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01

Atavist Urbanism - A Eco-Hotel

A new radical theory shall drive the architecture of the new radical age.

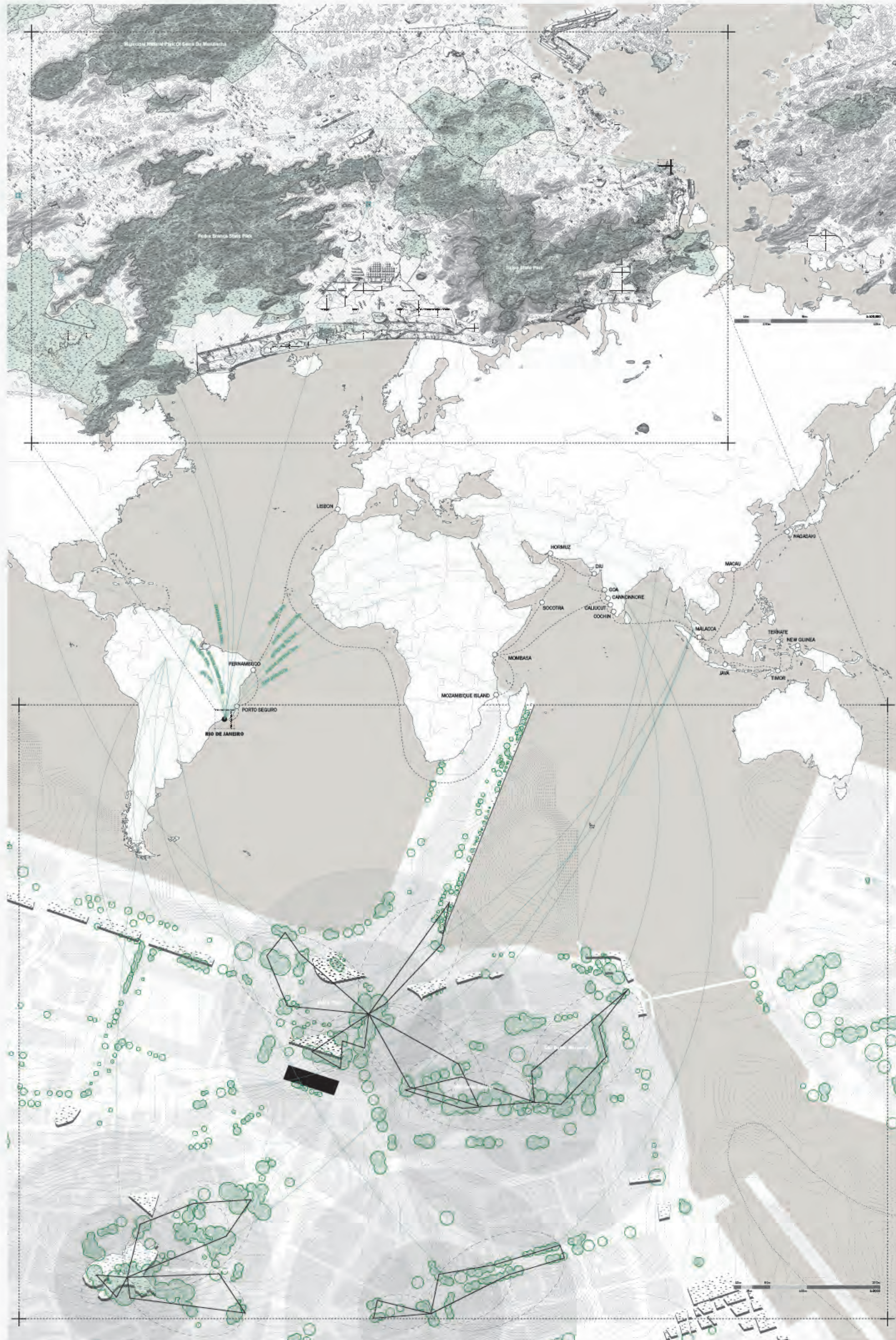
Solo Project
 Advanced Studio VI (Year 3 Spring Semester, 2024)
 Studio Leader: Galia Solomonoff (galia@solomonoff.com)

Ever since the 15th and 16th century, plant life has already been controlled and tamed as tools and objects by the emergence of horticulturists and botanists for specific uses, aesthetics, or human pleasure. Accelerated by modernism, the rapid urbanization of landscapes has almost never conceived the more-than-humans as one of its primary residents of the modern city, that was built upon the once nutritious soils and waters. It is not until the ozone layer and the extreme carbon emissions that have brought back the importance of plant-life, yet to formulate just another hierarchical and anthropocentric concept of "sustainability".

Founded by the water and mountains of Southeast Brazil, the city of Rio de Janeiro – with its proximity to hills and forests – has always been called an "urban forest". However, the term of the "urban" and the "forest" seems to be disconnected with its harsh borders against plant designated lands and human territories within the city. The separation and constriction of plant life hinders the natural growth of the already-polarized list of species and the diversity of the natural biome. Yet, it is within this highly urbanized area, where species of plants, animals, and insects must conform and survive in layers that are not so visible to the day-to-day human.

The project envisions the future of "layered urbanism" in Rio de Janeiro to be constructed by the "new public": of the human and the more-than-human (plants, fungi, birds, bees, butterflies), exploring the synergy between humans and more-than-human entities to function and live under a new paradigm of converging, self-forming & self-governing ecology that is facilitated by architecture.

The Hotel typology values hospitality through the dynamics of "choice", impermanence, movement, growth and expansion, and aims to perform as a beacon, an activator, and the first "eco-center" for the city of Rio.



Rio de Janeiro

MODERNITY

URBAN FOREST

(Urban) Plant-life

control & taming

Tools

Shading
Air Filtration
Air Production
Urban Heat Island Effect
Green Roof
Building temperature
Human Pleasure & Leisure
Parks

Objects

Aesthetics
Ornamentation
Advertisement

The project starts by looking at the intimate relationship between the city of Rio and its natural surroundings. The hilly landscape has produced a city that shares borders with forests and national parks in unusual ways. Although the city of Rio seems to be living up to the image and name that it has been commonly called - an URBAN FOREST - the term of the URBAN and the FOREST seems to be disconnected with its harsh borders against plant designated lands and human territories.

By taking a closer look at the city. The habitations of nature is fragmented into patches that serve human uses. Within which, a lot are parks or nurseries which farms "nature" for rapid production that opposes its natural courses. Almost like an unethical hormones livestock farm.

In fact, the way in which nature manifested in the urban setting of Rio has a close relation to its colonial past with Glaziou, who implemented rules such as each tree must be 7-10m apart for aesthetics and sun shading. The separation and constrictions of plant life hinders the natural growth of the already-polarized list of exotic species and the diversity of the natural biome. Yet it is within this highly urbanized area, where species of plants, animals, and insects must conform and survive in layers that are not so visible to the day-to-day human.

This brings about the question...

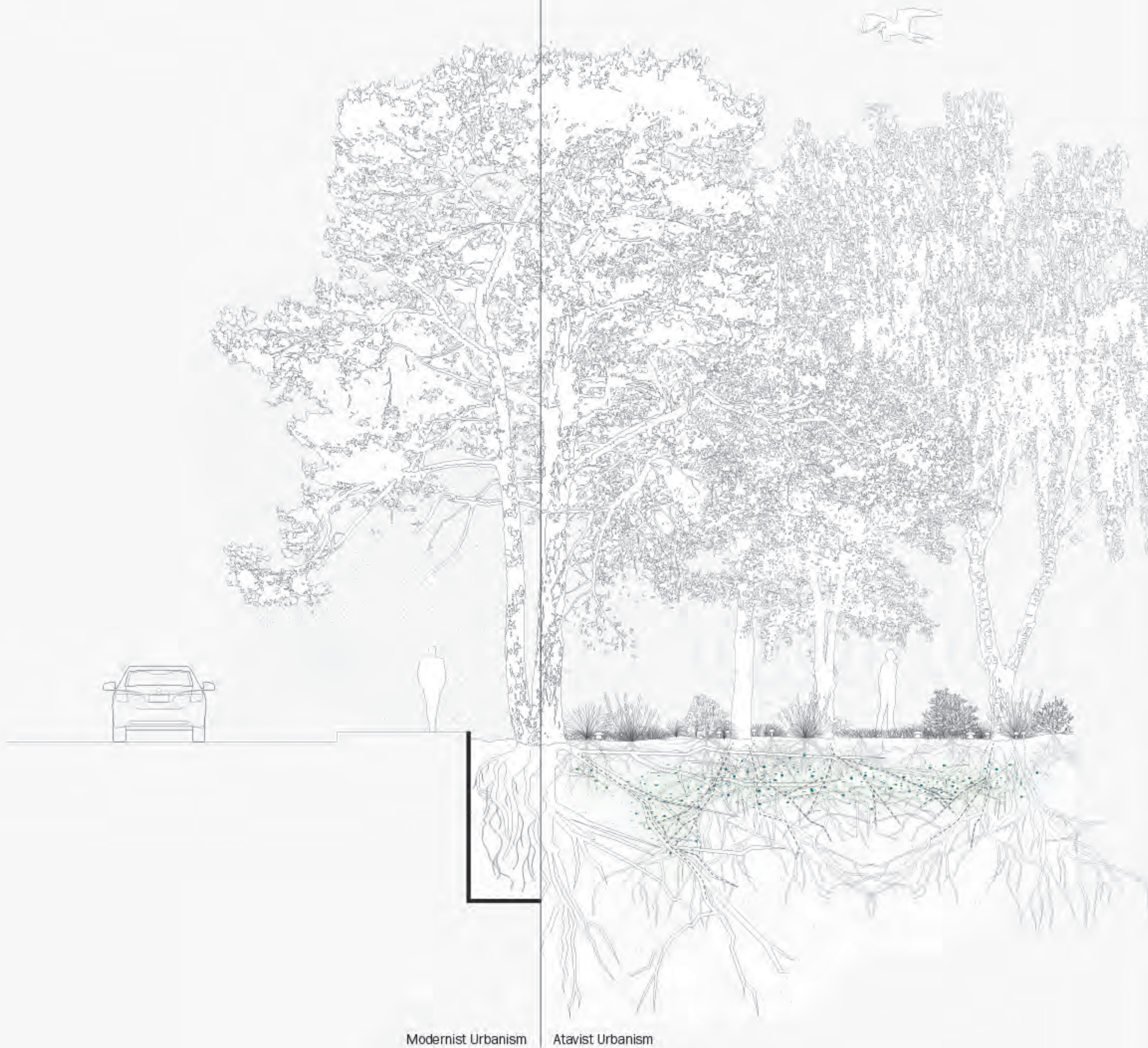
*How to establish a new relationship between human - plant life in non-hierarchical, non-humancentric and collaborative ways, to construct a **layered trans-species new public/urbanism** that does not impose or compromise one on the other?*

...to break down borders between human living and living nature (instead of constricting zones)

Building as a facilitator of "Life"

... to construct a new paradigm of self-forming & self-maintained ecology facilitated by architecture

Shading - Aesthetics - Air Filtration - Advertisement - Air Production - Sustainability - Survivability | Network - Individual - Community - Communication - Care - Ecology - Symbiosis - Mycorrhiza - Living



Modernism vs. Atavism

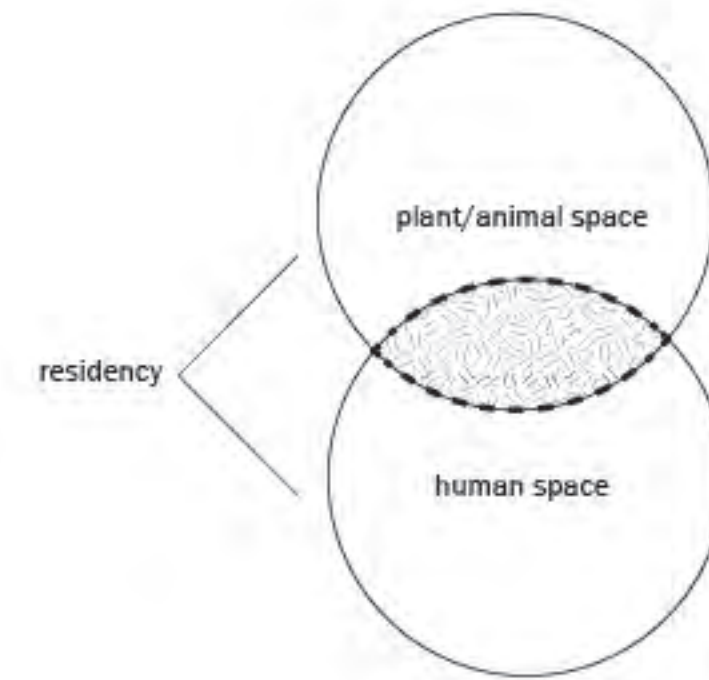
The project seeks to explore the synergy between the human and the more-than-human amidst the backdrop of the climate crisis. The anthropocentric environmental damage has been the best indicator of the failure of the modern theory within a world that demands balance and natural growth. A new radical theory shall emerge and drive the architecture of the new radical age. The new attitude shall be founded upon the synergy between the human and the more-than-human, in order to construct the architecture of the new age that serves the "new public".

atavism

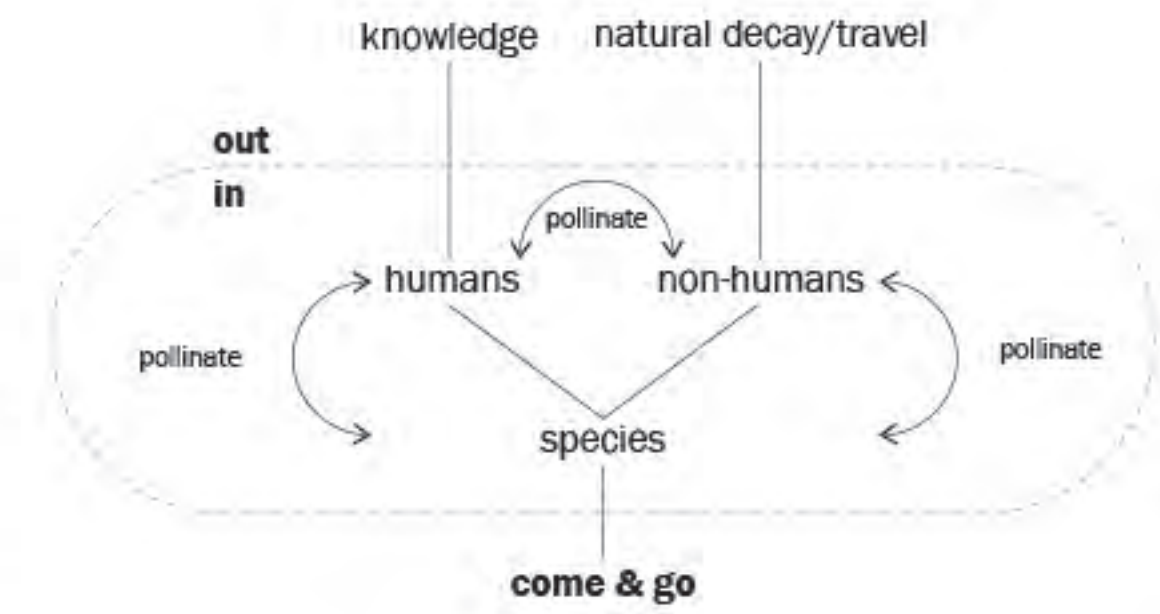
/ 'adə,vizəm/

"In biology, an atavism is a modification of a biological **[ecological]** structure whereby an ancestral (genetic) trait reappears after having been lost through evolutionary change **[modernity]** in previous generations."

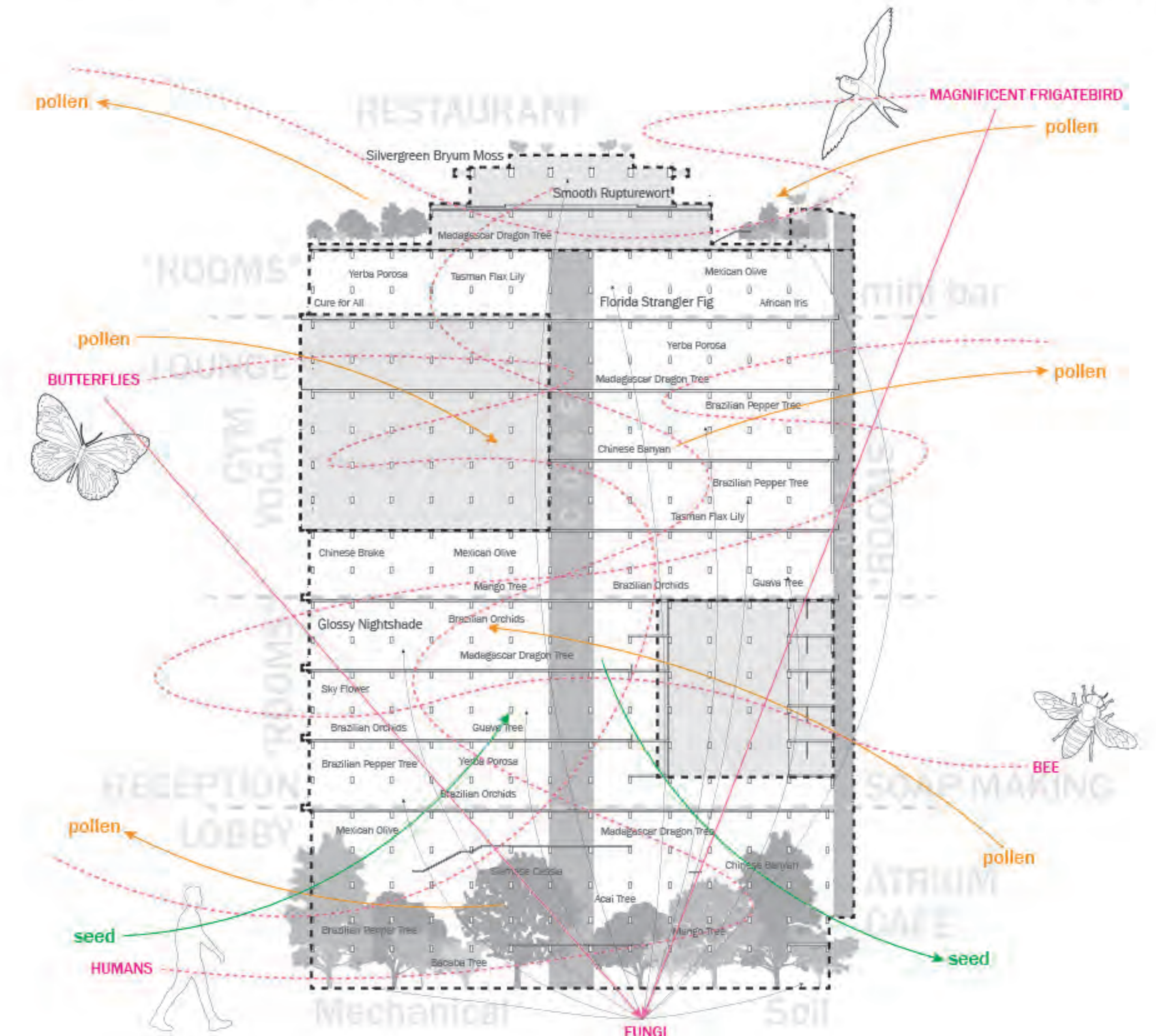
A new attitude towards designing "for" & "with" nature in the "new urban" with the "new publics", that integrates the pre-modern and the post-human



The architecture sees all residing entities as its primary residents. Within, the architecture focuses on dealing with the spectrum of converging moments between the different species and creatures.

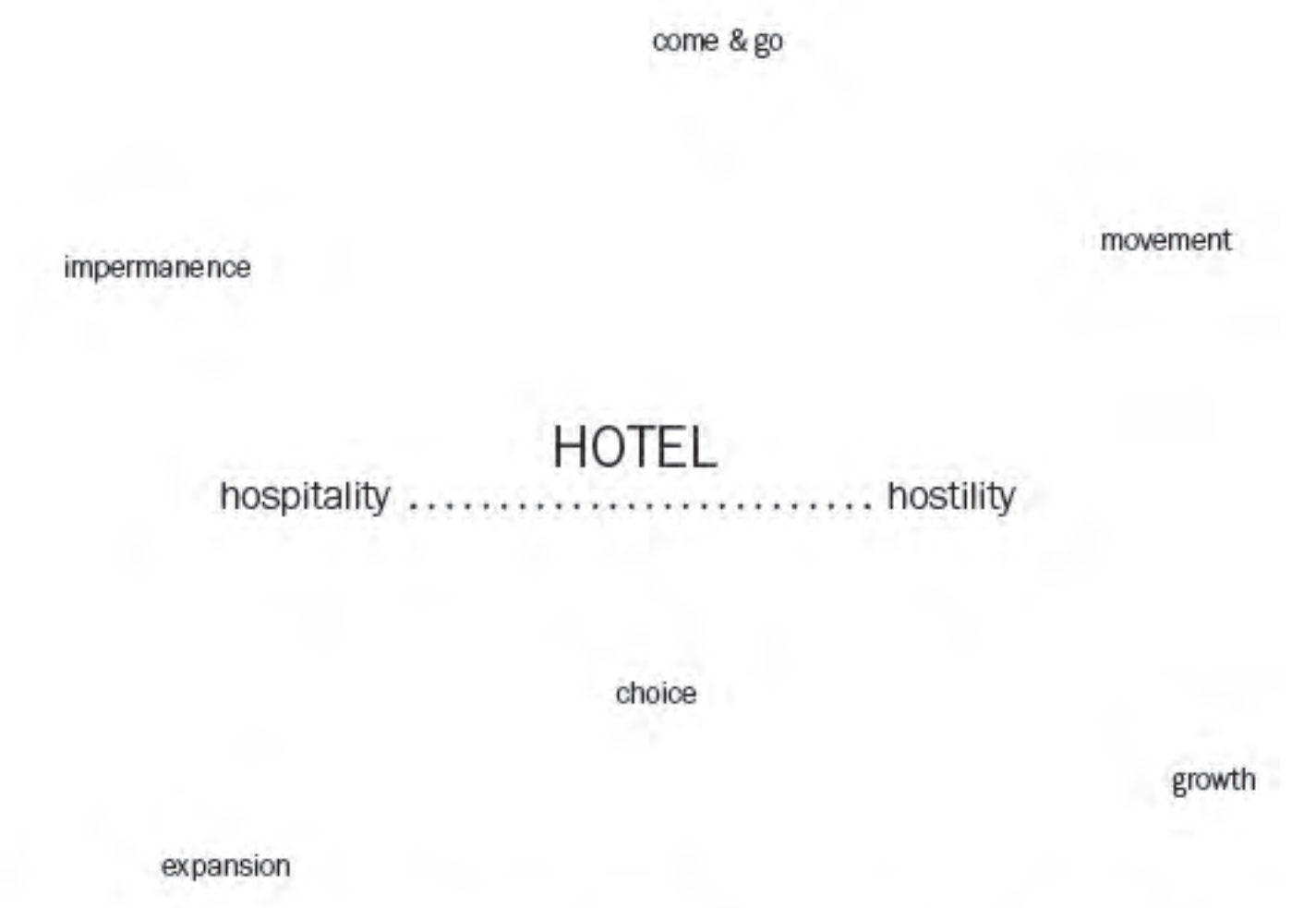
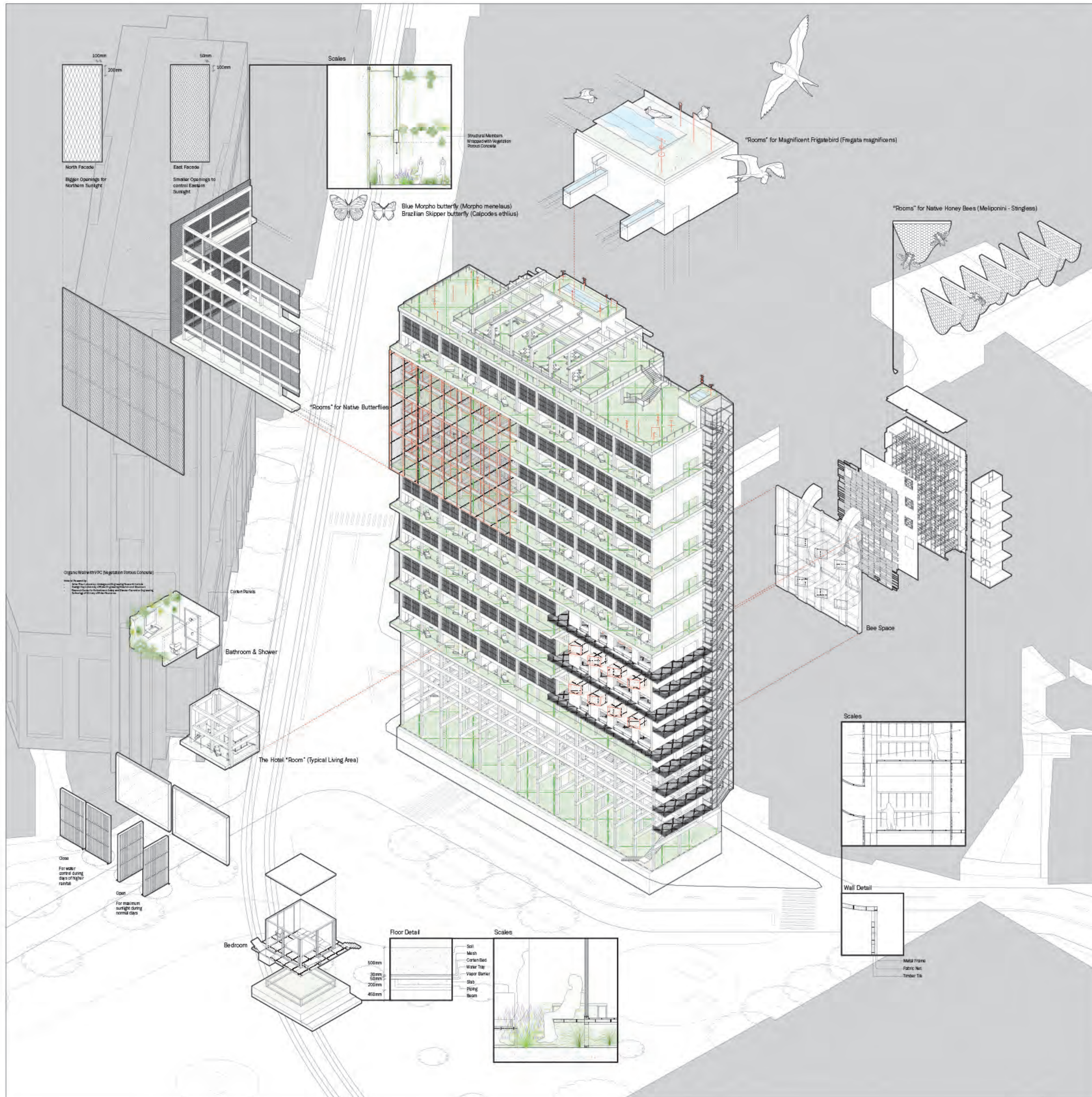


The hotel would function as a dynamic self-forming ecosystem with all of its residents playing the role of pollinators, who will contribute to the building as well as to each other in non-hierarchical ways. The input and output of this beacon will always be different and evolving.



Building Synergy

The project envisions the future of "layered urbanism" in Rio de Janeiro to be constructed by the "new public": of the human and the more-than-human (plants, fungi, birds, bees, butterflies), exploring the synergy between humans and more-than-human entities to function and live under a new paradigm of converging, self-forming & self-governing ecology that is facilitated by architecture.



The Hotel typology values hospitality through the dynamics of "choice", impermanence, movement, growth and expansion, and aims to perform as a beacon, an activator, and the first "eco-center" for the city of Rio. The inherent history of the Hotel typology that deals with the tension of Hospitality vs. Hostility also inspires the project to eradicate the hostility between humans and the natural world.



Typical Living Floor



Living x Soap Making Workshop

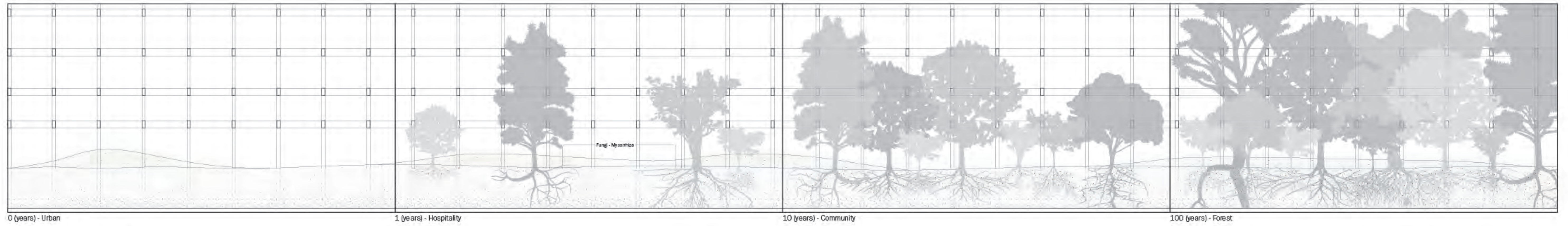


Living x Bee Apiaries

Isometric Building Systems

The adaptive reuse hotel of the A Noite Building in Centro of Rio de Janeiro focuses on the creation of "rooms" for all of its primary residents: humans, native plants, and native animals. According to the different species, the architecture provides shelters, privacy, and shared spaces between all.

OVER TIME



Growth Through Time

The architecture embraces natural growth and decay. It is envisioned that the community of the hotel will only enrich with time and by the natural processes of pollination. The growing community will also allow plants to expand their mycorrhiza network, which will help these native residents thrive and strengthen themselves, and in turn strengthens the whole community that occupies the building.





02

Park-ticipation

Redefining the "Park" Typology with Uncertain Collaboration

Group Project with Shiyu Lyu
Advanced Studio IV (Year 2 Spring Semester, 2023)
Studio Leader: Rachely Rotem (rachely@moduarchitecture.com)

Bridgeport, the city and industrial hub that once thrived during periods of violence and war in the 1900s is now fragmented and scarred by that legacy. The urban fabric of the south end of the city is subject to disconnection and island-ization, within itself as well as from the main city, that is due to the left-behind large infrastructures, factories of the industrialization era, as well as the fly-over Connecticut Turnpike. The south end now suffers from exactly that what brought its glory.

The site of south end Bridgeport can be perceived as a contested landscape of infrastructural territories. While non-places and abandoned empty lots occupy large amount of the city scape of the south end, the public infrastructure that sits on top of these land demonstrates an interesting paradox: the very device that performs as an essential service to the community is pushing that community away from itself. It is ironic that within a city crowded by infrastructure, there are no sufficient green infrastructures for the humans nor the non-humans. The nearby seaside park by Olmsted falls under the park typology that originated from modernism, and remains underutilized due to large un-surveilled 'non-places'.

Through a modular approach, the project aims to redefine what a 'park' is. The project deconstructs the key values of parks into Biodiversity, Social Gathering, and Outdoor Recreation, and introduces the idea of 'uncertain collaborative-ness' to thread together the 3 aspects in order to create interdependency, engagement, and community ownership in the new park typology, which also act as a mechanism for spatial reclamation, activation, and ultimately connection within the city engulfed by infrastructure.



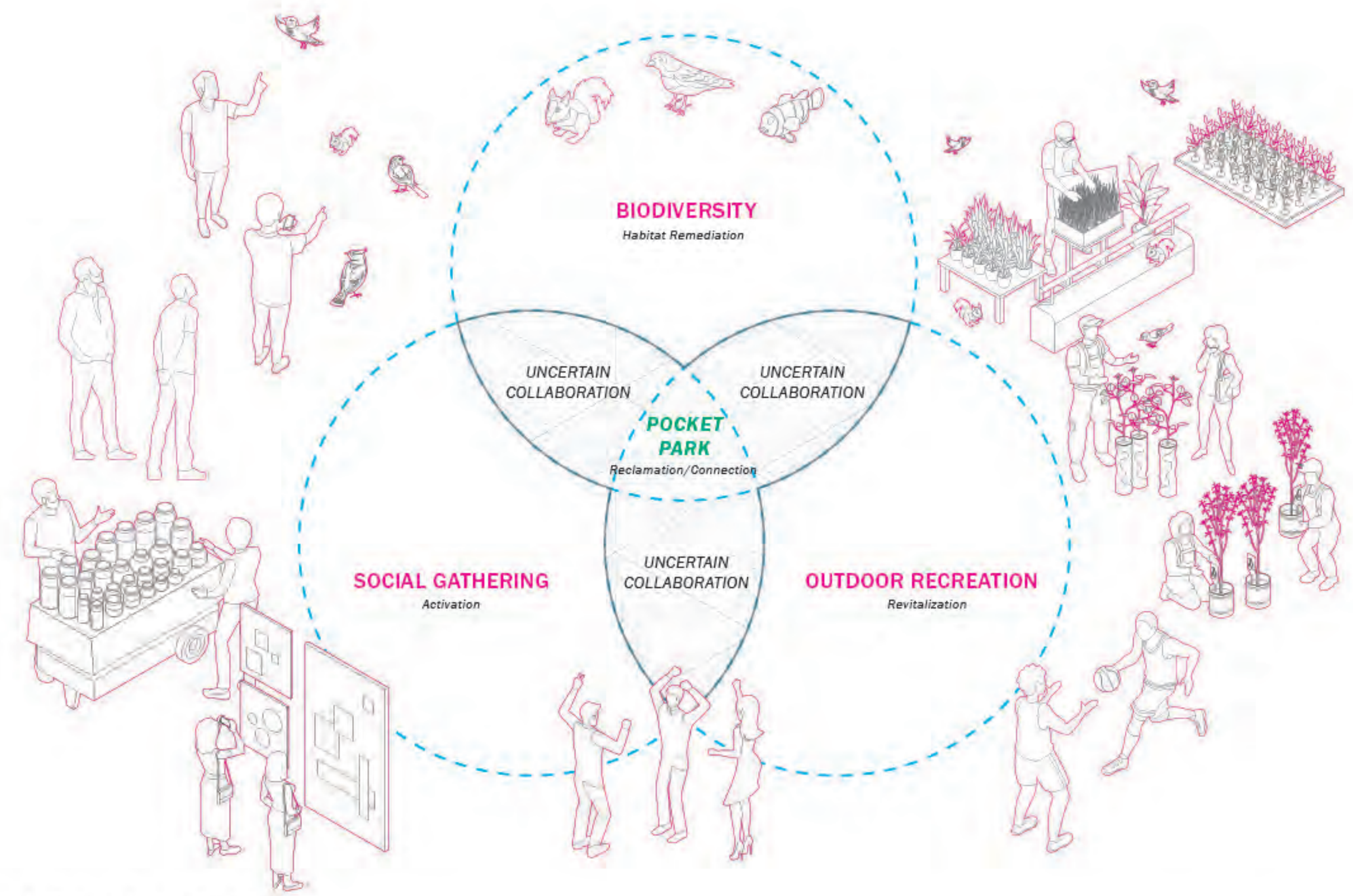
The Fragmentation of Bridgeport

The map shows the fragmentation of the urban fabric due to infrastructures and their associated industrial legacy, showing borders in-between parcels even though the lands might be physically connected.



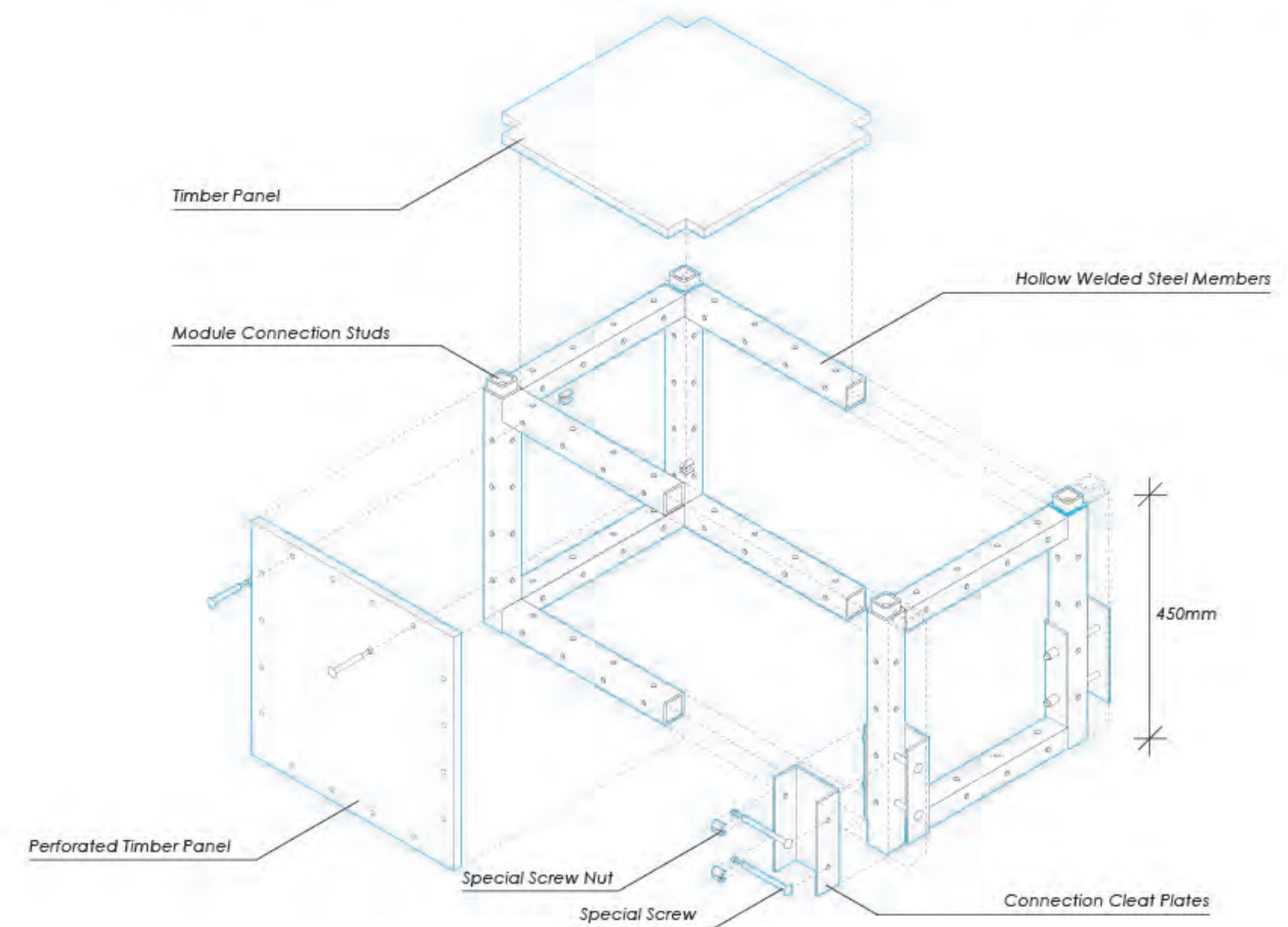
Site & Strategy

Within the fragmented city, we locate our site of interest in a complex and contested junction between downtown Bridgeport and South-end, that interfaces with large-scale under-fly-over-highway, underutilized car park, and the water. In contrast, our design approach envisions smaller scale interventions with surgical insertions, that can be deployed in more underutilized spaces around the city to breach borders and activate and intensify the neighborhood of south-end.



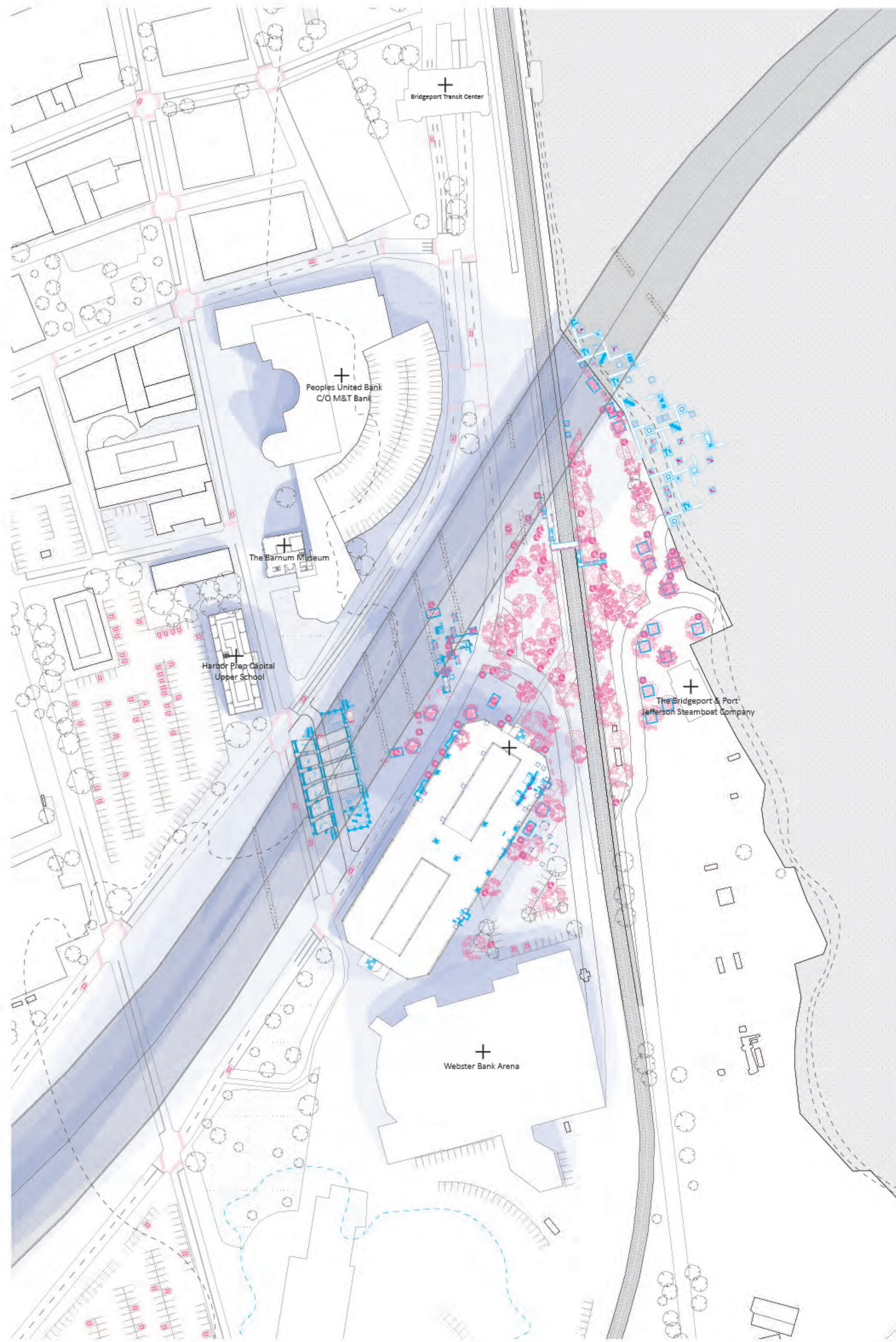
Redefining the "Park"

The lack of meaningful social and environmental infrastructure intrigued our exploring and deconstructing the conventional ideas of the modernist product of "parks". To redefine what a park is, we deconstruct the key values of parks into Biodiversity, Social Gathering, and Outdoor Recreation, and introducing the idea of uncertain collaborative-ness to thread together the 3 aspects in order to create interdependency, engagement, and community ownership, and hence creating a new park typology that can also act as a mechanism of spatial reclamation, activation, and ultimately connection.



