

PORTFOLIO

selected works

2022 - 2025

Thea Bertin-Levecq

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I. Learning Greenhouses

Semester: Spring 2025 Advanced VI

Instructors: Galia Solomonoff

Subject: Layered Urbanism

Site: Tracey Towers, 40 & 20 Moshulu Parkway, Bronx

Tracey Towers were built with the intention of having townhouses and parking on its plinth. These townhouses were never built, leaving an empty space to be used.

CONCEPT

Learning about food through growing and cooking

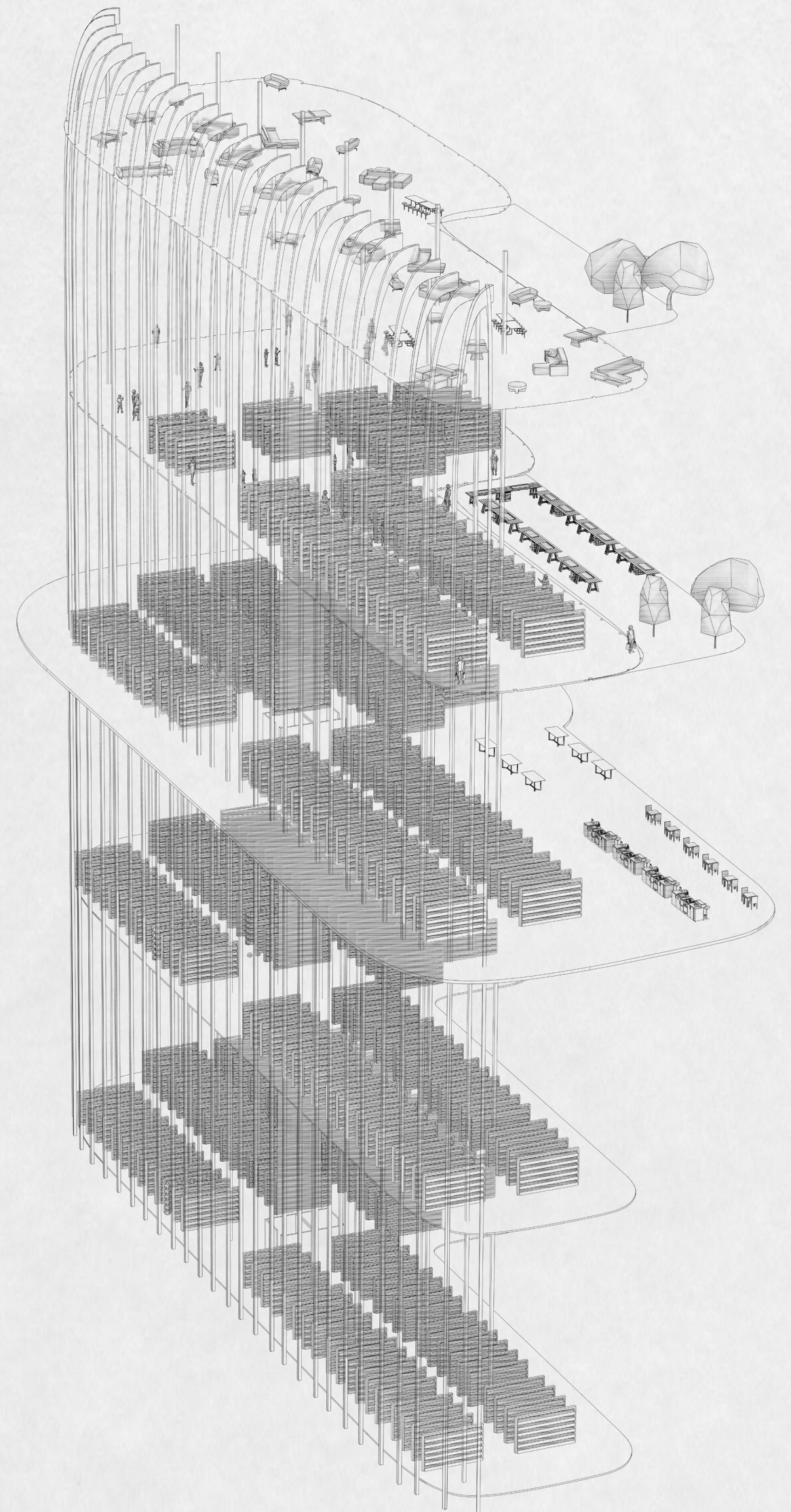
Food is part of what keeps us alive. But access to fresh foods and the knowledge of how to cook it correctly is not available to all.

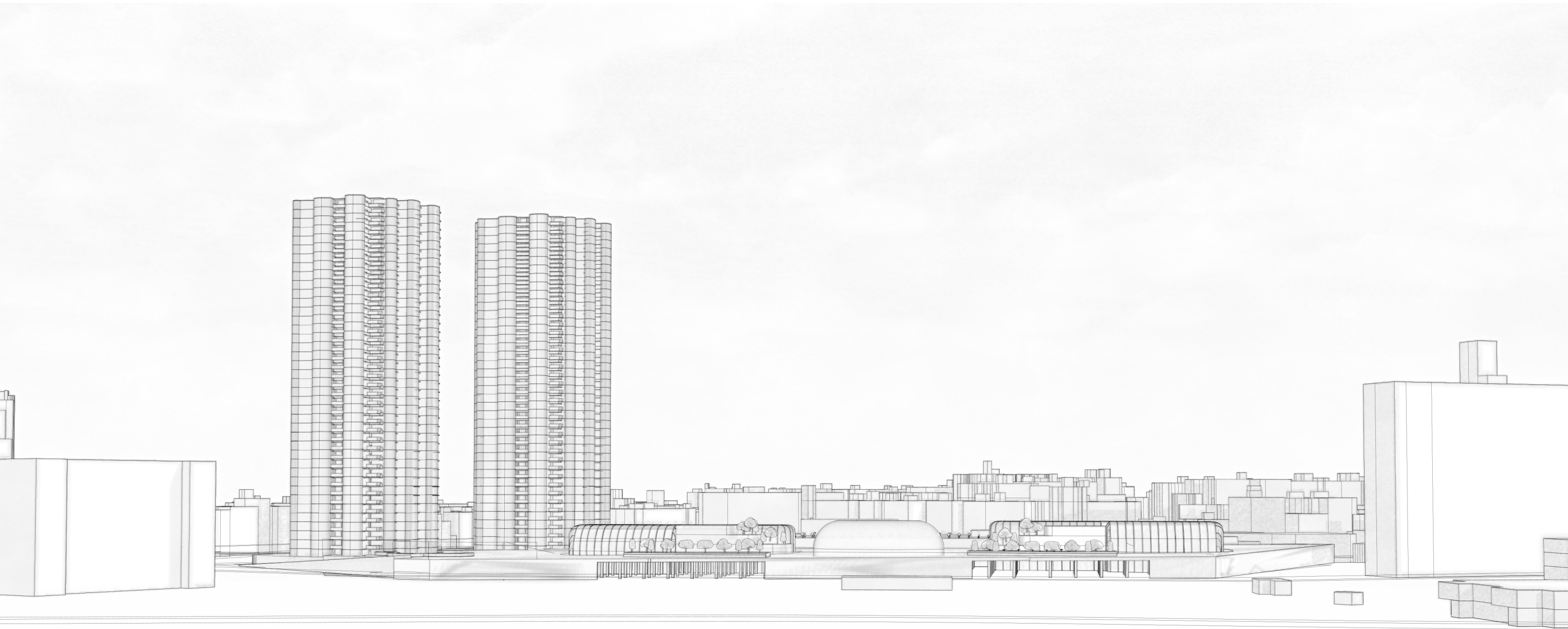
This project would be creating 3 greenhouses, punching through the plinth, that would house hydroponics. The ground level would also hold an aquarium and exhibition wall. Atop the plinth would sit the learning areas, green spaces, a pond (top of the aquarium) and a restaurant.

With these greenhouses, there would be a goal to enable the surrounding schools, with a push towards high schools, to be hosted to teach their students food independence. These classes would center around how food grows, its nutritional value, how it is cooked, simple recipes and even teaching to do grocery lists.

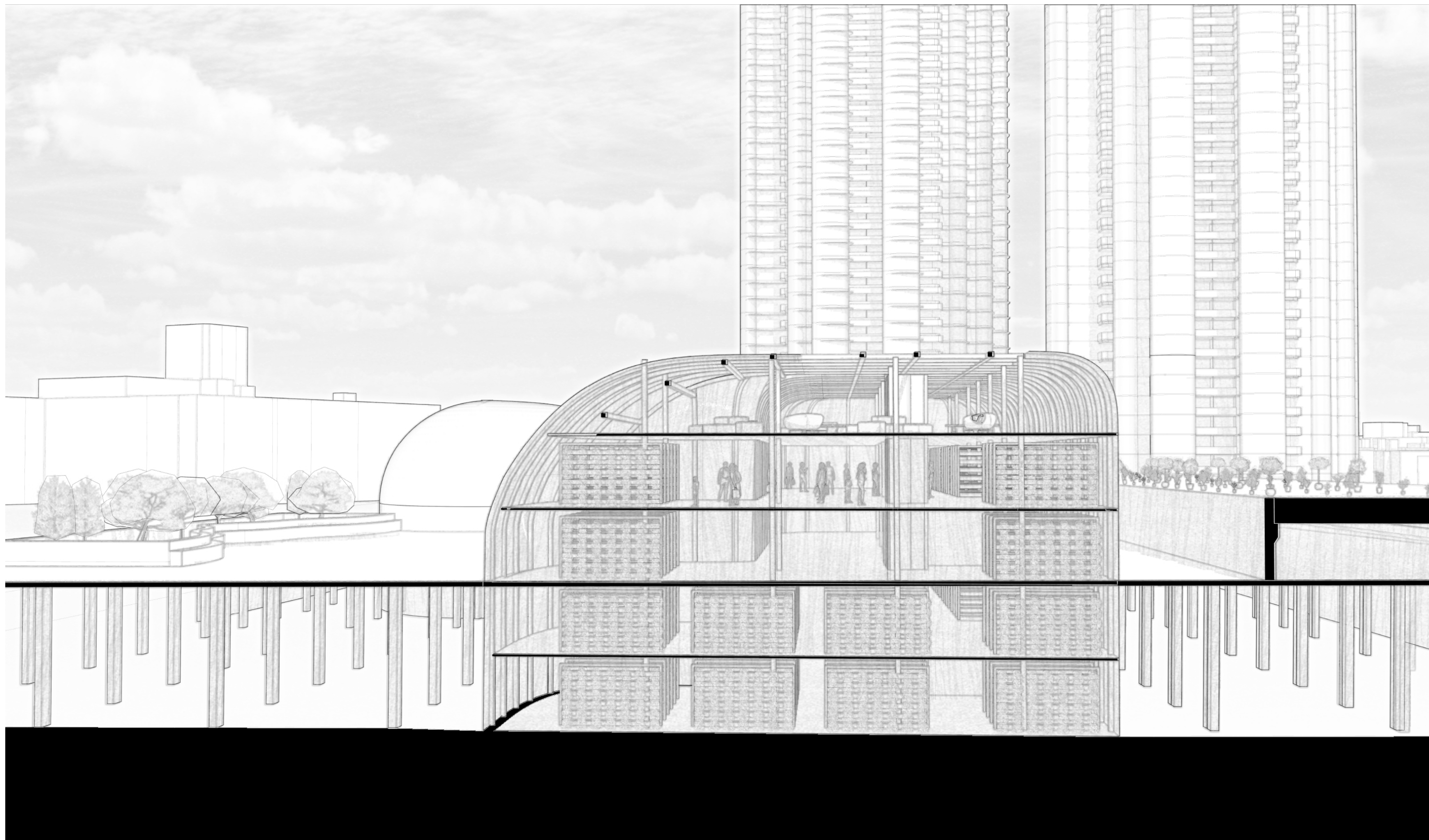
This would go along with feeding a community in the Bronx that is not in a food secure area and where access to fresh foods is not easily available.

*Exploded Axon
of a Greenhouse*

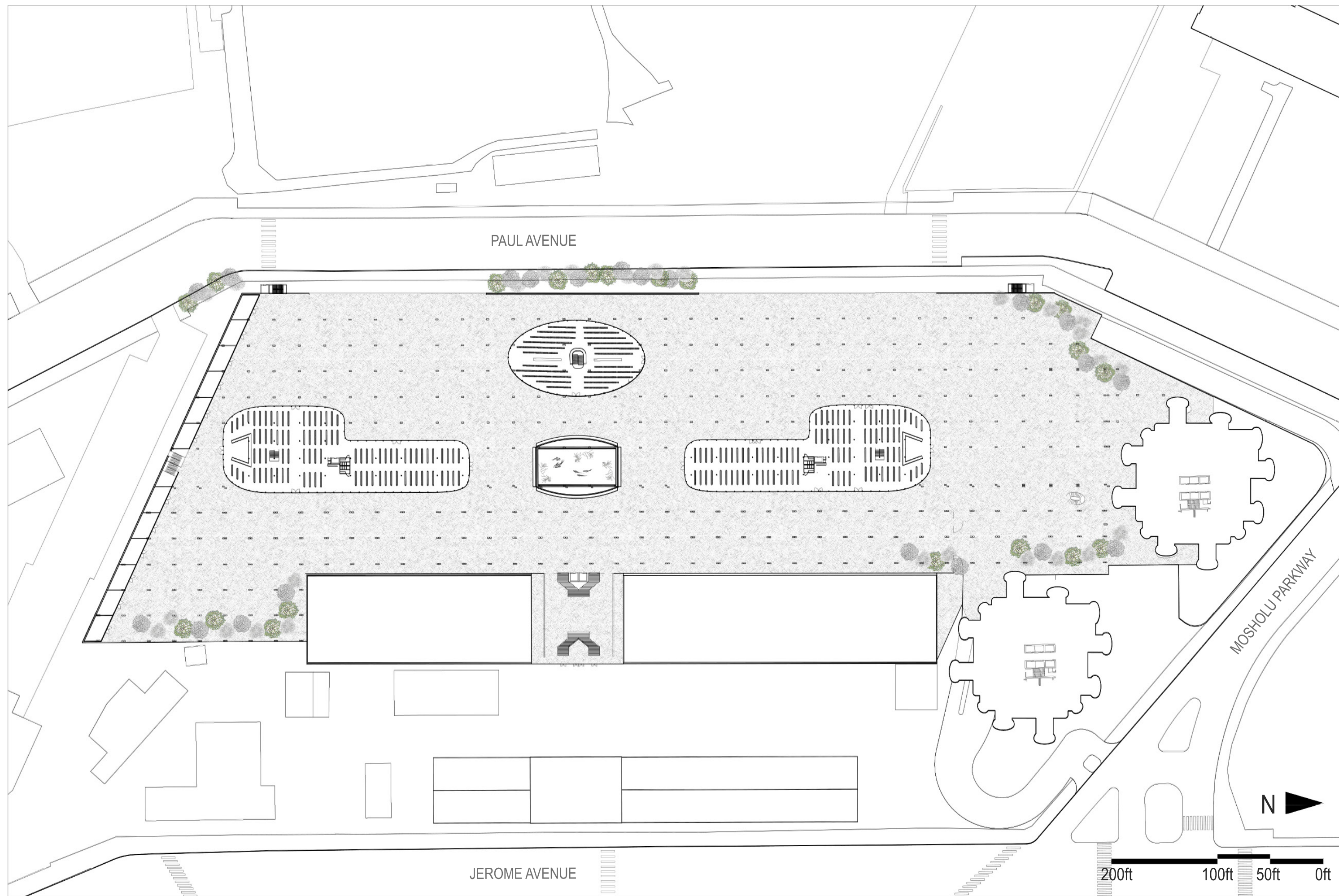




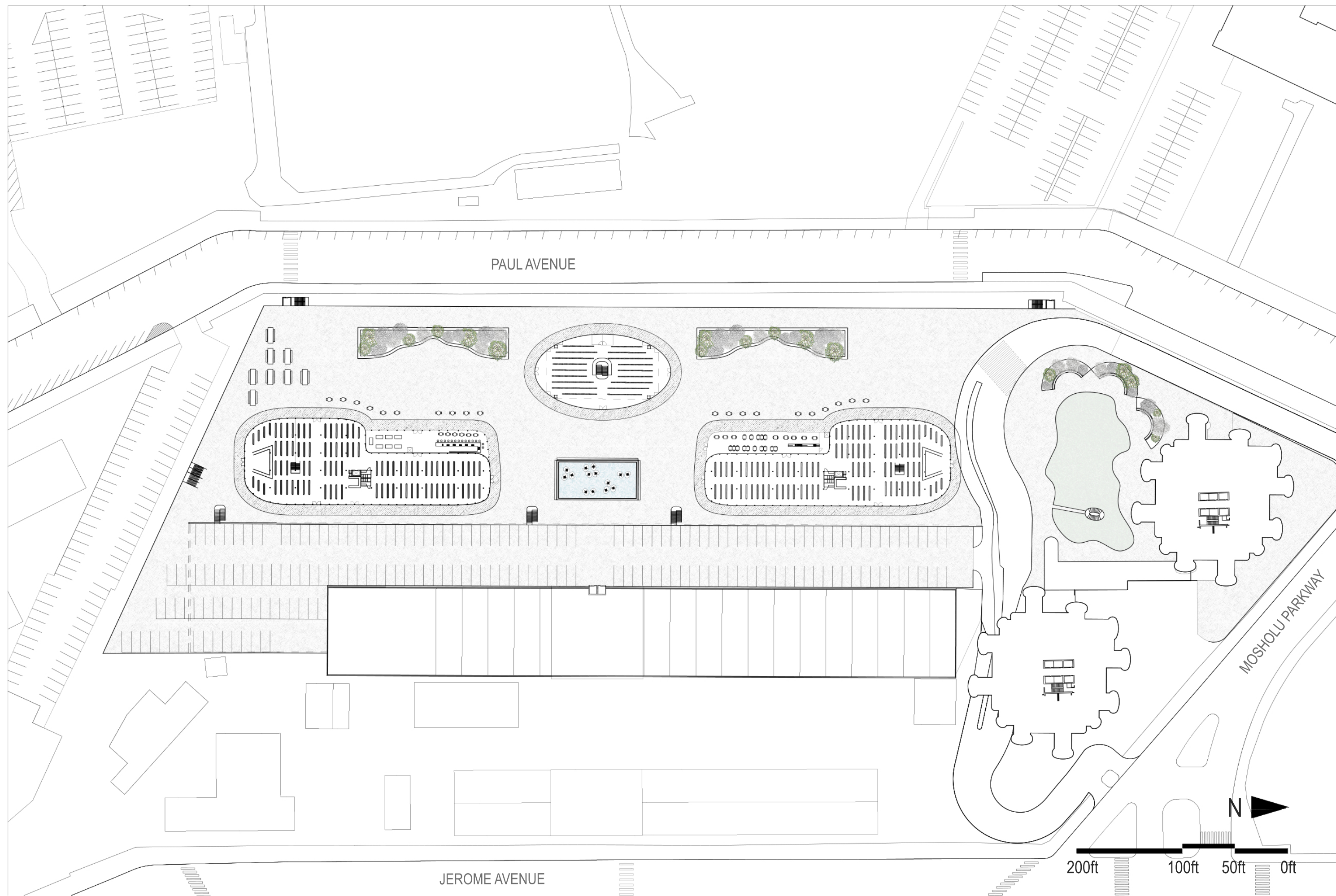
North South Elevation (view fom Paul Avenue)



*East West Section cutting though a greenhouse
showing its punching though the plinth)*



Ground Floor Plan (Street Level)



Third Floor Plan (Plinth Level)

