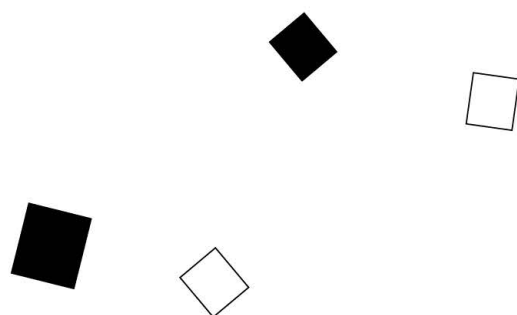
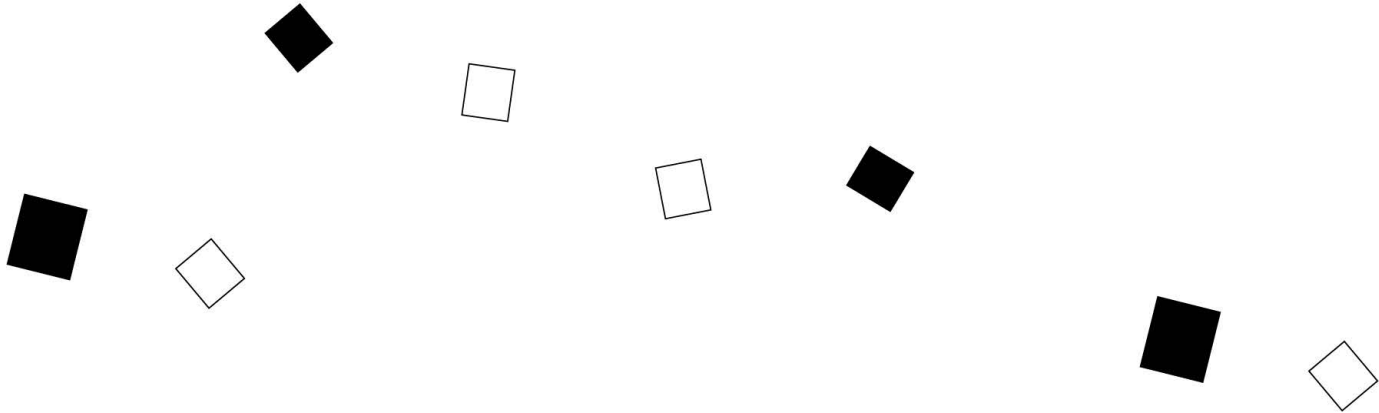


Columbia M.Arch
2022 - 2025 Selected Works





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Transitional Houses For Extreme Hoarding Behavior

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Sustainable Construction System

1:1 FACADE SYSTEM

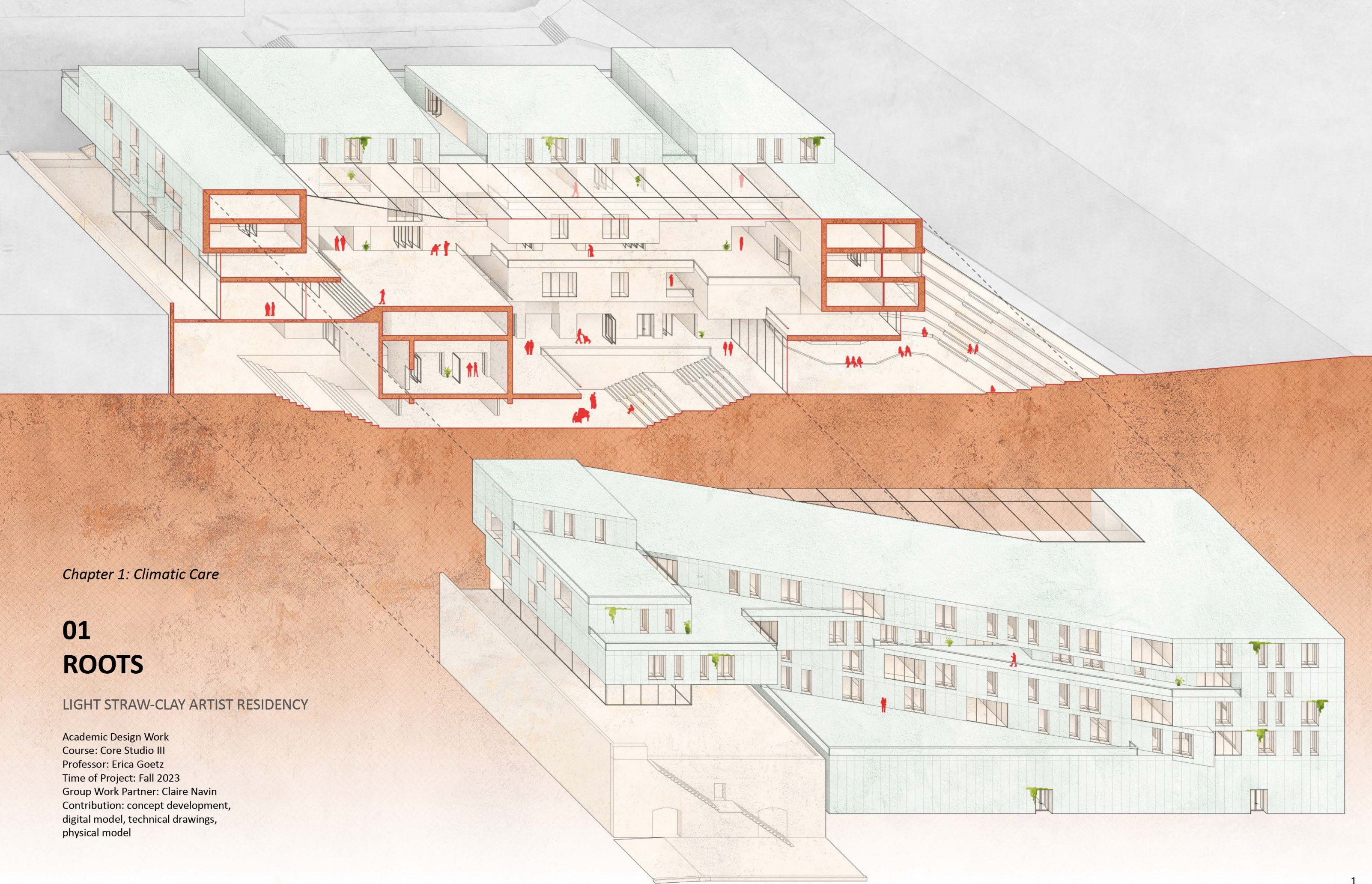
Life Cycle of the Construction System

Chapter 1: Climatic Care

01 ROOTS

LIGHT STRAW-CLAY ARTIST RESIDENCY

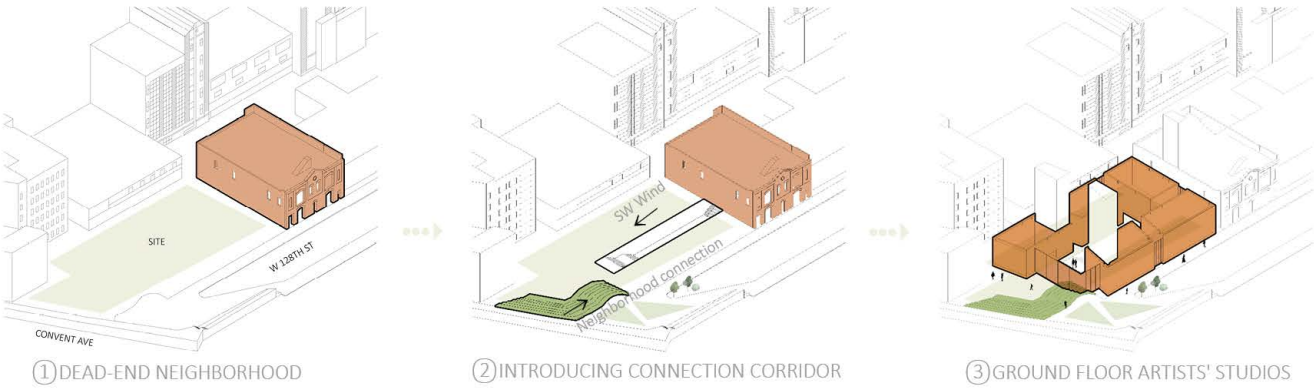
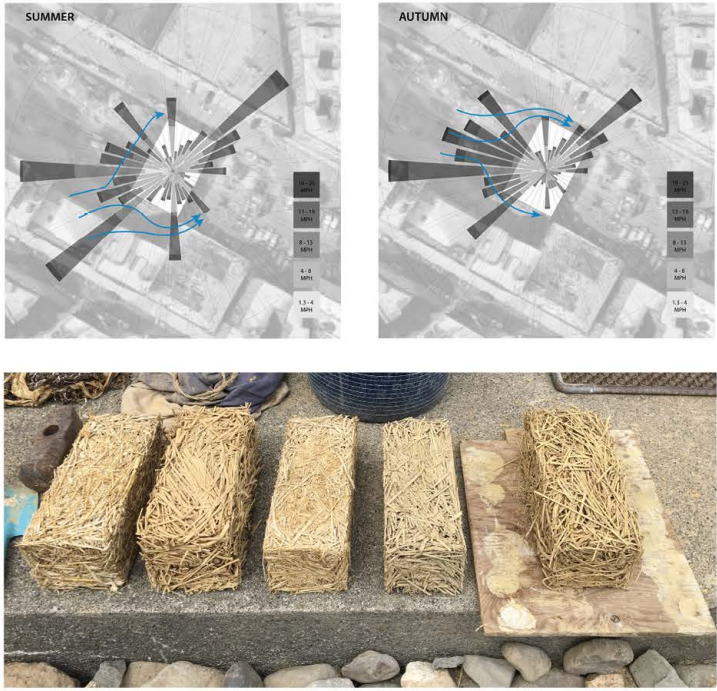
Academic Design Work
Course: Core Studio III
Professor: Erica Goetz
Time of Project: Fall 2023
Group Work Partner: Claire Navin
Contribution: concept development,
digital model, technical drawings,
physical model



MATERIAL & WIND STUDIES



LIGHT STRAW-CLAY AS INSULATION



In Harlem, the project addresses two key challenges: urban heat island effect and a declining artist population. Using passive cooling, light straw-clay materials, and low carbon footprint strategies, the design creates an artist residency.

The site benefits from strong northwest and southwest winds, optimizing energy use. Green roofs offer an effective solution to reduce energy consumption, provide shading, and minimize reliance on air conditioning.

CROSS SECTION





THIRD FLOOR PLAN



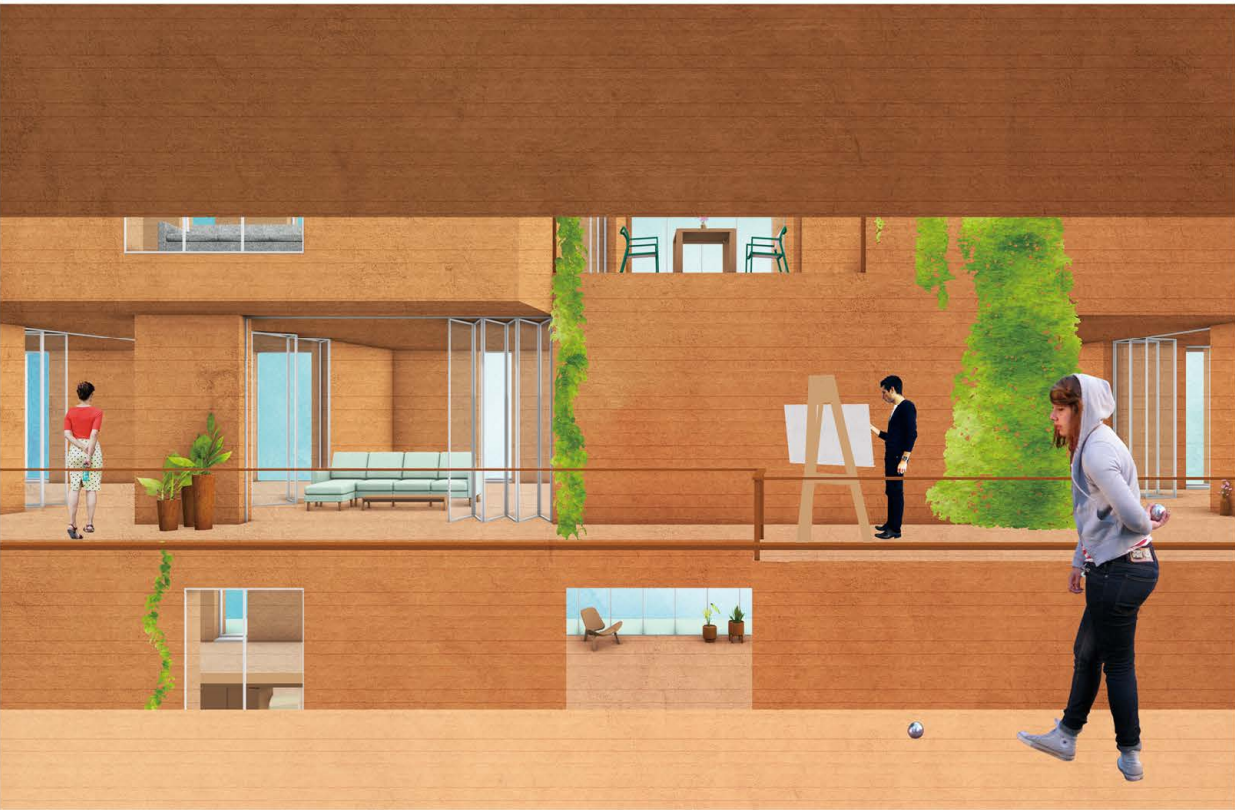
FOURTH FLOOR PLAN



MODEL PHOTOS



RENDERS



The architectural centerpiece is the performance center, serving not only as a functional space but also as a striking artistic statement. Designed to harmonize with Harlem's vibrant arts scene, it serves as a beacon of creativity and cultural expression. Drawing inspiration from Harlem's rich artistic heritage, the center fosters connections with surrounding neighborhoods, inviting residents and visitors alike to participate in the cultural tapestry of the area.

