Zejun Sun

Selected Works
2017 - 2023

PORTFOLIO

WORKS EXHIBITION

https://zejuns.myportfolio.com/

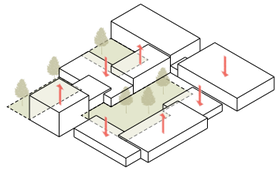
ACADEMIC

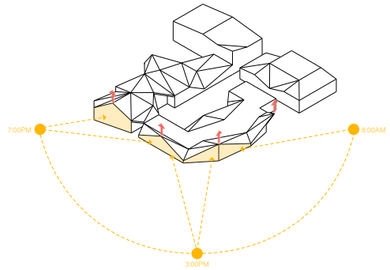
OTHER WORKS

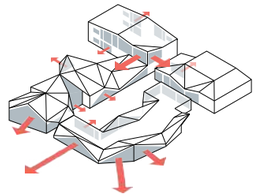
01 - Prattsville Community Center

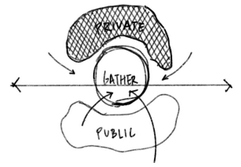
Academic - ARC 409: Comprehensive Studio
Location - Prattsville, NY, United States
Professor - Amber Bartosh
2022.01 - 2022.05 - Group

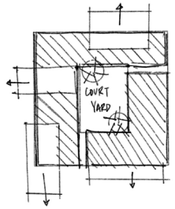
The Prattsville Community Center was designed to address the current lack of gathering space and facilities in the town. In collaboration with our client, Nancy Barton, who prioritizes diversity and community interaction, the project aims to function as an active community center that offers a platform for individuals from diverse backgrounds to come together and exchange ideas. The design process took into account the issue of flooding, and drew inspiration from the 四合院 (Si he yuan), a traditional and historically significant Chinese courtyard that features multiple programs on all sides surrounding a central courtyard. As a result, the project features a central terrace courtyard that serves not only as a gathering space, but also as a landscape and water storage area during floods.