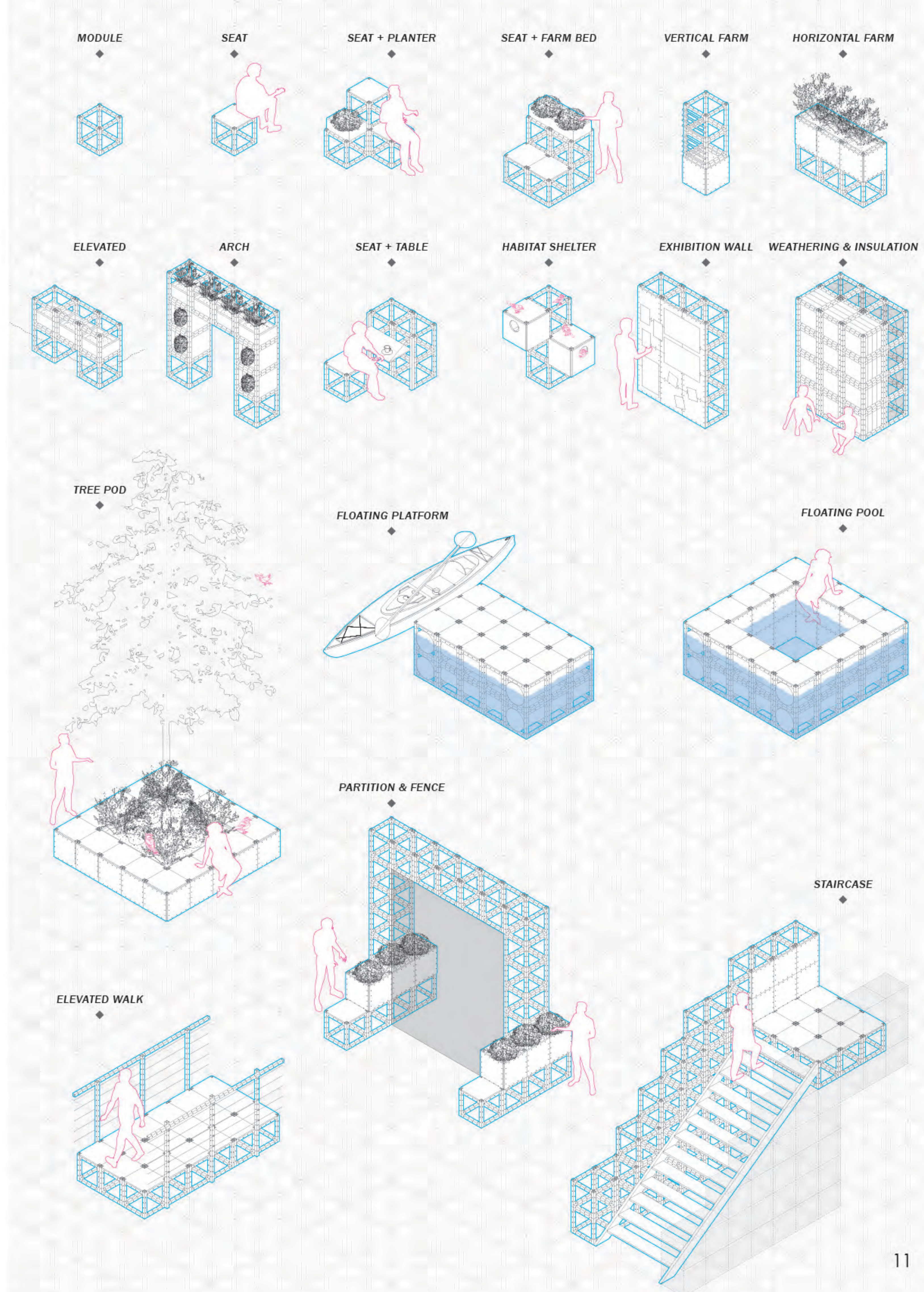
Detail of "Pocket Park" Block Module

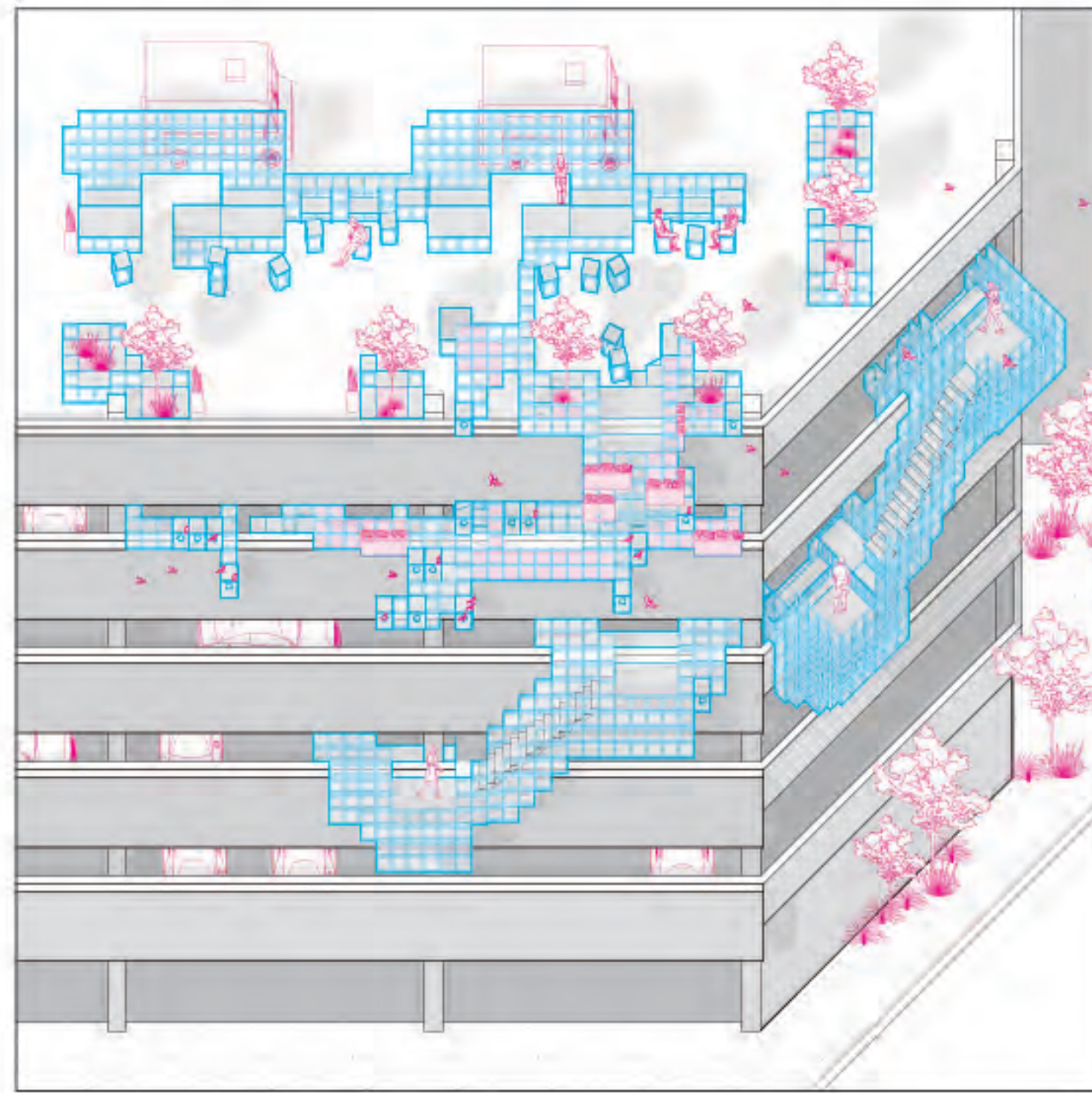
The system of the new park typology is based on the steel module that can be customized and reconfigured through intuition and collaboration to form functions and house different programs by aggregation.



Site Plan

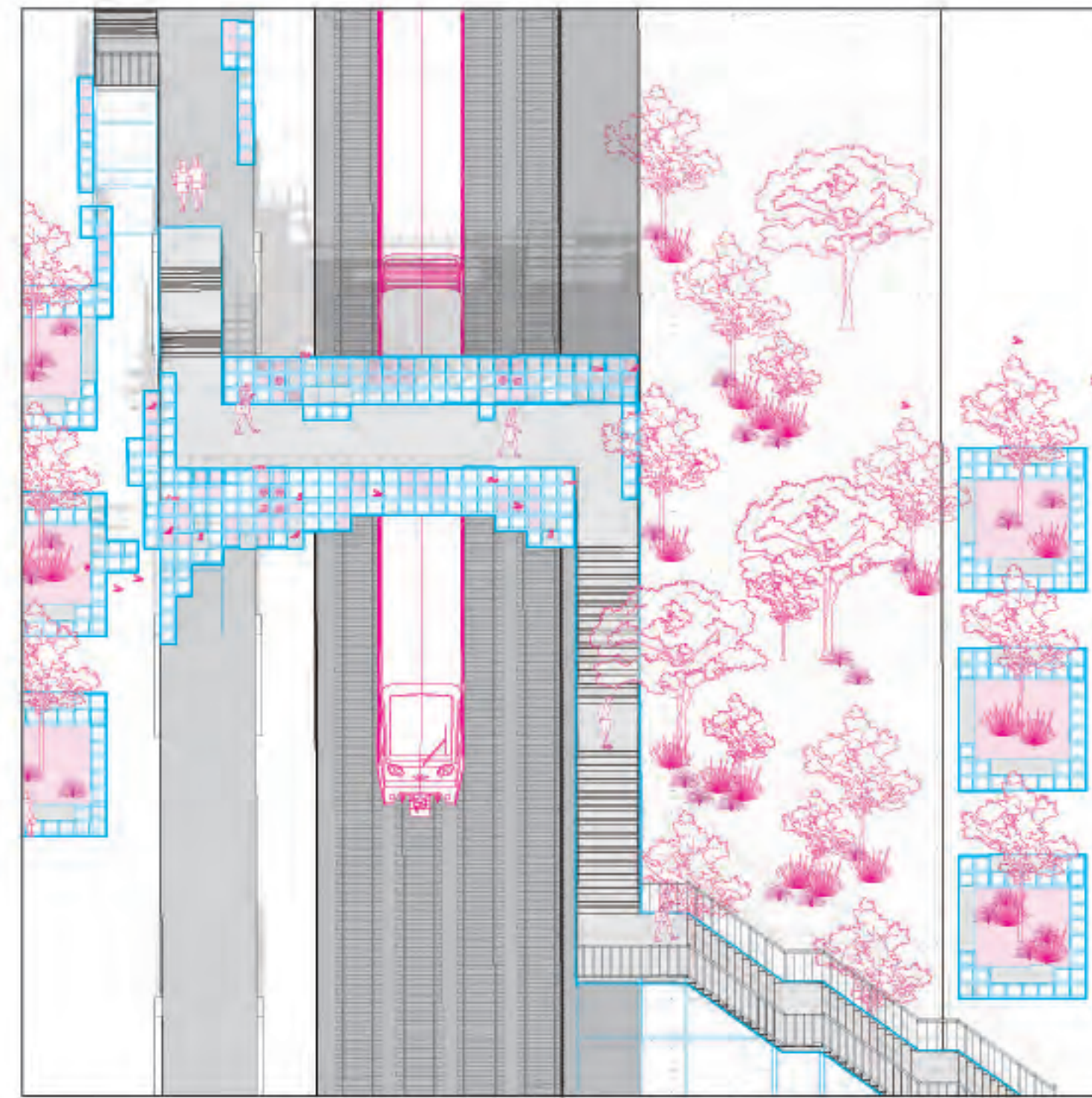
On the site, we first look to create a bonding agent that breaches borders and create connections between Downtown and South-end by deploying our system in 4 different conditions. On the smaller scale, the pocket parks engages with one another as well as the context to activate and reclaim interstitial spaces, with a larger area of impact covering half of downtown and tip of south-end to draw people together.





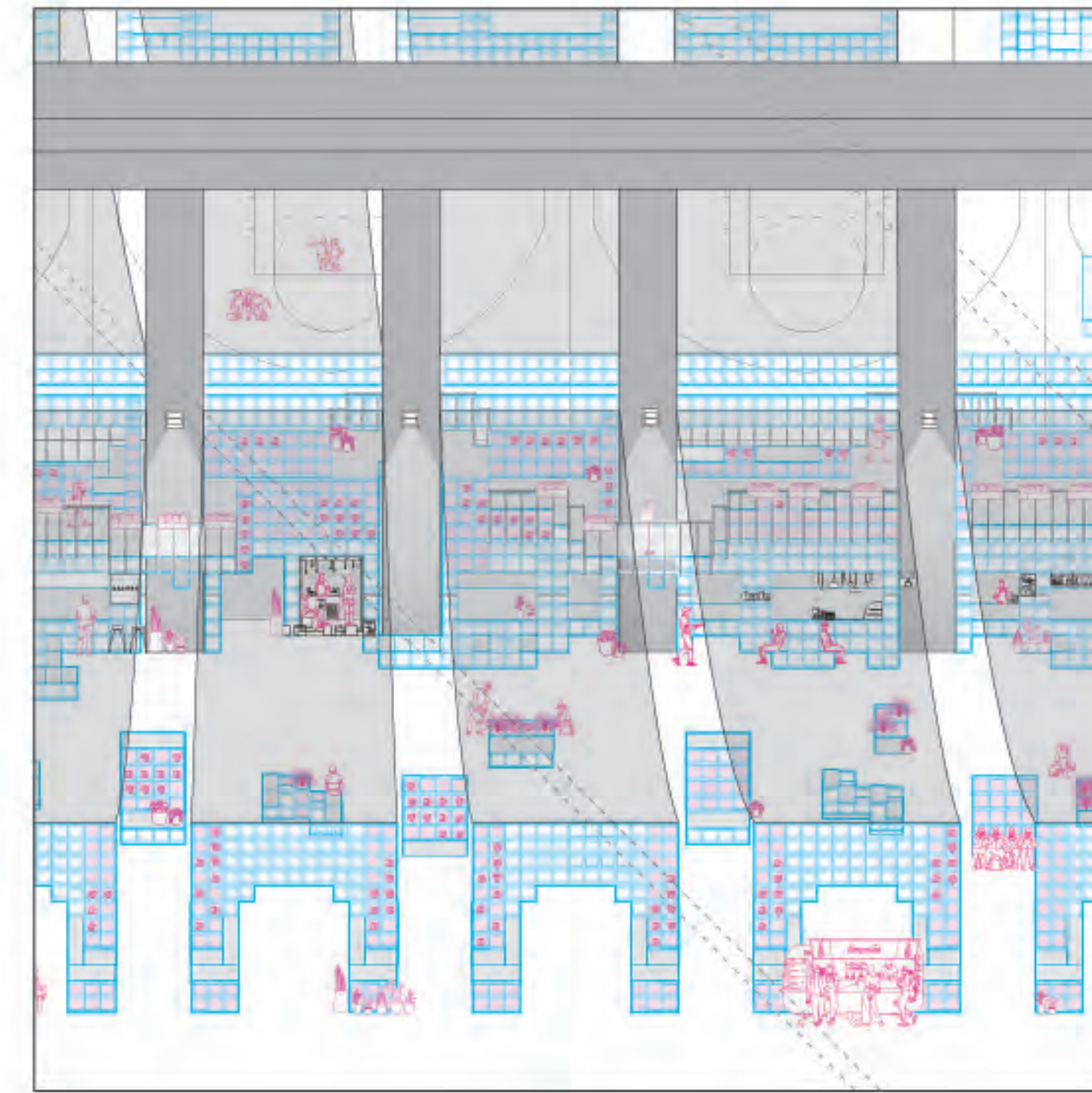
Abandoned Lots Revitalization

The modular units takes over the abandoned lot in a parasitic manner that reclaims the car park with terrace spaces, pop-up markets, gardens, and bird habitat. It focuses on the human-bird interface



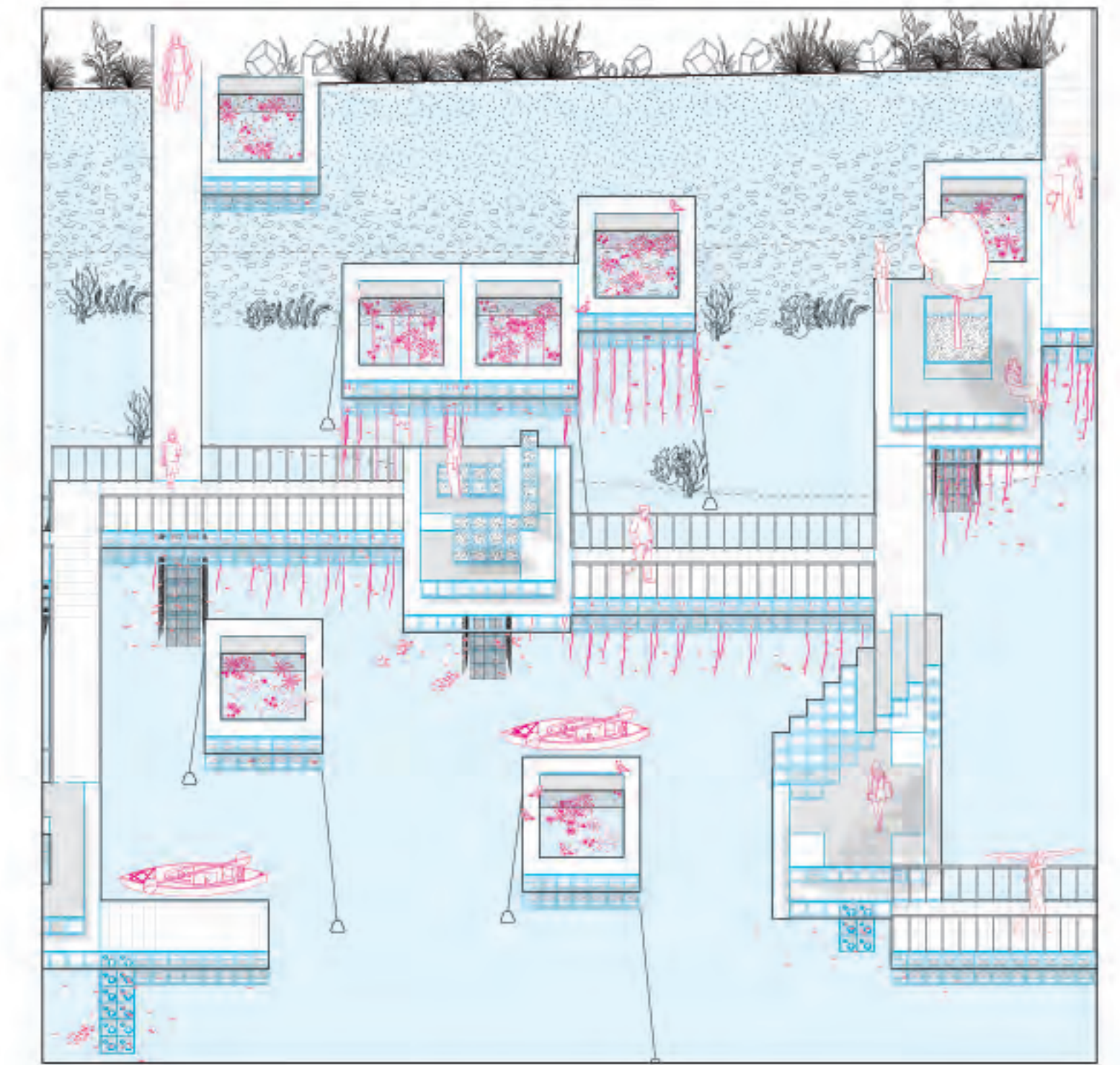
Connection Across Hard Infrastructures

One of the contested site condition is the scarring of the urban fabric by the train track. Through aggregation, the separated landscape is abridged.



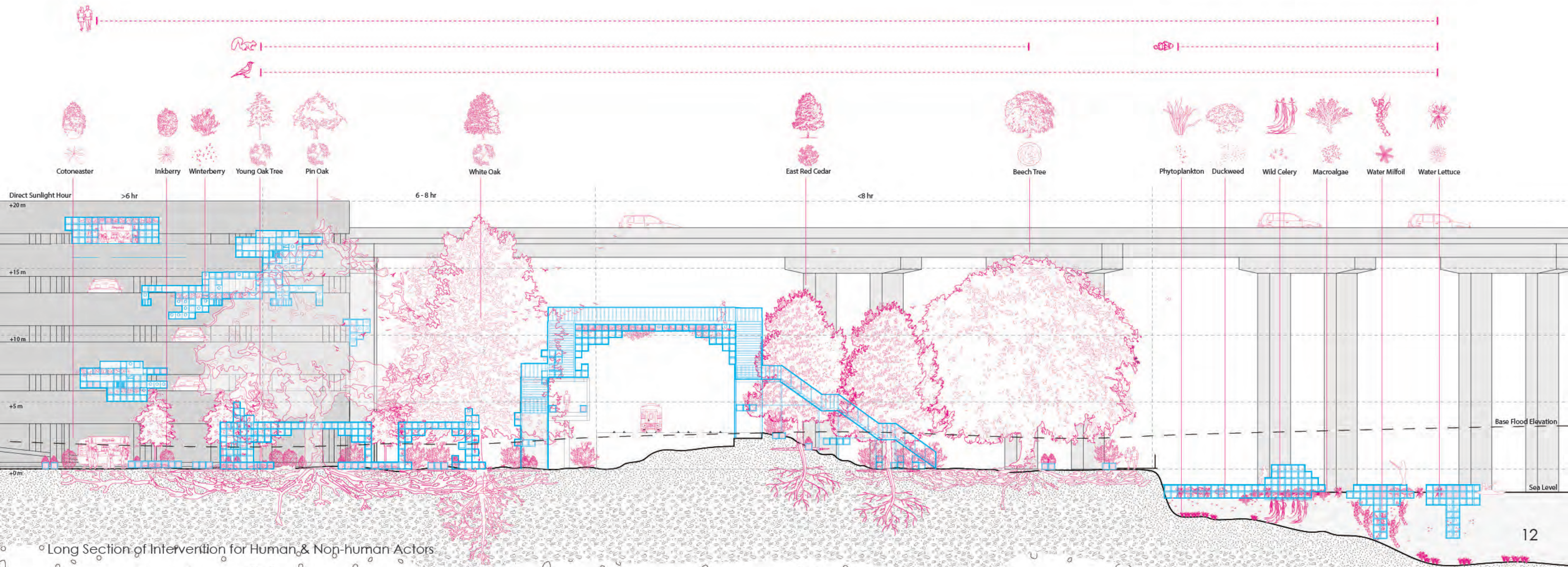
Under Viaduct Activation

The vast urban void under the viaduct is activated by the introduction of moss gardens, pop-up spaces, and sports courts.

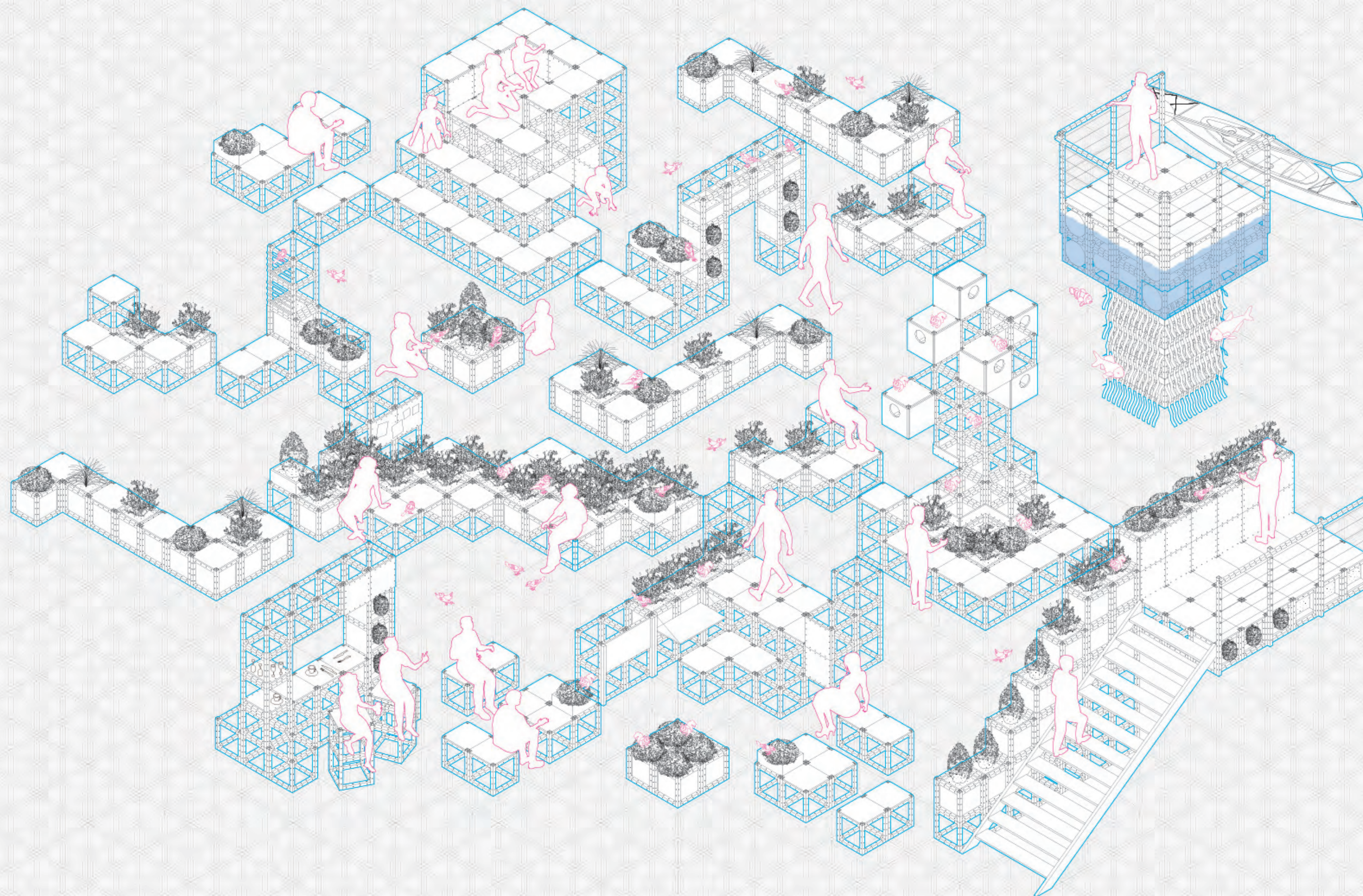


Water Engagement, Reclamation, and Marine Life Habitat

The water condition is reclaimed for both humans and marine life. Introducing on water viewing decks for local communities and gardens that provides food and habitat for birds and fish.



Long Section of Intervention for Human & Non-human Actors





Parking Lot Roof Revitalization



Parking Lot Roof Seating, Planting Beds, Viewing Deck



Parking Lot Facade Reclamation for Planting and Bird Houses

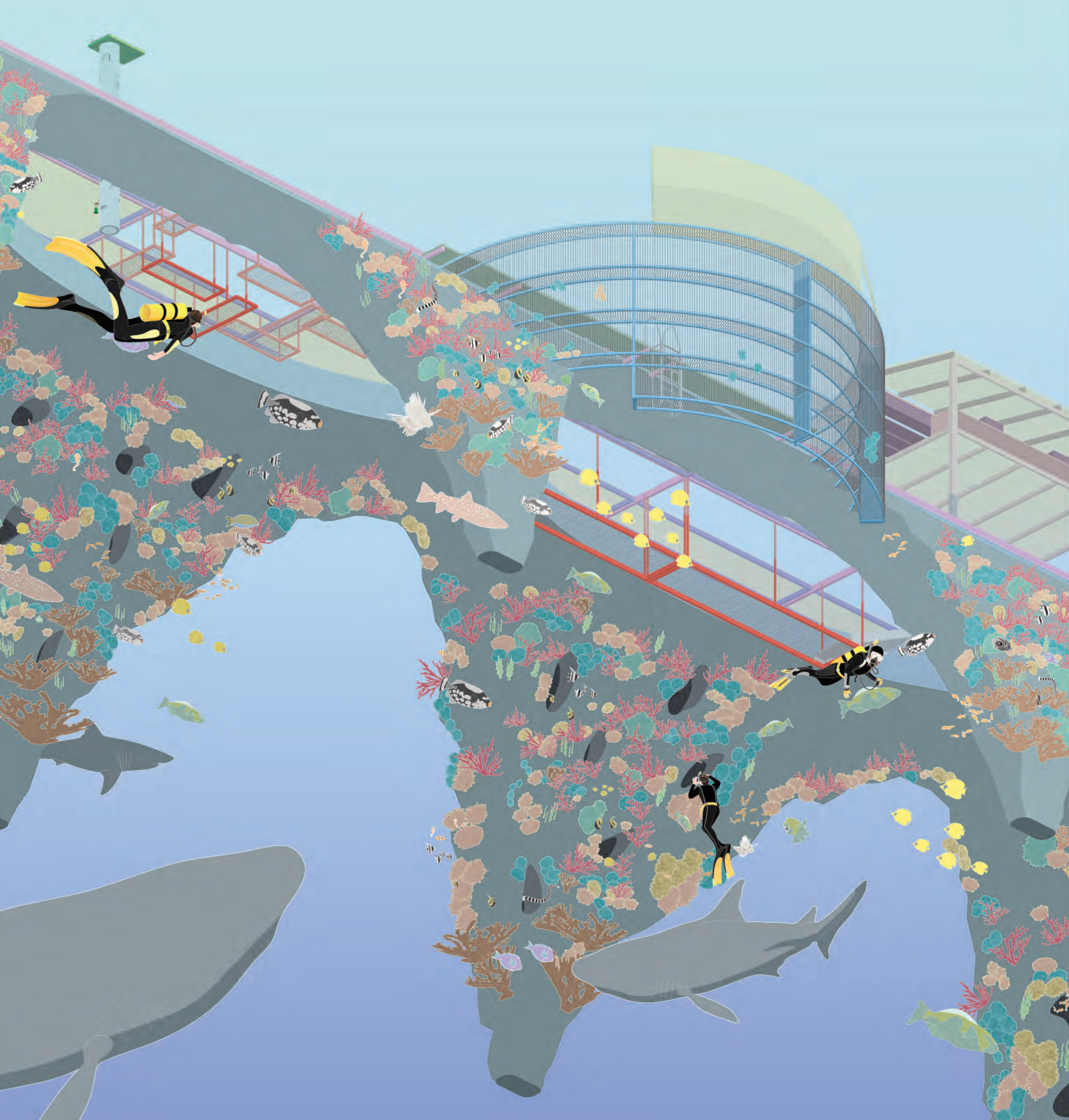


Inter-floor of Parking Lot



Site Strategy Model

Surgical insertion of intervention key borders of fragmented site to revitalize, reclaim, and to connect the contested urban spaces.



The Coral Parliament

Voicing of the Non-humans

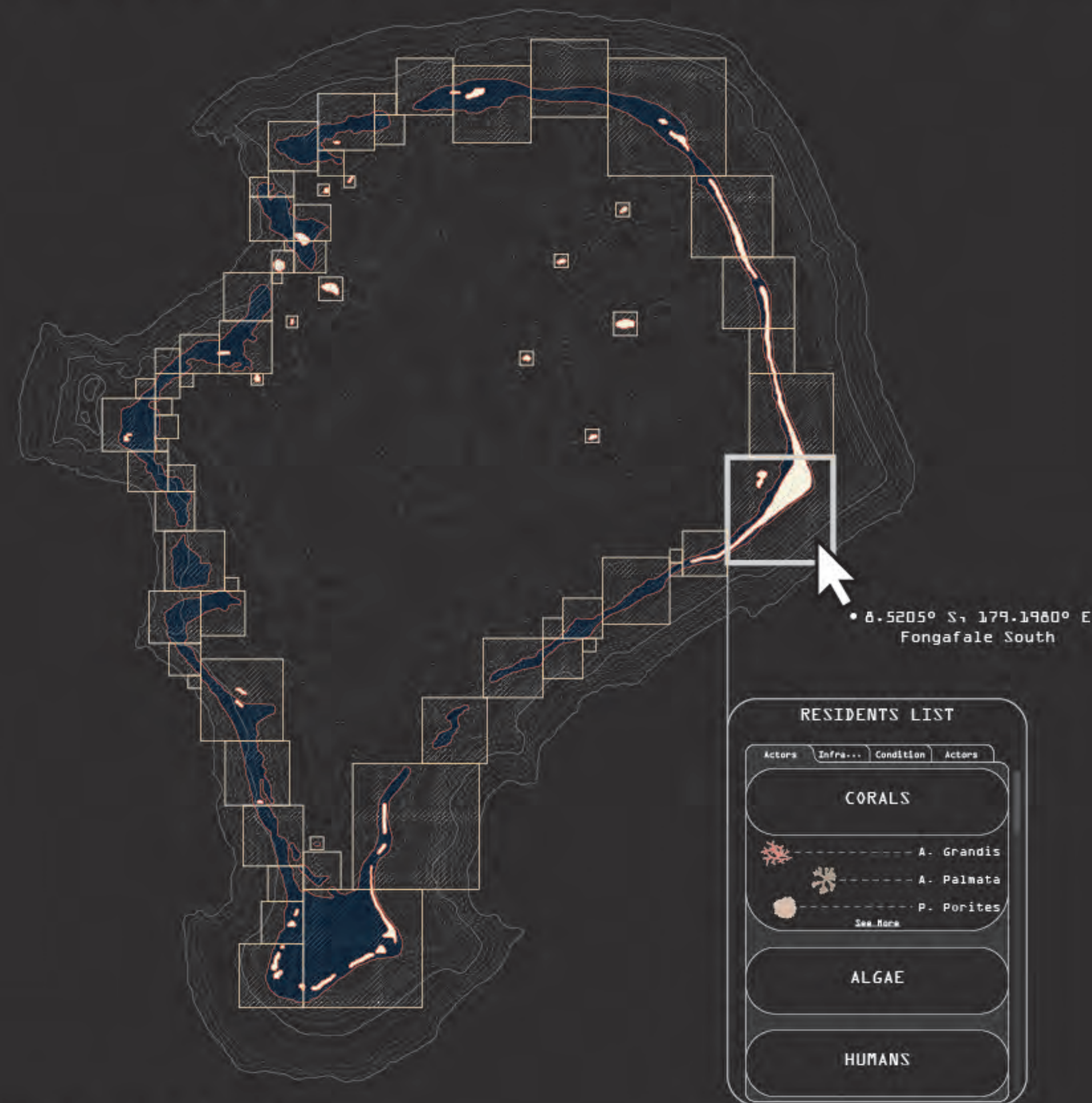
Group Project with Steven Gan
Advanced Studio V (Year 3 Fall Semester, 2023)
Studio Leader: Marina Otero (marinaotero@gmail.com)

'The Coral Parliament' proposes a framework where Corals and Humans discuss common concerns and come up with policies in the benefit of all of Tuvalu's inhabitants. The Parliament was established to envision alternative forms of inhabitation and urbanism that care for humans and non-humans and challenge the conventional hierarchical relations between humans and non-humans to ensure the rights of Corals.

Faced with imminent submergence, Tuvalu must consider the question of what and how to preserve. As we understand Tuvalu's social structure as a Coral Urbanism, where humans are just one of the 'actors' or inhabitants who also rely immensely on the reef ecology, the project highlights the need to recognize, recover, and care for the coral colonies in Tuvalu, as its living entities not only constitute archives of Tuvaluan traditions, eco-social practices, and knowledge, but are also fundamental to the preservation of its physical landmass and national sovereignty.

The main embodiment of the "parliament" is proposed as an extension structure, with a series of interventions, reaching out from a patch reef 500 meters from Fongafale. This extension serves multiple purposes: habitat for corals, coral data collection, gene bank, and spaces for various stakeholders to engage with and understand the corals. The interventions incorporated on and around the bridge serve as key mediums for giving voice to the corals. These include the coral radio, where the corals 'speak'; the coral theater, where the corals 'show'; and the coral lab, where the corals 'record'. The recorded information also contributes to the constant updating of the Coral IDs, which allows the corals to represent themselves both locally and internationally. The formal coral parliamentary space will be located at the end of the bridge that connects to the patch reef, where discussions on coral issues will take place with coral participation and presence. Over time, as sea levels rise to a point that may ultimately engulf the sandy lands of Tuvalu and displace its people, the structure would become solely occupied by corals and marine life. It would then act as a demarcation of Coral sovereignty in Tuvalu, maintaining land ownership for its inhabitants: the coral reefs, marine life, and Tuvaluans.





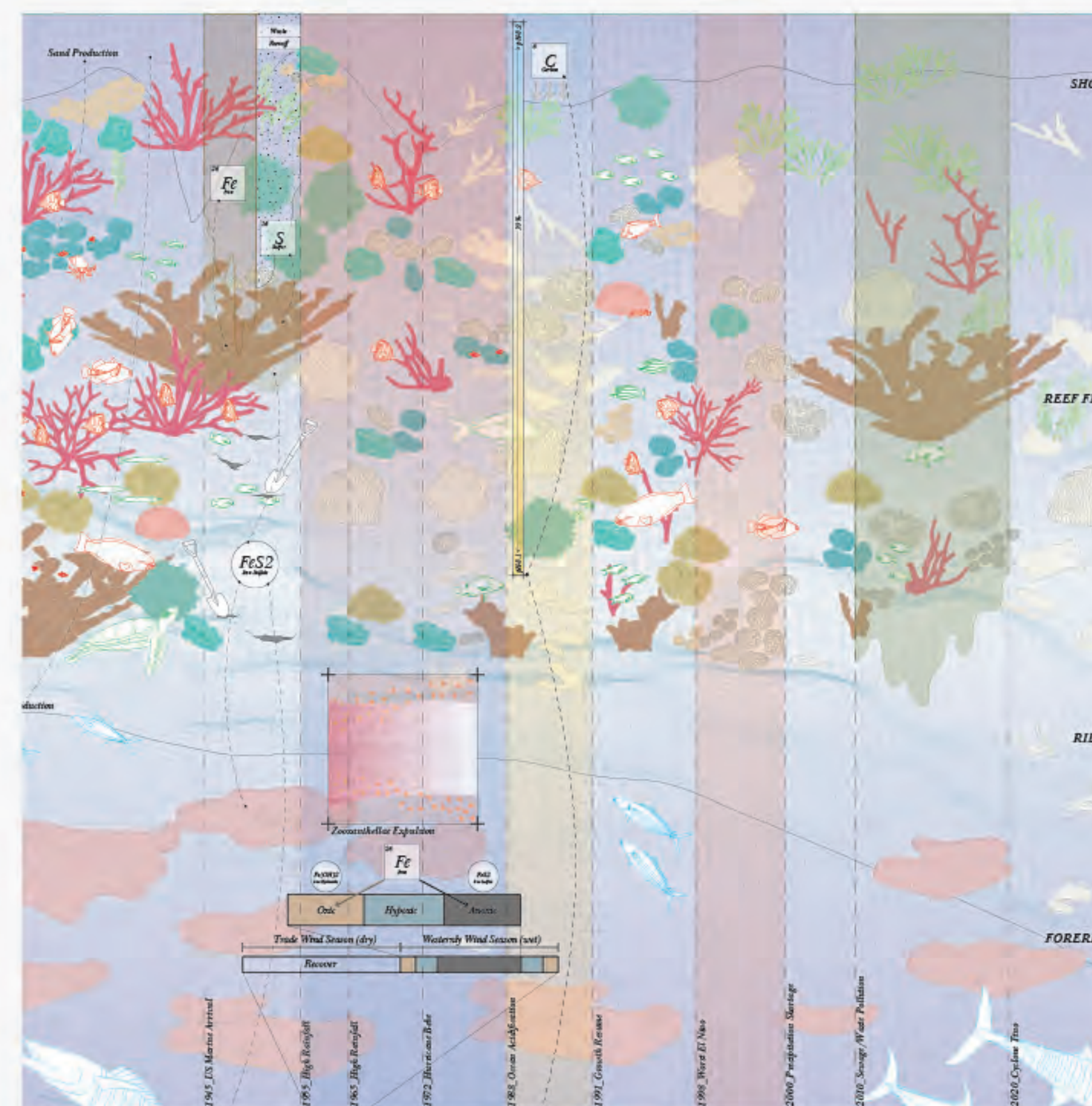
Fongafale (Most Populated Islet), Tuvalu

The nation of Tuvalu is founded on the atoll island where the interrelationship between the coral reefs that constructed the land and its inhabitants. As the 'indigenous' inhabitants of the land, the corals have existed for millions of years prior to human arrival. Corals, as archives, record the history of Tuvalu through environmental changes over time.



Coral Urbanism

We understand Tuvalu's structure as a Coral Urbanism, where humans are just one of the 'actors' or inhabitants who rely on the reef ecology for food sourcing and to replenish and sustain the country's shoreline. The reef urbanity, much like a city, consists of rhythms to light, morning traffic, borders, and territories, and is a home to many marine species locally but also affects at least 25% of marine life globally. Within this intricate social structure that centers around the corals, it calls for an re-evaluation of the conventional social hierarchy in order to sustain the future for all of its inhabitants.



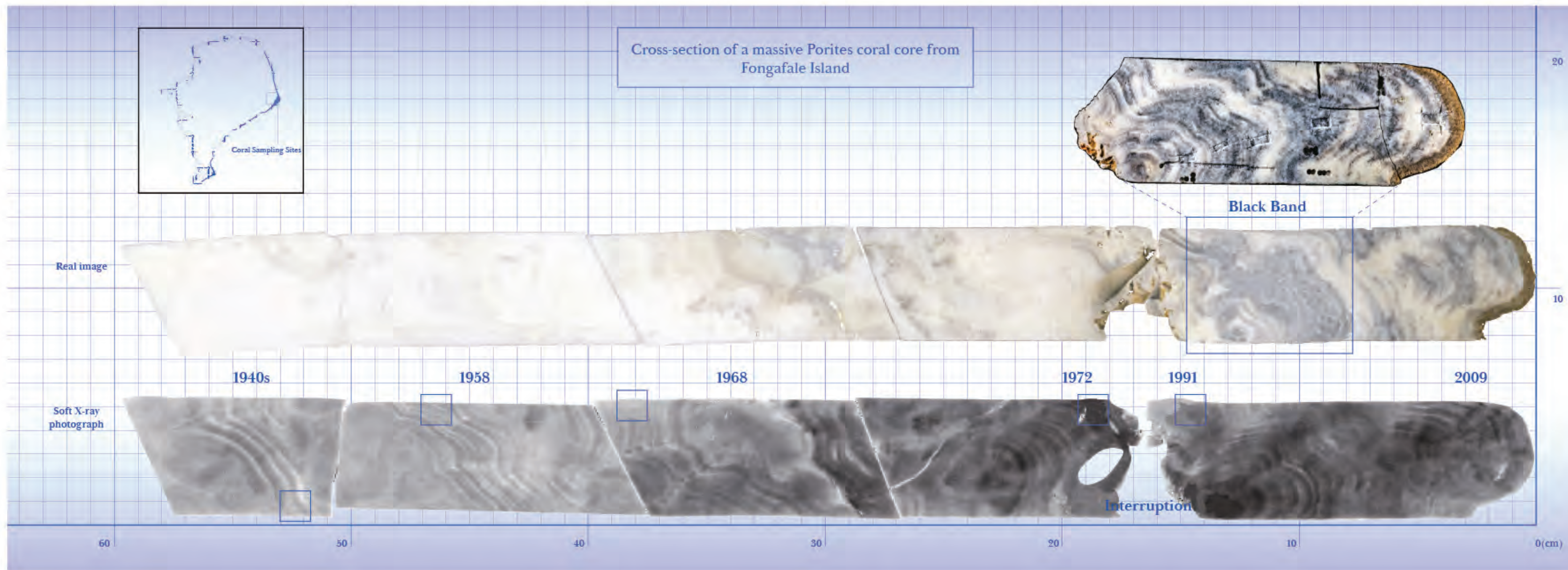
Anthropocene & Coral in Tuvalu

One way of accessing the information stored in corals is through the reading of coral annual bands, which provide temporal data that dates to prehistoric times. In addition, coral black bands suggest anoxic states when coral suffocates due to some natural causes, but growingly of anthropogenic impacts such as ocean acidification, ocean temperature rise, insufficient management of waste, and climate change. The constant and rapid anthropogenic activity that is fueled by capital accumulation, economic expansion, and population densification has come at a cost of the health of the coral reefs with vast areas of coral colonies dying off and even some going through extinction. This also results in the island becoming unable to self sustain through natural methods against climate change, due to the ability of sand production being hindered as reef ridges erode and shorelines inevitably recede.



