

# Ephemeral Occurrence Temporal

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## **Ephemeral Temporal Occurrence**

I think with verbs rather than nouns. Just as there is an expression in my culture that a house breathes, architecture is not static as a noun. In fact, everything is moving with verbs.

**01. WATER AND DATA AS PUBLIC ELEMENTS**  
2022 Summer Advance Studio

**02. STUDIO AS AIR**  
2022 Fall Advance V Studio

**03. ROUND, GROUND, SURROUND, UNDERGROUND**  
2023 Sprint Advance VI Studio

**04. GRIDS AND PATTERNS**  
2022 Advanced Curtain Wall

**05. HUBSON YARDS TRANSIT HUB**  
2023 Re-Thinking BIM

# WATER AND DATA AS PUBLIC ELEMENTS

## 2022 SUMMER ADVANCED STUDIO

Individual Work

Advisor : Dan Wood

Program : Data Center, Water Retention Facility

Location : 122 Amsterdam Ave, New York, NY (Lincoln Square)

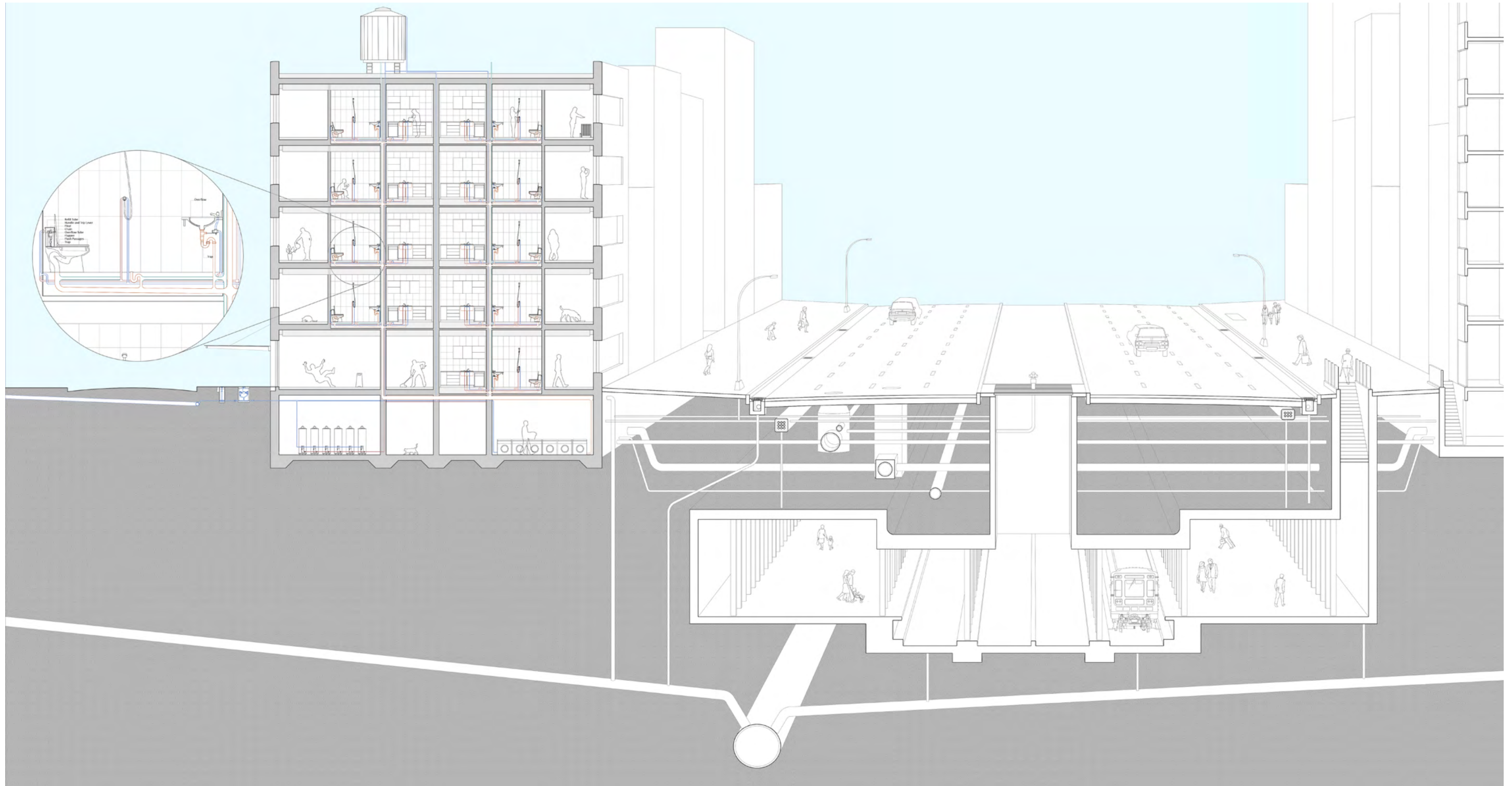


Physical Model on South Elevation

Water and data are the resources that we use every day. They are distributed through pipes and cables and processed through water treatment facilities and data centers. Even though the elements we use are public, the facilities that treat water and data are hidden or isolated

and unrecognized by the public. Combining two hidden and secured facilities, the project reimagines the possibilities to operate together and create by-products to bring public effects.

Section Drawing of Water System in the Building and Street (Studio Joint Drawing)



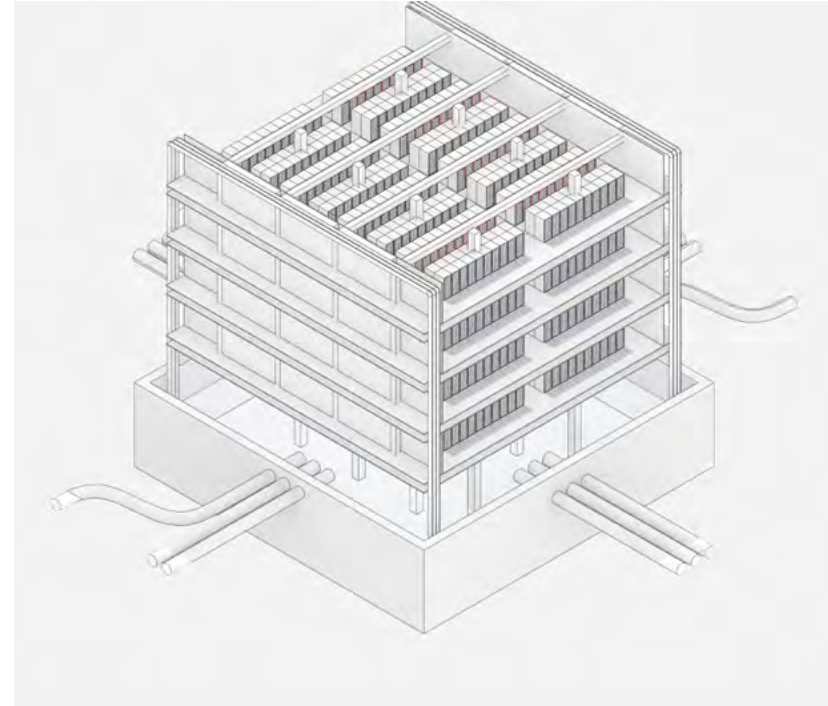
Section Drawing of Water System from Reservoir to Water treatment (Studio Joint Drawing)



Concept model



Water Retention and Datacenter



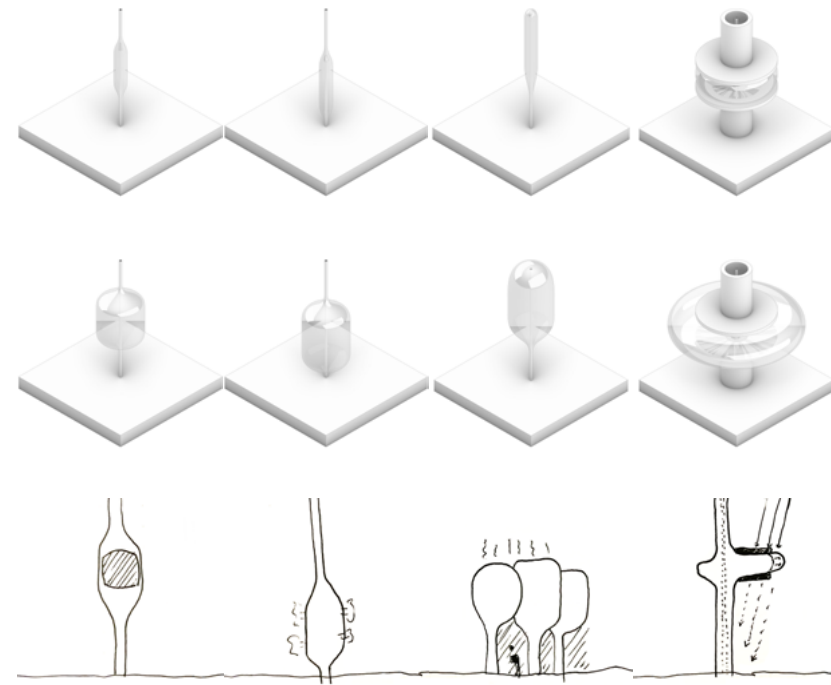
Aerial view of physical model



Study model on inflating structure



Variations of inflating structure using heated water



Datacenter is a collection of servers that generates heat, and cooling is essential. From the basic operation, overflow water can be used in diverse ways in different states of water: cold water, heated water, and vaporized water. The initial idea began with maintaining the security and

function of the facilities but transforming space and structures are attached. As well as inflating structures affecting each other. Inflating structures were studied for effects such as projection walls and structures for coldness or extreme heat.

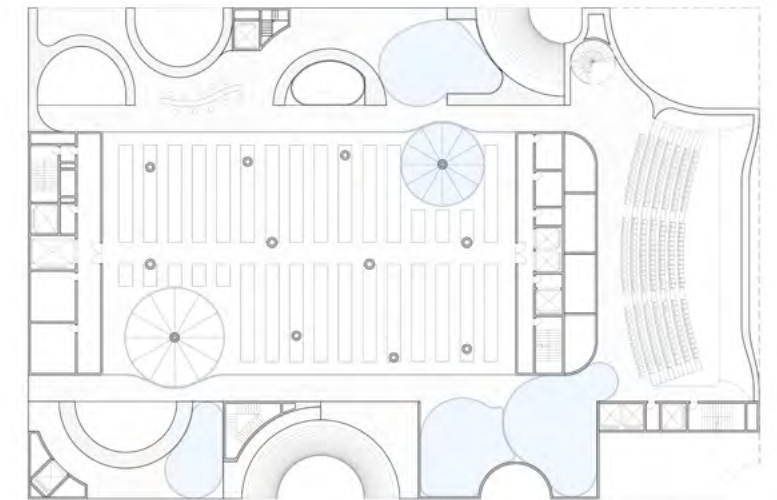
Inflating Structure on the Exterior, Public Space



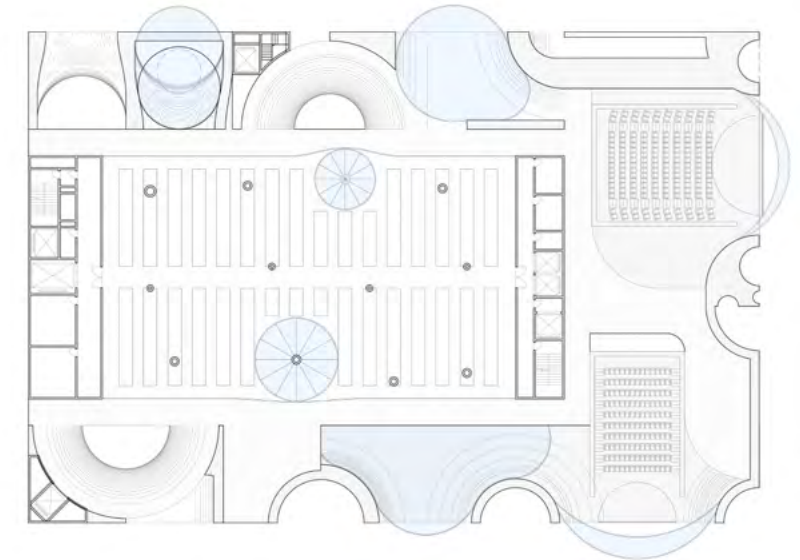
Rain Water Collecting Pipes and Inflating Structure in the Data Center



Floor Plan



1st Floor



4rd Floor

1. Data Center (Secured Area)
2. Performance Hall (Public Area)
3. Theater (Public Area)

Data Center is located in the middle of the project, and public spaces such as theaters surround it. There are two kinds of balloons or inflating structures; structure located within the data center area inflates when rainwater is collected from the roof. On the other hand, structures outside the data center inflate when steamed or in hot water, a by-product created from cooling the data center.

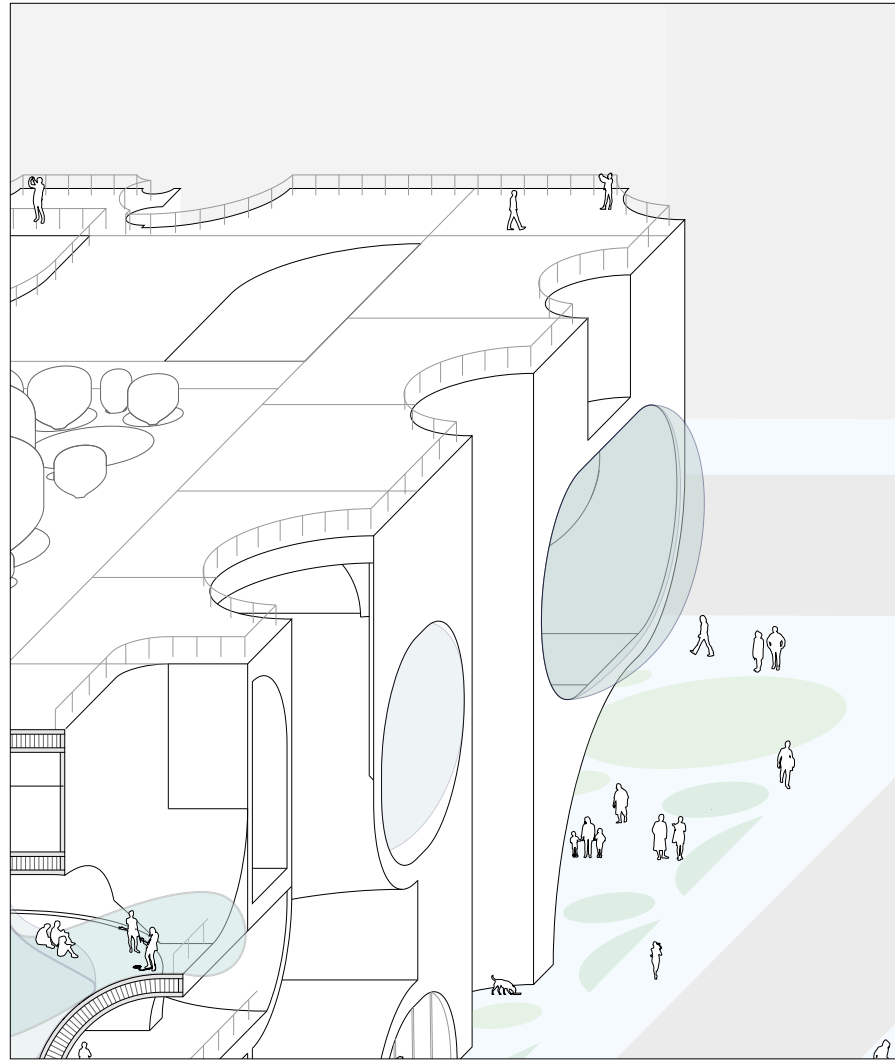
Size and shape of the structure change depending on the weather condition and data usage, which create different spatial experiences and usage.



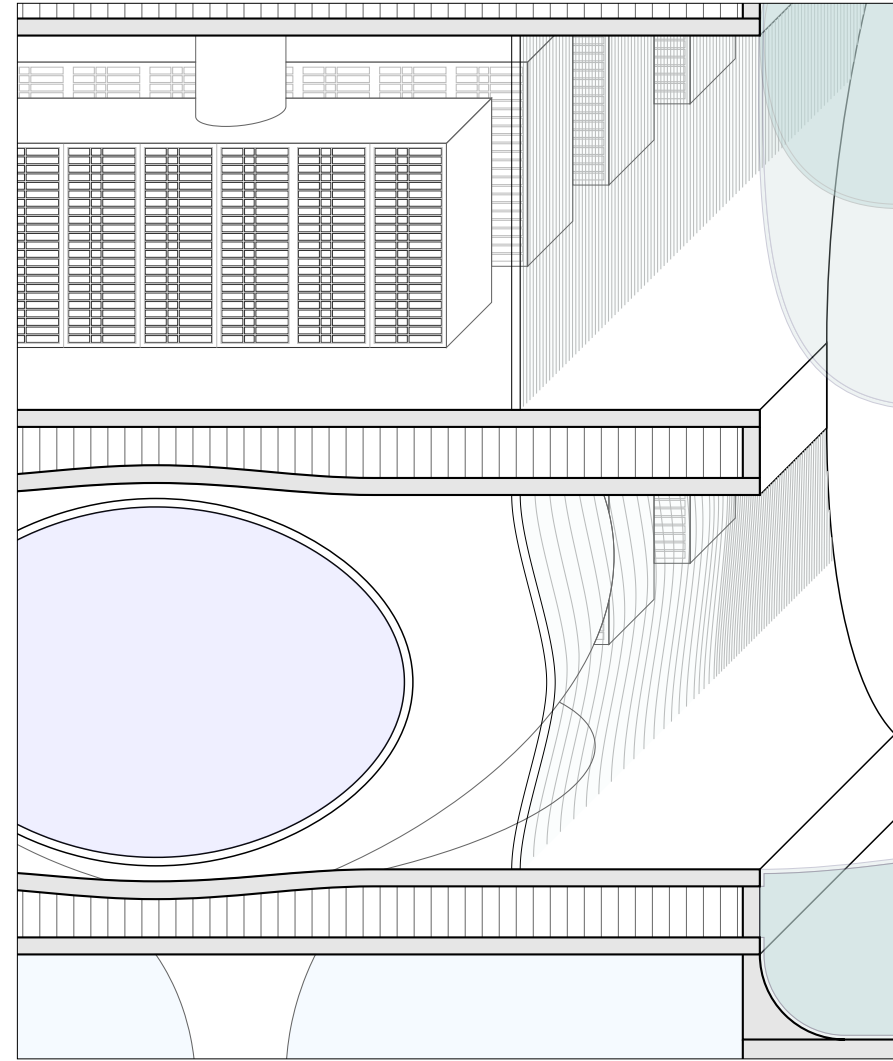
Oblique Section

Pipes penetrate the data center to use rainwater or reuse overflows to cool down the server. Whereas, on the periphery, the walls are curved inside out to reveal what is happening inside the building and provide structure to contain inflating structure. Excessive usage of servers or extreme heat weather can generate hot water, which can be utilized for inflation, providing artificial shade for the servers. Also, the canopy can be extended to provide heat shelter.

