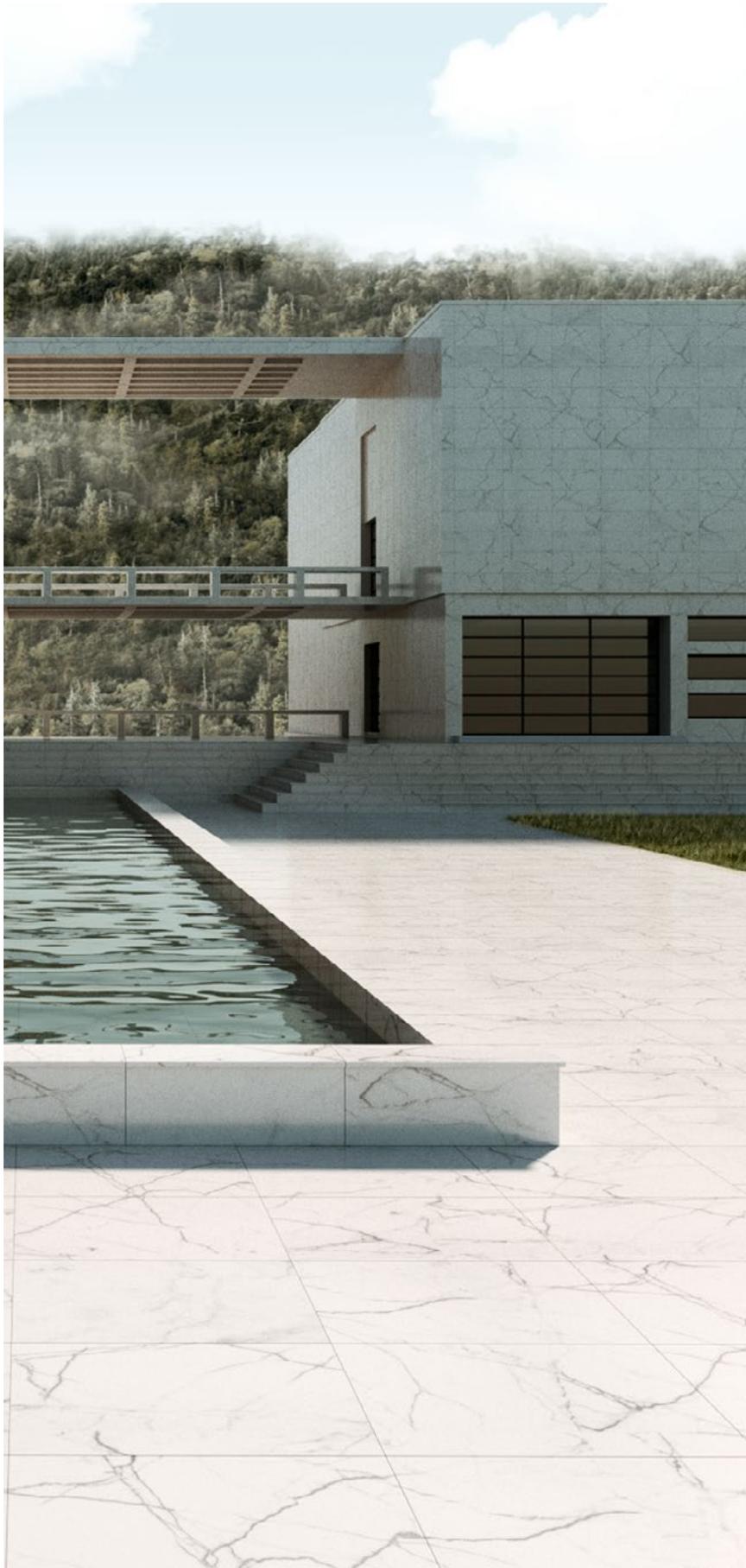


SELECTED WORKS, 2022



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# CORKTOWN LUMINARIA

FALL 2021, PROF. MICK KENNEDY, UNIVERSITY OF MICHIGAN

WITH AYA CHEHADEH AND VICTORIA WONG

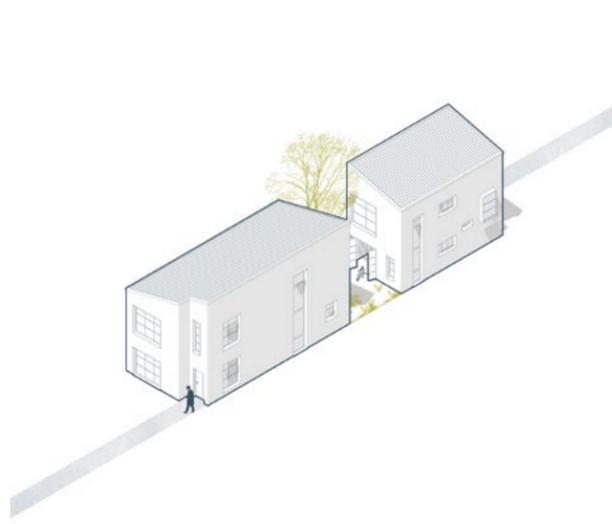
The main ideas for this project take place at two different scales. At the unit scale, looking at the combination of main and accessory units: the project explores the relationship between the two spaces through the lens of different user groups, those being multi-generational families and live-work scenarios. The project also presents ideas at the site scale: investigating the aggregation of units across the site with the goal of generating varying levels of intimacy and different identities of urban space. This idea is also manifested through a material strategy that realizes different levels of translucency.

The site for this project is in Corktown, a historic neighborhood of Detroit. The lot is on Ash Street in between 14<sup>th</sup> and 15<sup>th</sup> Streets. This area is proposed to be the site of much future development. The City of Detroit recently released a framework plan for Greater Corktown. Their proposal outlines a number of plans for the development and growth of the neighborhood. Development on Ash Street and 14<sup>th</sup> Street in particular is a major focus in the proposal, with Ash Street proposed to become an ecological corridor and 14<sup>th</sup> street the cultural corridor. This project was designed with these ideas and proposals in mind.

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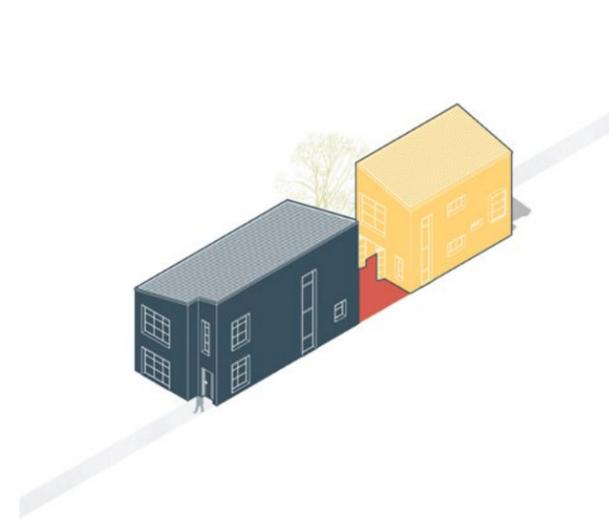
Exterior Perspective



Unit A: Multi-Family Duplex with detached ADU



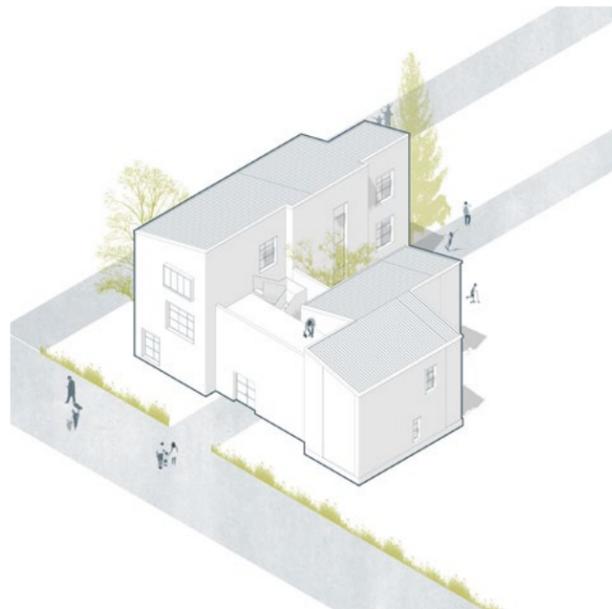
Unit B: Multi-Family Duplex with attached ADU



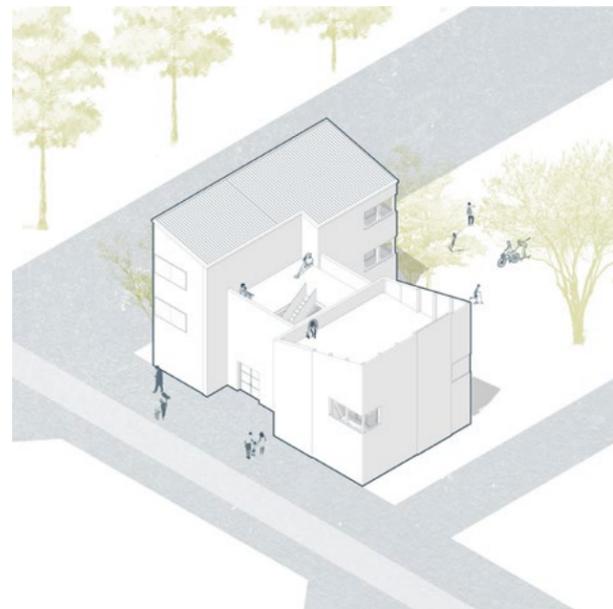
Unit A: 1 main unit, 1 accessory unit



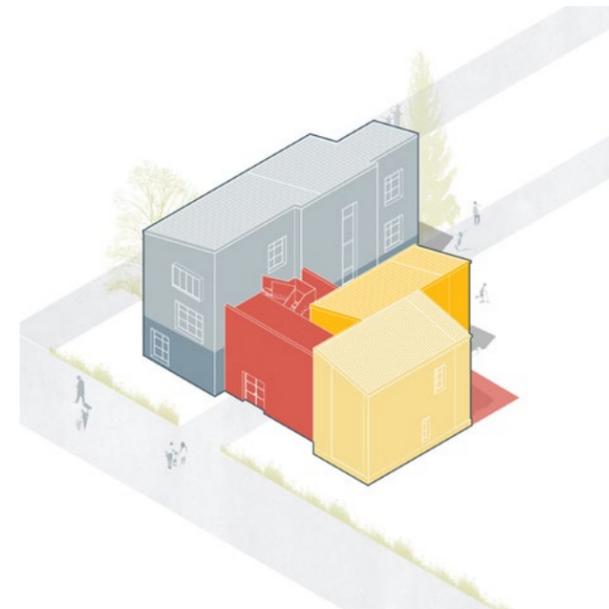
Unit B: 1 main unit, 1 accessory unit



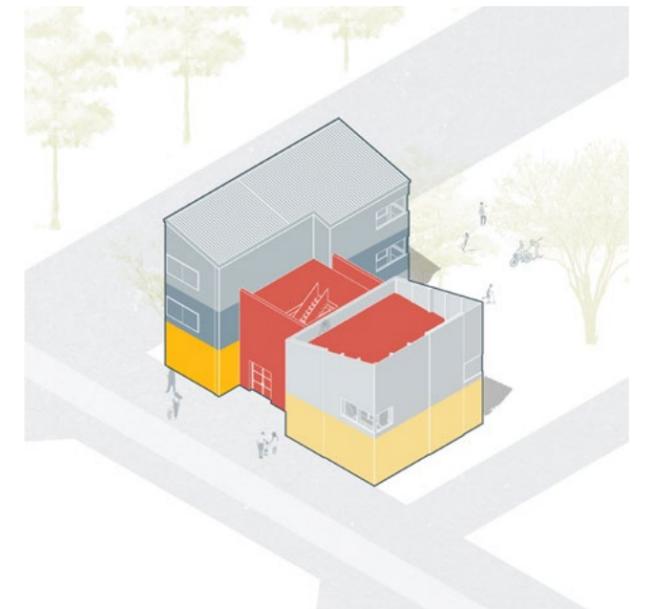
Unit C: Live-work complex



Unit D: Live-work complex



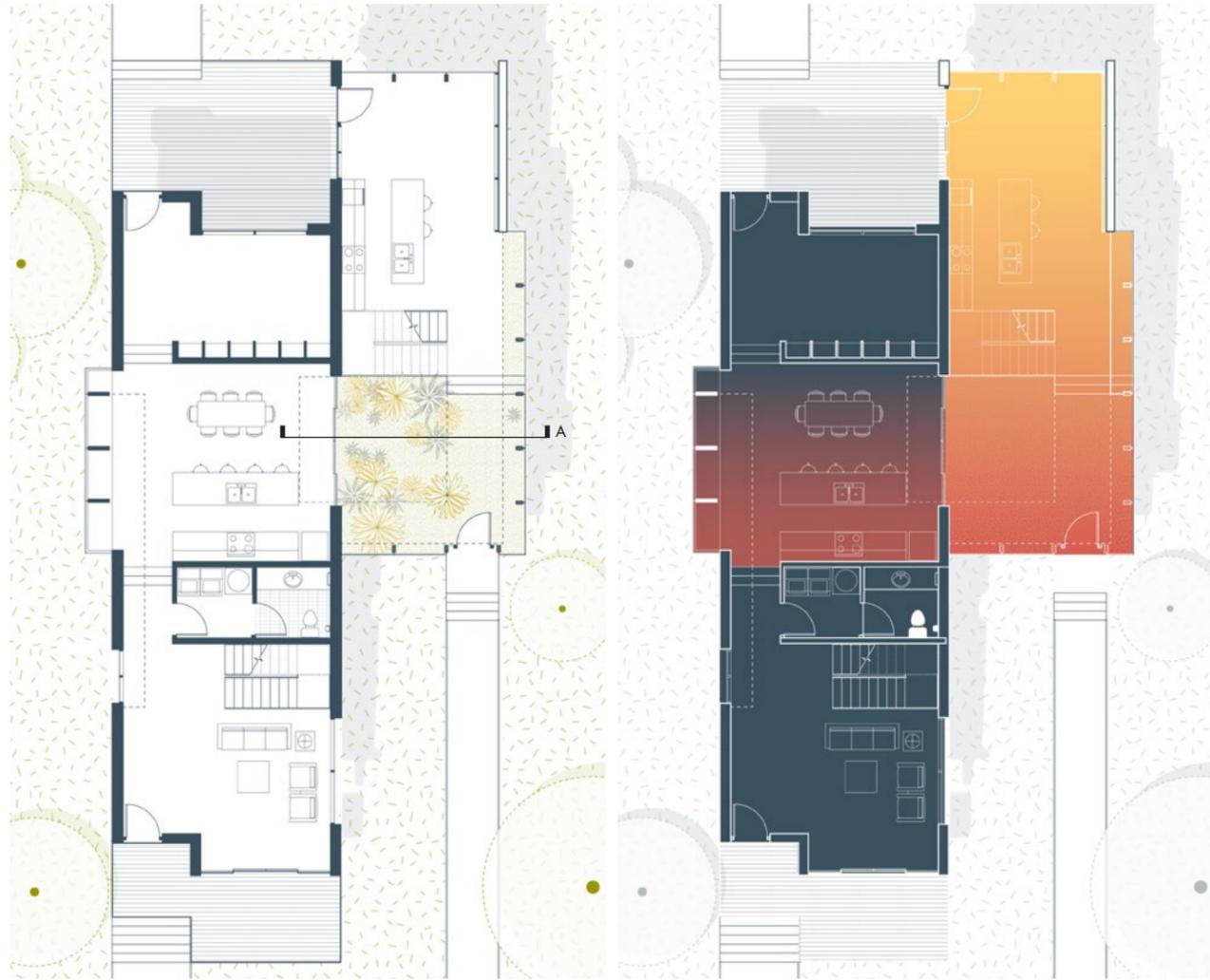
Unit C: 2 main units, 2 accessory units



Unit D: 3 main units, 2 accessory units

Corktown Luminaria presents four unit designs that each utilize a unique accessory dwelling unit. Two of the units are for multi-generational families while the other two incorporate live-work opportunities. The first of the two multi-generational units (Unit A) has a detached accessory unit while the second (Unit B) is connected through a shared winter garden. The live-work capable units are slightly larger in scale. The smaller of the two (Unit C) has two main units and two accessory live-work units that are connected by a central communal space that also contains circulation. The larger live-work unit (Unit-D) is designed to incorporate commercial retail.

