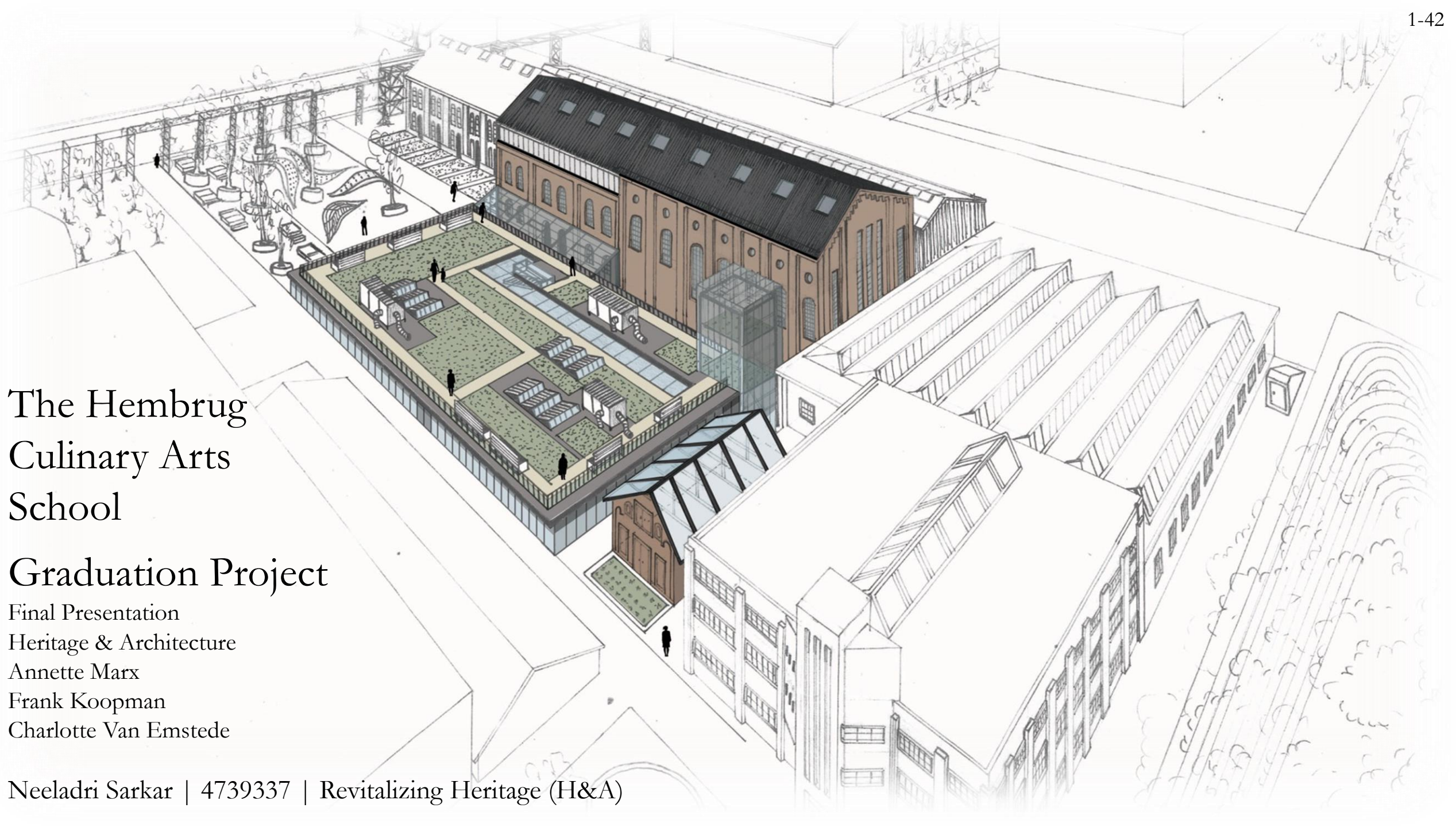


The Hembrug Culinary Arts School

Graduation Project

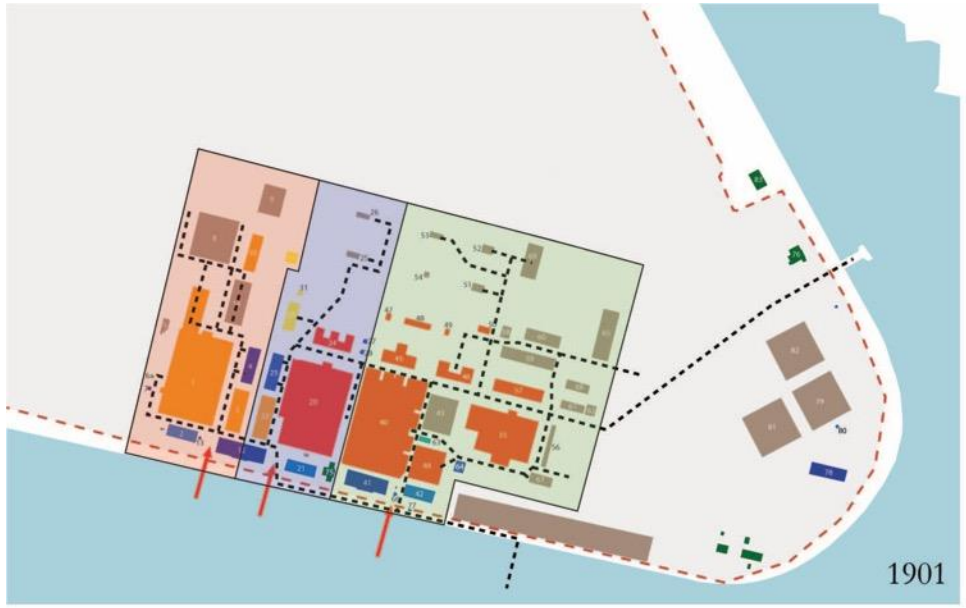
Final Presentation
Heritage & Architecture
Annette Marx
Frank Koopman
Charlotte Van Emstede

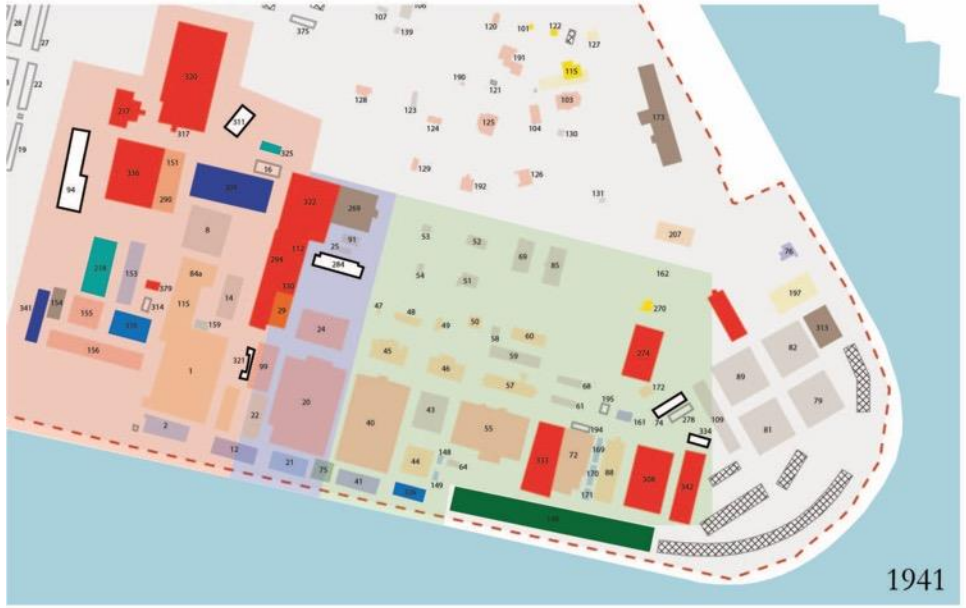
Neeladri Sarkar | 4739337 | Revitalizing Heritage (H&A)

Overview of today's Presentation

- Quick rundown of the **analysis**
- Introduce my **research question** and **inspiration**
- Present my design with respect to **architecture**
- Talk about my **sustainability approach**
- Go through the **building technology** of my design
- Reflect on my cultural values
- Conclude with a summary of my design

Hembrug In The Past

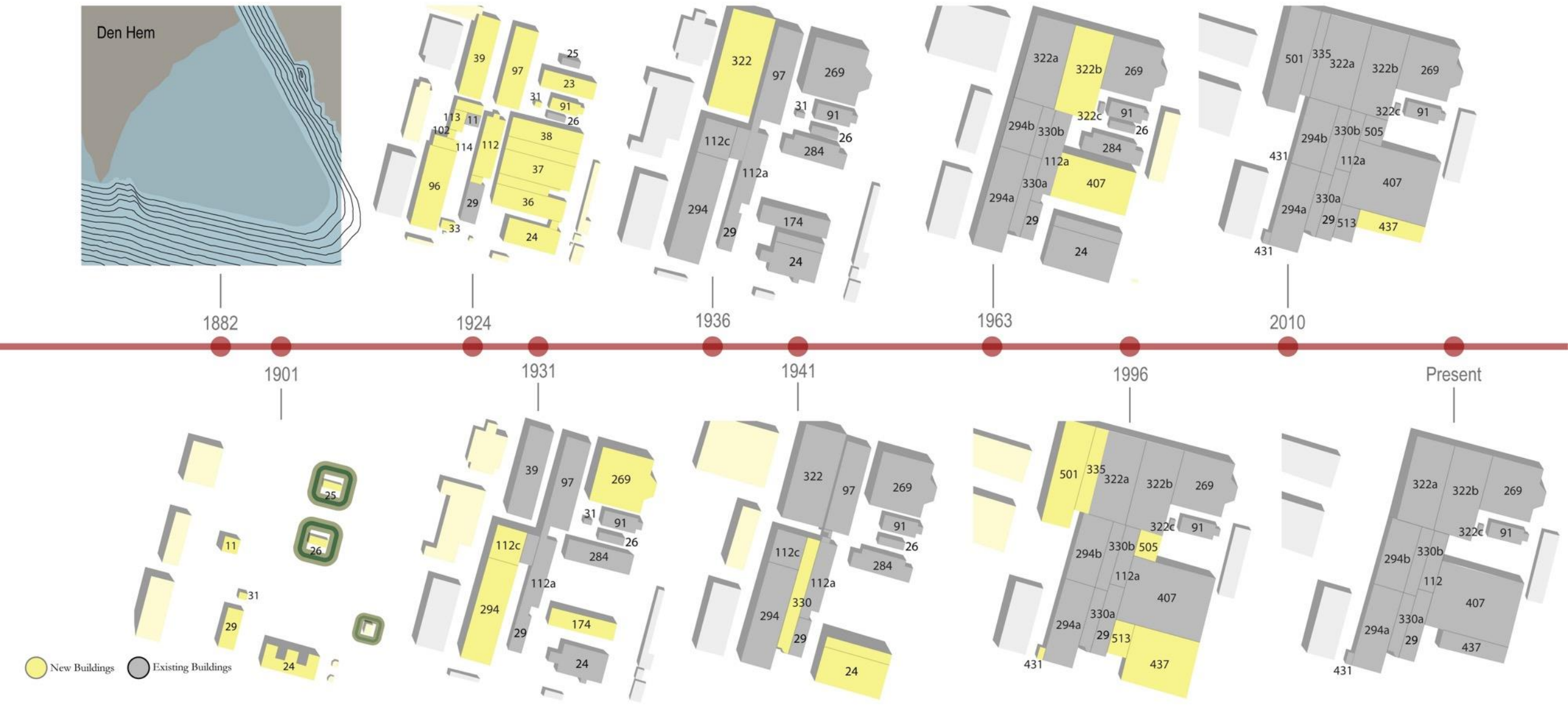




- Weapons Factory
- Cartridge Factory
- Ammunition Factory
- General services and Offices
- Staffing services
- Utility buildings
- Production buildings
- Workshop buildings
- Experimenting and monitoring buildings
- Storage buildings
- Houses