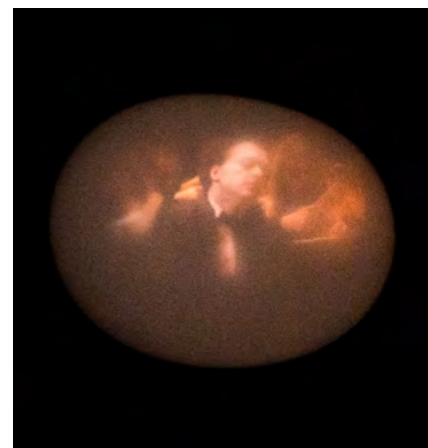
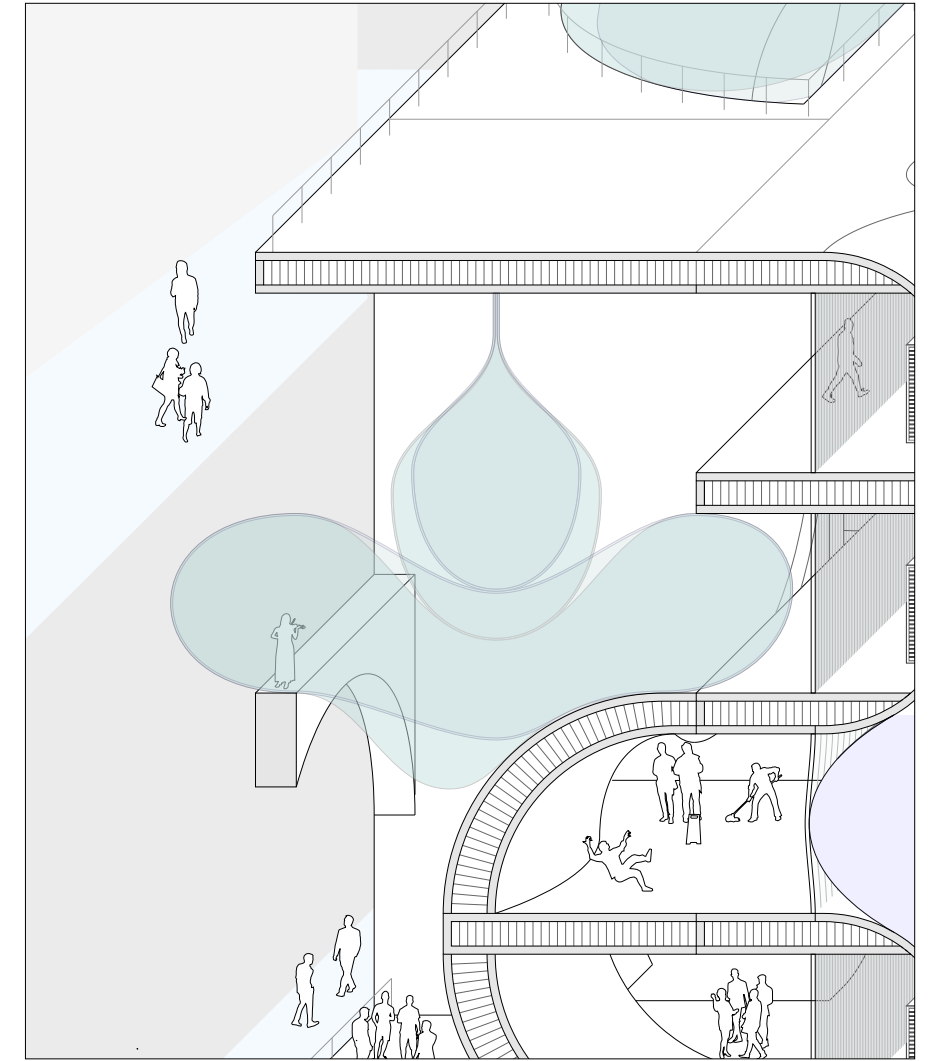
Inflating Structure on the Exterior, Public Space



Inflating Structure on the Exterior, Public Space



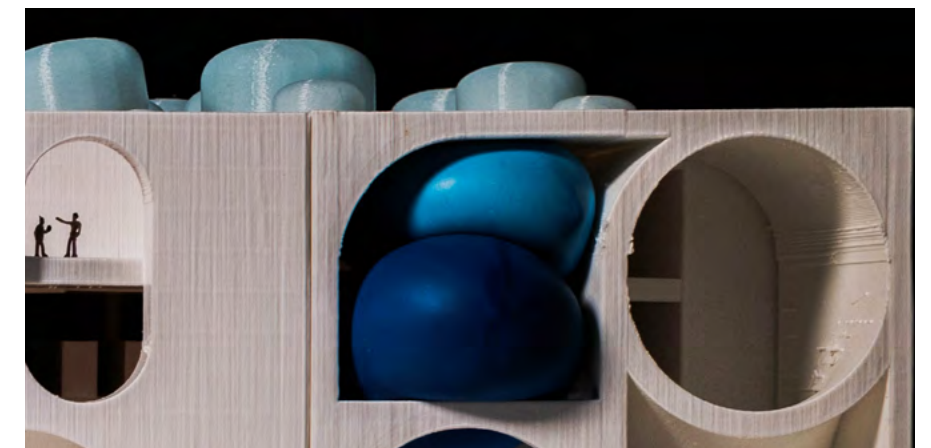
Inflating Structure on the Exterior, Public Space



On the block corners, projection structures are placed with a stage and theater to expose the events inside and sometimes project data stored to pedestrians.



When there is excessive rain, bubbles in the server temporarily collect the water, which expands and touches the elastic membrane. Dense patterns on the membrane will be expanded to reveal hidden servers to visitors.



When structures are stacked on top of each other, the heaviness of water balloons can press indoor balloons to change the characteristics of the space, combined or divided.



# STUDIO AS AIR

## 2022 FALL ADVANCED V STUDIO

Group Work with Armita Peirovani, Jae Sung Lee

Advisor : Bernard Tschumi

Program : School of Architecture

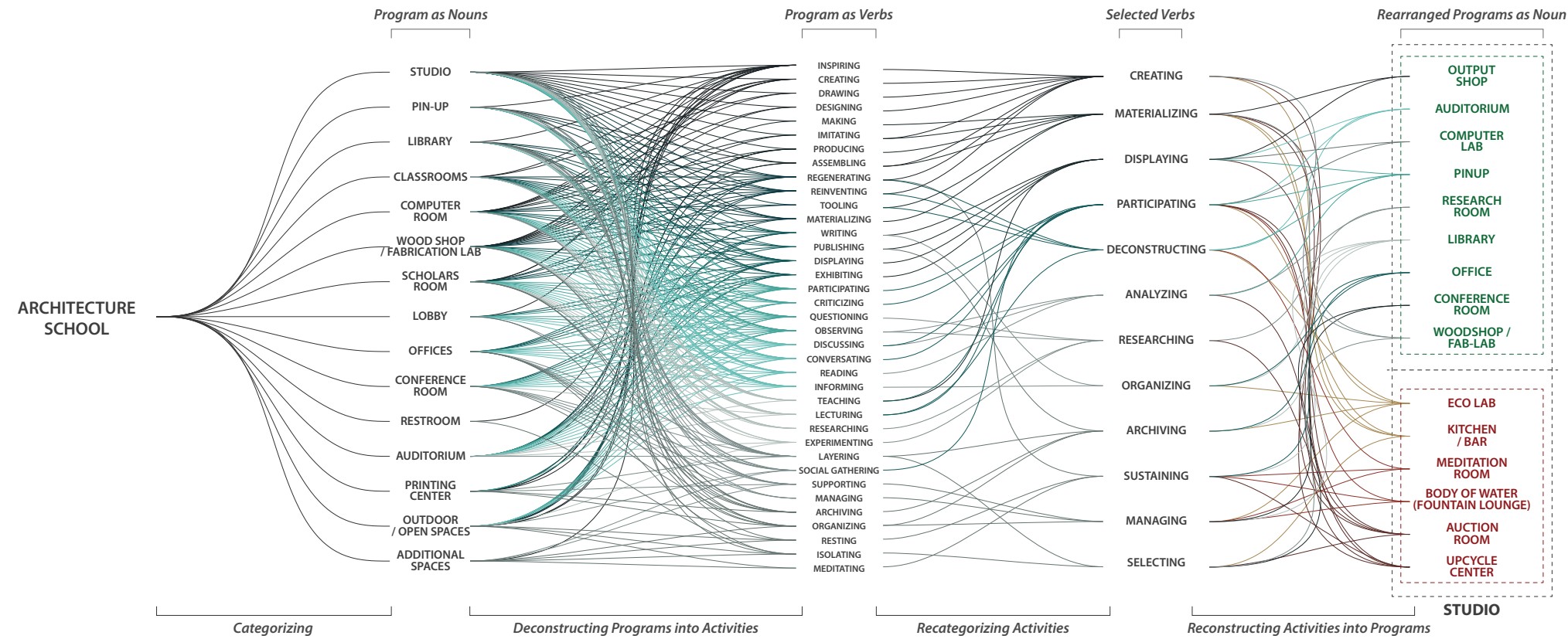
Location : 840 12th Ave, New York, NY (IRT Powerhouse, Hell's Kitchen)

X-Ray Perspective from 58th Street

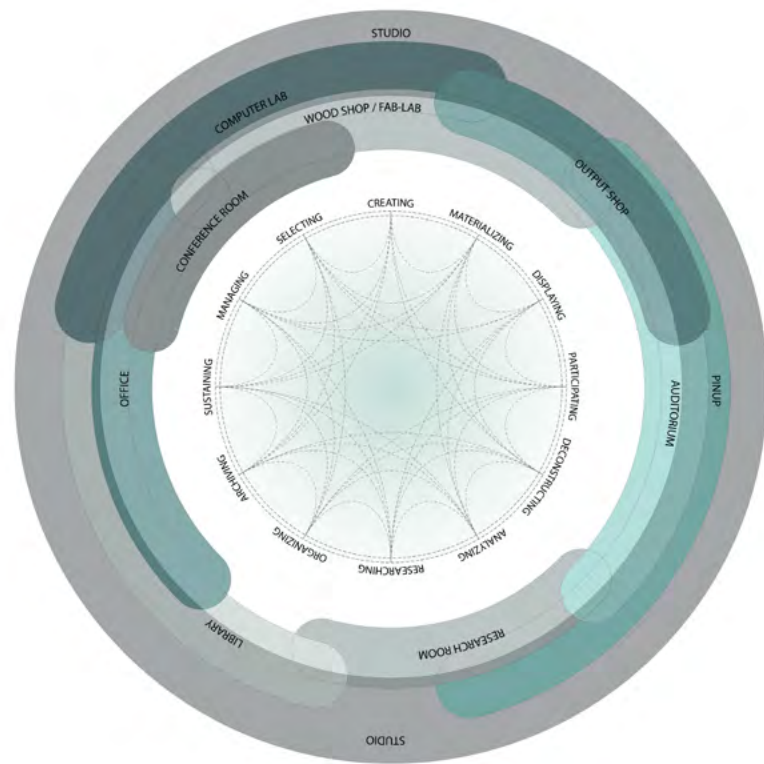
Architecture education takes place everywhere as if we are surrounded by air and breathing in and out without intention. Students and faculties are affected and influenced by this air, what they see, what they feel, and how they think. The goal of the boundless studio is to allow the studio space to be present everywhere. By navigating through boundless, air like studio, students will learn from one another without limitations and ultimately start to take advantage or adapt themselves to the floating programs in this aerial space.



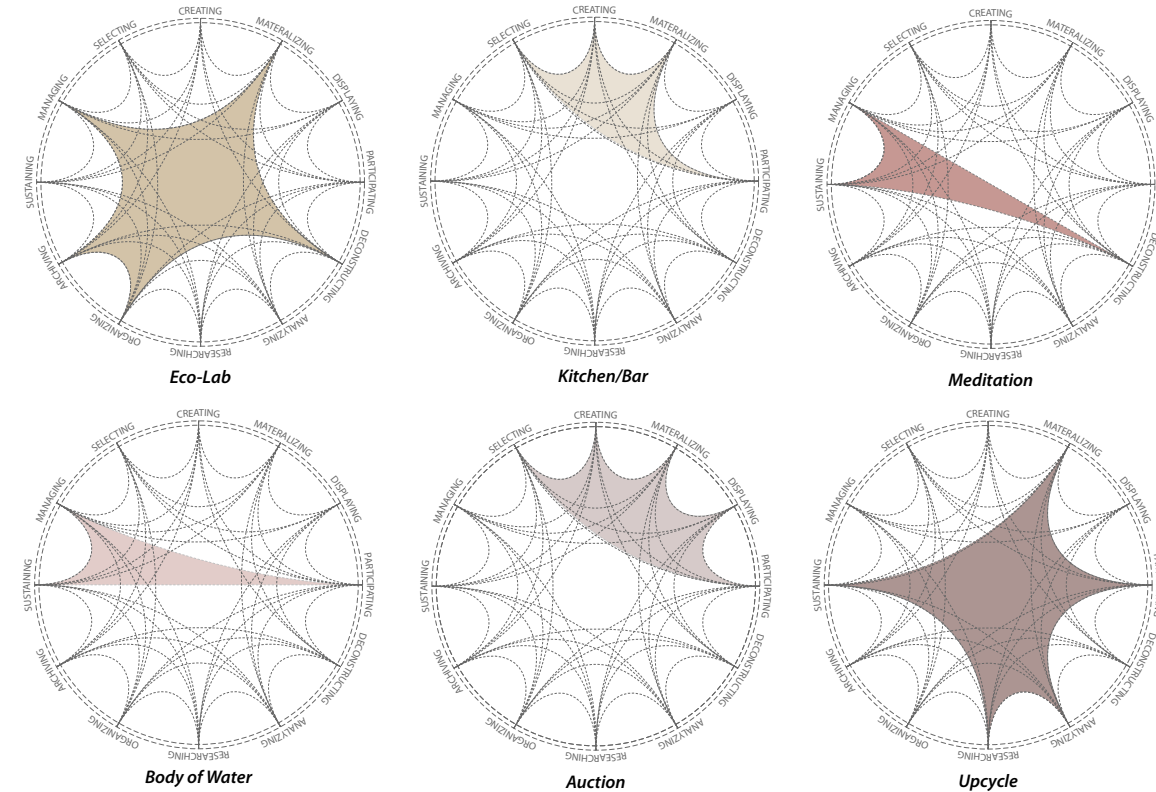
## Reconstruction of Verbal Activity to Program



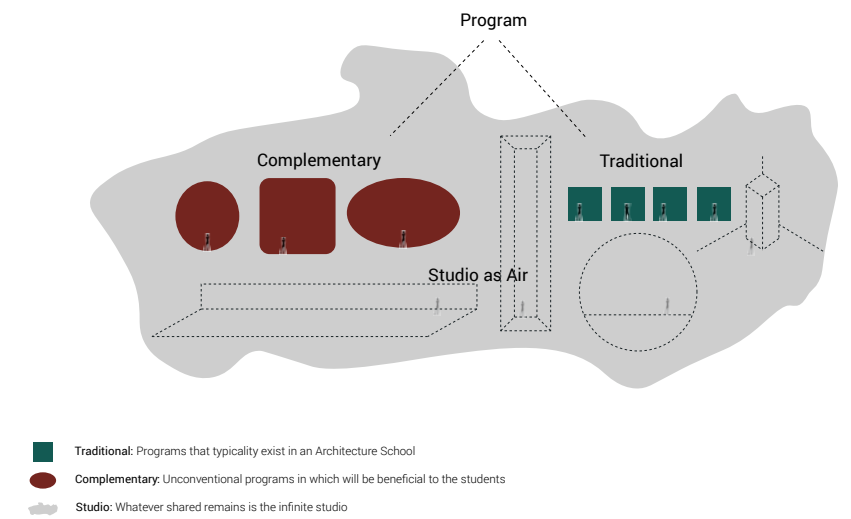
## Visualization of Program's Activities



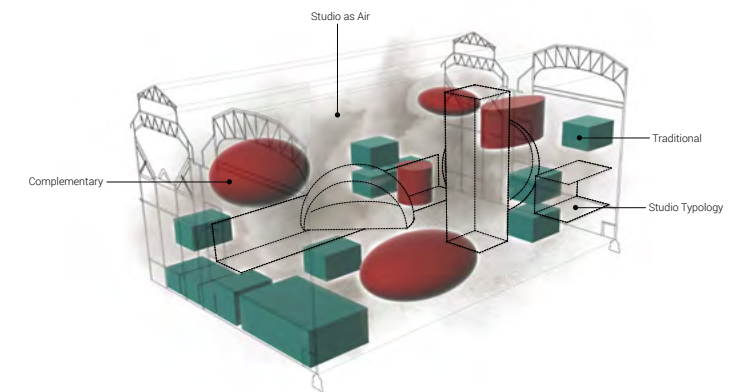
## Complementary Program Created from Existing Activities



