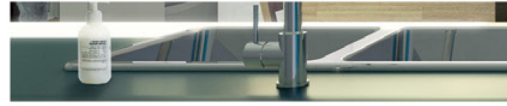
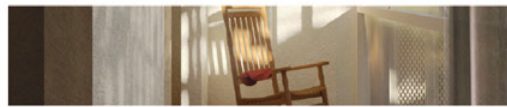


P O R T F O L I O



2 0 1 9 - 2 0 2 2

Y u m e n g L i u



2020

# CONTENT

*CORE I*  
**STREET CLASSROOM**

*CORE II*  
**THE EXPLORATION SCHOOL**

*CORE III*  
**NARROW HOUSING**

*ADV IV*  
**BUILDING THE UNBUILT**

*ADV V*  
**AIR MACHINE**

*ADV VI*  
**A WALL WITH SINK**



## ***STREET CLASSROOM***

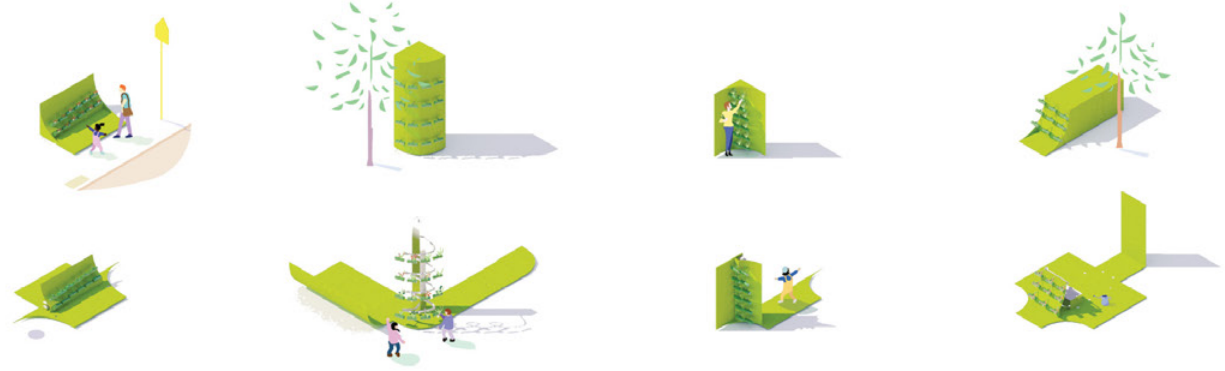
Street Installation  
New York  
Fall 2019  
Instructor: Jaffer Kolb  
Individual Work

Public education is public. However, it is invisible most of the time. This design looks to create a new kind of diffuse infrastructure to reveal the zero waste education to the public and to share the education with the community by collapsing the exterior and the interior. It is about seeing the things that we are usually not allowed to see but are public. The classrooms form a new kind of diffuse interior condition around the public school itself, creating a performative and active envelope of a program that both activates the school as a node and builds a playscape out of waste management education.

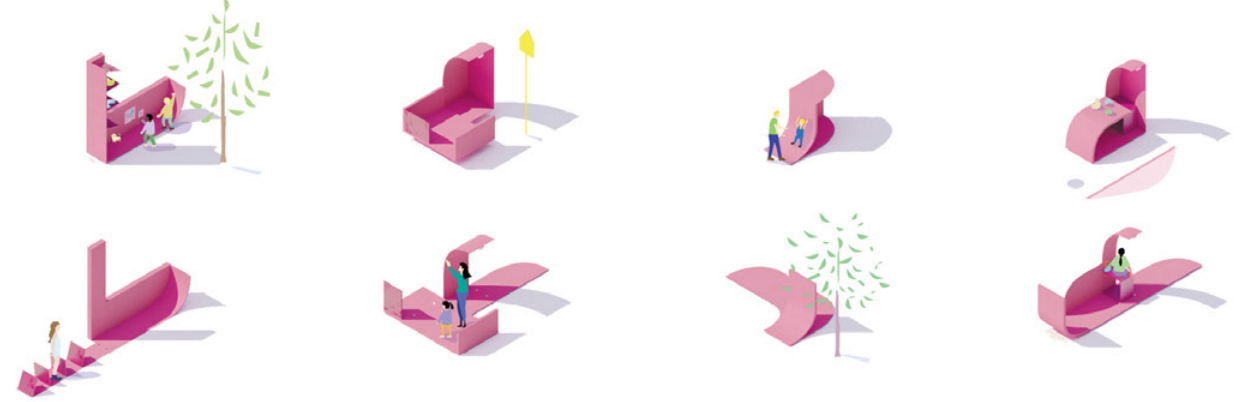


Program

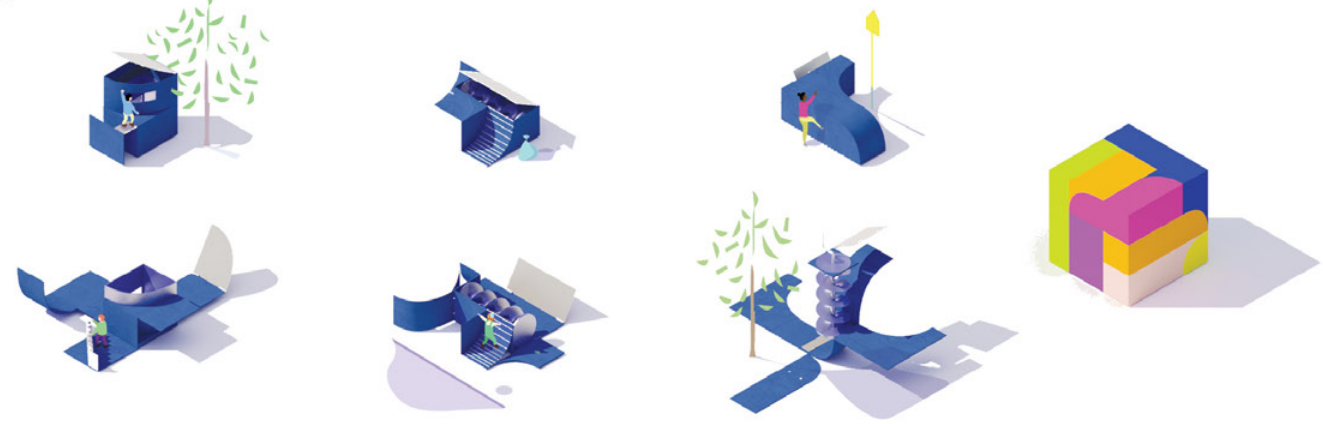
Garden



Gallery



Compost



After School







Assembly



Composition



Section





1:1 Model

Street Classroom

M.Arch GSAPP

Yumeng Liu





# THE EXPLORATION SCHOOL

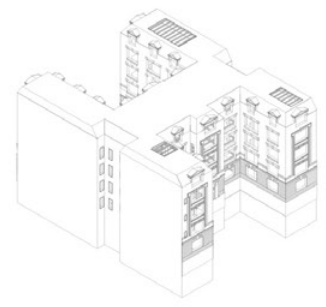
School Renovation  
 New York  
 March 2020  
 Instructor: Erica Goetz  
 Individual Work

The school of exploration purposes to stimulate kids' curiosity with architectural elements and to create environment with diverse dimension because of the relativity of scale between kids and adults.

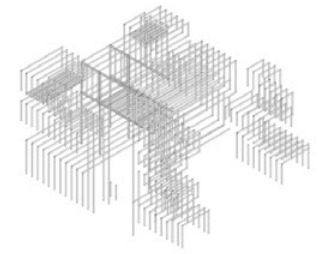
The design starts from weaving the new timber framework and the old exposed construction, setting the old building shell as the backdrop of interior space. After capsulizing classrooms into the boxes, these learning spaces float inside the vertical landscape of play. Kids can enjoy these segments of release between the study space.