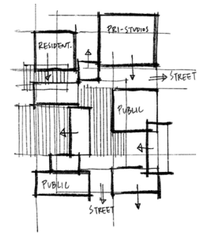


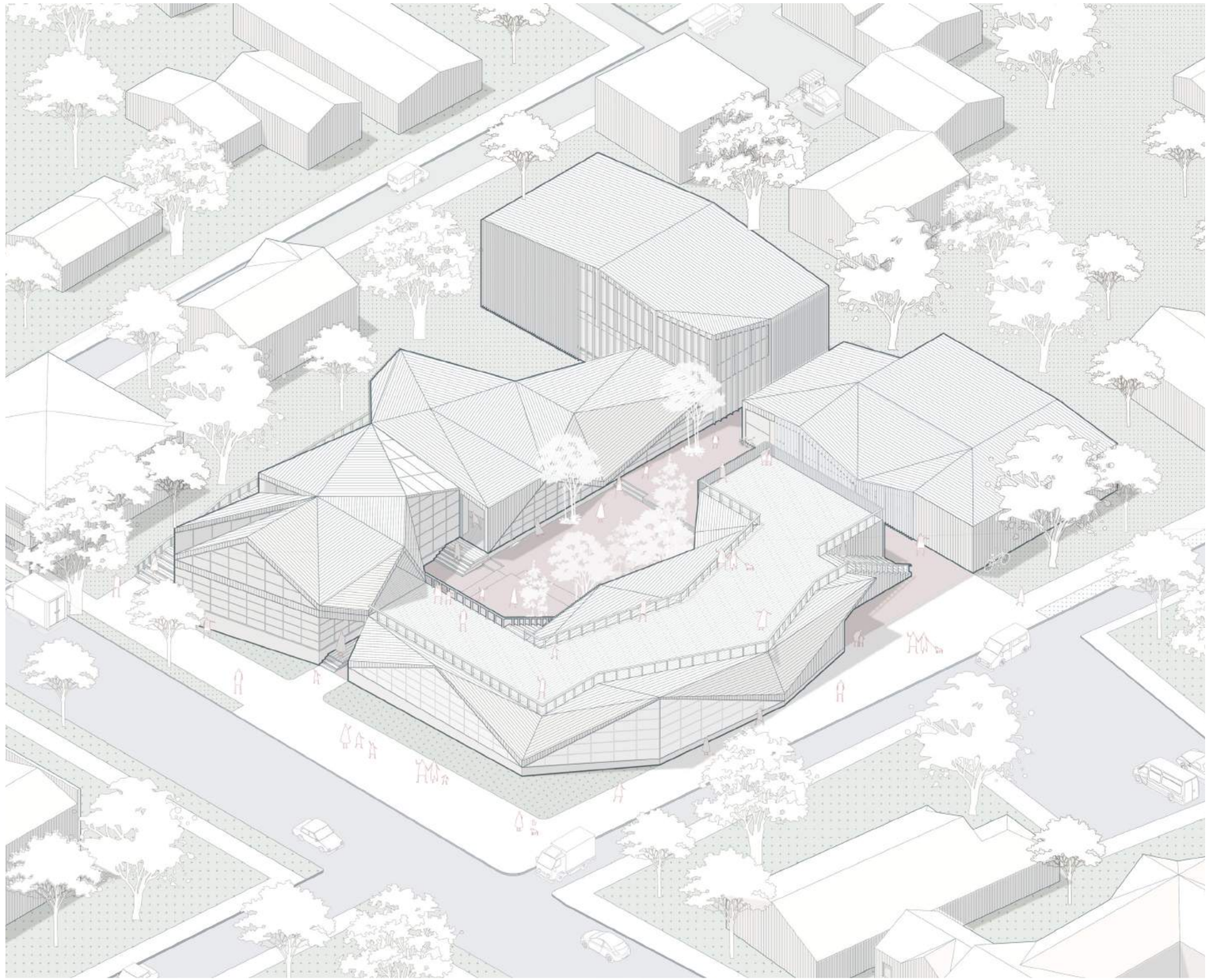








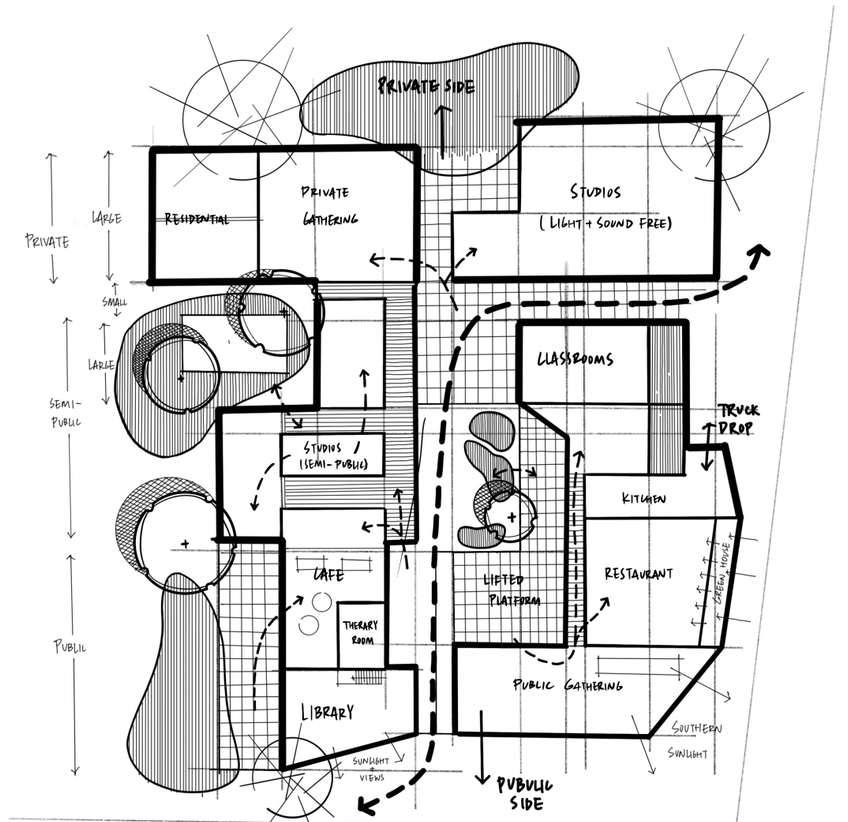


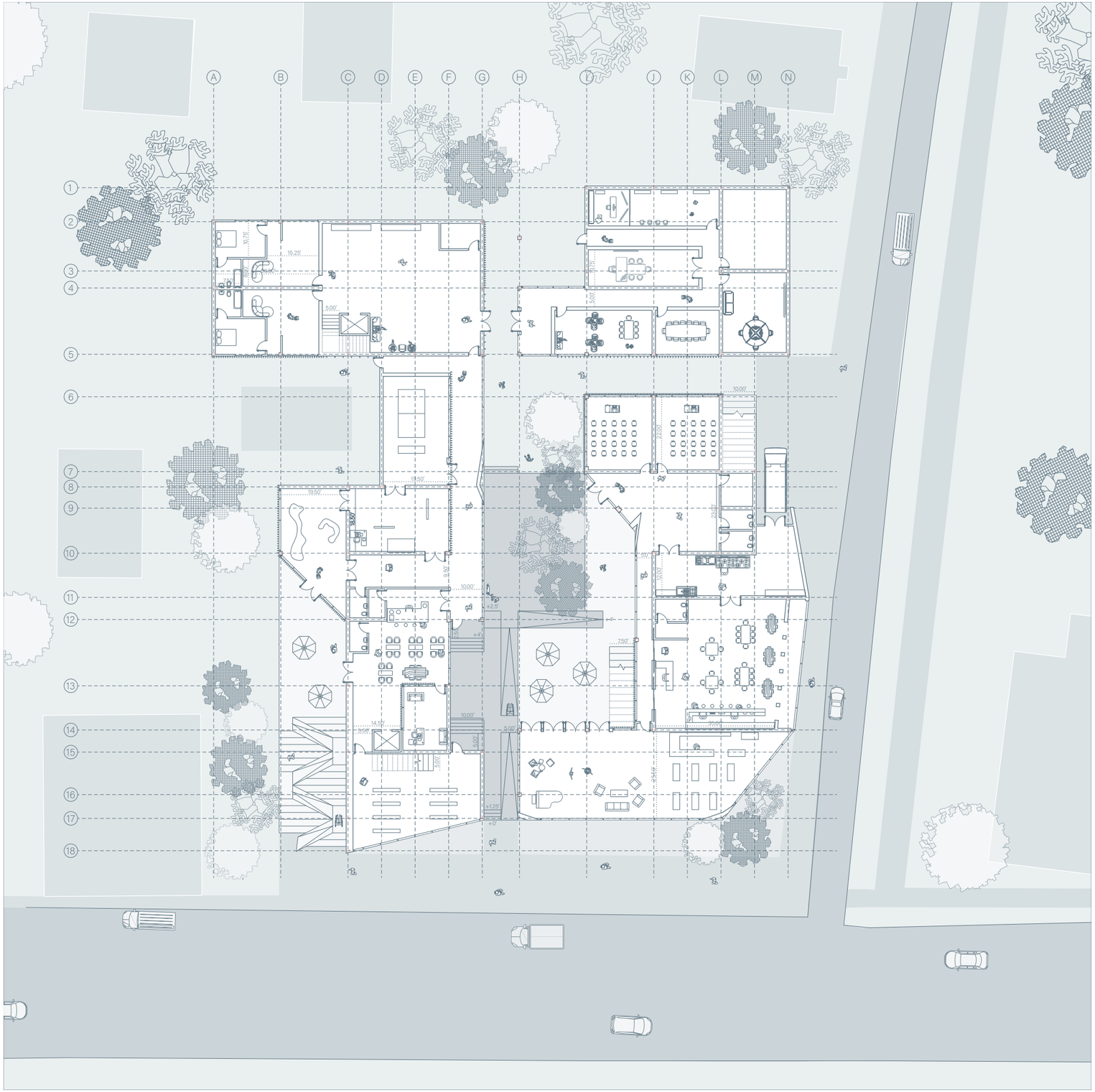


The project revolves around the creation of a central courtyard that serves as a leisure and gathering space. Public programs are strategically located near the streets, while the private areas are cleverly concealed in the rear.

All the programs within the project are interconnected through two main semi-thermal spaces positioned along the courtyard side of two L-shaped structures. The height of each space was determined through our program analysis, and we have proposed a connected roof that unifies all the volumes, creating a sense of unity.

Our design philosophy also places great emphasis on energy efficiency by harnessing the power of natural sunlight for passive heating, while simultaneously maximizing the panoramic views for the public.

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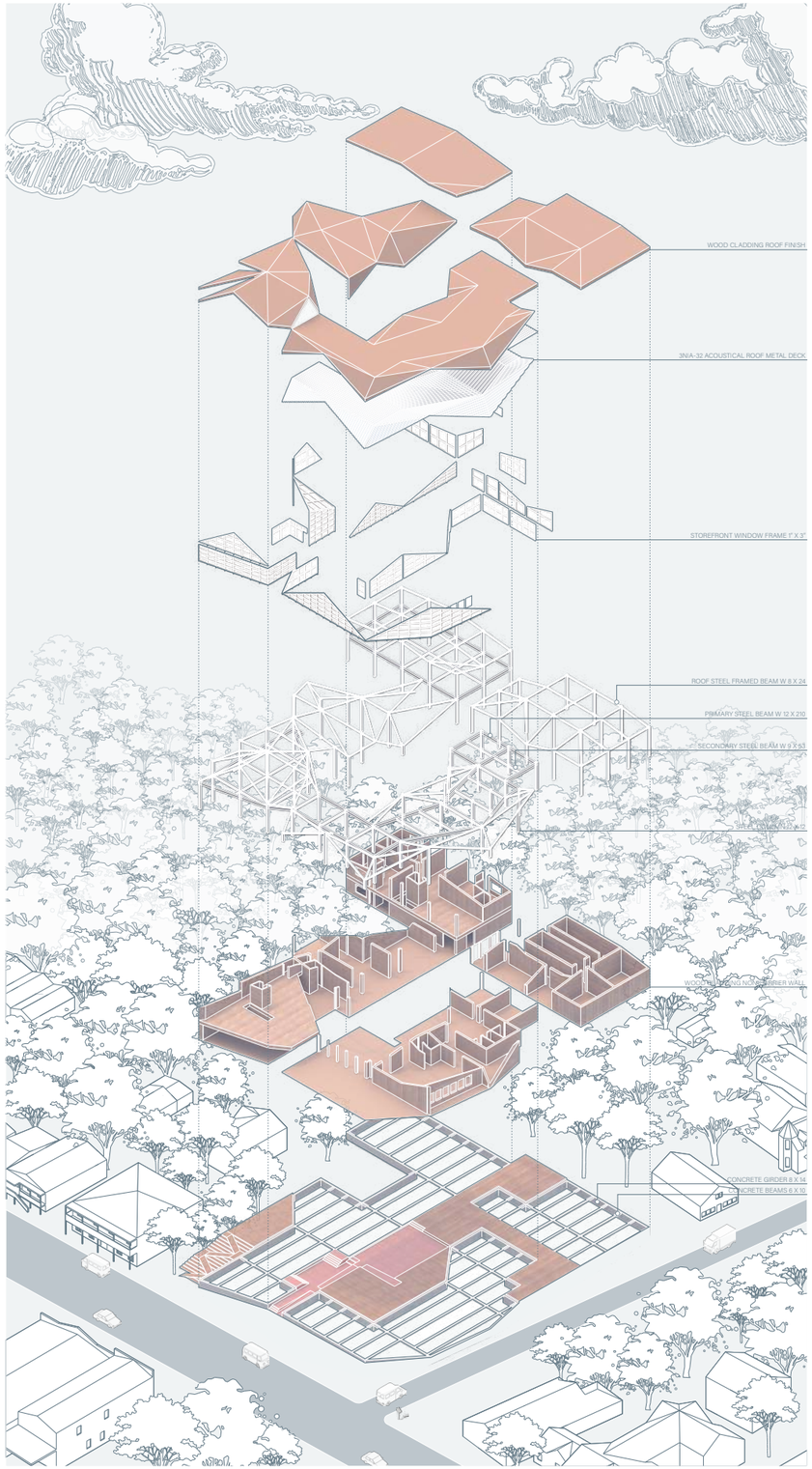
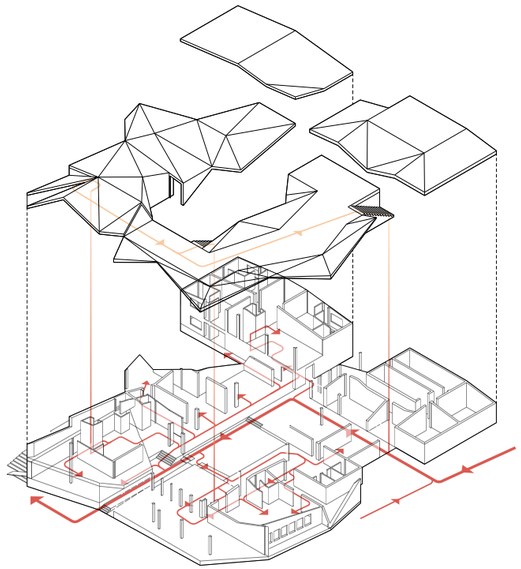
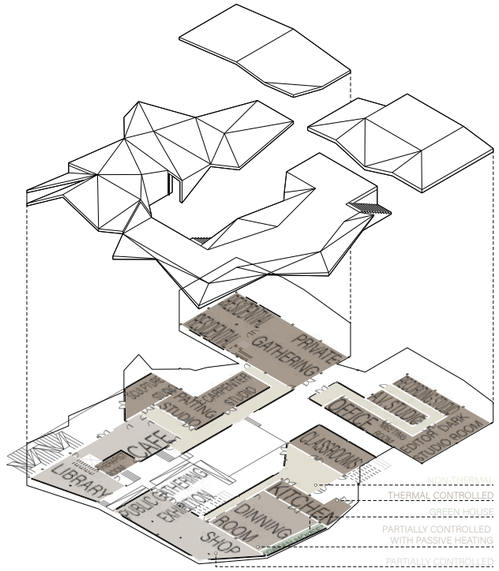

WOOD CLADDING ROOF FINISH
3INA-32 ACOUSTICAL ROOF METAL DECK
STOREFRONT WINDOW FRAME 1" X 3"
ROOF STEEL FRAMED BEAM W 8 X 24
PRIMARY STEEL BEAM W 12 X 210
SECONDARY STEEL BEAM W 9 X 53
CONCRETE GIRDER 8 X 14
CONCRETE BEAMS 6 X 10

Circulation



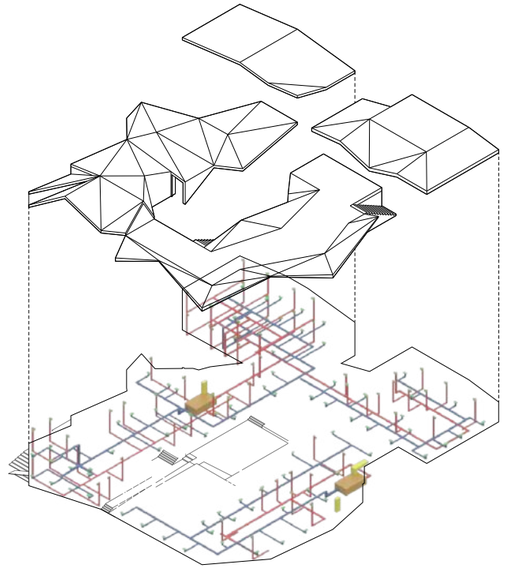
All programs within the building are connected through a loop system that is separated by thermal zones. In all primary public spaces, there are a minimum of two entrances available. The circulation system extends all the way to the roof level, enabling interaction not only horizontally but also vertically.