## Program Introduction



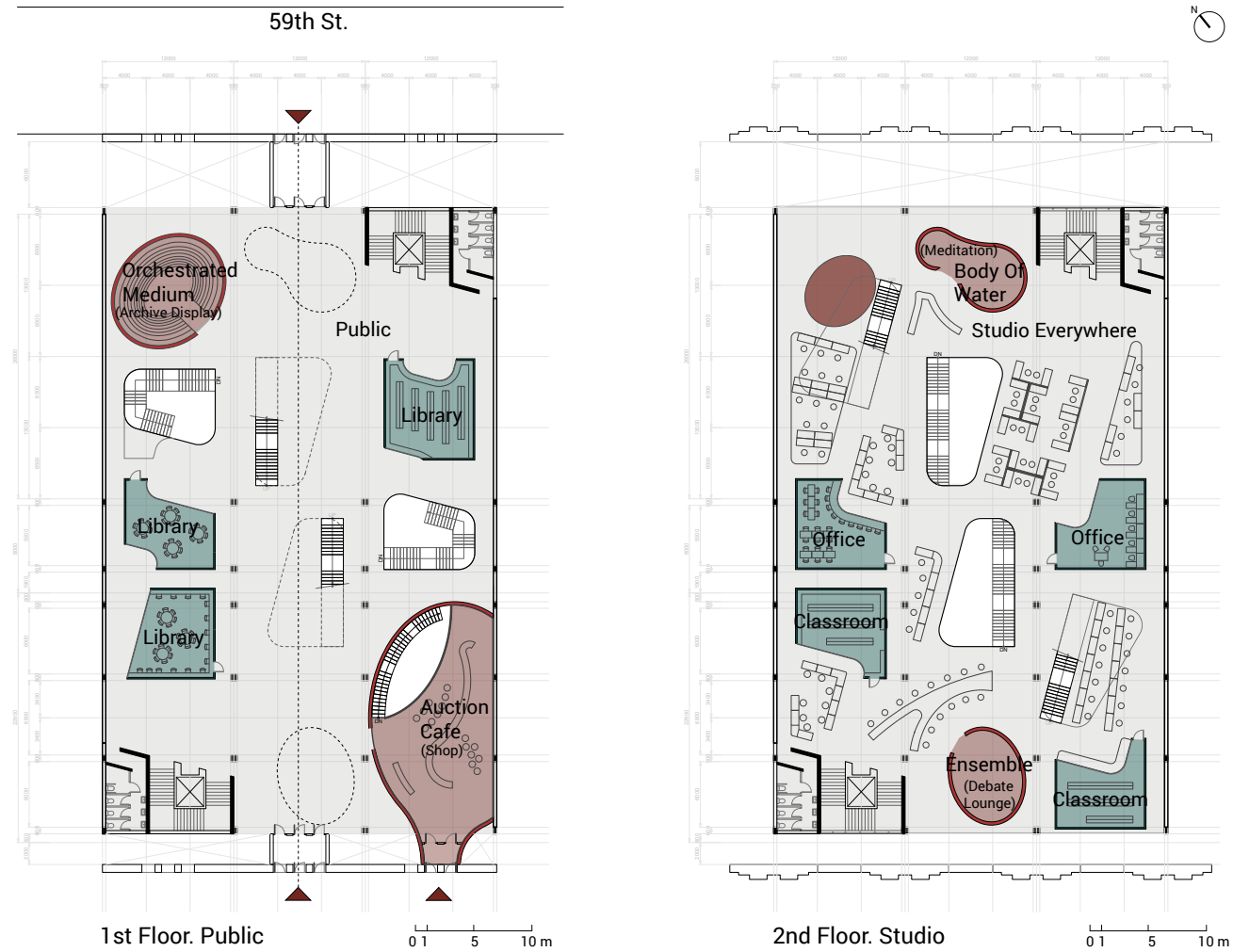
## Studio as Air



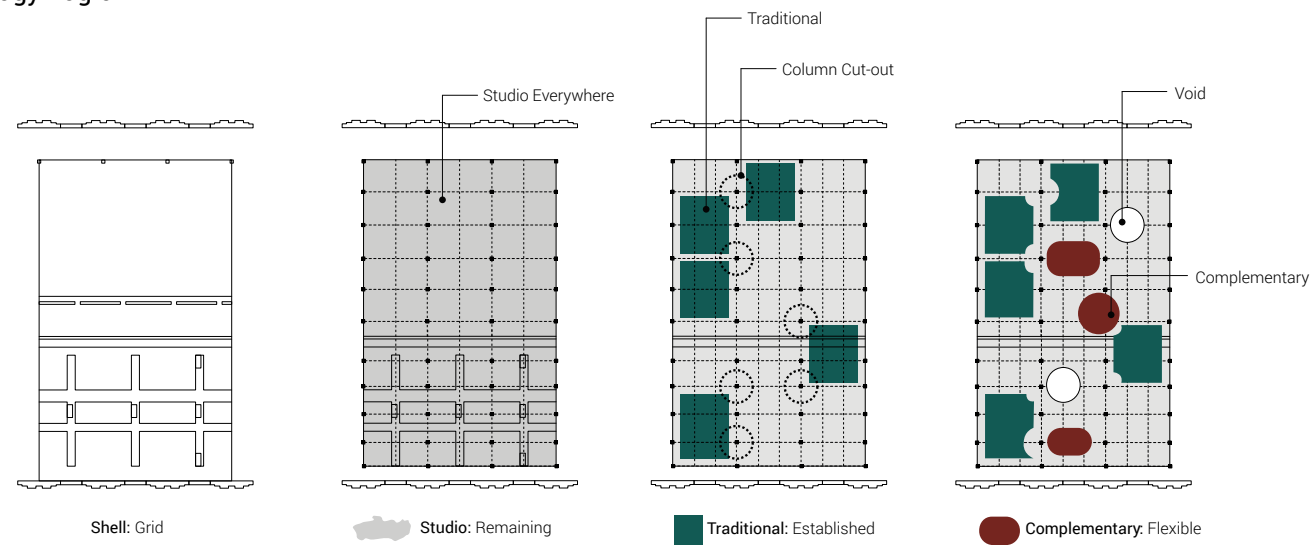
## Program as Verb

To refine programs in architecture school, I reorganized space through activities or verbs by avoiding defined space preconceptions. Typical programs in an architecture school are often boxed out and assigned dedicated spaces. However, the studio is the main program that shares most of the activities with all the existing traditional programs. For example, a library is no longer a noun but a verb such as organizing, archiving, sustaining, and managing. The logic is to find common ground between defined spaces and activities within that space. Following this chart, we introduce complementary programs that sometimes exist in an architecture school. Because they follow the design of verbal logic, they are still in tune with the rest of the school and will complement the learning experience. For example, a meditation space that shares the same activity as an auditorium where in one, you deconstruct your mind and in other, you deconstruct ideas.

## Floor Plans



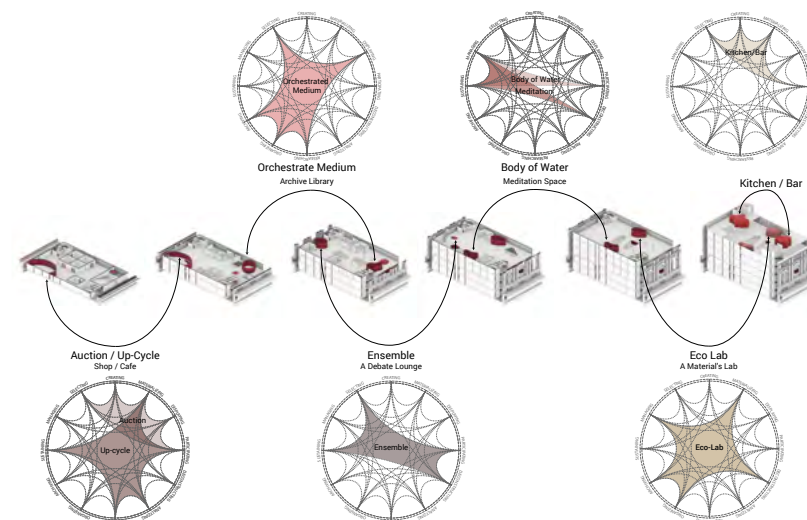
## Typology Logic



## Interior Rendering



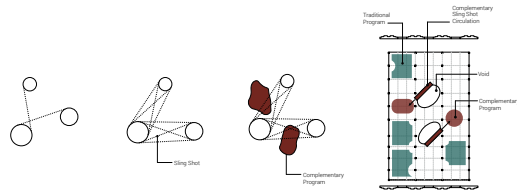
## Complementary Unity



## Typology as City

The basic logic of typology in this school revolves around the studio being the remaining aerial space between a city created by the traditional and complementary programs. Using the existing grid system of building structure and shell, I set the gray part as a studio and the green box as traditional programs. And then, I took away masses from the boxed-shaped traditional spaces to make more rooms and variations for the studio and the complementary programs. In addition, by making voids on slabs, I connected the space vertically with these aerial studios on different floors to reduce the boundaries as much as possible. The result is studio as air that hovers over complementary and traditional programs, which promotes the existence of all programs together without hierarchy.

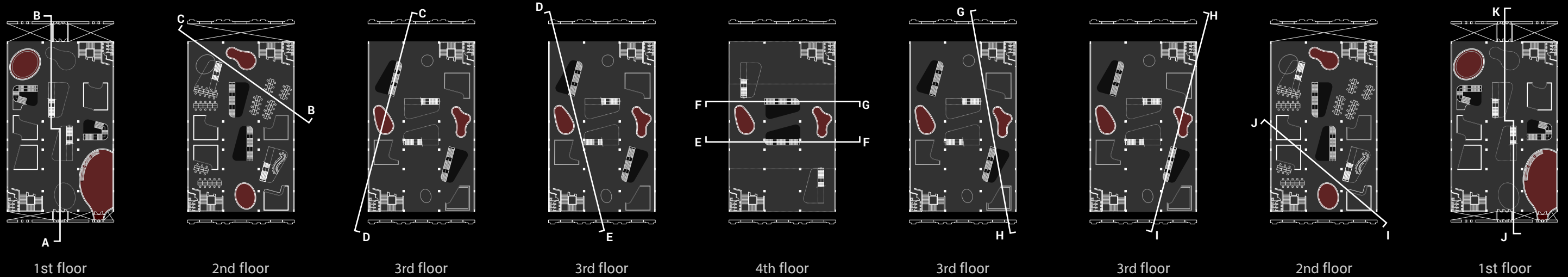
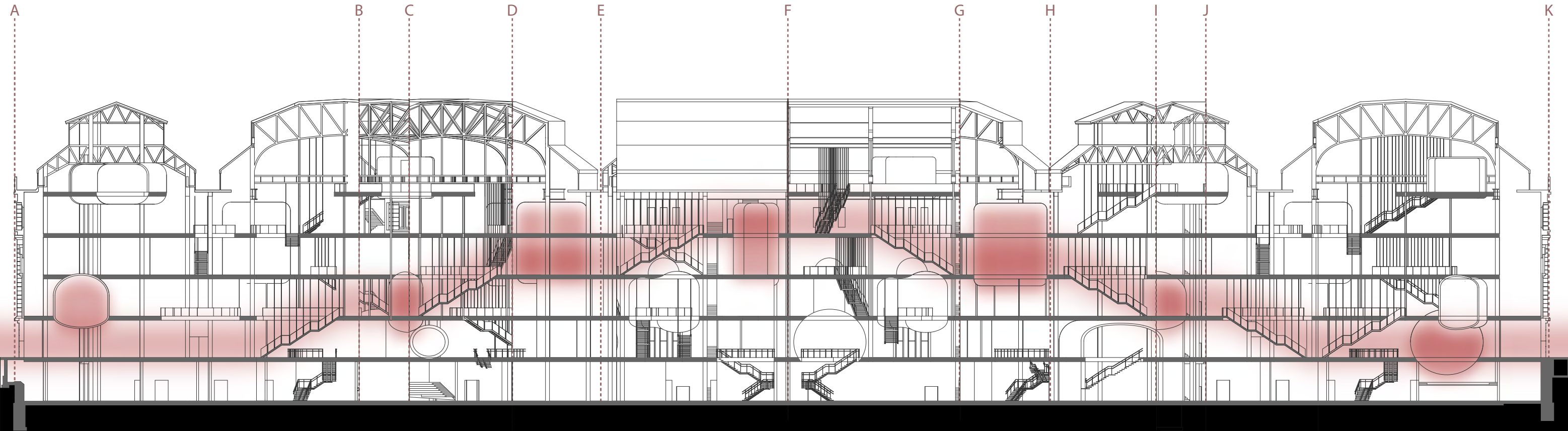
## Slingshot Strategy



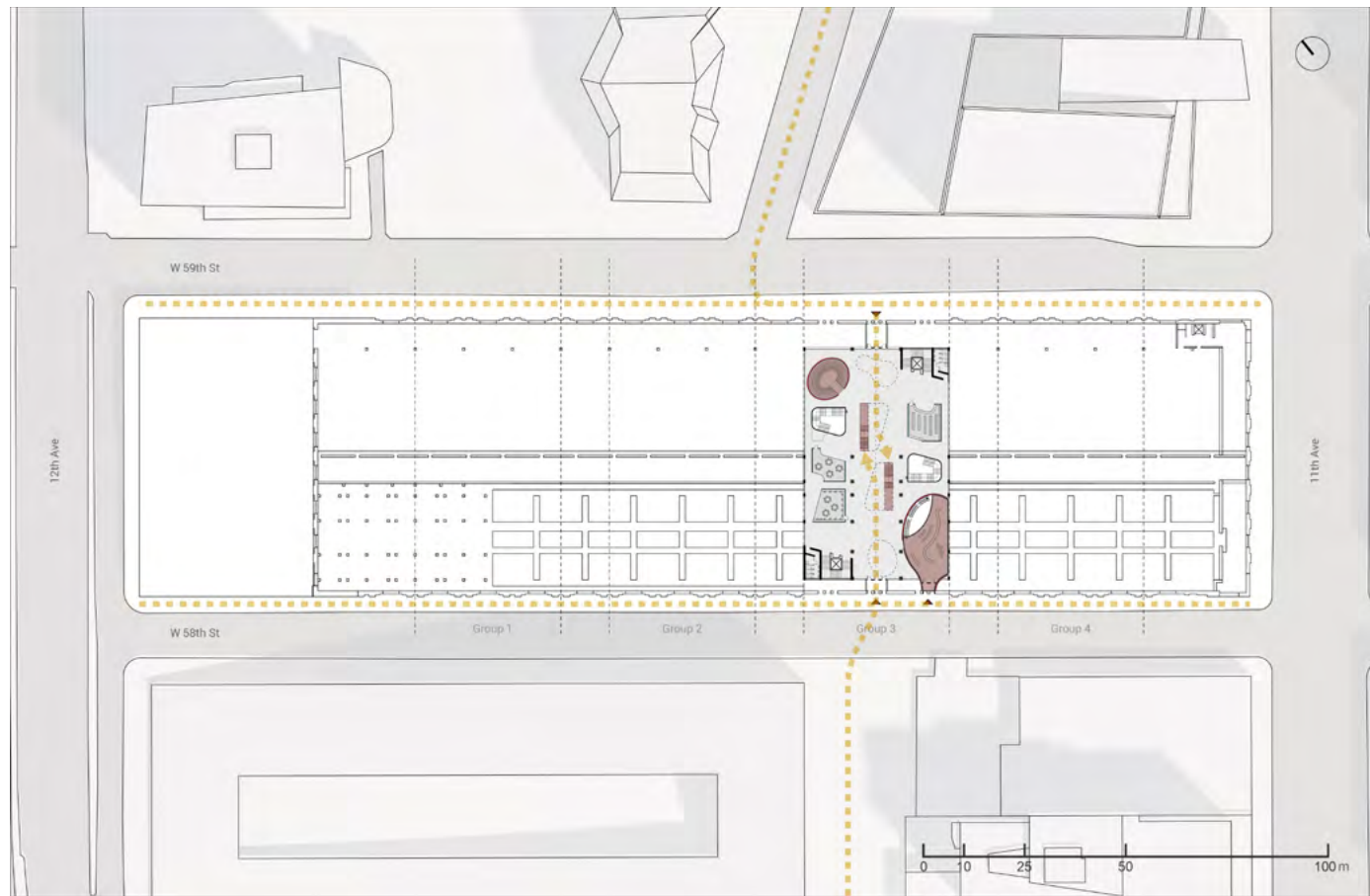
## Movement as Connector

There are two access locations on the north and south of the building which will promote a nonhierarchical circulation throughout with the use of 2 central stairs.  
The new slabs will accommodate the voids through the slabs alongside the circulation to further promote the whole connection of the studio.

The circulation plays an essential role in ensuring students from different studios to interact with one another. I used a slingshot strategy to guide the students through the space by placing the circulation on the path of the complementary programs so that the student is compelled to interact with these programs and go about the levels.



### Site Connections through Two Entrances and Two Stairs



### Unveiling Elevation View through Existing Building Facade



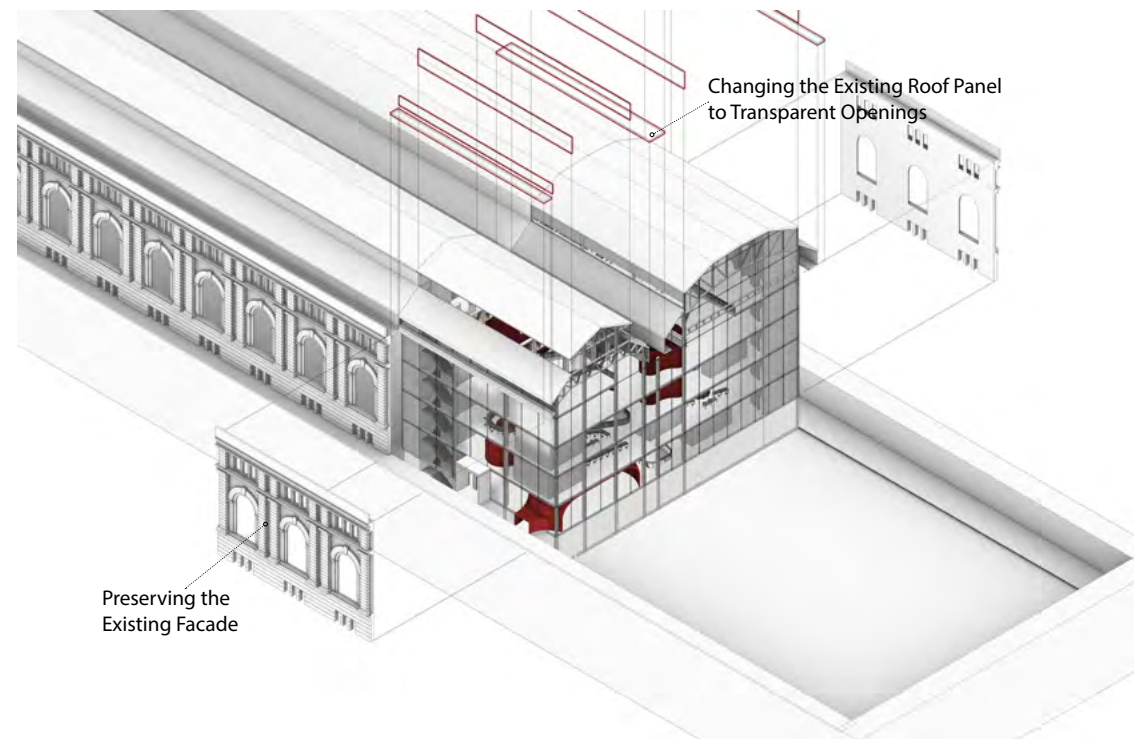
### Material for Attraction

To ensure the airy ambiance within the studio, levels of transparency are used to create a boundless studio and guide the visitors through this aerial space. The vision is a boundless school of architecture. As the local circulation shows here, the transparent complementary programs are placed in the path of the local stair to attract and guide. The thin structure of

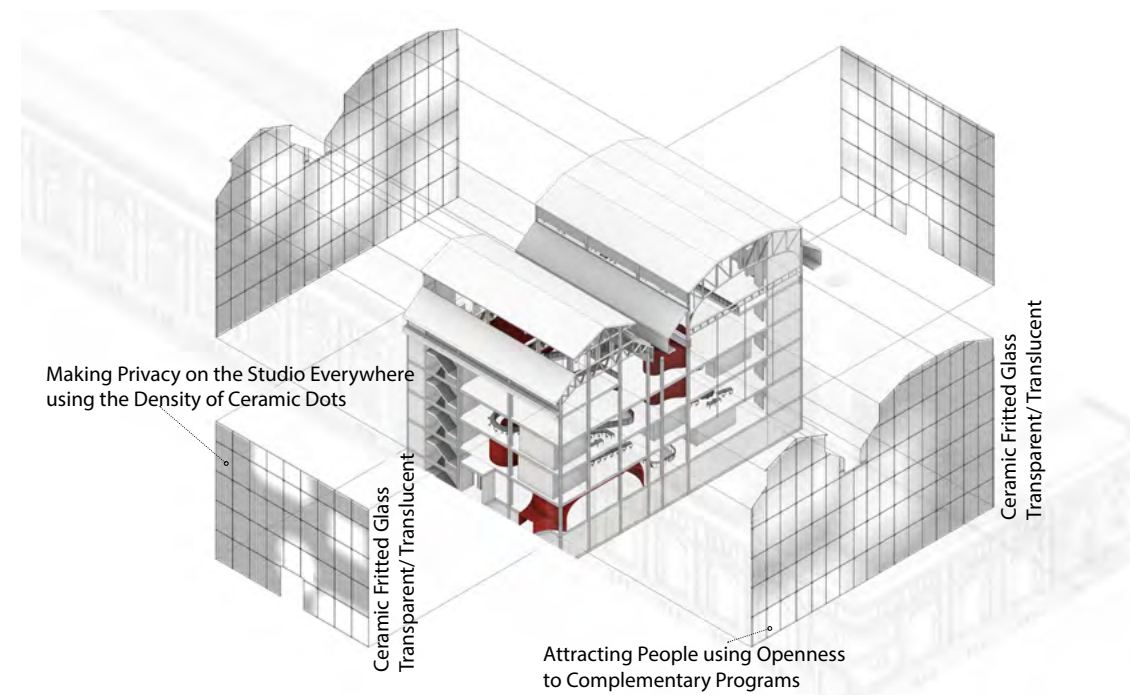
### Photo Collage



### Roof Panels Removals (Daylight)



### Ceramic Fritted Glass (Inner Facades)



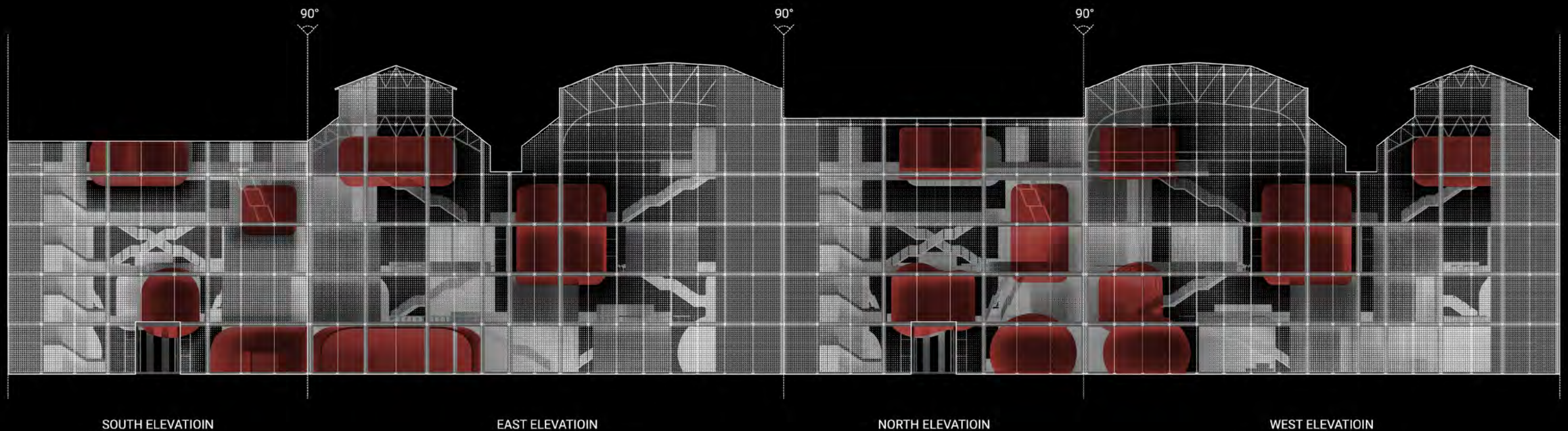
### Material for Attraction

The exterior facade of the building remains untouched, and to allow more daylight, horizontal strips of the roof are removed while staying as discreet as possible from the exterior shell. The inner layers of the elevations are designed as fritted glass to highlight the complementary programs inside to attract visitors from outside. In the interior shell of the existing building lies many mysterious programs that will ultimately attract the students inside. The same logic applies to the party wall shared by the other neighbors. The goal of the fritted glass is ultimately to highlight the complementary programs throughout.

