

The background of the entire page is a complex architectural wireframe. It consists of multiple overlapping, semi-transparent wireframe models of buildings. These models are rendered in a light gray color, creating a sense of depth and complexity. The wireframes show various structural elements like columns, beams, and floor slabs, arranged in a way that suggests a multi-story, interconnected urban or institutional structure. The overall aesthetic is clean, technical, and modern.

PORTFOLIO

Columbia GSAPP
Master of Architecture

Academic Projects • Tech Electives • Independent Research

YONG YEOB KIM

GSAPP, COLUMBIA FROM 2020 TO 2022



ADVANCED VI

INSTRUCTOR : GARY BATES • 2022.01 - 04

- Program : Rehabilitating Archive for a town and tourism
 - Material : Polluted Soil Brick + PTFE
 - Structure : Mass Timber + Steel Structure
 - Architectural Issue : Adaptive Reuse
- Social Issue : People Leaving from Polluted Land



ADVANCED V

INSTRUCTOR : MARC TSURUMAKI • 2021.09 - 12

- Program : Art Educational Center for Children in Poverty
 - Material : Plastics
 - Structure : Reused Plastics in Reinforced Concrete
- Architectural Issue : Possibilities of Ambiguous Spatiality
 - Social Issue : Children and Artists in Poverty



CORE III

INSTRUCTOR : ERICA GOETZ • 2020.09 - 12

- Program : Collective Housing
 - Material : Wood
 - Structure : Mass Timber
- Architectural Issue : Natural Cross Ventilation
- Social Issue : People Living in Poor Environments



ADVANCED IV

INSTRUCTOR : ROBERT MARINO • 2021.01 - 04

- Program : Museum & Memorial
 - Material : Wood
 - Structure : Wooden Structure
- Architectural Issue : Actualization of Spirits
- Social Issue : Memorial for the Culture-torn

ADAPTIBLE ARCHIVE : ACTIVISM TOWARD LAND

Adaptive reuse of existing structures related to the history of site to bring tourism

Individual • Instructor : Gary Bates • Period : Advanced Studio VI (4rd semester) - 2022.01 ~ 04

Program : Tourism • Site : Fort Bragg, California, United States

The first goal of the project was to build an Art organization center for artists who have been in trouble with job and money. From the goal, I thought that it will be definitely meaningful to bring an spatial inspiration from an artist or art which might have methodologies and ideas that can be used for Architecture. Gabriel Orozco was the artist I chose and his understanding of trees with diverse sized-circles gave me an inspiration of how to create this center of Art organization.

Then while researching to pick a site for the center and thinking about how the center can play a better role in people also having hard time during and after Covid-19. I found an article explaining that art education for kids had got worse because of poverty and uncertified teachers in South Bronx and also it showed the benefits of appropriate art education for kids. This is the reason why the site in the poorest part of South Bronx was chosen. The key word, ambiguity came from both the goals and definitions of Art and education to create educational spaces for kids to have better experiences, even while they are not taking classes.

Lastly, recycling of construction material from demolition is one of the hottest topic among artists to warn society and the government. Therefore the ways to reuse abandoned plastics were used for the construction, which also helps solve a problem of pollution in South Bronx and the thing is that plastics remind of playful things and kids which is also parellel to the program.



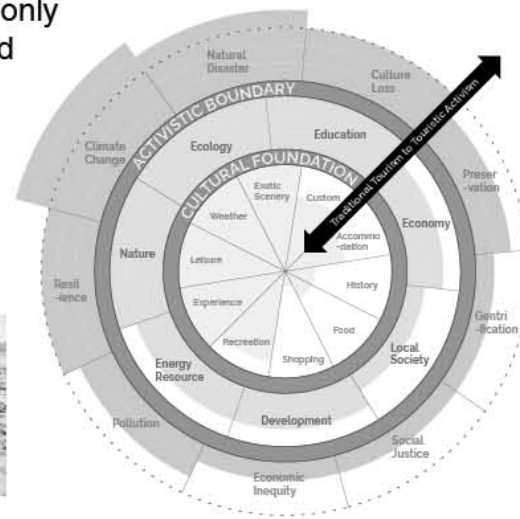
VIRTUAL TOURS IN SMALL, INCONSISTENT, AND FRAGILE AREAS

A specific kind of activism closely has been involved in tourism. When people were traveling to other countries seeing the only surfaces of cultural geography, the activist people started thinking of being with the local people like eating and wearing like them. Then nature and environmental tourism appeared to see one more layer in each culture. These days, tourism started considering to revive destroyed culture and to rehabilitate the local community.

More Responsibility, Less Transportation Time, More Information



Culture Tourism Nature/Eco Tourism Environment Tourism



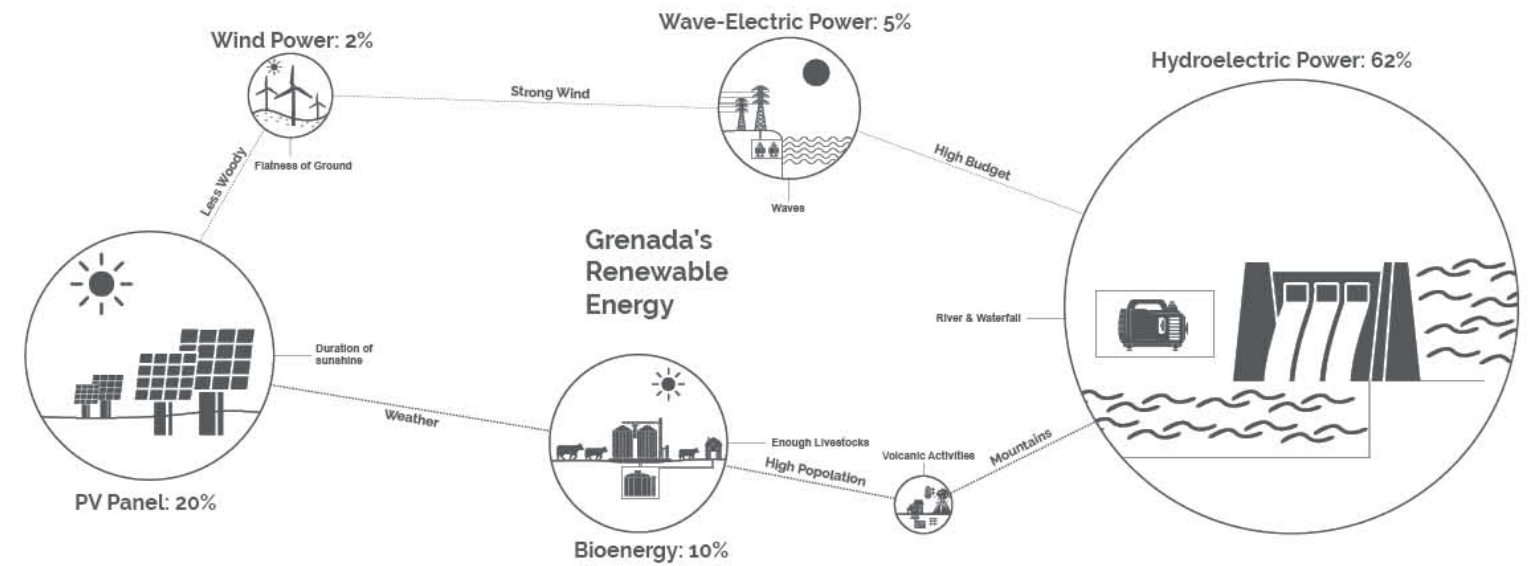
Doughnut Diagram

Cultural Foundation

It indicates the basic elements that consist of each country or touristic place

Activistic Boundary

This shows what kind of activist issues will proceed because of tourism and how both the local community and tourists can handle



Granada - Renewable Energy Source

Because of limited land, population, and sources, small and fragile areas become dependent on one or two renewable energy sources which is different with the global renewable energy production chart.

Population : 2,642
Climate : Polar
Area : 7500.5 km²



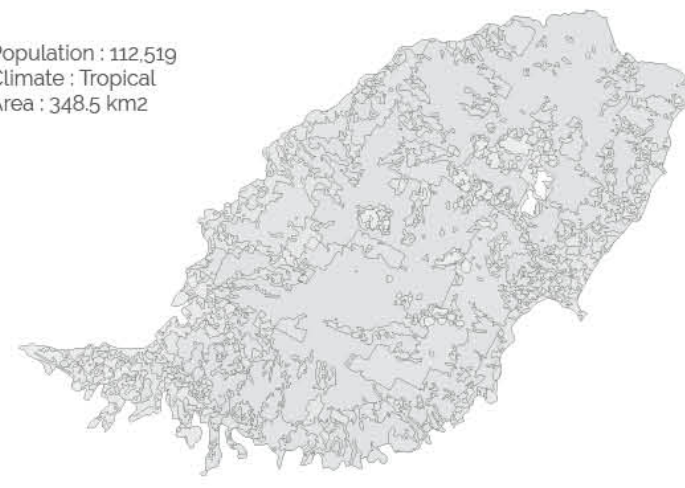
TOUR1. Svalbard

Population : 120
Climate : Subtropical
Area : 0.7 km²



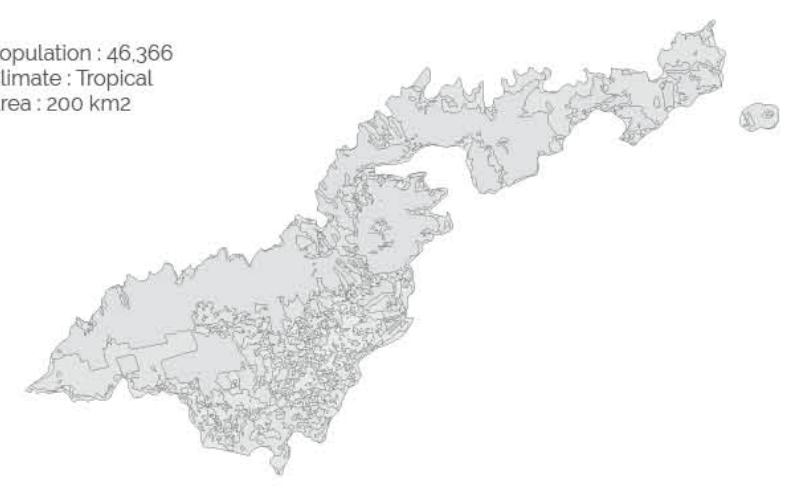
TOUR2, Governor's Island

Population : 112,519
Climate : Tropical
Area : 348.5 km²



TOUR3. Grenada

Population : 46,366
Climate : Tropical
Area : 200 km²



TOUR4. American Samoa

FRAGILITY

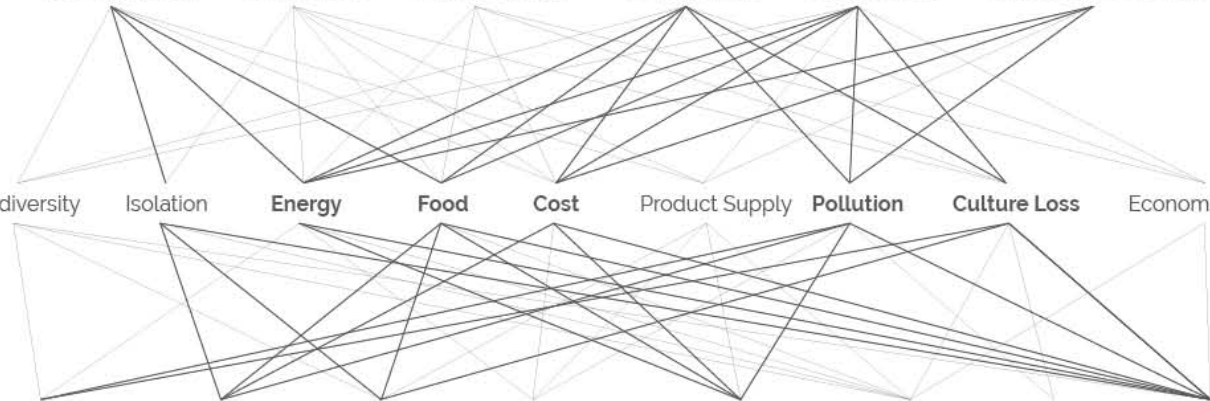
Natural disaster Remoteness Climate Change Development Over tourism Outdated Technology

SUSTAINABILITY

Biodiversity Isolation Energy Food Cost Product Supply Pollution Culture Loss Economic Inequity

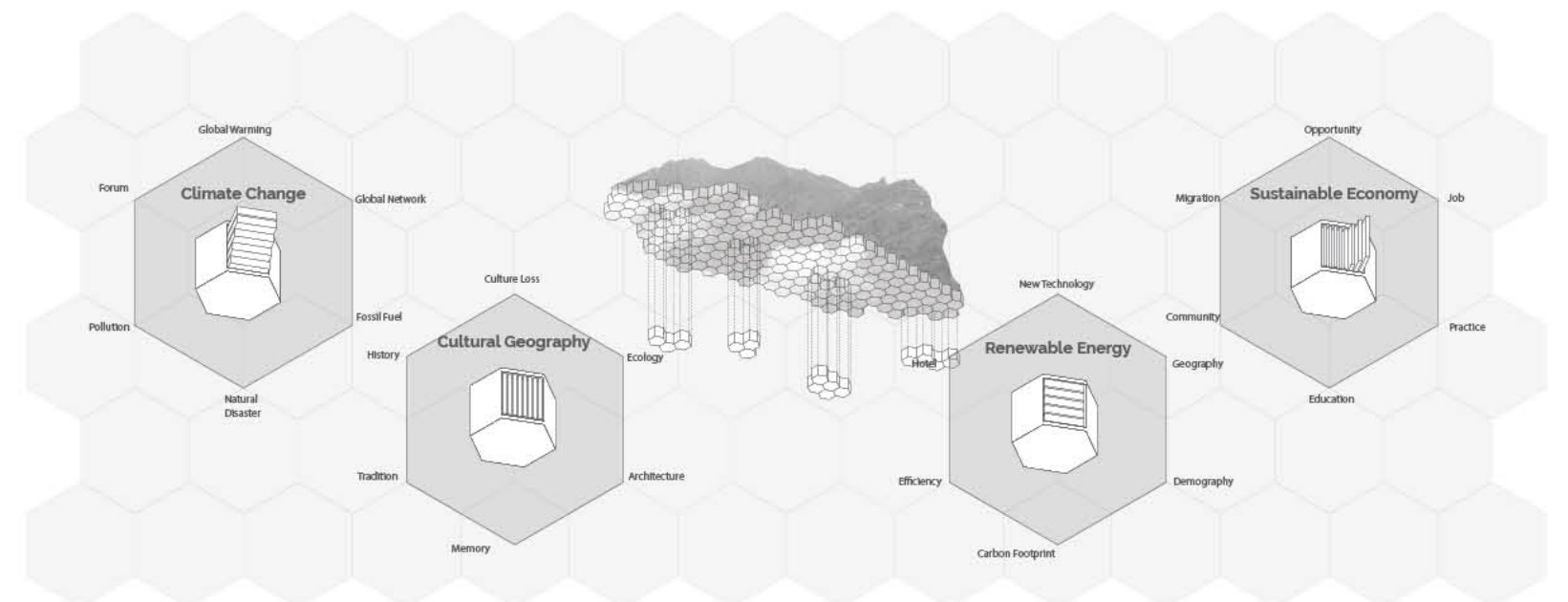
ACTIVISM

Research & Data Collecting Indoor Farming Archive Renewable Energy Energy-Efficient Technology Network Marketing Education



Governor's Island - Archive

When tourism appears on an island, it exposes specific fragilities. To cover and make the island sustainable, specific programs also need to support the area.



American Samoa - Decolonization

Tourism has been taking land from small communities and destroying by colonizing cultural and economical assets on the small areas. To stop this, tourism has to be with the local community.

LAND, EARTH, AND SOIL FROM THE KINNE TRIP

During the Kinne trip, I was focusing on soil, land, and earth and how those could give different images, messages, and feeling to us depending on the conditions of surfaces. Furthermore, the layers below surfaces were interesting in terms of its inclusions of the past on top of each other. What we do on land will remain as layers.

Polluted Land



Inaccessible Land



Below Surface



Traces on Surface



Death



Emptiness



Accessible Land



Layers

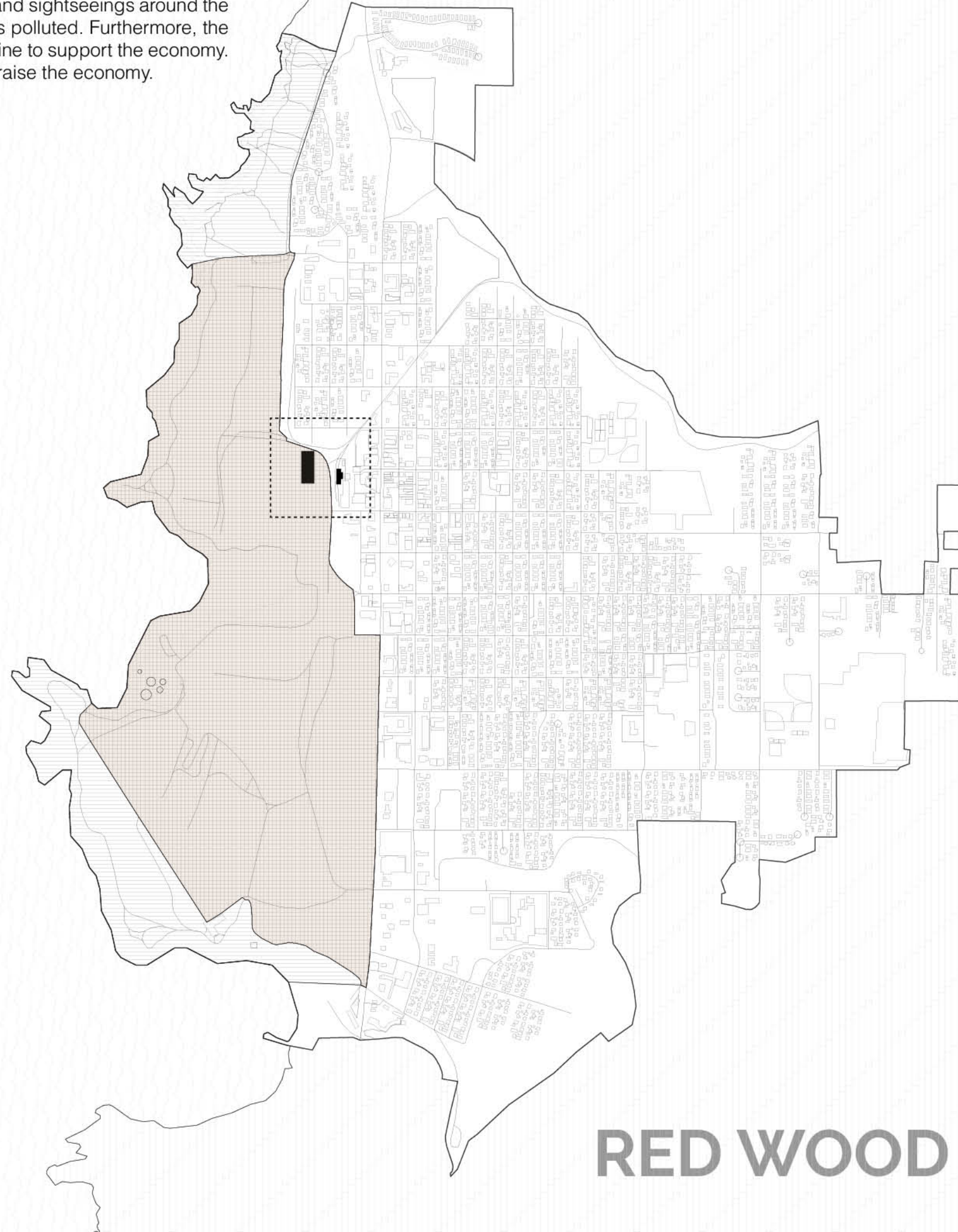


HOW WE VOLUNTARILY HAVE IMPRISONED OUR LIVES IN A SMALL AREA

Fort Bragg is placed 150 miles away from San Francisco and also it is the biggest town in a close distance. Even though it has been popular these days because of glass beach and sightseeing around the town, the best place to go to the beautiful shore line is blocked because it is polluted. Furthermore, the town is small and people have left to other cities to get a job. There is no engine to support the economy. This is the reason why Fort Bragg was chosen to bring tourism which could raise the economy.



-  **Polluted Area**
-  **Redevelopment Area**



PACIFIC OCEAN

RED WOOD FORREST

HISTORY OF THE SITE, HISTORY OF THE POLLUTION

PFAS is called a forever chemical that cannot be removed by chemical and biological process and it directly goes to people causing a lot of diseases.



Wood Industry



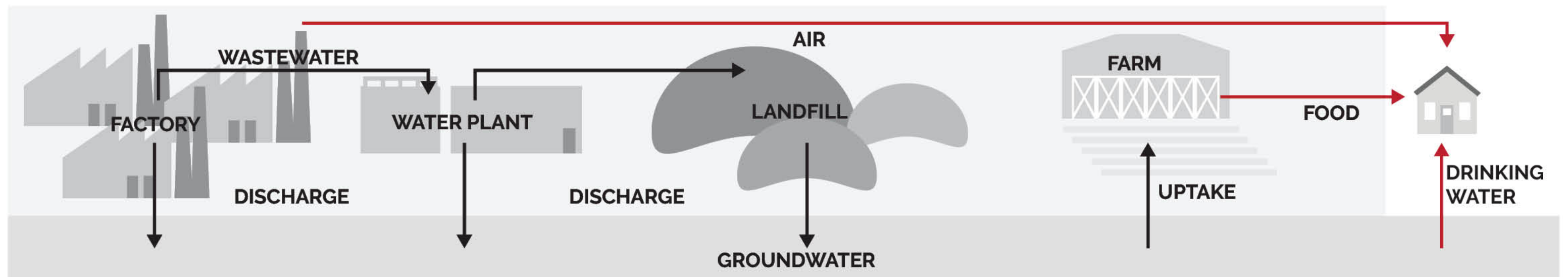
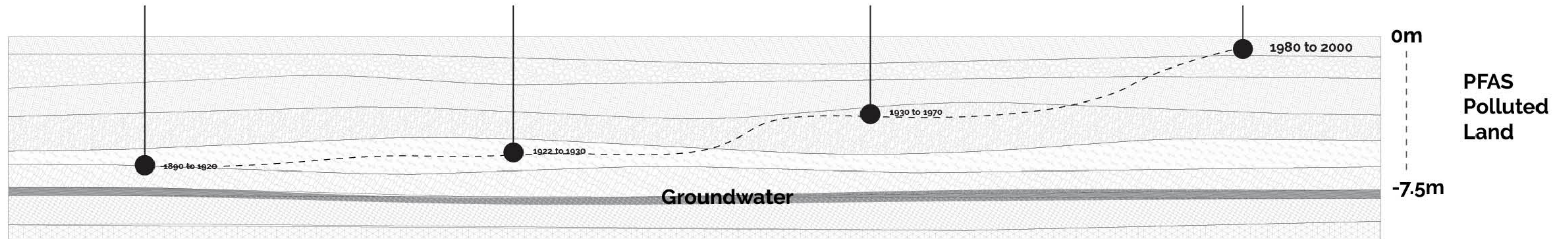
Earthquake



Landfill



Factory



LIBERATION OF LAND

The concept is to liberate the land and to recreate cultural assets related to the history of the local community by rehabilitating the land and it is also to bring tourism connecting the history and the sightseeings to the land at the same time.

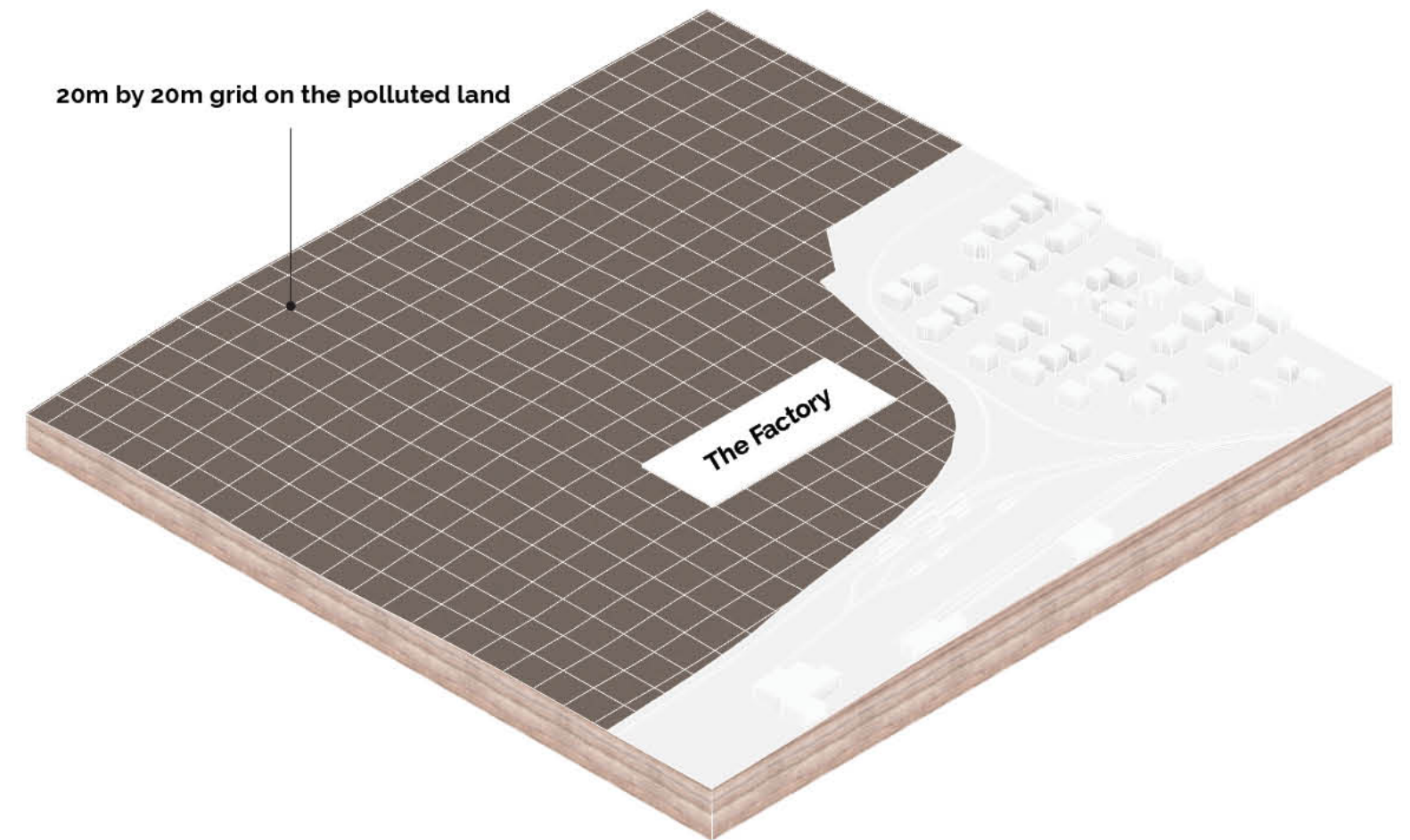


Direct Removal of Polluted Soil By Making Bricks

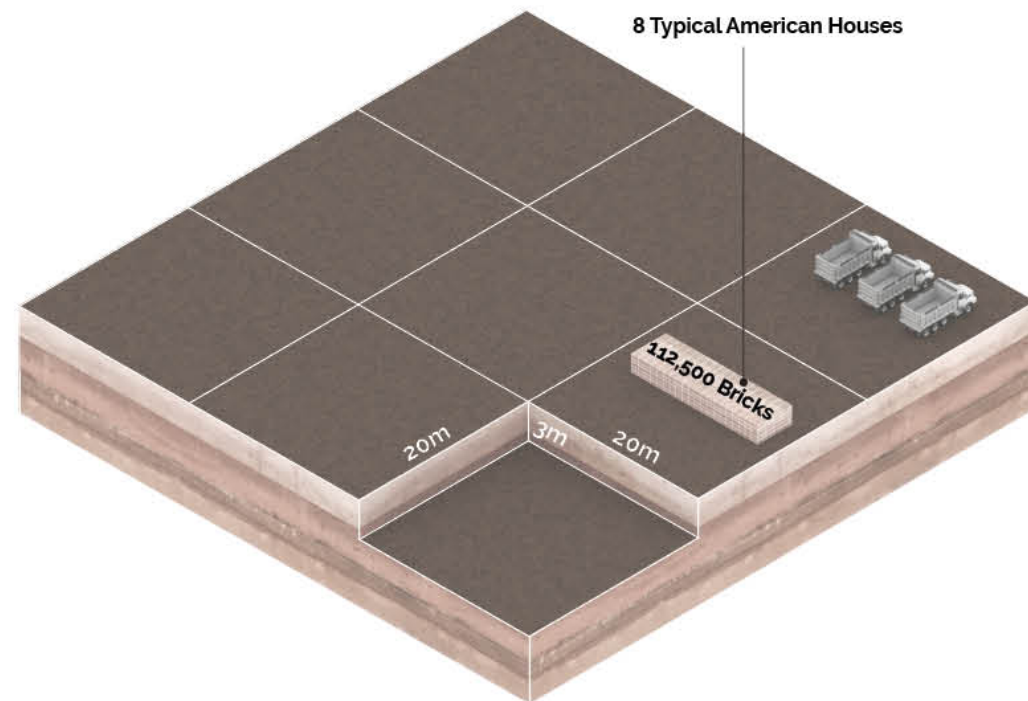
One technique was invented to use the polluted soil by making bricks since PFAS cannot be removed from the soil. Therefore the direct removal could be the best way to recover the land. The starting process is to draw a 20 by 20m grid system on the land which is optimal to excavate and to make bricks in one unit of factory.



LONG-TERM EXCAVATION PLAN

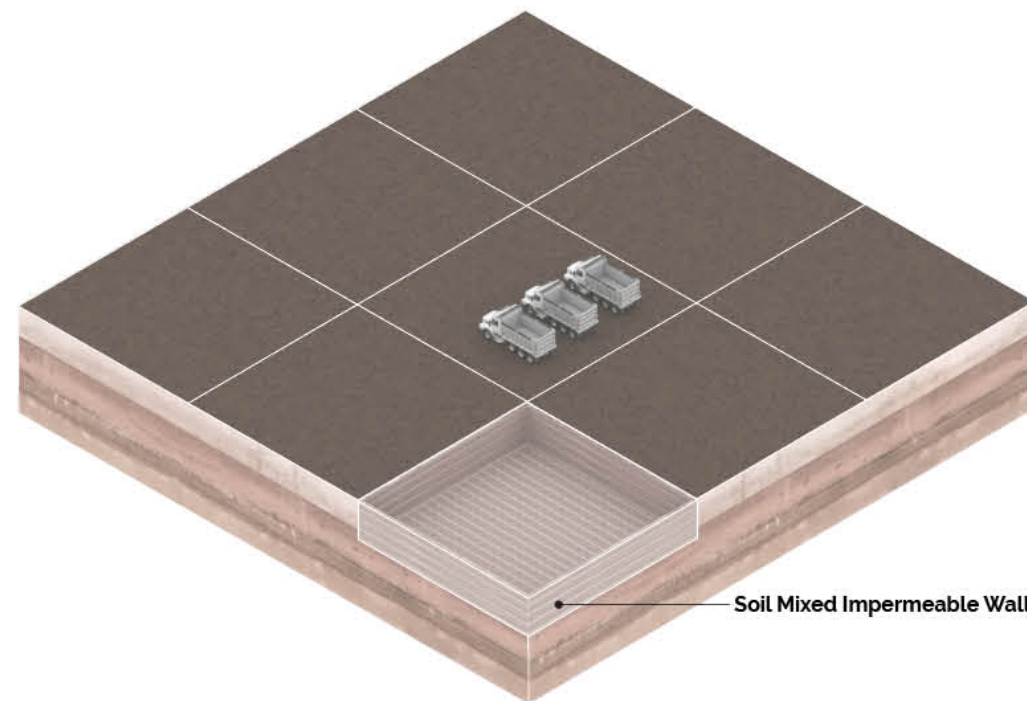


A 20m by 20m grid system on the land



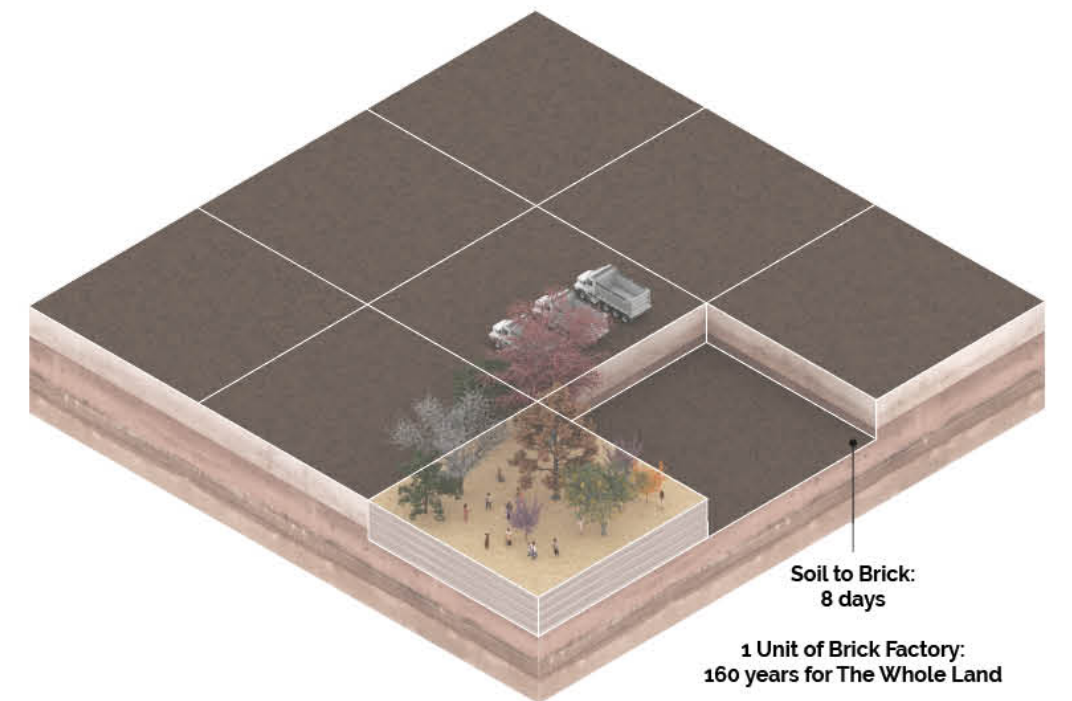
Long-term Excavation Plan : Step1

Each plot will be excavated with 3m depth. From each plot, bricks will be made as much as 8 typical American houses. It takes 8 to 10 days in one unit factory from excavation to creation of bricks.



Long-term Excavation Plan : Step2

After that, PFAS still can move both vertically and horizontally. The way to block the chemical is to install soil mixed walls and foundation which can be absorbed to the land in a couple of decades.



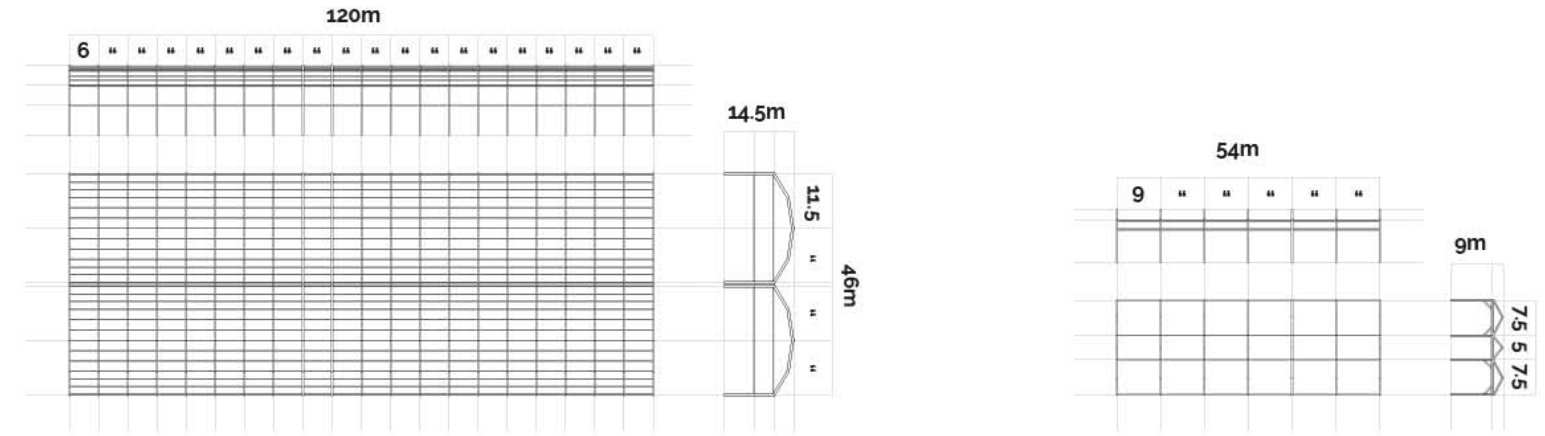
Long-term Excavation Plan : Step3

From my calculations, one unit of brick factory takes 160 years to cover the whole land which means 10 units will take 16 years.



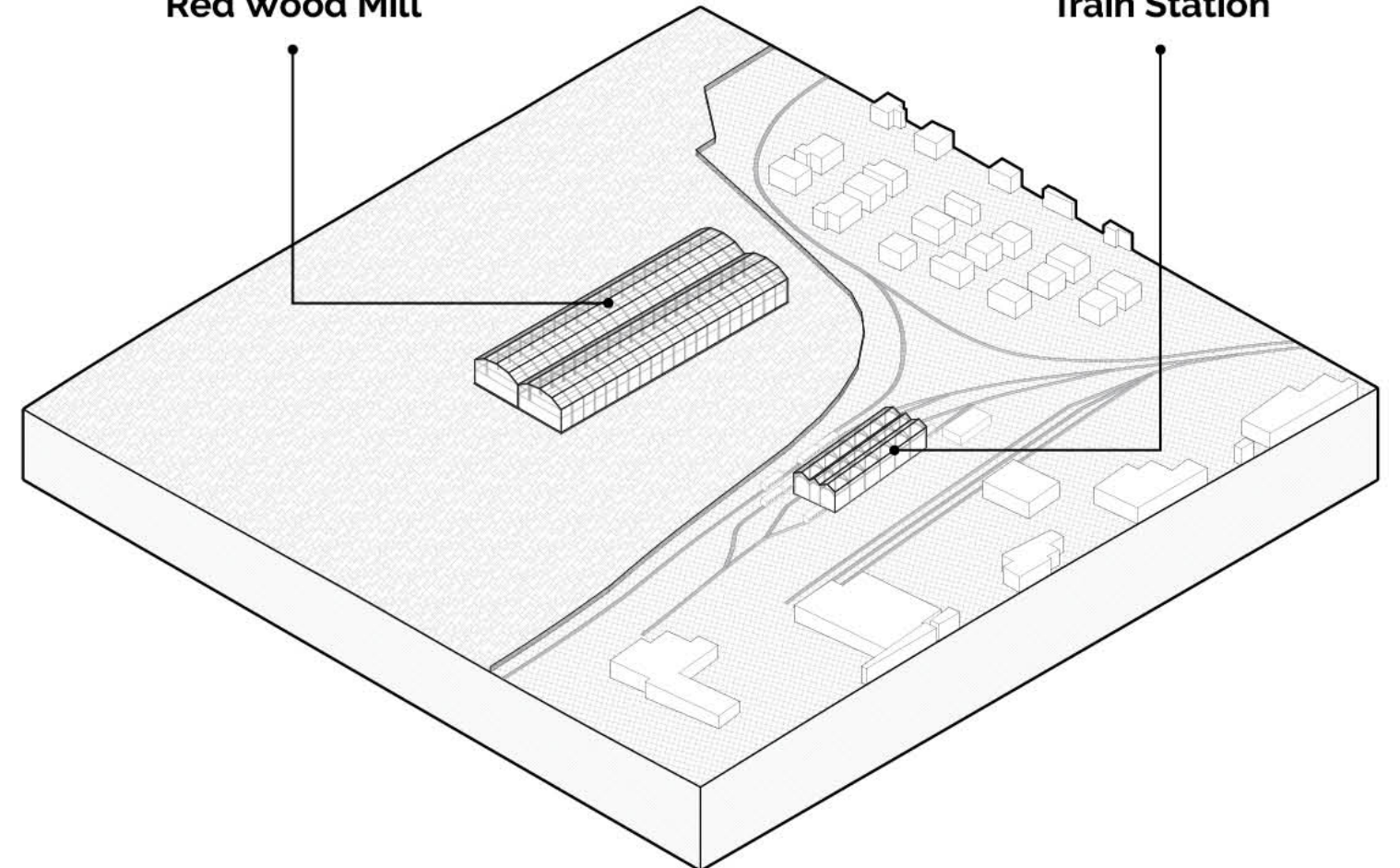
THE RESULT

It was interesting to see how humans have voluntarily imprisoned their lived in a specific areas by polluting, manipulating, and exploiting their land. The fenced area above is showing the result of our behaviors.



Red Wood Mill

Train Station



EXISTING STRUCTURE : ADAPTIVE REUSE

There are two existing structures in Fort Bragg. One is the last red wood mill in the polluted area and the other one is train station. Those are placed in a fascinating position where fence is passing between the two buildings.

THE ORGANIZATION OF THE PROGRAMS

The necessary parts where long span spaces are in need are remaining. The half of the train station is demolished since it is bigger than it should be for the reception area. Then the historical museum is added to connect the two. mass timber structure is inserted on, below, and in the existing structure to support new programs. Then polluted soil brick covers for the soil related programs and a big multipurpose hall is added being connected to all the facilities.