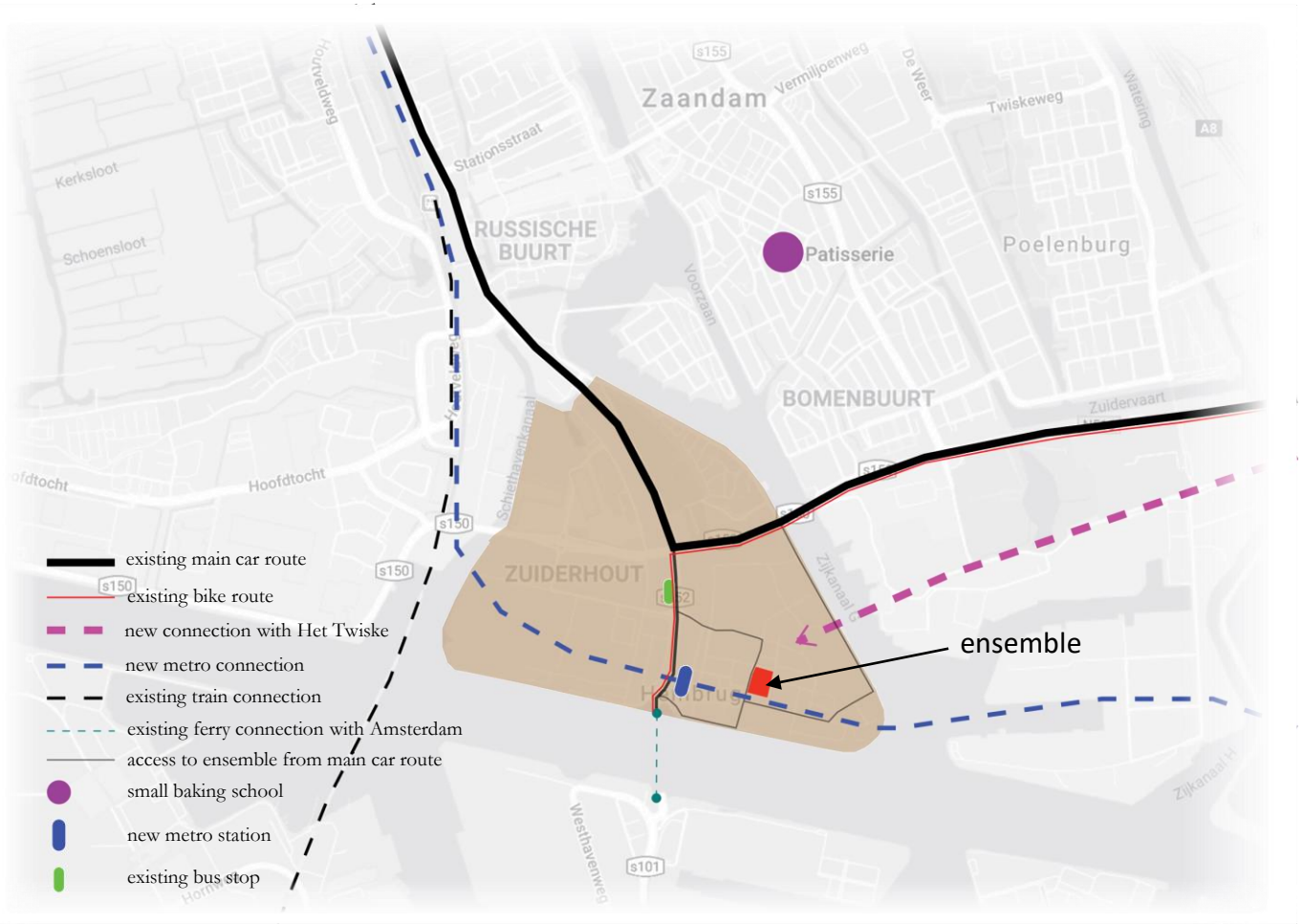
Source: Contextual Analysis

Development of the Changeover Zone



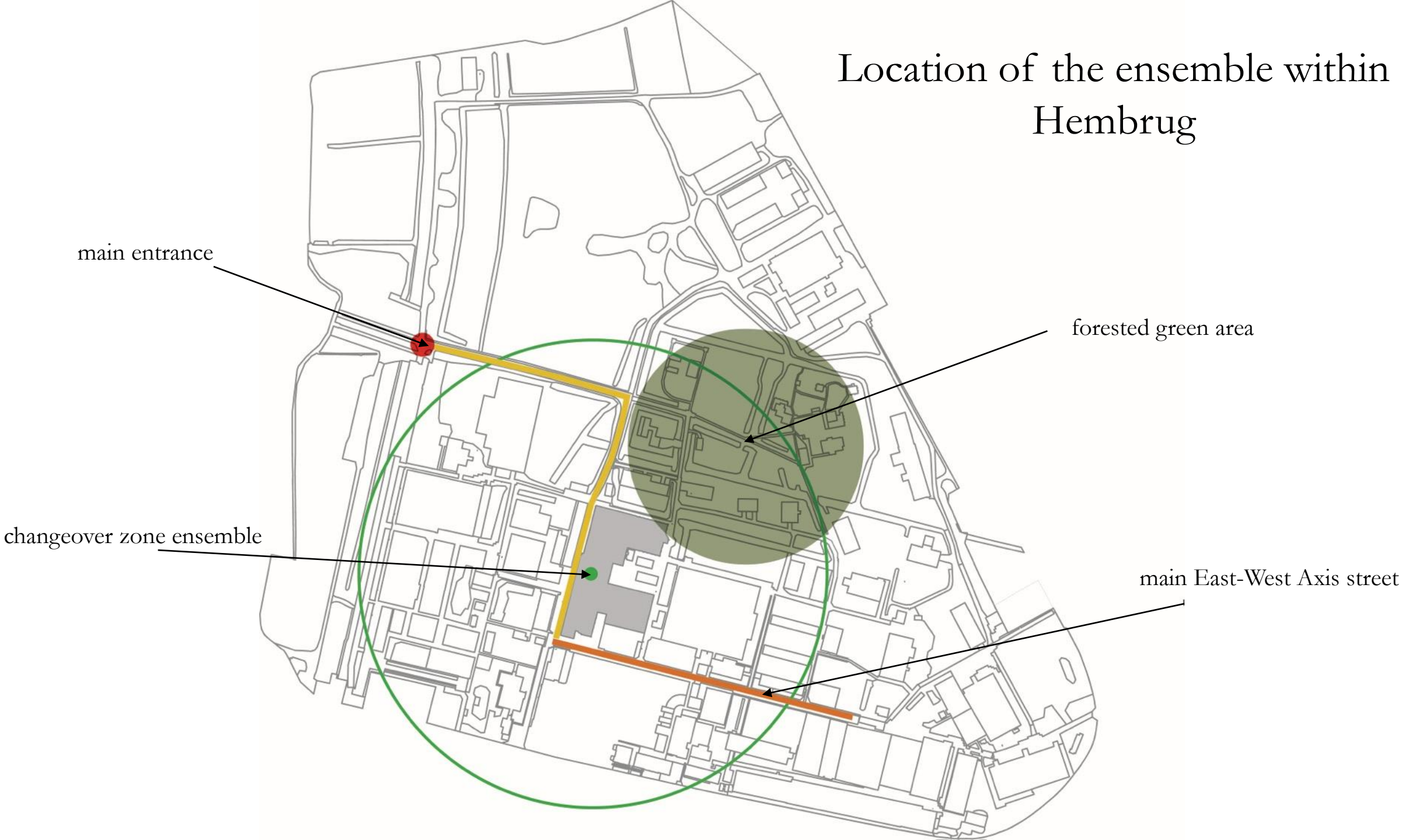
Hembrug Today

Hembrug in the Future



- Part of the future expansion of Amsterdam
- The government as part of their scheme is urging young professionals to move to Zaanstad
- A lot of people who used to or want to live in Amsterdam cannot afford it anymore due to rising real estate rates. They can then move to these newly developing areas and still be part of greater Amsterdam
- Hembrug has been assigned one of 4 future hotspots for tourists in the expansion plan
- A lot of dwelling projects are coming up in this area to inhabit this former industrial region
- New metro station coming up
- Better connection through public transportation planned
- Close to the airport and other major train networks

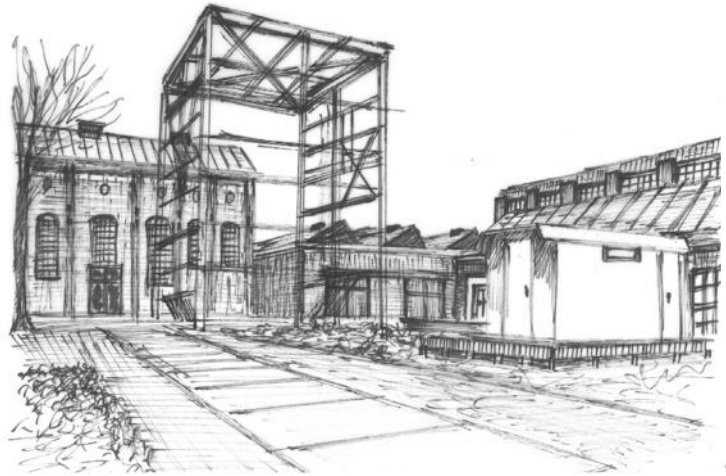
Location of the ensemble within Hembrug



Important Values of the Ensemble

Northern Border

Southern Border

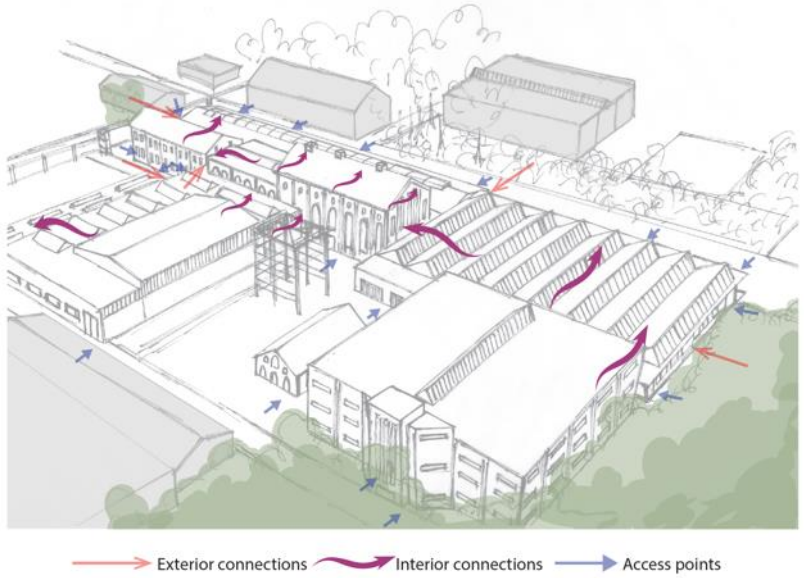


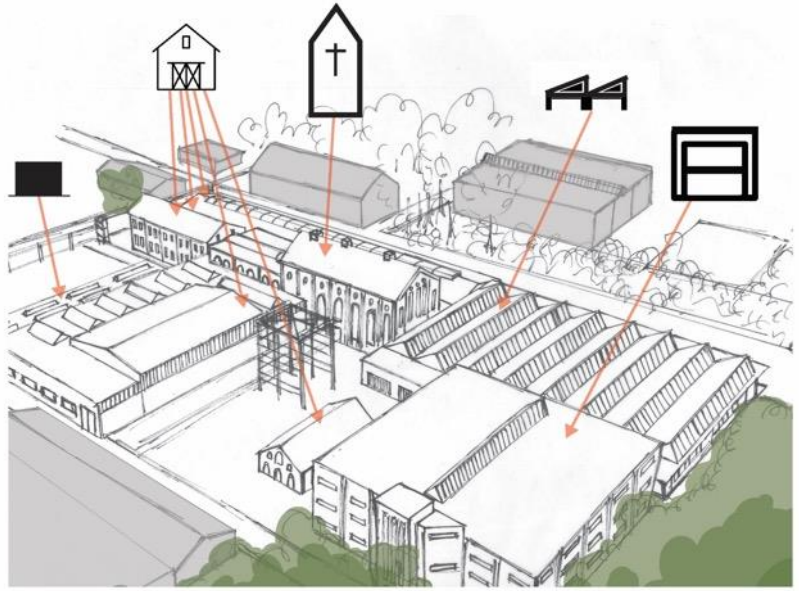
Eastern Border

Western Border

Borders

Open spaces and Connections





Typologies

Existing Buildings Today

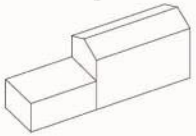
29

Relatively small
Two stories
Pitched roof
"Flat" facades
Rectangular floorplan

91

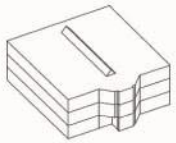
Smallest building in ensemble
Single story
Pitched roof
"Flat" facades
Rectangular floorplan

112

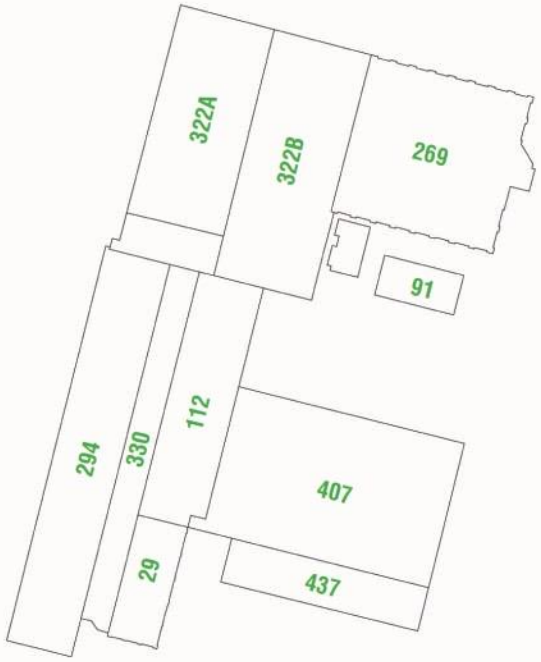


Medium sized
Single story
Pitched roof and flat roof
Two parts
Rectangular floorplan
Tallest building in ensemble

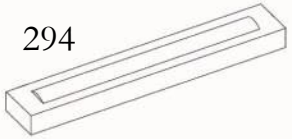
269



Relatively large
Three stories
Flat roof
Two parts
Square floorplan
Extending facade

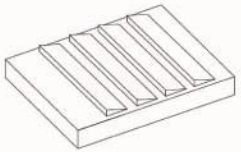


294



Medium sized
Single story
Flat roof
"Flat" facades
Rectangular floorplan

322 A + B

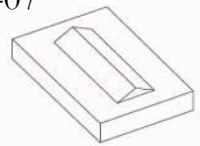


Largest building
in ground
floor area
Single story
Flat roof
"Flat" facades

330

Single story
Flat roof
"Flat" facades
Very stretched floorplan

407

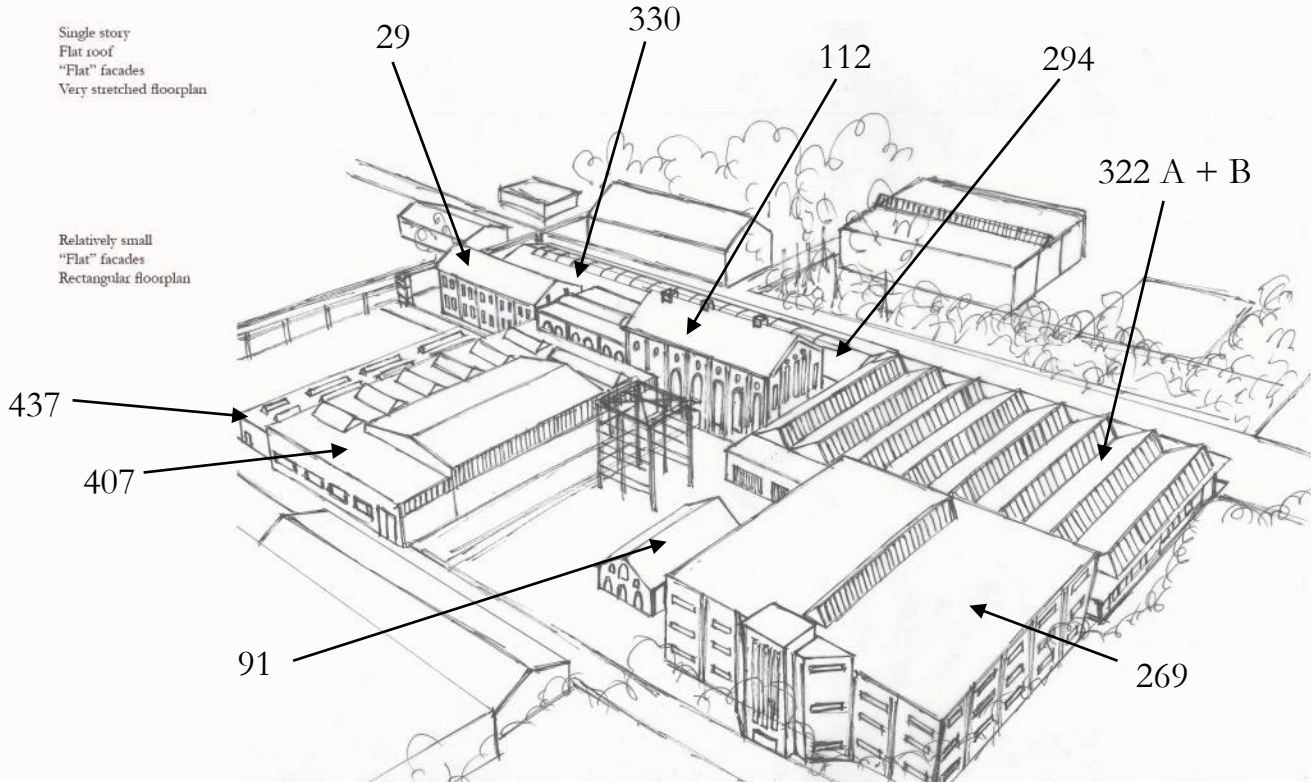


Single story
Flat roof
"Flat" facades
Very stretched floorplan

437

Relatively small
"Flat" facades
Rectangular floorplan

- 29 "Clean 2 Antarctica" (1901)
- 112 "The Cathedral" (1920s)
- 91 Former "Water treatment" building (1920s)
- 269 "De Dood" (1920s)
- 294 former "Yada-Yada" market (1930s)
- 330 former "Yada-Yada" market (1930s)
- 322 "Art Zaanstad" (1930s)
- 407 "Annealing Oven" building (1960s)
- 437 "Workshop" (1990s)



