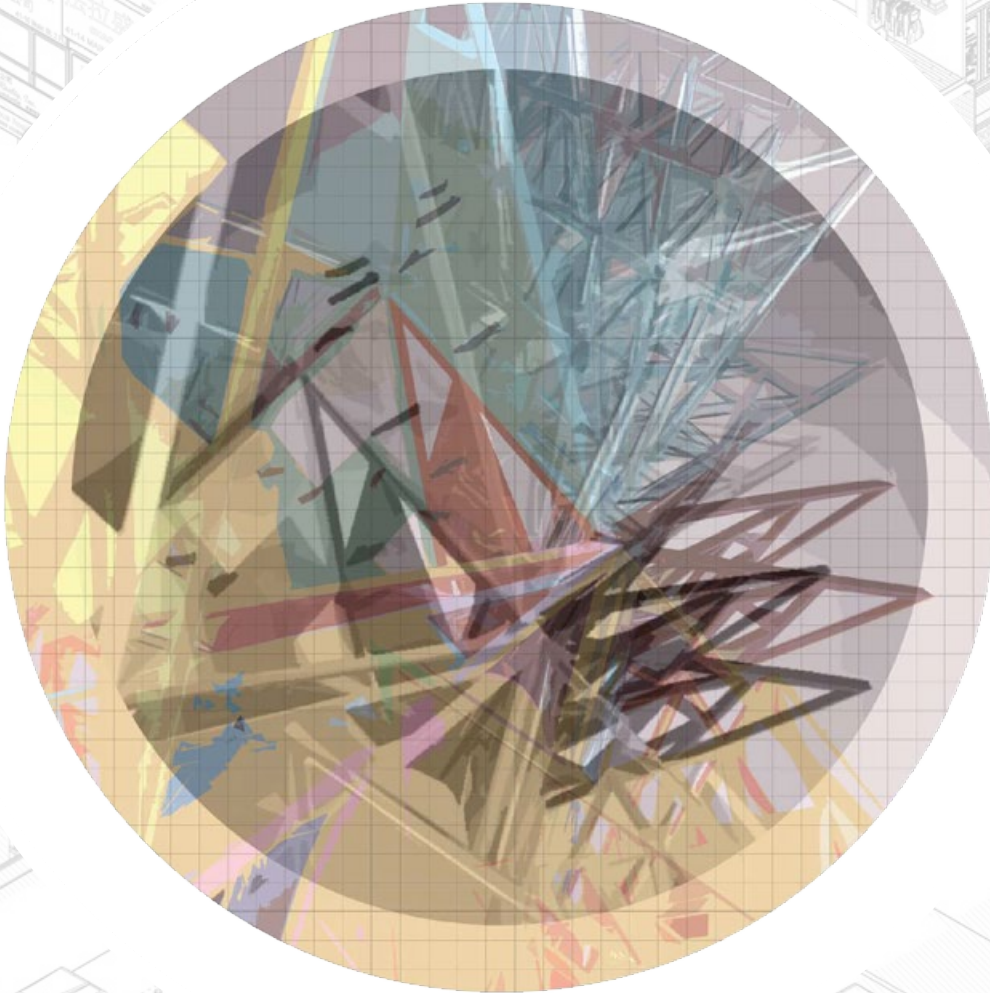


Alyna Karachiwala



Portfolio

GSAPP | MARCH - MSRED | 2019 - 2022

CONTENTS



1 The Tear Gas Turnpike

Advanced Studio VI- Spring 202204



2 The 'i' Line

Advanced Studio V- Fall 202132



3 Beneath Our Feet...

Advanced Studio IV- Spring 2021.....50



4 Expandable Living

Core Studio III- Fall 202068



5 School of Autism

Core Studio II- Spring 202082



6 Center for Composting Corpses

Core Studio I- Fall 201994



7 Melrose Community Center

Architectural Technology IV- Fall 2020.....102



8 The Prada Transformer Unfolded

Architectural Drawing & Representation I - Fall 2019.....114



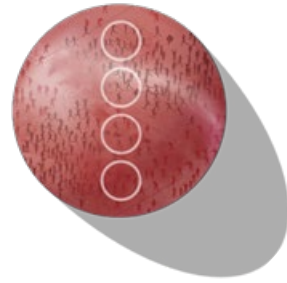
9 Mountain Dew

Techniques of the Ultrareal- Spring 2021.....120



10 The Building Blocks of Life

Transitional Geometries- Fall 2021.....124



The Tear Gas Turnpike

Type: Academic- Solo

Semester: Third Year Master, Spring 2022

Studio: Advanced Studio VI- Mark Wasiuta

Location: Portland, OR

Tear gas has become a permanent fixture in the landscape of protests worldwide, from the Arab Spring to Hong Kong. So has its aftermath: crowds fleeing slow-moving clouds, the coughing, the choking and the water bottles dumped in stinging eyes. Over the past few years, as unrest engulfs the United States, this scene is seen repeating itself, again and again.

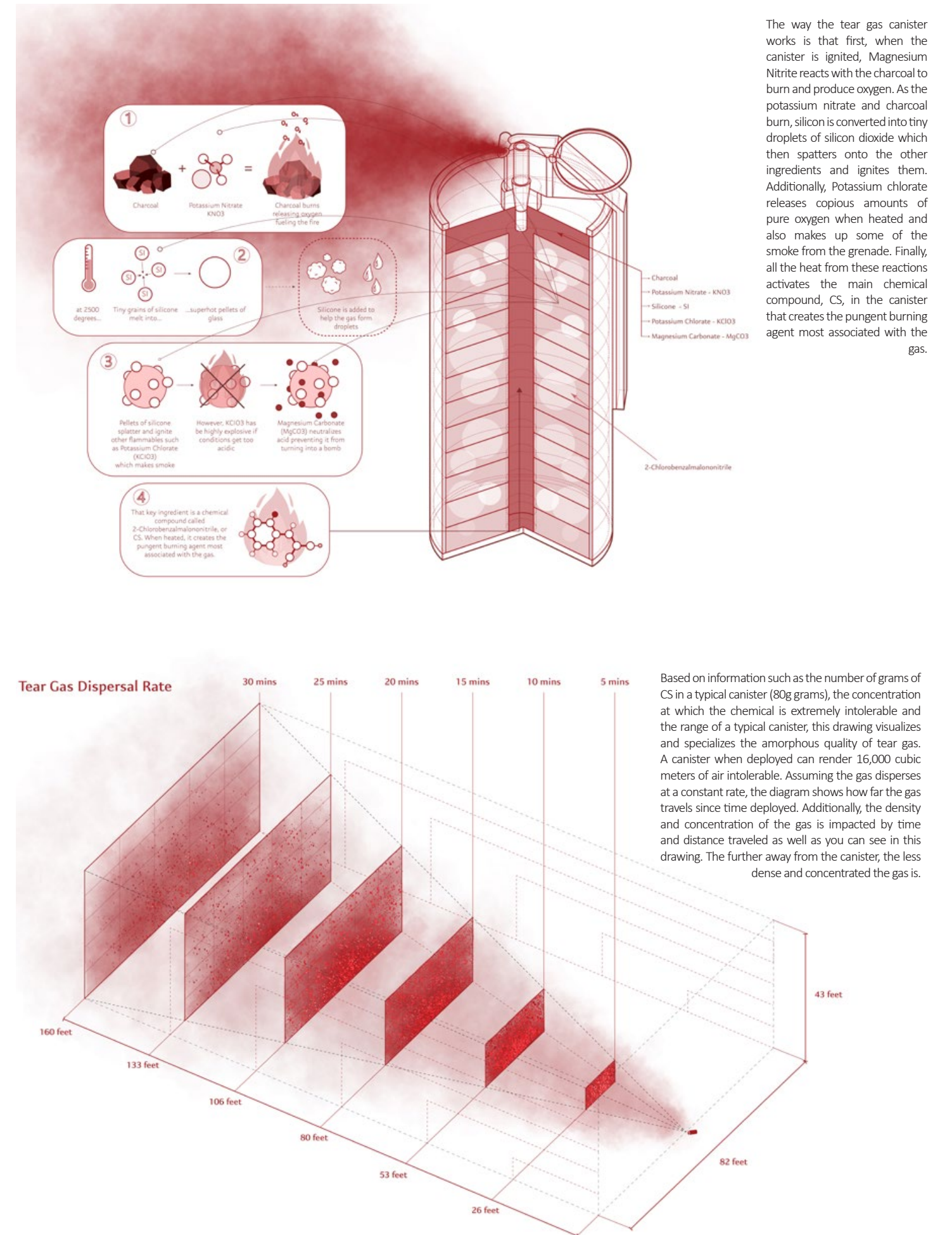
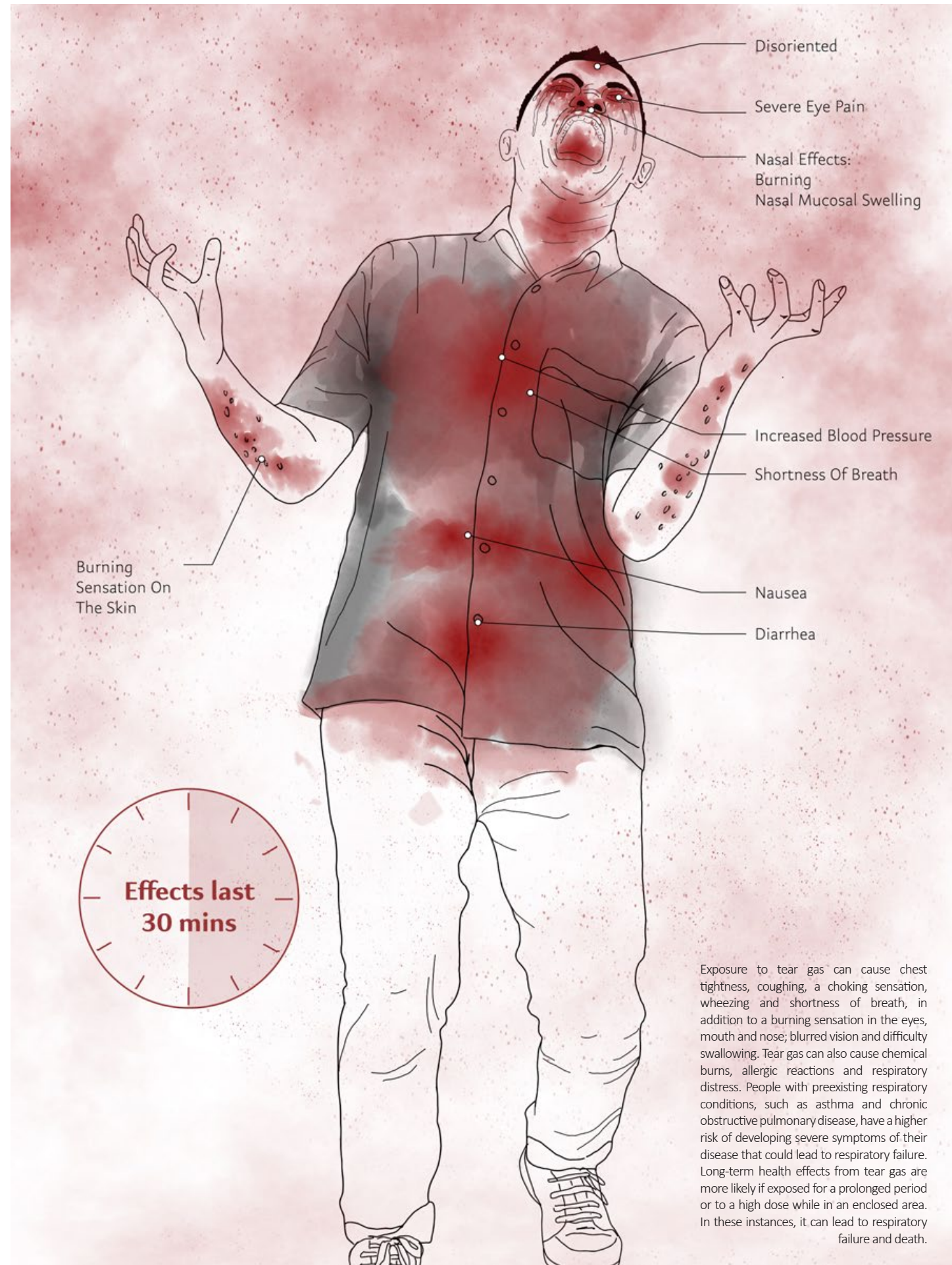
It should be noted that since tear gas is deemed a “riot control agent,” it is exempted from chemical weapons protocols — meaning it can still be used on a city street by domestic police forces, but not by soldiers in a war zone. Additionally, there is no federal oversight of the manufacture of tear gas, it is only produced privately, meaning there is very little information made public about its production and distribution. These factors along with the rampant abuse of tear gas by police forces during the BLM protests urges us to question the use of chemical weapons against the general public. It is clear that there is a huge power imbalance when it comes to the domestic use of these chemical agents.

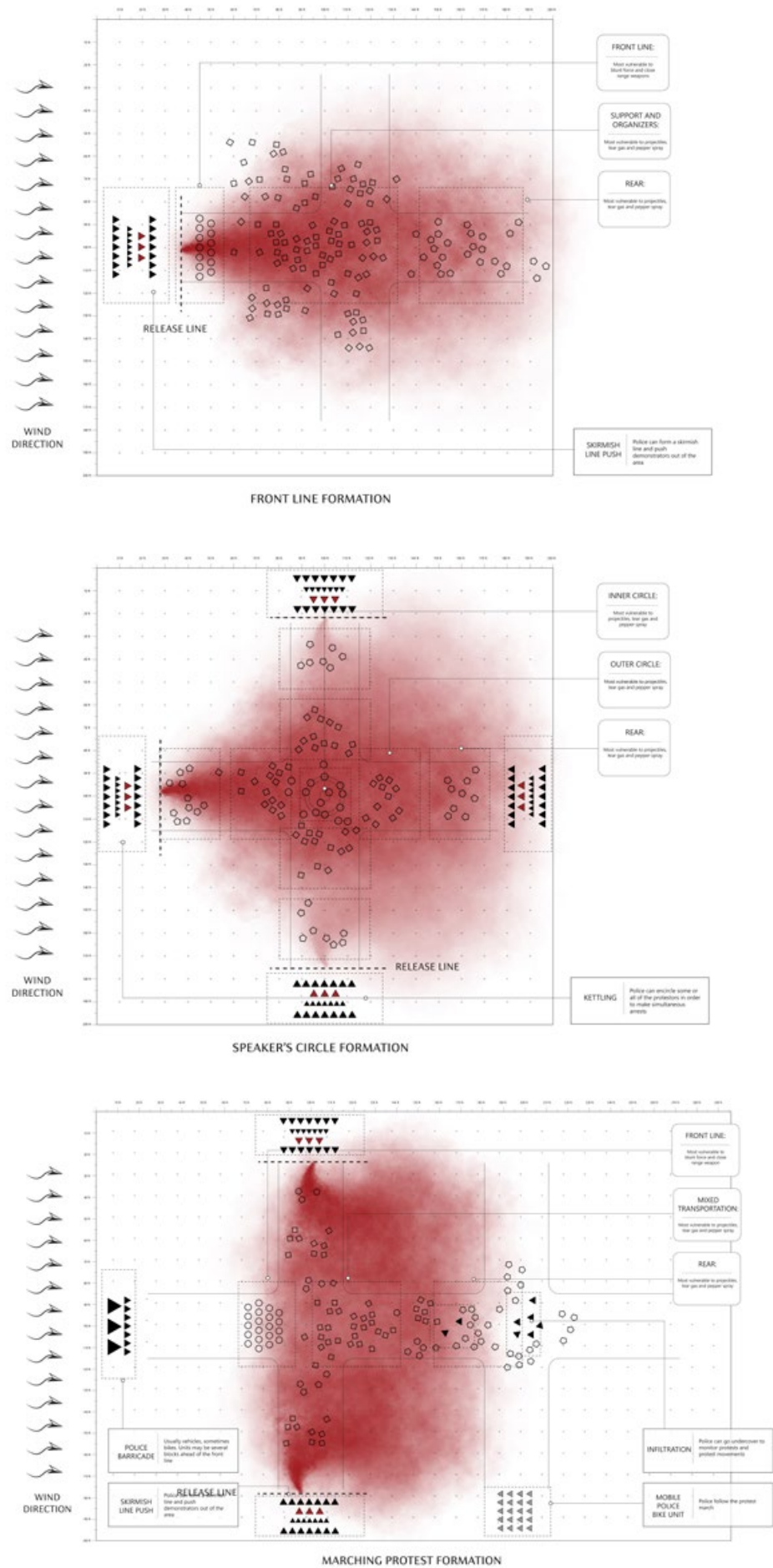
Located in the heart of the BLM protests in Portland, Oregon, my project transforms the existing Chapman and Lowndale Squares into an area where protestors can act on their freedoms without the threat of tear gas attacks.

Titled, “The Tear Gas Turnpike”, my project, like its name, acts as a barrier of defense and protection against modern chemical weapons and also as a monument remembering the 100 days of continuous protesting and, consequently, chemical attacks that took place in Portland.

As protestors have always fled to the streets during times of civil unrest, the project aims to give the streets back to the people, converting the roads into pedestrian only walkways. The intervention utilizes a complex hvac and filtration system to take in all the tear gas from the surrounding air, filter it, and distill it back into the atmosphere at a concentration that isn’t considered irritable.







The formalization of tear gas is incorporated into established police riot control formations. The following is a short study of different police and protest formations and which strategies and factors such as wind and release lines define the most efficient ways tear gas should be deployed.

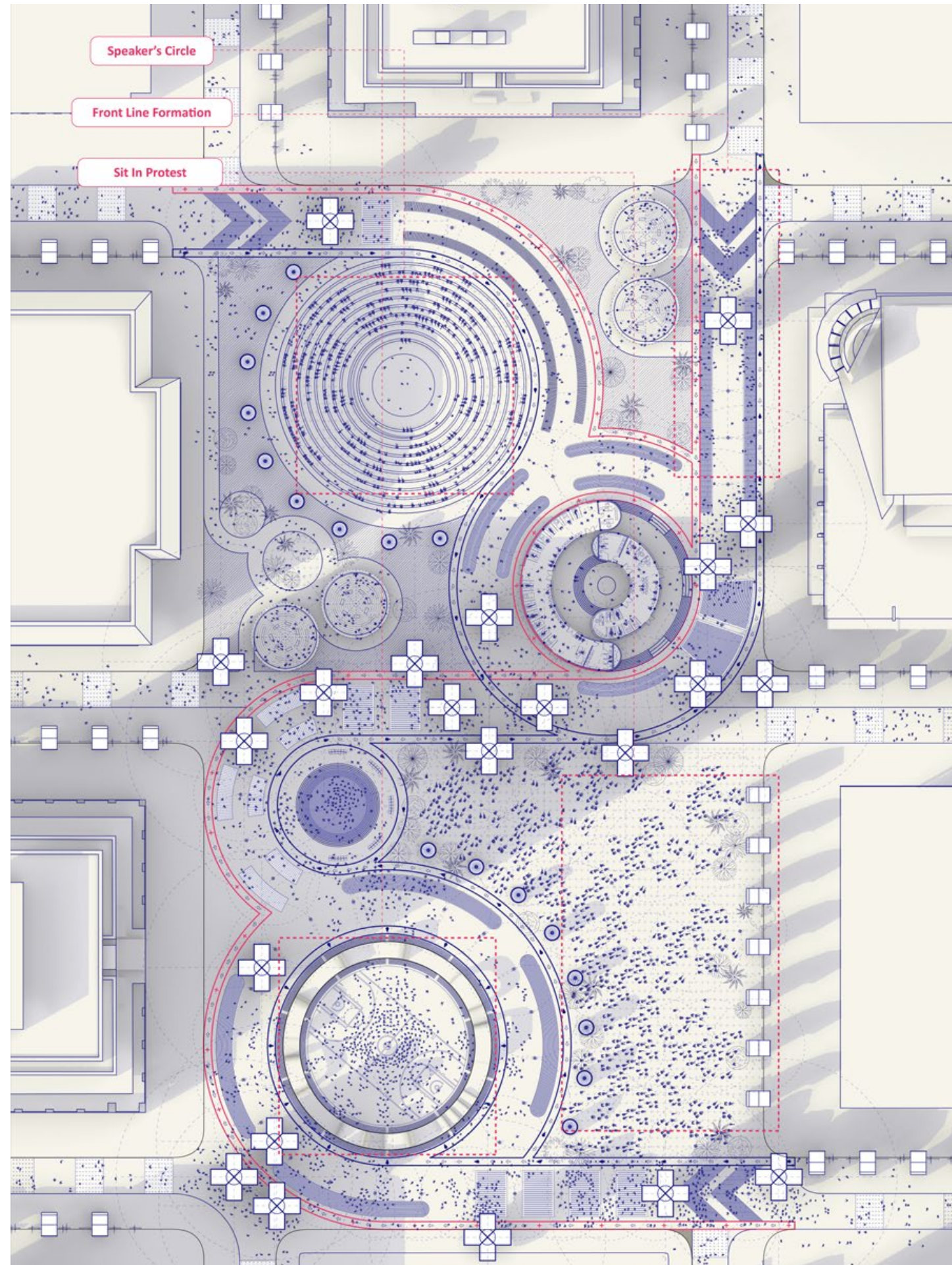
First is the 'Front Line' Protest Formation, in which police officers would use the tactics of a skirmish line push. Here the most basic form of tear gas deployment is used in which it is simply deployed in the direction of the wind.

Next, the 'Speaker's Circle' Protest Formation in which police officers use the tactics of kettling which is the practice of encircling protestors to make several arrests. Here, tear gas has to be used strategically as officers still need to provide an escape route for protestors. Additionally, as there are more areas of deployment, the concentration of tear gas is higher.

Finally, we have the 'Marching' Protest Formation, in which police officers use a number of tactics, such as police barricades, mobile units and infiltration. Barricade units only serve defense purposes and tear gas is mainly used to disrupt the movement of the march.

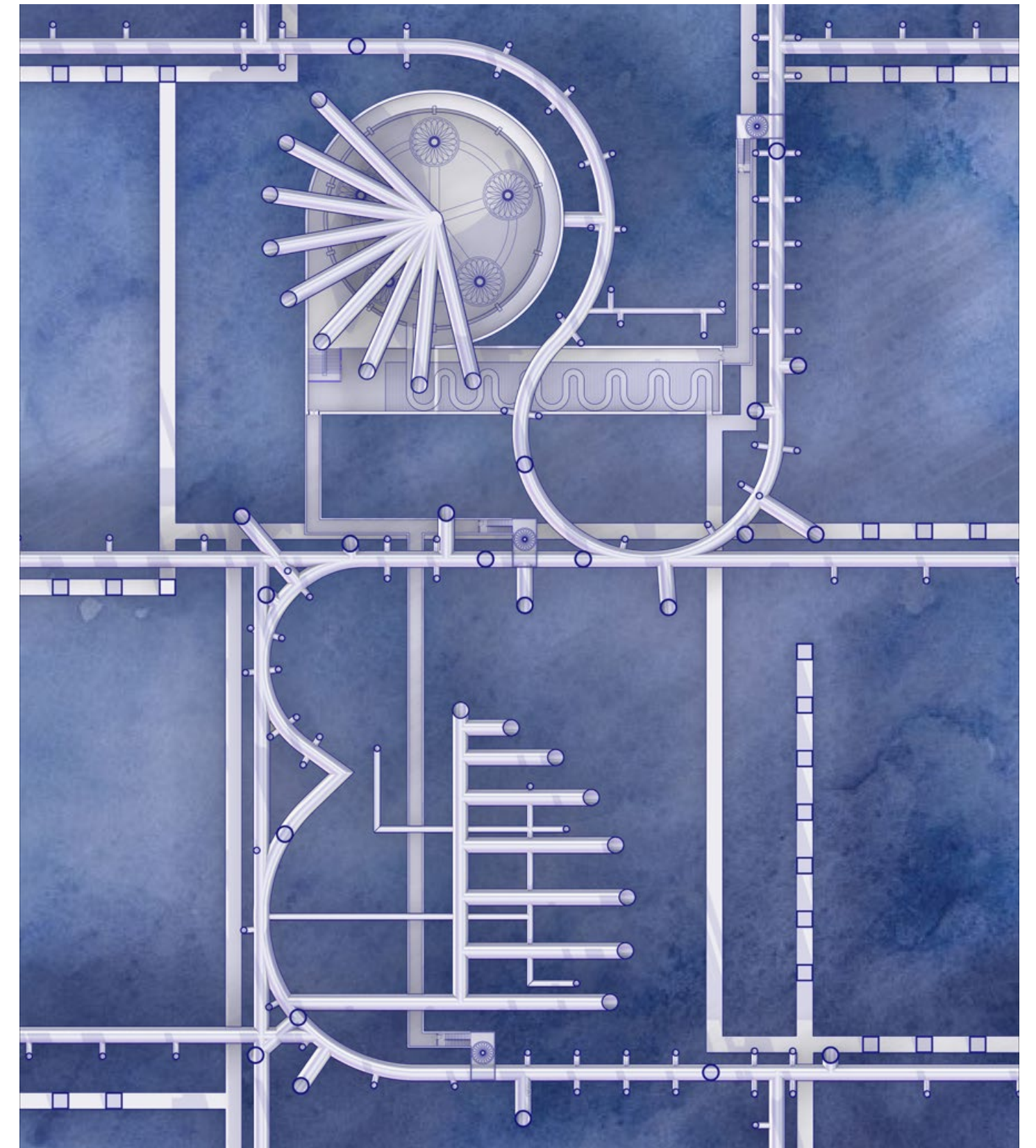
I focused my analysis as well as my intervention in Portland, Oregon, specifically, Chapman and Lowndale Squares. Not only has Portland always had a history and a legacy of grassroots direct action, it most recently experienced 120 days of continuous protesting during the BLM movement in the summer of 2020, when tear gas was used excessively every one of those 100 days. I chose the location of Chapman and Lowndale Square as it is completely surrounded by federal and national buildings (highlighted in blue). Additionally, the red dots show all the locations where tear gas deployed during the protest.

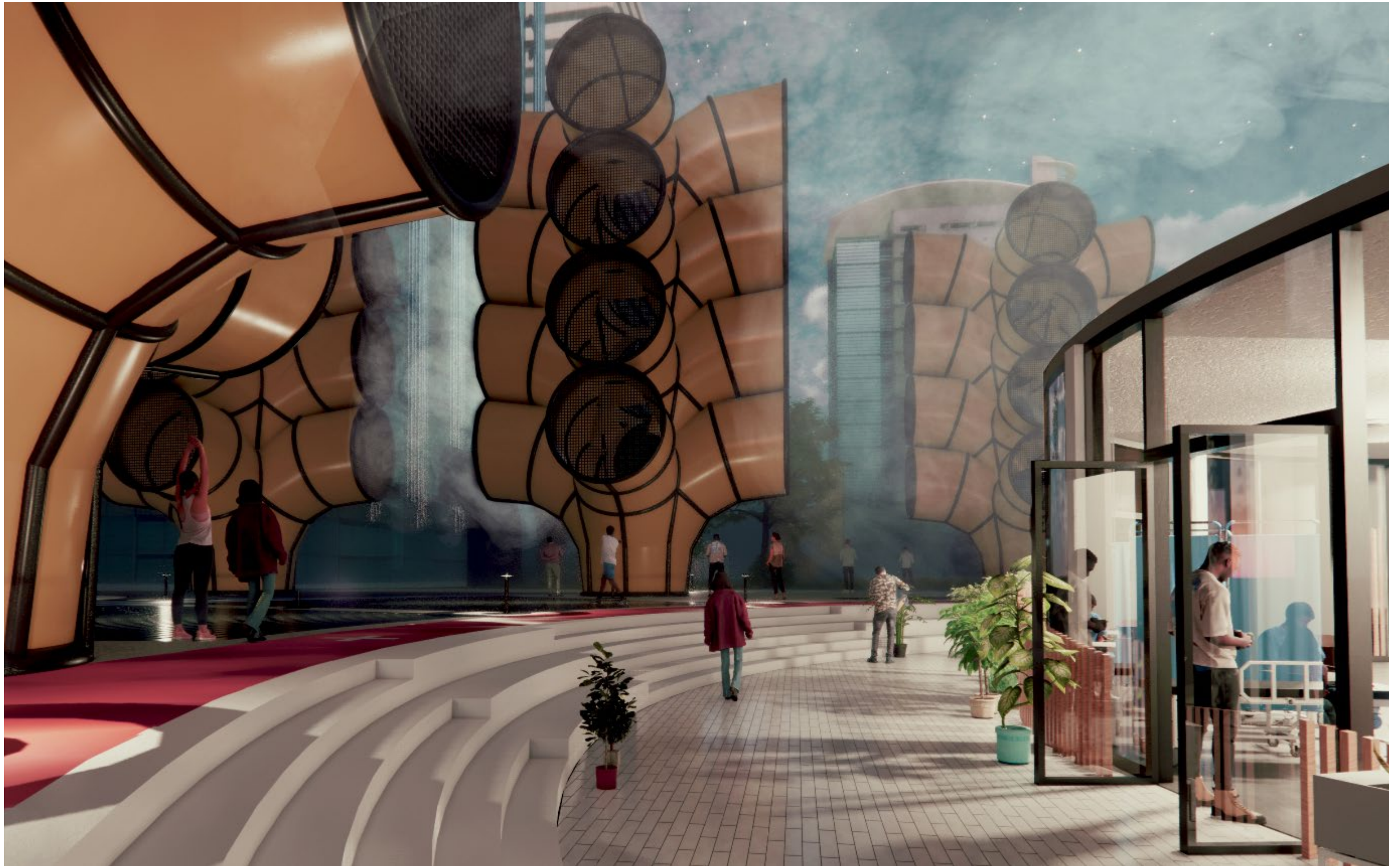


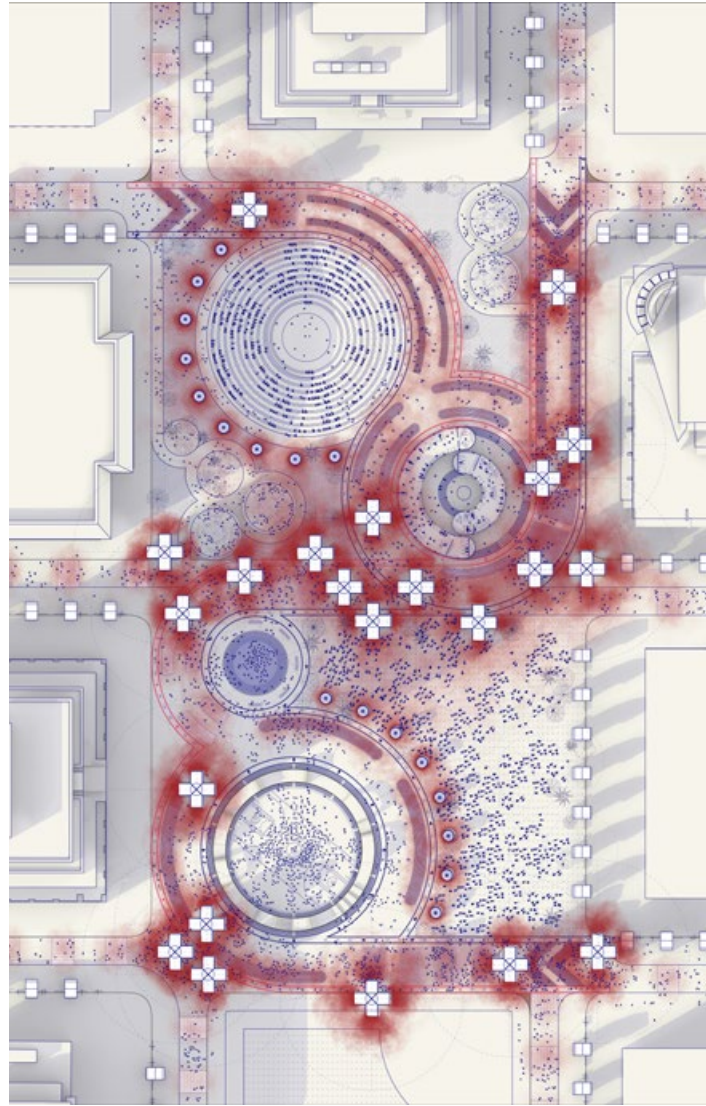


The above grade plan (left) shows how Chapman and Lowndale Square are transformed by introducing pedestrian only pathways that are impeded with gas vacuuming grates. The 'turnpike' - which refers to the entire system that takes up the two squares - can be accessed from all surrounding streets. Following the path, leads you to various programs such as the amphitheater, the medical center and decontamination pools and showers. Additionally, red and blue markings border the path, directing those protests in need of medical attention or water correspondingly. Large, 50 feet tall, vents are also littered along the path that mark the exact locations of where tear gas was deployed during the BLM protests in 2020. These act as primary vents that suction in the most tear gas from the environment. Secondary intake vents are found bordering the decontamination showers and amphitheater to provide additional safety as large groups are more likely to congregate there. Lastly, exhaust vents are found along the sidewalk, all facing the various government buildings located around our site.

The below grade plan (below) shows the HVAC system that is integrated as part of the vents. The intake vents take all the tear gas to the main air handling system, where it is stored and is then passed through various carbon filtration systems. The filtered air is then released back into the environment through the exhaust vents.

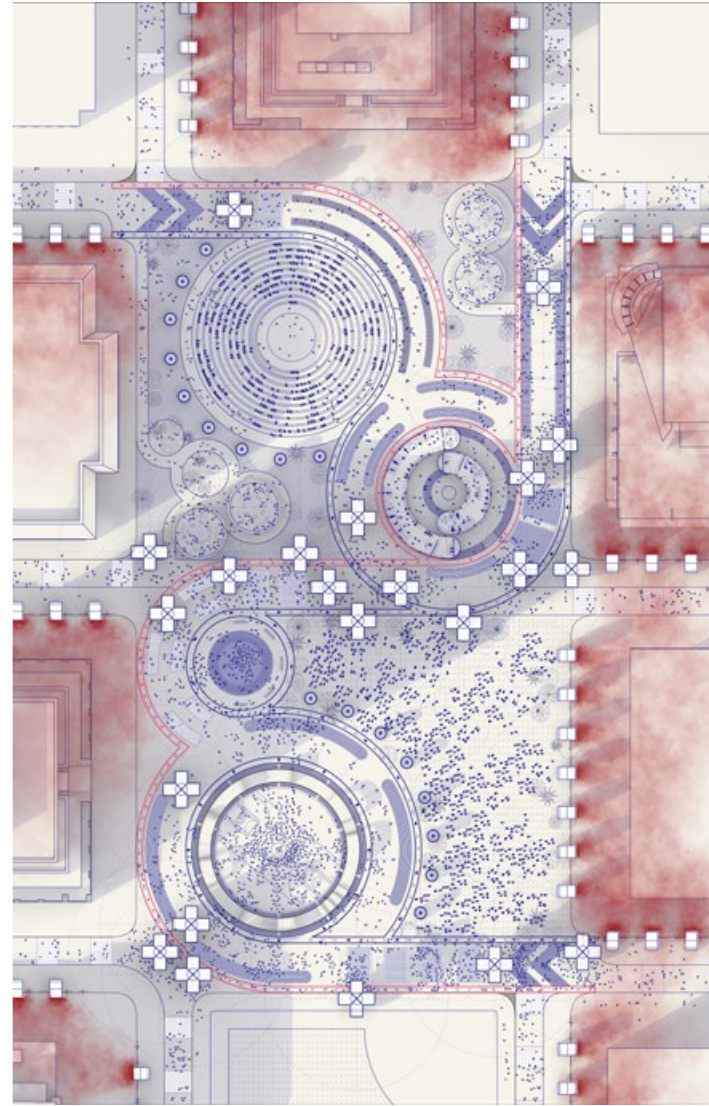






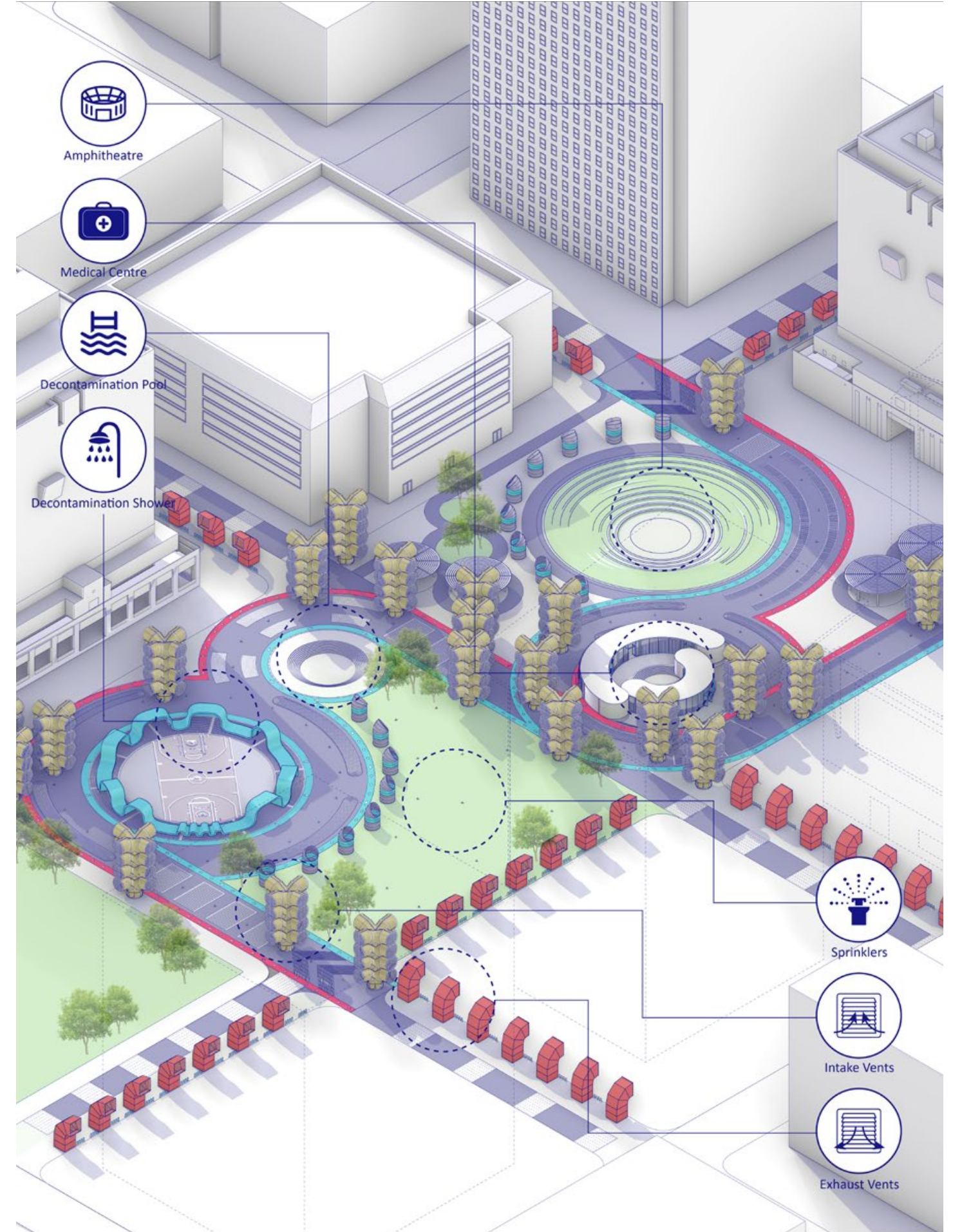
Intake Density

In these drawings, on the above grade plan on the left, the red reflects the 'tear gas free' zone- the spatial area where tear gas is most inhaled. The opacity of the red reflects where the suction is greatest and where the protestors would be most protected. The below grade plan on the right reflects the density of the dispelled air. Once the inhaled tear gas has been filtered, the distilled air is released back into the environment. The exhausted air is all directed towards the government buildings surrounding the site. In the drawing on the right, the opacity of the red similarly reflects the concentration of tear gas laced air pushed back out, however, the denser areas show where the tear gas concentration is the highest.