Program + Thermal Zones



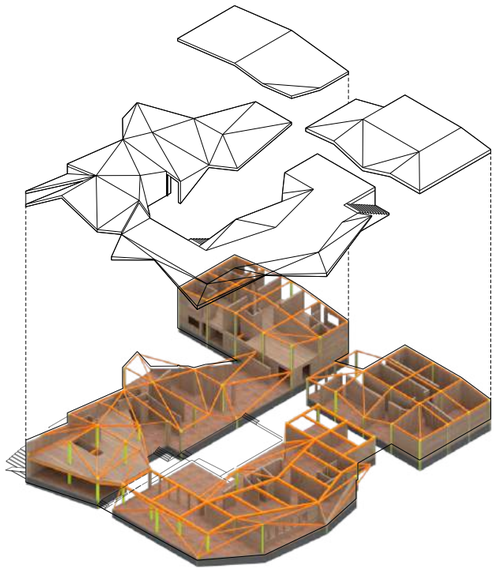
The project is divided into several climate zones. The majority of the private spaces and studios are thermally regulated through the use of an HVAC system, while the public spaces are only partially controlled. The restaurant presents a unique situation, as it is also partially controlled but is able to obtain additional heat supply from the adjacent green house.

HVAC System

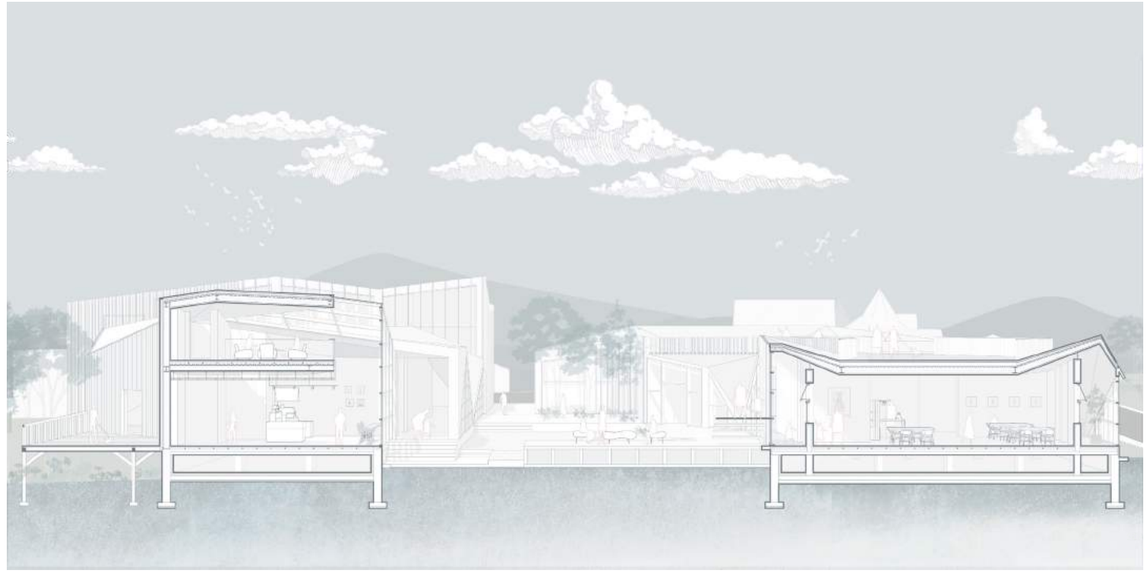


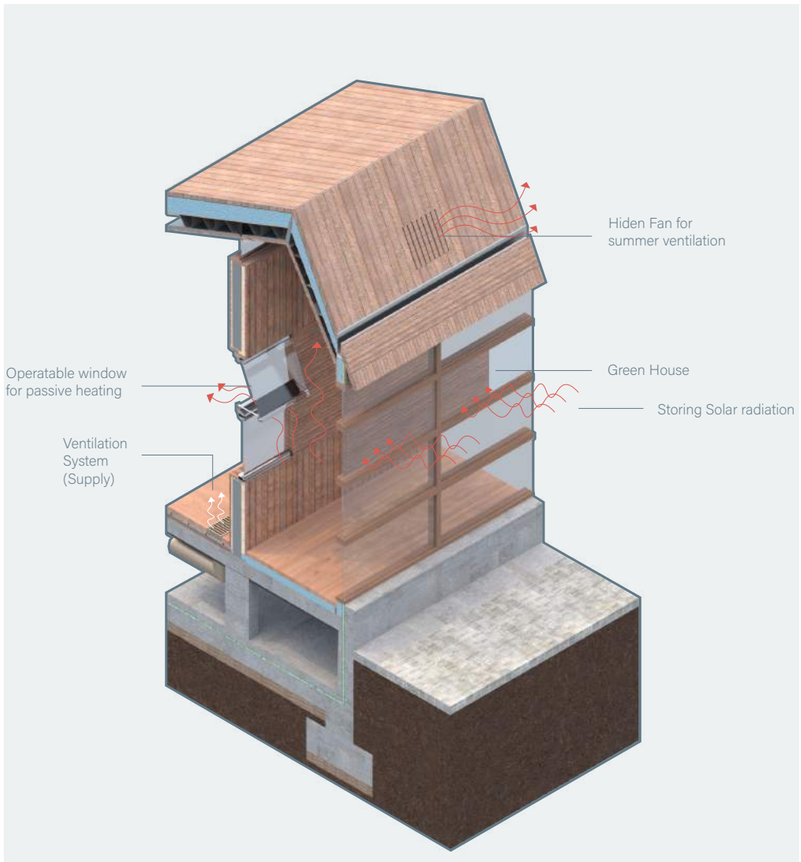
The project aims to minimize energy consumption by reducing the use of HVAC systems while still maintaining a comfortable indoor temperature across different climates. Each unit is strategically located on the minor sides of the building in order to maintain a clean and visually appealing facade on the street.

Structure



The second floor and roof terrace are supported by primary and secondary steel beams, with steel columns connecting to the concrete foundation. This design approach not only reduces the thickness of the floor slab, but also maintains a thin edge for the roof.