Current Ensemble Condition

29 Clean 2 Antarctica storage

112 Taets food company event space

91 furniture store

269-used sparingly for exhibitions

322 A + B-Art Zaanstad

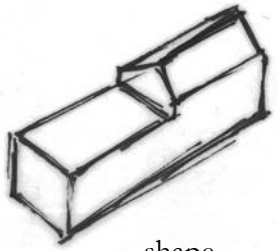
330-former Yada-Yada market

294-former Yada-Yada market

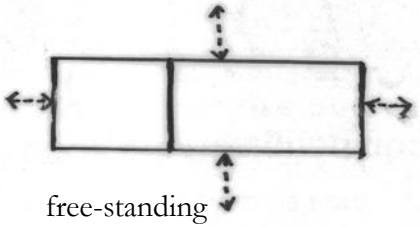
407-unusable due to the extent of decay

437-storage for Taets food company

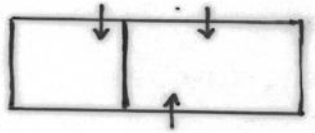
The Cathedral and its Values



shape

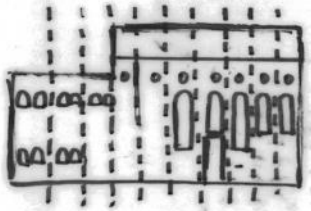


free-standing
when built

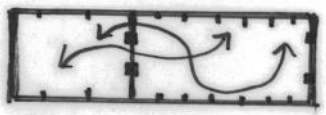


daylight from
big windows

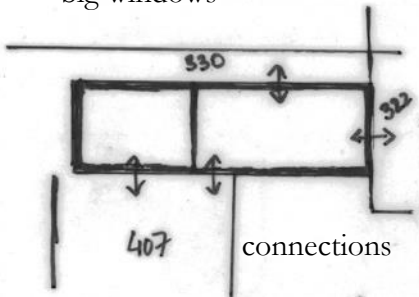
entrances



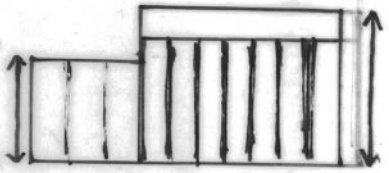
rhythm



open floor-plan



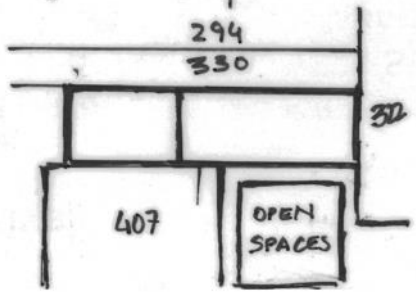
connections



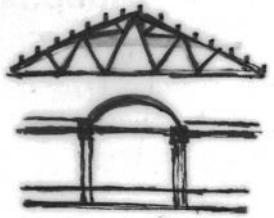
height

heavy masonry wall
vs light steel roof

interior rhythm
and low ceiling



open
spaces



roof trusses

Design Inspiration

- Similar
- Monotonous
- Repetitive
- Might become old very soon
- Site needs certain moments of surprise
- Needs some Contrast
- Might help keep the fascination for this site going

House in Vexin by Jean-Philippe Doré, France

Reference projects reflecting Contrast between Old & New

Music School Louviers by Opus 5 Architects, Normandy, France

Moritzburg Museum Extension by Nieto Sobejano Architects, Germany

Research Question

How can a new Contrasting Intervention help rejuvenate the Changeover Zone Ensemble?

Can this idea of bringing **contrasting architecture** to Hembrug help provide a long-term solution to attract people to the site? To give visitors something to talk about and return back to?

With the help of this **contrasting intervention**, can the spotlight be put back on the existing to highlight it and its values?

Program Inspiration

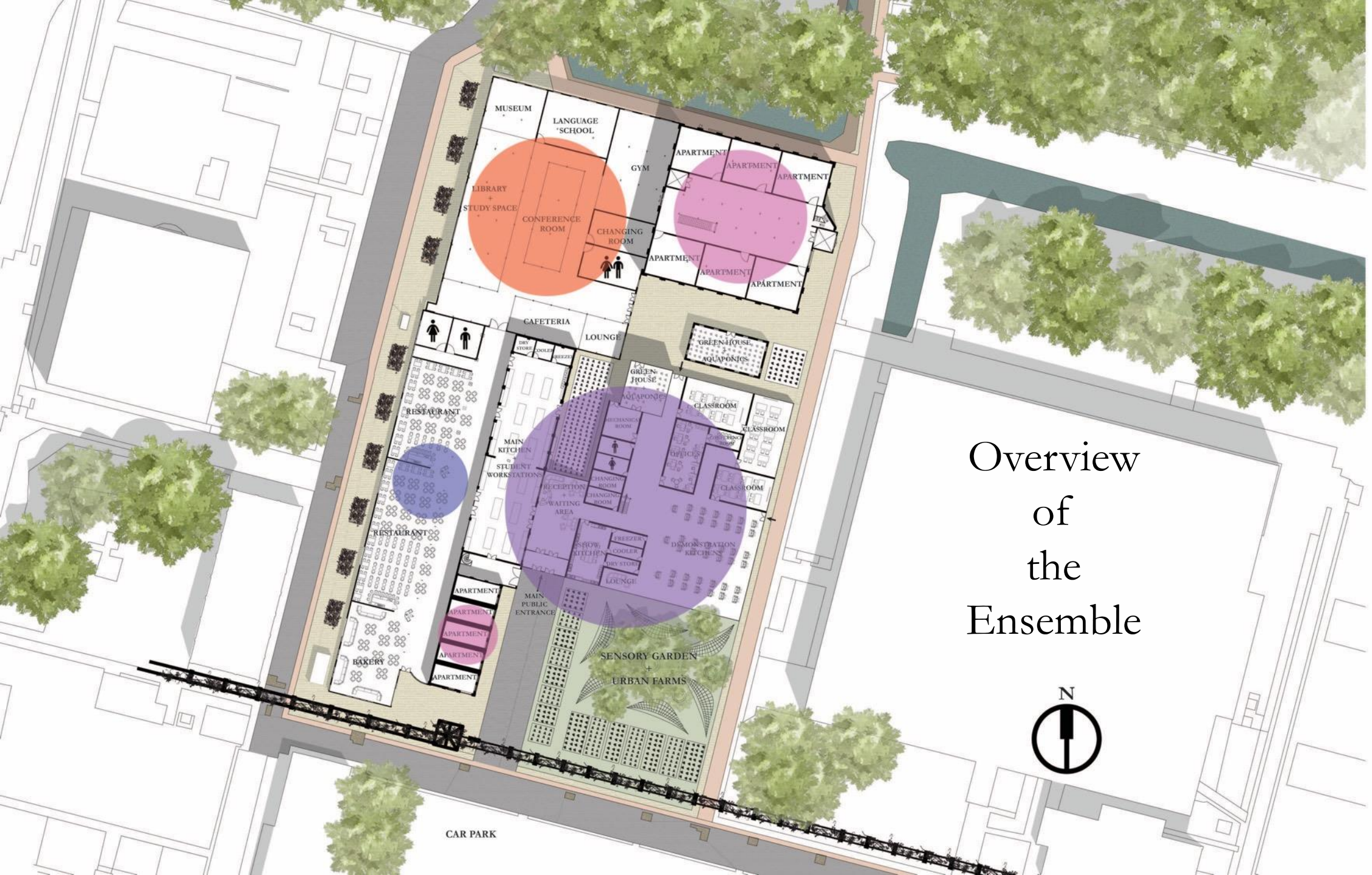
Love For Cooking

Passion to Help the Elderly

Culinary Schools Visited

Le Cordon Bleu – Paris (800-1000 students)

Kookstudio Keizer Culinair – Rotterdam (40 students)

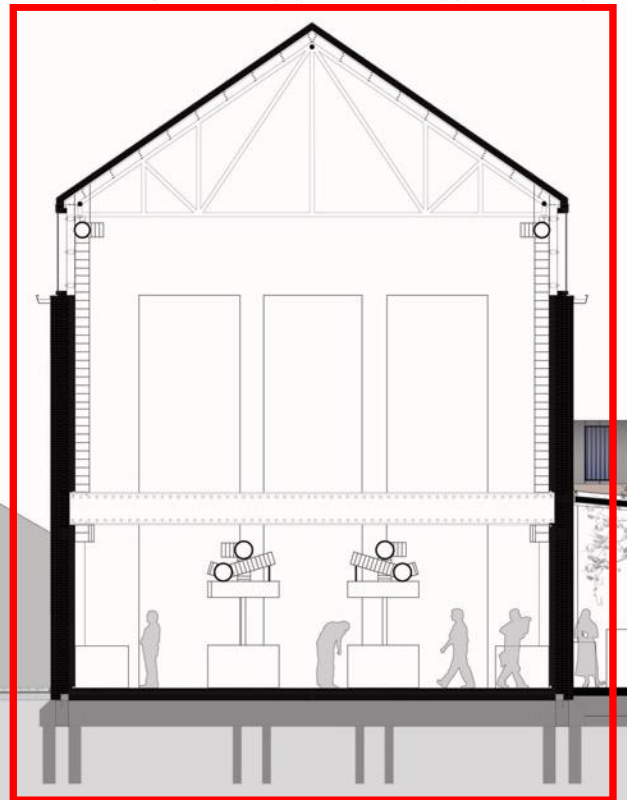


Overview of the Ensemble

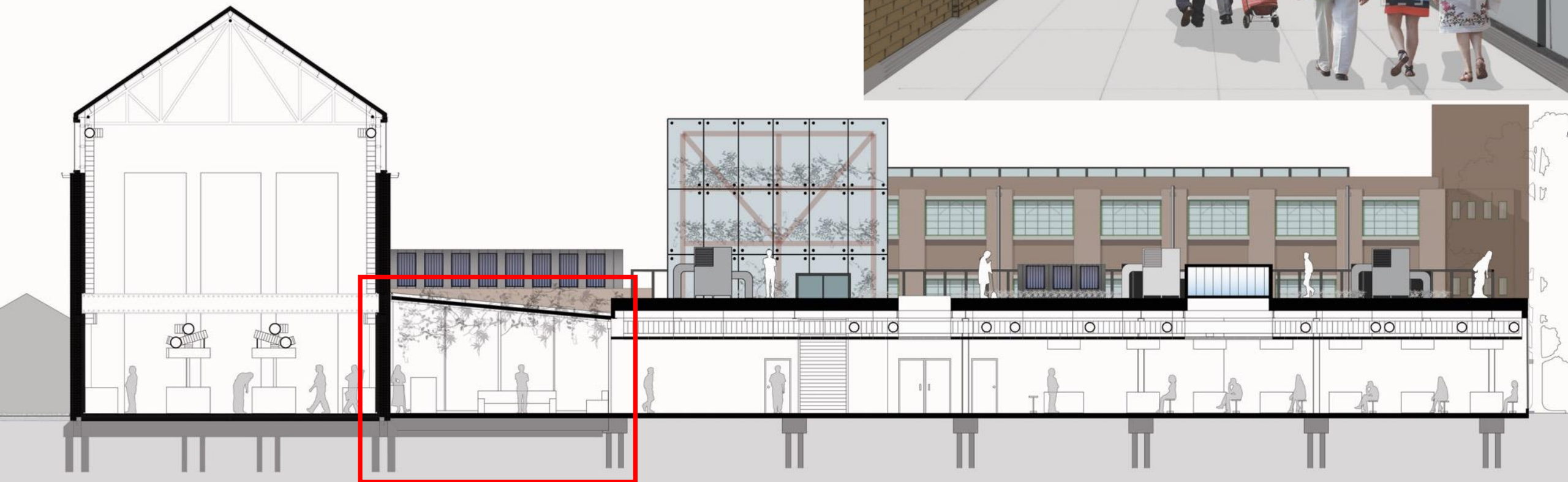
- Culinary School
- Residential
- Restaurant
- Community center