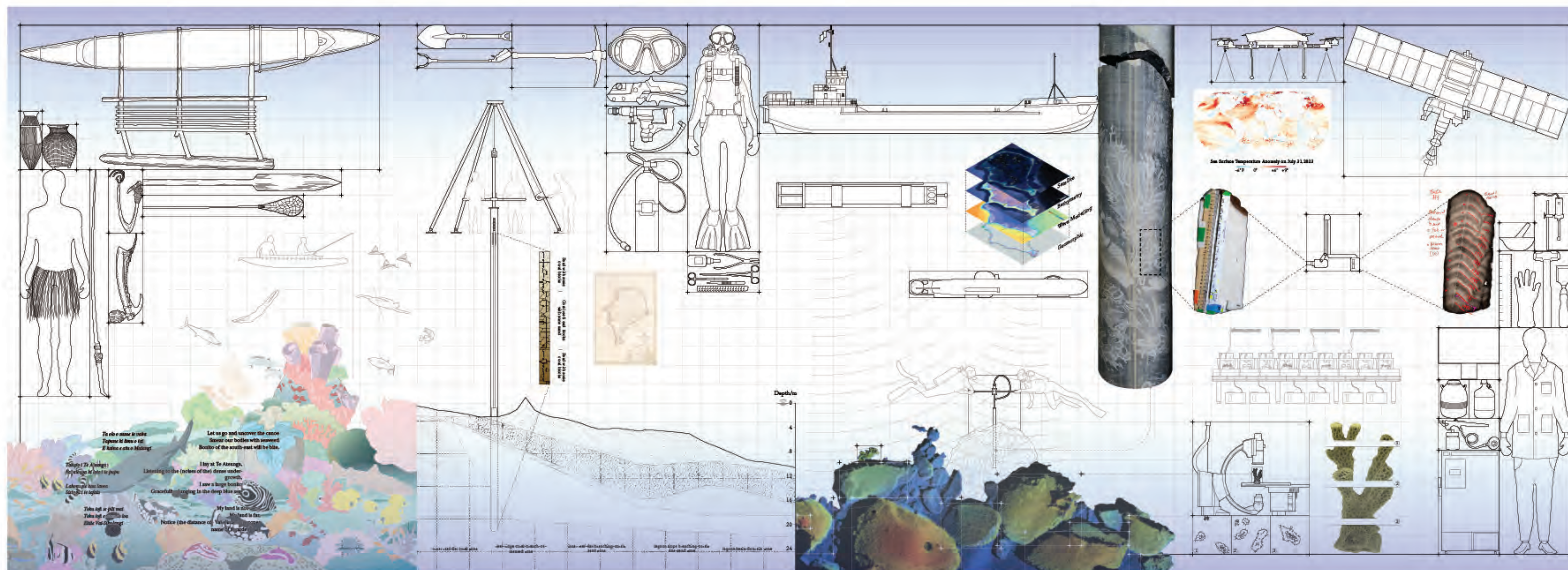
Coral Reef Global Network

Coral Reefs cover less than 1% of the ocean floor on Earth, yet is crucial to the survival of 25% of marine life and affects around 1 billion people. On the global stage, it calls into question of what kinds of global social platform can be provided to the Corals.



Coral Cross-section Sample

The study of corals are usually conducted through imaging or x-ray in order to extract information such as health, annual growth bands, and anoxic black bands, which can reflect past climatic environments even from millions of years ago.





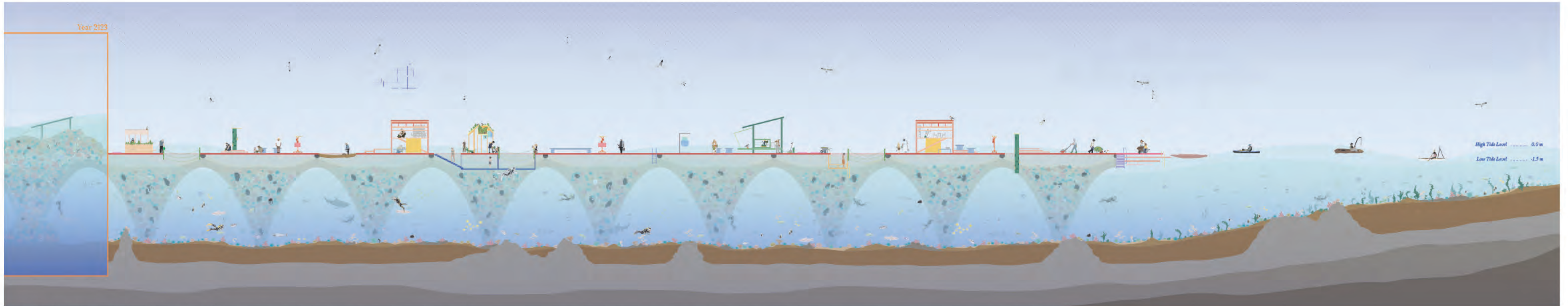
Site Plan

Focusing on Fongafale and its nearby coral reefs, we find the corals in a critical state, largely impacted by human activities such as land reclamation, excavation, and pollution. To restore the corals' rights and territory, we propose an extension structure from a patch reef 500 meters from Fongafale. This extension will join the existing reef, providing a new habitat for coral growth and development. At the bridge's end, connecting to the patch reef, will be the formal coral parliament, where discussions on coral issues will take place, including coral participation. Additionally, on land, we'll implement interventions within the existing urban fabric, bringing together diverse actors. Should Tuvalu ultimately become submerged, this structure will offer new land for corals to continue growing and evolving in both horizontal and vertical dimensions claiming the nationhood of Tuvalu.



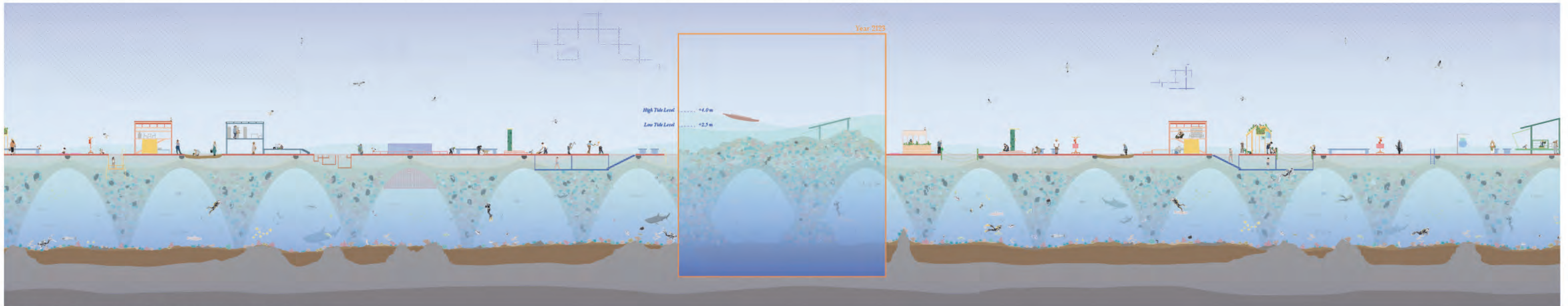
Actors Network

In coral urbanism, the factors influencing coral health extend beyond their immediate habitat, reaching from water bodies to land and sky. To comprehensively understand corals, we've mapped the network of actors involved in either the growth or destruction of coral reefs. This map reveals the intricate connections between corals, marine life, plants, livestock, and human activities, forming the basis of new coral urbanism. We've proposed interventions at various scales to bring together different stakeholders to address these issues. Echoing Bruno Latour's perspective, these intervention spaces serve as forums where diverse actors can gather, negotiate and act based on the issue.



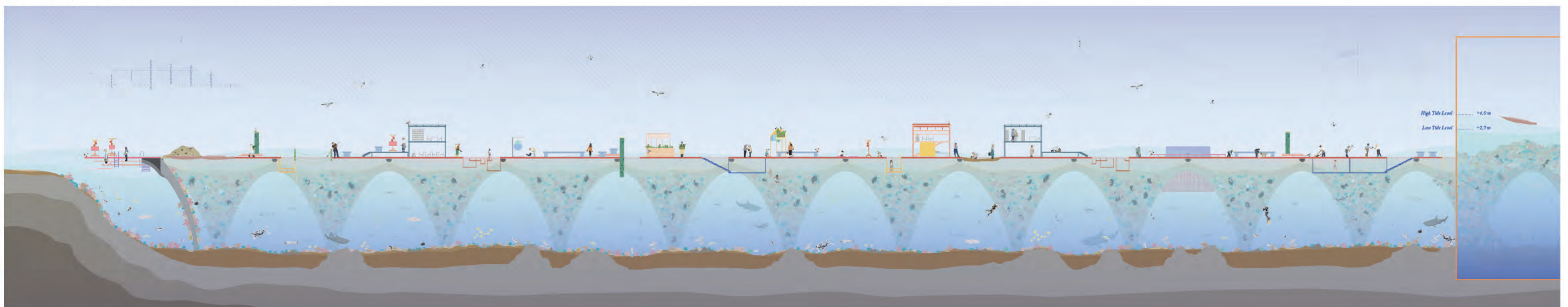
Bridge Section - Land Connection

The reef extension and bridge interact with the various actors in the lagoon setting, prioritizing service to the corals by providing a habitat for marine life to inhabit and settle.



Bridge Section - On Water & Change with Time

Over time, as sea levels rise to a point that may ultimately engulf the sandy lands of Tuvalu and displace its people, the structure would become solely occupied by corals and marine life. It would then act as a demarcation of Coral sovereignty at Tuvalu, maintaining land ownership for its inhabitants: the coral reefs, marine life, and Tuvaluans.



Bridge Section - Patch Reef Connection

Through coral nurseries, coral voicing devices, and submerged platforms, the presence of the coral is emphasized, bringing the human perspective into the coral habitat in non-intrusive ways.



The Coral Parliament

A limestone reef constitutes both a threshold and a gateway into the parliament. The parliament structure embraces an offset periphery of the patch reef and ensures sun exposure for the corals. The organization of the decks promotes non-hierarchical centers and, on the lagoon side, is programmed as canoe piers for Tuvaluans.



Axonometric Moments of Interventions Throughout Fongafale (Patch Reef - Lagoon - Beach - Land - Ocean)



04 (Un)Common Space(s)

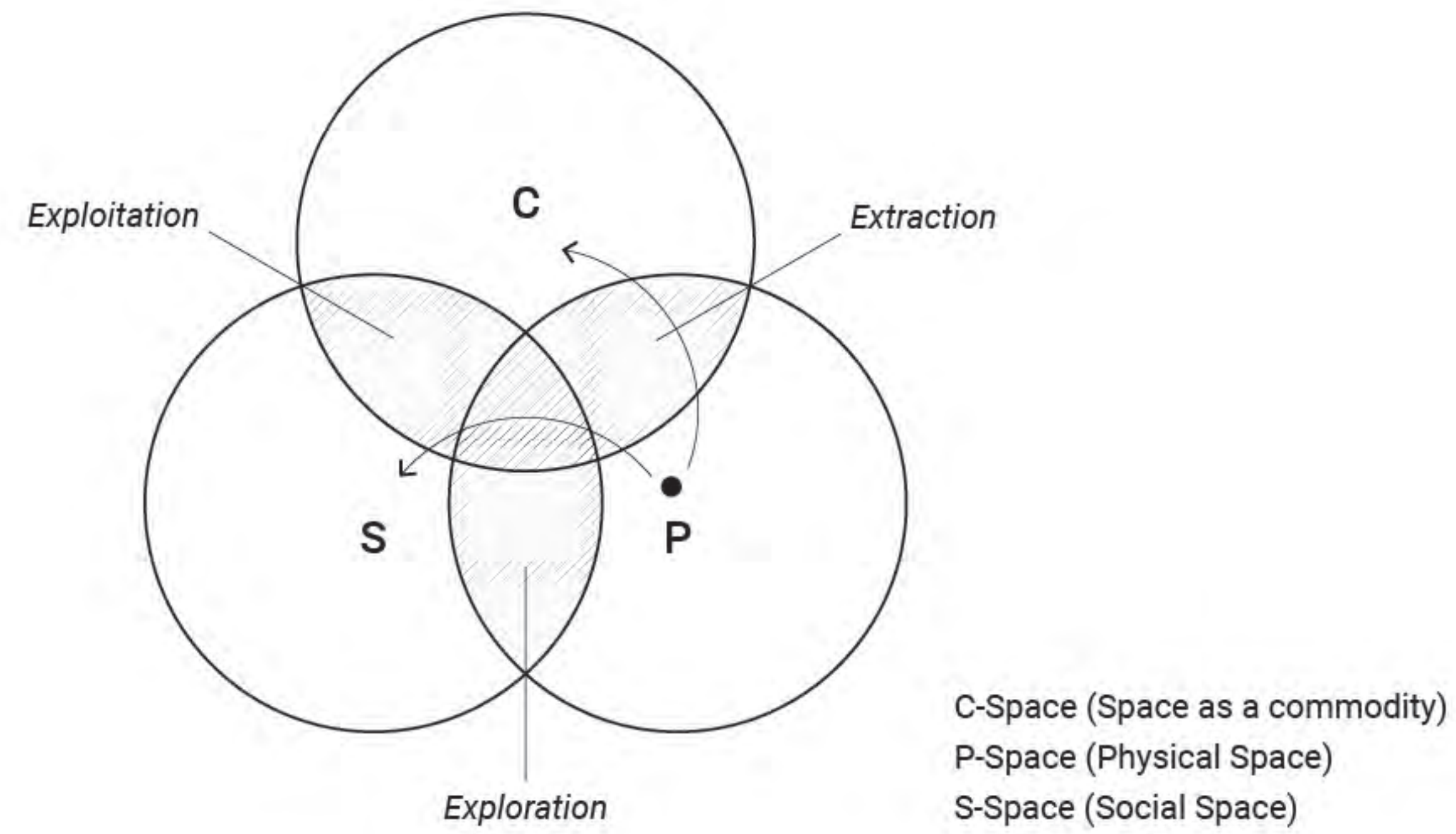
The De-commodification of Spaces

Group Project with Steven Gan
Core Studio III (Year 2 Fall Semester, 2022)
Studio Leader: Esteban De Backer (ed2599@columbia.edu)

Within the modern society, where housing is founded upon "heterarchy" and does not shy away from being symbols of prestige and status, the commodification of housing and spaces are inevitable; if anything, it has already become the existing standard for modern living which should be questioned and challenged.

As a response, we are proposing a New Standard of affordable/free housing for 200 residents of the low-income community in south Bronx, New York, that redefines the conventional relationship between what is private and what is shared in questioning the commodification of spaces. Since commodification – under an age of capitalism that fuels the accumulation of objects and spaces – is catalyzed by privatization and exclusive ownerships of objects, spaces, and real estate, as a radical approach, we are proposing a system of maximizing shared spaces and minimizing yet providing for sufficient private spaces. We believe the sharing and de-privatization of spaces have the potential to undo the effects of capitalism and commodification within our housing system.

Additionally, the project revolves around 4 main pillars and processes of commodification: production, consumption, possession, and demolition. This circular economical cycle with inherent value within each step informs us of our program X, which focuses on recycling and reproduction workshops and trade markets to foster local economy and to provide job opportunities for the locals of south Bronx who, otherwise, would need to travel long distances for work within the broader city.



Ce qui reste, UHO, Plan_Libre Issue 192, April 2022

Space as a Commodity

In contemporary architecture, the commodification of space has become a pervasive phenomenon, where spaces are not merely functional or aesthetic but are also subject to economic exploitation and social extraction.

Modern architecture has witnessed a shift where physical spaces are increasingly treated as commodities rather than public goods or resources for human habitation and interaction. Such commodification often leads to the displacement of marginalized communities, gentrification of urban areas, and the prioritization of capital accumulation over social well-being.

In addition to the commodification of physical spaces, modern architecture also commodifies social spaces by shaping human interactions and identities within the built environment. Public spaces are increasingly privatized or commercialized, restricting access to those who can afford it and undermining the democratic ideals of inclusivity and accessibility.



The "Sufficient" Private Unit Matrix — Privatized

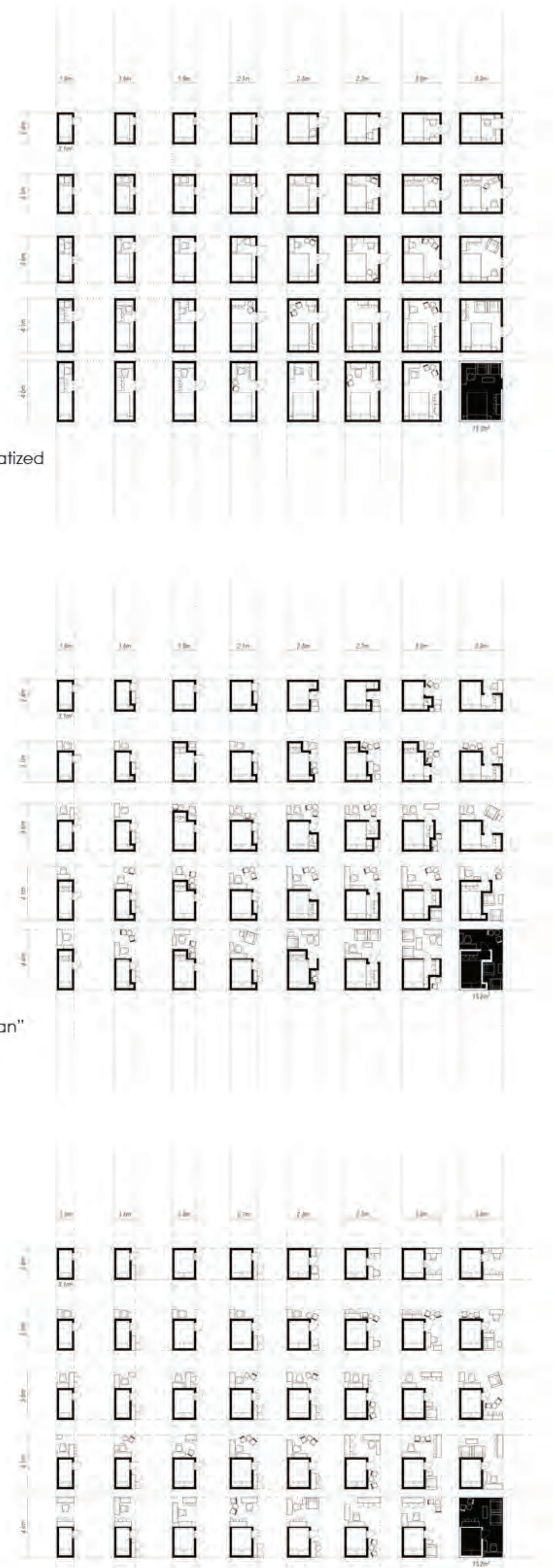


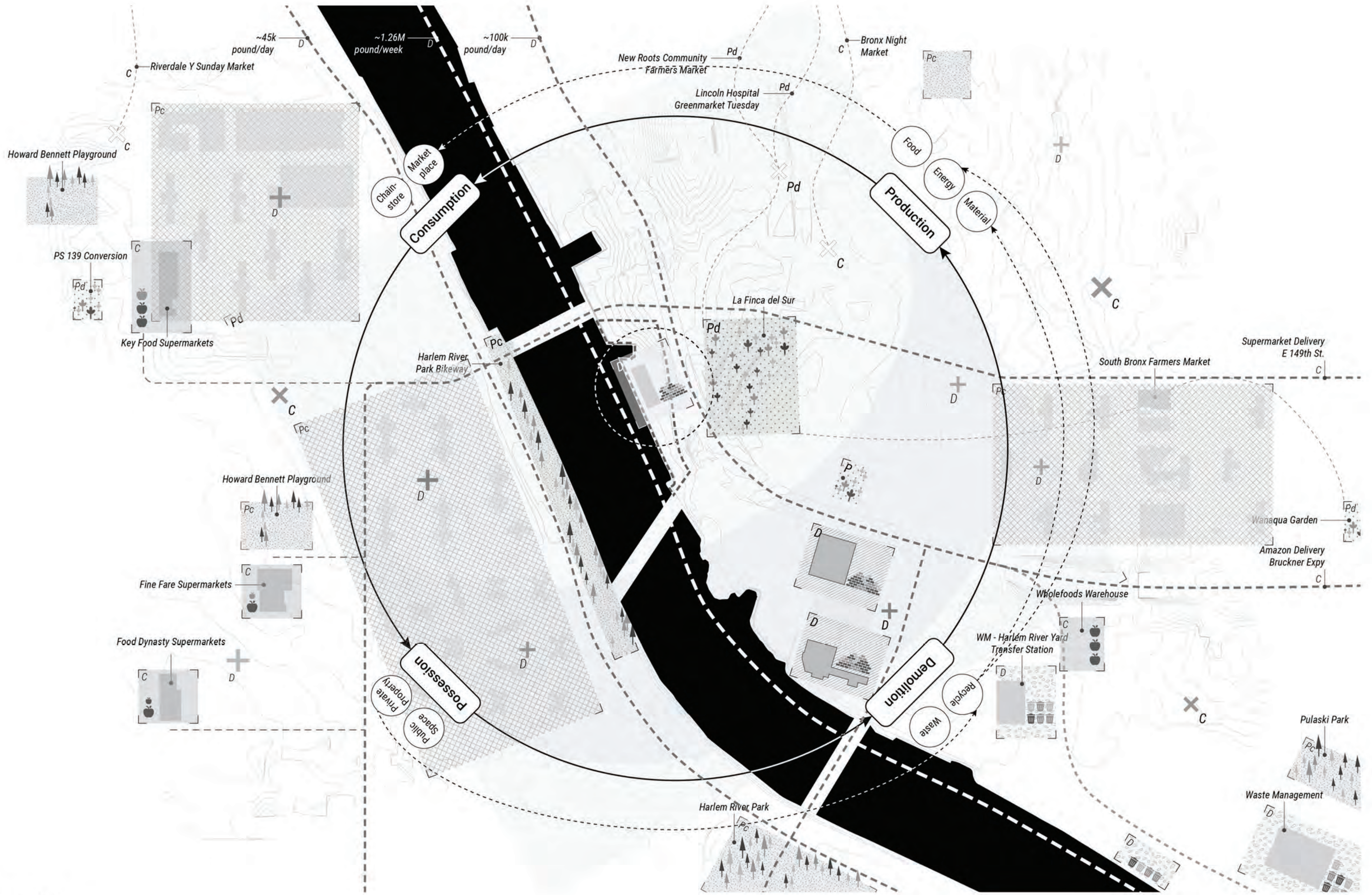
The "Sufficient" Private Unit Matrix — "Loan"



The "Sufficient" Private Unit Matrix — Shared

A study of what are the "essential" private elements of the living area, as well as the minimal occupiable area to facilitate such programs. The matrix demonstrates the reimagined bedroom and how it would interface with spaces such as storage, seating area, and working space.

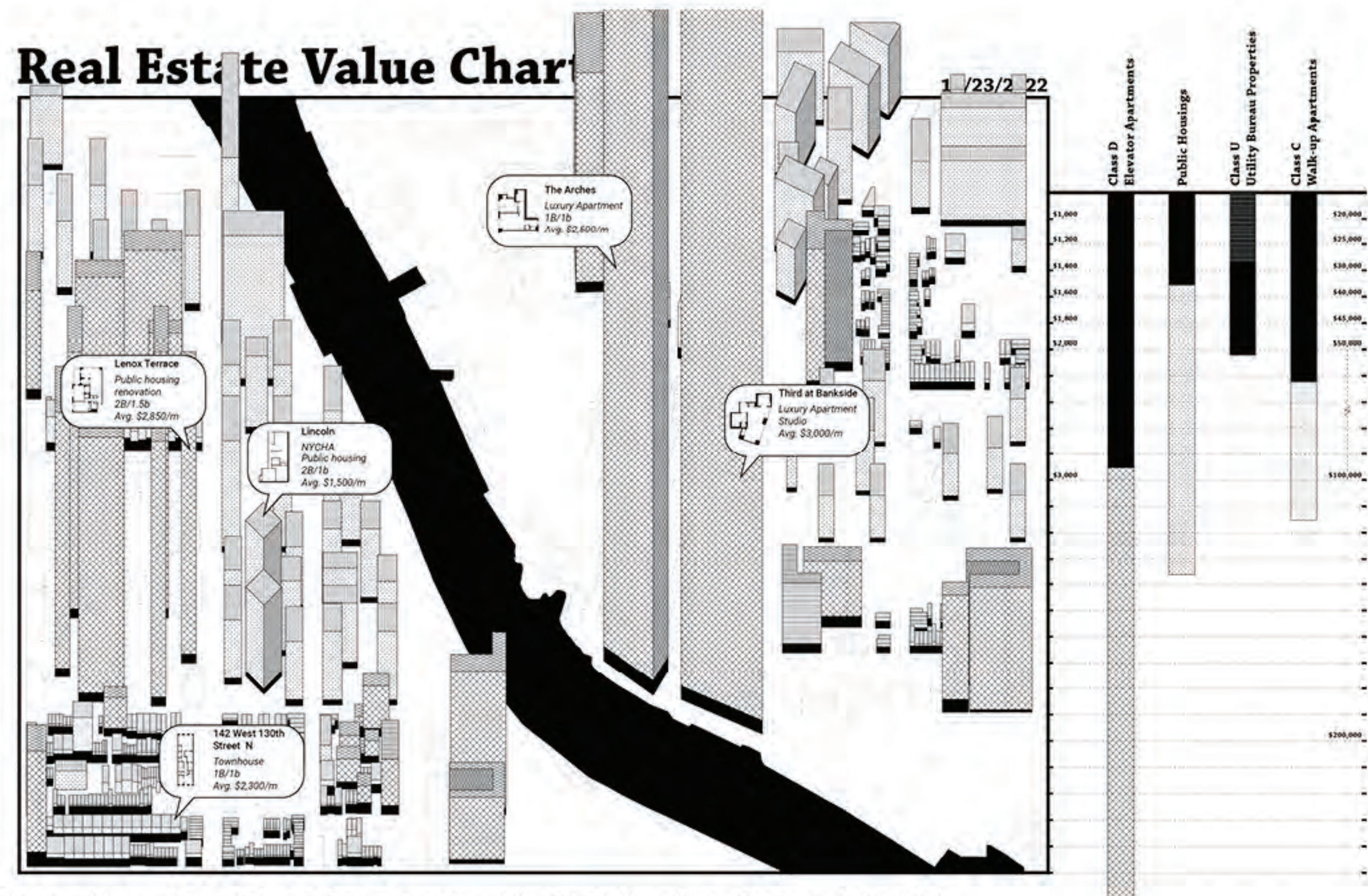




Site Analysis

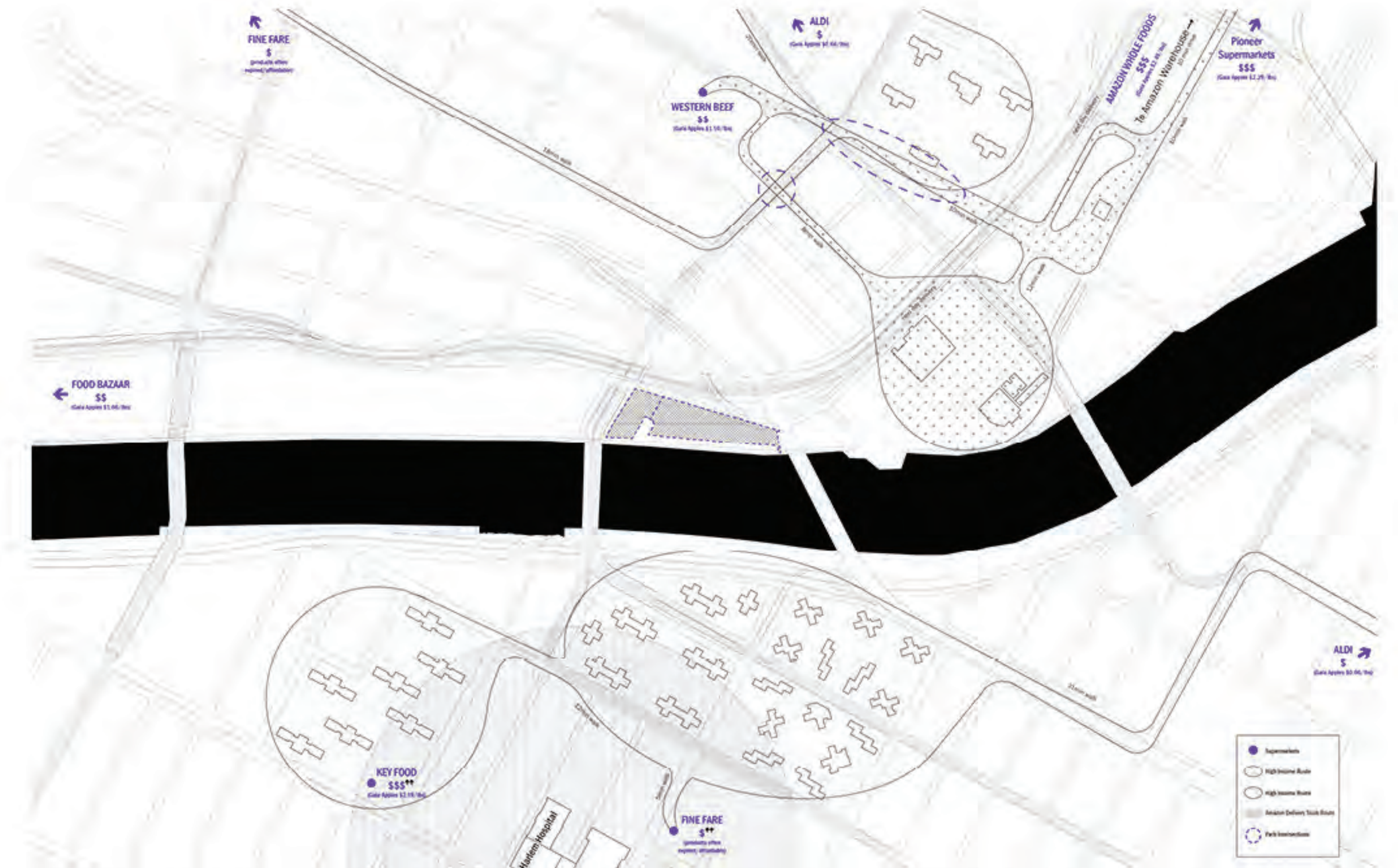
The understanding of the site and the neighborhood begins through the lens of the circular economic nature of commodities in general. Through Production, Consumption, Possession, and Demolition, the relationship of the site, the neighborhood, and its residents can be established in the broader urban context of the south of the Bronx, highlighting socio-physical spaces as well as nearby infrastructures for daily essentials and commuting.

Real Estate Value Chart



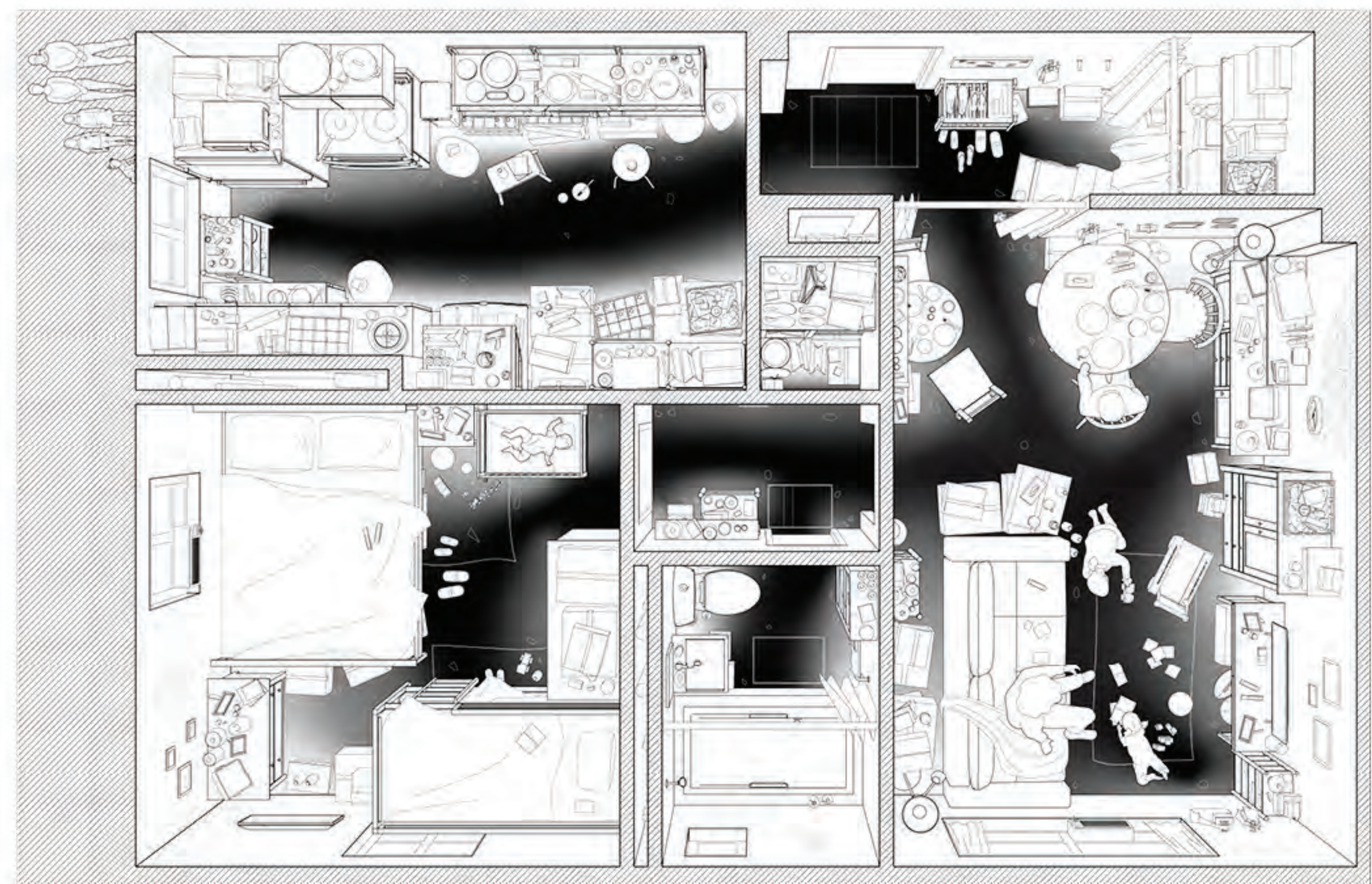
Production - Real Estate Development & Gentrification (Borough Scale)

With the exaggerated building height representing the value of real estate within the borough of south Bronx, Mott Haven, the commodification of real estate and newly developed luxurious apartments in the lower-income neighborhood results in community fragmentations, dispossession, and displacement, while raising the rent prices and living cost of the area, forming pressure to the local communities.



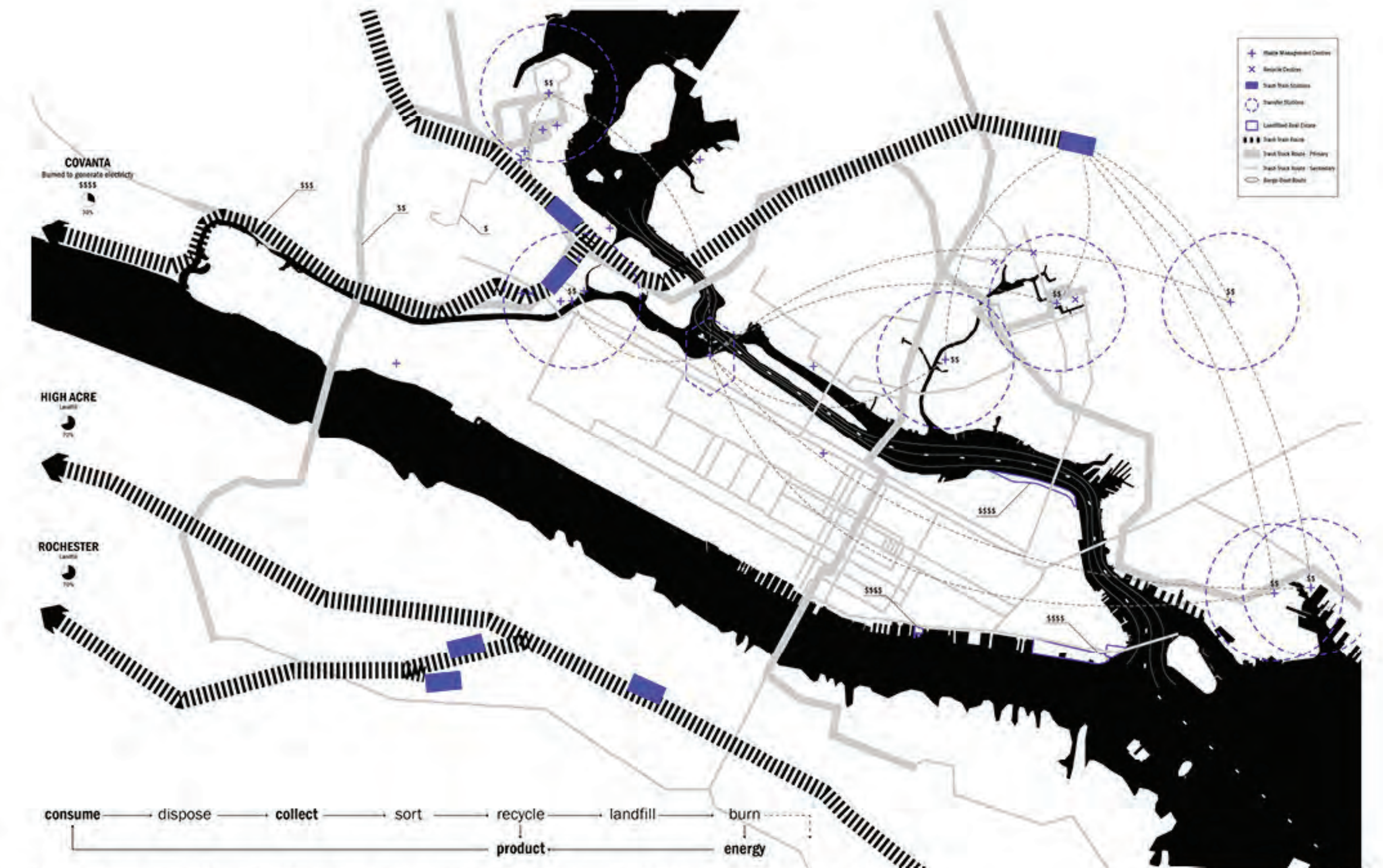
Consumption - Essential Consumption Pattern & Social Fragmentation (Neighborhood Scale)

The diagram examines the consumption patterns of local communities of different income level in order to deduce the movement pattern and social engagement between different demographic groups. The result indicates a lack of meaningful interaction and engagement between the two, highlighting the social fragmentation of the neighborhood that is as a result of gentrification.



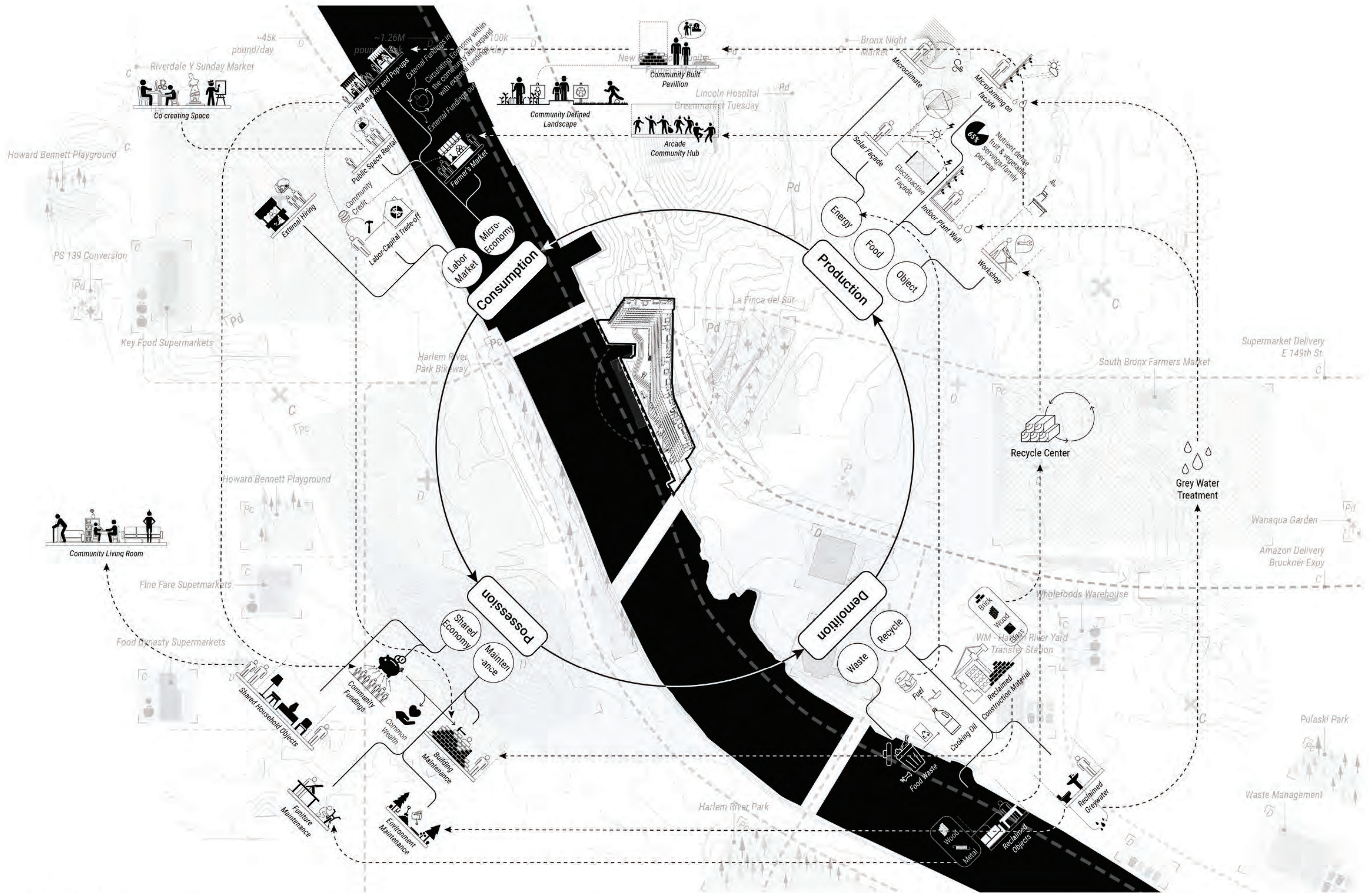
Possession - Commodified Spaces (Domestic Scale)

Based on an interview conducted of a family of 5 living in the Bronx on their living condition, the diagram examines the accumulation of commodities by humans within the capitalistic society and its take-over of human spaces within a household - spaces become occupied by commodities instead of humans.



Demolition - Waste Management and Inherent Value (Urban Scale)

The analysis looks at the commodification of the processes of waste management. The commodification of the very idea of 'waste' is interesting as it juxtaposes with how we perceive waste and trash as valueless objects. The map investigates the cyclical nature of waste management and the inherent value of each and every step such 'valueless' objects generate value.



Concept Diagram

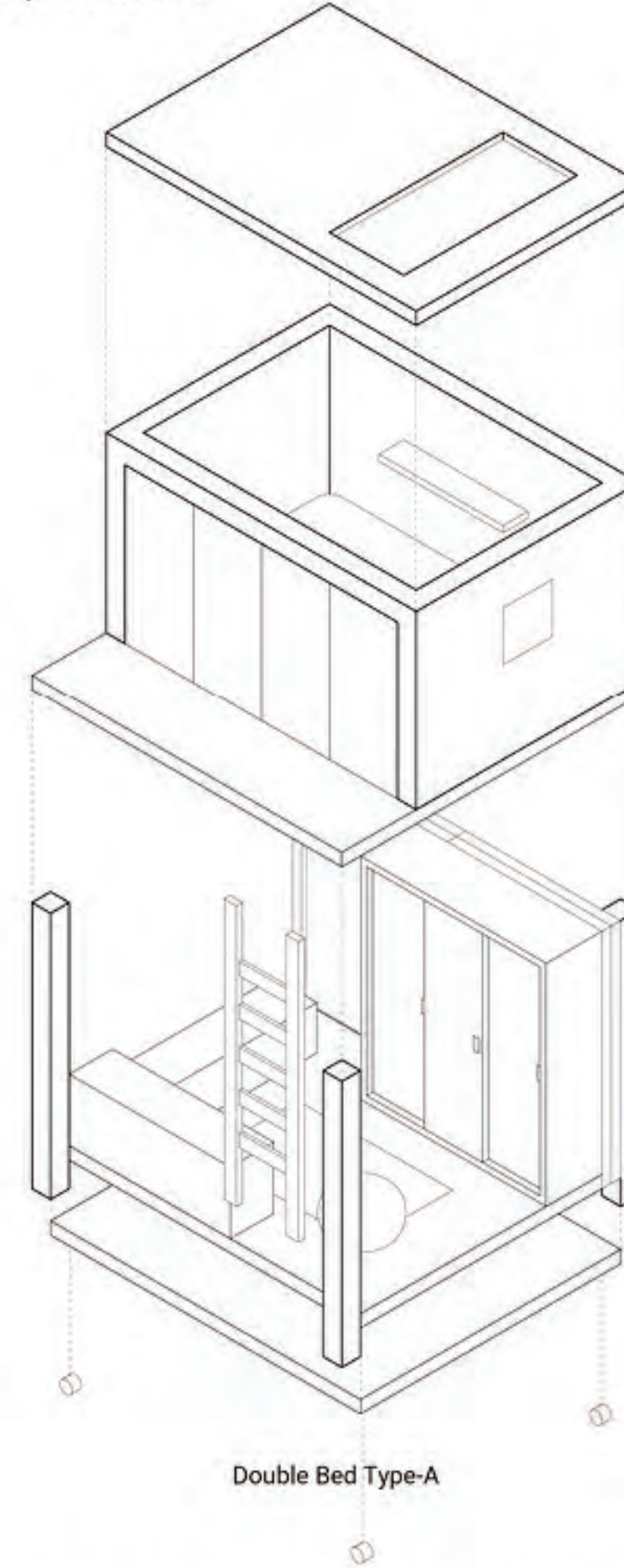
The project looks to tackle the commodification of spaces by the 4 pillars of Production, Consumption, Possession, and Demolition. Informed by this, the proposed 'Program - X' revolves heavily around winter gardens, recycling workshops and markets, which provides local job opportunities and trainings that will sustain the free-housing project. The project de-commodifies houses by encouraging the idea of 'shared-ness' and minimizing privatization. Residents are also encouraged to self-construct semi-temporal pavilions and installations to create adaptable spaces according to will as we intend to keep it as inhabitants driven as possible.



