

**RIA RUIXIN
ZHANG
PORTFOLIO**

*University of Pennsylvania
MArch I
Selected Works*

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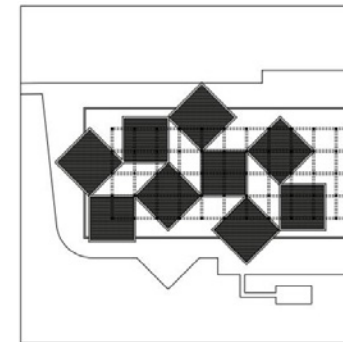
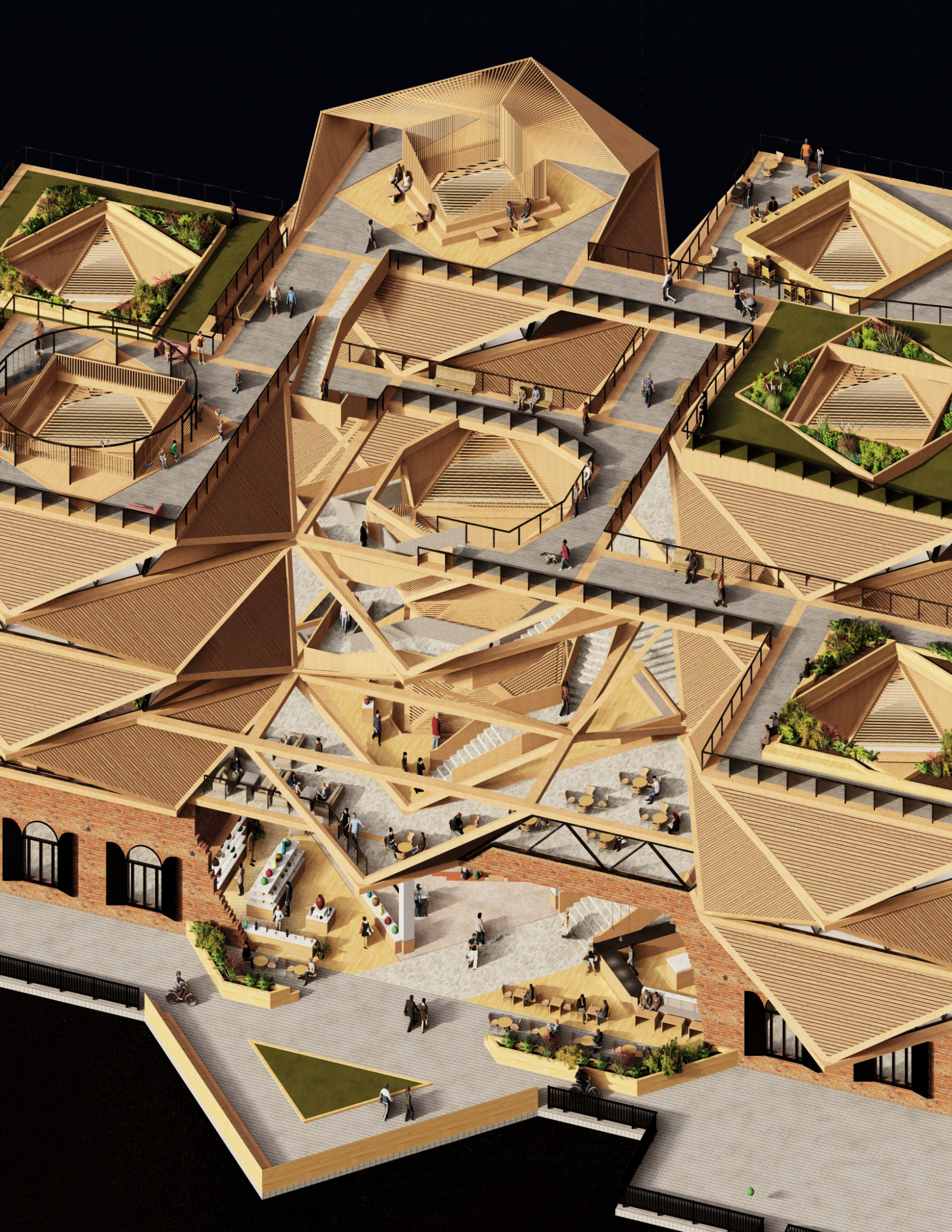
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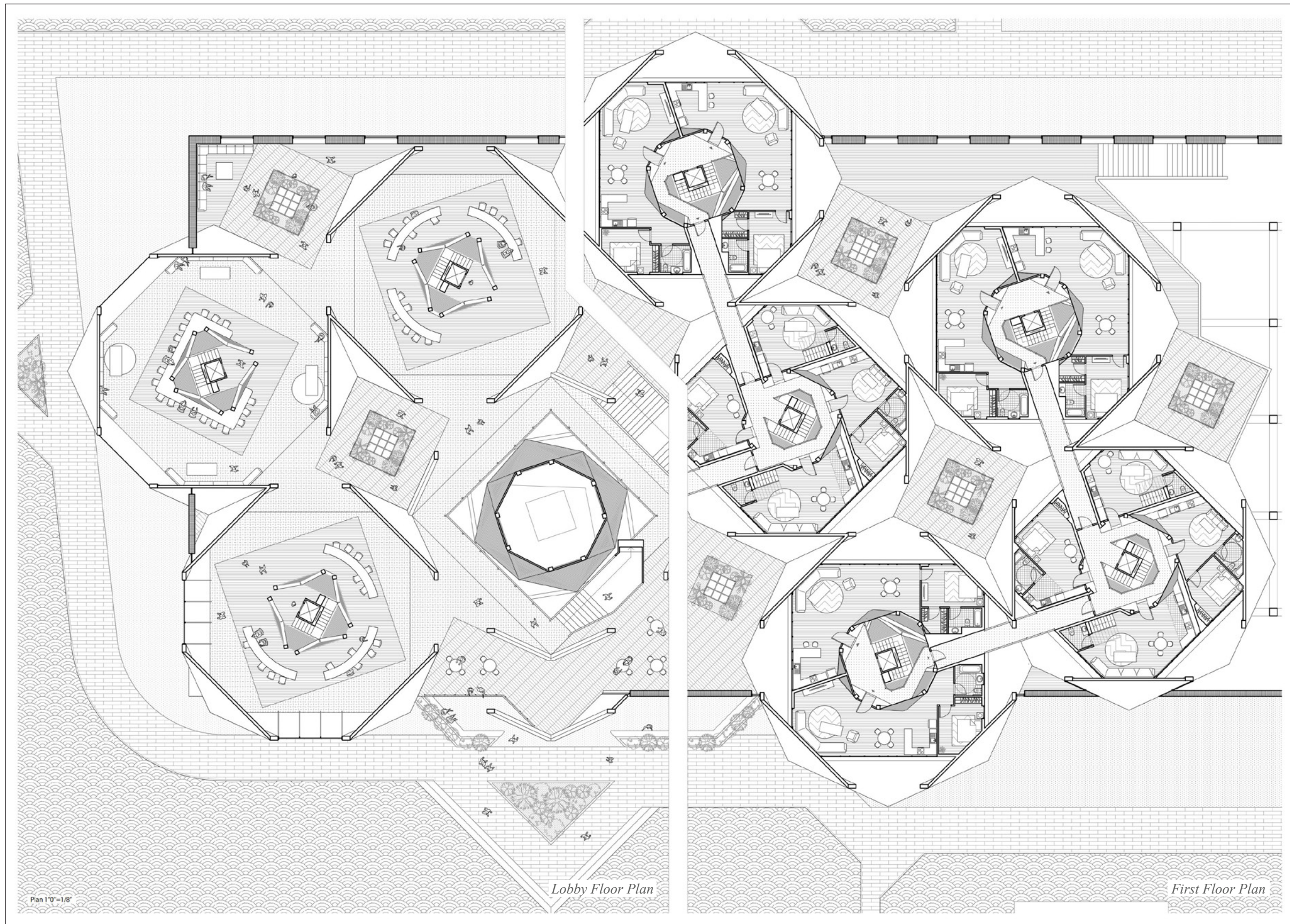
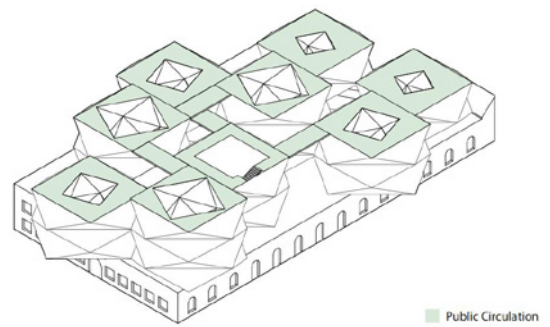
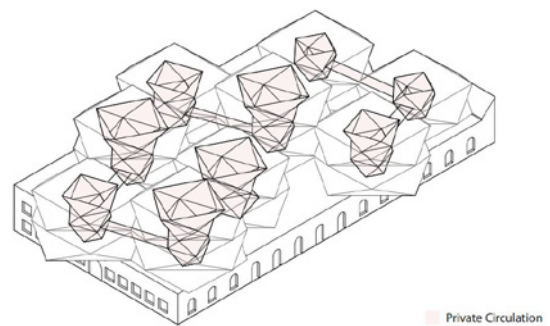
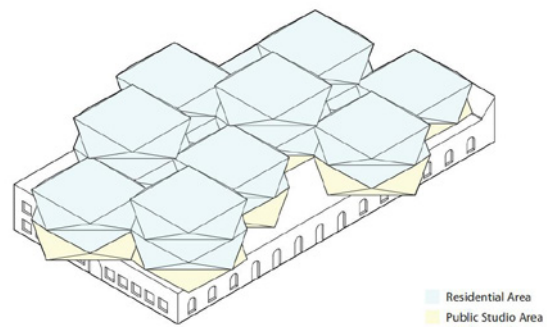
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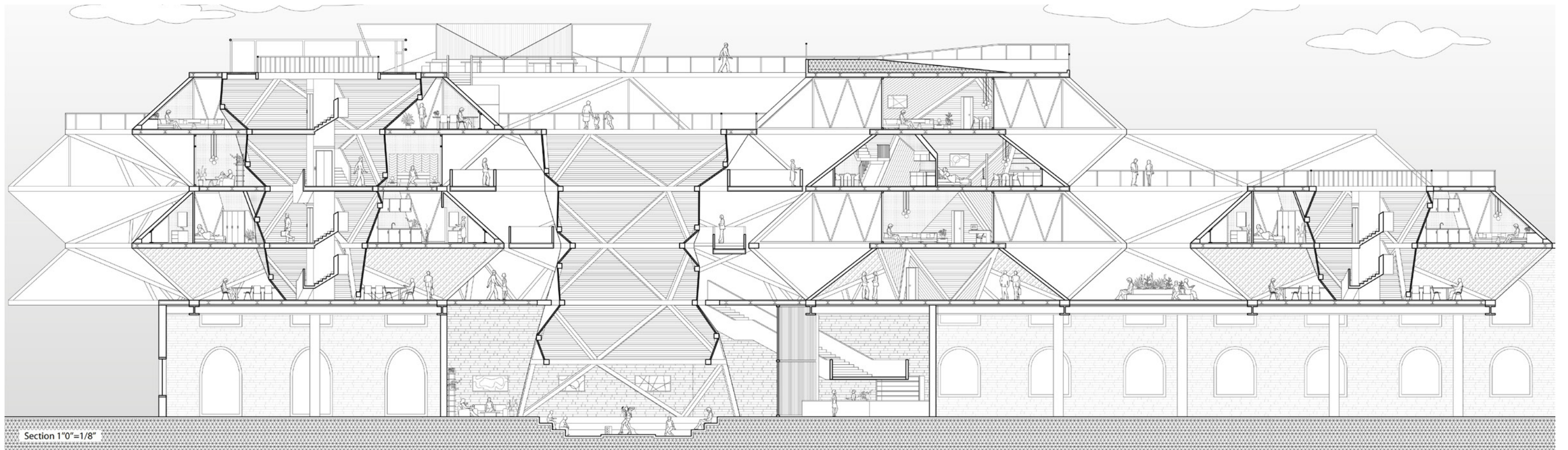
| Sanctuary of Anonymity |

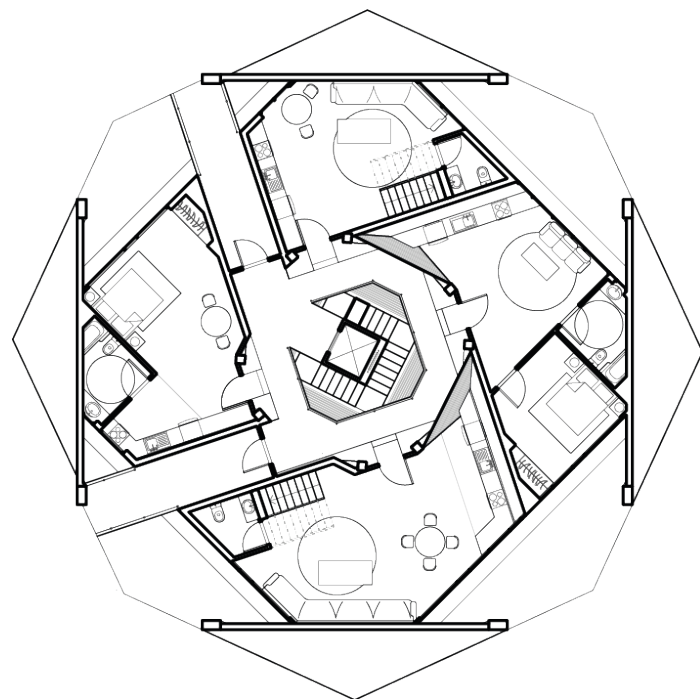
*Red Hook Urban Housing
Academic Studio Design
UPENN 2023 Fall - New York
Instructor: Ben Krone
Individual*

Located in Red Hook, New York, this project aims to create a sanctuary for individuals seeking refuge from the hustle and bustle of the big city, providing them with an environment where they can embrace anonymity and solitude. This intention is approached by having a central circulation core to each individual unit "tower", offering a delicate balance between solitude and communal engagement. It offers residents the power to adjust their own level of social interaction and personal freedom. It is trying to create a balance where residents can enjoy the freedom to be themselves while also participating in a vibrant, ever-evolving community. This design harmonizes the contrasting elements of isolation and connection, making Red Hook Retreat a truly unique and inviting place to call home.

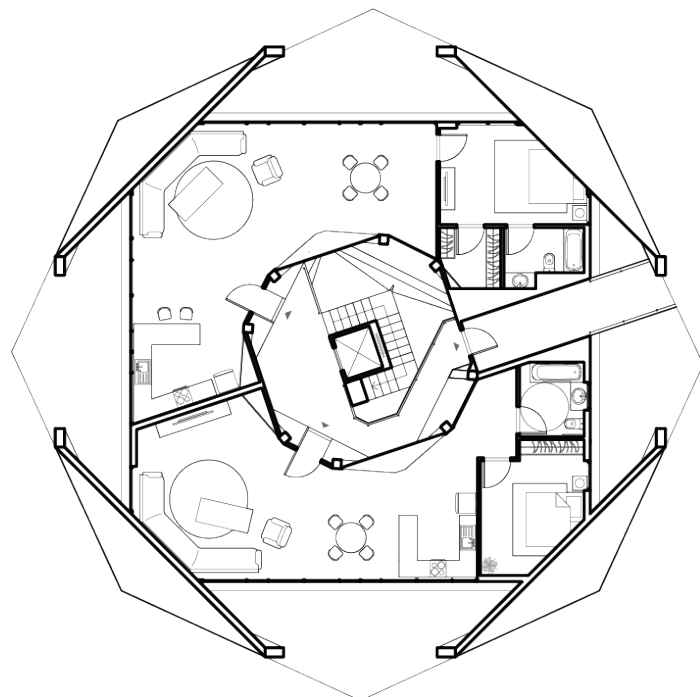
The public space floating above our residences serve as individual pocket parks, encouraging residents and visitors to connect and unwind closely in a unique urban landscape. Each pocket park is thoughtfully curated, offering a distinctive experience. Some showcase vibrant, lush gardens, inviting residents to immerse themselves in the beauty of nature. Others provide sheltered spaces, perfect for contemplation or intimate conversations. Sunny dining areas are perfect for communal meals, while lively playgrounds beckon children to play and make lasting memories.



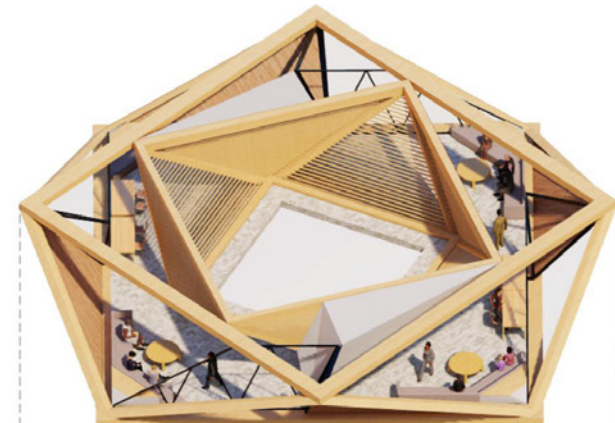




Type A: 4-Unit Plan



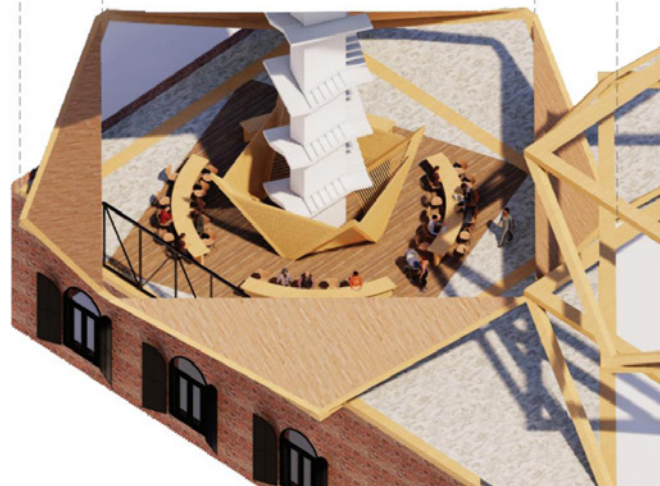
Type B: 2-Unit Plan

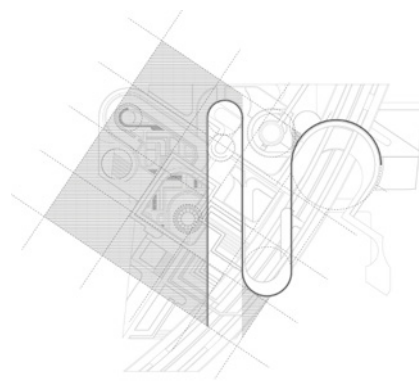


Study Rooms



1 Bedroom Units & 2 Bedroom Units





02

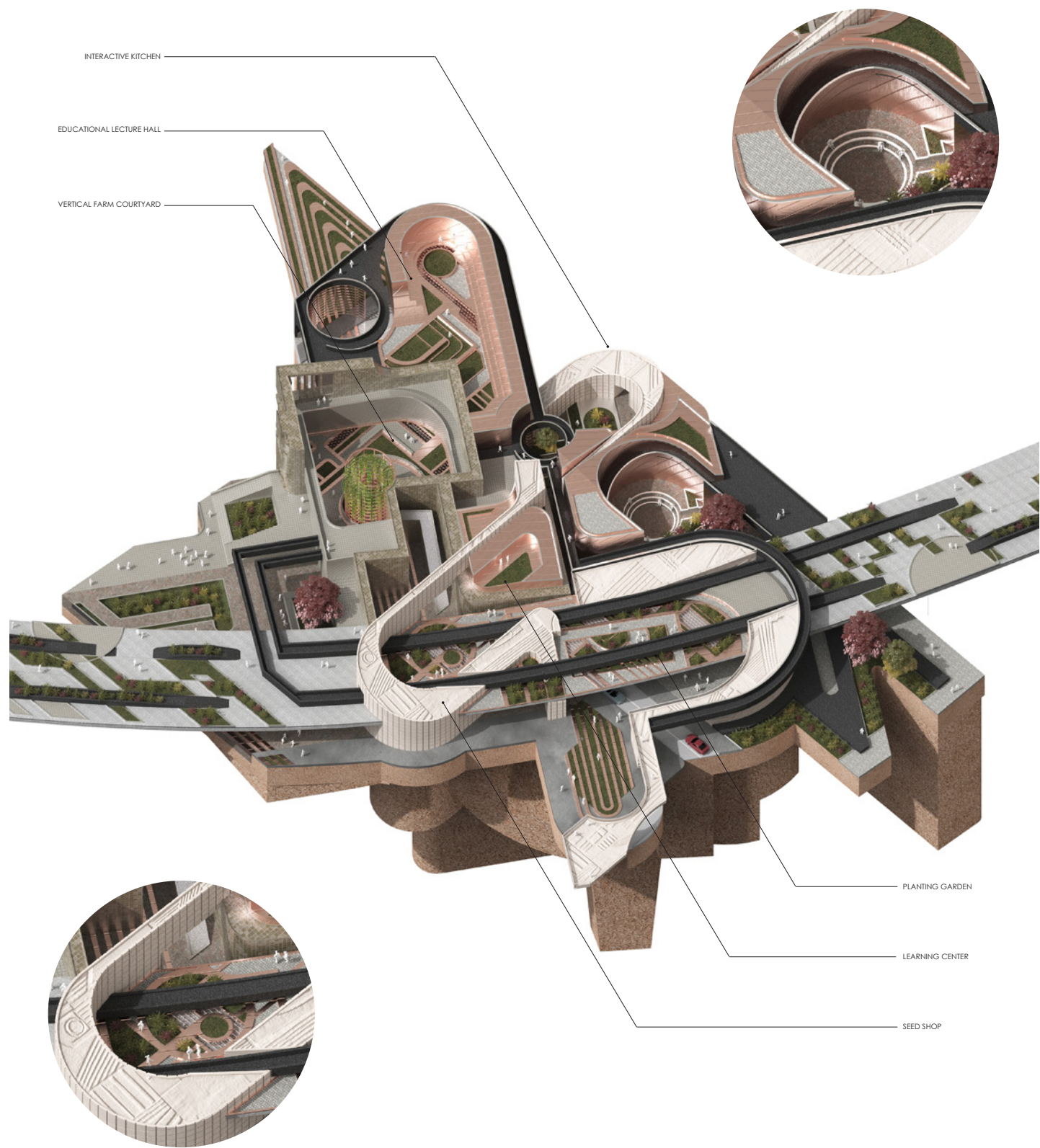
| Foodscape |

*World Fair for Food Innovative Technology
Academic Studio Design
UPENN 2023 Spring - Philadelphia
Individual*

