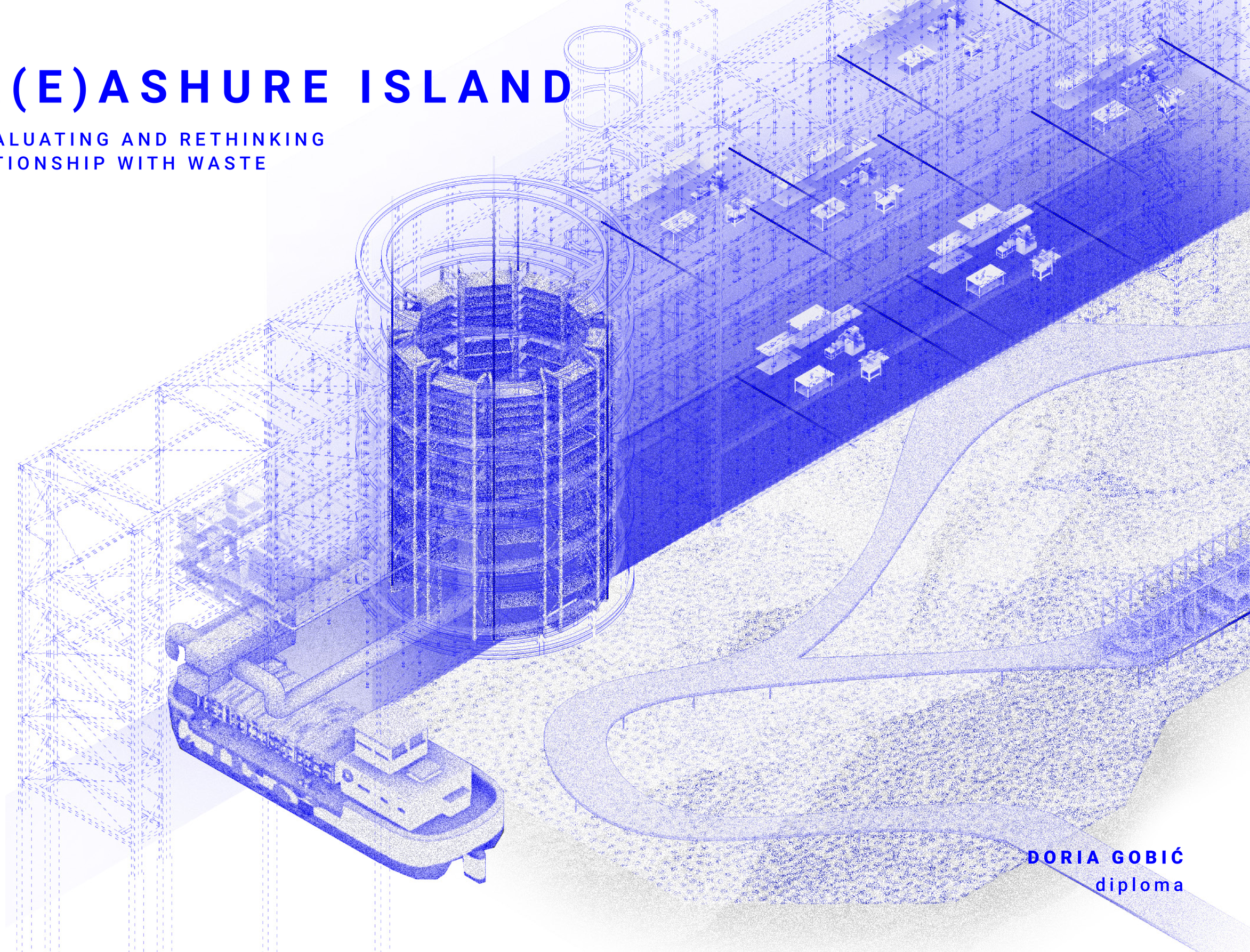
TR(E)ASHURE ISLAND

REEVALUATING AND RETHINKING RELATIONSHIP WITH WASTE



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diploma

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Design booklet

Graduation Studio ExploreLab 37
Msc Architecture, Urbanism and Building
TU Delft, 2024

TU Delft Faculty of Architecture & the Built Environment
Architecture Track

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thank you to my mentors - Stavros, Roel & Rufus,
to Marko, Čilić, my friends and family for the support and long hours of listening about waste & everything (related to it) and being a motivational force through this diploma.

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CONCEPT & LOCATION

WASTE?

RESEARCH METHOD

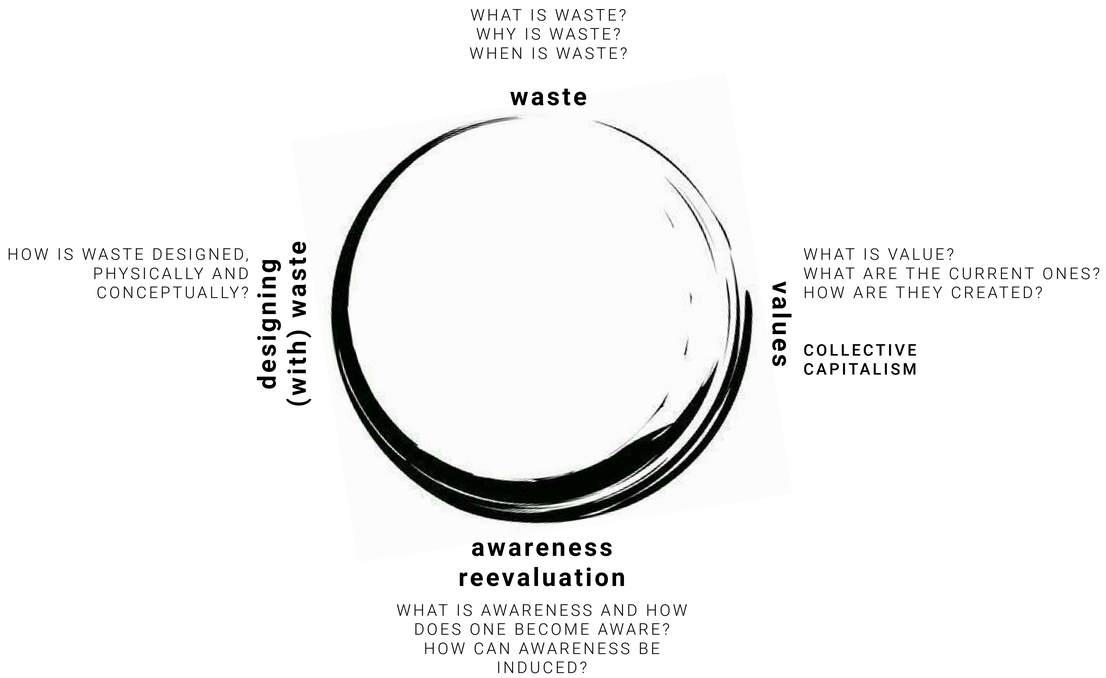


Figure 1: diagram of circular (continuous) reevaluation of waste - in the research, but also aimed as the accomplished process with(in) the design, made by author

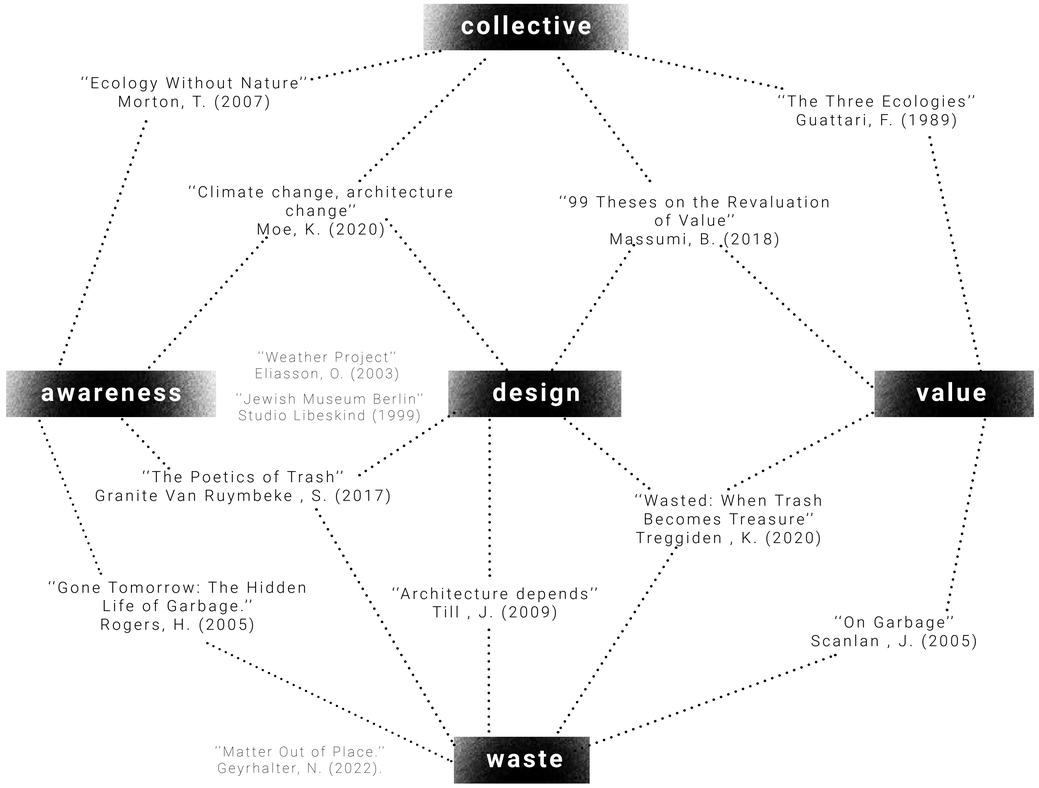
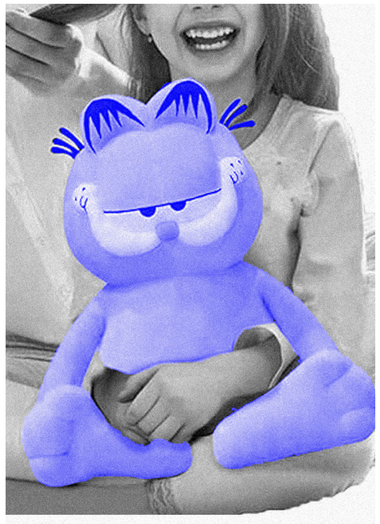


Figure 2: interconnectedness between the initial used bibliography and the five primary research topics, made by author

WASTE IS A CATEGORY,
NOT A FACT







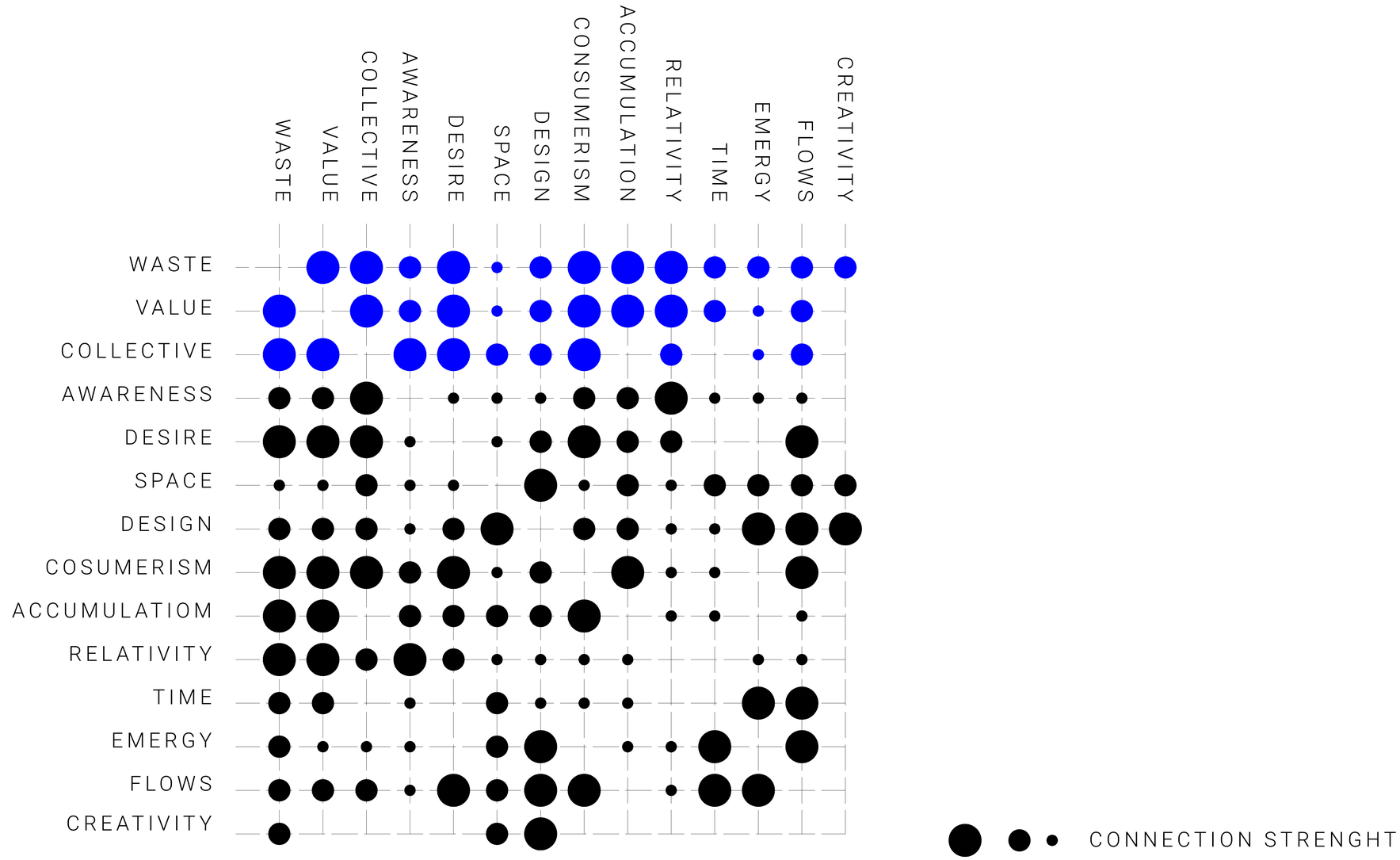
WASTE?

Waste is something that was, had value, until due to a conscious or subconscious drop into the garbage bin it became nothing, valueless, trash.
From something to nothing, a child's favorite toy, categorized as a plush one, for ages 3 to 15, with an economic value of 20euros and the emotional value of that child's beloved friend, to simply being categorized as waste, trash, junk.
Anything can become waste, yet nothing inherently is waste.
It is a concept, constructed by the collective that gives it its definition.

A concept with a key connection to value and the idea of what is or isn't valuable, connected to the collective that produces those values.

WASTE?

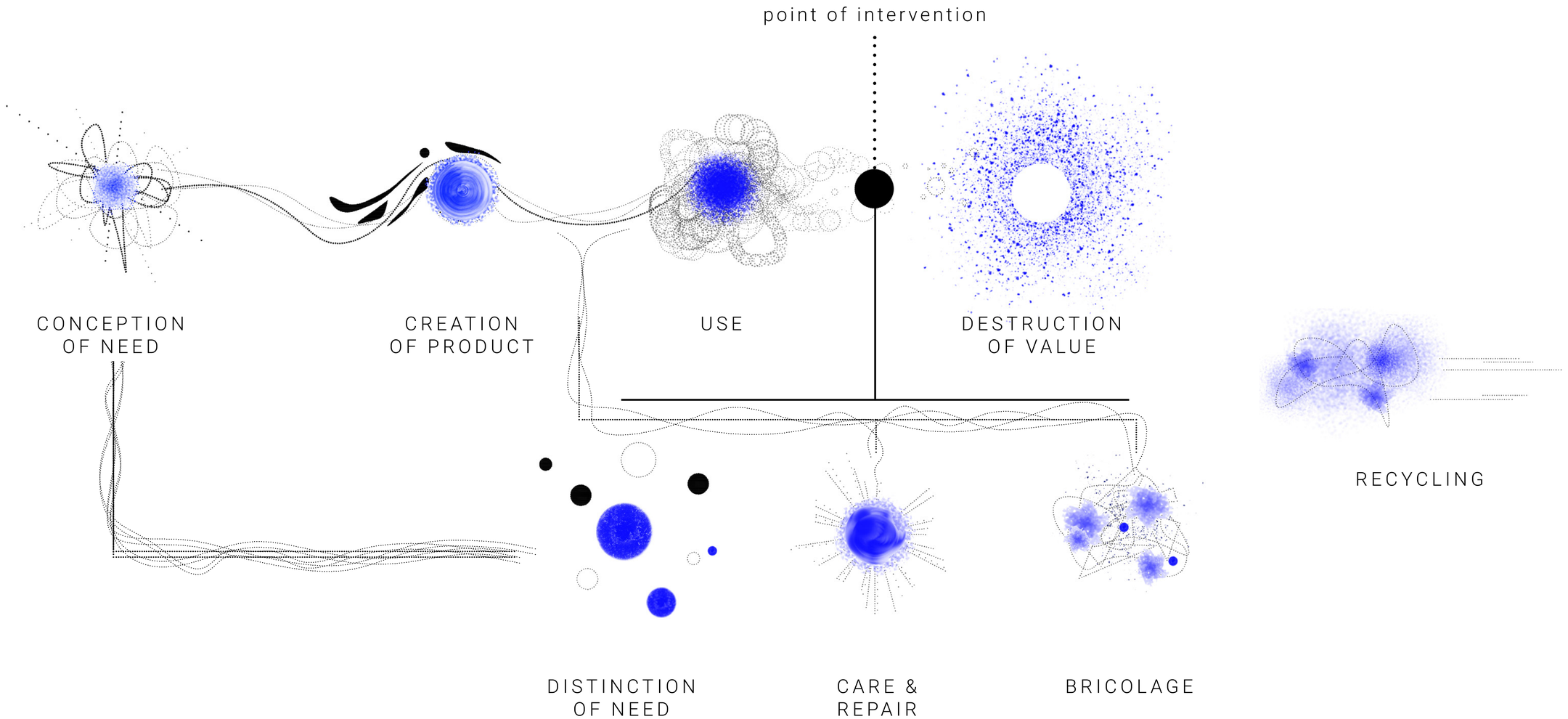
RESEARCH CONCLUSION



How to design an aware collective with reevaluated
(values and) **conceptualization of waste,**
and its (lack of) **value?**

