

The Modulator.

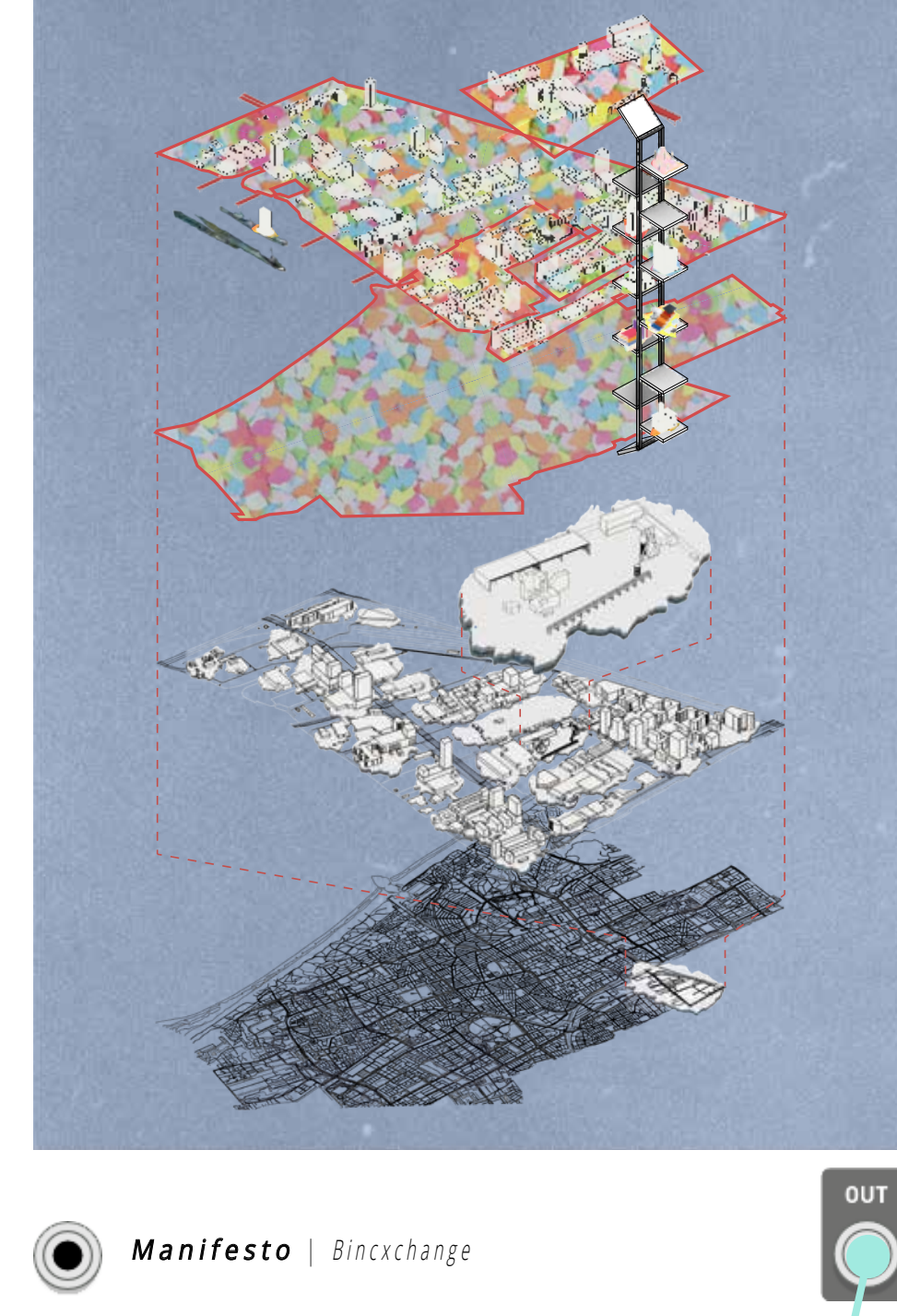
HAC Terrain, Binckhorst, the Hague

MSc 3 Public Building - Music Marvel - Bart Schipper - 4465741

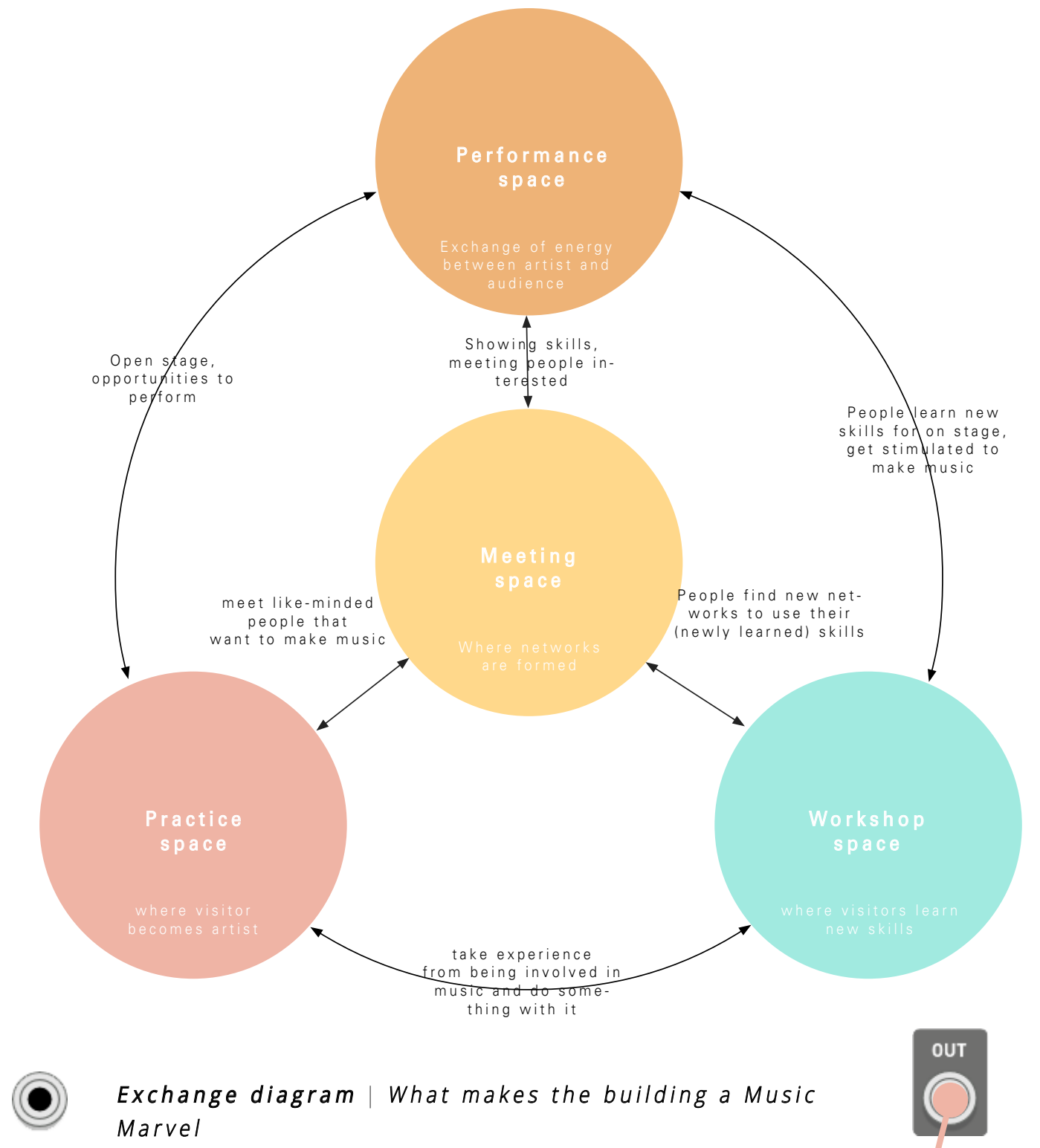
Realising exchange

Music is all about exchange. Exchange between artists on stage, exchange between artists when they collaborate something together and create something bigger than the sum of their parts, exchange between artist and audience, when the artist plays a good set and the room explodes. What Binckhorst is lacking is exchange. The area is very turned inwards and all the areas are fenced off and only take into account their direct surroundings. The Modulator seeks to bring exchange to the Binckhorst in the form of musical exchange. The building does this by facilitating many different scenarios of musical exchange, using the modular characteristics of containers, paired with elements native to the site, with a limited amount of space and a limited amount of elements the Modulator can realise scenario's from small scale concerts all the way to a 4-stage festival.

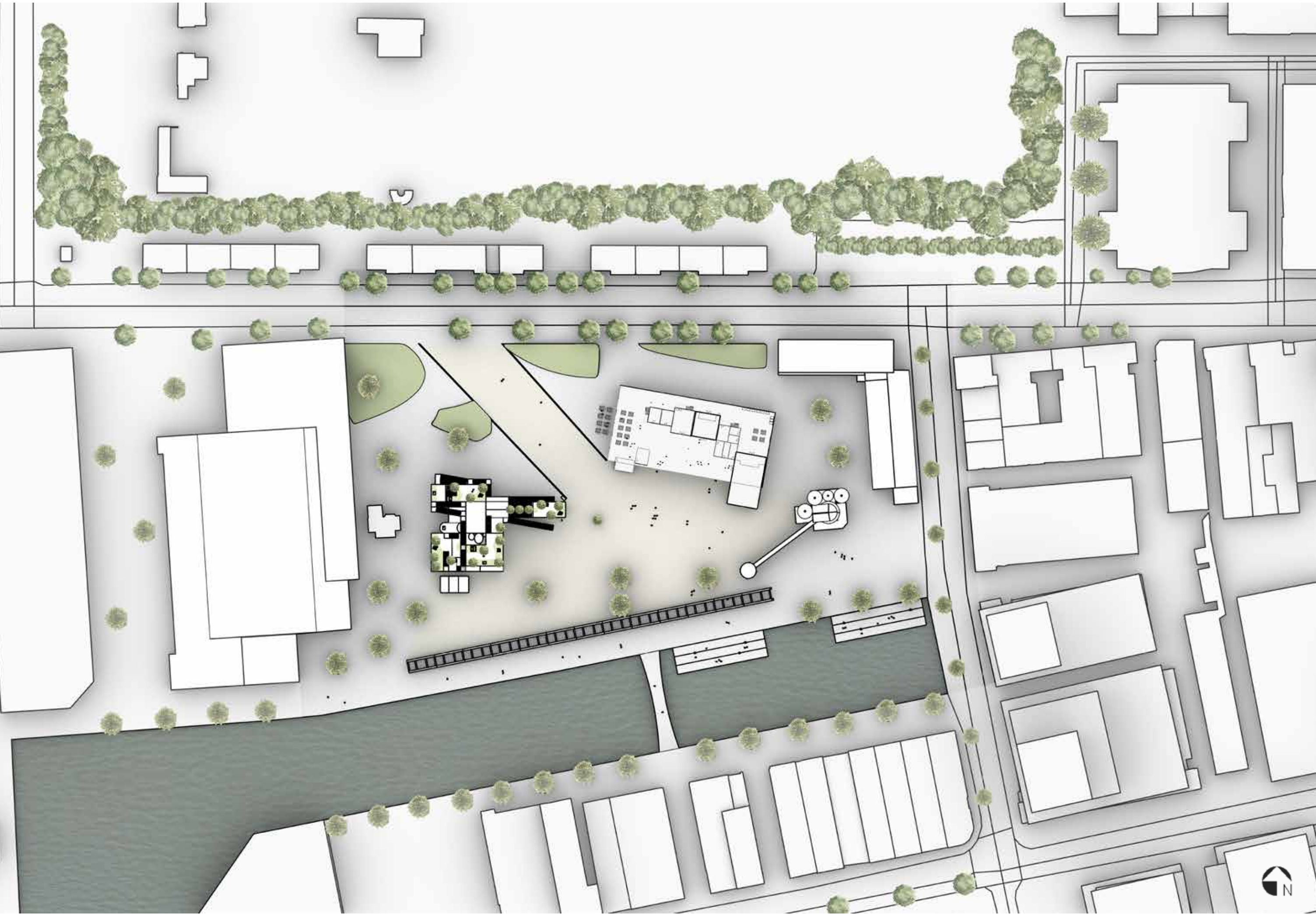
BINCXCHANGE



Manifesto | Binckexchange



Exchange diagram | What makes the building a Music Marvel



SITE PLAN
▲ 1:1.000

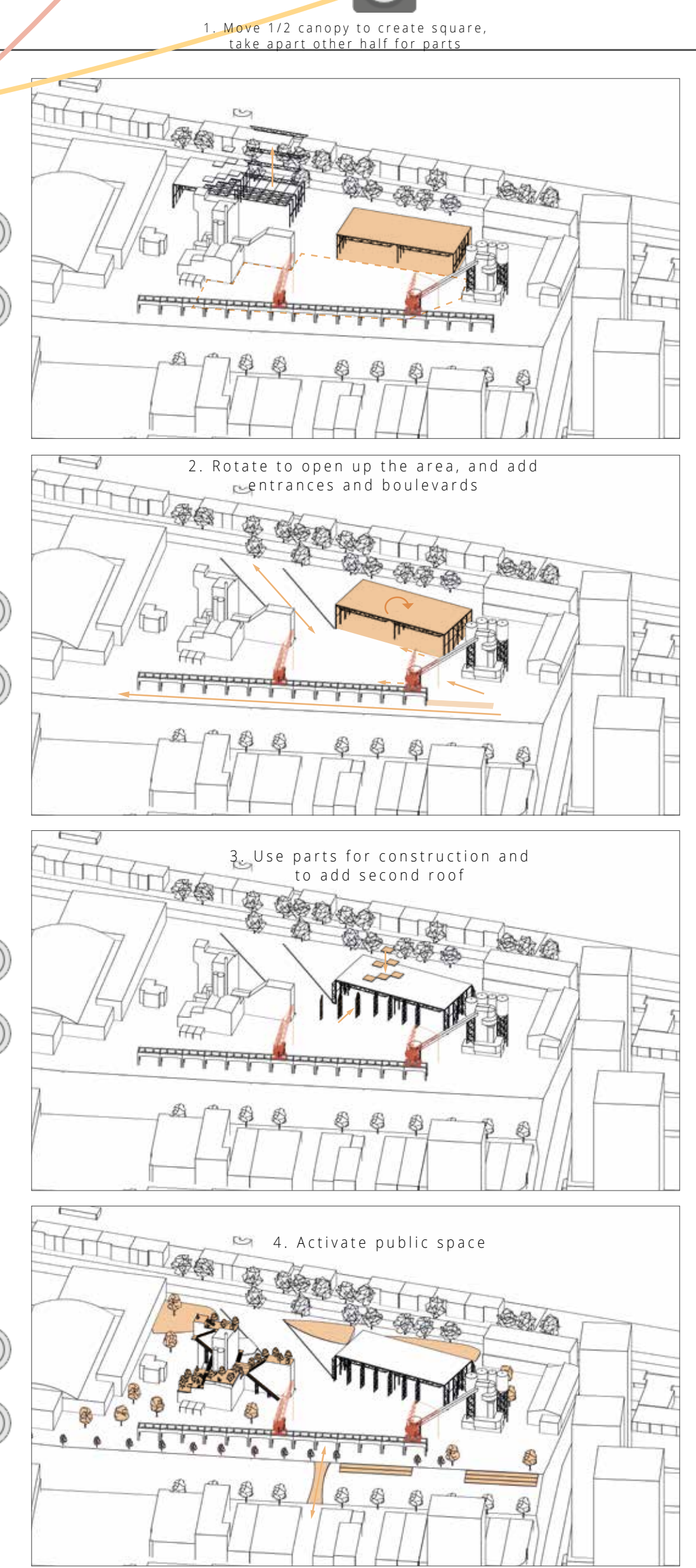
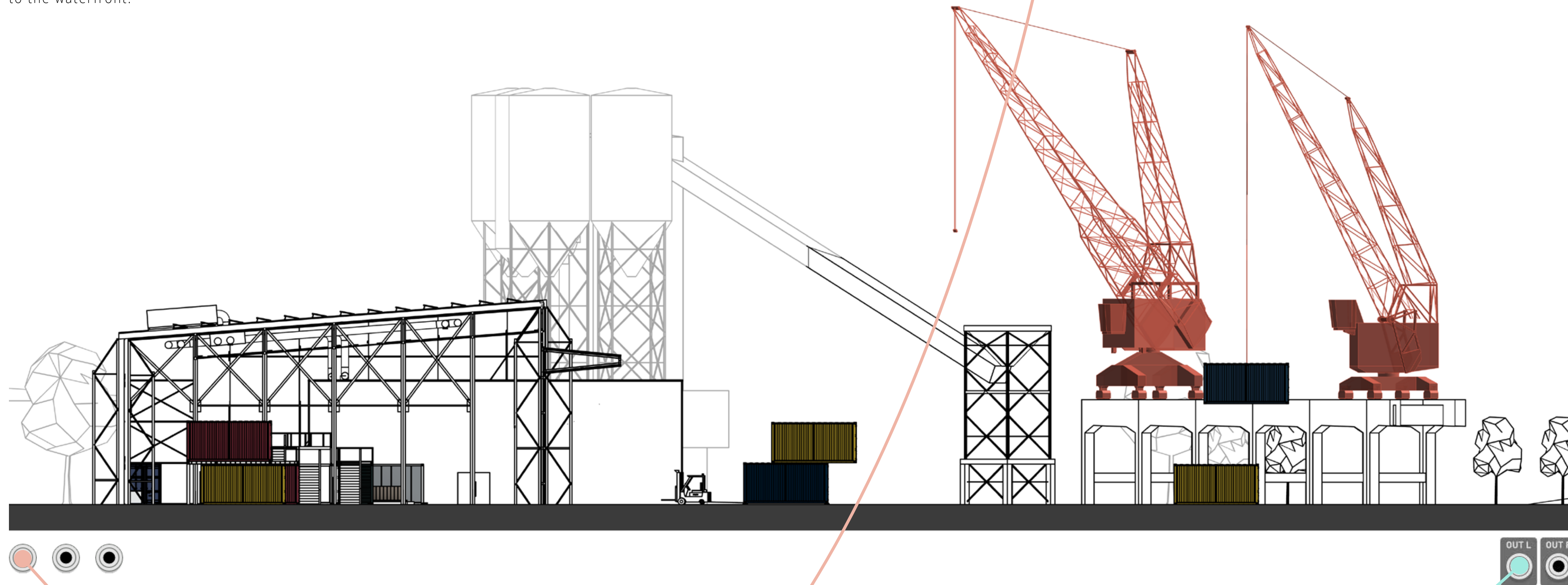


Urban PLAN
▲ 1:5.000

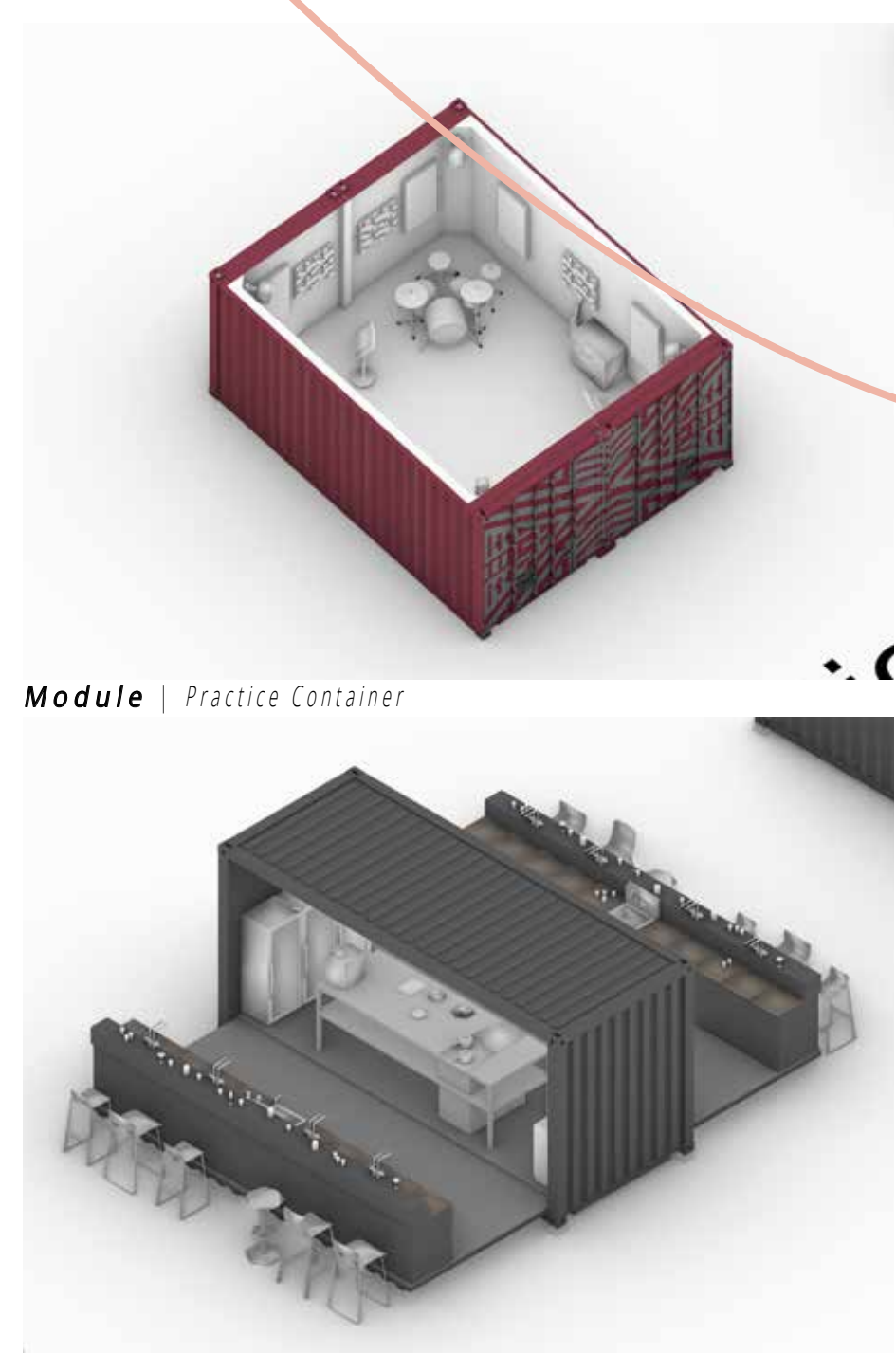
THE SYSTEM OF MOVEMENT

The elements that make the different compositions possible

To make the building changeable, and make the different scenarios of exchange possible, the building uses five elements. The combination of these elements and how they work together is called the 'System of Movement'. The system consists of containers housing the functions, cassettes to move them, cranes to lift them, and openable facade to allow the building to be permeated, and a floor to support everything. Together these elements allow for freedom of movement and placement everywhere from the building to the waterfront.



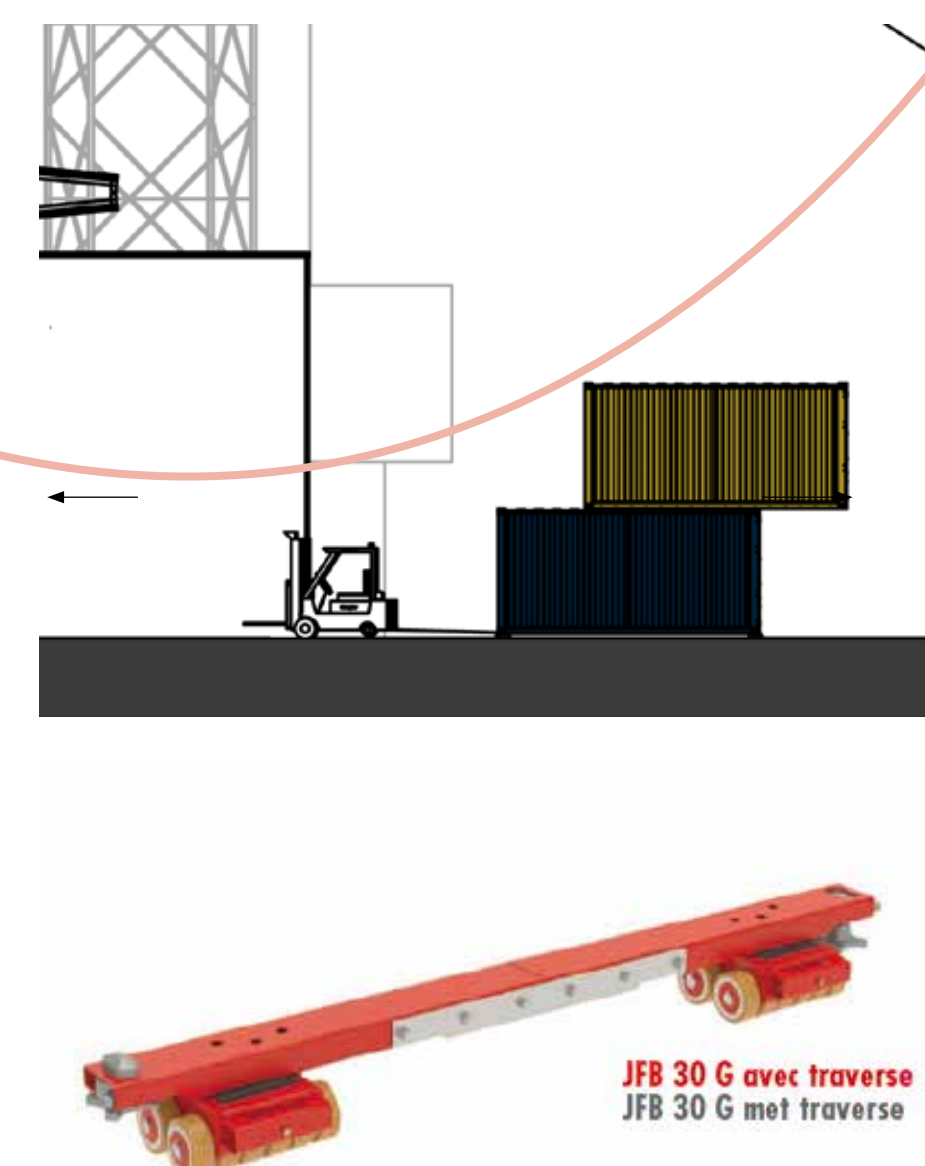
STEP 1. THE MODULES



Containers Housing the Modules

All the functions of the building are housed in container modules. This way they can be moved and arranged to create different compositions. The containers can also be closed and used to influence the space in the building, for example by creating stages or barriers.

STEP 2. MOVING THE MODULES



Transport cassettes

The transport cassette system is used to move the containers around the building and site. The containers are raised using pneumatic pumps, after which the cassettes can be put under. The containers can then be moved by a forklift.

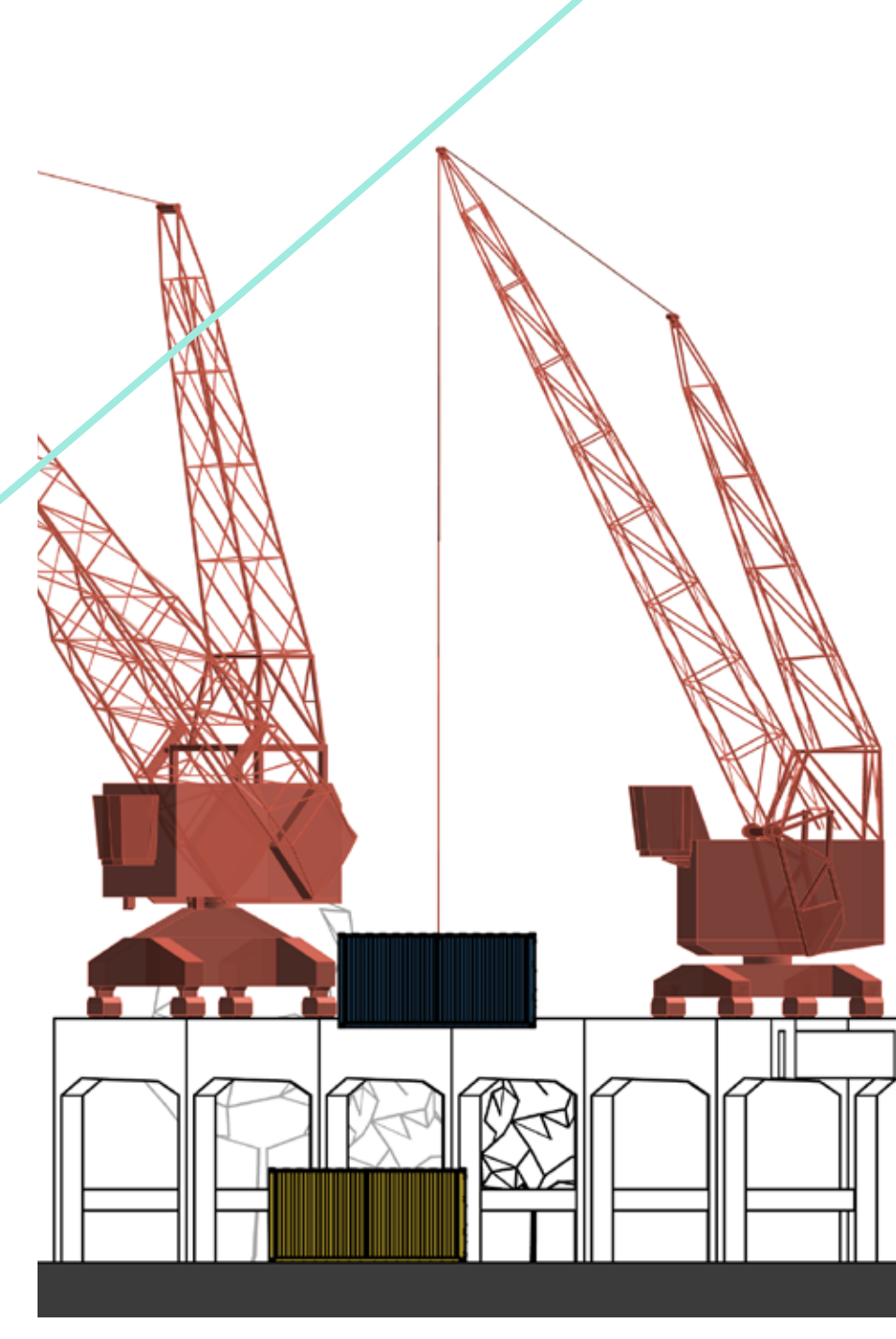
STEP 3. OPENING THE FACADE



Openable facade | Bifold facade system

Openable facade to allow containers to pass
To be able to open the facade and allow containers to pass, the south facade has bifold doors along the whole length. These can also be used to completely open up the building, and make the hall and square on big space for even larger concerts!

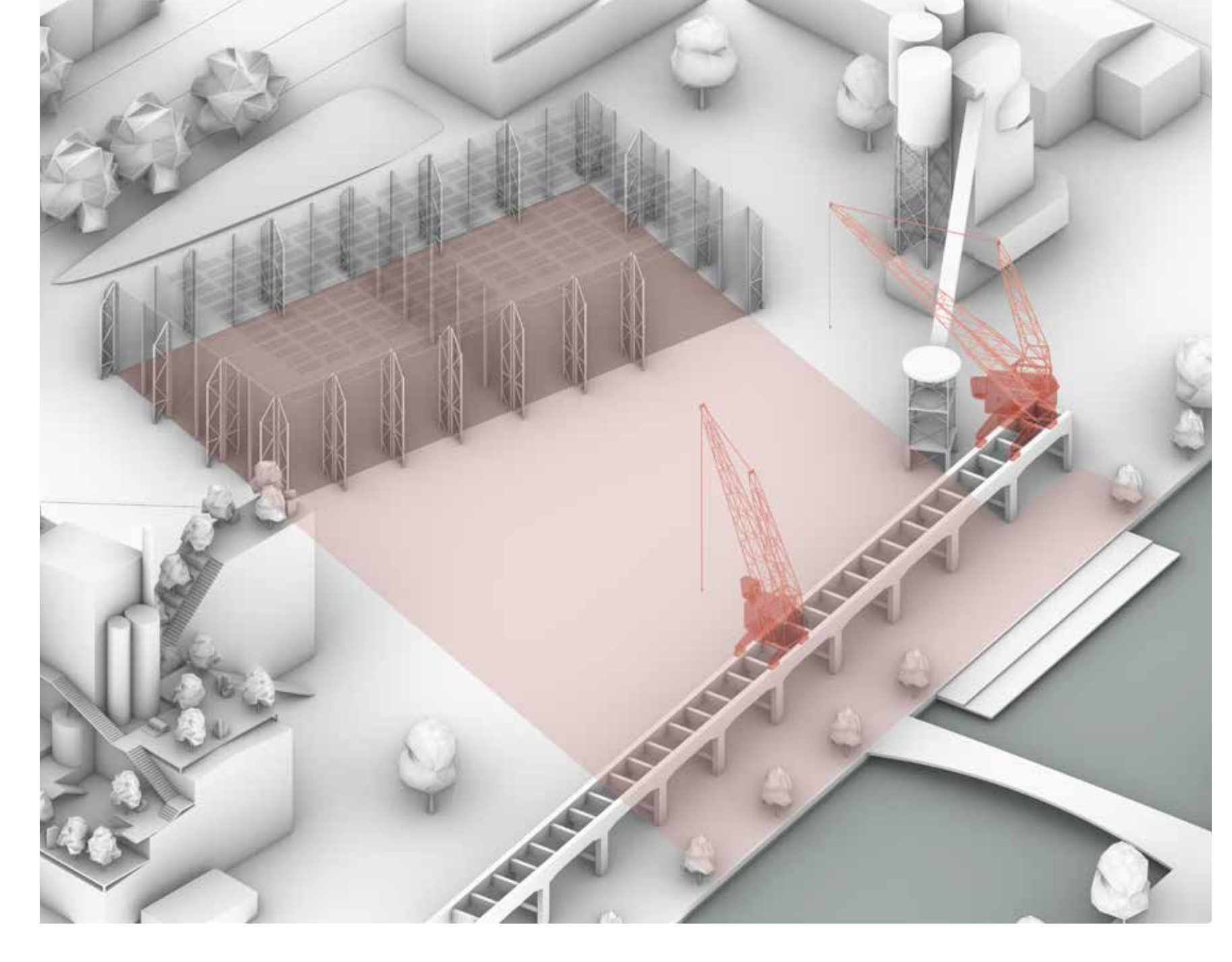
STEP 4. LIFT!



Cranes | Carrying capacity 7 tons

Utilising the existing cranes
The HAC terrain already features two cranes from its previous function as a cement factory. These cranes can carry up to 7 tons. These are used to stack the containers, and also to hang up elements for outdoor activities.

STEP 5. PLACE!

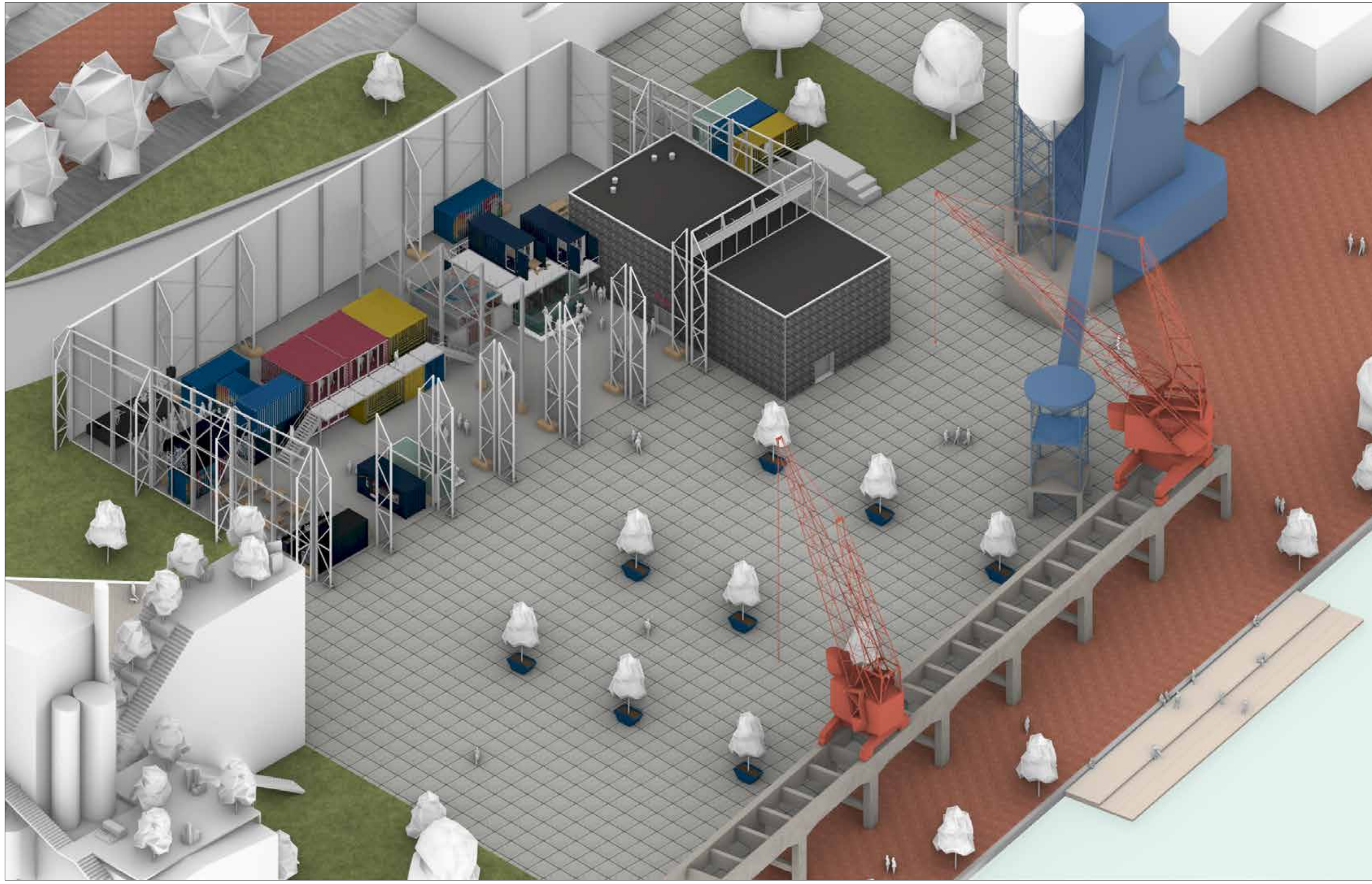
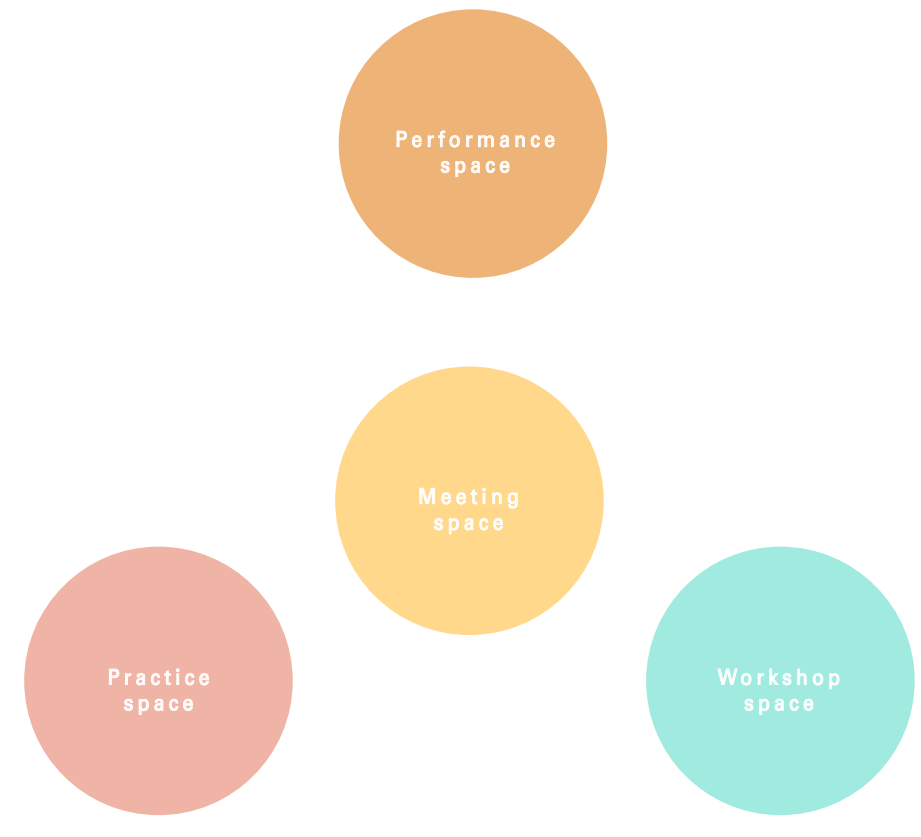


Place! | The 'playground' of the building

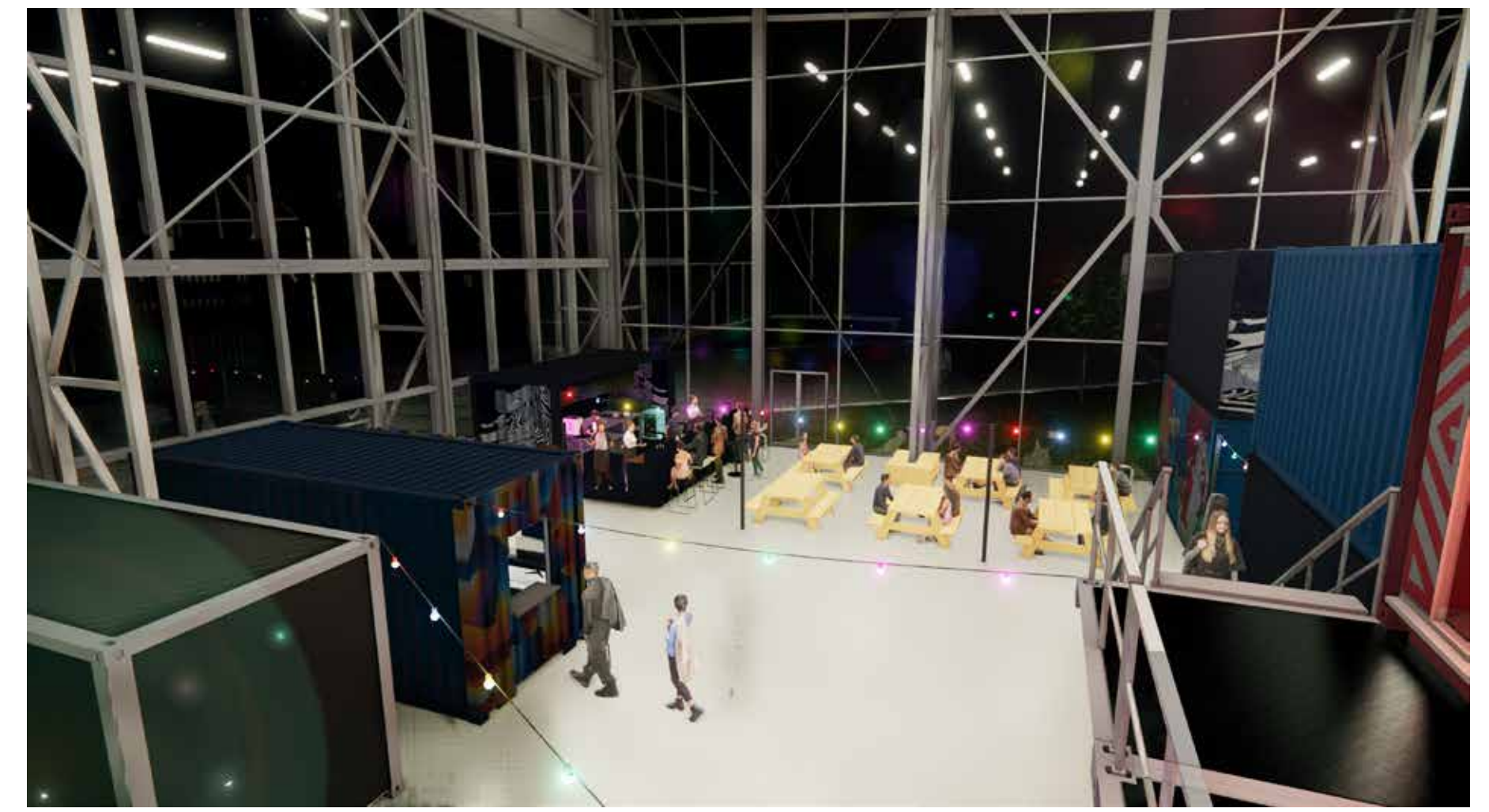
Place containers to create different compositions
The floor of- and square in front of the building are the playground of the design. These are made to support the heavy weight and infrastructure (electricity, sewage) needed to support the containers. The containers can be placed anywhere in this area.