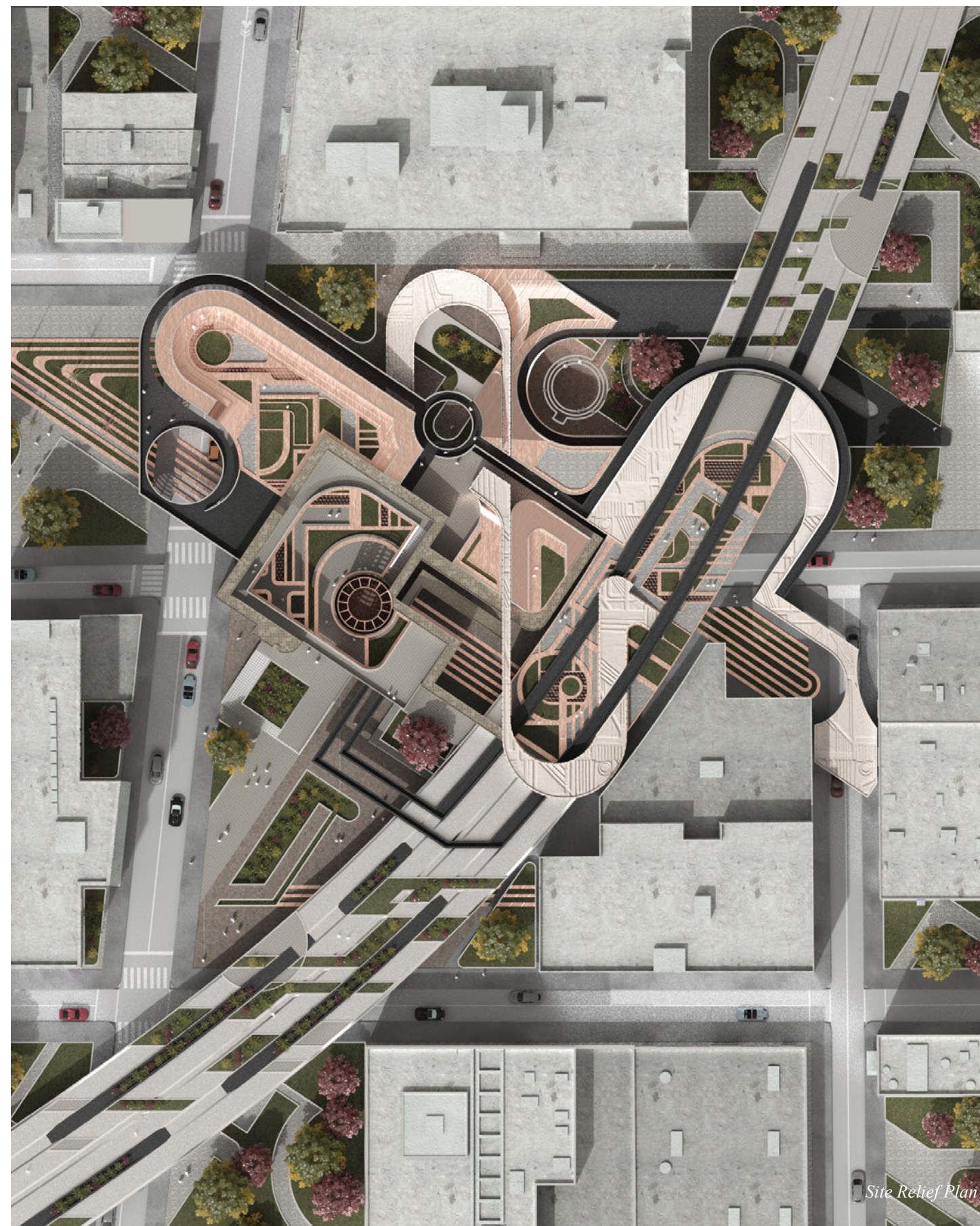
The World's Fair "FoodScape" is aiming to introduce the innovation of food production in an urban environment to the world. Over the current years, the food industry is constantly evolving, with new technologies and techniques being developed to improve food production efficiency, sustainability, and nutrition, addressing some of the most pressing challenges facing the global food system.

This World's Fair invites people to think differently about agriculture and culinary processes. It will showcase a world where food is grown not just on fields, but on towering vertical farms that stretch towards the sky; a world where algae, that once seemed like an unlikely food source, now provides us with a supply of protein and new form of power station that delivers clean energy to the city. It will house factory of synthetic meats that produce indistinguishable proteins from the real thing, without the environmental toll of animal farming. It will provide experience of intersection of art and science, as food is 3D printed into intricate shapes and textures.

By showcasing these food innovations to the world, it can promote a more equitable and efficient food system for all and inspire further collaboration across different countries. At this fair, we will not only experience the latest in food technology and culinary creativity, but also witness a celebration of local sourcing and environmental consciousness.



▲ Axonometric Drawing



Site Relief Plan

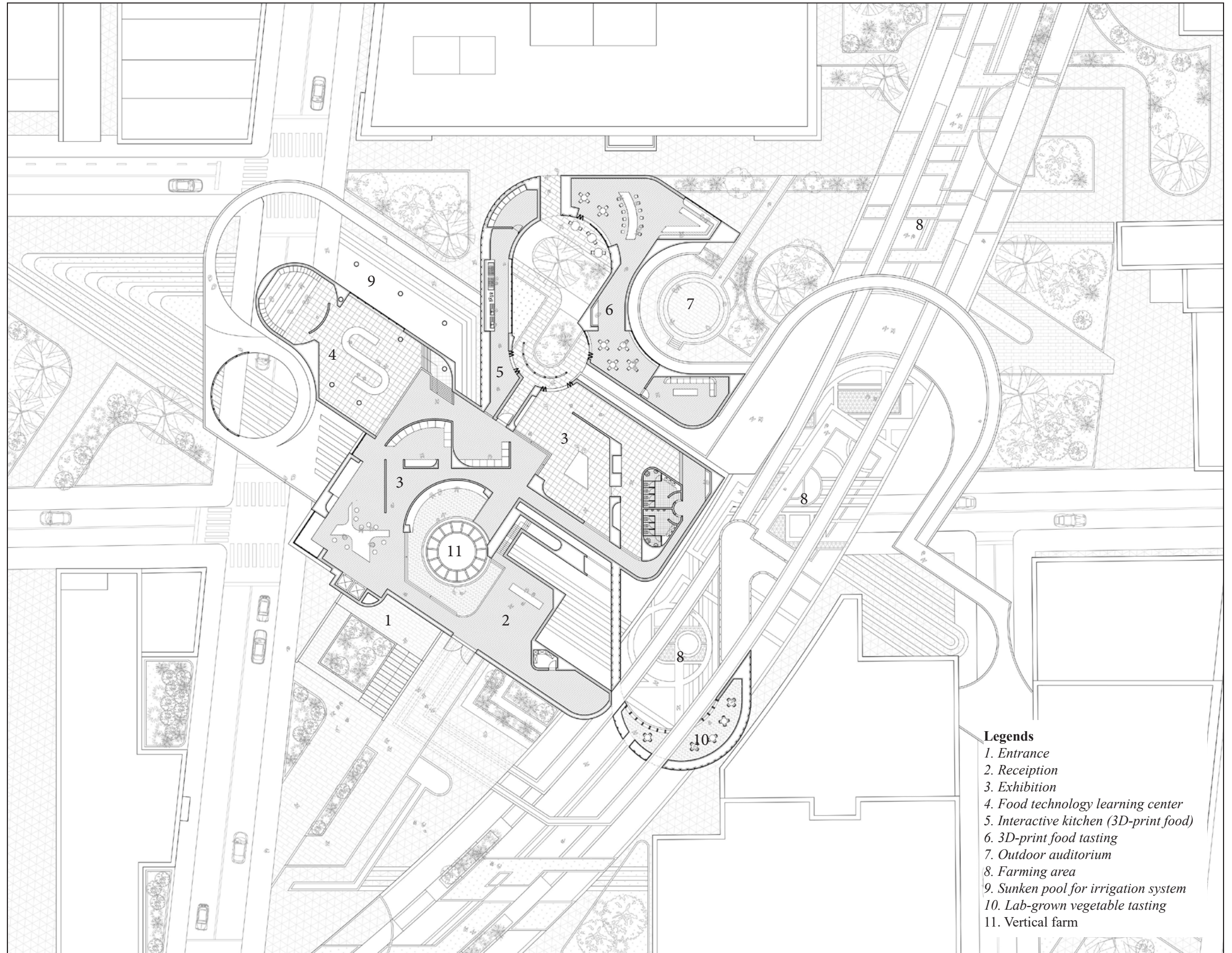


The Programs

The urban farm exposition will be designed as a series of vegetation walls and pavilions, creating an immersive and interactive experience for visitors. The vegetation walls will consist of various types of plants, including vegetables, herbs, and other crops that thrive in a vertical environment. The pavilions will be designed as enclosed spaces, allowing visitors to walk through and interact with the plants. The outdoor vertical farm will be equipped with an irrigation system that provides the plants with the necessary nutrients and water.

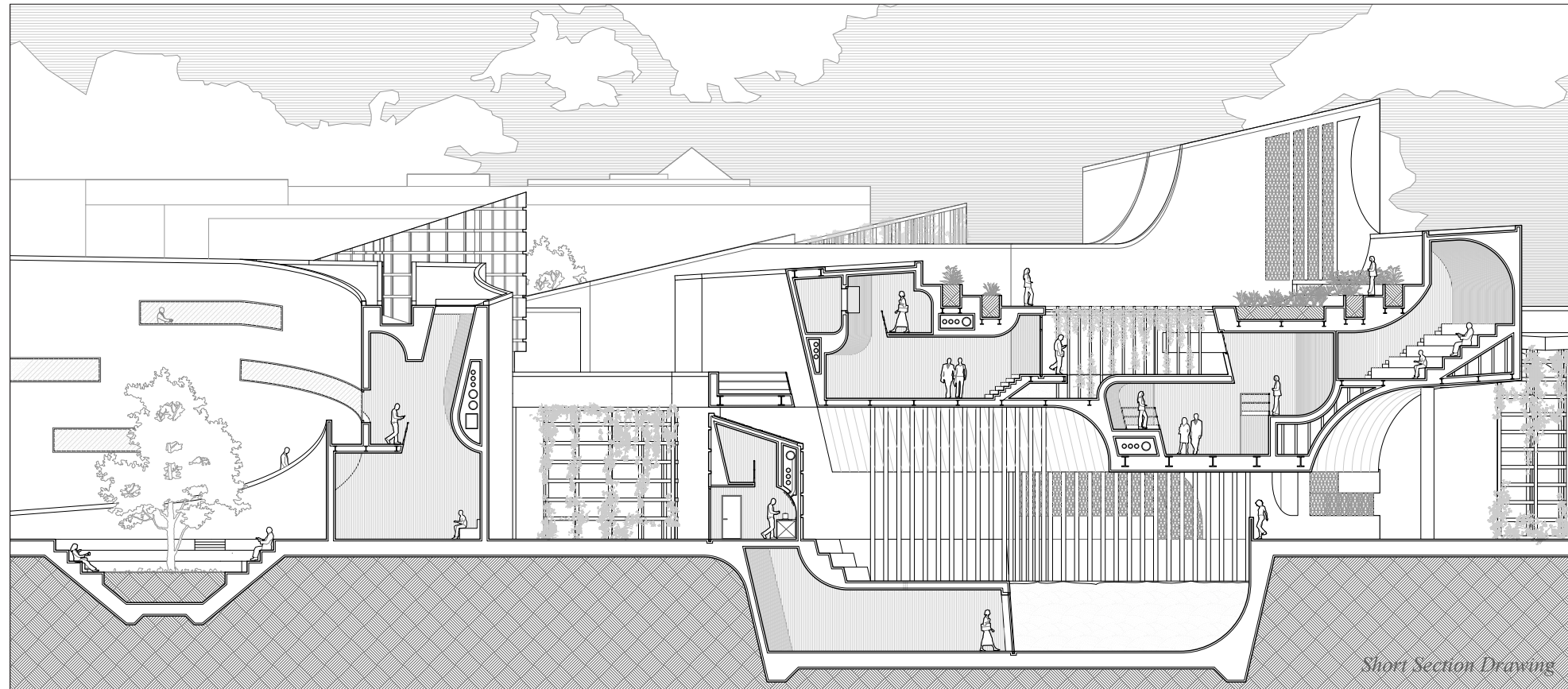
The indoor farming area will utilize advanced technology, such as AI, to monitor the crops and optimize their growth. The urban farm exposition will feature a vegetable seed lab, which will introduce new vegetable species that are better suited for vertical farming.

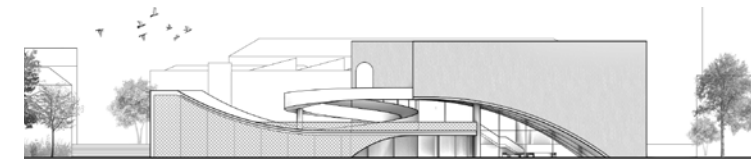
By utilizing technology and sustainable practices, this urban farm is designed to improve crop yields, reduce land use, and provide an interactive and educational experience for visitors.



Legends

1. Entrance
2. Reception
3. Exhibition
4. Food technology learning center
5. Interactive kitchen (3D-print food)
6. 3D-print food tasting
7. Outdoor auditorium
8. Farming area
9. Sunken pool for irrigation system
10. Lab-grown vegetable tasting
11. Vertical farm





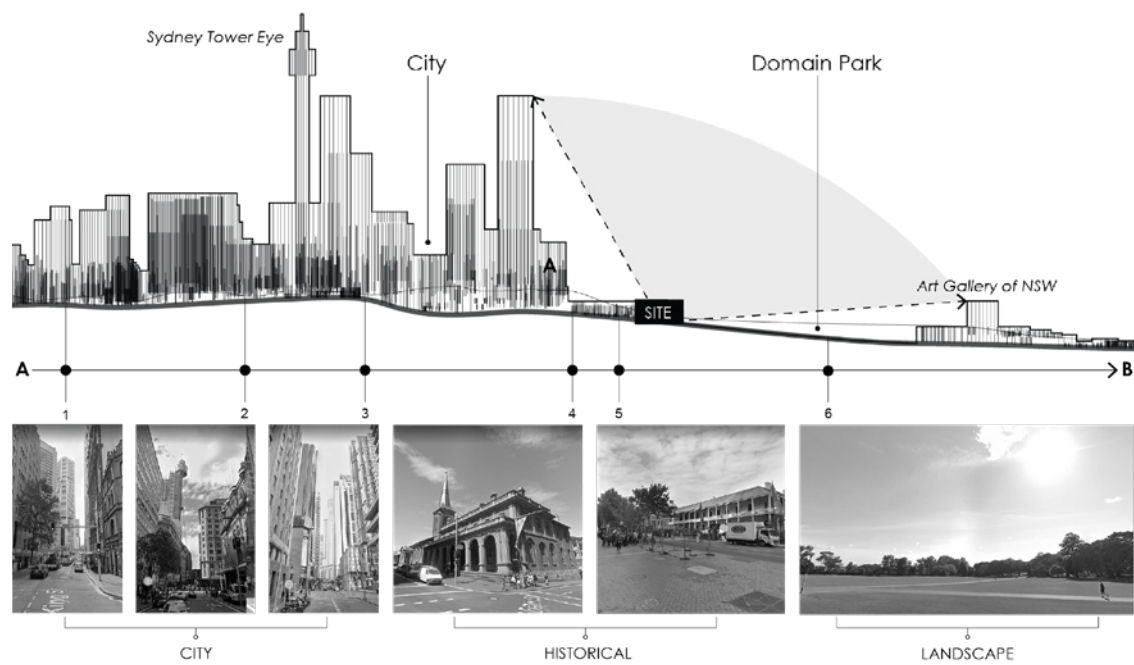
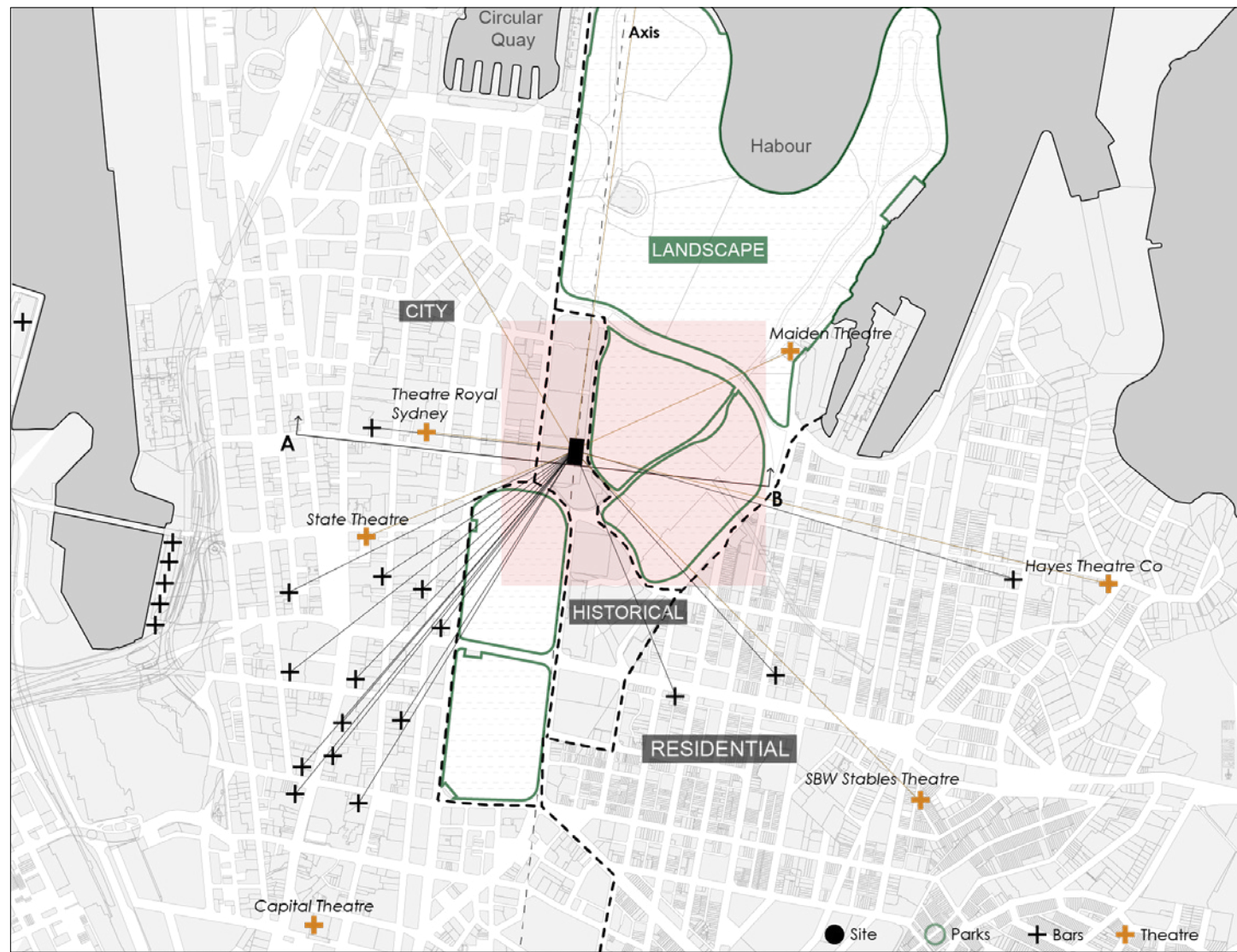
03

| The Counterpoint |

*Sydney Performance Space
Academic Studio Design
USYD 2019 Fall - Sydney
Instructor: Jason Dibbs
Individual*