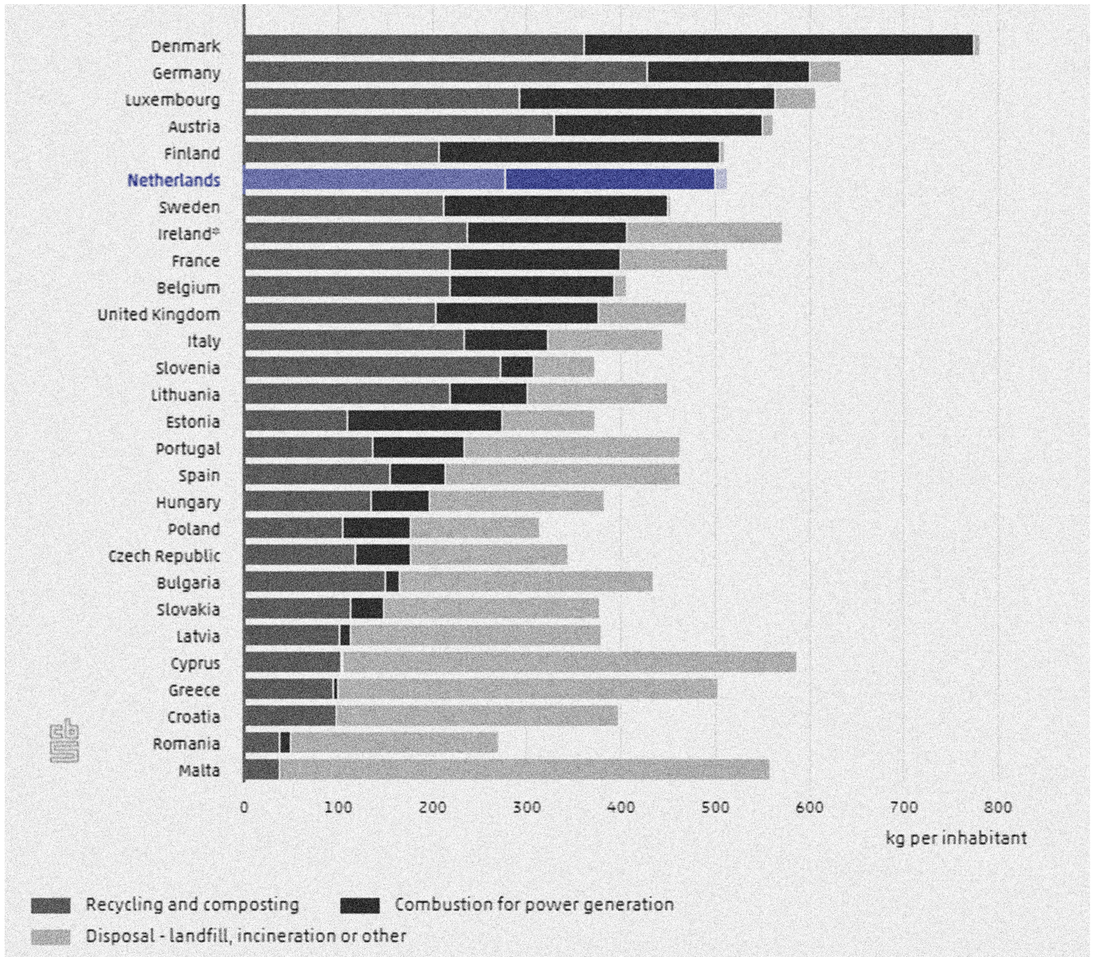
CONCEPT

OF THE (NEW)PRODUCTION CHAIN



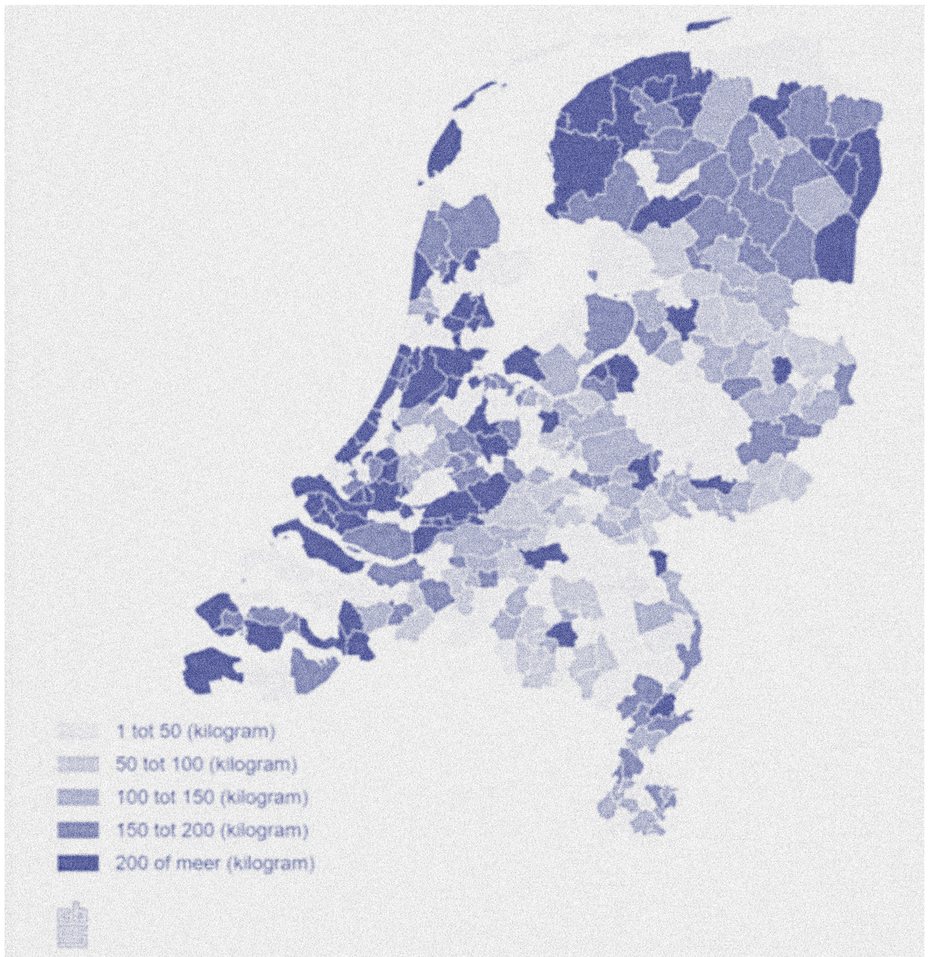
CHOOSING THE LOCATION

HOUSEHOLD WASTE PER EU COUNTRIES



Source: CBS, Eurostat

WASTE PER PERSON PER MUNICIPALITY



Household waste per person by area in 2021
Graphic: CBS

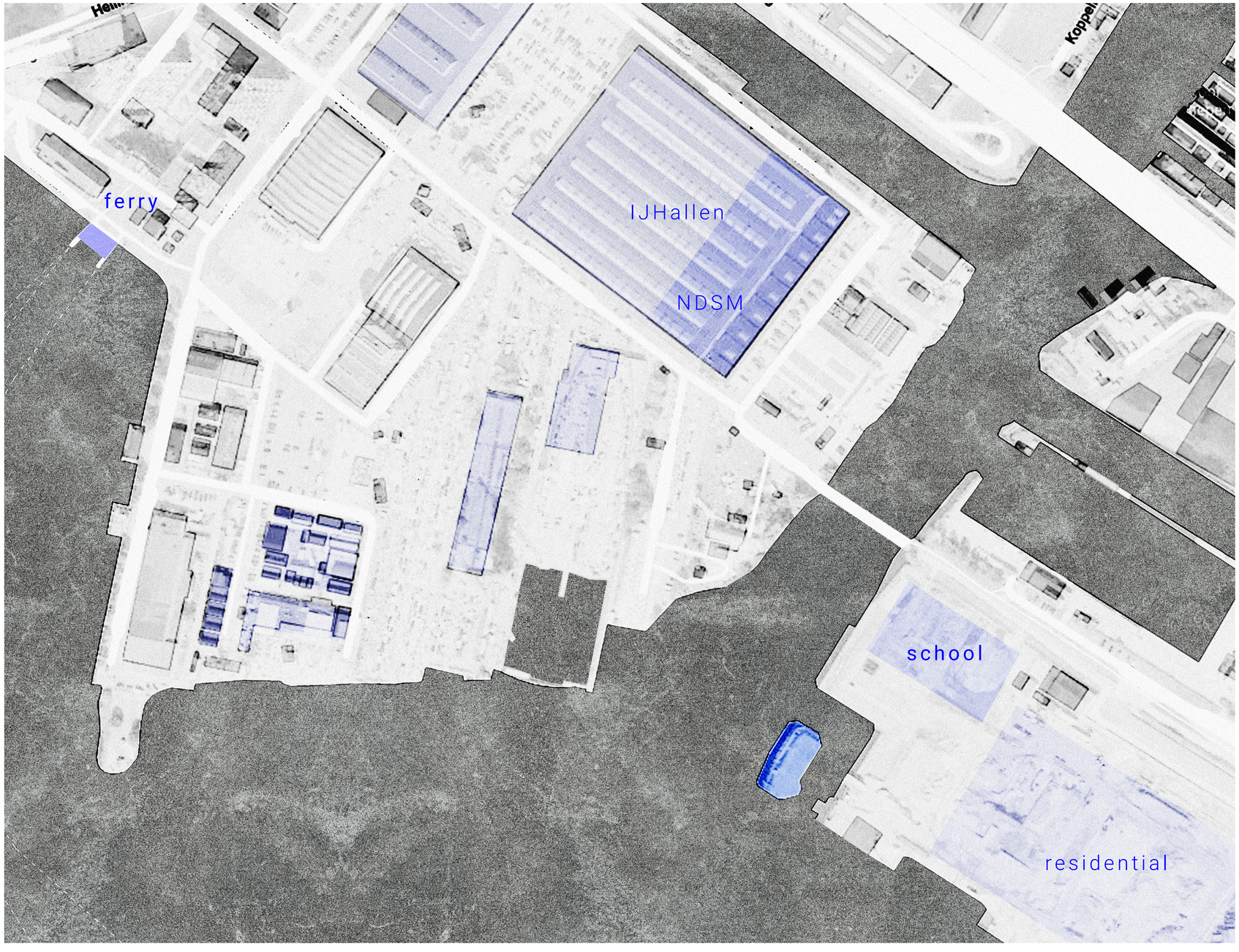


CHOOSING THE LOCATION

The Netherlands has almost mastered the art of handling waste after it has been produced, with 60% of it being recycled, 40% incinerated, and less than 1% still lays in landfills. And while doing so, it is still one of the bigger waste-producing European countries, per capita.
As expected, most waste is produced in urban areas, cities, leading with Amsterdam. Given that it was the fifth most visited city in the world in 2023, if placed in Amsterdam, the project would potentially be seen and influence not only the local population, but also tourists that could visit it.

The city of Amsterdam, having expanded to its southern borders, now faces the challenge of addressing the shortage of built environments, and to meet this demand, it started extending its development plans to the northern region known as Noord, historically an industrial area - currently developing the Buiksloterham neighborhood - a site of the city's ex-waste incineration plant (closed in 1983).

LOCATION



ISLAND

dumping & sorting station
for the incineration plant of
Amsterdam City (1913-
1987)

dimensions
≈ 30X50m

vacant

previously connected
by a bridge (removed)

E residential buildings
(planned,
unbuilt)

N Elementary School

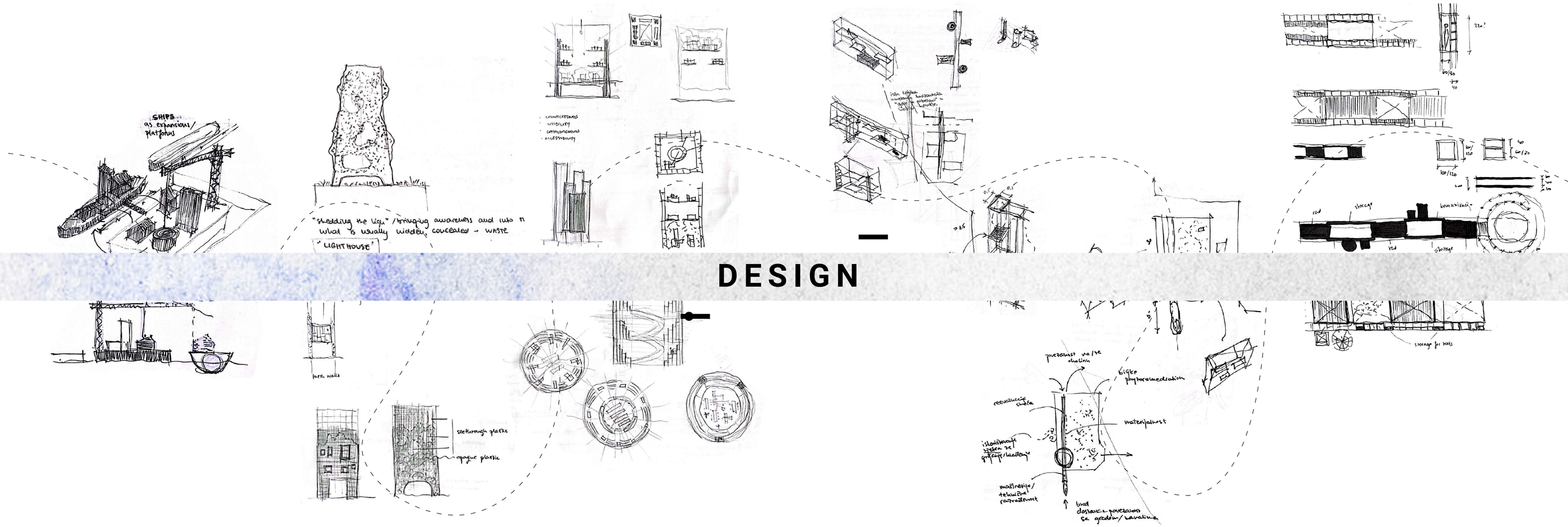
W ferry to Amsterdam
Centraal

IJHallen

STRAAT Museum

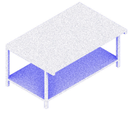
NDSM art collective

DESIGN

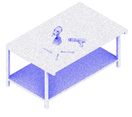

SHIPS
as expansions/
platforms
"shedding the light" / bringing awareness and into it
what is usually hidden, concealed → WASTE
"LIGHTHOUSE"
CONNECTEDNESS
VISIBILITY
COMMUNICATION
ACCESSIBILITY
storage
storage
storage for tools
seethrough plastic
opaque plastic
bilike
phytoremediation
materijalnost

CONCEPT

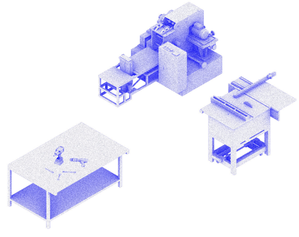
The idea was to create a public space, that engages and motivates reevaluating values, while fostering a culture of care and repair - in the form of a workshop program. Where I would be providing the collective with the space, machine and tools, and potential creative guidance or help on how to use them.
The essentials for such a (workshop) space to be able to function are:



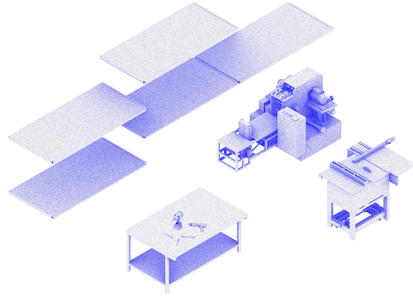
WORKING SURFACE



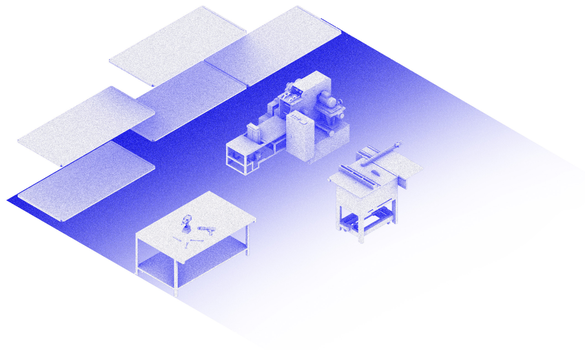
TOOLS



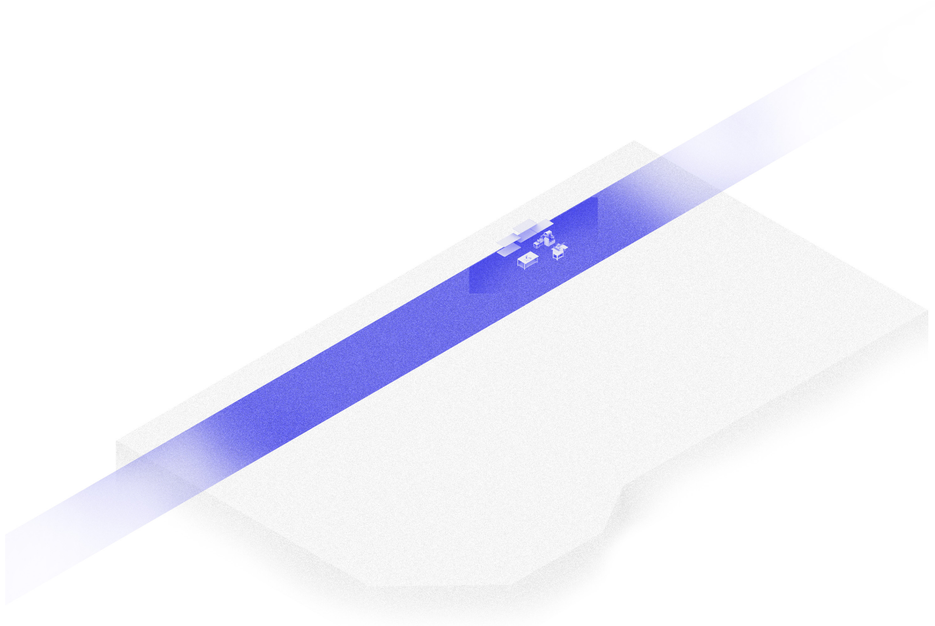
MACHINES



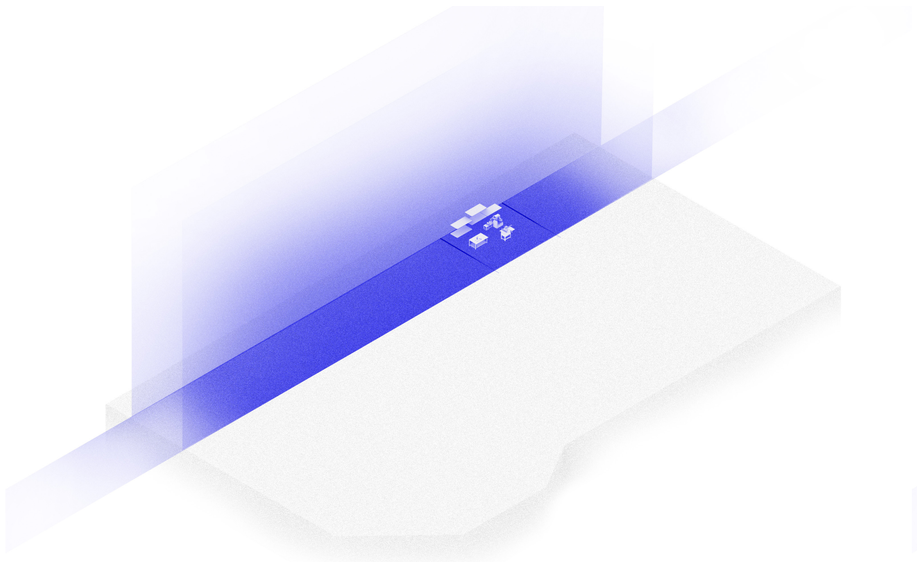
STORAGE SPACE



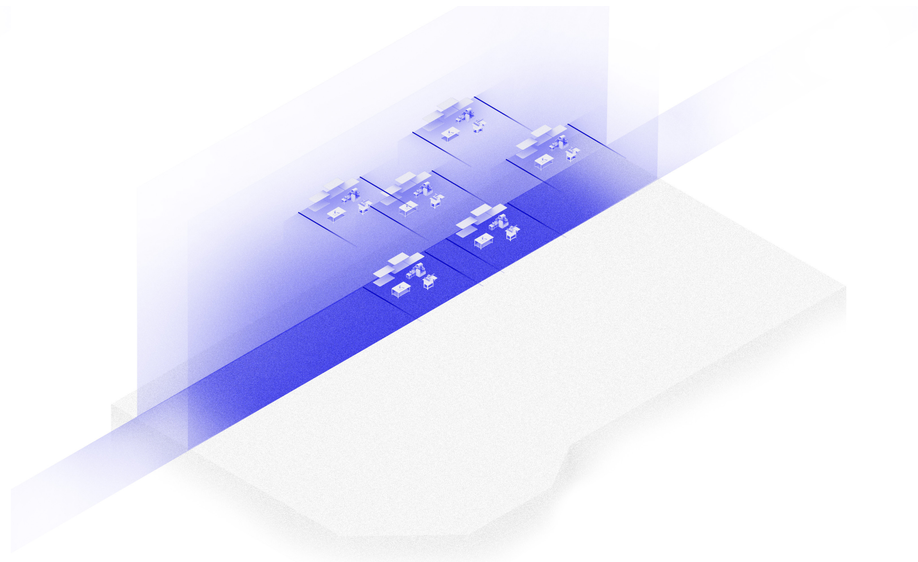
DAYLIGHT
(penetrates the building up to 6m)



