

POSSIBILITY⁺FOLIO

Site: Berlin, Germany
Author: Junyue Xu(Diagram)
 Zeyi Cheng(Design and Drawings)
Date: 9.2023-12.2023

THE POOL FLOW

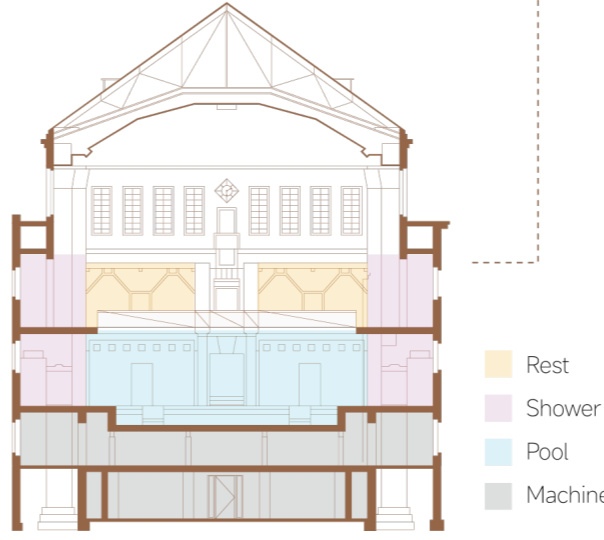
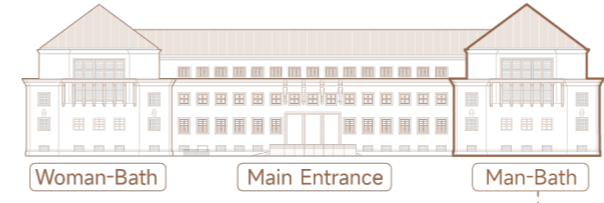
Typology Research out of Renovation

In the early 20th century, many large public buildings such as baths, dance halls and theaters were built in Germany, but these buildings fell into disuse due to historical reasons, changes in entertainment or aging of facilities.

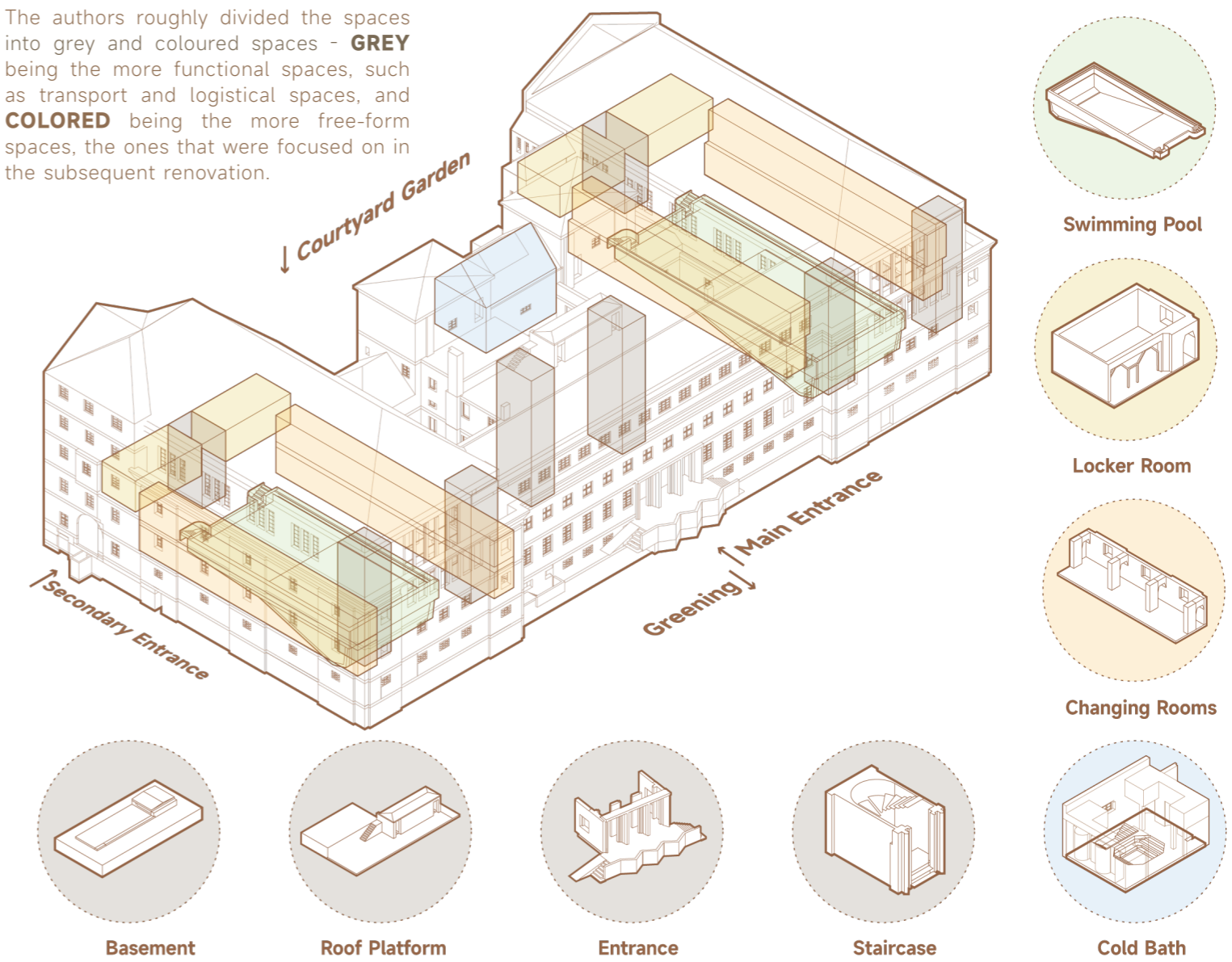
Located in an abandoned bath in Berlin, the project aims to explore the **revival** of abandoned public buildings in a modern city. **Lichtenberg Stadtbad** consists of two large spaces (which used to be the men's and women's baths) and a variety of smaller spaces (shower rooms, saunas, equipment rooms, etc.), which are now used for temporary exhibition functions. By introducing the links of **grape production, winemaking and visitor circulation**, citizens are involved in creating a complex place where people and agroecology coexist in harmony and revitalize abandoned buildings.



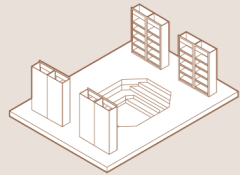
Because of the lack of timely repairs, the entire bath was opened in 1991 and exists as a monument hidden in the city. Minor repairs in recent years have brought community activities back into the building.



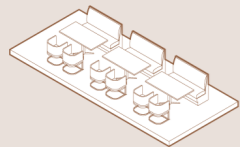
The authors roughly divided the spaces into grey and coloured spaces - **GREY** being the more functional spaces, such as transport and logistical spaces, and **COLORED** being the more free-form spaces, the ones that were focused on in the subsequent renovation.



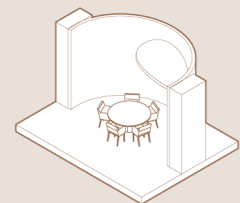
1 READING



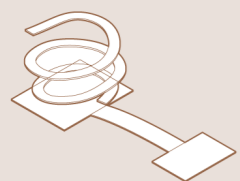
2 CAFE



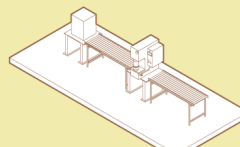
3 GATHER



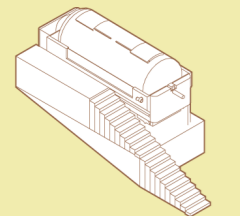
4 WANDER



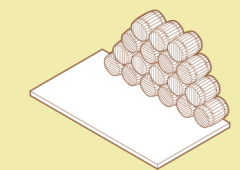
5 TEST



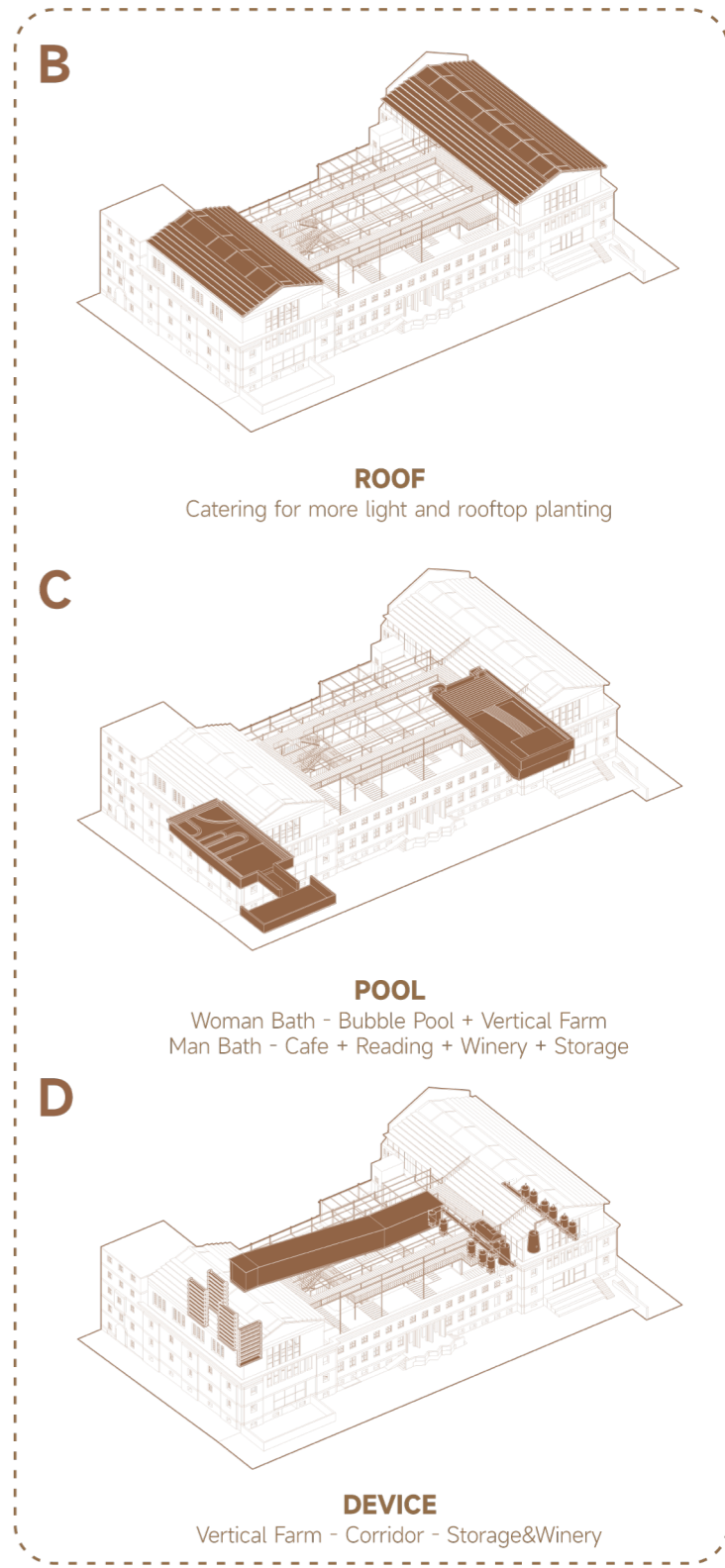
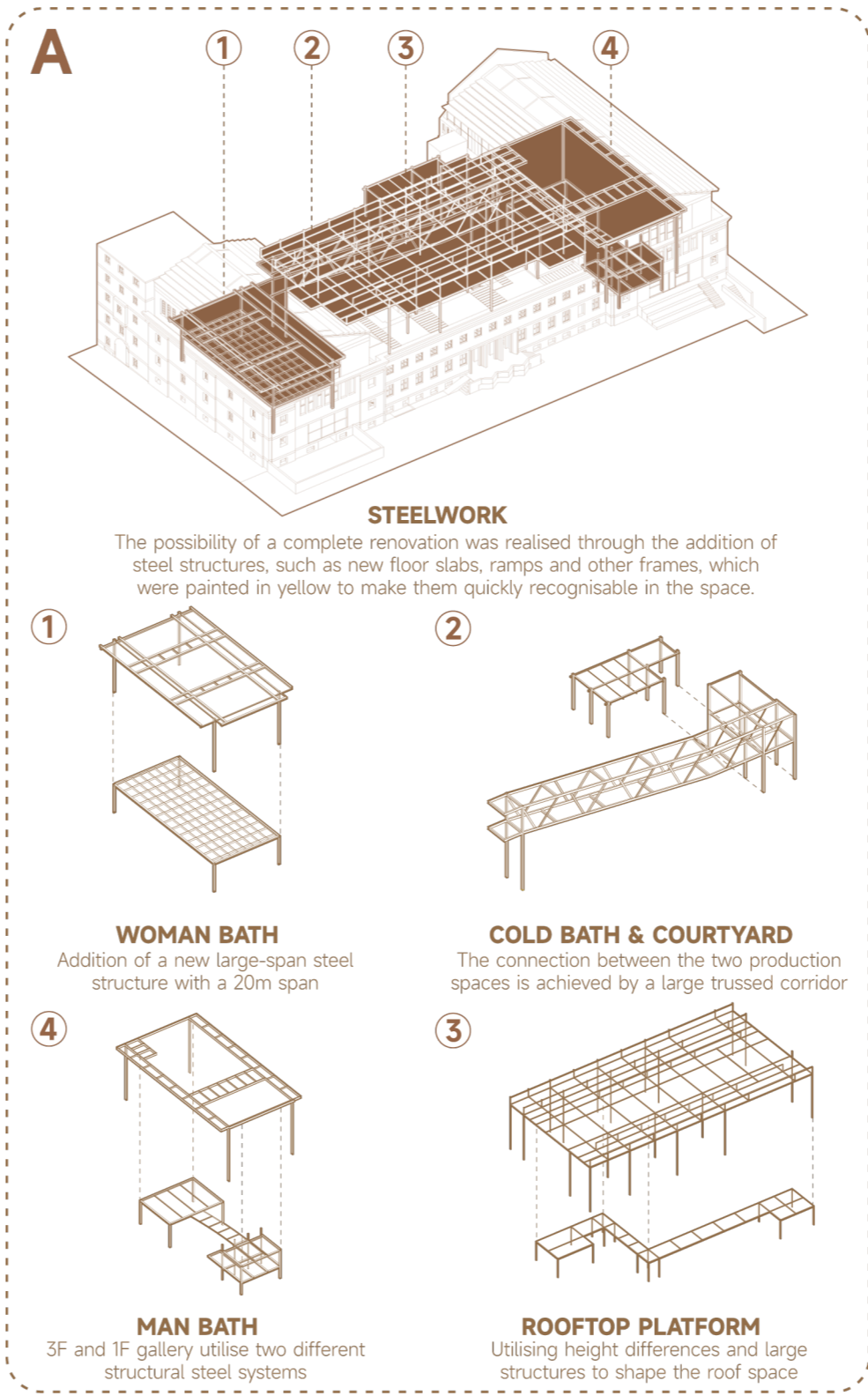
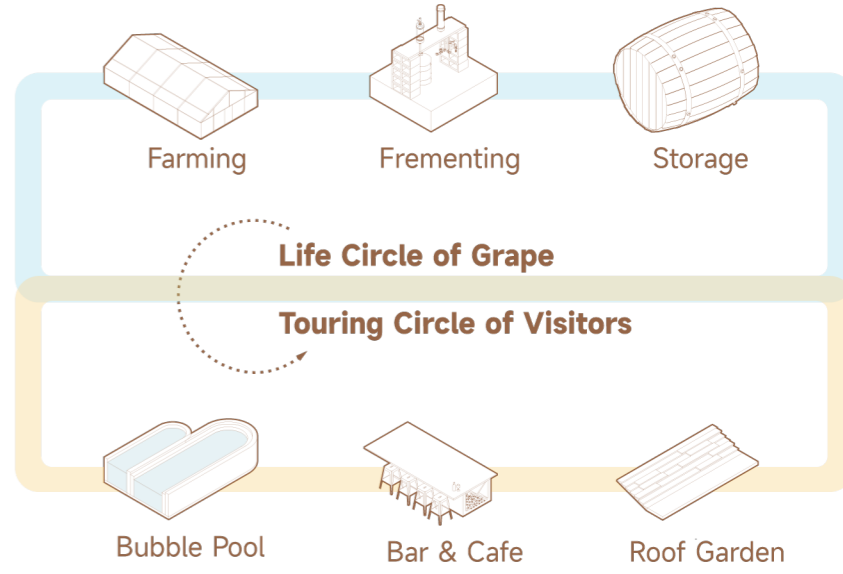
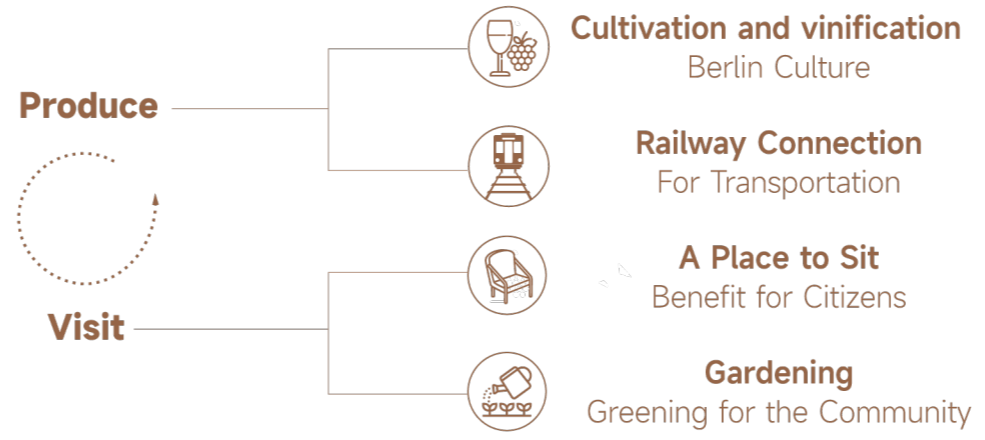
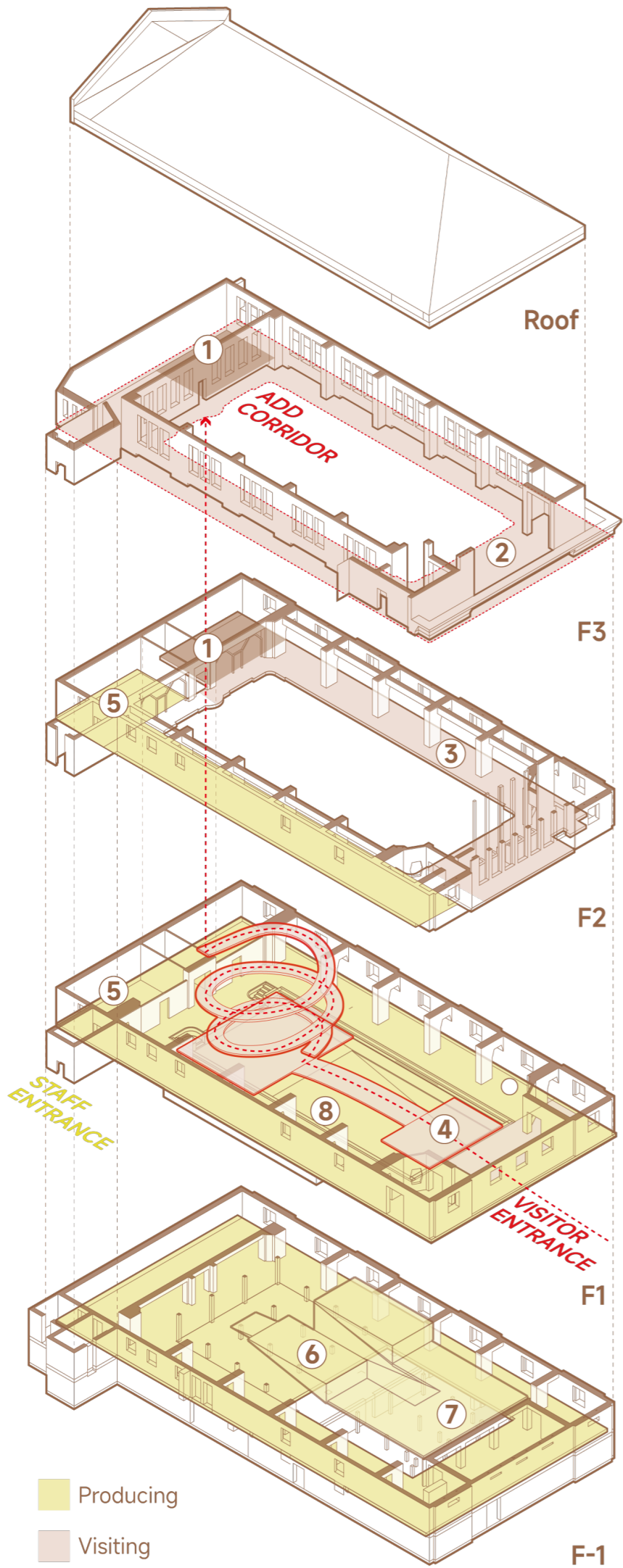
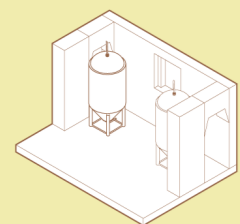
6 PRESS



