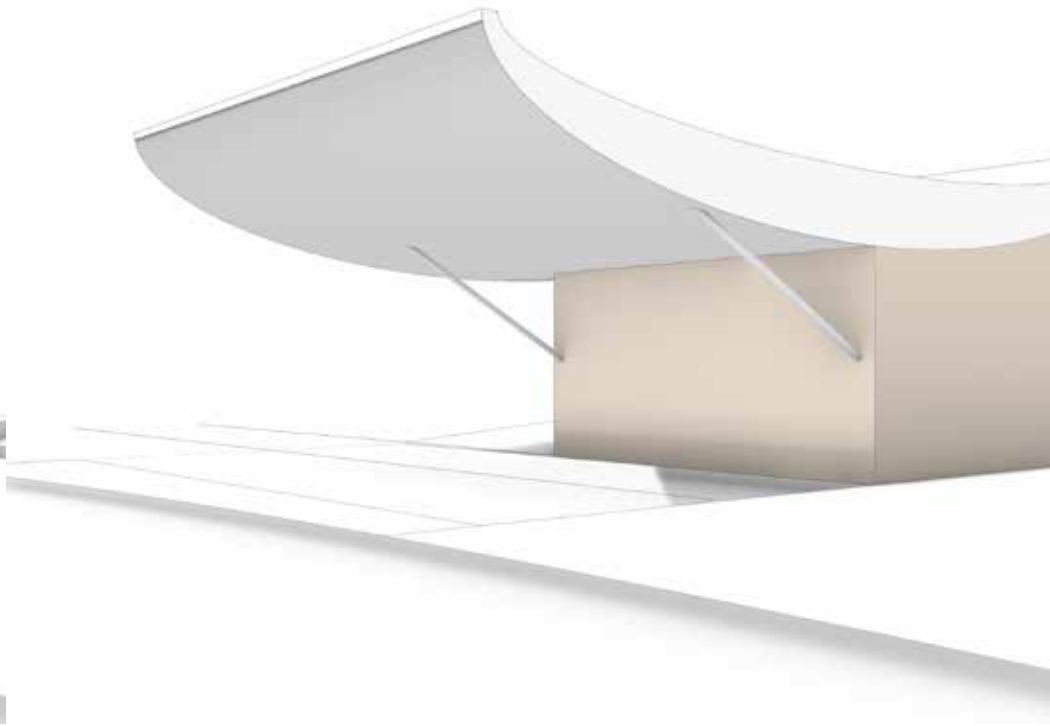

Over 8,000

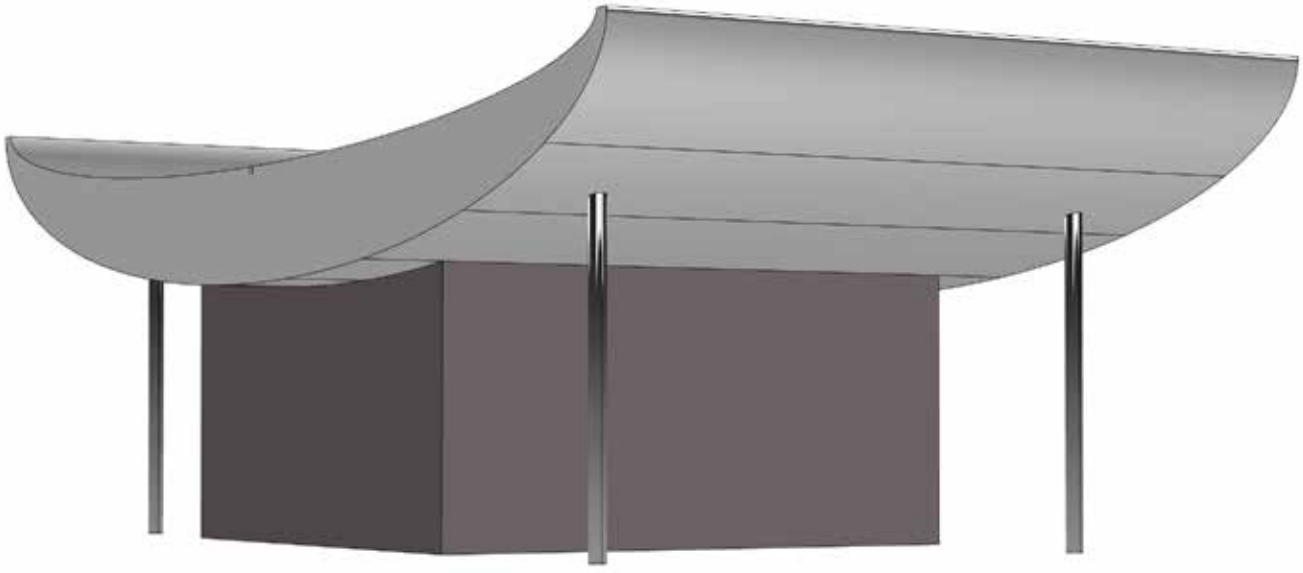


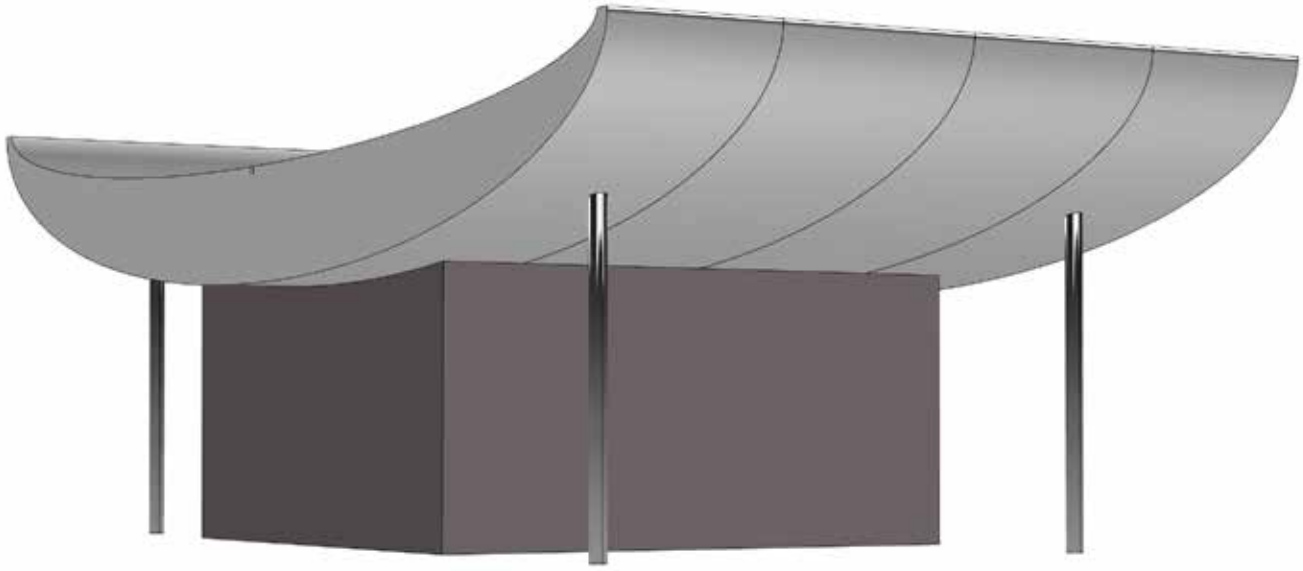

8,000


Over 8,000
8,000







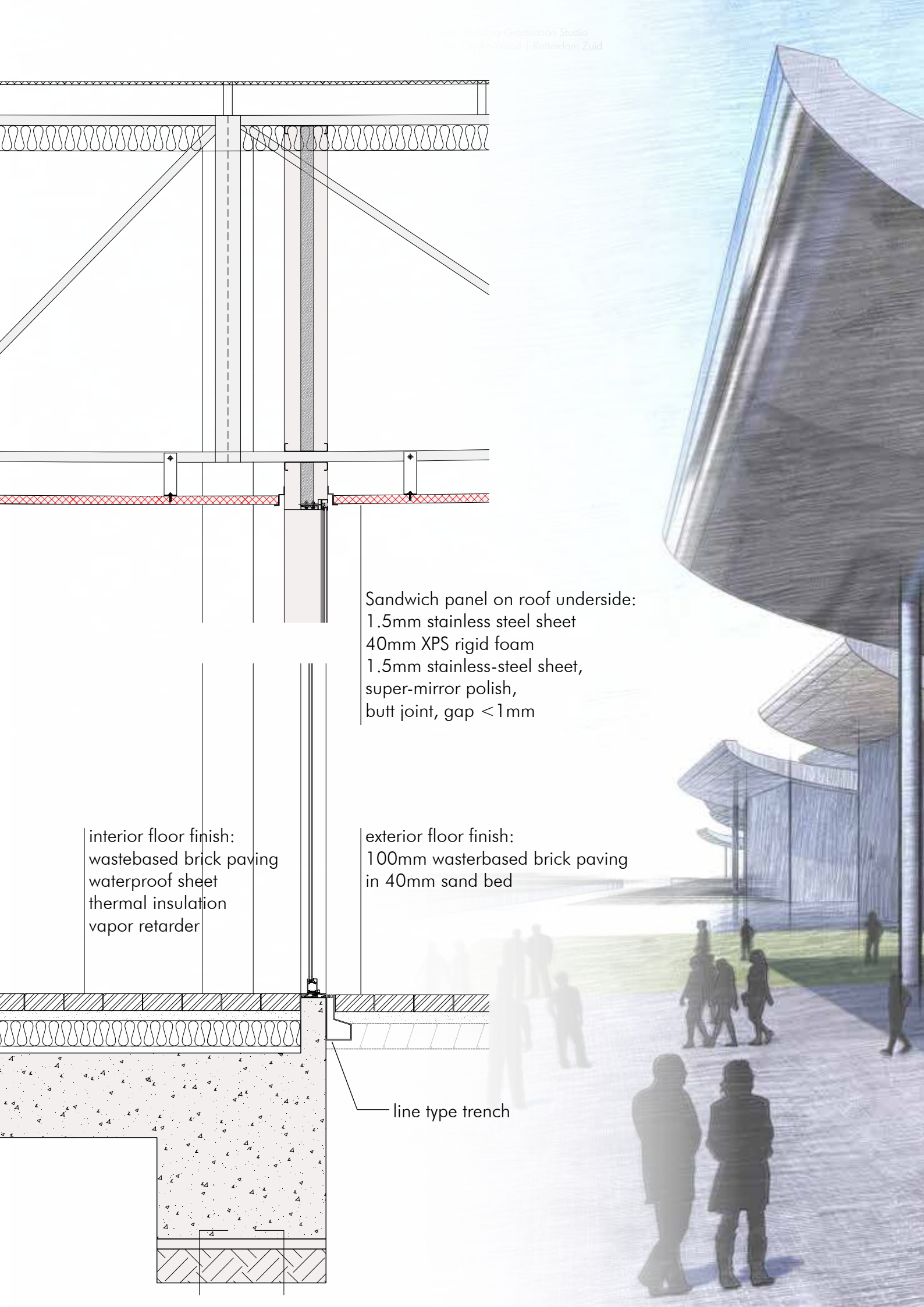


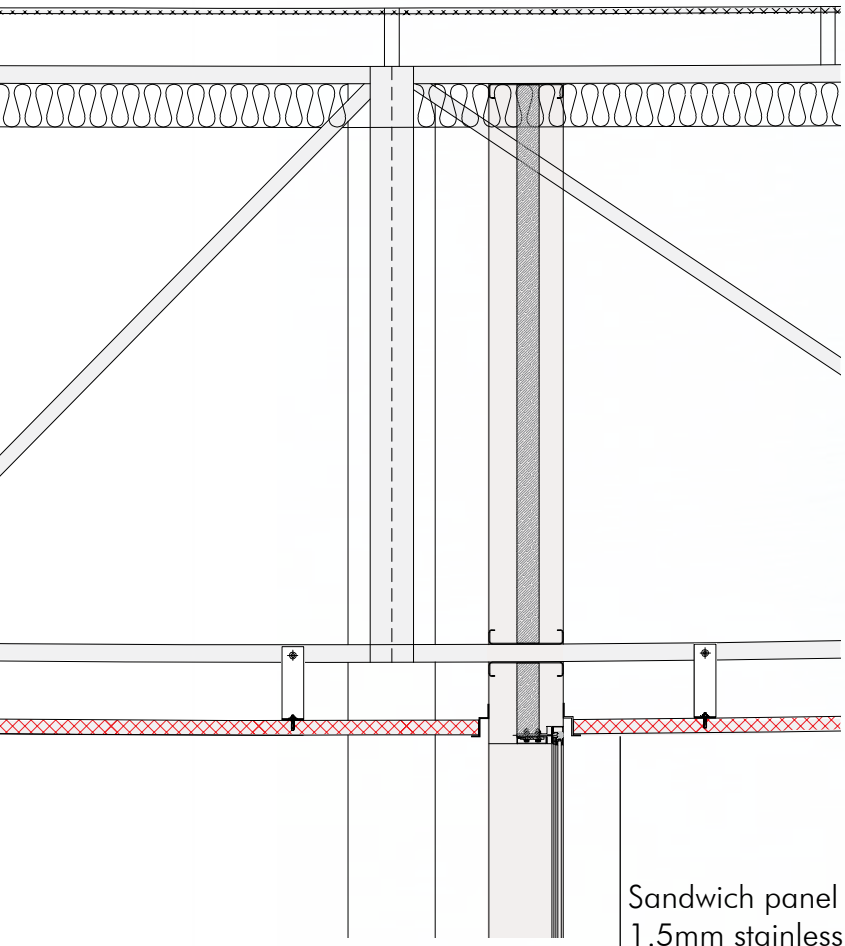
Sandwich panel on roof underside:
1.5mm stainless steel sheet
40mm XPS rigid foam
1.5mm stainless-steel sheet,
super-mirror polish,
butt joint, gap <1mm

interior floor finish:
wastebased brick paving
waterproof sheet
thermal insulation
vapor retarder

exterior floor finish:
100mm wasterbased brick paving
in 40mm sand bed

line type trench





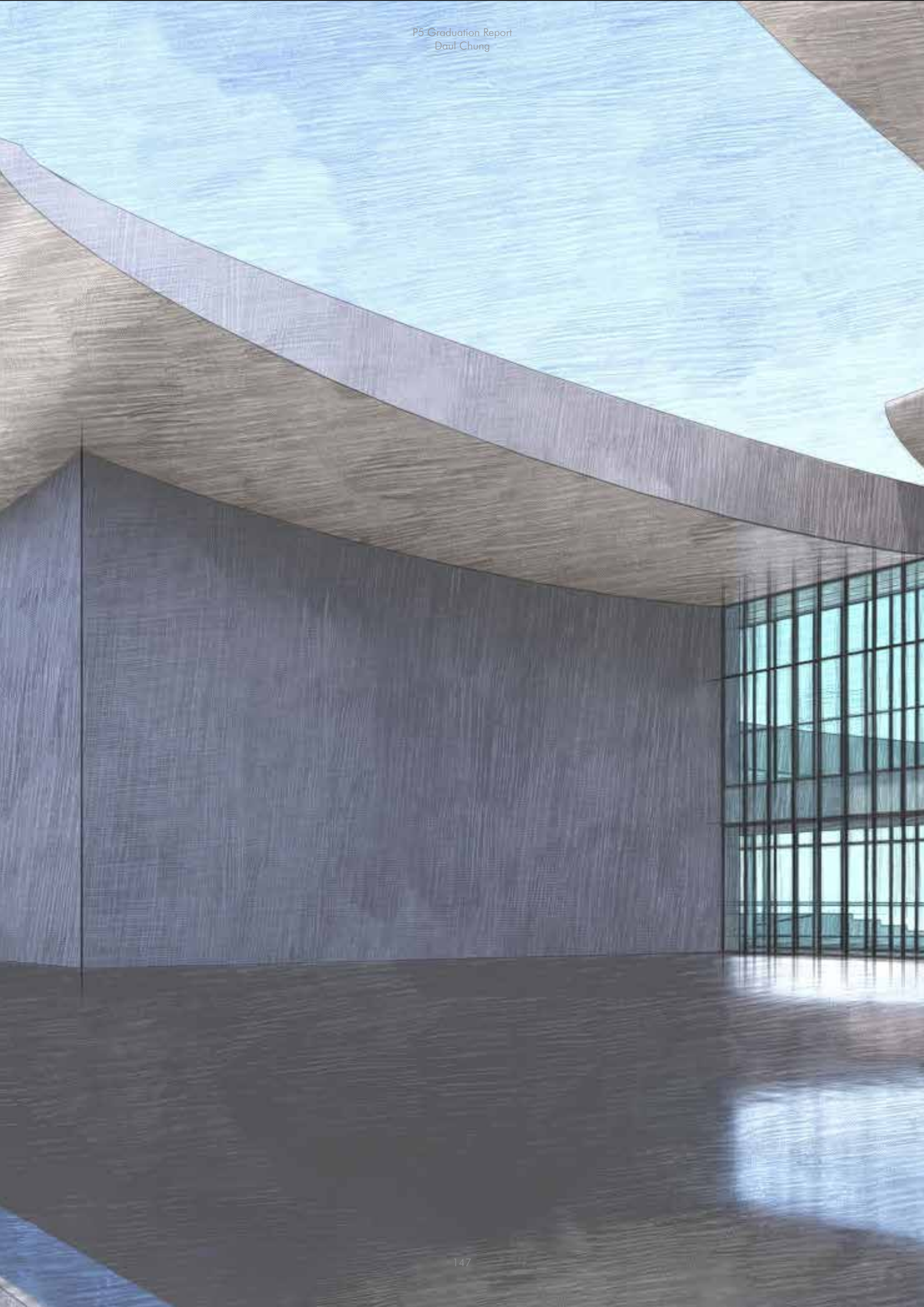
Sandwich panel on roof underside:
1.5mm stainless steel sheet
40mm XPS rigid foam
1.5mm stainless-steel sheet,
matte polished hairline,
butt joint, gap <1mm

interior floor finish:
wastebased brick paving
waterproof sheet
thermal insulation
vapor retarder

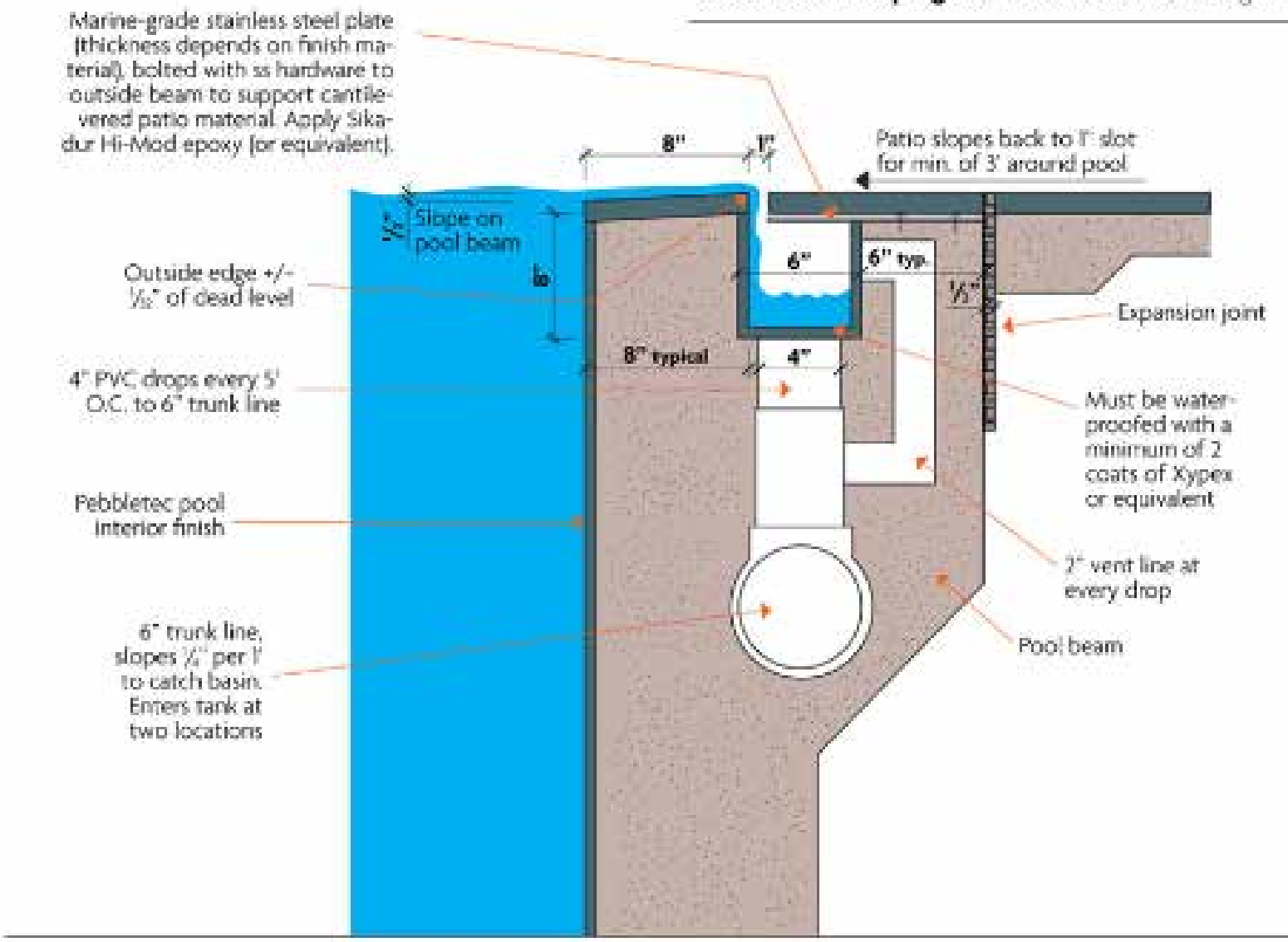
Underwater Coping
Perimeter Overflow

Sallow water
deepest depth=80mm

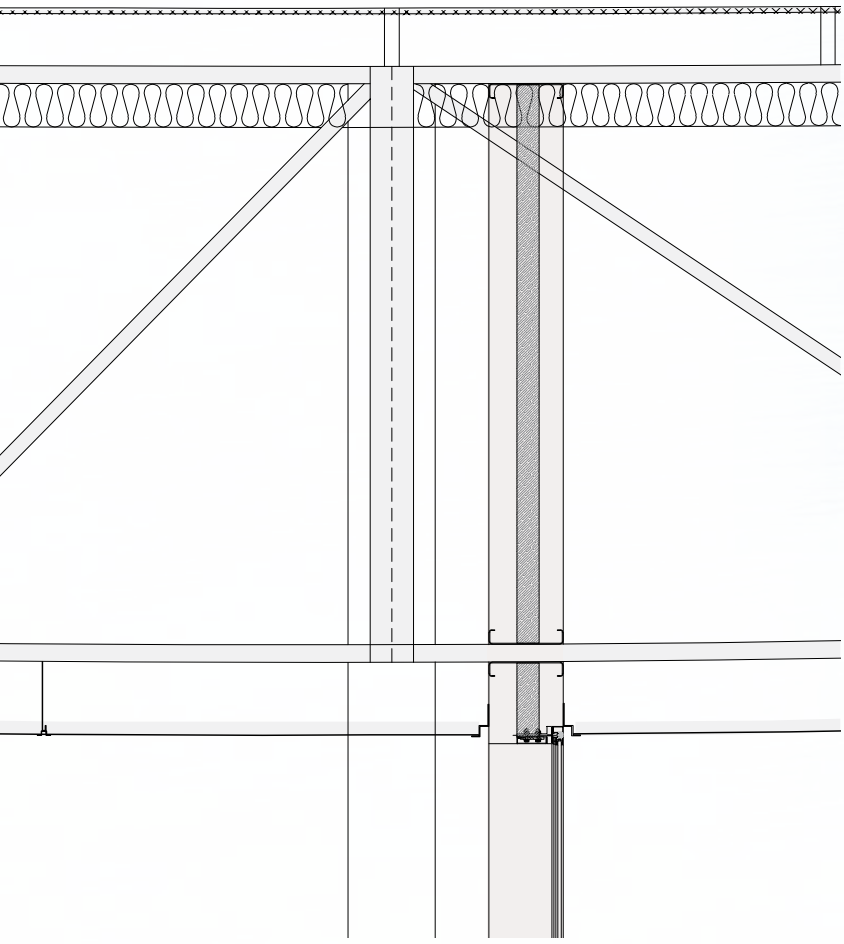
line type trench

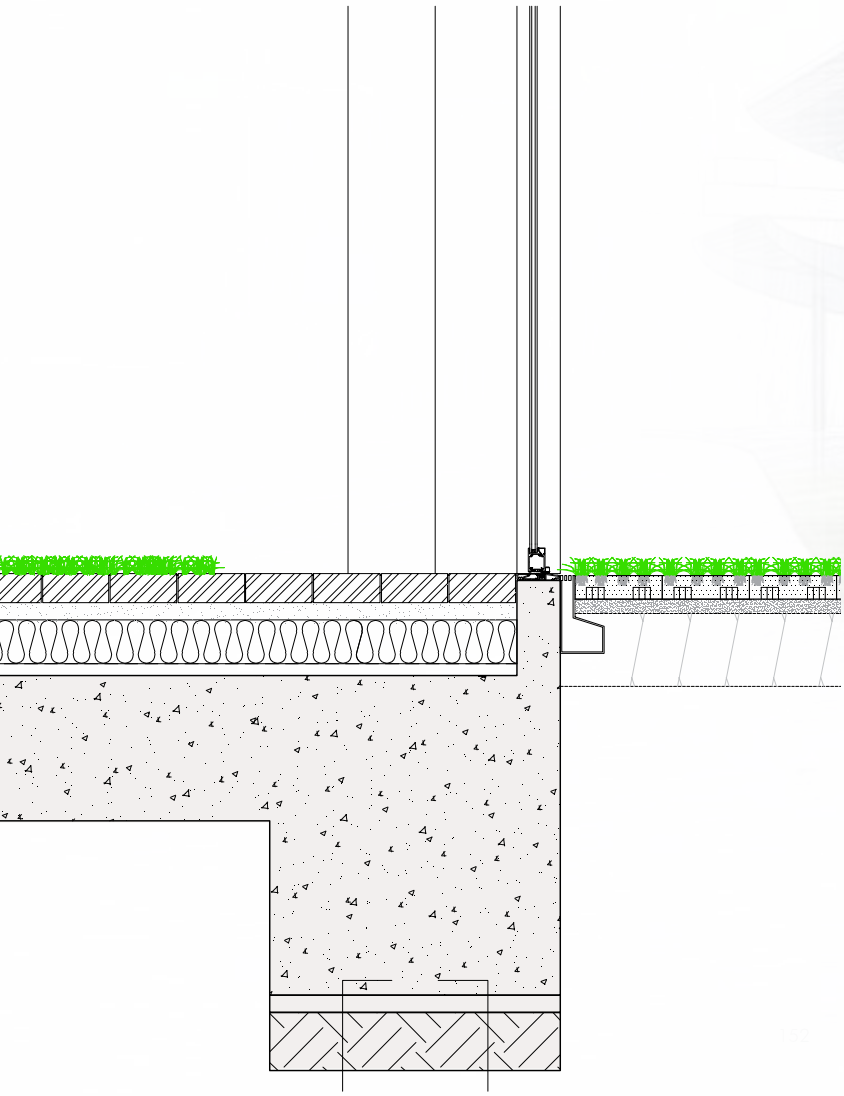


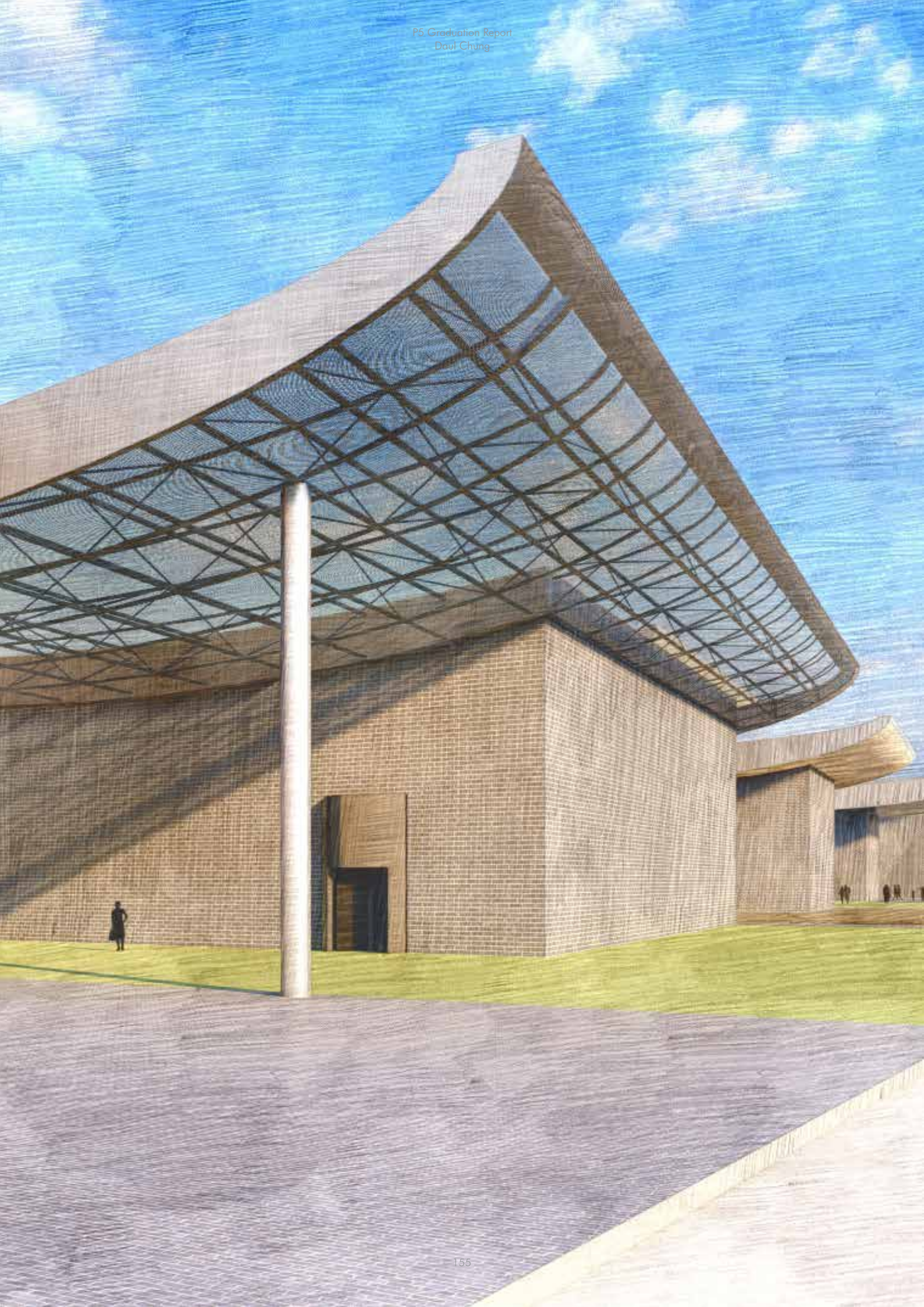
Underwater Coping Perimeter Overflow Diagram

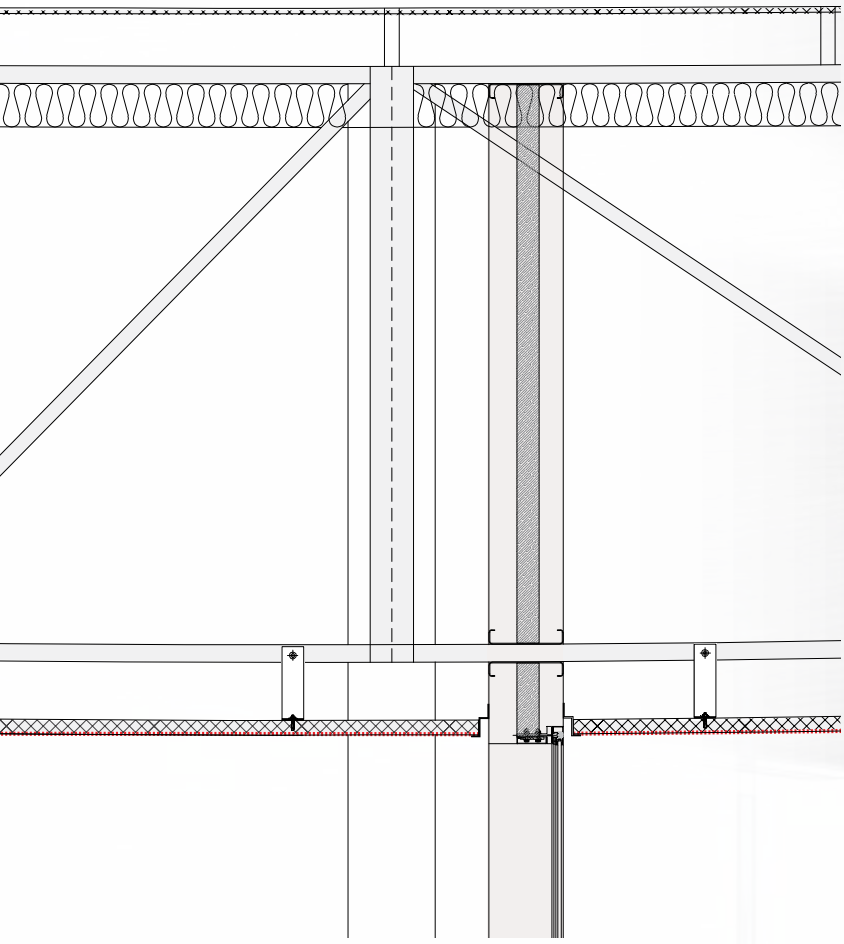


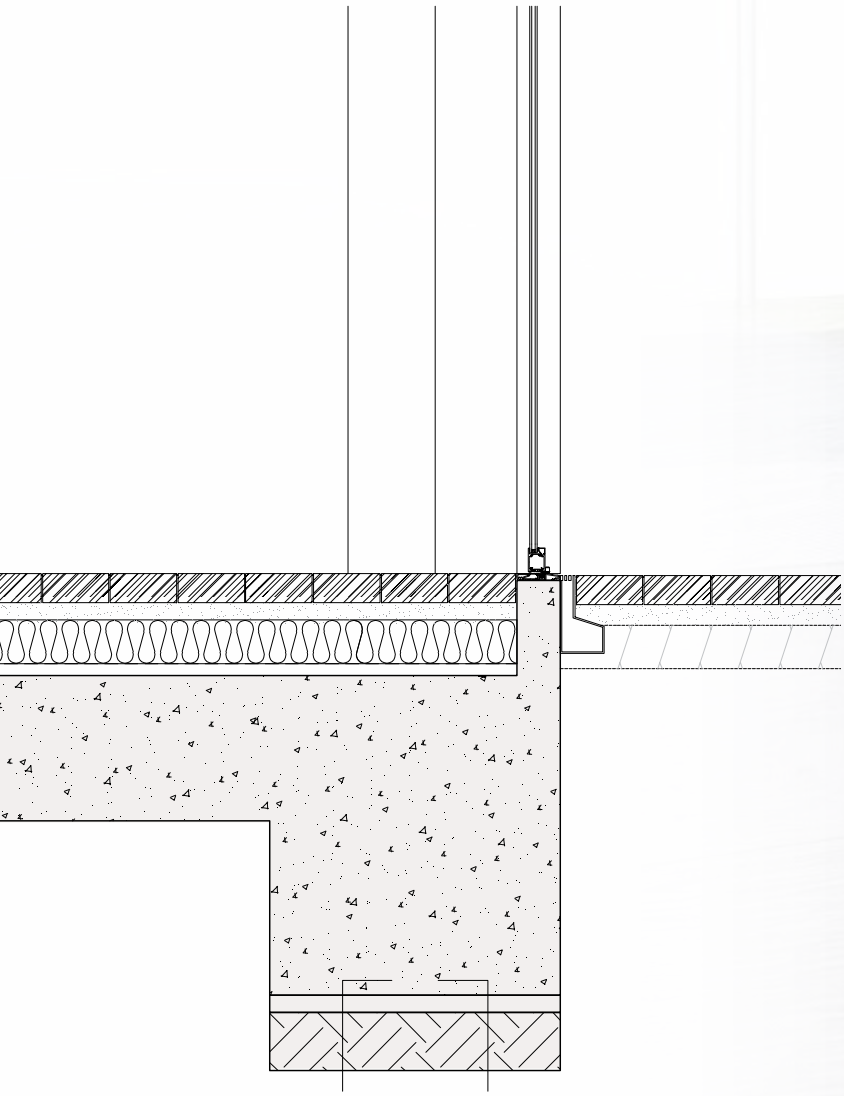

BBC
BBC



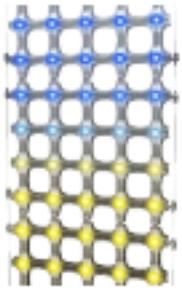








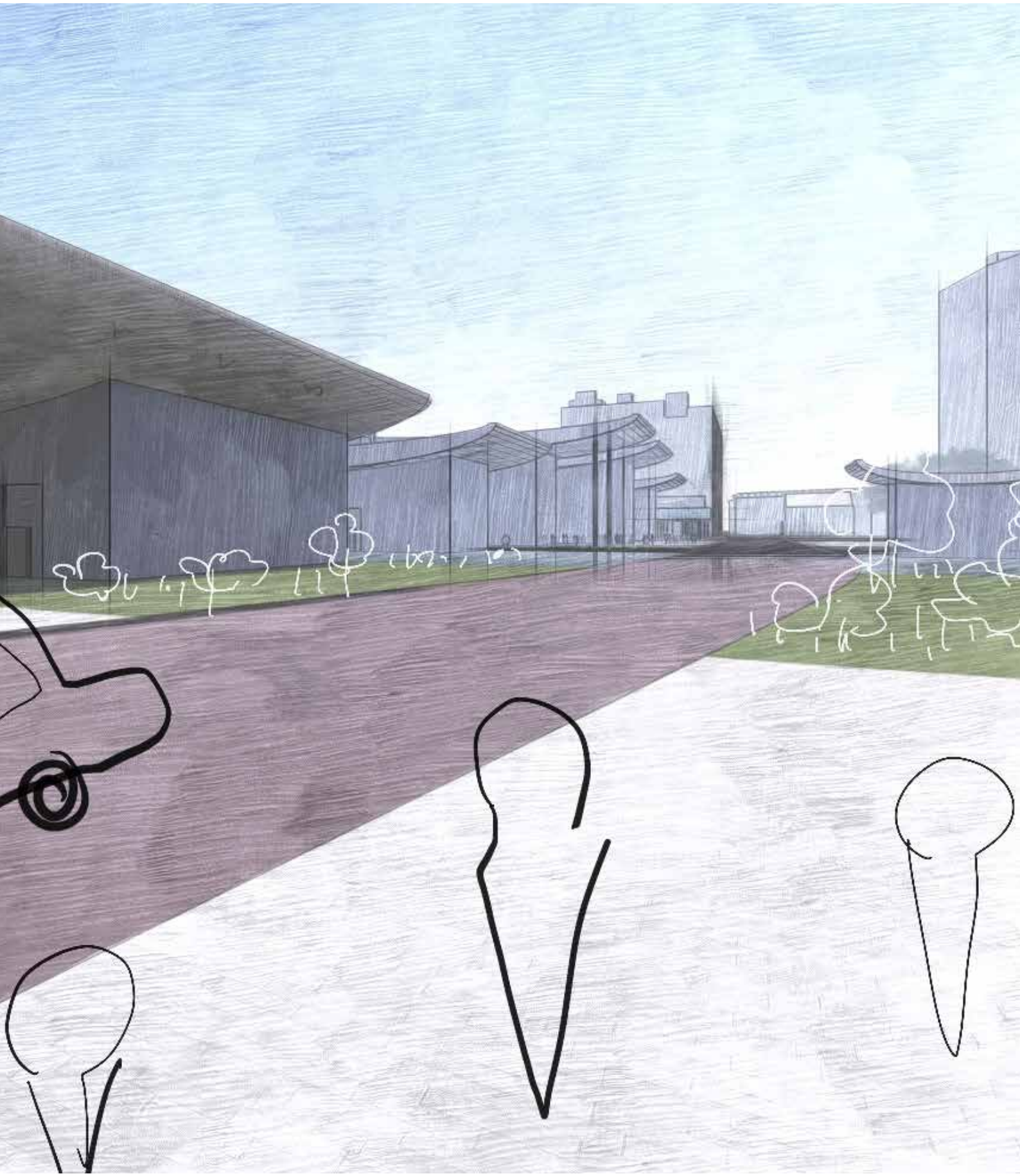

MUSEUM FOR
TEMPORARY TEC

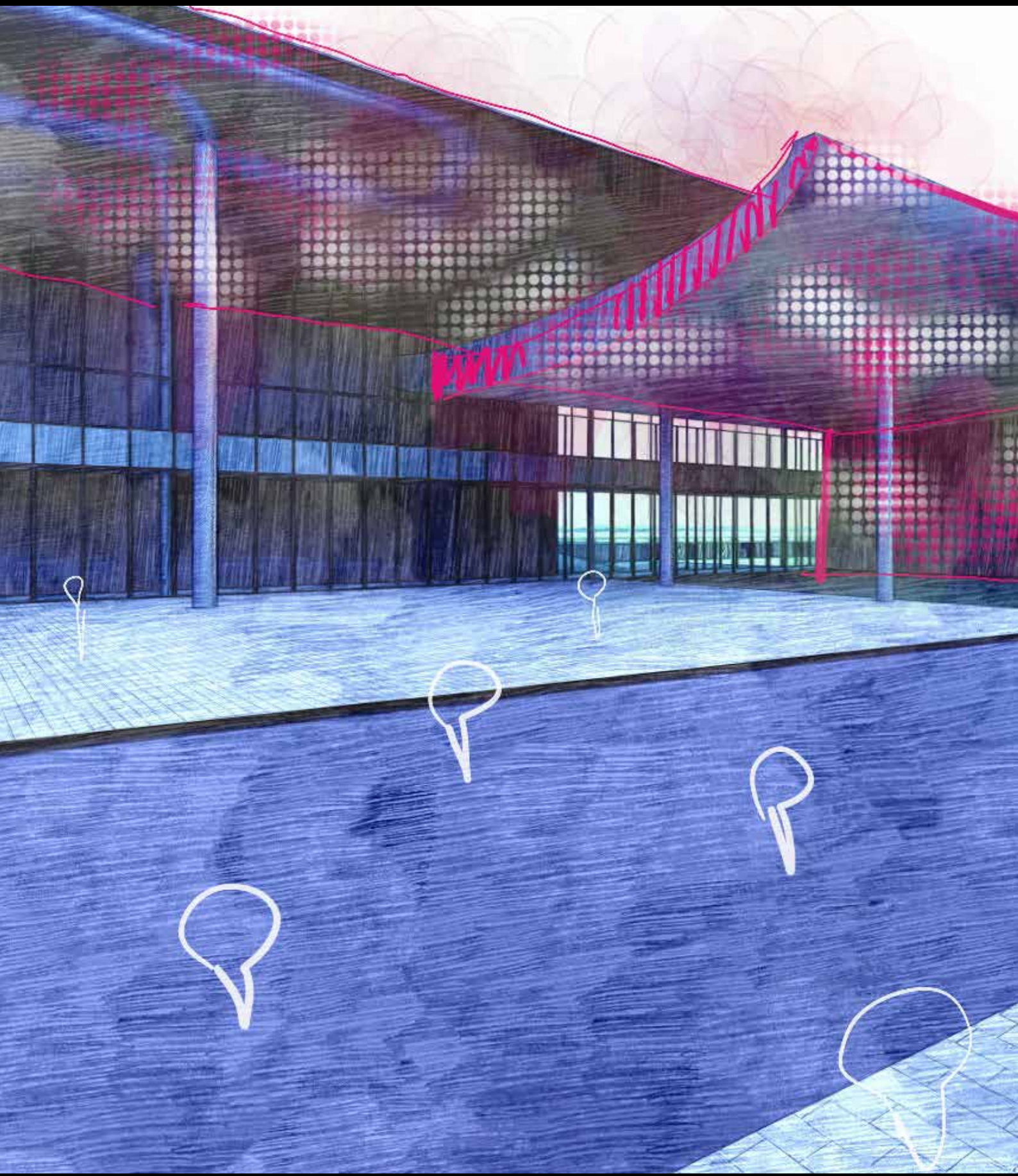


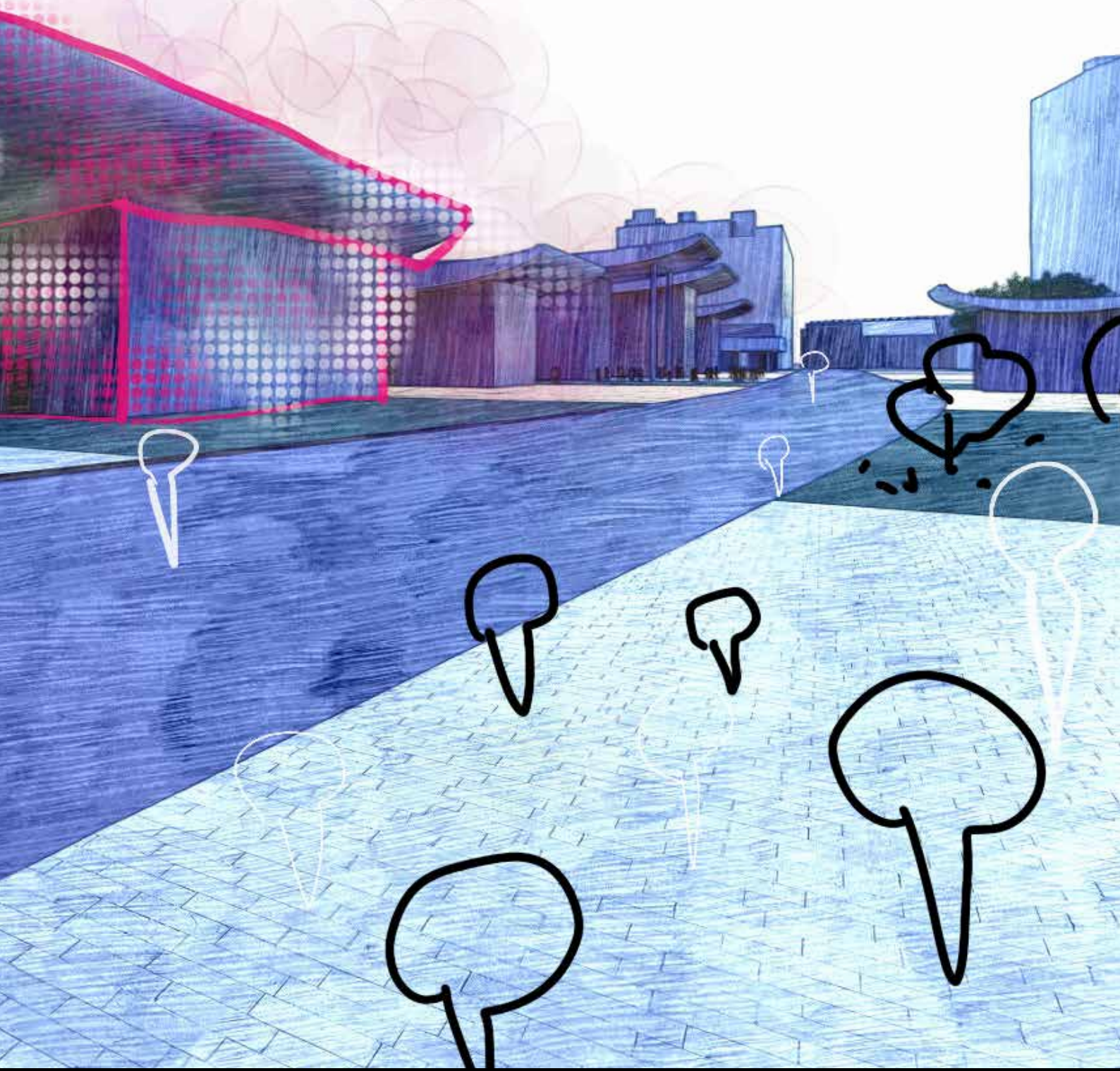
Mesh RGB

The Mesh unit comprises eight grid-elements, connected by flexible joints, giving it the ability to contour the most demanding surfaces. Each Mesh unit has 160 (5 x 32) individually controllable pixels. The control possibilities range from DMX and e:pix over DVI and its IP67 rated UV-resistant material makes it suitable for a variety of outdoor applications.