Overview of the Culinary School

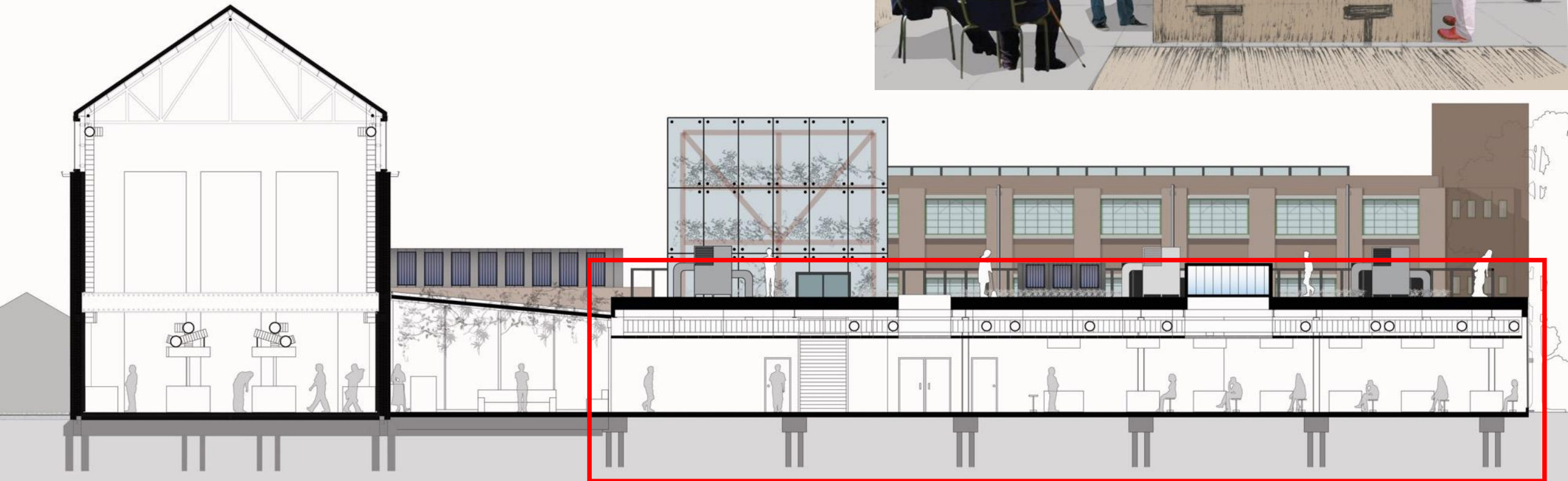
The Cathedral



The glass enclosure – connecting the old and the new



New Intervention



Old & New

SUSTAINABILITY

- Aim for a Zero Energy Design and make it as circular as possible
- Create a portfolio of materials both for items that are demolished, and new ones used
- Give the design a life-span of 20-30 years and materials used will be leased or rented from suppliers for that duration
- Use materials that help make the design more flexible, easy to remove after the lifespan
- Use steel as it is 99% recyclable and can be salvaged from the demolished building. Steel can also be easily sourced as one of the largest producers in the world has a factory 20 mins away. Bricks can also be recycled
- Put the focus more on Passive Solutions rather than Active ones

Triodas Bank, Netherlands

Brummen Town Hall, Netherlands

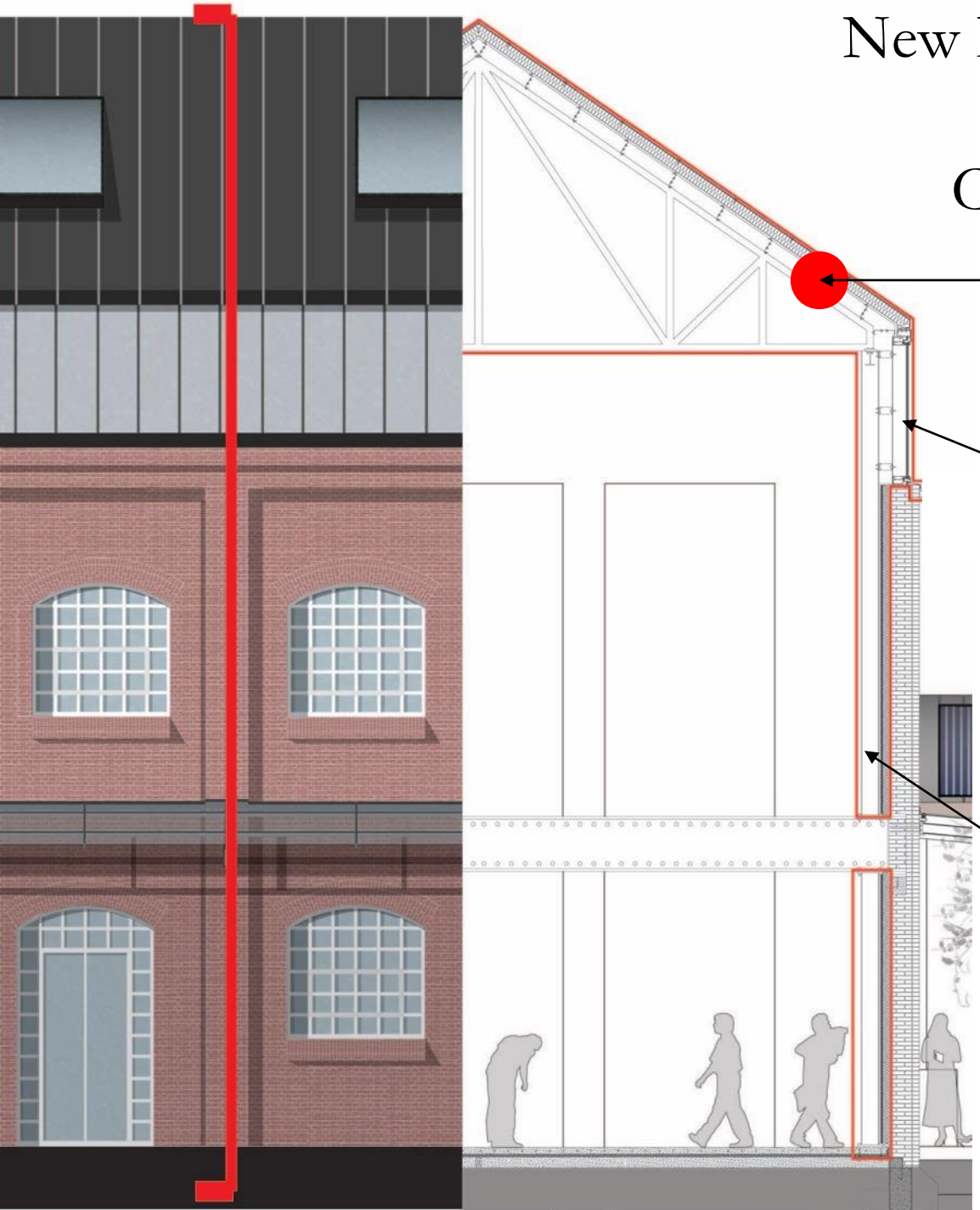
Source: RAU Architects

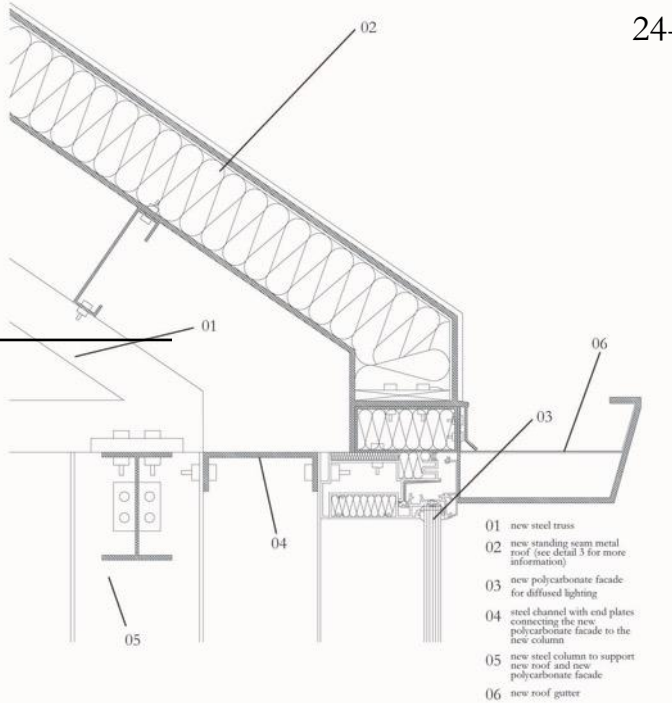
BT APPROACH

With the help of this **contrasting intervention**, can the spotlight be put back on the existing to highlight it and its values?

- Want to continue this idea with building technology
- The climate systems and ductworks are exposed and integrated into the design inside the cathedral.
- Similarly in the new intervention I want to conceal the climate systems and structure to get a cleaner space which would contrast the interior quality of the new part from the cathedral

New Roof Design Of the Cathedral

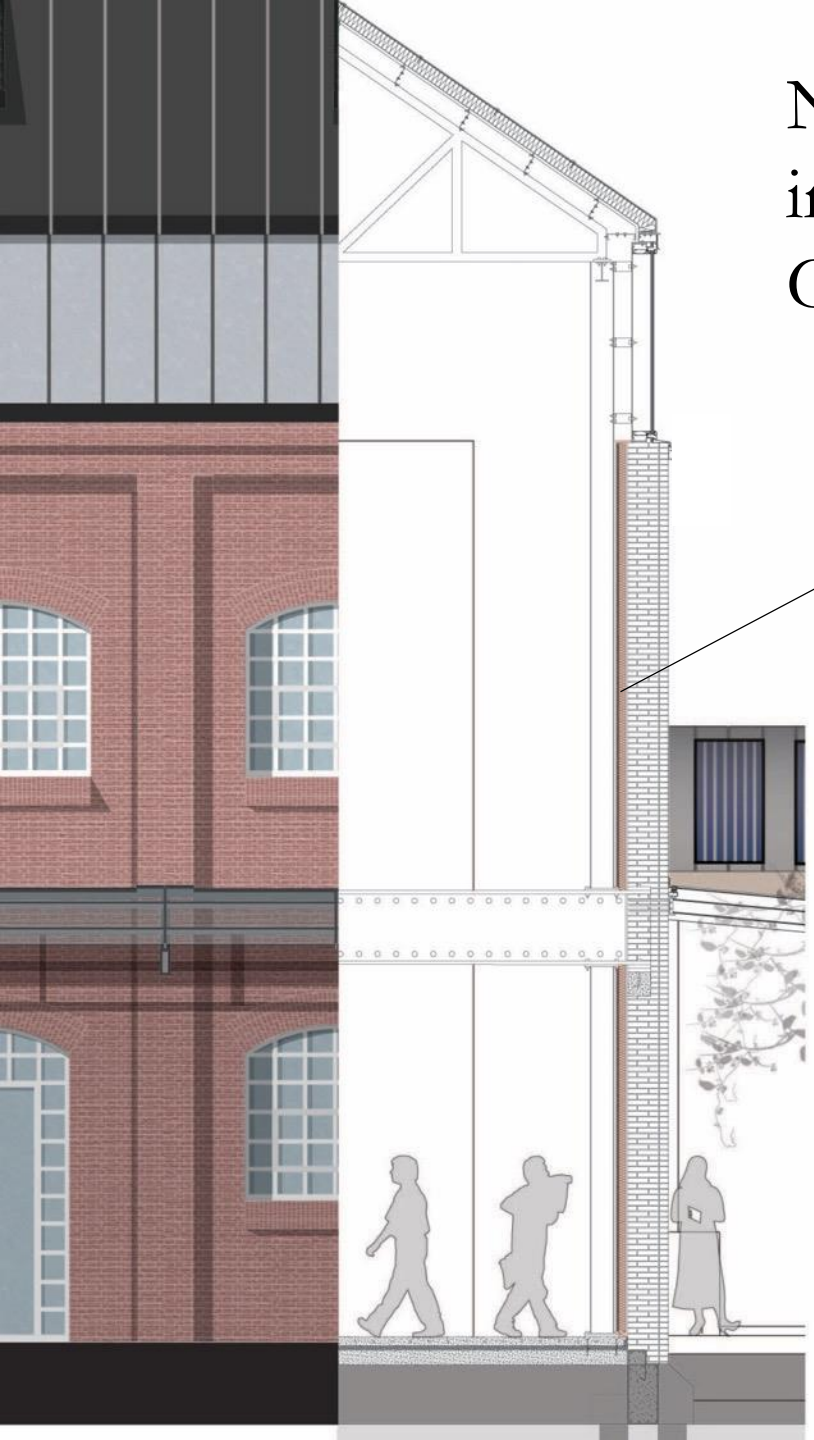


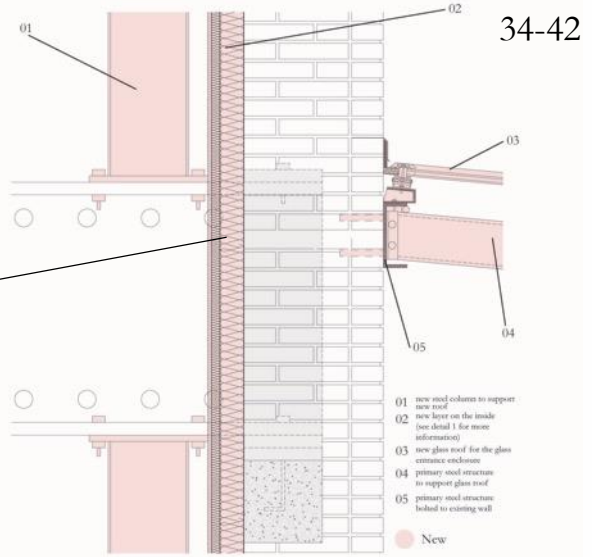


new opening with polycarbonate panels to allow diffused light to enter the cathedral

new steel beam attached to the existing beam and load bearing wall to support the new roof