MULTIPURPOSE PLATFORM

MEETING ROOM

SOIL PRETREATMENT

SOIL LAB

CAFETERIA

GREENHOUSE

MUSEUM

CONFERENCE

OFFICE

BRICK FACTORY

JOB PRACTICE

GEOTHERMAL GENERATOR

CAFE

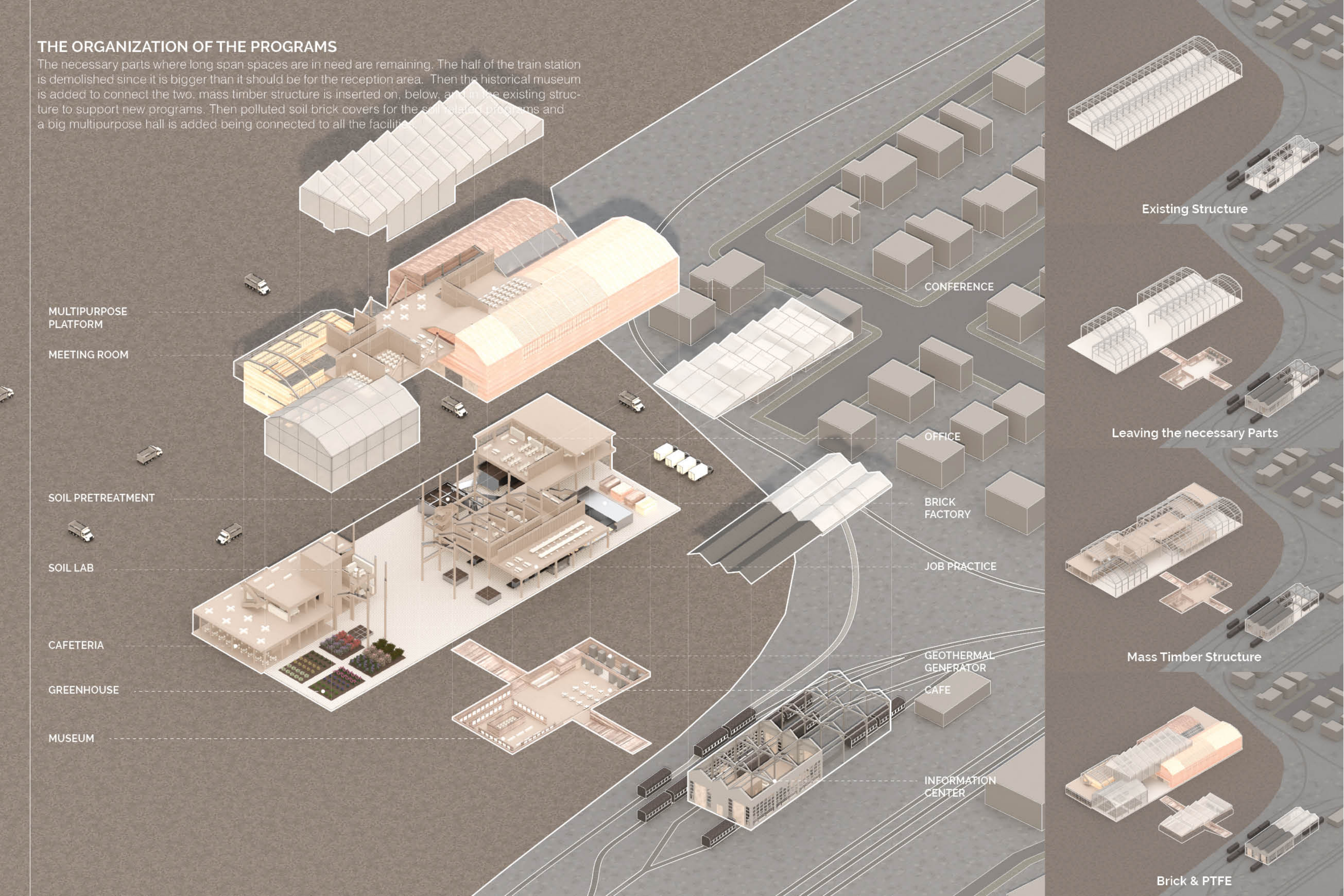
INFORMATION CENTER

Existing Structure

Leaving the necessary Parts

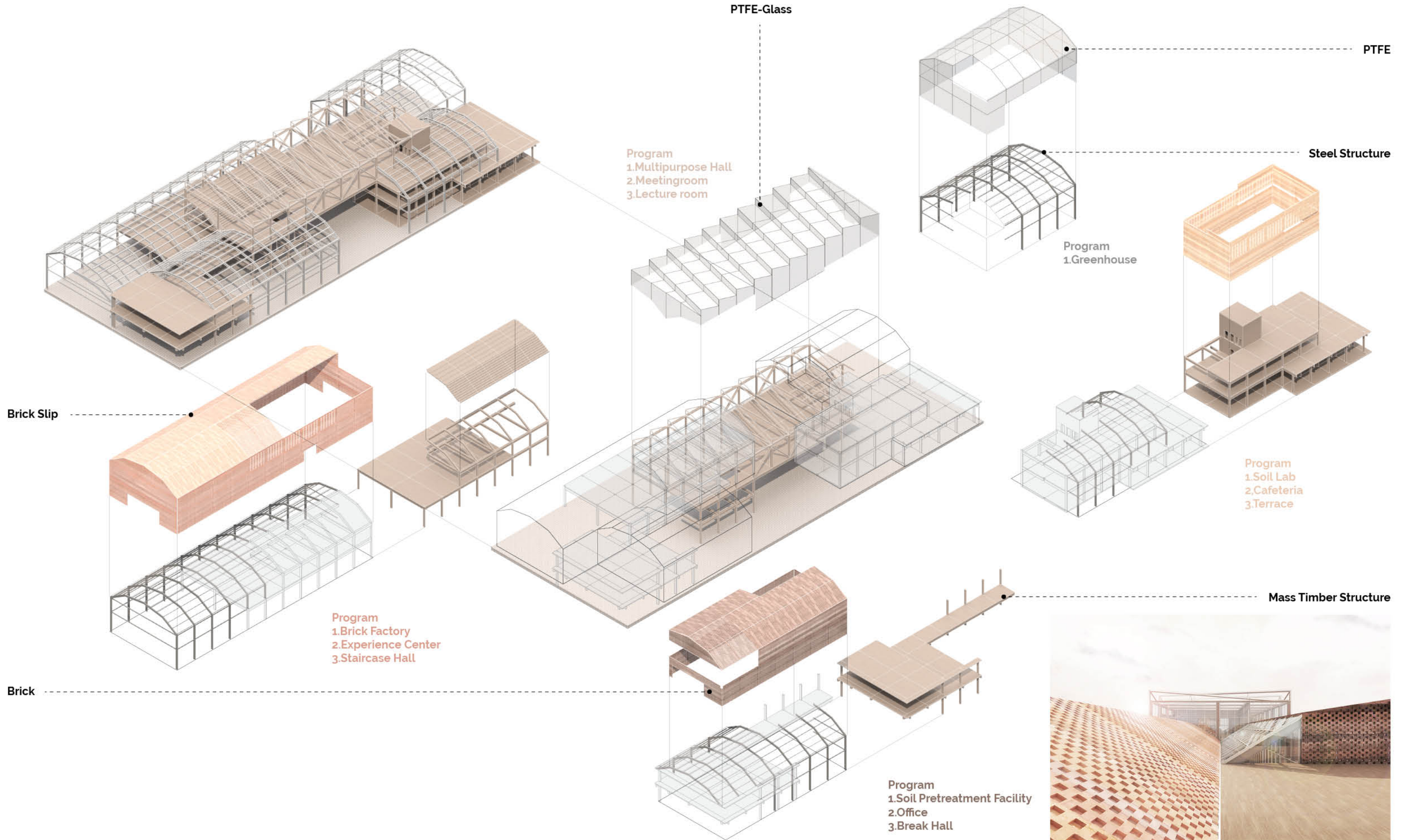
Mass Timber Structure

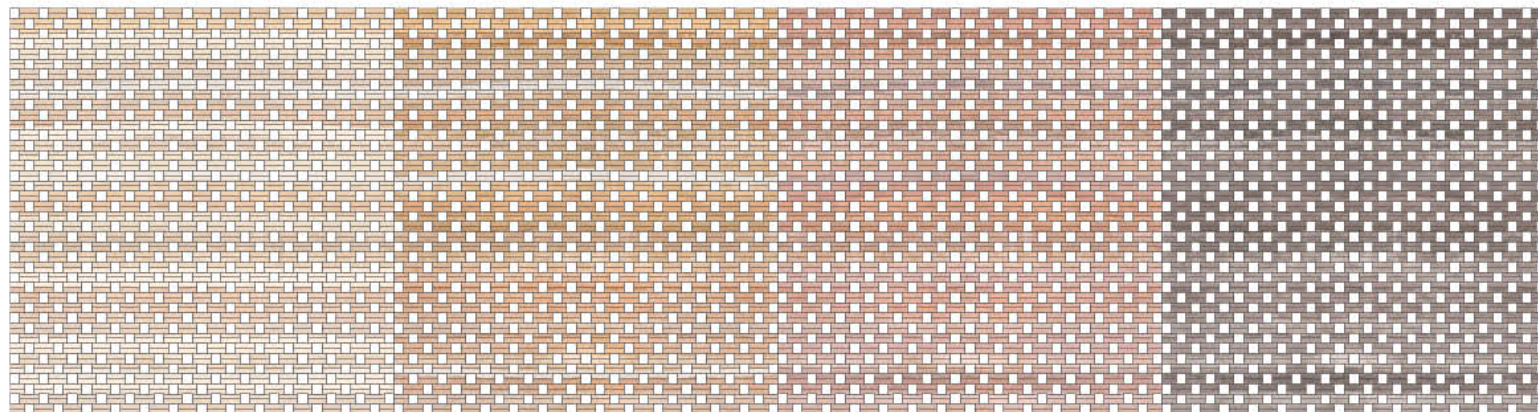
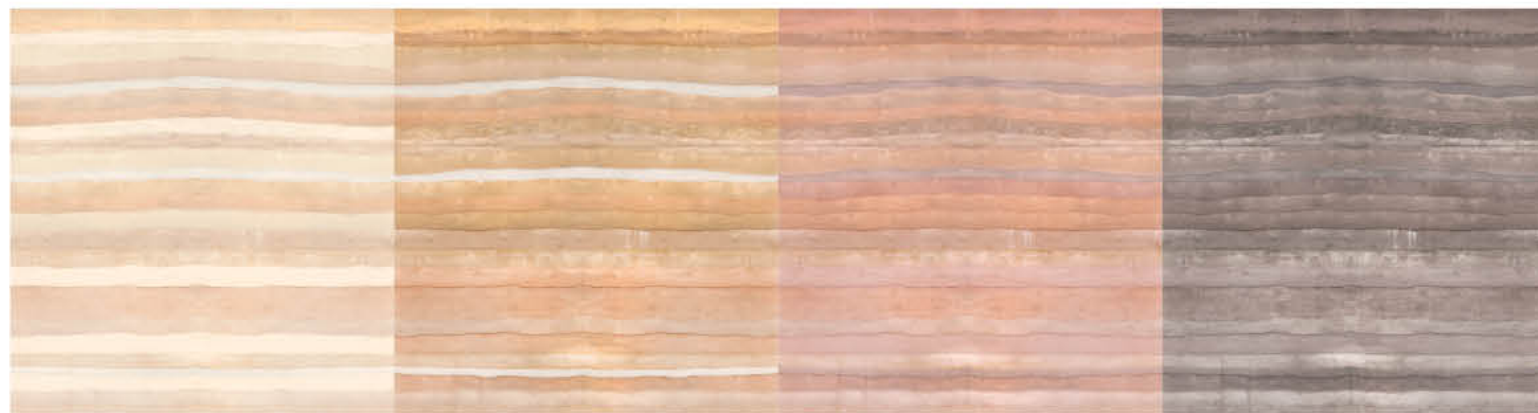
Brick & PTFE



HOW DIFFERENT MATERIALS MEET DEPENDING ON PROGRAMS

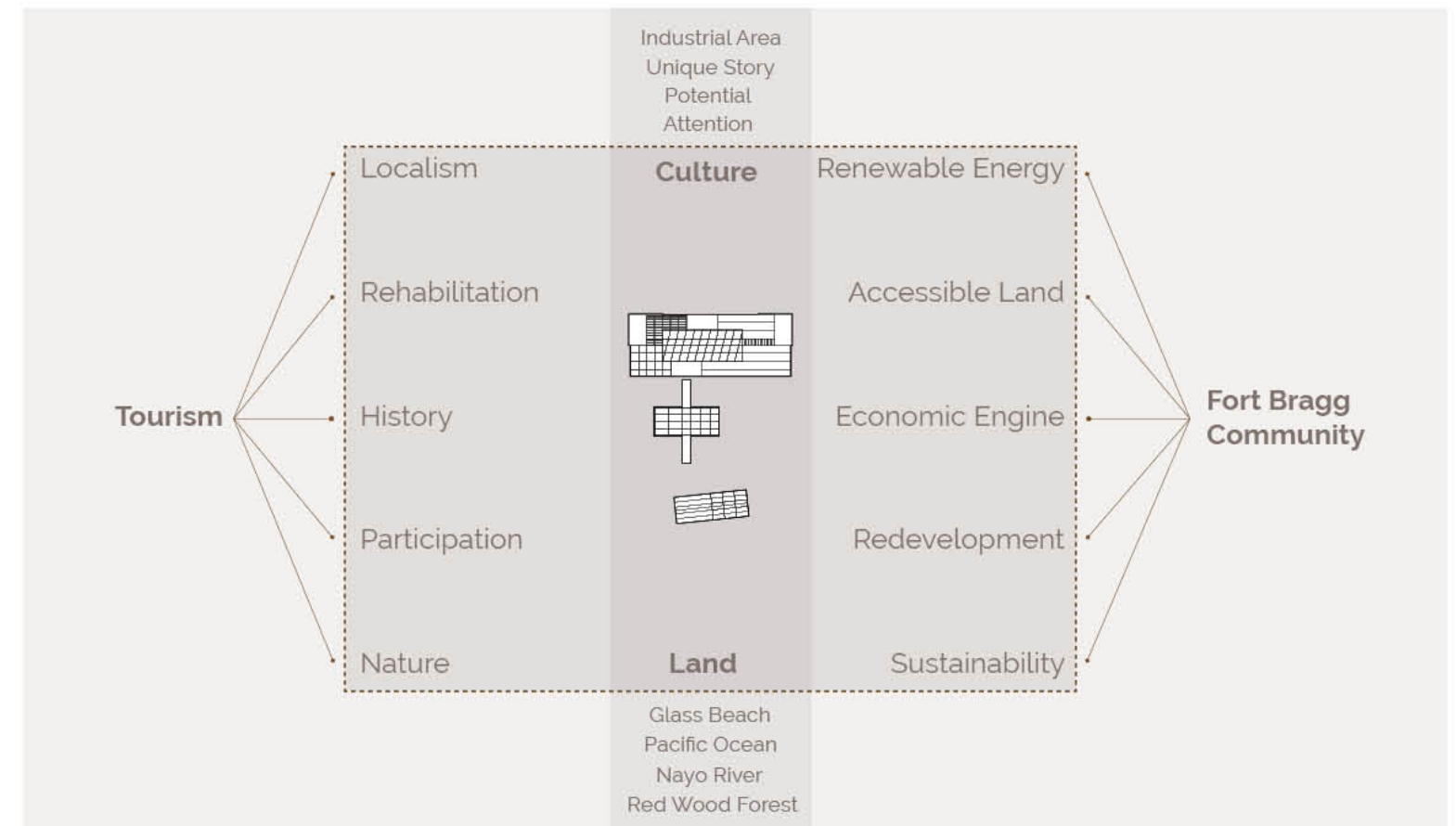
Depending on how different materials meet together and what types of programs are organized, each massing has different logic to be assembled.





LAYERS : Rammed-Brick Stack

It may makes sense to stack bricks while making layers to show what they are doing and to show the brick is coming from the land and the layers below the surface.

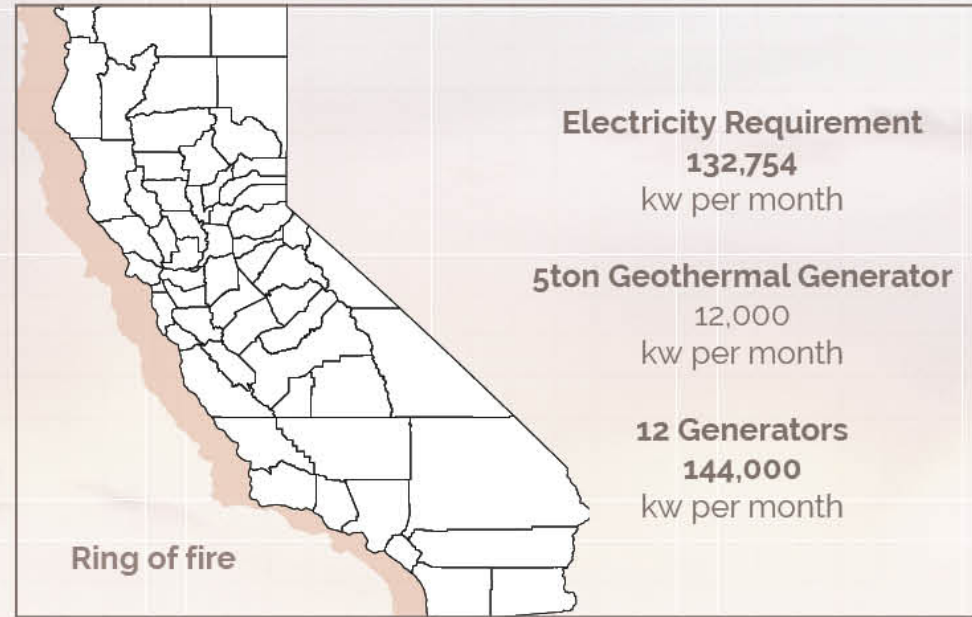


INTERSECTIONALITY

Tourism needs to have touristic programs to bring people. The local community needs programs to recover the local community's culture, history, and economy. On the platform, those can be connected.

EARTH TOURISM : LAYERS, SUSTAINABILITY, AND INTERSECTIONALITY

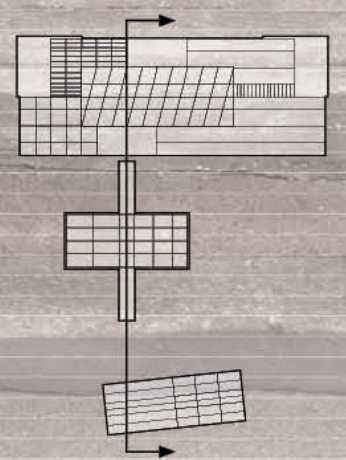
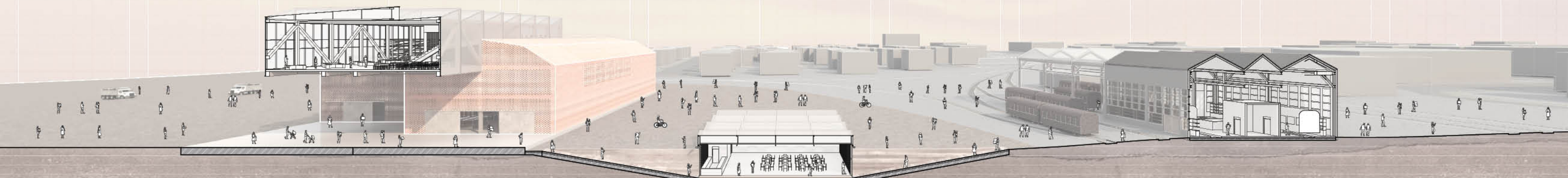
the train station becomes the reception area for people to get some information about the land and they go down to see the history in the museum and layers of pollution then they arrive at what's going on in the building imagining the future plan.



GEOTHERMAL ENERGY

Since everything comes from the land, geothermal energy could be more meaningful. The site is on the ring of fire and geothermal energy is much more efficient compared to other areas in the US to cover the whole facilities with less money.

Future ← Now ← History ← Entrance



Geothermal Pipe Depth :
150 to 200ft in California

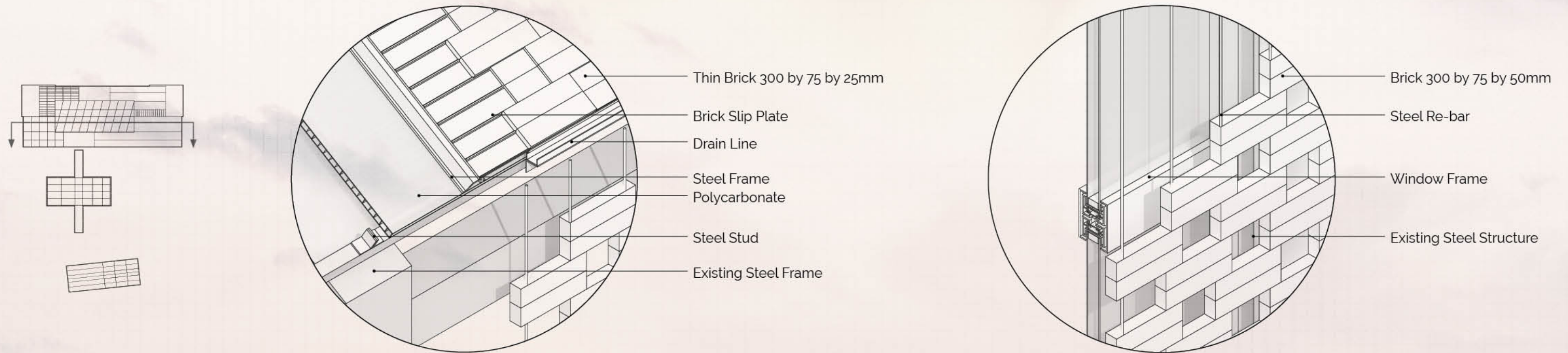


EARTH MUSEUM

Indoor and outdoor space provides students to be appropriately educated

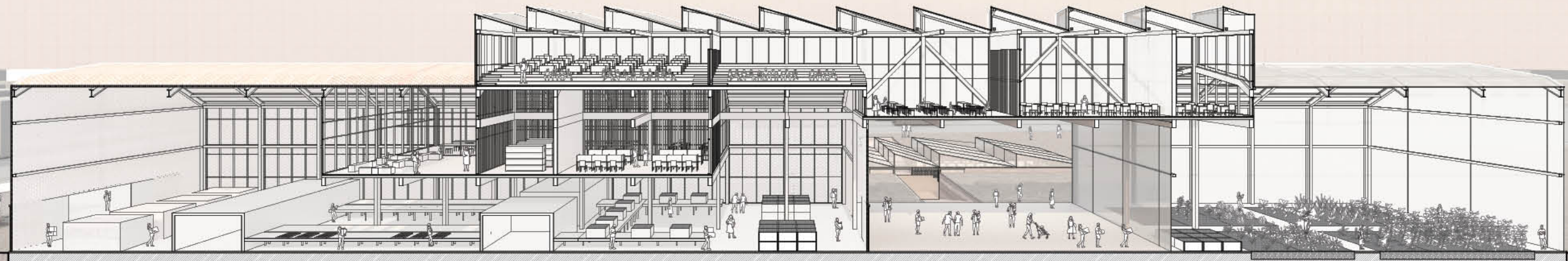


SECTION AND DETAIL



DETAIL 1 : Brick Slip + Steel Structure

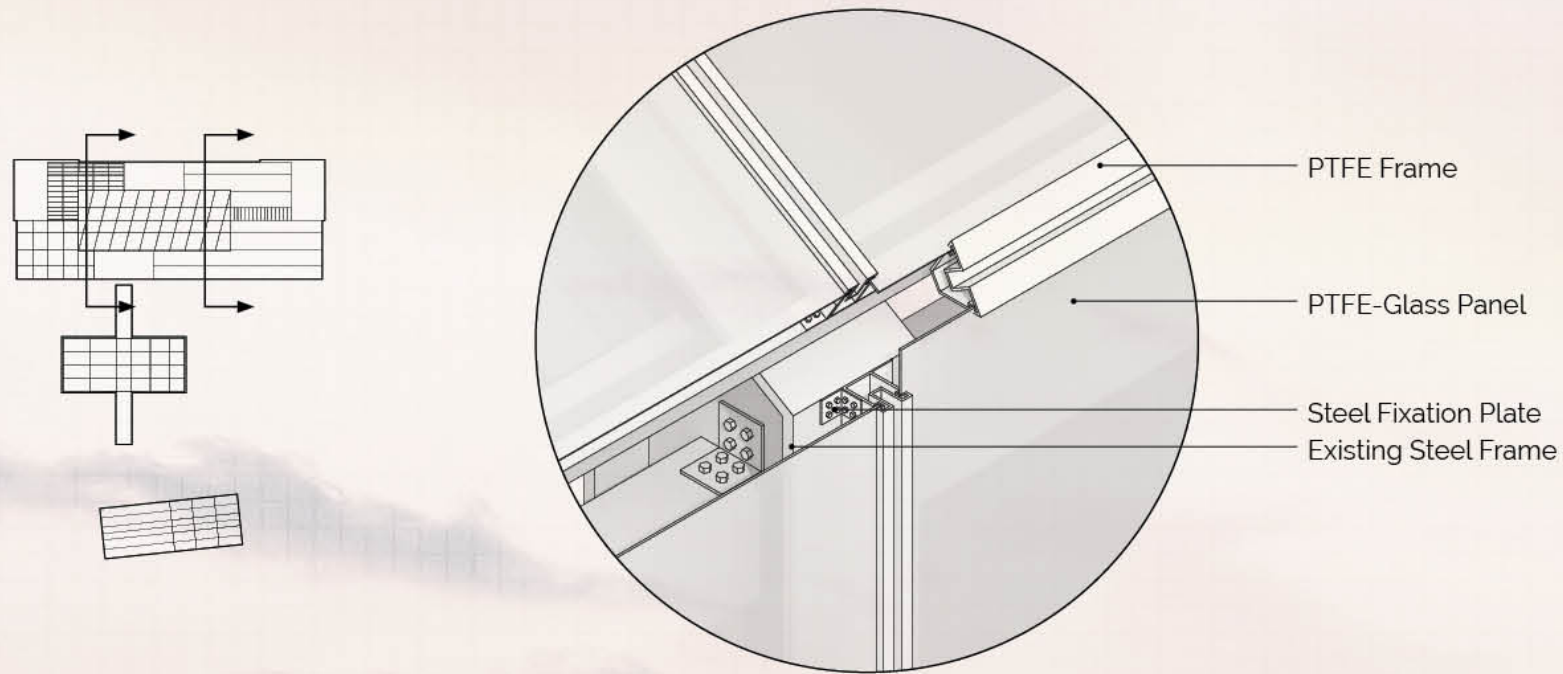
DETAIL 2 : Brick + Steel Structure



LONGITUDINAL SECTION

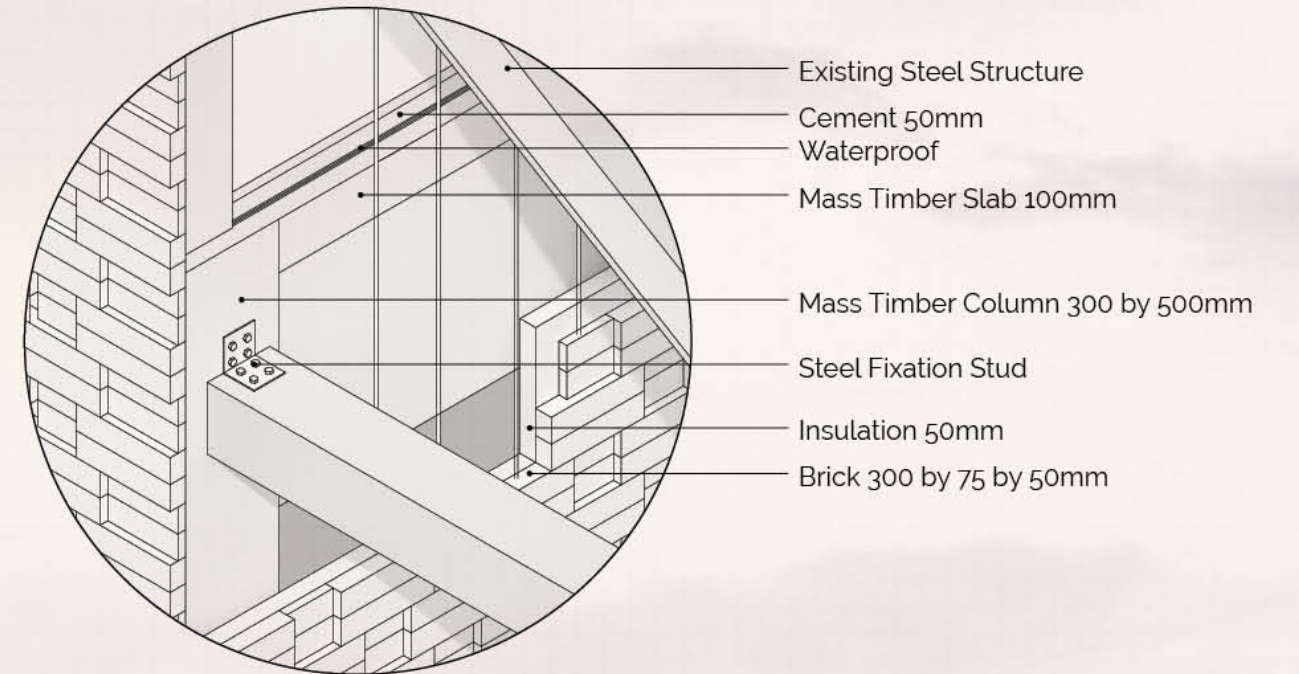
The multipurpose hall is visually and physically connected to each facility to show what's going on.

SECTION AND DETAIL



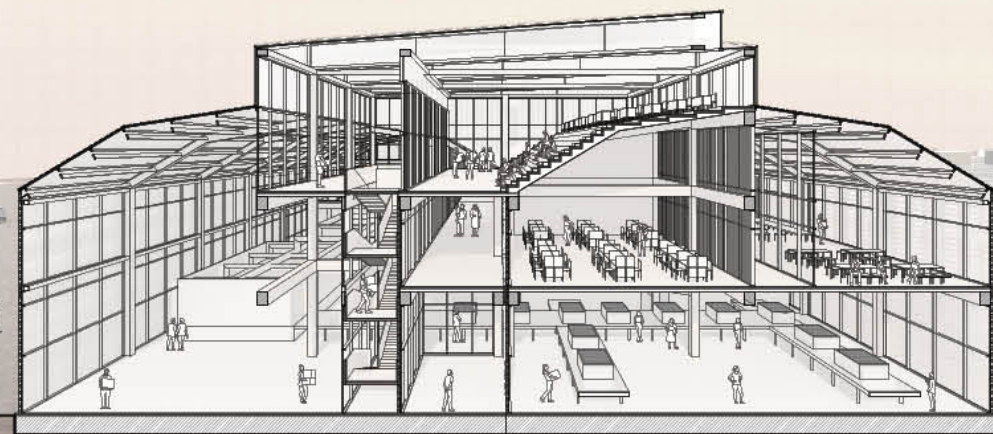
- PTFE Frame
- PTFE-Glass Panel
- Steel Fixation Plate
- Existing Steel Frame

DETAIL 3 : PTFE + Steel Structure



- Existing Steel Structure
- Cement 50mm
- Waterproof
- Mass Timber Slab 100mm
- Mass Timber Column 300 by 500mm
- Steel Fixation Stud
- Insulation 50mm
- Brick 300 by 75 by 50mm

DETAIL 4 : Mass Timber + Steel Structure



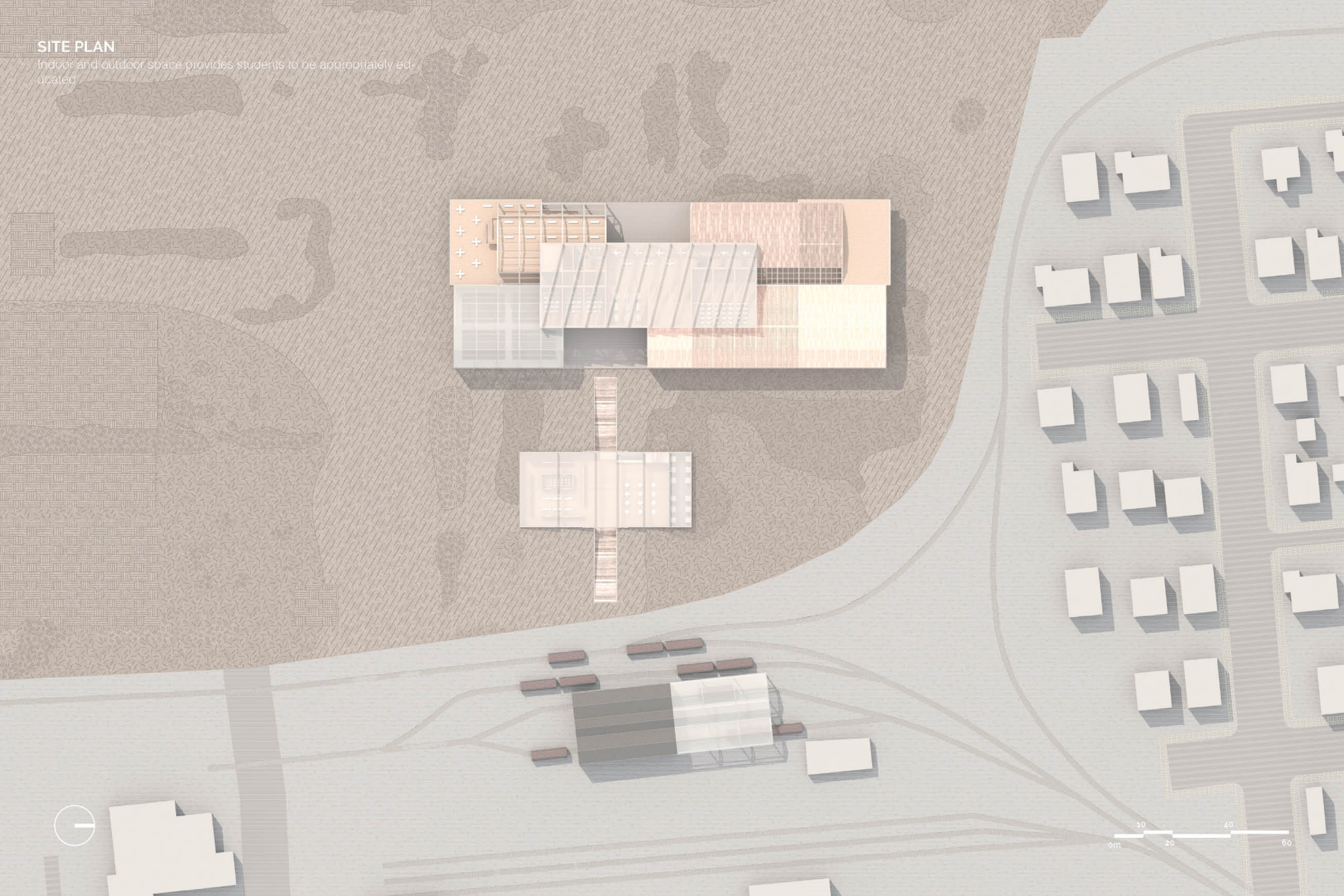
CROSS SECTIONS

The shape of the roof were left with different functions for the stepped meeting and multipurpose spaces.



SITE PLAN

Indoor and outdoor space provides students to be appropriately educated



0m 10 20 40 60

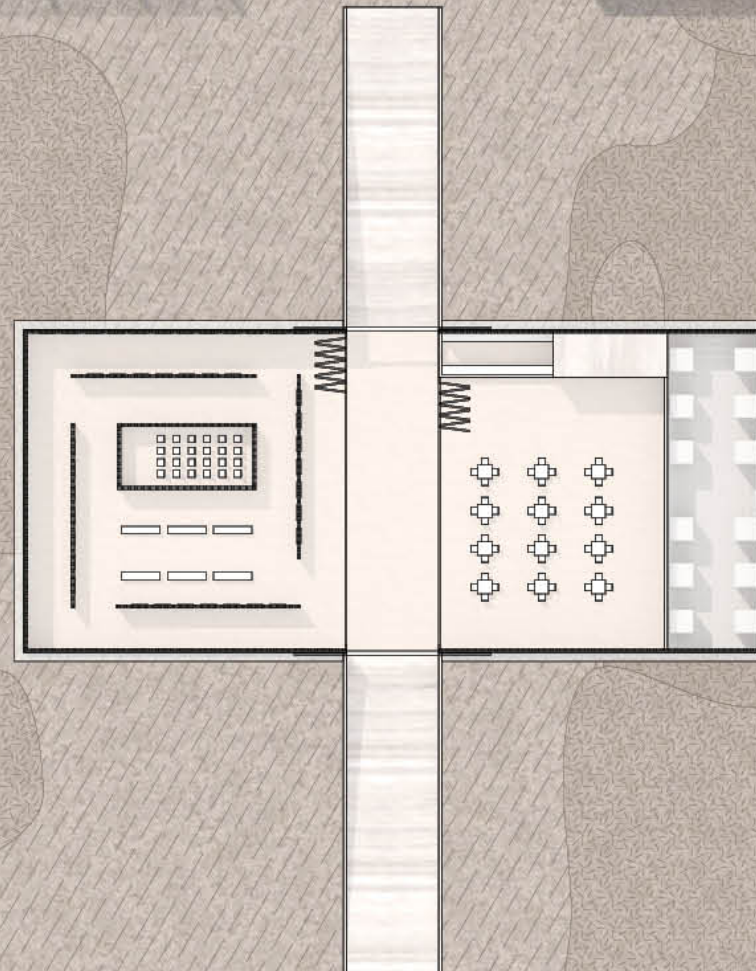


1F PLAN & B1F PLAN

- 1. CAFETERIA
- 2. CORE
- 3. SOIL LAB
- 4. SOIL PRETREATMENT
- 5. CORRIDOR
- 6. BRICK FACTORY
- 7. LOADING DECK
- 8. GREENHOUSE

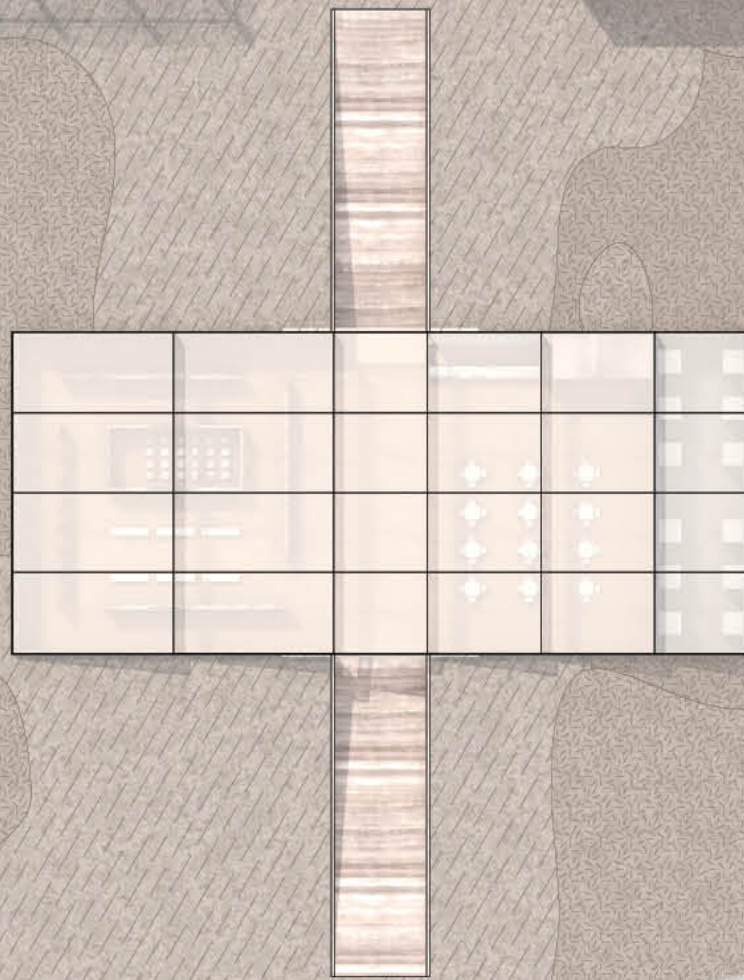


- 1. EARTH MUSEUM
- 2. PASSWAY
- 3. CAFE



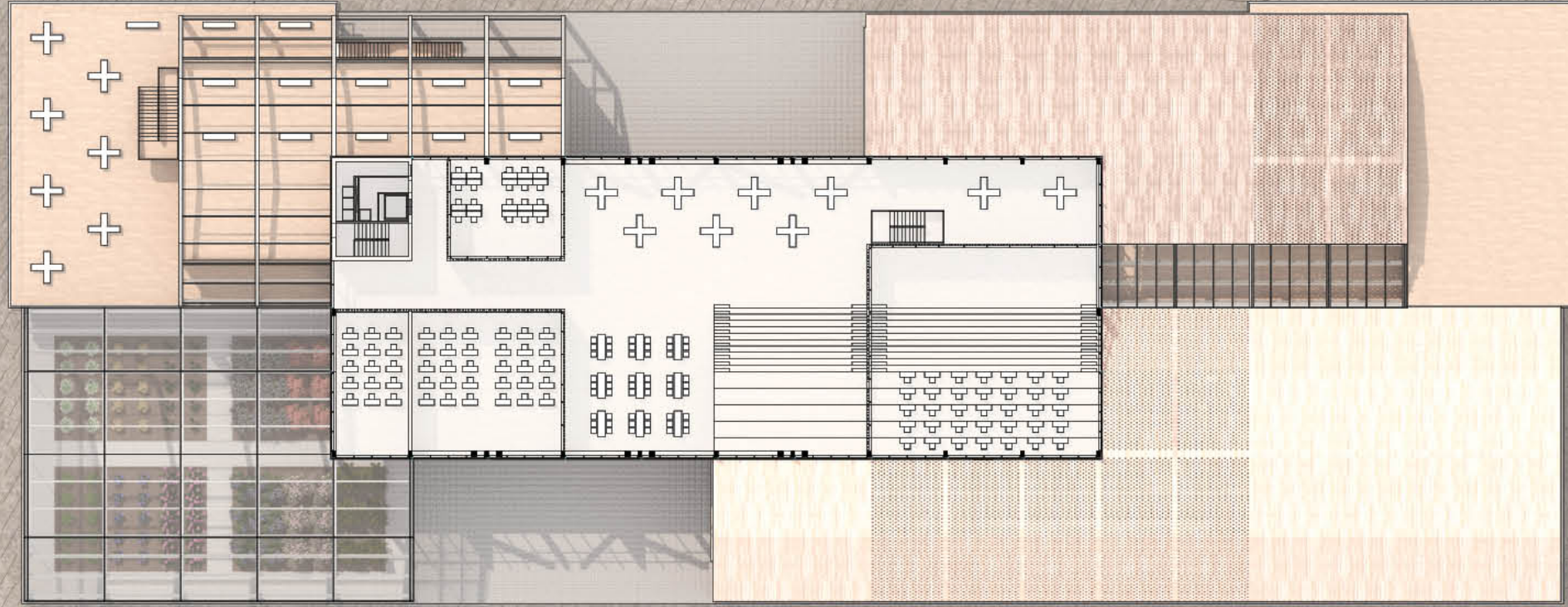
2F PLAN

- 1. TERRACE
- 2. CORE
- 3. SOIL TEST FACILITY
- 4. OFFICE
- 5. BREAK ROOM
- 6. CORRIDOR
- 7. EXPERIENCE CENTER
- 8. EDUCATION THEATER



3F PLAN

- 1. CORE
- 2. MEETING ROOM
- 3. LECTURE ROOM
- 4. ADMINISTRATION
- 5. MULTIPURPOSE HALL
- 6. CONFERENCE







1:1200(1/100") Physical Model



1:300(1/24") Physical Model

SPATIAL TRANSITION OF AMBIGUITY

Exploring on ambiguous architectural spaces for artists and kids in poverty

Individual • Instructor : Marc Tsurumaki • Period : Advanced Studio V (3rd semester) - 2021.09 ~ 12

Program : Art Education Center • Site : South Bronx, New York, United States

The first goal of the project was to build an Art organization center for artists who have been in trouble with job and money. From the goal, I thought that it will be definitely meaningful to bring an spatial inspiration from an artist or art which might have methodologies and ideas that can be used for Architecture. Gabriel Orozco was the artist I chose and his understanding of trees with diverse sized-circles gave me an inspiration of how to create this center of Art organization.