IP67

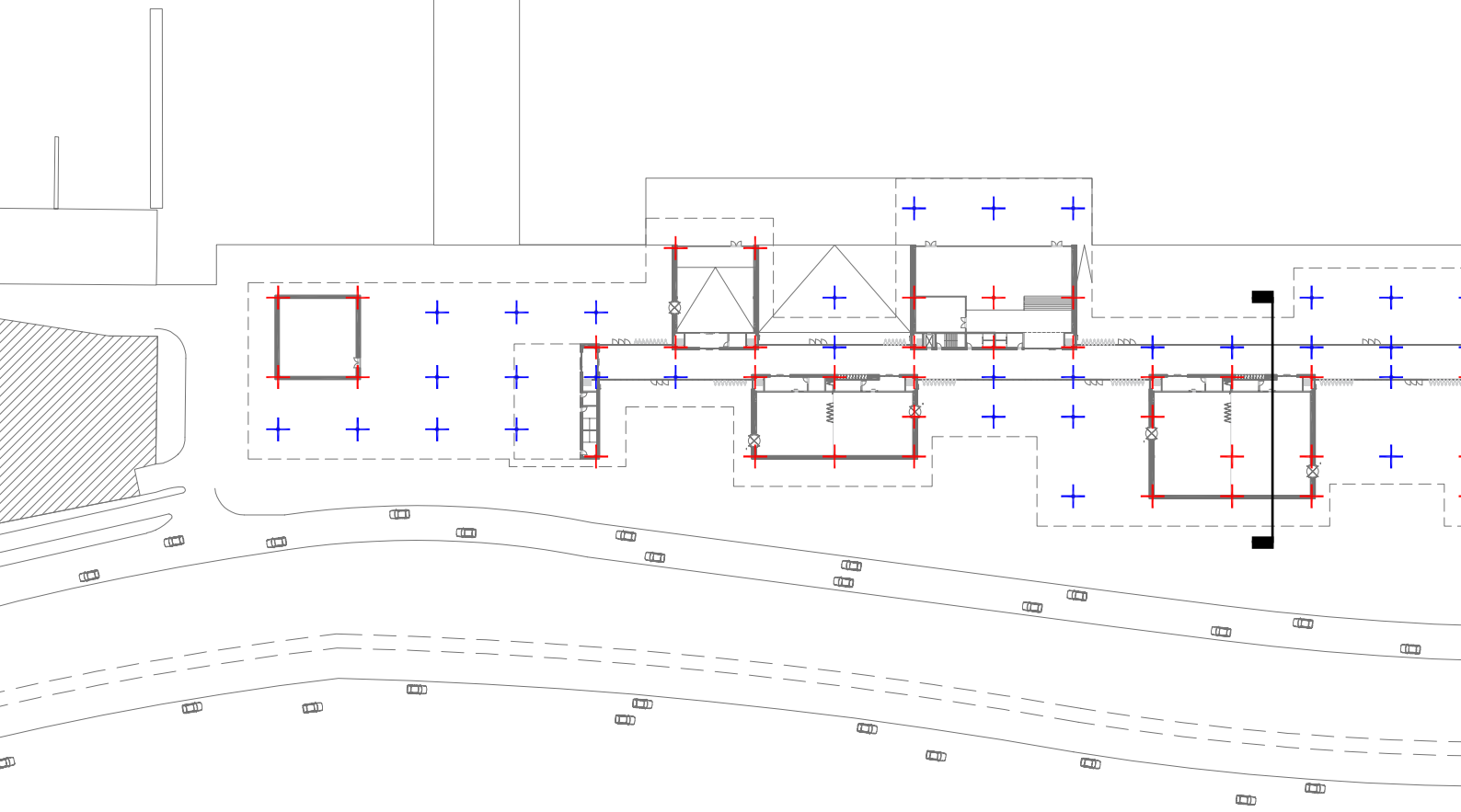




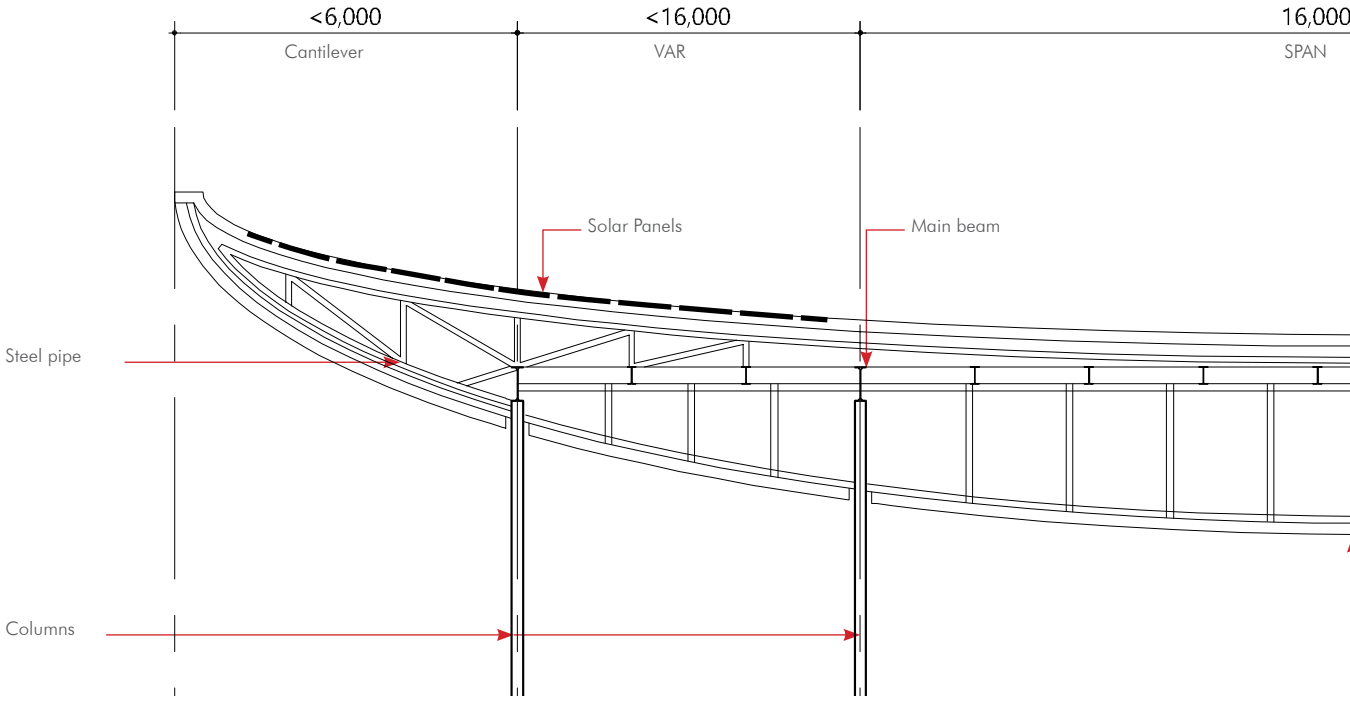


Structural Concept

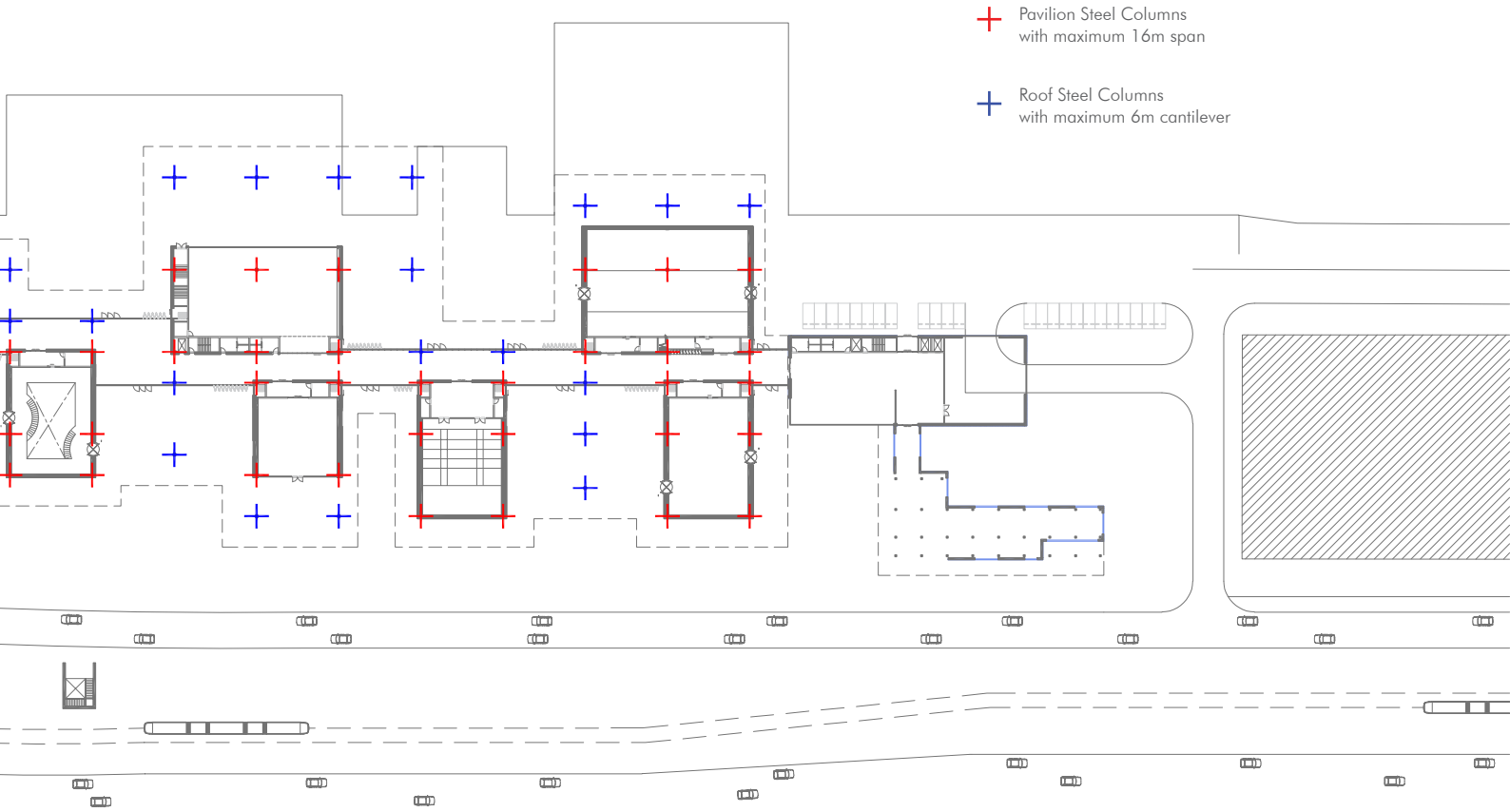
Structure



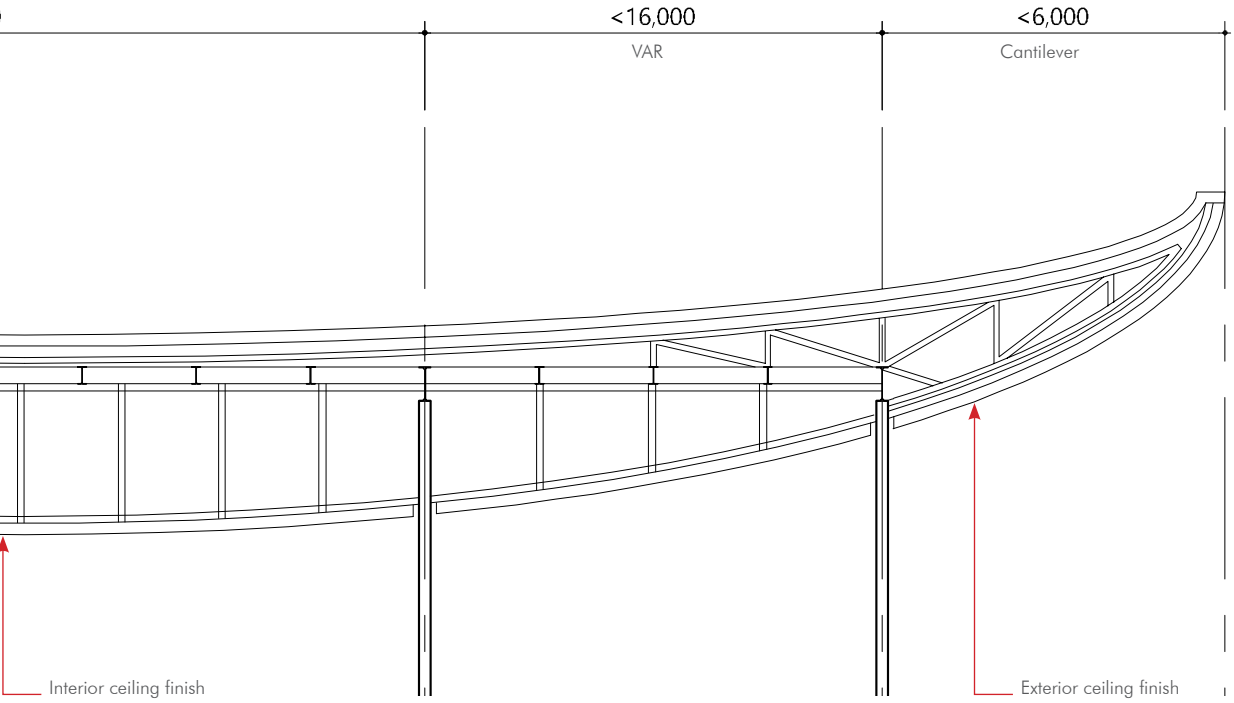
Typical Section fo



Concept



or Roof Structure



5 Stability – Points of Attention

Stability in essence means that horizontal movement of one floor is impossible relat
floor below. This is both for lateral and for rotational movement.

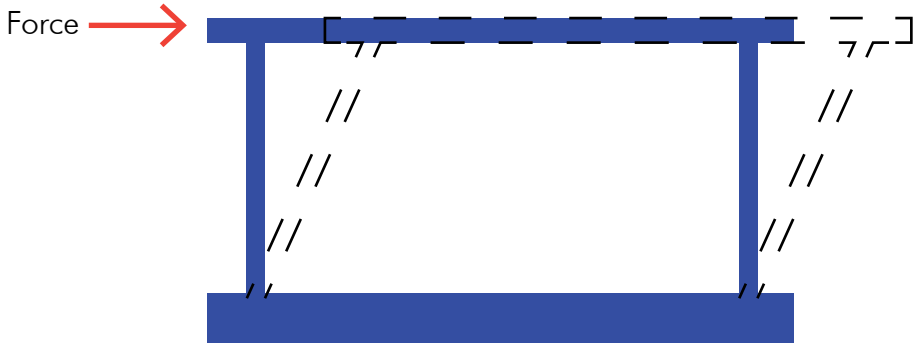
- Stability means that floors cannot move laterally relative to each.
  The movement can be stopped by :
    - Shear walls of concrete or masonry
    - Sufficiently big cores which are well placed
    - Braced frames/crossbracing
    - Rigid frame/portal construction
    - A combination of the above
- In a rectangular building, at least three facades/sides need to be stabilised f
  lateral movement and horizontal rotation. All floors need to be stabilized.
- Buildings of more complex shapes, should be "divided" in simpler rectangul
  each square should be stabilized in, at least, three sides as mentioned abov
  example an L-shaped building can be split in two (overlapping) rectangles; e
  be stable by itself (but they can share a common stability element in their c
  part).
- As a principle, stability elements should not be placed eccentrically as this c
  larger moment. It is advisable to evenly distribute the stability elements wit
  building.

ive to the

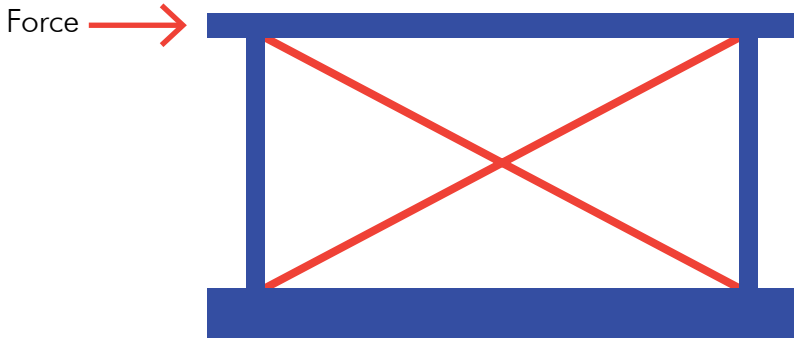
to counteract

lar shapes –
e. As an
each should
overlapping

creates a
thin the



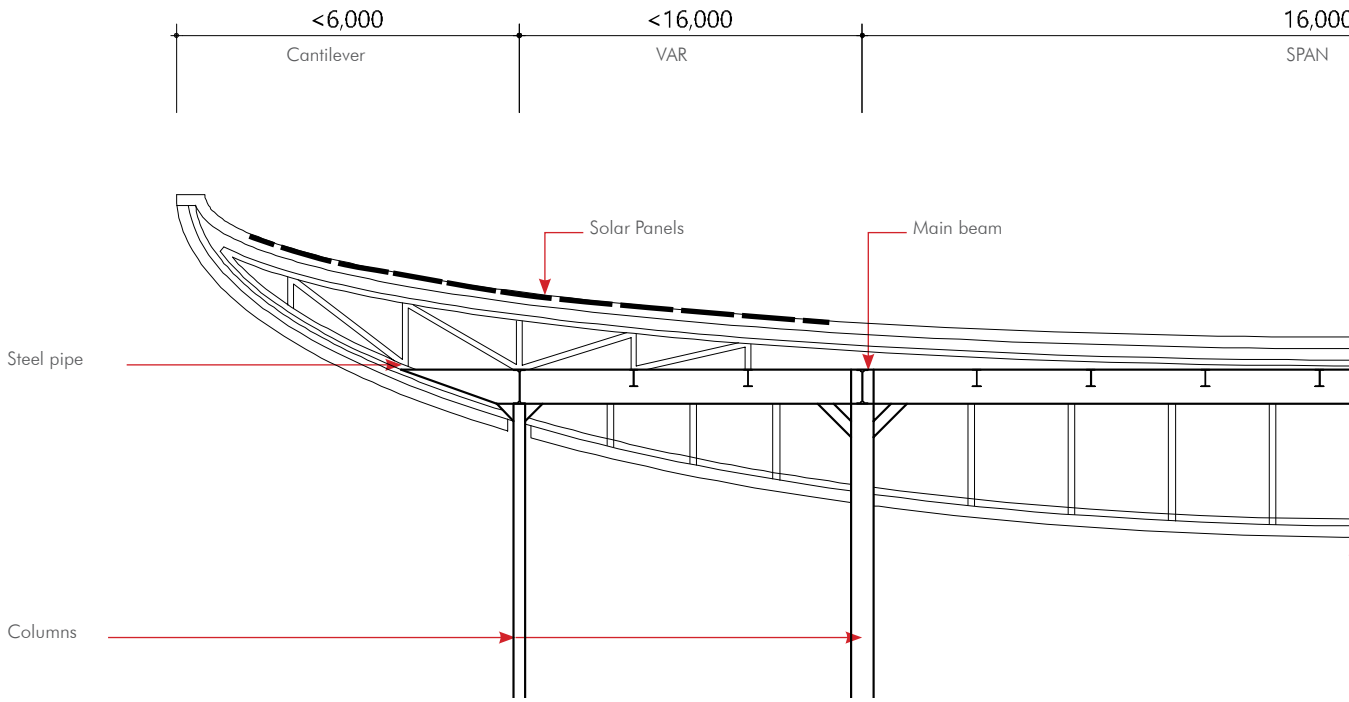
Unstable

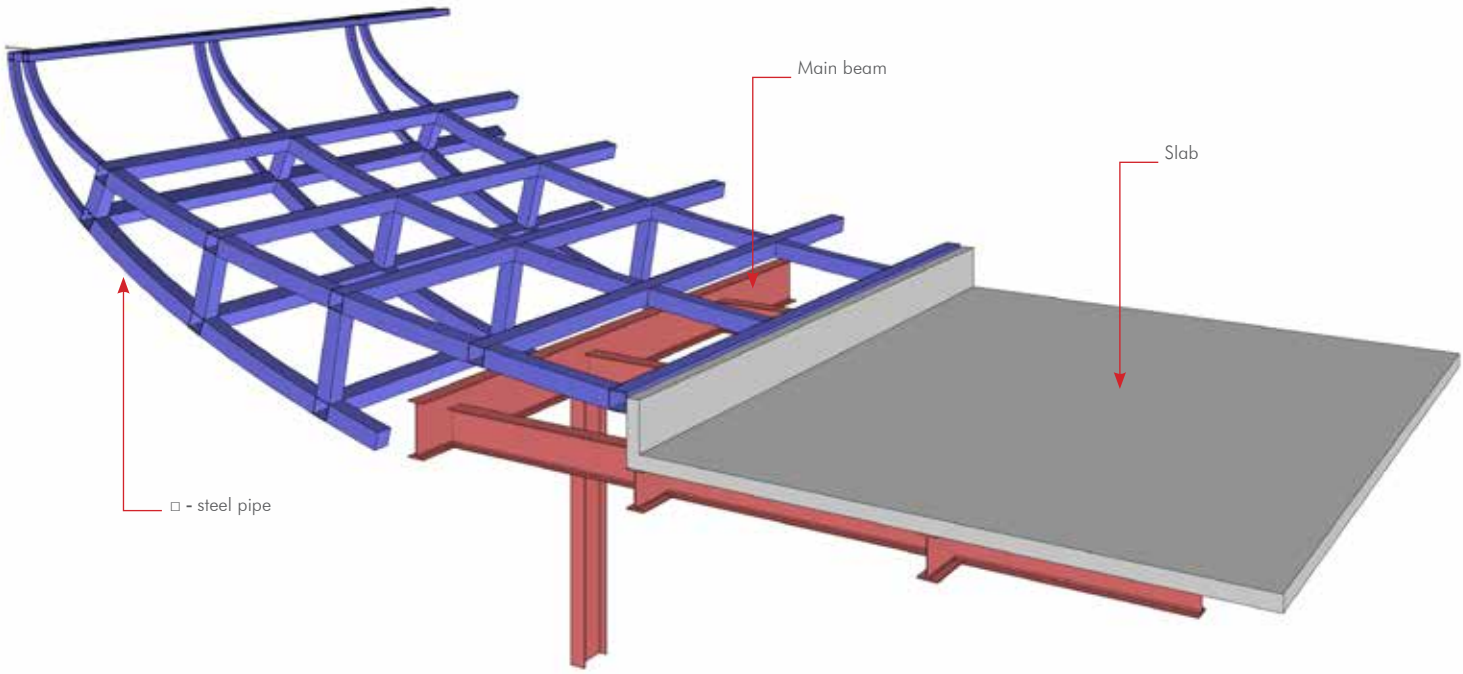


Stable - 1

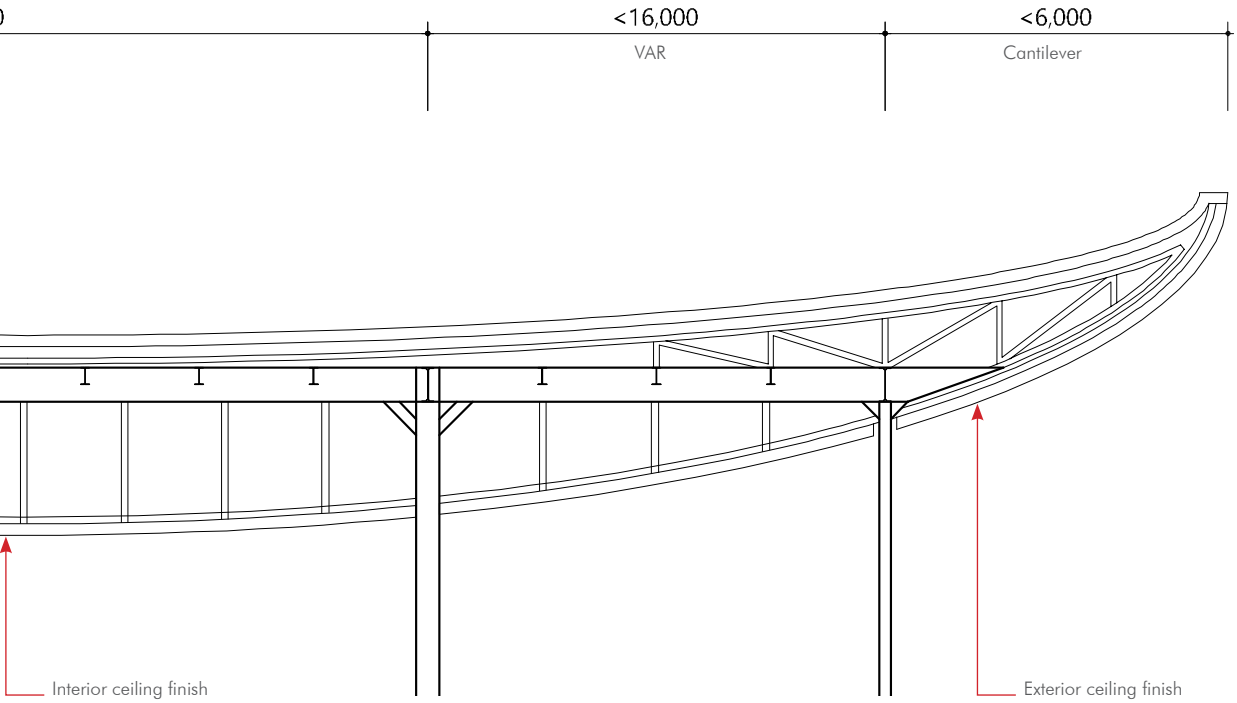
Stable - 2
with moment connection
and diagonal brace

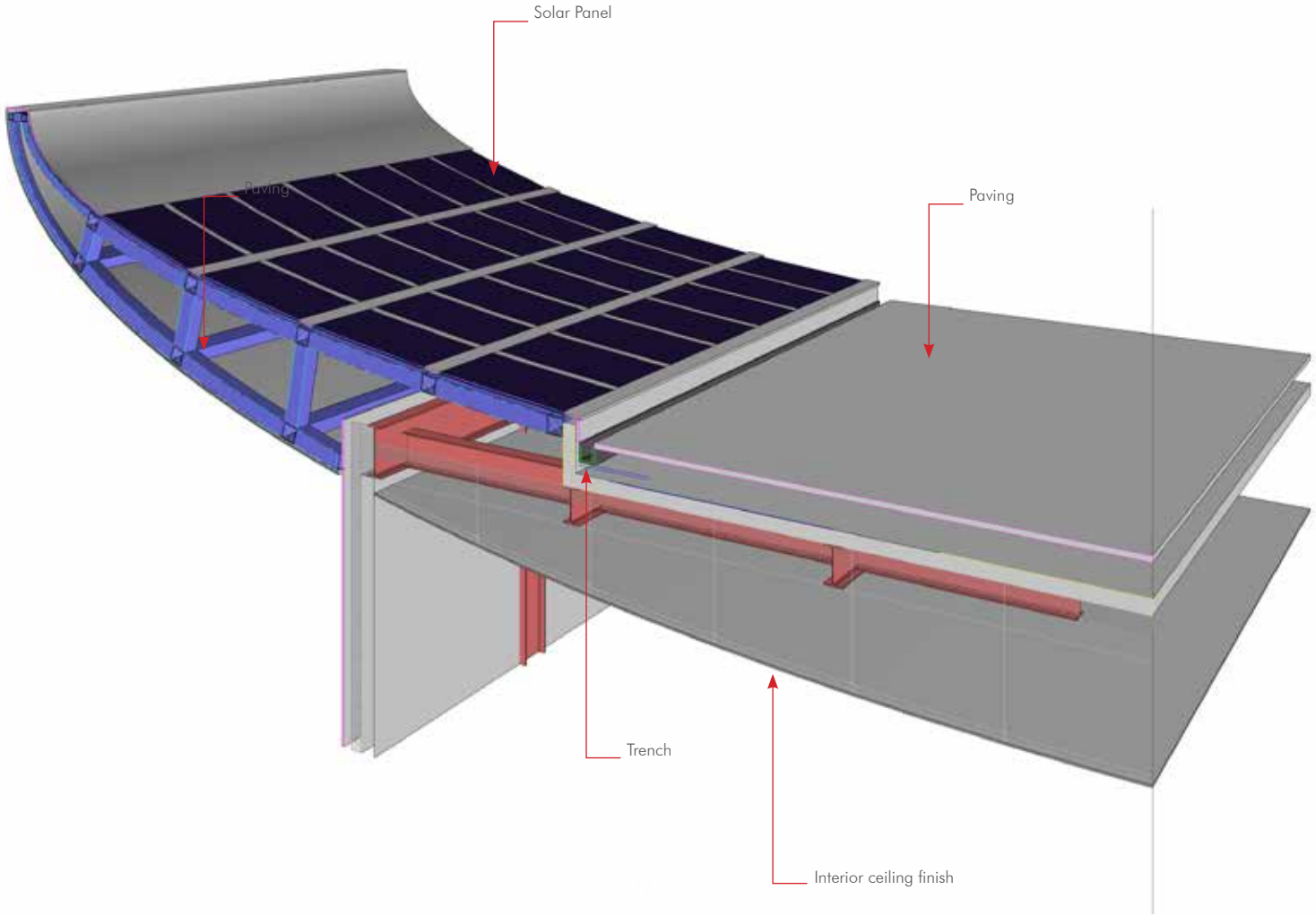
Typical Section fo





or Roof Structure





6 Spans

Floors, trusses and beams span spaces. If the element is too slender, ***length to hei***
high, it will have too much deflection. It is critical that all these member have the
proportions. The following rules of thumb can be used:

- For ***steel trusses*** this is ***15 to 1*** e.g., a 30 m truss needs to be 2 m high
- For ***steel beams*** this is ***25 to 1***, e.g. a 12.5 m beam needs to be 0.5 m hig
- For ***wooden beams*** this is ***20 to 1***
- For ***low strength reinforced concrete beams*** this is ***10 to 1***
- For ***high strength (prefabricated) reinforced concrete*** beams this is ***20 to***

For floors this is not simple. In general a floor that spans more than 12 m is uneco
it is a bubbledeck floor.

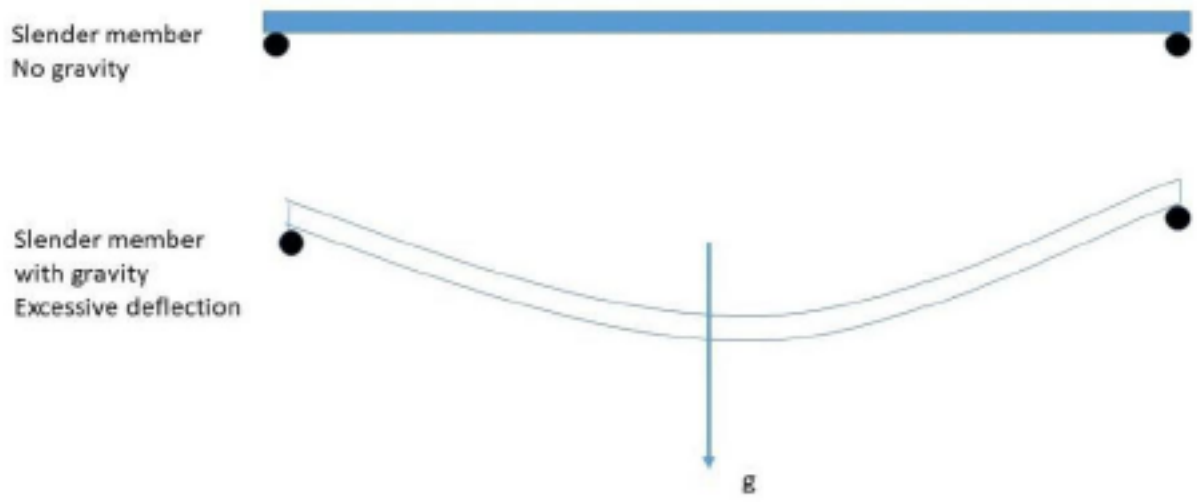


Figure 7: Principle of a slender member - if too slender, dead + live loads can result in excessive d

ight ratio is too
right

gh

o 1

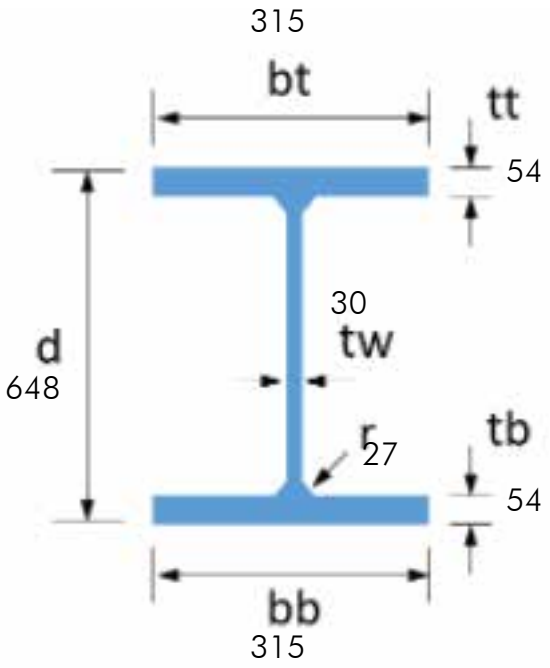
nomical unless

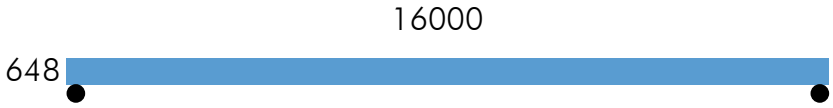
deflections.

16m span

25 : 1 = 16 : X
X = 16/25
X = 0.64

d (mm)	b_t (mm)	b_b (mm)	t_t (mm)	t_b (mm)	t_w (mm)	r (mm
648	315	315	54	54	30	27





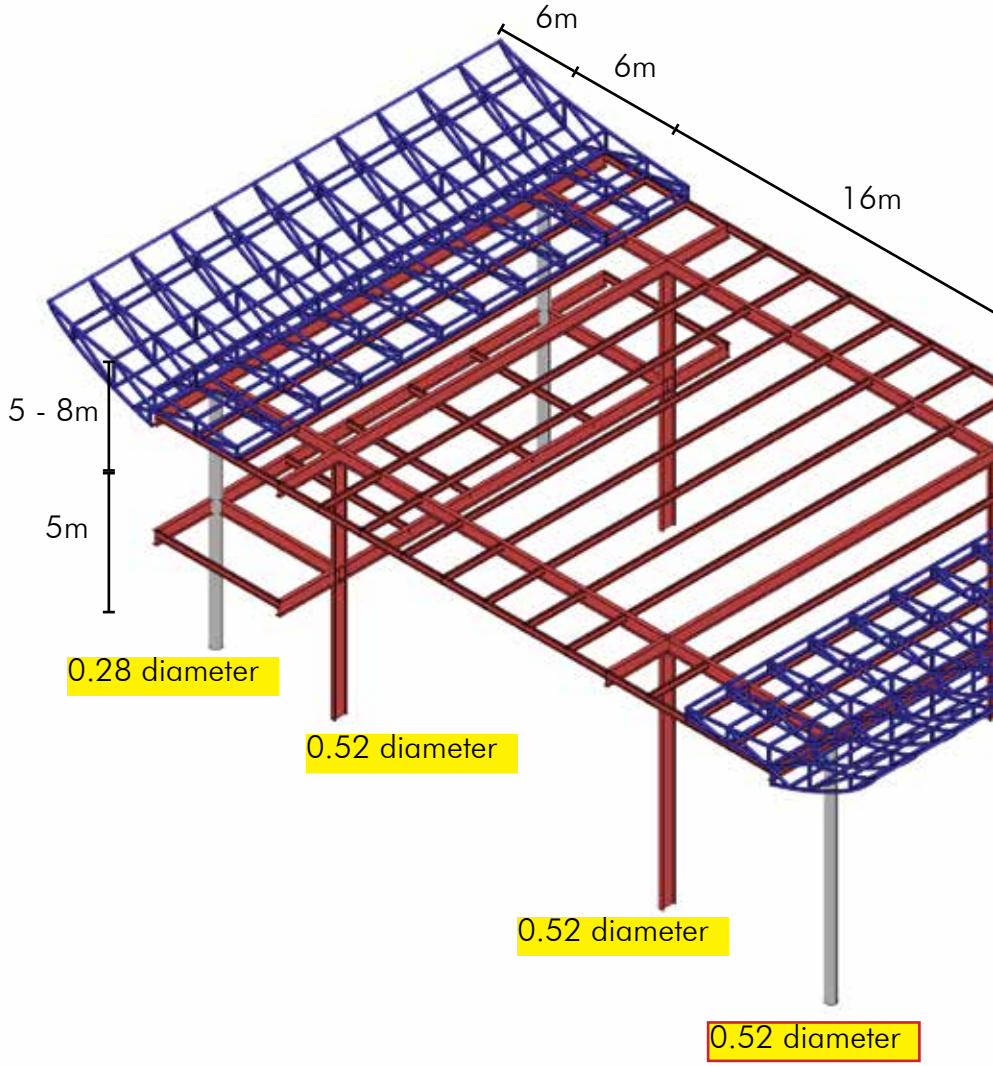
8 Walls and columns

Walls and columns carry vertical loads. It is important that they ha
resist buckling. A thin slender column cannot carry a load without

- A steel column needs a height to diameter ratio of 25/1.
  thick.
- If the column is supported in the middle in such a way th
  backwards or sideways, the buckling length is the length
  For example, a 20 m steel column, supported at 10 m he
  diameter.

The following rules of thumb can be used for the main constructio

- Steel length =25×diameter
- Wood length =20×diameter
- Concrete length =10×diameter
- For rammed earth there is no reliable data, be very cons
  than the one used for concrete)

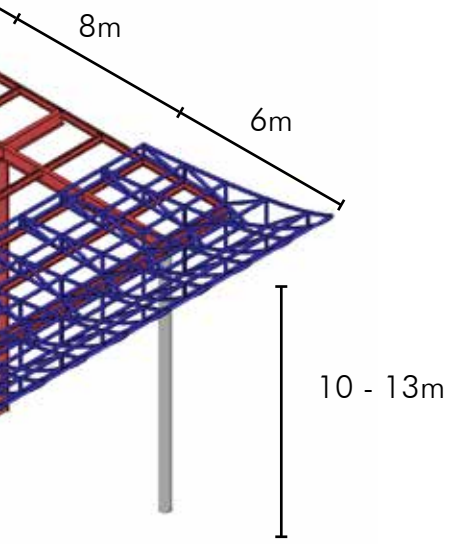


ave the right proportions to
buckling.
Thus, a 25 m high column is 1 m

at it cannot move forwards,
from the end to the support.
ight, need only be 0.5 m in

on materials:

