

Selected Works

**YOUNJAE  
CHOI**

Master of Architecture '23  
Columbia GSAPP

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# 01

## COURTYARD HOUSE

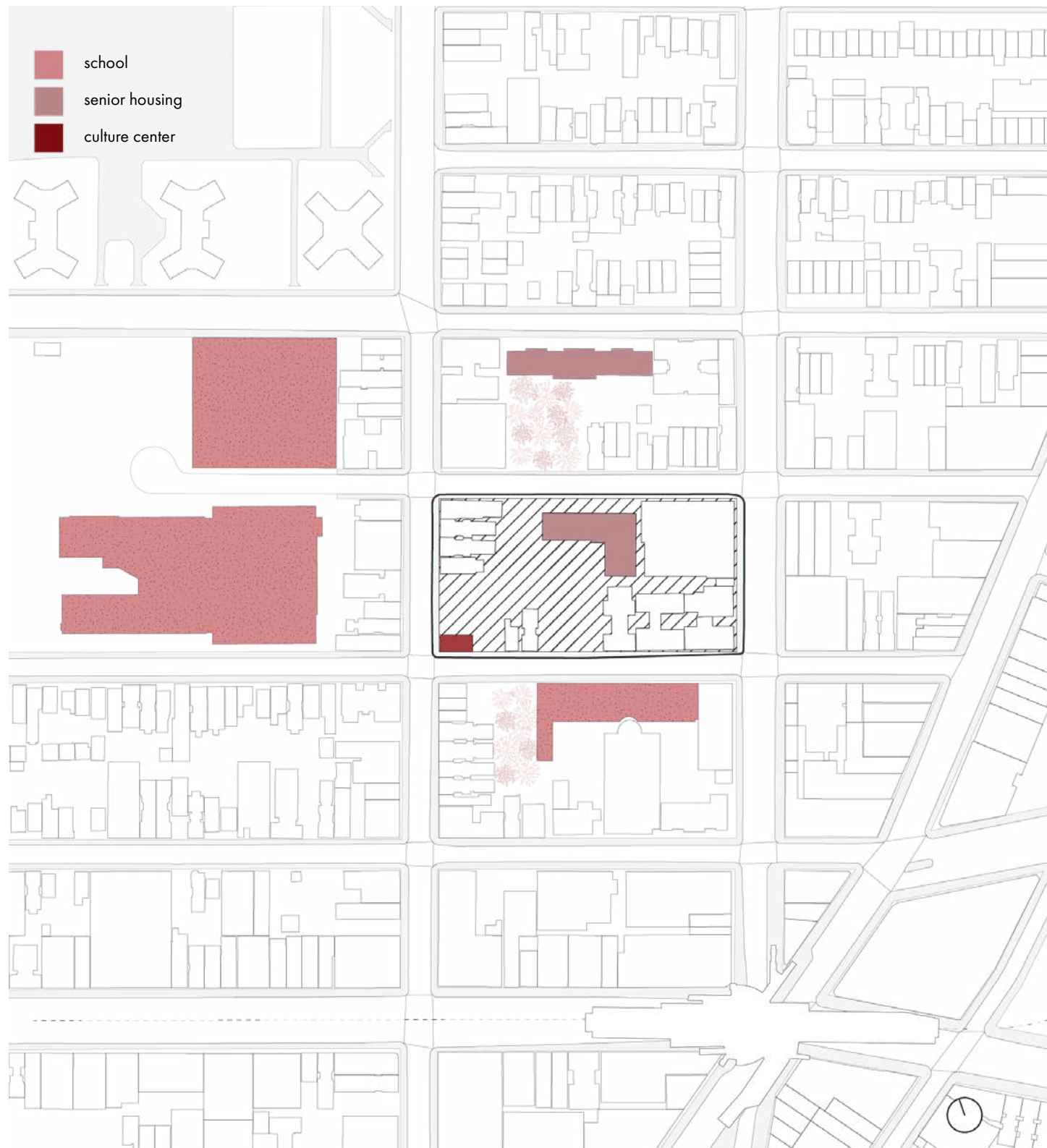
FALL 2021  
CORE III STUDIO | HOUSING  
CRIT: ERIC Bunge





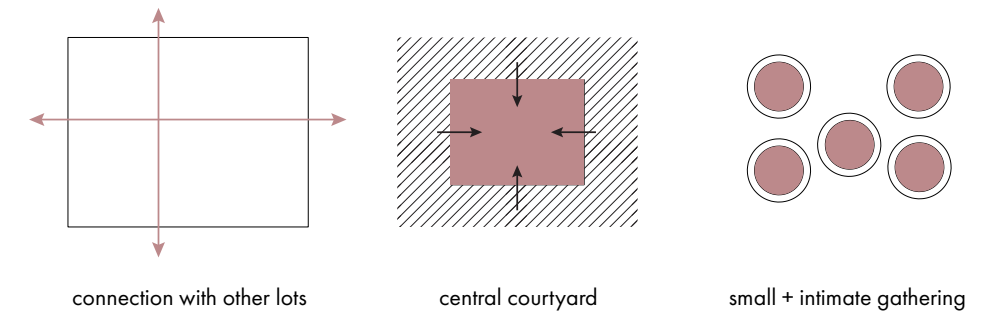
## Diverse Yet Under Utilized

Located in the Melrose neighborhood of the South Bronx, the site has diverse context: three public schools, two senior housings, one cultural center, and two community gardens. But the buildings are planned out first, and the vacant lots became the left-over space that is unused.



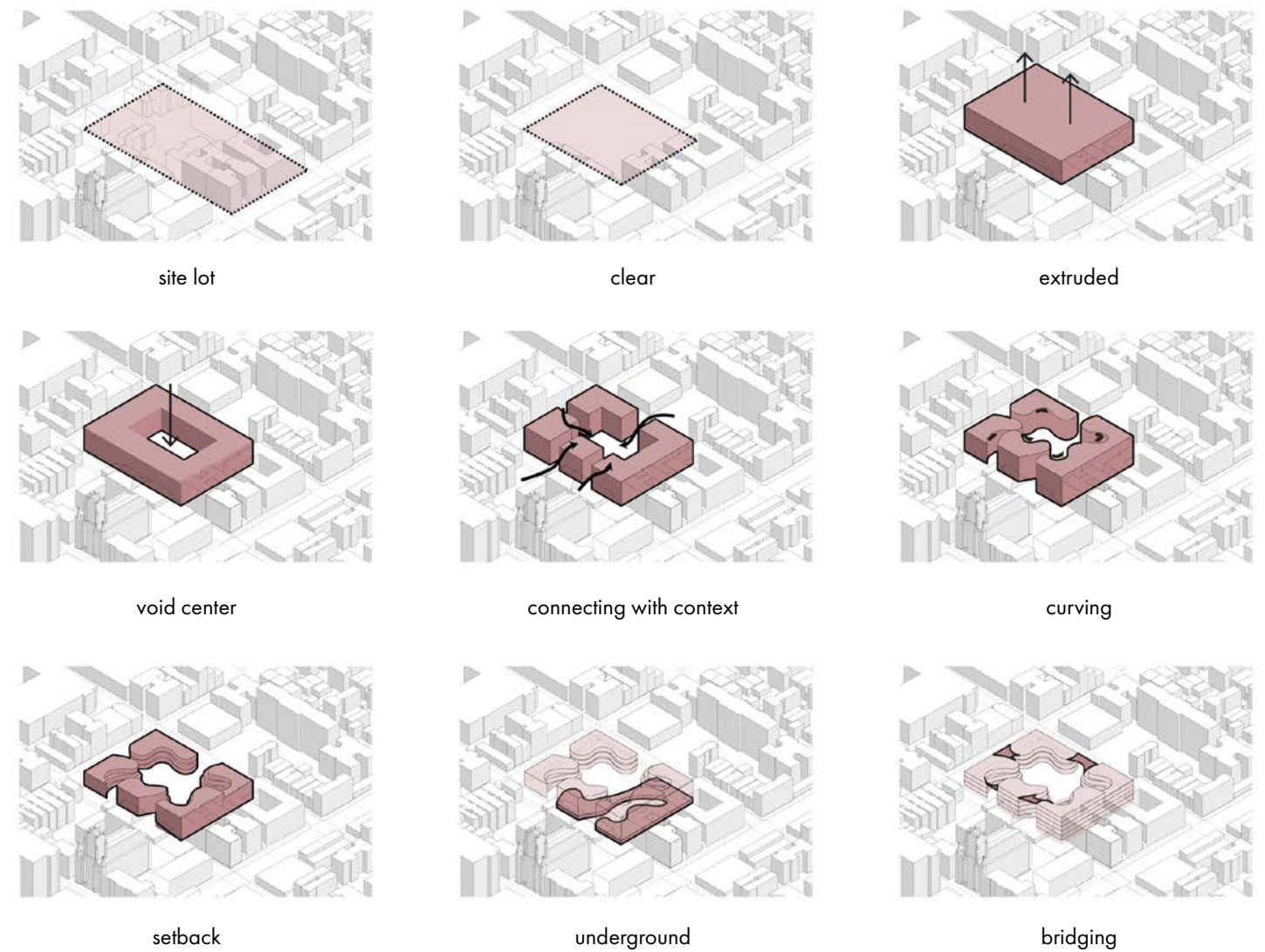
## Creating Intimate Yet Connected Neighborhood

The main logic in building a strong community is through connecting the adjacent context to the site and to create different levels of community spaces



## Massing Strategy

Massing strategy is done to create connection with the adjacent site and to build multiple levels of community spaces within the site.



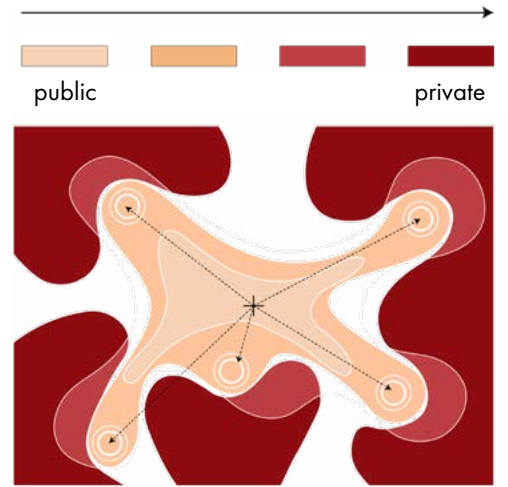
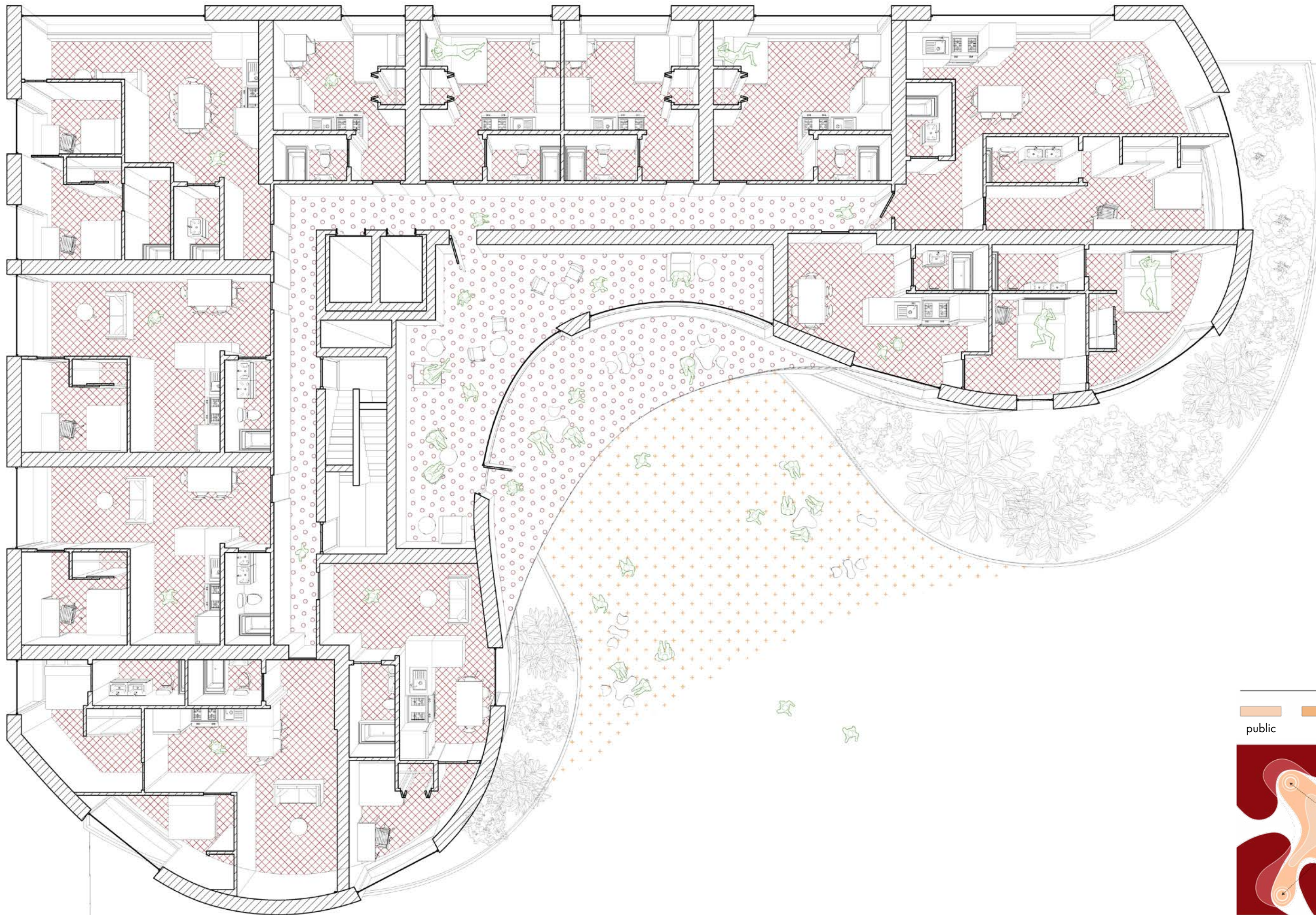