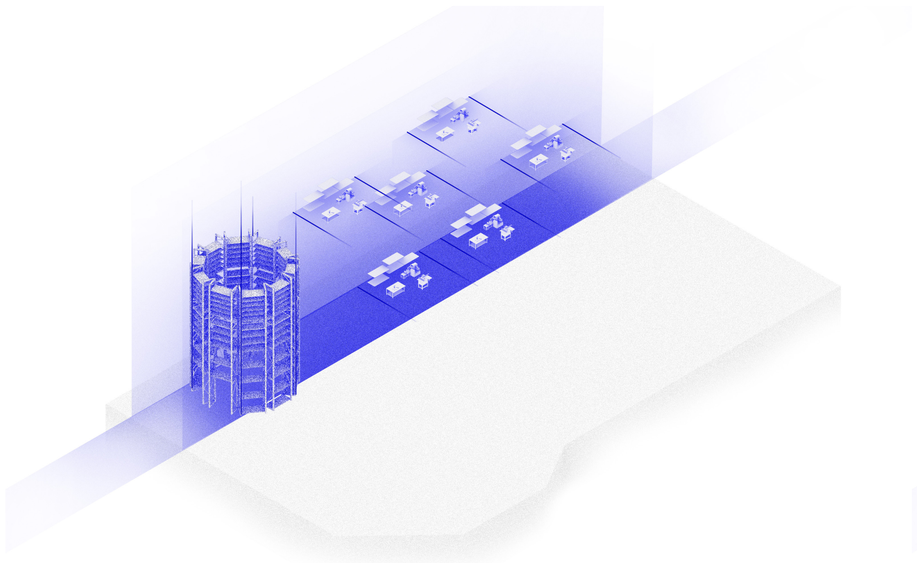
GROWTH IN LENGHT



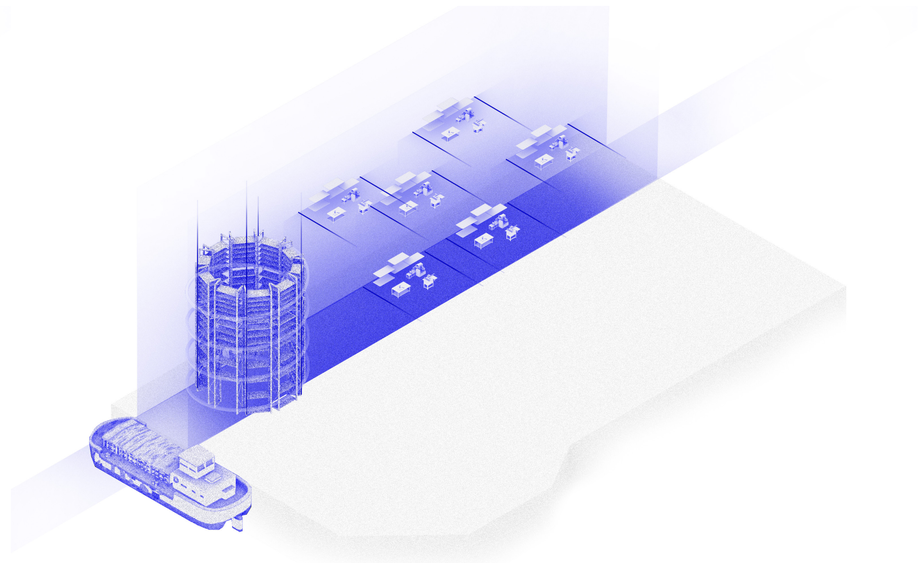
GROWTH IN HEIGHT



DISPERSED WORKSHOP PLATFORMS
THROUGHOUT THE HEIGHT

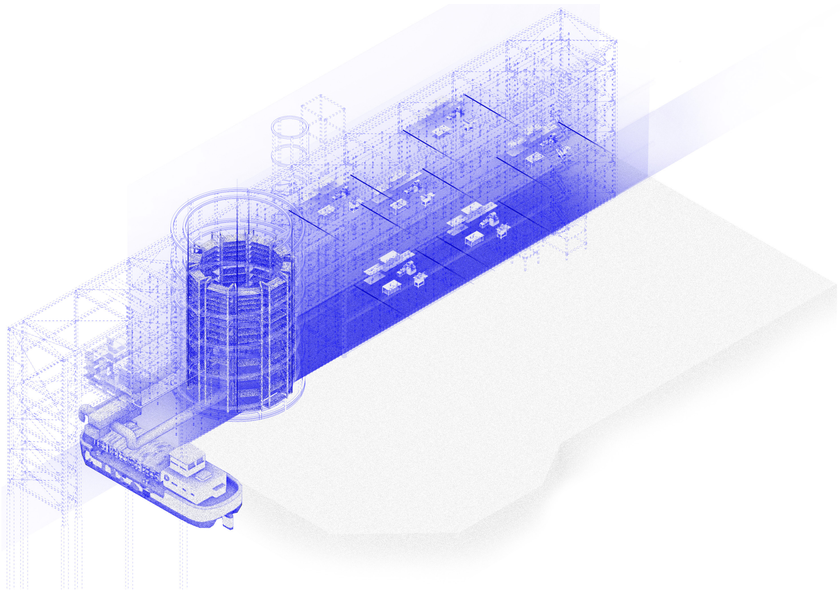


MATERIAL TR(E)ASHURY

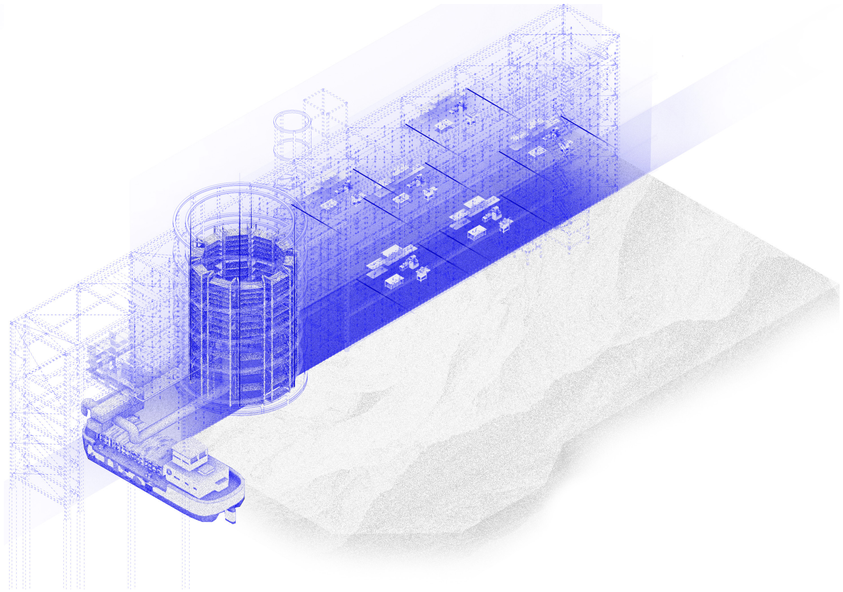


EMPLOYMEND OF A CANAL BOAT FOR THE TRANSPORT
OF THE MATERIAL

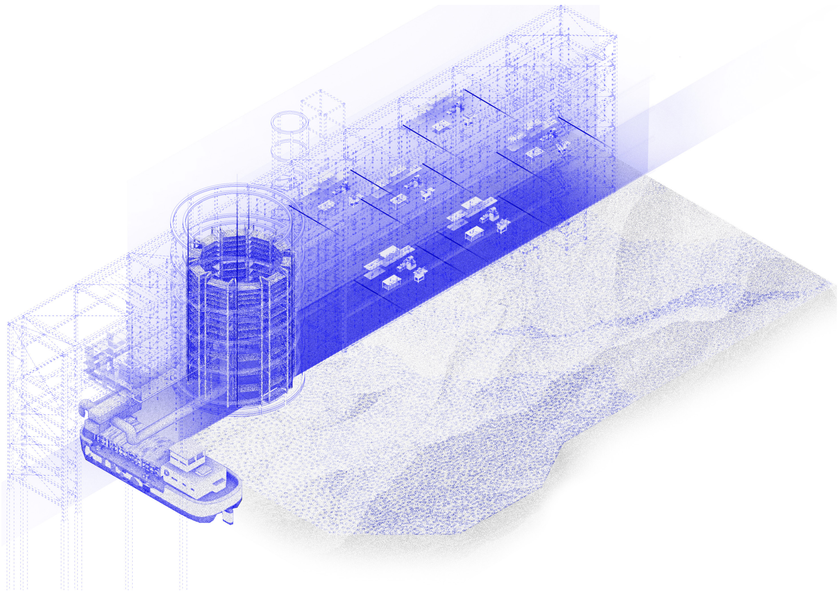
CONCEPT



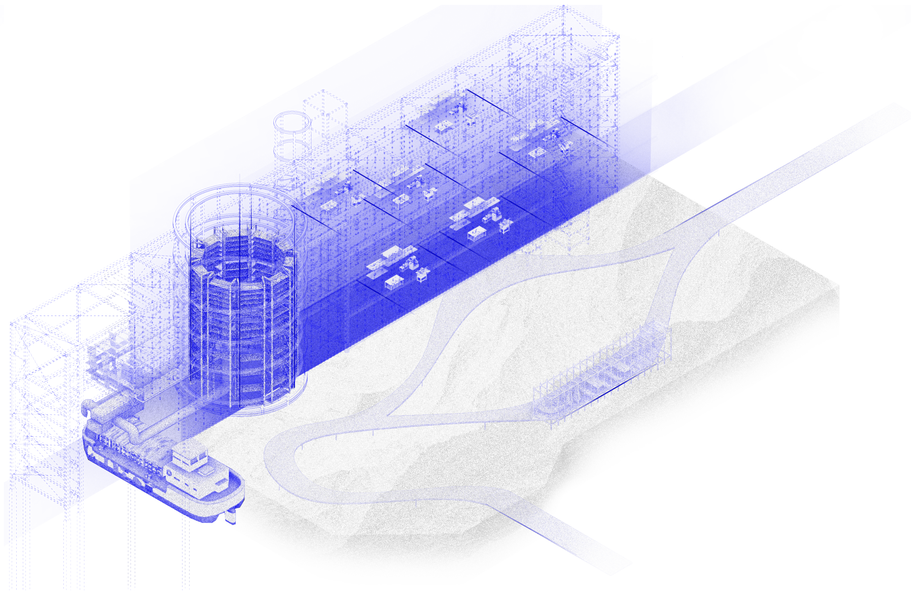
SERVICE MODULES POWERING
THE BUILDING



POLLUTED GROUND - ELEVATING THE BUILDING



PHYTOREMEDIATION OF THE
POLLUTED SOIL

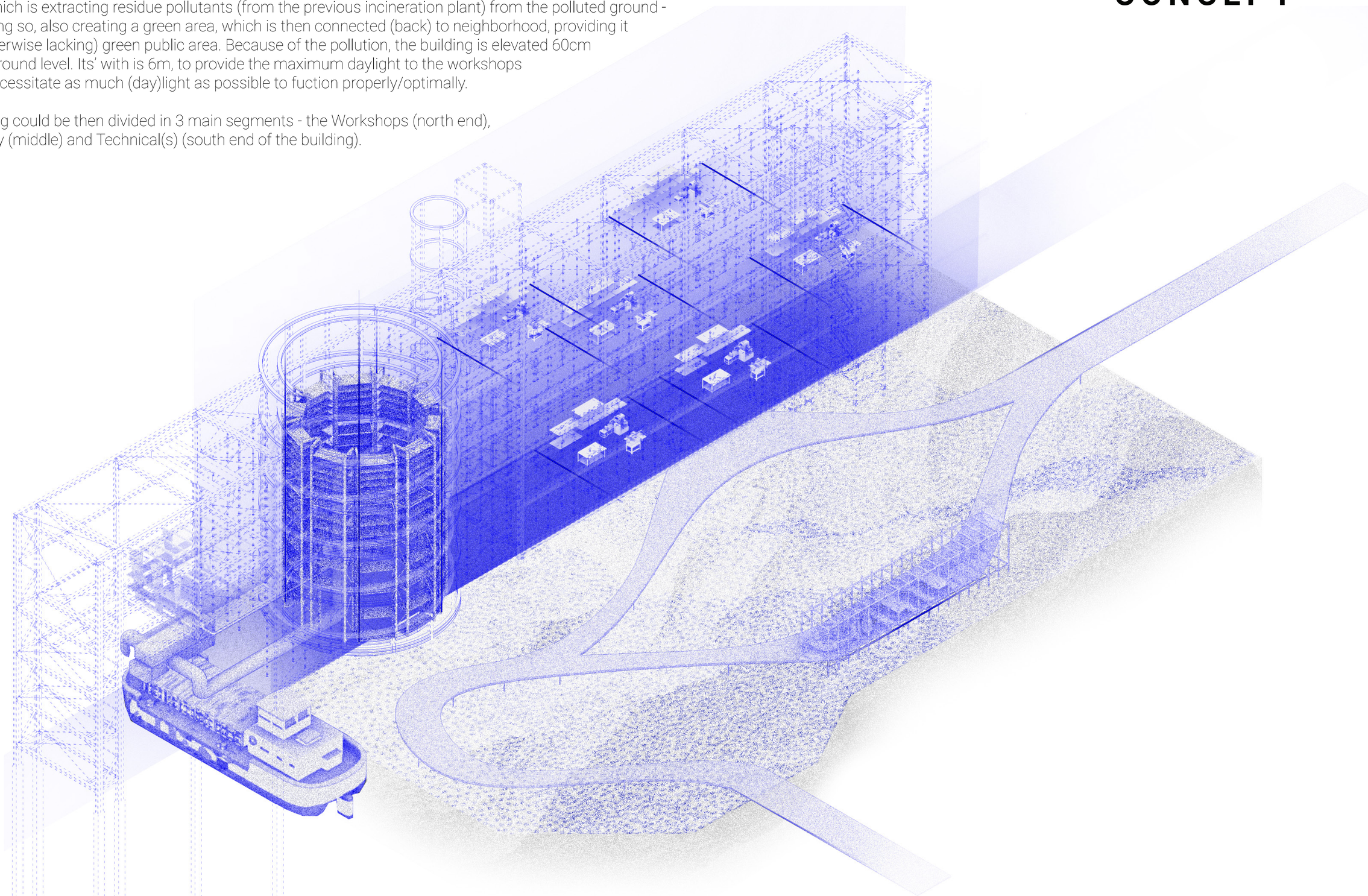


CONNECTION TO THE NEIGHBORHOOD
(PROMENADE + GREEN PUBLIC SPACE)

CONCEPT

The building is located on the west border of the island, freeing the rest of the ground for the Phytoremediating Garden, which is extracting residue pollutants (from the previous incineration plant) from the polluted ground - and by doing so, also creating a green area, which is then connected (back) to neighborhood, providing it with a (otherwise lacking) green public area. Because of the pollution, the building is elevated 60cm from the ground level. Its' with is 6m, to provide the maximum daylight to the workshops (which neccessitate as much (day)light as possible to fuction properly/optimally.

The building could be then divided in 3 main segments - the Workshops (north end), Tr(e)ashury (middle) and Technical(s) (south end of the building).



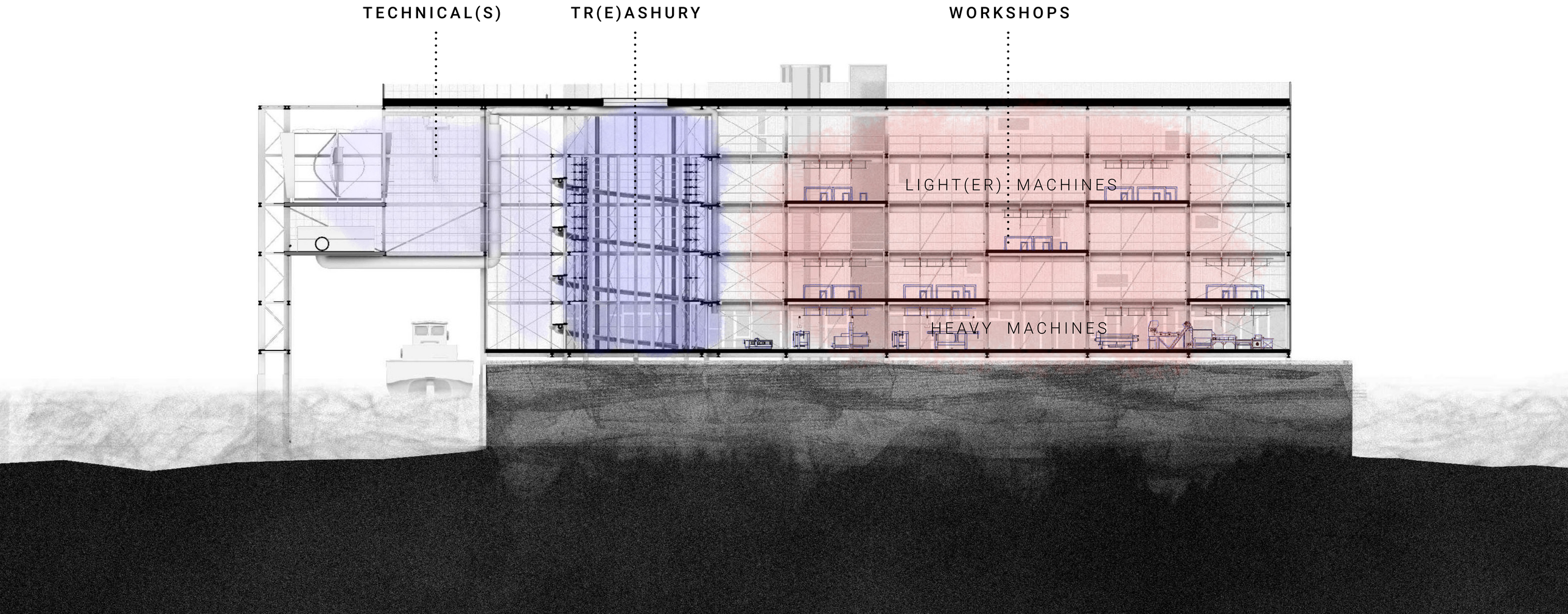
PROGRAM

the building could be then divided in 3 main parts - the Workshops, Tr(e)ahsury and Technical(s).

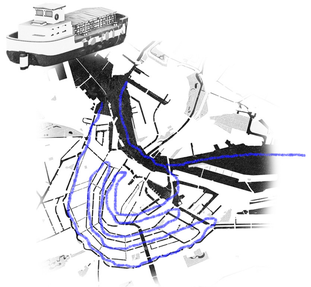
the Workshop space(s) are where the machines and tools are located - the heavier machines on the ground floor, lighter ones - such as sewing machines, tools and workareas on the upper levels.

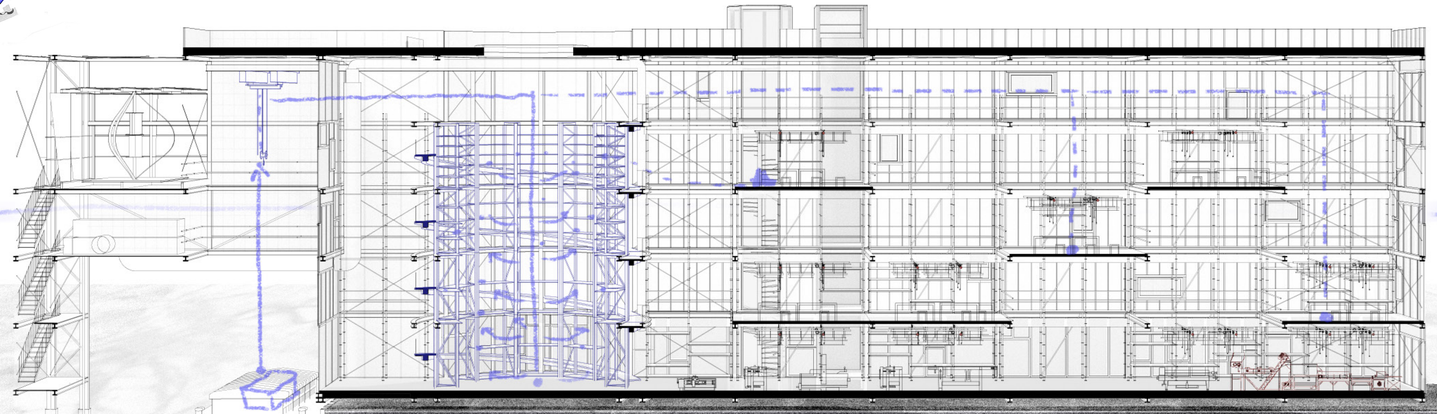
the Tr(e)ashury is a circular storage space of potentially (again) valuable and reusable materials and things - unwanted items collected from the Amsterdam City's residents by a canal boat, transported to the island - that the users of the Tr(e)ashure Island could then go and work on/with in workshops, or just take them home, and give them a second life and value.

for the whole building to function, the Technical(s) part, as well as the canal boat's docking deck are located in the open, ventilated, river part, in the south end of the building.

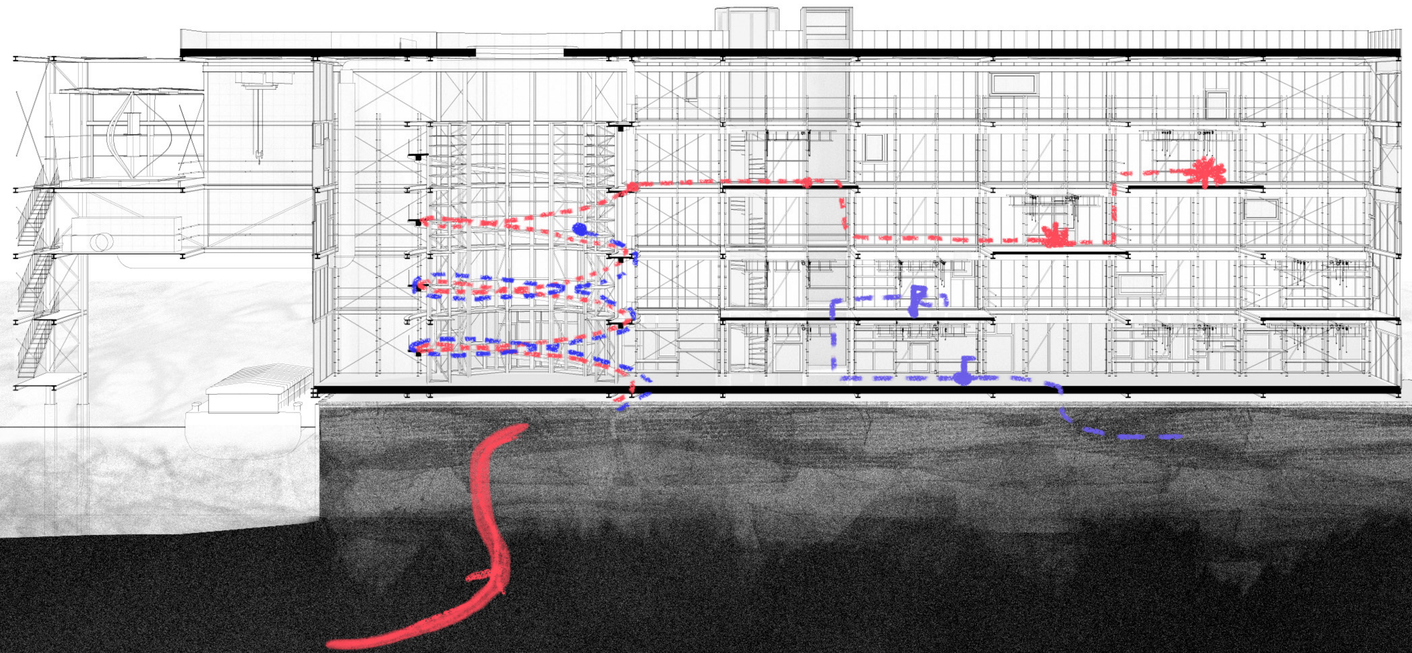


WASTE & USERS





A canal boat is employed to cruise around Amsterdam City's canals, collecting unwanted material from its residents, and finally transporting it to the Tr(e)ashure Island. There, it is stored in the
Tr(e)ashury material bank, from which the users can either take the material and go work on it in the Workshops, or they can simply take the items straight home, and give them new values and use.

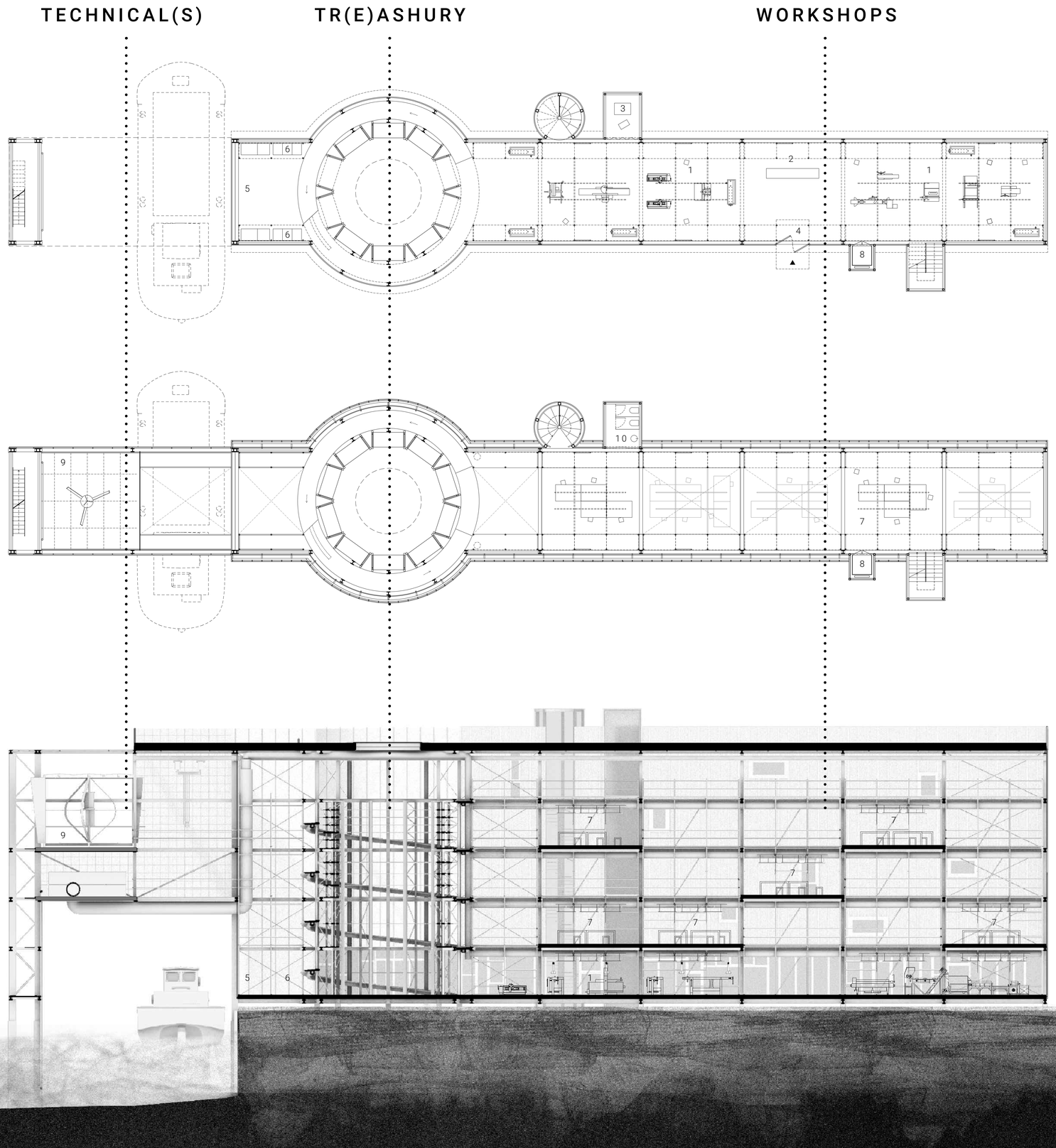


Users either come to the Island with their own posessions and materials on whom they will work in the Workshop; come with their own material but enrich them by taking some from the Tr(e)ashury; or simply take some items from the Tr(e)ashury, without working on them after.

DESIGN

1 HEAVY MACHINES
2 INFO/EMPLOYEE DESK
3 (SPRAY)PAINT ROOM
4 MAIN ENTRANCE
5 BOAT DOCK
6 RECYCLING YARD
8 ELEVATOR

7 WORKSHOPS
8 ELEVATOR
9 POWERNEST
10 WC



BUILDING CRITERIA

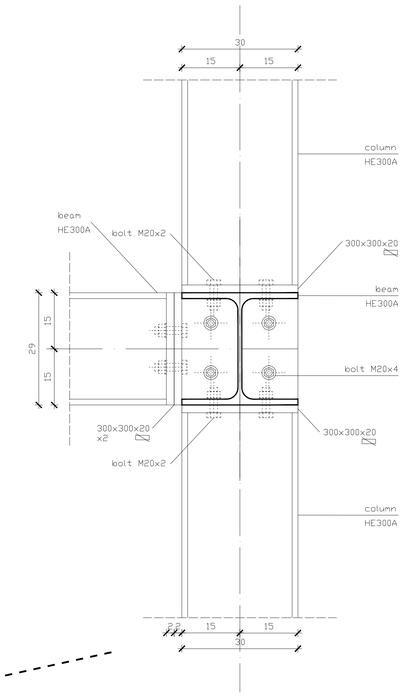


DISASSEMBLE ABILITY
REUSABILITY
REUSED MATERIALS
(RECYCLED)
AS LITTLE BYPRODUCTS AS POSSIBLE
EMERGY

LOAD BEARING STRUCTURE

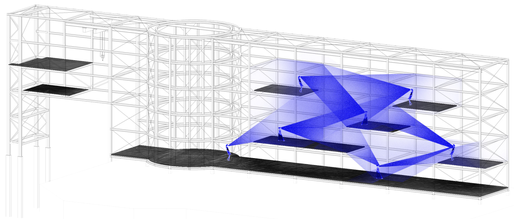
bolt-jointed steel beams & columns,
allowing for the structure to be disassembled and rebuilt in different configurations.
(somewhere else, for another purpose)
standard measurements of 600x600x300cm



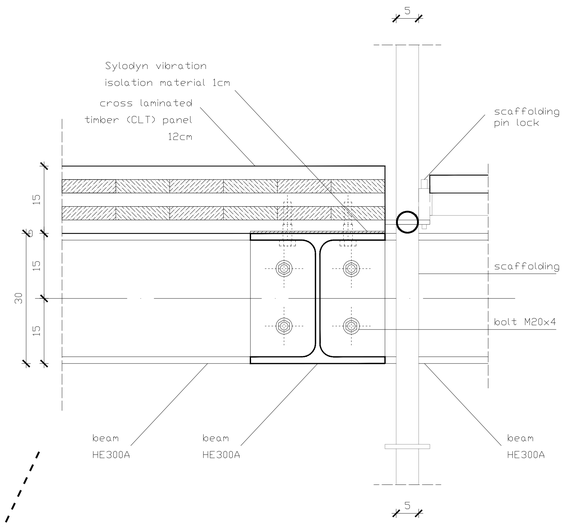


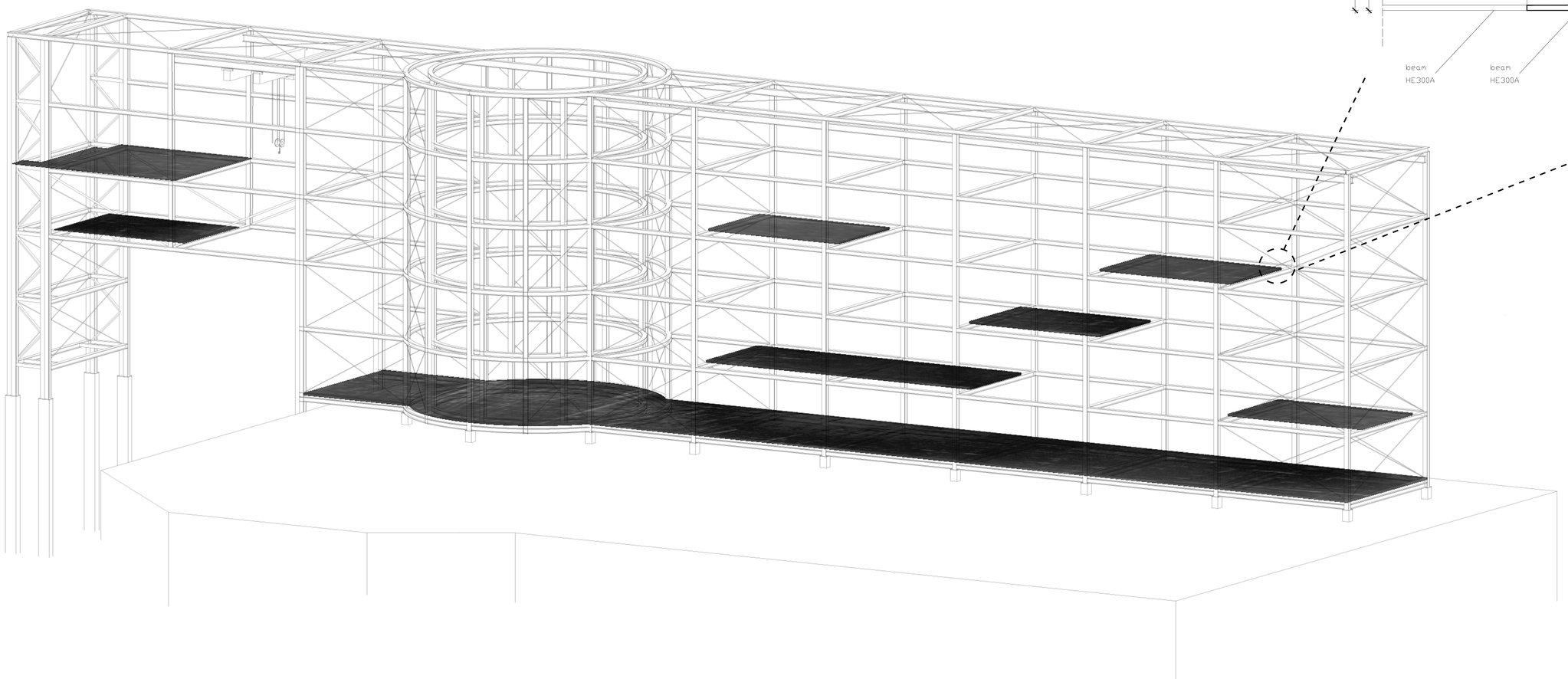
WORKSHOP PLATFORMS

prefabricated CLT (400x600cm) panels rest on vibration isolation material
atop the load-bearing structure, preventing machine vibrations from transferring to the building.
their modular design allows for easy expansion of workshop platforms,
with addition of new CLT panels.



