The Innovation Factory

The Cultural Hub in Hembrug

Edith Leung Yee Hang | P5 Presentation

RESEARCH

PROGRAM

DESIGN

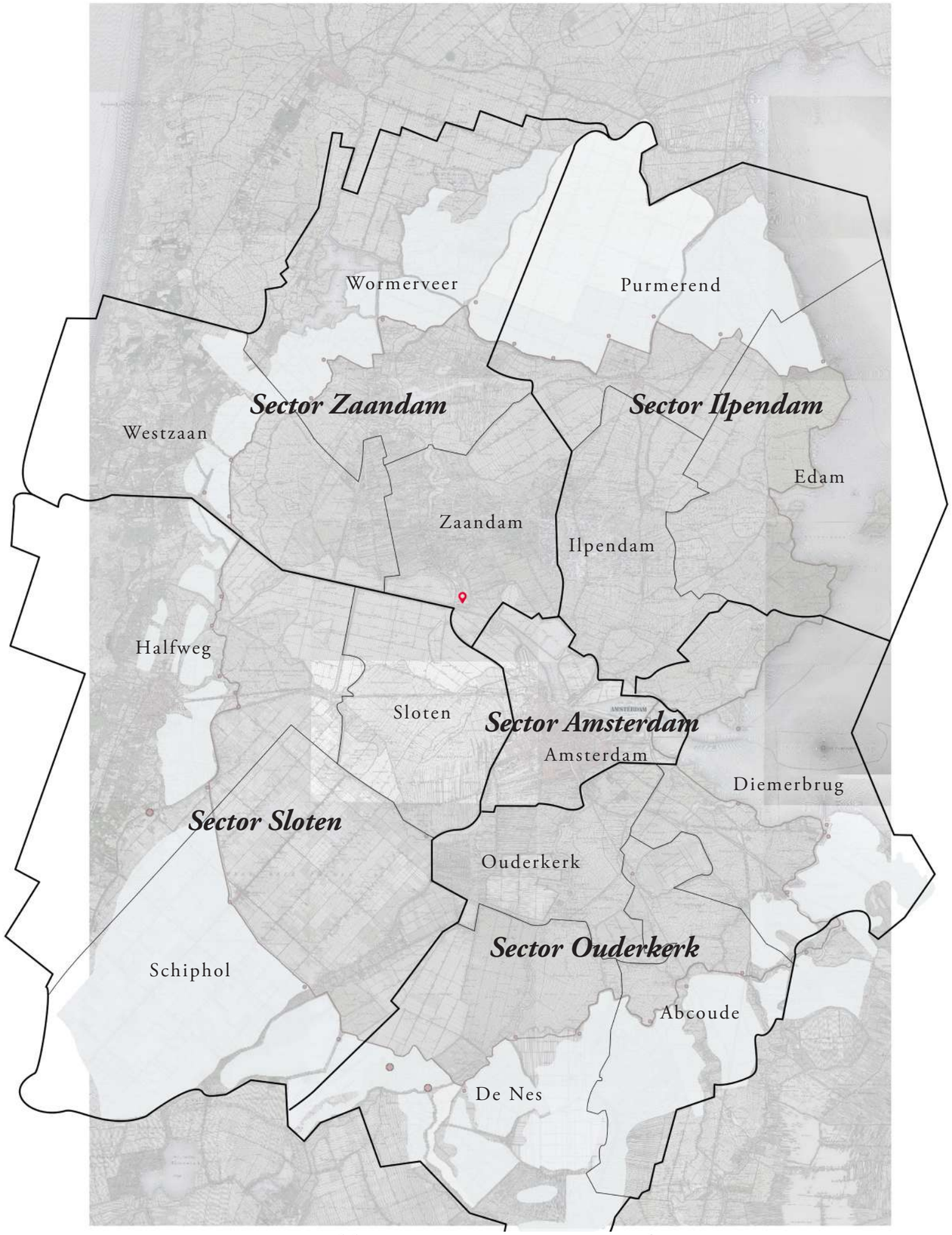
Content

- RESEARCH
- PROGRAM
- DESIGN

Research

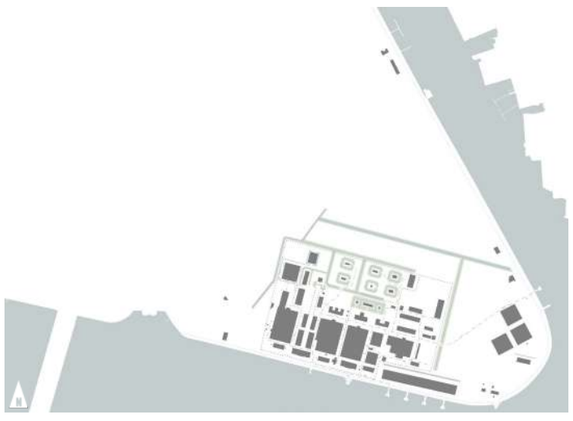
Hembrug?

New weapons, new bullets!

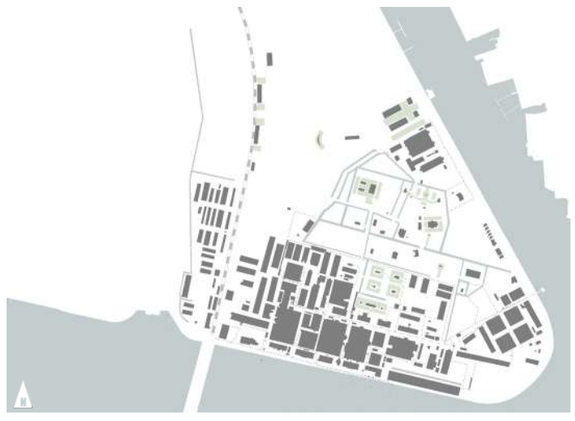


Stelling van Amsterdam

Tripartite production area

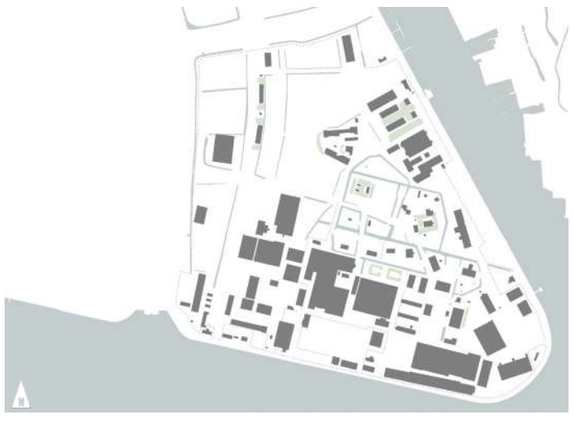


1901



1924

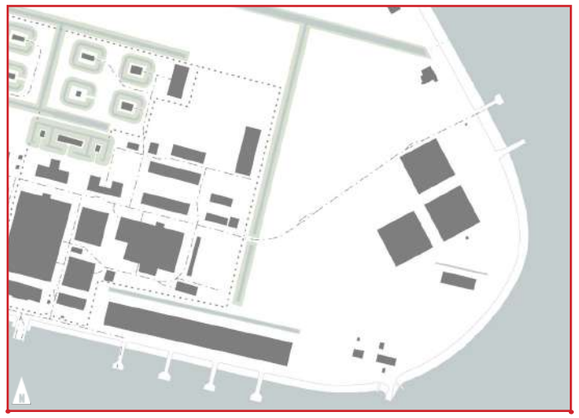
1941



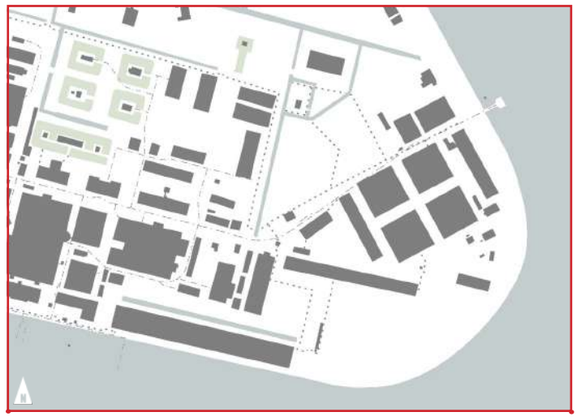
1996

Historical development

The Head of the Cape



1901



1924

1941

1996

1901

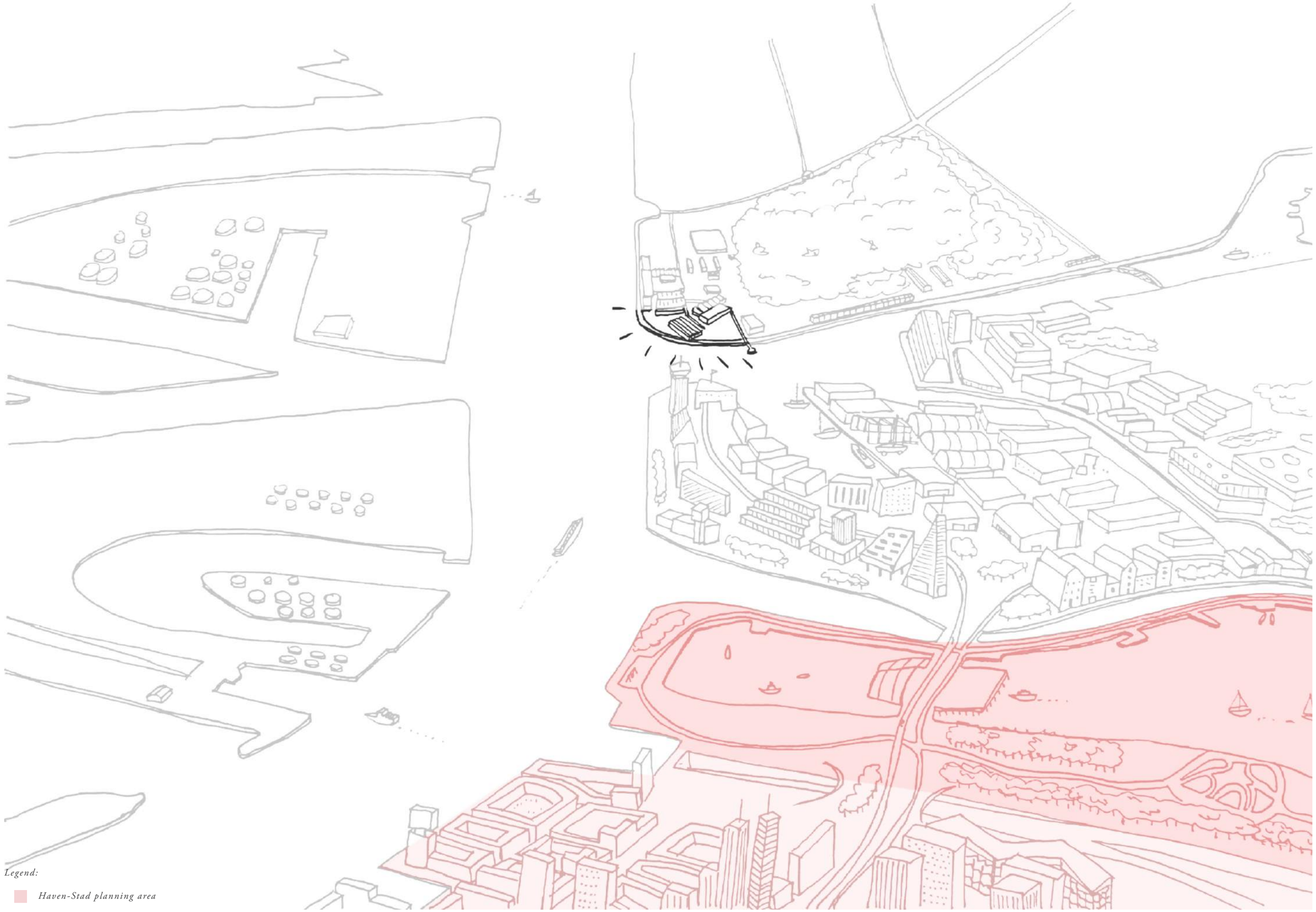
1924

1941

1996

Low density

Existing buildings



Legend:

Haven-Stad planning area

Future of Hembrug

Legend:

Hembrug | Haven-Stad planning area | Existing metro line | Proposed metro line | Bicycle lane | Pedestrian walkway | Ferry

Structural Vision Amsterdam 2040

How to revitalize the heritage in the Head of the Cape to suit the future socioeconomic development?

why?

How to revitalize the heritage in the Head of the Cape to suit the future socioeconomic development?

"The built environment is like a nearly full water basin,
it is important for us to look at the existing stock."

-Wessel de Jonge, 2017

Sustainability
Up-cycle movement

How to revitalize the heritage in the Head of the Cape to suit the future socioeconomic development?

Role of heritage architect:

To realize the potential in forgotten and faded spaces

To give a second life

To preserve the cultural values

Personal ambition towards innovation and technology

How to revitalize the heritage in the Head of the Cape to suit the future socioeconomic development?

Global trend in Dutch context

#4

The Global Innovation Index
by Cornell University, INSEAD & WIPO

2015

#9

The Global Innovation Index
by Cornell University, INSEAD & WIPO

2016

#3

The Global Innovation Index
by Cornell University, INSEAD & WIPO

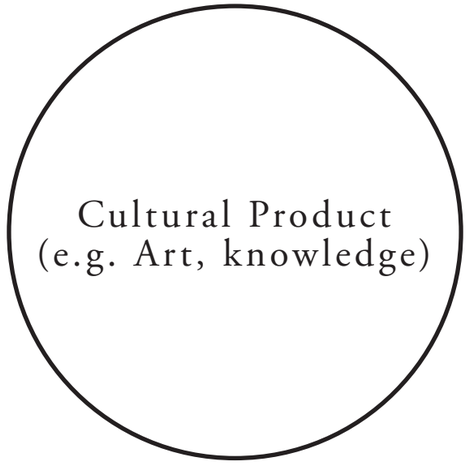
2017

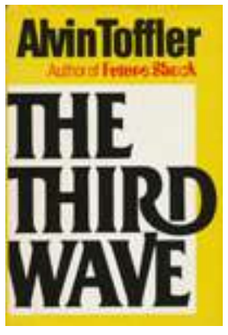
#2

The Global Innovation Index
by Cornell University, INSEAD & WIPO

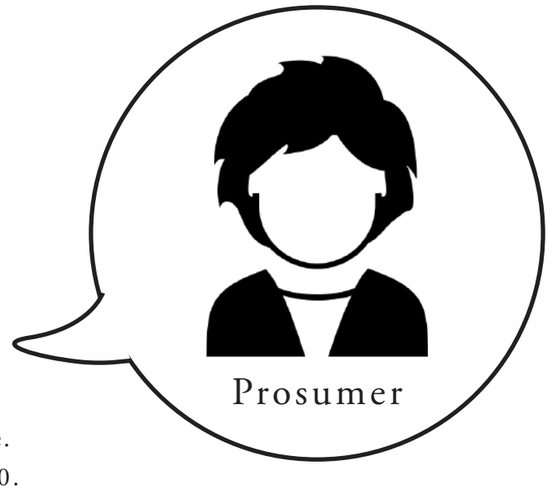
2018

Innovative culture





Toffler, Alvin. The Third Wave.
New York: Bantam Books, 1980.



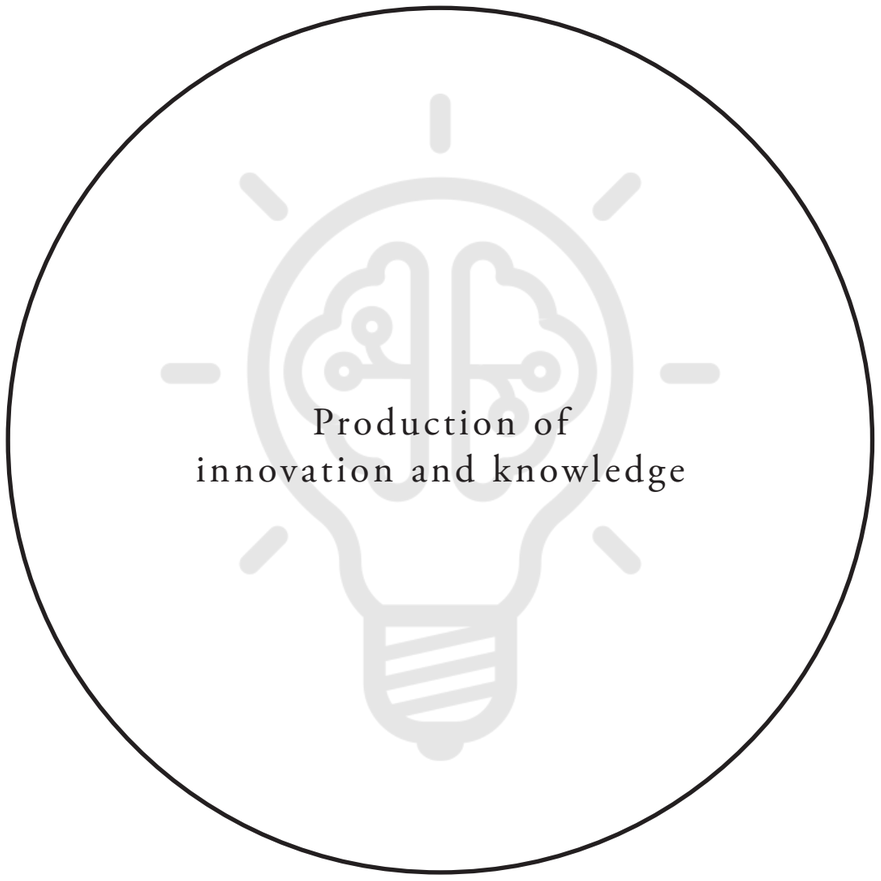
Prosumer

Can we integrate technological innovation with heritage to encourage the prosumer culture in Hembrug?

What was...

Ammunition Factory

What is...



Innovation Factory

Innovation factory

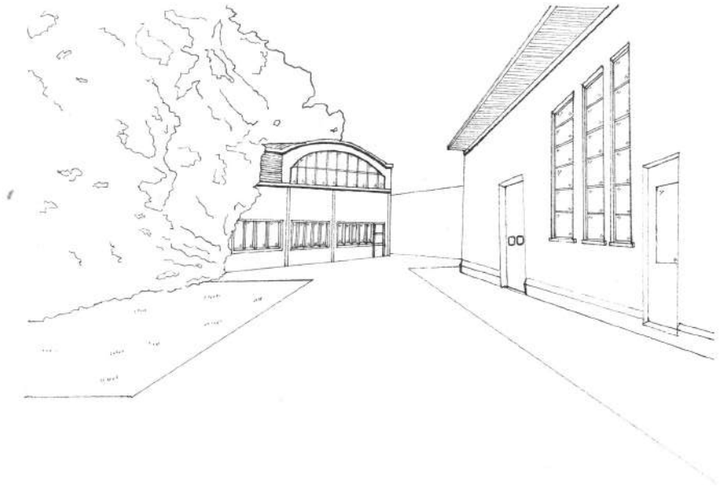
How to extract the character of the Cape to inform the design of a cultural venue which cultivates innovation?

Character noun [C or U]

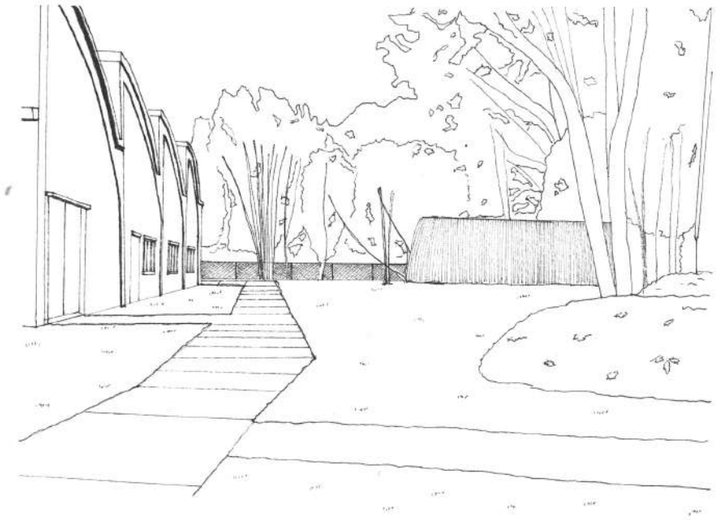
1. The particular combination of qualities in a person or place that makes them different from others

2. Qualities that are interesting and unusual

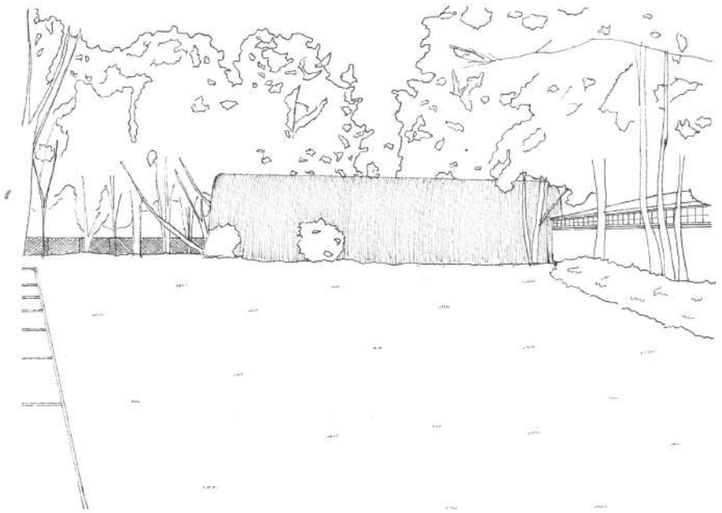
Off grid layout



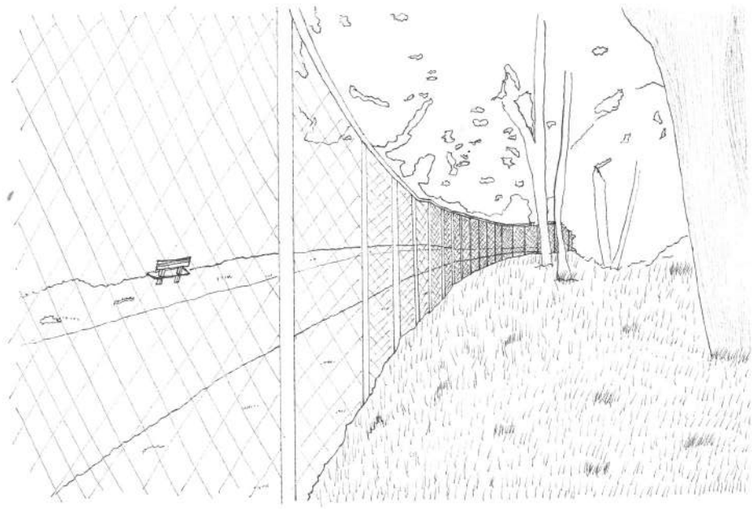
Hm...Where is this road leading to?



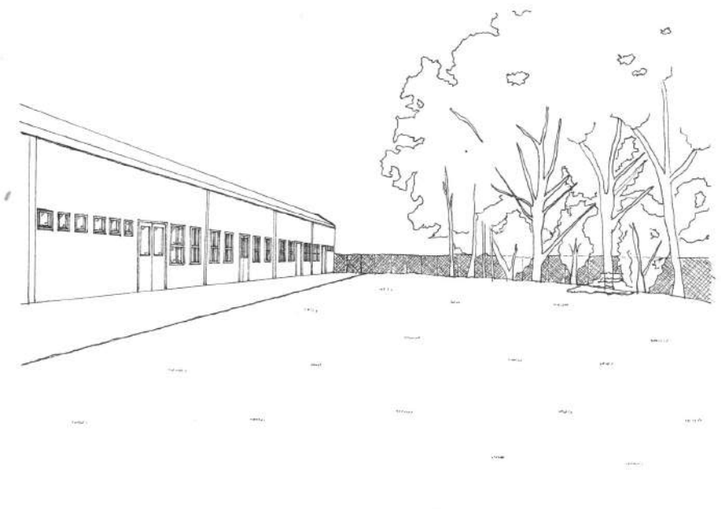
Oh! I can see the Noordzeekanaal from here!



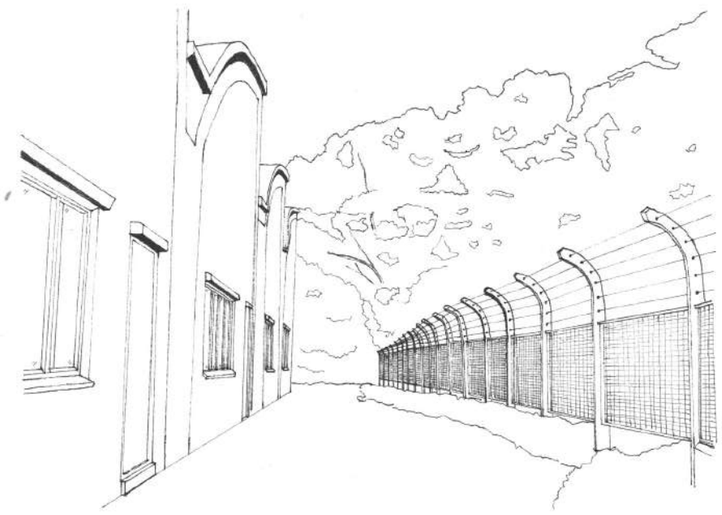
This green patch of grass is formed by two buildings.



Too bad that the promenade is separated from the lawn by this fence...



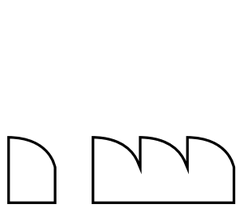
It seems that the lawn ends at the other side of the factory building.

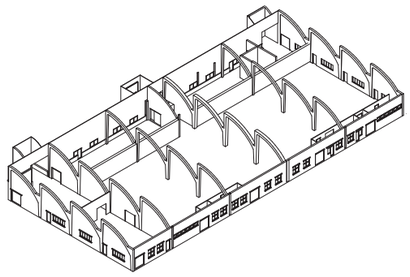


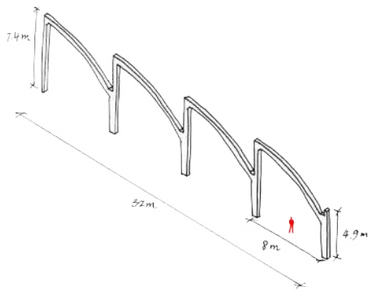
Oh, there is an alley at this end of the factory building. Look at these super old fence...

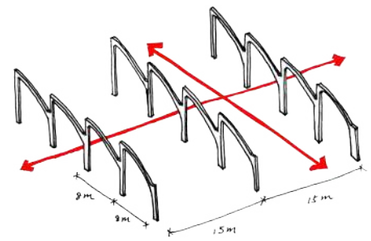
Element of surprise

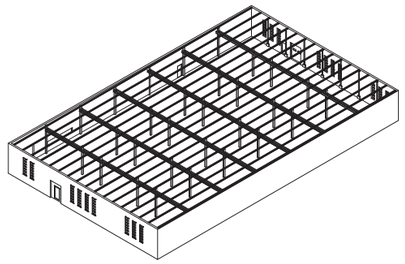
Typology *Building Examples* *Structural Element(s)* *Materiality* *Spatial Quality*