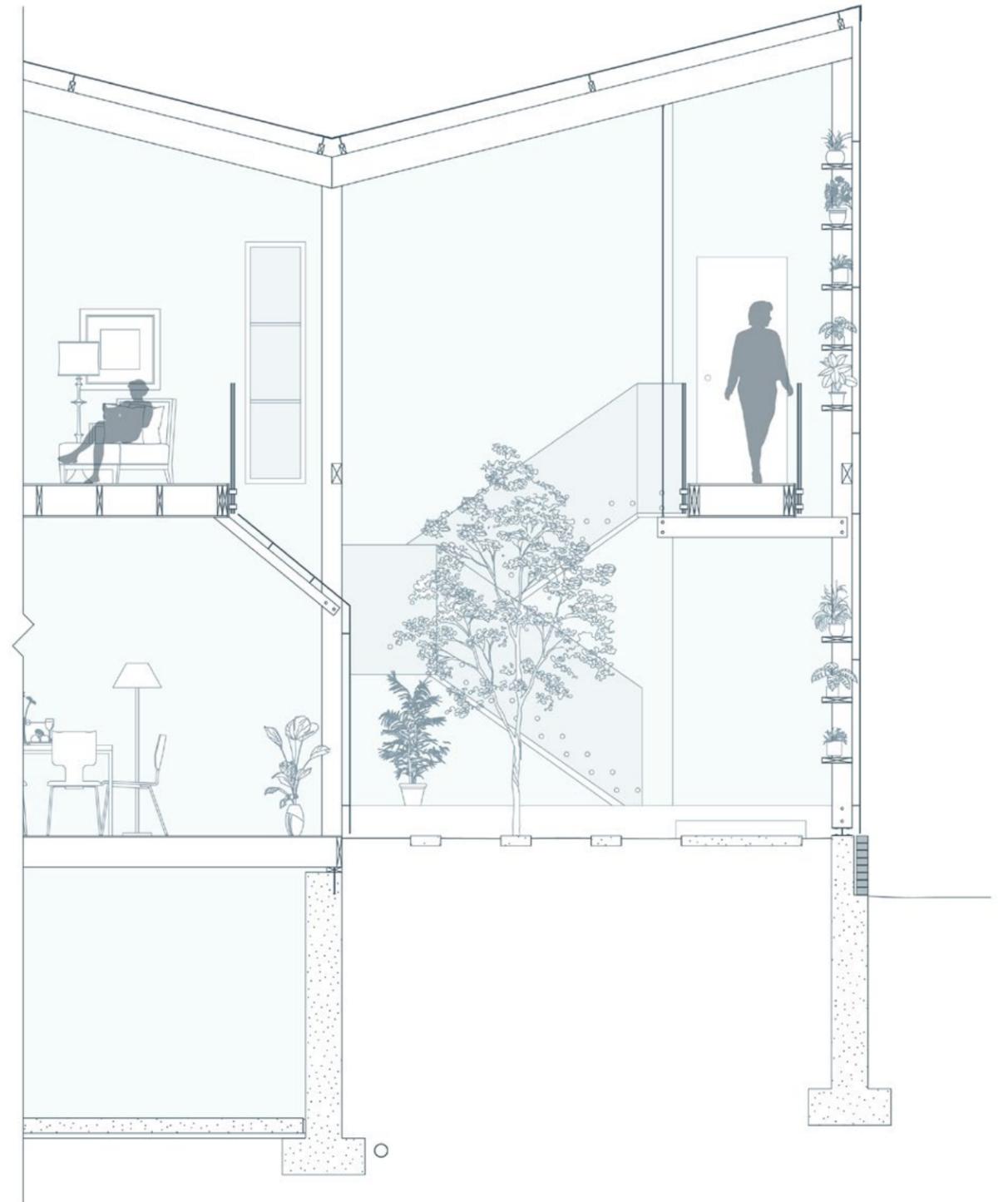
These diagrams illustrate the designation of spaces for each unit type. Blue shades depict main units, with yellow showing accessory units, and communal or circulation space in red. Semi-interior communal space is a theme of the project, promoting connections to the exterior and nature.



Ground-Floor Plan, Unit B

Spatial design diagram, Unit B

The drawings above reference Unit type B with the left showing the ground-floor plan and the right diagrammatically showing the spatial designation. The main and accessory units in this configuration are connected through a communal winter garden that blends into the adjacent spaces.



Section A, Unit B winter garden



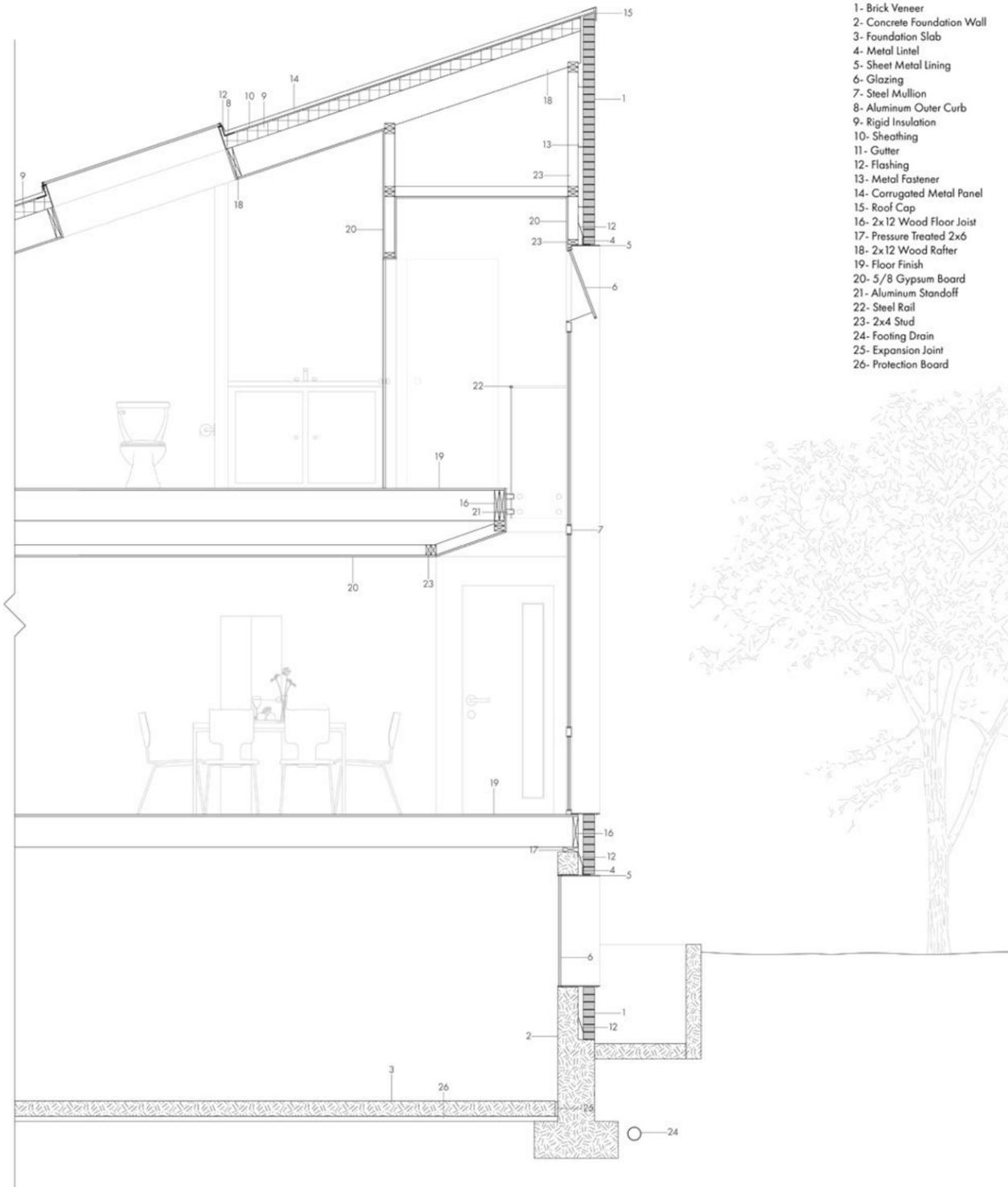
This plan diagram shows the aggregation of unit types across the site. The scale of building gradually increases from 15<sup>th</sup> to 14<sup>th</sup> Streets along Ash Street. The 15<sup>th</sup> Street side of the site is more neighborhood scale while 14<sup>th</sup> street is a commercial corridor leading into Detroit. The project blends the historic Corktown neighborhood fabric with the planned urban development.

This street section down the alleyway cuts through the site parallel to 14th and 15th street and shows a diversity of units and programmatic elements. Through this section we have live-work and multi generation units, and looking towards 14th you can see the commercial units in the background. In the center of the section you have the Ash Street ecological corridor where we are imagining a range of activities to take place such as running and biking and other small-scale communal events within the vegetated backdrop. The project aims to blend the nature of the eco corridor back into the site with the framing of communal spaces through unit aggregation.



Site plan, zoomed in

This plan diagram shows an example of the unit aggregation framing courtyards. The site plan saw many iterations throughout the design of this project. The negative space in the unit aggregation needed to form efficient paths through the site into the pockets or courtyards. Privacy within the units was also a concern, so we used material compositions on the facades such as perforated bricks and polycarbonate panels.



Interior perspective

The material palette for the project consists of cool-tone brick, polycarbonate panels, and perforated brick or brick screen for the facades. The selection of brick came from our site and context studies and worked well with our desired structural system using light wood framing. The polycarbonate material is used intentionally to frame specific programmatic elements such as the live-work units along with the residential ADUs. We wanted our facades to have different levels of translucency and tactility responding to program. Another example of this is the use of brick screen in the communal or circulation spaces.

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# THE FOOD COMMONS

FALL 2020, PROF. JOSE SANCHEZ, UNIVERSITY OF MICHIGAN

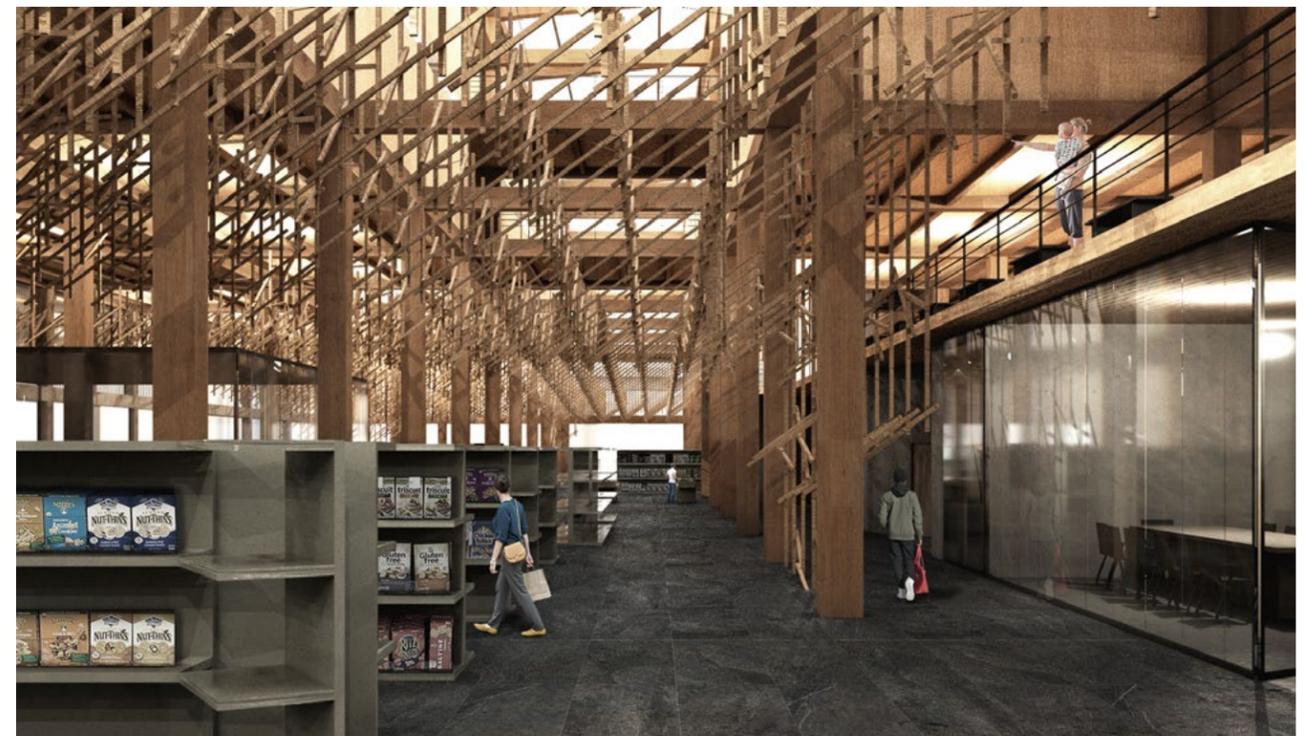
The goal of this project is to create a catalyst for stimulating the local economy and increasing communal engagement in Detroit. The building is a machine that intersects the networks and infrastructures of the city to bring together food and people. Providing cheaper, healthier food, access to nutritional education, employment opportunities, public space, and affordable housing while utilizing sustainable practices, it acts as a sanctuary for the people of the city.

Access to traditional supermarkets is a luxury in the modern era, whether that is because of geographic location or affordability. The research for this project reveals that there is a level of exclusivity in higher quality grocery formats. It is also evident that this has to do with both affordability and accessibility. When looking at supply chains, it becomes clear that a direct/local supply chain results in cheaper product prices as the shares decrease with the agents involved. That brings up the topic of food cooperatives that typically utilize an intermediated supply chain, which is essentially a direct chain with an extra agent, that being the retailer or, in this case, the cooperative. Cooperatives can provide cheaper, higher quality food with this supply chain, and they do this with the advantage of being locally run, which means closer relationships with local producers. This chain of research led to the idea of food commons, which is to design a business model, then design a building that could accommodate that model. The model is a hybridization of direct and mainstream supply chains where all business aspects are run within the building, and local producers are partners. That also calls for a centralized location for accessibility and distribution.