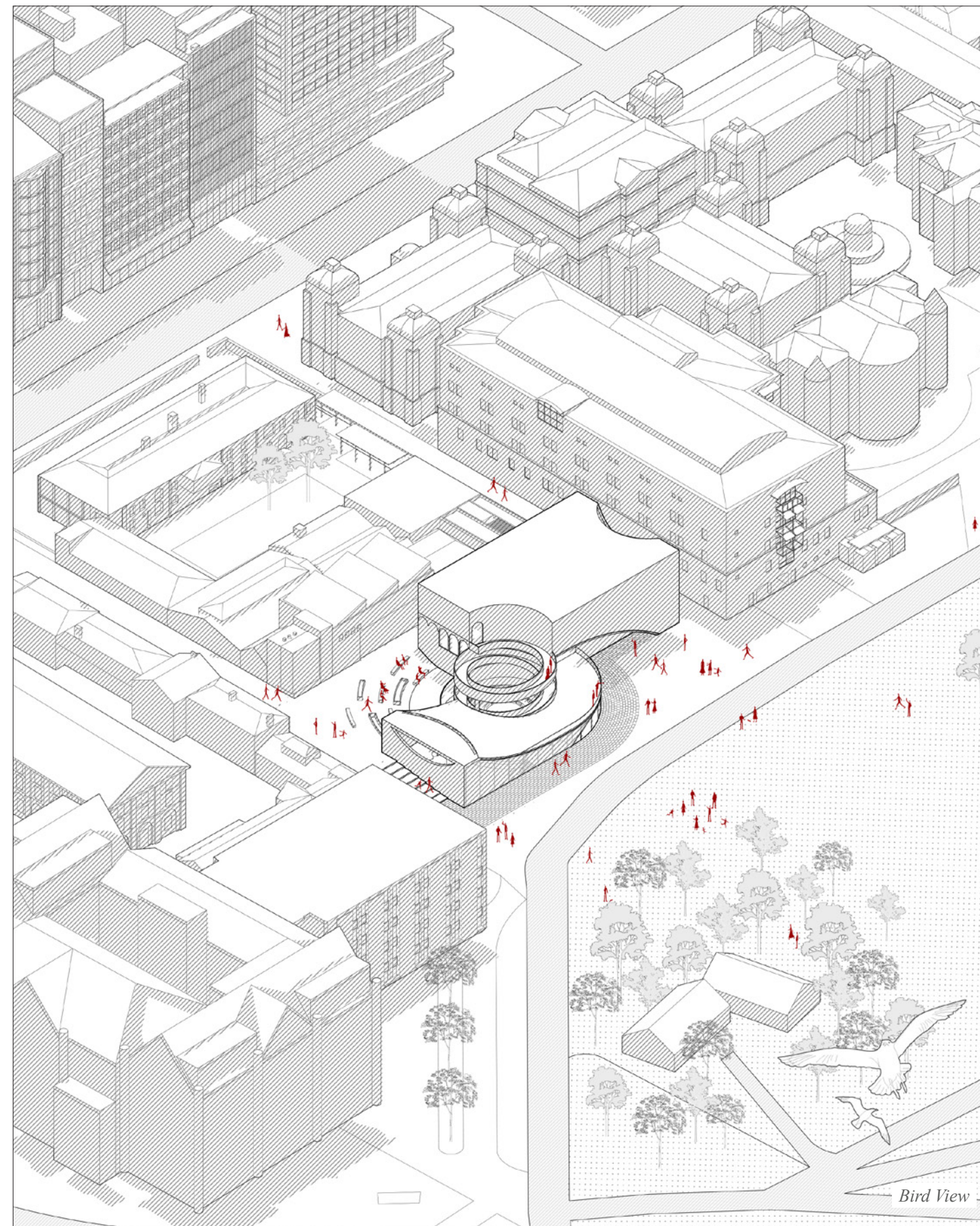
Due to the immigration history, Sydney has been in-filled with a diversity of ethnicities and cultures. This has brought a series of conflicts and inequality between diverse groups of people who shares distinct background and lifestyle.

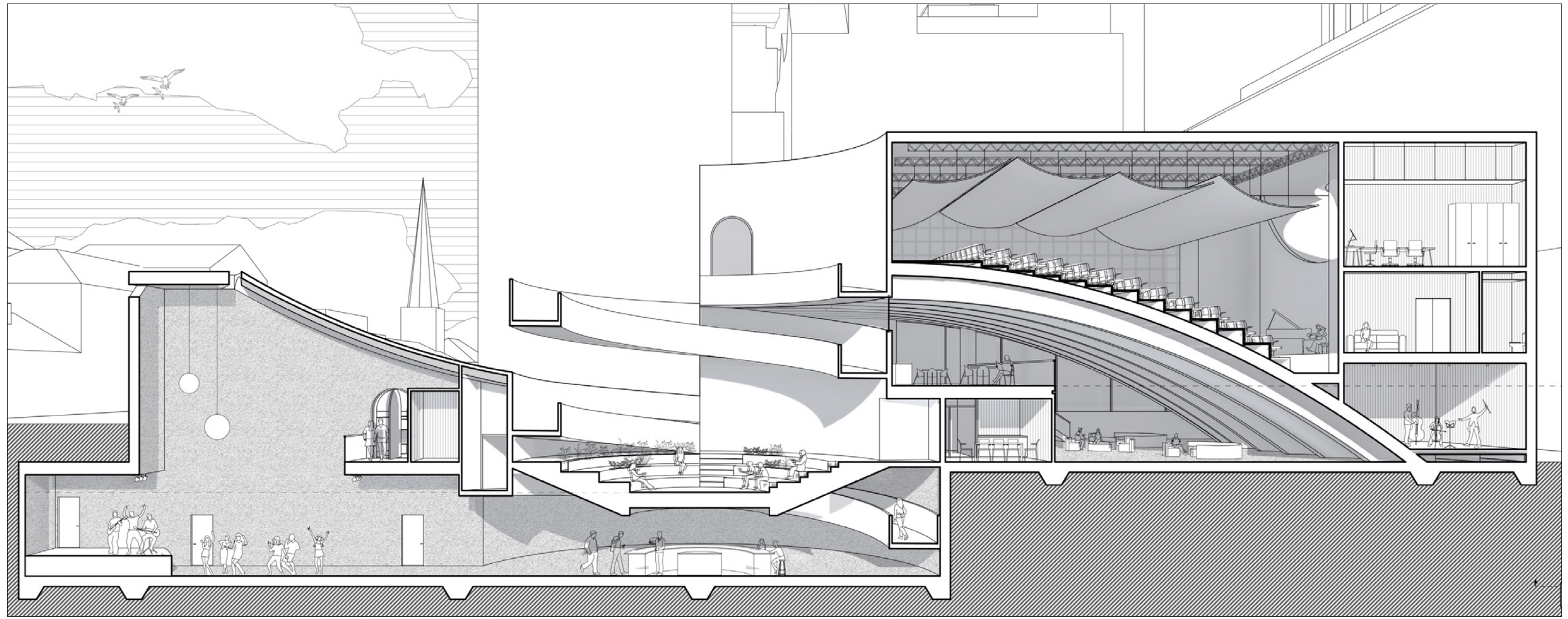
Aiming to resolve the disservice and evoke for cultural interweave, the Counterpoint provides diverse functions of performance space to the users but integrates them by coherent architectural language. Through the investigation of geometrical forms and gestures, abstract spatial experiences and manipulative circulation gradually lead the users of different groups to gather, appeal for communication, and cultural interweaving.



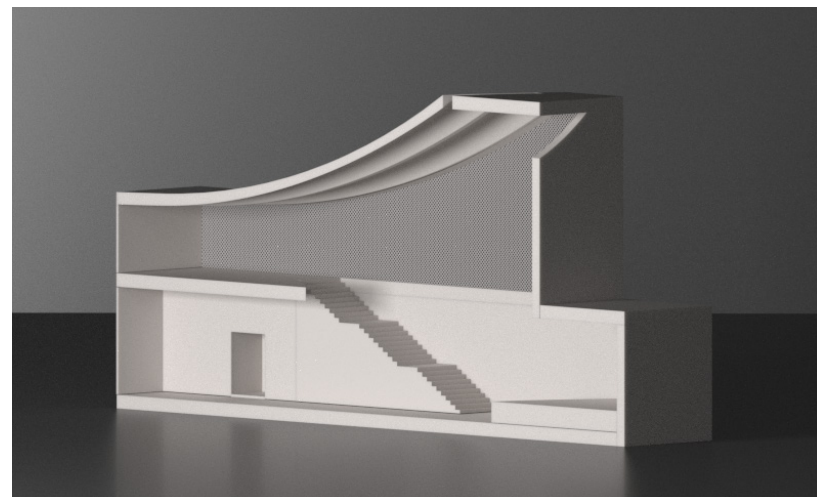
Site Analysis

Located at the edge of Sydney CBD, the site is surrounded by complex environment. Conflict is everywhere – modern and history, wide natural and dense city. People experience the shifting of intensity on the way to it, transitioned from dense urban environment to a wide natural landscape.