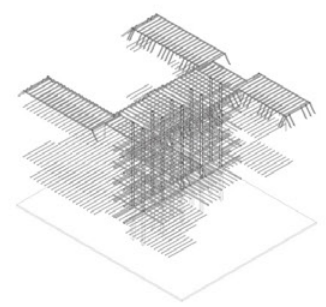
Existing buiding shell



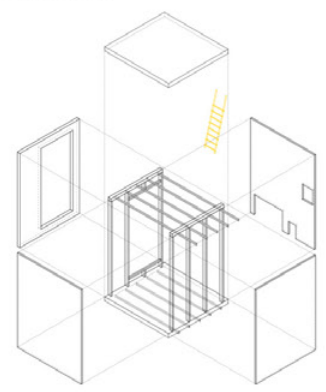
New timber construction



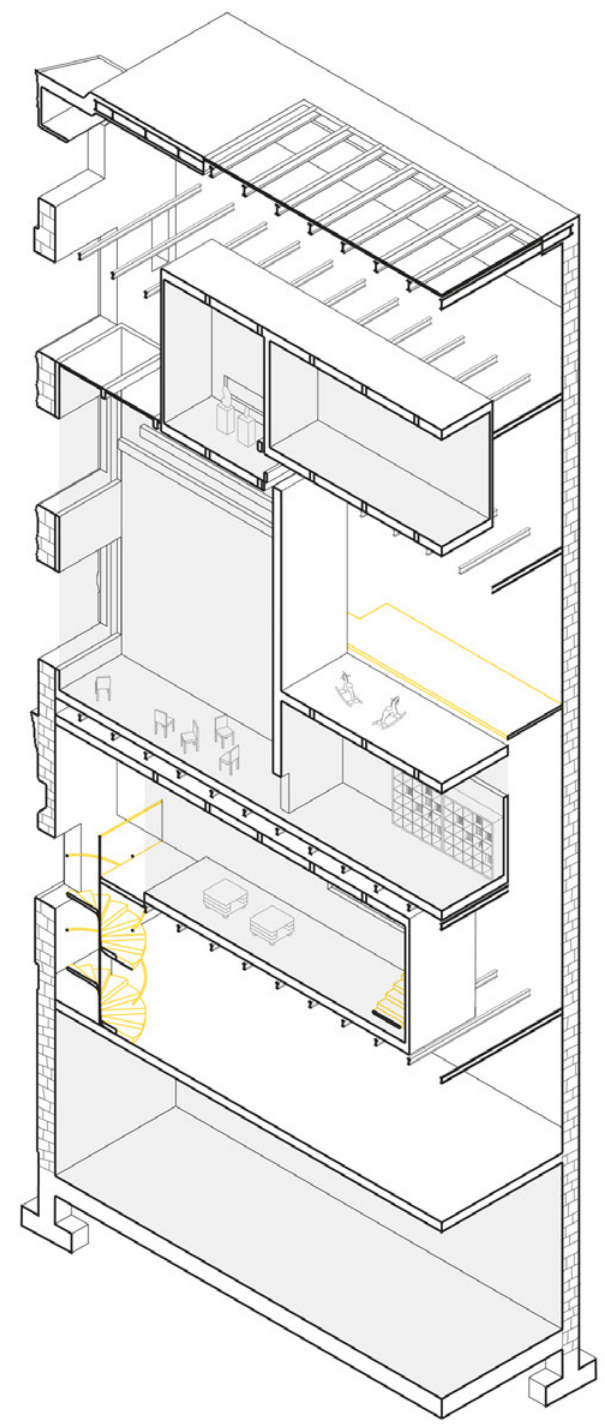
Old steel structure



Classroom frame



Section



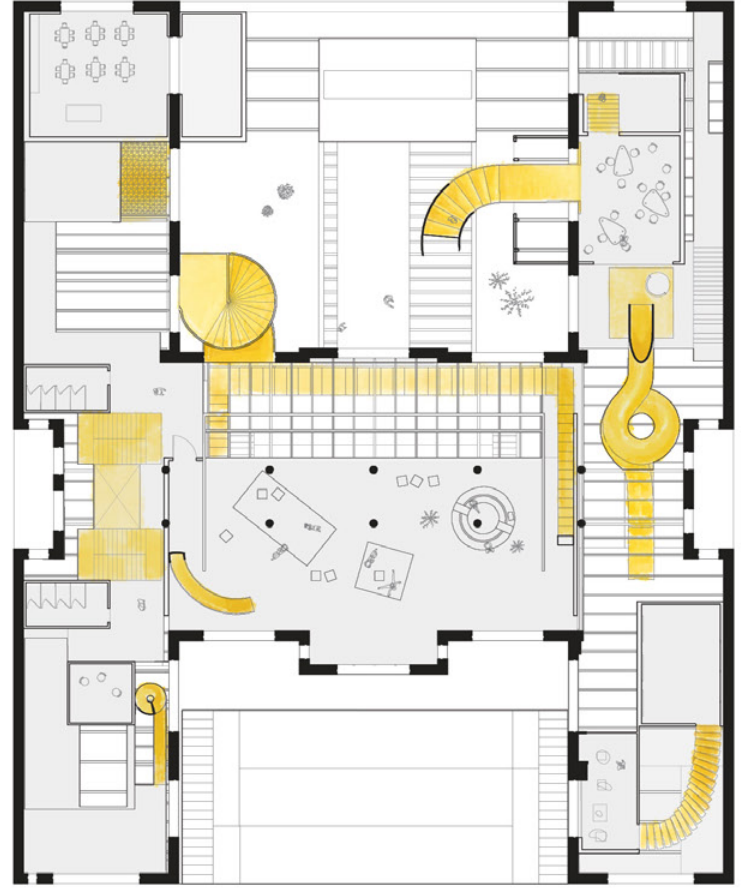
Outside the classroom



Inside the classroom







Level 3

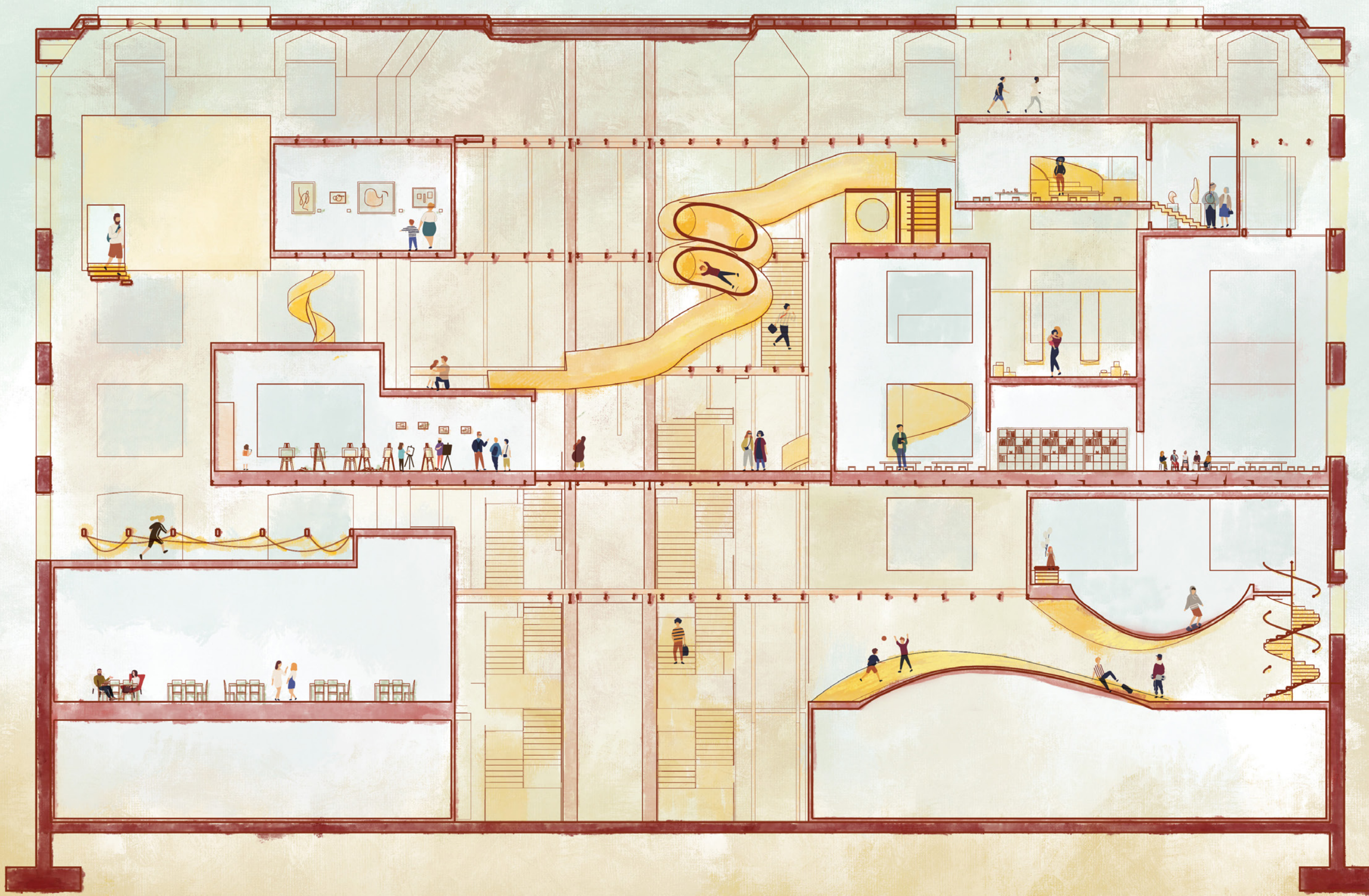


Level 1



Level 2









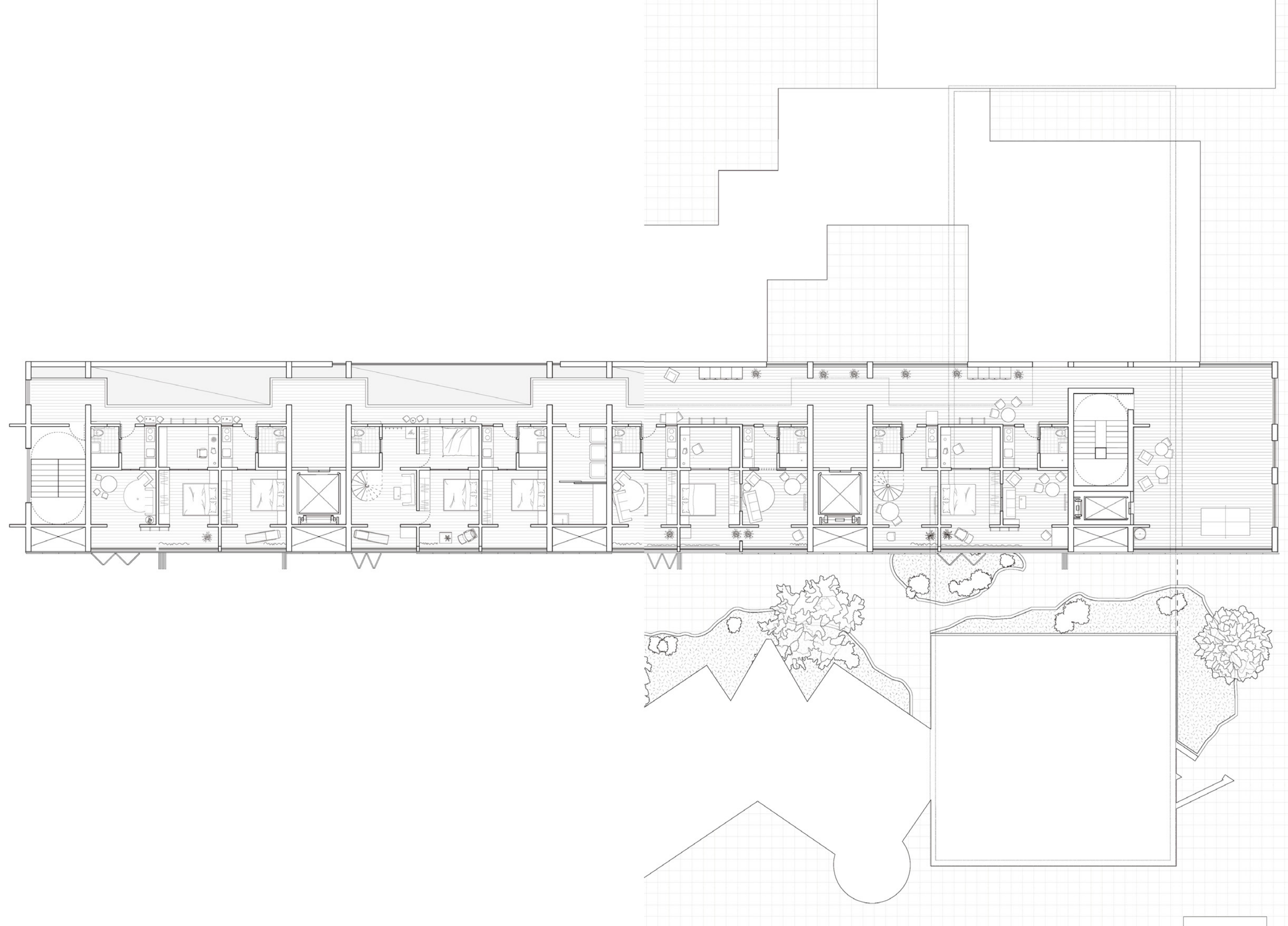
## ***NARROW HOUSING***

Senior Housing  
New York  
Fall 2020  
Instructor: Adam Frampton  
Partner: Nayef Alsabhan

With a relatively narrow site, 50' by 230', the building coverage is shrunk to 60% for the frontyard. The narrowness of the site directed us to the narrowness of form. Corridor, unit, and balcony are three main stripe-shaped program in the project.

The "wing walls" construct hashtag forms with ambiguous and flexible spaces. By wrapping the units to define the spaces, the project creates the possibilities to blend the boundaries by having openness that connects the inner and the outer layer of spaces.

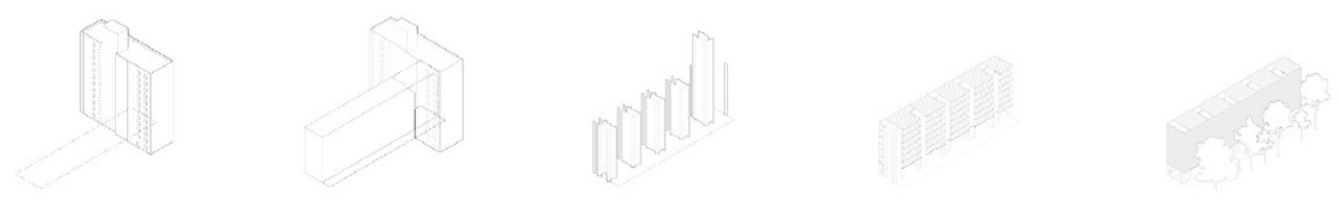




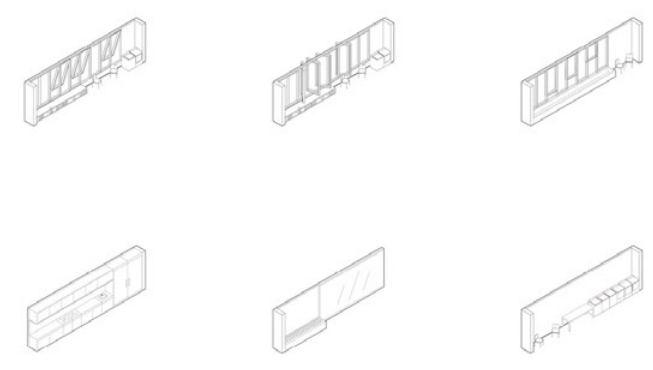


Unit

Formation



Catalog



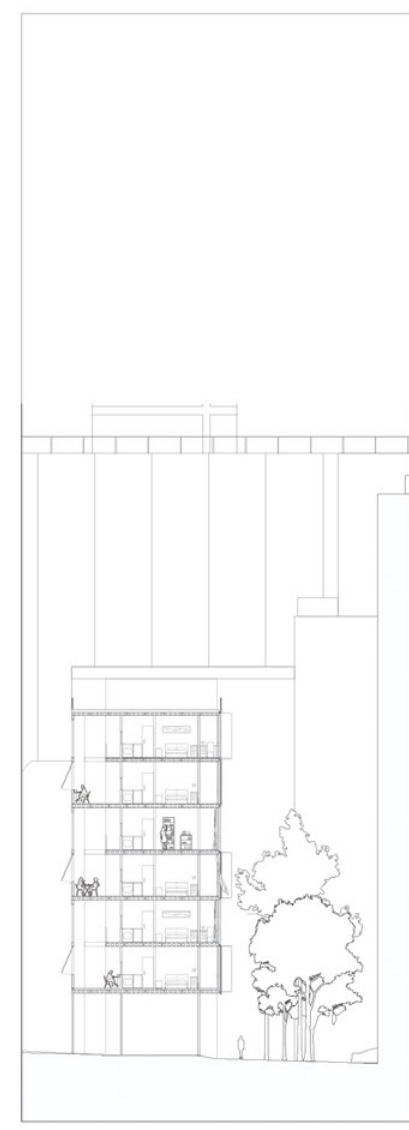
1:50 Model



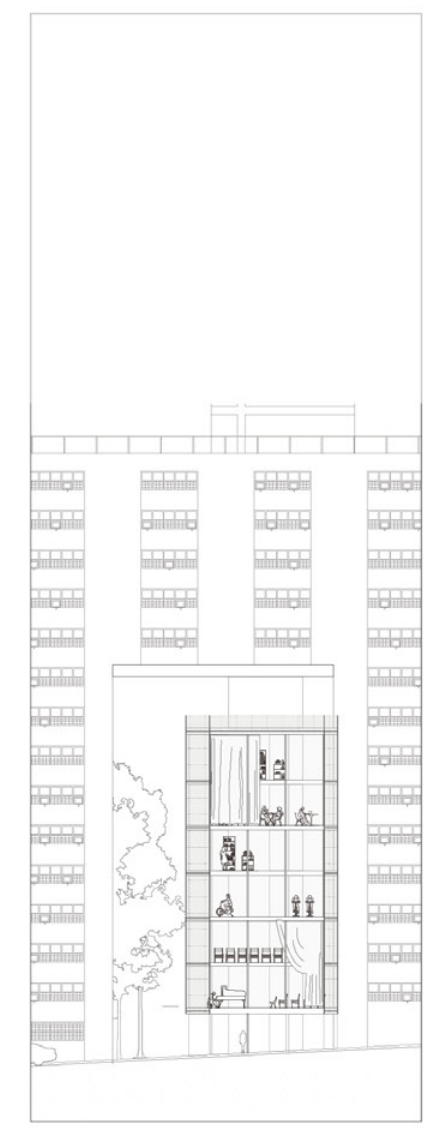
Section



Unit Cross Section



South Section

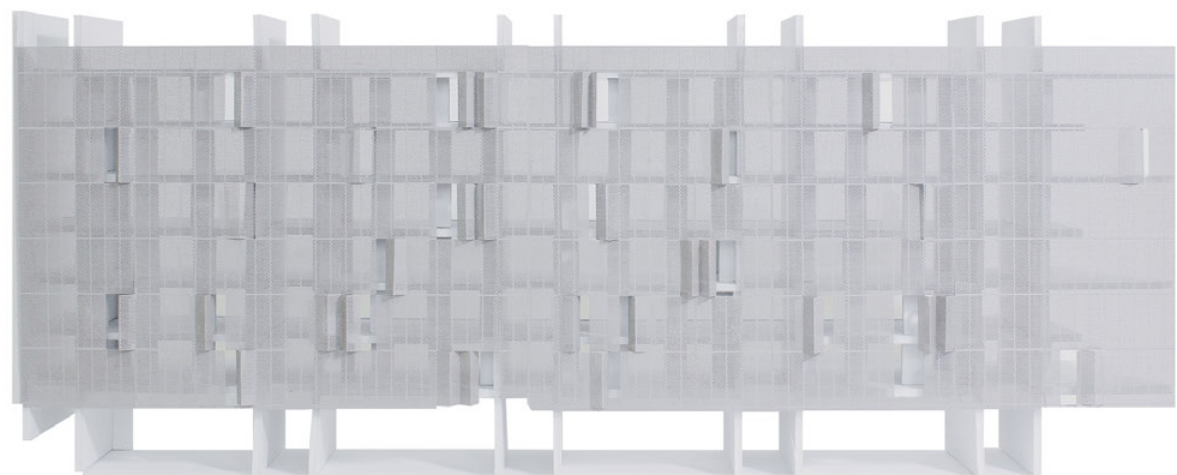


North Section

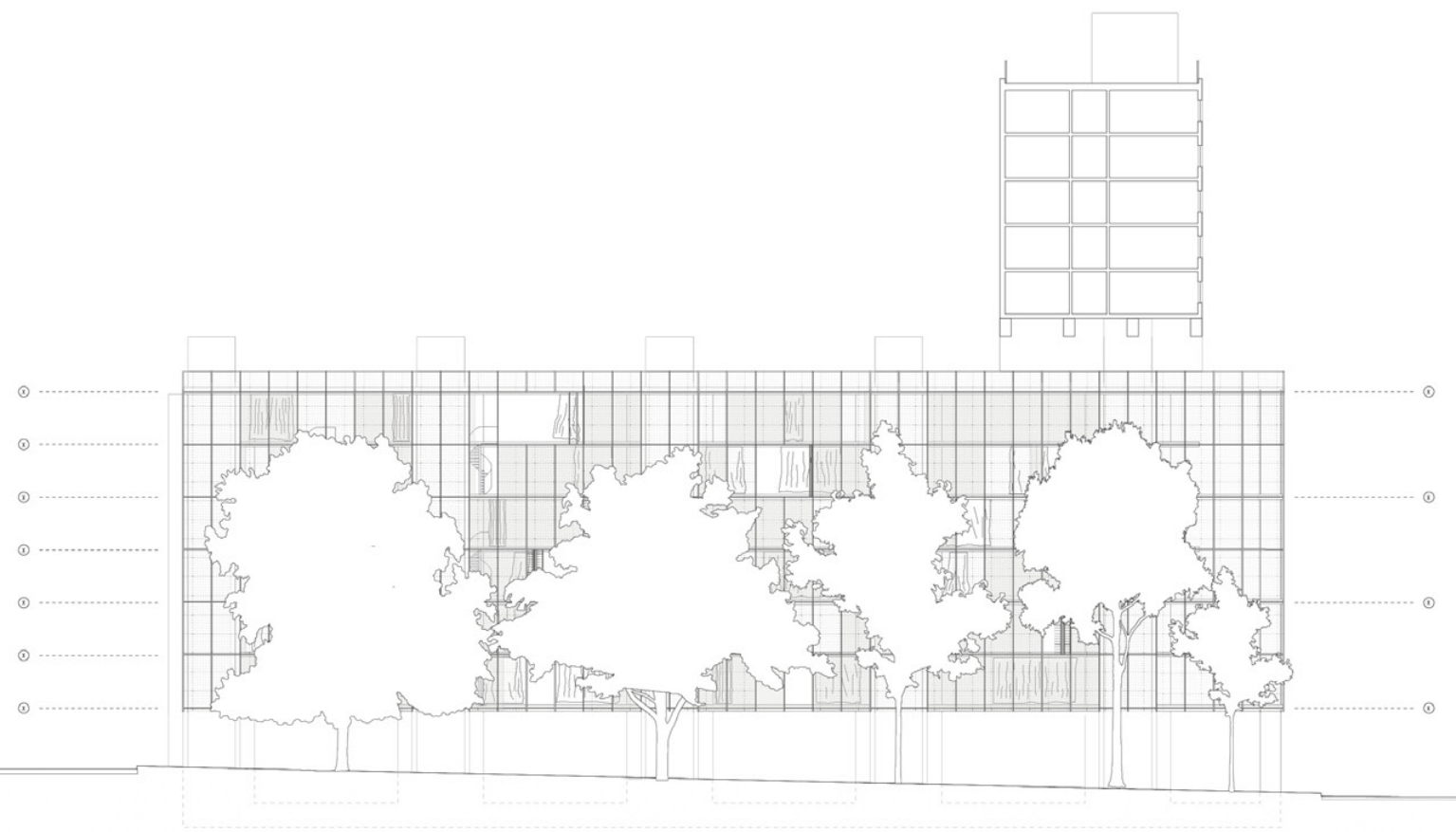


Facade

The facade is made of metal panels with perforations which allows for clear views out of the unit but a level of privacy from the ground conditions. The panels are foldable so the composition of the façade changes according to the users privacy preferences.