Three variants

1. Performance, practice, workshop and meeting space



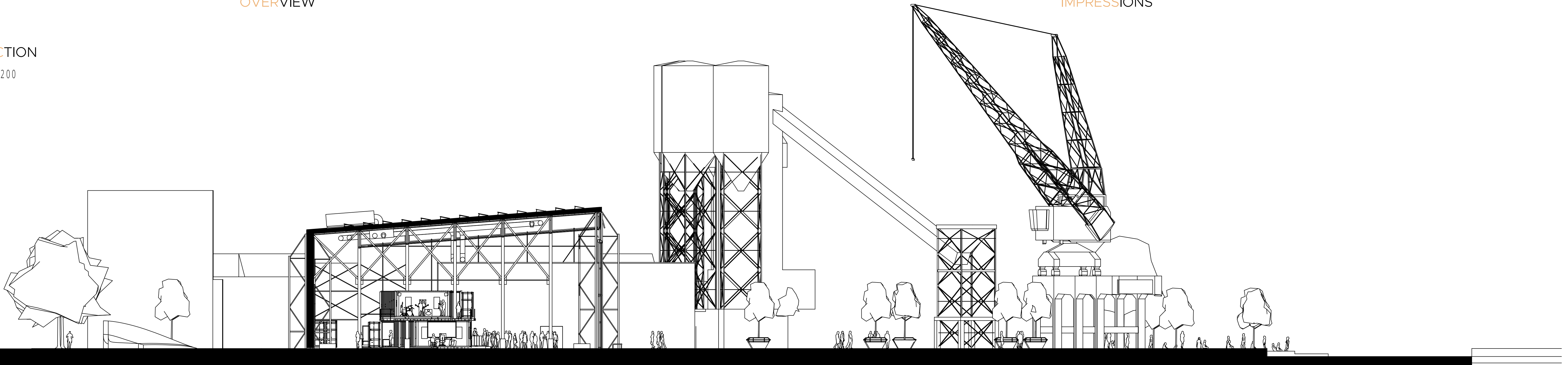
OVERVIEW



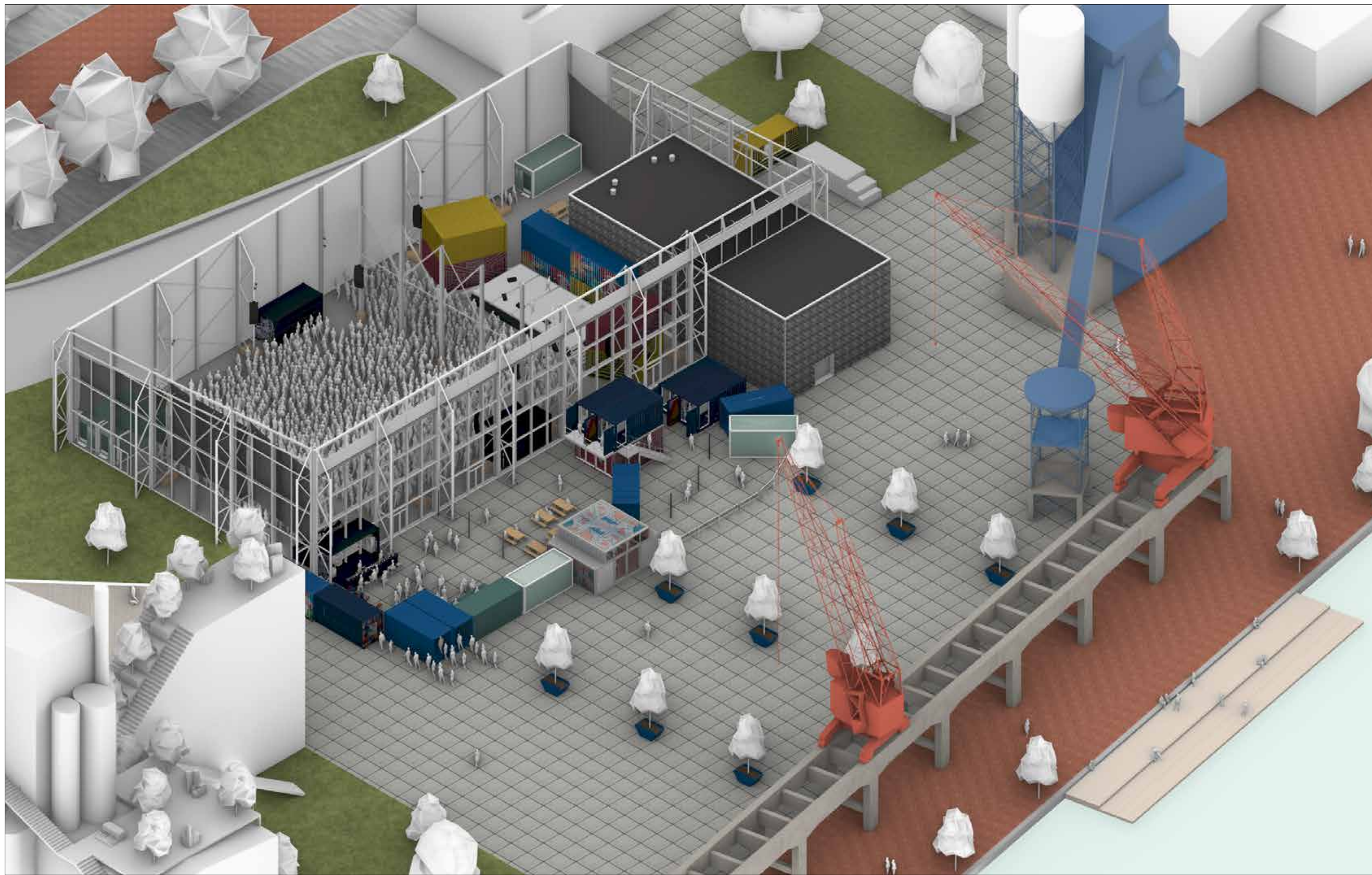
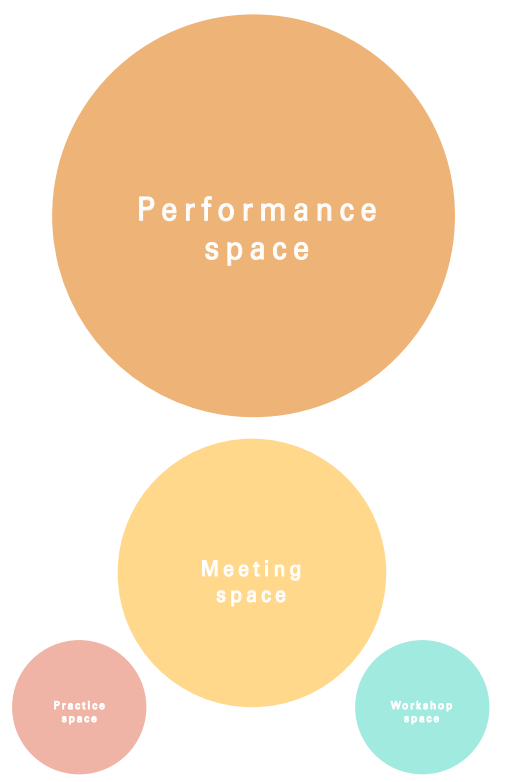
IMPRESSIONS

SECTION

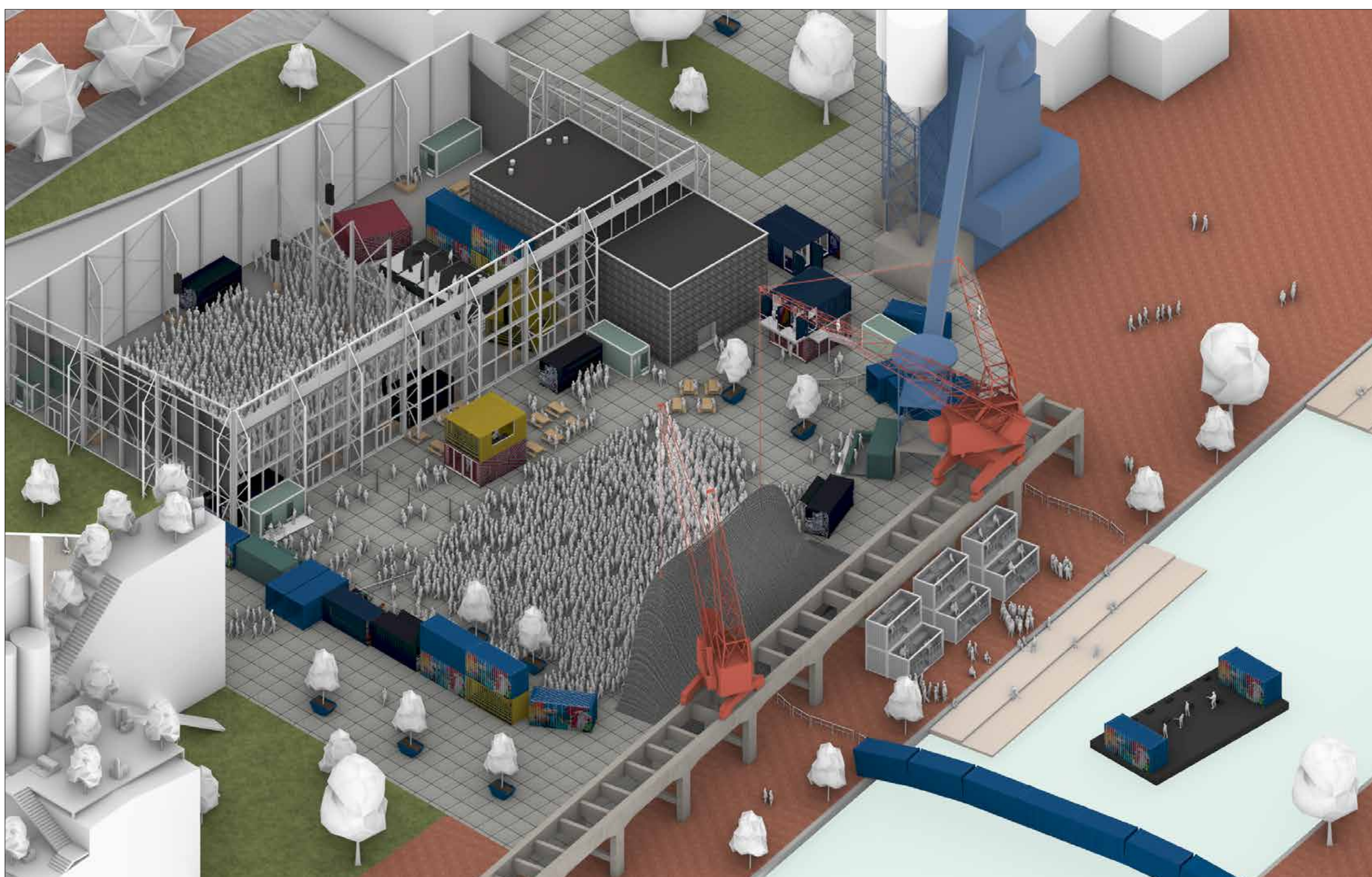
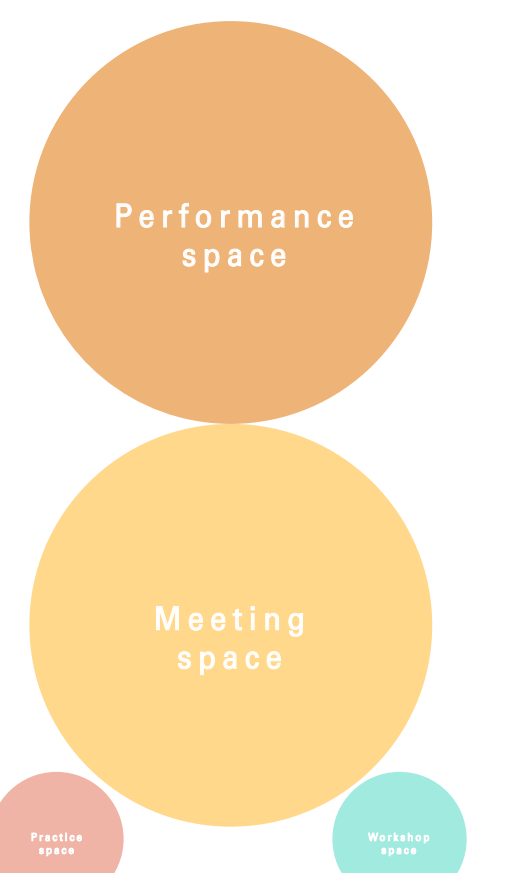
▲ 1:200



2. Big hall indoor concert



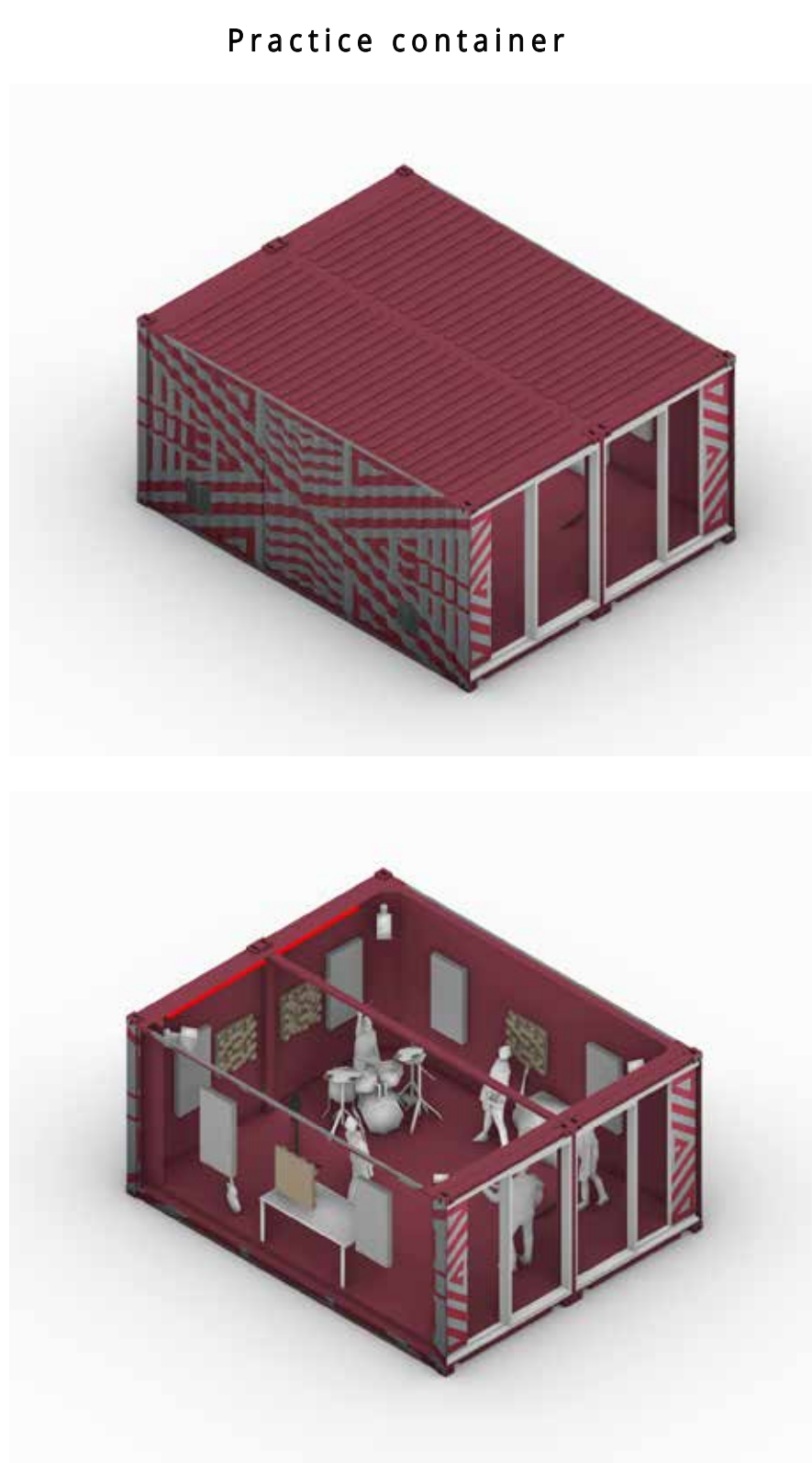
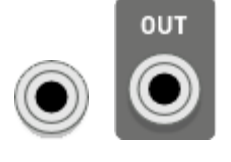
3. 4-stage festival



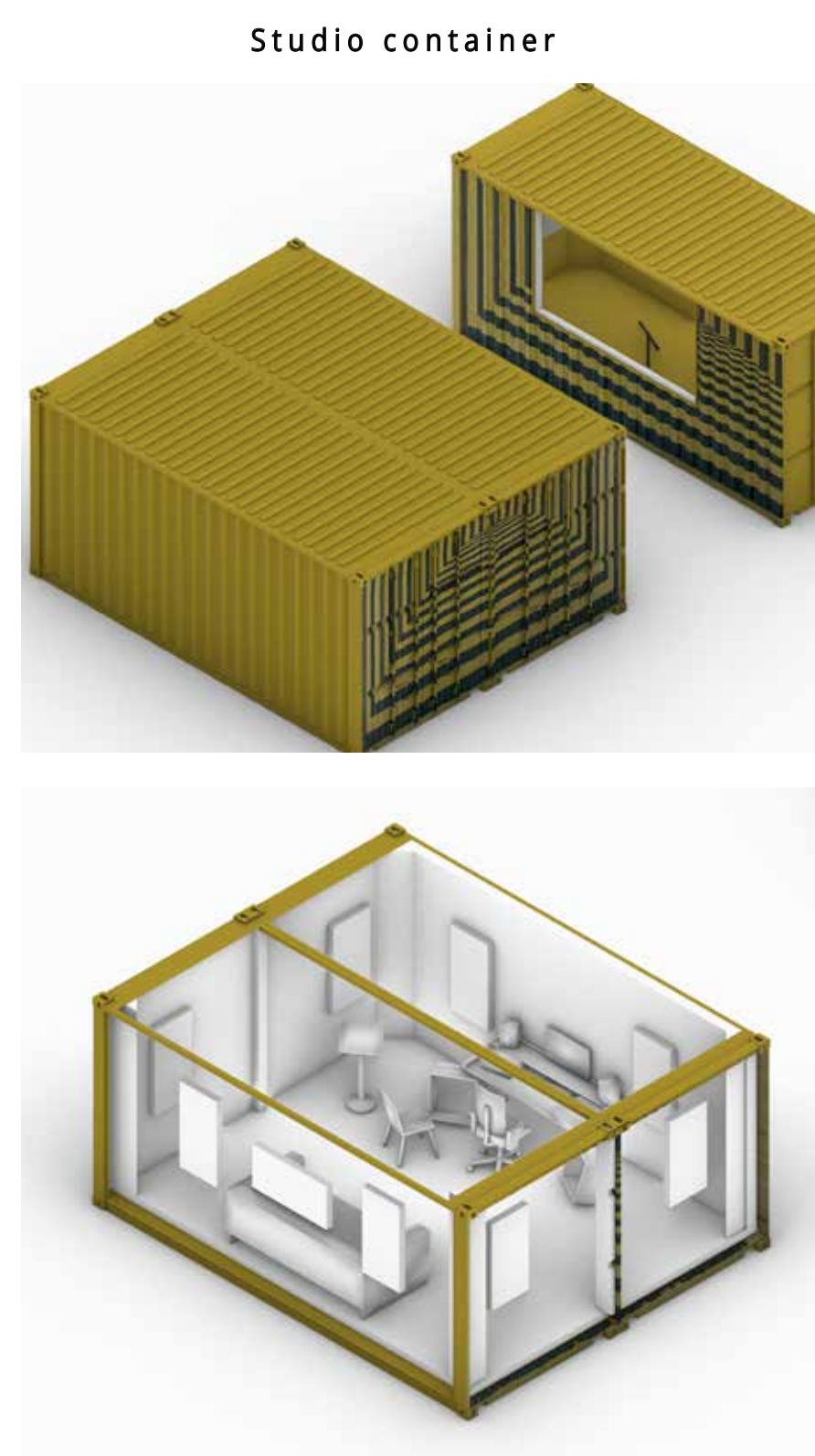
Modulating exchange

THE MODULES

Practice space
where visitor becomes artist

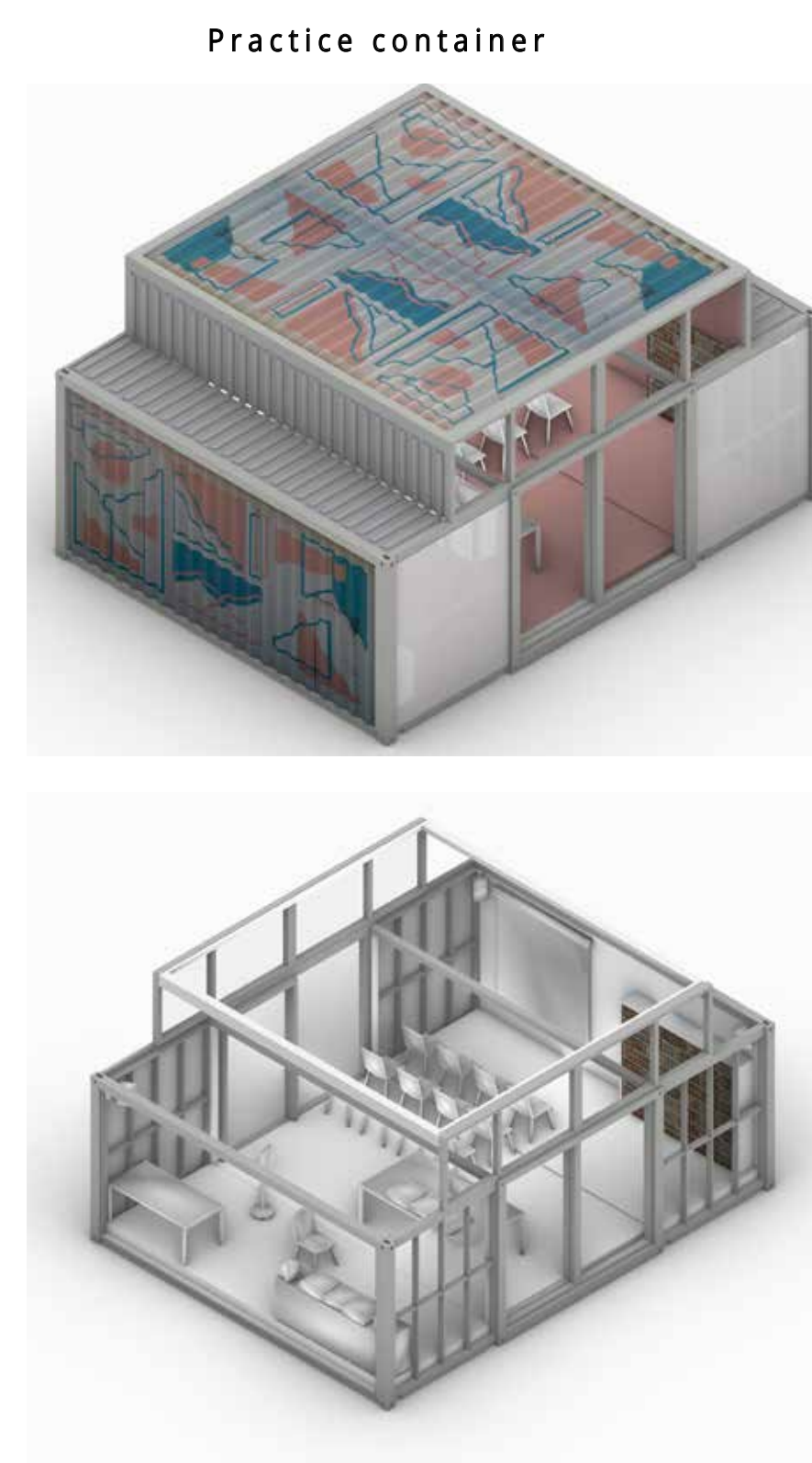


type | Re-used double container
area | 29 m²
Req. | Soundproof

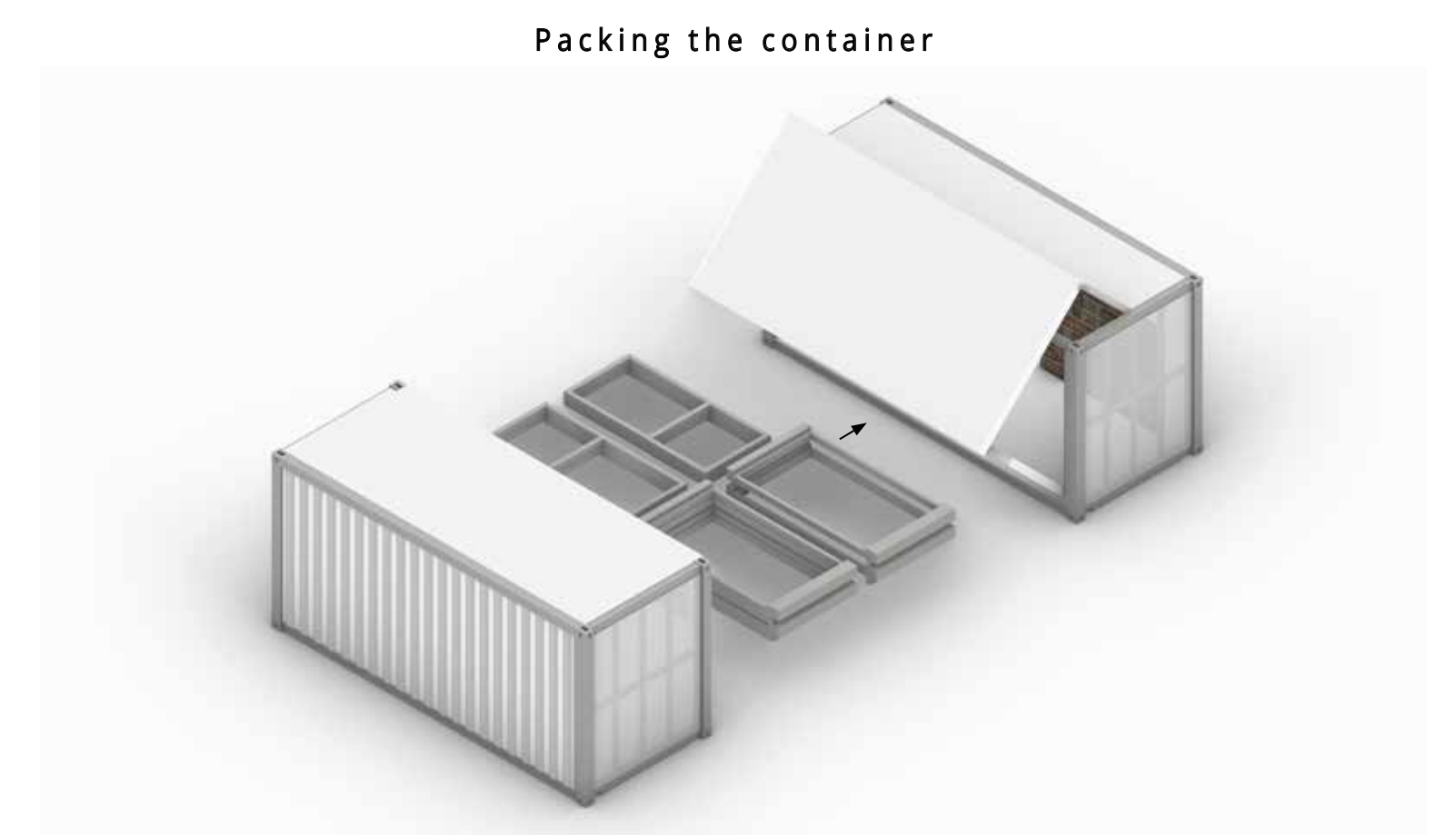


type | Re-used double container
area | 29 m²
Req. | Soundproof

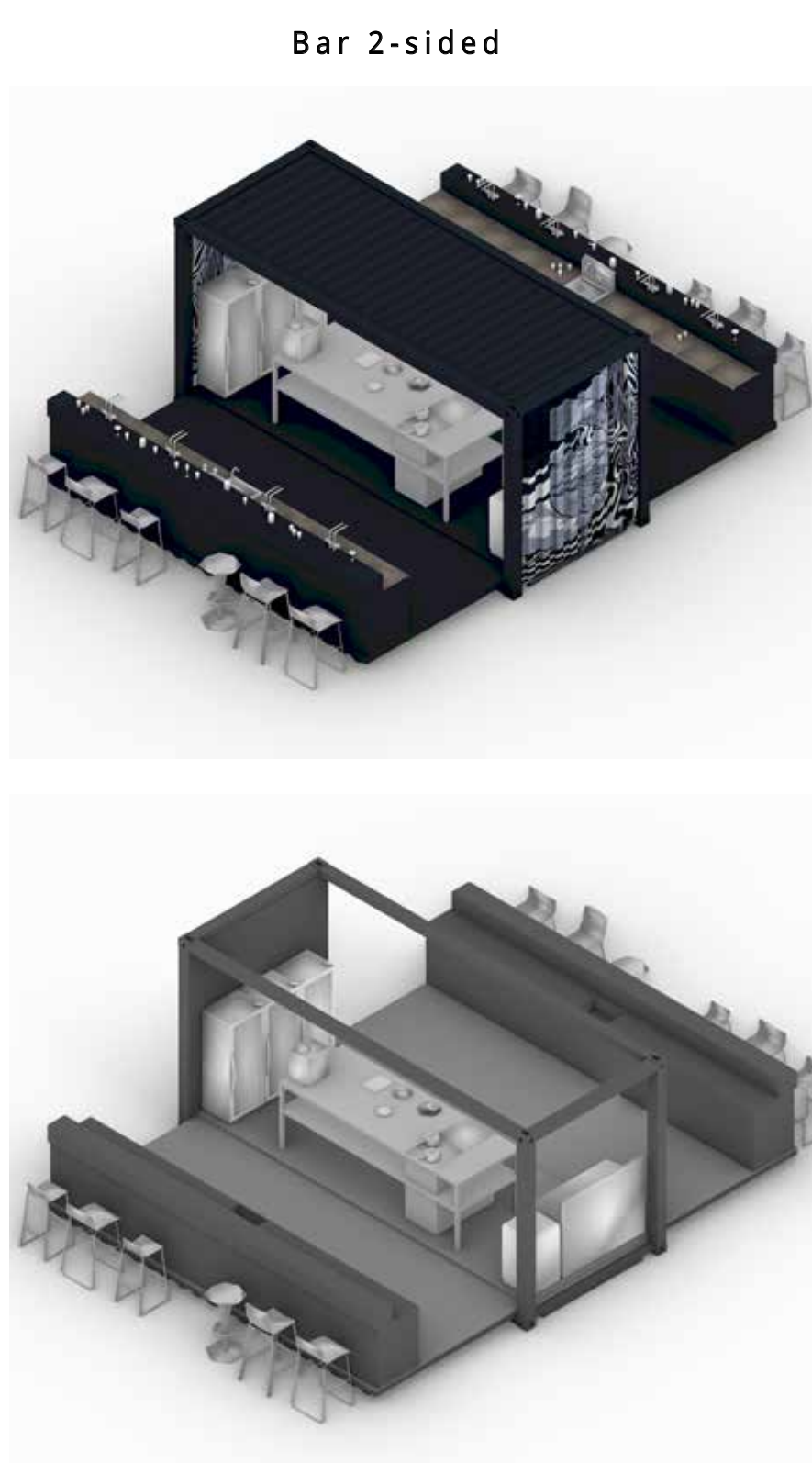
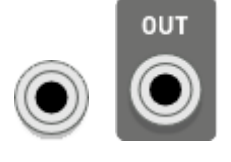
Workshop space
where visitors learn new skills



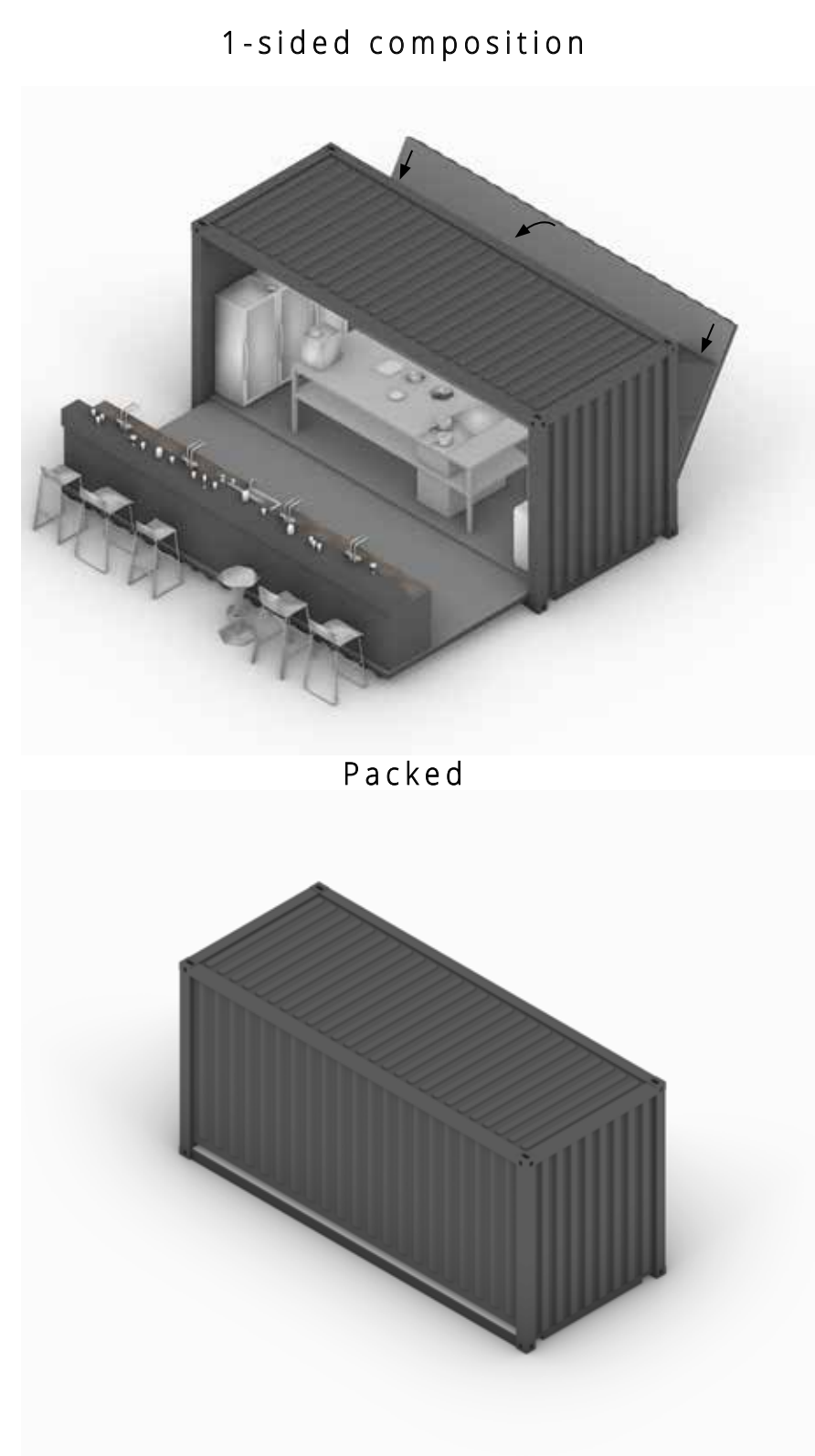
type | Building container
area | 45 m²
Req. | Packable



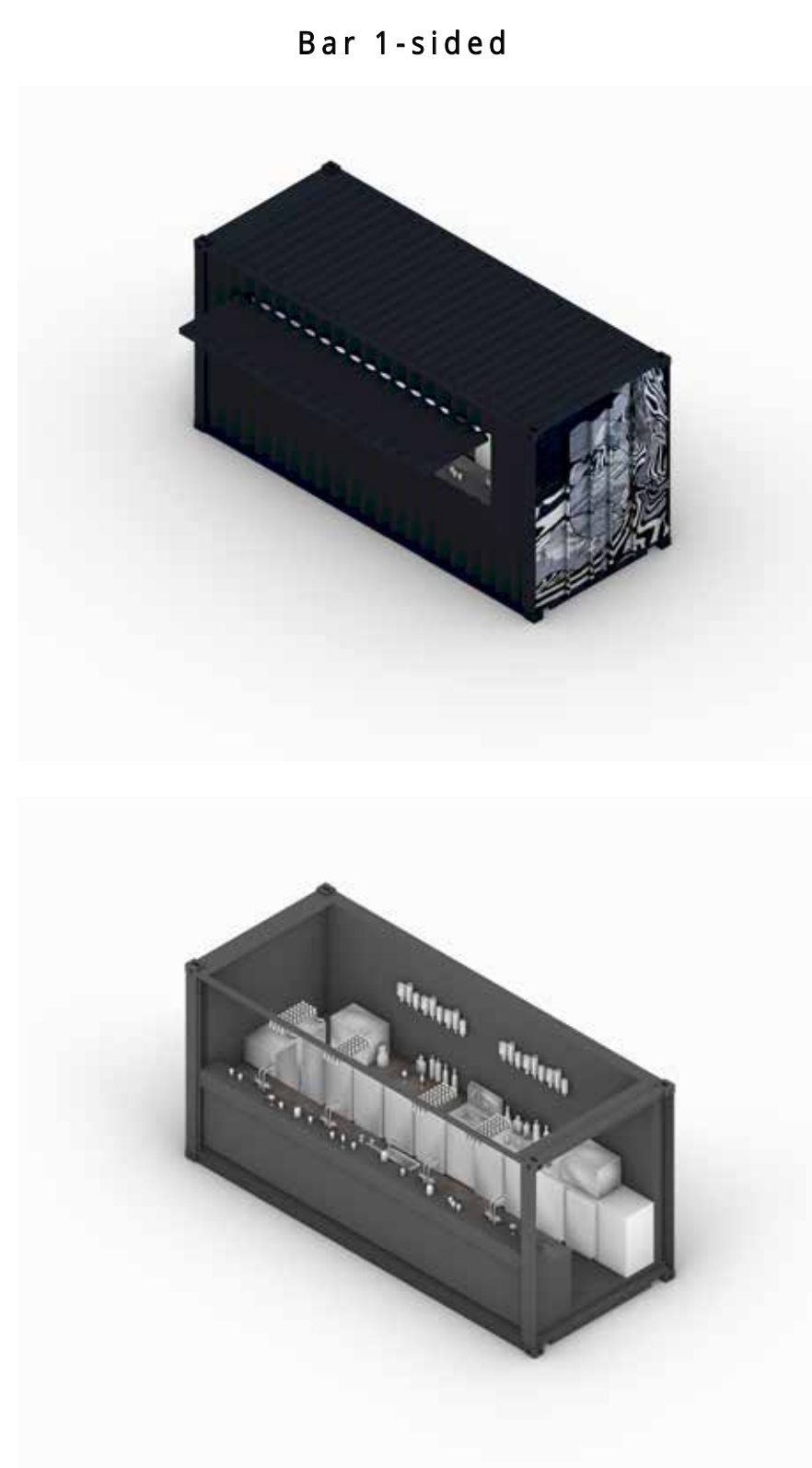
Meeting space
where networks are formed



type | Building container
area | 40 / 26 m²
Req. | Packable, water & sewage connection