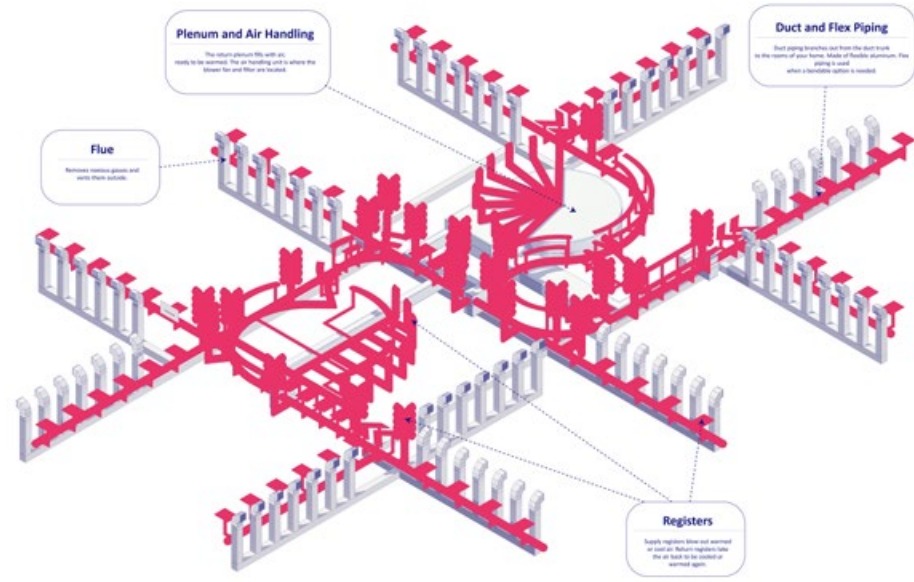
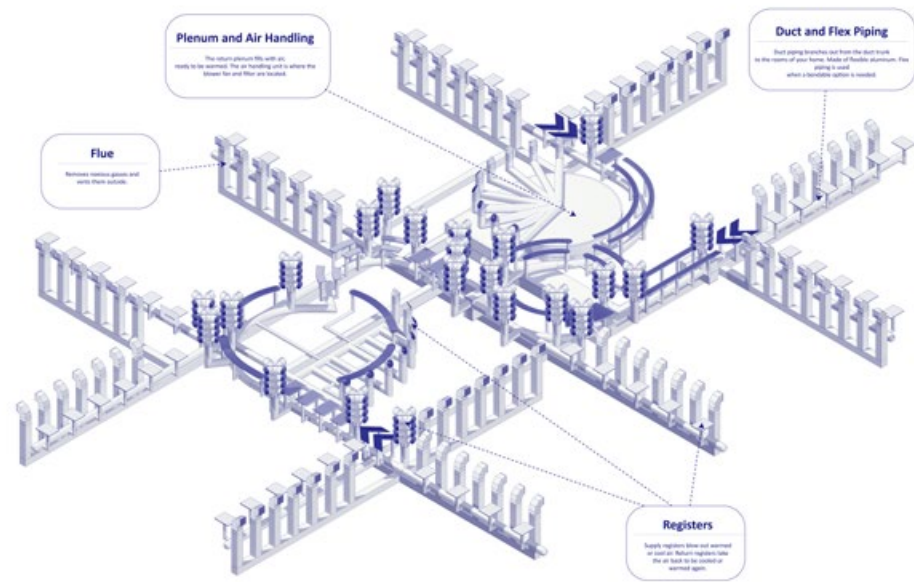


Outtake Density

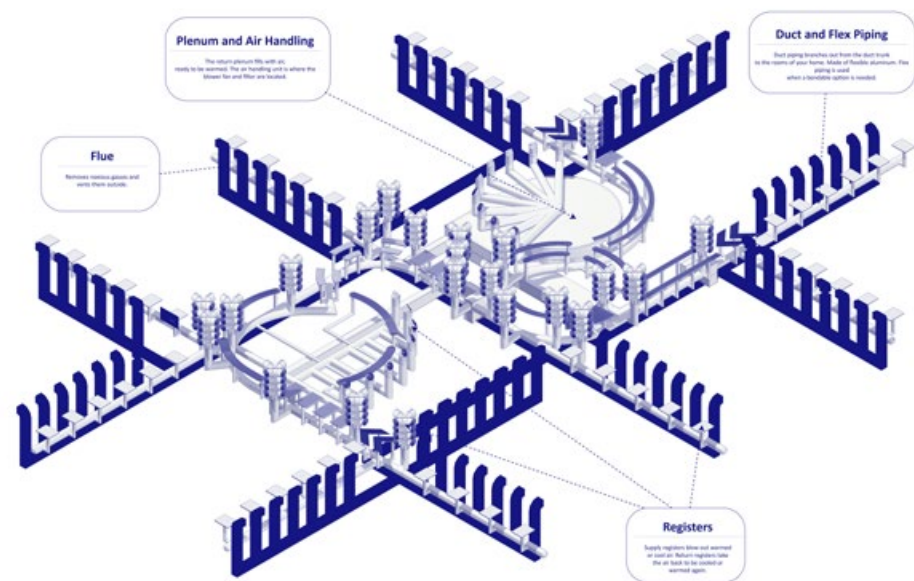
→
The axon on the right, highlights the various programs in my intervention. We have the amphitheater, the medical center and the decontamination showers. Additionally, we also have primary and secondary intake vents and exhaust vents. Lastly, sprinklers are integrated throughout the project to allow protestors easy access to water to combat the effects and the deployment of tear gas.



SYSTEM DIAGRAM



Pink - Intake System



Blue - Outtake System

This diagrammatic axon explains how the HVAC system of my intervention will function. The primary and secondary intake vents and the exhaust vents act as registers. As supply registers blow out warmed air, my exhaust registers will blow out distilled tear gas instead. Similarly, like return registers take the air back to be cooled or warmed again, my intake registers will take in all the tear gas from the environment. From the intake registers, the tear gas then travels through different duct and flex piping until it reaches the plenum main air handling area. The return plenum fills with tear gas ready to be filtered. The air handling area is where the blower fan and filter are located. After traveling through the plenum and air handling area, the now less concentrated, distilled air is released back into the environment through the flue, which in my project's case, are the exhaust vents located around the existing sidewalks.

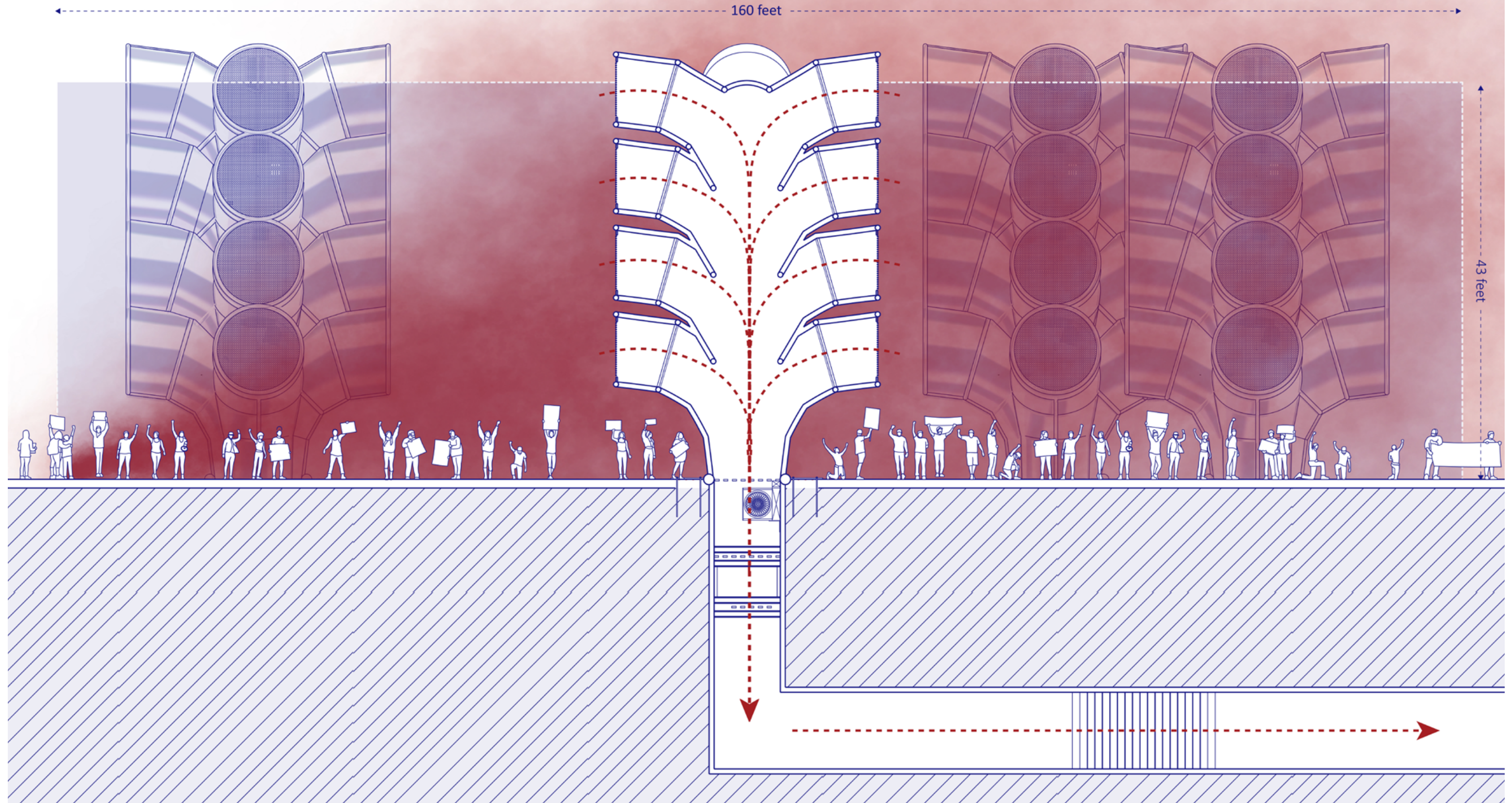
The areas highlighted in pink represent the ducts and parts of the system that take in tear gas from the outside environment. The dark blue highlighted areas represent those parts of the system that expel the distilled air back into the environment.



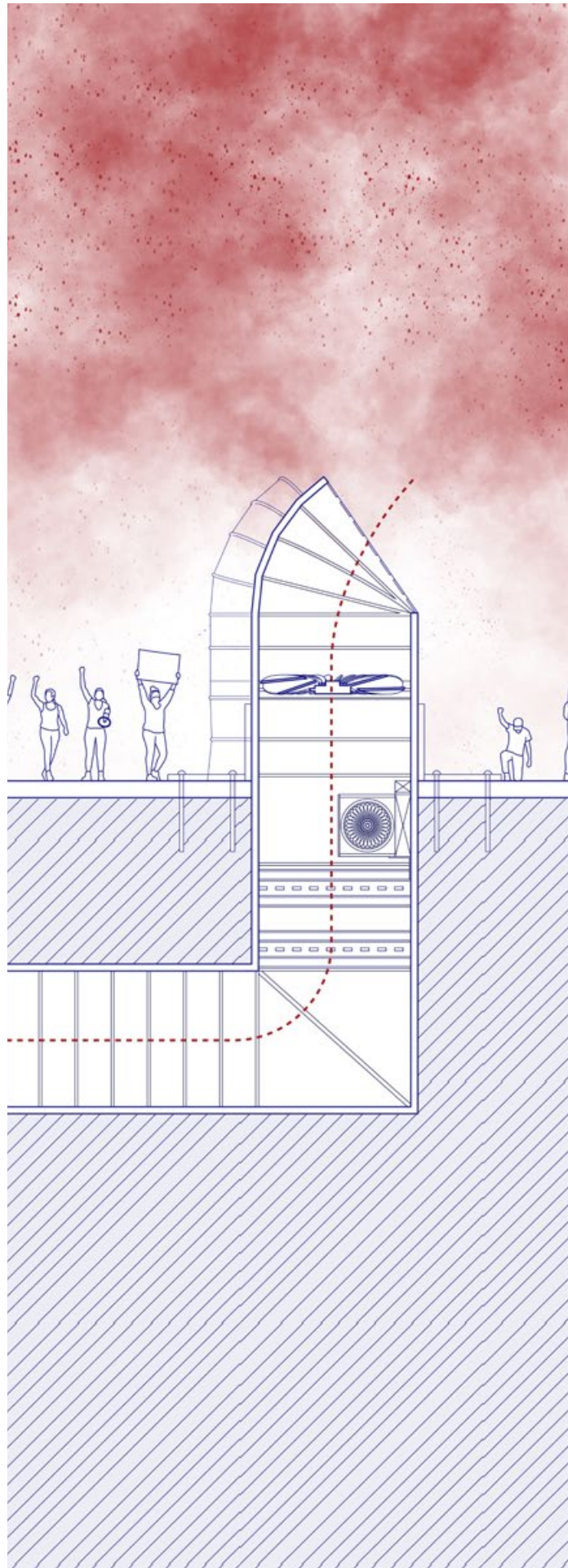
PRIMARY INTAKE VENT DETAIL SECTION

This section attempts to justify why the intake vents are so big. You can see the relationship of the vent to the volumetric dimensions of the gas cloud that is identified by the blue rectangle. The gas cloud typically has a range of 160 feet and a height of 43 feet, making it necessary for the primary intake vents to stand at least 50 feet tall.

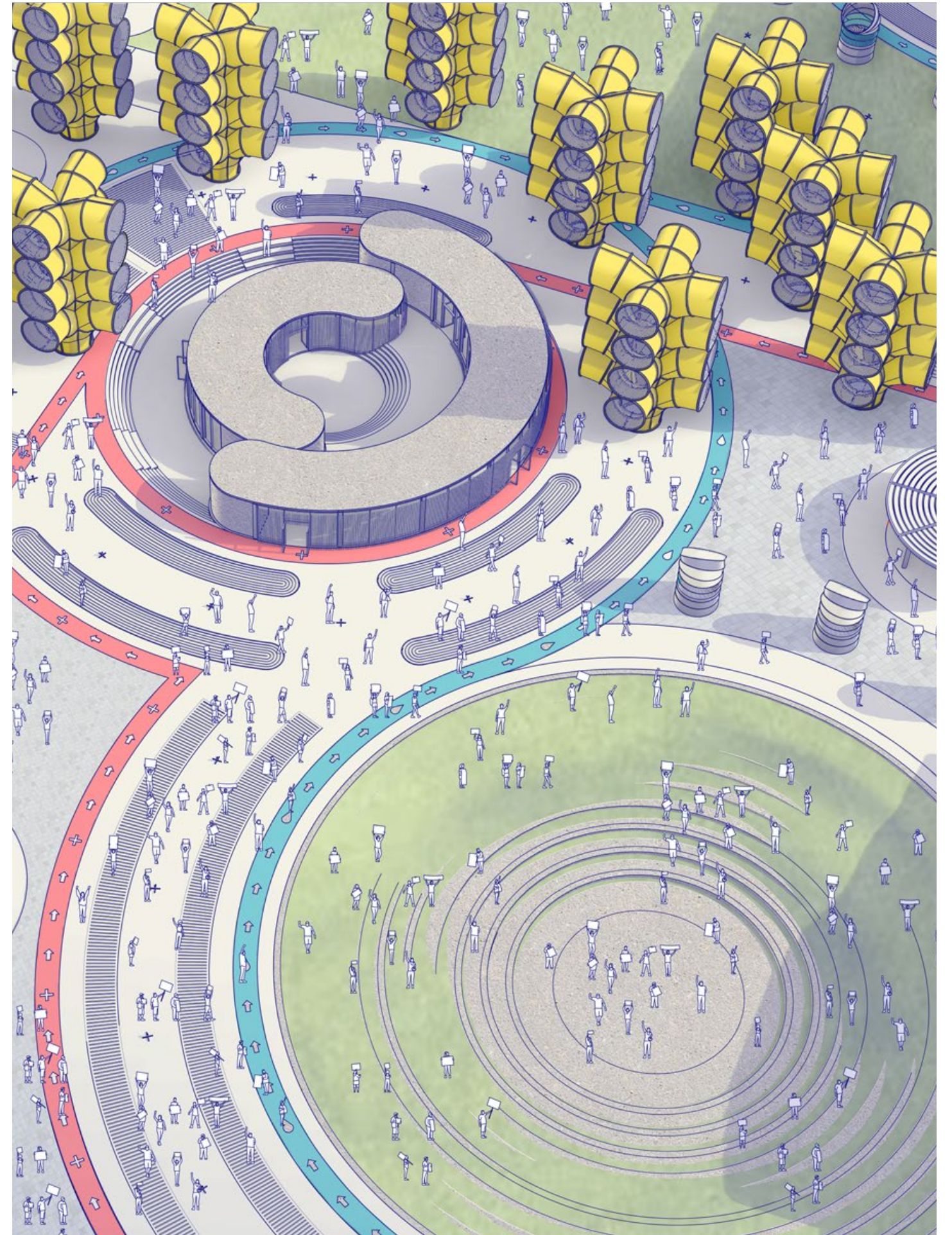
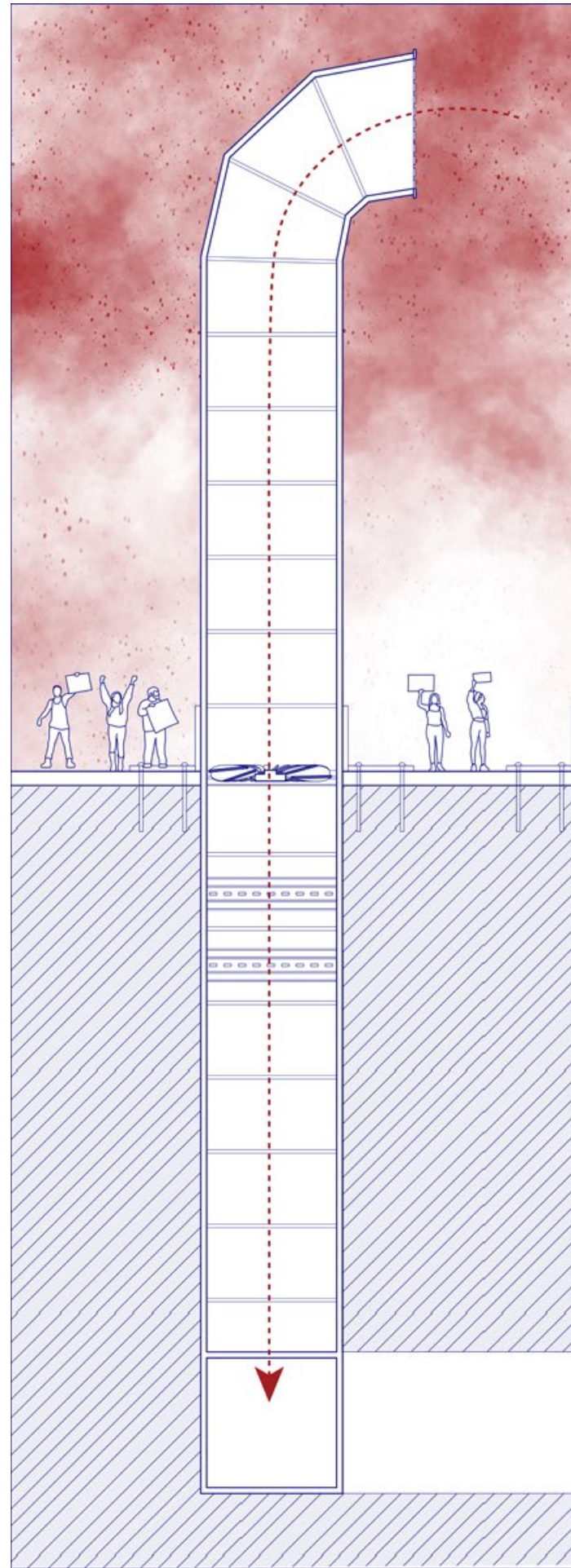
Primary Intake Vent

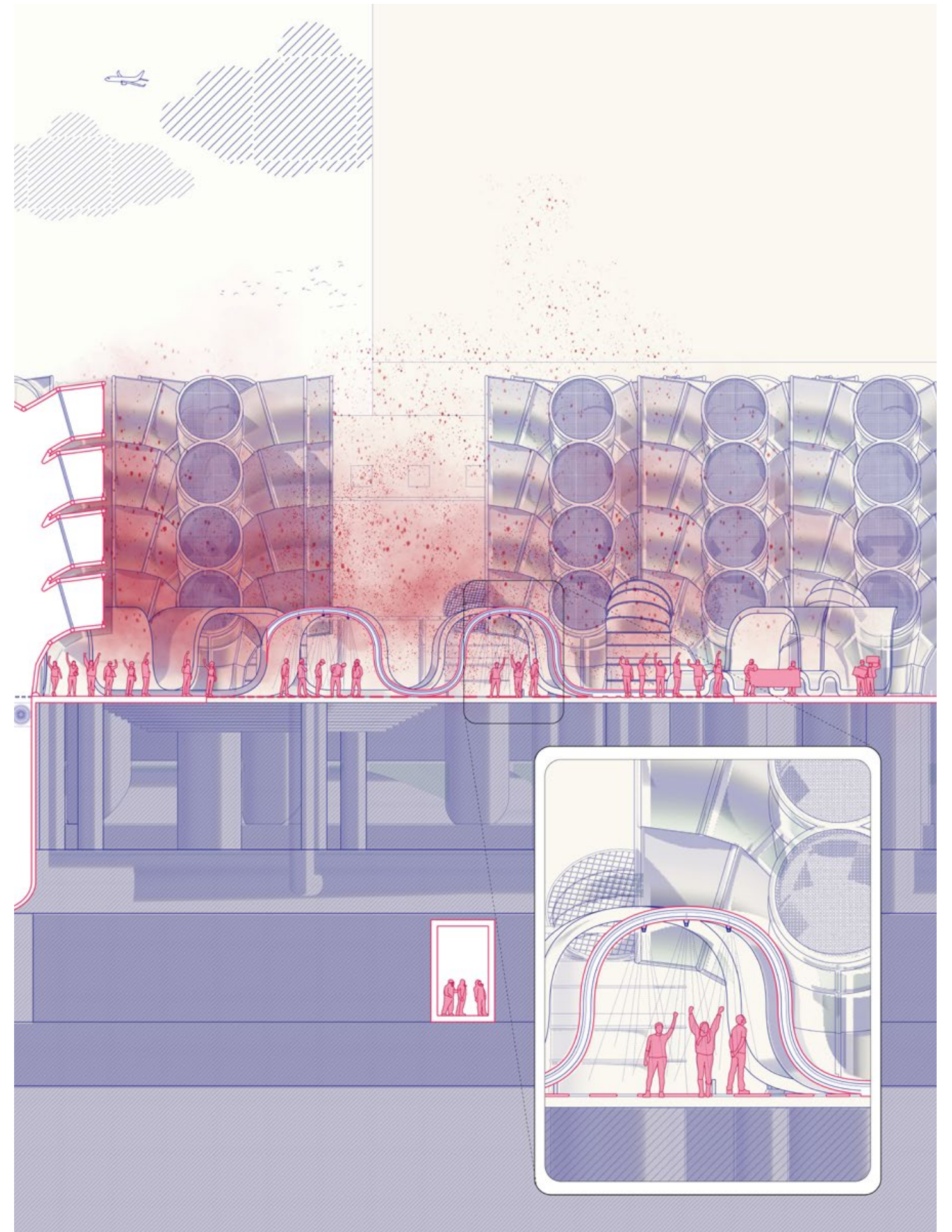
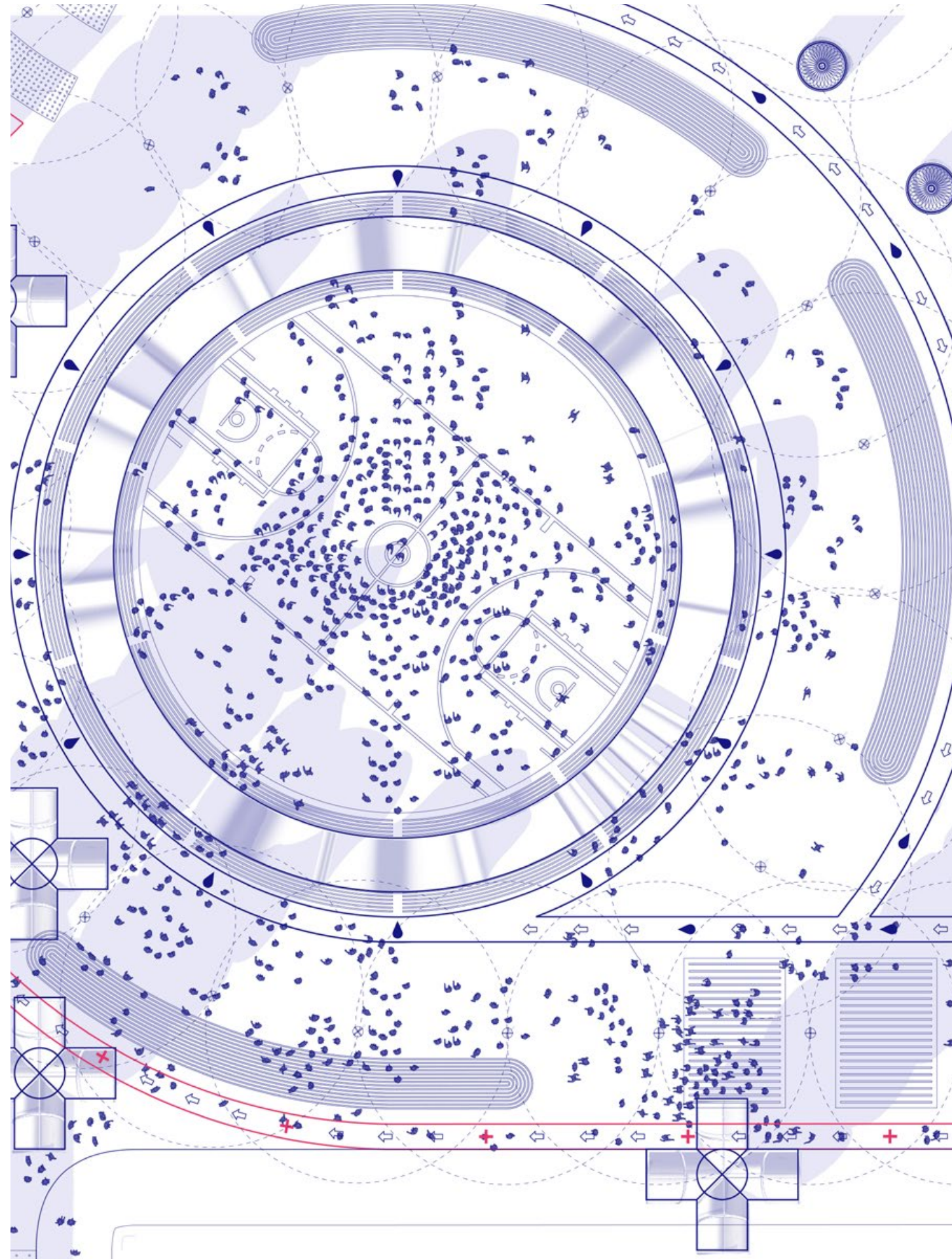


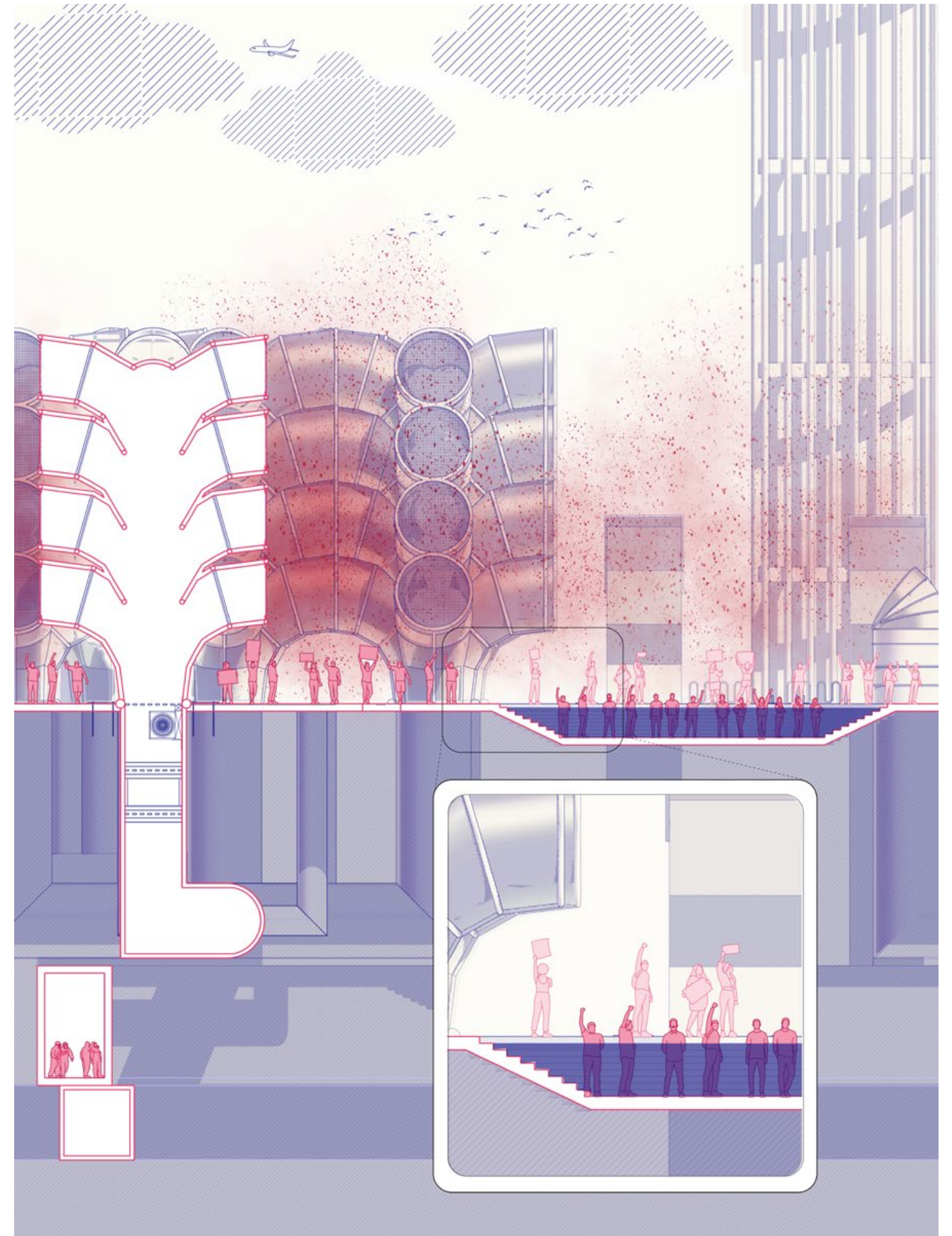
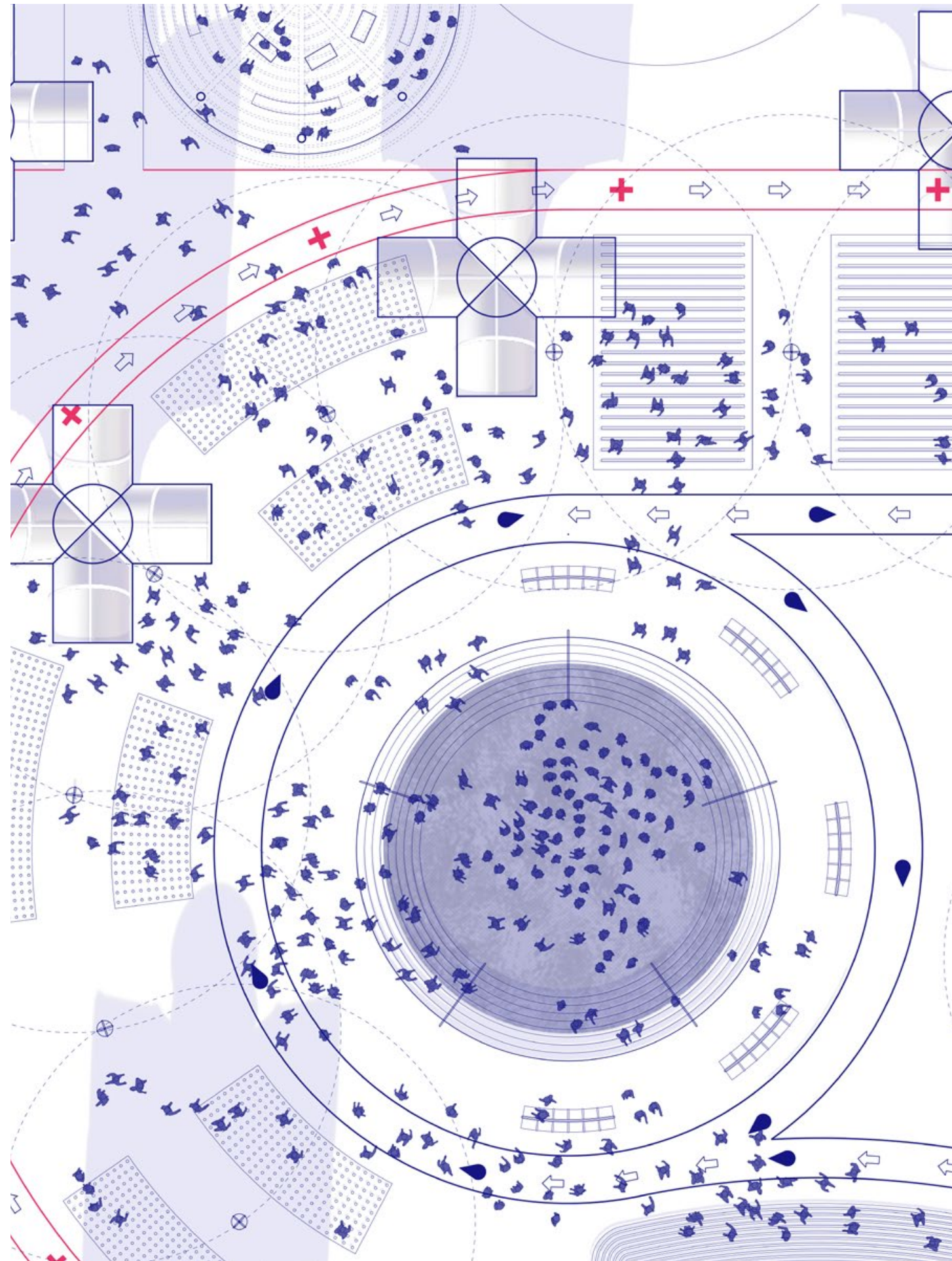
SECONDARY INTAKE VENT DETAIL SECTION

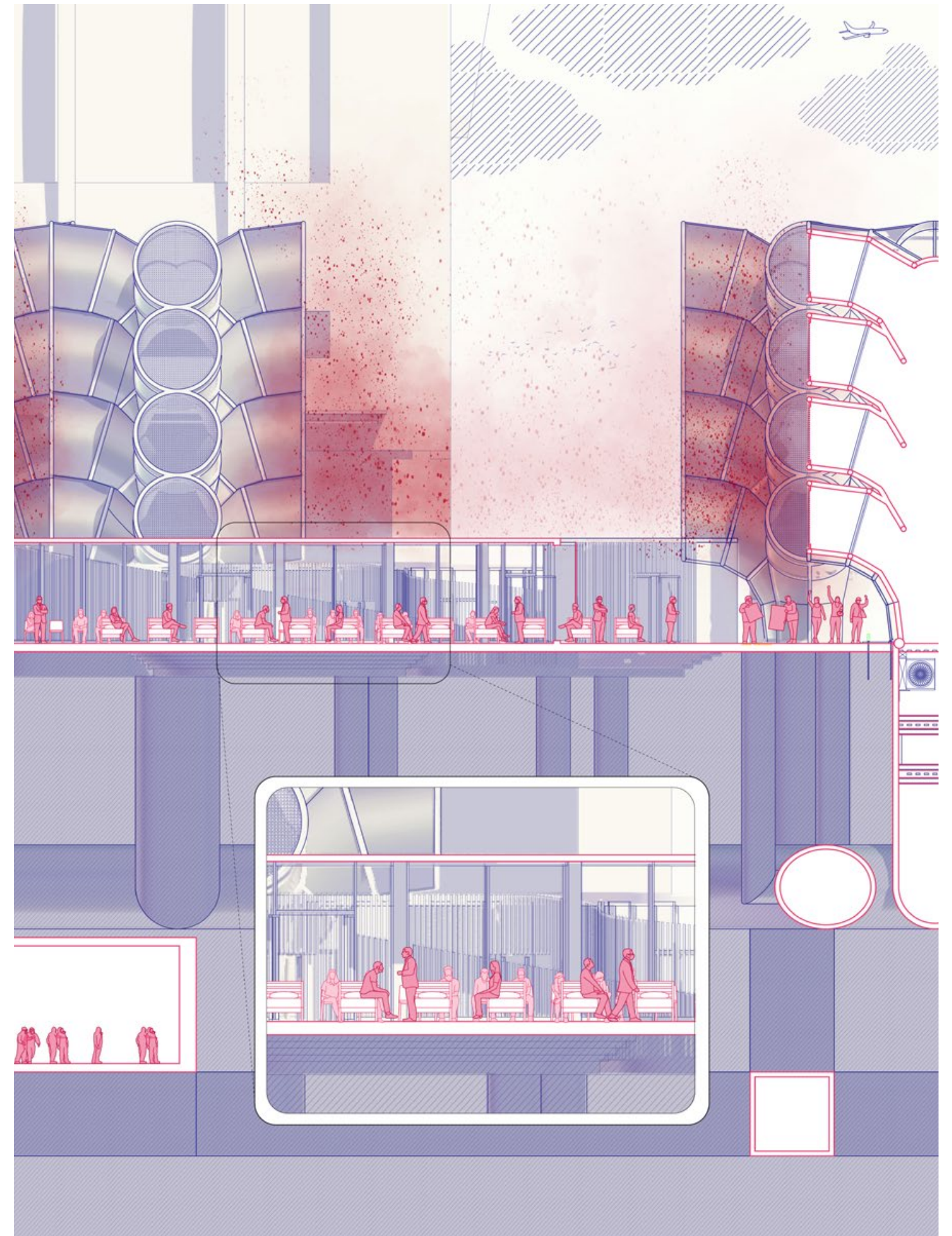
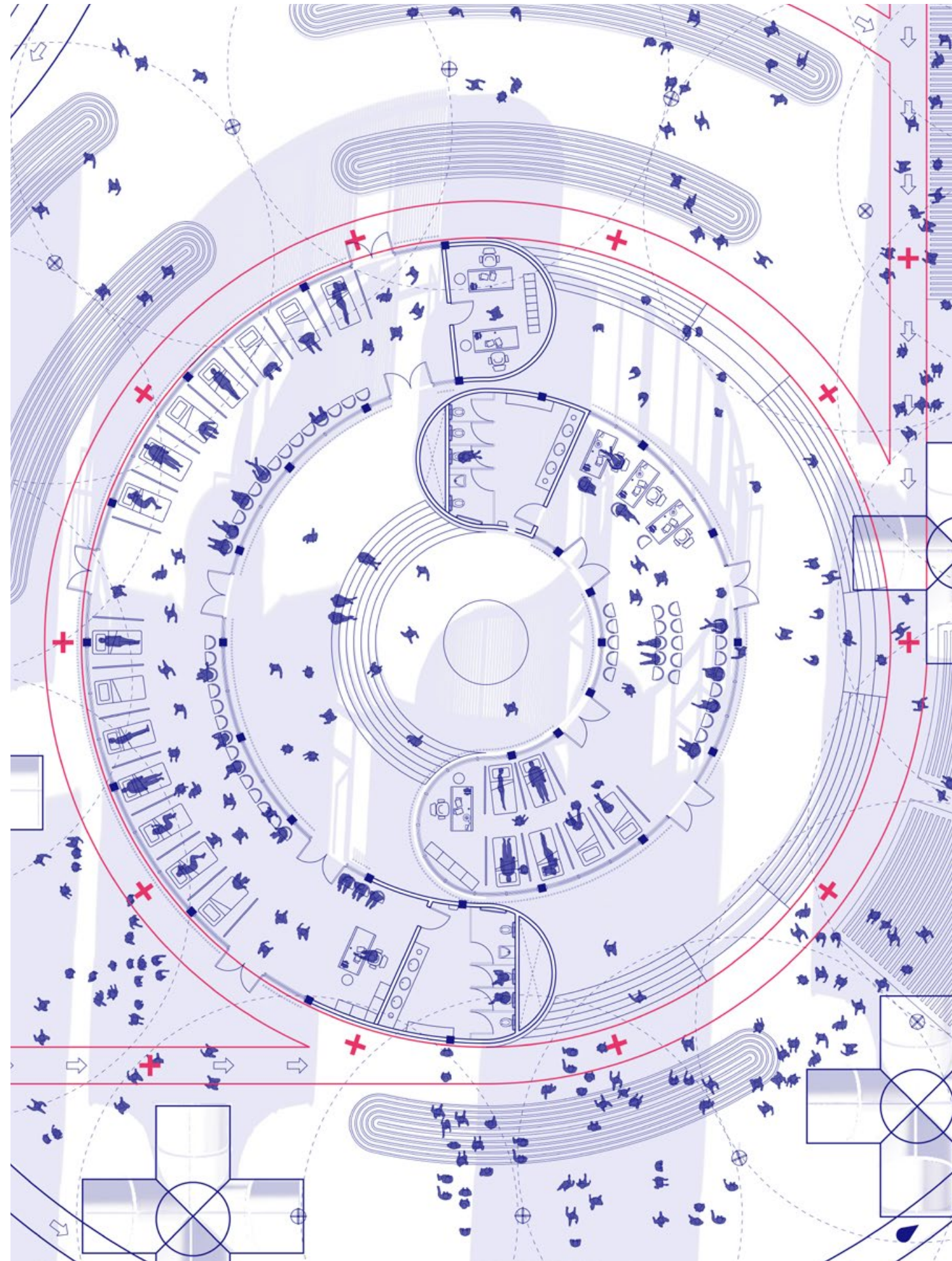