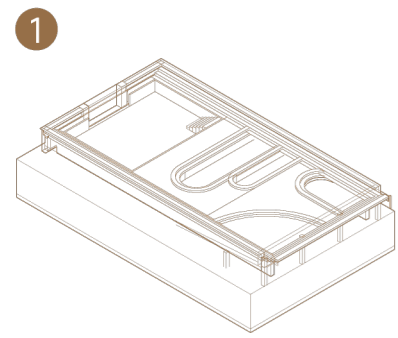
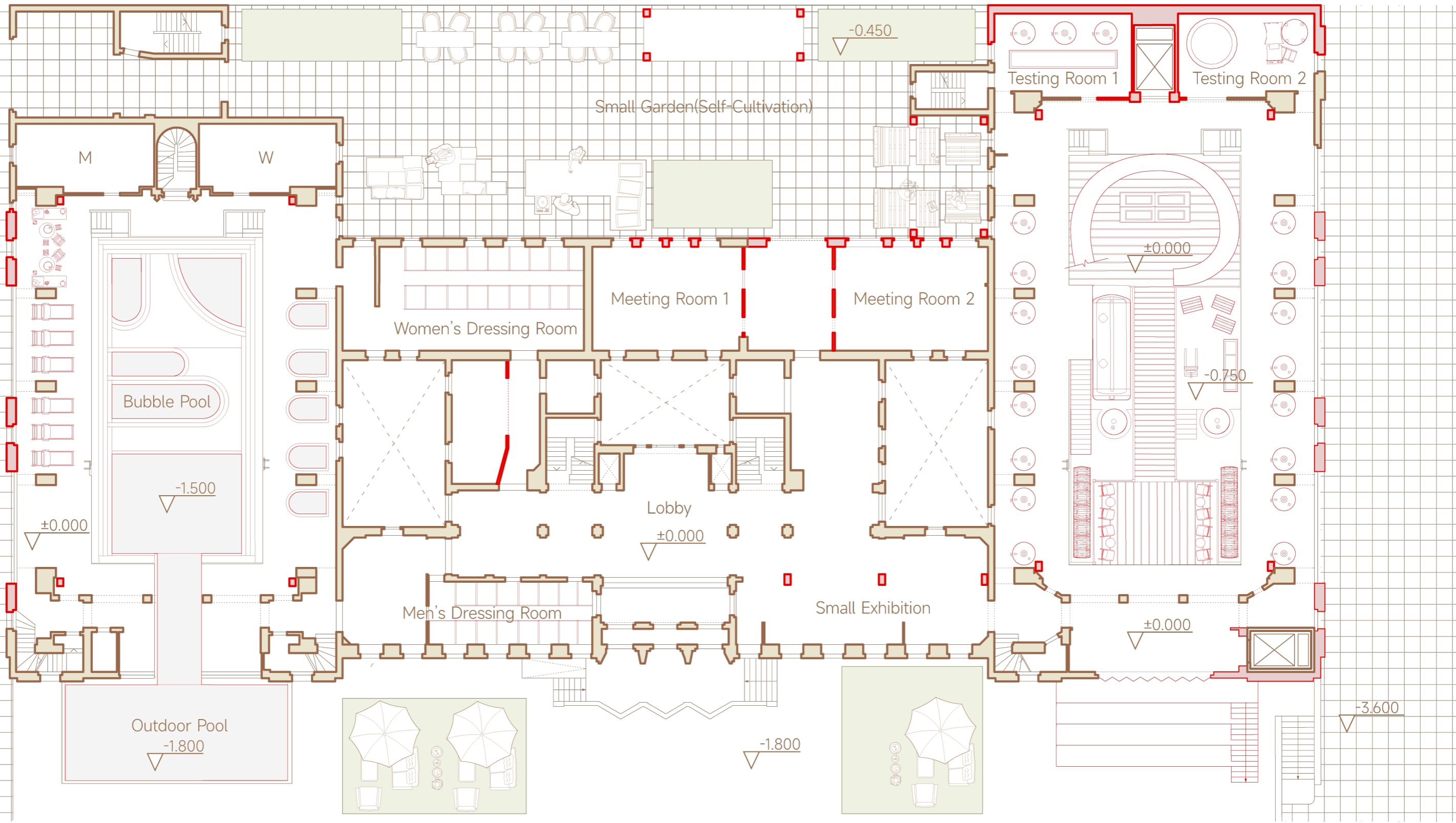
7 STORAGE



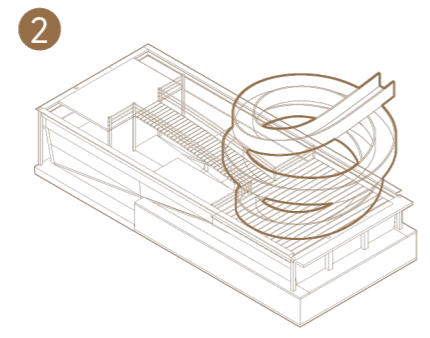
8 FREMENT



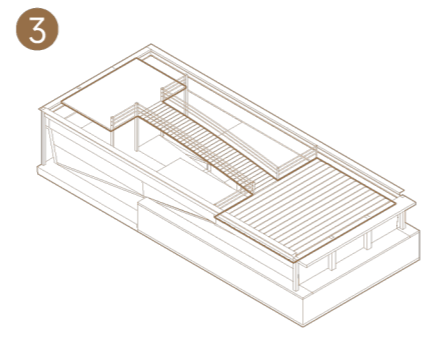
1st Floor Plan



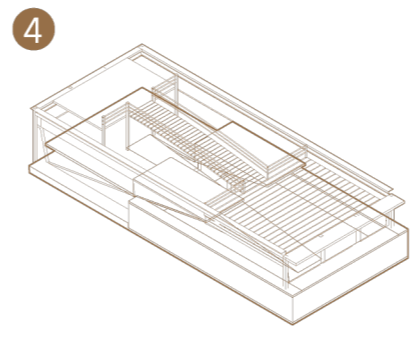
1 VISITOR-BUBBLE POOL
To enhance entertainment attributes



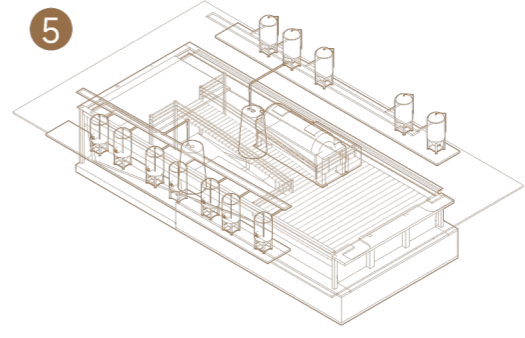
2 VISITOR-ROTATING RAMP
Connects visitor flow between floors



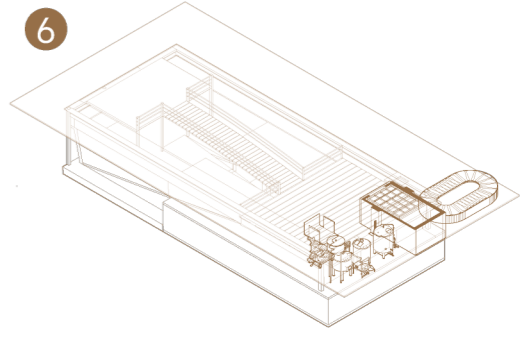
3 VISITOR-PLATFORM
Flow separation through height difference



4 PRODUCE-STORAGE
Basement space

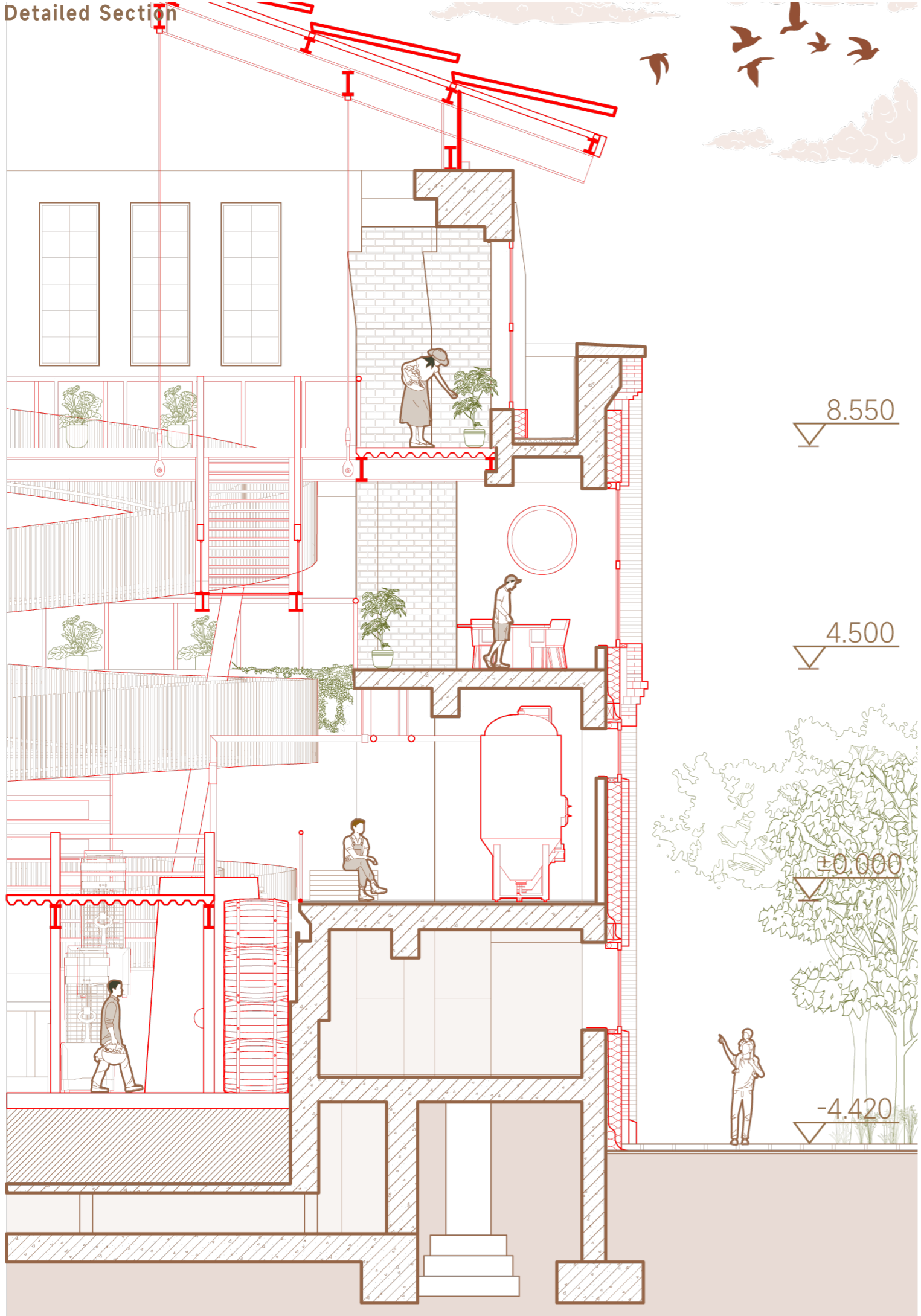


5 PRODUCE-FERMENT
Wraparound porch

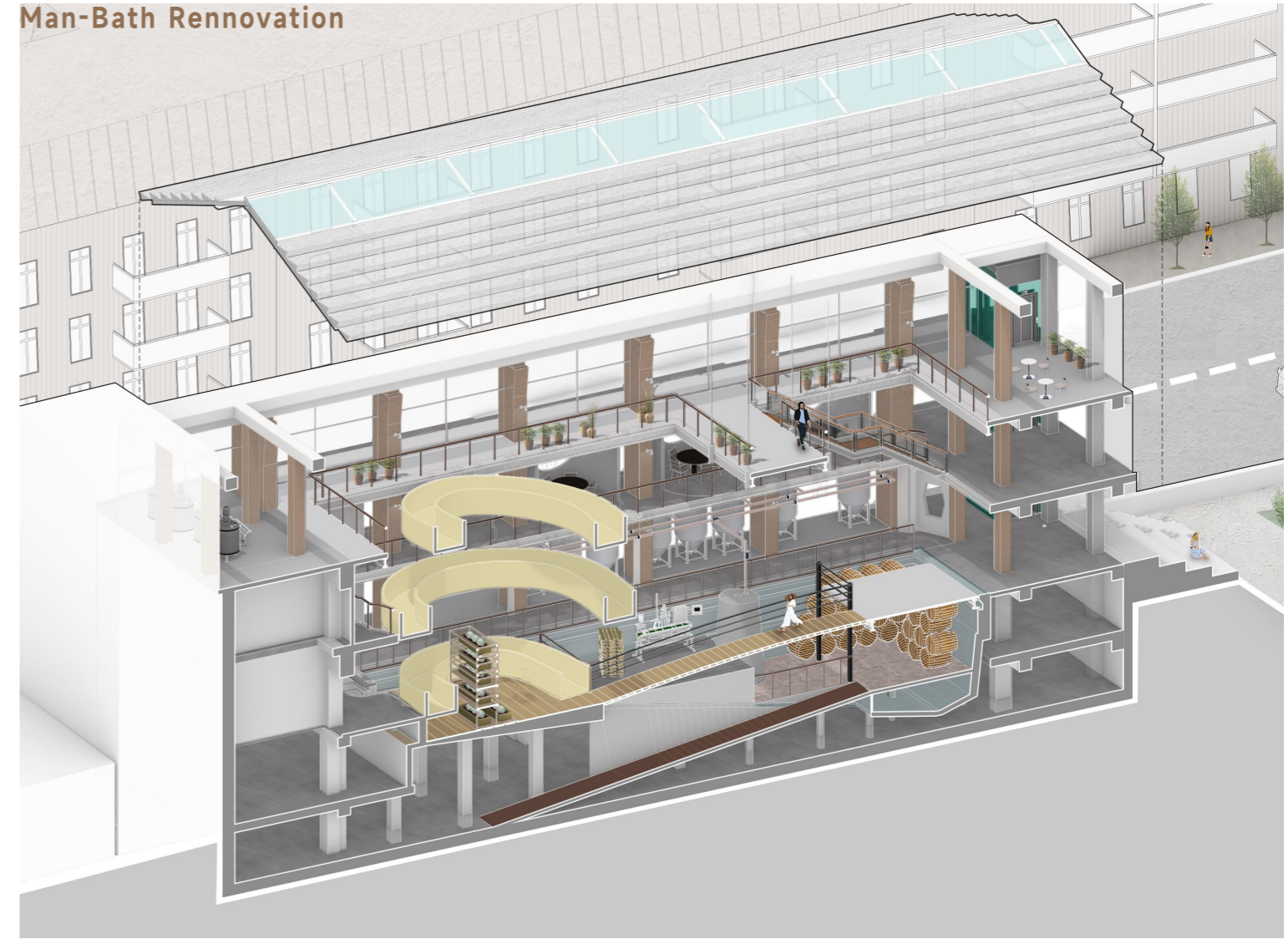


6 PRODUCE-TESTROOM+ELEVATOR
Cubicles and vertical traffic

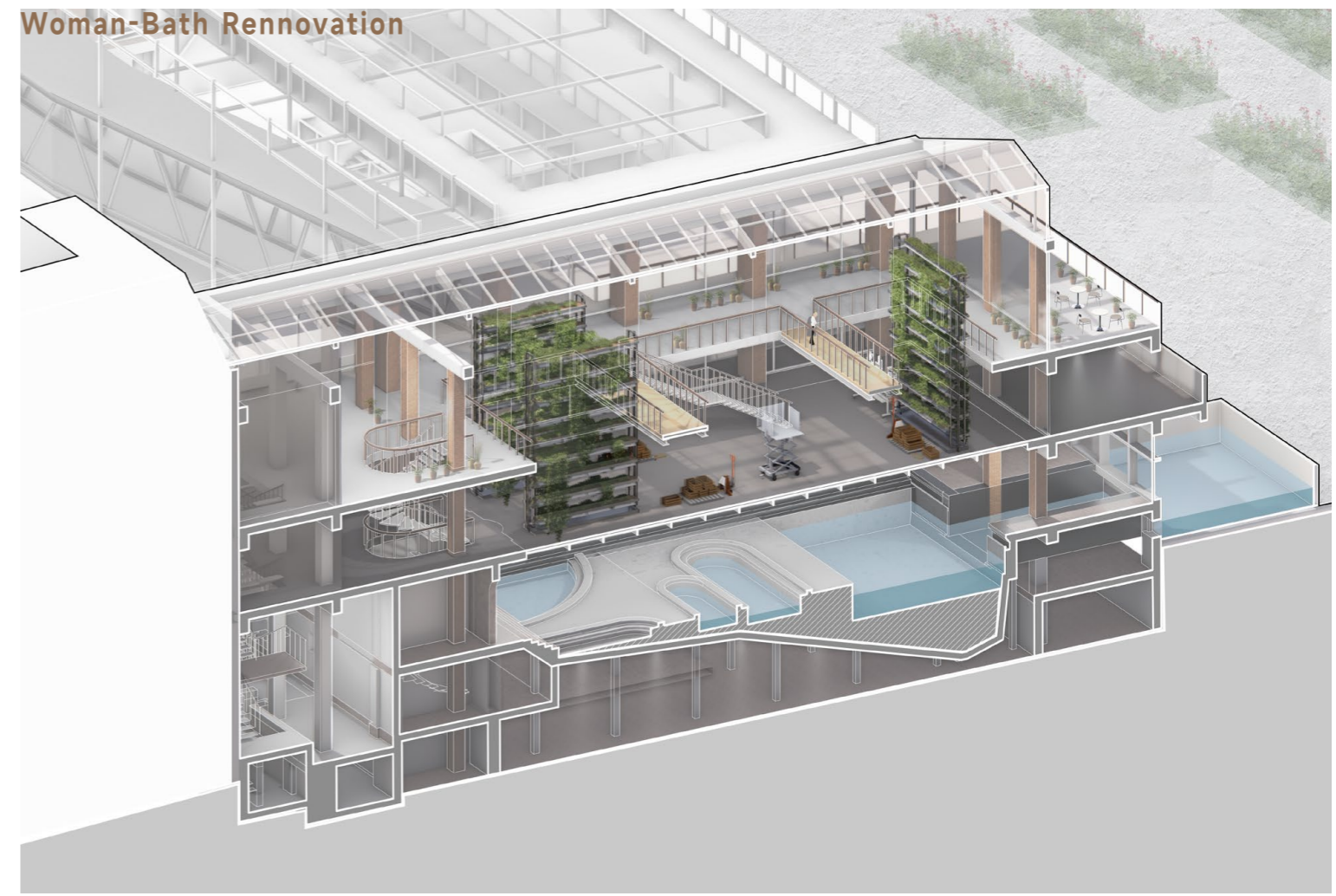
Detailed Section



Man-Bath Renovation



Woman-Bath Renovation





Roof Garden

A roof garden outlined by climbing plants (especially grapevines) was created using light and industrial steel components, and the three original open-air courtyards were transformed into glass skylights for added interest.



Vertical Farm

The Vertical Farm itself has a separate entrance and a glass door to the space where visitors can explore, which allows it to be opened for tours at regular intervals, and when it is not open, the glass wool and curtains are closed, and the functioning of the seating outside is not disturbed.



Bubble Pool

The bubble pool cuts the original whole pool into different parts, and transforms the shower space next to it into a more private bubble pool, and enlarges the window area, adds loungers and other leisure furniture, and enhances the vitality of the whole space.



Transportation

The juxtaposition of the intermediate gallery and the roof garden, which are visible to each other without disturbing each other, also forms a similar relationship with the open space in the courtyard, exposing the 'production process' in a real way.

Site: Helsinki, Finland
 Author: Zeyi Cheng
 Date: 9.2023-12.2023

MICRO UNI BELT

Penetration of education in city

What role does education play in the city, and how can it transcend traditional boundaries? Inspired by Cedric Price's **Potteries Thinkbelt** and Team X's **Free University**, this project reimagines education as an organic part of urban life rather than an isolated institution. Education, a fundamental human need, should hold a position in the city as vital as food and shelter.

The Micro Uni Belt envisions education as a network woven through Helsinki, anchored by the University of Helsinki. Modular "ribbons" spread across the city, using **tram stations** as nodes for connectivity and public interaction. Each ribbon accommodates various educational functions, creating an accessible, decentralized system. This approach dissolves the elitism of higher education, making learning an everyday experience. By embedding education into the urban fabric, the project fosters a city where knowledge flows as freely as essential services, enhancing both accessibility and community engagement.



Inpiration

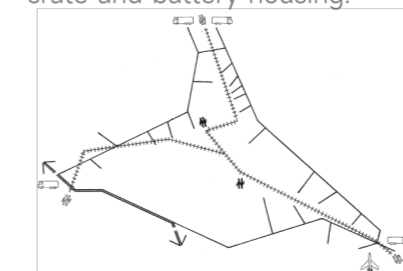
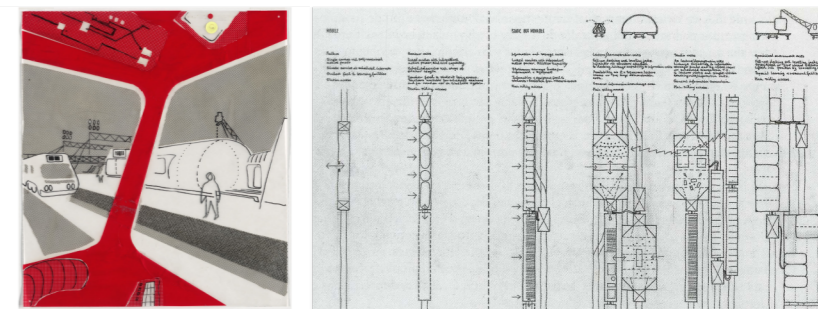
Potteries Thinkbelt Project

Answer of Education in Future

Free University Berlin

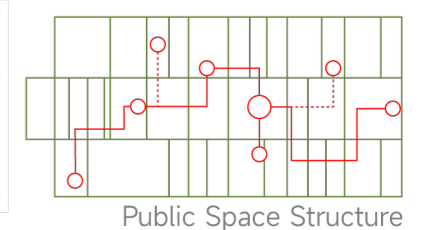
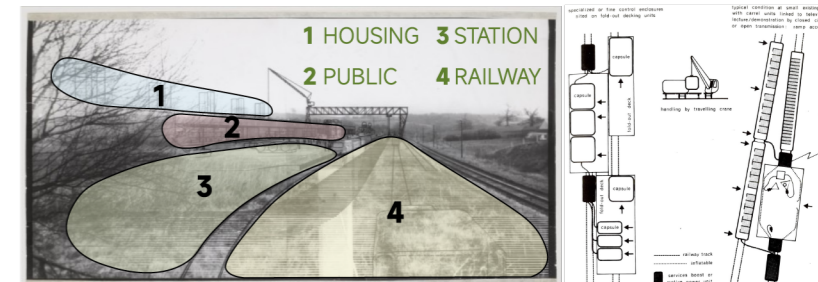
Cedric Price, 1964

1. the way in which education and the university life of the students were integrated with the rail stations
2. the planning of the overall transport network
3. Different forms of residential units: sprawl, capsule, crate and battery housing.