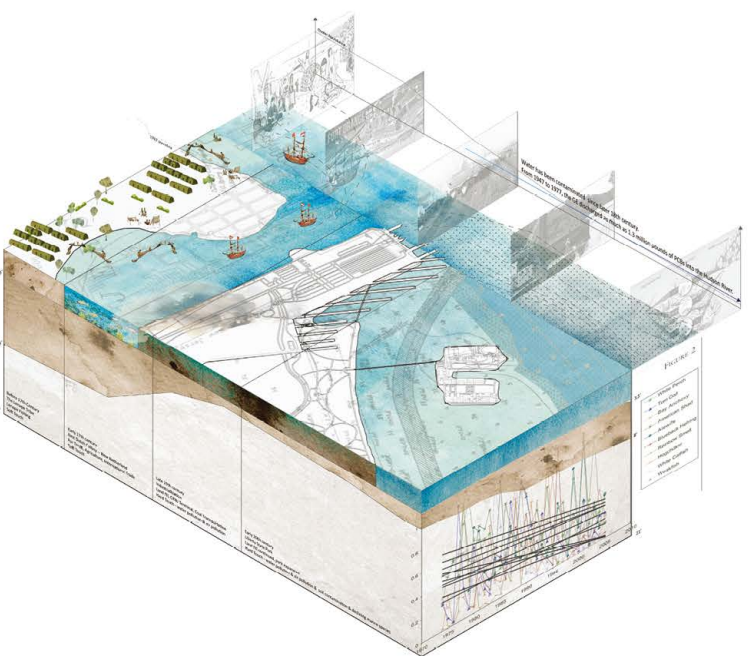
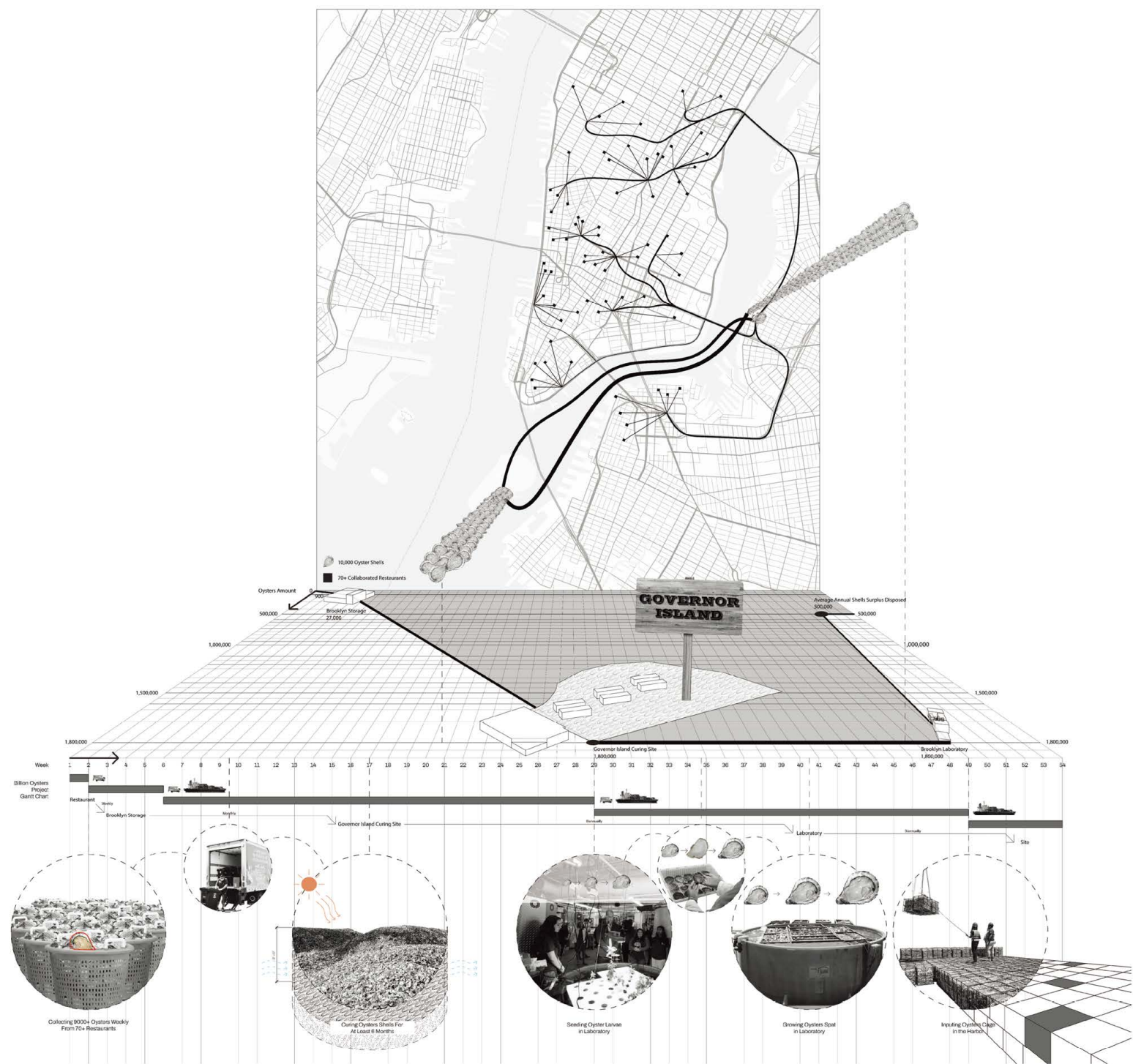
02

ROOF TO REEF

FROM ABANDONED TRAIN SHED TO REEF RECONSTRUCTION

Academic design work
Course: Advanced IV Studio: Wild / Willed
Professor: Mimi Hoang
Time of Project: Spring 2024
Group Work Partner: Wesley Song
Contribution: concept development, digital
model, technical drawings, physical model

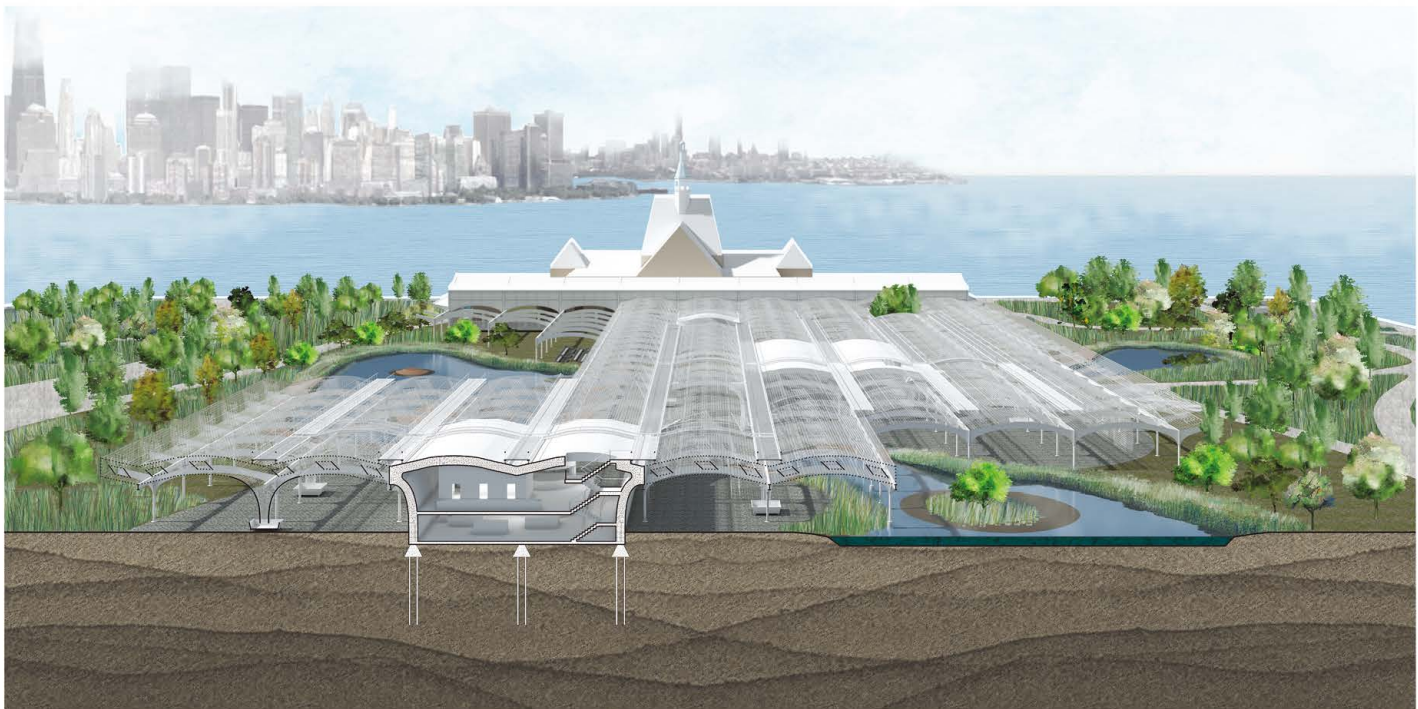


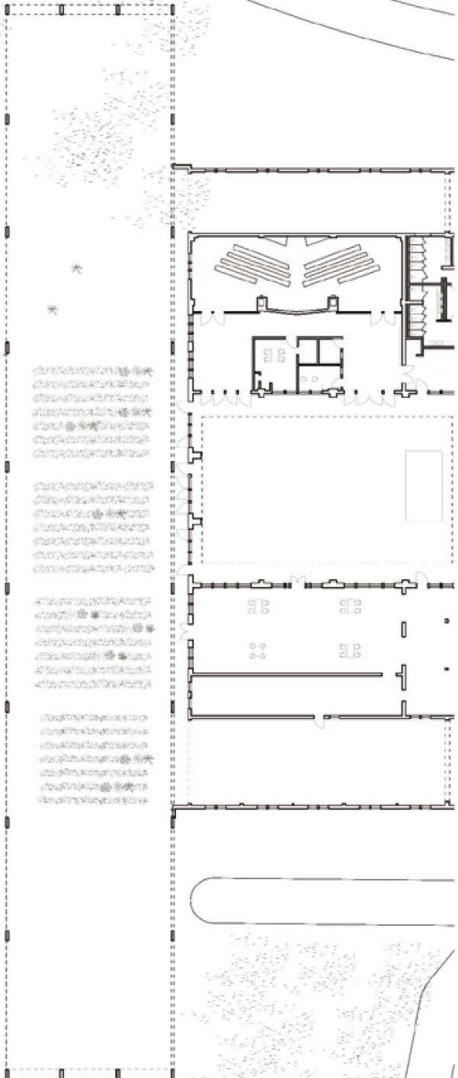
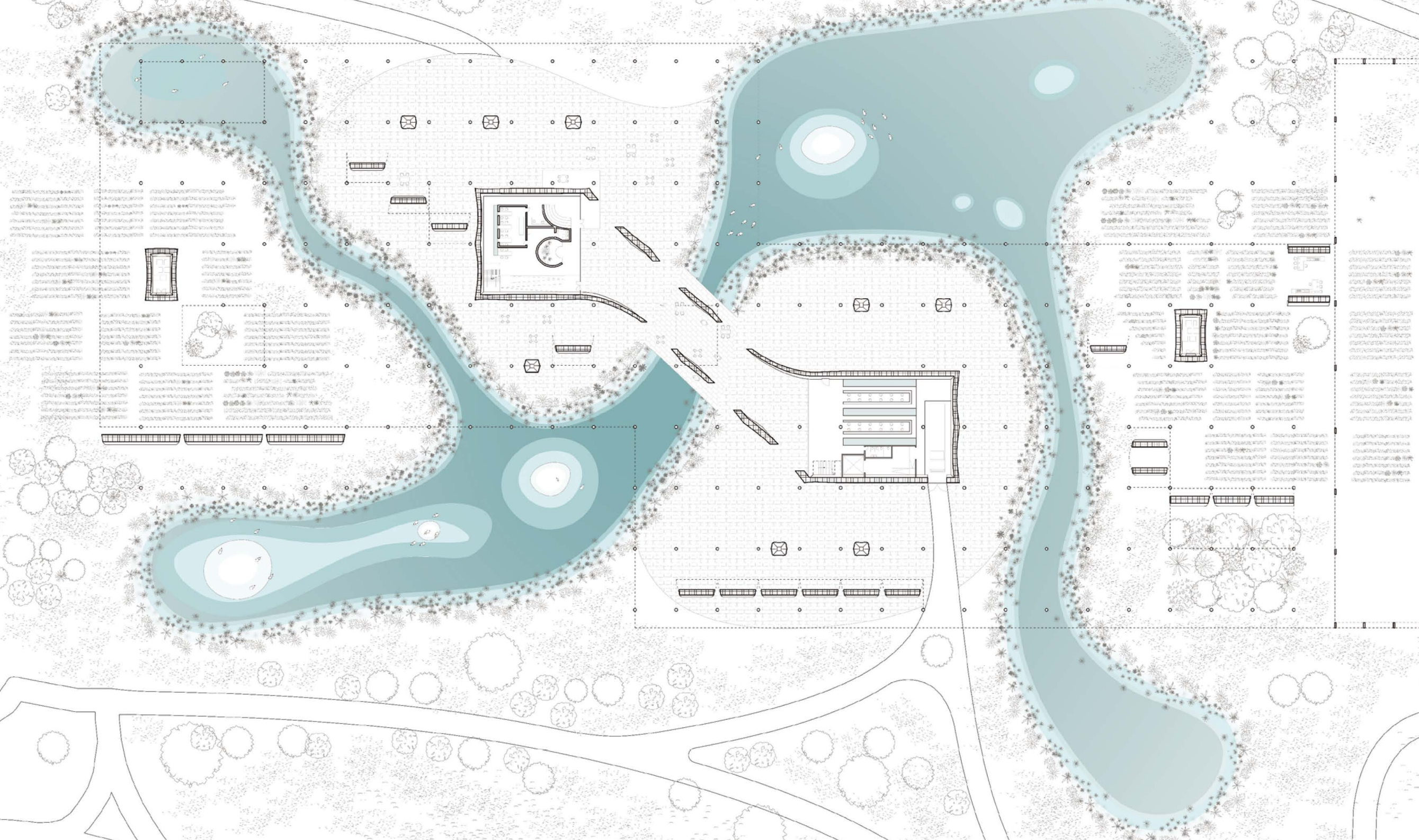


Oyster shells, recognized as both a natural habitat and building material, serve as the anchor point of our design.

Inspired by the Billion Oyster Project's use of restaurant shells to rebuild reefs and enhance marine ecosystems, our objective is to expedite the shoreline reef restoration, given the fact that B.O.P. only repurposed 2/1000 million oyster shells for over 10 years. The oyster shell processing involves three key stages: collection, curing for several months, and shell seeding.

Our group repurposed the deteriorated concrete roof into a 6-foot thick wire mesh oyster cage roof, integrating wind channels to establish an optimal drying industrial site.

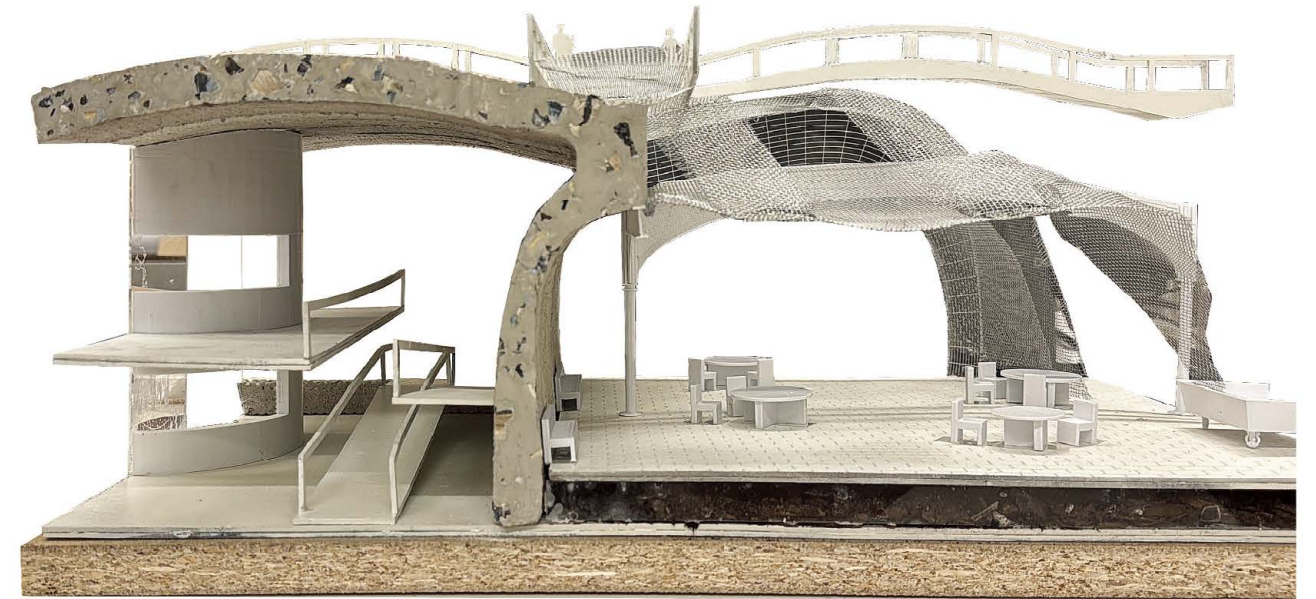




WETLAND & LAB RENDER



LAB PHYSICAL MODEL



The sectional perspective shows the oyster shells seeding lab. It demonstrates a complete industrial process of recycling oyster shells, starting from receiving delivery to caging above the roof and drying shells on the roof, collecting through drop-down channels, seeding and raising in the lab, and transporting out for reef reconstruction at the shoreline.