2. Reuse Market

Semester: Spring 2024 Advanced IV

Instructors: Esteban de Backer

Subject: Contested Territories

Site: Freshkills, Staten Island NYC

CONCEPT

Reusing our objects for less trash

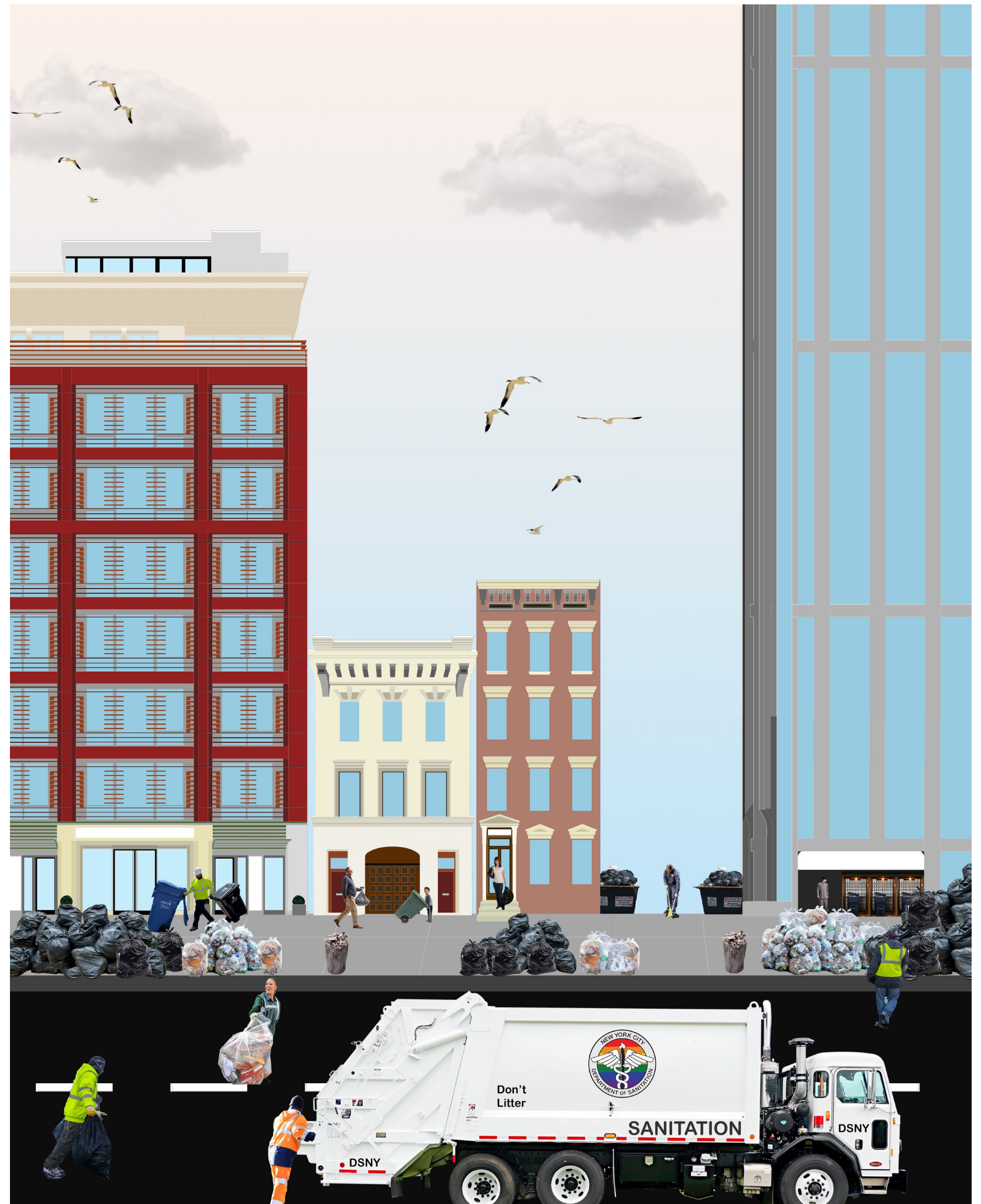
We all have objects we use very little, clothes with holes we don't know how to repair, furniture we can't repair.

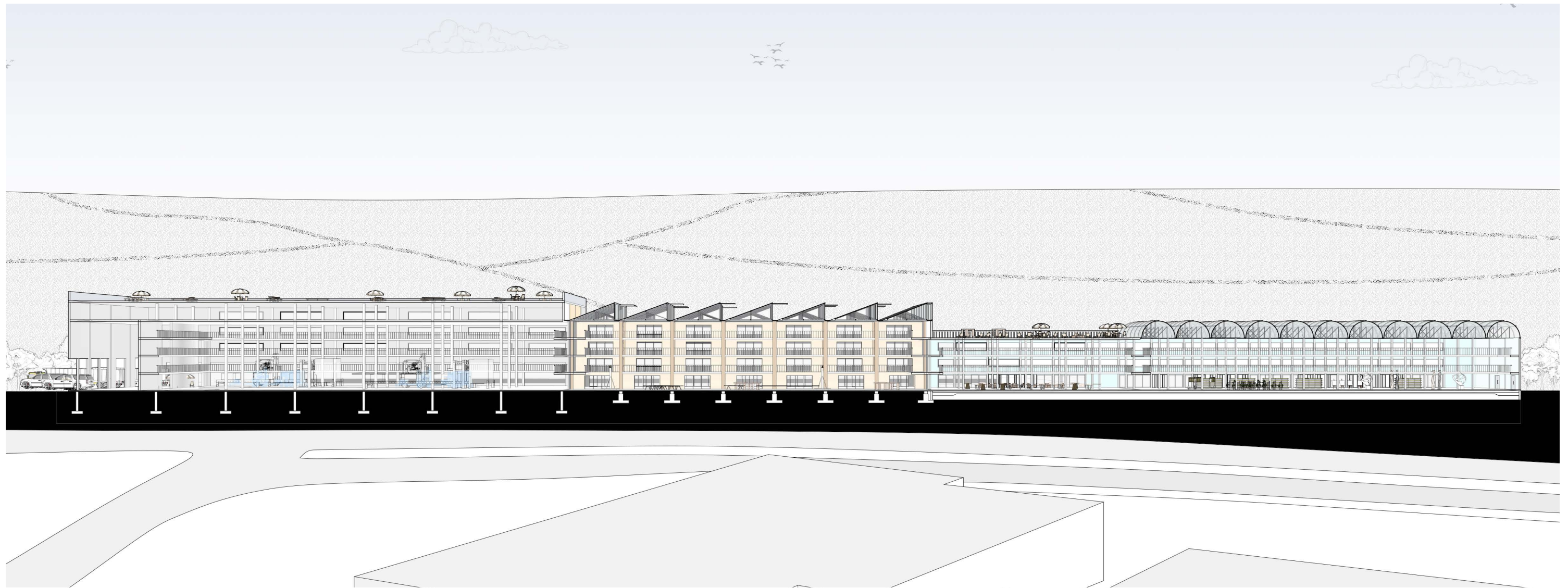
This project is made to show the linear process of collecting repairing/reusing and reselling donations and unused residential "trash". The space is meant to reduce the amount of refuse New York City sends to the landfills and waste-to-energy plants.

This space holds a processing plant for donations, workshops and greenhouses, a cafe/refreshment area and a collective market/exhibit area. They would serve the mall, the close-by residential area and the park and enable the surrounding neighbourhood to profit from creating less trash and sharing expertise with each others.

This project could also be broken into modules and put around the rest of New York city.

Collage of the garbage pick-up for different types of typical NYC houses and buildings





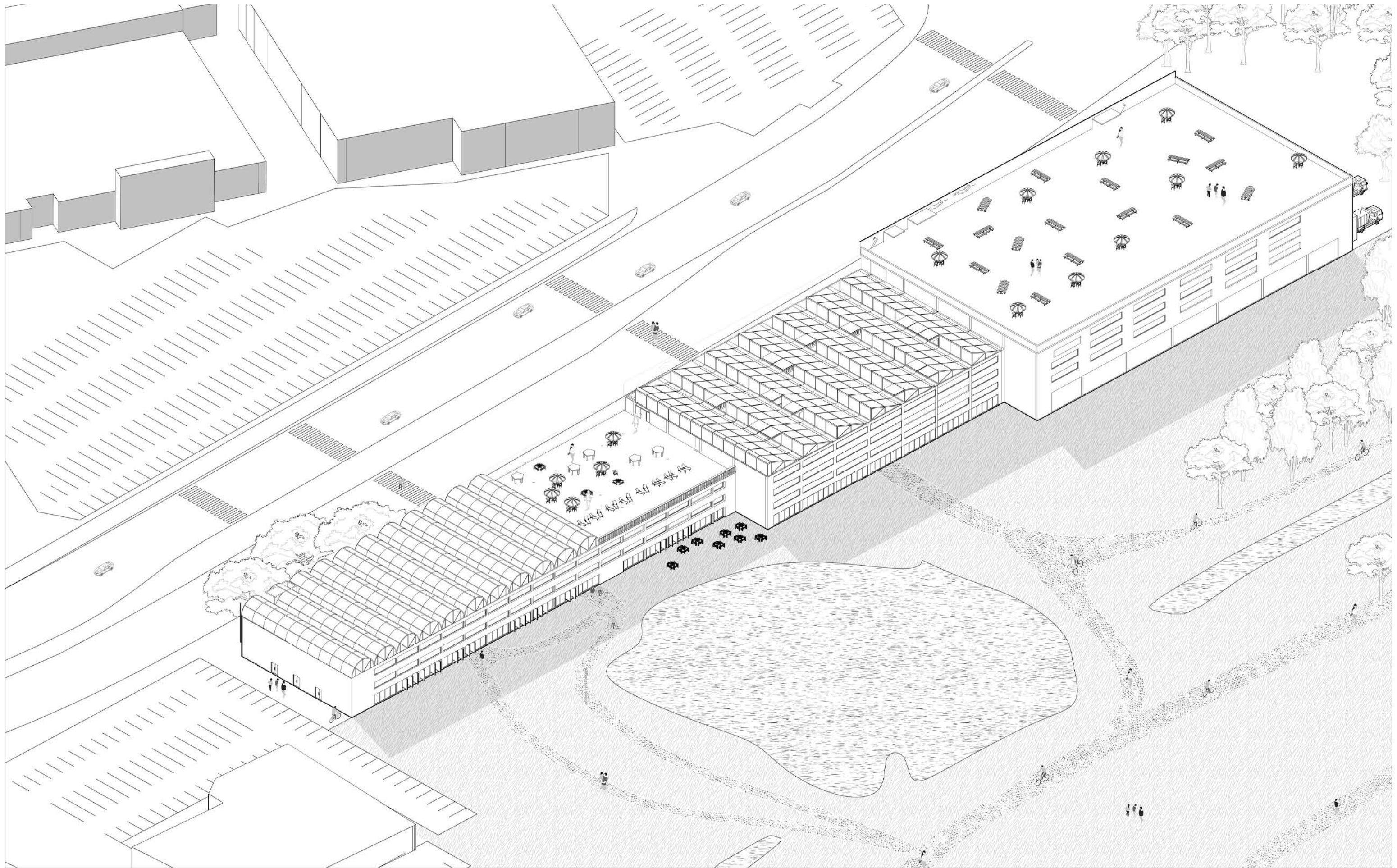
Longitudinal Section of the building showing each area of reuse



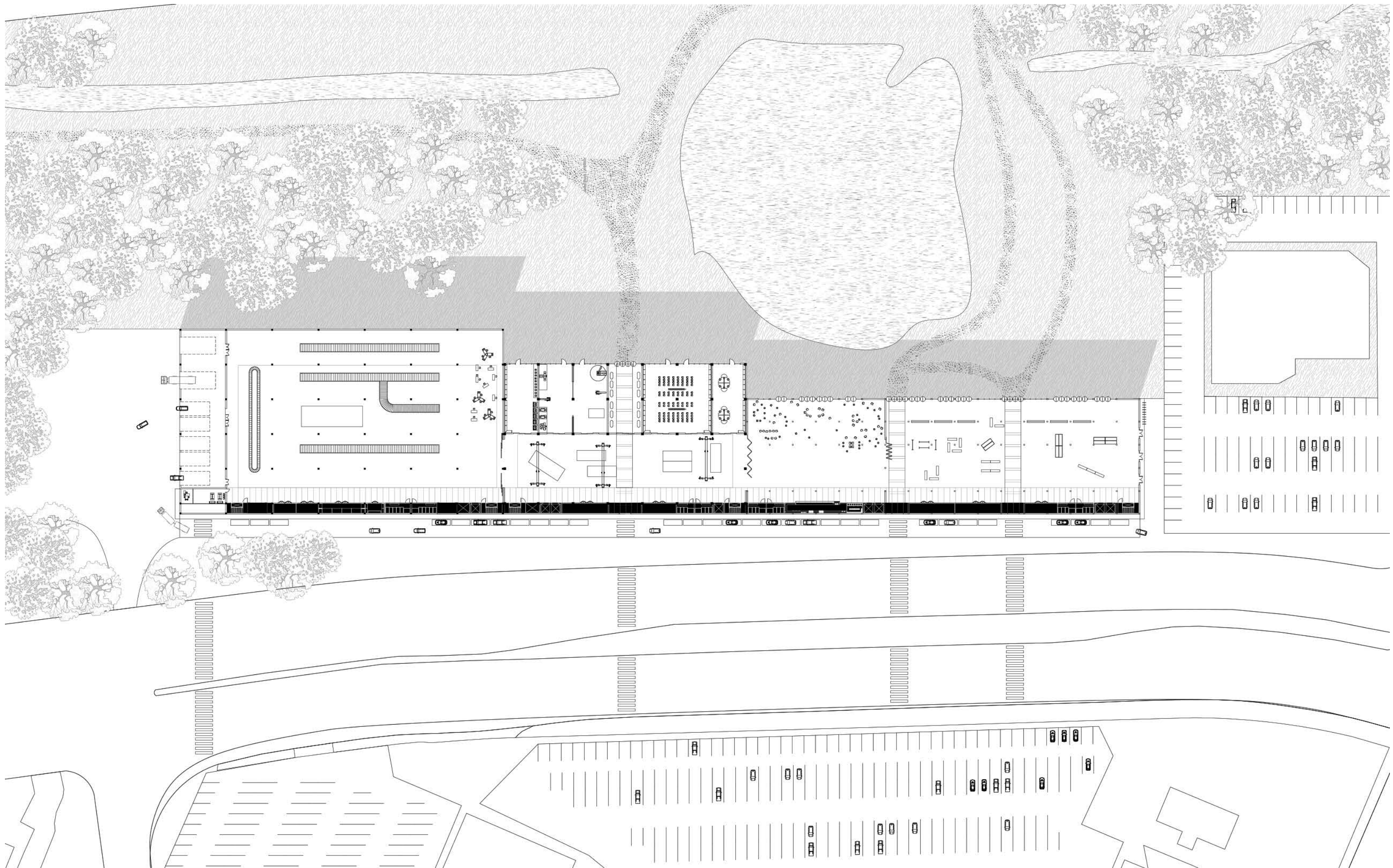
Collage of the interior of the learning workshop area, showing it in use. Area used to repair, divide up, create new pieces



Collage of the exterior of the building in the surrounding area, Freshkills Park on the right, the neighbourhood on the left.



Axon of the building showing the facade angled toward the park



Axon of the building showing the facade angled toward the park

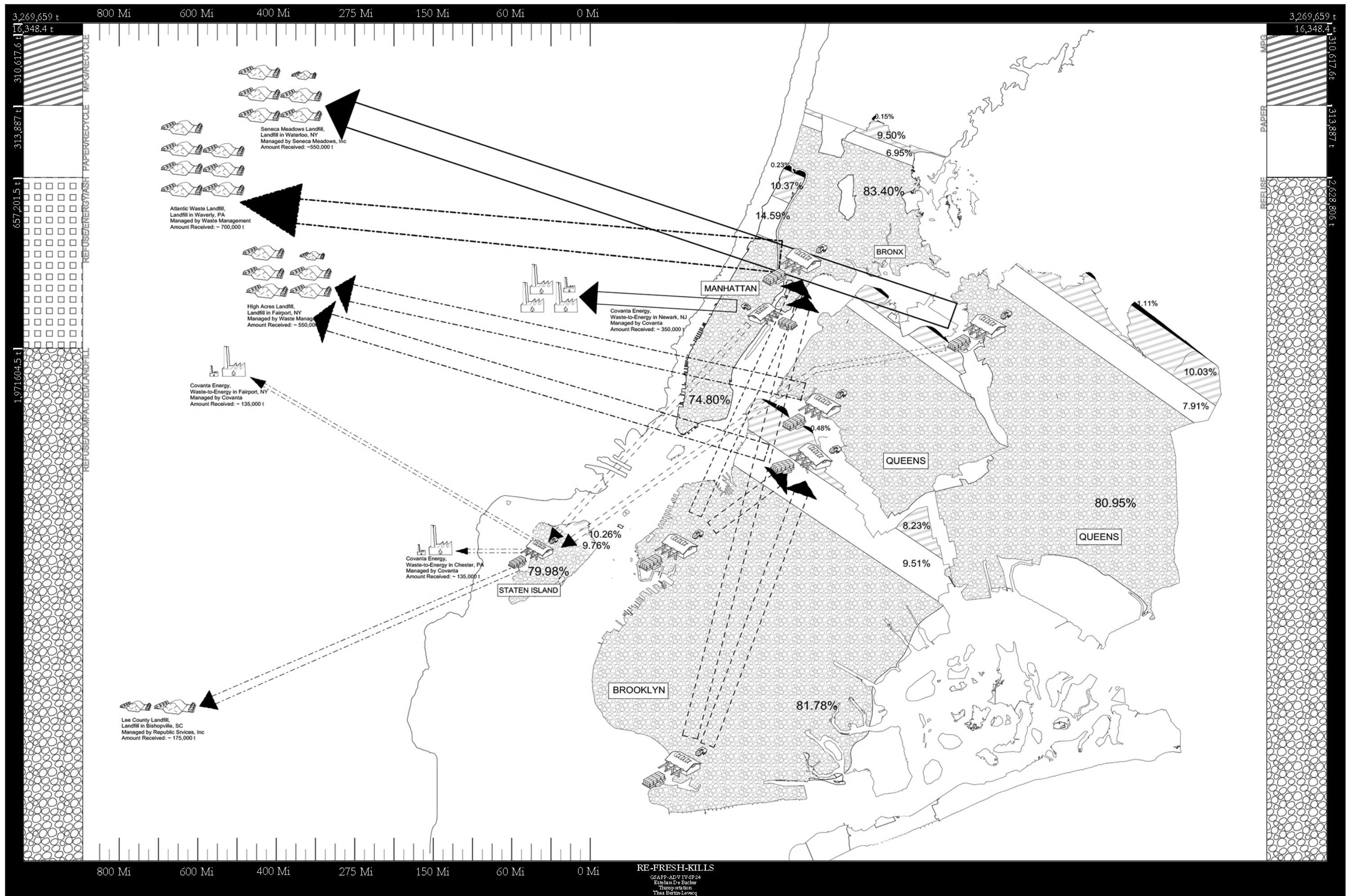


Diagram showing the movement of residential NYC trash from its origin to its disposal site (to be read right to left)