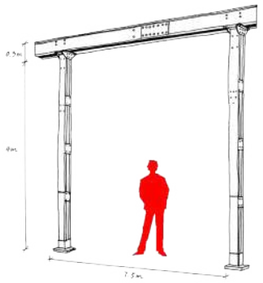


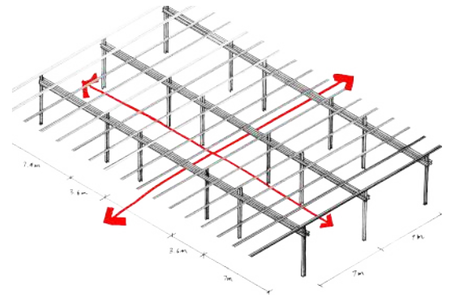


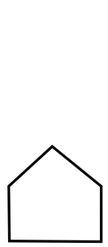


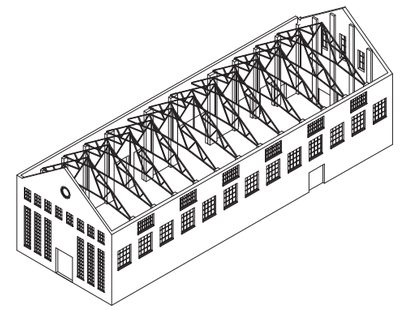


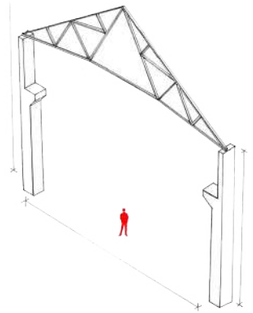


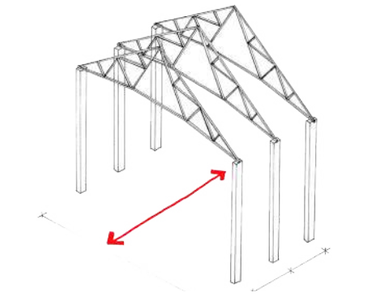


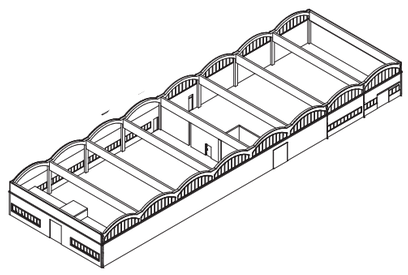


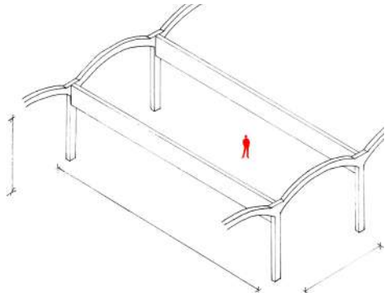


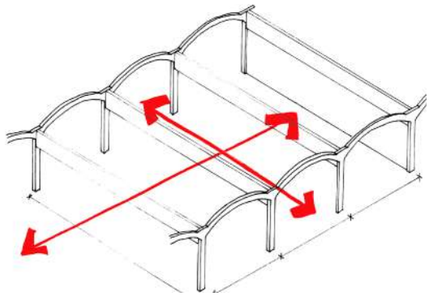


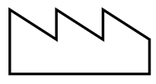


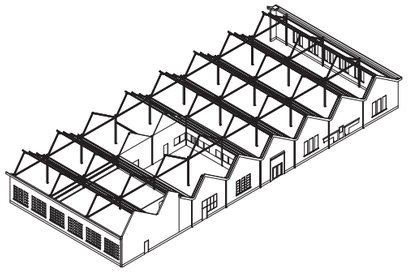


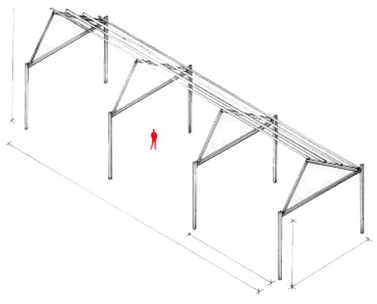


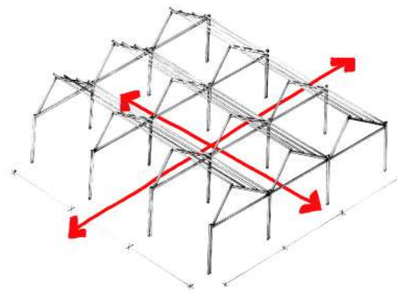












Industrial atmosphere

RESEARCH

▶ PROGRAM

DESIGN

Projectile workshop

Built in 1952

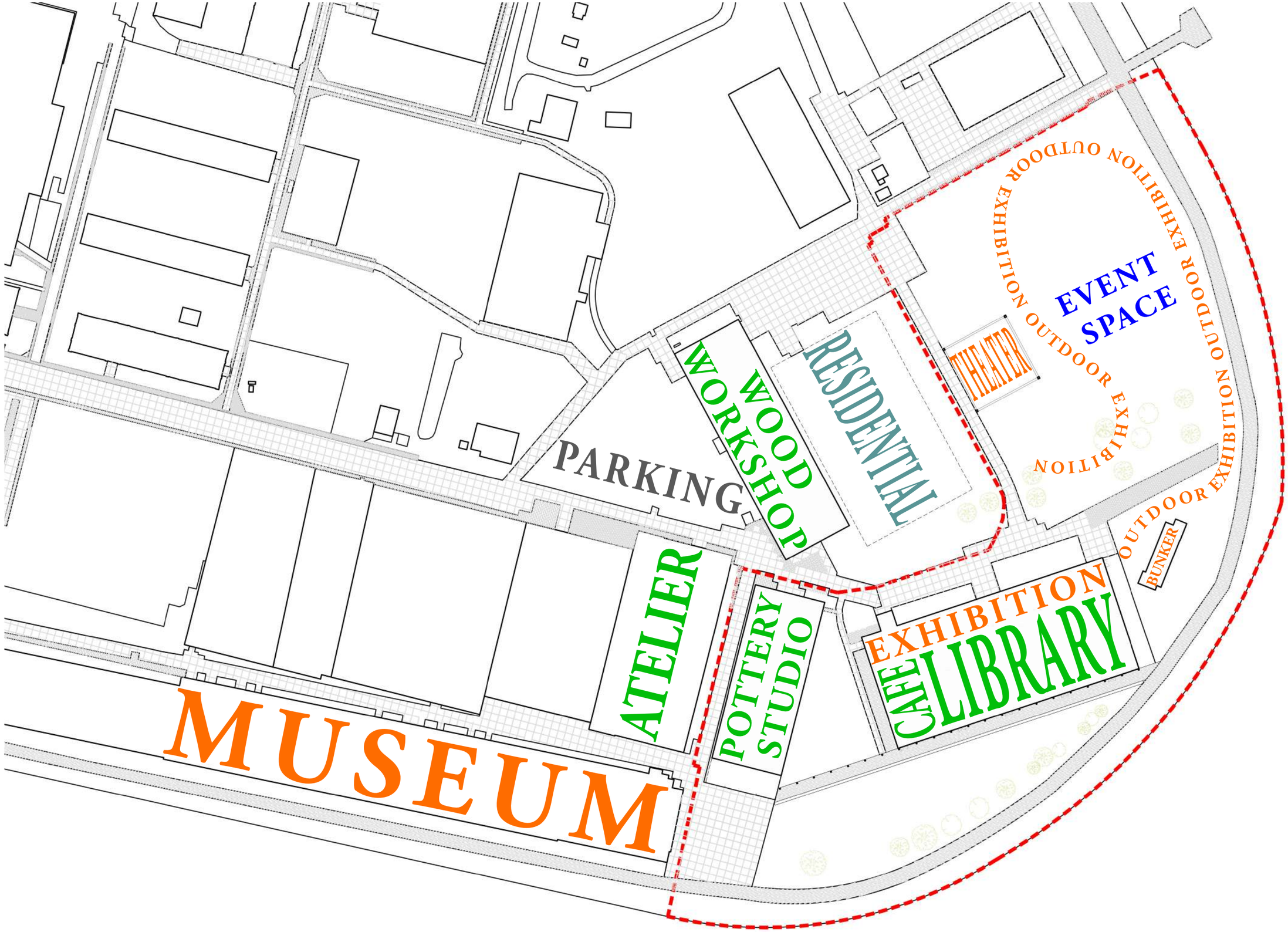
Ammunition factory

First built in 1955
Expanded in 1956
Finished in 1958

Commander bunker

Built in 1939
National monument

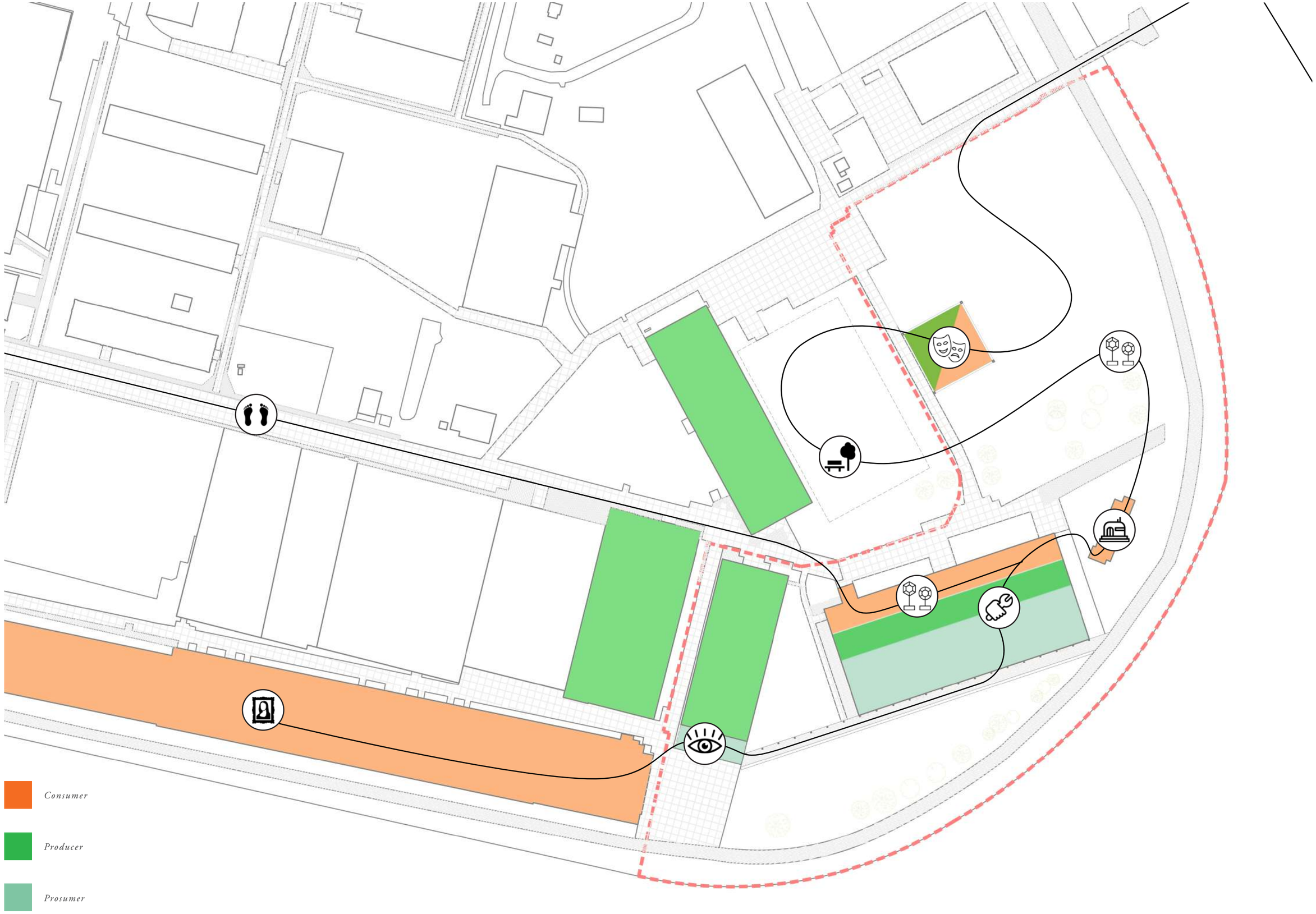
Building Overview



Cultural Belt

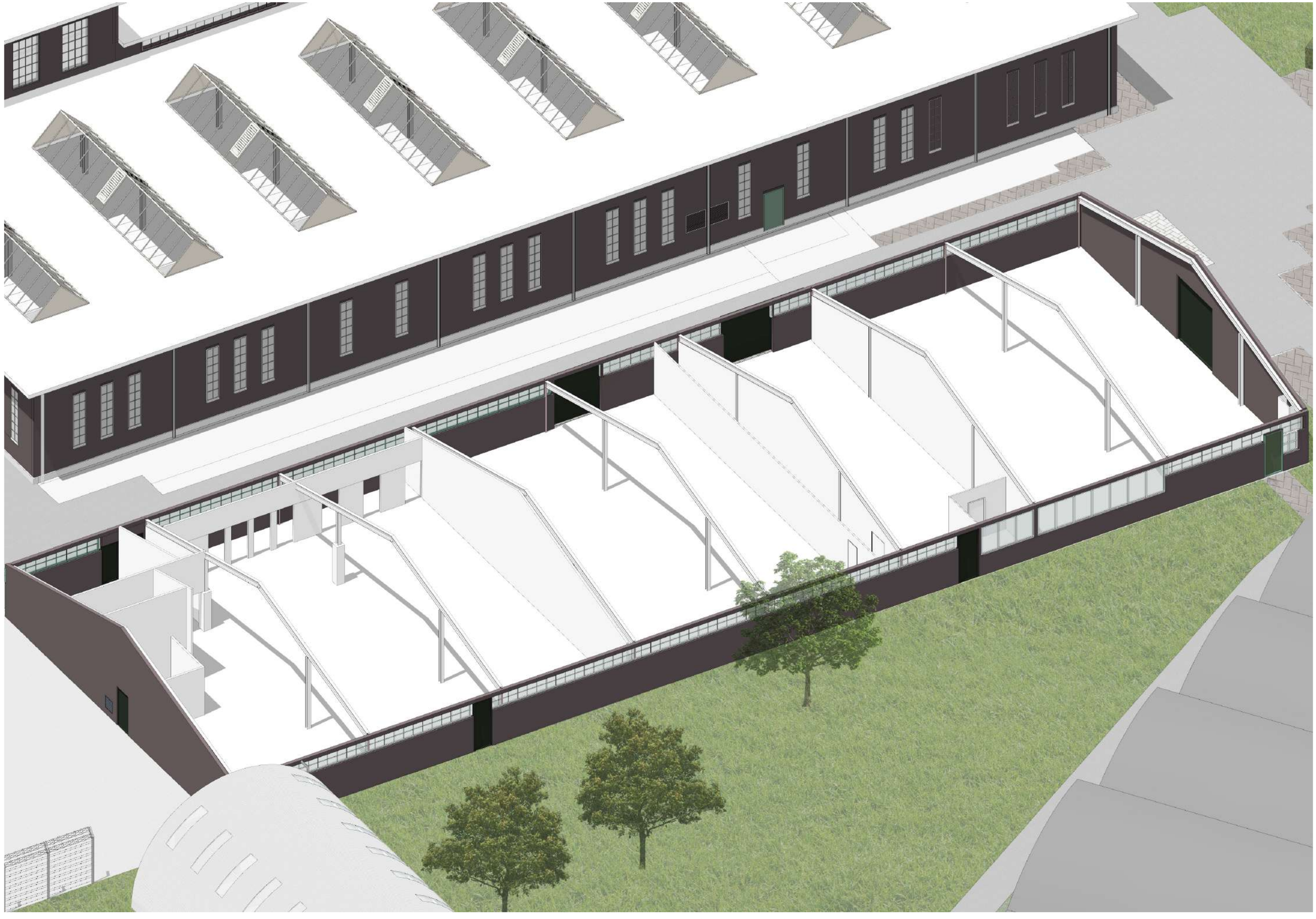
Target groups

From consumer to prosumer

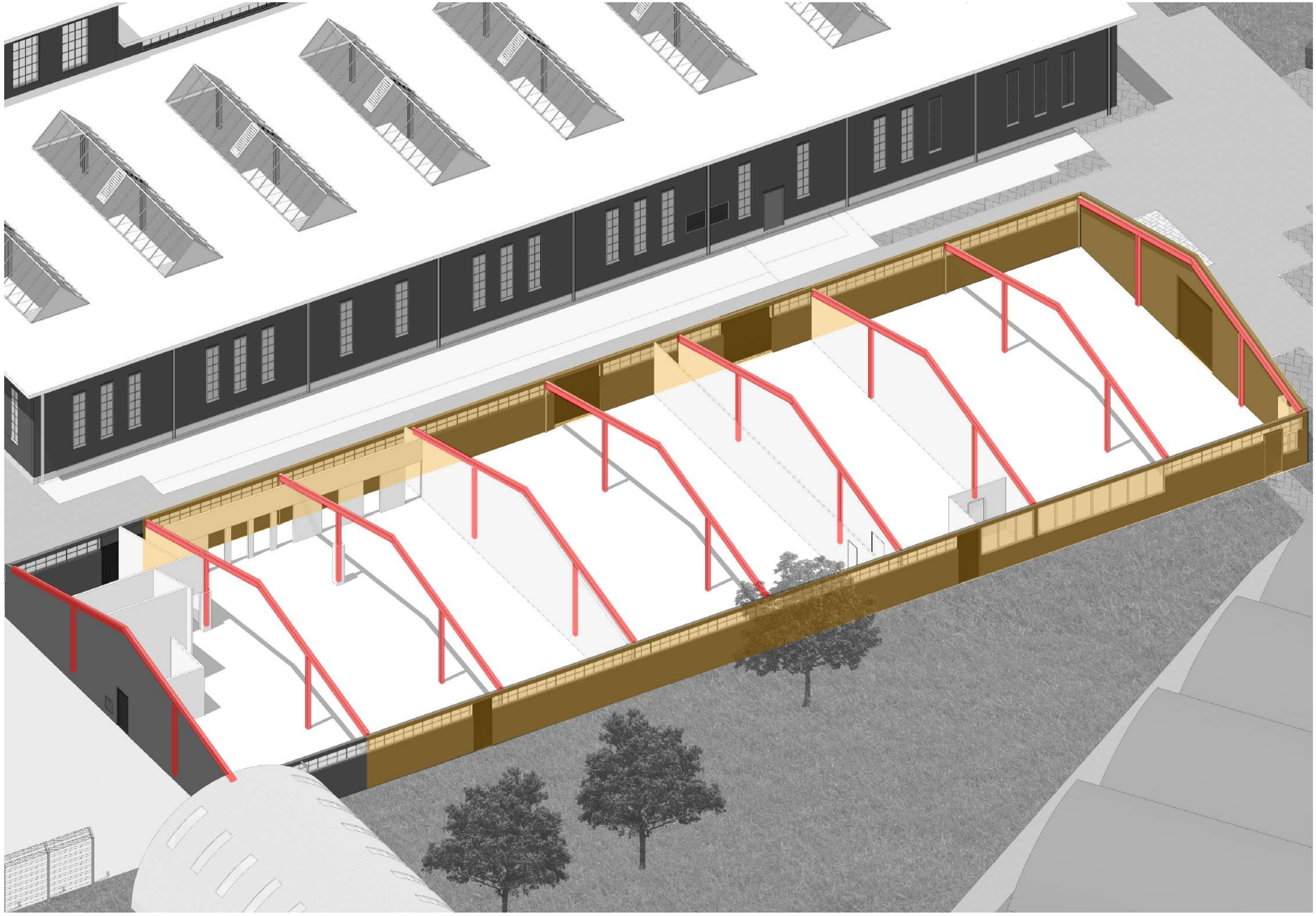


Visitors

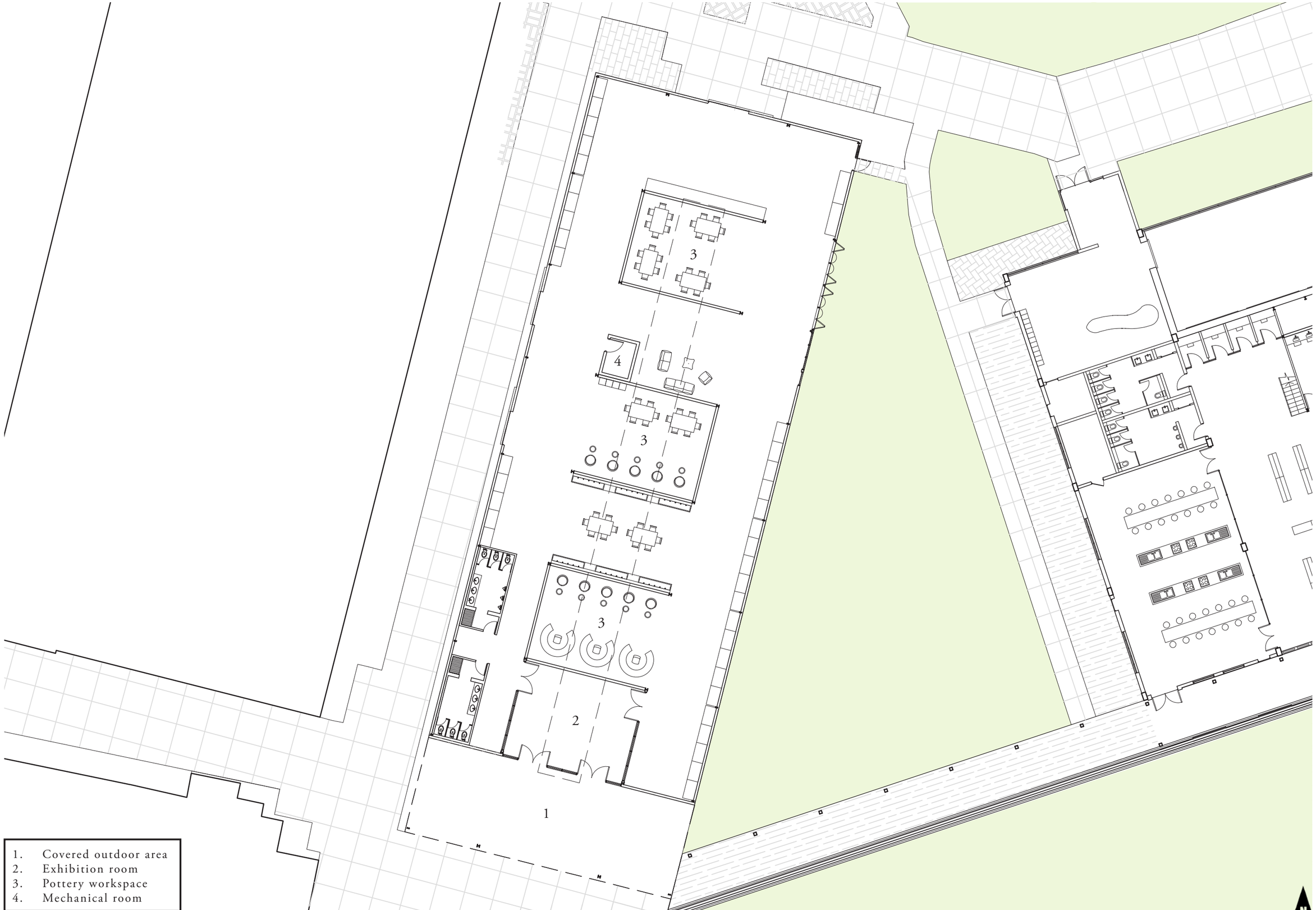
Existing projectile workshop



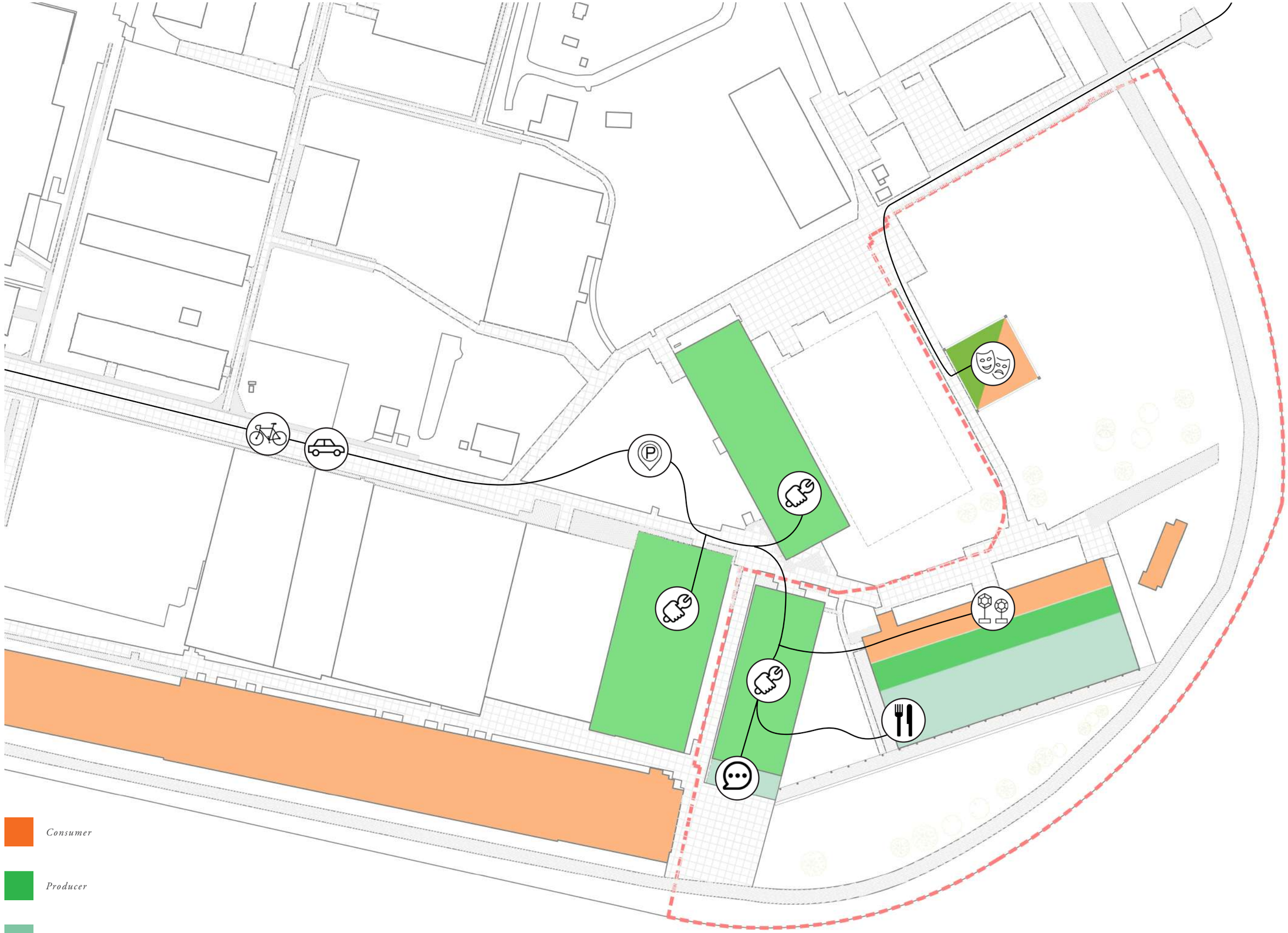
Existing projectile workshop



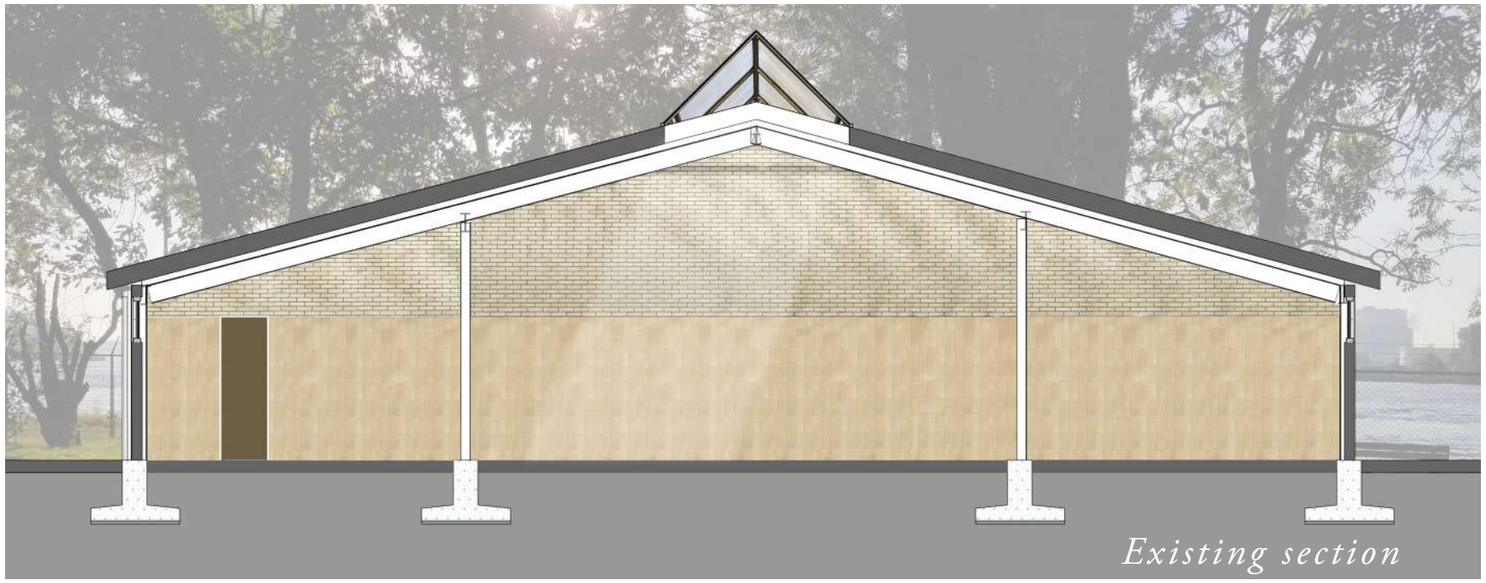
Intervention principle


3
4
3
3
2
1
1. Covered outdoor area
2. Exhibition room
3. Pottery workspace
4. Mechanical room
N
250