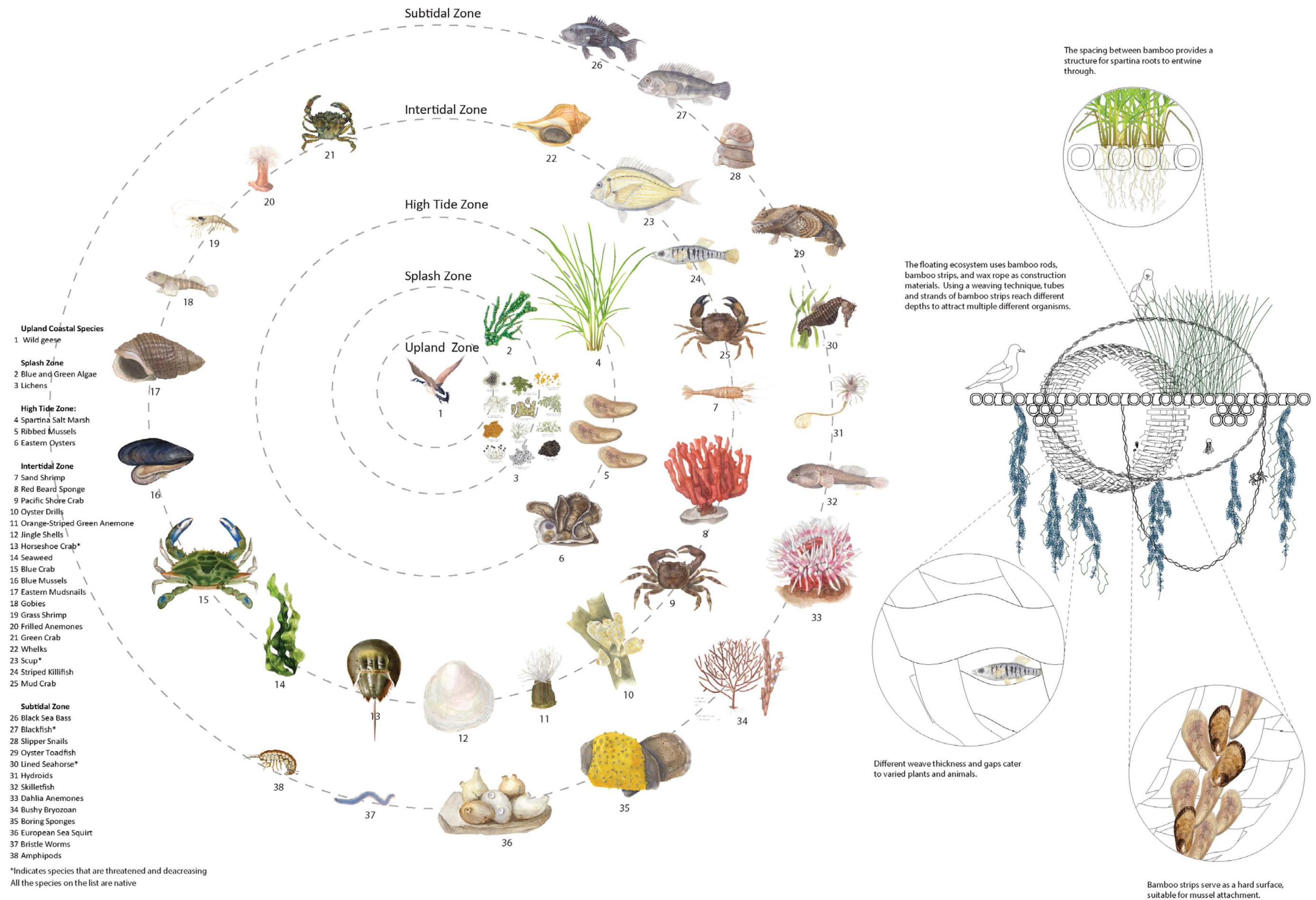
The physical model shows the roof-wall system. Splitting the roof structure in half horizontally, and bending down the bottom half concludes our main architectural language which generated numerous form potentialities like the oyster shells collecting channels, oyster shells stuffed semi-porous wall, and reinforced concrete walls with crushed oyster shells.

03 BAMBOO HABITATS

FLOAT DESIGN FOR MUSSEL REEF ECOSYSTEM

Academic Design Work
Course: Seed Bombs
Professor: Emily Bauer
Time of Project: Fall 2024
Group Work Partner: Marly MacNeal
Contribution: concept development, technical
drawings, physical model

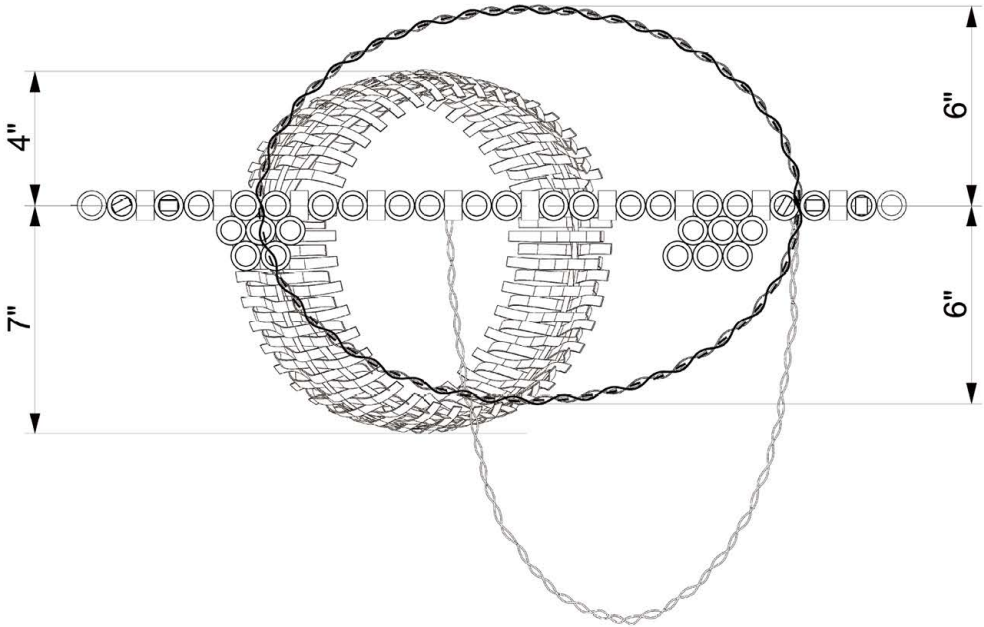
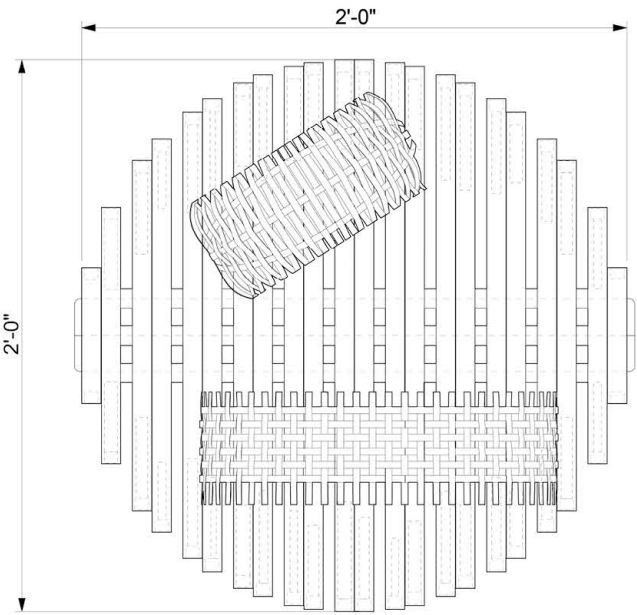




FLOAT PHOTOS

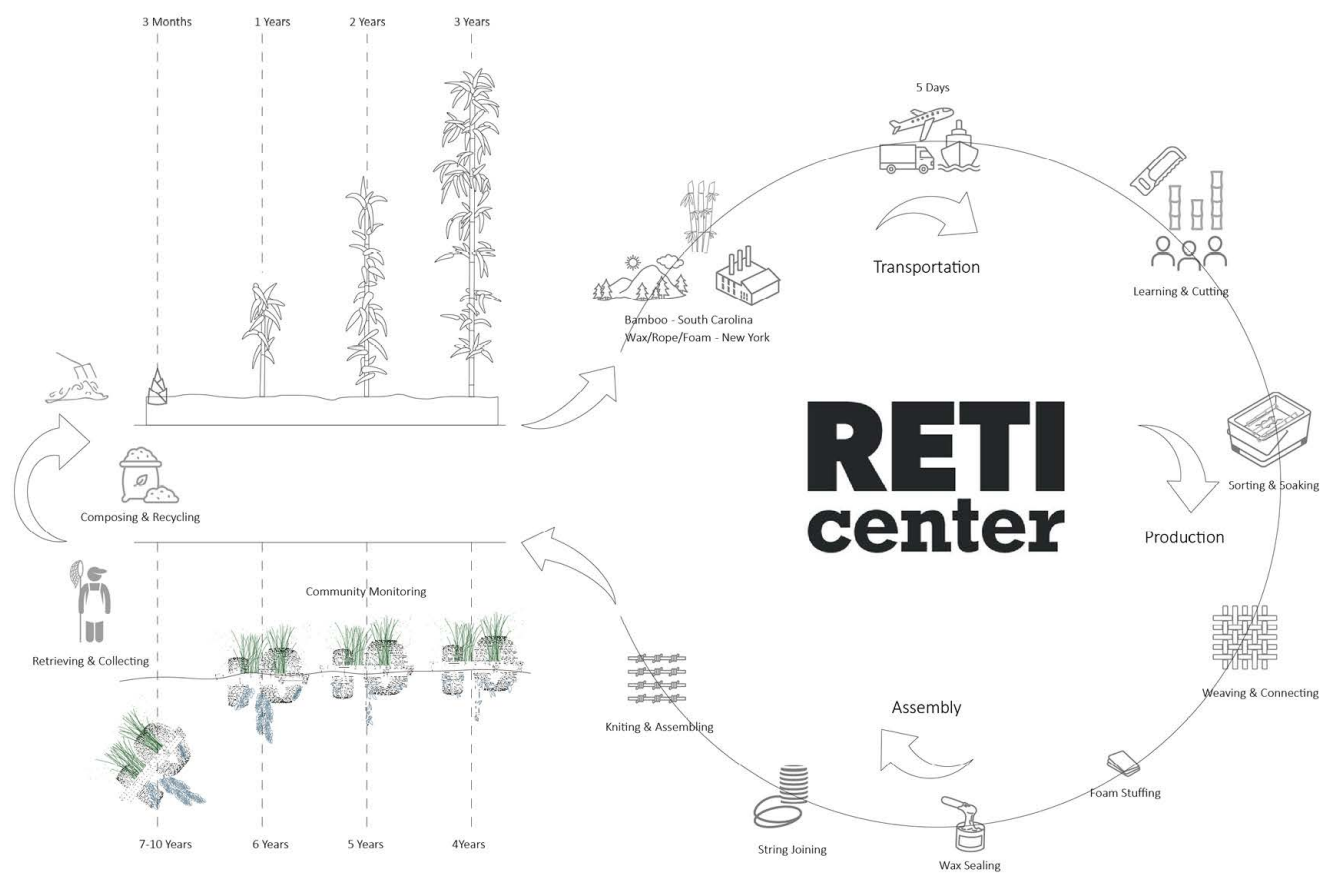


FLOAT DESIGN

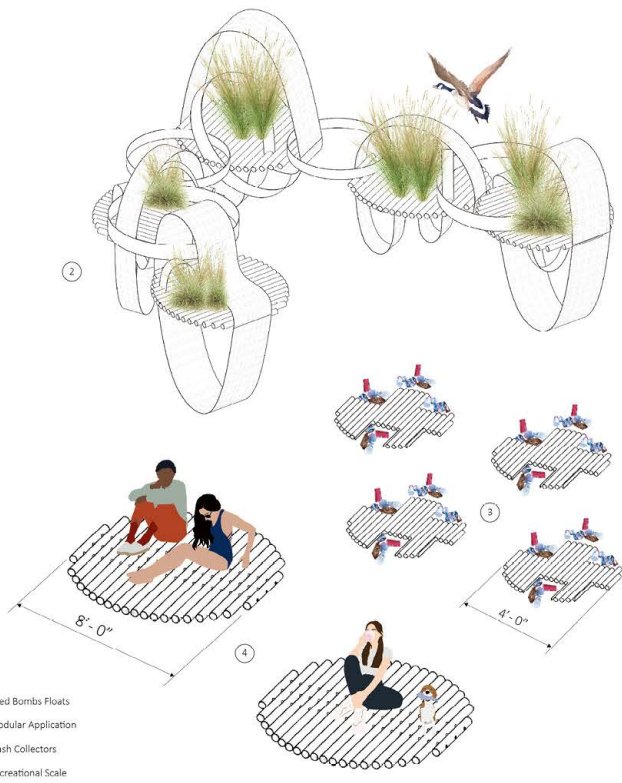
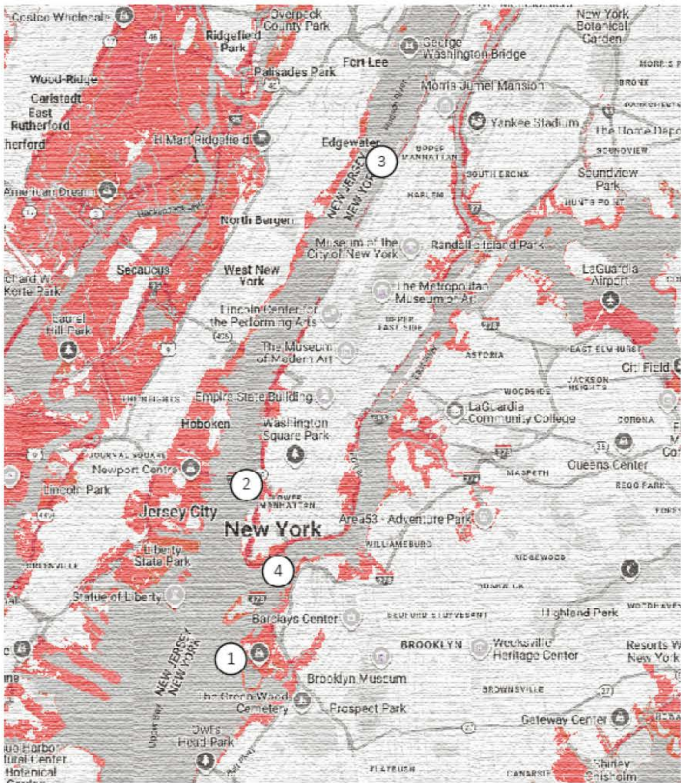


Our float design aims to enhance both the Salt Marsh Ecosystem and the Mussel Reef Ecosystem to foster biodiversity and improve water quality. The materials—bamboo and waxed eco-ropes—that we are going to use are sustainable and durable, forming a platform that offers diverse habitats for marine life. This design not only supports marine ecosystems but also helps mitigate storm surges, contributing to the RETI Center’s mission of innovative waterfront resilience through the Blue City Project.