3. Nooks of Avery

Semester: Fall 2024 Advanced V

Instructors: Bryony Roberts

Subject: The Well School Clinic

Site: Avery Building, Columbia Campus

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CONCEPT

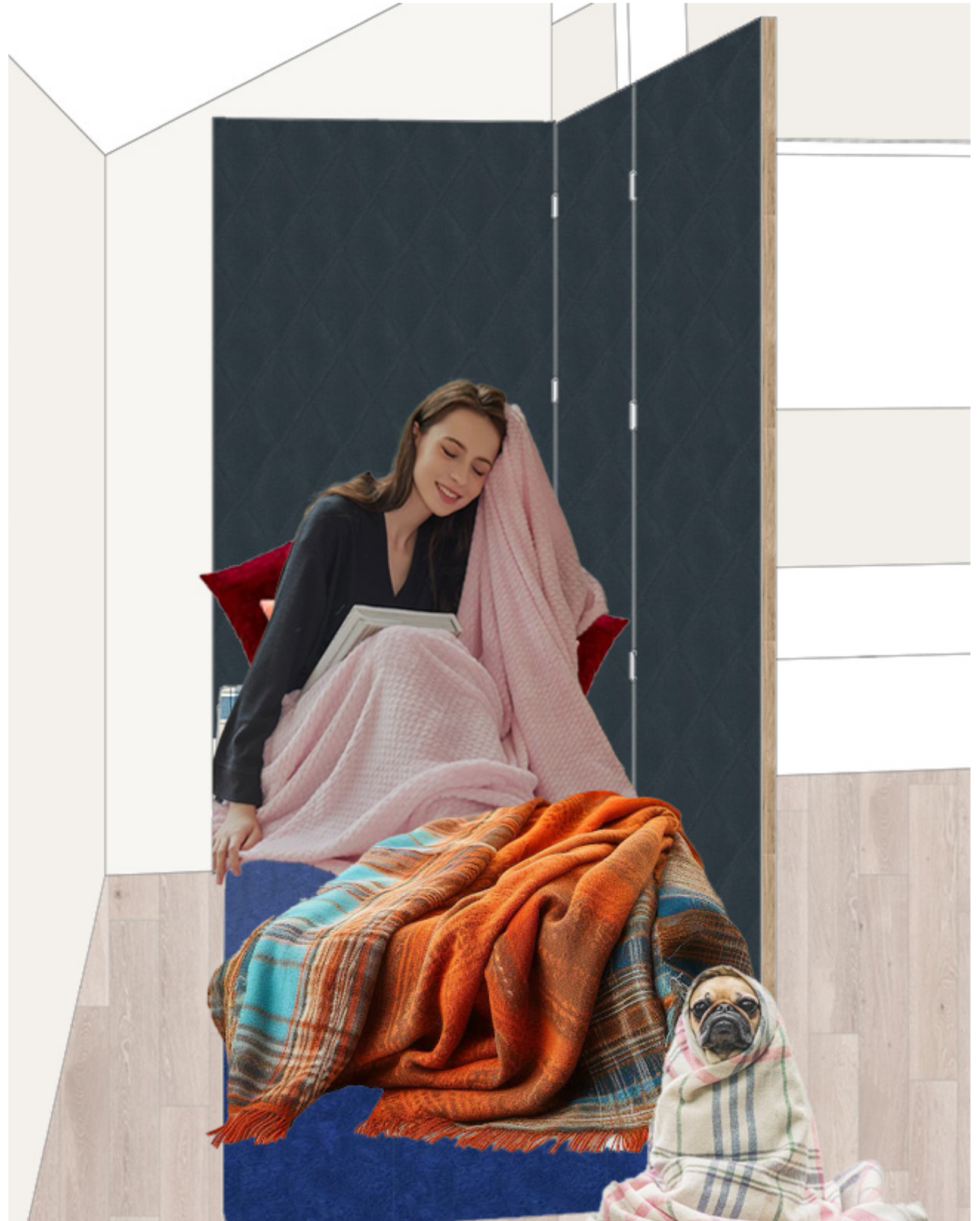
Creating Maleable Furniture for NeuroDivergent Comfort

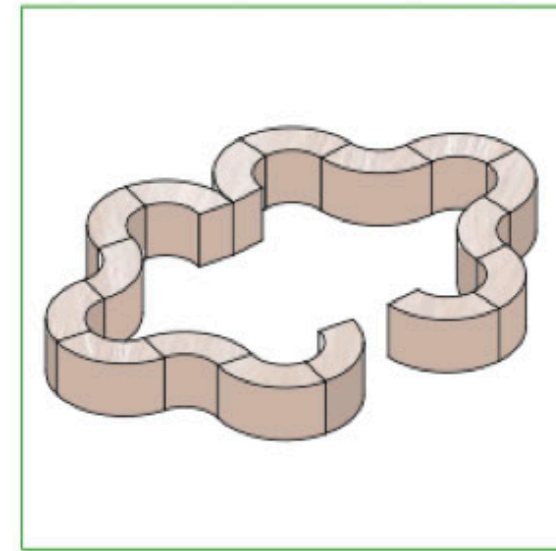
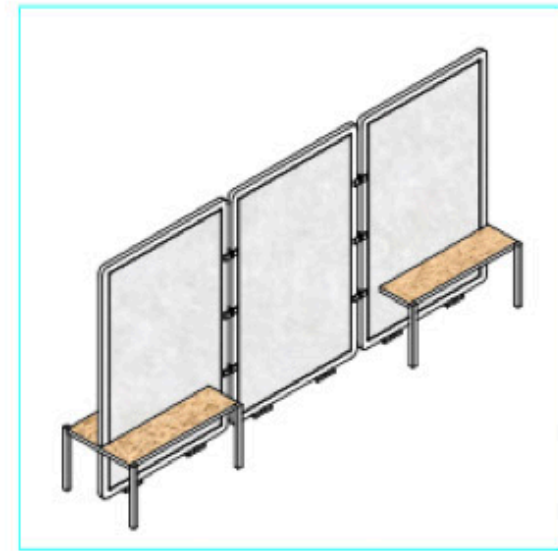
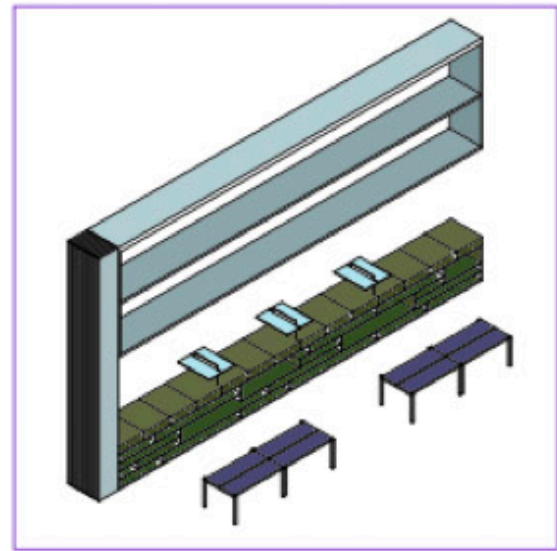
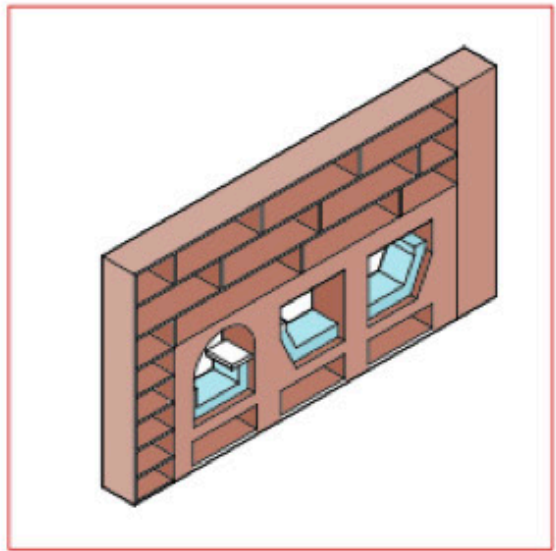
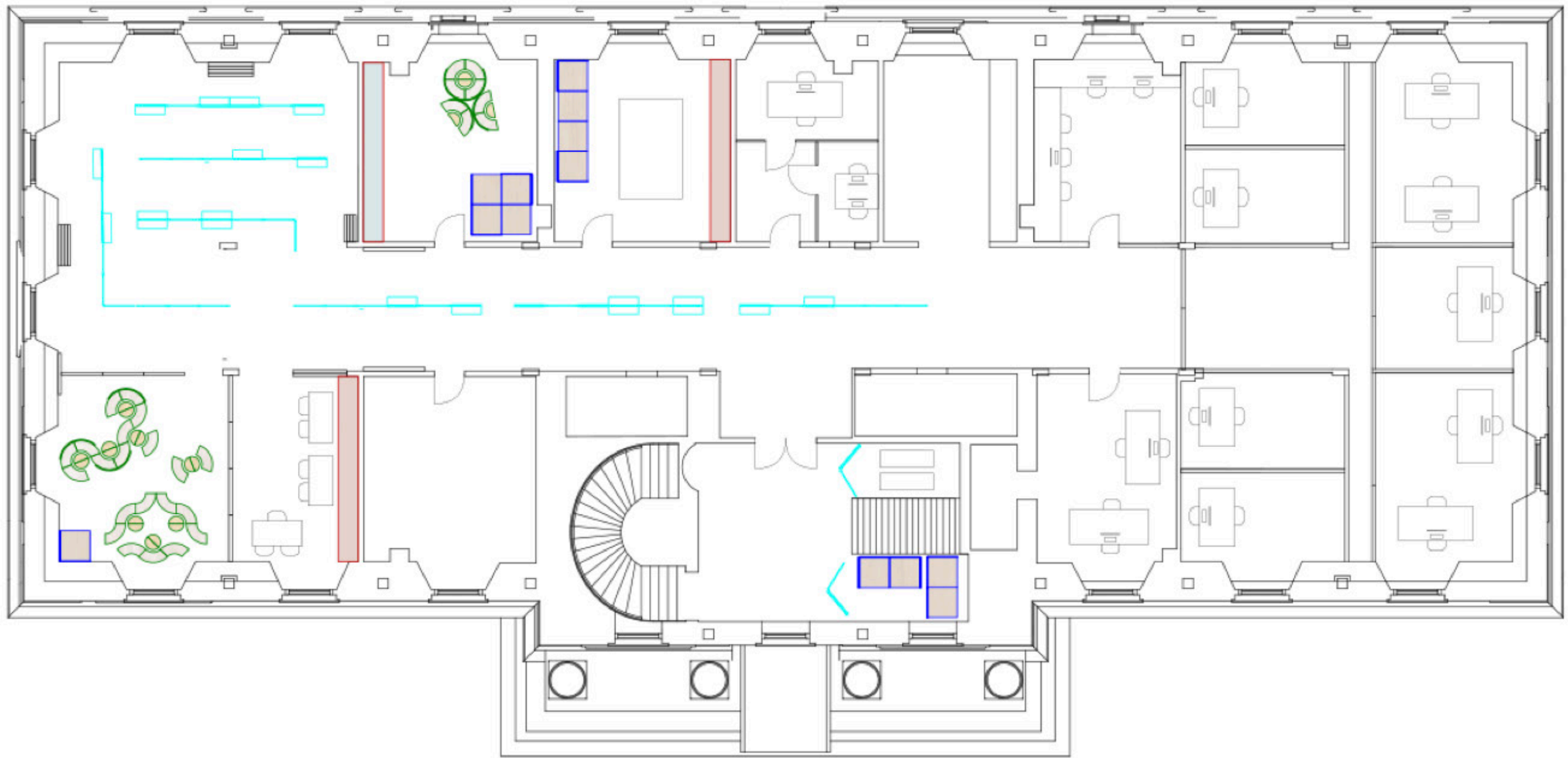
The Well School Clinic had for its goal the retrofit of Avery Building, house of Columbia's GSAPP. The goal of this retrofit was to make the building better cater to its neurodivergent community along with its disabled community.

This would enable Avery Building better conditioned for its student to learn in a more comfortable and healthier way. This project has for its goal to create pieces of furniture that could be used in the current conditions, with the buildings underused spaces and be reused in any future retrofits of the building.

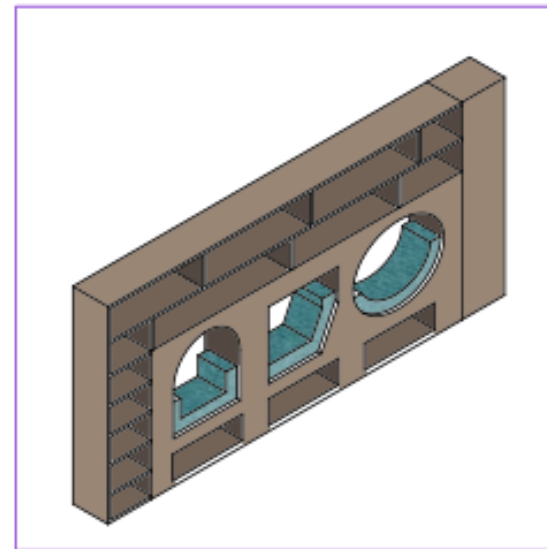
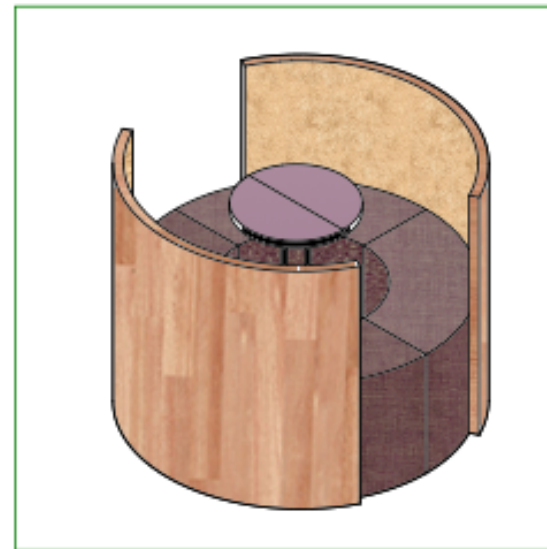
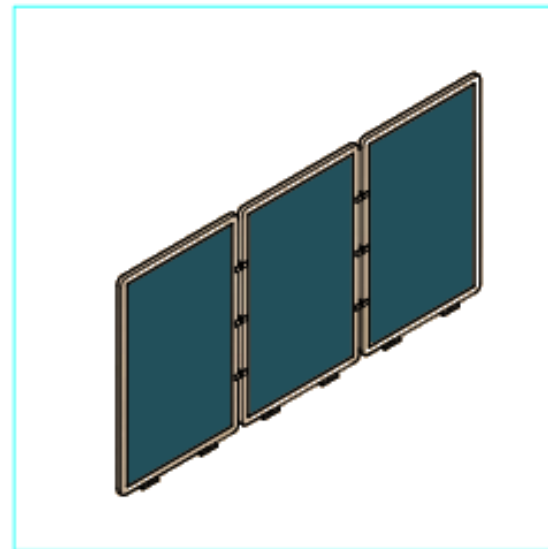
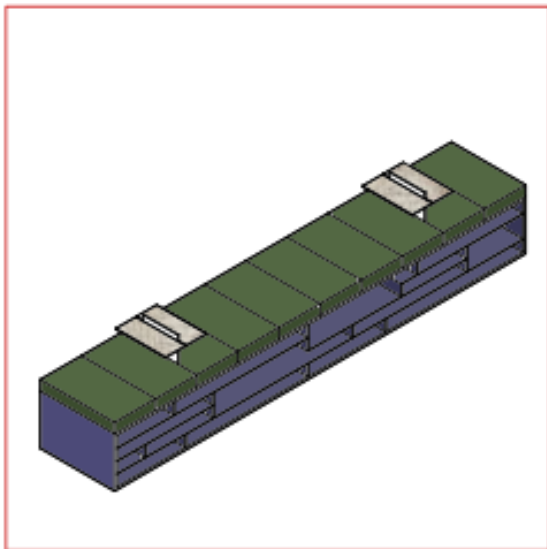
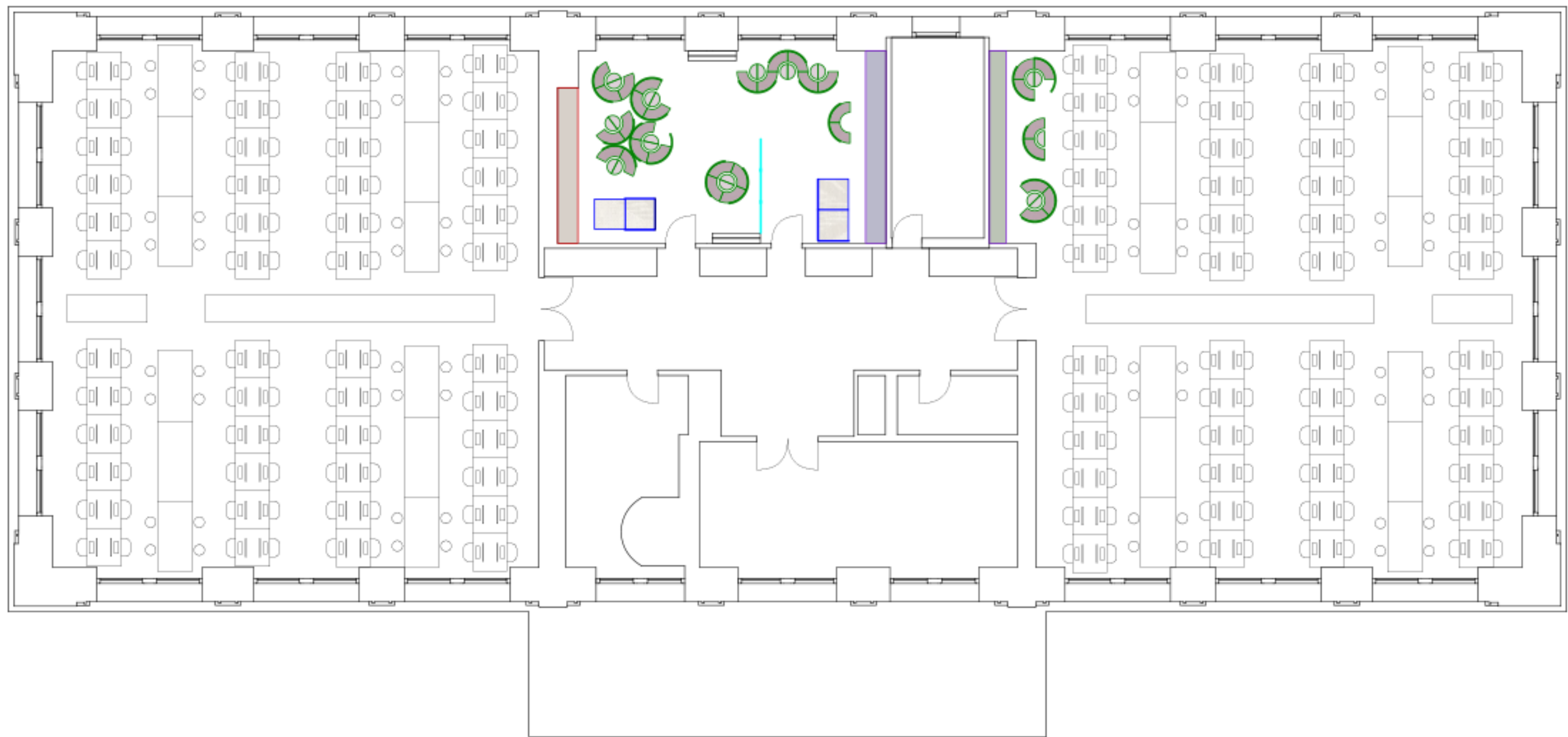
The modularity of these pieces are to enable the most uses out of them along for the most of the students that would need them, especially in times of need;