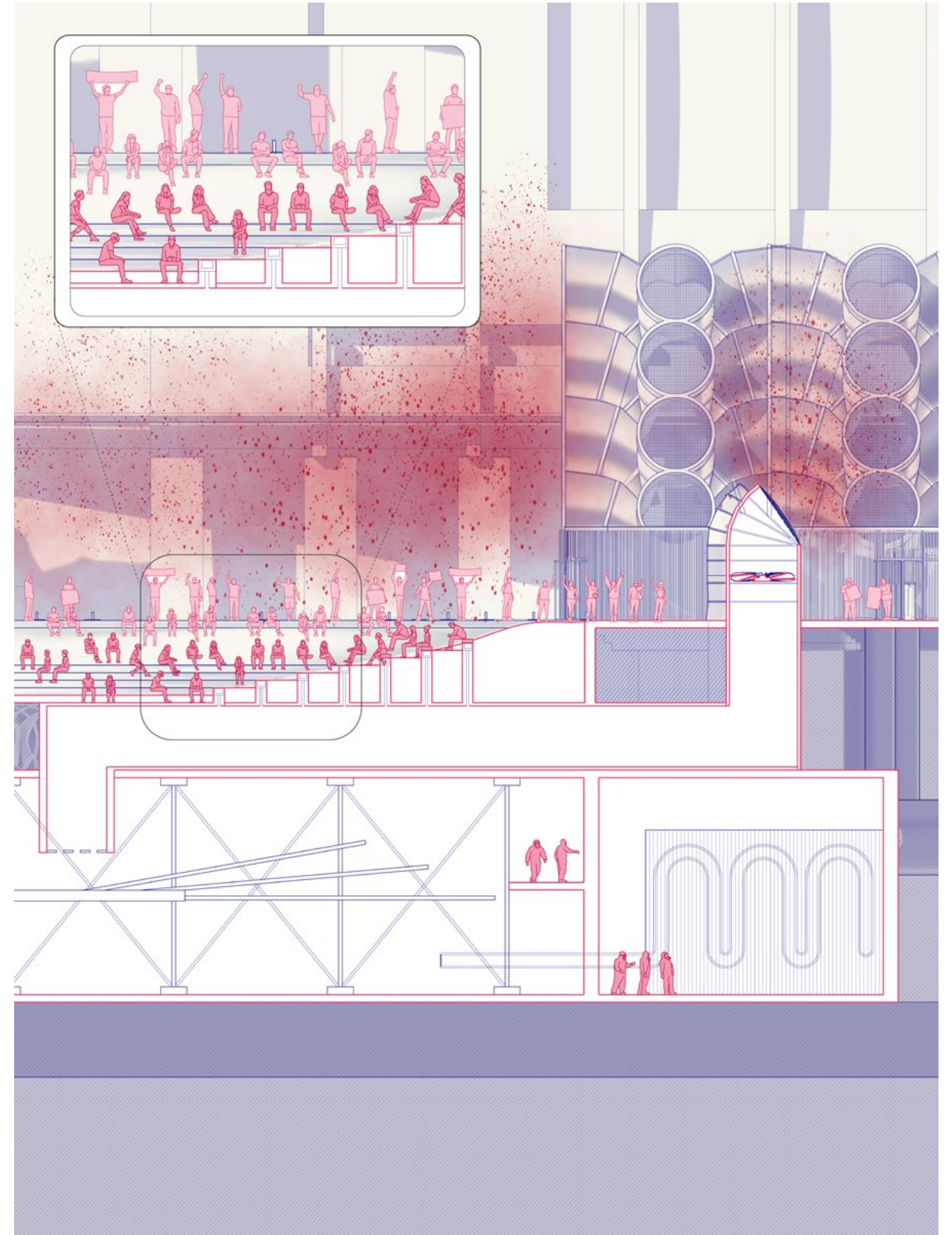
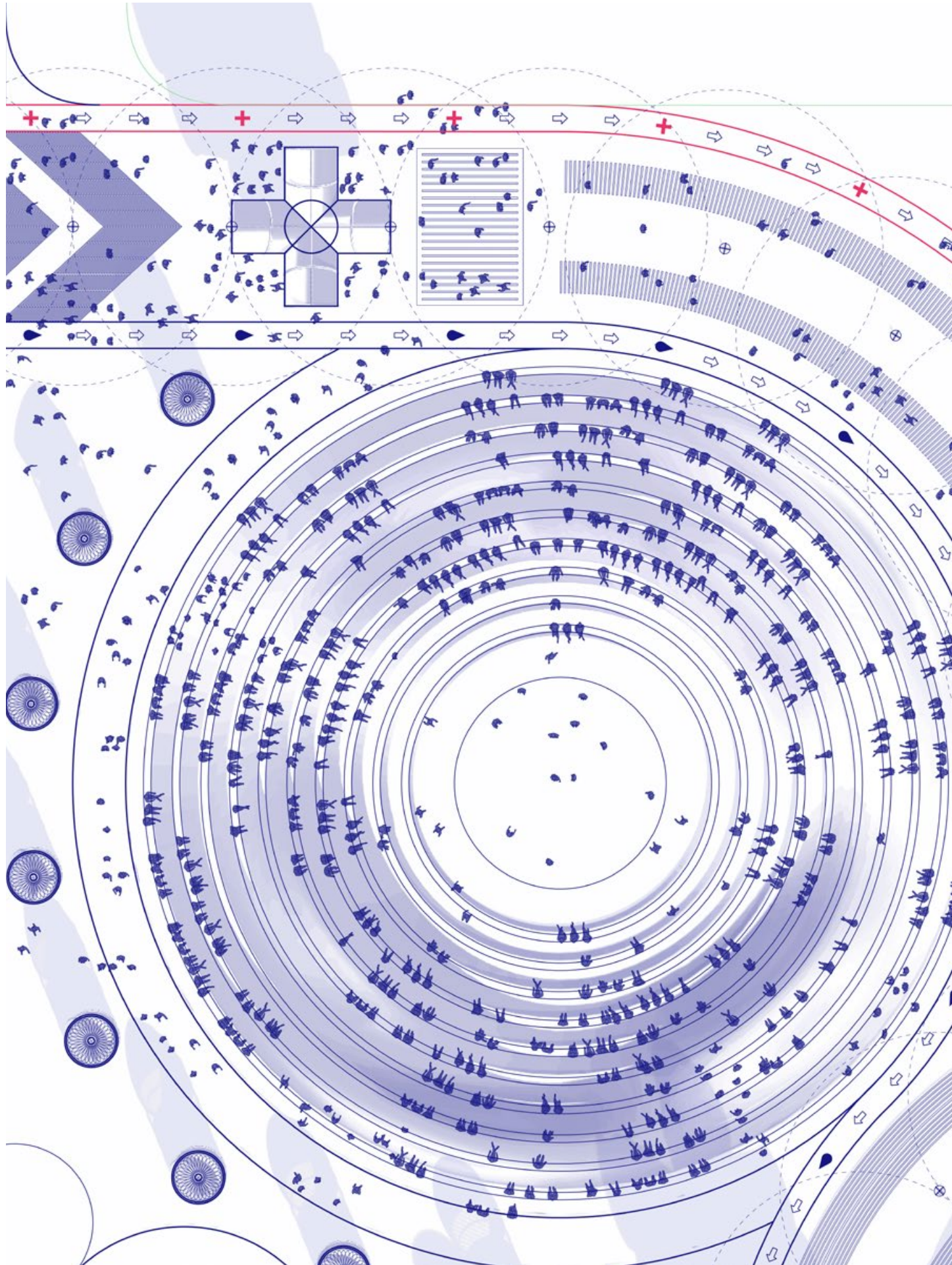
OUTTAKE VENT DETAIL SECTION

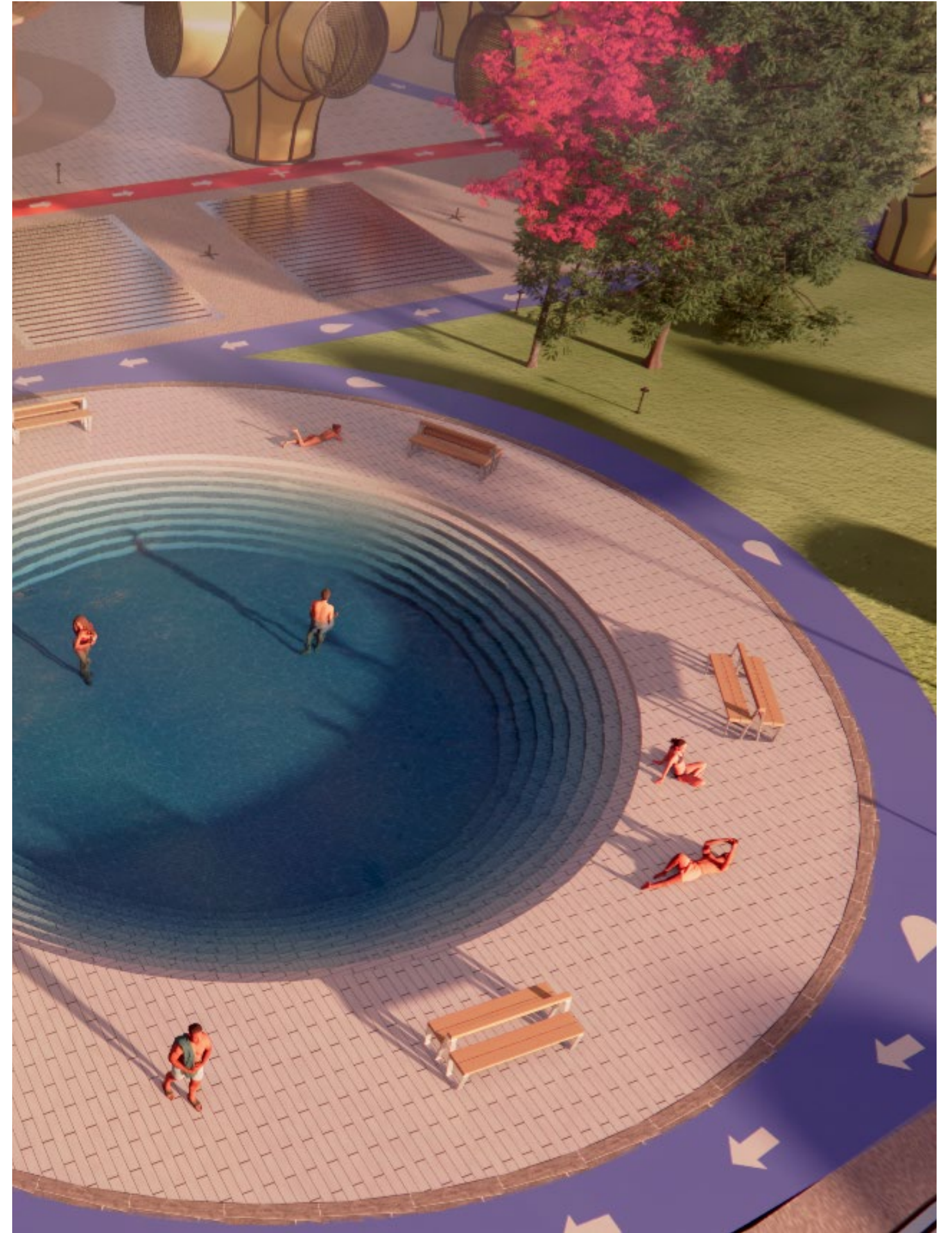
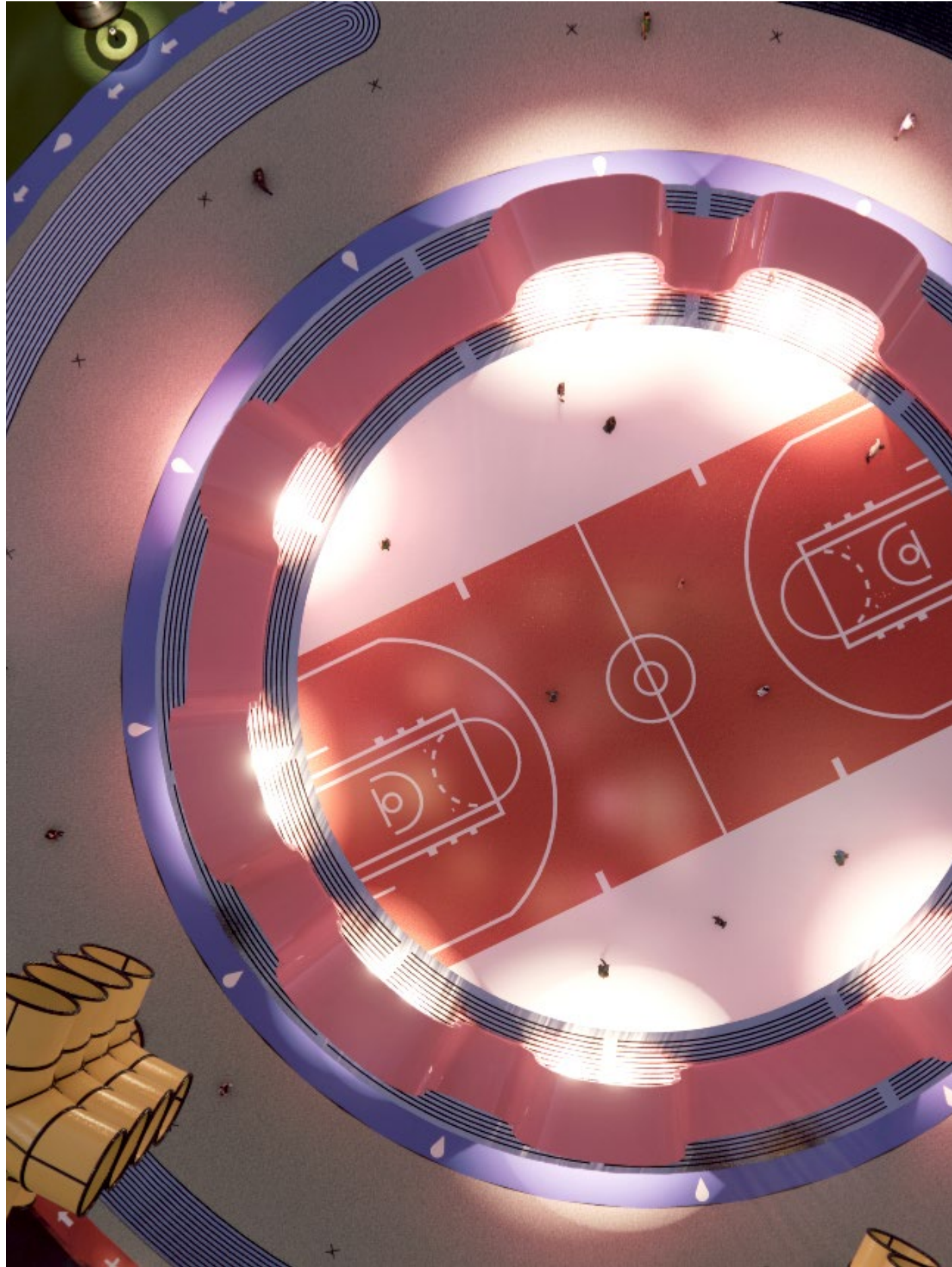














The “i” Line

Type: Academic- Group

Semester: Third Year Master, Fall 2021

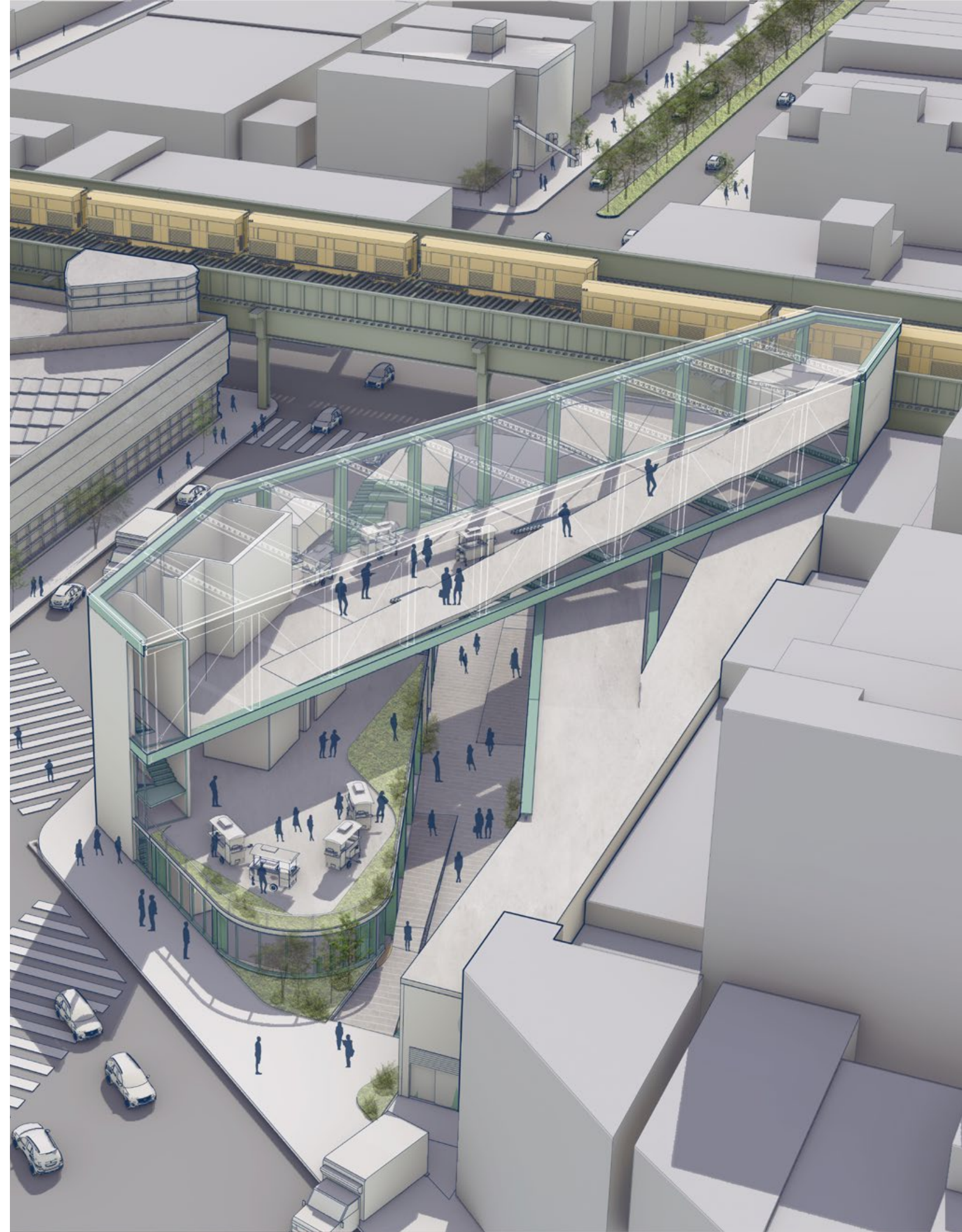
Studio: Advanced Studio V- Phu Hoang

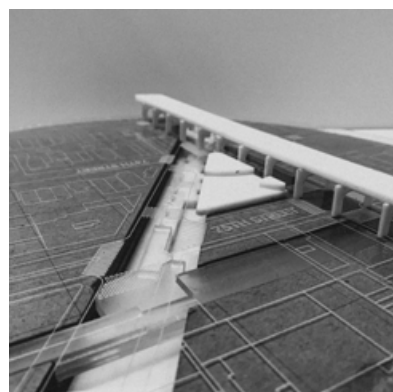
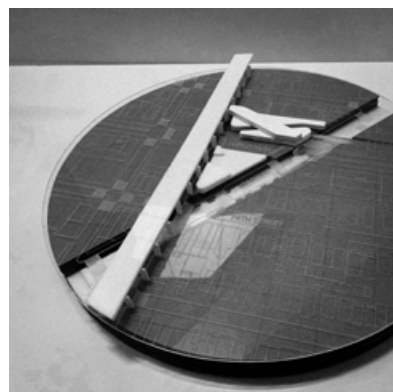
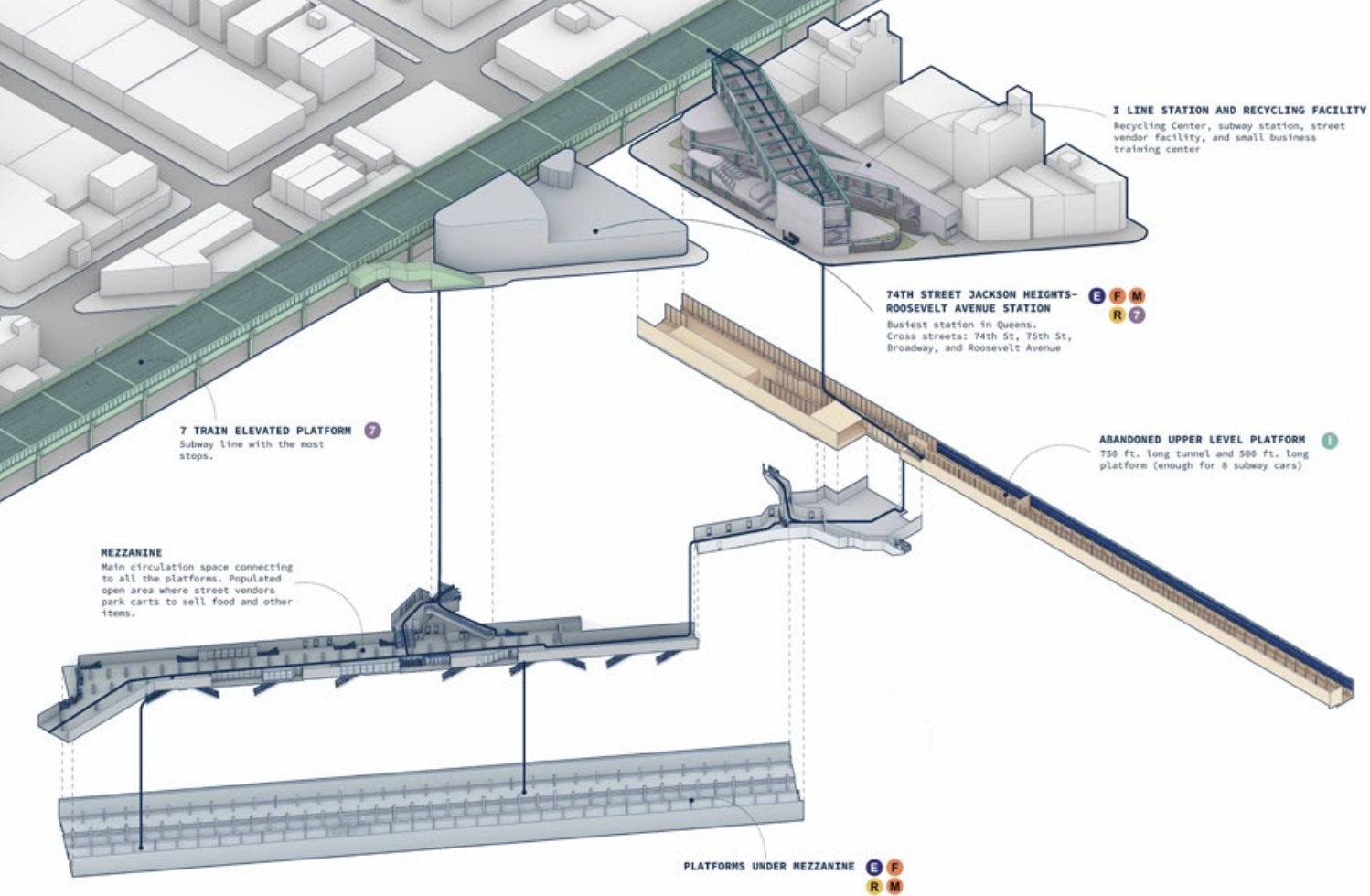
Location: Queens, NY

The “i” Line focuses on transportation equity for Queens. Many immigrants work in the city and commute long distances back to Queens at odd hours of the day when most transportation systems are not operational.

Our building seeks to support and add to the city’s existing recycling network, provide infrastructure to local informal businesses and also provide a more reliable transportation alternative for the general public. The strategy consists of exposing the unseen inner workings of the city and making them part of the everyday lives of the people in the area.

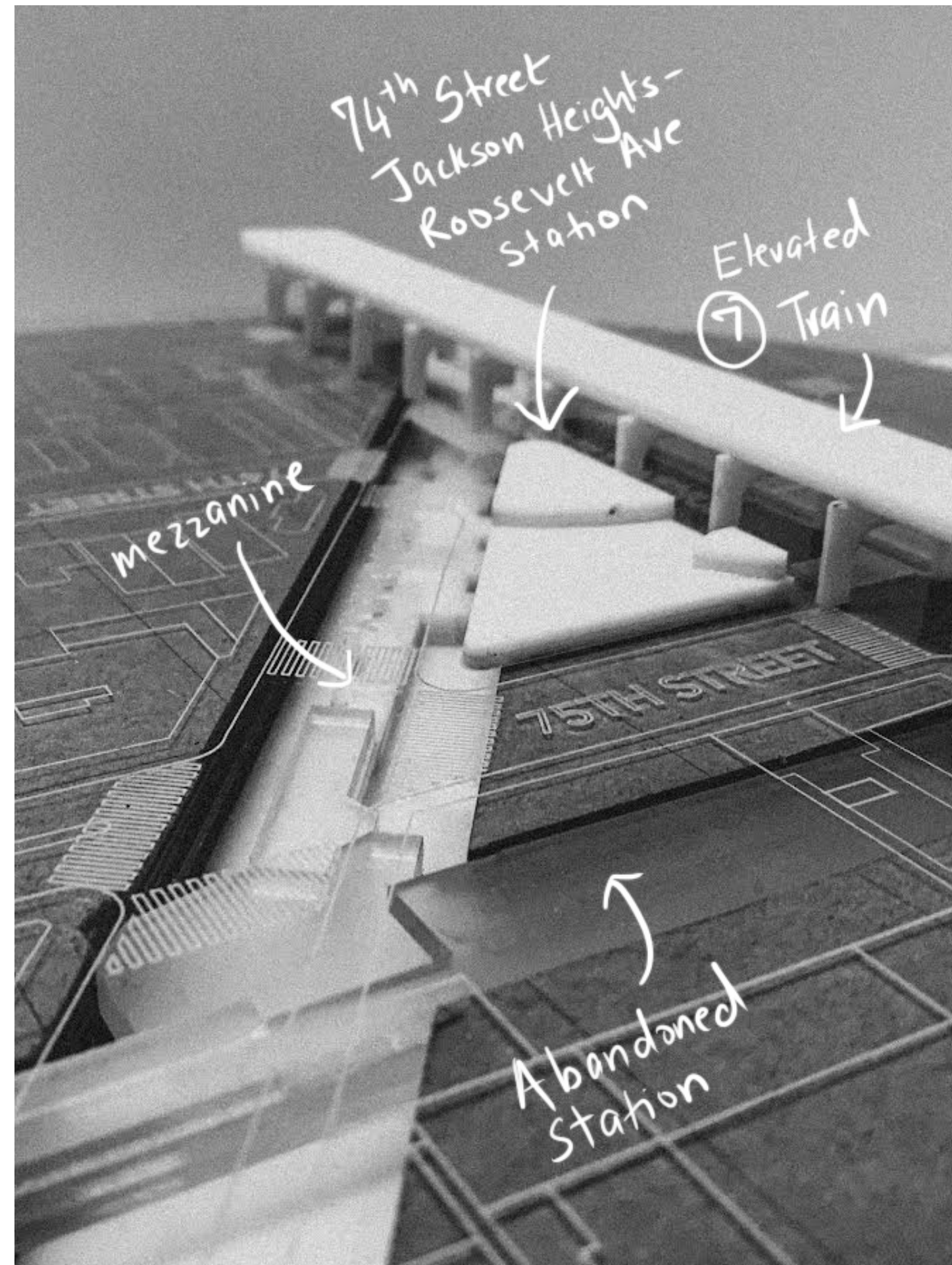
Our recycling network first offers solutions at a city-wide scale by lowering the amount of waste in the state, but aims to impact the global outflows of recyclables to junkyards, oceans and other impoverished countries.

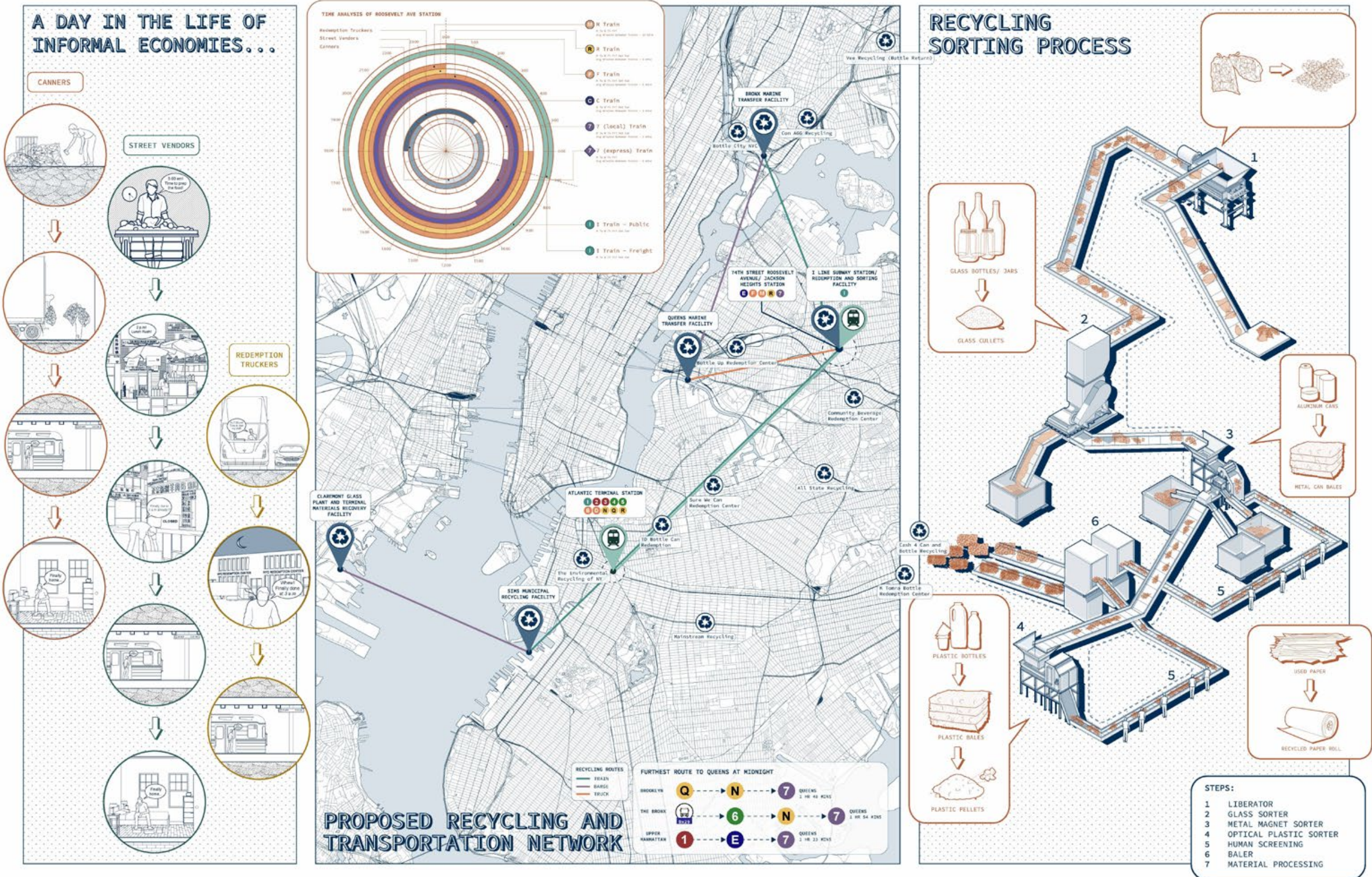




During our initial research, we discovered an abandoned subway platform in the 74th Street Jackson Heights-Roosevelt Ave subway station. The abandoned station was built in the 1920's but construction was stopped because of WWII and the Great Depression. However, a subway platform exists to this day.

In the exploded axon above, you can see the different levels of our site and how circulation works as you move from above to below ground, connecting between the various subway lines that pass through Roosevelt Ave Station. Our selected site, the abandoned station, is located in the upper level of the mezzanine and can be accessed through a ramp that leads to the current MTA offices. The abandoned station is highlighted in yellow in the axon with its train tracks located underground yet above the currently operating tracks.

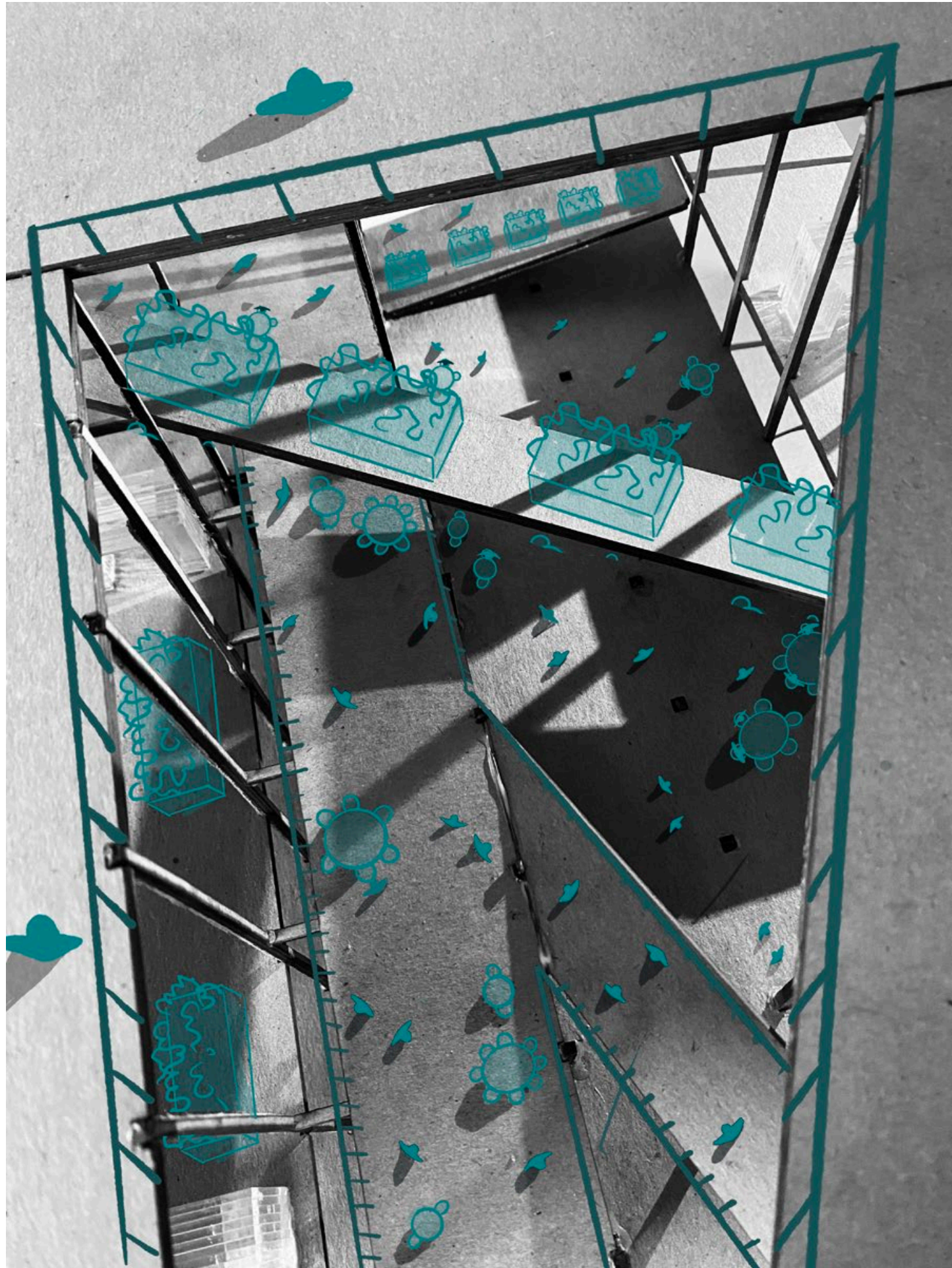




In Queens, we noticed different informal economies that influenced the program we would design for our building. We looked at the canner population and how their working schedule falls between very late nights and early morning; and how it is combined with the city's recycling infrastructure. We also looked at the street vendor population and how, similar to canners, they too have very early mornings to prepare for the day. These vendors often take up sidewalk space in an already crowded Roosevelt Avenue.

The common denominator of these three groups is the train station and how transportation inequality affects them all. Because most of these jobs are operated by immigrant workers living in Queens and require commuting at hours where the trains are not working at full capacity, we identified the need to introduce a new line that facilitates connections to Manhattan and other boroughs. The I line will connect Roosevelt Ave to Atlantic Terminal Station which connects to the 2,3,4,5,B,D,N,Q,R. In addition to the public line we also came up with a line that connects to the existing recycling network infrastructure of the city. In the existing network, incoming waste is taken to a transfer facility by redemption companies and ultimately delivered to the SIMS Facility in Sunset Park. There it would be sorted and then transported or sold to processing plants. However, Sims exclusively sorts plastics, metals and glass. Our project joins the network by adding the sorting and processing of paper. By extending this network we plan for waste to be moved directly from one facility to the next, thereby reducing the number of trash trucks on the road and reducing carbon emissions.

This diagram shows the basic process of recycling and the equipment needed. The first step is to introduce the recyclable bags into a liberator machine which releases them from the bags, later they go through different machines such as glass crushers, optical sorters, and drum magnets that separate the glass, plastics and metals. Next they go through a human screening process in which humans give that final look to see if all materials have been sorted properly or if anything that shouldn't be there should be taken out. And later the recyclables get turned into bales, pellets or cutlets. The final stage would be processing which is usually done by the buyers of the raw materials when they are ready to repurpose them into new products.

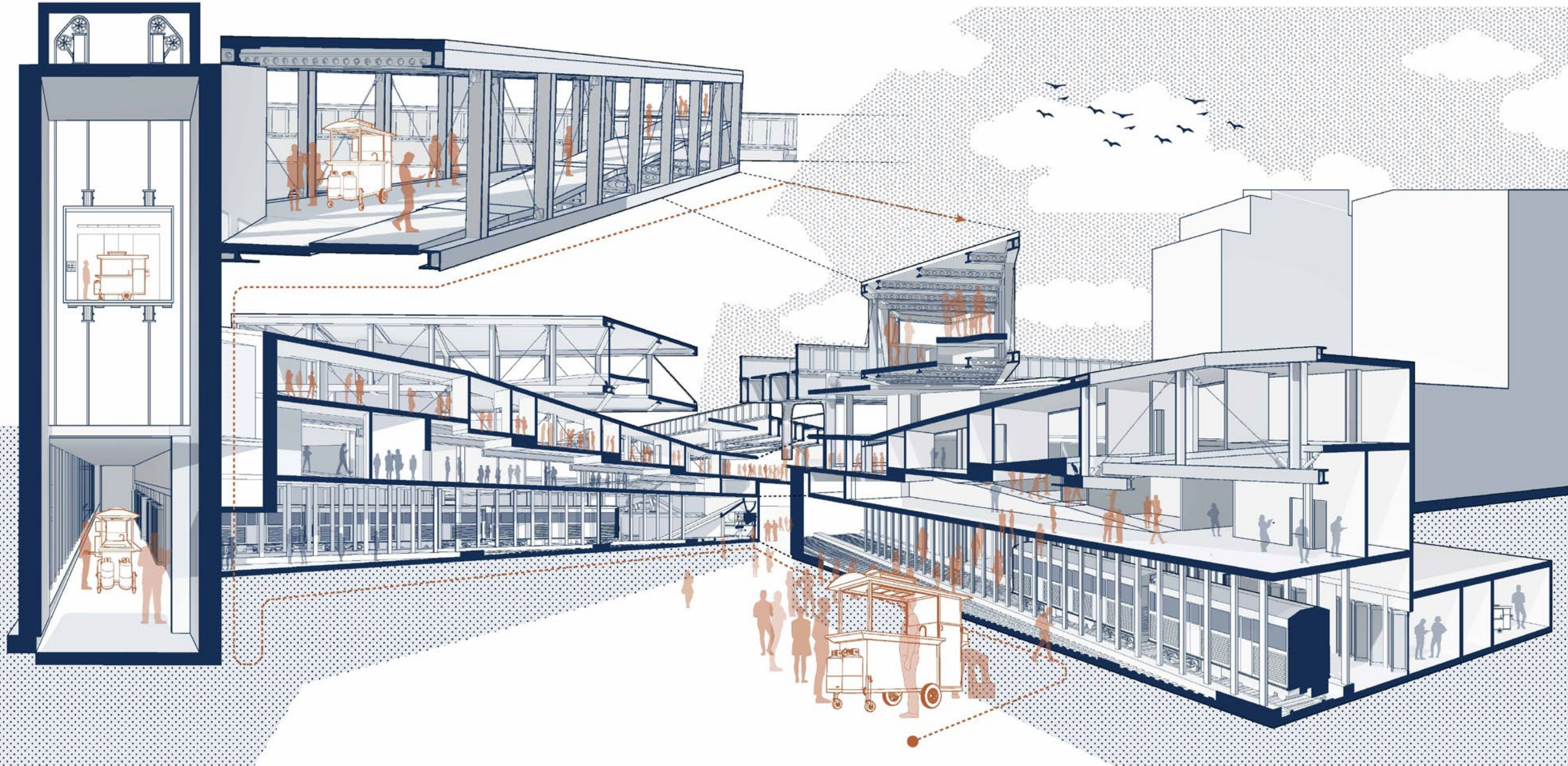


In the design strategy for these spaces it was very important for us to provide visibility from one space to another so that the typically hidden inner workings of the city can be exposed and become a visible part of the everyday lives of the people using the spaces or going through them. To achieve this, we designed long spanning ramps, supported by trusses, that connect different programs to each other, the different levels of our building and the surrounding context, like the elevated 7 train platform. Looking at the model below, you can see how all these ramps are sectionally overlapping. This provides a sense of transparency and visibility into all the different spaces of our building. Reinforcing the idea of exposing what is usually hidden.