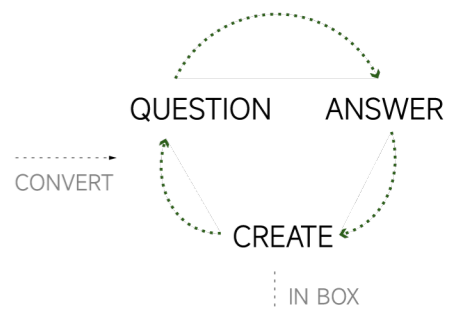
Team X, 1963

1. The Grid
2. Define as such a continuous figure of in- and outdoor Public Spaces



1. to compress a university

LIBRARY GYM
 MUSEUM LAB
 CLASSROOM



DAILY ROUTINE
 SERVICE

Q&A	Teach	Workshop	Exhibition	Transport
screen		digital	display	Tram Line
		manual		

coventional campus

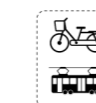
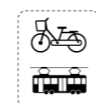
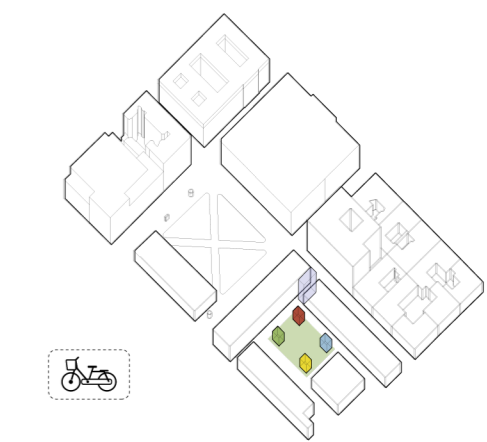
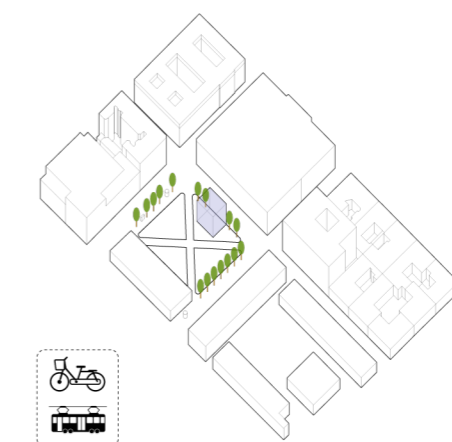
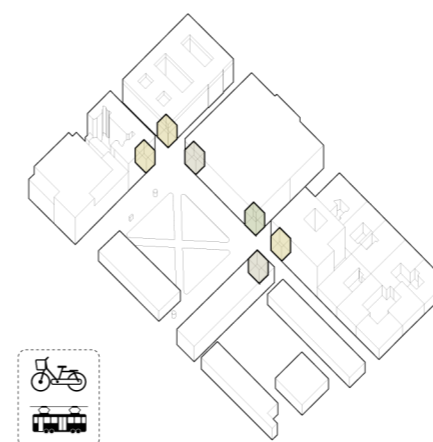
compressed campus

2. to implant the modules into urban area

Street Corner
 single module

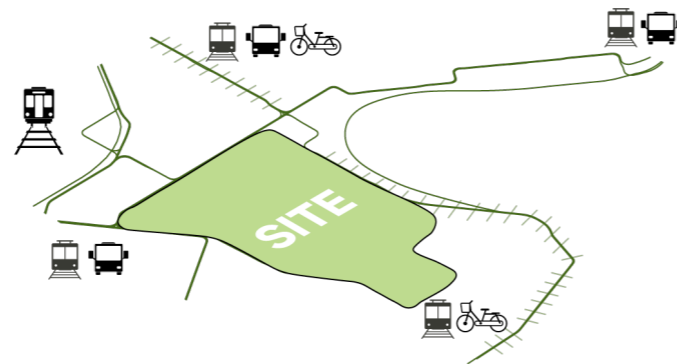
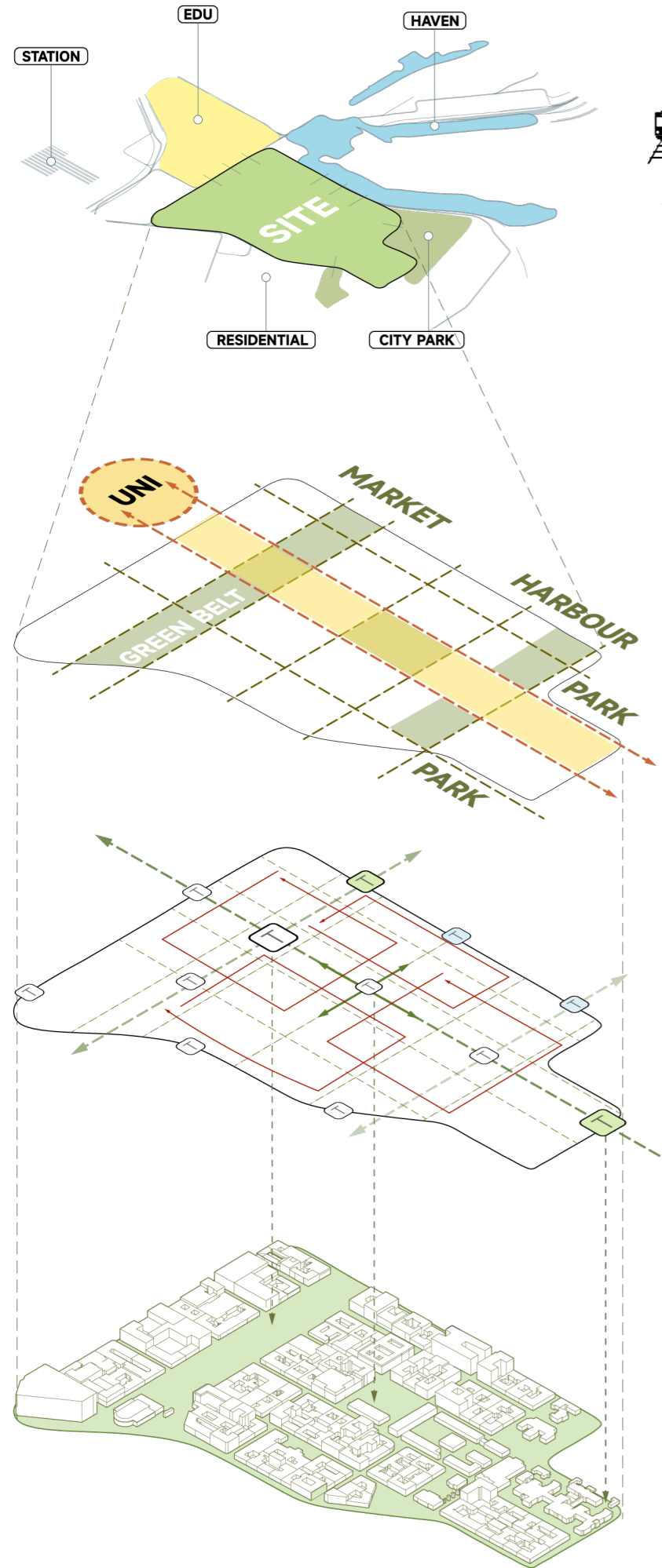
Public Space
 tram complex with retails

Couetyard
 assembling the community

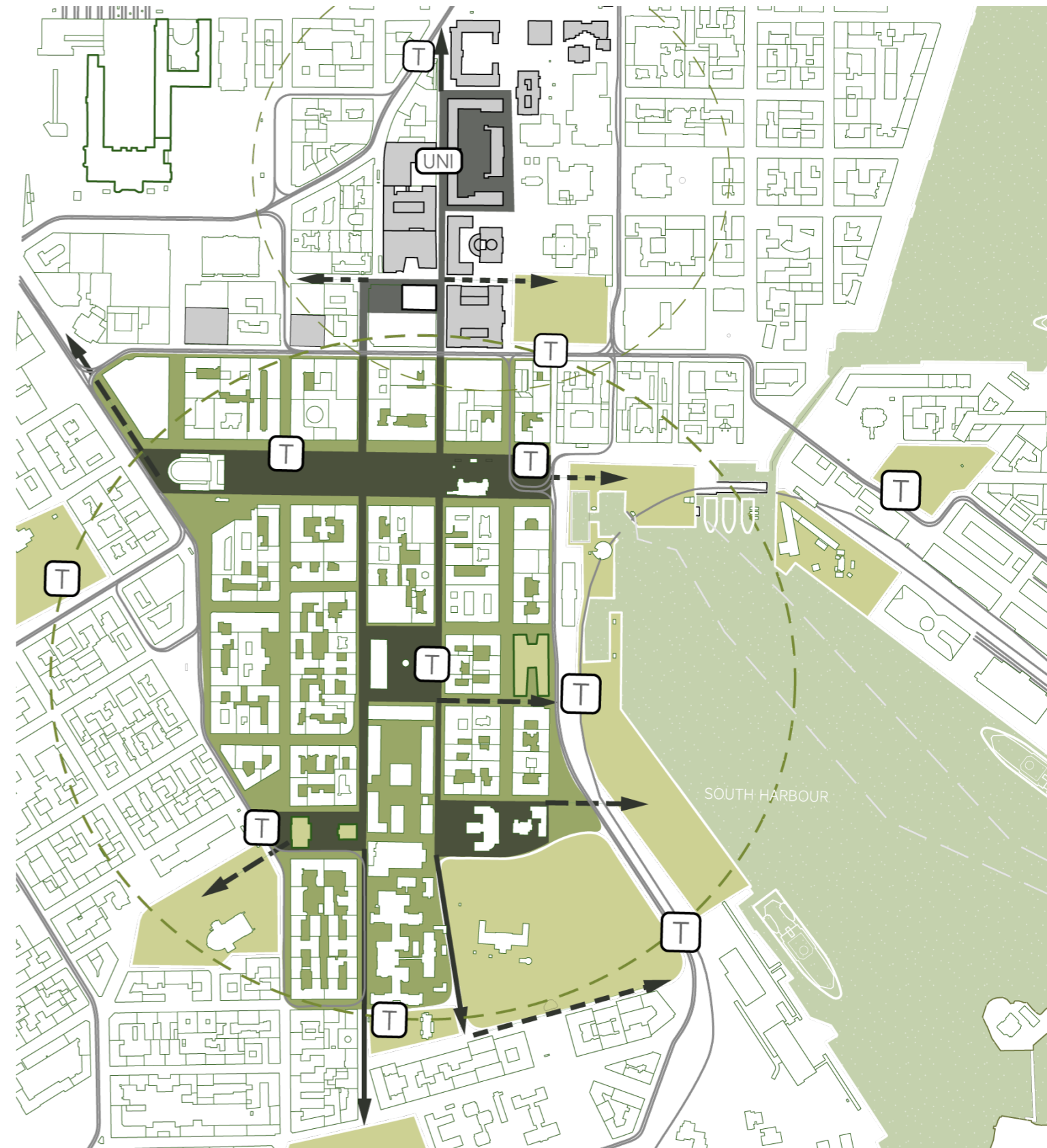
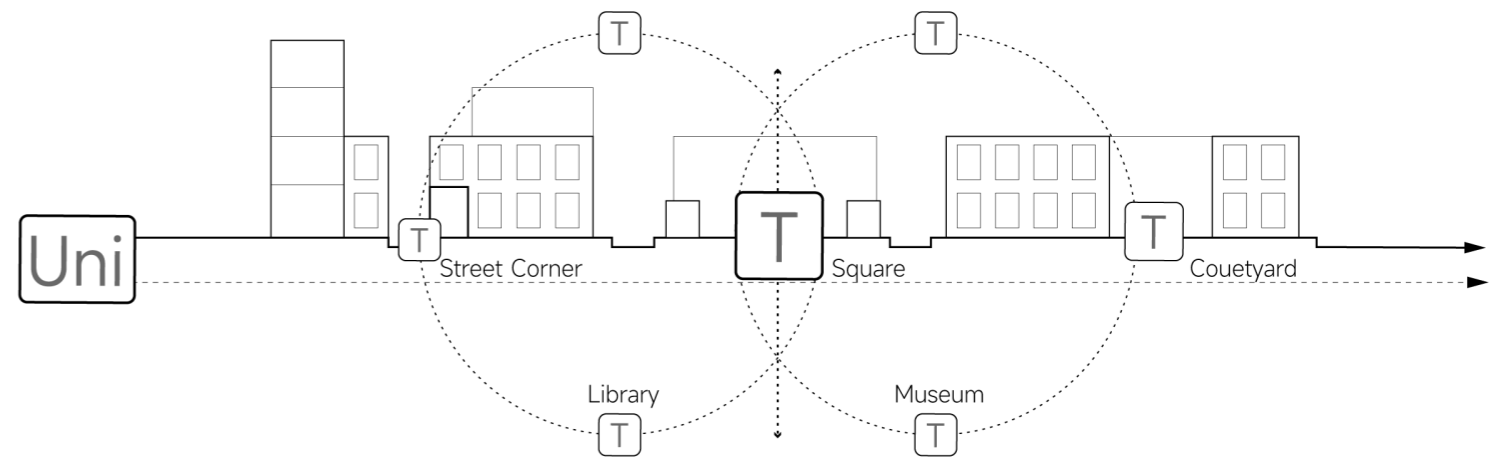
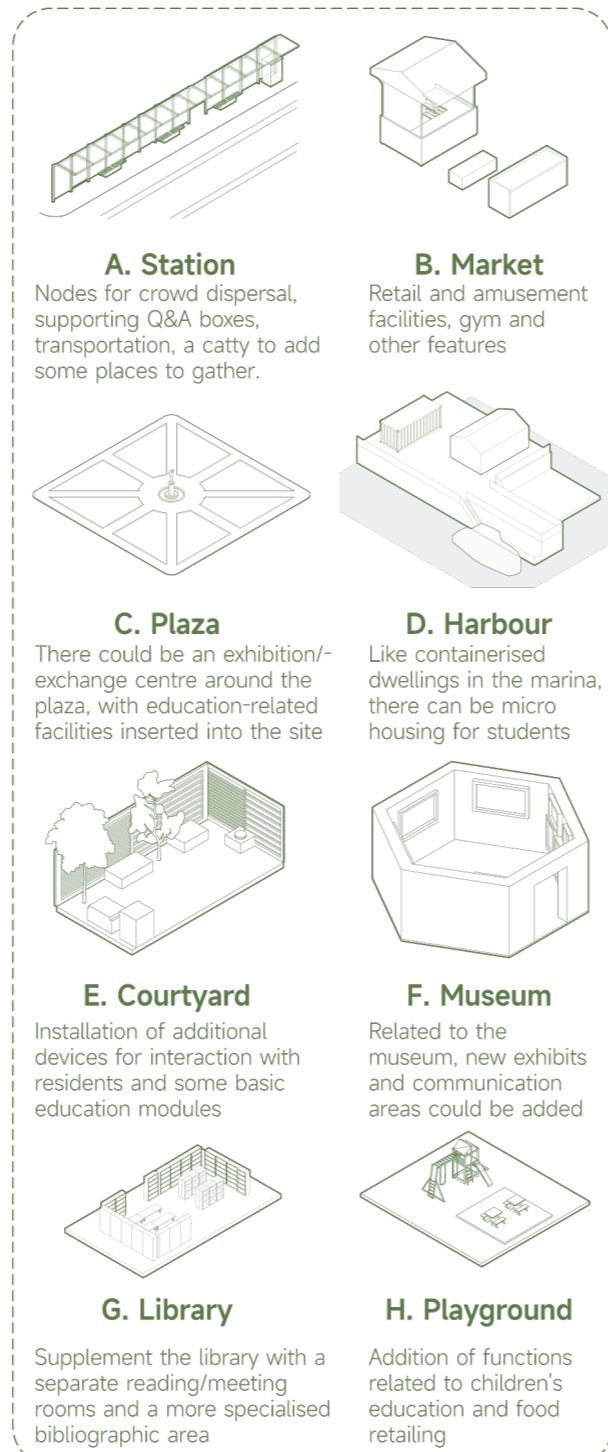


3. To connect all the 'micro uni' with tram lines

Starting from the campus, the project lines up all the old and new tram station, as a spreading tool of all educational functions, expecting Adult Education to play a role of commutator in the city.



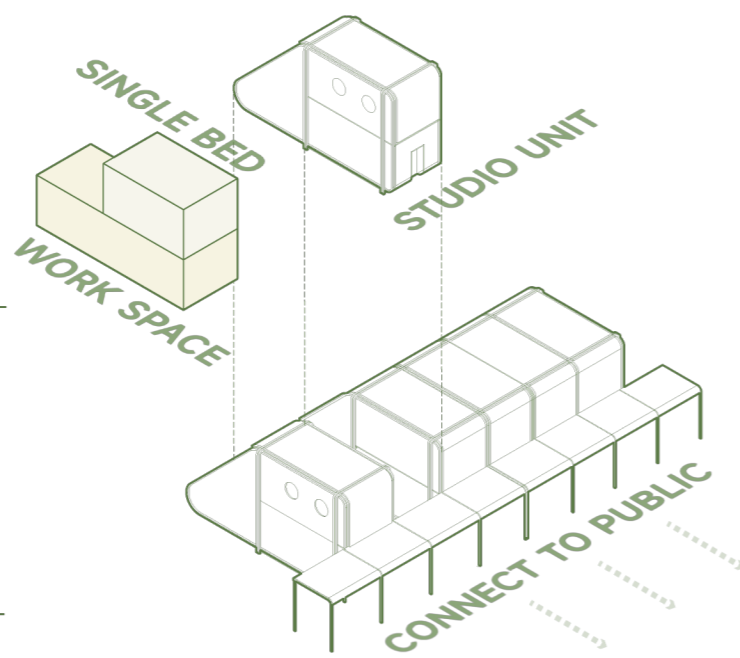
Type of Public Space



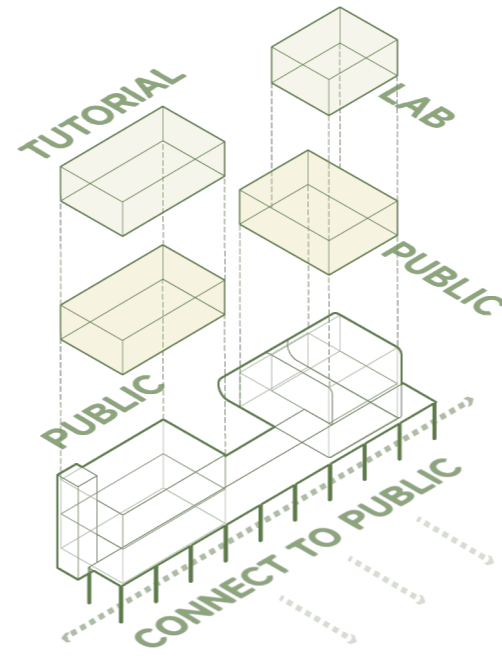
Function & Distribution

To truly transform the "micro uni" into a cohesive "belt," it must integrate diverse functions within the city's public spaces to meet the dynamic needs of learning. This approach allows people to move fluidly along the belt, creating an educationally driven cycle.

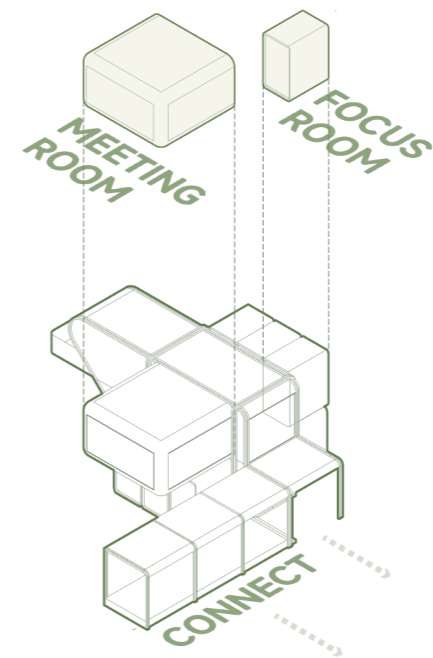
Thus, in public spaces, mobile studio modules are interspersed, providing students with areas to rest amidst intense work schedules. Additionally, workshops and small exhibition halls are integrated to facilitate the complete process from learning to production.