Living Area and 'Bunk Bed' Units

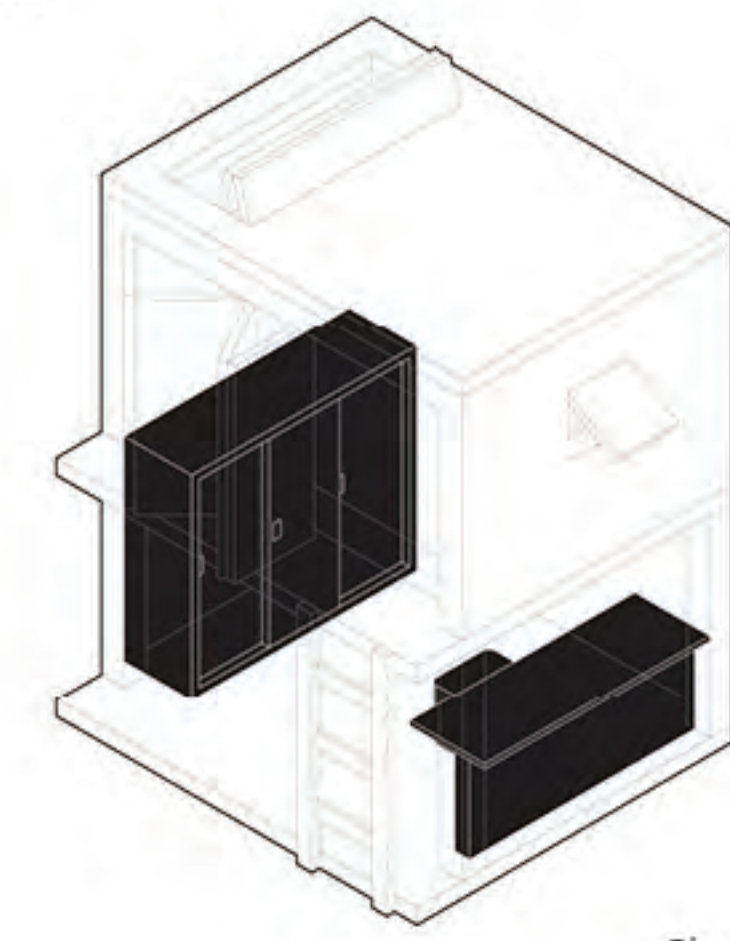
Shared living spaces that are highly appropriate-able and adaptable. Maximum natural light exposure is ensured through tall ceiling heights and windows facing south-west.

Exploded ISO

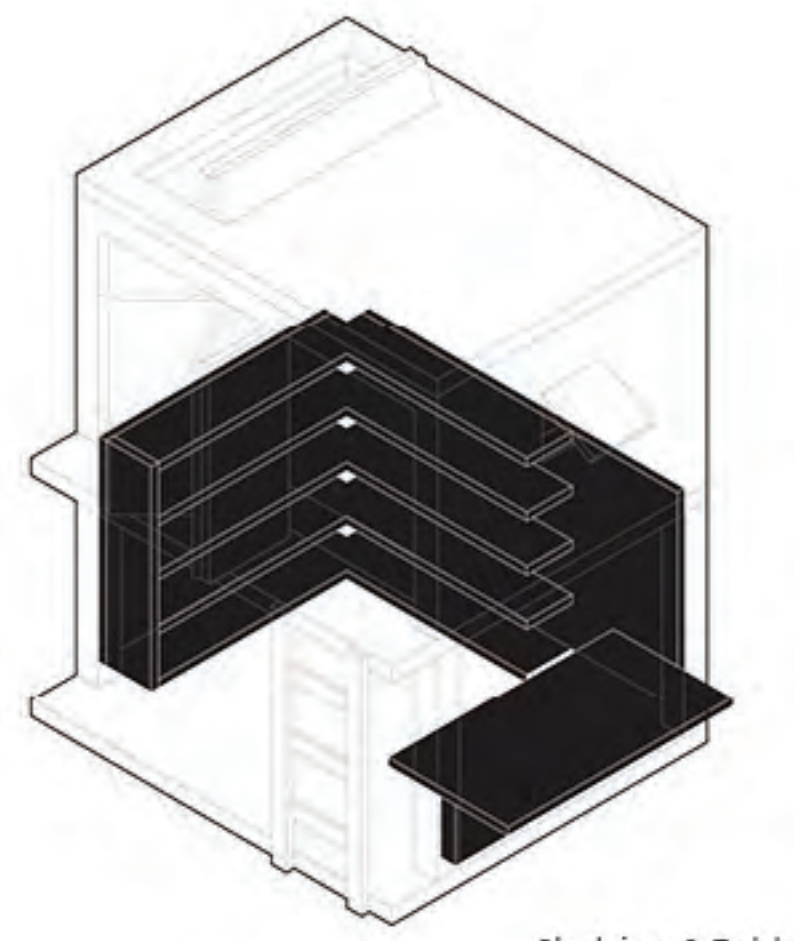


Double Bed Type-A

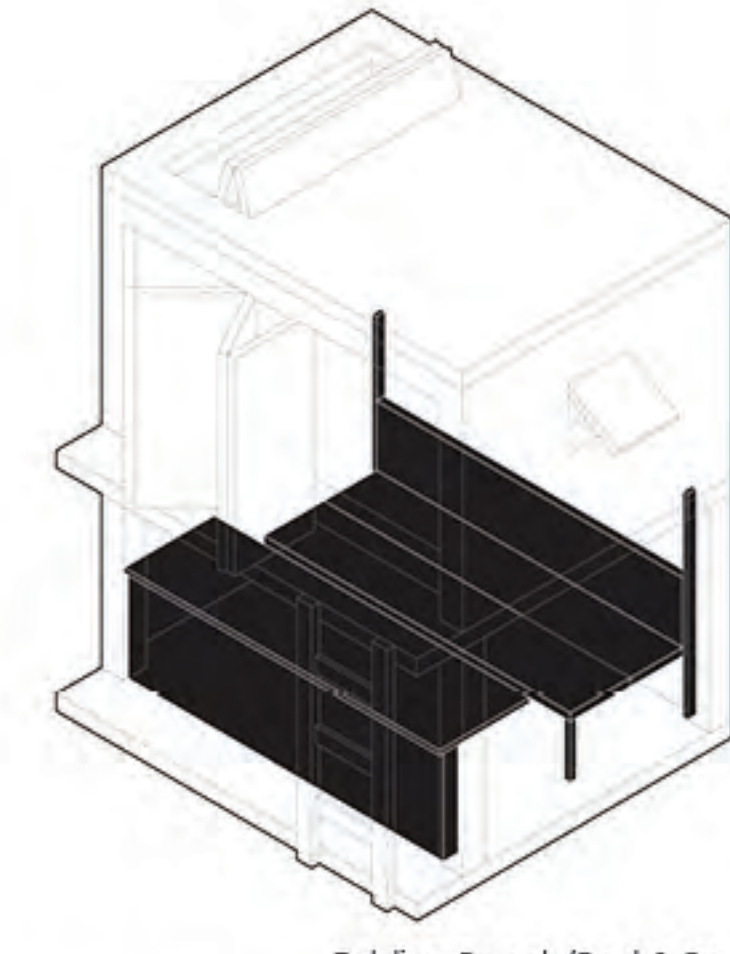
FIXTURE



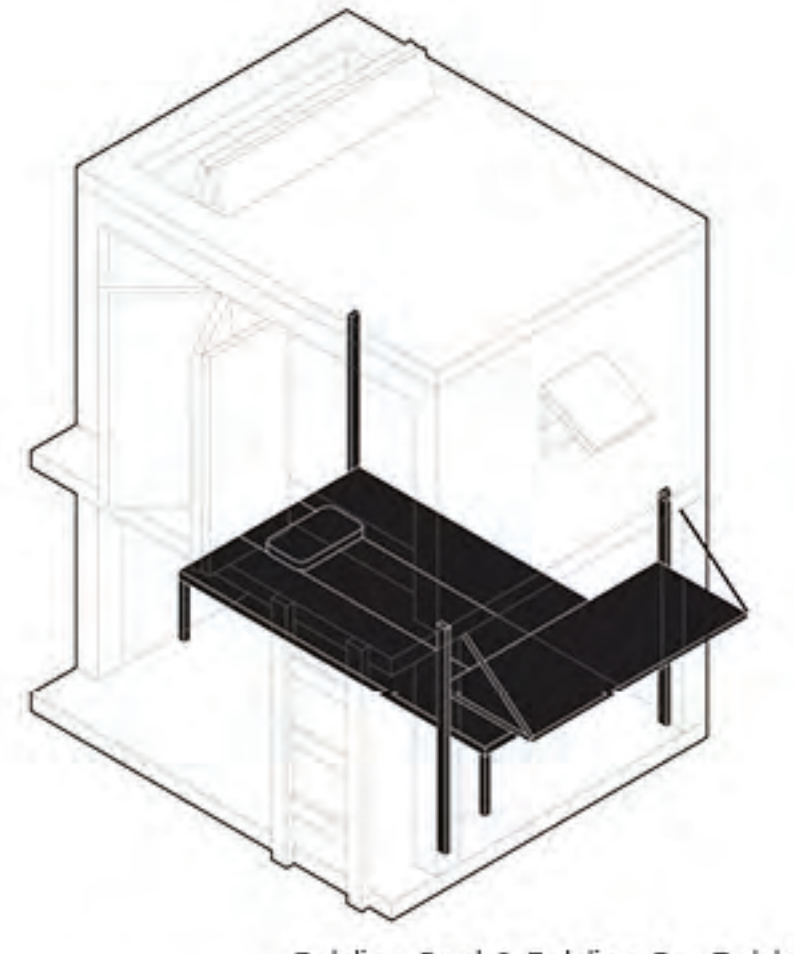
Closet & Desk



Shelving & Table

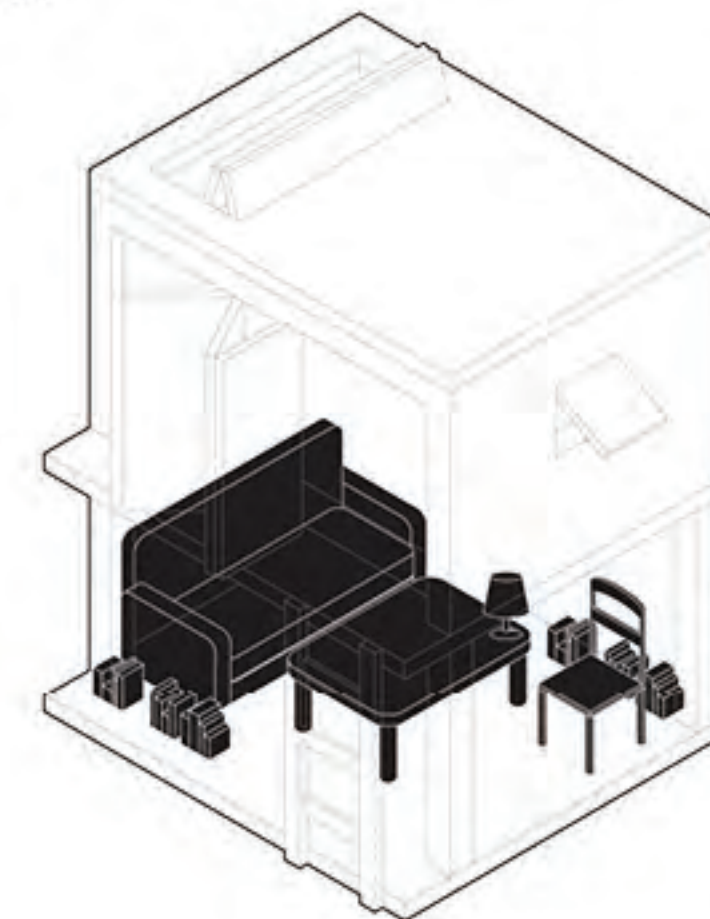


Folding Bench/Bed & Bench Table

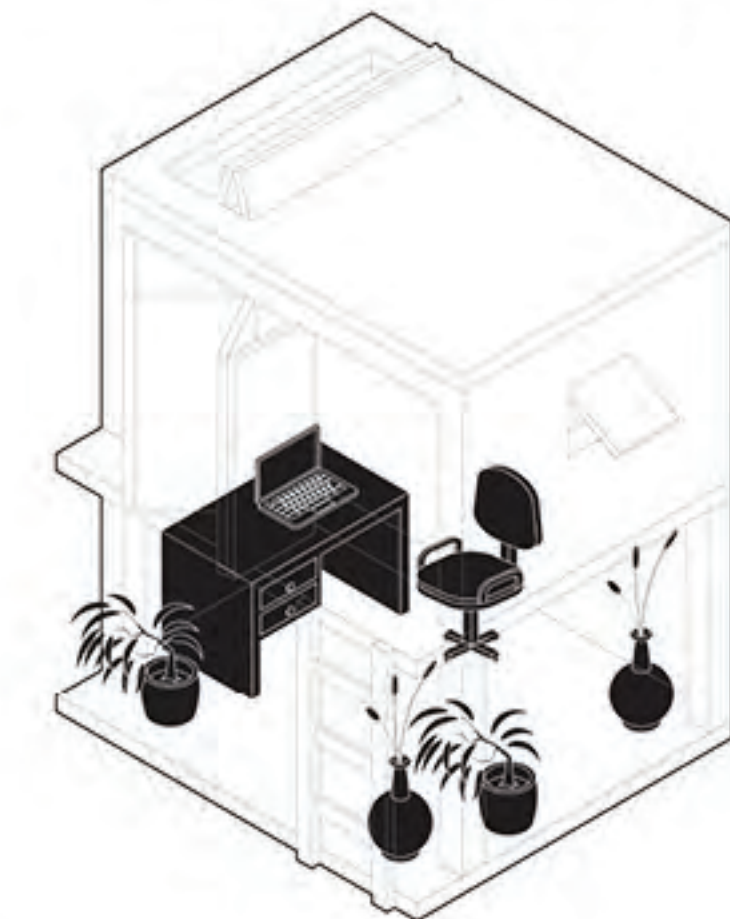


Folding Bed & Folding Bar Table

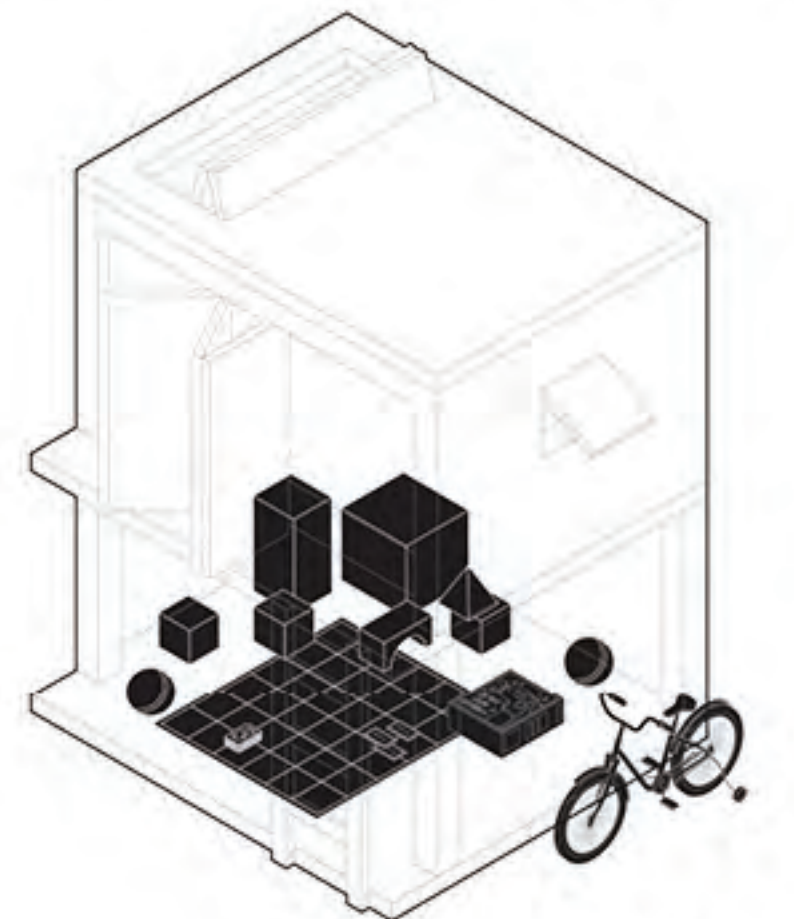
OPEN



Living Room

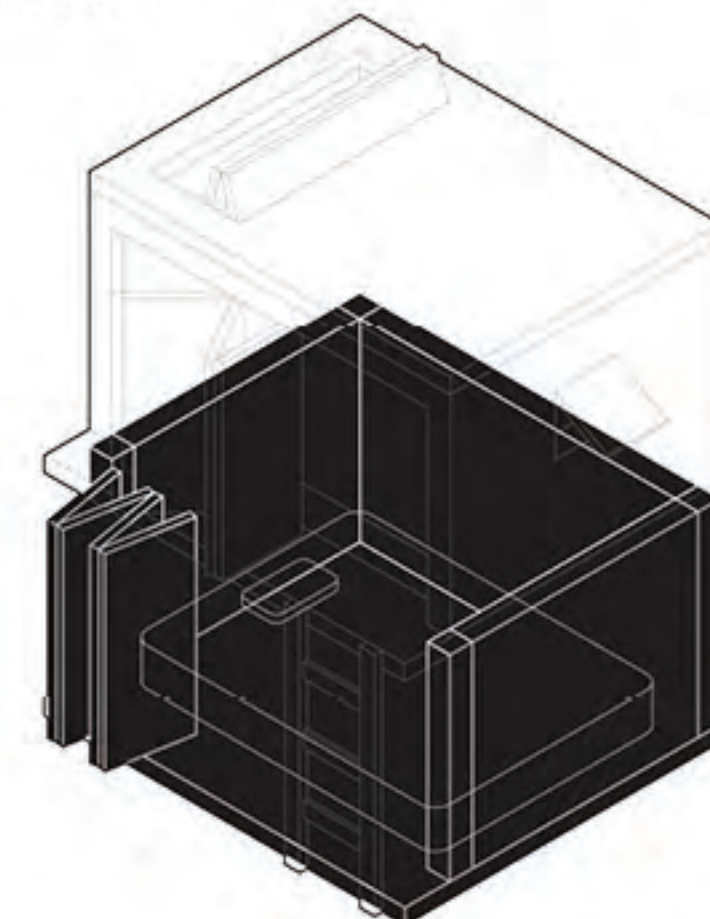


Study

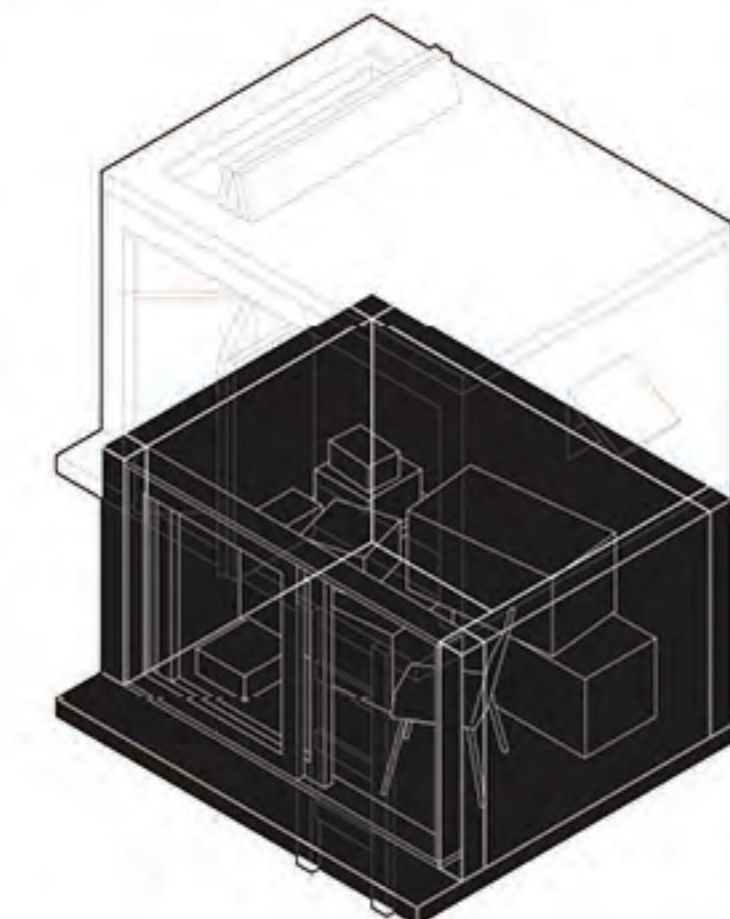


Children Play Room

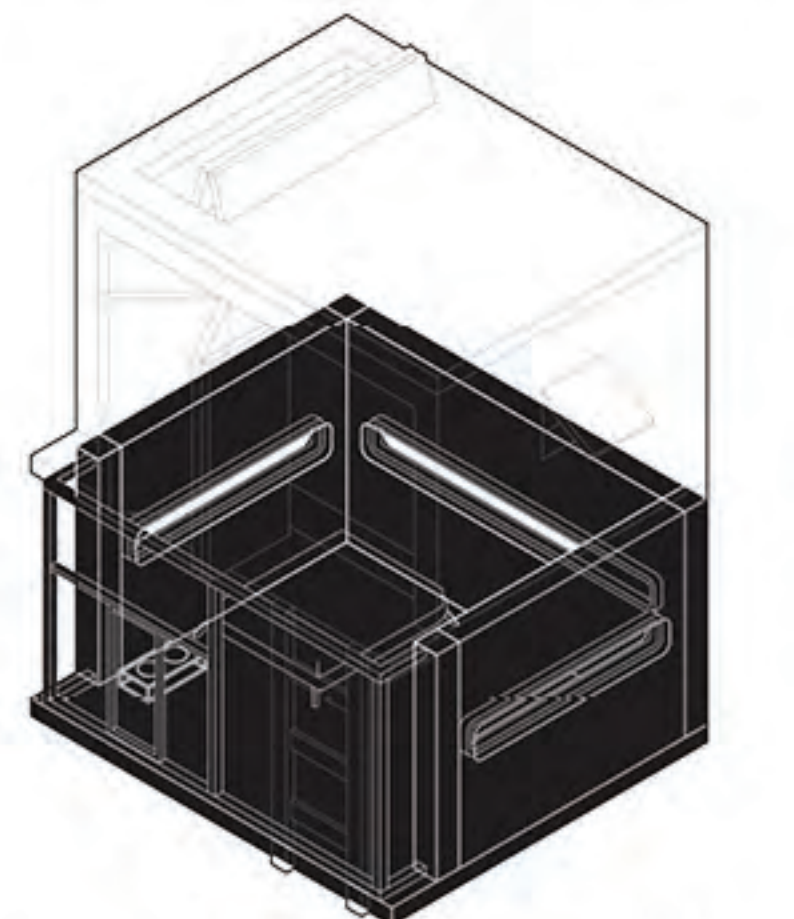
ENCLOSED



Second Bedroom



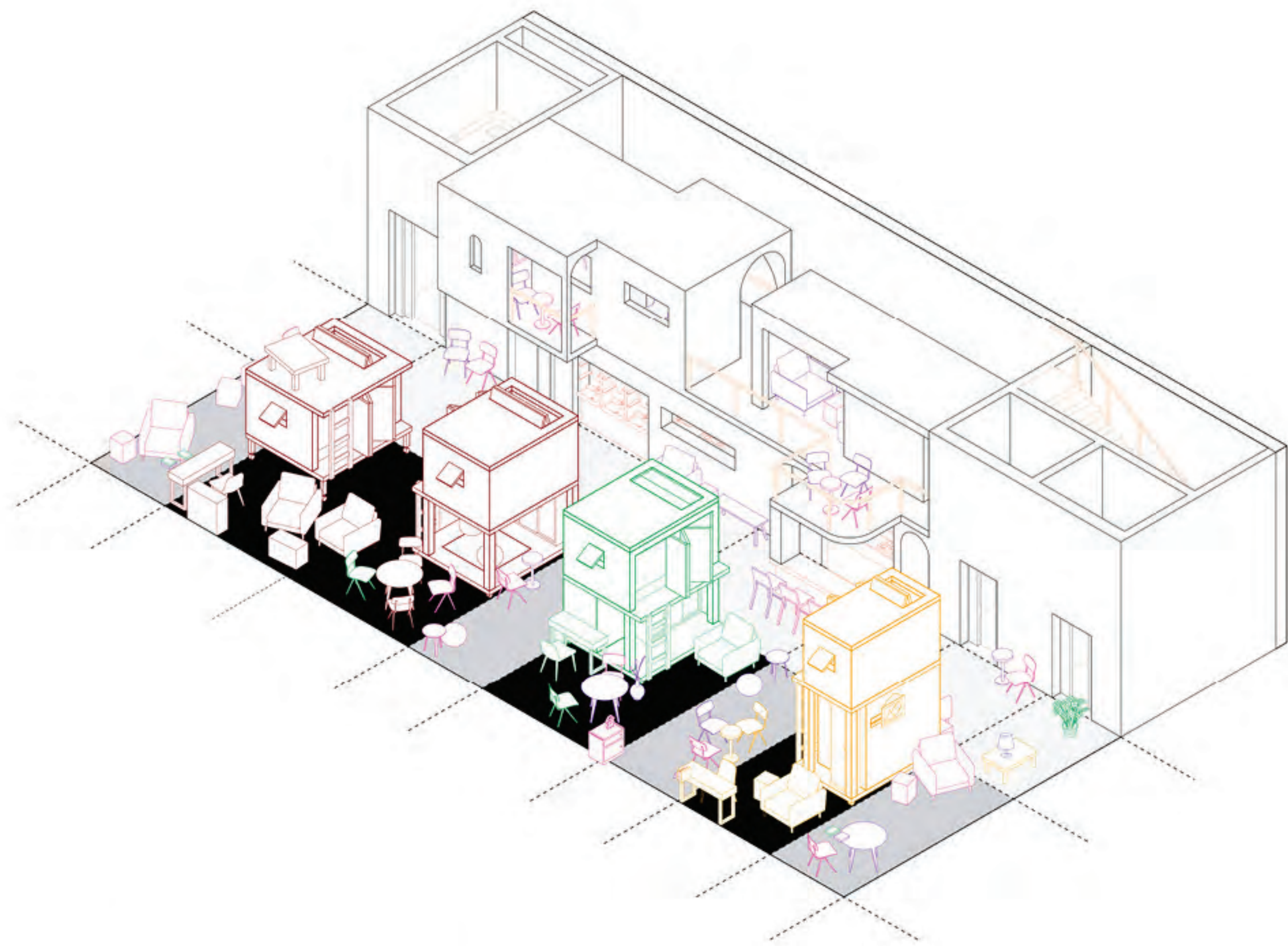
Storage Space



Pet Room

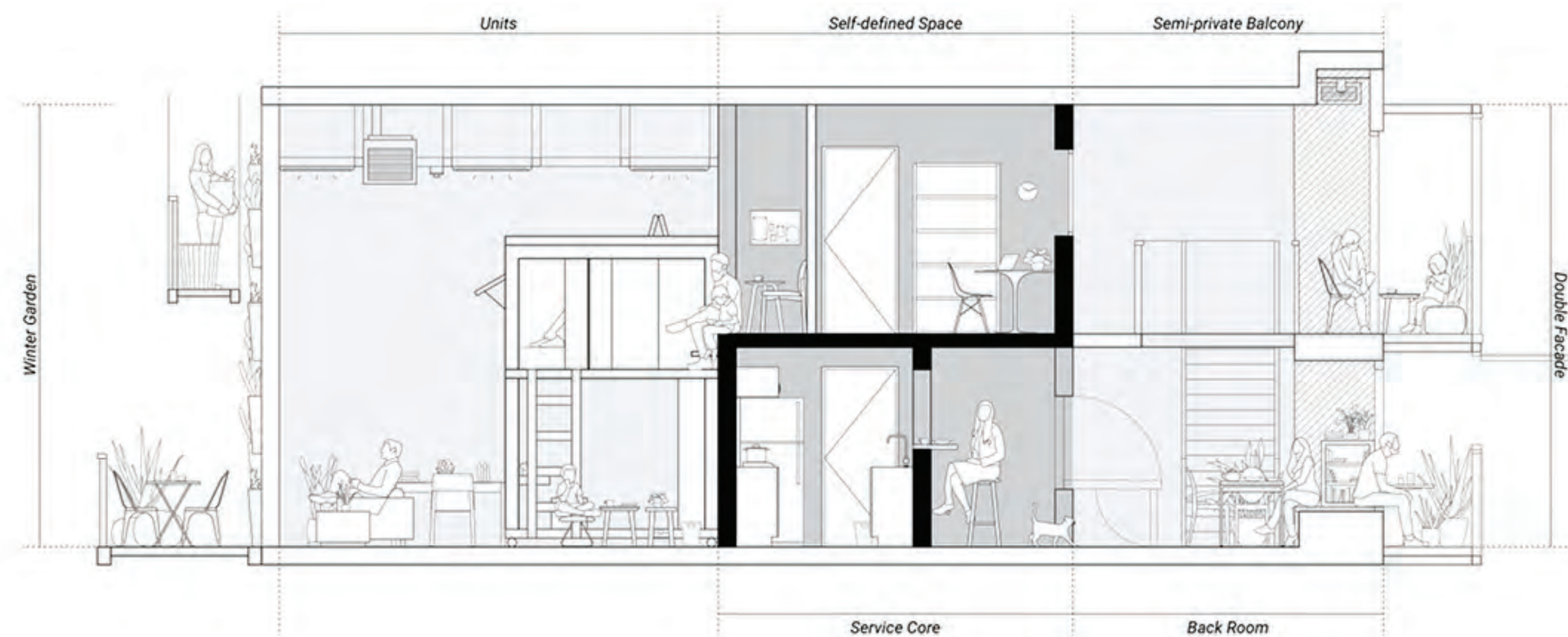
Matrix - Bed Unit Customization

The bed is where it is the most private in our proposal. The modular unit consists of a top half and a bottom half, where the top houses the private bed while the bottom is highly customizable according to residents' needs.



Moveable Units & Self-Defined Stationary Spaces

The highly flexible units allows for adaptation and intergenerational change through customization. A sense of shared ownership is also highlighted by the coloring of objects and spaces.



Residential Area Section

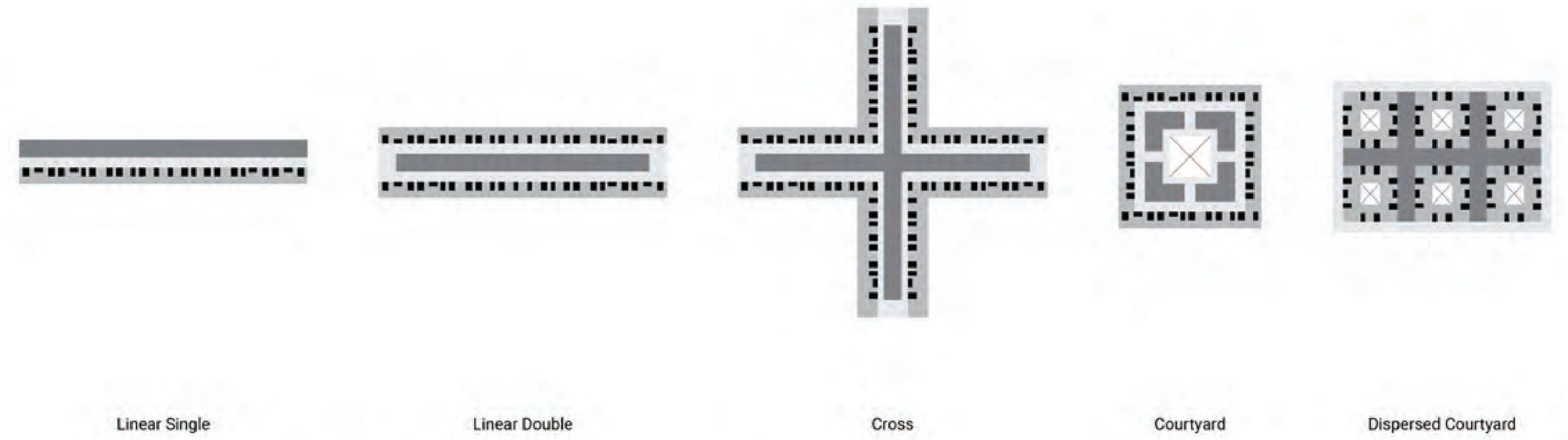
The typical floor is divided into 3 main parts: Units/Living Area with Winter Garden facing the river (SW), Self-defined Space and Service Core, and the Back Room with a Double Skin Facade facing the city (NE).



Back Room / Semi-private Balcony (Shared Common Area)



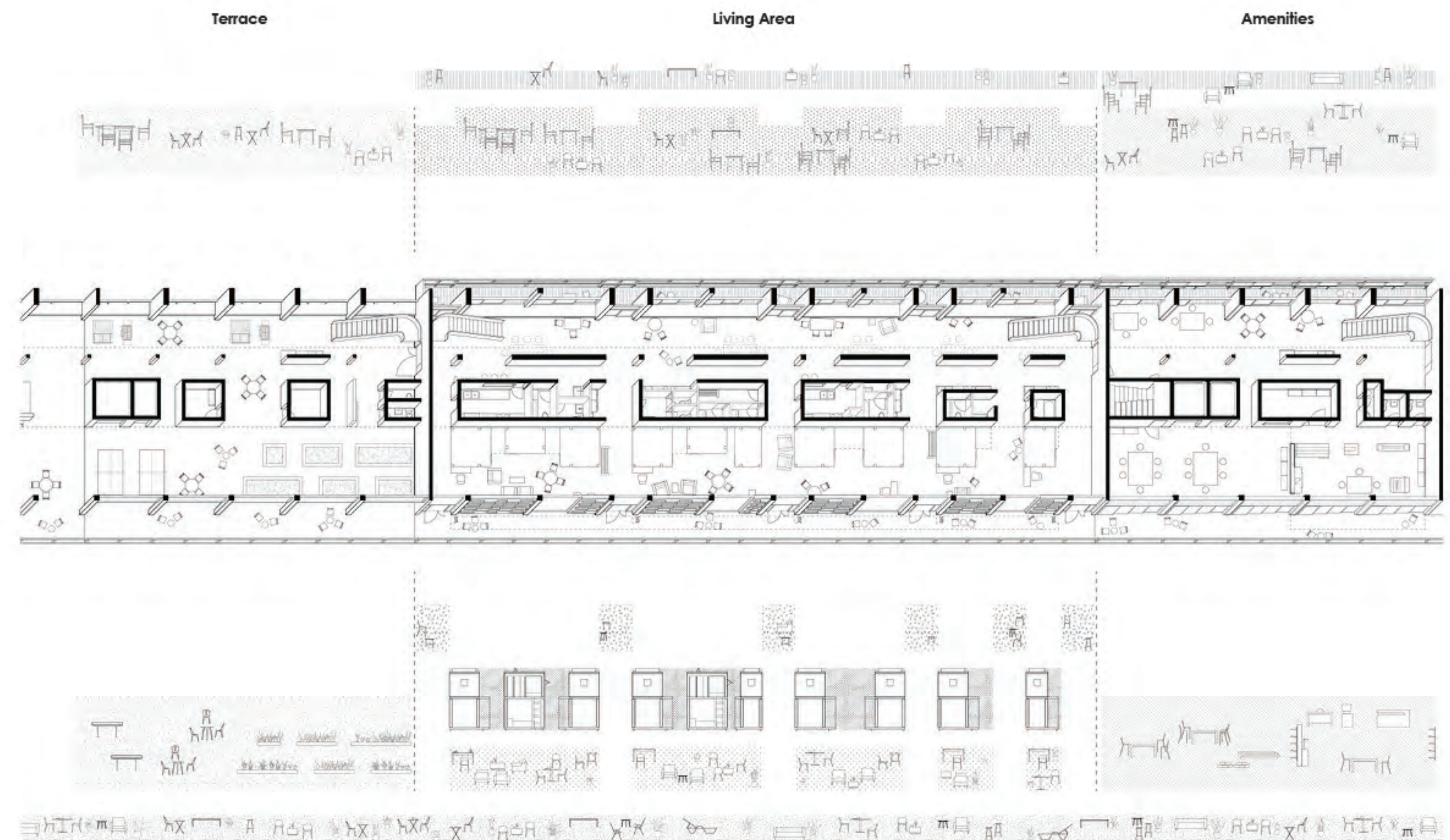
Winter Garden



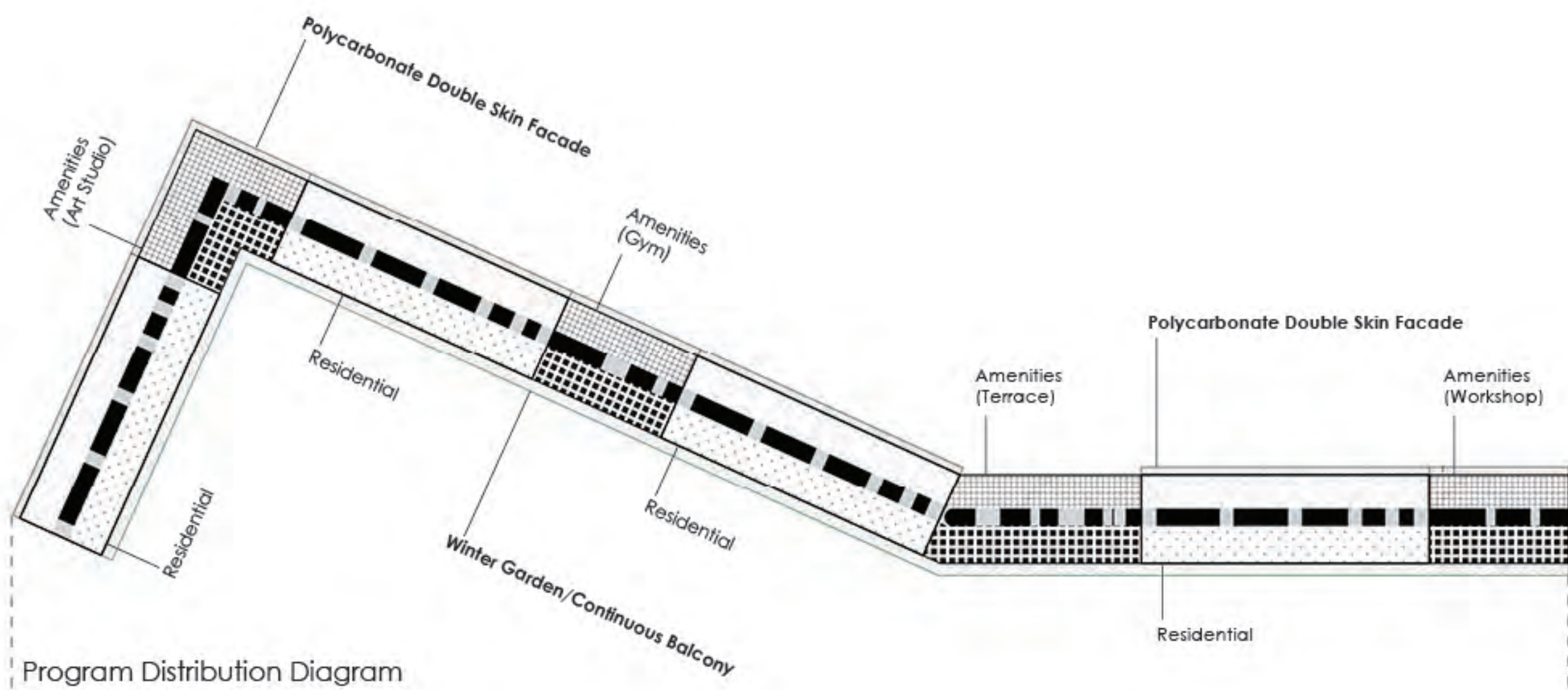
Units to Service Core (Wet Wall) Relations --- Iterations



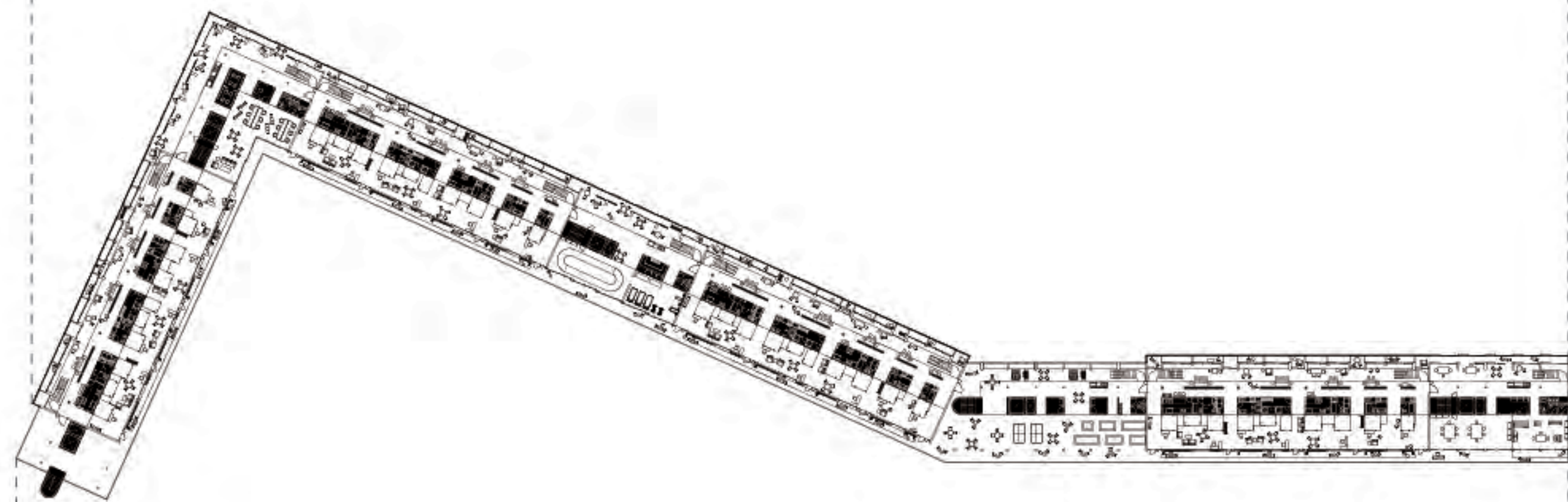
Living Space Organizations & Circulation