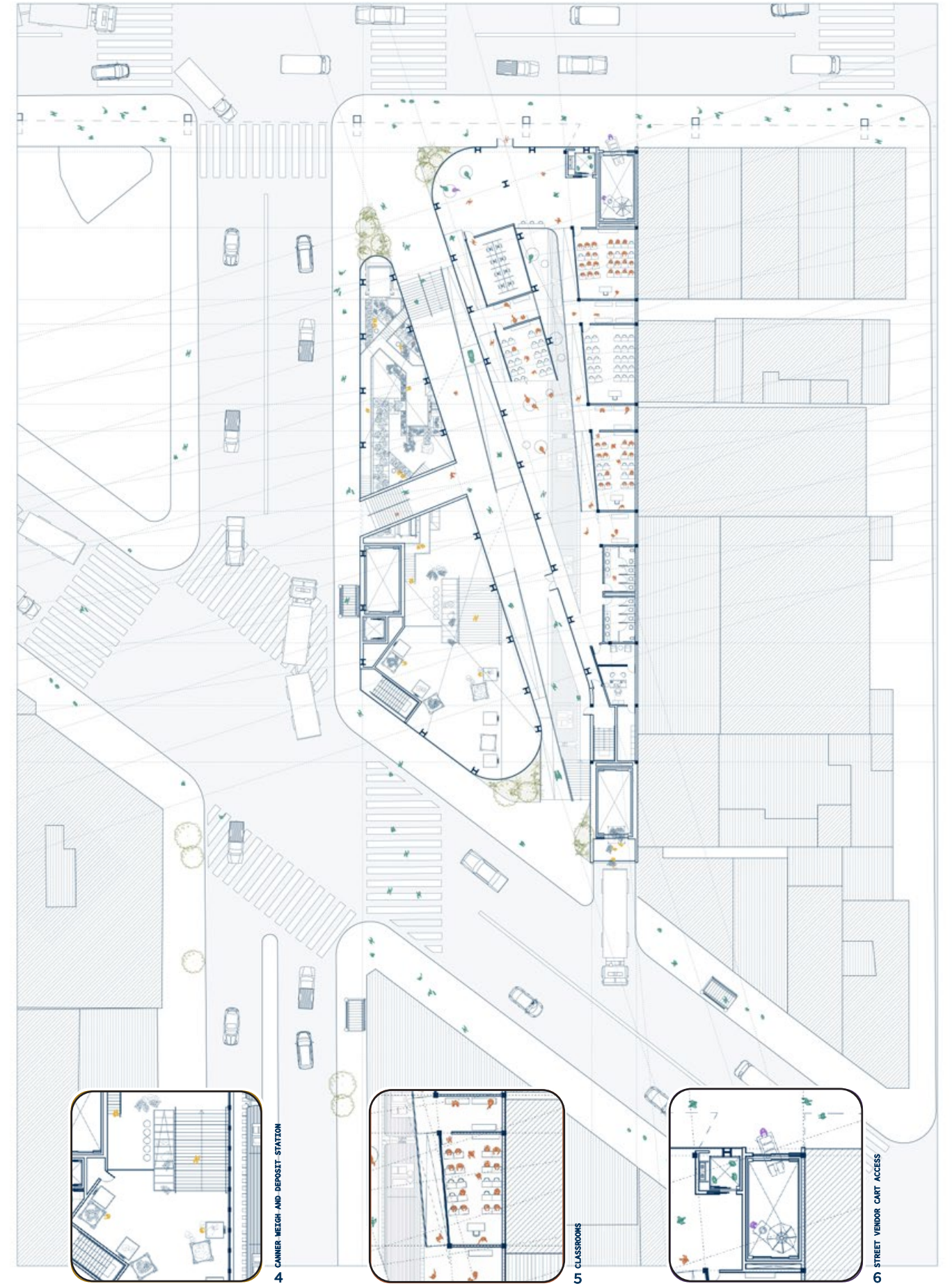
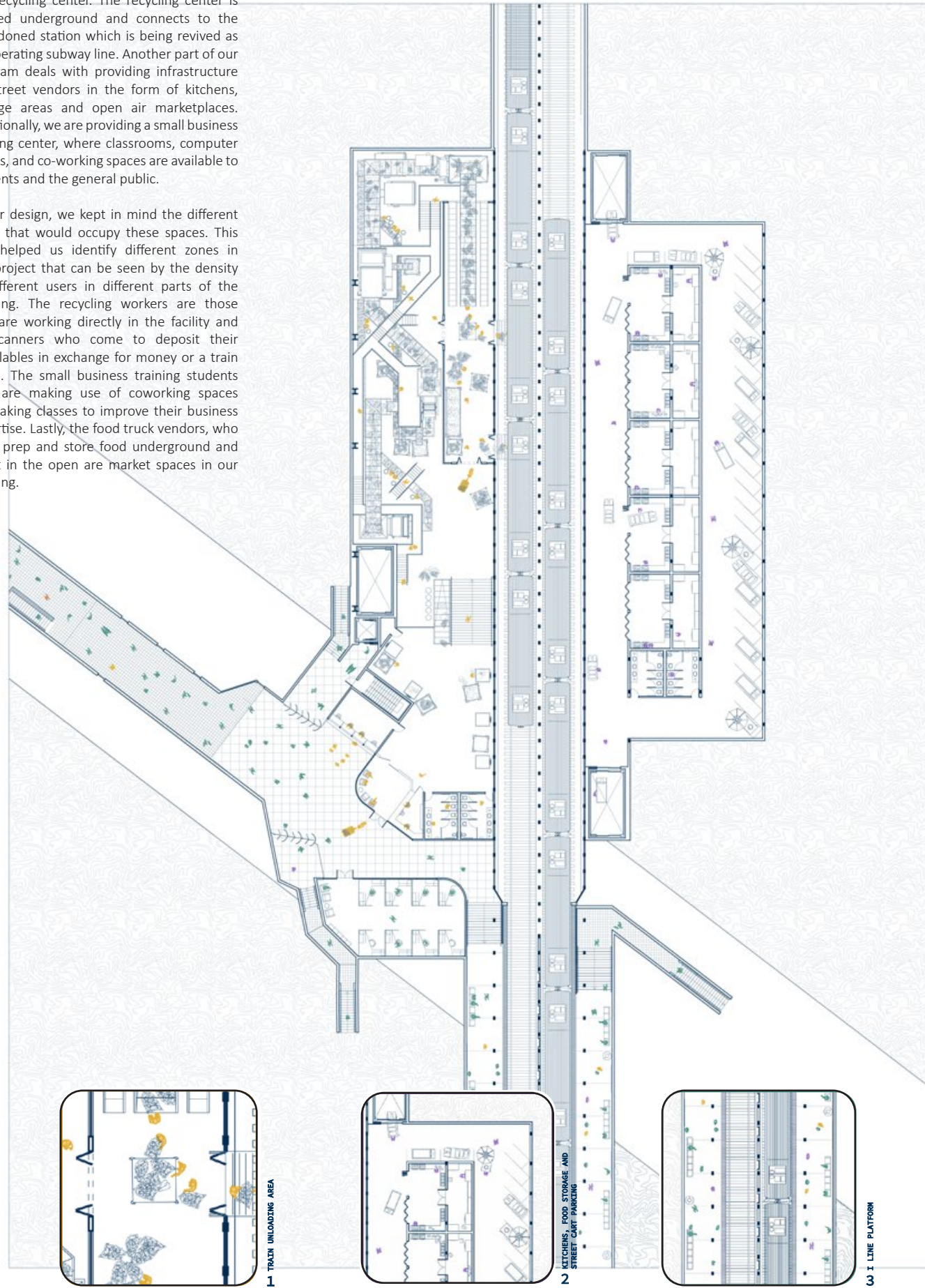
SECTION PERSPECTIVE

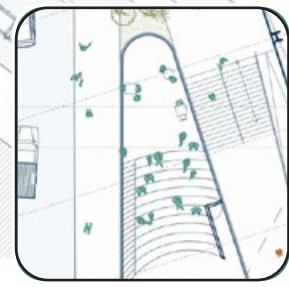
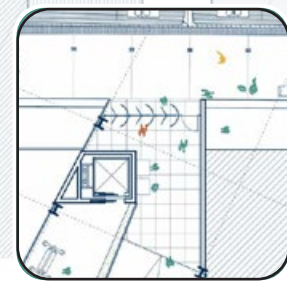
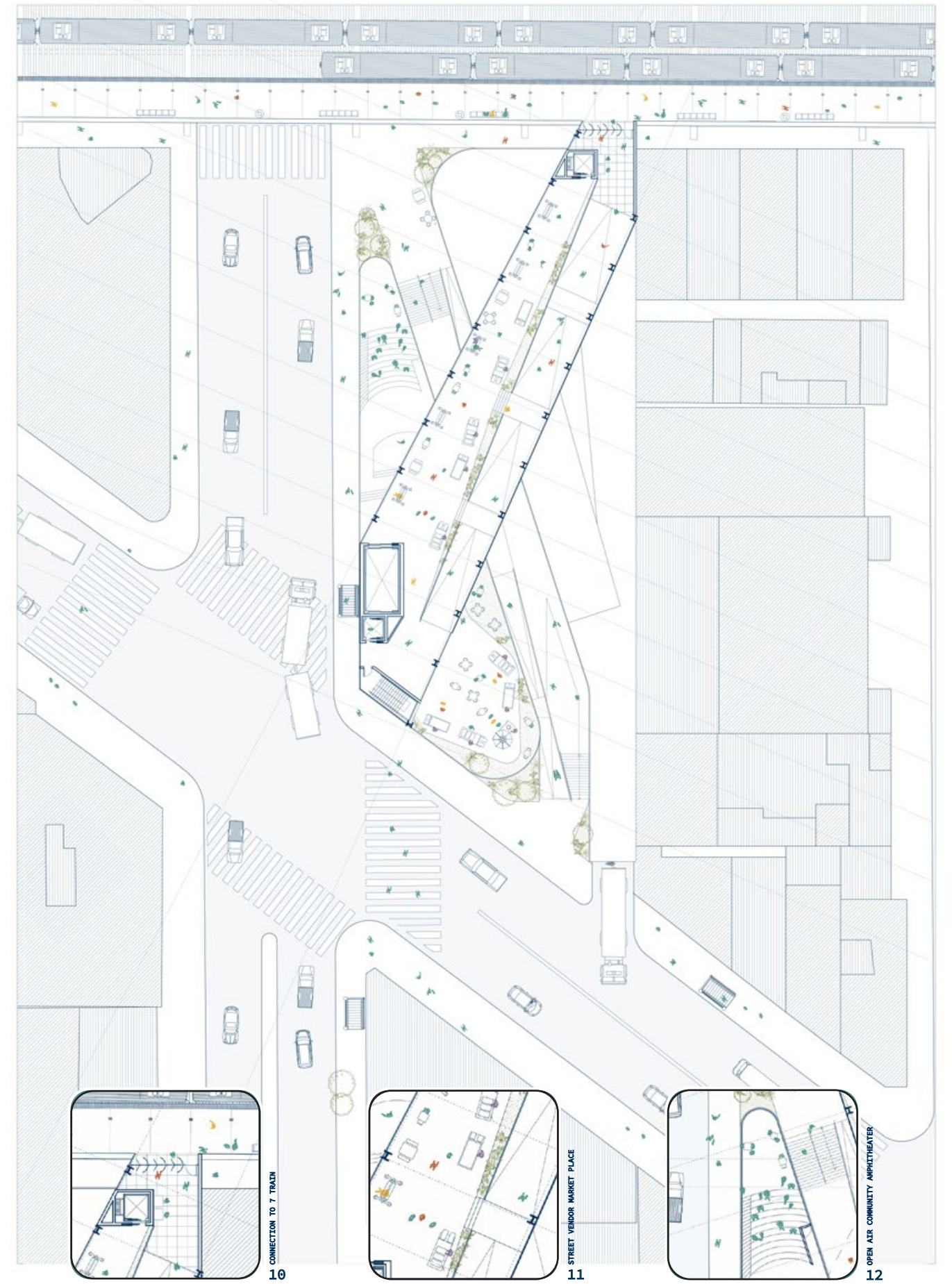
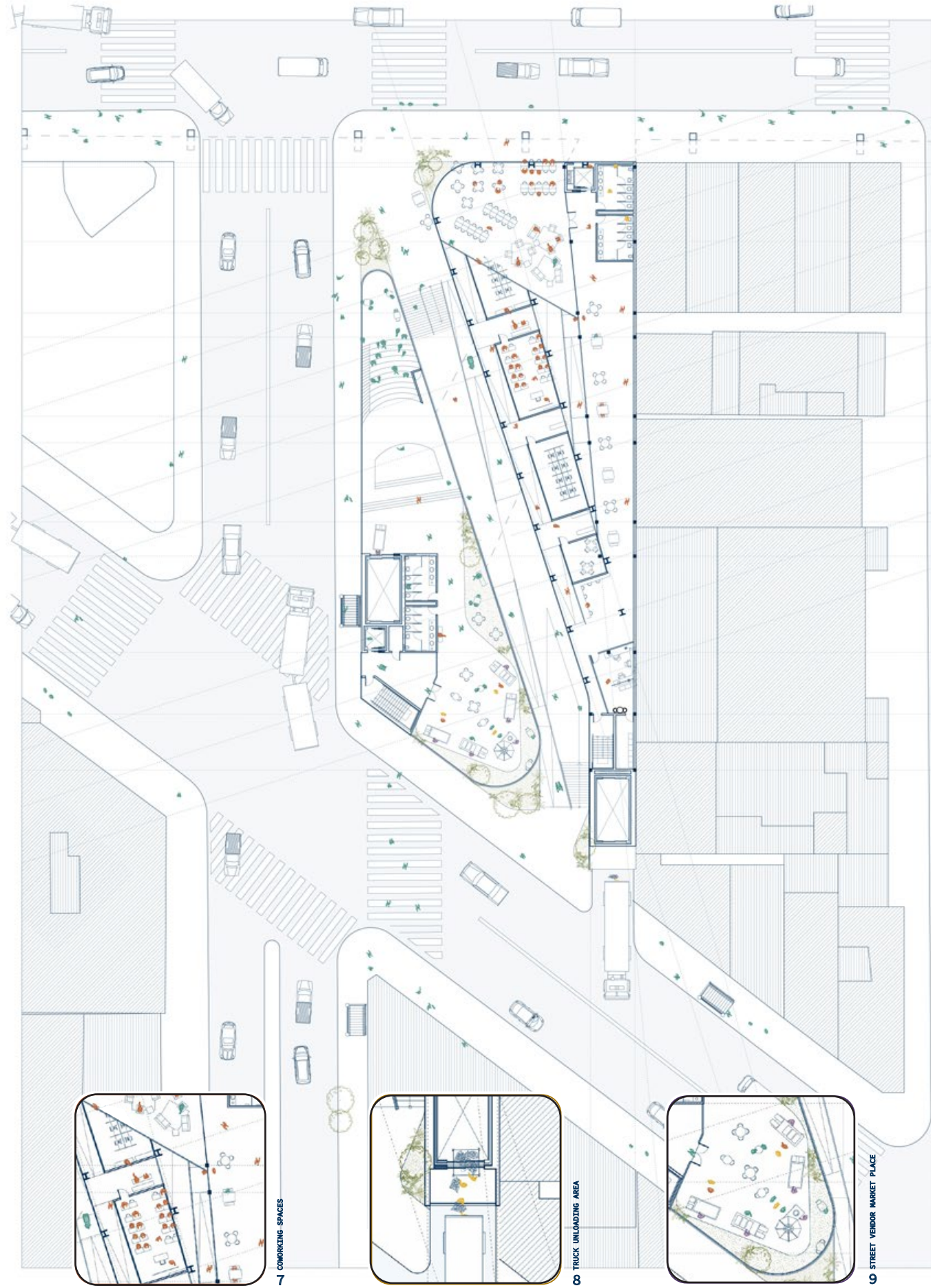
This drawing shows how people would move through the building - how they move from the sidewalk to the sunken level, then up to an elevated bridge that connects to the 7 train.



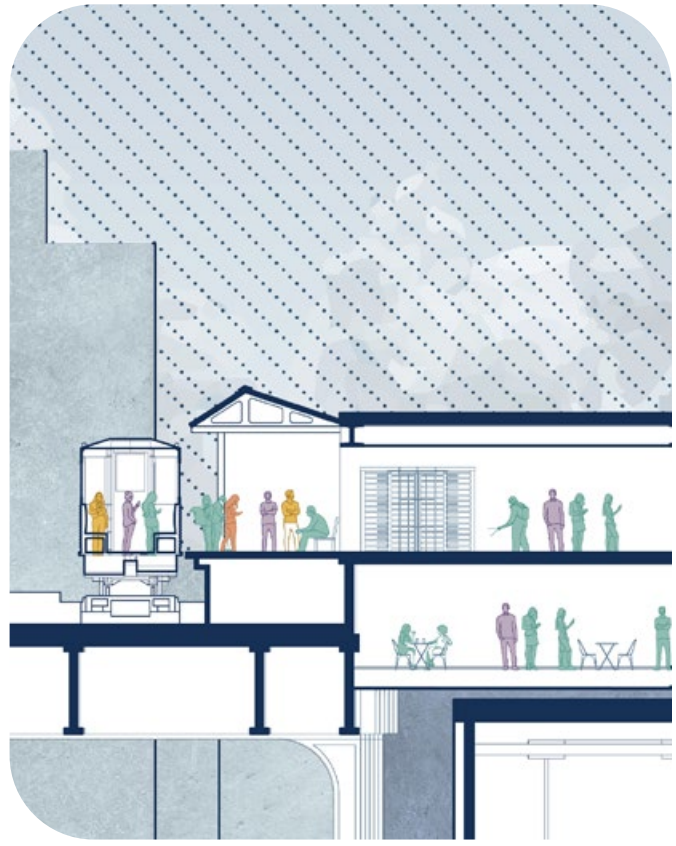
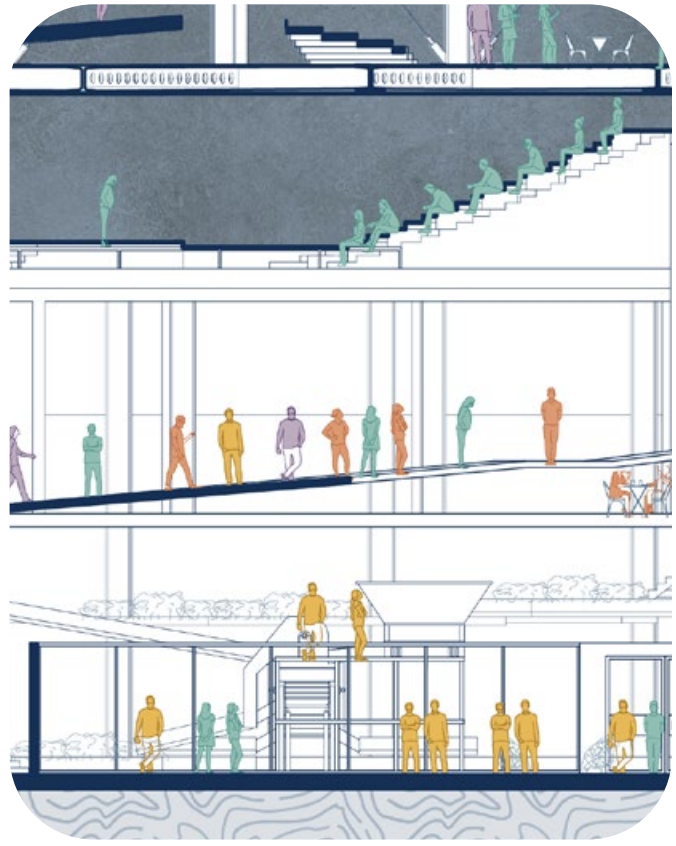
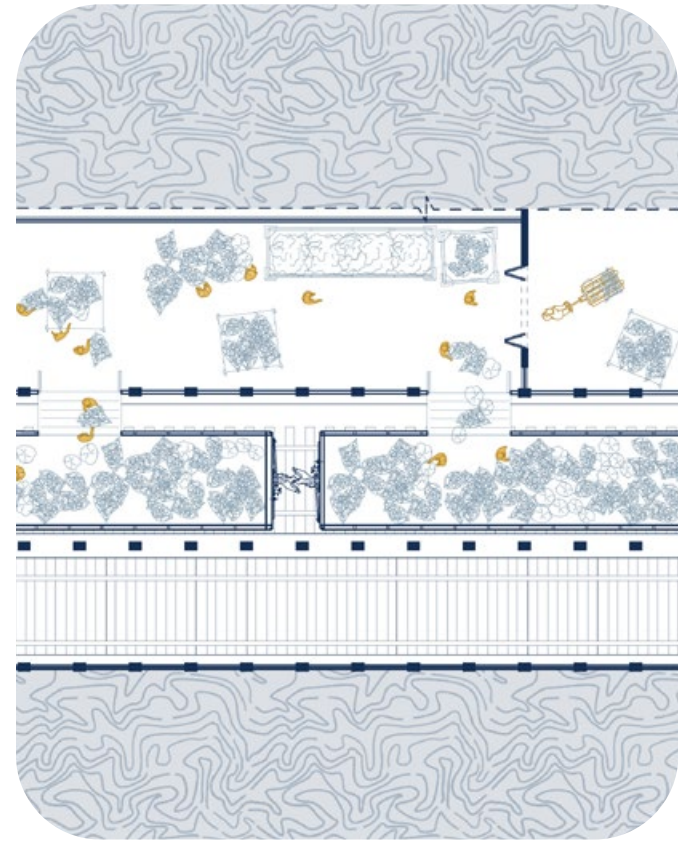
The first part of our proposal consists of the recycling center. The recycling center is located underground and connects to the abandoned station which is being revived as an operating subway line. Another part of our program deals with providing infrastructure for street vendors in the form of kitchens, storage areas and open air marketplaces. Additionally, we are providing a small business training center, where classrooms, computer rooms, and co-working spaces are available to students and the general public.

In our design, we kept in mind the different users that would occupy these spaces. This also helped us identify different zones in our project that can be seen by the density of different users in different parts of the building. The recycling workers are those that are working directly in the facility and the canners who come to deposit their recyclables in exchange for money or a train ticket. The small business training students who are making use of coworking spaces and taking classes to improve their business expertise. Lastly, the food truck vendors, who work prep and store food underground and sell it in the open are market spaces in our building.





UNFOLDED SECTION



PAST

In 1980 the landfill in Islip, NY was over capacity, so the city decided to send their waste to Morehead, NC, where there were plans to turn waste into methane... 1.

3,200 TONS CH₄

During the voyage, a rumor spread saying the waste was contaminated with diapers, syringes and hospital gowns... 2.

4 MONTHS

Morehead refused to accept the waste. The barge was also rejected by several other states and countries... 3.

4 months later, it was decided that the waste would be incinerated in Brooklyn and the ashes dumped in the overfilled landfill in Islip. 4.

PRESENT

As a result other countries have taken on the role but the number of recyclables ending up in landfills or being incinerated has increased since 2018. 3.

Country	Exports (Tons)
United States	861,000
Japan	801,700
Germany	750,000
United Kingdom	540,300
Malaysia	823,000
Thailand	472,700
Vietnam	443,000
Hong Kong	388,300

In 2018, they banned the imports of recyclables including plastic and other materials... 2.

CHINA'S 'NATIONAL SWORD POLICY' JANUARY 2018

BANNED

Until 2018, China was the largest importer of recyclables. They imported 70% of global recyclables... 1.

70%

FUTURE

ONE SUBWAY CAR CAN HOLD... 18 TONS

ONE TRAIN HAS... 10 SUBWAY CARS X 2 STOPS A DAY

OUR PROJECT COLLECTS... 360 TONS ... OF RECYCLING IN A DAY

OUR PROJECT WOULD REQUIRE... 7 YEARS ... TO COLLECT

THE US EXPORTS... 961600 TONS ... OF RECYCLABLES ANNUALLY

WHICH USES... 1.3 BILLION LITERS OF FUEL A YEAR

WHICH RELEASES... 2.7 MILLION TONS OF CO₂ WHEN BURNED...

THE I LINE PREVENTS... 4961 TONS OF CO₂ FROM BEING RELEASED IN THE AIR BY OPERATING FOR A DAY

Our recycling network first offers solutions at a city-wide scale by lowering the amount of waste in the state and reducing the number of trucks on the road. It also aims to impact the global outflows of recyclables to junkyards, oceans and other impoverished countries.

In this drawing we were looking at the global impacts of recycling and decided to view this topic through 3 lenses, the past, present and future. In the past, we look at the incident of MOBRO 4000 - which chronicled the arduous journey of a waste barge as its contents were rejected from various neighboring countries, highlighting the US's need for a recycling and waste program. In the present, we looked at the recycling ban China - which used to import 70% of global recycling - imposed in 2018 which impacted how the world dealt with their waste. Waste is still being exported to impoverished countries and the amount of recyclable being incinerated and dumped in landfills is increasing. For the future, we looked at how much waste the US exports annually, how much barge travel that would equate to, and the carbon emissions that would result from that travel. According to our calculations - by operating for 1 day, our building would prevent 4961 tons of CO₂ from being released into the air by waste barge travel.



Beneath Our Feet...

Type: Academic- Group

Semester: Second Year Master, Spring 2021

Studio: Advanced Studio IV- Vanessa Keith

Location: Hudson, NY

'Beneath Our Feet' asks us to think about the geological and fungal histories and networks that lay below ground. Visible on the surface only when we are willing to give time and energy to understand the delicate systems and geologies below- training our senses to see, smell and feel the energies that live beneath us.

Our site is rich in this history, tended by and celebrating the Schaghticoke First Nations peoples. Our project aimed to transform this historic land and not only design for the movement of people through this land but also provide amenities and a home base for the Schaghticoke peoples where they could stay, congregate and share their experiences with nature.

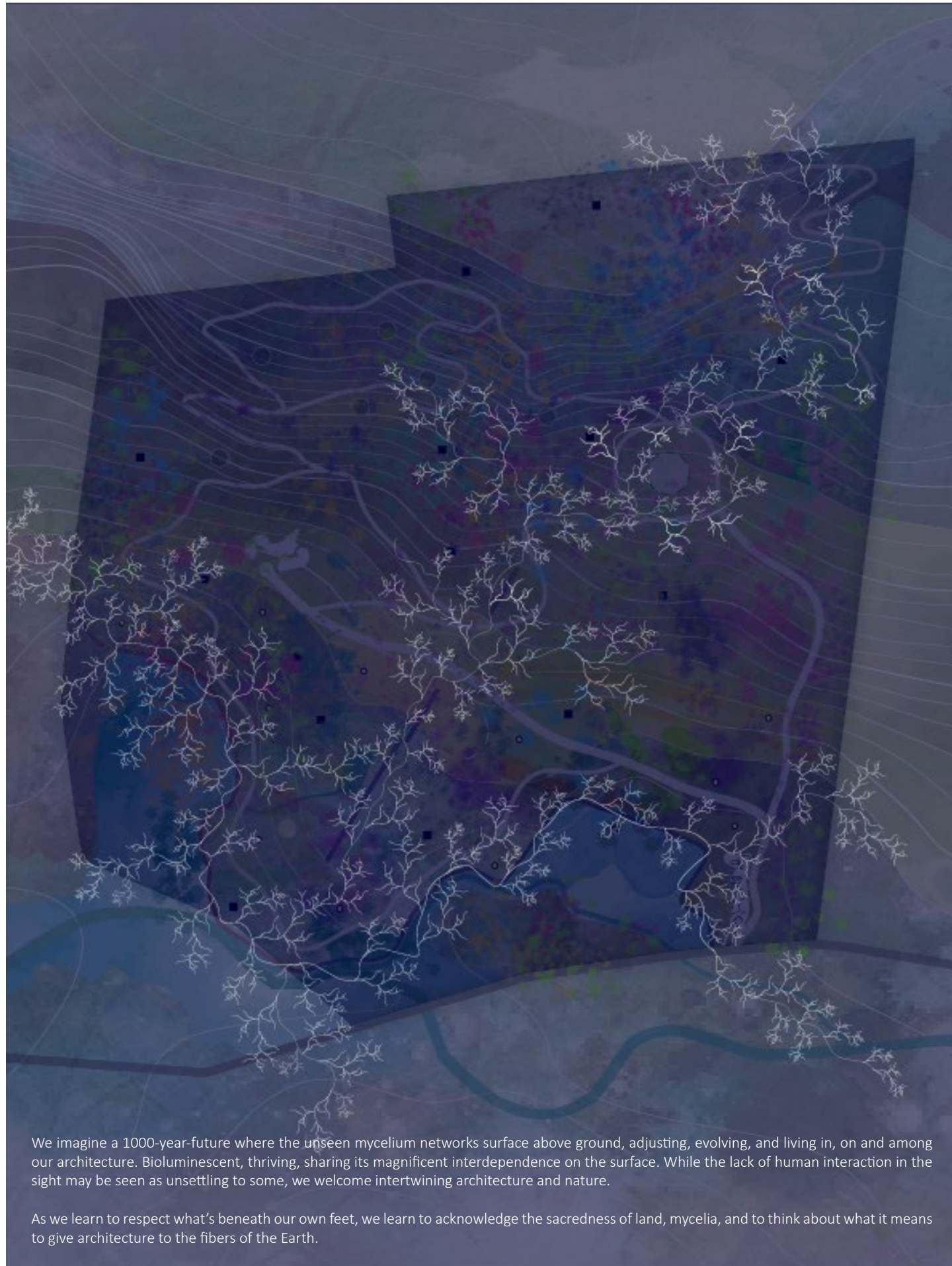


SITE PLAN

Our site is rich in this history, tended by and celebrating the Schaghticoke First Nations peoples. For example, looking at the 'serpent walls', the pregnant female on the left is characterized by her curves while the male serpent on the right follows a more rigid path. Along the sacred rock walls the serpents meet at a quartz head. Additionally, you can observe the existing flora and fauna ecosystems that are marked by the various splatters of colors. These herbs and flowers are an important part of the Schaghticoke First Nations culture.

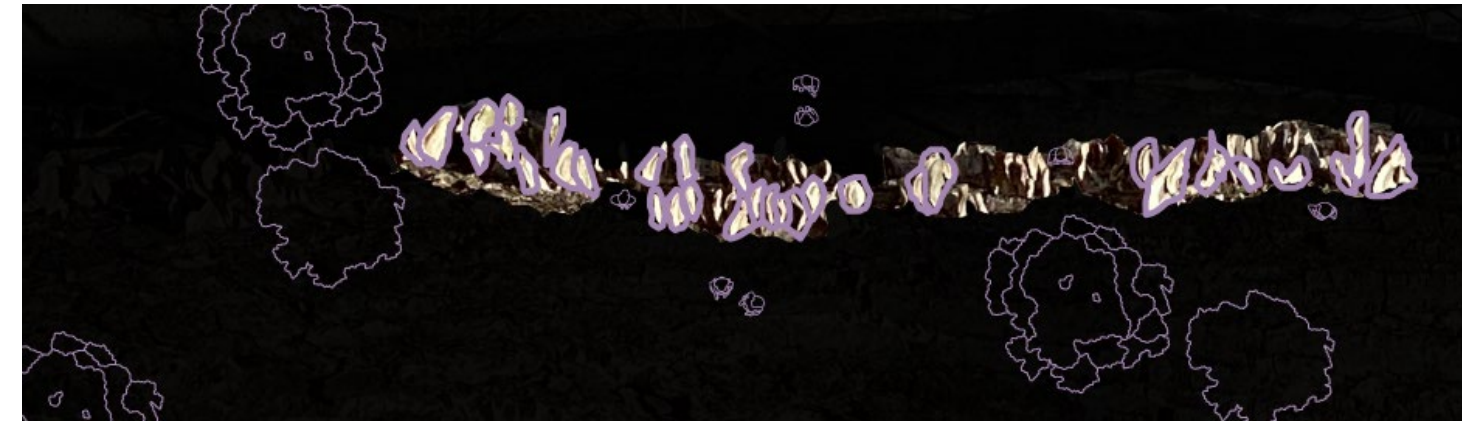
Our master plan below locates the various programs pertaining to our site. We have the Main House, which, like its name, acts as the base for the Schaghticoke First Nations people. There are also mini passive houses littered across the 5 acre site, where visitors can spend the night surrounded by nature. There is also a greenhouse proposed in the northern region of the site where sunlight is abundant, and lastly, a gateway house at the entrance to welcome the Schaghticoke First Nations people and visitors.





We imagine a 1000-year-future where the unseen mycelium networks surface above ground, adjusting, evolving, and living in, on and among our architecture. Bioluminescent, thriving, sharing its magnificent interdependence on the surface. While the lack of human interaction in the sight may be seen as unsettling to some, we welcome intertwining architecture and nature.

As we learn to respect what's beneath our own feet, we learn to acknowledge the sacredness of land, mycelia, and to think about what it means to give architecture to the fibers of the Earth.



Beneath trees, exists an underground network of mycelium. Mycelium fibers are a type of fungi that creates an intricate network of interconnectedness in the soil. These fibers allow plants to share nutrients and information between each other. Older trees, considered 'mother' trees, are known to supply sugar to seedlings. However, some plants use this network to deliver toxins and kill nearby plants. As a result of this beautiful network and the appearance of several mushroom types on site, mycelium plays an important role in both our design and construction.

MYCELIUM BRICK PROCESS



Stage 1 - Picking out fibrous mushrooms

Easily produce-able and a strong insulator mycelium bricks will create the walls of several temporary pavilion at the gateway and provide insulation in our main house and passive guest houses throughout the site.

Below you can observe our own mycelium brick process. Our bricks are made from corrugated cardboard and mushrooms stored in a sealed container and a dark space- opened once a day for fresh oxygen.

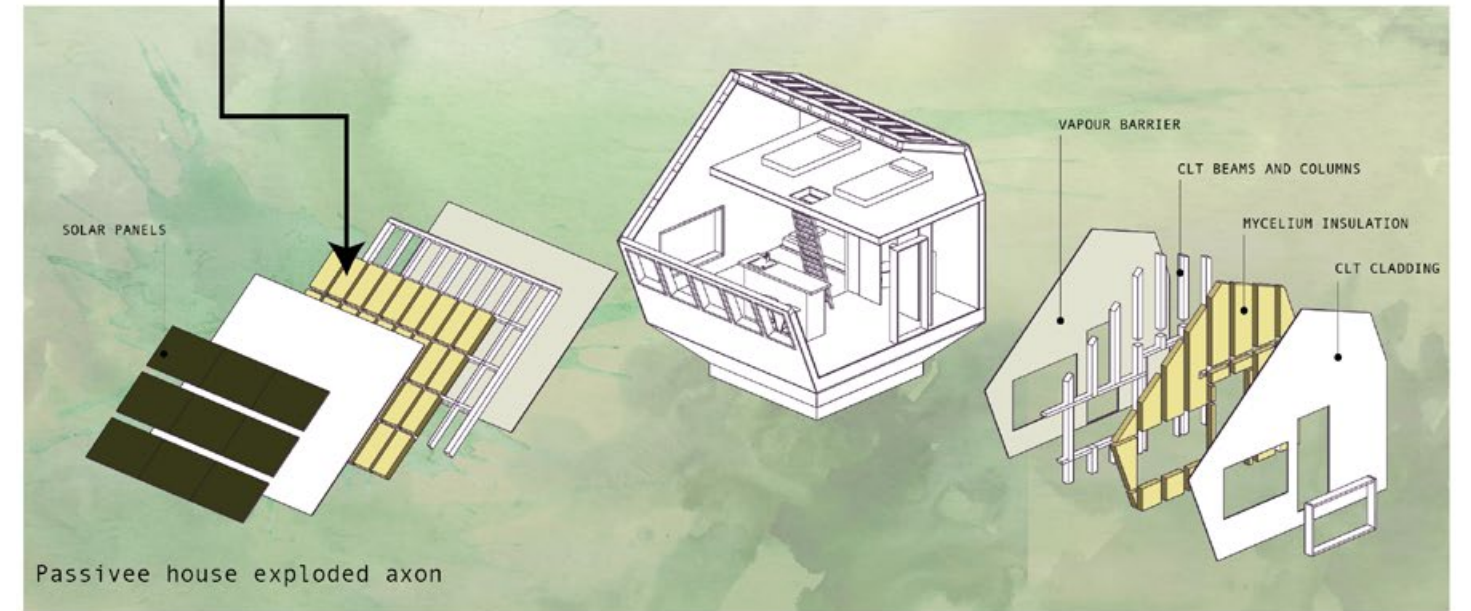
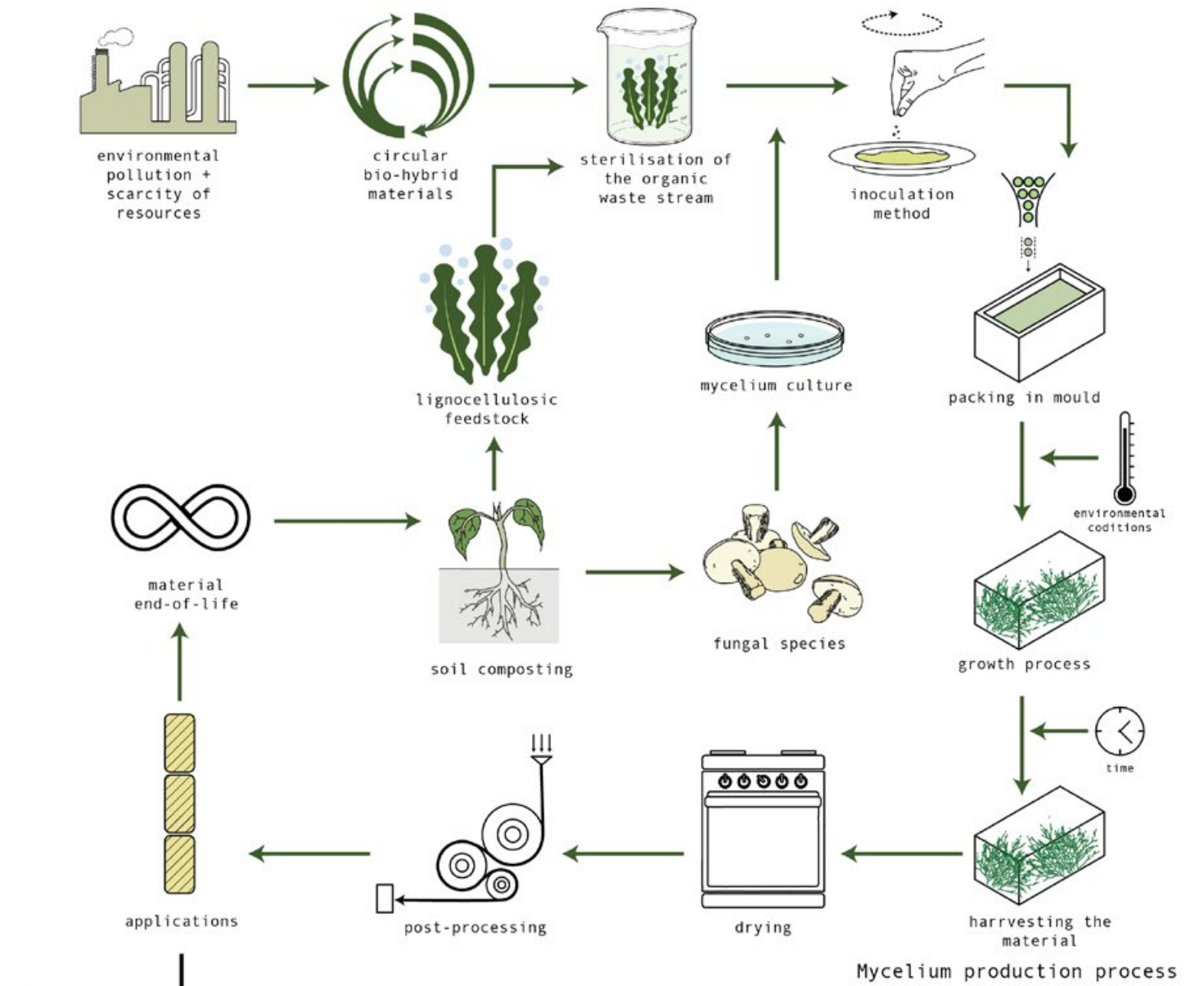


Stage 2 - Stripping the fibers from the mushrooms and then layered them in a container with sheets of corrugated cardboard inbetween

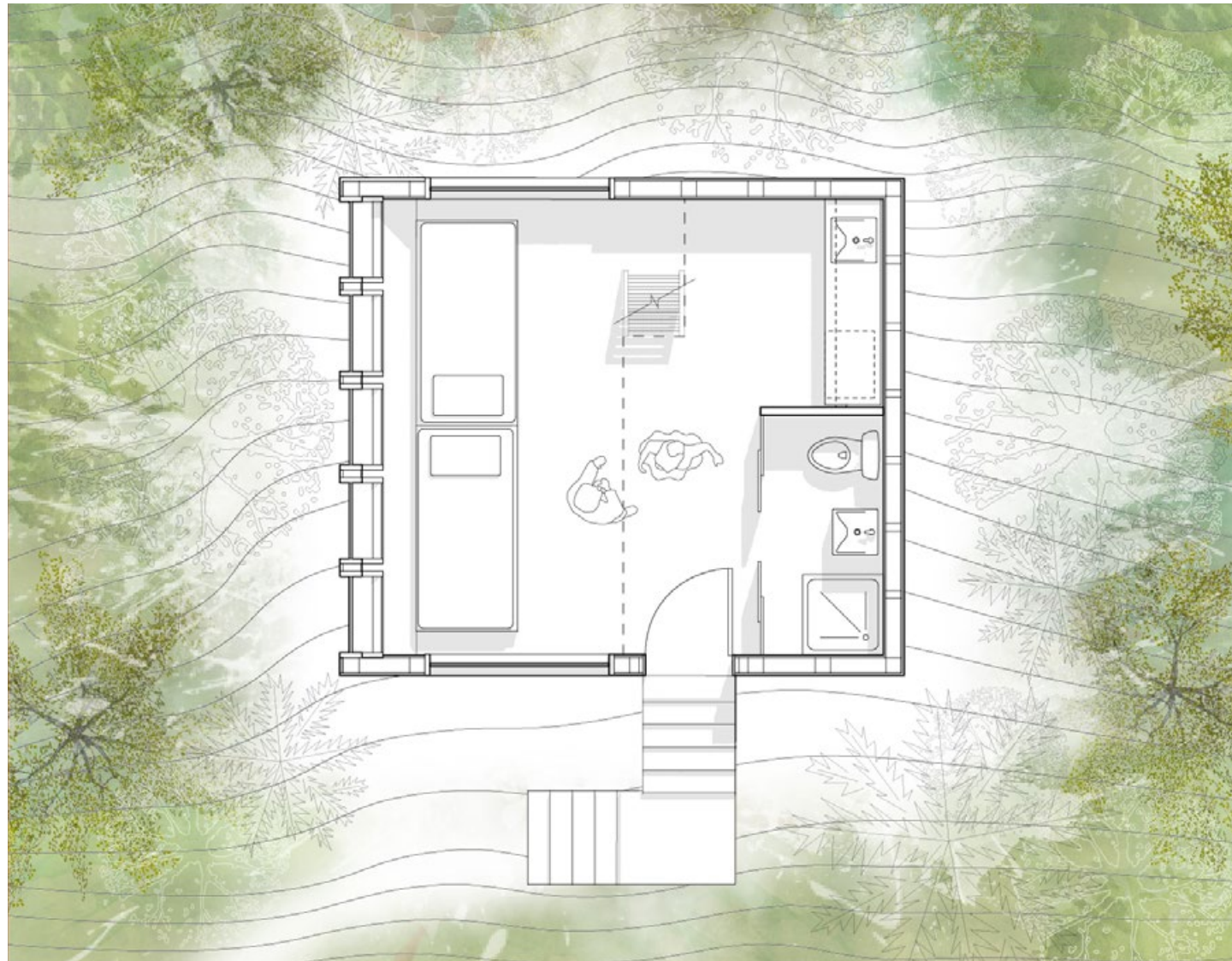


Stage 3 - Leaving the container in a dark environment until mycelium grows from the fibers