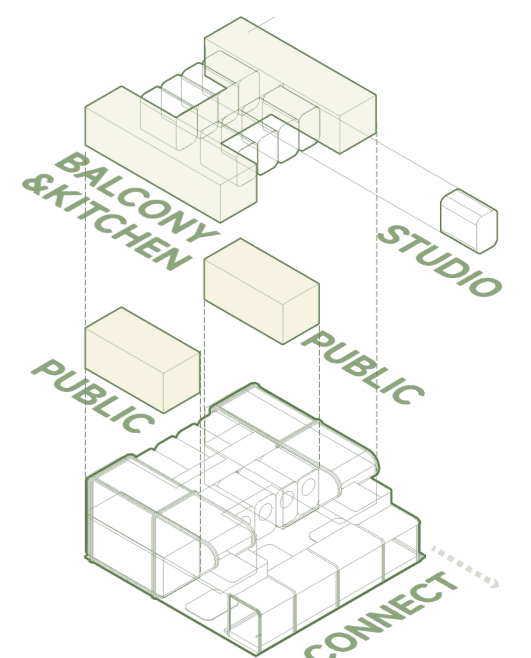
Studio Housing



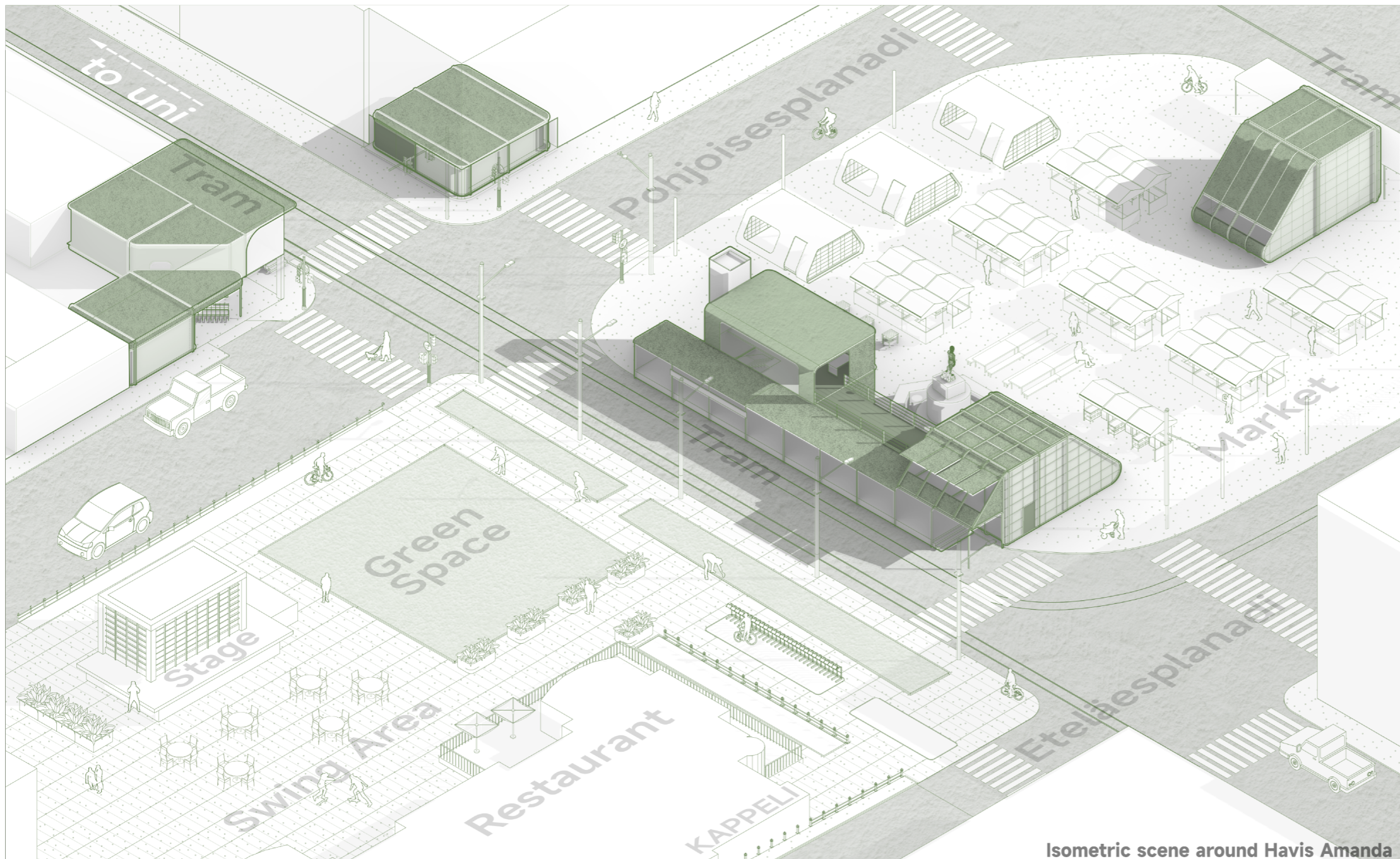
Teaching and Display



Faculty and Staff

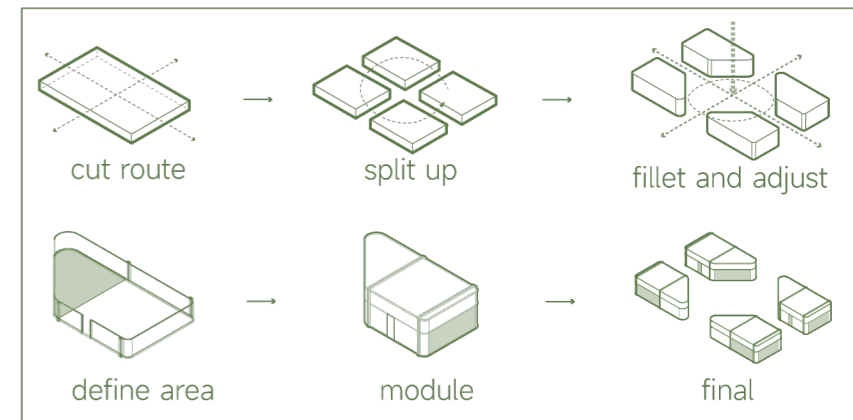


Micro Housing

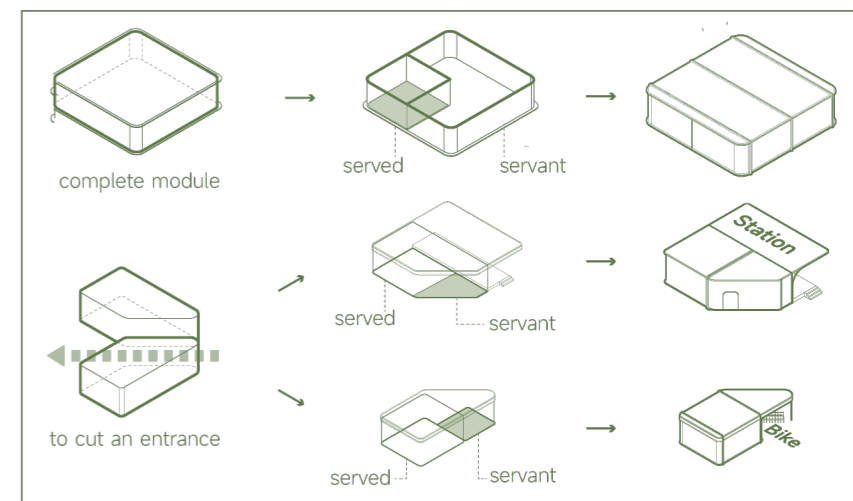


Isometric scene around Havis Amanda

Public Space tram complex + connect the city

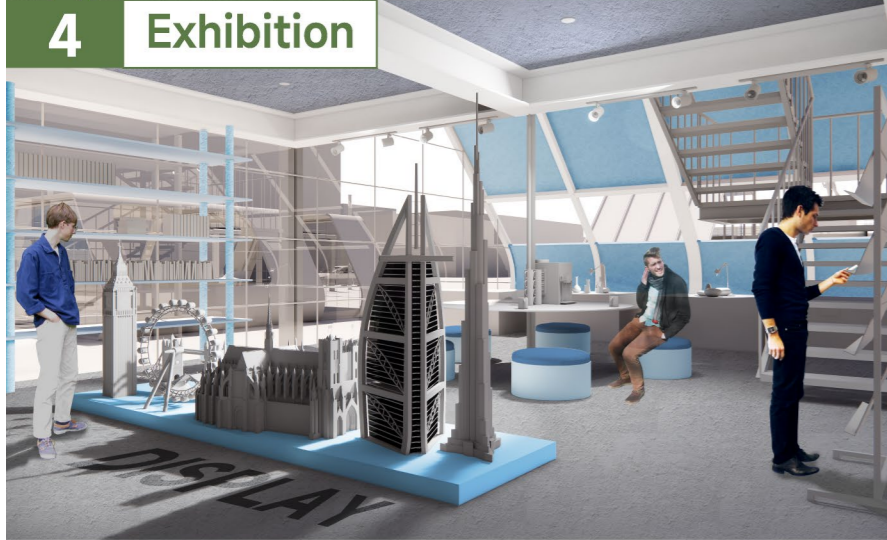


Coueyard serve the community



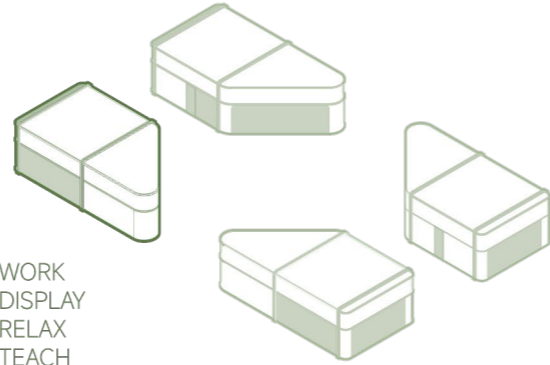
Street Corner flexible function





TYPE:COURTYARD

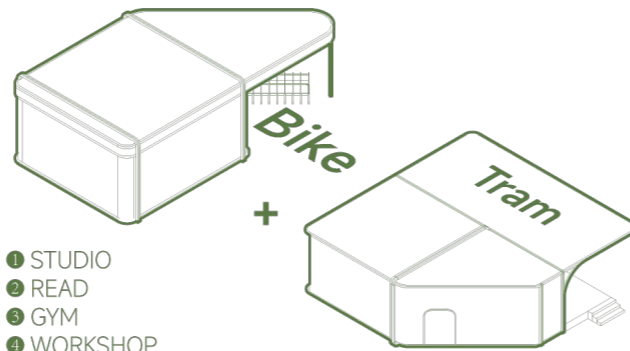
Courtyard type is a flexible type to insert into various urban space.



- 1 WORK
- 2 DISPLAY
- 3 RELAX
- 4 TEACH

TYPE:STREET CORNER

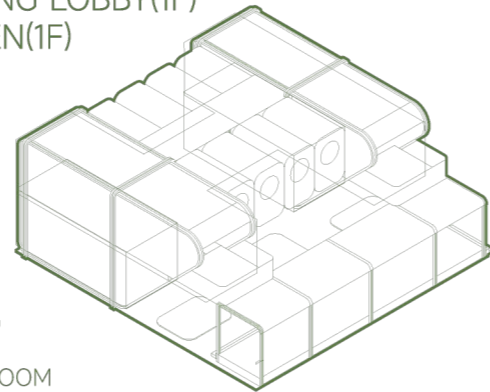
Street corner type is integrated to contain multiple educational functions.



- 1 STUDIO
- 2 READ
- 3 GYM
- 4 WORKSHOP

TYPE:PUBLIC SPACE 1

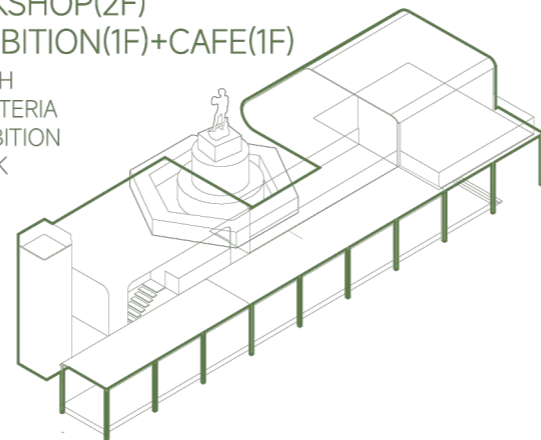
HOUSING CAPSULE(2F)
+HOUSING LOBBY(1F)
+GARDEN(1F)



- 1 LAB
- 2 HOUSING
- 3 GARDEN
- 4 FOCUS ROOM

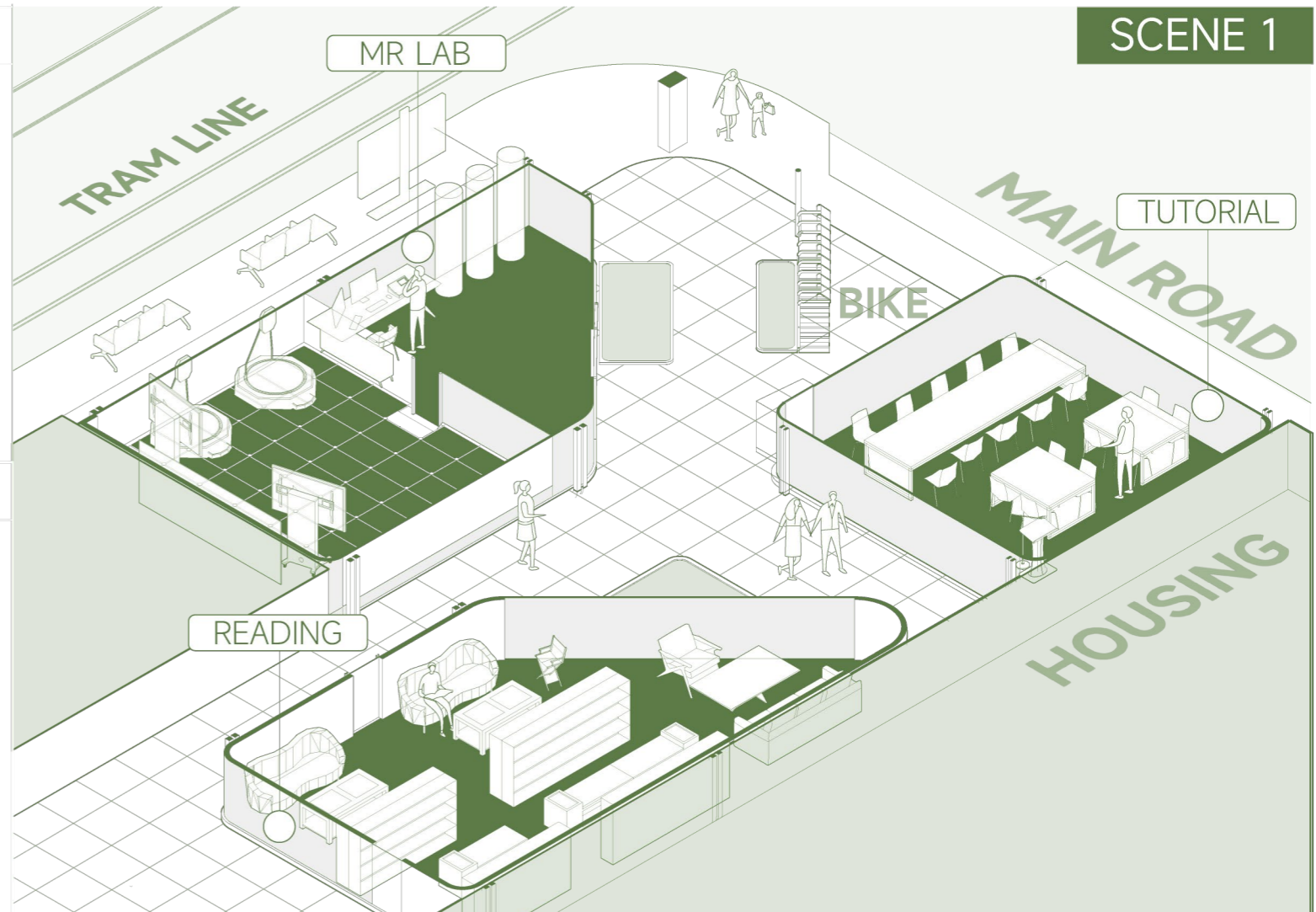
TYPE:PUBLIC SPACE 2

WORKSHOP(2F)
+EXHIBITION(1F)+CAFE(1F)

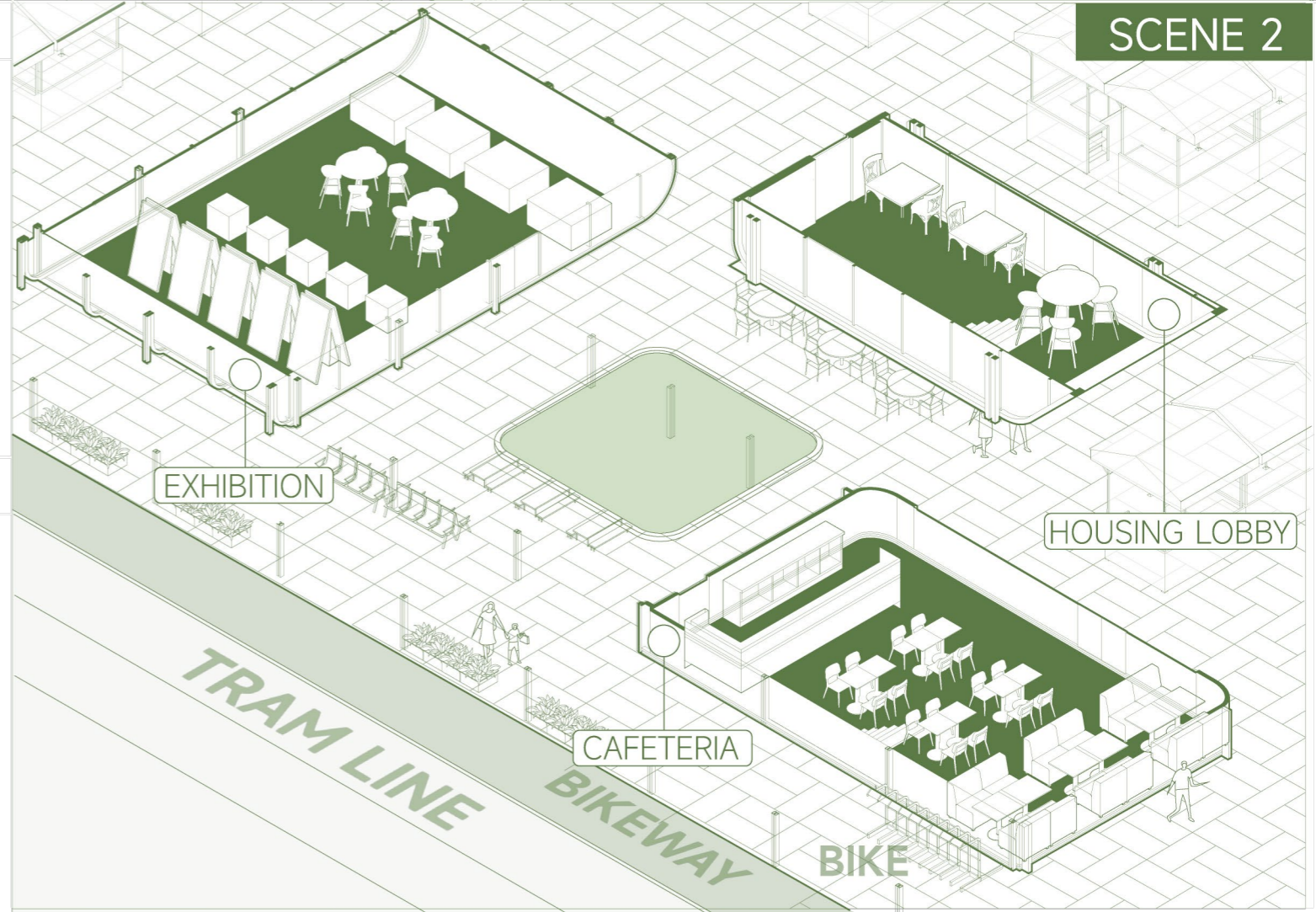


- 1 TEACH
- 2 CAFETERIA
- 3 EXHIBITION
- 4 WORK

SCENE 1



SCENE 2



Site: Helsinki, Finland
 Author: Zeyi Cheng
 Date: 4.2024 - 6.2024



SNOW VOLT

An Exploration of Natural Material

In our search for natural materials, we turned our attention to “snow” as a material of interest—snow with a certain thickness can provide **insulation**, transform into **water** as temperatures rise, and even serve as a potential energy source for **power generation**. While current methods and technologies for utilizing snow are not yet fully developed for practical application, our aim was to explore the future possibilities of such innovations.

Thus, we chose Helsinki—a city where snow accumulates significantly for nearly half the year—as our research site. Ultimately, we selected the Viikki campus of the University of Helsinki as the specific project location. This site is adjacent to the Viikki Nature Reserve and incorporates educational functions related to ecological sciences, aligning perfectly with our vision of an innovative research-based student housing project.



Main Technology(1): Temperature Difference Generation



SNOW POOL SAUNA

COLD AIR → TURBINE → HEAT AIR

GENERATOR → ELECTRICITY

DECIDING FACTORS

C+ GREATER DIFFERENCES → HIGHER EFFICIENCY

GREATER VOLUME

SUCCESSFUL CASE

AOMORI, JAPAN

CONDUCTOR
Forte (Startup)
UEC (University)

METHOD
Use the swimming pools to collect snow and thus support the light of a school

RESULT
According to estimates, 47 pools of snow will ensure per capita annual electricity consumption

CONVERSION RATE

6° SNOW ↔ 10~15m² PHOTOVOLTAIC

SUPERIORITY

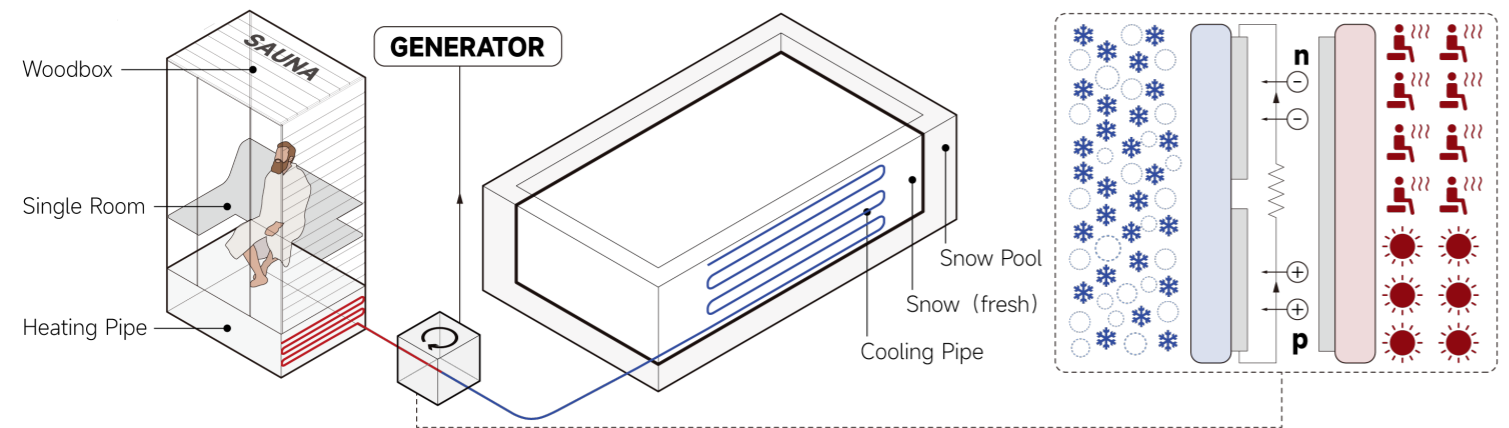
LOW COST ↔ CLEAN ENERGY

CURRENT OBSTACLE

LACK OF AREA FOR SNOW STORAGE → BUILDING

LACK OF STABLE OFFERING OF HOT AIR → SAUNA

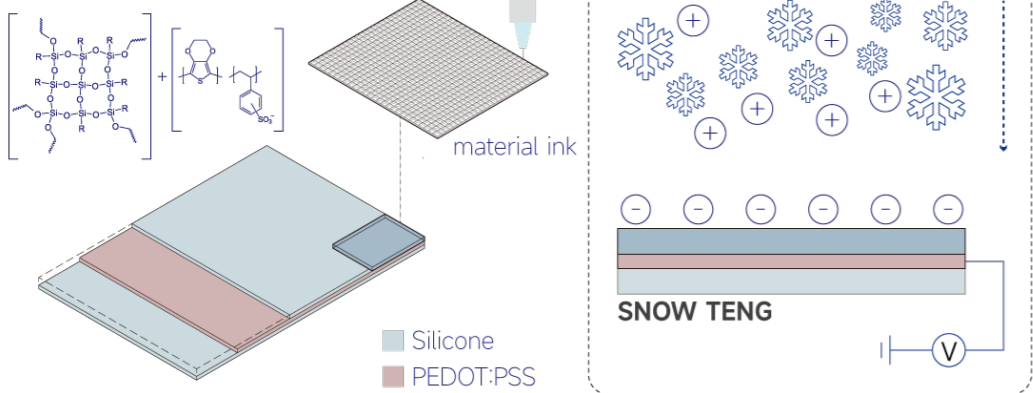
The temperature difference between the cold and hot air will give rise to a convection current in the turbine's coolant. This current will eventually make the turbine rotate and produce electricity.



Main Technology(2):
Temperature Difference Generation

Triboelectric Nanogenerators (TENGs) have recently attracted attention as an efficient energy harvesting technology, as the friction of snow with charged surfaces can generate.

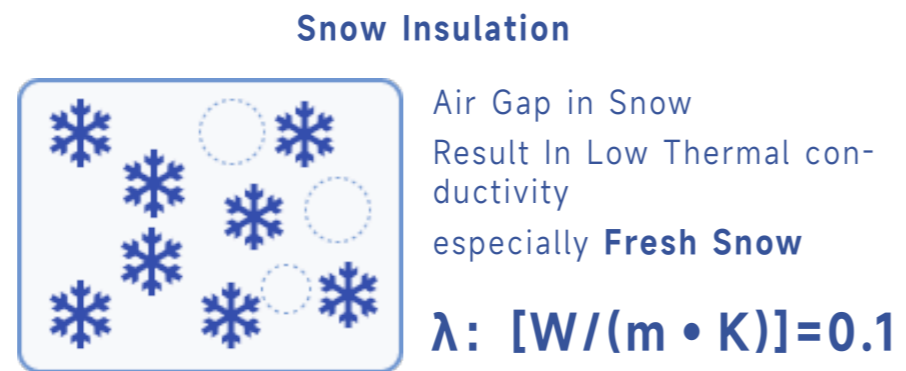
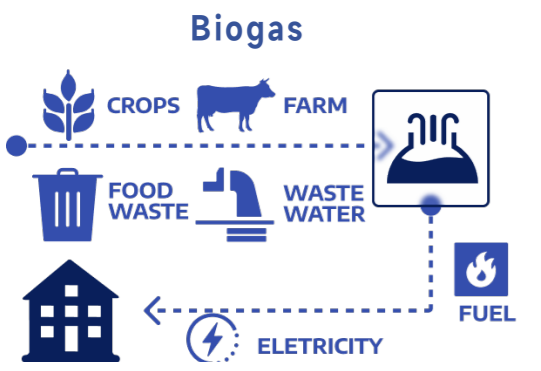
UCLA RESEARCH



it was observed that the snow layer is charged **positively** at temperatures of -5°C and -10°C and **negatively** at -15°C and -20°C .