### Material Selection



### Unfolded X-ray Elevation of Fritted Glass Facade



# ROUND, GROUND, SURROUND, UNDERGROUND

2023 SPRING ADVANCED VI STUDIO

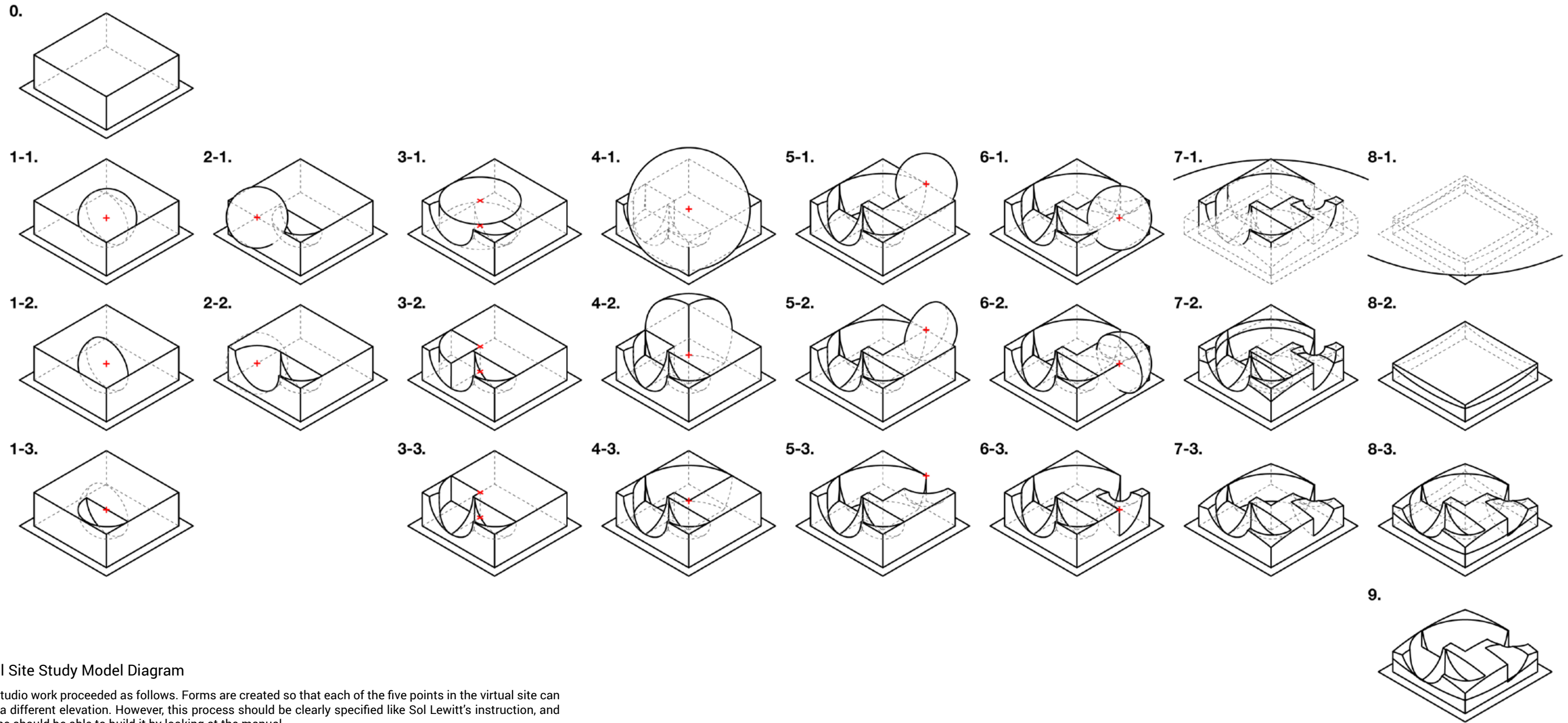
Individual Work

Advisor : Laurie Hawkinson

Program : Education and Performance Center

Location : 4-40 44th Dr, Queens, NY (Anable Basin)





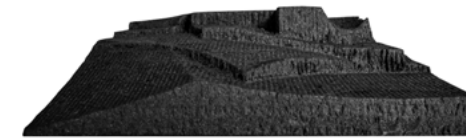
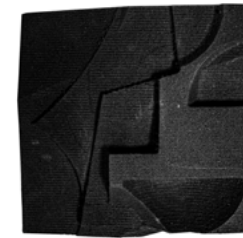
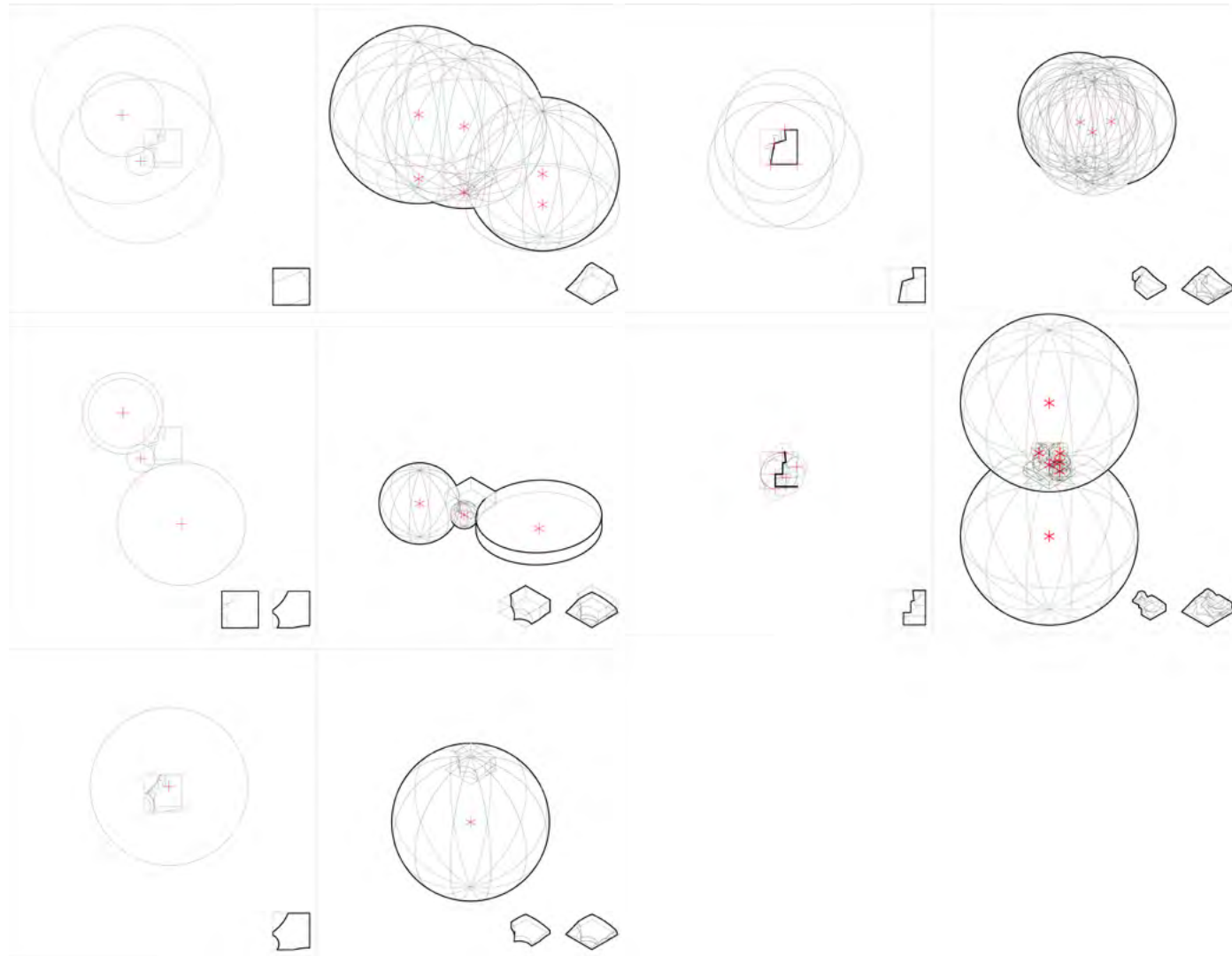
### Initial Site Study Model Diagram

The studio work proceeded as follows. Forms are created so that each of the five points in the virtual site can have a different elevation. However, this process should be clearly specified like Sol Lewitt's instruction, and anyone should be able to build it by looking at the manual.

I started forming shapes using circles, cylinders and spheres. I approached it as a kind of landscape where 5 points are continuously connected rather than having a disconnected height value.

During this exercise, I used models of various scales, and I intended that the models be read subtly in the final result.

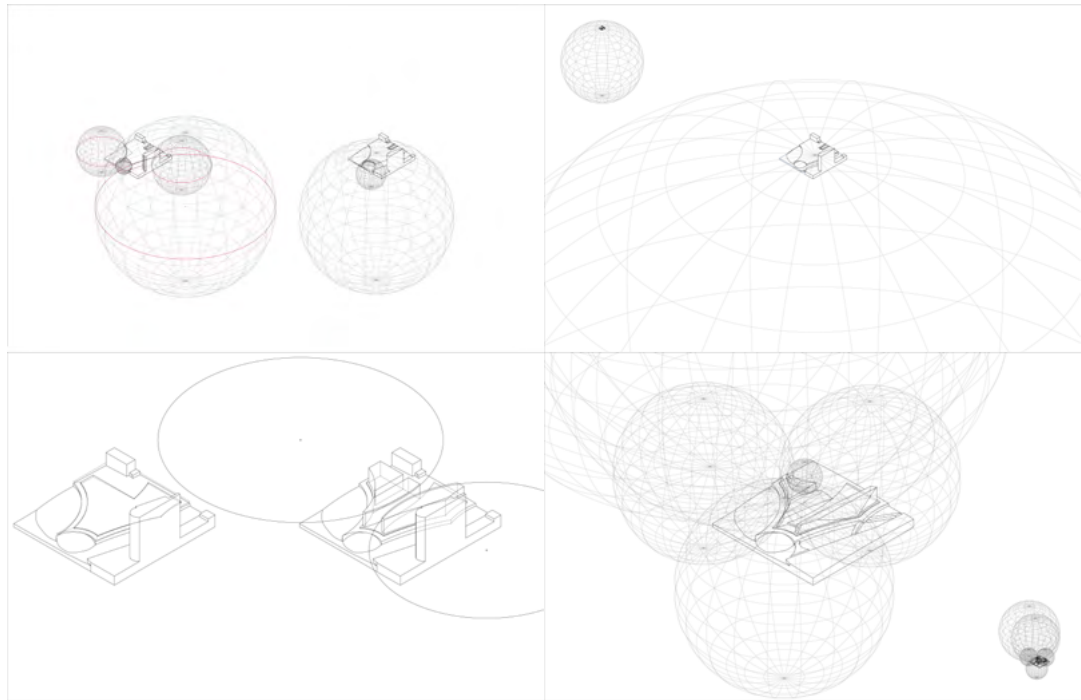




### Second Site Study Diagram, Model

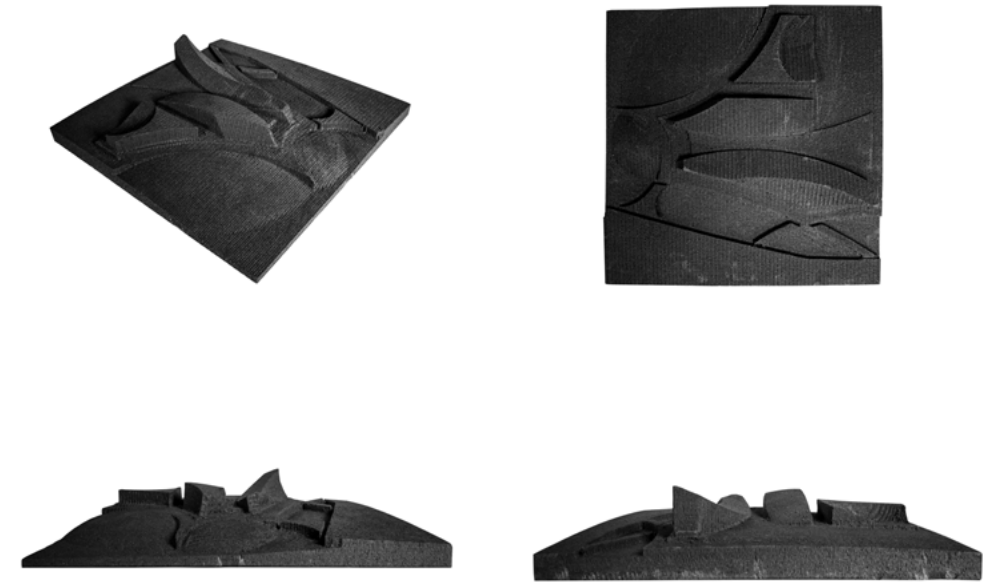
I decided to use the geometry rule used in the first study exercise. However, considering the actual site, an able basin, I began to think about how water and land could meet. Like the tide, the height of the water changes at different times. Therefore, depending on the topography of the land, the method by which water can enter may vary. I avoided the flat site in this study model. Instead, a relatively large sphere was used to create a flat land with different heights, but the height difference was gentle so that it could be a natural transition.

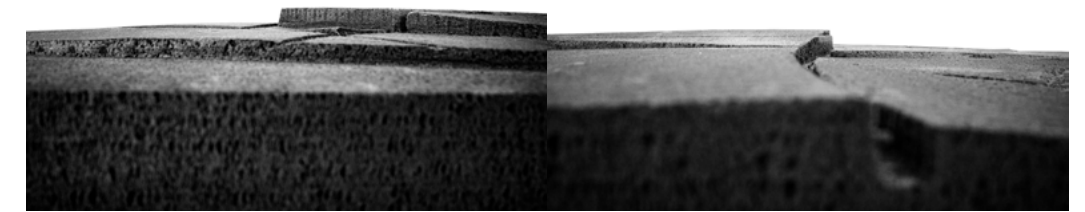
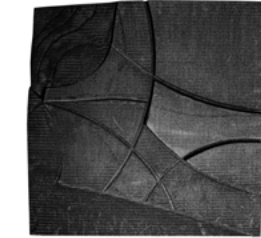
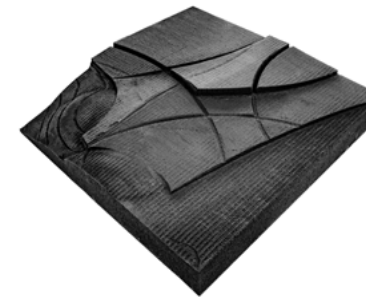
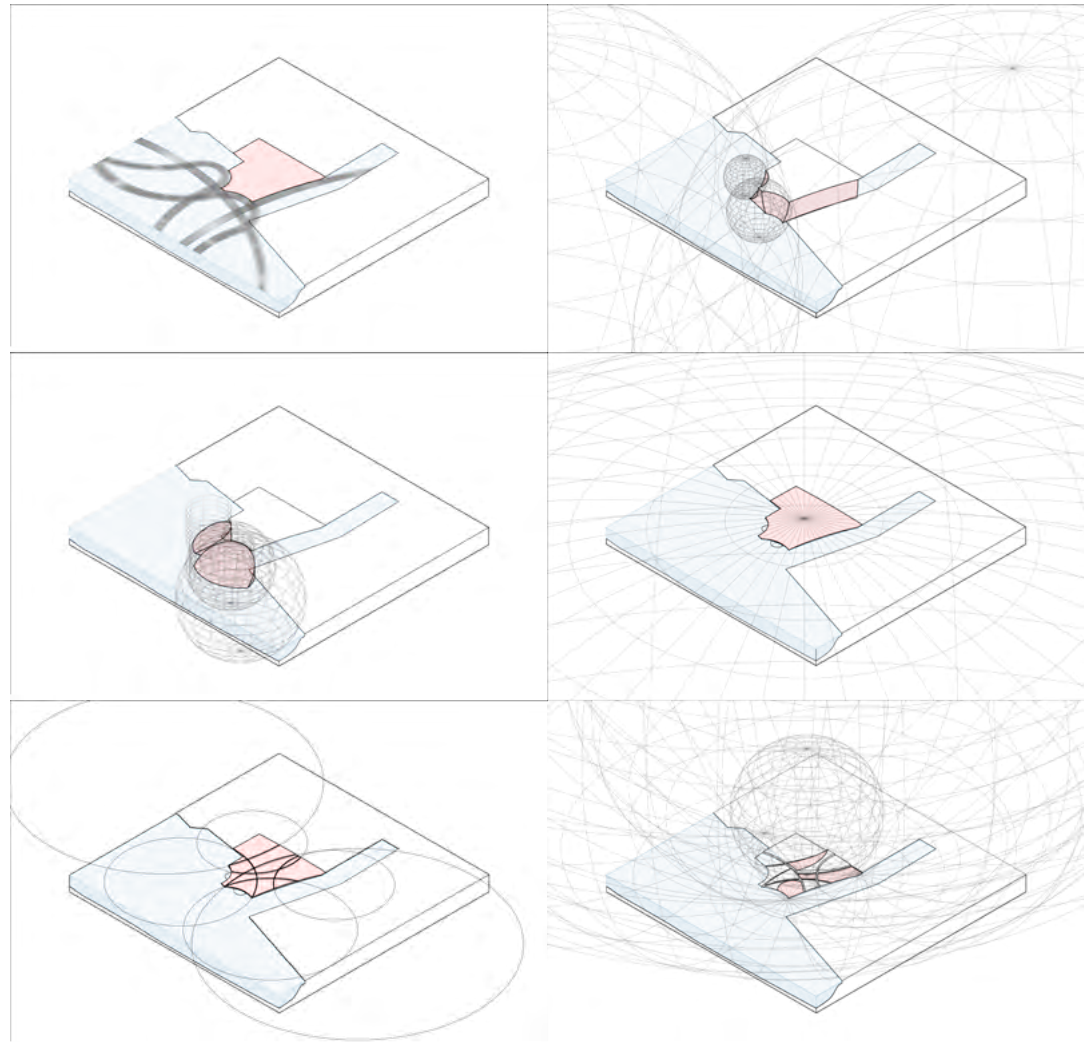




Third Site Study Diagram, Model

I wanted to use a larger model and thicker lines for this model. In particular, I created a miniature horizon using a single giant sphere on the site. Due to the sphere, the land has a high point and a low point, and at the same time, the movement between the two points is very smooth. In addition, due to the geometrical characteristics, the water and land beyond the horizon cannot be seen directly when the model is observed at ground level. Therefore, I thought that the user would be able to experience the surrounding water environment differently as he moved on the site. And it was believed that the surrounding landscape, which is not obvious, will further promote the activities of users. And I thought it would fit well with the ferry terminal and the cultural program that would be put on this site.