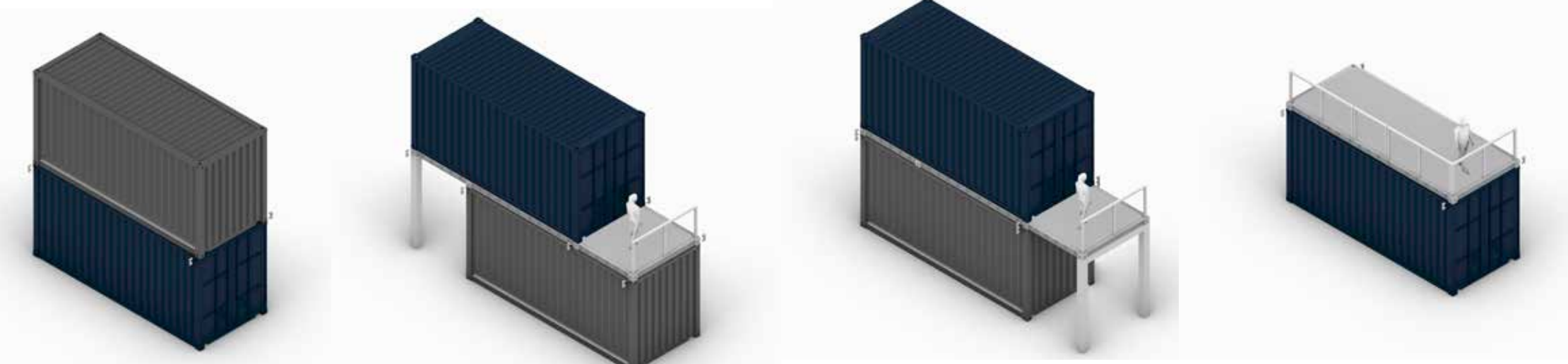
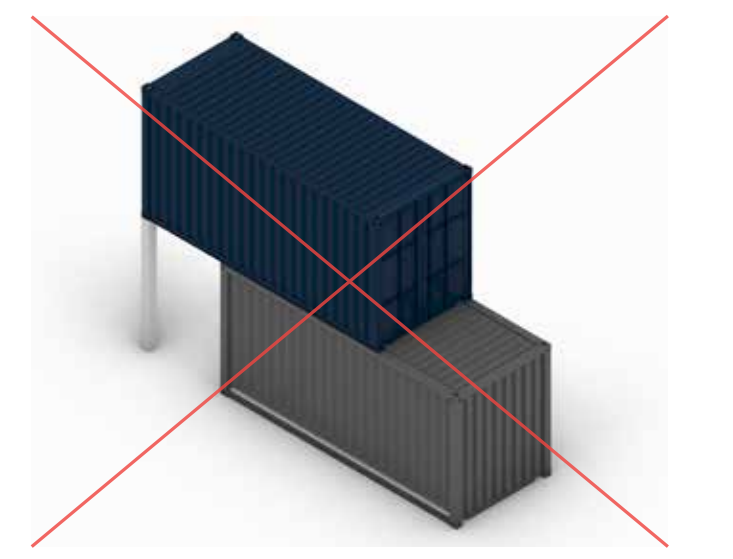
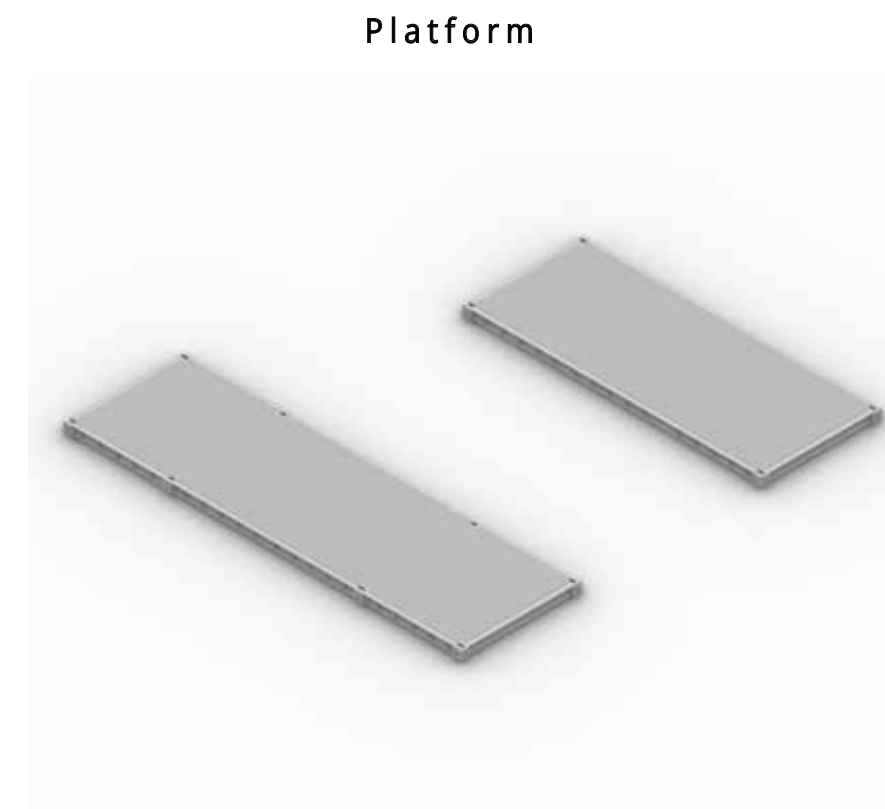


type | Building container
area | 40 / 26 m²
Req. | Packable, water & sewage connection

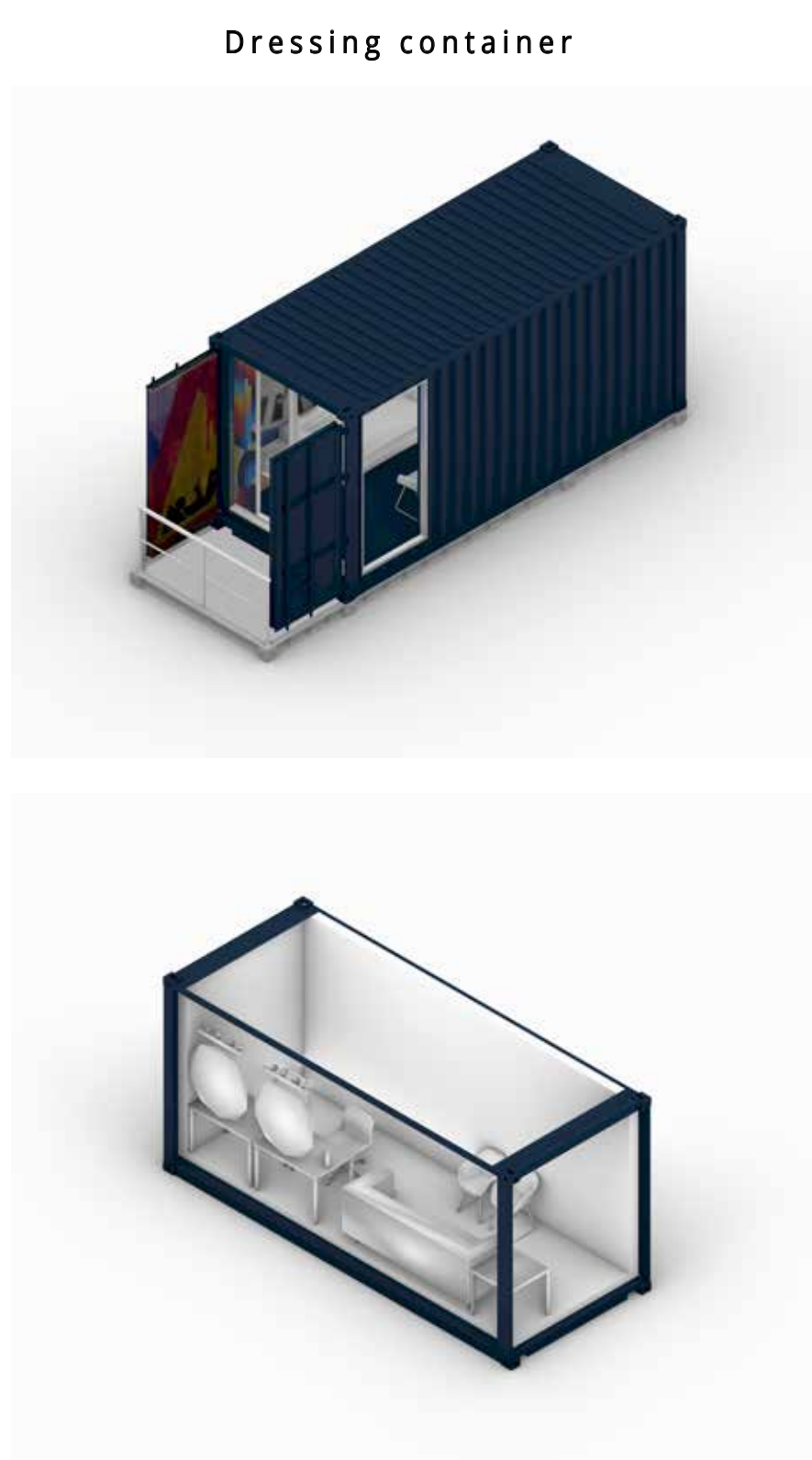
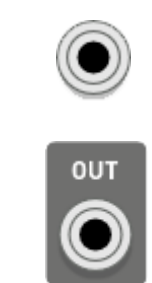


type | Re-used container
area | 14 m²
Req. | Water & sewage connection

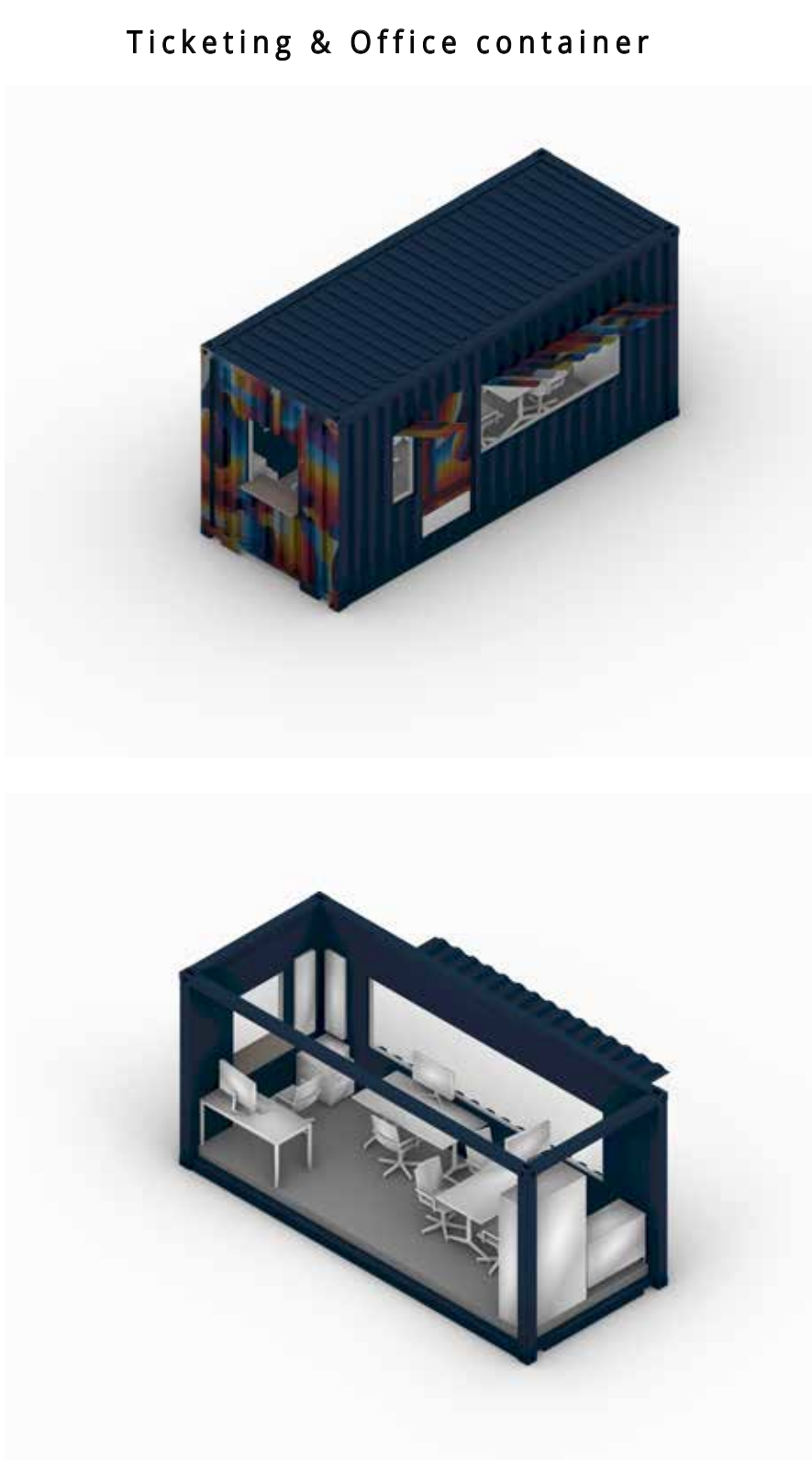
SUPPORT



SUPPORT



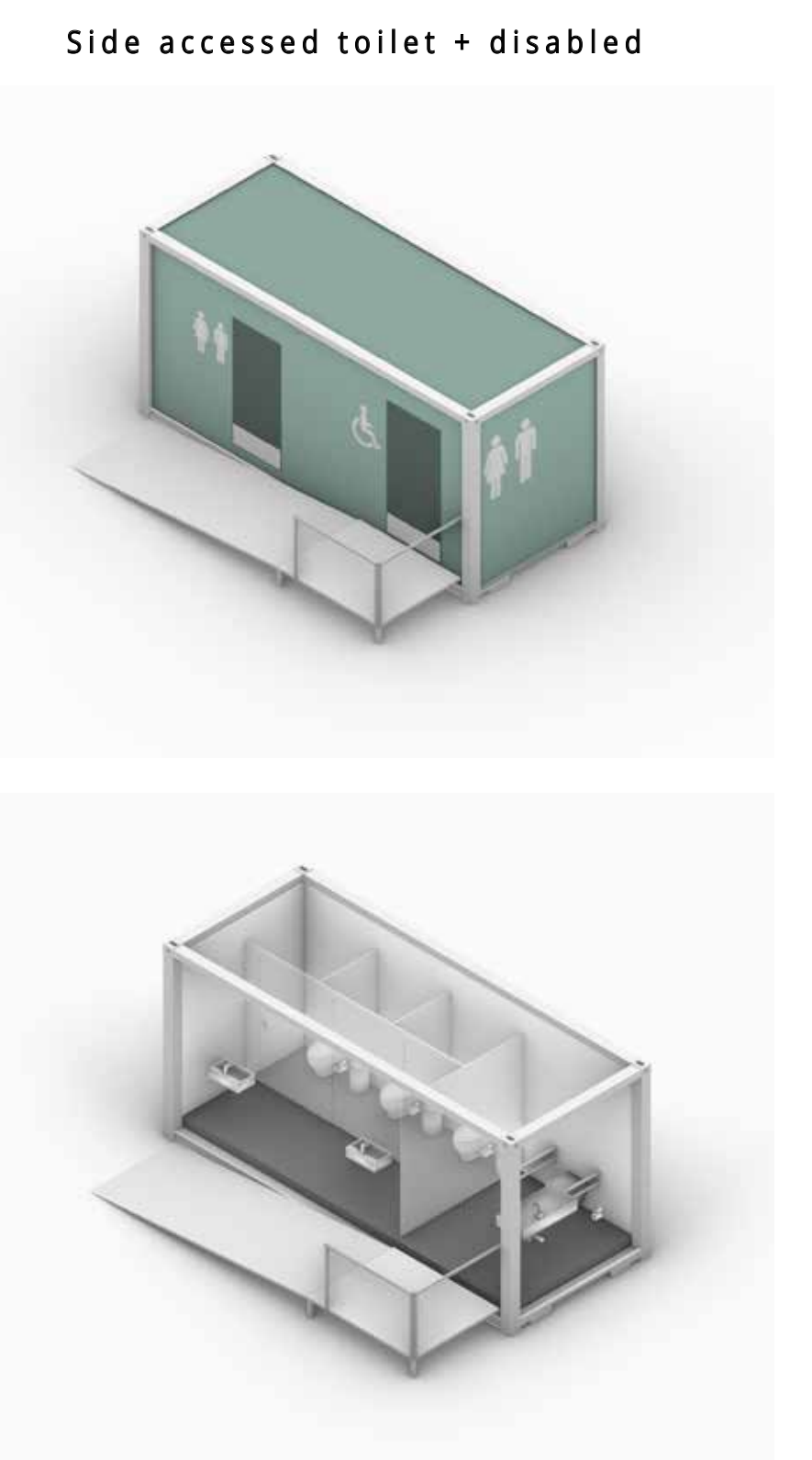
type | Re-used container
area | 14 m²
Req. | Privacy



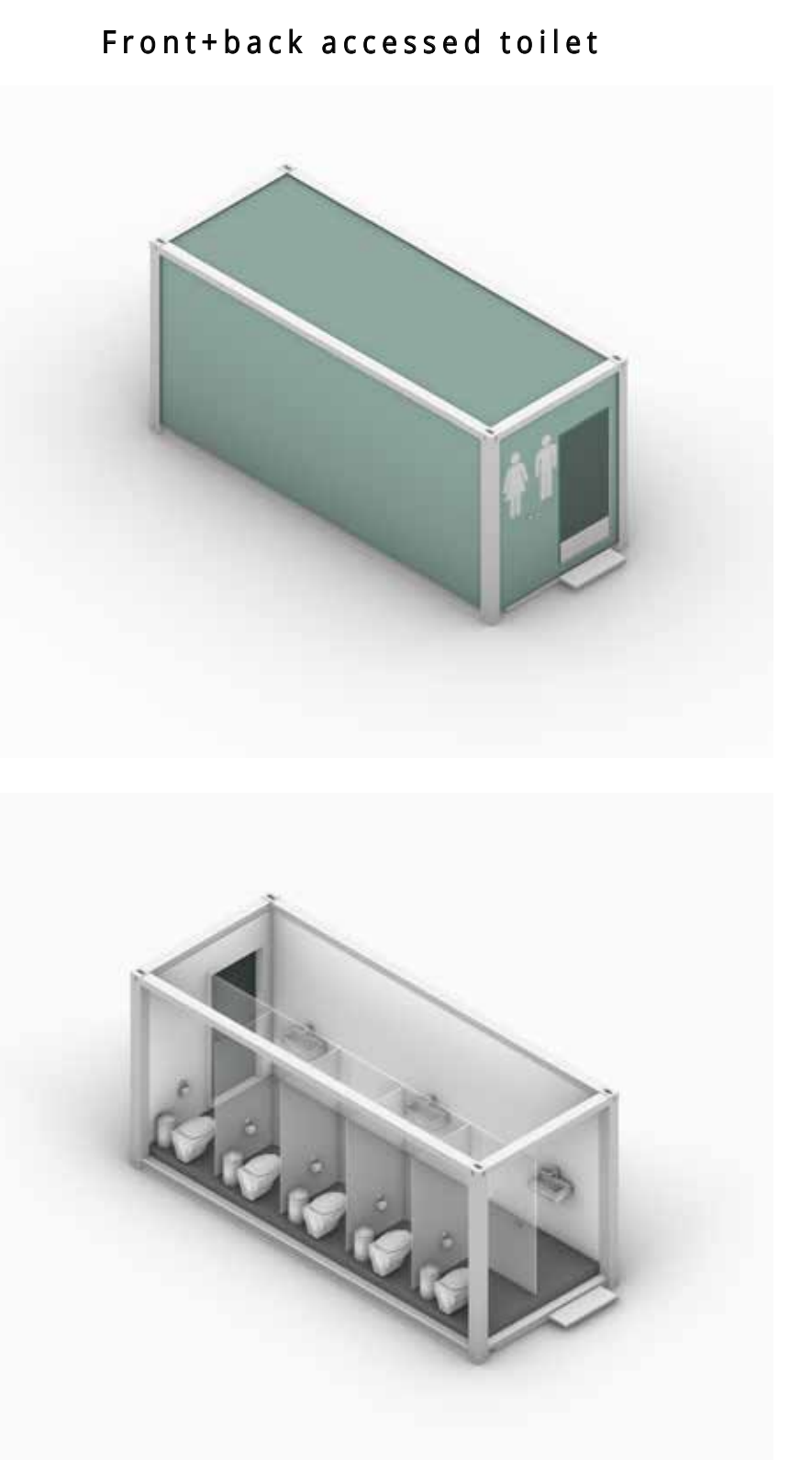
type | Building container
area | 14 m²
Req. | Many openings



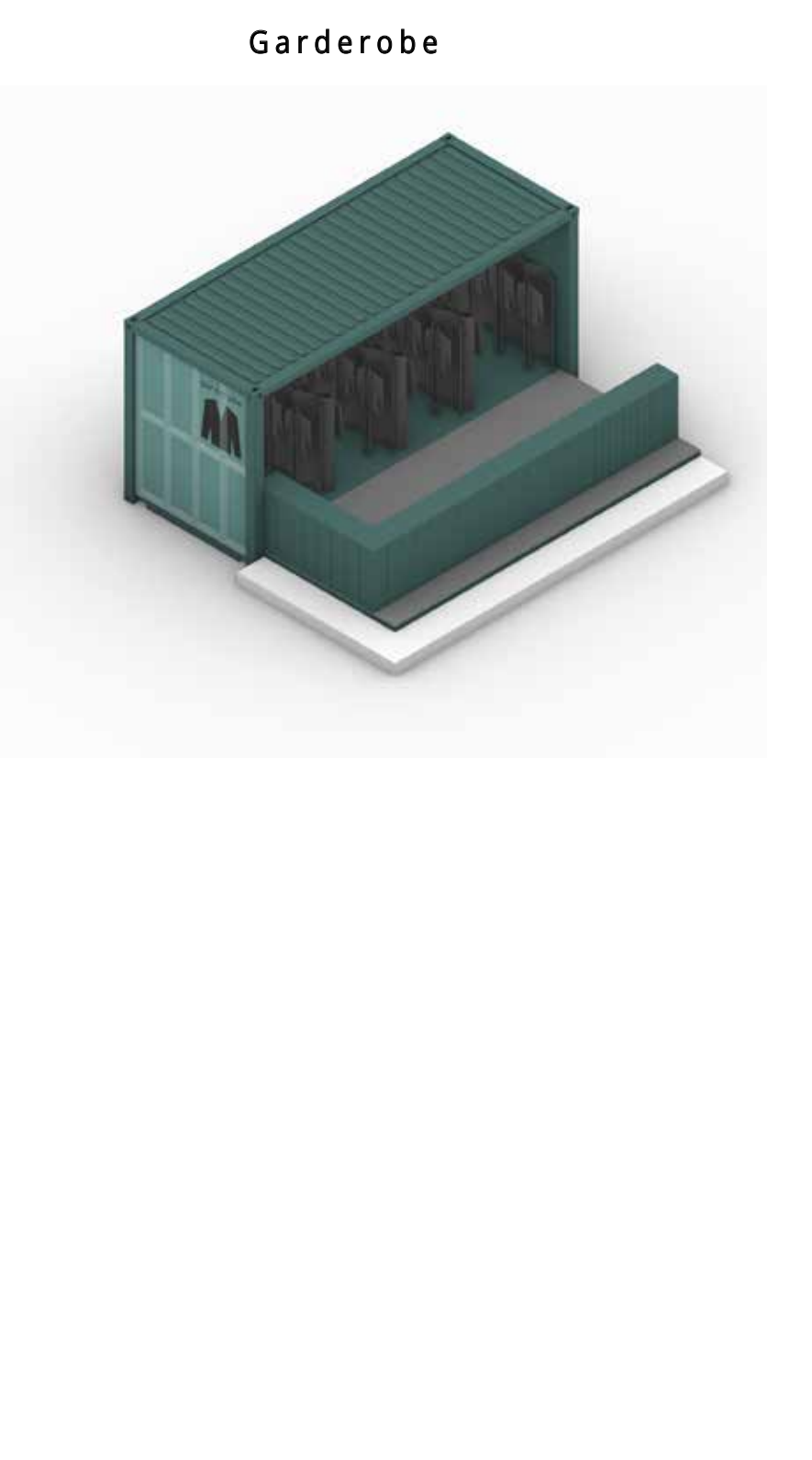
type | Re-used container
area | 14 m²
Req. | Soundproof



type | Building container
area | 14 m²
Req. | Water & sewage connection



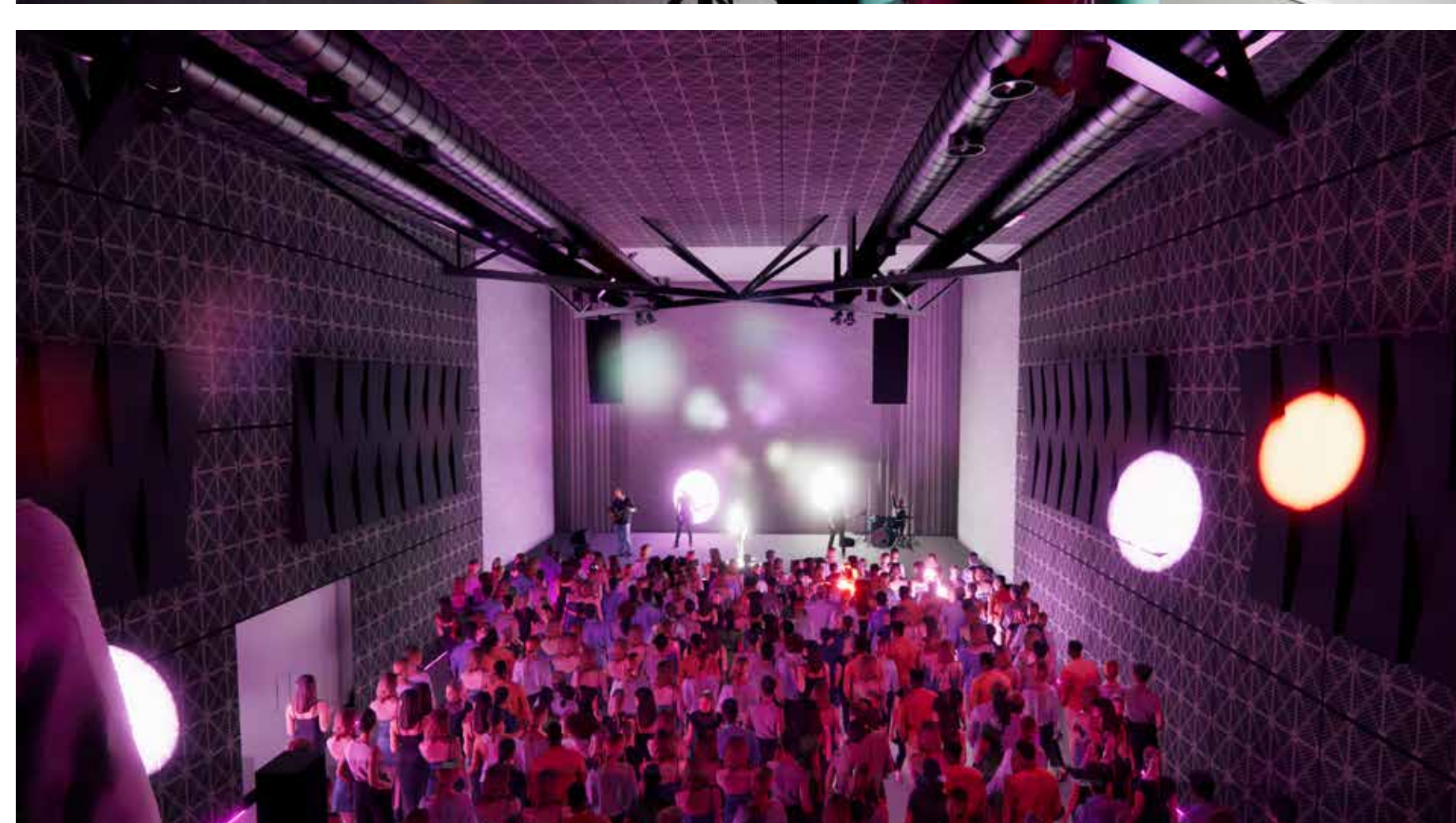
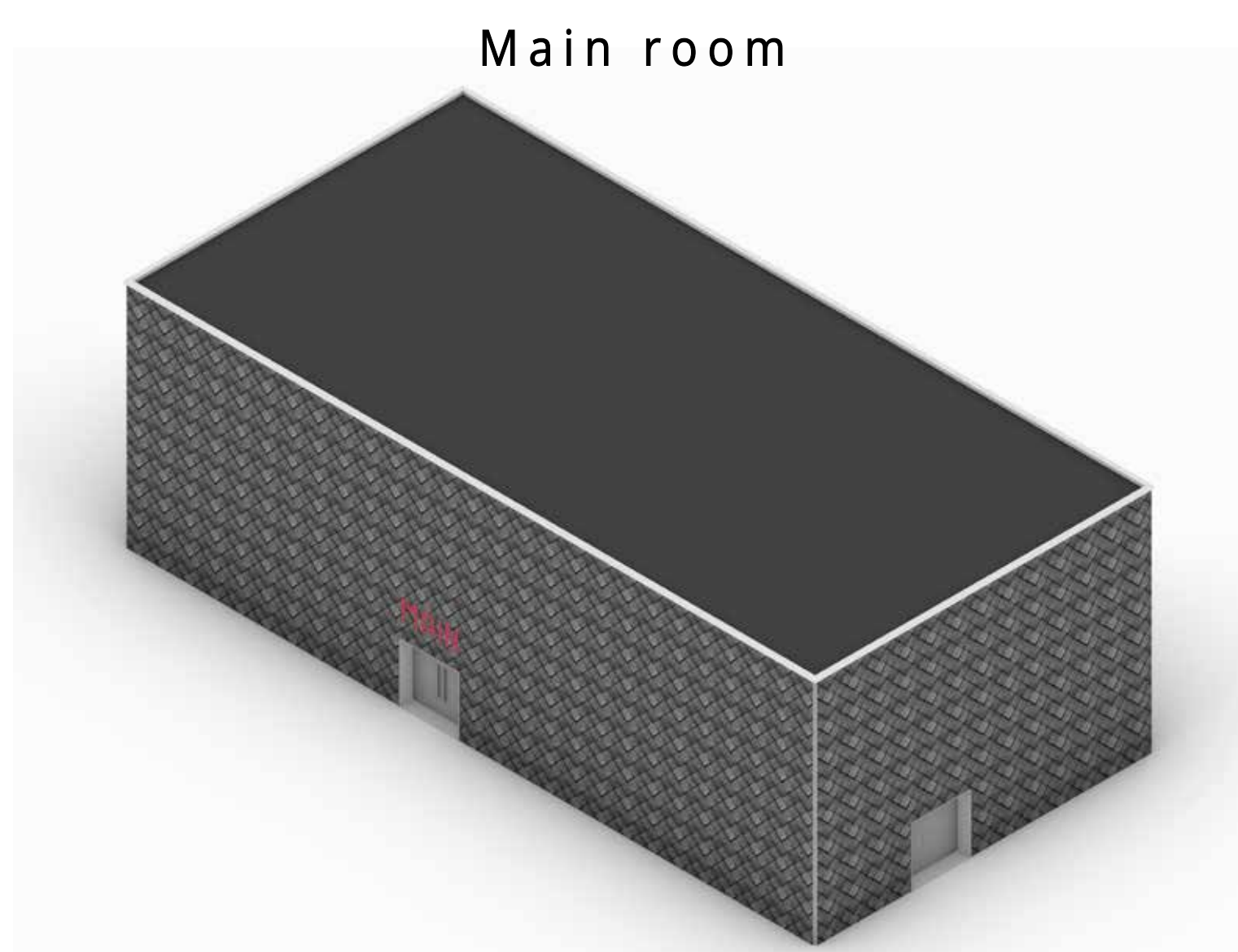
type | Building container
area | 14 m²
Req. | Water & sewage connection



type | Building container
area | 14 m²
Req. | expandable

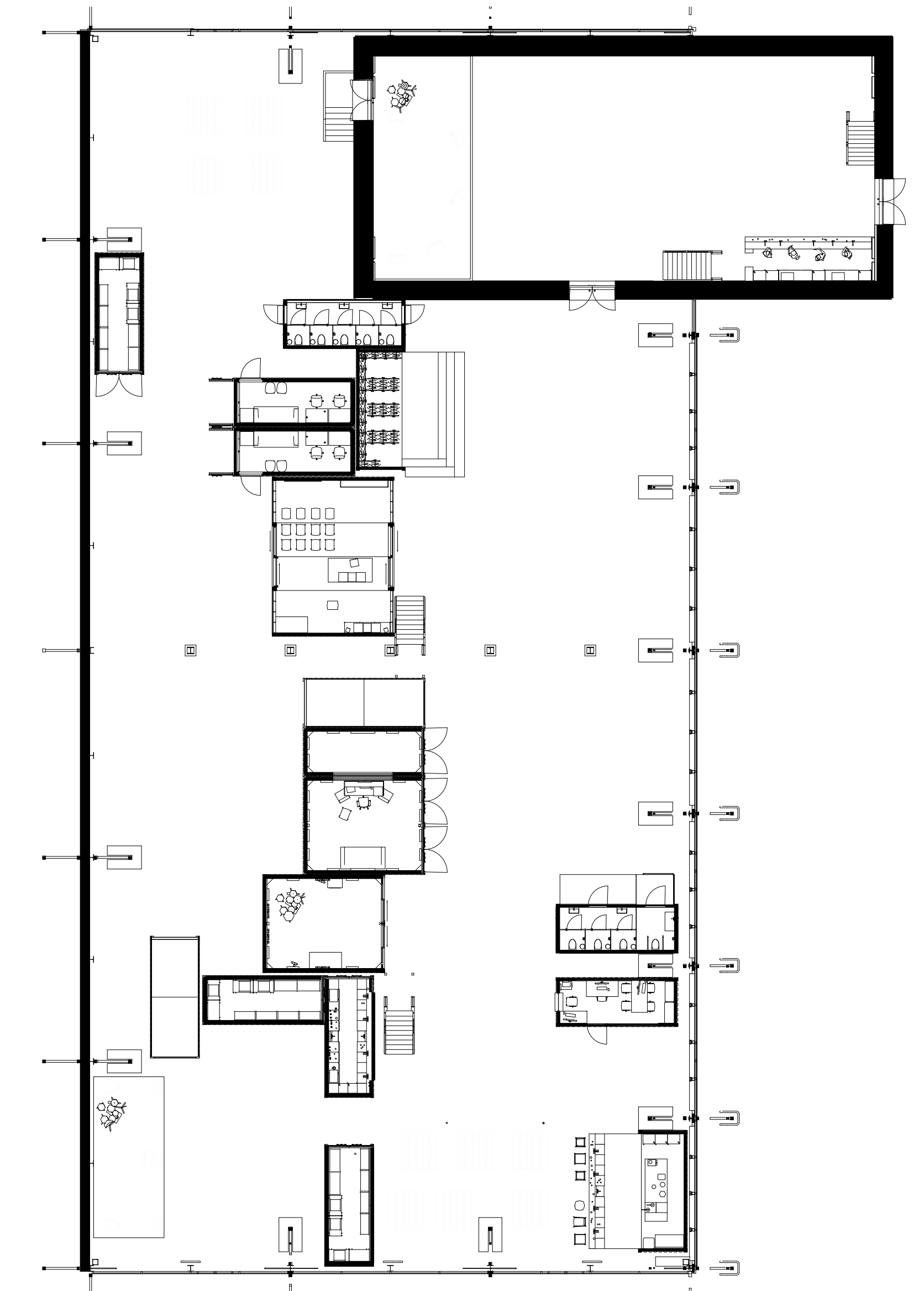
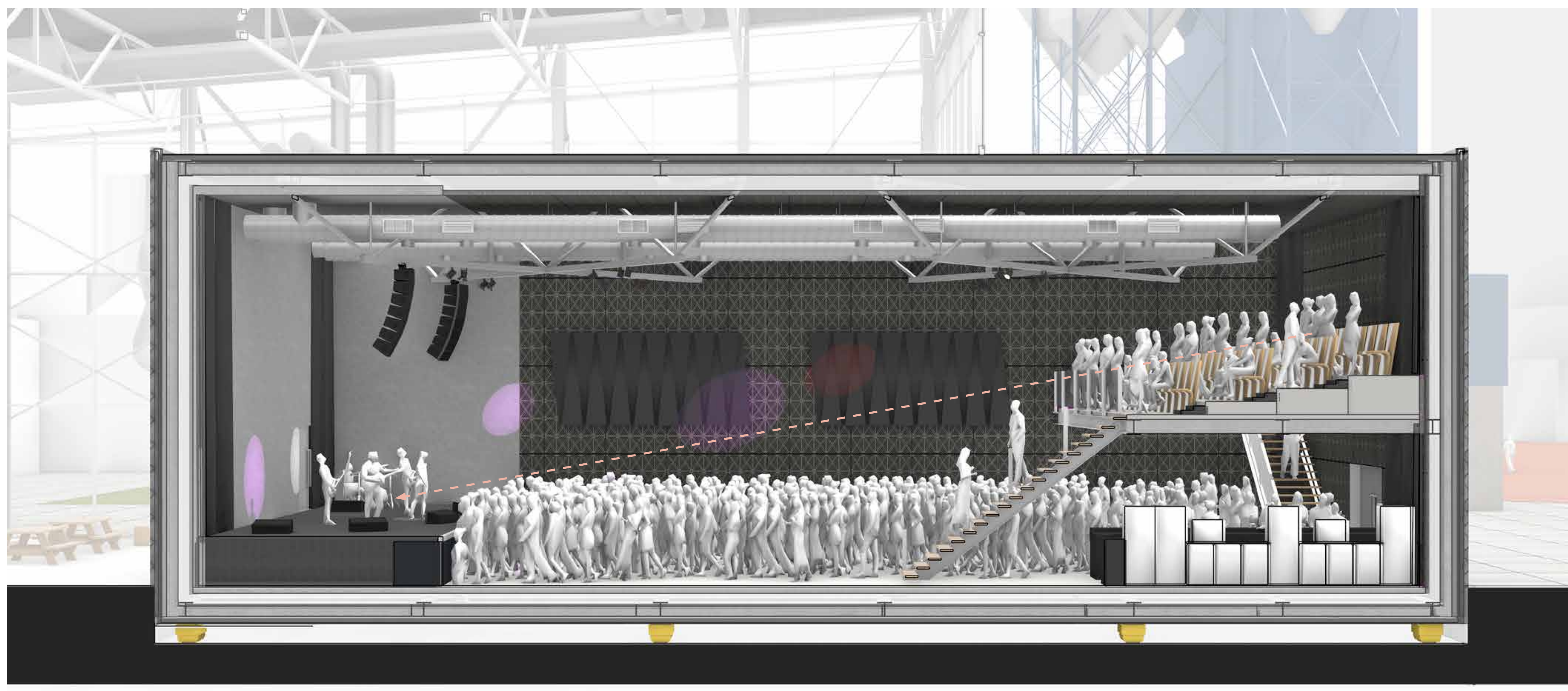
Performance space
Exchange of energy between artist and audience

CONCERT HALLS

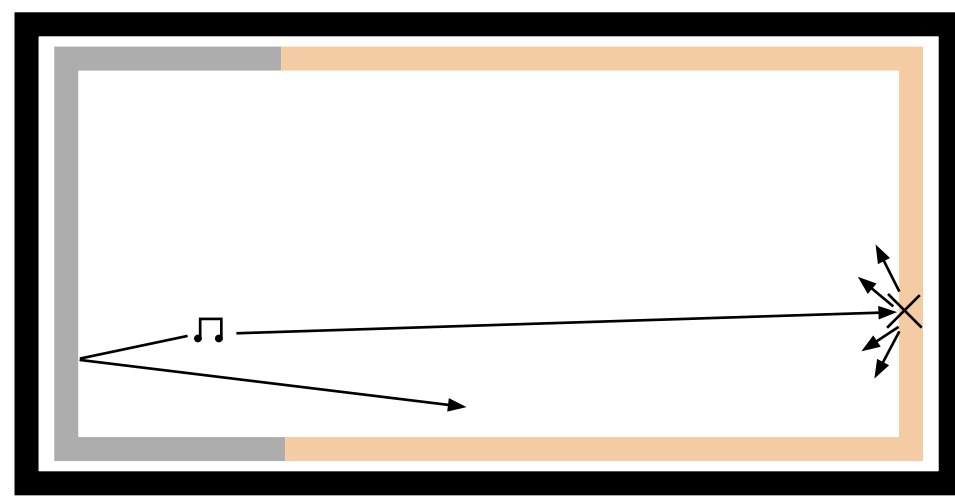


The building

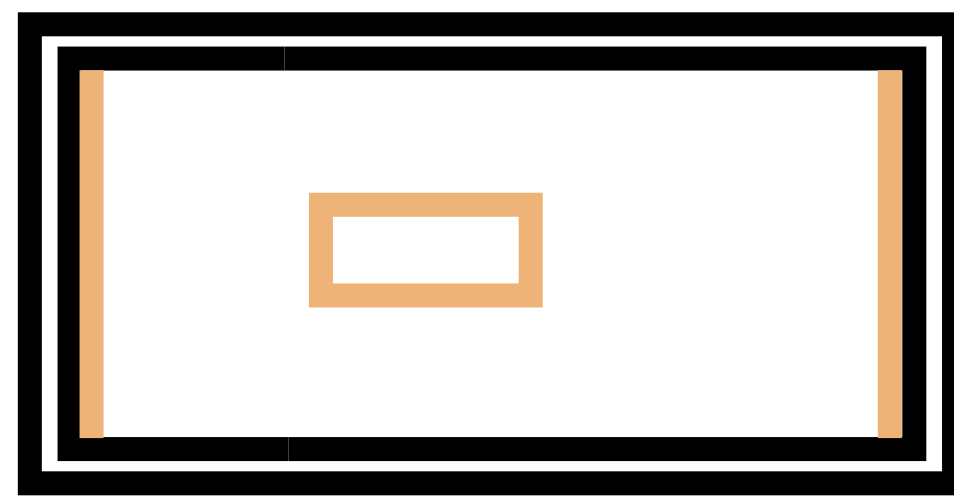
THE CONCERT HALL



Box-in-box construction



Concrete behind stage for reflection, rest of the hall acoustic panels for diffusion and absorption



Diffusion panels and Curtains to be able to more accurately dial in the amount of absorption and reflection