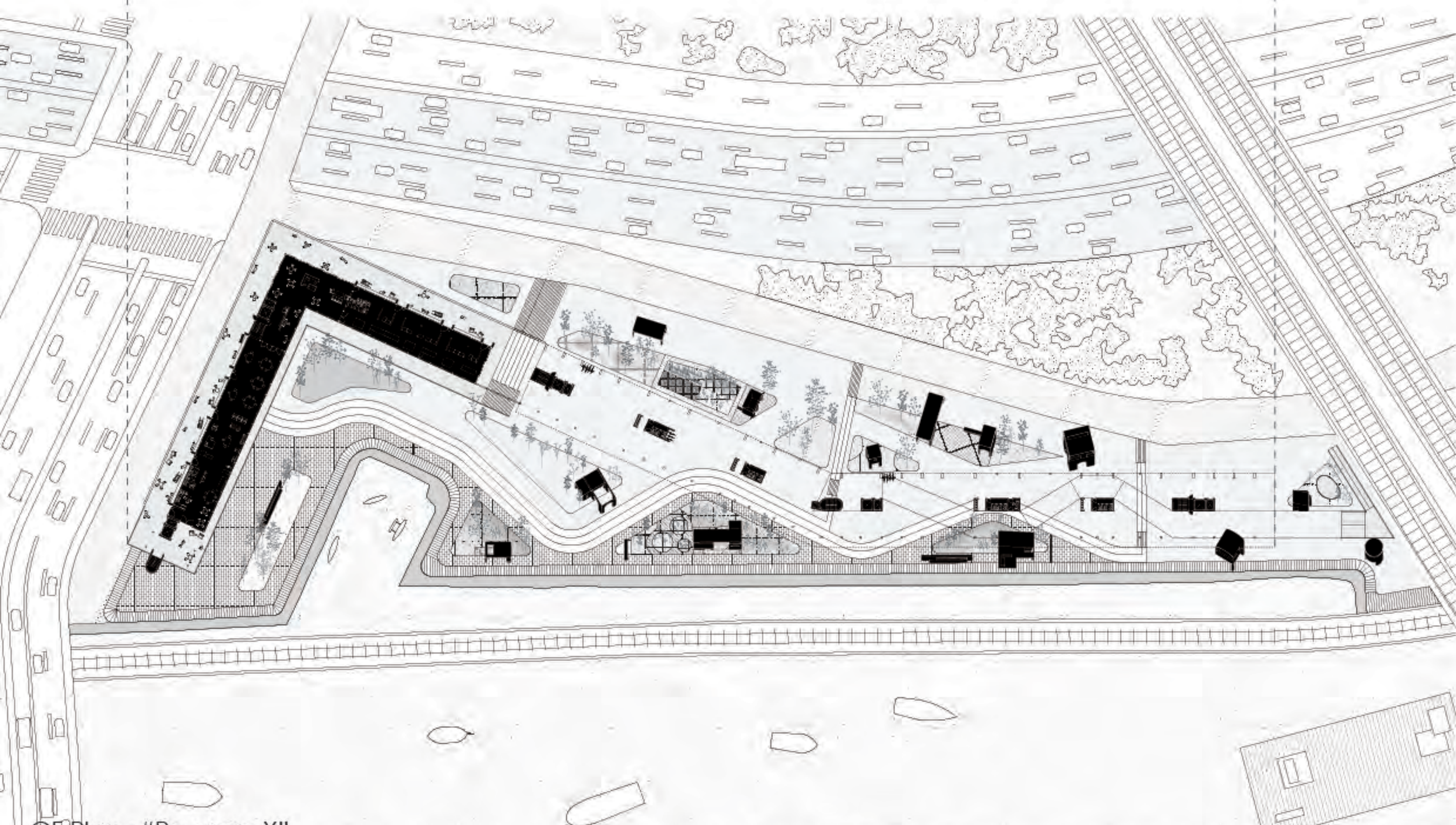
Plan Oblique of Programmatic Adjacencies



Program Distribution Diagram

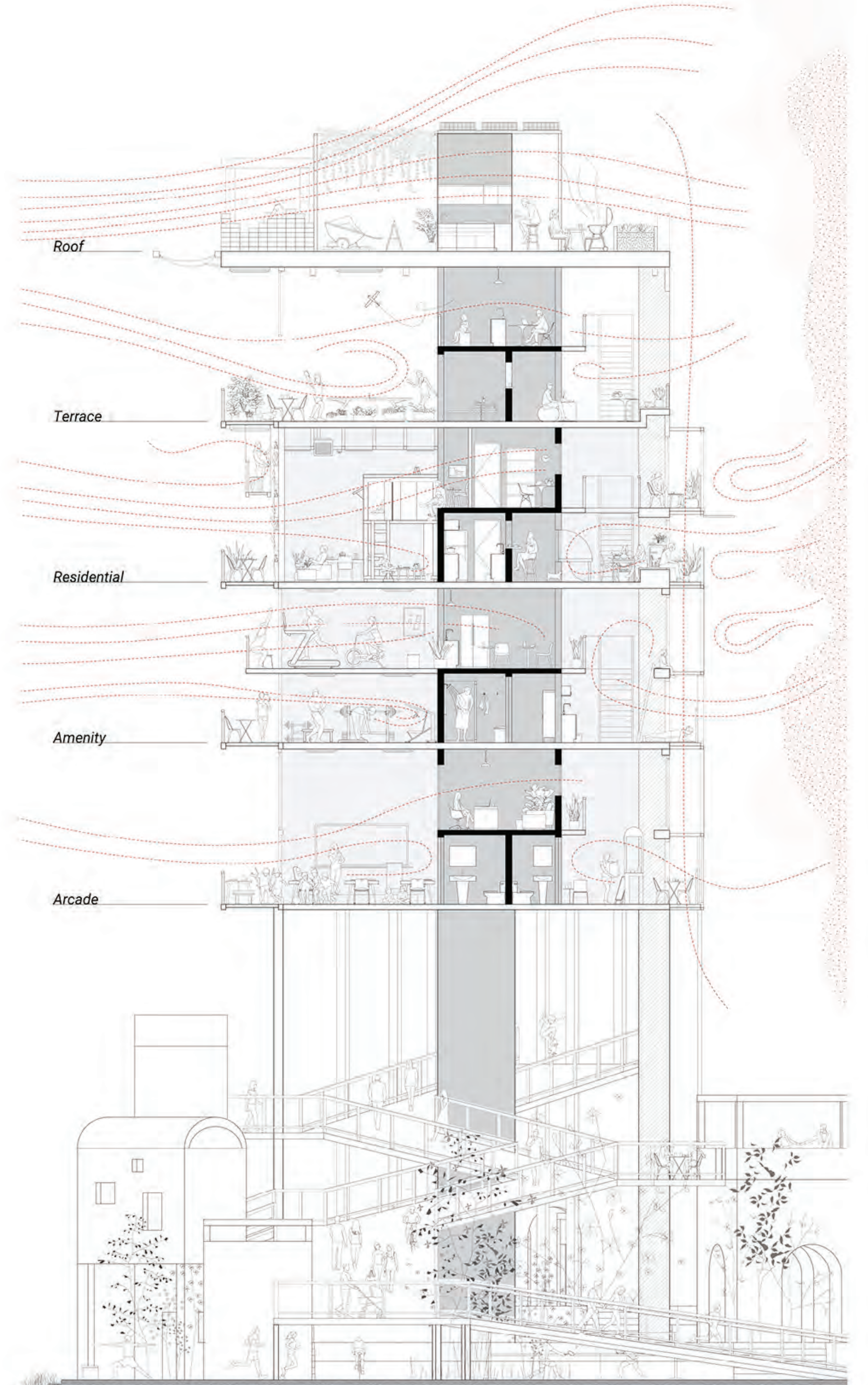


Typical Floor Plan



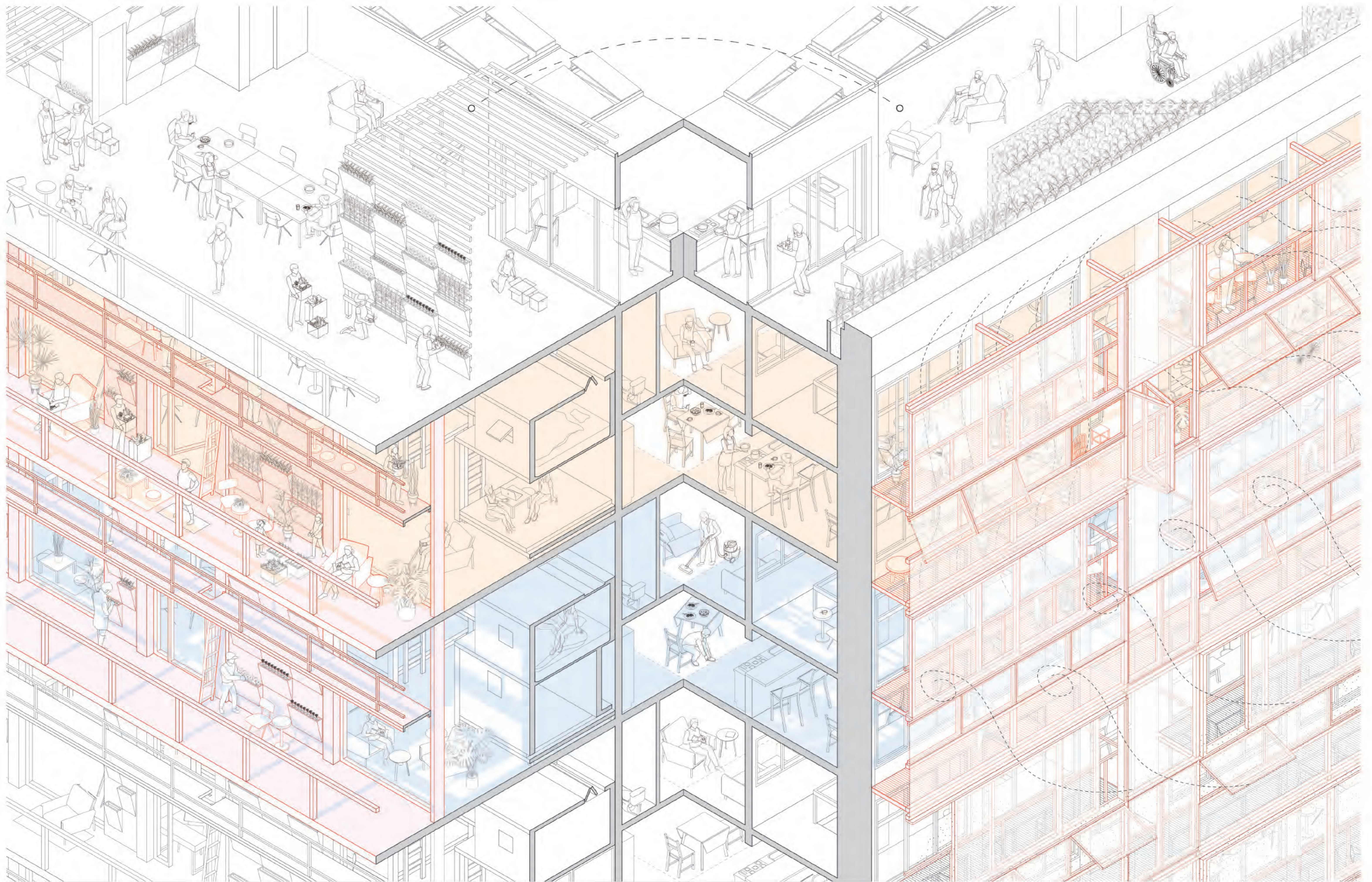
GF Plan - "Program X"

The main area of attraction is proposed at the main entrance/atrium of the building towards the left. The main space serves as key waste management sorting facility, workshops, and farmer's market. The landscaped ground floor is the most public area of the whole proposal. Revolving around the idea of sharing, building, and customizing, and facilitated by a sky bridge arcade that can be manifested as a new ground floor during flooding season, residents are encouraged to design and construct relatively simple structures to support specific programs, such as galleries, retail shops, coffee shops, wood workshop, viewing pavilions, etc..



Abstracted Section of Conditions

A series of sections showing the various proposed conditions within the project that does not necessarily align with one another vertically but more so horizontally. The two different types of facades responds to the two sides of the building: the winter garden facing the river and the polycarbonate double-skinned facade facing the city. The ramp into an elevated arcade creates edge conditions and adjacencies that fosters resident-built pavilions, as well as performing as a new ground level during flood season or in 100 years when the existing ground may be submerged due to it being in the 100-year flood plane.



Unwrapped Section ISO - Facade Performance (west & east facade)

The proposal takes into account the two different interfaces that the site faces: one towards the Harlem river and the other towards the urban scape of broader Bronx. Correspondingly, the facades are also designed specifically to interact with the two conditions. An intermediate winter garden occupies the west elevation facing the river to provide views, natural lighting, and natural ventilation, which also supports plantation walls that allows the residents to grow food or other vegetations. In contrast, the east elevation that faces the city and traffic highways is designed with a more closed off system. The relatively cheap double skin facade, consisting of steel frame structure and polycarbonate panels, performs thermally as a stack ventilation mechanism that helps to retain heat in the cold winters of New York; during summer, the system can be opened up to allow maximum cross-ventilation through the winter gardens. In addition, the double skin facade also performs as a barrier for noise and air pollution that is generated by the city and traffic.





Shared Living Area & Bunk Bed Units



City-facing Double Facade System with Sliding Partitions



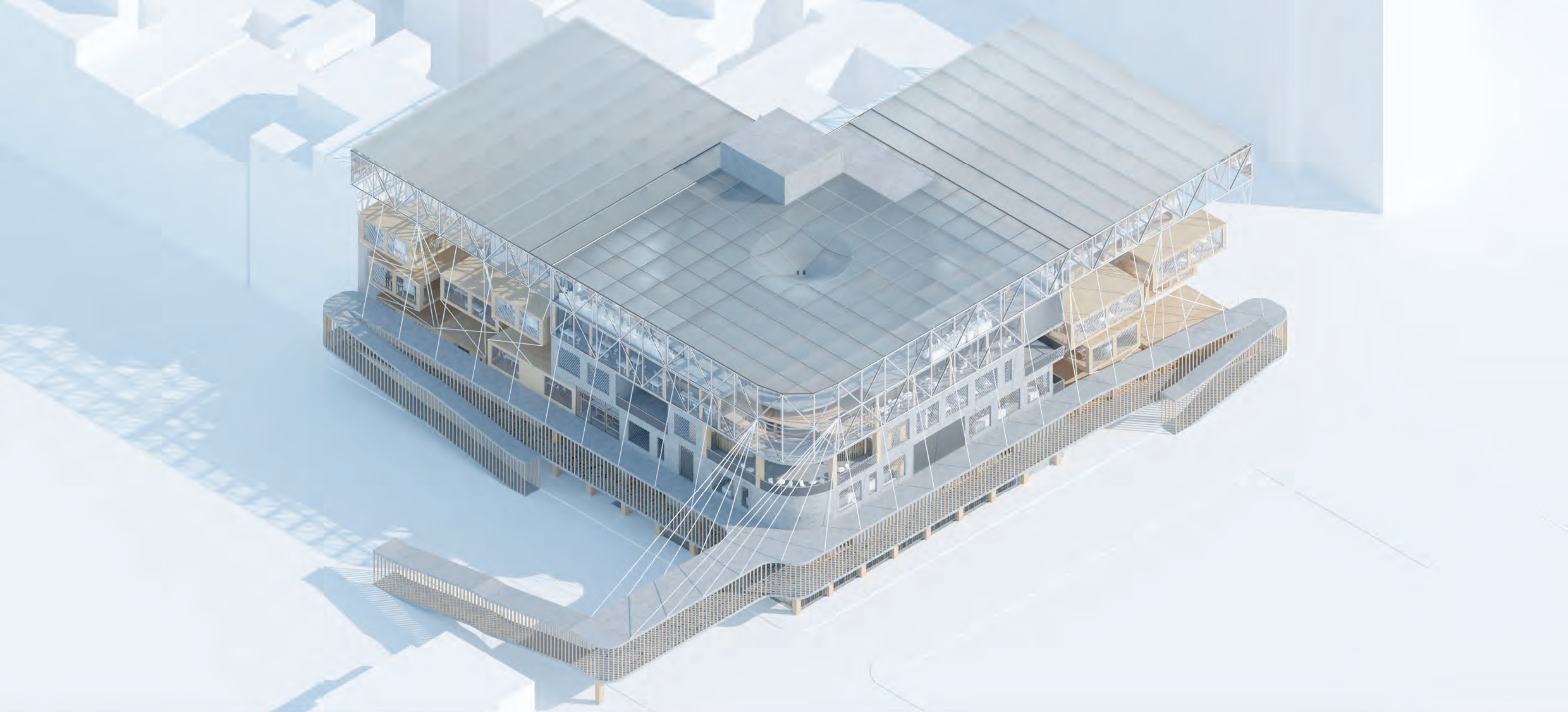
Winter Garden with Vertical Farm



Circulation in between City-facing Double Facade



Interior View of Shared Space Looking Towards The City



05

The Post-carbon School

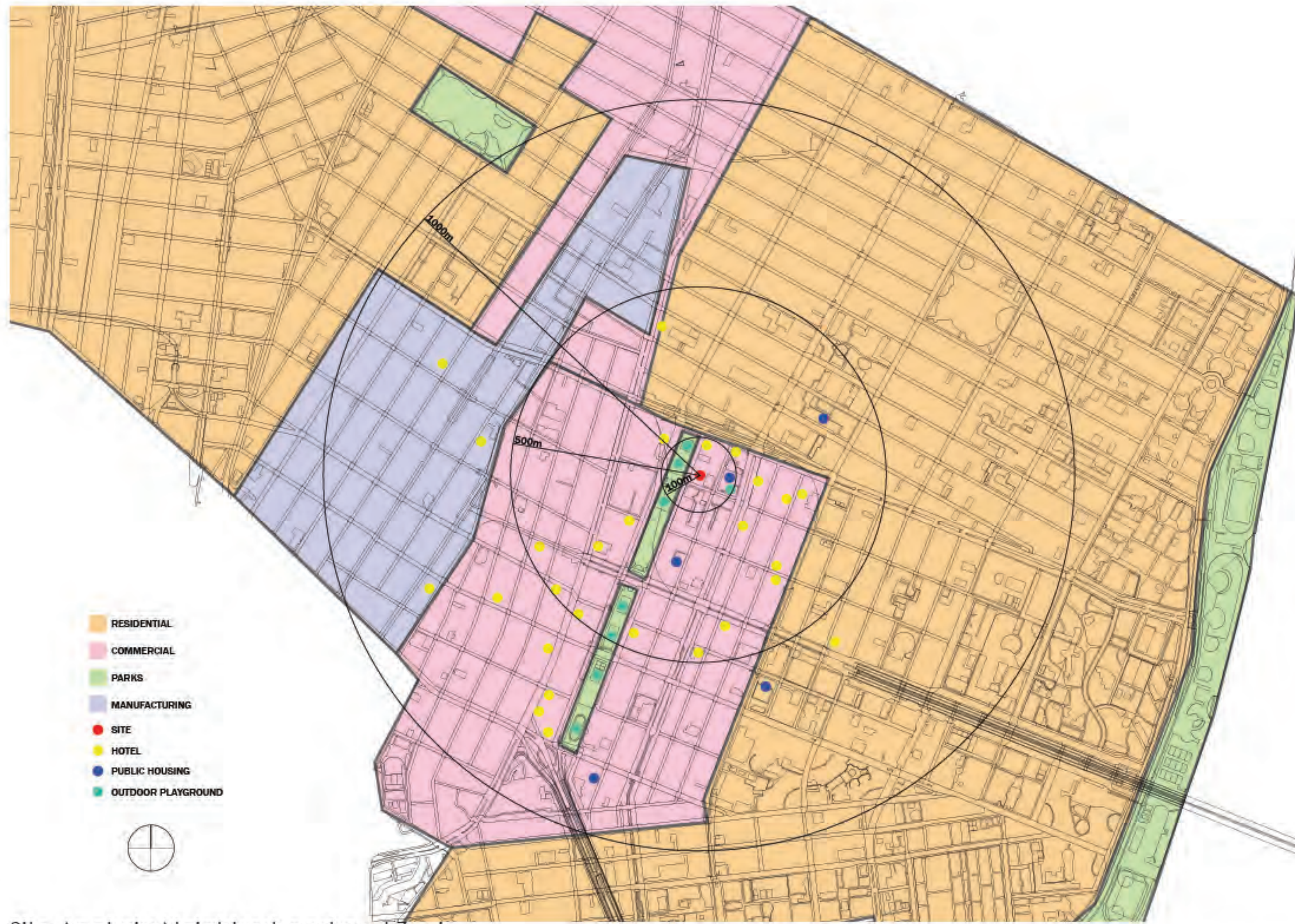
The School of Amalgamation

Independent Project
Core Studio II (Year 1 Spring Semester, 2022)
Studio Leader: Miku Dixit (md3194@columbia.edu)

In the carbon world, buildings – an integral part of human living – generate nearly 40% of annual CO2 emissions by daily operations and construction/demolition. This urges for higher material efficiency, material re-usability/replenishment, and passive design strategies in the post-carbon world as humans continue to build. Considering that nearly 68% of the building embodied carbon can be affected using properly sourced materials, the project also seeks to minimize the embodied carbon of construction systems using low-embodied-carbon materials, efficiently, through the amalgamation of composite structural systems between steel, timber, cable, and concrete.

The K-8 school of “Amalgamation”, located at 198 Forsynth St in Manhattan, focuses on a curriculum of substance circular economy and fosters an amalgamation of disciplines and non-standard-material-assemblies through a physically balanced and hyper legible system, comprised of compression and tensile structures, that activates the minds of children through experience, application, and visualization.

The visual idea of a hyper legible structural interrelation, water circulation, and material paths encourages the post-carbon child to ponder upon materiality, efficiency, and sustainability.



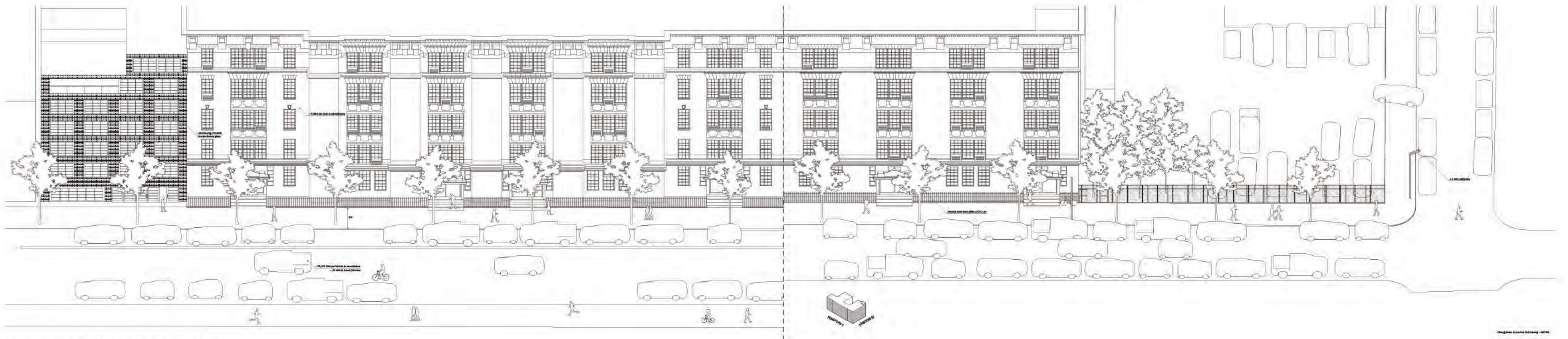
Site Analysis: Neighborhood and Zoning

The site is situated at the edge of a commercial zone rather than a residential zone. Surrounded by touristy districts with numerous hotels in the area the immediate demographic, other than students, can be understood as non-idle and constantly changing.



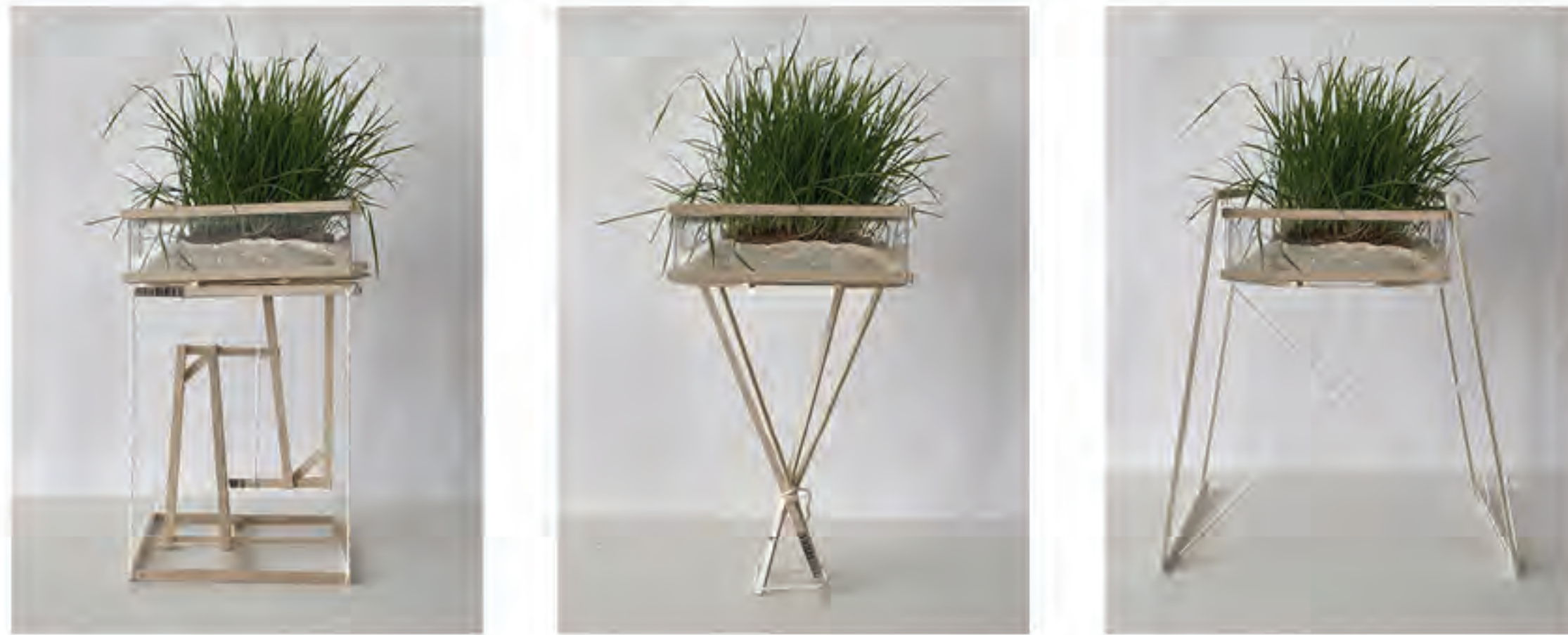
Site Analysis: Walkable Surfaces

The circulation around and to site is very limited with narrow pavements and are congested by the busy traffic. The congested walkways open up to a major node of open space in the park that is opposite the site. The danger of cars around the K-8 school should also be taken into consideration.



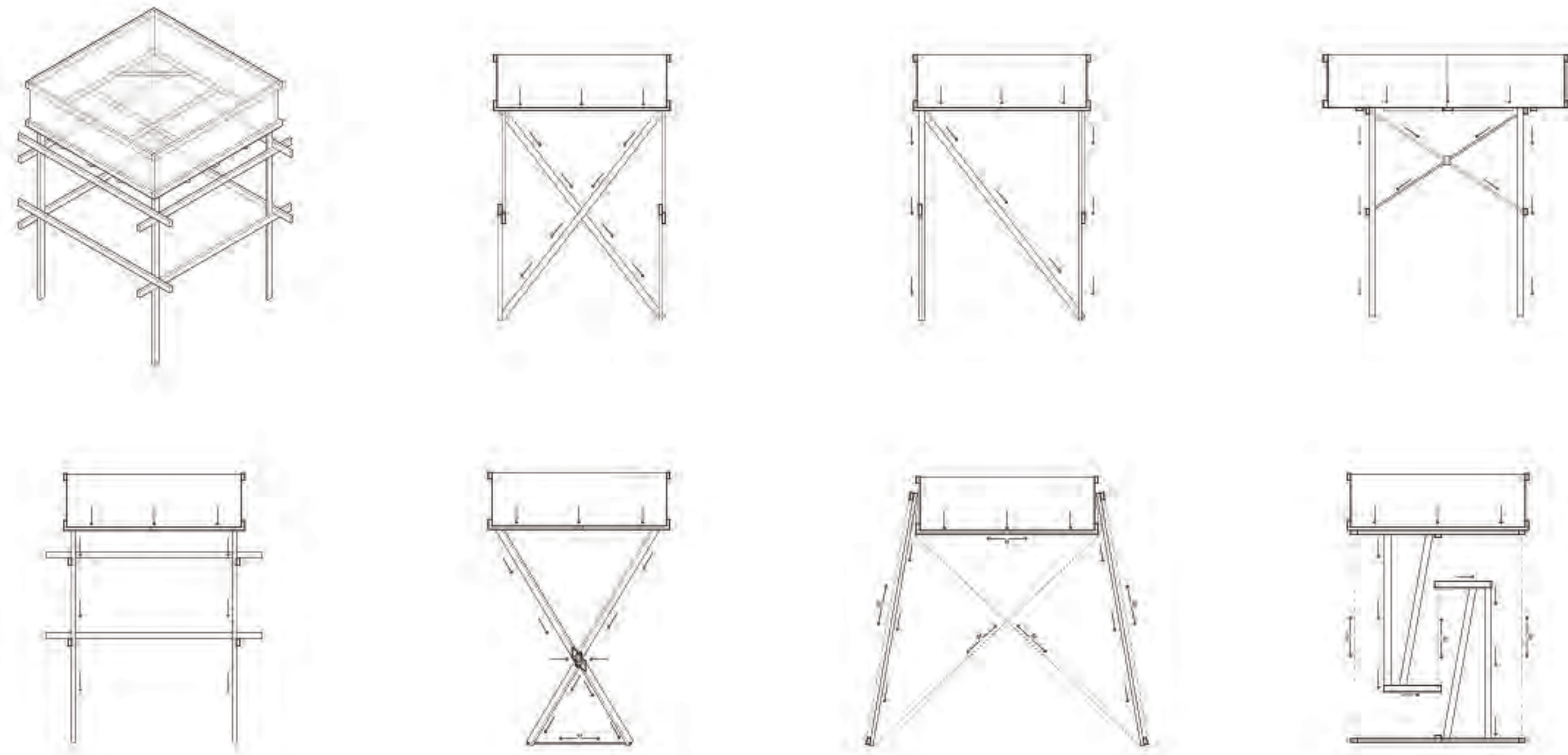
Unwrapped Elevation Oblique

The site is occupied with an existing school building that is underutilized as the 6-storey building only houses small classes and night classes. The drawing examines current conditions of the site, highlighting narrow pavements, dominant car presence, lack of lighting at night and safety, and the embodied carbon/energy of materials.



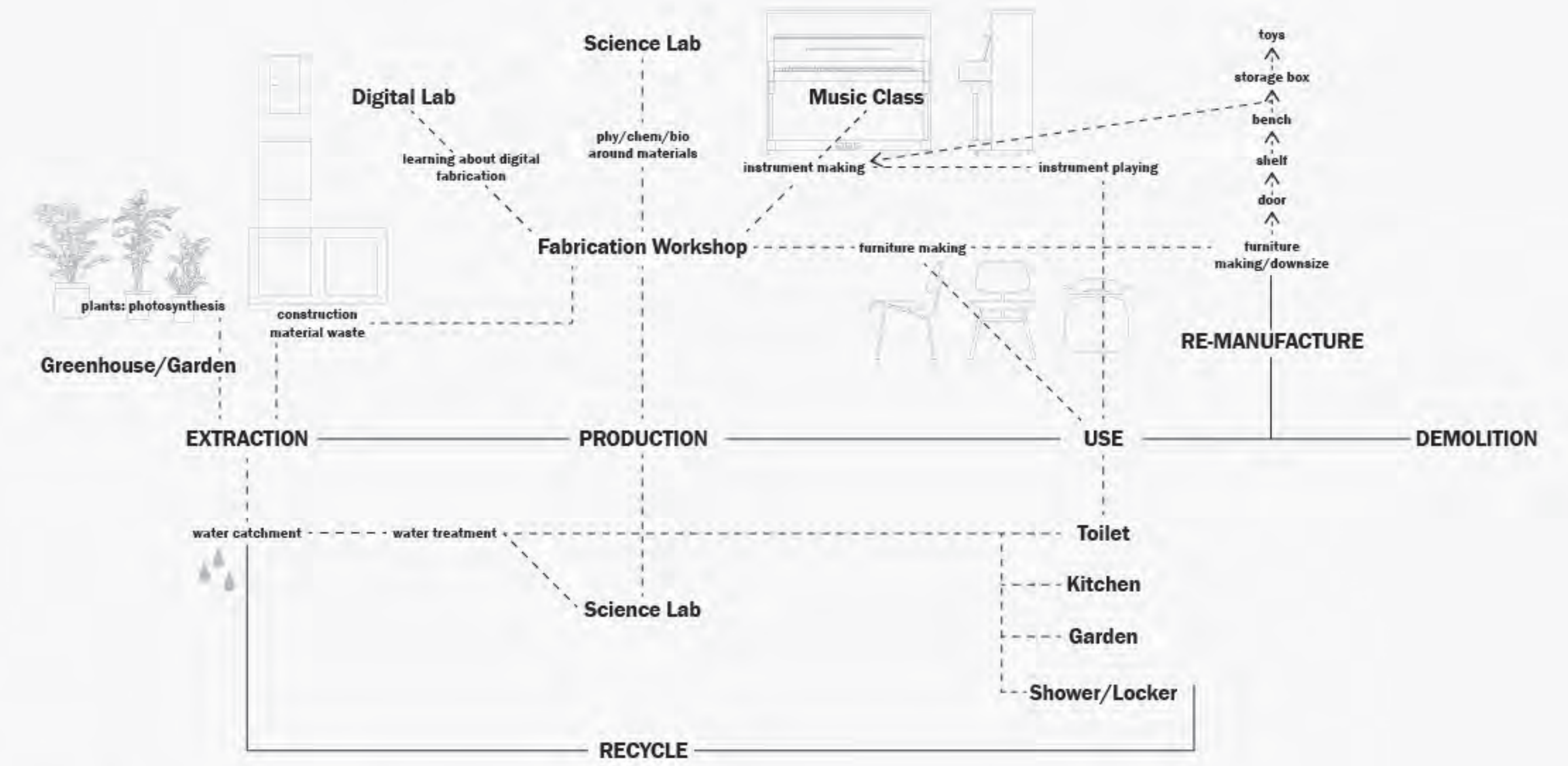
The "Dirty" Model

The modeling exercise looks at minimal structures and material efficiency in supporting both dead-loads and live-loads. The grass is grown from seeds over time in the container. Its growth and watering is considered live-loads and the container is the dead-load. The experiment evolves from compressive structures to composite compressive-tensile structures to further reduce the structural weight.



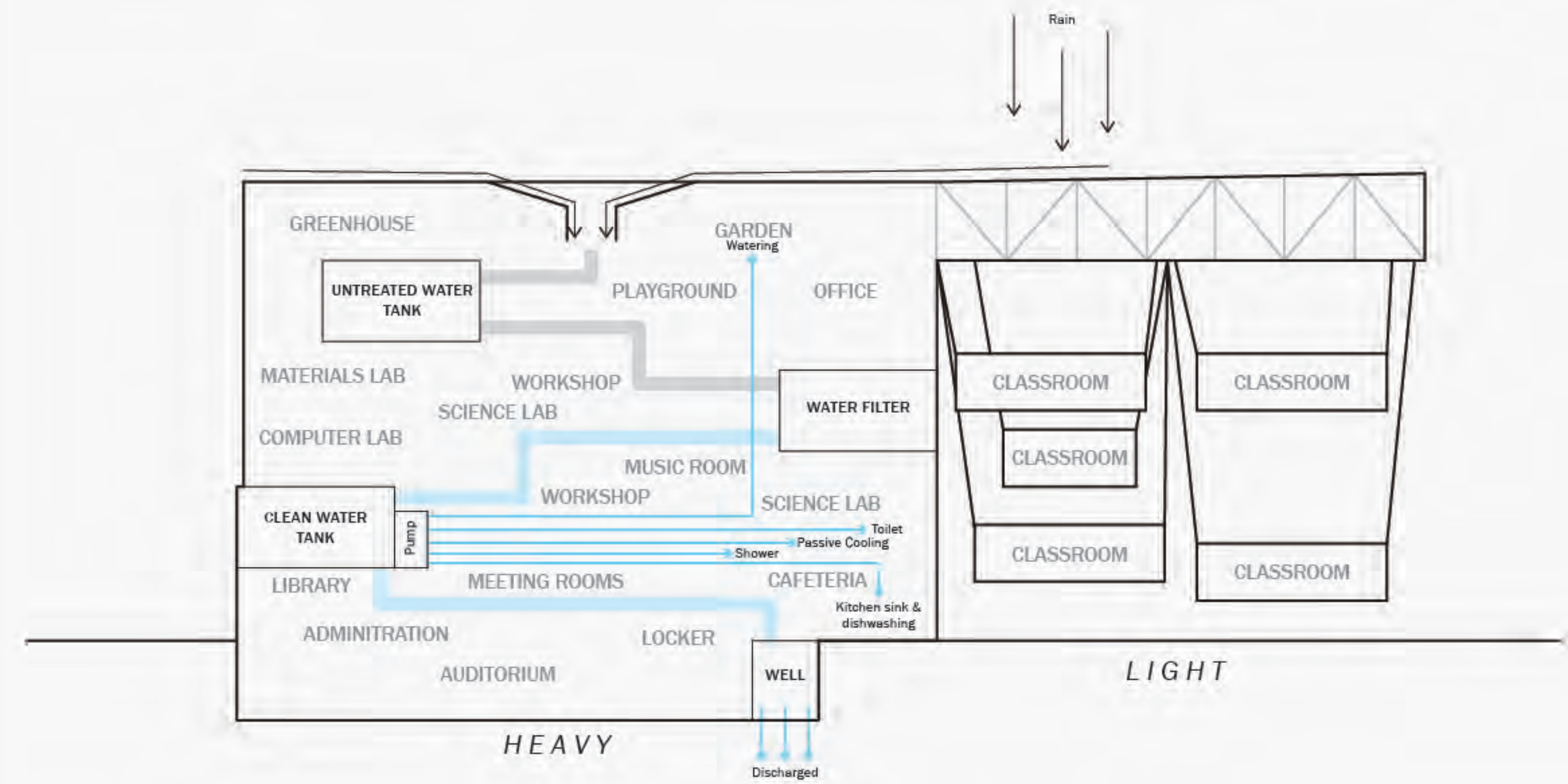
Composite Systems Load Path Analysis

The load paths are analyzed in each of the structural iterations; between solely compression to the interrelationships of compression and tension.



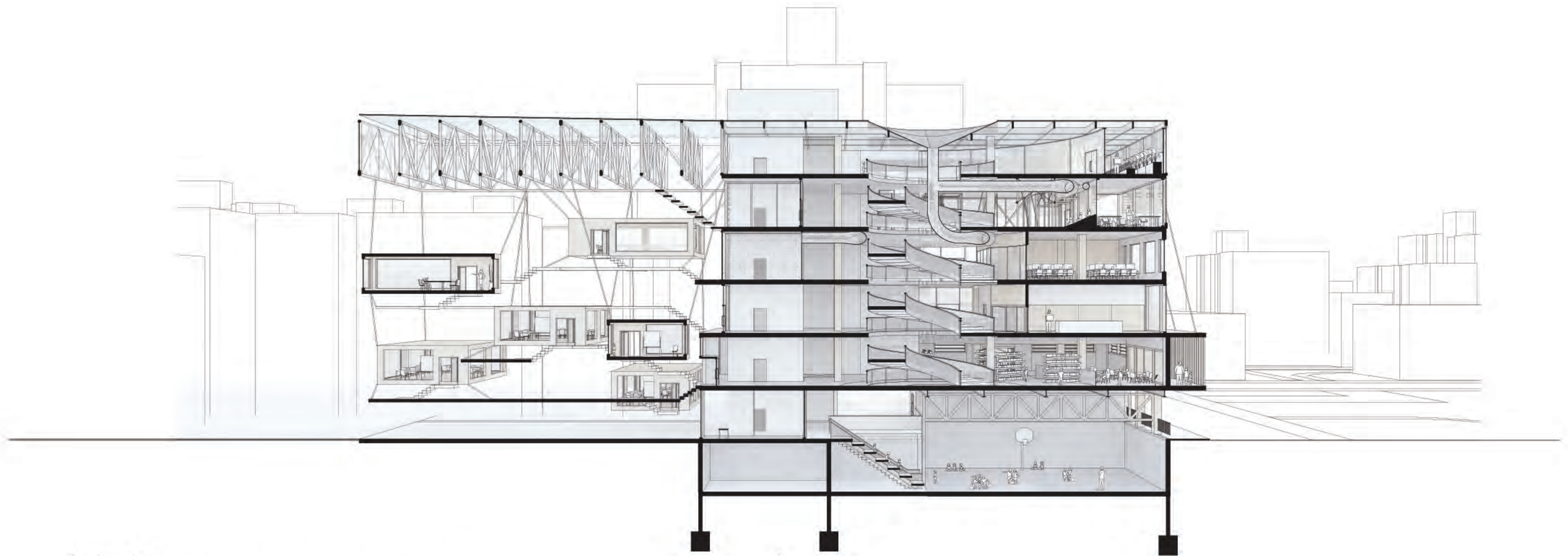
Pedagogy: Circular Economy

The pedagogy will focus on the processes of circular economy of materials and rainwater through extraction, fabrication, use, and reuse/recycle/re-manufacture, centered around the fabrication workshop and its adjacent special-instructed programs.



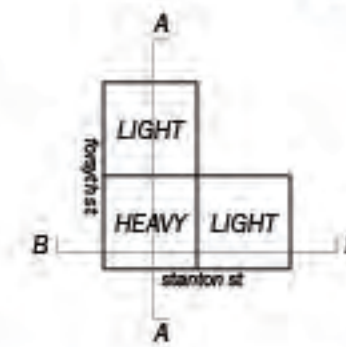
Hyper Legibility: Structural Balance & Water Cycles

The building explores the intricate structural legibility that is tested before, and creates a visual narrative of superimposition between heavy and light, compressed and suspended, concrete and cables. By programmatic heaviness, the heaviest programs are placed in the "heavy zone" while the lighter classrooms are located in the "light zone", and by the interdisciplinary nature of circular economy, it allows for the special instructional classes to interact and cross-pollinate each other, hence amalgamating the diverse disciplines in creating a unique educational experience. The cycle of water collection is also made hyper legible, which allows students to passively observe and understand the water treatment processes.



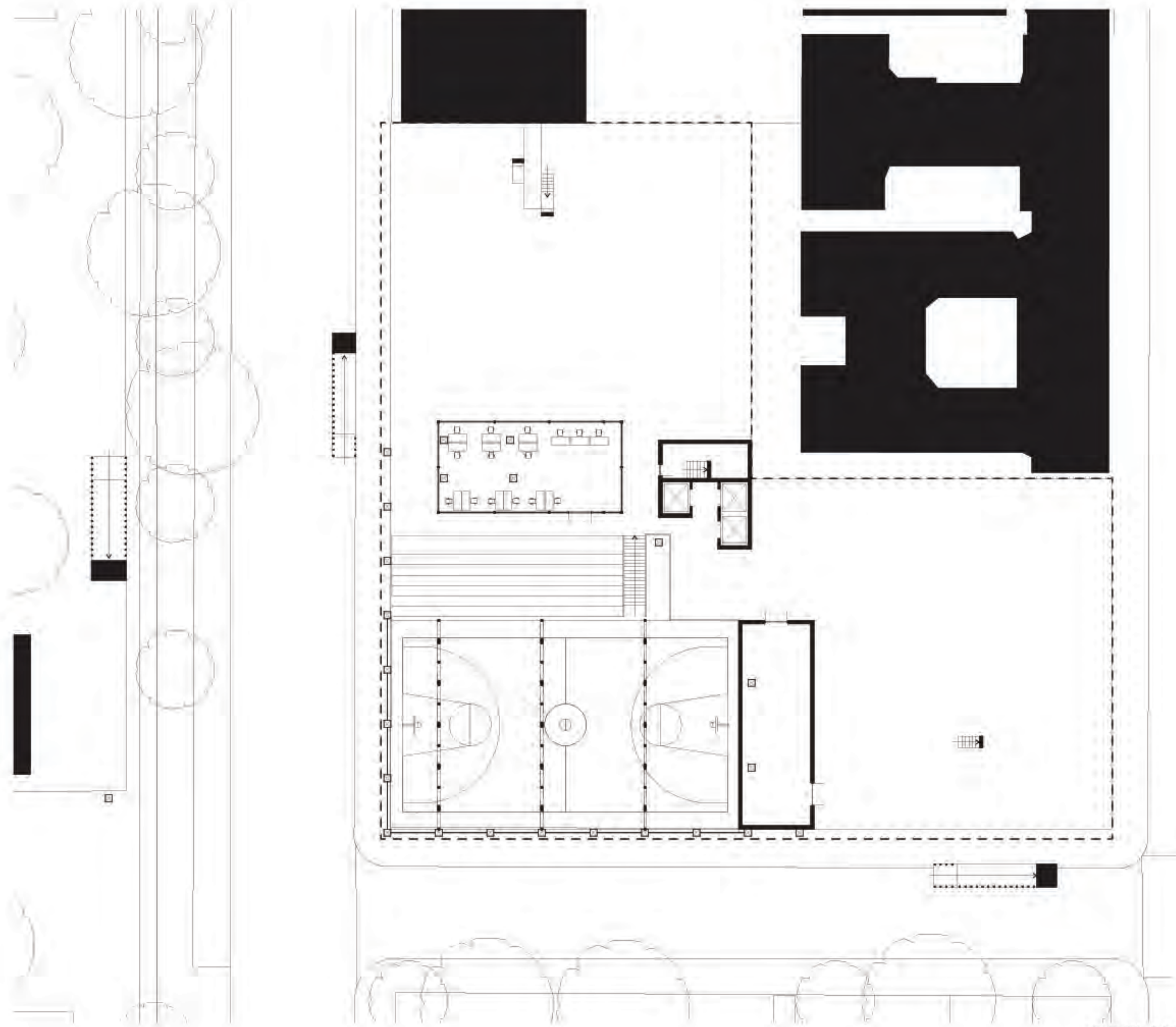
Section AA

Much like the structural systems, the rain water catchment and water processes are made hyper legible by a central feature of piping to create visual studies for the students.