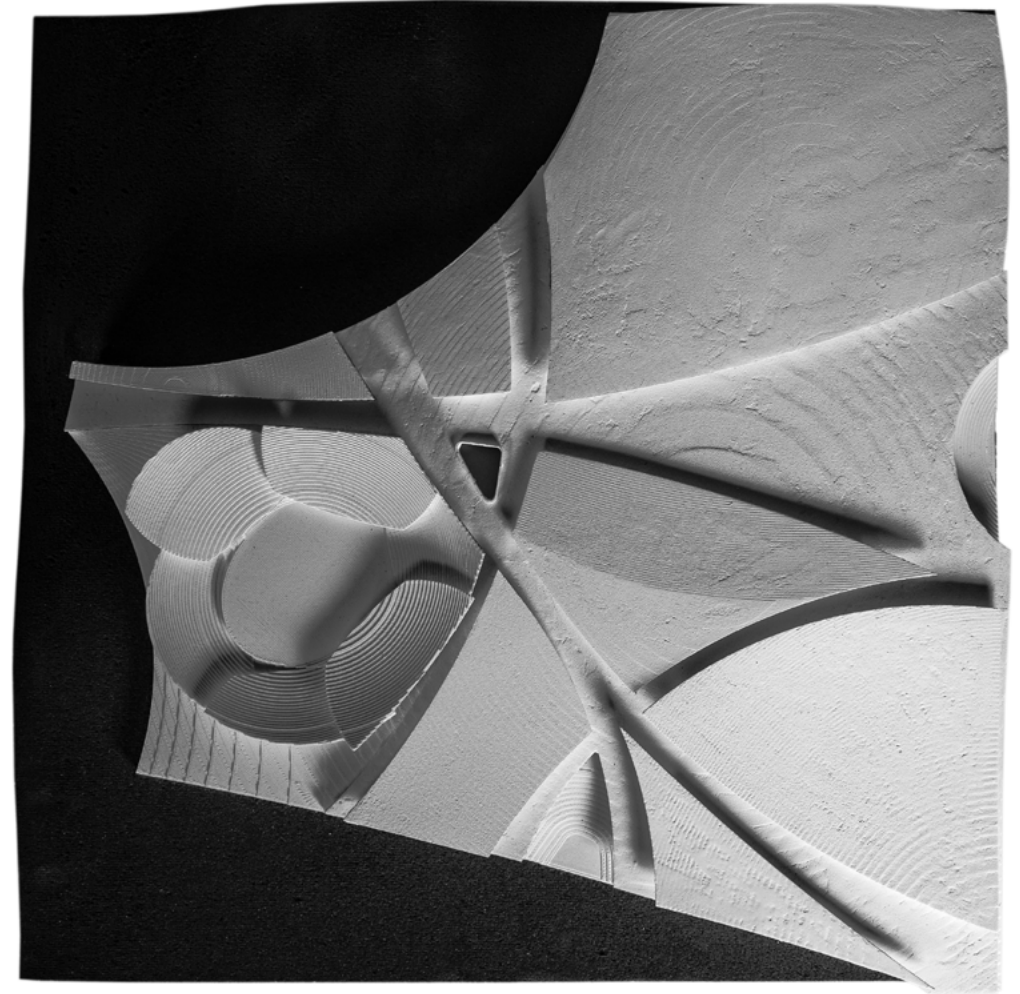
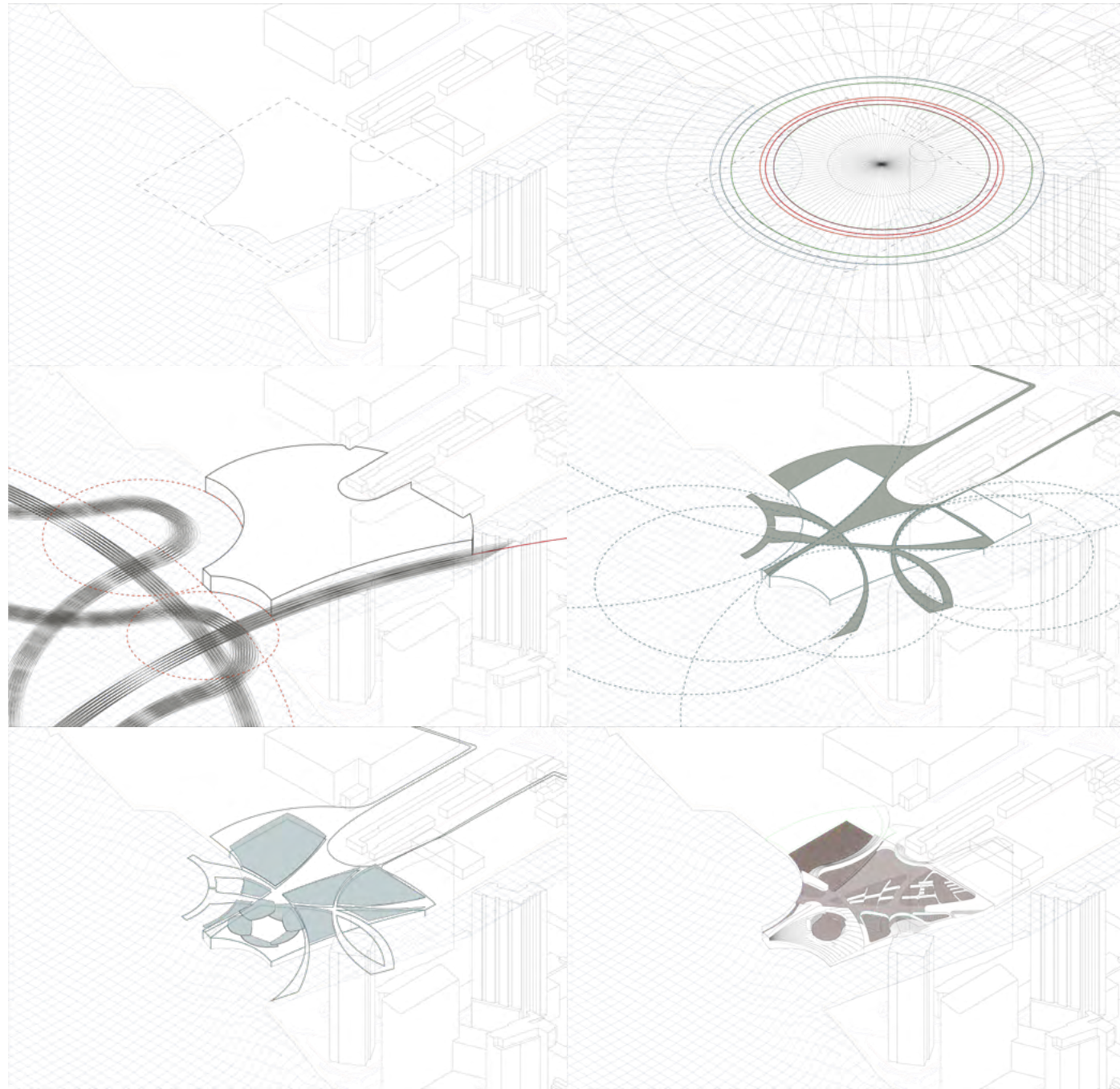




Fourth Site Study Diagram, Model

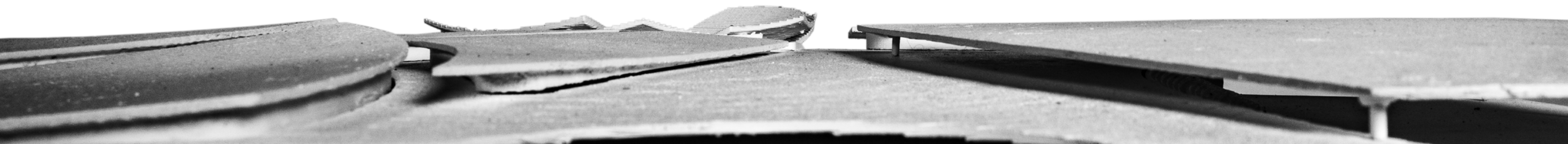
I looked at the possibility of the previously subtly gentle landscape and focused on the subtlety in the fourth study model. However, this delicate landscape was not drawn spontaneously, but was formed by carefully structured instructions. Each patch's landscape is connected or disconnected from its surroundings. Accordingly, a continuous landscape is suggested, or the entrance or side of a building is suggested. The site adjacent to the water becomes adjacent to the water in a gradation, and as the water fills the site, the temporary nature of the site can be emphasized.



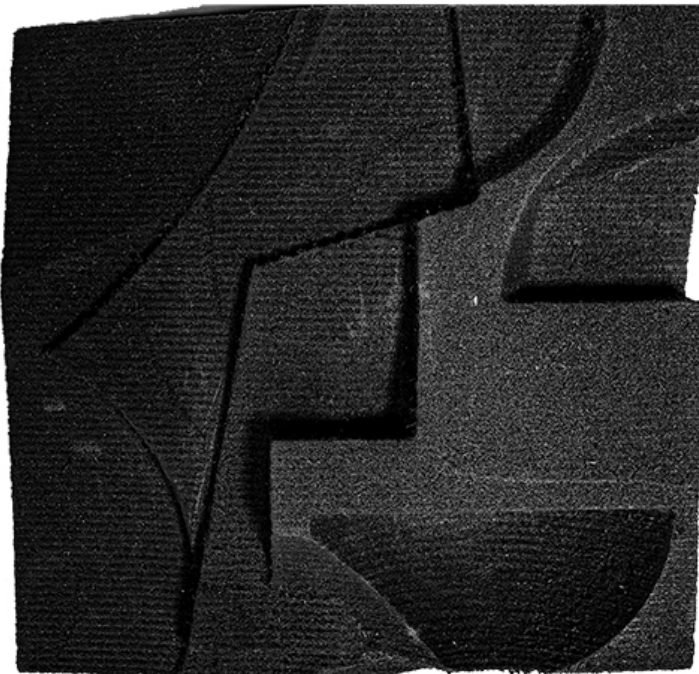


#### Final Model

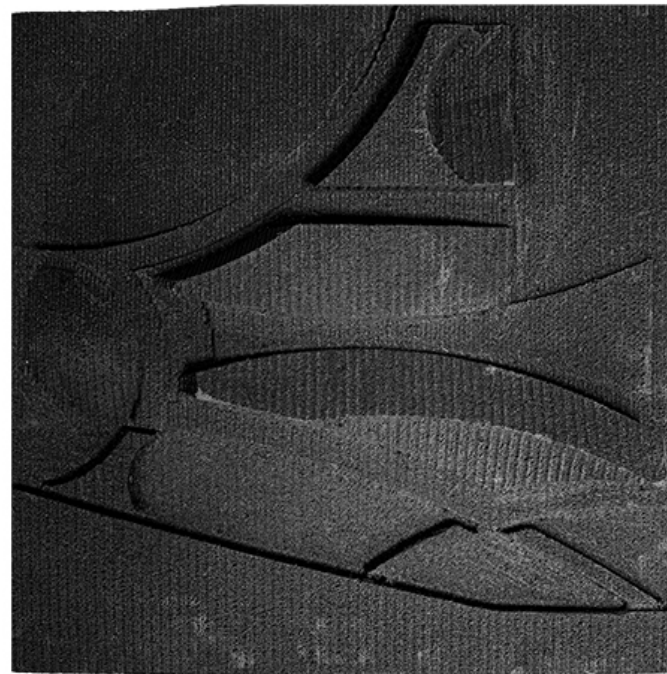
I synthesized the characteristics of the land found in previous studies. The shape of the site was formed by capturing the invisible movement of the passenger ship, and the roof of the site and the building were formed by huge geometry. In addition, the path was determined considering the connectivity between the surrounding roads and the land across the anable basin, which is also connected by a curve drawn from a circle. The space made of various curves and curved surfaces will create a different landscape from time to time and will become a device that prevents the surrounding environment from being seen intuitively. As a result, the temporary and changing relationship between water and the earth can be experienced inside the site.



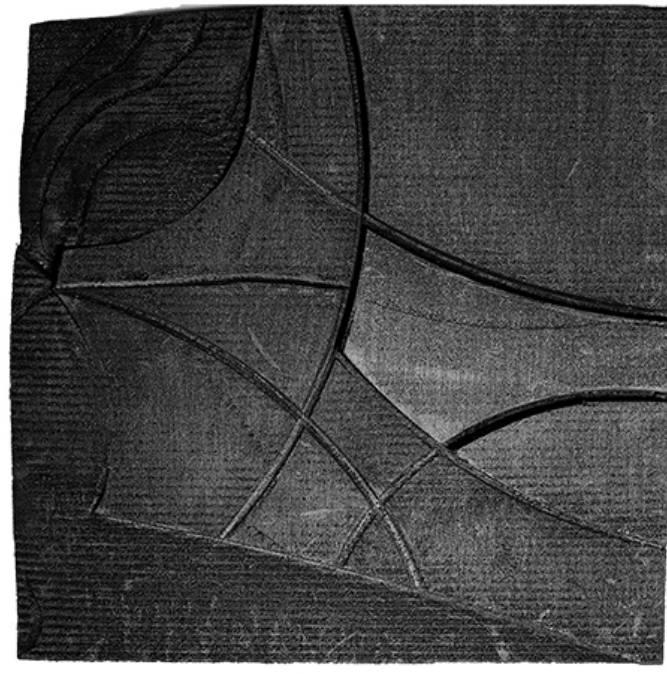
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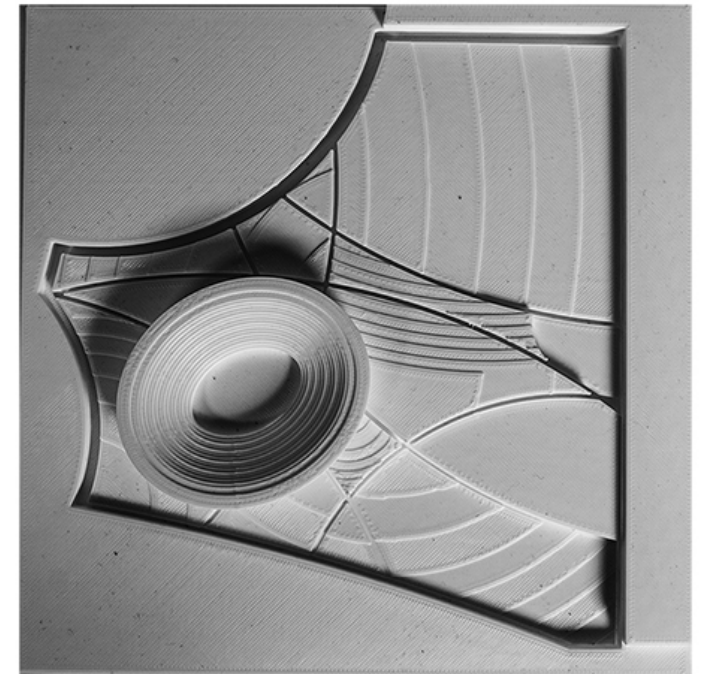
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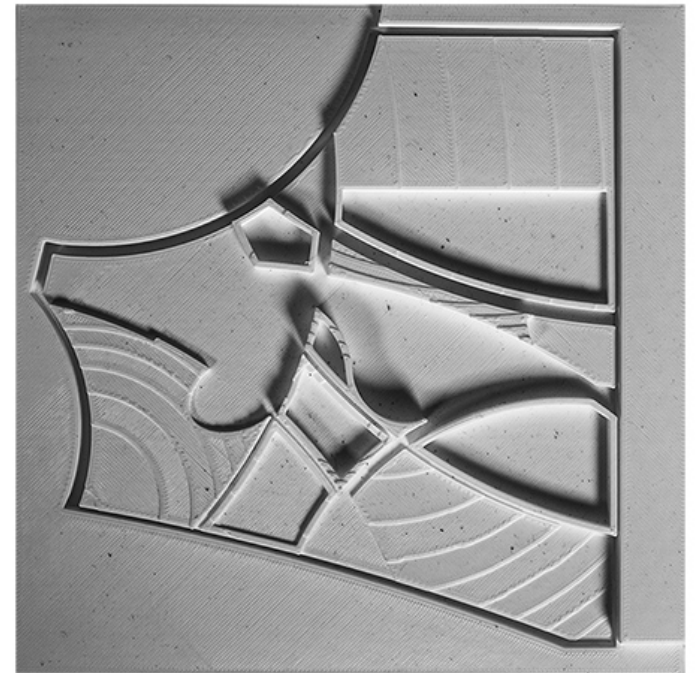
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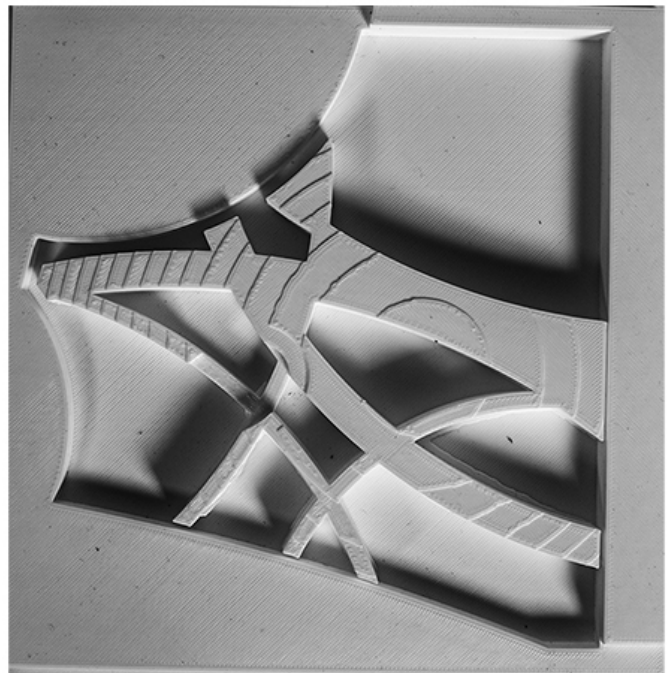
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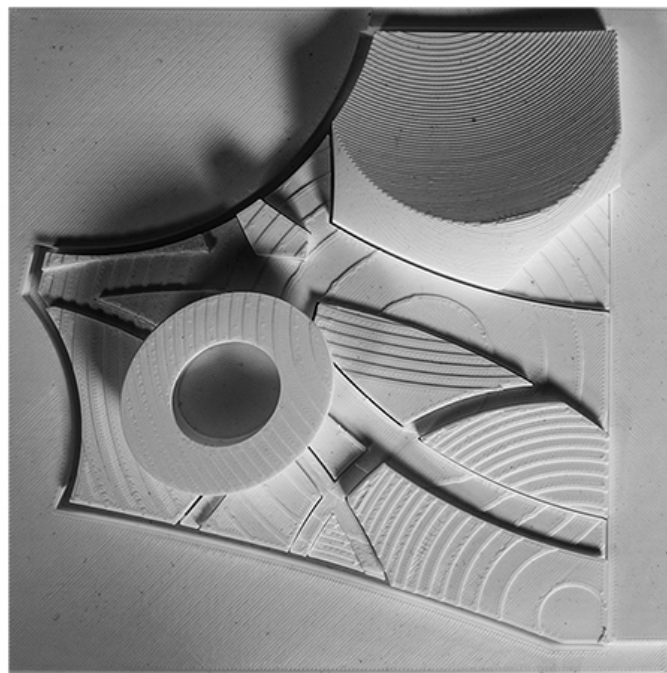
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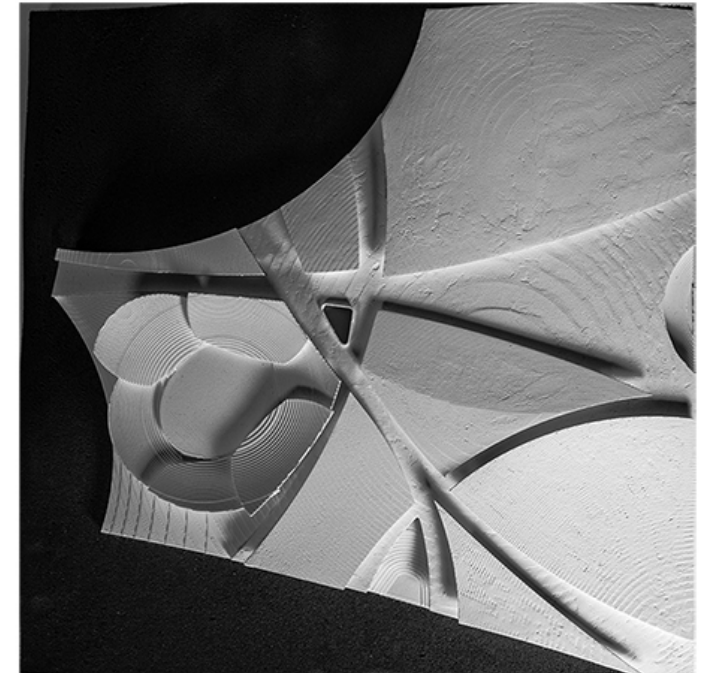
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7