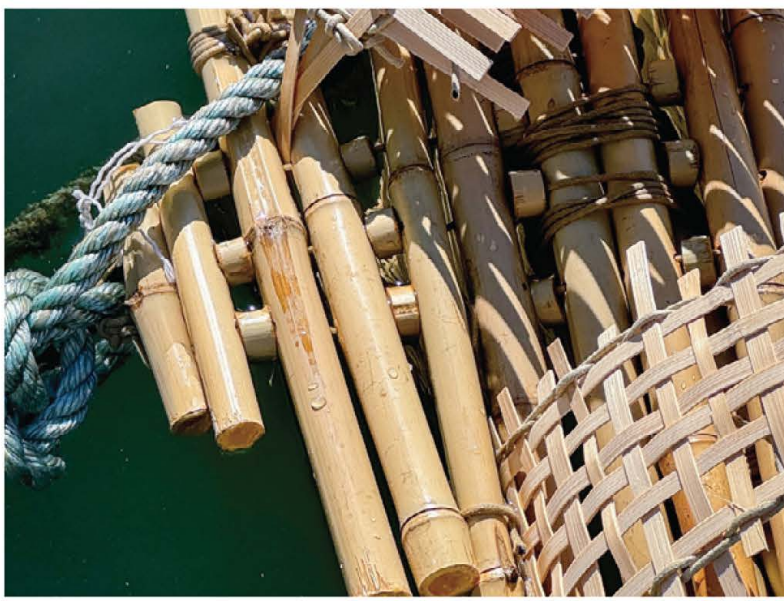
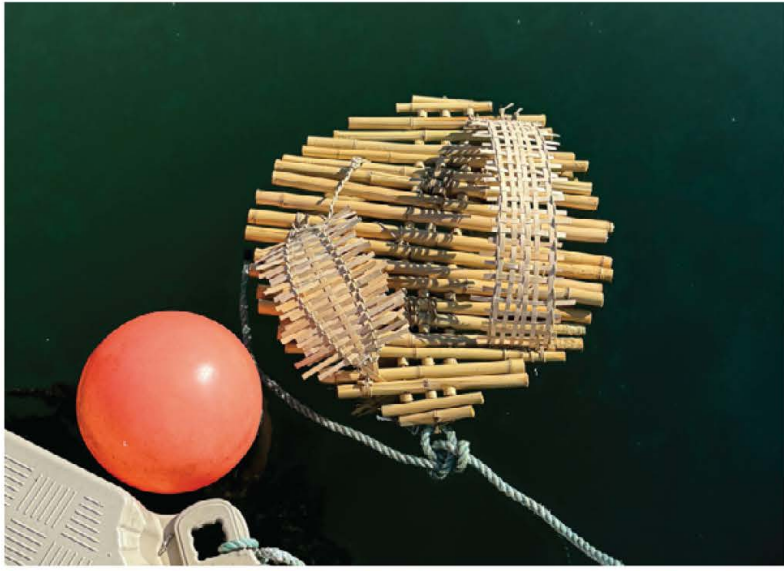
RECYCLE RESEARCH



SCALABILITY RESEARCH



FLOAT RELEASE DOCUMENTATION



Chapter 2: Social Care

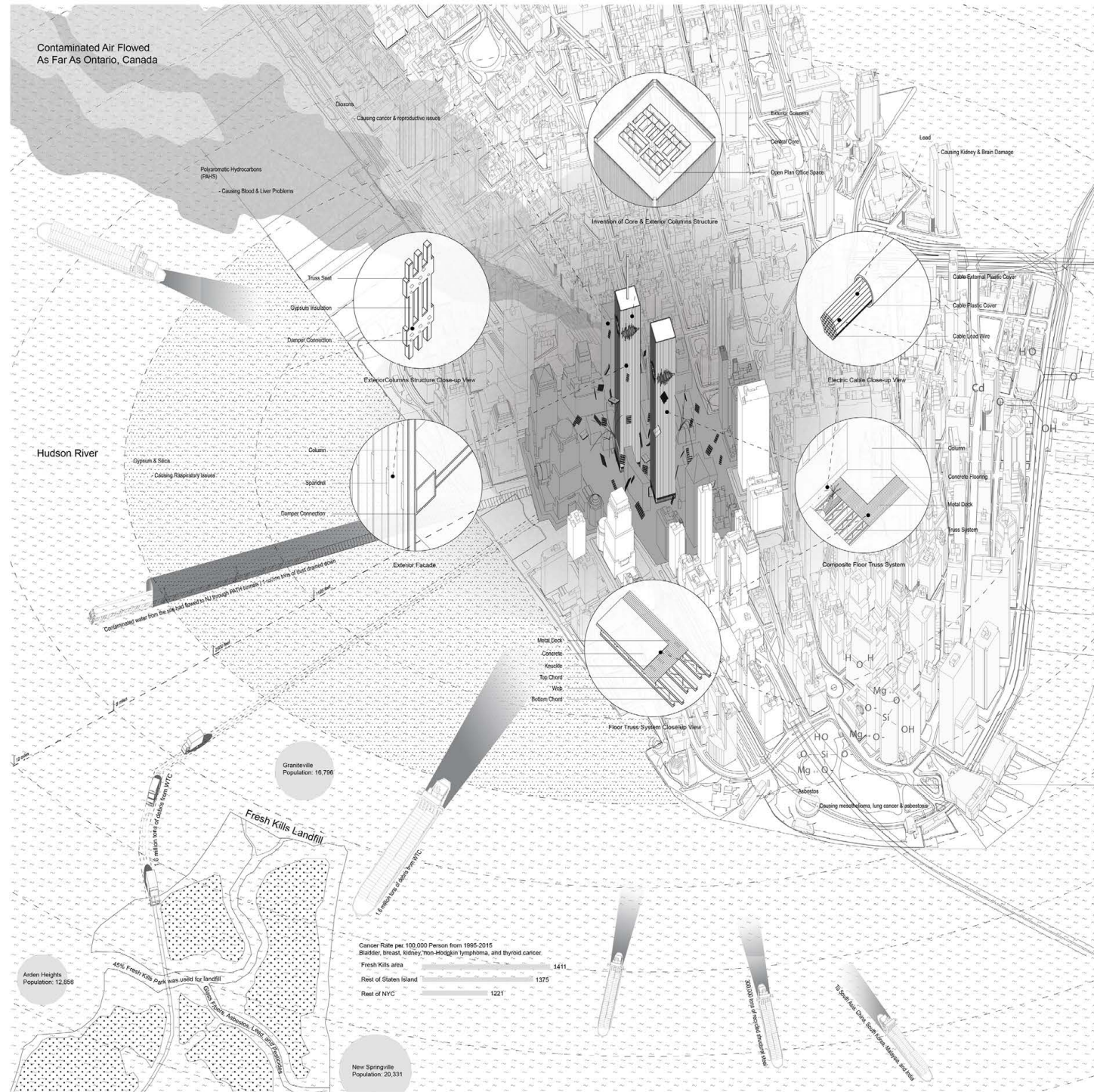
04 RESILIENCY

MODULAR FACADE EXTENSION

Academic design work
Course: Core II Studio: Damage Control
Professor: Esteban De Backer
Time of Project: Spring 2023
Individual Work



SITE ANALYSIS



RESEARCH MODEL

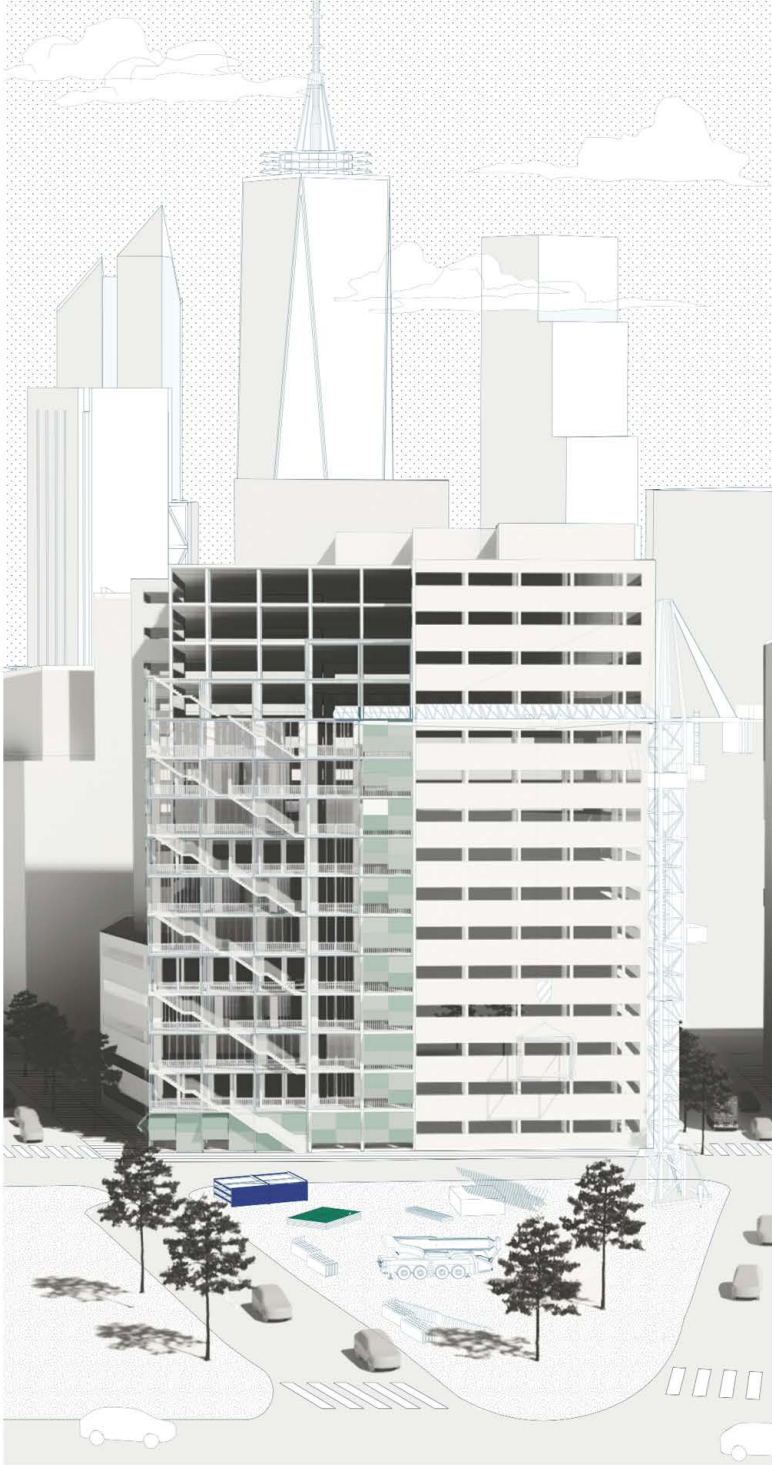


The disparity in financial budgets and construction processes between the civic building and the commercial tower spurred this intervention. On 9/11, Fiterman Hall's southern facade was damaged by the collapsing WTC 7. Despite the swift reconstruction of the WTC 7 tower by 2006, Fiterman Hall, a public university building, remained damaged and contaminated for 8 years due to state funding conflicts. During this time, students and faculty used trailers along the streets as temporary accommodations.

FACADE EXTENSION MODEL



CONSTRUCTION ELEVATION



EXTERIOR RENDER

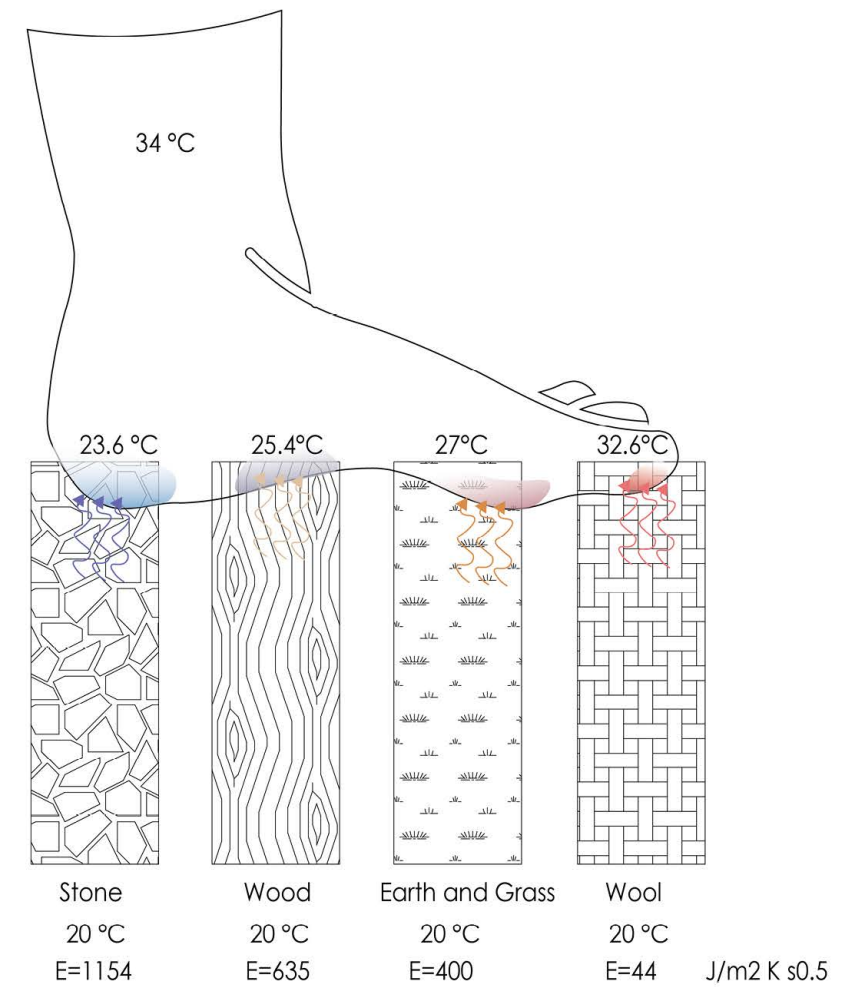


This design proposes a construction system that extends the damaged facade to efficiently use modular components, providing additional classrooms and social gathering areas for students while the building is in the process of recovery. Sliding doors in various directions and foldable doors on the first floor grant students and faculty agency to define their spaces flexibly, whether as expanded classrooms, semi-open libraries, or balconies for social interaction.

05 COOL GREENS

COOL HOUSE FARM-TO-TABLE CULINARY SCHOOL

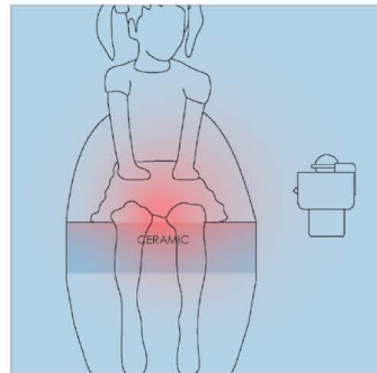
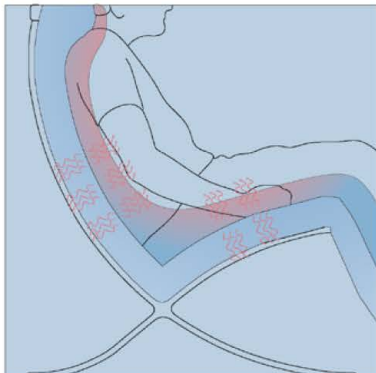
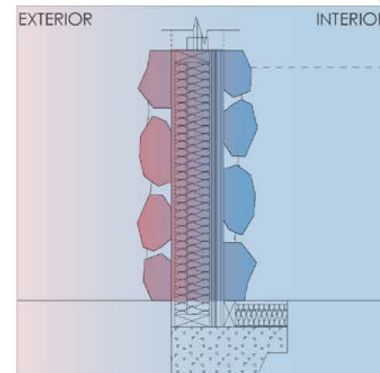
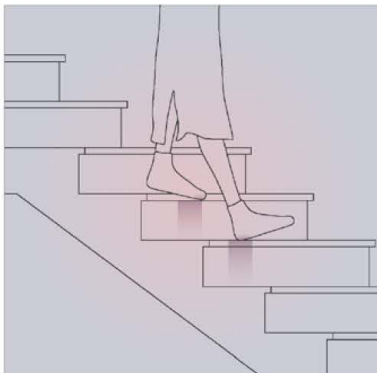
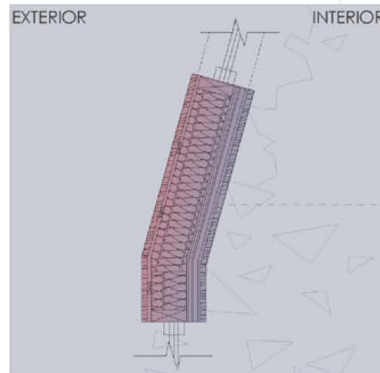
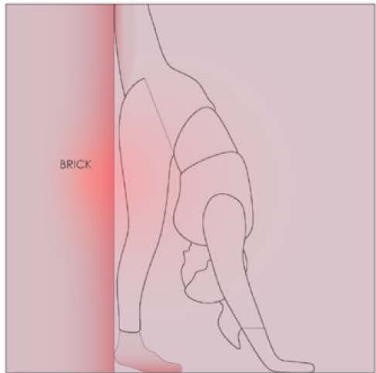
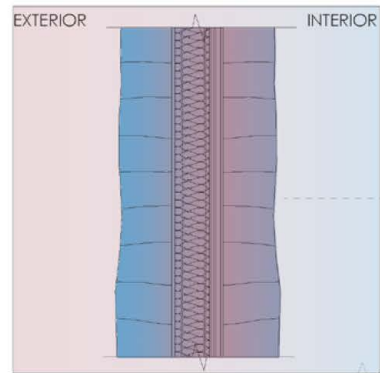
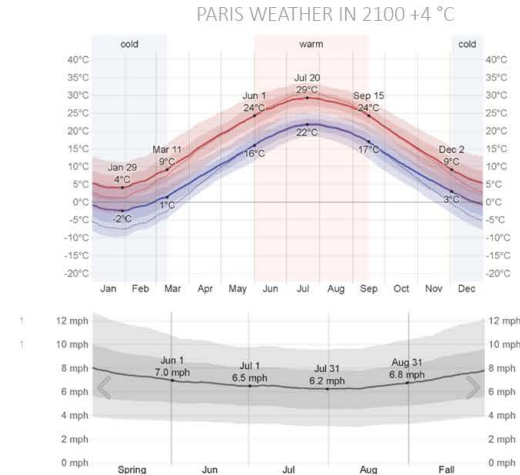
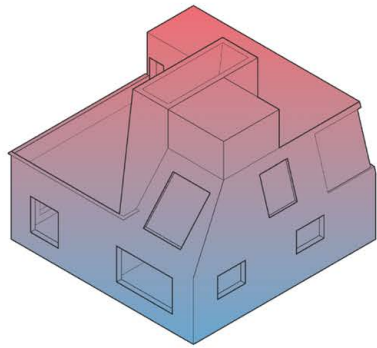
Academic Design Work
Course: Advanced V Studio: How to Live in Paris in 2100?
Professors: Philippe Rahm, Mariami Maghlakelidze
Time of Project: Fall 2024
Individual Work