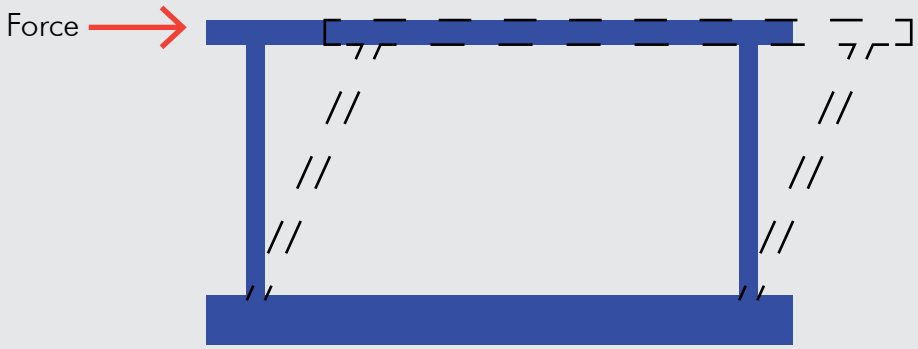
ervative (the ratio should be less



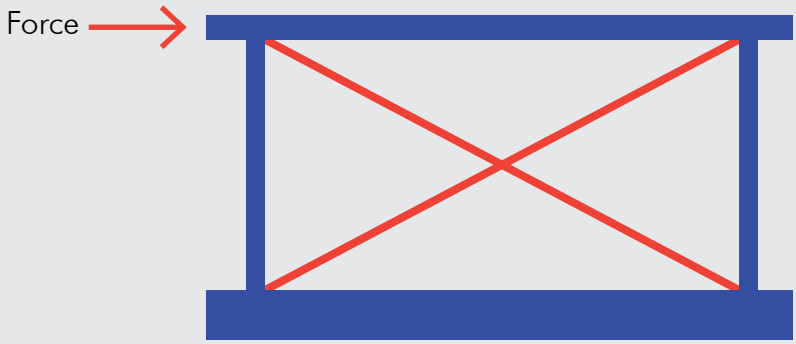
length = 25 X diameter
13m high column = 25X
X = 14/25
X = 0.52 diameter

length = 25 X diameter
8m high column = 25X
X = 8/25
X = 0.28 diameter

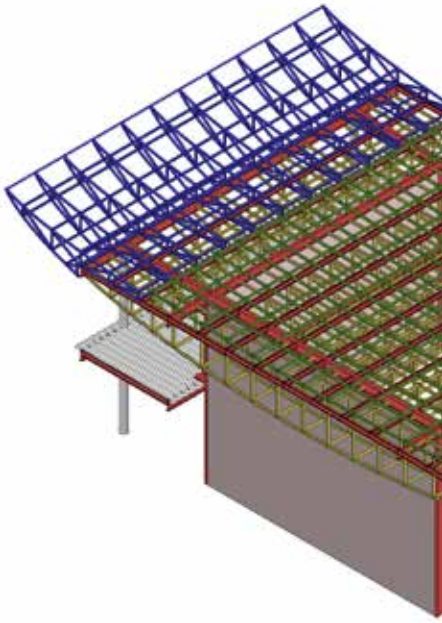
Stability

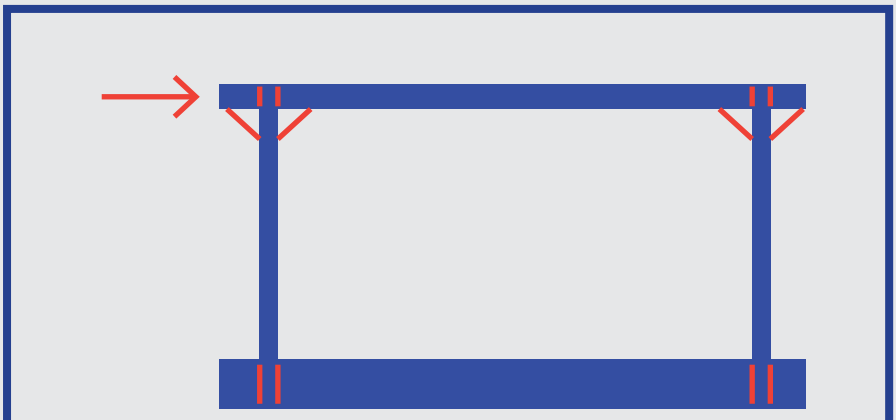


Unstable

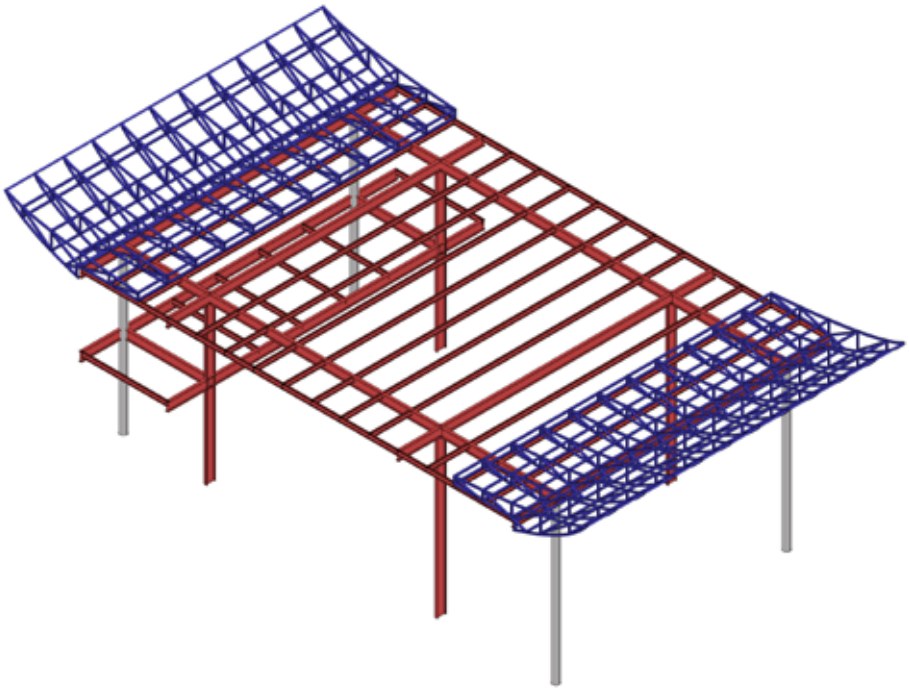


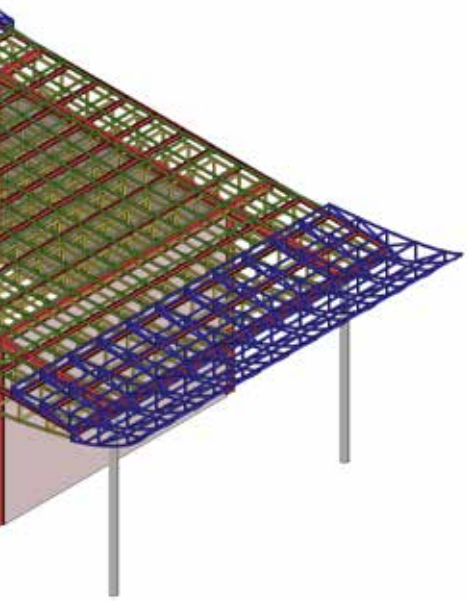
Stable - 1

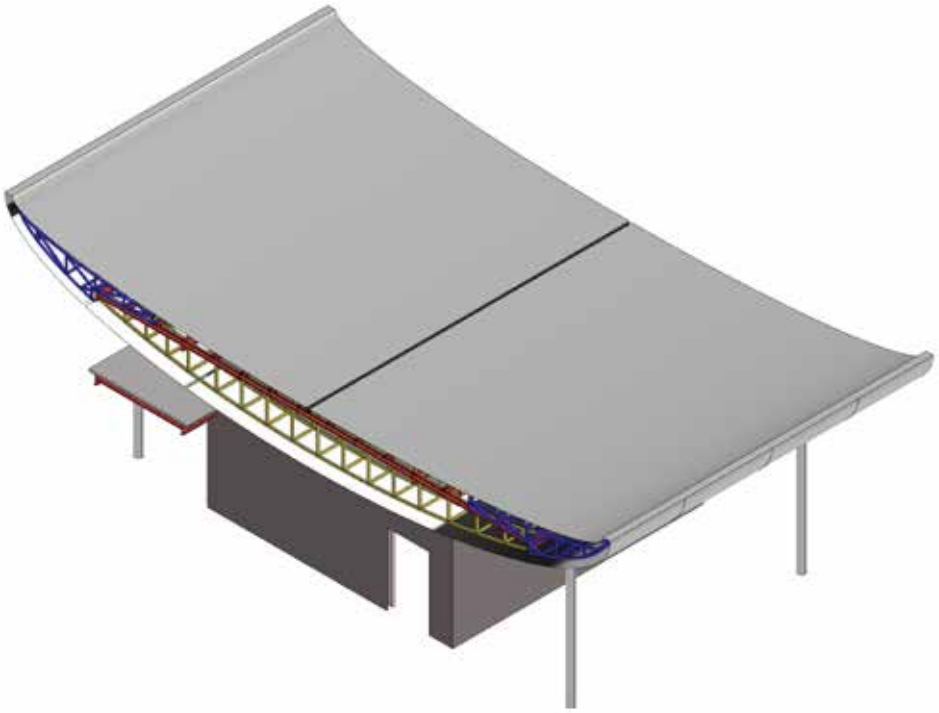


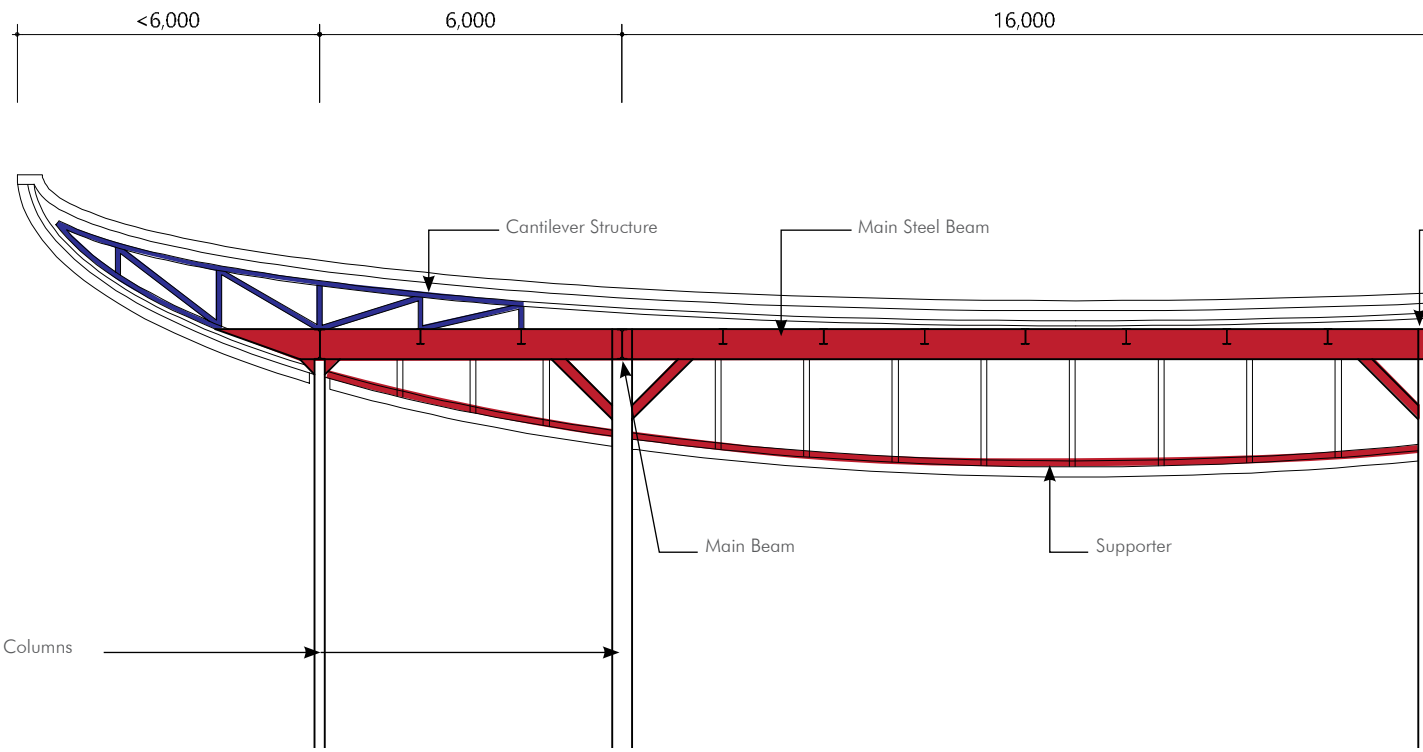


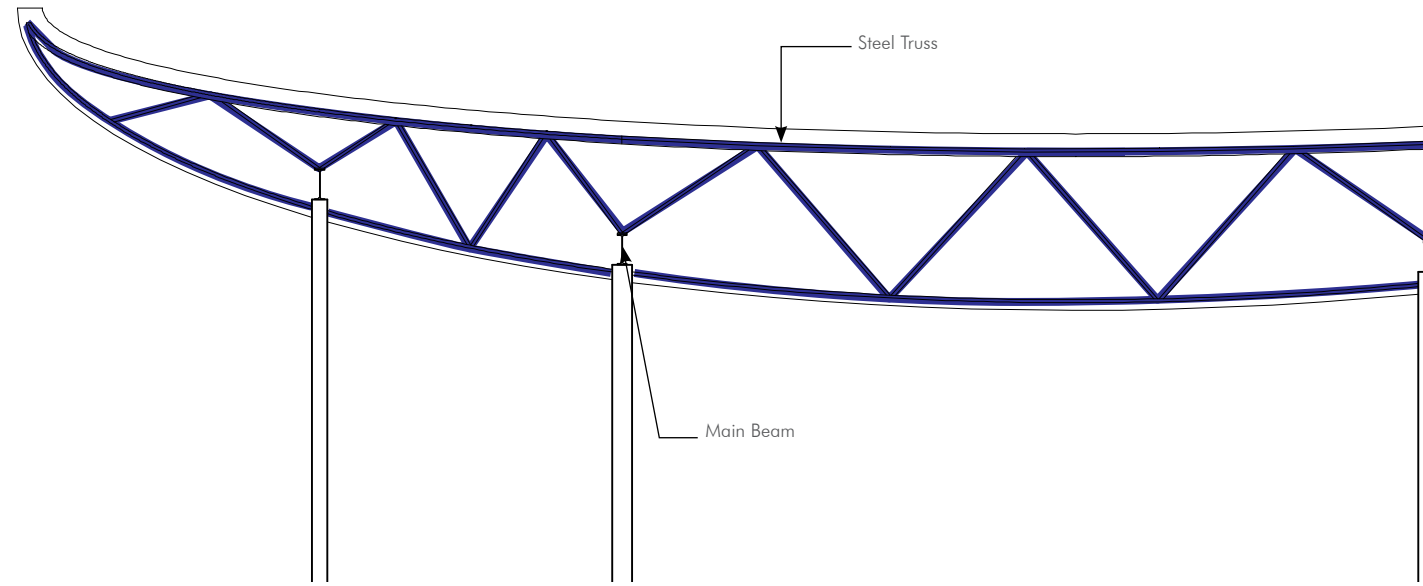
Stable - 2
with moment connection
and diagonal brace

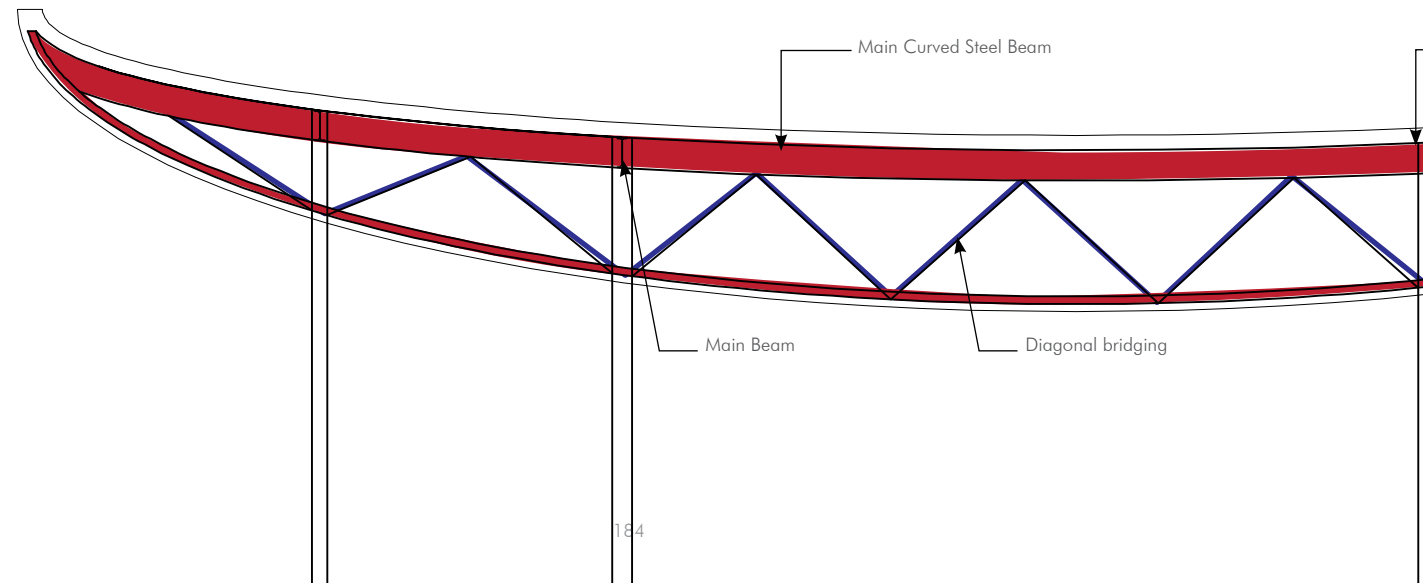


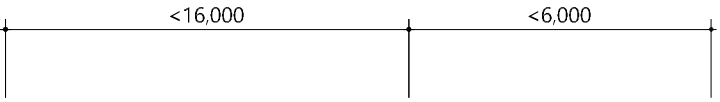


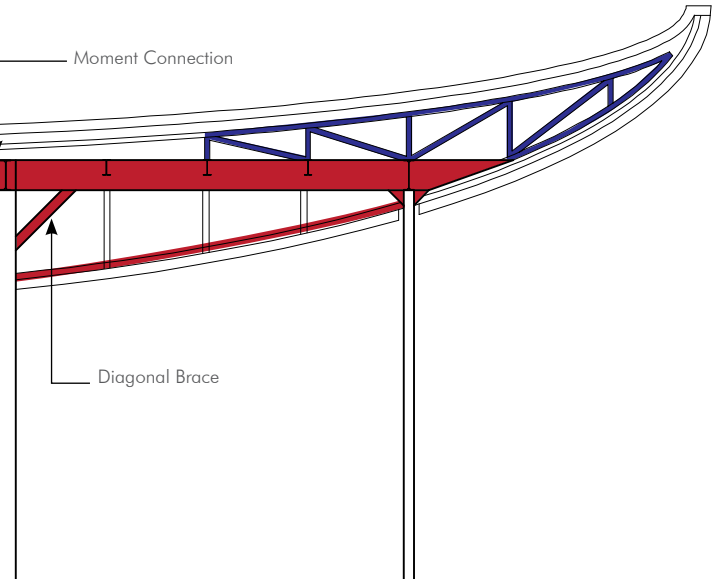



<6,000
6,000
16,000
Cantilever Structure
Main Steel Beam
Main Beam
Supporter
Columns


Steel Truss
Main Beam

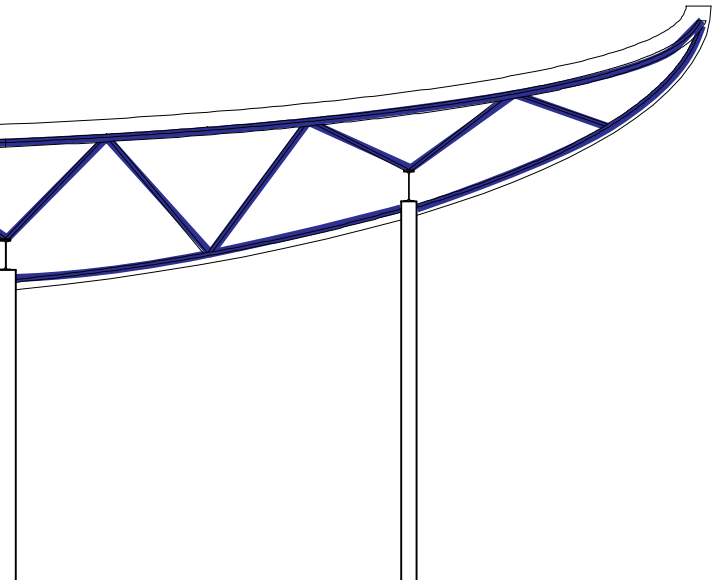

Main Curved Steel Beam
Main Beam
Diagonal bridging





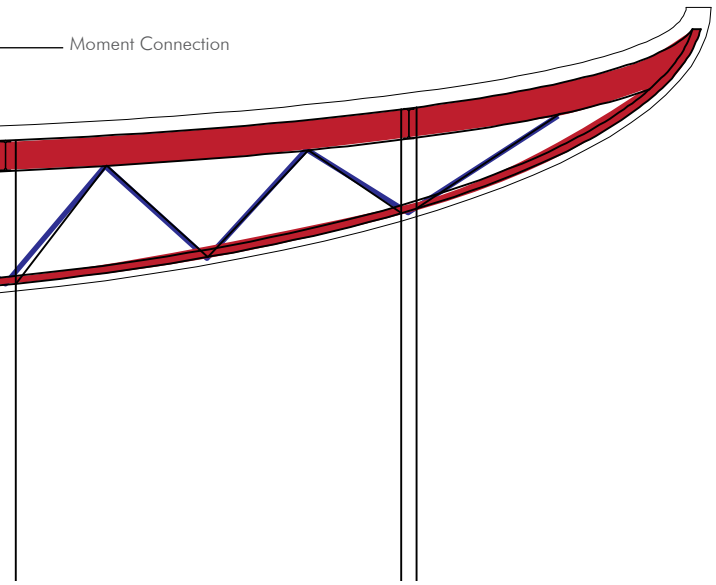
Alternative -1

The roof structure seems complicated with horizontal main beams (red) + another structure of cantilever (blue). For stability, moment connection in between main beams and diagonal braces are connected.
>>Since it is complicated, there shall be a simpler solution.



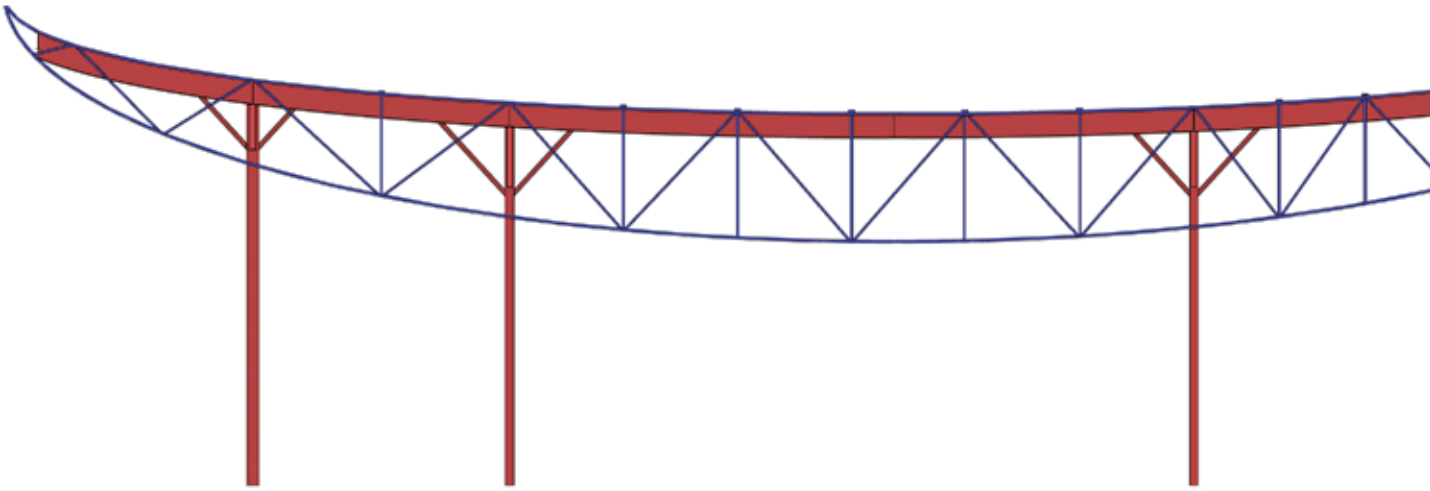
Alternative -2

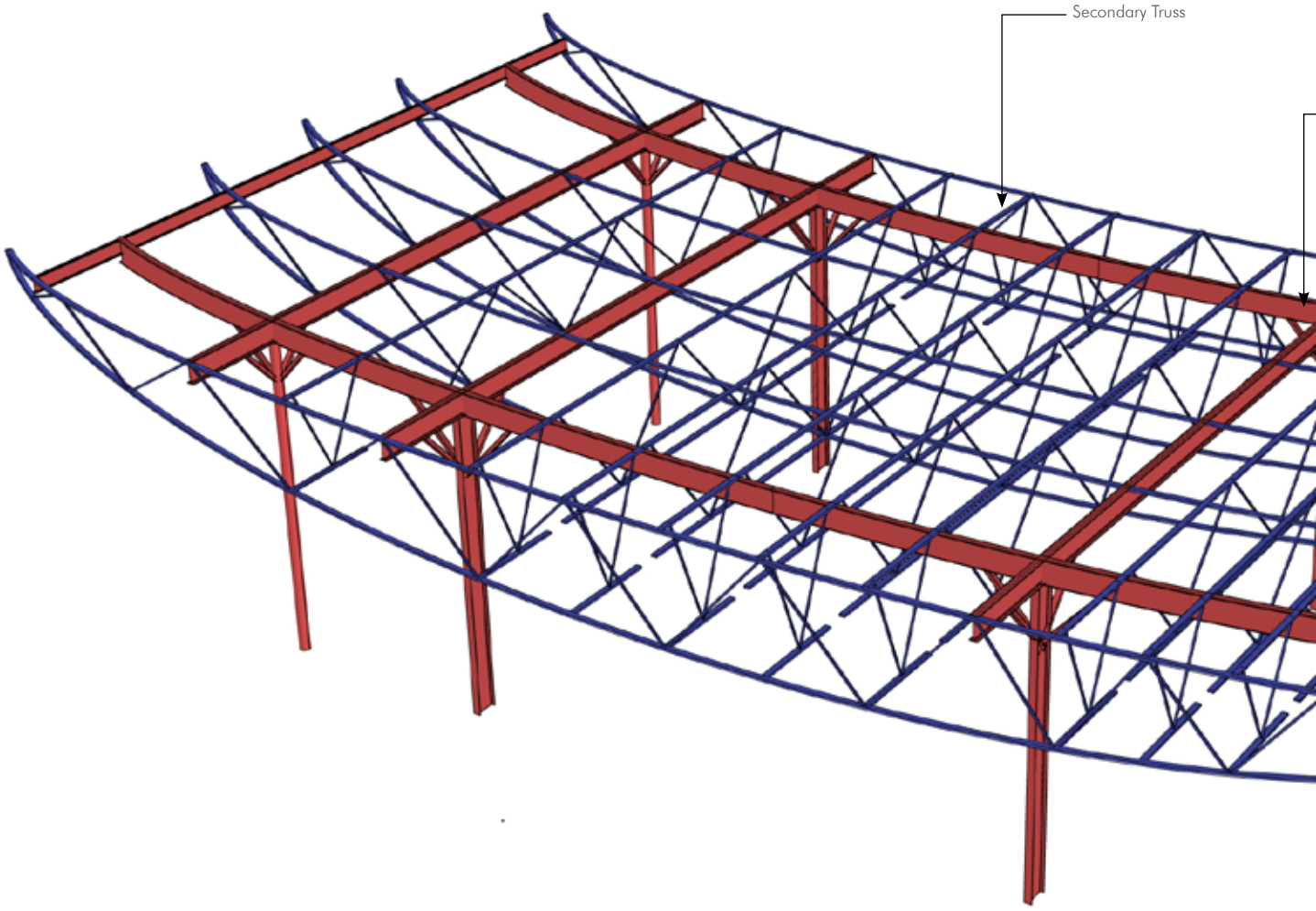
The roof has a structure of steel trusses. However, it seems that the building is unstable.



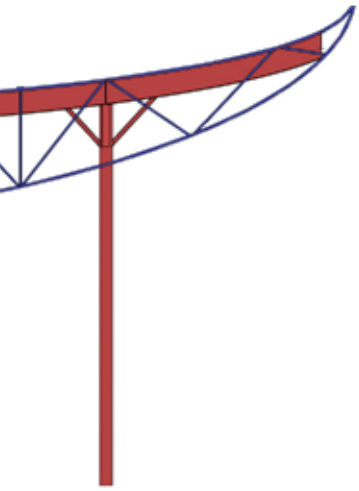
Alternative -3

This is a stronger version of alternative-2. Curved horizontal frames(red) are customized curved steel beams. The main curved steel beam is connected to columns with moment connection for stability. Diagonal bridging (blue) connect and support top and bottom curved beams(red).

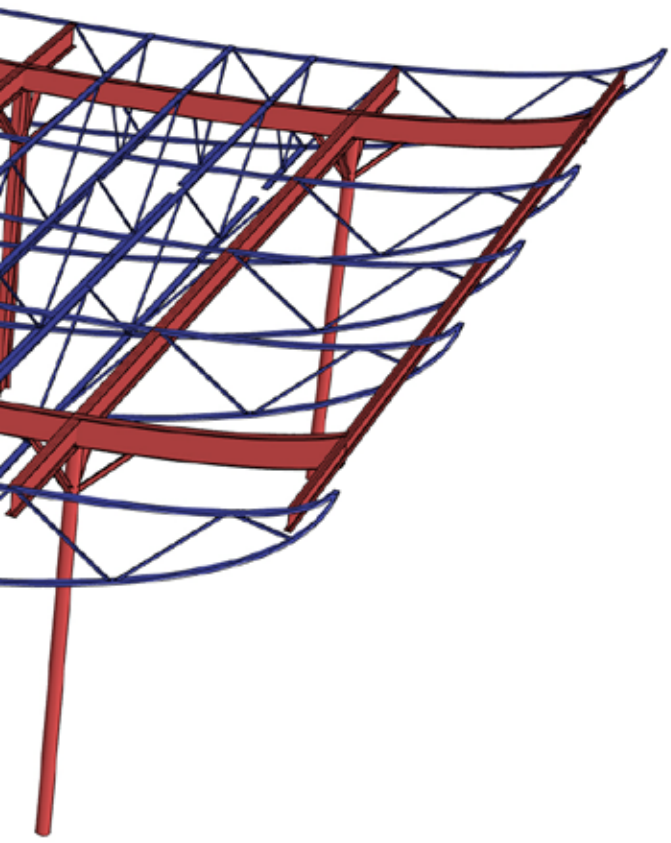


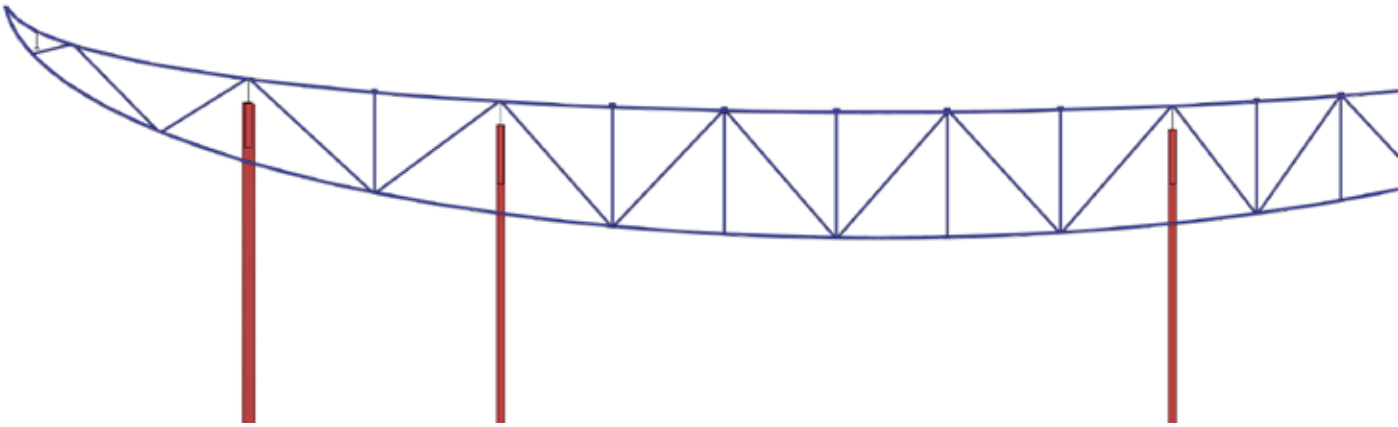

Secondary Truss

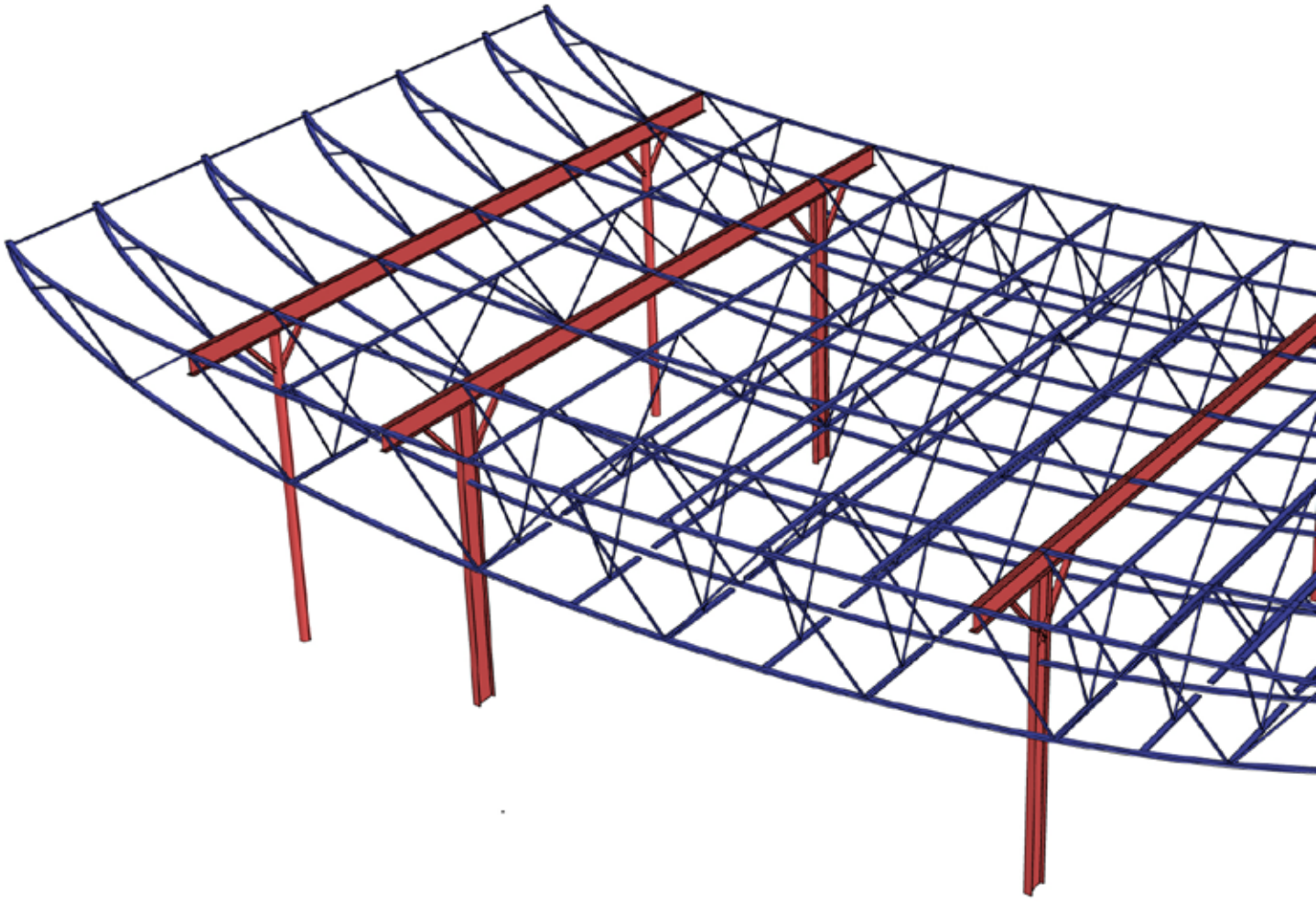
Version -B



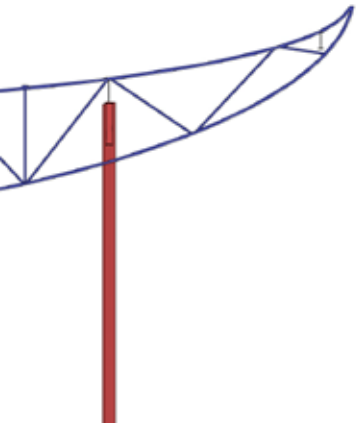
Main Beam

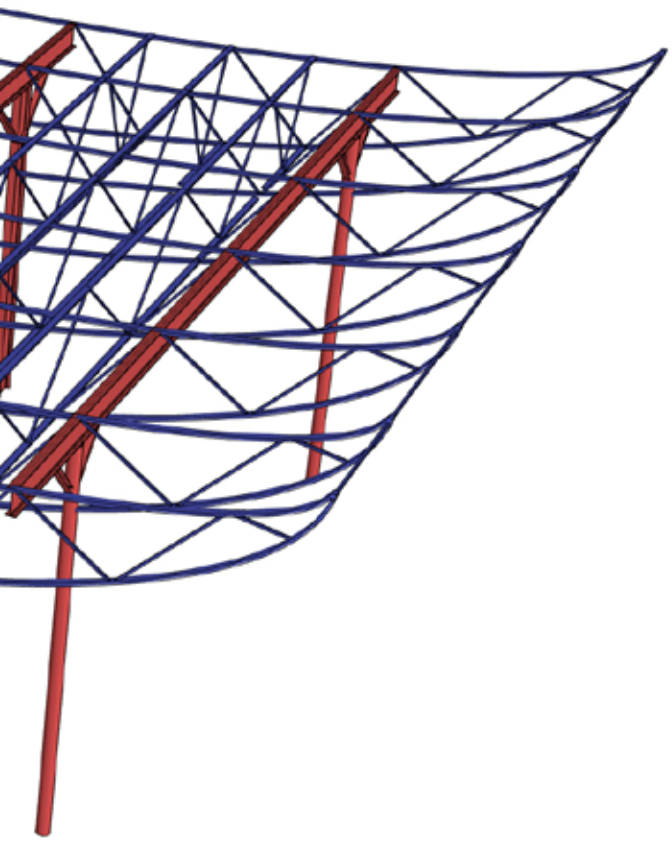


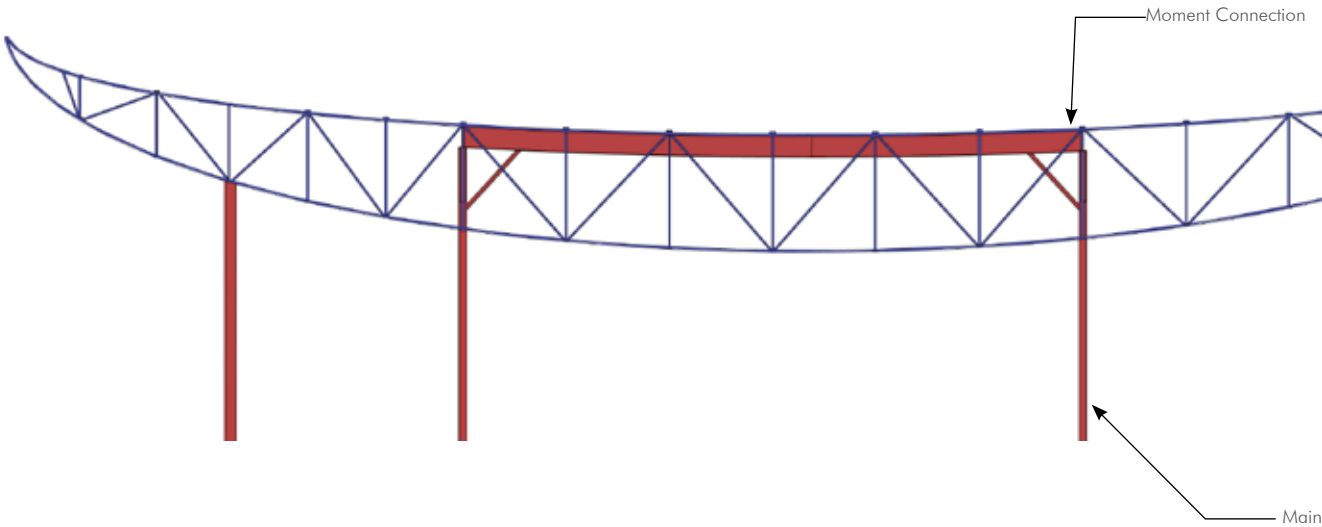


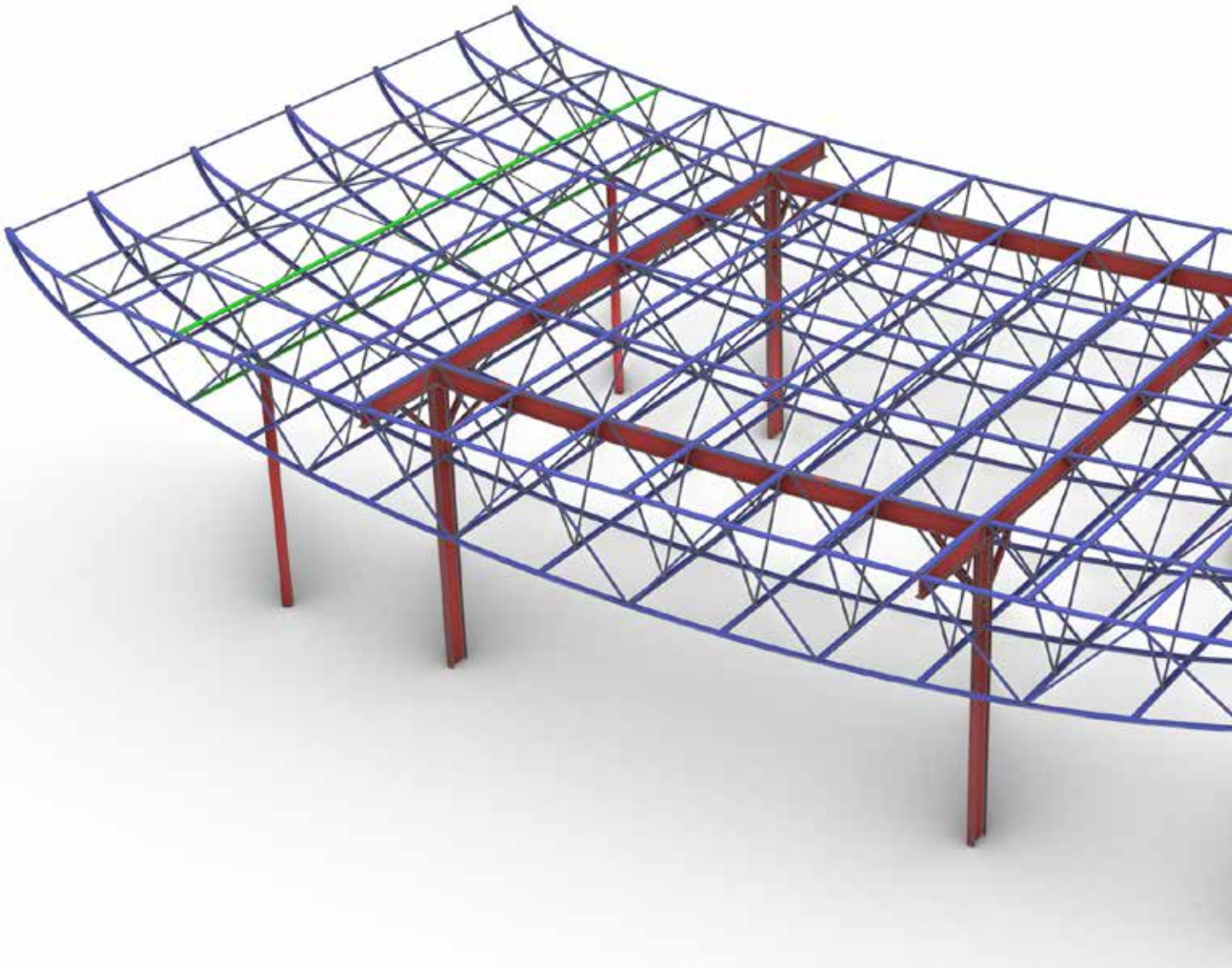


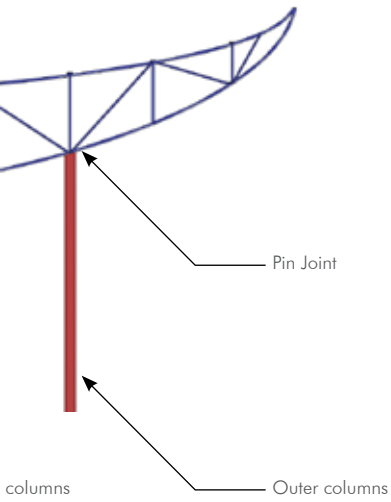
Version -A



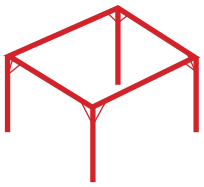



Moment Connection
Main

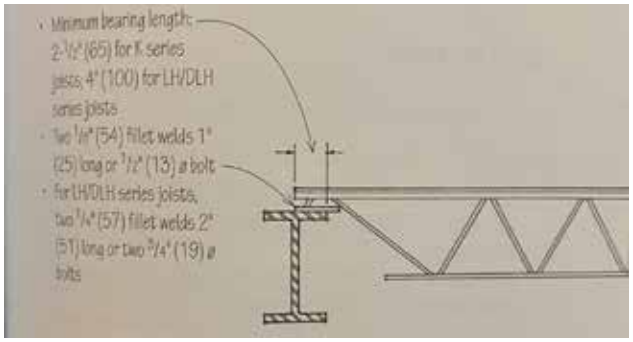


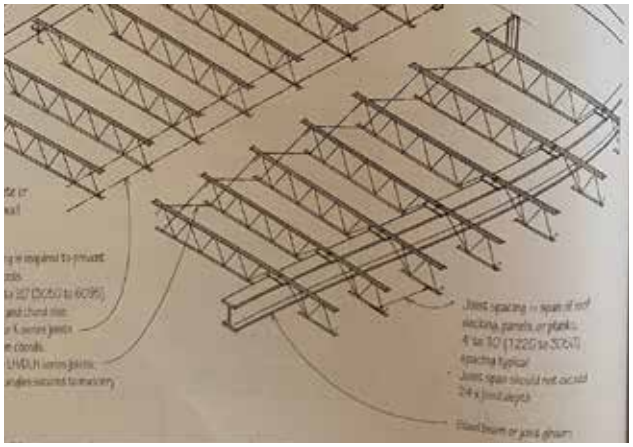


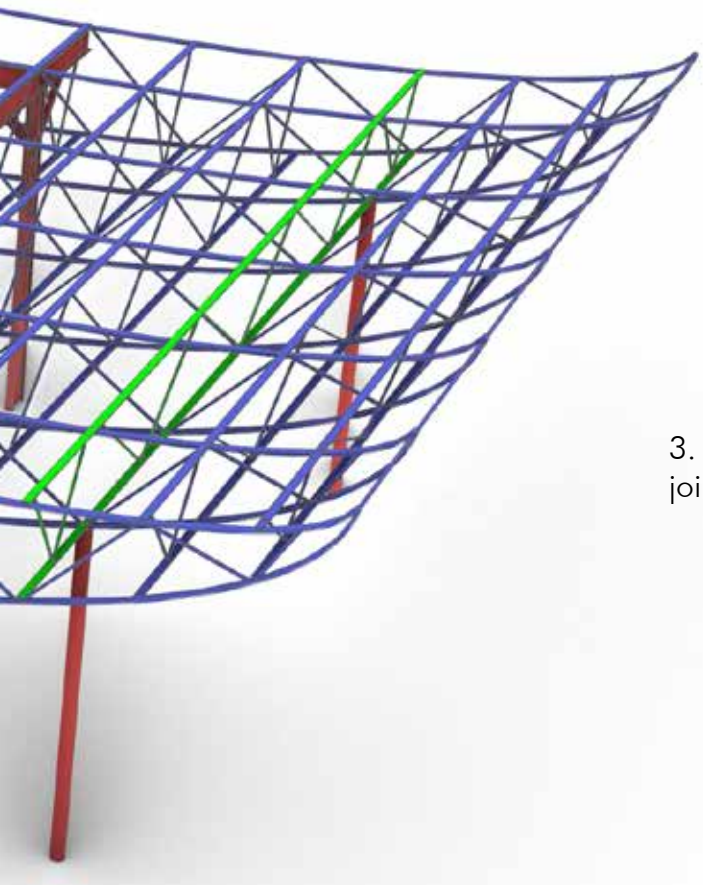
1. Main cloumns (intermal) are connected with beams with moment connection and diagonal braces.