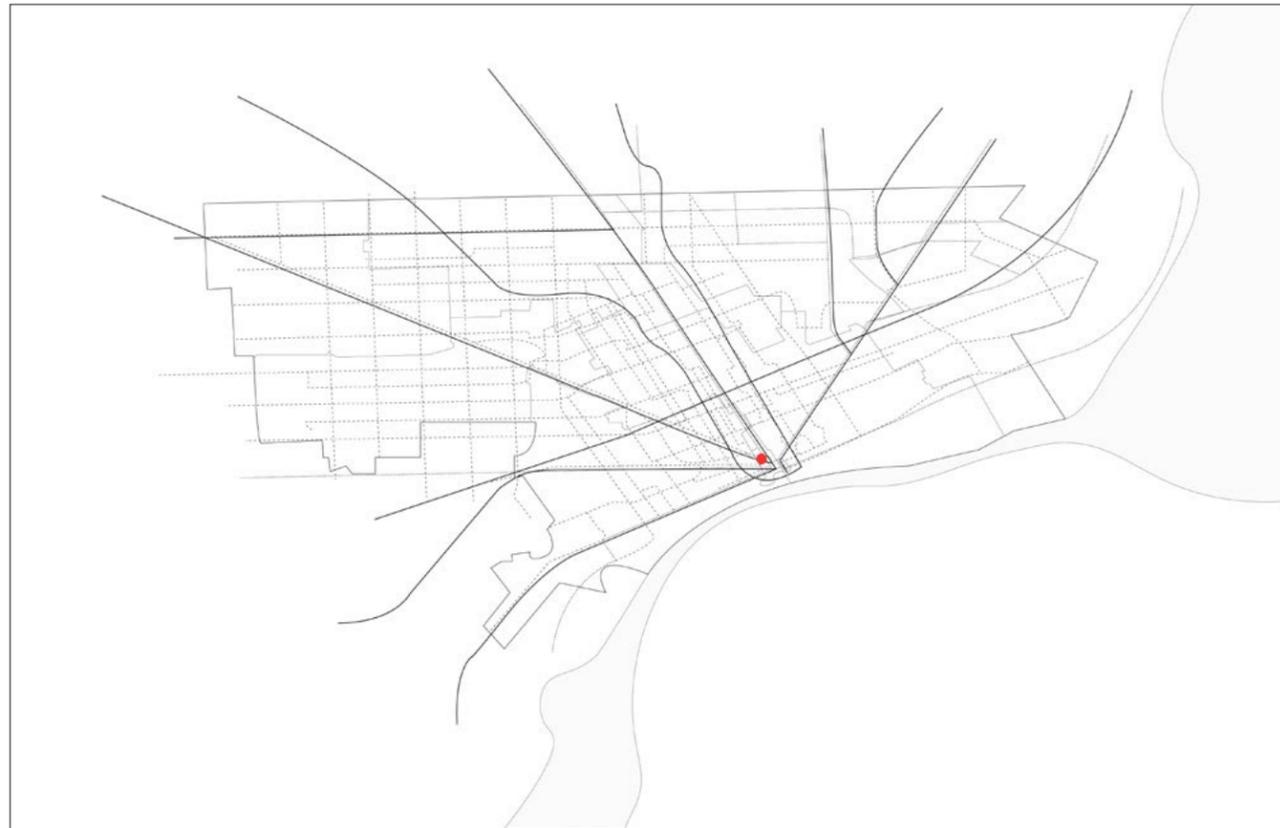
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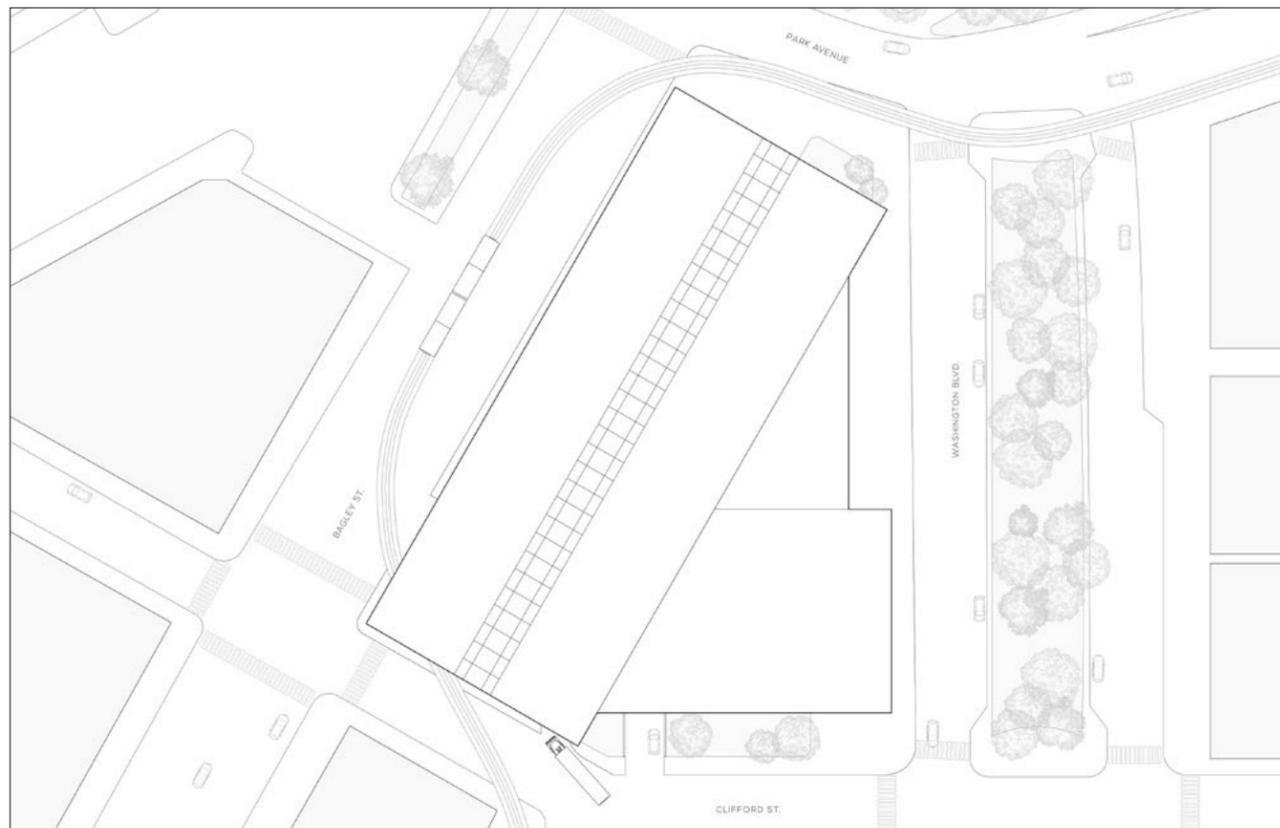
Exterior Perspective



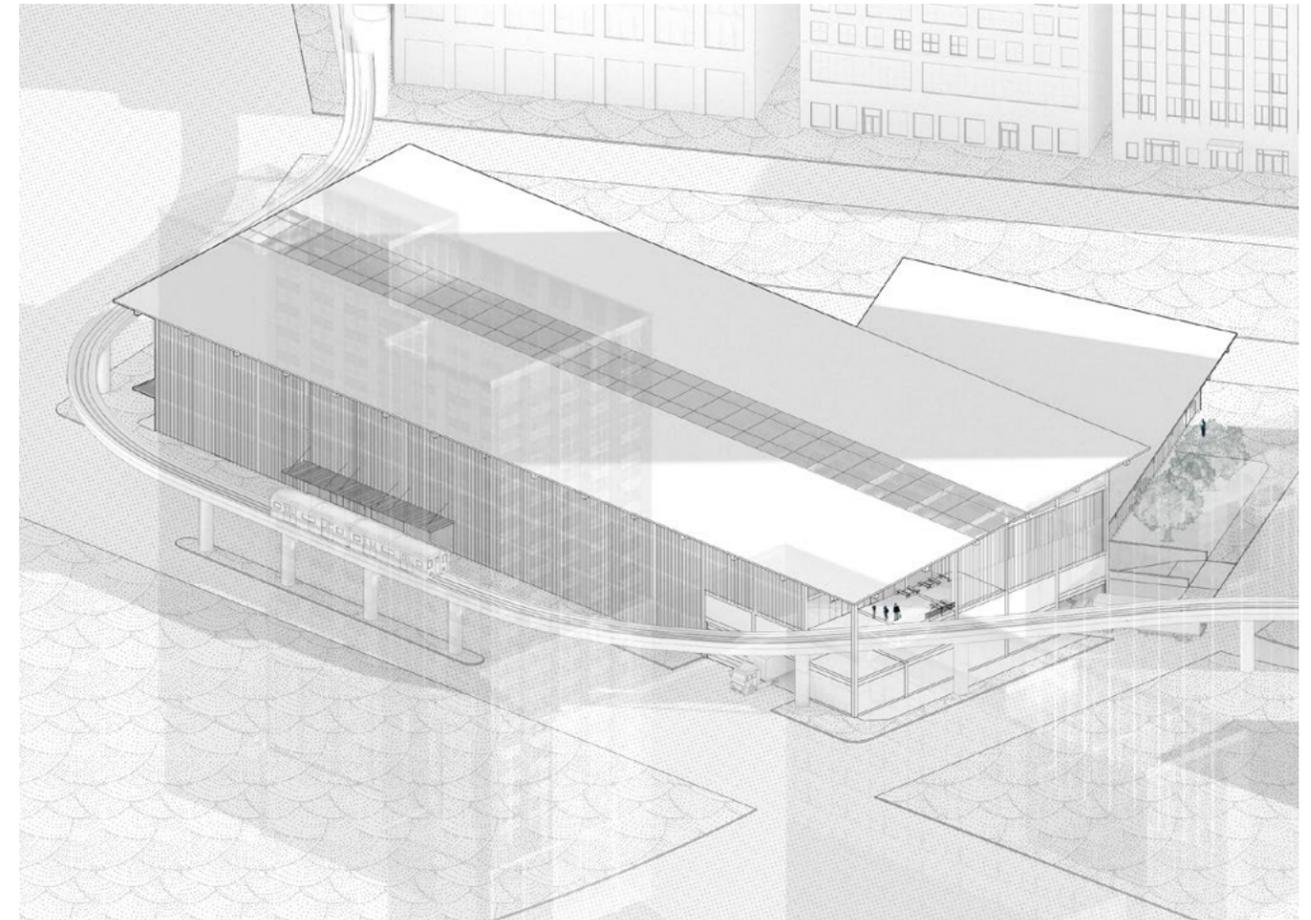
Interior Perspective



Site Map



Site Plan



Site Condition

Factors that contributed to site selection included public transit routes, reach/ population in the area, and truck routes for distribution. These factors were essential in fulfilling the goal of accessibility and supply chain effectiveness. With those factors in mind, I selected the lot of 1501 Washington Blvd. to house my project. This site was perfect in that it intersects all public transit routes of the city, every major truck route flows directly into it, the district is the most populous while also being the poorest when looking at income per capita. I also found staggering statistics on unemployment and homelessness in the area and in Detroit in general. Detroit's unemployment rate is 2 percentage points higher than the national average, and while the homeless statistics are rather vague and inconsistent due to the difficulty of tracking, a site visit made it evident to me that it is a real problem in the city. During this phase of the project is where I decided to address that issue. I felt that it would fit in quite well with my ideas of food equality and accessibility.