#### LAYERS OF COMMUNITY SPACES

Courtyard placed in the middle, the buildings will be stacked up by creating a setback. Total four layers of community spaces will be created: The central courtyard, the shared balconies, the shared roof garden, and the Underground Bronx Documentary Center



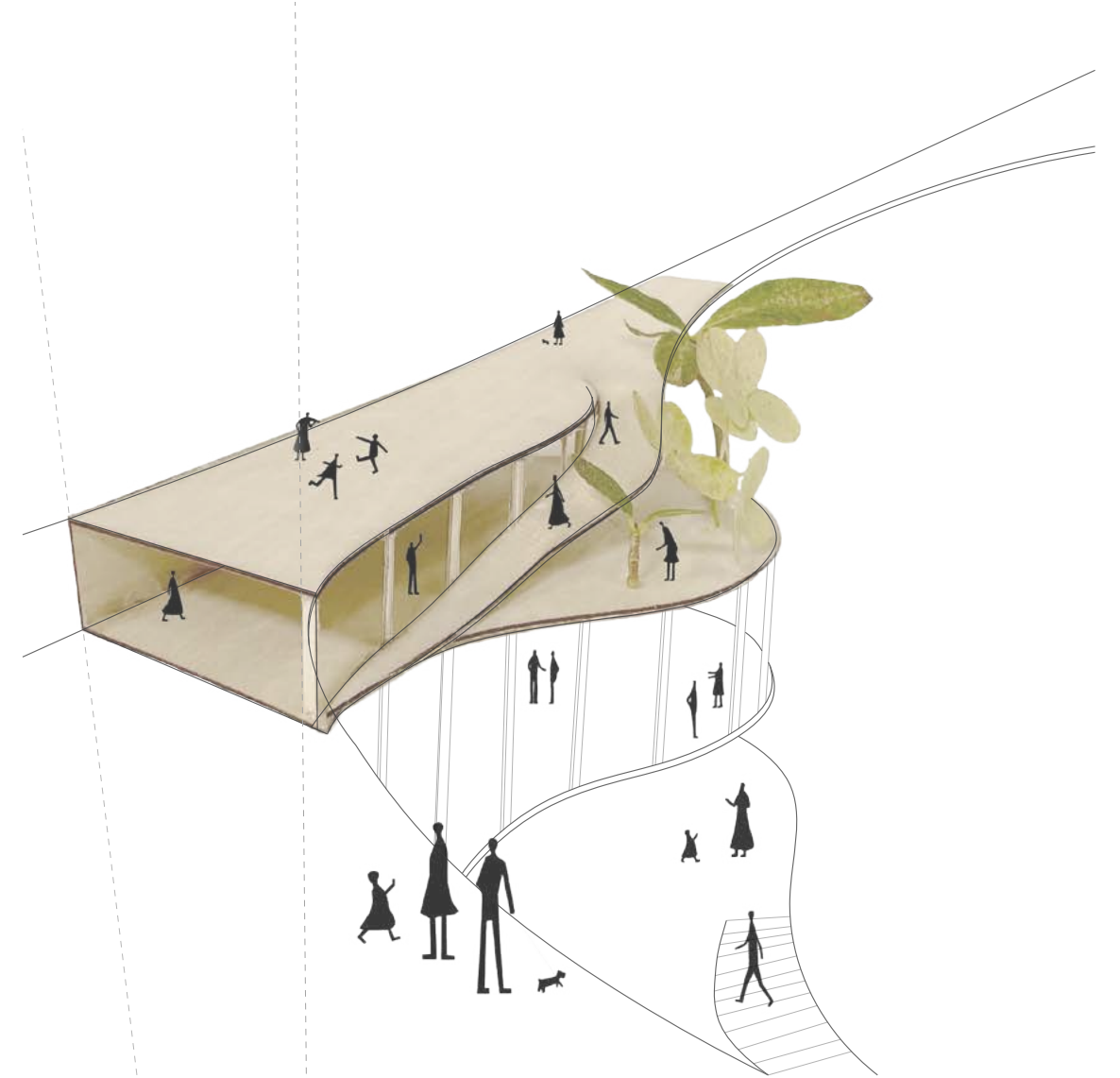






### Smooth Continuum

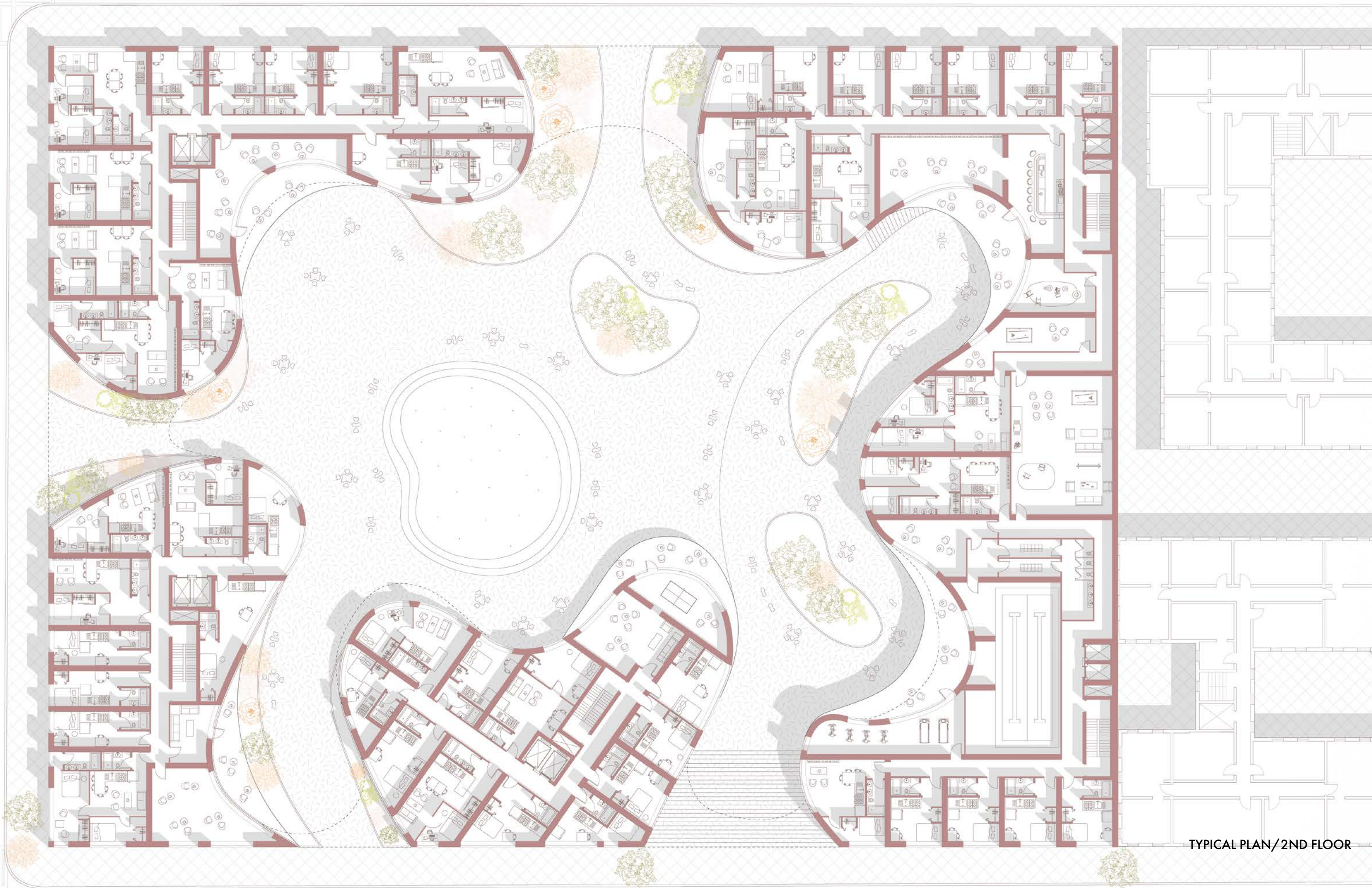
The geometry goal is to create a smooth continuum. The large courtyard space in the middle is carved in toward each building, creating one singular yet more intimate space for the community.



### Connected with a Floor

A floor is used as an element to achieve the concept of community-centered design. It can create multiple layers of community spaces. A floor can be stretched to become a bridge, tear down to become a stairs, expanded to become a balcony.



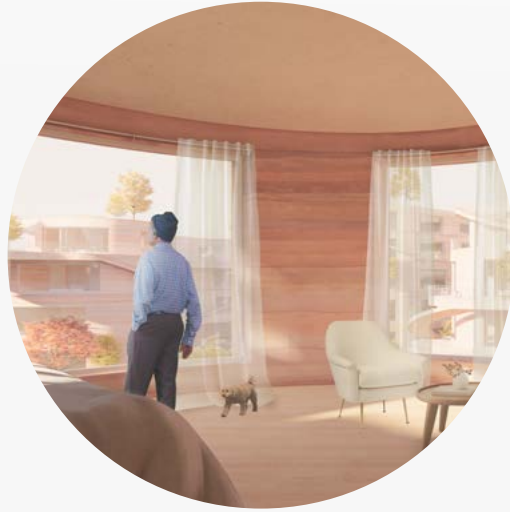


TYPICAL PLAN/2ND FLOOR



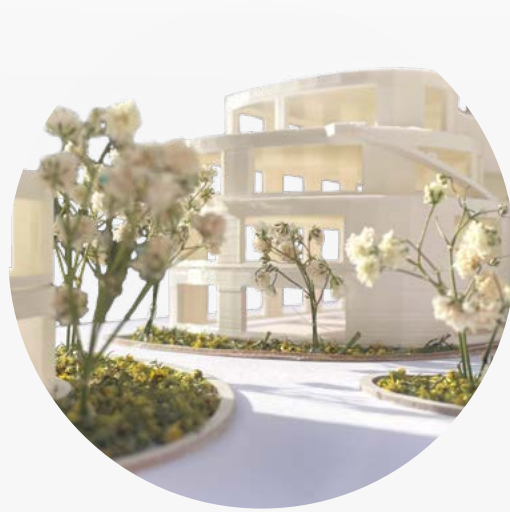
### Inside the Unit

Total three types of units exist in the housing: micro studio for the seniors, 1 & 2 bedrooms for the families.