New insulation in the Cathedral

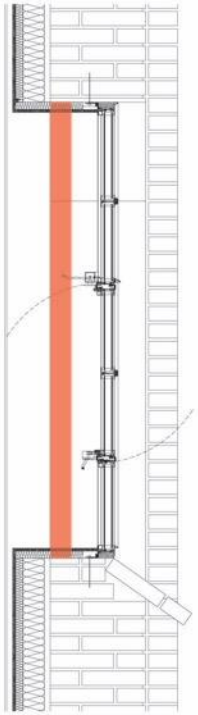


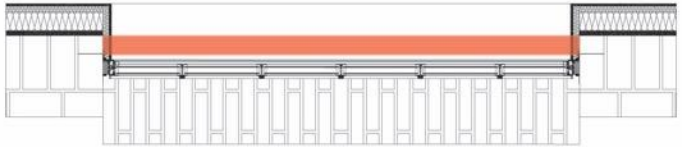


new layer of insulation on the inside

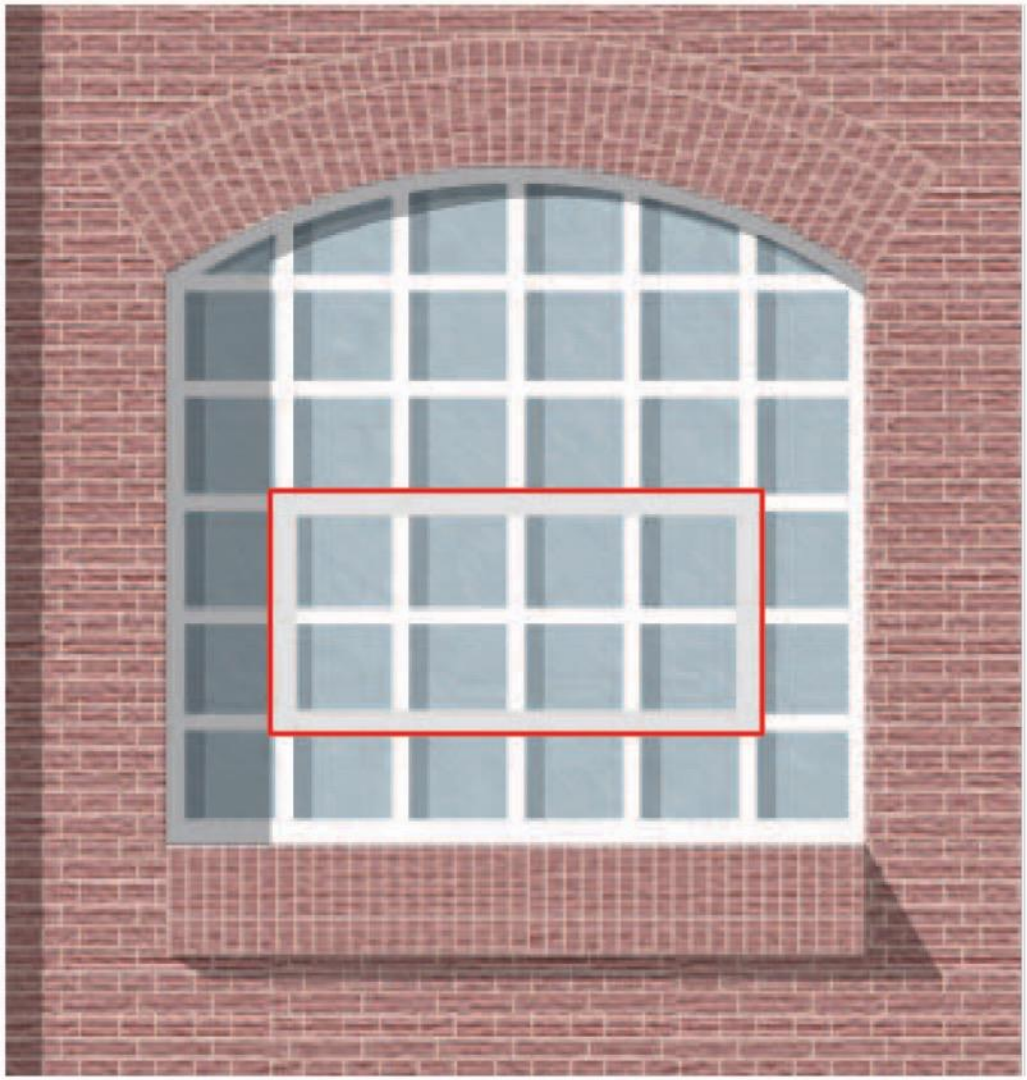
New Window design for the Cathedral

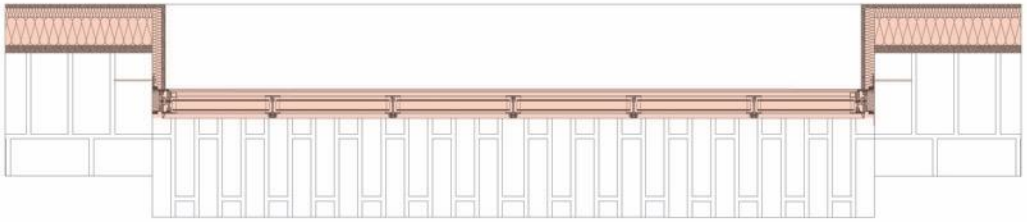
- Offset character from the inside would be lost partially
- Idea of operable window would not be possible