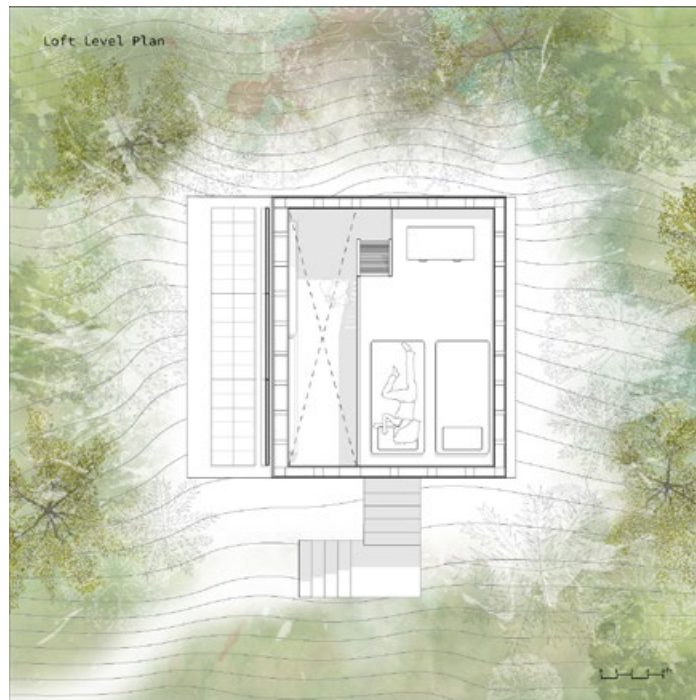
MYCELIUM INSULATION PRODUCTION DIAGRAM



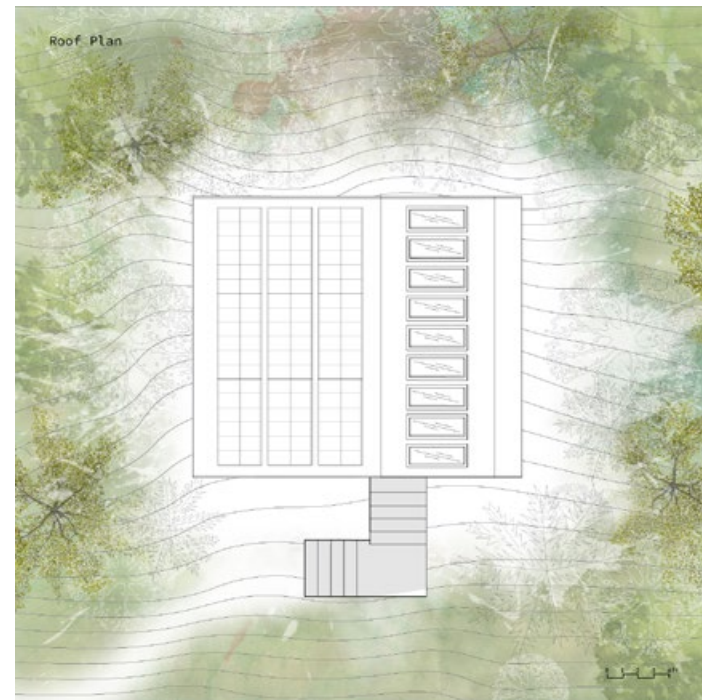
Passive house exploded axon



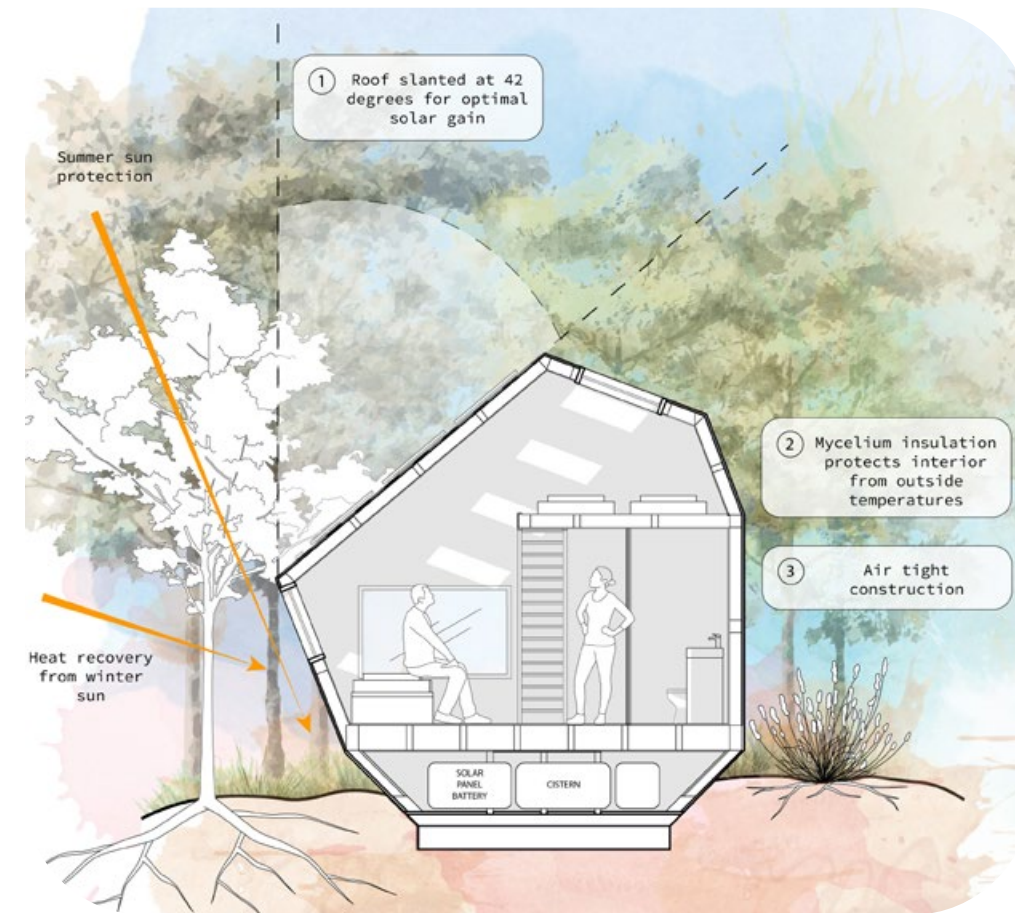
First Floor Plan



Second Floor Plan



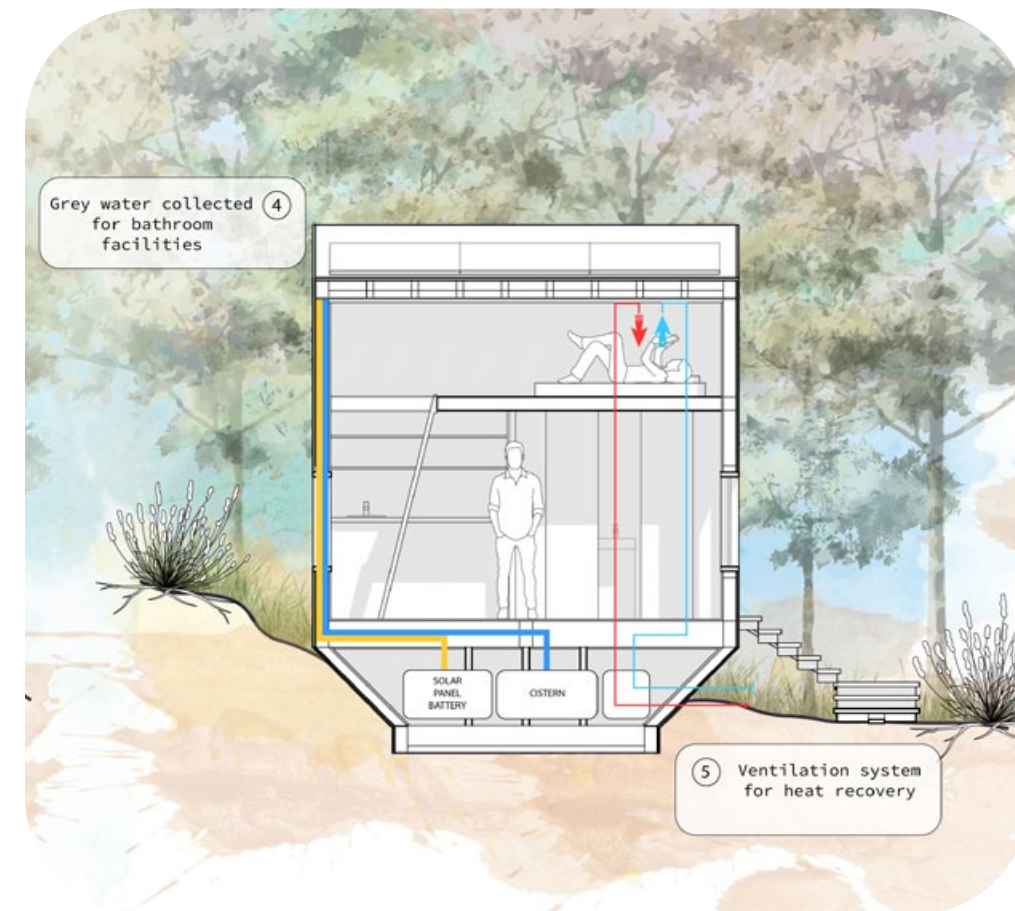
Roof Plan



Scattered on the higher region of the site, are passive houses. While original wigwam platforms on this higher area will remain untouched for educational programming, we propose passive houses for visitors or Schaghticoke First Nations people visiting the site for an extended period of time.

The ground floor is an open layout design with bedding on the second floor. Bathrooms are located on the ground floor that use water collected from gray rainwater collection systems and kitchens are designed to be small and compact to encourage visitors to eat meals with everyone in the community kitchen.

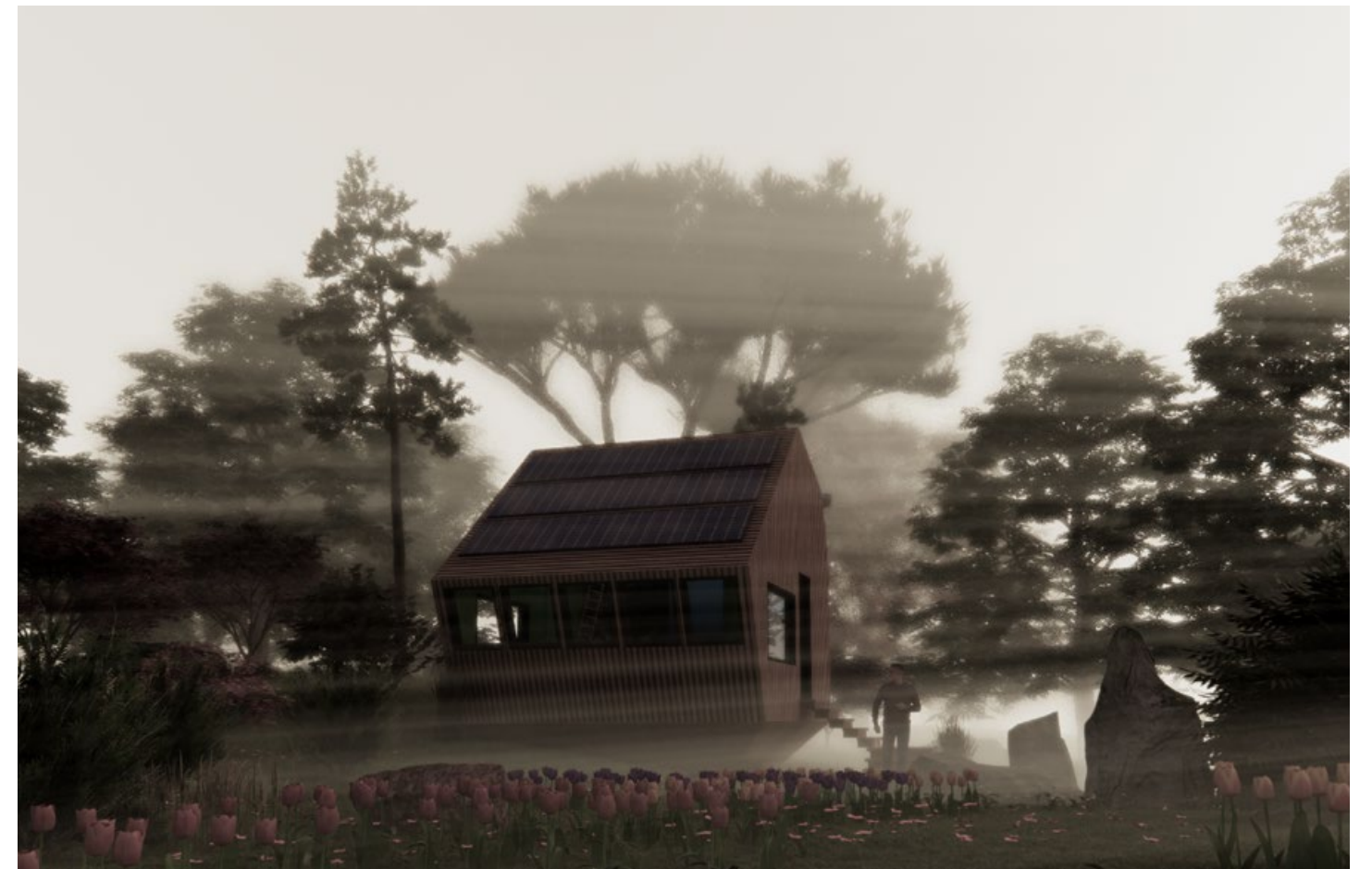
Our passive house strategy proposes a form that can be orientated for max solar heat gain and for optimal solar intake for the solar panels located on the roof. The house will have airtight construction, mycelium insulation and heat ventilation recovery systems and would be built with sustainable materials such as CLT.

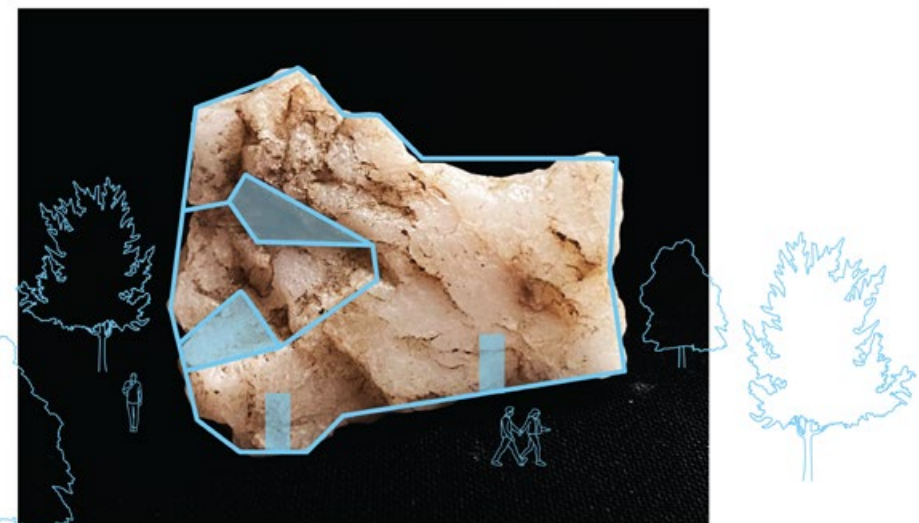
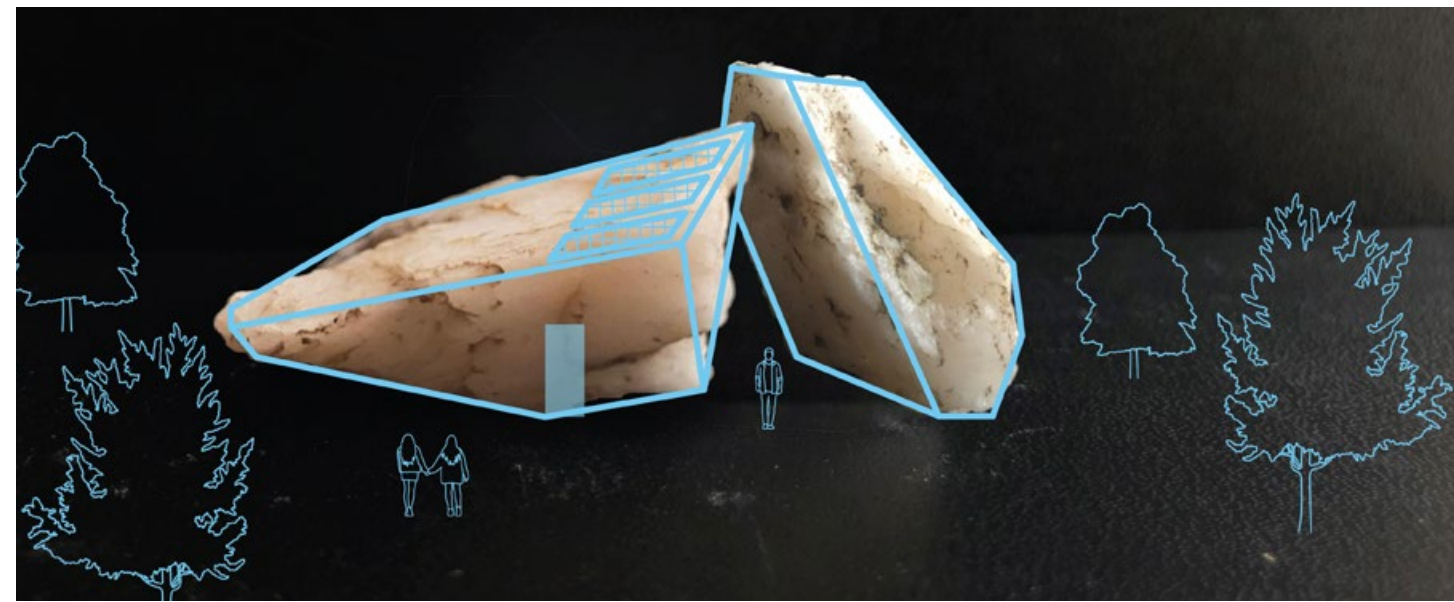
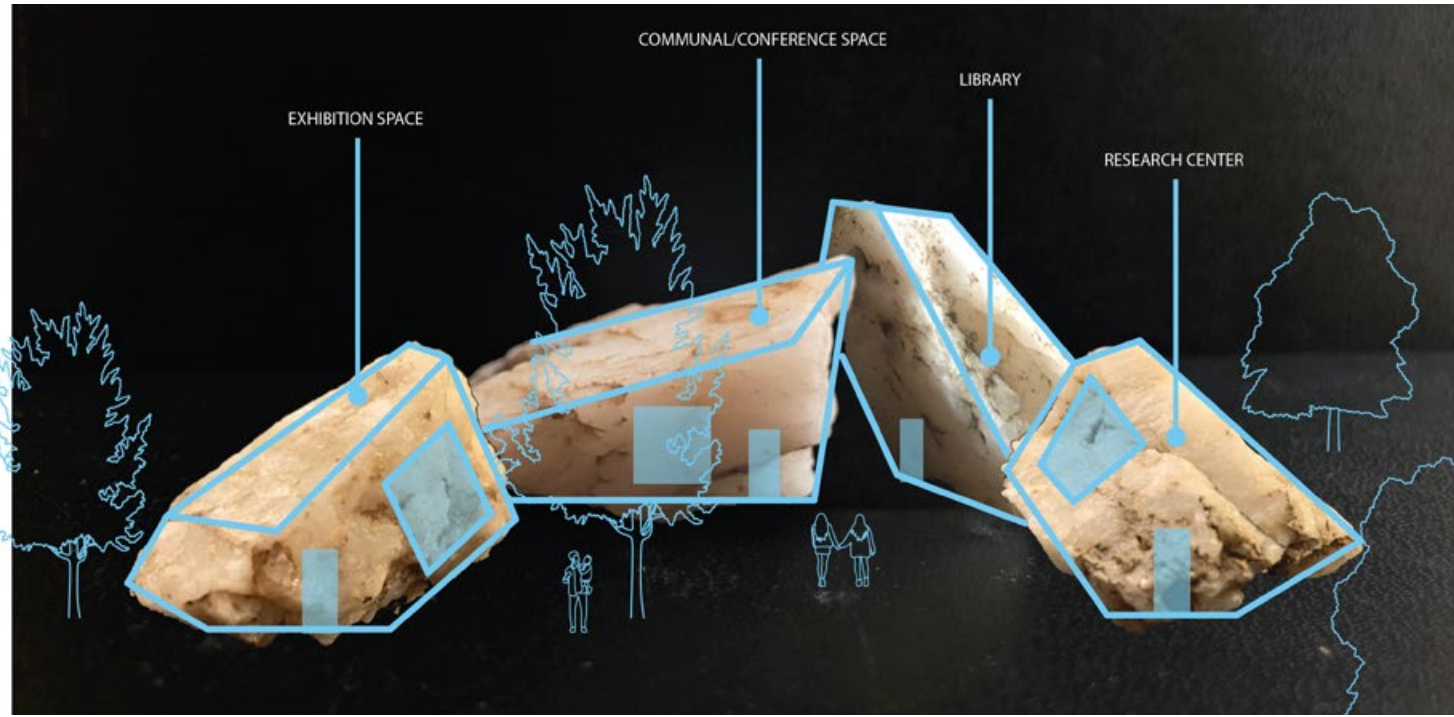


VIEW OF PASSIVE HOUSE EXTERIOR



VIEW OF PASSIVE HOUSE (EXTERIOR AND INTERIOR)

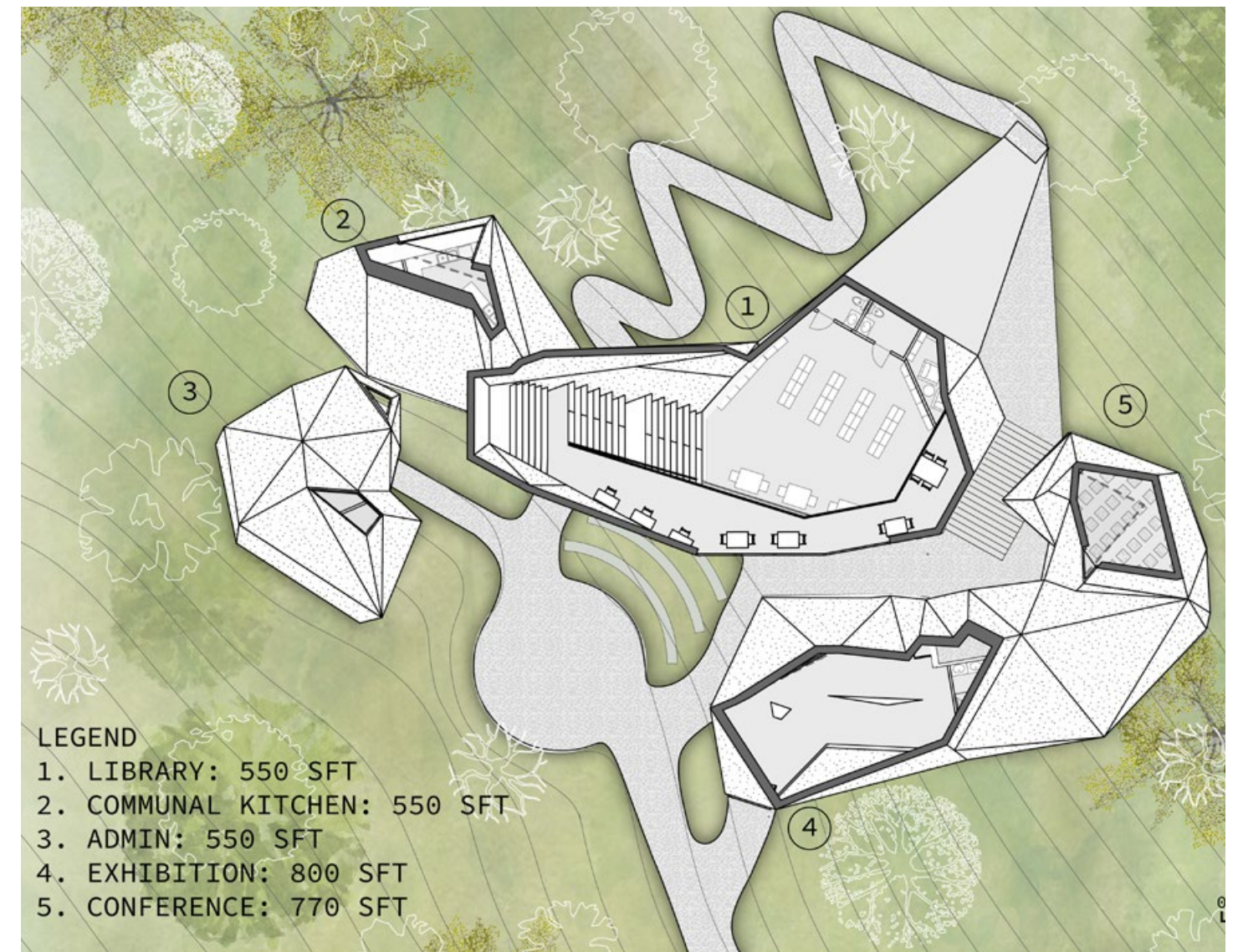




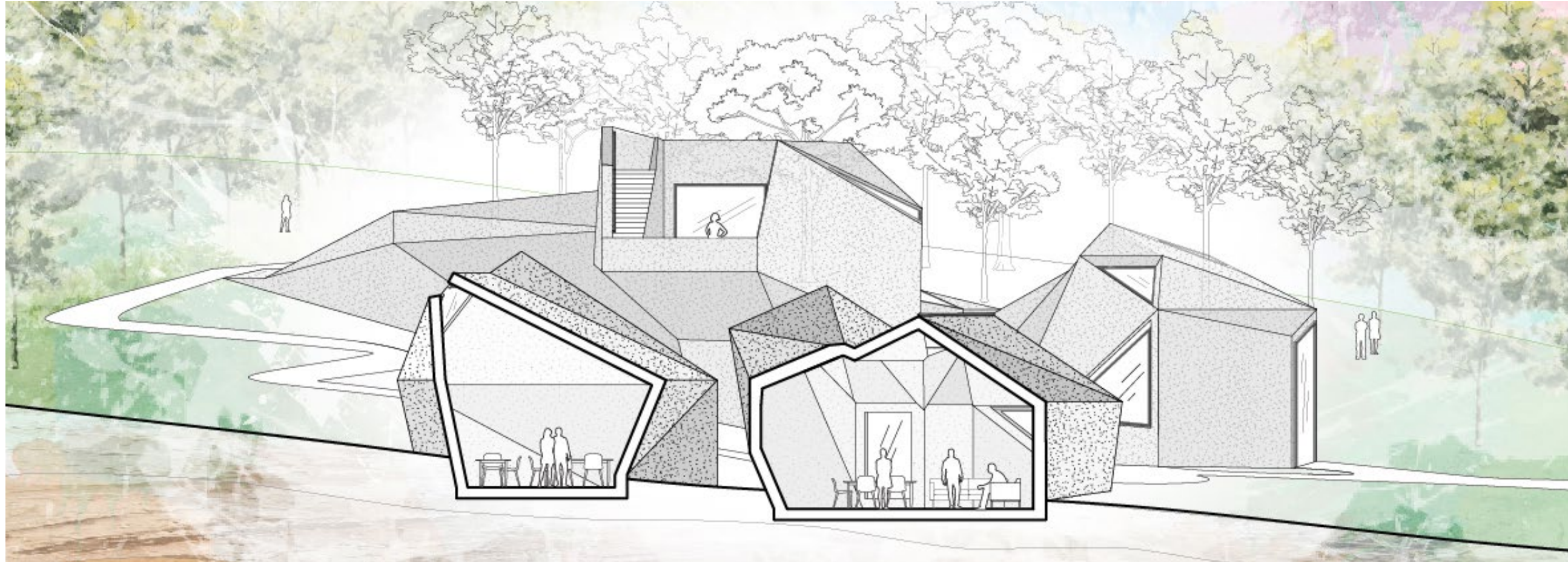
With the abundance of quartz on our site, its spiritual connection to this land and embedded indigenous knowledge led us to typology studies for our Main House and Passive House. As the quartz is an energy stone, we wanted to use the materiality of this gem to create a welcoming architectural language.

The Main House is the hub of the site for public programming including a gallery, library, and conference spaces and programming including a communal cooking and dining space and research center. Our roof plan presents an ADA accessible ramp that leads to an overlook point above the library.

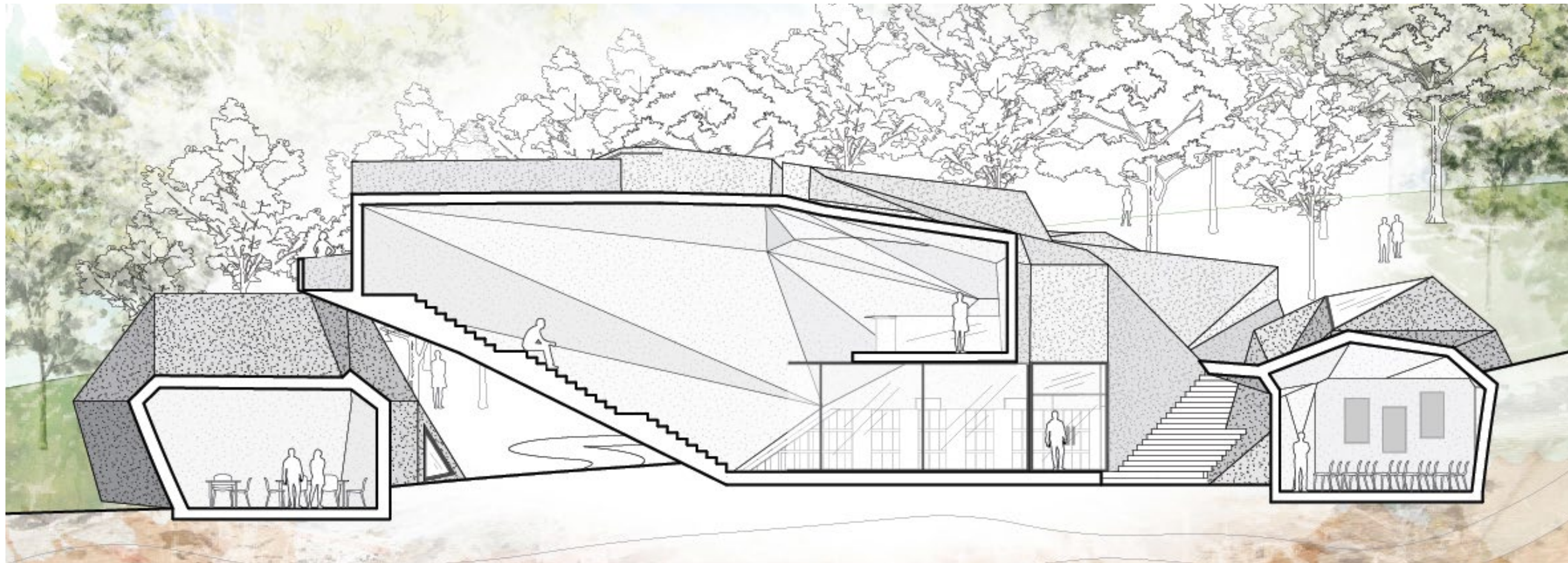
As we were inspired by the formal language of milky quartz on the site, our building uses a quartz composite of recycled quartz and aggregate materials. On the interior, we imagine similar composite materials of different colors, as we can see a warmer tone of stone on the interior versus exterior.



- LEGEND**
- 1. LIBRARY: 550 SFT
 - 2. COMMUNAL KITCHEN: 550 SFT
 - 3. ADMIN: 550 SFT
 - 4. EXHIBITION: 800 SFT
 - 5. CONFERENCE: 770 SFT



Given the steep topological shifts of the site, we had a unique opportunity to cut into the slope creating an interesting relationship between the buildings and the ground plane. The cut through the exhibition and auditorium spaces, allow for a covered foyer connecting the library and pathway to the overlook ramp. The cut through library shows the stairwell leading up to the mezzanine level with additional seating for research or communal meetings.







Expandable Living

Type: Academic- Group

Semester: Second Year Master, Fall 2020

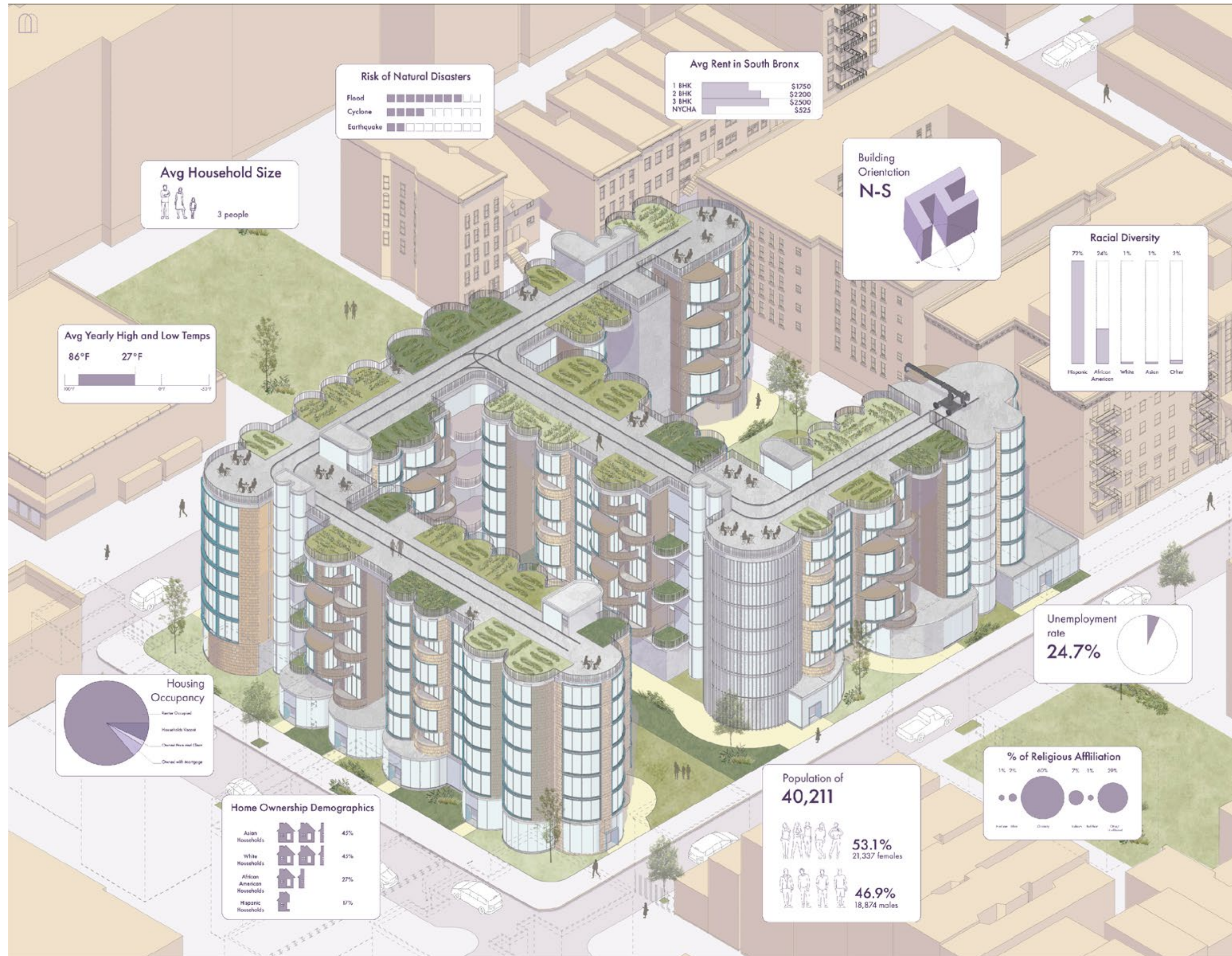
Studio: Core Studio III - Eric Bunge

Location: Bronx, NY

This project is a multi-use, multi-family affordable housing building that addresses the economic and demographic diversity of the site and permits adaptability to changing households. It proposes a modular construction co-op housing model that encourages home ownership through the growth and expansion of apartment units.

The proposed building promotes a self-sustainable community through different programs such as urban agriculture. A rooftop garden provides space for food to be harvested and then sold in a market on site. The modular construction is facilitated through a permanent armature that contains structure, service spaces, and communal programs for the residents. The armature supports a variety of fixed and expandable units that wrap around two main courtyards that are accessible to both the residents and the public.

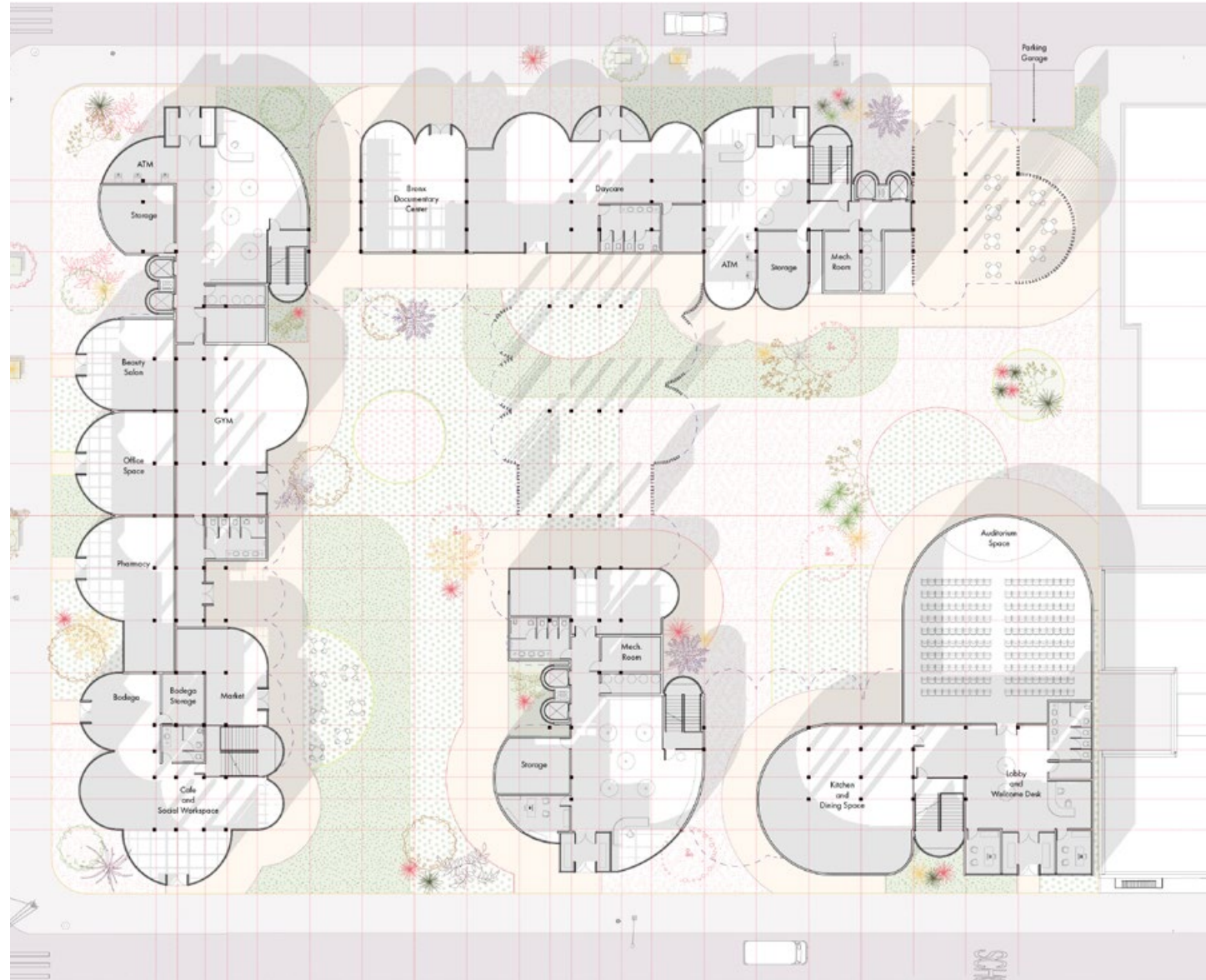




Looking at the age demographics of the Bronx, we observed the median age to be between 25 and 30 years and upon closer look at the breakdown of the demographic, we realized that a large category of the population comprises many young children. Additionally, the population also comprises the majority of mid-20 year olds and a small subset of elderly peoples. Ultimately, it was concluded that the population of the Bronx is made up of many young families.

Looking at what type of home ownership exists in the area, it was observed that 86% of the population in that neighborhood rented homes. In 2018, the NYC homeownership rate was 44 % for asian and white households but only 27 % and 17 % for black and hispanic households. As our neighborhood is made up of 80% Hispanic or Latino peoples and 23% of the Black community we wanted to encourage home ownership on our site.

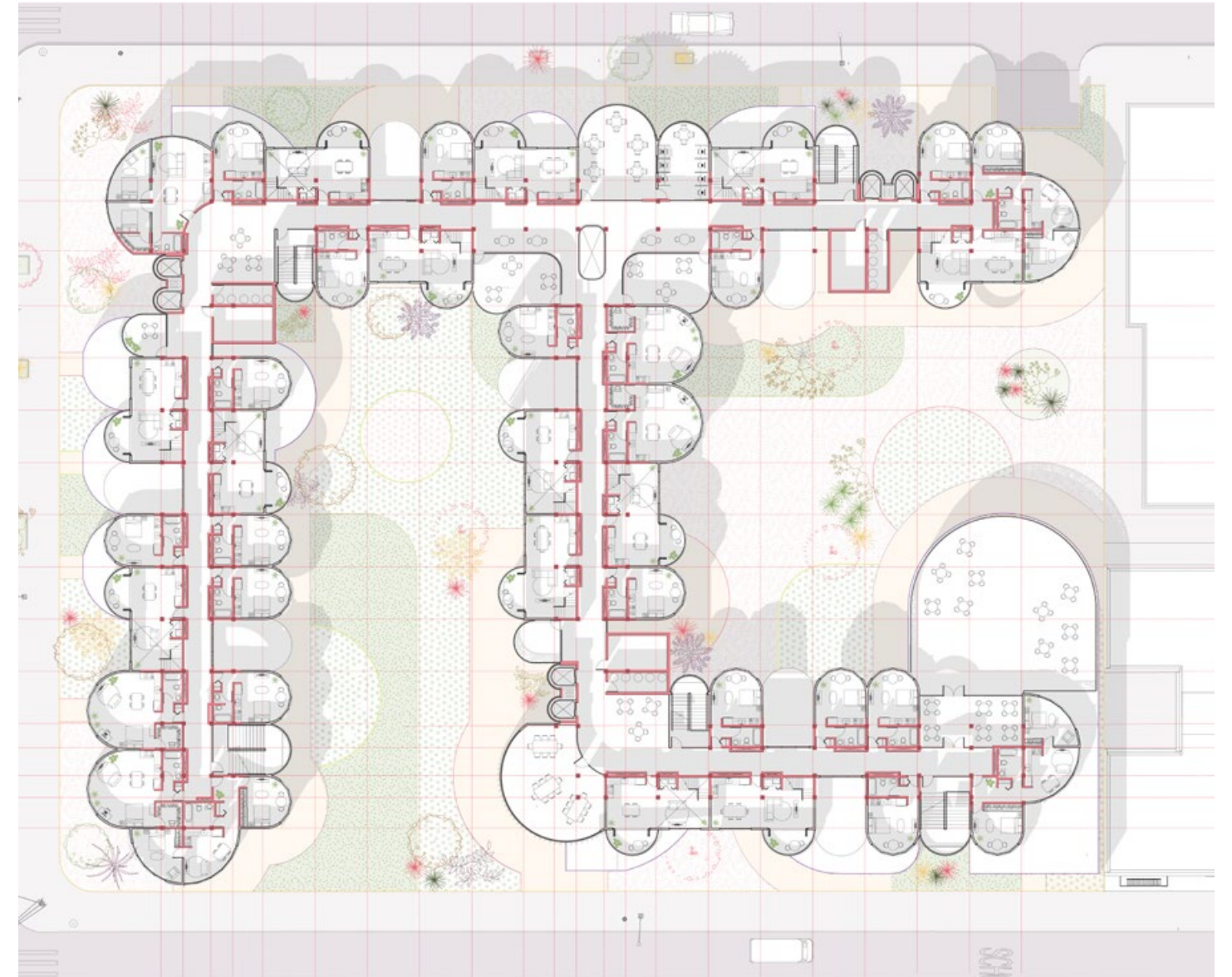
Upon further research, we also discovered that studios and one bedroom apartments are mostly rented whereas one bedroom and two bedrooms and up are more likely to be owned.