VISUAL CONNECTION
THROUGH THE BUILDING

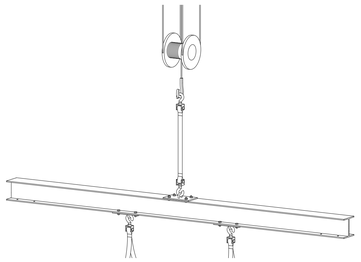




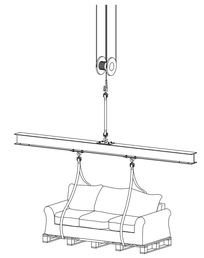
CRANE HOIST SYSTEM

the crane hoist system transports heavier material from the canal boat to the material Tr(e)ashury,
as well throught the building to the workshop platforms.

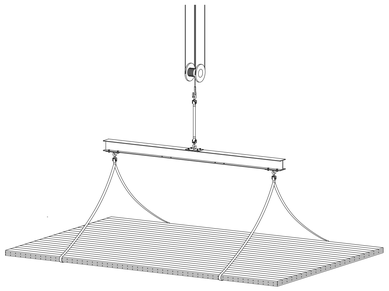
it also helps with the transportation of the material to their designated location
in the building process of the building, and has adjustable spans,
for different dimensions of the transported material.



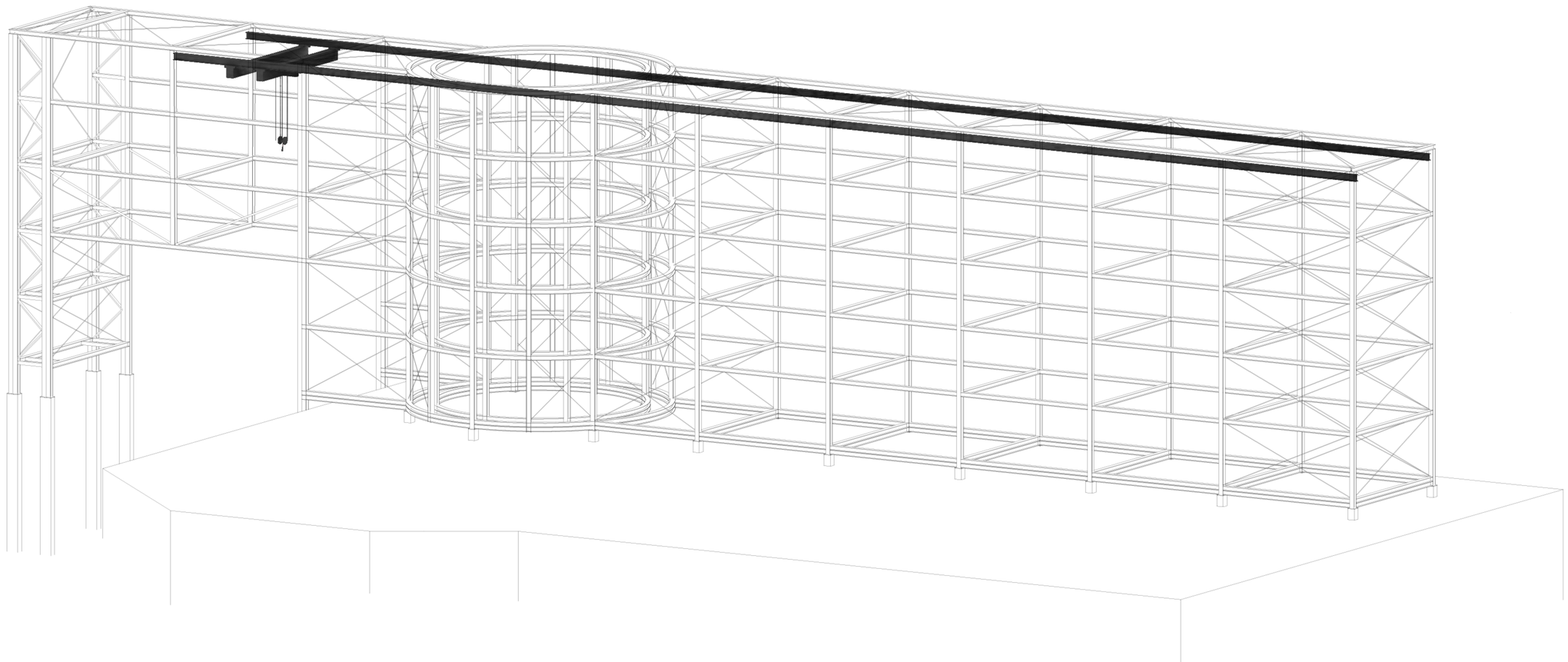
ADAPTABILITY OF LENGHT



GENERAL USE



USE IN CONSTRUCTION

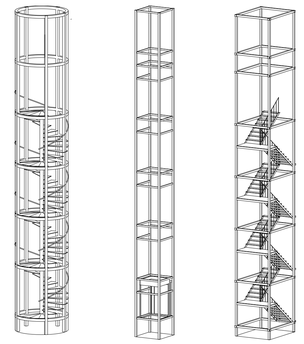


VERTICAL CIRCULATION

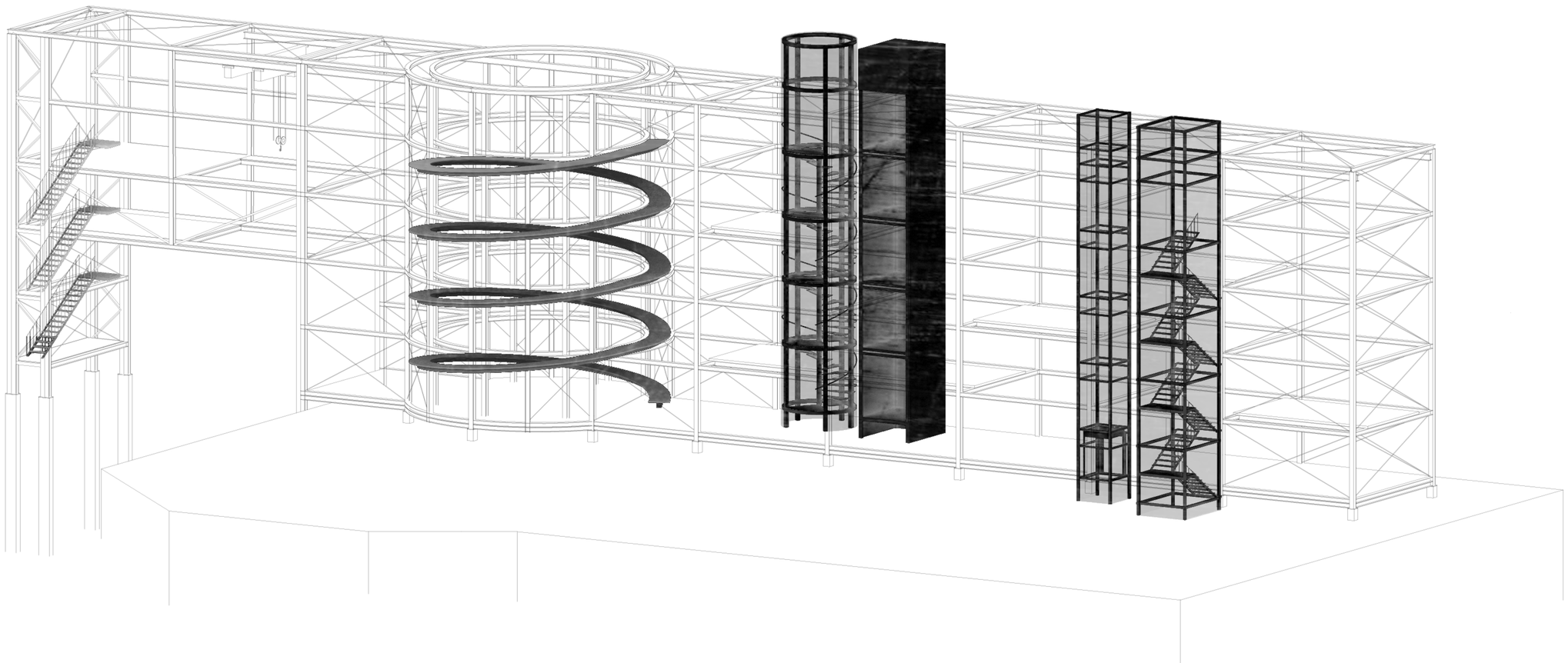
ejected cores maximize interior space, visual connection through the building, and crane mobility.
they are built from the disassembled, previously existing buildings.



EJECTED CORES
OUTSIDE THE BUILDING



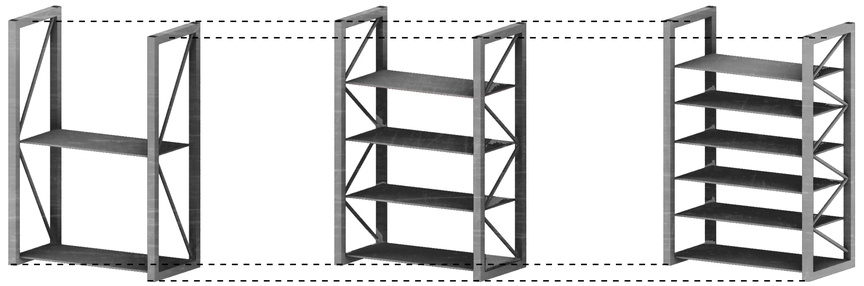
REUSED STAIRCASES FROM PREVIOUS
BUILDINGS



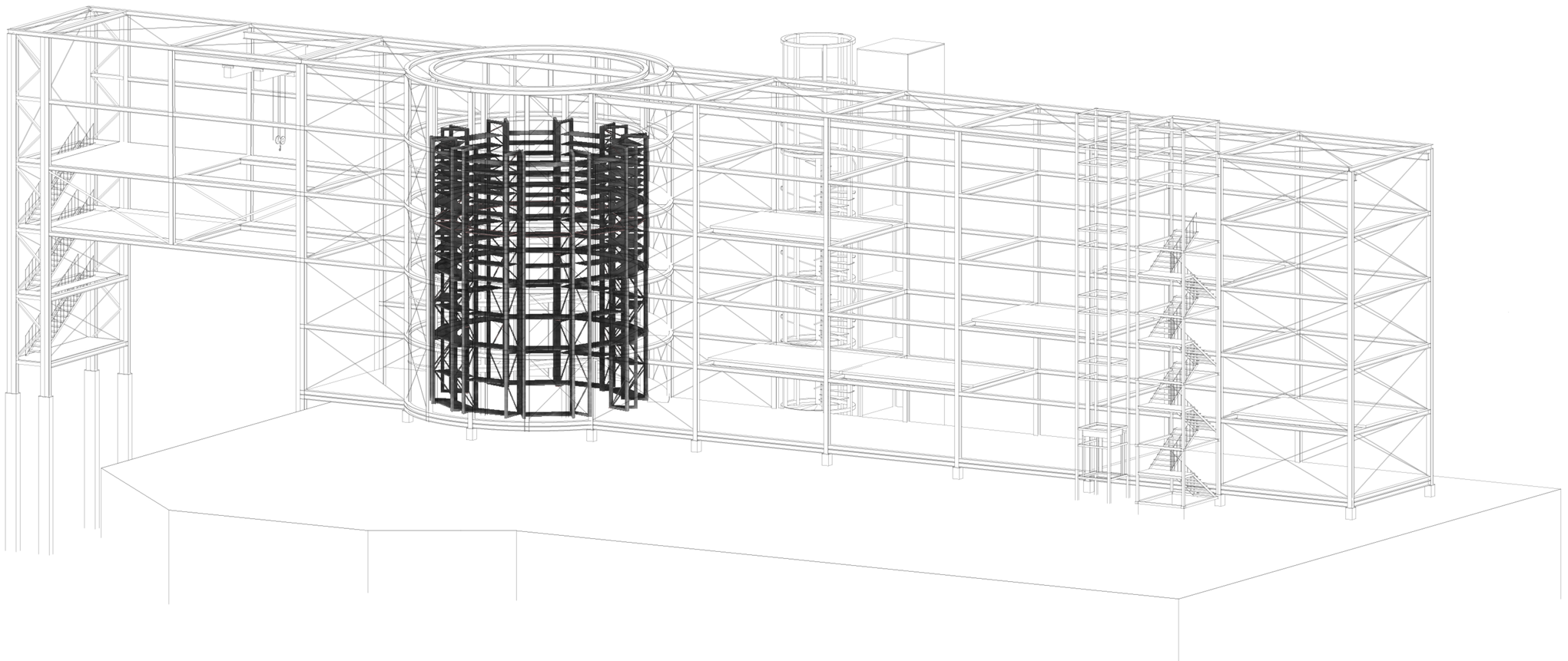
TR(E)ASHURY

material bank/Tr(e)ashury is the main storage space
for the transported collected unwanted material from Amsterdam City's residents.

it is assembled from storage racks, ranging in 3 height spans,
allowing for different sizes and volumes of materials to be stored.



210X90X(150X2) 210X90X(75X4) 210X90X(50X6)



HORIZONTAL CIRCULATION

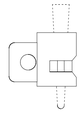
ringlock scaffolding, chosen for its ease of assembly and availability from nearby construction, serves a dual purpose.

first, it serves to build the building's facade. then, it disassembles for use as both horizontal circulation inside the building, as well as for storage for user projects.



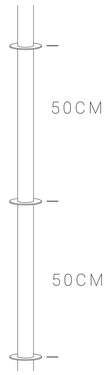
TUBE

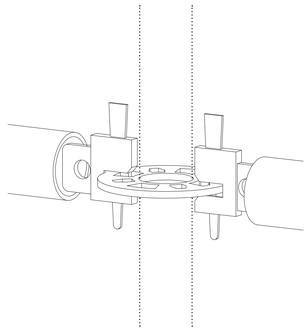
RING



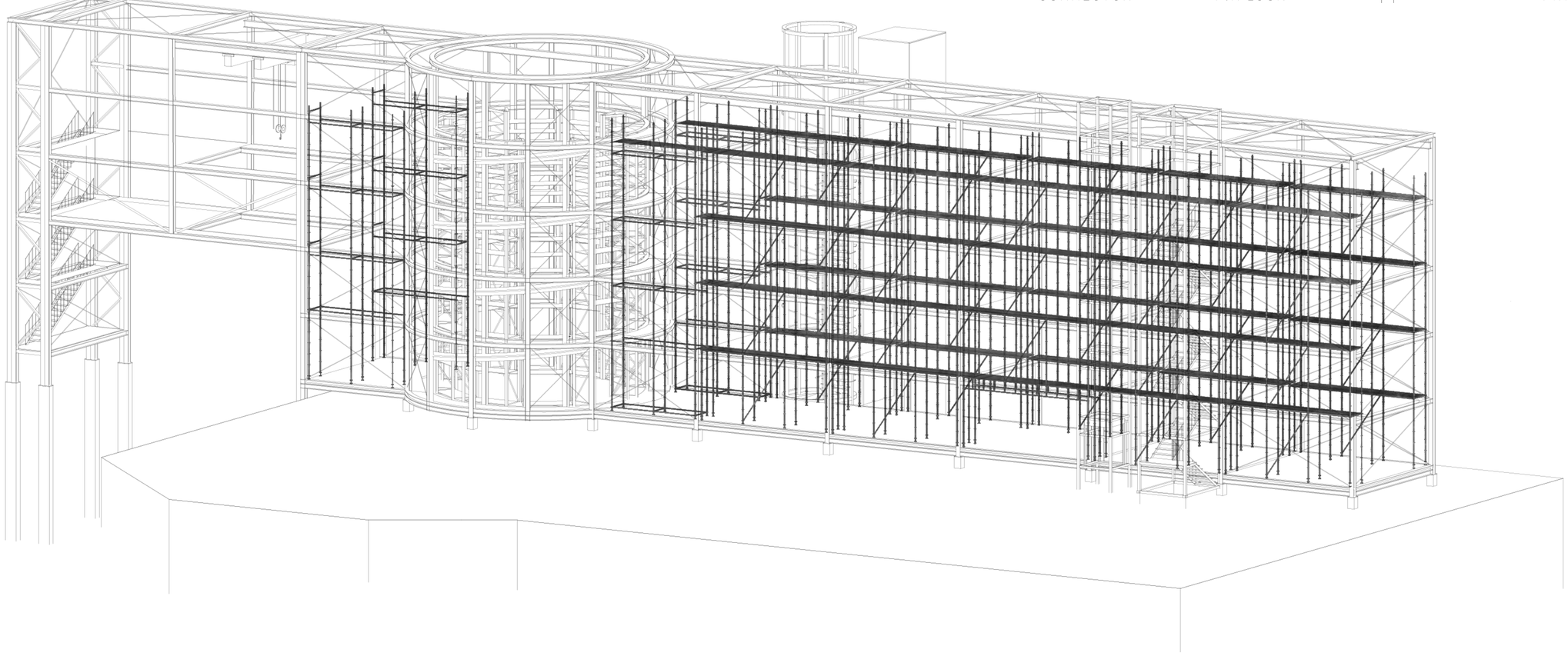
CONNECTOR

PIN LOCK





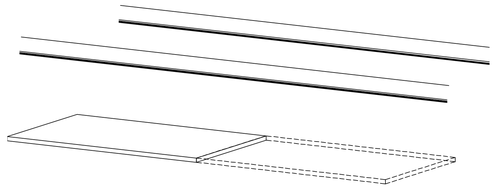
PIN LOCK CONNECTION



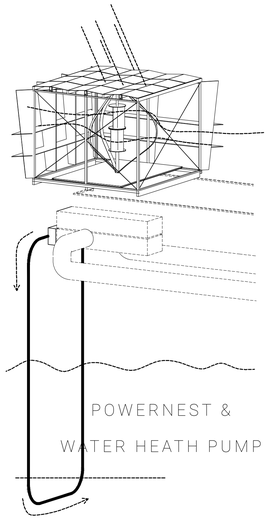
INSTALLATIONS

the installations are pulled through the whole building, for an easy expansion of the modules inside of it - so that when/if they expand, they already have everything needed for them to be able to function.

the electricity is generated by a Powernest unit - made out of a wind turbine and solar panels, whereas the heat is provided by a water heath pump.



POSSIBILITY OF EXPANSION OF WORKSHOP PLATFORMS DUE TO ALL THE INSTALLATIONS BEING EXTENDED THROUGH THE WHOLE BUILDING



POWERNEST &
WATER HEATH PUMP

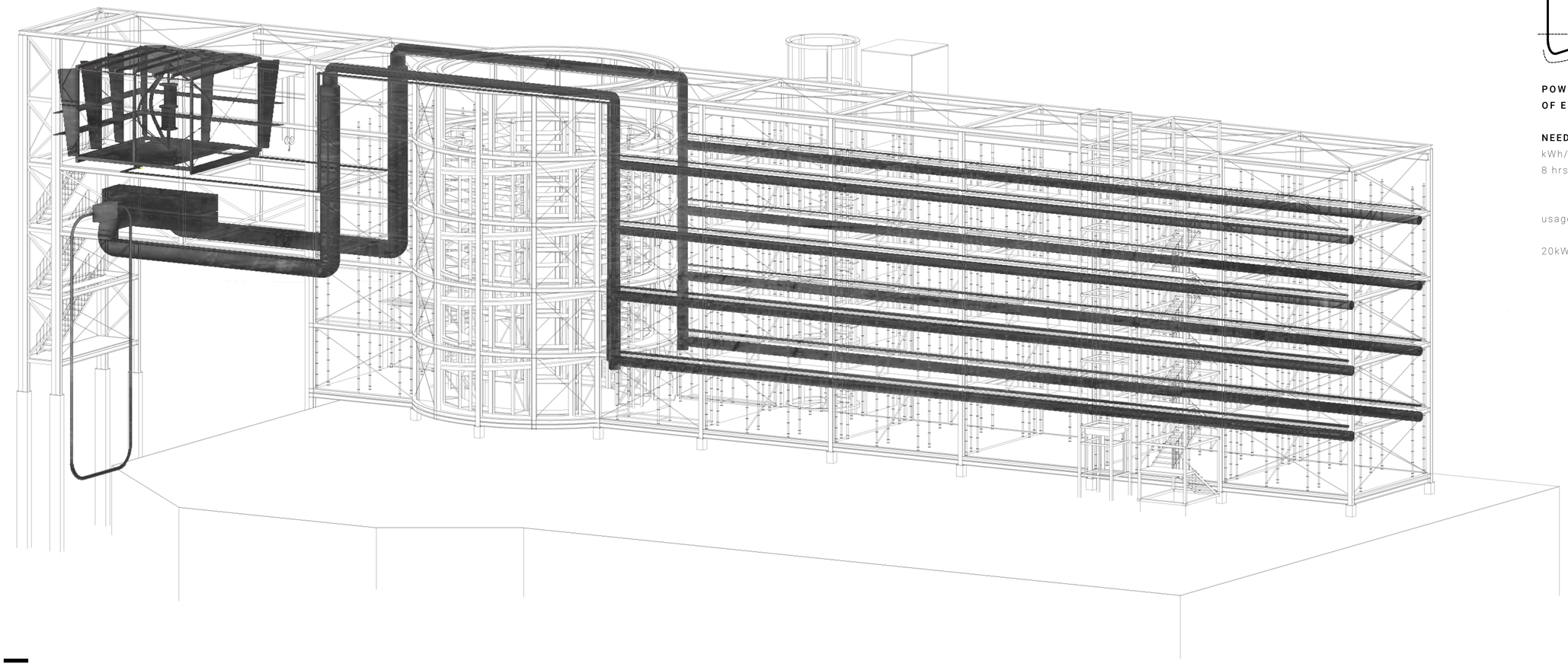
POWERNEST'S YEARLY GENERATION OF ENERGY - 45 000 kWh/yr

NEEDED ENERGY

kWh/yr = kW x time (in hours)
8 hrs/day x 7days/week = 56 hrs/week
≈ 50 weeks (holidays)

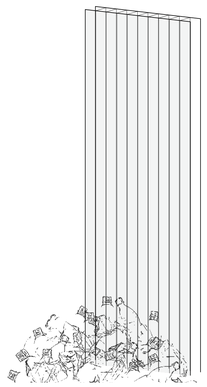
usage of heavy machinery (≈ 20kW)

20kW x 56hrs/week x 50weeks = **56 000 kWh/yr**



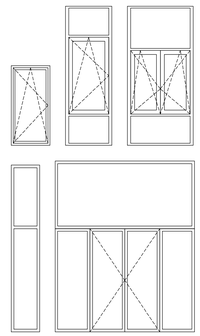
INNER FACADE LAYER

the facade is a double layer polycarbonate facade, made out of end-user recycled plastic.
ground floor and north/south facades utilize reused plastic window frames from dismantled buildings.