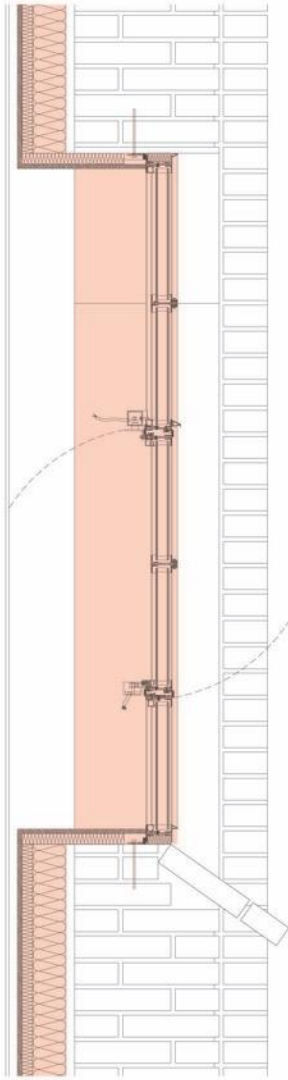




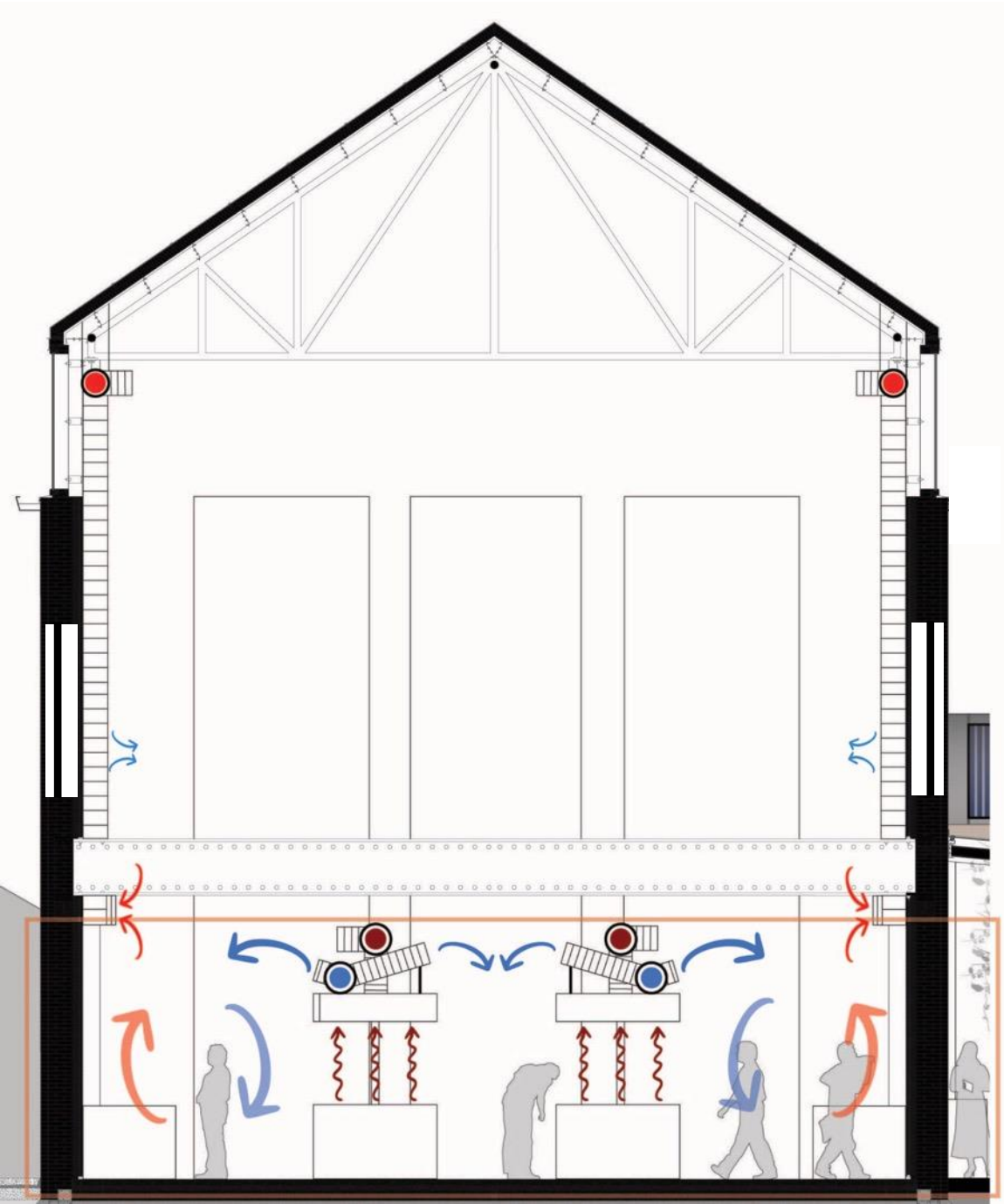
experiment

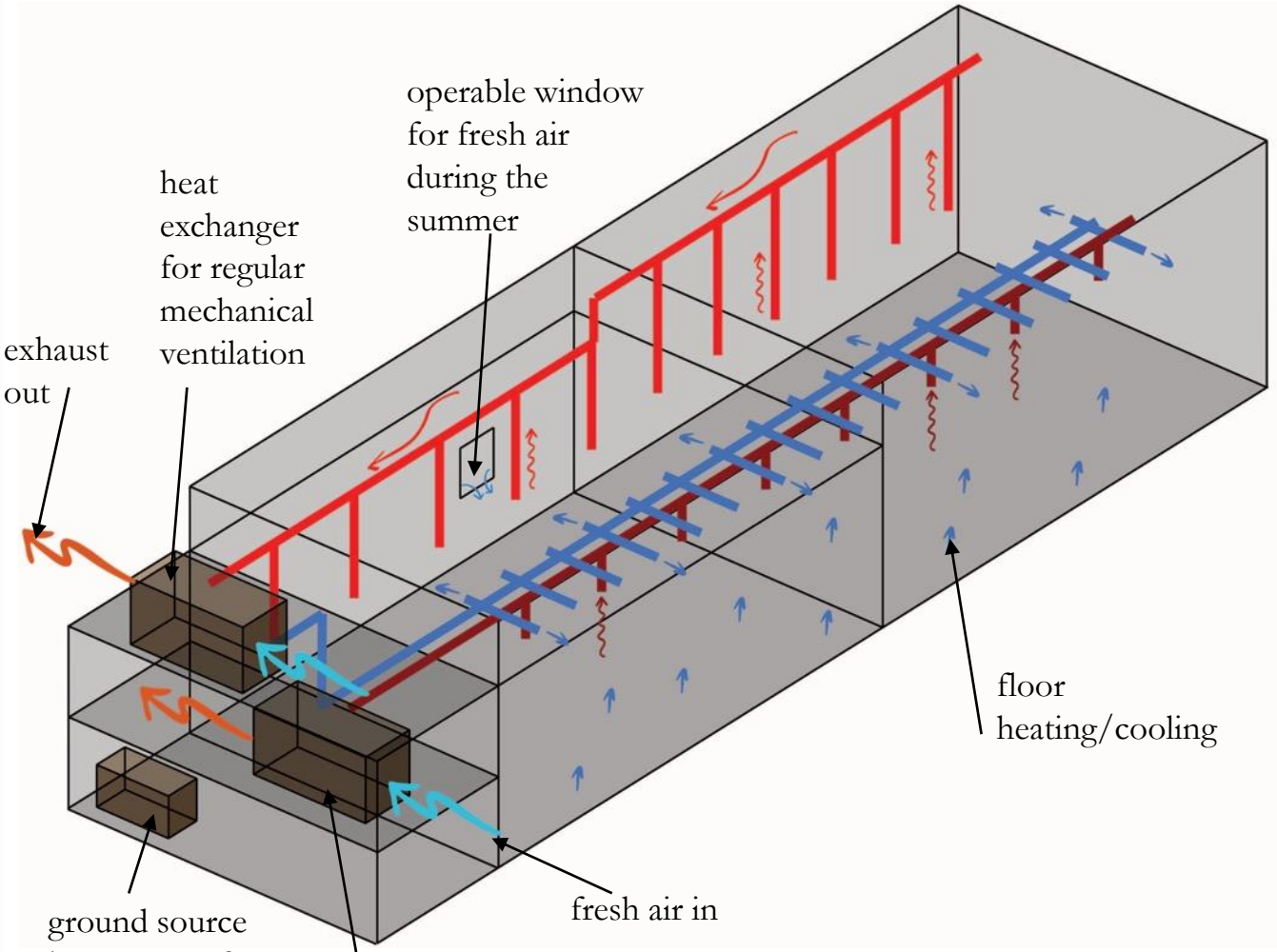






final iteration





Climate Design Of the Cathedral

Daylighting studies of the Cathedral

daylighting in existing conditions

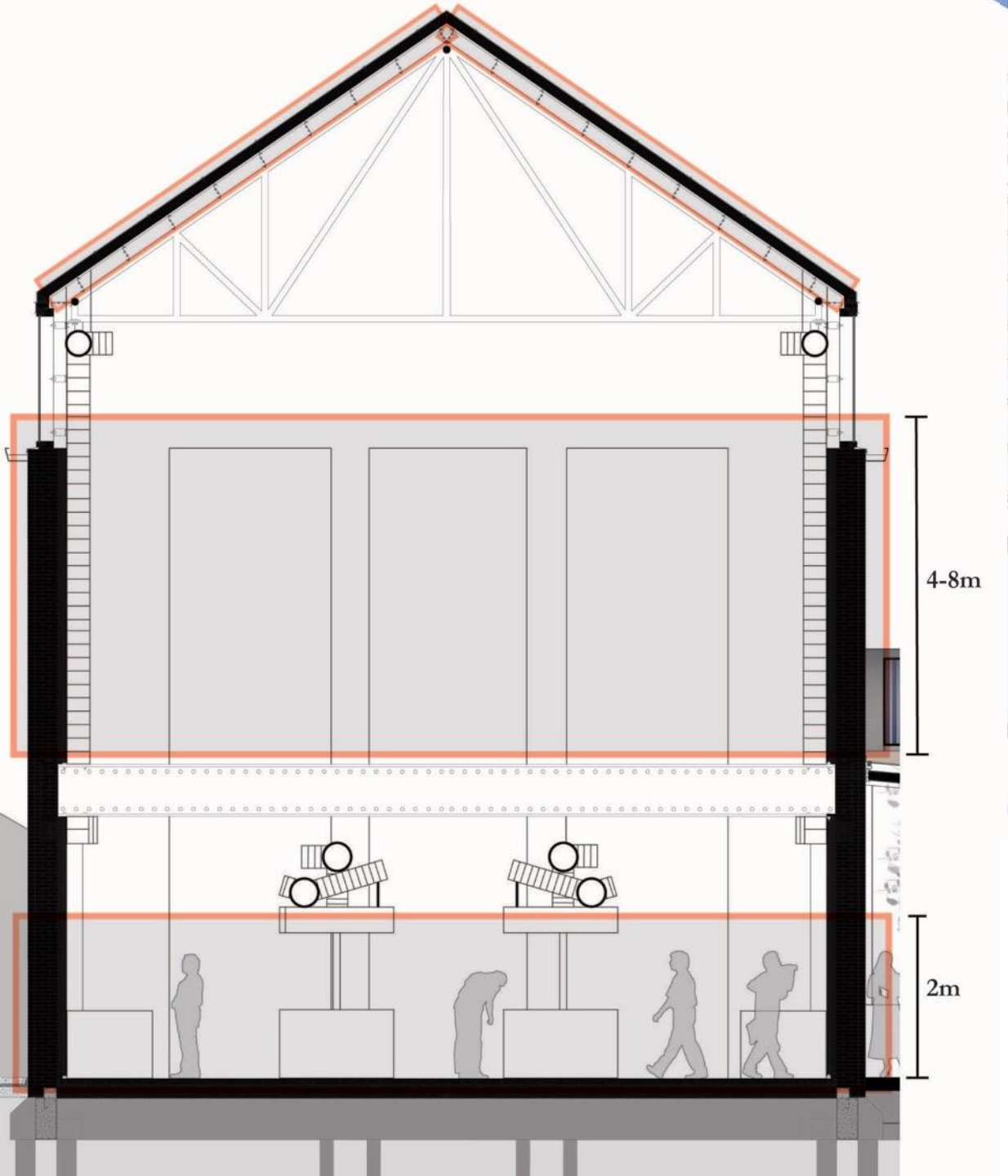
daylighting with roof lights

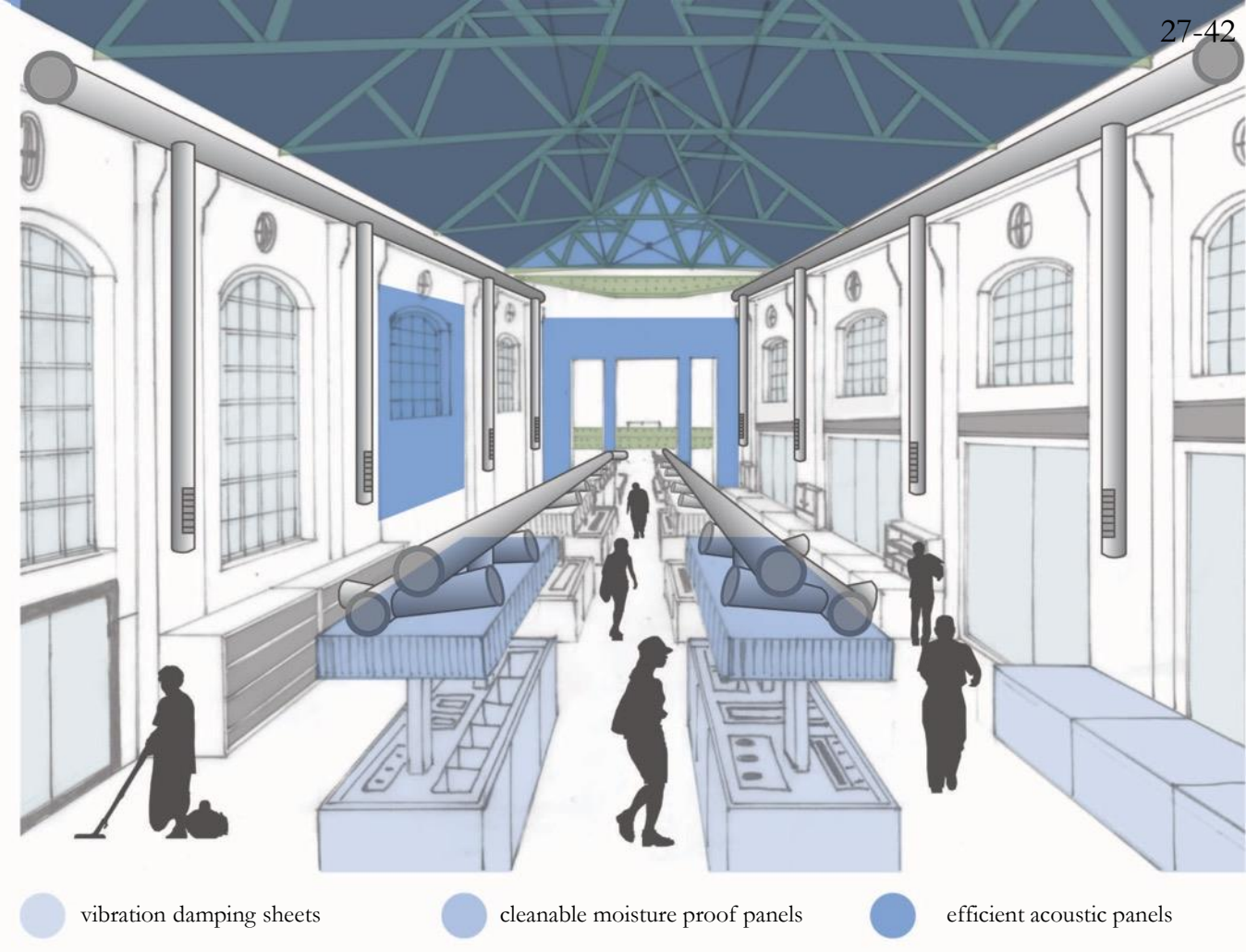
daylighting with transparent opening on the side of the new roof

daylighting with translucent opening on the side of the new roof

new roof without openings

new roof with current openings

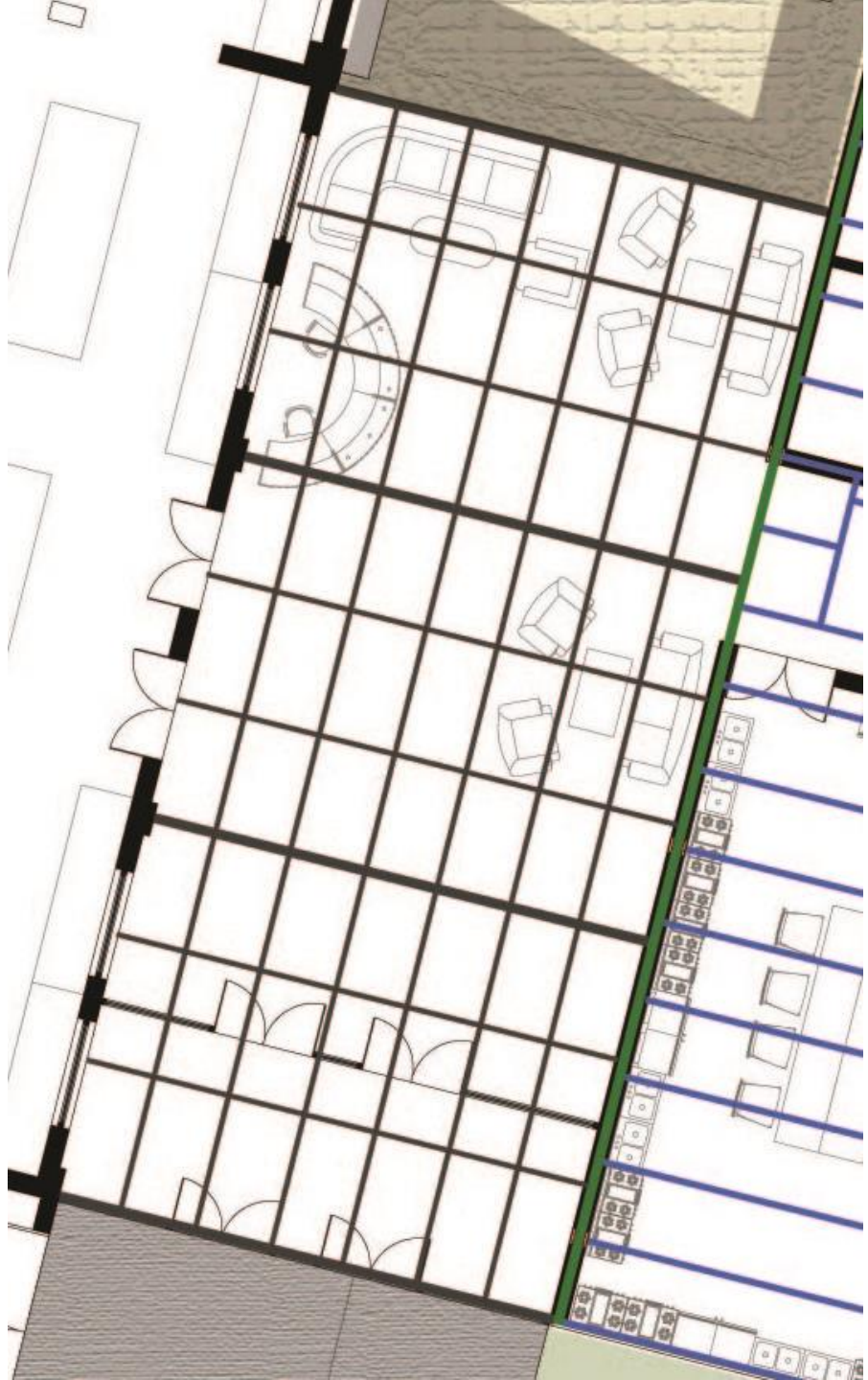




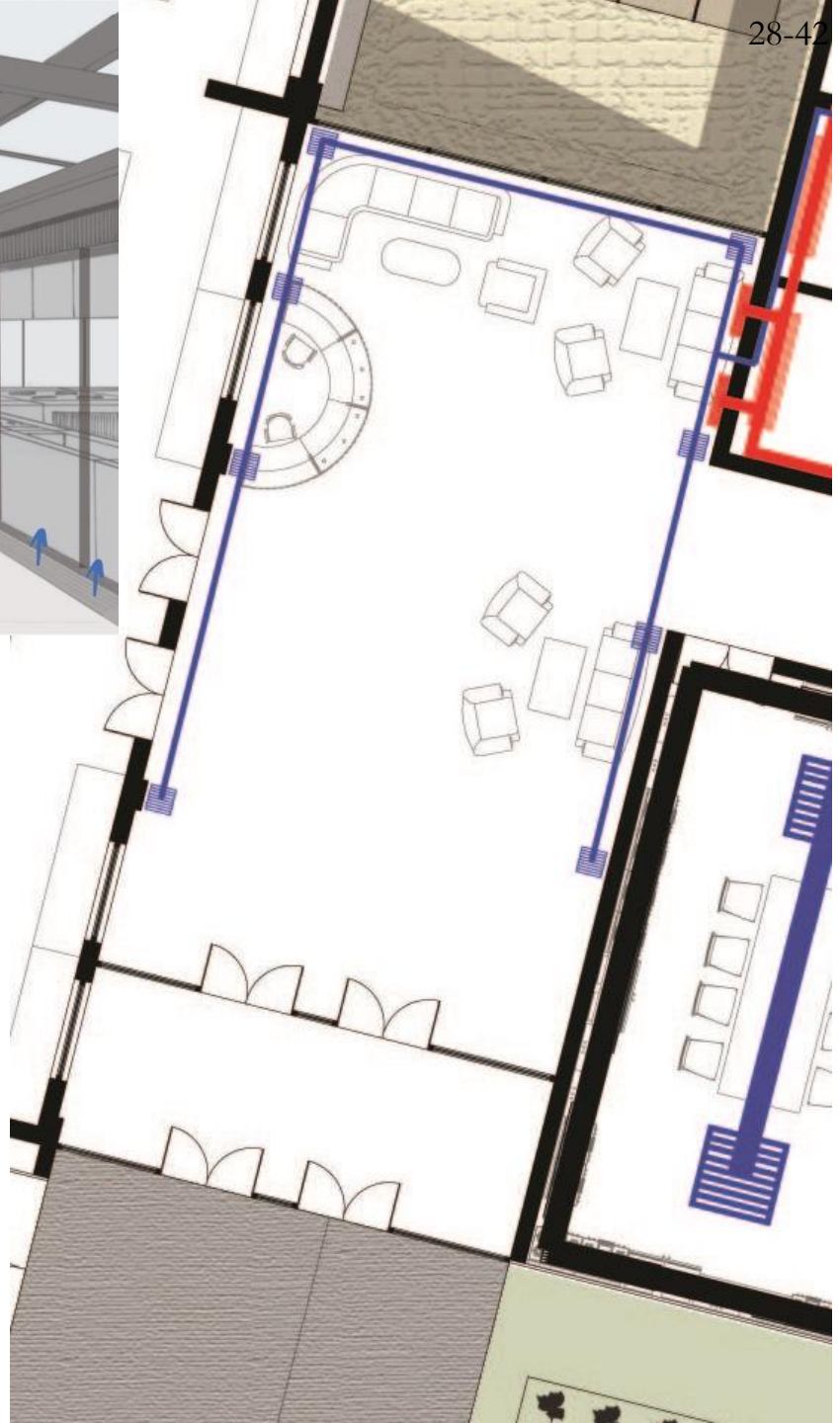
α - 0.8 (absorption coefficient)
A - ~650 m^2