LOW EFFUSIVITY

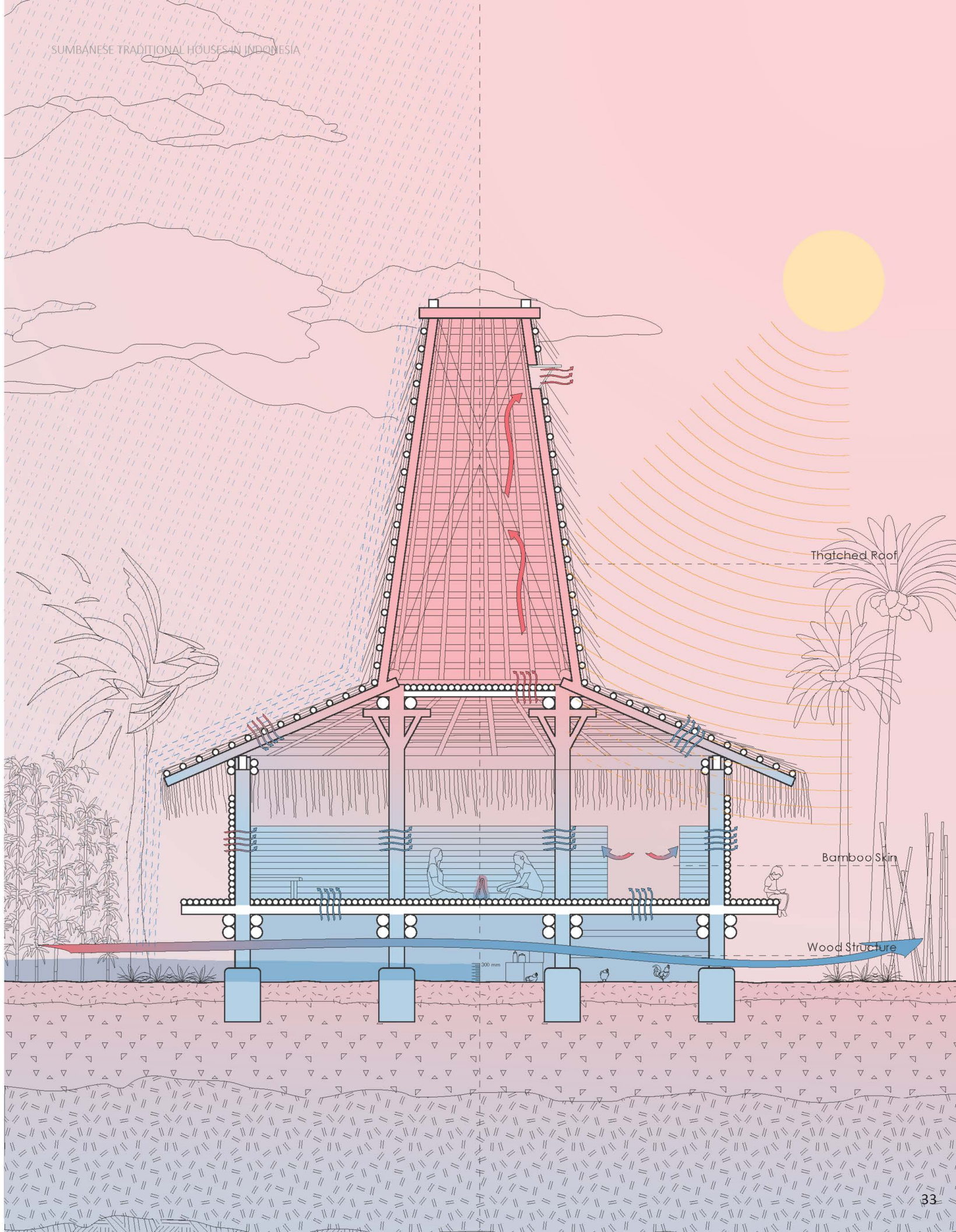
- WOOL
- COTTON
- RAW EARTH
- WOOD
- RUBBER
- STONE
- METAL

HIGH EFFUSIVITY

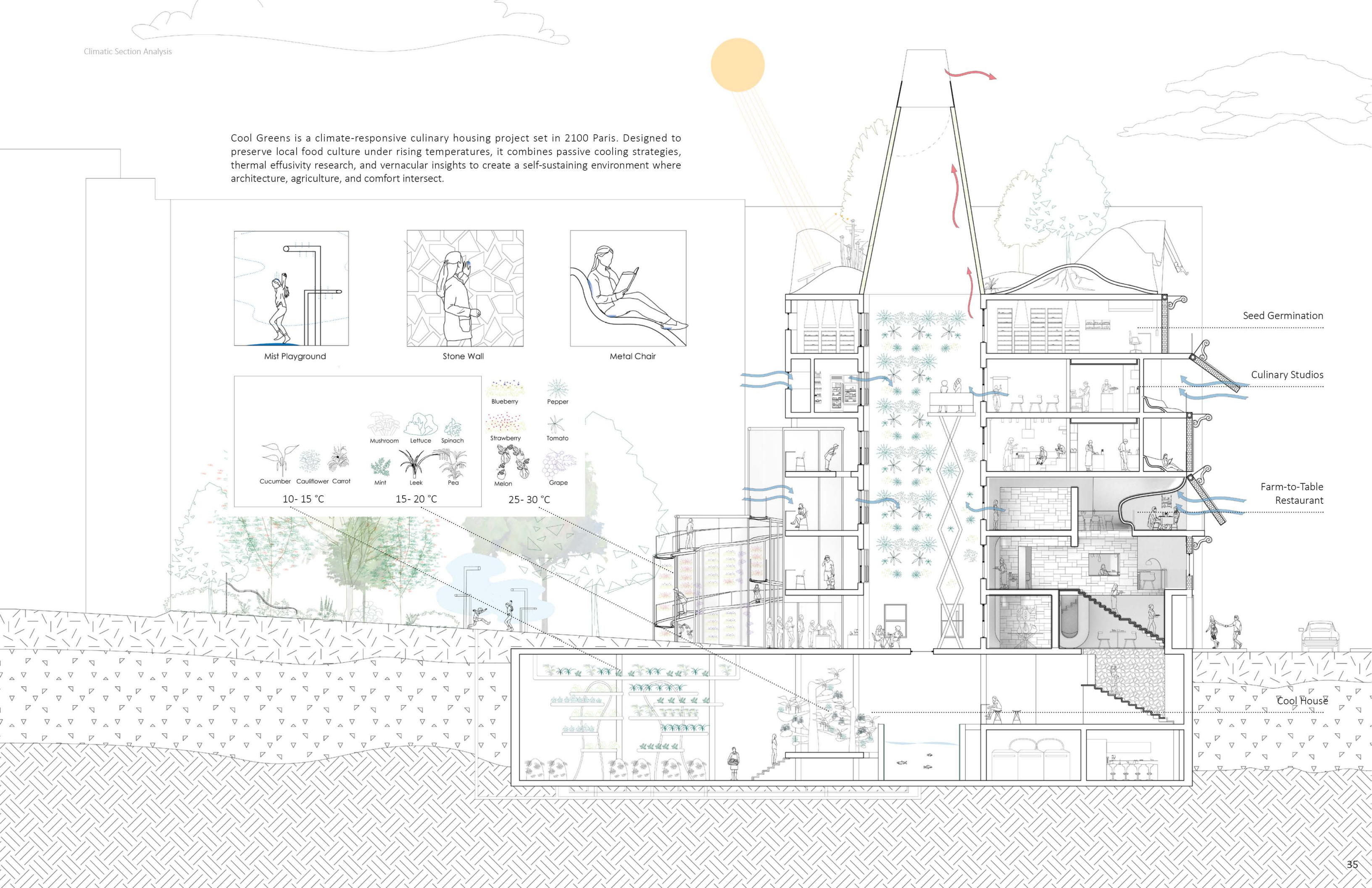


The study of thermal effusivity, alongside research into southern vernacular Sumbanese housing, provided a critical foundation for climate-responsive design in 2100 Paris. As global warming shifts climate zones northward, Paris is projected to resemble the conditions of today's southern Mediterranean. Understanding how materials with varying effusivity, along with porous and elevated structures, passively regulate heat in these climates offered transferable strategies for future adaptation.

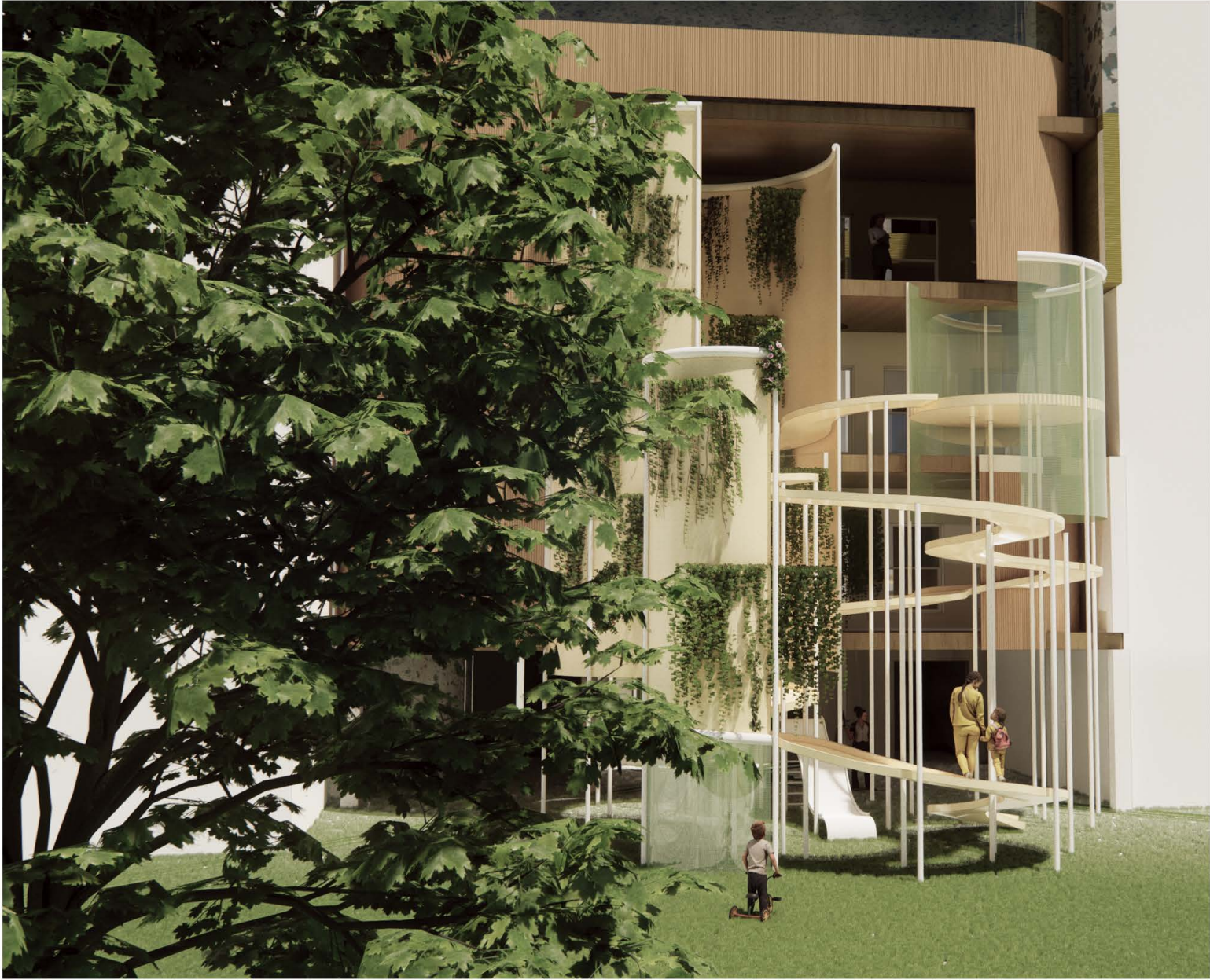
SUMBANESE TRADITIONAL HOUSES IN INDONESIA



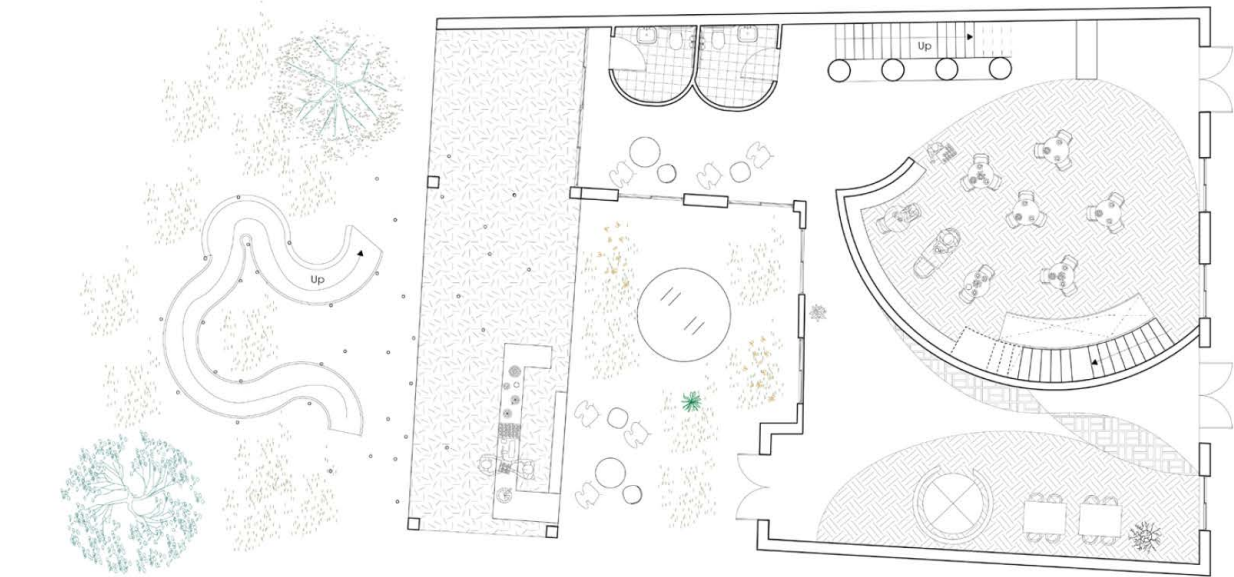
Cool Greens is a climate-responsive culinary housing project set in 2100 Paris. Designed to preserve local food culture under rising temperatures, it combines passive cooling strategies, thermal effusivity research, and vernacular insights to create a self-sustaining environment where architecture, agriculture, and comfort intersect.