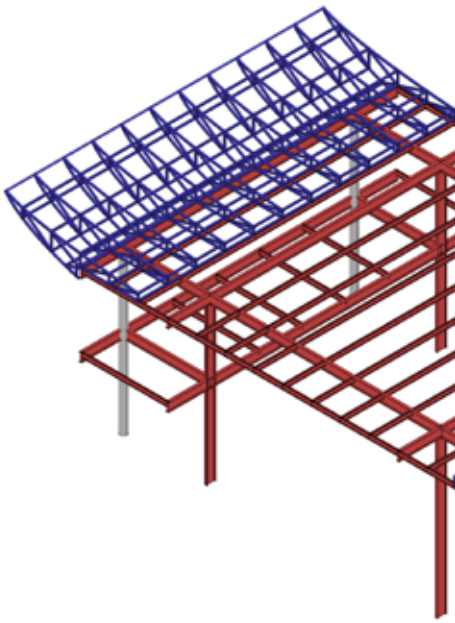
2. Trusses are connected to the intermal beams

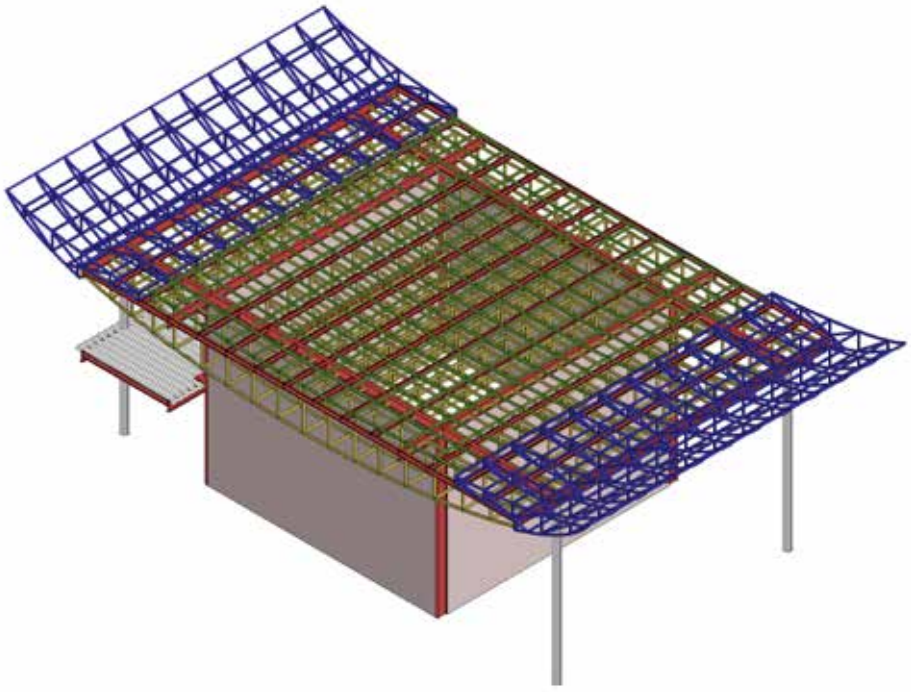


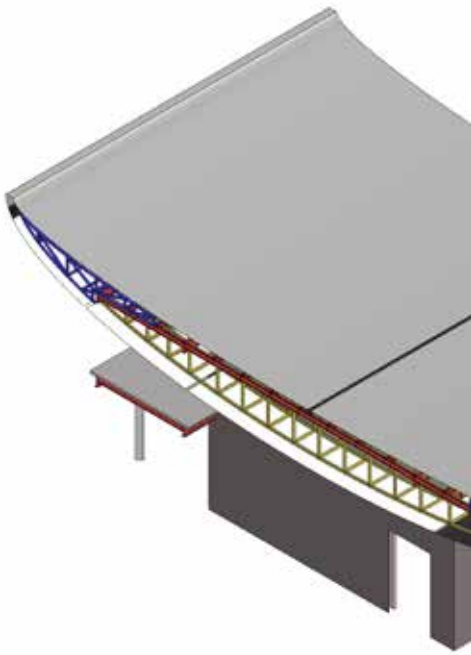


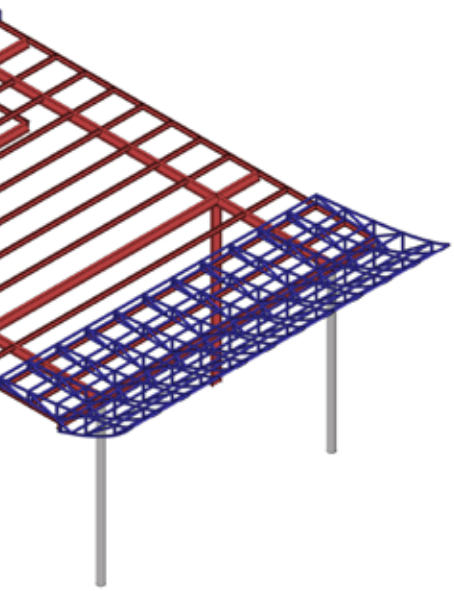


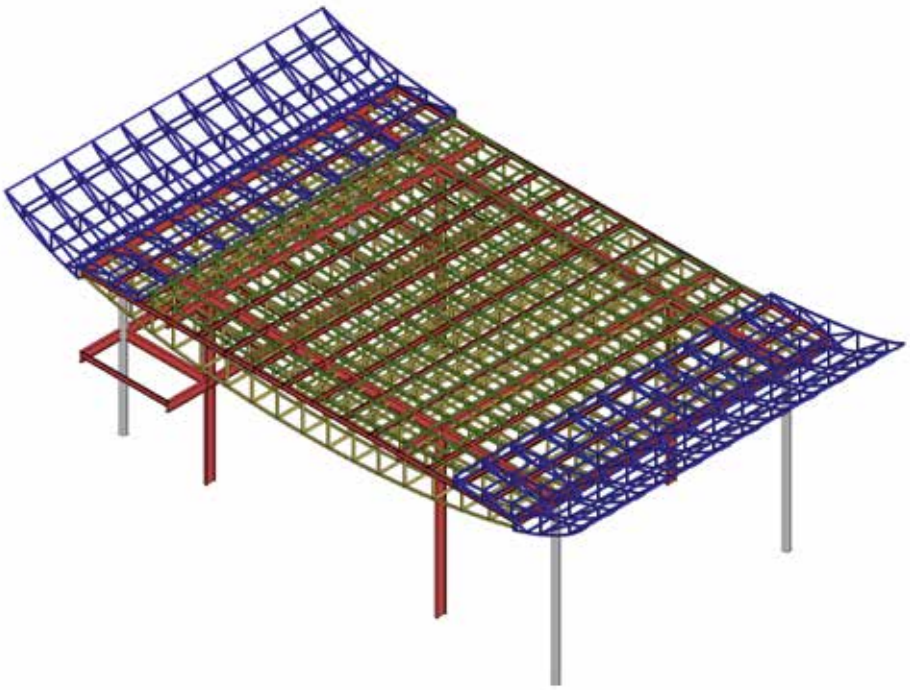
3. Outer columns are connected at the bottom with a pin joint

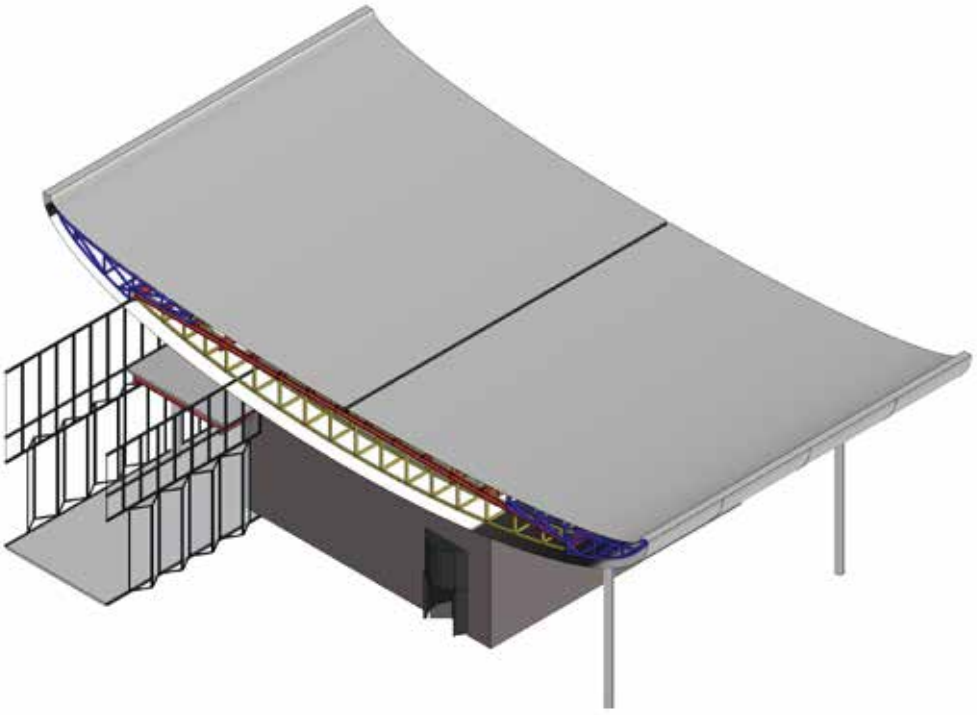




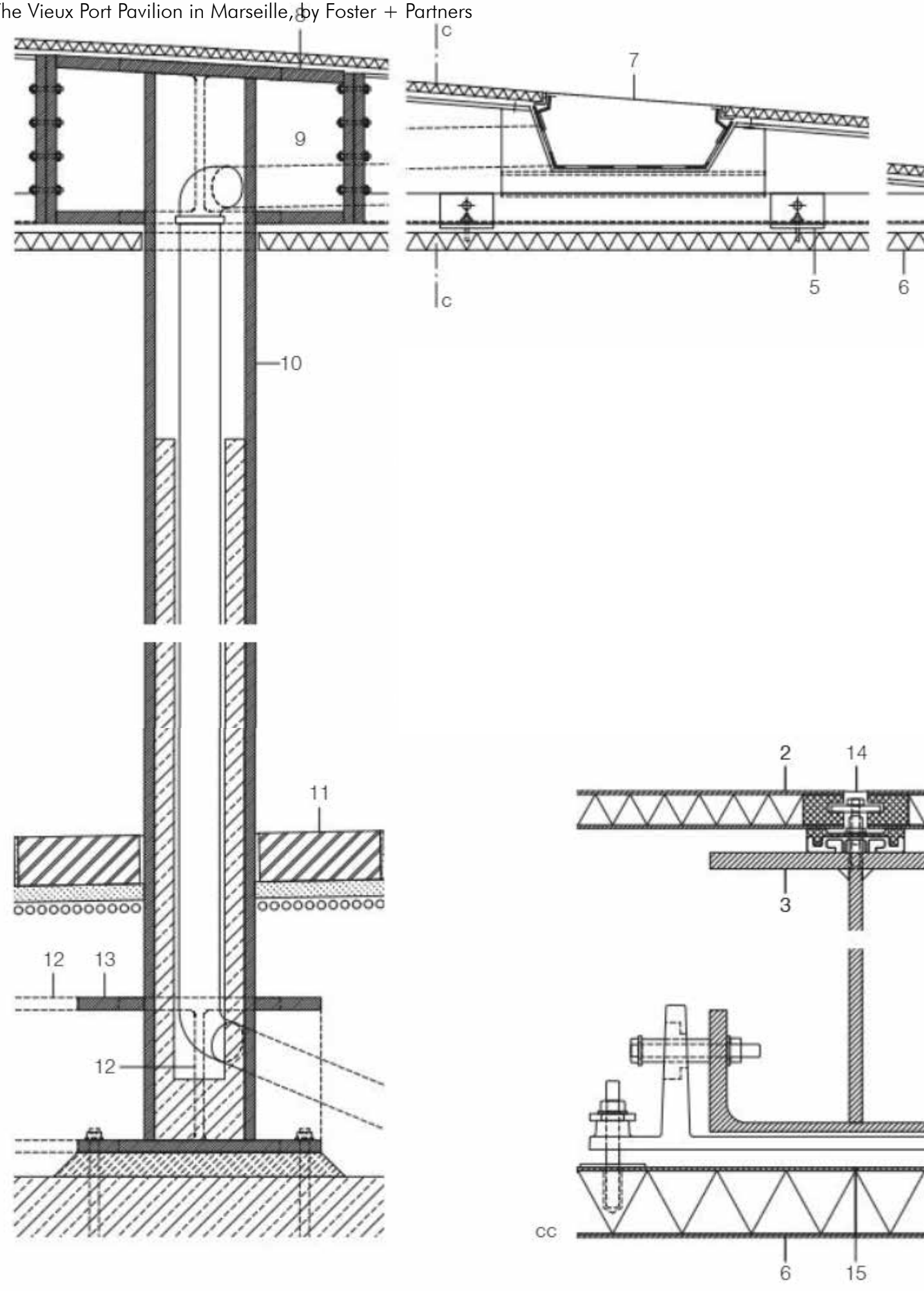


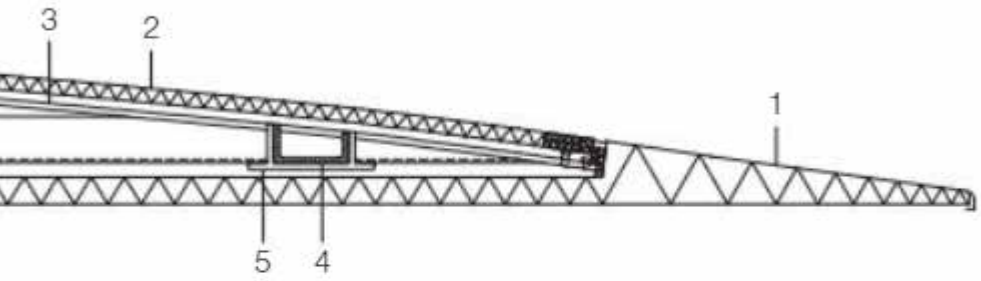




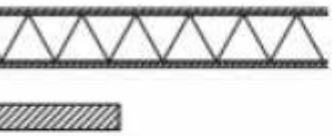


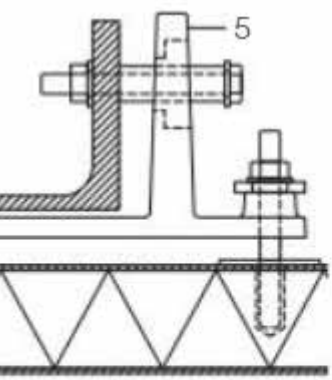
The Vieux Port Pavilion in Marseille, by Foster + Partners





scale 1:20
Section through fastening of
sandwich panels
scale 1:5

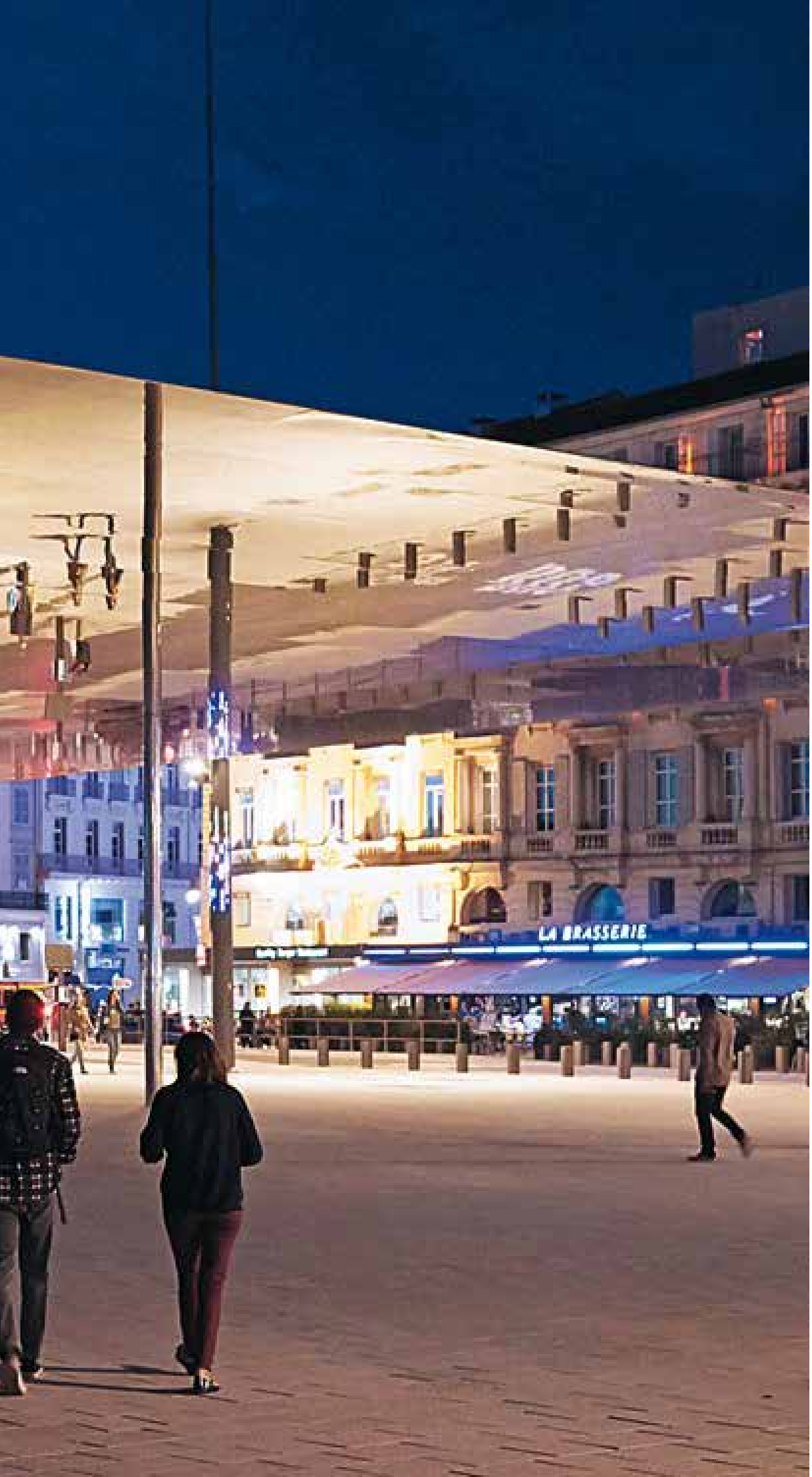


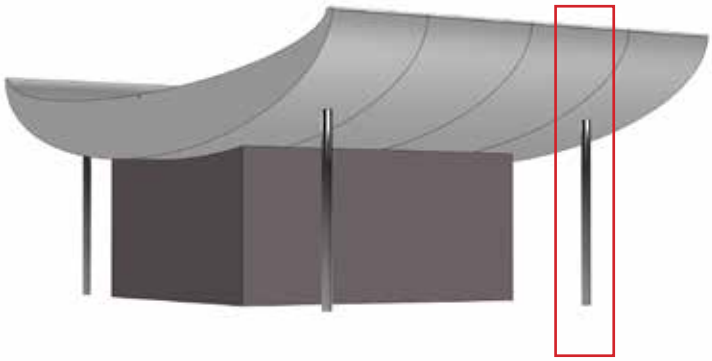


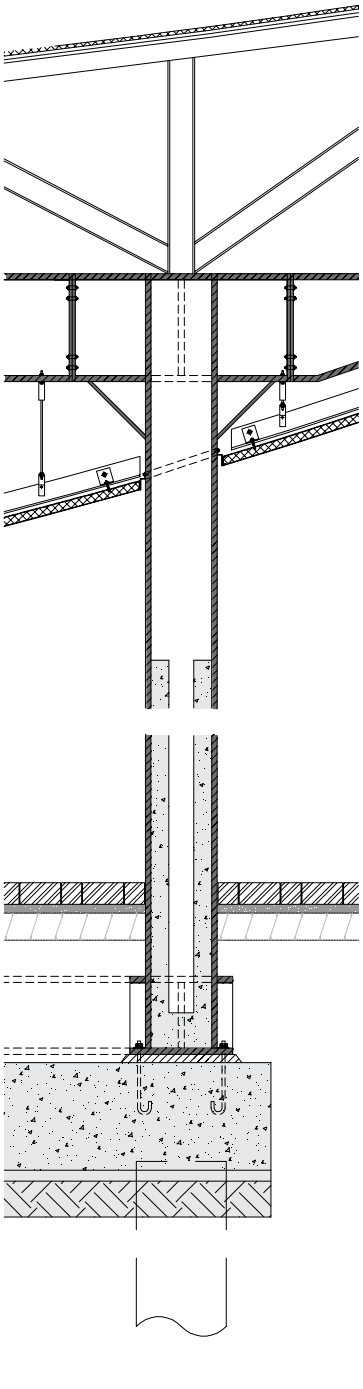
1 sandwich panel at edge of roof
(2000/5000 mm):
1.5 mm stainless-steel sheet,
super-mirror polish
XPS rigid foam
1.5 mm stainless steel sheet,
super-mirror polish
2 sandwich panel on upper roof surface
(2000/6000 mm):
1.5 mm stainless steel sheet, shot peened
20 mm XPS rigid foam
1.5 mm stainless steel sheet
3 steel profile beam, welded of
180/10 mm steel flats, 8 mm steel flats,
and 180 mm steel channel (UPE 180)
4 edge beam: 120 mm steel channel (UPE 120)
5 steel point supports
6 sandwich panel on roof underside
(2000/6000 mm):
1.5 mm stainless-steel sheet
40 mm XPS rigid foam
1.5 mm stainless steel sheet,
super-mirror polish
7 gutter: 2 mm stainless steel
sheet, perforated, as cover
1 mm EPDM membrane as lining of drain
2 mm stainless steel sheet
8 column head, steel, welded
9 360/30 mm steel profile primary beam
10 column: Ø 273/25 mm stainless steel CHS
50 mm concrete
downpipe
11 120 mm granite paving
in 40 mm sand bed
12 400 mm steel profile; frame (HEB 400)
13 foot plate, steel
14 silicone joint
15 butt joint, gap < 1 mm

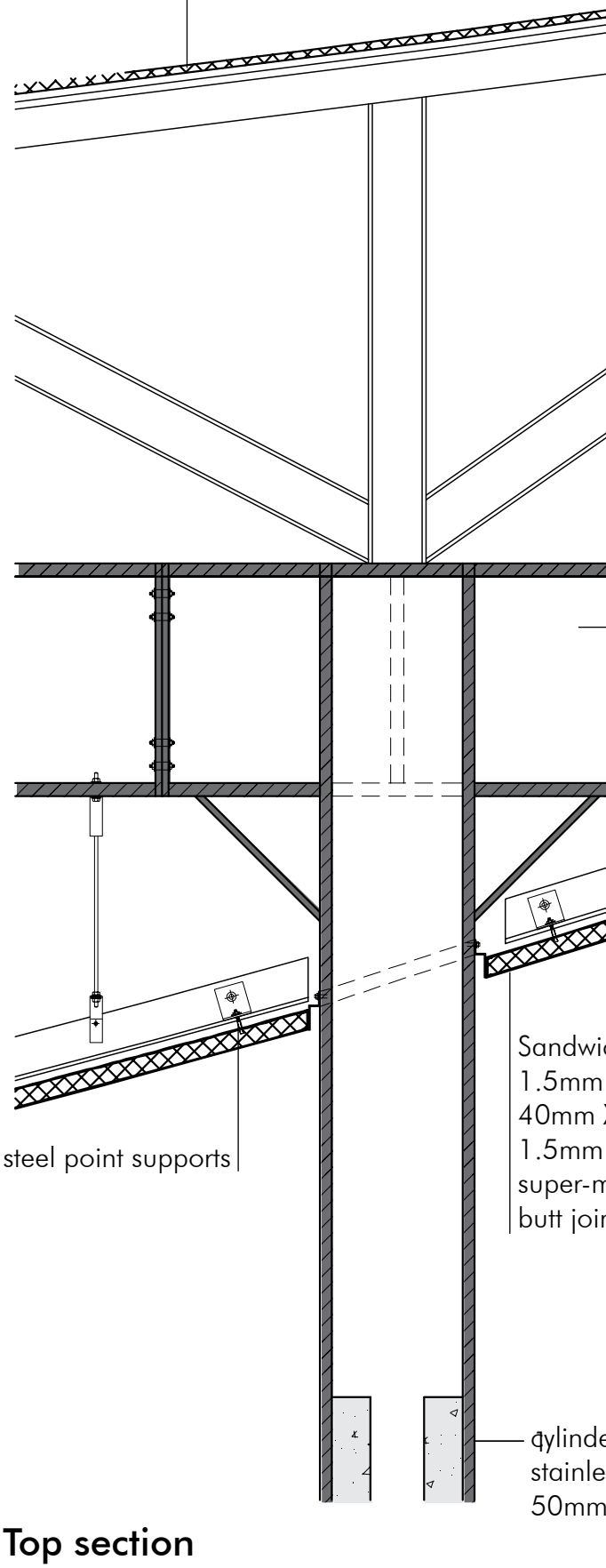
The Vieux Port Pavilion in Marseille, by Foster + Partners

The Vieux Port Pavilion in Marseille, by Foster + Partners


LA BRASSERIE

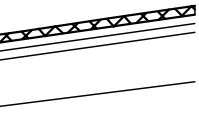


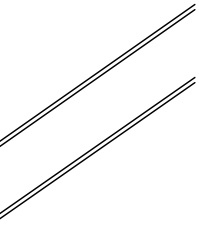


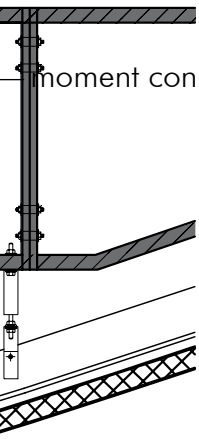

Sandwich panel on upper roof surf
1.5mm stainless steel sheet, shot p
20mm XPS rigid foam
1.5mm stainless-steel sheet
steel point supports
Sandwi
1.5mm
40mm
1.5mm
super-m
butt joi
cylinde
stainle
50mm

Top section

ace:
eened



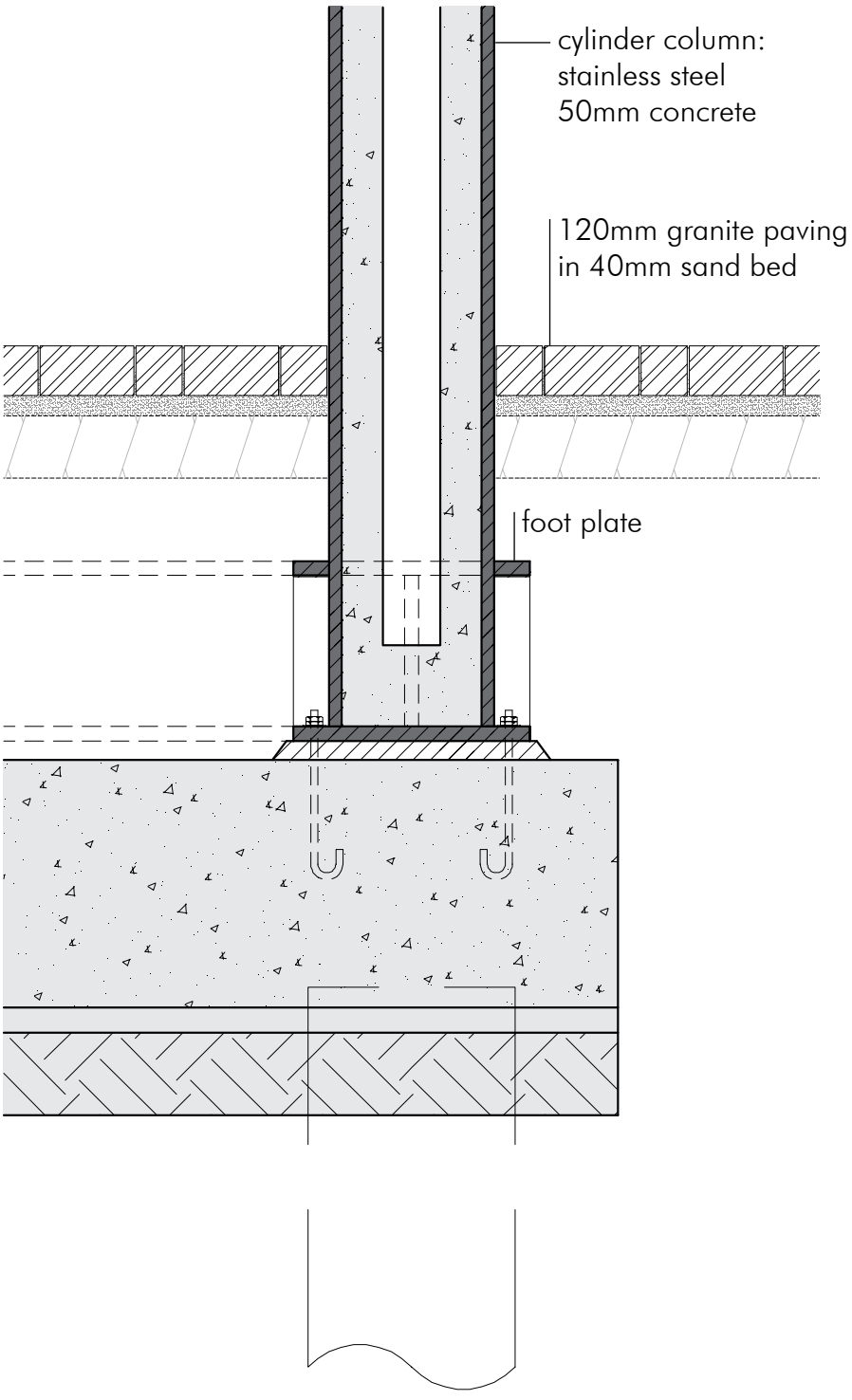




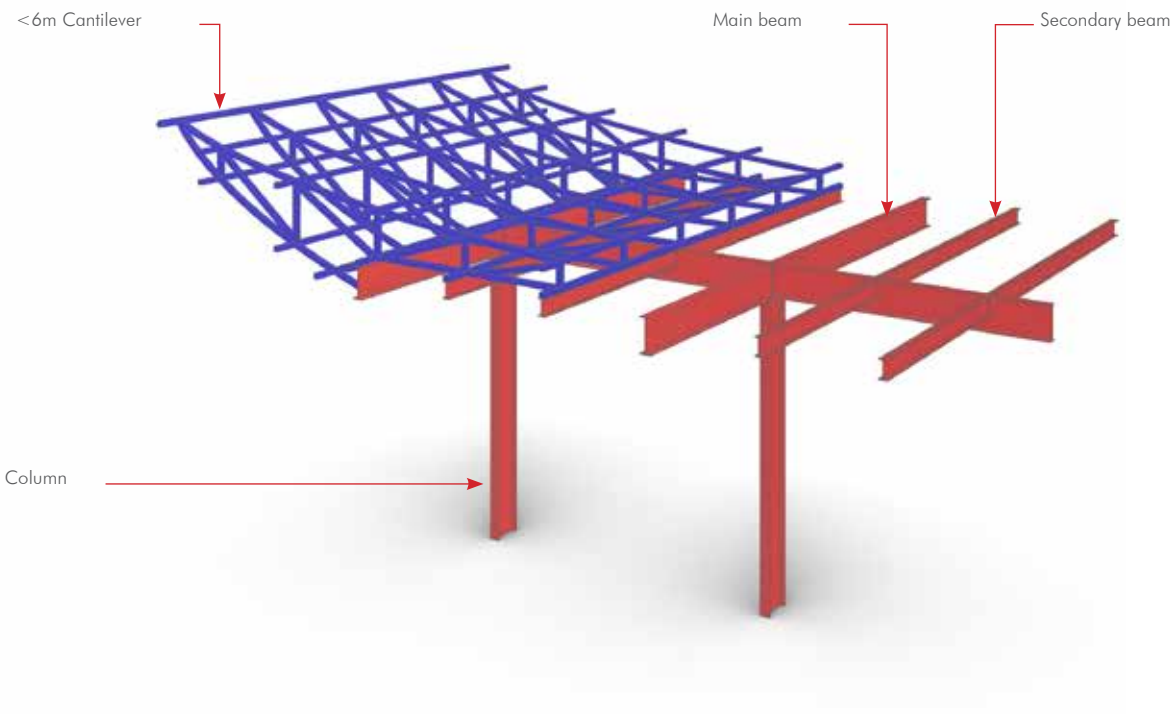
moment connection

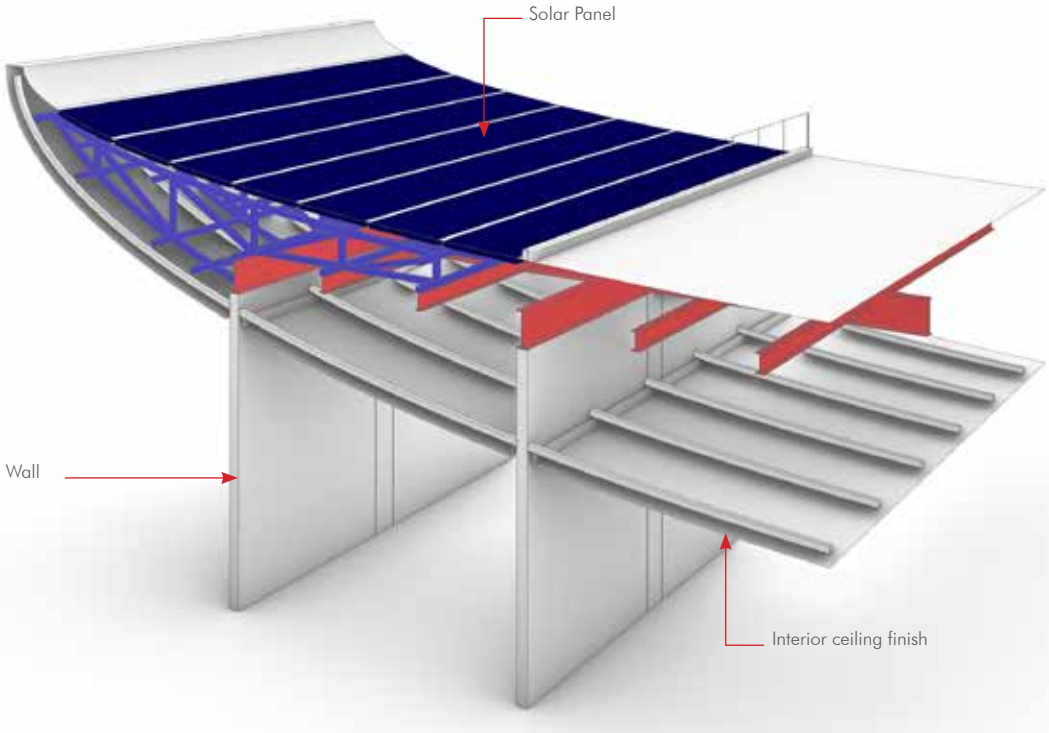
ch panel on roof underside:
stainless steel sheet
XPS rigid foam
stainless-steel sheet,
irror polish,
nt, gap <1mm