"Render" of the Foldy Chair being in use on the 7th floor of Avery building

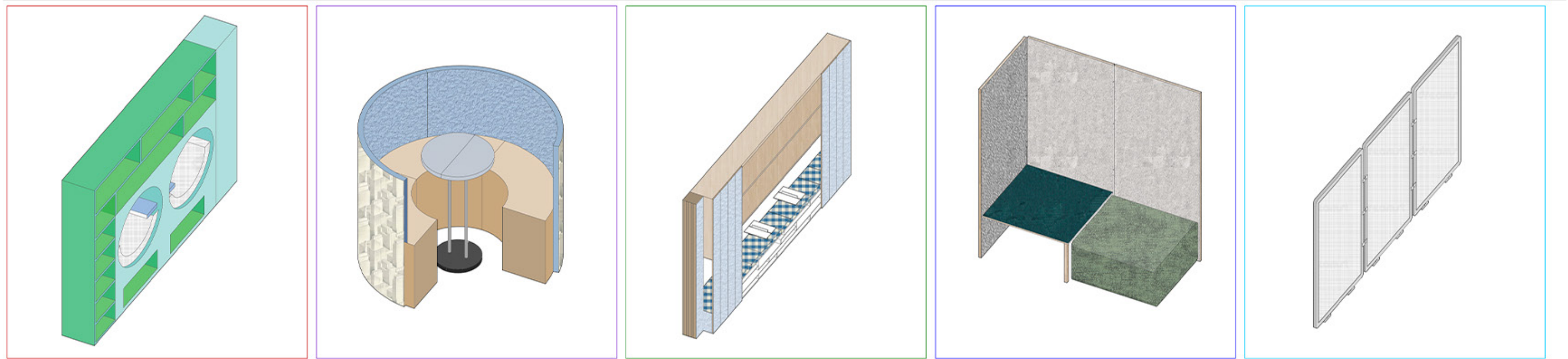
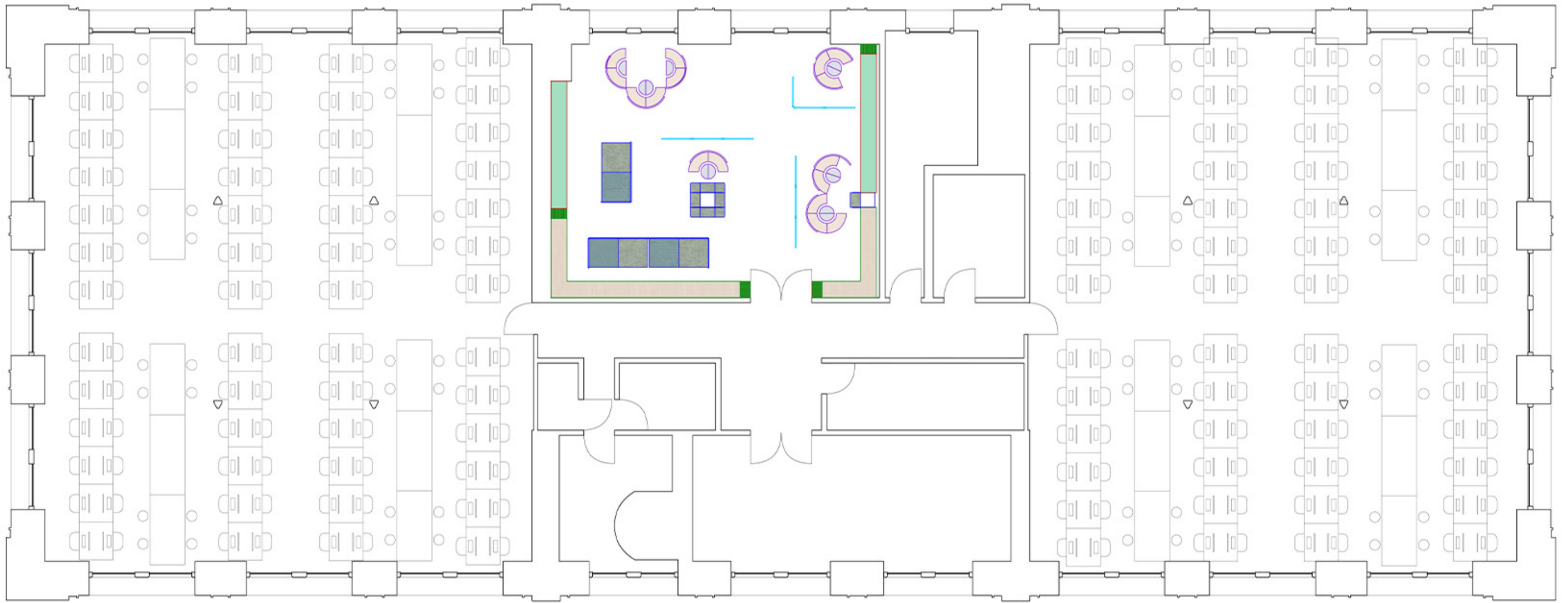




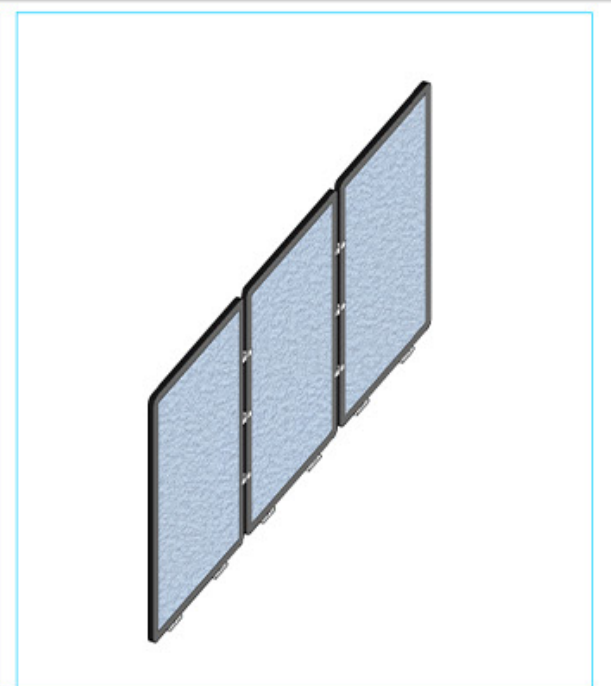
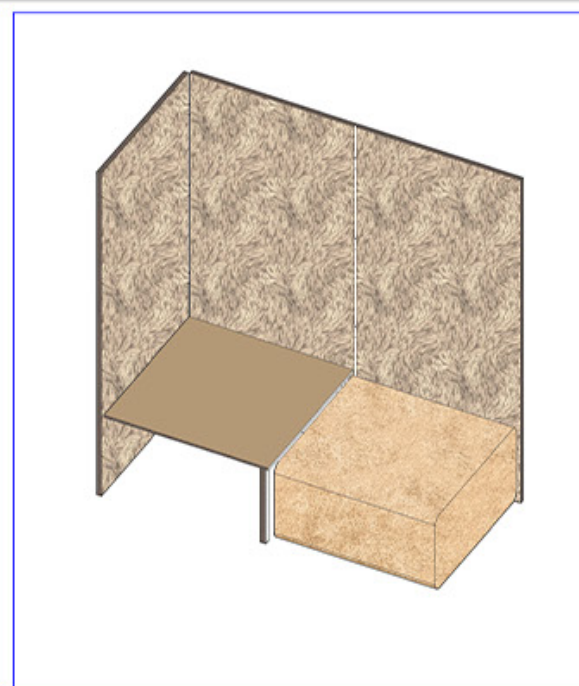
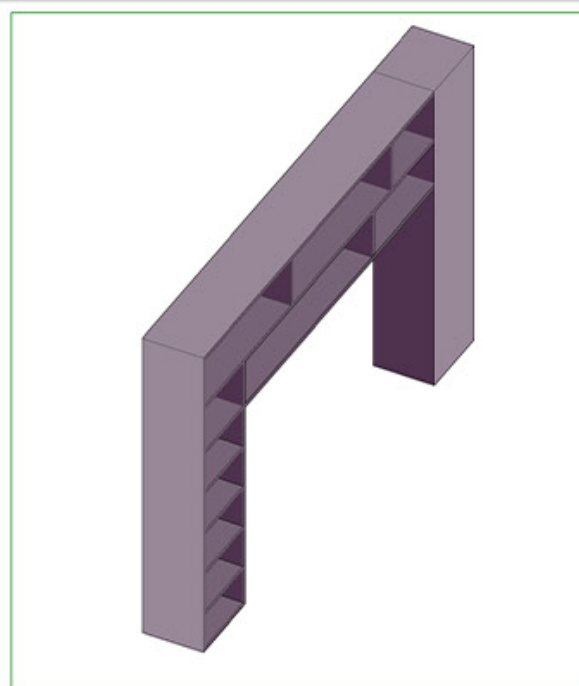
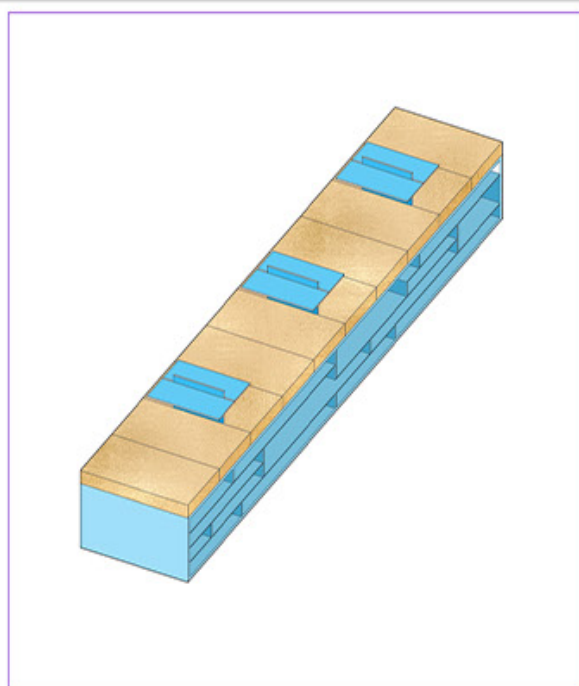
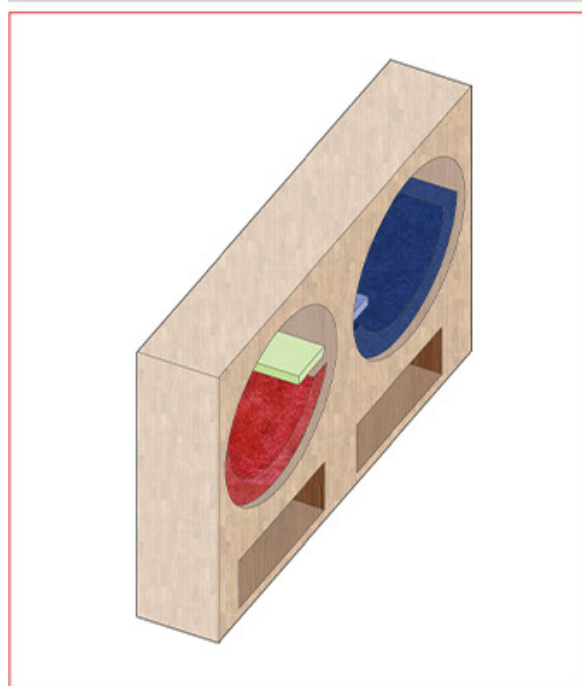
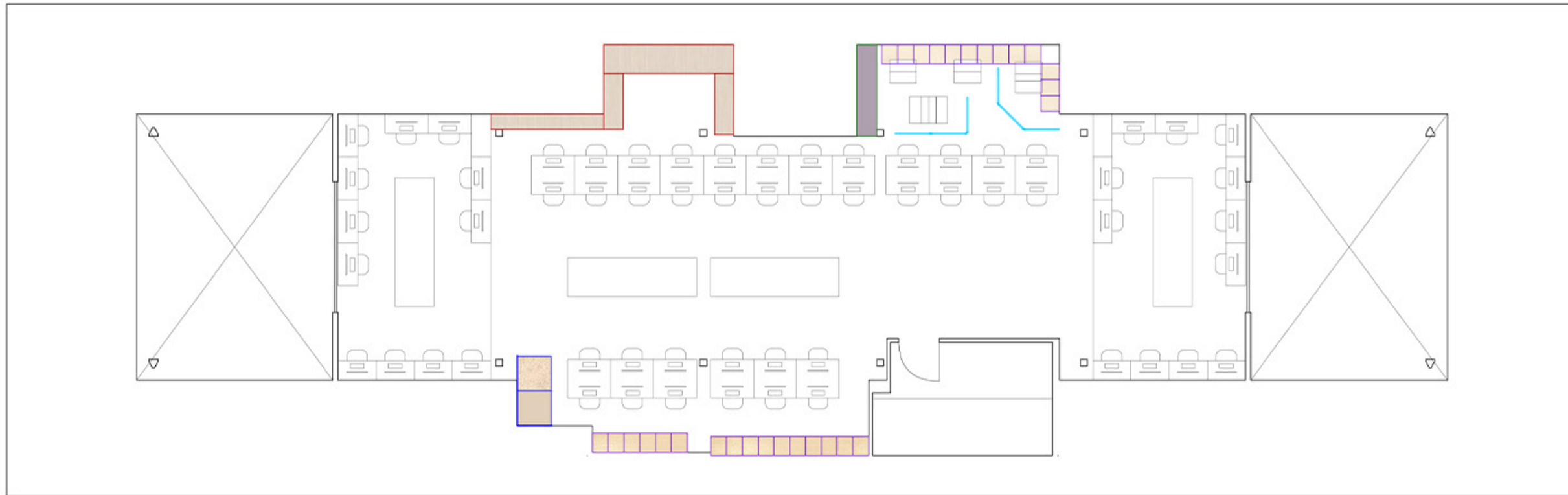
4th Floor Plan with Furniture Type



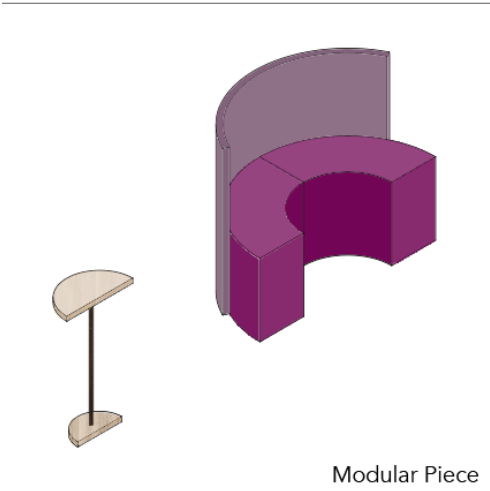
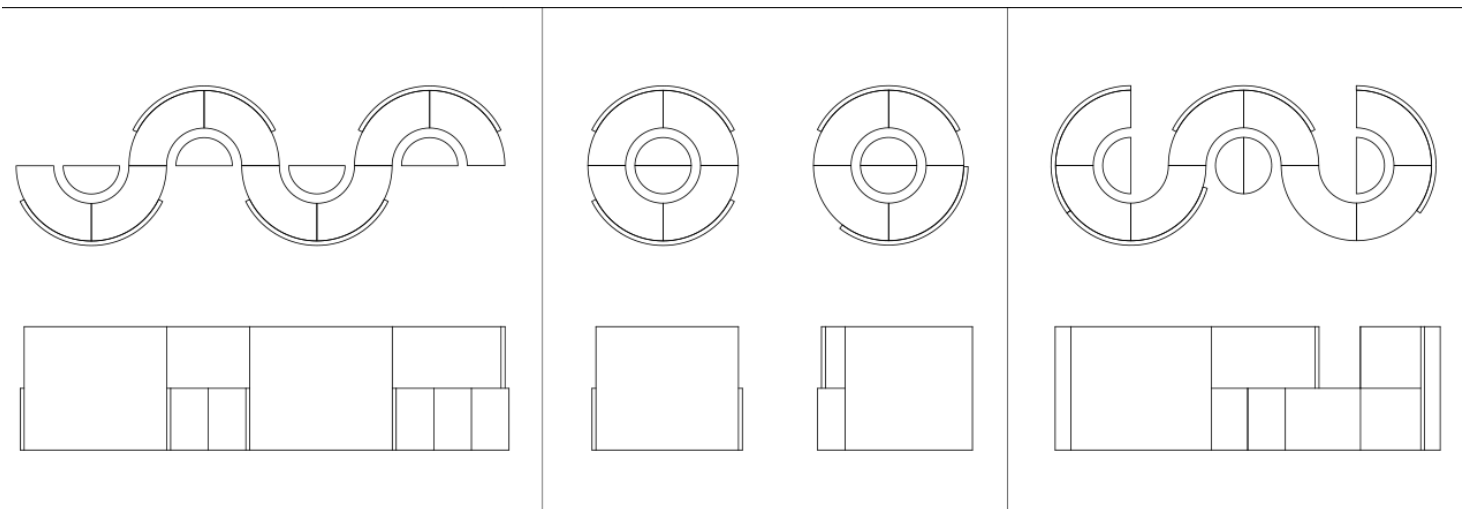
5th Floor Plan with Furniture Type



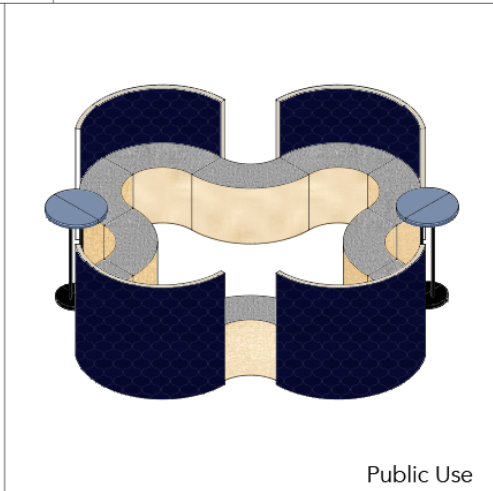
6th Floor Plan with Furniture Type



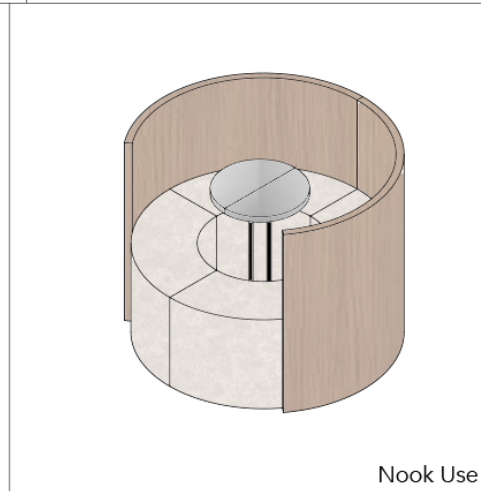
7th Floor Plan with Furniture Type



Modular Piece

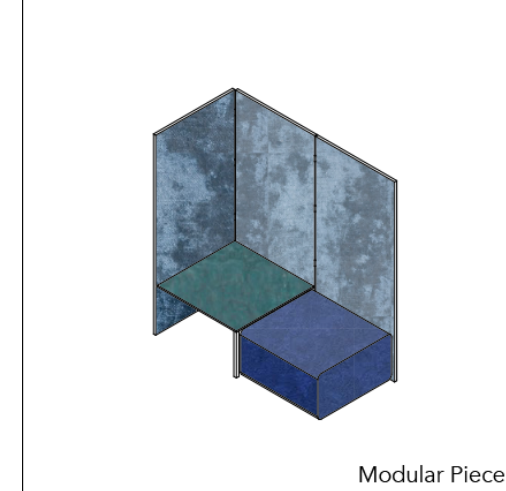
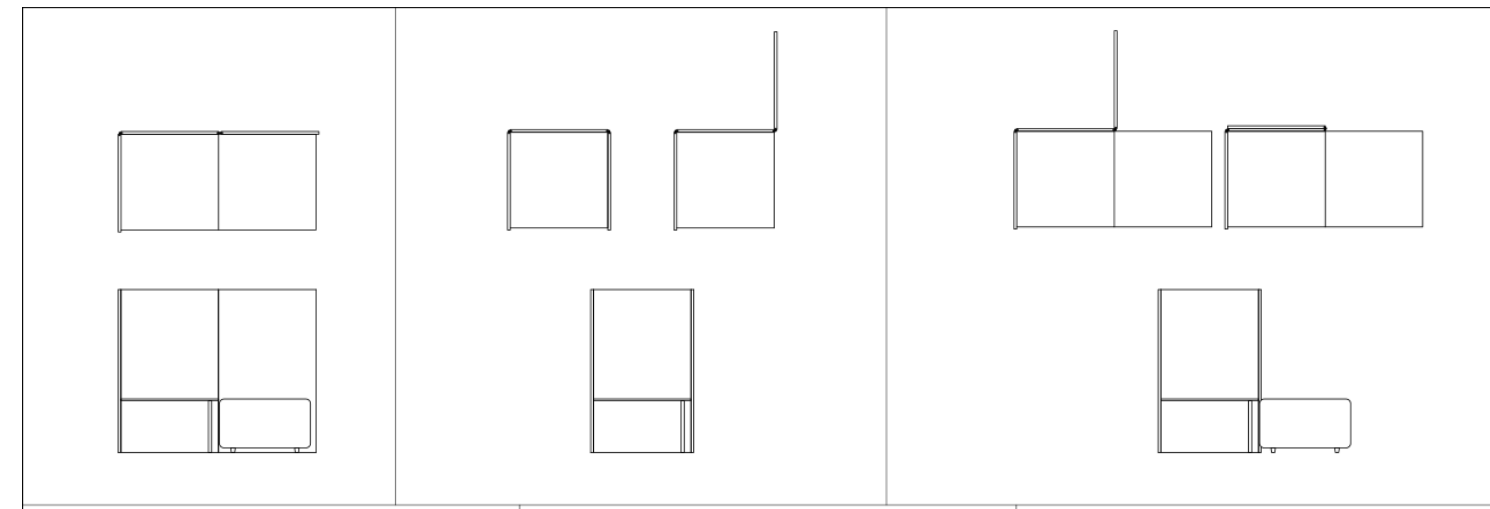