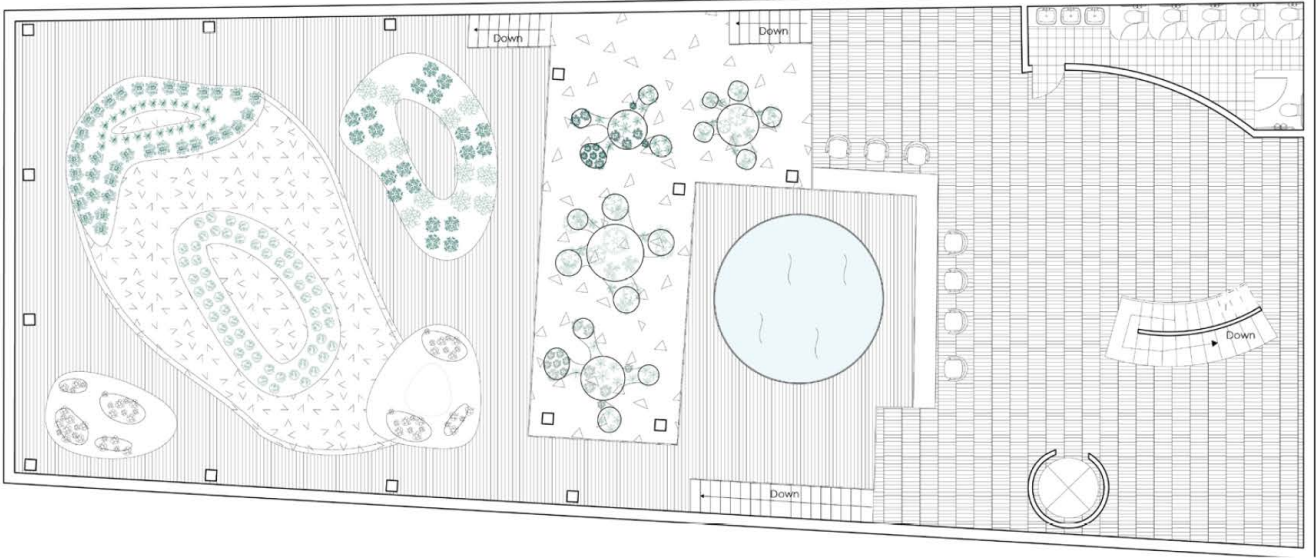
COMMUNITY GARDEN



GROUND FLOOR COMMUNITY CAFE



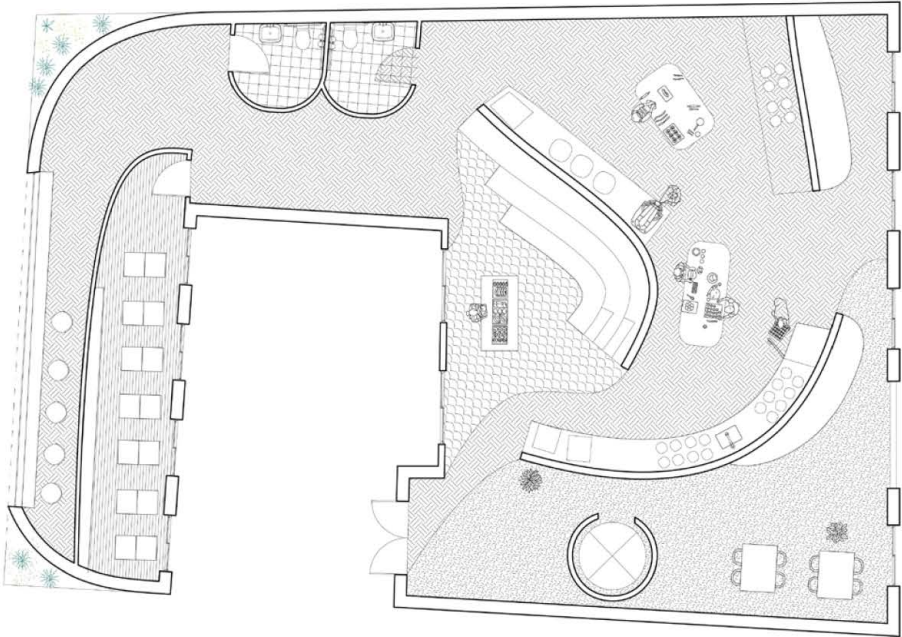
BASEMENT COOL GREENS



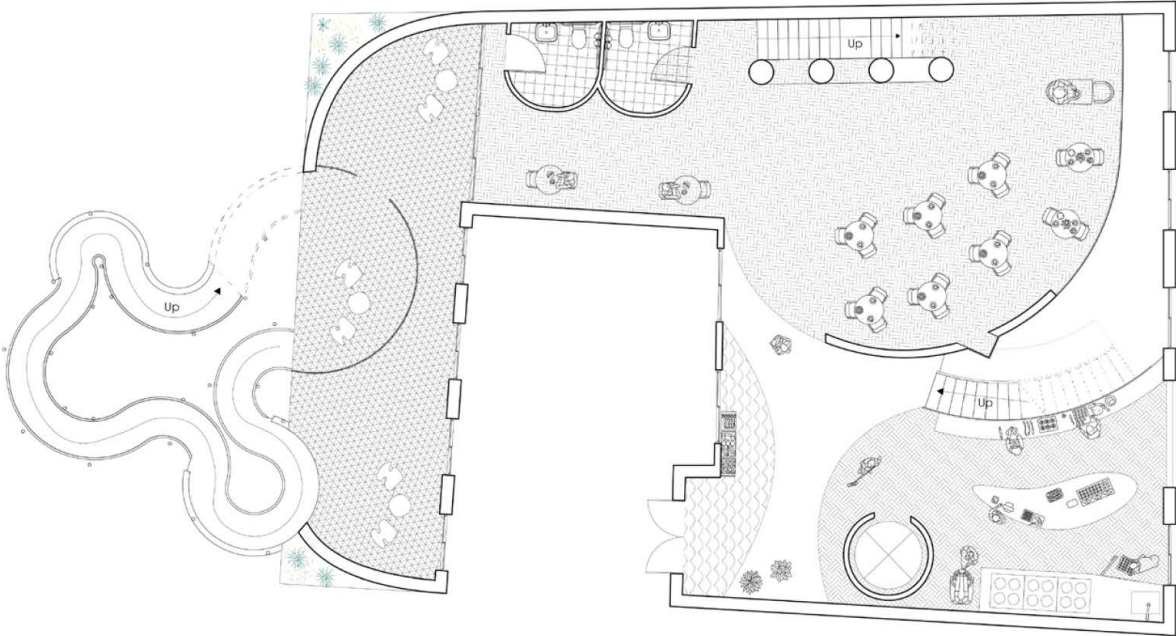
ELEVATIONS



4- 5 F CULINARY STUDIOS



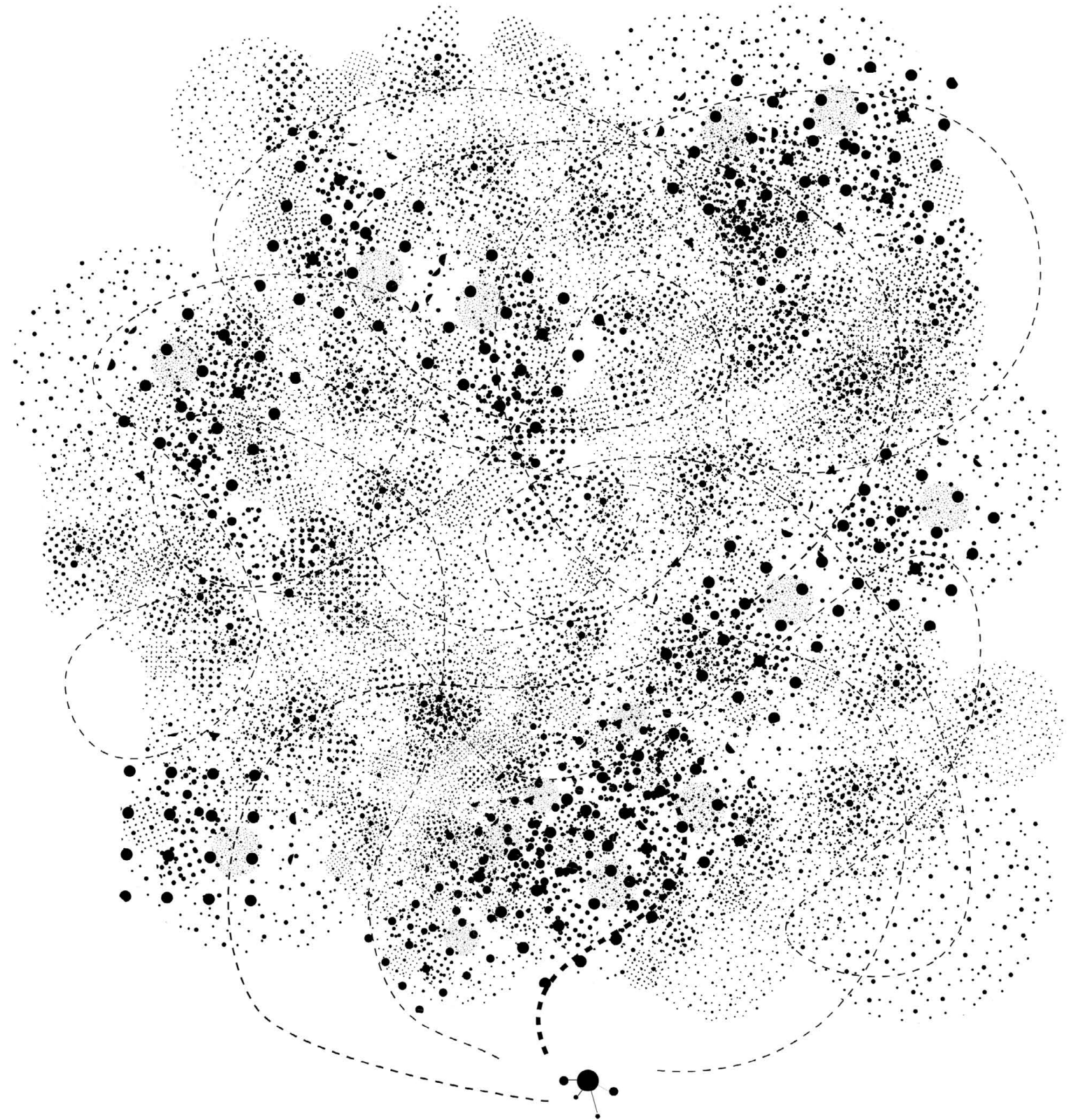
2 F RESTAURANT



06 SLOW CARE, LET GO

TRANSITIONAL HOUSES FOR EXTREME HOARDING BEHAVIOR

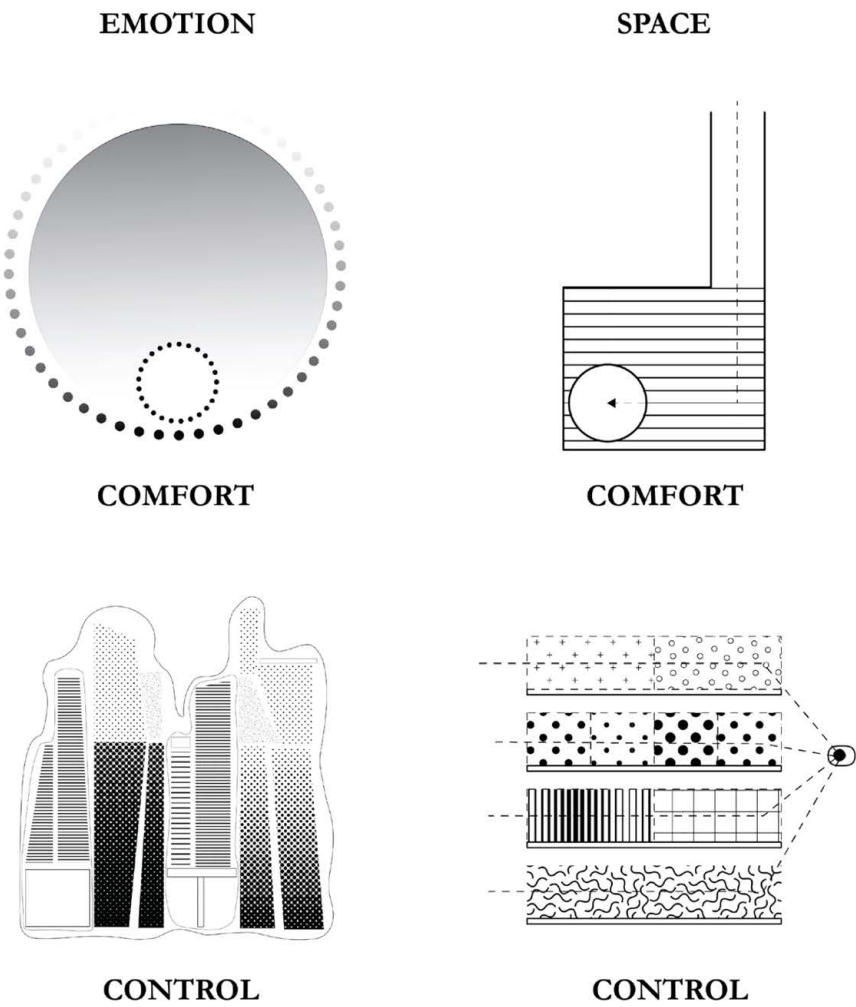
Academic Design Work
Course: Advanced VI Studio: Transitional Spaces for Complex Mental Health
Professors: Dr Anthony Clarke and Alonso L. Ortega.
Time of Project: Spring 2025
Individual Work



COMPLEX MENTAL HEALTH: EXTREME HOARDING BEHAVIOR IN AGING ADULTS (55-65)

This project explores transitional housing for aging individuals experiencing extreme hoarding behavior—an often misunderstood condition frequently met with stigma, forced cleanouts, or eviction rather than care. These responses neglect the emotional complexity of the behavior and often deepen the trauma. The project reframes architecture as a mediating tool, not to correct behavior, but to support gradual, respectful transformation.

Beginning with an analysis of emotional and spatial needs, the design process translates behavioral patterns into diagrammatic studies that inform architectural strategies. Informed by extensive case study research, the project advocates for a trauma-informed, dignity-centered approach to serve this marginalized and often invisible population.



GREENFIELD TOWN, MA, 01301

Independent living difficulty Population
17.3%

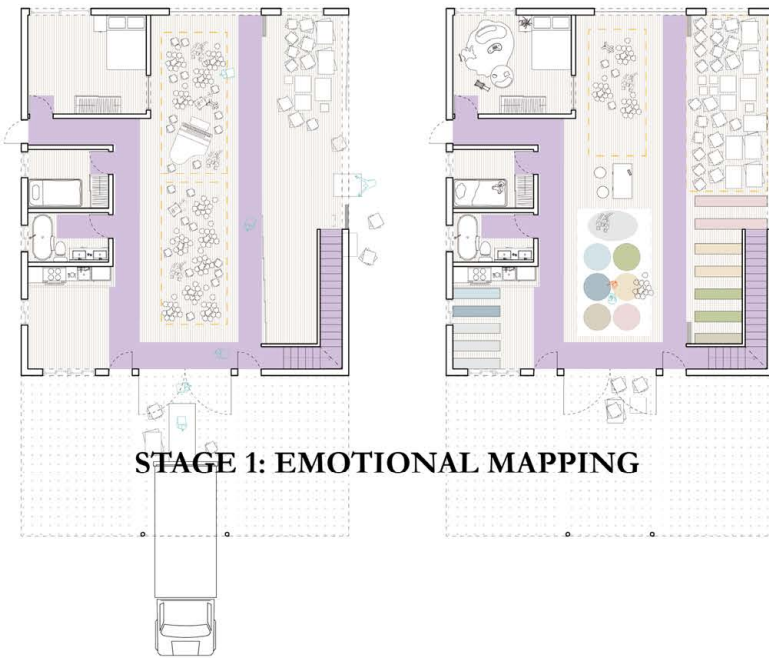
Age group from 45 to 64
23.5%

Female householder, no spouse present, family household
33.9%

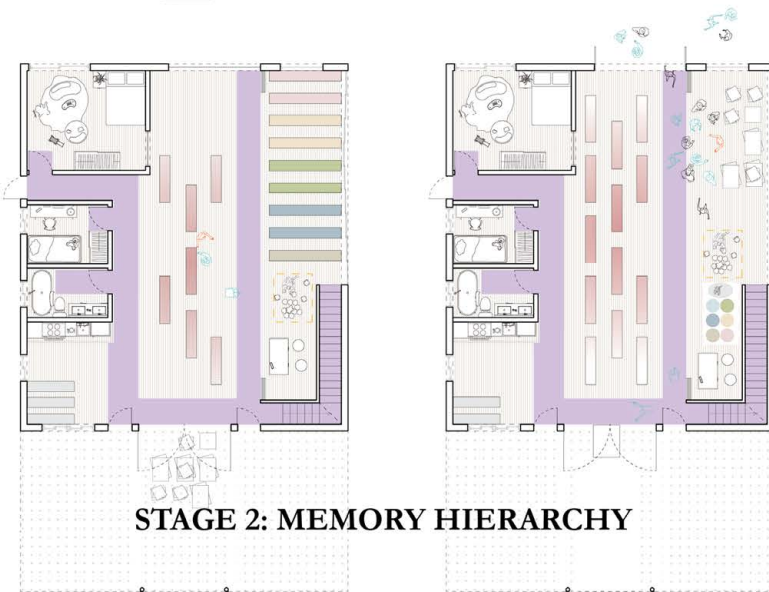
- Local Information Access
- Aging Health Centers
- Commercial Use
- Schools/ Colleges / Institutions
- Residential Areas
- Green River
- Parks