$0.2\text{mW}/\text{m}^2$
power density
8V
open circuit voltage
 $40\mu\text{A}/\text{m}^2$
current density

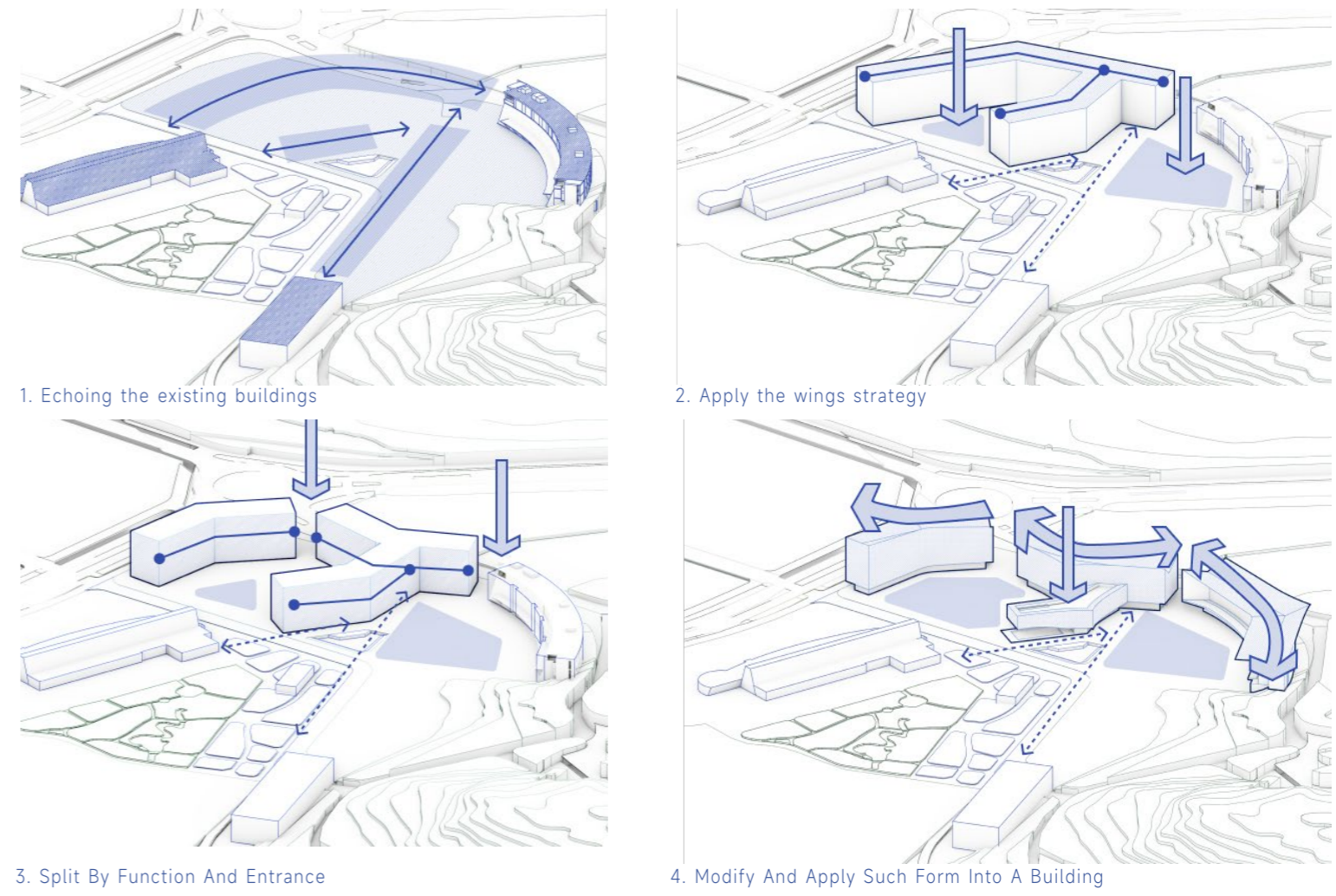
Main Technology(3):
Snow Insulation & Biogas



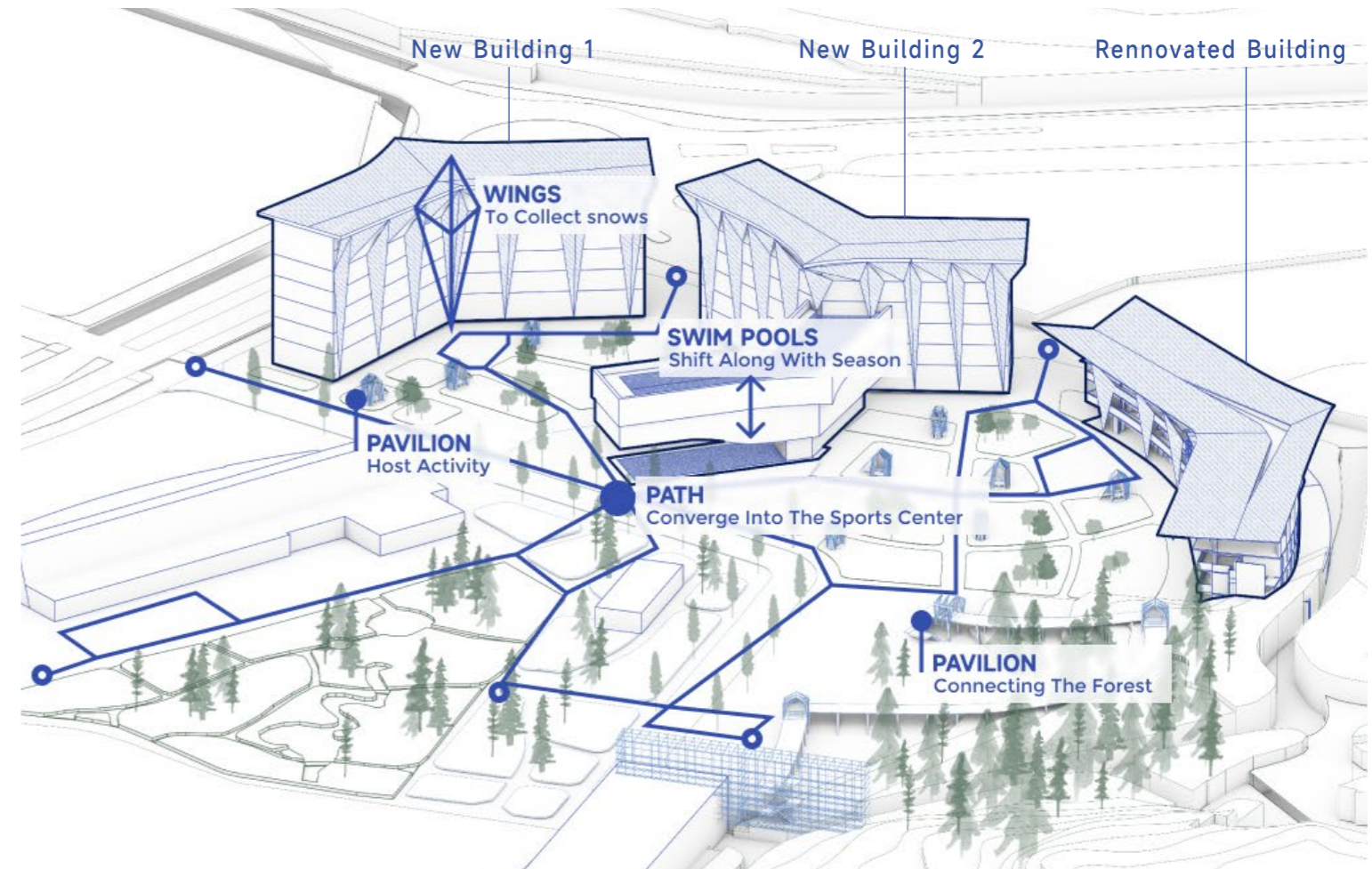
Energy Result:

<p>Snow Friction Unit Efficiency: $0.2\text{ mW}/\text{m}^2$</p> <p>All Building 2.3 km^2</p> <p>Everyday Production $0.4\text{ kW}\cdot\text{h}$</p> <p>Fullfill 1-hour Produce for 40 Street Light</p>	<p>Temperature Difference 500 m^2 70°C</p> <p>Every Transition Production $3017\text{ kW}\cdot\text{h}$</p> <p>This way would cover 48.6% Electricity Supply all year round</p>	<p>Biogas Efficiency: $21820\text{ kJ}/\text{m}^3$ add up to about 300 m^3</p> <p>The Device could power $1.8\text{--}2.6\text{ kW}\cdot\text{h}/\text{m}^3$ in all Produce: 6546000 kJ</p>	<p>Vertical Greening Carbon Sink Factor: $2.58\text{ kg}/\text{m}^2$</p> <p>$1200\text{ m}^2$ Facade&Device absorb 3.09 tCO_2 on a yearly basis</p>
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Overall Strategie:
Cohere with the Environment



Building System:



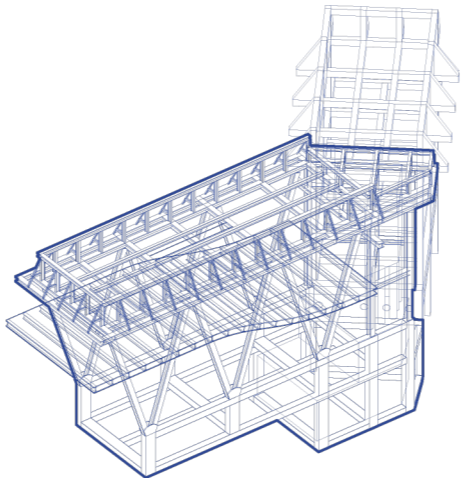
Swim Part

This section exists as the most special part of the whole program, which carries the functions of fitness sports such as swimming, a ballroom, and a sauna. What's more, the distribution of functions changes with the seasons, and the temperature difference between the snow and the residual heat from the sauna is cleverly utilized to generate electricity.

	Summer	Winter
Pool A	Stage	Swim
Pool B	Swim	Snow

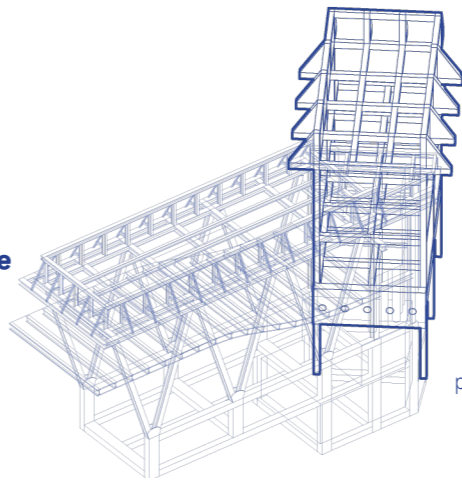
Steel Structure

The steel portion of the structure is able to carry the two pool spaces more efficiently and keep the ground floor open. These supporting structures are located on reinforced concrete foundations.



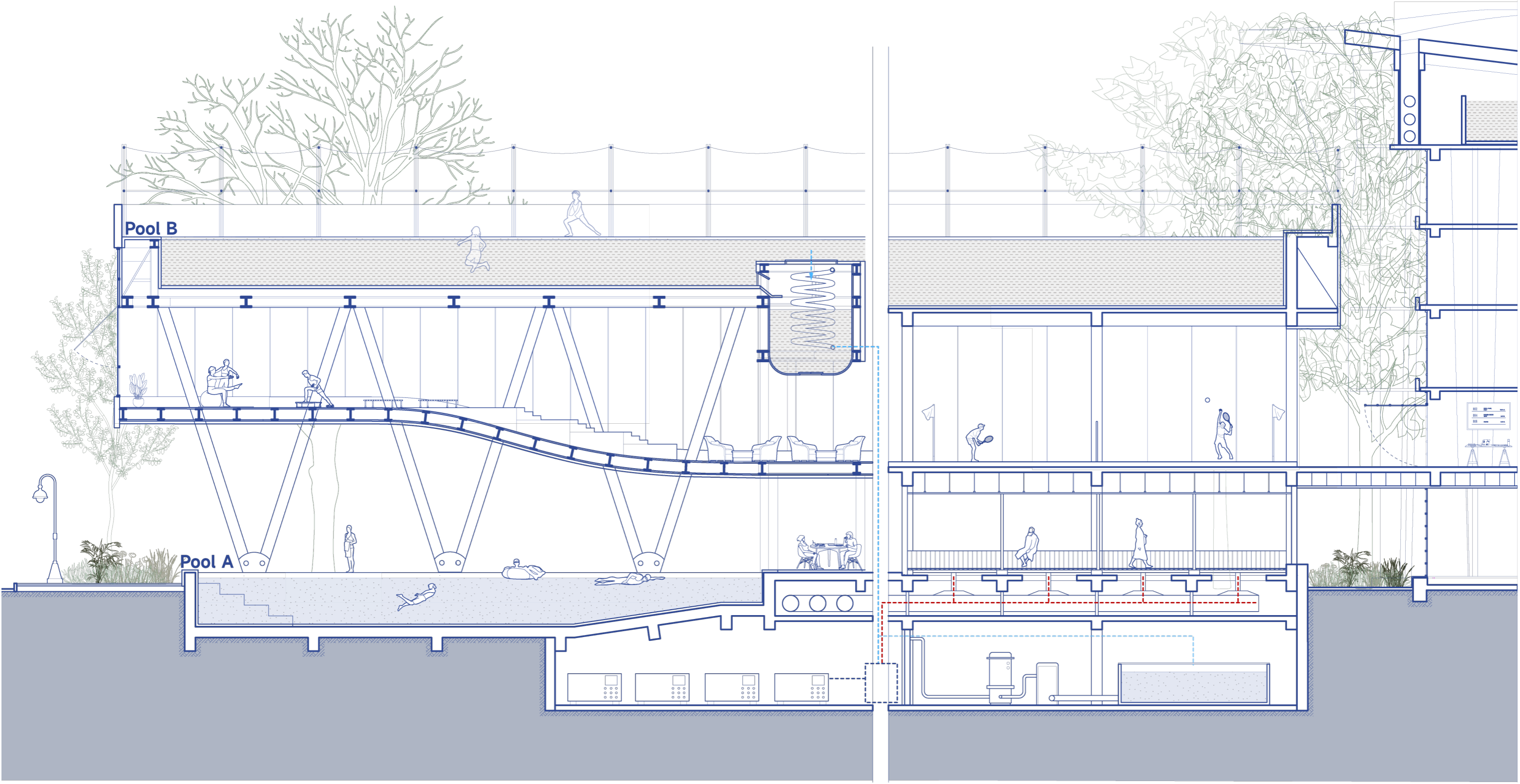
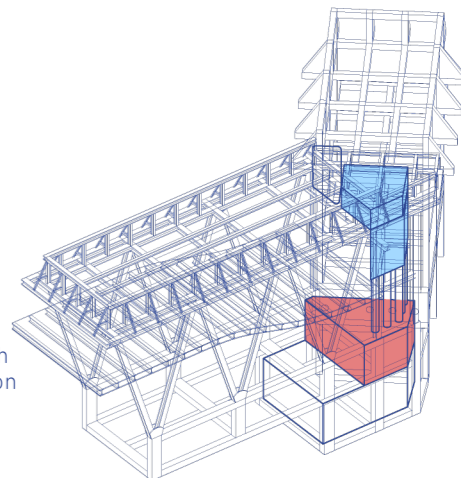
Concrete Structure

The concrete structure is attached to the main body of the new building and does not change with the seasons, the function is more fixed.