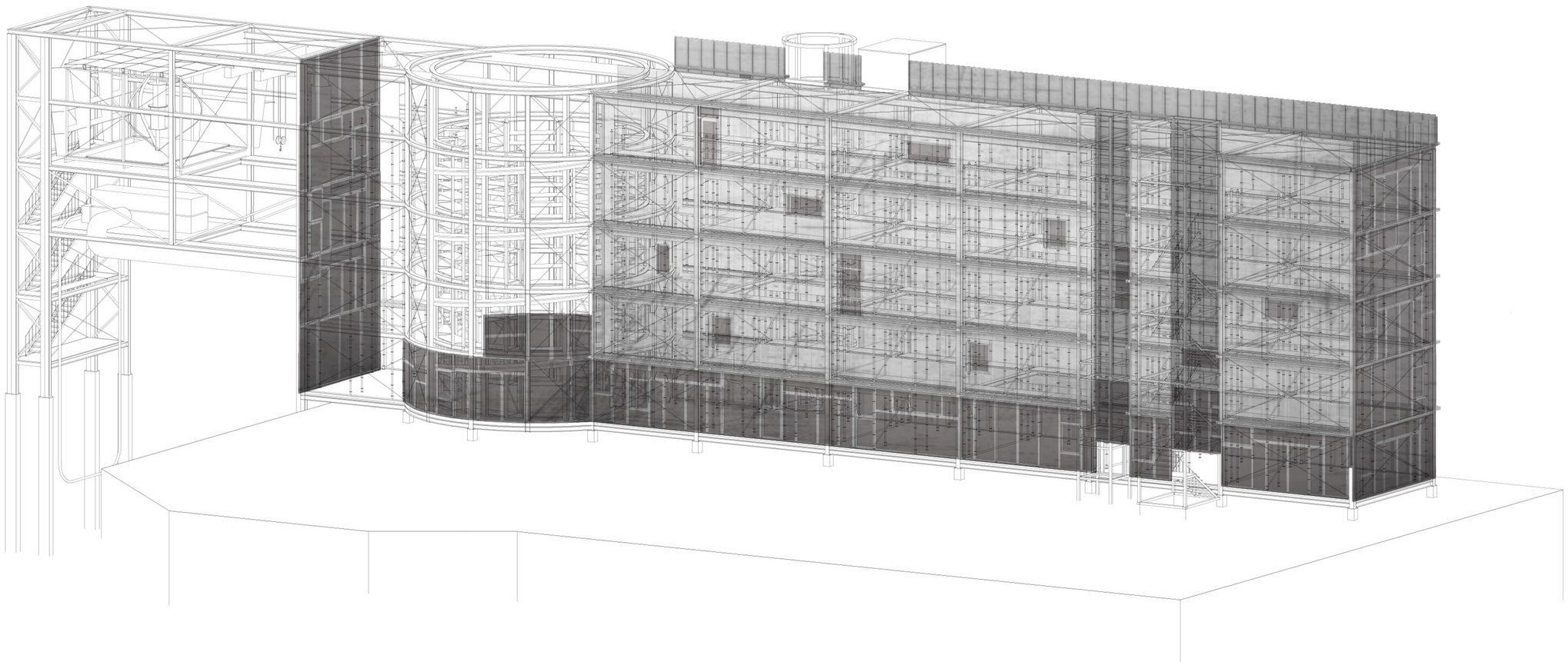


RECYCLED PLASTIC
POLYCARBONATE
FACADE PANELS

50X300CM

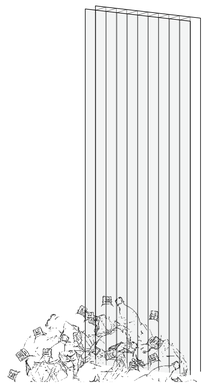


REUSED PLASTIC
FRAMES WITH
DOUBLE GLAZED
GLASS



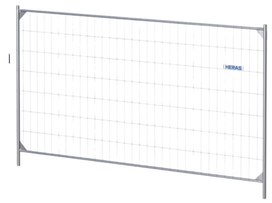
OUTER FACADE LAYER

the exterior facade layer is likewise built of polycarbonate, while the Techincal, ventilated (river) part of the building is enclosed by a facade made out of construction mesh - reused from the nearby construction site of the new residential area.

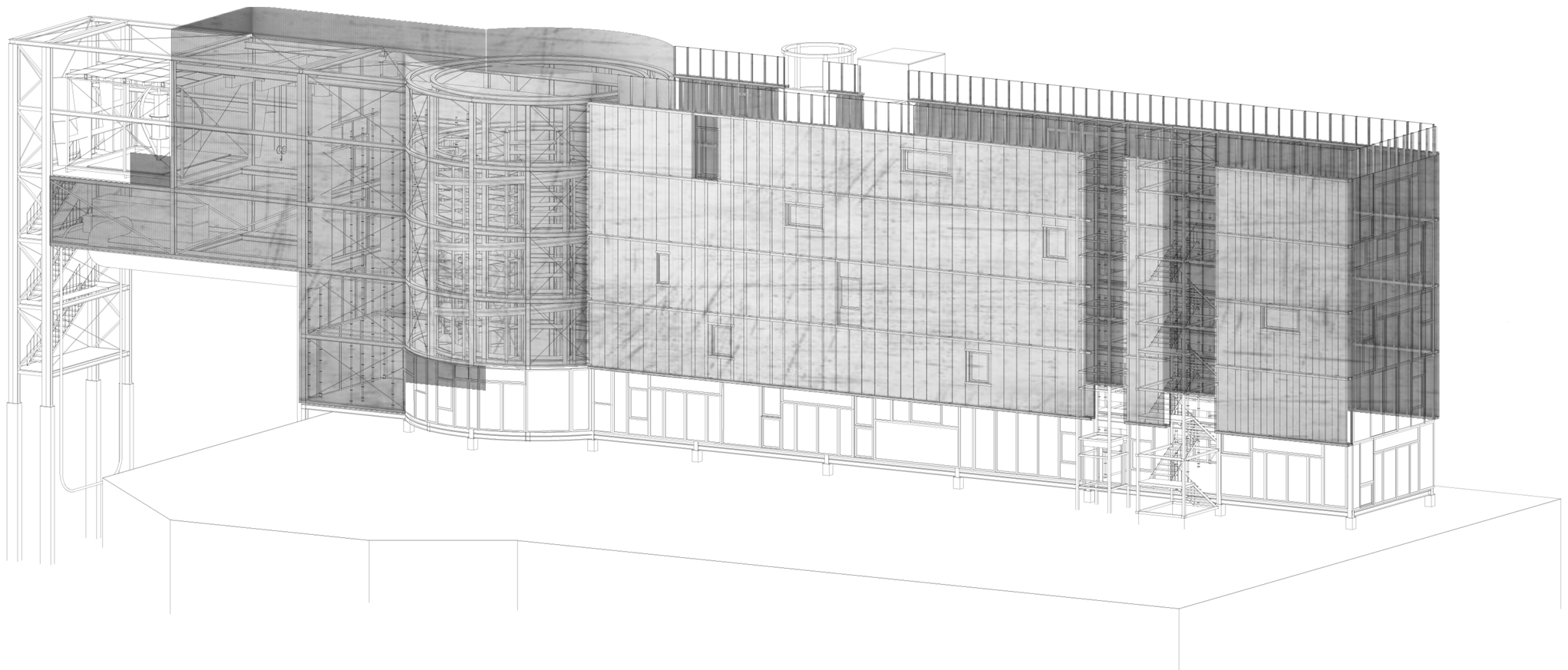


RECYCLED PLASTIC
POLYCARBONATE
FACADE PANELS

50X300CM



CONSTRUCTION
SITE MESH



PHYTOREMEDIATION GARDEN

due to the soil being polluted by the previous use of the site for incineration plant,
phytoremediation plants are planted to extract the heavy metals from it.
in doing so, a green area is created, which is otherwise lacking in the neighborhood.



Sunflower
Healianthus annuus

LANDFILL LEACHATE



Indian Mustard
Brassica juncea

CESIUM



Alyssum
Lobularia

LEAD
NICKEL



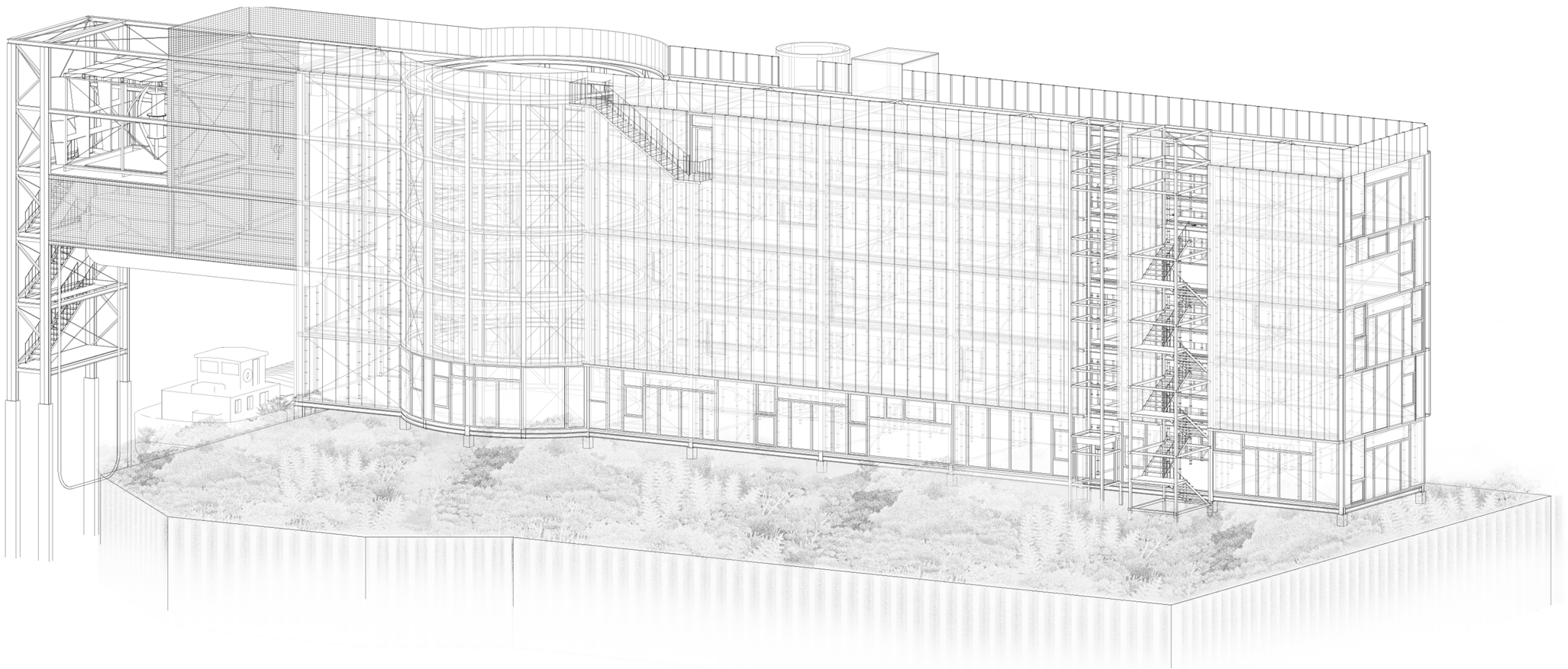
Horsetail
Equisetum

ARSENIC
CADIUM



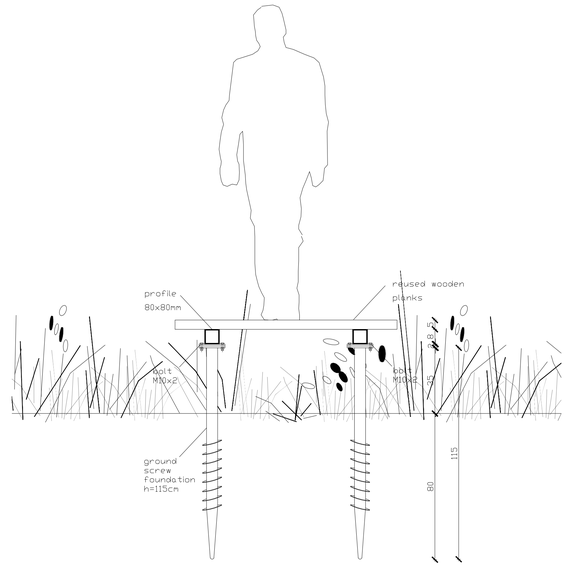
Pteris Vittata
Arundo donax

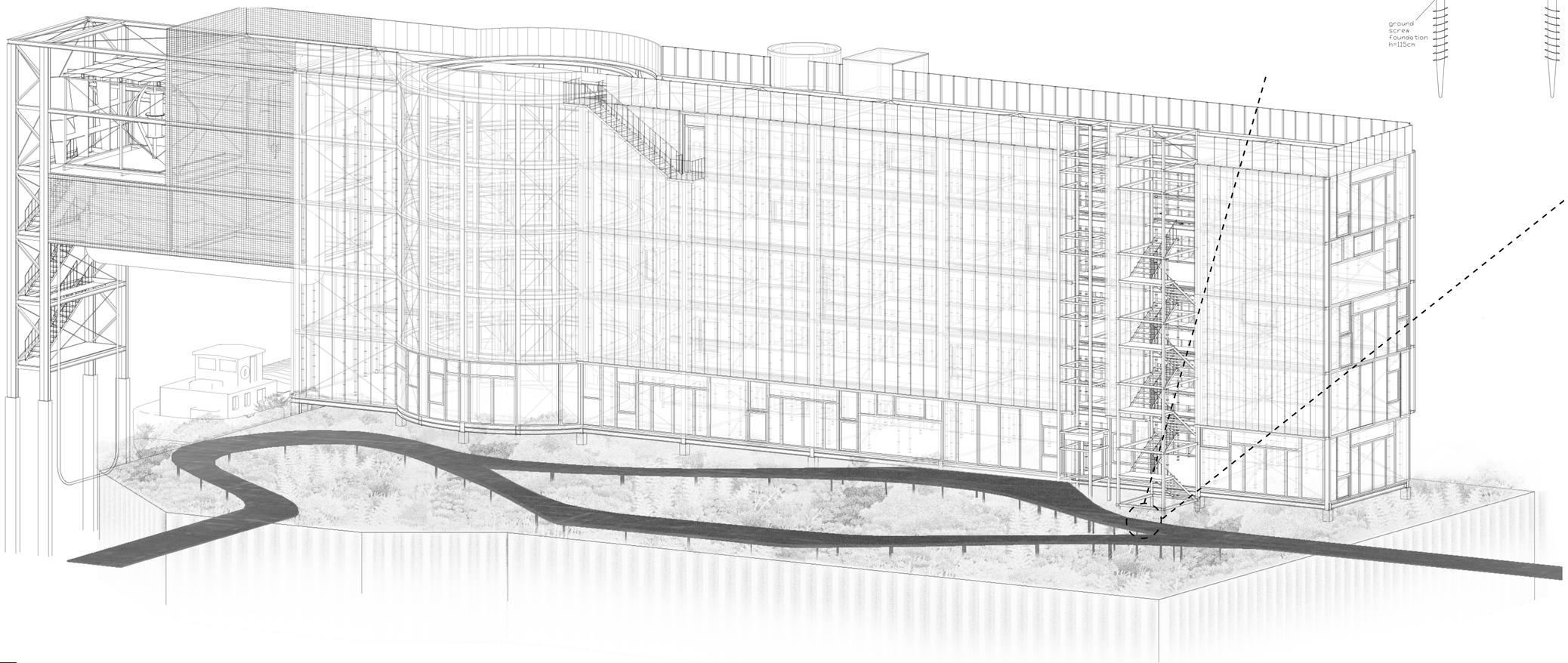
ARSENIC



PROMENADE

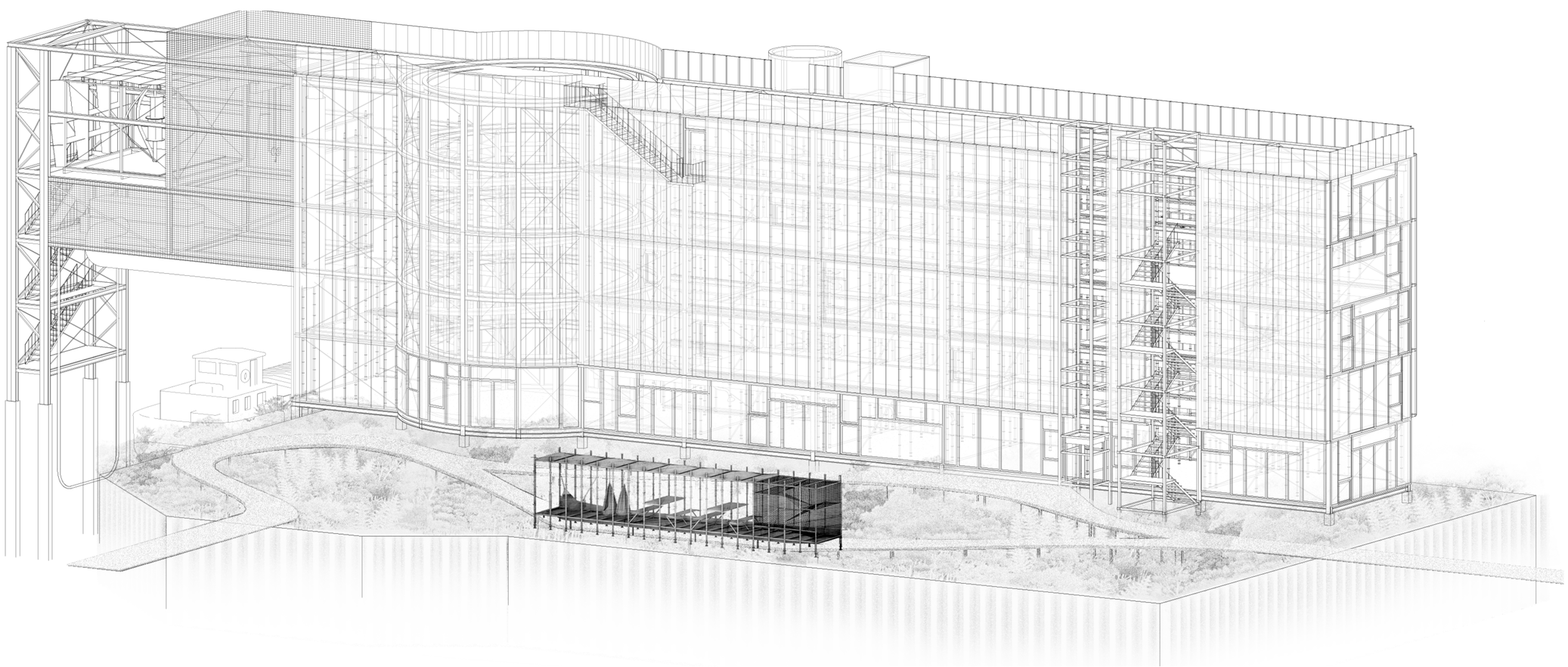
to connect the site to the neighborhood, a promenade is created,
to foster an accessible public green space.
the walkway is elevated from the polluted ground, enabling the phytoremediation plants to grow





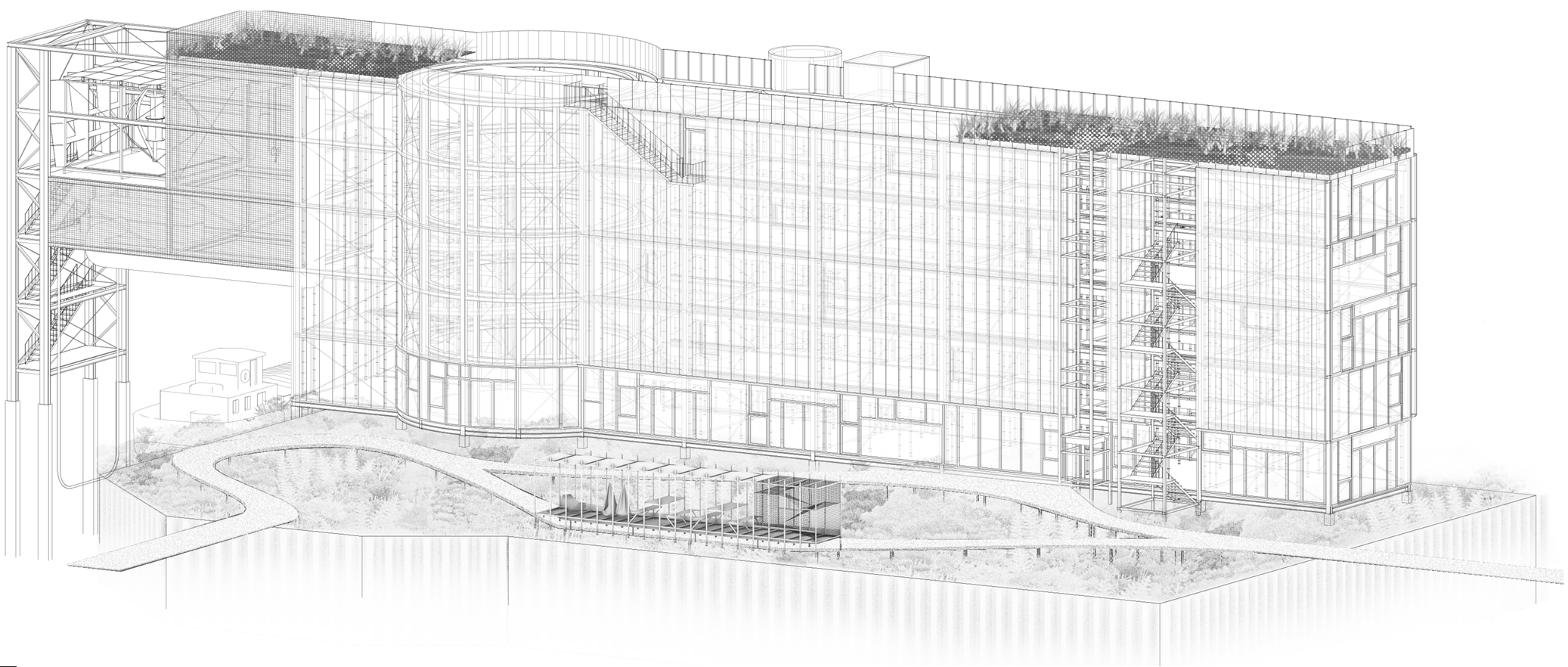
PAVILION

to enable users to spend some time in the garden,
a pavilion is created with the remaining scaffolding and leftover material -
to create a space of rest, and childdren's play