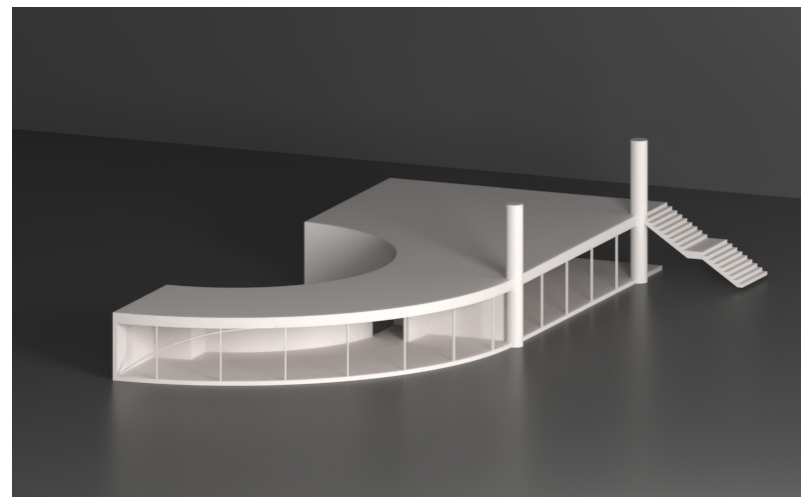
Sectional Perspective



Detail Model - Live House Section



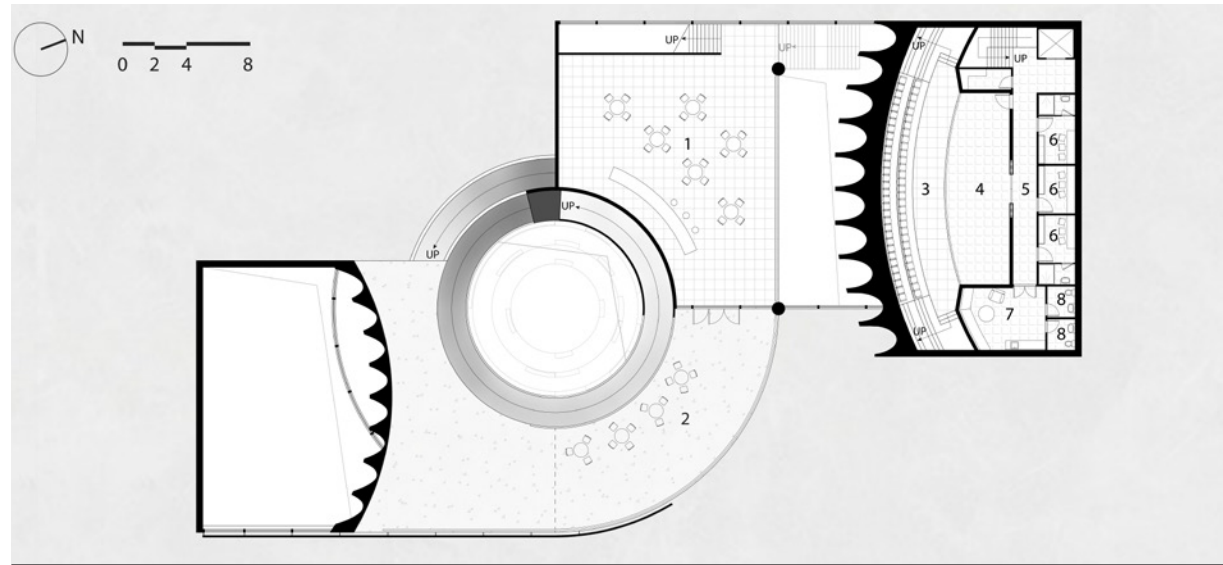
Detail Model - Sparrow Ramps



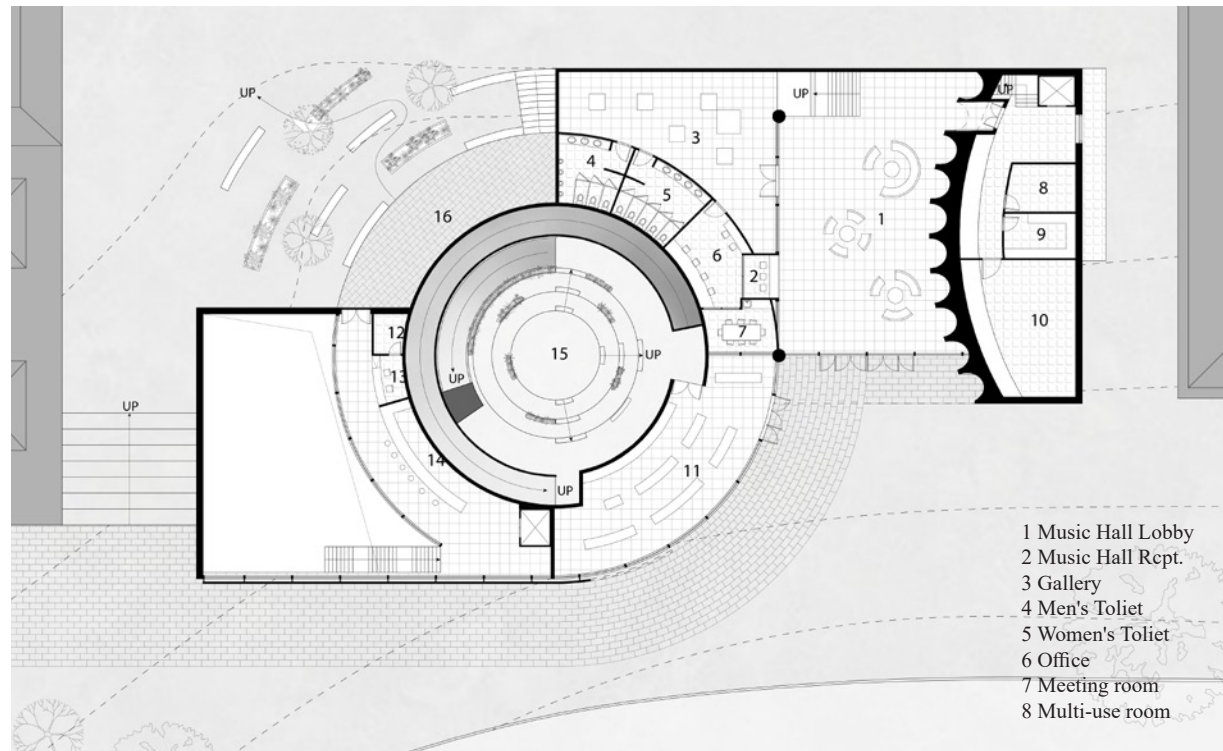
Detail Model - Supporting store



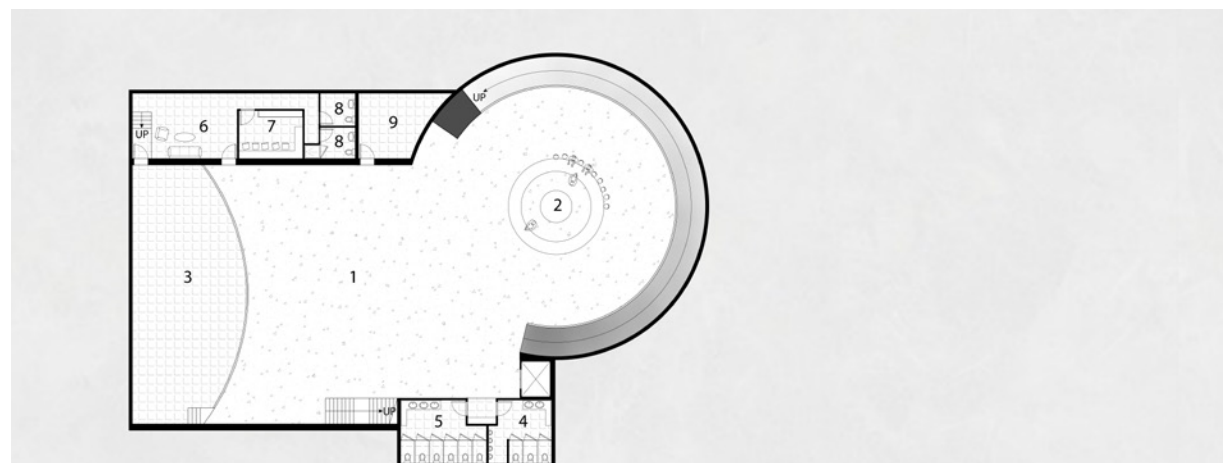
Detail Model - Stage



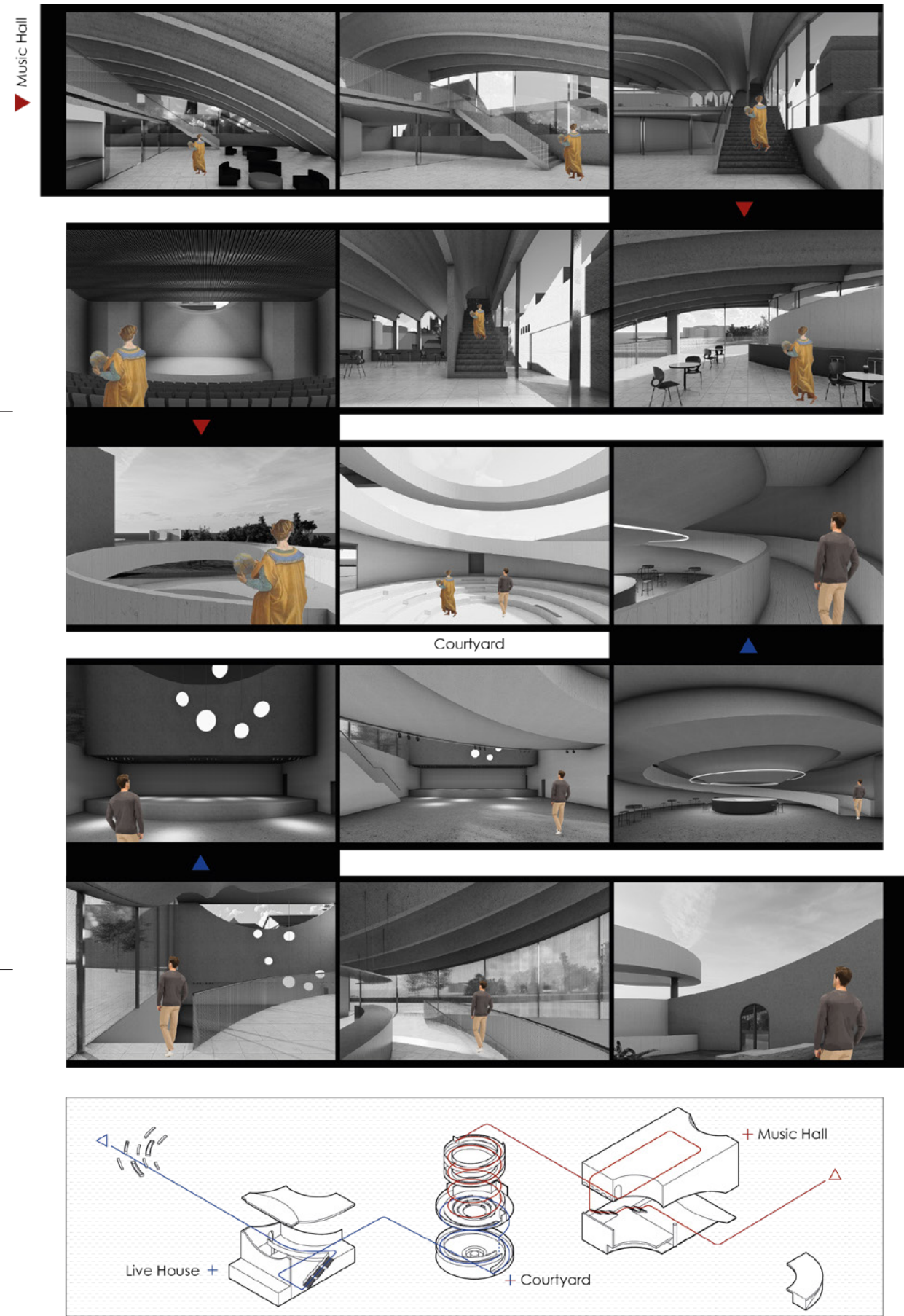
1st Floor Plan



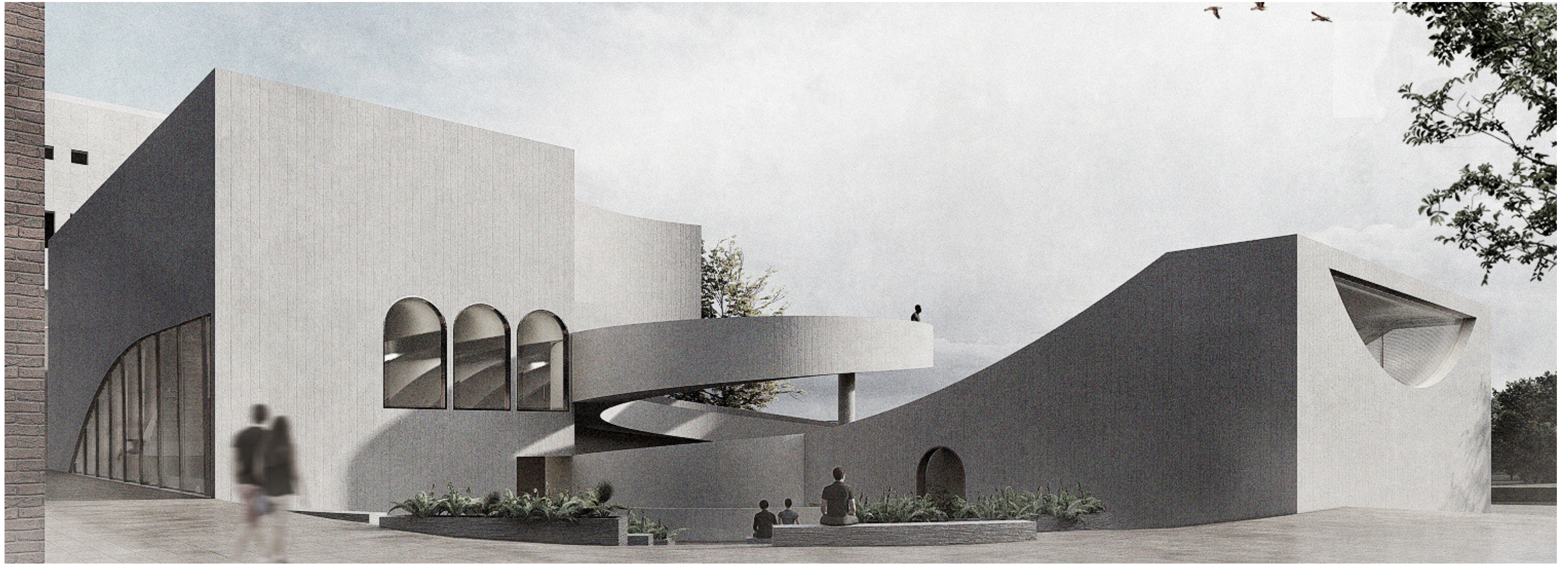
Ground Floor Plan



Basement Floor Plan



Circulation Diagram
 This project intends to introduce a continuous journey to the visitors. Entering from two separated buildings, the visitors will smoothly follow a series of curved architectural elements along with the enjoyment of diverse types of musics. Eventually, they will encounter in the central courtyard. Conversations are encouraged to happen in this socialable space.



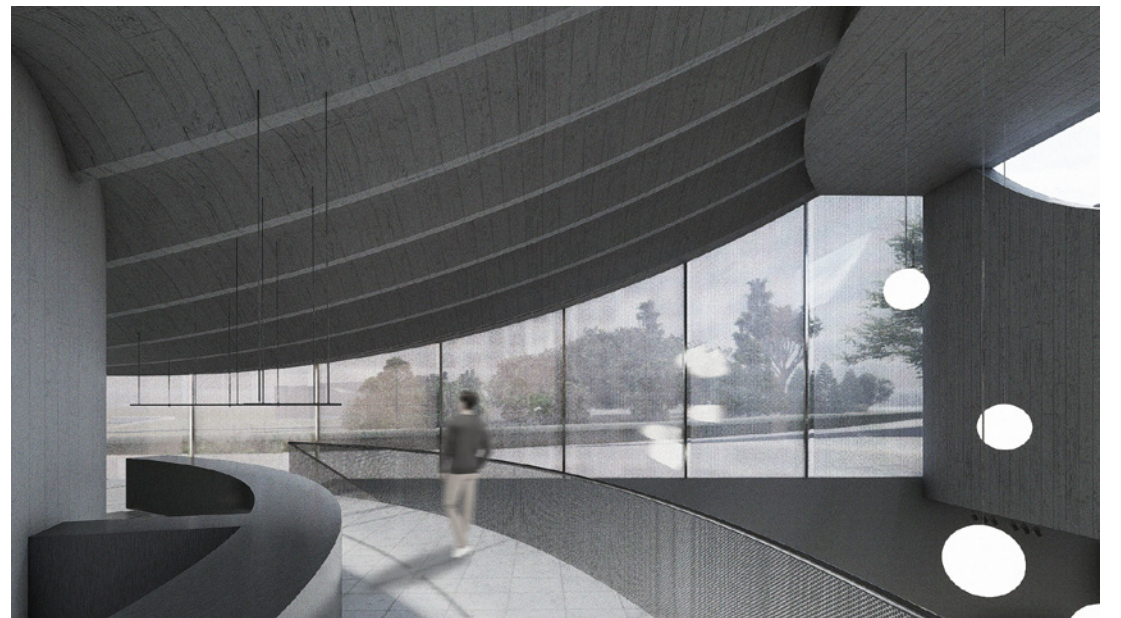
Music Hall - Cafeteria



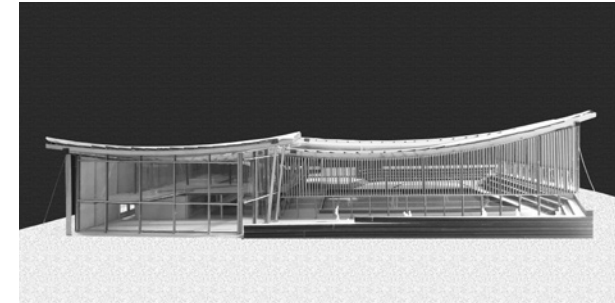
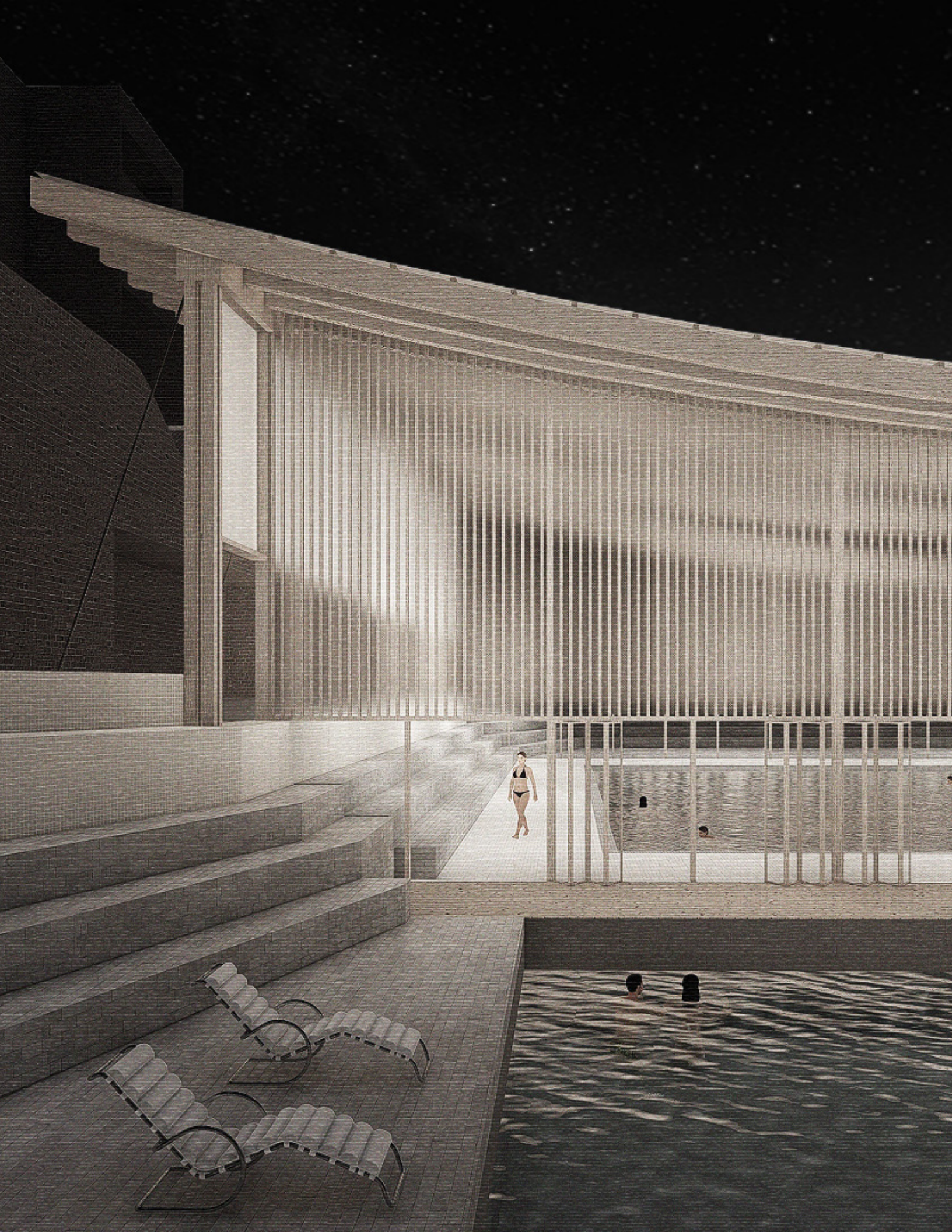
Music Hall - Sparrow Ramp



Live House - Dance Floor



Live House - Reception



04

| Urban Oasis |

*Community Swimming Center
Academic Studio Design
USYD 2019 Spring - Sydney
Instructor: Jonathan Evans
Individual*

The swimming center program attempts to bring a familiar recognition from the beach into the community by adopting elements echoing the sea. Interesting experience with water and a beautiful draping appearance deliver a fresh vision to the dense residential environment, enriching the community with vibrancy.

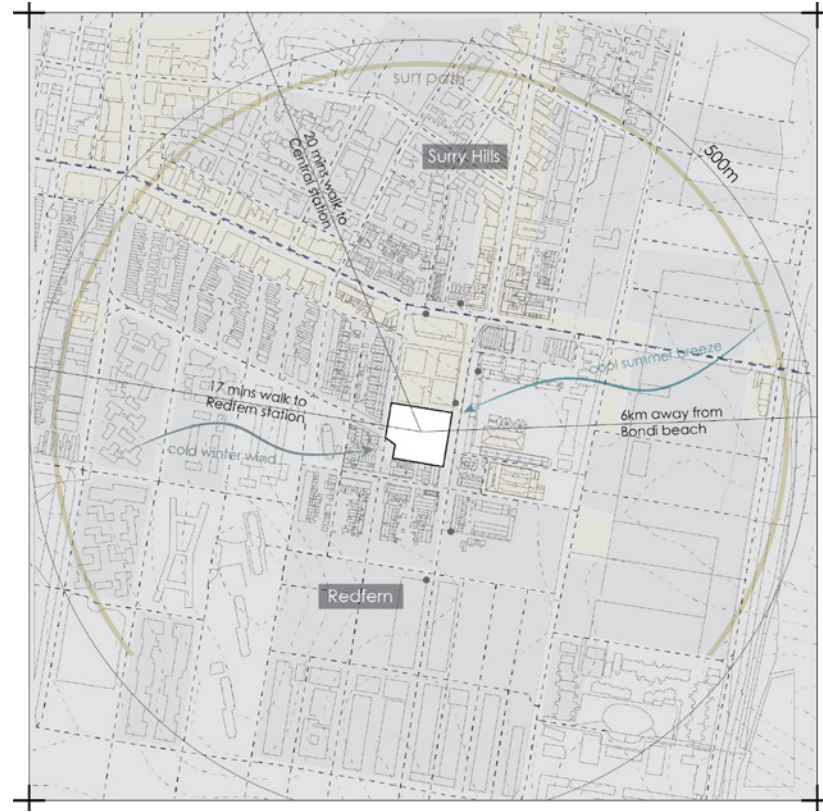
The catenary shape of the timber roof mimics dynamic waves and at the same efficiently waives the bending load of the long-span structure. The undulating rooftop deck for sunbath recalls the memory of lying on a beach. With subtle light penetrating through timber cables, glittering with the water beneath, people are isolated from the tense daily life, immersing into this urban oasis.

Site Analysis

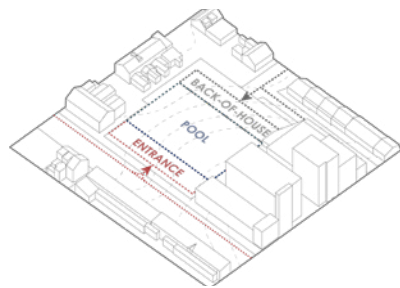
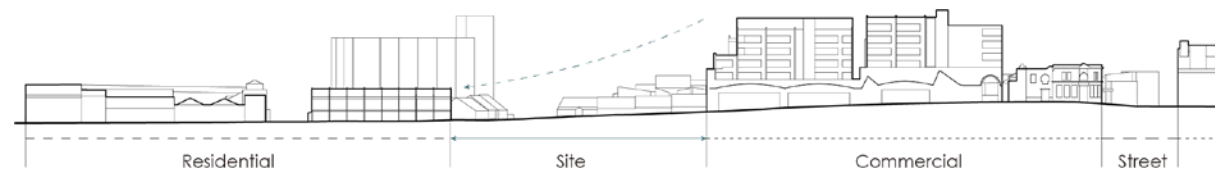
The site is located in Redfern, an inland residential area. Distant from the beaches, the swimming center provides opportunities for the local resident to get simulative water experience. Passive design and height variation of the existing context has been carefully considered during the design process. Working model made by paper has inspired the resulting roof shape undulating like wave on the sea.



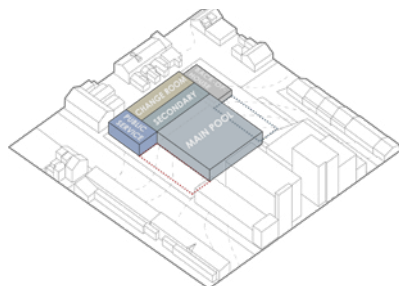
Relationship with the coastline



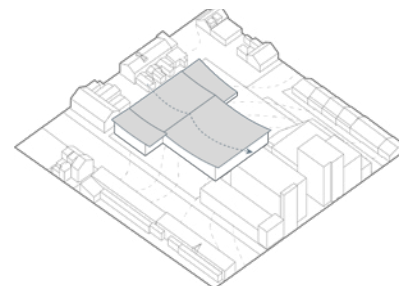
Site Analysis



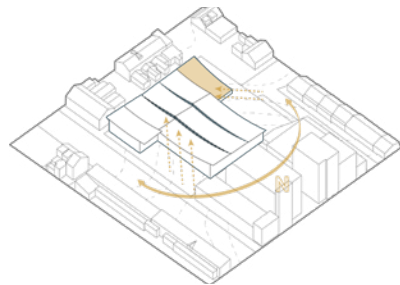
1. Site divided by hierarchy of publicness



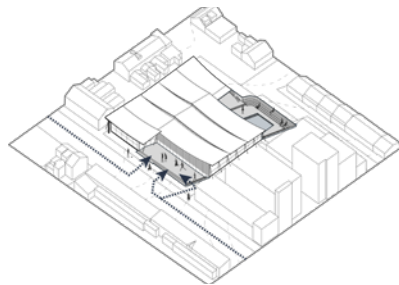
2. Massing of functions arranged



3. Waving roof follows the surrounding height



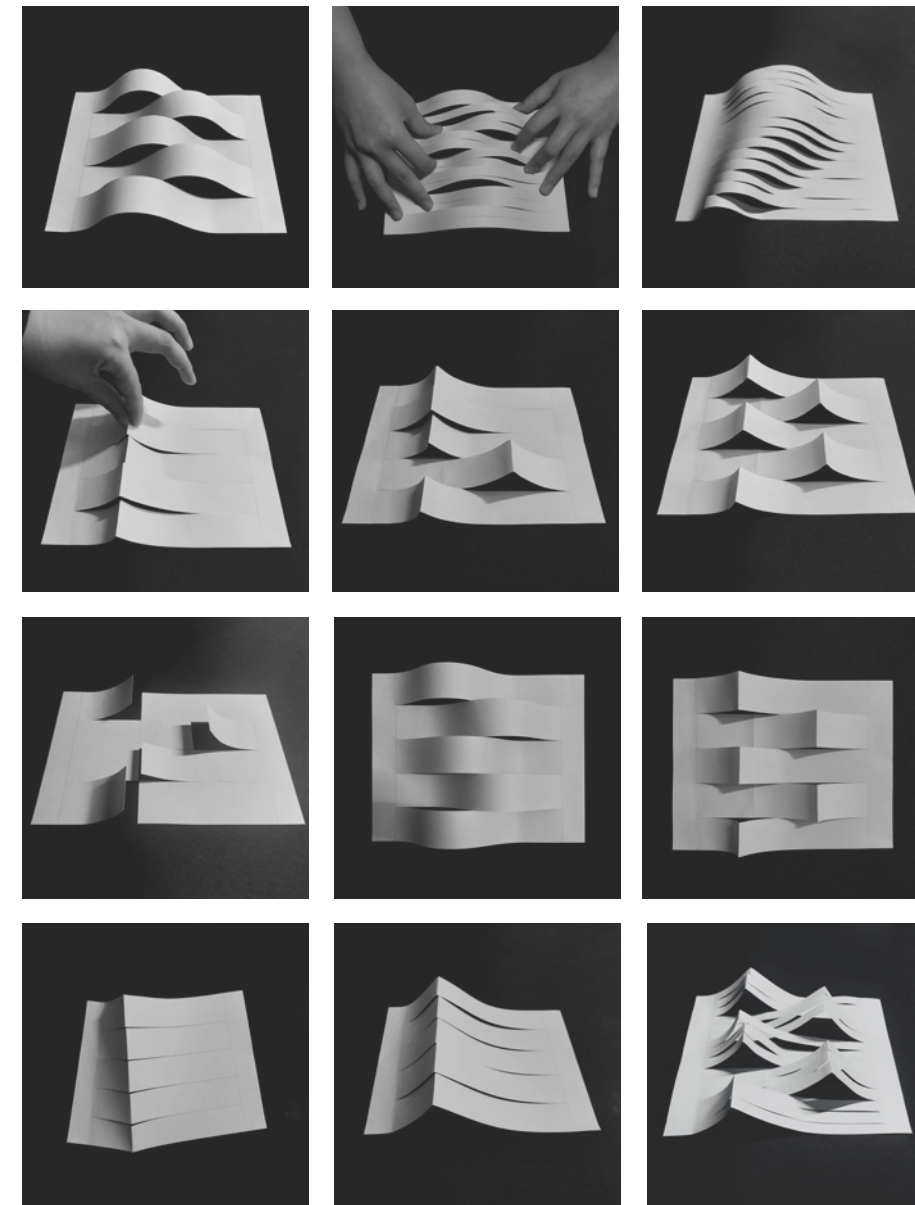
4. East-facing skylights / roof top drying area response to the sun