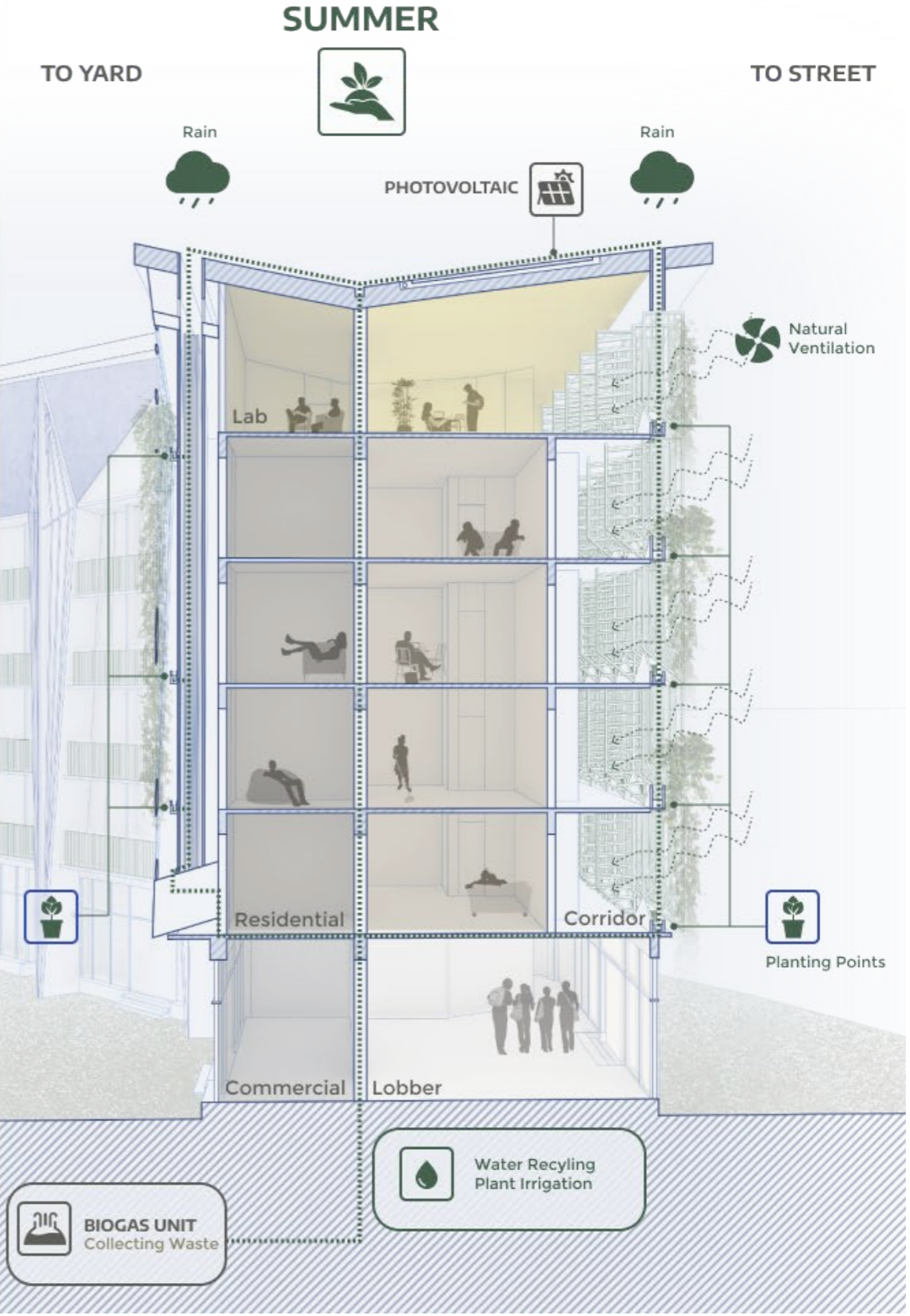
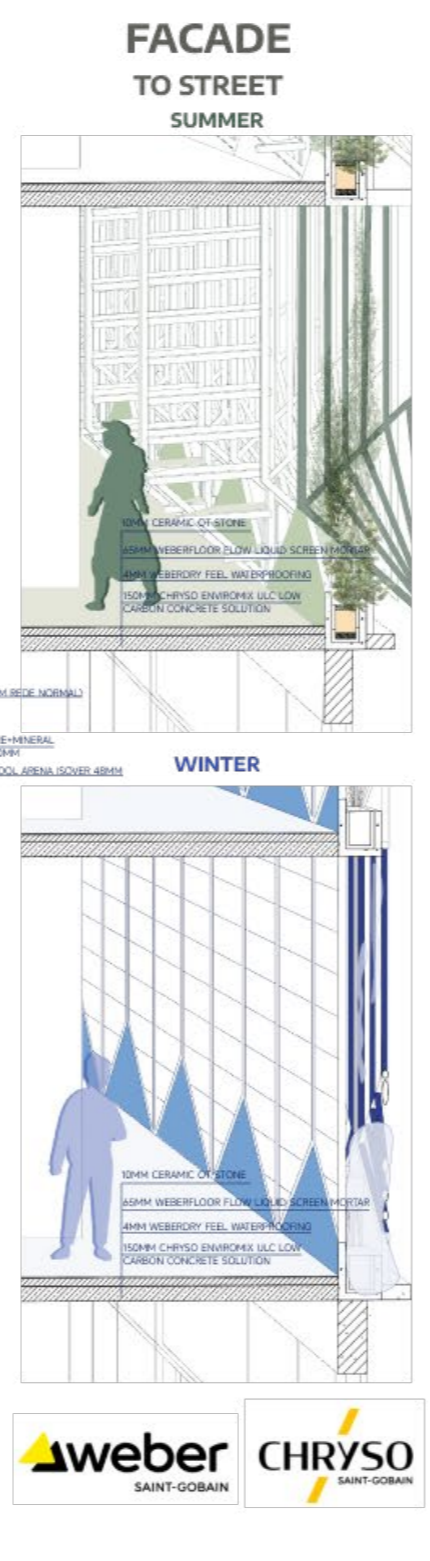
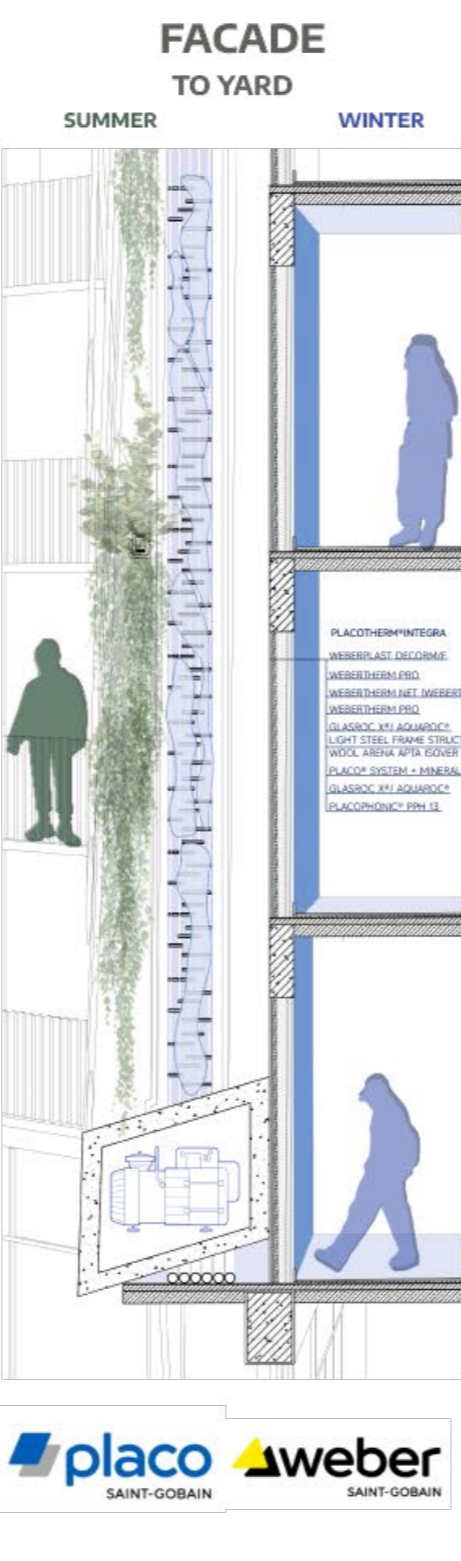
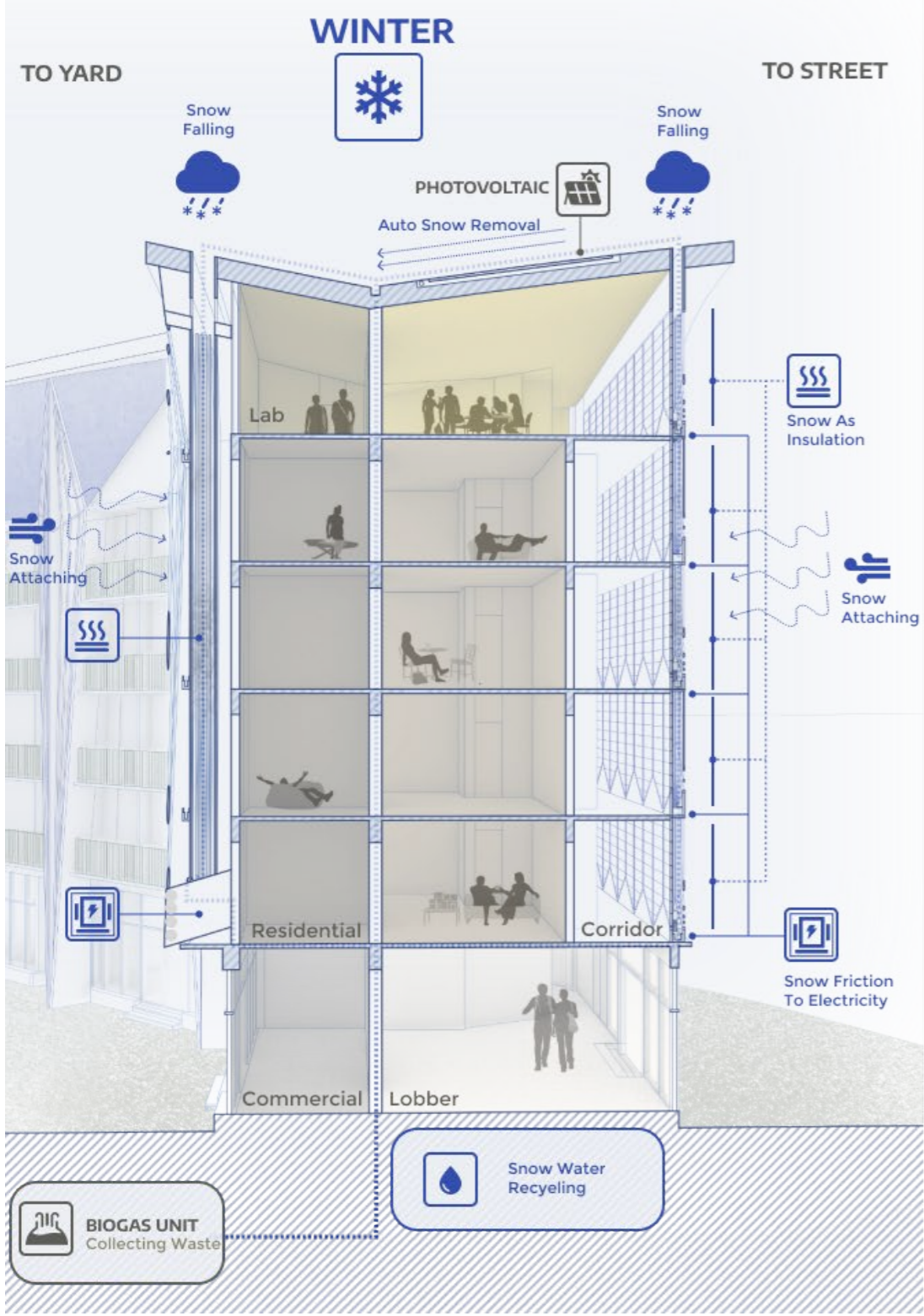
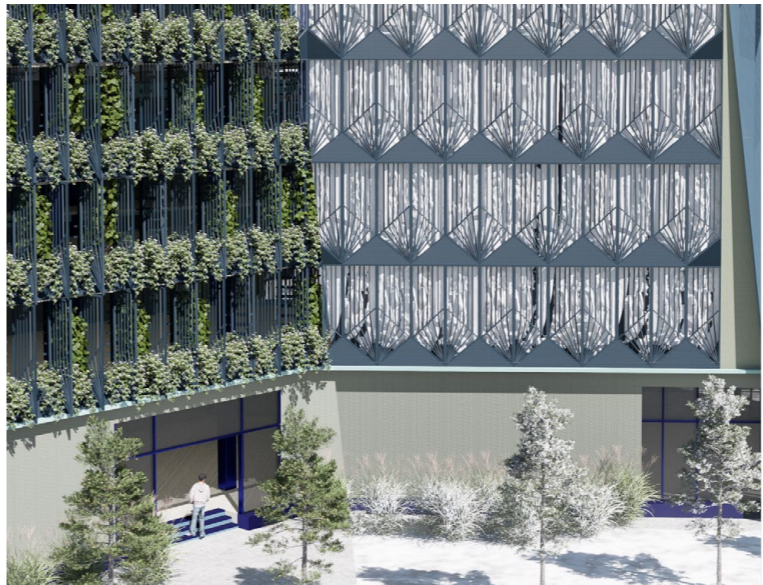
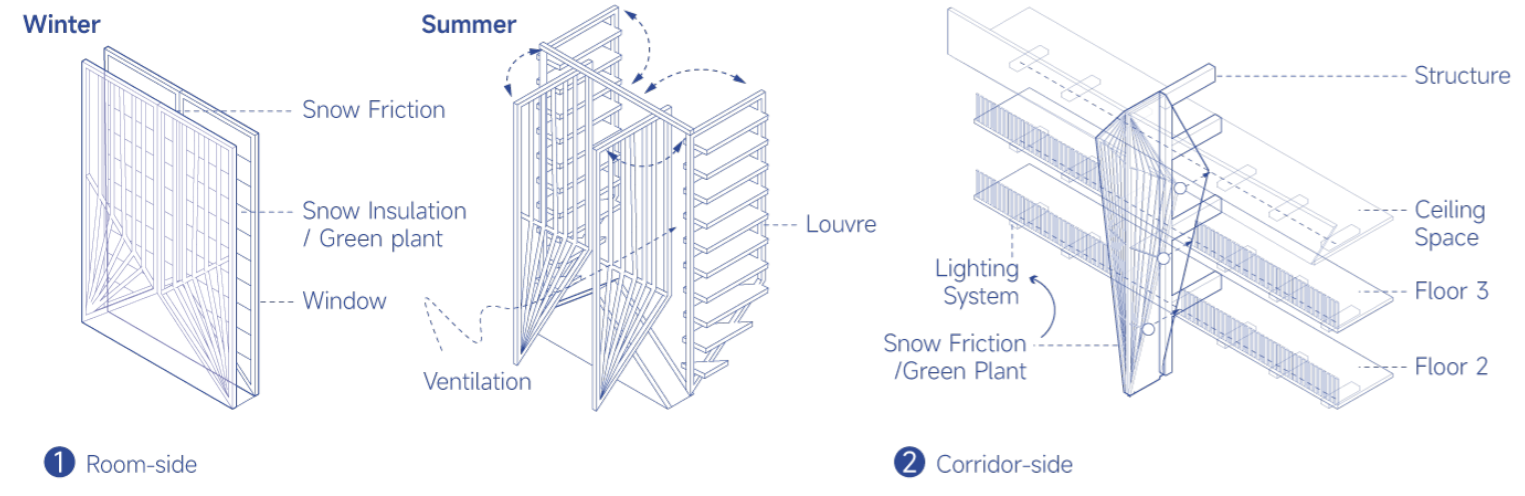


Generation

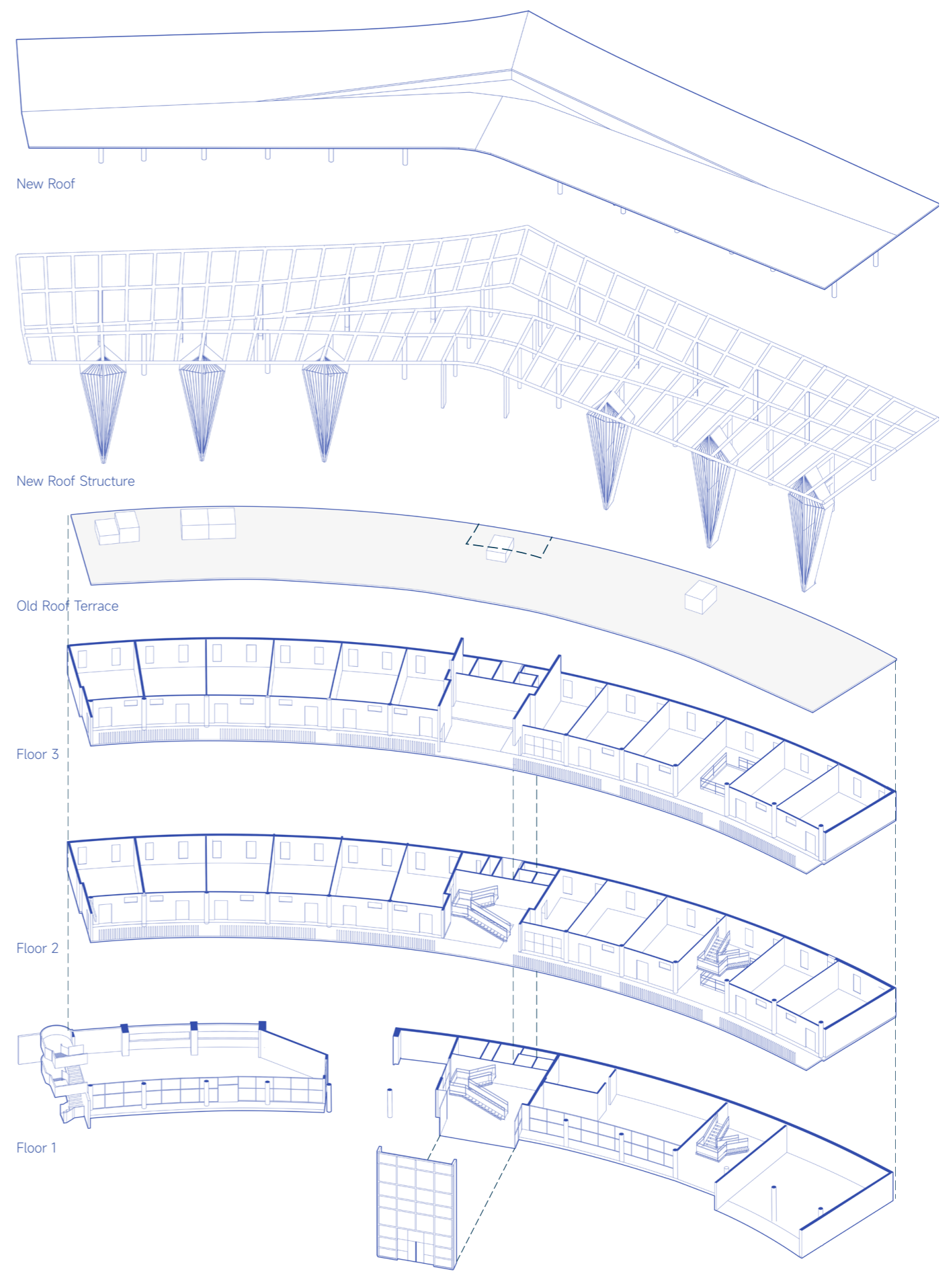
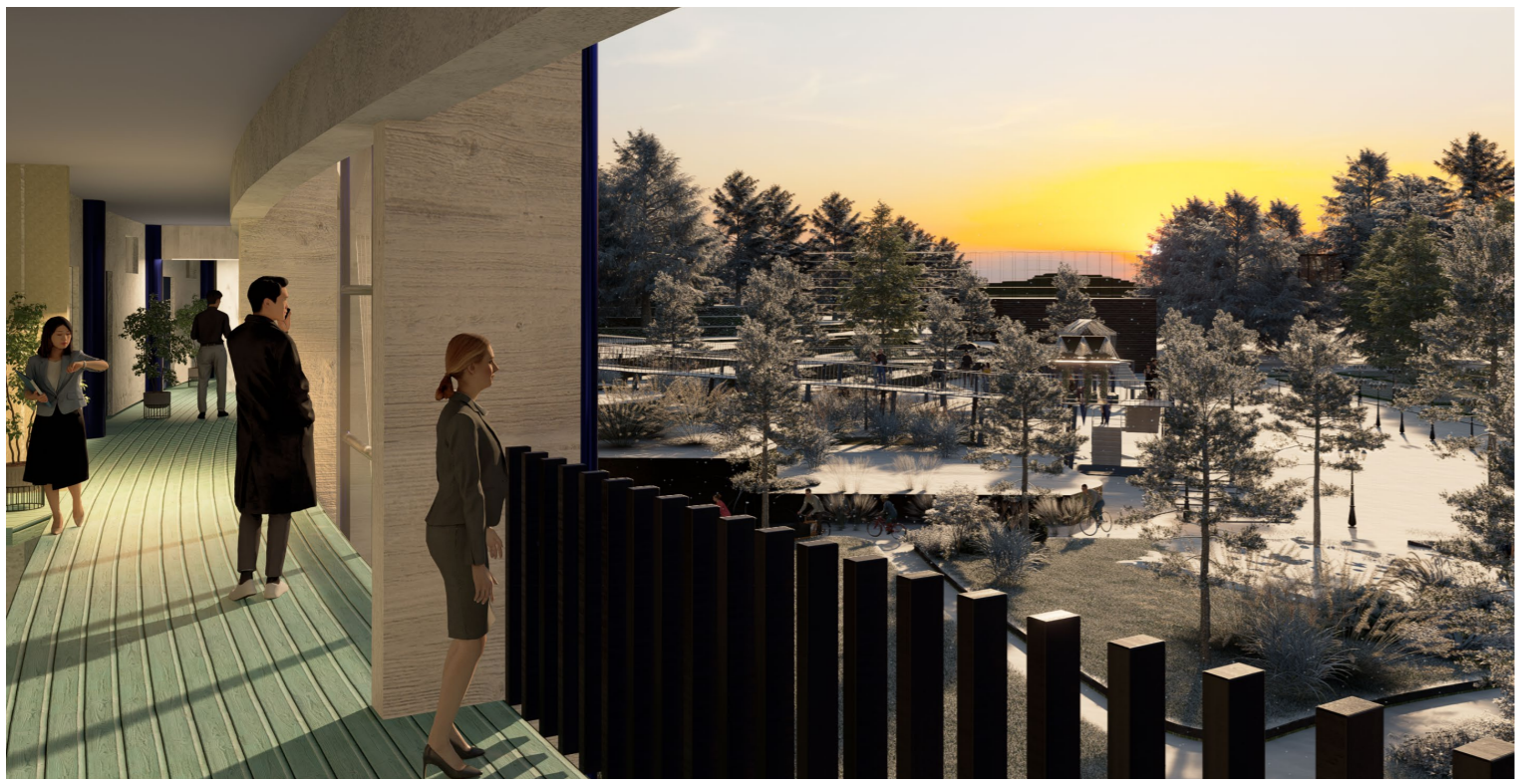
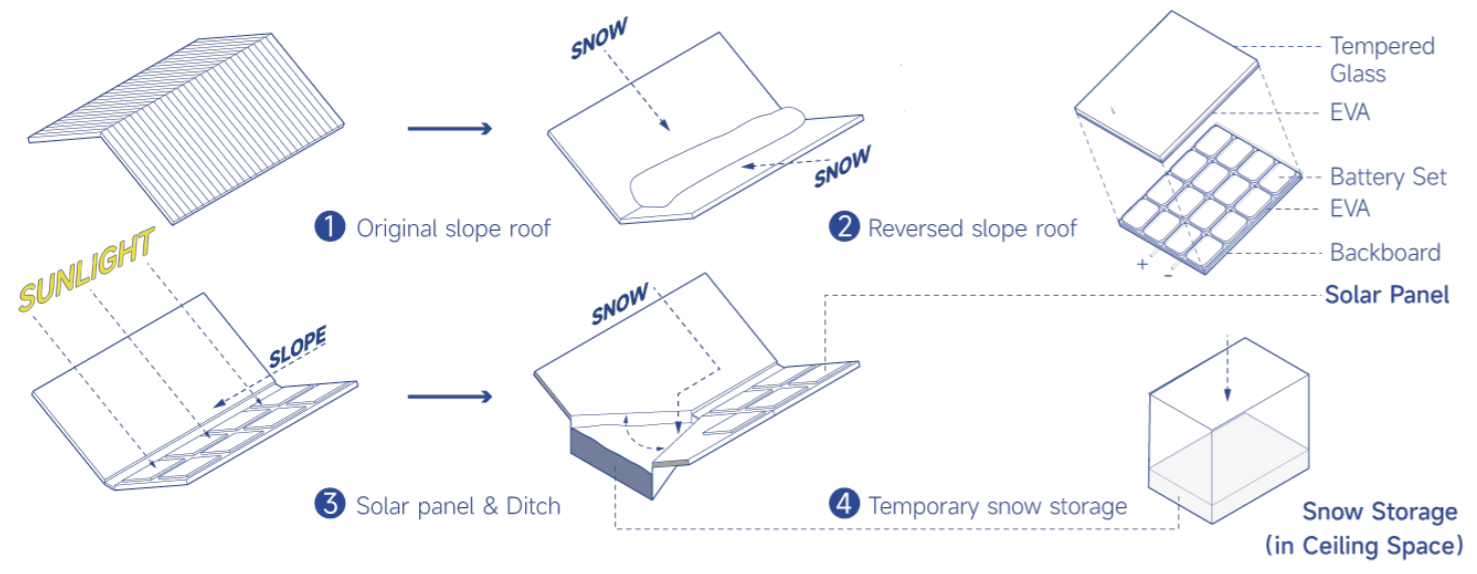
The connection between two parts is provided with pipes for the transportation of snow cooling and the collection of waste heat from the sauna.



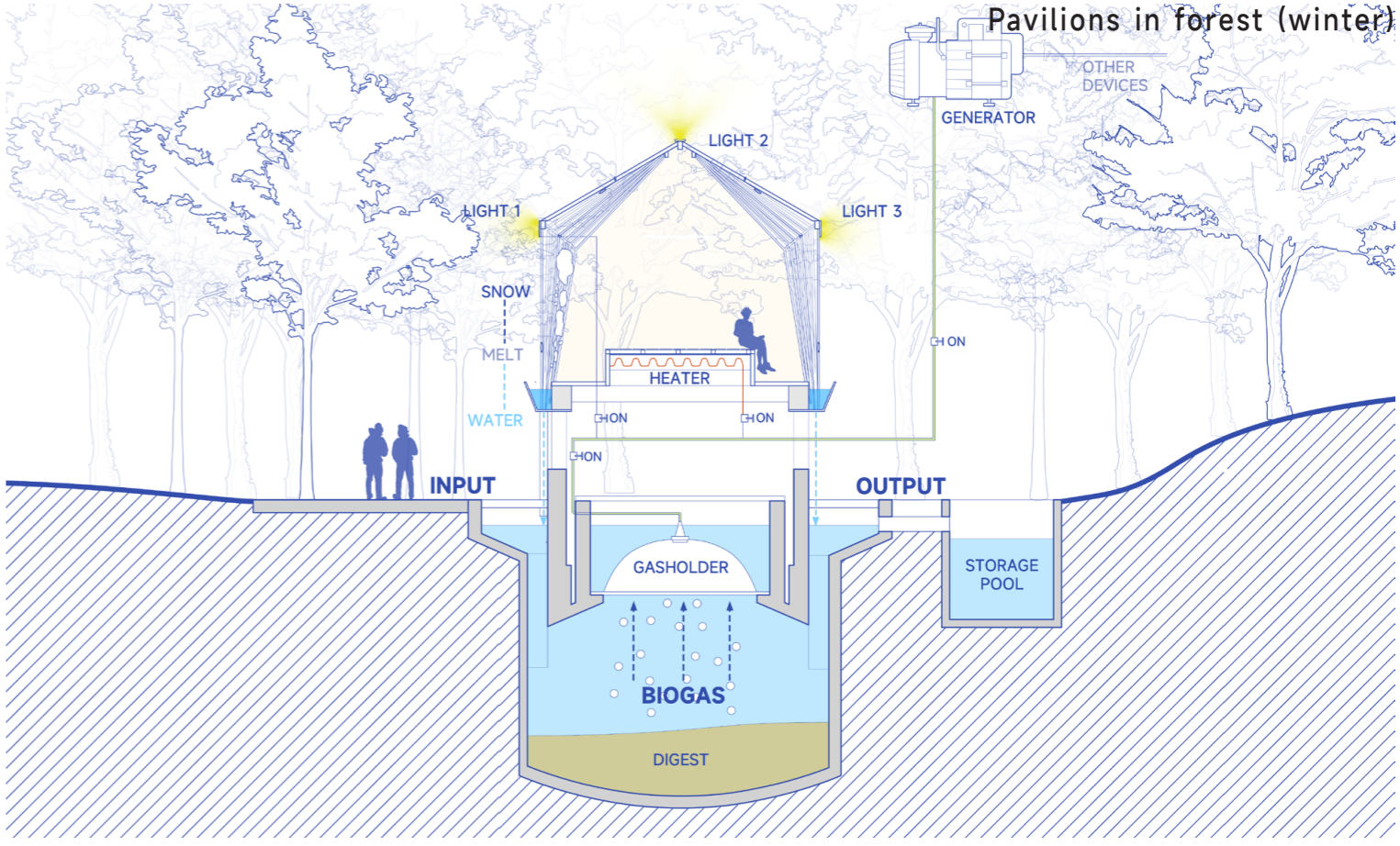
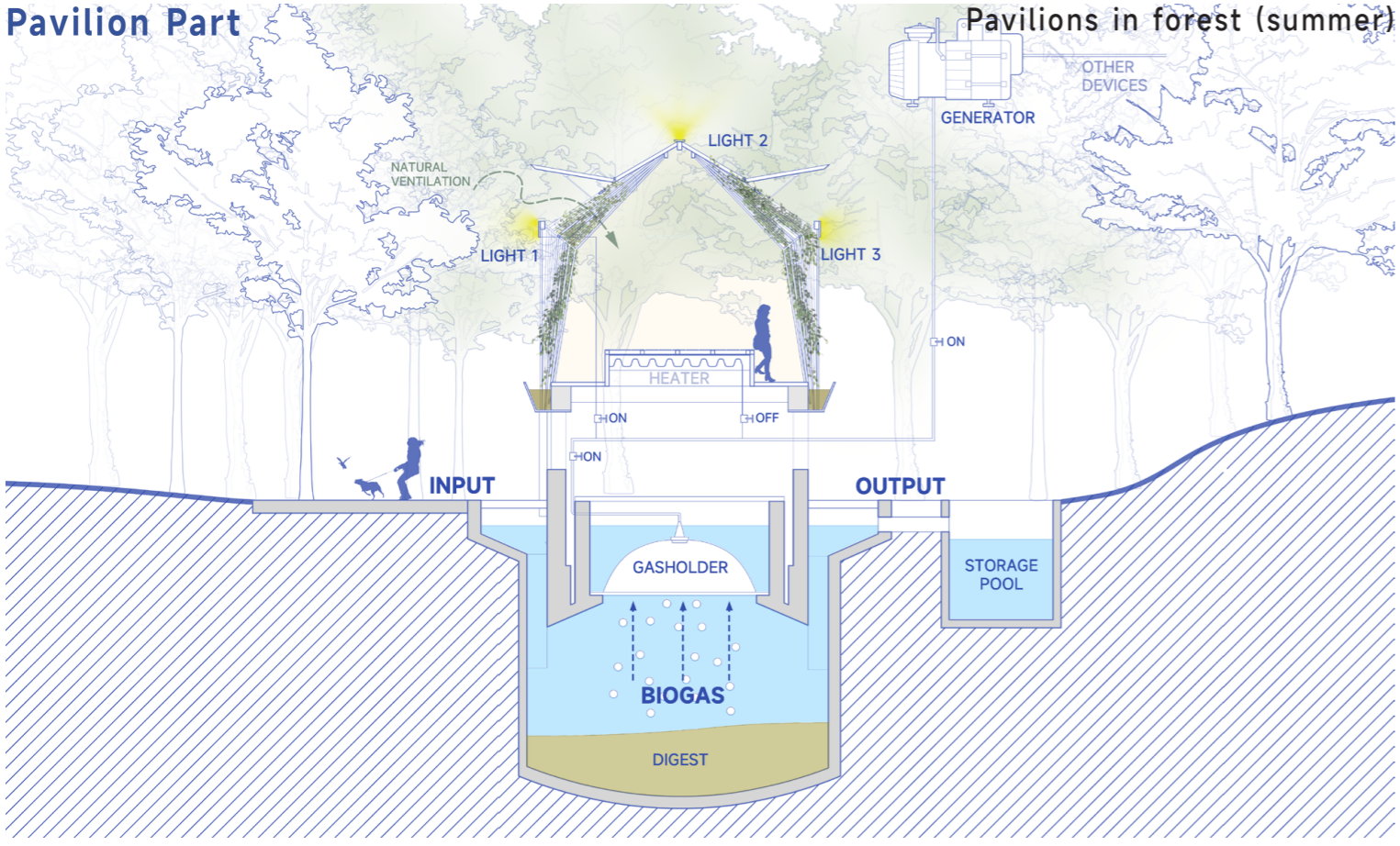
New Building Part