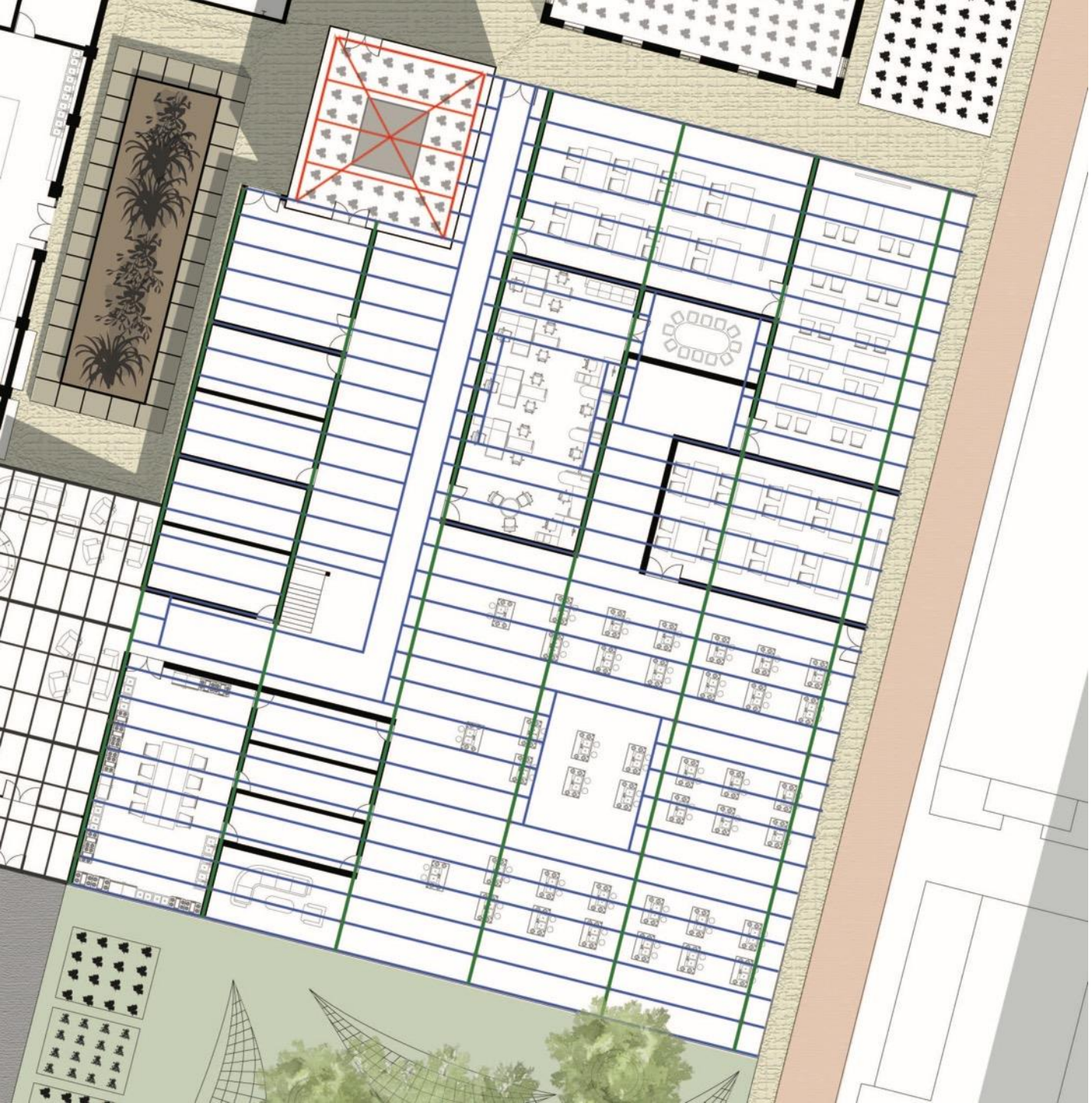
Problems: material used in the cleanable zone have lower absorption coefficient. Hence more surface area is used in the roof to make up for that

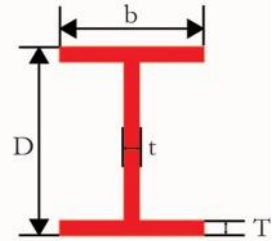
Acoustical design of the Cathedral



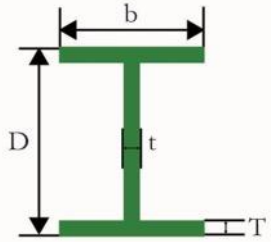
Structure And Ventilation of the glass reception area



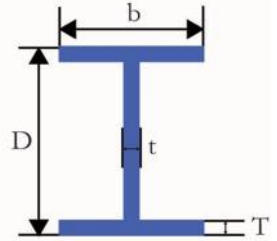




Column
D = 254 mm
b = 102 mm
T = 12.7 mm
t = 7.2 mm



Primary Beam
D = 356 mm
b = 127 mm
T = 8.5 mm
t = 6 mm

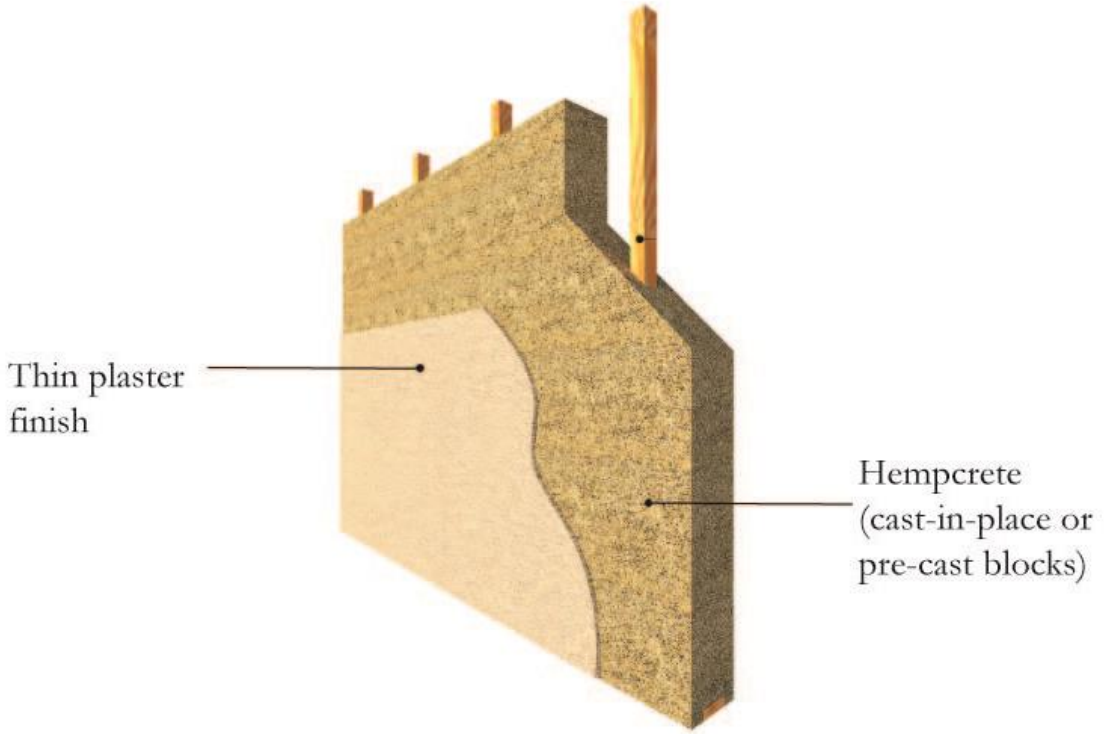


Secondary Beam
D = 305 mm
b = 165 mm
T = 10.2 mm
t = 6 mm

To support a Intensive Green Roof with weight of about 350 – 400 kg/m2

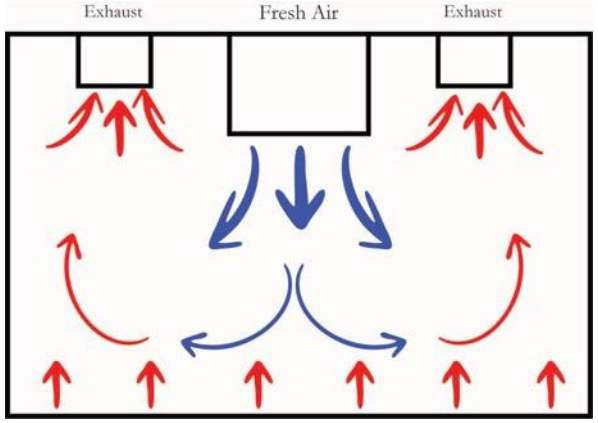
Structure Of the New Intervention

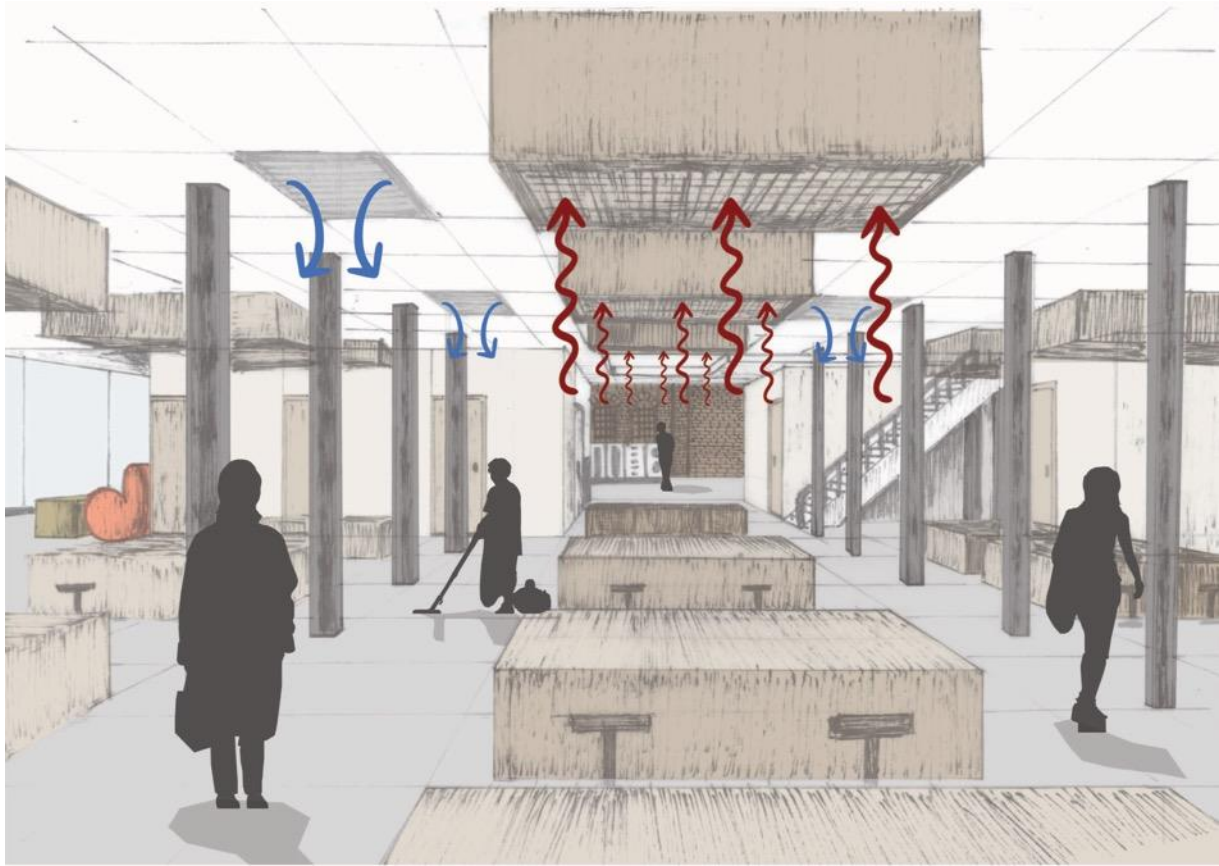
Hempcrete as a flexible material for the walls of the new intervention



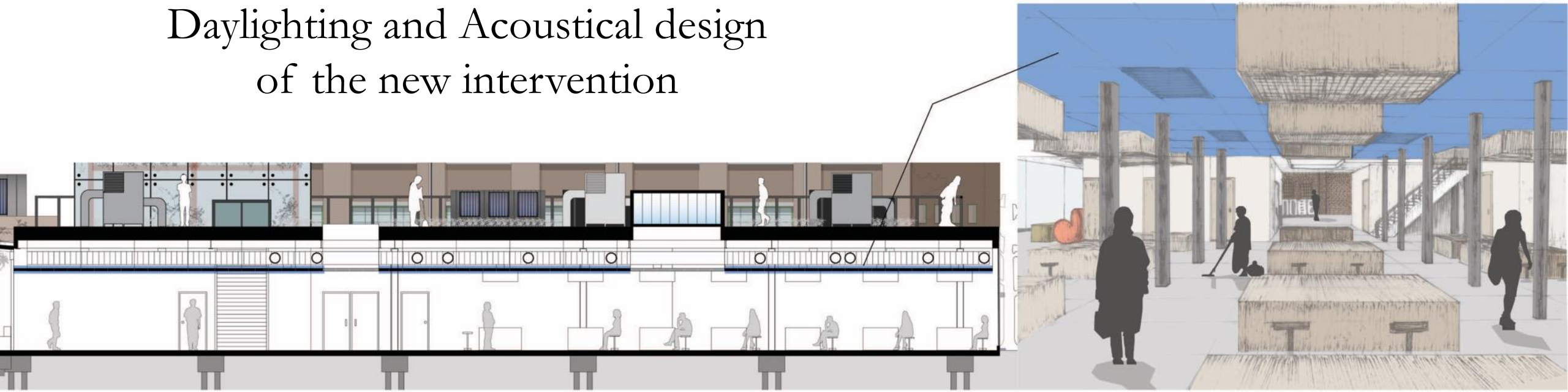
- Hempcrete partition walls add thermal mass to the building
- It is a carbon negative product
- Can be easily installed and removed making the spaces flexible