FLOOR PLAN

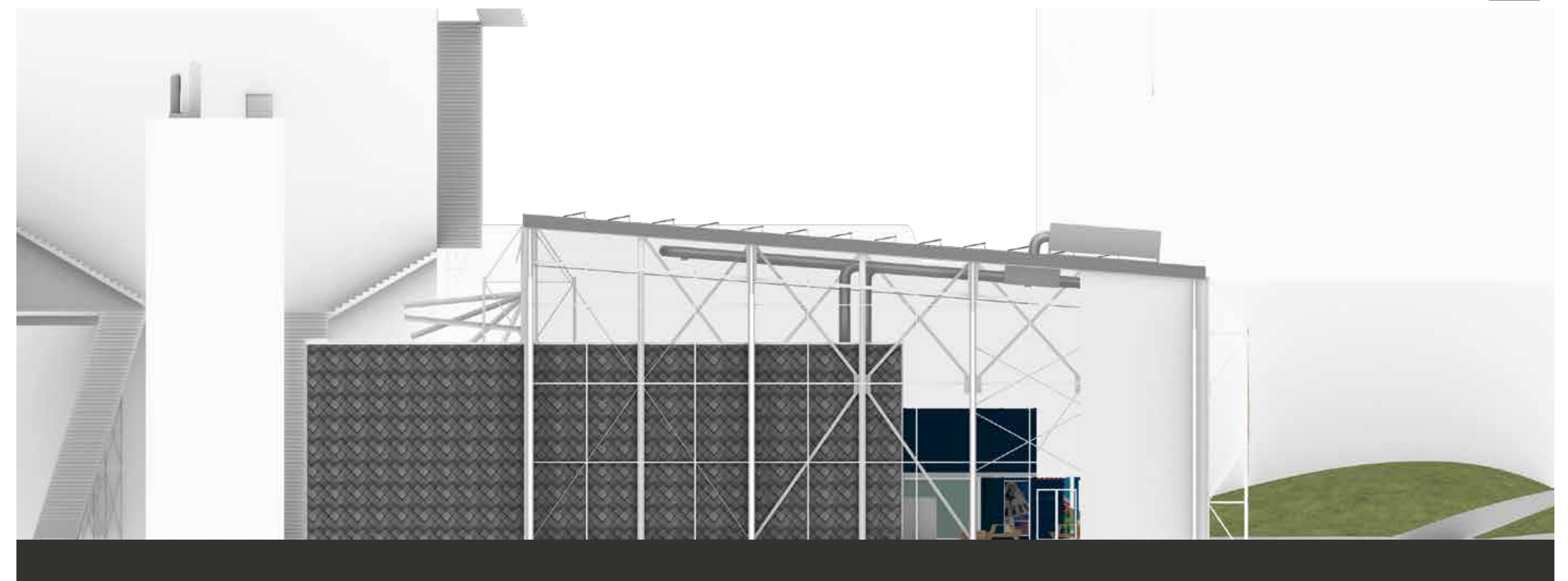
▲ 1:200

ELEVATIONS



ELEVATION SOUTH

▲ 1:200



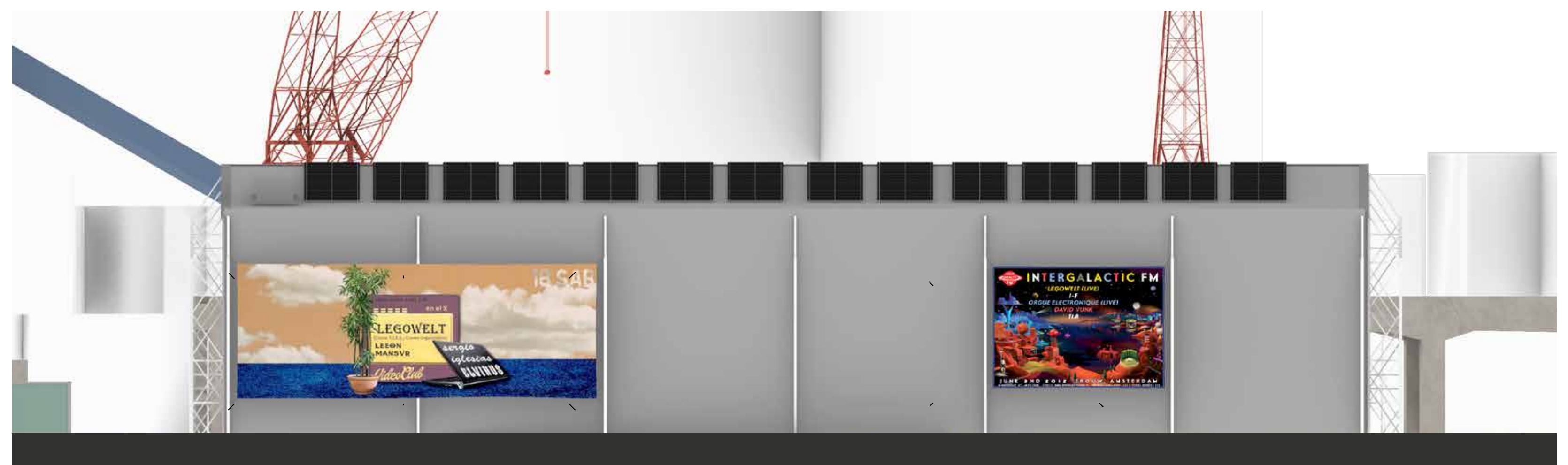
ELEVATION EAST

▲ 1:200



ELEVATION WEST

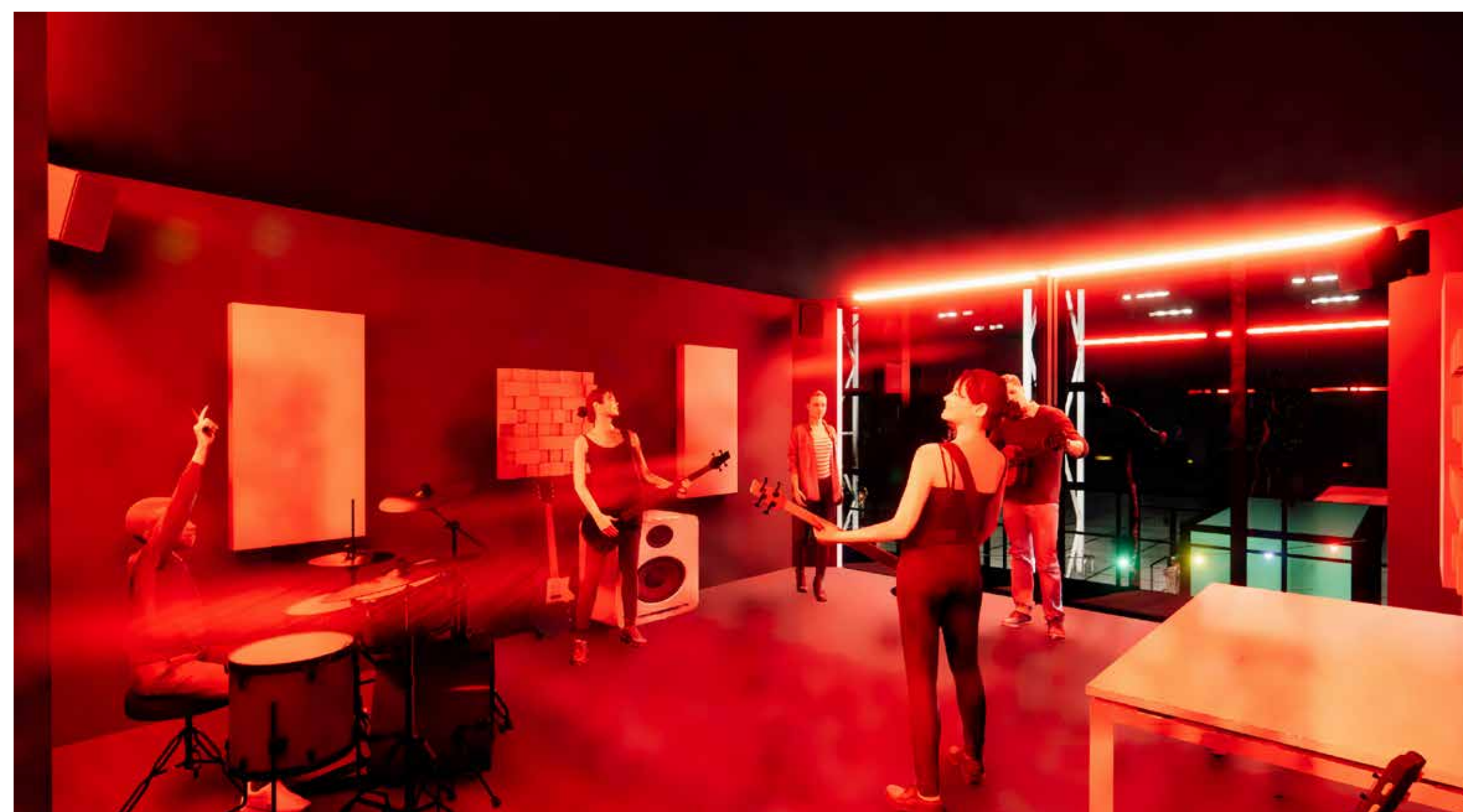
▲ 1:200



ELEVATION NORTH

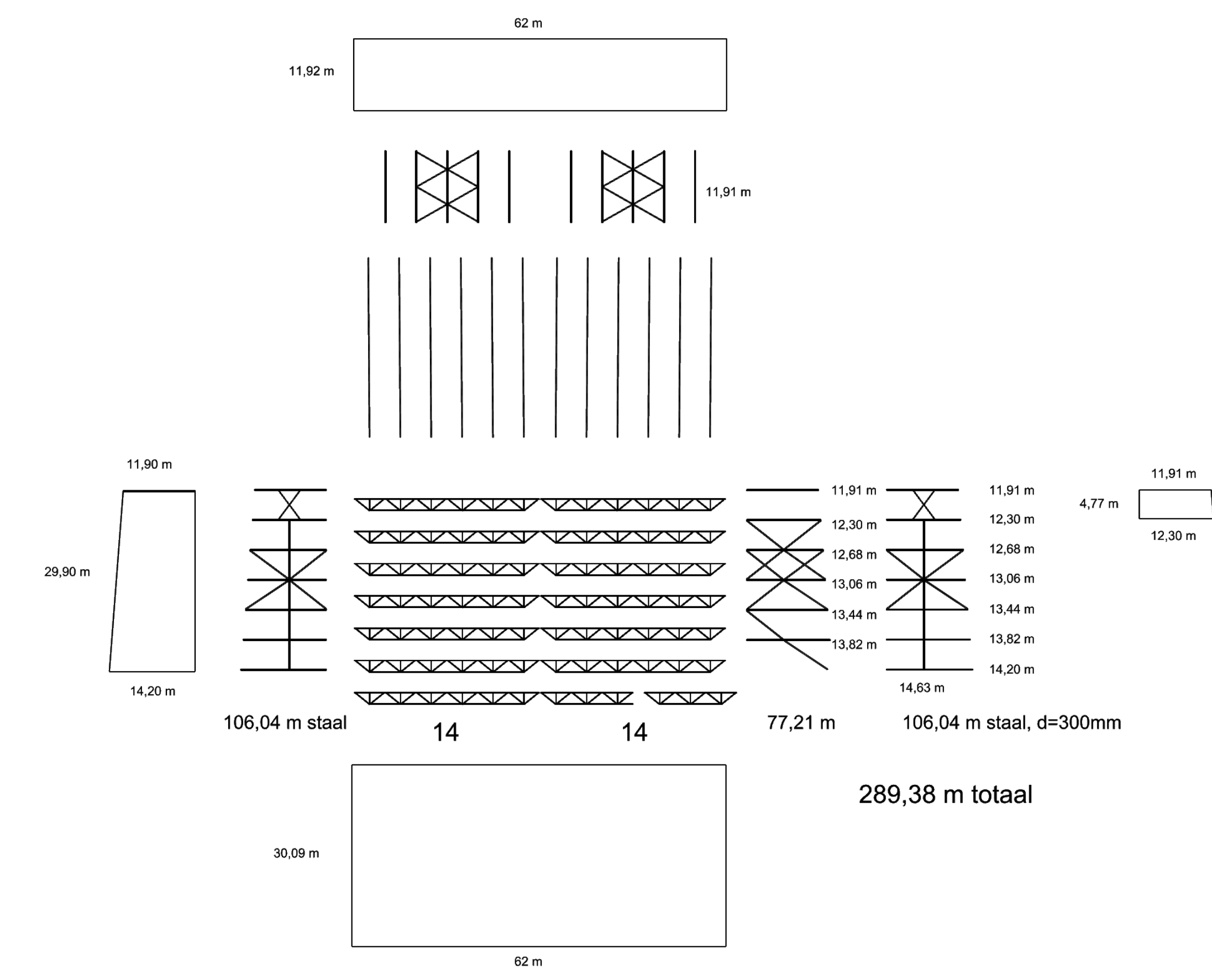
▲ 1:200

IMPRESSIONS

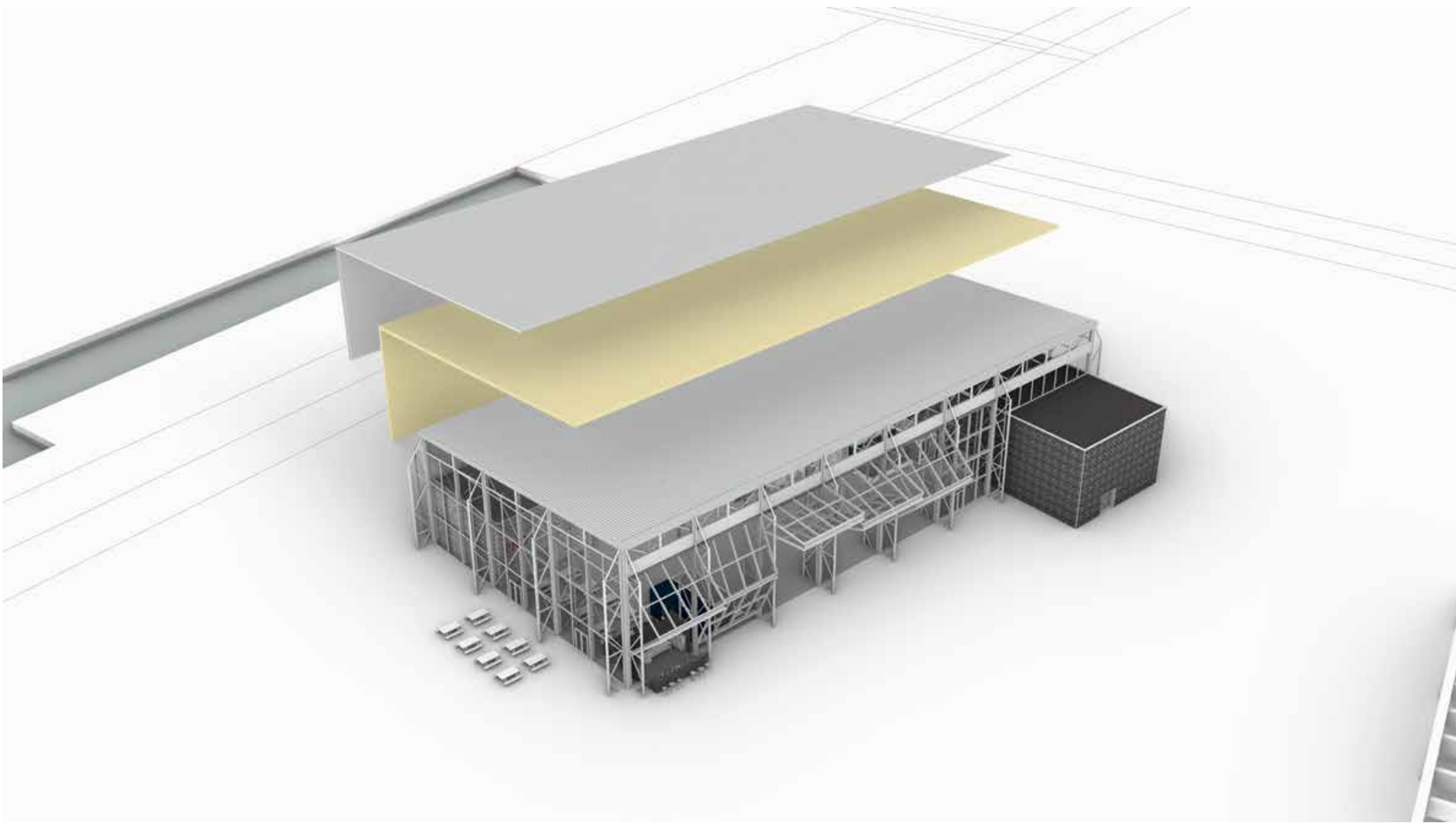


Sustainability and re-use

CATALOGUE



SECOND CANOPY ROOF REUSED



CONTAINER SUSTAINABILITY

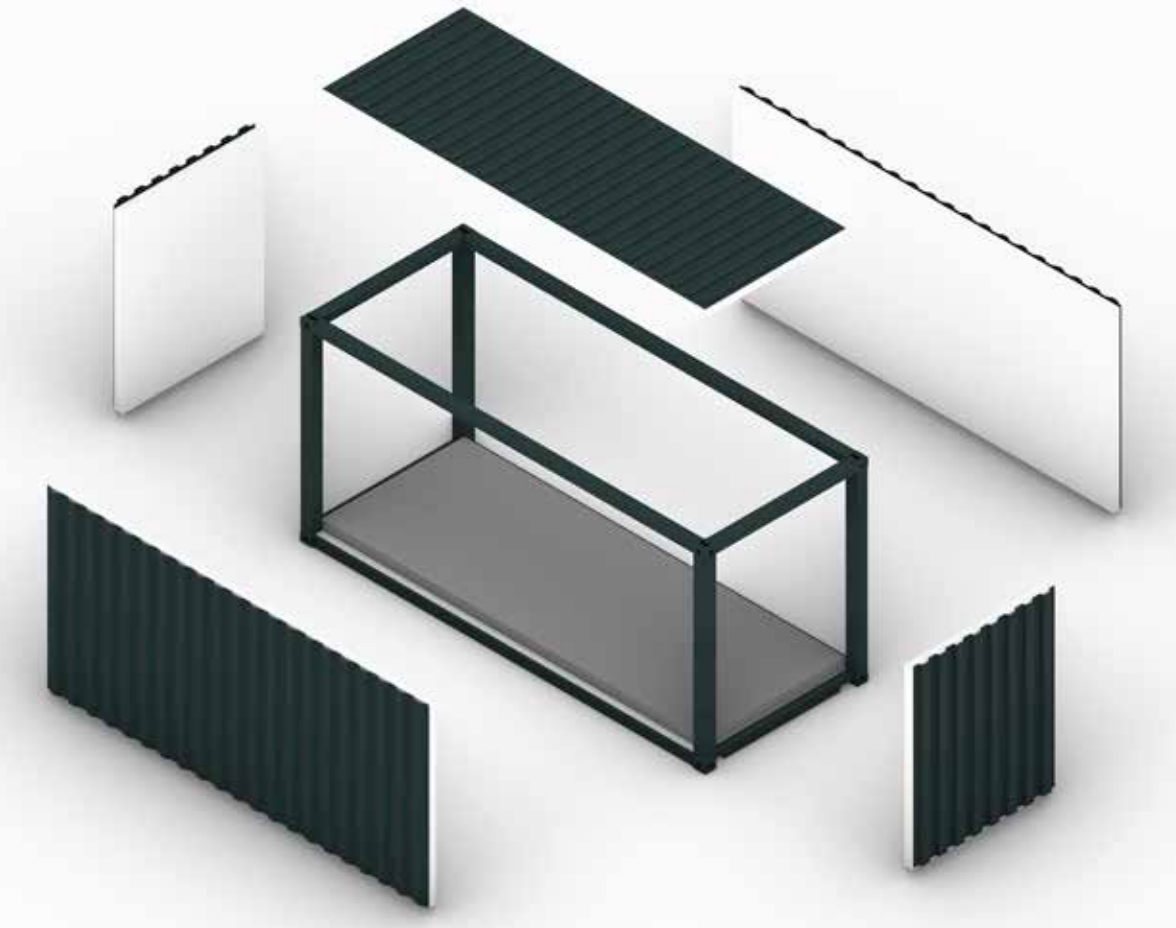
Shipping container



Structure | All parts required for structural integrity
State | Used
Sustainability? | re-use / upgrade / sidegrade
used in project for | 0 / 1 opening

V.S.

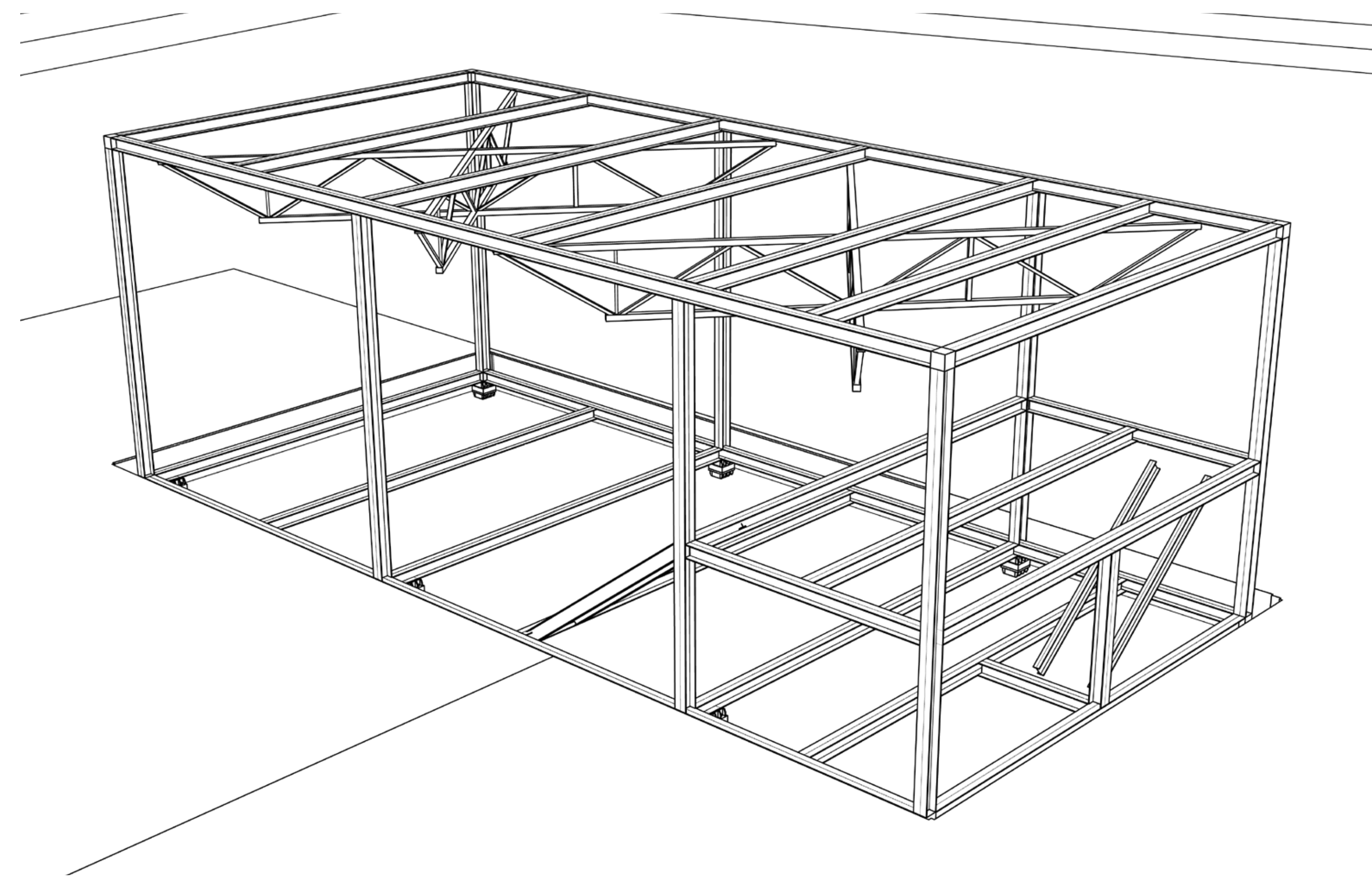
Building container



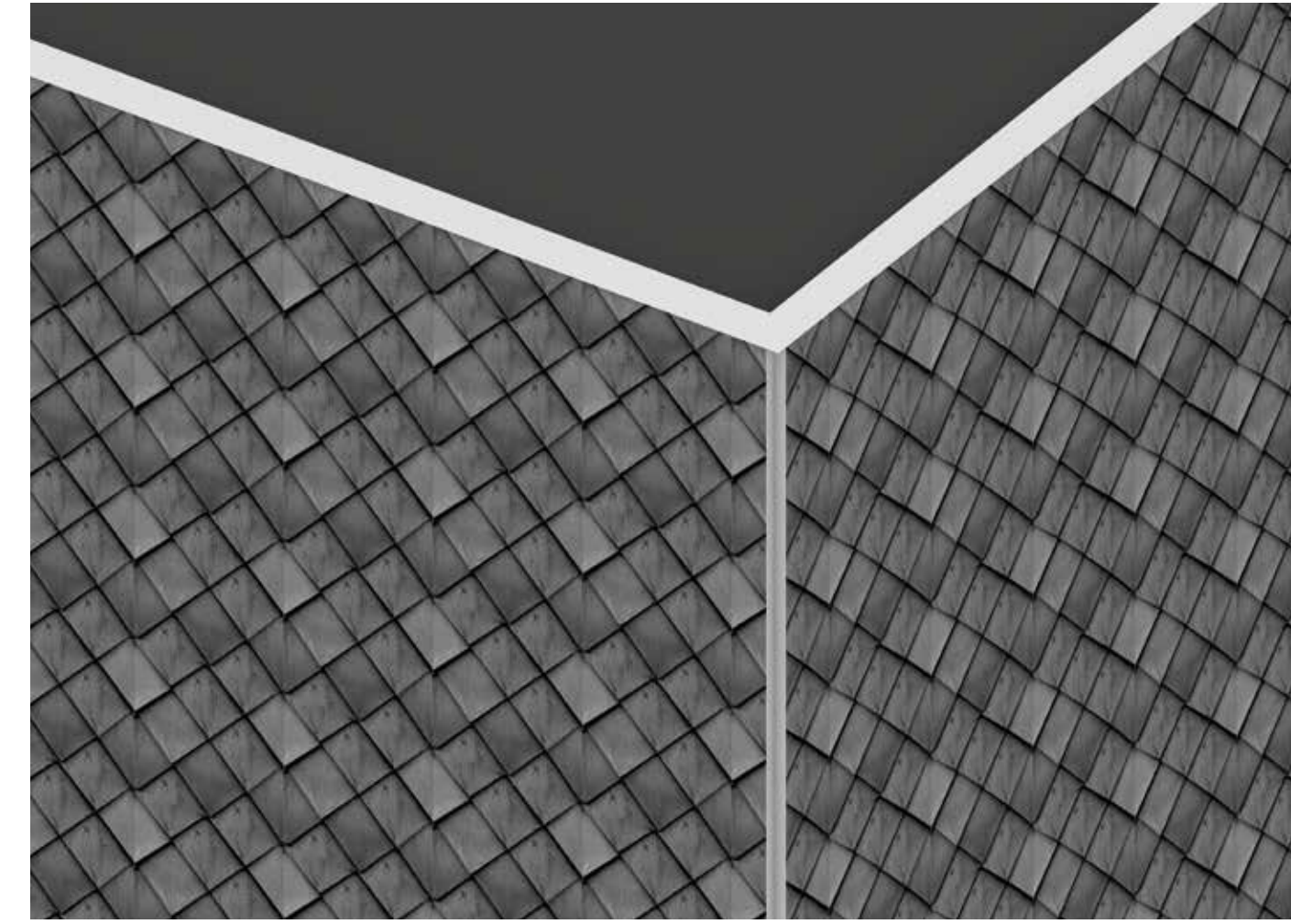
Structure | Structural frame and infill separate
State | New
Sustainability? | Circular
used in project for | > 1 openings

REUSED STEEL CONSTRUCTION

▲ From the second canopy



PRETTY PLASTIC

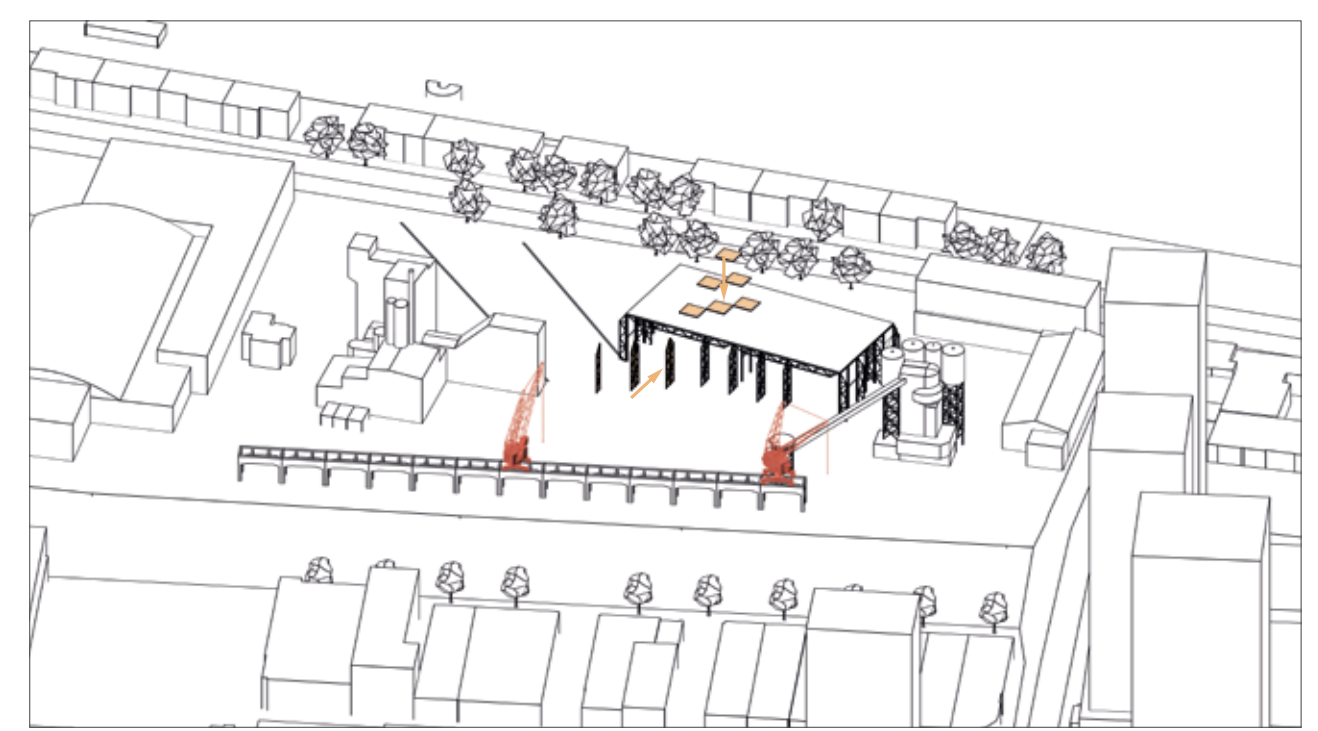


Component | Corner profile



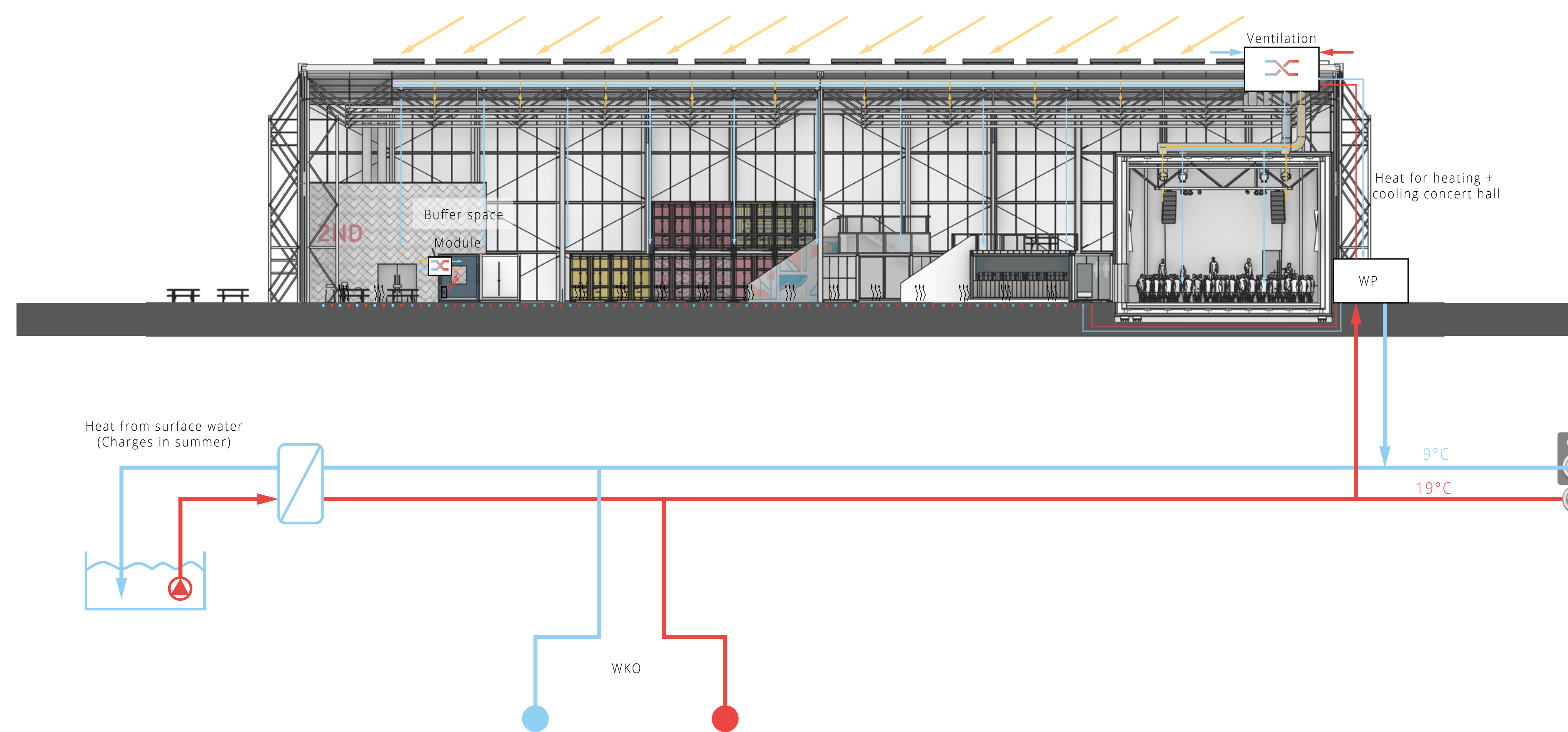
Component | Roof edge

REUSE OF TRUSS BEAMS AND ROOF



Climate

CLIMATE DIAGRAM

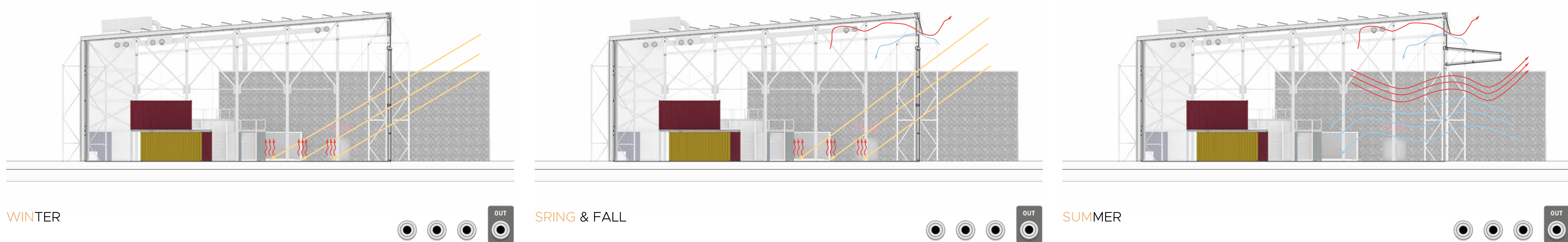


HEAT NET BINCKHORST



Heat net | Location of the future heat according to the municipality
Low temperature heat net
 -Combination of heat storage in ground and aquathermic measures
 -Uses surface water to gain energy in summer
 -Provides water of 9 and 19 degrees to be tightened or lowered by heat pumps in the buildings

PASSIVE COOLING & NATURAL VENTILATION



WINTER

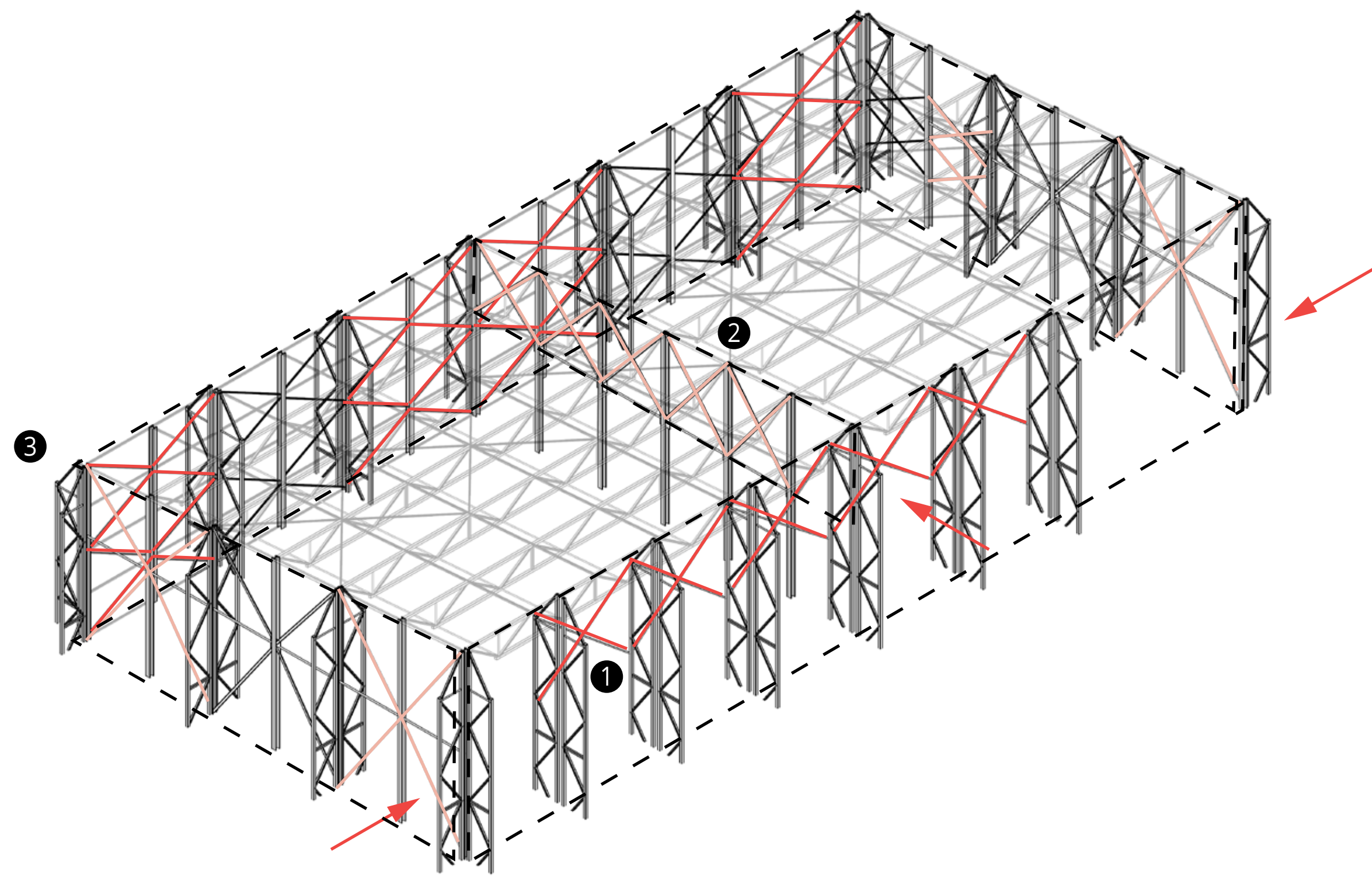
SPRING & FALL

SUMMER

OUT

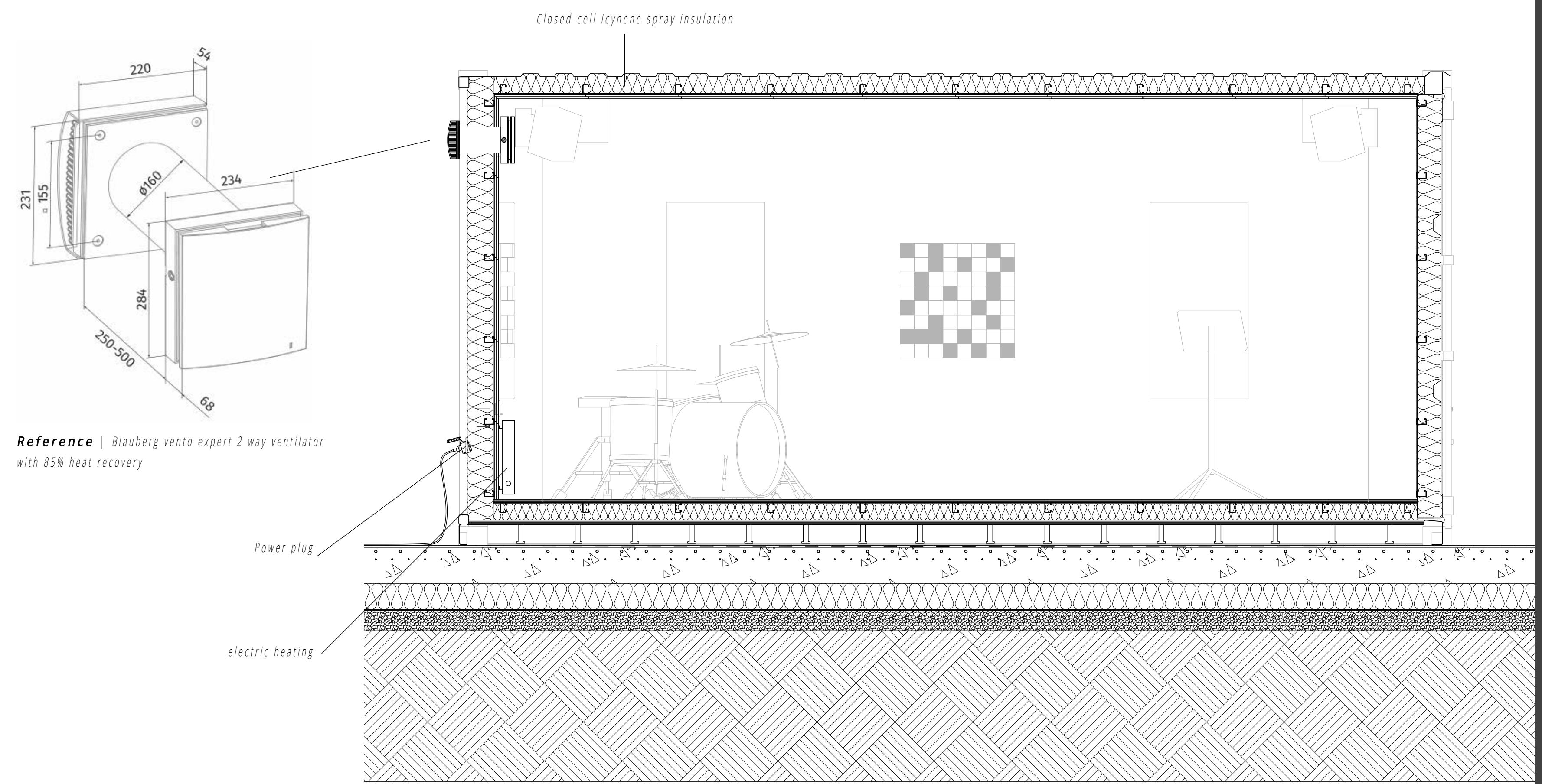
Building Technology

STABILITY



- 1 Crosses added for rotation stability new front facade.
- 2 Existing crosses that were in the way replaced with higher up crosses.
- 3 Sides and back stiffened to compensate for the stability loss of 2.