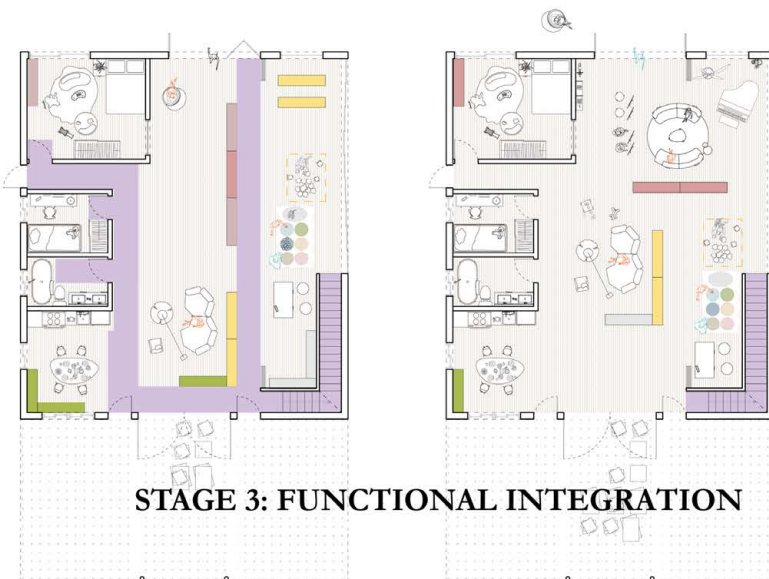
PLANS



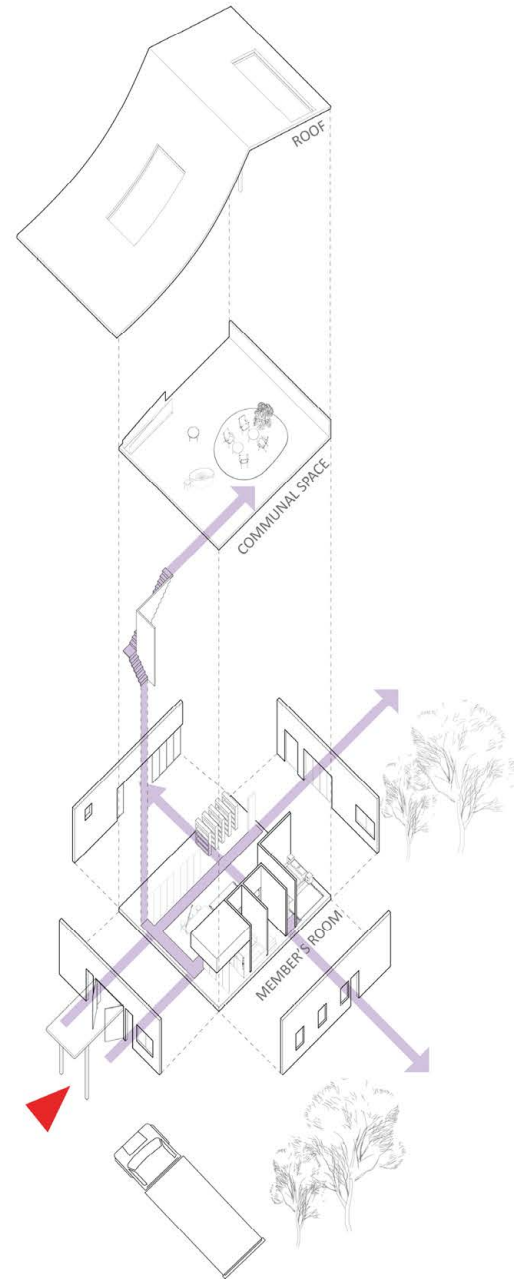
STAGE 1: EMOTIONAL MAPPING



STAGE 2: MEMORY HIERARCHY



STAGE 3: FUNCTIONAL INTEGRATION



SPATIAL NEEDS

- Visual Transparency
- Private Paths to Personal Rooms
- Multiple Fire Egress
- Color-Coded Circulation
- Seamless Hard Flooring
- Flexible Storage Systems
- Accessible Reach Height
- Support Ritual Actions
- Visible Progress
- Low-Stimulation Environment
- Communal Spaces Optional

SITE PLAN



STAGE 1 INTERIOR



The design follows a three-stage transitional model. Stage 1, Emotional Mapping, uses daily sorting sessions to identify emotional attachments and anxieties, revealing the behavioral patterns behind hoarding. Stage 2, Memory Hierarchy, introduces spatial zones for use, display, and storage, organizing belongings based on memory value. Stage 3, Functional Integration, reintroduces daily routines and social life, supporting a gradual return to safe and functional living. The process may span one to five years, allowing residents to move back and forth between stages until their original home becomes manageable. Architecturally, the stages are expressed through elevation and light—early phases are darker and denser, later ones more open and bright.

Chapter 3: Structural Care

07 FI-DI REIMAGINED

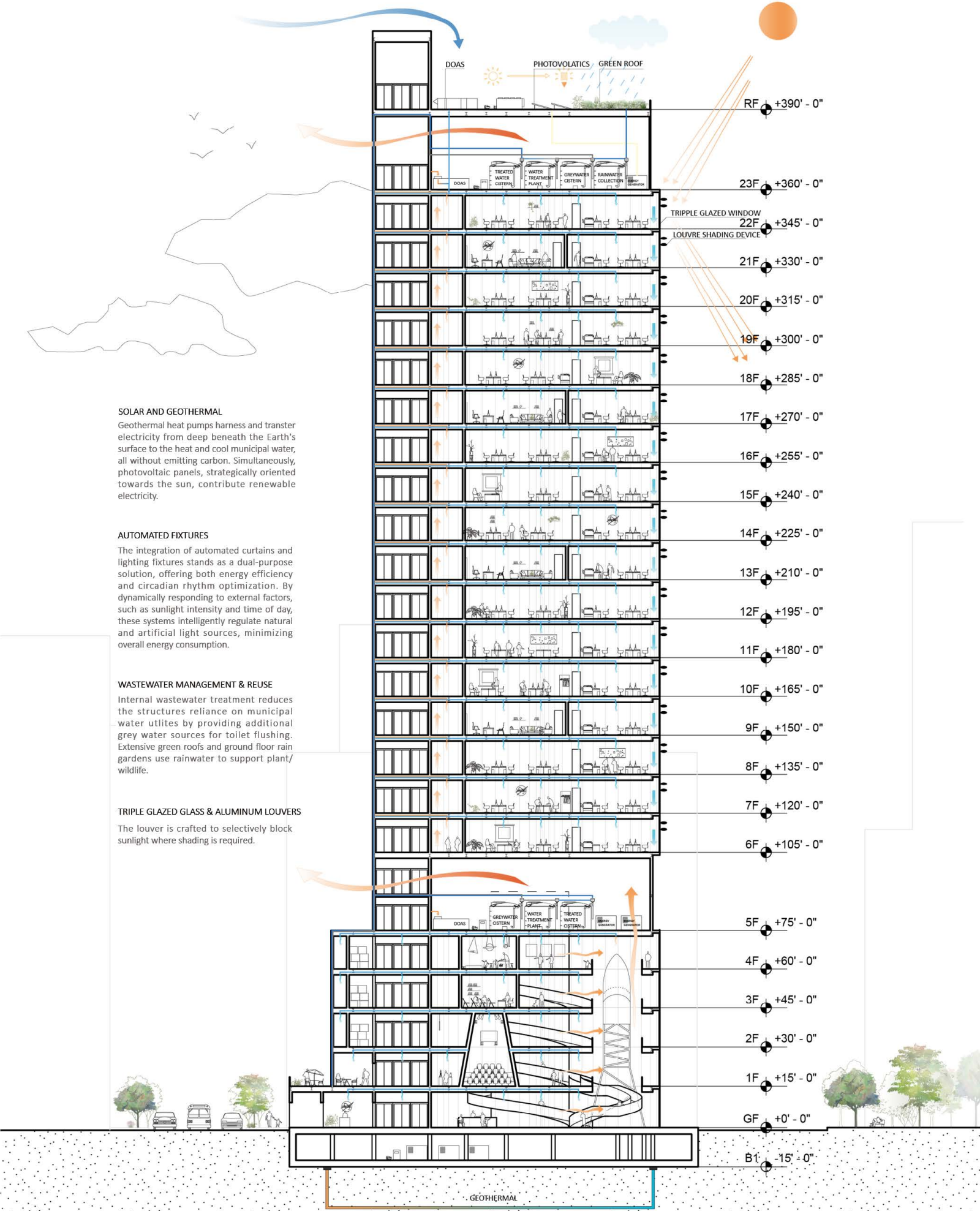
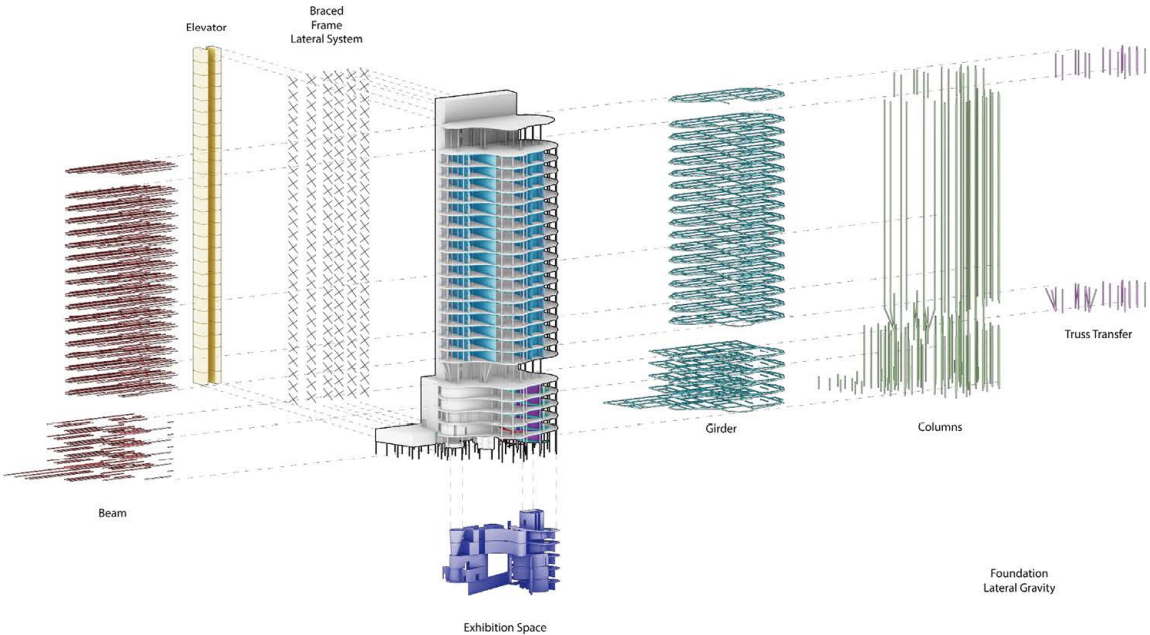
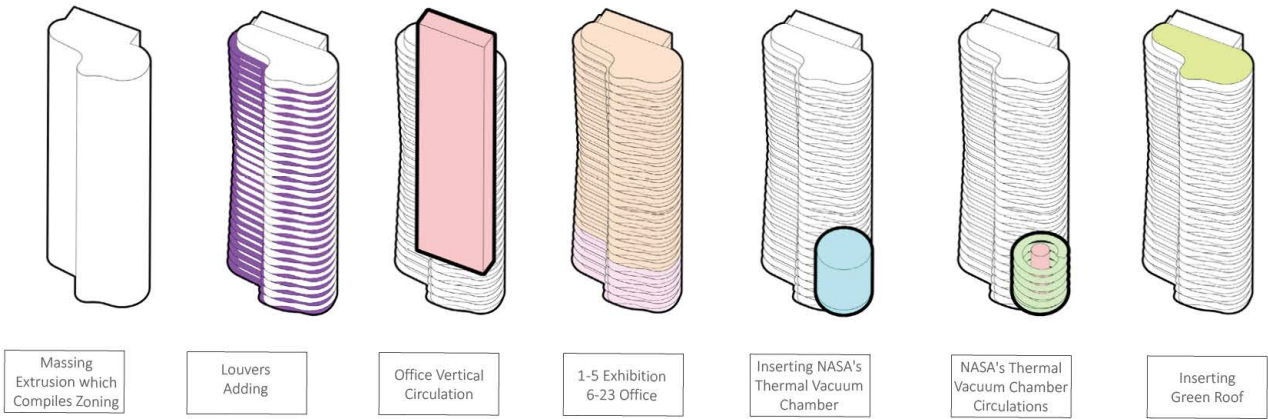
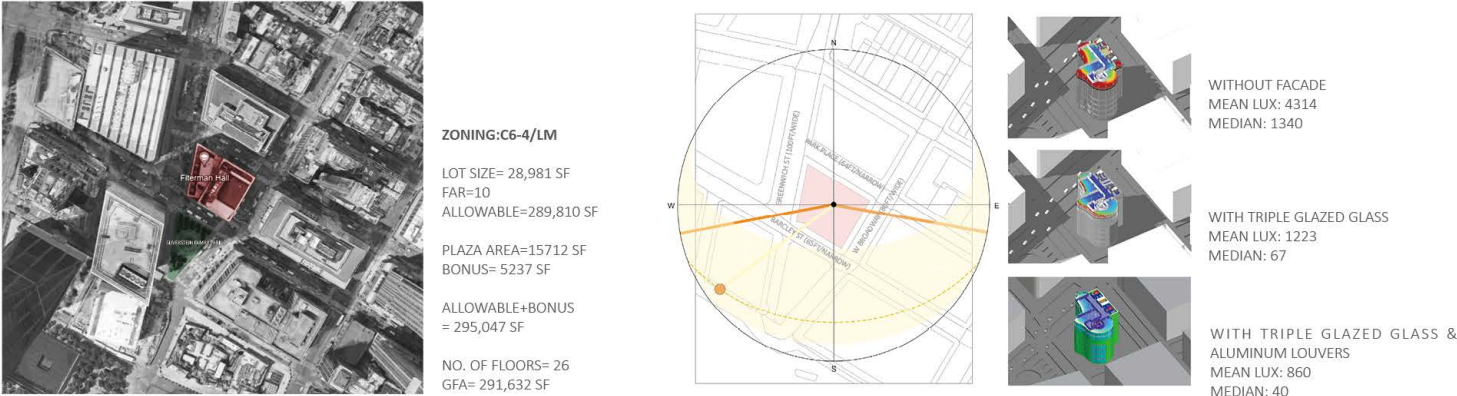
SUSTAINABLE CONSTRUCTION SYSTEM