Contact with artists

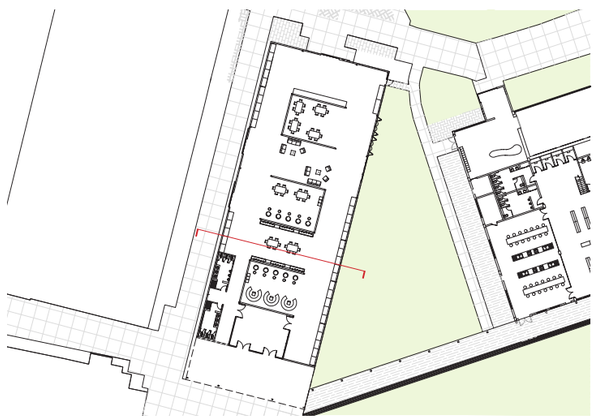


Artists



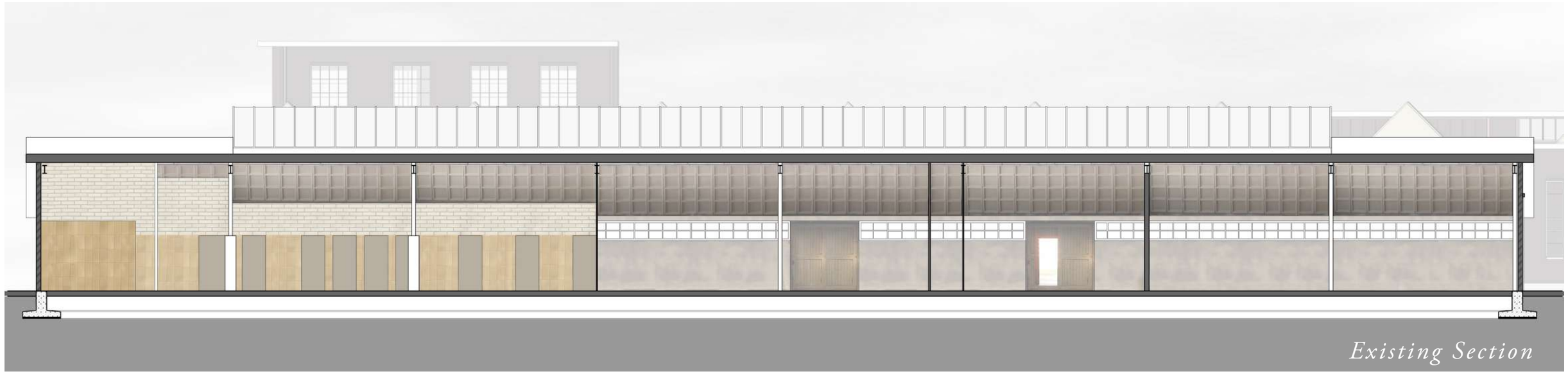
Existing section

New section



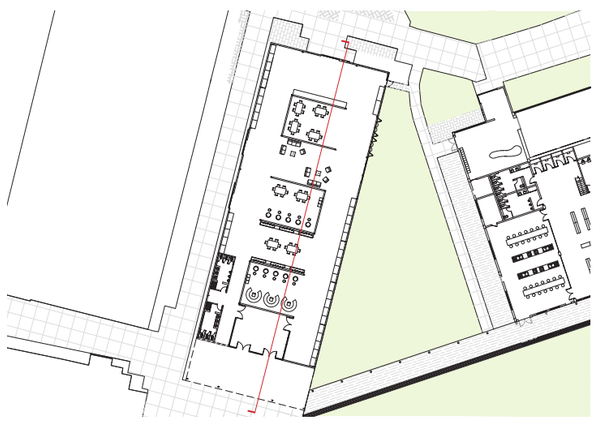
Visual Connection to canal

100



Existing Section

New Section



150

Physical connection to loggia

Pottery Studio - Interior

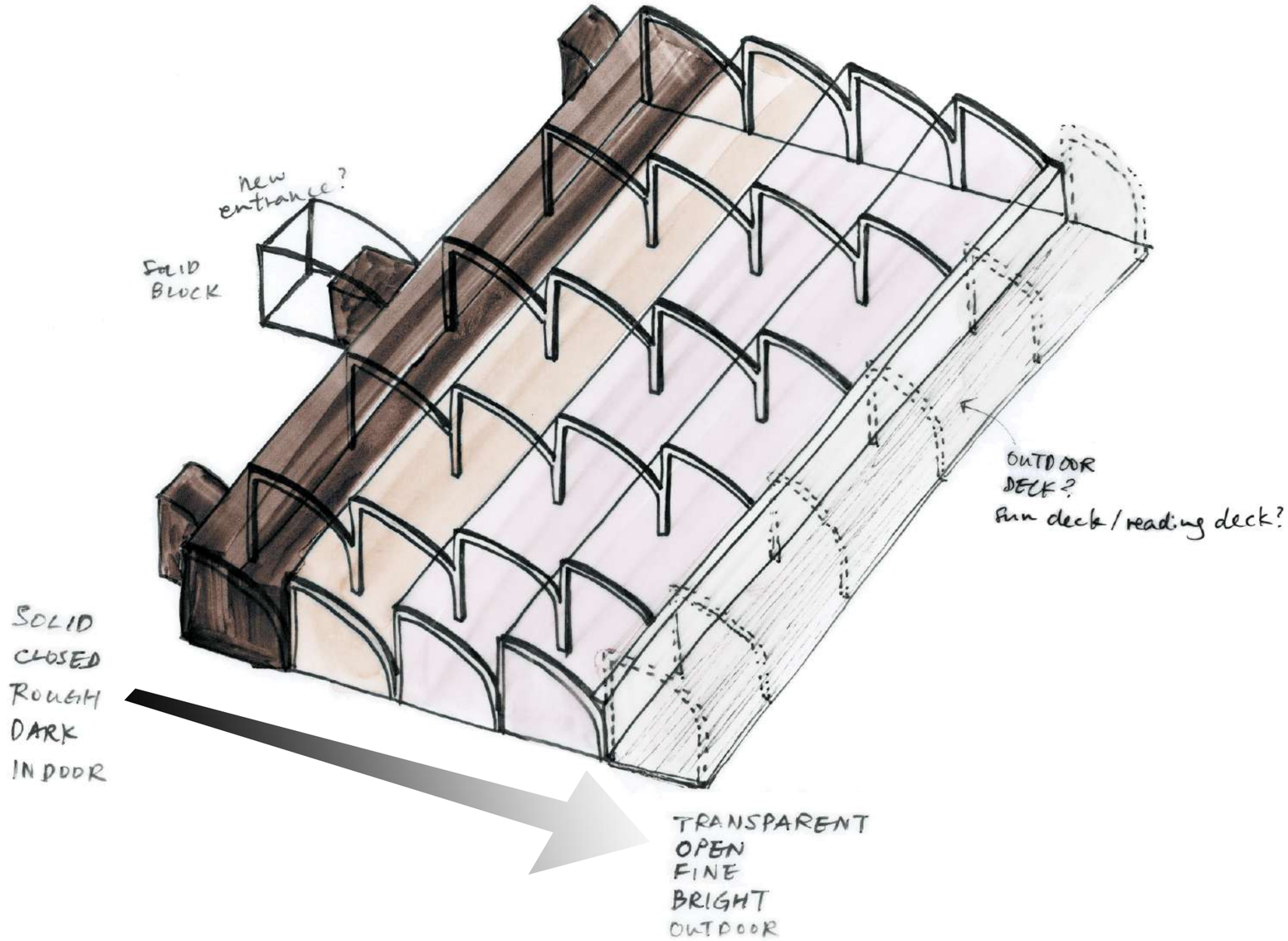
RESEARCH

PROGRAM

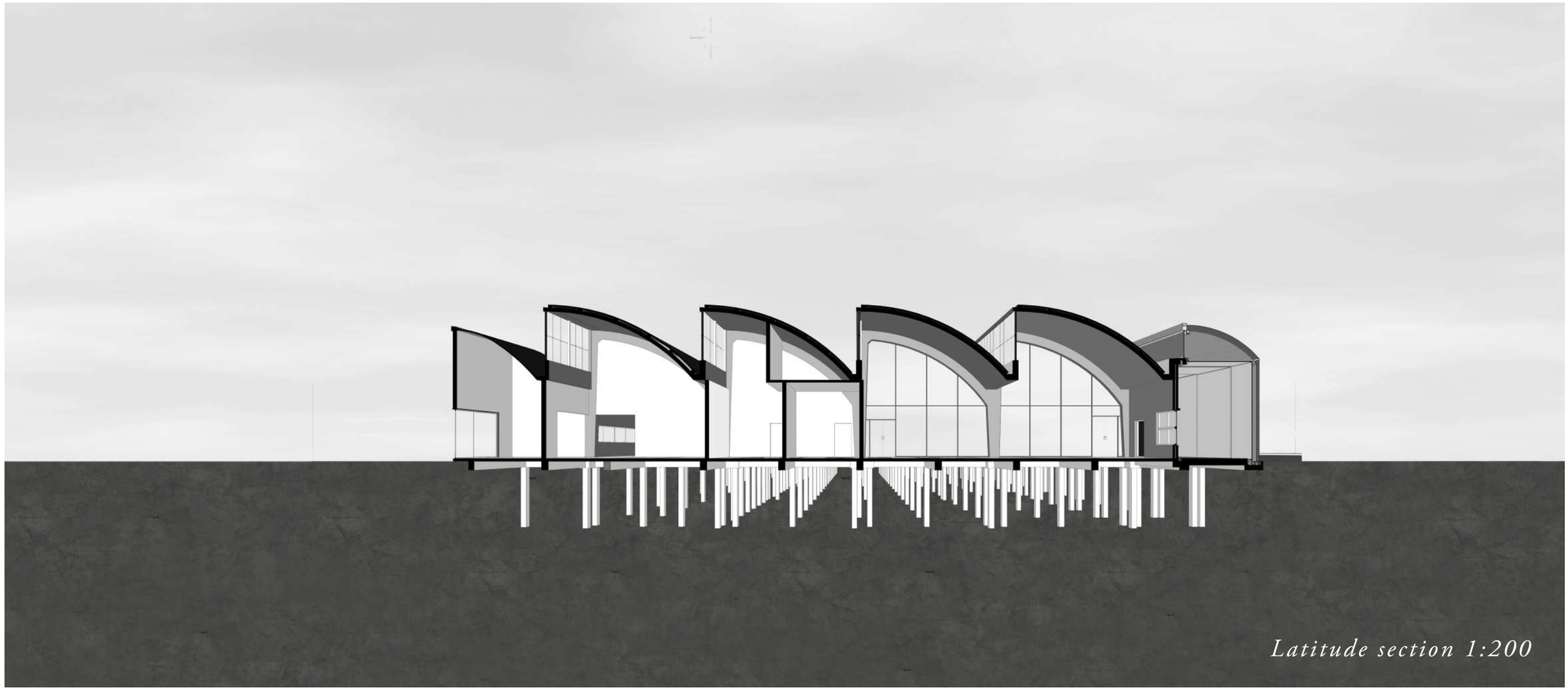
▶ DESIGN

Ammunition factory
Innovation Factory

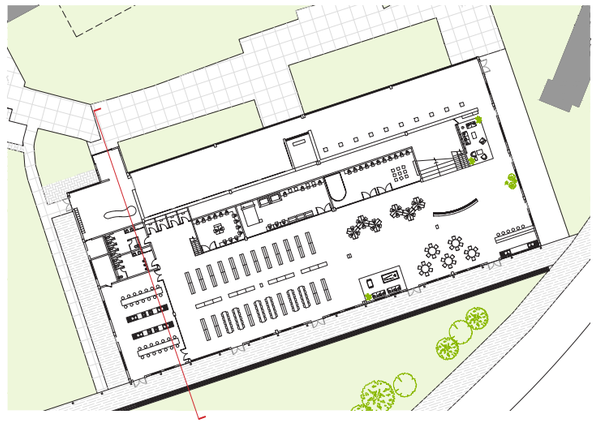
Main Design focus



Design starting point

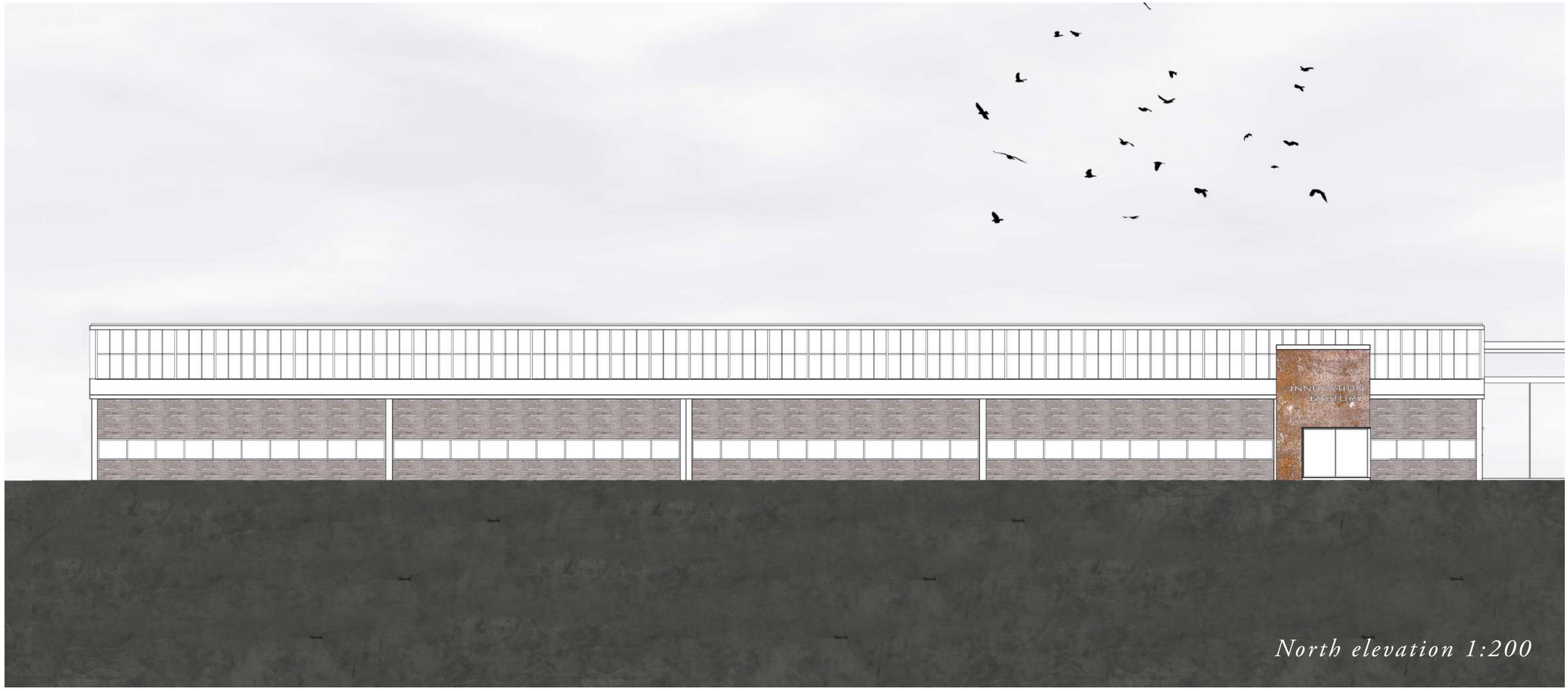


Latitude section 1:200

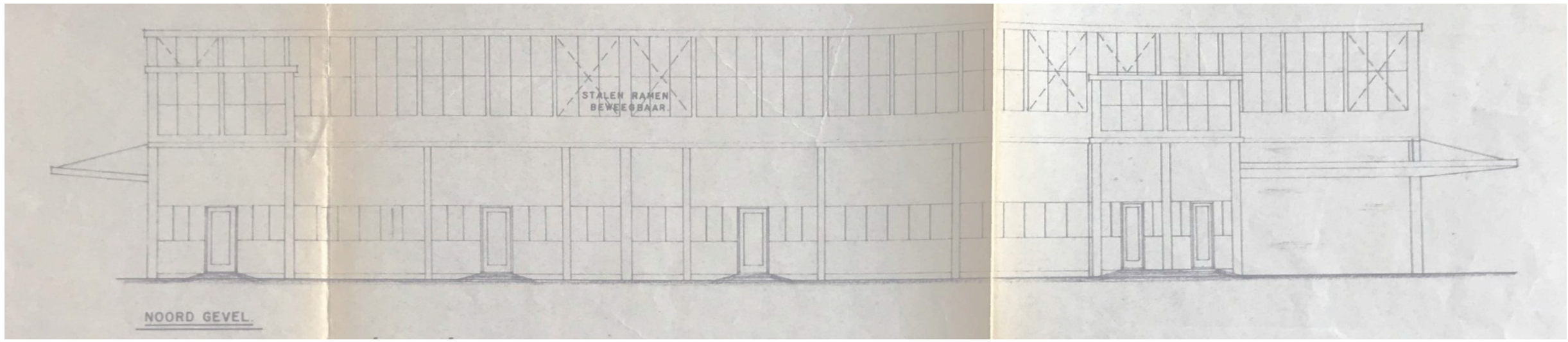


Echo of existing form

New Entrance

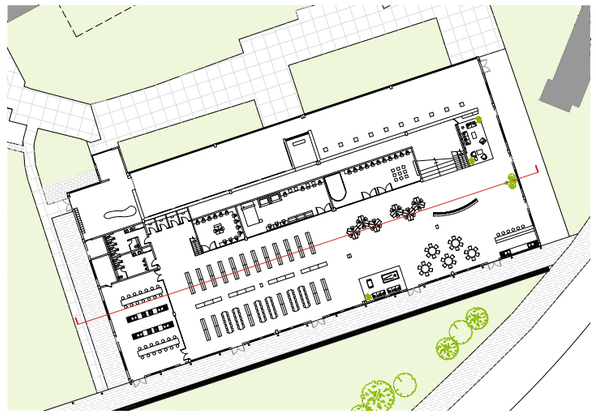


North elevation 1:200



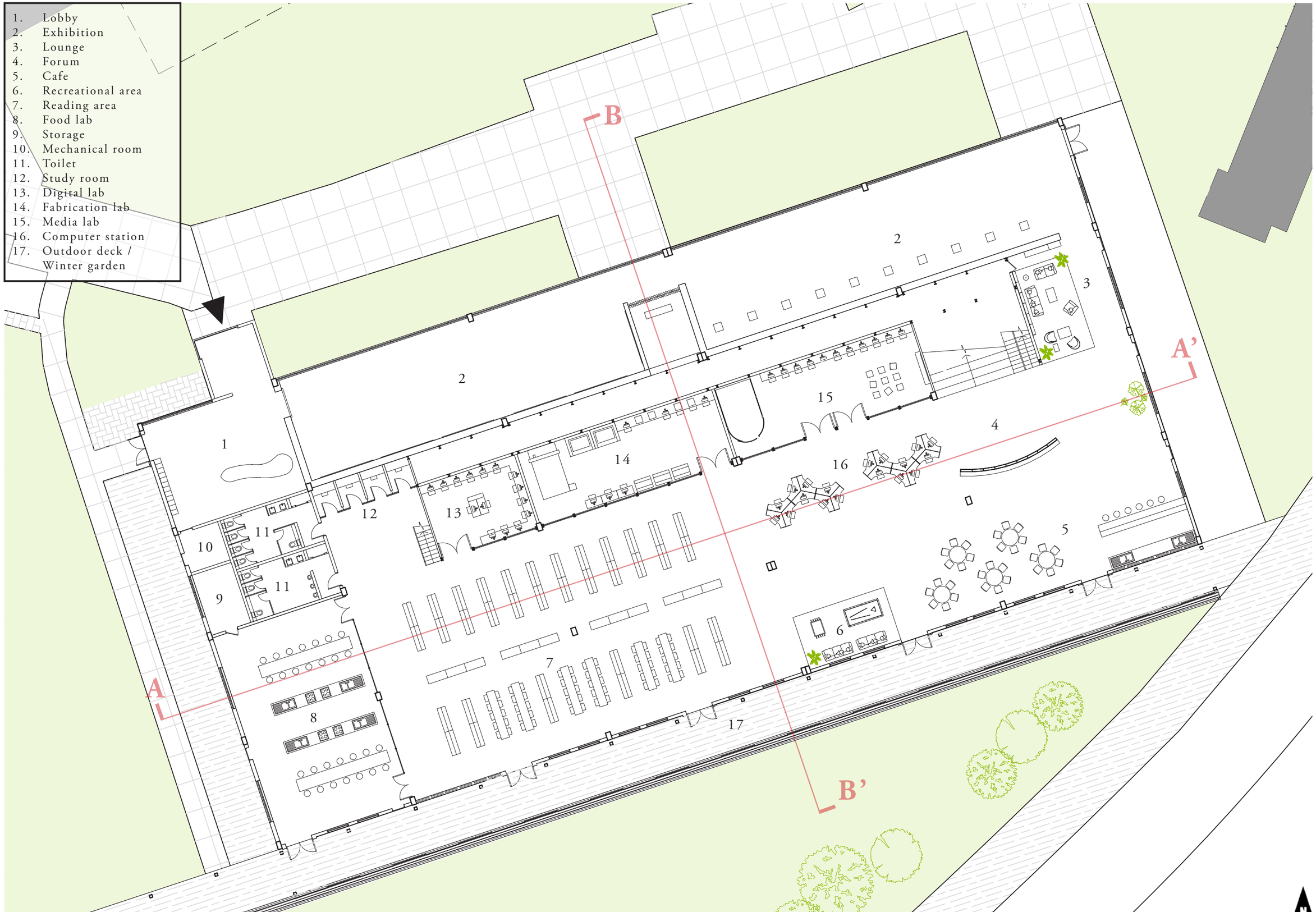
North Elevation

Longitude section 1:200



Zoning

1. Lobby
2. Exhibition
3. Lounge
4. Forum
5. Cafe
6. Recreational area
7. Reading area
8. Food lab
9. Storage
10. Mechanical room
11. Toilet
12. Study room
13. Digital lab
14. Fabrication lab
15. Media lab
16. Computer station
17. Outdoor deck / Winter garden



Plan - Ground

Element of surprise

Public living room

Main space

Labs

1. Lounge
2. Study rooms
3. Meeting rooms
4. Forum

B

A'

A

B'

1

2

3

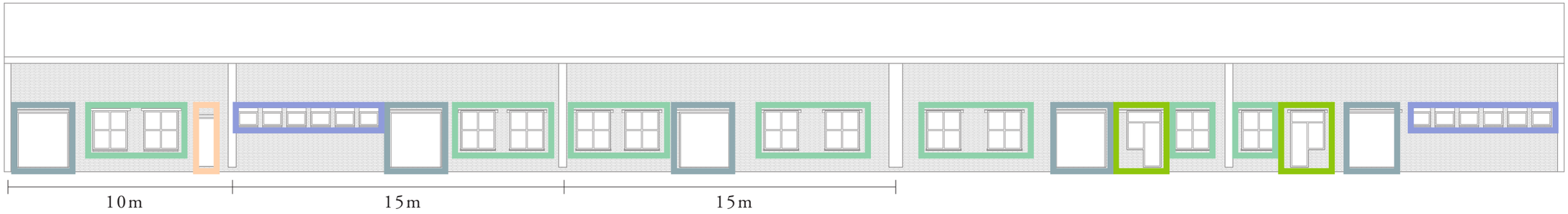
4

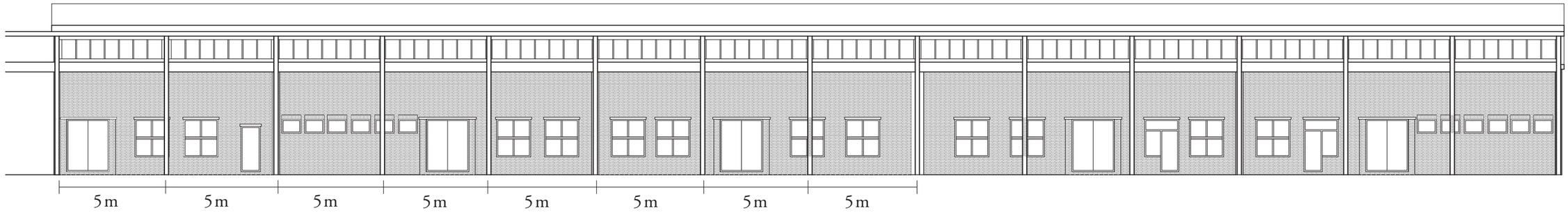
250

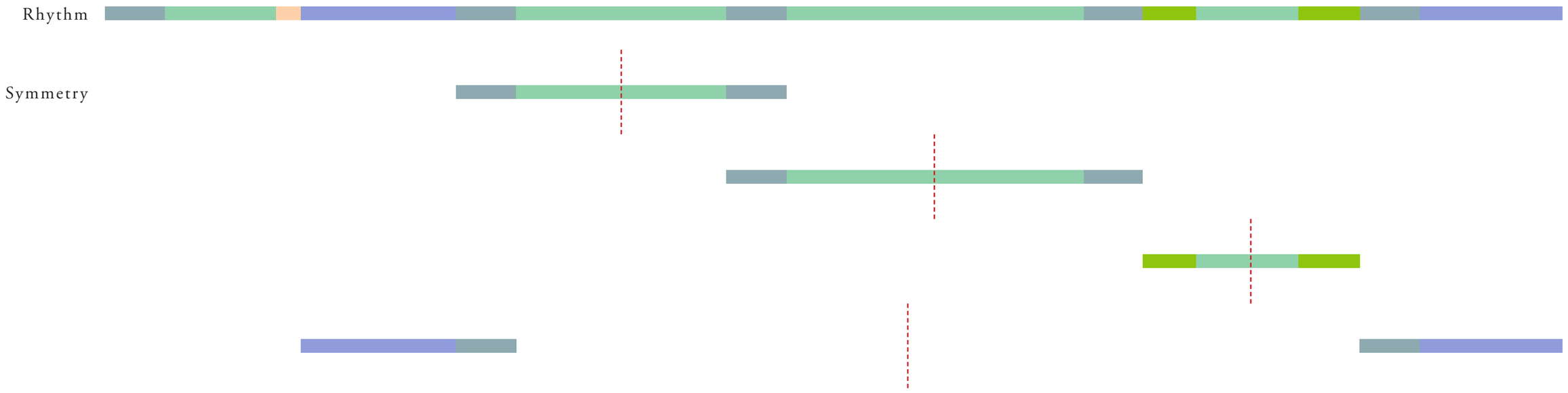
Plan - Mezzanine

Mezzanine

The old and the new

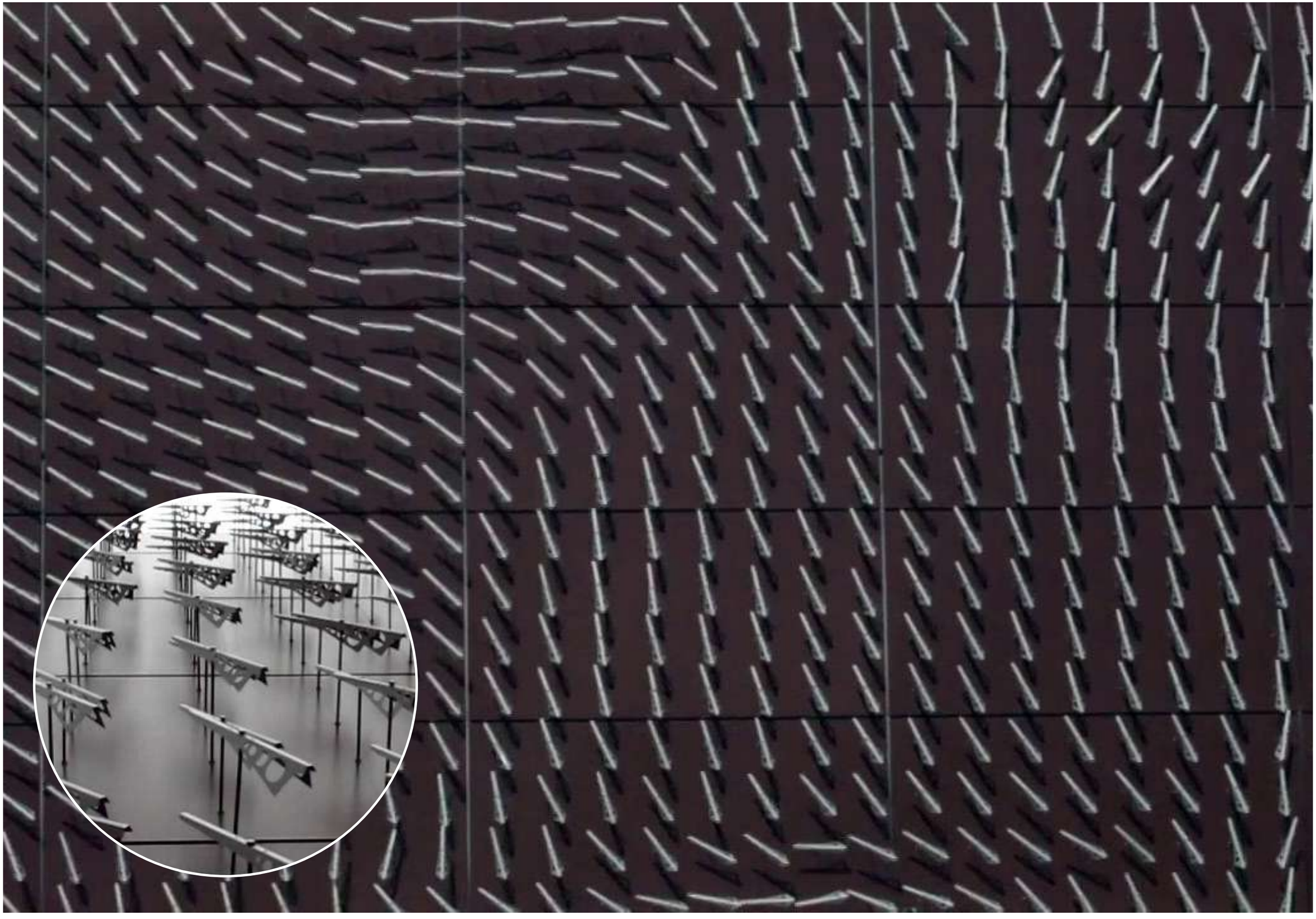




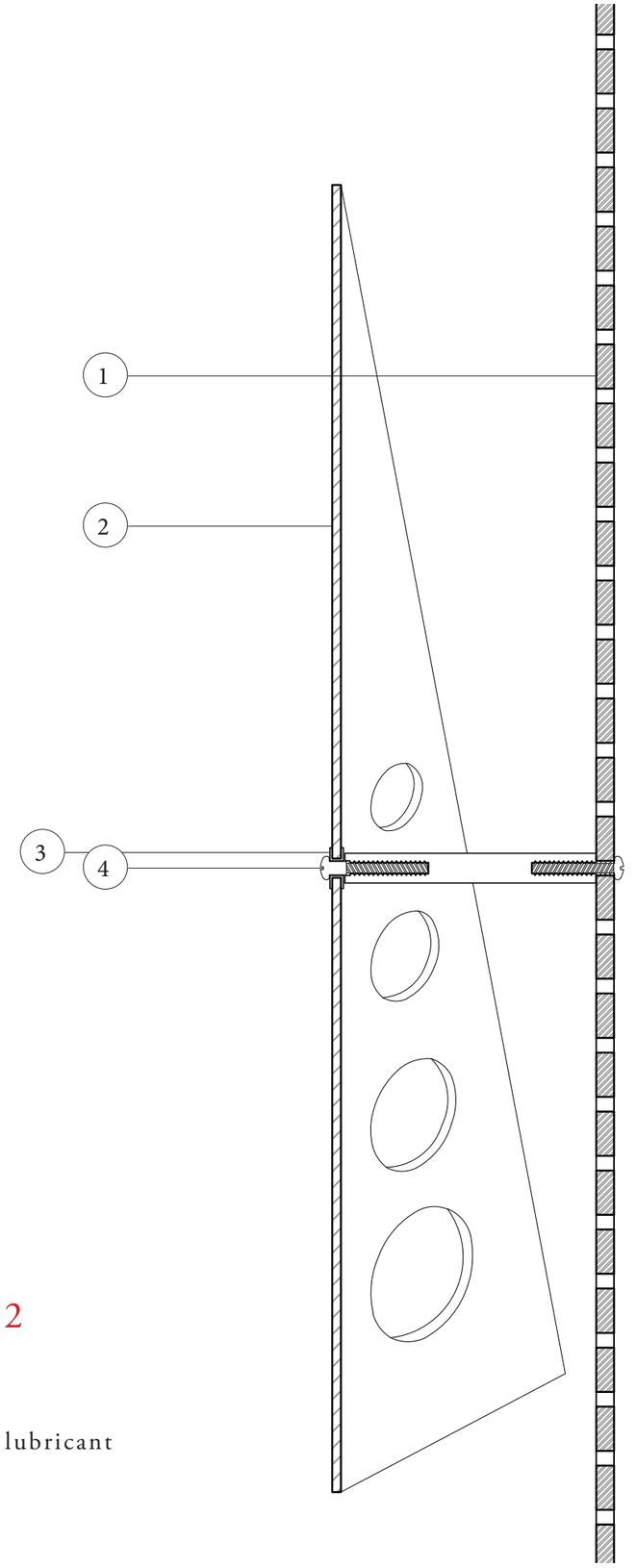


N 200

South Elevation



Facade that dances with the wind



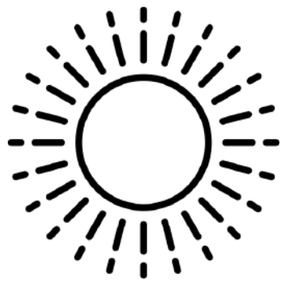
Wind pivot detail 1:2

1. 5mm perforated steel panel
2. 3mm aluminum wind pivot
3. Plastic protective ring with lubricant
4. M6 Button head cap screw