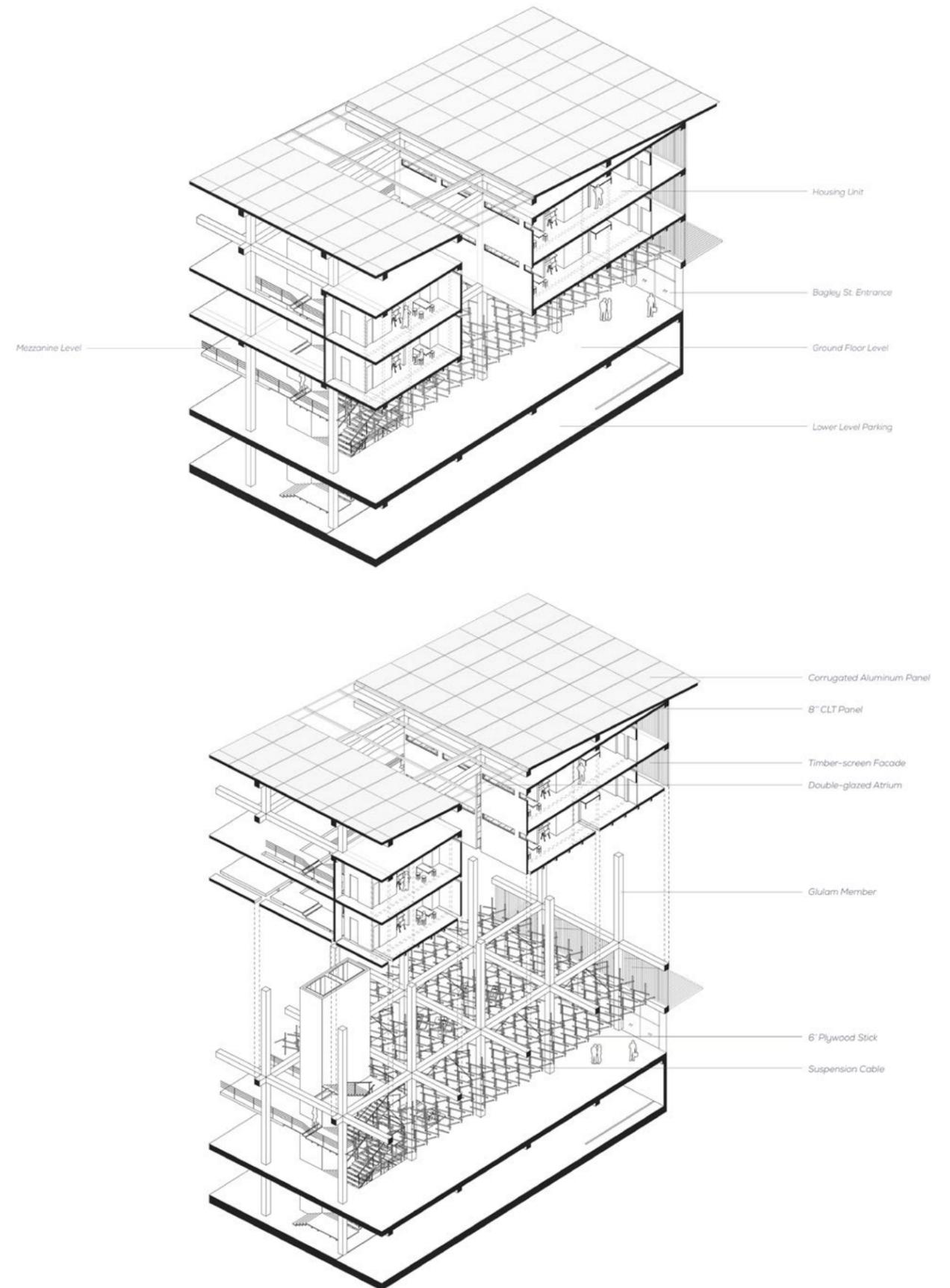


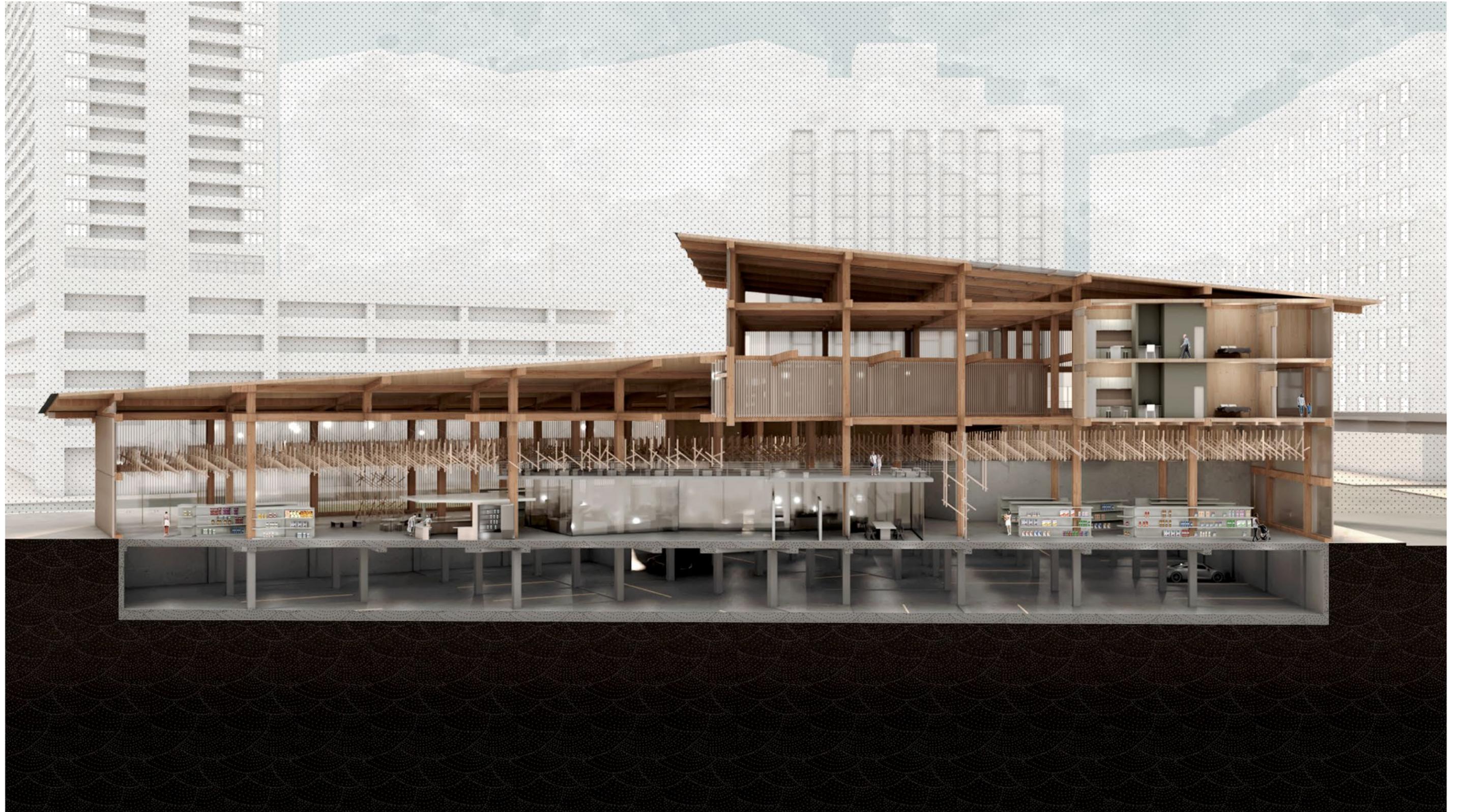
Ground Floor Plan

There are entrances on each bounding street, which comes from the idea of accessibility. The entrance on the east pushes back into the form creating outdoor public space and has a series of sliding doors that can remain open on warm days. This entrance leads into the local produce section of the supermarket. The plan was designed using two grids that respond to the orientation of the site boundaries. The plan is also very integrated so you can see other programmatic elements implanted into the supermarket.

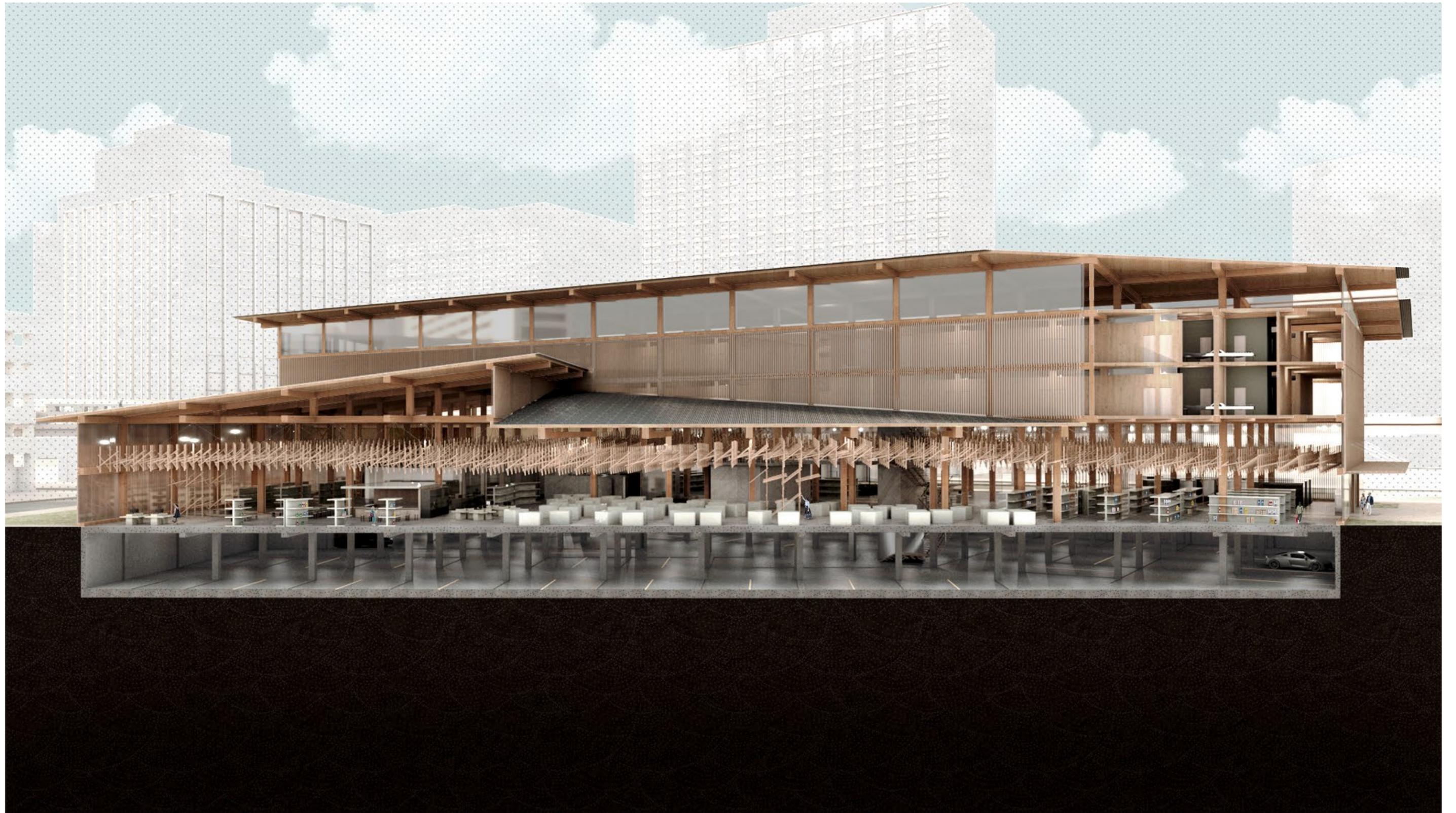
I was interested in the different events and interactions incorporating an integrated plan like this would produce.

Getting into the materials, the building is constructed mostly of sustainable materials including Glulam, Cross Laminated Timber, Corrugated Aluminum, and other types of timbers. You can also see the cloud structure that hangs above the first floor which was inspired by the works of Kengo Kuma. The structure is suspended from the Glulam members and creates this unjulating form that flows through the entire space and comes down to touch the ground at some points which you can also see in the plan. The idea of this structure is to contradict the typical modern supermarket which is all about constant movement and encourages people to slow down and take note of their surroundings and community. I like to think of it as a sort of artificial vegetation that can promote communal engagement and interaction.





Cross Section



Long Section



Exterior Perspective

## AGAINST THE GRAIN

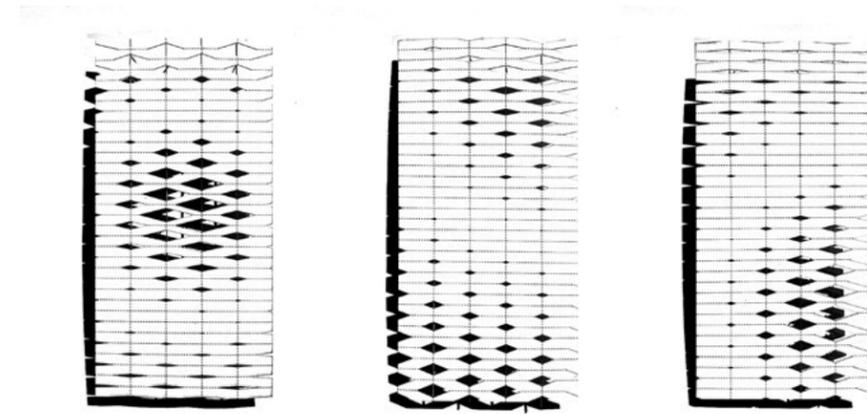
SPRING 2019, PROF. PETER WONG, UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE

COMPETITION ENTRY FOR ACSA "TIMBER IN THE CITY 2019"  
WITH RICHARD COTTRELL, ARTURO LUJAN, & DANIELLE SCACCIA  
HONORABLE MENTION

BUILDINGS ARE VESSELS – a familiar phrase in architecture. But rather than thinking of the vessel as a container, receptacle, vault, or precious ark for objects, our aim is to redefine it as a conduit for movement, circulation, transmission, and distribution. Like blood in vessels or arteries of the body, this project imagines the flows of people in and through the program for community wellness, the steady march of toddlers entering and exiting the early childhood center, and the ebb and flow of people who take up residence in one of its affordable housing flats.

Trees are vessels as well – drawing nutrients from the earth and pulling carbon from the atmosphere. Outstretched canopies and spreading roots are connected by the soft, outer layers of the trunk, which function as a highway for the exchange and neutralization of carbon.

Against the Grain incorporates two approaches derived from wood's unique cellular organization. First, wood's cross-grain nature inspires the density and packing of the 10-story cross-laminated timber (CLT) housing wing. 24' structural bays are arranged as parallel bearing walls. The coffered face of this structure carries verandas of varying size and shape while simultaneously providing skyline views and sun protection. Second, the parallel organization – running with the grain – of the wellness and early childhood programs are situated beneath a horizontal canopy constructed of parametric and perforated 40' x 12' CLT planks, allowing light to pass into the spaces below. To achieve these overall effects, standard rectilinear CLT planks are designed, shaped, and manufactured as polygons using computational algorithms.