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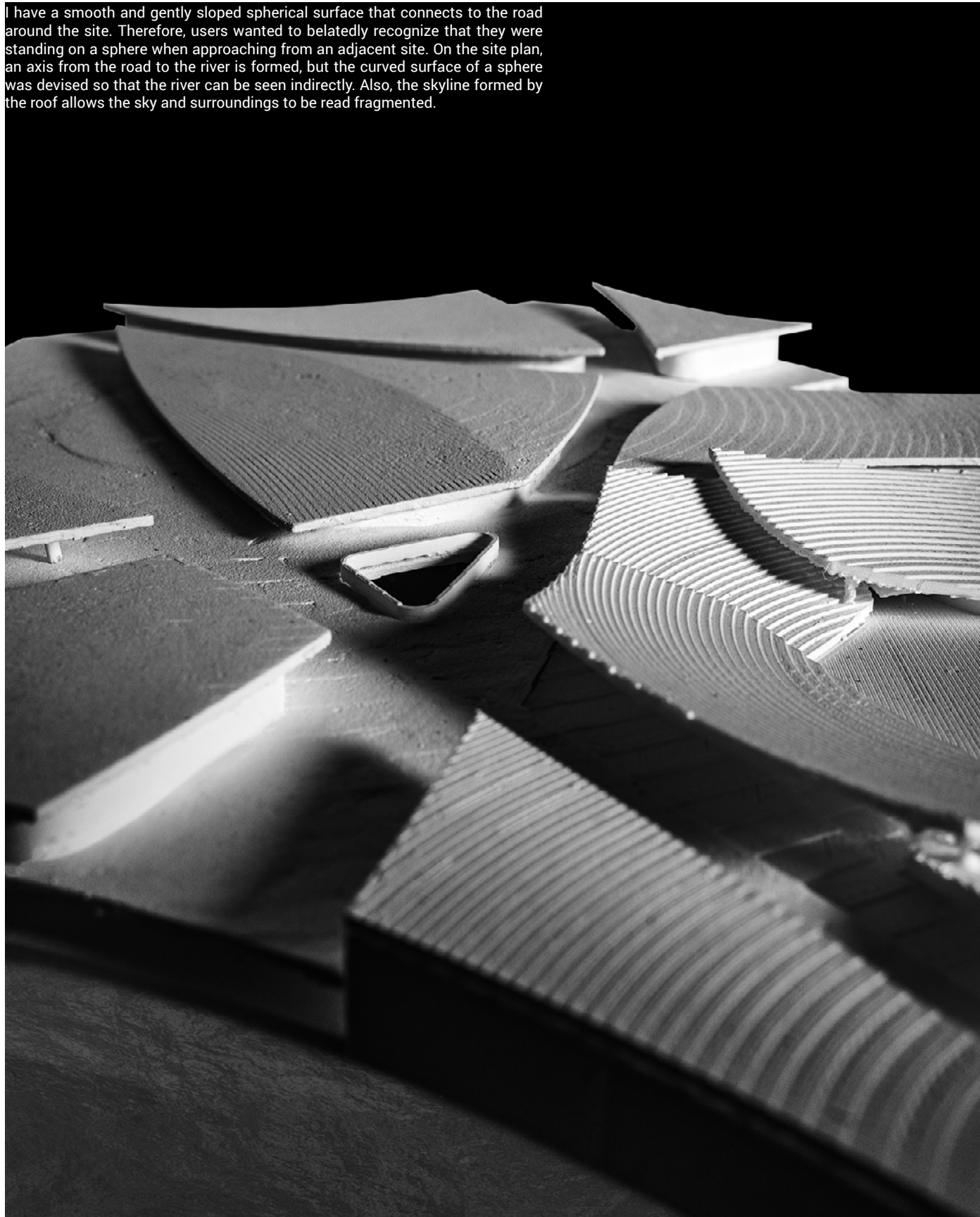


### Study Sequences

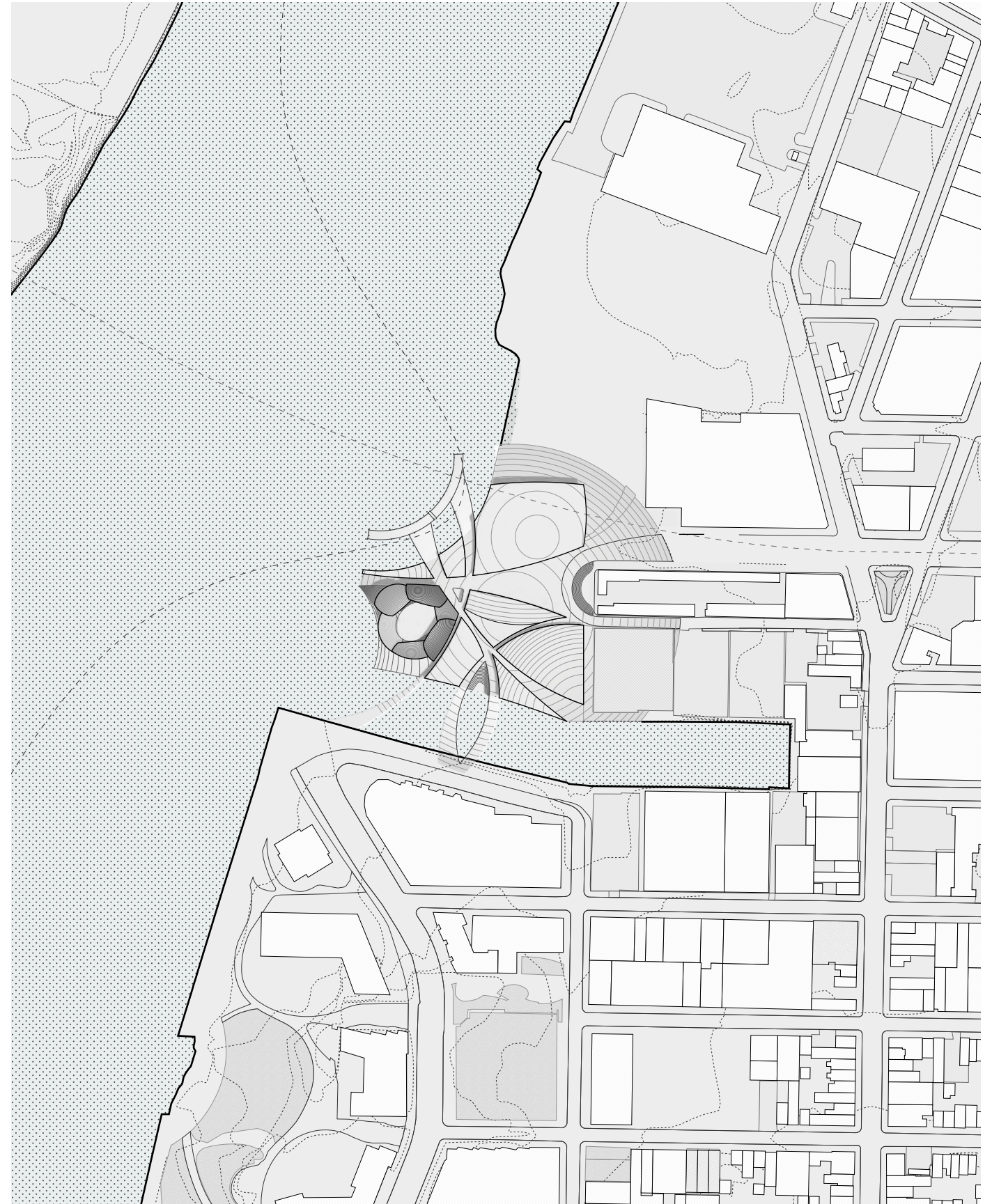
I made a study model by introducing dimensions that are architectural and flood elevation after the foam models. In the number 4 model, I started to shaped where the building will be placed. In number 5 model, I considered placing cultural space under the surface of the sphere. In number 6 model, I arranged how the walkway on the sphere surface will be connected within the site and the surrounding.

### Model Photo

It has a smooth and gently sloped spherical surface that connects to the road around the site. Therefore, users wanted to belatedly recognize that they were standing on a sphere when approaching from an adjacent site. On the site plan, an axis from the road to the river is formed, but the curved surface of a sphere was devised so that the river can be seen indirectly. Also, the skyline formed by the roof allows the sky and surroundings to be read fragmented.



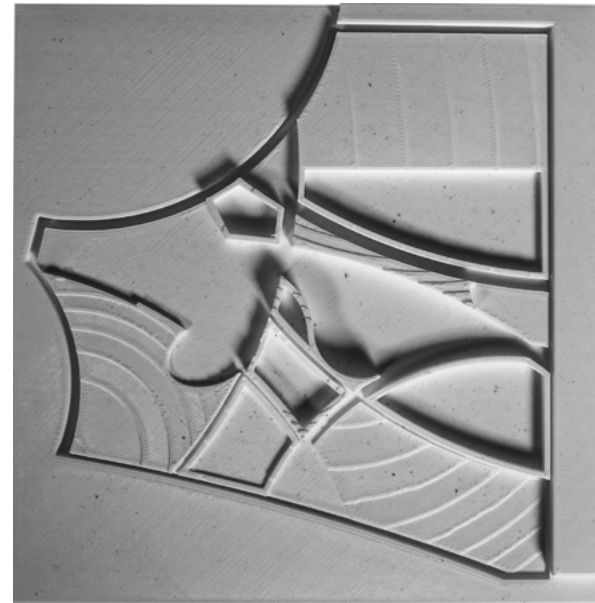
### Site Plan



Model Photo

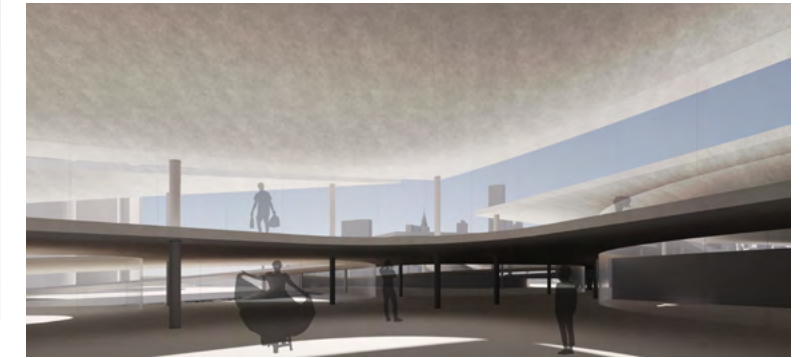


Study Model #5

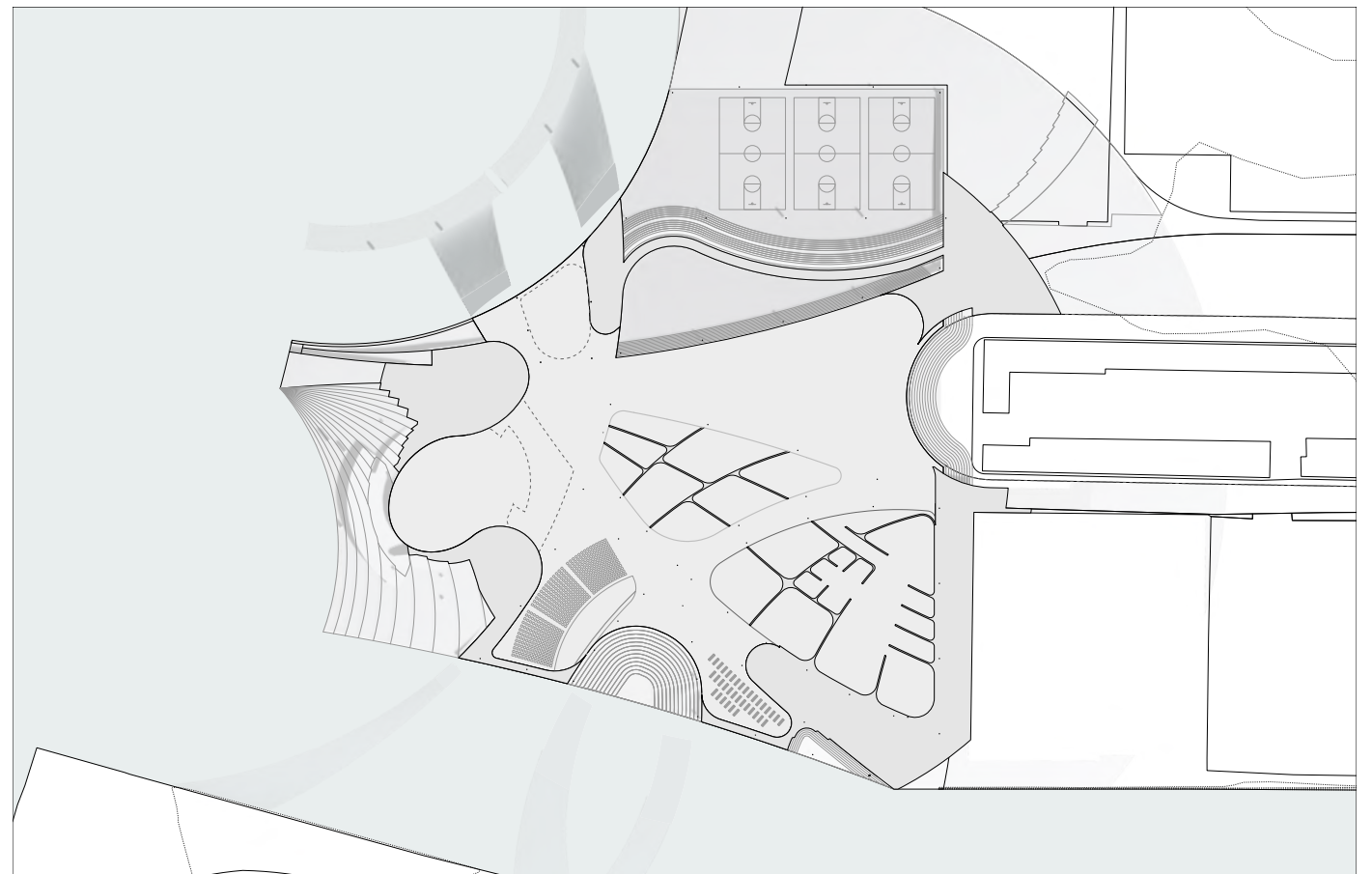


Underneath the Surface

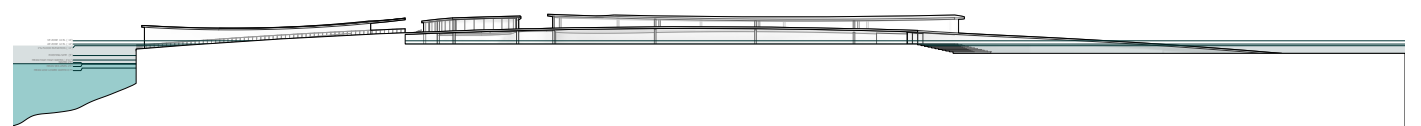
The minimum height between the designed flood elevation and the surface of the sphere is 6.6 feet. Therefore, spaces that require a certain height, such as lecture rooms, practice rooms, auditoriums, libraries, and exercise facilities, are arranged in areas where the roof is slanted. Through the slit between the roof and the ground, natural light will reach the space beneath the surface either directly or indirectly. And through the slit, people inside the classroom will indirectly experience the external environment, and people walking on the surface of the sphere will be able to indirectly see the activity under their feet from above.