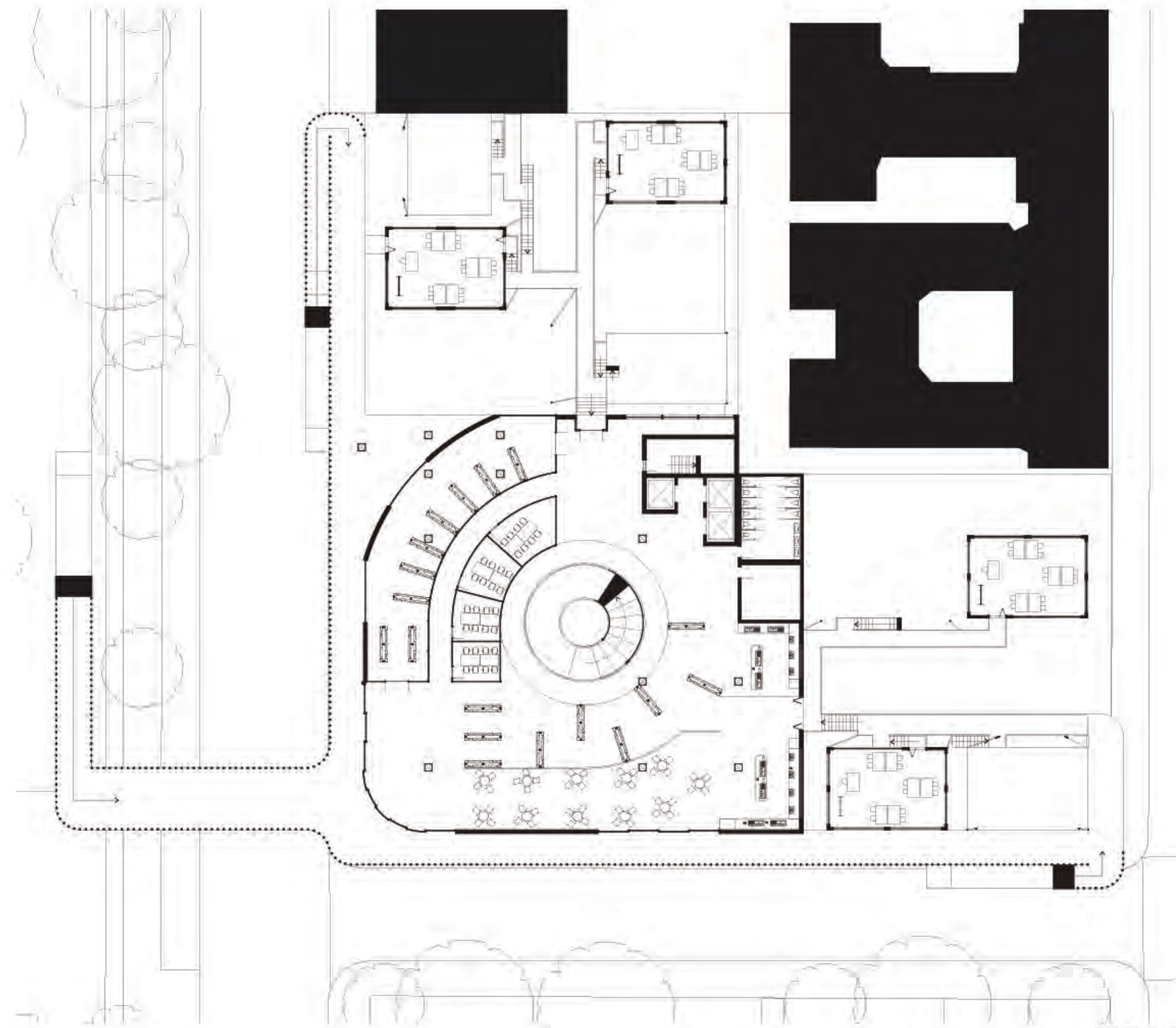


Section BB

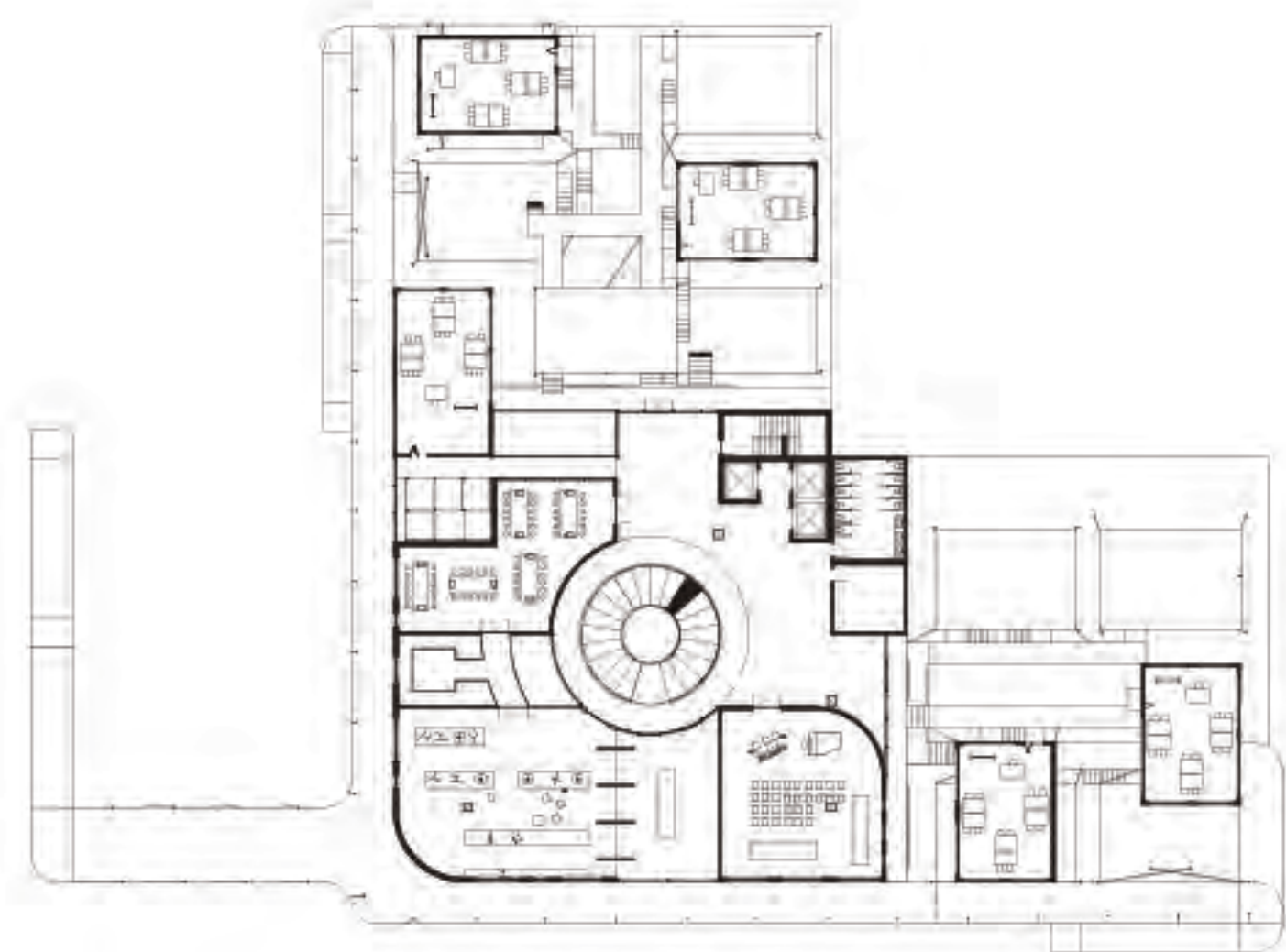
The connection between the park and the school is linked by a sky bridge, which provides a safer route of commute away from the traffic.



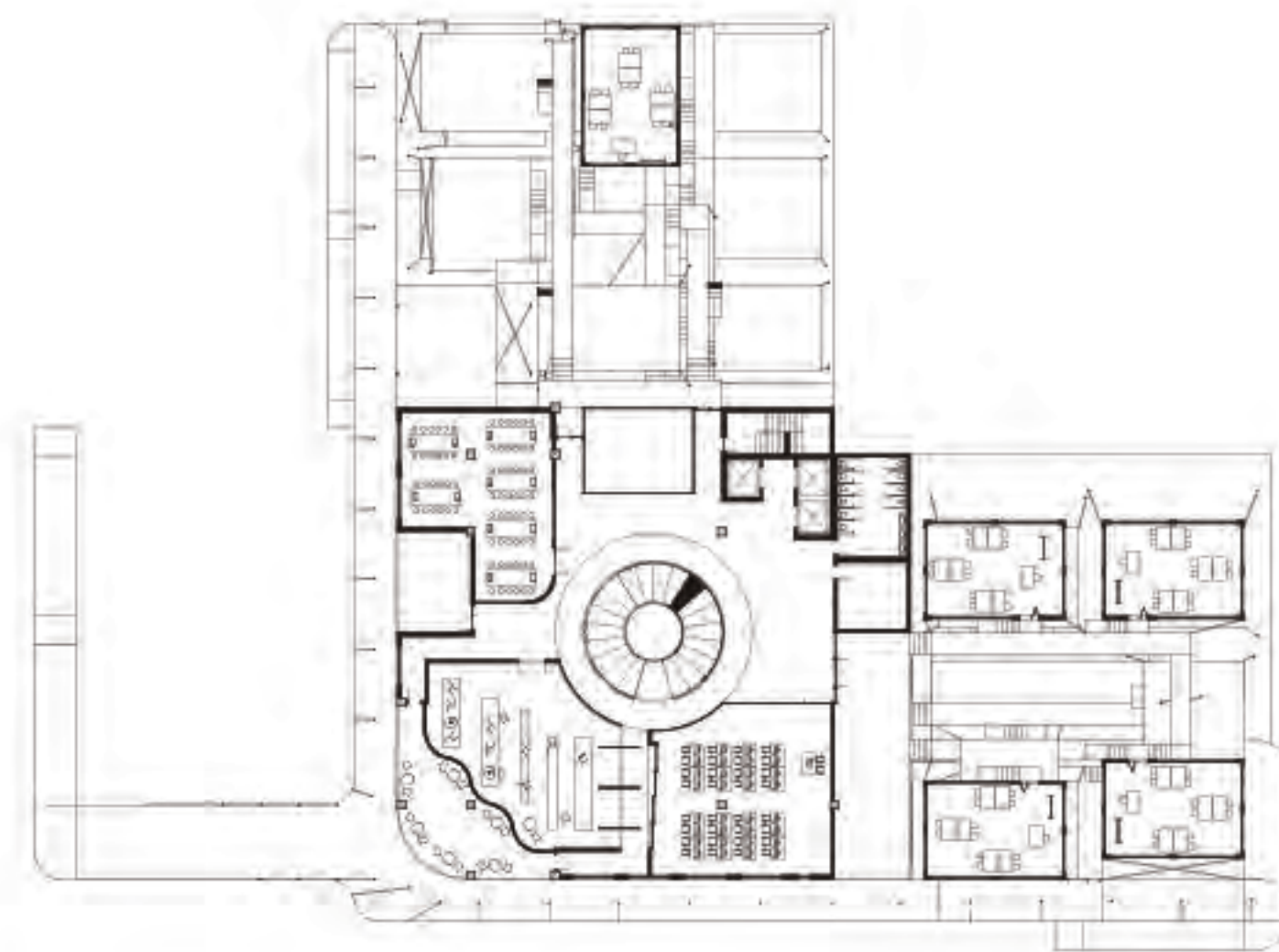
GF PLAN
Sunken gym/auditorium, locker, admin, office space



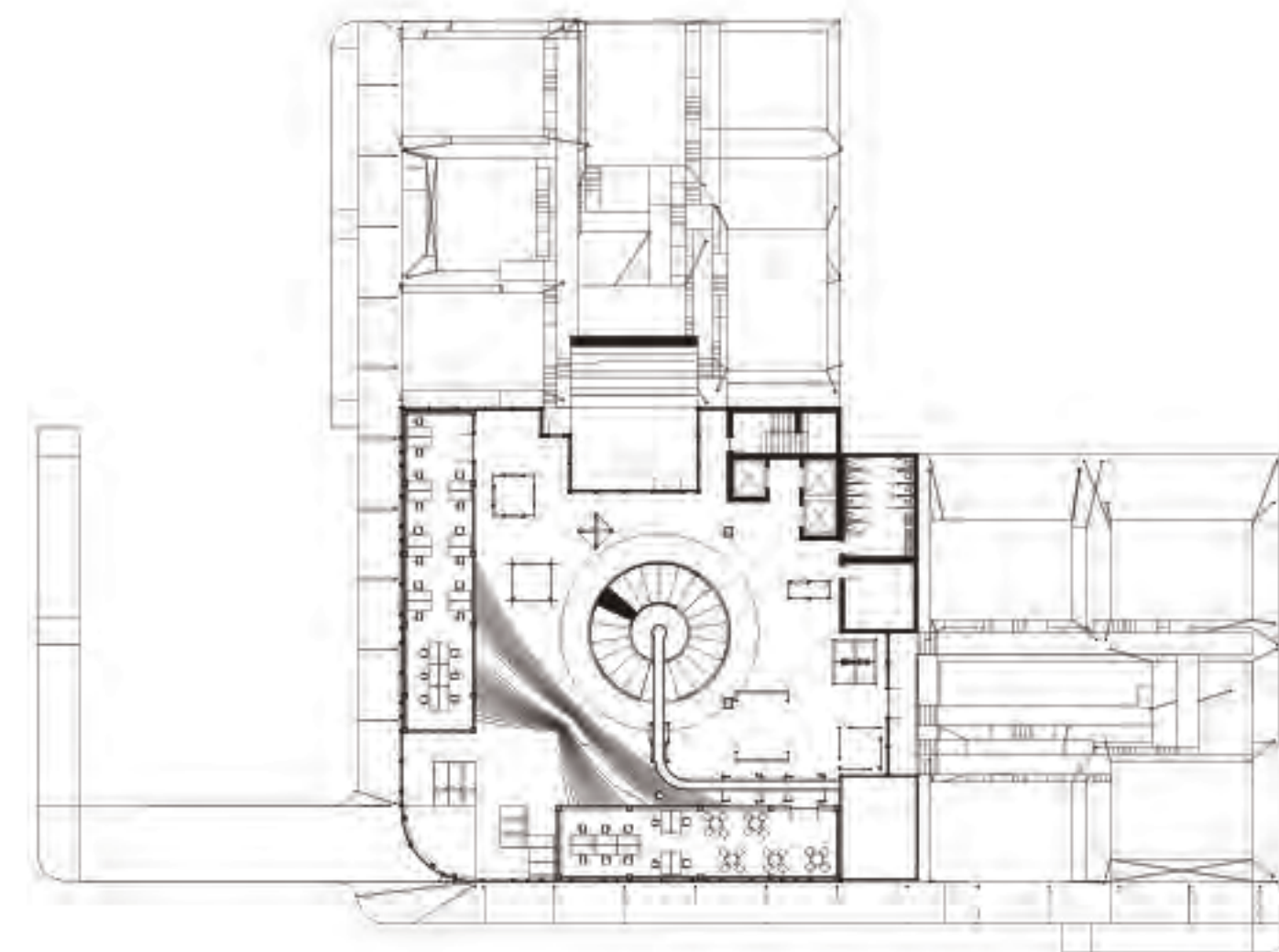
1F PLAN
Library, cafeteria, kitchen, meeting rooms, hanging classrooms



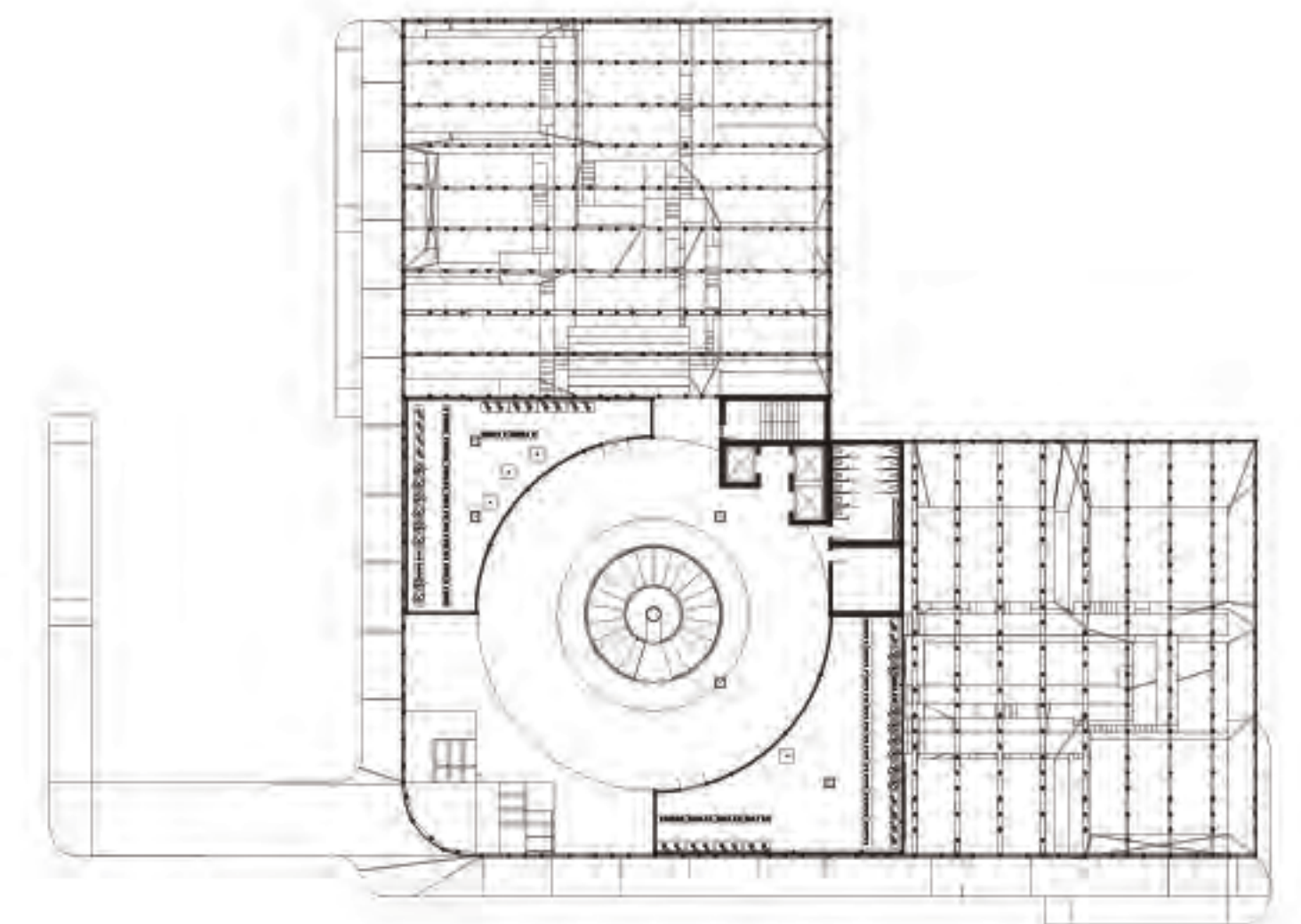
2F PLAN
Material workshop, music room, science lab, hanging classrooms, clean water tank



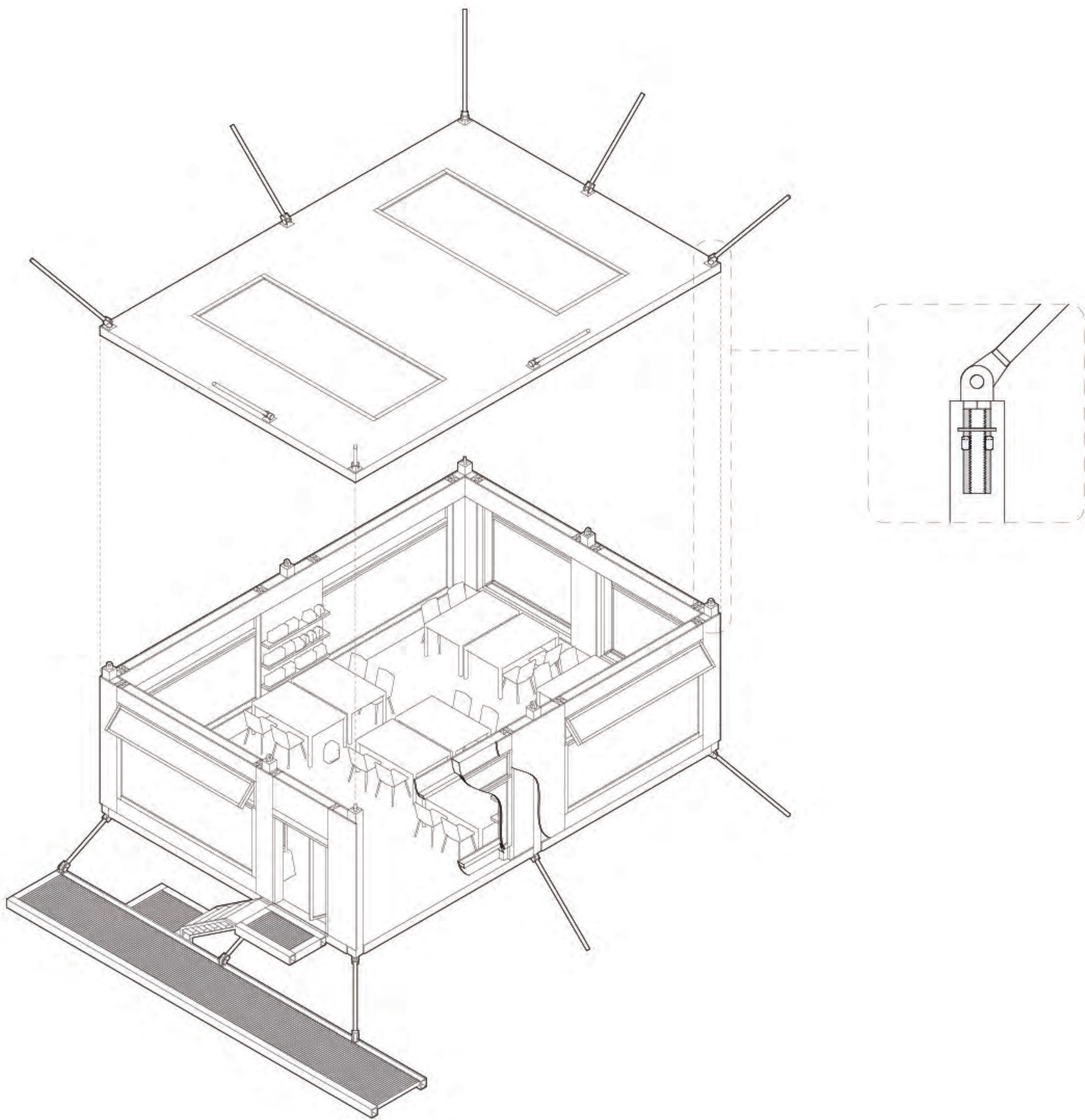
3F PLAN
Material workshop, computer lab, science lab, hanging classrooms, water treatment tank



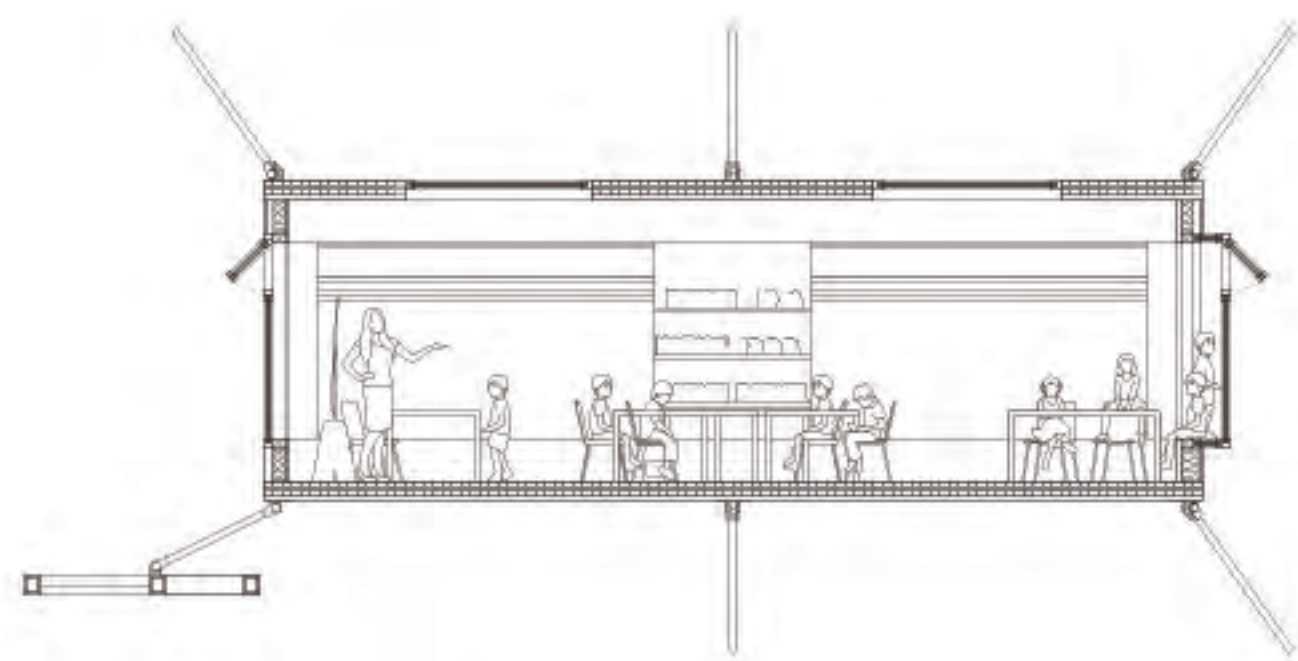
4F PLAN
Teachers' office, open playground, hanging auditorium



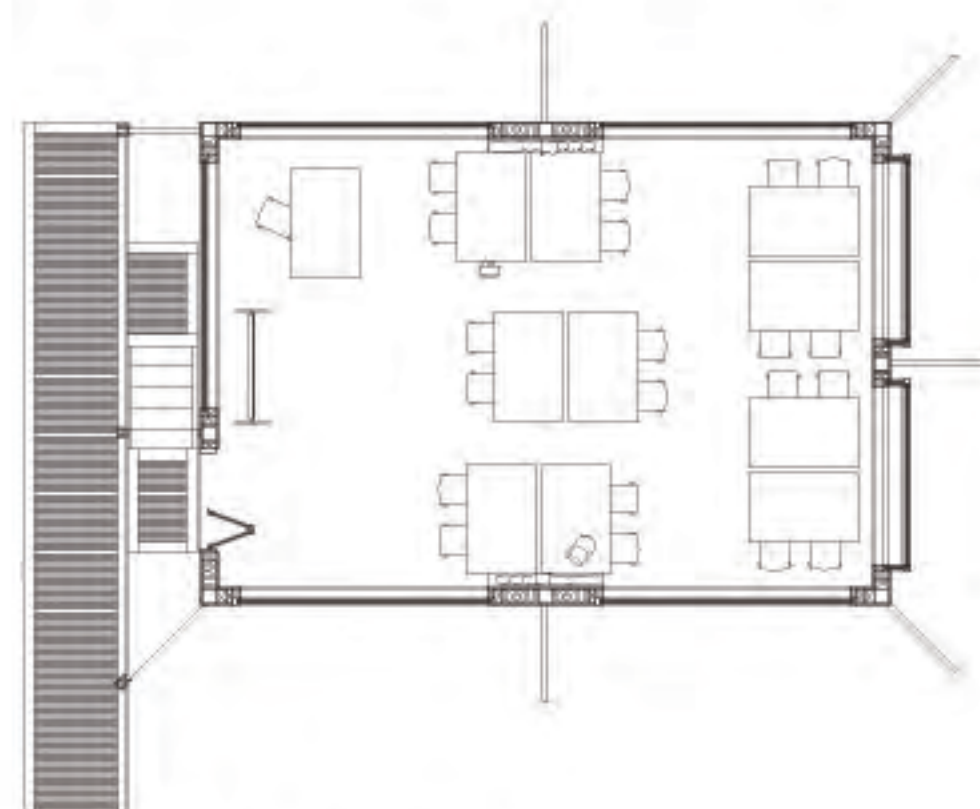
5F PLAN
Greenhouse/garden/farm, playground



Peel-away Exploded ISO of a Hanging Classroom



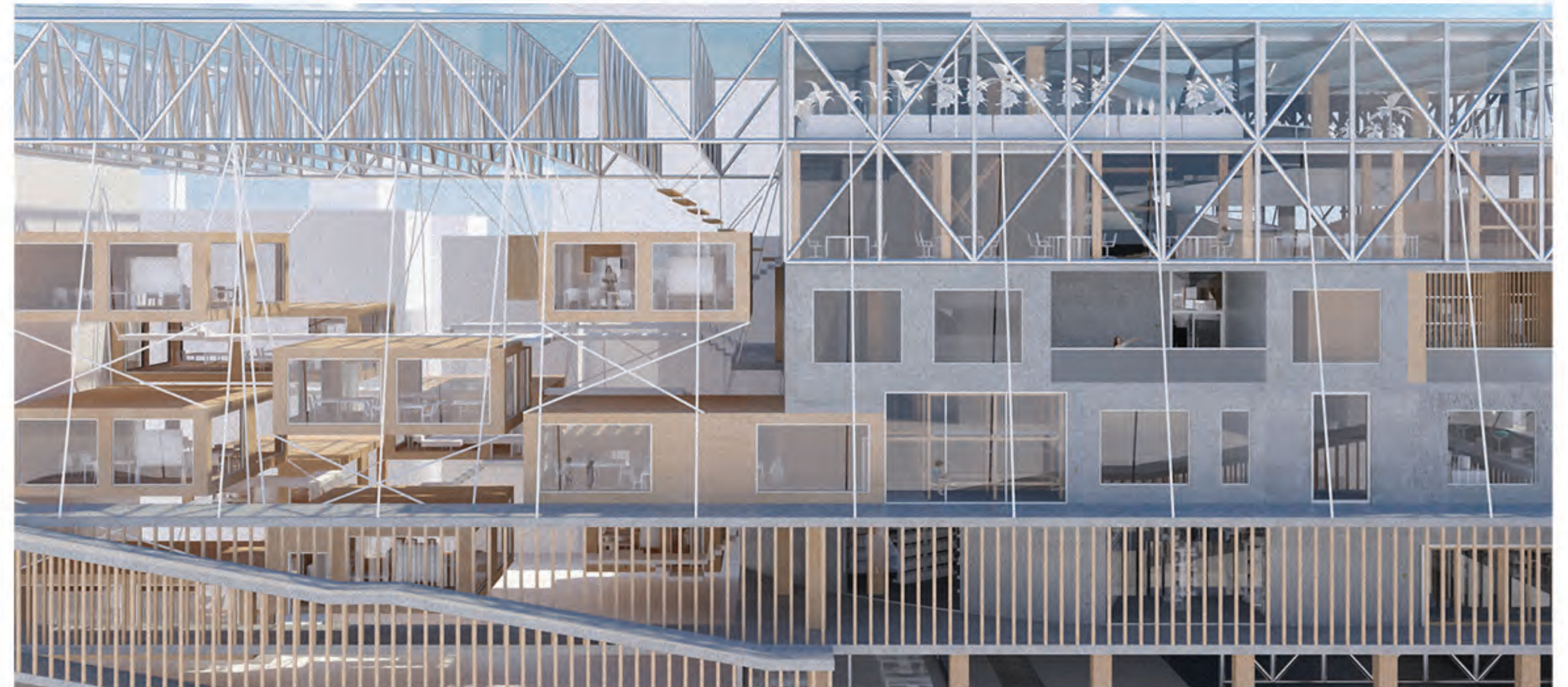
Hanging Classroom Section



Hanging Classroom Typical Plan



Main Entrance / Library Render



Facade (west face) Render



Hanging Classrooms Physical Model



Classroom Collage



06

The Commons

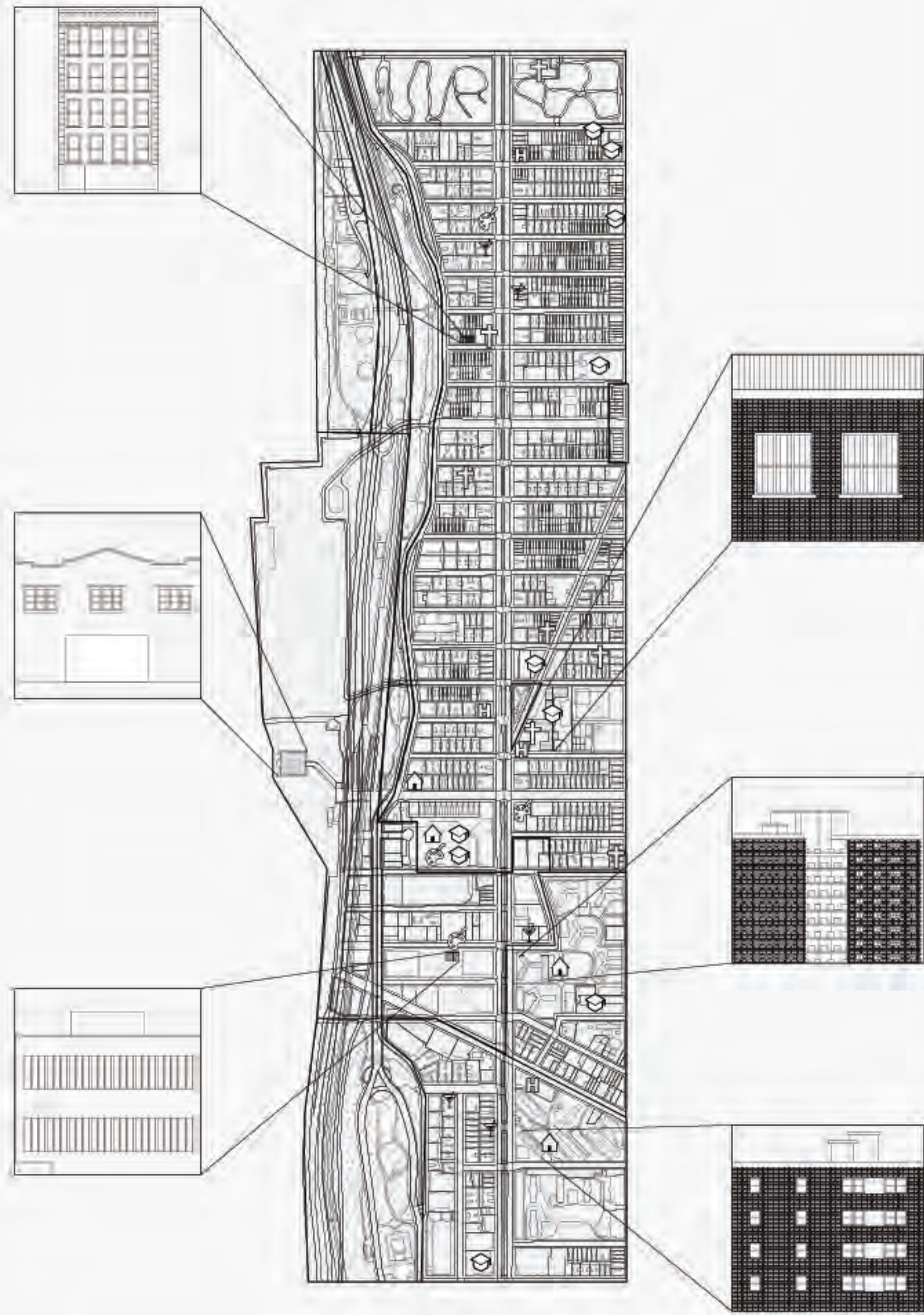
Urban Farming Oasis

Independent Project
Core Studio I (Year 1 Fall Semester, 2021)
Studio Leader: Alessandro Orsini (ao2713@columbia.edu)

This project aims to encourage and foster a more equitable food environment for the Morningside Heights locals in New York, whose accessibility to sufficient nutrition is compromised at the face of rising gentrification in the neighborhood, as local supermarkets are forced out and are replaced by 'higher end' supermarkets whose products and prices are more accustomed to higher income groups. In addition, as research suggests that merely 10% of each household's food variation purchases can be associated with their access to nearby markets, the education revolving around nutrition needs and eating habits are just as essential to the provision of fresh and healthy foods.

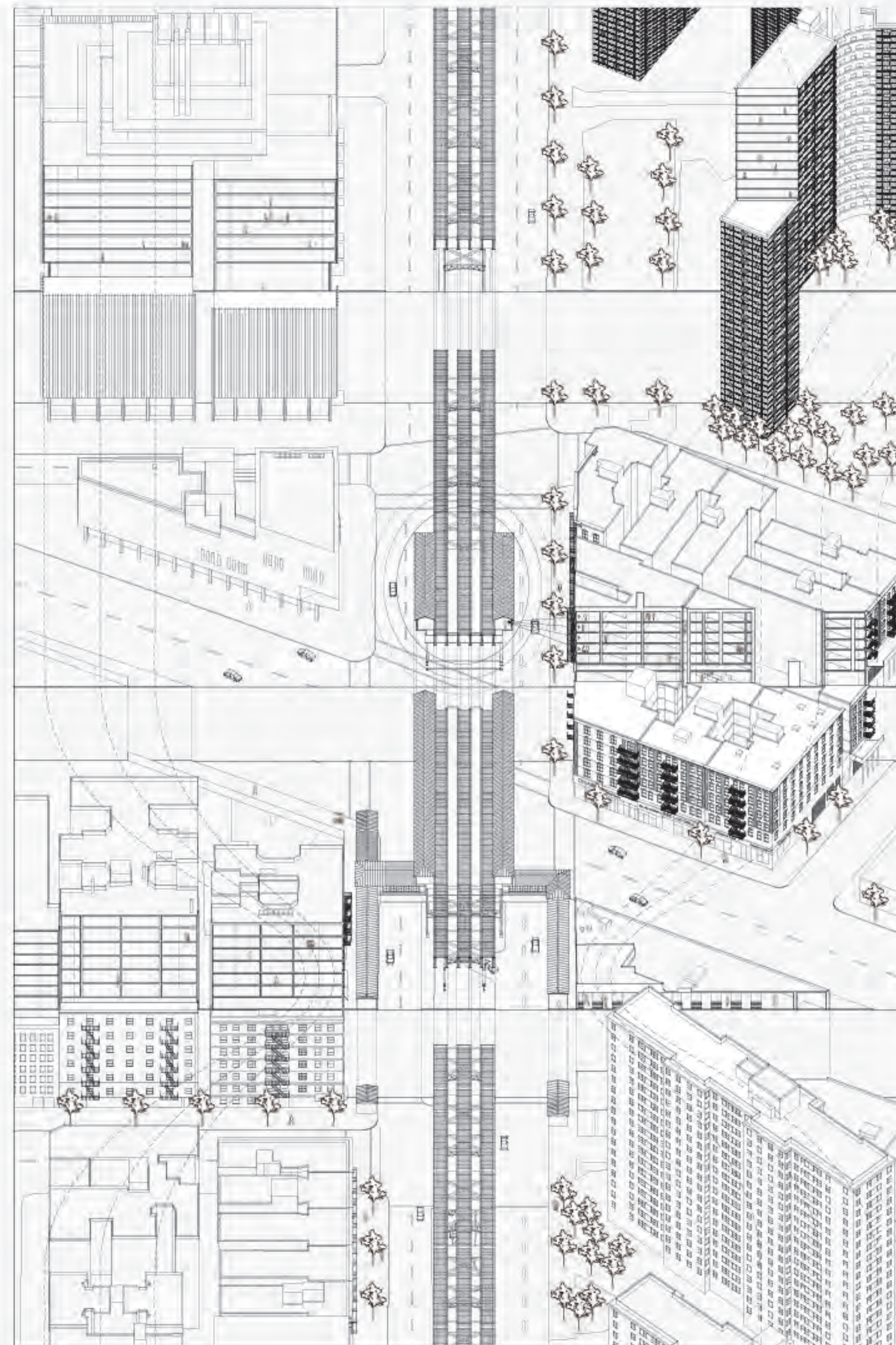
Located adjacent to the 125th station along Broadway, the urban farming project occupies the spare FAR on the roof of an existing pharmacy and supermarket and is intended to perform, architecturally, as a gesture that connects infrastructures and alleviates the ground.

By growing and exchanging locally sourced foods, the intervention is purposed to give back to the commons under the schemes of equitable access to nutrition, provision of education, and job creation, through key programs such as community garden/farm, community kitchen, and fresh food market, as well as utilizing its intimate connection with the train station for deliveries and transportation. It aims to educate, primarily, the low-income households' caretakers of all racial groups in the community in the hopes that they would transfer their knowledge down to the care-receivers, however, the experience is open to all.



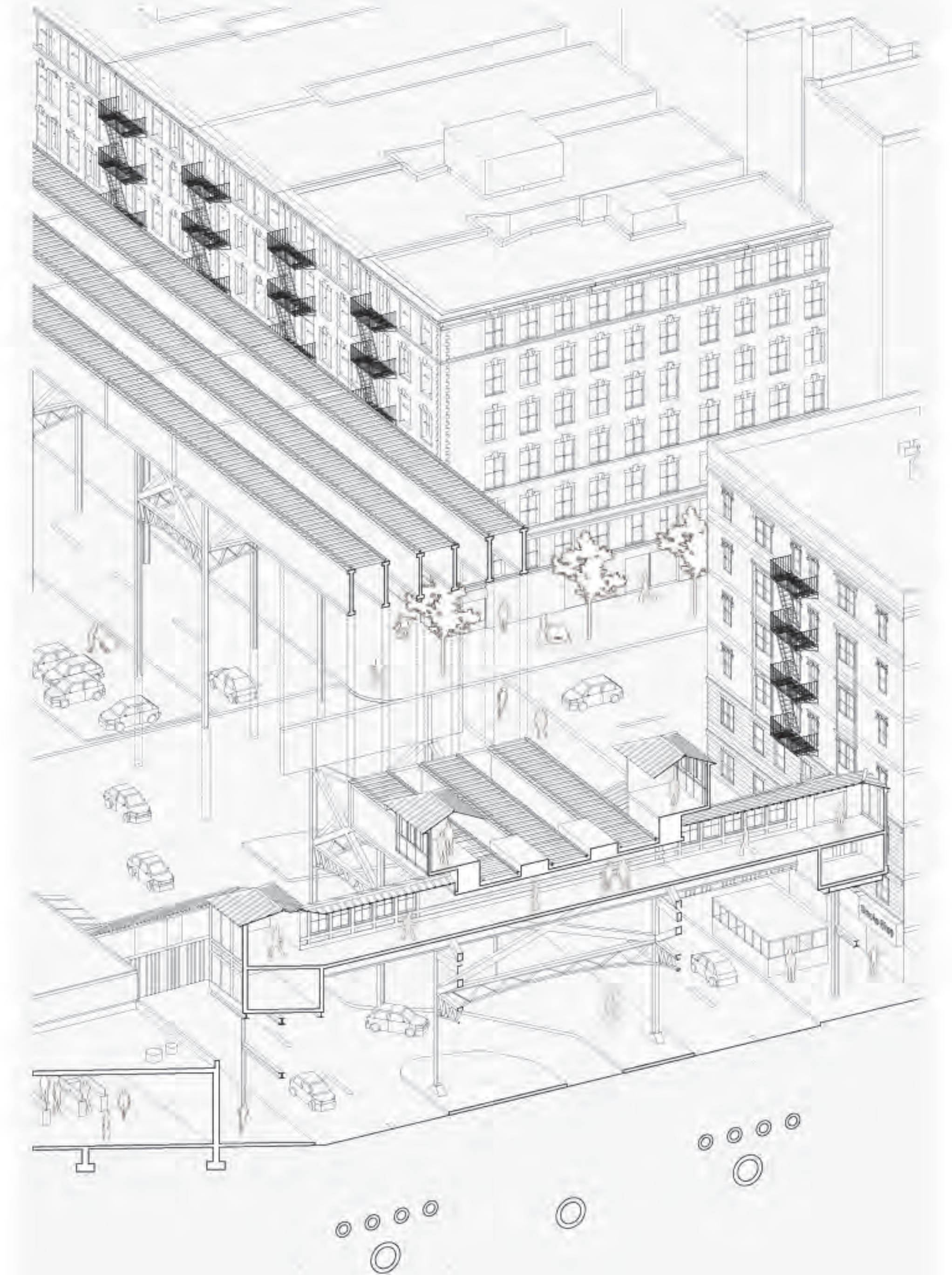
Morningside Heights

The gentrification of the borough can be indicated by the growing amount of galleries and bars that opened in the area as means of attraction to the mid-higher class. The identification of key building typologies and facades suggest a wide mix of demographics (from NYCHA to The Forum) that is a result of gentrification as capitalistic auditoriums tear through the neighborhood's land through dispossession without contributing to the lives of the greater community.