er column:
ss steel
concrete

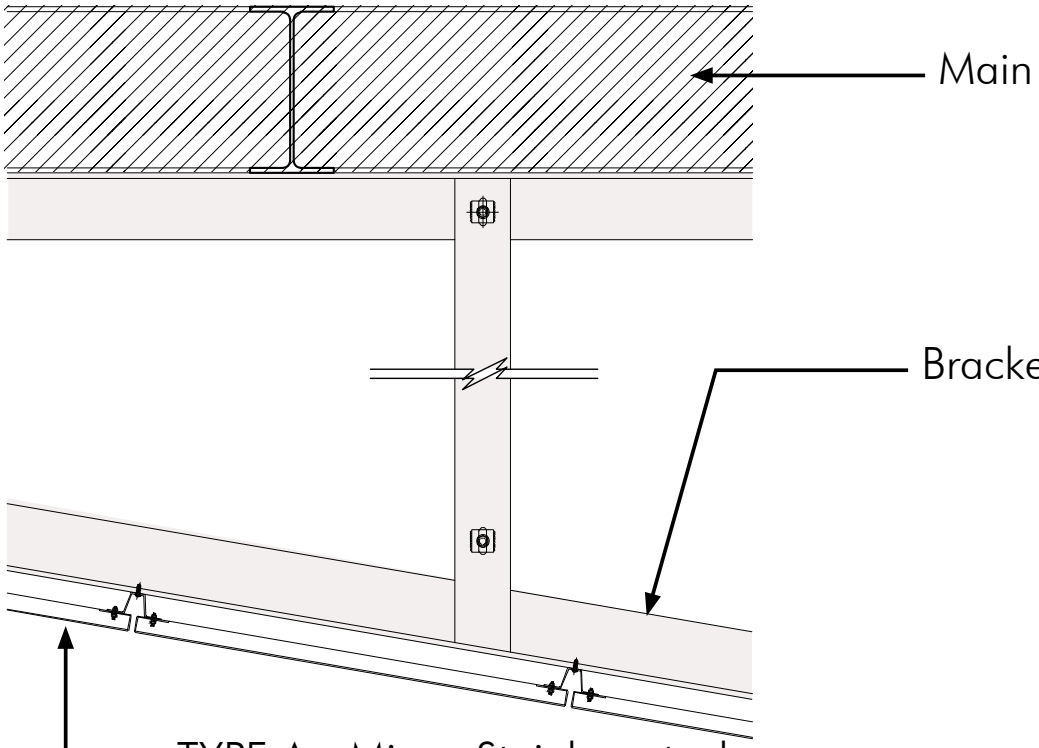


Bottom section

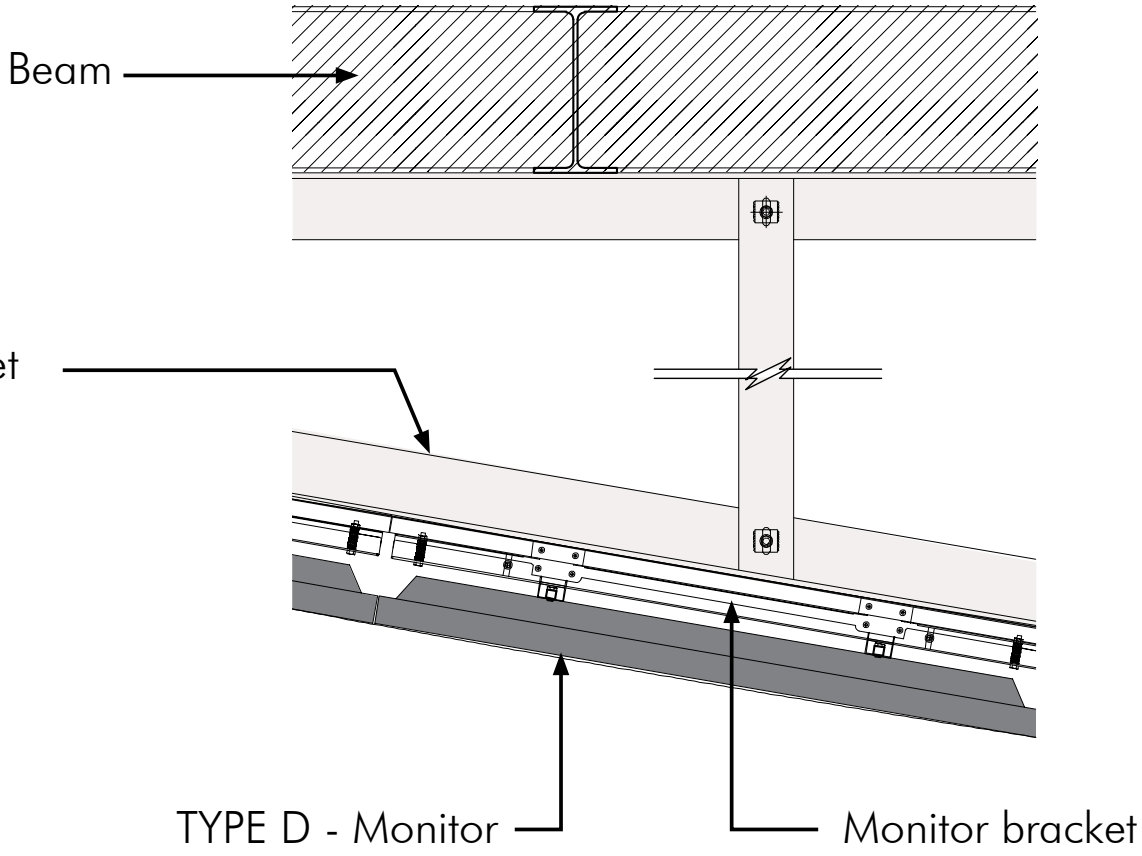

<6m Cantilever
Main beam
Secondary beam
Column

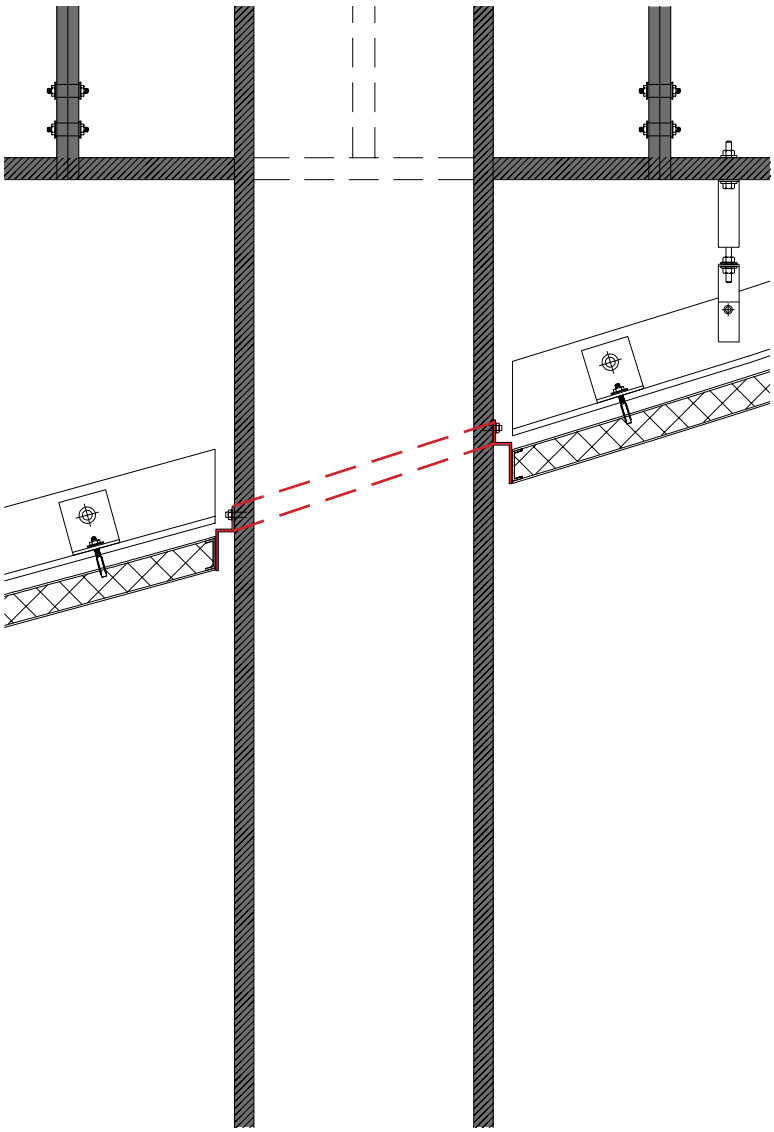

Solar Panel
Wall
Interior ceiling finish

Roof Ceiling Detail - TYPE A/B/C

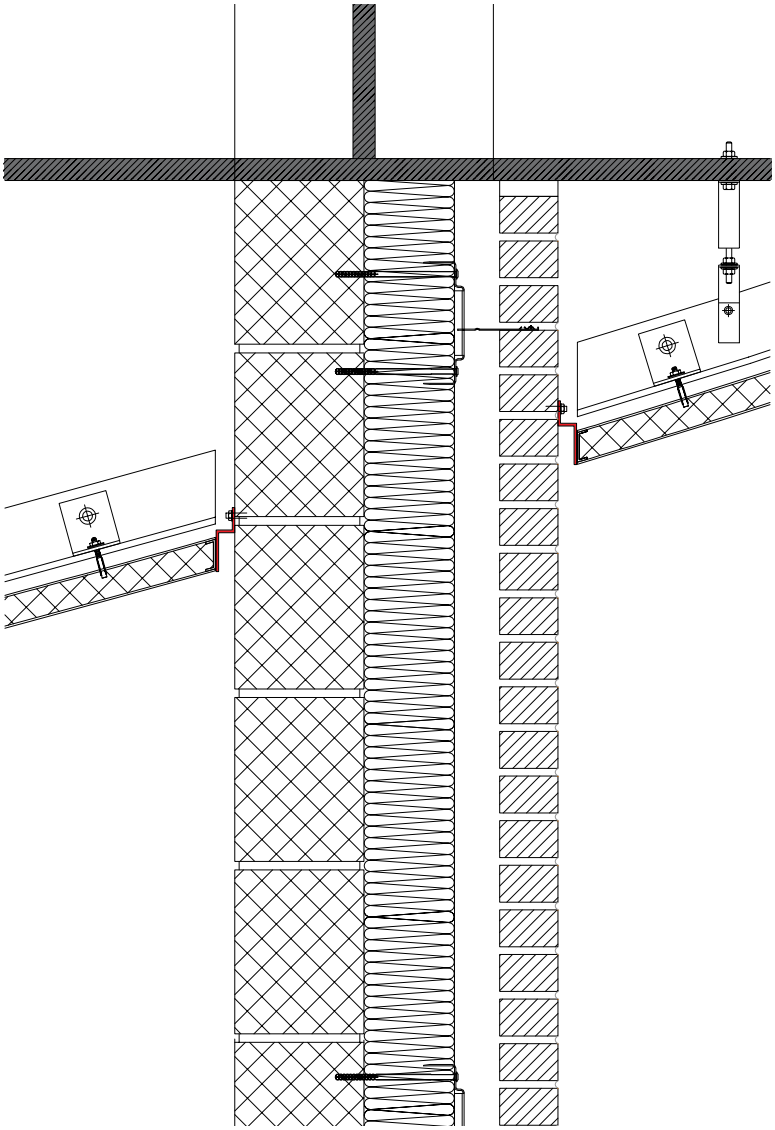


Roof Ceiling Detail - TYPE D

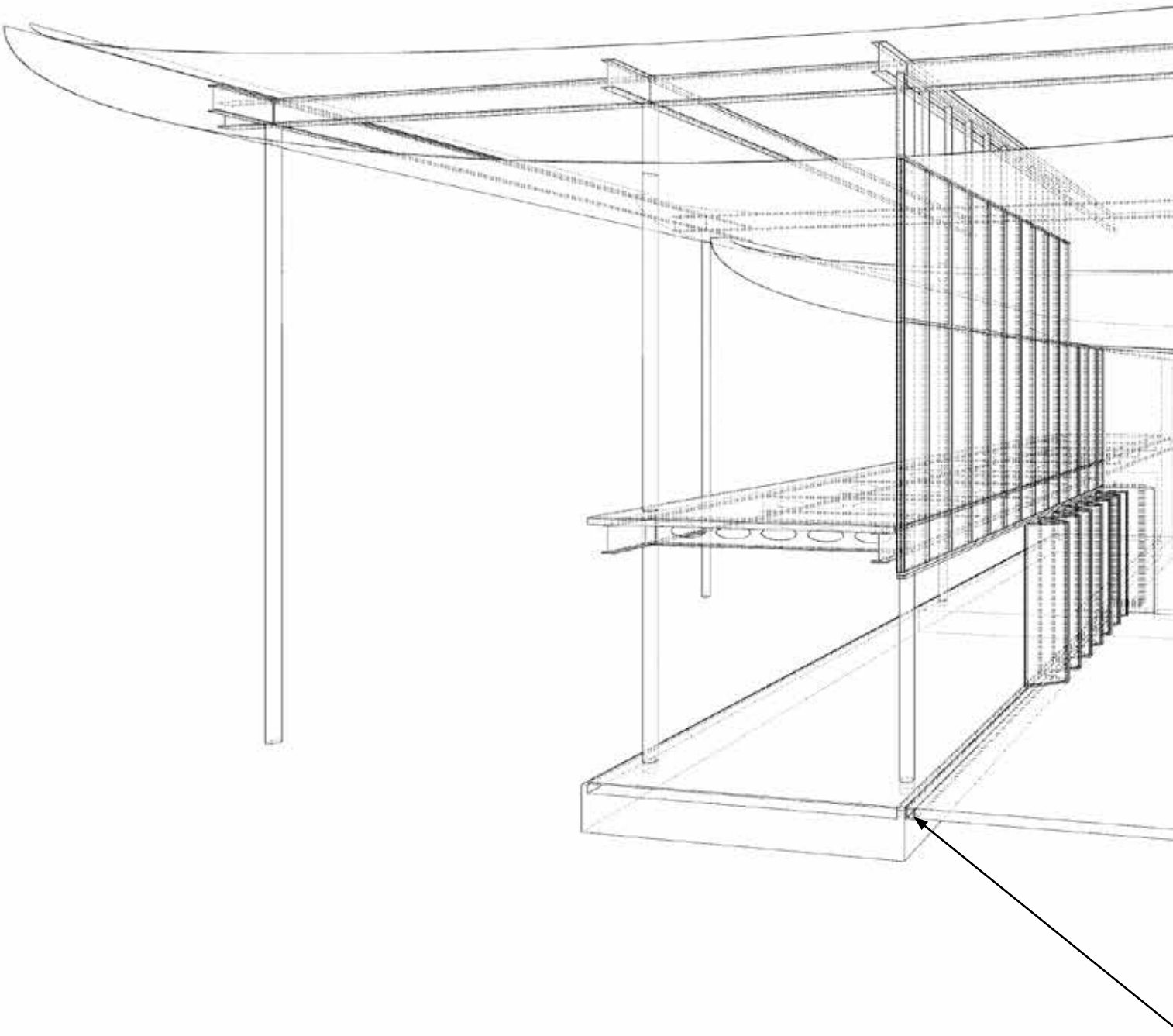


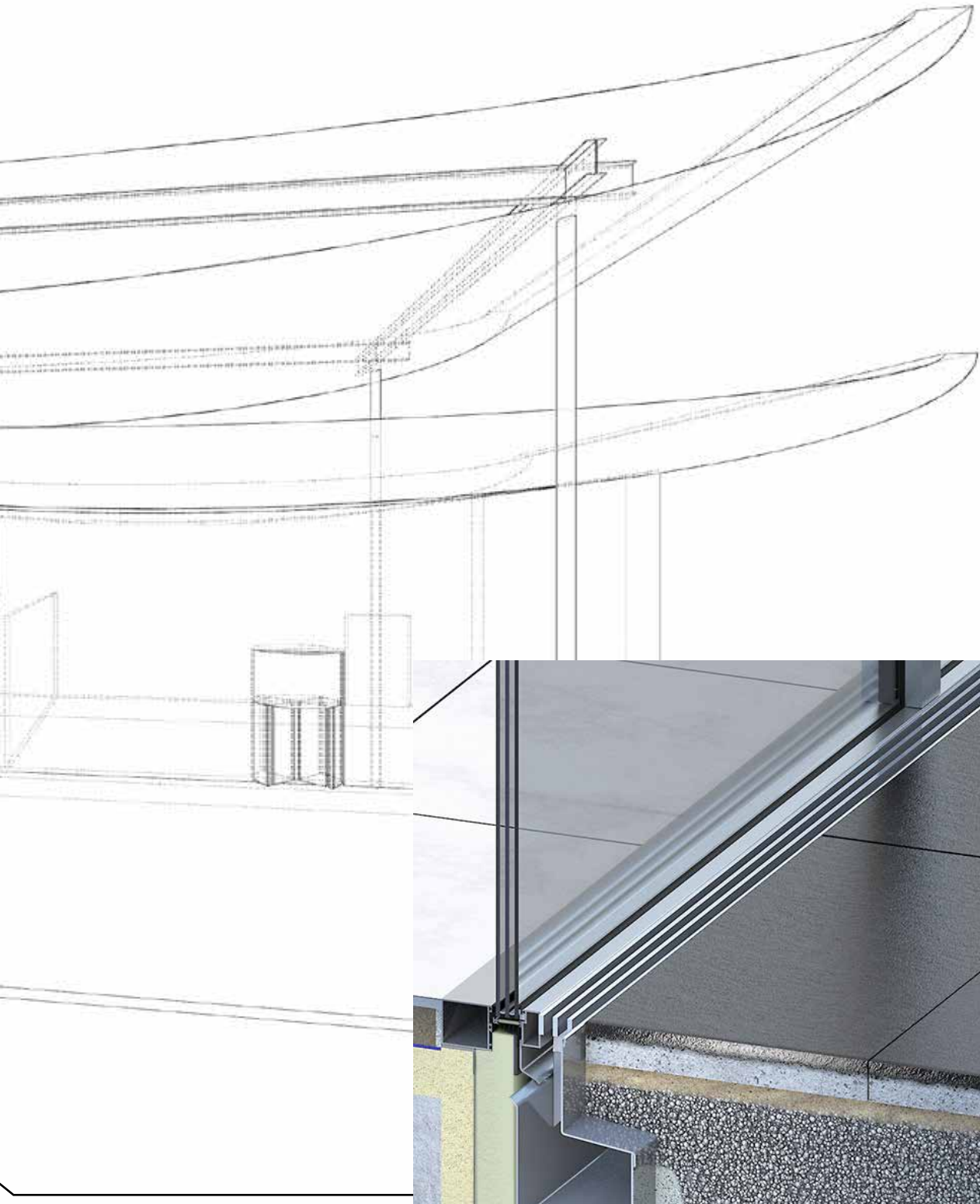


Roof and Column

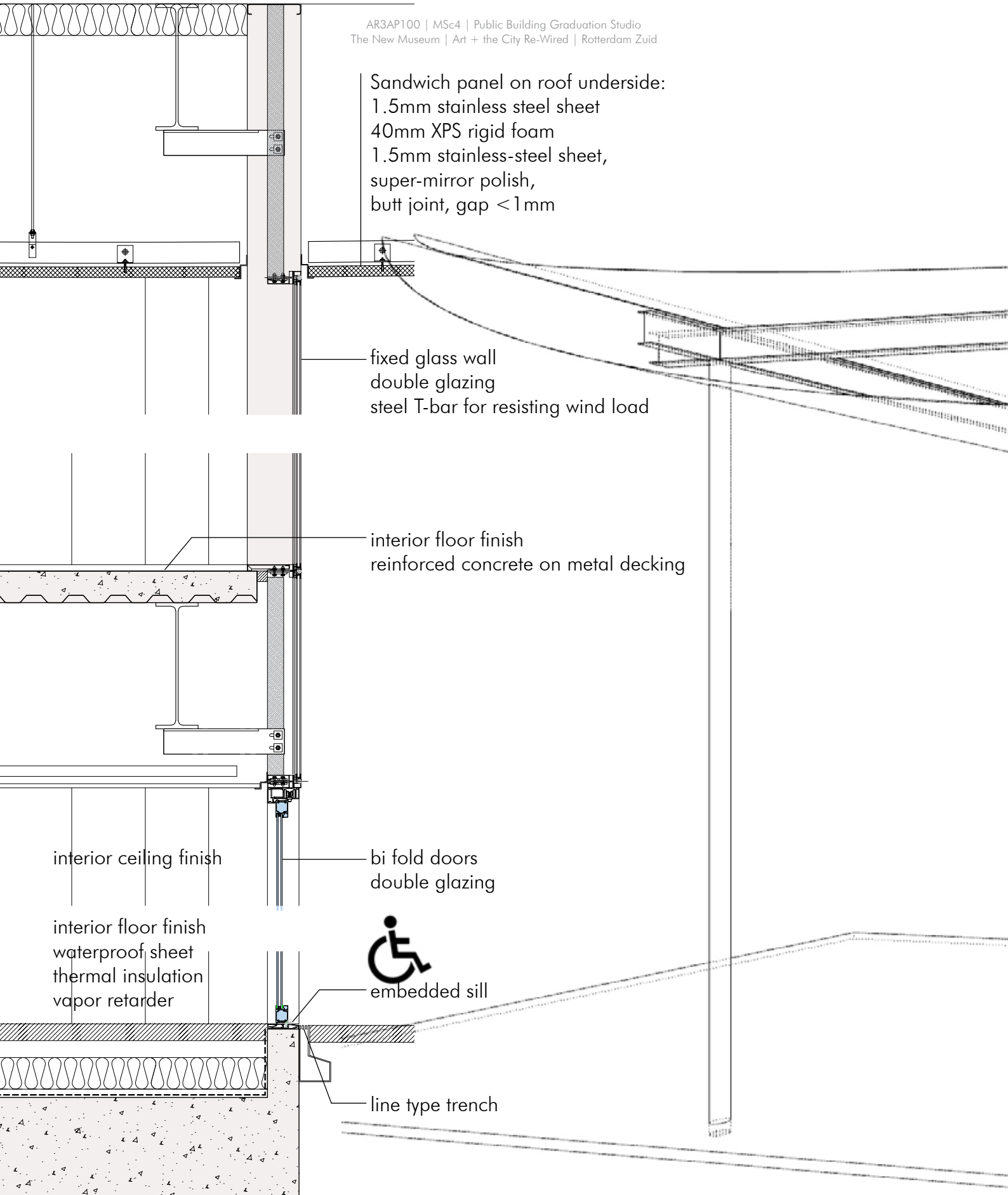


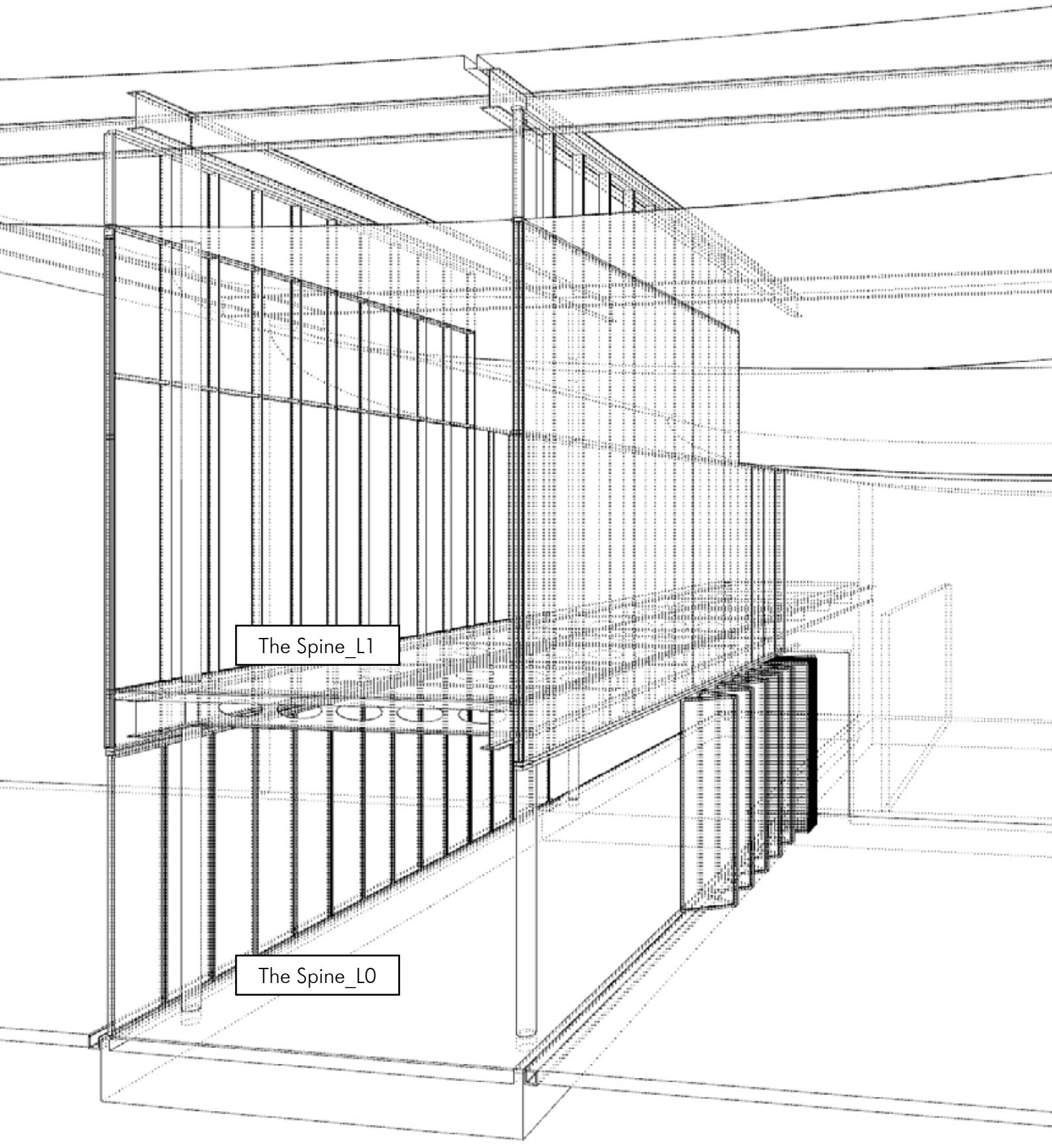
Roof and Wall





https://www.inotec-edelstahl.de/produkte/fassadenrinnen/schlitzrinnen/schlitzrinne-typ-ino-662-sr/

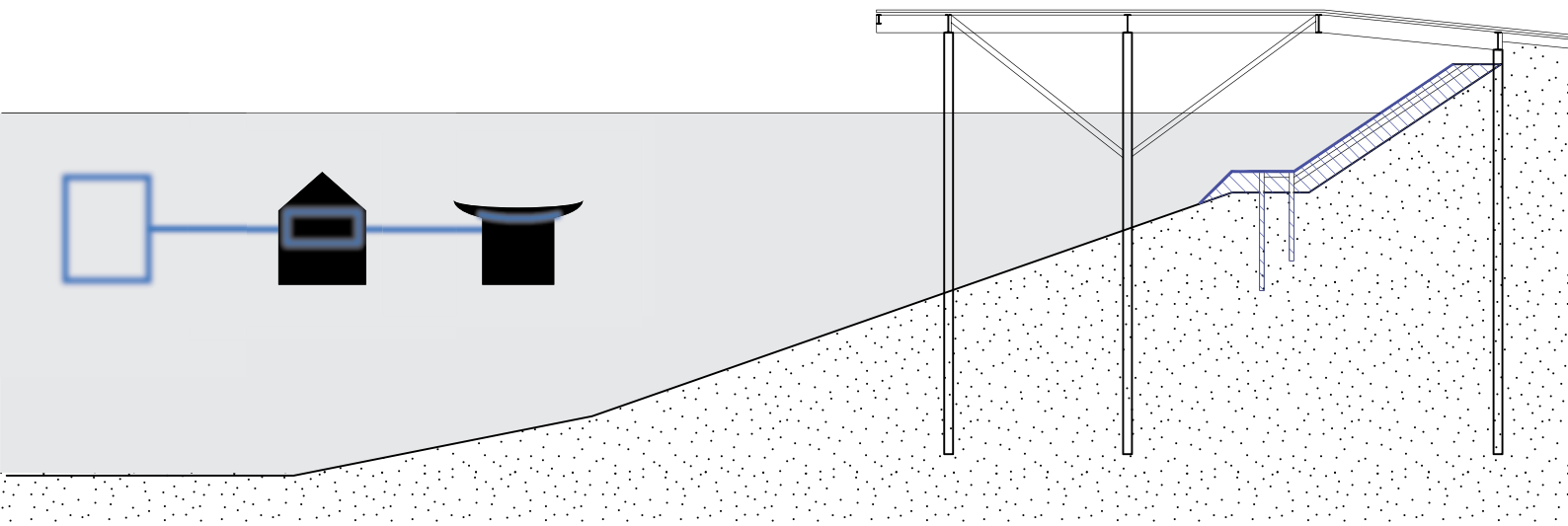

Sandwich panel on roof underside:
1.5mm stainless steel sheet
40mm XPS rigid foam
1.5mm stainless-steel sheet,
super-mirror polish,
butt joint, gap <1mm
fixed glass wall
double glazing
steel T-bar for resisting wind load
interior floor finish
reinforced concrete on metal decking
interior ceiling finish
bi fold doors
double glazing
interior floor finish
waterproof sheet
thermal insulation
vapor retarder
embedded sill
line type trench

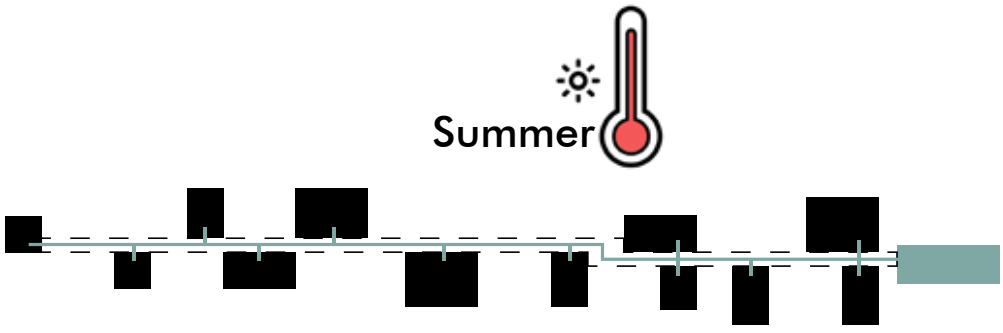

The Spine_L1
The Spine_L0

Climate Concept

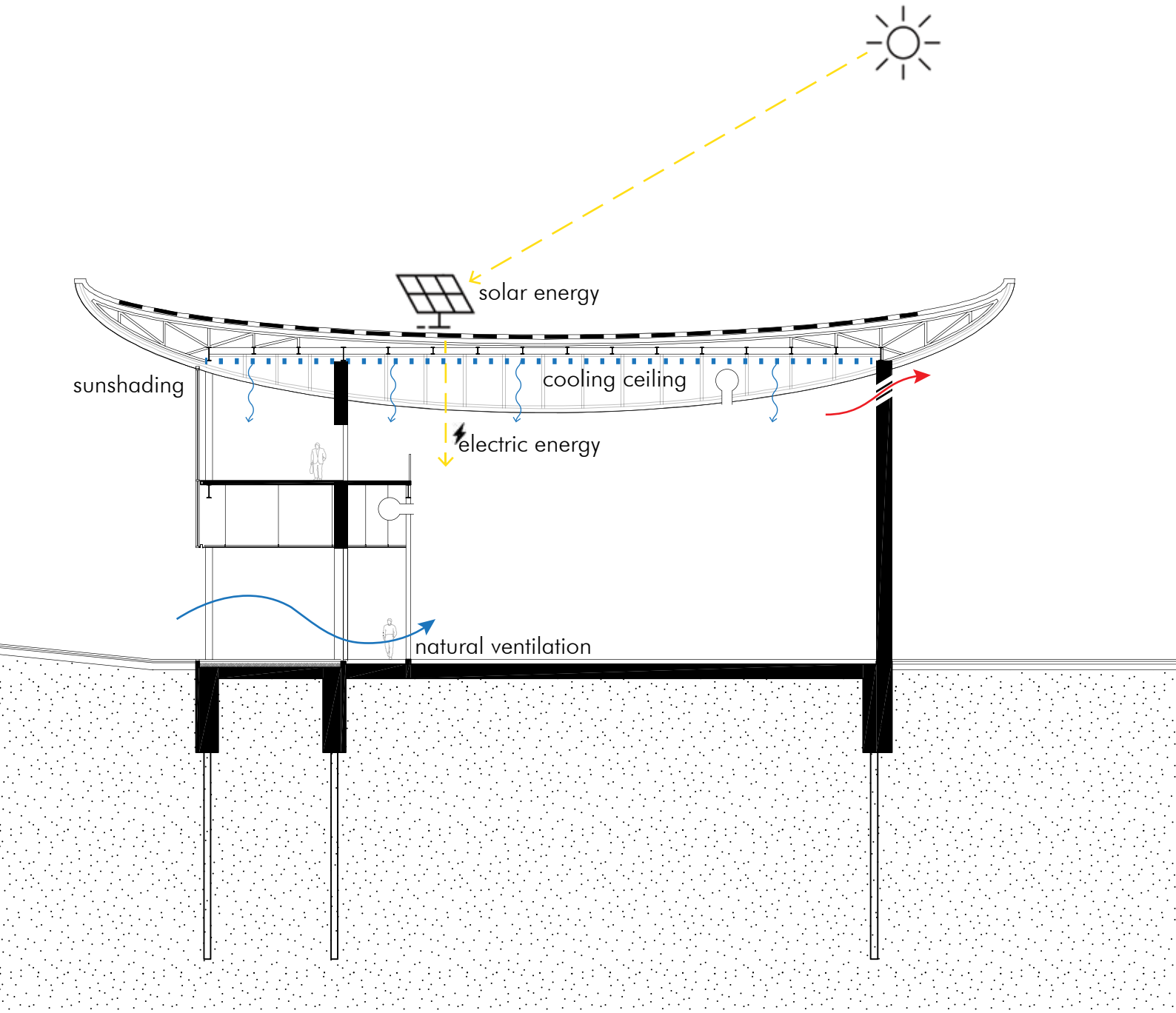
Due to the roof structure, heat sources such as incident solar radiation, incoming warm external air, transmission, and use of the building can cause a room to heat up. Under the roof, a cooling ceiling is installed to prevent overheating. And cool night-time air can help the stored heat to escape. The roof profile can also help for natural air flows.

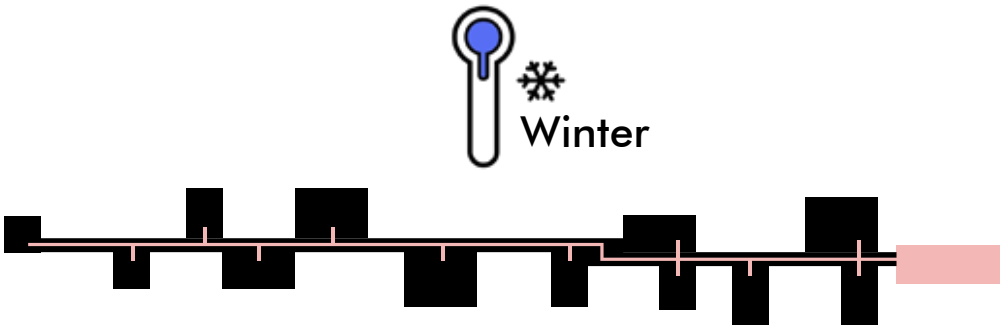
Due to climate change, rising sea level cuases high-water levels to rise in Rotterdam. The higher dike is newly installed on the river bank.





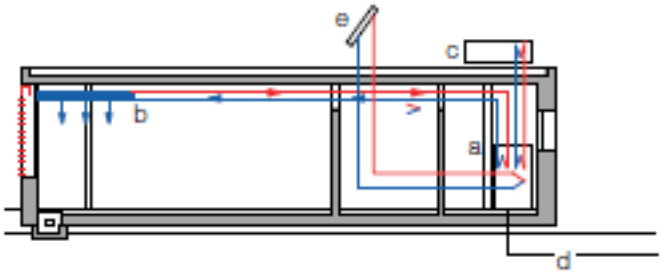
When the spine disappears during summer, it provides good airflow. The primary climate concept is using passive energy. However, for example when there is no wind, it needs an artificial ventilation system. The machine room is located in the Quaker Oat building and pipelines are connected under the spine ceiling.



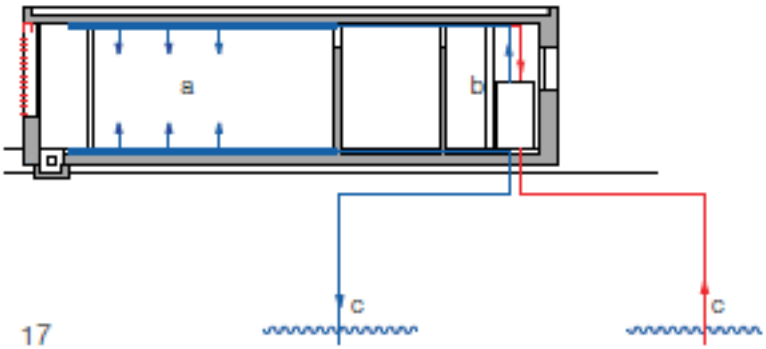


Since the spine is composed of double glazing, it provides another insulation layer to keep warm.

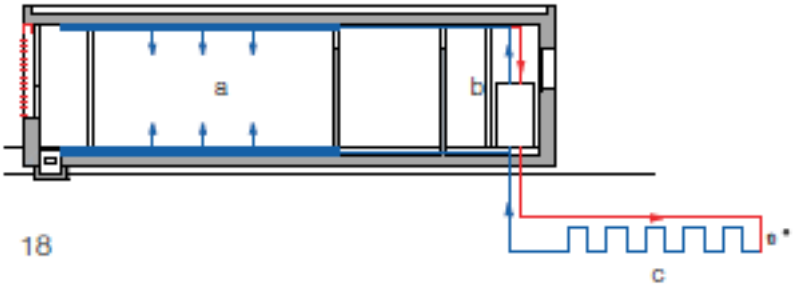
Cooling with water



16



17

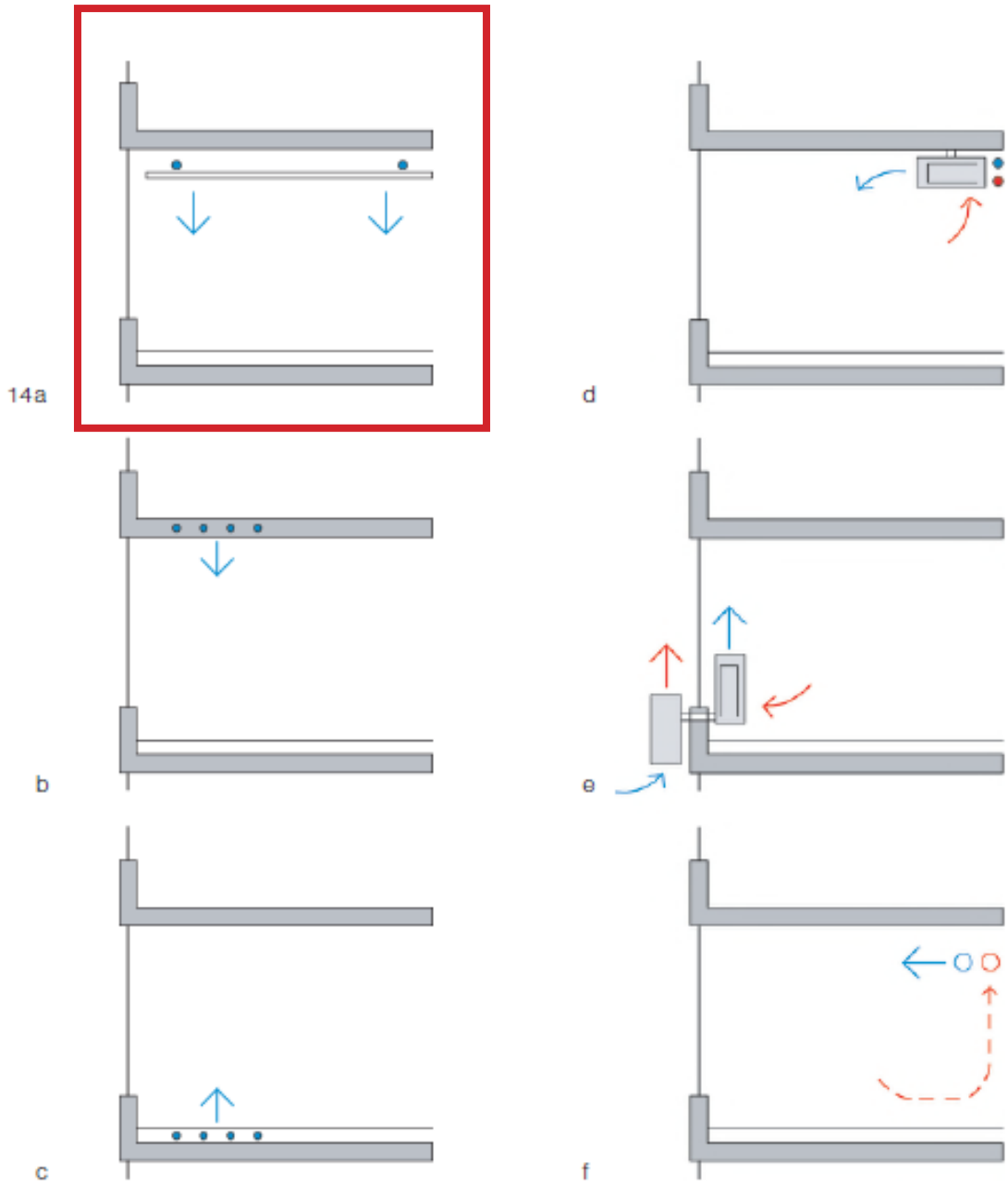


18

16 Solar cooling
- a Refrigeration unit (absorption or adsorption)
- b Cooling effect provided by fins or fresh air
- c Recooling
- d Electricity supply
- e Collector for producing heat

17 Ground coupling (groundwater)
- a Cooling effect provided by component cooling (floor/soffit)
- b Heat exchanger
- c Production and re-injection wells

18 Ground coupling (soil)
- a Cooling effect provided by component cooling (floor/soffit)
- b Heat exchanger
- c Absorber

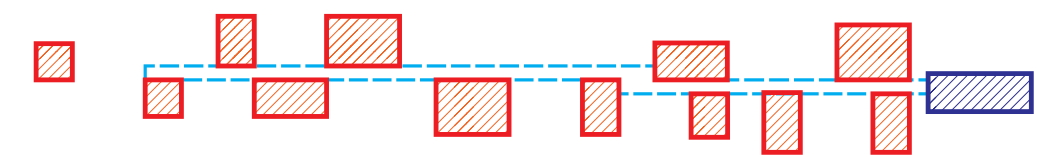


14 Principles of cooling effects with water:
a Cooling ceiling
b Component activation (soffit)
c Underfloor cooling
with air:
d Local recirculating cooling unit with central cold-air supply
e Cold-air cooling with compact local unit
f Central cold-air cooling

15 Performance data for different ways of achieving cooling

Climate Concept
- aims to make a building as passive as much as possible - energy efficiency
- aims to reduce CO2 emissions
- aims to make an integrated roof system (hollow strucutre + climate installations)

	1	2	3
Issue	Thermal Insulation	Cooling	Electricity
Diagnosis	As a new building, it needs proper insulation througout the building.	Overheating in summer due to the large roof structure	New Media Art require electricity such as LED LED panels, computers monitors, projectors, a
Solution Proposal	Wall Thermal Insulation + sound insulation The Spine Wall Double glazing wall (only for winter) Roof Thermal Insulation inside of the hollow structure	Cooling Ceiling + Floor cooling with water pipe with pump + ventilation system + night time ventilation	Since the roof area is l solar panels can be ins many as possible and l reduce electricity use.



Exterior wall and roof thermal insulation with sound proof

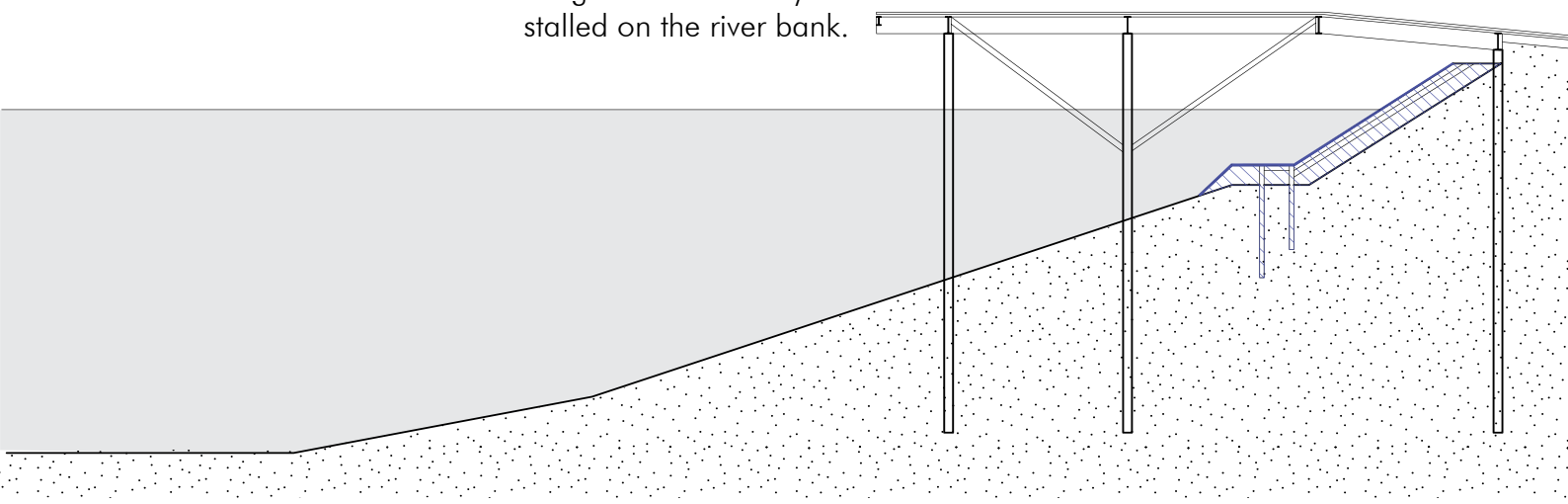
Interior wall + roof thermal insulation (Quaker Oat building)

Double glazing

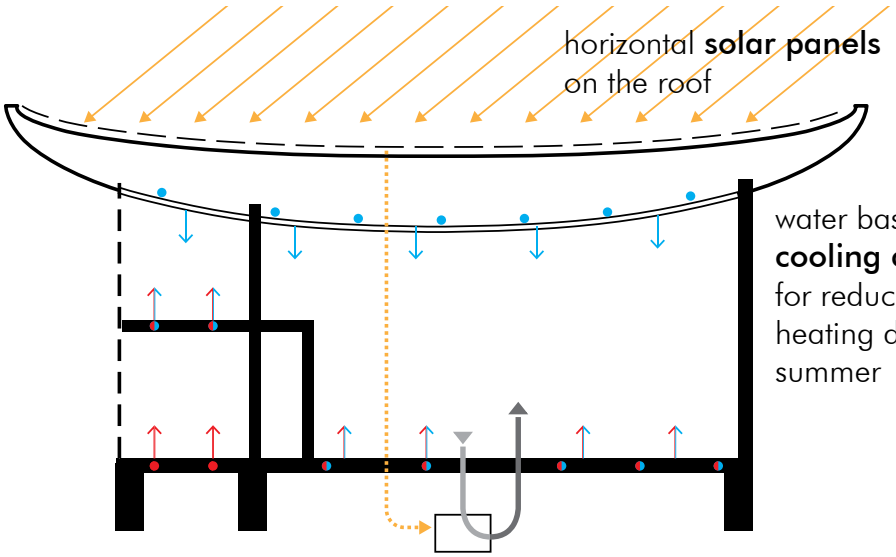
	4	5	6
	Rain water	Ventilation	Heating
s lots of lighitings, , LCD nd etc.	Lots of rain water due to concave shape of the roof	As a museum building, ventilation is important.	Since this is not a living function, heating is not so important. Visitors keep moving.
arge, stalled as help to	Rain water can be stored for using toilet flushing, watering plants.	Hybrid Ventilation Initially, natural ventilation can be used since the roof shape helps for air flow. However, when there is not enough wind, mechanical ventilation can be worked.	When the spine is closed during cold temperature, it creates another layer of thermal insulation to keep it warm. Floor heating with low temperature is installed to balance the whole building.

Climate

Due to climate change, rising sea level cuases high-water levels to rise in Rotterdam. The higher dike is newly installed on the river bank.



Cooling/Heating

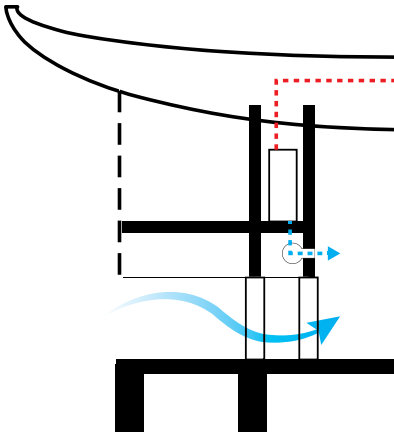


water based
cooling ceiling
for reducing overheating during summer

water based
underfloor cooling & heating
Floor heating with low energy temperature is installed to balance the whole building

pump
using the electricity gained by the solar panels

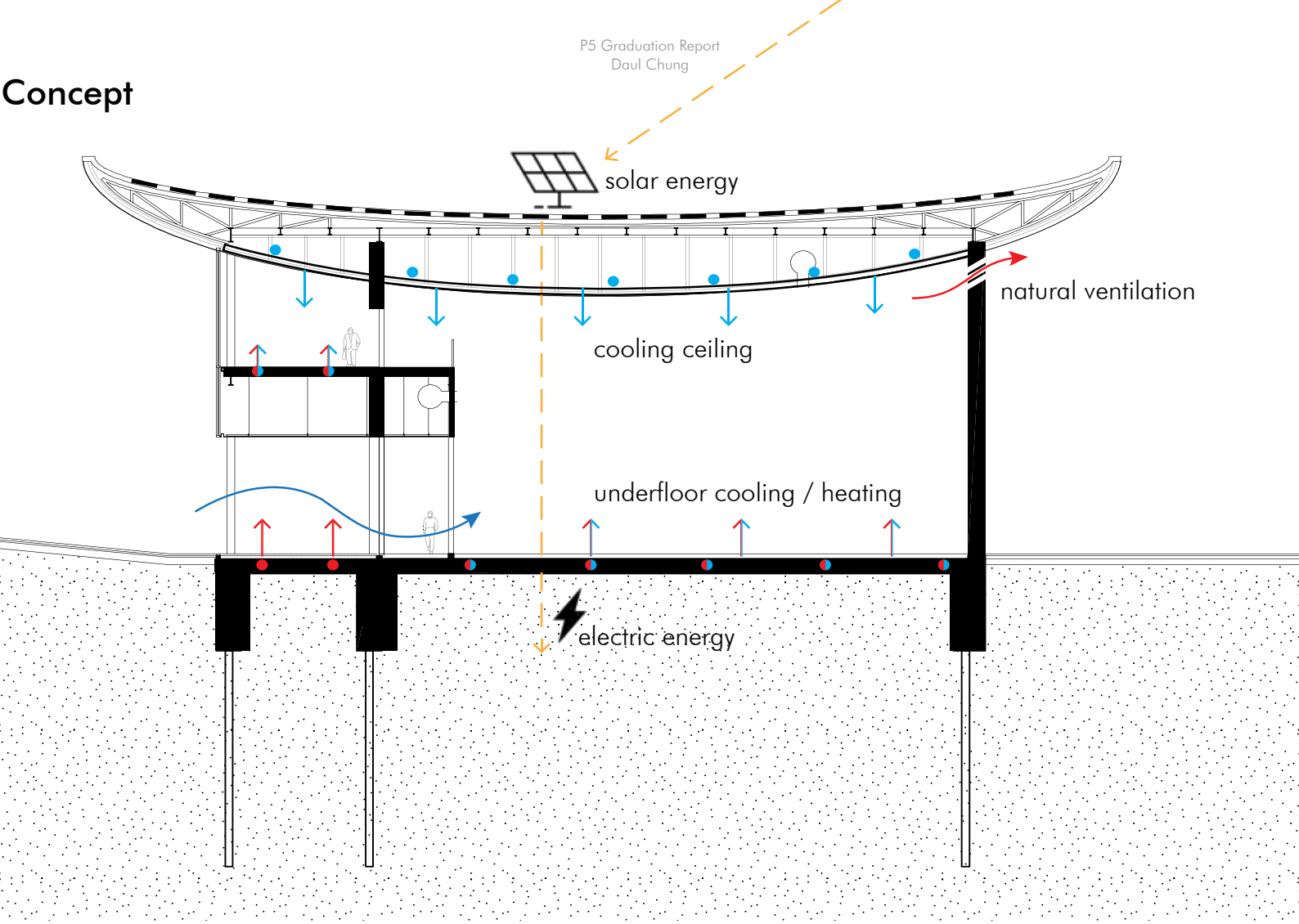
V



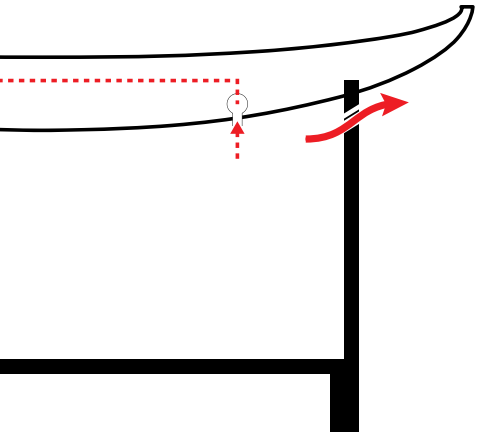
primary - **natural ventilo**
using roof shape

secondary - **machinery v**

Concept



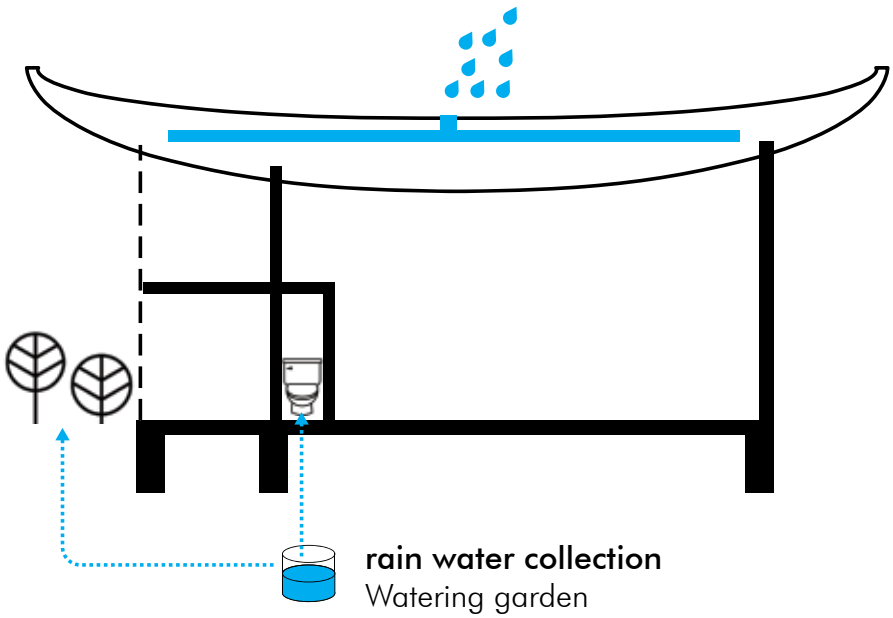
entilation



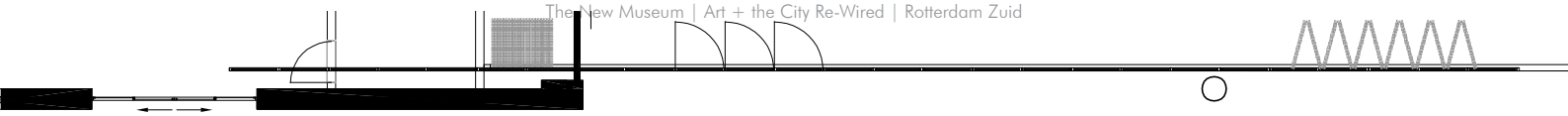
tion

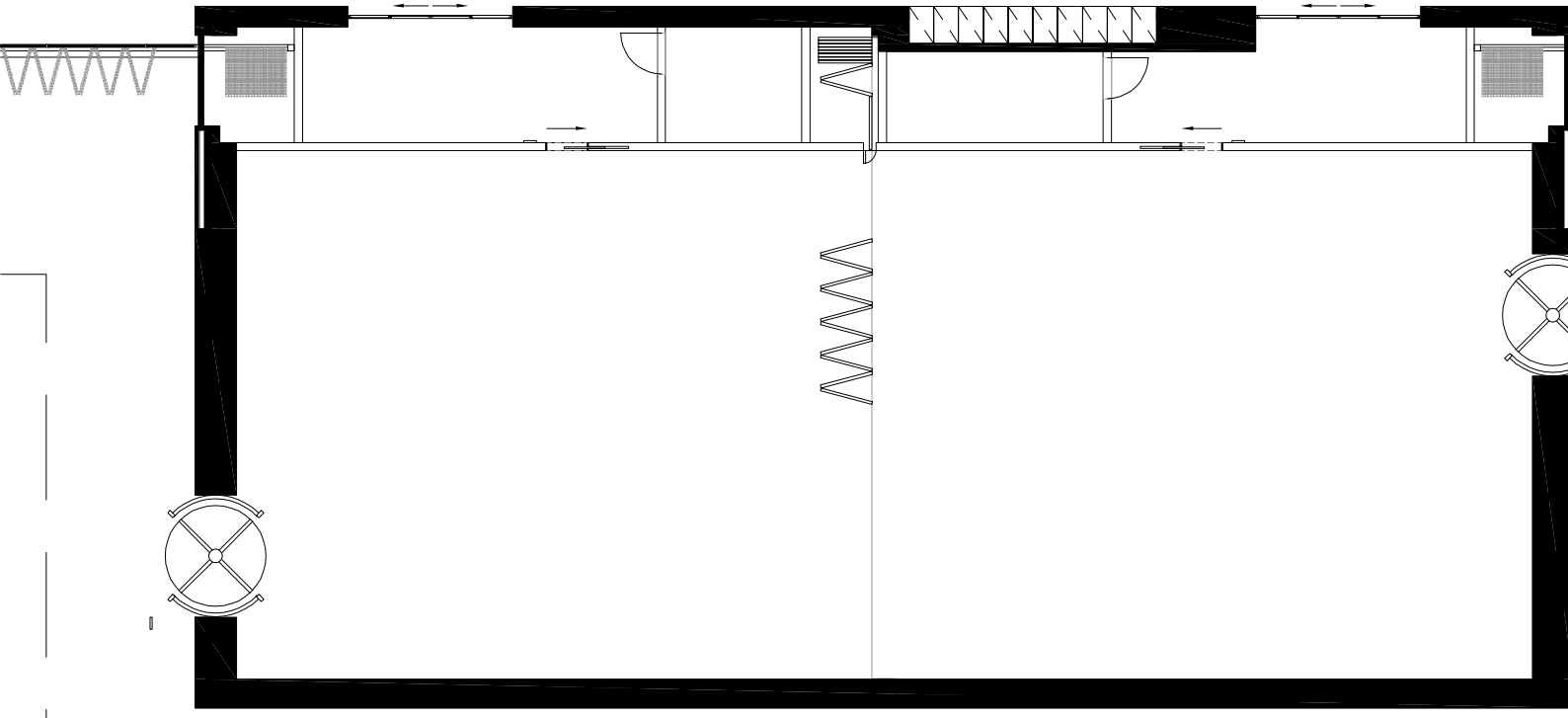
ventilation

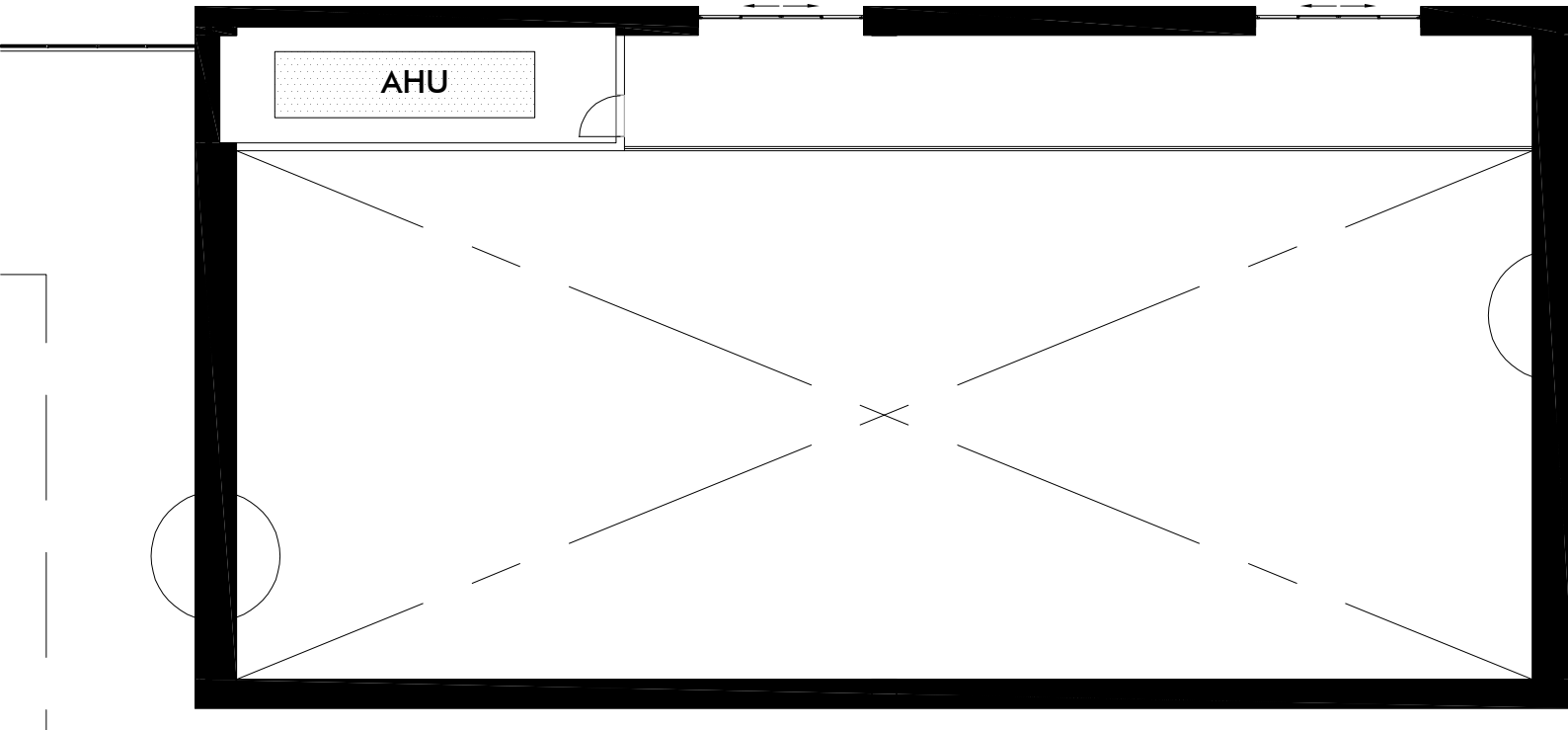
Rainwater

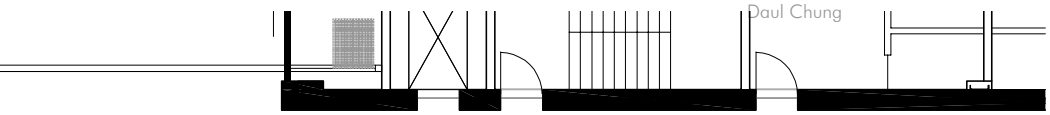


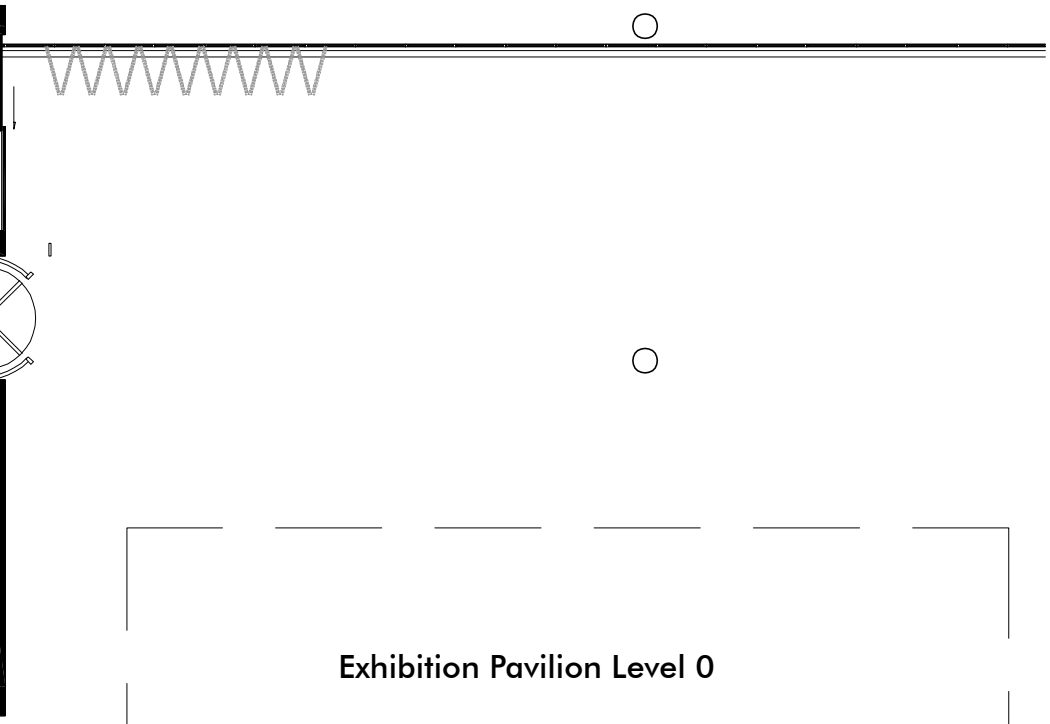
rain water collection
Watering garden
Flushing toilets
Supplementing the water supply
in case of fire