Ground Level Floor Plan

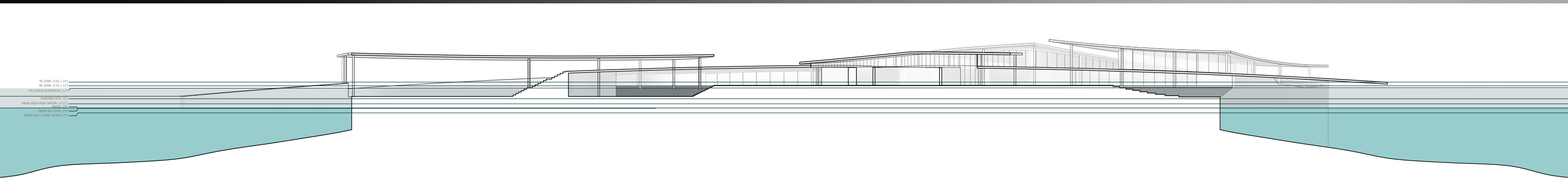


Cross Section

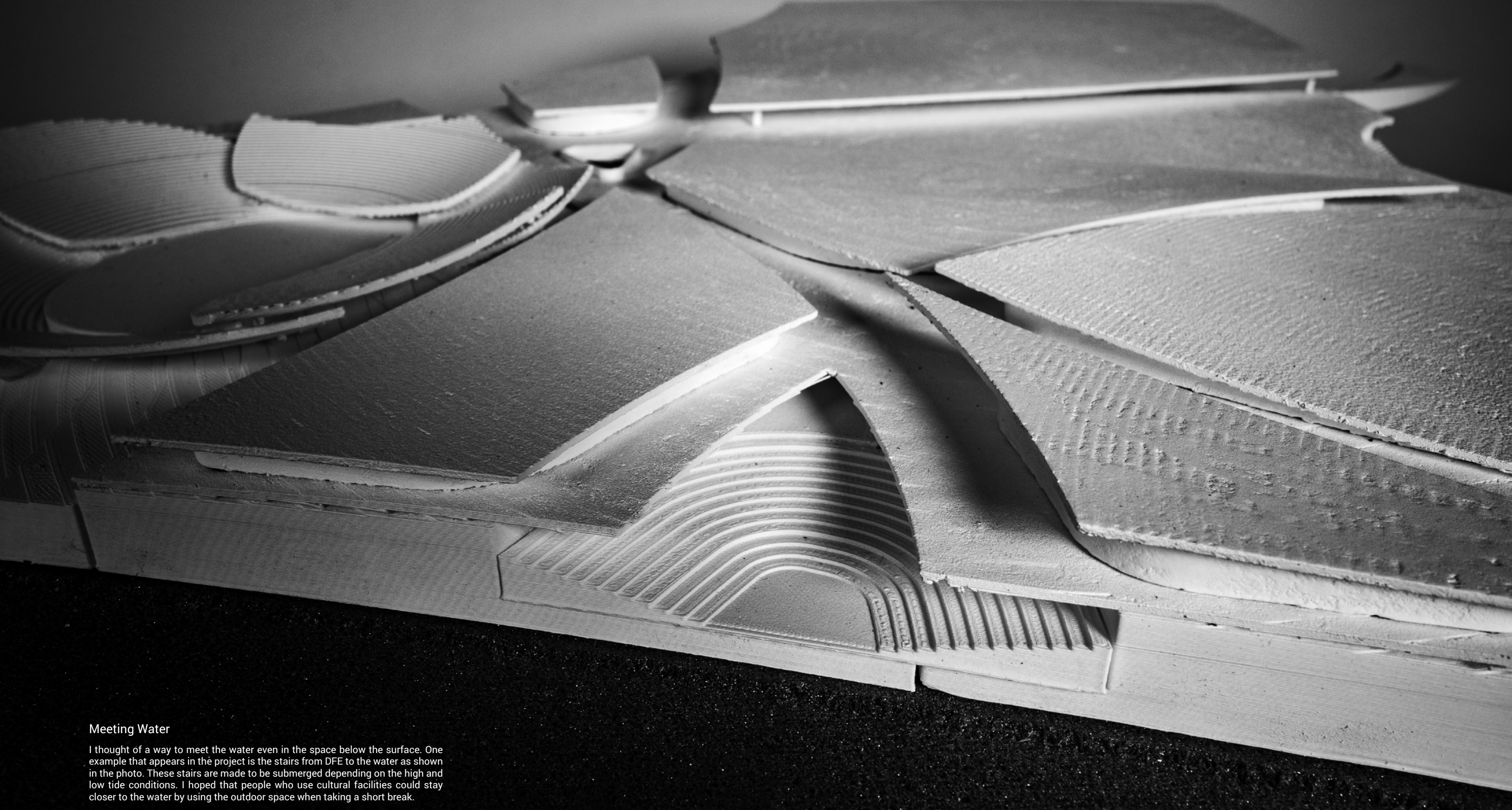


## Floodable Landscape

Not all areas of the project are water proof spaces. For example, outdoor exercise facilities are designed lower than DFE, so that visitors can watch the exercise from above, and at the same time, exercisers can secure a sense of location by exercising closer to the water. In case of flood, the sports facility is submerged in water, which can act as a wave attenuator to prevent great damage to the adjacent land.

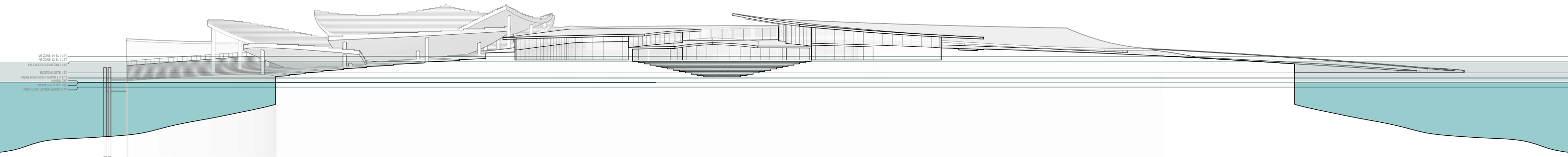






## Meeting Water

I thought of a way to meet the water even in the space below the surface. One example that appears in the project is the stairs from DFE to the water as shown in the photo. These stairs are made to be submerged depending on the high and low tide conditions. I hoped that people who use cultural facilities could stay closer to the water by using the outdoor space when taking a short break.





### Towards the Water

One of the entrances to access the cultural space beneath the surface is adjacent to the river. A lamp is installed towards the river, which is a device designed to give visitors an immersive experience as if walking towards the water.



# GRIDS AND PATTERNS

## 2022 ADVANCED CURTAIN WALL Individual Work

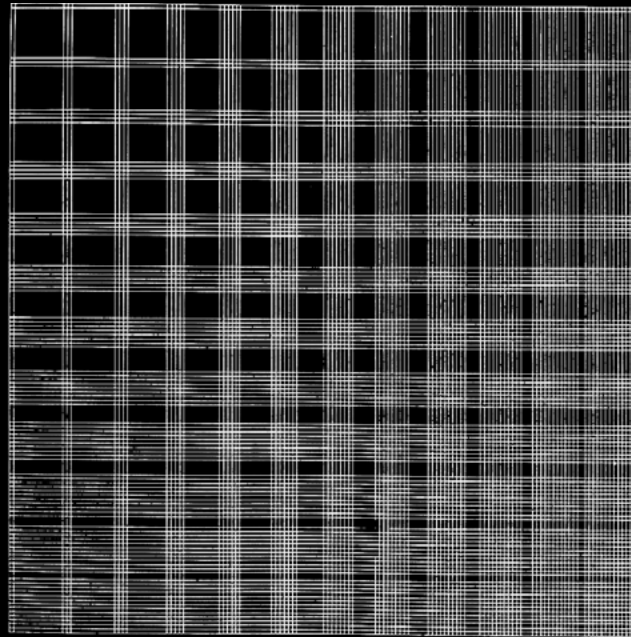
Advisor : Dan Vos

Program : Facade on Fabric Retail and  
Office

Location : New York, NY

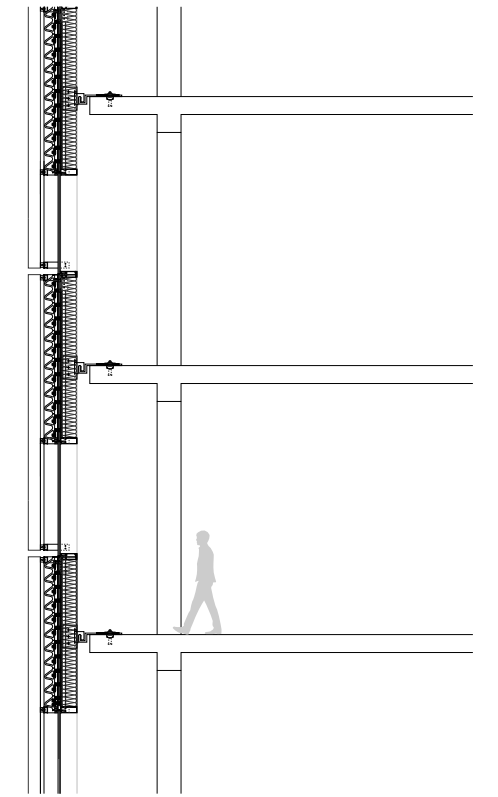
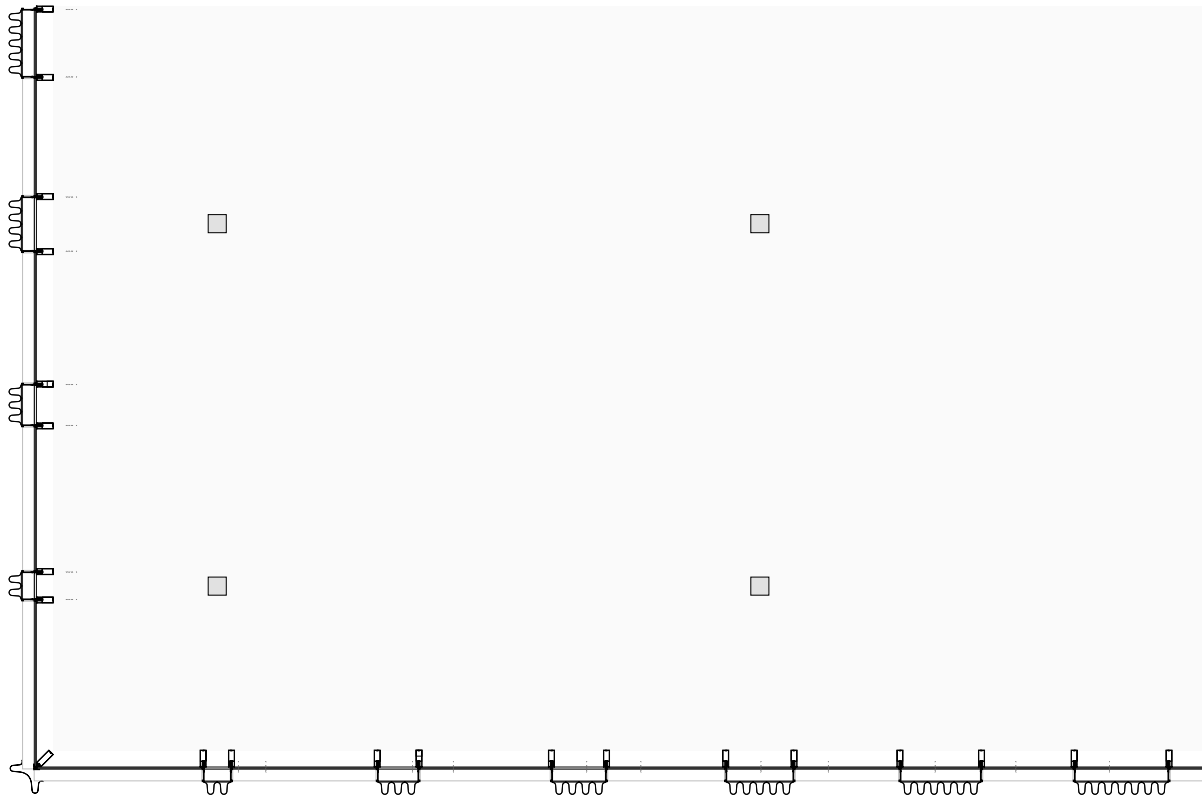
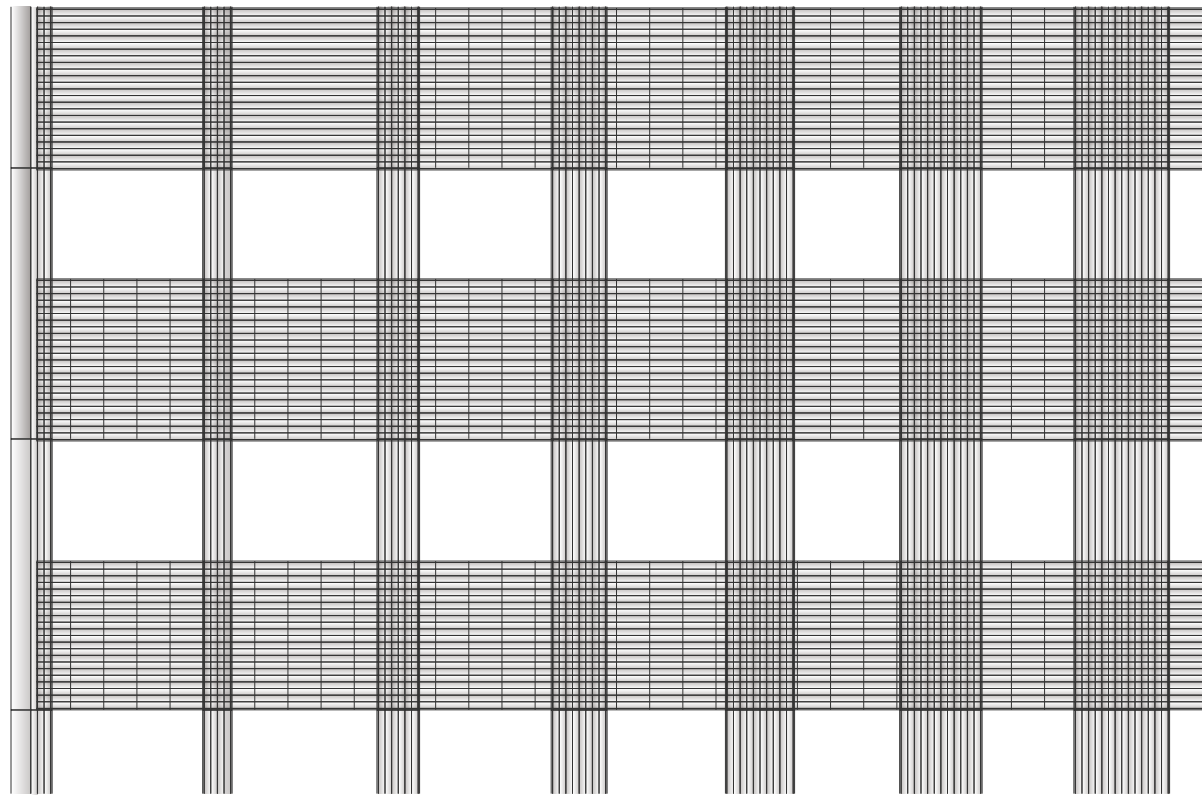
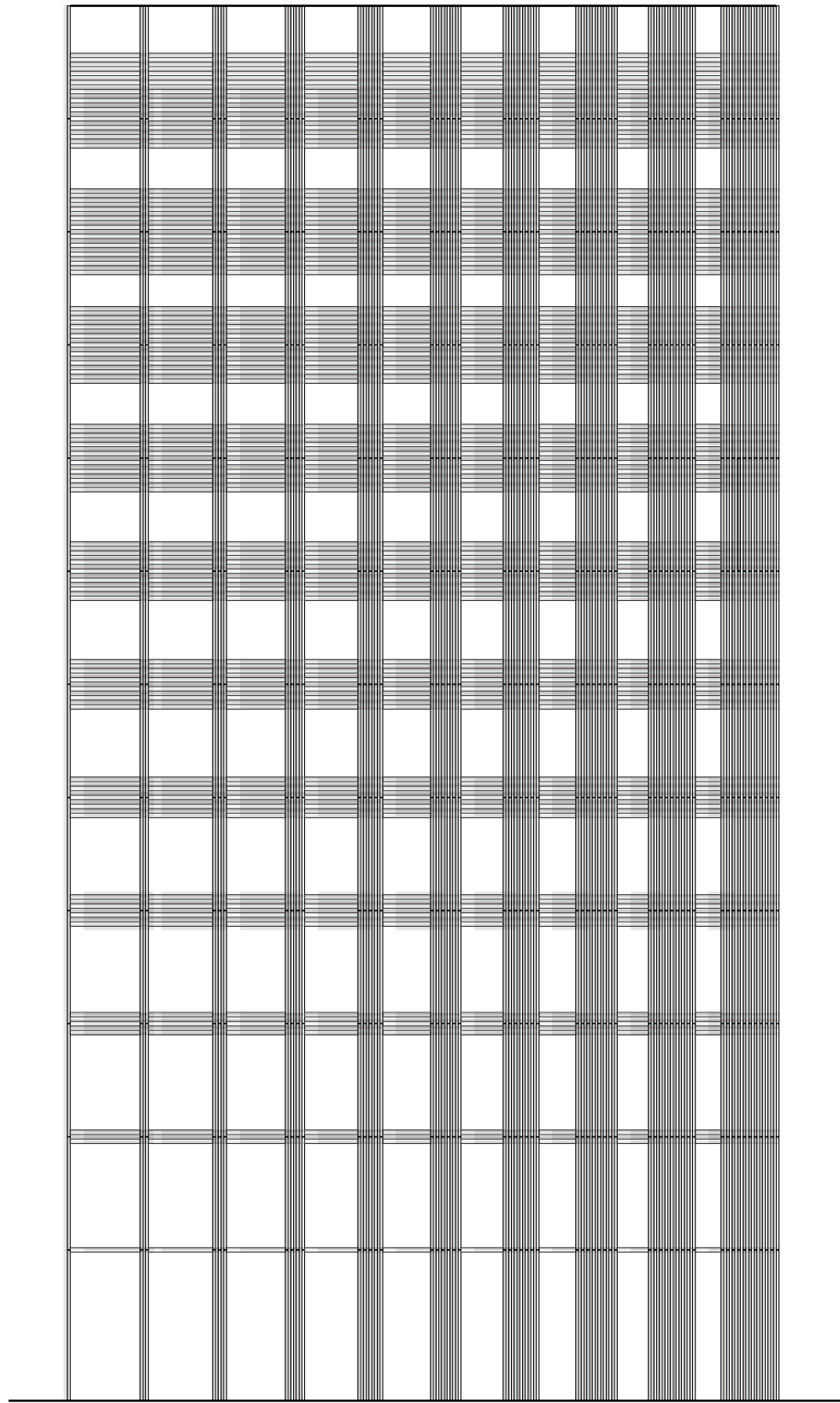
Context : 11 Story Corner Building

Inspiration Image [Sol Lewitt - Grid 5]