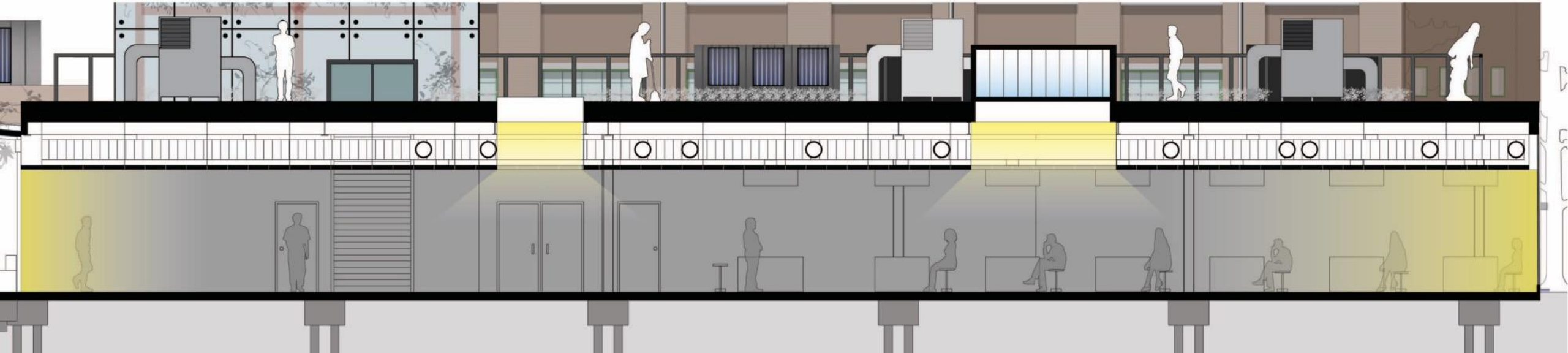
Climate Design of the New Intervention

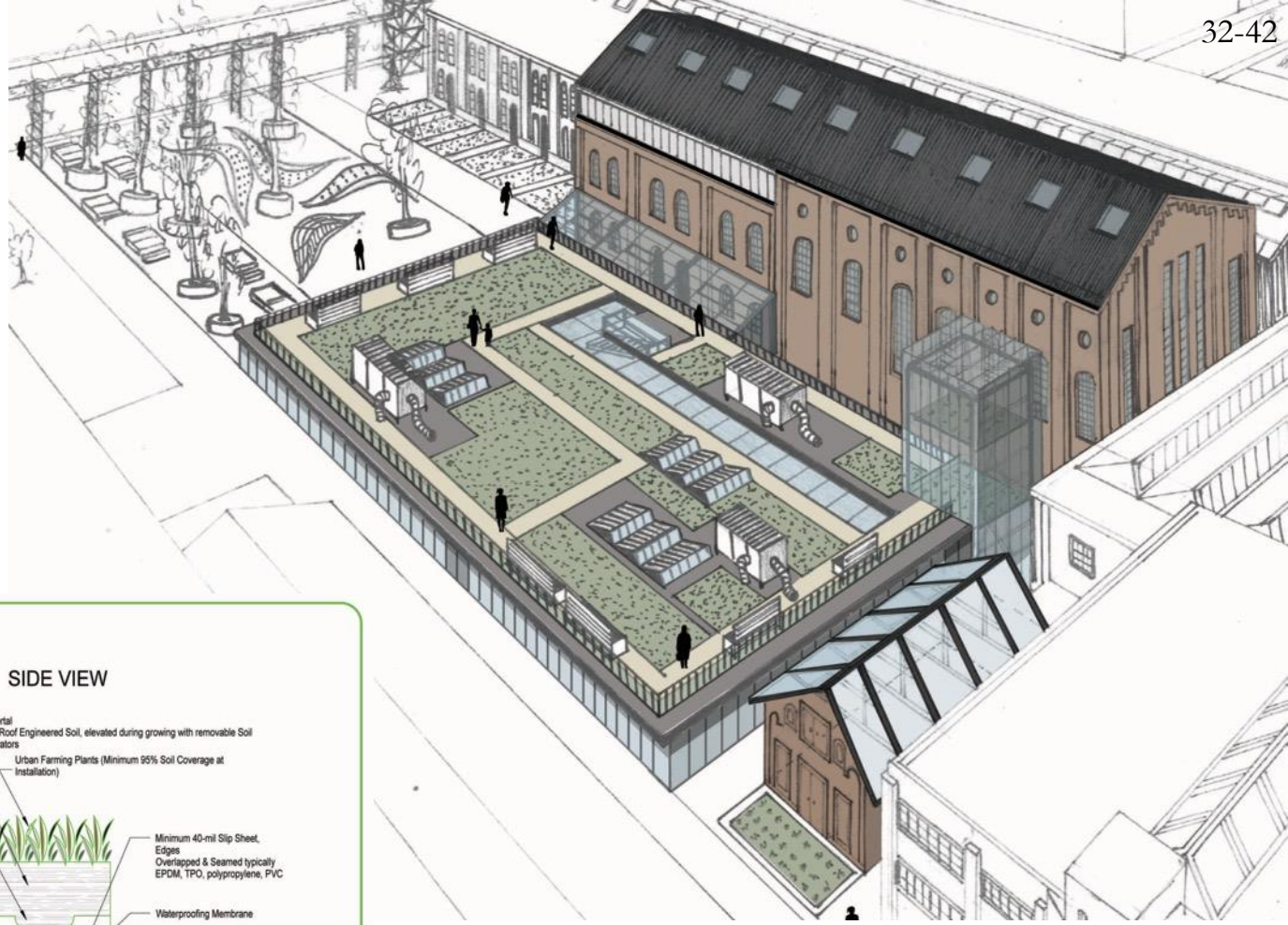


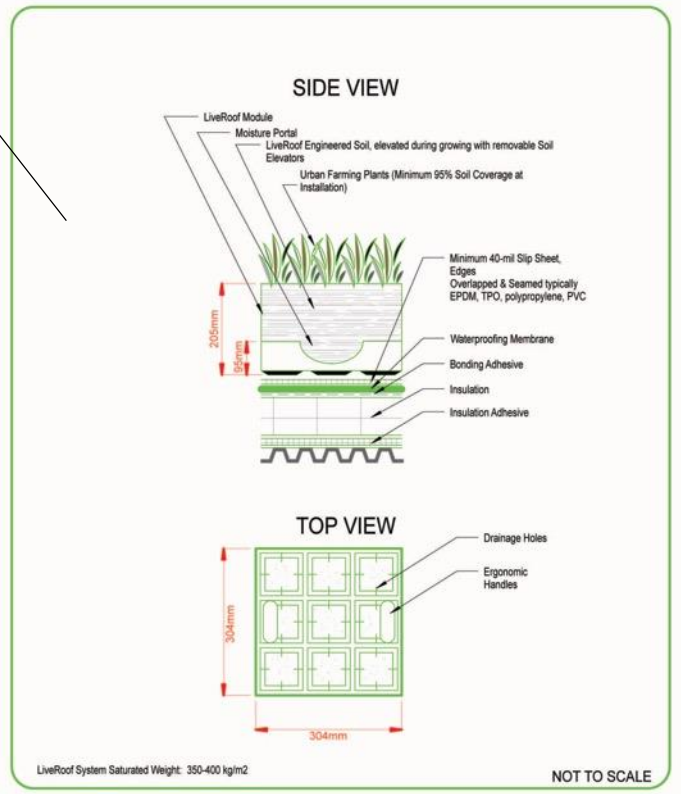


Daylighting and Acoustical design of the new intervention

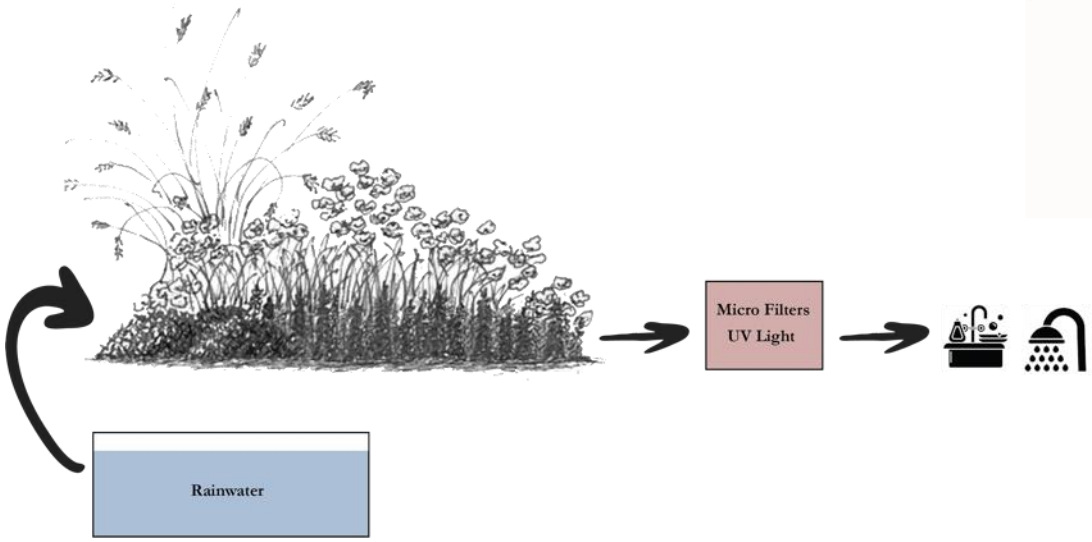






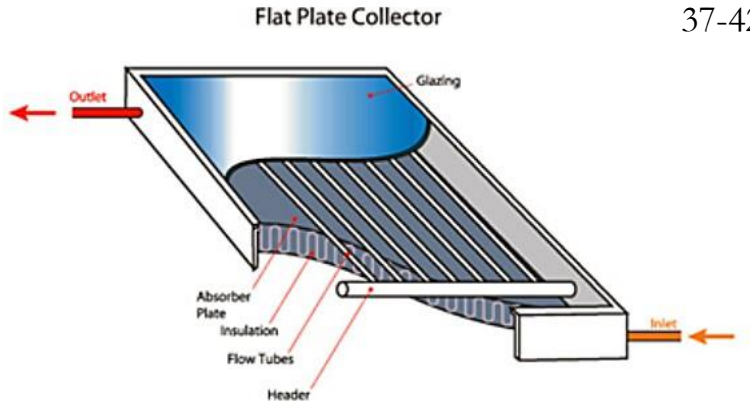


New Green Roof & Urban Farms



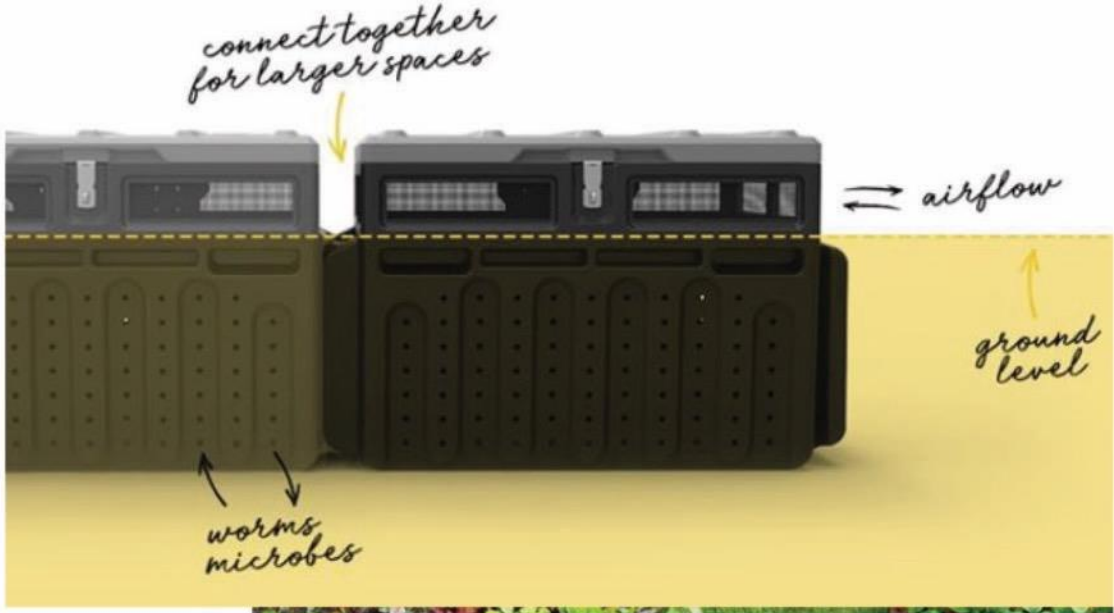
Rainwater Collection & Irrigation

Solar heat and building heat collection for Winter use



- The setup consists of two main components, plastic storage tanks made of recycled plastic, that hold the chemicals and a unit designed to charge and discharge the contained heat. The storage tanks contain the sodium hydroxide mixed with water.
- During the charging process, heat energy harvested from a renewable source, such as a solar thermal collector, is directed to the sodium hydroxide solution. As the solution absorbs the heat, the water evaporates.
- The sodium hydroxide solution becomes more concentrated and can be stored like this for months or even years. What's more, its heat storage capacity is five-times that of a hot water tank, which greatly reduces the space needed to contain the heat.
- When water is added back into the condensed solution, the absorbed heat is released. That heat can be transported via pipes into the building's main heat system, delivering warmth to the rooms.

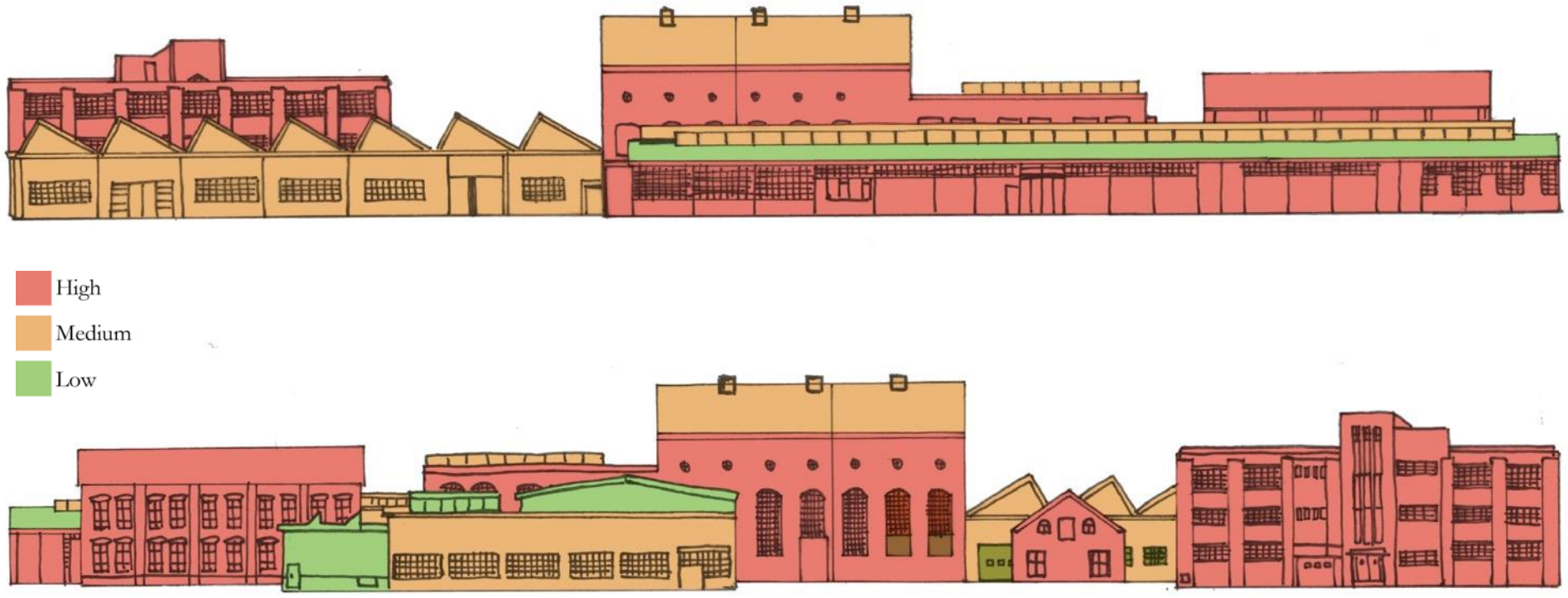
Waste Management



SubPod

Size/pod: 75cm x 45cm x 43cm / 29.5 in x 17.7 in x 16.9 in
Weight: 9.4kg / 20.7lbs
Chamber Capacity: 85 Litres
Lid Weight Capacity: Up to 200kg / 440.9lbs
Composting Capacity: 15kg / 33lbs per week

Cultural Value Reflection



Conclusion

How can a new Contrasting Intervention help rejuvenate the Changeover Zone Ensemble?

Thank You