1:100 Physical model



East elevation

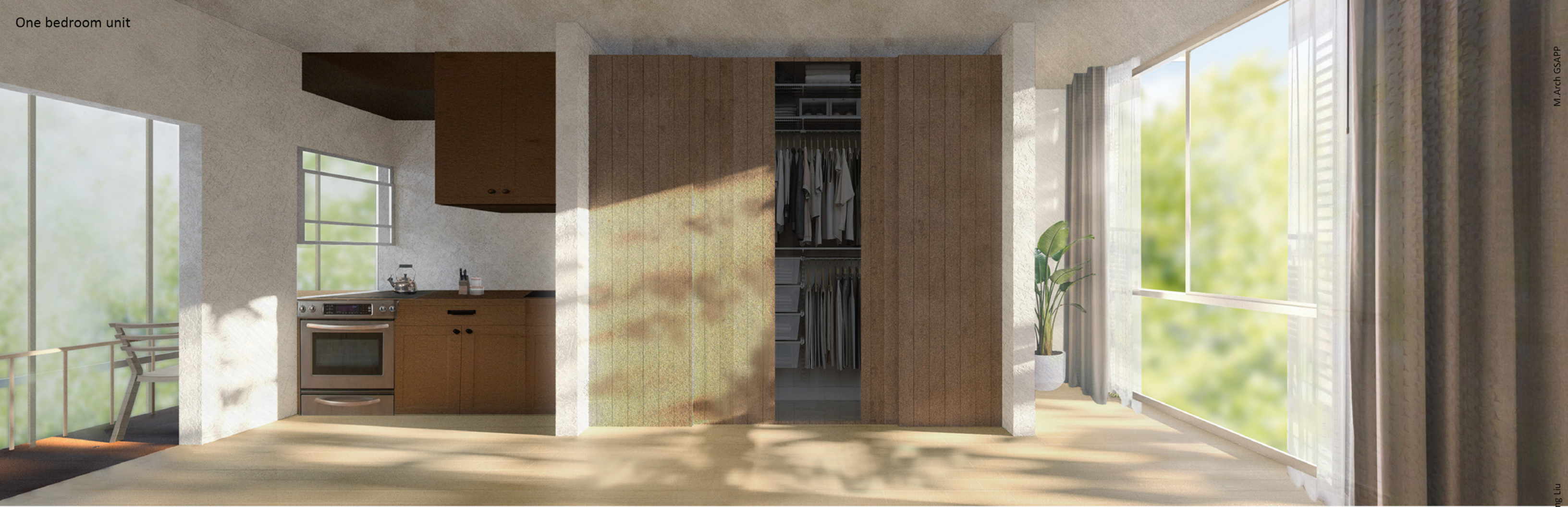


M\_Arch GSAPP

Yumeng Liu

Narrow Housing





One bedroom unit

Studio unit



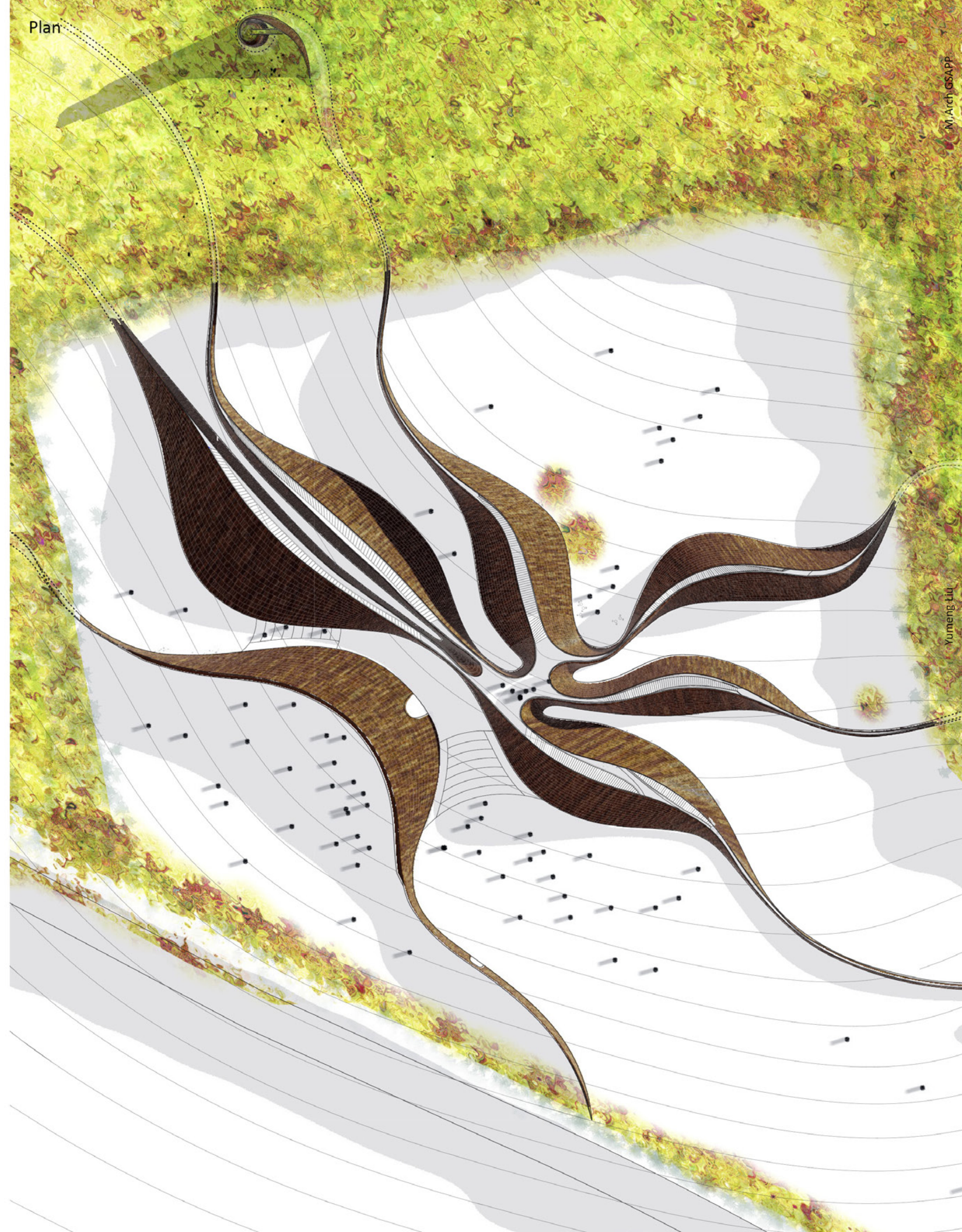
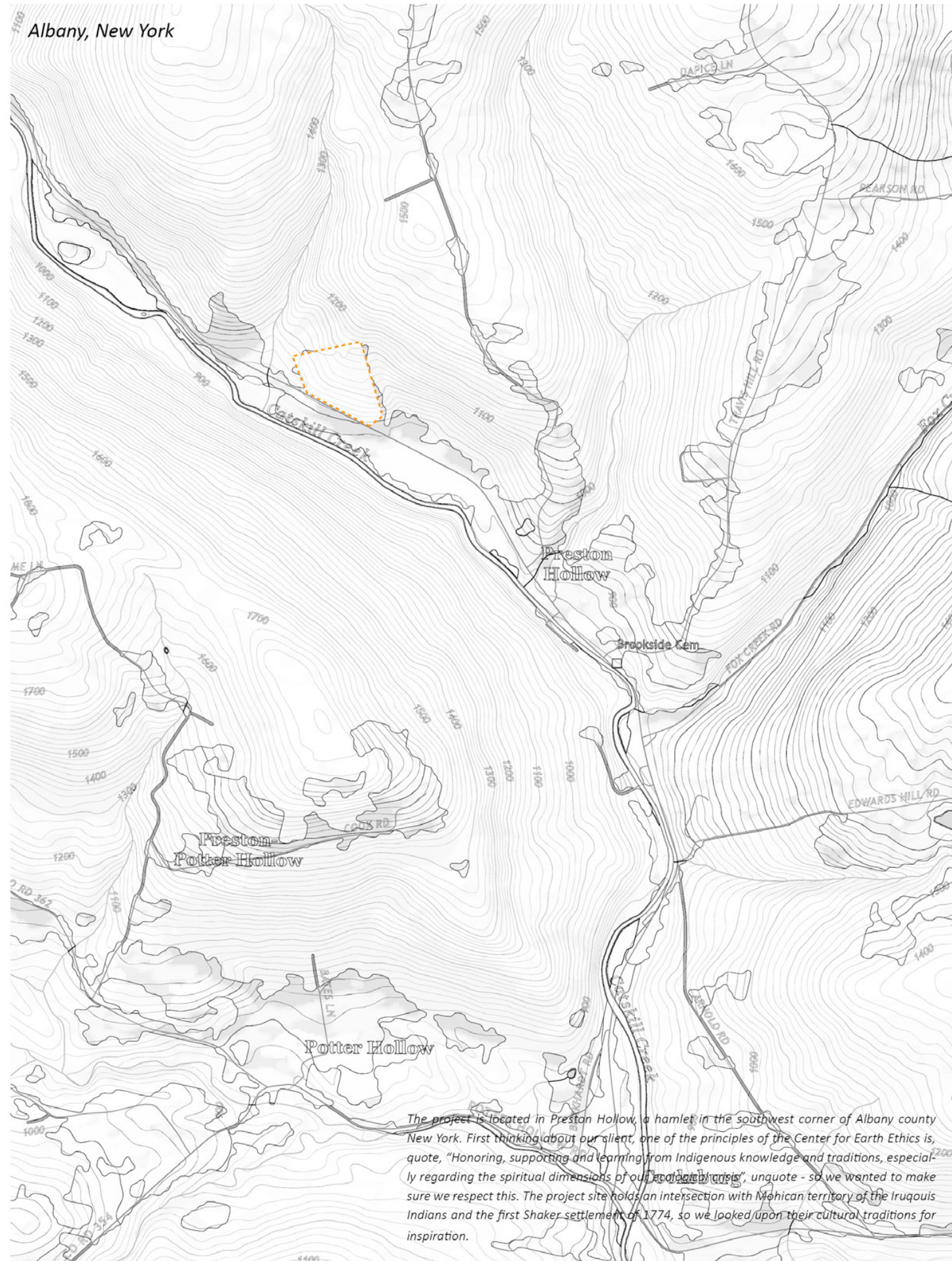


## ***BUILDING THE UNBUILT***

Campus of Center for Earth Ethics  
New York  
Spring 2021  
Instructor: Lindsey Wikstrom  
Partner: Sierra Heckman

Our project for the Center of Earth Ethics aims to propose a new way of living to achieve collaborative survival in a **more-than-human Anthropocene**. We intend to invite humans and the federally endangered Indiana bats and as two of our main clients because of their reversed and mirrored living patterns. After researching on the site, we wish to reconnect with the native american and the Shaker's culture in Albany. We are inspired by how the Shaker's hang most of their furniture on a strip on a wall and that strip will go across every room in the building. We adopted the "suspension" because it is both a process of maintenance and gives respect to the ground, also it echoes with how the bats hang themselves under a surface. We decided to use the idea of the CLT wall as a host of the "suspension" which provides vertical surfaces to hang elements, and it will work as the primary structure in our project.







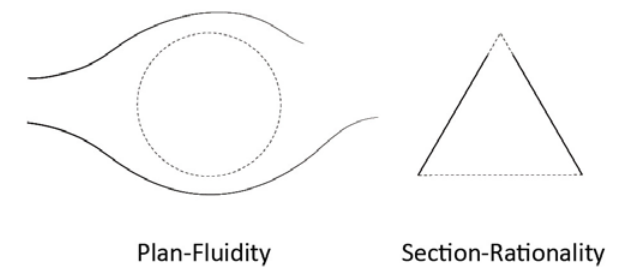
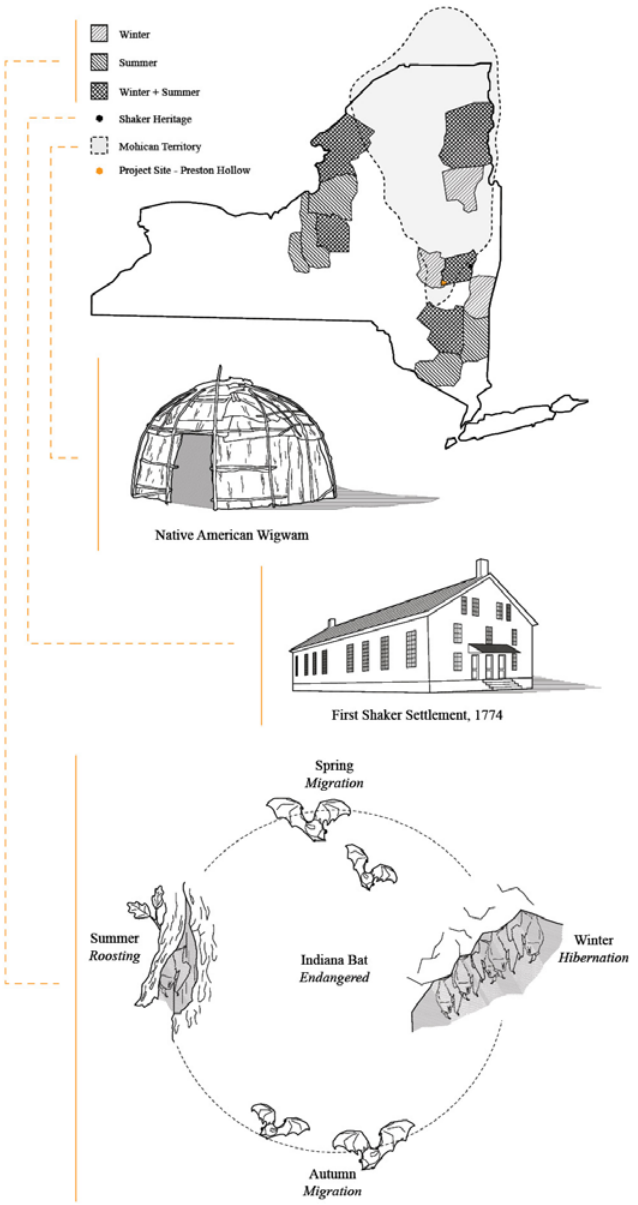
Thinking about our client, one of the principles of the Center for Earth Ethics is, **"Honoring, supporting and learning from Indigenous knowledge and traditions, especially regarding the spiritual dimensions of our ecological crisis"**, so we wanted to make sure we respect this. The project site holds an intersection with Mohican territory of the Iruquois Indians and the first Shaker settlement of 1774, so we looked upon their cultural traditions for inspiration.

In addition, Albany county is one of the few places where Indiana Bats, a federally endangered species, inhabit year-round, so the protection of these bats became a driving theme of the project.