Our site strategy consists of creating a shape that wraps around 2 central courtyards. This strategy prevents dark spaces and facilitates ventilation. The shape also takes advantage of daylight and captures eastern winds.

The building has 3 main private entrances next to elevators and stairs that access the apartments and rooftop. Facing Courtland Ave, there are office spaces, a café, a bodega and beauty parlor. Facing the quieter 152nd street, is the Bronx documentary center and a daycare. Located at 151st street, is a community center with a black box theater and dining hall that can be rented out for various events.

Both courtyards are accessible to the public and residents. But programmatically, the west courtyard provides a more commercial and public environment because of its location next to Courtland Ave. The east courtyard does not have commercial spaces making it a more semi-private park/playground area for residents.



The building follows a double loaded corridor strategy. All apartments have views to either the central courtyards or the street. The corridor highlighted in red works as an armature that includes structure, circulation, wet walls and service spaces that support modular construction on site. The apartments are stacked in towers in order to facilitate construction and expandability. In addition to private homes, the building offers several communal spaces such as workspaces, laundry rooms, play spaces, yoga rooms and arts and crafts in the building central spine.

ROOF PLAN



VIEW OF ARMATURE



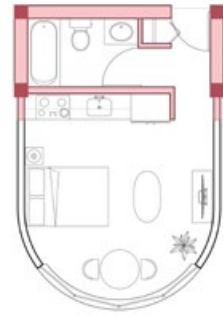
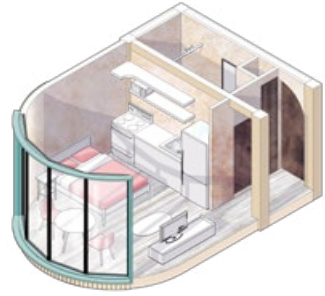
VIEW OF DOUBLE-HEIGHTED LIVING ROOM



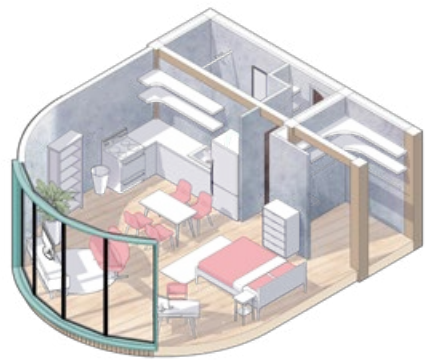


UNIT TYPOLOGIES

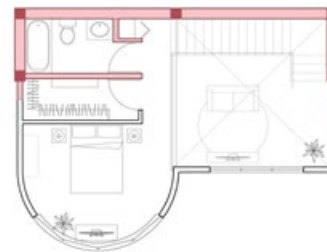
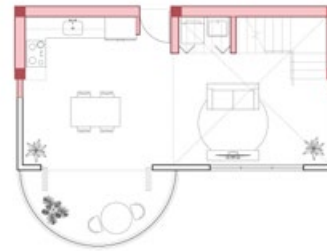
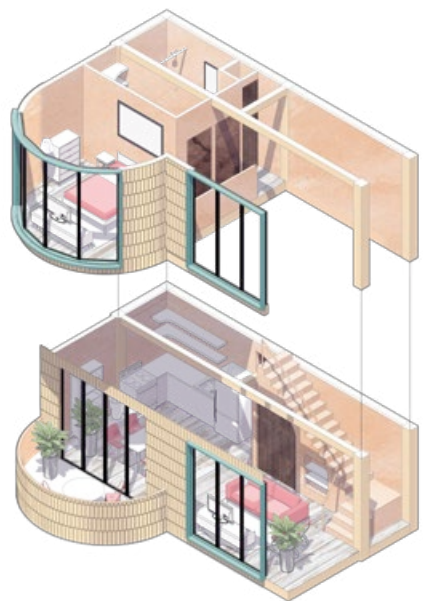
To address the financial diversity and needs of the neighborhood, the building promotes various unit types. Firstly, a mini studio, that can be rented out at cheaper rates, to address housing affordability. A larger studio is also offered to appeal to those who also want to pay studio rents while living in slightly more luxurious apartments. Then come the one and two bedroom apartments that are both duplexes, with the one bedroom having a double height living room. The building also comprises additional units that are located at the end and corners of the building. They offer wider views of the outside world and are both two bedroom apartments.



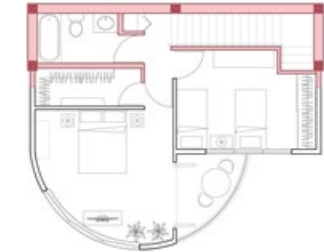
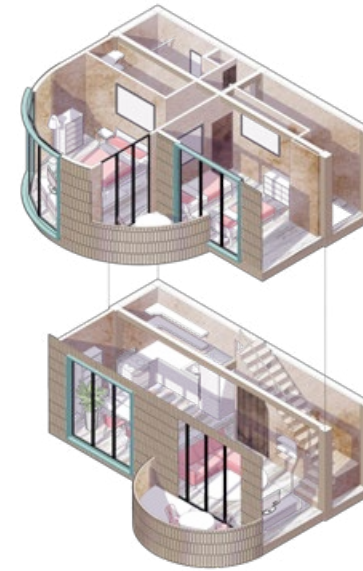
Mini Studio - 300 sqft



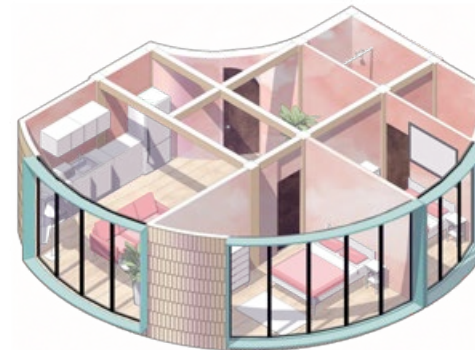
Studio - 500 sqft



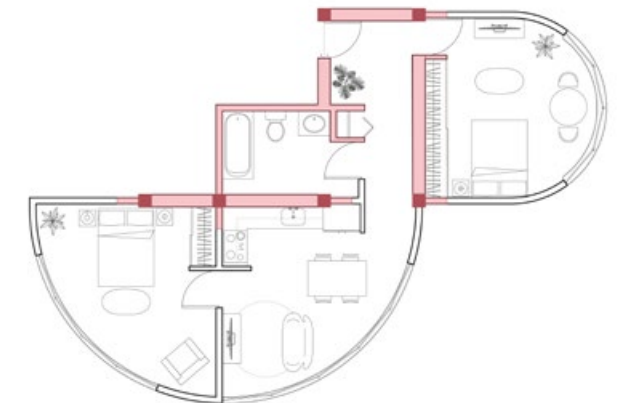
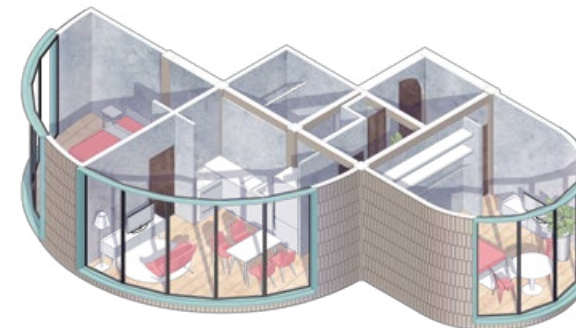
One Bedroom - 750 sqft



Two Bedroom - 1000 sqft



Corner Unit - 750 sqft

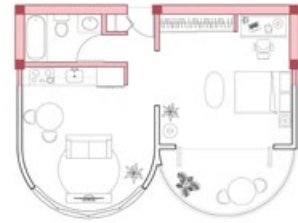
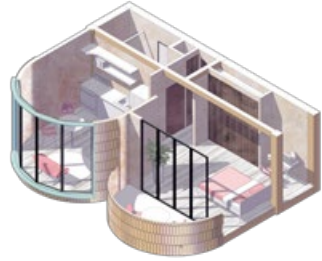


End Unit - 900 sqft

EXPANDABLE UNITS



Stage 1 - Studio - 300 sqft



Stage 2 - One Bedroom - 600 sqft



Stage 3 - Two Bedroom - 1200 sqft

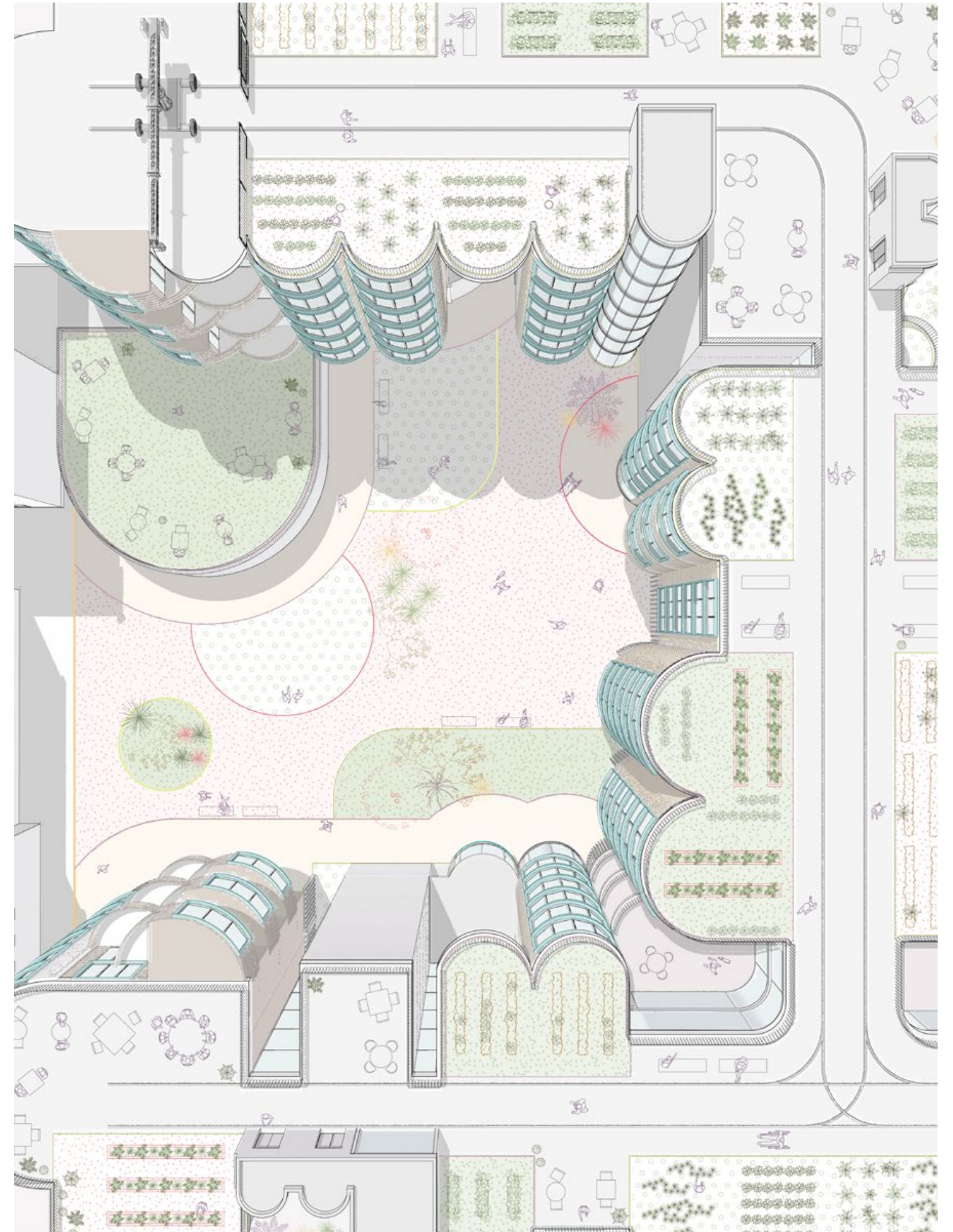


Stage 4 - Three Bedroom - 1200 sqft

Our project also introduces the concept of 'expandable units' - when you buy into the co-op, you would be sold a certain amount of airspace, along with the basic unit as seen here. Depending on your current needs and finances, you can expand upon that module or expand later in the future as your needs and finances change. As the unit expands an additional bedroom is added.

The expansion is broken down into 4 stages. The first stage consists of a studio (300 sqft) apartment. As the owner's personal financial situation improves, they can progress to stage 2 in which the apartment is extended one unit over and converted into a one bedroom apartment (600 sqft). As the owner grows their household, they can expand further by turning their apartment into a 2 level, two bedroom (1200 sqft) unit. The final stage comprises revising the interiors and adding another bedroom turning the apartment into a maximum three bedroom (1200 sqft) unit.

ROOF PLAN - PERSPECTIVE





School of Autism

Type: Academic- Solo

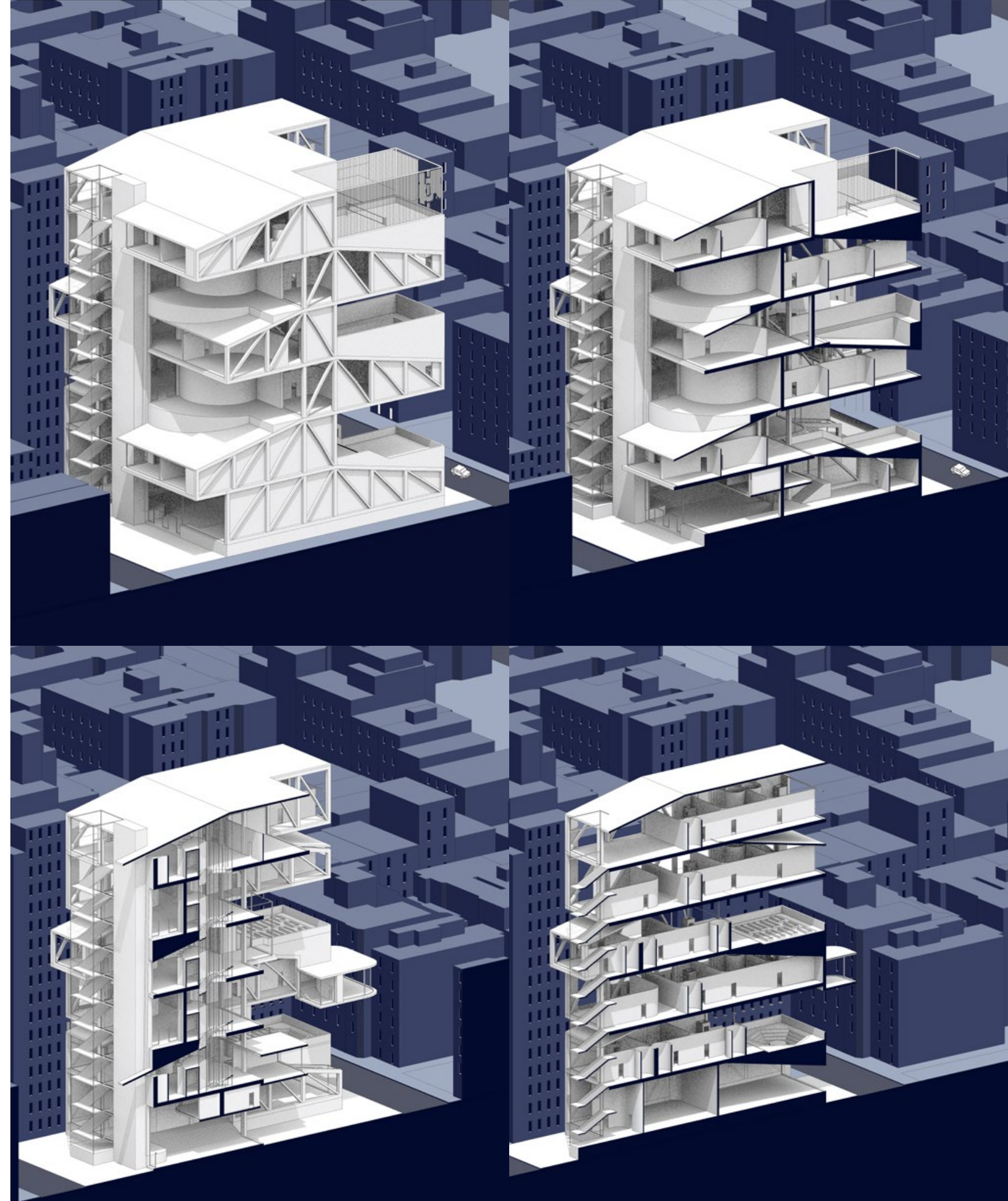
Semester: First Year Master, Spring 2020

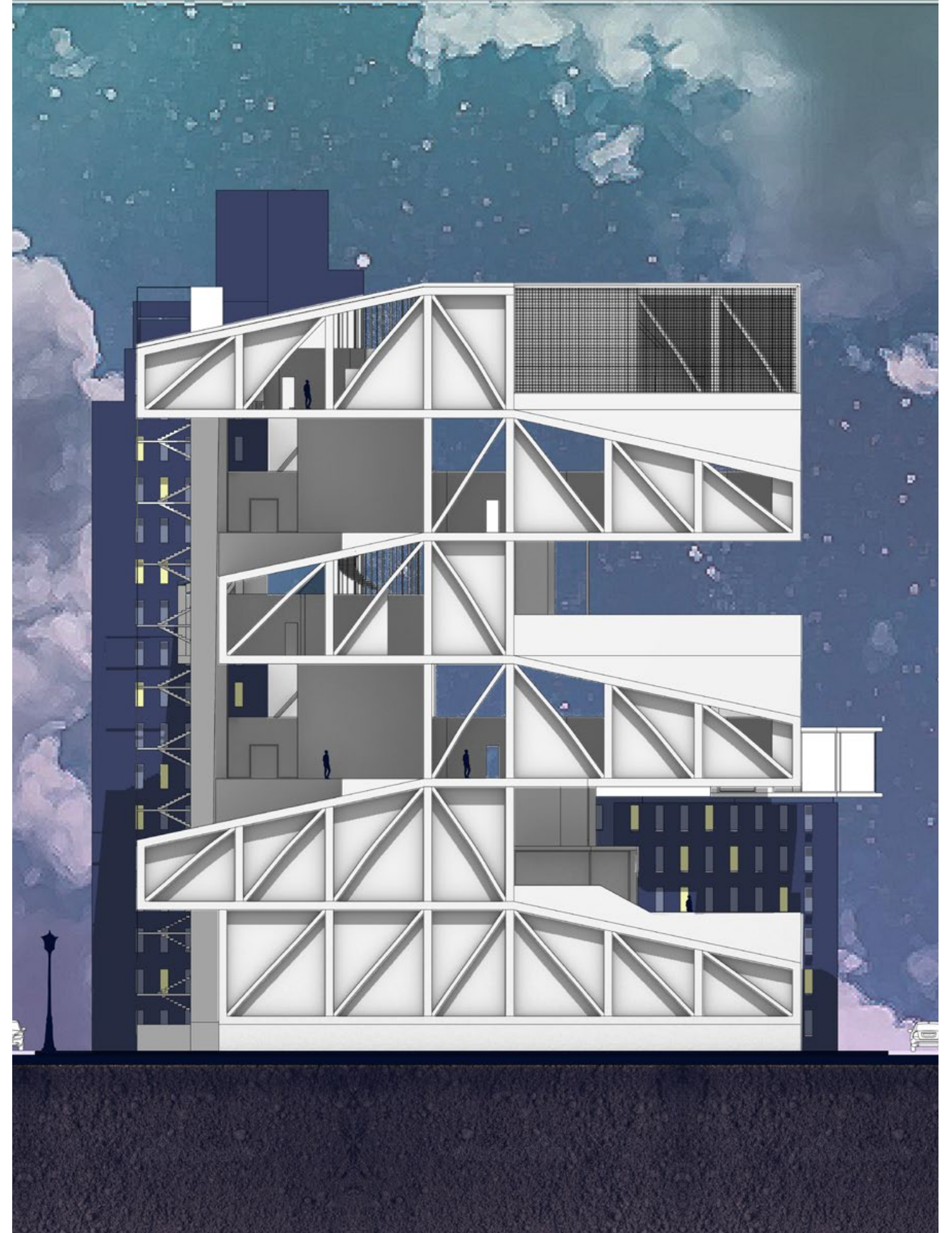
Studio: Core Studio II - Christoph Kumpusch

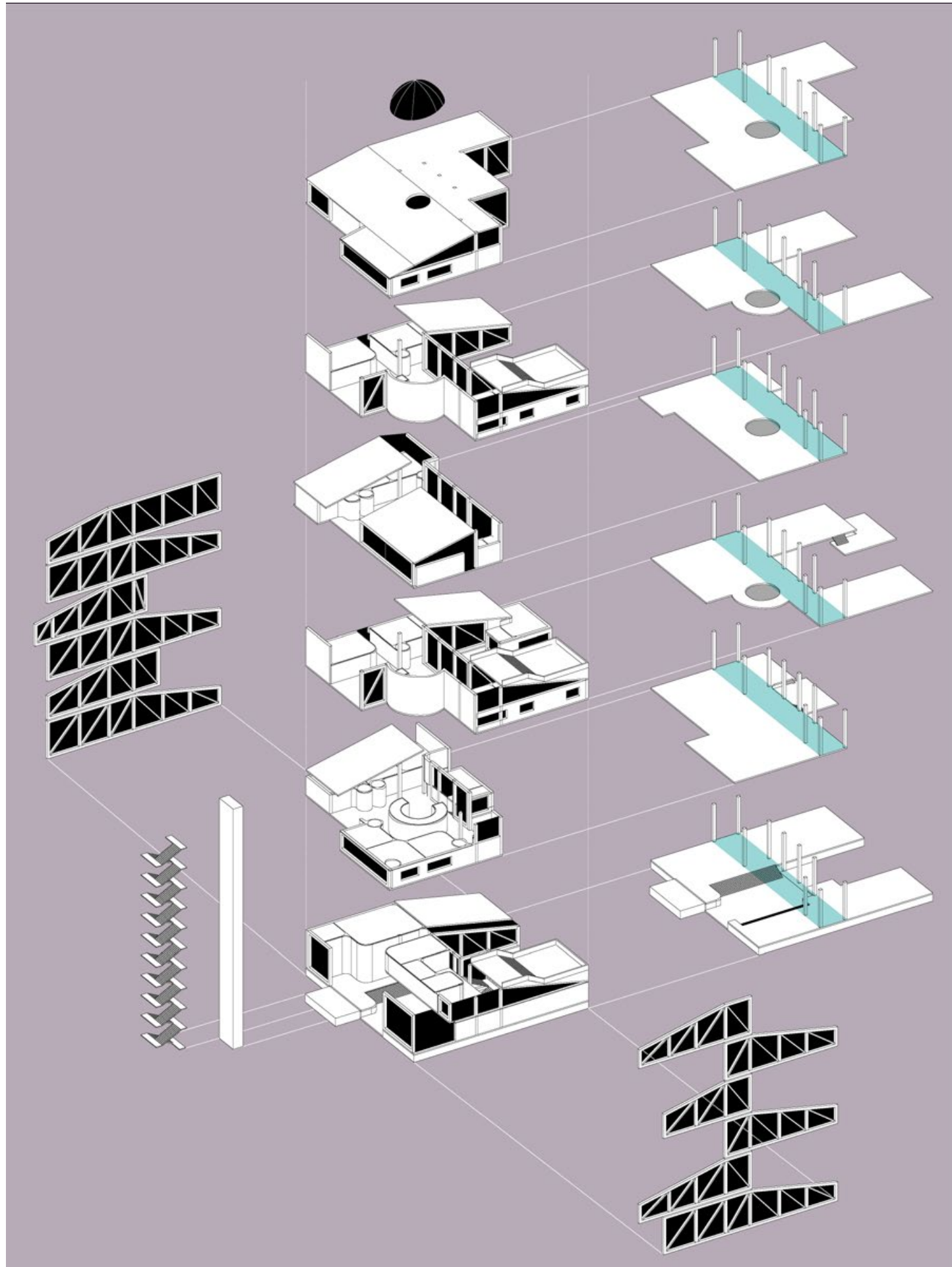
Location: New York, NY

It is estimated that 1 in every 150 children, regardless of color, class or culture, fall within the spectrum of autism. Despite this overwhelming prevalence, very little information is available on how to design for these unique individuals. Education is an integral experience in a child's development and their ability to thrive in these schools not only affects their academic success but also their social and behavioral developments as well.

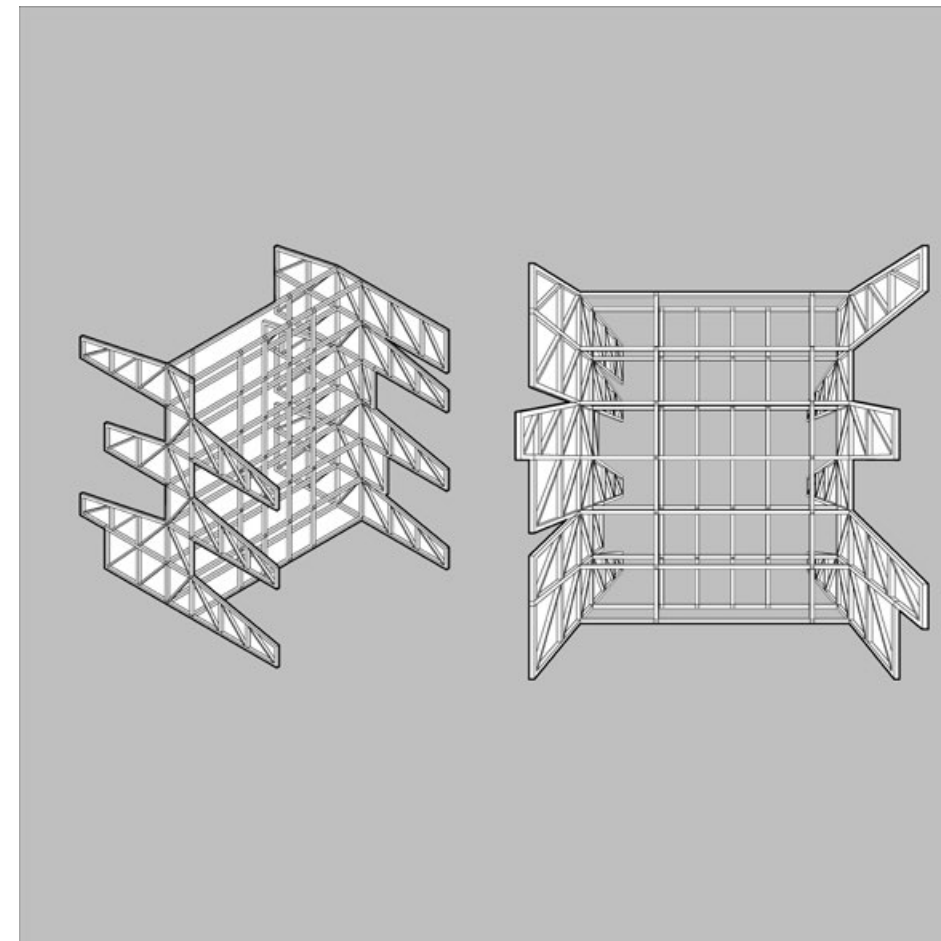
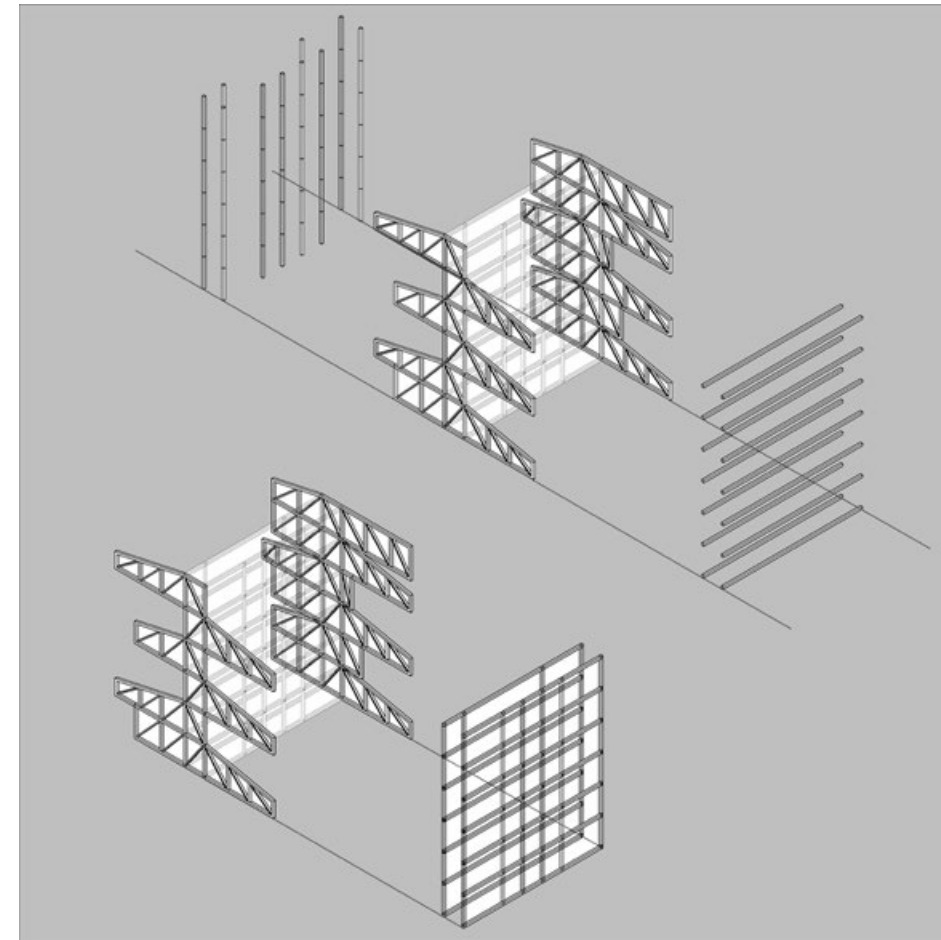
The School of Autism proposes an educating facility that uses architecture as a sensory environment and a source of controllable stimulation. These different sensory environments can be achieved through spatial organization, acoustics, texture, color, pattern and lighting. The building proposes an open plan design that removes the idea of a 'corridor', allowing children to have enough personal space around them to not be overwhelmed. The parallel trusses and cantilevered floors create a lightwell that allows natural light to enter the building, without proving to be overstimulating. Angular ceilings allow for different acoustic environments to be created throughout the building. Different facade materials create a variety of textures that prove to be visually and physically stimulating. The structure overall is designed to stimulate your senses







The structure of the building consists of cantilevers that are supported by a central column core that is connected to bilateral trusses. The cantilever floors create a lightwell that opens the building up. Additionally, as the ceilings are at an angle, different acoustic environments are created in different parts of the buildings.

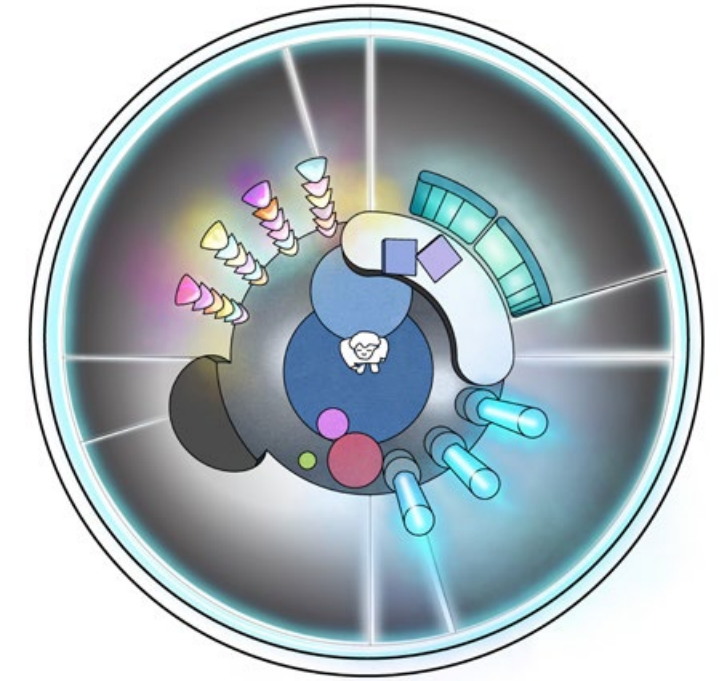
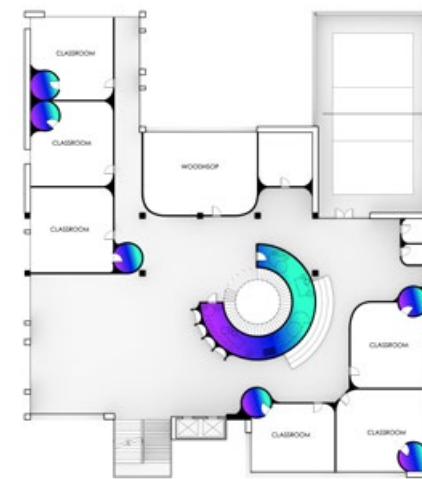
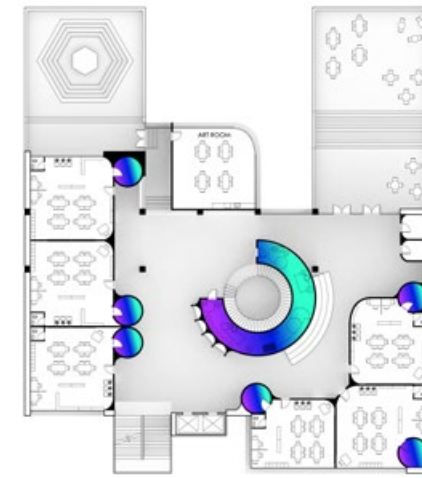


GROUND FLOOR PLAN



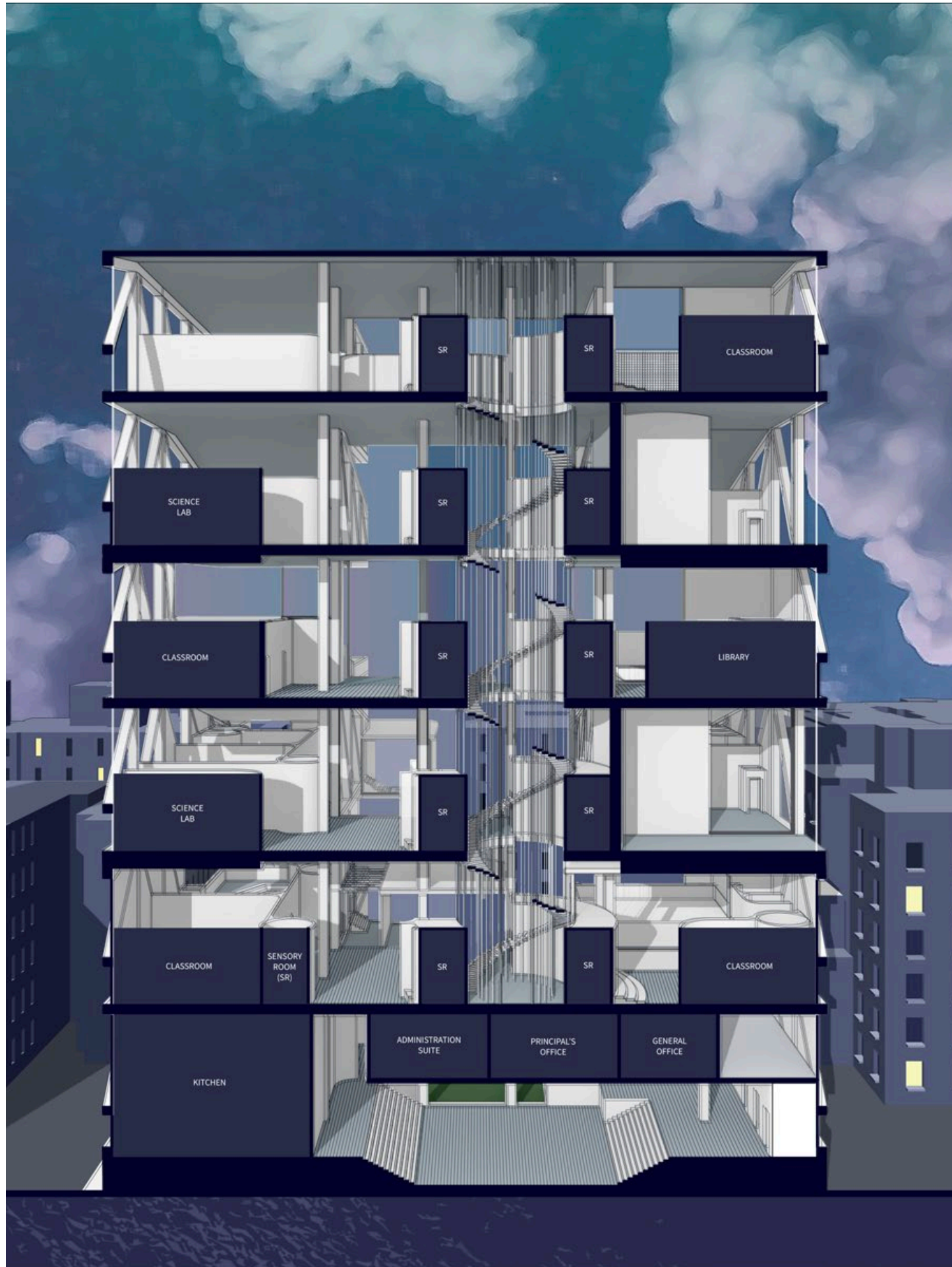
Above is the ground floor plan. Constantly thinking about breathability and space, the lobby of the building is completely open allowing for areas for children to play. There are also spaces for parents and teachers to occupy as well, where they can have constant visuals on all the children.

The student dining is quite large and open to the outdoor garden and playscape. Especially considering the situation in the world right now it was interesting to see how these schools apart from being a place of education for children could also have a role in helping society. The kitchen and dining area can be used as a community food kitchen or meal center for those in need.



The sensory rooms combine a range of stimuli to help individuals develop and engage their senses, usually through special lighting, music, and objects. It is used as a therapy for children with autism.

Classrooms are located on the floors above. Each classroom has its own sensory room, with a communal sensory room located in the center of the building, around the circular stairs. Every other floor has access to outdoor courtyards that each have a different program. The first floor outdoor courtyard acts as a small amphitheater and outdoor workspace. The third floor courtyard acts as a community garden on one side and houses a pool on the other. The fifth floor houses a volleyball court. Each program can be used by students in alternating schedules. Additionally, an art room is located on the first floor, a science and music lab on the second floor, a library on the third floor, and a woodshop on the fifth floor.



A precedent study of different textures, looking at which materials stimulate which senses. This material study developed into a study of different envelope materials.



A precedent study of different textures, looking at which materials stimulate which senses. This material study developed into a study of different envelope materials.

A study of envelope materials. The variety of materials used encourages visual stimulation.

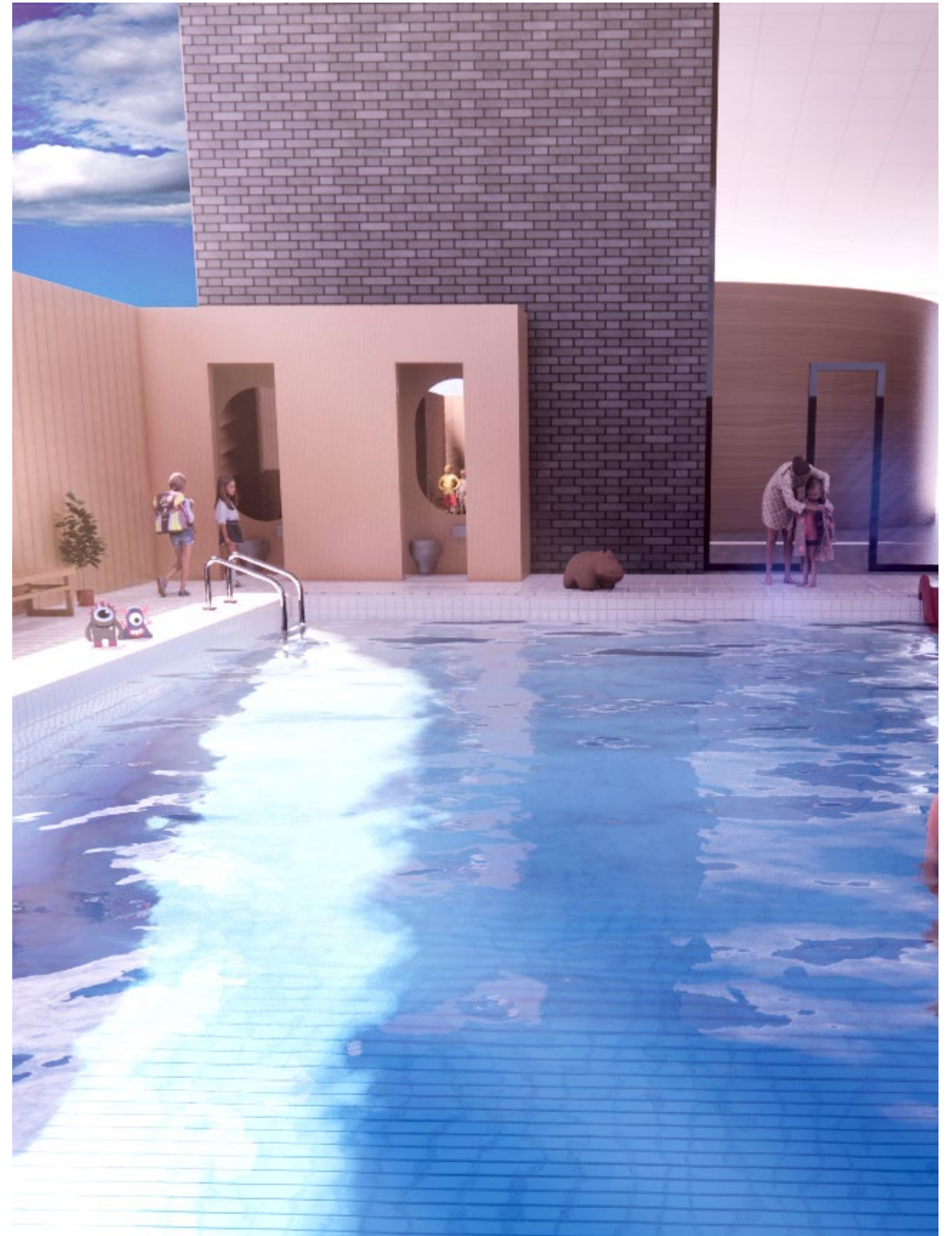


A study of envelope materials. The variety of materials used encourages visual stimulation.