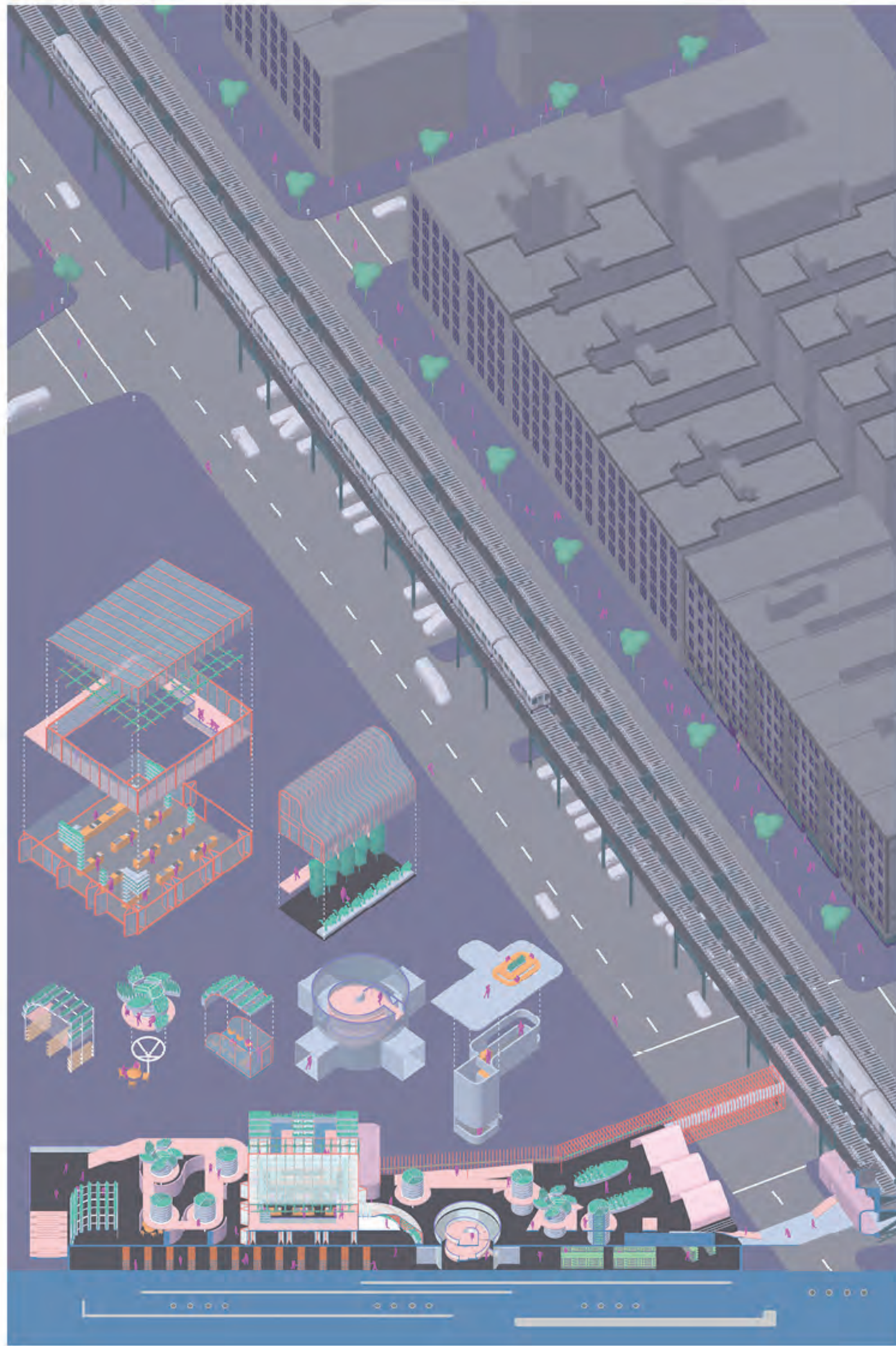
The Neighborhood

A prominent feature of the chosen site is the dominance that is exerted onto the surroundings by the viaduct. Albeit as a key transportation that generated wealth and jobs for the north part of Manhattan and Harlem, the elevated train track also pressures its immediate urban conditions such as noise pollution, air pollution, and spatial compression, and it seeks for solutions.



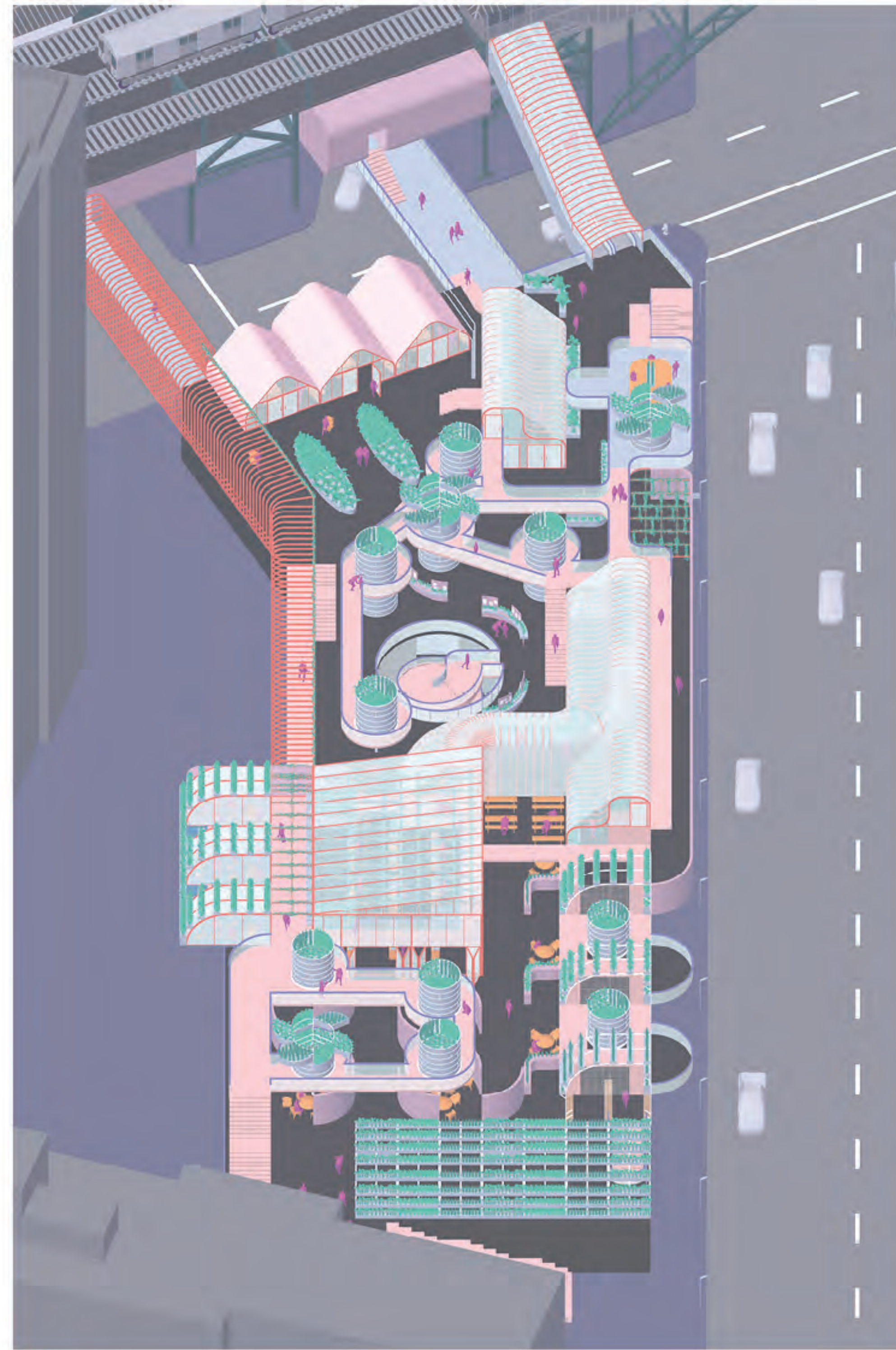
The Site

With close proximity with the 125th street elevated train station, the site and its surrounding interstitial spaces and car parks urge for better interconnections as well as new programs and user-ships.



Kit of Parts

The urban farming project revolves around the key typologies of community kitchen, experiential greenhouses, innovative radial vertical farming systems, classrooms, farmer's market, and coffee/juice bar. The project connects and interacts with the existing supermarket and pharmacy underneath it, which fosters collaboration with local business and medical groups to seamlessly monitor and advise on nutritious diets and lifestyles to lower diabetic rates in the low-income demographic.



Urban Oasis

Manifested as an urban oasis, the design not only serves as a catalyst for local nutrition equity but is also an experiential garden that is a getaway from its fast-paced urban environment that welcomes all to enjoy, and in turn 'harvests' cultural exchange and raises awareness to the hardships of communities.



Connection & Activation

The design seeks to create better linkages between the existing infrastructures such as the train station, the viaduct, and the busy street. The connection to the New York trains allows for logistic deliveries of the nutritious products as well as creating a safer environment for pedestrians to commute and circulate, whether entering the site or simply passing by. The underside of the viaduct is transformed into a decomposing station for the farm.



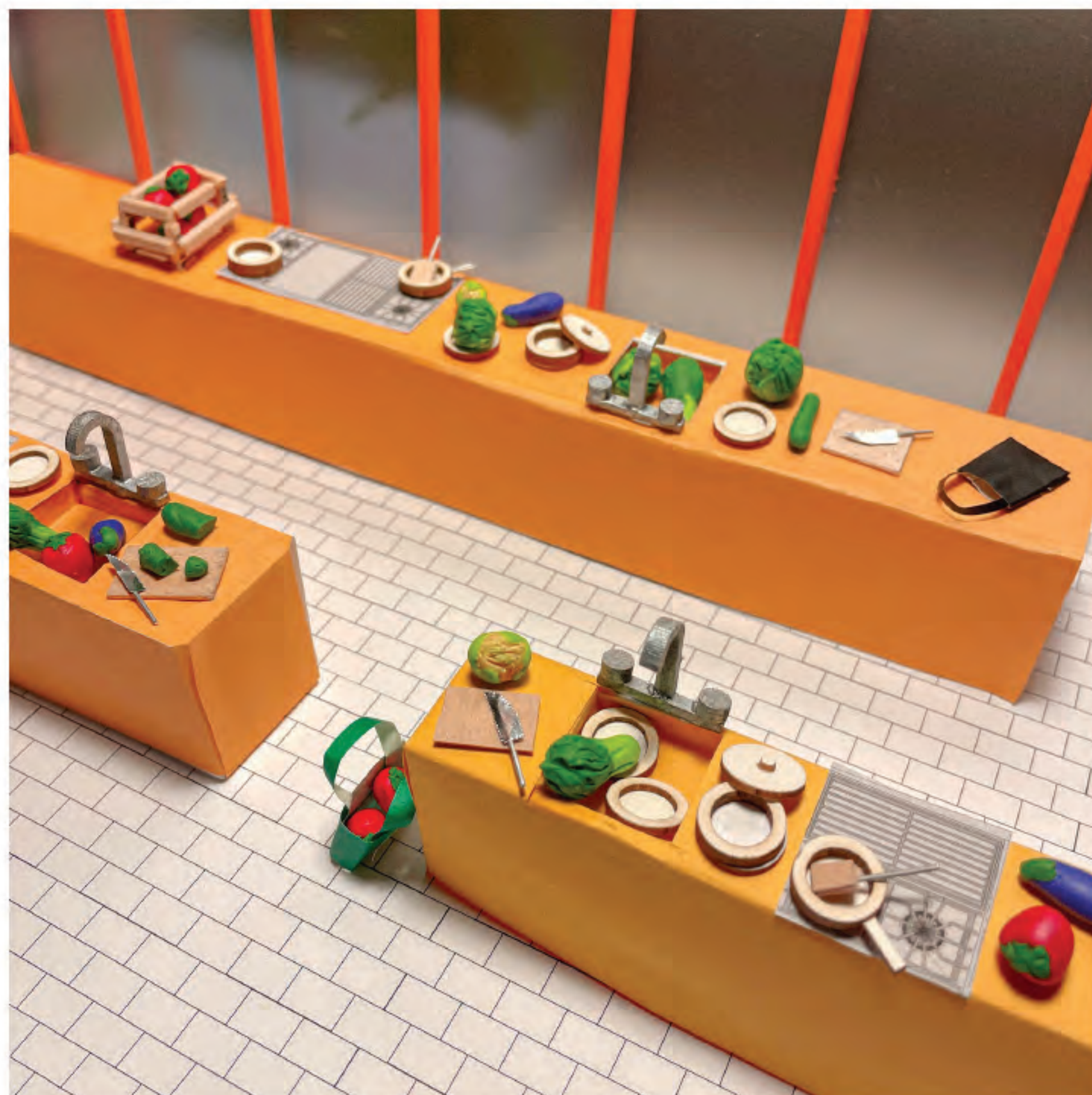
Radial Vertical Garden
An innovative modular vertical urban-farming system manifests in a radial manner with operable compartments that open and close according to environmental conditions.



Experiential Greenhouse
The greenhouse takes on an organic form that weaves through the site acting as a spine and arcade that directs people to the various programs or to the street.



Curbside Juice Bar
The juice bar extends to the street level to provide the health benefits of nutritious products to the community who may not wish to go through the farm or market.



Community Kitchen
Aims to educate and train low-income households' caretakers in the community through cooking and recipes.



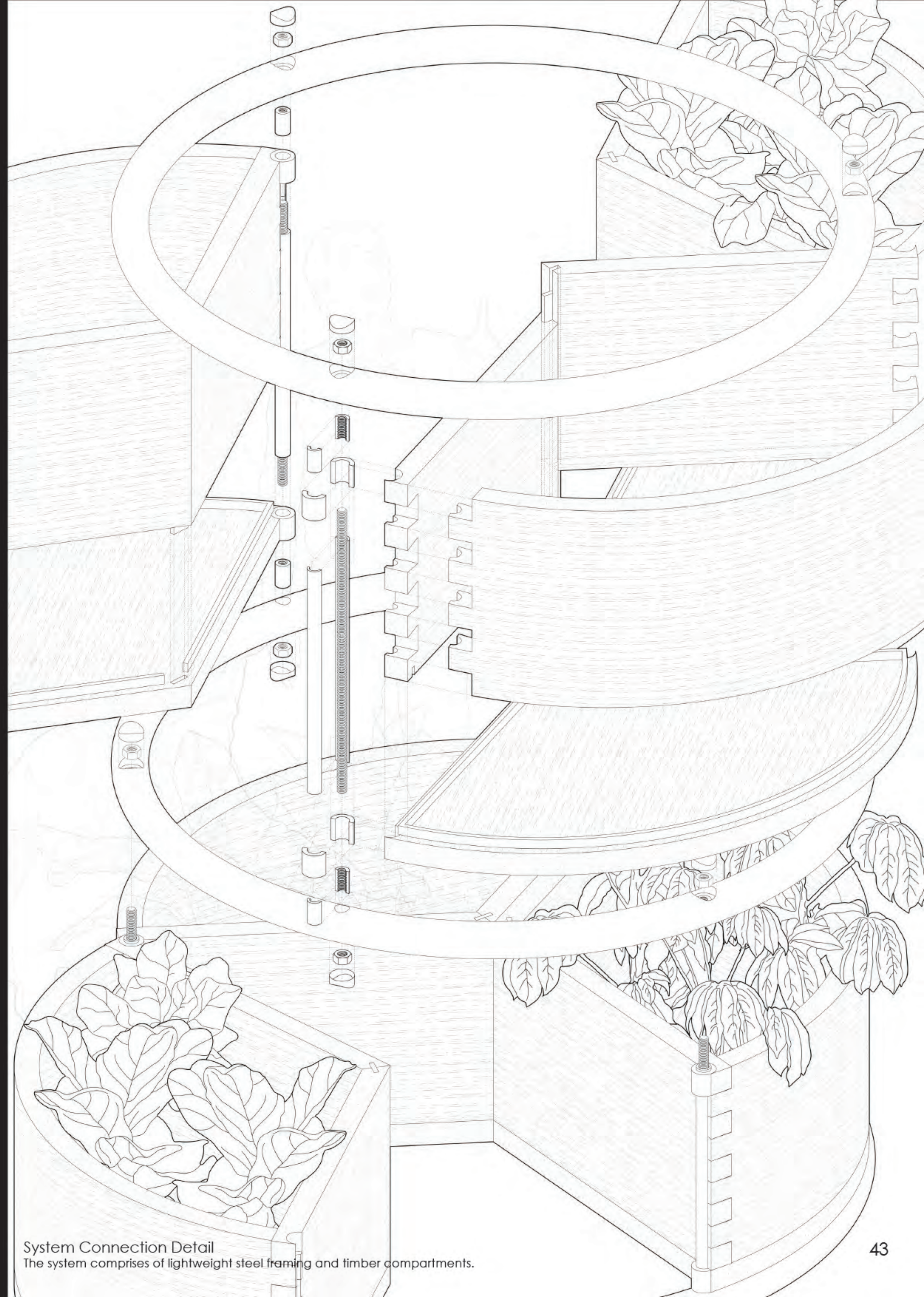
Classroom
The classrooms house the exchange of nutrition and food related knowledge.



Curbside Juice Bar
Order to go!



Partial 1:1 Model
The 1:1 partial model of the radial vertical farming system showcases the operability of the compartments and farming potential. The compartments can be opened up to allow for sunlight and watering, while it can be closed for overnight storing or under harsh conditions.



System Connection Detail
The system comprises of lightweight steel framing and timber compartments.

07 - Other Works

Towards a Trans-Species Architecture

Solo Work
Towards a Trans-Species Architecture | Year 3 Spring Semester, 2024
Seminar Professor: Mark Wigley

THE TRANS-SPECIES MANIFESTO

TOWARDS A TRANS-SPECIES ARCHITECTURE

BY JASON LI

LED BY MARK WIGLEY

TOWARDS A TRANS-SPECIES ARCHITECTURE

1. Architecture shall be "blank" - a canvas; humans and nature to be its colors.

Towards a Trans-Species architecture, the expressionism of such architecture shall not lie within the morphology or gesture of the materialization itself. The building shall be humble and neutral. Free from attitudes, preconceptions, and imageries, like a blank canvas that is to be occupied, appropriated, "invaded", "informed", and "colored" by its trans-specific residency. Since this palette is dynamic and non-static, the trans-specific "painting" will not conform to a single land/visual scape.

Notes:

The way in which many projects of Lina Bo were "completed" were by a composition of constructive materials and plant-life, often depicted without human intervention in the frame or sketch, though the buildings are underlie by human incentives or desires, which implies a fundamental participation of the human. Projects such as the Casa de Vidro, where the architecture expression is restrained to a minimal box and is surrounded by plants that occupied the visual elevation from every angle, whether from the outside looking inward or from the inside looking outward, which gives both to "paintings" or images from within that intimate relationship and tension between plants and buildings. From the inside, the large paned glazing - performing like a canvas - frames the outside in a way that almost flattens the dynamic and lively scene into an immersive artwork that engages the human, the subjects, or the objects from within the built environment. The building in this case serves as the fundamental catalyst of the "paintings" - the canvas. In a different example, SESO Pompeia focuses largely on the presence of humans and activities that form organically and dynamically around the static architecture. The movement, impermanence, and unpredictability of such usership contrasts the ever-changing colors of the trans-species architecture.

TOWARDS A TRANS-SPECIES ARCHITECTURE

2. It shall be a performance!

Towards a Trans-Species architecture, spaces of architecture shall facilitate a mutual and democratic spectatorship of plants and humans. The architecture and spaces shall be celebrated as theatrical sets that construct non-hierarchical, dynamic, and non-static viewerships that accommodates the non-uniform userships. One falls in neither simply the subject nor the object, but in a constant shift between the two, completed by the other, when united, completes the space.

Notes:

The tension and dynamism between the "audience" and the "actor" can be interpreted from Lina's work, which is underpinned by Lina's passion and obsession with theatres and dramatic performances. In Bahia Itaparua, the exhibition space is granted a sense of theatricality with the addition of leaves as a prop which filled the space. This prop creates a set in the space in performative ways that claims itself as what it is not - a space within nature with fallen leaves from (artificial) trees. Within this stage, the objects, artifacts, humans, and nature all become participants of a grander plot, where each space or view, inclusive of everything that can be observed by one or from the other, becomes a theatrical performance. The noise of rustling leaves as people walk through the space emphasizes on the immersive performance from one to the other. At times, the human may perceive the artifacts, the leaves, and the pedestals to be a scene, while in other times, the human, the movement, the agitation may become the play for the artifacts and the plants. Thus, signifying a constant shift of viewership and the concept of the subject vs. the object, setting up a space of democratic performance that risks of species (or even objective) hierarchy between the human and the other. This is even more so the case in the project Teatro Oficina, where Lina brings the performance into the audience, where the boundary between the "stage" and the "viewer" is blurred or even negated. The performance becomes fixed within the ever-changing viewership, which also implies that the performance is never the same, and based on the relationship, distance, and location of the participants to the performers, the role of the observer and the performer are constantly interchanged.

TOWARDS A TRANS-SPECIES ARCHITECTURE

4. Architecture as a prosthetic of plants.

Towards a Trans-Species architecture, the building shall be in service of plants (as well as humans), to merge with plants, and to become an extension of plants.

Notes:

Since plants shall be viewed and treated as one of the primary residents of such architecture, the way in which the building, as a sort of infrastructure, that has assisted the human to a degree have become the human) shall also assist and merge with the plants. This means that the architecture would sprawl from a foundation of neither sabotaging plant-life nor to just become a life-support device of plants, but to be a tool or infrastructure that can be utilized by plants to reach better lives than they have previously. While some evidence from Lina's work have suggested clues of integration of buildings and plants where the building actively engages with preexisting trees and landscape, such attempts often sabotage the health of these residents due to a lack of multi-perspectival vision. Should the trees be seen with personhood, would the project still materialize in the way it had? For instance, the jack fruit tree at the Chame-Chame house was designed for but not with, as the tree eventually dies during the construction of the house. A trans-species architecture shall not only facilitate natural growth of plants, but to also be an extension of the bodies of plants that improves growth in non-assertive/hierarchical ways which allows for a self-governed plant community, as what the house or the modern machines/technologies have been to the humans - an extension rather than an imposition. Should modern technology be understood as prosthetics of humans, the trans-species architecture shall propose the same views of the building as prosthetics to the plants.

TOWARDS A TRANS-SPECIES ARCHITECTURE

5. The "new public" shall reside on "ilha" of paradise.

Towards a Trans-Species architecture, the space in which the entities occupy shall be an "ilha (island)" that has an established entrance. However, the entry of this space and the space itself does not equal the entry of the building. The space can converge with the building by encasing it or be created by it. The entry threshold shall not be a hard border, instead, a boundary that may grow, shift, change, push and pull, to inflect, to appropriate, and to occupy the surrounding of the buildings as well as the immediate urban.

Notes:

The entrance into many of the works of Lina has been very established in ways that clearly define the outside and the inside of the buildings. The ascending stairs as seen in MASP, Casa de Vidro, Casa Crell sketches, and many more, all demarcates a sort of border or portal into an otherworldly space where the human or the visitor. The idea of the "ilha", which is created by the language of the portal, is also very prominent in Lina's works. The urge to distinguish yet also merge nature and buildings creates a spatial domain that encompasses this idea of the "living unit" of plants. Since many urban environments can be deemed as not suitable for plant-lives, as they are not designed for and with plants, there is a need to divert and to "keep out" the residues of the old urban from this trans-species ilha. The move of elevating from the original ground plane in the mentioned projects signifies a detachment from the "polluted" soil in order to create new spaces for the "new public" under the trans-species amendment.

TOWARDS A TRANS-SPECIES ARCHITECTURE

6. Architecture to be an agent that transcends time, from the past to the future.

Towards a Trans-Species architecture, the idea of entropy and decay shall be embraced, celebrated, and tolerated. The architecture, like lifeforms, shall possess the ability to grow, change, and adapt through time and through impermanence. The dynamism that jitters along the spectrum of absolute certainty and infinite possibilities shall grant the architecture its responsibility and capability to serve the different entities in unpredictable ways, of which are totally shaped by these entities. A trans-species architecture shall also thrive with post-anthropocentrism and visualize a vegetative future that is occupied, simply, by the other.

Notes:

The idea of ruination or the idea of architecture as a time capsule that is able to transcend past the human has been central to many of the discussions on the works of Lina Bo, especially through her sketches, particularly the renders of the underside and the elevation of the MASP. The sense of ruination, under-maintenance, and wilderness seem to suggest the architecture as an object of whose purpose have been slowly transformed through time and through the process of decay, and the occupancy ratio of the human vs. the plant slowly tips over as plants infest this chamber of free growth. The object of the architecture is constantly being constructed by the idea of entropy, in unrestrained ways, that would actually accompany the plants more efficiently. Perhaps the ruination of a building can be deliberately designed and consciously preserved as a language of the trans-species architecture, which introduces the central ideation of not being in control, at least not in an anthropocentric way.

TOWARDS A TRANS-SPECIES ARCHITECTURE

8. Hospitality and Hostility: Vegetative privacy - where is it the most private?

Towards a Trans-Species architecture, spatial intimacy shall be considered for all entities along a spectrum of usership divergence and convergence.

Notes:

Should the bedroom or bathroom be the most private space in a house for the human, what would the equivalent space be for plants? Should the bedroom or bathroom of the human be free of any other species, would not plants also require such spaces? That are free of disturbance from outsiders. A trans-species architecture shall examine and critique the conventional spatial typology and organization of the idea of intimacy that has been revolved solely around the human and propose new spaces that are exclusive to plants within architectures. With yet another reference to Casa Crell, the roof design for both houses on the site seems to suggest a minimal degree of accessibility for the human, yet plants can be seen occupying the rooftop. If the polar-opposites of the scale of spatial intimacy are the absolute human vs. the absolute plants, this house is a great example of the increments on the spectrum of intimacy, the bedroom/roof for both the humans and plants respectively underlined by divergence, and the garden/open living space as the shared zone underlined by convergence between the entities. Perhaps the roof can be understood as a type of bedroom for the plants. Accordingly, the trans-species architecture shall not overtly pursue the complete integration and immersion of the human with the plant - which would risk falling under a false hope in the name of "sustainability" that appeals to a forced association between humans and nature as a modern anesthetic/placebo under the climate crisis - but to design such architecture with respect to the habitual lifestyles of both entities and does not impose the fetishization of one onto the other, and shall be treated as equal residents of the architecture.

TOWARDS A TRANS-SPECIES ARCHITECTURE

9. The building shall not define the absolute inside and outside.

Towards a Trans-Species architecture, the building shall not indicate an absolute idea of "inside" - the enclosed "interior" space shall not deny the "outside" - and since the binary of inside and outside is not established by the relationship, the boundaries and borders between what is the inside and what is the outside shall be infinitely ambiguous, since the associated definition of such spatial concepts would differ amongst the different entities.

Notes:

In Lina's works, the connection between inside and outside has always been made very prominent, whether it is a physical connection by a lack of partitions or through visually porous moments created with large panes of glazing. The use of glass often becomes a frame that brings the outside in as a thin line of minimal defense against nature that appeals to a sense of surrealism. This is particularly the case in the Museum by the Sea. With parts of the building being "invaded" by plants which curves out the building from the "inside", the visual porosity to the landscape and plants confuses the boundaries and poses a question of the tension between the set of binaries. Perhaps the building will always function along the spectrum in between and never actually reach the extreme ends.

TOWARDS A TRANS-SPECIES ARCHITECTURE

10. The "indigenous" residents of lands shall be acknowledged, respected, and included.

Towards a Trans-Species architecture, the original occupants and residents of sites shall be respected and design for and with. The architecture shall not be imposing to the landscape and shall be recognized as a "temporary" visitor of the site that facilitates further growth to the existing entities, as well as to accompany new coming entities. The architecture shall not be detrimental nor prejudicial to the lands and communities within the broader trans-species environment.

Notes:

The engagement with existing residents is a crucial part of the trans-species architecture, as its foundation shall be to embrace and facilitate life, rather than destructive in order to create a seemingly ecological architecture. The urge to preserve existing trees can be seen throughout Lina's work, particularly in Casa de Vidro, the Chame-Chame house, and Teatro Oficina, where the architecture is raised around the tree, and it hugs and engages with it. This sums up many of the points of trans-species architecture, for it shall be a "caregiver" that is not imposing and facilitates the growth of all residential entities. This shall be contrasted to the modern manipulation of the site to conform to its modern architecture, which shall be antagonized and condemned as this method inherently values one species over the others.

TOWARDS A TRANS-SPECIES ARCHITECTURE

3. Architecture shall always be designed for and with plants as one of its primary residents.

Towards a Trans-Species architecture, the building and plant-life shall not be seen as separate elements, but as a binary of incubators for each other.

Notes:

The idea of entanglement between architecture and plants cannot be expressed with enough emphasis. In similar ways to the previous points, architecture and plants form counterparts to each other, in both theatrical performative ways as well as physical performative ways. The two elements shall influence each other in the formation of trans-species architecture, since without one, the other will also not stand. In Nova Prefeitura de São Paulo, the architecture is expressed largely by the plants that occupy the envelope, or performing as the envelope, which allows the unique project to be. This intricate relationship lies within the entanglement of the building and plants, which is also what grants the project its theatricality and unconventionality as a residence for both plants and humans. This also means that the growth and habits of the plants are equally as important as to the human occupants of the building, which informs of orientation, surface material, and substrate construction and design, and shall influence and massage against the building itself performing as an incubator for the architecture. In similar manners, the building would push back to reach a point of equilibrium that seeks a solution that would be optimal for its trans-species residency of the plants, the humans, and the objects.

TOWARDS A TRANS-SPECIES ARCHITECTURE

7. Hospitality and Hostility: Eradicating the hostility of containments.

Towards a Trans-Species architecture, plants shall not be designated in form of containments or borders. Plants shall be connected like communities rather than individualized and isolated.

Notes:

Although the potted plants are still often seen in Lina's works that presents the selves as these mobile units of moveable decorations, plants shall not be engaged in the trans-species architecture. Since plants must be considered as one of the primary residents of the building, plant-life shall not only be perceived as tools of aesthetic or advertisement, but as individuals and communities with needs and wants. Since plants are able to bond and communicate through their rooting systems that work in partnership with fungi and other animals, the borders and walls that prevent such connection shall be eradicated. Casa Crell would begin to represent some of this idea with the surface and façade treatment that attempts to allow continual plant growth, both horizontally and vertically. However, it is assumed that plant-life are still designated and "planted" into particular slots that remain a form of containment and control. The trans-species architecture shall be founded on "beds" of freedom and "choice", that facilitate connections not only between humans, but between all of its residents to form social clusters and free growth.

"We performed hitherto a sort of tour throughout time and throughout the 'theories' of architecture... we no longer feel the sap flowing from the past, that we have almost constitutionally 'cut the roots' that the natural habit of a calm and methodical study no longer exists, despite the consciousness of an acquired cultural heritage."

--- Lina Bo

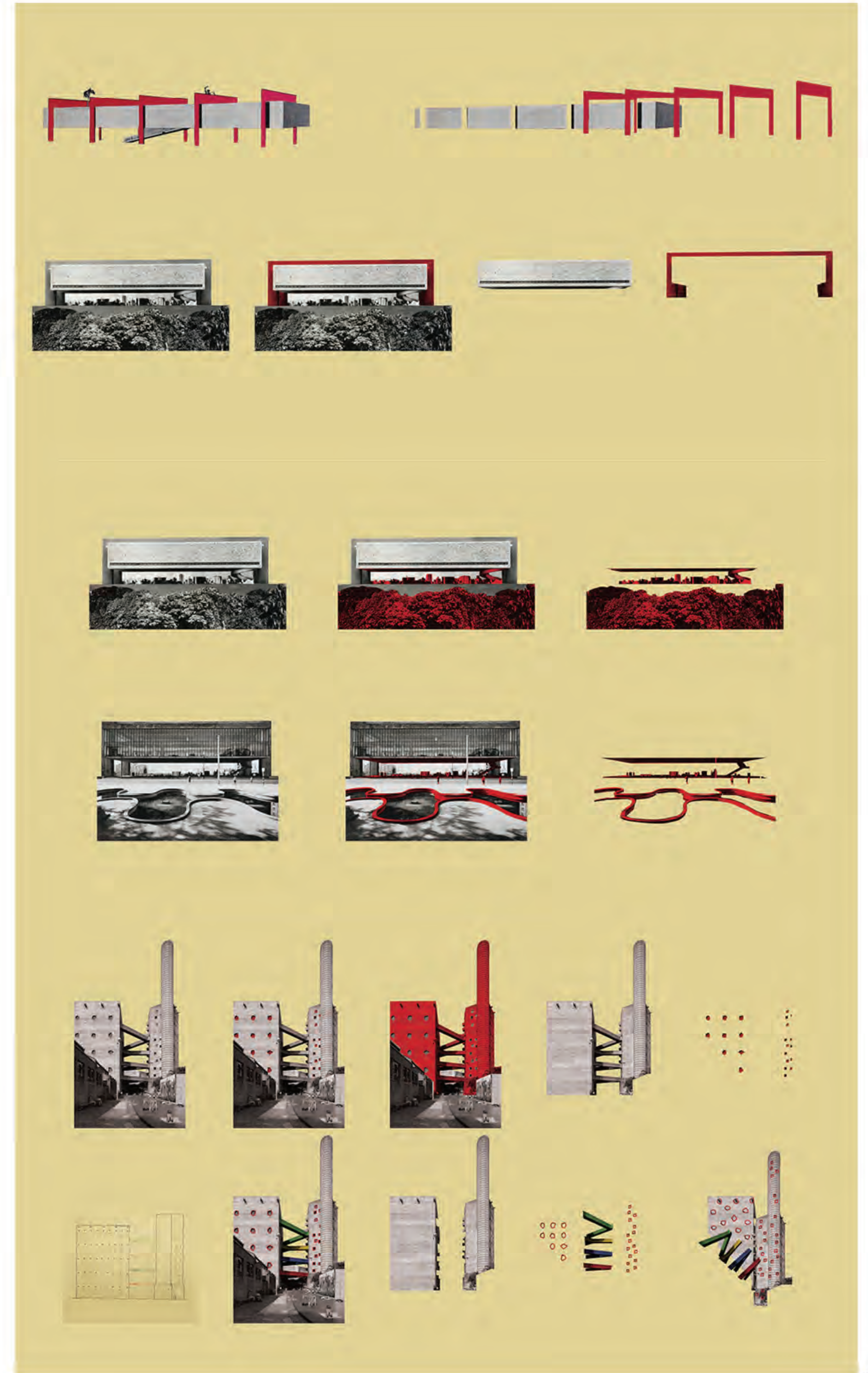
Accelerated by modernism, the rapid urbanization of landscapes has almost never conceived the more-than-human as one of its primary residents of the modern city, that was built upon the once nutritious soils and waters. It is not until the ozone layer and the extreme carbon emissions that have brought back the importance of plant-life, yet to formulate just another hierarchical and anthropocentric concept of 'sustainability'.

A new radical theory, the new sap, shall drive the architecture of the new radical age. The new attitude shall foresee the synergy between the human and the more-than-human in order to construct the new trans-species architecture that serves the "new public".

07 - Other Works

Architecture Apropos Art

Solo Work
Architecture Apropos Art | Year 3 Fall Semester, 2023
Seminar Professor: Steven Holl



07 - Other Works

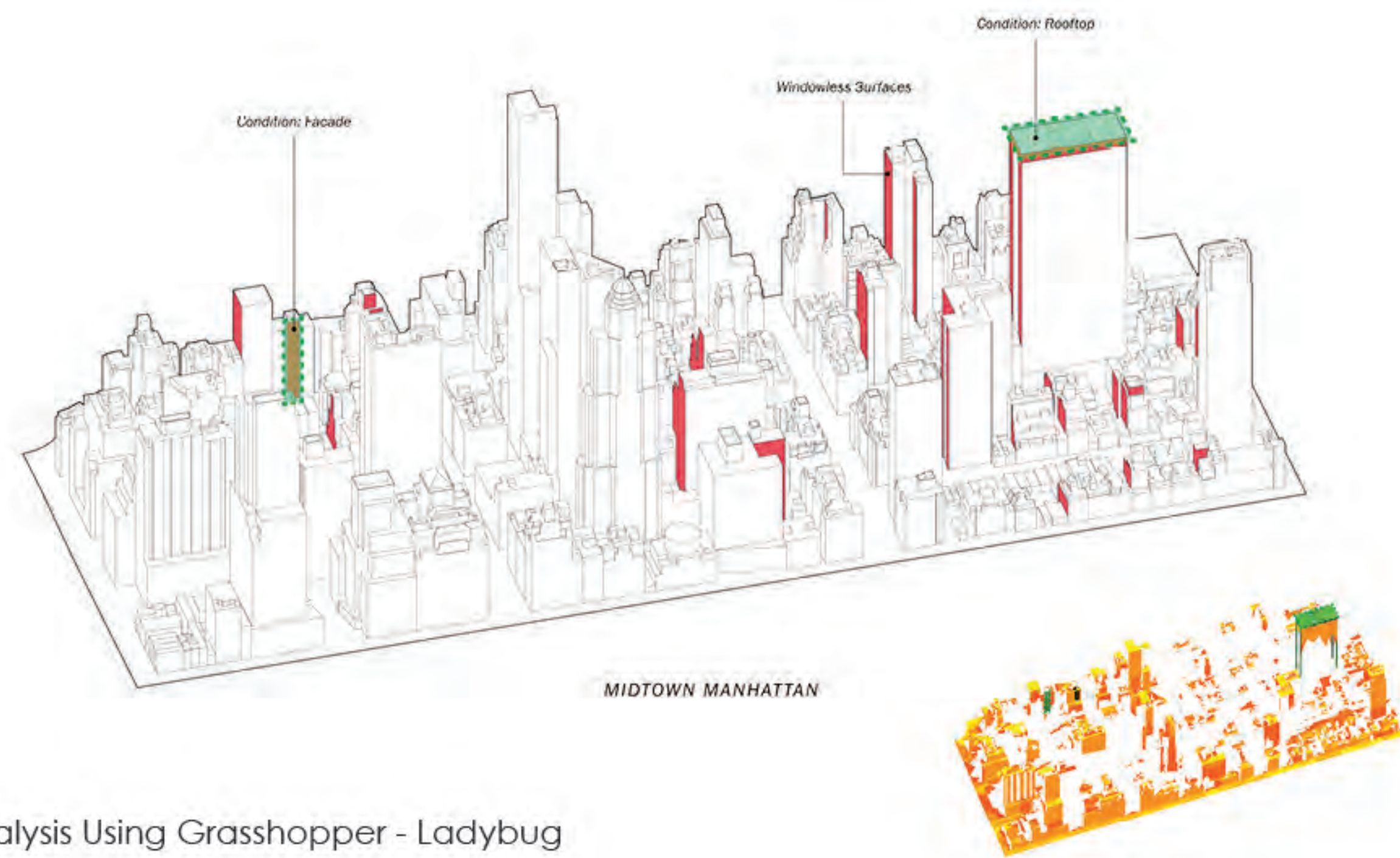
Generative Design

Group Project
 Generative Design | Year 2 Spring Semester, 2023
 Studio Leader: Danil Nagy

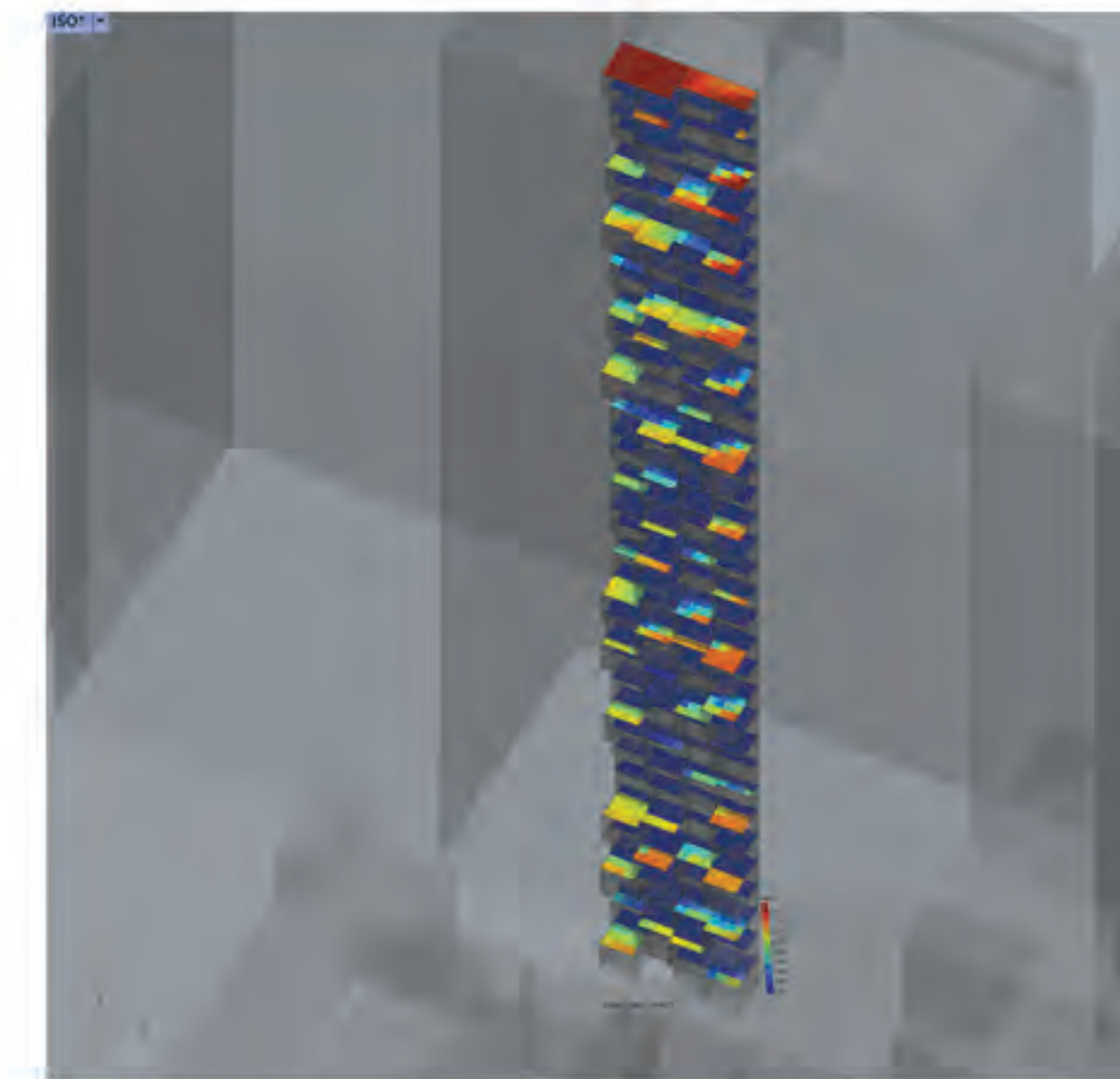
Since industrialization, the amount 'nature' that was replaced and displaced by reinforced concrete to form buildings and cities has become a symptom of the modern epoch under capitalism.