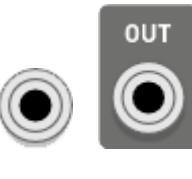
MODULE DESIGN



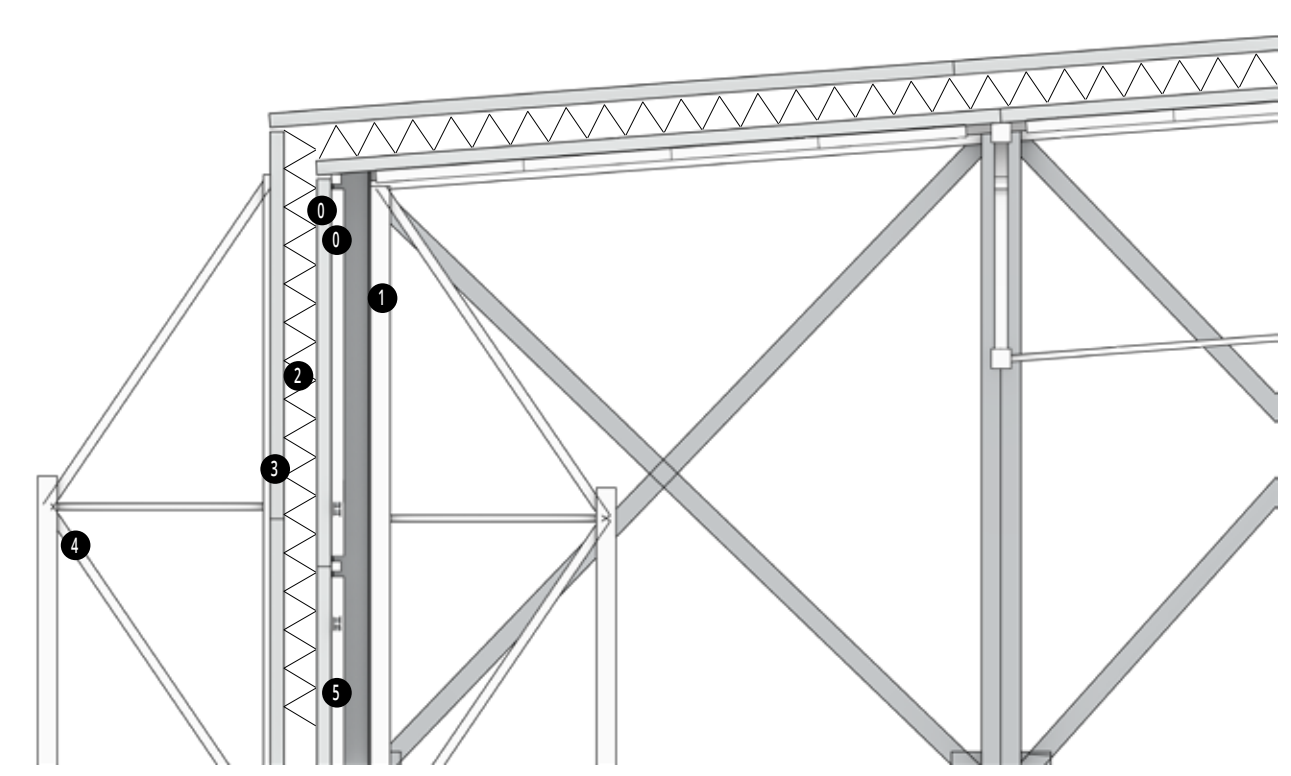
Reference | Blauberg vento expert 2 way ventilator with 85% heat recovery

CONTAINER DETAIL

▲ 1:20



HORIZONTAL DETAIL | ASSEMBLY



- 0. Original construction with column and corrugated sheet
- 1. Add inside truss beam from 2nd canopy
- 2. Add insulation
- 3. Add 2nd corrugated sheet from 2nd canopy
- 4. Add outside truss beam from 2nd canopy
- 5. Add acoustic panels

North facade
 Insulation | Rockwool + 100mm acoustic insulation (Rockwool)
 Thickness | 260 mm + 100 mm
 Rc | 8,2

Roof
 Insulation | Rockwool + 100mm acoustic insulation (Rockwool)
 Thickness | 260 mm + 100 mm
 Rc | 8,2

East + West Facade
 Insulation | Triple acoustic glass, -36 dB
 Thickness | 6-12-4-12-4
 Rc | 2,7

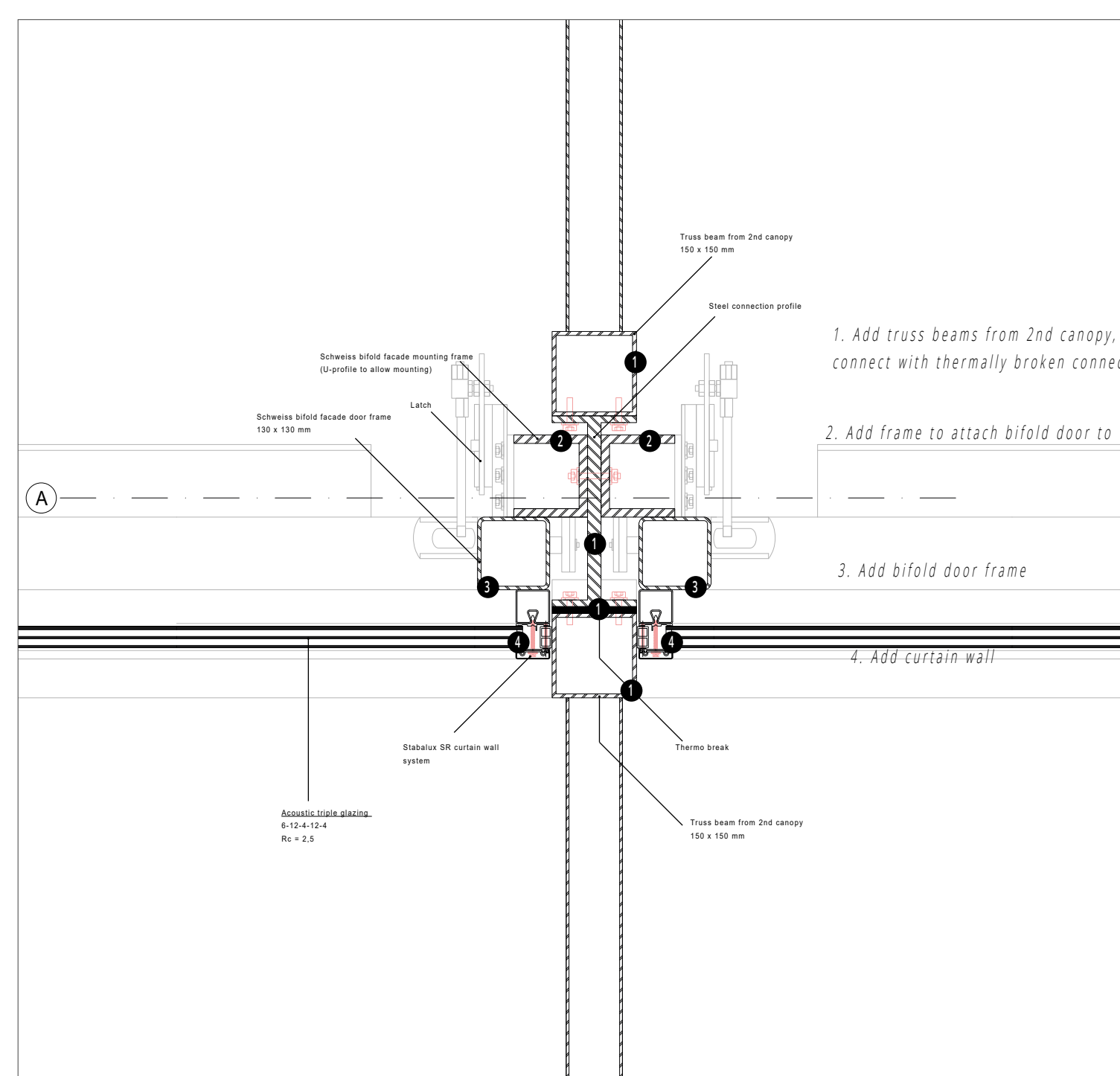
Concert Hall
 Insulation | Rockwool + Acoustic insulation
 Thickness | 150 mm + 100 mm
 Rc | 5,9

South Facade
 Insulation | Triple acoustic glass, -36 dB
 Thickness | 6-12-4-12-4
 Rc | 2,7

SECTION & FACADE SPECIFICATIONS

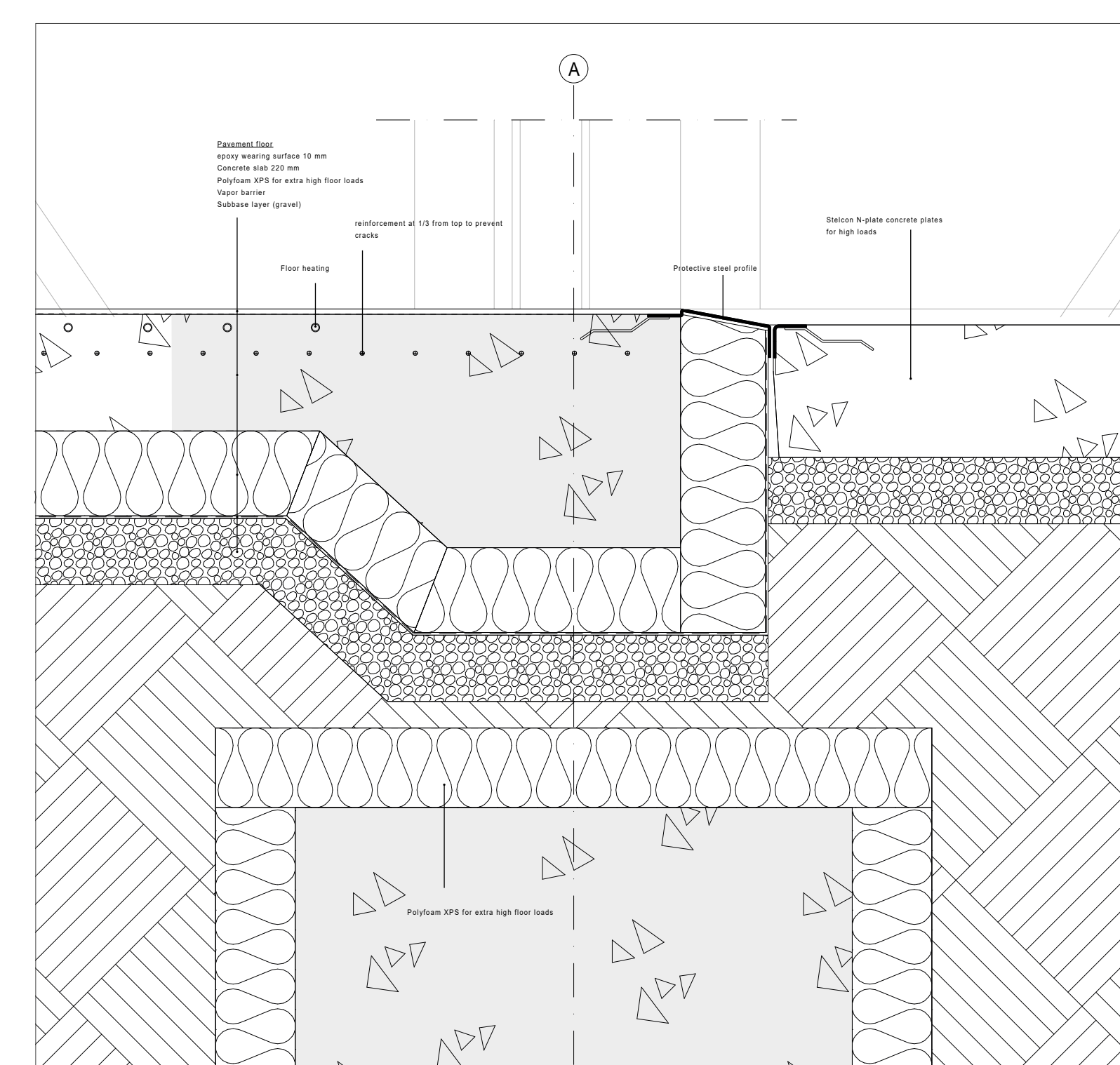
▲ 1:100

Floor
 Insulation | Polyfoam XPS for heavy weight
 Thickness | 150mm
 Rc | 4,3



HORIZONTAL DETAIL | ASSEMBLY

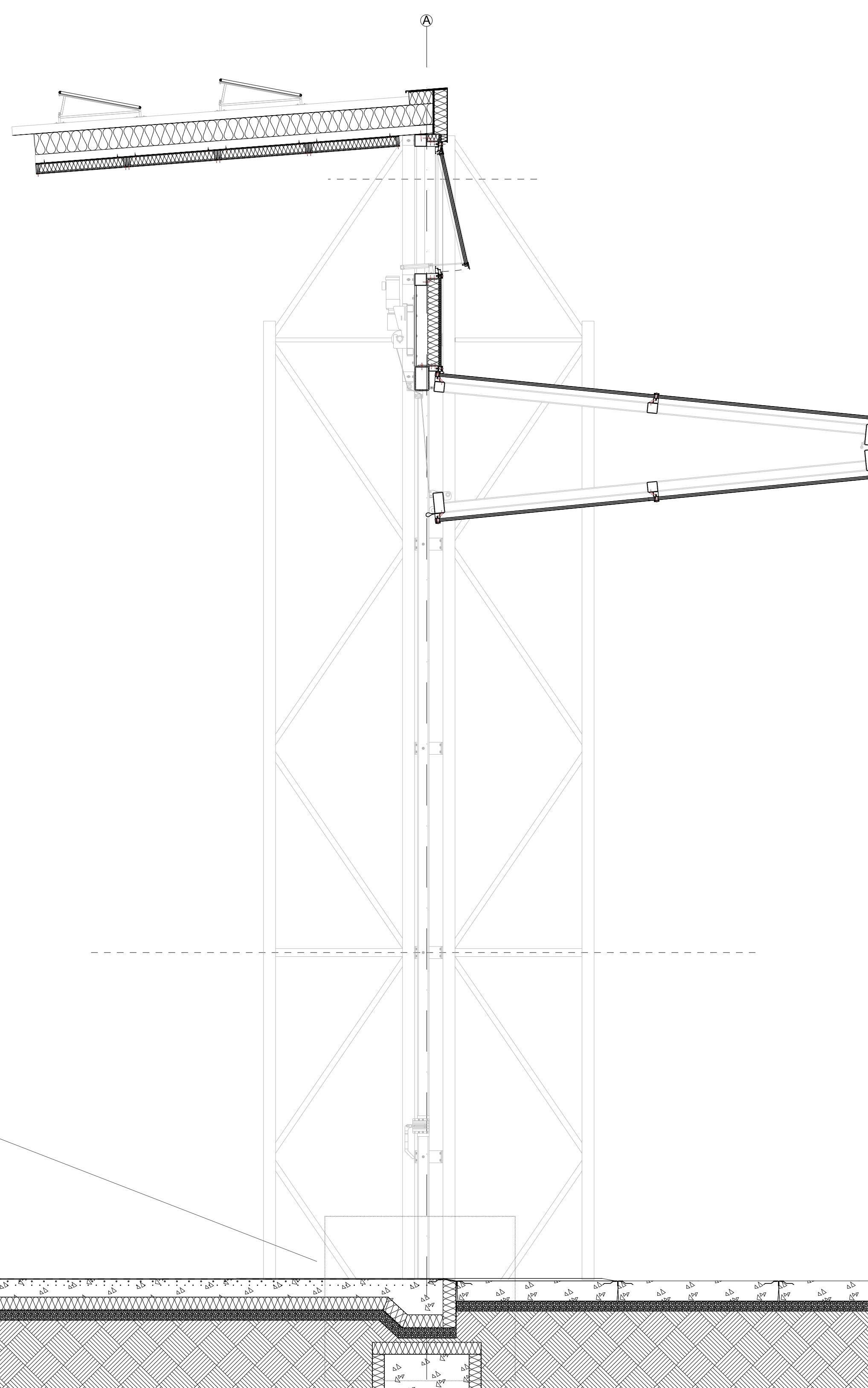
▲ 1:5, displayed at 1:10



FLOOR DETAIL

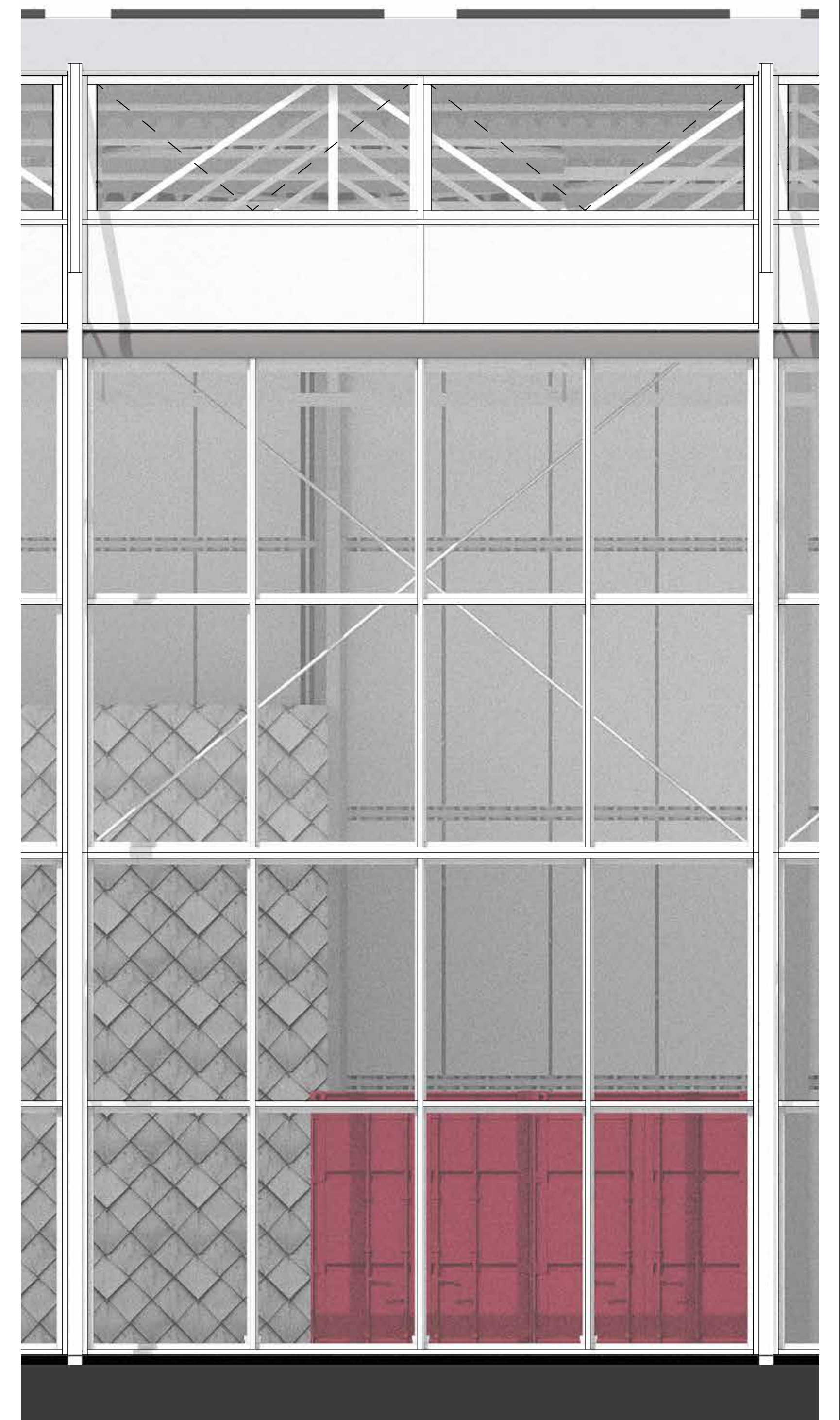
▲ 1:5, displayed at 1:10

1:20 - voorgevel - detail versie



CONTAINER DETAIL

1:20, displayed at 1:40 ▲



The Modulator.

HAC Terrain, Binckhorst, the Hague

MSc 3 Public Building - Music Marvel - Bart Schipper - 4465741

Designing a Music Marvel

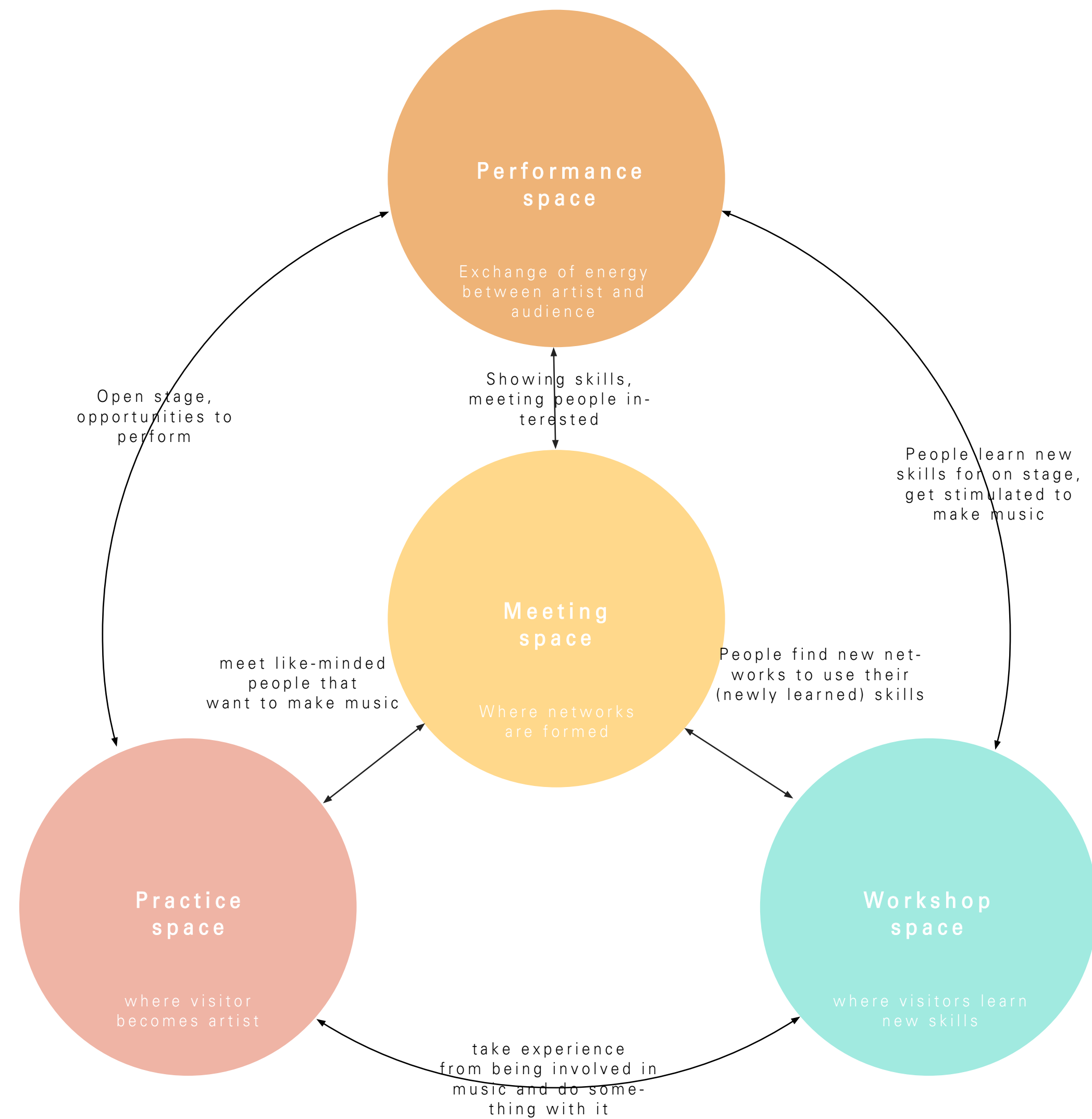
In the Binckhorst, the Hague

The **Modulator**. | Hac Terrain, Binckhorst



A Music Marvel: promoting musical exchange

Framework of exchange, derived from the case studies



Reference | dB's Utrecht

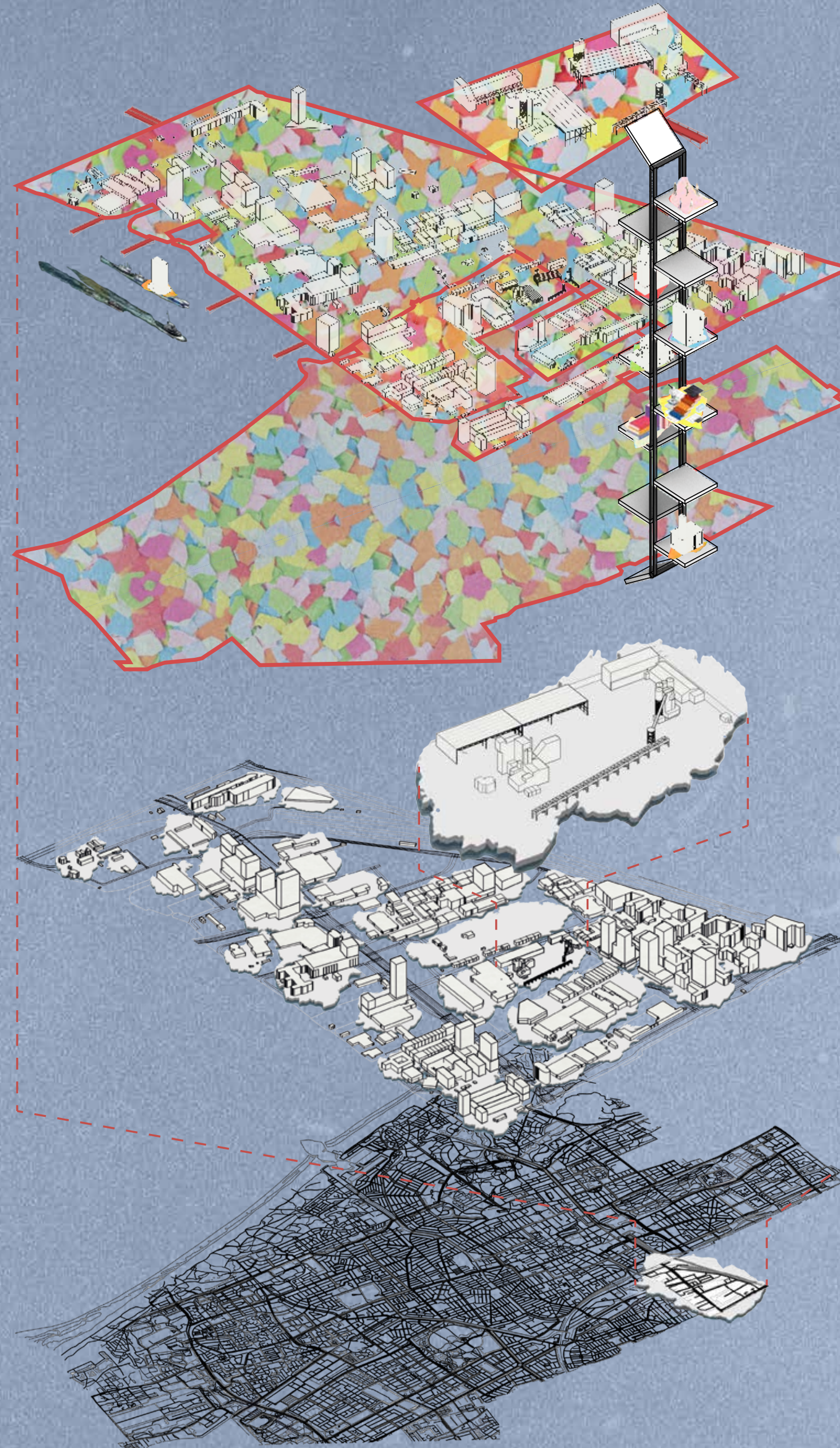


Reference | Kytopia, Utrecht



BIN CXCHANGE

The **Modulator**. | Hac Terrain, Binckhorst



3 Themes

Framework of exchange, derived from the case studies

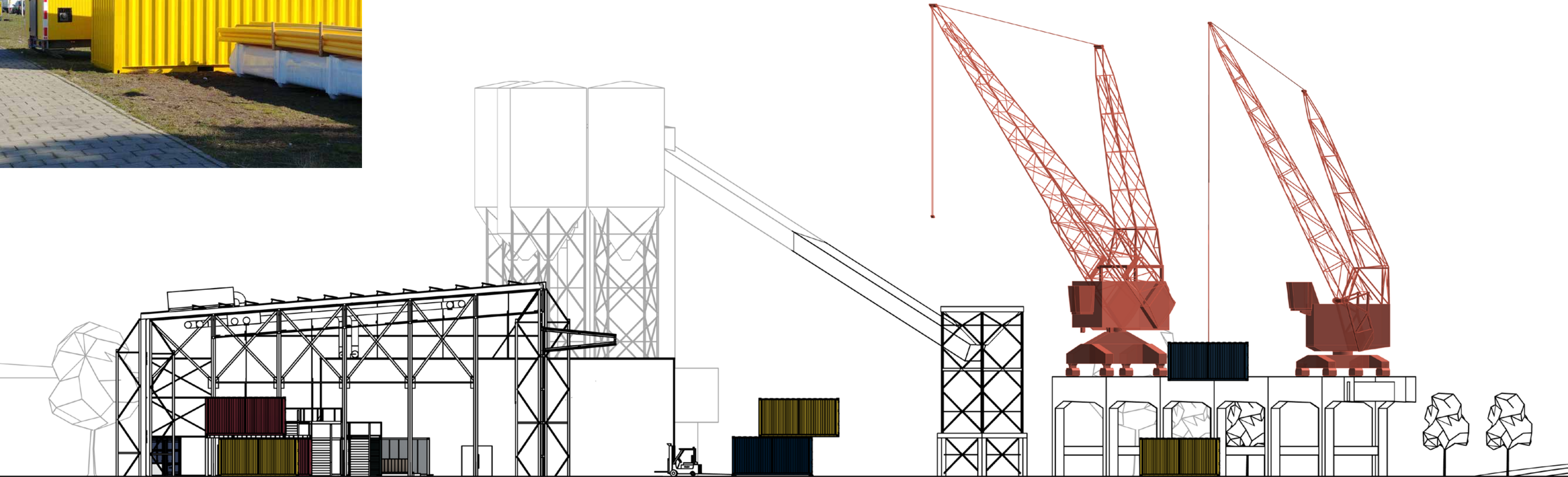
Identity

re-use

adaptability

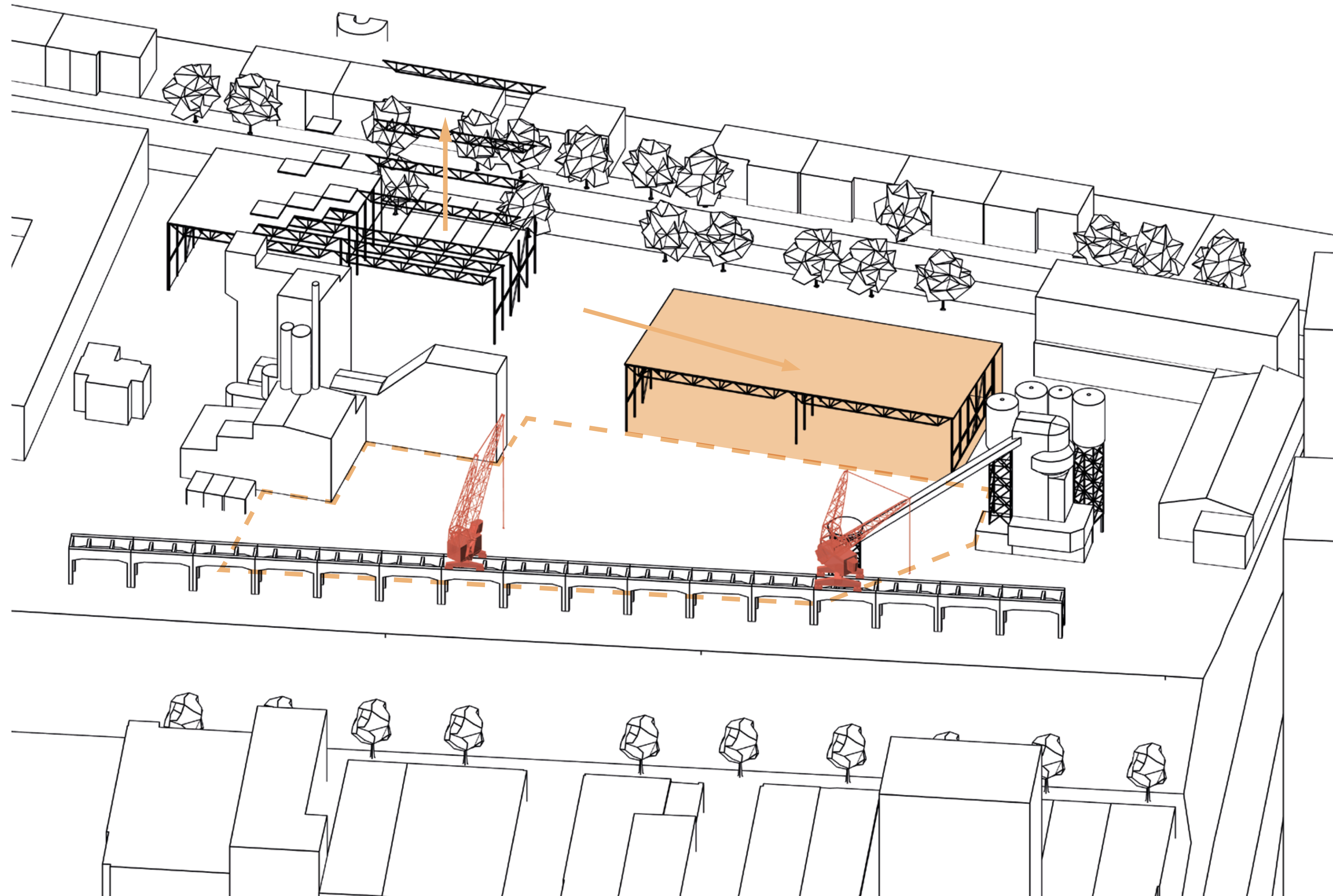
Adaptability

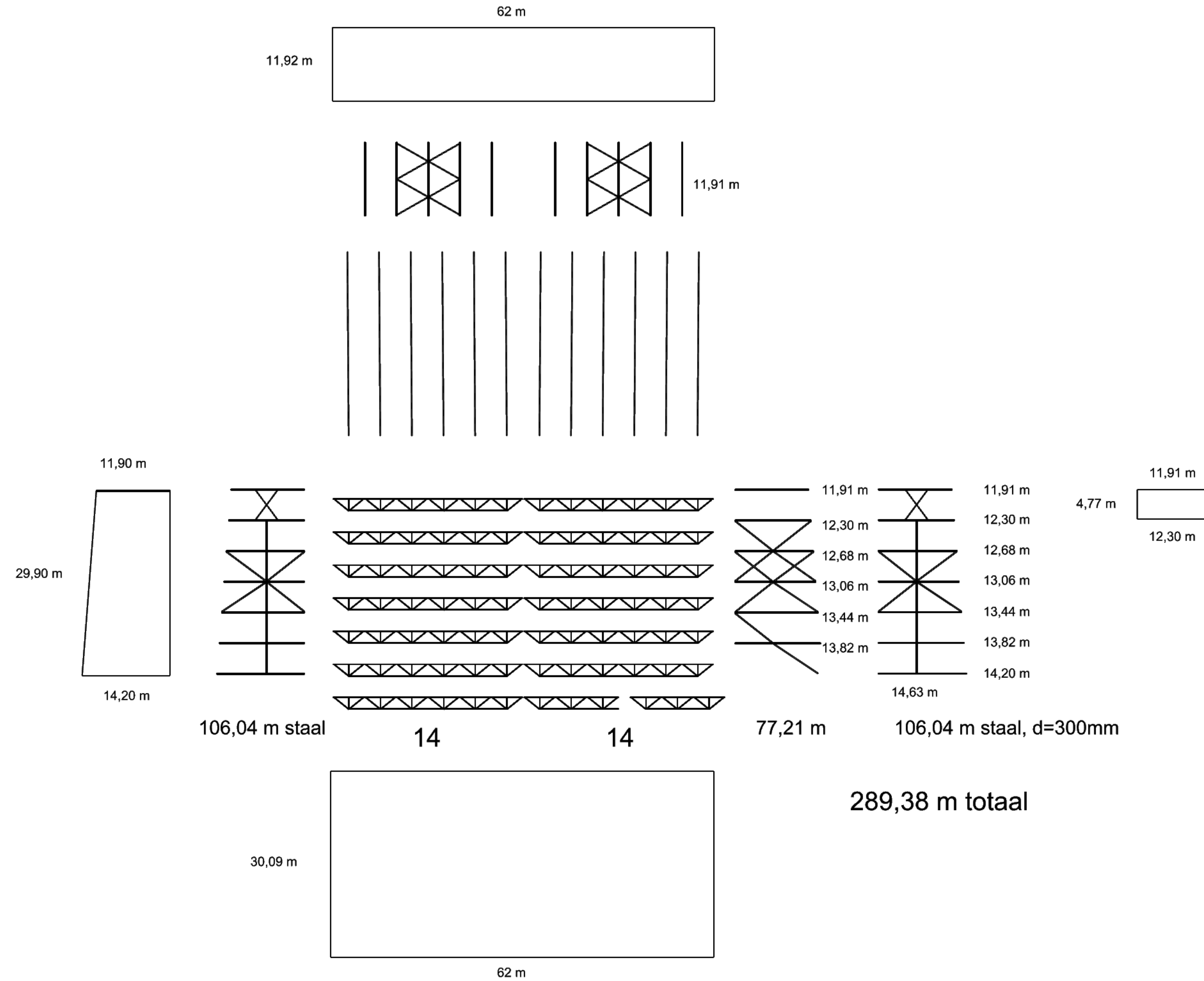
The elements that make up the design



Re-use

re-using an existing building





Identity

The character of the Binckhorst



3 Variants

The character of the Binckhorst

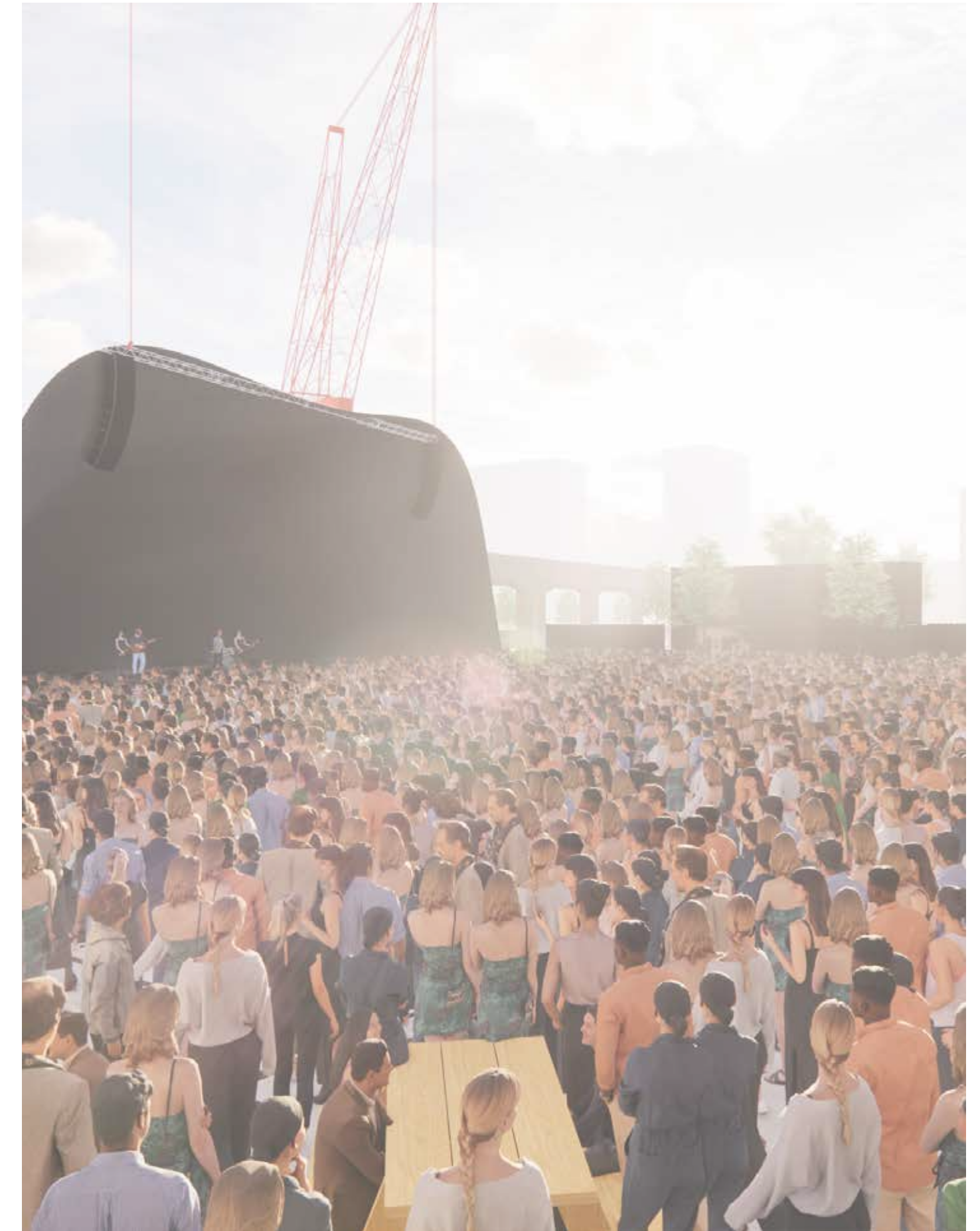
1. Performance, Practice, Workshop & Meeting



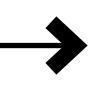
2. Big concert in the hall



3. 4-stage festival



Scale



Variant 1: approach

Imagine you are going to a concert...