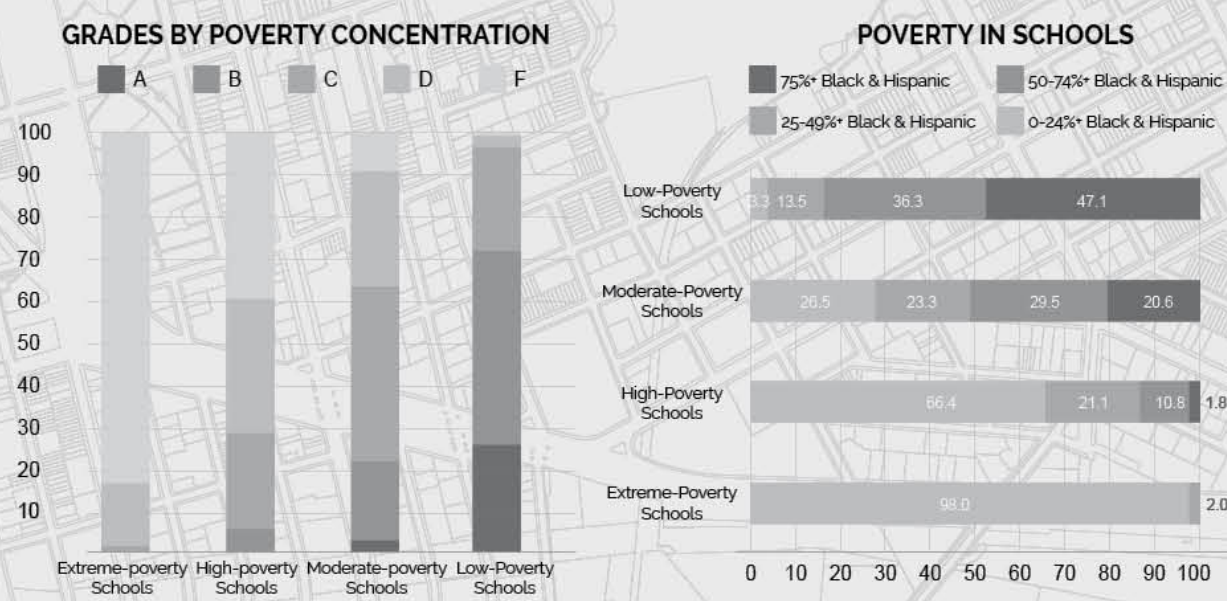
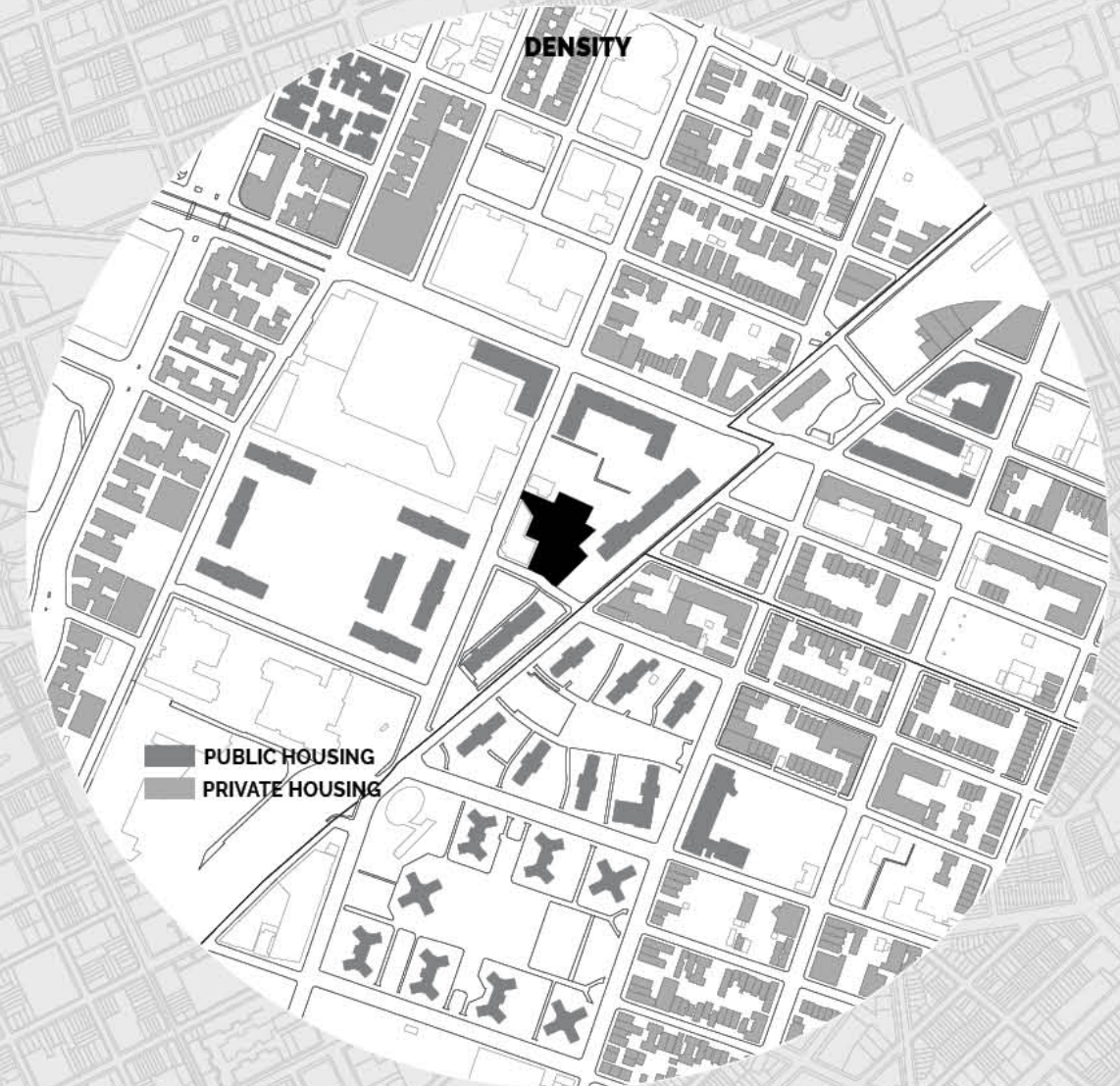
Then while researching to pick a site for the center and thinking about how the center can play a better role in people also having hard time during and after Covid-19. I found an article explaining that art education for kids had got worse because of poverty and uncertified teachers in South Bronx and also it showed the benefits of appropriate art education for kids. This is the reason why the site in the poorest part of South Bronx was chosen. The key word, ambiguity came from both the goals and definitions of Art and education to create educational spaces for kids to have better experiences, even while they are not taking classes.

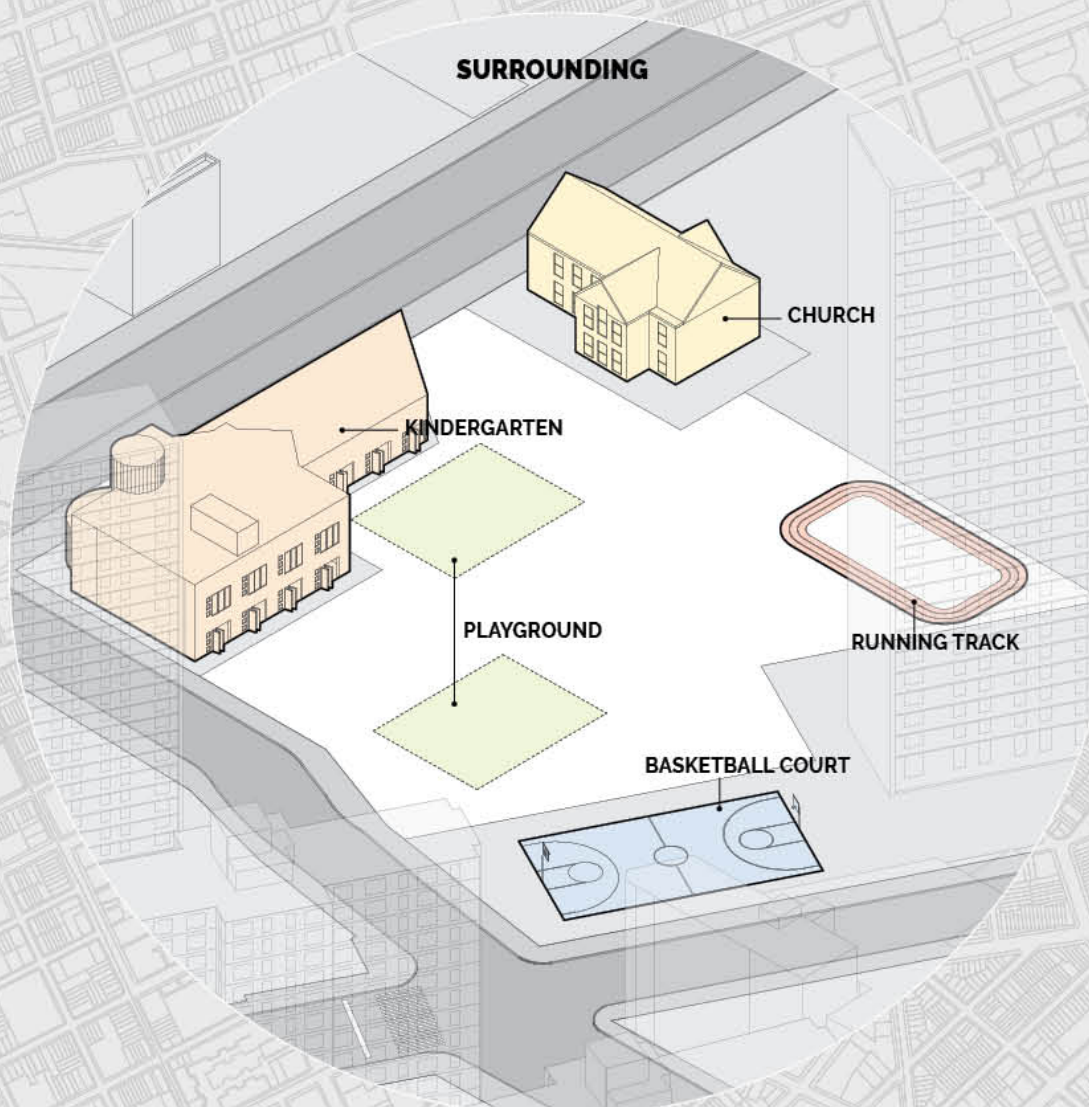
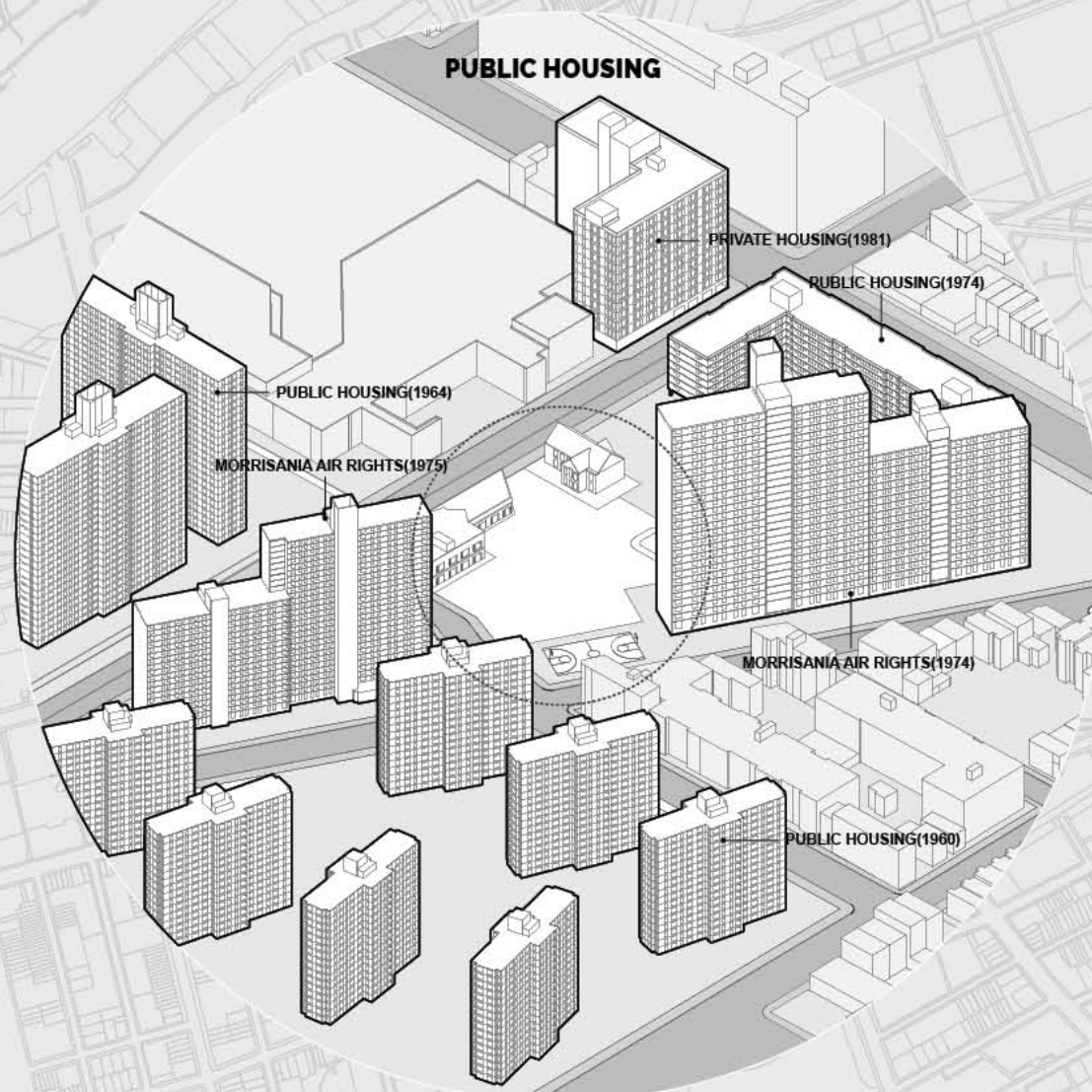
Lastly, recycling of construction material from demolition is one of the hottest topic among artists to warn society and the government. Therefore the ways to reuse abandoned plastics were used for the construction, which also helps solve a problem of pollution in South Bronx and the thing is that plastics remind of playful things and kids which is also parallel to the program.



SITE FOCUSING ON DENSITY OF SCHOOL AND POVERTY

Even though there are a lot of art organizations that are helping artists, there are only a few centers closely related to the local areas. Based on this point, I found many researches and theses showing art education's benefits and needs for kids under 18 as well as lack of attentions to art subjects in schools, although many sources are saying that kids in poverty especially need art education in terms of relieving their stress and improving the skills to express themselves which help students raise their abilities in other subjects.





ART SUBJECTS



MUSIC



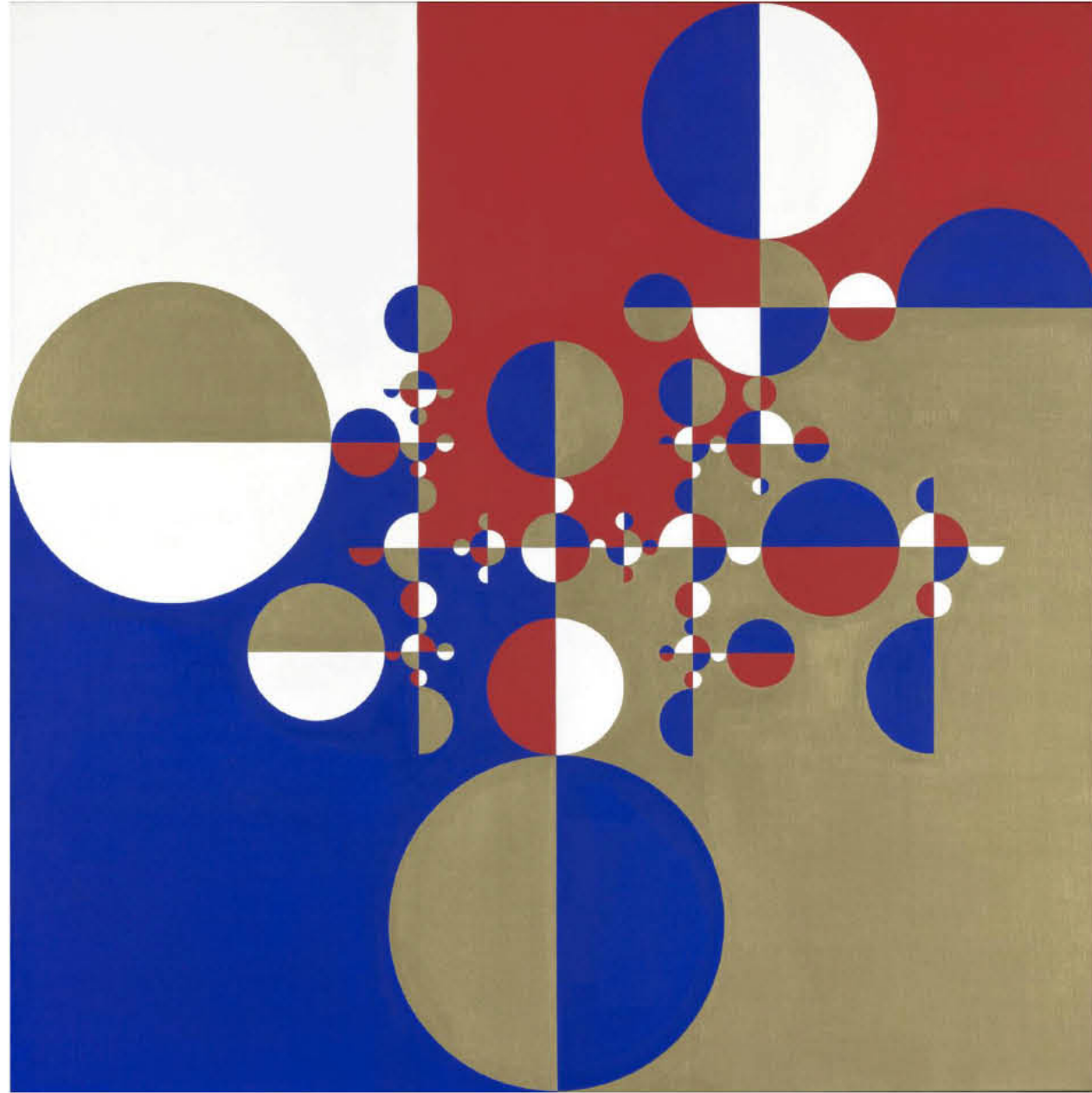
THEATER



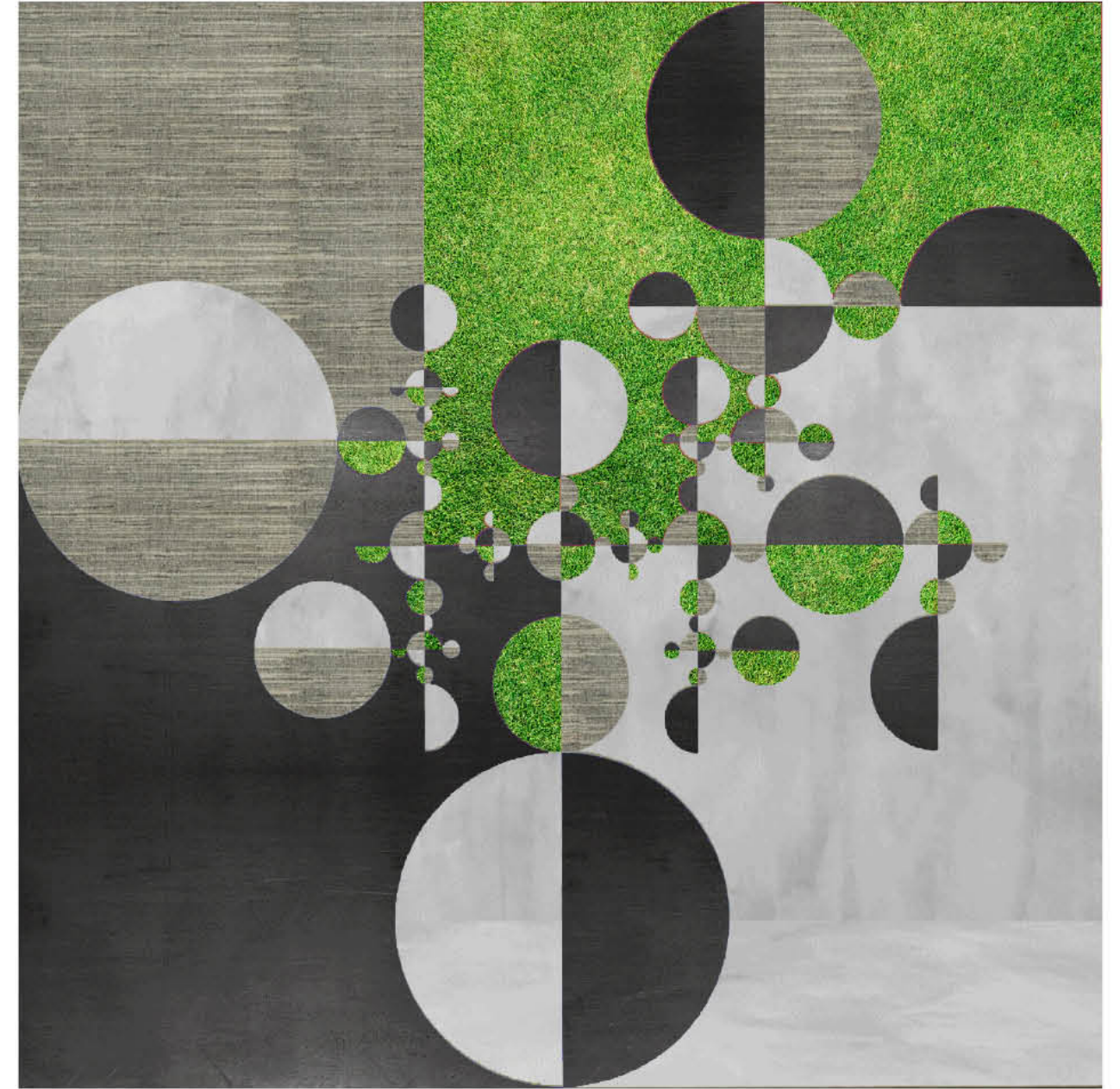
DANCE



VISUAL ART



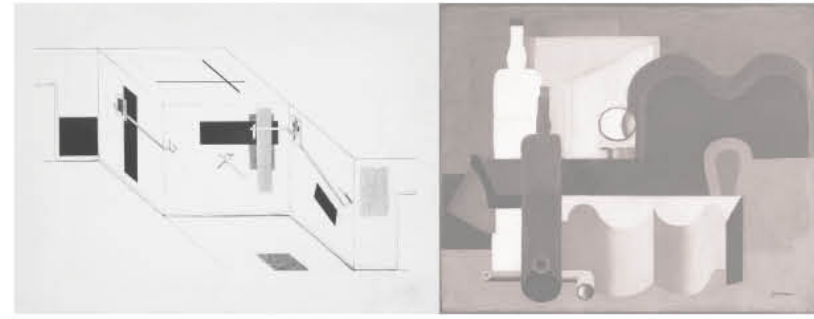
GABRIEL OROZCO



INSPIRATION

AMBIGUITY BETWEEN ART AND EDUCATION

Ambiguity is a given feeling based on spatial familiarity from people's previous experiences in buildings. When spaces are denied against their prejudices about spatiality, they call it as AMBIGUITY; The quality of being open to more than one spatiality, imagination, and expectation; inexactness and openness leading to new things like the definitions education and art that encourage students to imagine more possibilities to consider newer things and to connect one to more subjects. Ambiguity is a shared idea from art and education to help create spatiality kids who need to be educated.



DEFINITION: ART

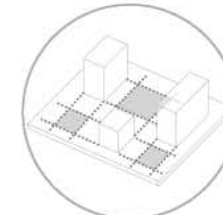
The expression of creative imaginations to be appreciated for new possibilities.



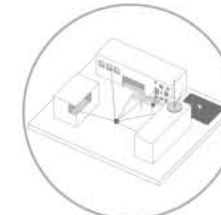
PHYSICAL AFFORDANCE



DIVERSE MATERIALS



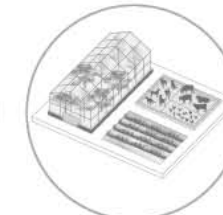
CHANGABLE BOUNDARY



VISUAL CONNECTION



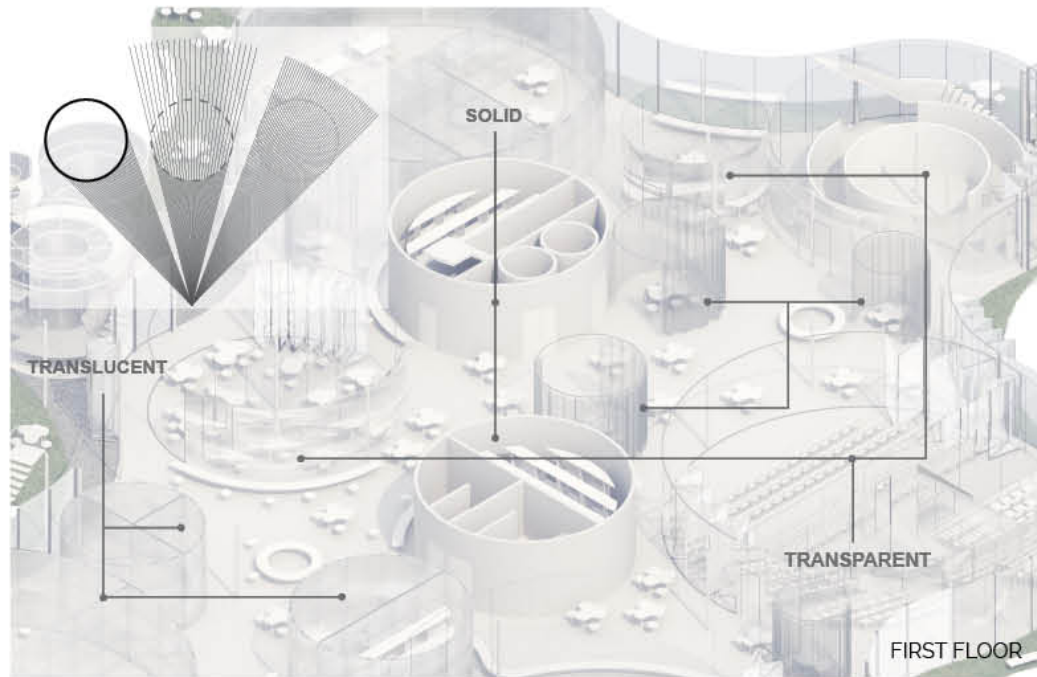
SOCIAL CONNECTION



OUTDOOR & INDOOR

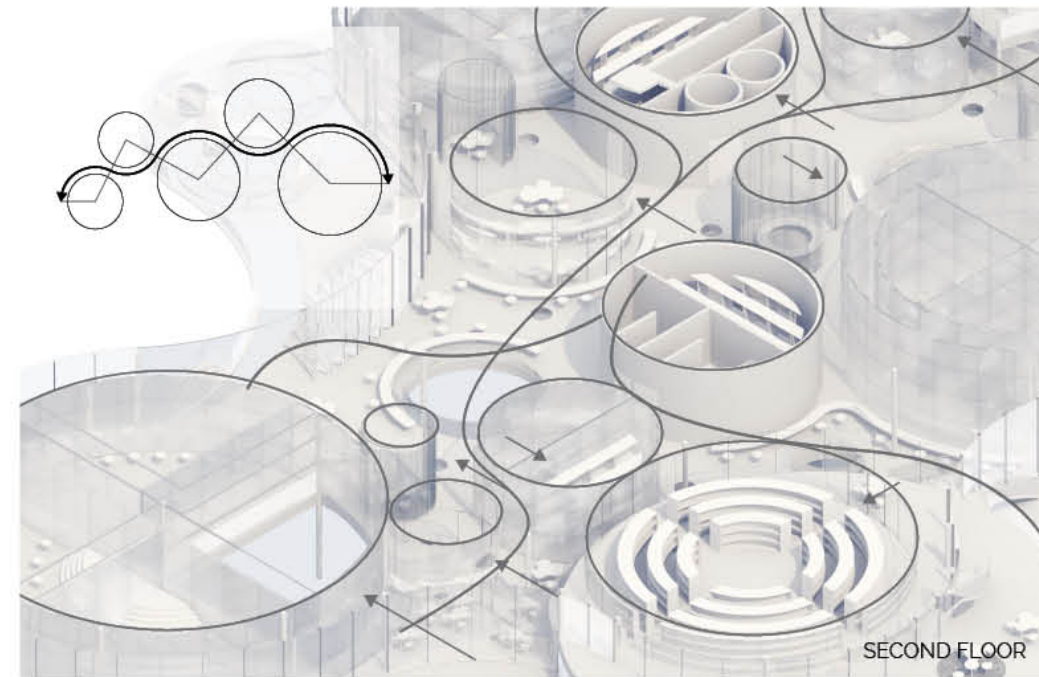
DEFINITION: EDUCATION

The process of giving an enlightening experiences to help children have further imaginations.



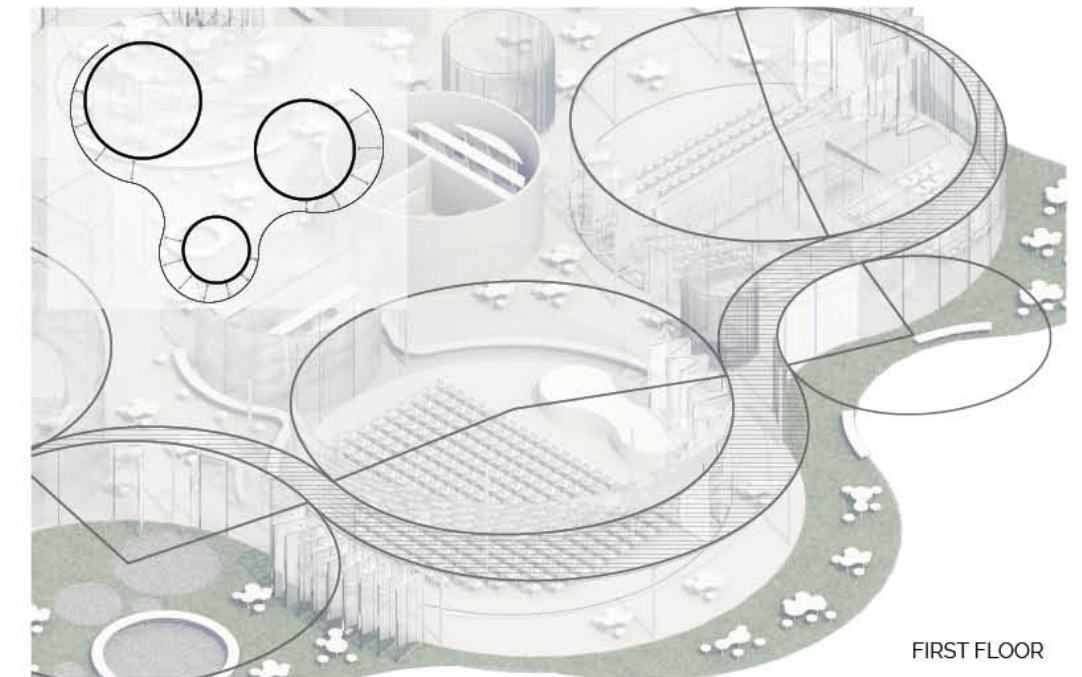
TRANSPARENCY

The diversity of transparency gives more imaginations to students by having them see through spaces over other spaces. By doing so, parts of activities over spaces will lead the students to explore the building.



EDGELESS

Edgeless spaces create meandering circulations that lead kids to explore inside the building. Also not arranged spaces both open and close the views and temporary spaces with curtains will help have more fun.



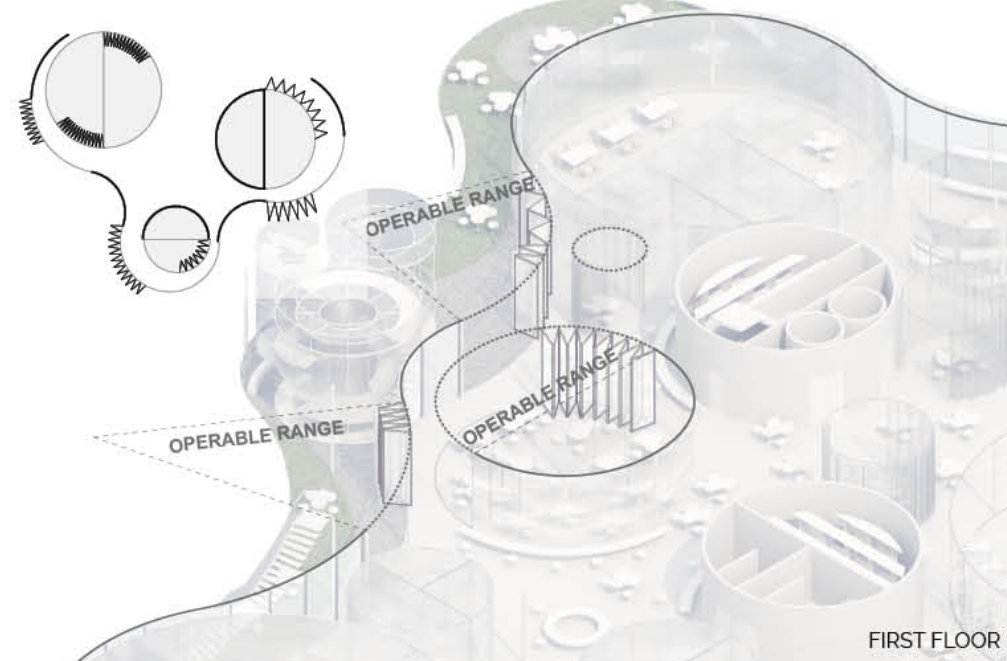
LAYERS

Double layers create new experiences when students face that no spatial prejudice works. So they have to travel. The spaces between the layers sometimes guide them to new spaces, outdoor, and other open spaces.



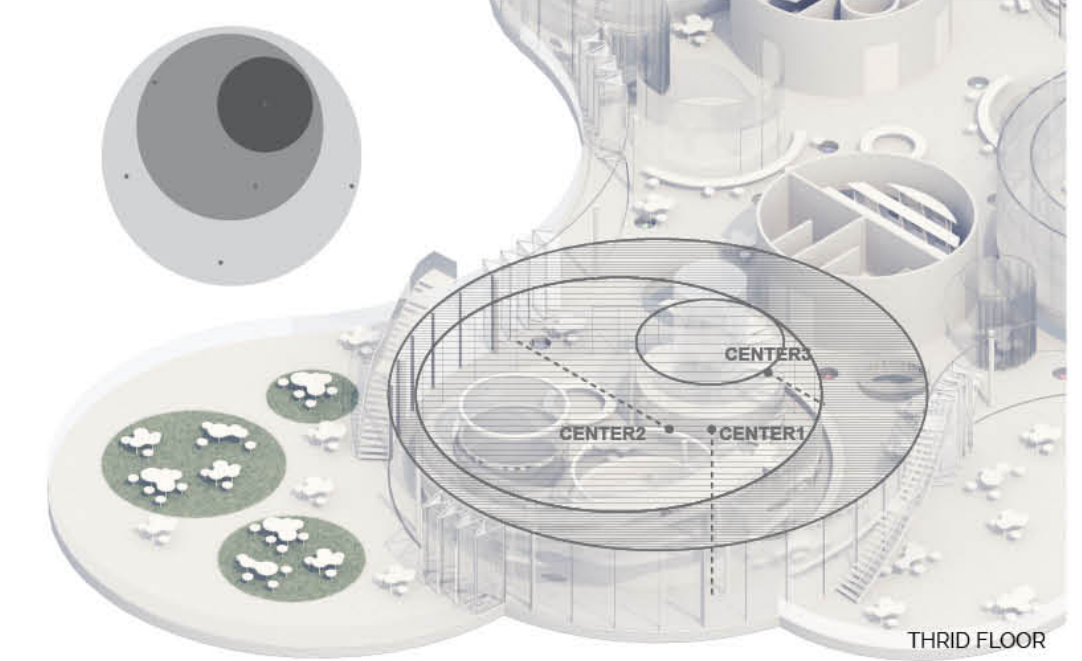
DIVERSE SCALES

Benefits of using several scales of circles will not give any clues if spaces are big, if there another space behind what they see since circles can be overlapped into one and be differentiated from each other.



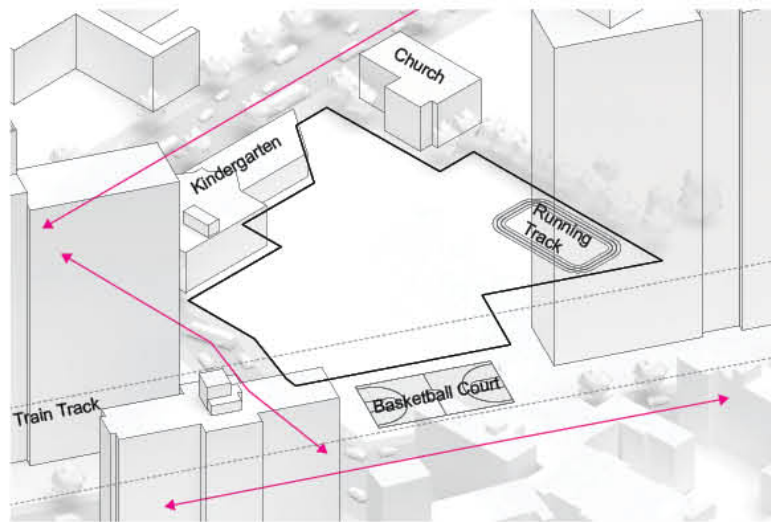
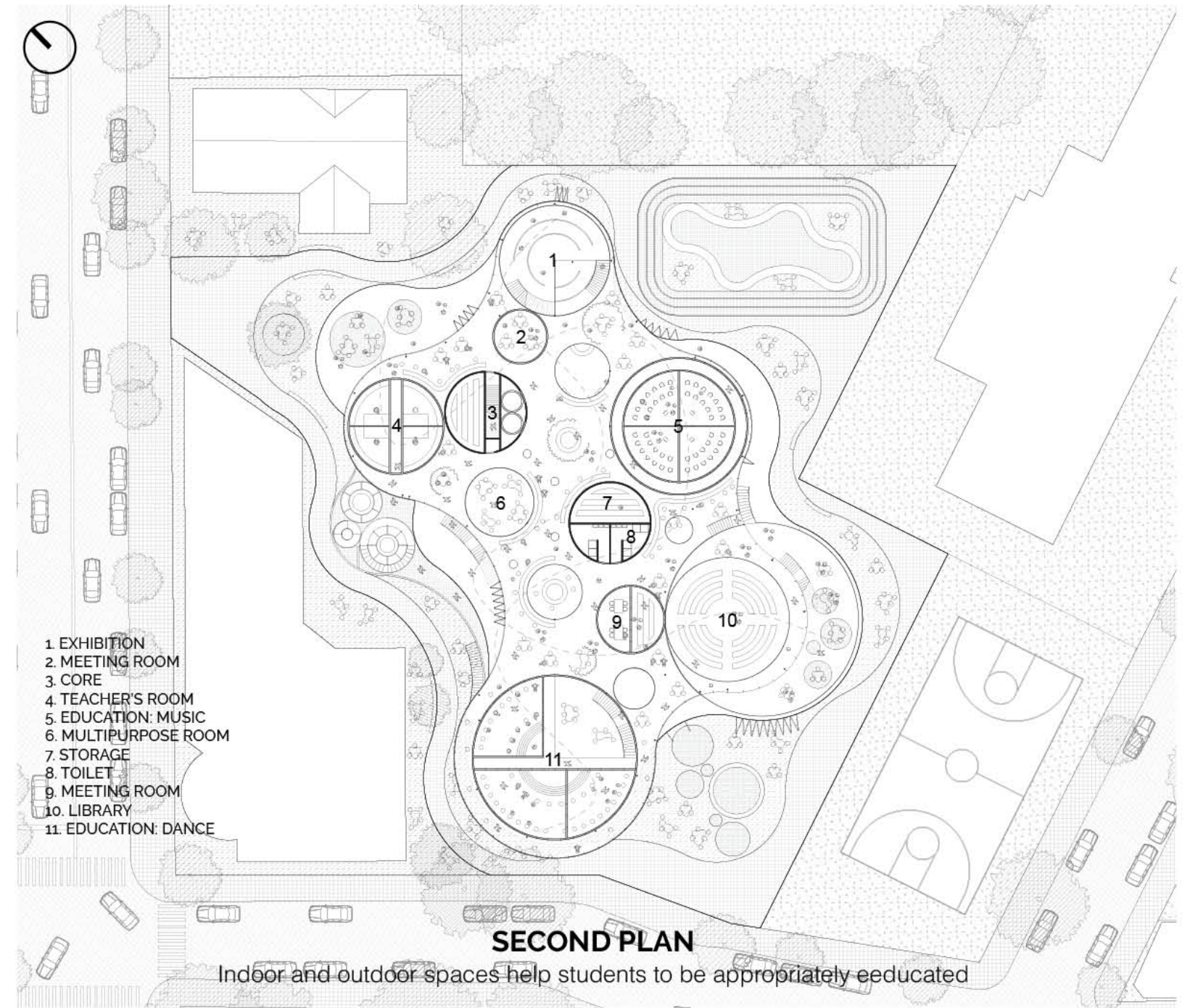
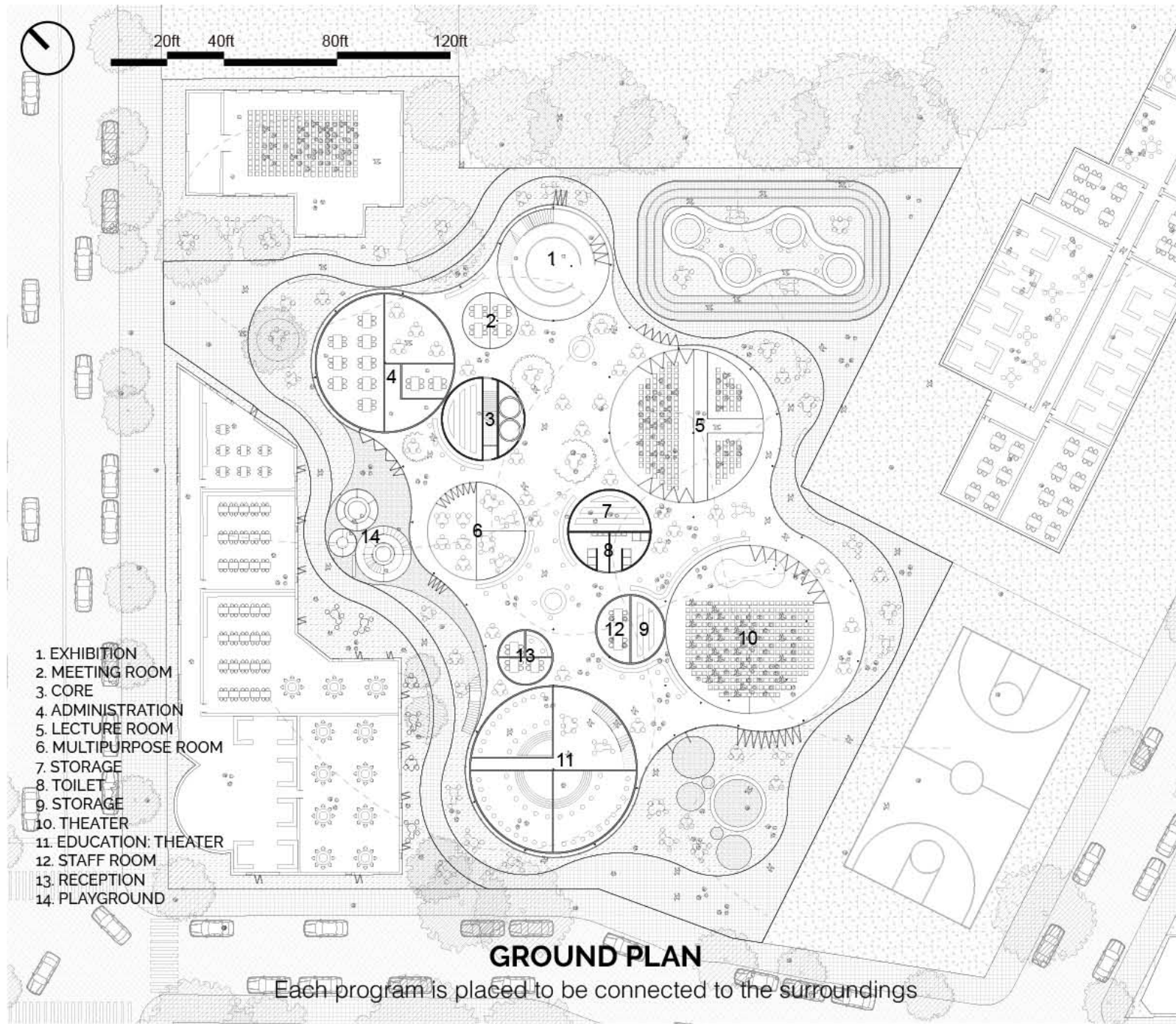
OPERABILITY

Appropriate operable windows become points that break the boundaries between outside and inside, which will attract kids to go both outside and inside.