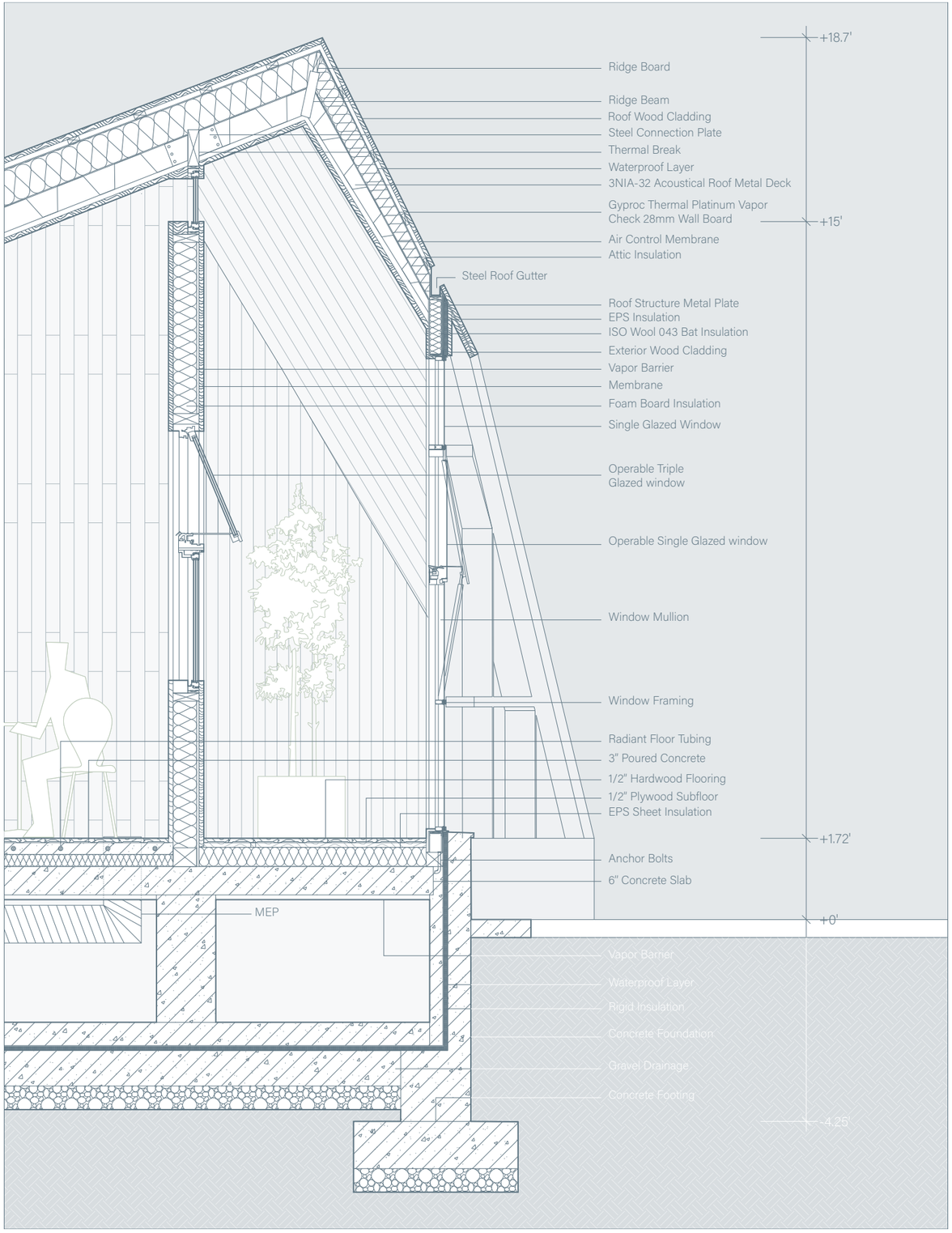


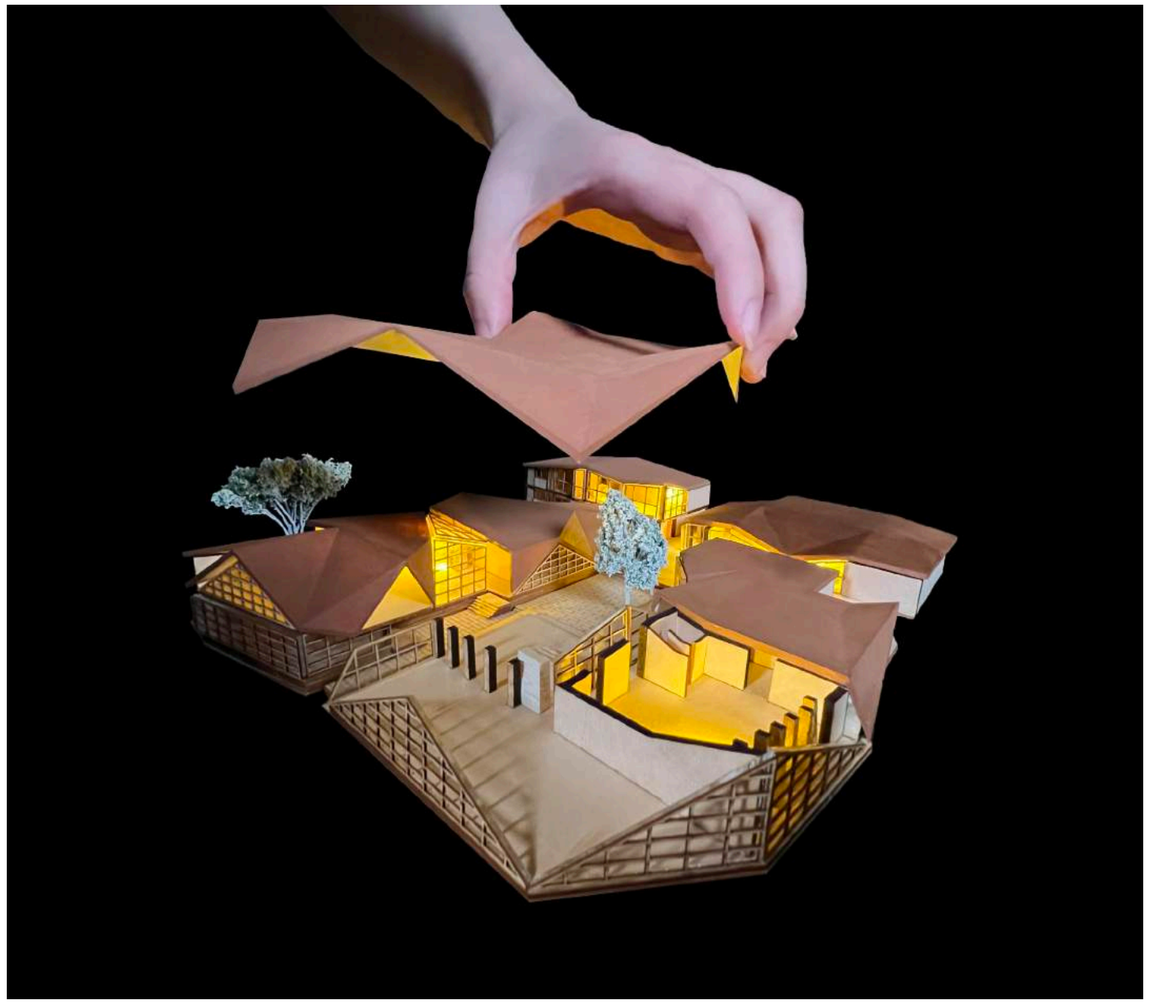


Detailed Section

Green House Passive Heating

The project incorporates a concrete one-way foundation that effectively addresses the issue of flooding and provides support for an embedded mechanical system. Furthermore, a steel grid was employed for the floor slab and steel-framed roof system to achieve a sleek and minimal exterior appearance. A greenhouse is integrated into the design of the community center to serve as a passive heating system, thereby reducing energy costs during the winter season. To ensure comfortable indoor temperatures year-round, the greenhouse is equipped with operable windows and a discreet roof fan.





Extension...

Interactive 360 Degree Video

Academic - ARC 500: Immersive Infrastructure
Location - Remote
Professor - Amber Bartosh
Website - zejuns.myportfolio.com
2022 May (2 weeks) - Individual

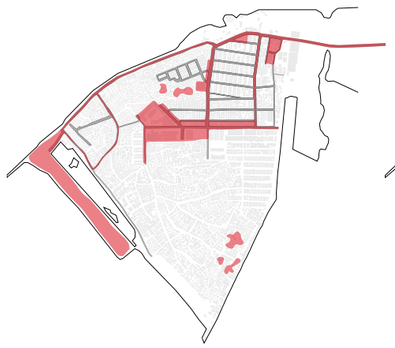
Software - Rhino, Vray Render, Adobe Media Encoder, Adobe After Effects

02 - The ARK

Academic - ARC 505-508: Thesis
Location - BASECO, Metro Manila, Philippines
Professor - Yutaka Sho
2022.08 - 2023.05 - Group

In the face of escalating climate and environmental changes, the repercussions of flooding and sea level rise on human populations have become an urgent concern. Rather than focusing on develope countries, we targettat less-developed regions where resources are limited to cope and survive in such disasters.

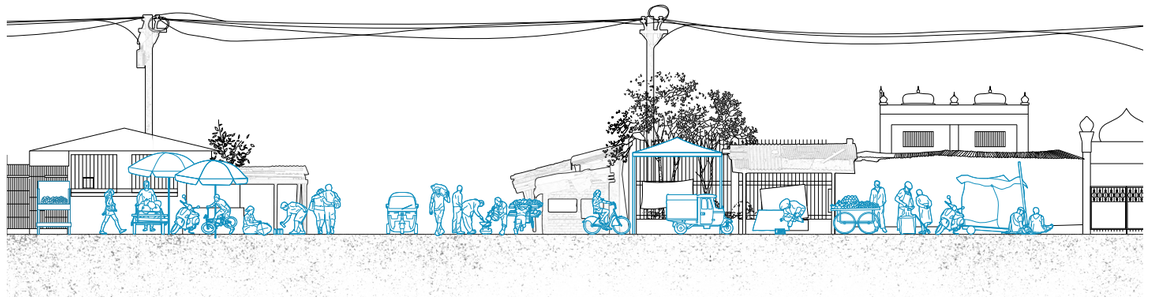
Our thesis aims to decrease the potential flood damage to the highly populated informal settlement families while improving their living conditions and reforming the existing urban landscape in the Baseco Compound in Philippines Manila.