The Modulator. | Hac Terrain, Binckhorst



Station Voorburg



Impression

Entrance South-East

The **Modulator**. | Hac Terrain, Binckhorst



Variant 1: approach

Imagine you are going to a concert

The Modulator | Hac Terrain, Binckhorst



Station Hollands Spoor



Impression

Entrance North-West

The Modulator. | Hac Terrain, Binckhorst



Variant 1

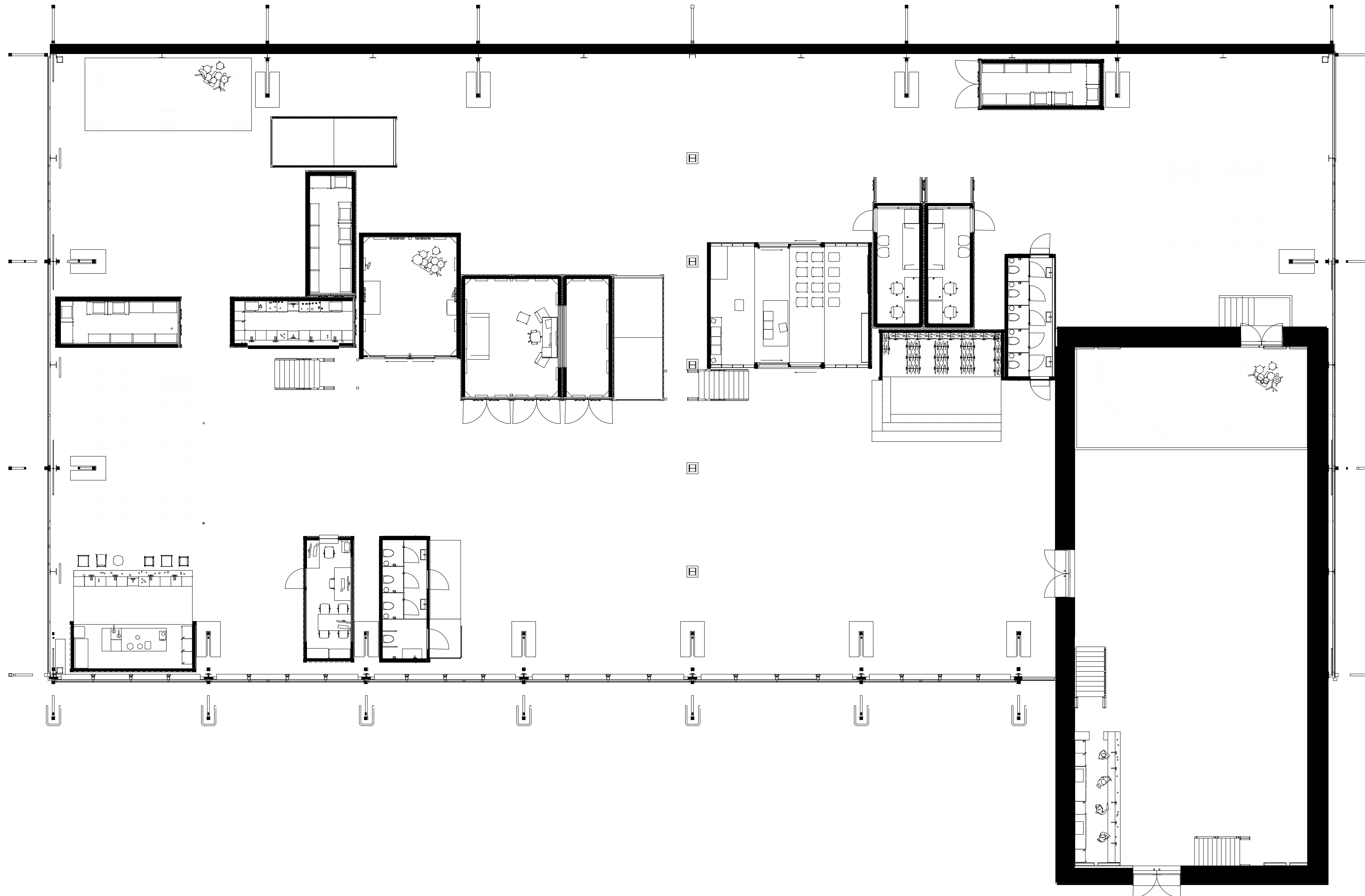
Performance, practice, workshop & meeting space

Equal combination between functions of exchange



Floor Plan

Performance, practice, workshop & meeting space



Variant 1: Impression

Interior

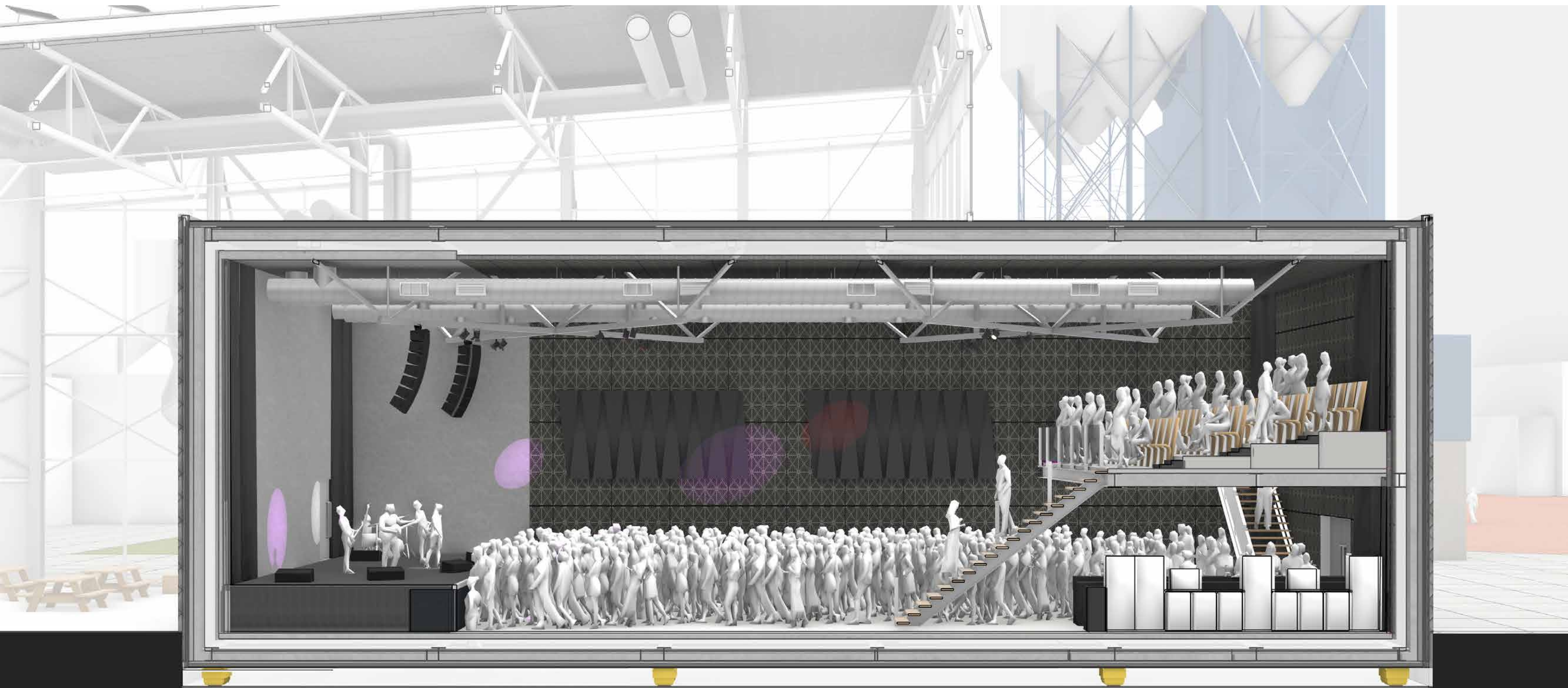
The Modulator. | Hac Terrain, Binckhorst

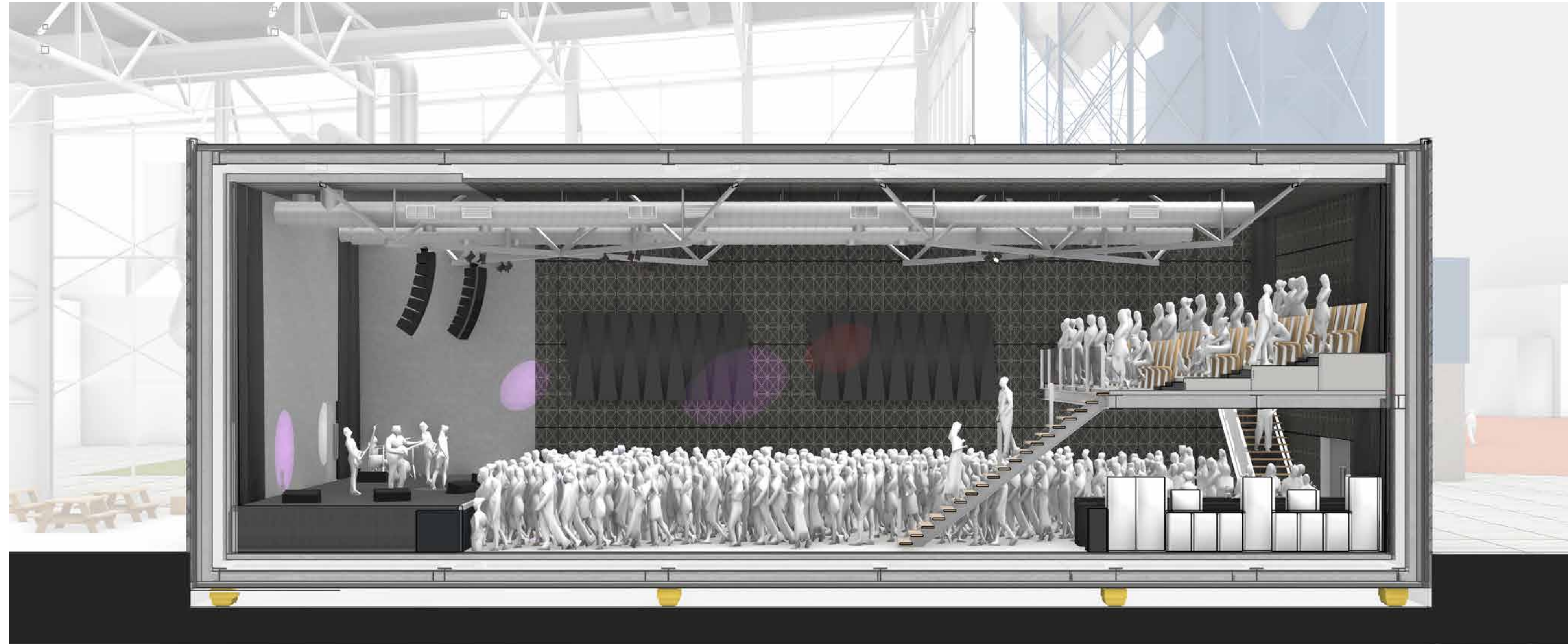


Main Hall

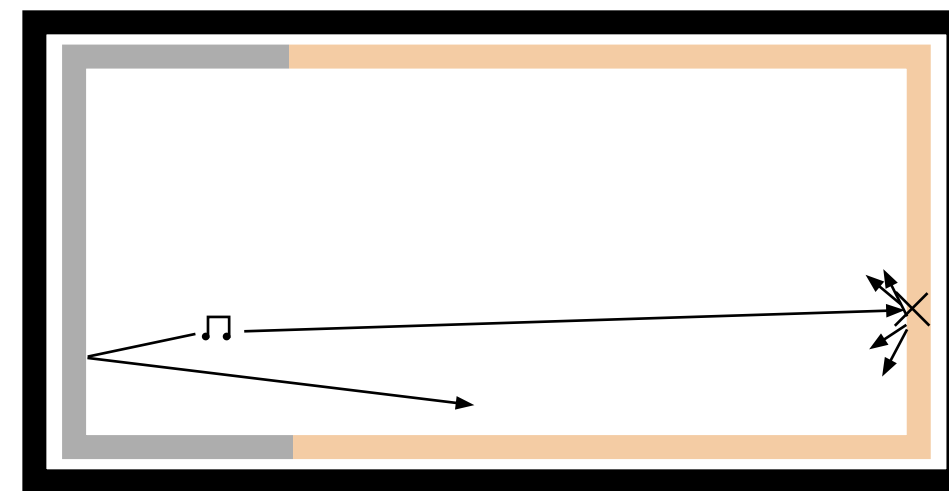
Section

The Modulator. | Hac Terrain, Binckhorst

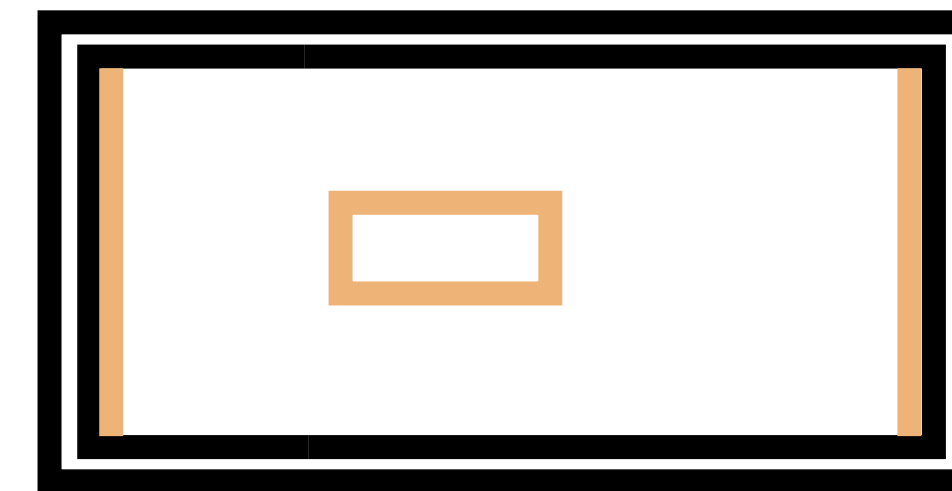




Box-in-box construction



Concrete behind stage for reflection,
rest of the hall acoustic panels for diffusion and
absorption



Diffusion panels and Curtains to be able to more
accurately dial in the amount of absorption and
reflection

Impression: main room

concert hall

The Modulator. | Hac Terrain, Binckhorst



Catalogue

11

Picture



Picture

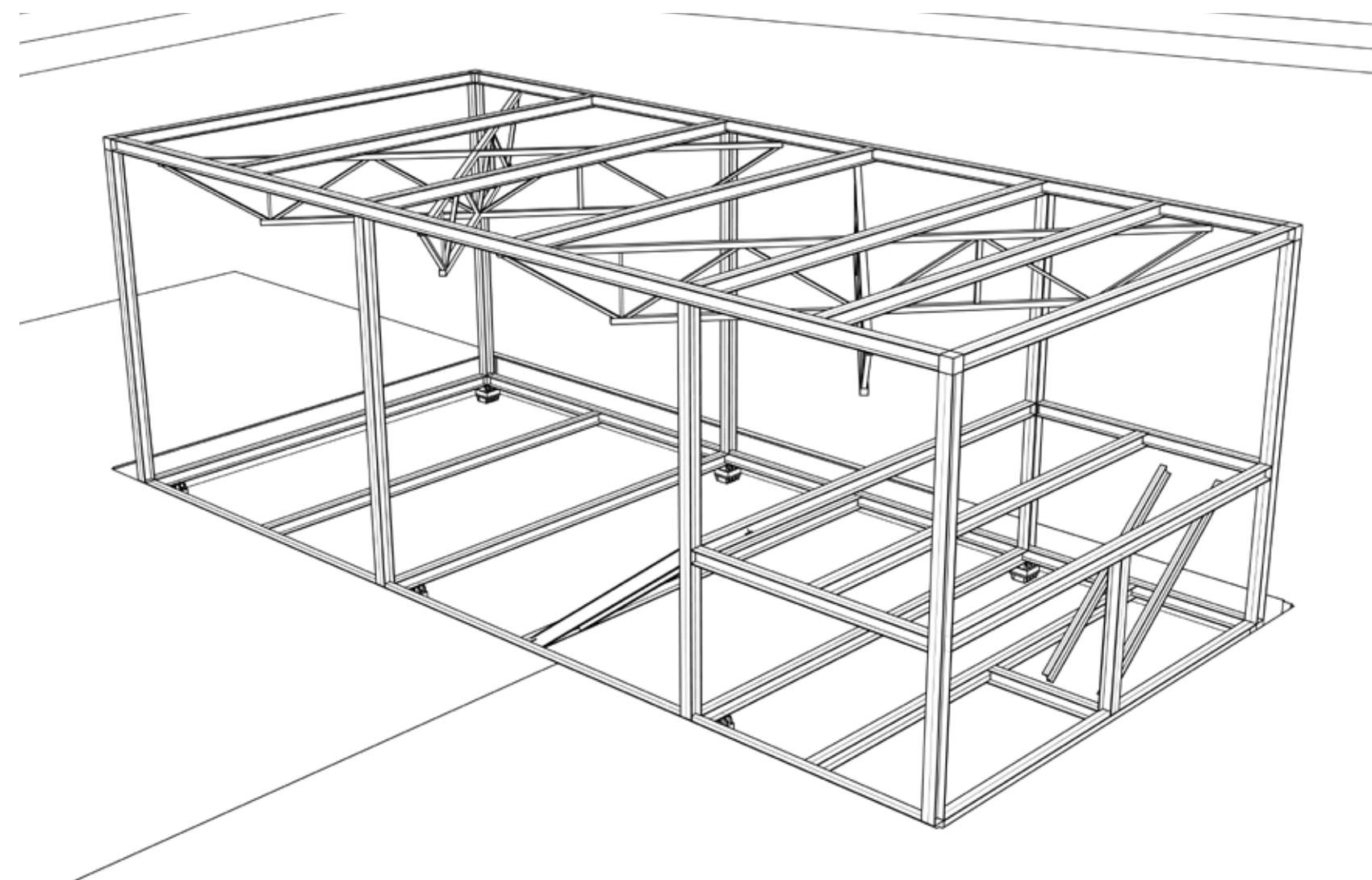
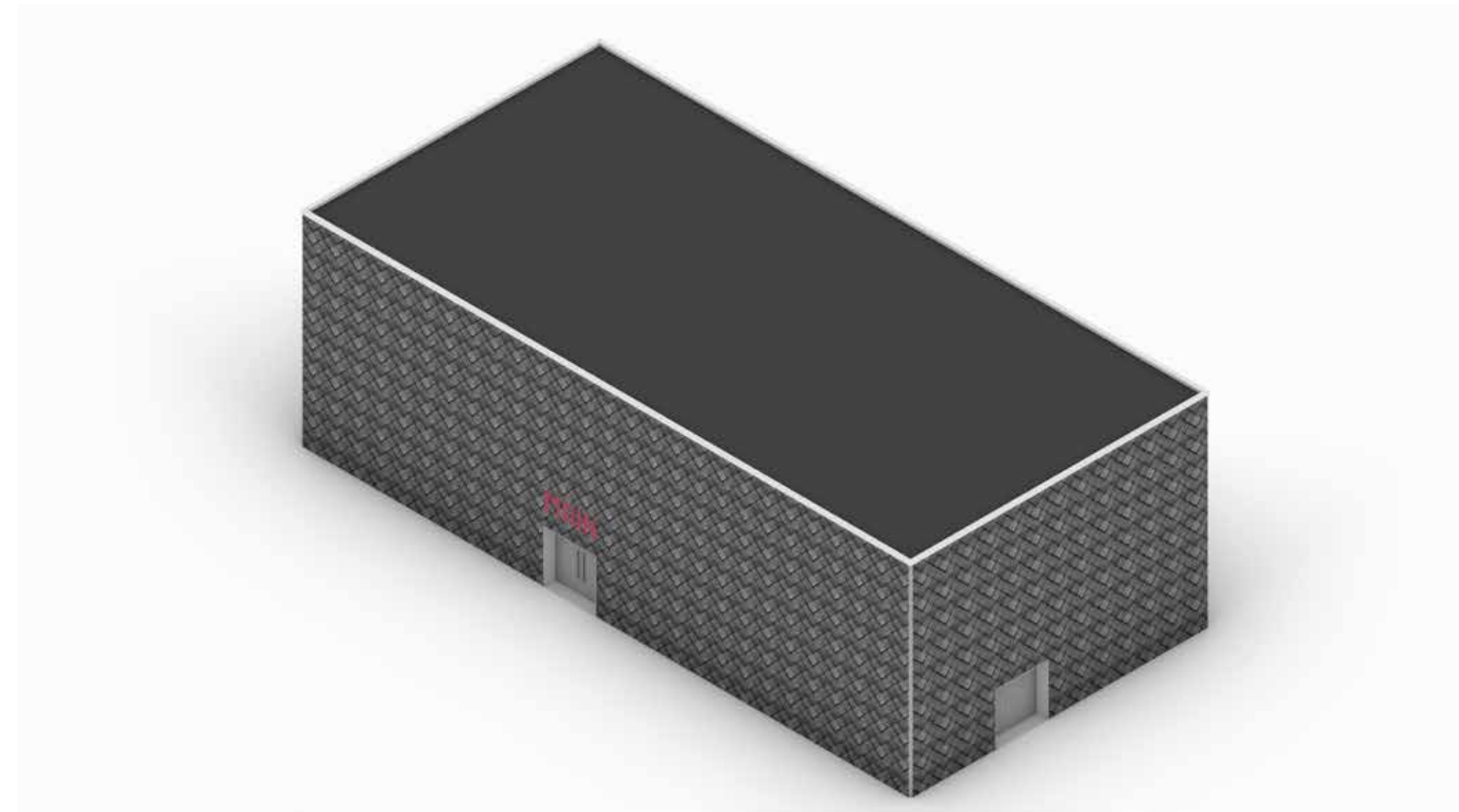


Profile

Info

-Many building materials come packed in plastic foil. Over the course of many building projects in the Binckhorst this can stack up to many tons of plastic. This plastic can be used to create facade panels.

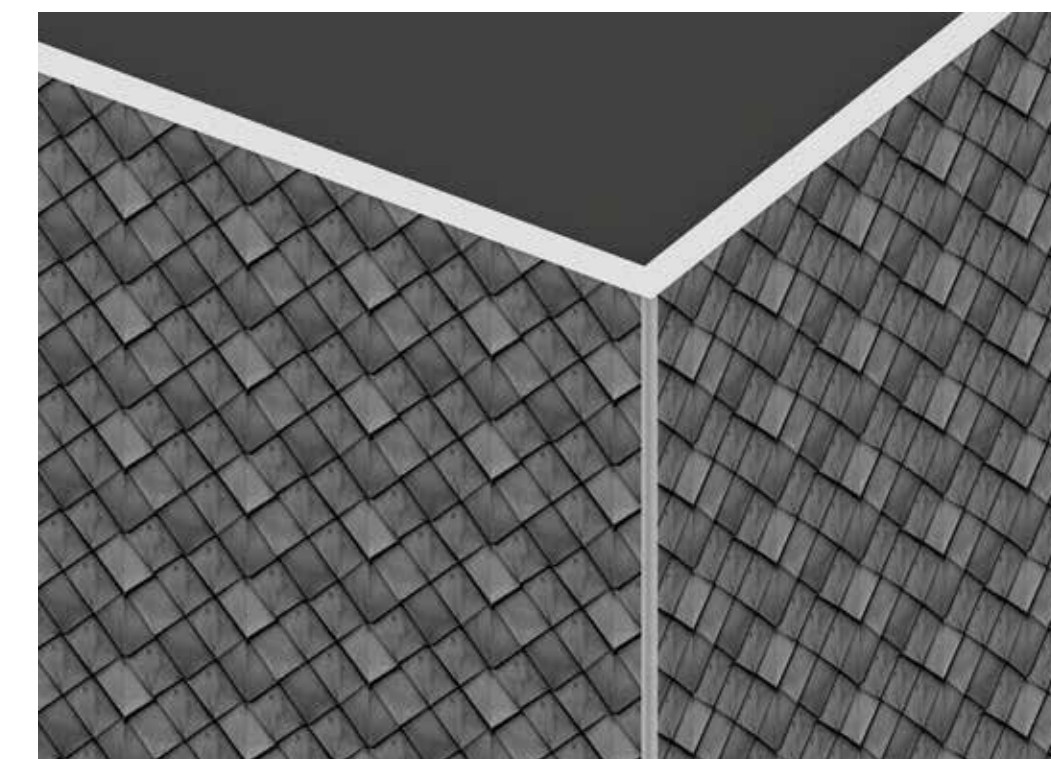
Main room



Material



Reference | Dutch Design Week pavillion, Bureau SLA & De Overtreders W



Component | *Corner profile*



Component | *Roof trim*

Impression: meeting space

connecting the functions

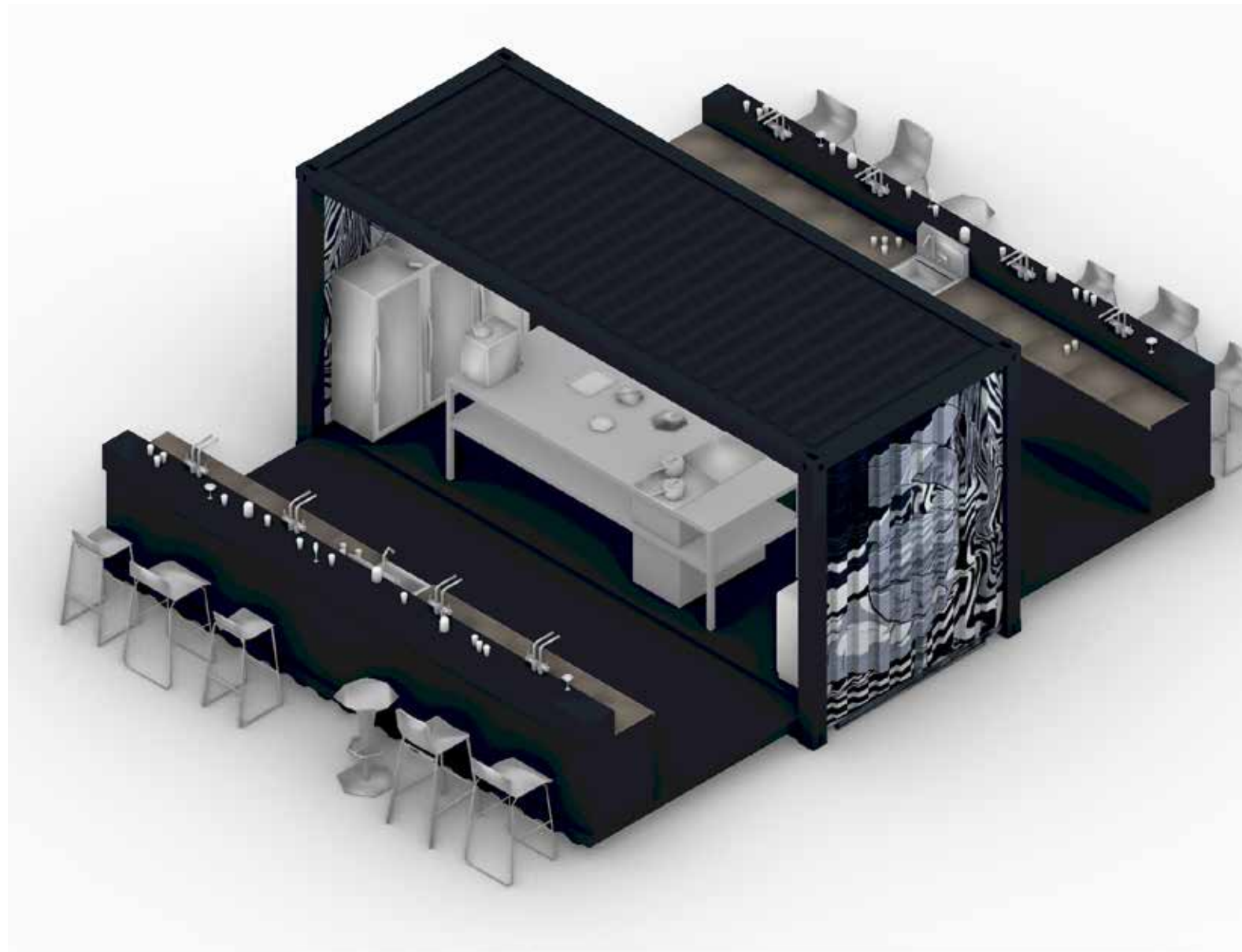
The Modulator. | Hac Terrain, Binckhorst



Bar

Module

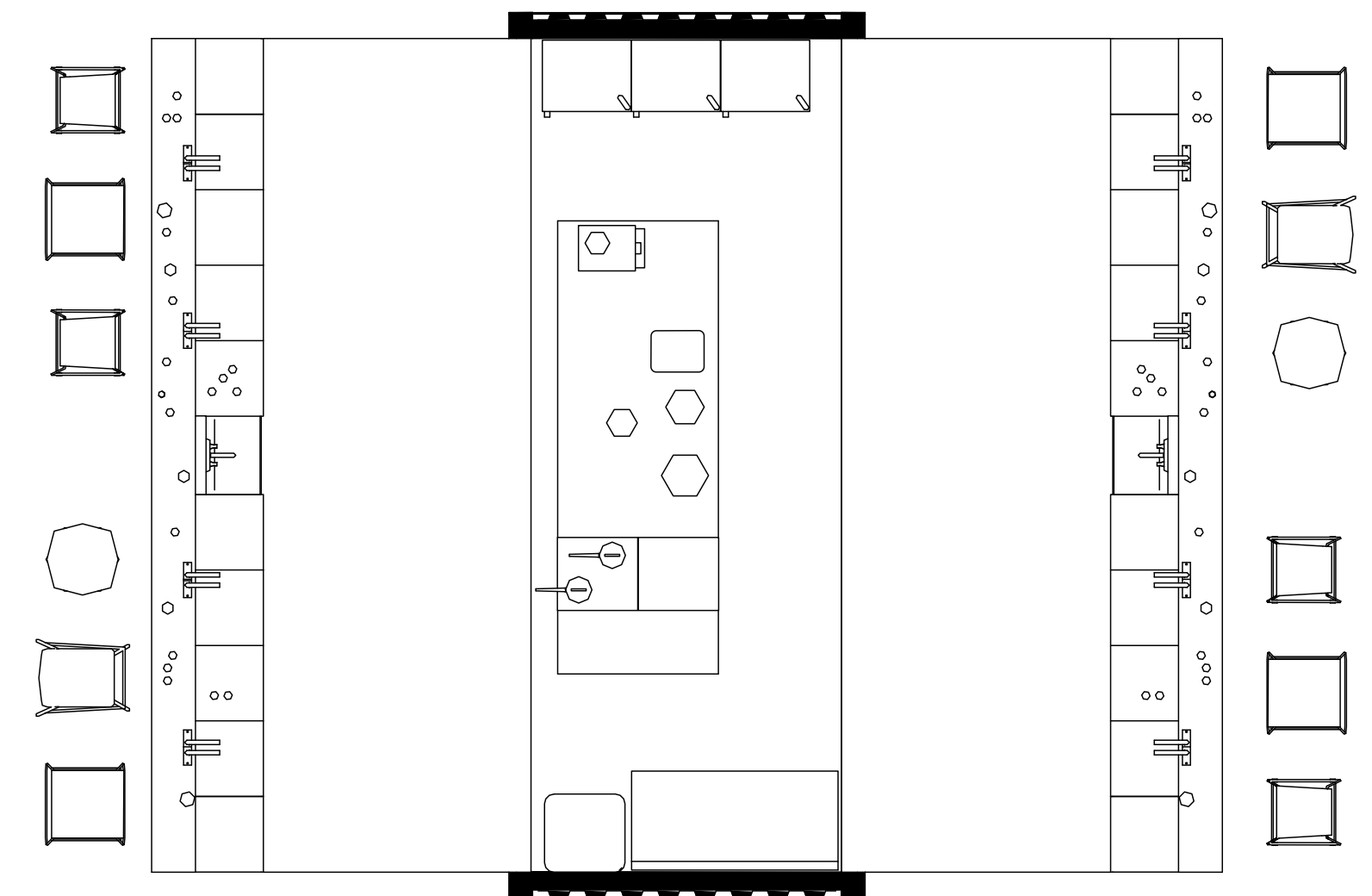
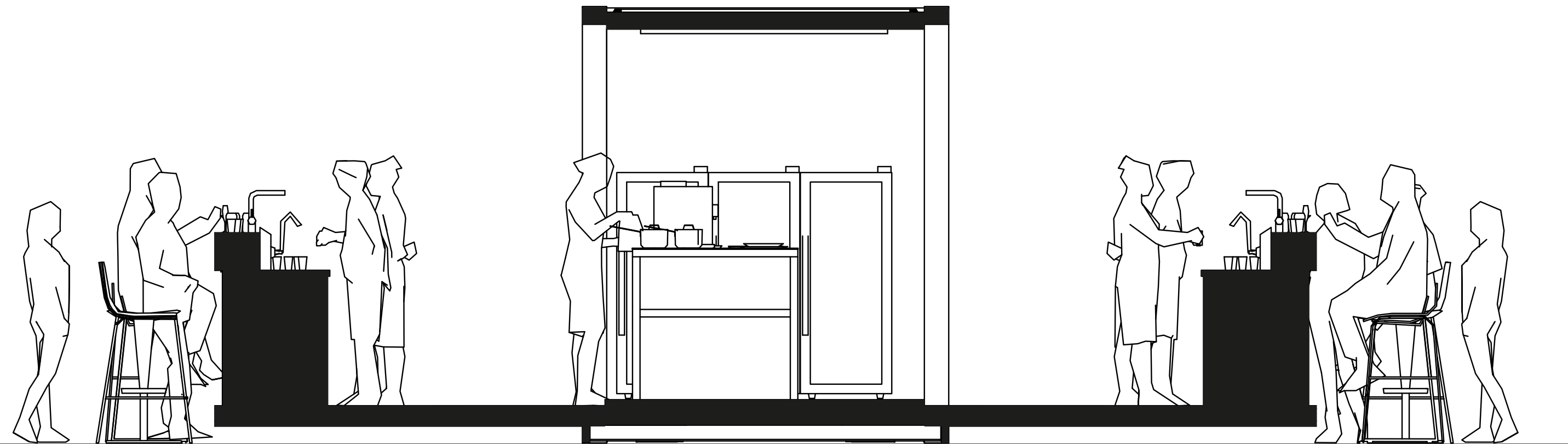
The **Modulator**. | Hac Terrain, Binckhorst



type | Building container

area | 40 / 26 m²

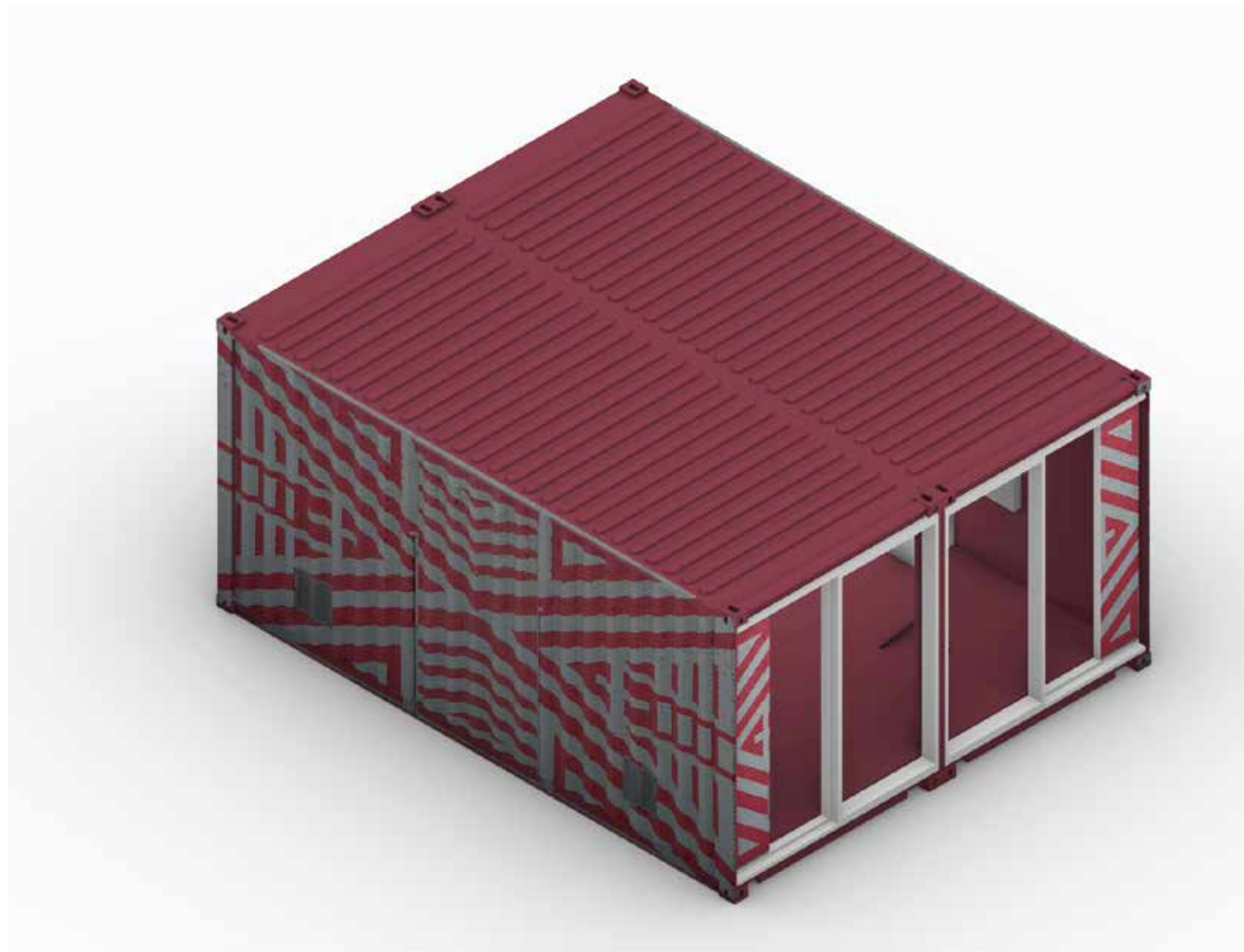
Req. | Packable, water & sewage connection



Practice container

Module

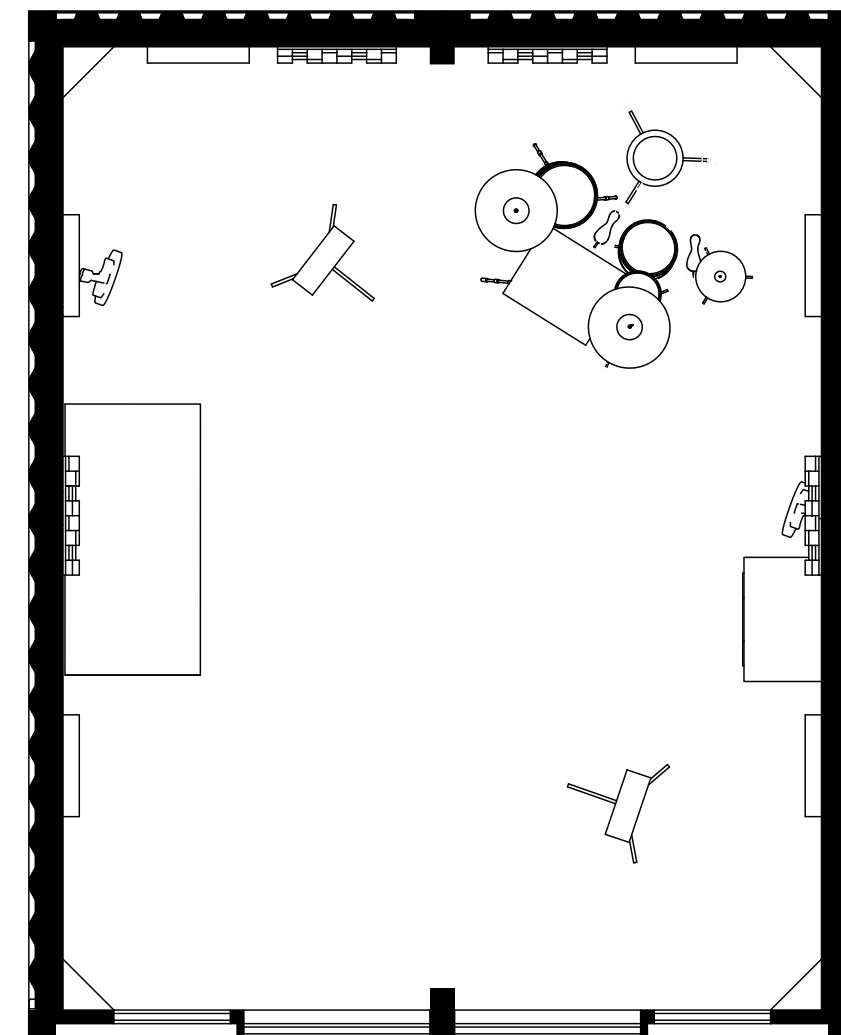
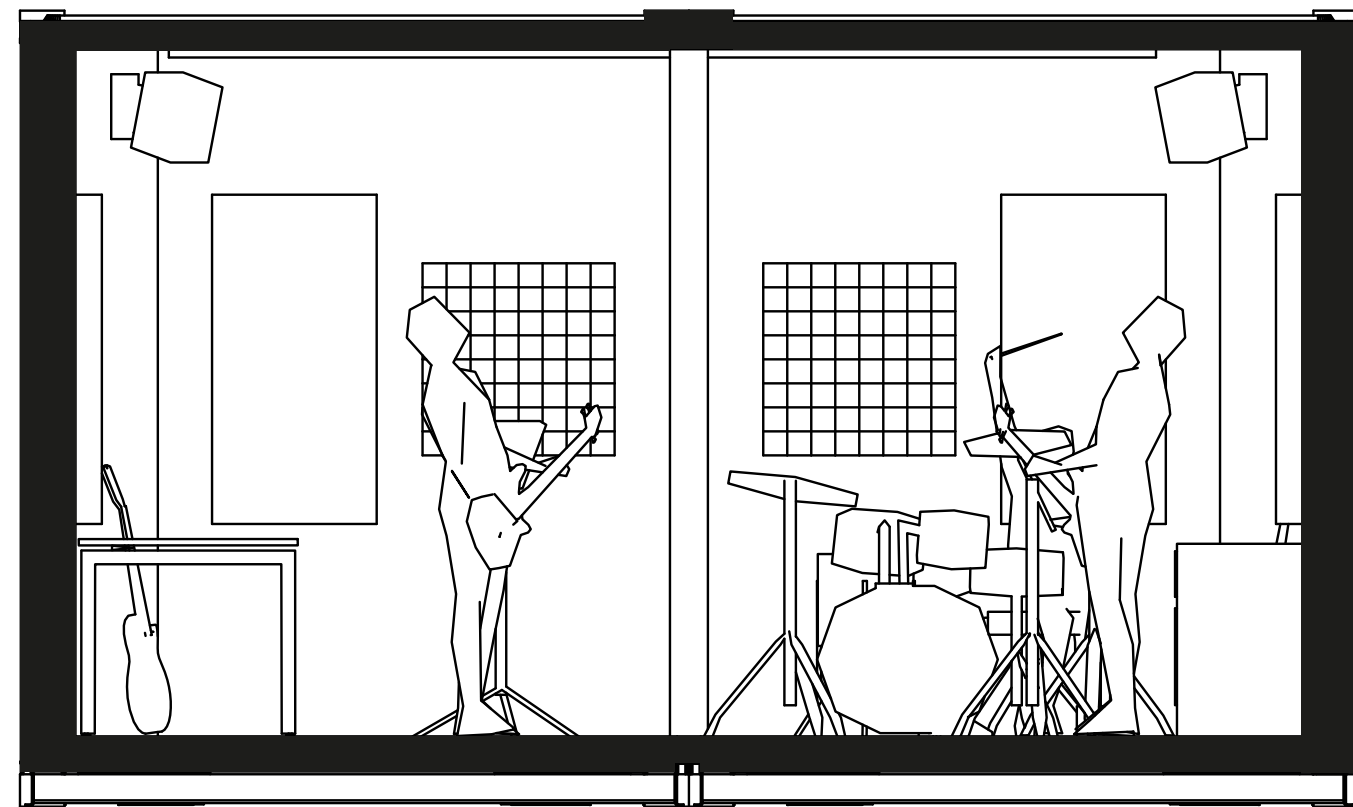
The **Modulator**. | Hac Terrain, Binckhorst