Wind pivot detail

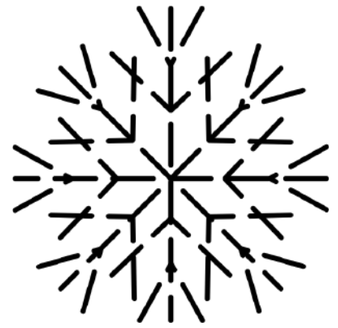
Exterior

New time layer of Hembrug



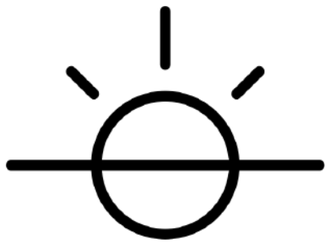
Sun shading

Rain



Avoid wind

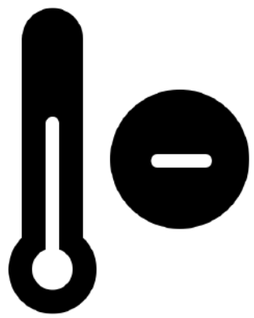
Summer



Day

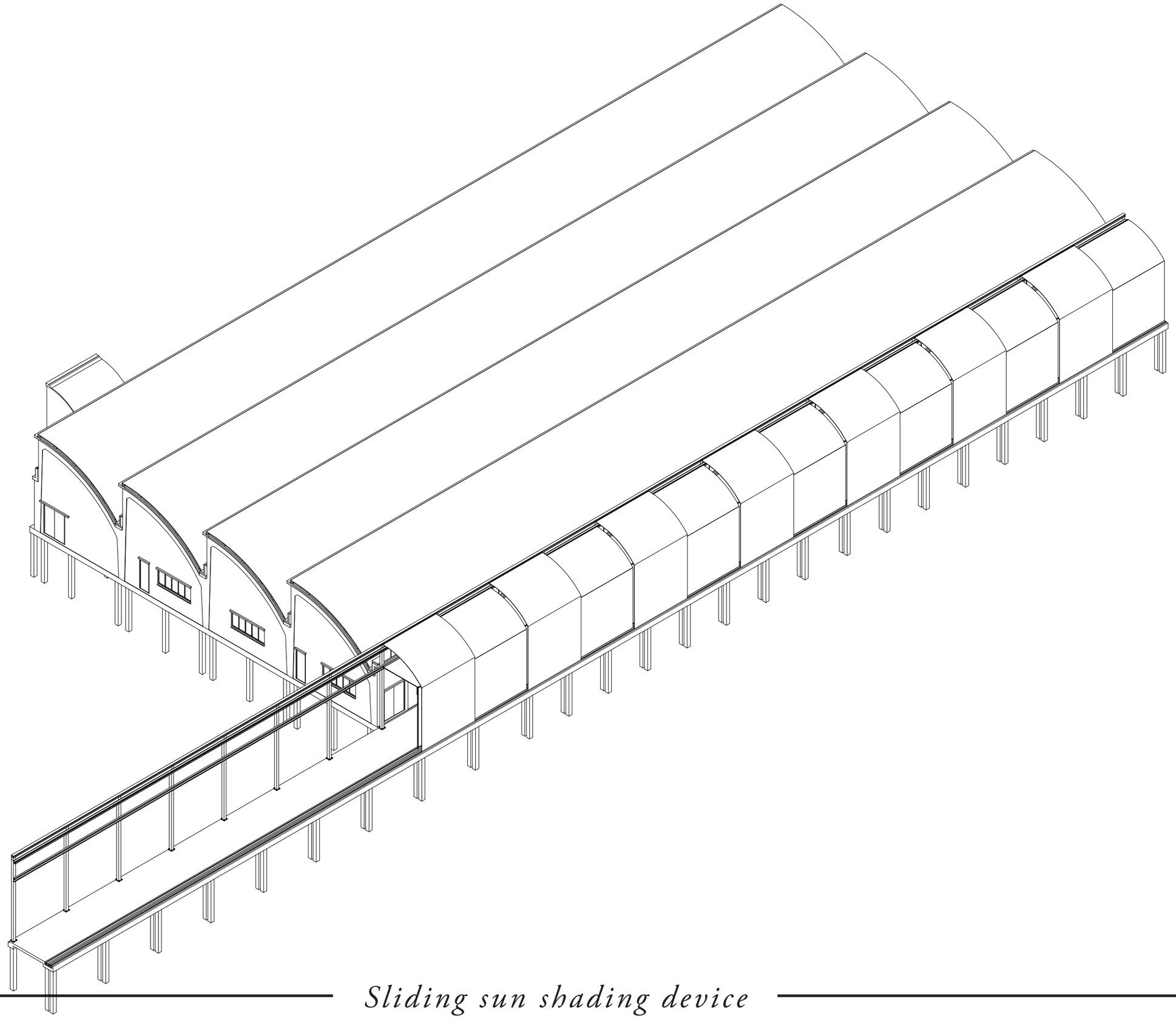
Night

Winter

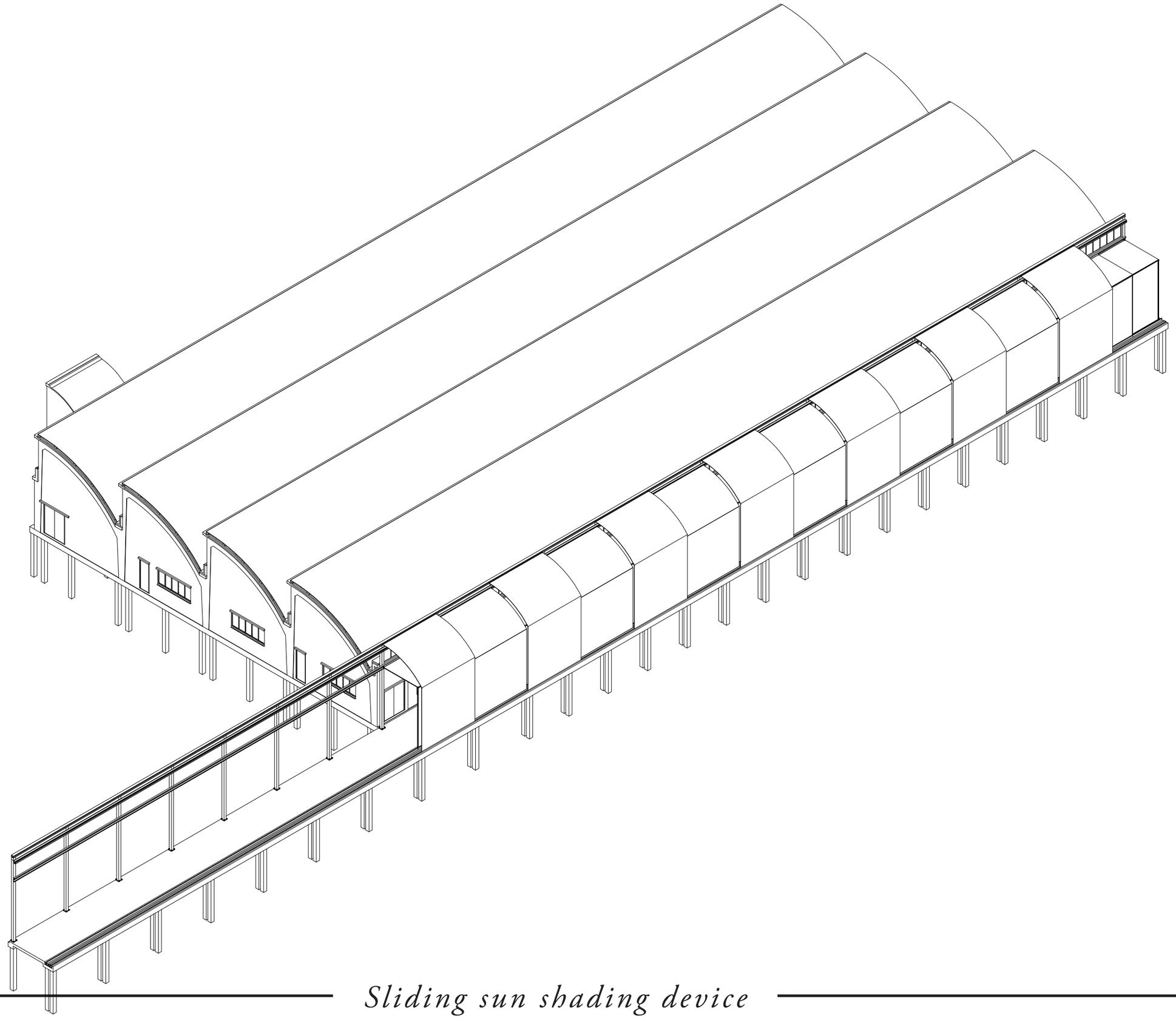


Cool down

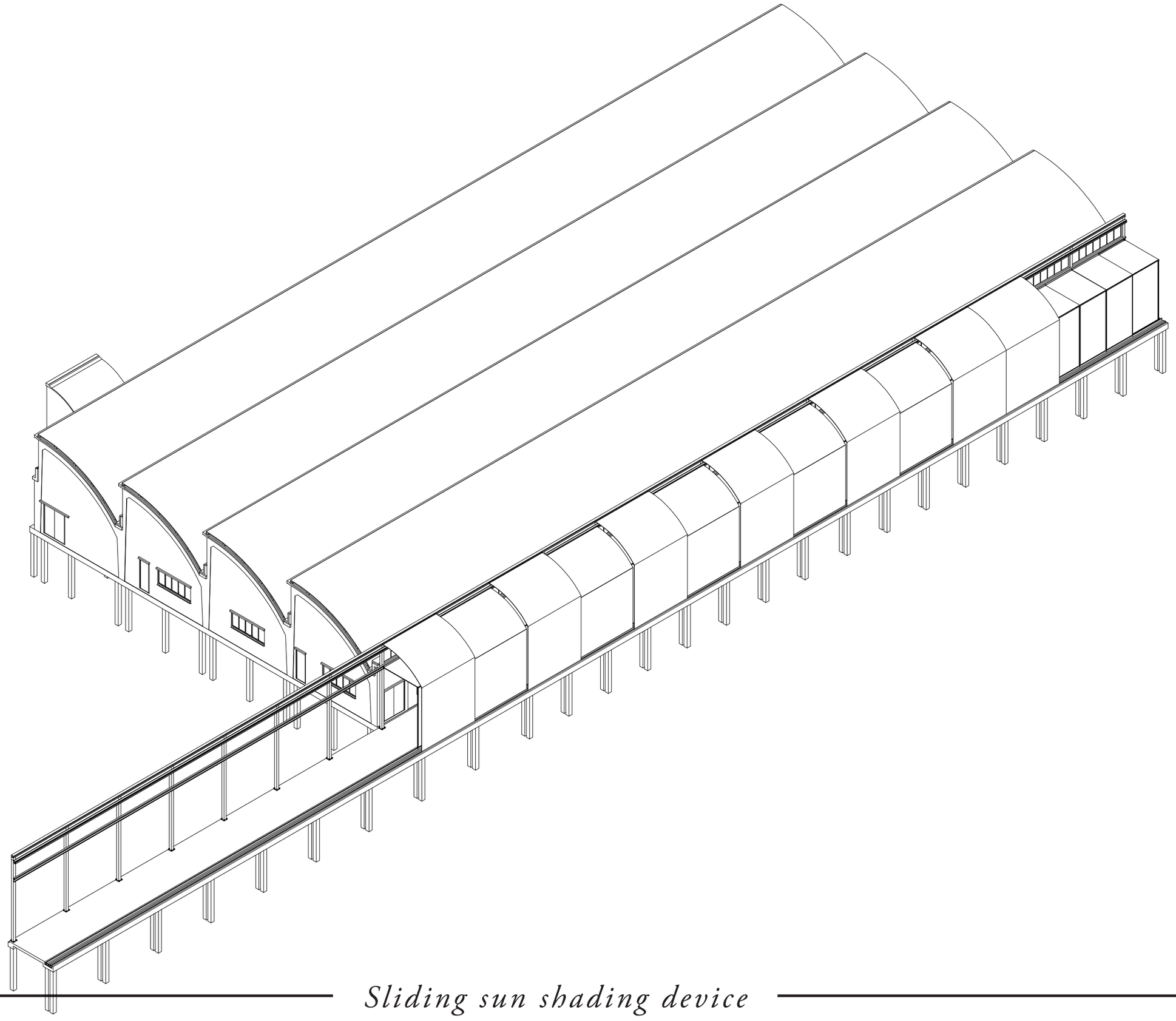
Keep warmth



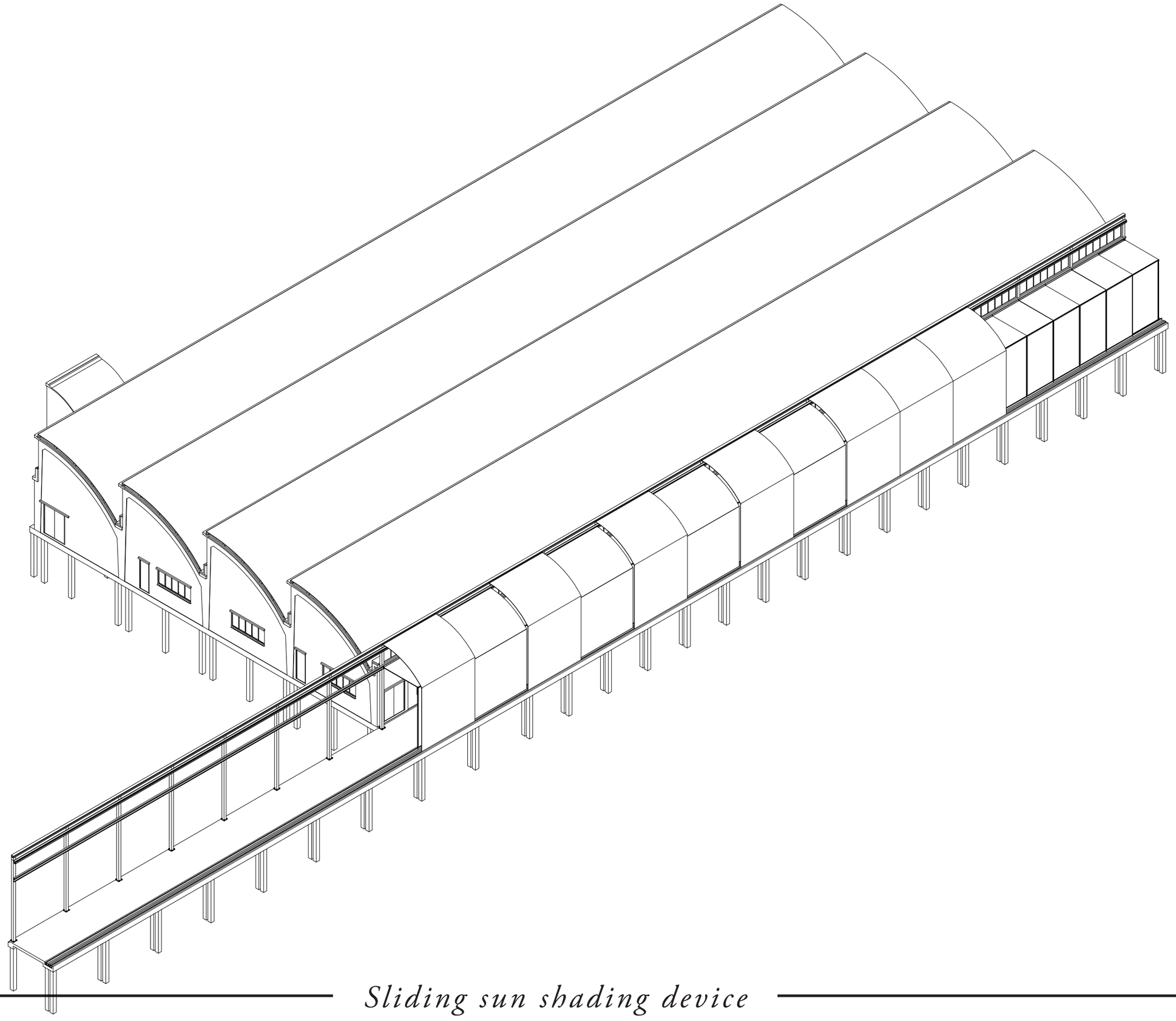
Sliding sun shading device



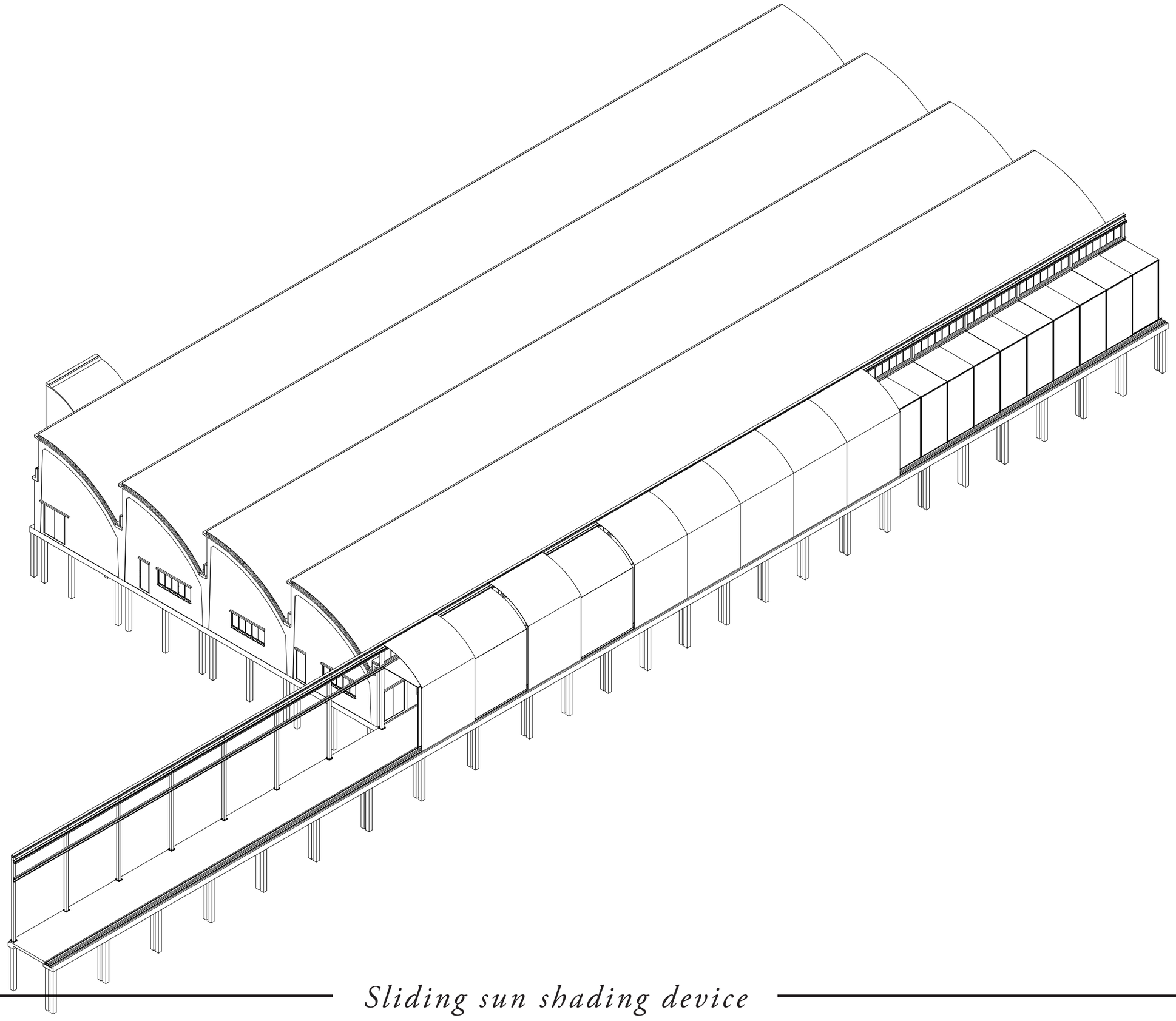
Sliding sun shading device



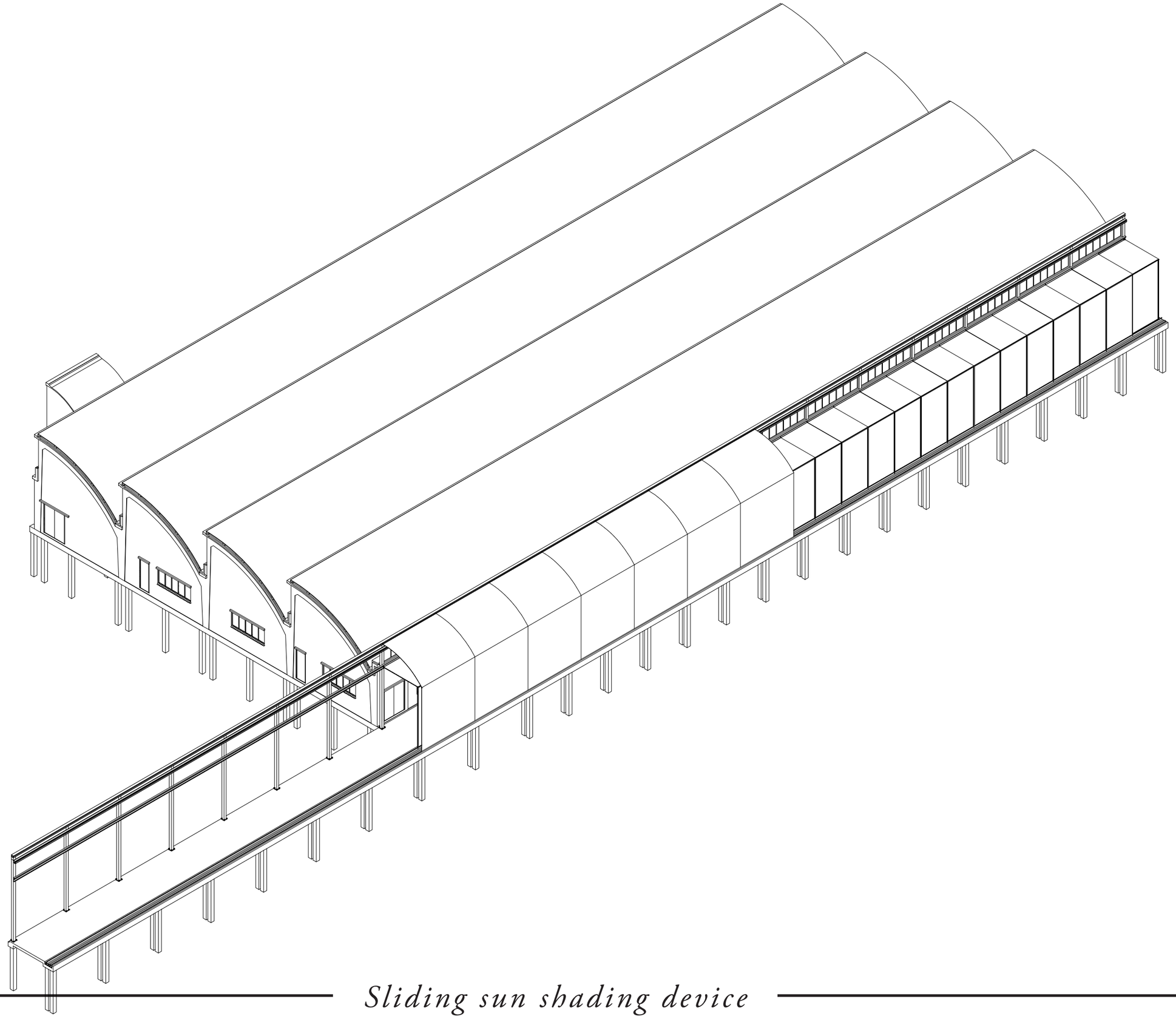
Sliding sun shading device



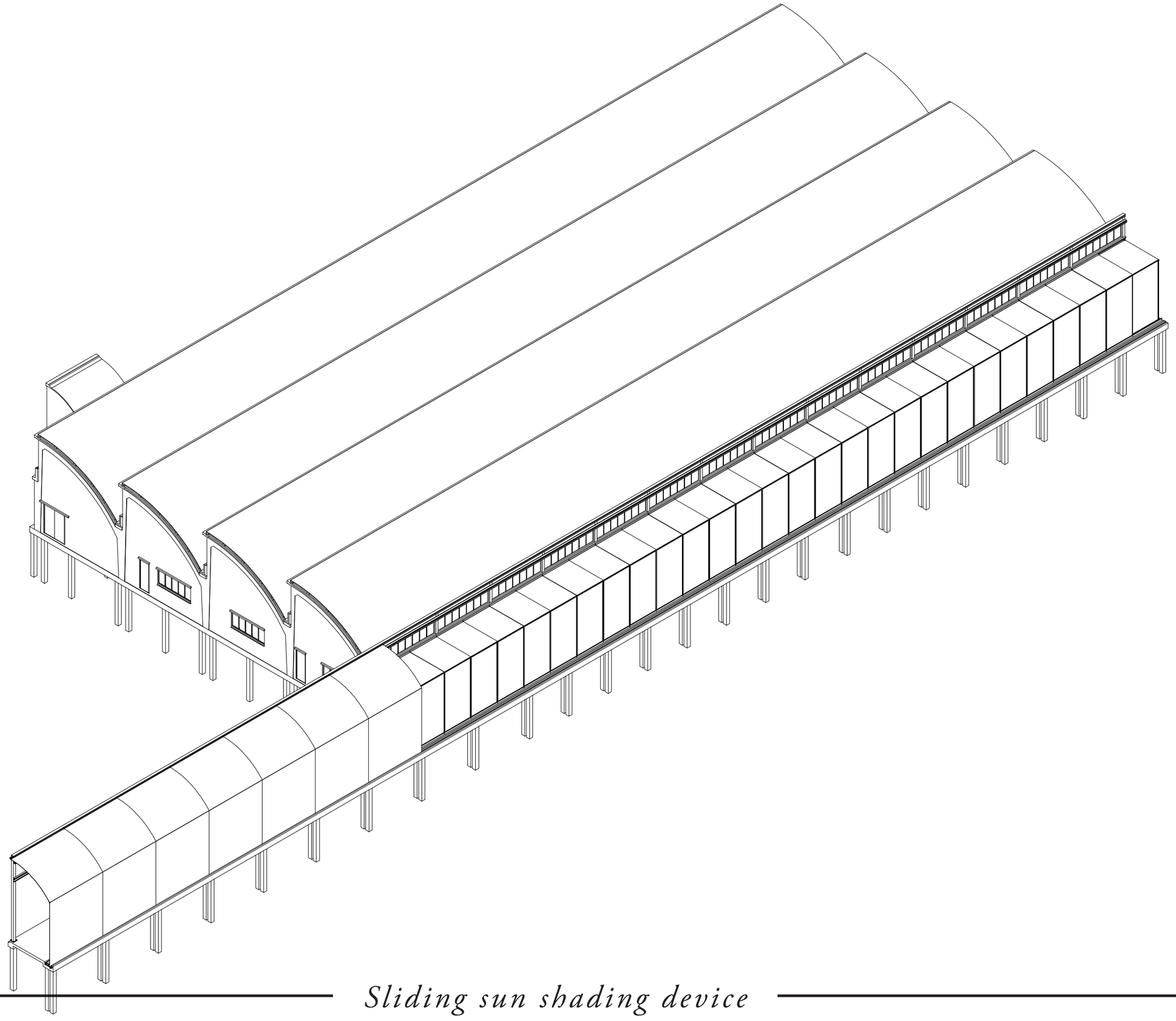
Sliding sun shading device



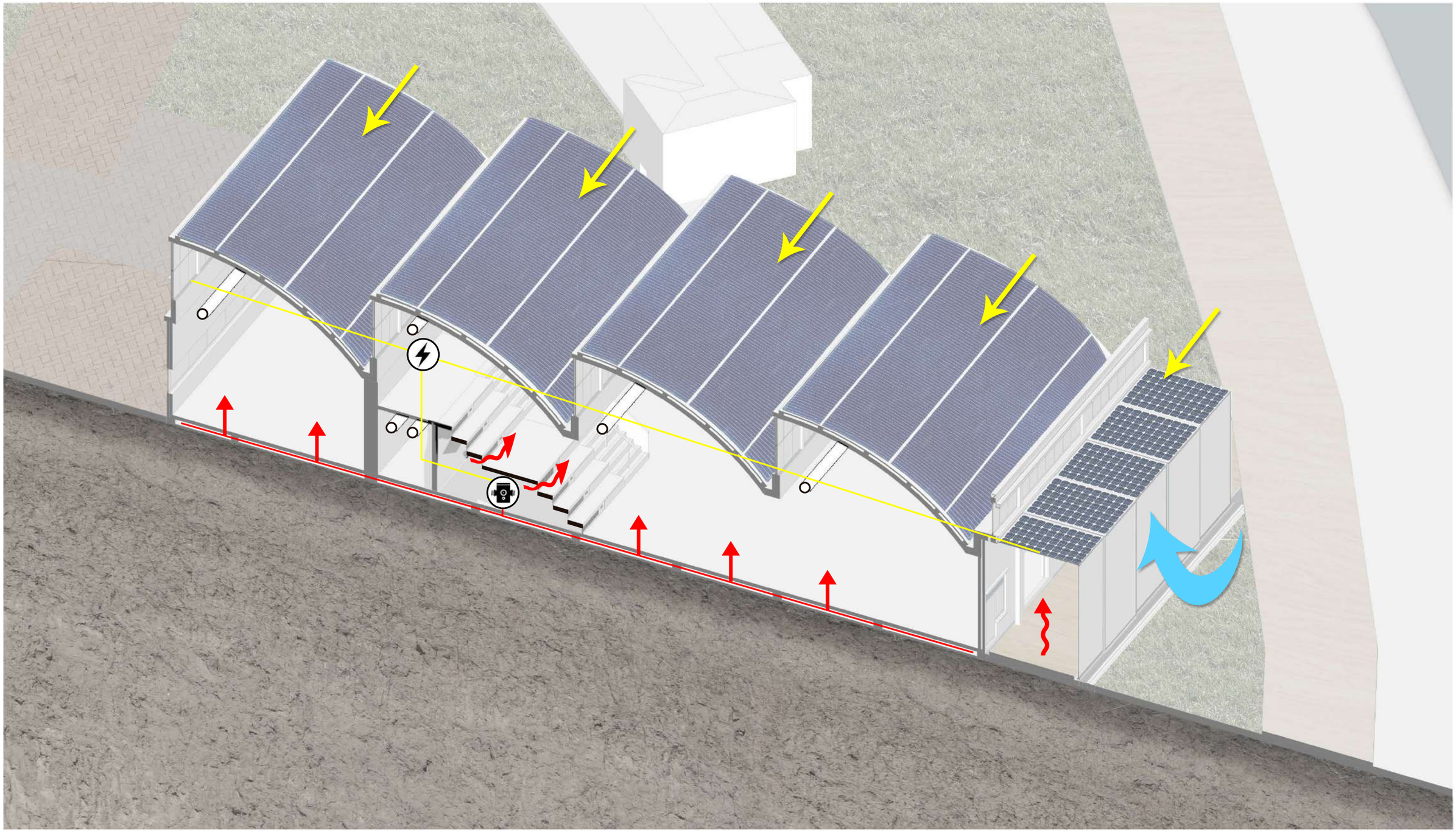
Sliding sun shading device



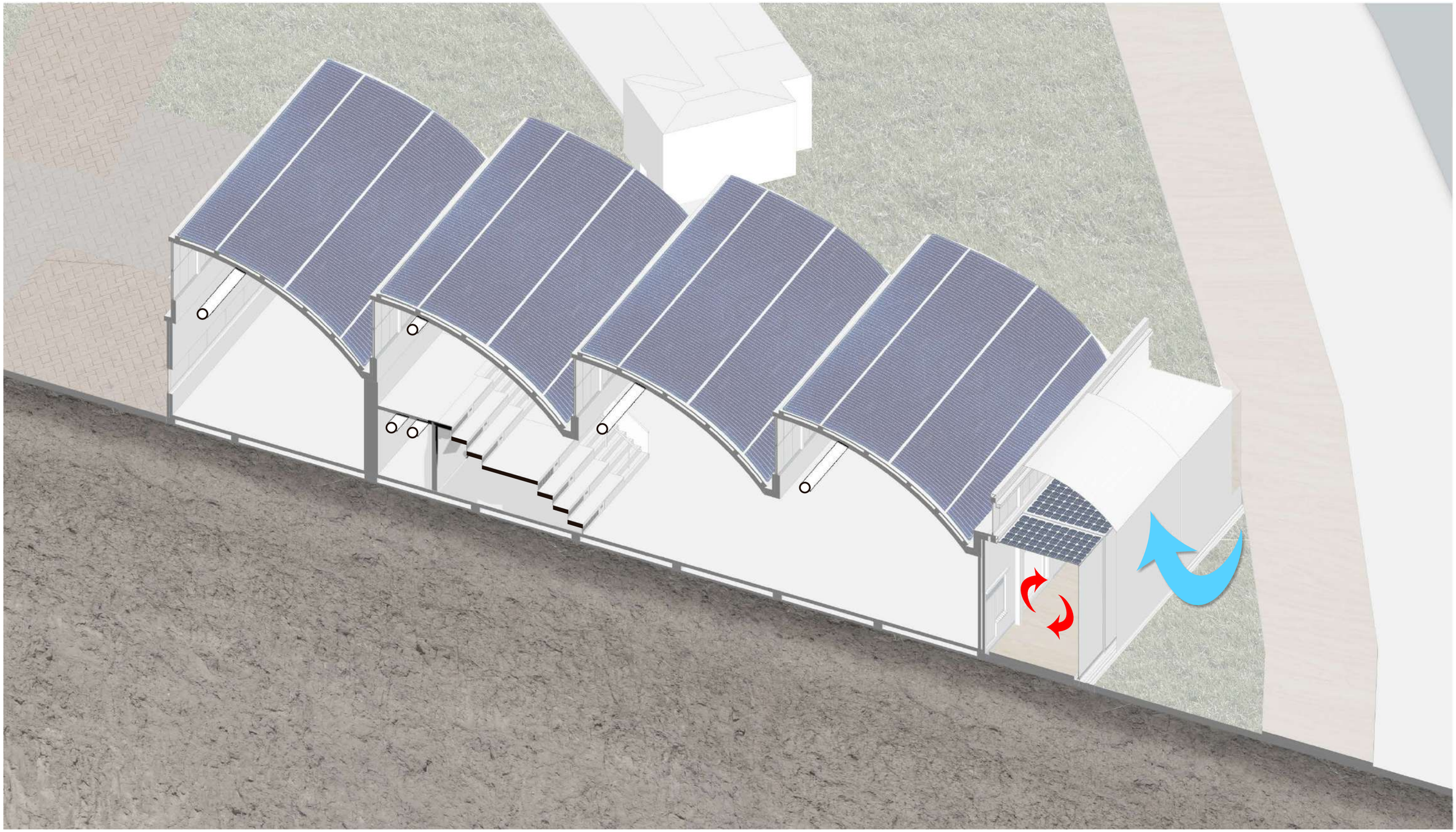
Sliding sun shading device



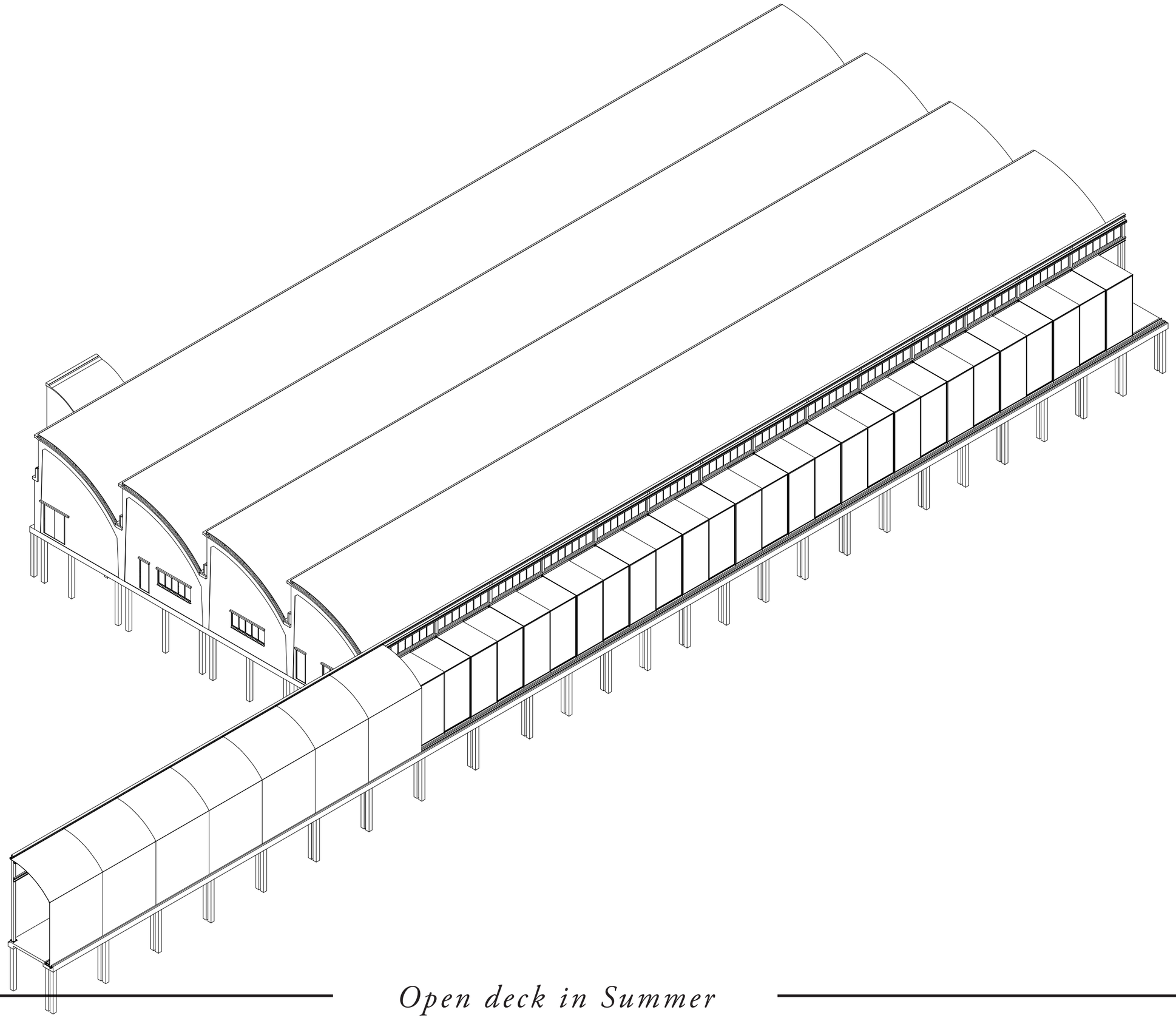
Sliding sun shading device