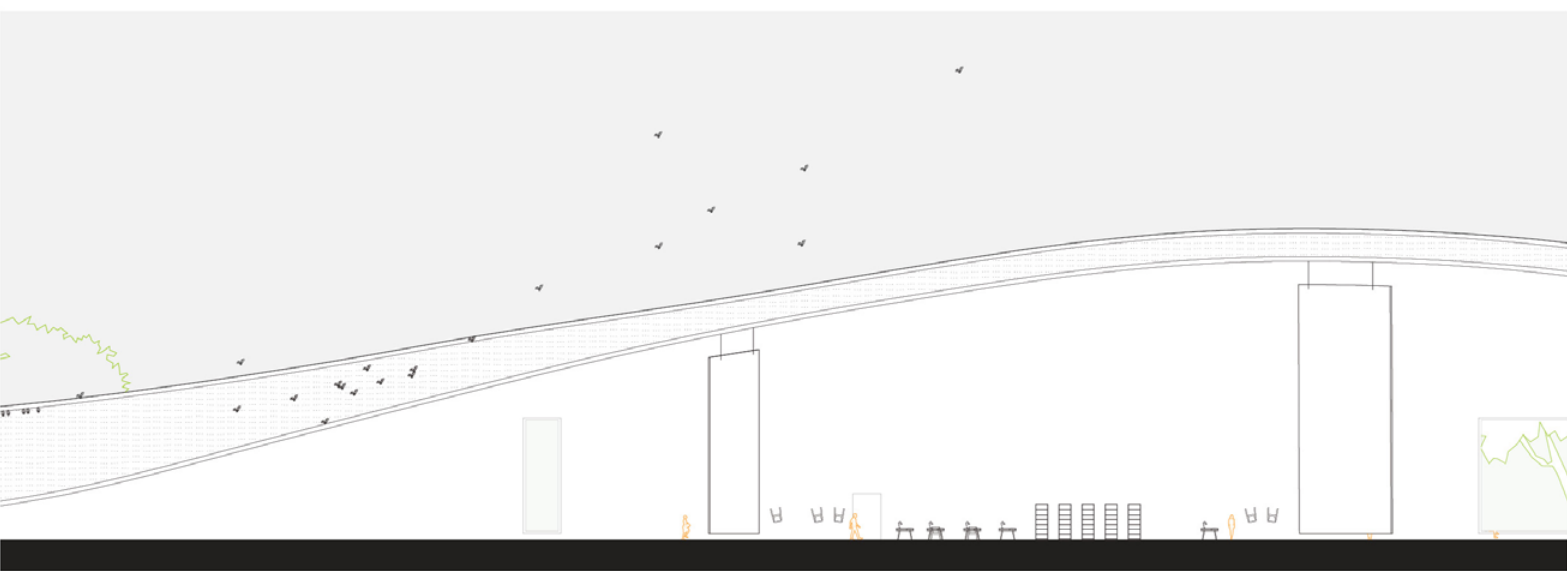
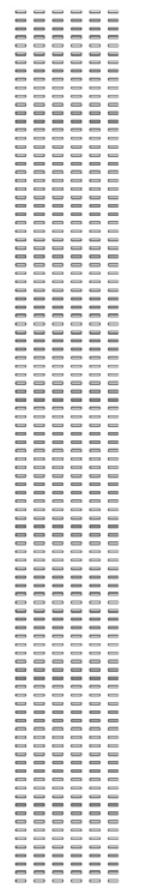
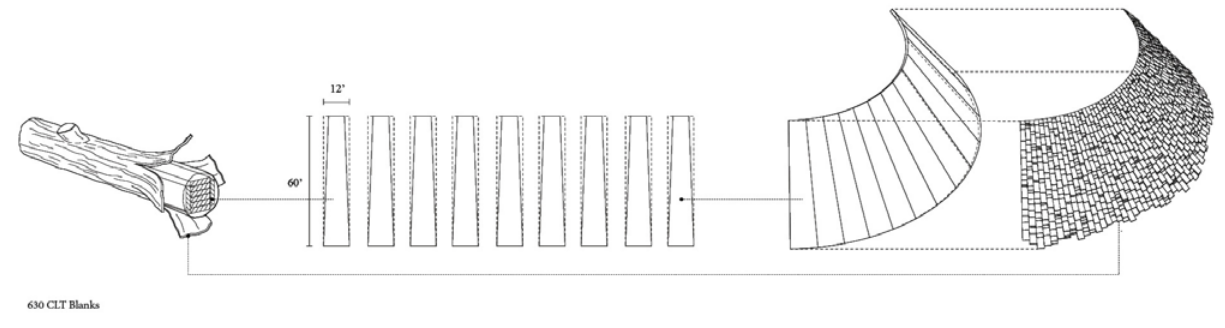
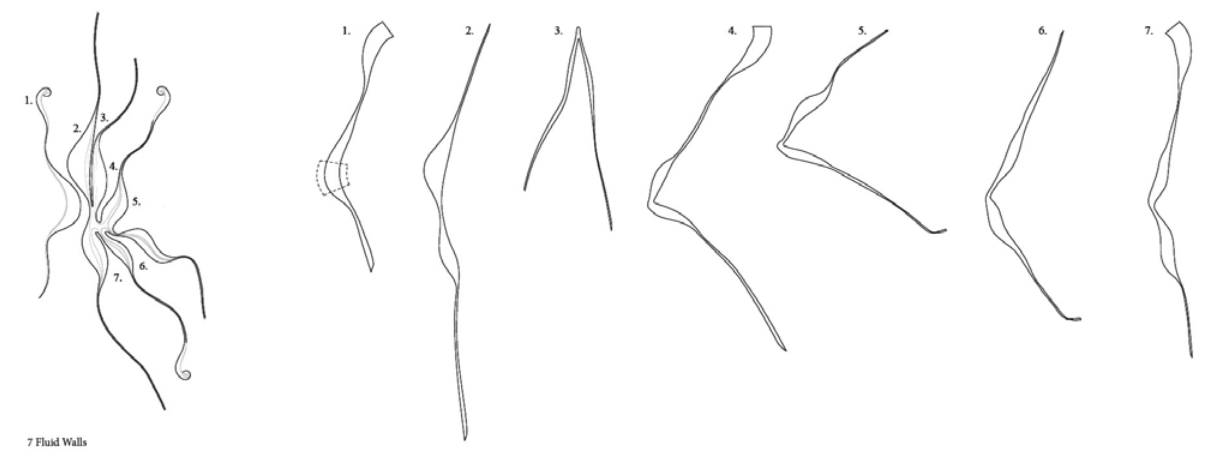
For the Center of Earth Ethics, we are proposing a new way of living to achieve **collaborative survival in a more-than-human Anthropocene**.

We invite humans and bats as our two main clients, and intend it to serve as a prototype for systematic protection of other endangered species. We are inspired by how bats and humans live inversely; while they are nocturnal, we are diurnal, and while they occupy ceilings and walls, we occupy the ground.

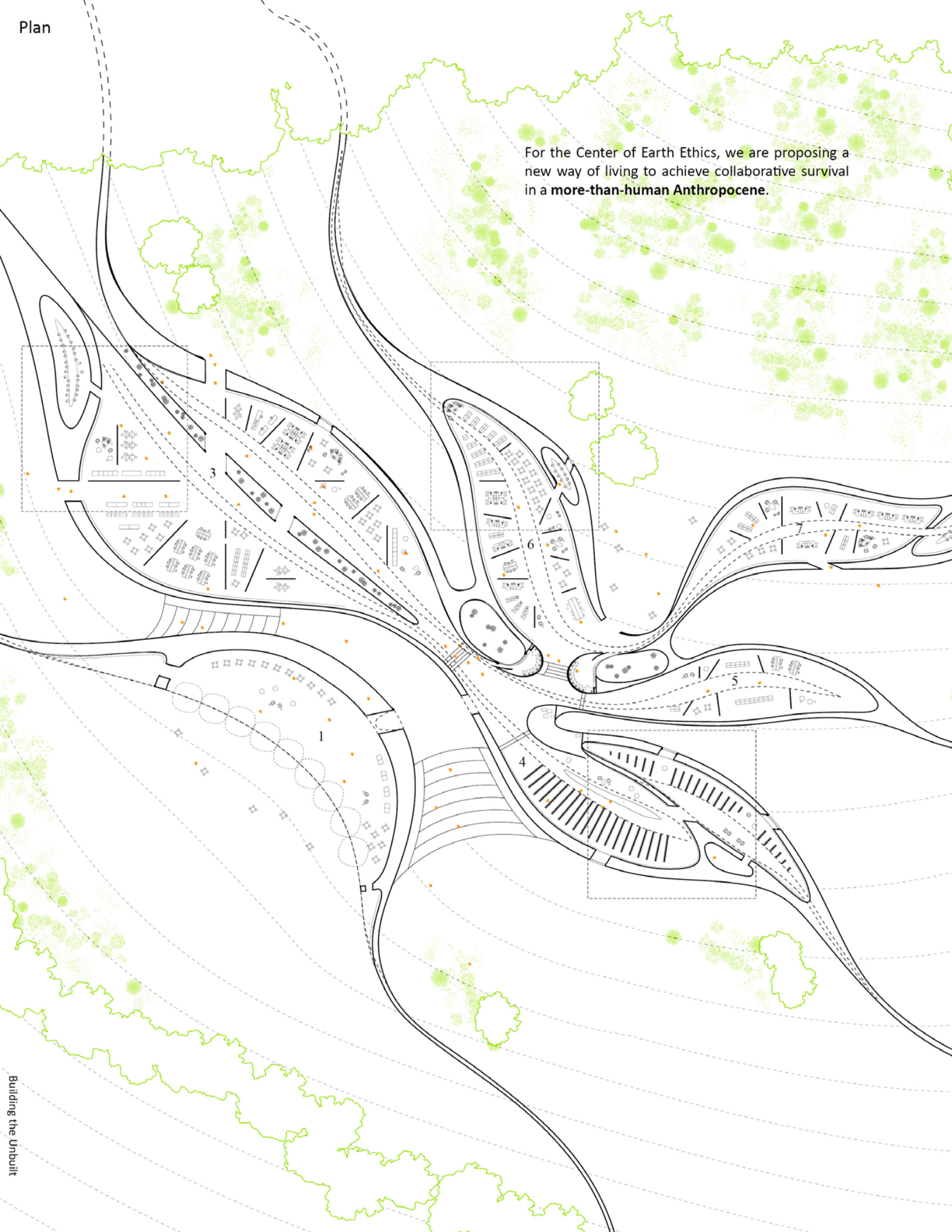
We are also inspired by how the Shakers hang most of their furniture on a strip on a wall and that strip crosses every room in the building. So we adopted the term **"suspension"** as a theme of our project because it is both a process of maintenance and gives respect to the ground, and echoes how bats naturally hang themselves under a surface.



We approached our geometry in plan by considering natural fluidity, for example how air or water moves around a stagnant object. In section we consider the contrast of nature with rationality, and thinking about how slanted walls simultaneously provide both a lateral and vertical surface.

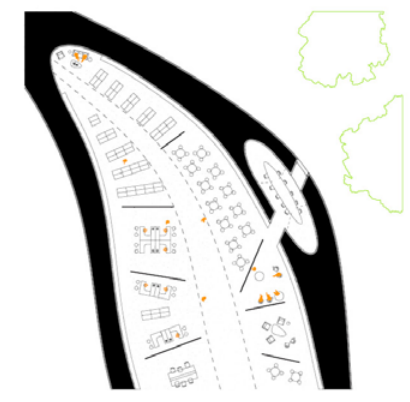
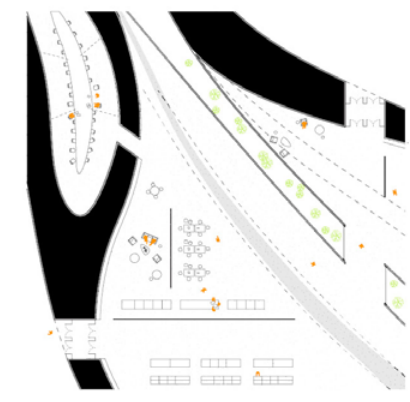




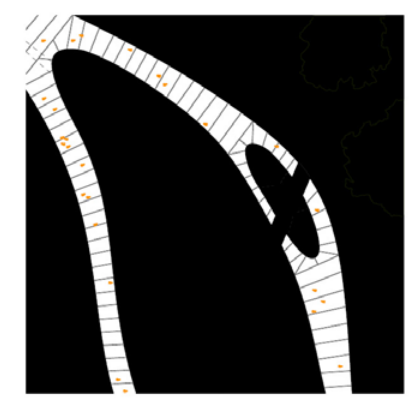
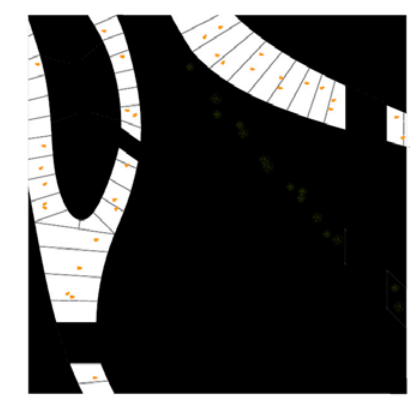


For the Center of Earth Ethics, we are proposing a new way of living to achieve collaborative survival in a more-than-human Anthropocene.

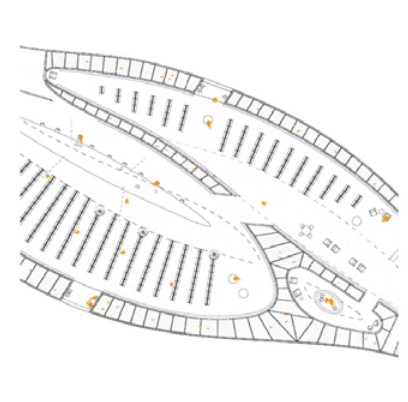
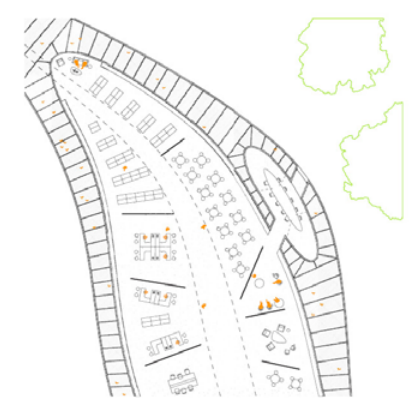
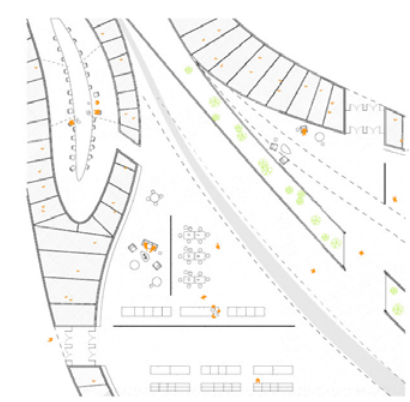
Interior



For human

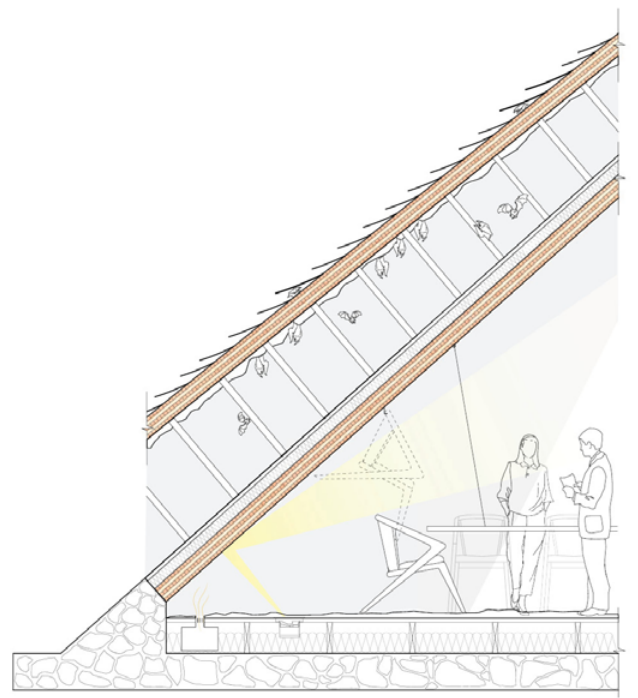


For wildlife



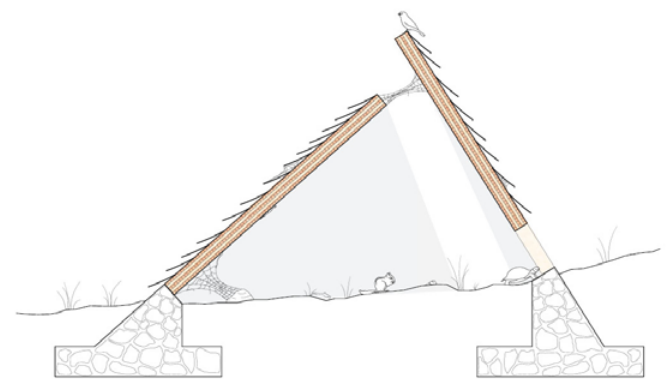
For all





Human scale

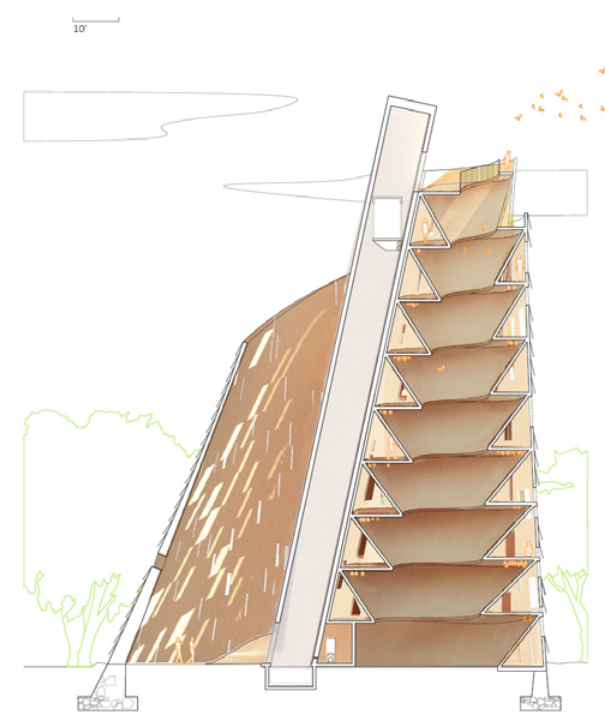
The cavity walls are serving as a surface for bats to hang on and for the suspension of furniture and walls. The corners in our human programs serve as space for the lighting and HVAC systems that provide comfort.