5. Entrance plaza with seating / Outdoor paddle pool area

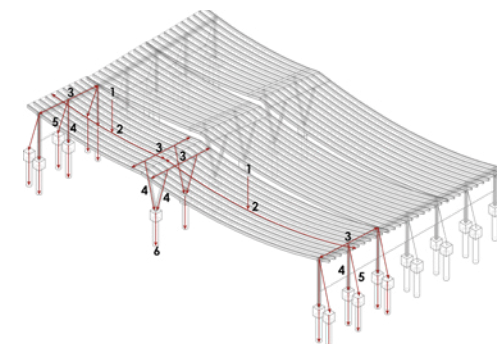


6. Welcoming east-northern summer breeze / blocking cold west wind

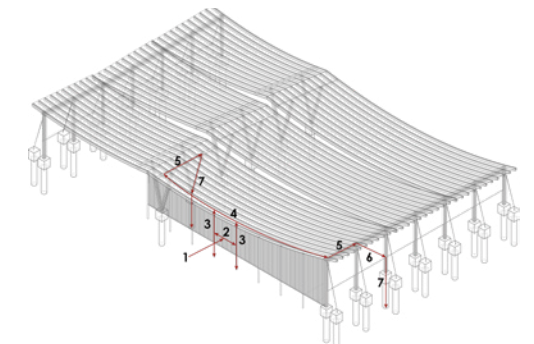


Structure Study

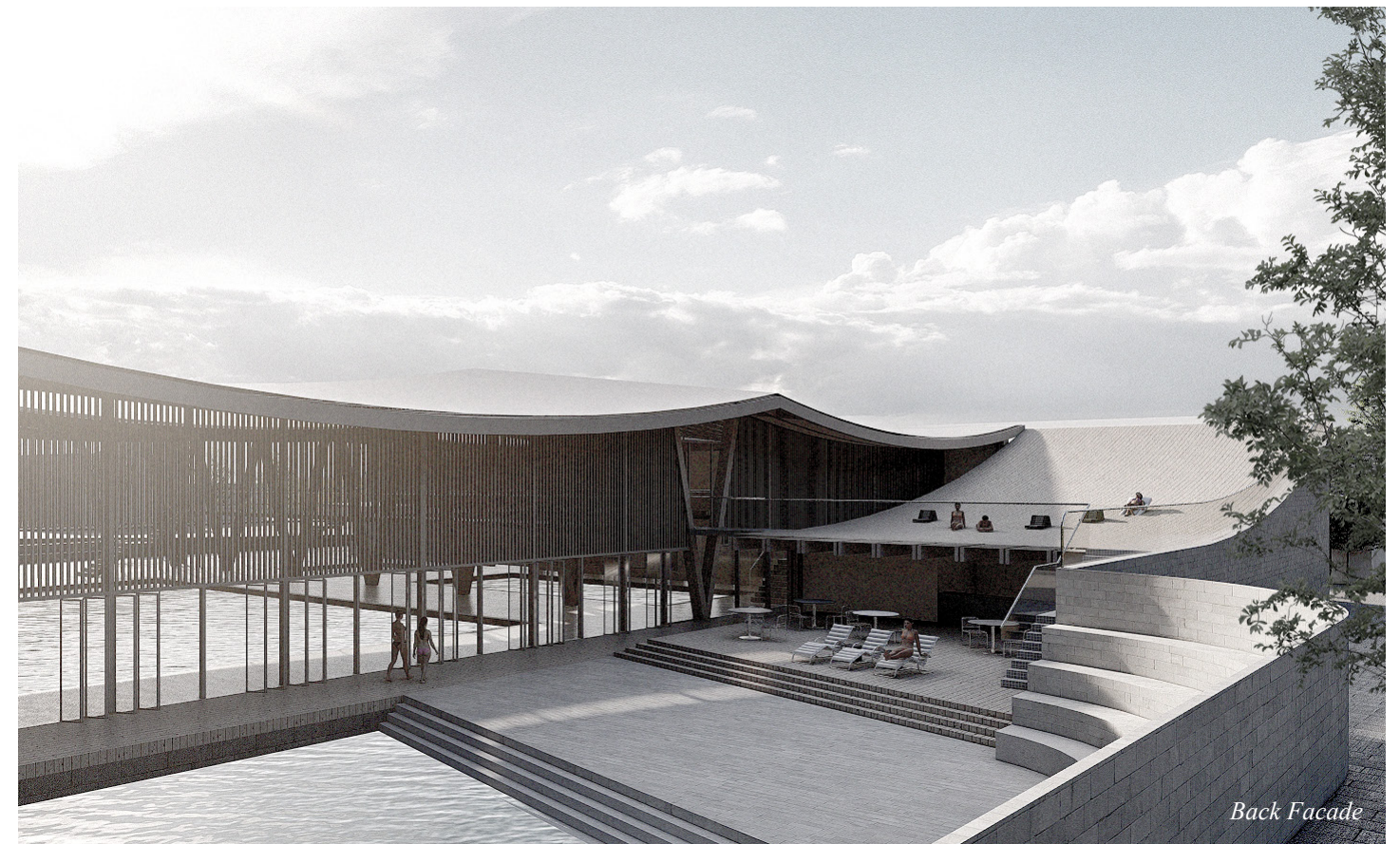
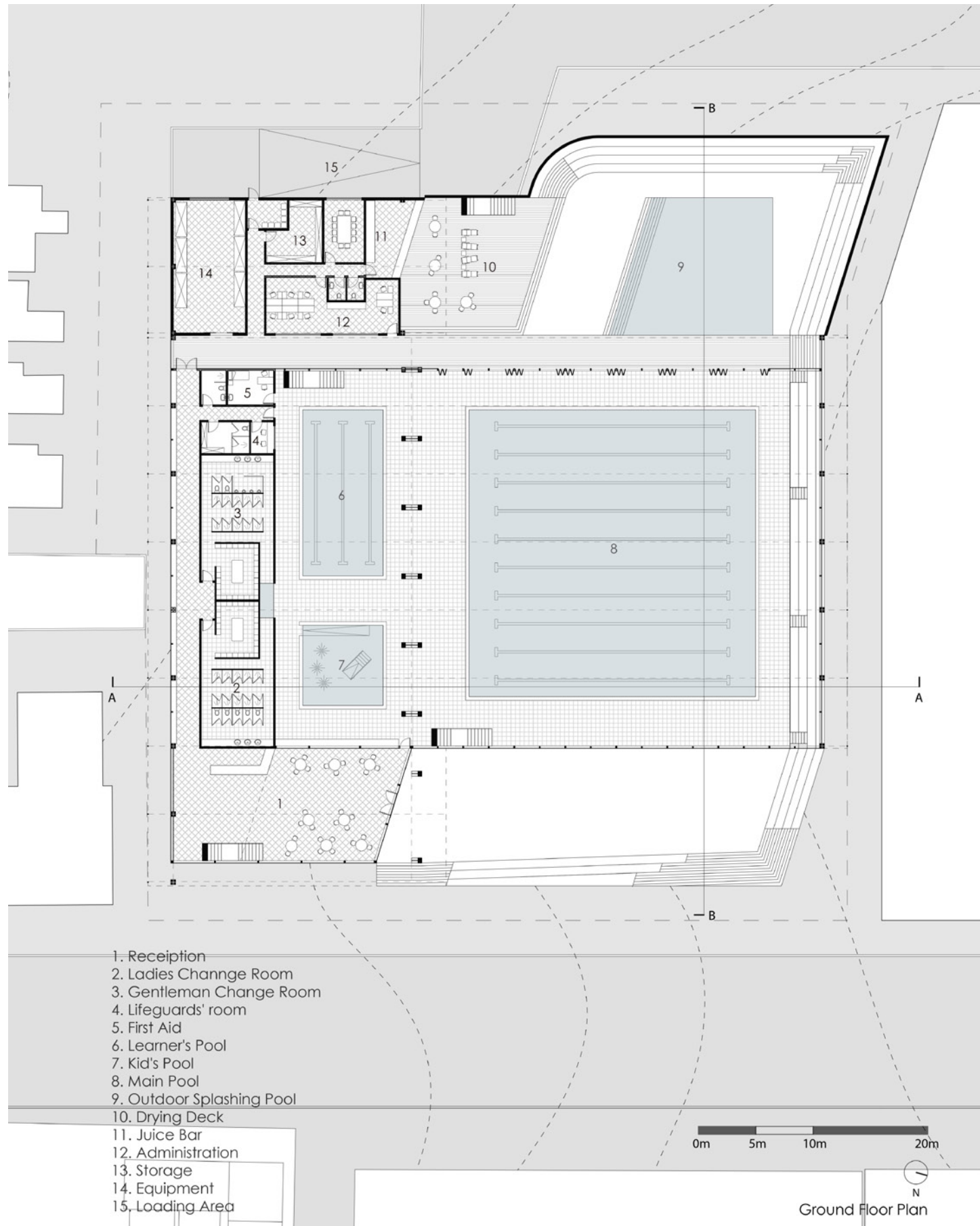
Working models made by paper and timber tested the wavy forms and spatial qualities. The final designed appears a catenary shape to benefit the long-span timber structure. Catenary cables efficiently bend along vertical load, providing a durable and simple structure solution.

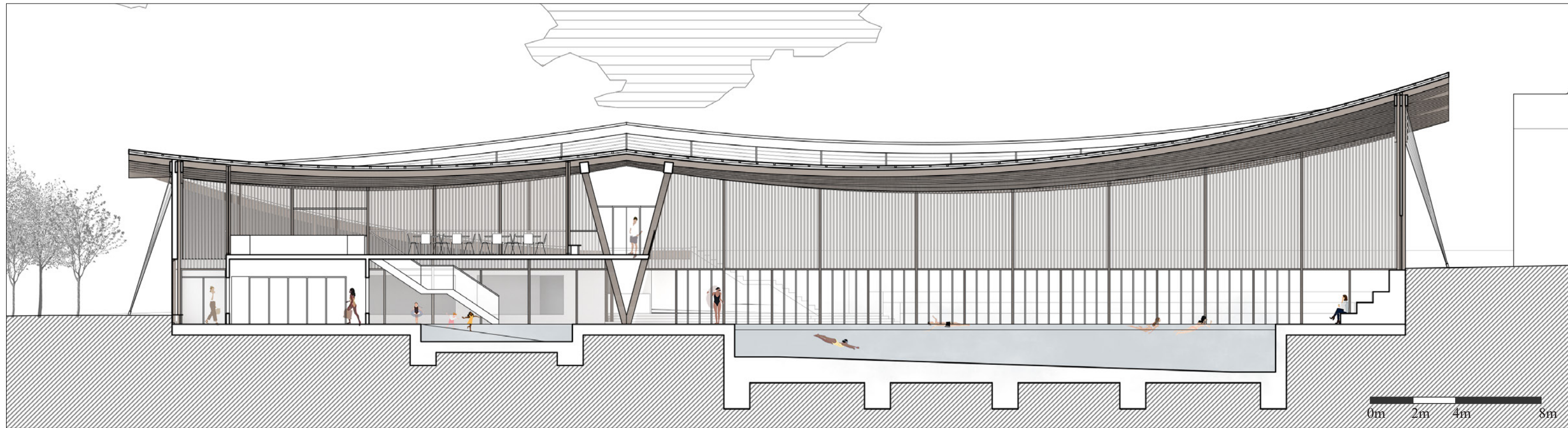


1. Vertical point load applied to glulam cable roofing
2. Load transfers horizontally from catenary glulam twin cables in tension to glulam beams
3. Glulam beams span on top of glulam columns
4. Load transfers vertically along columns in compression to conc. pier footing
5. Steel wire rope in tension force delivers load to conc. pier footing

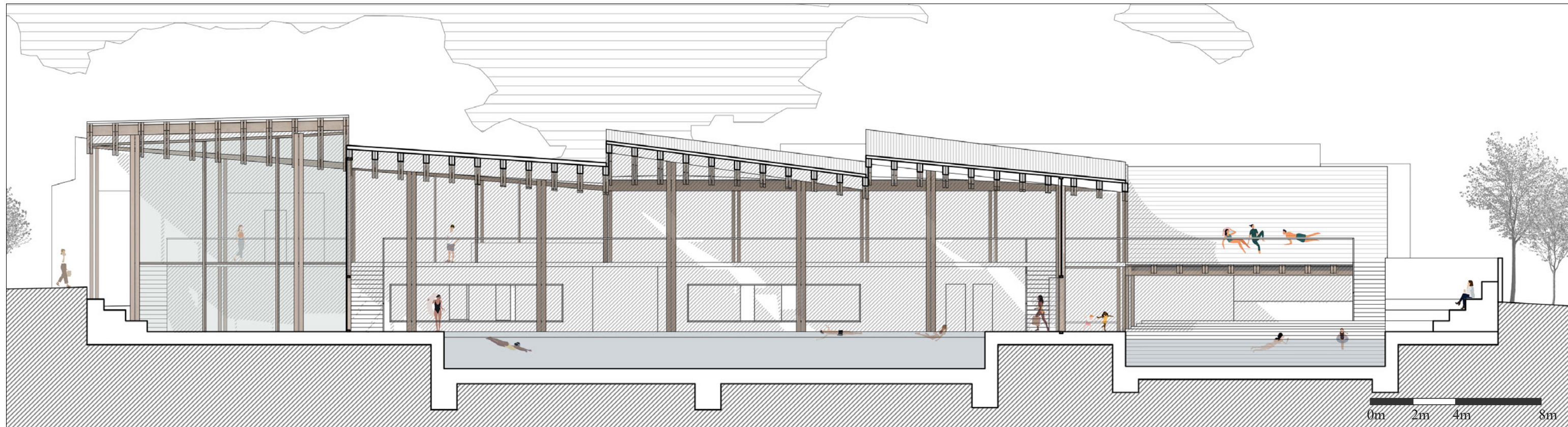


1. Wind load applied to timber facade
2. Load transfers along timber mullions horizontally
3. Vertical timber mullions deliver load to ground and roof
4. CLT bracing panel on glulam cables diagonally pass force to rigid beams
5. Horizontally force transfers along rigid beams
6. CLT bracing panel diagonally transfers horizontal force to column
7. Glulam column delivers force to pier footing and ultimately into ground

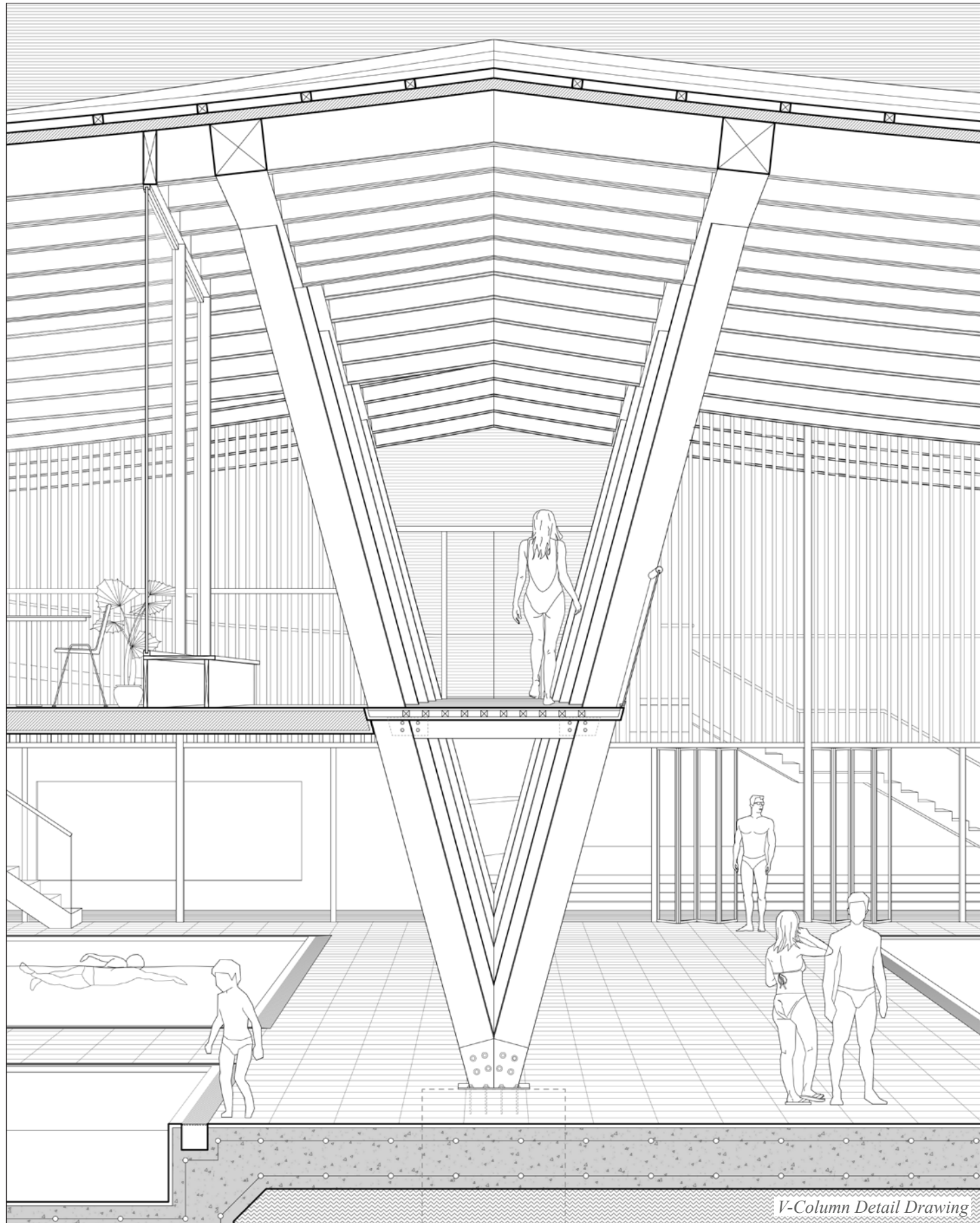




Section A-A



Section B-B



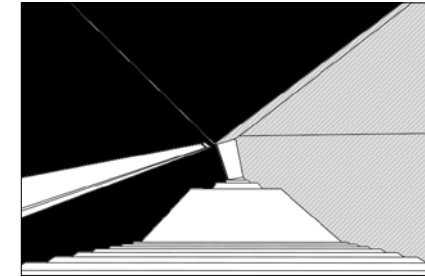
V-Column Detail Drawing



1:100 Model Photos



Water Experience - Main Pool



05

| Into The Wound |

*Mohe Wildfire Memorial Museum
Inspired Work
2021 Fall, Mohe, China
Individual*

This memorial museum program is inspired by a sorrowful story. An old man, who lost his wife in the 1987 Daxing'anling wildfire, has spent his whole life yearning for his beloved partner. In a disco bar in Mohe, he threw himself back to the old years, danced alone with the wife in the ever-lasting memory.

By applying a massive scar in the forest of Daxing'anling, the museum proposal attempts to remind people of the painful history. A narrative told by the architecture delivers visitors back into the fire within gloomy underground spaces. The atmosphere along the narrative is shifting, triggering emotions from fear, sadness to peace as time passed by. Through winding movement and twisted walls, the building mimics the ruins, gradually brings people from the forest back to the fire, and eventually end with a lookout above water in peace.

By evoking memories of the Black Dragon wildfire, I attempt to trigger collective contemplation about the climate change issue, appeal to environment conservation.

Site Analysis

Mohe, as the northernmost city in China, forms a border with Russia's Amur Oblast and Zabaykalsky Krai, where the Amur River flows for 245 kilometers. It's rich in natural resources being in Daxing'anling Prefecture.