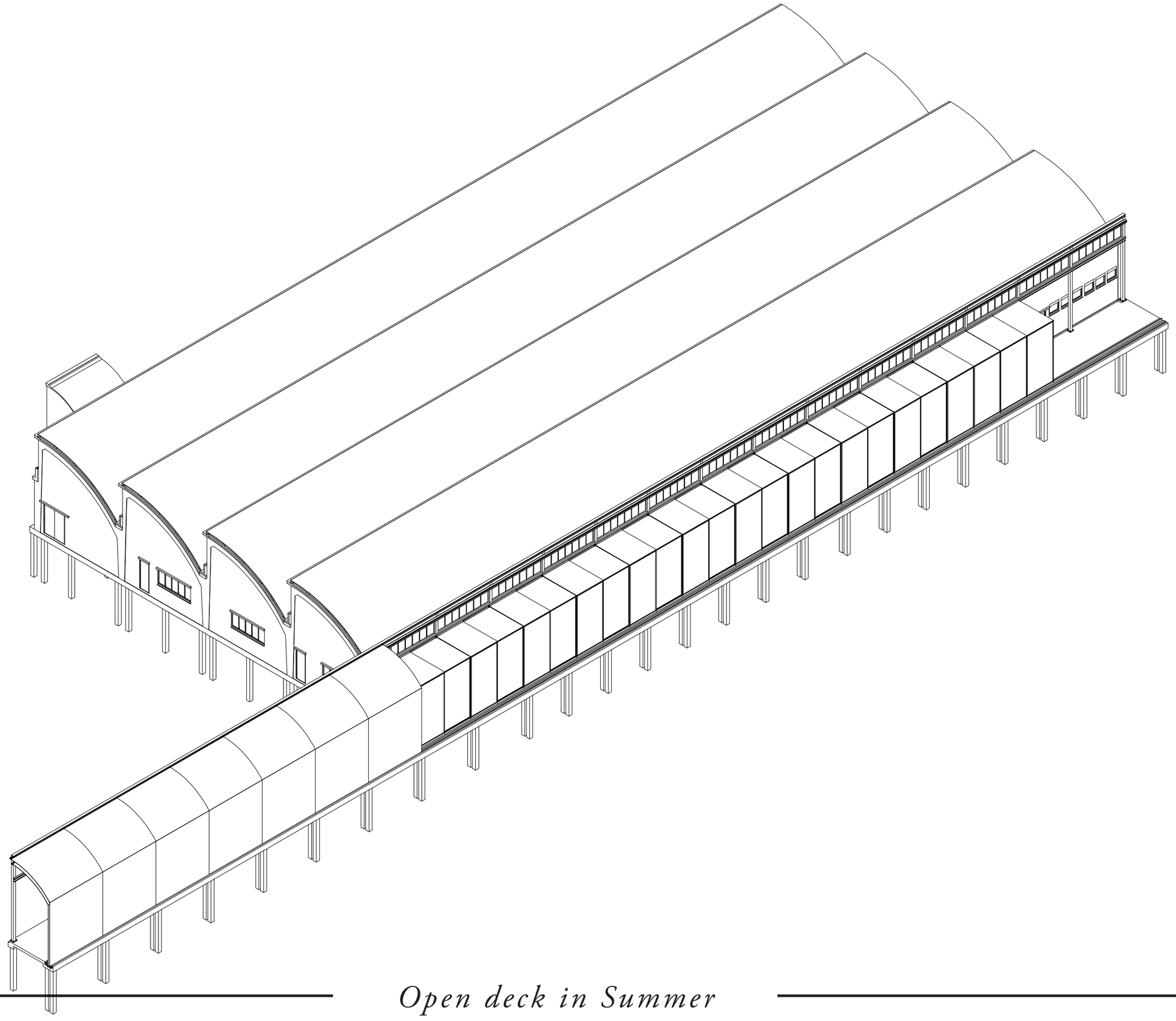
Climate strategy - Winter Day



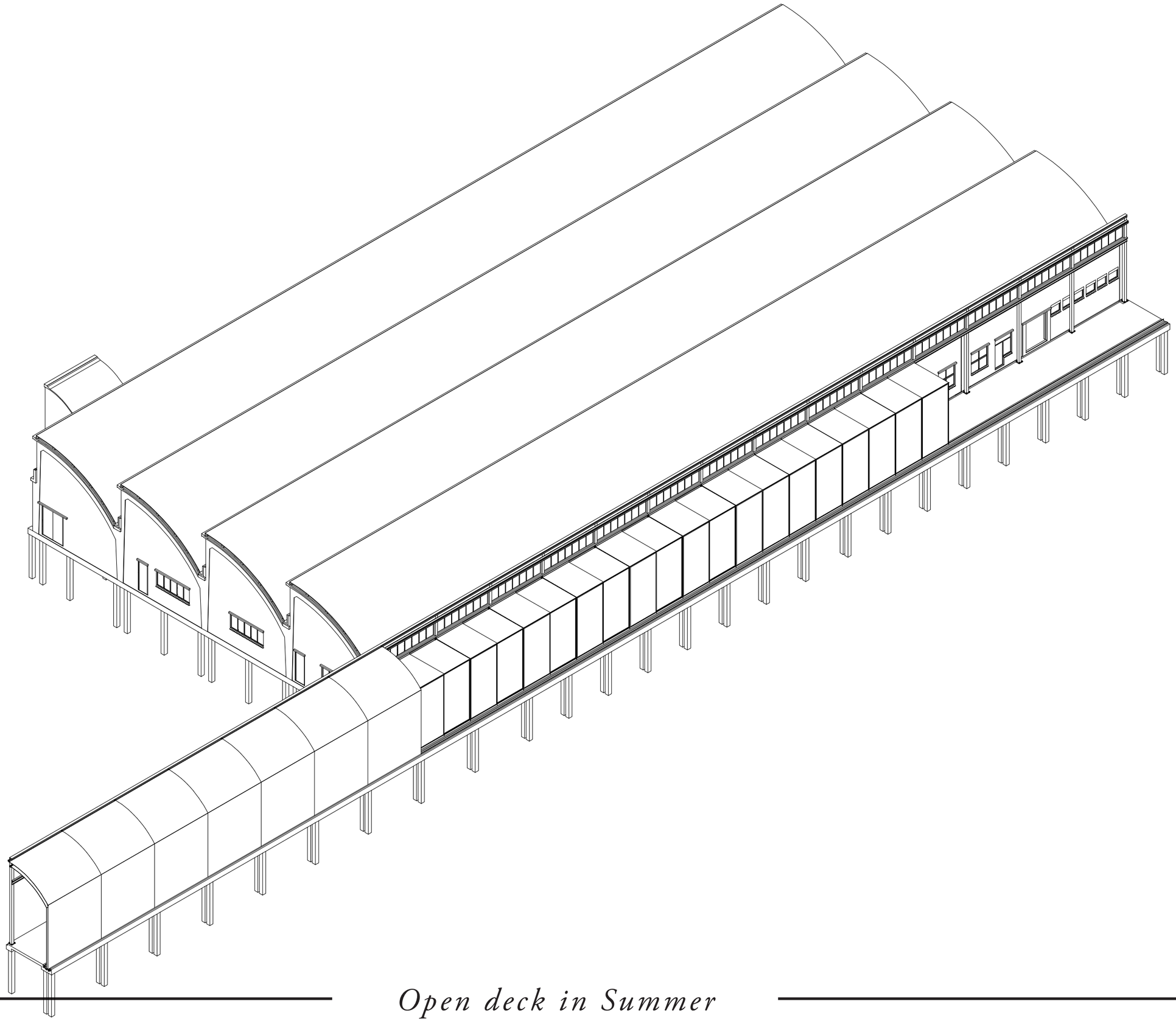
Winter Night



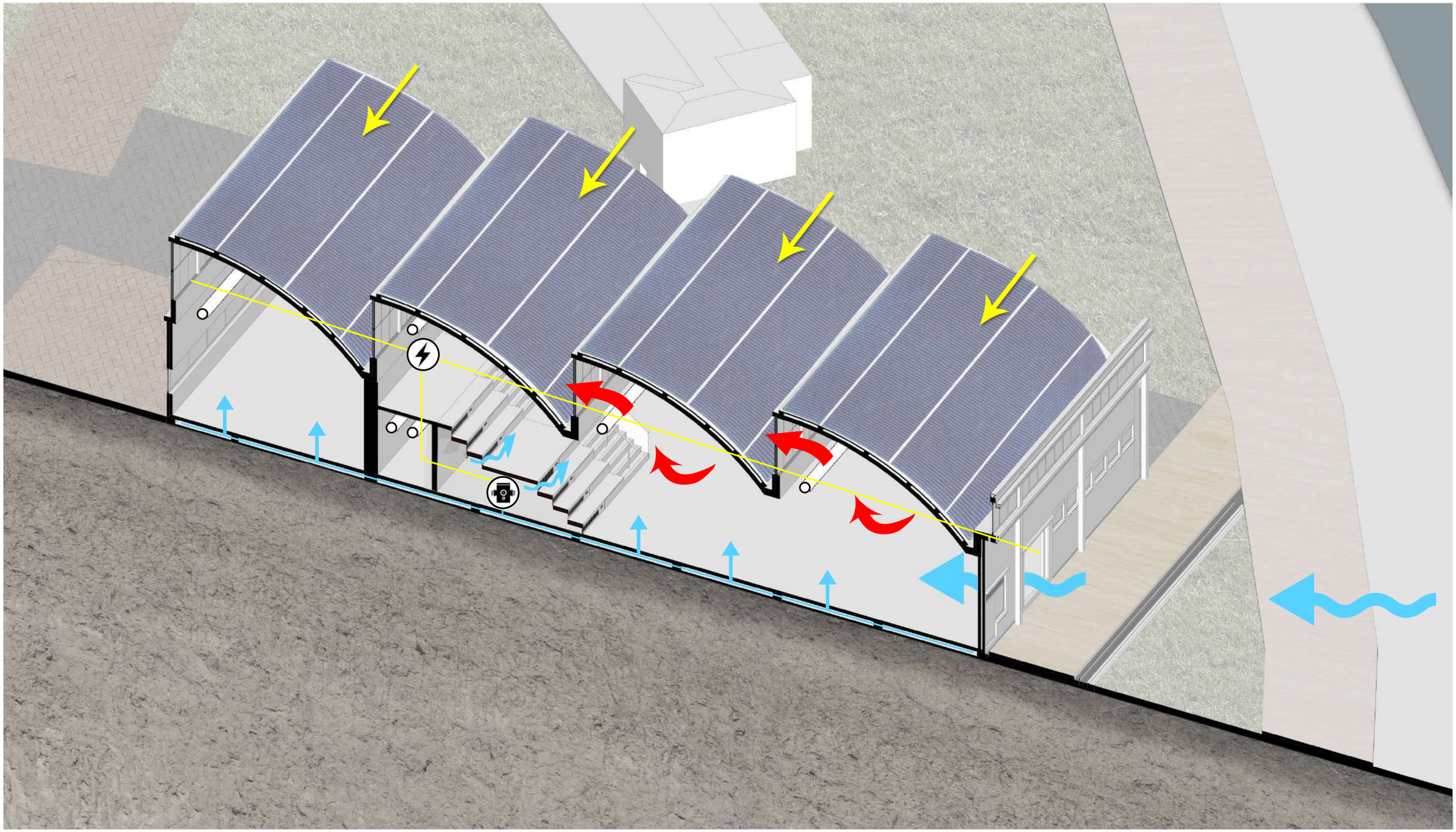
Open deck in Summer



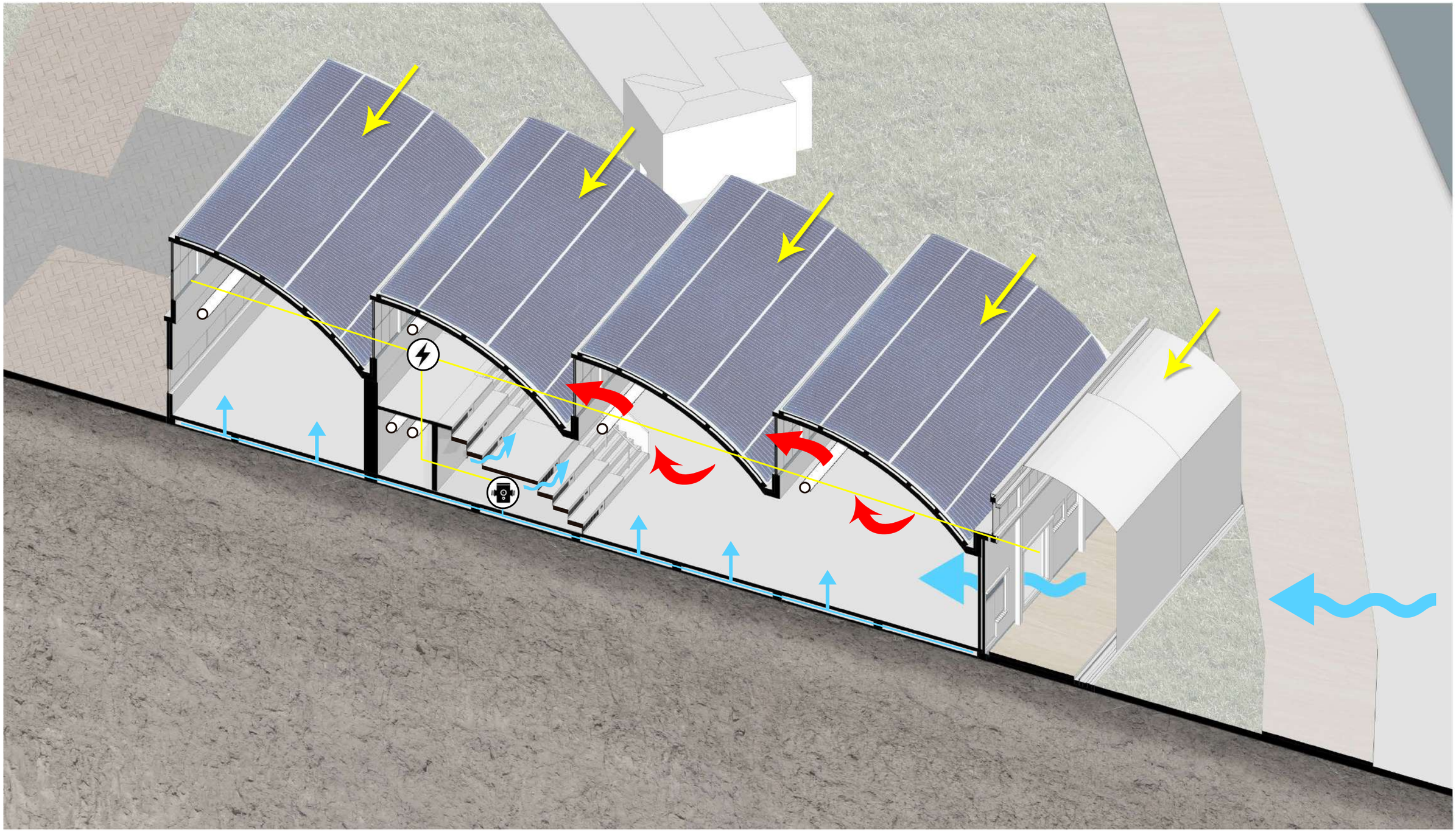
Open deck in Summer



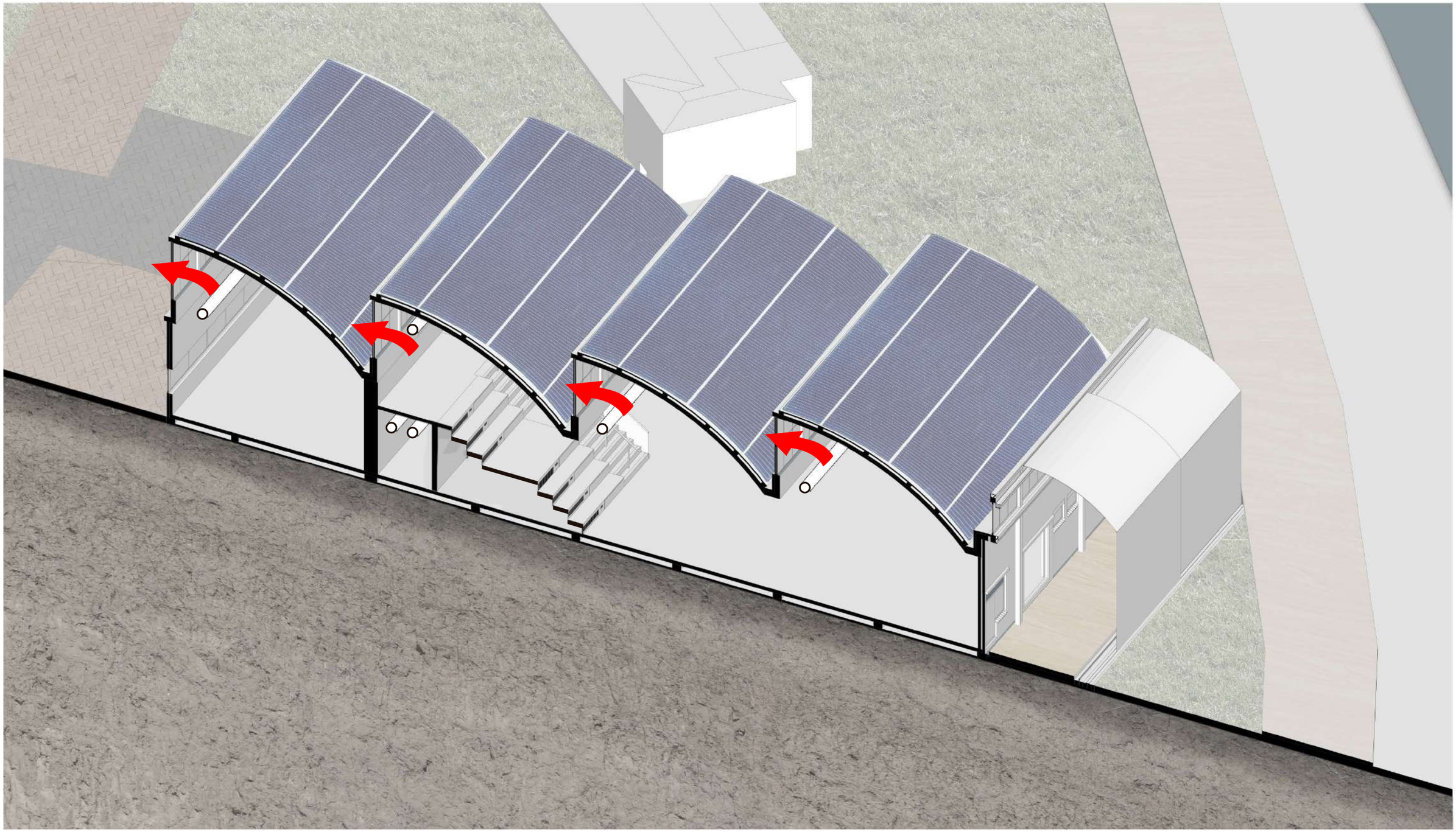
Open deck in Summer



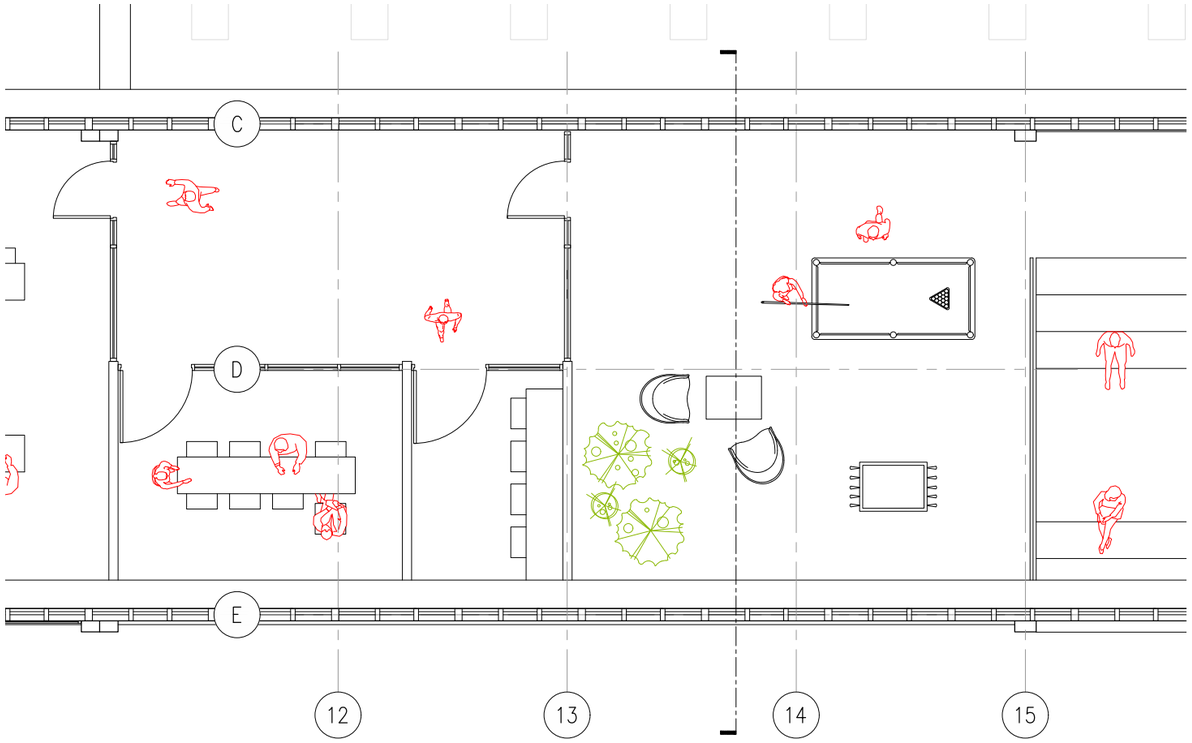
Summer Day - Open



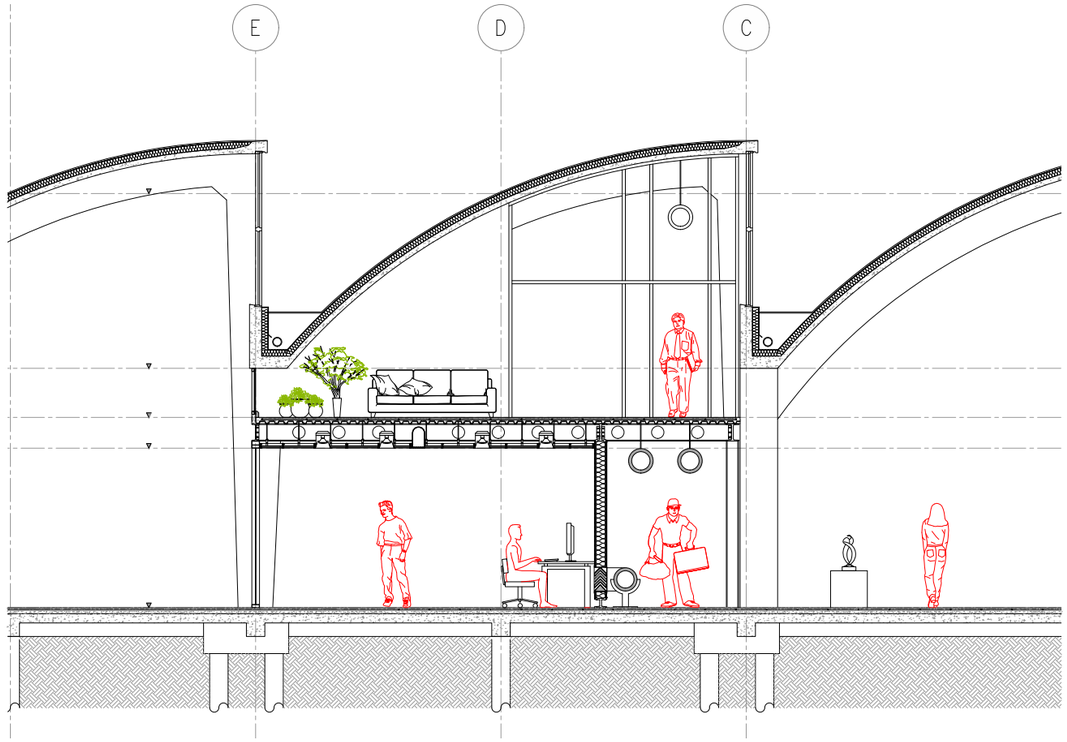
Summer Day - shaded



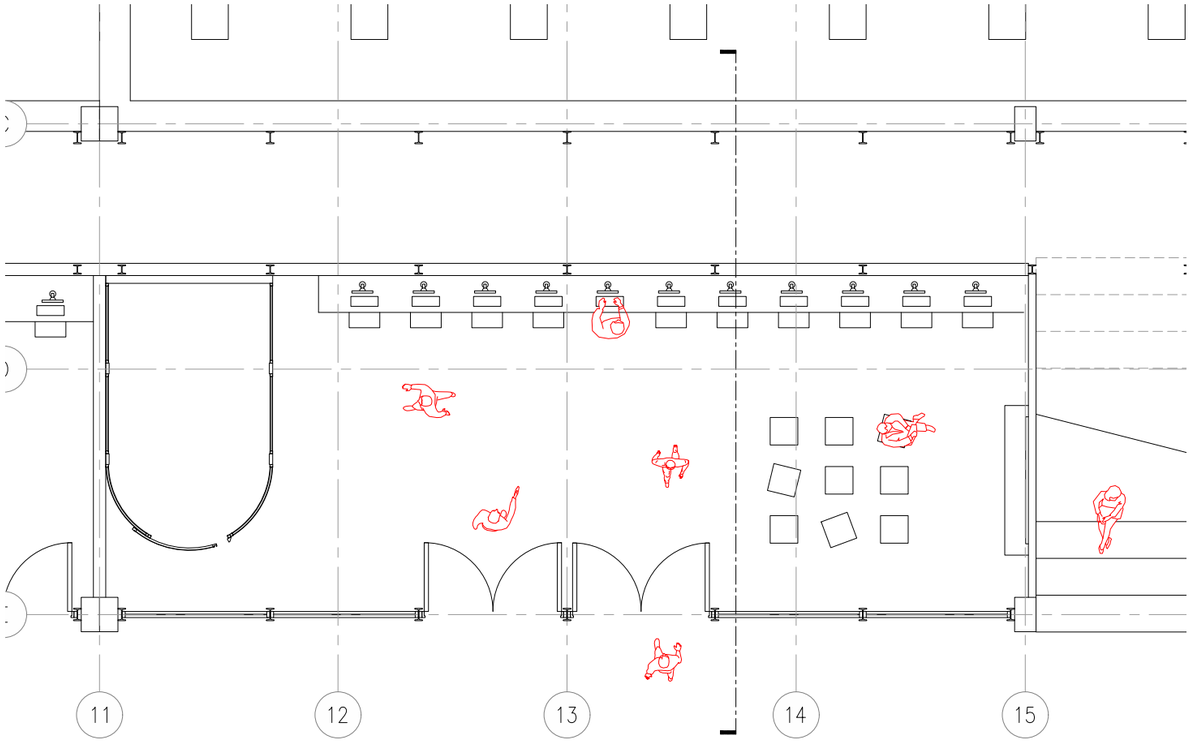
Summer Night



Mezzanine Floor 1:100

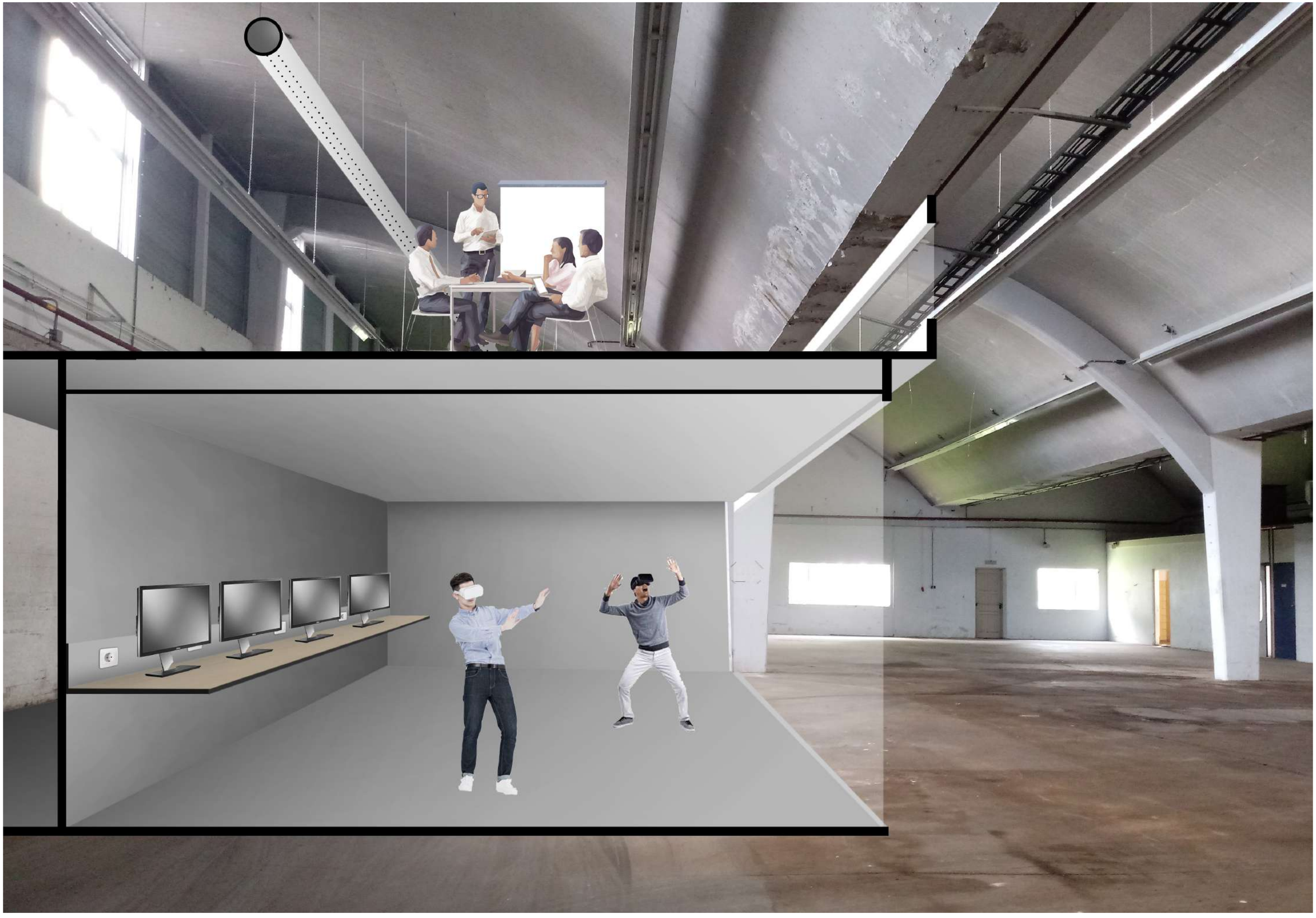


Section 1:100



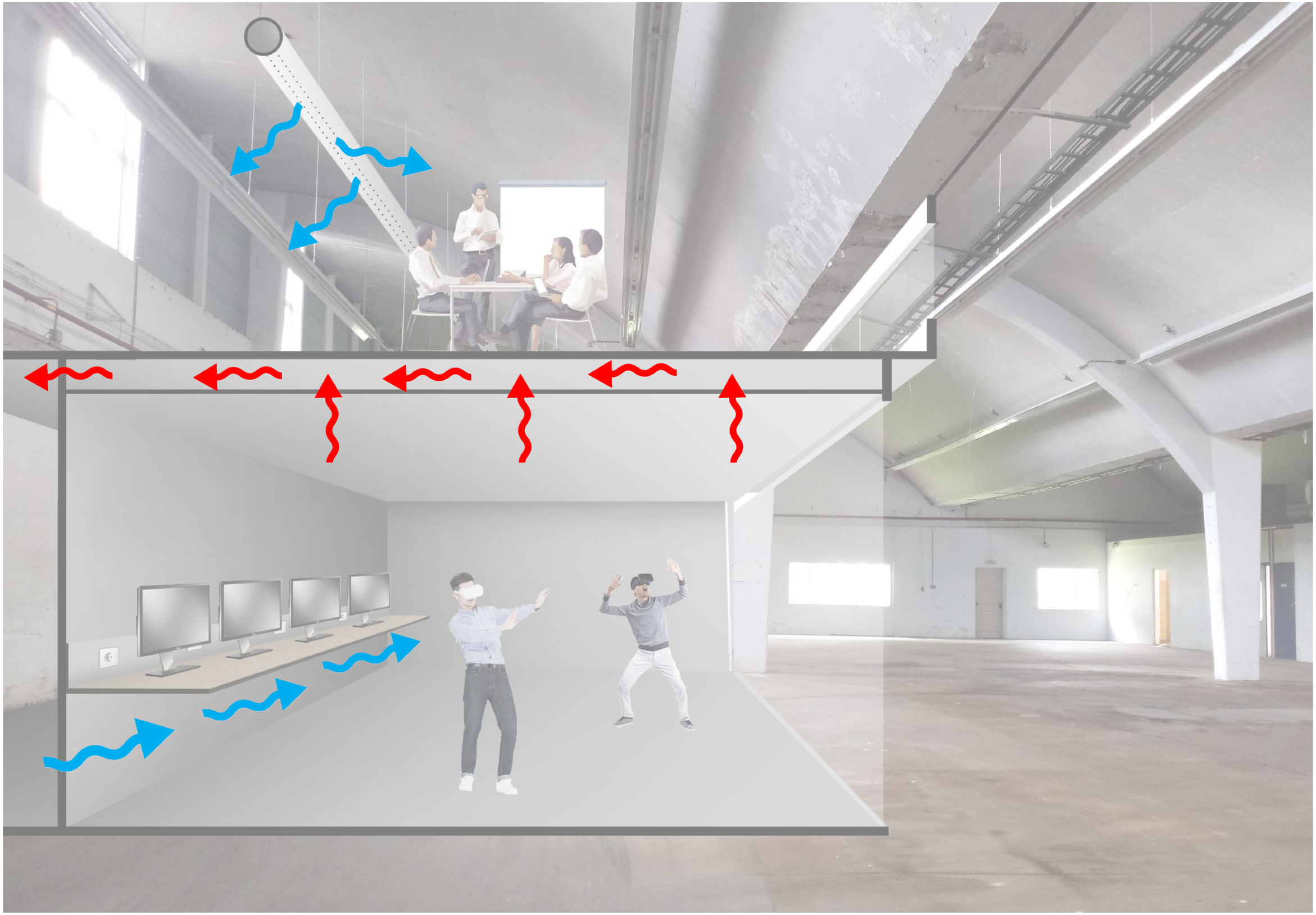
Ground Floor 1:100

Laboratory



Control indoor climate

Acoustics & visual connection



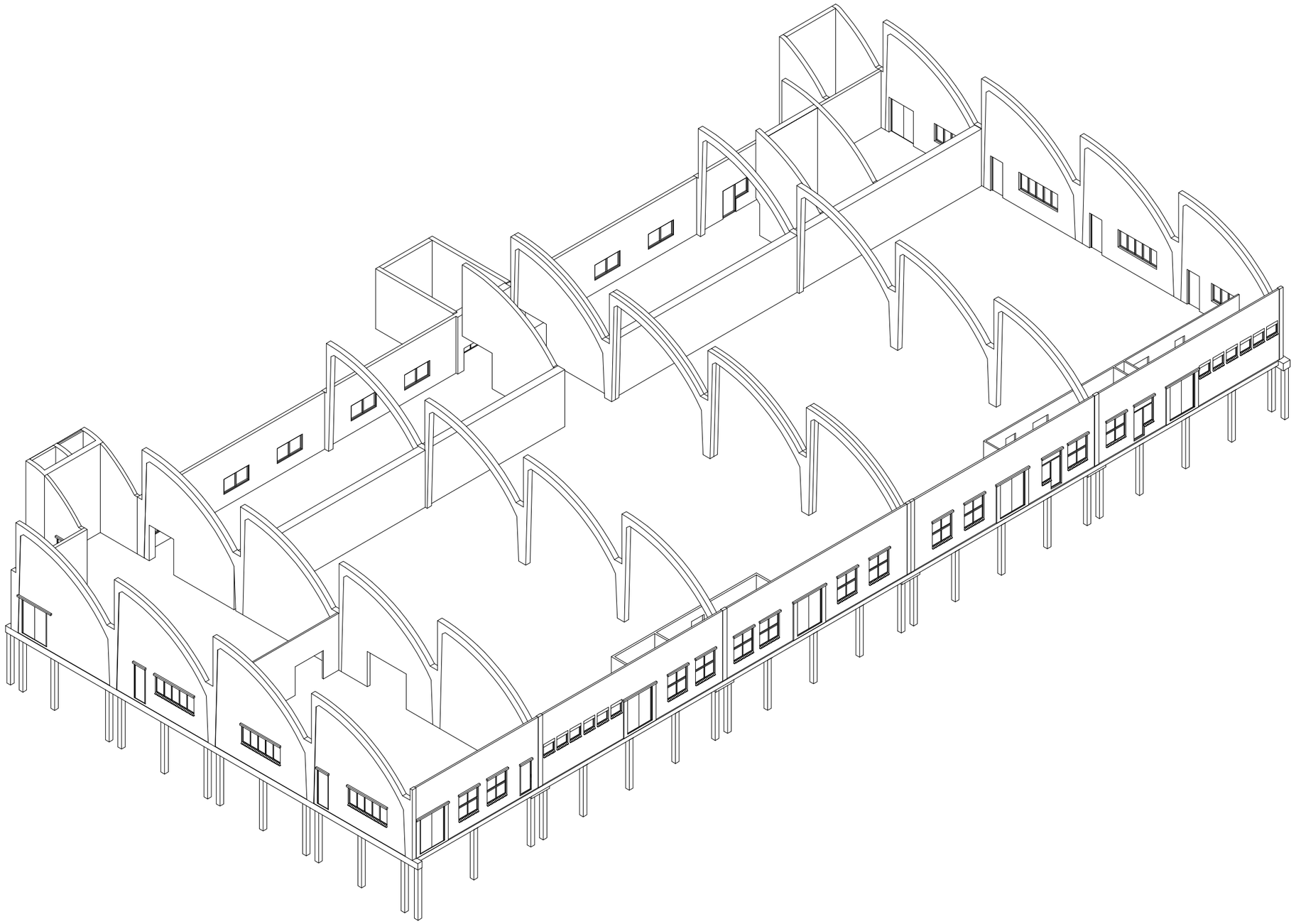
HVAC System

Video

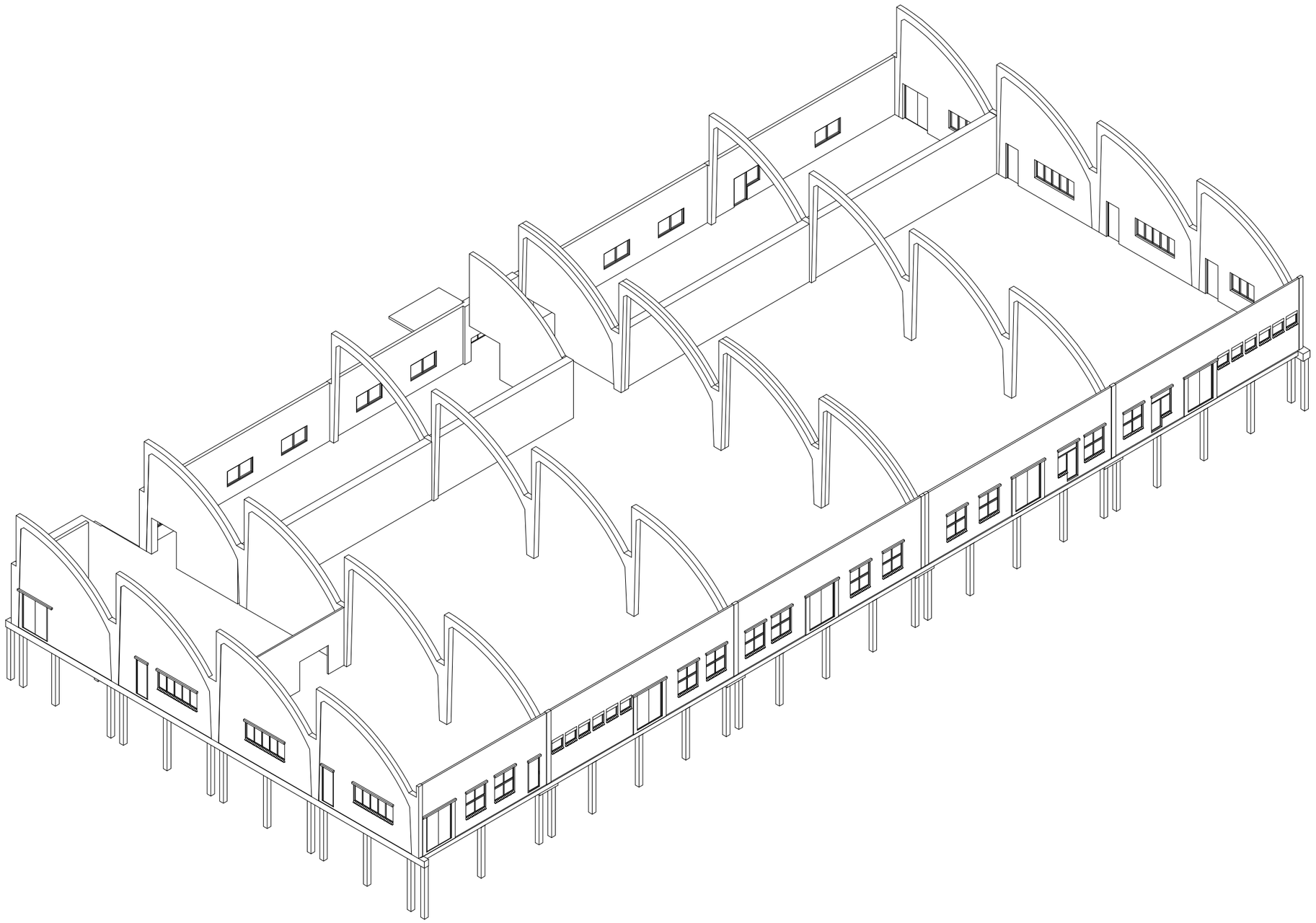
- Adaptability for future
- Added value of the intervention
- Integration of technology and heritage