type | *Re-used double container*

area | *29 m²*

Req. | *Soundproof*



Impression: Practice container

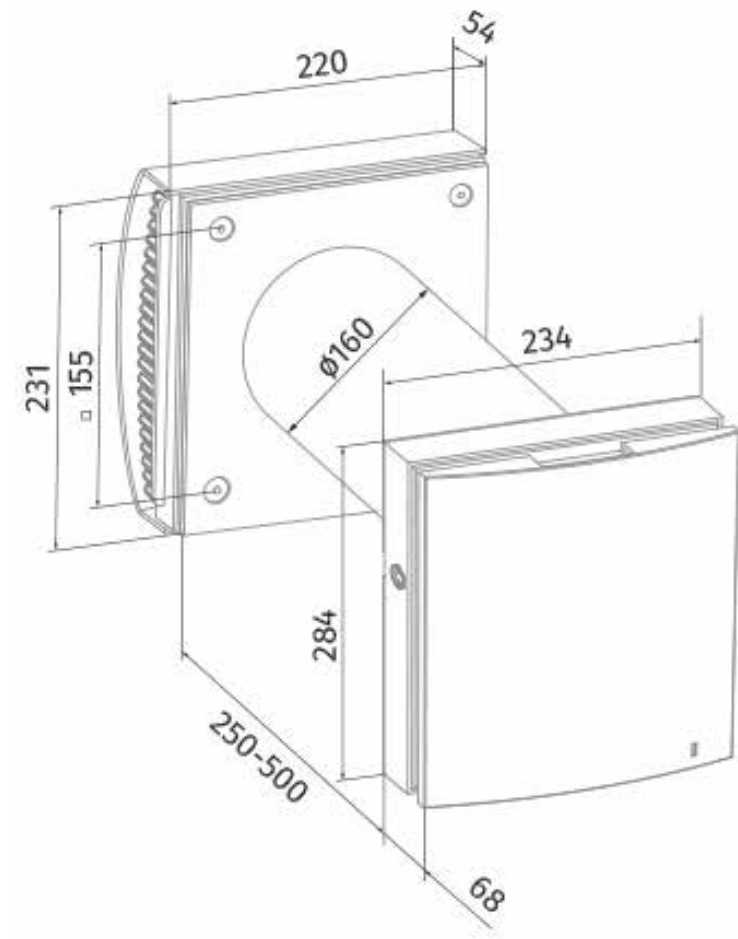
Module

The Modulator. | Hac Terrain, Binckhorst



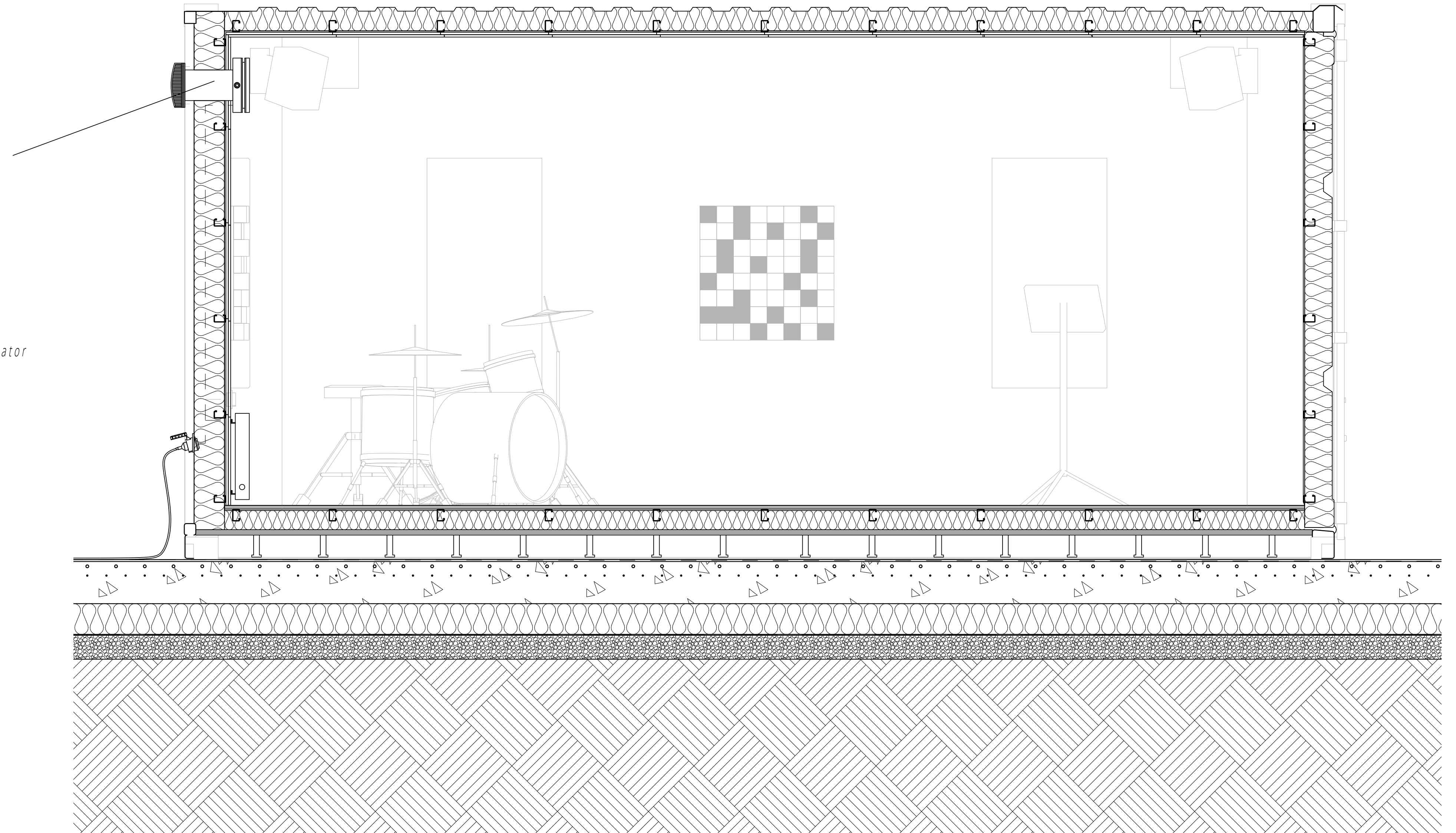
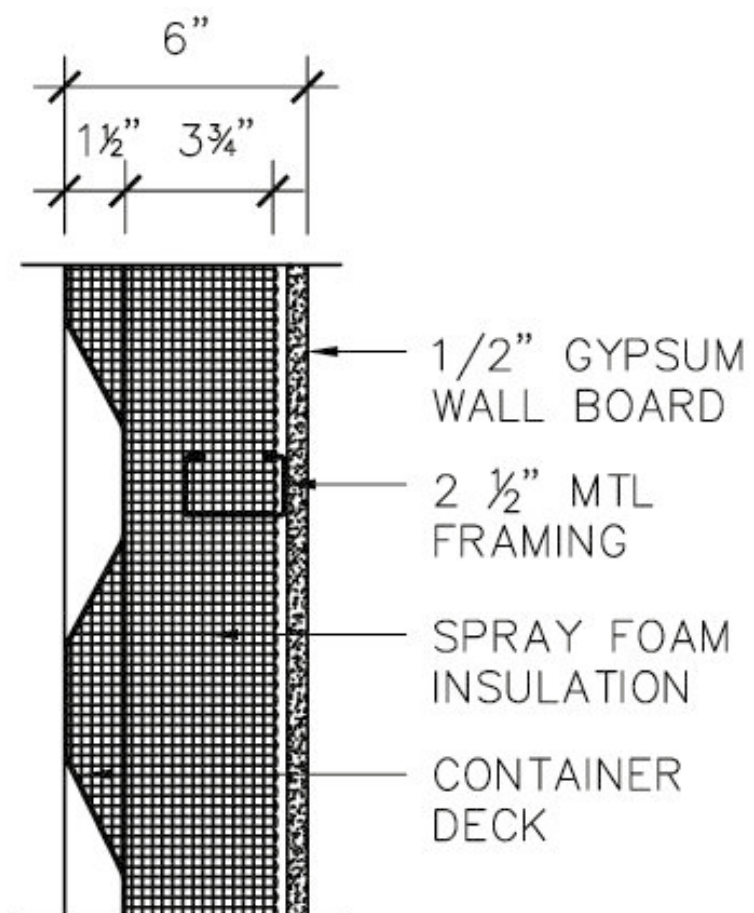
Module

Technical methods and systems used



Reference | *Blauberg vento expert 2 way ventilator with 85% heat recovery*

Reference | *Container insulation detail*



Shipping containers v.s. Building containers

Limitations of re-use

Shipping container



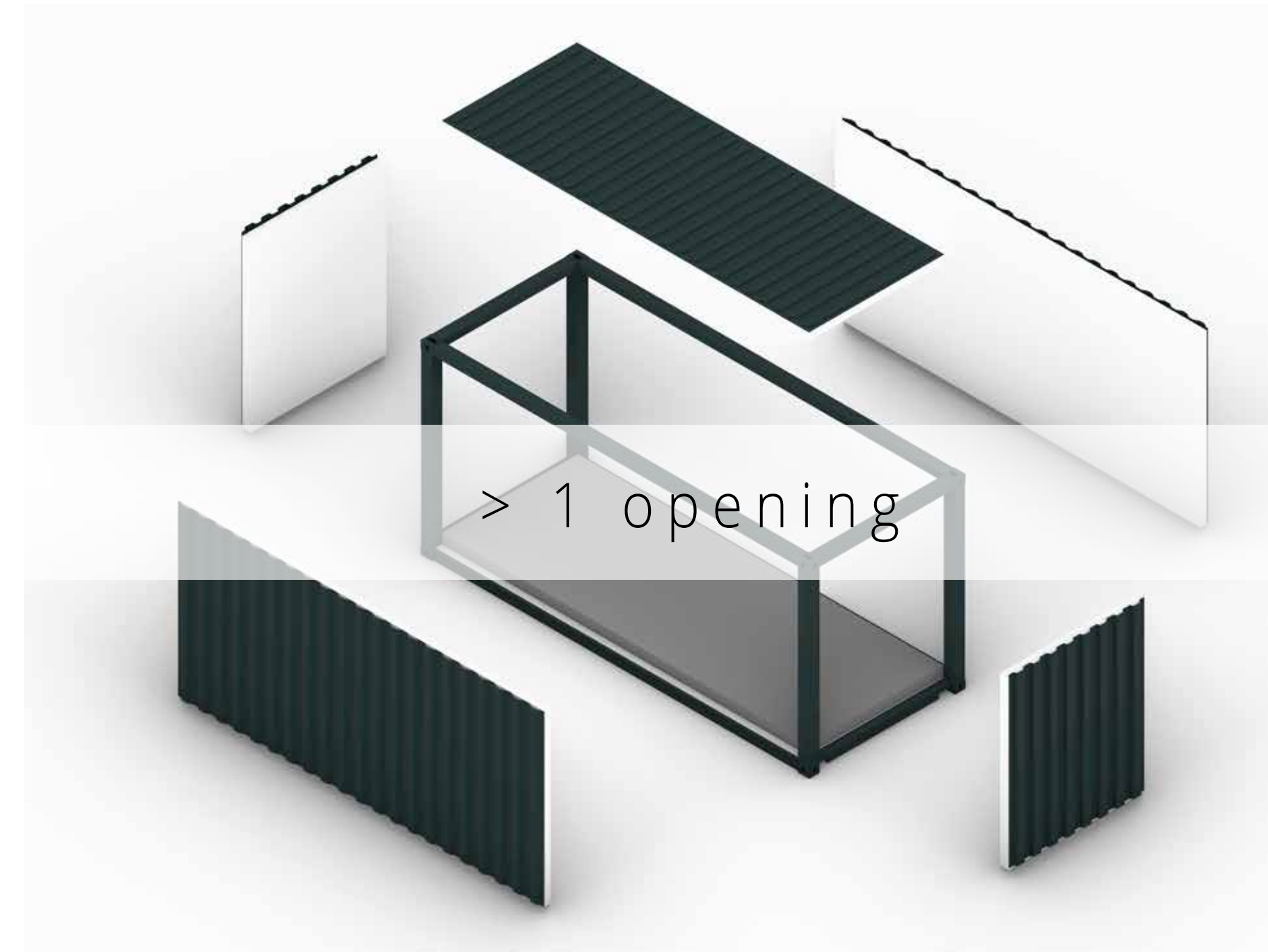
0 / 1 opening

Structure | All parts required for structural integrity

State | Used

Sustainability? | re-use / upgrade / sidegrade

Building container



> 1 opening

Structure | Structural frame and infill separate

State | New

Sustainability? | Circular

Architecture of containers

The **Modulator**. | Hac Terrain, Binckhorst

Factors that contribute to the architecture

Appearance

(color, material, pattern, light, transparency)

Space inside

(What space does the container create inside?)

Identity

(What rest space is created between the containers?)

Height

(Different levels)

Openings

(What space does the container create inside?)

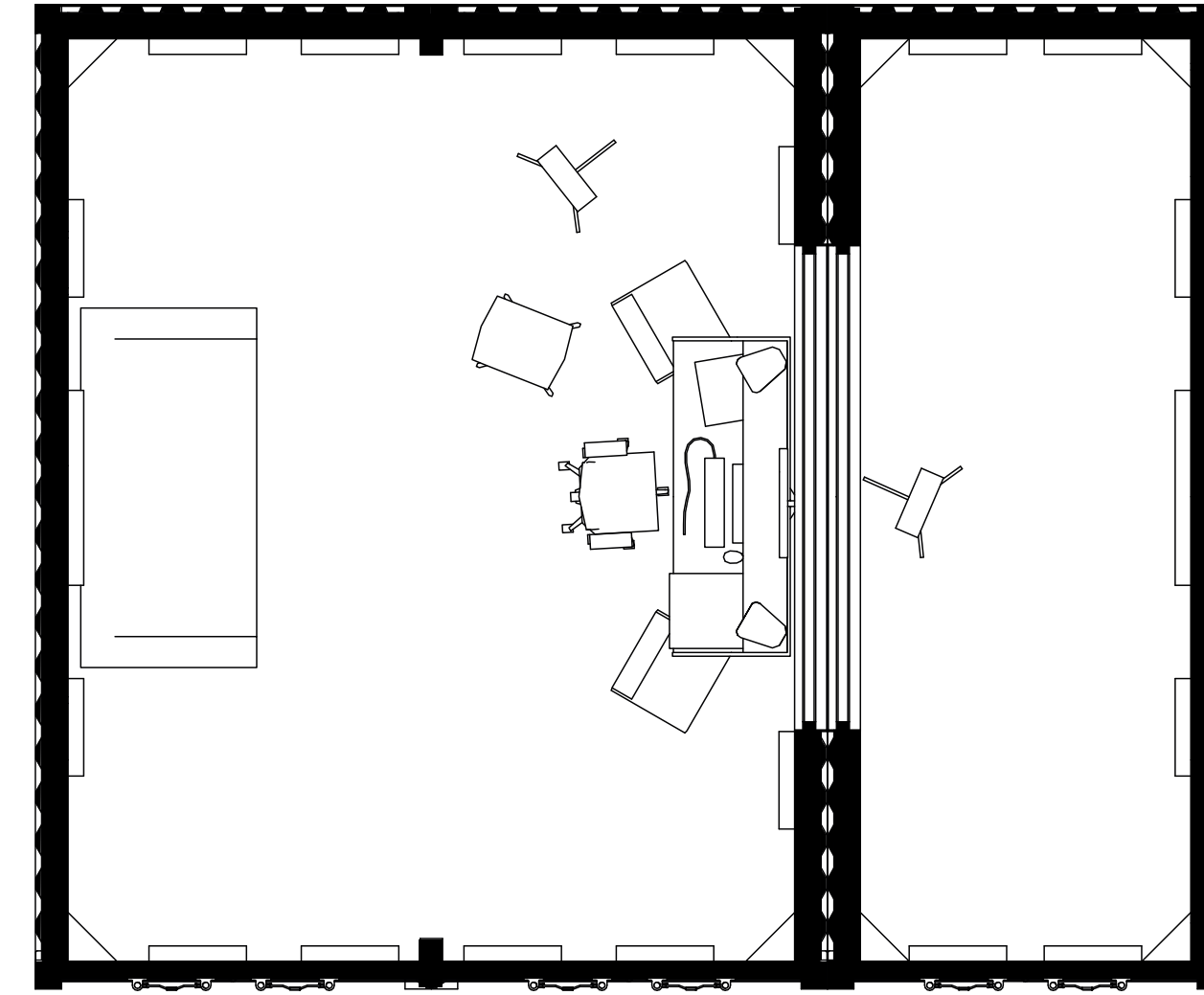
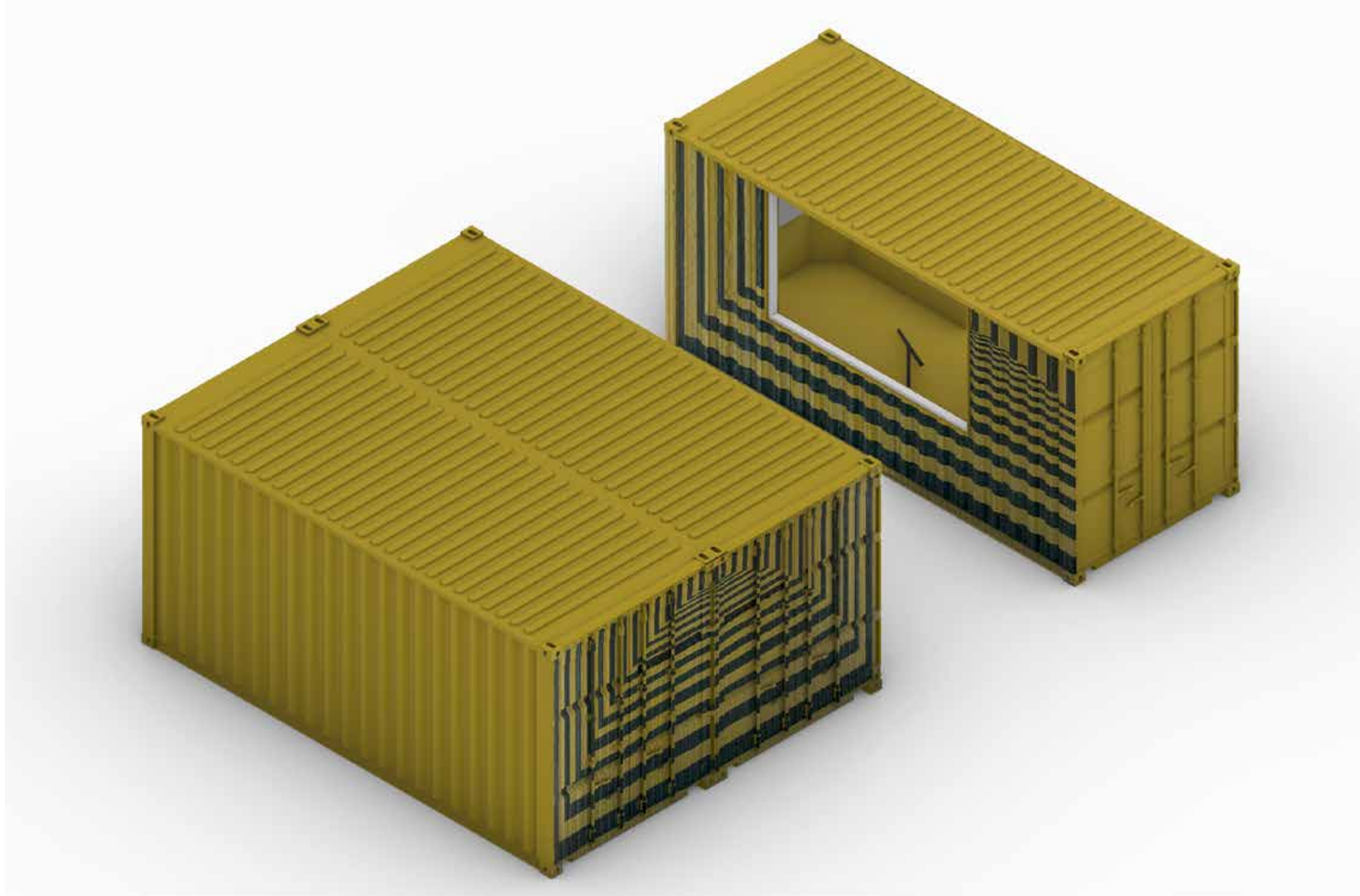
Movement and expandability

(What rest space is created between the containers?)

Studio container

Module

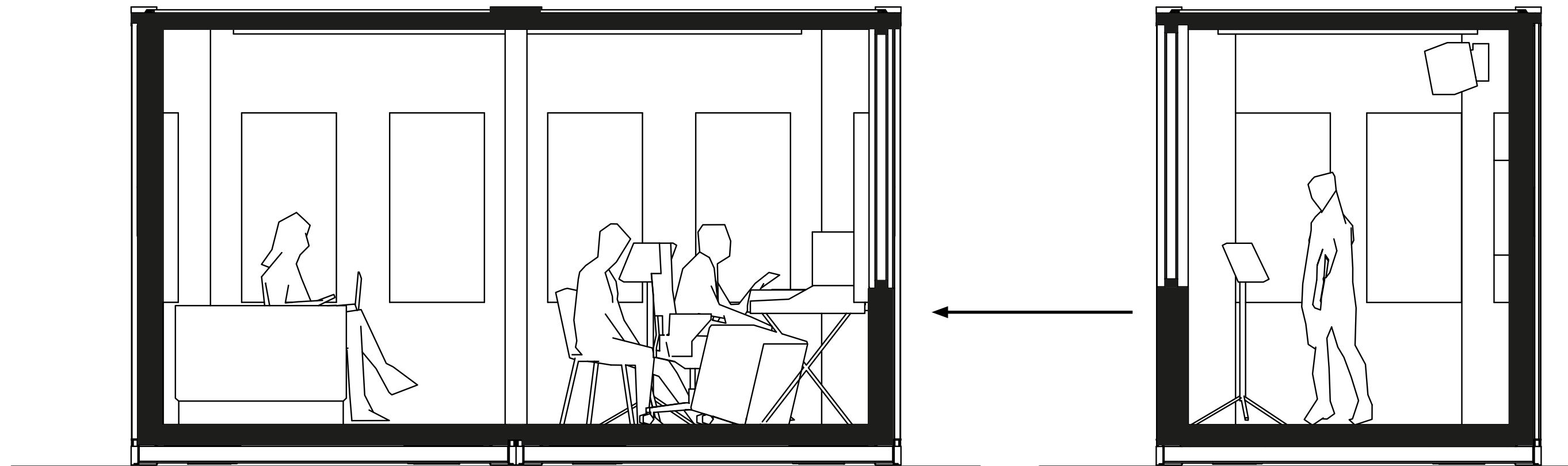
The **Modulator**. | Hac Terrain, Binckhorst



type | *Re-used double container*

area | *29 m²*

Req. | *Soundproof*

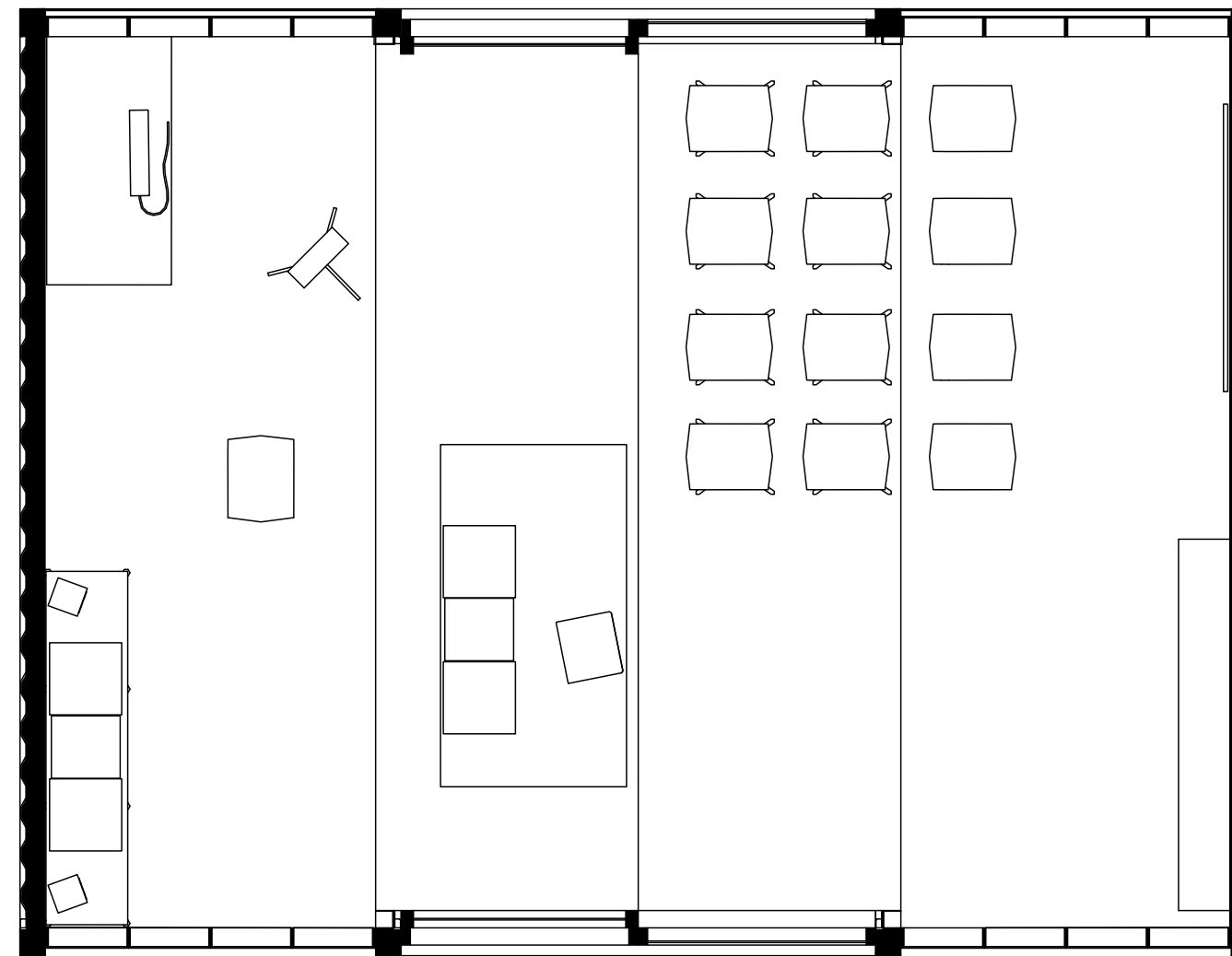
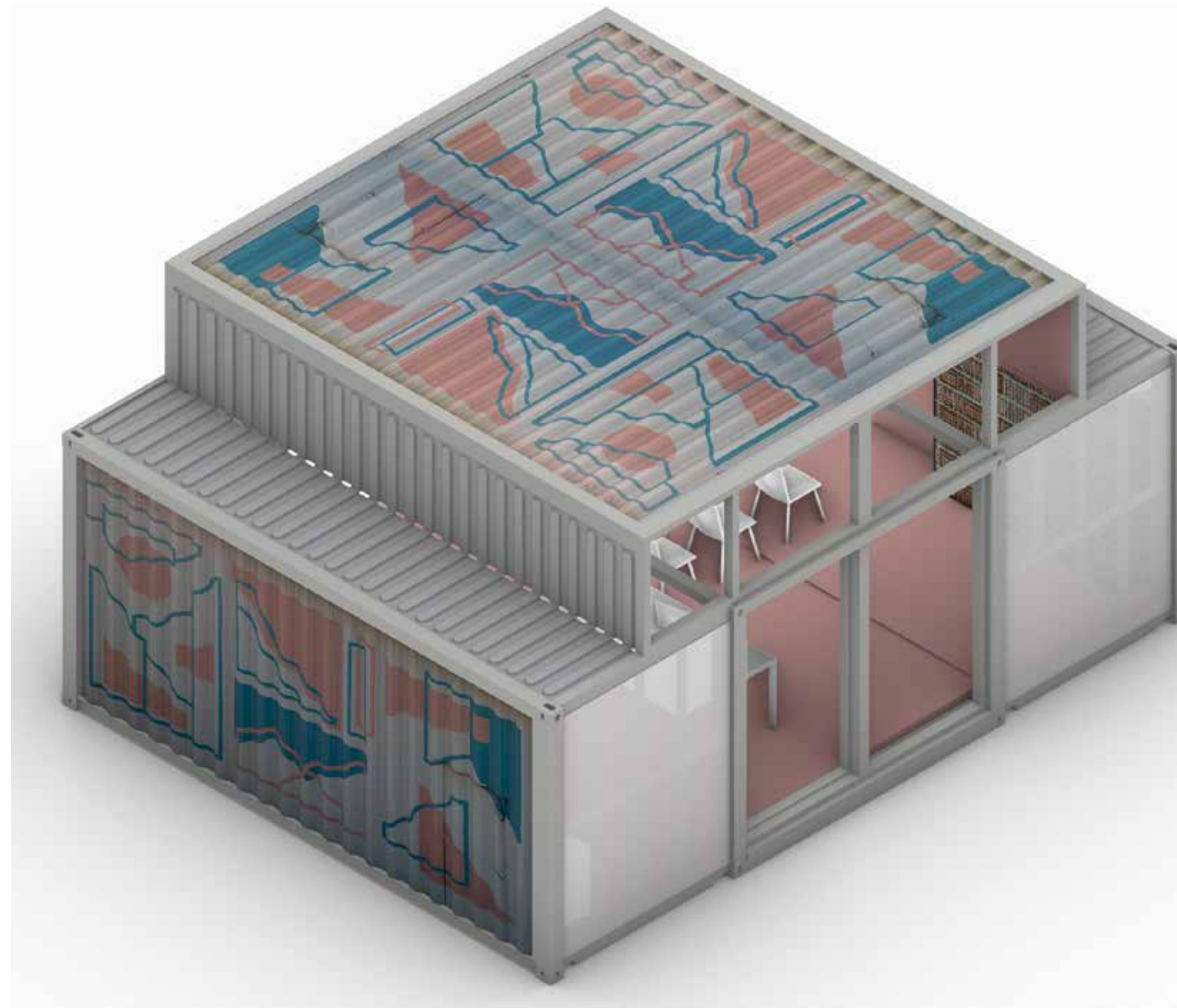




Workshop container

Module

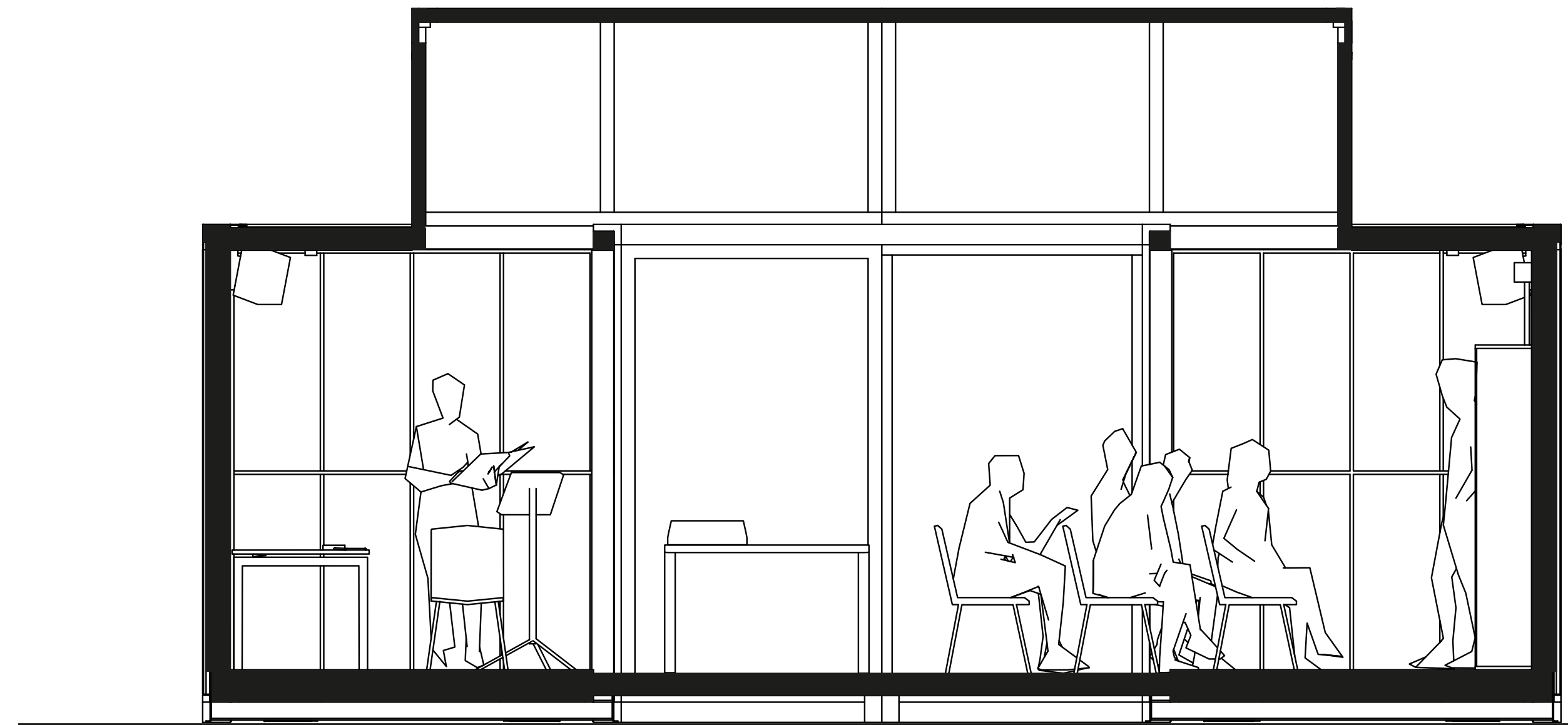
The **Modulator**. | Hac Terrain, Binckhorst



type | *Building container*

area | 40

Req. | *Packable*



Studio container

Module

The Modulator. | Hac Terrain, Binckhorst



Stage 2: adaptable

Adaptable stage with adaptable capacity

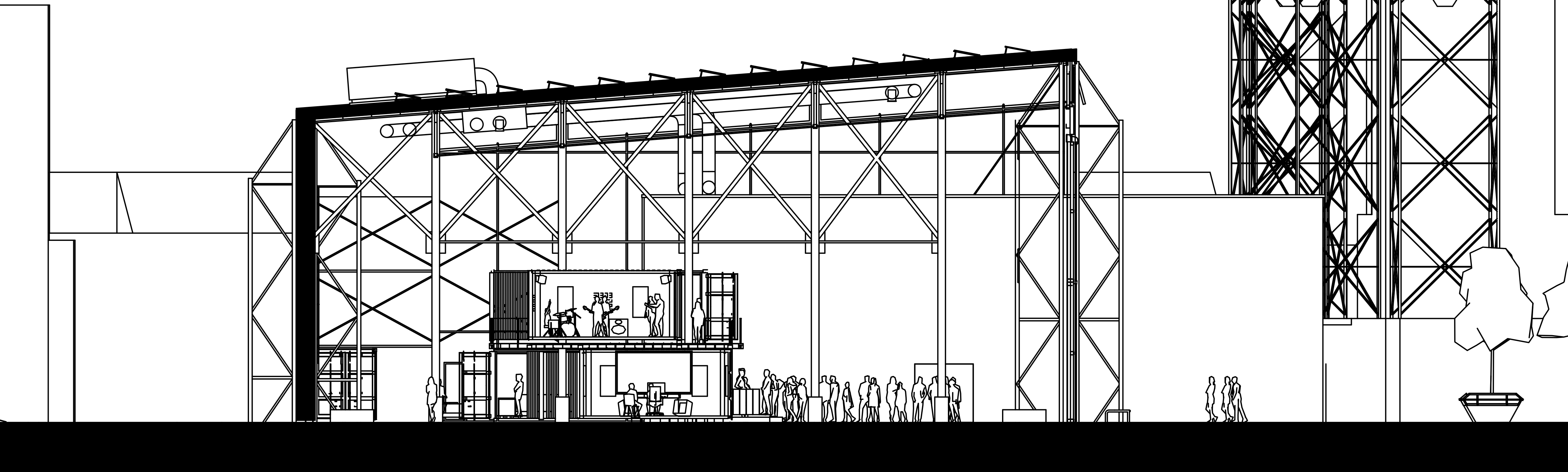
The **Modulator**. | Hac Terrain, Binckhorst