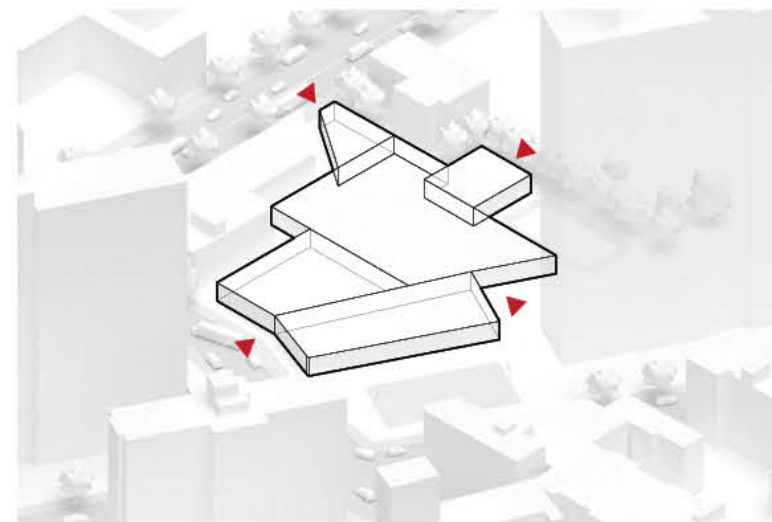
IRREGULARITY

Diverse circles are sometimes consisting of a space but the centers are not at the same point to make students out of their spatial stereotypes to give more chances to imagine where they are and what they will do.



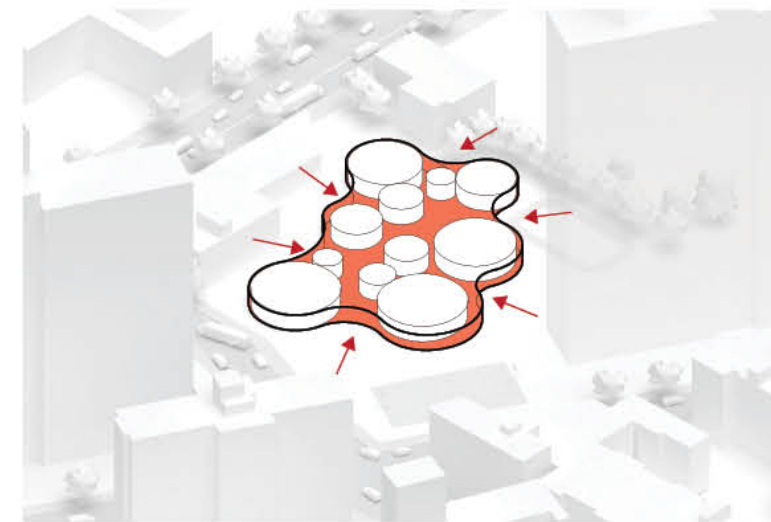
PARK IN THE COMPLEX SURROUNDINGS

South Bronx follows the same grid system with Manhattan and there's one more grid created for train track under the site. The grid systems and plots of surroundings created a weirdly shaped site that has a lot of possibilities.



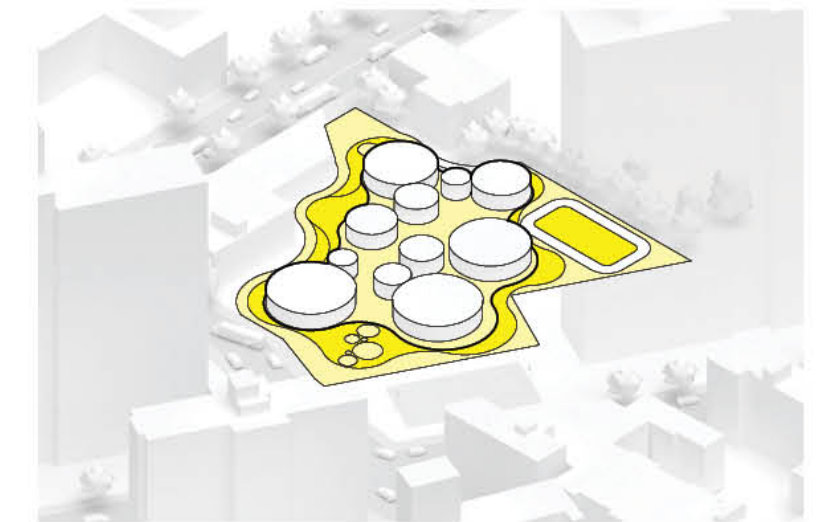
ACCESSES IN-BETWEEN EXSITING PROGRAMS

The site is located in-between many public housing complexes built in 1960s. Those were built highly to solve the housing issue at that time. However now the area is denser than other places, especially children under 18.



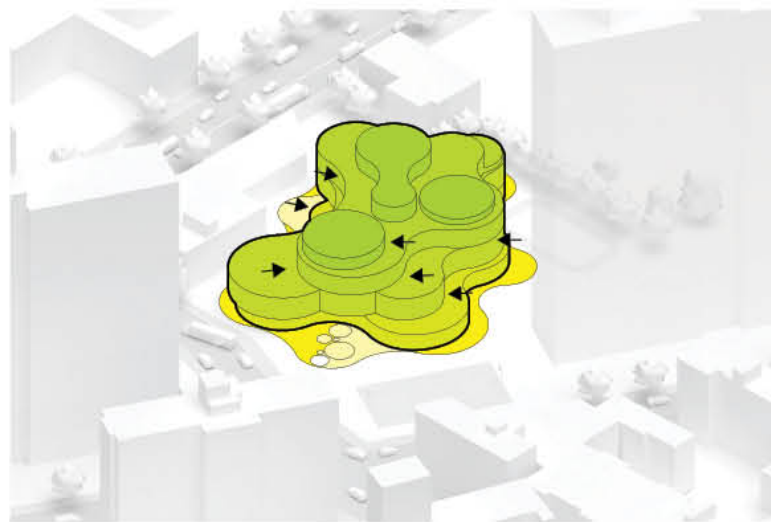
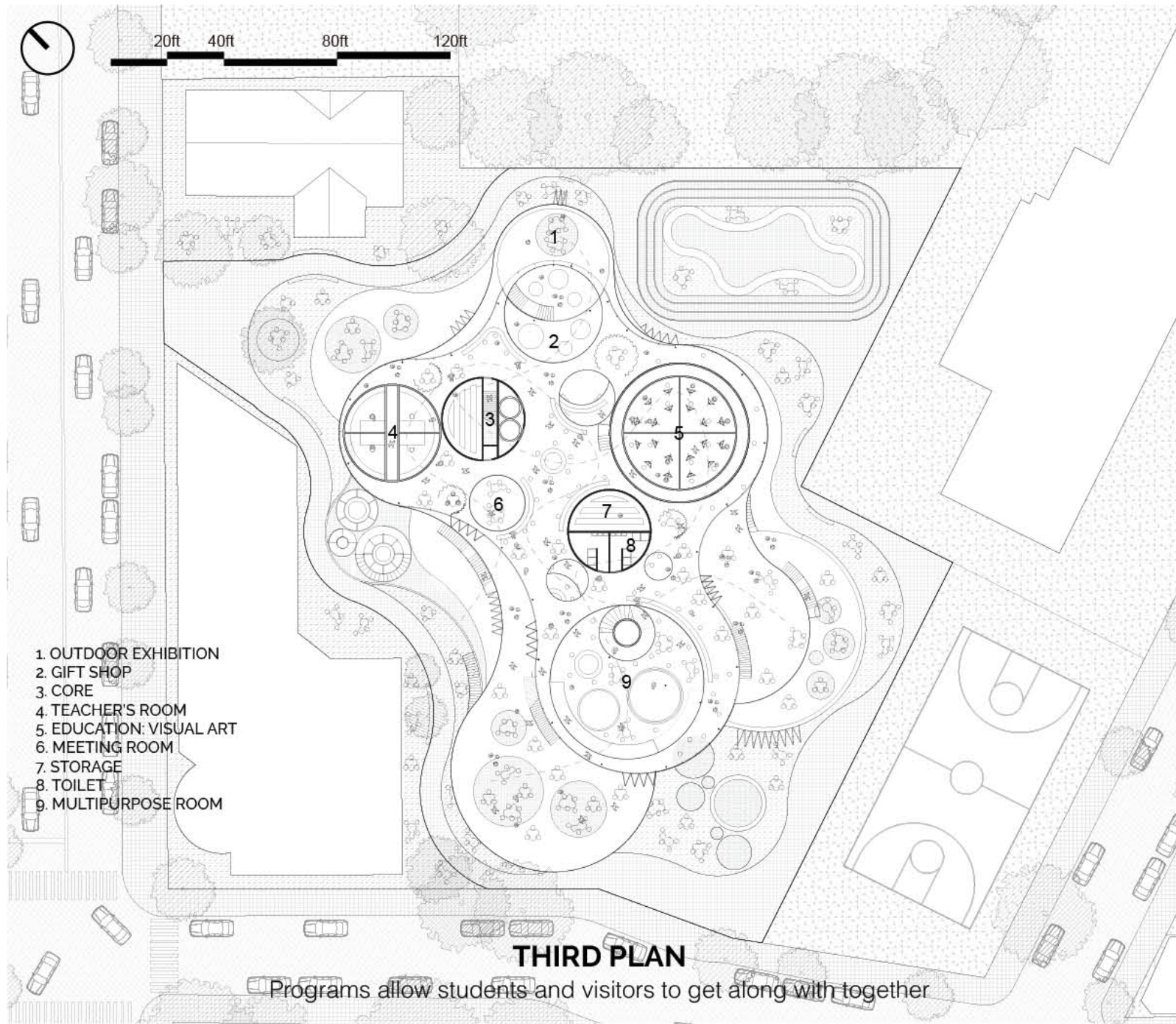
PROGRAM ZONING WITH CIRCLES

To relevantly face the accesses from apartments, streets, and other programs, programs on the ground were placed at appropriate points based on their goals.



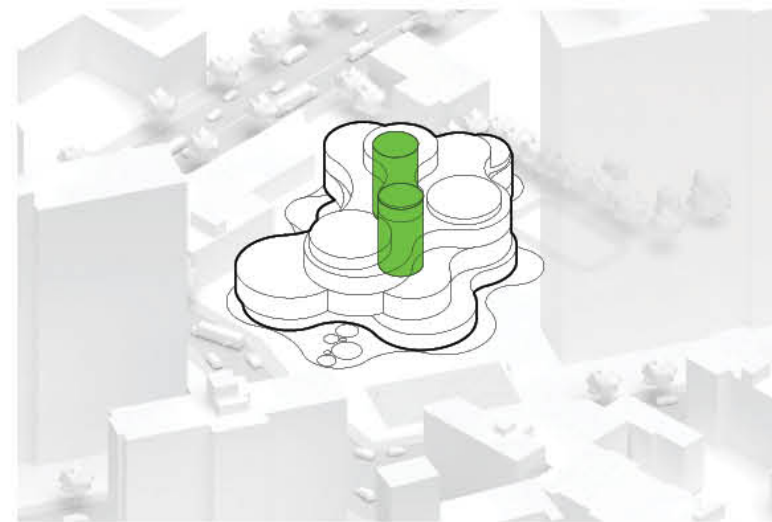
IN-BETWEEN LAYERS

A meandering circulation appears in between the outlayer and surroundings such as buildings and trees. Then in-between the programs inside and the outlayer, another circulation attracts people to explore the building.



ADAPTIVE STACKING

By changing the position of each circle flexibly, the massing for each floor avoid interrupting with the surroundings, while circles for programs work relevantly for their goals.



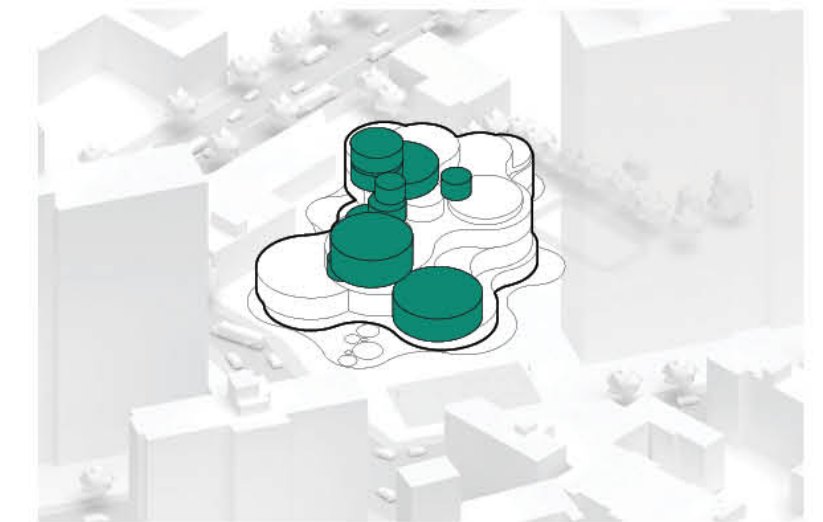
VERTICAL CONNECTION

There are two cores that help people move around the building efficiently, while circles help children explore the programs and broaden their perspectives, finding lots of new spaces that they don't expect.



EDUCATIONAL PROGRAM

Educational programs are located near supporting programs such as storage and two programs are connected to enlarge the educational effectiveness. Theater and dance and Music and Visual Art work together.



PUBLIC & PRIVATE PROGRAM

Public programs play a role to expand the educational outputs to outside, people, and out of each space. Private programs such as administration exist near core for efficiency.

VIEW FROM THE EXISTING KINDERGARTEN

There is a kindergarten in the park where the building takes and two playgrounds are the places where kids play. This art educational organization includes the kindergarten as a program into the center. With a same spatial language, new playground is offered for kids in the kindergarten and it is also connected to the center. Now the art educational center covers all kids under eighteen and provides comprehensive art education. Furthermore, the curved facade avoids blocking the relations of the existing church, apartment, and kindergarten, on the other hand, it attracts people to walk around the building.



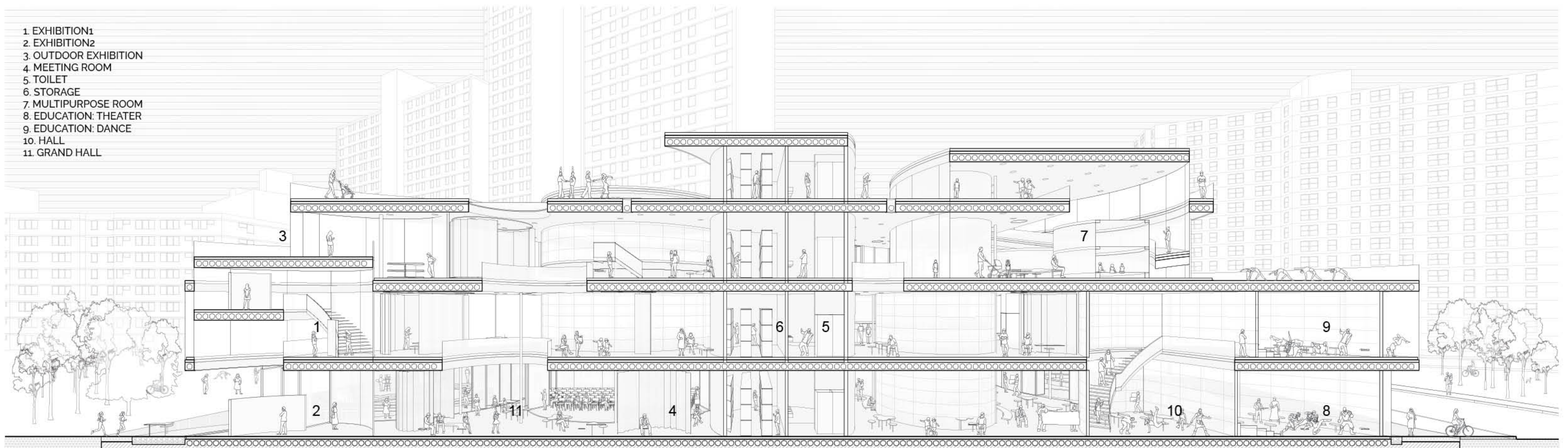
VIEW FROM THE BACKYARD

The height of the building has one more story compared to the existing buildings not to interfere with sunlight. Each floor footprint narrows down when it is stacked on top of each other and then spaces between the center and the exists have proper gaps enough to be visually connected.





- 1. EXHIBITION1
- 2. EXHIBITION2
- 3. OUTDOOR EXHIBITION
- 4. MEETING ROOM
- 5. TOILET
- 6. STORAGE
- 7. MULTIPURPOSE ROOM
- 8. EDUCATION: THEATER
- 9. EDUCATION: DANCE
- 10. HALL
- 11. GRAND HALL



SECTION PERSPECTIVE LOOKING AT EAST

Diverse sized-spaces between programs provide spaces to explore

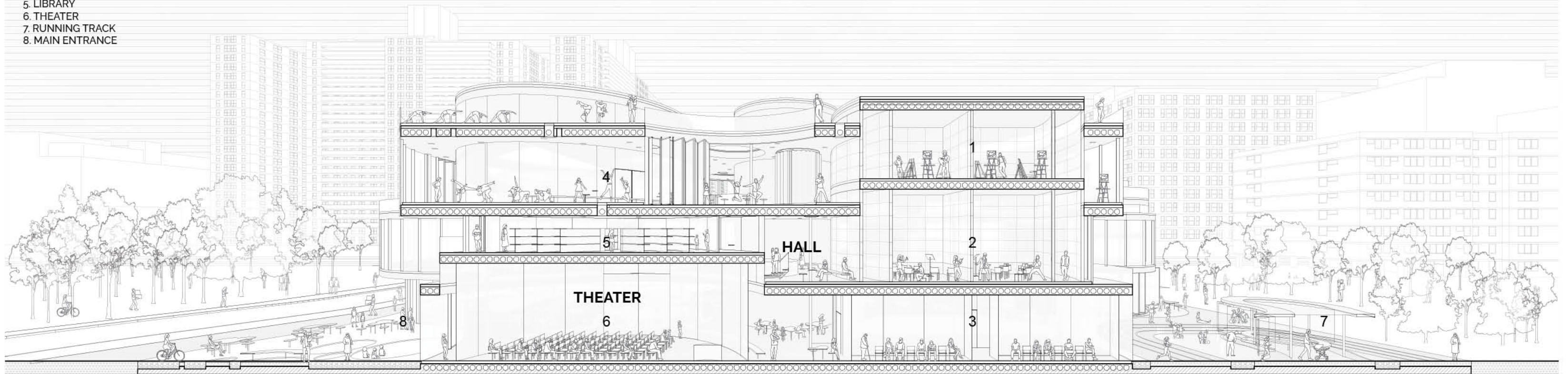


THEATER



HALL

- 1. EDUCATION: VISUAL ART
- 2. EDUCATION: MUSIC
- 3. LECTURE ROOM
- 4. MULTIPURPOSE ROOM
- 5. LIBRARY
- 6. THEATER
- 7. RUNNING TRACK
- 8. MAIN ENTRANCE



SECTION PERSPECTIVE LOOKING AT WEST
Vertically different heights create connections between floors



HOW PLASTICS GET INVOLVED INTO STRUCTURE AND CONSTRUCTION

Plastics are used for a lot of parts in buildings such as pipes and window frames. However it is not considered as an important materials for construction since plastics are not supporting buildings. Compared to concrete and steel re-bar, plastics have been on the side of discussions to reuse as a necessary materials. However there are a lot of techniques are being invented to use with cement as a structural element.

Behind concrete and steel, plastics have diverse roles, giving a better life and more convenience. When buildings are renovated, we finally see that plastics are really supporting our lives.

Plastics are easily transformed, playing an important role in getting things flowing such as air, water, plumbing. These are not easily be seen from our sight but inside buildings, a lot of plastic products are existing, giving a sense.

Reused plastic can replace steel re-bar and coarse. Even though the tensile strength of plastic is weaker than steel re-bar, some research shows shredded plastics partially do the same performance.

uPVC started being used in the 1990s for window frames. Regarding its lifespan which is 25 to 30 years, these days it has been coming out from demolition of constructions.

PLASTIC PIPING PROCESS
uPVC is a stronger form of plastic that can endure more compressive strength. When it combines with concrete, uPVC helps reduce the diameter of column, giving more flexibility in spaces.

PLASTIC REMOLDING PROCESS
This is a traditional way to reuse plastic. By adding some chemical additive, the lifespan can be extremely extended.

SHREDDED PLASTIC SAVING COARSE & RE-BAR 20%

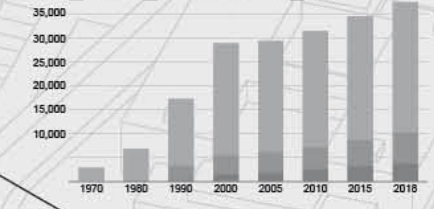
RECYCLED PLASTIC BUBBLE DECK SAVING CONCRETE 35%

RECYCLED PLASTIC PRODUCTS SAVING CONCRETE 75%

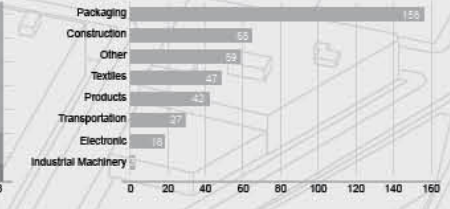
PRE-CAST TECHNOLOGY SAVING CARBON FOOTPRINT 10%

These techniques have the same characteristics of plastics. By using plastics into construction, the building process itself can save a huge amount of time, avoiding the other construction problems in a city such as noise and dust.

Plastic Recycling Still Has A Long Way To Go



GLOBAL PLASTIC PRODUCTION BY SECTORS



PLASTIC USAGE IN THE UNITED STATES

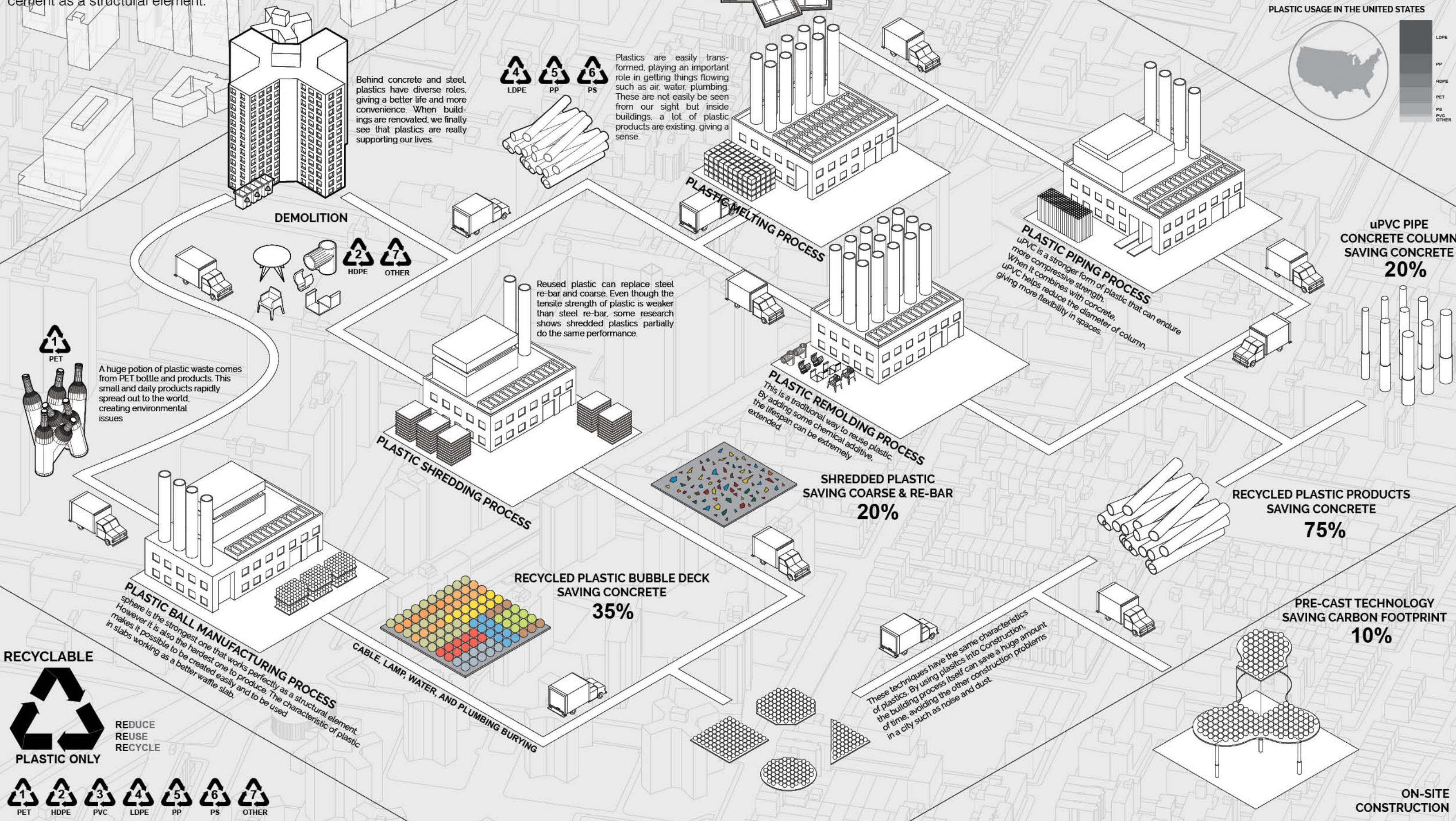


RECYCLABLE

PLASTIC ONLY

REDUCE
REUSE
RECYCLE

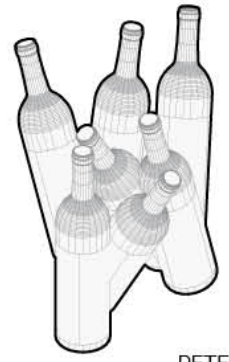
- PET
- HDPE
- PVC
- LDPE
- PP
- PS
- OTHER



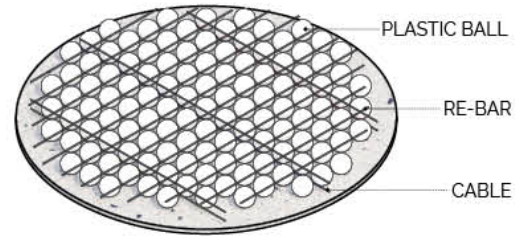
THE WAY HOW PLASTICS ARE THE MAJOR PART OF BUILDING MATERIALS

Plastics cover almost of all the building materials structurally and spatially, while creating ambiguity.

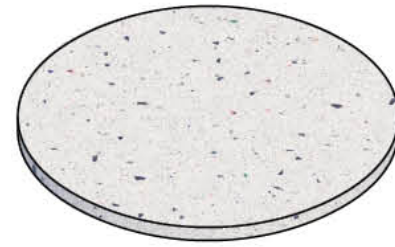
CONCRETE SLAB WITH PLASTIC BALL



PETE

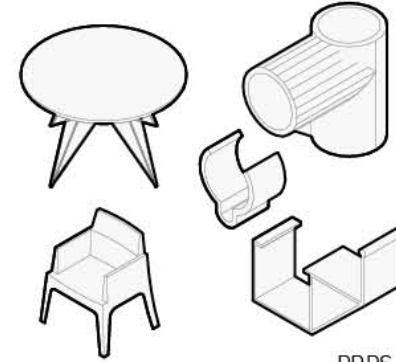


PLASTIC BALL

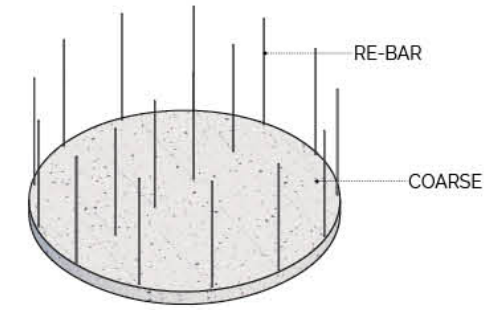


SLAB

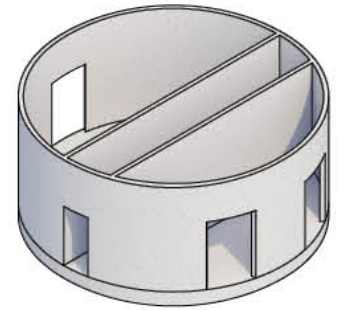
CONCRETE WITH PLASTIC COARSE (TRANSPARENCY 0%)



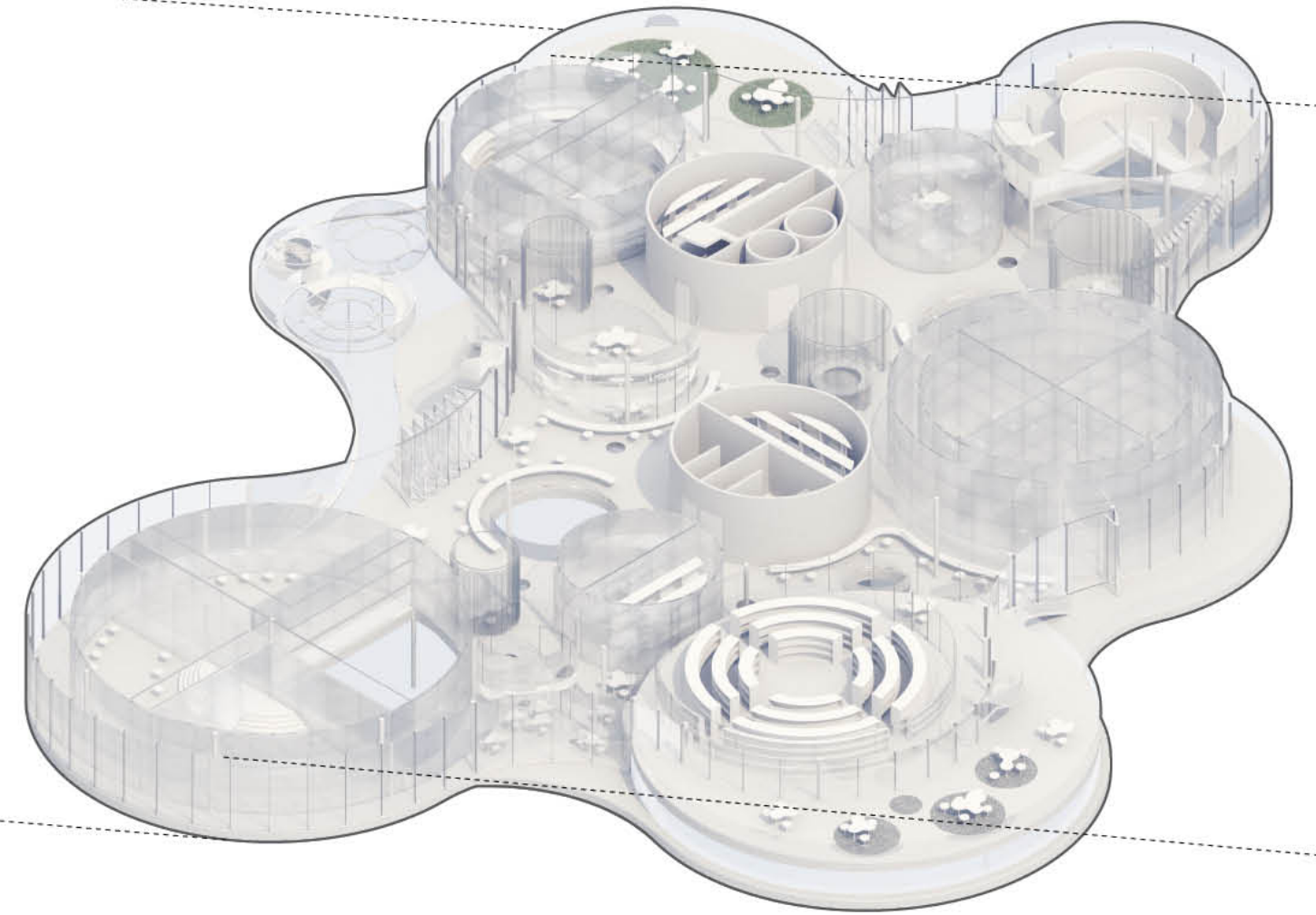
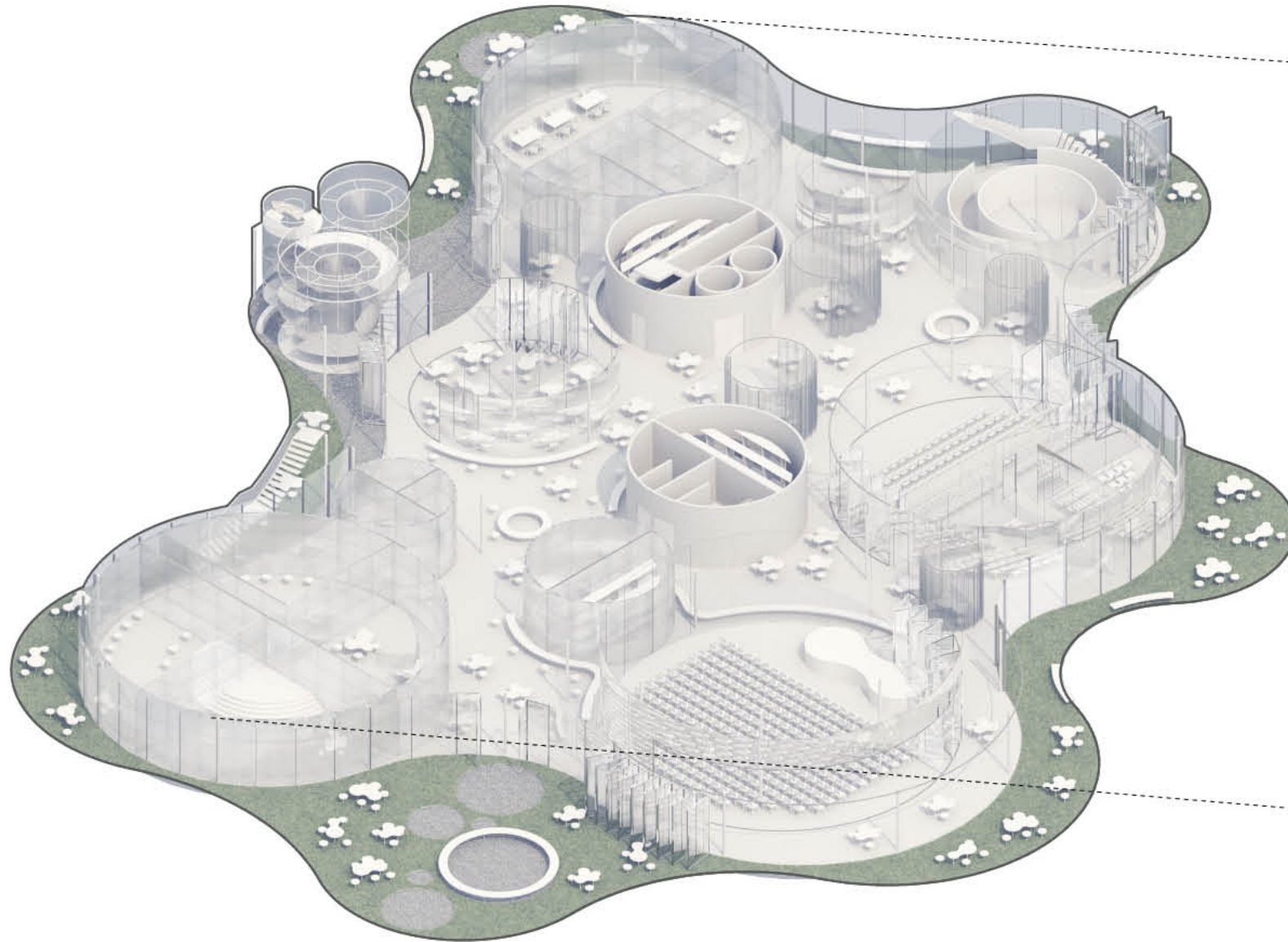
PPPS



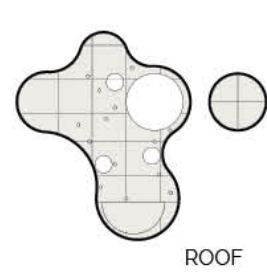
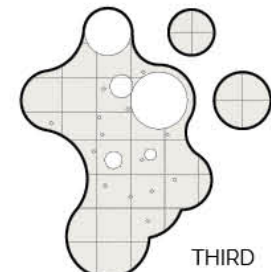
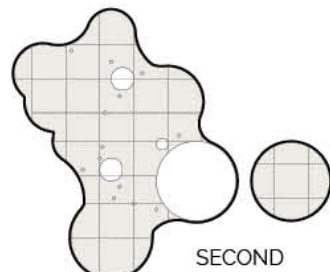
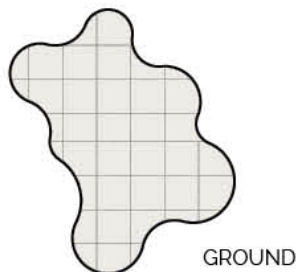
PLASTIC COARSE



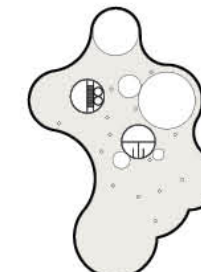
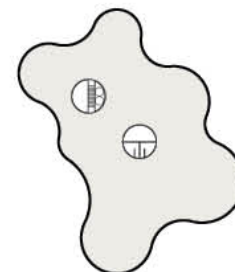
SOLID



PRE-CAST SLAB GRID



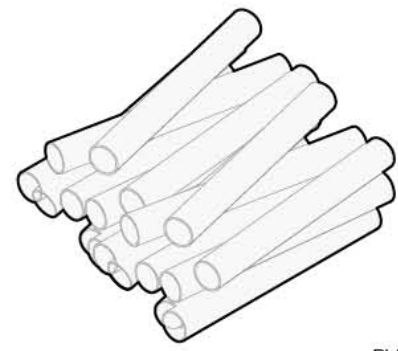
CORE



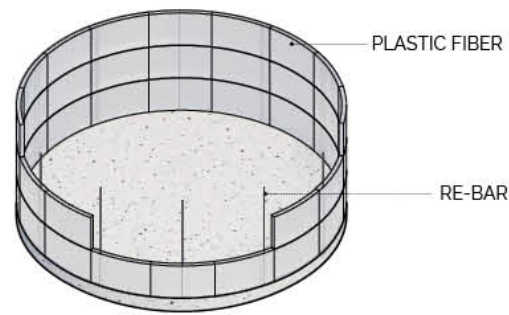
THE WAY HOW PLASTICS ARE THE MAJOR PART OF BUILDING MATERIALS

Plastics are meant to toys and playful things to kids, which makes sense to children under 18.