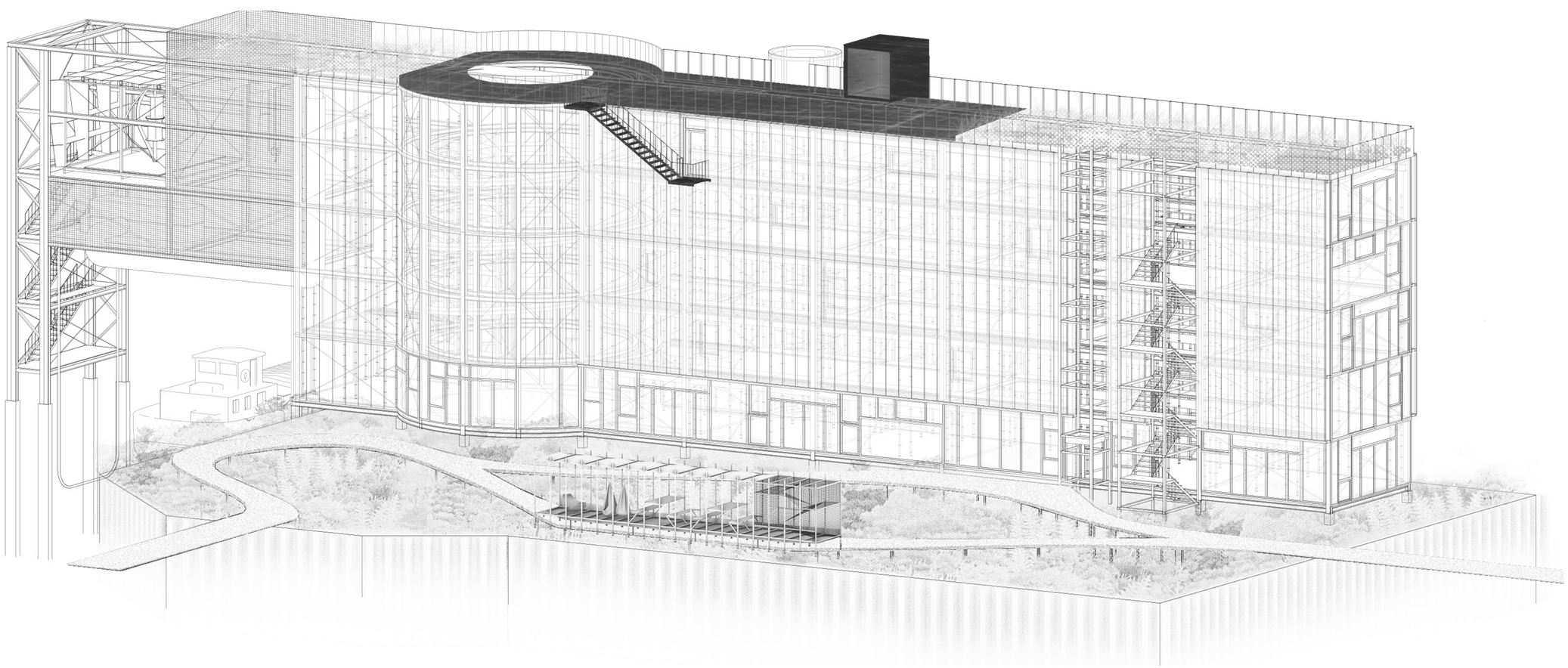
ROOF

the roof is flat and green, providing other species such as birds a place to rest,
as well as insulating the building from sun overheating.

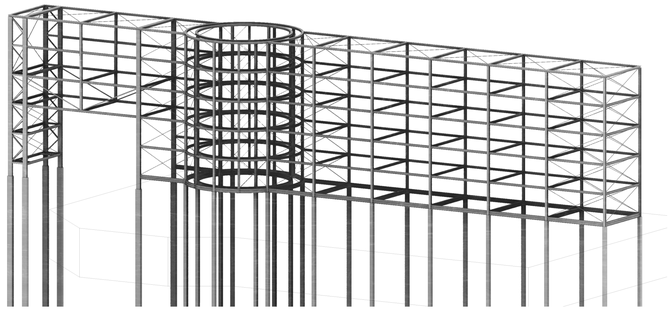


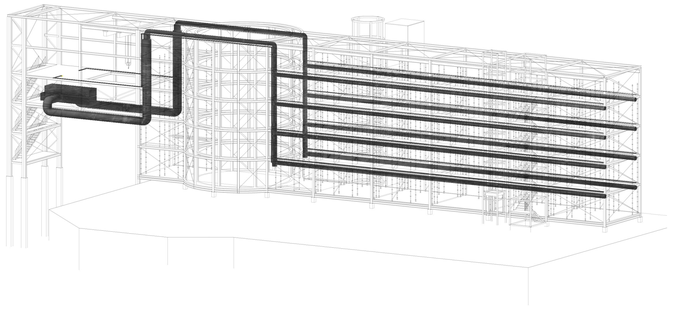
ROOF

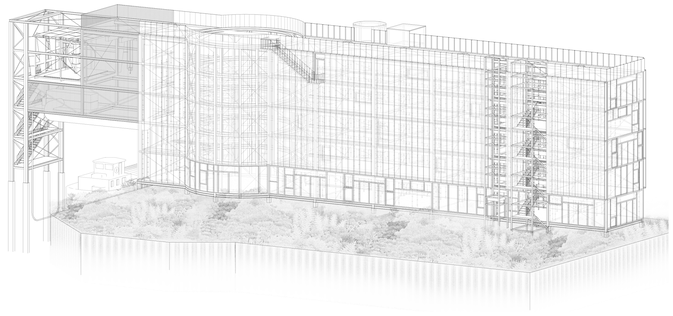
the central part of the roof becomes a lookout point, capitalizing on the building's unobstructed river location and panoramic views of South Amsterdam. a rooftop bar entices visitors to explore the building before accessing the bar and viewpoint via the rooftop staircase.