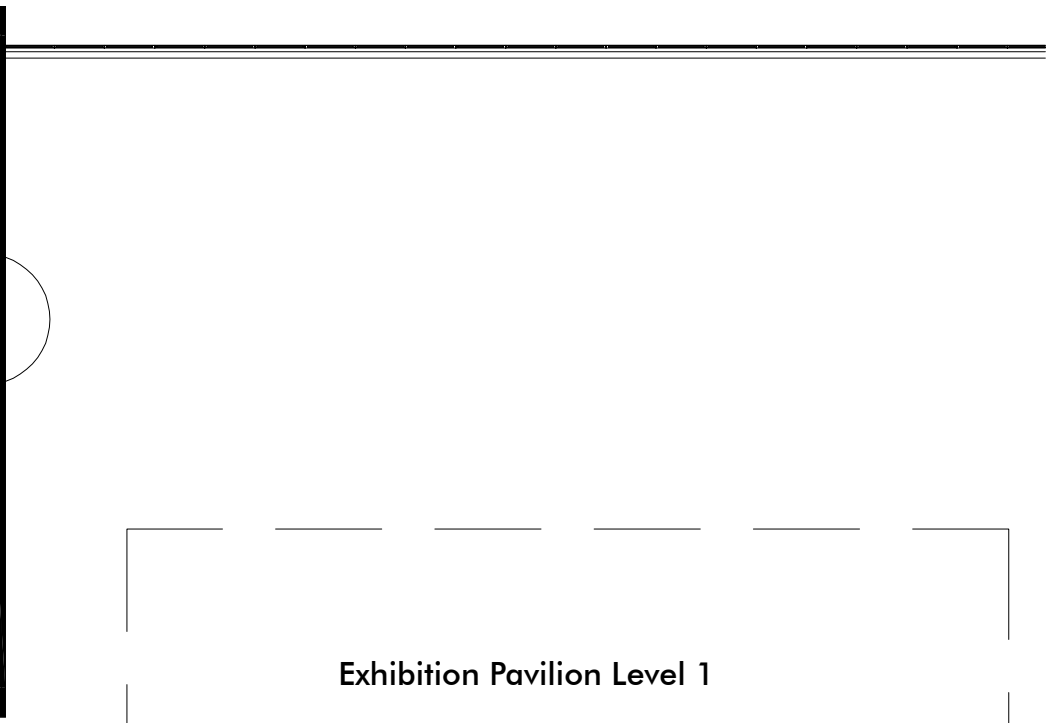



AHU



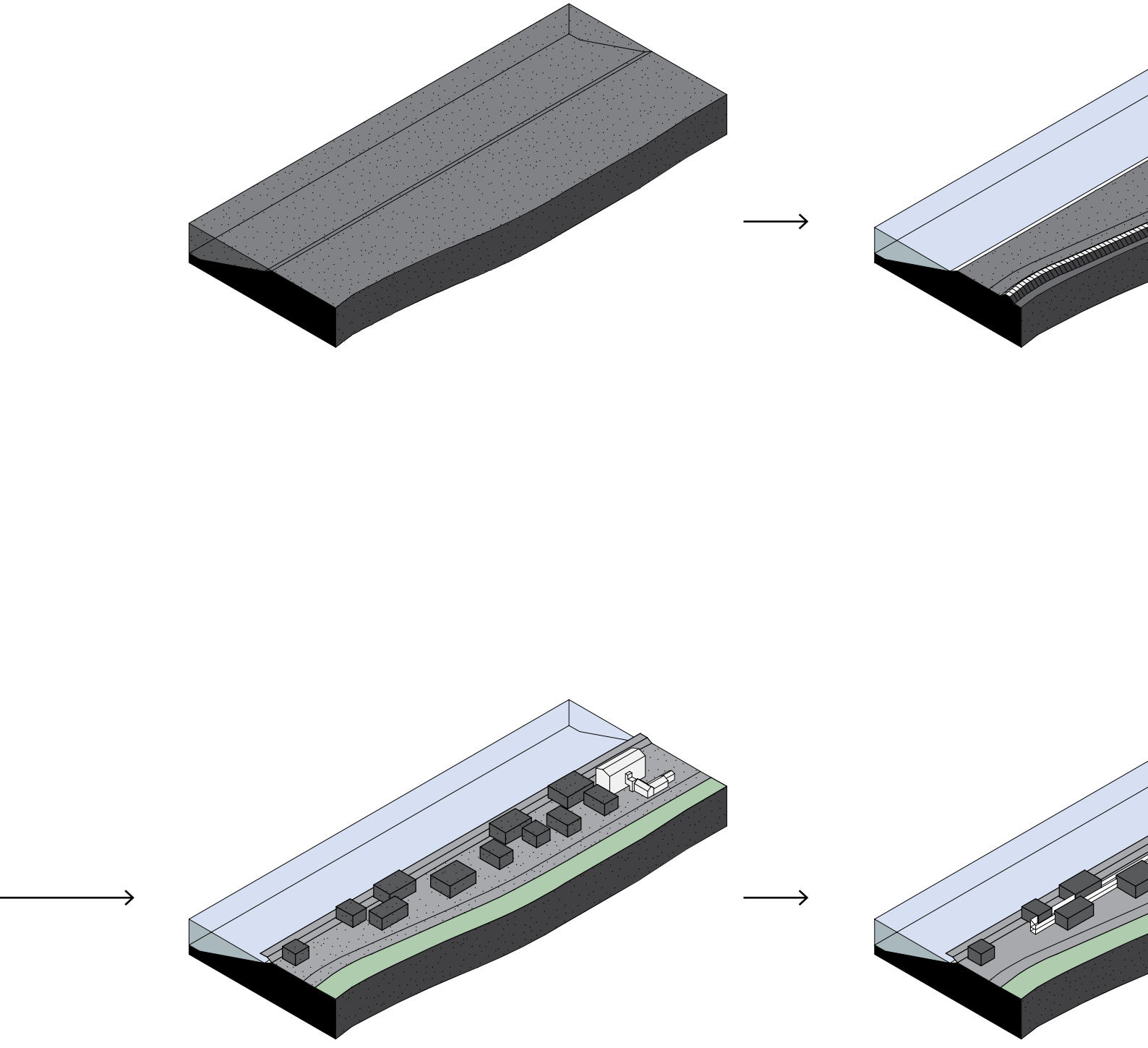


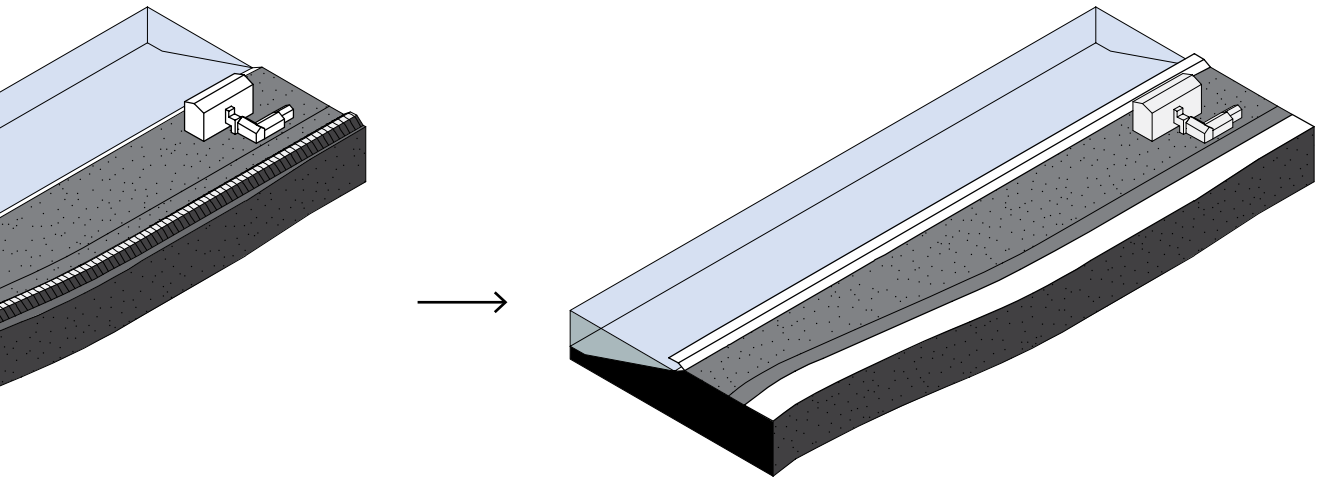
Exhibition Pavilion Level 0

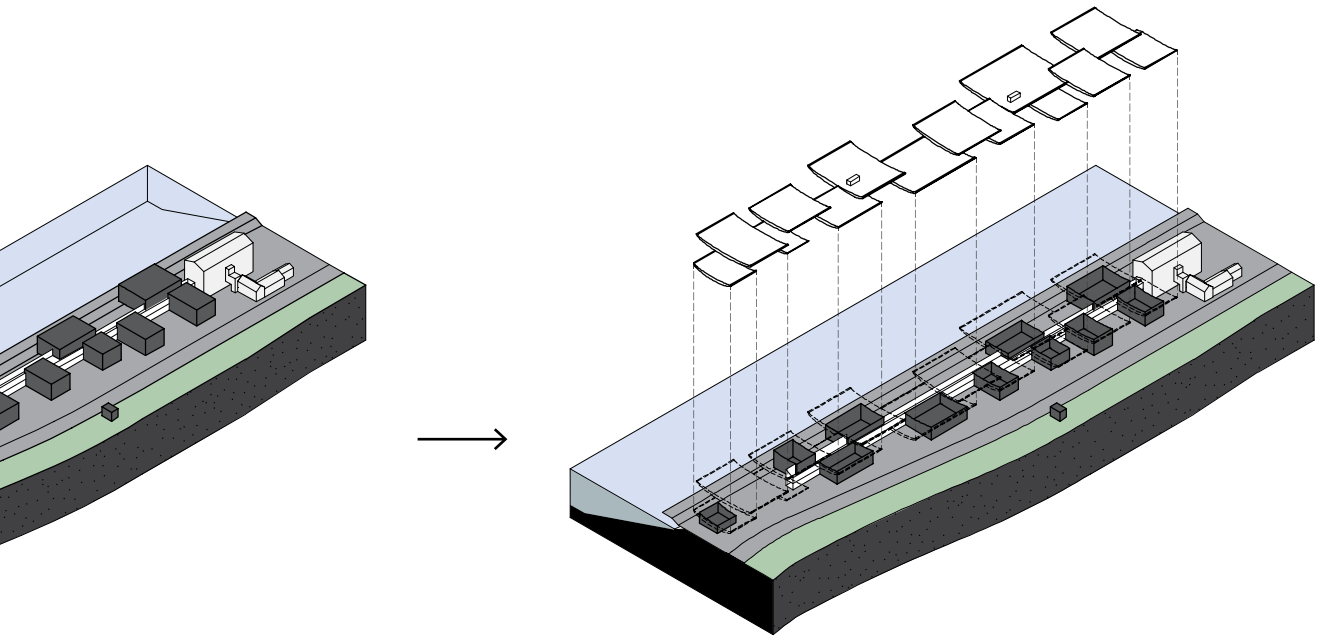


Exhibition Pavilion Level 1

2. Final Design



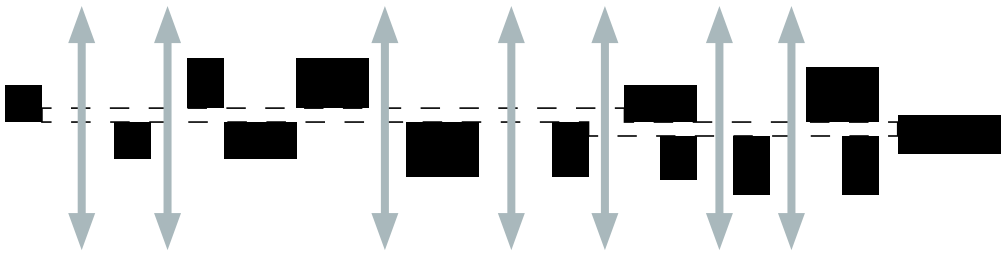




Discrete Representation

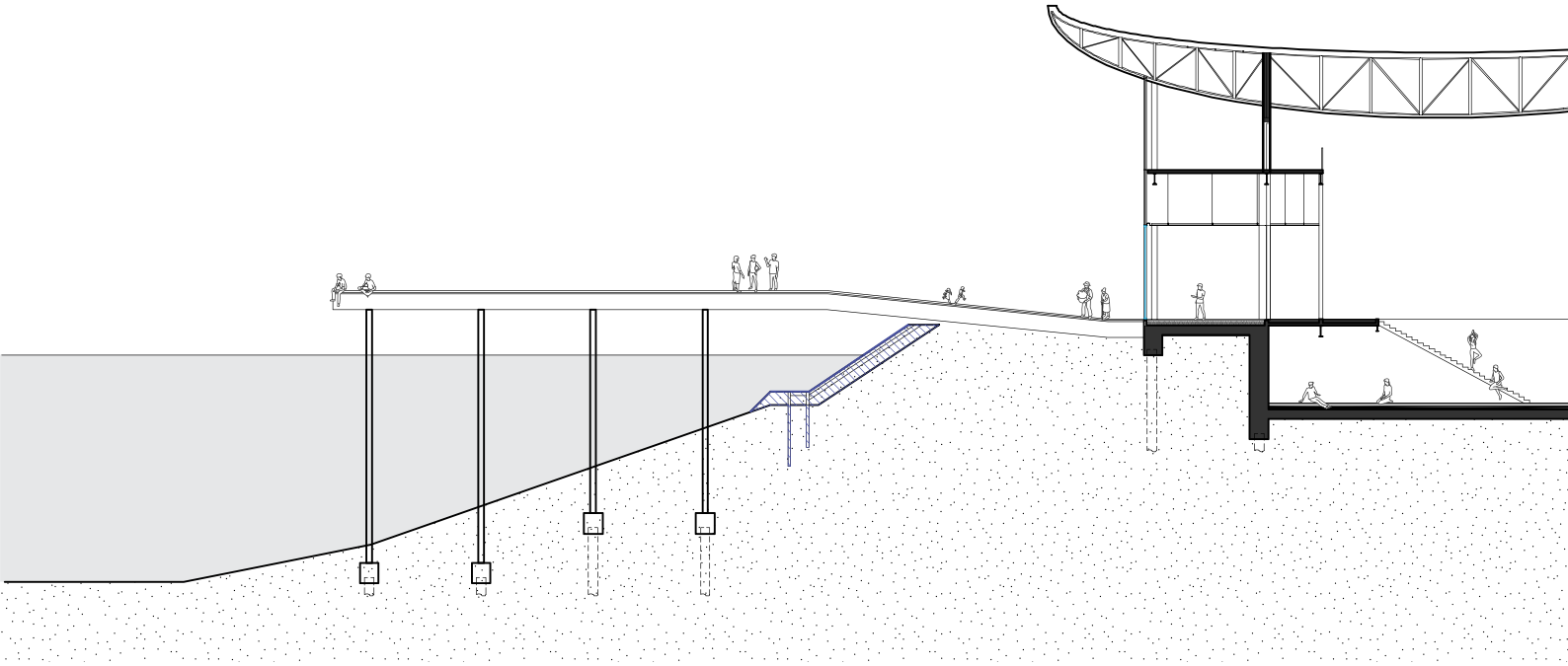
Unlike neighboring buildings that are one long continuous, the new museum is a discrete representation. Masses are distinct from each other based on the principles of new media art.

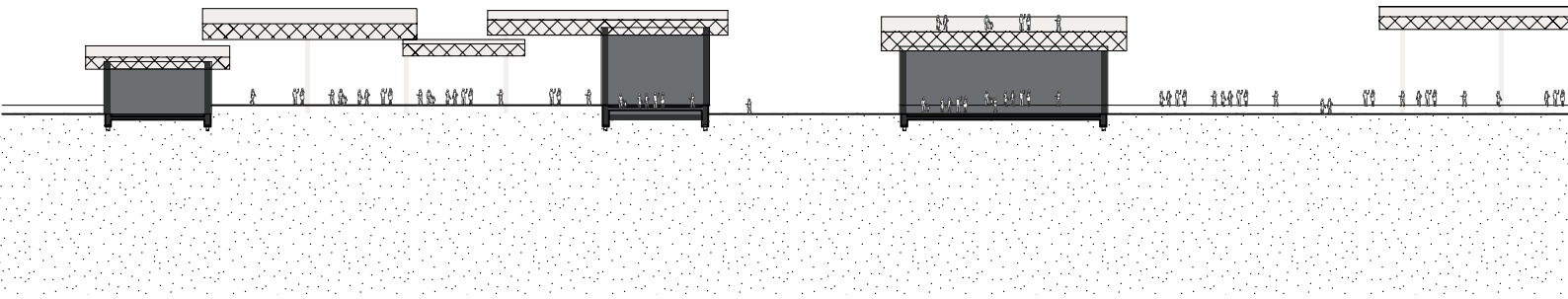
Accessibility & Permeability

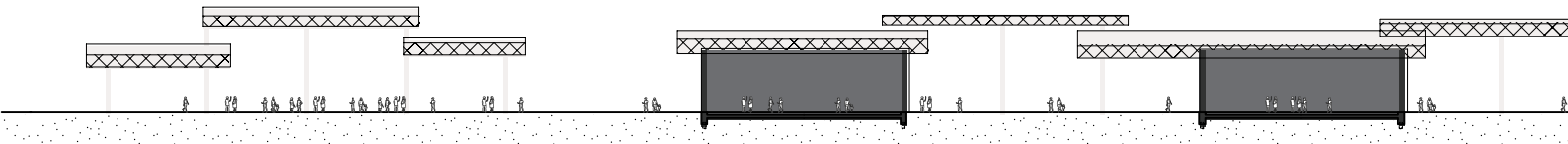


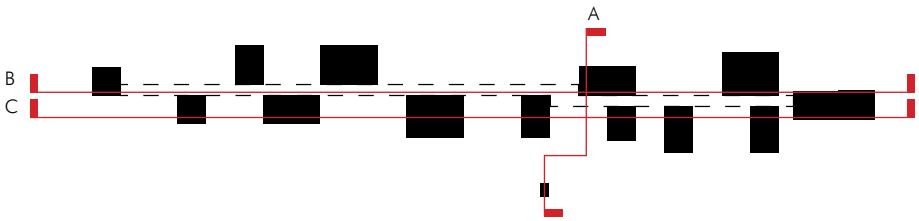
As buildings are fragmented, it gives accessibility and permeability from the town to the waterfront in between masses.

River | New Quaywall | Pavilion

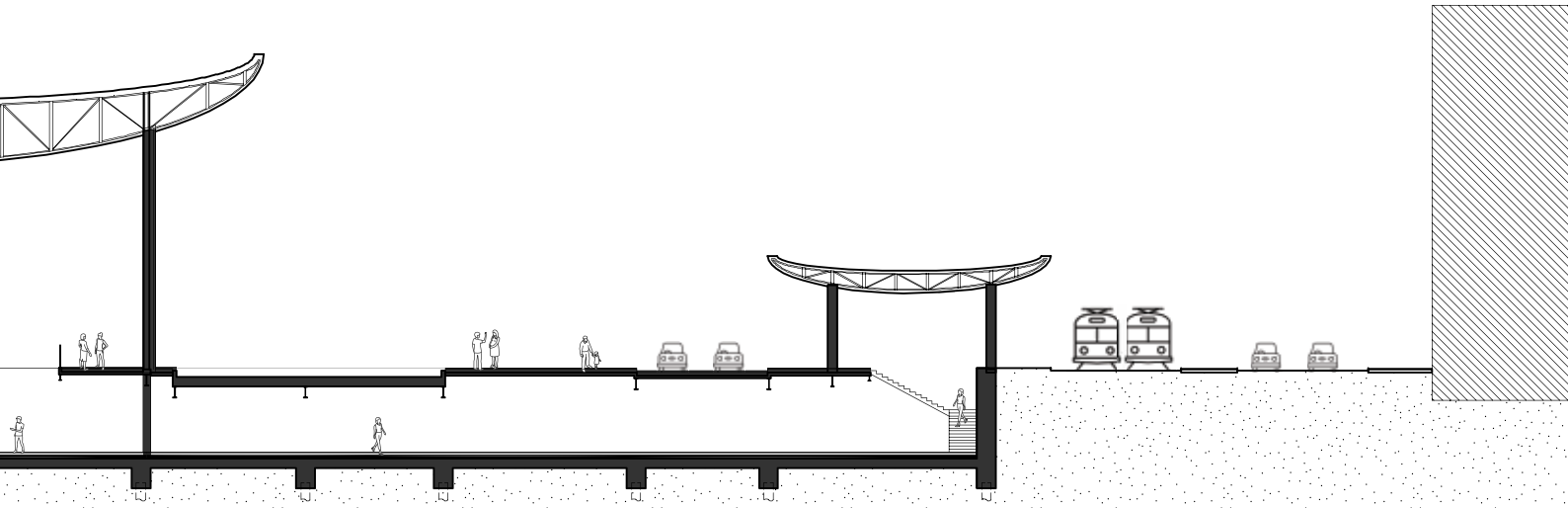




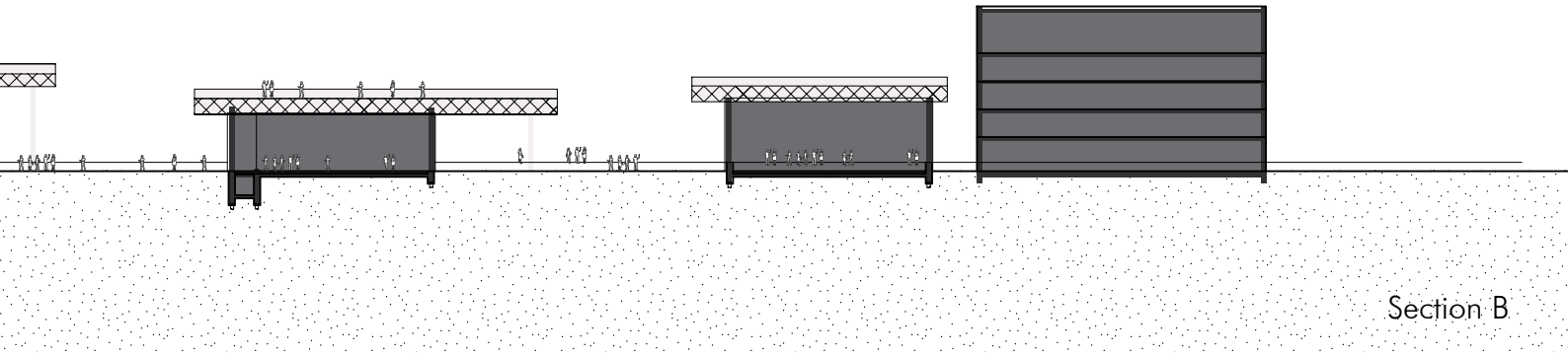




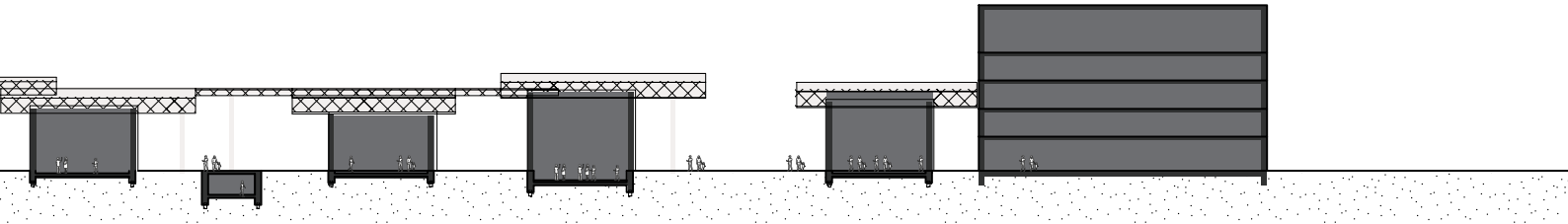
Interspace | Road | New territory | Road | Town



Section A

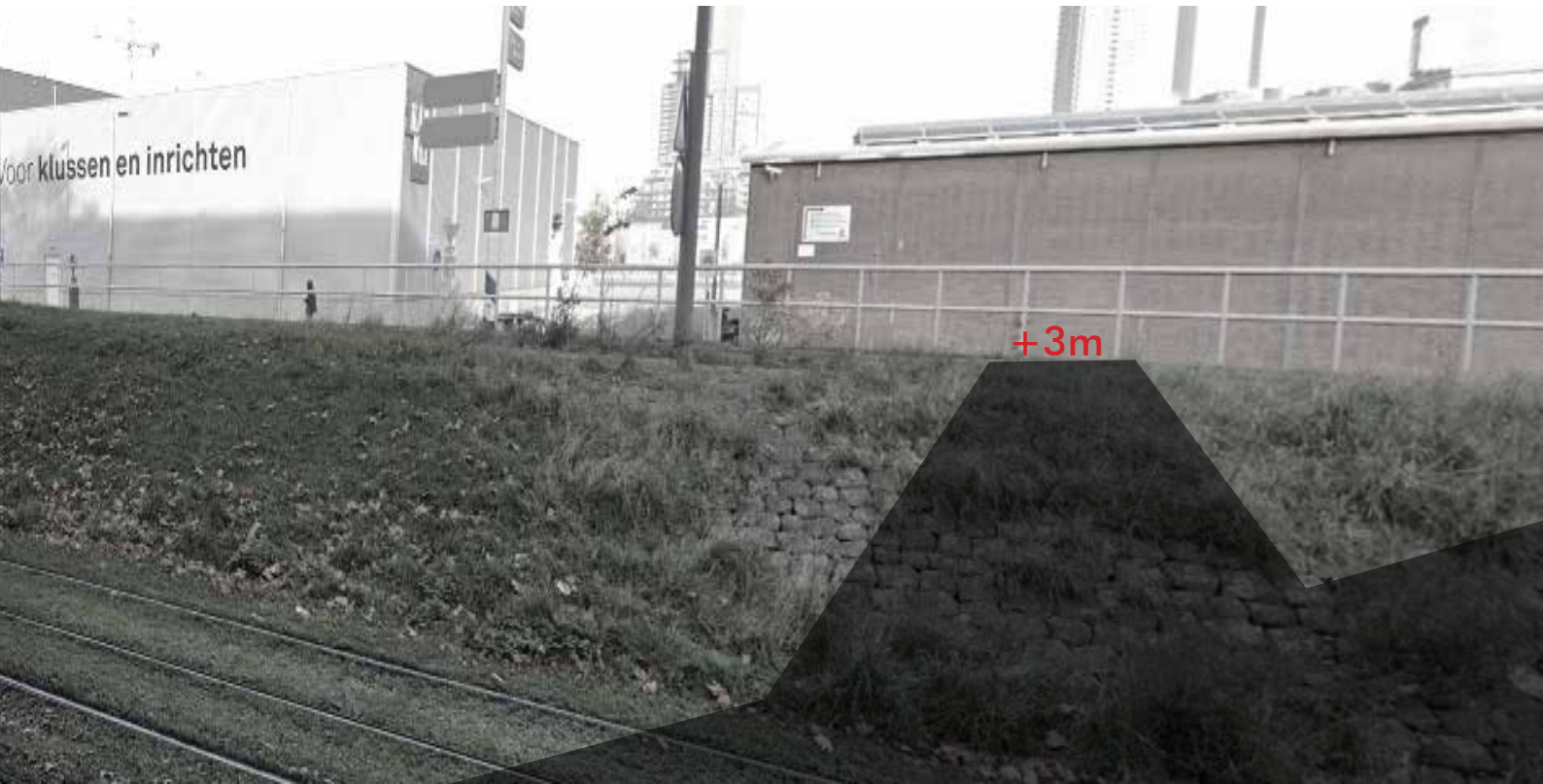


Section B

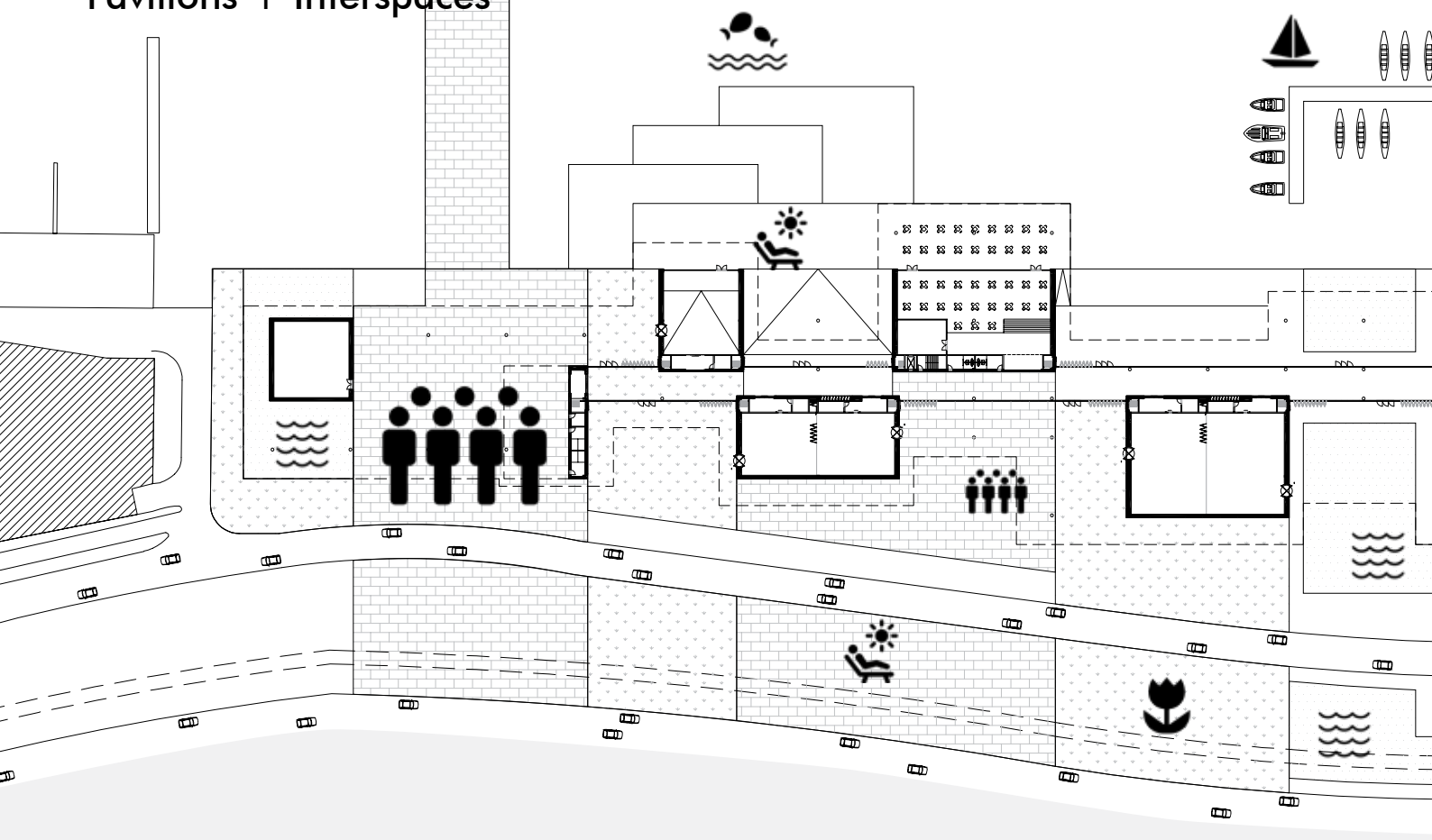


Section C

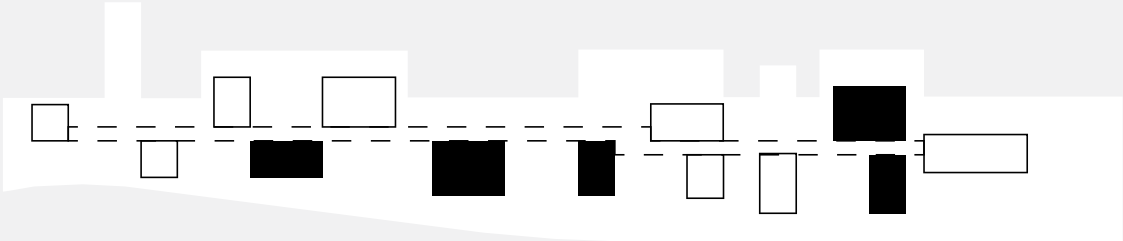

KAR
WIET


voor klussen en inrichten
+3m

Pavilions + Interspaces

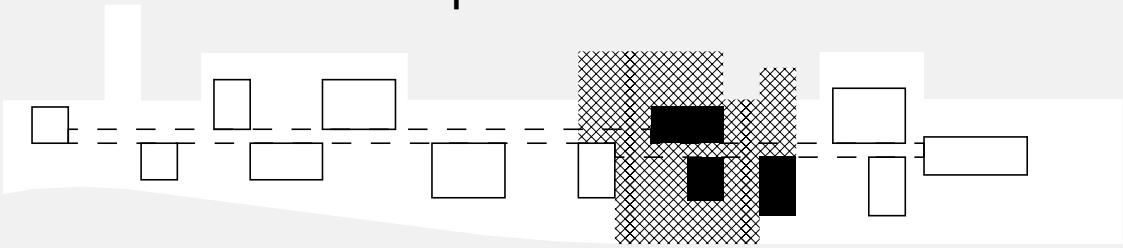


Exhibition Pavilions

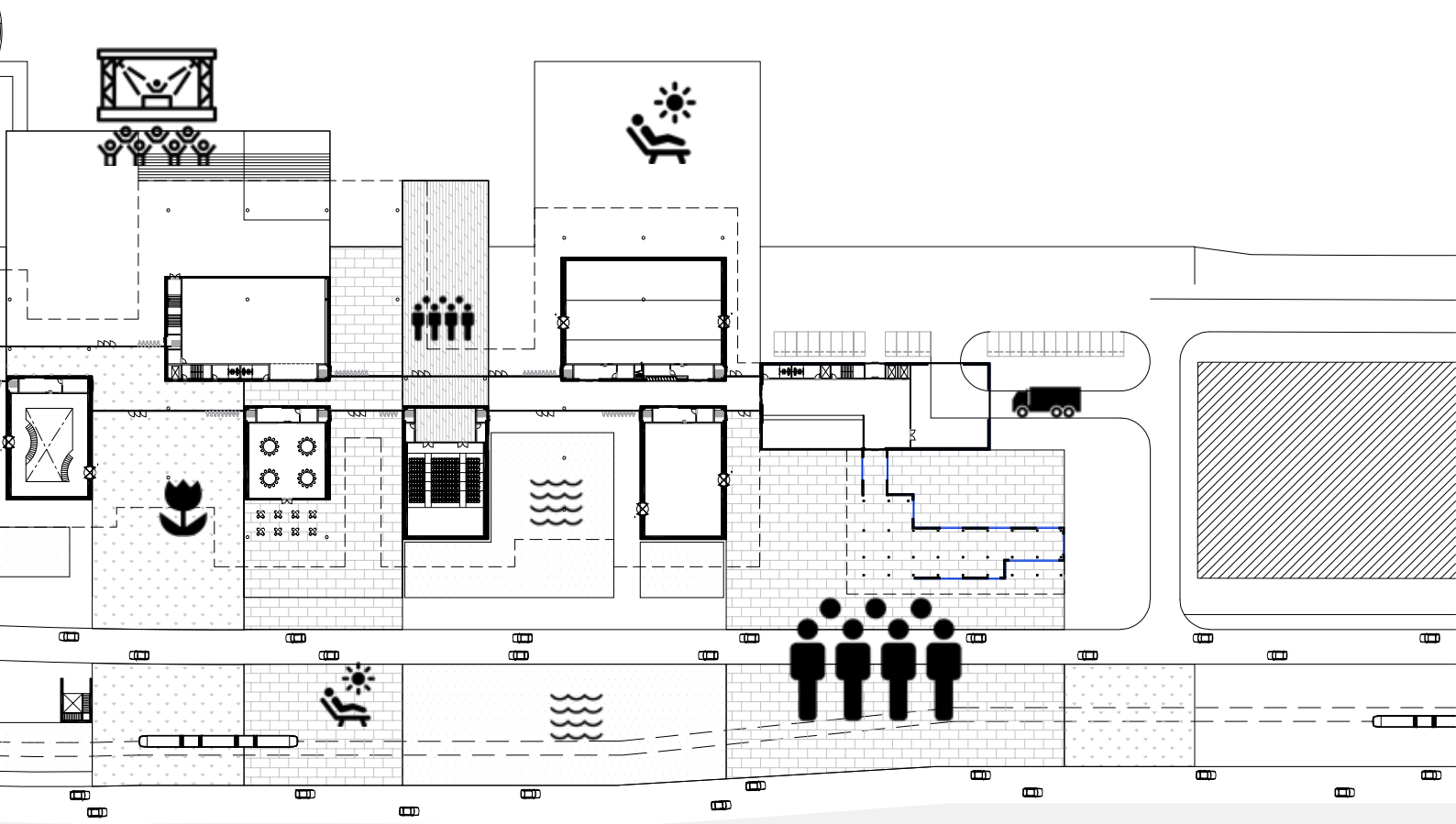


There are 5 exhibition pavilions with different physical types and sizes.

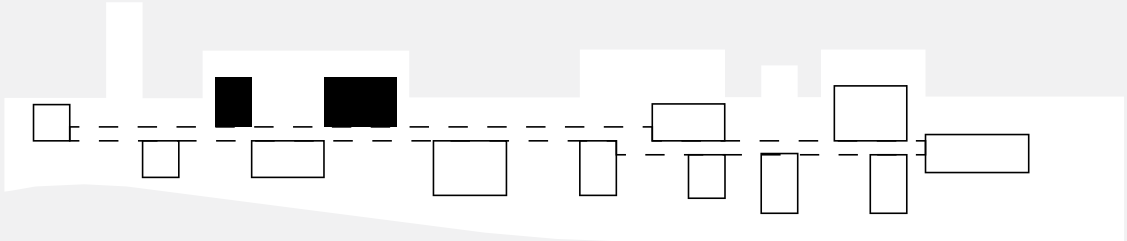
Special Pavilions



Special Pavioions such as Workshop, Event hall, and Multi-purpose hall can be extended to the interspaces.

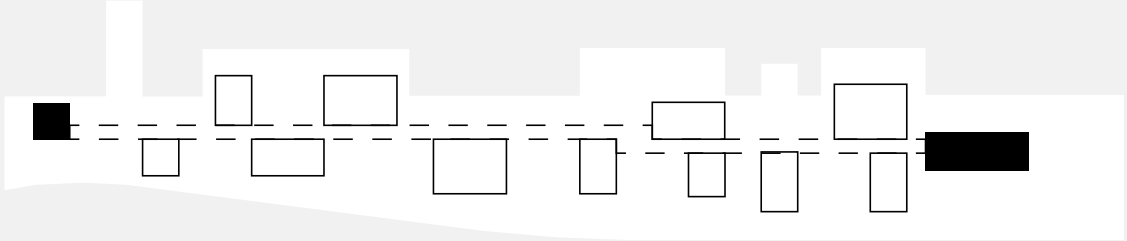


Retail Pavilions

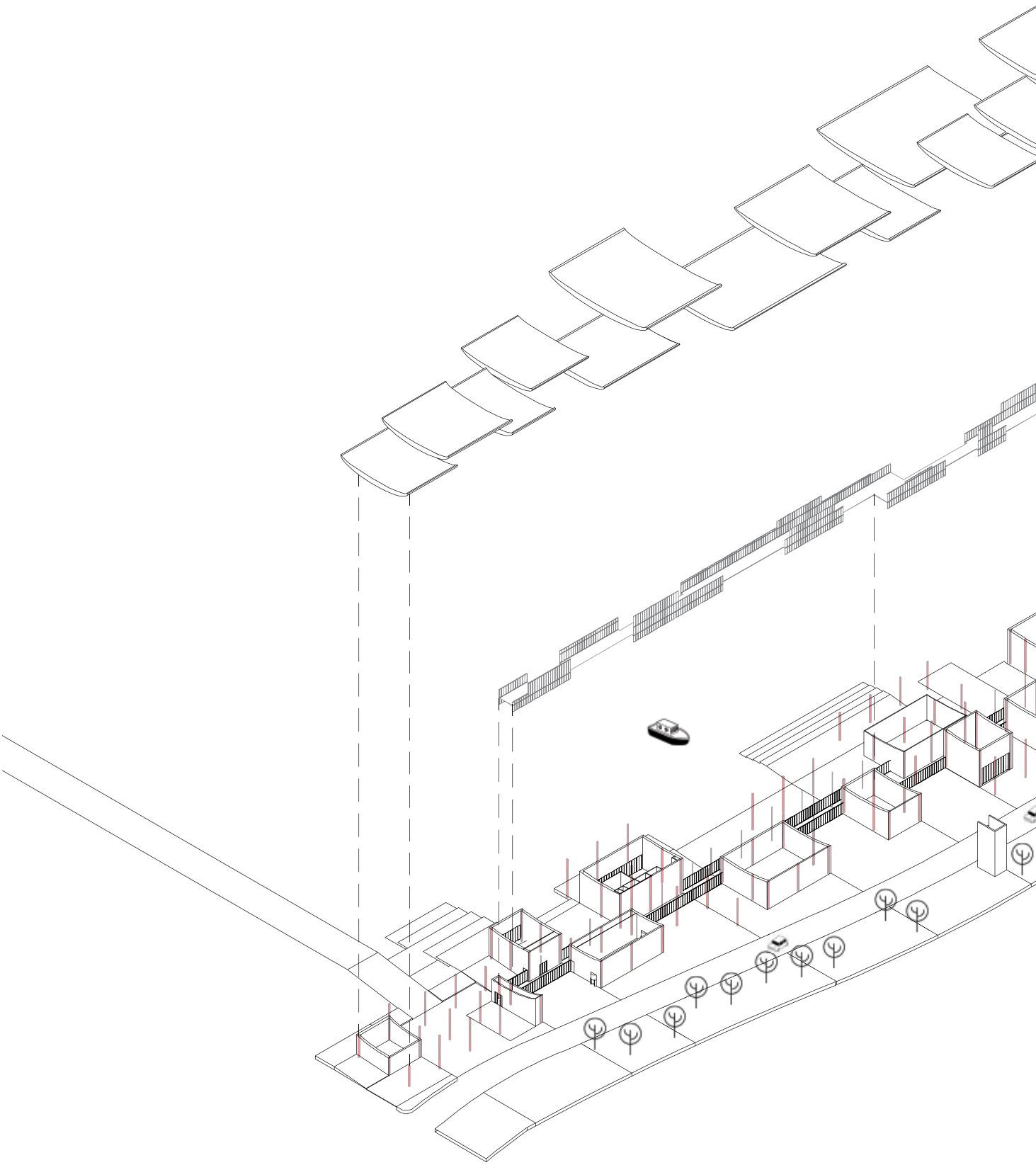


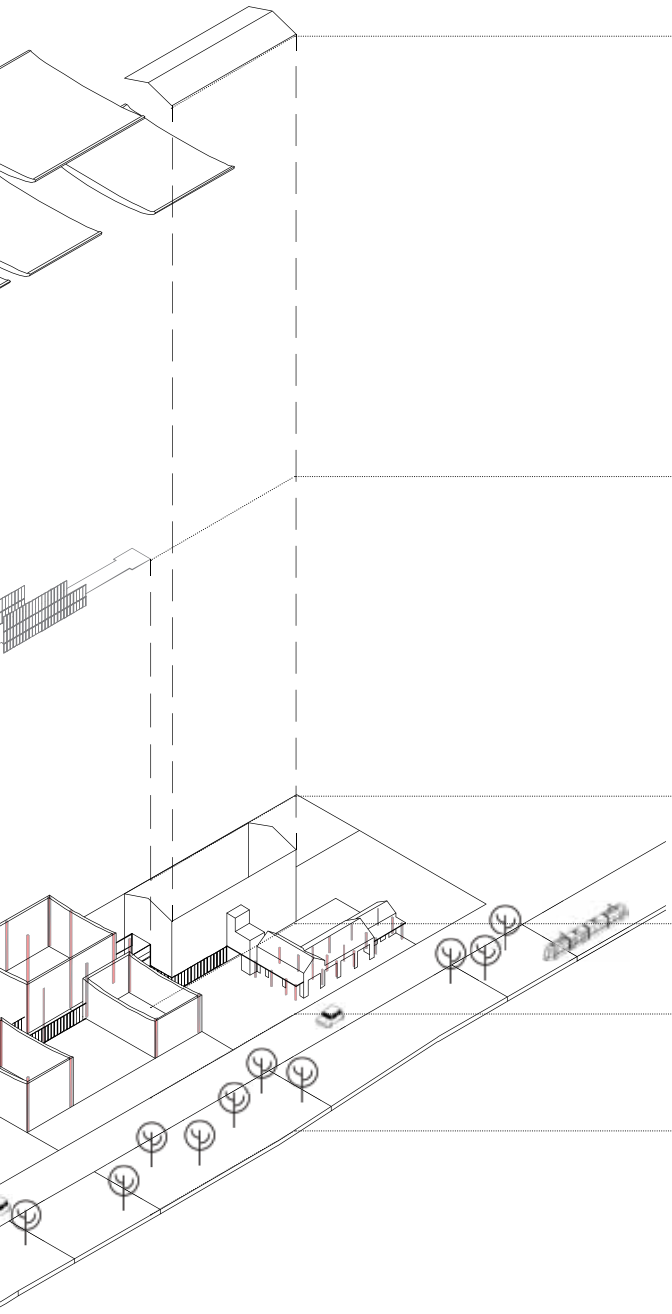
Retail and Restaurant pavilion is located in waterfront side for viewing.