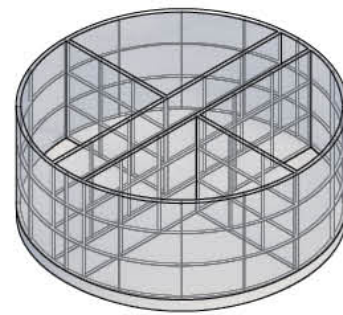
CONCRETE WITH PLASTIC FIBER(TRANSPARENCY 30 ~ 70%)



PVC

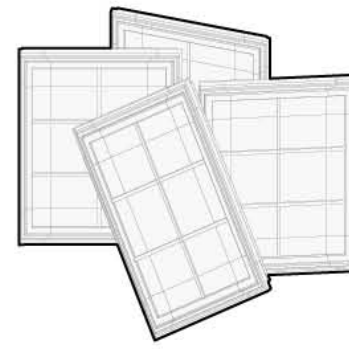


PLASTIC FIBER

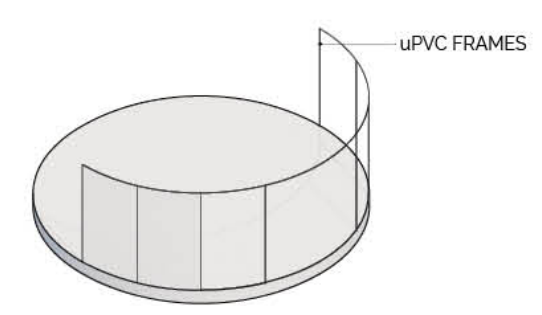


TRANSLUCENT

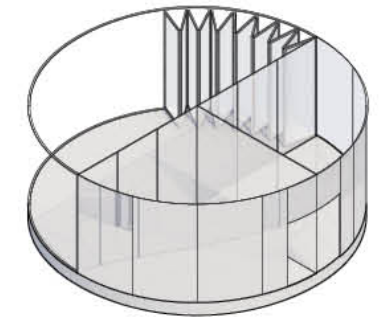
PLASTIC FIBER GLASS(TRANSPARENCY 100%)



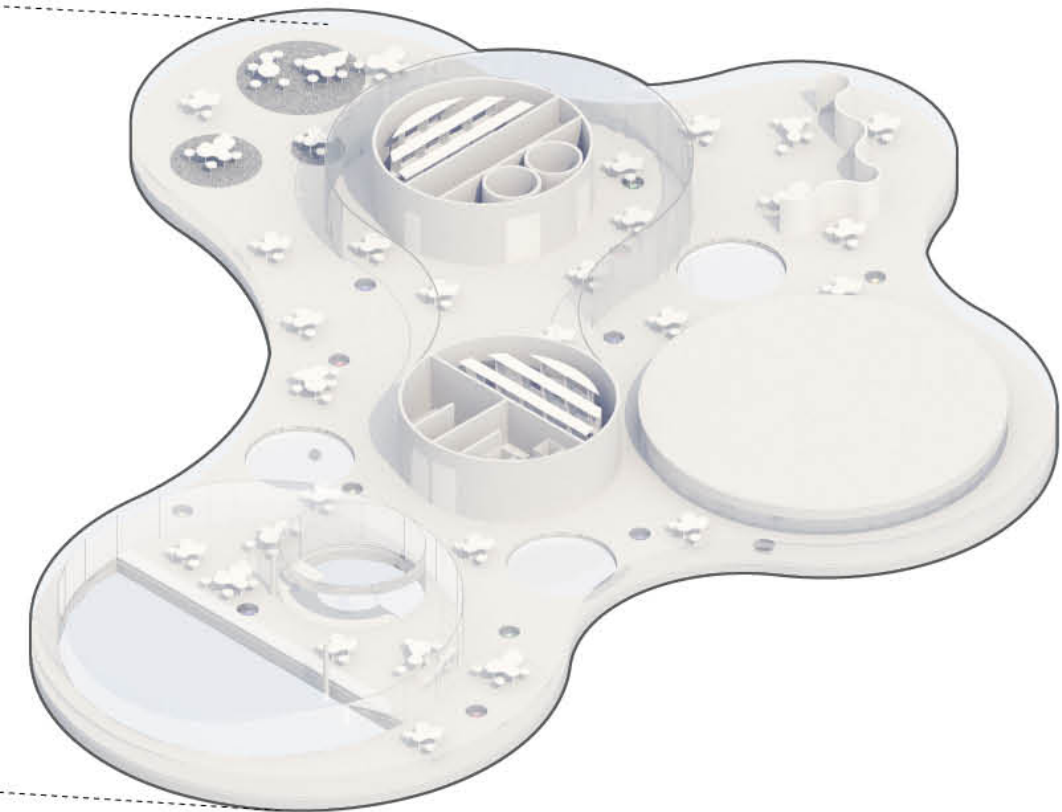
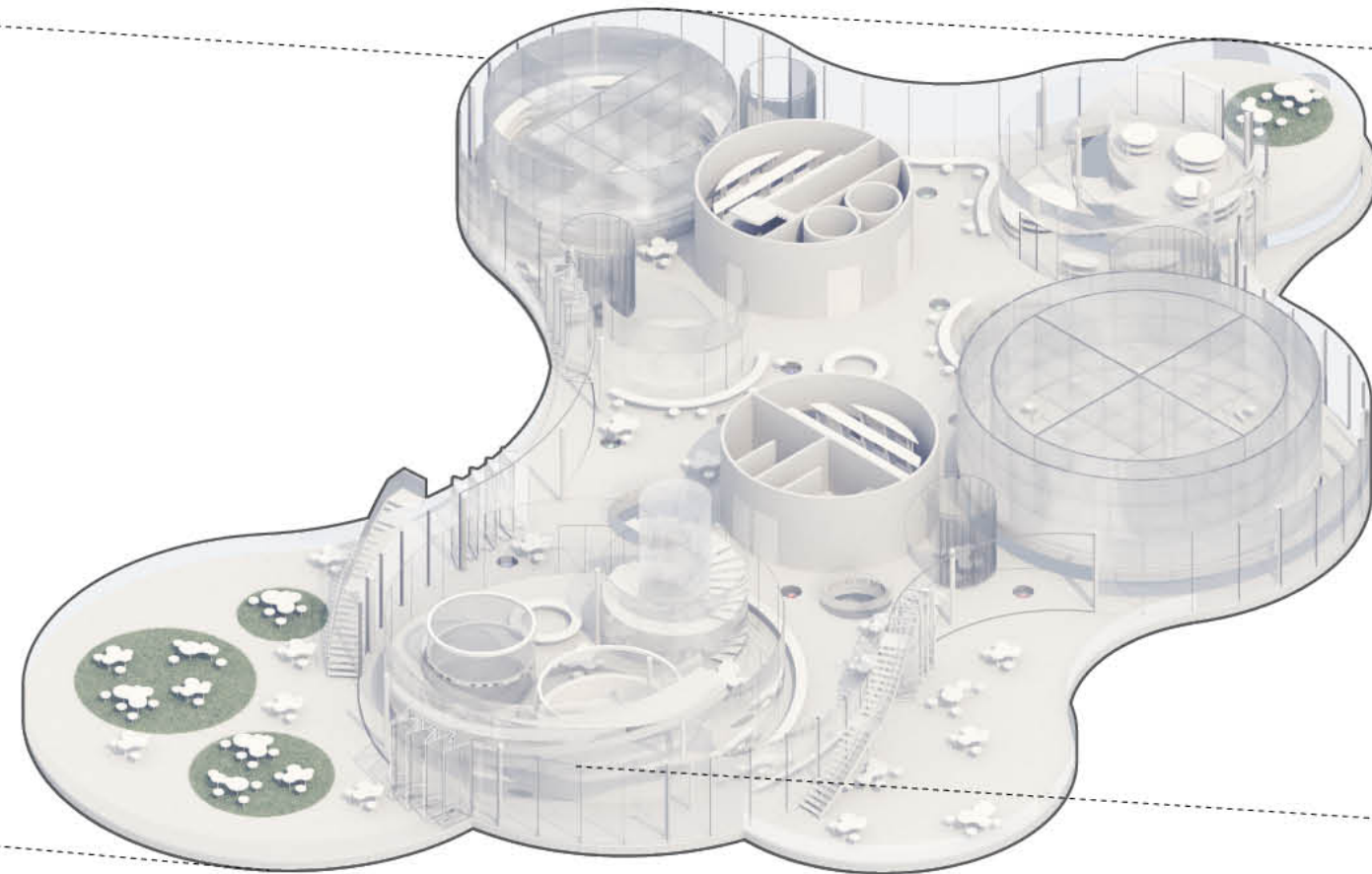
uPVC



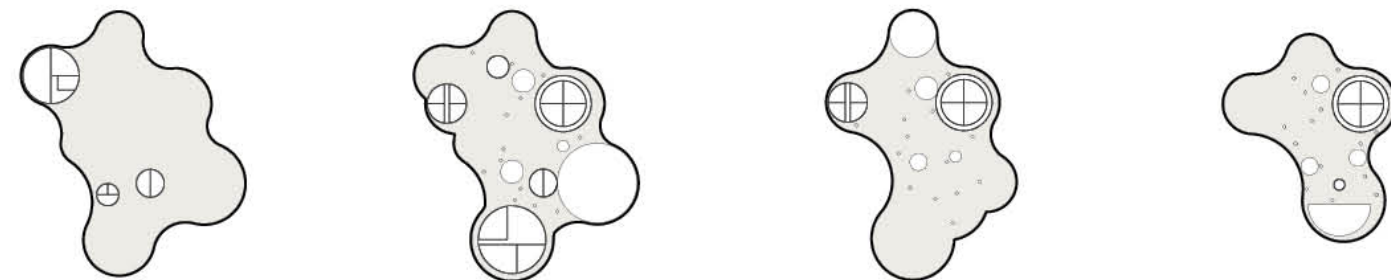
REUSED PLASTIC



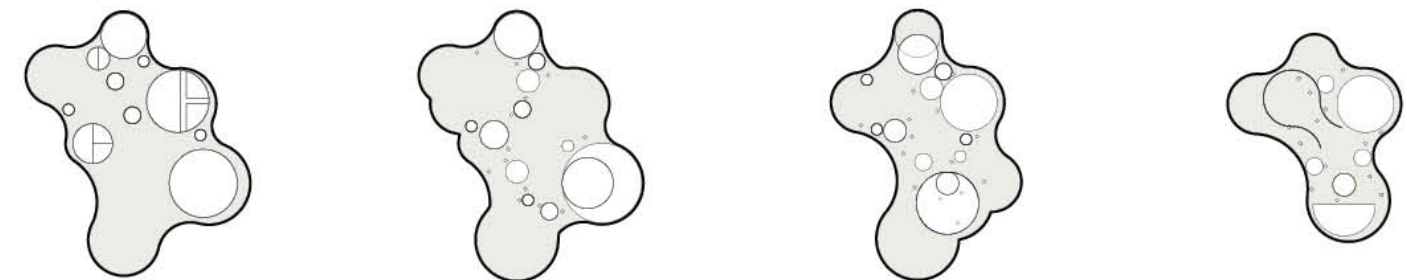
TRANSPARENT

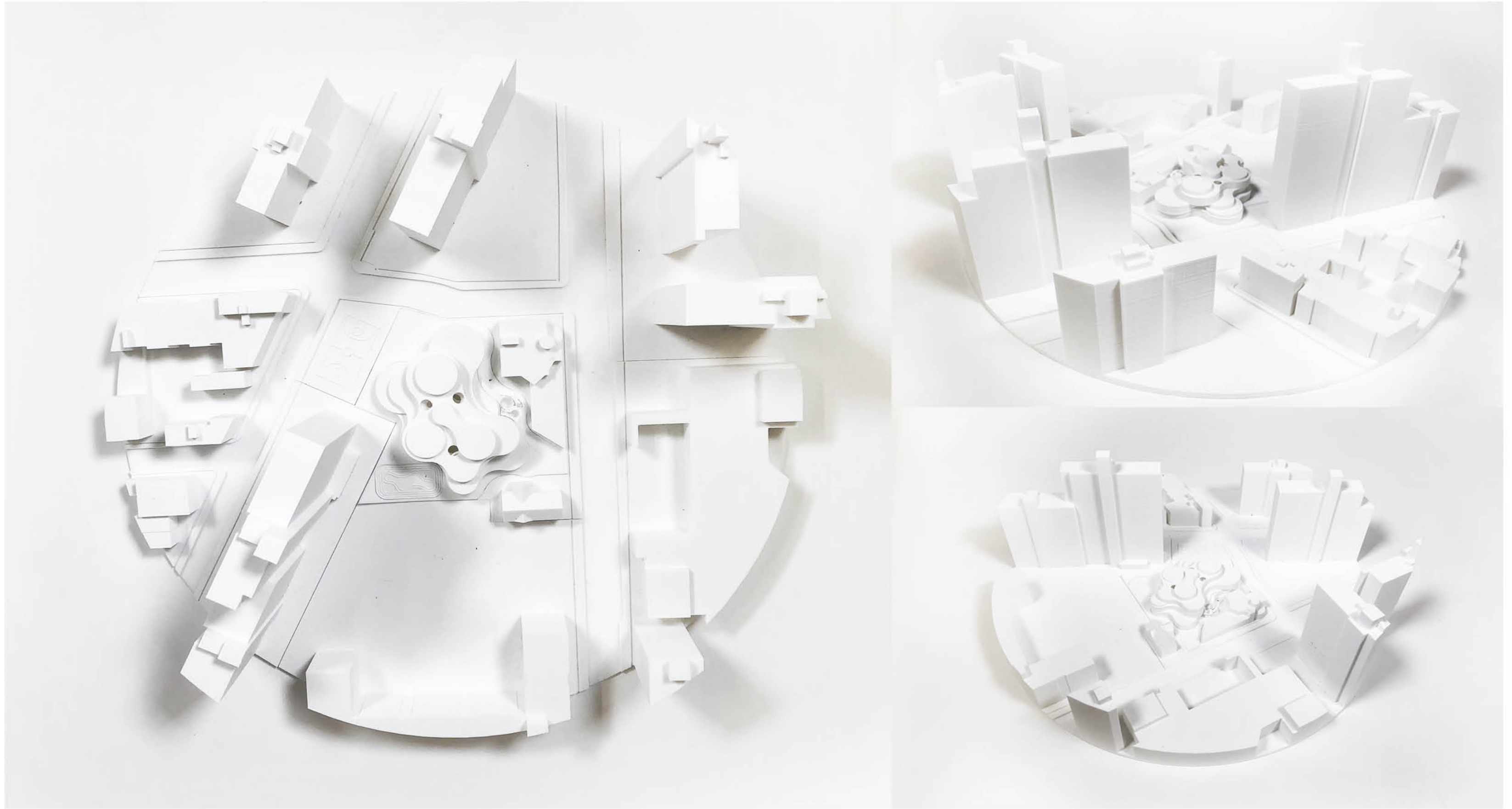


SEMI-PRIVATE SPACE(TRANSLUCENT)

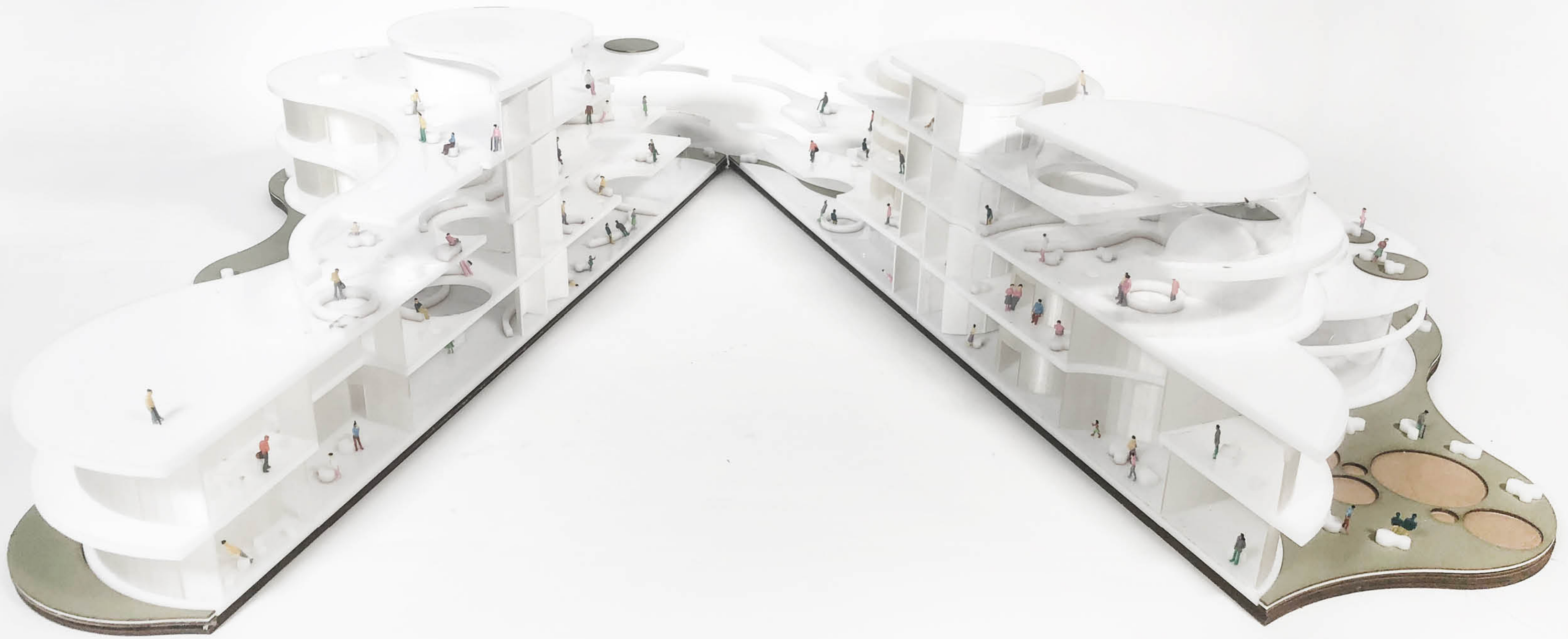


PUBLIC SPACE(TRANSPARENT)





1:32" SITE MODEL
From the contexts to the specific spaces



1:4" SECTION MODEL
From the contexts to the specific spaces



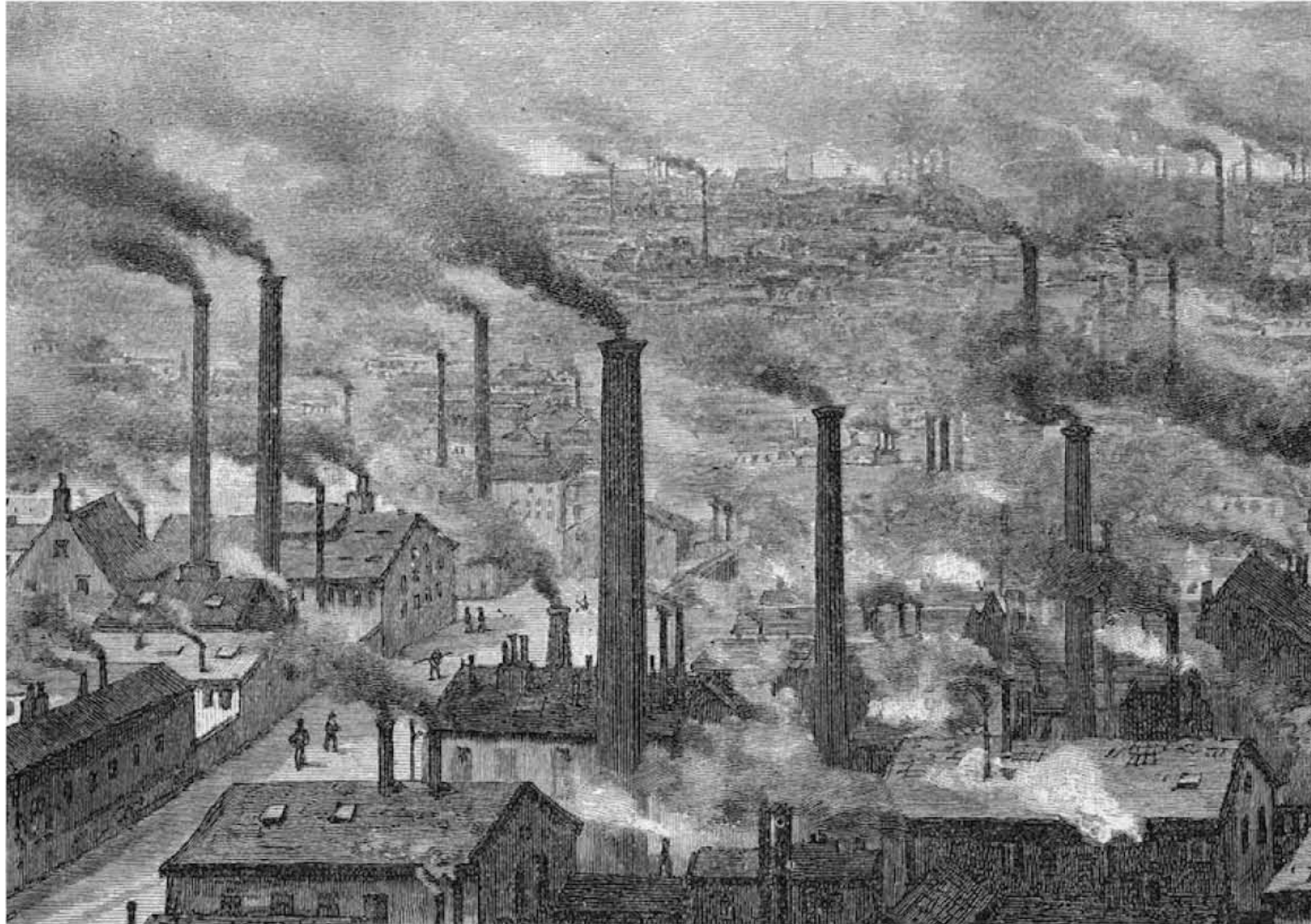
URBAN VEGETATED FILTER

Experimenting on creating fresh air in a highly polluted area

Yongyeob Kim & Karan Matta • Instructor : Erica Goetz • Period : Core III (1st semester) - 2020.09 ~ 12

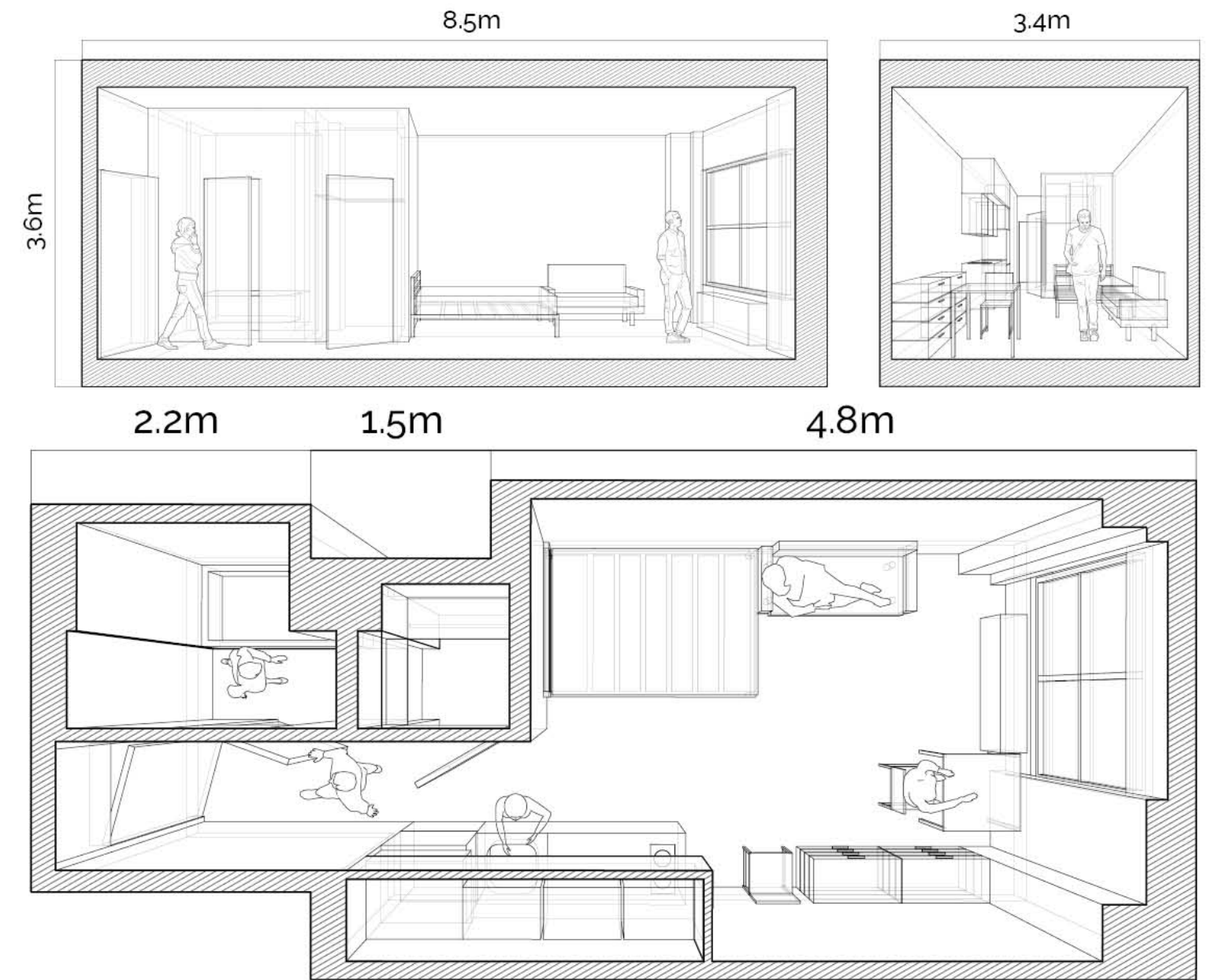
The driving concept to tackle the theme of breezeways and the air was filtration through vegetation. Utilizing biophilic features as a way of creating healthier environments became the main method to design this project. The building is an aggregate of porous bars that terraces down from the Northeast to the Bronx documentary center in the Southwest. One basic goal is to design a housing that encourages the air movement through vegetated voids and stands as a self-sustainable building.

The site is placed in South Bronx where lots of factories, cars, and plants are negatively impacting the air quality. The typical block is built with a high level of density creating stagnant air including hydrocarbon compounds, resulting in adverse health conditions. The approach involved creating more porous form allowing for constant wind circulation. A traditional thesis says that the air is stagnated in the living areas between buildings in dense cities. While being stacked more and more pollutants, at some point, the polluted air gets through housing, which causes respiratory diseases such as Asthma. This condition could be the main cause why the incidence rate of asthma is higher in Bronx than other areas.



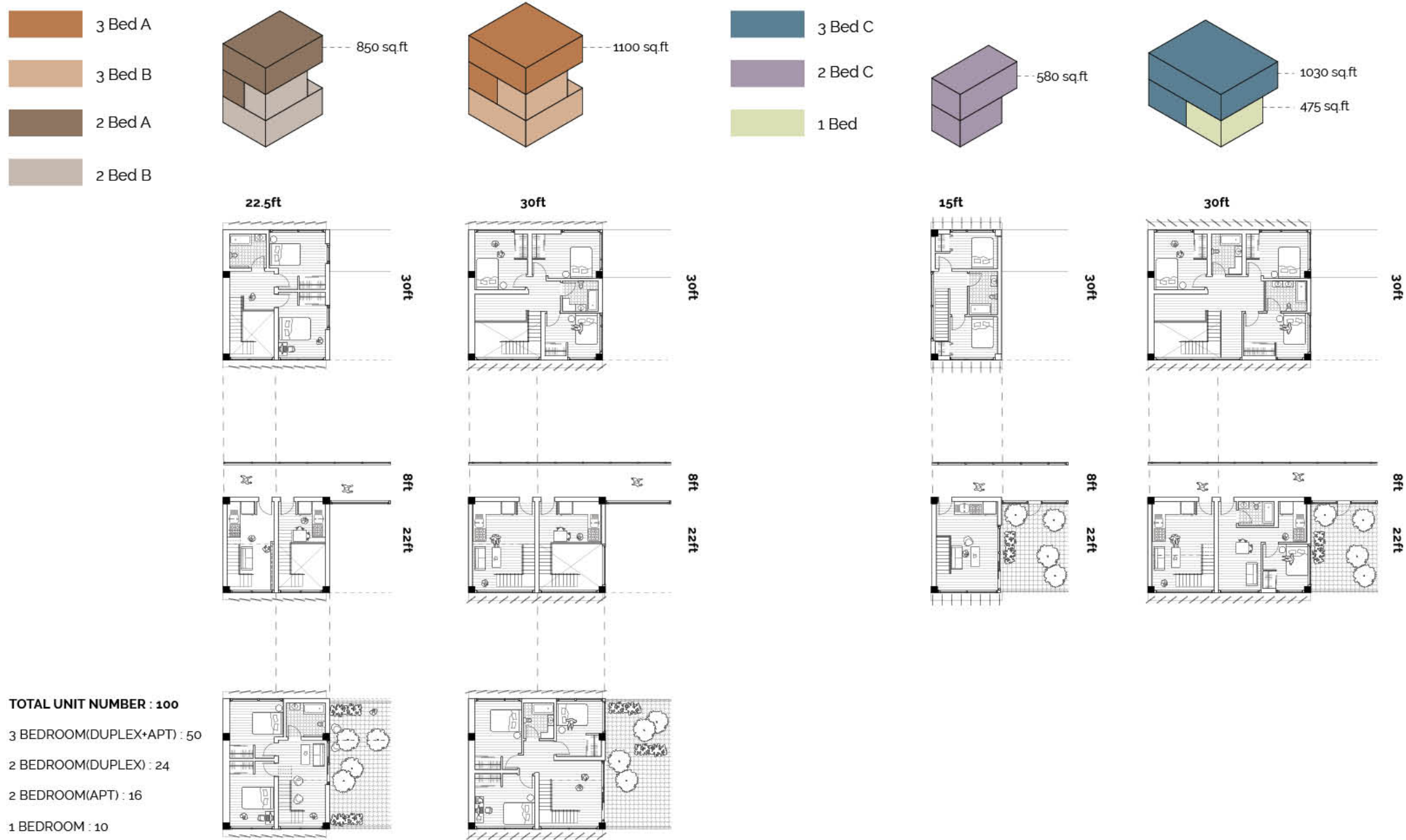
THE STAGNATED AIR

After Industrial Revolution, we have been studying the air. It was found that, when the air is stagnated, it creates pollutants that cause respiratory diseases.



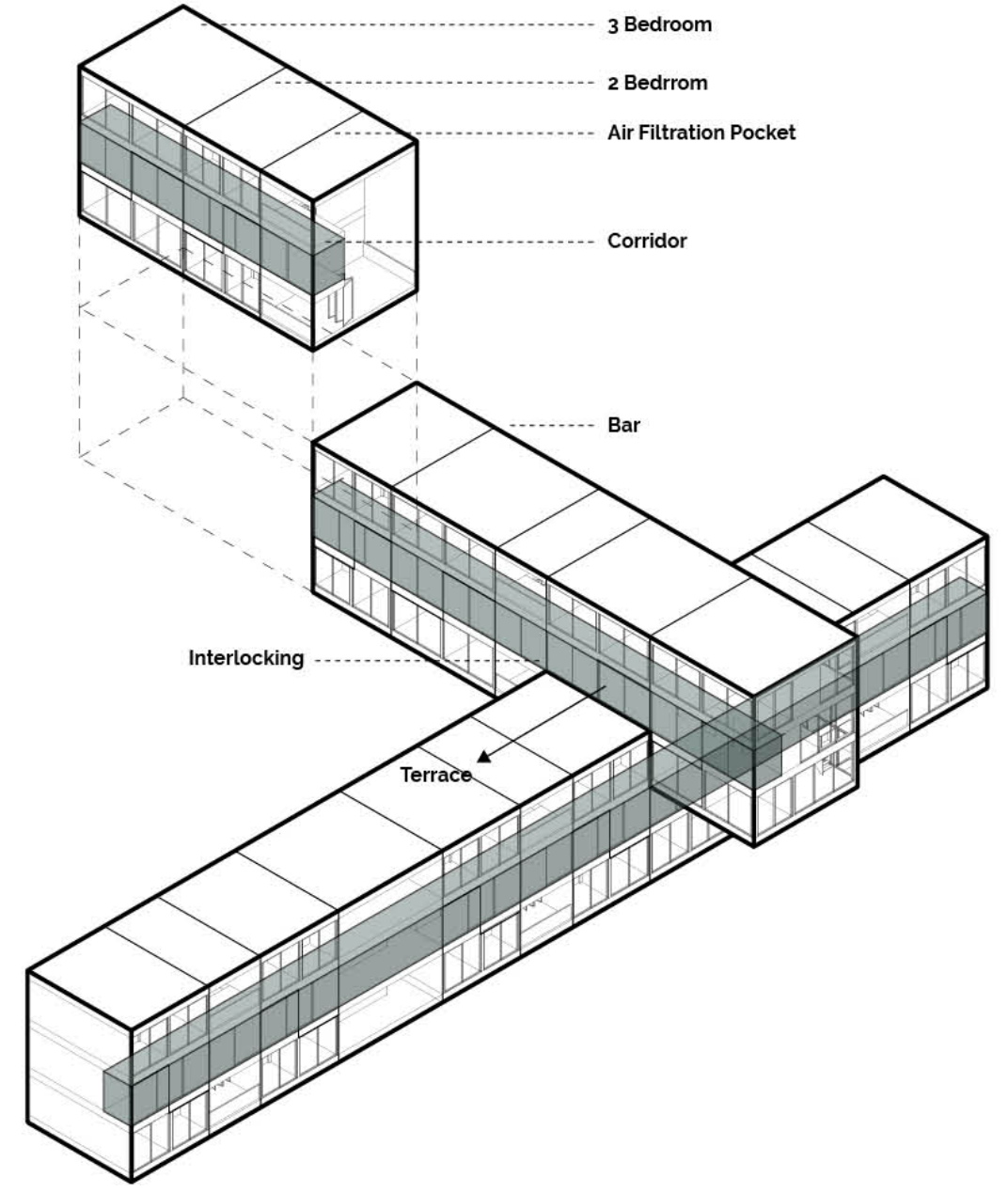
LIFE IN NEW YORK DURING COVID-19

During after Covid-19, people had to stay at their own places, while not meeting any one. As much as they stay at home, people realized that how the air quality is important and how the fresh air is important for their lives. Then a lot of people moved to rural areas or bigger houses to have more the fresh air. Now people are aspiring more natural ventilation.



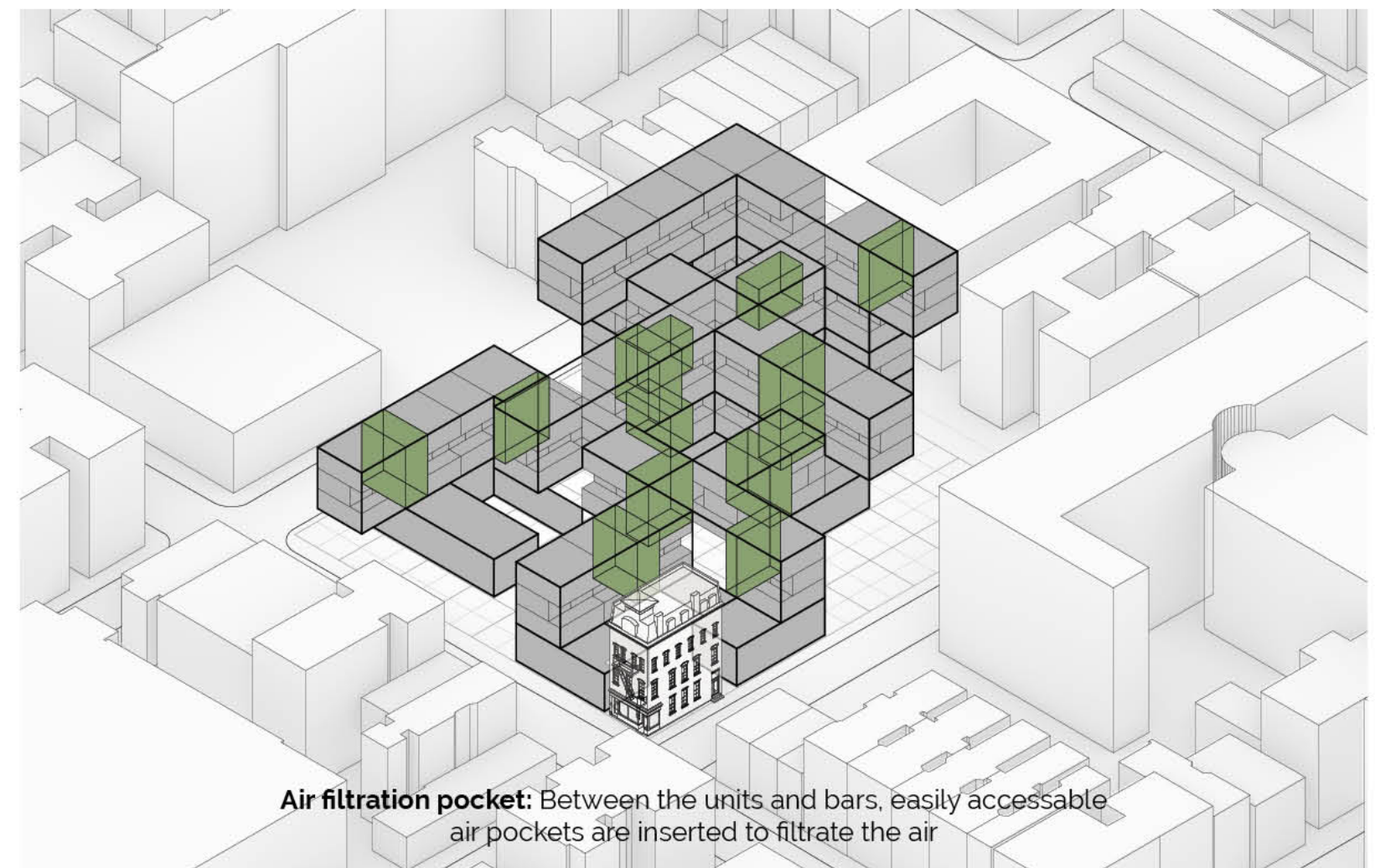
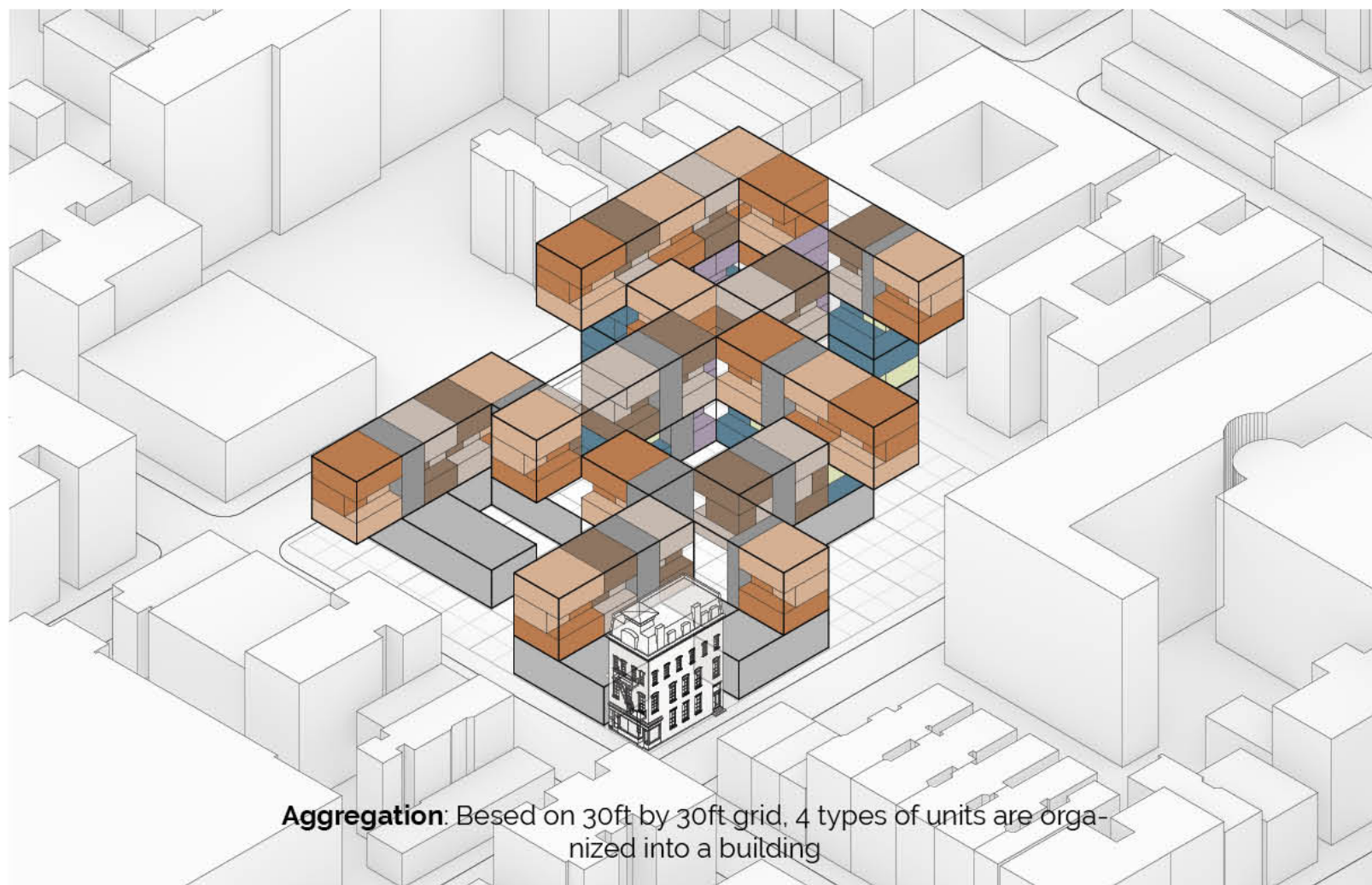
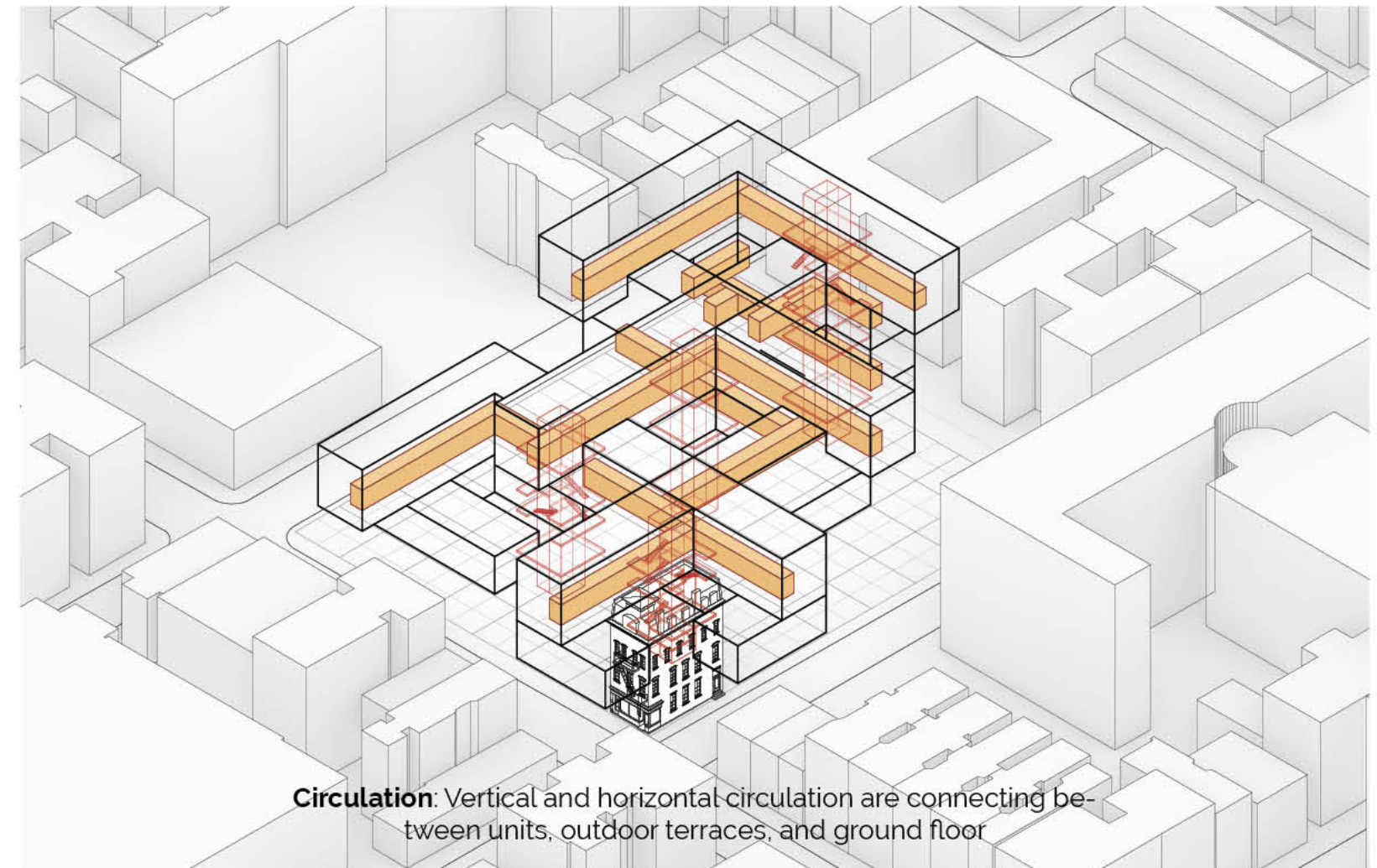
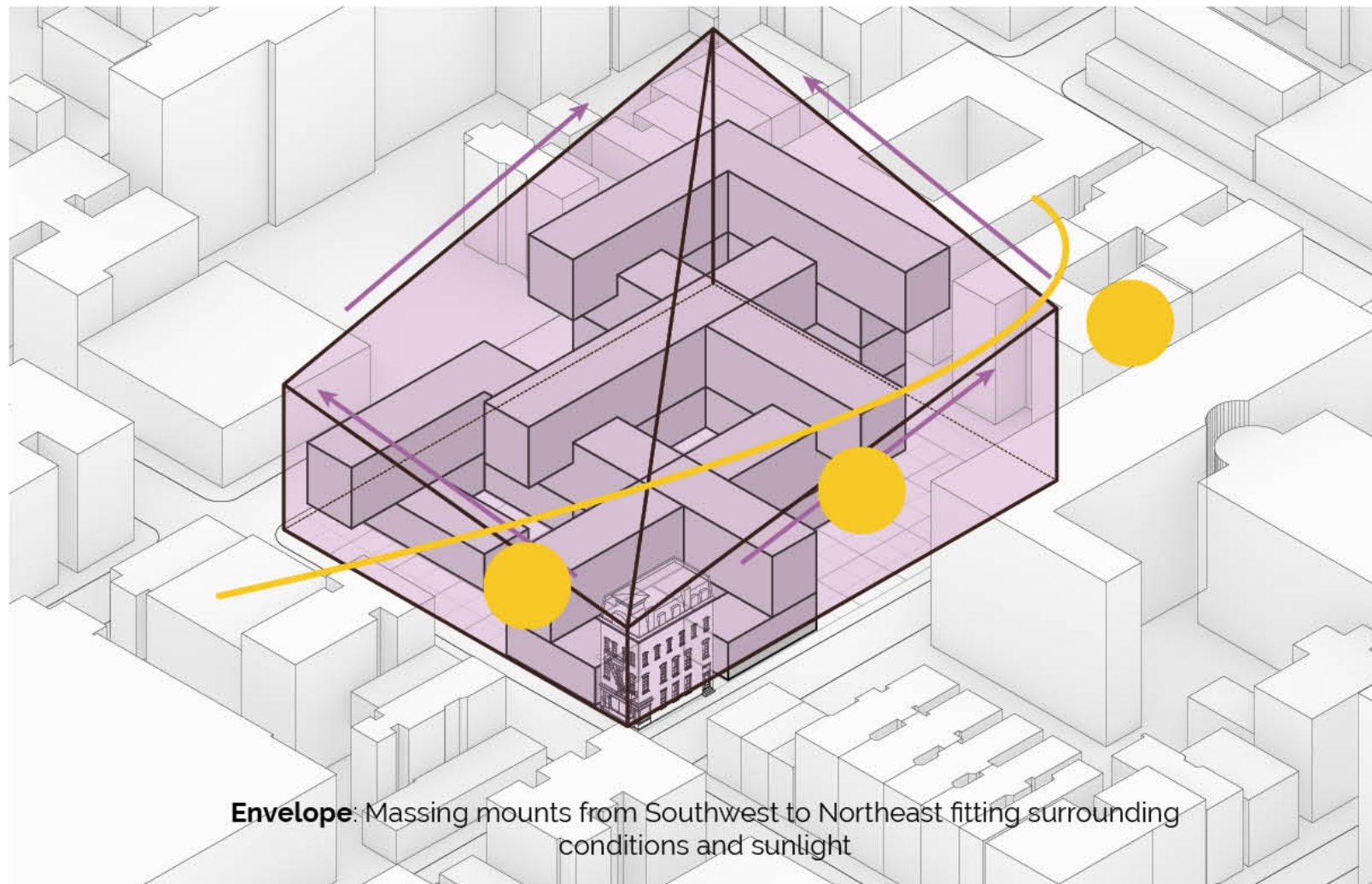
UNIT AGGREGATION

A skip-stop method of circulation is utilized to make up for air filtration pockets while the massing was carved out of the massing. There are two strategies. On the left, a skip stop that alternates every three floor. This aggregation consists of interlocking two bedroom and interlocking 3 bedroom units. and on the right a skip-stop that alternates every two floors. This allows for the integration of studio and 1 bedroom apartments. This strategy allows the unit to have views on both sides of the aggregate bar. This typology encourages cross ventilation. at the unit scale.