Wildlife scale

Inside the thinner walls that human can not occupy, we offer this as the green corridor for the smaller animals to travel inbetween the forests.

Yumeng Liu



Section

The geometry of the observation tower is like a hand clenching, where the outer wall wraps up the tower, and the inner wall spirals upwards and creates a cavity for the bats to inhabit. The spiral staircase between the two walls functions as supportive structure.

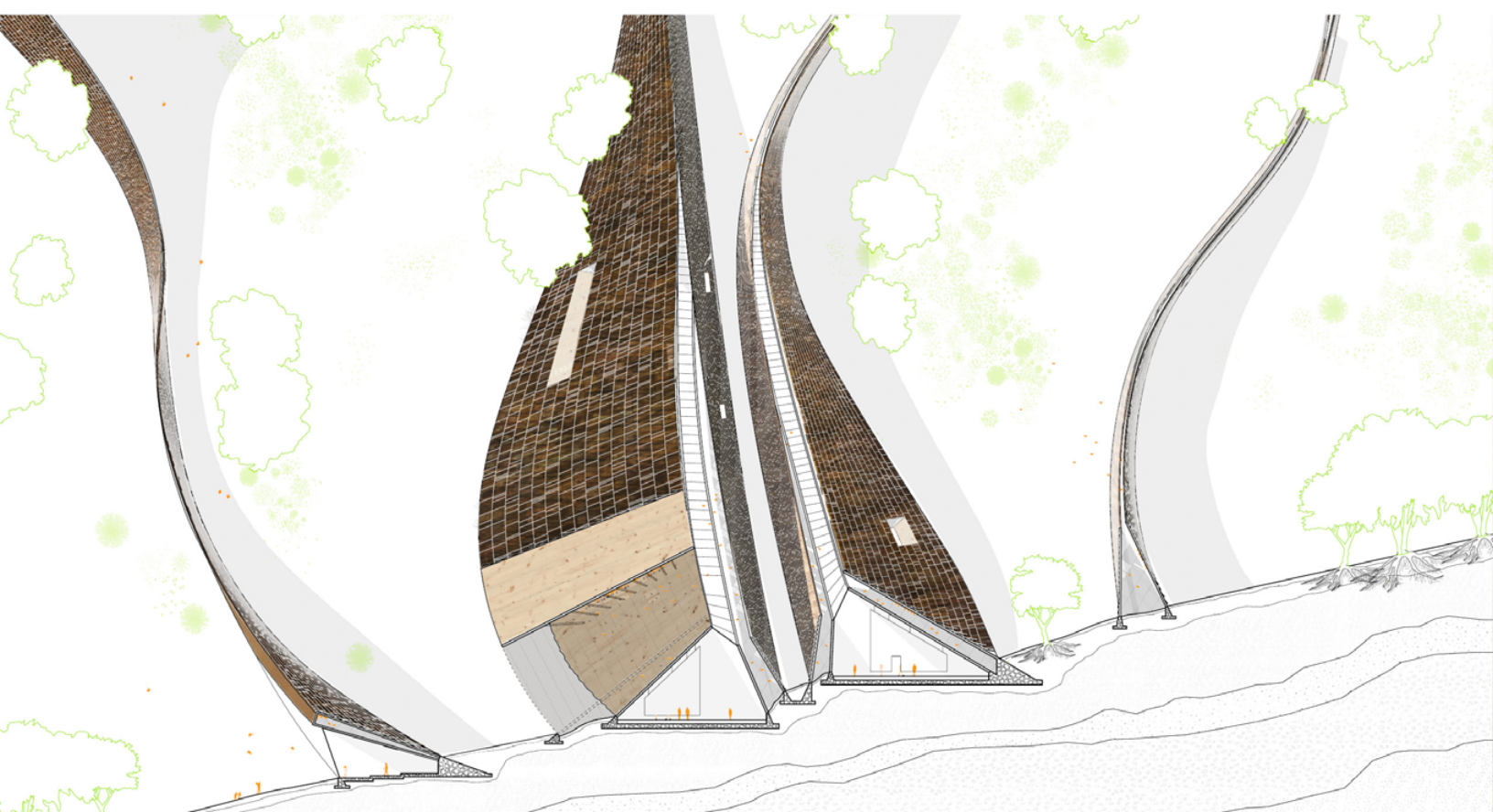


Plan

The geometry resembles an animal crawling on the ground, and the tower is the moment that it lifts its head up from the forest. The top of the observation tower serves as a reflection point.

Yumeng Liu

M.Arch GSAPP







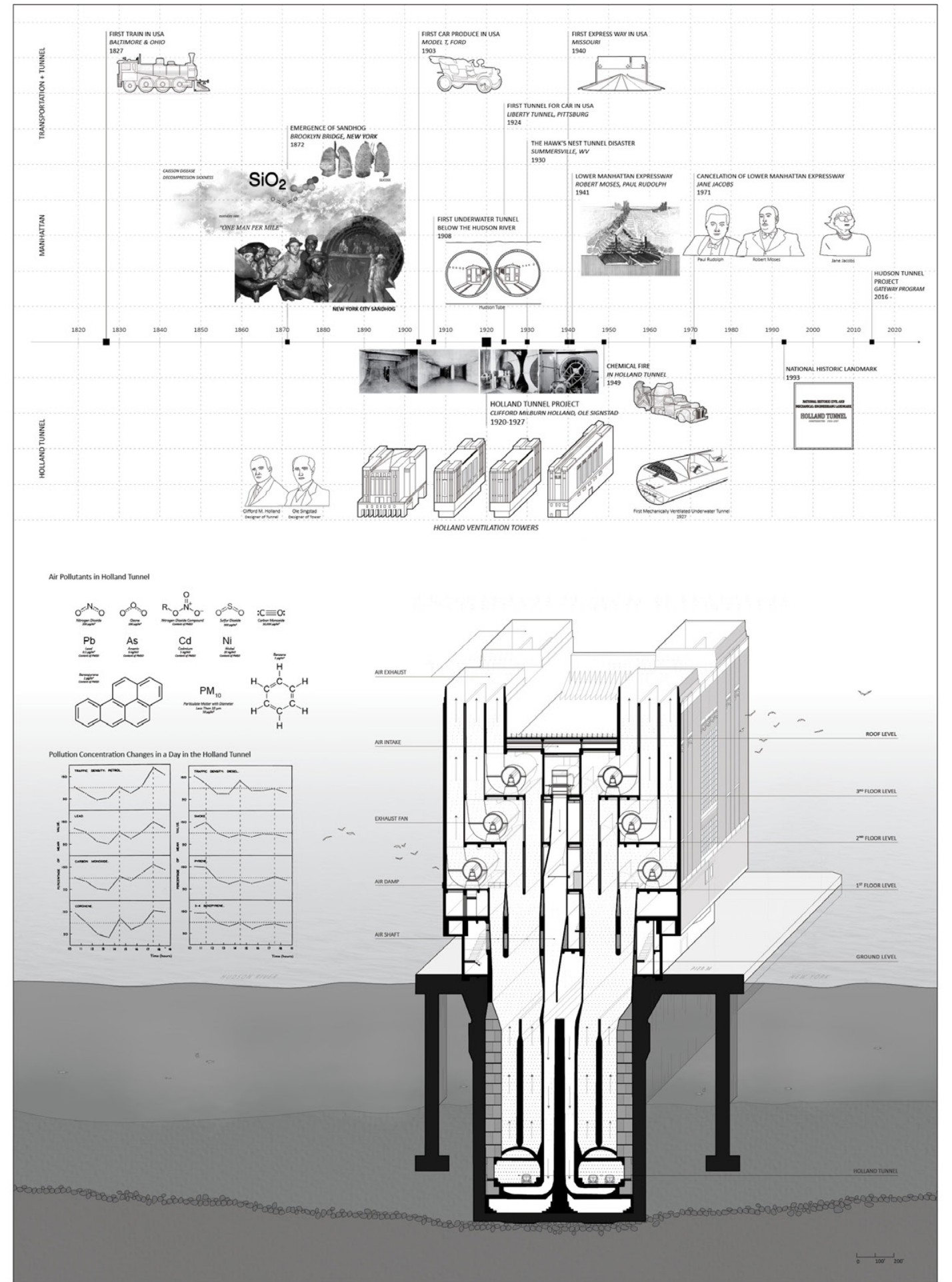
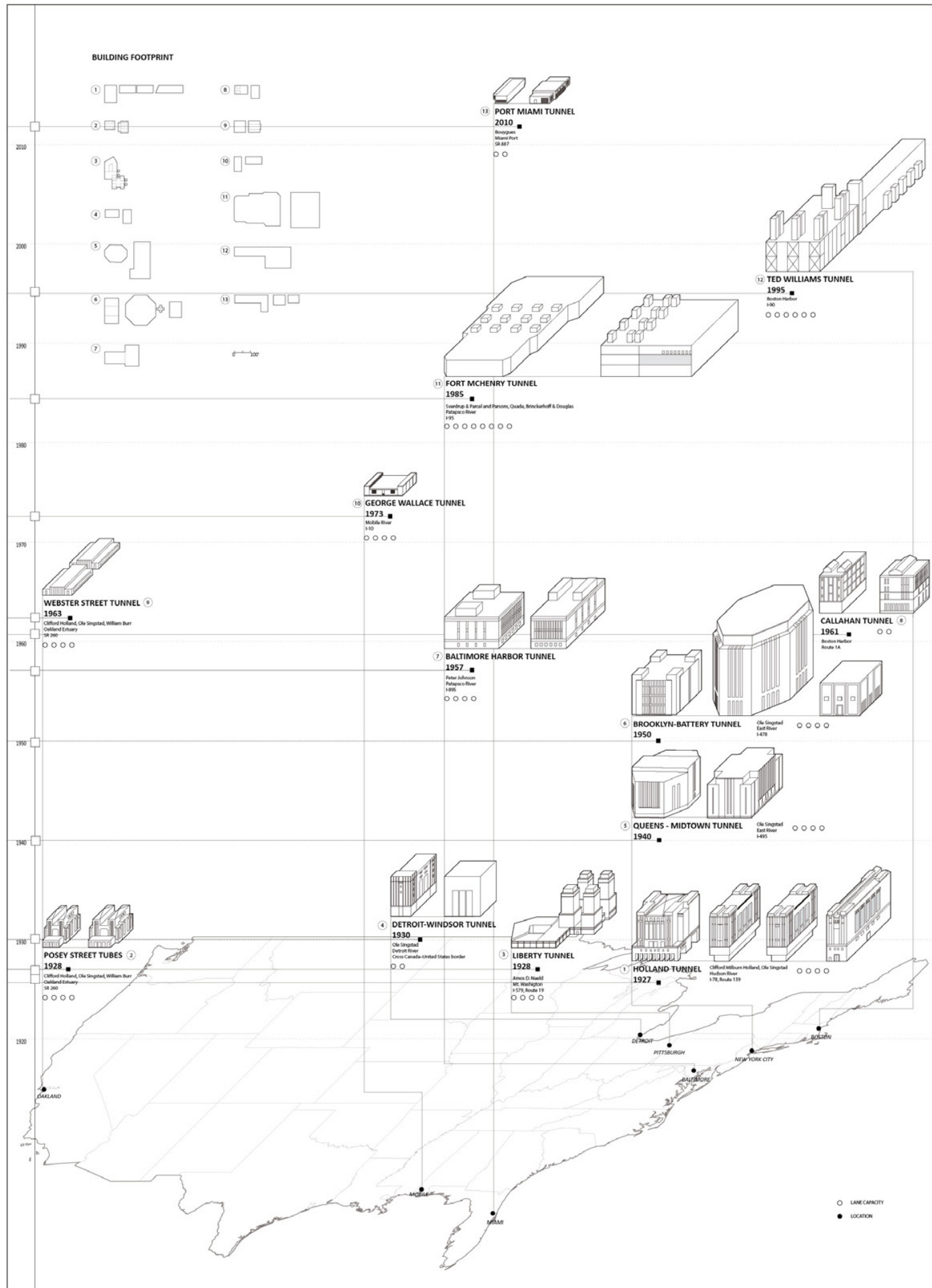
## ***AIR MACHINE***

Holland Tunnel Ventilation Building Intervention  
New York  
Fall 2021  
Instructor: Nahyun Hwang  
Partner: Selim Jung

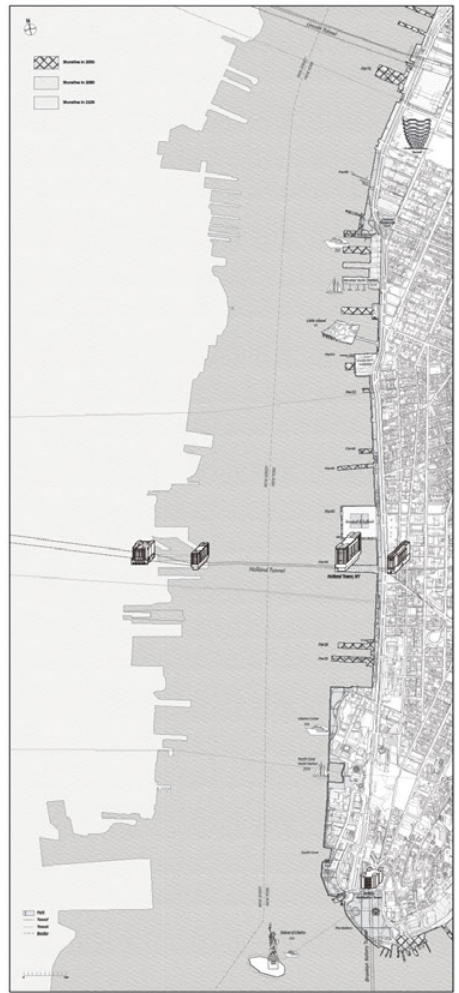
The project is the renovation of the Holland Ventilation Tower which is the first mechanical ventilation system applied to the first underwater automobile tunnel.

Standing in the middle of the Hudson River, these four ventilation towers for the Holland Tunnel symbolize the tip of an iceberg of urban underground construction. The verticality of the existing system, as the nature of its functionality, leads to the new vertical circulation system integrating with the old one. Inside the ventilation tower of New York side, the newly-structured vertical pathways allow citizens to observe this huge machine dressed up like a building in diverse ways. The exciting spaces that were not initially designed for humans but for the air in this building will be open for the visitors as they wander about this place.

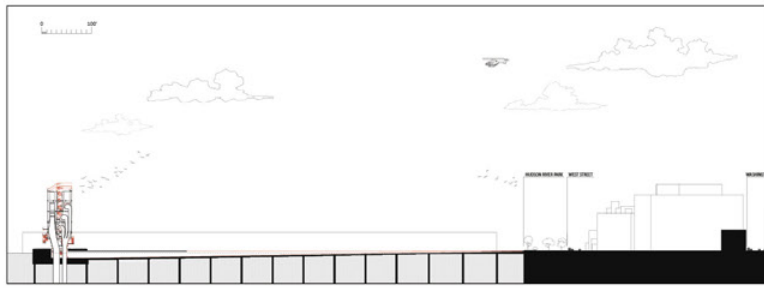








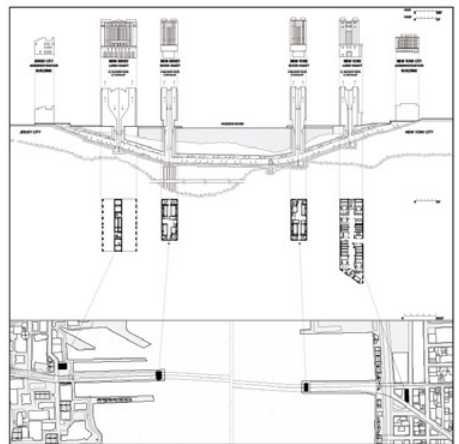
Site Map



Section



Site plan



Tunnel Section

The river ventilation building of the Holland tunnel, sits at the shoreline of the Hudson River. The riverfront area of west side New York City has been commercialized and into a symbol of luxury. Instead of a civic space, the architecture projects along the Hudson riverside are more about tourism and leiscapescape. Our project is looking to create another typology of New York City riverside architecture.