### Central Courtyard

Ramped up from the street level, the central courtyard invites the whole community to play and gather



### Stairways to BDC

Connecting ground level courtyard to the sunken courtyard with stairs, BDC invites students to learn



### Shared Balcony

Shared balcony for each floor residents has mini garden and outdoor terrace space







12' Floor to Floor Height

2' Floor Slab

8' Window Open-

1.6'  
Rammed Earth  
Wall

- 01 Insulation
- 02 Concrete with Rammed Earth
- 03 Rammed Earth
- 04 Green Roof  
green roof plants  
soil  
Moisture portals  
standard modules  
waterproof membrane  
bonding adhesive
- 05 Water Proof Balcony Decking
- 06 Wood Stud
- 07 Aluminum Window Frame









# 02

## SEDIMENT LAB

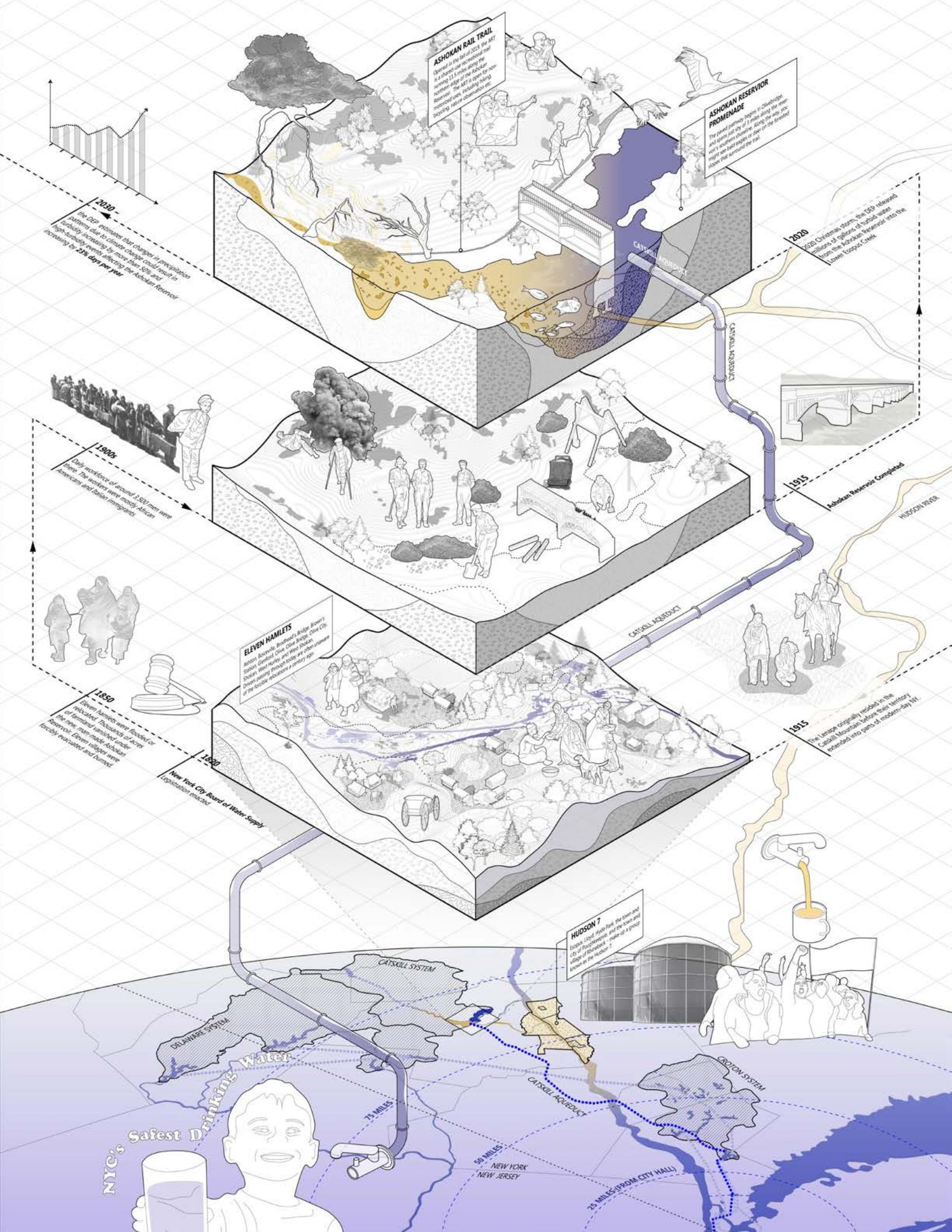
SPRING 2021

ADV IV STUDIO

CRIT: HWANG, NAHYUN

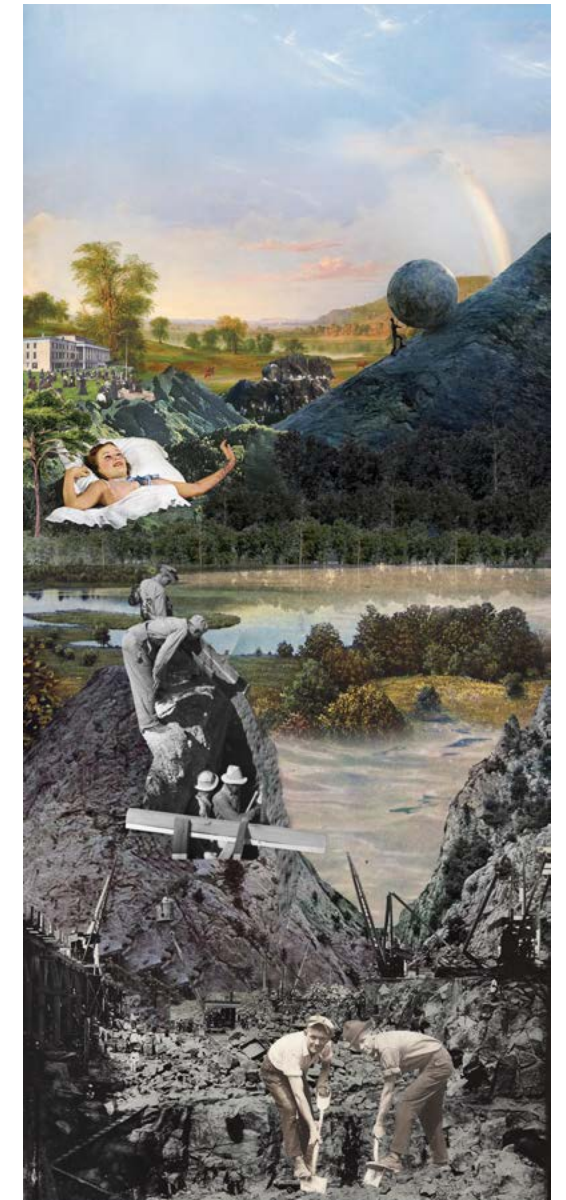
In Collaboration w/ Myungju Ko





contaminated the west basin, as well as New York City's drinking water. DEP discharged this turbid water to the lower Esopus creek which leads to the Hudson River in order to provide clean water to New York City. Such an incident affected the drinking water of the community nearby who obtains a source of drinking water from the Hudson River.

Recently, DEP is spending another 33 million dollars in Century Project, which is to renovate tourist attractions for recreation and reservoir restorative purpose to repair the dams and dikes to improve water quality for New York City, while still neglecting the turbidity affecting the community.



Currently managed by New York City DEP, the Ashokan Reservoir is releasing large amounts of turbid water into the Hudson River, which is affecting daily lives of communities near the Hudson River with contamination while providing clean drinking water to New York City.

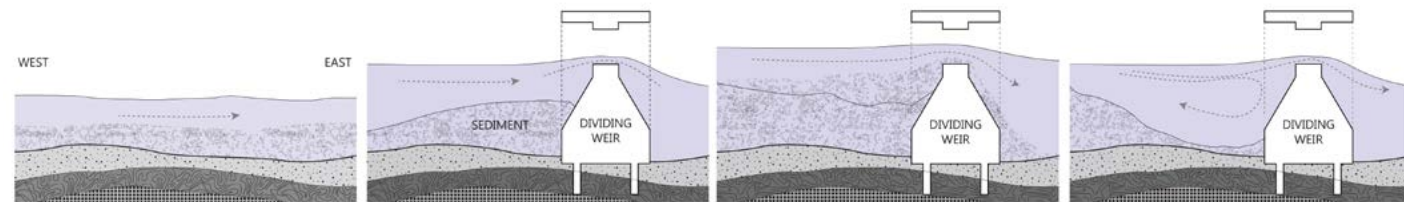
Before it was filled with water, Ashokan Reservoir was a village made up of thousands of acres of farmland and small towns. However, in 1820, after the legislation of New York City's Board of Water Supply, New York City started to find their water source outside the city, which was Ashokan. The evacuation was forced to construct the world's largest reservoir at the time.

In 1915 Ashokan reservoir was completed. And now the reservoir has established itself as a famous tourist attraction. However, in 2020, an unexpected storm caused large amounts of turbid water to flow into the reservoir. This turbid water



### Formation of Sediment Piles

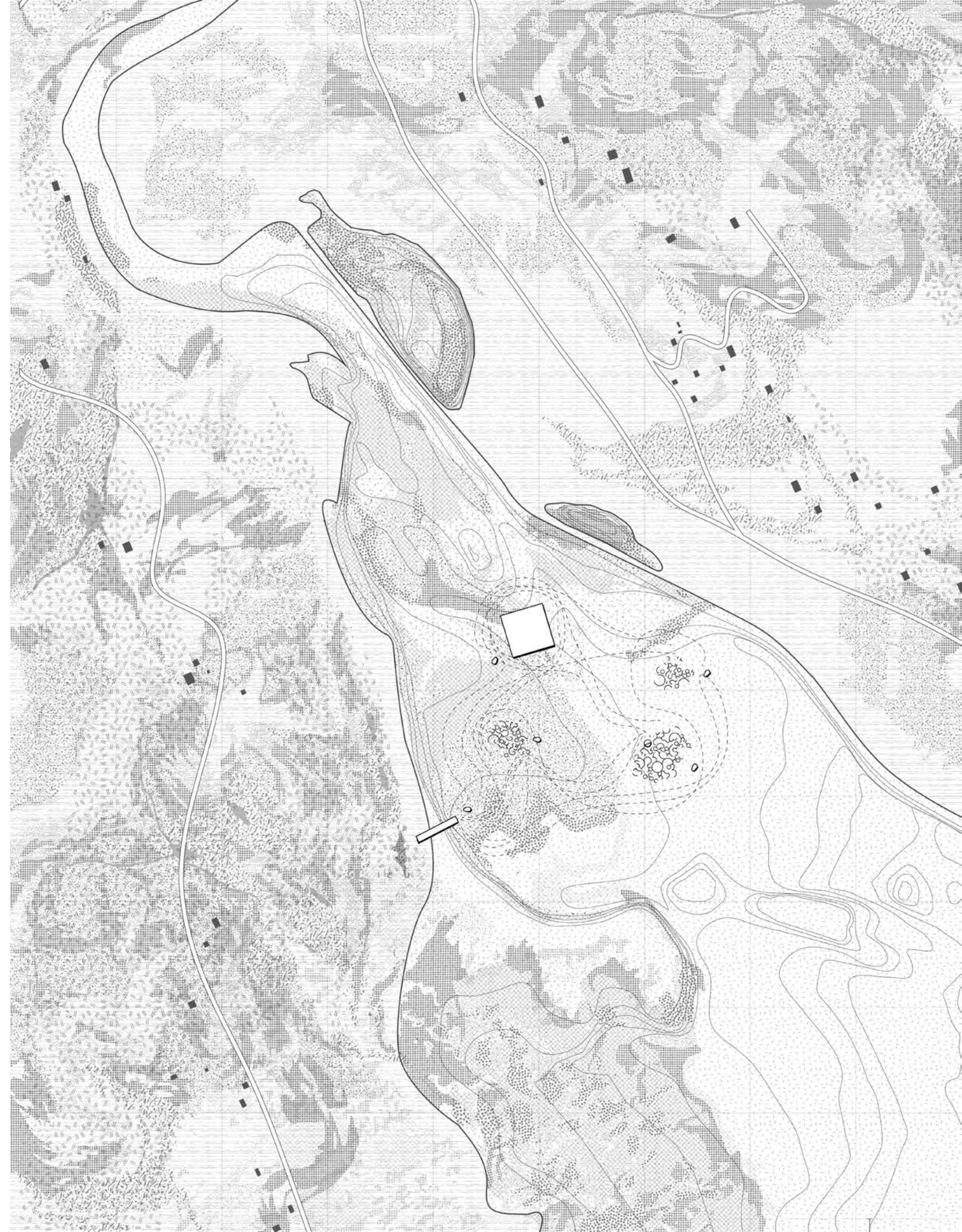
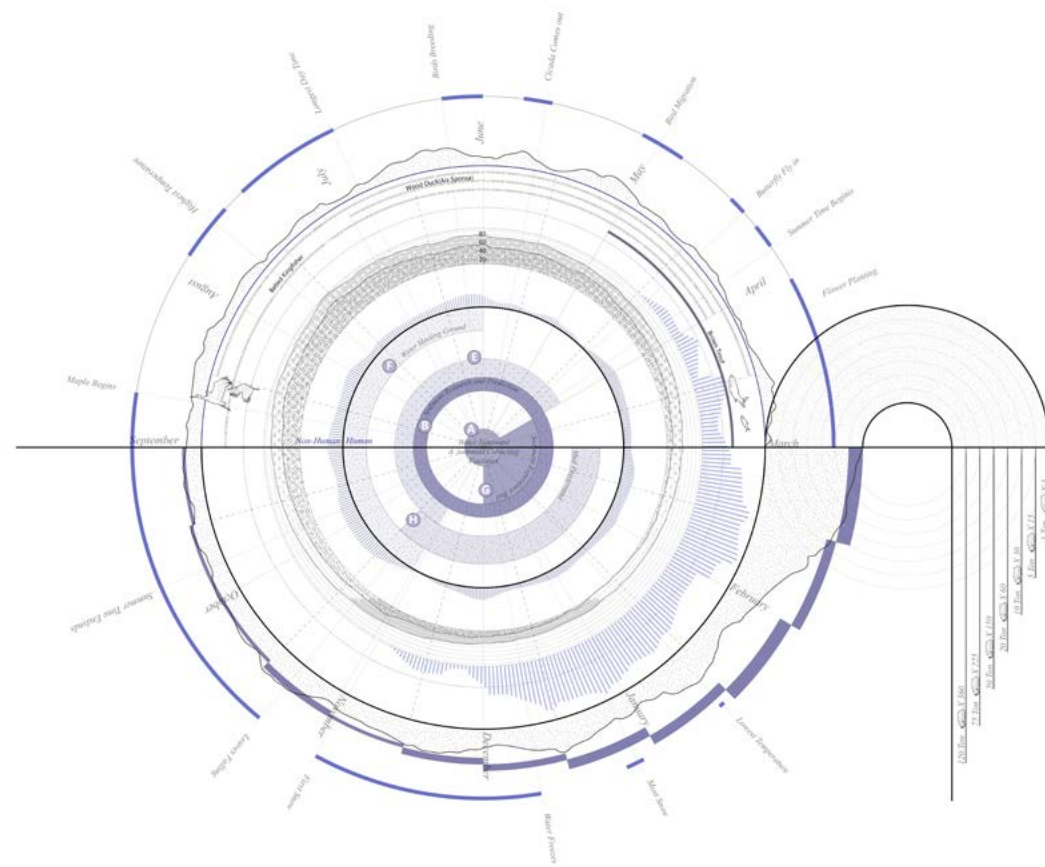
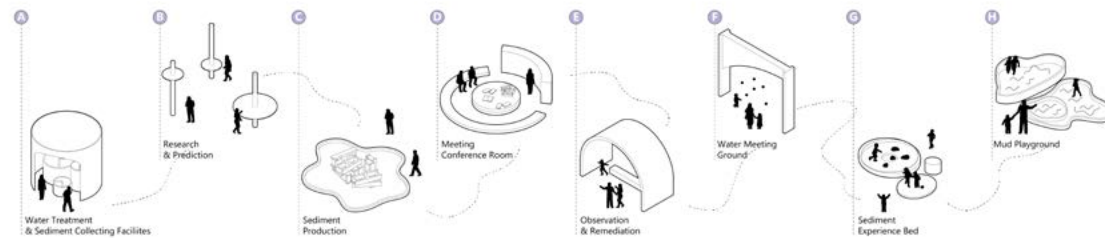
Currently within the reservoir, sediments are piled, creating a sediment island. The methodology behind the compilation is due to the water wave and bottleneck phenomenon with the dividing weir.