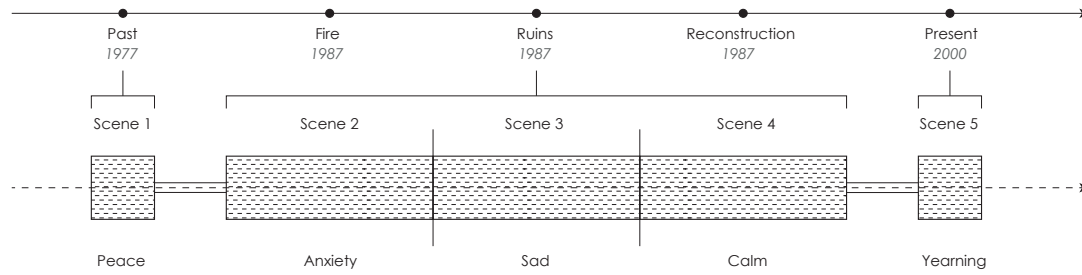


Mohe City Analysis



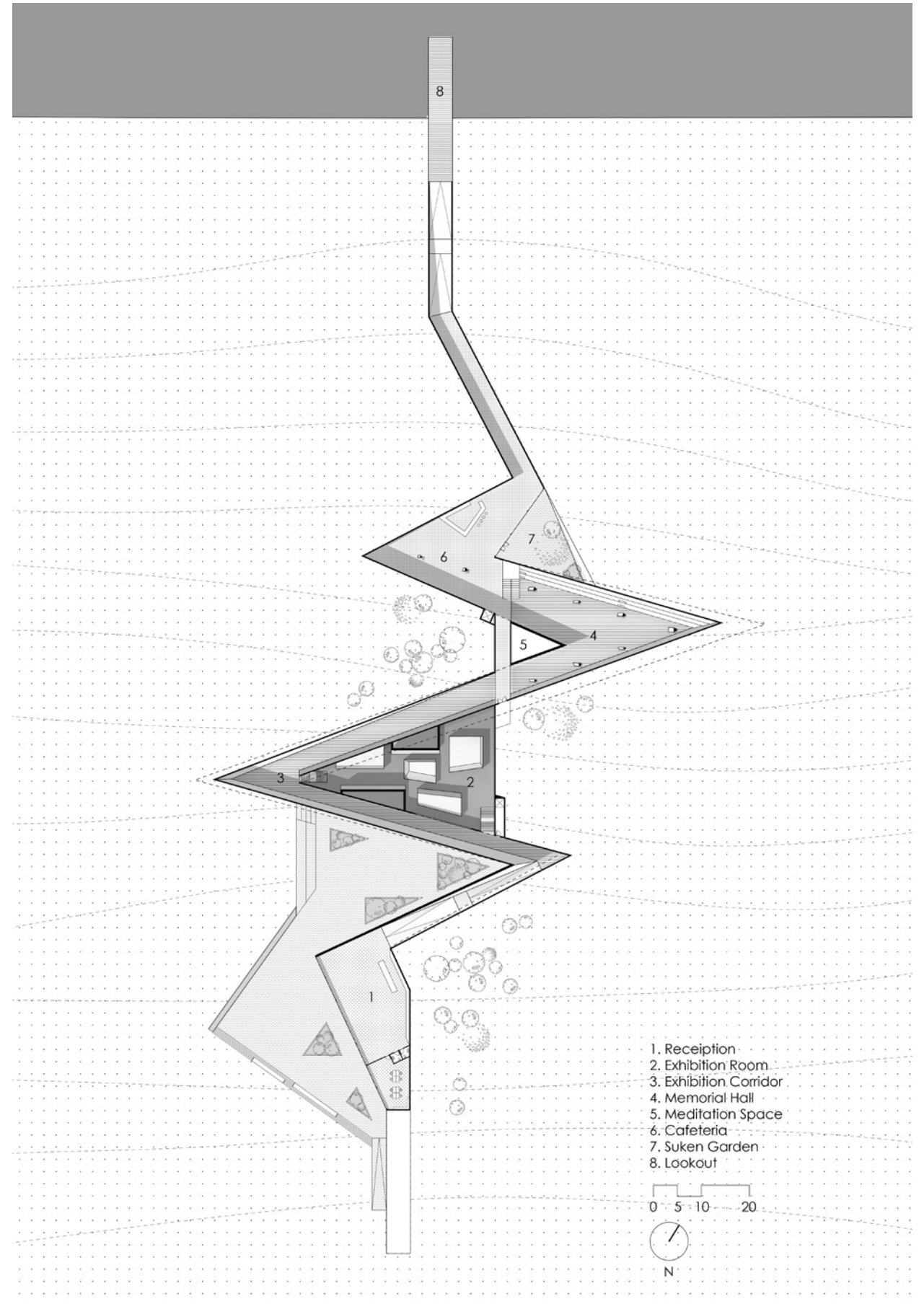
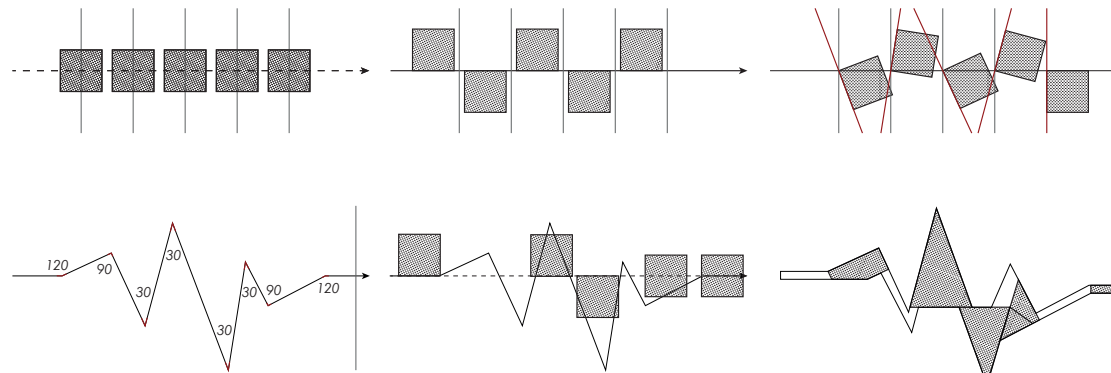
Context

The Black Dragon Fire took place in 1987. Emotions are captured in different stages of the event. 5 types of atmospheres derived from the emotions are designed into a narrative.



Plan Strategy

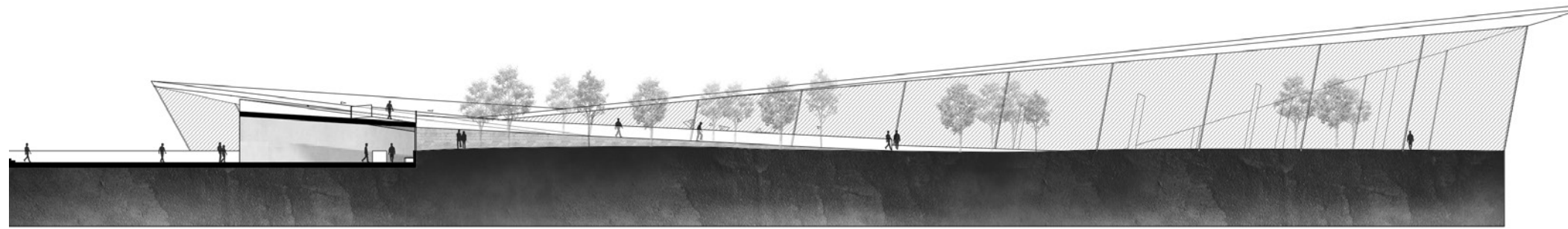
A zig-zag plan is simulating the emotions in the narrative of the events. The angles shifted from gradual to sharp drive the visitors into the fire.



- 1. Reception
- 2. Exhibition Room
- 3. Exhibition Corridor
- 4. Memorial Hall
- 5. Meditation Space
- 6. Cafeteria
- 7. Suken Garden
- 8. Lookout

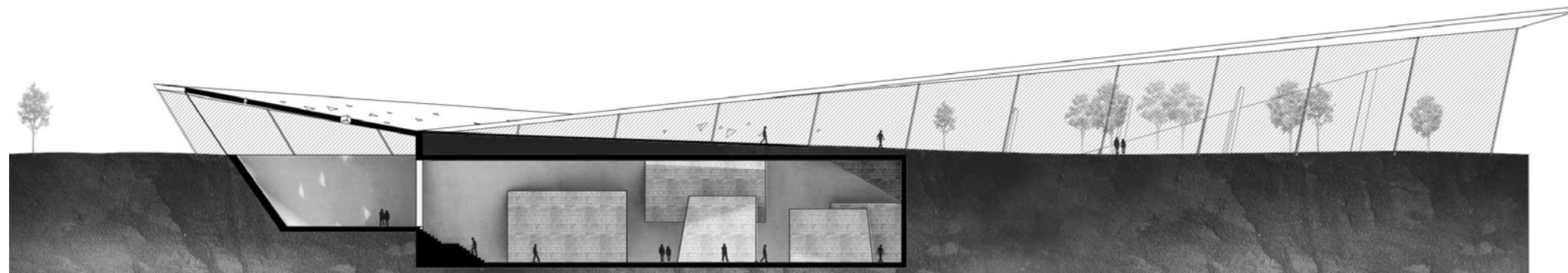
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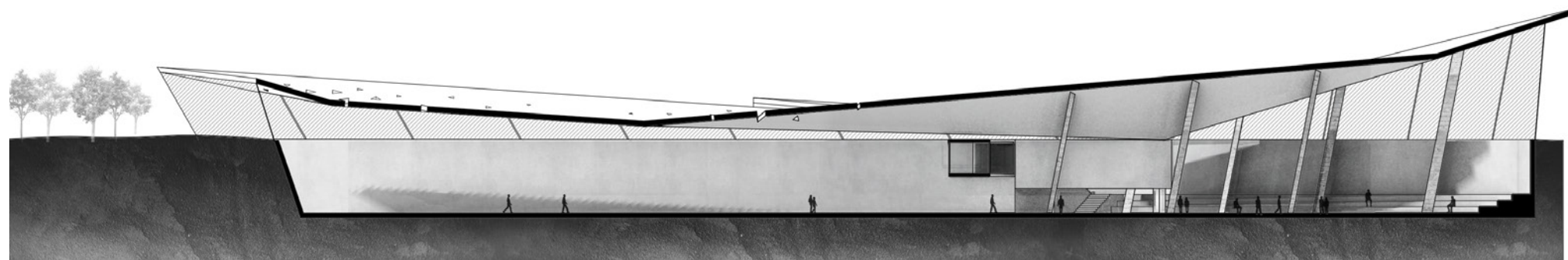
1. Entrance
Section A-A

0 1 2 4 8



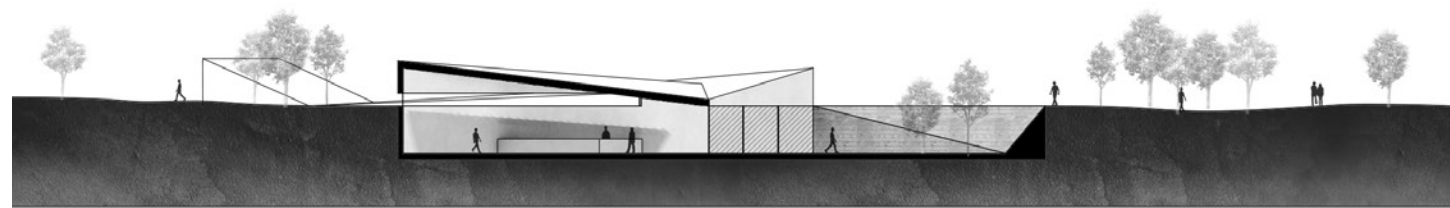
2. Exhibition
Section B-B

0 1 2 4 8



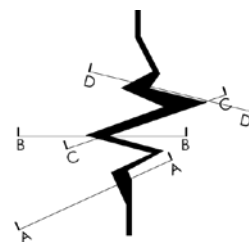
3. Memorial Hall
Section C-C

0 1 2 4 8



4. Cafe / Courtyard
Section D-D

0 1 2 4 8



Entry Corridor



Exhibition Rooms



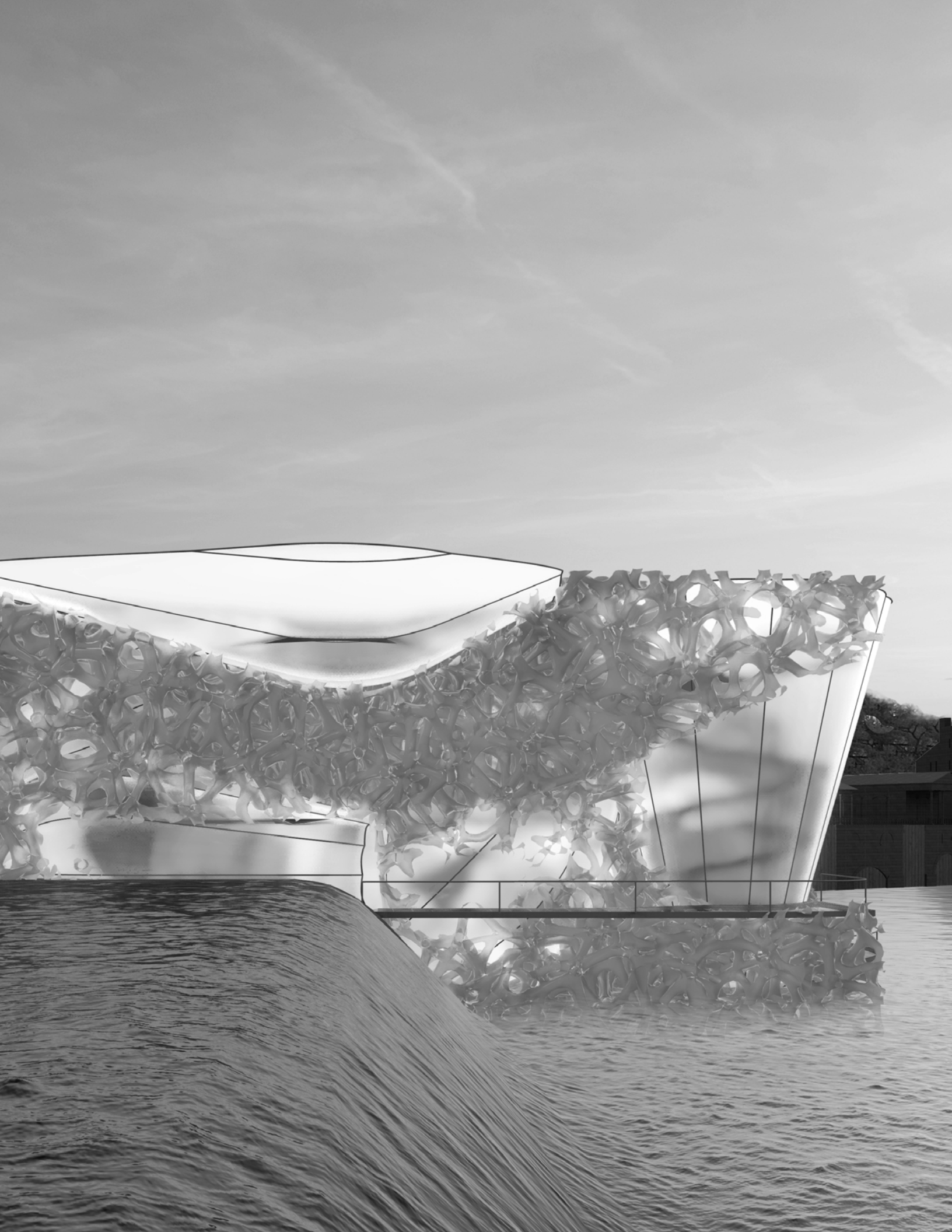
Memorial Gallery



Rooftop Walkway



Memorial Hall



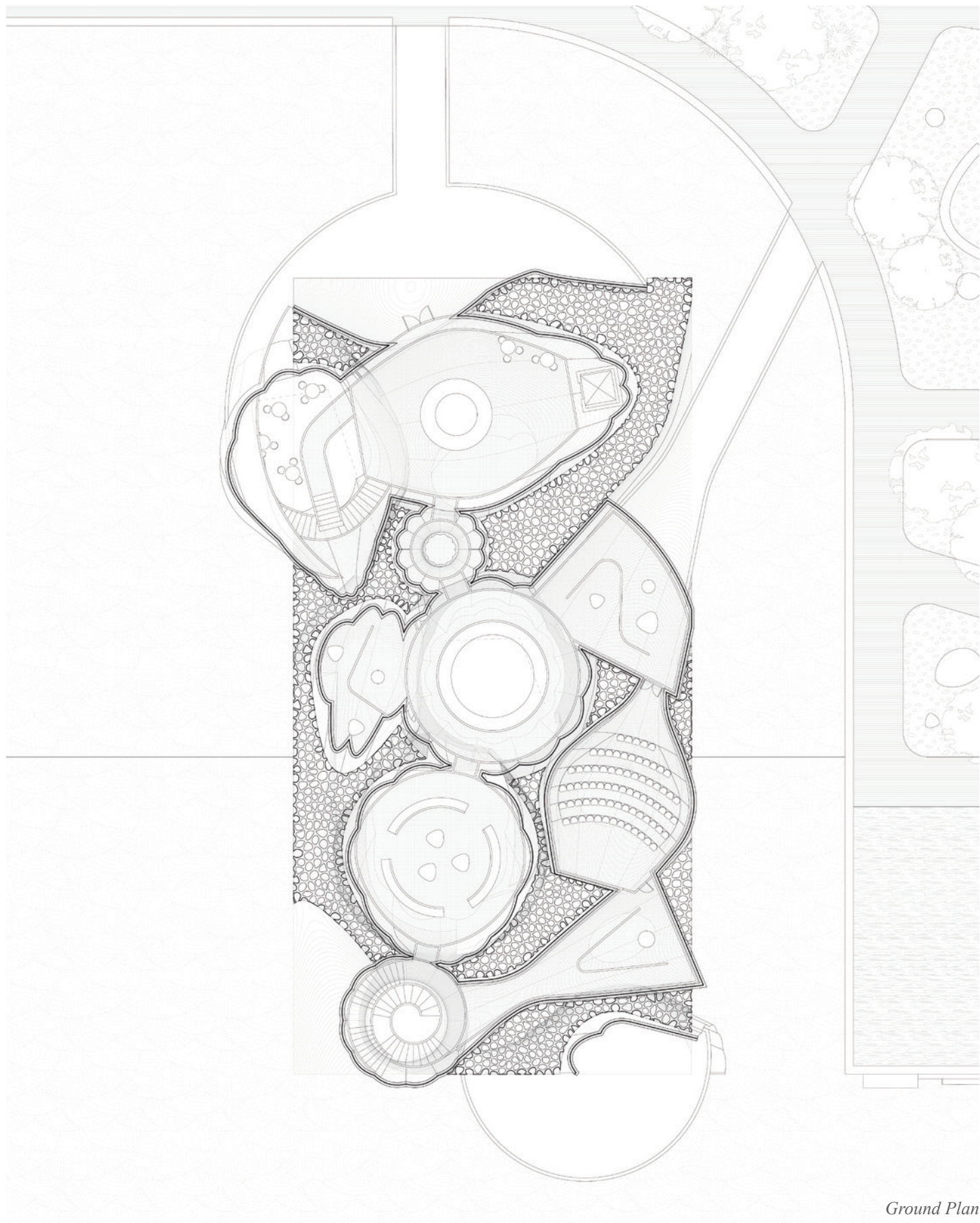
06

| The Mirage |

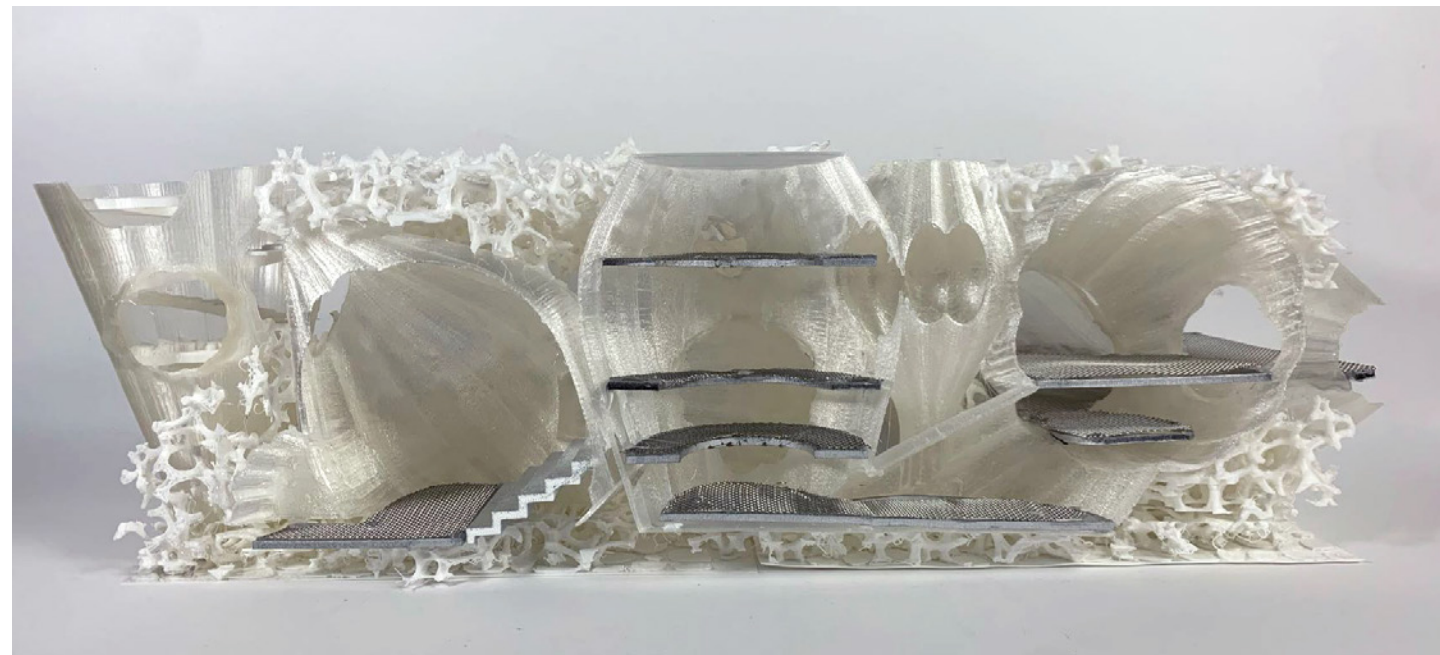
*Museum for Decolonization
Academic Studio Design
UPENN 2022 Fall - Philadelphia
Individual*

This project is challenging the traditional form of architecture by defamiliarizing the solid existence of a building. It is trying to reduce the artificial trace during the process of design and left a degree of randomness for the organic material to generate. An innovative porous material is employed to construct the form. Like liquid, wax, it is able to be solidified after being poured into water and forms countless holes within the defined poche. It obscures the traditional opposing relationship between solid & void spaces. There are infinite voids within the solid. The walls & flooring systems are separated from the exterior framework, so the interior space is more monolithic rather than being fragmental.