PUBLIC SPACES

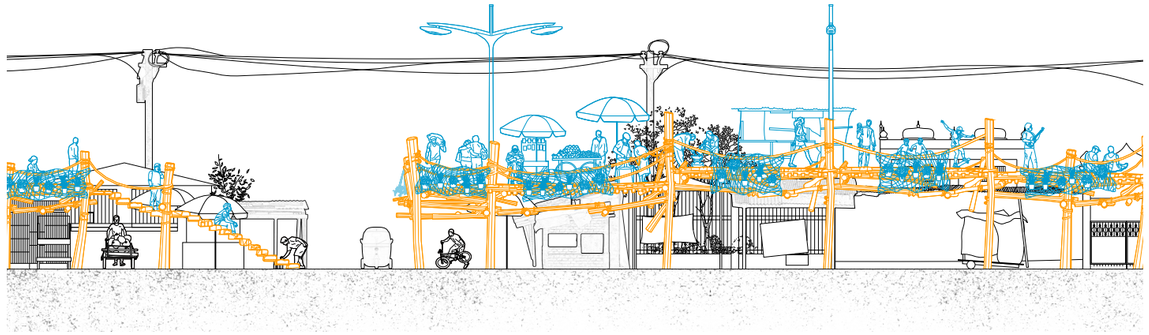
FORMAL ZONES


INFORMAL ZONES

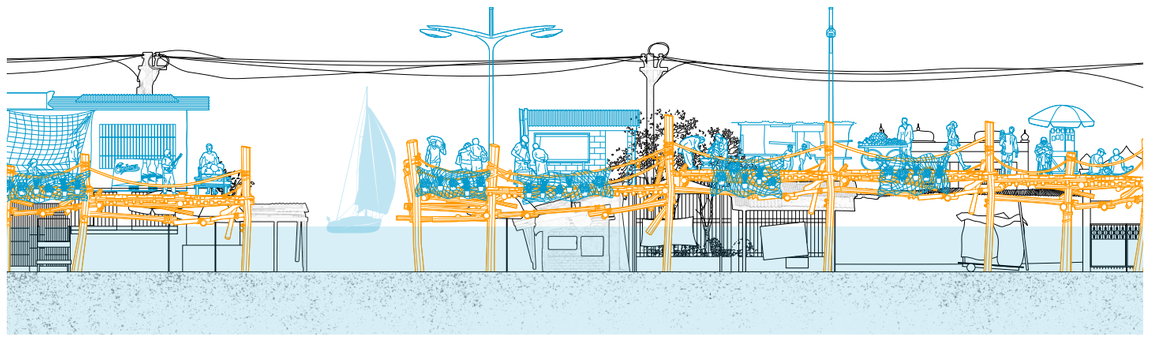
Current



5-Year



70-Year

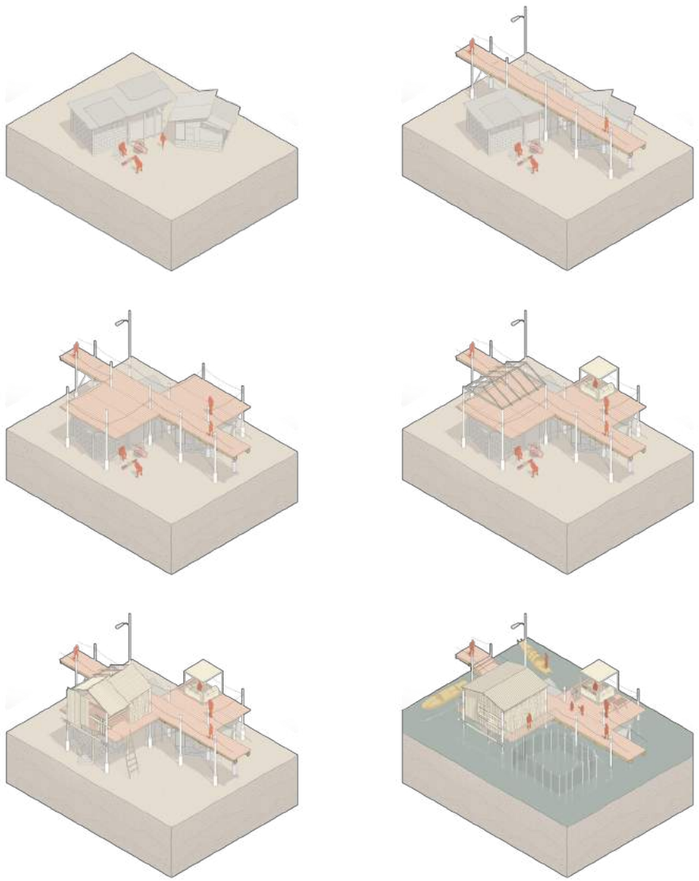


By combining geospatial and demographic analysis of the site, church becomes the location for the towers due to the fact that the majority of residents are religious, and the number and distribution of churches can cover the entire site. Moreover, the church is a central gathering place that people are familiar with on a daily basis.

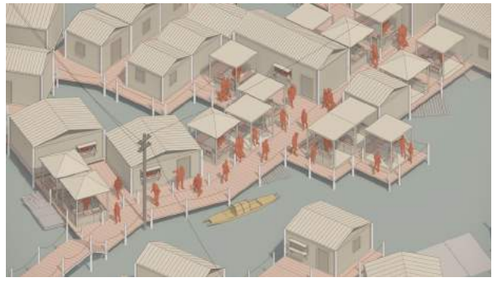
Our proposed strategy includes a mat building approach and the introduction of an elevated walkway system that will span across the targeted zone and connect from church to church. The goal is to gradually relocate current ground activities and daily life cycles to the elevated bridges. This not only provides a faster and safer route for escape during floods but also offers an improved living environment for local communities. The elevated bridges will accommodate new versions of existing programs, such as a stall market, and introduce essential infrastructure like clean water pipes, which are currently lacking and urgently needed.

Water plays a crucial role in the lives of locals, and we use it to create opportunities such as fish farming and a new market economy while also managing its threats such as floods and sea-level rise. The water tank above symbolizes life source, while the water below poses a life threat, and our goal is to help people thrive in between.

The bridges act not only as a walkway, but also provide platforms for second floor buildings, retail and recreation spaces. The daily activities are slowly transitioned from ground to the upper level. And eventually when the first floor is submerged into water, the void space could be used for boat transportation and fish farming pockets.



1. Fishing Pockets
The enclosed water pockets through the extension of the elevated platforms enables residents to grow fish next to their home. Feeding fish and sell for living has been their rooted habitat.



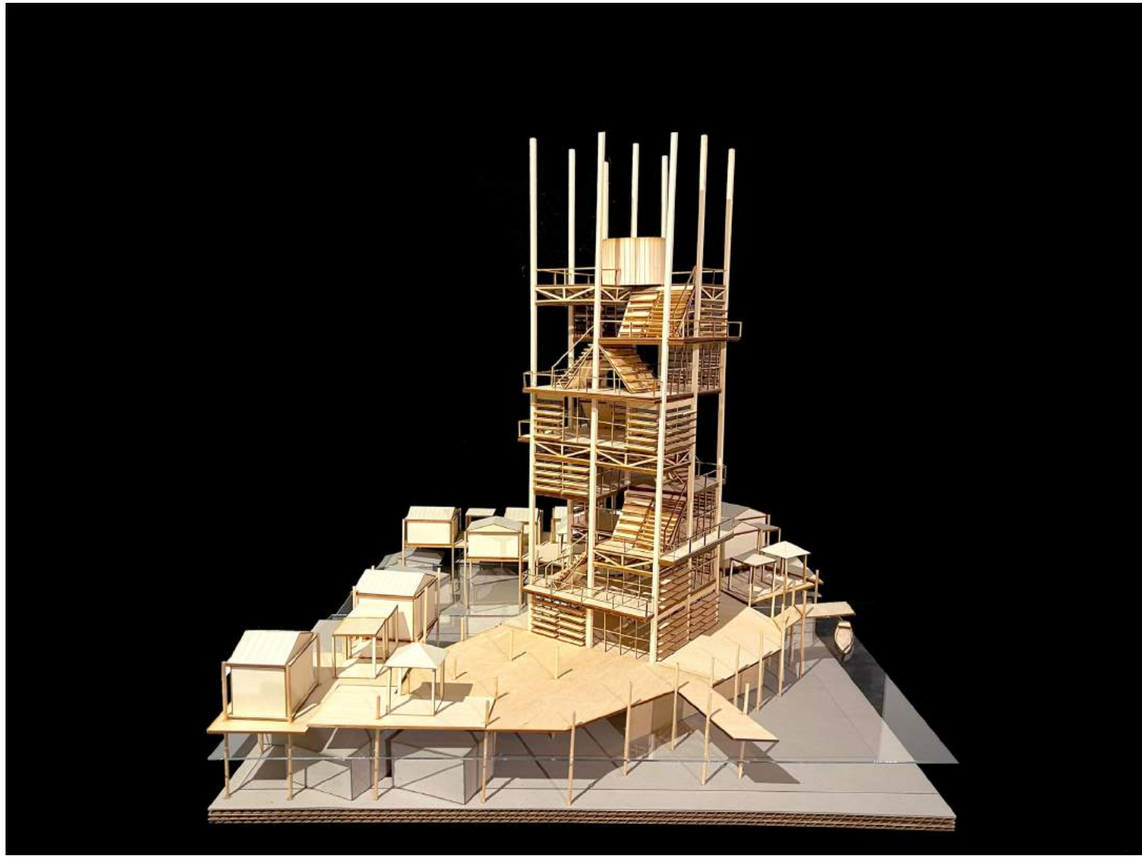
2. Stall Markets
Stall Markets is the deeply rooted social-economical structure of the locals. People rely on the stalls to communicate, sell daily goods, engage with community, and earn a living.

3. Open Court
It is the connection between tower, as a vertical, to walkways, as a horizontal, formal language. The extended area of the common platform allows for sports, performance, markets, and etc.

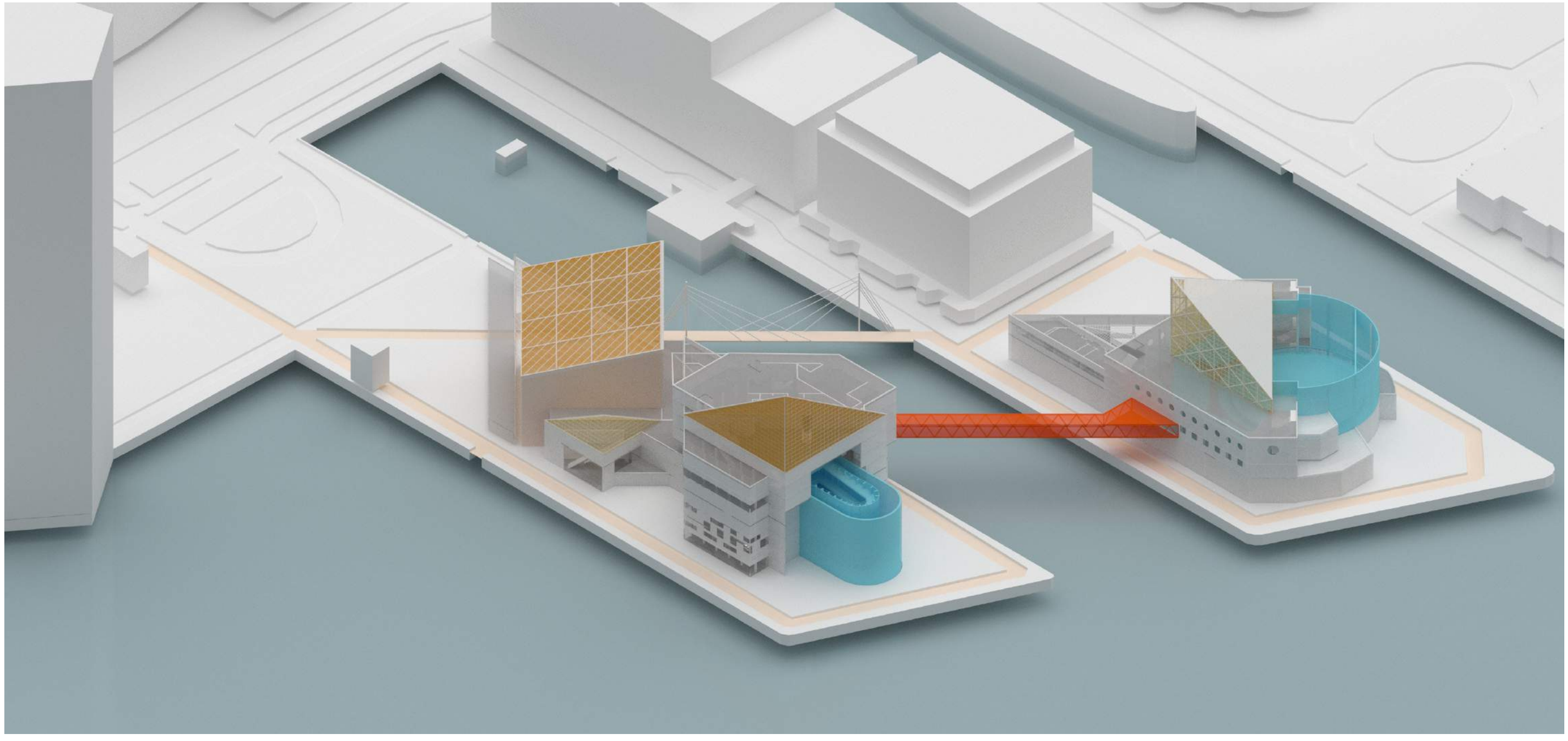
4. Boat Markets
Except for the stall along the walkways, there is a potential to develop boat or water markets with the development of boat transportation.