VIEW OF LOBBY



VIEW OF POOL IN CANTILEVERED COURTYARD



Center for Composting Corpses

Type: Academic- Solo

Semester: Second Year Master, Fall 2019

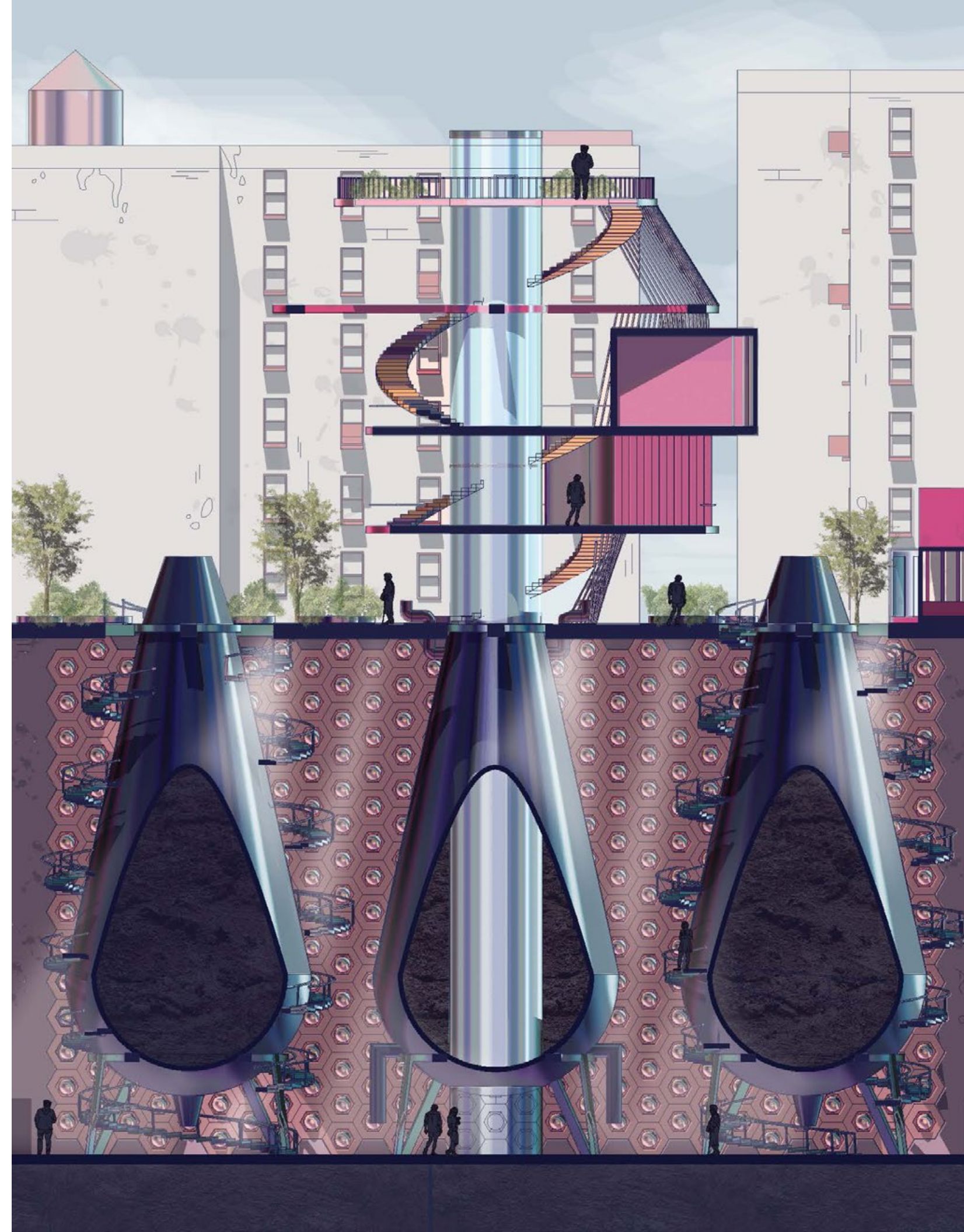
Studio: Core Studio I - Josh Uhl

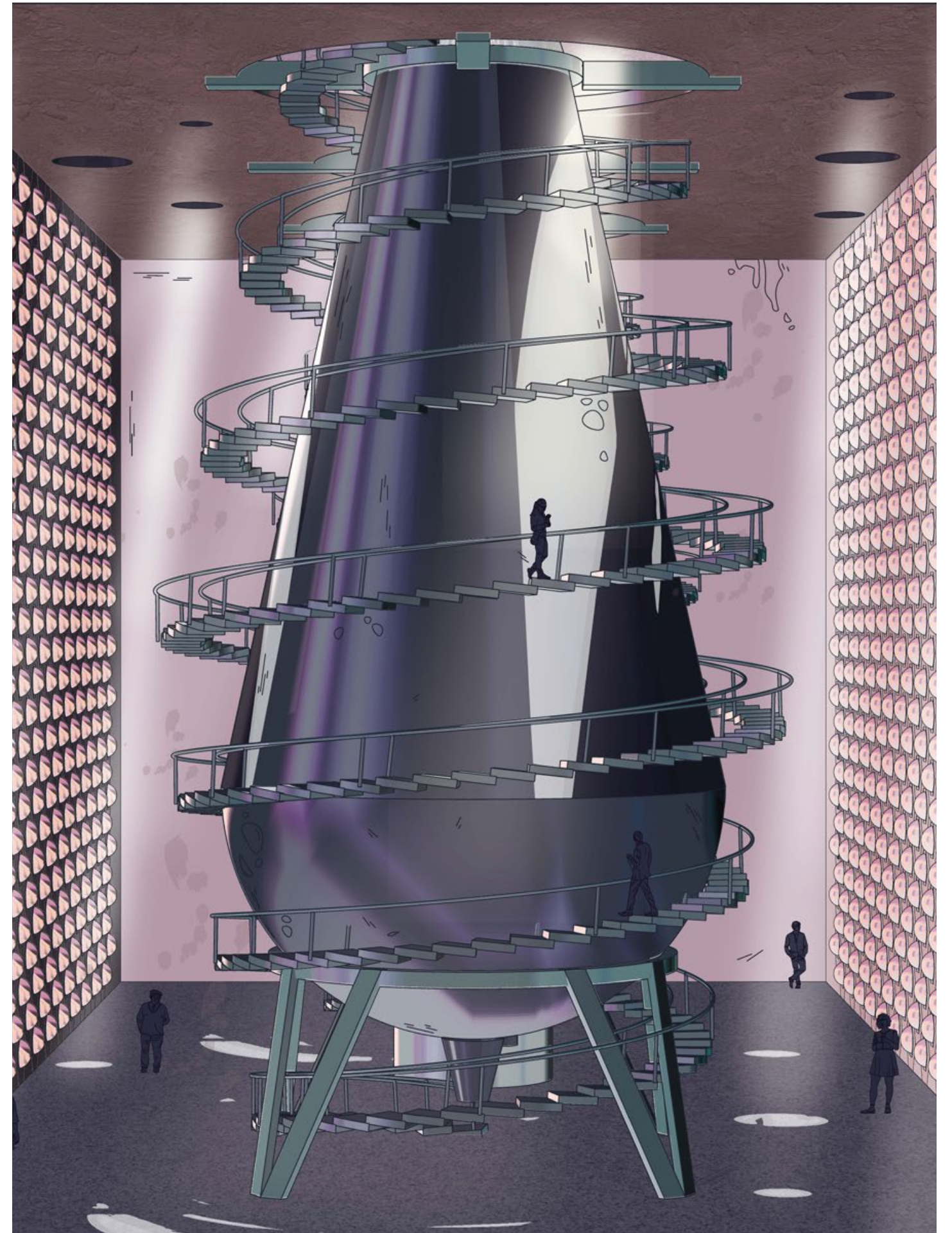
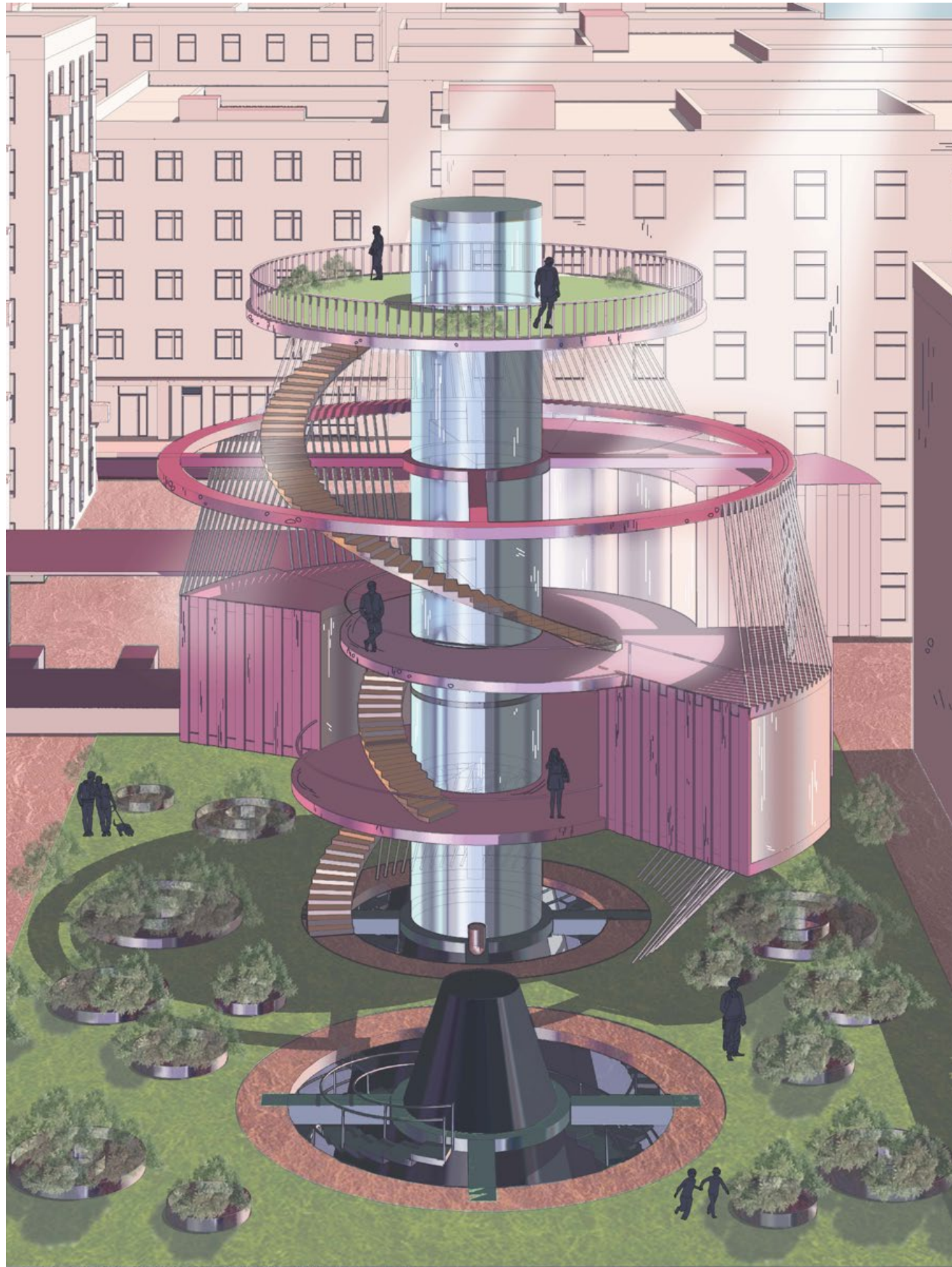
Location: New York, NY

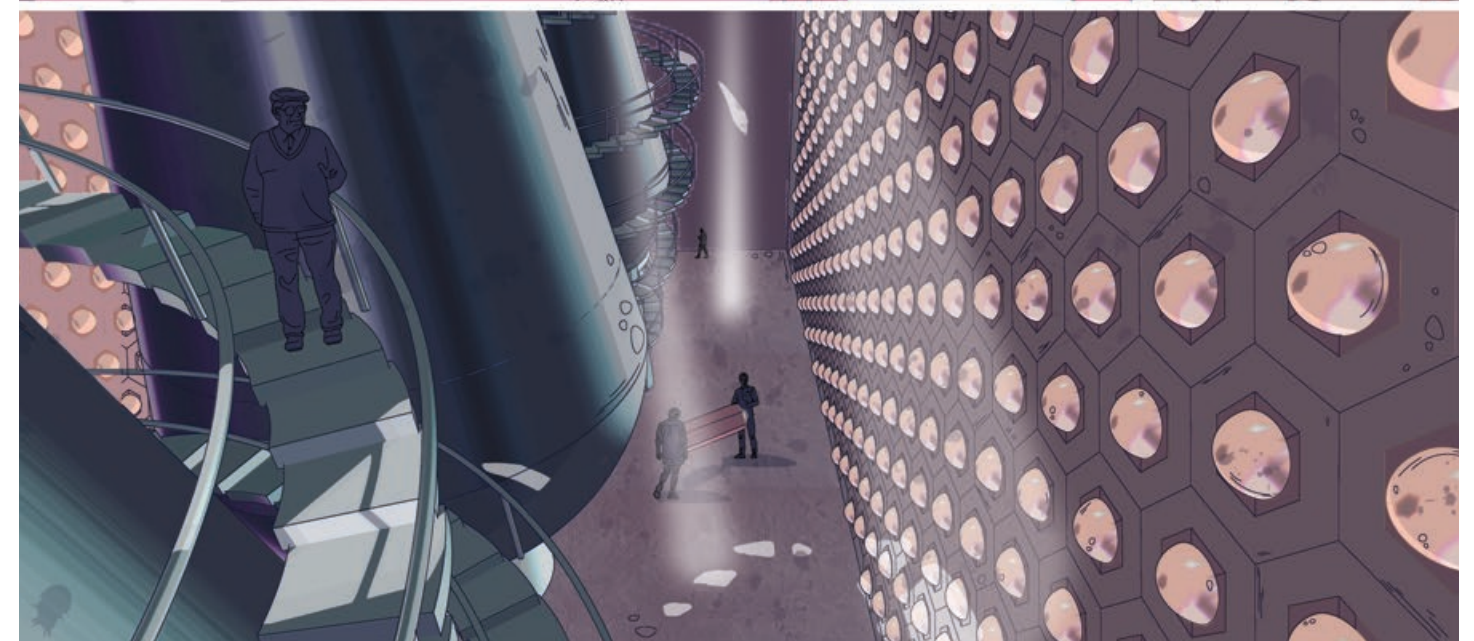
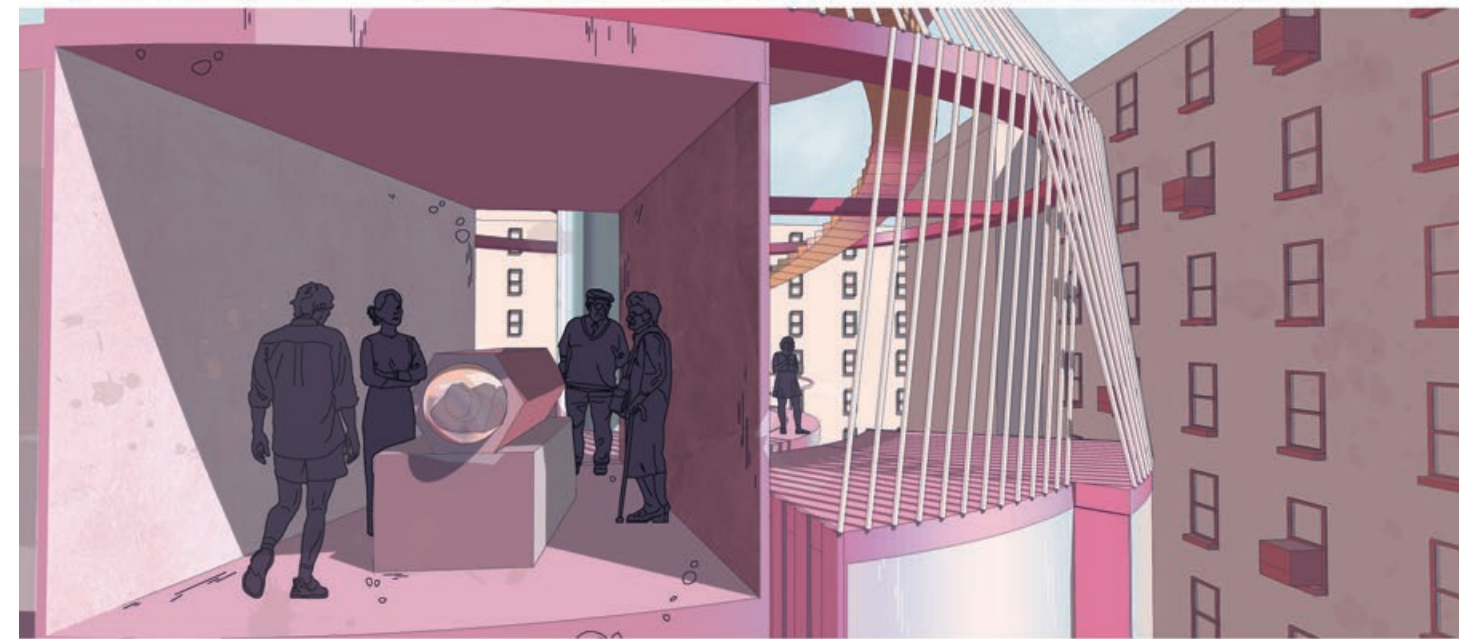
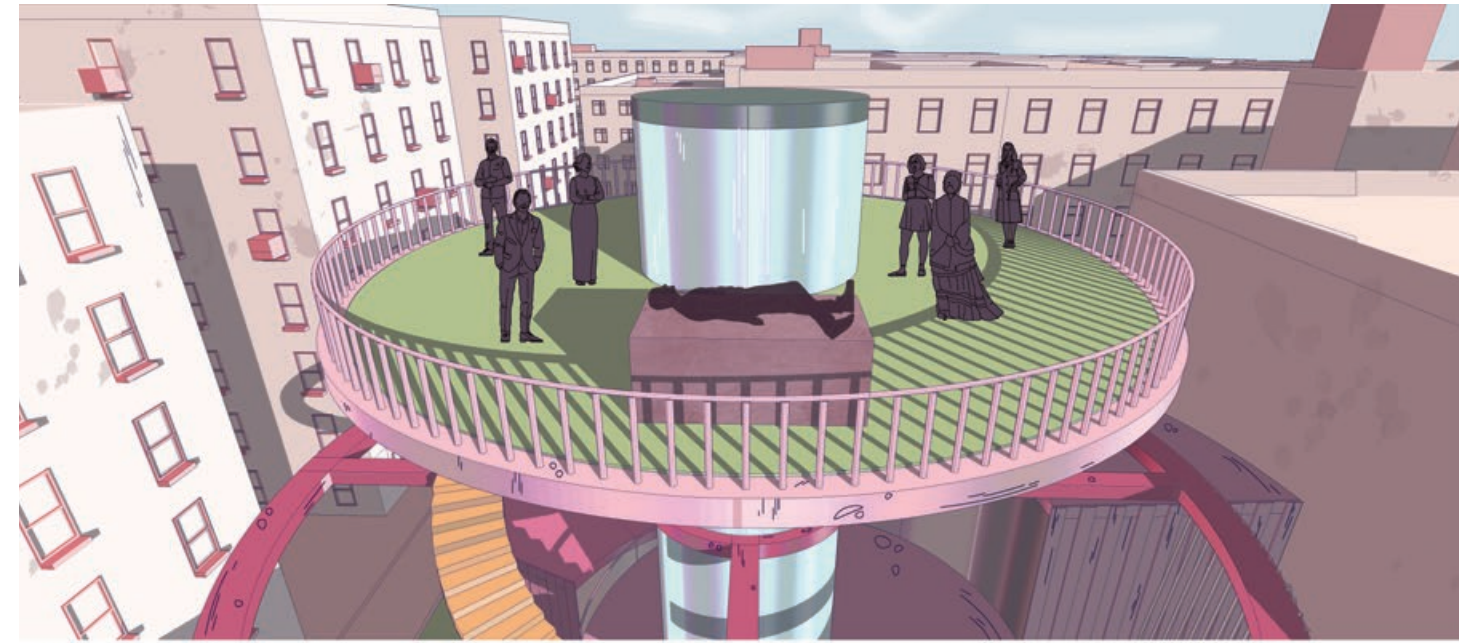
Located in the neighborhood of Inwood in Manhattan, New York, the Center is a composting facility accessible to all members of the neighborhood as well as the rest of the inhabitants of the city. Addressing the global environmental problems caused by landfills and traditional forms of funeral practices, my intervention proposes a permanent composting facility that provides residents of New York a space to not only compost their organic waste but also compost their departed.

Above grade infrastructure provide programs where: funeral rites can be observed, loved ones can be respectfully placed into composting pods and where a community garden can grow which uses the compost that is produced on site. Additionally, the excess compost produced on site can be transported to other places in the city and even farms outside of the city. The program below grade allows for a space where the composting takes place, providing a sanctuary for residents to come and view the cyclical system of how all living things can benefit from one another.

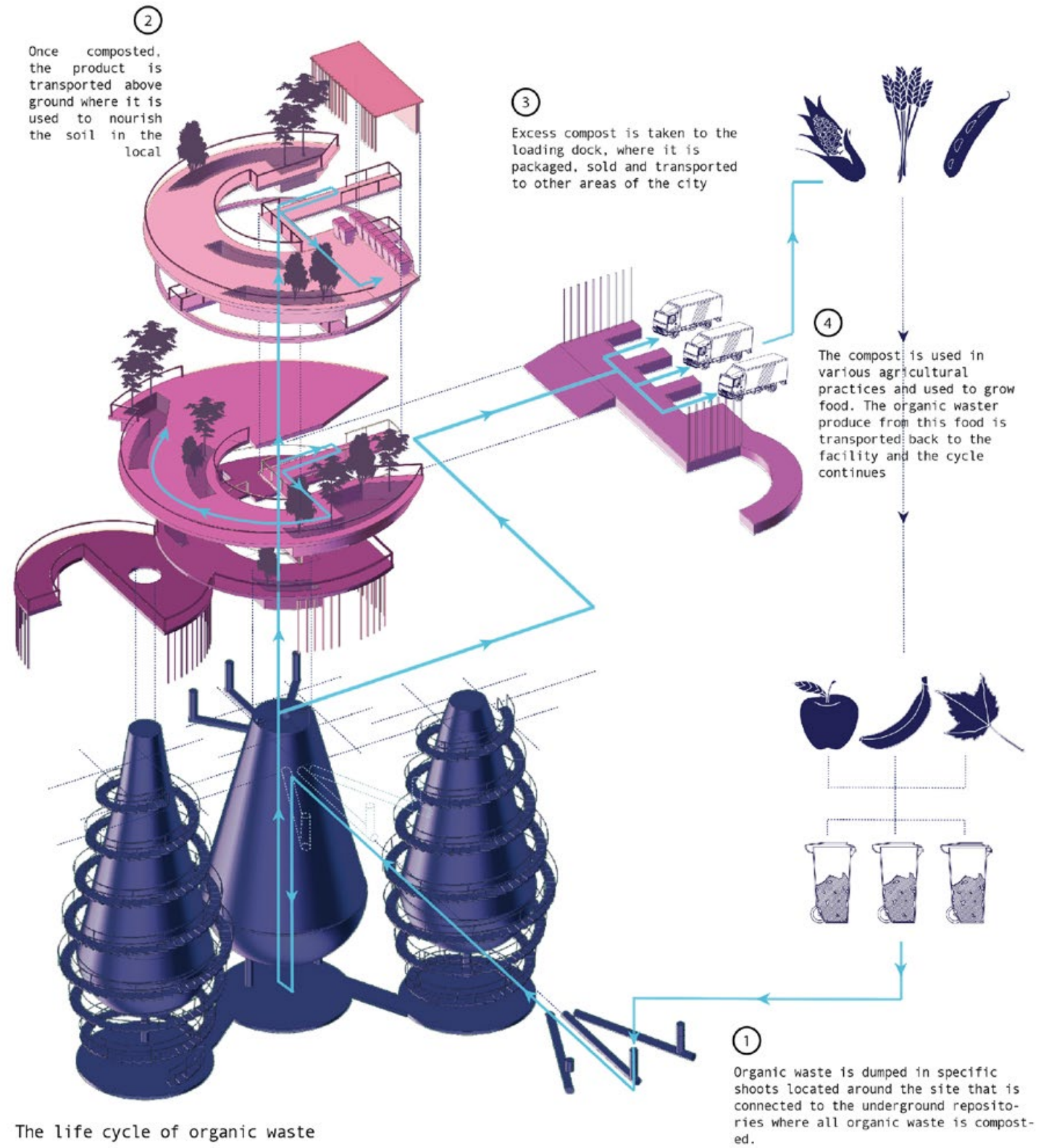
By giving back to the earth we can continue the cycle of life and death. Organic waste is composted in the large, hanging repositories, whereas the human bodies are composted in individual pods fitted into the walls surrounding the repositories.





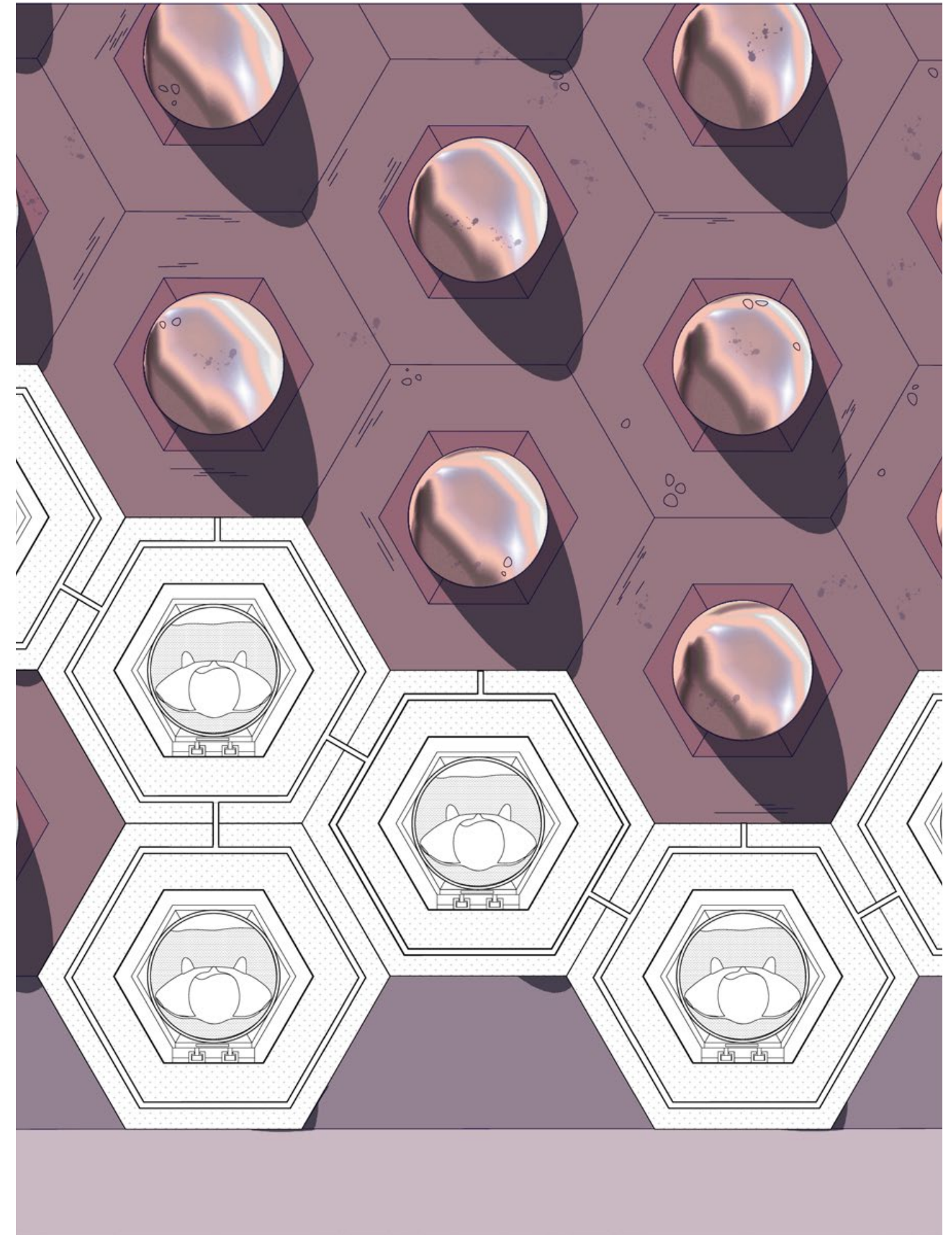


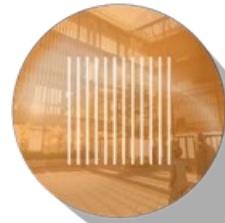
→
A triptych, showing the three stages of how the body is treated on site. In the first drawing, we see how funeral rights and other ceremonies can be practiced on the top most floor of the structure, that is open to the city around it. In the middle drawing, we see how the body is placed in composting pods, on the second level of the infrastructure, in private rooms. In the last drawing, we see the body in the composting pod being transported to the underground mortuary, where the pod is stored while the composting takes place.



The life cycle of organic waste

The above diagram shows the path traveled by waste and the cyclical life cycle, my intervention promotes. First, organic waste is dumped in specific shoots located around the site (that is connected to the underground repositories where all organic waste is composted). Once composted, the product is transported above ground where it is used to nourish the soil in the local community garden. Excess compost is taken to the loading dock, where it is packaged, sold and transported to other areas of the city. The compost is used in various agricultural practices and used to grow food. The organic waste produced from this food is transported back to the facility and the cycle continues.





Melrose Community Center

Type: Academic- Group

Semester: Second Year Master, Fall 2020

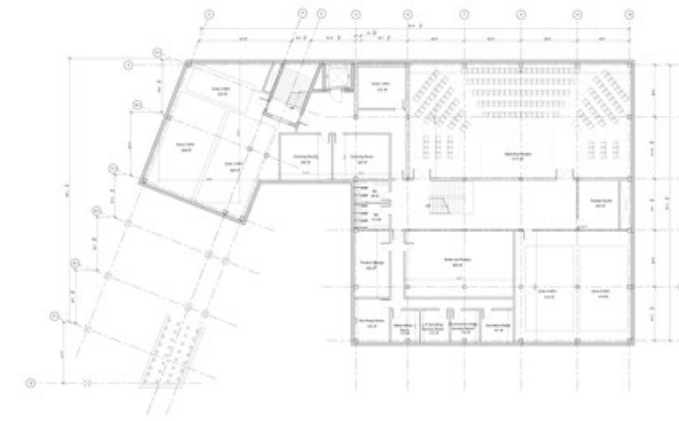
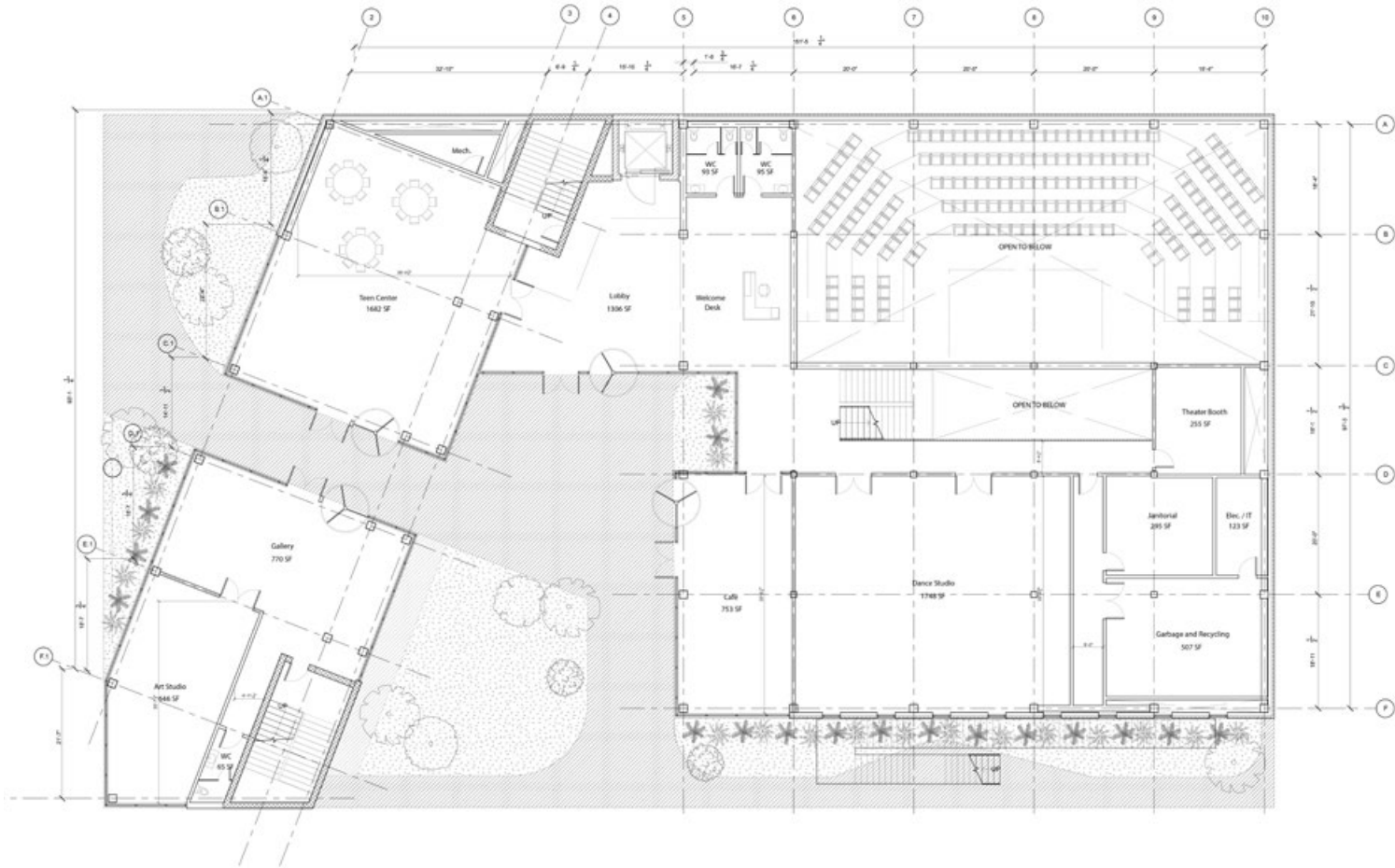
Studio: Architectural Technology IV

Location: Bronx, NY

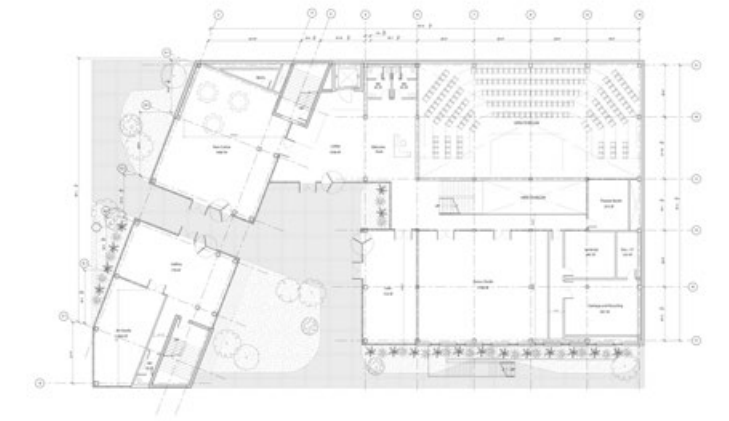
Melrose Community Center is a mass timber building, located along E 151st. Between Cortland Avenue and Melrose Avenue in South Bronx, New York. Its shape is designed to make optimal use of daylight, which is diffused throughout the building by the use of wooden louvers that line the southern facing façade.

With the goal of sustainable design in mind, this building promotes renewable energy by having solar panels run along the southern side of the sawtooth roof on the eastern building. Additionally, toilets and other facilities make use of the gray water that is collected on the western roof. The community center aims to serve the needs and wishes of the local neighborhood and foster a sense of community for its inhabitants.