Questions? :)

Thank you



Building Sequence



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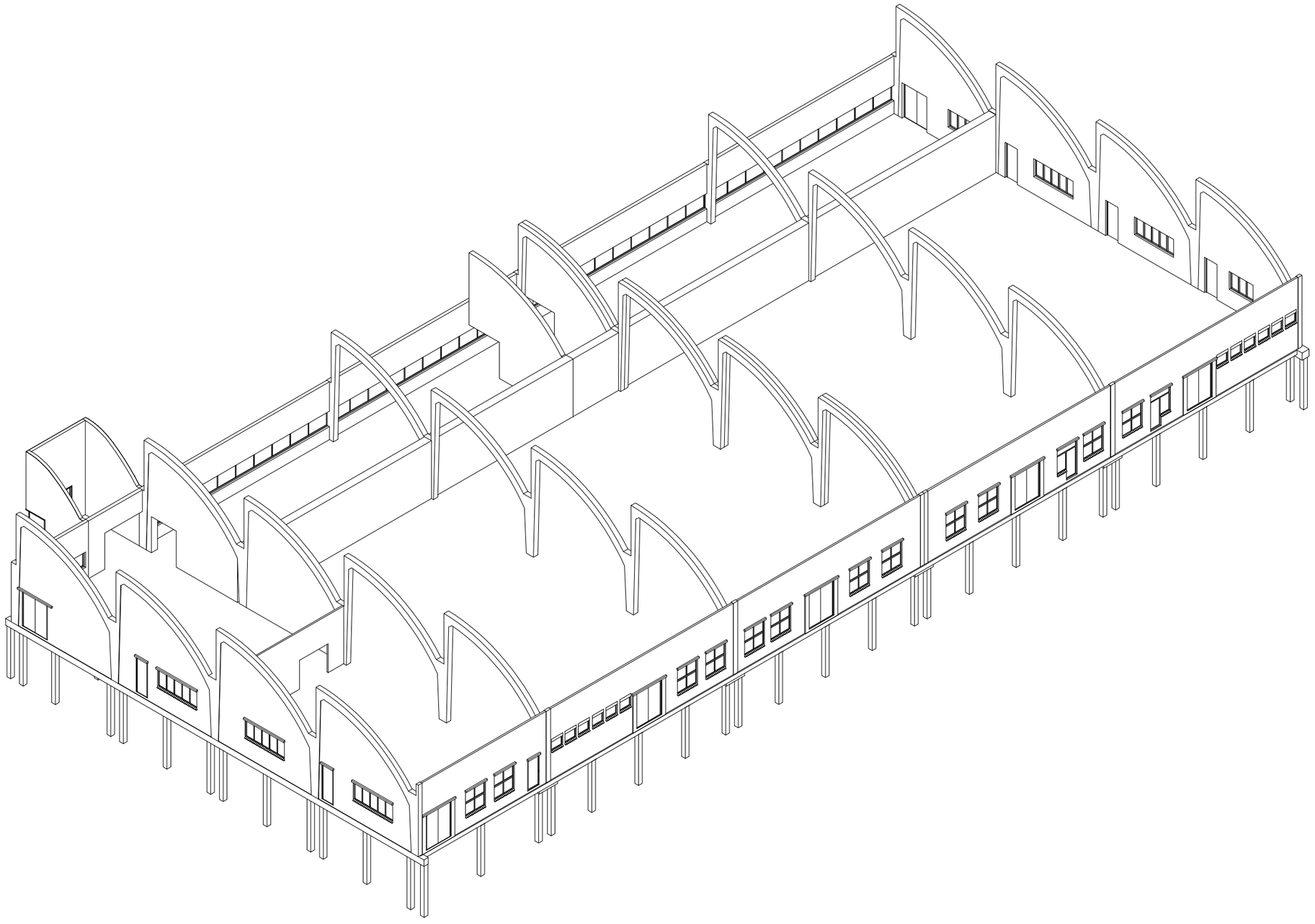
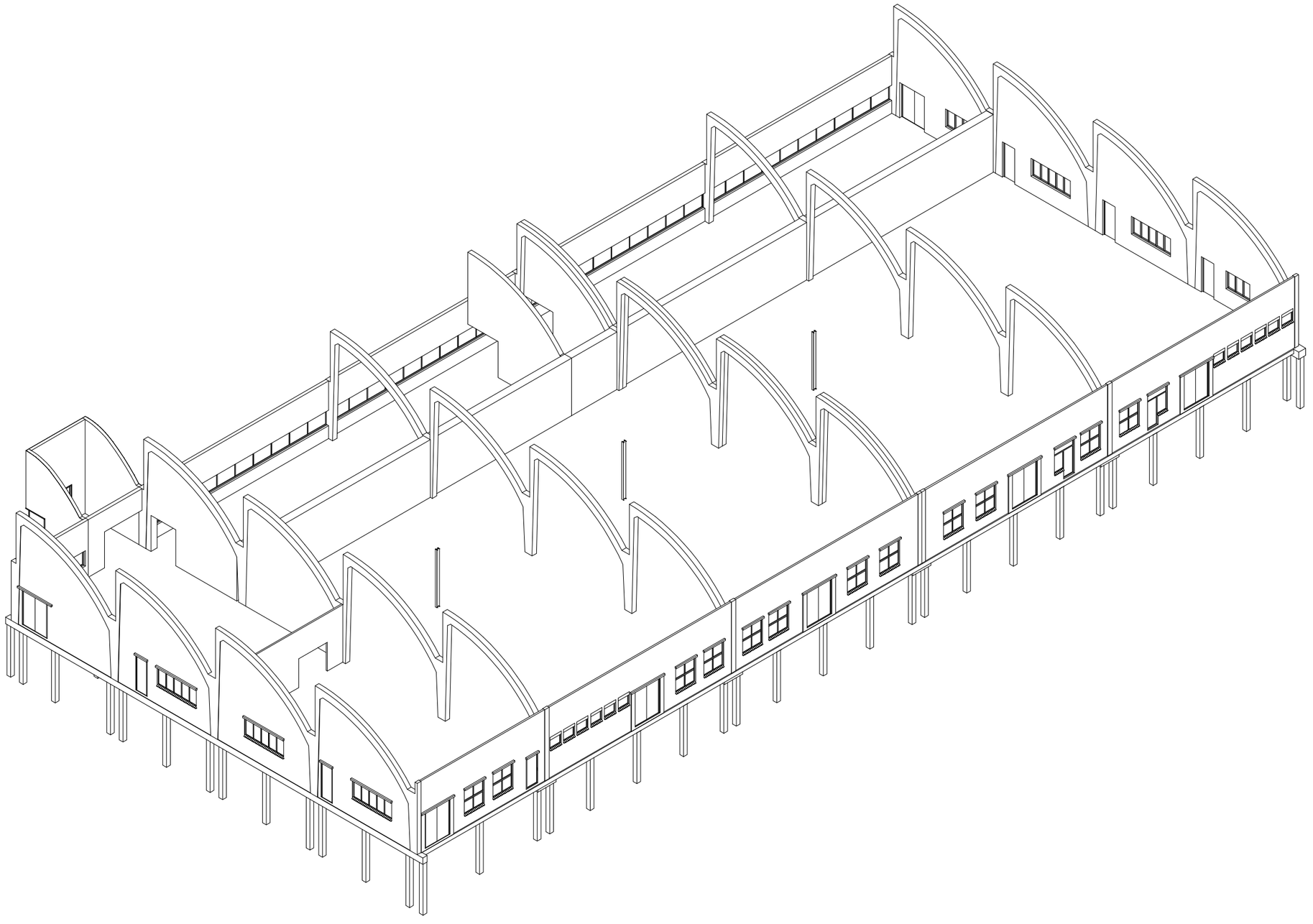


Building Sequence



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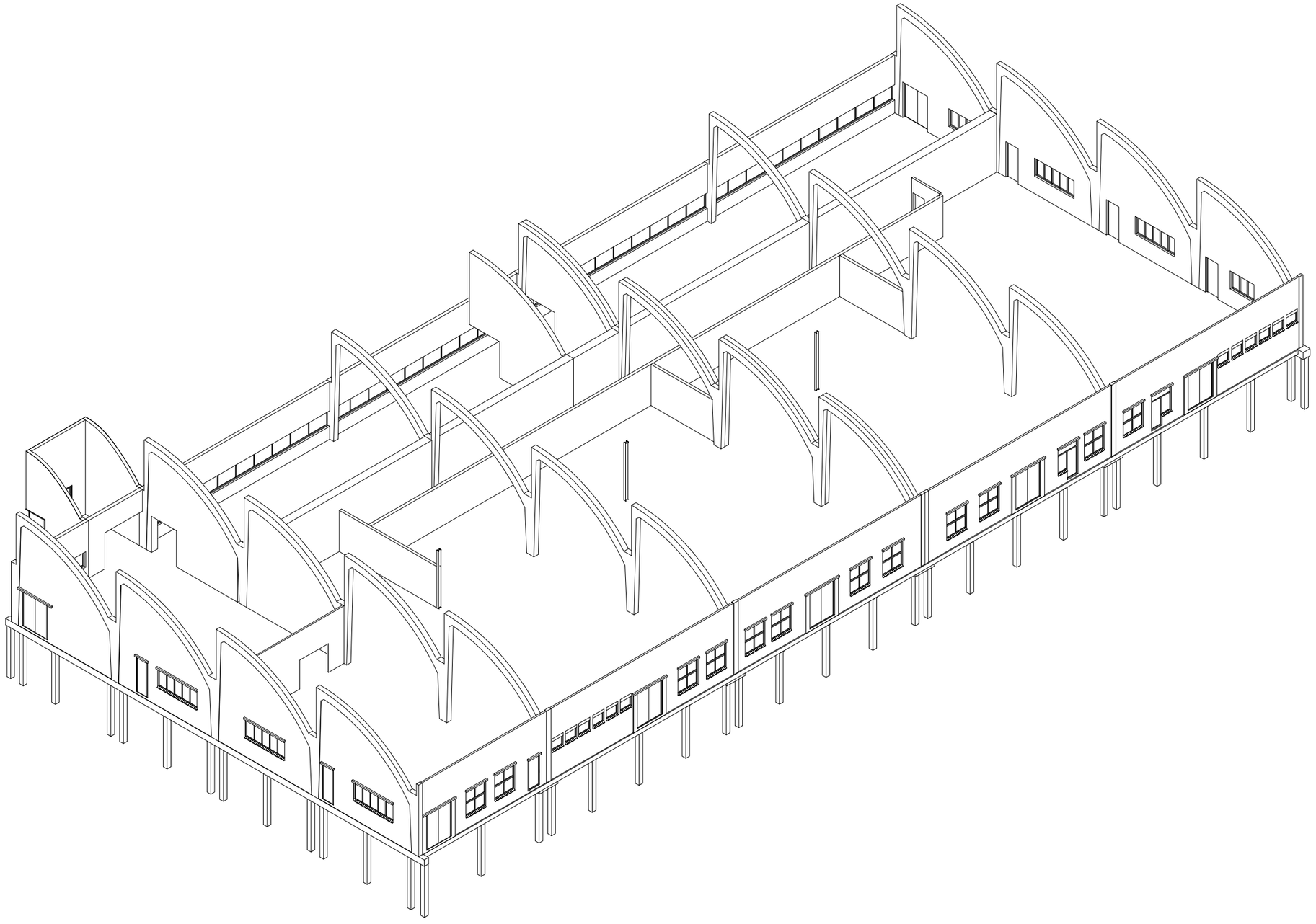

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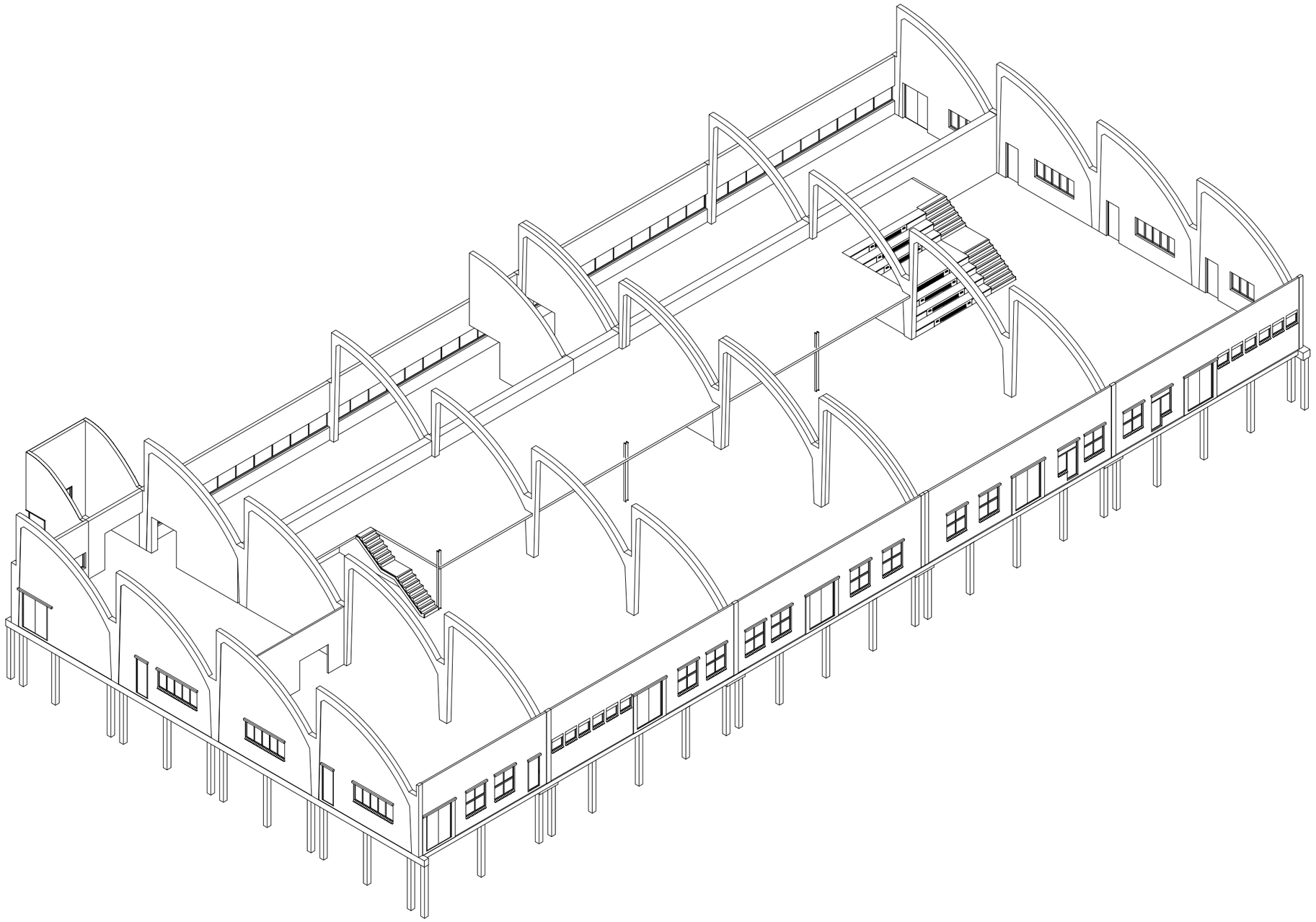

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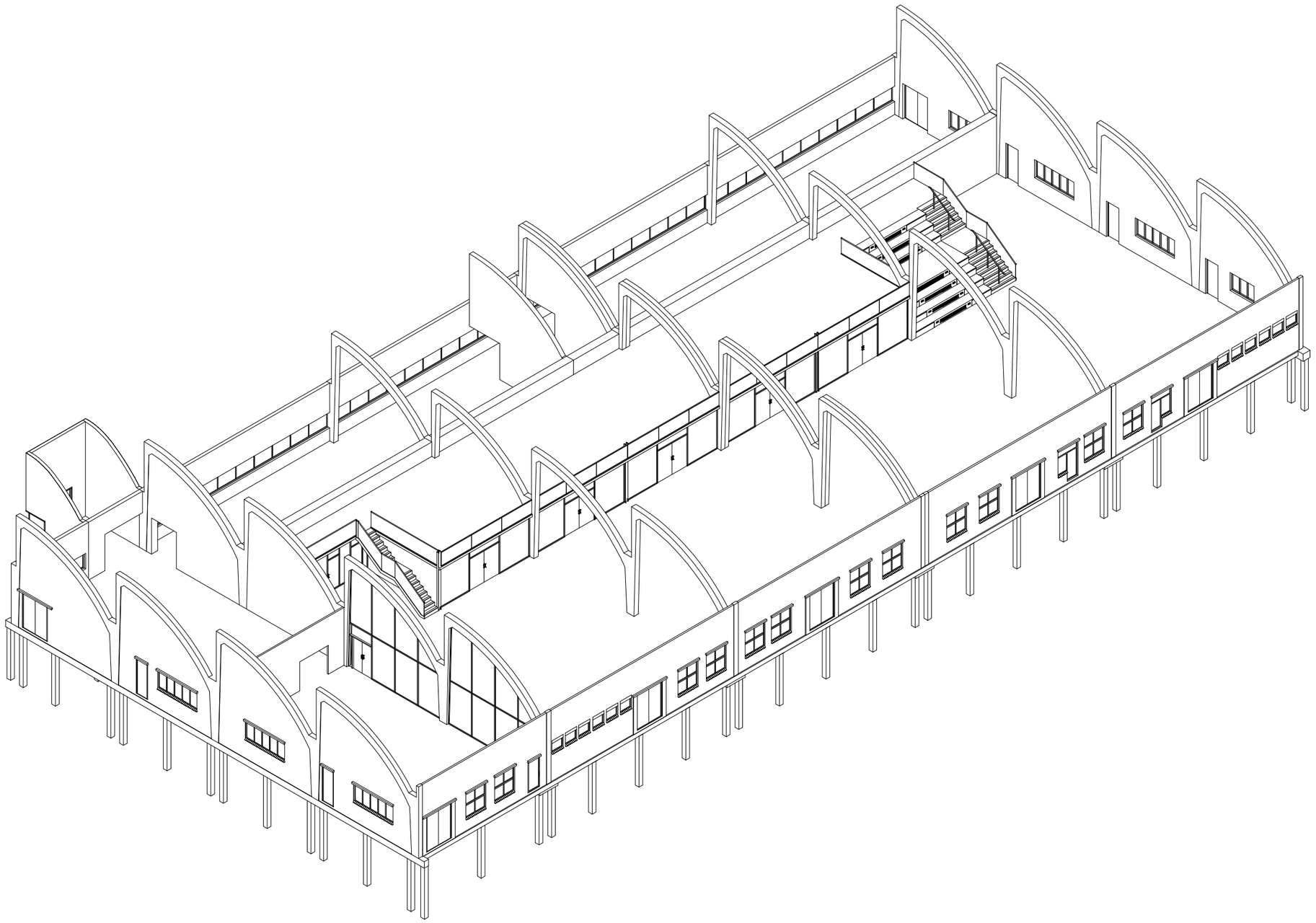

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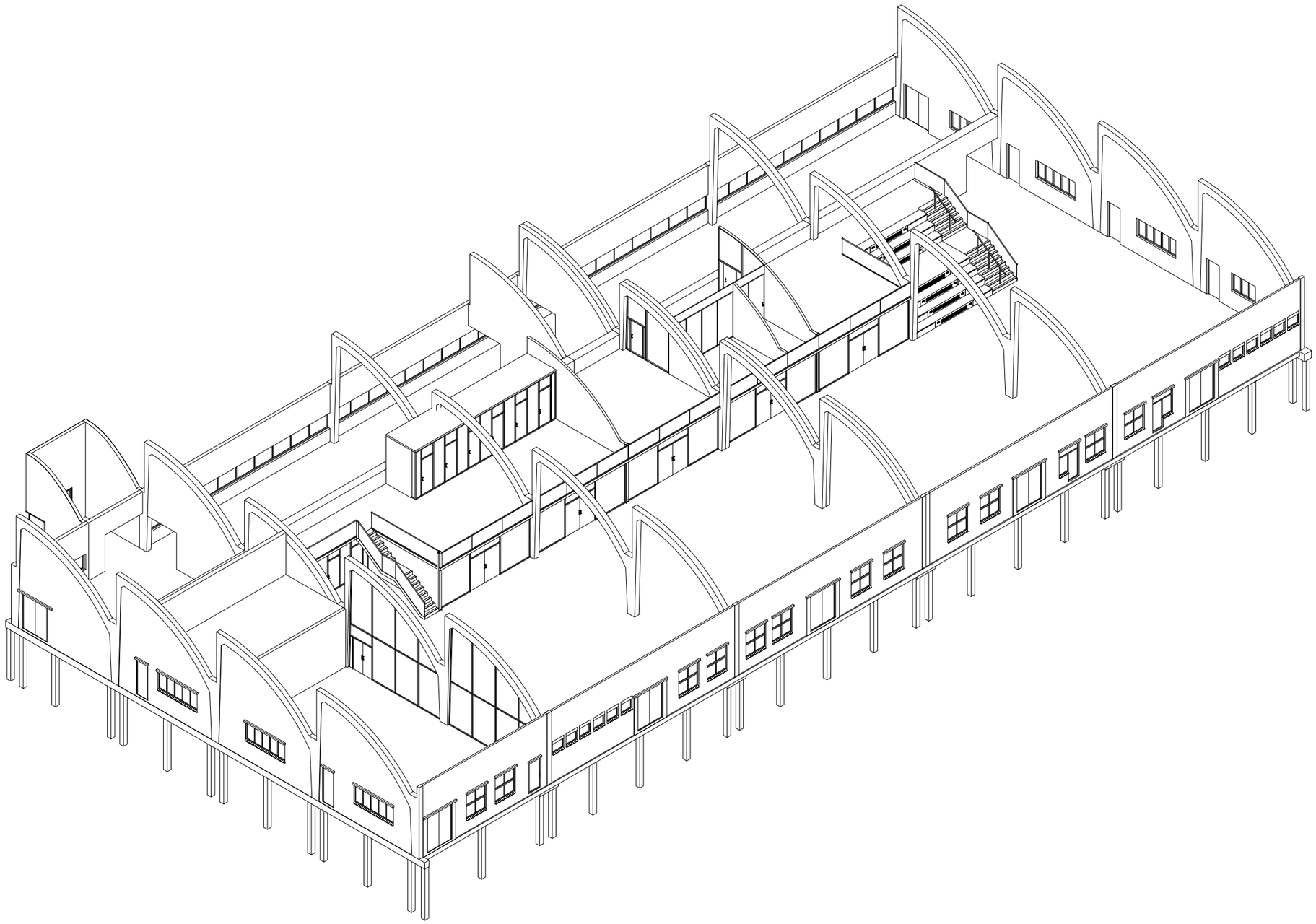

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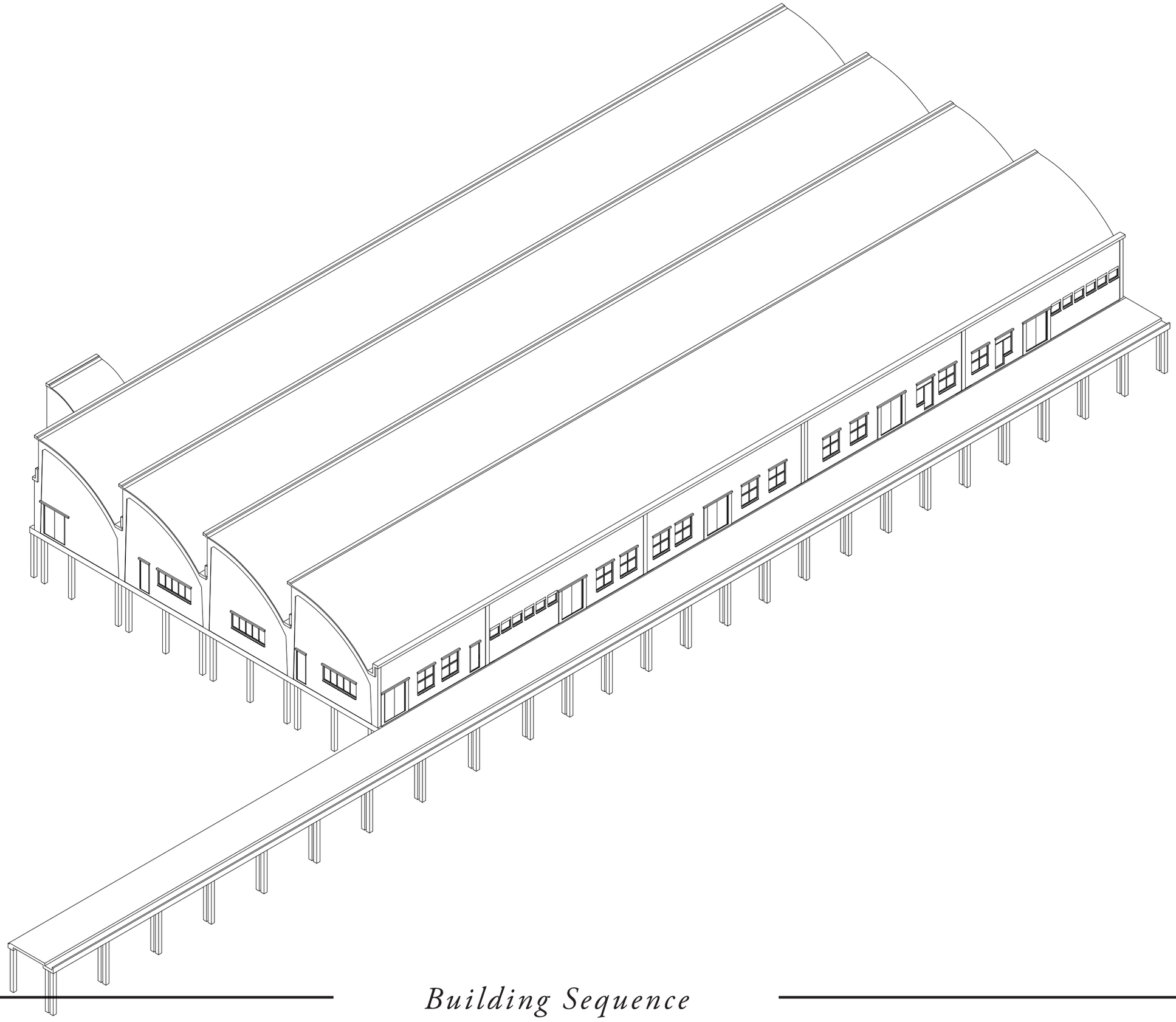

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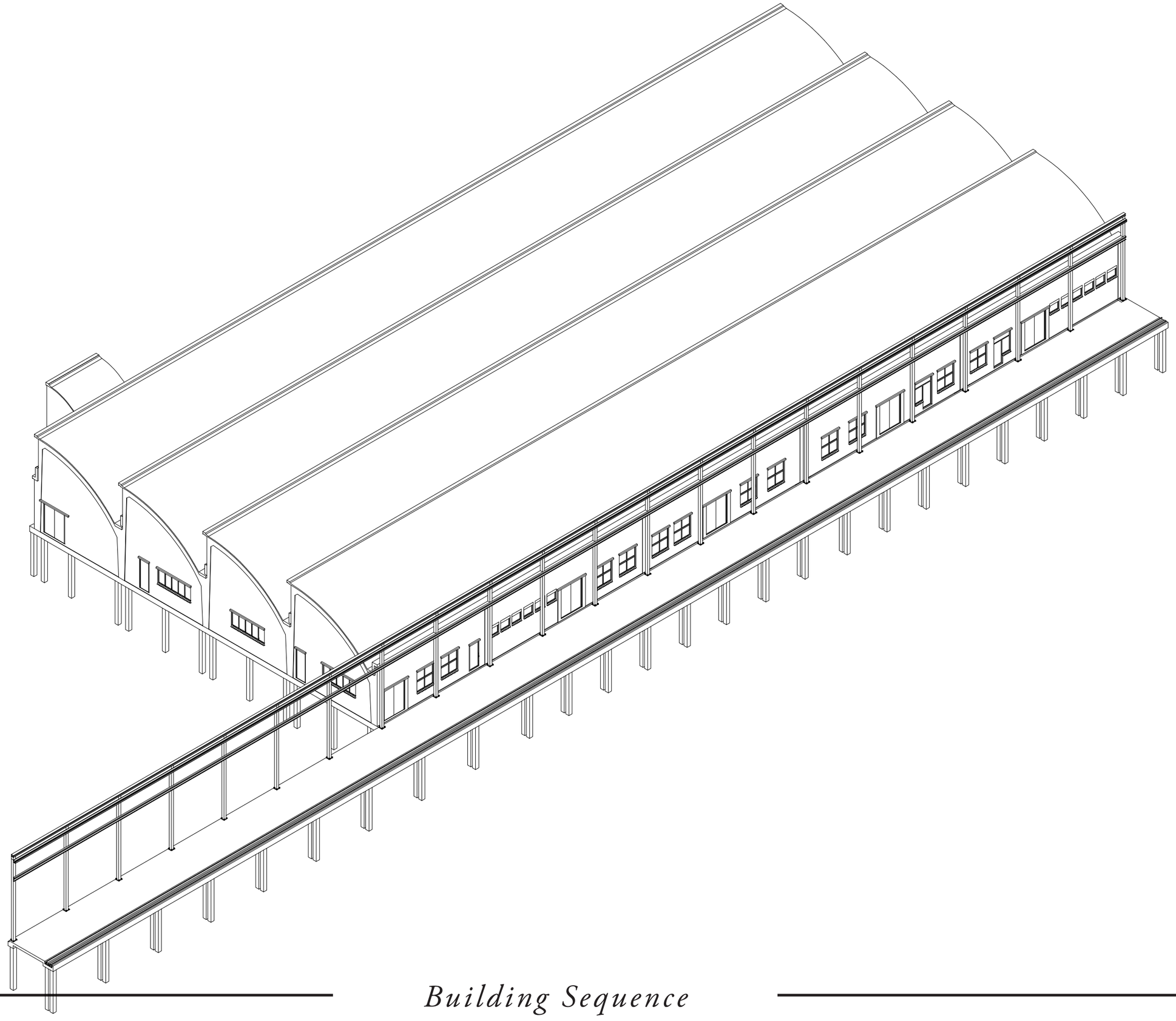