1. Turbid water flows into the reservoir
2. Dividing weir can prevent increasing of the turbidity in the East Basin
3. When the reservoir becomes turbid, the DEP release turbid water
4. Some sediments are compiled due to the bottleneck phenomenon and water flow

### Tangible Sediment Lab

The Sediment Lab will operate fully over the year to generate sediment collectors as well as to provide multiple experience-based spaces to the public

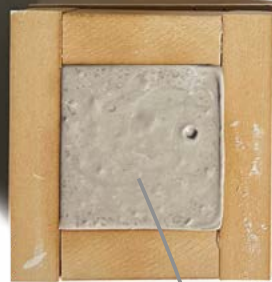




Rockite 20%  
+ Sediment 80%



Rockite 70%  
+ Sediment 30%



Rockite 50%  
+ Sediment 50%



Rockite Only

### SEDIMENT BLOCK MODEL

The island will provide a new and surreal form of a garden that visitors can have tangible experience and understand what is now filled with water was once a village and a land that people used to habitat.

To understand the way that sediments get accumulated, and finding the form of the collectors that captures sediments in effective way, we tested different combinations with quarter of circles as a module type for the possibility of expansion.

The quarter of circles are in three different sizes - 30', 60' and 90', and they are linked to one another creating different combinations. With this experiment, we could find out that the sediments get captured within the collectors, and create an island-like shape within it.

In order to test different types of materiality of the collectors when we reuse the sediments, we used soil that we collected from our site. We mixed it with rockite to harden the material, and experimented with the texture, color, and strength.



### SEDIMENT ACCUMULATION TEST MODEL

The location of the sediment collectors will be flexible as it reflects the changing landscape in the future. As sediments get accumulated along the collectors, the sediment island will be created in a longer term, similar to the already existing sediment piles along the reservoir edge.







### Encountering the Raw Nature

By stepping on the floor composed of the same material as a wall, visitors can encounter the raw nature and reverse to the artificial beauty of an artificially created reservoir. This is the most accidental and therefore roughest form of nature created by the reservoir.





### FLOATING LAB FACILITY:

The barge is a way to respond to turbidity, but also a new ecosystem of Hudson valley and Ashokan can coexist together in resilience way.

At the bottom floor, there are conditioning facilities for sediments filtering collected water, dewatering the Geotube, and heating and pressing. The produced collectors are stored at the edge of the barge.

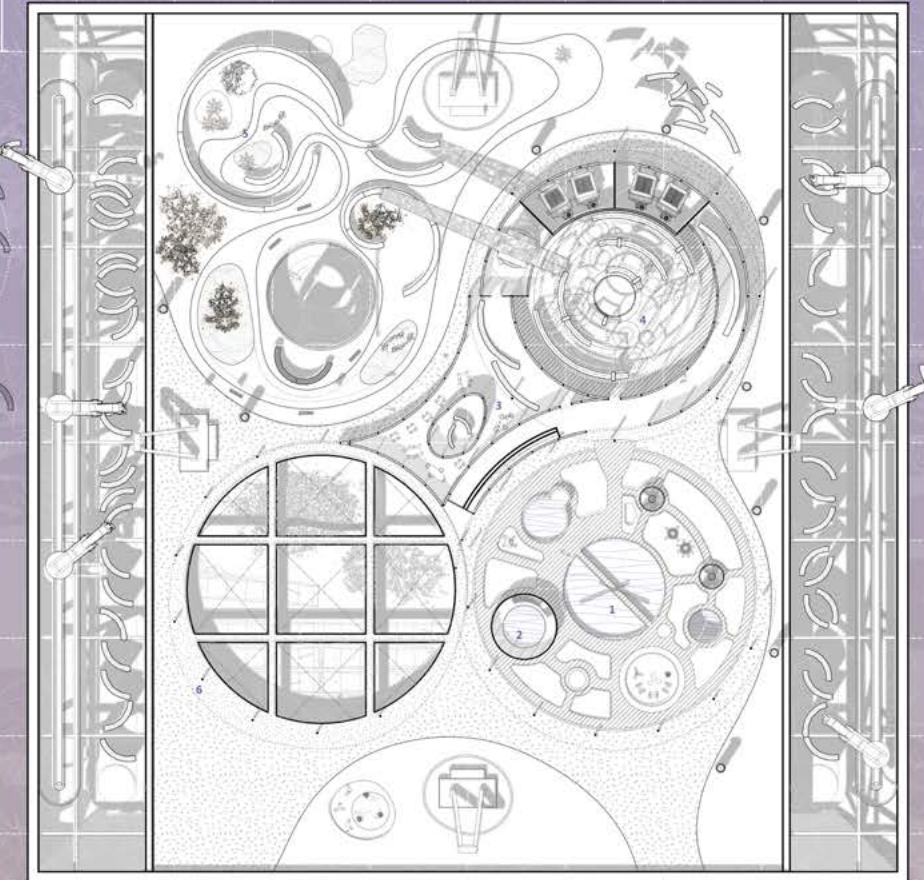
The Experience happens mainly on the upper floor. The upper floor of the Barge is public dominated space where people can recognize that the material of the sediment is naturally created through this dirt while walking around the barge. In addition, some of the conditioned water is used as a public pool to form the landscape

### SYSTEM OF SEDIMENT LAB:

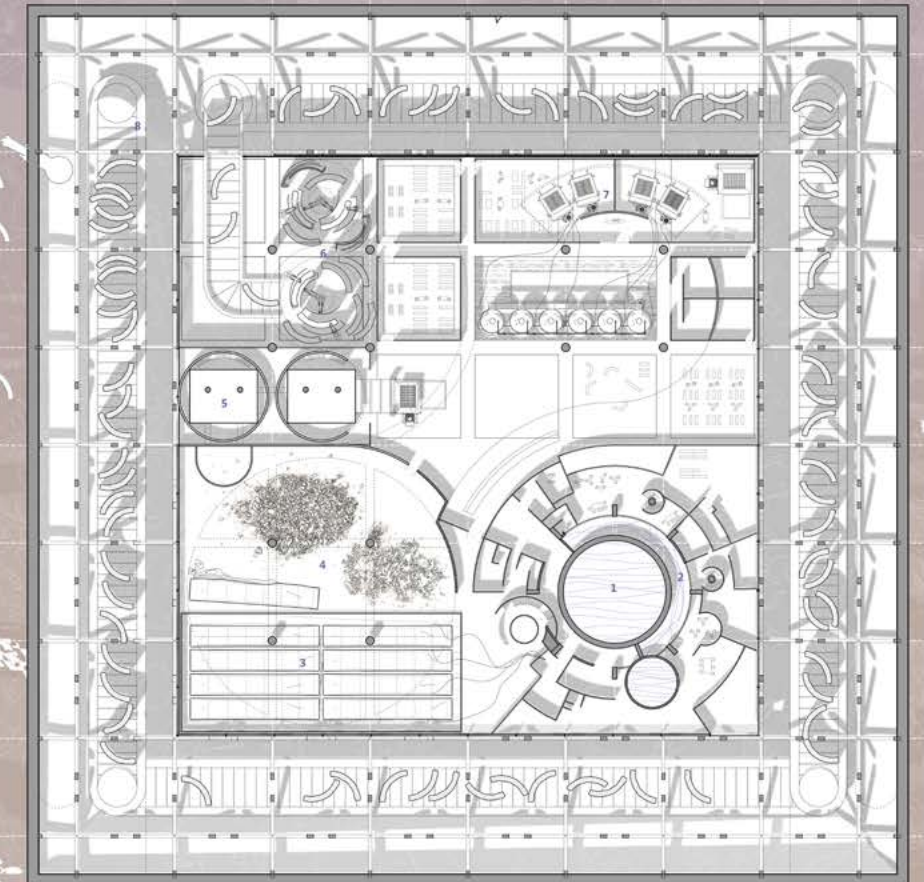
Barges are connected to one or more sediment islands during the settling and collecting process, allowing people to freely roam between the islands and the labs.

The barge is a combination of collecting, producing, and experimentation space.

The collecting happens at the bottom of the barge. The puller inhales water and sediment to the main conditioning place, and there is a flow rate sensing facility for hydraulic energy. The sphere is a hydro-electric power supplier that produces energy with the velocity of the water flow. Such natural form reduces collisions with other underwater ecosystems such as fish and sea plants. This new form of hydroelectric power becomes a fuel for the whole facility.