Public Use

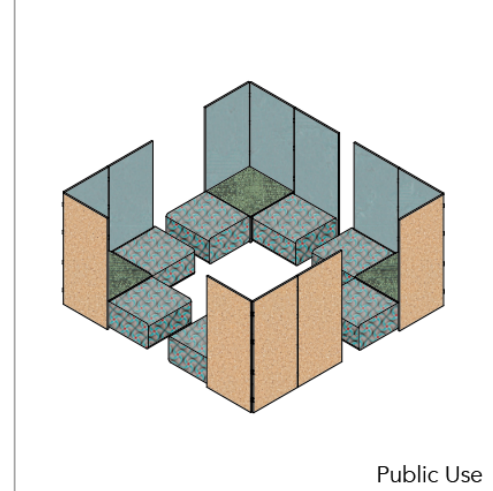


Nook Use

Wiggly Couch Uses, Plan and Elevations



Modular Piece

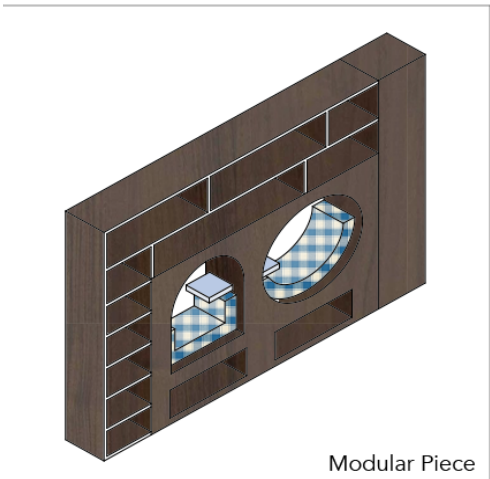


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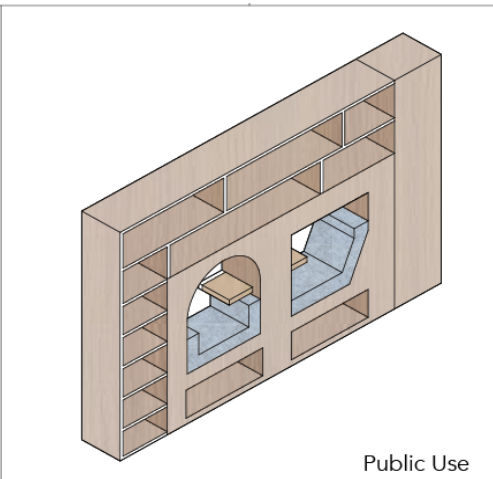


Nook Use

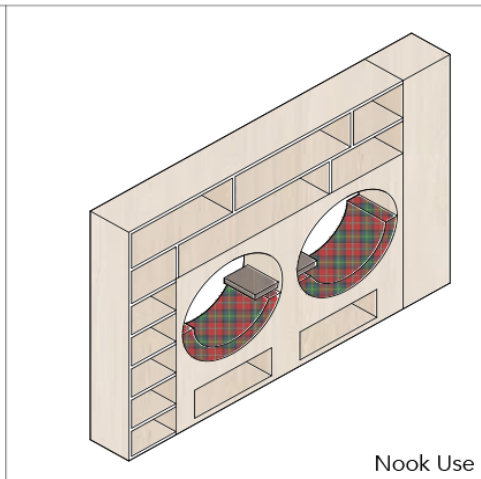
Foldy Chair Uses, Plan and Elevations



Modular Piece

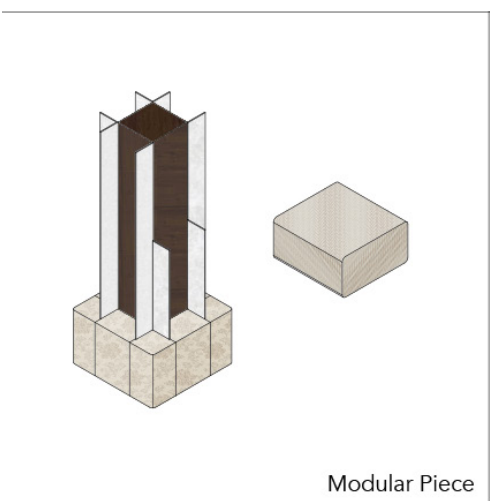


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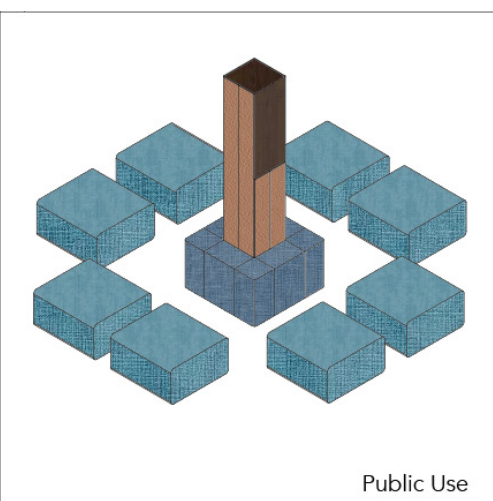


Nook Use

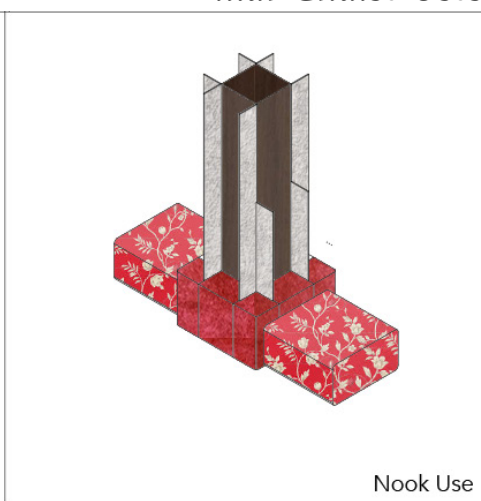
Storage Cocoon Uses



Modular Piece

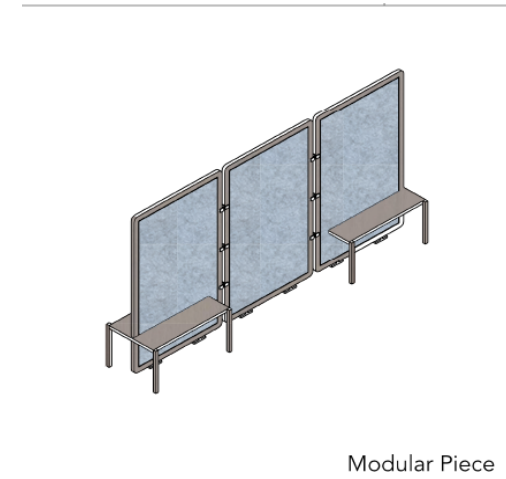


Public Use

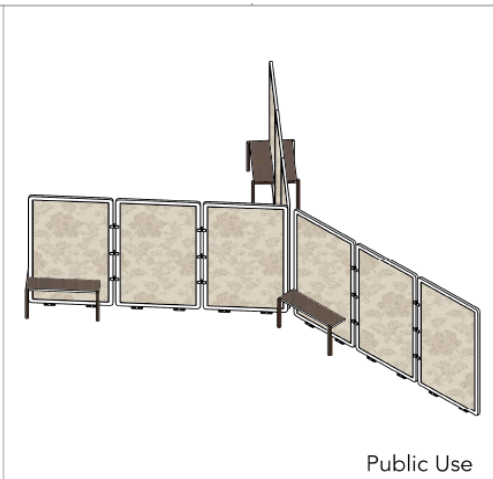


Nook Use

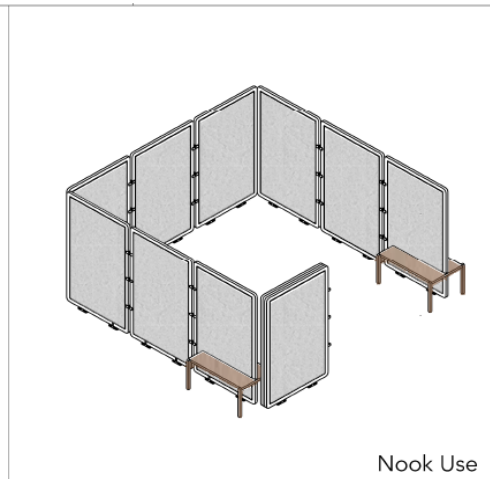
Pillar Chaise Uses



Modular Piece

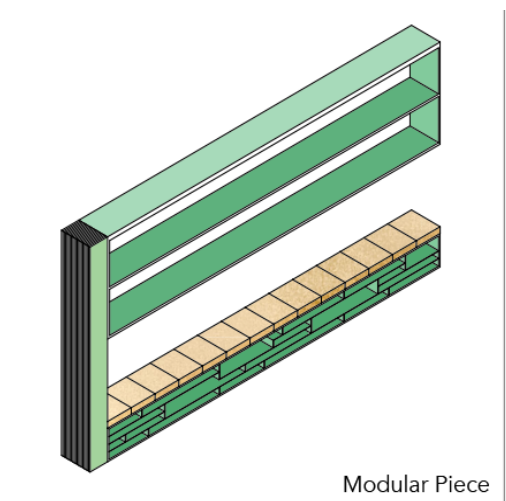


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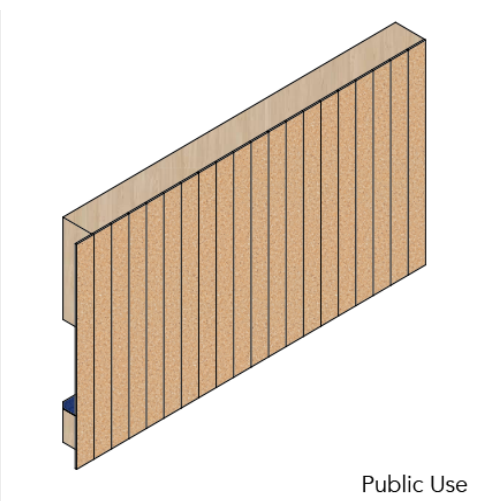


Nook Use

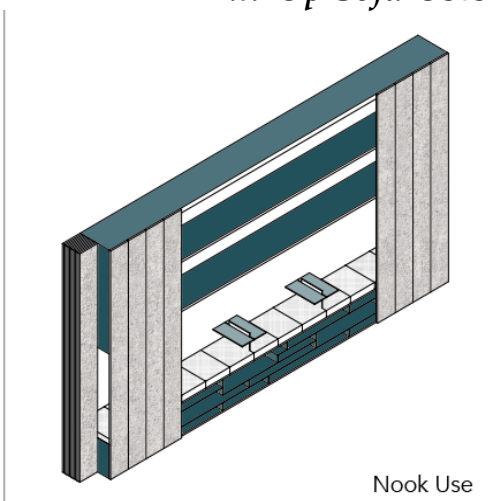
Pin-Up Board Uses



Modular Piece



Public Use



Nook Use

Pin-Up Sofa Uses



*“Render” of the Pin-Up Board
being in use for pin-ups on the
4th floor of Avery building*

*“Render” of the Pillar Chaise,
Pin-Up Sofa and Storage Co-
coon being in use on the 6th
floor of Avery building*



“Render” of the Foldy Chair being in use in multiple ways on the 4th floor of Avery building



*“Render” of the Wiggle Couch
and Pin-Up Sofa on the 5th
floor of Avery building for a
pin-up*

“Render” of the Foldy Chair a on the 7th floor of Avery building in a different way as previously shown



“Render” of the Wiggly Couch and Foldy Chair on the 3rd floor mezzanine of Avery building

4. Surfing the Attention Systems

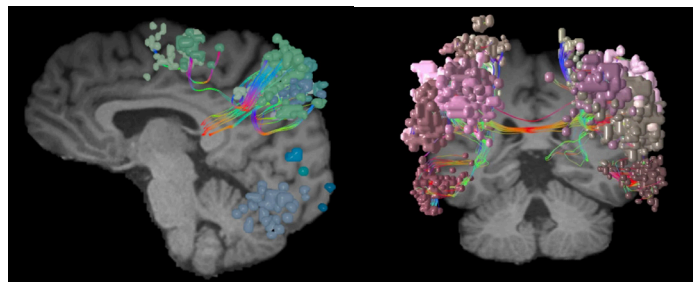
Semester: Spring 2025 Elective

Instructors: Lindy Roy

Class: Nervous Systems

Attention is a core component of how we interact with the world and make sense of it. But attention is not a singular, simple function—it is a complex mental process supported by intricate brain systems and influenced by a wide range of internal and external factors. Understanding how attention works starts with exploring of the brain's two main processing systems—top-down and bottom-up processing—which determine how we perceive and interpret stimuli around us. Then, we examine the four different types of attention that help us engage with our environment in diverse ways. Finally, we're exploring how various factors can either strengthen or weaken our attentional abilities.

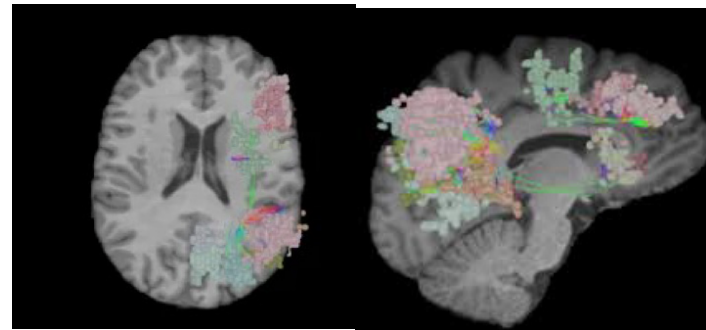
The two main types of processing systems are: top-down and bottom-up processing. Top-down processing is a cognitive approach allowing us to interpret sensory information by relying on our prior knowledge, experiences, expectations, and context. In this system, the brain starts with what it already knows and uses that knowledge to understand or predict what is being perceived. While this method helps us interpret ambiguous or incomplete information efficiently, it can sometimes lead to errors influenced by context or assumptions (wrong conclusions when without enough information, wrongfully interpreted illusions). This process is regulated by the Dorsal Attention Network (DAN), network that controls voluntary attention, supports spatial attention and enhances the processing of relevant sensory input. It is bilateral in terms of brain activity, using both brain hemispheres.



Dorsal Attention Network

Bottom-up processing, in contrast, is a cognitive process that involves interpreting raw sensory input without relying on prior knowledge or experience. Here, the brain starts with the actual stimulus and gradually builds a complete perception from the basic features. This approach tends to be slower than top-down processing but is often more accurate in unfamiliar situations, where no previous knowledge is available to guide interpretation. This process is controlled by the Ventral Attention Network (VAN), the brain network that supports reorienting atten-

tion to new or salient stimuli and can act as a circuit-breaker for ongoing attention. This network helps detect changes in our surroundings and responds to external stimuli. It is located only on the right lateral side of the brain.



Ventral Attention Network

On an other hand, humans have four different types of attention: Sustained, Selective, Alternating and Divided.

Sustained Attention, which is also called "vigilance", is the ability to maintain and sustain focus over a long period of time despite distraction. It is critical in most daily activities. Sustained attention is essential for learning, working, and everyday activities that require ongoing focus. When this ability is impaired, people may become easily distracted, miss important information, or struggle to complete tasks. This type of attention declines over time due to its application to tasks that are low stimulation or high demand

Selective Attention is the brains ability to focus on one specific stimuli to the ignorance of all other surrounding ones. It helps filter out the distractions and irrelevant information from what matters in the moment. Selective attention allows you to stay focused in environments full of competing stimuli, such as driving while ignoring roadside ads or reading a book while others are talking nearby.

Alternating attention is the brain's cognitive ability to shift focus back and forth between different tasks or mental activities that require different cognitive demands. It allows you to mentally "switch gears" – disengaging from one task, refocusing, and then re-engaging with another – without losing efficiency or accuracy. Alternating attention requires high mental effort, especially if the tasks are complex or vastly different.

Divided attention is the cognitive ability to focus on and process multiple tasks or sources of information at the same

time. It involves distributing your mental resources across more than one activity, allowing you to perform them simultaneously – though often with reduced efficiency or accuracy compared to focusing on a single task.

Various factors both internal and external can influence attention. Among the external factors, certain characteristics of a stimulus can significantly affect how much attention it captures. These include the size, intensity, color, and movement of the stimulus (and these do not always have to be visual cues)- those characteristic can make it more noticeable and likely to draw focus. A smaller stimulus is generally less likely to attract attention compared to a larger one. For instance, you're far more likely to be distracted by a yeti than by a mouse – the larger size naturally draws more focus. The same principle applies to other types of external stimuli: bright, flashy colors tend to capture attention more than soft pastel tones; a Formula 1 car will likely stand out more than a quiet hybrid vehicle; and a thunderstorm, with its dramatic sights and sounds, is far more attention-grabbing than a light drizzle.

Among the internal factors that influence attention, the state of our body and mind plays a vital role in how we process and respond to stimuli. Key factors include interest, mood, motivation, and emotional state. When we are genuinely interested in a task, it becomes much easier to stay focused and engaged. A positive mood or emotional state can also make the task more enjoyable and help us stay committed to our goals. In contrast, low motivation or negative emotions can make it difficult to concentrate, even on tasks we know as important. Our motives—the reasons behind why we want to focus—also significantly impact attention. When we are motivated, our physiological responses (such as alertness and energy) are enhanced, making it easier to direct and maintain focus. Likewise, our emotional state can either support or hinder our attention in ways similar to motivation.

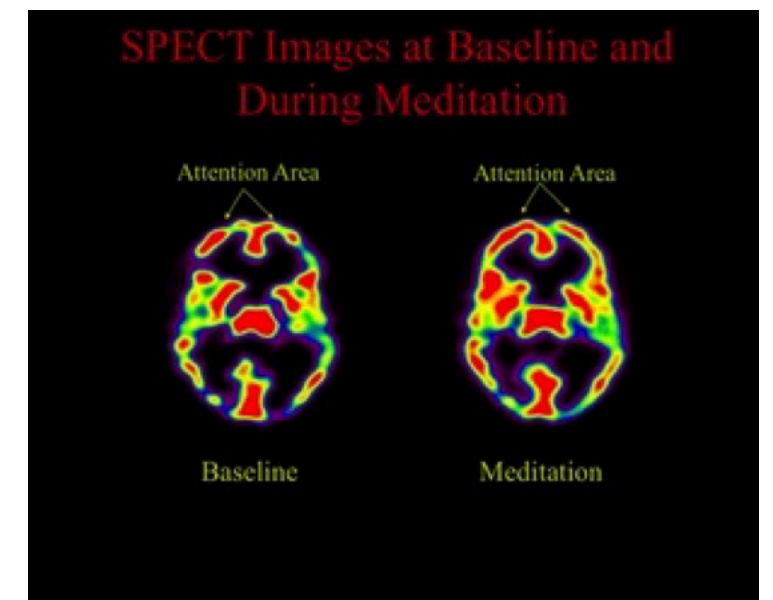
After exploring how the brain manages attention and the various factors that influence it – from our emotions to something as stimulating as a Formula 1 car – we now turn our focus to the activities, exercises, and environments that can help enhance attention or at least support and improve our thinking processes.