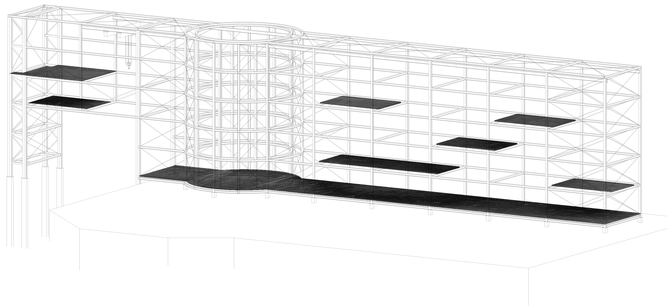


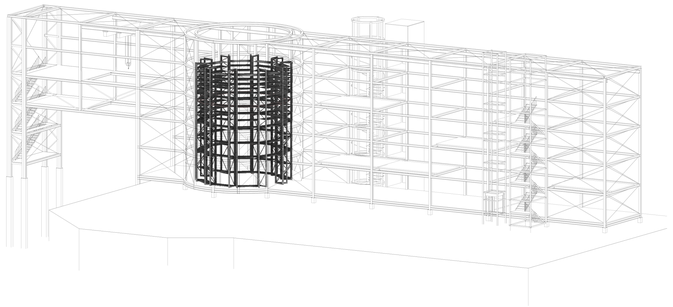
LAYERS

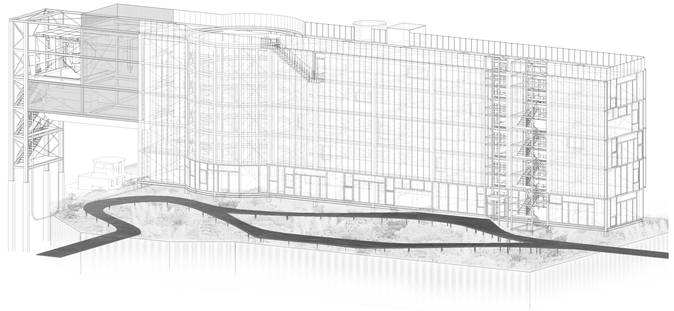


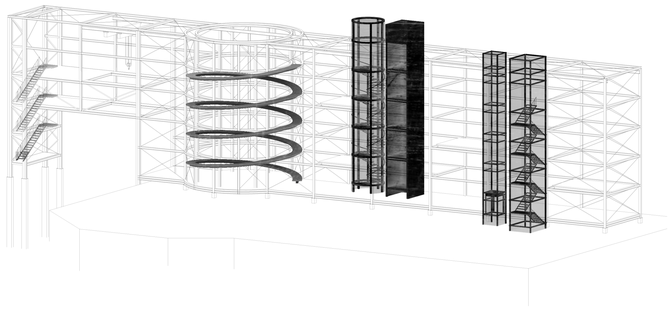


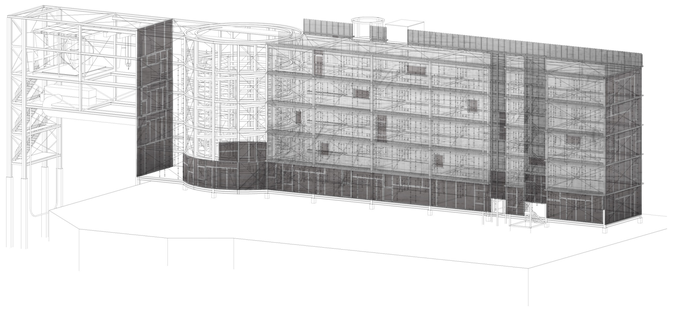


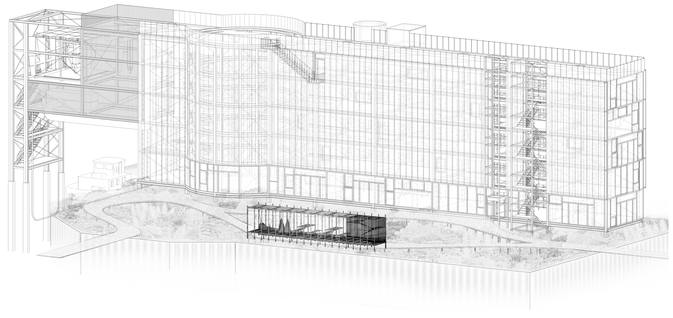


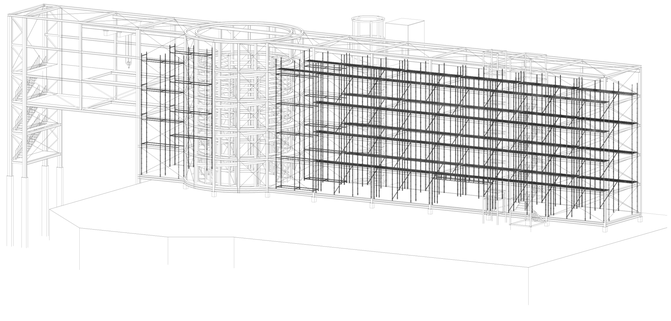


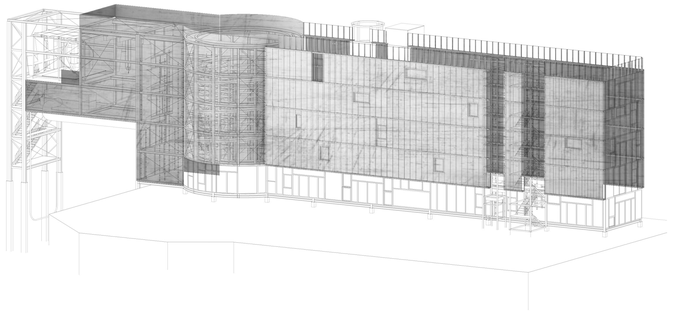


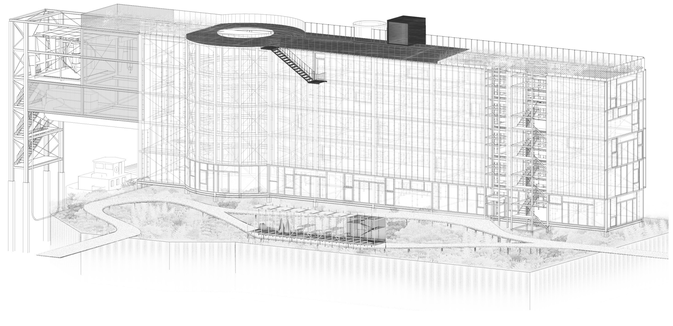




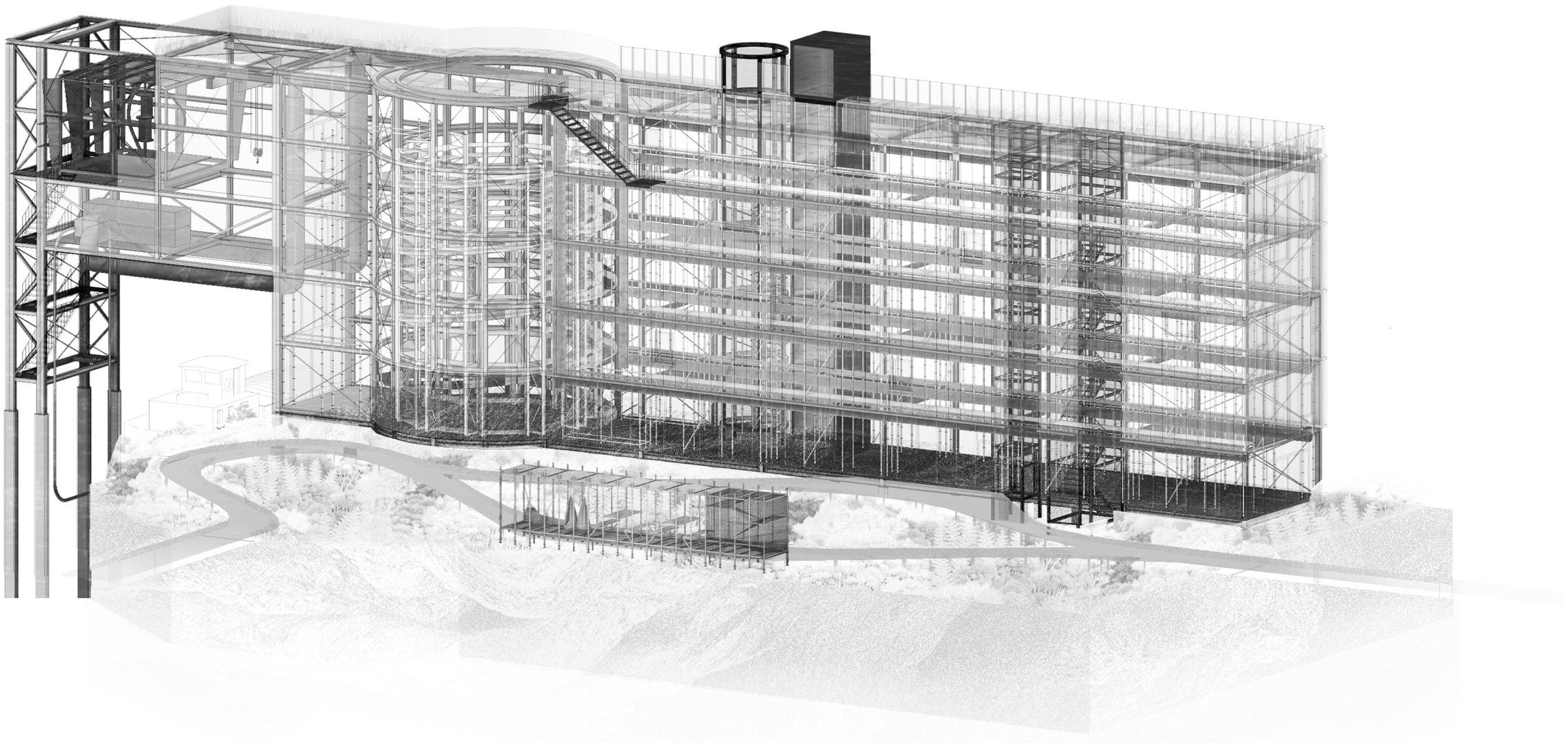








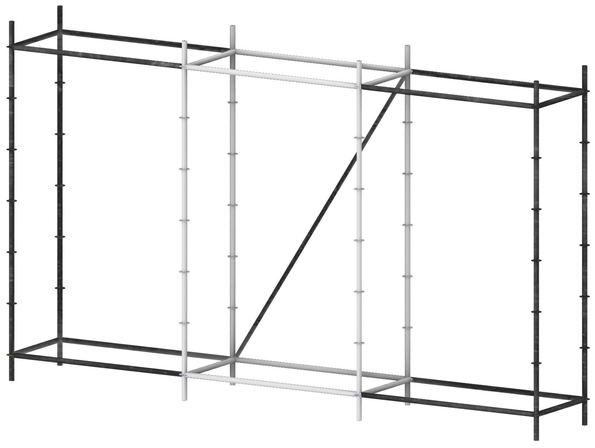
LAYERS



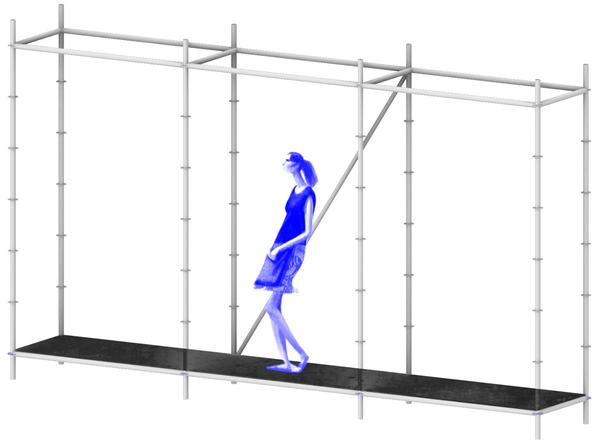
DESIGN DETAILS

SCAFFOLDING MODULE

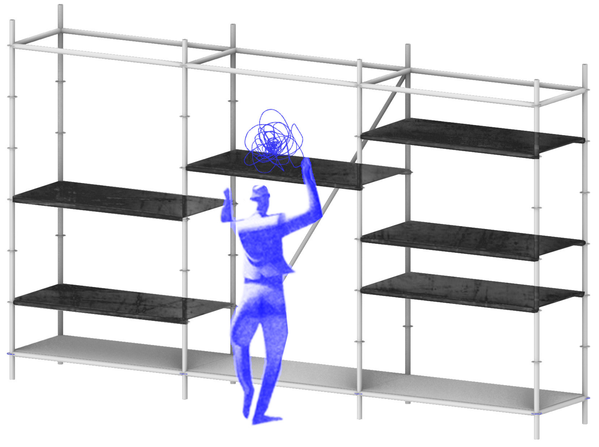
WAYS OF USE



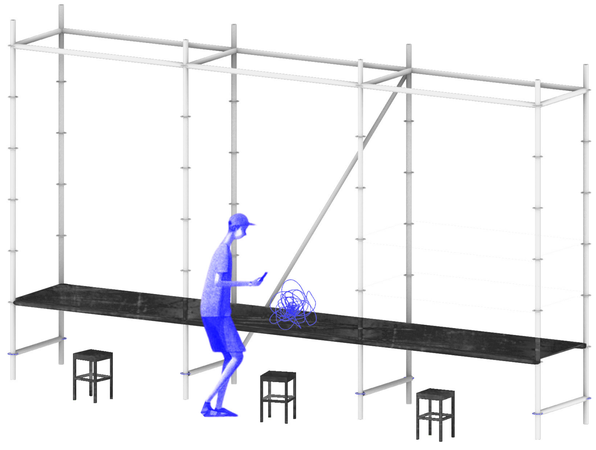
BASE MODULE



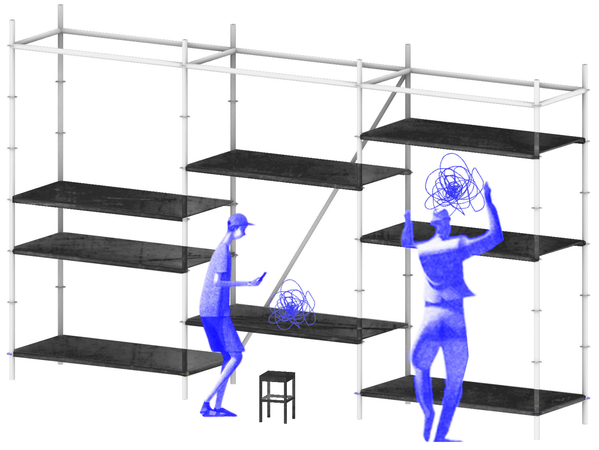
HORIZONTAL CIRCULATION



STORAGE SPACE



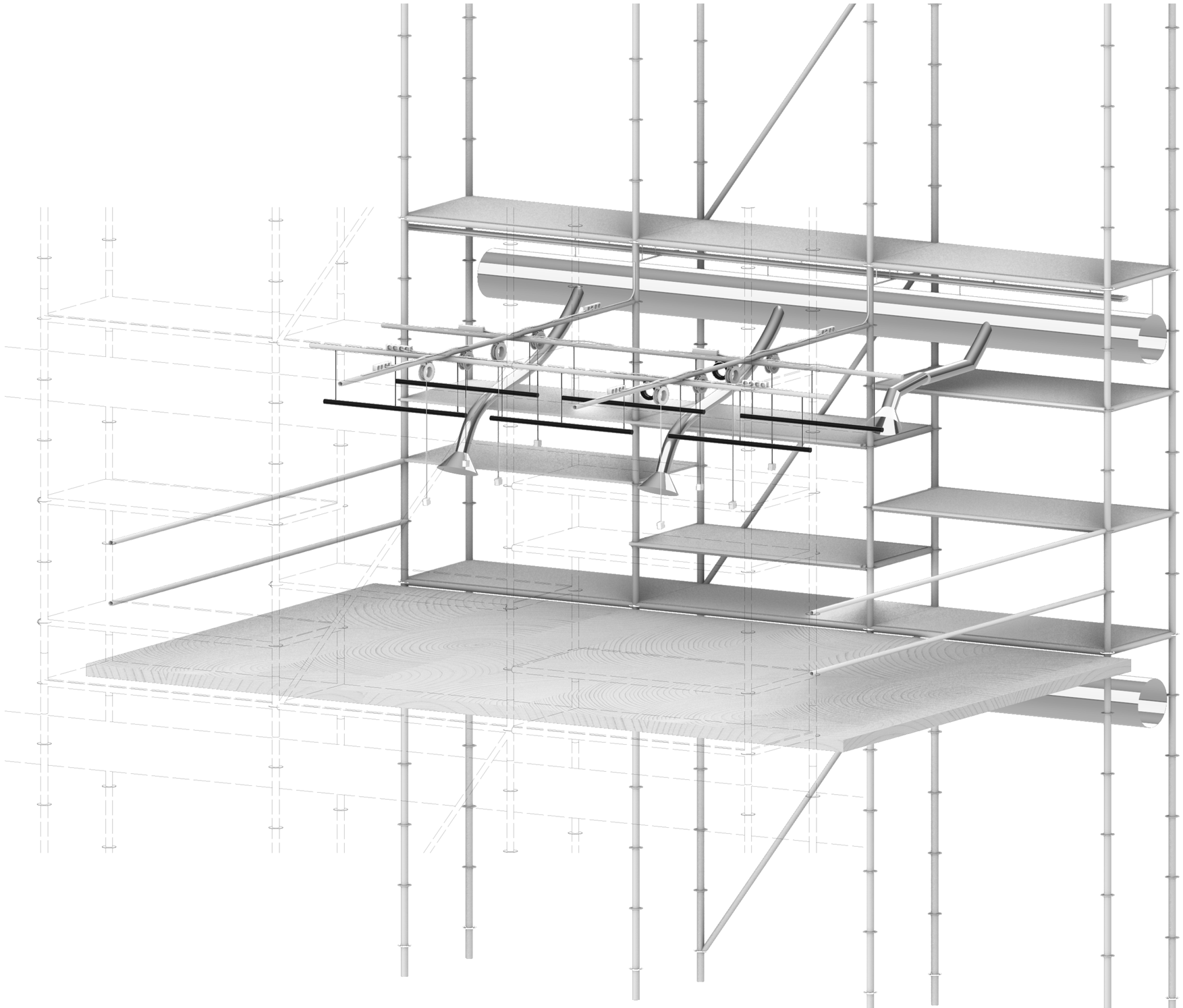
WORKING SURFACE



COMBINATION

WORKSHOP MODULE

ELEMENTS OF SPACE CUSTOMIZATION

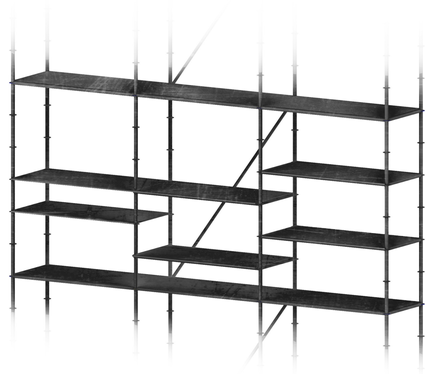




AIR INTAKE ELEMENTS



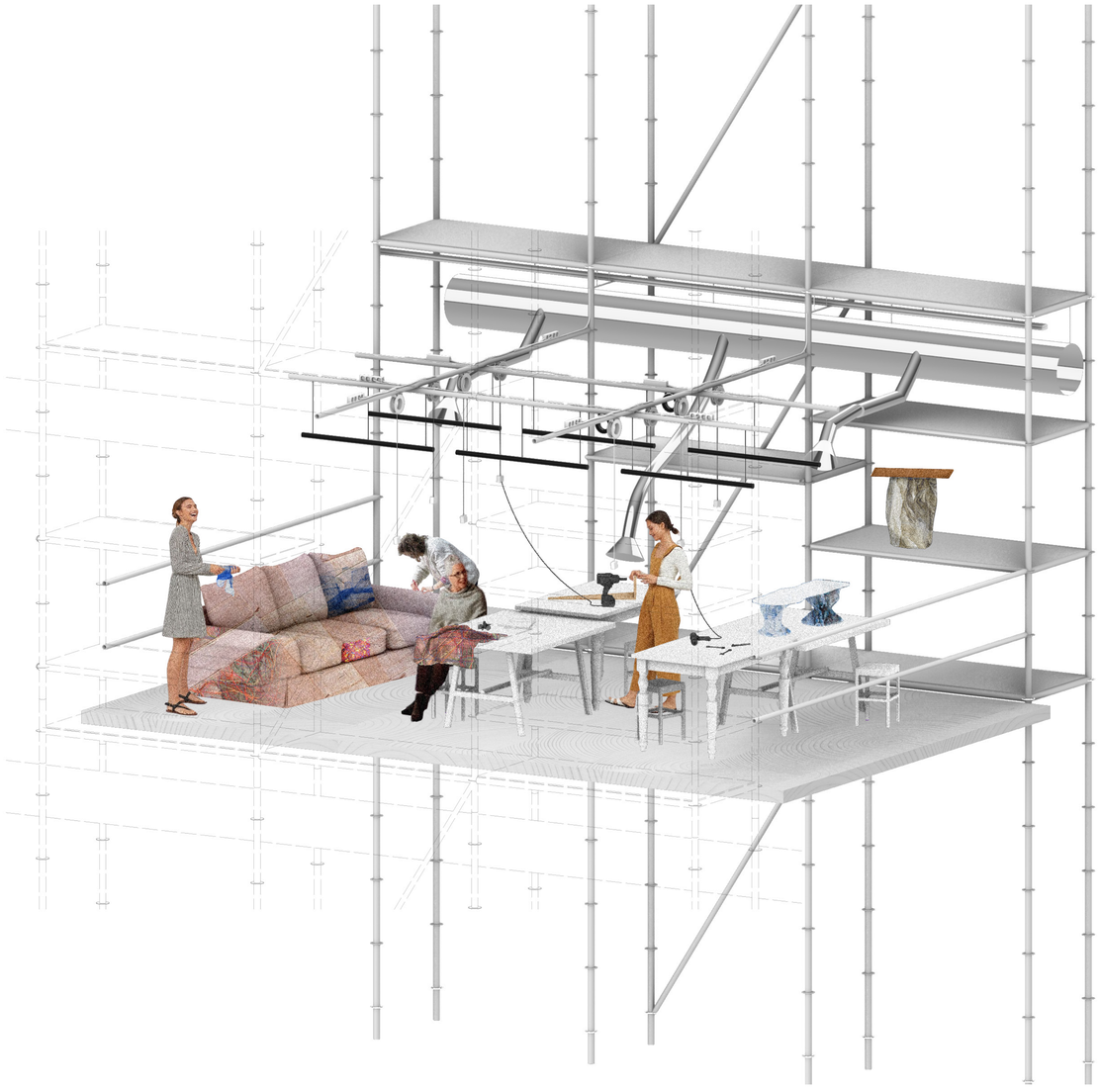
ELECTRICITY PLUGS

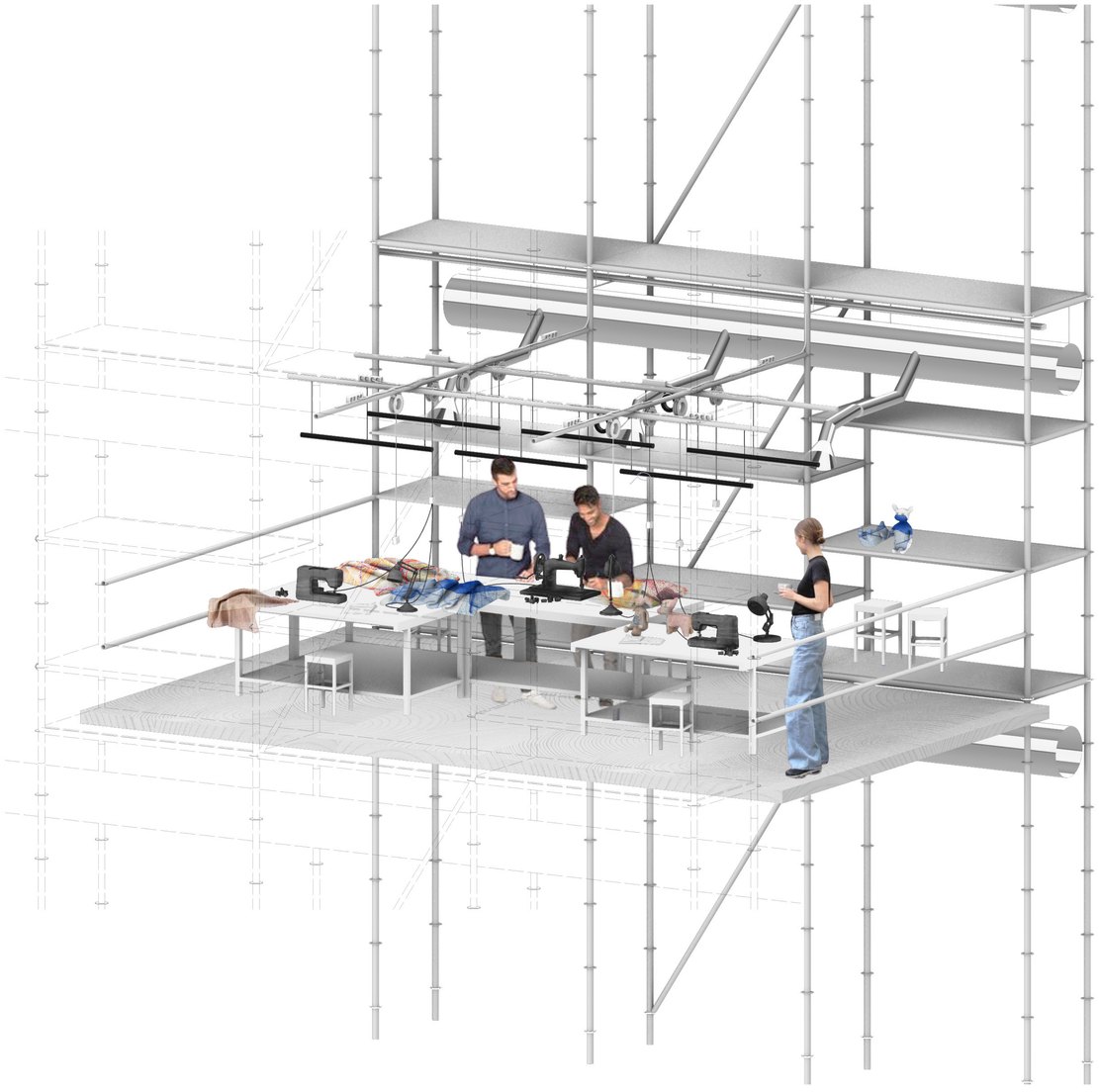


STORAGE SPACE

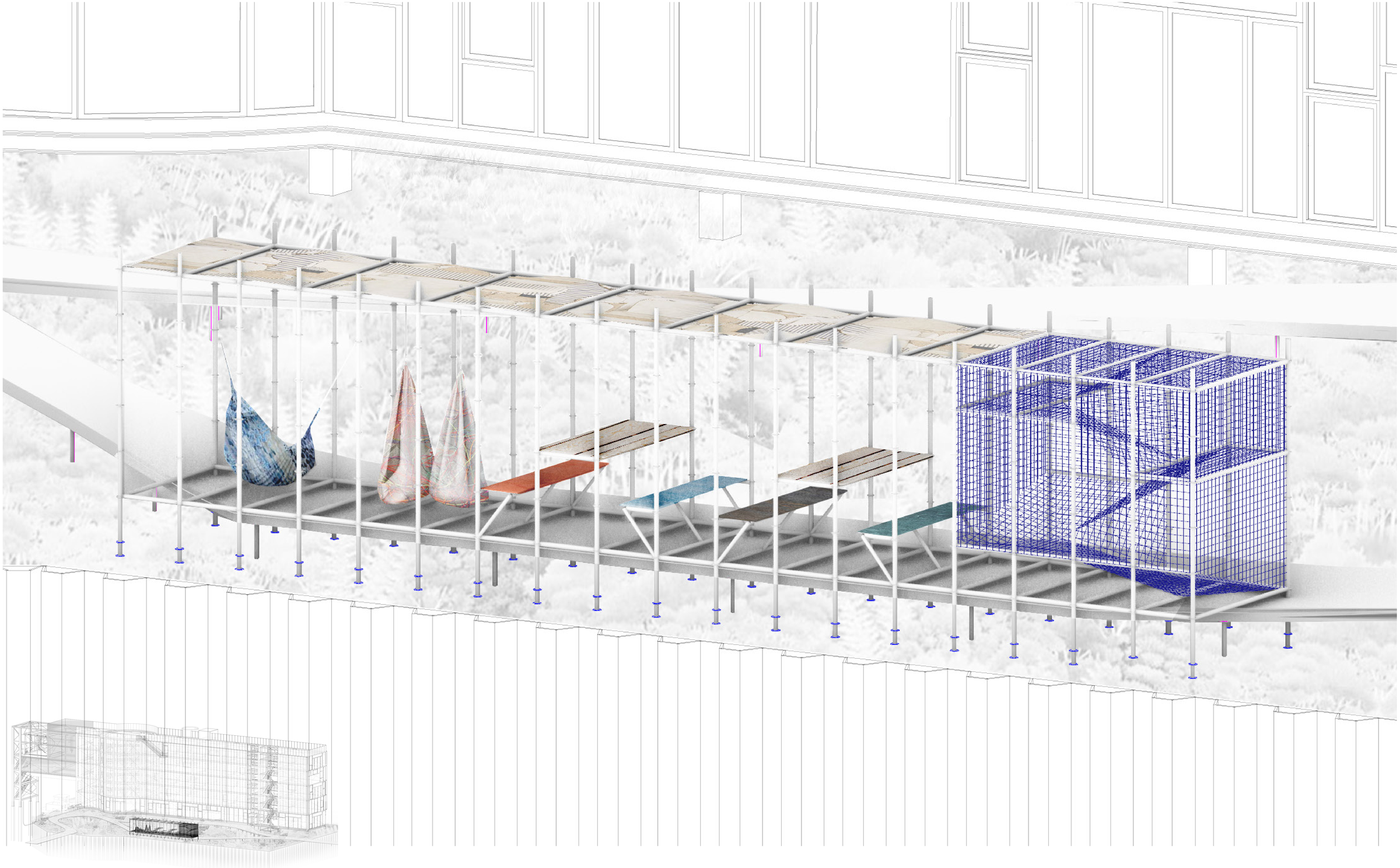
WORKSHOP MODULE

POTENTIAL USE SCENARIOS



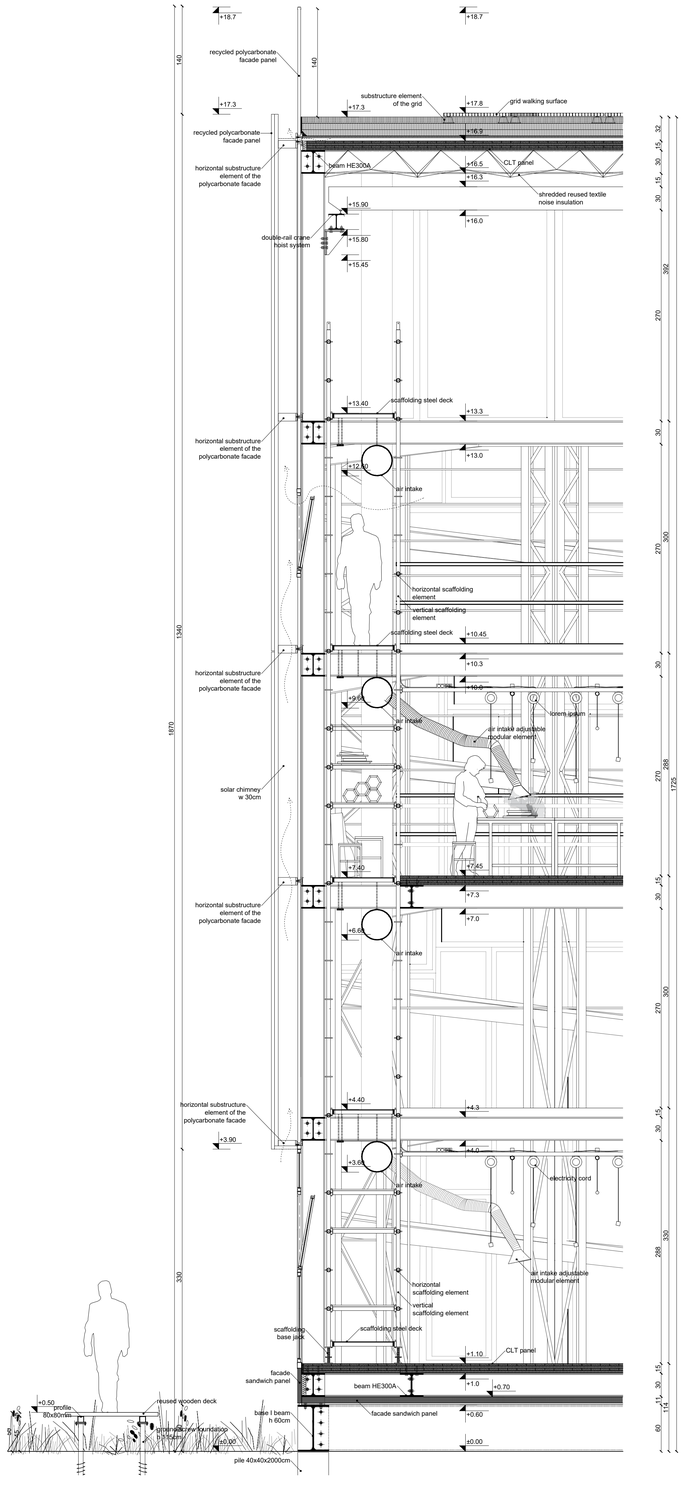


PAVILION



FACADE




+18.7
recycled polycarbonate facade panel
140
substructure element of the grid
+17.8
grid walking surface
+17.3
+16.9
recycled polycarbonate facade panel
horizontal substructure element of the polycarbonate facade
beam HE300A
+16.5
CLT panel
+16.3
shredded reused textile noise insulation
+15.90
+16.0
double-rail crane hoist system
+15.80
+15.45
+13.40
scaffolding steel deck
+13.3
horizontal substructure element of the polycarbonate facade
+13.0
+12.60
air intake
horizontal scaffolding element
vertical scaffolding element
scaffolding steel deck
+10.45
+10.3
horizontal substructure element of the polycarbonate facade
+10.0
+9.60
air intake
lorem ipsum
air intake adjustable modular element
solar chimney w 30cm
+7.45
+7.40
horizontal substructure element of the polycarbonate facade
+7.3
+7.0
+6.60
air intake
+4.40
+4.3
horizontal substructure element of the polycarbonate facade
+3.90
+4.0
+3.60
air intake
electricity cord
air intake adjustable modular element
horizontal scaffolding element
vertical scaffolding element
scaffolding base jack
scaffolding steel deck
+1.10
CLT panel
facade sandwich panel
beam HE300A
+1.0
+0.70
base I beam h 60cm
facade sandwich panel
+0.60
+0.50
profile 80x80mm
reused wooden deck
+0.00
+0.00
pile 40x40x2000cm
1870
330
270
300
270
330
270
288
270
1725
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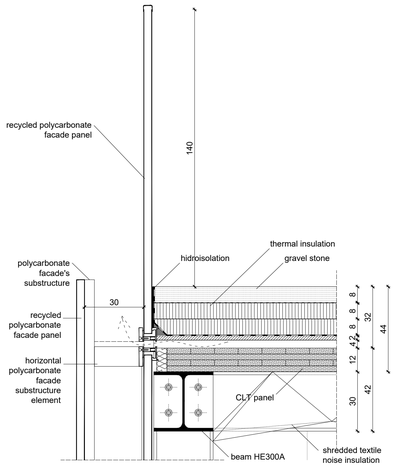
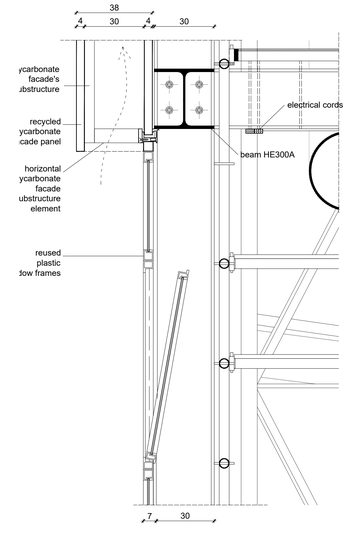
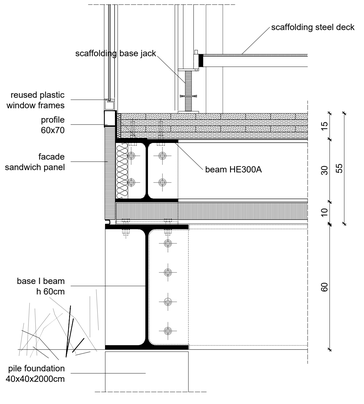

recycled polycarbonate facade panel
140
thermal insulation
hidroisolation
gravel stone
polycarbonate facade's substructure
30
recycled polycarbonate facade panel
horizontal polycarbonate facade substructure element
CLT panel
beam HE300A
shredded textile noise insulation
8
8
8
32
44
12
42
30


38
4
30
4
30
ycarbonate facade's ubstructure
recycled ycarbonate cade panel
horizontal ycarbonate facade ubstructure element
electrical cords
beam HE300A
reused plastic ow frames
7
30


scaffolding steel deck
scaffolding base jack
reused plastic window frames
profile 60x70
facade sandwich panel
beam HE300A
base I beam h 60cm
pile foundation 40x40x2000cm
15
30
45
10
60

ATMOSPHERES











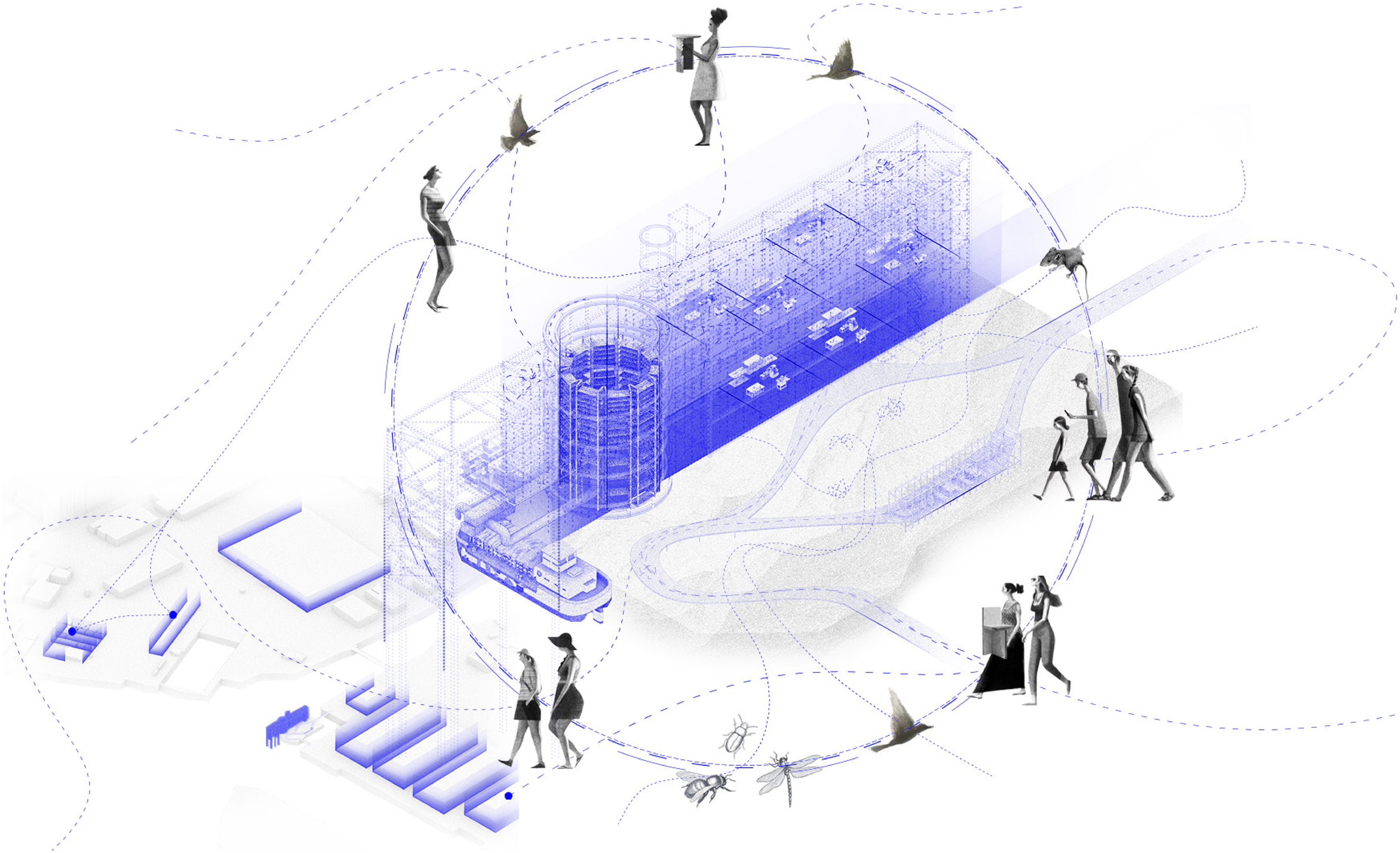
LAST FLOOR

ROOFTOP BAR / VIEWPOINT



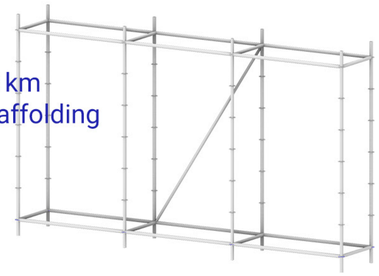
TR(E)ASHURE ISLAND...