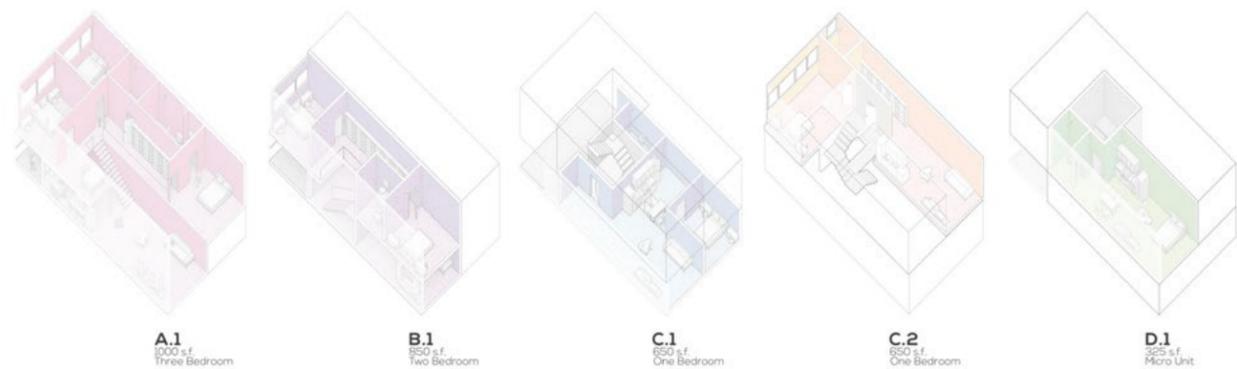
Canopy Study Models



Facade Study Model



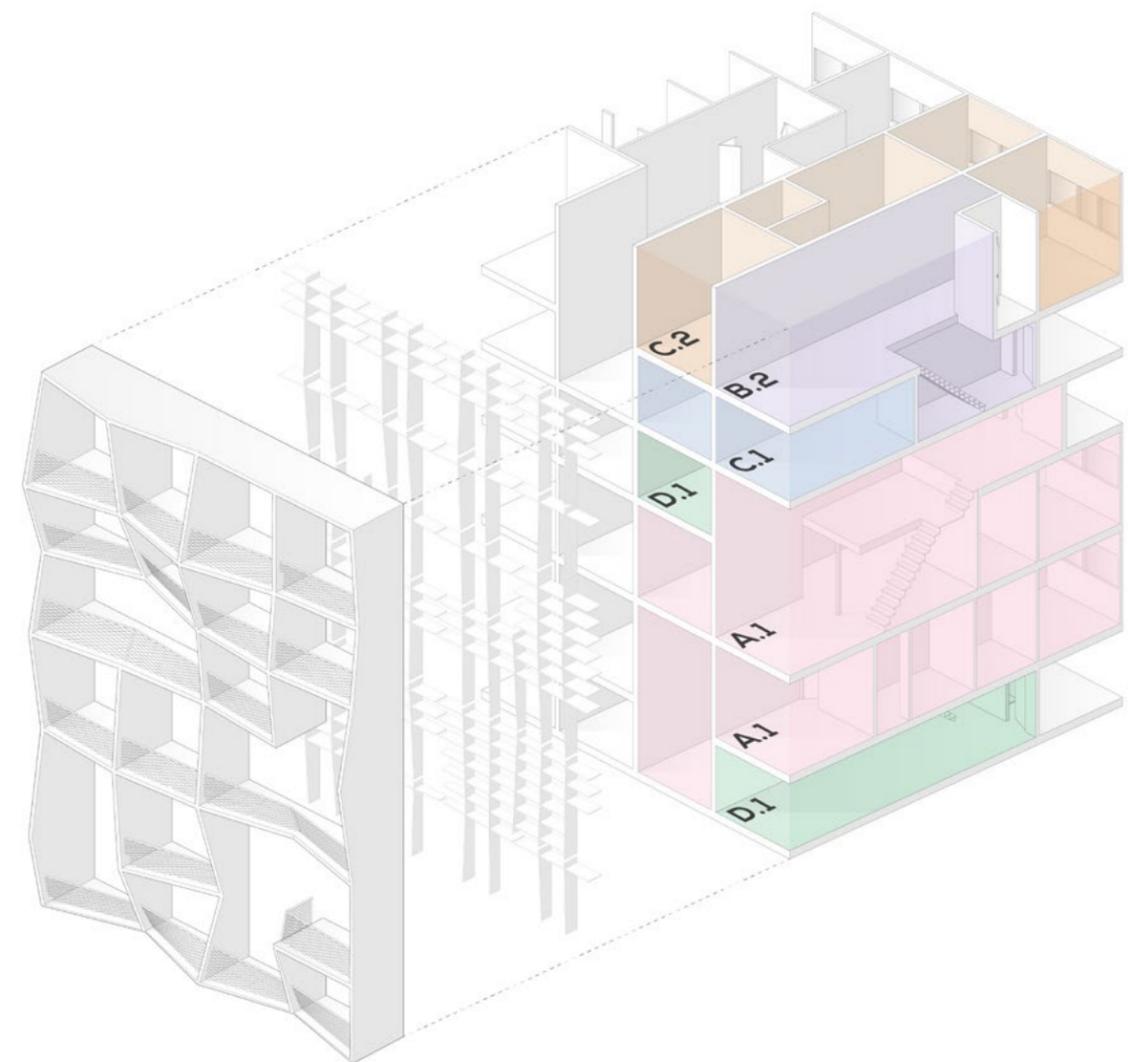
Ground Floor Plan



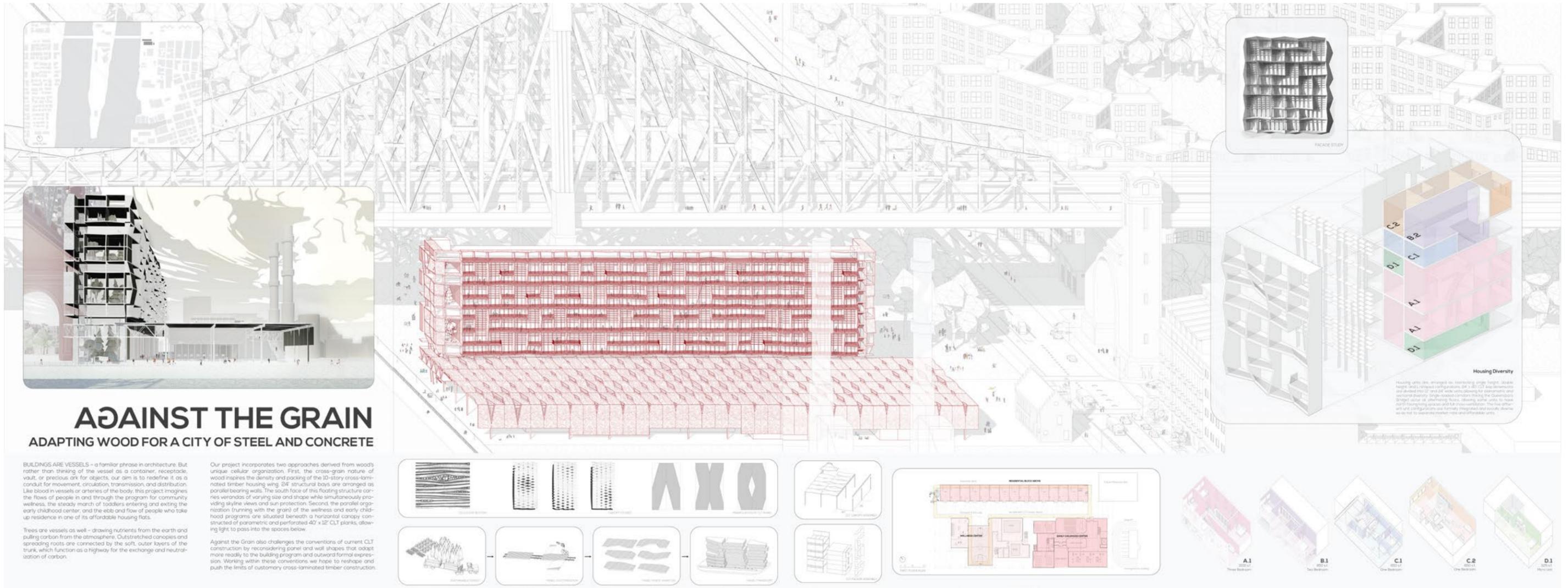
Housing Units Taxonomy

The housing wing units are arranged as interlocking single height, double height, and L-shaped configurations. 24' x 40' CLT bay dimensions yield 12' and 24' wide unit widths allowing for plan and sectional diversity. Single-loaded corridors (facing the Queensboro Bridge) occur at alternating levels, allowing some units to have north facing living spaces and full cross-ventilation. Five different unit configurations are formally integrated as well as socially diverse so as not to separate market-rate and affordable units.

Against the Grain challenges the conventions of current CLT technology by reconsidering panel and wall shapes that adapt more readily to the building program, environmental conditions, and architectural expression. Working within these conventions the project hopes to reshape and push the limits of customary cross-laminated timber construction.



Housing Units Stacking Diagram



# AGAINST THE GRAIN

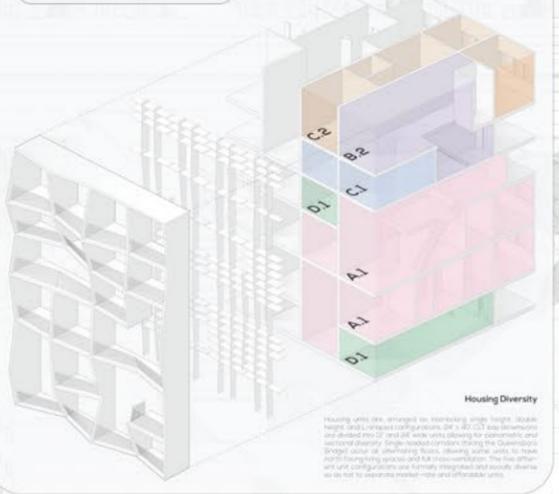
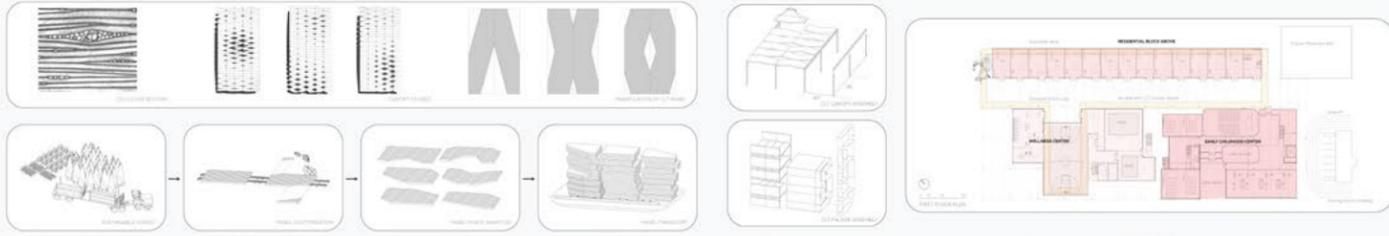
## ADAPTING WOOD FOR A CITY OF STEEL AND CONCRETE

**BUILDINGS ARE VESSELS** - a familiar phrase in architecture. But rather than thinking of the vessel as a container, receptacle, vault, or precious ark for objects, our aim is to redefine it as a conduit for movement, circulation, transmission, and distribution. Like blood in vessels or arteries of the body, this project imagines the flows of people in and through the program for community wellness, the steady march of toddlers entering and exiting the early childhood center, and the ebb and flow of people who take up residence in one of its affordable housing flats.

Trees are vessels as well - drawing nutrients from the earth and pulling carbon from the atmosphere. Outstretched canopies and spreading roots are connected by the soft, outer layers of the trunk, which function as a highway for the exchange and neutralization of carbon.

Our project incorporates two approaches derived from wood's unique cellular organization. First, the cross-grain nature of wood inspires the density and packing of the 10-story cross-laminated timber housing wing. 24" structural bays are arranged as parallel bearing walls. The south face of this floating structure carries verandas of varying size and shape while simultaneously providing skyline views and sun protection. Second, the parallel organization (running with the grain) of the wellness and early childhood programs are situated beneath a horizontal canopy constructed of parametric and perforated 40" x 12" CLT planks, allowing light to pass into the spaces below.

Against the Grain also challenges the conventions of current CLT construction by reconsidering panel and wall shapes that adapt more readily to the building program and outward formal expression. Working within these constraints we hope to reshape and push the limits of customary cross-laminated timber construction.



**Housing Diversity**  
Housing units are arranged in staggered single height, double height, and 3-level configurations. 24" x 80" CLT size dimensions are used for all wall and floor units allowing for parametric and vertical diversity. Single-level units mirror the Queen's Park Street side of the building facade, allowing units to have their own floor-to-ceiling space and full cross-ventilation. The two other unit configurations are formally integrated and provide diverse options to separate market-rate and affordable units.

Competition Submission

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## TREADING WATER: REINHABITING THE DROWNED CITY

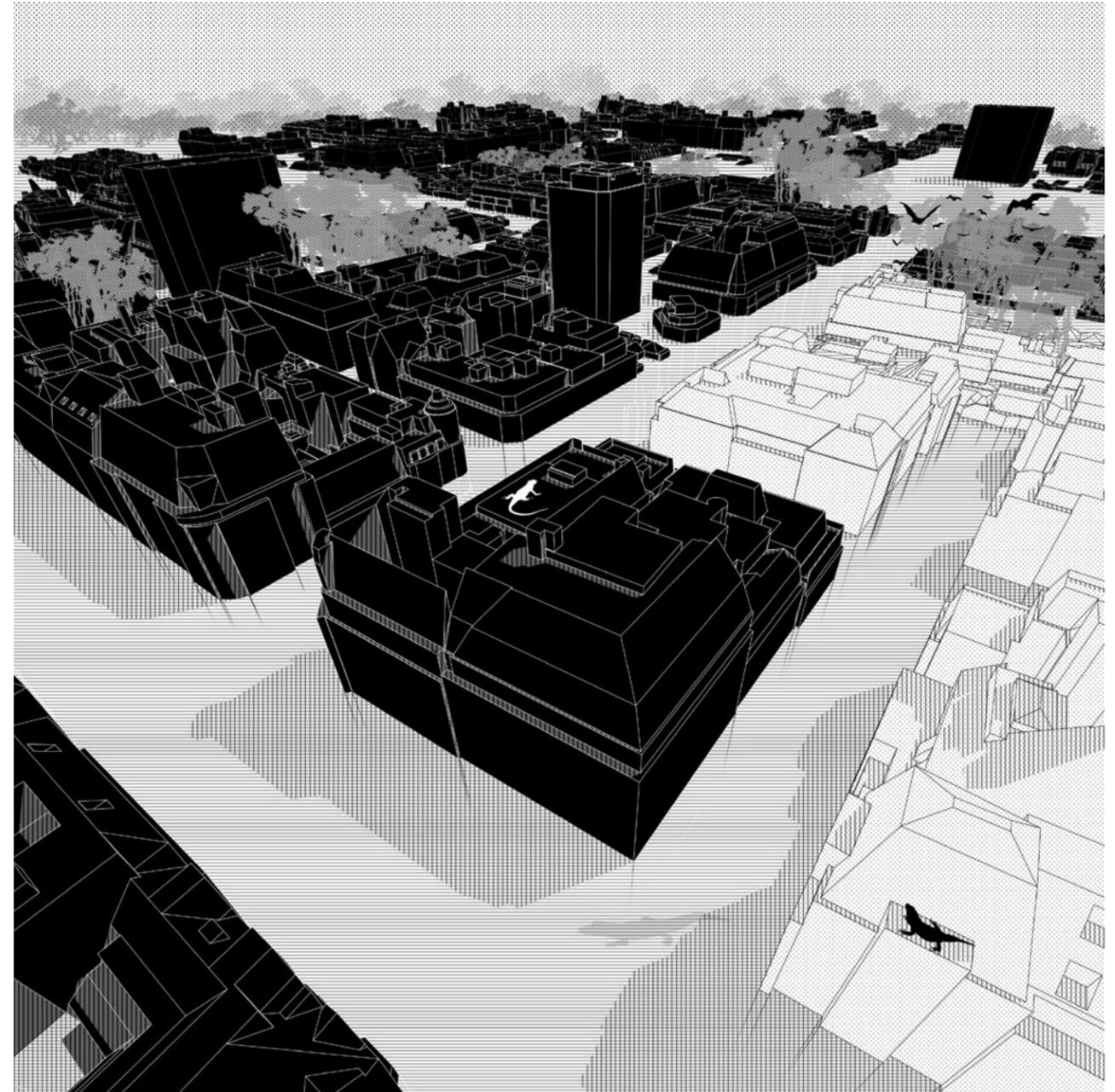
SPRING 2021, PROF. KATHY VELIKOV, UNIVERSITY OF MICHIGAN