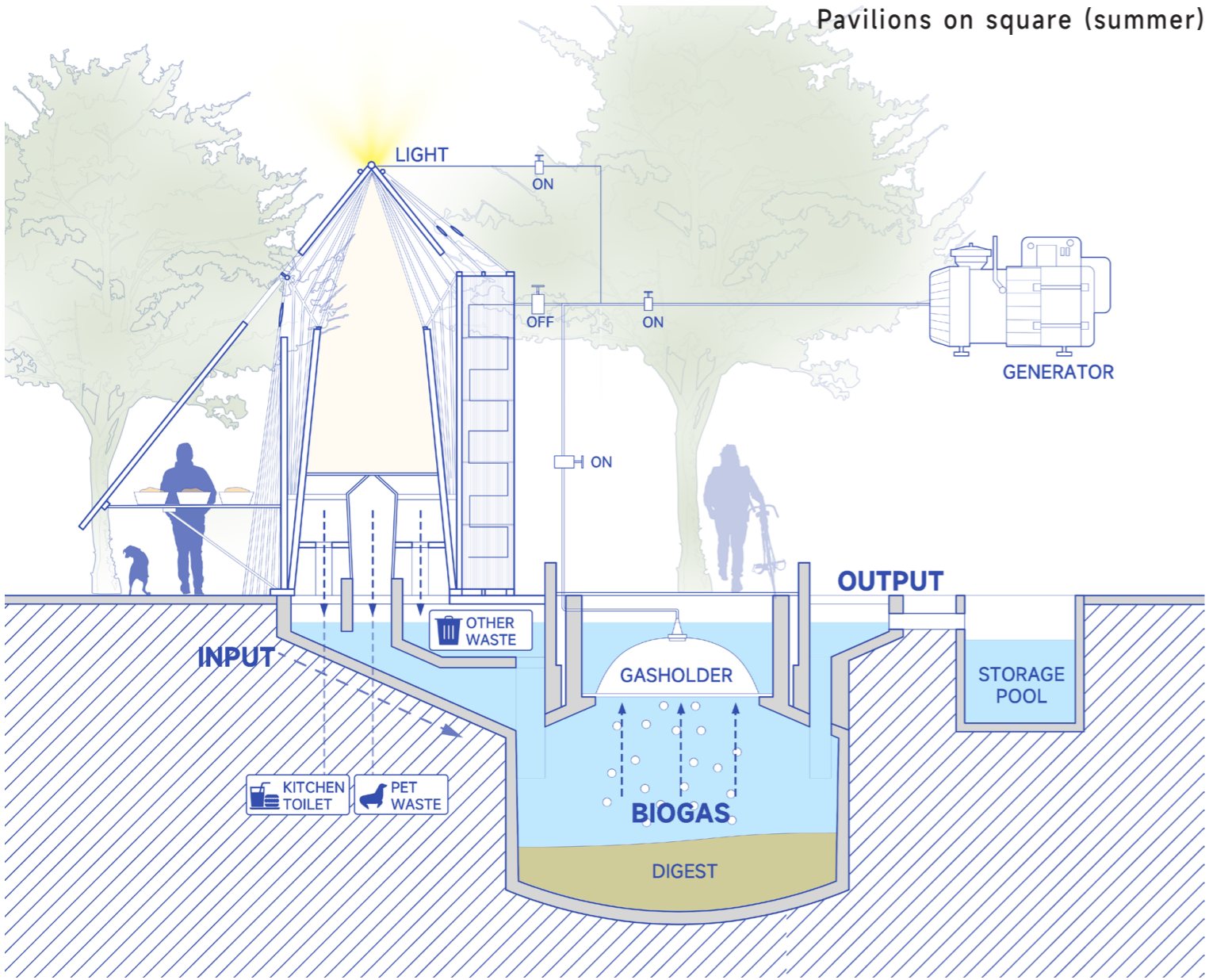
Renovation Part



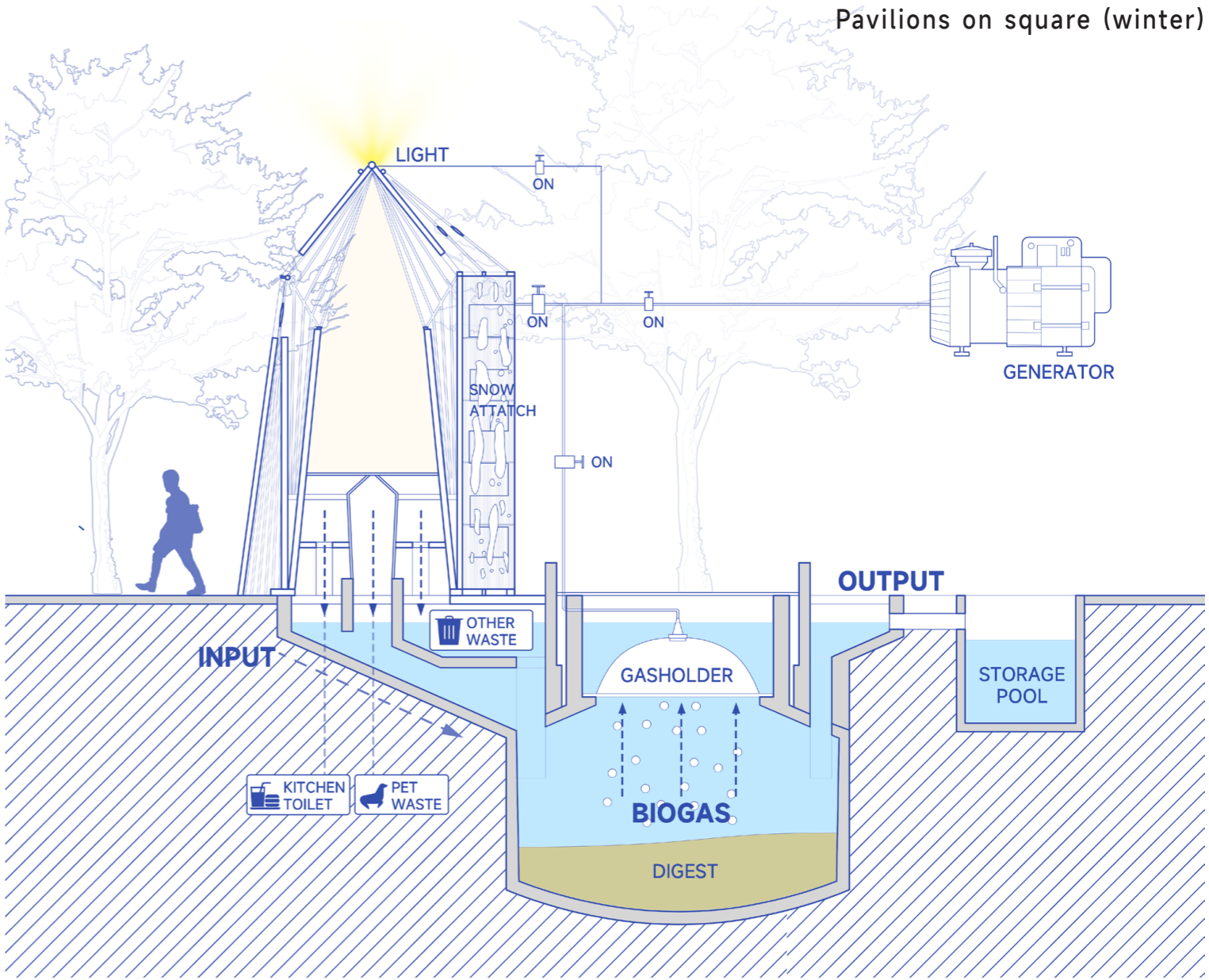
Pavilion Part



Pavilions on square (summer)



Pavilions on square (winter)



Site: Qingdao, China
Author: Zeyi Cheng
Date: 7.2024 - 9.2024

Data Source :

Gao, Feng & Yamane, Shu & Zhao, Chong & Kadono, Yukihiro. (2022). SPATIAL CHARACTERISTIC OF LIYUAN BUILDING AND ITS TRANSFORMATION IN DABAODAO AREA, QINGDAO, CHINA. Journal of Architecture and Planning (Transactions of AIJ). Vol. 87. 337-348. 10.3130/aija.87.337.

RECREATE INFOMALITY

Rethinking Urban Renewal Based on Illegal Construction

More than a decade ago, a remarkable architectural exhibition titled **Reading Illegal Architecture** was held in Taiwan by a unique practitioner, Hsieh Ying-Chun, and Wang Shu, who had yet to receive the Pritzker Prize at the time. The exhibition caused a significant stir. Looking back at this unconventional event today, it inspires deeper reflections: over the past decade, China's approach to urban renewal has often involved large-scale demolition and reconstruction, resulting in the **loss of urban character**. Small but ingenious illegal buildings, as well as the voices of longtime residents, continue to be neglected.

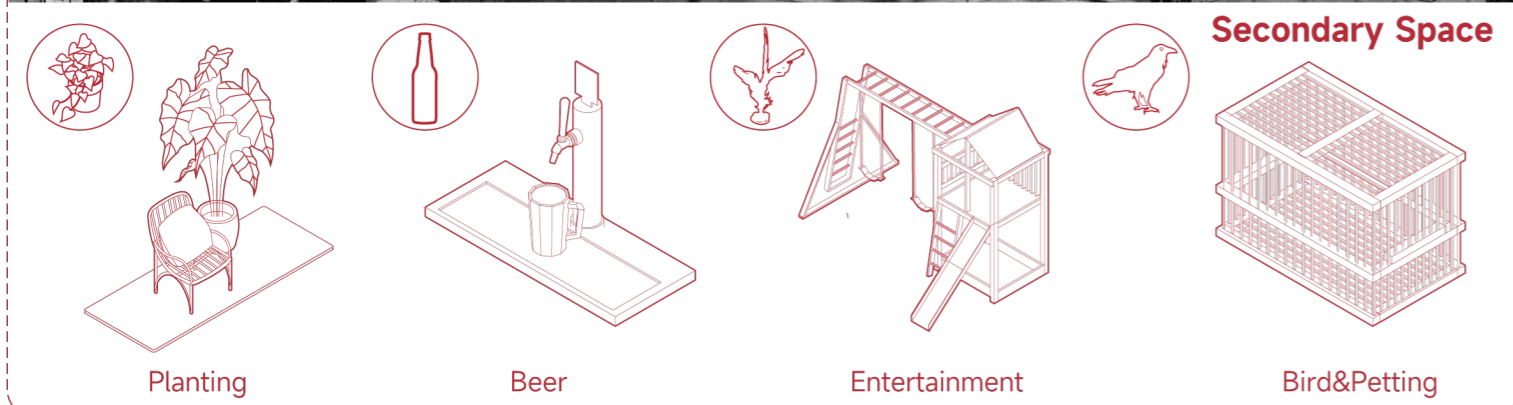
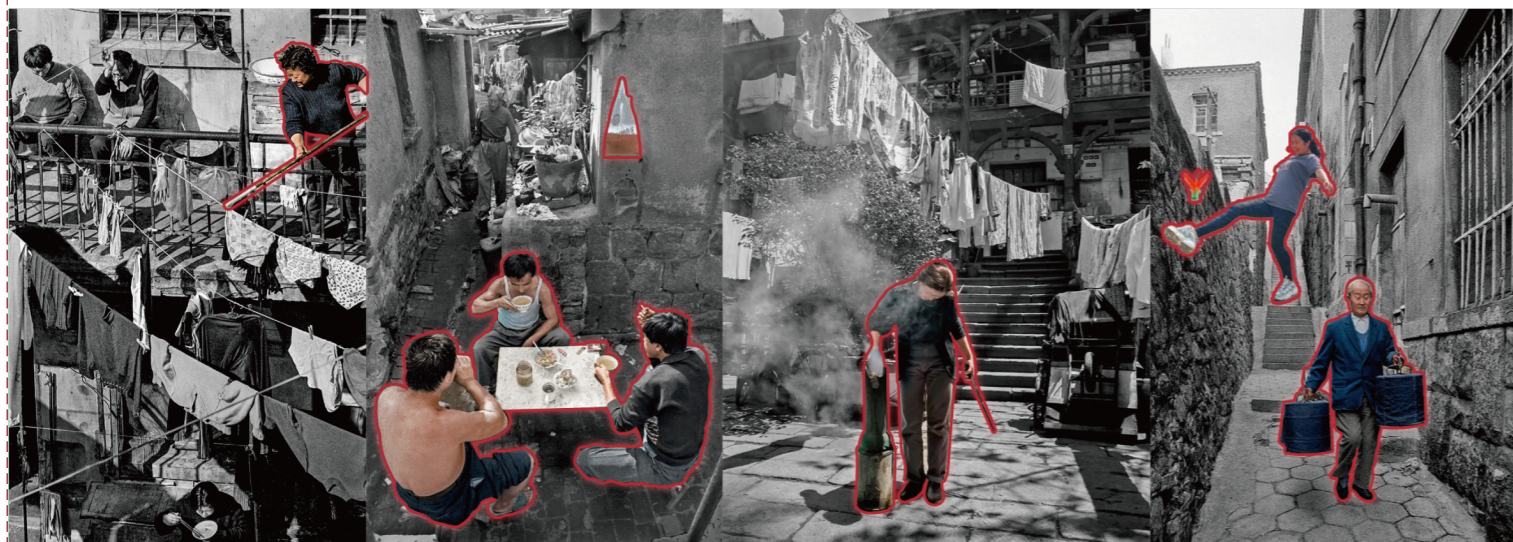
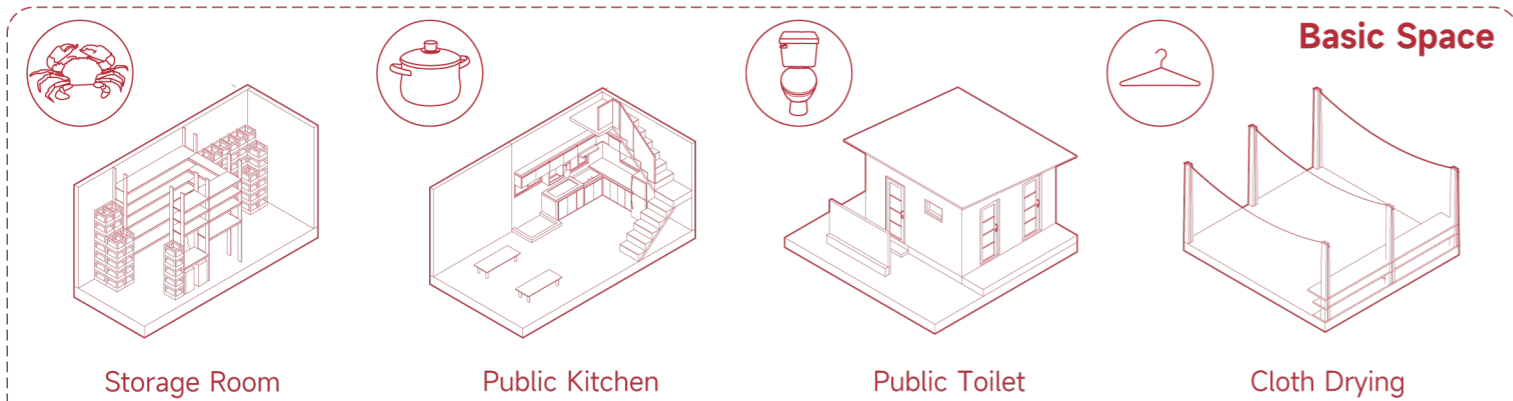
Qingdao serves as an example of a city that has taken missteps in its urban renewal process. However, its most distinctive architectural form—**Li Yuan**—has fortunately been preserved through history. Yet, after relocating most of its original residents, the utilization of these courtyards remains minimal, as they have primarily been turned into tourist attractions. This project aims to explore the phenomenon of **Additional Room** in Li Yuan buildings, revisiting original **living patterns** and the needs of residents. It seeks to propose future designs that reintegrate residents into Li Yuan spaces.



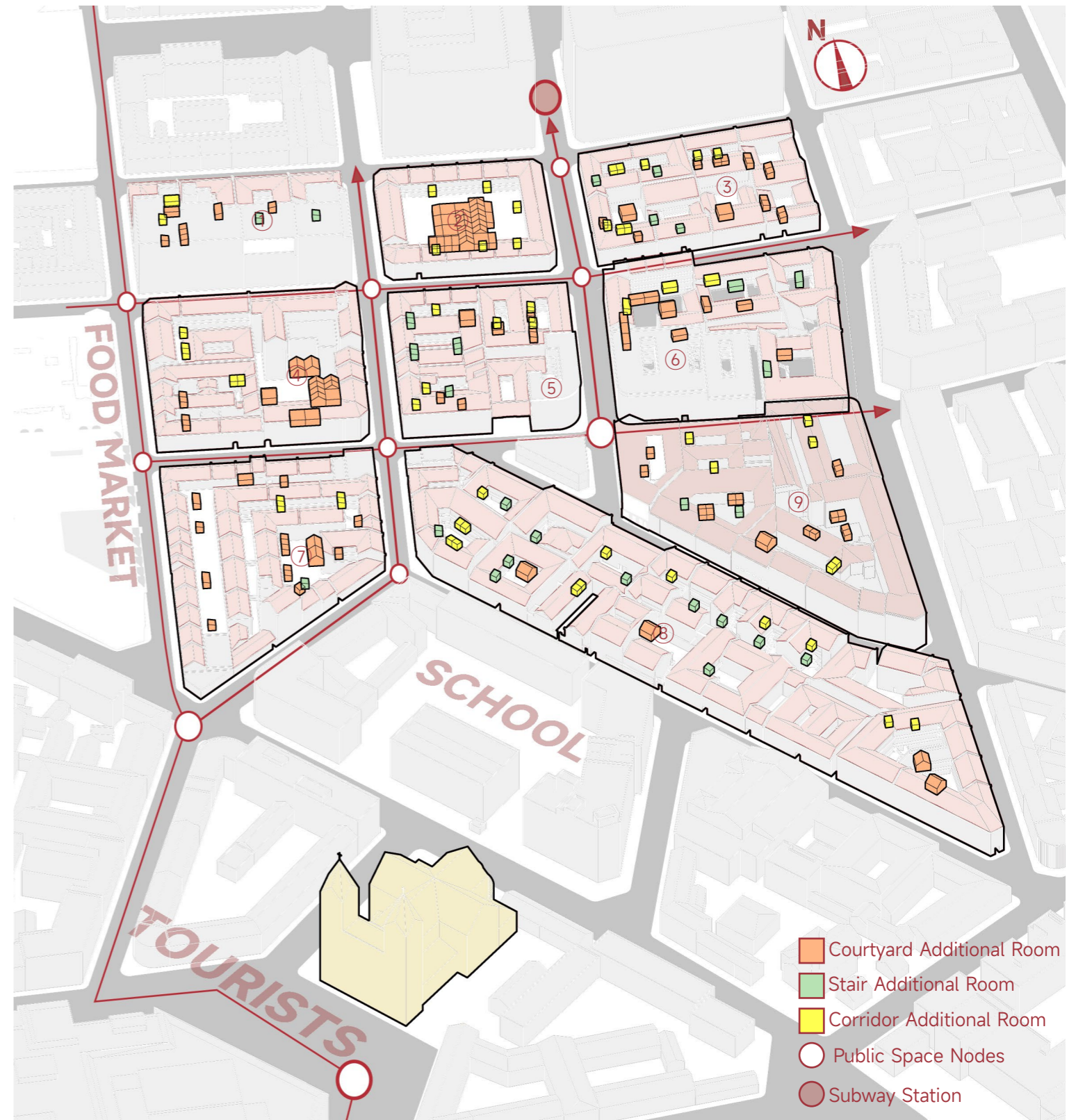
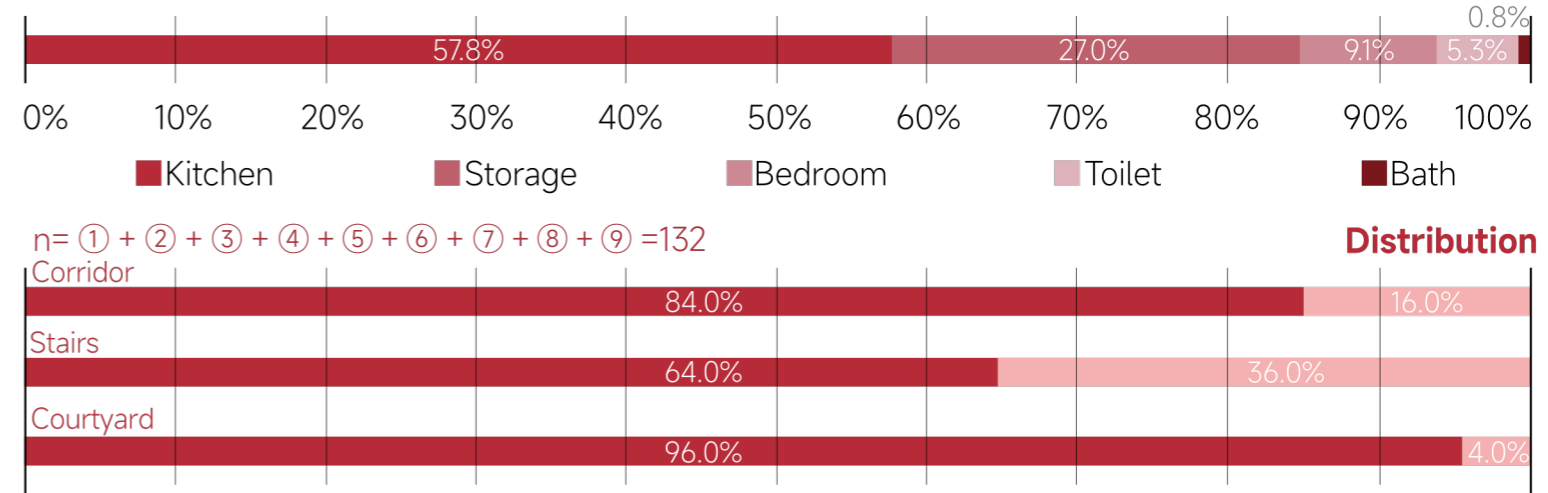
Objects in Liyuan (past)