But also, the locality of our site also means vulnerability because of the possible water level rising that might happen in 100 years. It's such an ironic fact that the transportation system that these air towers use to support is the cause of their drowning.

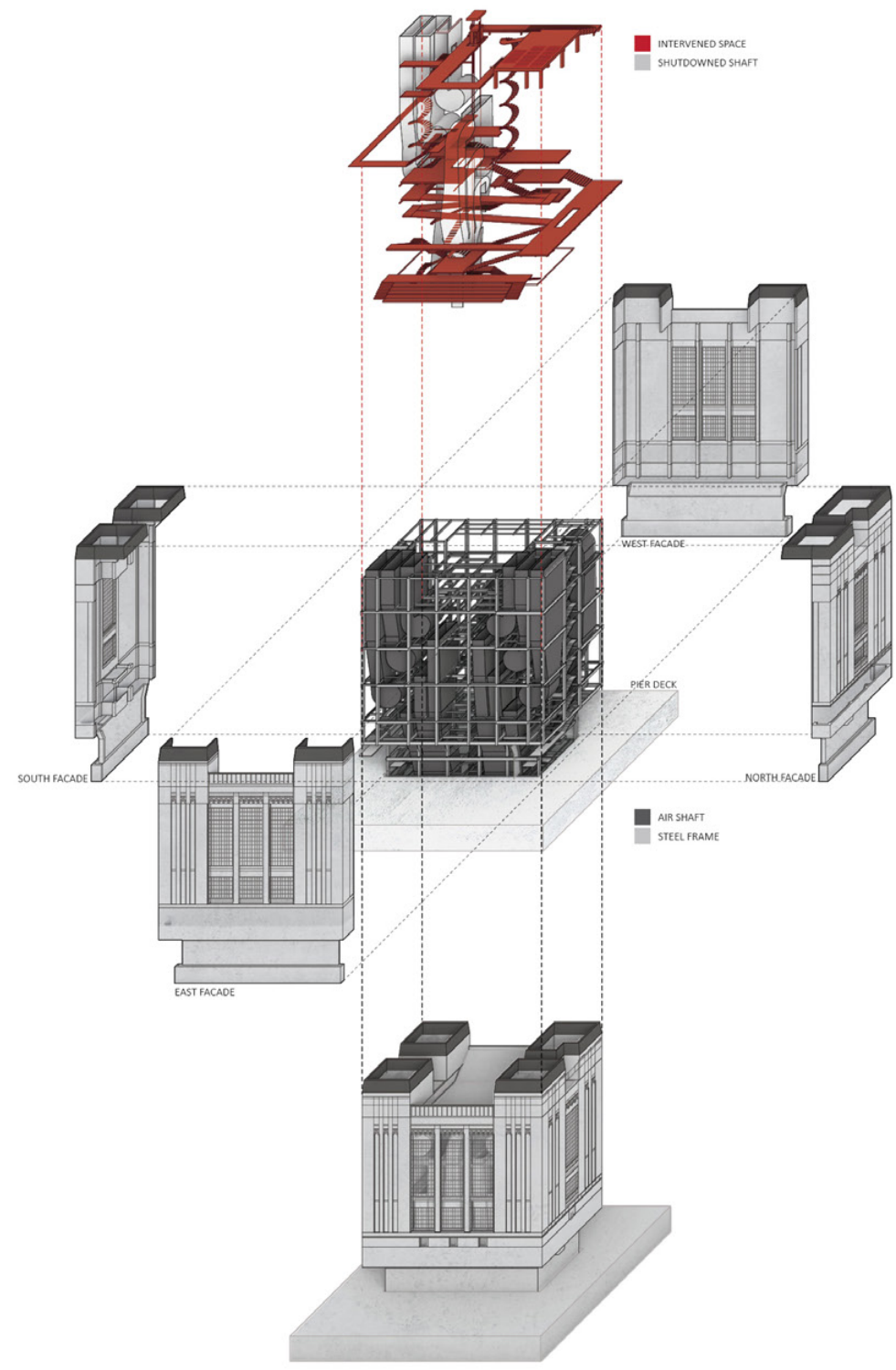
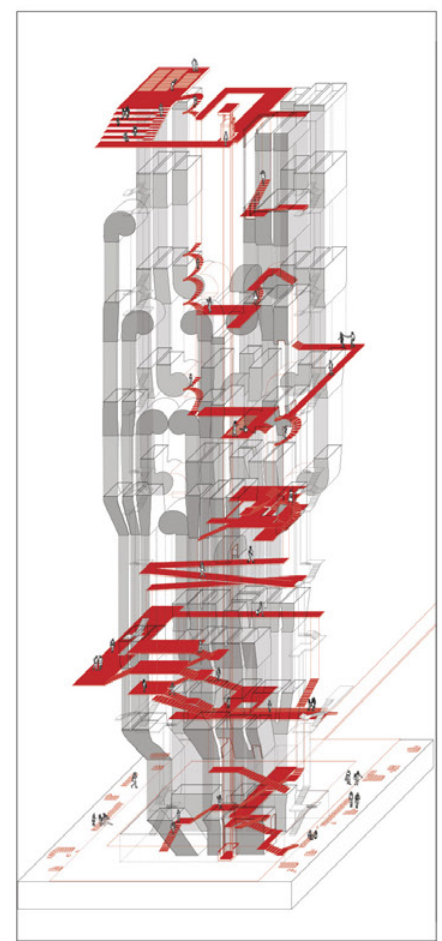
As shown in the section in the middle, the entrance of the building is a 770 feet long ramp leading people down to the underwater level.



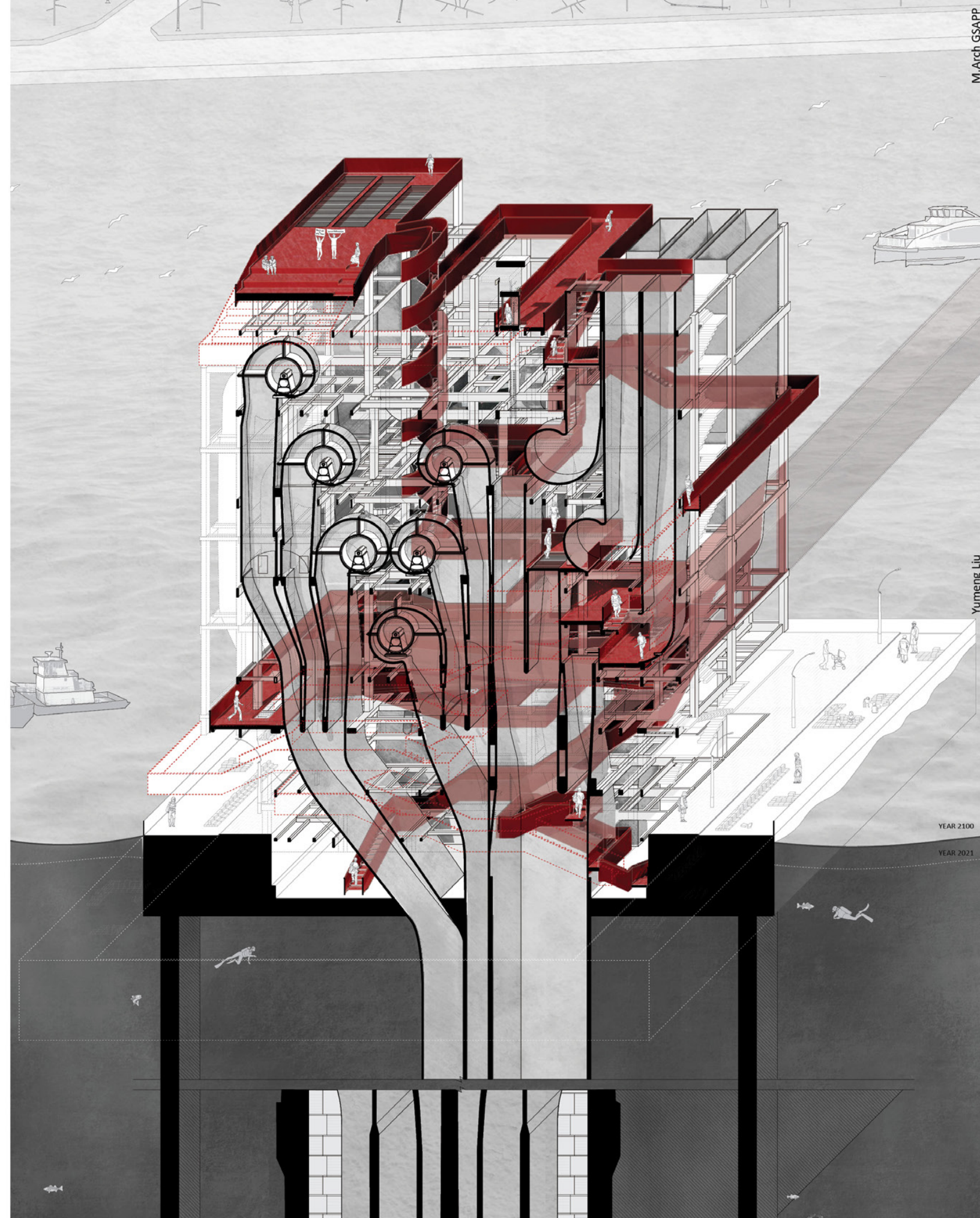
Layer

The verticality of the existing system, as the nature of its functionality, inspired us to create another vertical circulation system to integrate with it. Therefore, all the exciting moments that were not initially designed for humans but for the air in this building will be accessible for the visitors as they wander about the building.

After peeling off the facade to reveal the sophisticated structural system, a new circulation system will roam through the structure. As the old and the new coexist in this framework, people can travel in and out to discover this gigantic monolith sculpted by air.



Section



M.Arch GSAPP

Yumeng Liu

YEAR 2100  
YEAR 2021



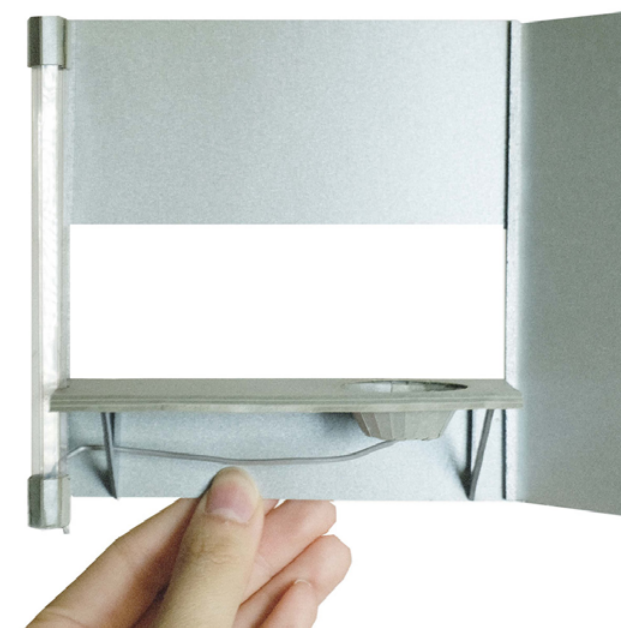
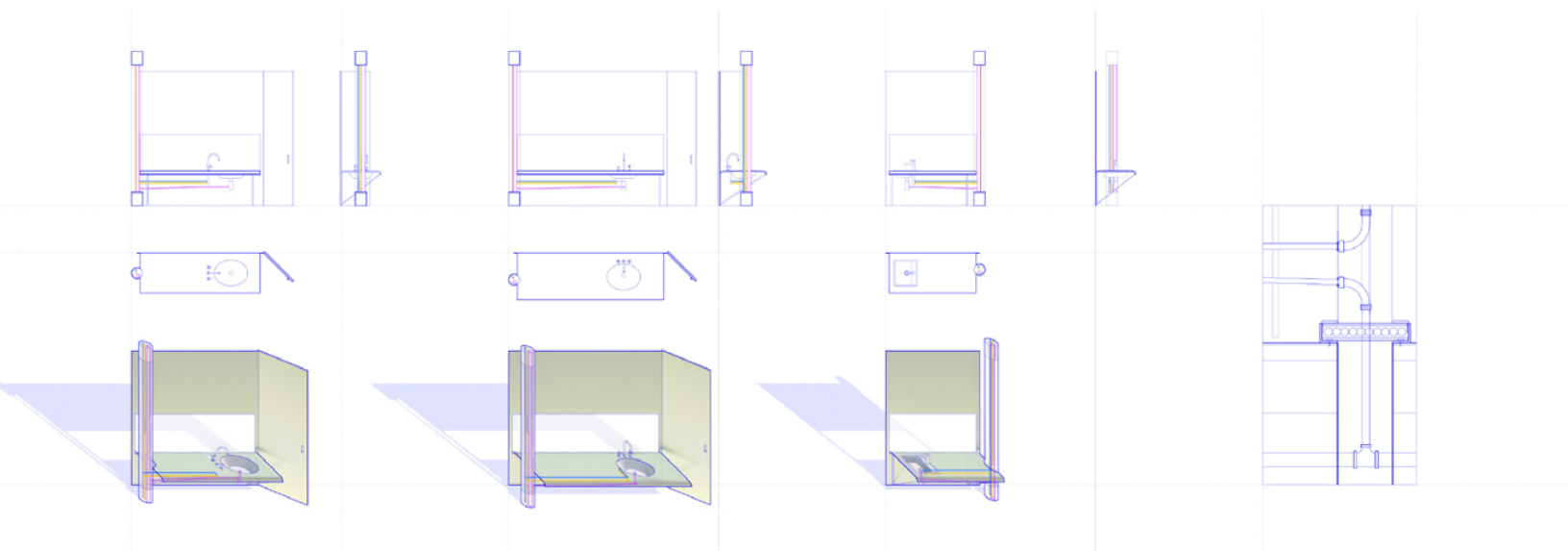
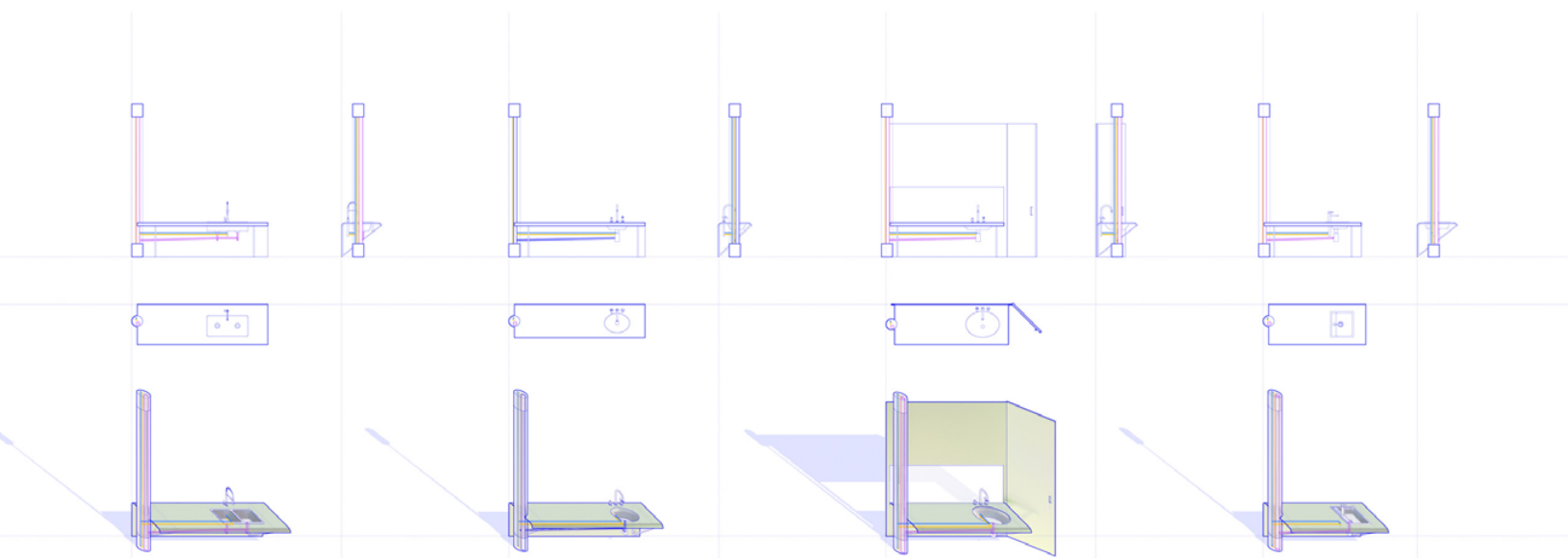


## ***A WALL WITH SINK***

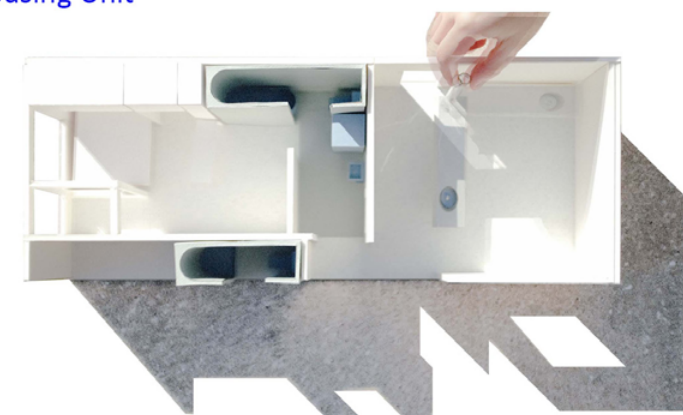
Clinic and Nurse's Housing  
New York  
Spring 2022  
Instructor: Hilary Sample  
Individual Work

The project is based on reflection of hygiene rituals, which occupy a big part of nurses' daily lives but only started to gain more attention from the public after the pandemic. Living with COVID, "wash your hand" is probably what we hear and see most frequently. It is interesting that washing hands is something you have to do before you leave or enter a certain space. It is a way of conditioning space by maintaining the human bodies inside. It led me to create the infrastructural device that defines the barrier in between the spaces with different levels of hygiene, a wall with a sink.