Water as the clue curates our design narratives. The tower is designed not only as a beacon for temporary shelter but also symbolizes a life cycle, where the water tank is placed on the top not only due to physical gravity, but also as a metaphor of life source. The flood water below could cause insecurity. And all other programs in between are following a sequence of life including the church for baptisms, daycare for children, and communal kitchen for adults.

In summary, this is a project that tackles multiple scales, from reforming the urban landscape, planning of infrastructure, to rebuilding the church to the tower, and to the scale of a single house. We strive to seek a balance between top-down and bottom-up approaches, between governance and autonomy. We deeply know that interference can impact the lives of locals in signifacant ways; therefore, we design to provide for their basic needs while respecting their culture, religion, and habits to avoid gentrification.



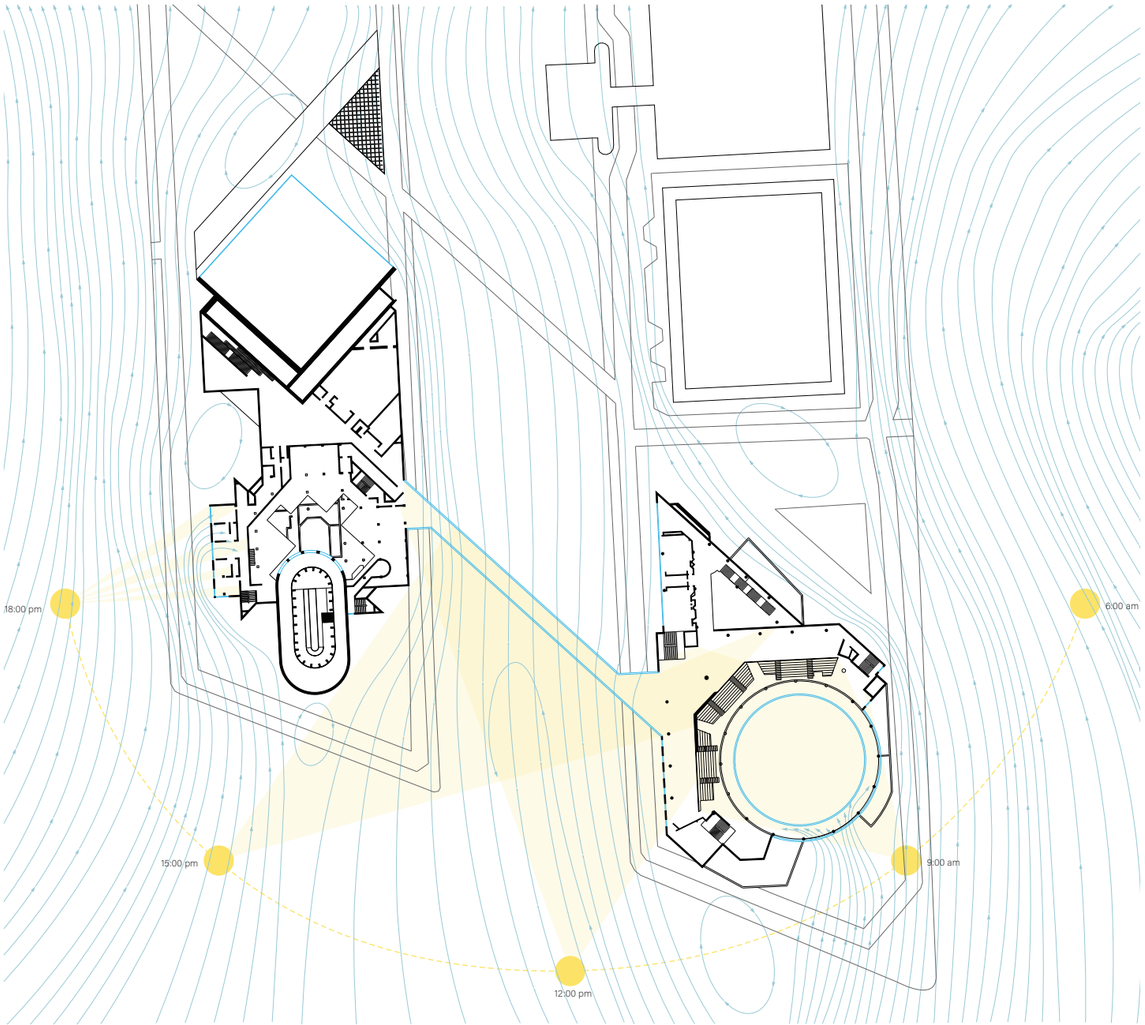
03 - National Aquarium

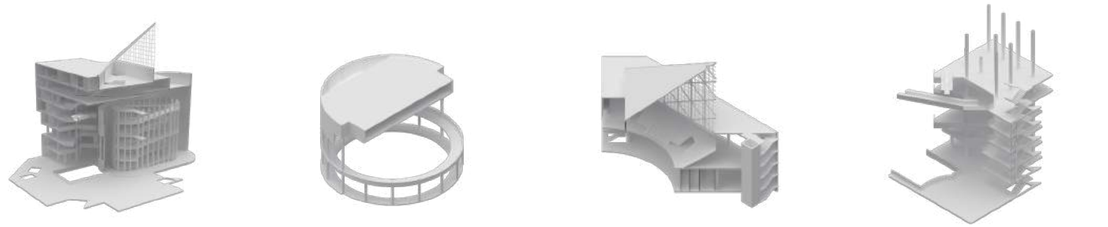


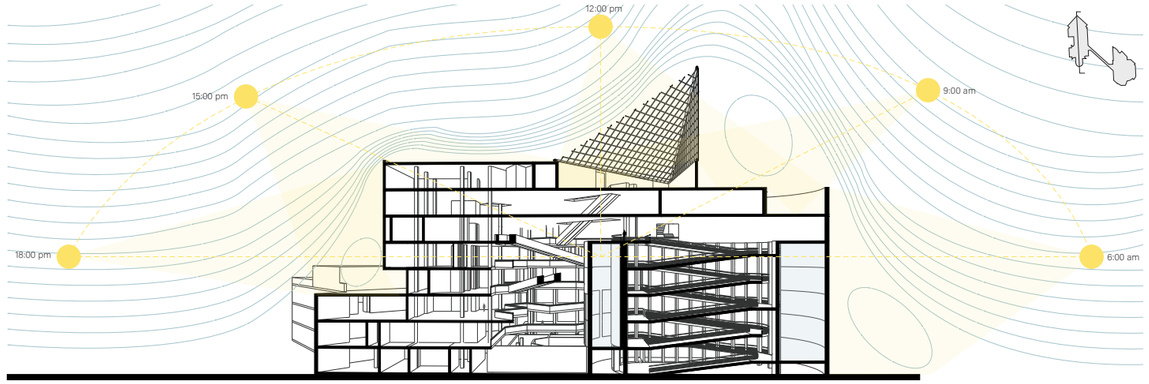
Academic - ARC 423: Advanced Building System
Location - Baltimore, MD, United States
Professor - Nina Sharifi
2021.08 - 2021.12 - Group

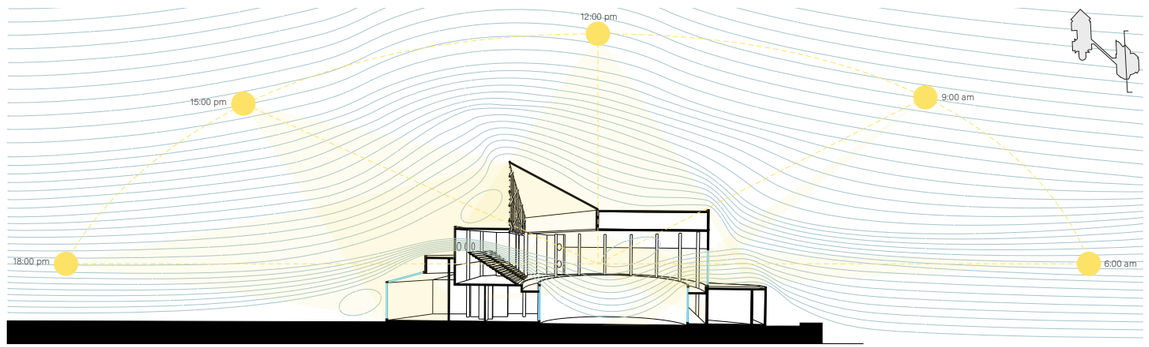
The focus of this project is to analyze the National Aquarium Baltimore based on three key categories: conceptual, environmental, and system-based.

The National Aquarium has a mission to inspire conservation of the world's aquatic treasures, and its vision is to address pressing issues facing global aquatic habitats through innovative science, conservation, and educational programming. This project aims to provide a comprehensive understanding of the aquarium's conceptual, environmental, and system-based aspects by analyzing them. The ultimate goal is to identify the aquarium's strengths and areas for improvement, contributing to its continued success in fulfilling its mission and vision.