INTERLOCKING BAR

The units are aggregated into a bar type. Outdoor air pockets are placed between units. This allows cross ventilation to occur at the scale of the bar later at the scale of building. Residents are also able to access the these pockets either visually or physically. These pockets will be strategically covered with greenery to act as a cleansing mechanism.

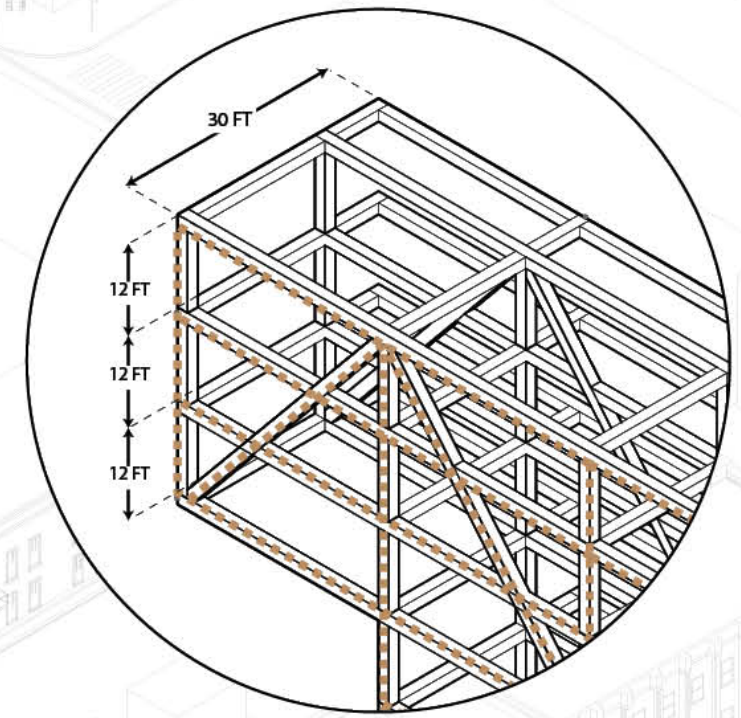
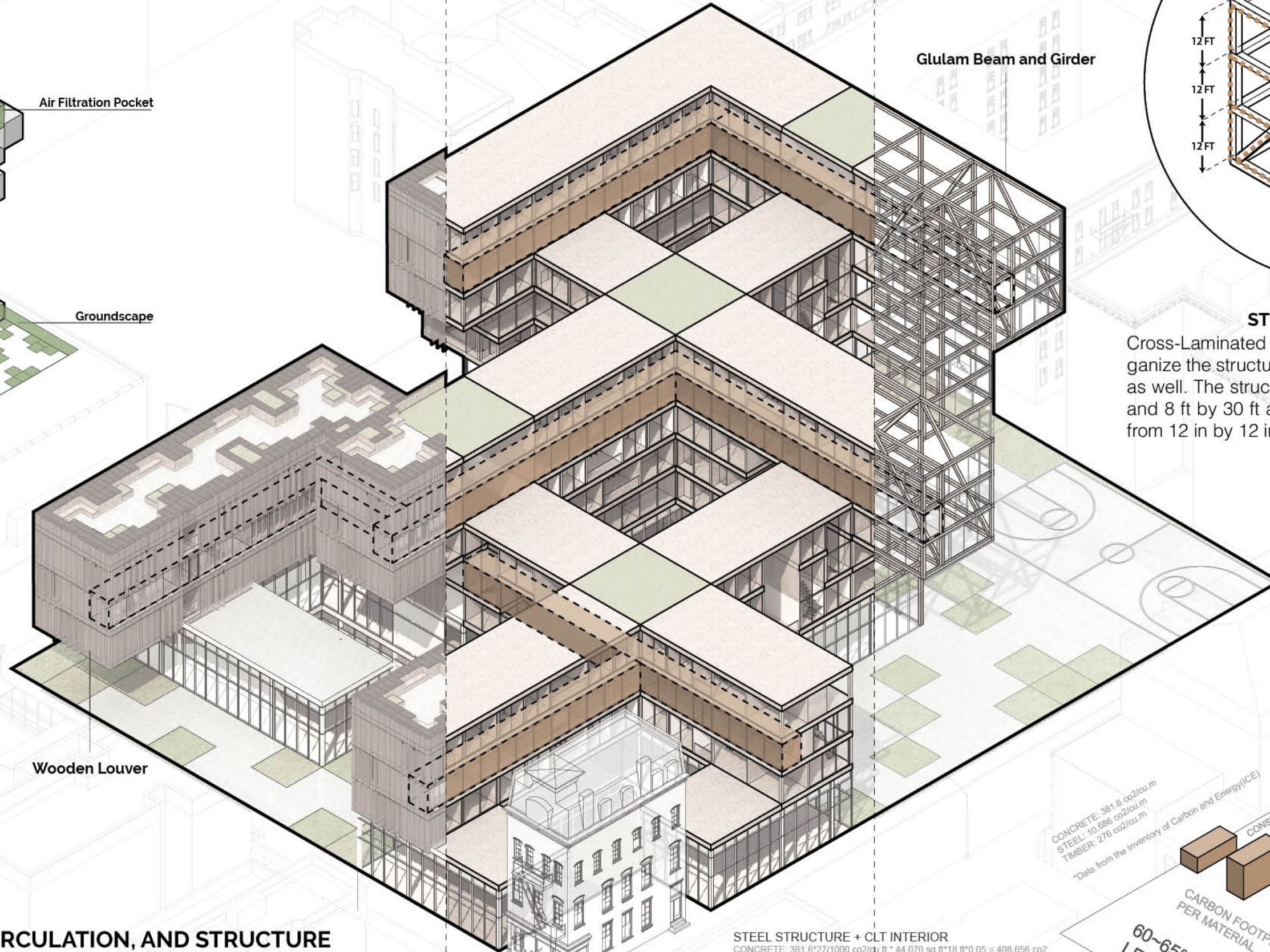
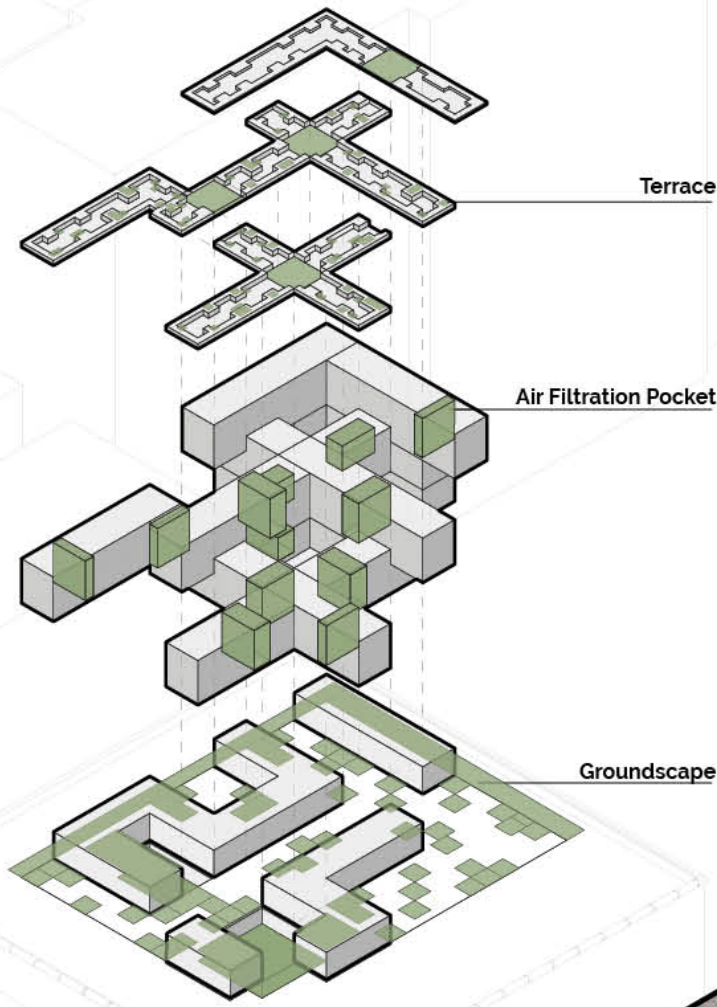


3 STEPS TO DECREASE CO2 FOOTPRINT

FACADE

CONSTRUCTION MATERIAL

STRUCTURE



STRUCTURAL DETAIL

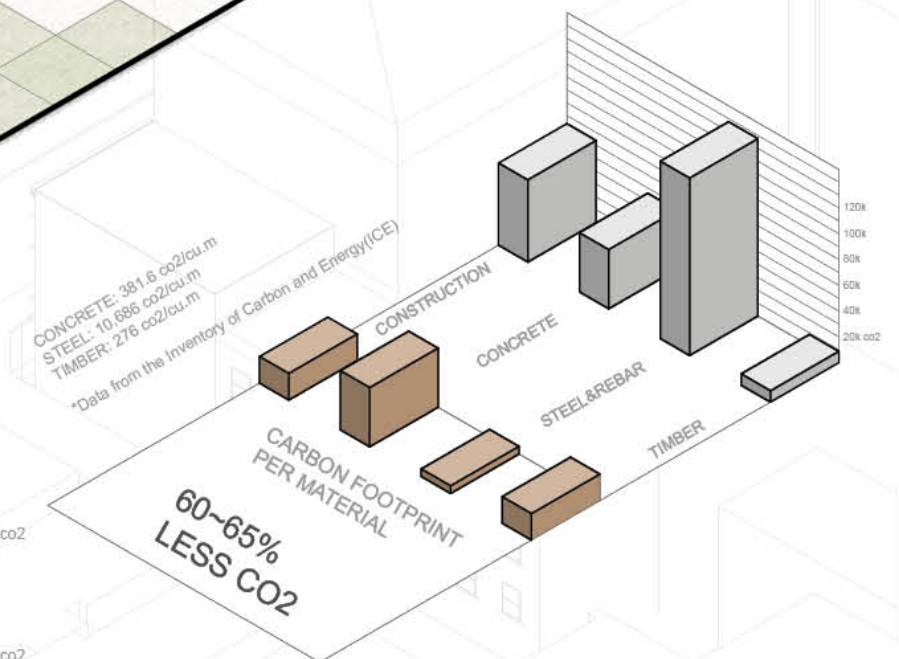
Cross-Laminated Timber and Glulam are used to organize the structure and to lower the carbon footprint as well. The structural grid is based on 22 ft by 30 ft and 8 ft by 30 ft and the basic size of glulam varies from 12 in by 12 in to 14 in to 14 in.

VEGETATED SPACES, CIRCULATION, AND STRUCTURE

The air filtration strategies are divided into 3 steps. The location of the filtration pockets occurs throughout the building resulting in its porous form. These bars are stacked on top of each other mounting from South West to North East corresponding to the elevation of the surrounding building conditions. Also the bars are stacked simply, interlocking at the top and bottom floors. This allows for the circulation corridors to have easy access to the roof and outdoor landscape at that level. This interlocking strategy might be an efficient way to minimize corridor area and offer more facades of units to face outside.

STEEL STRUCTURE + CLT INTERIOR
 CONCRETE: $381.6 \times 27 \times 1000 \text{ cu.ft} \times 44,070 \text{ sq.ft} \times 18 \text{ ft} \times 0.05 = 408,656 \text{ co2}$
 STEEL: $10,686 \times 27 \times 1000 \text{ cu.ft} \times 1,5800 \text{ cu.ft} = 1,673,427 \text{ co2}$
 TIMBER: $276 \times 27 \times 1000 \text{ cu.ft} \times 9600 \text{ cu.ft} = 64,087 \text{ co2}$
 TOTAL: 2,146,170 co2

MASS TIMBER STRUCTURE + CLT INTERIOR
 CONCRETE: $381.6 \times 27 \times 1000 \text{ cu.ft} \times 44,070 \text{ sq.ft} \times 18 \text{ ft} \times 0.05 = 408,656 \text{ co2}$
 TIMBER: $276 \times 27 \times 1000 \text{ cu.ft} \times 37,000 \text{ cu.ft} = 275,724 \text{ co2}$
 STEEL: $10,686 \times 27 \times 1000 \text{ cu.ft} \times 1,000 \text{ cu.ft} = 288,522 \text{ co2}$
 TOTAL: 972,902 co2 (55% REDUCED)

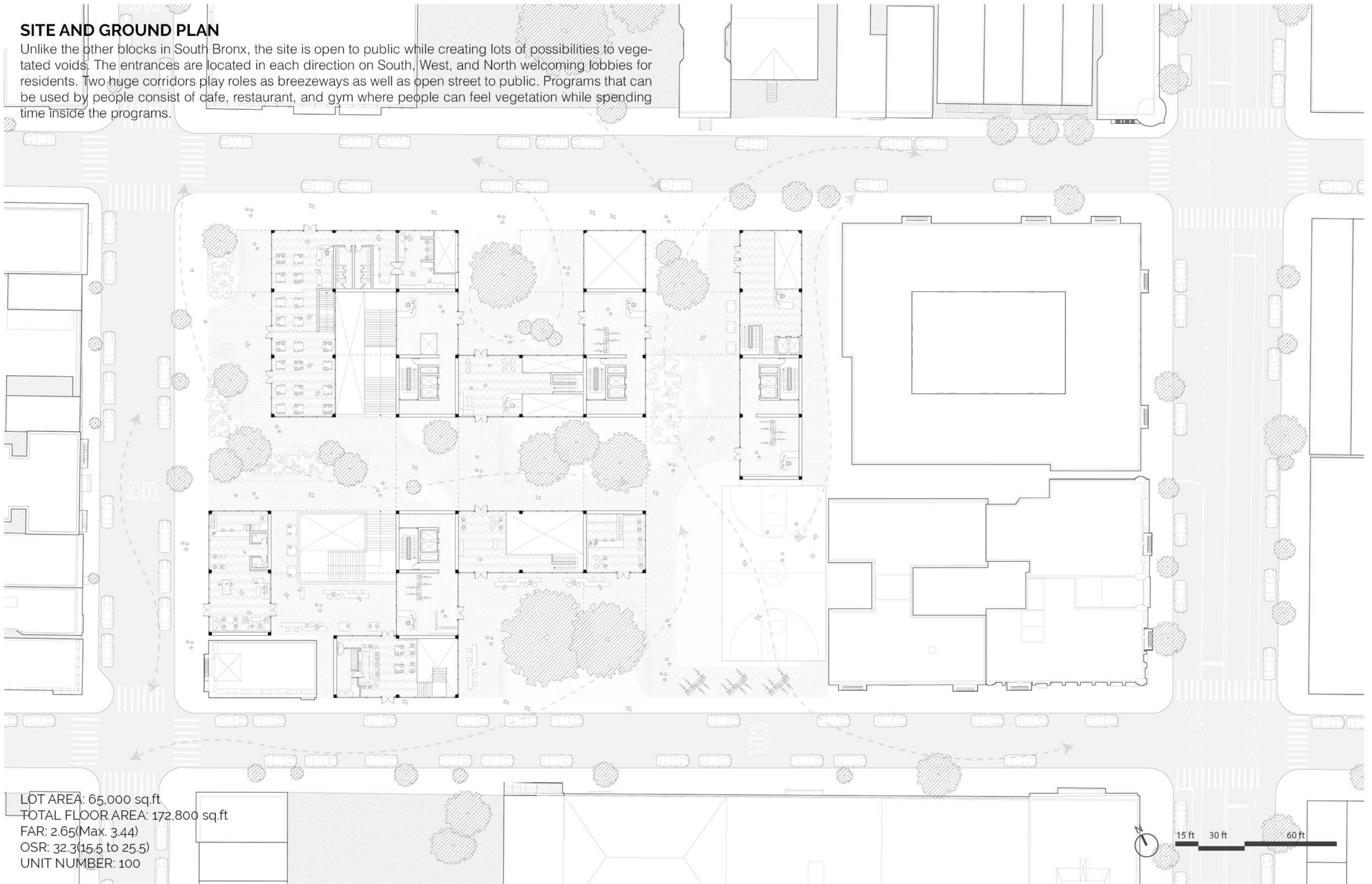


CARBON FOOTPRINT

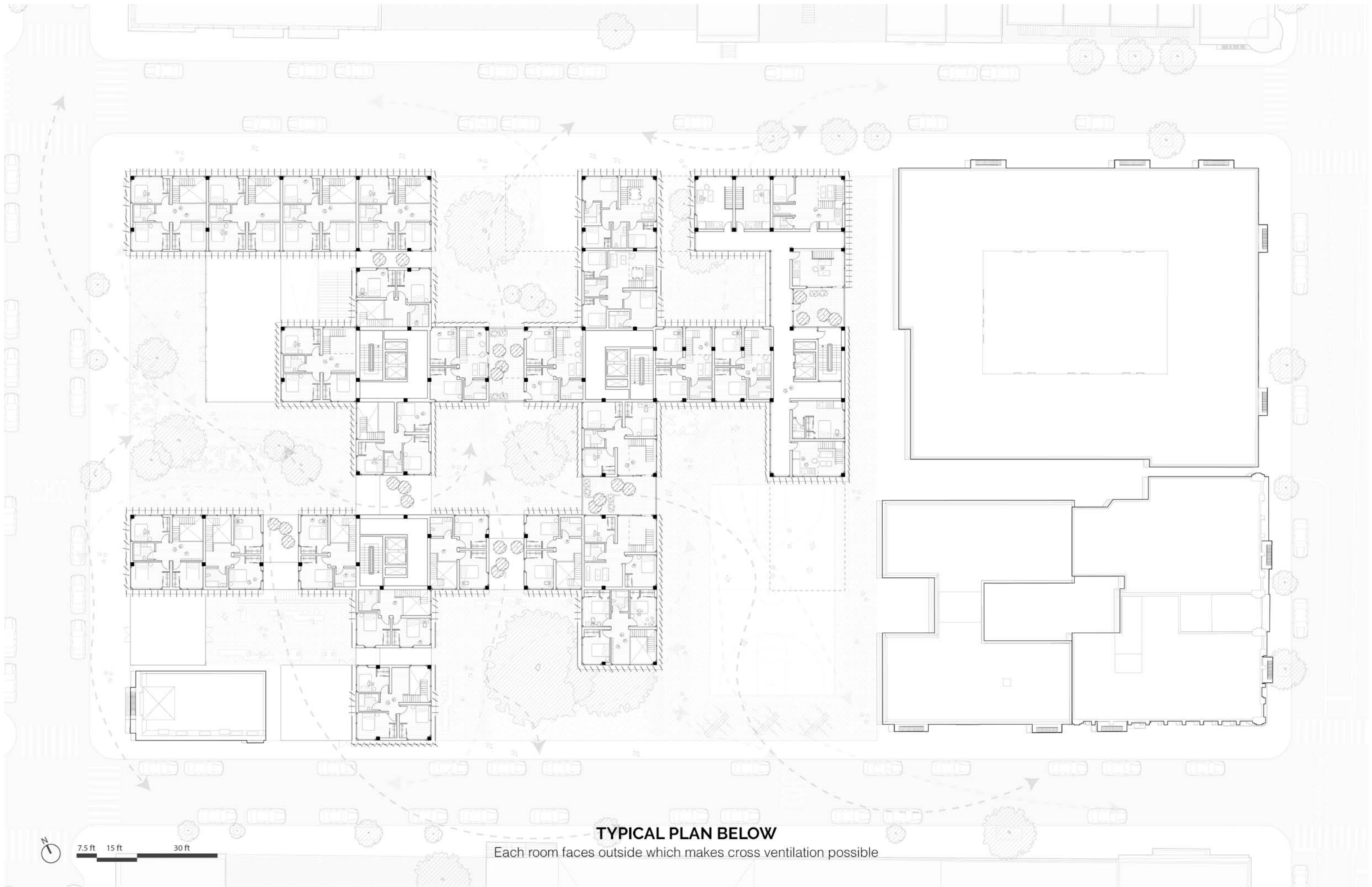
About 60% of Carbon footprint is expected to be reduced

SITE AND GROUND PLAN

Unlike the other blocks in South Bronx, the site is open to public while creating lots of possibilities to vegetated voids. The entrances are located in each direction on South, West, and North welcoming lobbies for residents. Two huge corridors play roles as breezeways as well as open street to public. Programs that can be used by people consist of cafe, restaurant, and gym where people can feel vegetation while spending time inside the programs.



LOT AREA: 65,000 sq.ft
TOTAL FLOOR AREA: 172,800 sq.ft
FAR: 2.65(Max. 3.44)
OSR: 32.3(15.5 to 25.5)
UNIT NUMBER: 100

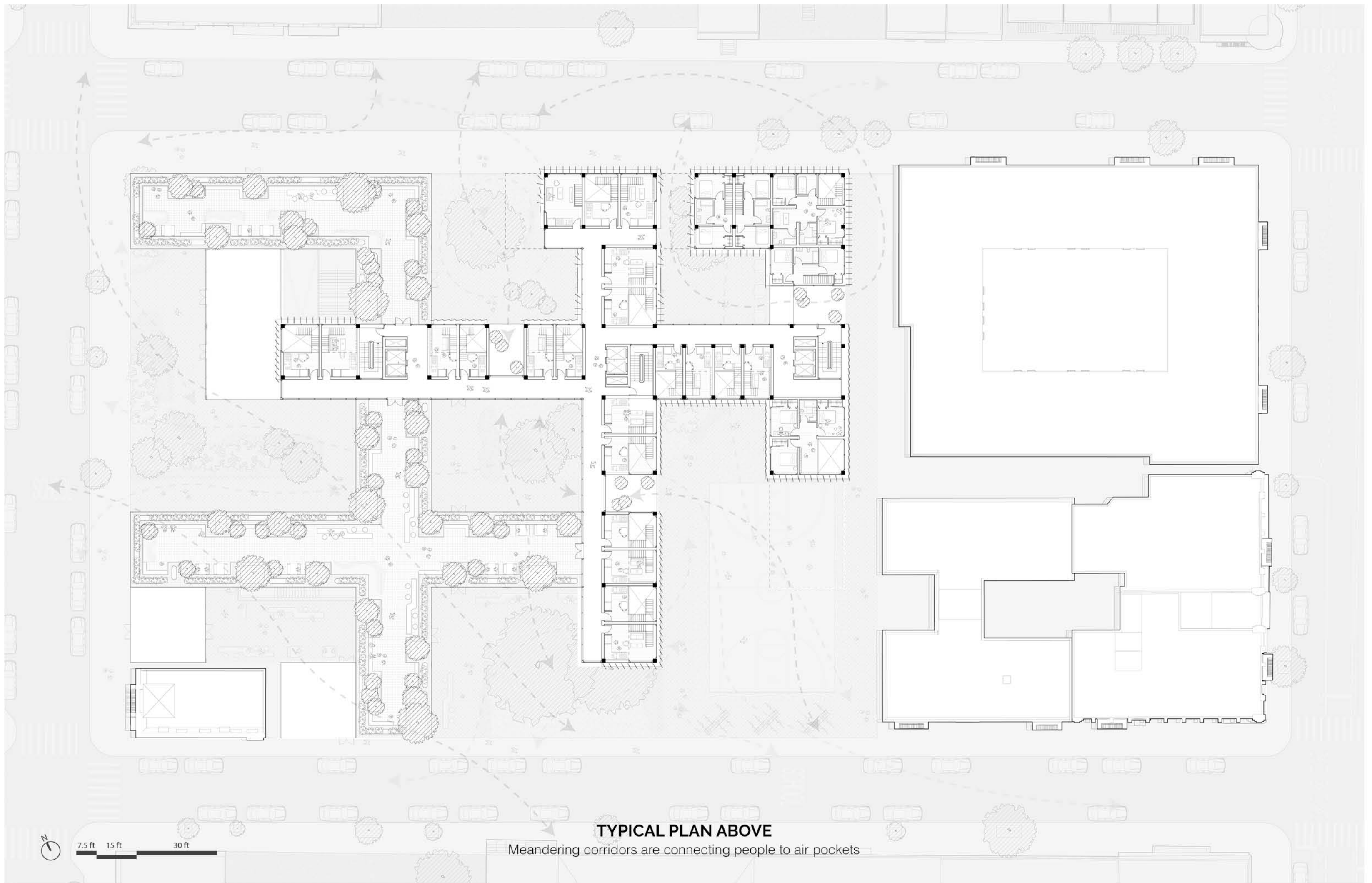


TYPICAL PLAN BELOW

Each room faces outside which makes cross ventilation possible



7.5 ft 15 ft 30 ft



TYPICAL PLAN ABOVE

Meandering corridors are connecting people to air pockets

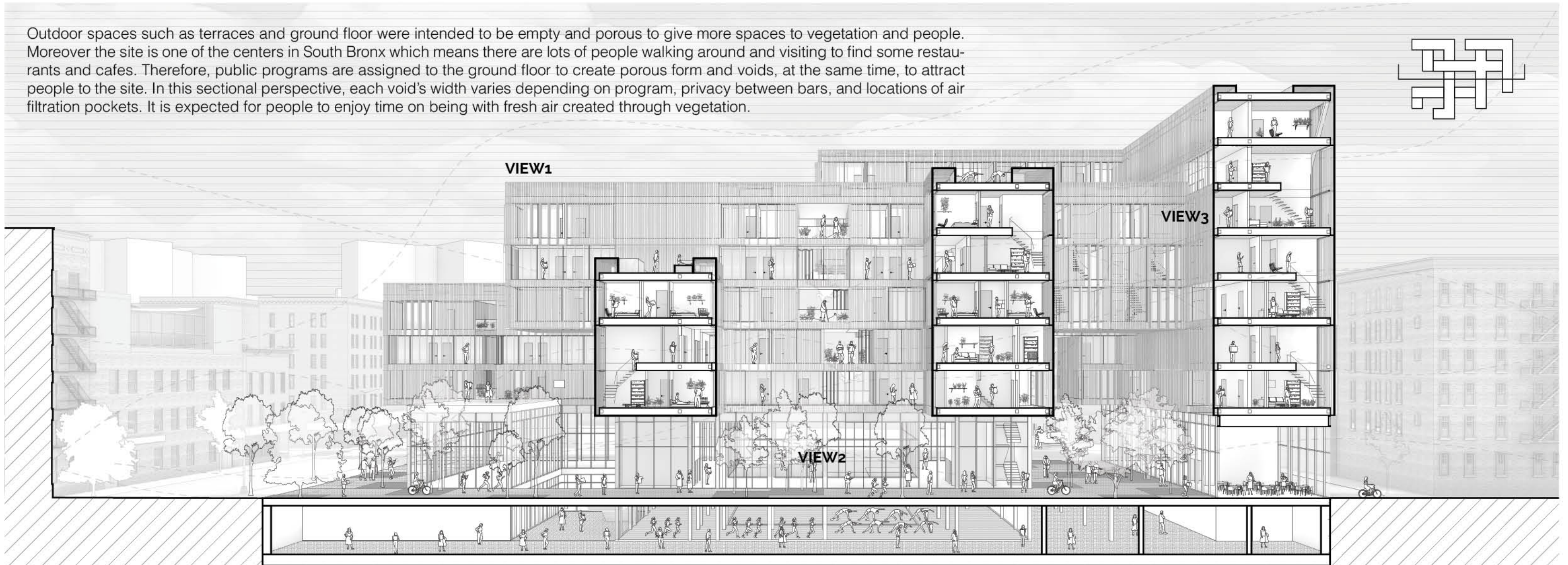
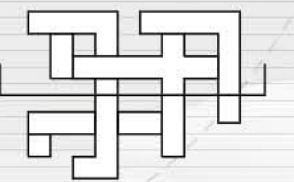


COMPREHENSIVELY CONCEPTUAL VIEW

Vertical and horizontal voids bring light and wind inside, purifying the polluted air. The life in this housing will be totally surrounded by newly blowin wind and sunlight, haveing open views.



Outdoor spaces such as terraces and ground floor were intended to be empty and porous to give more spaces to vegetation and people. Moreover the site is one of the centers in South Bronx which means there are lots of people walking around and visiting to find some restaurants and cafes. Therefore, public programs are assigned to the ground floor to create porous form and voids, at the same time, to attract people to the site. In this sectional perspective, each void's width varies depending on program, privacy between bars, and locations of air filtration pockets. It is expected for people to enjoy time on being with fresh air created through vegetation.

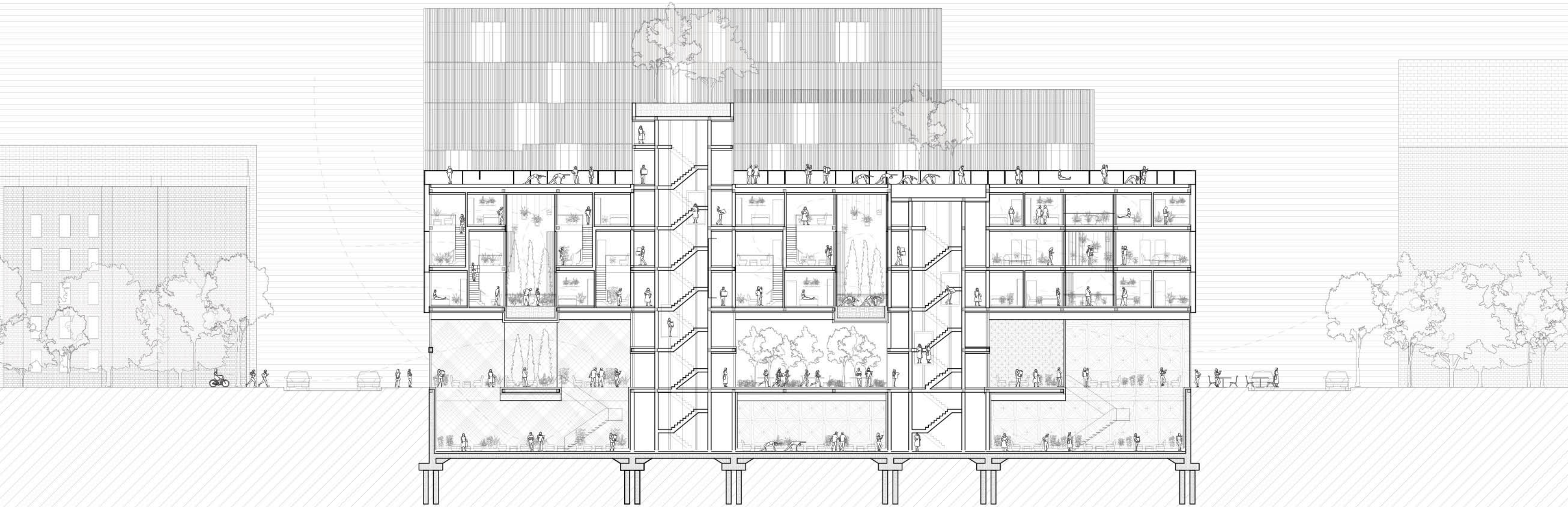
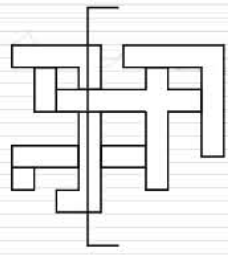


SECTIONAL PERSPECTIVE
Differently sized-voids play a role in filtration



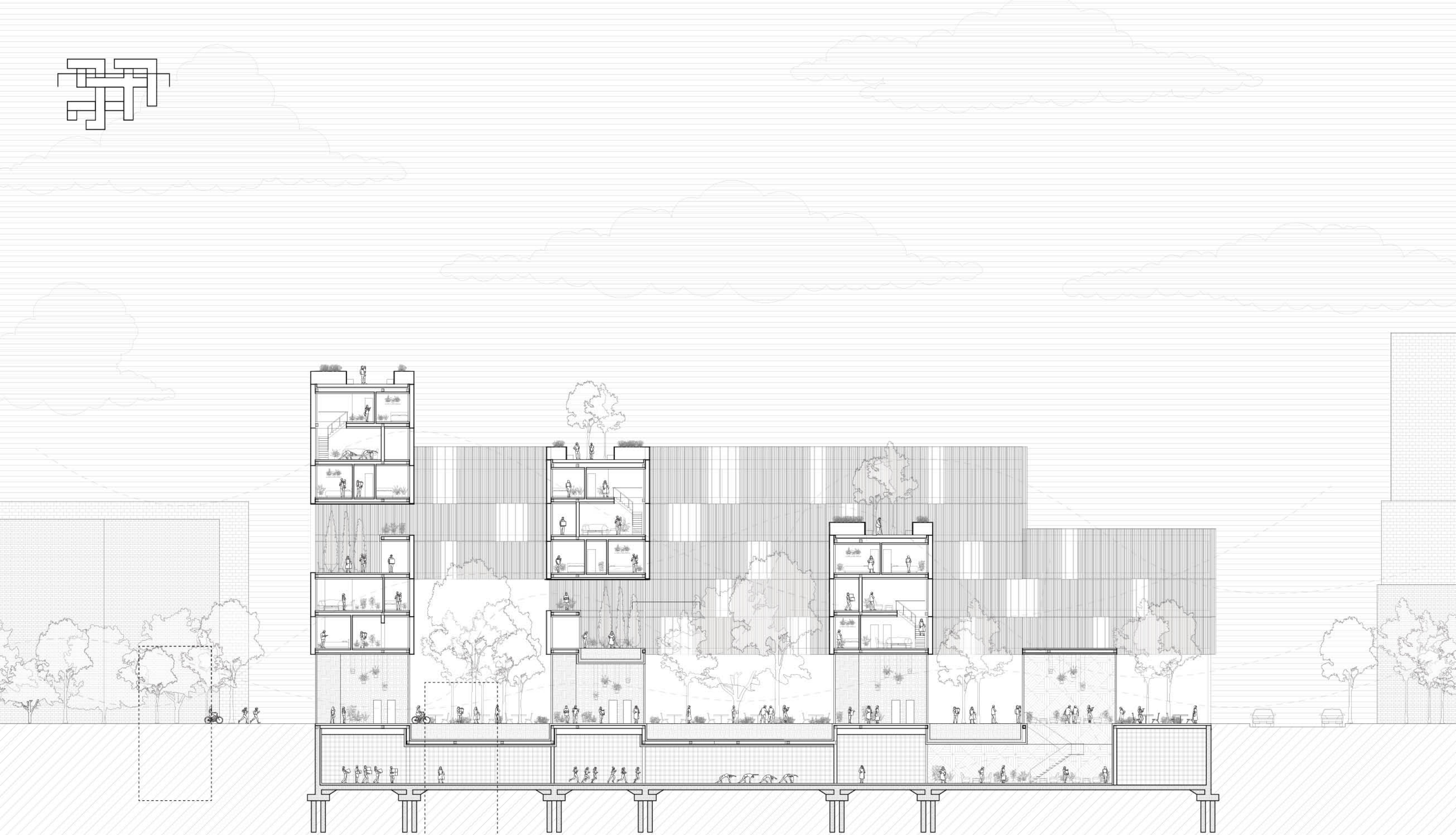
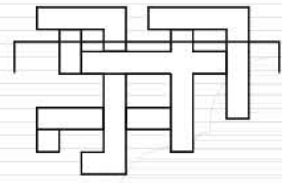
MAIN ENTRANCE

The programs such as restaurant and cafe on the ground floor have clear glass-facade to avoid to block views of pedestrians which is also parallel to the concept to make voids as many as possible. Finally, the housing units are visually floated from the land.



SECTION: LOOKING AT EAST

People's lives are organized centering on the air pockets. On the transparent ground floor, public spaces such as lobby, café, and courtyards. Housing units are floating from the ground being in-between the air.