Mindfulness and Meditation

Meditation is a technique that typically involves focused attention on a particular object, such as the breath, or open awareness of thoughts and sensations. Mindfulness is the practice of

being fully present and aware of the moment without judgment and can be enhanced by the practice of meditation. These two practices train the mind to recognize the wandering of the mind and pull back to the present moment. That can be a fundamental skill for improving attention.

One of the primary ways mindfulness and meditation improve attention is by enhancing sustained attention. Through repeated practice, individuals learn to maintain focus on one task or stimulus for extended periods without becoming mentally fatigued. This has also been effective in the practice of selective attention by better filtering of background noise and visual clutter. Furthermore, scientific research and studies have shown that regular meditation can lead to changes in brain structure associated with attention, such as the prefrontal cortex (responsible for executive functions) and the anterior cingulate cortex (involved in error detection and focus). These structural and functional enhancements contribute to more efficient attention control and sensory processing.



Difference of blood flow before (left) and after meditation (right)

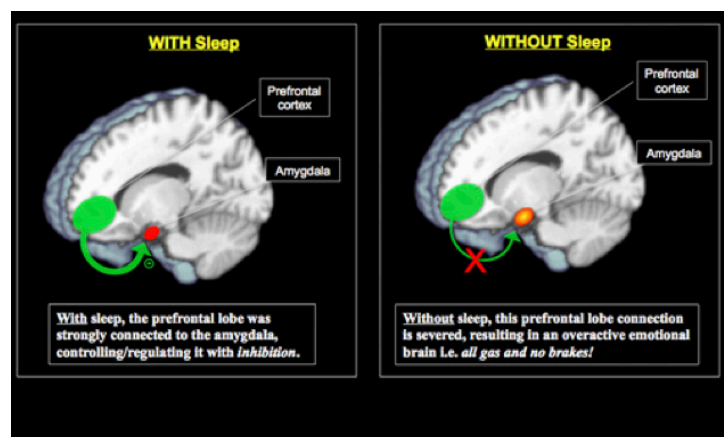
Sleep and Diet

Mindfulness and meditation are active things enhancing attention. However, simple things such as sleep and food can also be determinant for attention.

Sleep is an essential tool for optimal brain function, especially in terms of cognitive processes linked to attention, mem

ory and decisions. During sleep, the brain helps consolidates information, clears out waste and restores our mental energy. Our ability to sustain long term attention, filter out distractions and quickly responds to stimuli is significantly reduced with lack of sleep. This is due to a drop in activity in the prefrontal cortex (area for high level thinking and attentional control).

Our brain needs sleep, but it also needs proper fueling in the form of food. The nutritional content of our diet directly affects brain chemistry, energy levels, and overall mental performance, including attention. A balanced diet that included good levels of complex carbohydrates, healthy fats, lean proteins, and nutrients such as omega-3 fatty acids, B vitamins, iron, and zinc supports steady brain function and enhances focus. Hydration is also critical—dehydration can impair attention, since it reduces alertness and increases fatigue, especially in children and older adults.



Sleep Impacts on Pre-Frontal Cortex and Amygdala

Sports

Along with diet, sleep, mindfulness and meditation, practicing sports has a certain impact on attention and the brain. Engaging in sports increases blood flow and oxygen to the brain, which overall enhances brain function. The improvement of blood flow and oxygen can enable the growth of new brain cells while strengthening the existing bonds between existing ones. In addition to better blood flow and better oxygen, the brain releases neurotransmitters such as dopamine, serotonin and norepinephrine which directly influences mood, focus and motivation. Sports naturally train attention by requiring participants to stay focused, respond quickly, and shift attention as needed. These activities challenge and improve different types of attention, including sustained attention, selective attention, and alternating attention. We highlight the potential of two type of physical activity on the brain: walking and surfing.

When it comes to walking, it does as previously stated, it brings blood flow to the brain (brisk paced probably being more efficient). It can also enhance neuroplasticity, making the brain more adaptable and responsive. In addition to helping with blood flow and neuroplasticity, a walk, even a short one and especially outdoors, can lower stress hormones, reduce mental fatigue and improve a person's mood. Additionally, walking while thinking or

navigating through an environment engages alternating attention, while maintaining pace and direction requires sustained attention. It trains the brain to stay alert without being overloaded. Allowing the mind to wander during a relaxed walk can lead to mental clarity and problem-solving. After such walks, people often return to tasks with renewed focus and insight.



Activities like surfing offer a unique and powerful way to sharpen and sustain attention. Surfing as a sport requires to be completely in the moment, it's a space where mind-wandering is not commonplace. Surfing requires to be constantly in the present moment, looking out for changing wave patterns, having quick reaction times and anticipate the right time for certain movements. Moreover, it requires q specific attention for balance. Surfing activates several sensory systems at once: visual by watching the waves, tactile by feeling the board under you and the water around you, vestibular in your balance and motion, and auditory with sound of the ocean.

The unpredictability of the ocean and the multi-sensory experience uses multiple types of attention. The multi-sensory experience requires the processing of multiple streams of information, engaging divided attention. The requirement for the surfer to constantly shift attention from one element to another makes it an excellent training ground for alternating attention.

The rhythmic sound of the waves, fresh air, and connection to nature create a calming sensory environment that reduces anxiety and clears the mind. This improved emotional state supports better attention and decreases mental distractions caused by stress or overstimulation. In addition to the calming effects of nature, surfing can be described as a form of active meditation due to the fact that surfing forces attention to the present through action.

In the end, we understand that attention is a multifaceted, dynamic process thats shapes how a person will perceive, interact with, respond to the world around them. The attentional network is governed by complex brain systems such as top-down

and bottom up processing and has different types of attentional focus, each one playing a vital role in our daily functioning. These processes and our ability to maintain and shift attention can be influenced by a combination of factors, both external stimuli and internal states (motivation, mood, needs). But, at the end of the day, attention is not fixed. We can strengthen and refined attention through intentional practices like mindfulness, meditation, proper nutrition and sleep and physical activities such as walking or even surfing. All these tools can help us optimize our brain function, regulate our emotional states, even train multiple aspects of attention. This demonstrates that with conscious effort along with healthy habits can enhance our cognition.Ultimately, understanding and nurturing our attention allows us to better navigate the demands of modern life with focus, flexibility, and resilience and a little bit of peace of mind.

5. Harlem Heart

Semester: Fall 2023 Core III

Instructors: Christopher Leong

Subject: In-Between Spaces

Site: 454 W 128th Street, Harlem, NYC

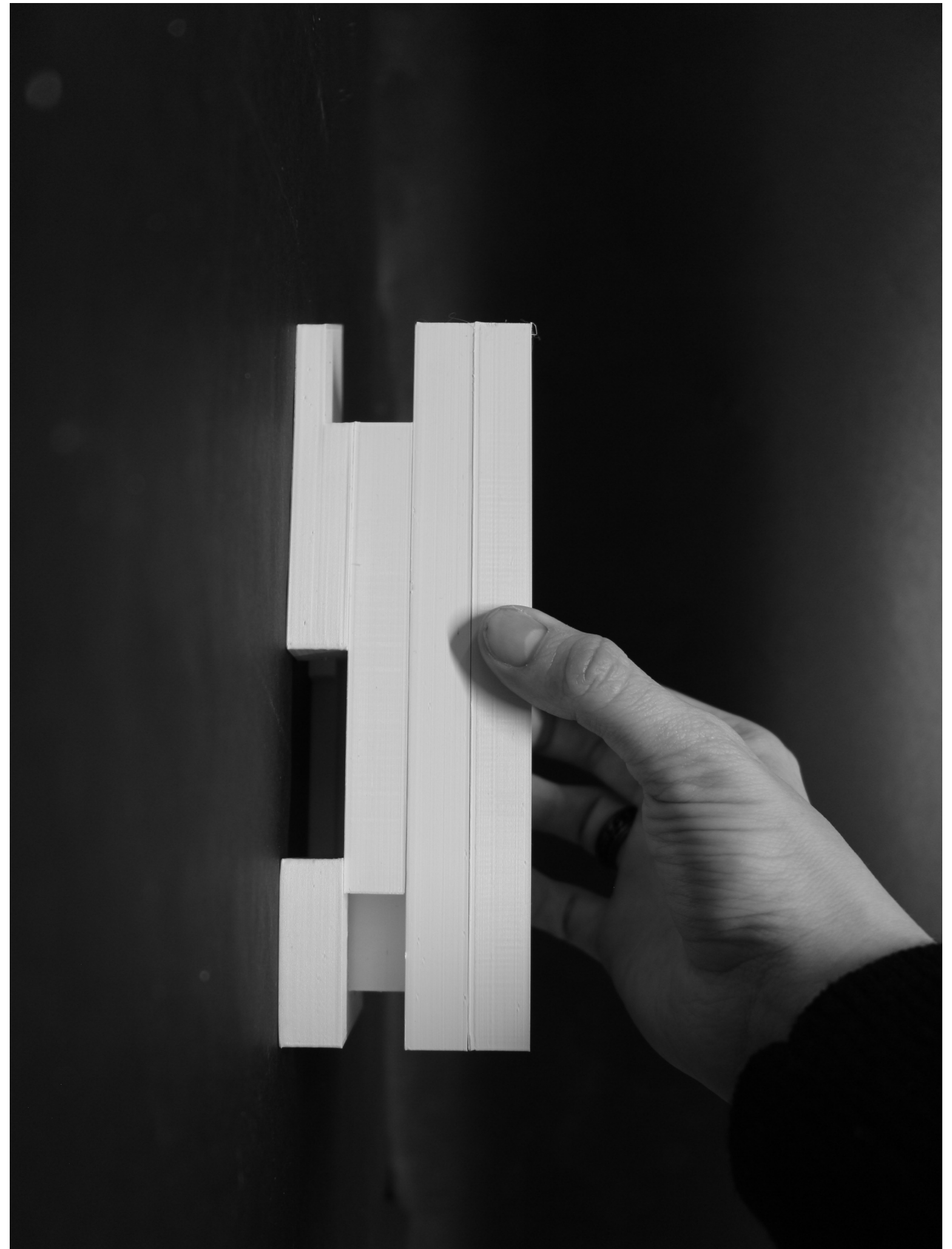
Done in partnership with HANYIN ZHANG

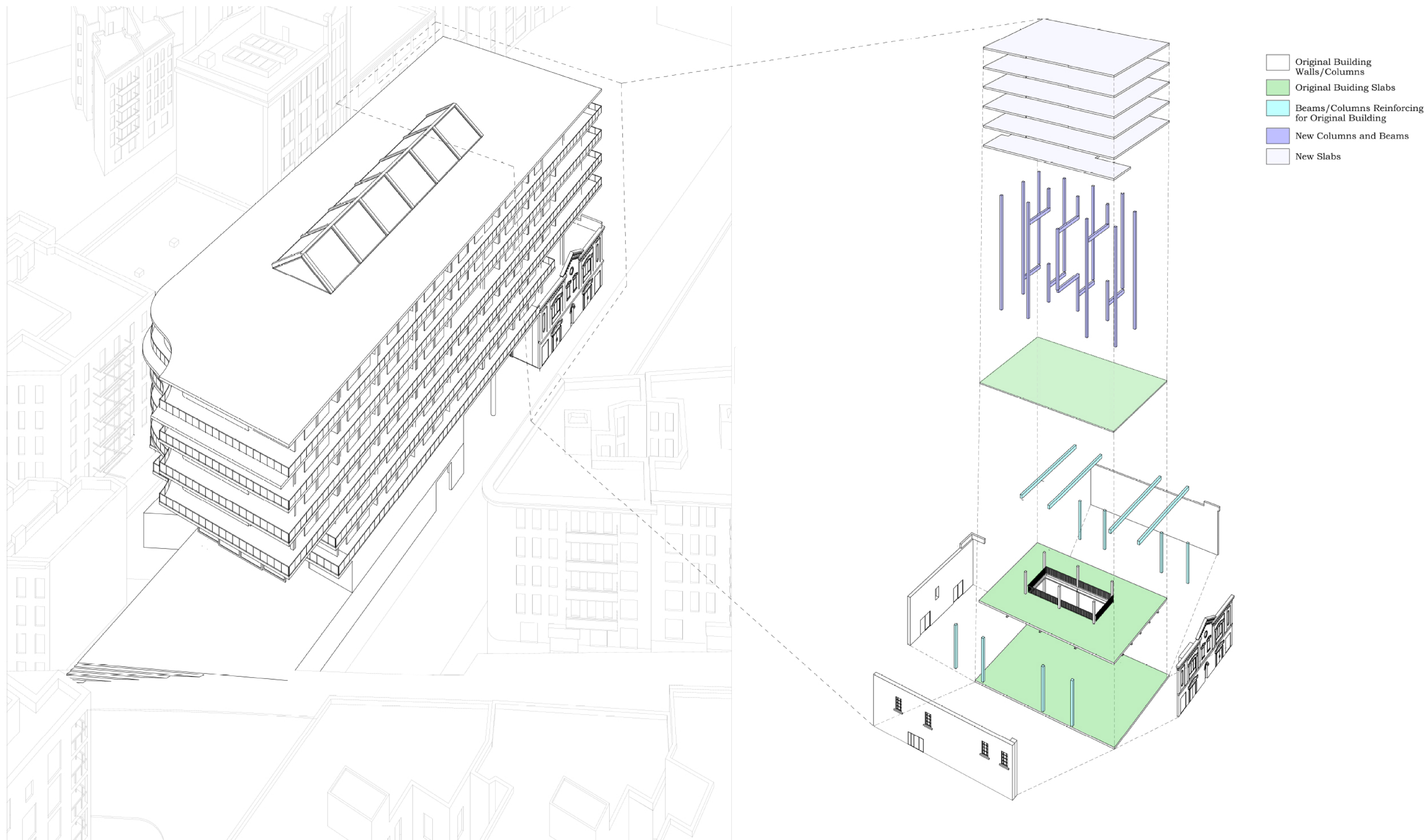
CONCEPT

Old and young carrying for each other

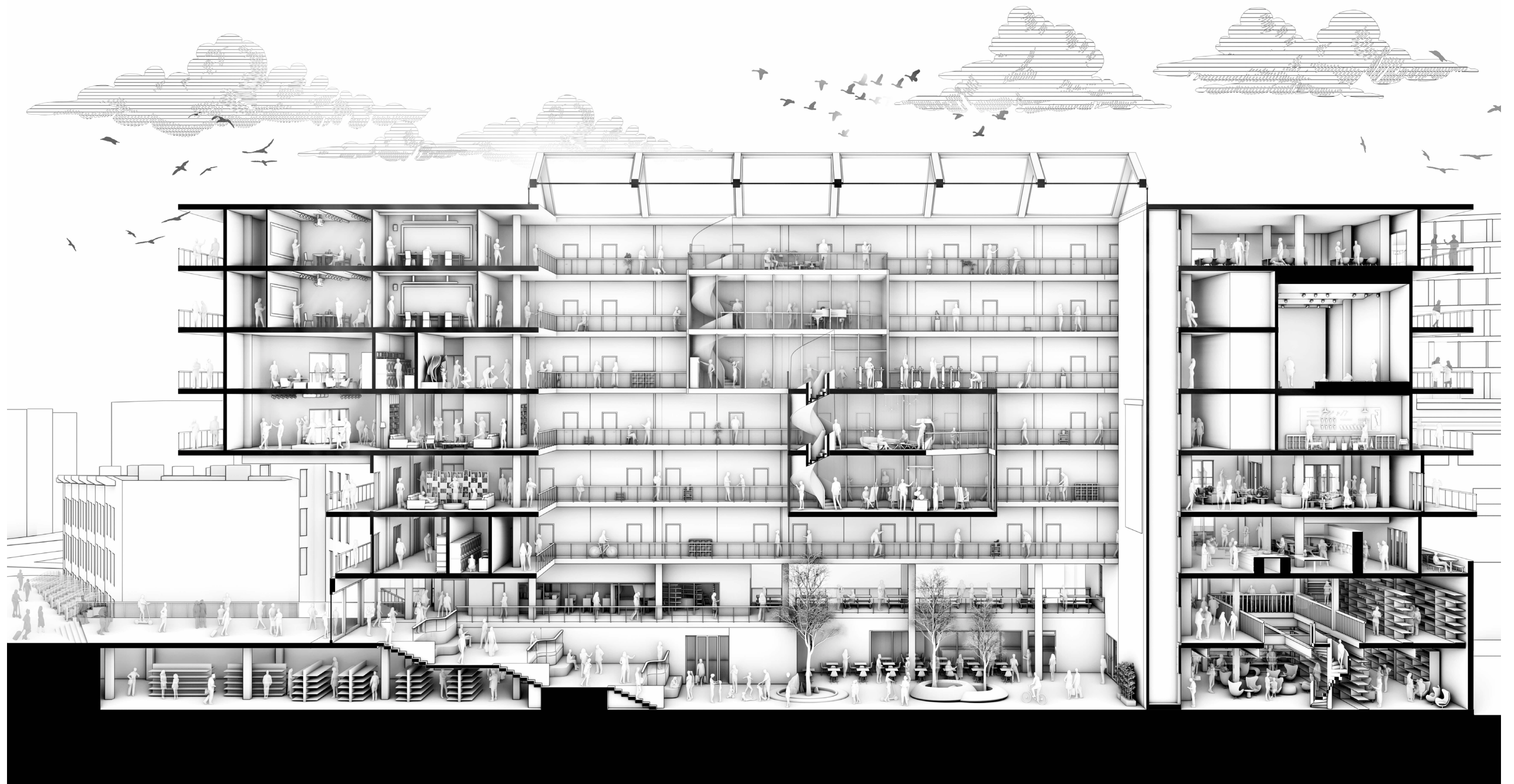
This project is located on 128th Street, in Harlem, NYC. It is a housing project that is intended to be intergenerational. It is fitted with studios for all residents and provides ample community space as to cater to all needs and wishes aiming to create a greater sense of community.

The communal space includes a library and a quiet reading room, a gym, a group of study/quiet rooms, a laundry, a home movie theater that is also a multi-purpose room, a super-market, a restaurant and a cafe. And all is centered around a central green.