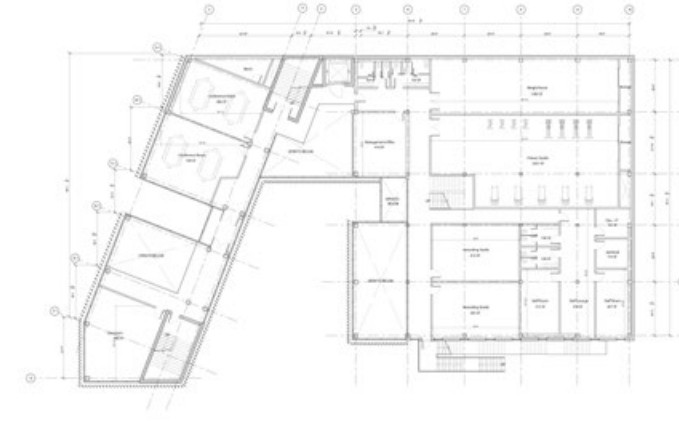




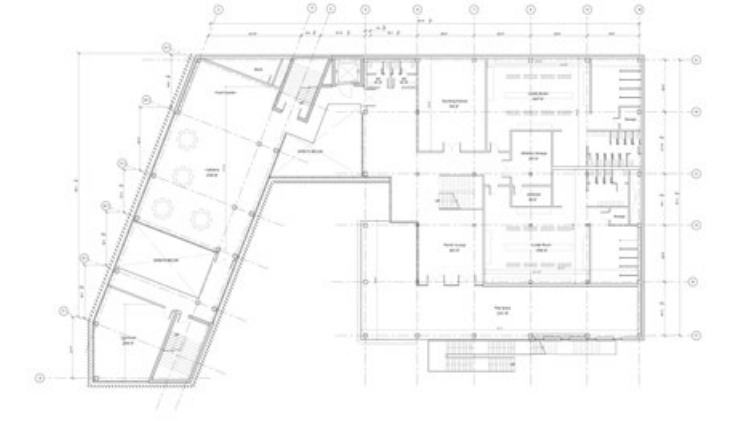
Basement Plan



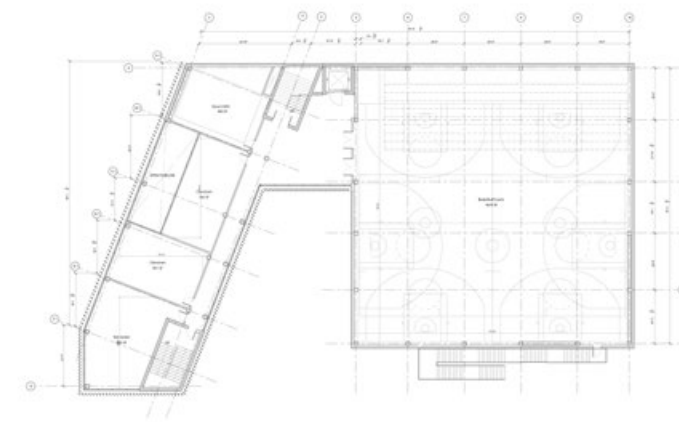
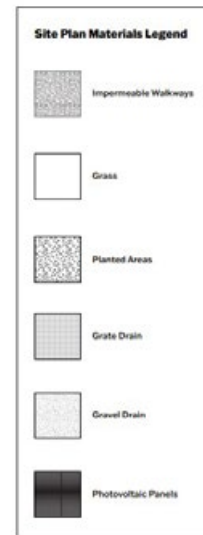
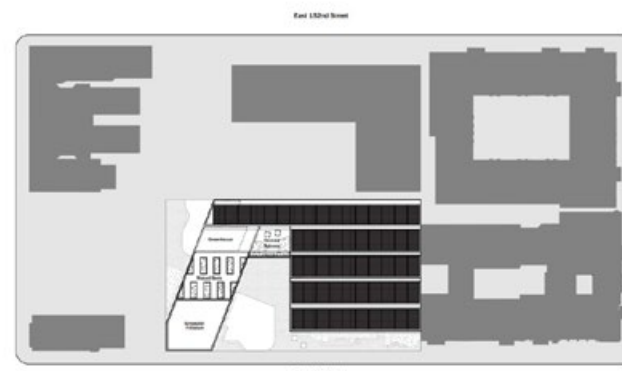
Ground Floor Plan



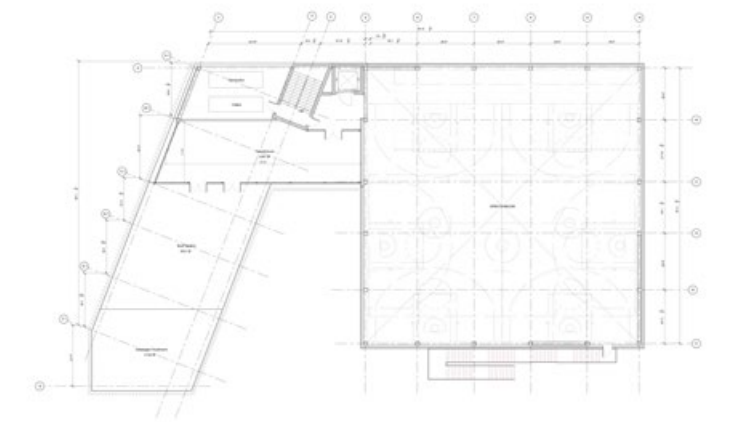
First Floor Plan



Second Floor Plan

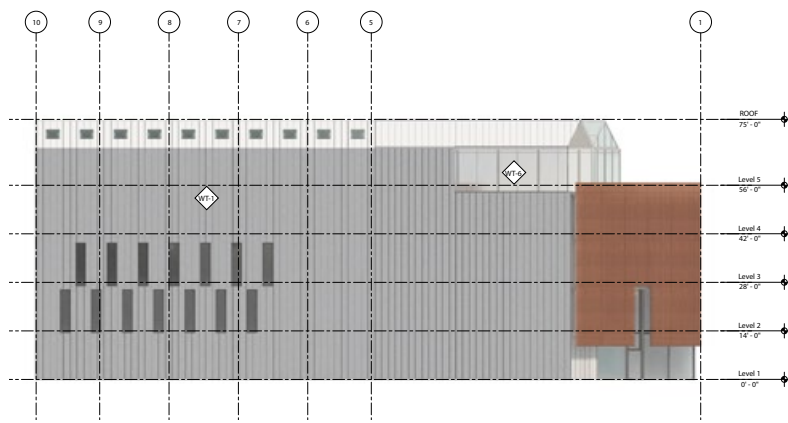


Third Floor Plan

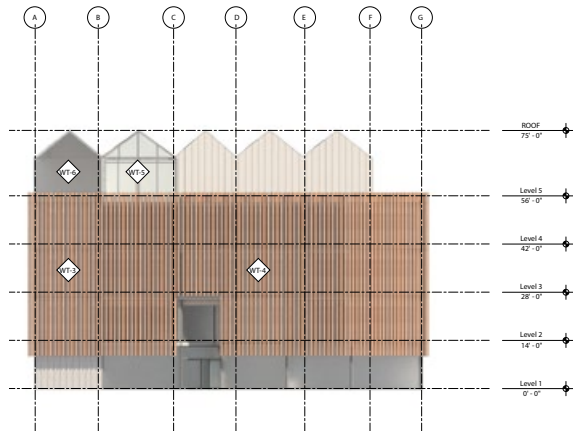


Roof Plan

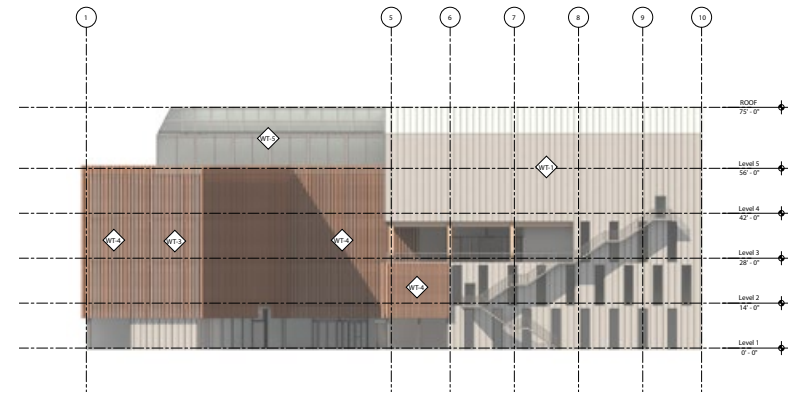
ELEVATIONS



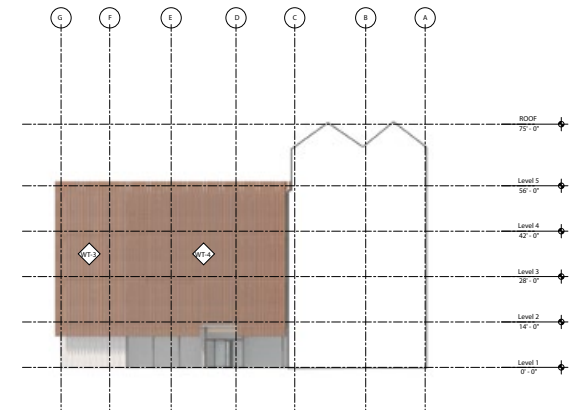
North Elevation



West Elevation

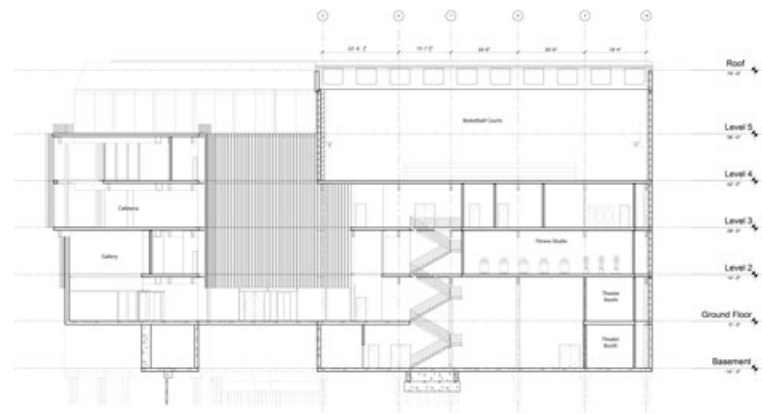


South Elevation

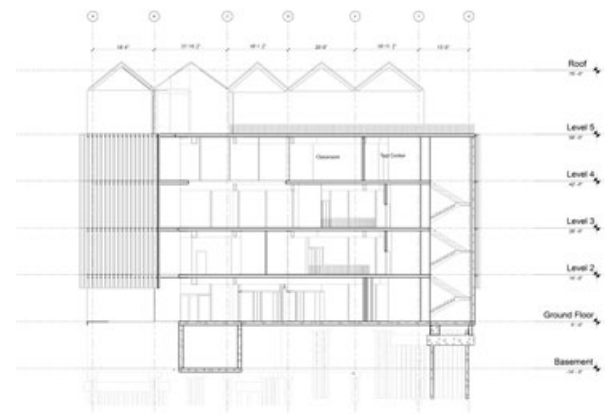


East Elevation

SECTIONS



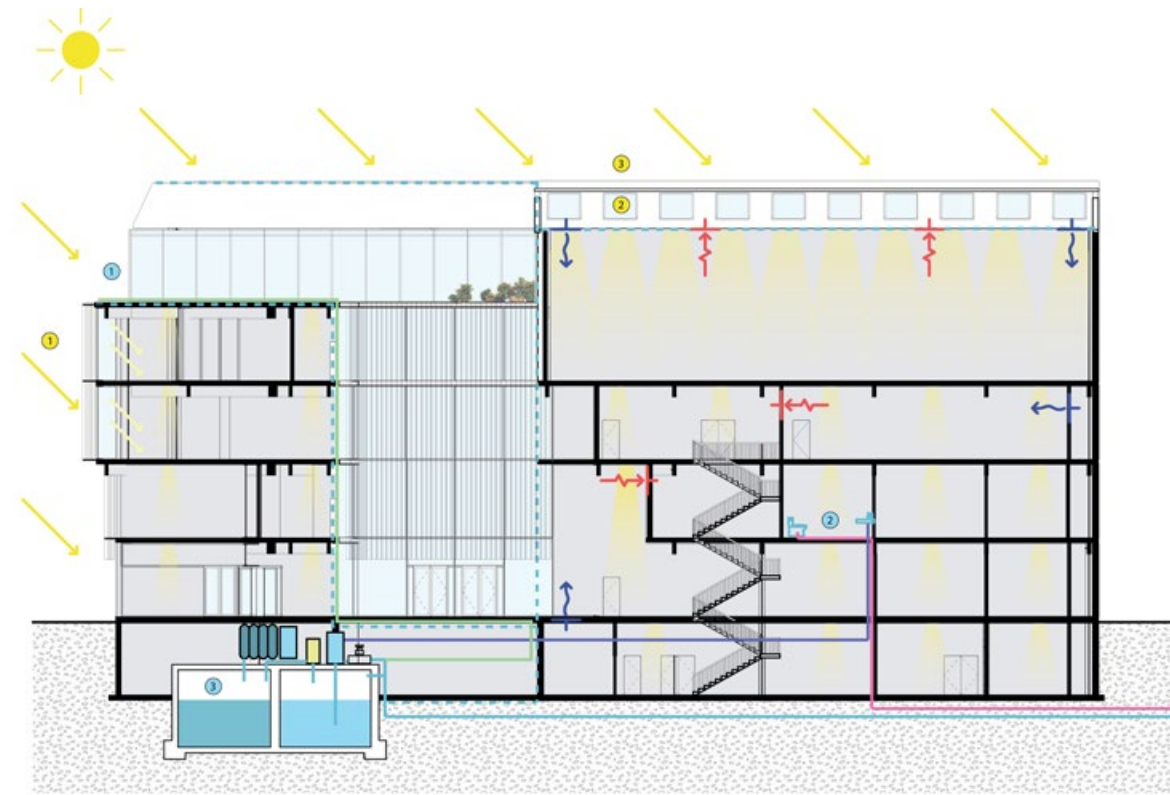
North South Section



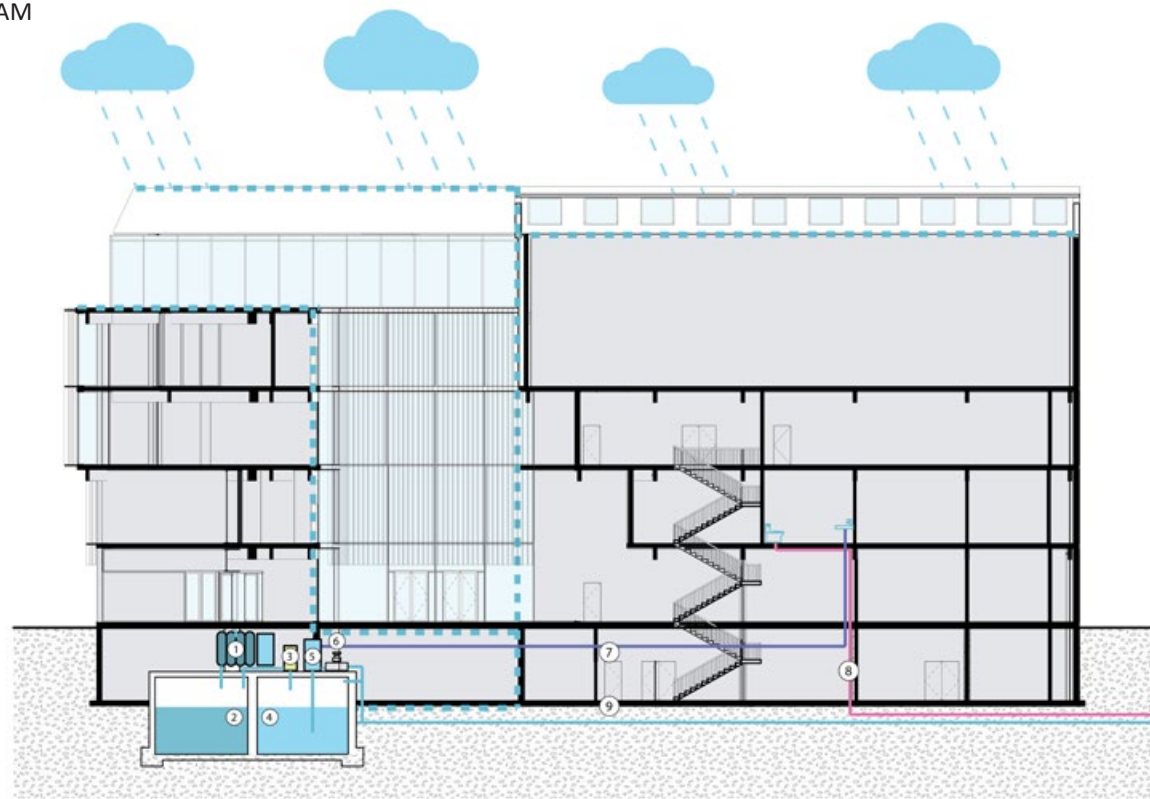
East West Section

EXTERIOR VIEW

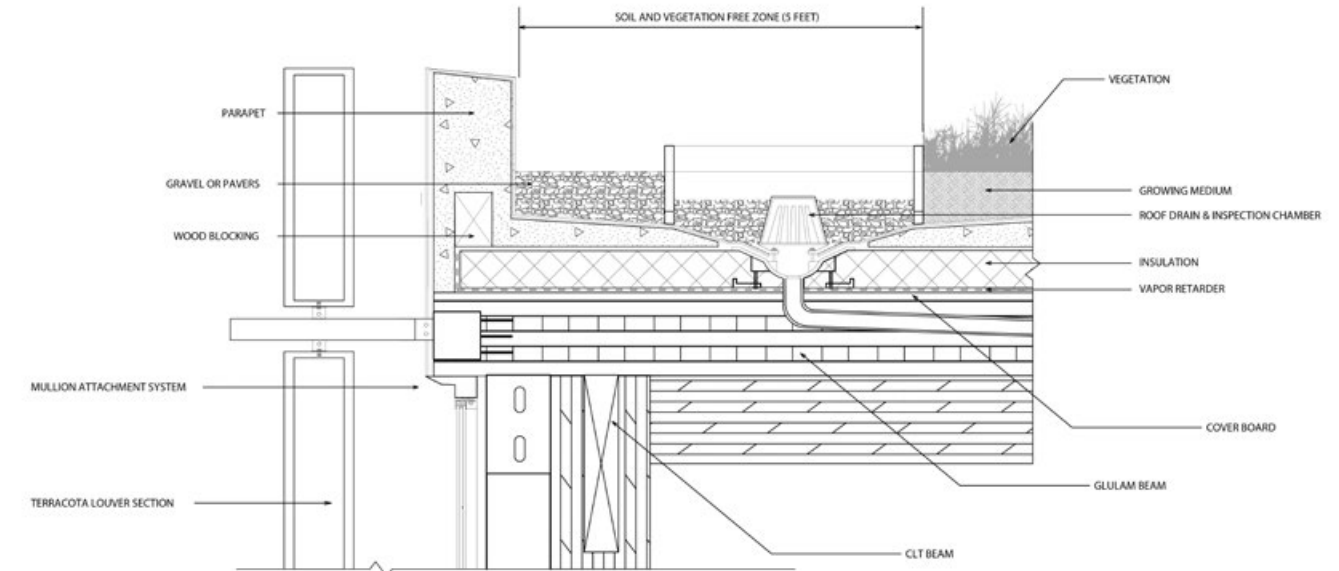




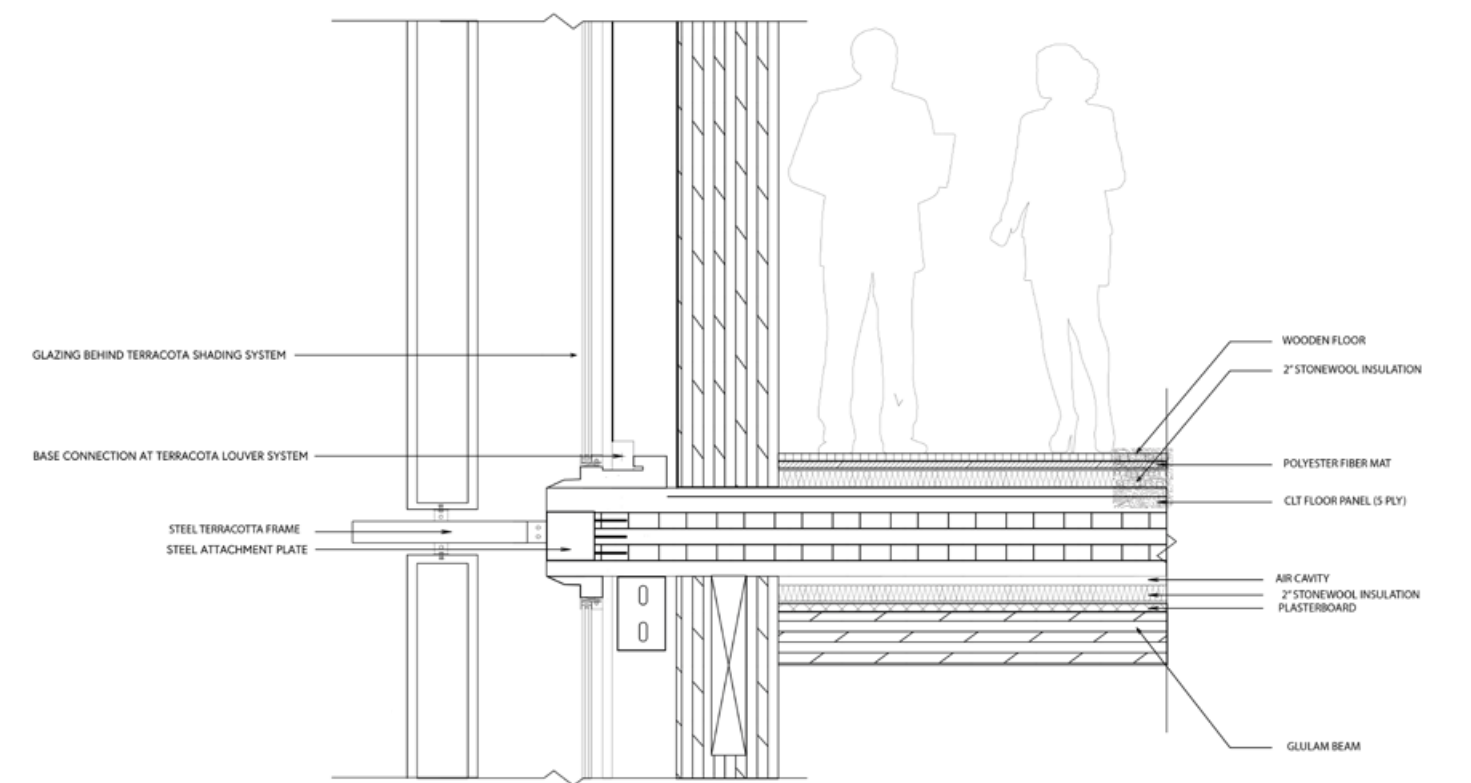
- 1 Daylight diffused through vertical louver system
- 2 Skylights along saw-tooth for even distribution of lighting in gymnasium
- 3 Photovoltaic panels located along the south facing side of saw-tooth roof
- 4 Stormwater collection system
- 5 Greywater collection system in sinks/showers
- 6 Water filtration tanks used for landscape irrigation



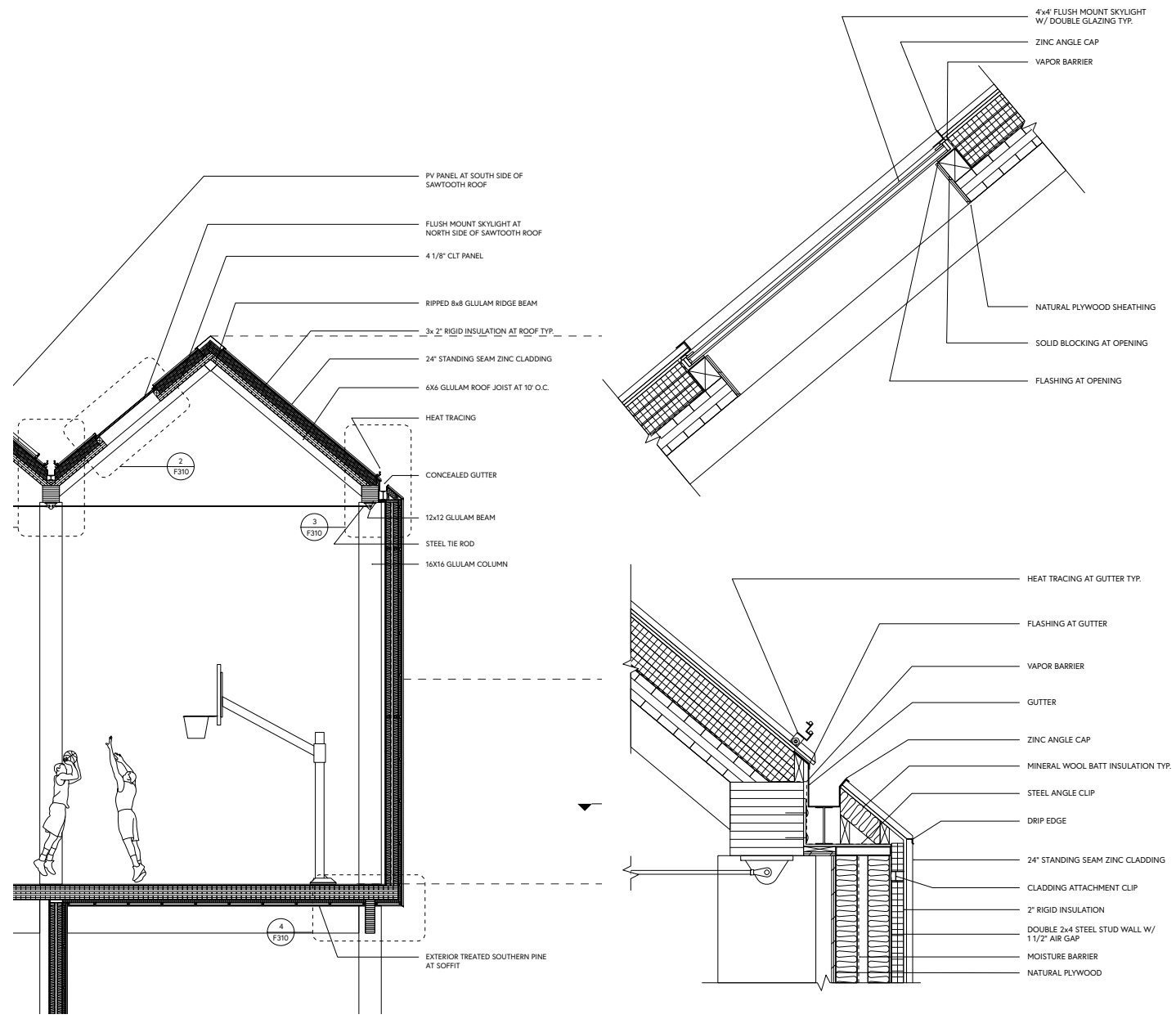
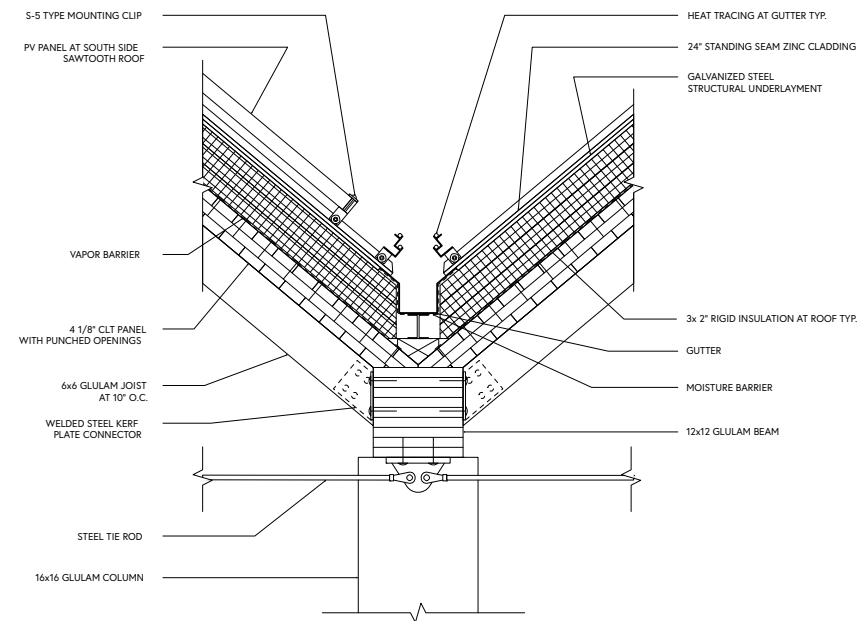
- 1. Cylinder Water Filter
- 2. Membrane Water Filter
- 3. UV Ray Water Filter
- 4. Holding Tank
- 5. Water Pump
- 6. Valve
- 7. Collected Grey Water
- 8. Collected Black Water
- 9. Back Wash Line in Event Excess Cistern Water / System Failure

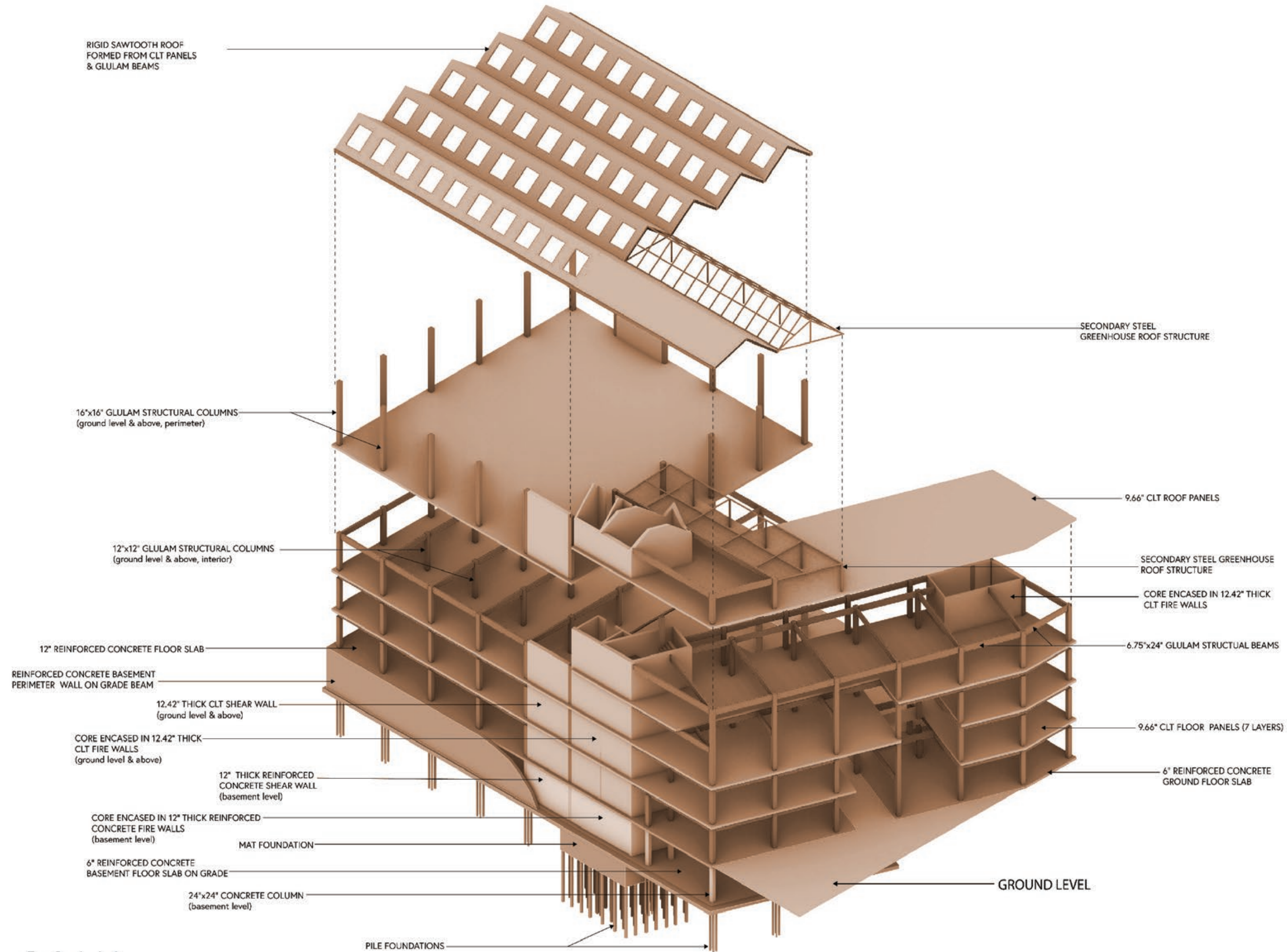


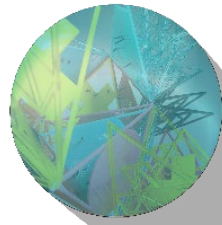
Roof System Detail



Floorslab Detail







The Prada Transformer Unfolded

Type: Academic- Solo

Semester: First Year Master, Fall 2019

Studio: Architectural Drawing & Representation I

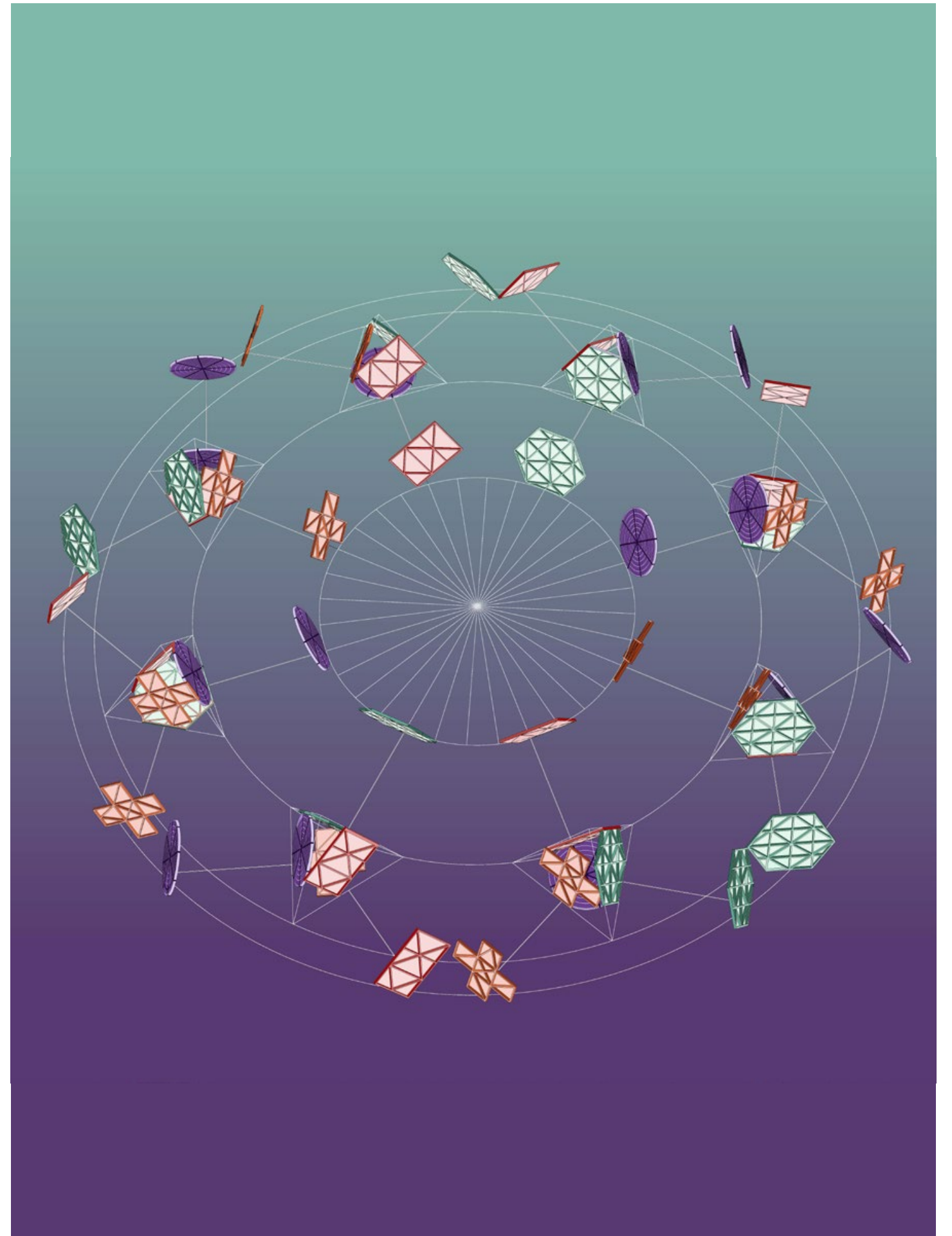
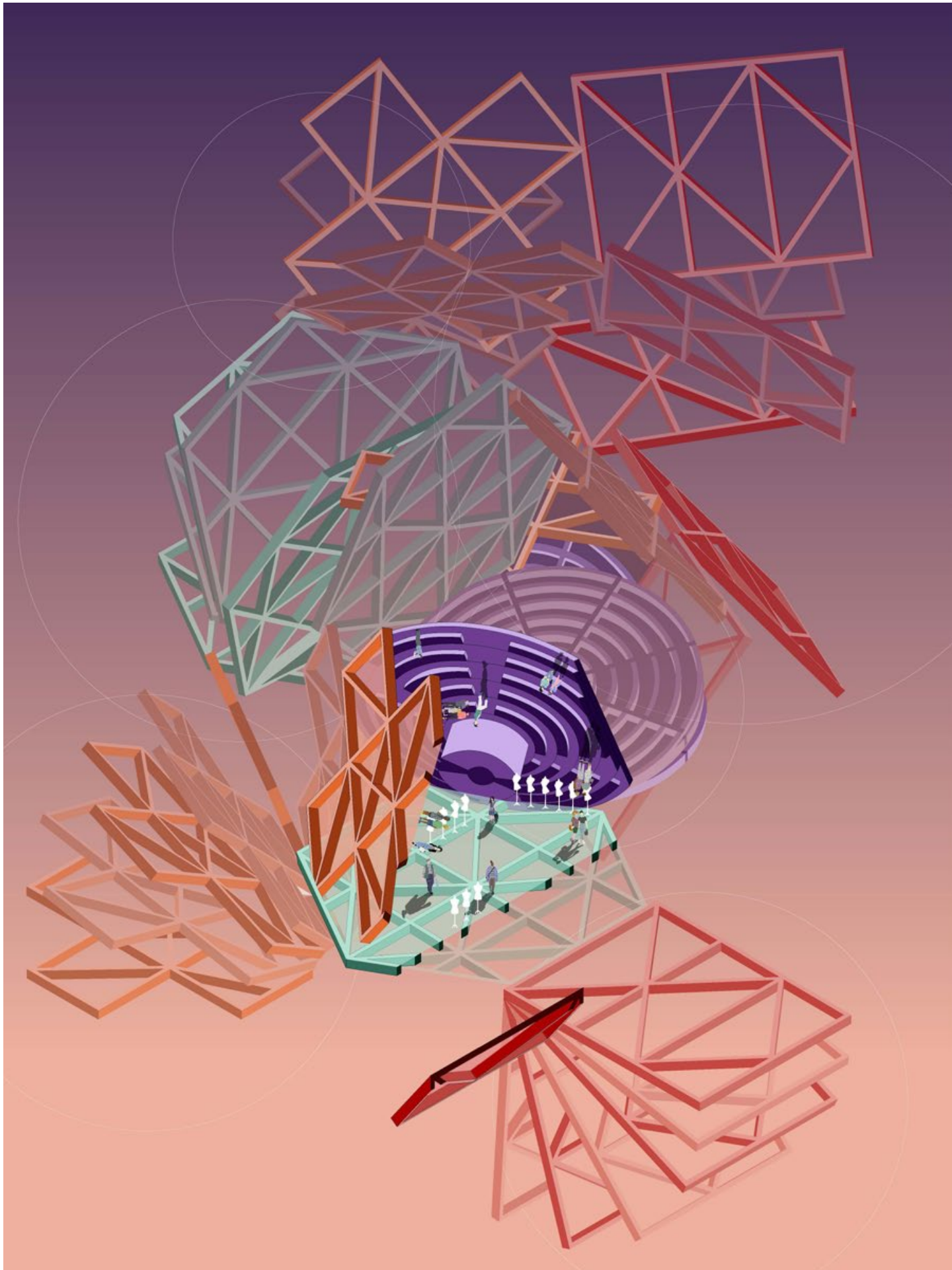
Location: Bronx, NY

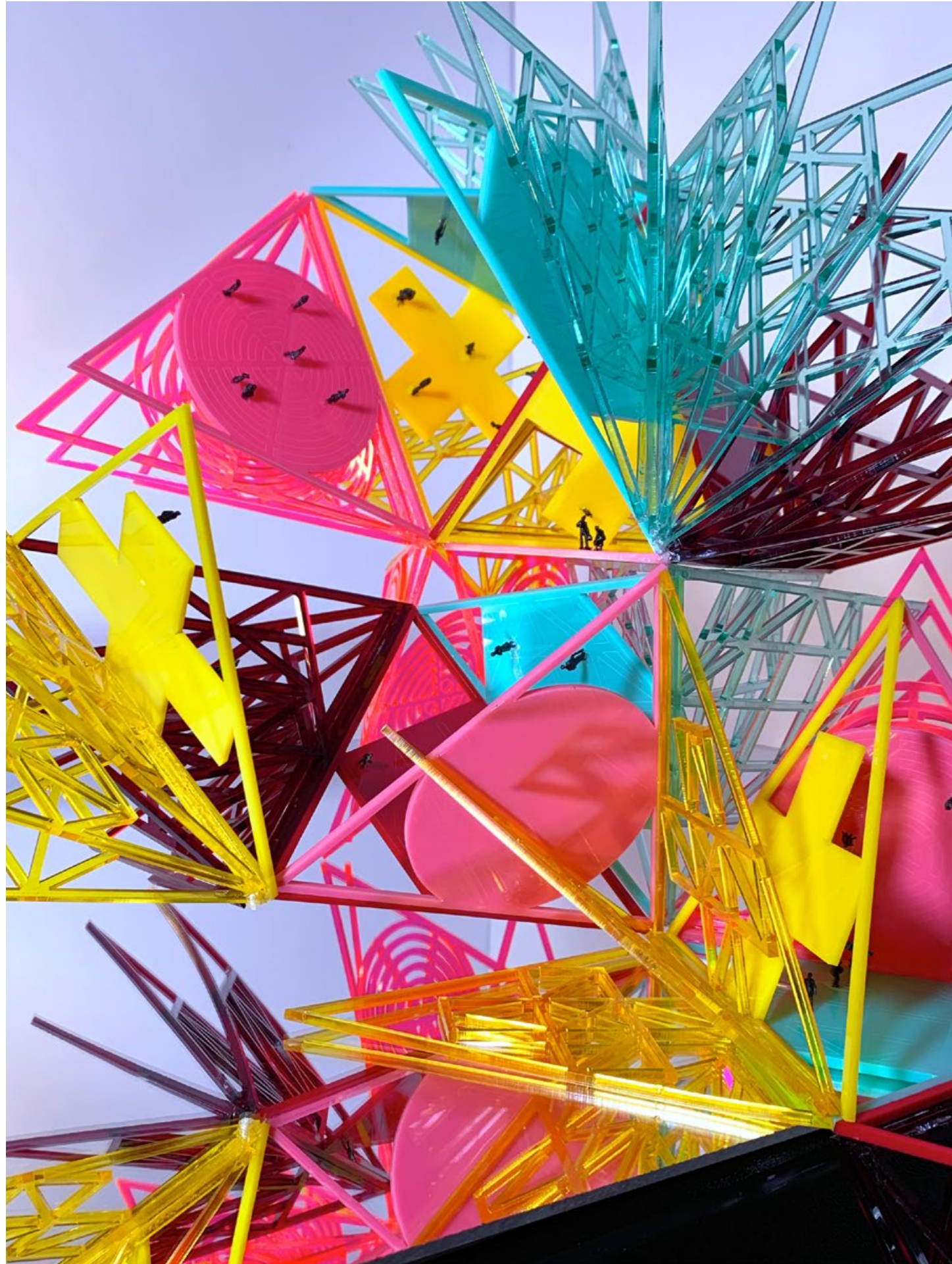
This class investigated the current concepts, techniques, and working methods of computer-aided “drawings” in architecture. The focus was on the construction of architectural representations, but rather than just experimenting in technique, we learned to define how these new operative techniques are changing the role of drawing in architecture.

The building I focused on was the Prada Transformer by OMA. The Prada Transformer is a temporary structure picked up by cranes and rotated to accommodate a variety of cultural events. The 20-meter high Prada Transformer is located adjacent to the 16th Century Gyeonghui Palace in the center of Seoul. The pavilion consists of four basic geometric shapes- a circle, a cross, a hexagon, a rectangle- leaning together and wrapped in a translucent membrane.

Each shape is a potential floor plan designed to be ideal for three months of cultural programming: a fashion exhibition (Waist Down, featuring skirts designed by Miuccia Prada), a film festival (co-curated by Alejandro González Iñárritu), an art exhibition (by Swedish video artist and sculptor Nathalie Djurberg), and a Prada fashion show. Walls become floors and floors become walls as the pavilion is flipped over by three cranes after each event to accommodate the next.









Mountain Dew

Type: Academic- Group

Semester: Third Year Master, Spring 2021

Studio: Techniques of the Ultrareal

Location: In another universe

Exploring the rendering capabilities of V-ray for 3ds Max, 'Mountain Dew' presents a Final Fantasy/Super Mario/Pirates of the Caribbean inspired world where bubbles exist instead of dust, streams flow backwards, and fireflies rave at night.

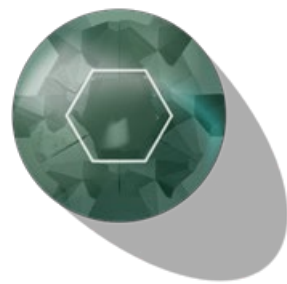


RENDER 1



RENDER 2





The Building Blocks of Life

Type: Academic- Solo

Semester: Third Year Master, Fall 2021

Studio: Transitional Geometries

Location: Makerspace

This project investigates tiling and modular fabrications, from two simultaneous motivations:

- 1) To explore the organizational, experiential, and aesthetic performance of units and repetition in architectural composition.
- 2) To look at moldmaking as an analog to construction logics writ large, efficiencies and economies of modular fabrication