European Settlement

18th Century

Major U.S. Seaport

19th Century

Hard Infrastructure Development

Early-Mid 20th Century

Urban Renewal

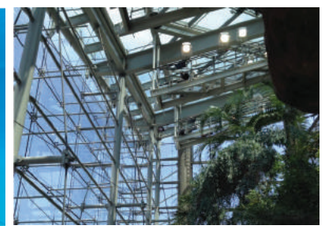
Late 20th Century

Opening of the National Aquarium

1982

First Expansion on Pier 4
Marine Mammal Pavilion

1990

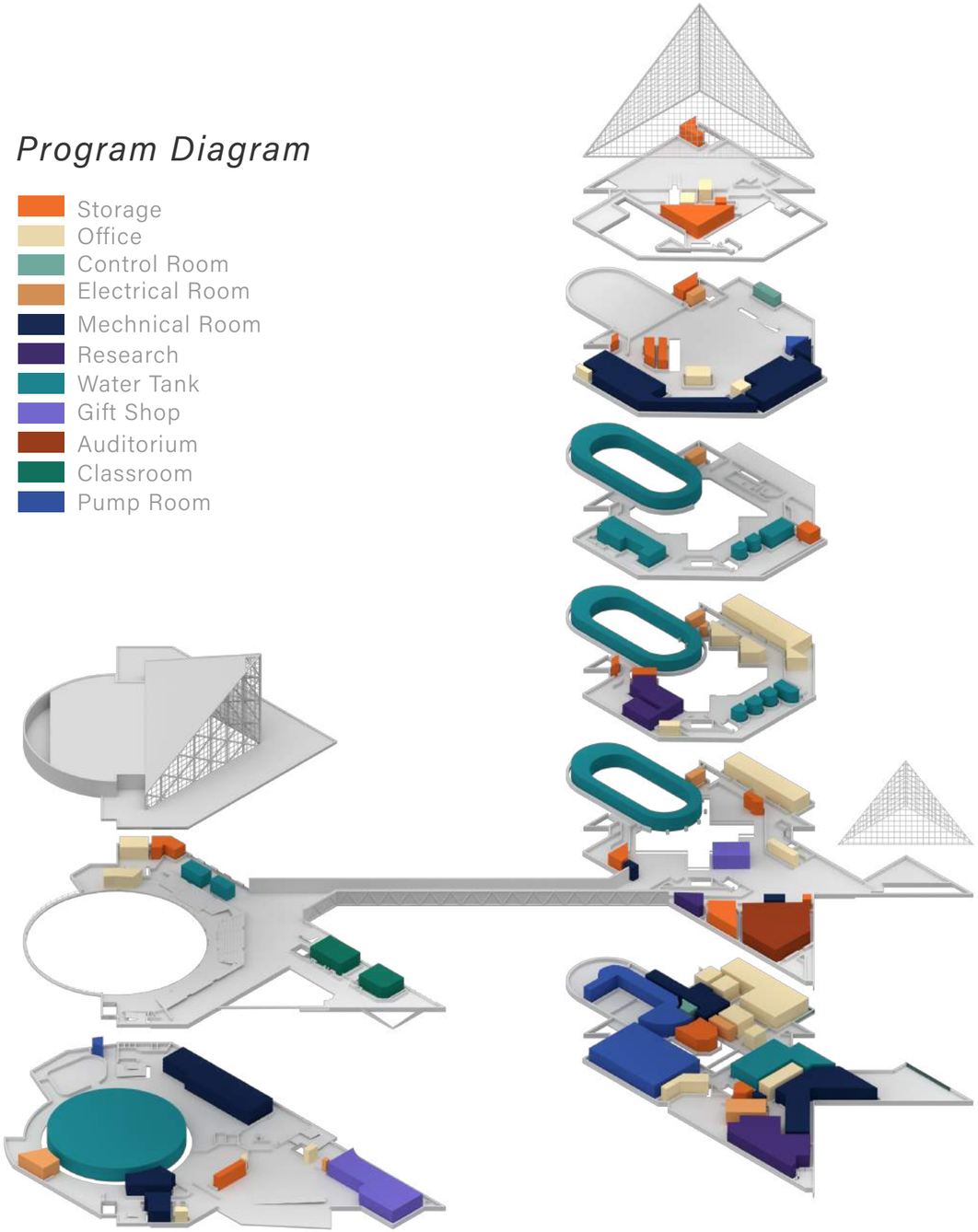


Second Expansion on Pier 3
Glass pavilion

2005

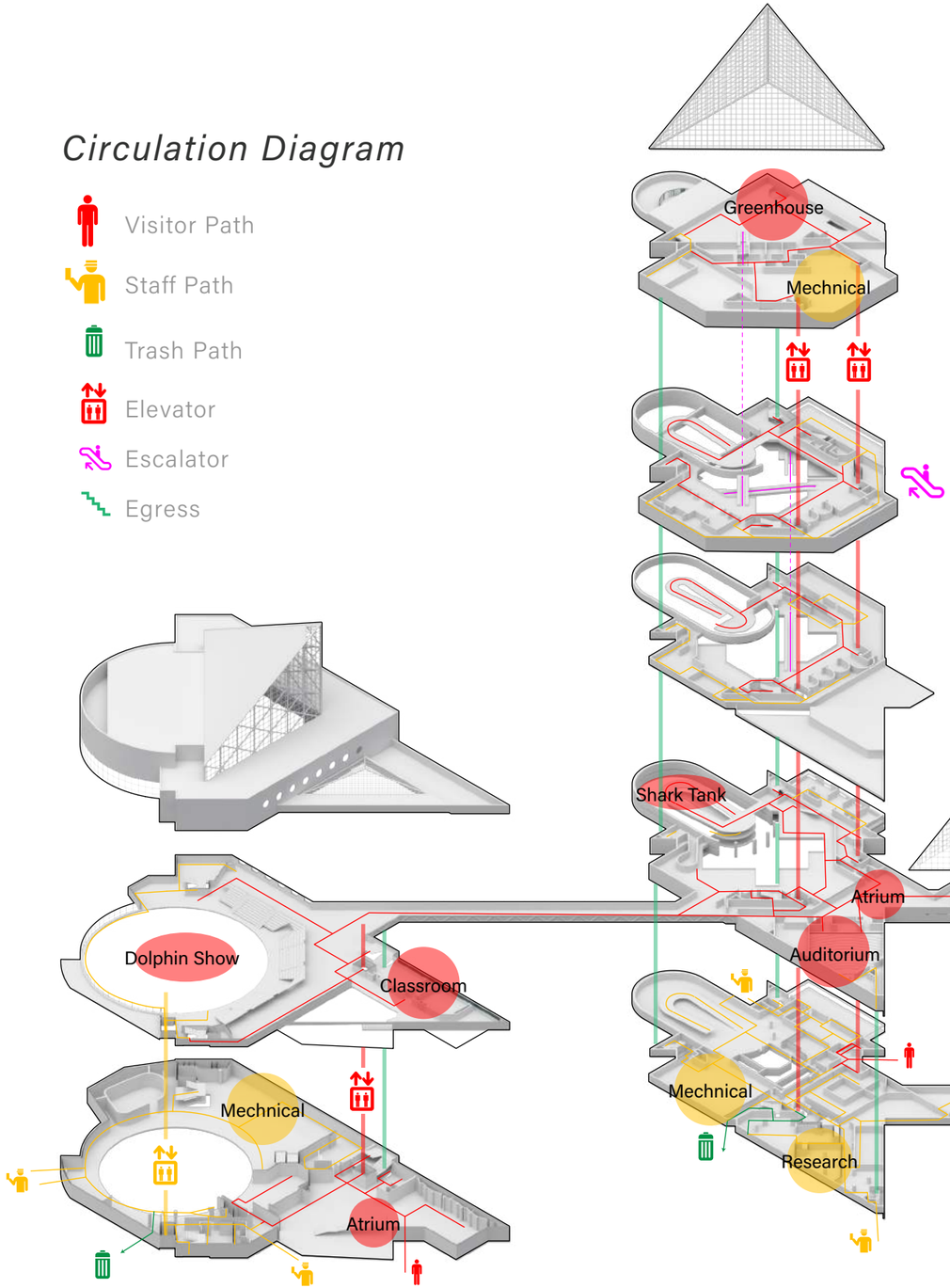
Program Diagram

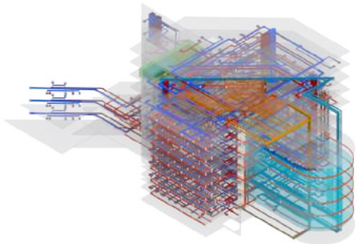
- Storage
- Office
- Control Room
- Electrical Room
- Mechnical Room
- Research
- Water Tank
- Gift Shop
- Auditorium
- Classroom
- Pump Room



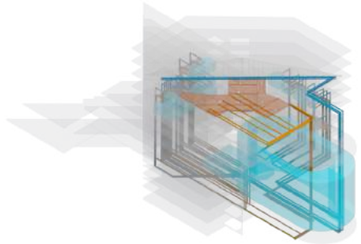
Circulation Diagram

- Visitor Path
- Staff Path
- Trash Path
- Elevator
- Escalator
- Egress

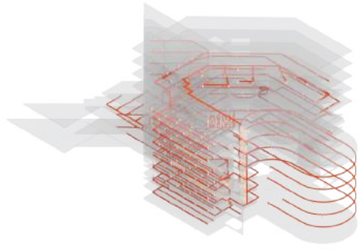




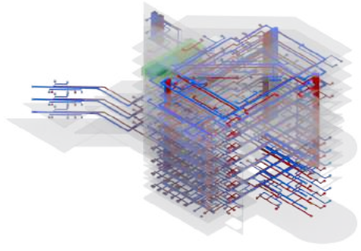
Wires Lighting Electric Room Rain Collection
Water Tank Water-in Water-out Floor Drain
Supply Duct Return Duct Diffuser Return Exhaust
Mechanical Chiller Boiler Pumping Room



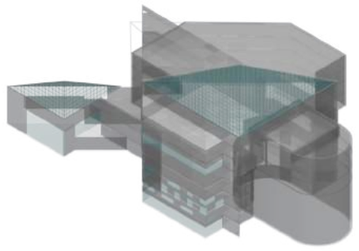
Water Tank Water-in Water-out Floor Drain
Rain Collect Poumping Room