Service Pavilions

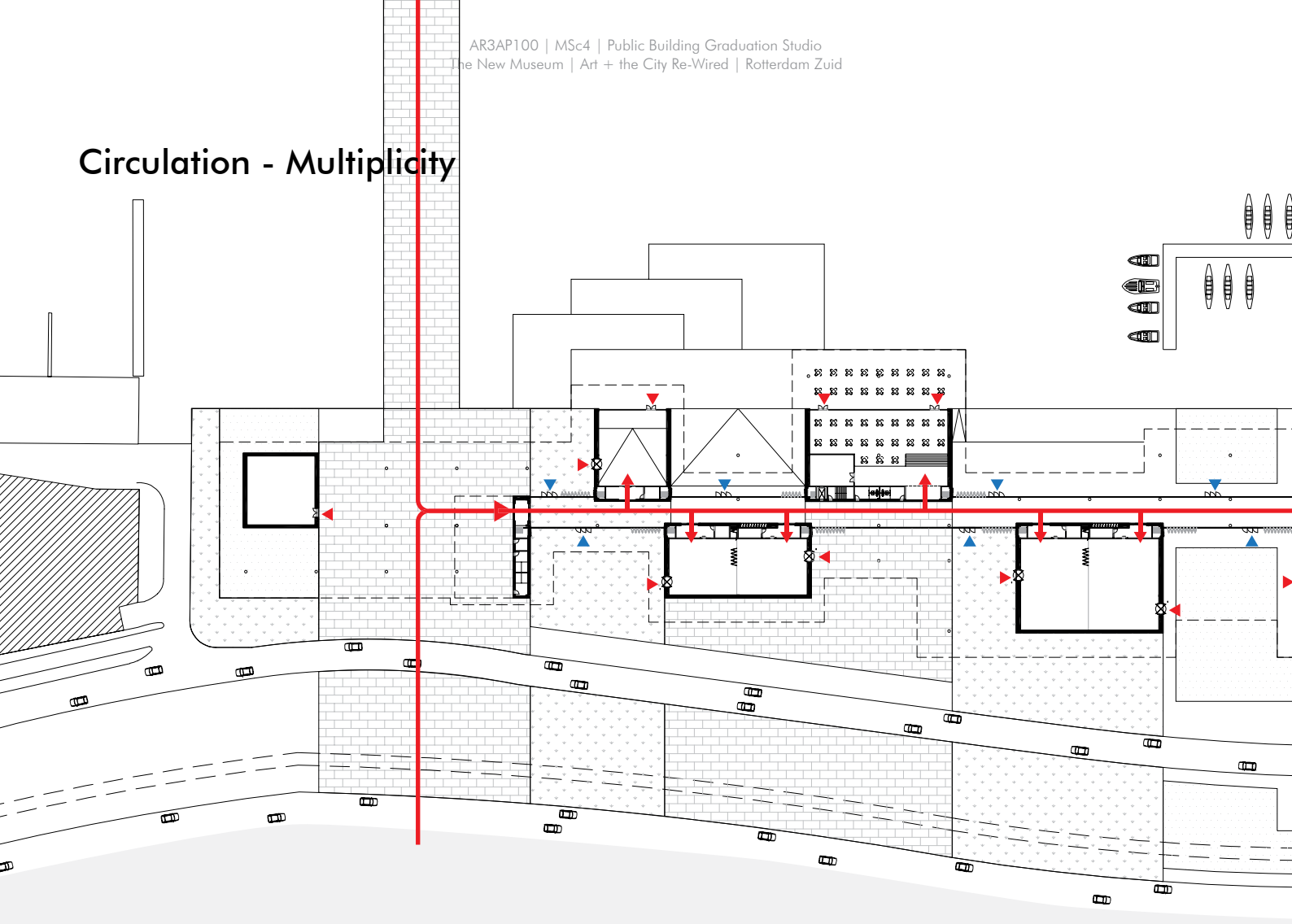


At the two end, there are service pavilions: Mini Data Center for digital archive / Back of house (office, loading, machine room)



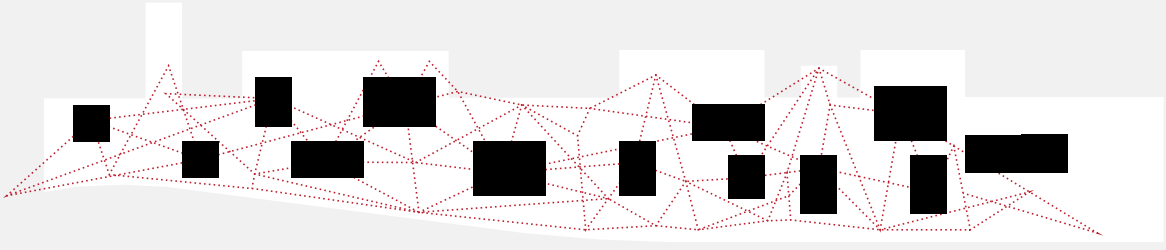

The Roof
1F_The Spine
Riverbank_New Dike
GF_Pavilions & The Spine
Interspaces
New Territory

Circulation - Multiplicity

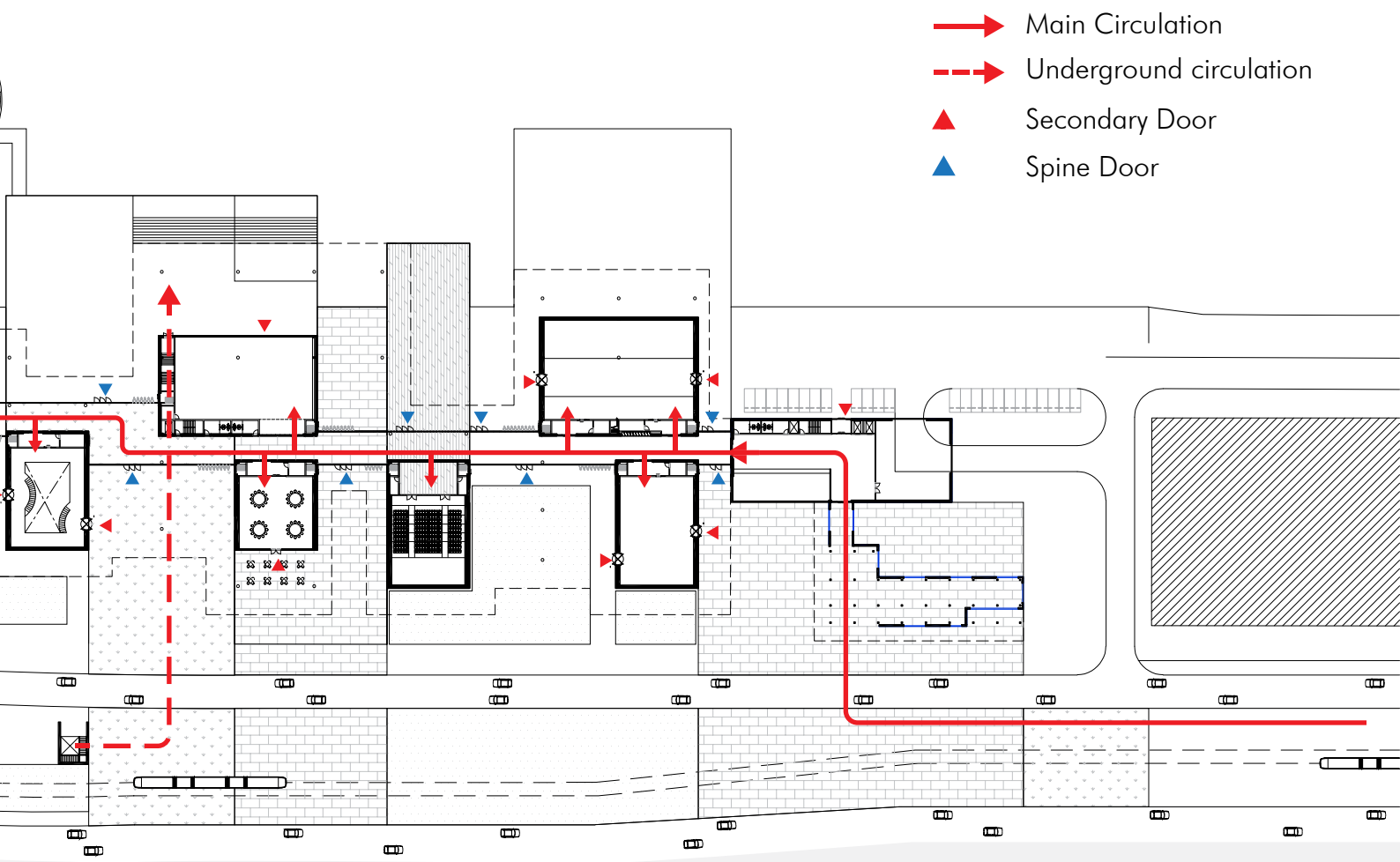


Summer

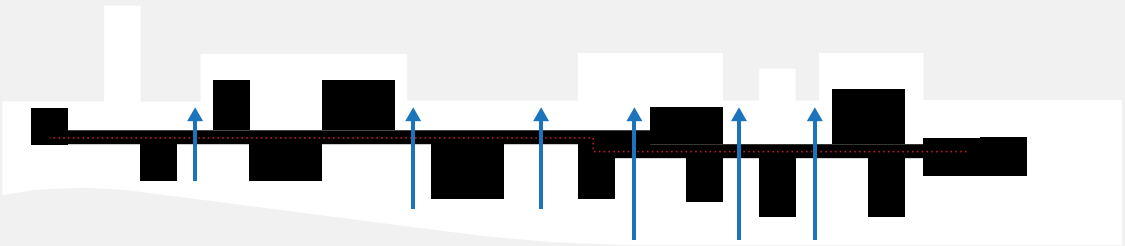
During summer, the spine disappears to provide more outdoor spaces.



During summer, it is meant to be interactive as much as possible.



During winter, the spine appears to provide comfortable temperature.

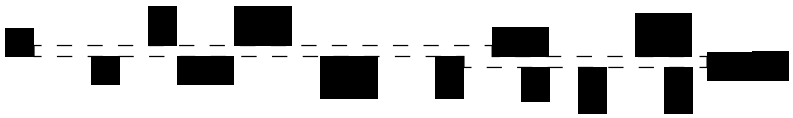


During winter, the main circulation is the spine. However, there are several doors to reach the waterfront.

Winter

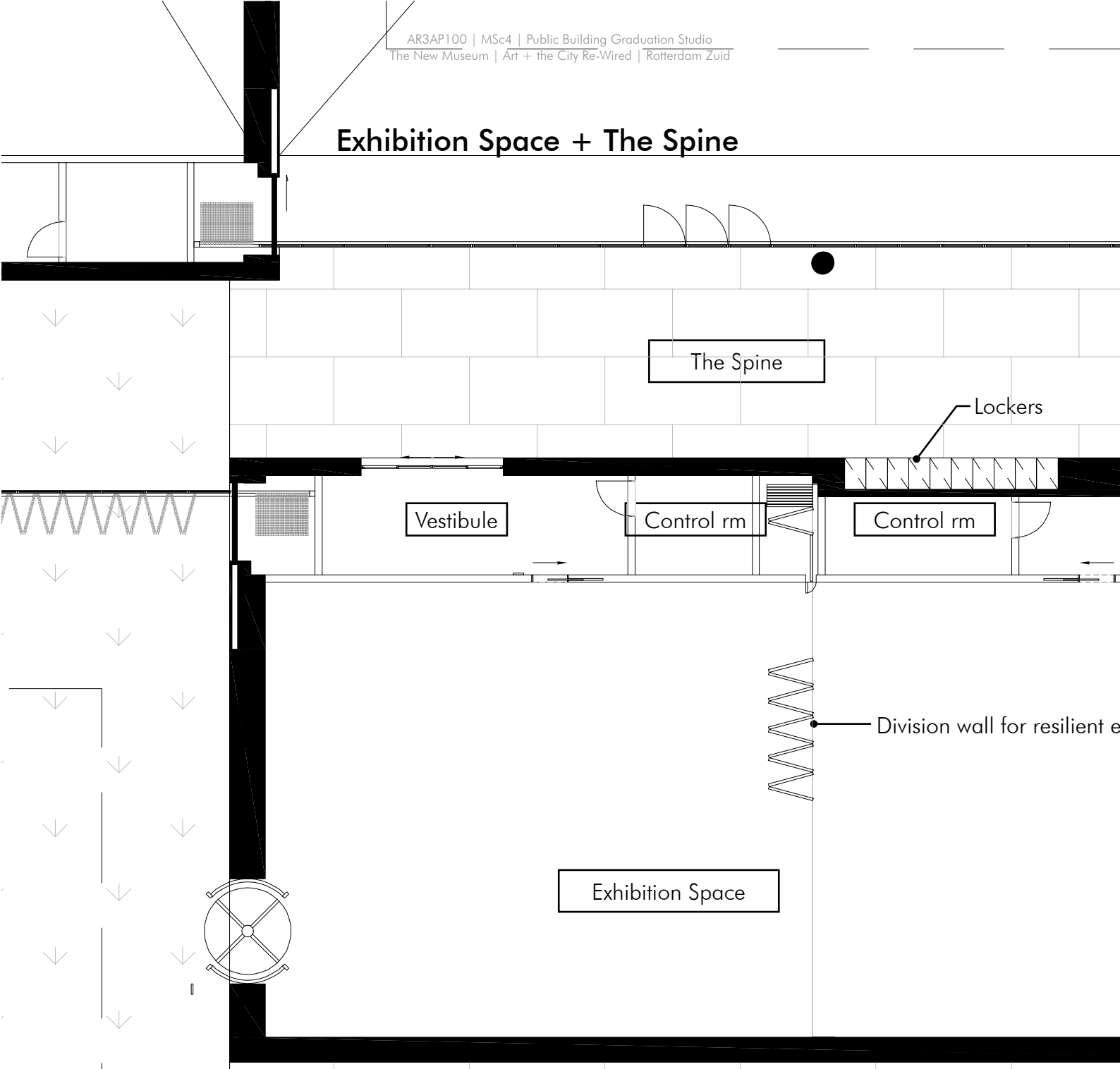
People can stay in the spine at a comfortable temperature while enjoying exhibitions.They can also use doors in the spine to move in and out to the waterfront and the town.

Summer

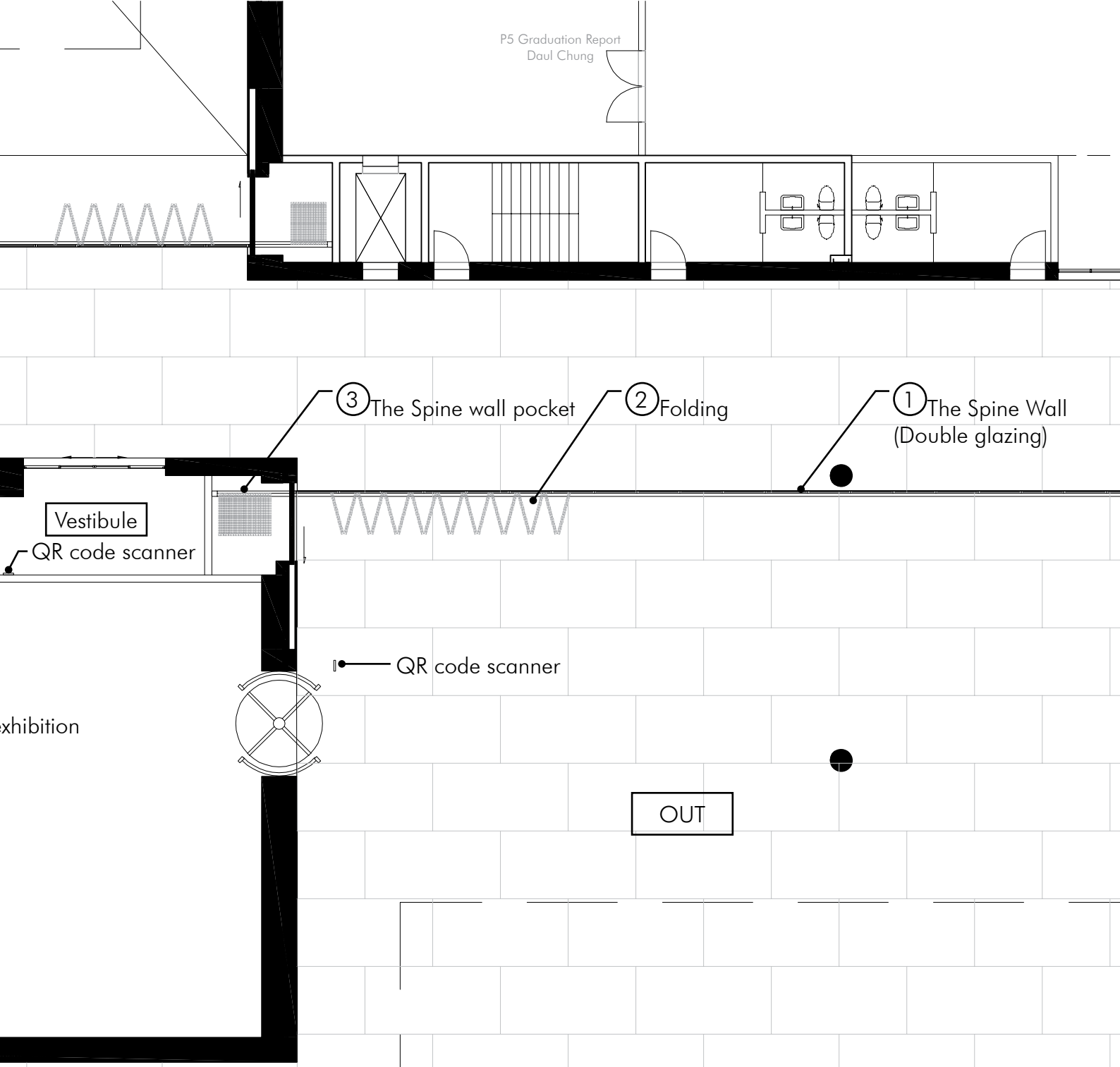


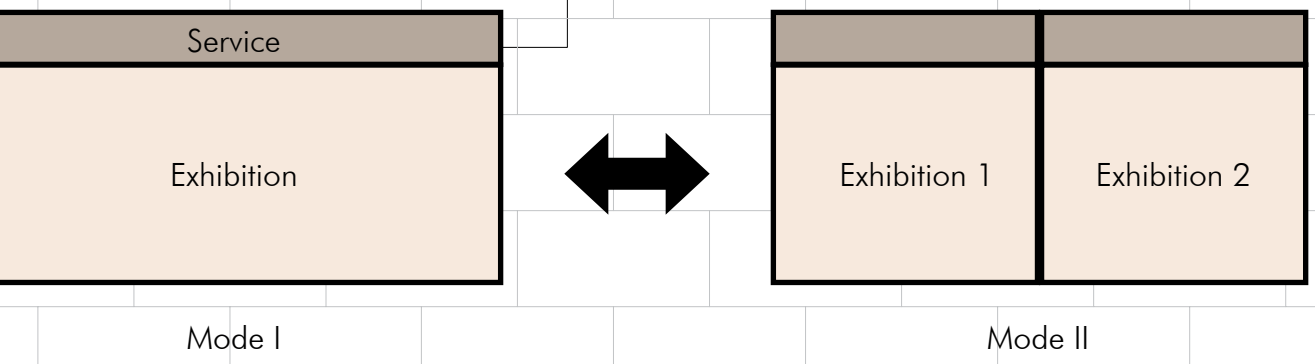
In good weather, the spine disappears and the indoor space becomes outdoor space for more interactive activities.

Exhibition Space + The Spine

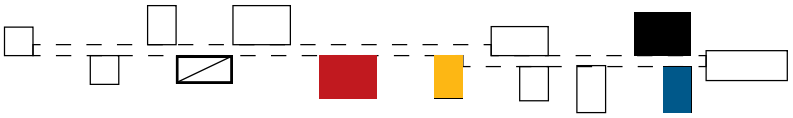


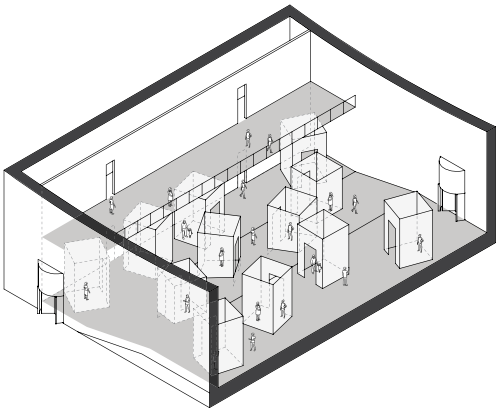
The moveable spine wall needs a pocket to hide these folding walls. The pavilions are designed to be integrated with the pocket and service zone such as vestibule for visitors to be ready for surprise, control rooms or computer rooms for new media art, lockers to store coats and bags, toilets, and etc.


3 The Spine wall pocket
2 Folding
1 The Spine Wall
(Double glazing)
Vestibule
QR code scanner
QR code scanner
xhibition
OUT


Service
Exhibition
Exhibition 1
Exhibition 2
Mode I
Mode II

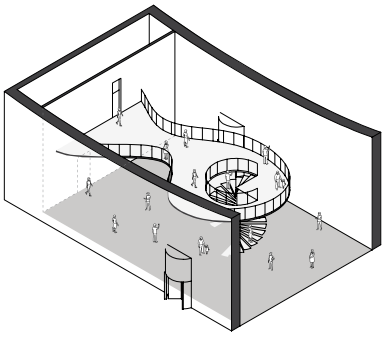
Exhibition Pavilions

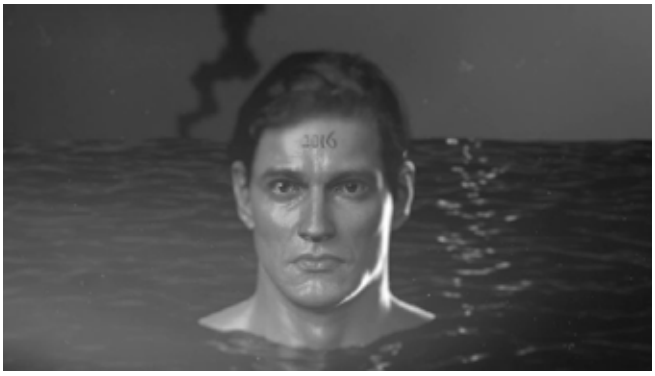




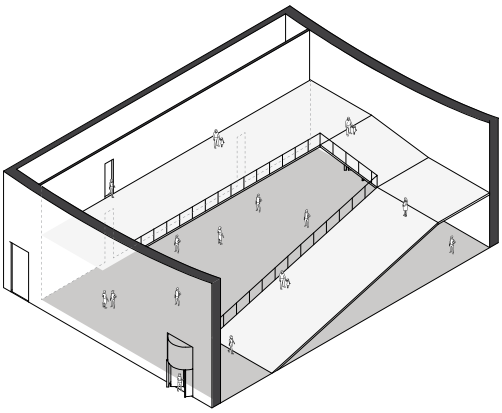
Davies, Char. "Osmose." 1995.
Char Davies Immersant. http://www.immersence.com

Shaw, Jaffrey. "The Legible City." 1989.
Jeffery Shaw Compendium. https://www.jeffreyshawcompendium.com/portfolio/legiblecity/

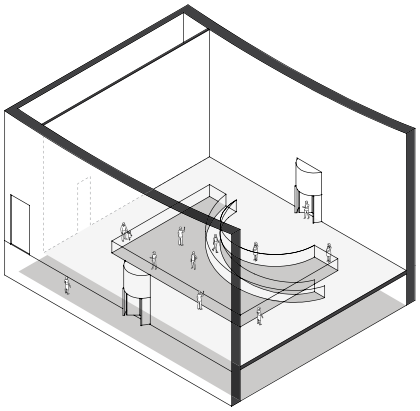




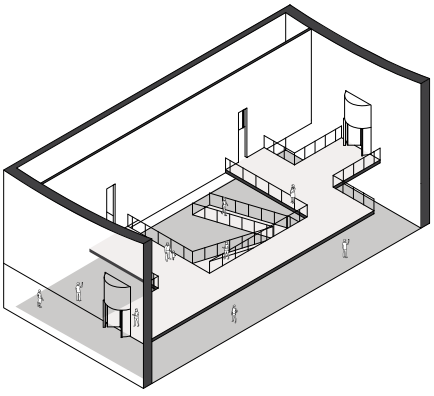
RECENT OUIJA by ED ATKINS
https://www.stedelijk.nl/en/exhibitions/70432



Ceramic-porcelain-3d-printer by Olivier van Herpt Logo
https://oliviervanherpt.com/blue-and-white-porcelain/



a'strict. "Starry Beach." 2020. Seoul, KR
http://www.dstrict.com/arttechfactory/kr/65-Public_Media_Art_1.html.



IN 20 STEPS by DRIFT
https://www.studiodrift.com/work#/work/in-20-steps/

Atmosphere - Exhibition Pavilion

Atmosphere - Restaurant Pavilion

Window Option A

Window Option B

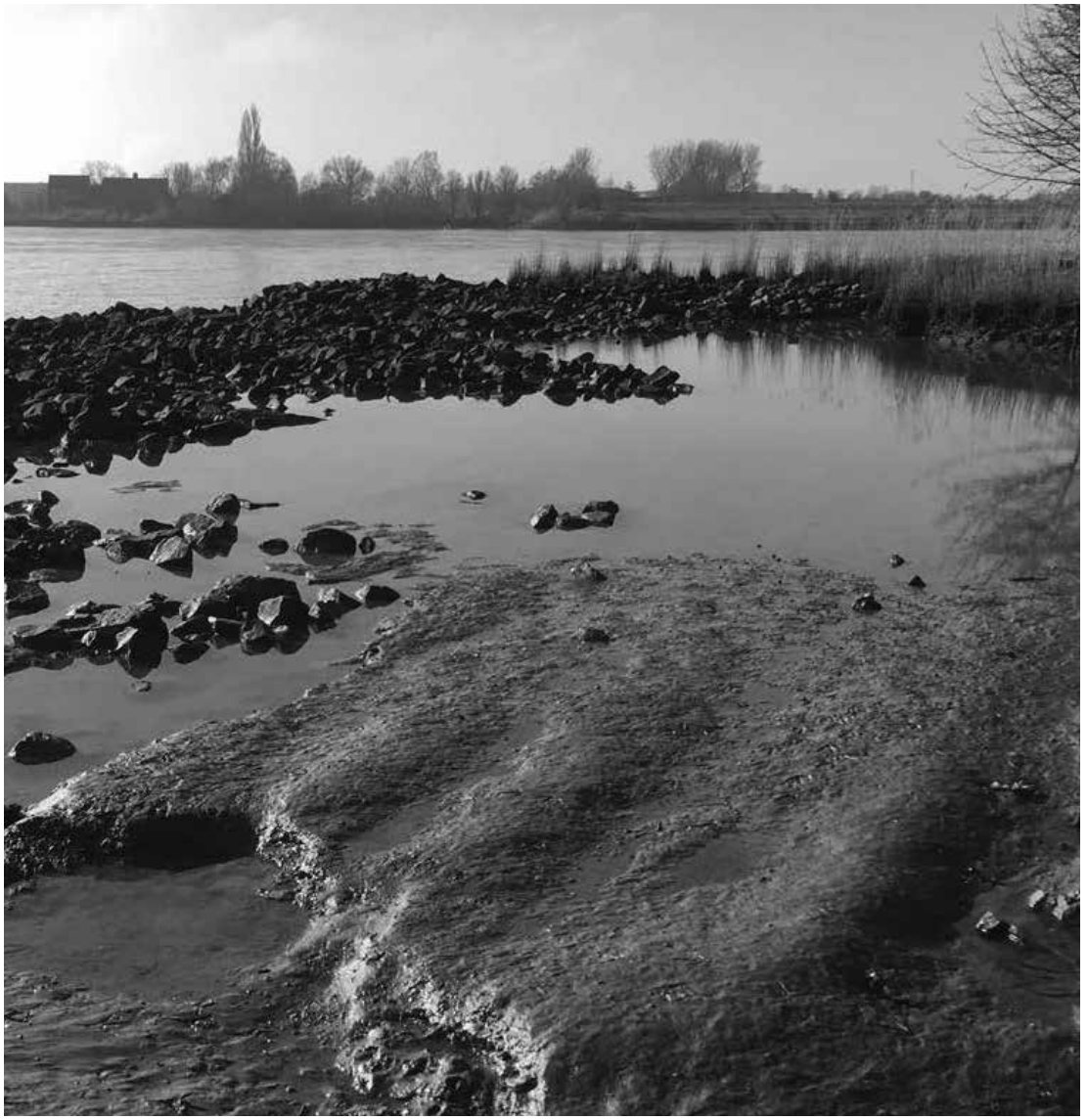
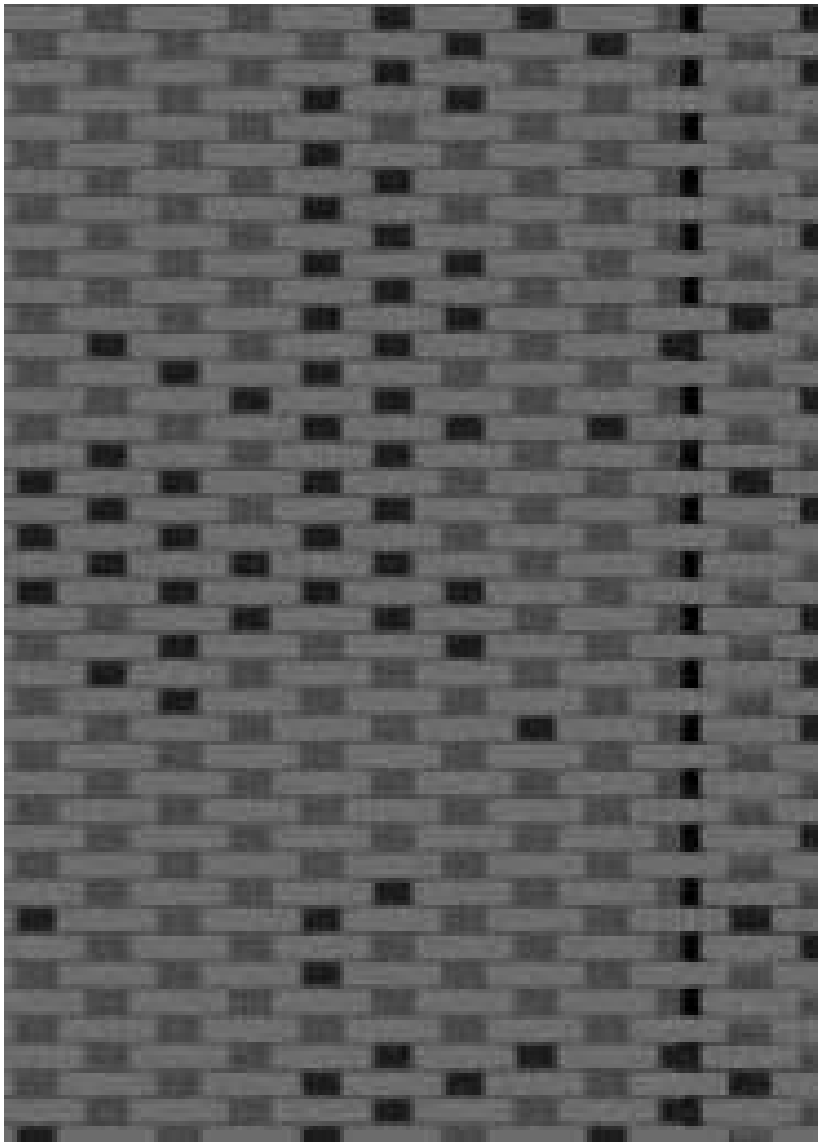


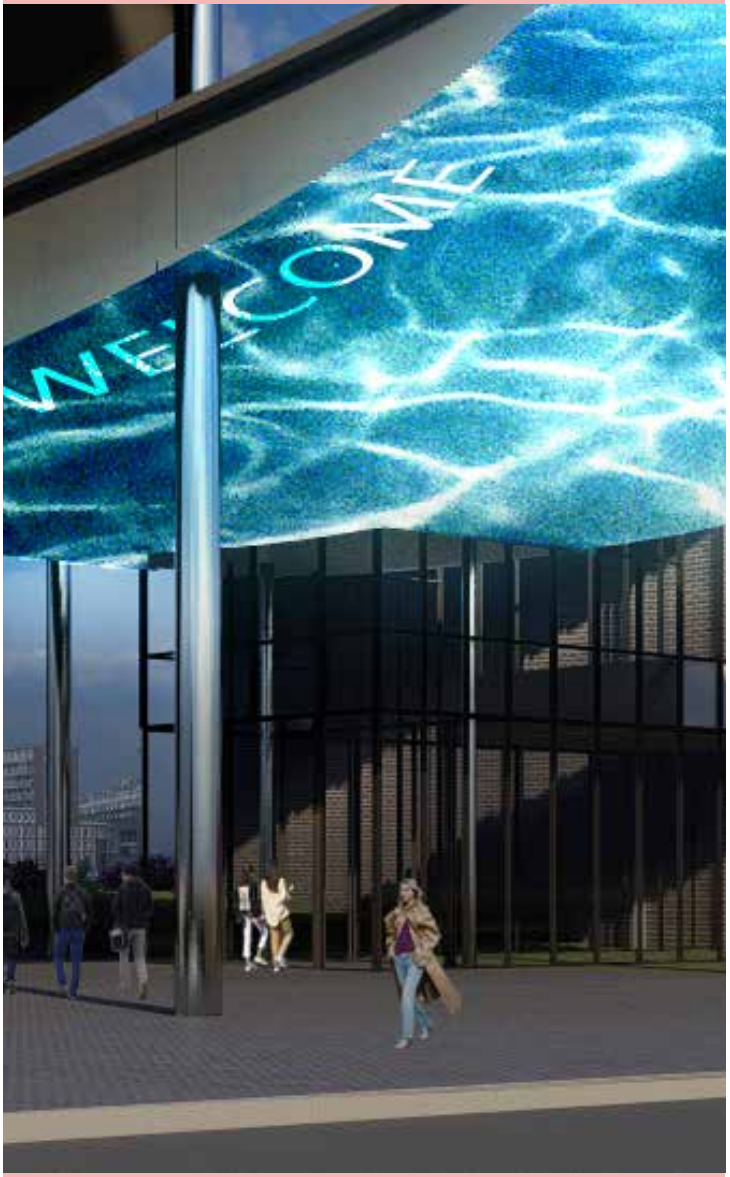
Image from Guest Lecture RIVER AS A TIDAL PARK by Marit Janse De Urbanisten Rotterdam 21.03.04



wastebasedbrick

TYPE A

Media Ceiling

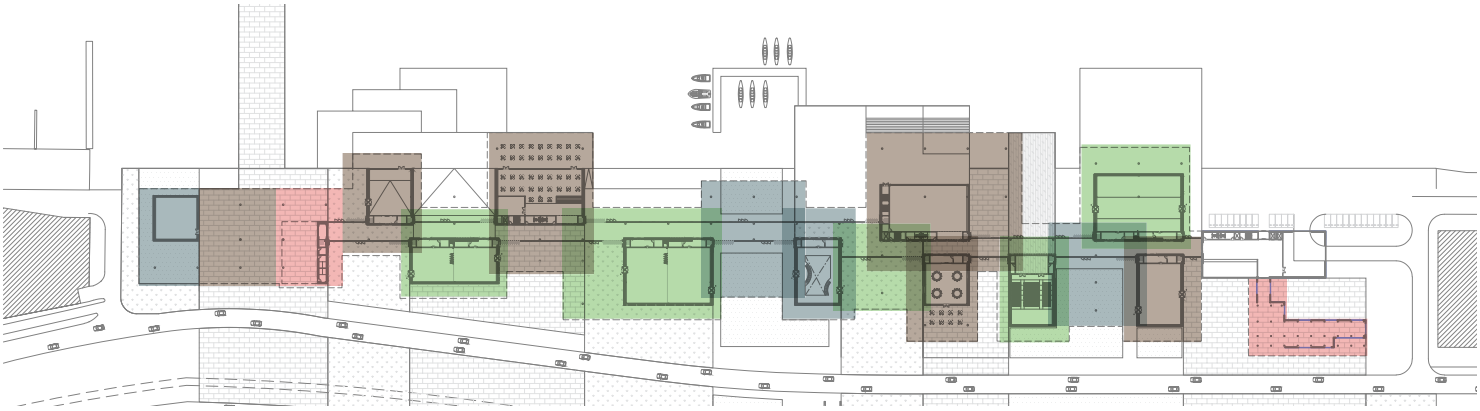


Main Entrance

TYPE B

Mirror Stainless Steel

Movement



TYPE C

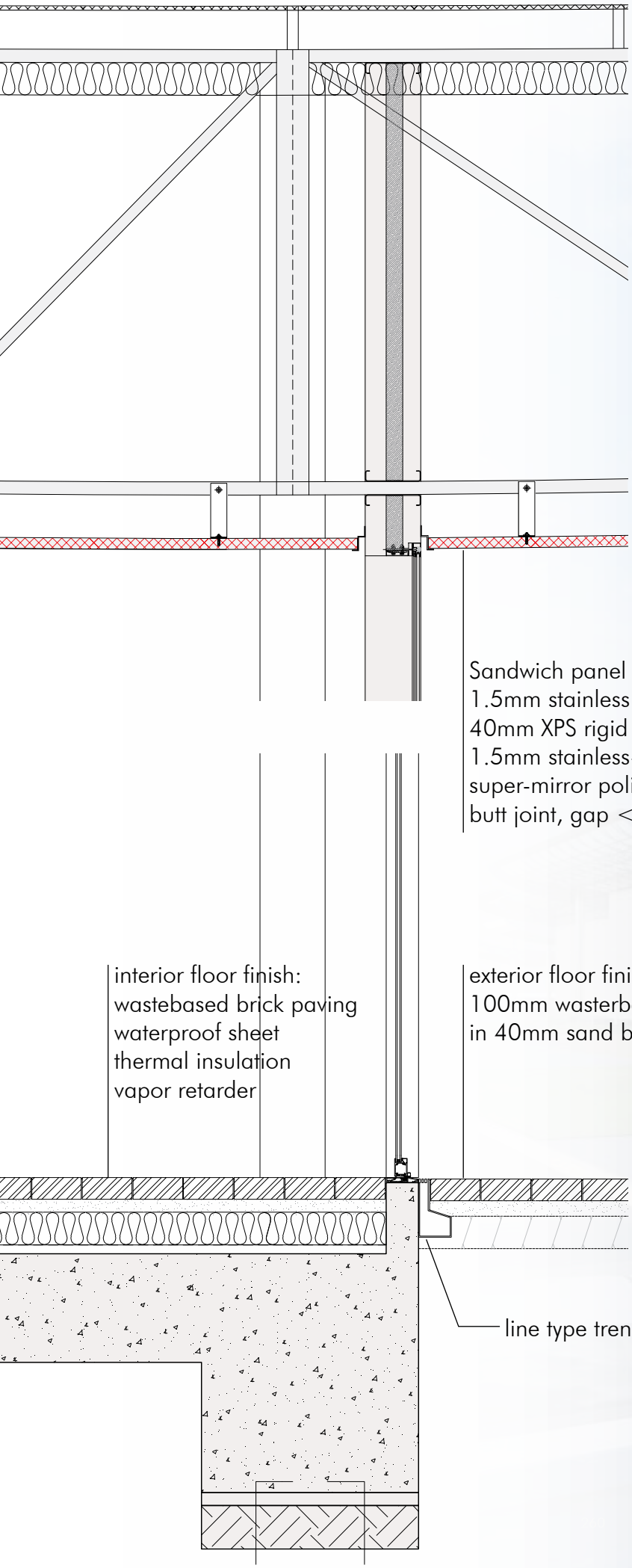
Matt Ceiling

Water Garden

TYPE D

Perforated Ceiling

Green Garden



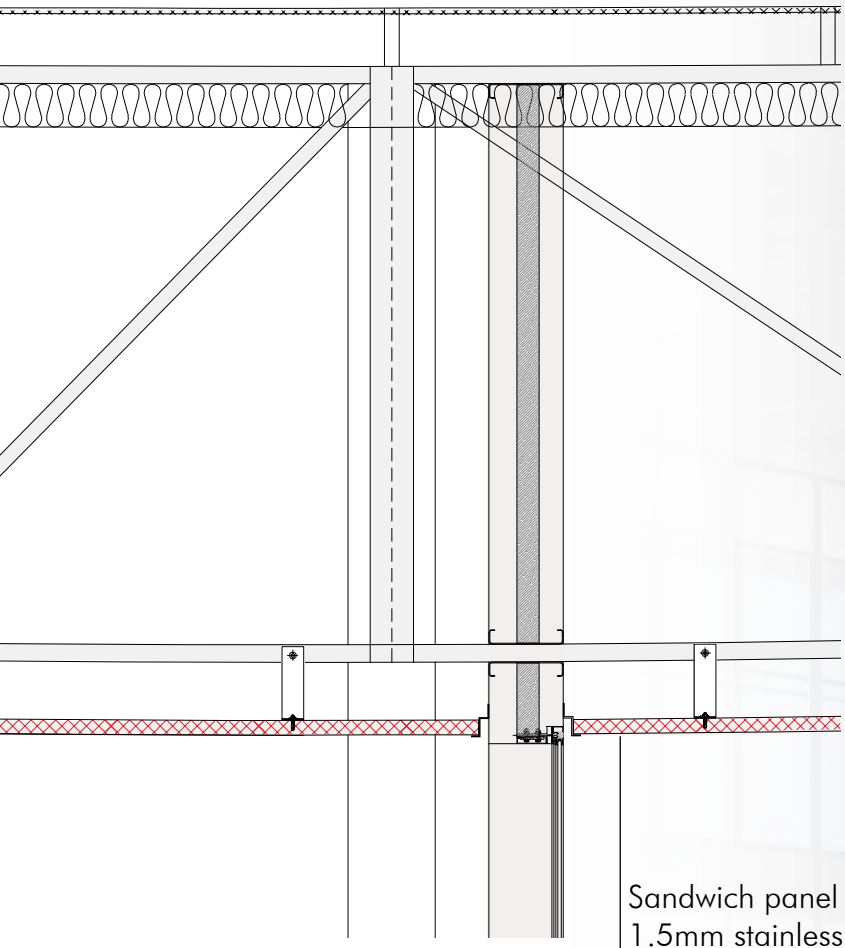
Sandwich panel on roof underside:
1.5mm stainless steel sheet
40mm XPS rigid foam
1.5mm stainless-steel sheet,
super-mirror polish,
butt joint, gap <1mm

interior floor finish:
wastebased brick paving
waterproof sheet
thermal insulation
vapor retarder

exterior floor finish:
100mm wasterbased brick paving
in 40mm sand bed

line type trench

The Vieux Port Pavilion in Marseille, by Foster + Partners
https://www.archdaily.com/340004/vieux-port-pavilion-foster-partners



Sandwich panel on roof underside:
1.5mm stainless steel sheet
40mm XPS rigid foam
1.5mm stainless-steel sheet,
matte polished hairline,
butt joint, gap <1mm

interior floor finish:
wastebased brick paving
waterproof sheet
thermal insulation
vapor retarder