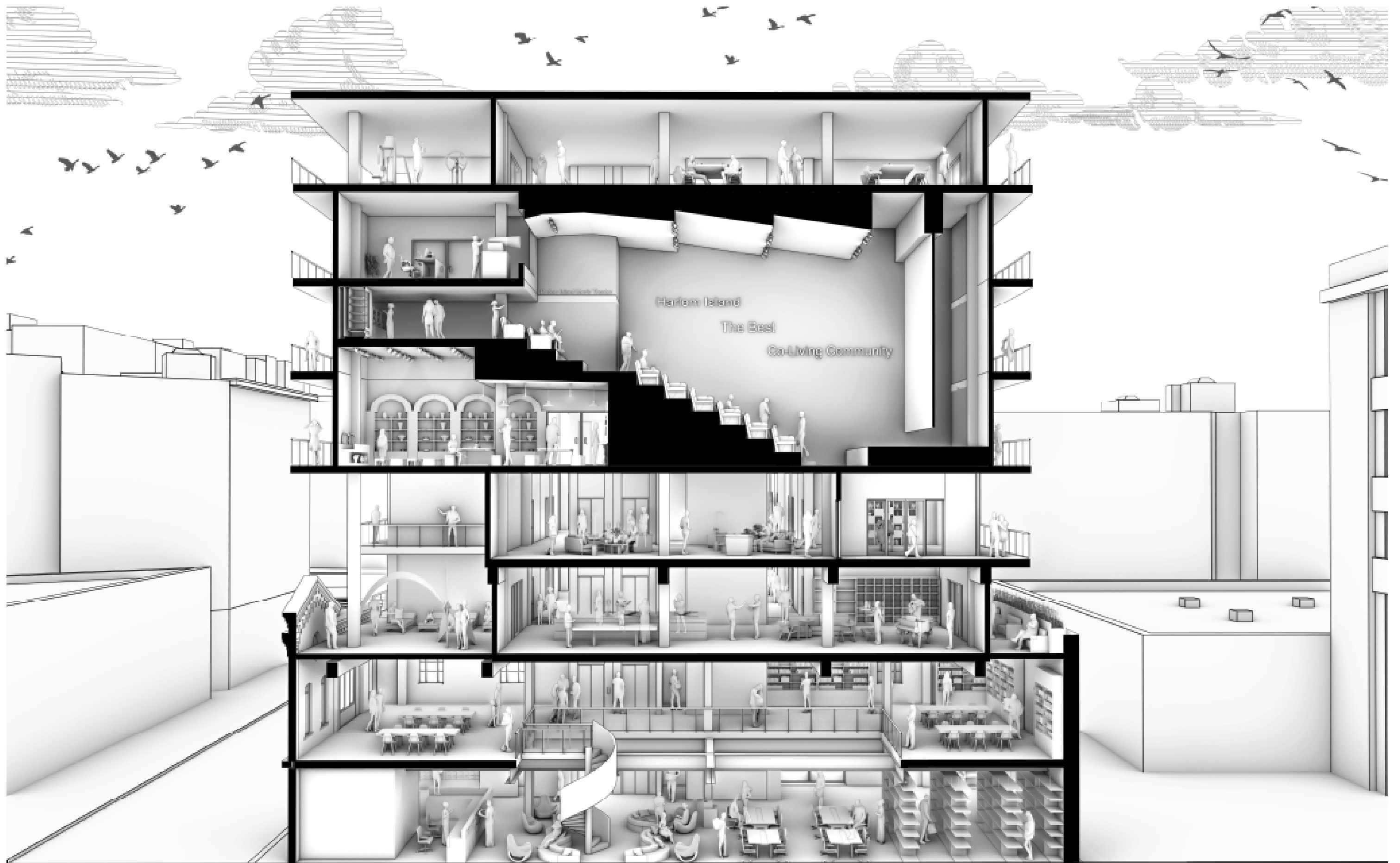




Axon with a Structural Exploded Axon Explaining the Reinforcement of the Existing Building



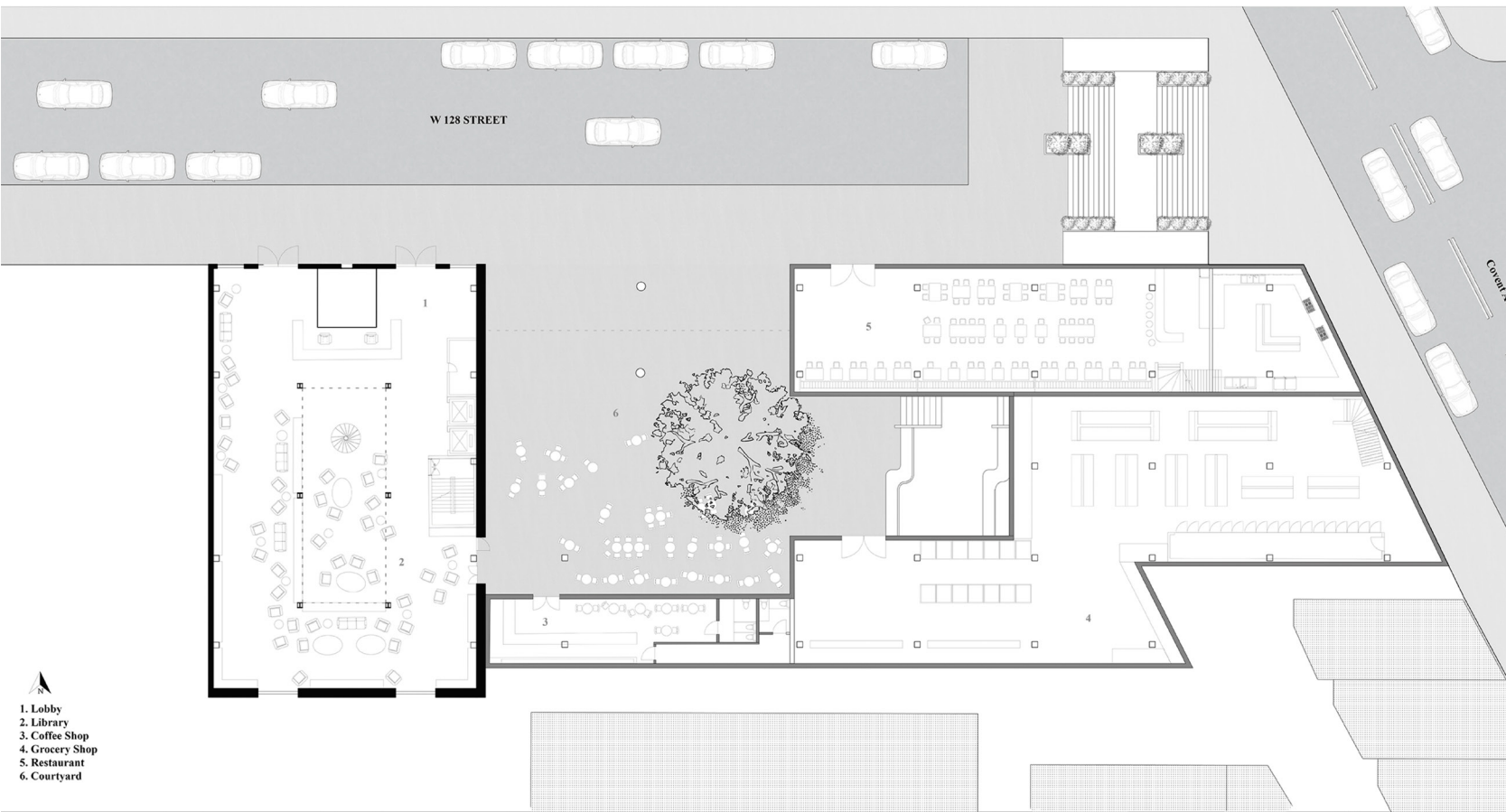
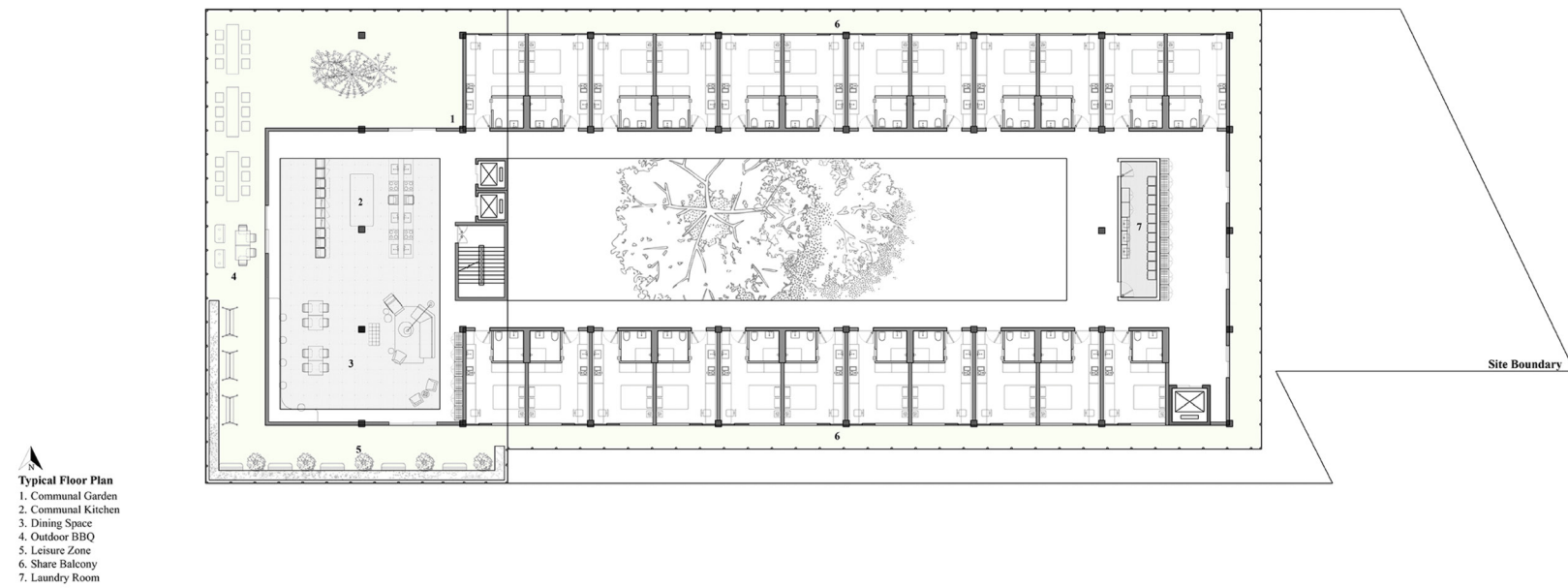
North South Section of the Building



First East West Section Showing the library, kitchens, study rooms and home cinema



Second East West Section showing the Courtyard



Typical Floor Plan (top) and Ground Floor Plan (Bottom)



Kitchen Renders (2 top) and Library Render (Bottom)

6. Campus Memories

Semester: Spring 2023 Core II
Instructors: Mustafa Faruki
Subject: Damage Control
Site: Columbia University Campus + NYC

CONCEPT

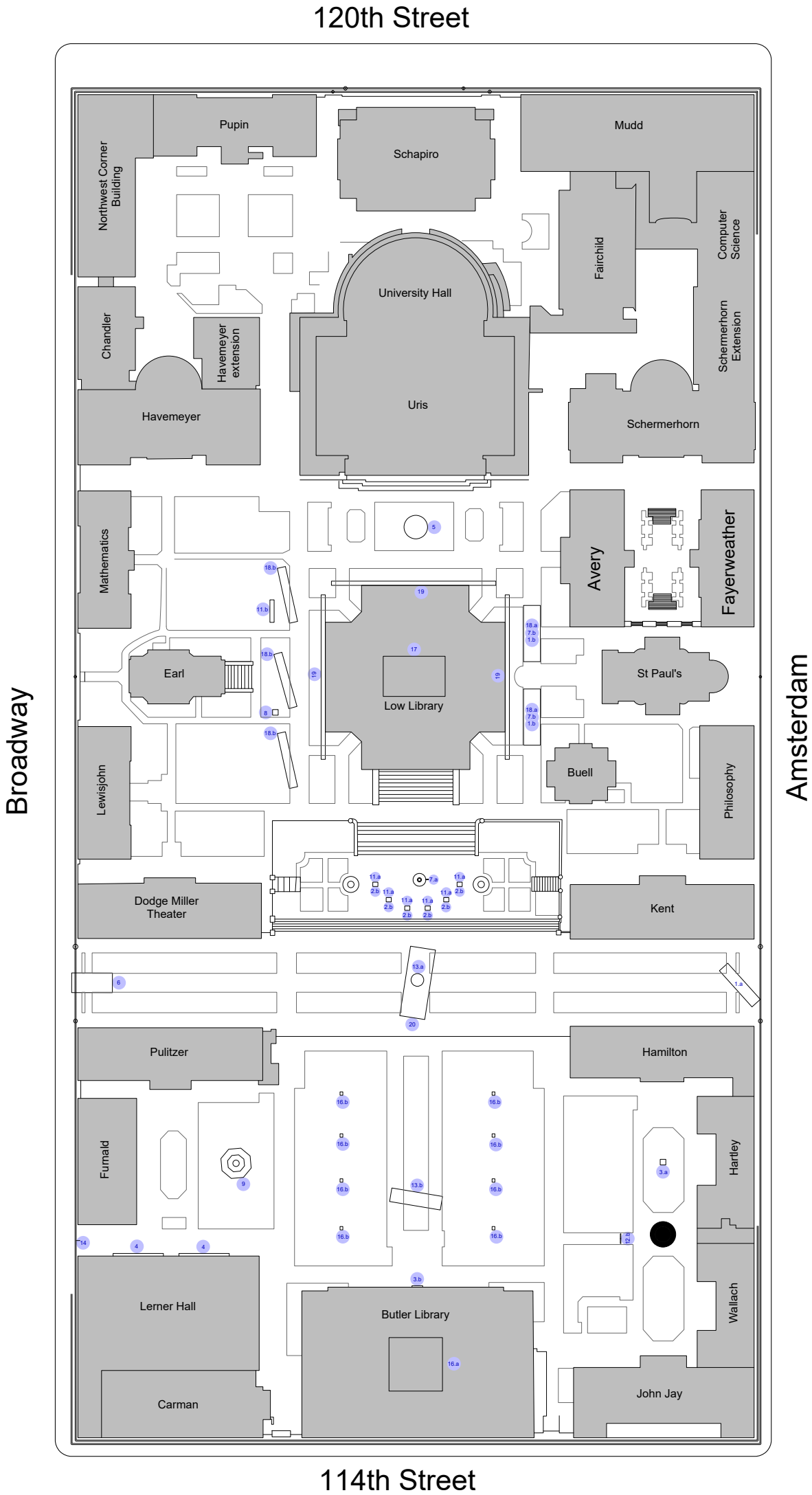
Save our memories for others to remember

How to protect architectural landmarks and memories from rising water was the question at the core of this project. The research focuses on the Aswan Dam in Egypt, the saving of 24 temples (the most famous being Abu Simbel) and the loss of others due to the creation of Lake Nasser.

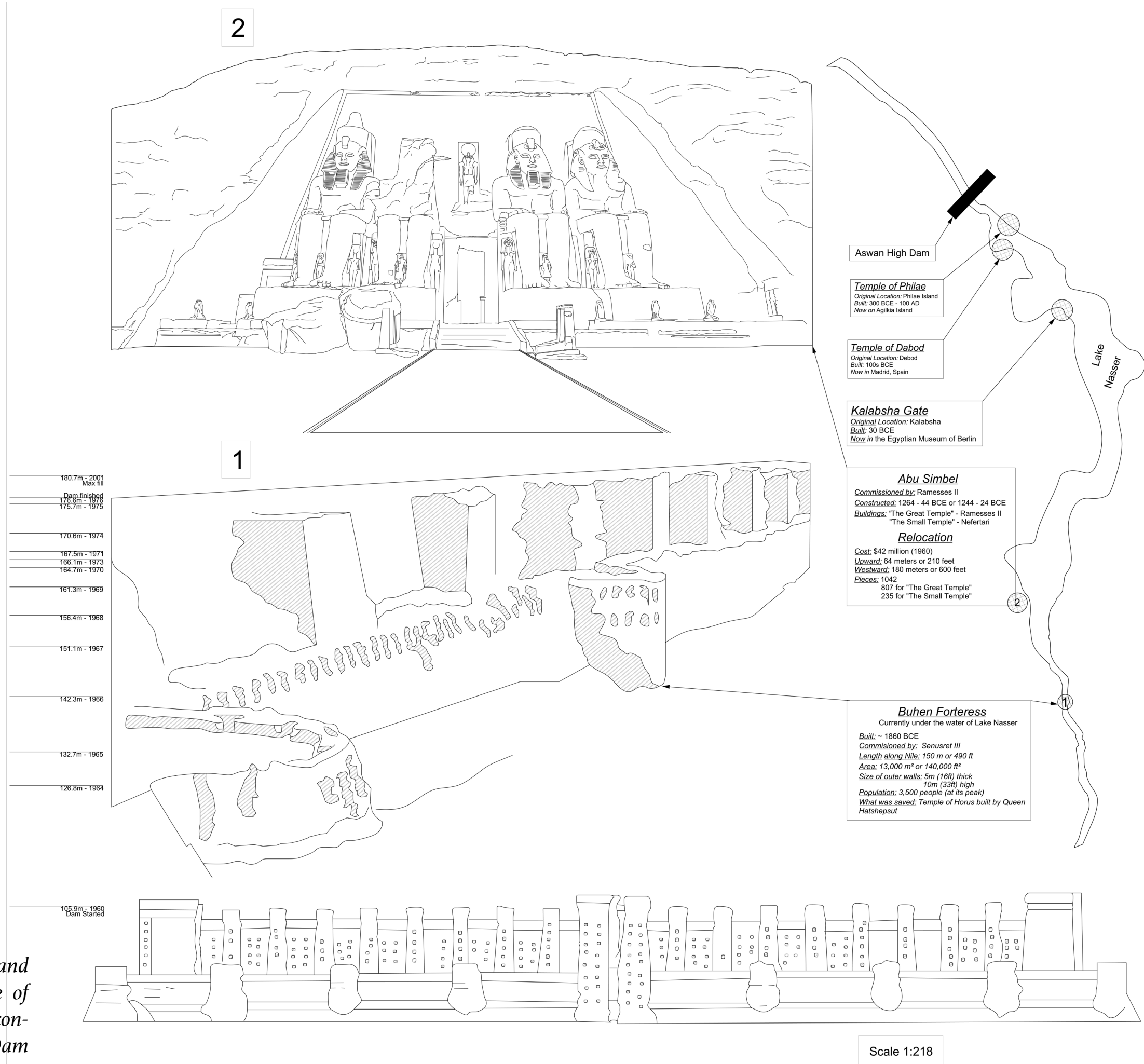
New-York City is an island. Hence, the city could be impacted by rising waters. Consequently, this protect aimed to preserve whole or parts of New York architectural landscapes by moving them to the Columbia campus as it stands on a hill. In the event of extreme rising water, the Columbia campus would remain an university but would also become a living museum.

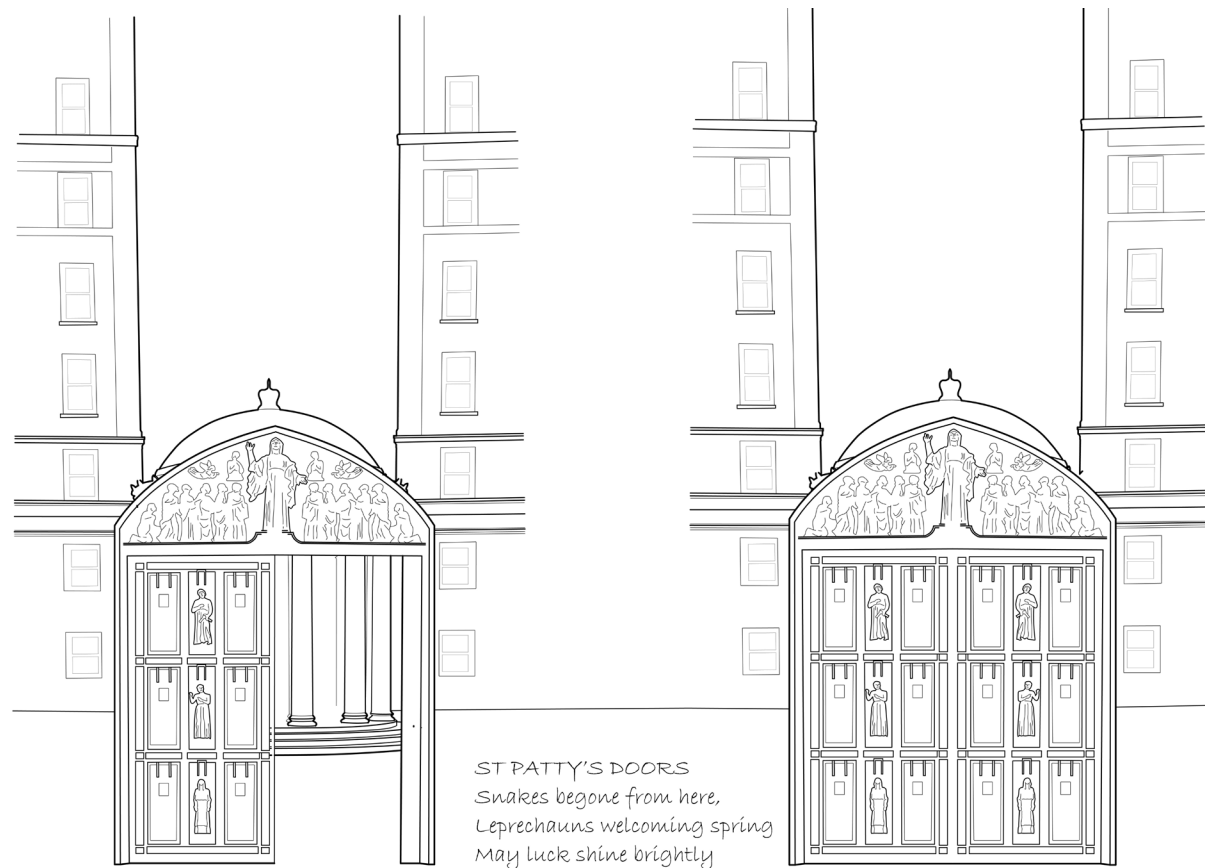
All people have different memories associated with certain spaces, smells, landmarks. Loosing such memories can be sad, devastating and finding a way to keep them alive can be a way of avoiding such pain.