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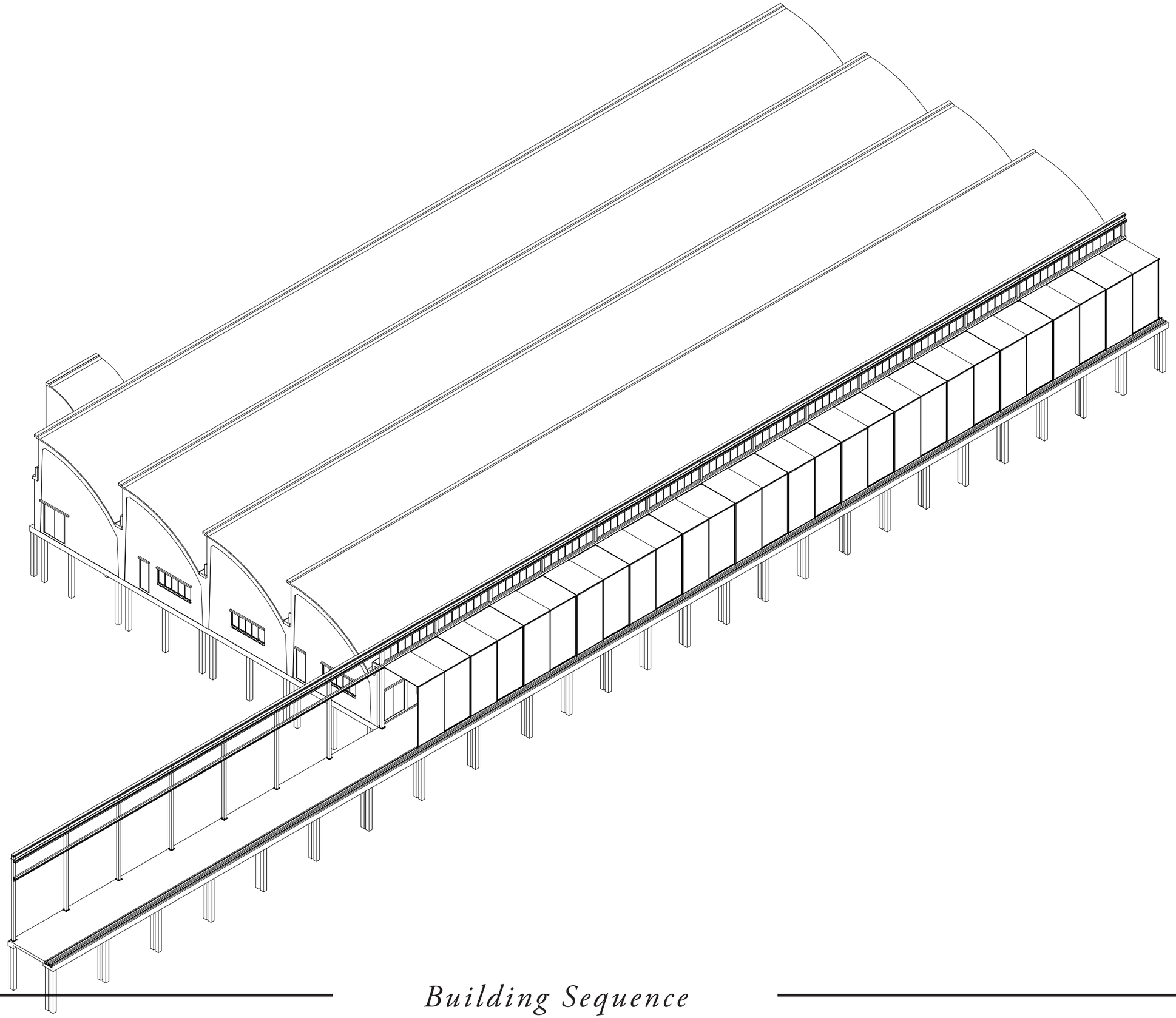
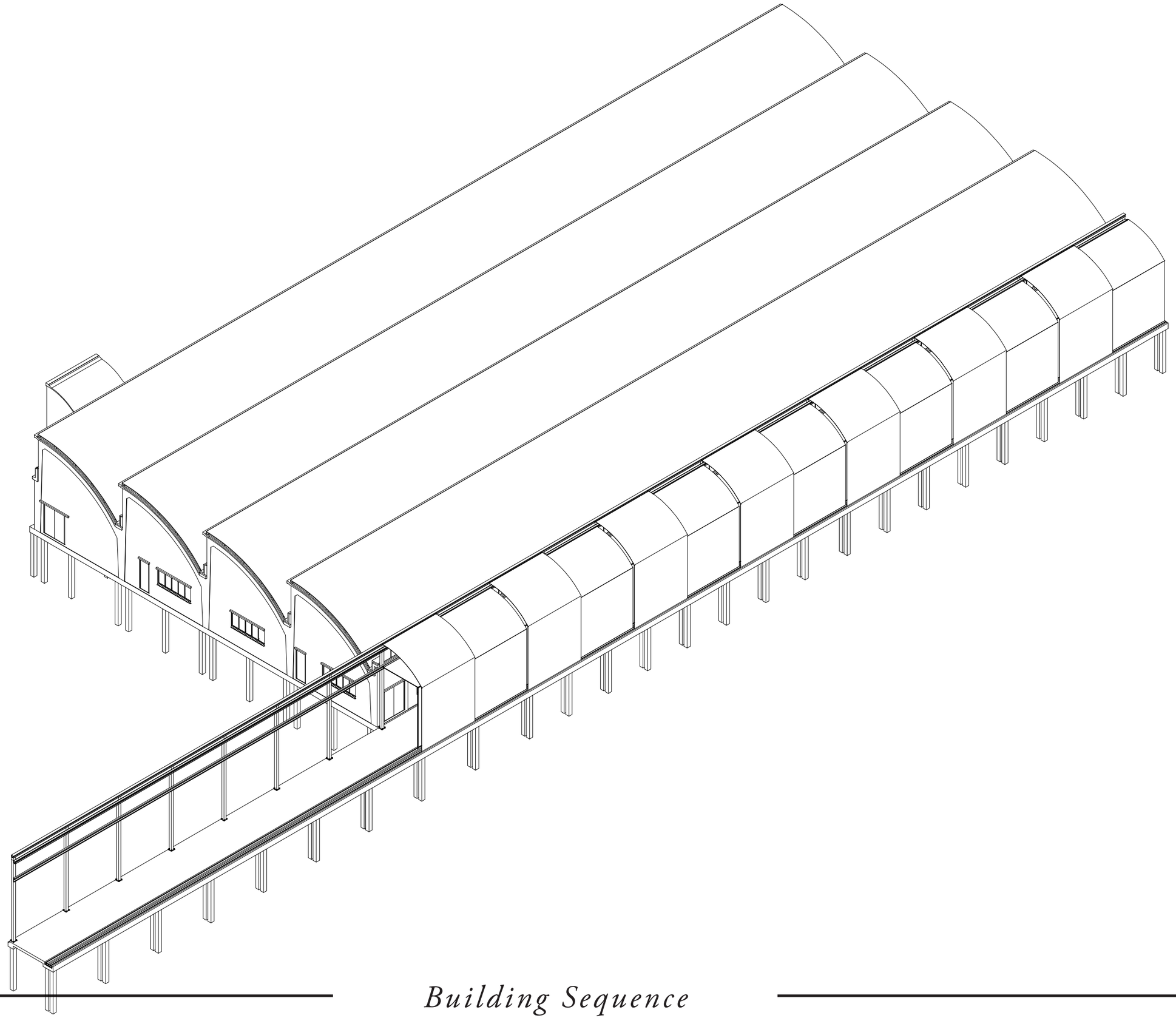
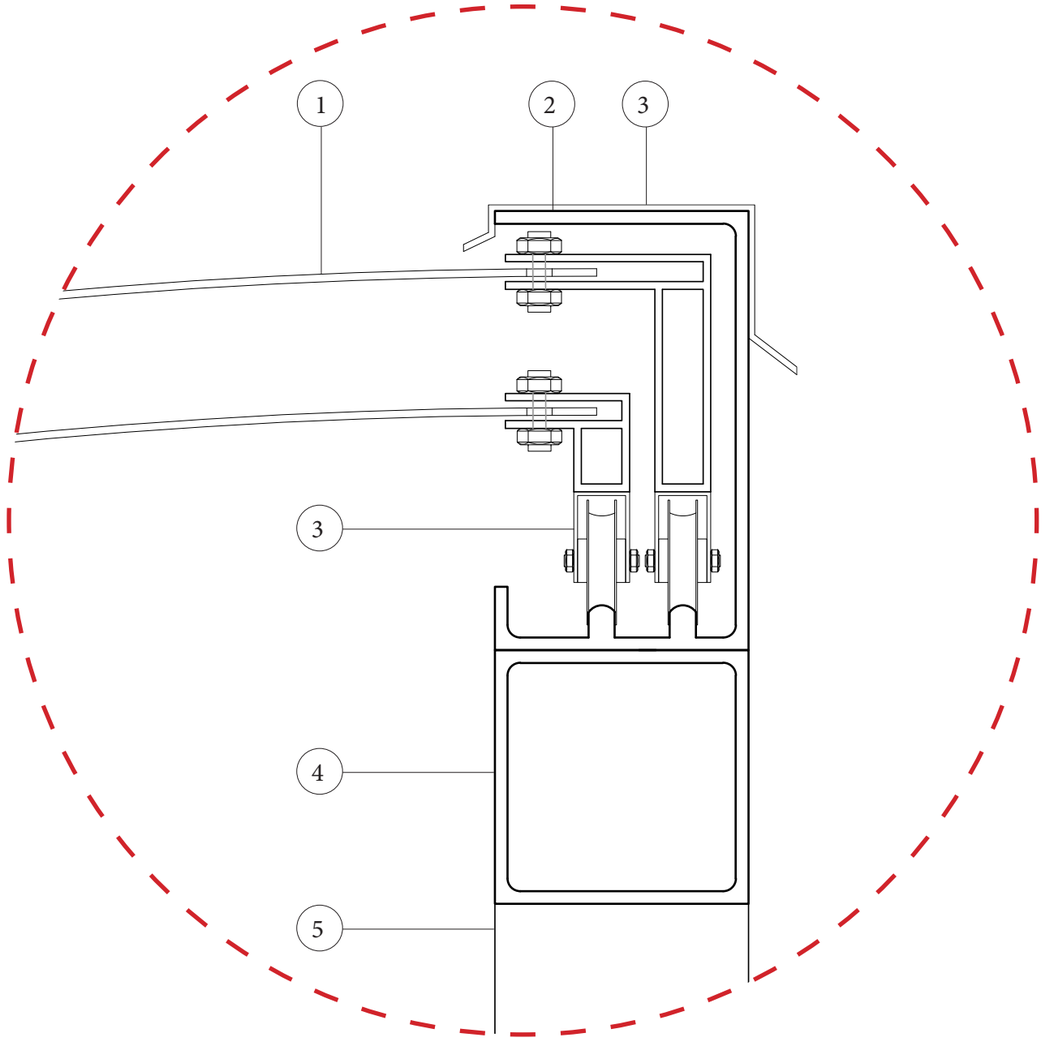


Building Sequence

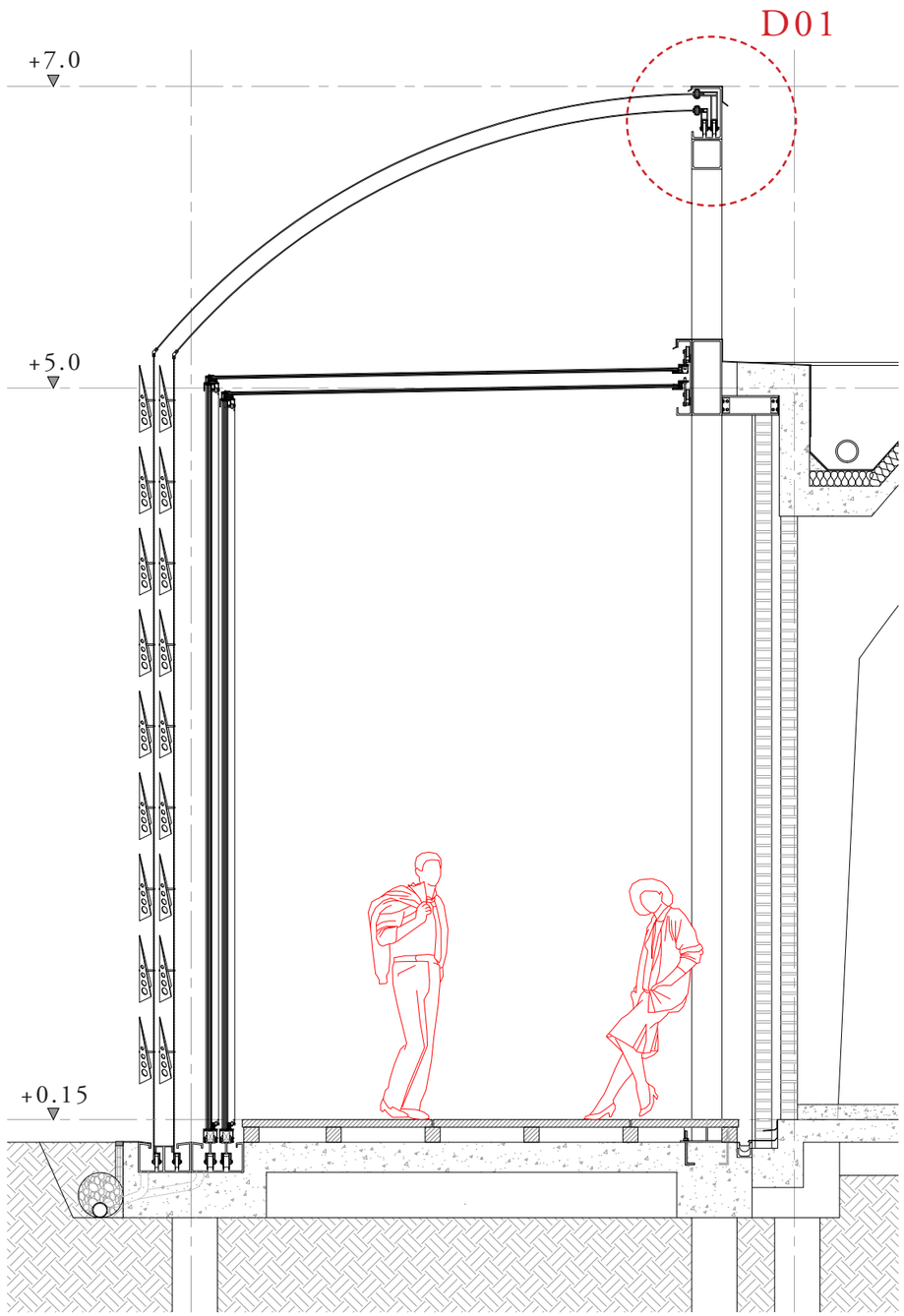


Building Sequence

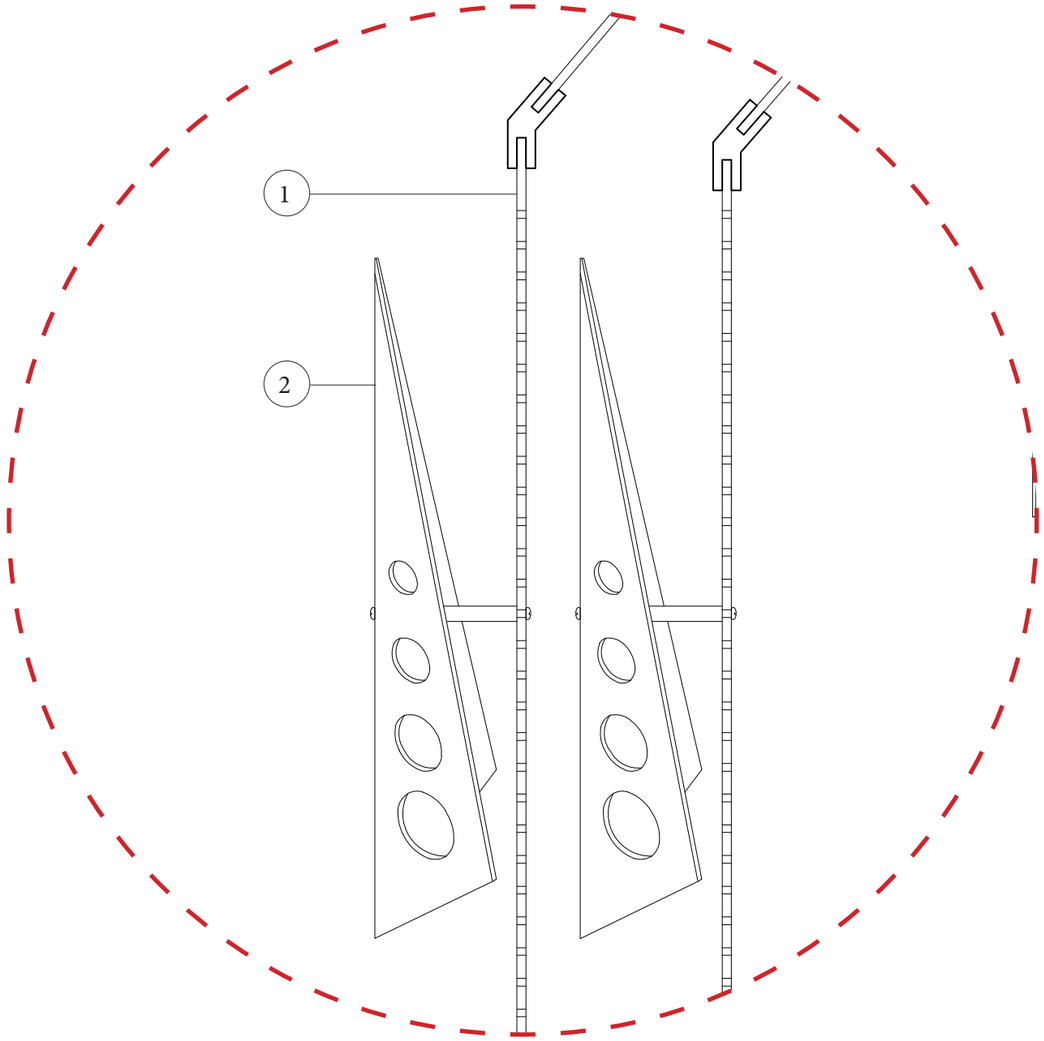


D01 1:5

1. 5mm perforated steel panel
2. Metal flashing
3. Aluminum bracket on sliding track
4. 200x200mm Rectangular hollow steel beam
5. 200x200mm Rectangular hollow steel column

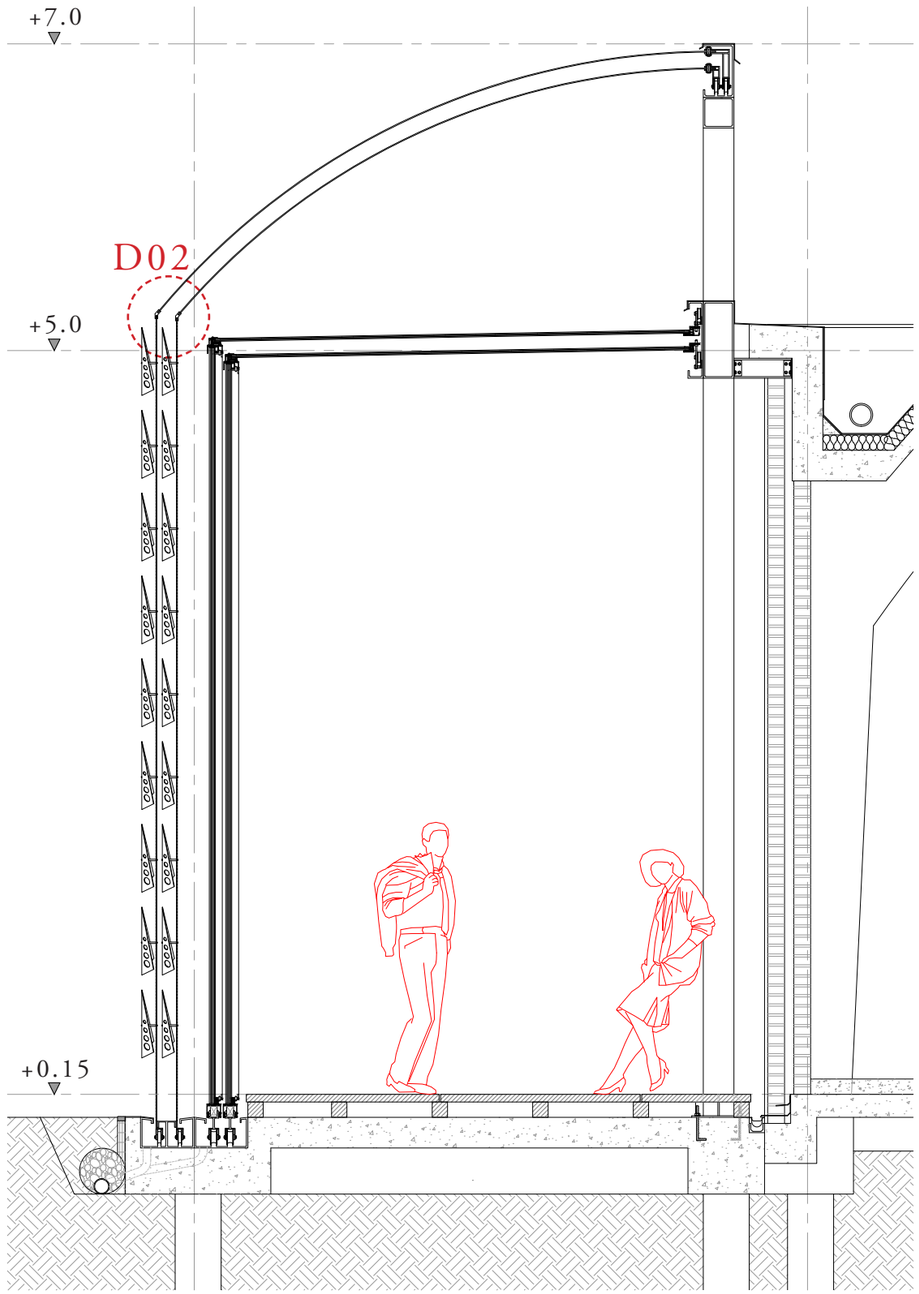


Section detail 1:40

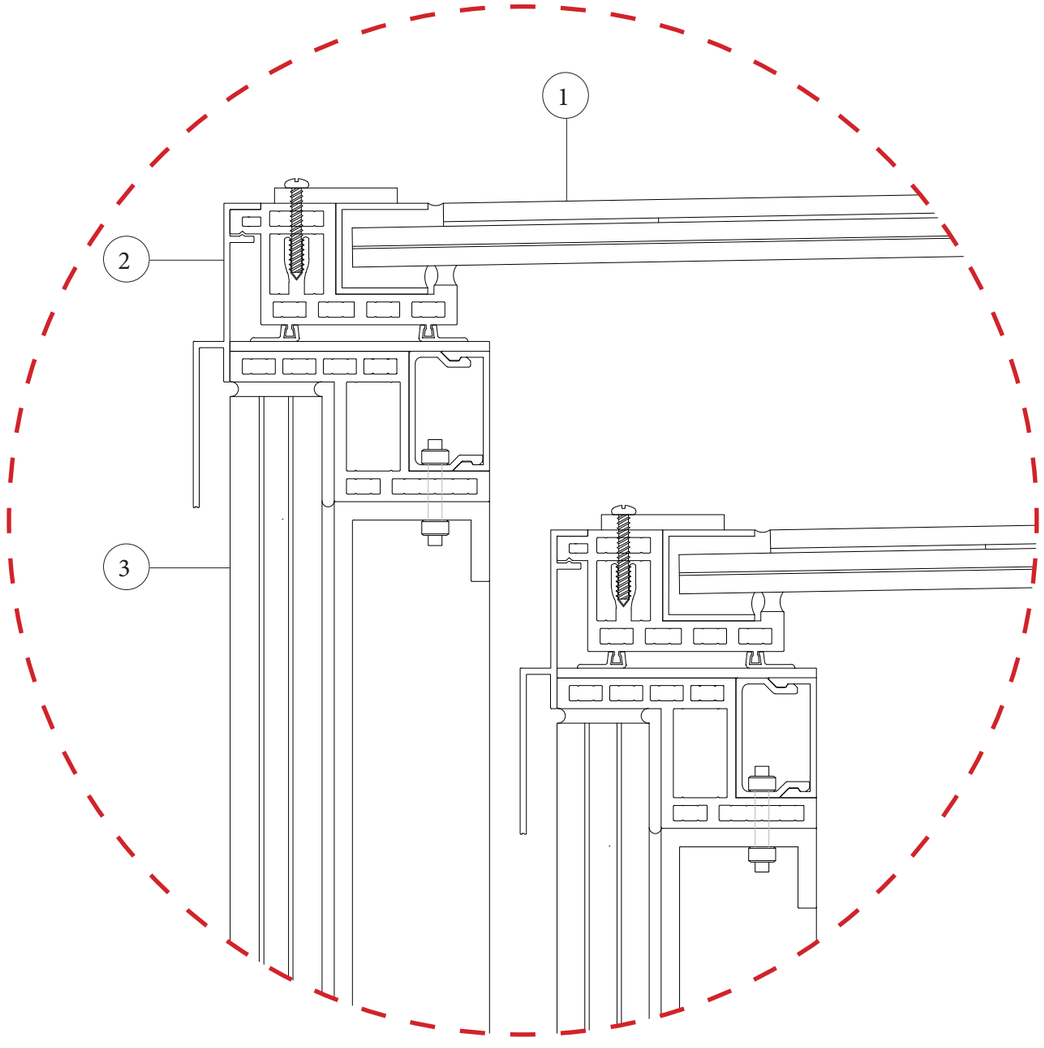


D02 1:5

1. 5mm perforated steel panel
2. Aluminum wind pivot screwed to the holes of the perforated steel panel

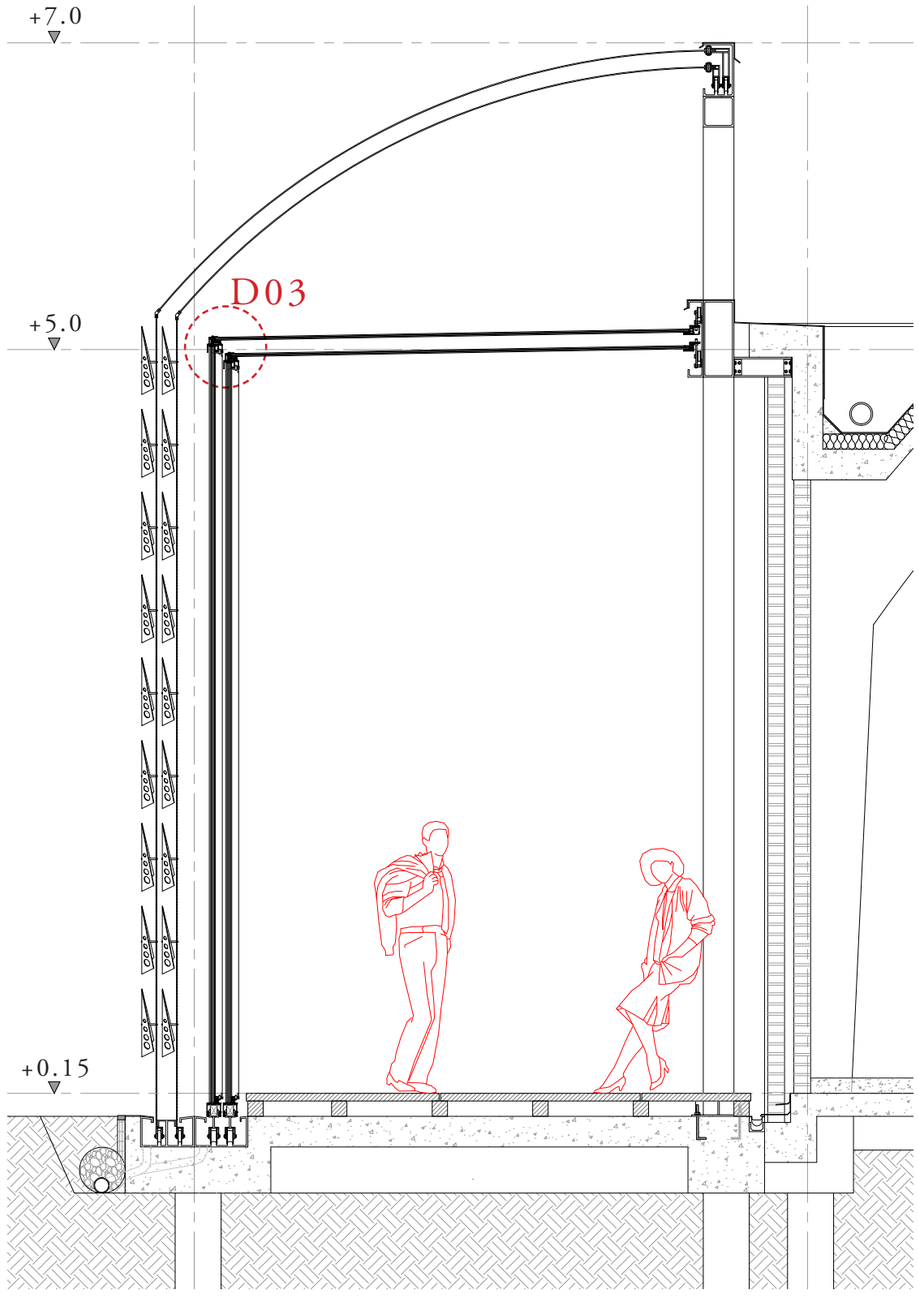


Section detail 1:40

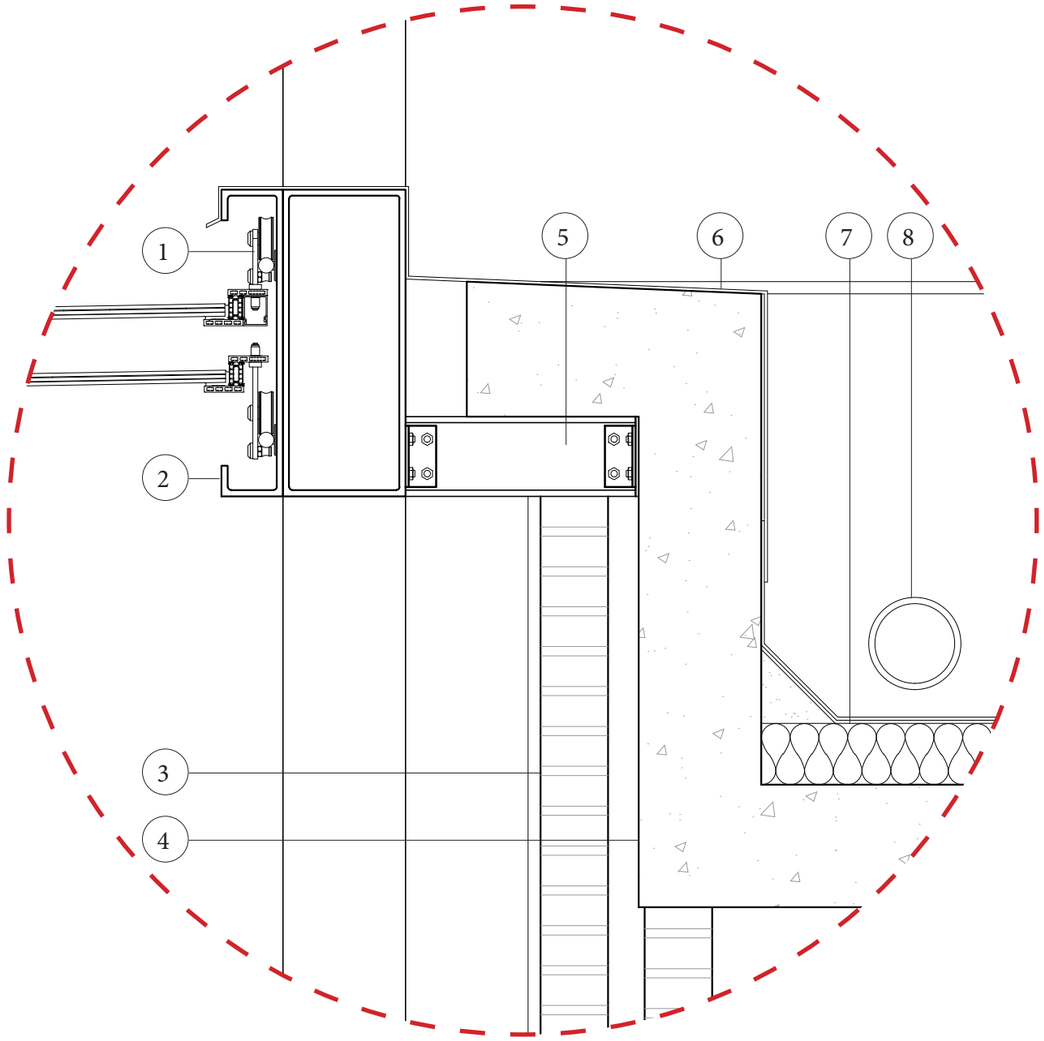


D03 1:2

1. Laminated glass
   (from top: 6mm low iron tempered glass, 1.5mm photovoltaic cell, 6mm low iron tempered glass, 0.76mm PVB interlayer, 6mm low iron tempered glass)
2. Metal flashing
3. Structural laminated glass