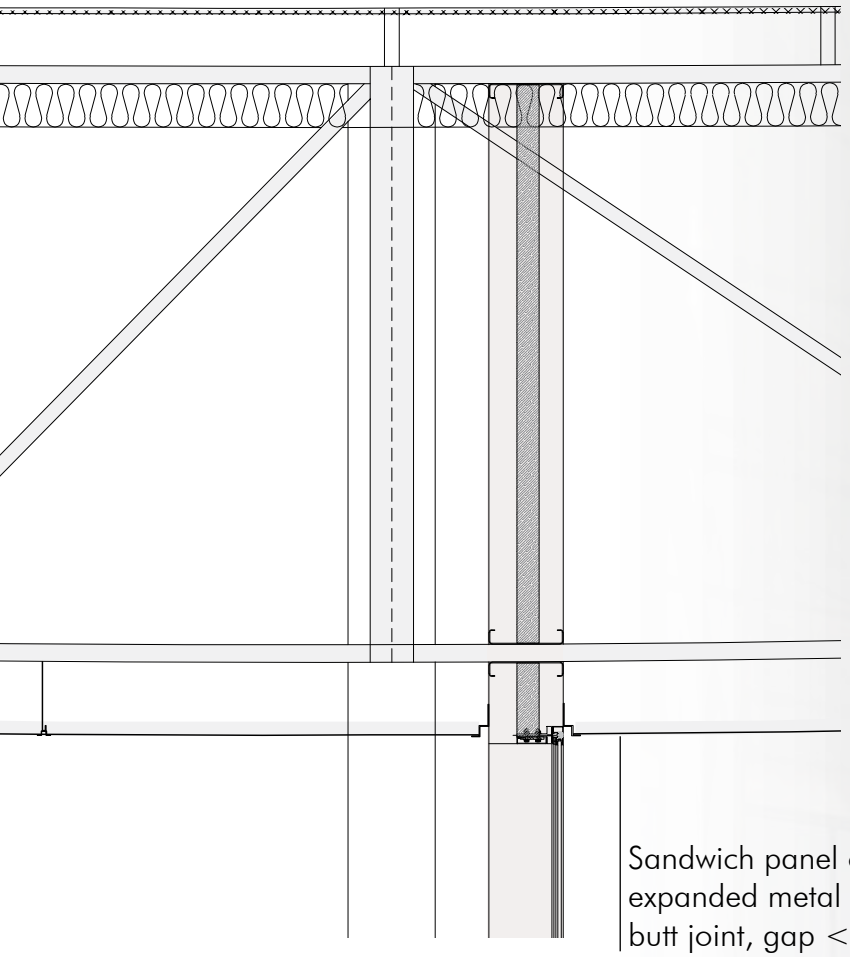
Underwater Coping
Perimeter Overflow

Sallow water
deepest depth=80mm

line type trench

https://i.pinimg.com/1200x/b4/62/c7/b462c73a820cbfde22b08e4410f8c277.jpg

Public Gallery Design Of Yuexiu Tianyue Bay / XAA
https://www.archdaily.com/923110/public-gallery-design-of-yuexiu-tianyue-bay-xaa?ad_source=search&ad_medium=search_result_all



Sandwich panel on roof underside:
expanded metal sheet,
butt joint, gap <1mm

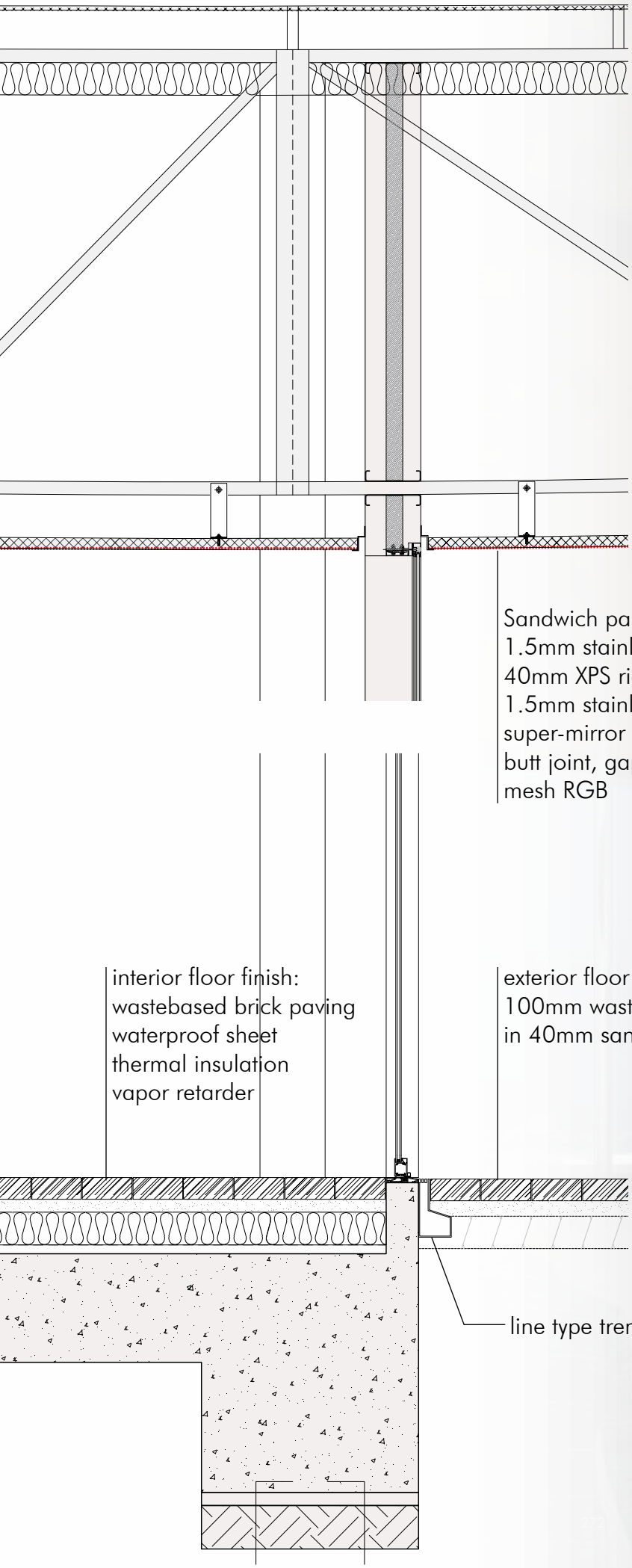
interior floor finish:
wastebased brick paving/
moss carpet
waterproof sheet
thermal insulation
vapor retarder

Lawn

line type trench

Art gallery in London by L'Atelier Senzu
https://lateliersenzu.com/galerie-mai/

Indoor green - moss
https://azumamakoto.com/209/

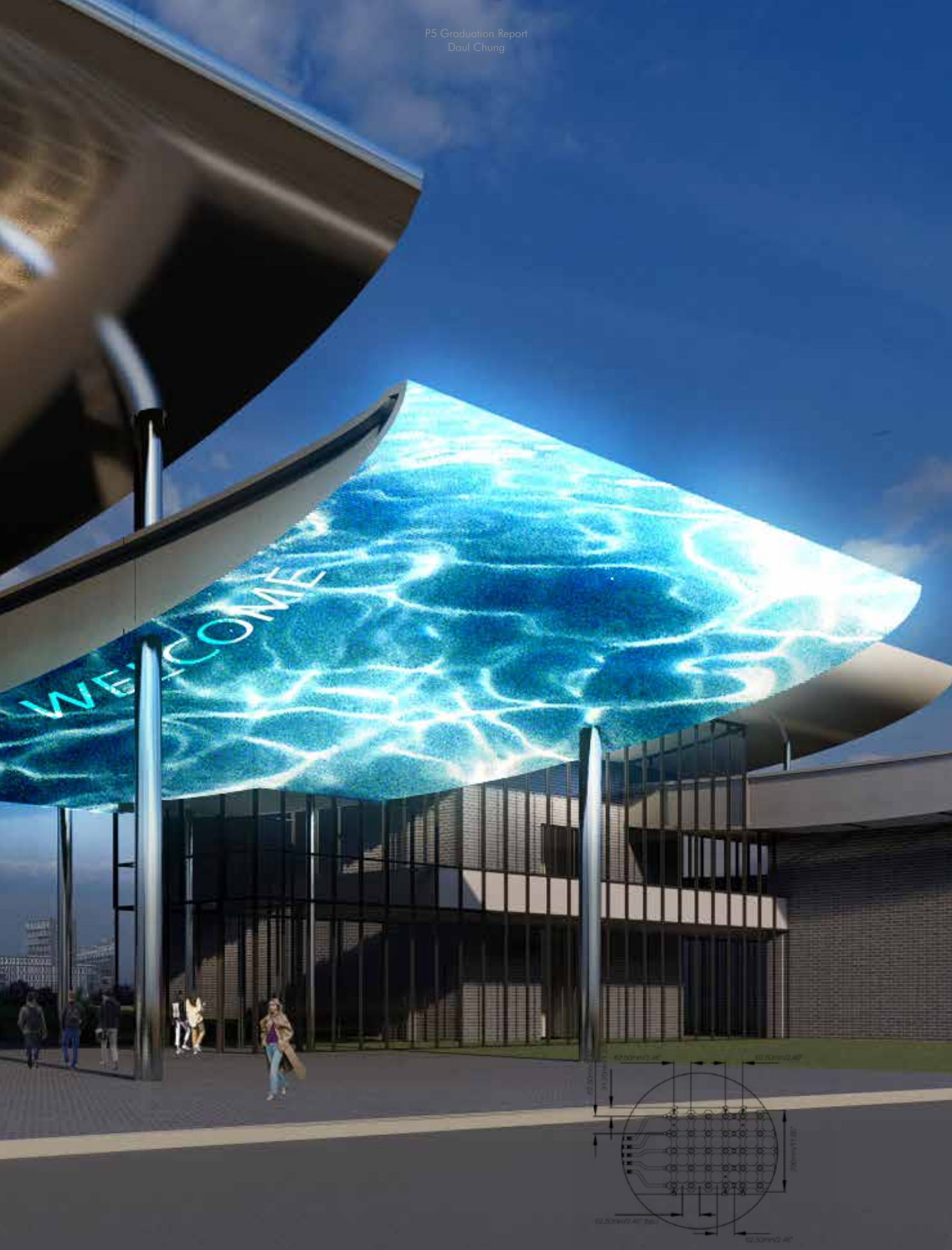


Sandwich panel on roof underside:
1.5mm stainless steel sheet
40mm XPS rigid foam
1.5mm stainless-steel sheet,
super-mirror polish,
butt joint, gap <1mm
mesh RGB

interior floor finish:
wastebased brick paving
waterproof sheet
thermal insulation
vapor retarder

exterior floor finish:
100mm wasterbased brick paving
in 40mm sand bed

line type trench

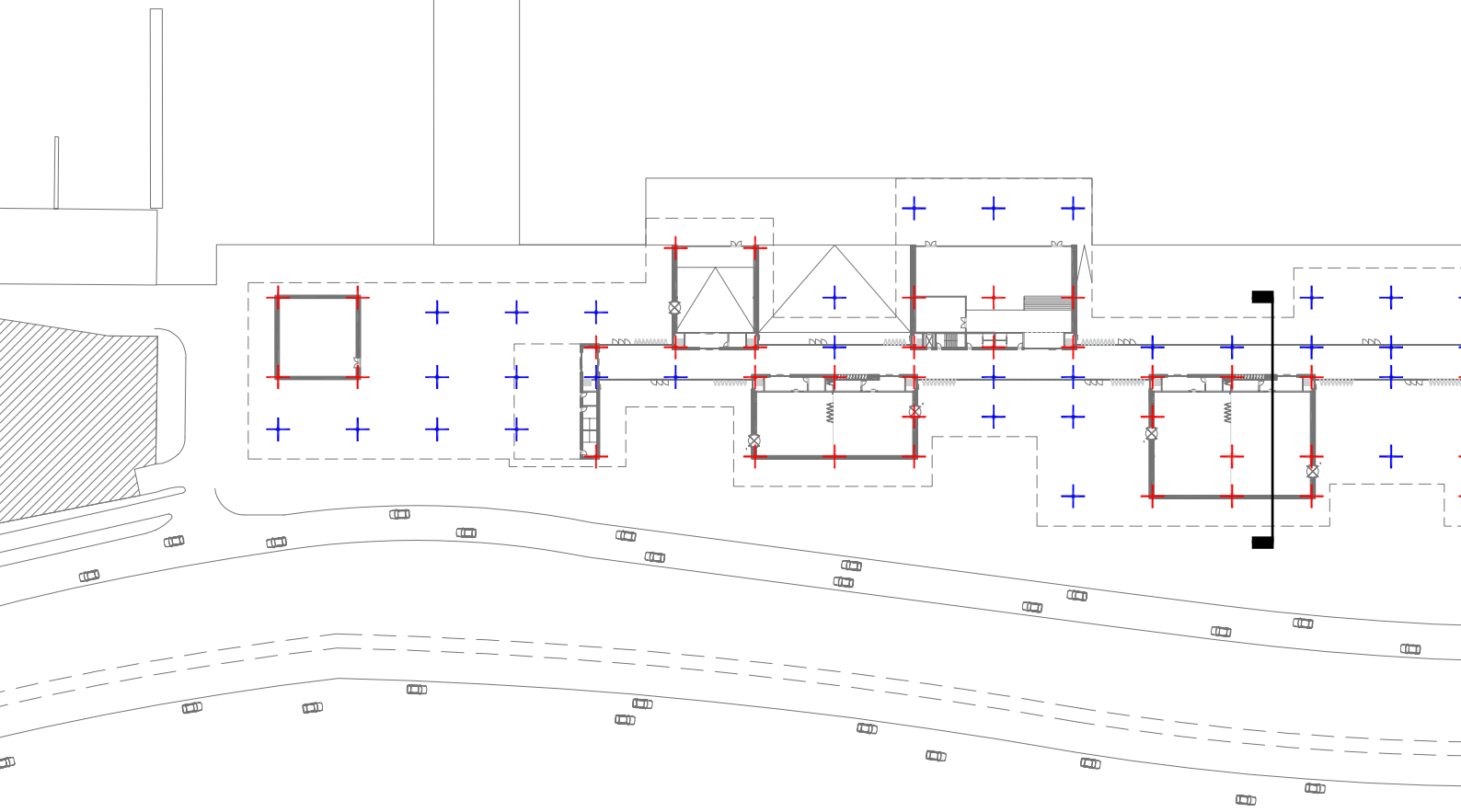


mesh RGB

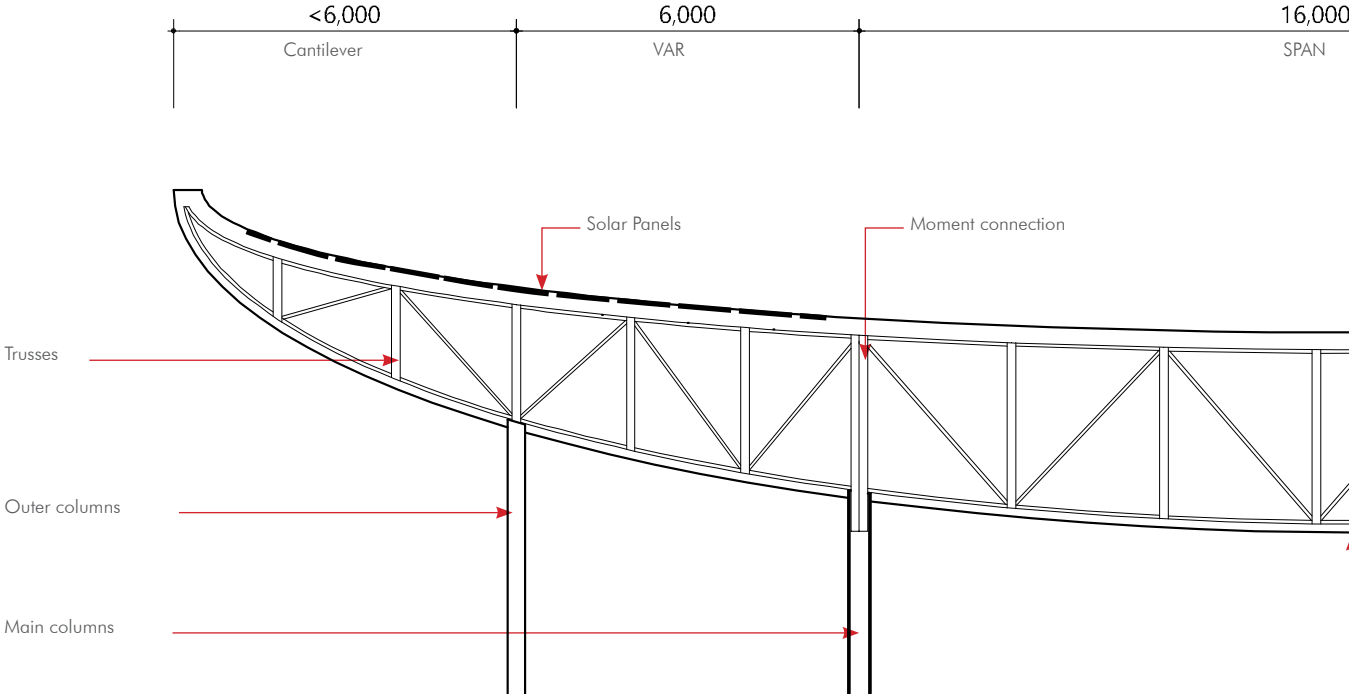
221-main-street-san-francisco


221

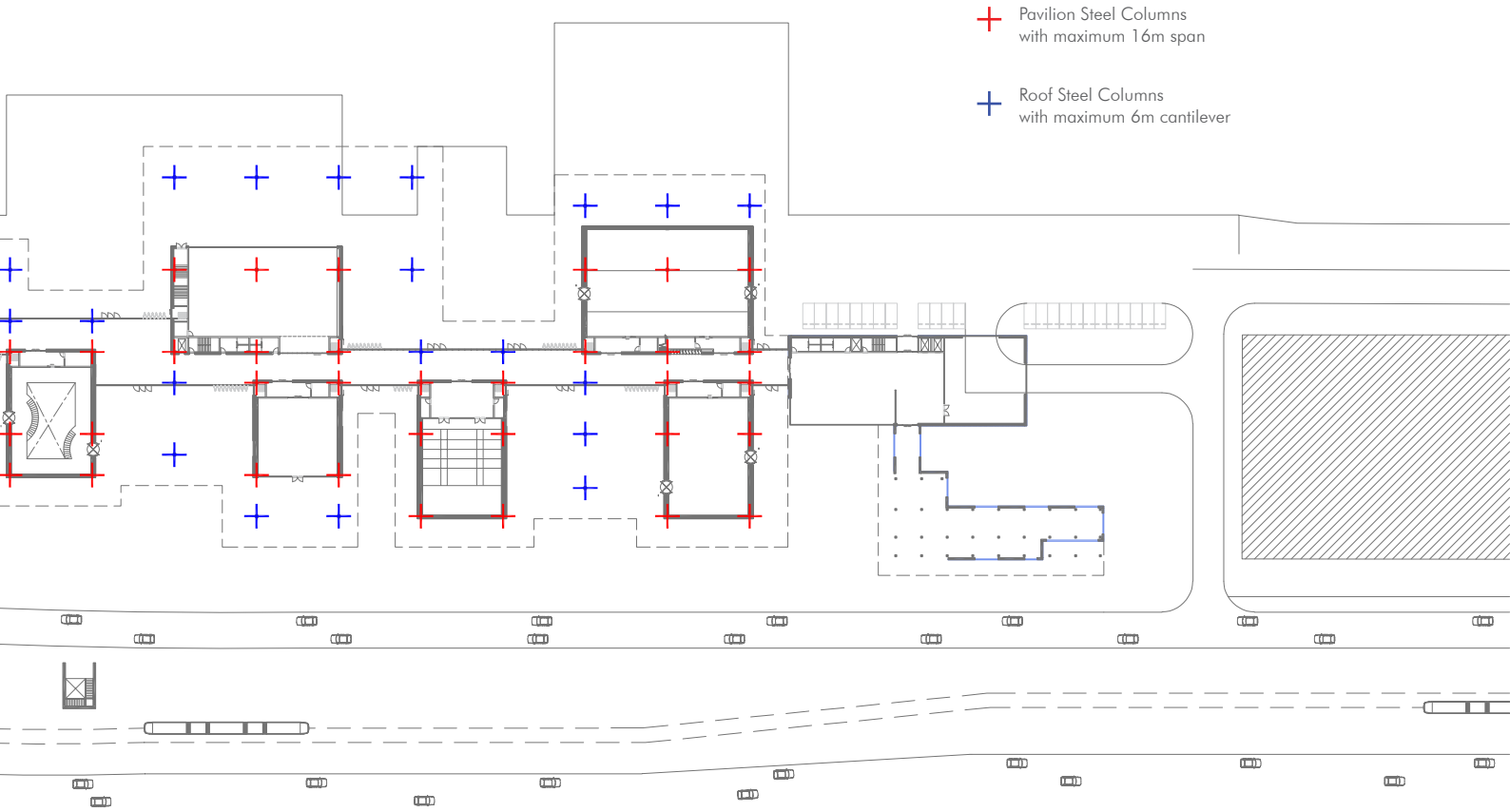
Structure



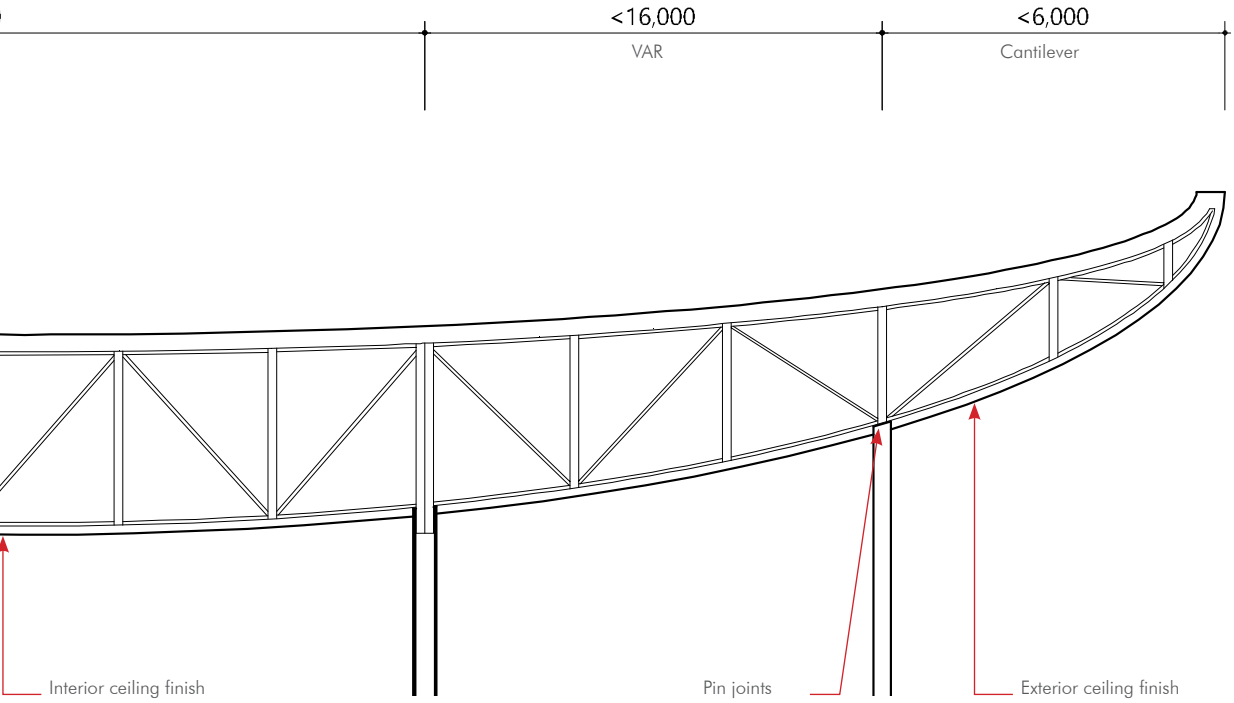
Typical Section fo



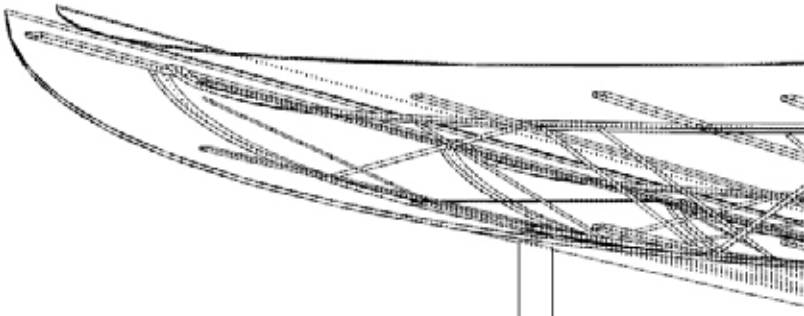
Concept



or Roof Structure



Sandwich panel on roof underside:
1.5mm stainless steel sheet
40mm XPS rigid foam
1.5mm stainless-steel sheet,
super-mirror polish,
butt joint, gap <1mm



fixed glass wall
double glazing
steel T-bar for resisting wind load

interior floor finish
reinforced concrete on metal decking

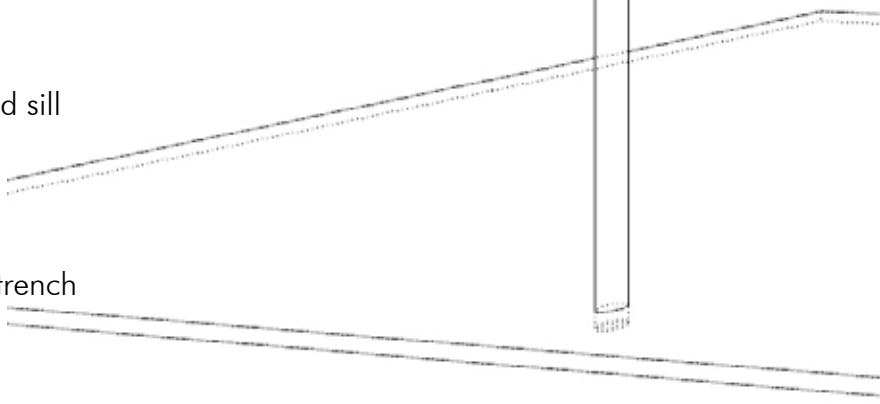
interior ceiling finish

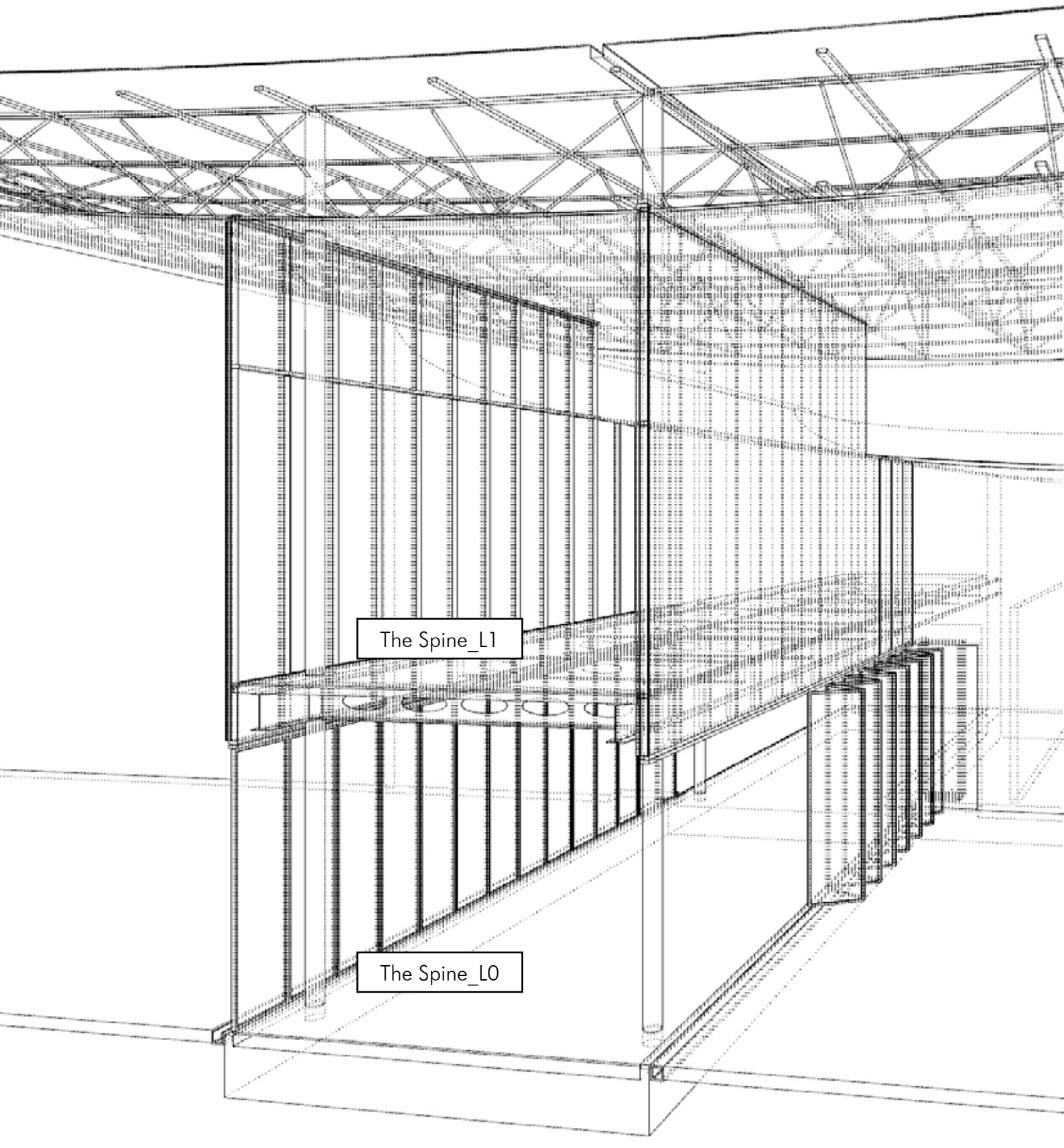
bi fold doors
double glazing

interior floor finish
waterproof sheet
thermal insulation
vapor retarder

embedded sill

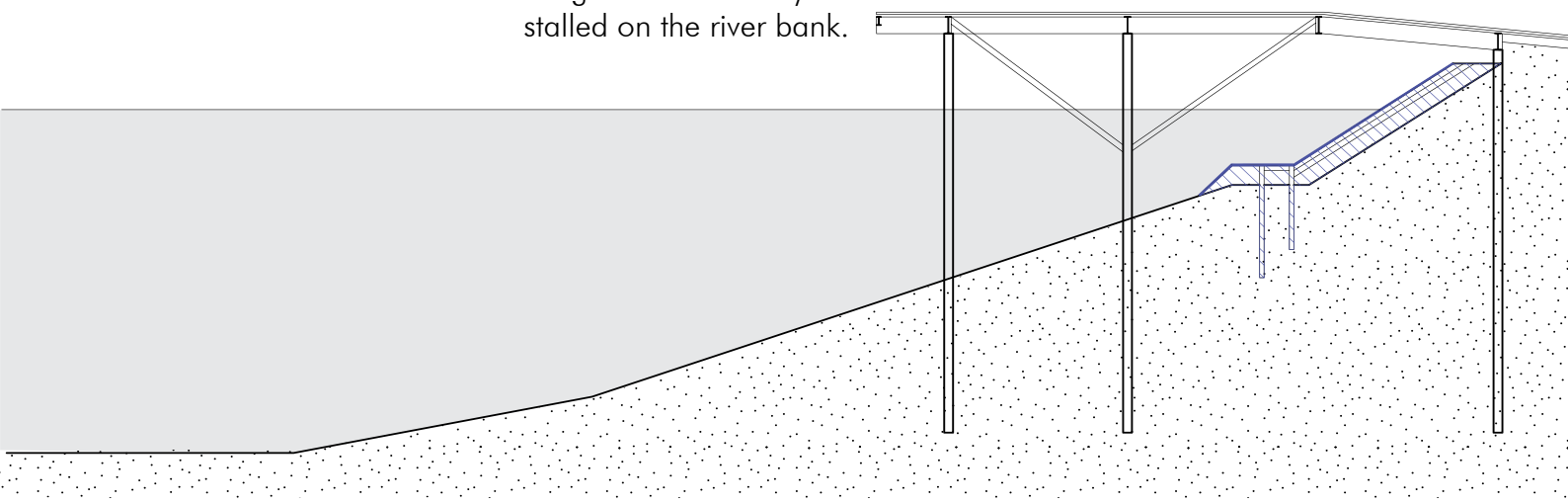
line type trench



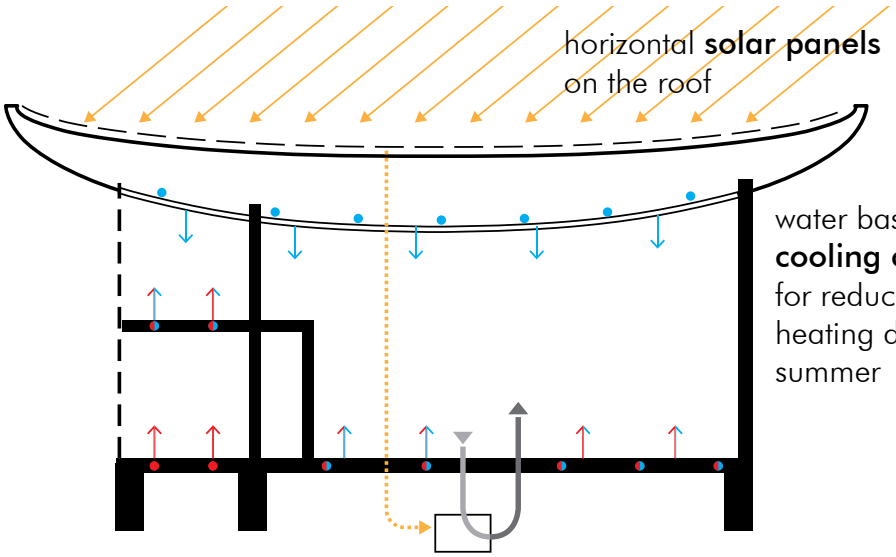

The Spine_L1
The Spine_L0

Climate

Due to climate change, rising sea level cuases high-water levels to rise in Rotterdam. The higher dike is newly installed on the river bank.



Cooling/Heating

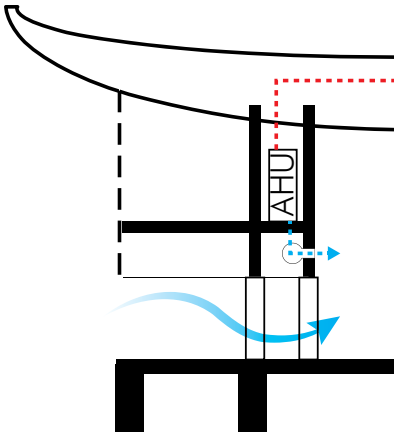


water based
cooling ceiling
for reducing overheating during summer

water based
underfloor cooling & heating
Floor heating with low energy temperature is installed to balance the whole building

heat pump
using the electricity gained by the solar panels

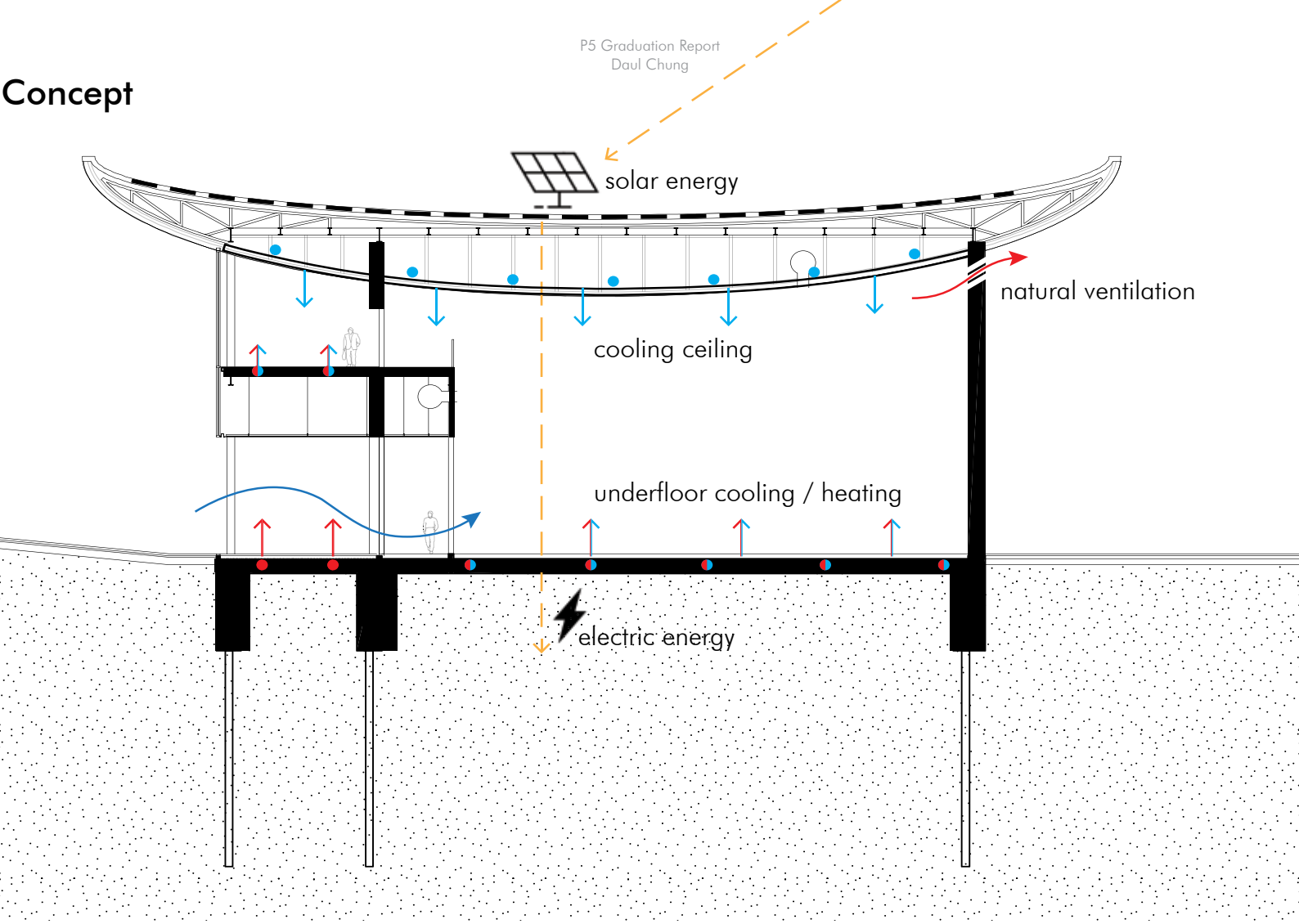
Hybri



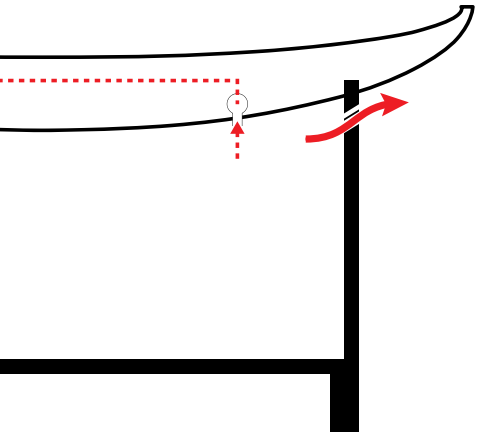
primary - **mechanical ve**
as an exhibition space

secondary - **natural vent**
using roof shape

Concept



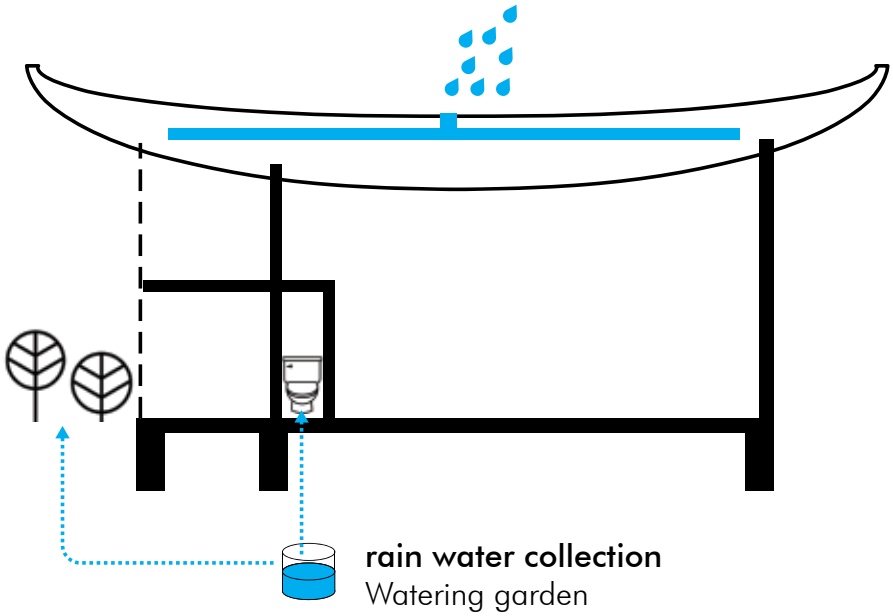
d Ventilation



ntilation

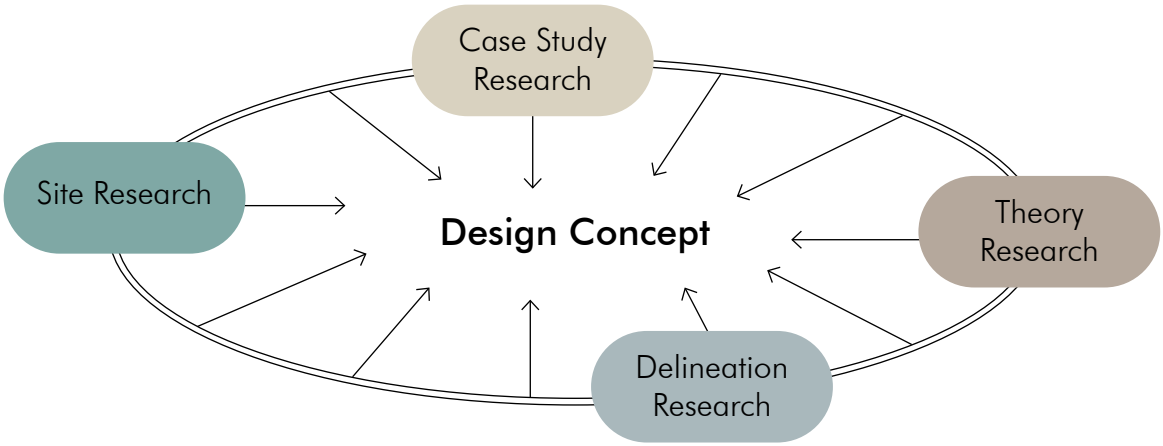
tilation

Rainwater



rain water collection
Watering garden
Flushing toilets
Supplementing the water supply
in case of fire

3. Final Reflection



The studio simultaneously began with four researches: site research, case study research, theory research and delineation research, to create the tool box to get a hold of the New Museum. These four research produced four different results but they are all interconnected to each other and lead to the one design which aims to find possibilities of the future of the Art Museum as a public building.

The site research, which was divided into six topics: city, connection, power, people, culture, and history, enables to point out the necessities and the demands on the site while setting a foundation for new possibilities. For example,since this is a 'new' museum, it should not be one of the existing museums in Rotterdam. And, because of the social and cultural difference between North and South Rotterdam which is divided by the river, this new museum should be appropriate for the site. And this should be able to connect mental distance between North and South. Also, the new museum should take over the role of Maas River which has changed a few times (polder>harbour>finiding new role). On a smaller scale, the site context such as public transportation locations and neighboring buildings helped to make a decision to place masses, entrances, and etc.

The case study gave fundamental ideas about what museums need such as concept, program, circulation, materialization, relevant interior elements, and etc. It offered me to start drawing the New Museum with appropriate scale. For instance, comparing floor plans of eighteen museums gave the sense of scales of different rooms.

During Theory Research sessions, I could open my eyes through literature from Walter Benjamin to Andreas Huyssen. After reading and based on the site research, theory research and delineation research, I came up with the question for the New Museum and wrote the paper about it. "How can an Art Museum express new art forms in contemporary technology?" The paper started with the statement that when the technology is changed, not only the way of adopting the new art forms but also the place of presenting the new art is changed for better understanding of new art forms using contemporary technology. With the invention of the World Wide Web around 1990, the term digital media comes to be used along with computer graphics. Along with existing cultural forms, computers begin to host new forms such as web sites, computer games, CD-ROMs and interactive installations, namely new media. For example, when

computer technologies such as LifeForms are developed, new art forms such as Trackers by Merce Cunningham emerge. Therefore, contemporary technology starts from around 1990. The new art forms using contemporary technology have emerged from Jaffrey Shaw – Char Davies – teamLab – Refik Anadol to d'strict. Since technology is constantly developing, new art forms keep emerging. Examples of artworks show that there are no borders, no limits. Hence, the new museum building which exists with new media art collections shall have infinite possibilities. The characteristic of infinite possibilities can be addressed into five principles derived from media scholars such as Kittle, Manovich, McLuhan, and Bolter & Grusin: Remediation, Discrete Representation, Modularity, Variability, and Transcoding. In this way, it finds the future possibilities of the museum as a public building which can express the new art forms using contemporary technology.

During Delineation Research sessions, I learned to look at existing museums in different perspectives such as disarticulation, dismembering, cadavre exquis, atomization, catalogue, collection, wunderkammer, cabinet de curiosites, superimposition, layering, decollage, collage, assemblage, scaling, and excavation. The result of delineation research was creating a design manifesto which contains what I imagined the New Museum to be based on four research. As a 'New' Museum, I imagine an unconventional museum where people can choose their routes, not just one way direction but infinite ways of direction. I imagine that this museum is not just for one time visit but for multiple times. In this way, the museum buildings can change its look like temporary exhibitions by season.

I tried to translate the results of research into the design concept and tried not to forget about it while I proceed the project further. My museum is the New Museum for contemporary technology. The New Museum has three main elements: fragmented masses, the spine, and the roof. The fragmented masses are the results of five principles of new media: Remediation, Discrete Representation, Modularity, Variability, and Transcoding. The sizes of masses are from the case study research. The spine is the result of the Multiplicity concept. Multiplicity in Architecture aims to give buildings and building elements properties that make them less singular in function, more productive, more transformative and resilient. As the spine, which is a device to connect independent masses, can disappear and appear by temperature, it allows people to use different indoor and outdoor spaces by seasons. It also offers visual and behavioral resilience by seasons. The roof is the result of the site research. As having the concave roof, I tried to enhance the neighborhood with the New Museum.

The relationship between my graduation topic and master track of Architecture is engagement with the built environment in a world that is constantly changing and developing. The graduation topic seeks a New Art Museum as future-proof and multiplicity in today's urban cultural milieu, the built environment. The purpose of the NEW Art Museum is new relationships between the museum as a public building, new art forms in contemporary technology, people, and the city that fit with my chosen master track of Architecture and the overall programme. The graduation work aims to find the future possibilities of the museum as a public building. The new museum explores what multiplicity means and future-proofs in today's urban cultural environment. The design process will lead to design principles that implement multiplicity in architecture. The resulting design reflects the relationship between the NEW Art Museum, new art forms, people and cities in contemporary technology.