- 1 Conditioning Water Tank
- 2 The Public Pool
- 3 The Cafeteria
- 4 Sediment Settling and Filtering
- 5 Sediment Dewatering
- 6 Sediment Laboratory Overlook



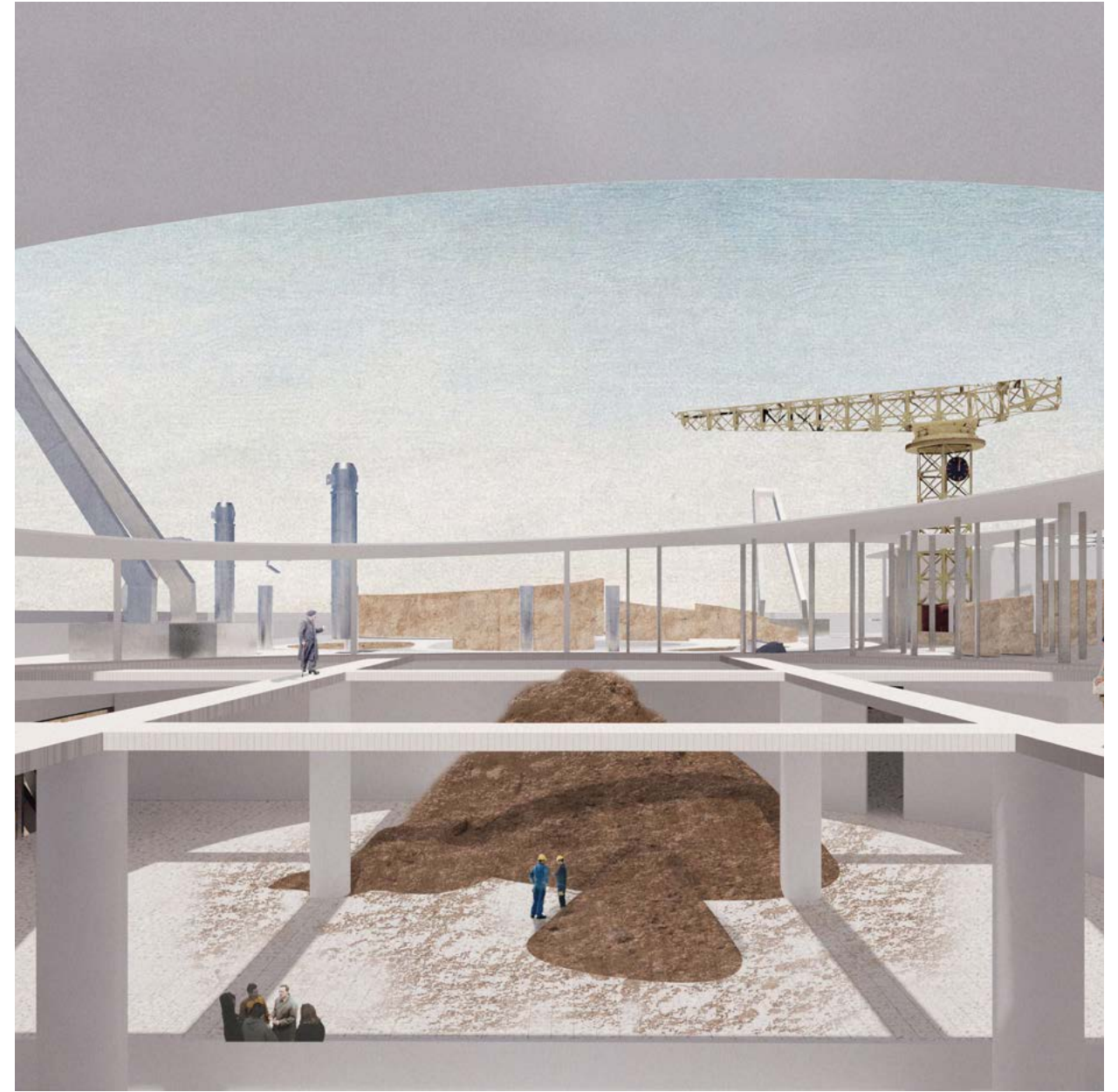
- 1 Conditioning Water Tank
- 2 Ashokan Limestone Preservation
- 3 Geotube
- 4 Geotube Sediment Filter
- 5 Sediment Processing Heating Tank
- 6 Mixing and Cooling Place
- 7 All Construction Materials Lin Storage





### Remembering the Sacrifice

In the largest module among some sediment islands, an indoor archive space is created to display and archive the wreckage of hamlets, underwater ecosystem, or sediment layers during the collecting process.



### Learning the Making

Proposing another public accessible space, in order to expose the re-usage of sediments, a bridge over the Geotube and 3D printing spaces is provided for the public to look and speculate on the sediments produced.



# 03

## SPIRAL SCHOOL

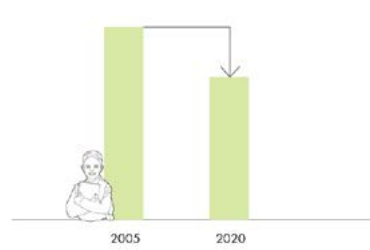
SPRING 2021  
CORE II STUDIO | SCHOOL  
CRIT: Gordon Kipping



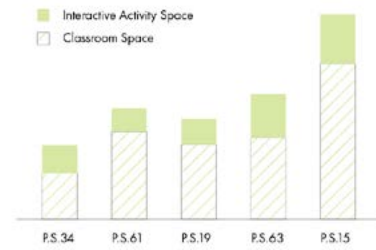


## A Shared Activity Center

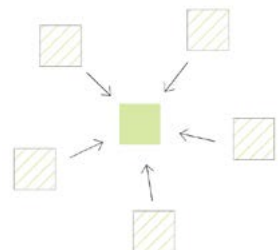
As number of student population decreases and classroom becomes more vacant, I propose PS 64 to be connected with surrounding school as a shared activity center



Number of student population in NYC decreased over 20%.



Physical built structure remained same: limited activity space and multiple classrooms



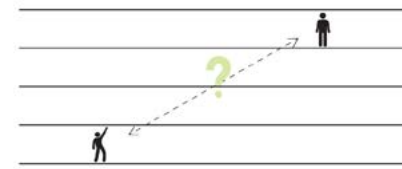
Creating a shared activity hub for the neighboring schools



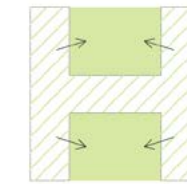
## Vertical and Horizontal Interactions

While existing structure had limitations in vertical and horizontal interactions, I propose center void and centralized community spaces, and pocket space for community and individual interactivity.

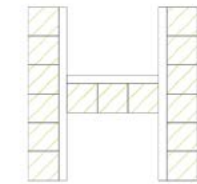
EXISTING



Vertical Interaction is blocked

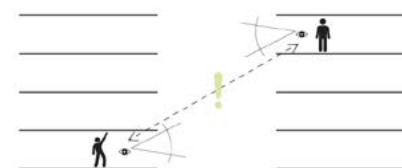


Divided community spaces

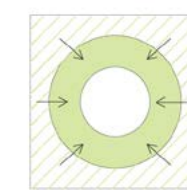


Linear and rigid classrooms

PROPOSAL



Adding void in the middle to generate view and vertical interactions



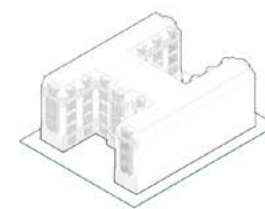
Centralized community spaces



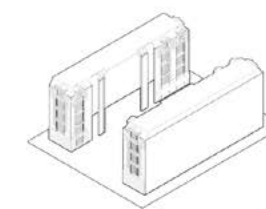
A pocket space for individual activity

## Massing Strategy

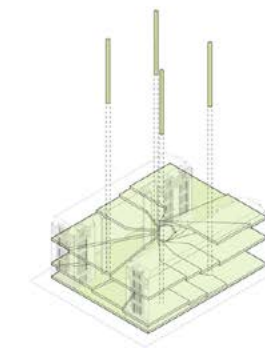
Center part of the existing structure is removed, and a rotating floor slabs along the center void is added to introduce interactivity.



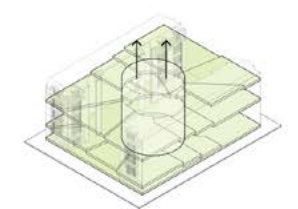
existing structure



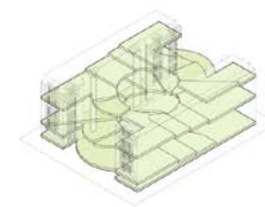
remaining part



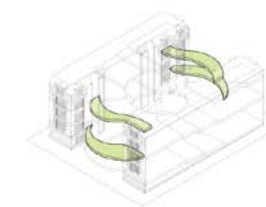
add floor slab + columns



center void



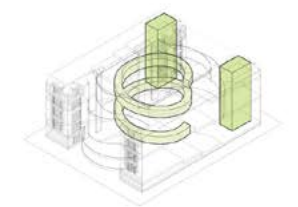
curving the center



extrude balcony



add facade + roof

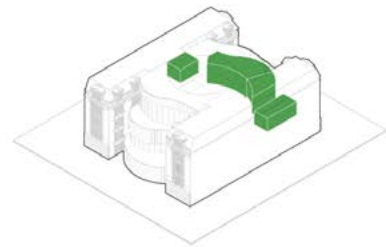
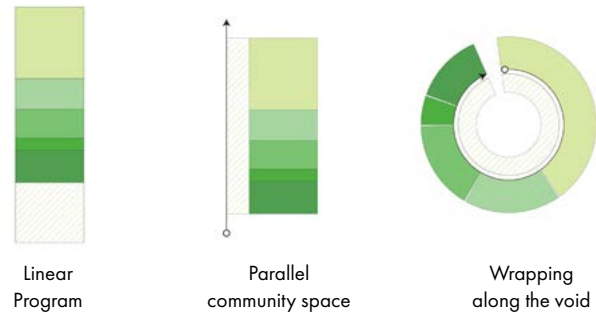


circulation

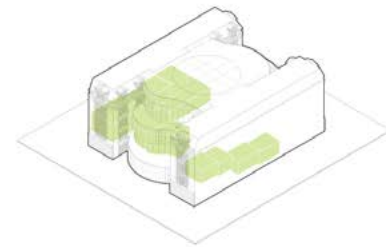


### Parallel Community Space Along the Classrooms

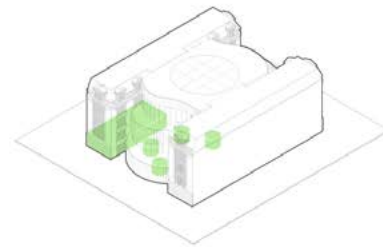
Along the series of activity classrooms, a parallel community spaces are introduced. These programs are wrapped along the center void to enhance interactivenss.