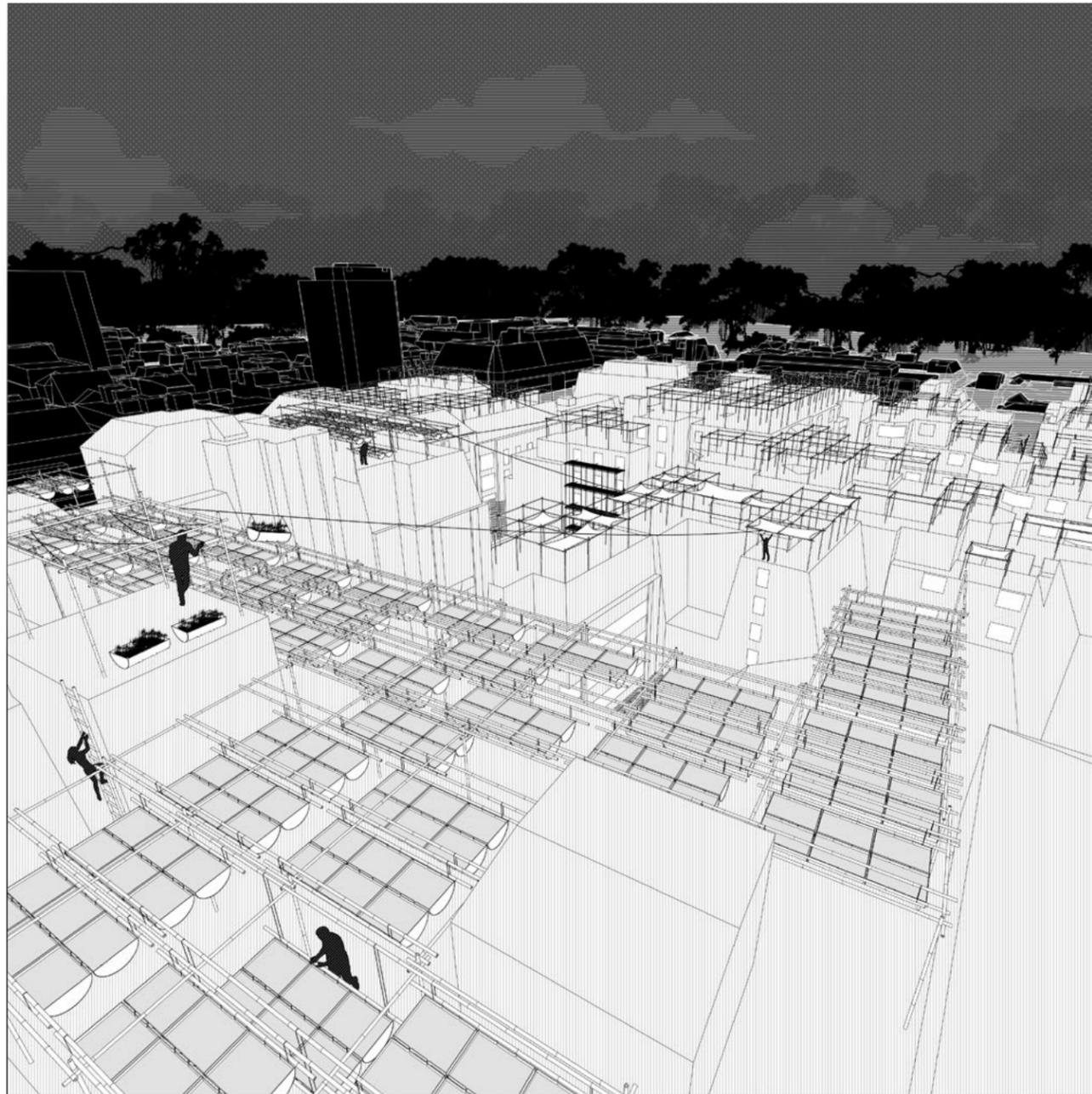
In J.G. Ballard's *The Drowned World*, a series of violent solar storms lead to the diminishing of Earth's ionosphere, leaving the world defenseless from solar radiation. Temperatures increase exponentially, causing the polar ice caps to melt- raising sea levels and displacing billions of tons of topsoil. Most of the human population perishes from the flooding. The remaining few must migrate away from the equator to survive the excruciating heat.

Nearly 100 years later, Camp Byrd Greenland is the location of the only civilization on Earth. It is far enough from the equator that temperatures are manageable. Living conditions, however, are unfavorable- resources and land have become scarce with the increase of the population. Finding ways to reinhabit the cities of the old world has become a critical experiment.

This project imagines a scenario in which a population of people returns to reinhabit drowned London. Remains of the city are hidden beneath 70 feet of water, making only rooftops of taller buildings still visible. Vegetation dominates the new skyline from the newly formulated jungles. Protruding rooftops become the foundation for a new civilization. Society becomes nocturnal as a means of protection from the intense, unsurvivable heat that the sun produces. Architecture adapts to the restrictions that the world presents and the technological limitations that the population inherits.

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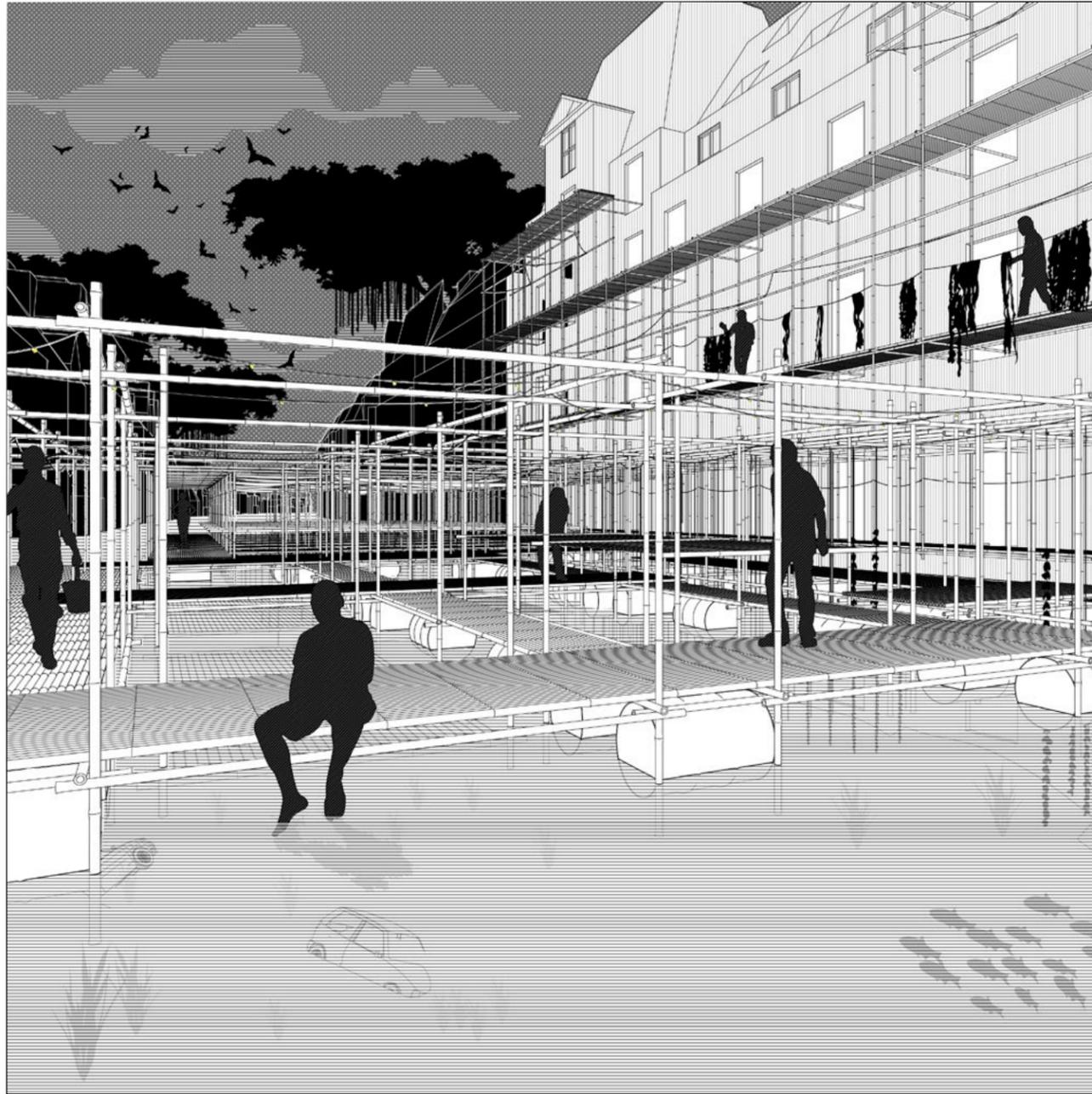




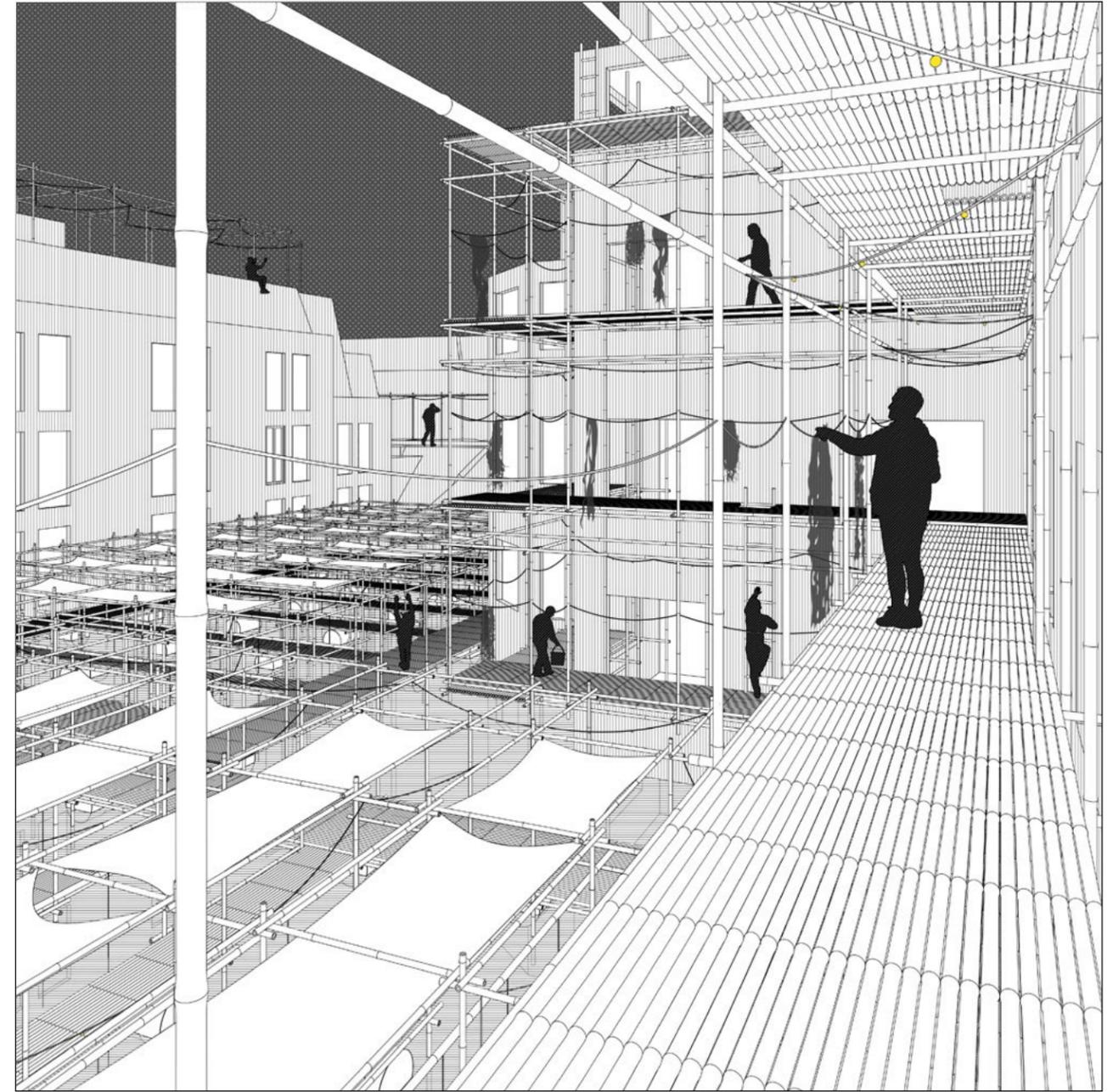
Building materials have become vastly unconventional- ranging from oil drums scavenged throughout the city's ruins to bamboo, a frequent resource in what is now tropical London. The cruciality of resource production and self-sustainability gives rise to architecture that prioritizes function; structures are primarily designed to increase crop yields. The insides of existing buildings are reserved for dwelling while societal interactions and public life occur on the rooftops, which accommodate bays of scaffolds that serve a plethora of functions like catalyzing movement, designating space, providing light, and becoming the base for agricultural prototypes. Nocturnal life makes it so this structure can be light and simplistic, allowing it to grow parallel to the civilization.



The rooftops become the setting for social interactions in addition to traditional agriculture and rainwater collection. The frequent folding and variation of the landscape creates complex movement solutions. Ladders become the main form of vertical circulation. Zip lines connect different sections of the camp that catalyze resource movement.



The scaffolds expand onto the surrounding and ubiquitous water landscape where structures accommodating aquaculture reside. Oyster farming and mussel farming provide a valuable source of food, and seaweed farming produces energy and fertilizer in addition to food. The combination of the three aquaculture practices remove nitrogen from the water, making it more appealing to fish, so traditional fishing becomes more reliable as a result.



The scaffolds crawl down the north facing facades where the citizens of the civilization reside. These create neighborhoods of sorts, connecting pockets of residences. This is also the middle point of the supply chain of resources from the water to the rooftops. Harvested resources from the aquaculture prototypes immediately find themselves here before they are stockpiled on the rooftops with the other resources.



Exterior Perspective

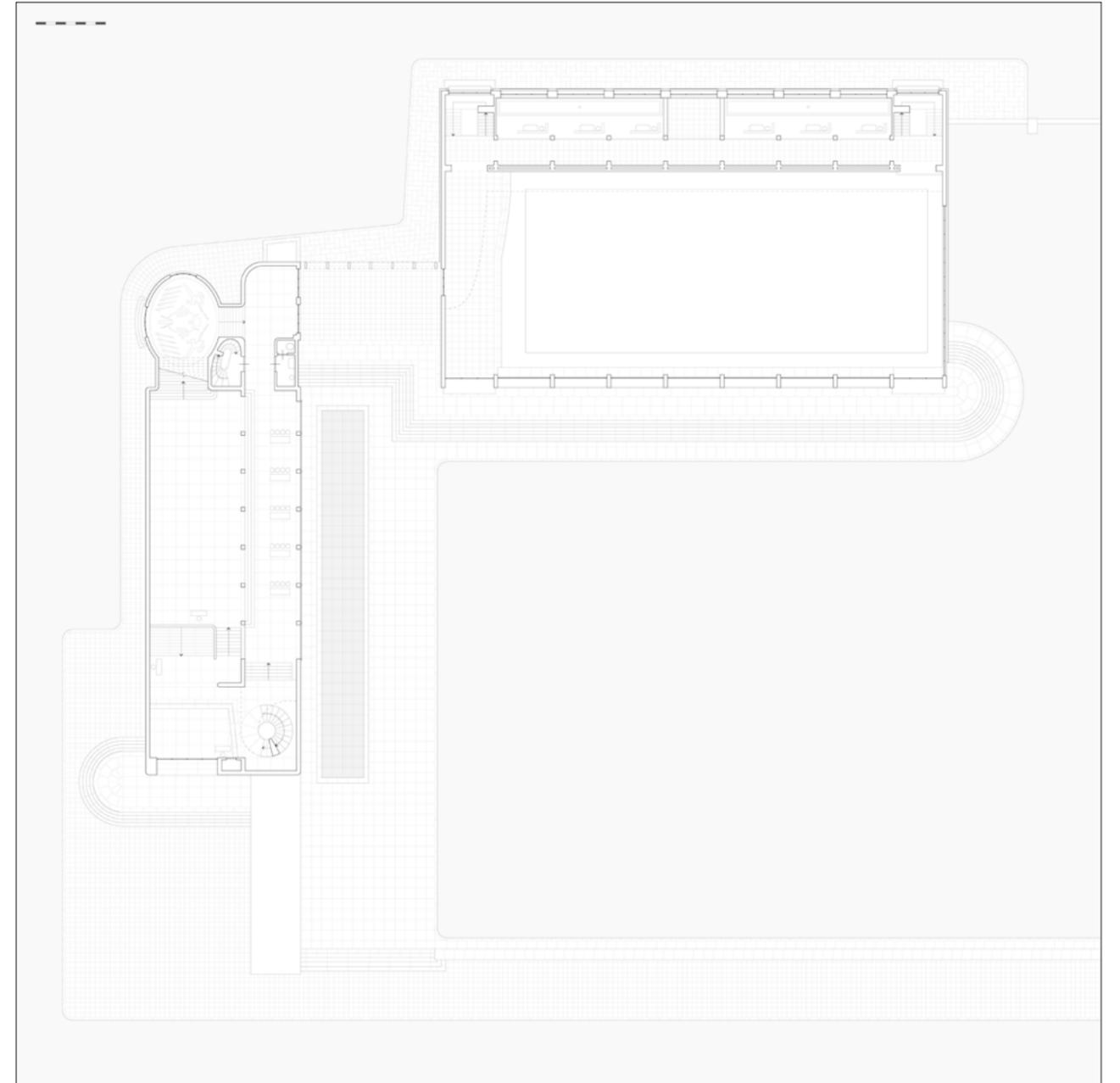
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## CASA DELLE ARMI RESEARCH