Rapid development in the 21st century has created economic centers around the world, one of which is Manhattan, New York. Within such a densely populated urban fabric, the amount of green infrastructure is drastically lower than the surrounding areas such as Brooklyn and the Bronx, which is a direct result of the products of economic power and development - 'Super-skyscrapers'. Our project - "Green Manhattan" - is interested in analyzing and locating optimal areas for green infrastructure in the city of Manhattan (Midtown, where the grounds are overcrowded and overshadowed by super-skyscrapers), whether it be curbside, rooftops, or facades, according to sun exposure. Then, designing these infrastructures to allow plants to gain maximum/sufficient direct sunlight, purify the cityscape and allow human interaction, and reduce urban heat island effect.

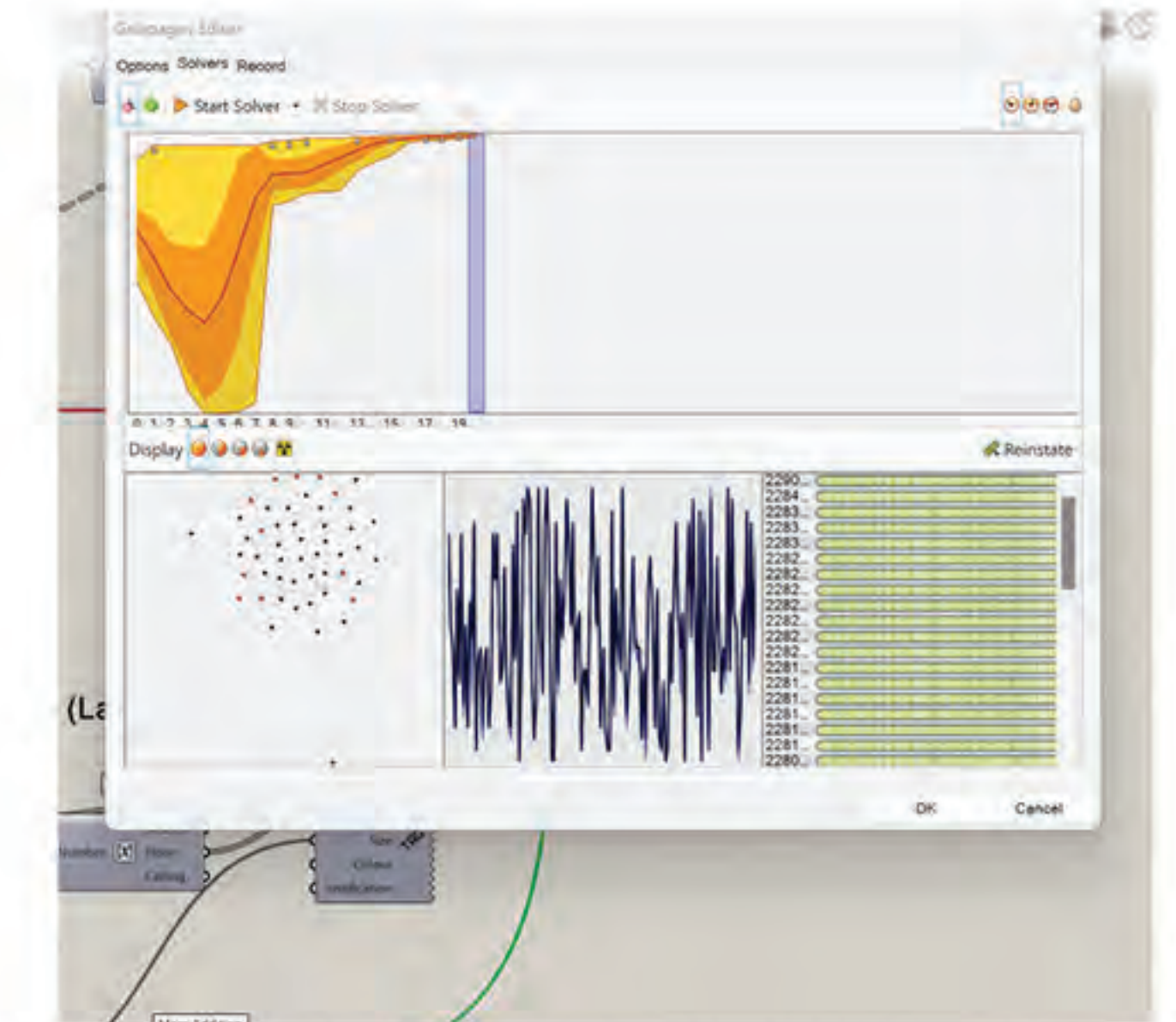
With the use of Grasshopper and Python, the project is envisioned to be a workflow or tool that is repeatable at different city blocks or even different urban contexts in different parts of the world.



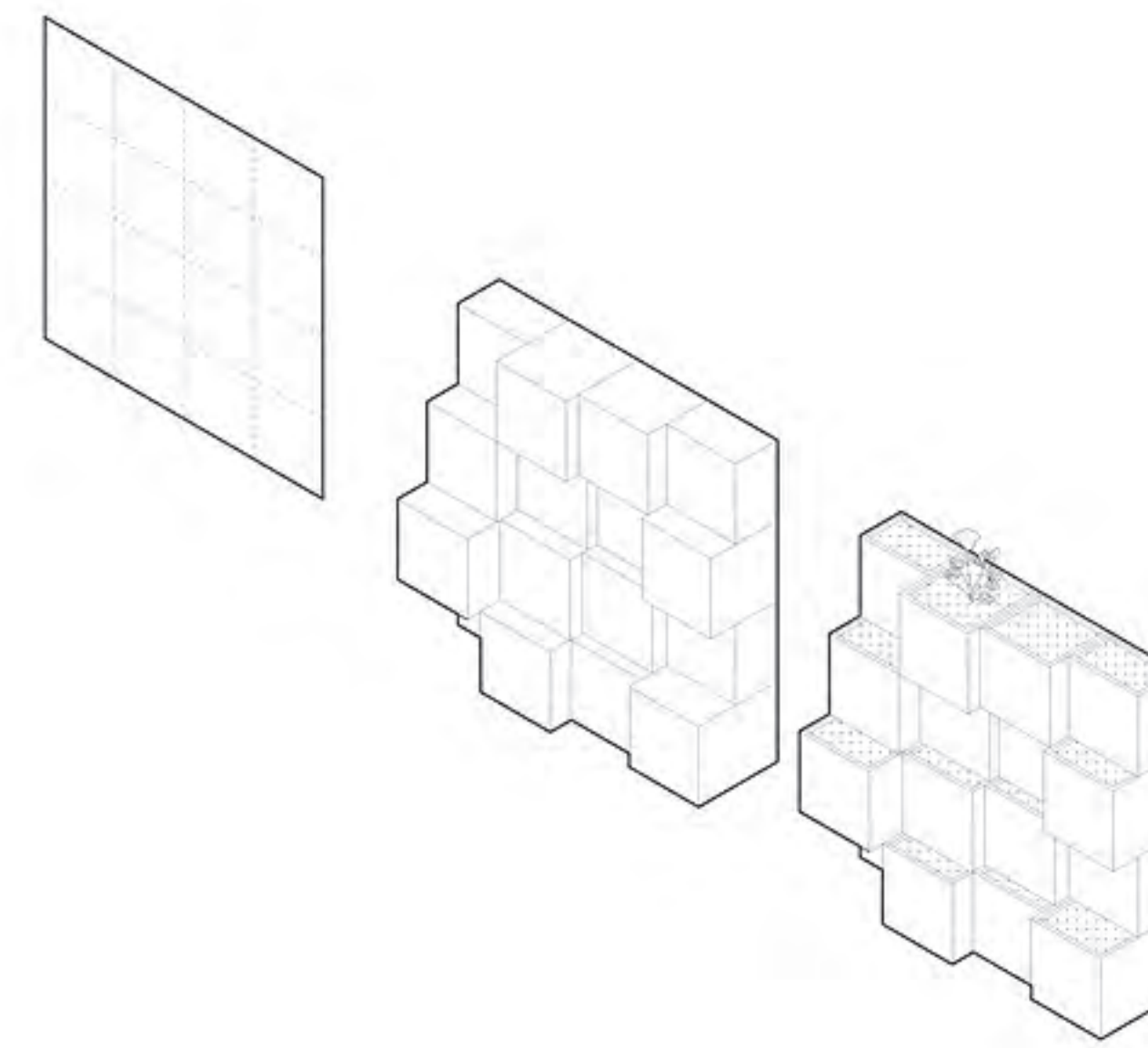
Sun Analysis Using Grasshopper - Ladybug



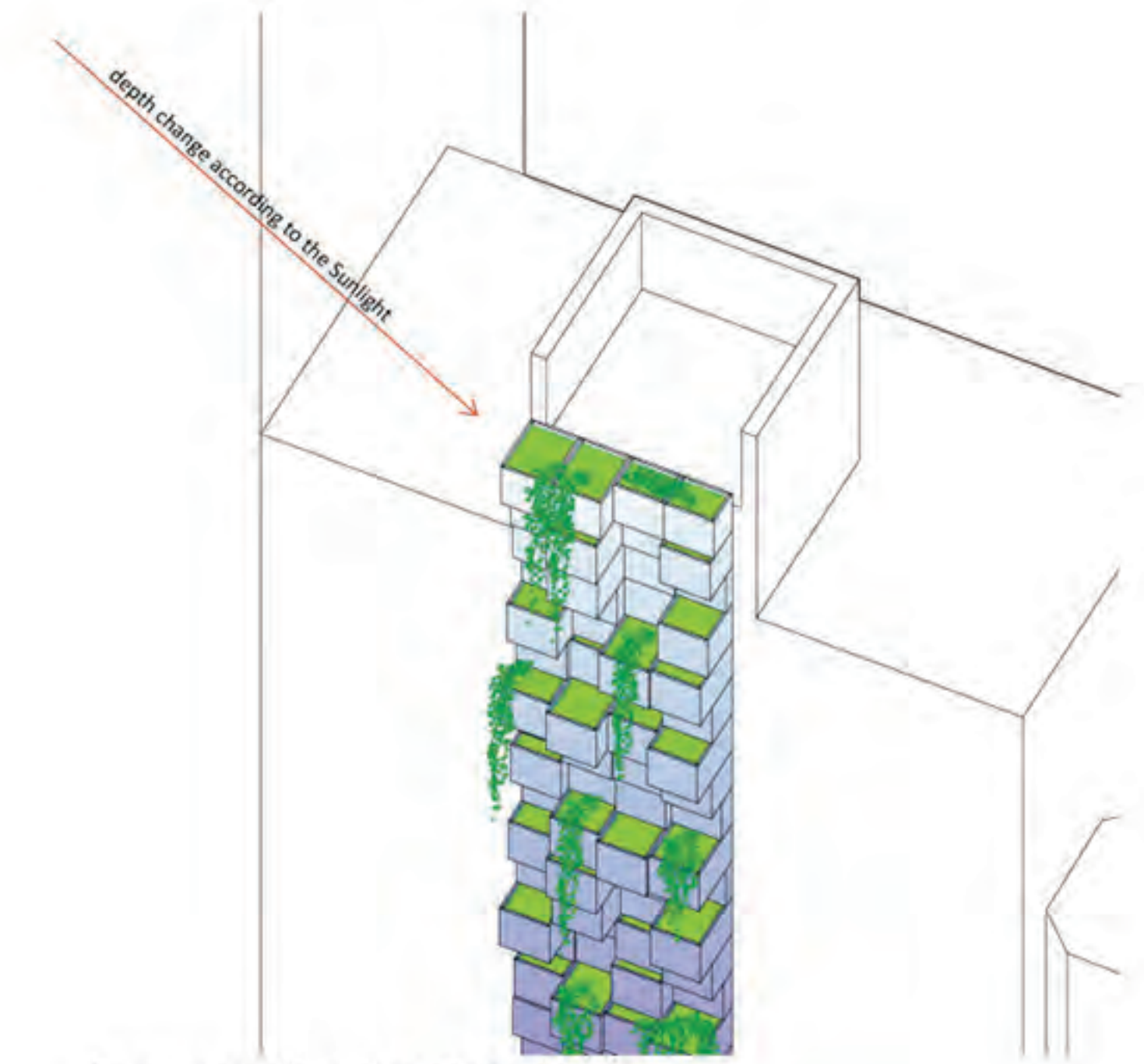
Optimization of Surface Area and Sun Exposure



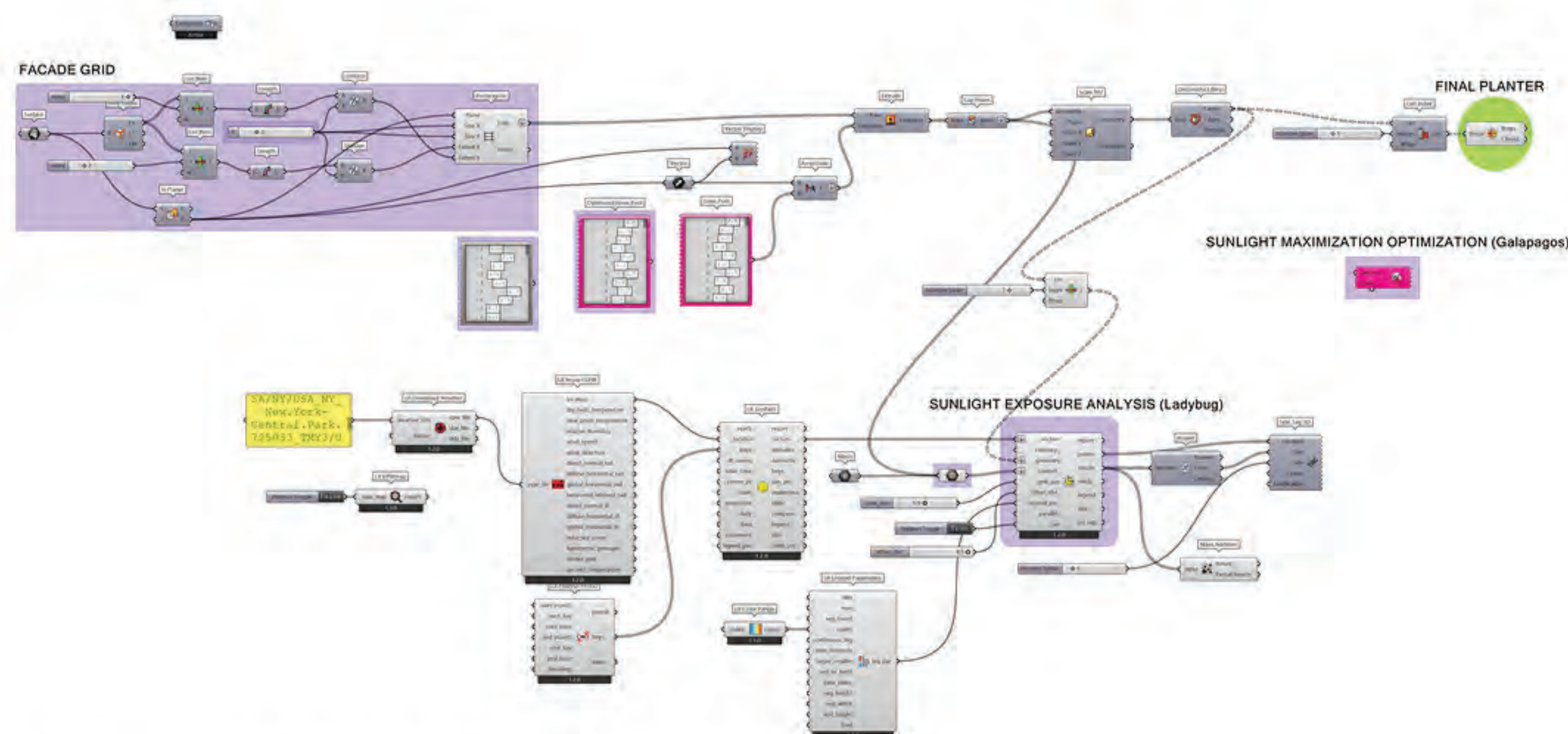
Galapagos in Grasshopper for Optimization



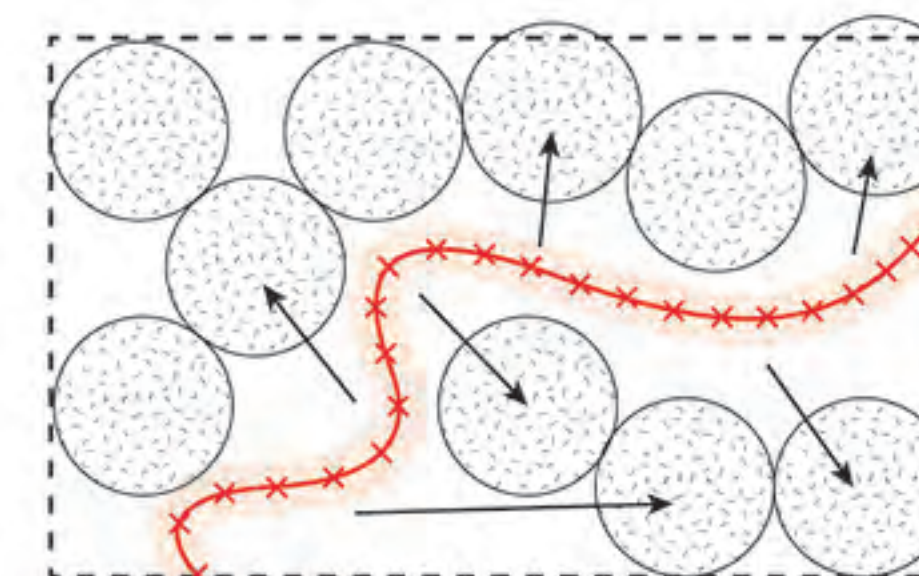
From Facade to Planters



Facade Planter Condition



Grasshopper Script using Optimization



Collision & Expulsion Using Python



Rooftop Planter Condition

07 - Other Works

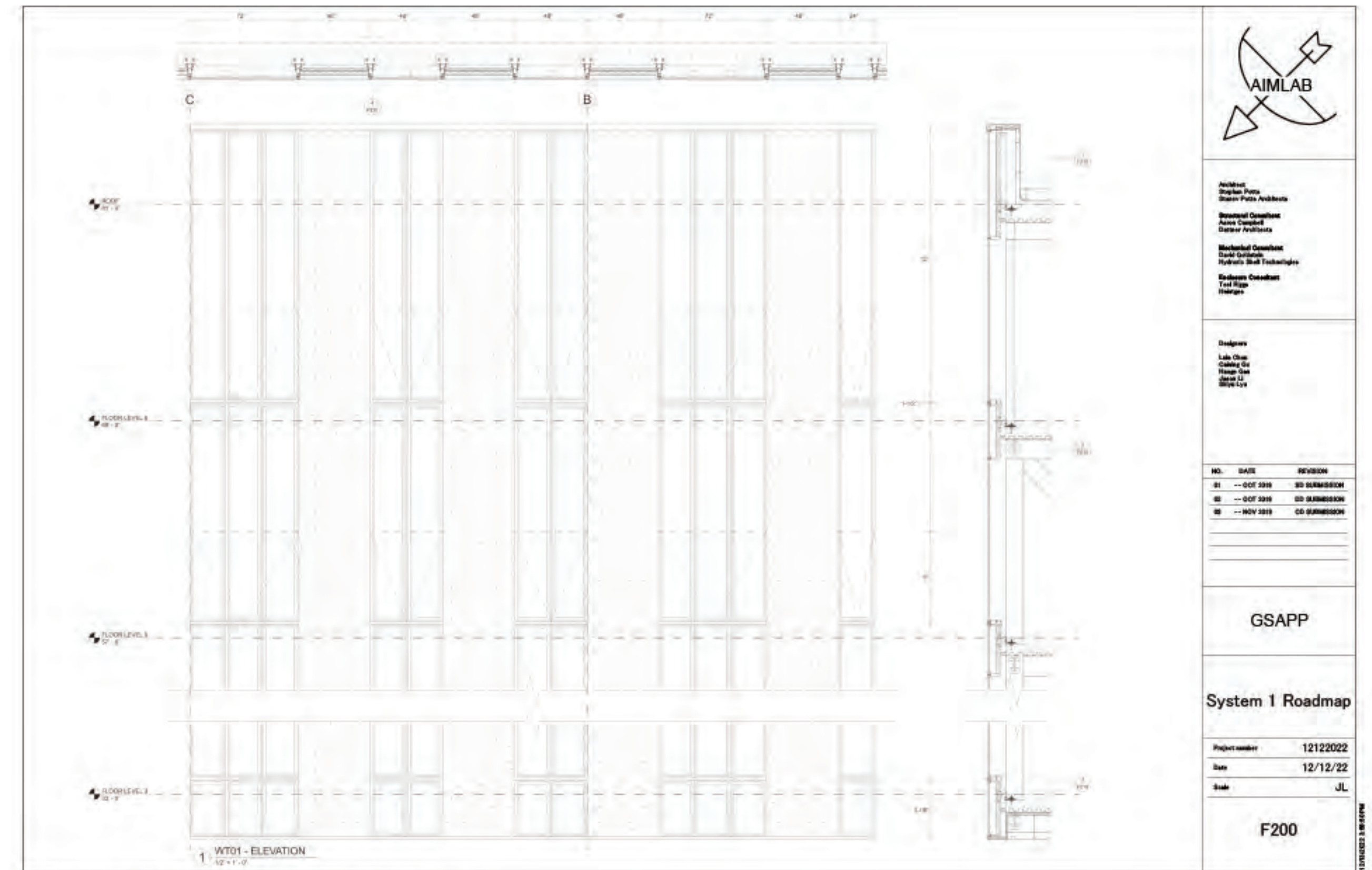
Architecture Technology - Integrated Design

Group Project
 Architecture Technology | Year 2 Fall Semester, 2022
 Studio Leader: Berardo Matalucci

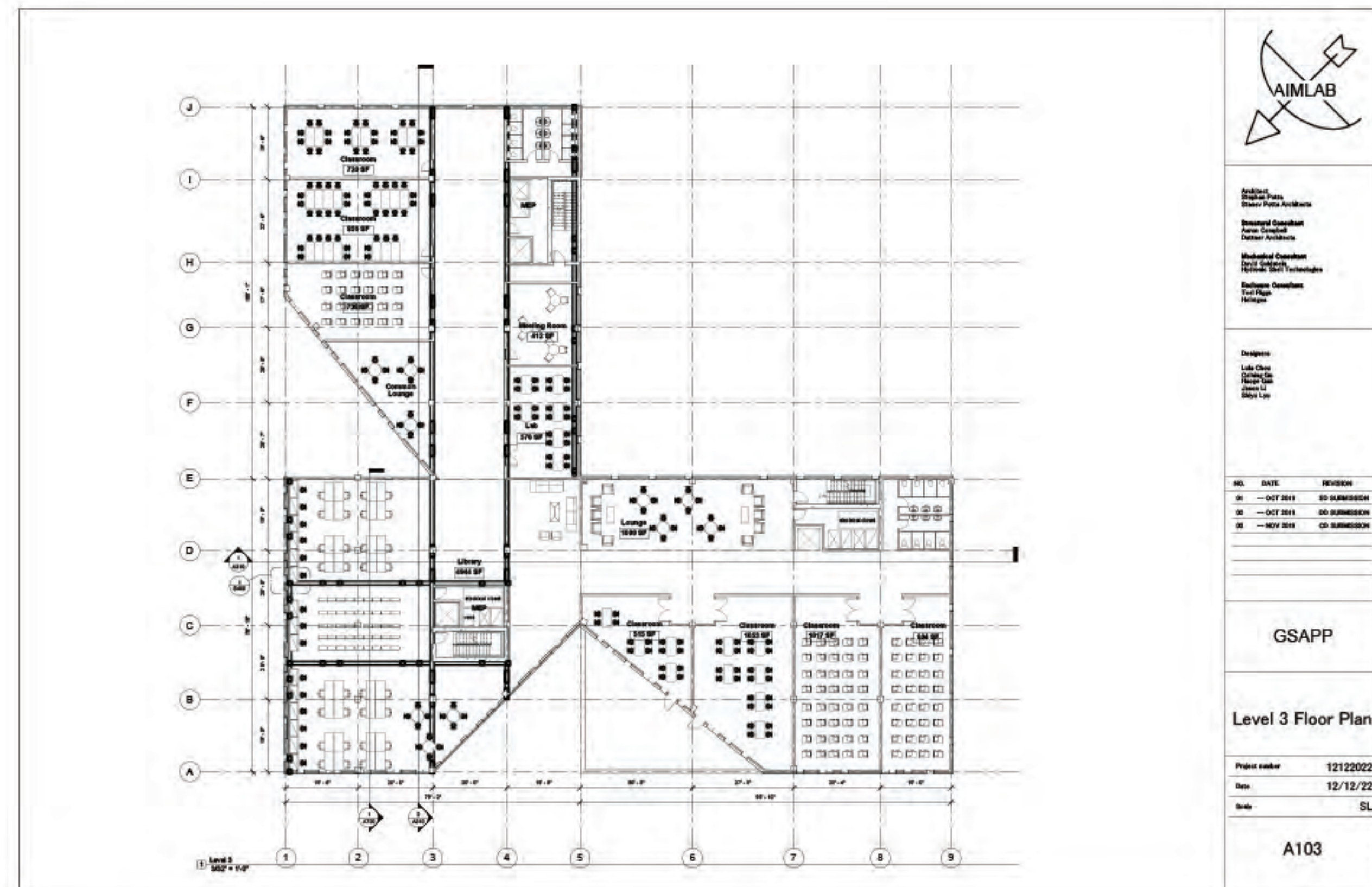
Building Systems Integration brings together the technical domains of life safety, fire protection, environmental systems, structure, and enclosures in a way that promotes the integration of disciplines. The representation of the information of a building is expressed through the use of Revit and professional building documentations.



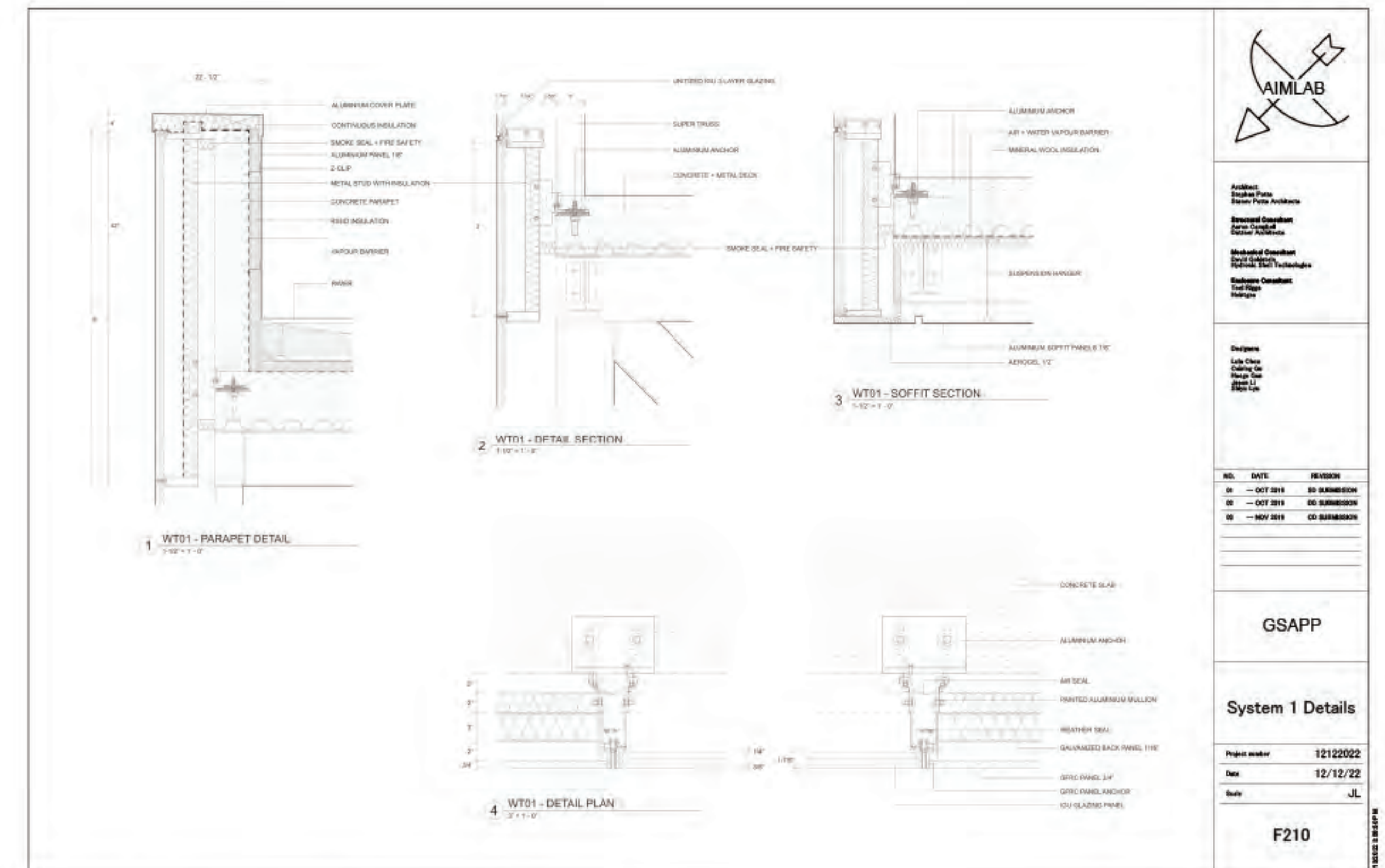
Exterior Render



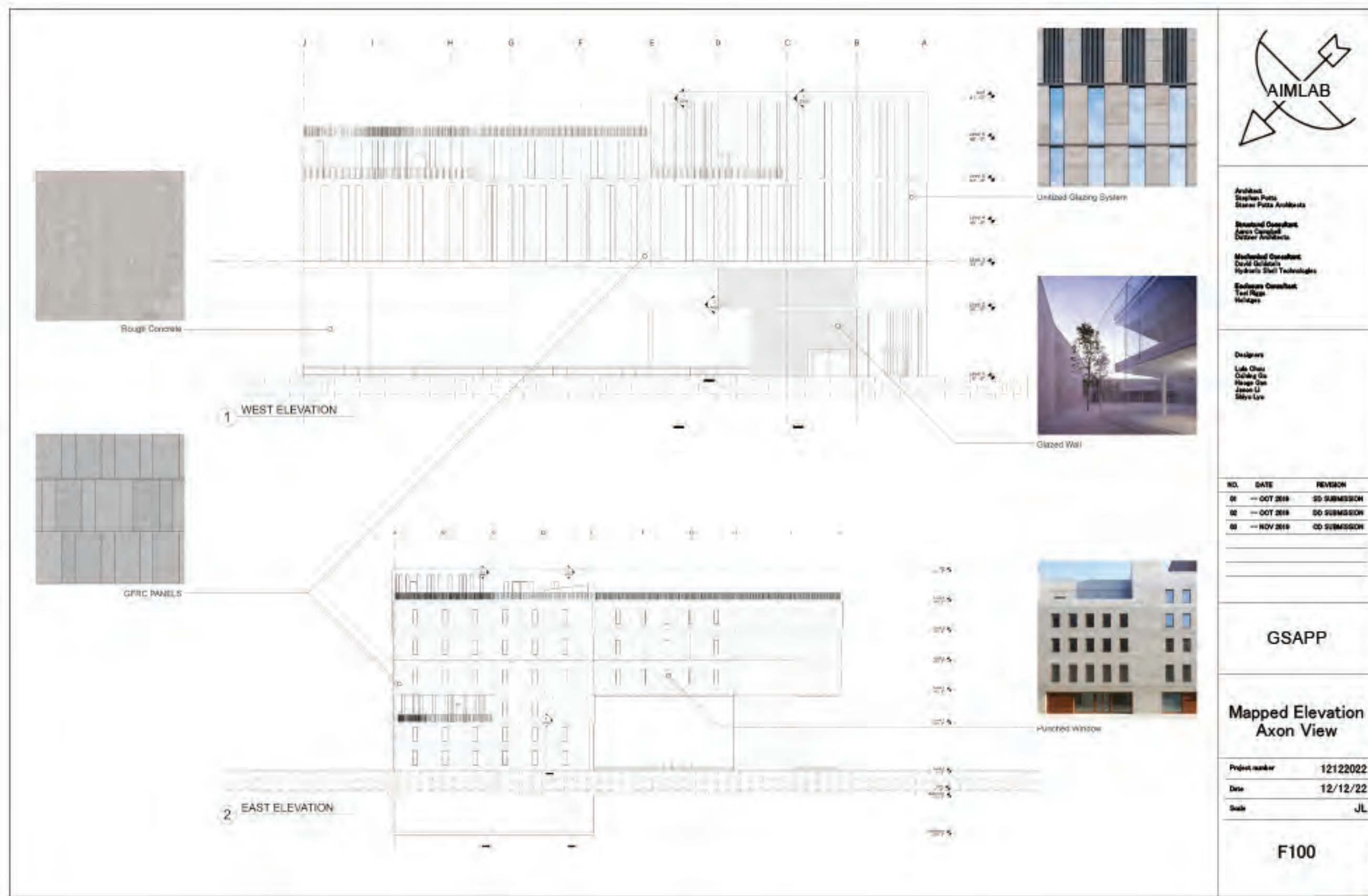
Facade Systems and Materiality



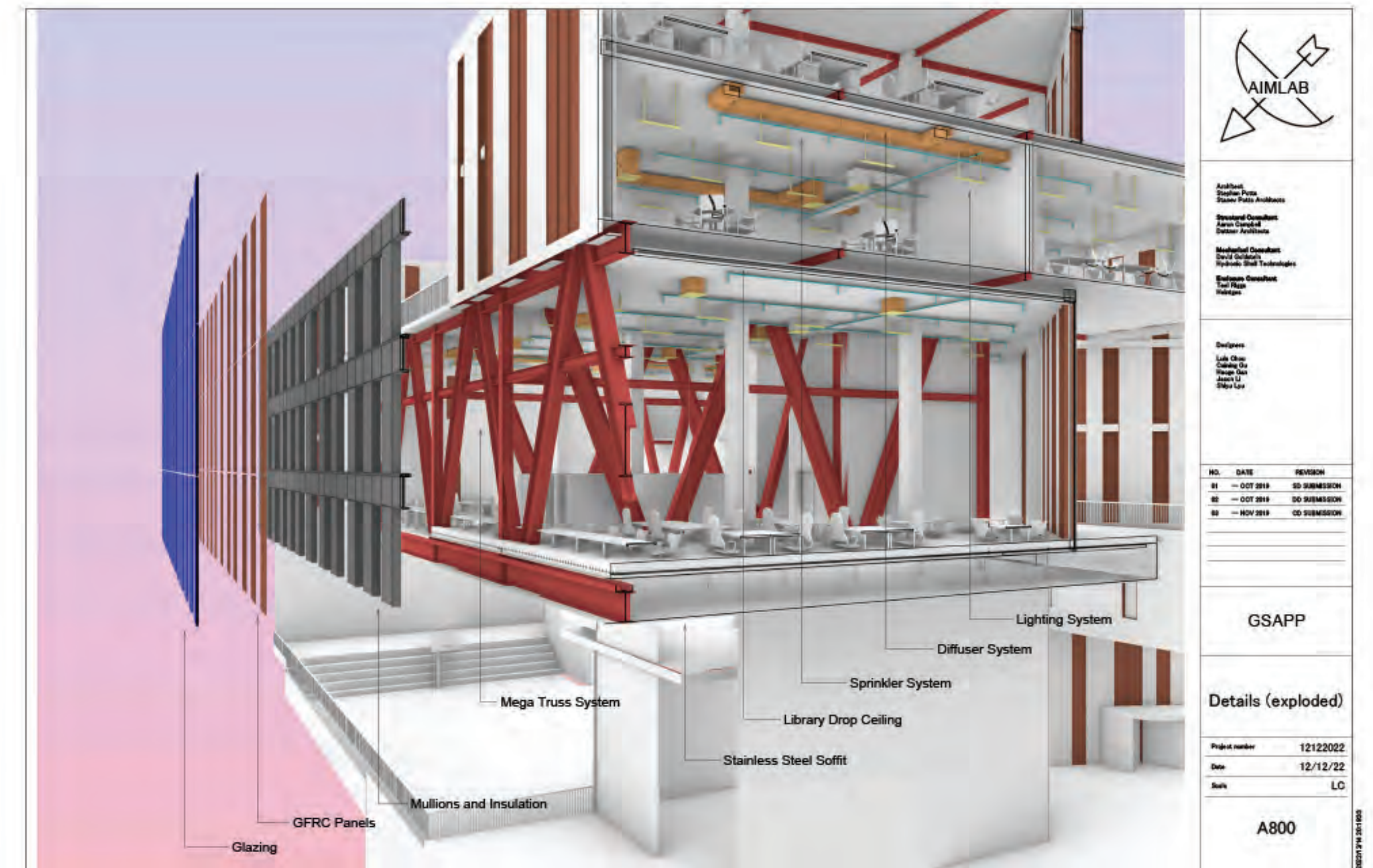
Typical Floor Plan



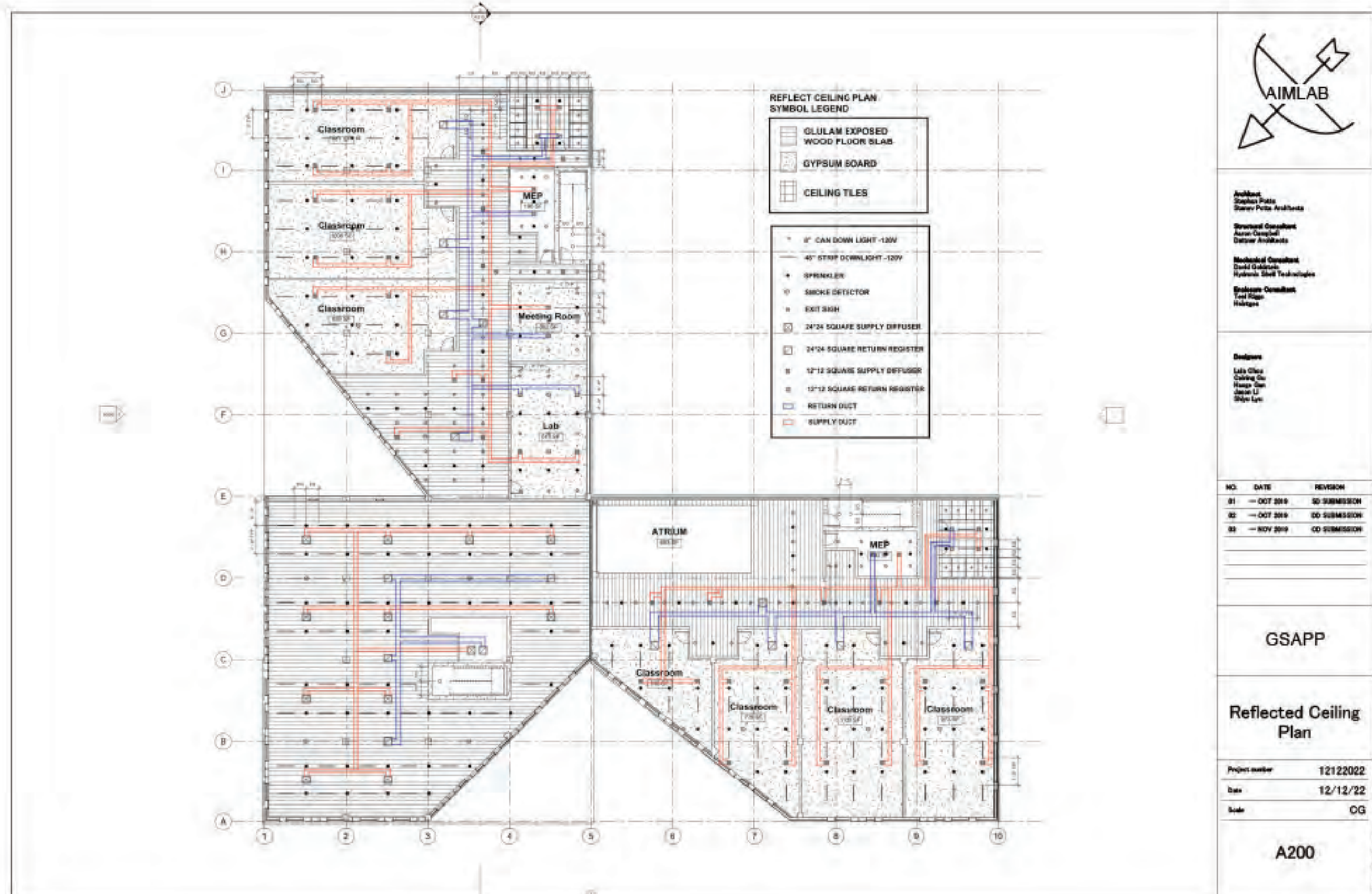
Facade Systems - Details



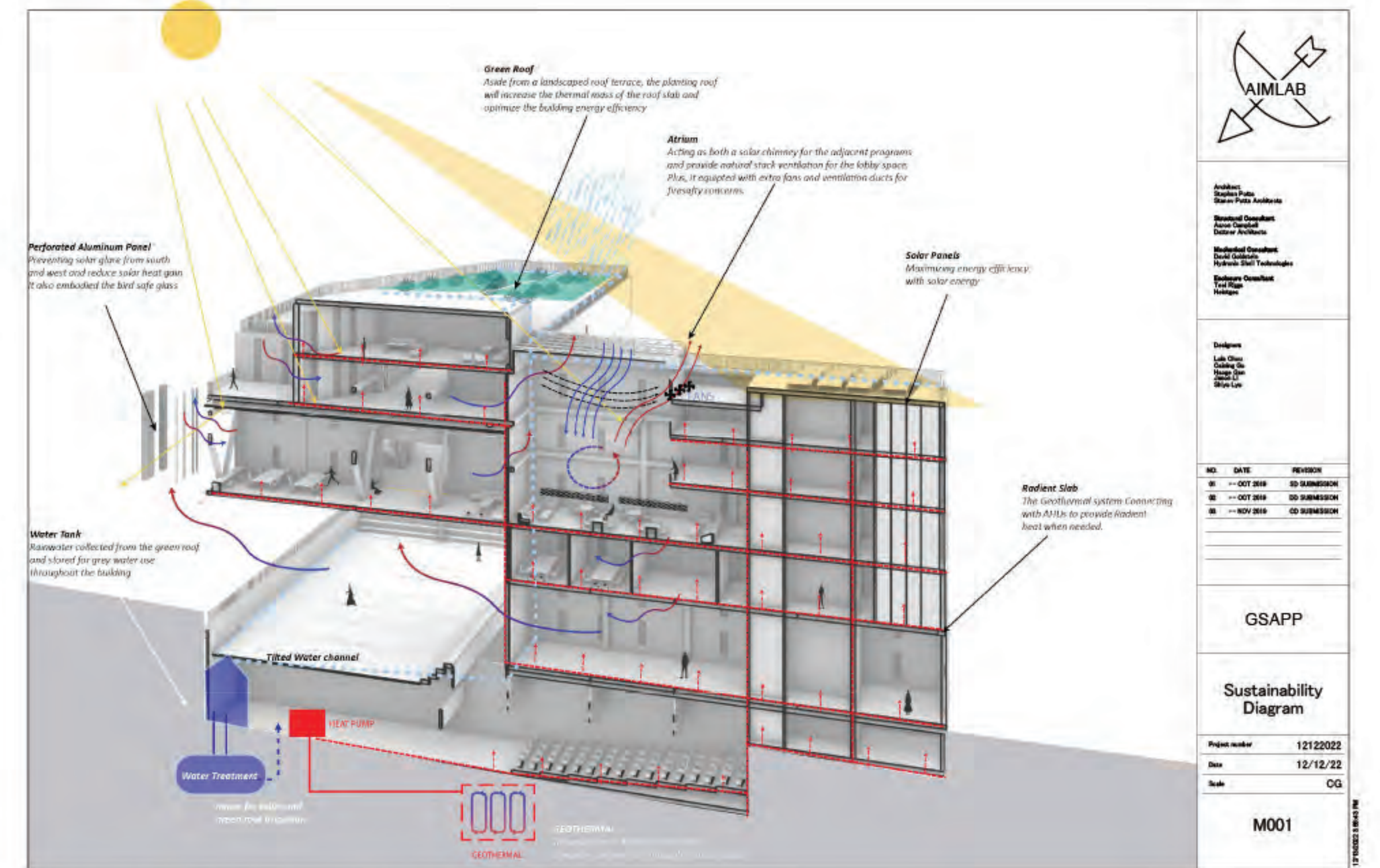
Facade Materiality



Building Structural Exploded Detail



HVAC & Fire Systems - Reflected Ceiling Plan



Building Sustainable Design Strategy