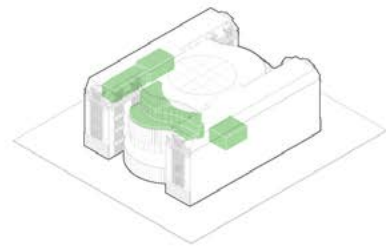
Library



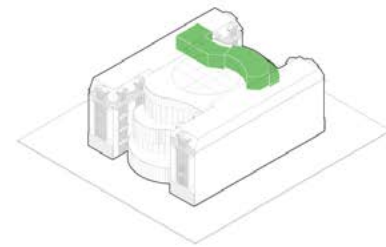
Visual + Performing Arts



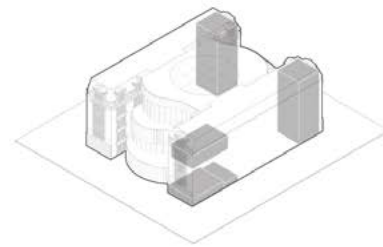
Teacher + Parents



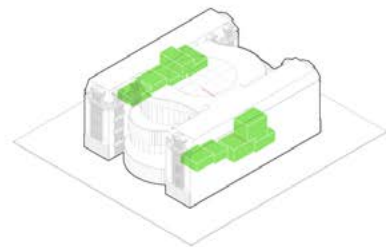
Culinary + Nature



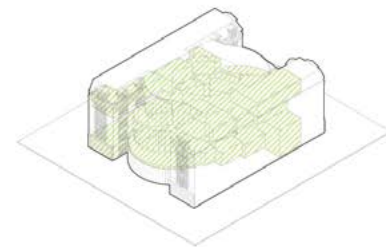
Physical Education



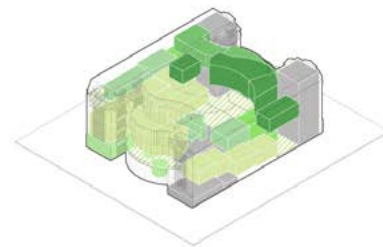
Service



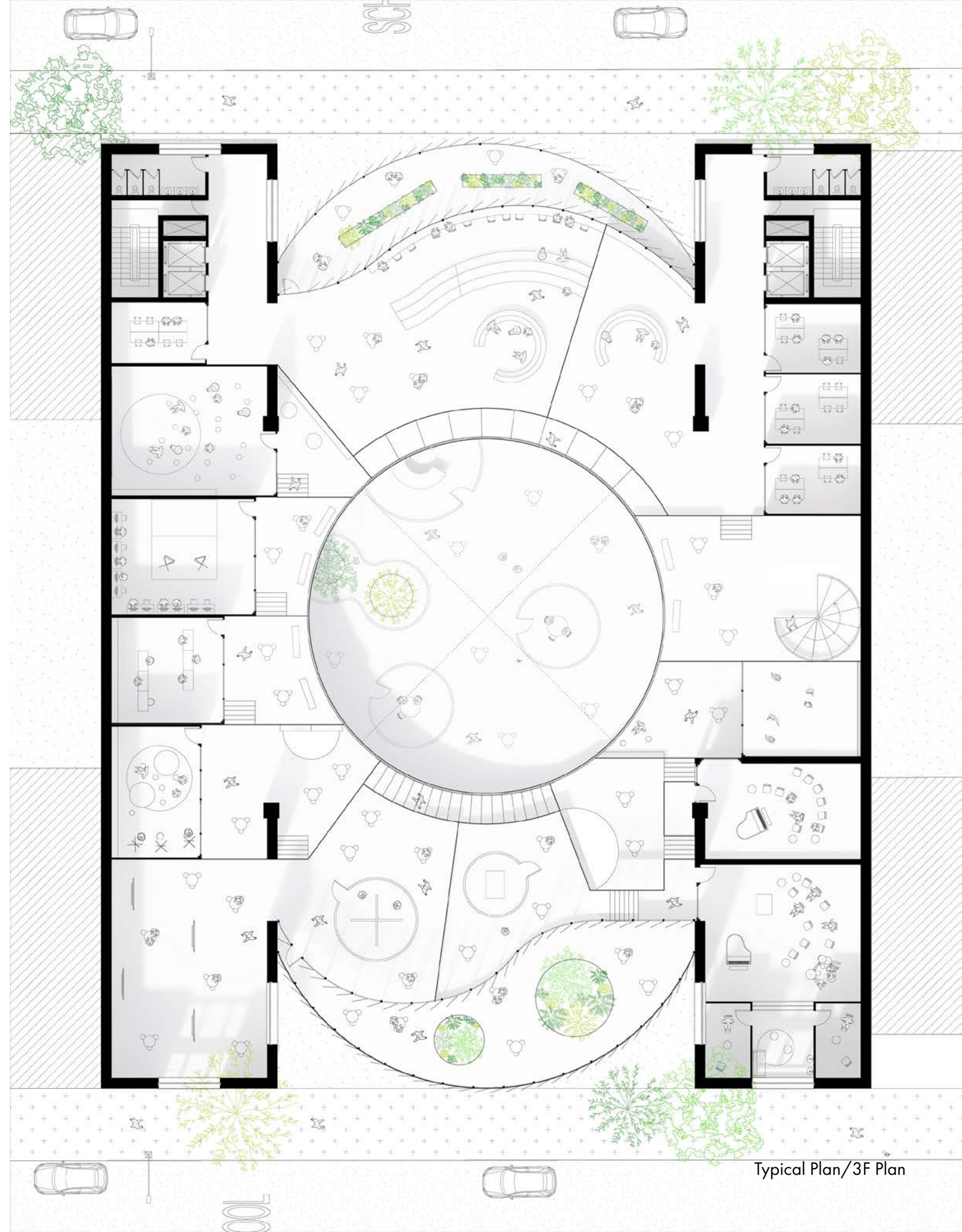
Pocket Space



Community Space

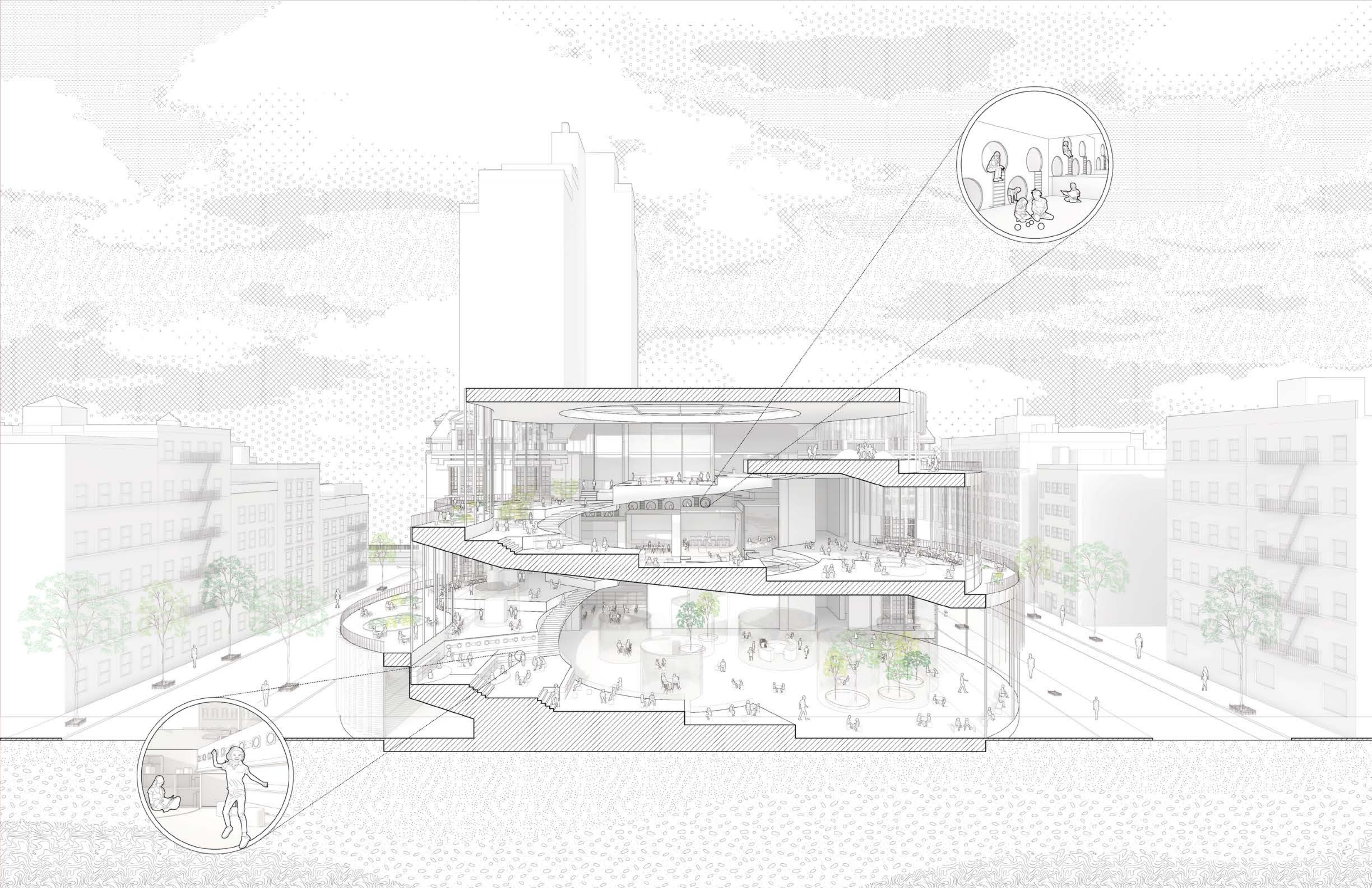


Combined



Typical Plan/3F Plan









### Creating Multiple Visual Connections

With each floor slabs creating a different floor heights, and classrooms extruded in diagonal way, an interactive visual connection is created



### Integrating the Old and New

Leaving the East and West wings of the original building and integrating the center with modern materials of perforated steel and glass, the mix-match of old and new is created



# 04

## GATEWAY

SPRING 2023

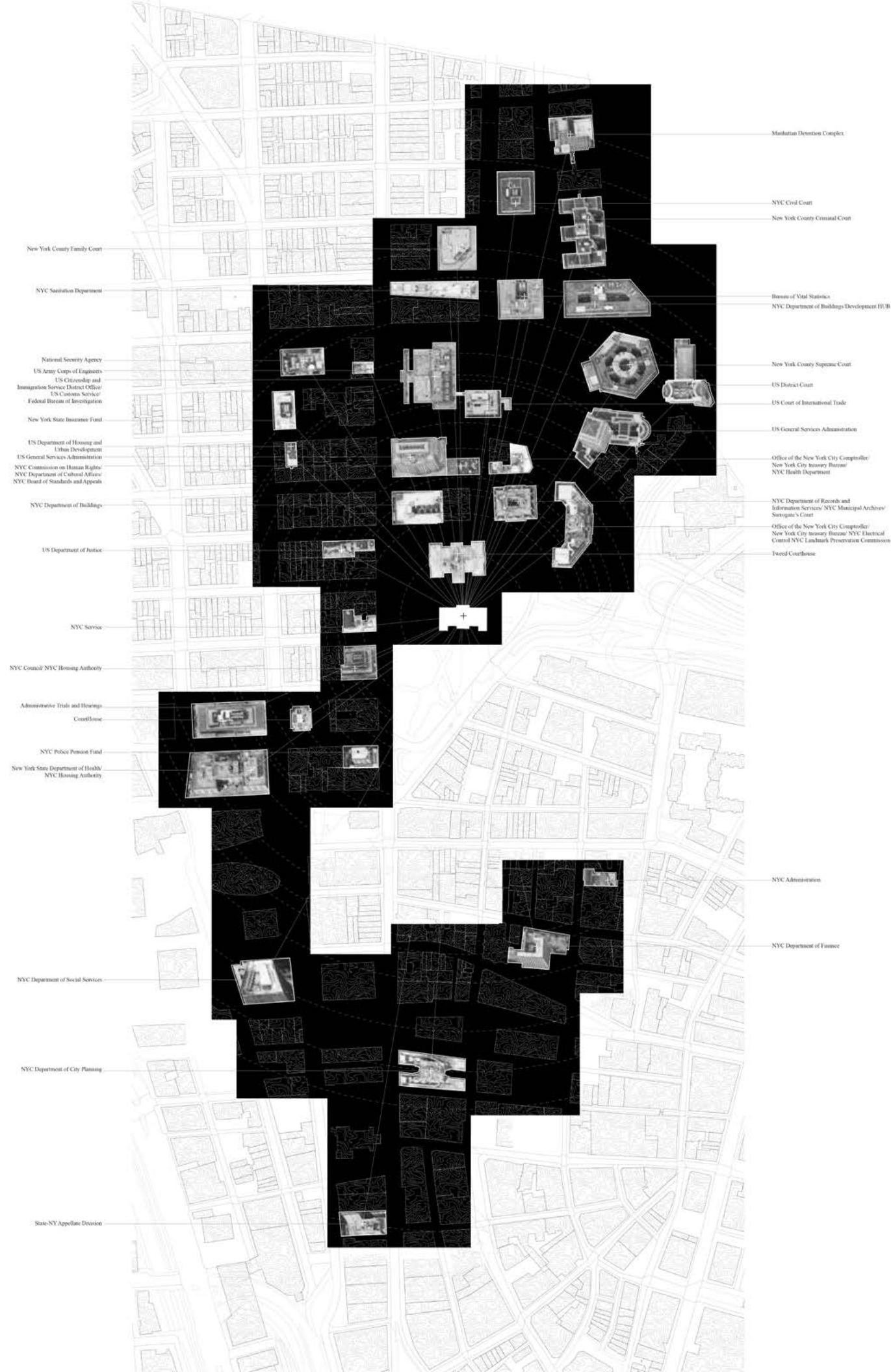
ADV VI STUDIO

CRIT: BUNGE, ERIC

In Collaboration w/ Myungju Ko







### Cith Hall as a Library

In order for the city hall to be departed from conventional bureaucratic form, we believe that the new city hall should be derived from the idea of a "civic space". We defined Civic Space in three different types.

First, the representation of governance where government officials meet with civilians for in-person guidance, and have public speech and hearing. Second, the exchange of knowledge and public value, where government's 3rd party meet with civilians to work collaboratively and provide educational lectures. Third, the free interactions among civilians where festivals or events is hosted, and civilians have free interactions. As a response to creating a civic space, we want to suggest the city hall as a library acting as an information center for immigrants, a fast-track center for certain straightforward needs of immigrants, a place for political exchanges, and also hosting civic functions.