The void functional spaces are squeezed in the poche like huge bubbles. They are enclosed by a translucent shell fixed to the organic exterior framework. People could wander around these bubbles with ambiguous glimpses of the outside world. A sense of lightness and delicateness is introduced to the site, resonating with nature and the river below.



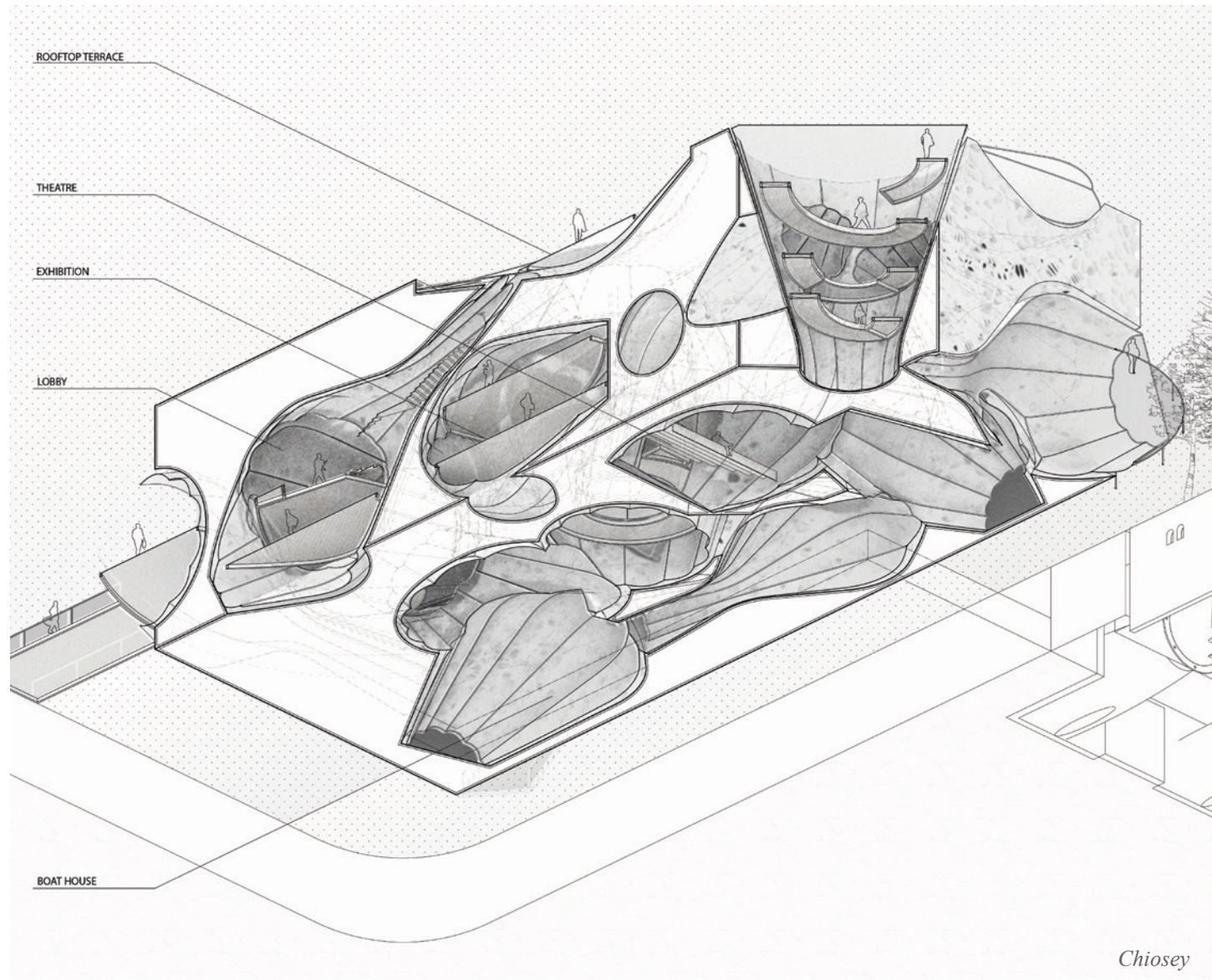
Ground Plan



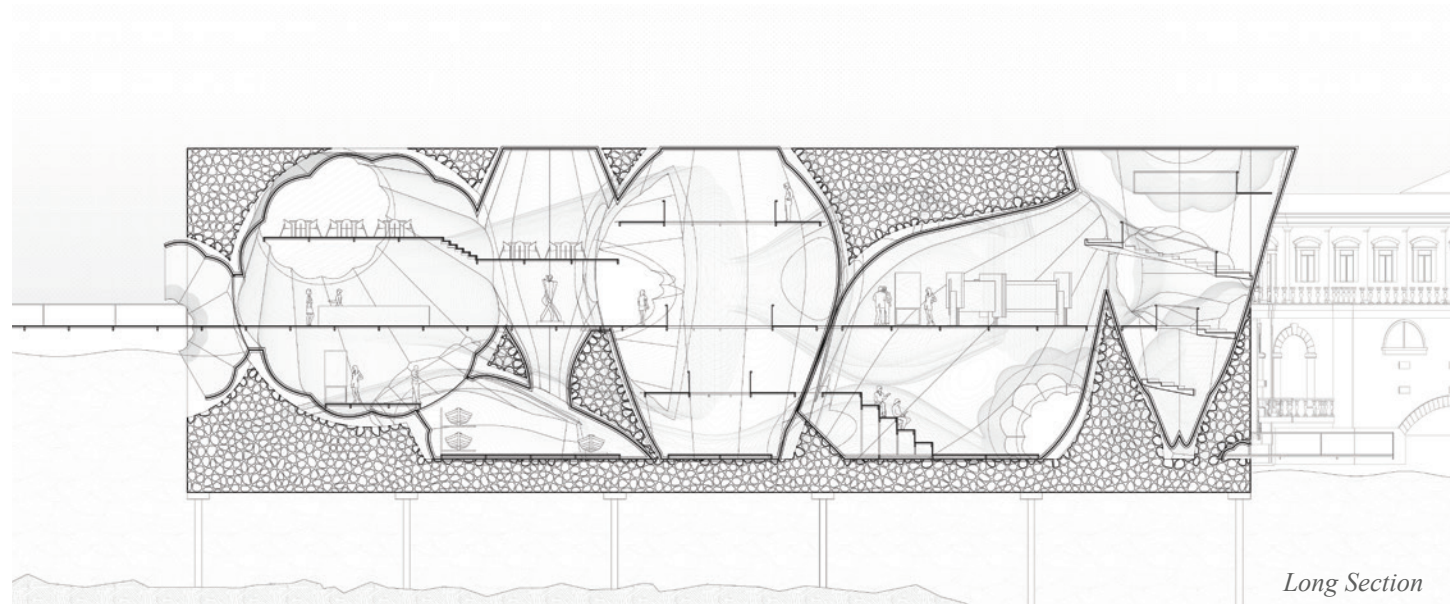
Physical Model



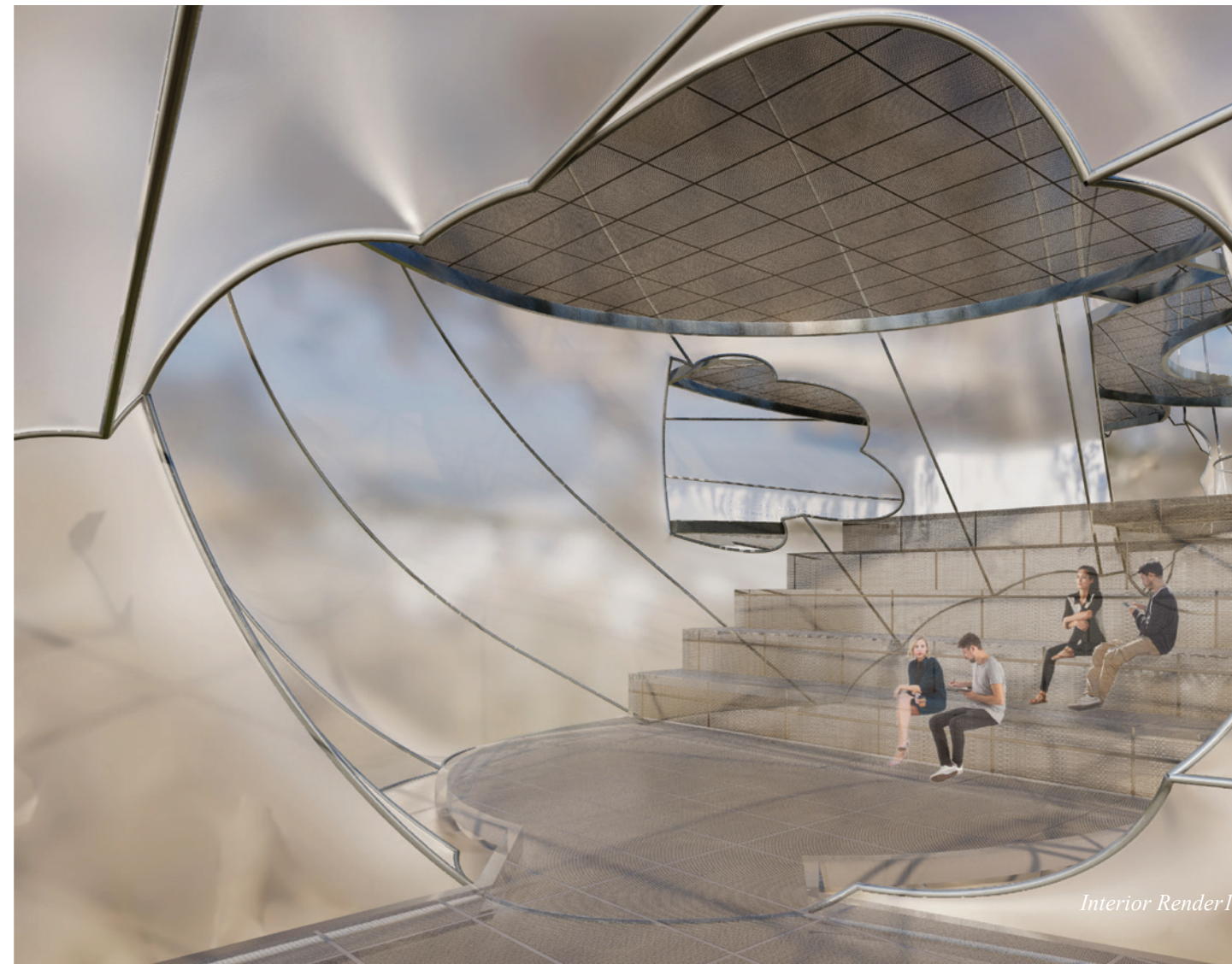
Physical Model



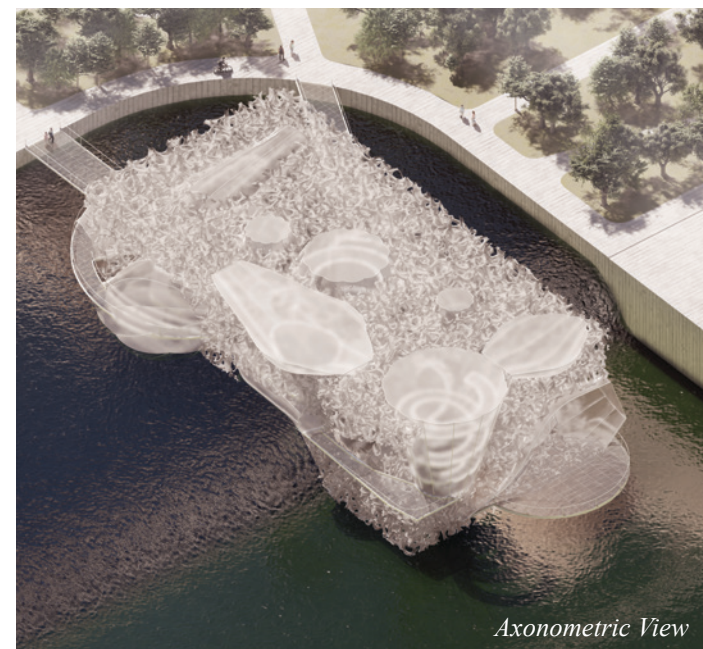
Chiosey



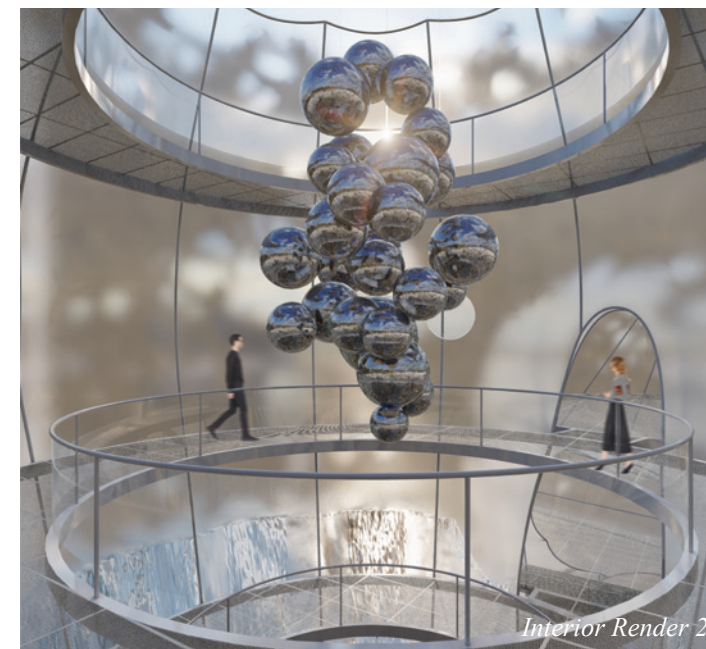
Long Section



Interior Render 1



Axonometric View



Interior Render 2

| Shidu Country Resort |

Residential Resort Project

Shidu, Hebei, 2020

Supervisor: Shujun Fang, Studio FSJ

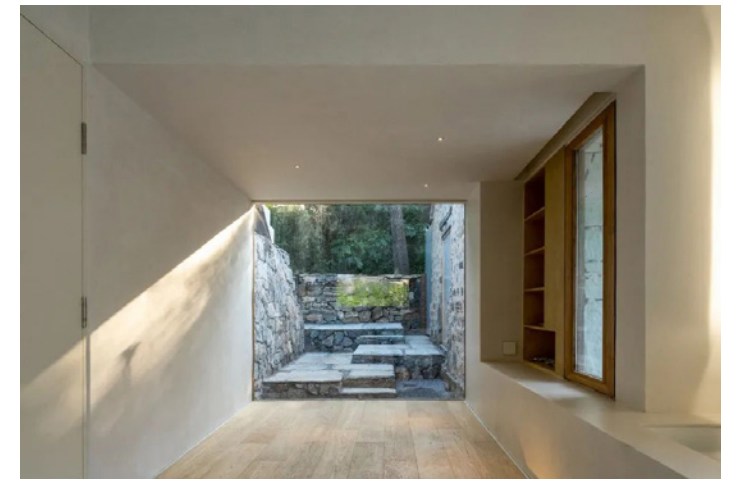
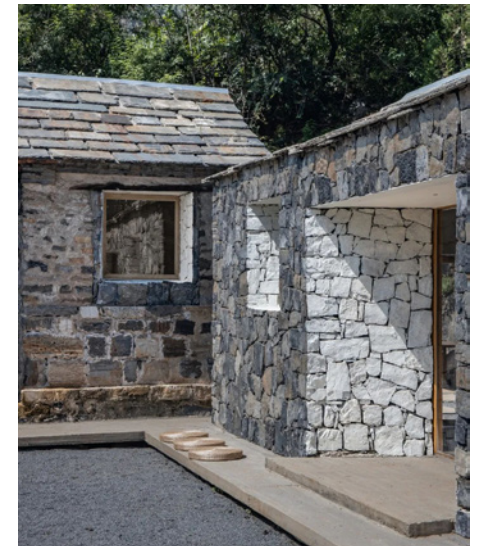
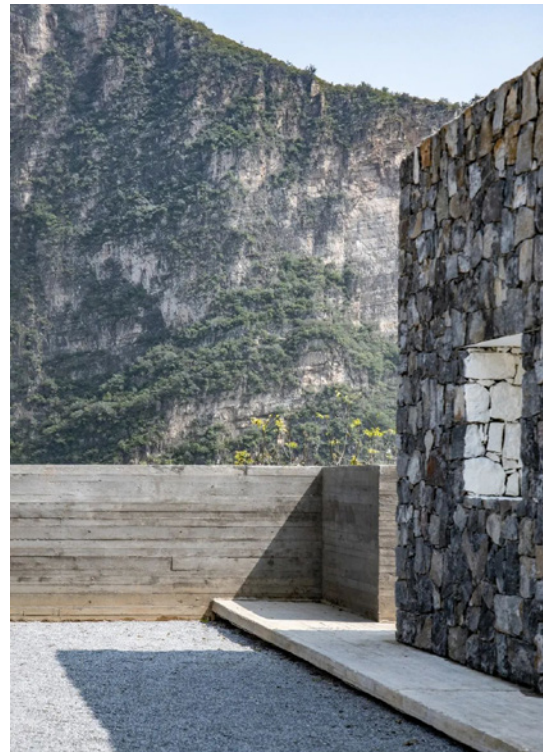
Phrase of Participation: Design Development (DD)

Role of Participation: assist the architects with schematic design, interior design, etc.

Project Status: built



Due to overpopulation, the living and public spaces in traditional quadrangle courtyard complexes are overflowed and recklessly occupied by add-on structures. Respecting the historical reminiscences, we renovated an 8sqm add-on storage, transforming it into a kitchenette with a rooftop terrace for small gatherings. We have considered not only the efficiency of facilities but also the communal attributes of the traditional courtyard to return a sociable space to the neighbors, infusing the community with vibrancy.