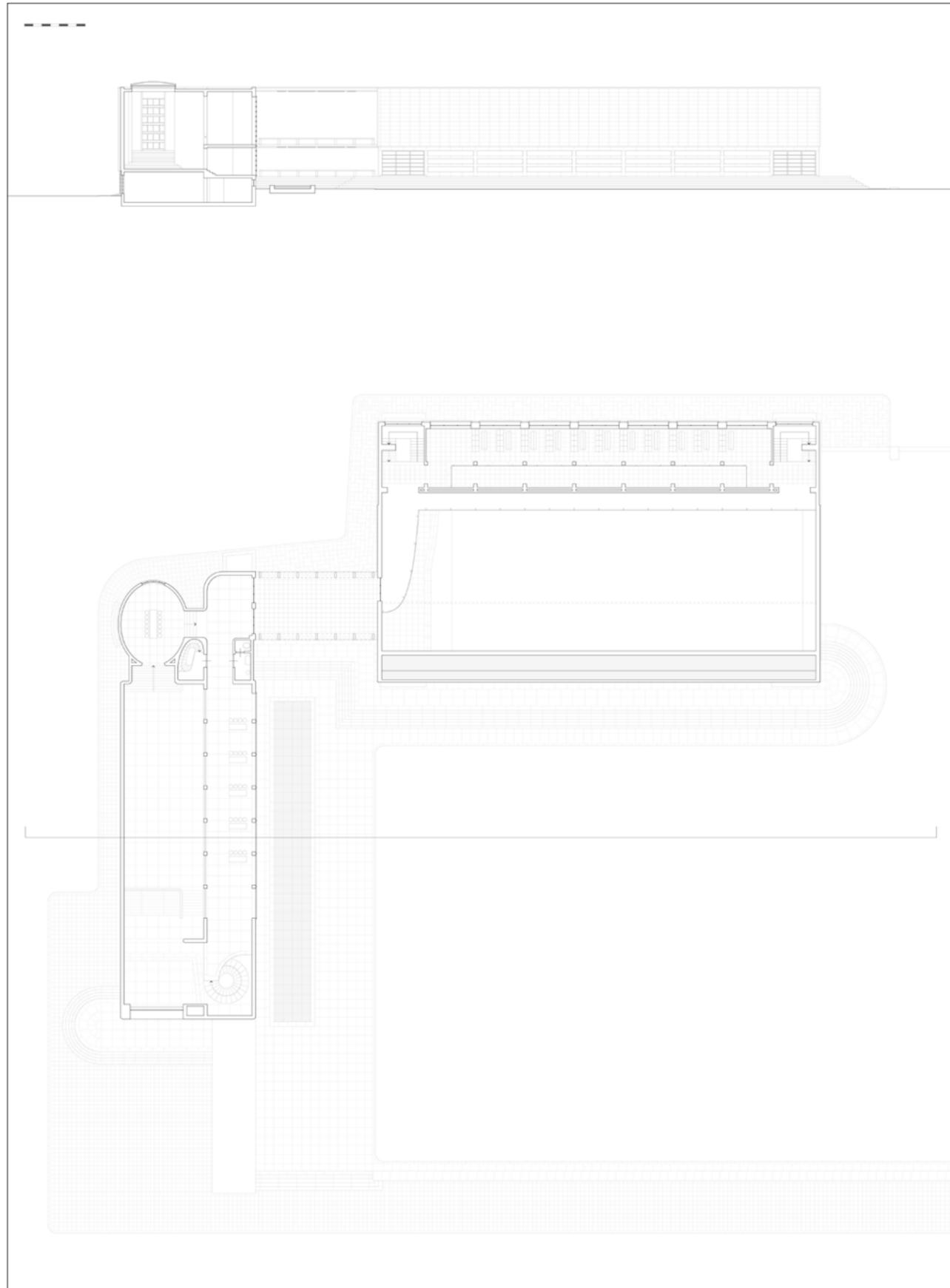
FALL 2019-FALL 2020, PROF. JEFF BALMER, UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE

Casa Delle Armi is one of the early modernist buildings designed by Luigi Moretti in 1934. The building is apart of the Foro Italico (Italian Forum) but has seen extreme renovation and intense neglect. I worked on this project in close coordination with professor Jeff Balmer, who is in the process of trying to have this building restored to its original state. My job was to study original drawings and essentially recreate the building and its details into a CAD model that would accompany Balmer's writings and research. I was also tasked with developing a set of drawings to represent the model.

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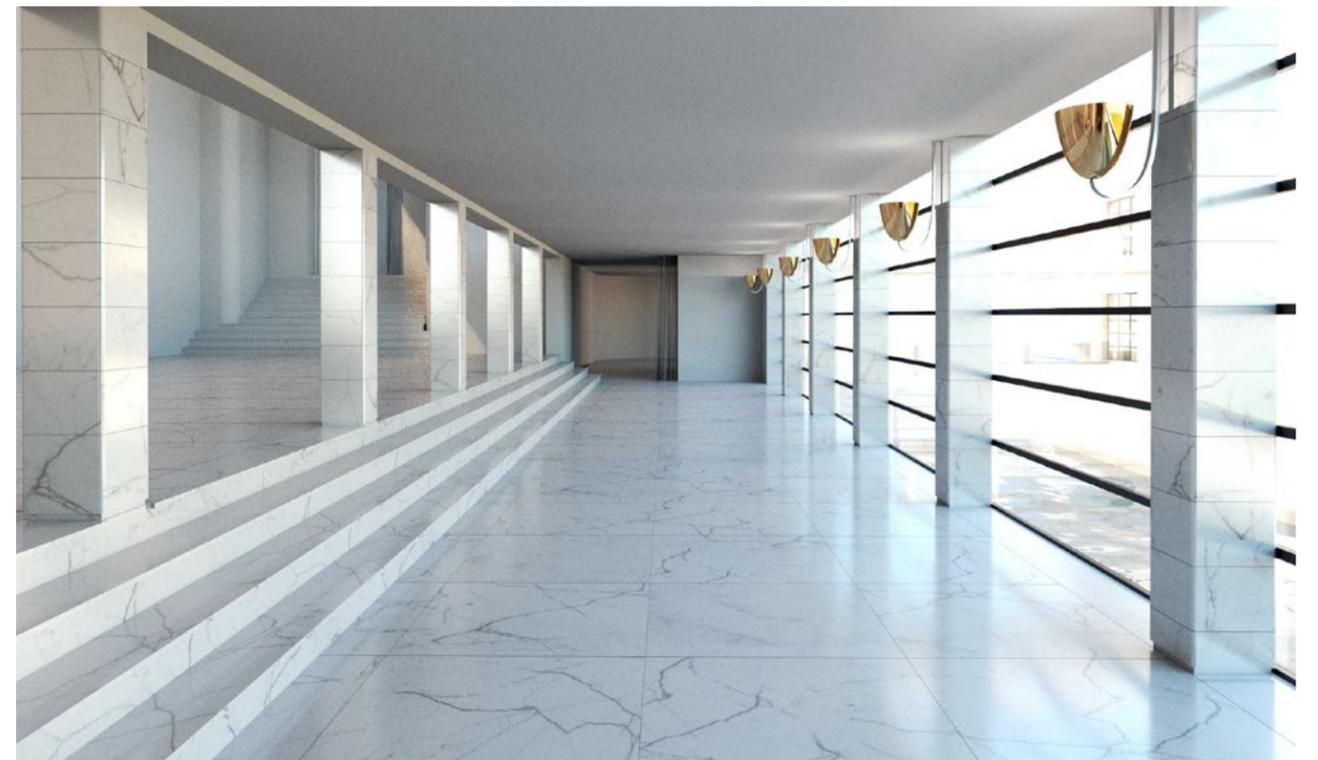
Ground Floor Plan



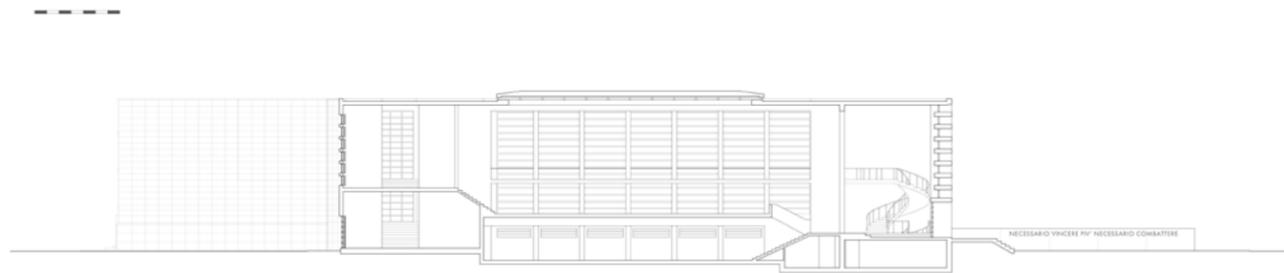
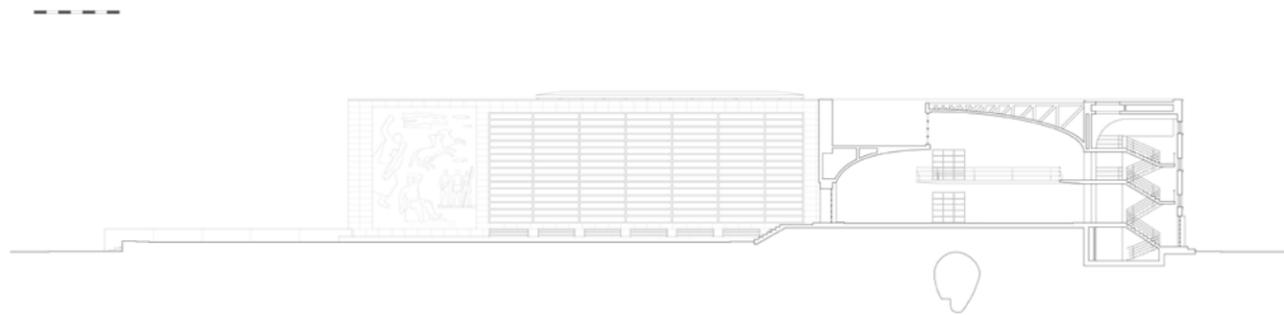
Library Wing Cross Section, First Floor Plan