Housing Unit



Clinic Unit

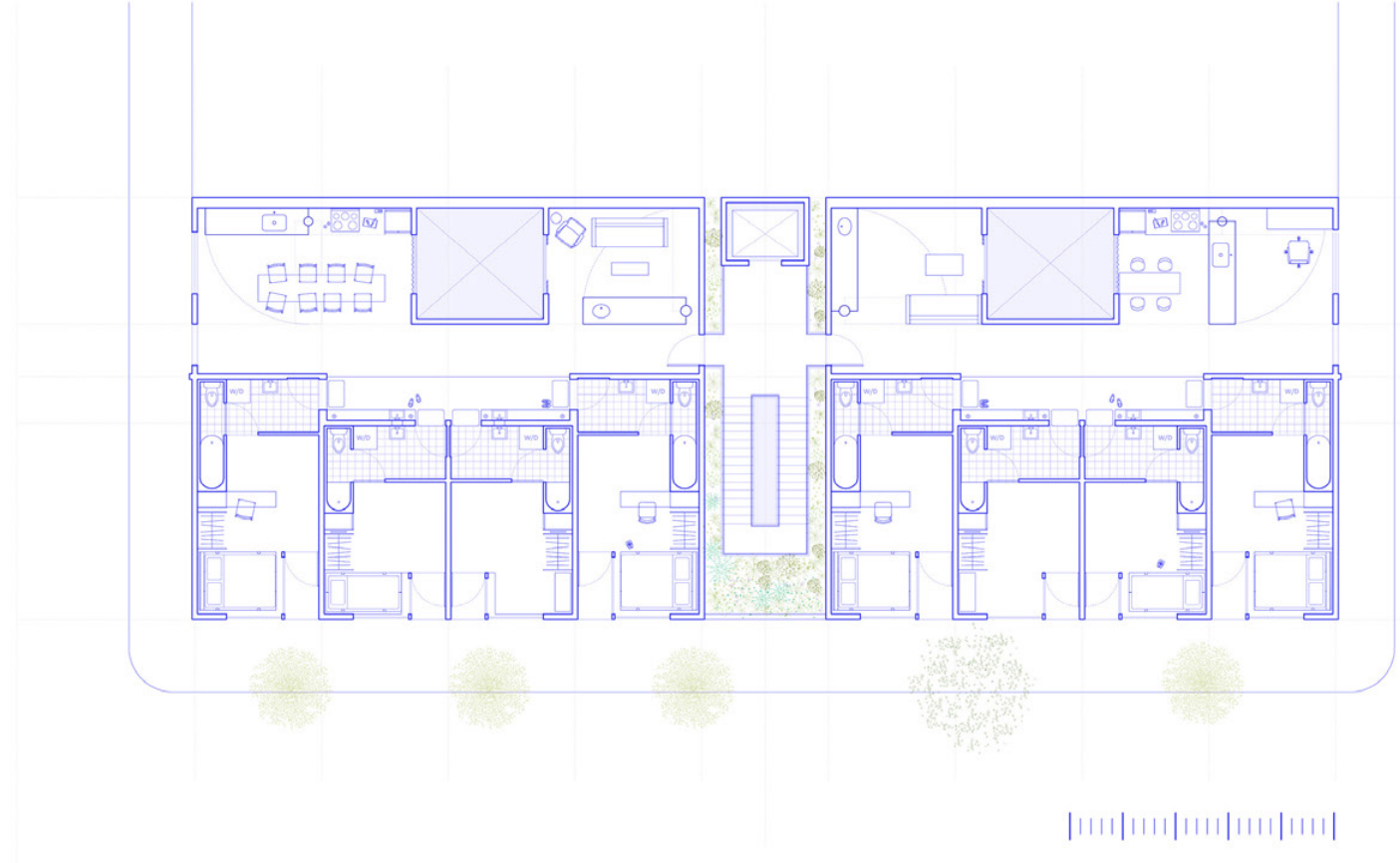
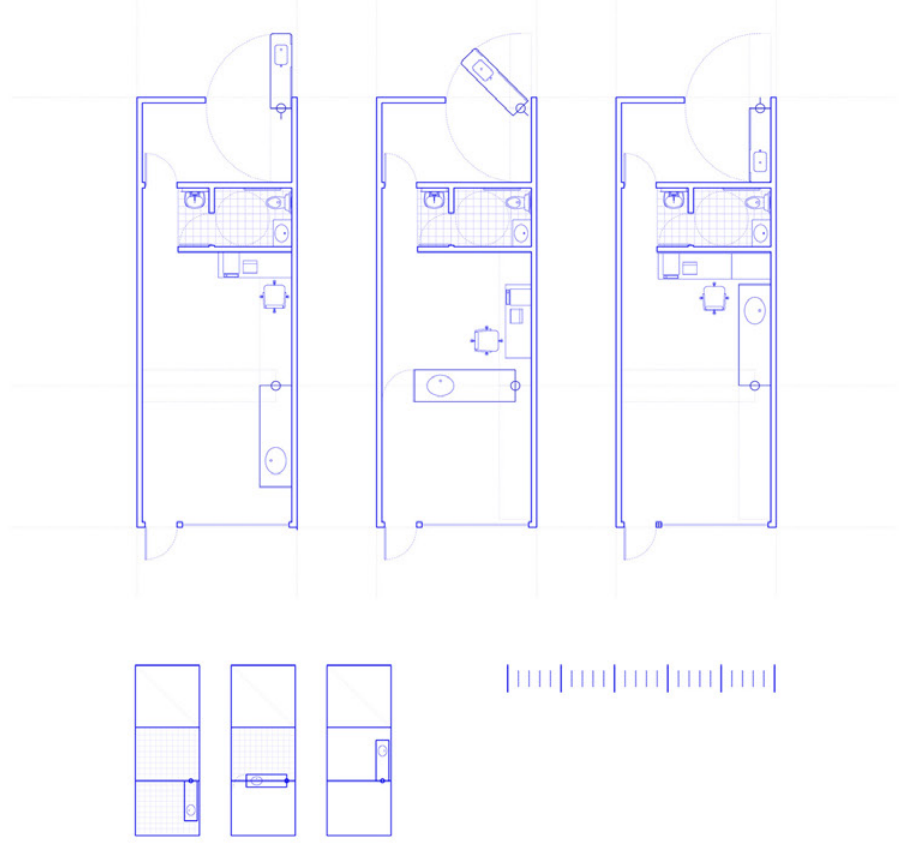


Living with COVID, “wash your hand” is probably what we hear and see most frequently. I found it interesting that washing hands is something you have to do before you leave or enter a certain space. It is a way of conditioning space by maintaining the human bodies inside. It led me to create the infrastructural device that defines the barrier in between the spaces with different levels of hygiene, a wall with a sink.

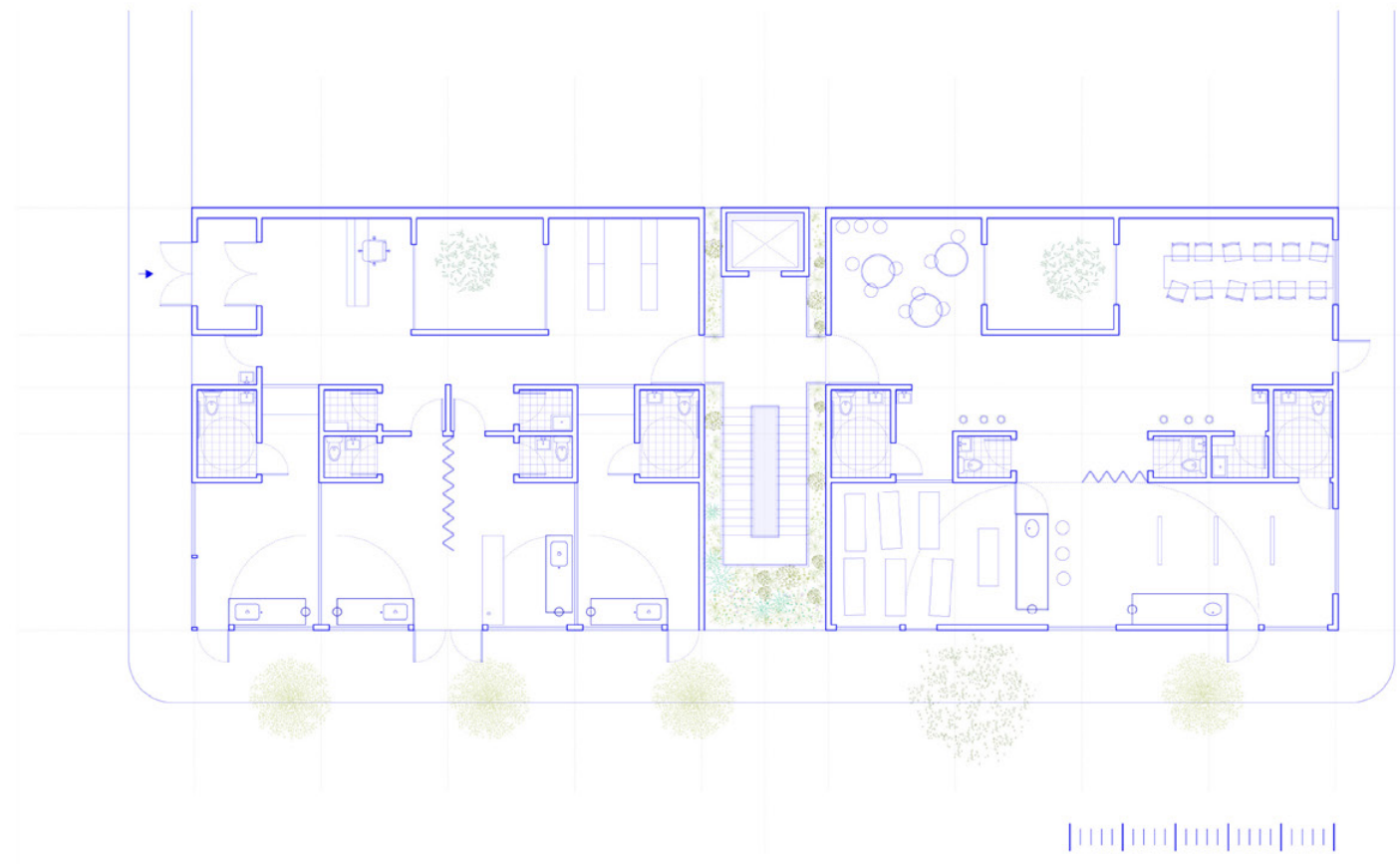
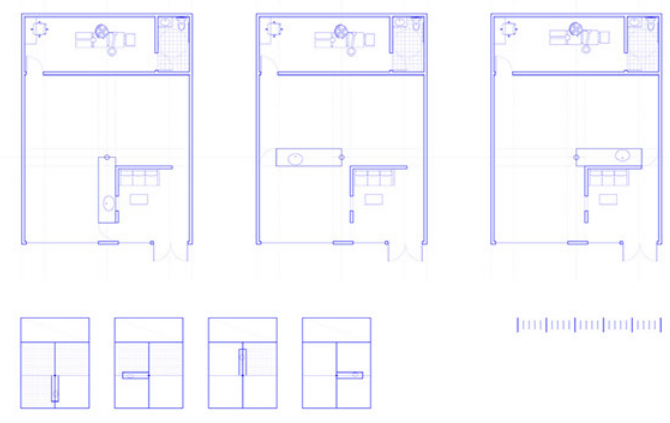


Clinic

Nurse's Housing



The project is located at a hypothetical site with dimensions of a typical New York City block. The dormitory of traveling nurses and the clinic are located at the same block but at different corners. Close enough to commute more easily, far enough to keep the work-life balance.