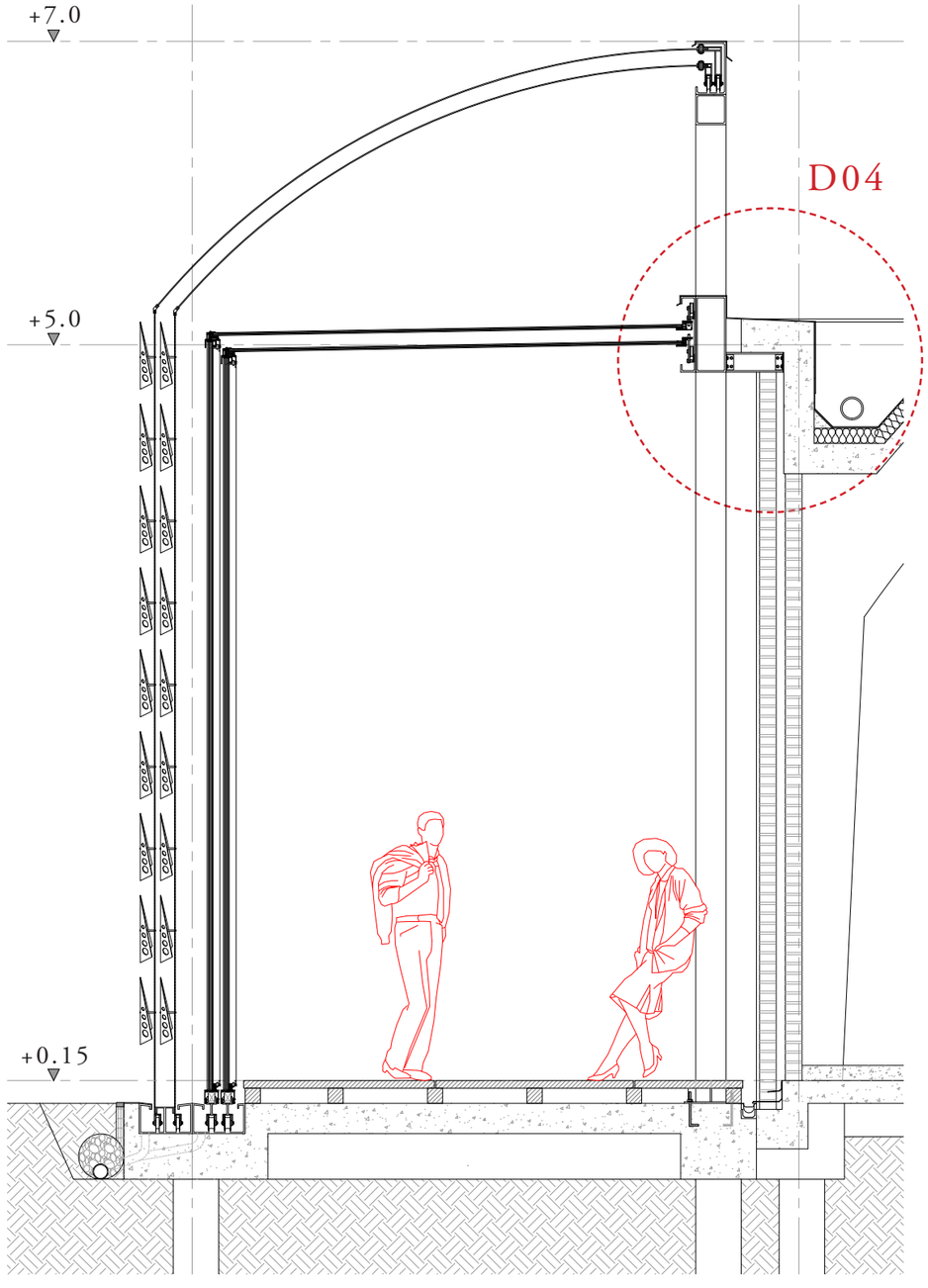


Section detail 1:40

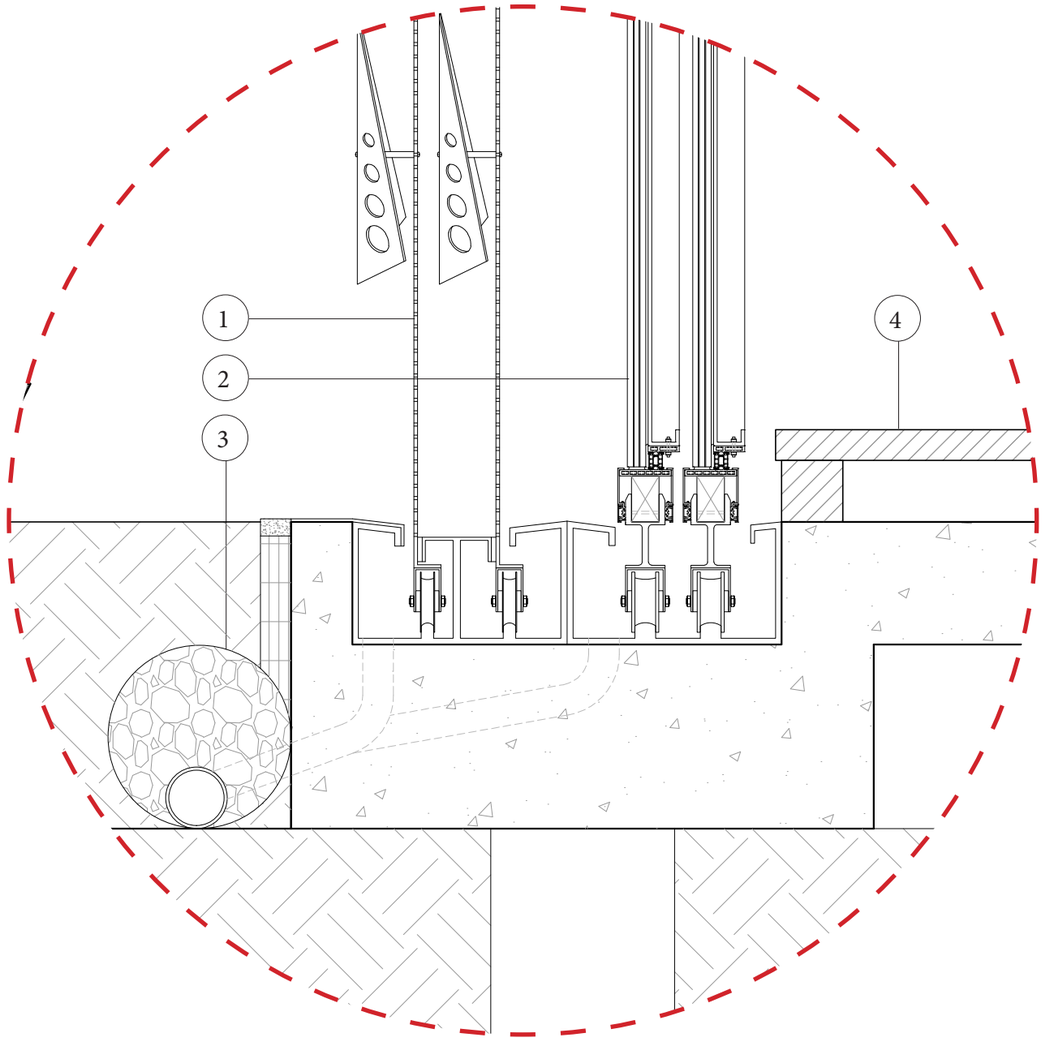


D04 1:10

1. Aluminum bracket screwed to wheels on sliding track
2. Metal C-channel welded to 200x500mm rectangular hollow steel beam
3. Existing double layered brick wall
4. Existing concrete roof
5. 130mm depth I beam
6. Metal flashing
7. 100mm thk. insulation with waterproofing layer on top
8. 150mm dia. drainage pipe

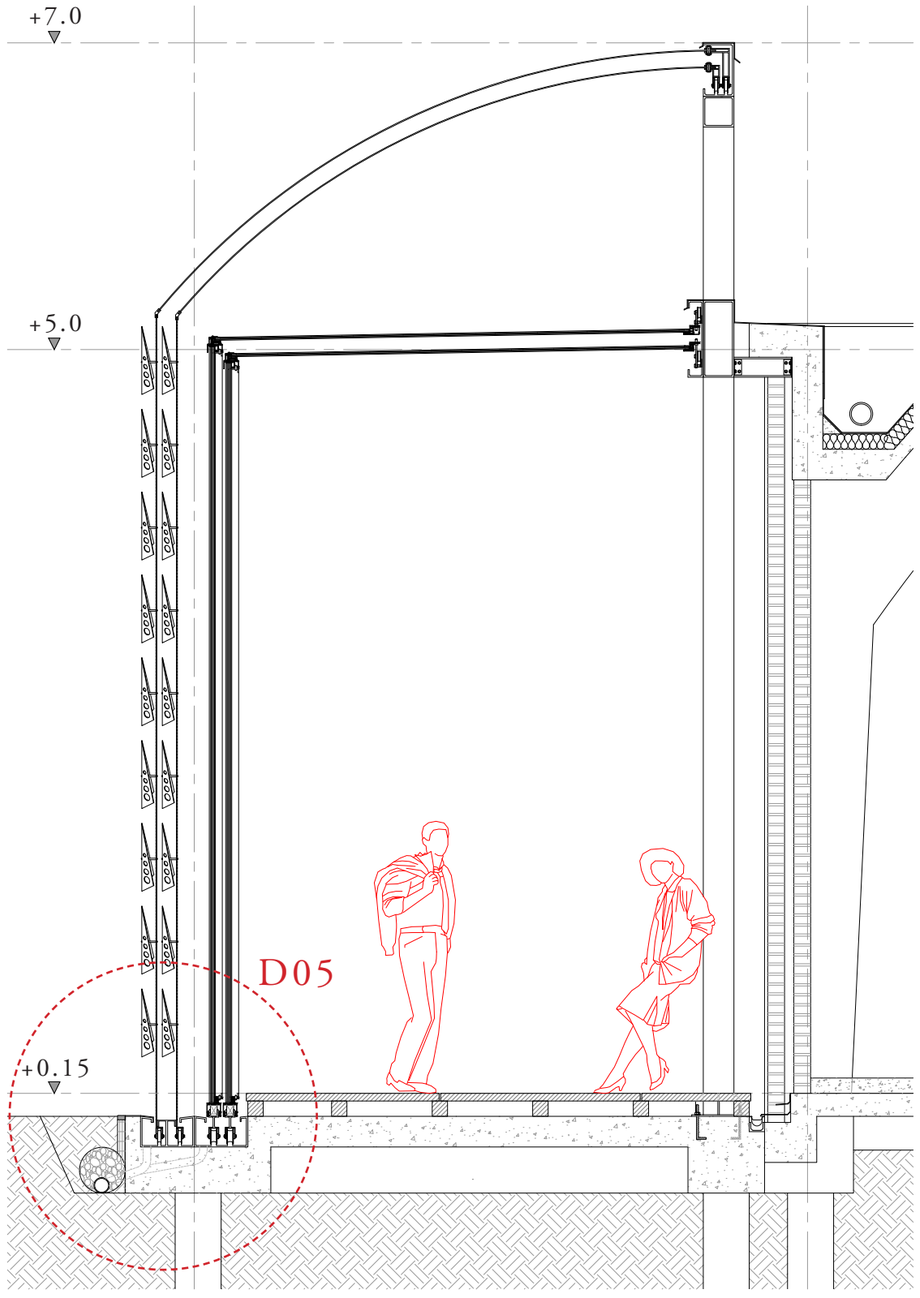


Section detail 1:40

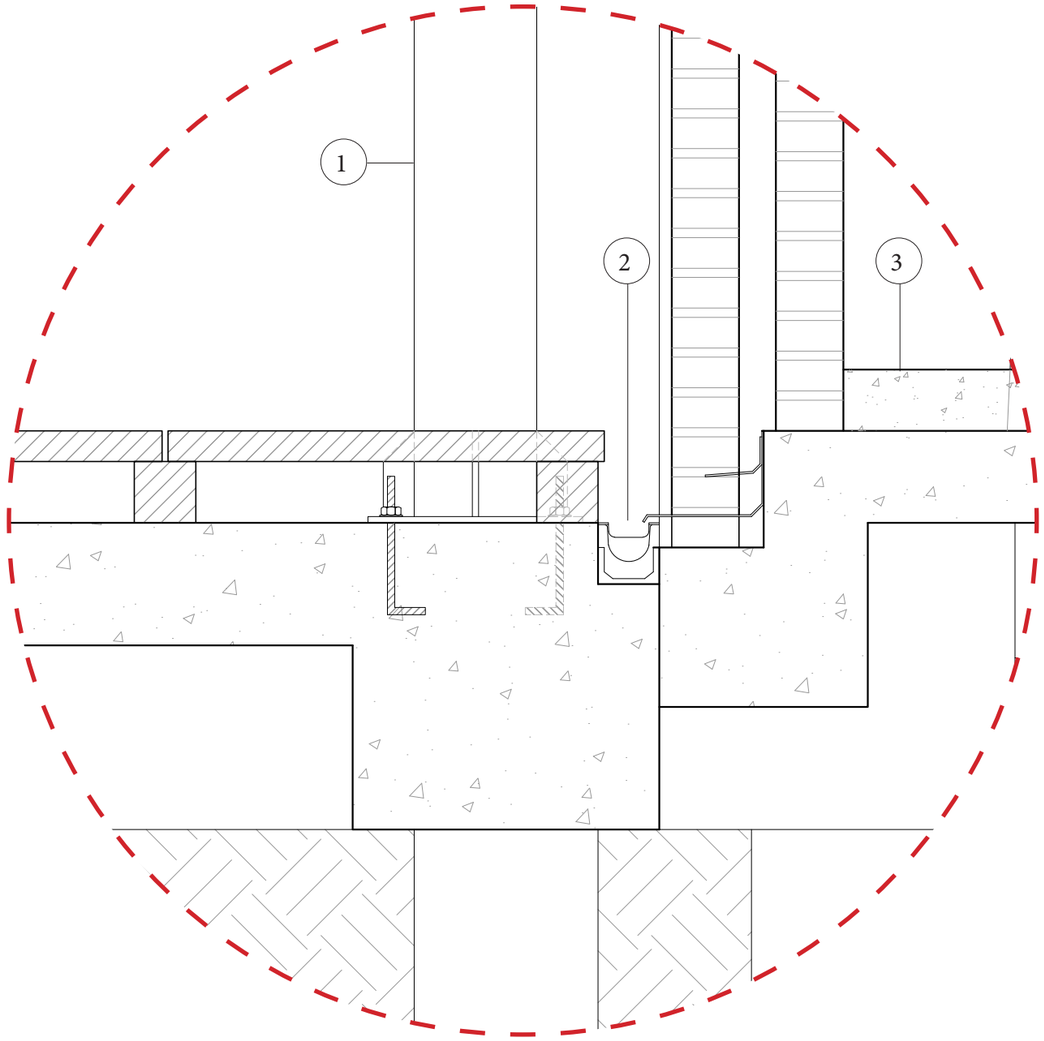


D05 1:10

1. Sliding sun shading panel
2. Sliding glass panel
3. Sub-grade drainage system
4. Wooden deck on new concrete foundation

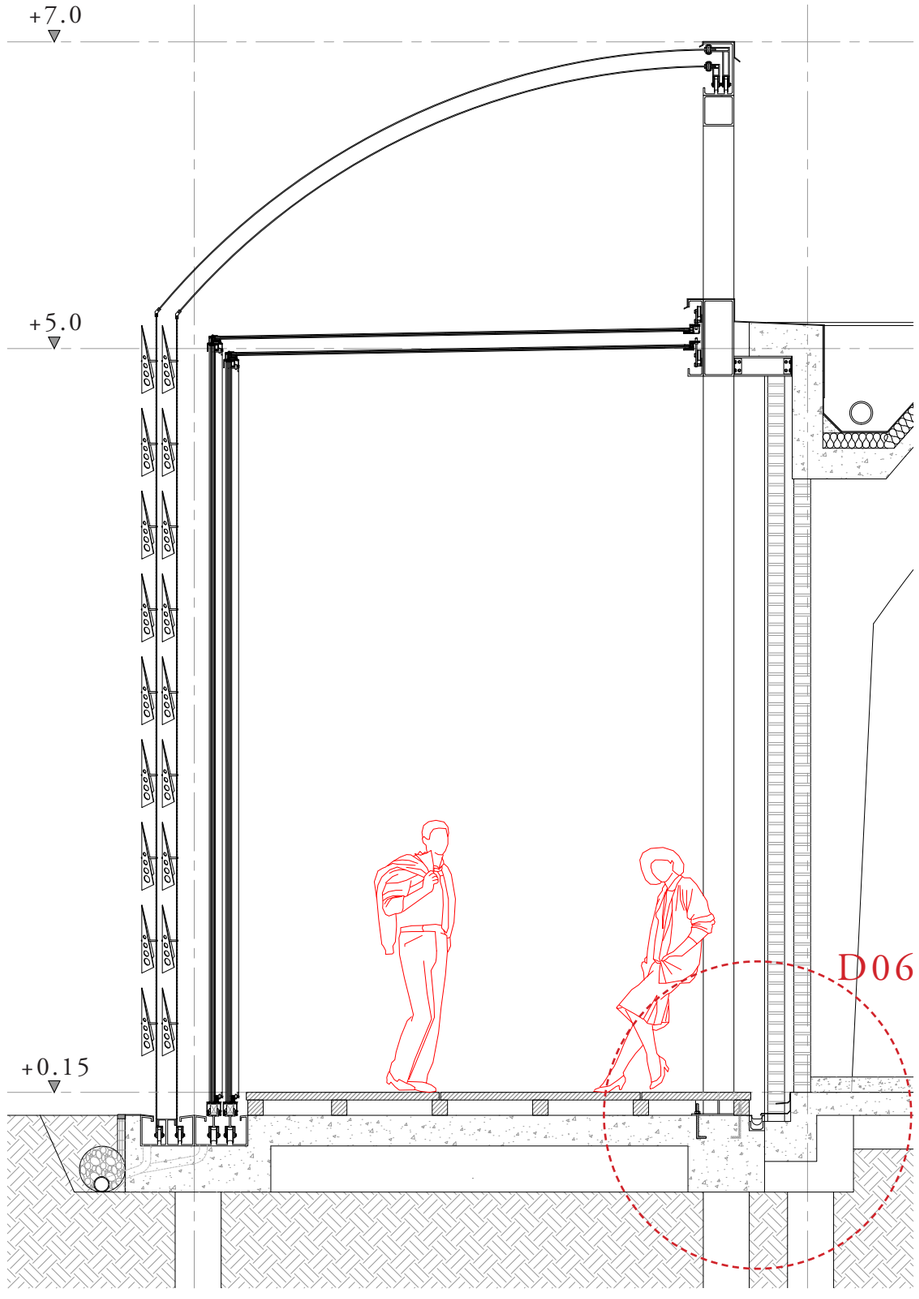


Section detail 1:40

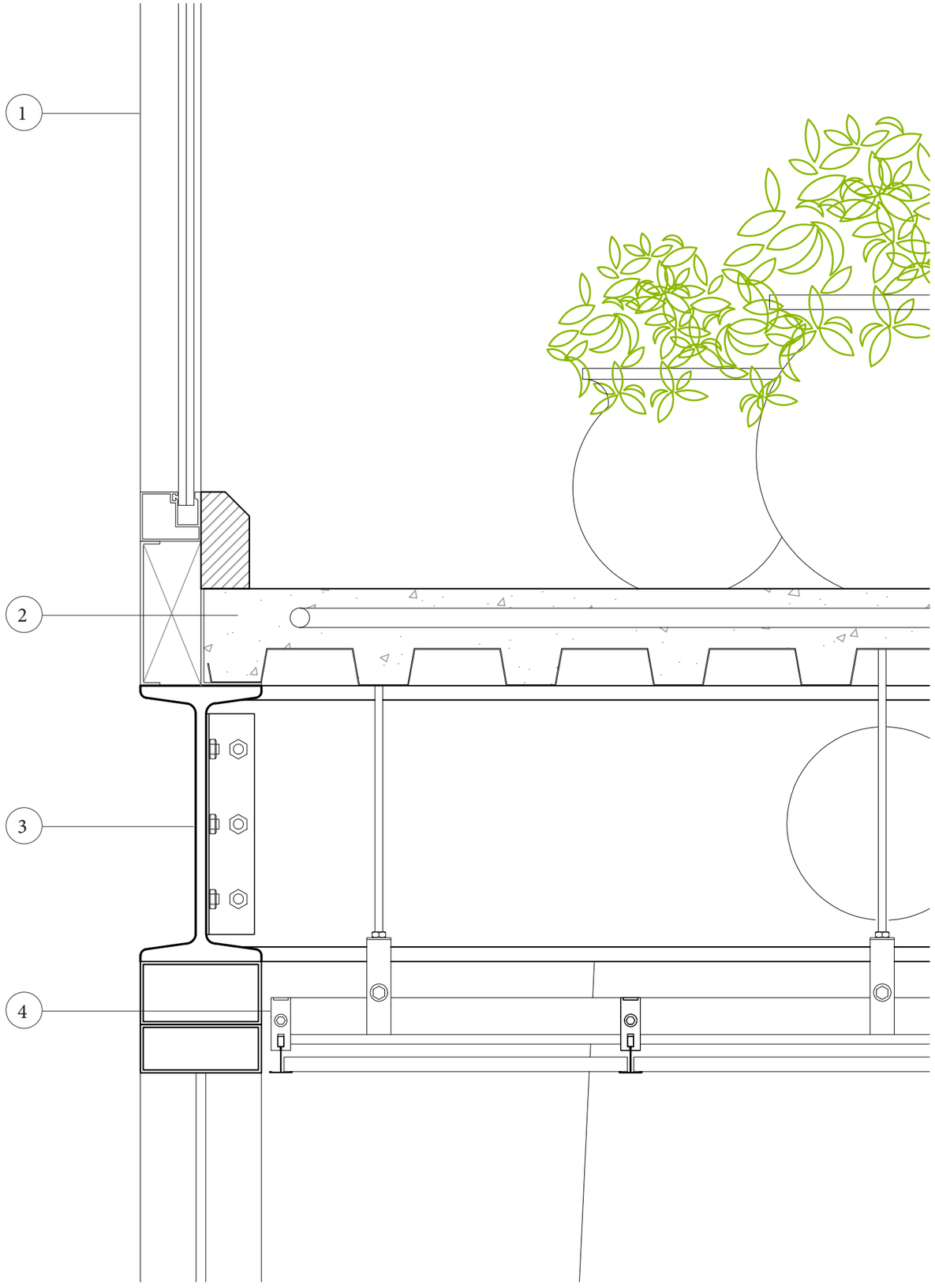


D06 1:10

1. 200x200mm rectangular hollow steel column with steel stiffeners at the bottom
2. Gutter
3. 100mm concrete floor with floor heating and cooling system

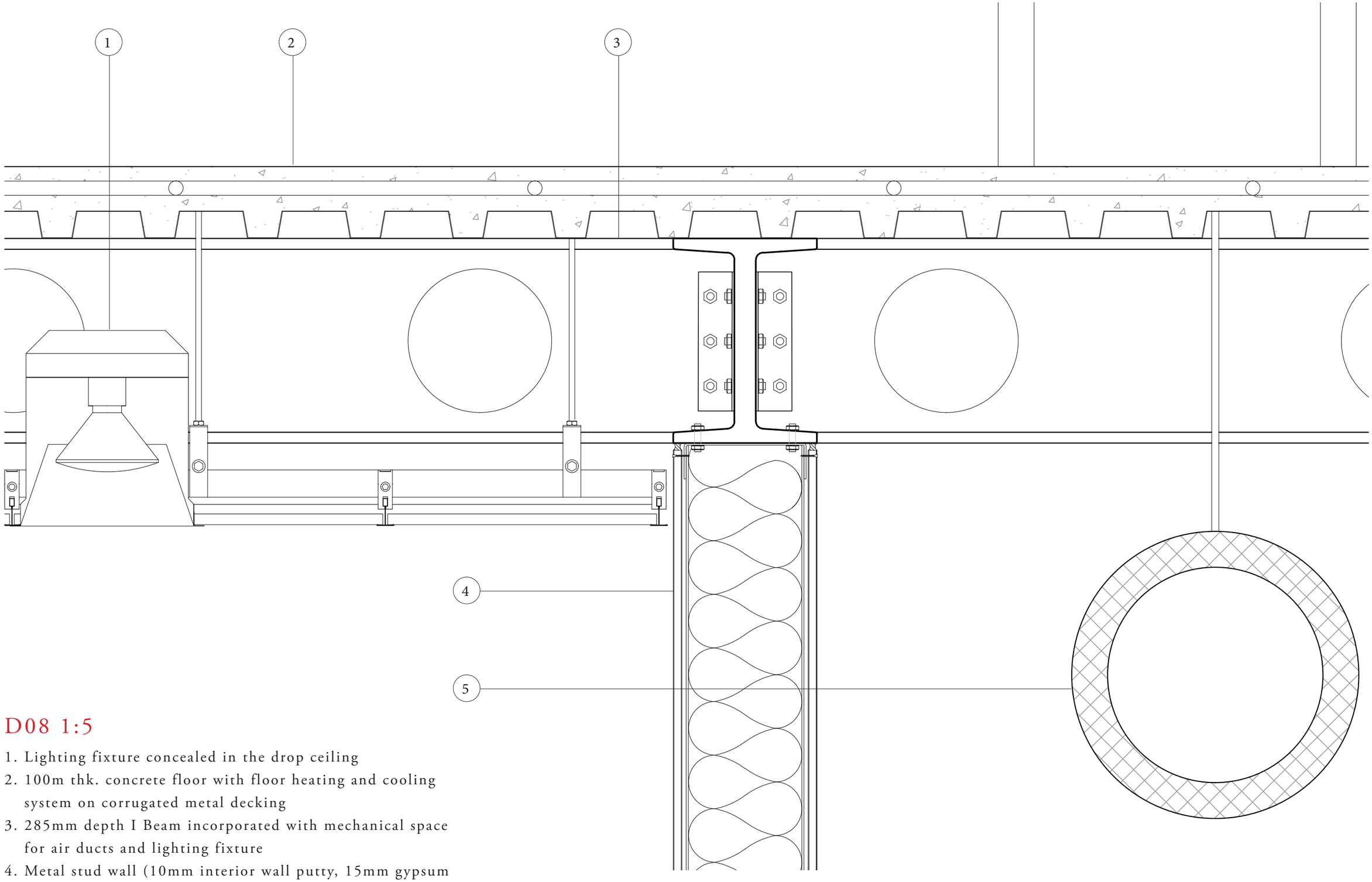


Section detail 1:40



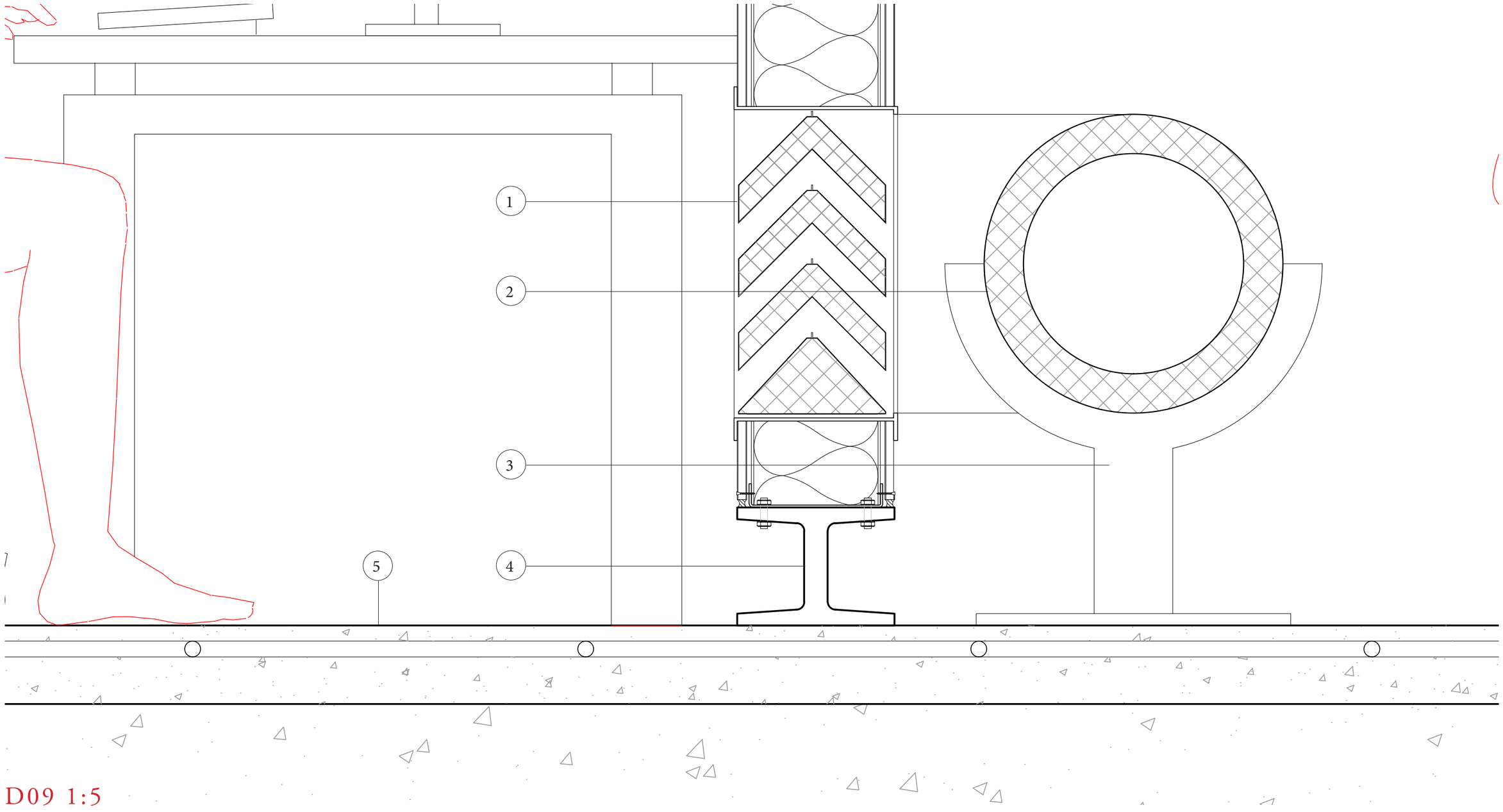
D07 1:5

1. Aluminum framing window strip
2. 100m thk. concrete floor with floor heating and cooling system on corrugated metal decking
3. 285mm depth I Beam incorporated with mechanical space for air ducts and lighting fixture
4. Hanging drop ceiling with sound absorbing panels



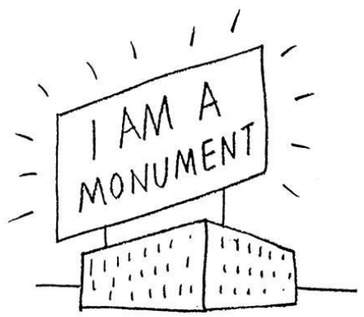
D08 1:5

1. Lighting fixture concealed in the drop ceiling
2. 100m thk. concrete floor with floor heating and cooling system on corrugated metal decking
3. 285mm depth I Beam incorporated with mechanical space for air ducts and lighting fixture
4. Metal stud wall (10mm interior wall putty, 15mm gypsum panel, steel stud, 150mm insulation)
5. 200mm dia. air exhaust duct wrapped with sound absorbing insulation



D09 1:5

1. Air inlet grille with sound insulation
2. 200mm dia. air supply duct wrapped with sound absorbing insulation
3. Metal support rack for the pipe
4. 150x200mm steel I beam
5. 100m thk. concrete floor with floor heating and cooling system casted on existing concrete floor



NON-INTENTIONAL COMMEMORATIVE VALUE

USE VALUE

RELATIVE ART VALUE

STRUCTURE / SKIN


Typical typology for 1950s


Skylight from the north


Roof skylights

Preservation

Repair

Intervention

Transformation / Reinterpretation

Heritage Position