Campus map with the placement of some of the moved NYC pieces



Drawing of the Abu Simbel and Buhan Forteress, and some of the temple moved before the construction of the Answan Dam





ST PATTY'S DOORS
Snakes begone from here,
Leprechauns welcoming spring
May luck shine brightly

Doors of St Patrick's Cathedral Placed on Campus (nb 12b on map)



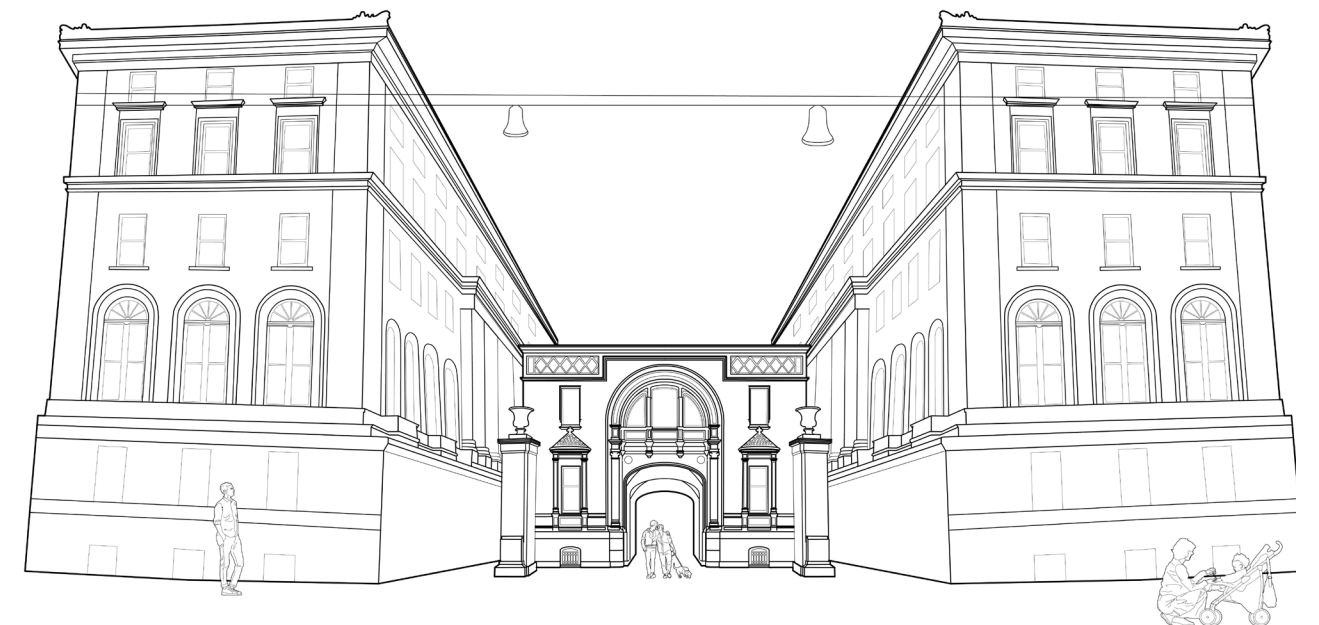
PULITZER FOUNTAIN
Tell me all I need
Knowledge is what I seeked
The clock was ticking

Pulitzer Fountain Placed in Front of Pulitzer Hall (nb 9 on map)



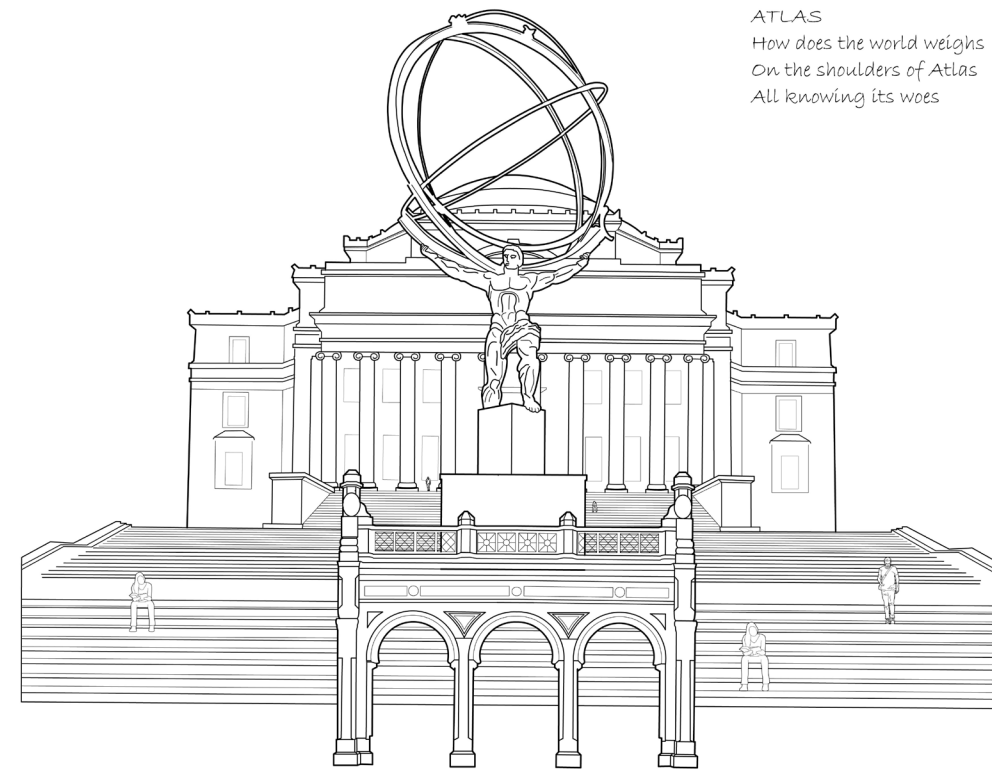
WASHINGTON
Revolt upon us be
Sail across the Delaware
Story heard today

Washington Square Park Arch placed at Amsterdam Entrance (nb 1a on map)



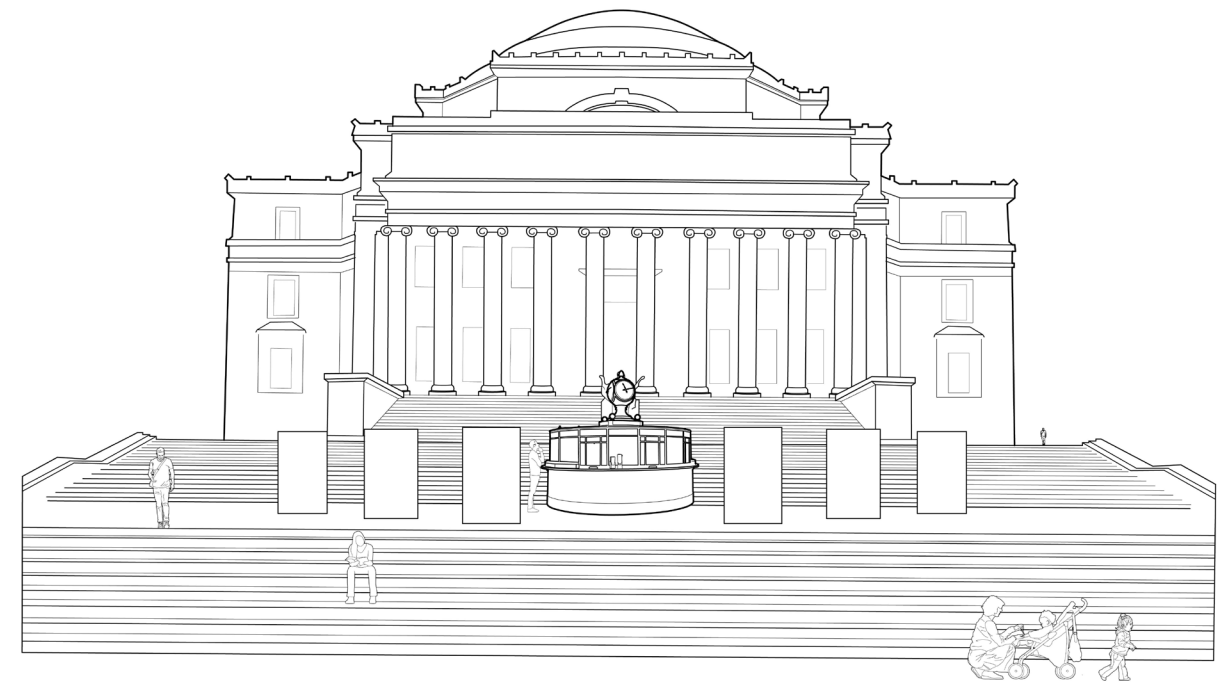
DAKOTA
Imagine me be,
Strawberry fields forever
Smile and let it be

Dakota Building Entrance Hall at Broadway Entrance (nb 6 on map)



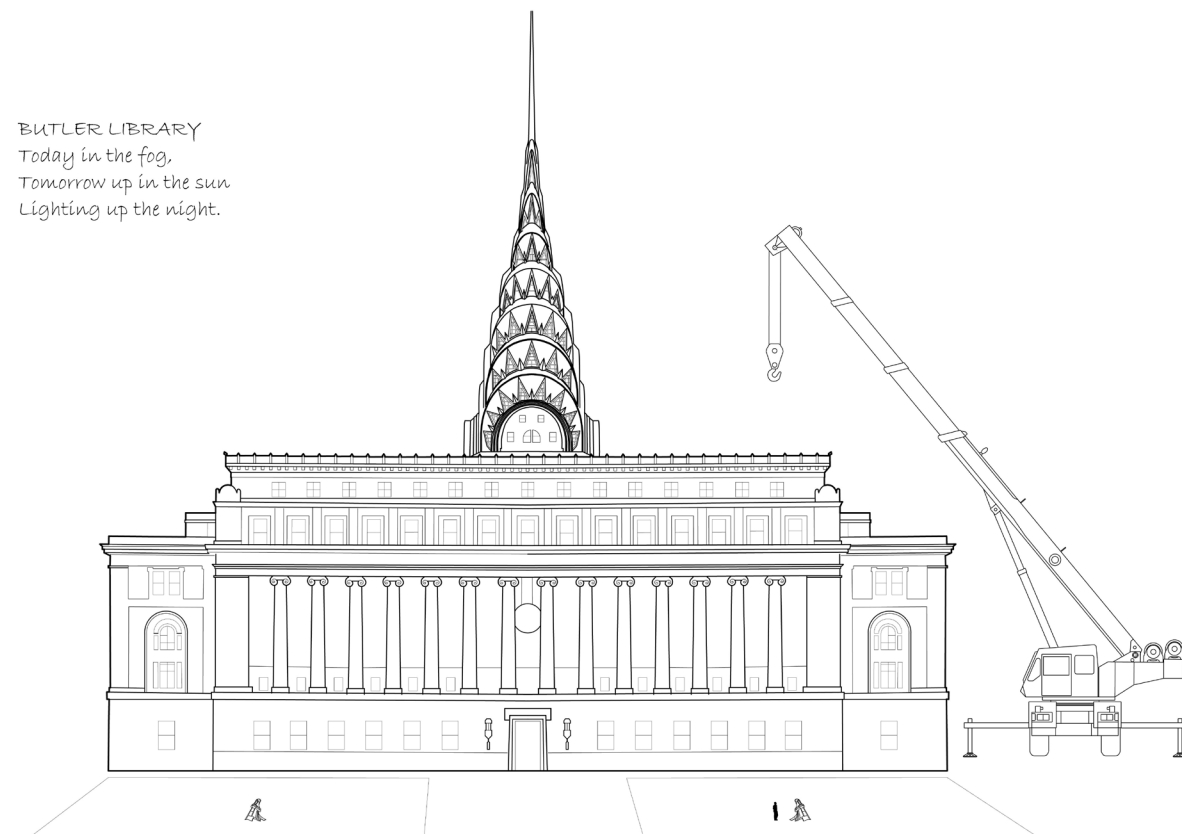
ATLAS
How does the world weighs
On the shoulders of Atlas
All knowing its woes

Bethesda Terrace and Atlas in front of Low Library (nb 13a + 20 on map)



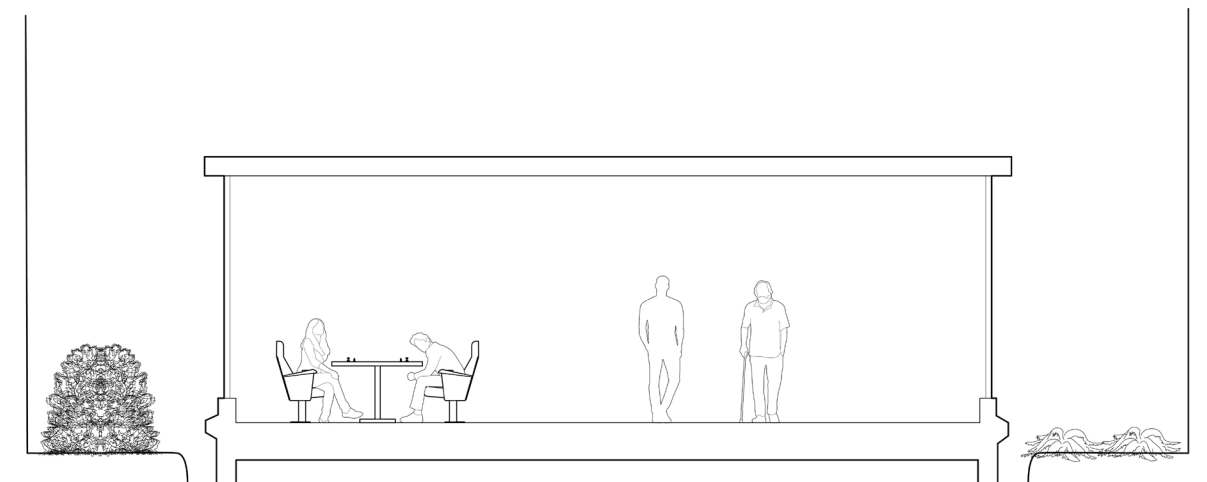
LOW LIBRARY ELEVATORS
I said "I love you" / Atop the Empire State / The lifts got us there

Grand Central Station Info Desk and Empire State Elevators in front of Low Library (nb 2b + 7a on map)



BUTLER LIBRARY
Today in the fog,
Tomorrow up in the sun
Lighting up the night.

Chrysler Building Spire on Butler Library and Gargoyles on South Lawn (nb 16a + 16b on map)



CHESS TABLES
Chest played lost and won,
under the cherry blossom
Found Bobby Fisher

Ford Foundation Floor, WSP chess tables and Apollo seats on campus (nb 1b + 7b + 18a on map)

7. Spirituality of Togetherness

Semester: Fall 2022 Core I

Instructors: Lindsay Wikstrom & Thomas de Monchaux

Subject: Broadway Stories

Site: St Paul's Chapel, 209 Broadway, NYC

CONCEPT

Survival brings us together, tragedy makes us work together

This project centered on the adaptive reuse of a New York historic landmark aiming to foster a sense of community. Saint Paul's chapel in downtown New York City survived 9/11 despite being across the street from the Twin Towers. After the towers collapsed, it became a safe haven for all first responders.

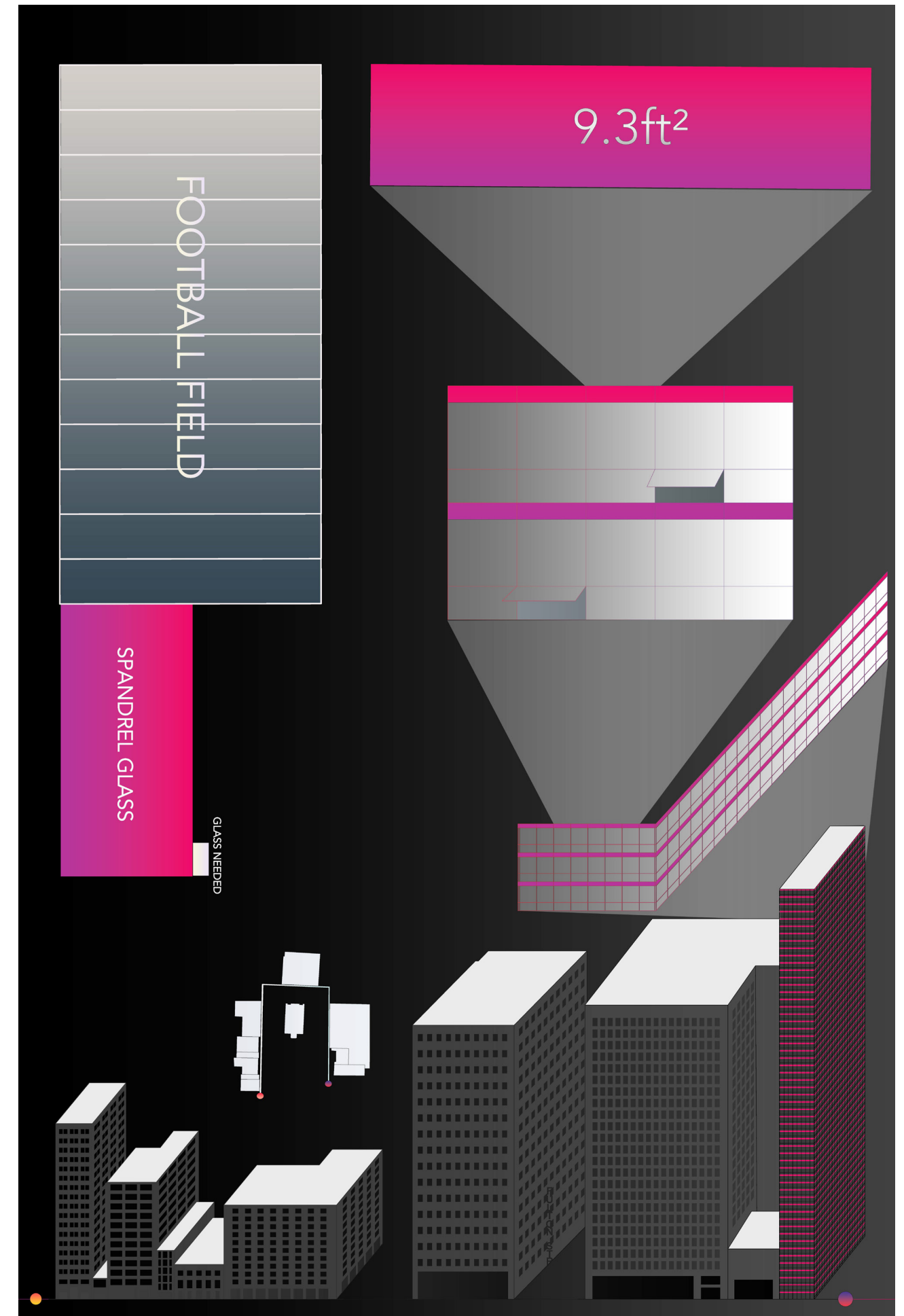
The project, while reusing spandrel glass from a neighboring building, creates an addition to the chapel. This addition would feed on the history of the chapel and become a new safe haven to discuss the problems of the community aiming for a solution.

*Model Picture of the table set on
the new collaborative space in St
Paul's Chapel*





Model Picture of the table set on the new collaborative space in St Paul's Chapel



Model Picture of the table set on the new collaborative space in St Paul's Chapel