### Expansion of Public Realm

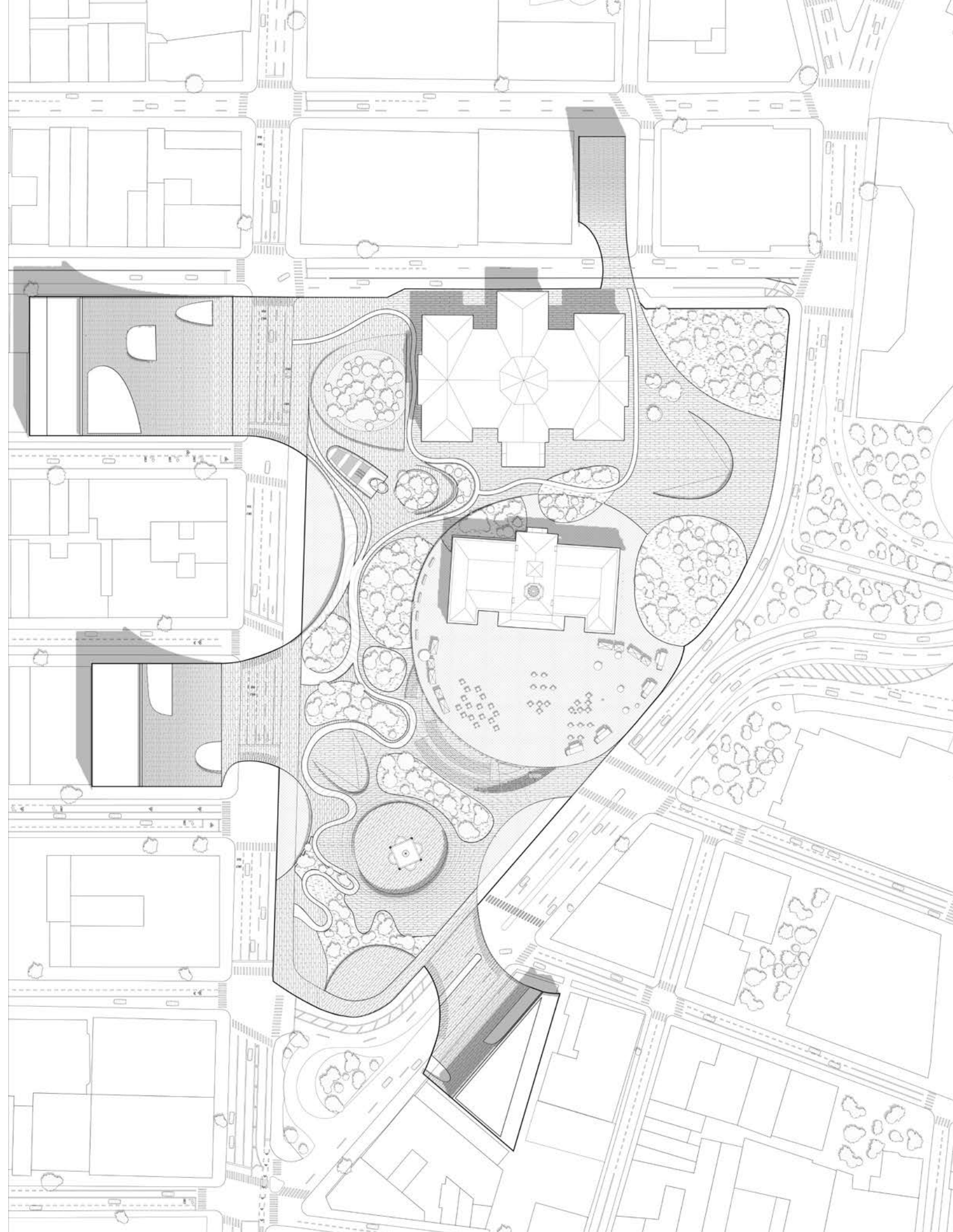
By bringing the migrant related offices to the plaza, the New City Hall defined a more active role and by lifting we want to propose a city hall Campus by re-defining the boundaries of the city hall. It will be a collective working environment for the offices, a tangible public experience for the citizens, and a symbolic representation of the next new york city citizens - the immigrants.



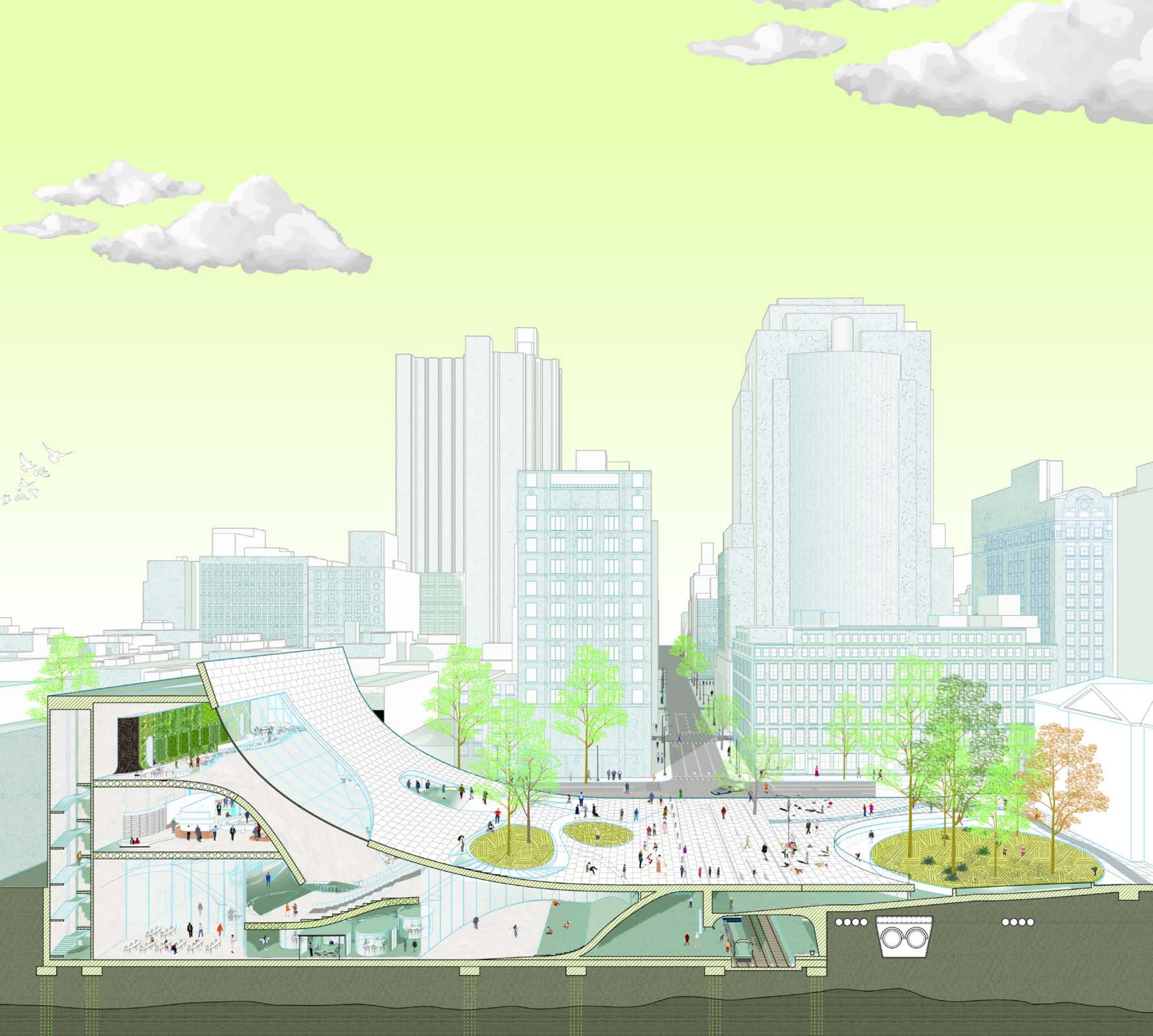


### Undulating Vault Structure

These curves will blur the boundaries between civilians and government offices, creating an ambiguity in space. The carved out curves create a vertical and horizontal interactive space. And the arches will be a symbol of a welcoming gateway for migrants.