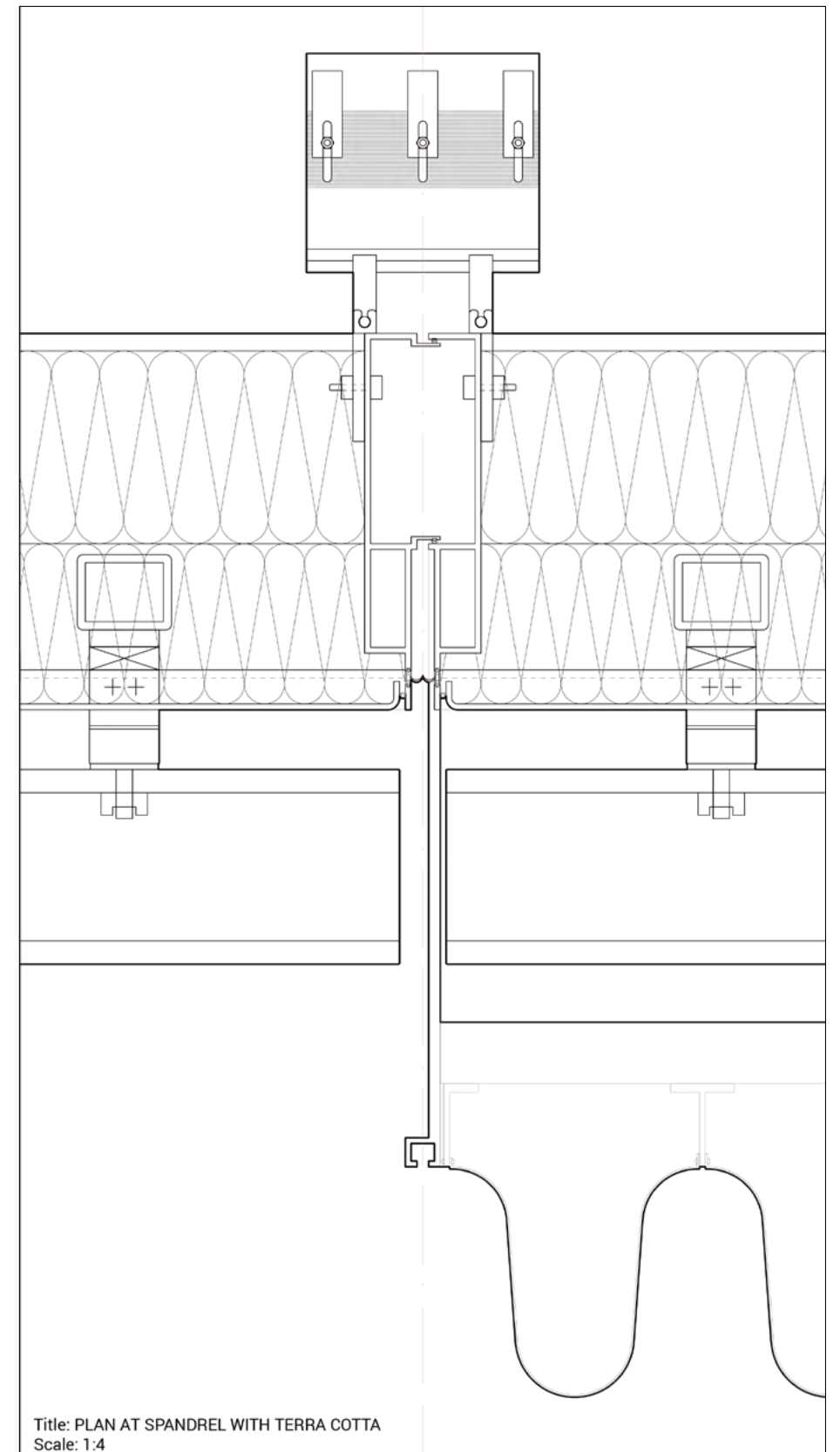
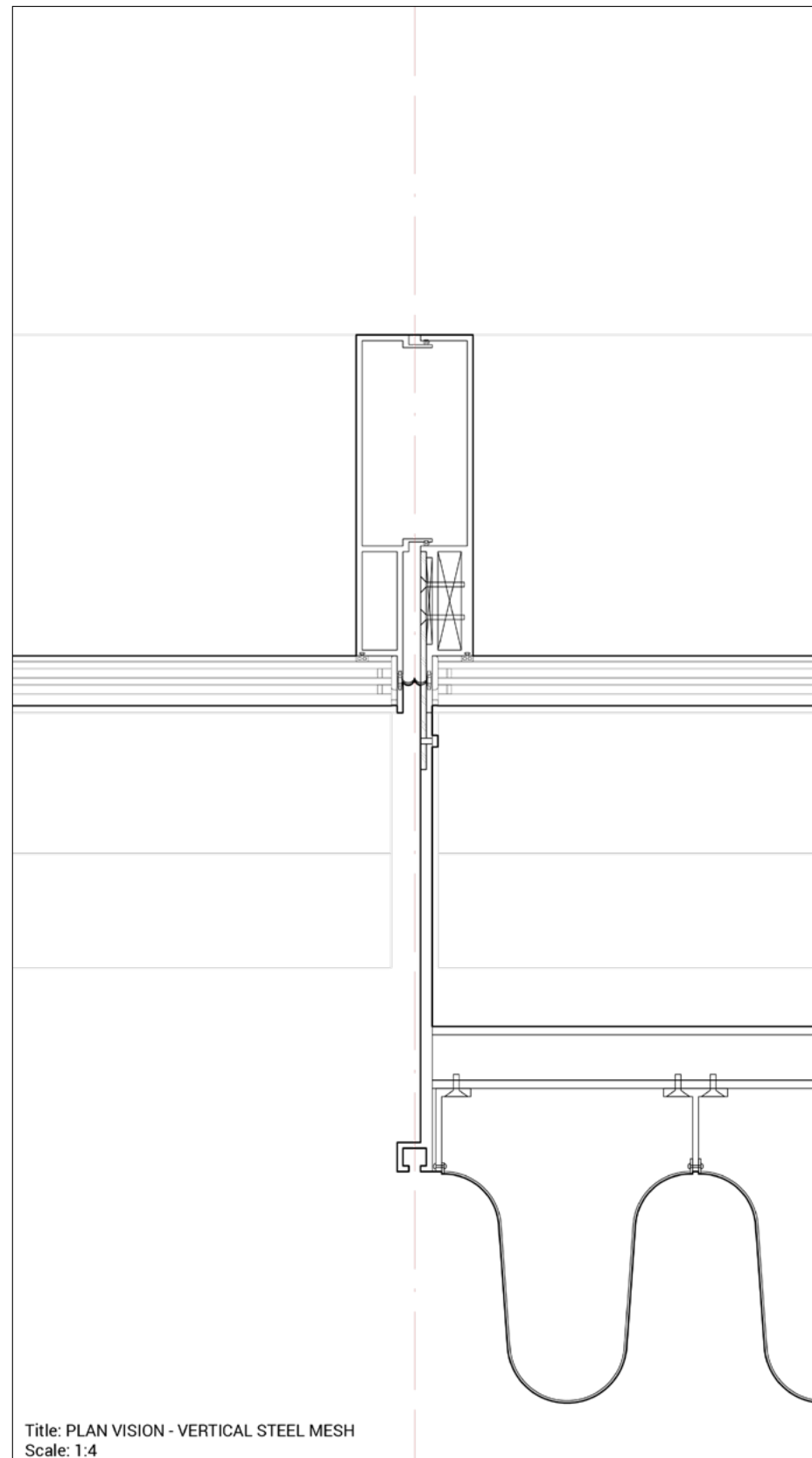
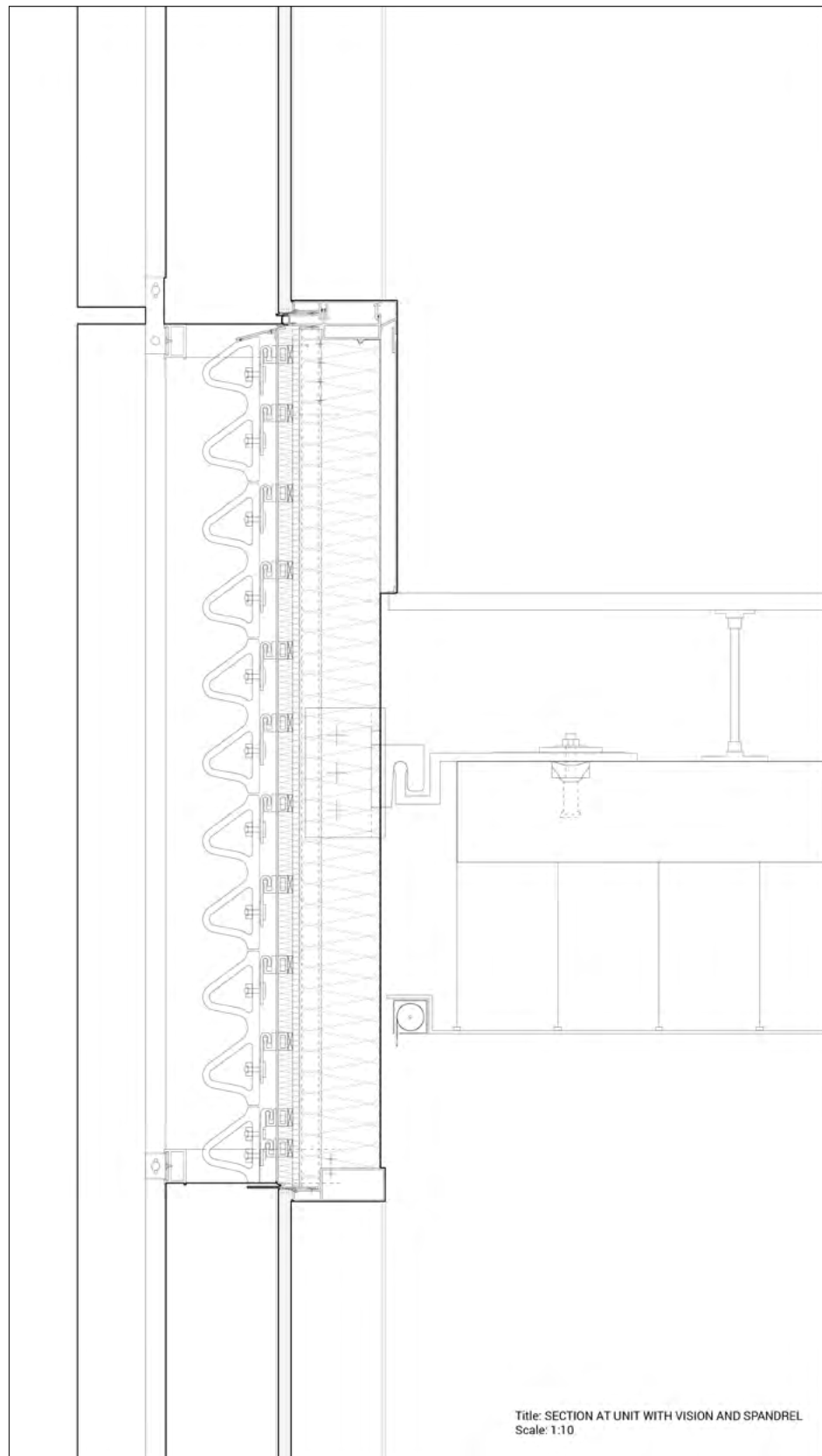
### Project Brief

The project is a commercial, office mixed-use building located in corner block of New York City specifically designed for fabric/fashion company. It is 11 story high building with commercial store on the first floor and the rest is dedicated to office space for the company. The façade of the building is inspired by Sol Lewitt's Grid 5 drawing and key aspects of drawing were implemented to the design. First, the incremental repetition of lines creates a unique pattern which controls width and height of the openings. Second, fuzziness created from disconnected lines or grains of the paper gave an inspiration to choose specific material for the façade which is stainless steel mesh. As a result, in functional perspective, maximum opening is created on the ground level for retail store and increased size of spandrel allows thermal and light control on the office floors.



### System Description

WT-1: Aluminum, Glass, Stainless Steel Mesh and Terra Cotta Unitized Curtain Wall System  
 System consists of insulating glass four-side structural silicone glazed onto unitized frames of thermally broken, custom profile extruded aluminum. Spandrel areas are clad with individually supported terra cotta panels of custom profile tiles. Terra cotta anchorage includes through body connections to integral aluminum supports clipped to aluminum sub-framing as required within curtain wall unit to allow for individual removal of tiles. Terra cotta rainscreen assembly is backed with integral insulation and galvanized air vapor barrier sheet. At the exterior, system features curved stainless steel mesh unitized screen assembly composed of vertical extruded aluminum outriggers at horizontal aluminum extrusion which is anchored back to vertical mullions. System is anchored to building structure at top of concrete slab.



# HUDSON YARDS TRANSIT HUB

## 2023 RE-THINKING BIM

Group Work with EunYoung Lee, Gyeom Chung, Margie Bozicevich

Advisor : Joseph Brennan

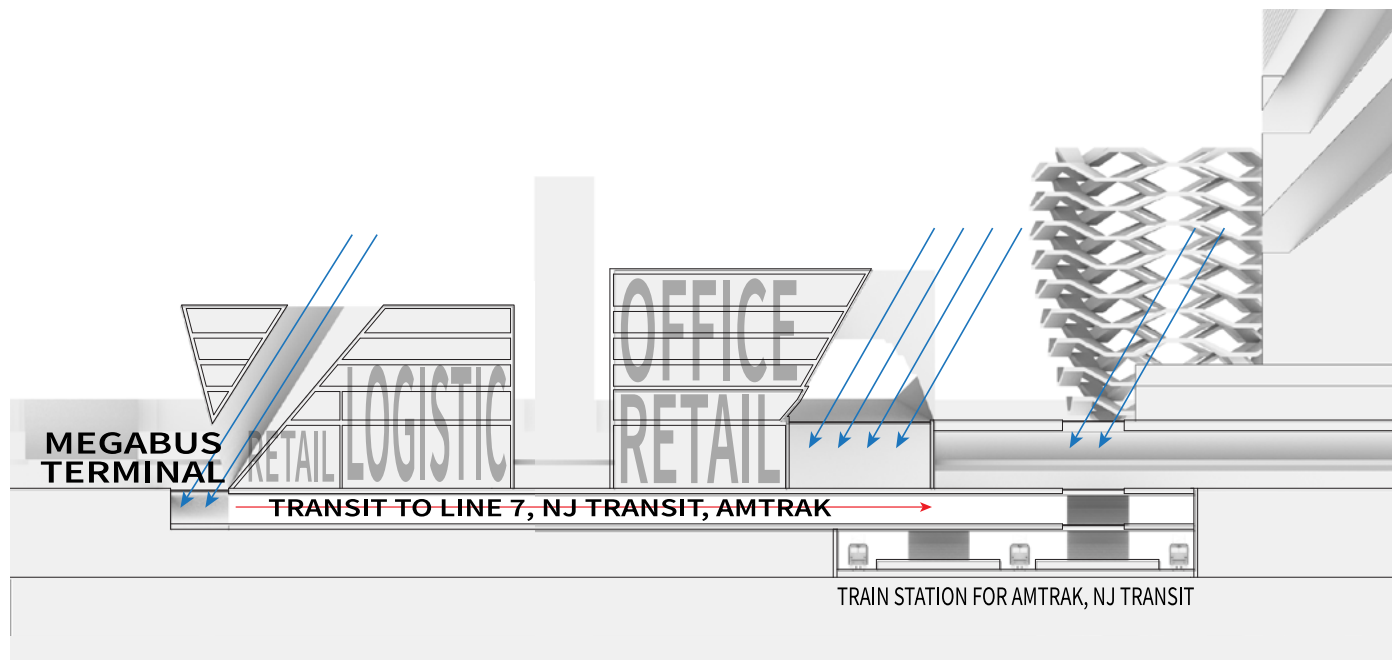
Program : Mixed-use Transit Hub

Location : 300 12th Ave, New York, NY (West Side Yard)

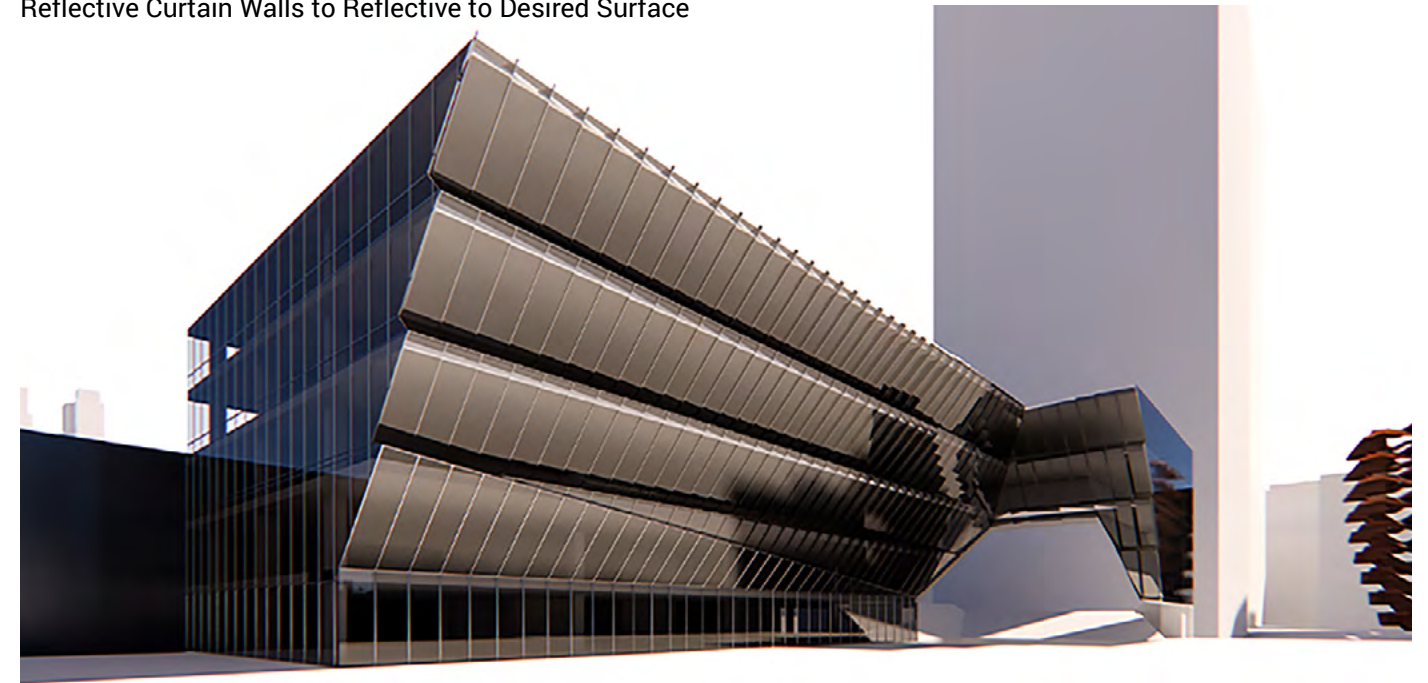
This project is about designing a pedestrian-friendly mixed-used transit hub in Hudson Yards by providing good daylight conditions using BIM. To achieve this, we made three openings on the ground floor to allow the sunlight to reach the underground base with train platforms and transit circulation. We tested solar fans in different rush hours in Grasshopper with a ladybug plugin and carved out the building mass, designed based on the Hudson Yards district zoning regulations. Facades are designed to maximize the sunlight reflection to redirect it to the underground platform. We angled the reflective curtain wall by calculating the average angle between the sunlight and reflected light vectors.



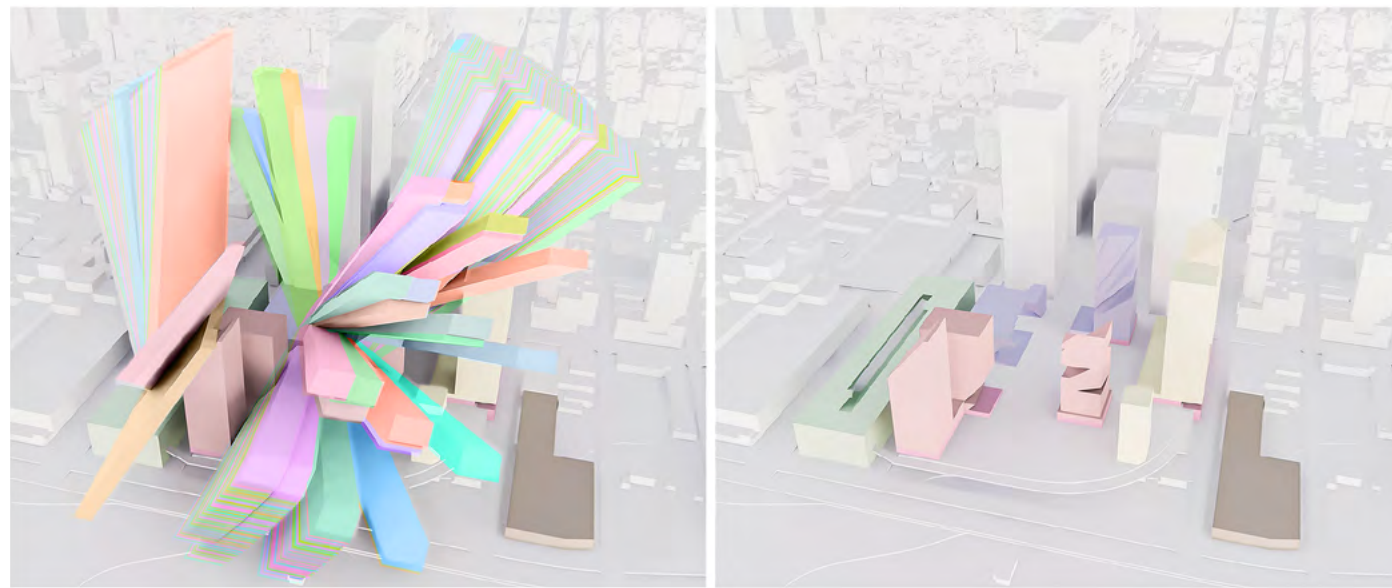
Concept Section



Reflective Curtain Walls to Reflective to Desired Surface



Solar Fan Study to Extract Volume



Perspective Section