Life in Liyuan (past)

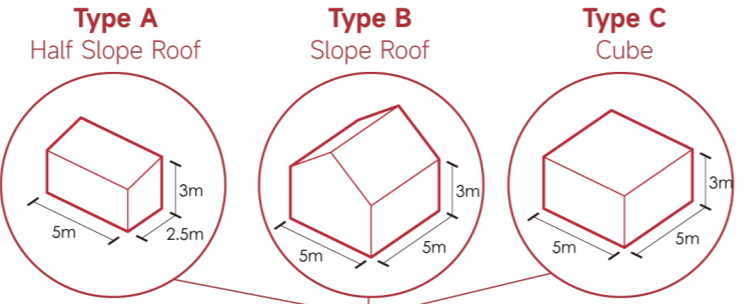


Distribution of 'Additional Room'



Example - ② Guangxingli

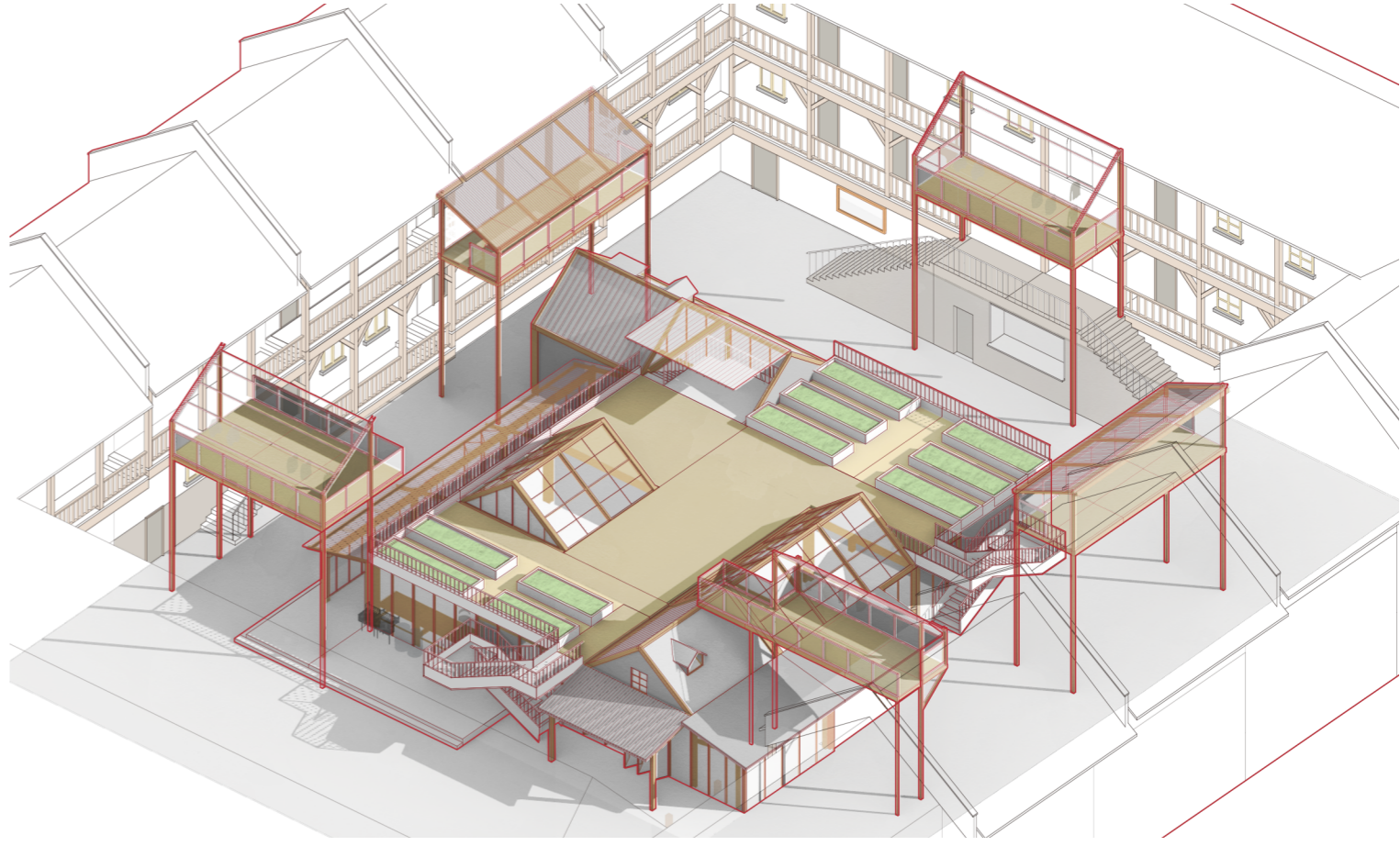
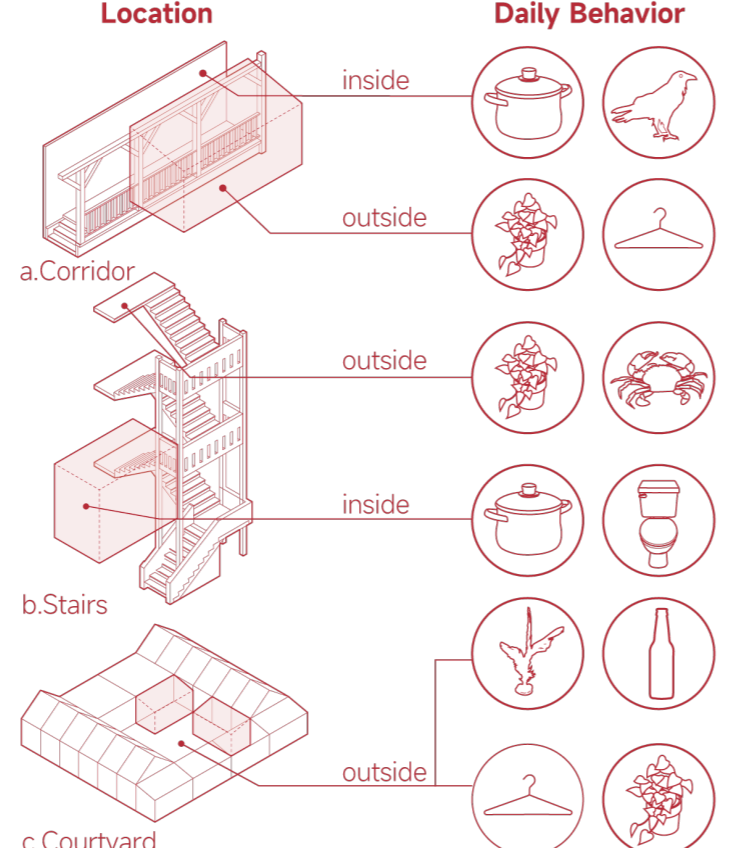
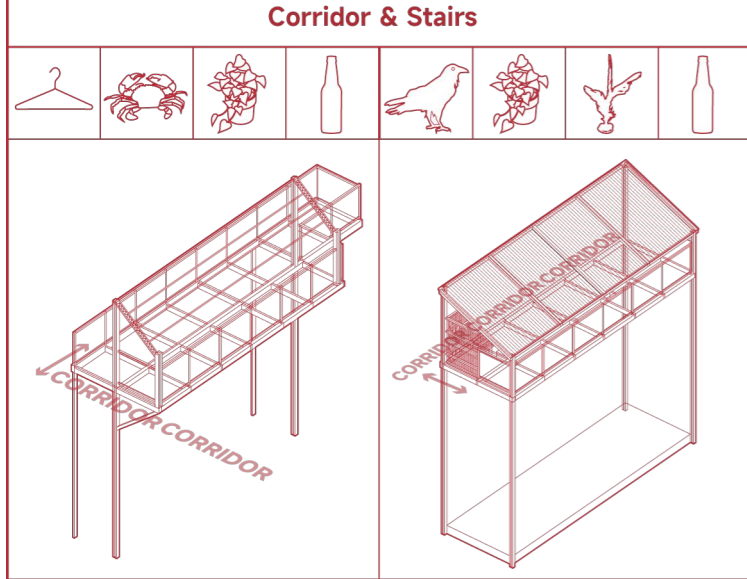
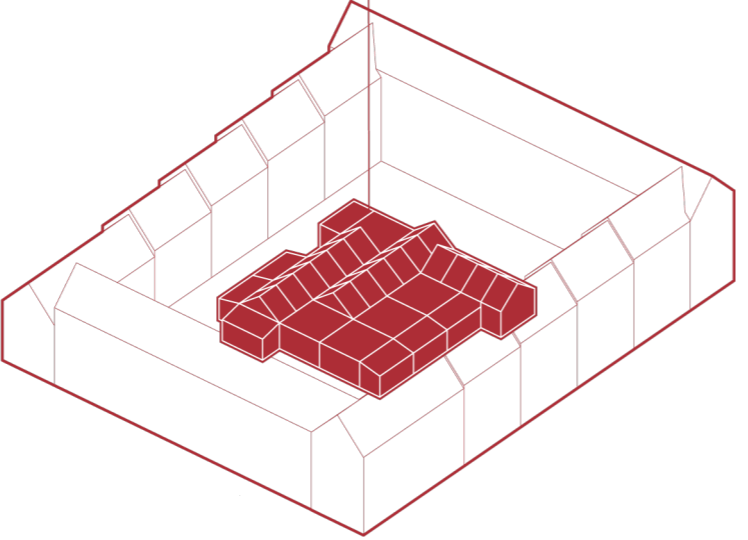
The authors attempted to categorize all the buildings in the entire Liyuan according to their **plan form** in order to generate different renewal strategies. Among the **three plan types**, the authors mainly emphasize one type of Liyuan buildings with more complete courtyards and extract **Guangxingli** as an example for renewal design.



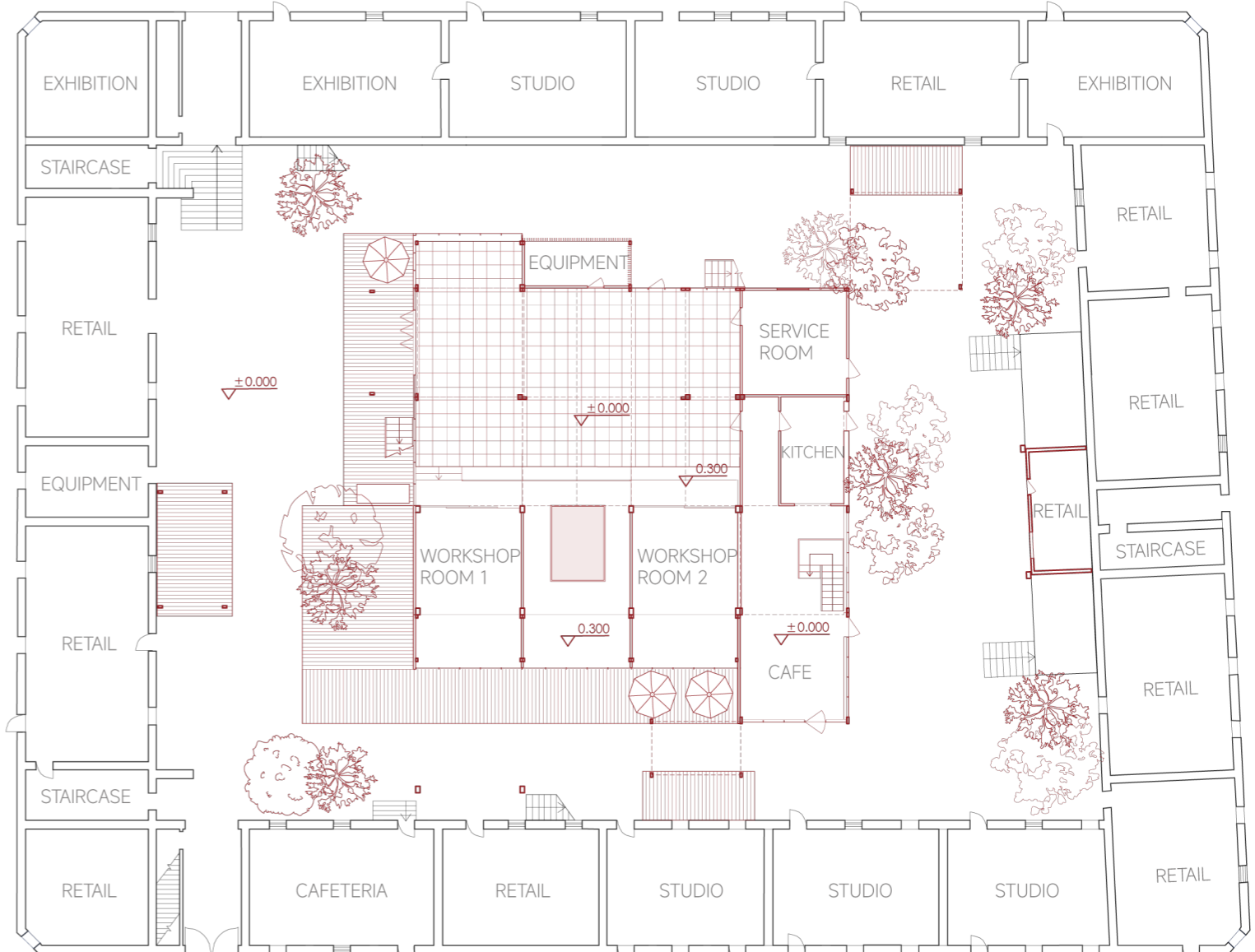
'Additional Room' implant Strategy

The authors attempted to categorize all the buildings in the entire Liyuan according to their **plan form** in order to generate different renewal strategies. Among the **three plan types**, the authors mainly emphasize one t

Courtyard			
	Type A	Type B	Type C
Light House			
Pavilion			
Multi-Function			
Device			



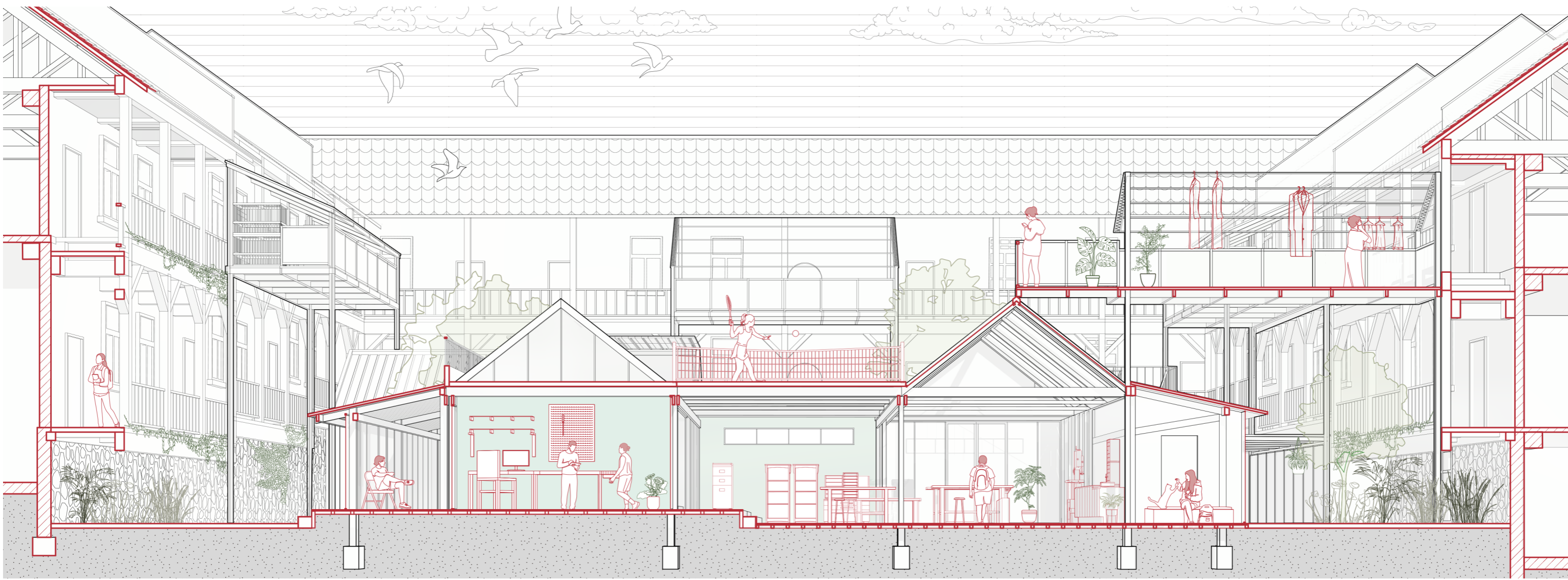
1st Floor Plan of Guangxingli



View from Extended Balcony



View from Workshop



Other Works

Interdisciplinary Exploration



1. The Forgotten Land

Type: Video
Tools: LumaAI UE5 Blender
Content:

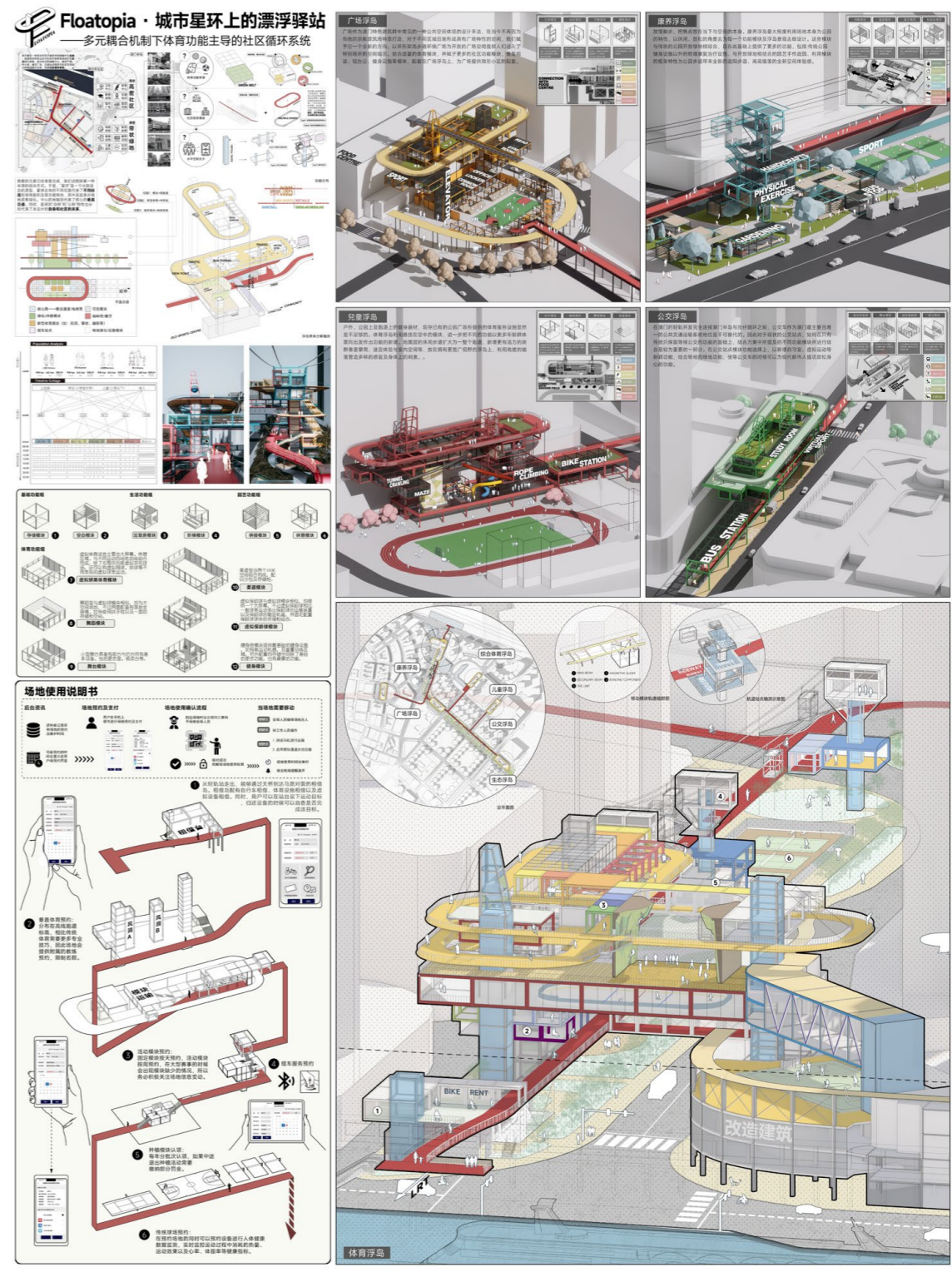
Trying to find things that have been 'forgotten' in the rapid urbanisation, we went into the corners of the Lilong in Shanghai to find the Typology that are out of time and to try to understand the stories behind them.



2. Echo

Type: Video
Tools: StableDiffusion Midjourney
Content:

First create a story line and train the lora model to create the main characters based on the story, and make appropriate adjustments based on random elements generated by the ai, and finally string together a complete film.



3. Floatopia

Type: Architectural Contest Proposal (Urban Design)
Content:

The scheme takes a green axis that originally existed in the city as the main line, with the original sports activity centre and open sports venues as the fulcrum for dispersal, and with the nearby health centres, city squares, primary and secondary schools, rooftop plazas, transport stations and other diversified community spaces for the dispersal of sports functions, to build a community circulation system.