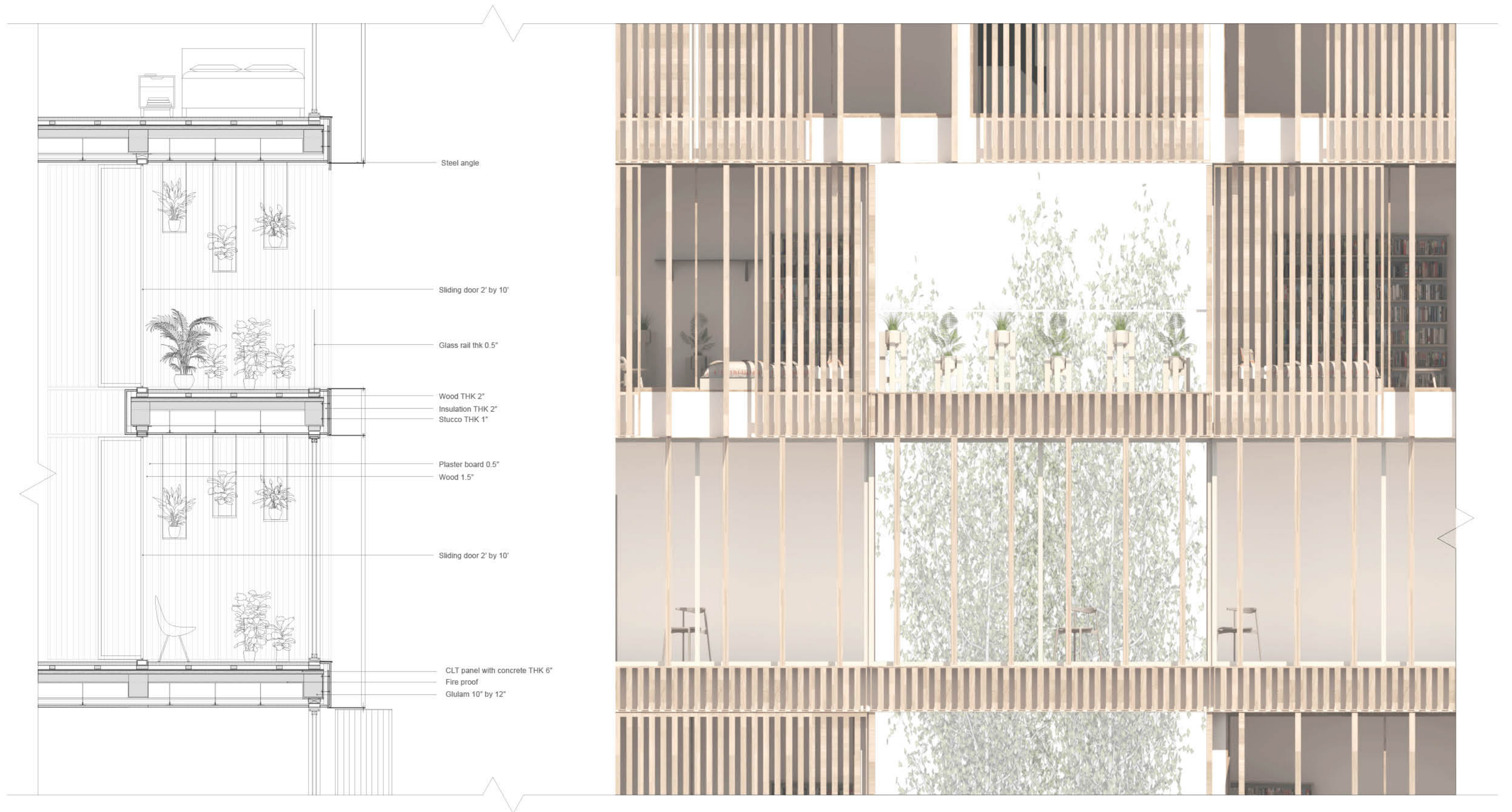
SECTION: LOOKING AT SOUTH

The city is being denser and denser and harder to breathe fresh air in our houses. Different sized-courtyards provide a special life for people. The life inside the building will be existing while being surrounded by the fresh air



AIR FILTRATION POCKET IN BETWEEN LIFE

LIFE IN-BETWEEN THE AIR



360 DEGREE ROTATING LOUVER SYSTEM

To control sunlight and to protect privacy of people, a 360 degree turning louver system was designed. This shows how people will experience inside the building in both air filtrated pocket and housing

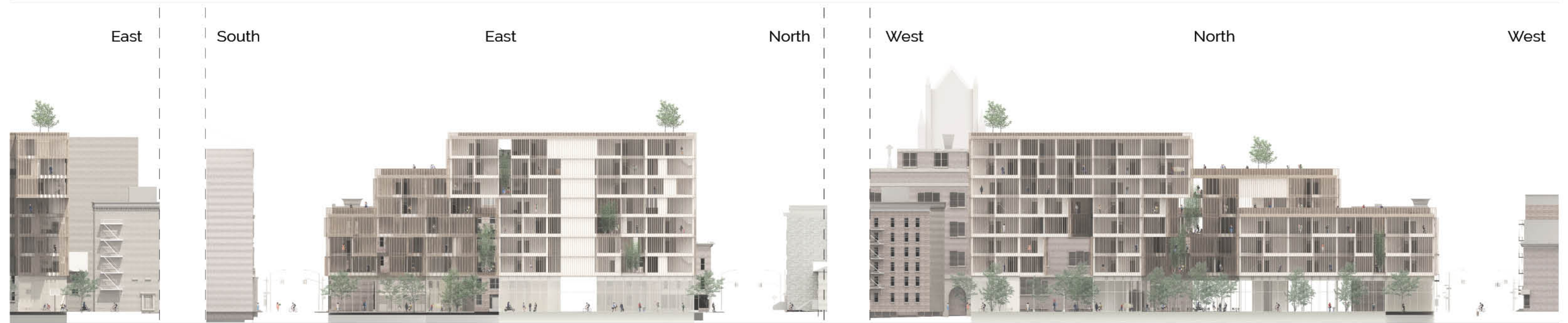


360 DEGREE ROTATING LOUVER SYSTEM

To control sunlight and to protect privacy of people, a 360 degree turning louver system was designed. This shows how people will experience inside the building in both air filtrated pocket and housing

LOUVER DENSITY VARIATION

The density varies according to directions. South and West facades have denser louvers since those facades face more sunlight during the day and sunset. On the other hand, North and East facades have less dense louvers because those lack of sunlight.





IN-BETWEEN

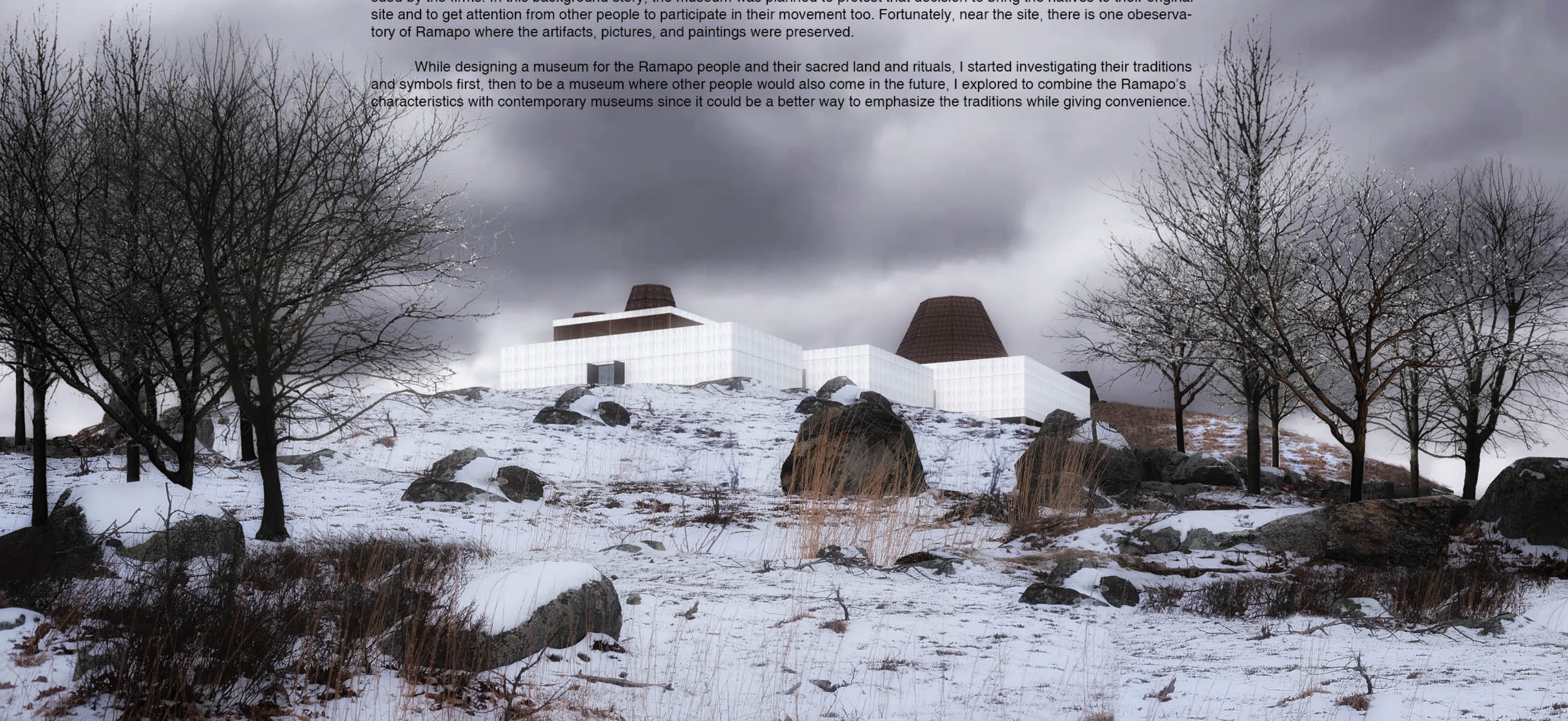
Helping traditional spirits adapt to contemporary spaces

Individual • Instructor : Robert Marino • Period : Advanced studio IV (2nd semester) - 2021.01 ~ 04

Program : Museum • Site : Mahwah, New Jersey, United States

The site is located in one hour-driving distance from Manhattan where more than 20,000 people were living. However, the site and surroundings were decided to develop as a golf practice center and sport facilities, real estate firms and politicians forced the Ramapo tribe to leave the sacred land where their ancestors had been living more than a few hundreds of years. Because they didn't record any documents that can prove that the land is owned by the Ramapo tribe, they had to escape not to be sued by the firms. In this background story, the museum was planned to protest that decision to bring the natives to their original site and to get attention from other people to participate in their movement too. Fortunately, near the site, there is one observatory of Ramapo where the artifacts, pictures, and paintings were preserved.

While designing a museum for the Ramapo people and their sacred land and rituals, I started investigating their traditions and symbols first, then to be a museum where other people would also come in the future, I explored to combine the Ramapo's characteristics with contemporary museums since it could be a better way to emphasize the traditions while giving convenience.





FOCUS 1. THE SPLIT ROCK
The rock is the center of Ramapo tribe

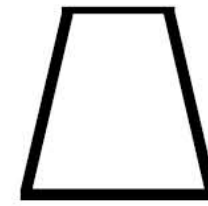


FOCUS 2. THE VILLAGE
Ramapo tribe used to build a village where buildings directing to the center



FOCUS 3. WOOD
Wood was the material they used to build housing

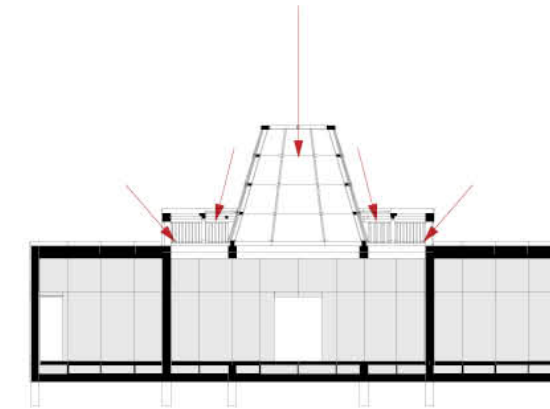
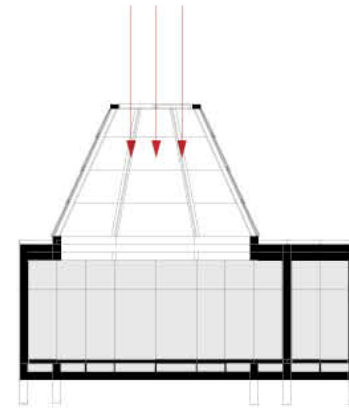
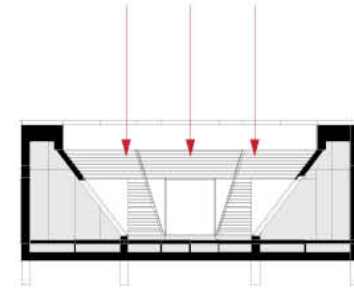
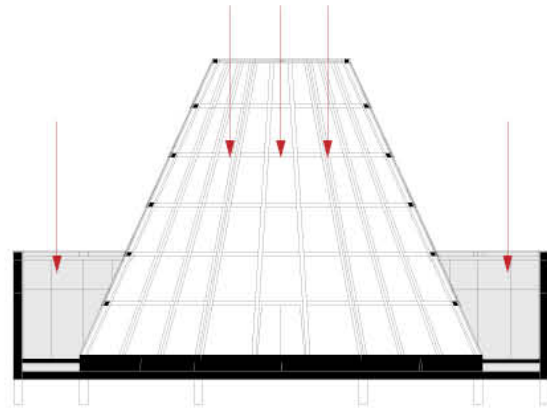
While taking the characteristics of Ramapo tribe as a tradition and a reminder of people who are one of the Native tribe and live away from their sacred land, the museum was focused on implanting those traits into the museum and transforming into the architectural gestures in contemporary since the museum will not be just a museum, it is an advertising place for common people who might be interested in and might help the Ramapo people. The ways the native people bring sunlight inside were used for creating ritual spaces. Also their methods to create a village and to connect one of each other are rendered by combining with simple boxes which is one of the representatives of contemporary language.



**A - SYMBOLIC,
TRADITIONAL**



**B - FUNCTIONAL,
CONTEMPORARY**



A(Closed) + B(Open)

Ritual Space(closed to public)

A(Reverse) + B(Open)

Center + Ceremonial Space to Public

A(Above) + B(Closed)

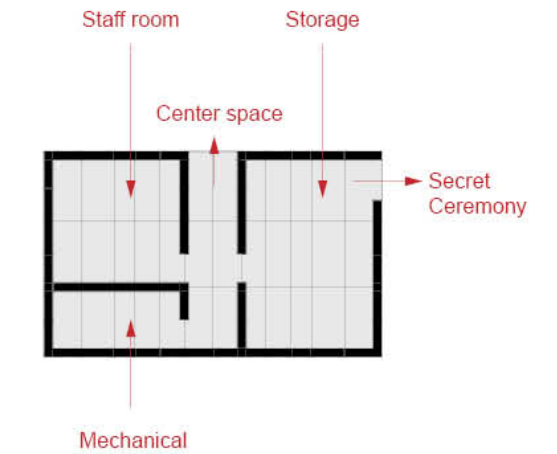
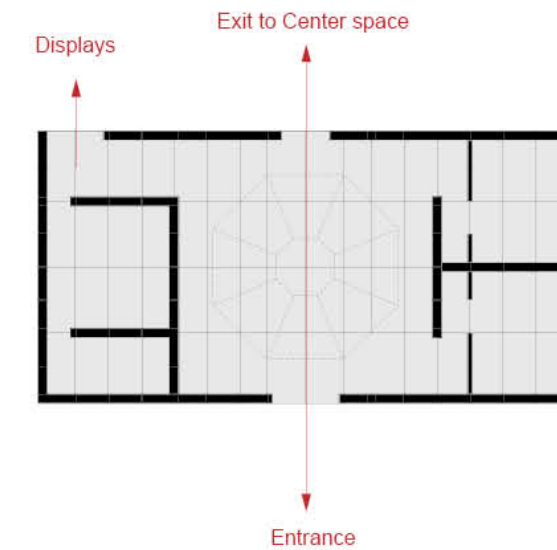
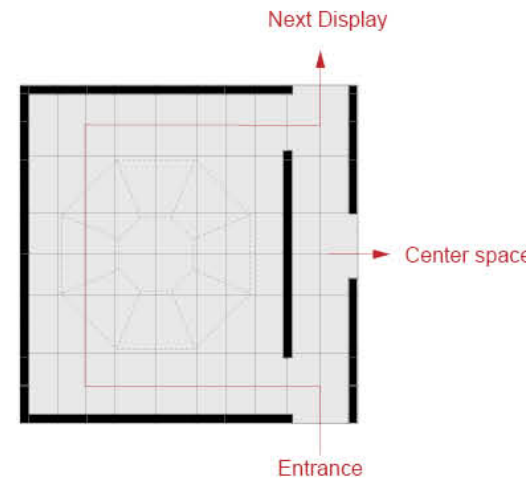
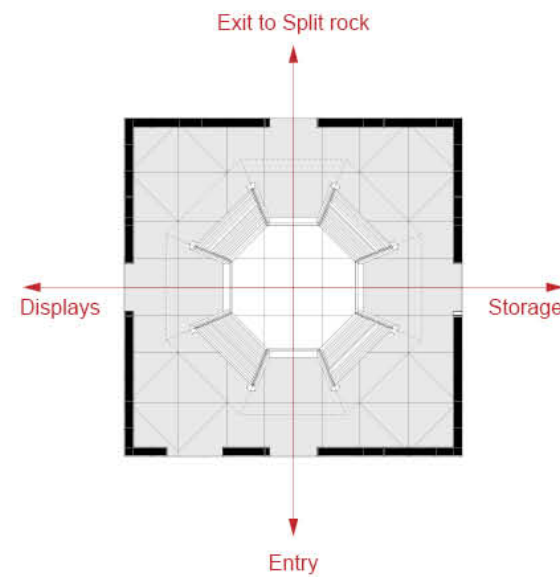
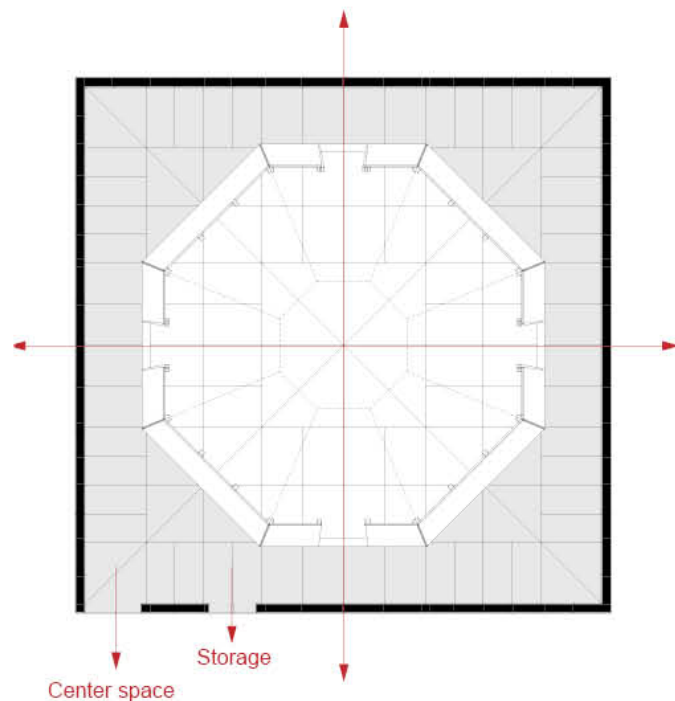
Display of Artifact

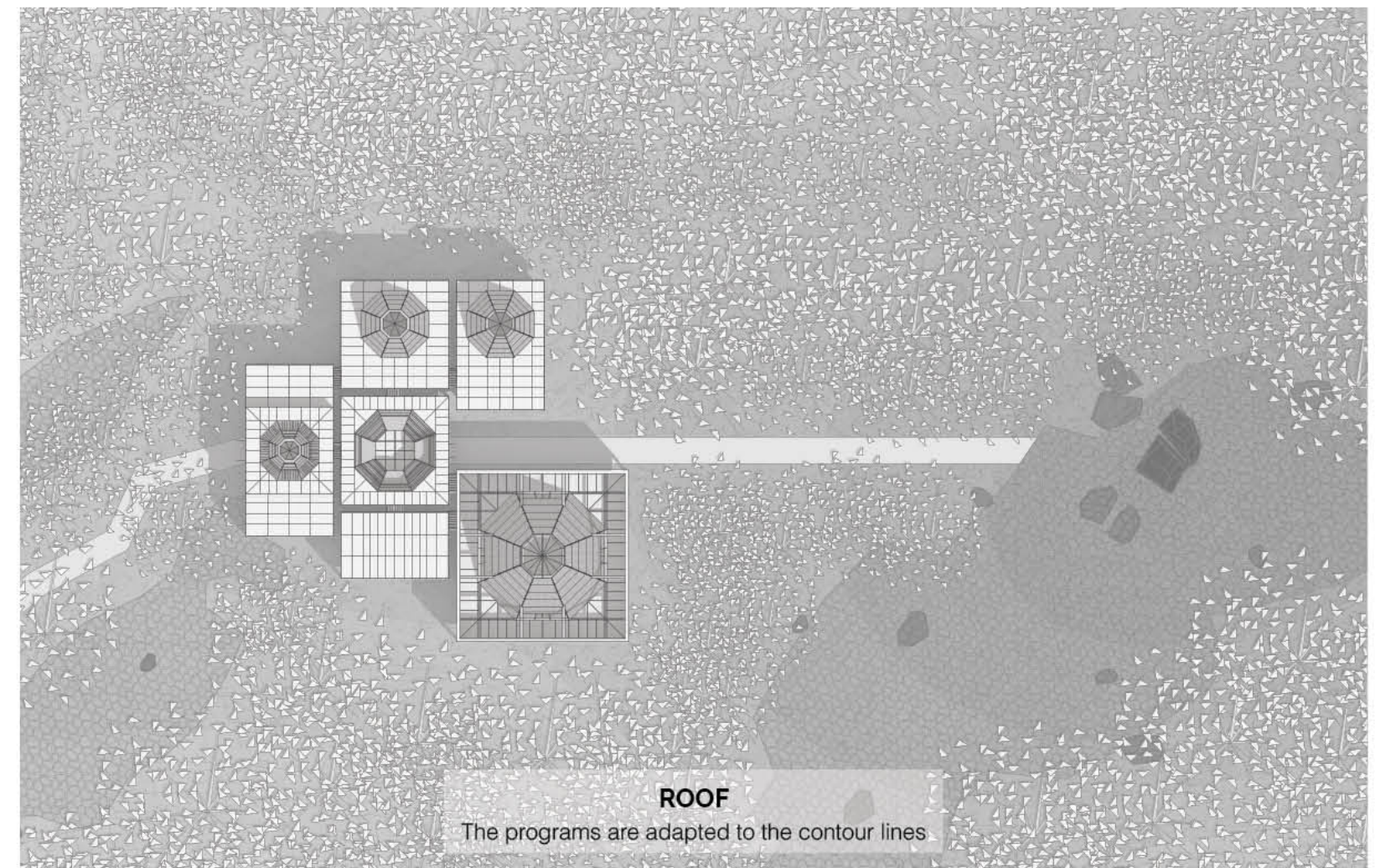
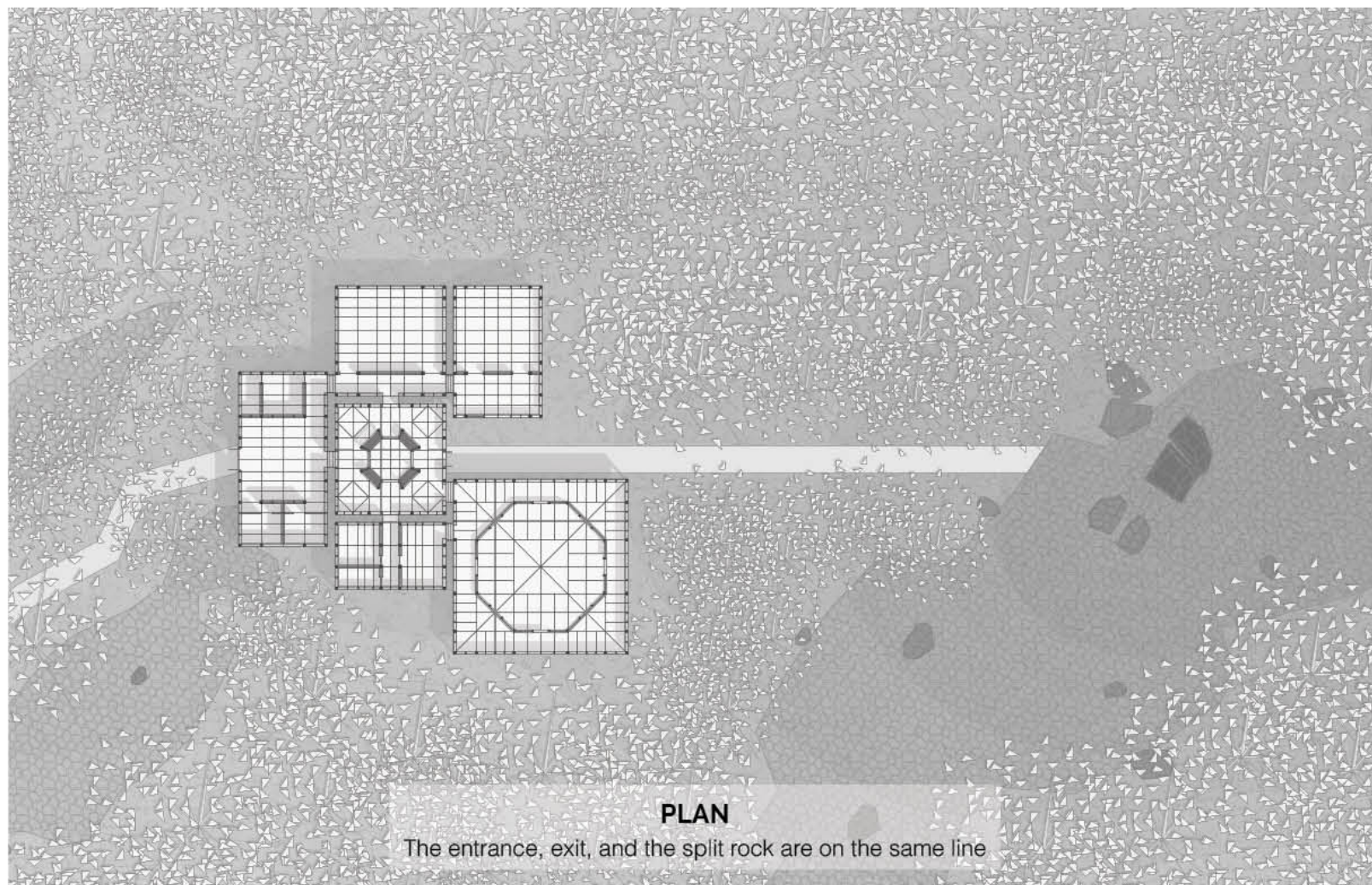
A(Down) + B(Up)

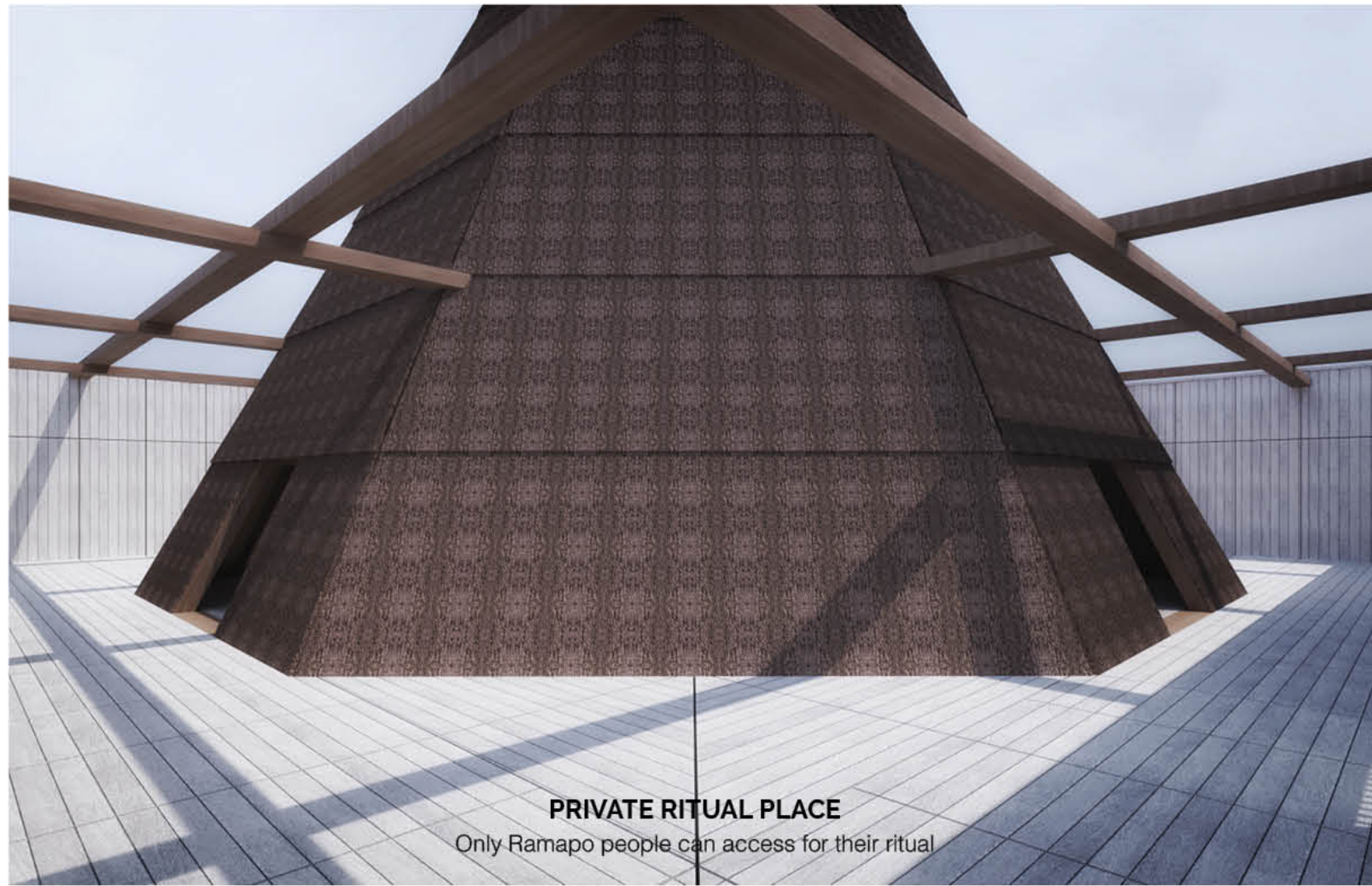
Entry with Skylights

B

Storage + Meeting room + Mechanical



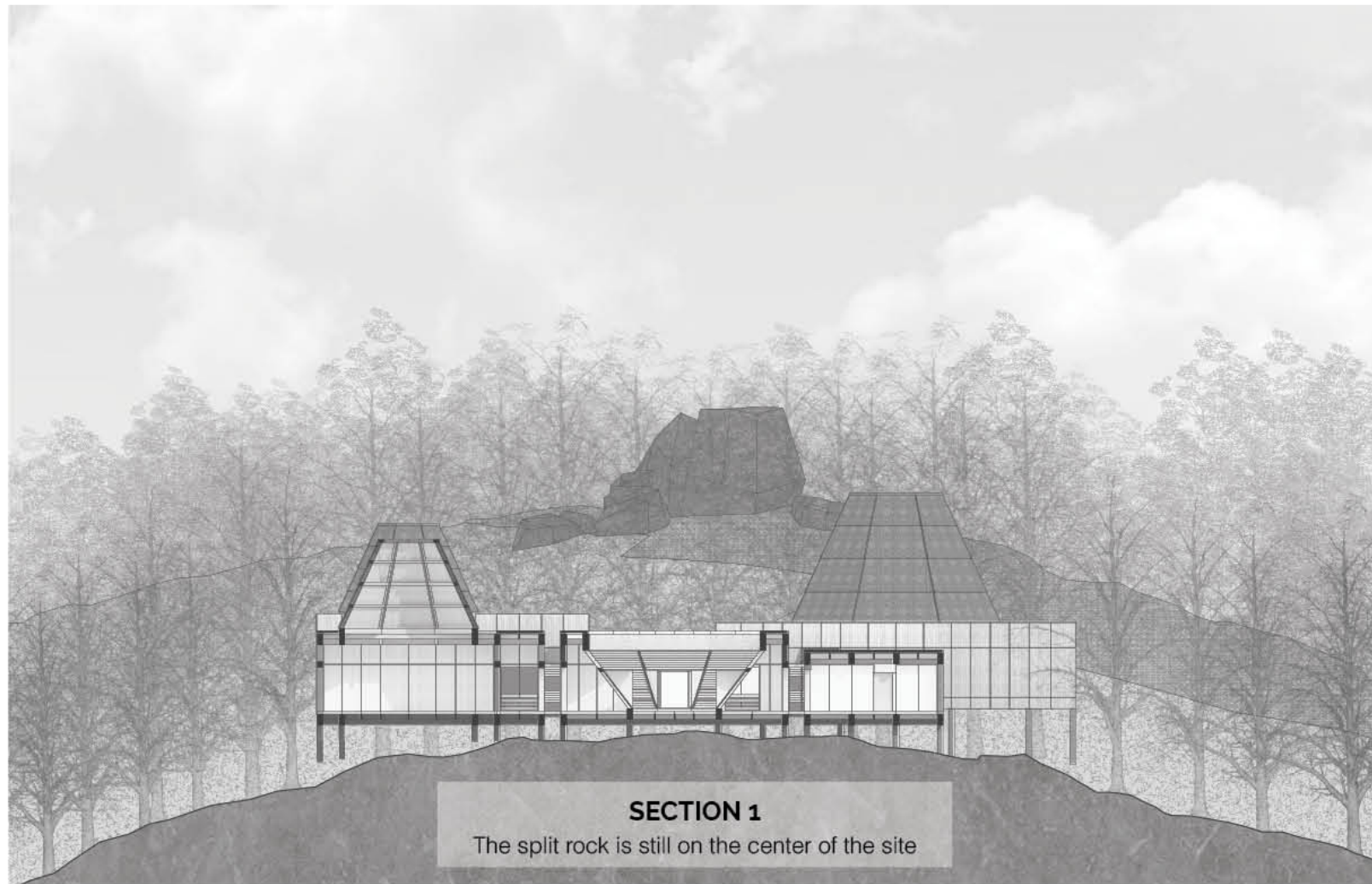




PRIVATE RITUAL PLACE
Only Ramapo people can access for their ritual



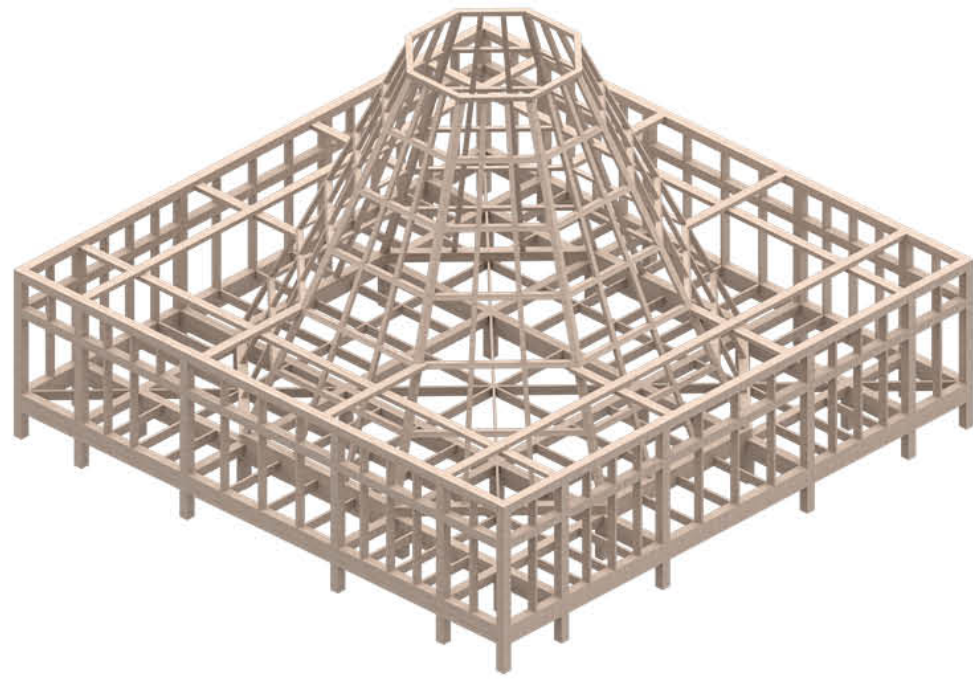
EXIT
The split rock becomes the destination



SECTION 1
The split rock is still on the center of the site

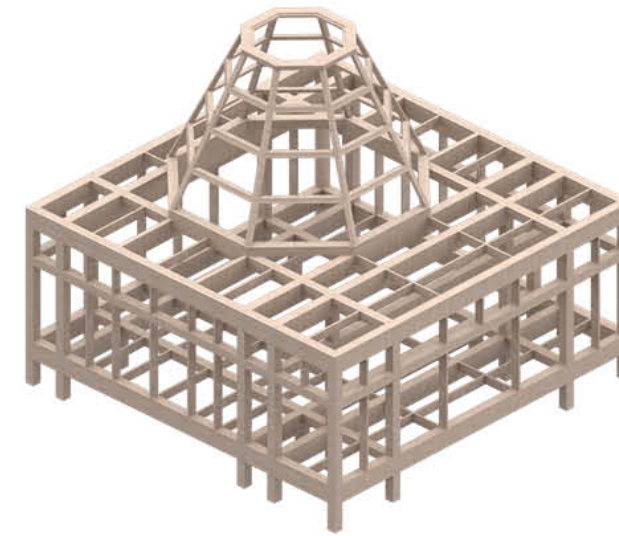
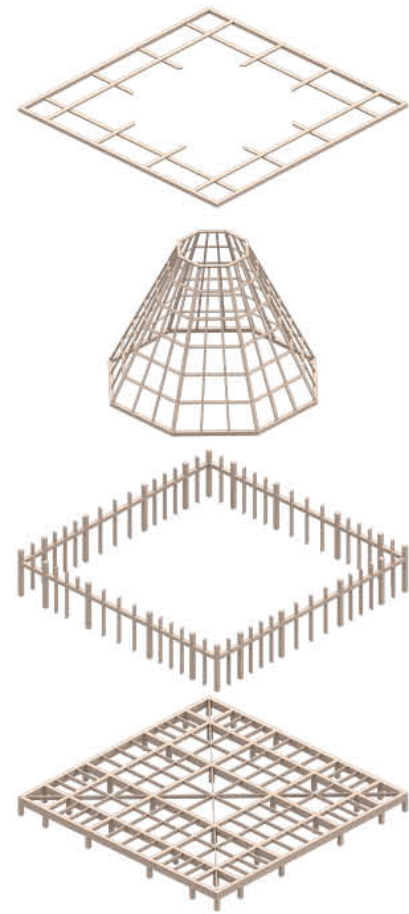


SECTION 2
Each space is getting up by the slope



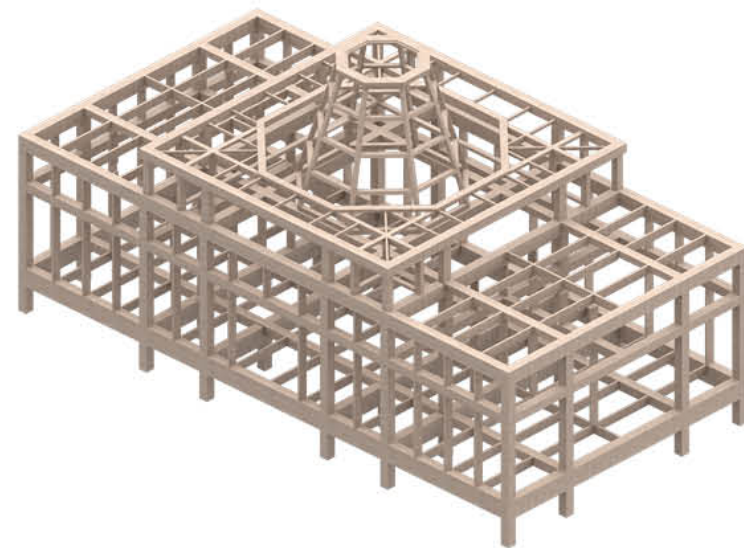
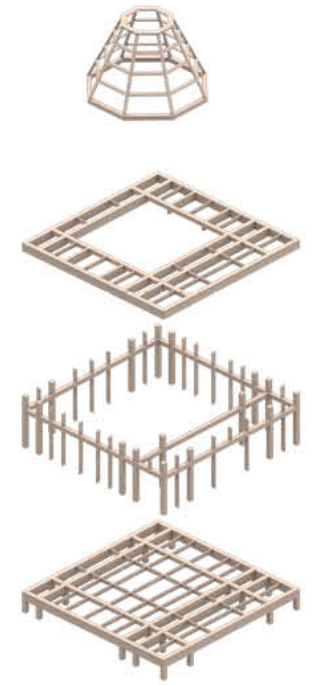
SPACE FOR SECRET RITUAL

The biggest space for the Ramapo people to enter as much as 100 people



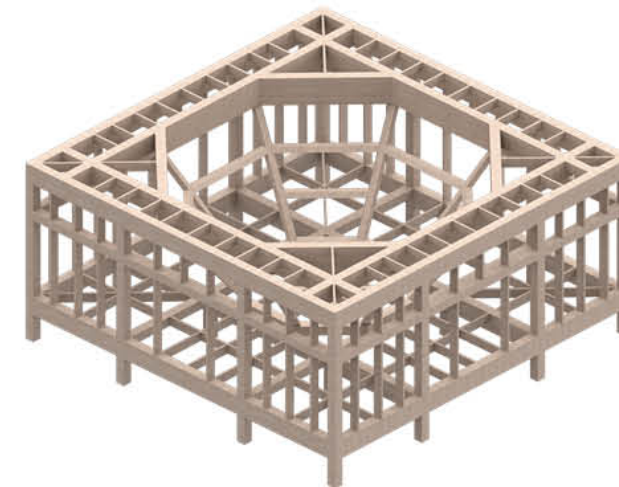
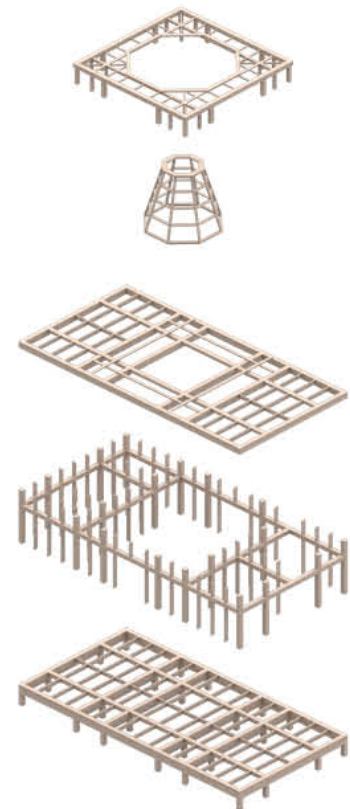
EXHIBITION

There are three exhibitions where each has its own theme such as artifacts and documents