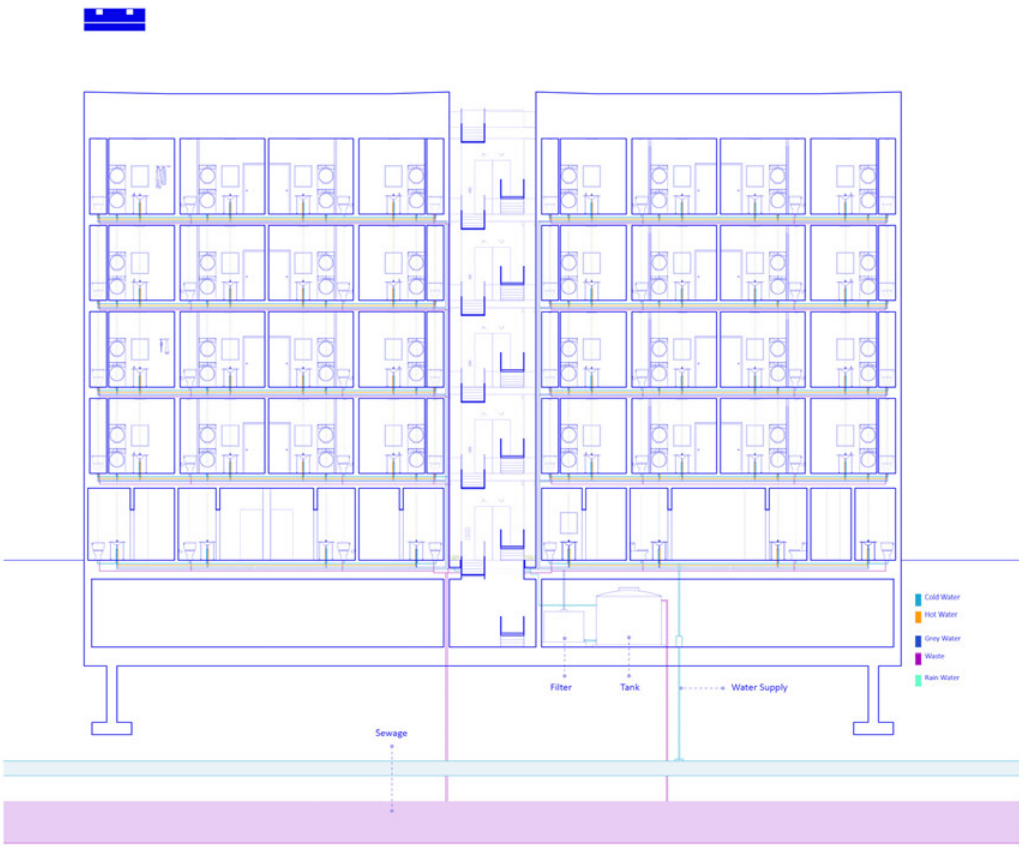




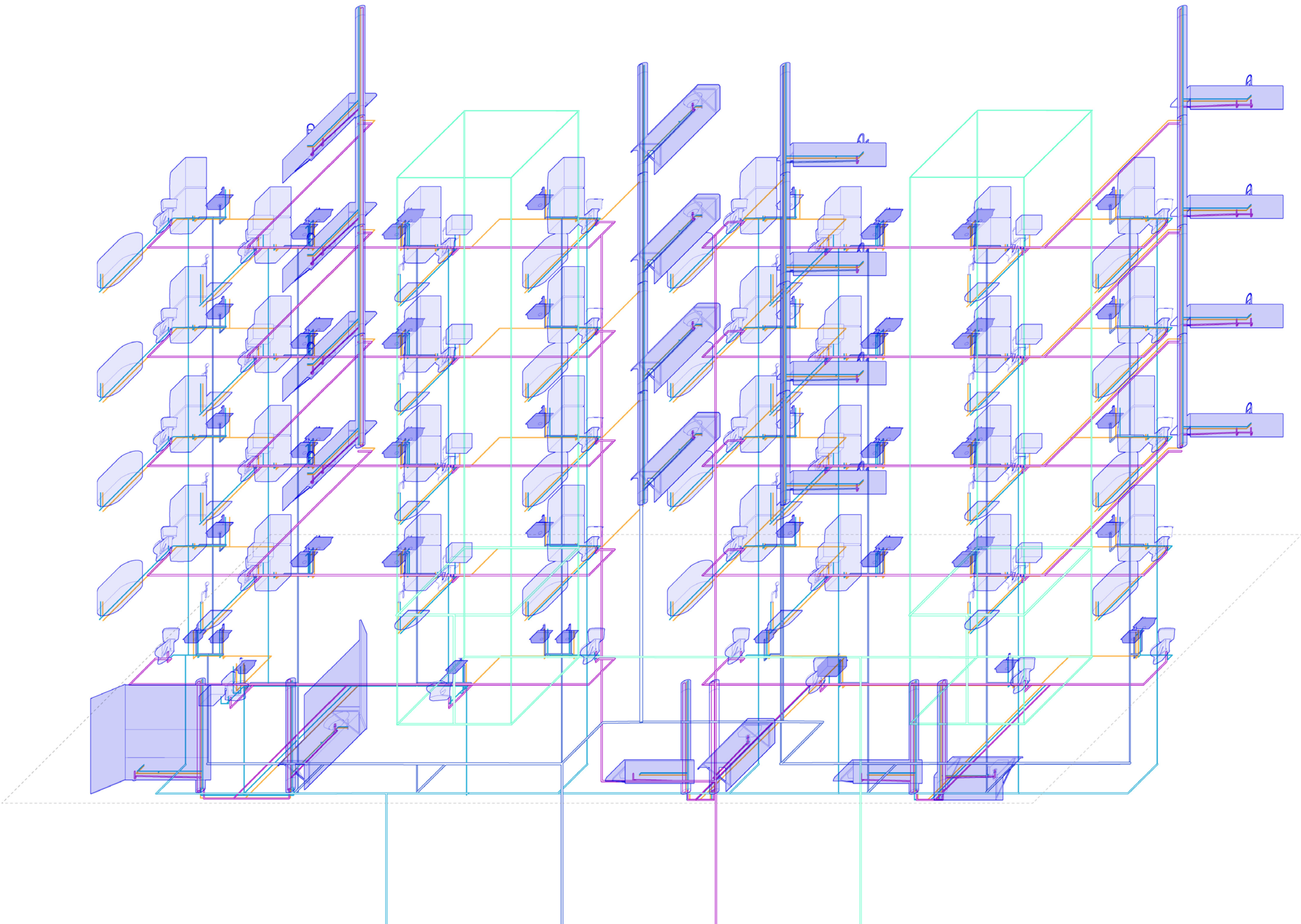
RAINWATER SYSTEM



GREYWATER SYSTEM







- Cold Water
- Hot Water
- Grey Water
- Waste
- Rain Water

A Wall with Sink



# Other Works

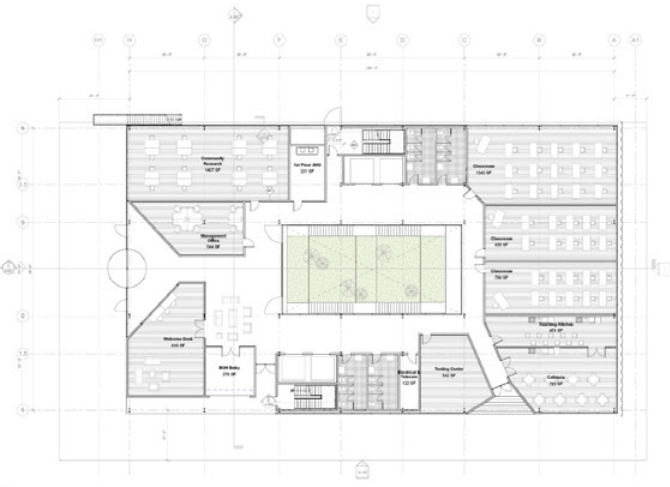
Melrose Community Center  
New York  
Fall 2020

Partners:  
**Agnes Anggada, Jiafeng Li, Xiucong Han**  
Software:  
**Revit, Rhino, Enscape**

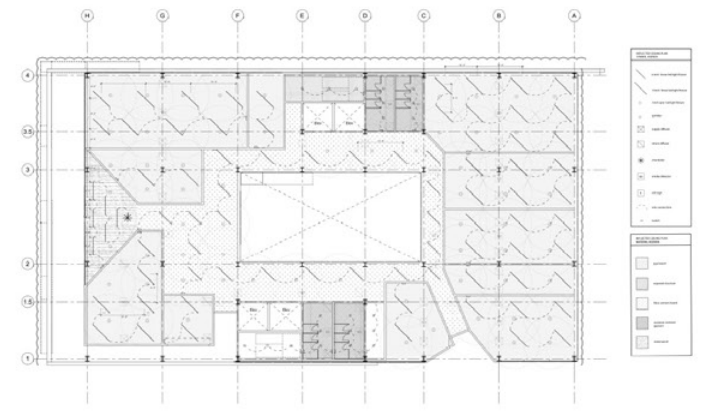
Architectural Consultant:  
**Stephen Ruiz**  
Mechanical Consultant:  
**Oliver Meade**

Enclosure Consultant:  
**Ryan Donaghy**

M.Arch GSAPP



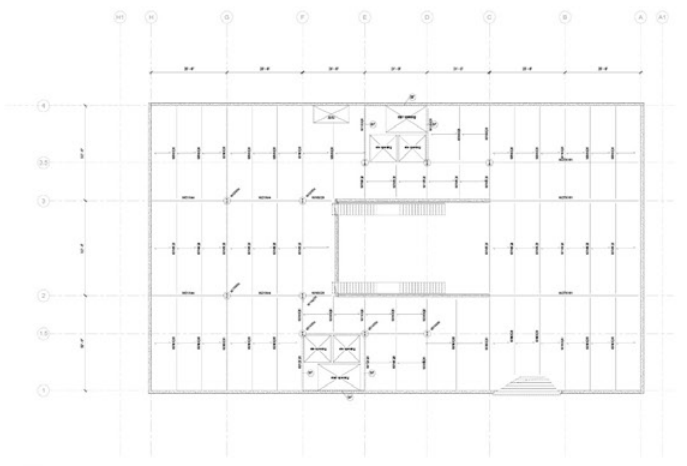
1st floor plan



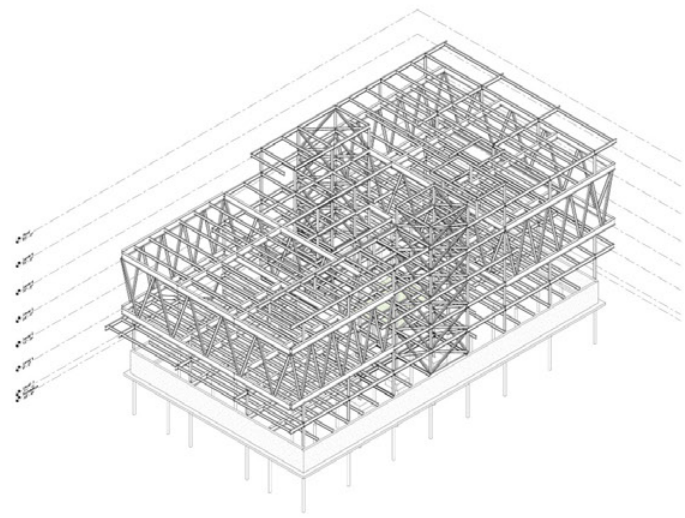
1st floor RCP



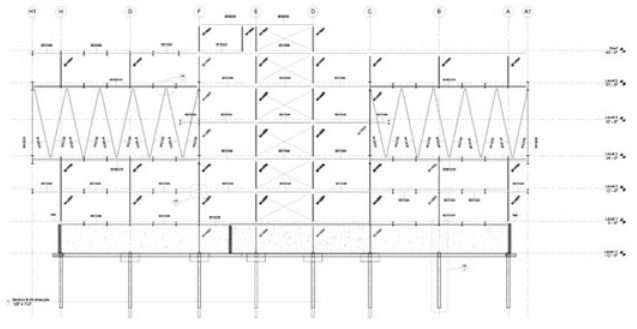
1st floor AHU



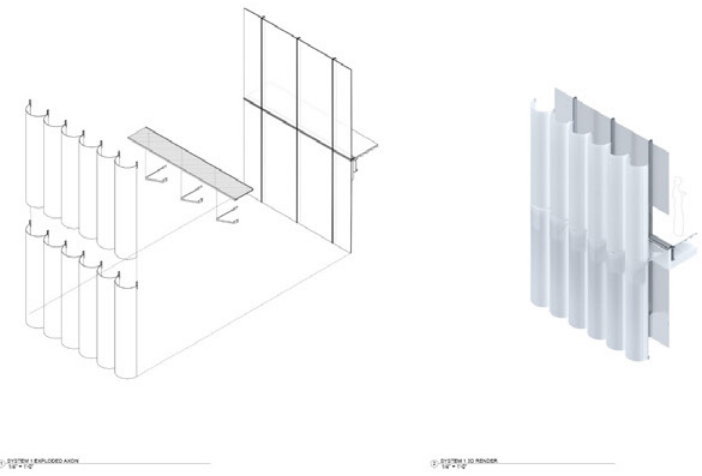
1st floor Structural Plan



Structure

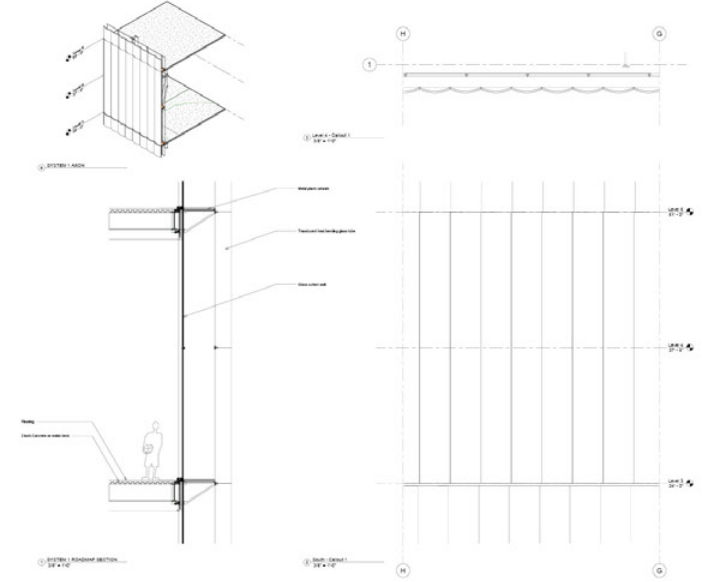


E-W Section Structure



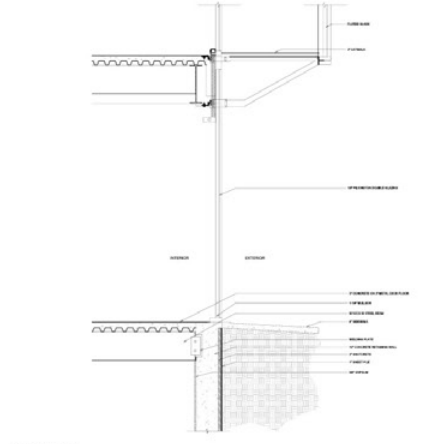
1st floor facade

2nd floor facade

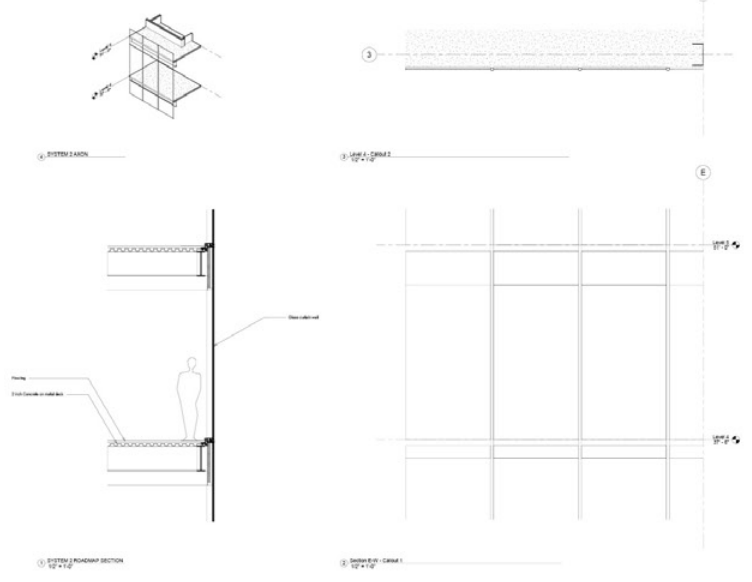


1st floor window section

2nd floor window section

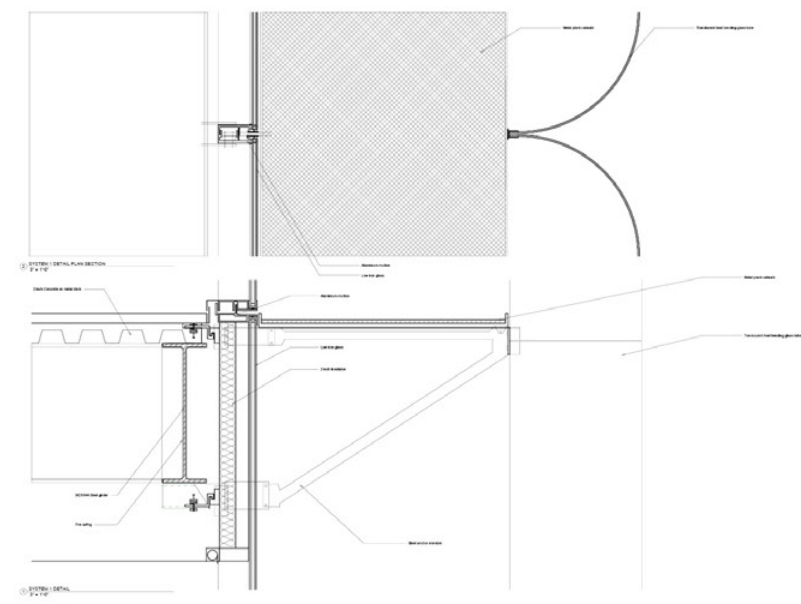


1st floor wall section

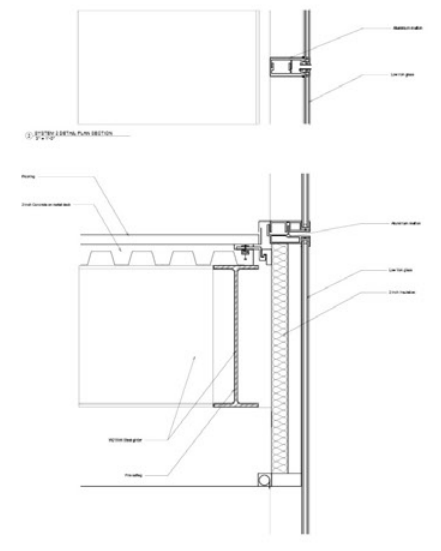


1st floor door section

2nd floor door section



1st floor section



1st floor window section

Facade details

Yumeng Liu

AT4 Integrated Design





YUMENG LIU  
606W 57th Street, New York, NY 10019  
yl4279@columbia.edu  
347-453-1628