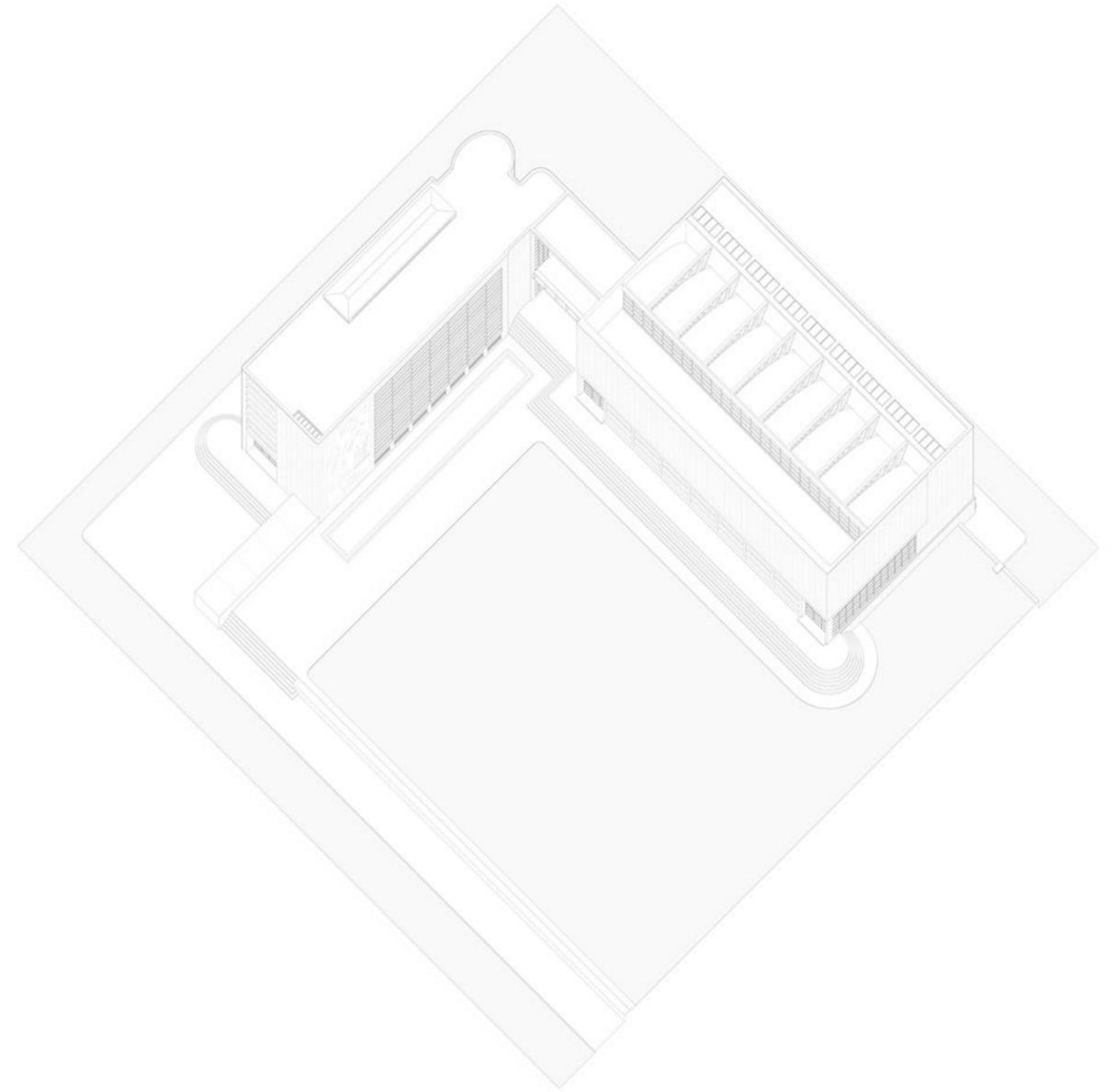
Library Wing Interior Perspective



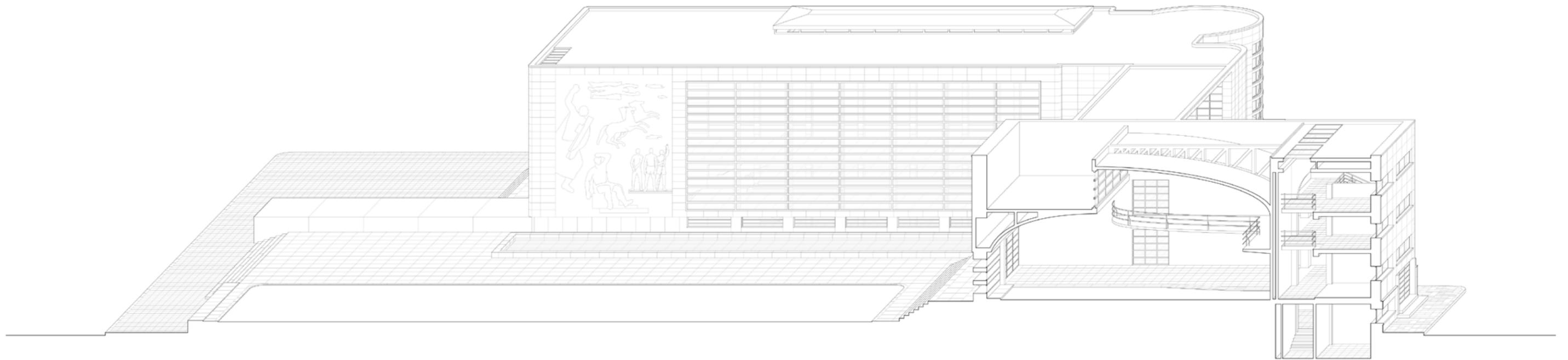
Library Wing Interior Perspective



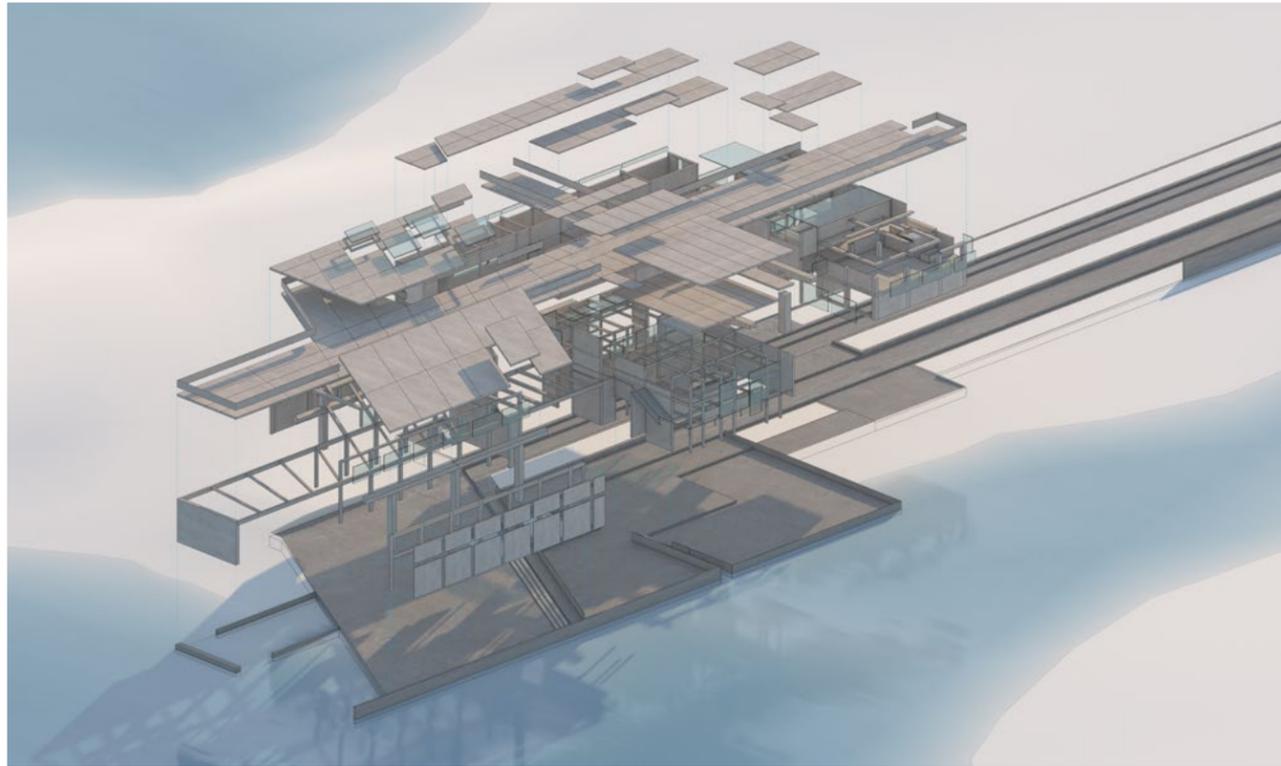
Gymnasium Wing Cross Section, Library Wing Long Section



Axonometric View



Gymnasium Wing Cabinet Oblique Section



Exploded View

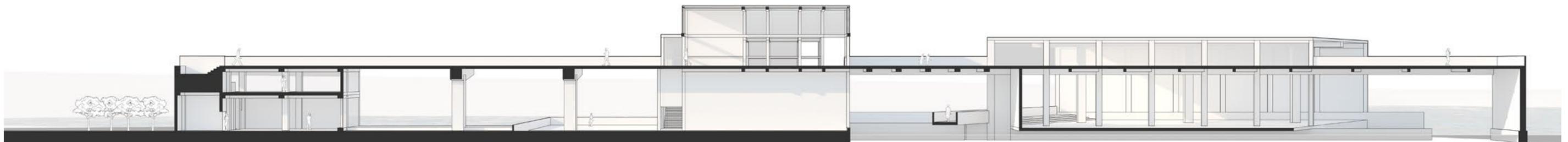
## CENTER FOR WOODEN BOATS

FALL 2018, PROF. PETER WONG, UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE

The Center for Wooden Boats is a place of construction, display, education, and business. The location is Lake Union Park in Seattle, a quite accessible and rather convenient park woven within the urban fabric just north of the city center. The site is important in that it maintains a strong relationship with the people of Seattle. This project asks the question: Does the construction of a building have to fundamentally change the nature of its geographic location? The final product is a structure that separates the program on the ground and raises circulation above the ground to create a transparent building. Outdoor circulation and public space remain intact as do views out to the lake.



Ground Floor Plan



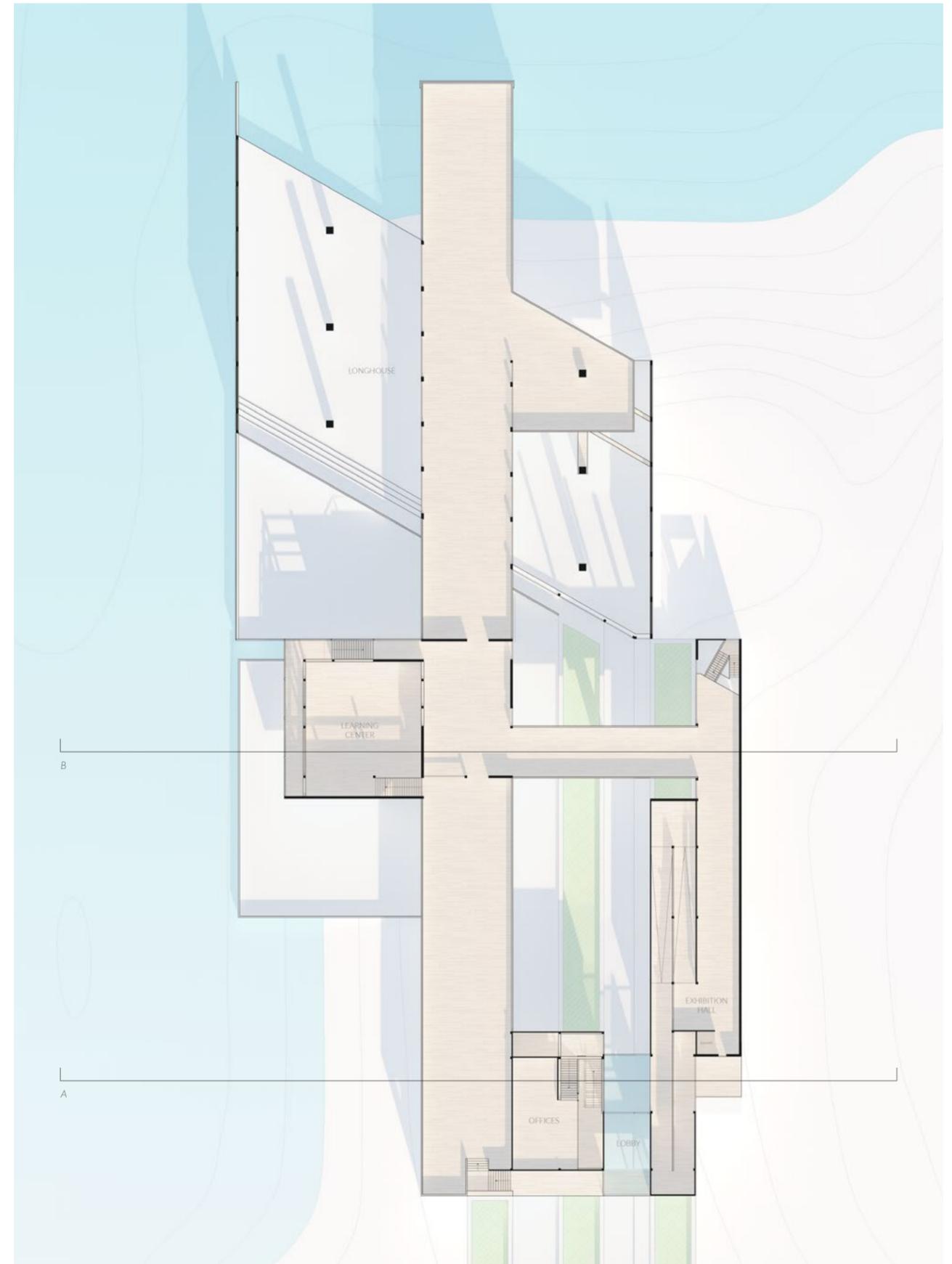
Long Section



Cross Section A



Cross Section B



First Floor Plan



*Final model, Parametric Pavilion, Fall 2018, prof. Rachel Dickey*

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## FABRICATION

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This section contains a collection of model photographs that I am particularly fond of. Fabrication is an aspect of architecture that has always been profoundly intriguing to me. It can be a tool for design development or a means of representation. The process of fabrication is always thoughtful and conveys intention in a project, which, for me, leads to more powerful design.

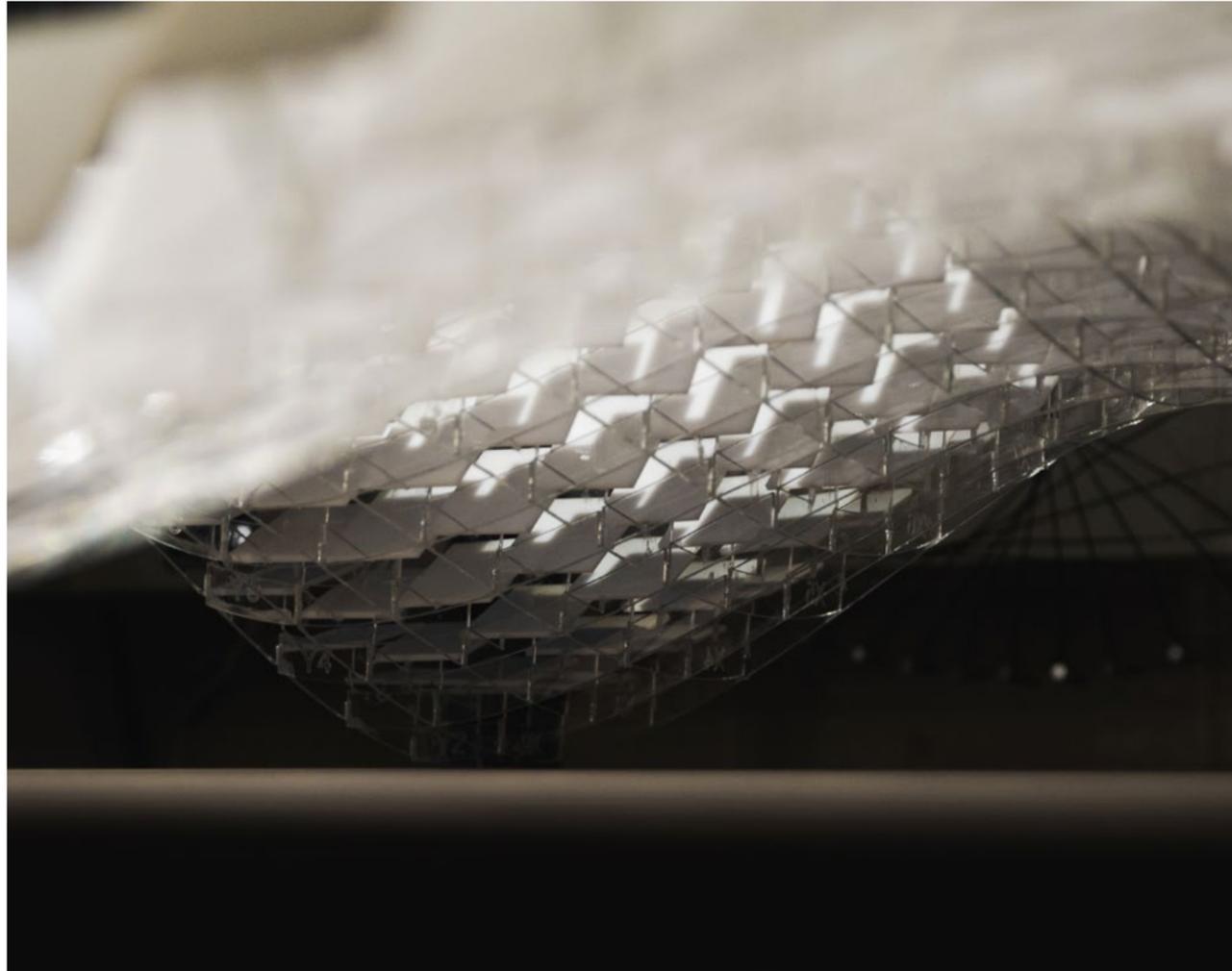
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*Parti model, NoDa Community Center, Spring 2019, prof. Mona Azarbayjani*



*Study model, 4th Ward Bathhouse, Spring 2018, prof. Rachel Dickey*



*Final model, Parametric Pavilion, Fall 2018, prof. Rachel Dickey*



*Study model, Center for Wooden Boats, Fall 2018, prof. Peter Wong*