Conclusion: variant 1

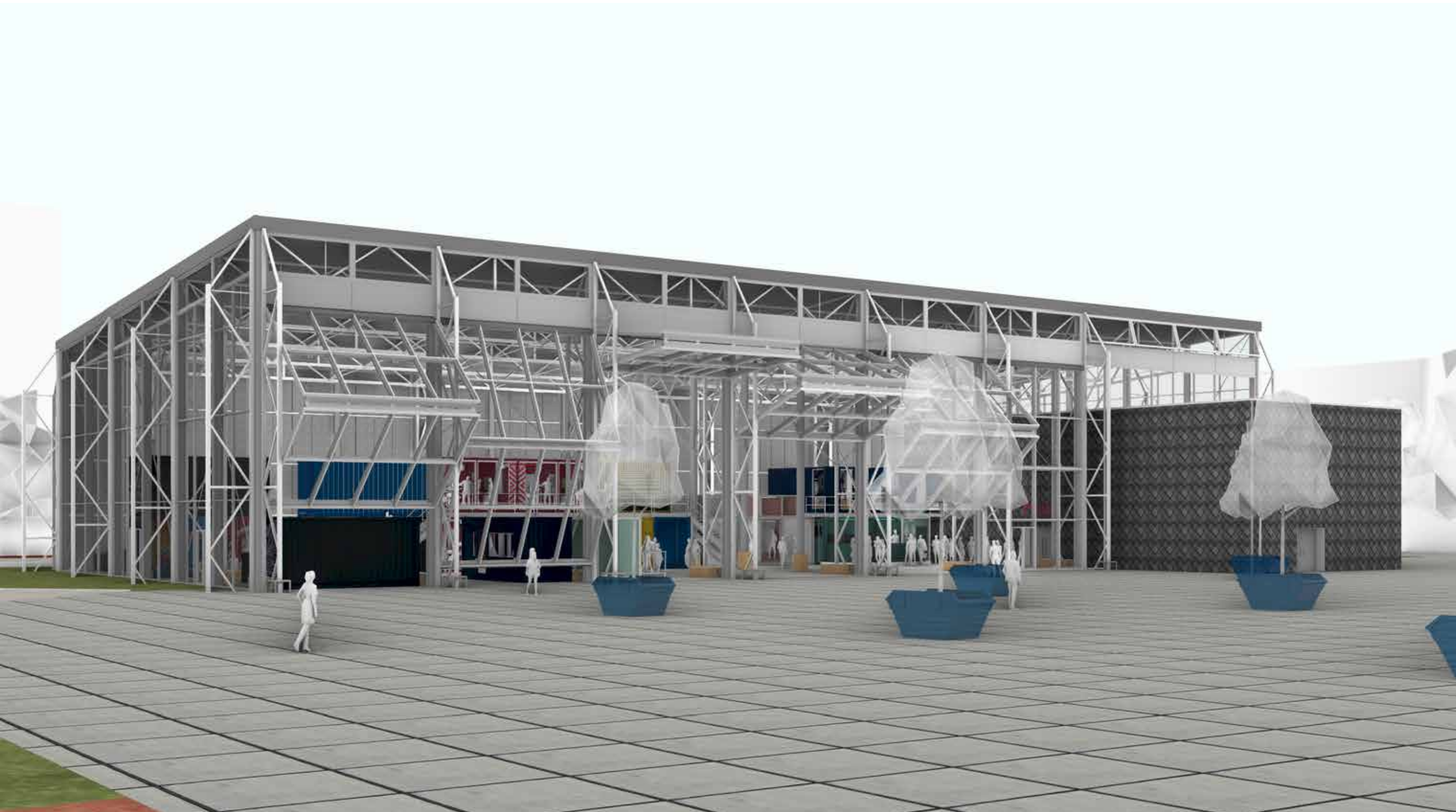
Adaptable stage with adaptable capacity

The Modulator. | Hac Terrain, Binckhorst

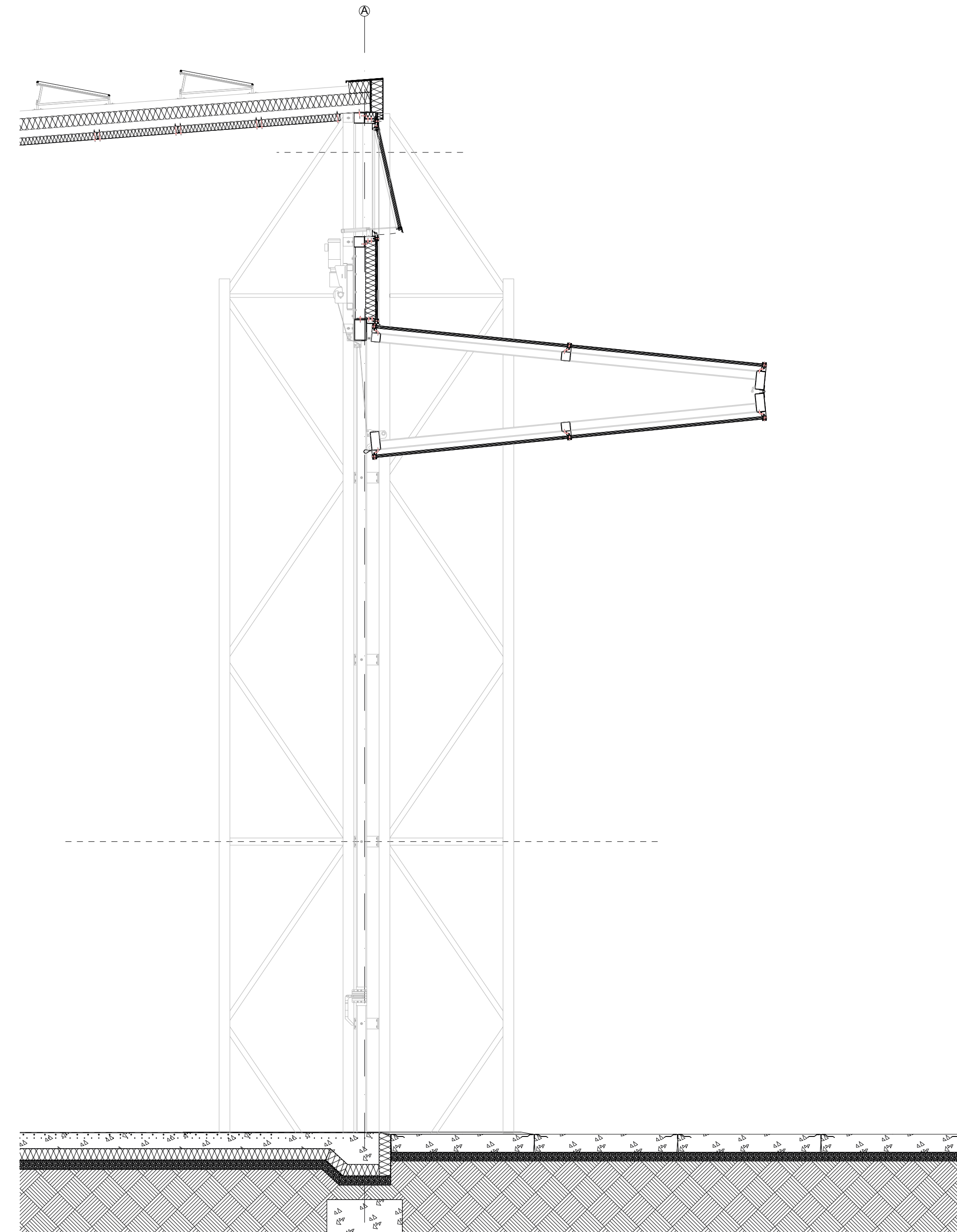


Changing the Building

Opening the facade



1:20 - voorgevel - detail versie

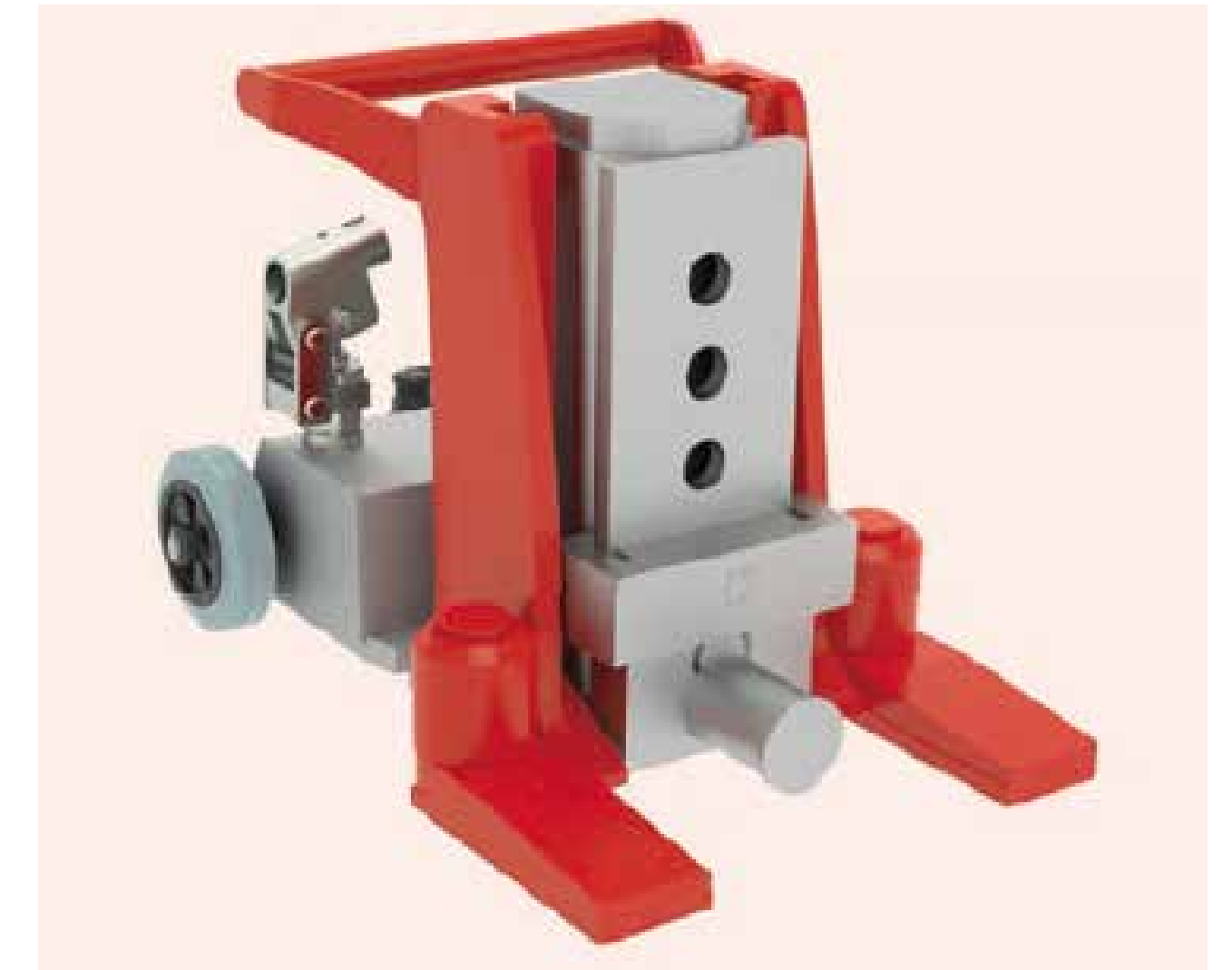


Transporting the containers

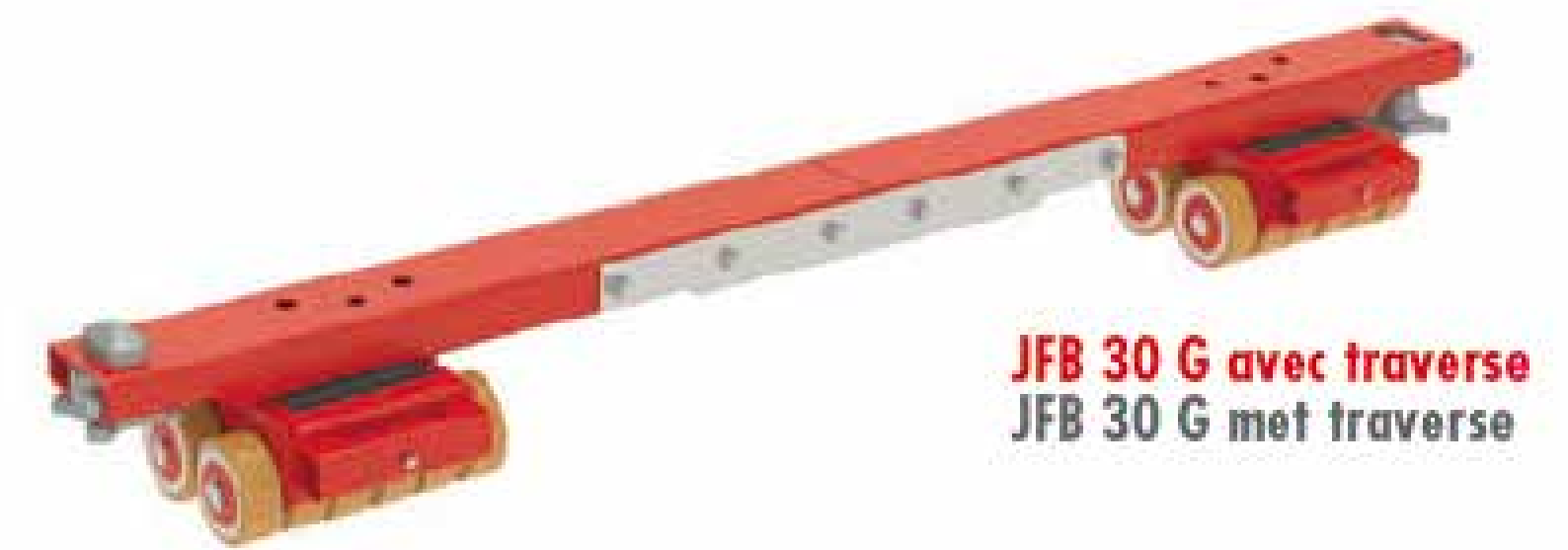
The system of movement



The **Modulator**. | Hac Terrain, Binckhorst



System | *Pneumatic raiser - JUNG Catalogue 2019-20*

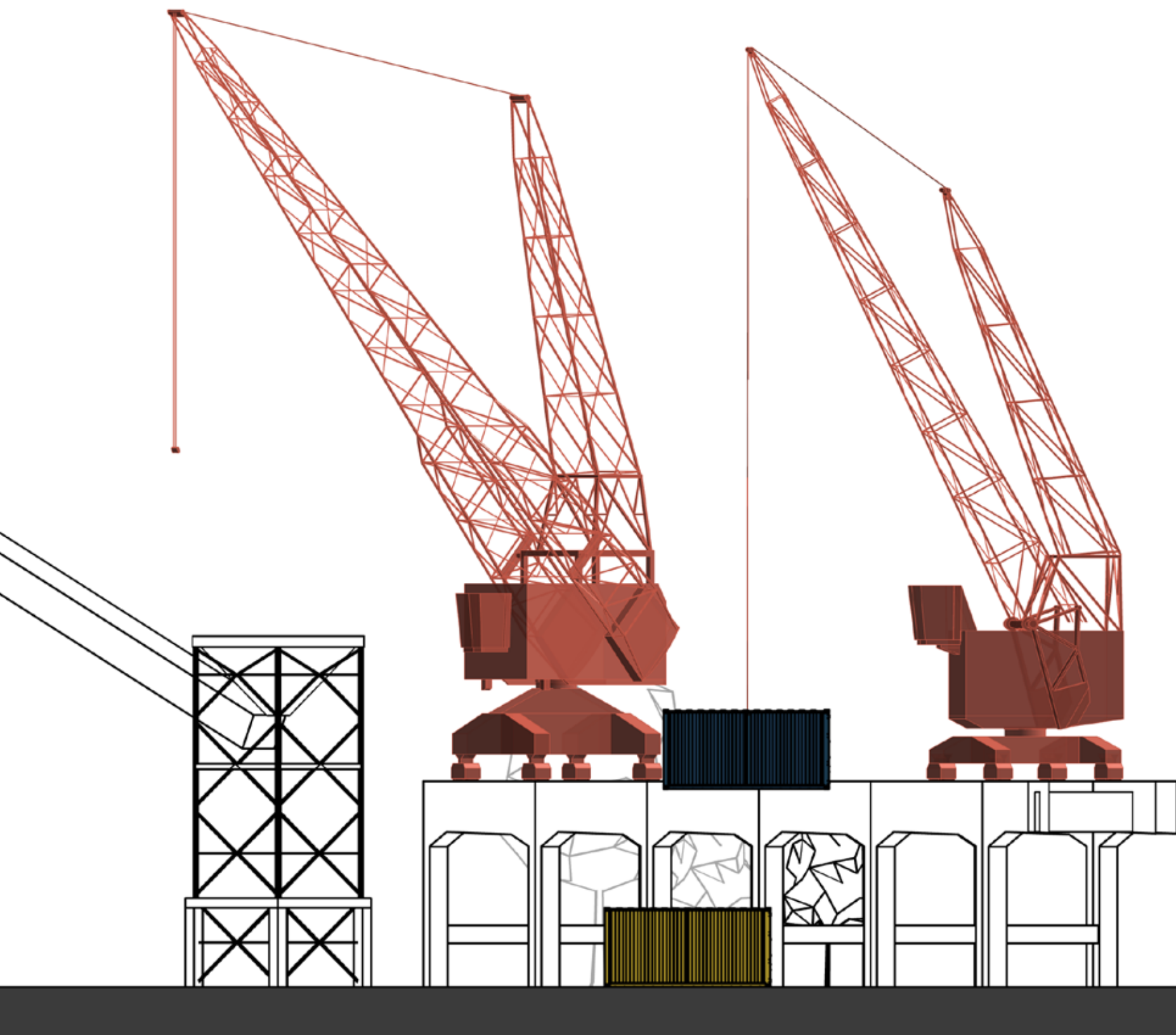


JFB 30 G avec traverse
JFB 30 G met traverse

System | *Transport Casette - JUNG Catalogue 2019-20*

Stacking the containers

The system of movement



The **Modulator**. | Hac Terrain, Binckhorst



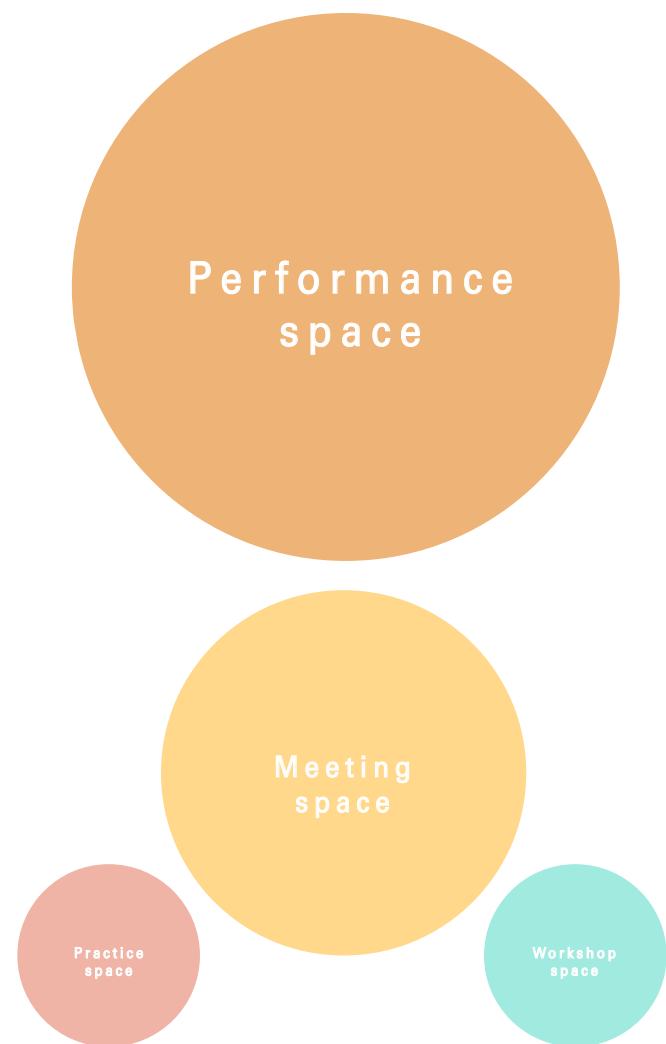
Images | Cranes at the HAC terrain



Variant 2: Big Concert

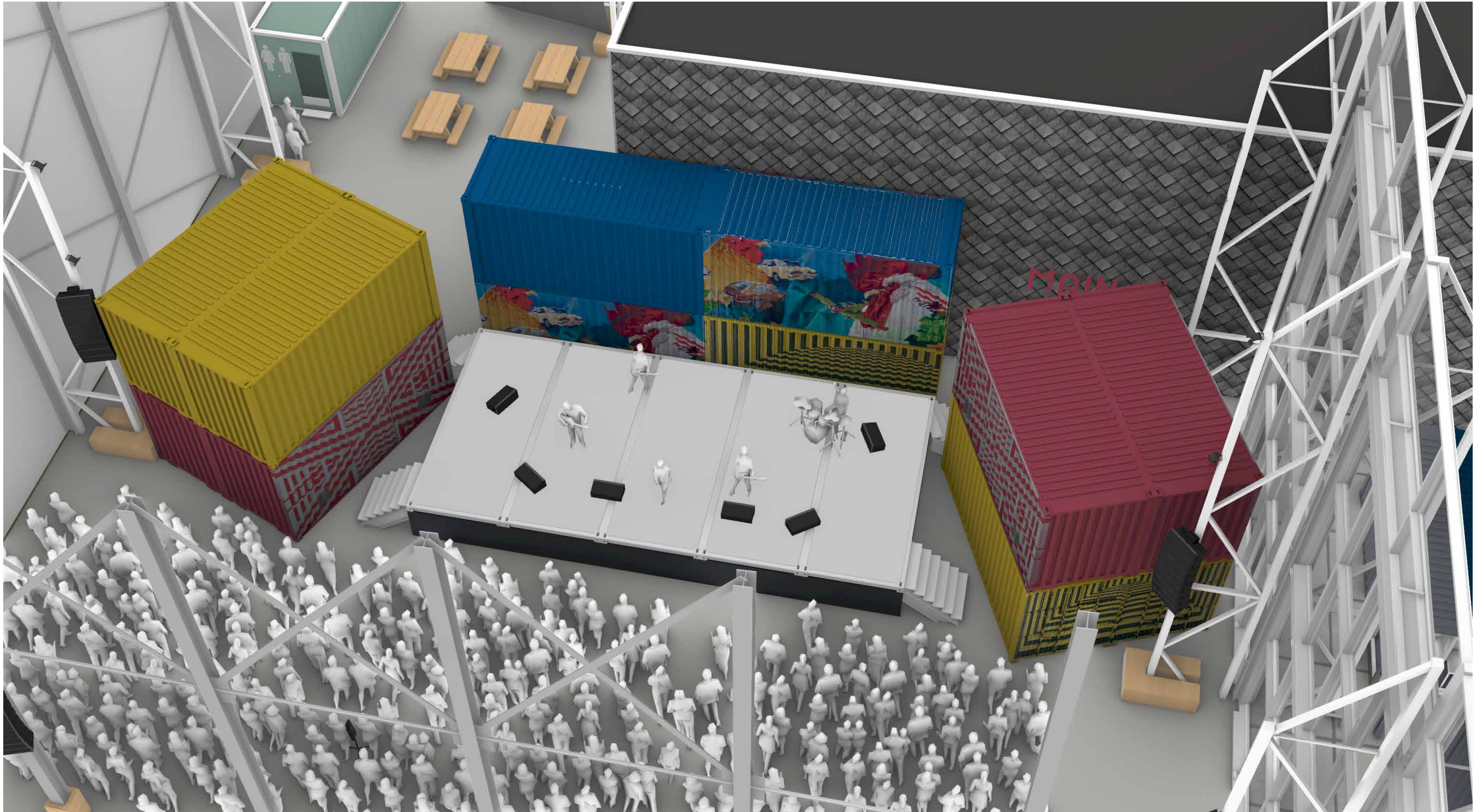
The system of movement

Utilises the complete hall for bigger concerts



Making stage out of containers

Using the containers in a different manner



Impression: Big hall concert

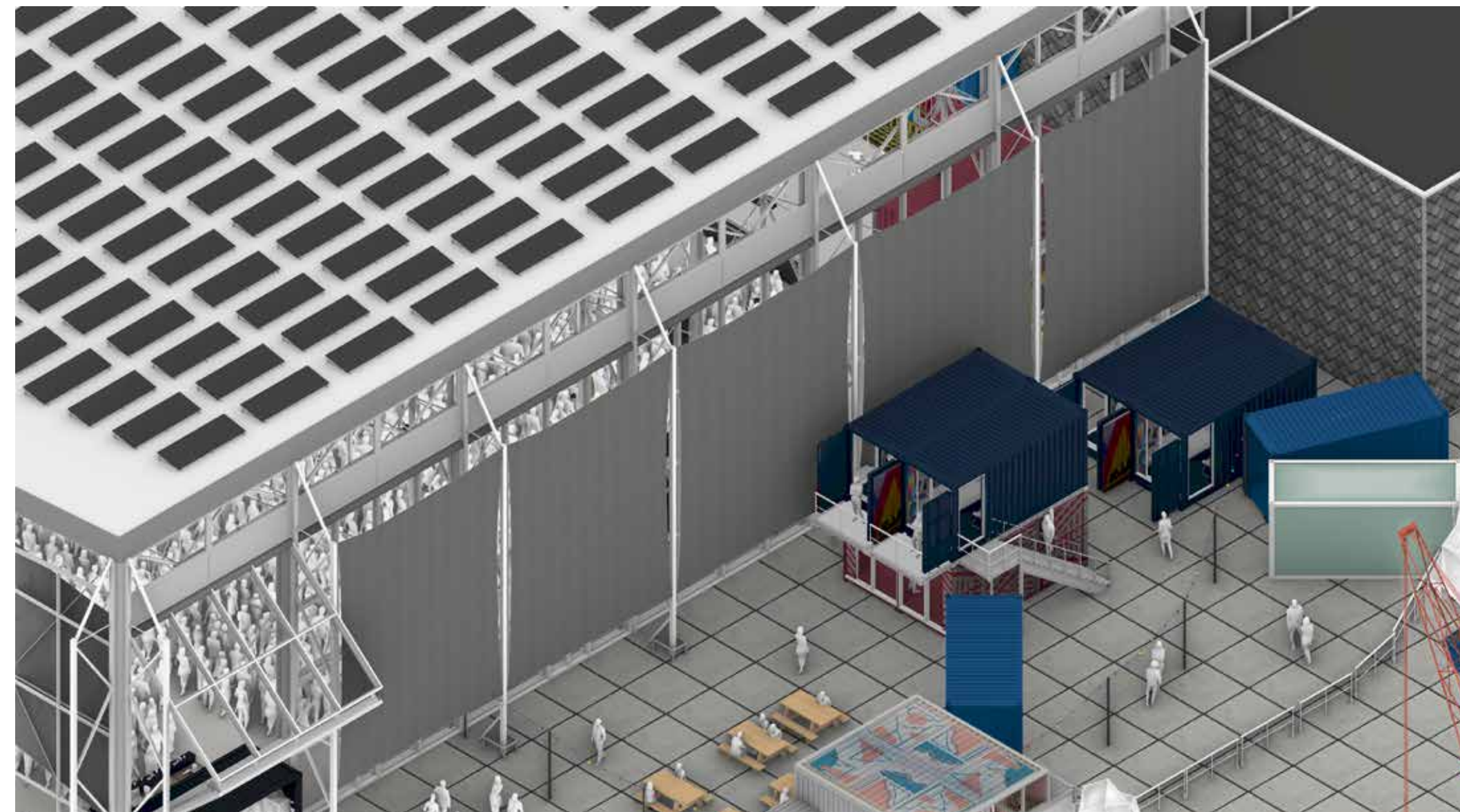
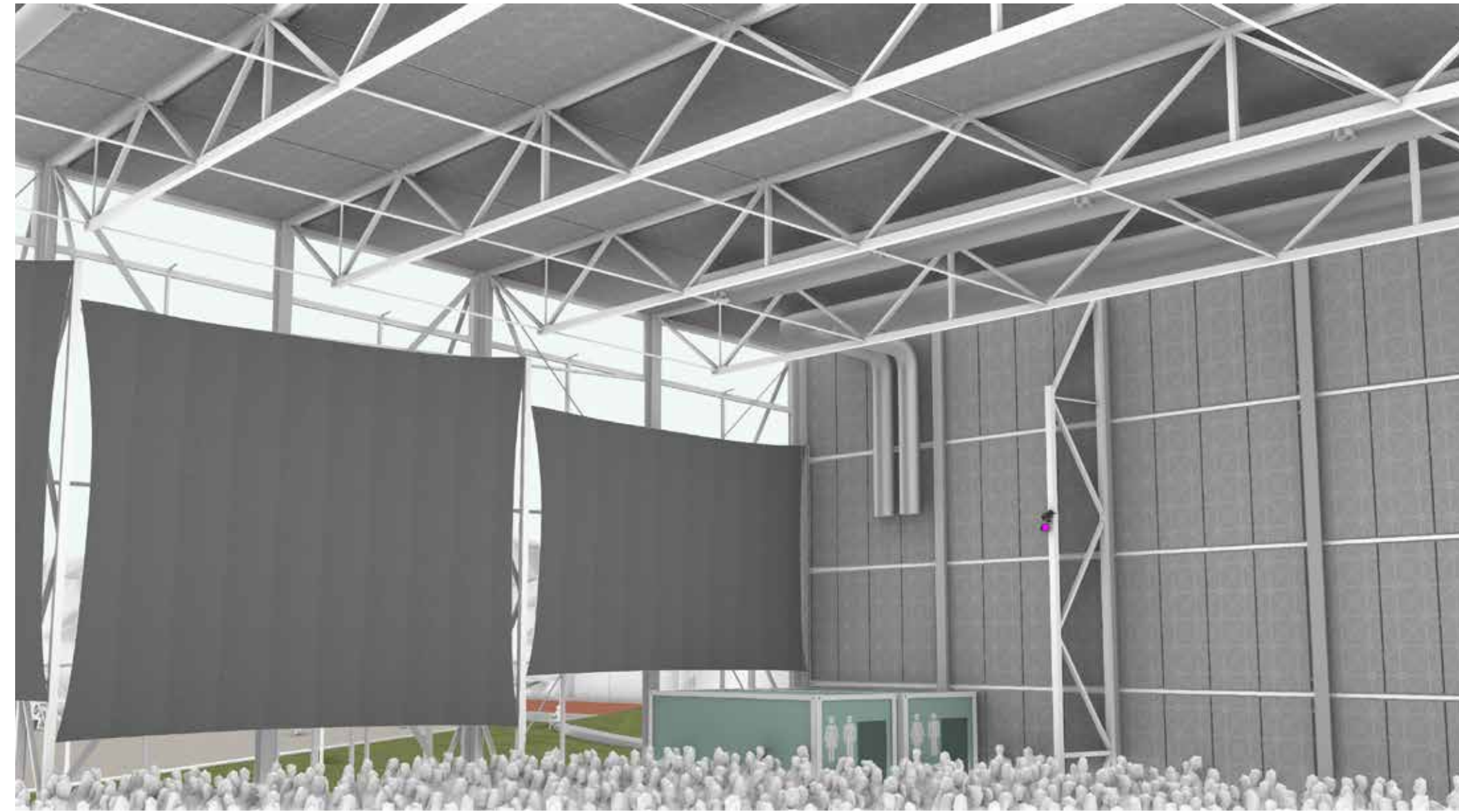
Utilising the complete hall

The Modulator. | Hac Terrain, Binckhorst



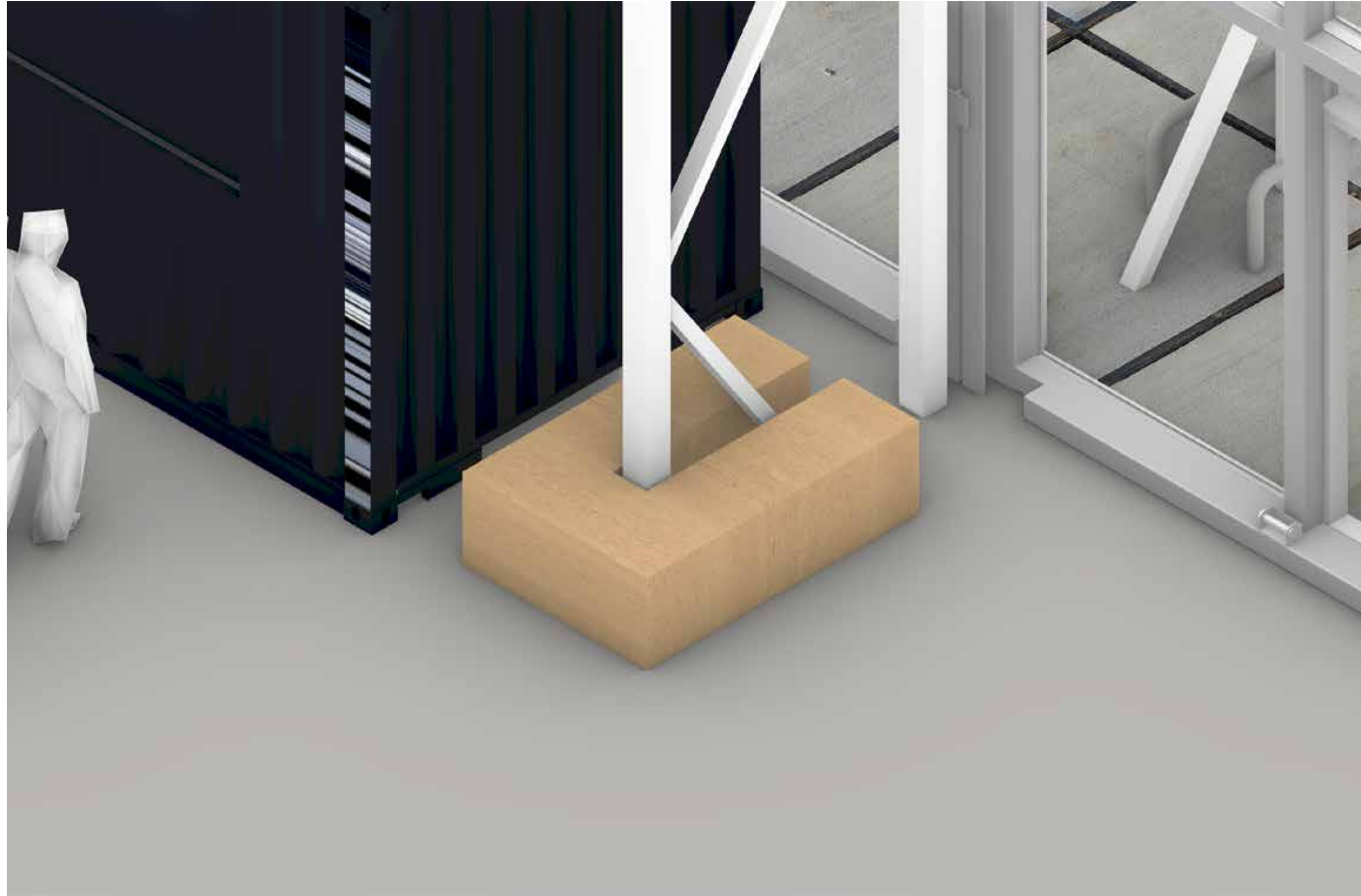
Adaptability of truss columns

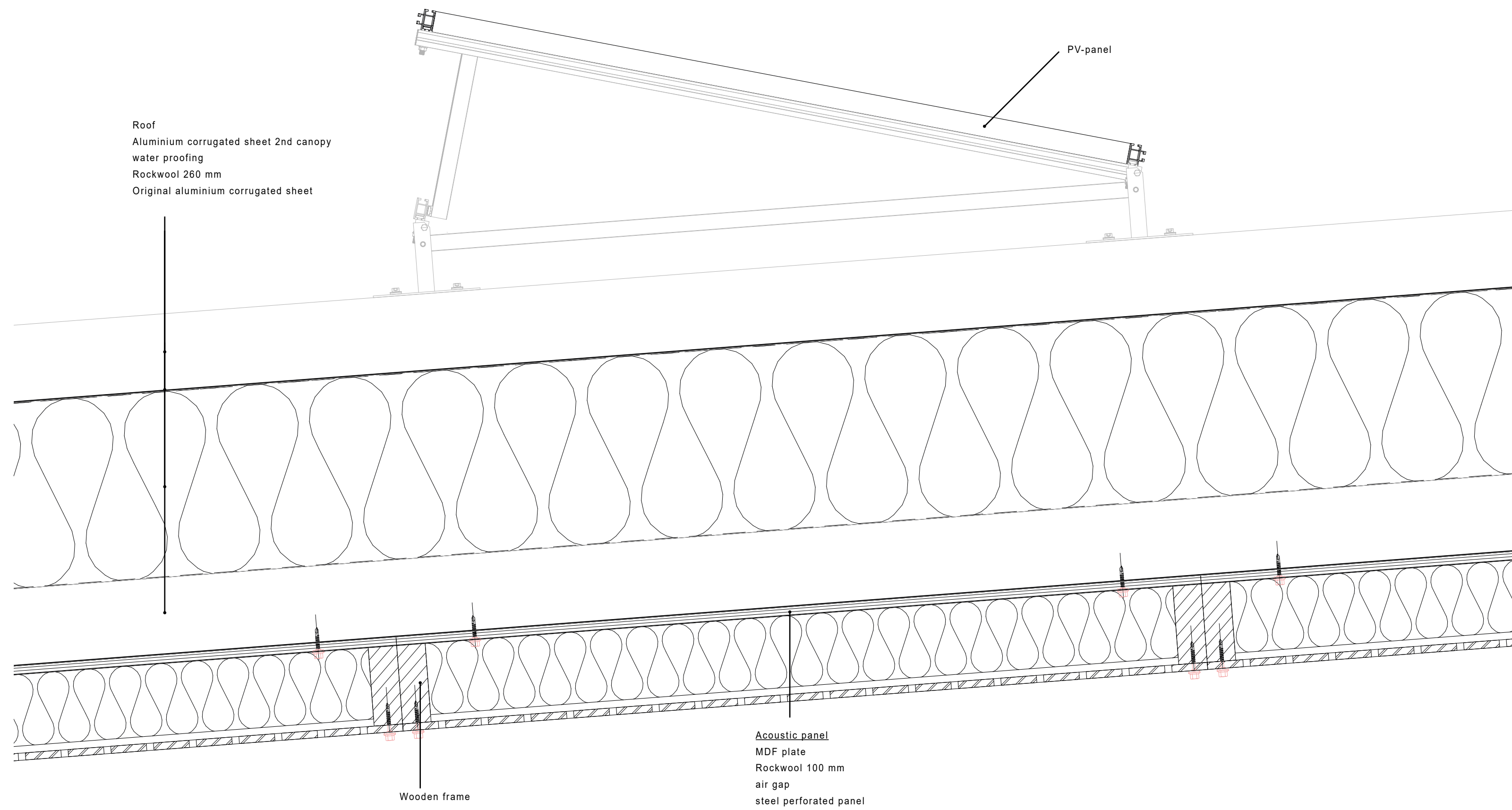
Method for attaching a variety of objects



Bump protection

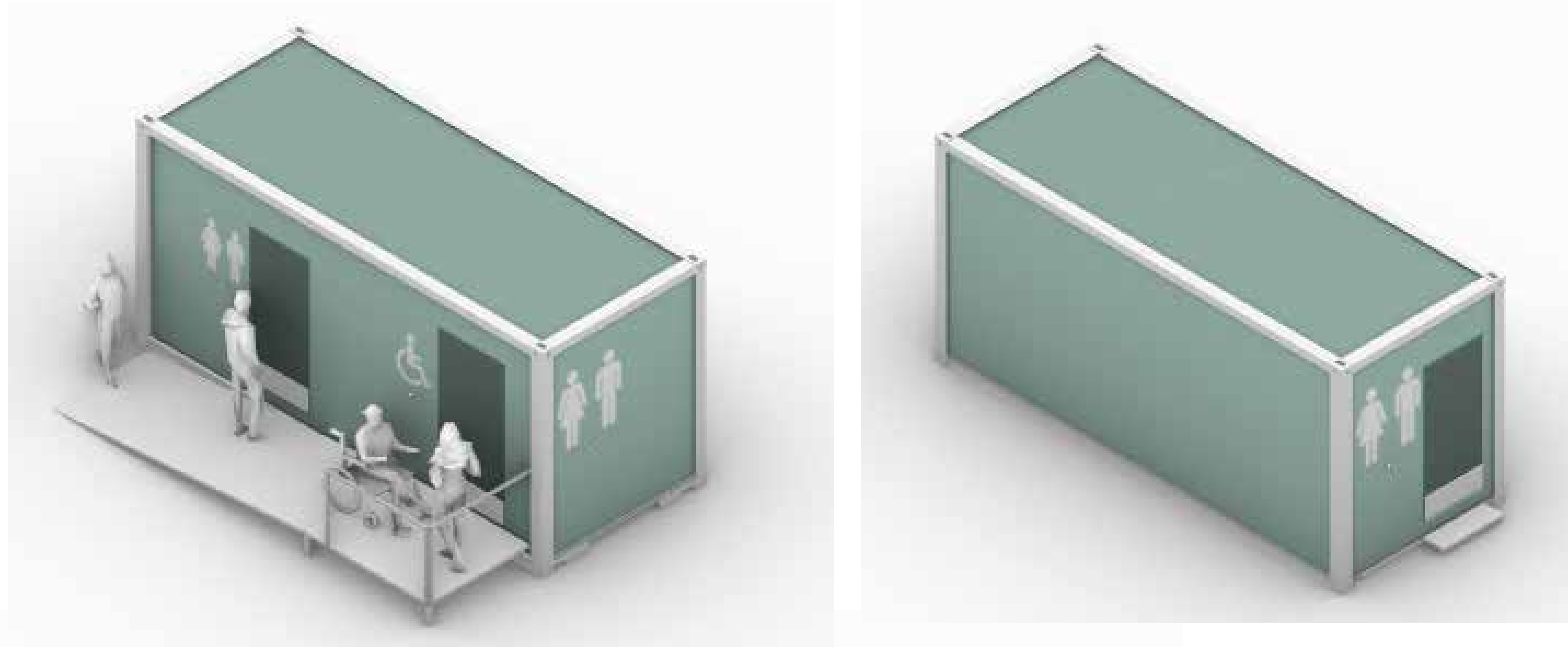
Doubles as seating and place for drinks





Support Modules

Garderobe, toilets, office & ticketing



Impression: Big hall concert

Utilising the complete hall

The Modulator | Hac Terrain, Binckhorst



Popnota the Hague

Demand for a festival location in the Binckhorst

-10x per year: 2.500 people festival

-5x per year: 5.000 people festival

In the Binckhorst

Space requirement:

0,6 m²/person

x2 to also have accomodating space

=6.000 m²



Den Haag

Ruimte voor Pop

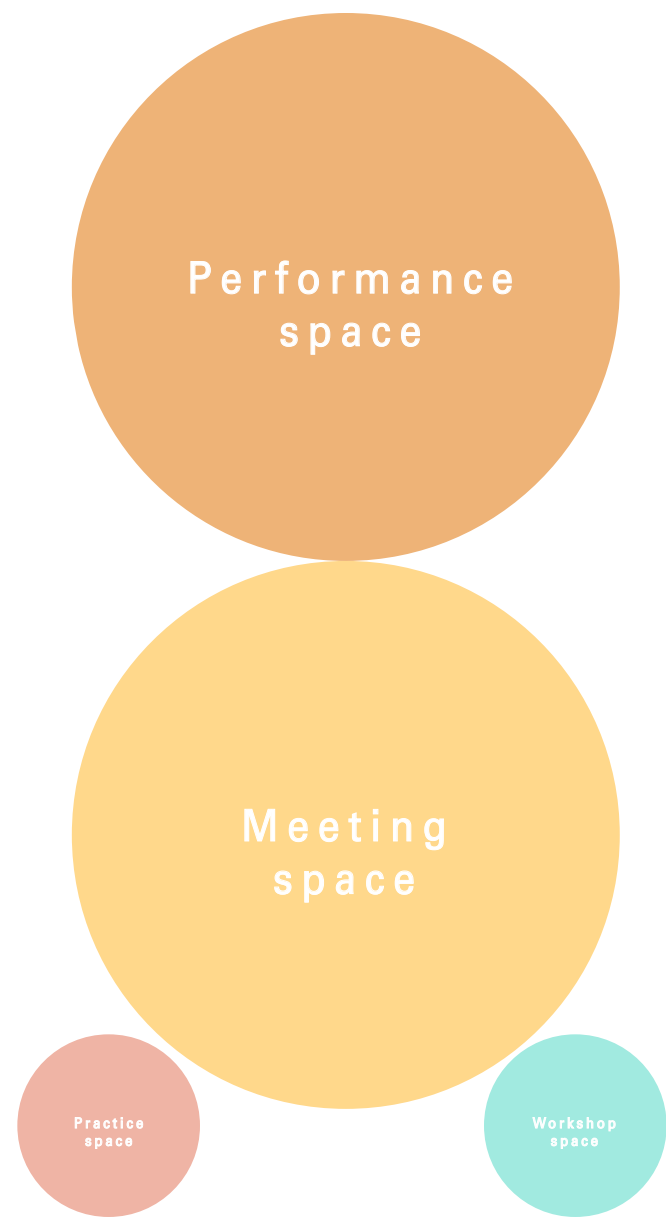
Update Haagse Popnota



Variant 3: 4-stage festival

Garderobe, toilets, office & ticketing

Utilises the complete hall for bigger concerts



Identity: stages using existing qualities

Using the cranes to create a stage

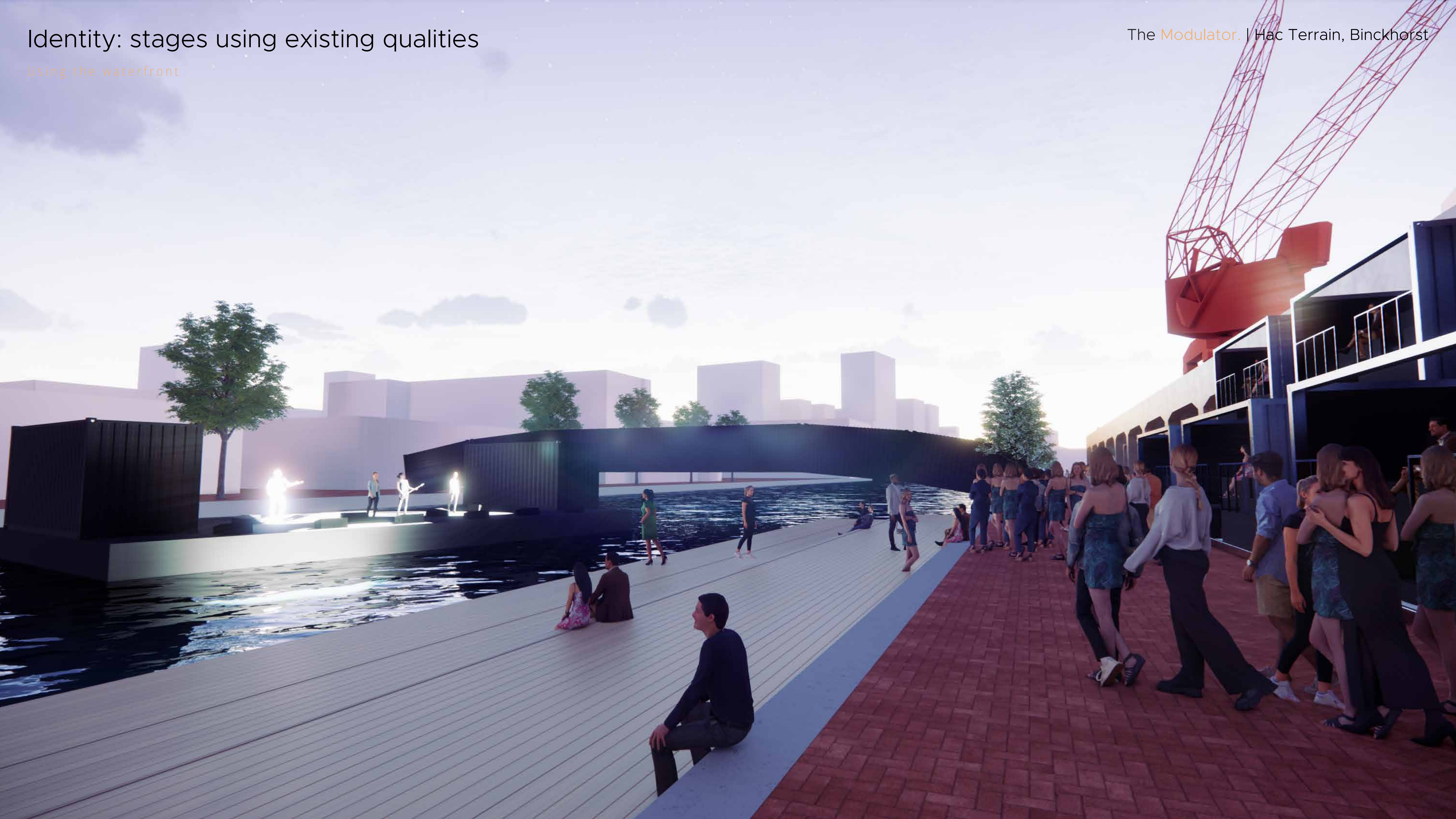
The **Modulator**. | Hac Terrain, Binckhorst



Identity: stages using existing qualities

Using the waterfront

The **Modulator**. | Hac Terrain, Binckhorst





Conclusion

creating a system of movement and interaction

The **Modulator**. | Hac Terrain, Binckhorst