Cafe Overseeing City Hall Plaza



Hot Desk with Govt. Officials

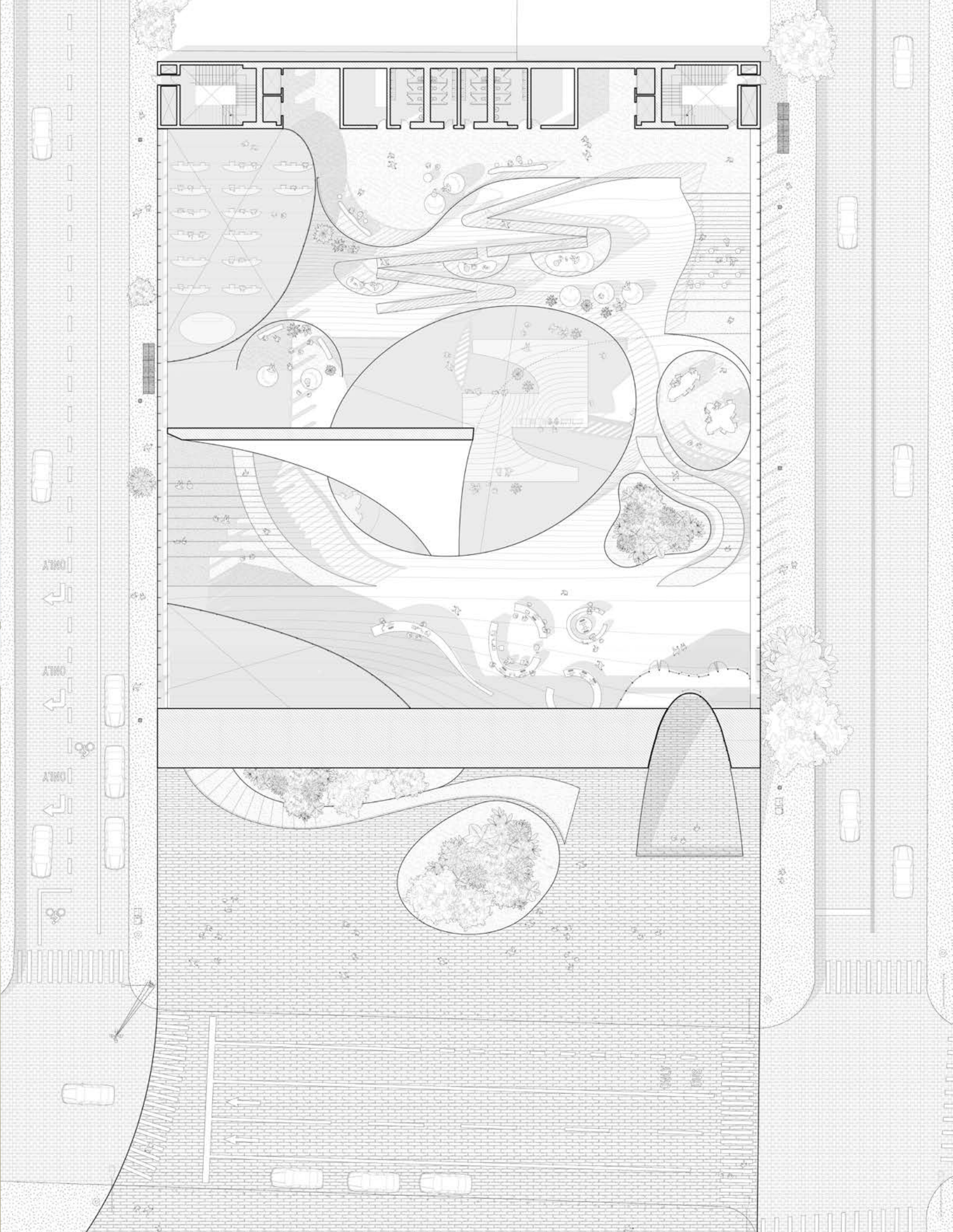


Private Group Meeting

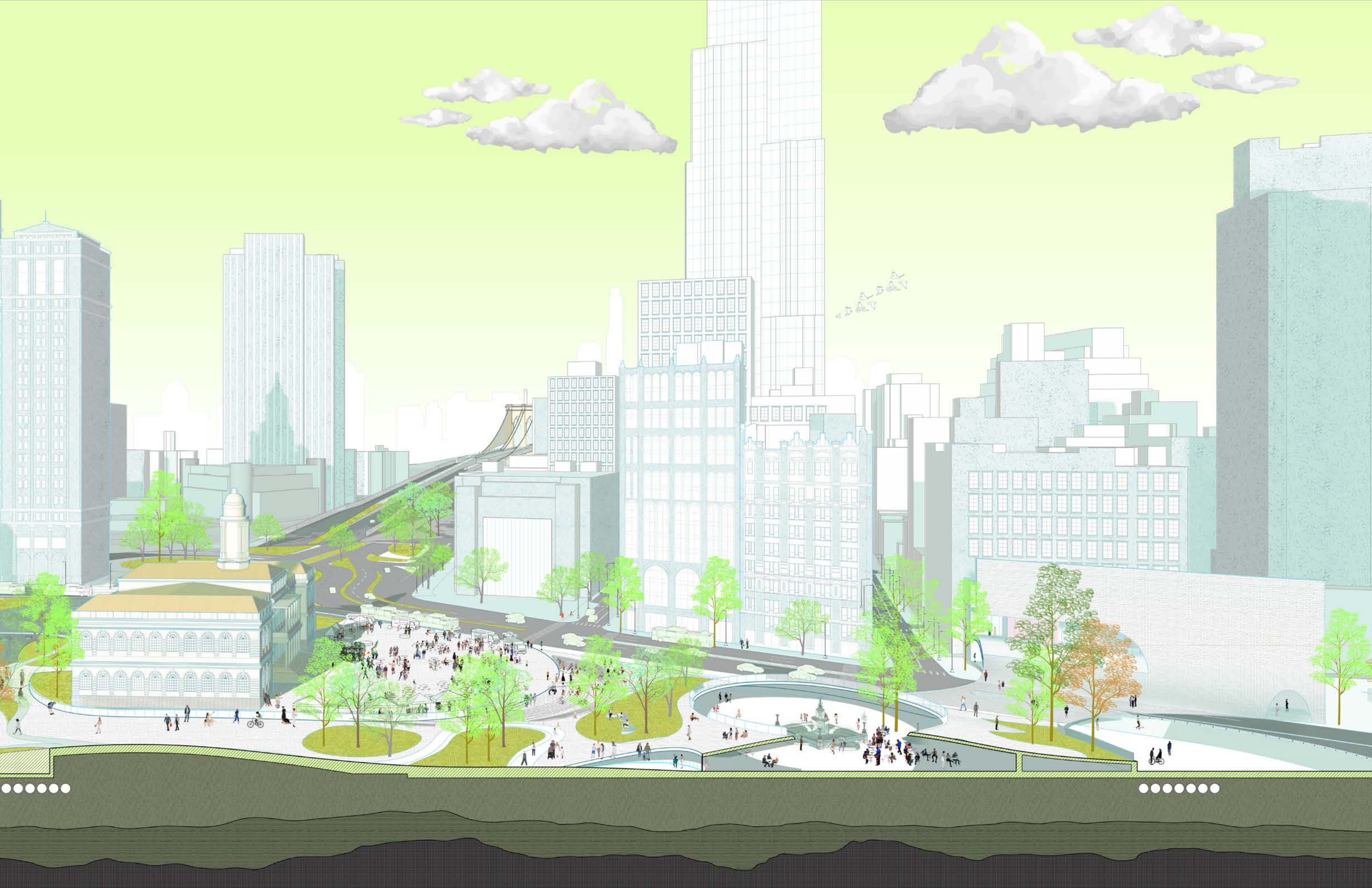


This low-rise City Hall campus, which is very rare in high-density Manhattan, people walk through the City Hall in a horizontal motion rather than vertically. If you go up along the white pavement, you will naturally bump into the immigration service space, and while handling government work there, you can also have a more pleasant and enjoyable time by freely going outdoors and indoors next to it.

This flow is also connected to the subway line and naturally raises the underground flow upwards.









# 05

## PATHWAY

FALL 2020

CORE | STUDIO | BROADWAY

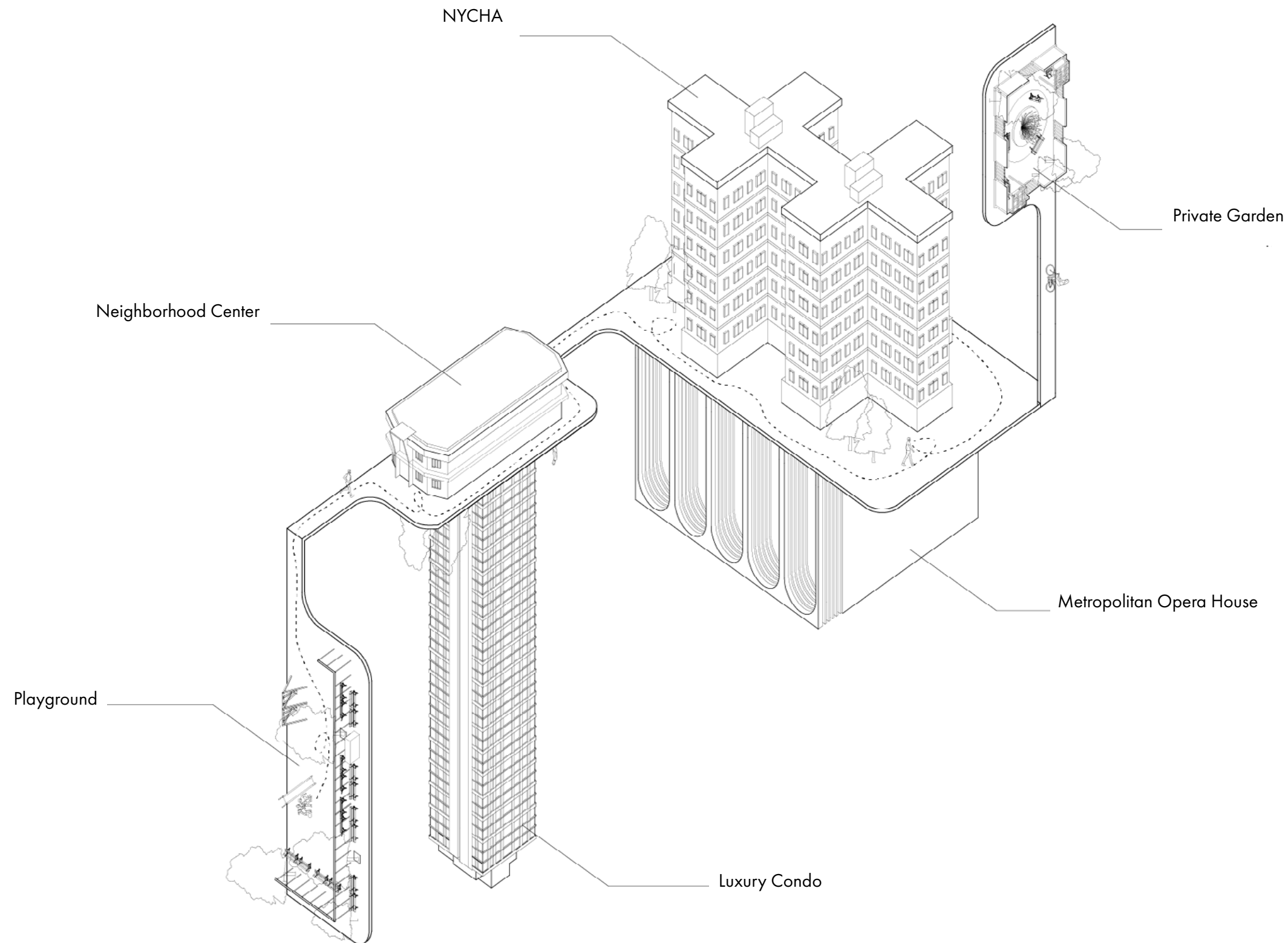
CRIT: PUIGJANER Anna

In researching the Upper West Side, my interest grew in the deep disparity of economy and racial demographics, and how it was creating a social boundary.

Such wealth gap affects the living condition that the residences faced everyday. Furthermore, the wealth gap extended to cultural centers, and gathering spaces that people used. Even though they live in a same street, their journey differs that it seems like they live in two very different world – which eventually creates an unseen boundary.

I focused specifically on the Fredrick Douglas Housing located in the 100th street and Broadway. While the Housing has diverse population such as student population and active commercial users, the unseen boundary existed that limited and isolated the housing residents from the rest of the community.

To mitigate and erase the unseen boundary, I propose a scattered program design that creates a smooth continuous passage toward and within the housing area to attract outside population into the neighborhood, and engage the housing community with in them.







### Scattered Design

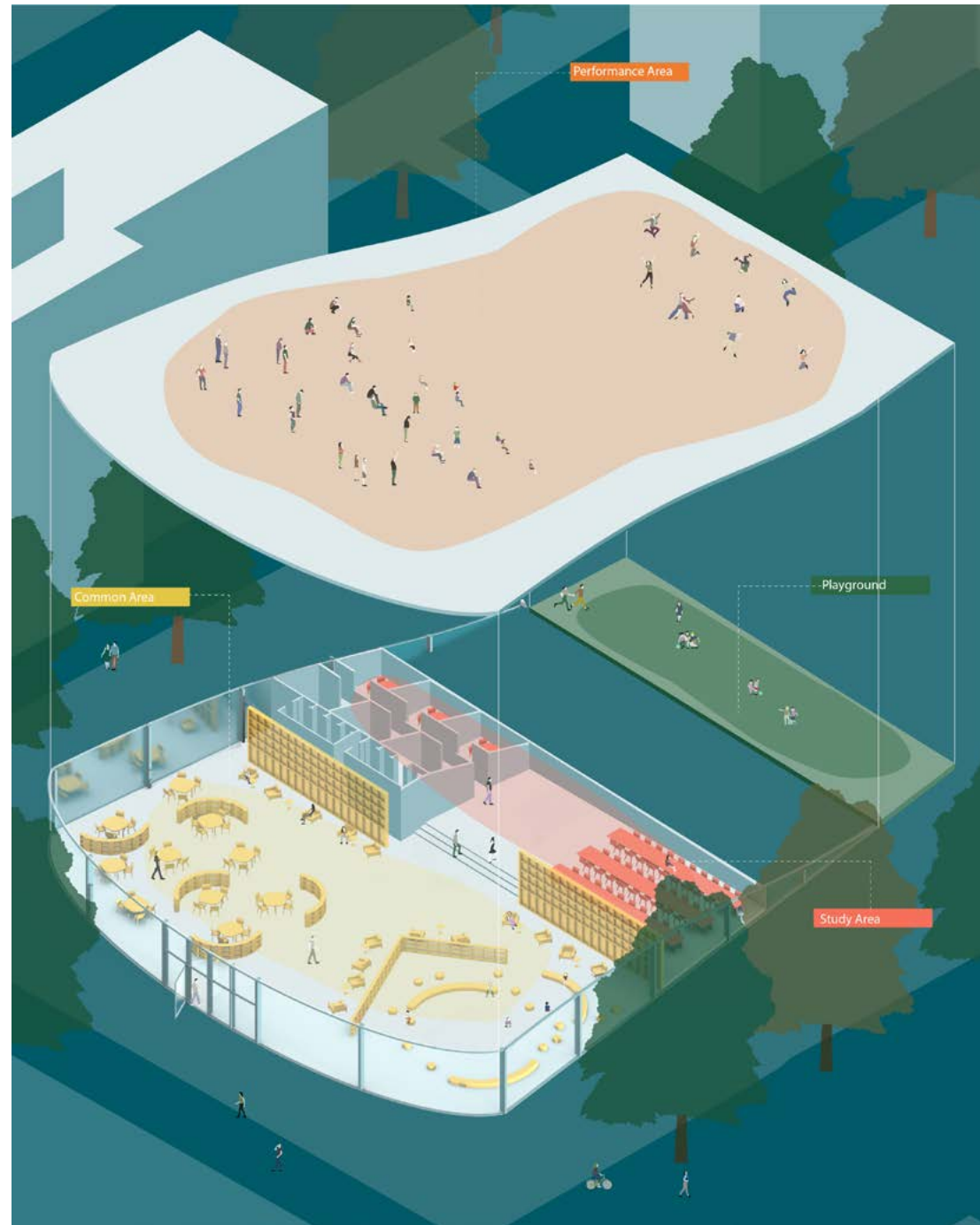
Three scattered programs will not only attract the population from commercial area, schools, and central park visitors, but also support the current housing residents with job opportunities, culture and recreations activities



### Cafe with a Volunteer Events

As the housing comprises of 38% of single parent household, the cafe could be used as a volunteer and sponsoring event space from the non-profit organizations during the weekend, and as a shelter and a playground during the weekdays.





### Library with Performance

The library for the students from the schools and the housing provides not only a collective studying area but also a performance hall on the roof which could be used as a place to gather and share their interests and learning for students.



### Neighborhood in the Market

The market will be connected with the sidewalk that they pedestrians can walk through. Also the roof will be extended that it creates outdoor areas of farmers market and picnic zone where the visitors and residents can come together.





# 06

## DAYS AFTER

FALL 2022  
ELECTIVE: ULTRA-REAL  
Collaboration w/ Sky Zhang,  
Will Rose, and Issac Koufman







Younjae Choi

t. 646.899.9875

e. [yc3767@columbia.edu](mailto:yc3767@columbia.edu)