The Crystal

8sqm Kitchen Renovaion Project

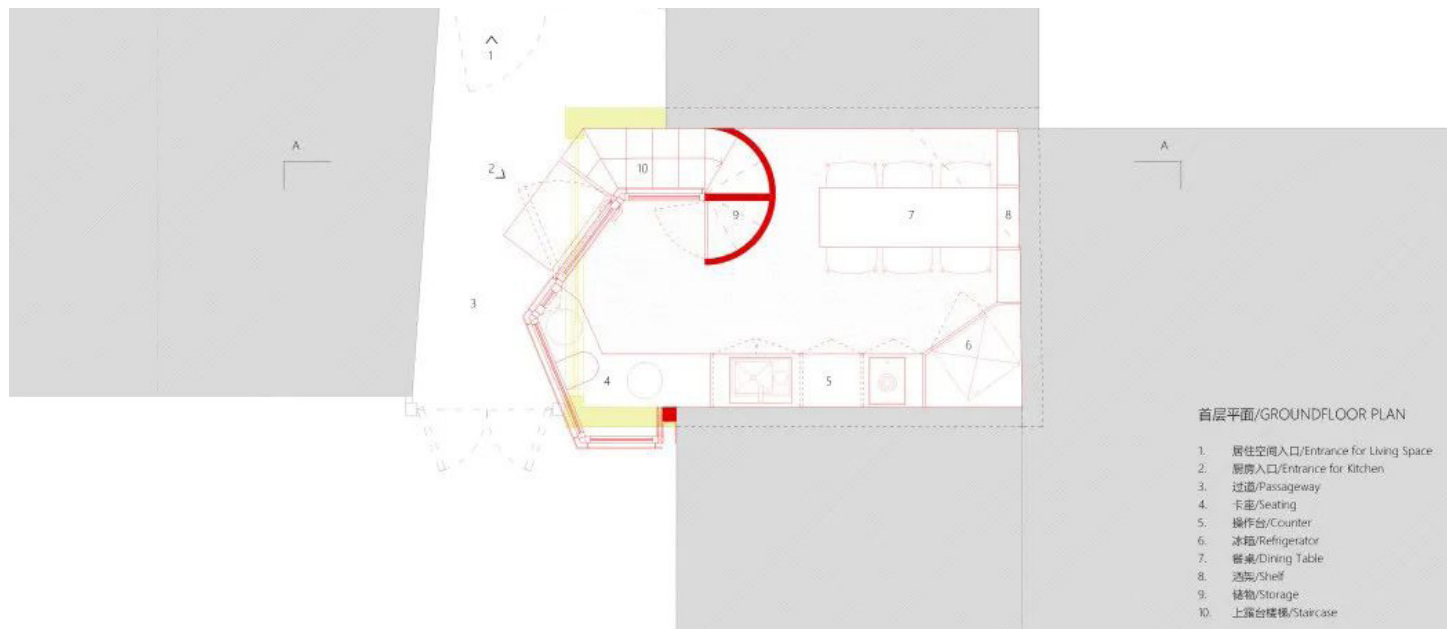
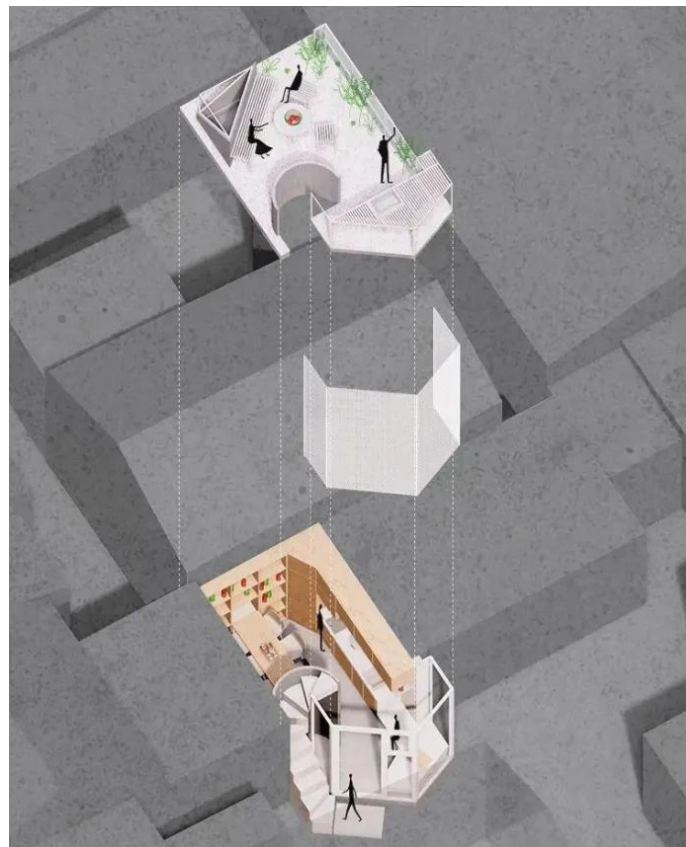
Qianhai, Beijing, 2020

Supervisor: Shujun Fang, Studio FSJ

Phrase of Participation: Construction Administration (CA)

Role of Participation: assist the architects with furniture design, construction coordination, etc.

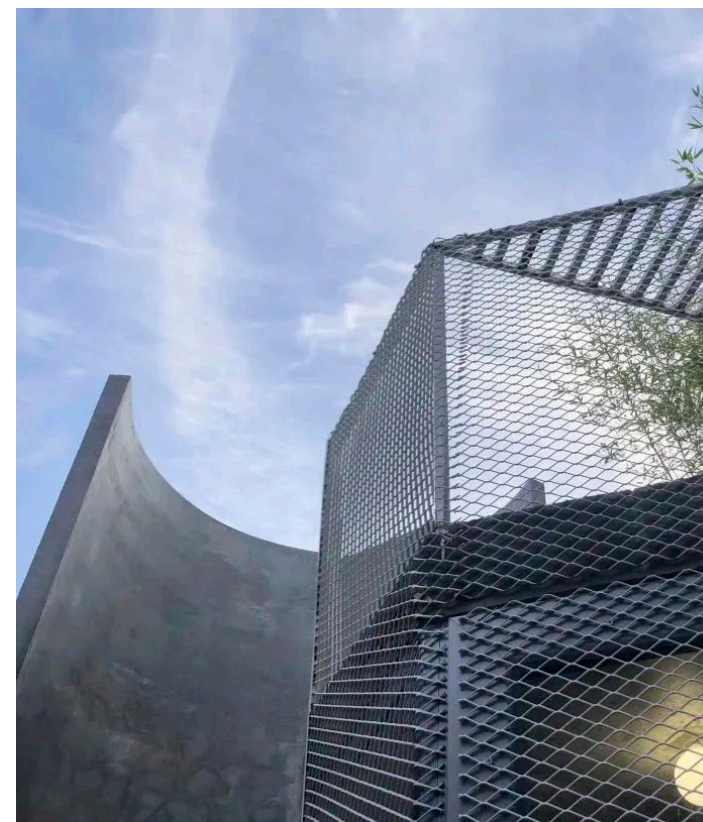
Project Status: built



首层平面/GROUND FLOOR PLAN

- 1. 居住空间入口/Entrance for Living Space
- 2. 厨房入口/Entrance for Kitchen
- 3. 过道/Passageway
- 4. 卡座/Seating
- 5. 操作台/Counter
- 6. 冰箱/Refrigerator
- 7. 餐桌/Dining Table
- 8. 透架/Shelf
- 9. 储物/Storage
- 10. 上露台楼梯/Staircase

Due to overpopulation, the living and public spaces in traditional quadrangle courtyard complexes are overflowed and recklessly occupied by add-on structures. Respecting the historical reminiscences, we renovated an 8sqm add-on storage, transforming it into a kitchenette with a rooftop terrace for small gatherings. We have considered not only the efficiency of facilities but also the communal attributes of the traditional courtyard to return a sociable space to the neighbors, infusing the community with vibrancy.



Ningbo Aranya Thermal Baths

Zhejiang, China, 2022

Supervisor: Alessandra Duka, Neri&Hu

Phrase of Participation: Design Development (DD)

Role of Participation: assist the architects with schematic design, facade design, etc.

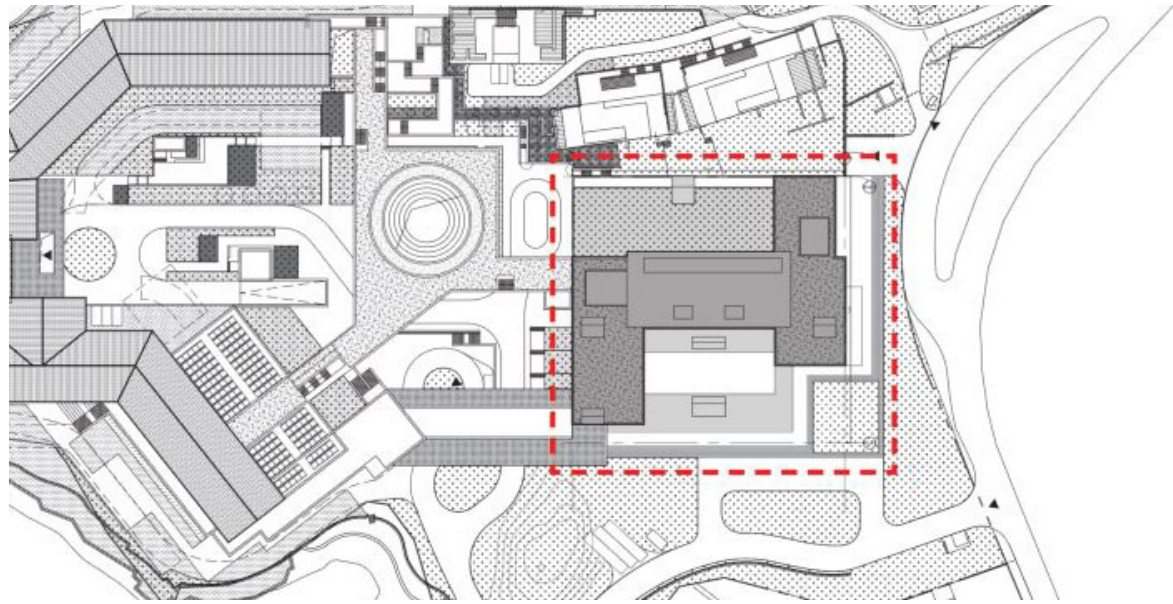
Project Status: design in progress



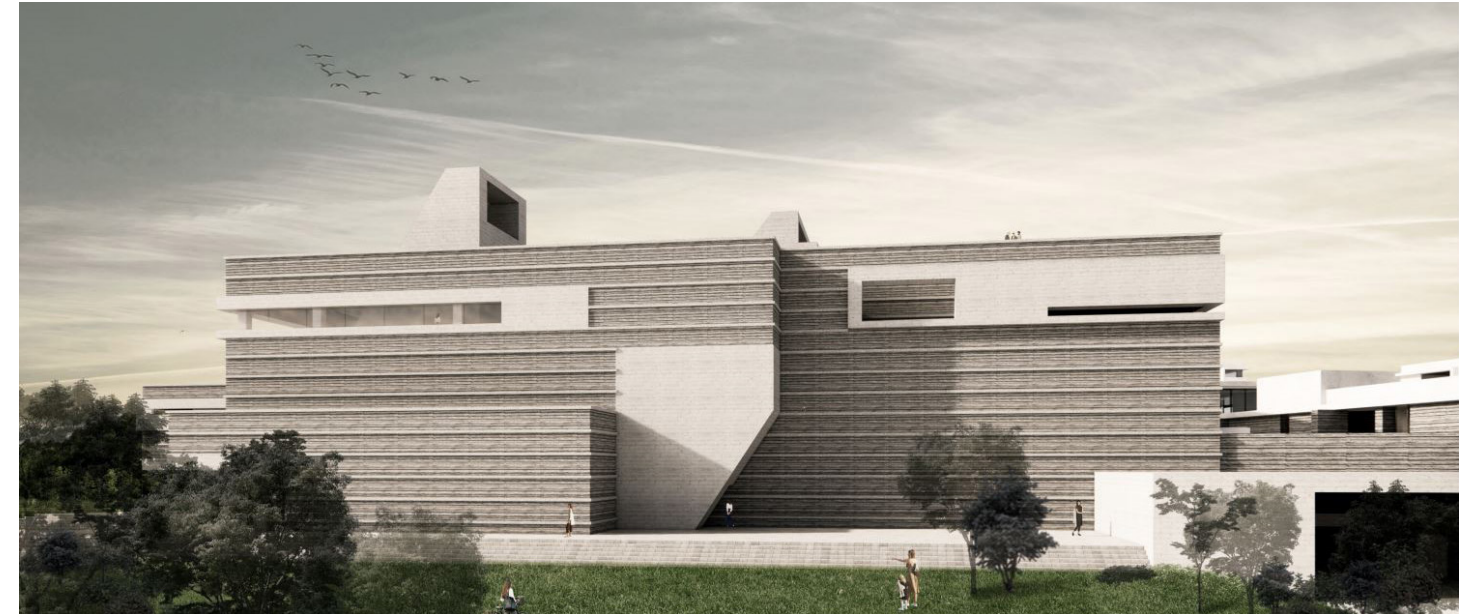
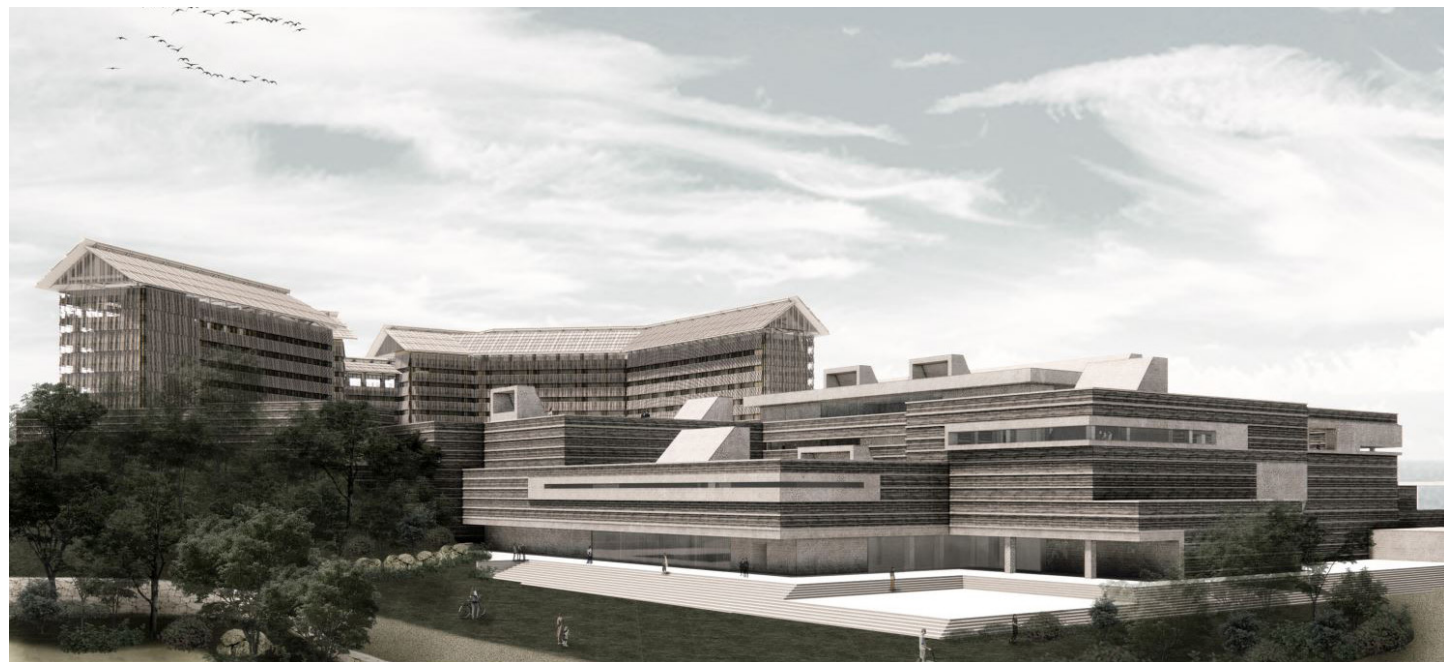
solid stone
坚实的体量



buried shell
嵌入的壳体



Master Plan



| Yango Chapel |

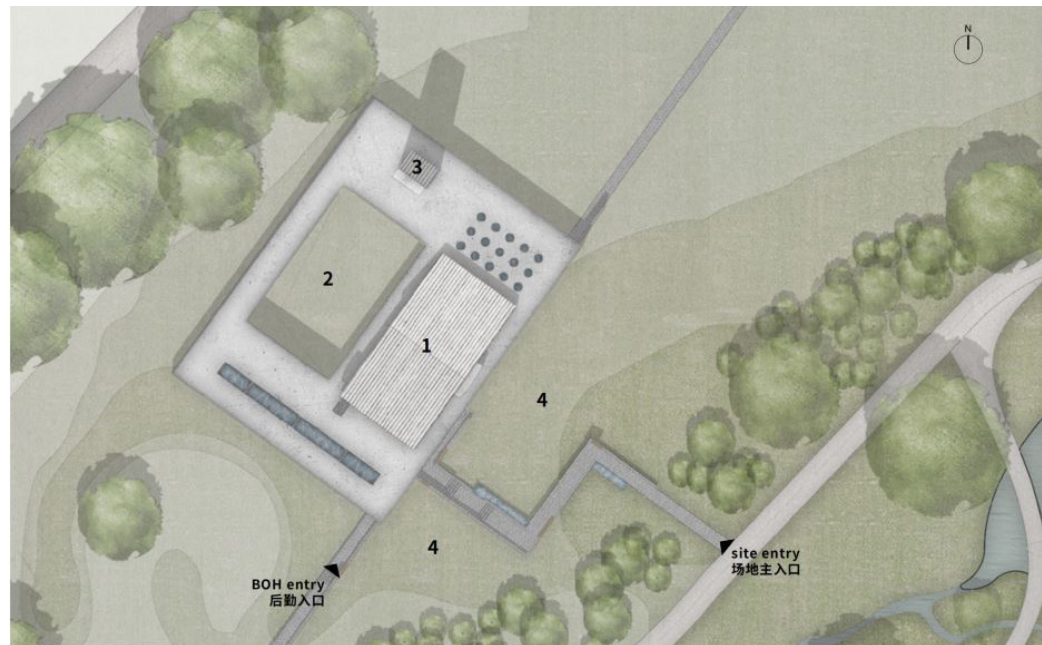
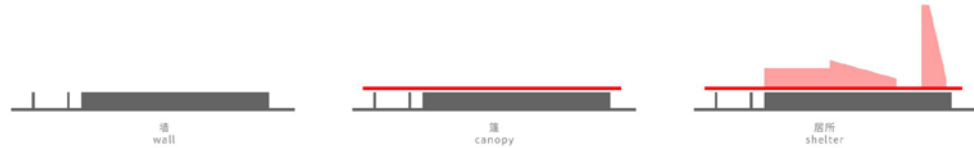
Fujian, China, 2022

Supervisor: Yinan Li, Neri&Hu

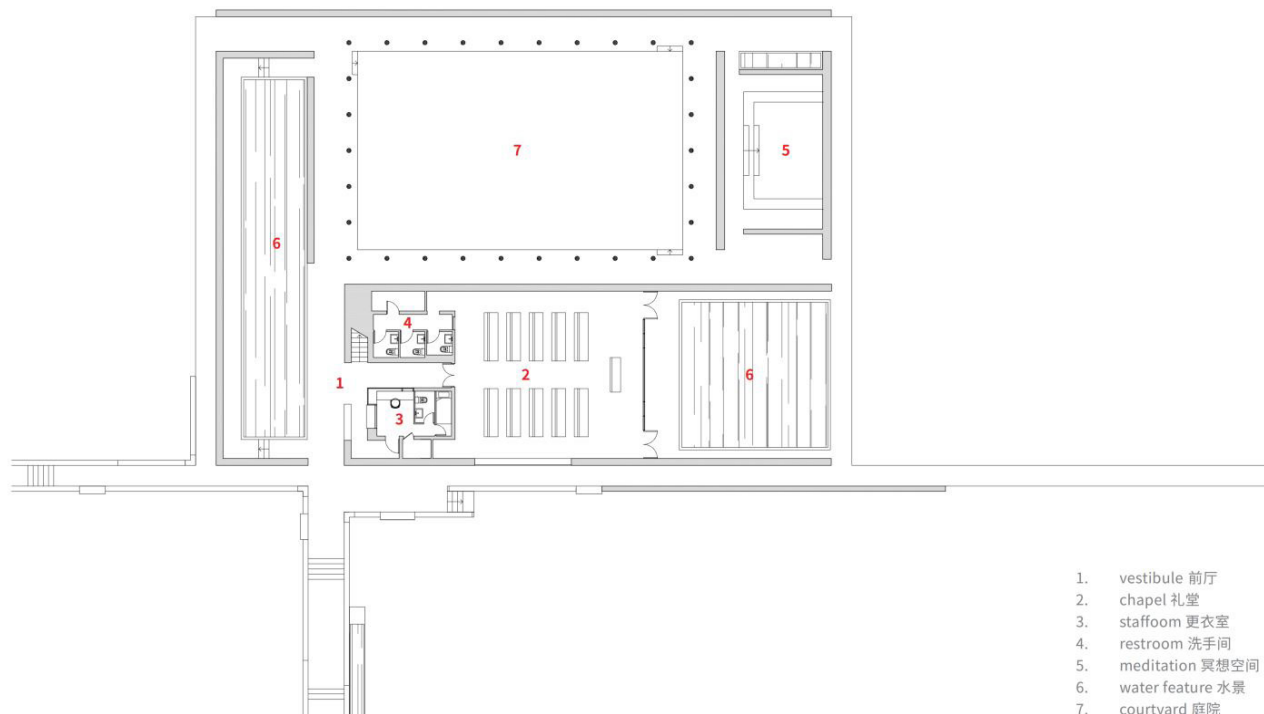
Phrase of Participation: Design Development (DD)

Role of Participation: assist the architects with schematic design, landscape design, etc.

Project Status: design in progress



- 1. chapel 礼堂
- 2. courtyard 庭院
- 3. tower 塔楼
- 4. grass 室外草地



- 1. vestibule 前厅
- 2. chapel 礼堂
- 3. staffroom 更衣室
- 4. restroom 洗手间
- 5. meditation 冥想空间
- 6. water feature 水景
- 7. courtyard 庭院





RIA RUIXIN
Z H A N G
P O R T F O L I O