ACTORS

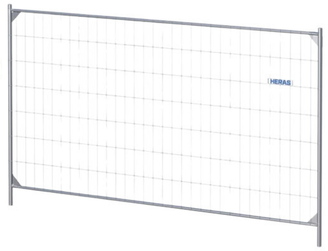


MATERIALS

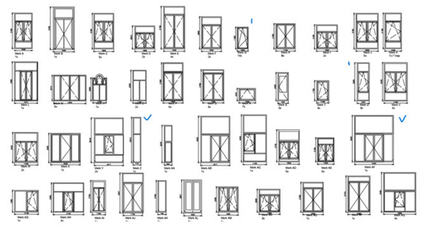
01
+0 km
scaffolding



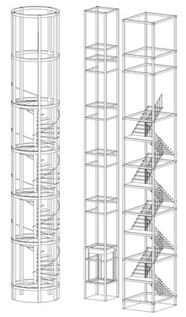
02
+0 km
mesh



03 +3 km
window frames

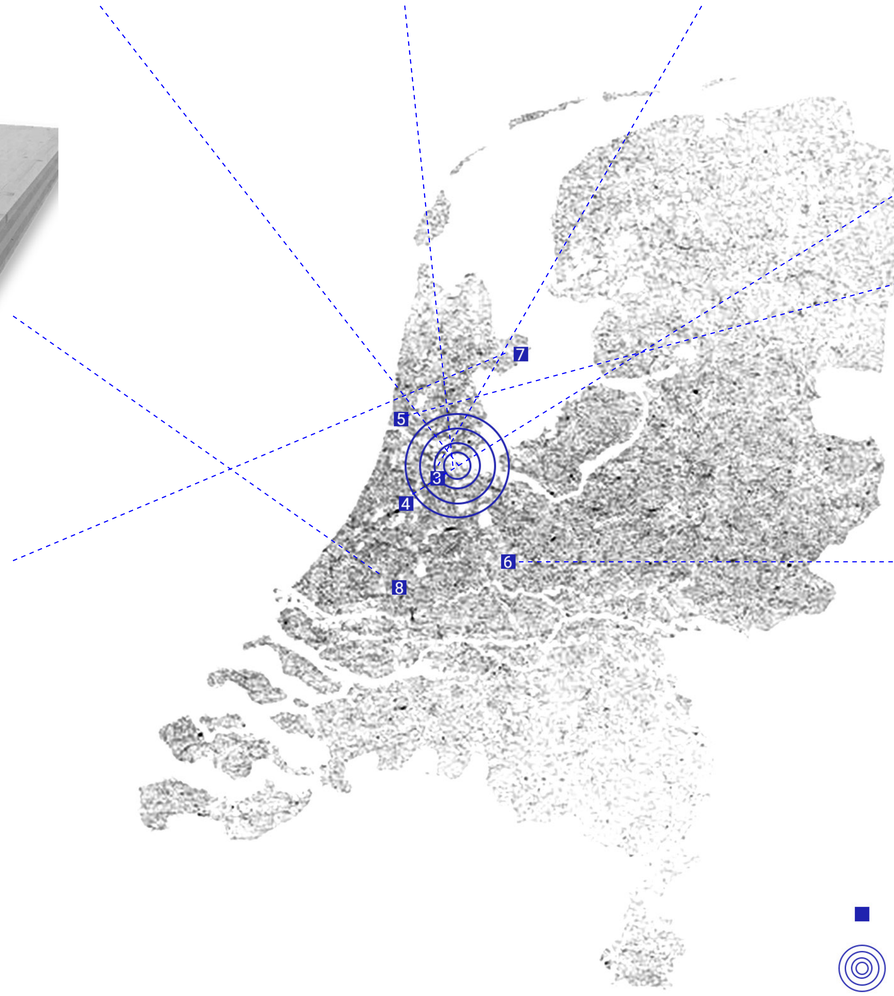


04
+12 km
staircases



08 +41 km
CLT panels





05 +19 km
steel



07 +41 km
recycled polycarbonate
facade panels



06 +32 km
industrial lamps

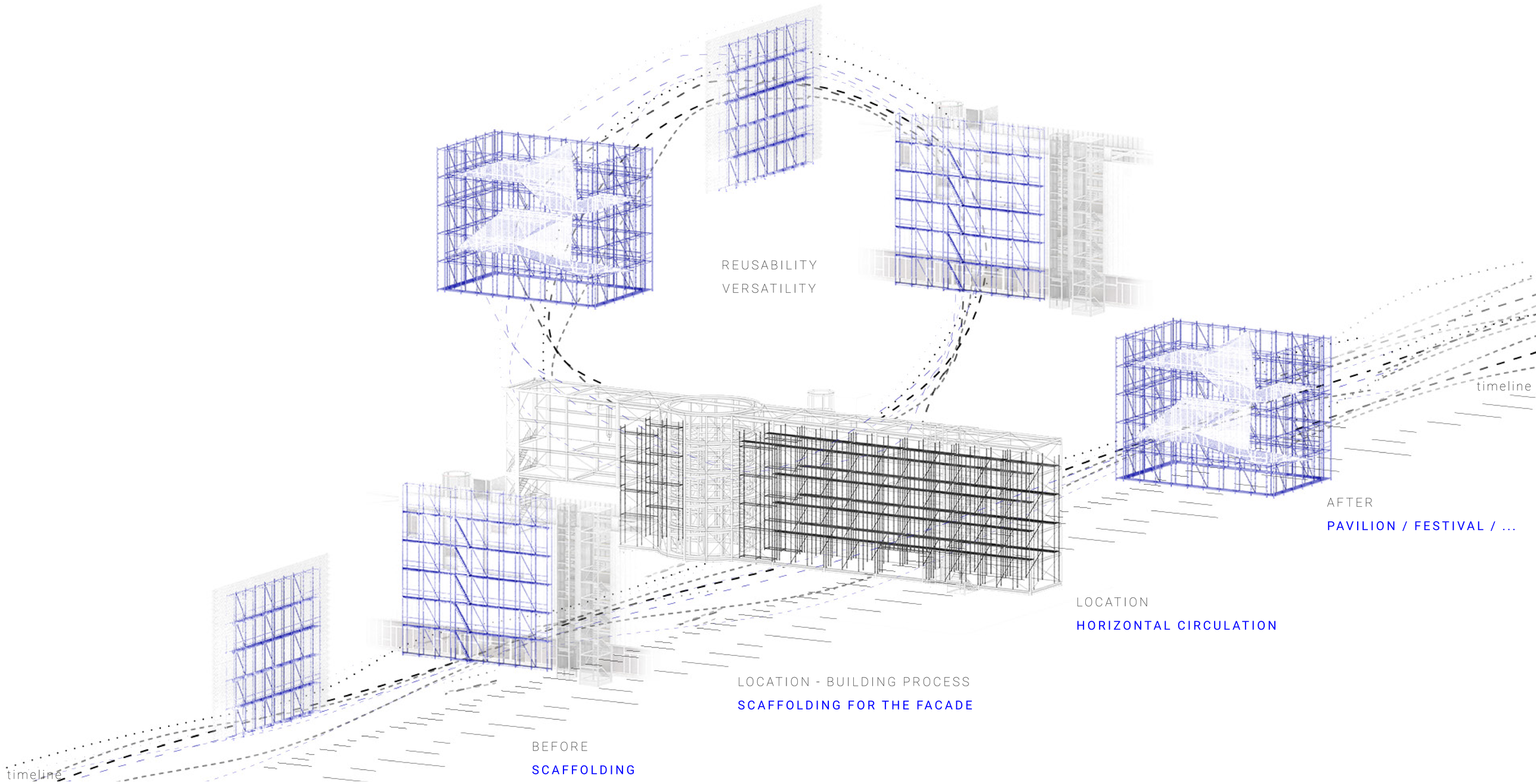


LOCATION

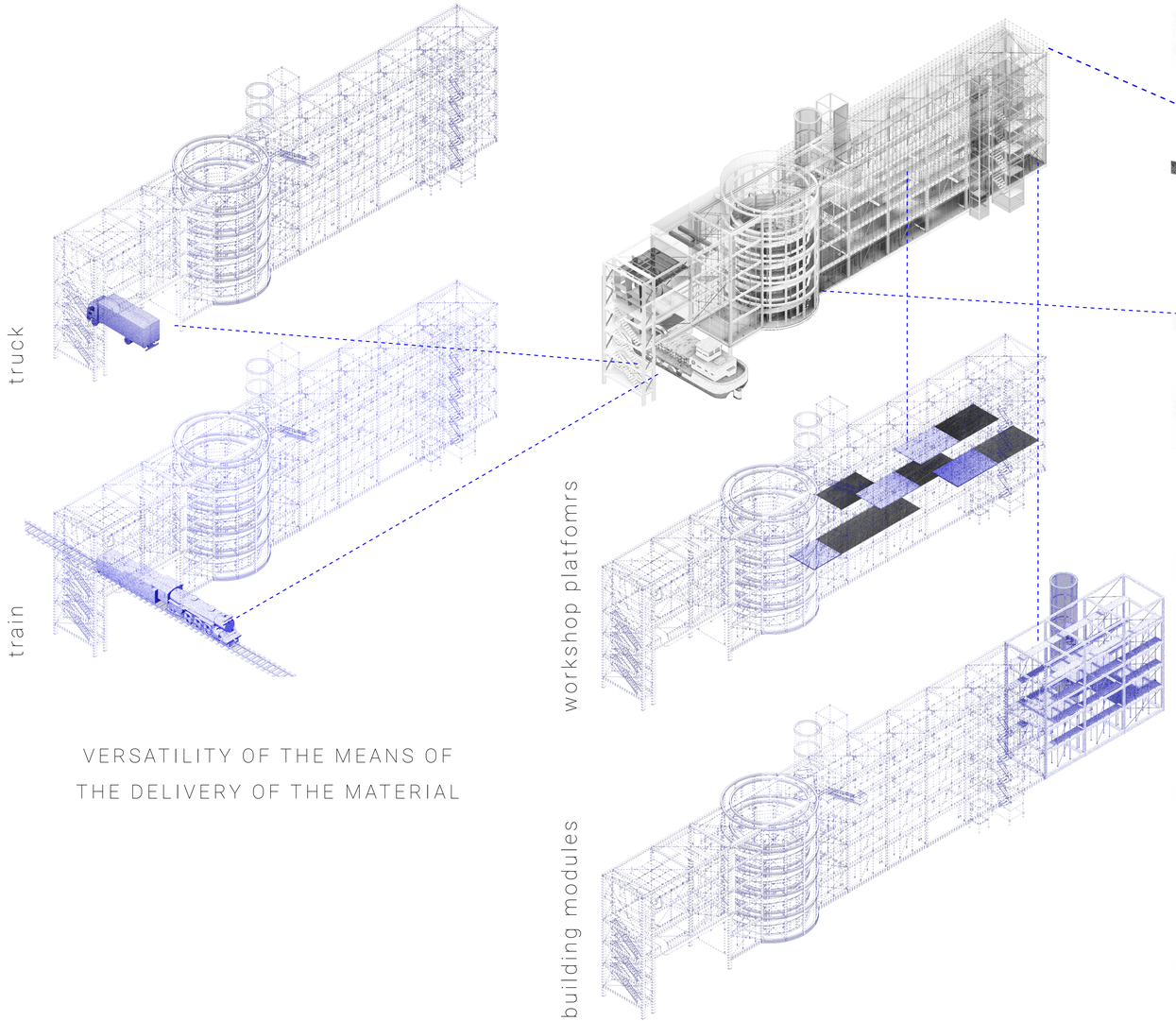
+10KM

EMERGY

REUSABILITY

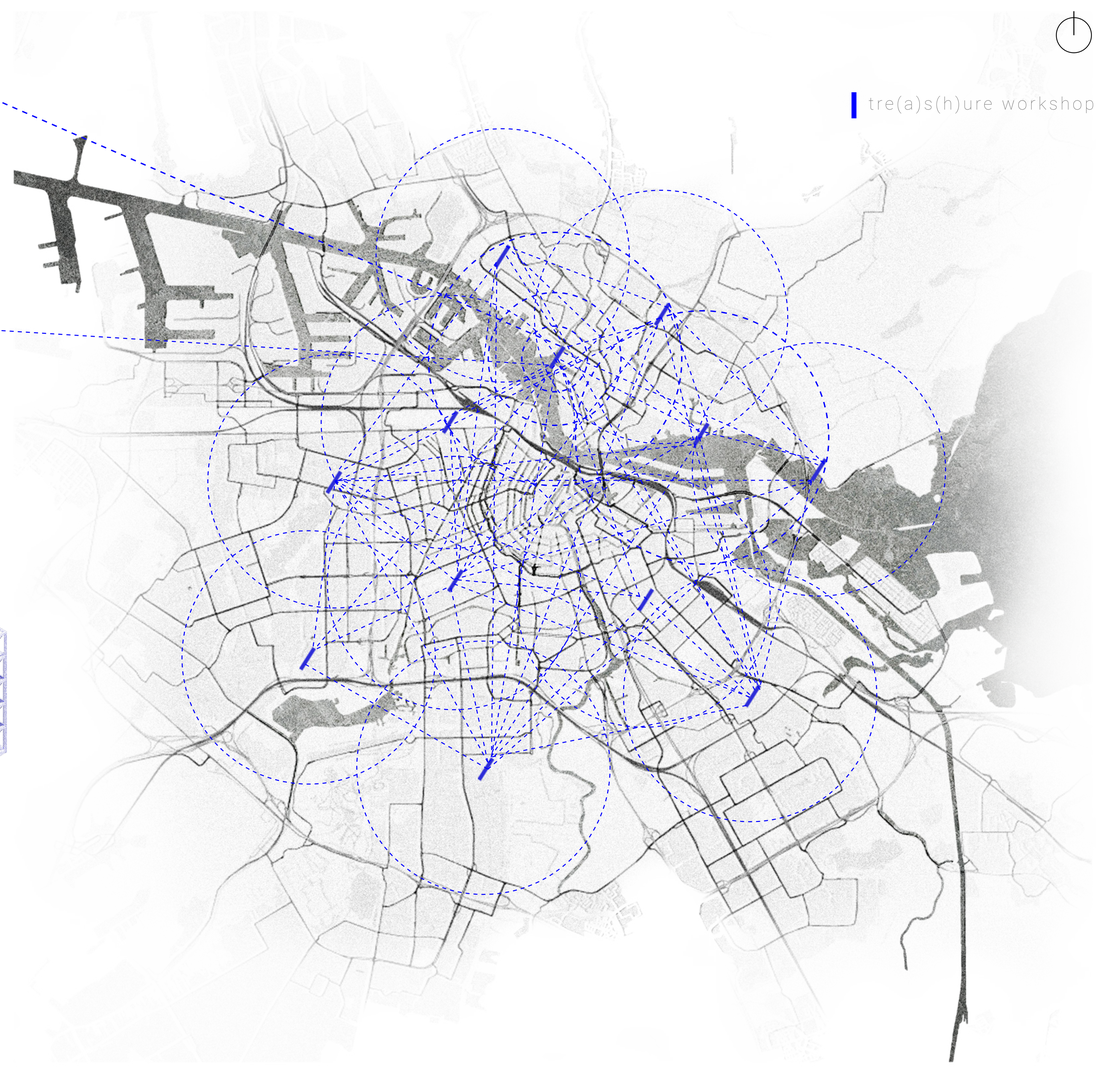


EXPANDABILITY



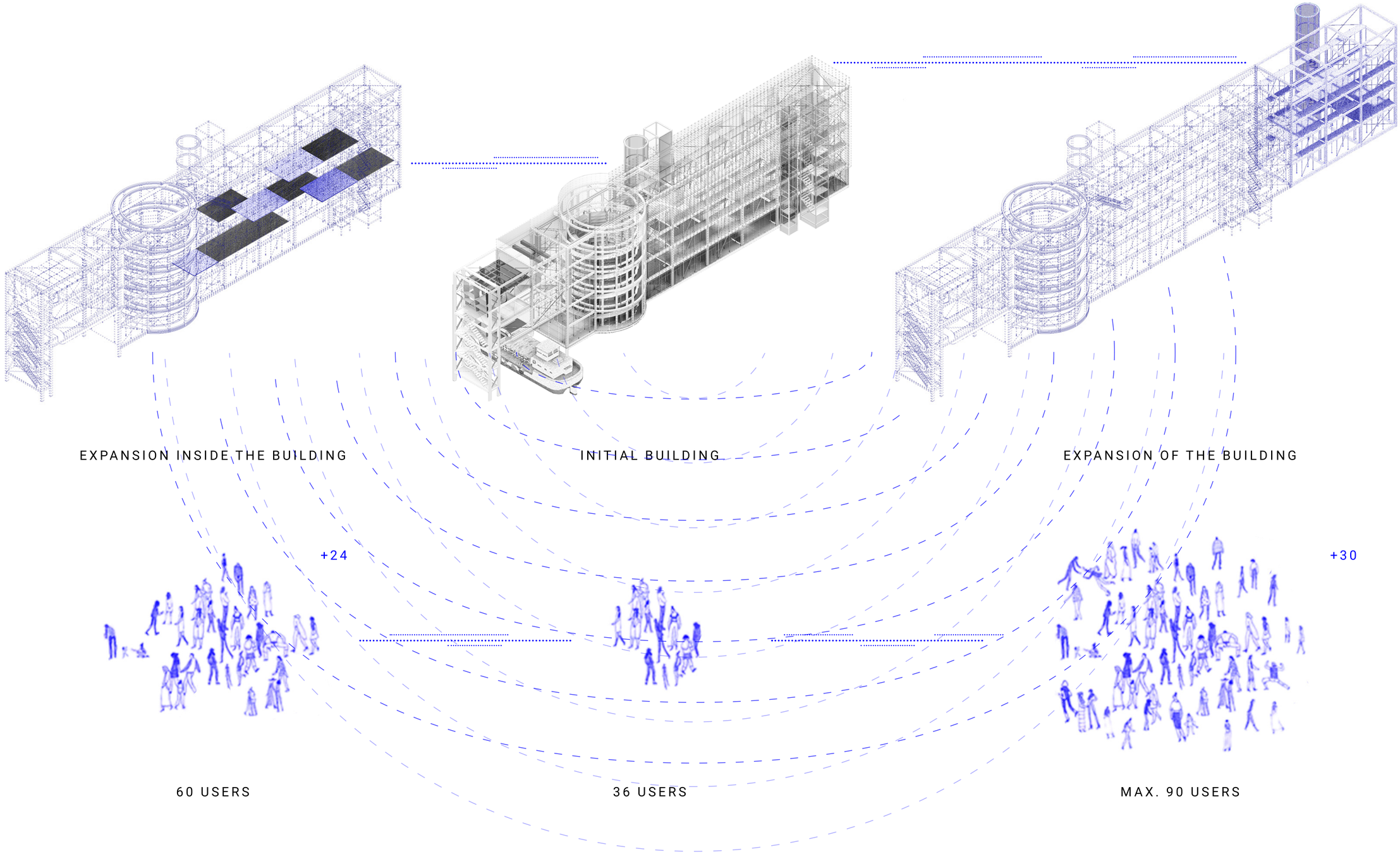
VERSATILITY OF THE MEANS OF
THE DELIVERY OF THE MATERIAL

EXPANDABILITY OF/INSIDE
THE BUILDING

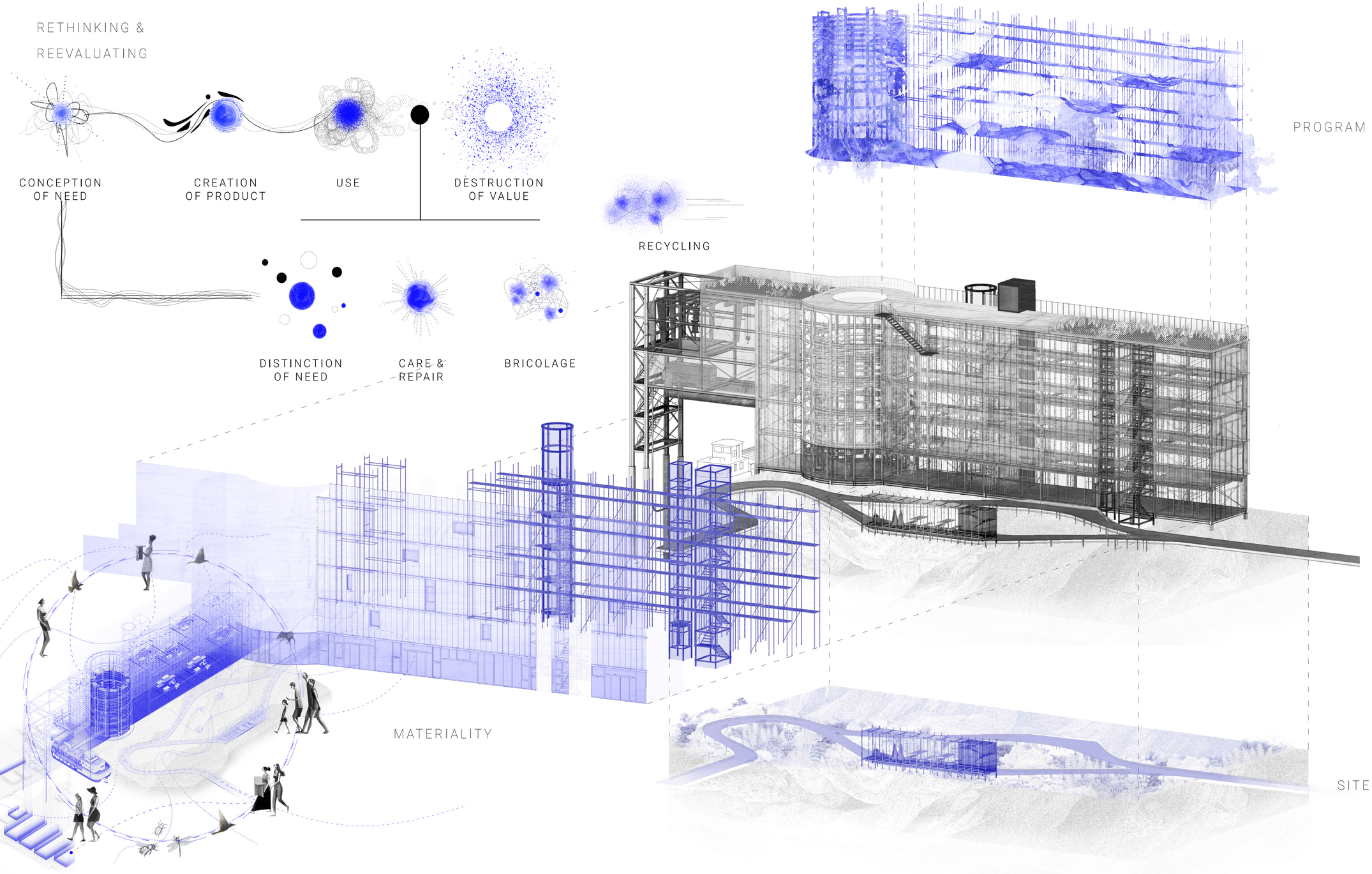


EXPANSION OF THE NETWORK OF
TR(E)AS(H)URY WORKSHOPS

NUMBER OF USERS



SYNOPSIS


RETHINKING &
REEVALUATING
CONCEPTION OF NEED
CREATION OF PRODUCT
USE
DESTRUCTION OF VALUE
DISTINCTION OF NEED
CARE & REPAIR
BRICOLAGE
RECYCLING
PROGRAM
COMMONING
MATERIALITY
SITE

SCALE MODEL