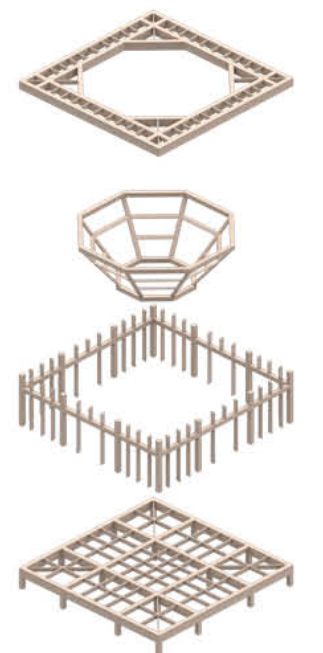
RECEPTION

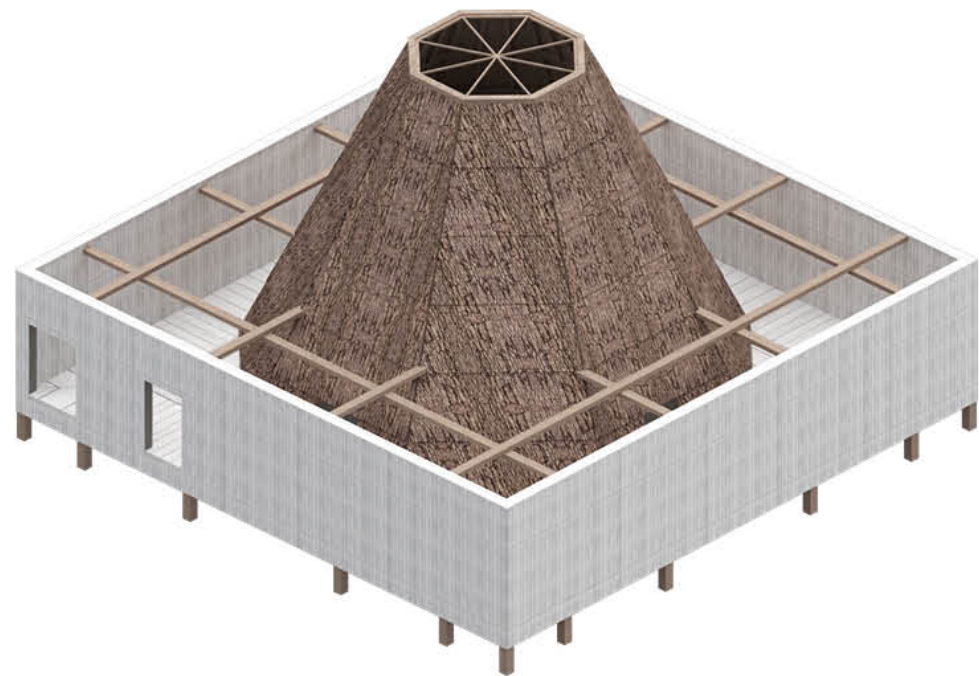
The space is intended to give a little sense to the people about what they will see



THE CENTER

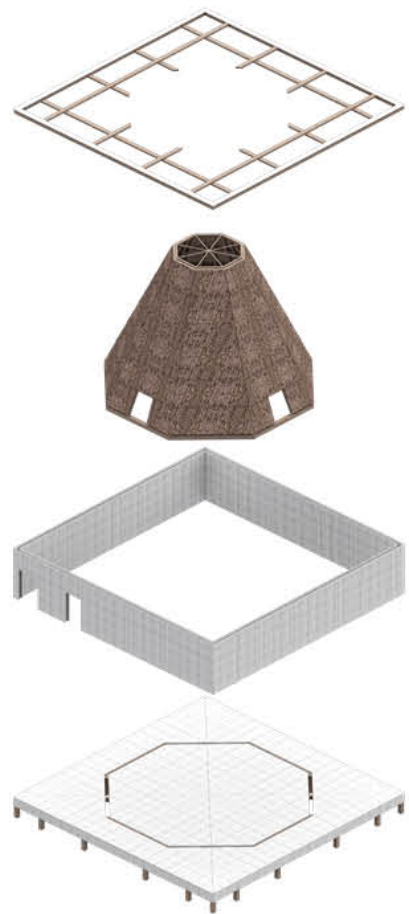
Wind, rain, snow, and sunlight get inside without a cover





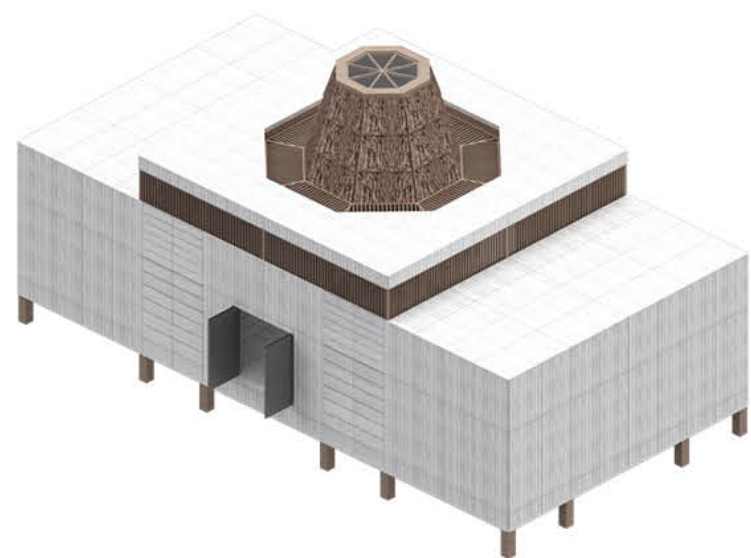
SPACE FOR SECRET RITUAL

The biggest space for the Ramapo people to enter as much as 100 people



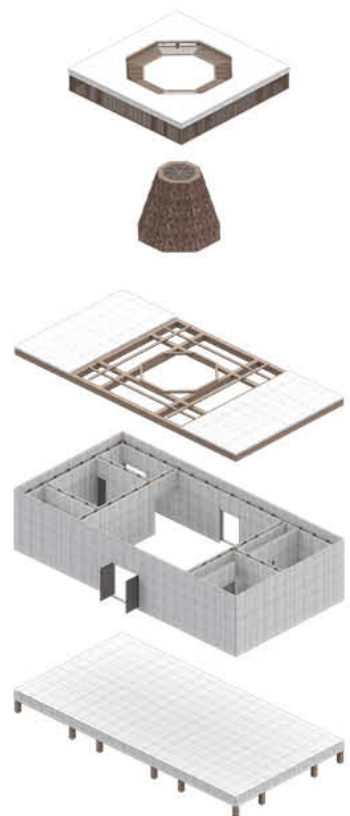
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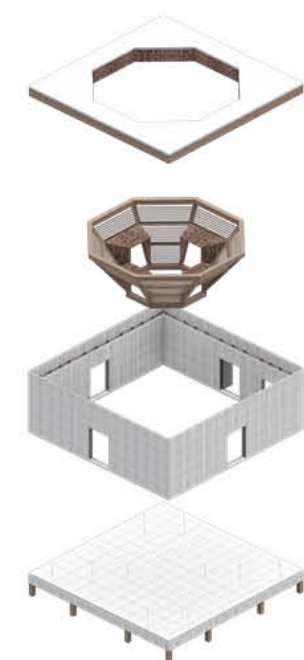
RECEPTION

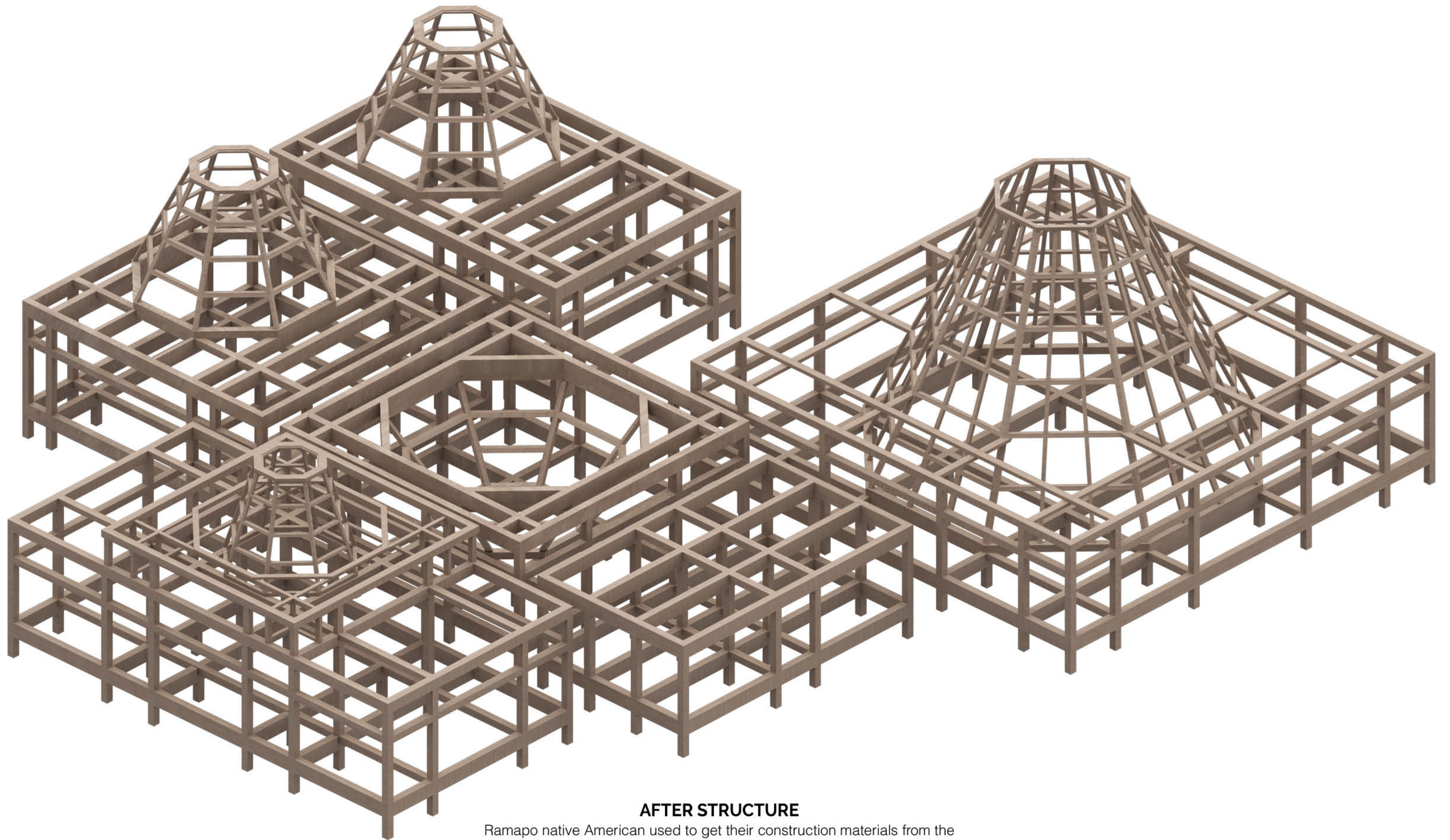
The space is intended to give a little sense to the people about what they will see



THE CENTER

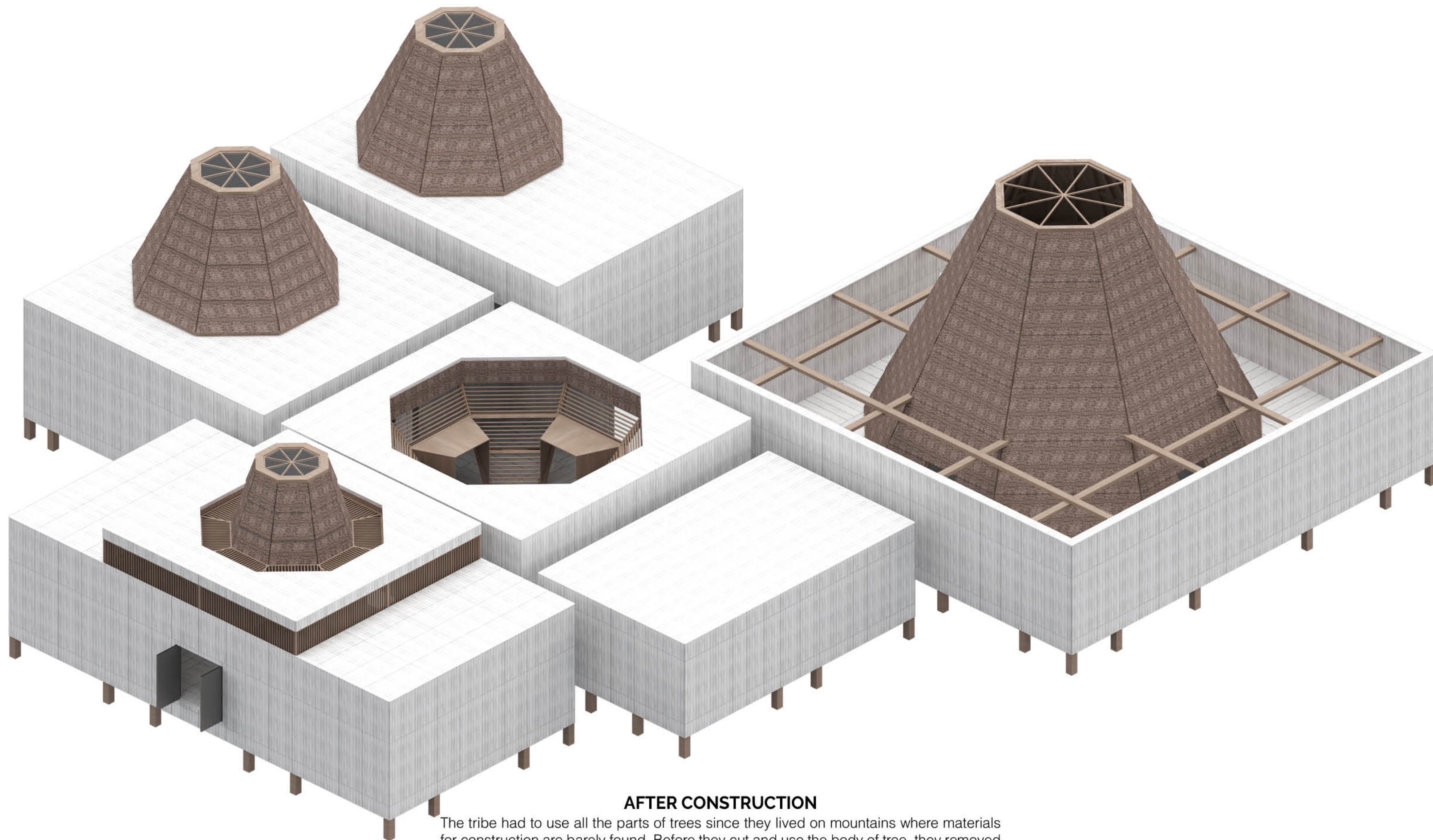
Wind, rain, snow, and sunlight get inside without a cover





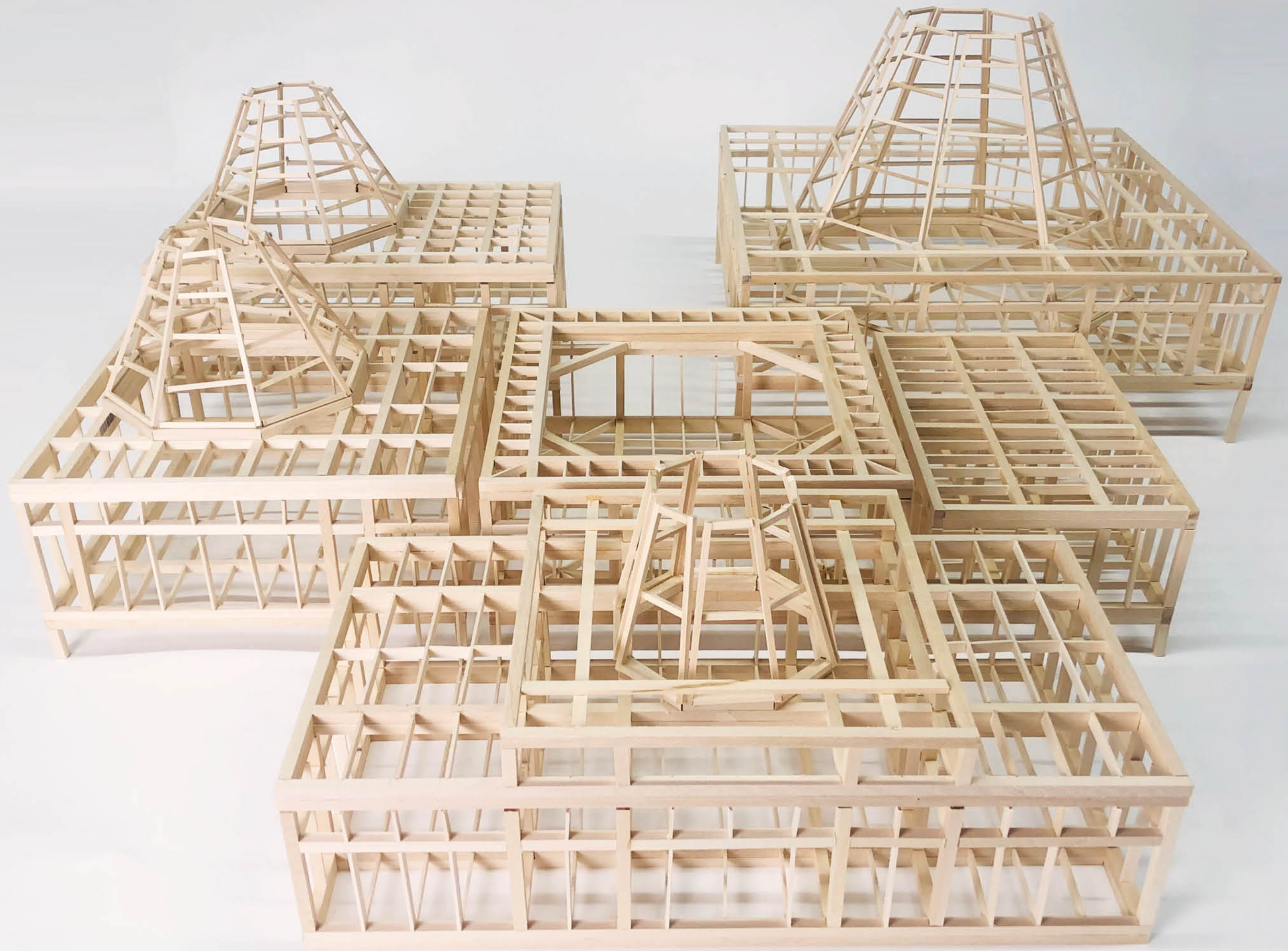
AFTER STRUCTURE

Ramapo native American used to get their construction materials from the place where they are. In this site, there are several types of oak tree which are strong enough for structure. The structural techniques are being used around us named as mass timber of Cross-Laminated Timber and Glulam. The width and the depth vary from 0.5 foot by 0.5 foot to 2 feet by 3 feet.



AFTER CONSTRUCTION

The tribe had to use all the parts of trees since they lived on mountains where materials for construction are barely found. Before they cut and use the body of tree, they removed barks to dry and to cover their structure which become facade. Therefore the size of each bark is the same as the structural grid which is the same as curtain wall system. Then the white panels are dyed to contrast with the natural materials and emphasize the mood as a museum



1:4" PHYSICAL MODEL

BUSHWICK EDIBLE PARK

Farming fresh food and distributing to the local communities

AT V URBAN SYSTEM INTEGRATION • Period : 2021.01 ~ 04

Program : Farm and Research • Site : Bushwick Inlet Park, New York

In our designed layers, underneath the elevated landscape, we have a restaurant with a roof garden facing the water, the education center, botanical garden, farmers' market, and biogas plant in our park's central area. We also have fungi farms connecting with each other under these buildings. We provide a residential building for the farmers on the north side. We also have mix-used buildings across the avenue. We categorize all the greenery into farmlands responding to our concept of edible landscape, and besides the pedestrian circulation, we place farmer's lanes across the park for the farmers to collect crops. We also propose extended piers and bridges along with the new soft shore-line, to encourage interaction between the visitors and our aquaculture.





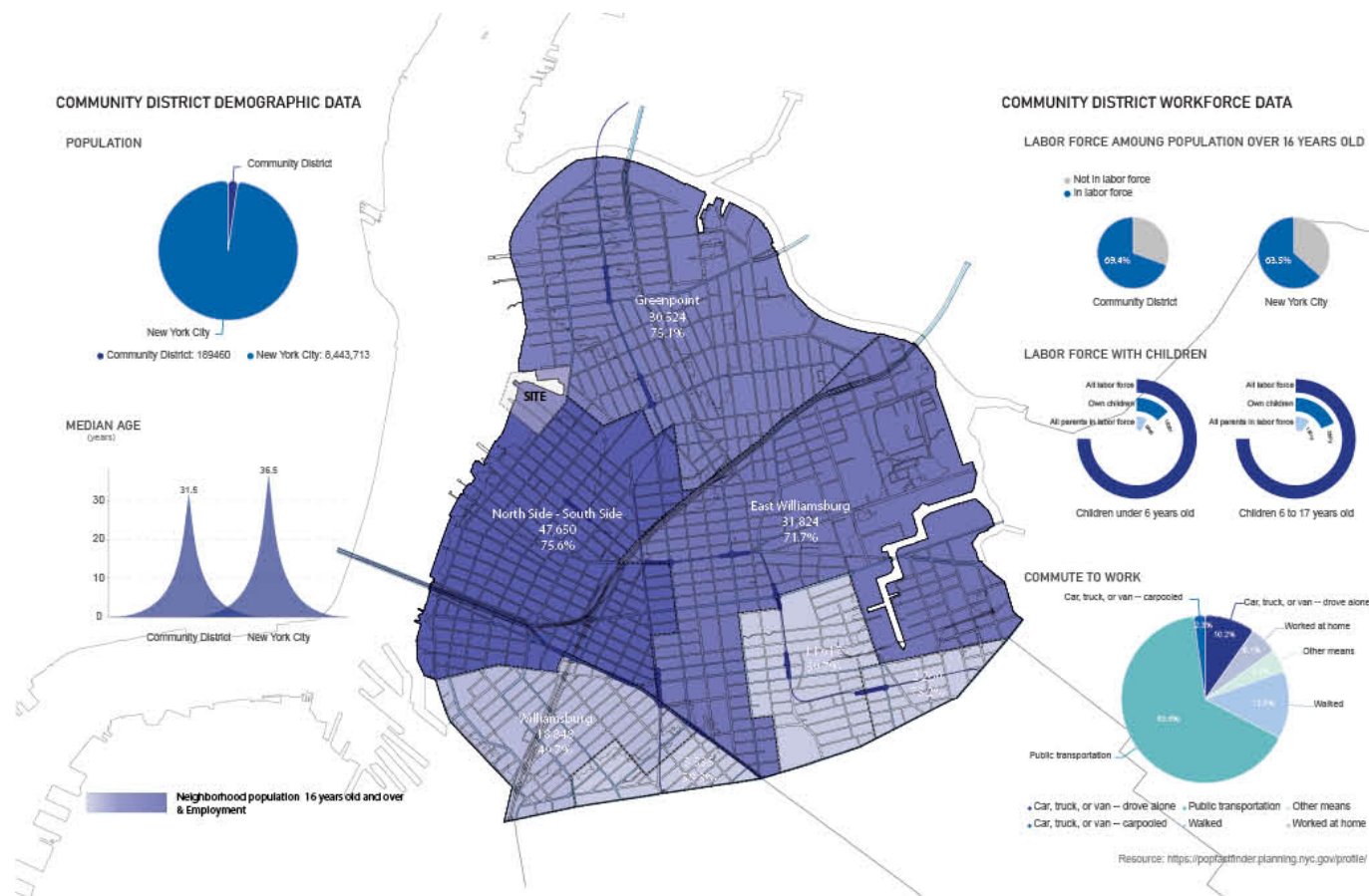
FOOD DESERT

Even though we are living in an urban area, a lot of people in poverty have troubles with fresh food. The communities near Bushwick Inlet park are the same.



SANITATION

Related to old infrastructure, people are in trouble with sanitation. The area has been getting worse and worse.



DEMOGRAPHICS

Compared to the other areas in Brooklyn, the area has a lot more young people who are seeking for a better food and interested in urban farming and local food.



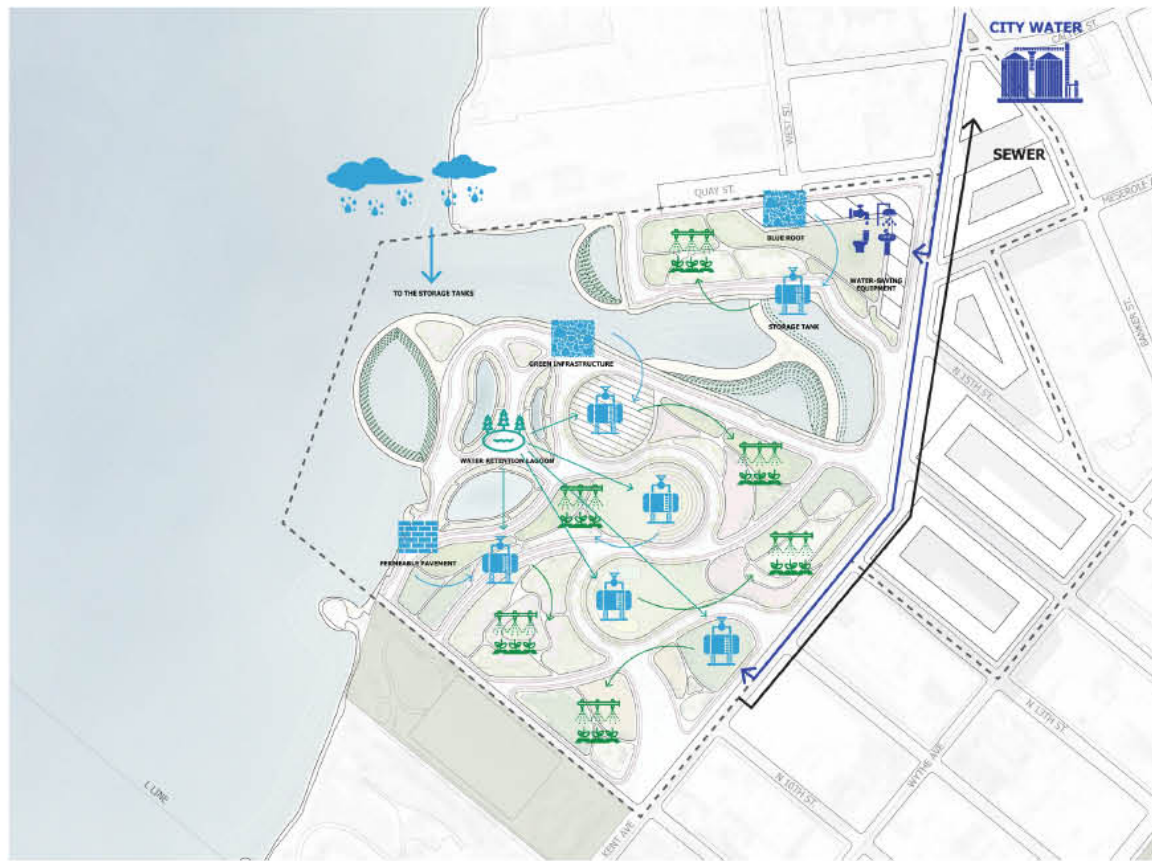
SOIL DISTRIBUTION FOR LOCAL FARMING

By distributing fresh soil to the communities where urban farming is happening, it is a long-term plan to gradually provide fresh food to people.

MASTERPLAN

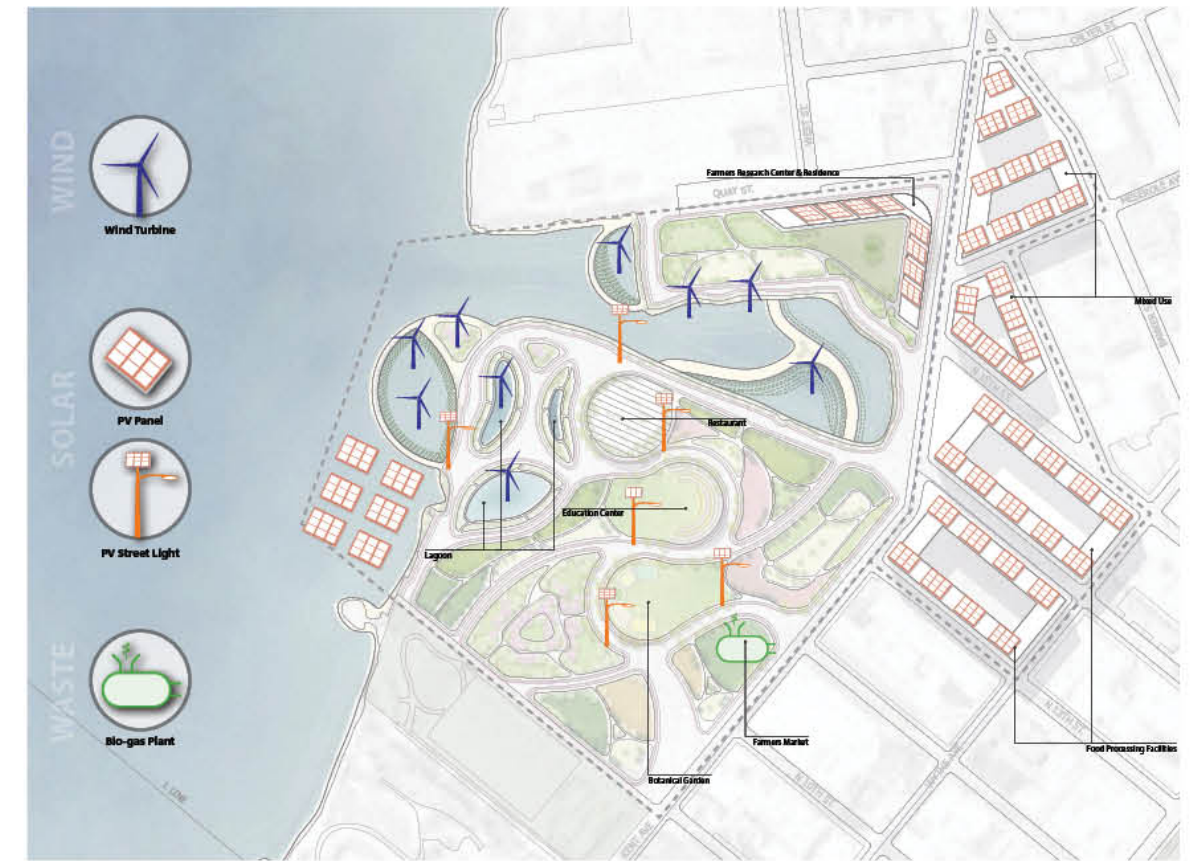
The farming system is based on four introduced categories: an edible perennial landscape scattered throughout the site and concentrated in a rose garden, second, fungi-culture mushroom planting in dark and humid conditions, cultivated all year round and peaking in the fall, garden crops with drip-irrigation (reducing water use by 40%), thirdly, a crop rotation between legume, leaf, root and fruit cultivated seasonally year-round. Seaweed farming extending into the east river, harvested January-May, and finally wetland grass is planted for natural greywater treatment. These species introduced impact food webs and create multi-scalar habitats for species, especially the oysters. A total area of 3.57 hectares will be farmed from our site, yielding 192,000 tons of crops per year, in addition to 861 tons of mushrooms and 3 dry tons of seaweed, transforming the site into a true ecological habitat serving the fauna and flora of the East River and feeding the people of Bushwick.





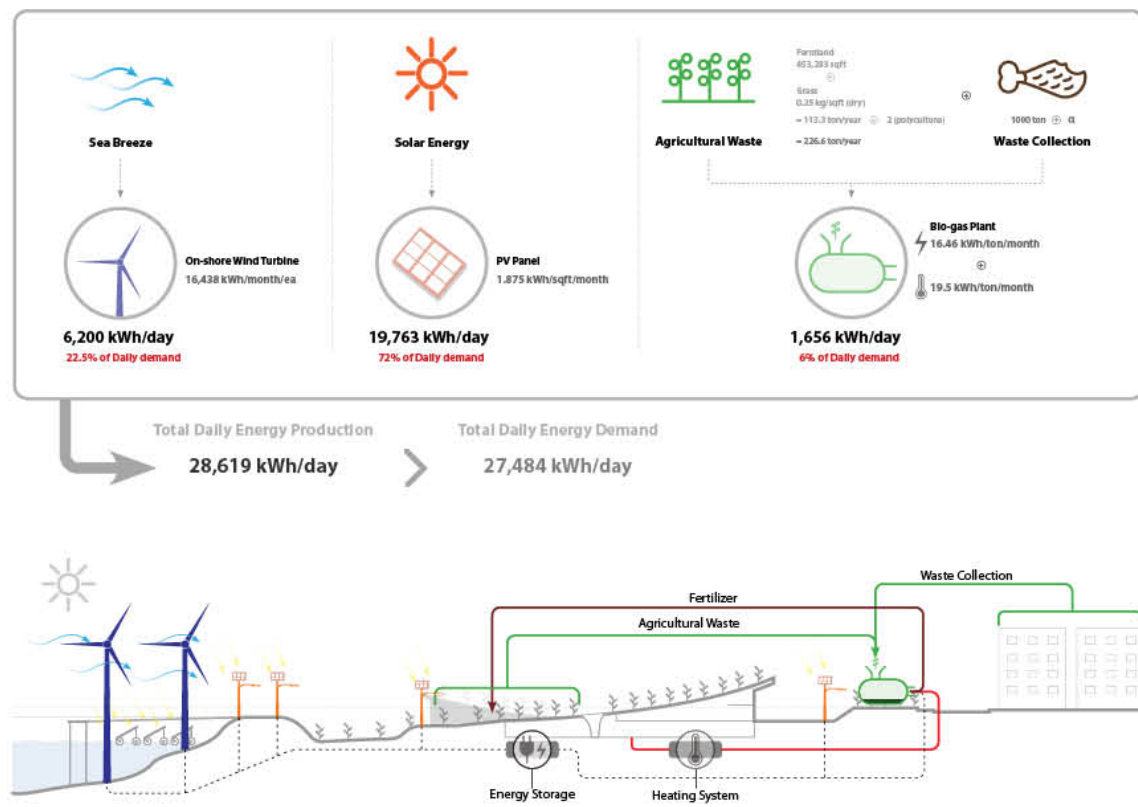
WATER SYSTEM

There more sophisticated water systems should be added to supply farms as well as the other programs such as restaurants and housings. The intention was to maximize water reuse to reduce the water demand in the park.



ENERGY SYSTEM

Bushwick Edible Park's energy system mainly consists of three types of energy production : Wind Energy, Solar Energy and Biomass Energy. From the climate study, ET-9 has found out that the site gets frequent wind from the East River and enough sunlight.



MOBILITY

Bushwick Inlet Park is composed of a range of diverse programming related to food. The bespoke movement of user experience is essential to assure a park.



FOOD

The farming system is an edible perennial landscape scattered throughout the site and concentrated in a rose garden, second, fungiculture mushroom planting

INDEPENDENT RESEARCH

Finding new young contemporary artists and learning their thoughts and ideas into Architecture

Instructor : Marc Tsurumaki • Period : 2022.01 ~ 04

Art, A medium for Architecture

CONTEMPORARY ART

Types and Performance of Art to Architecture

Sculpture

Compared to other types of art, the most impressive characteristic of sculpture is to have diverse scales. Sometimes it takes just one square feet standing on ground, but some takes a whole building covering all facades depending on what it is intended for, which helps artists have more options for materials, places, and shapes. Secondly, this type of art has been actively divided into a few fields depending on whether it has practical functions or not such as sculpture, installation art, and furniture. The fact that sculpture is three dimensional objects and it has materiality makes it possible to be more closely connected to architecture. The trait that sculpture basically does not need to be functional encourages artists to try diverse forms and to express their ideas actively. Lastly, sculptors have less limitations of places where they want to put their projects and interconnect to nature such as wind, forest, and sunlight. Some are exhibited in the center of a park, some are standing in a desert which is a few hundreds miles away from a city. This led artists to be more experimental in bringing the concept of aging to their projects, while observing how their chosen materials change time by time.



Cornelia Parker, Cold Dark Matter: An Exposed View, Site Modern, UK, 1997



Sol Lewitt, The Cube Show, ABBA, USA, 1974

Installation Art

On the one hand, sculpture has had its focus on forms and materials to show ideas of artists for thousands of years, installation art is a newly born concept that is less than 60 years old in the art industry. Its roots are based on Marcel Duchamp and his readymade exhibition. Compared to sculpture that has its own values on forms, materials, and elaboration, installation art emphasizes artists' intentions. These characteristics of installation art have blurred the boundaries between sculpture and architecture and have interconnected with contemporary architecture in terms of its start from intentions about what installation artists to three dimensional objects. More deeply, installation art has been divided into several groups. Among those groups, there is a new form of the art named as site specific art which takes consideration into the previous events and issues going on a specific site to attract people's attention. Considering that architects take care of time researching on sites, the methodologies of how artists see and interact with will be helpful for architects to diversify their ways to see a specific site.



Marcel Duchamp, Fountain, Manhattan, USA, 1917



Agnes Denes, Wheatfield, Manhattan, USA, 1982

CONCLUSIONS

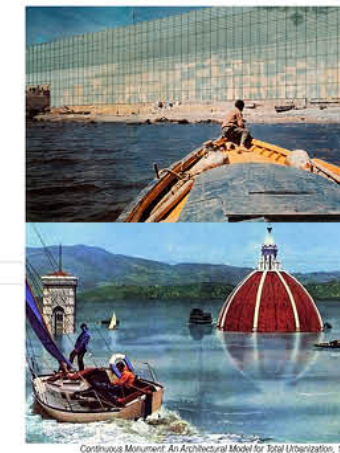
The Environment

Pristine Nature

In the architectural field, architects might be in conflicts and discussions. They have been aware of the seriousness of environmental destruction and have been trying to correct it as much as possible. However, in most cases, building architecture itself is one of the biggest parts that destroys the environment and nature. Under this circumstance, architects have been actively trying to minimize environmental destruction by covering nature on buildings or using more eco-friendly materials to decrease carbon footprint. However, the number of lands that remain naturally around the world is gradually decreasing since architects are not the leading group for developing cities and lots, but real estate firms and governments who want to make more profits and to raise the economy and job opportunity. Therefore, it is certain that the lands remaining in their natural conditions around the world will be continuously decreasing more and more, meaning the lands that support buildings become less and less natural. Once the land is contaminated, it takes decades to recover, so Julian and Julius duo's project makes architects think that the most important thing is to try not to touch the underlying land. Their land and performance art shows a new notion that architects need to think of alternative suggestions to stop developing natural fields. Furthermore architects have to try to recess the used and contaminated land to its original natural form.

Architects can think of ways to absorb new needs by reusing existing cities and buildings without having to widen them, starting with the idea of how to do little harm to the land.

Visualized Assumption of the Future



Continuum Monument: An Architectural Model for Total Urbanization, 1969

In the 1970s, there were many discussions about what would become of cities and architecture through assumptions about the future environment, which influenced many modern architects through drawings and home projects. However, the works of the super studio, which depicted the future of losing a place to live in a new structure due to human activities, lost the meaning behind it and simply conveyed its form, forming a part of the formative framework of modern architecture. This is because the future assumed by the super studio did not progress at all at the time. Therefore, the meanings of the works that came out through their thoughts were not conveyed to modern times. Rem Koolhaas, who was inspired by their work, also said that they started it because they thought it would be cool to actually build their work, but their thoughts on meaning are not much revealed in his work. Over time, however, super-studio homes have been going the same way in recent years, and the land where people live has begun to narrow down more quickly. Superstudio homes that were created 50 years ago now have a meaning to be revived. Timo Aho and Pekka Niittyvirta's this amazing installation also brings an old artist group, Super Studio which was an architectural firm, founded in 1966 in Florence, Italy by Adolfo Natalini and Cristiano Toraldo di Francia. At that time, instead of showing real architecture, they focused more on the radical architecture and design movement of the late 1960s by creating a series of films in order to raise awareness of the harmful impact of construction

on the natural environment. Even though Rem Koolhaas used Super Studio's artworks to his buildings as Rem said that it would be great to build in cities, the artists collective inspiration was a serious flood happened to Venice which made them think about over-development and environmental destructions. So their collage images were showing a dystopian future where people are living in a huge infrastructure, taking food from the grid. These days, the sea level rise has been more serious issues and as we all know, the architectural fields have the main responsibility for it. However, contemporary architects seem not to express their anxiety in their projects. And actually, architects don't have as much freedom as artists who are freer to use materials, sites, and budgets. Nonetheless, architects are still finding how they can treat the climate change that humans are facing and warn the world by using their buildings. Timo Aho and Pekka Niittyvirta are giving an interesting idea for designs that could show an alarm of the climate change. Despite the tremendous amount of effort, new developing countries are emerging, and energy consumption and global warming are constantly occurring. Once again, it is time for architects to think about the negative future ahead. This means that new architectural acts different from those that have been performed by all generations of architects should be discussed. This will be done through new approaches, forms, and conversion of ideas.

CONTEMPORARY ARTISTS

Site-specific Art + Painting



The Englewood Neighborhood, Chicago, USA, 2015

Amanda Williams



Amanda received her Bachelor of Architecture from Cornell University. After working for a few years at a commercial architecture firm, she changed her career to an artist. Then she created her own philosophy, Color(ed) Theory in which she thought each color can have not only its own identity, but also its previous memory in a site. She got her fame from the Englewood neighborhood project where she developed several colors that represent the black culture, including Harold's Chicken Shack red, Newport 100's teal, Crown Royal Bag purple, Flamin' Hot Cheetos orange, Ultrashen conditioner blue, Pink Oil moisturizer, Currency Exchange yellow, and Safe Passage yellow. Then she painted those colors to the homes in the site to remind people of the previous memories of the local community.

Born in 1974



The Englewood Neighborhood, Chicago, USA, 2015

Even though some of the homes were demolished after she painted the colors, the pictures taken are remaining, giving a new notion that reproduced colors can preserve specific memories and, by painting spaces with the colors, the homes become the community's memorials in that area. Even though colors have been the common tool for artists, Amanda's Color(ed) Theory has its own specialties in terms of inventing new colors by reflecting the black community's multilayered cultures and applying those to the abandoned homes which are three dimensional spaces where the local people were living as well. When Amanda painted the colors to the abandoned houses, those became three dimensional memories itself. In this project, the cultures and the behaviors of the local people were expressed as each color that reminds of the previous memories which were also invisible and abstract. Amanda visualized the multistratified memories and painted at the featureless homes which were three dimensional forms. Then the abandoned homes became a memorial space with each color.

Young Contemporary Artists

- Michael Elmgreen
- Sarah Sze
- Rayyane Tabet
- Timo Aho and Pekka Niittyvirta
- Ilit Azoulay
- Carlito Carvalhosa
- Eva Rothschild
- Ivan Navarro
- Ruben Ochoa
- Marcos Acosta
- Tadao Cern
- Park McArthur
- Patrick Staff
- Pierre Huyghe
- Julian Charrière
- Julius Von Bismarck
- Doug Aitken
- Brendan Fernandes
- Petrit Halilaj
- Kapwani Kiwanga
- Lars Jan
- Haroon Mirza
- Otobong Nkanga
- Jose Dávila
- Random International
- Anna Borgman and Candy Lenk
- Hito Steyerl

Old Contemporary Artists

- Michael Heizer
- Dan Graham
- Robert Smithson
- Donald Judd
- Chiharu Shiota
- James Wines
- Richard Long
- Andy Goldworth
- Martin Hill and Philippa Jones
- Nancy Holt
- Bob Gramsma
- Alberto Burri
- Cornelia Parker
- Richard Serra
- Ann Hamilton
- Mona Hatoum
- Not Vital
- Nobuo Sekine
- Carlos Cruz Diez
- Rachel Whiteread

The background of the entire page is a complex architectural wireframe. It consists of multiple overlapping, semi-transparent line drawings of building structures. These drawings show various levels, corridors, and structural elements of a multi-story building, rendered in a light gray or beige tone. The perspective is from an elevated, slightly angled viewpoint, creating a sense of depth and complexity. The lines are thin and precise, typical of architectural technical drawings.

THANKS TO ALL

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