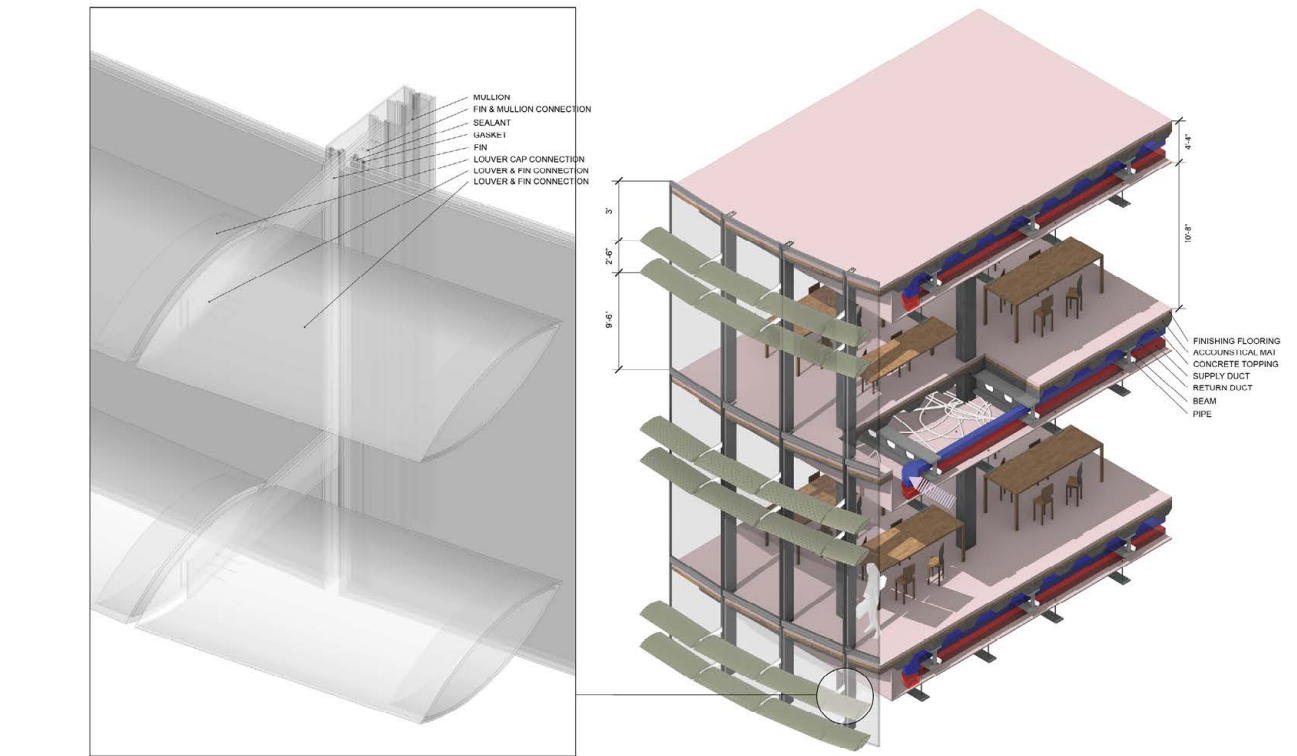
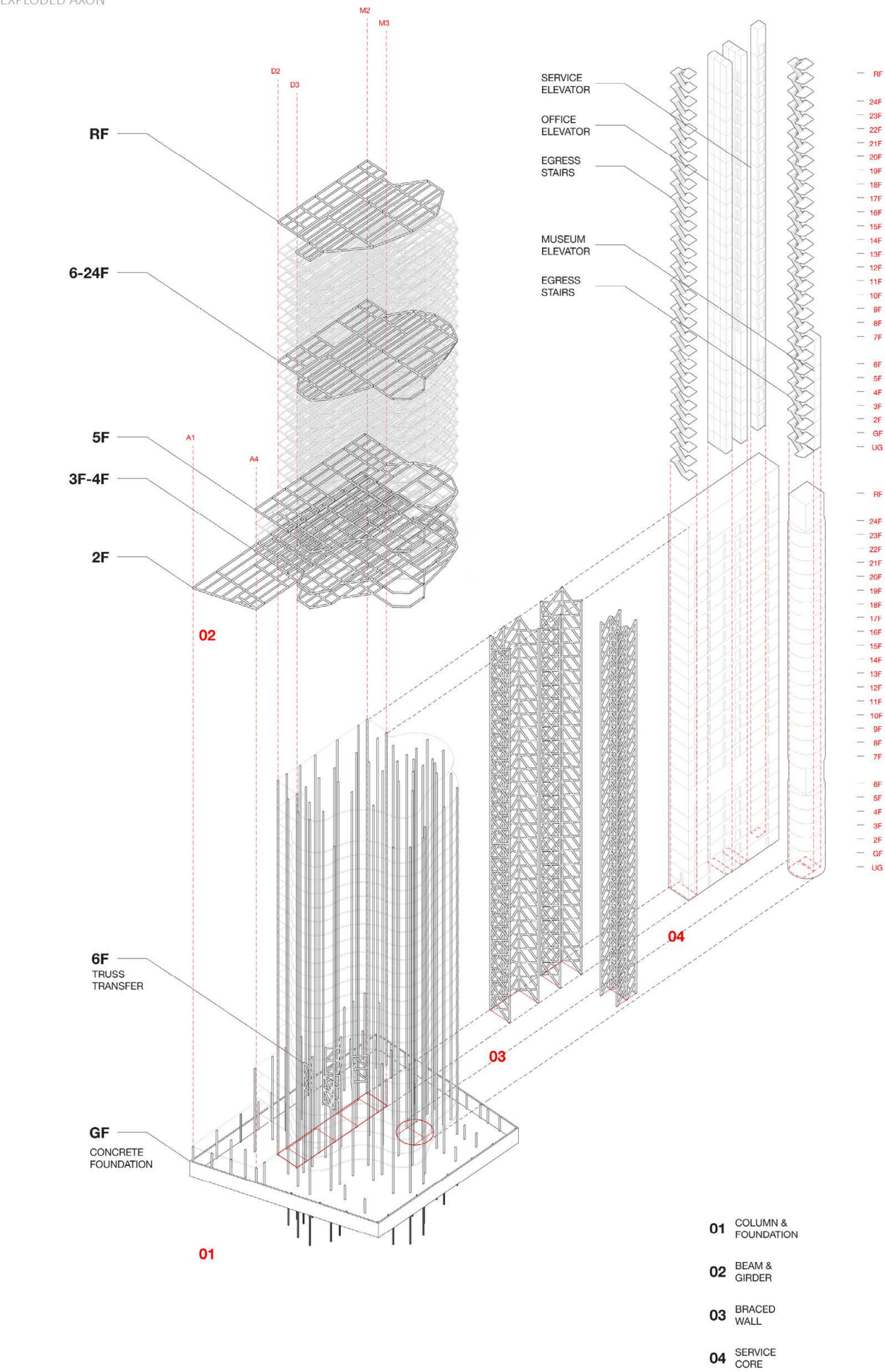
Academic Design Work
Course: Tech IV Integrated Building Systems
Professor: Berardo Matalucci
Time of Project: Fall 2023
Group Work Partner: Andrew Lin, Anson Li,
Wesley Song, Ji Hyun Num, Jiwon Kim
Contribution: digital model, technical
drawings



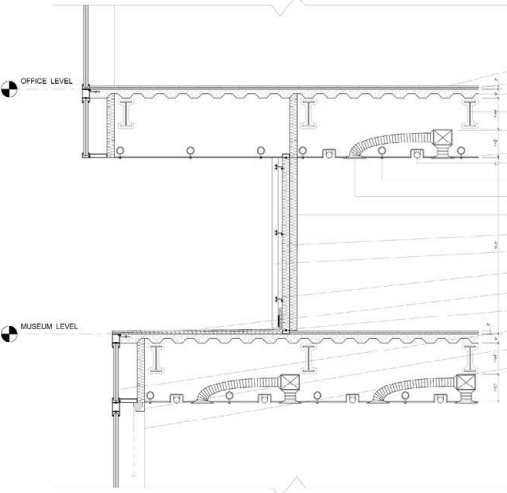
DESIGN CONCEPT

This initiative draws inspiration from the resilience post the Space Shuttle Challenger disaster. It integrates NASA's thermal vacuum chamber into the exhibition design for its unique features. Massing complies with zoning regulations, maximizing Floor Area Ratio (FAR) in Lower Manhattan. Repurposing the site as a NASA headquarters embodies renewal and innovation, reflecting the recovery spirit of FIDI.

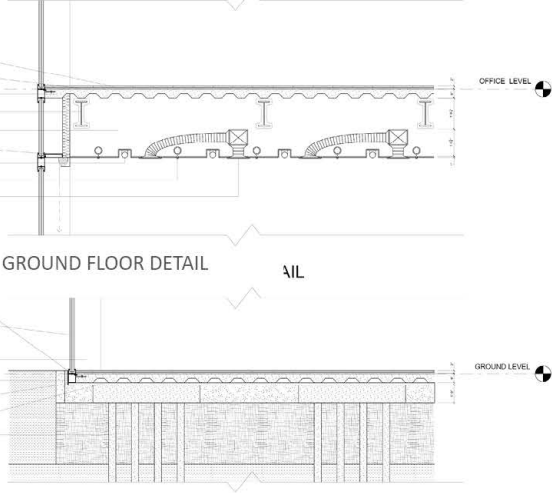




MUSEUM FLOOR-CEILING DETAIL



OFFICE FLOOR-CEILING DETAIL



In conclusion, the NASA Research Center stands as a testament to the resilience of the FIDI community and the enduring human spirit of exploration and innovation. Through carefully crafted spatial design, the project not only showcases NASA's work but also invites public engagement and reflection. By repurposing this space, we honor the past while embracing the future, symbolizing hope, progress, and the unwavering pursuit of knowledge.

08

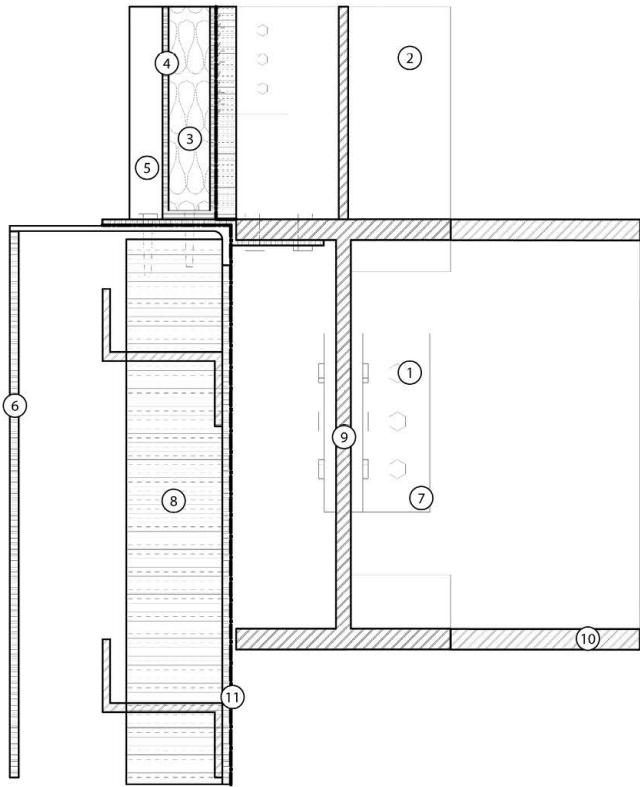
1:1 FACADE SYSTEM

LIFE CYCLE OF THE CONSTRUCTION SYSTEM

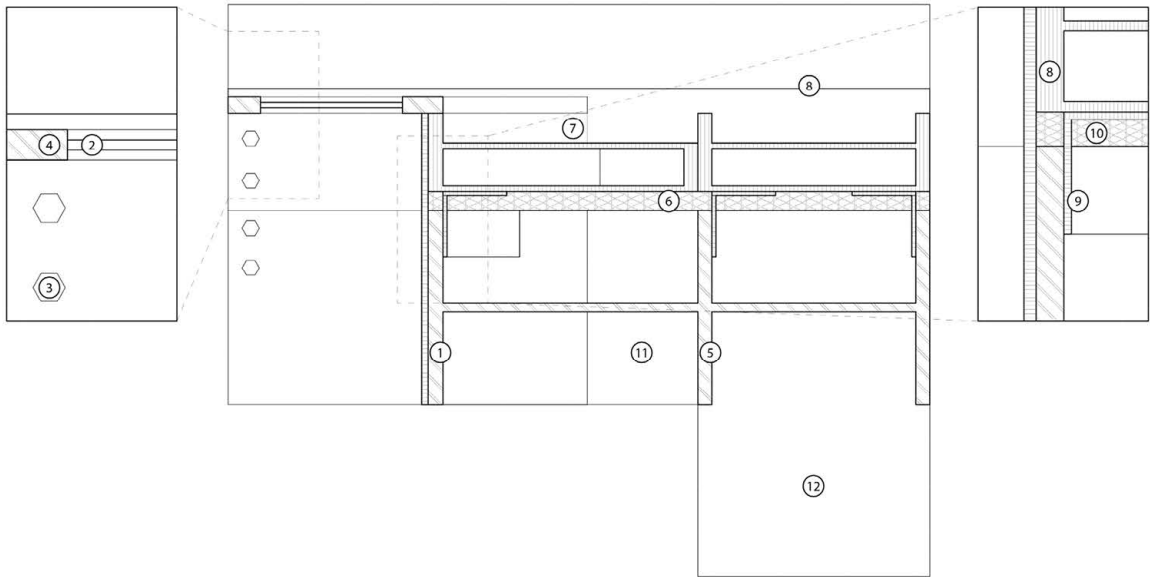
Academic Design Work
Course: Tech V Construction and Life Cycle Systems
Professors: Lola Ben-Alon, Tommy Schaperkötter
Time of Project: Fall 2023
Group Work Partner: Sharel Liu, Flora Ng, Albert
Mok, Wesley Song
Contribution: shop drawings, physical modeling



SECTION DETAIL



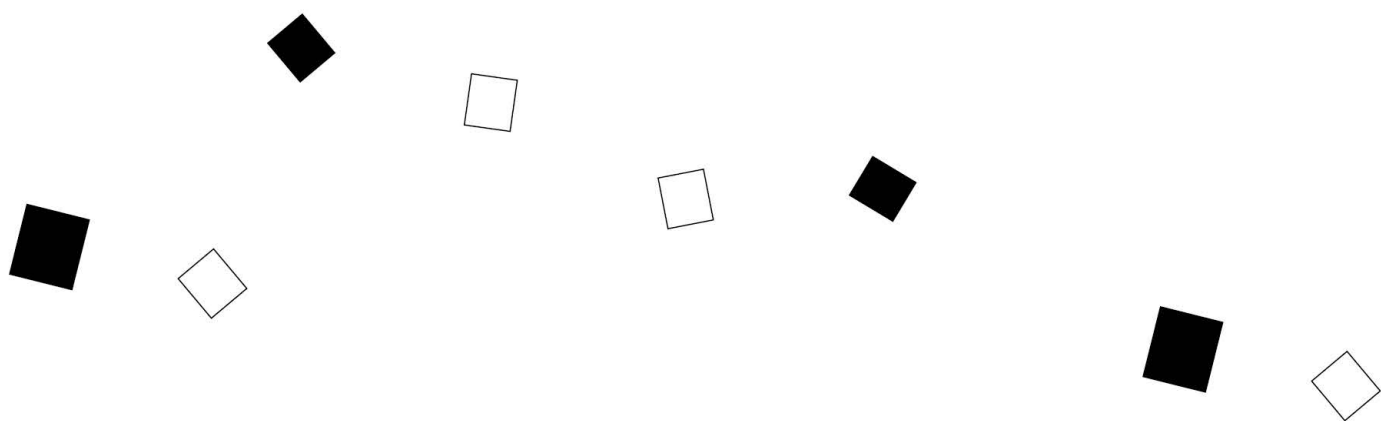
- ① Steel Bolts
- ② Structural Steel Column - W10 x 12, A992 Steel
- ③ Blanket Insulation, 6-1/4" Thick, R19
- ④ Light Stripes, 450 Lumens/foot
- ⑤ Aluminum Cladding, Natural Color, 0.19" Thick
- ⑥ Aluminum Cladding, Natural Color, 0.19" Thick
- ⑦ Structural Steel Plates, 2-1/2" x 2-1/2" x 3/8"
- ⑧ Blanket Insulation, 6-1/4" Thick, R19
- ⑨ Structural Steel Beam - W18 x 35, A992 Steel
- ⑩ Structural Steel Girder - W12 x 22, A992 Steel
- ⑪ Gypsum Board



- ① Structural Steel Truss - W10 x 15, A992 Steel
- ② Commercial Grade Low-E Glazing - 3' x 4'
- ③ Steel Bolts
- ④ Structural Steel Channel Framing - C3 x 4.1
- ⑤ Structural Steel Column - W10 x 12, A992 Steel
- ⑥ Blanket Insulation, 6-1/4" Thick, R19
- ⑦ Light Stripes, 450 Lumens/foot
- ⑧ Aluminum Cladding, Natural Color, 0.19" Thick
- ⑨ Structural Steel Plates, 2-1/2" x 2-1/2" x 3/8"
- ⑩ Blanket Insulation, 6-1/4" Thick, R19
- ⑪ Structural Steel Beam - W18 x 35, A992 Steel
- ⑫ Structural Steel Girder - W12 x 22, A992 Steel

PHYSICAL MODEL





关怀建筑