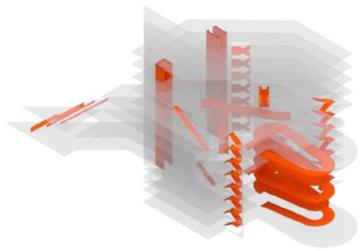
Wires Lighting Electrical Room



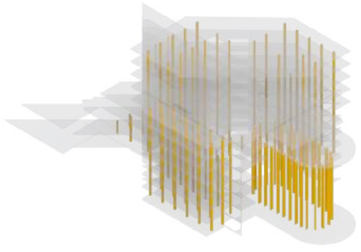
Supply Duct Return Duct Diffuser Exhaust
Mechanical Chiller Boiler



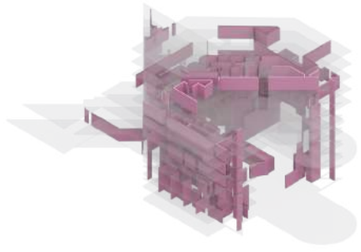
Floor Exterior Wall Glass



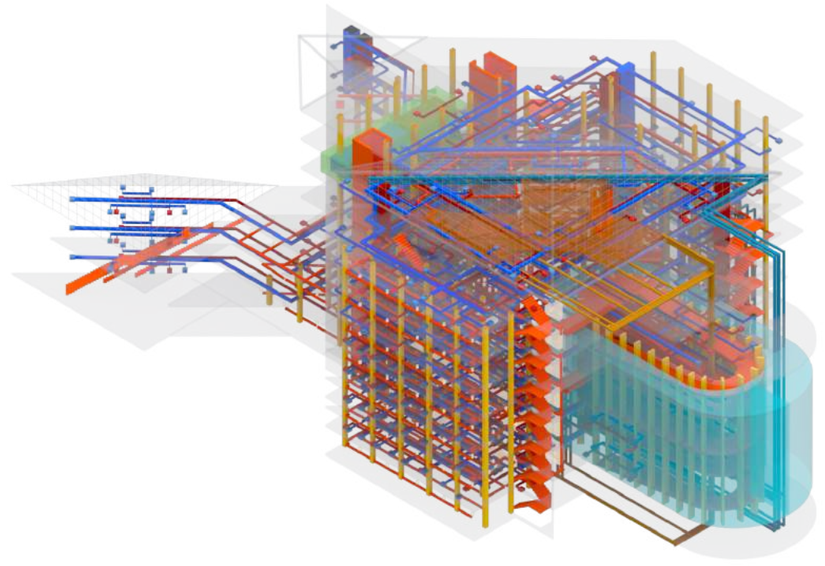
Floor Circulation



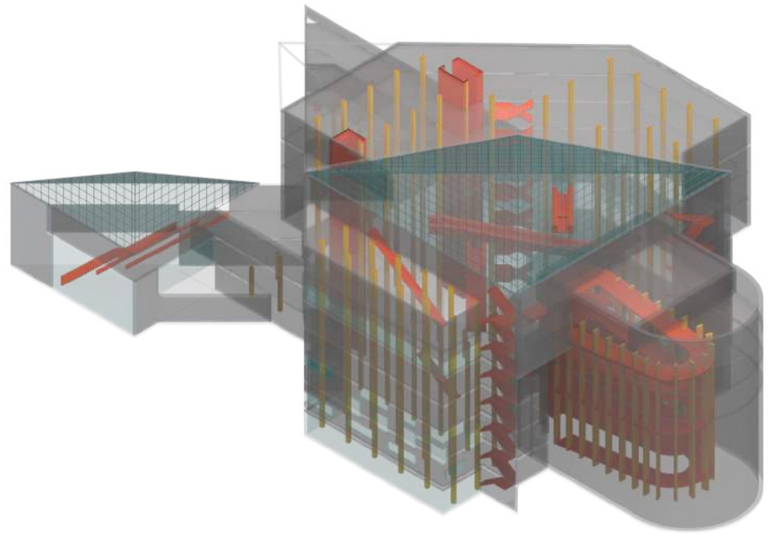
Floor Column



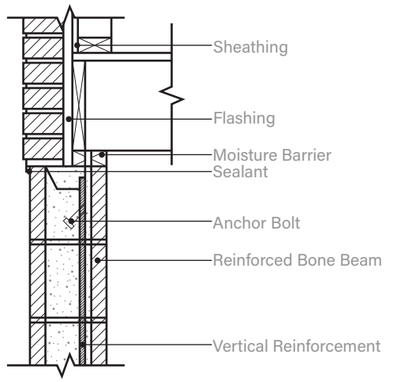
Floor Inner Wall

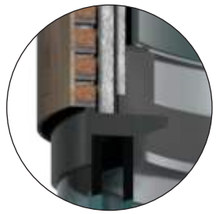


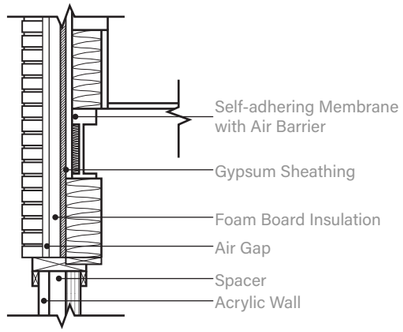
Floor Circulation Column Rain Collection
Wires Lighting Electric Room Pumping Room
Water Tank Water-in Water-out Floor Drain
Supply Duct Return Duct Diffuser Exhaust
Mechanical Chiller Boiler

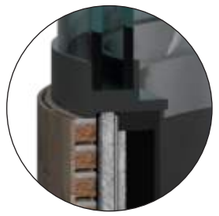


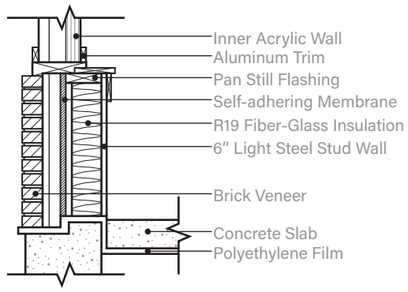
Floor Exterior Wall Circulation
Glass Column

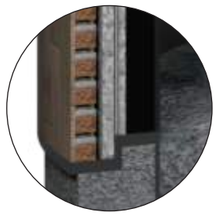


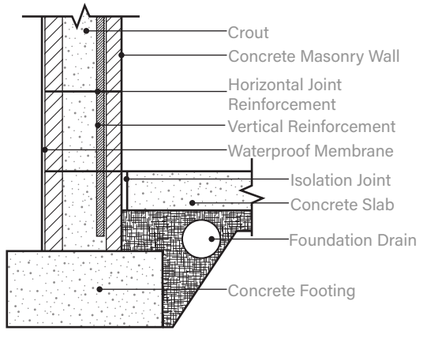








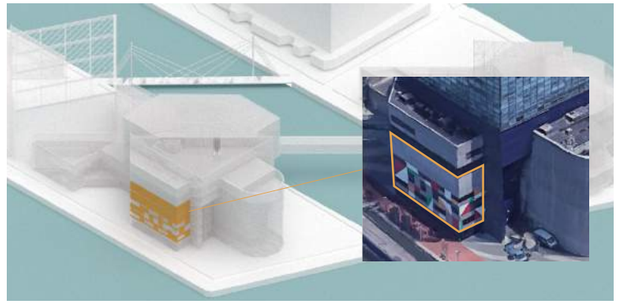


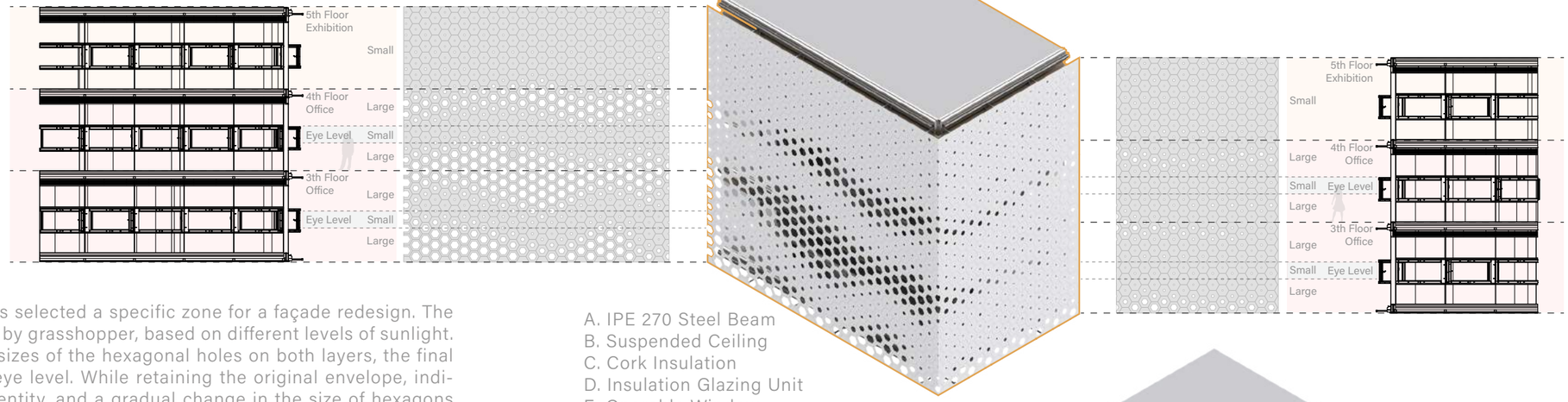


The National Aquarium has undergone an impressive transformation by repurposing its existing "Wings on the Water" stingray exhibit into the stunning new Blacktip Shark Exhibit. The 260,000 gallon tank, which had an already deteriorating and failing liner, has been revamped to showcase sand tiger sharks, sandbar sharks, and nurse sharks circling gracefully around the tank's perimeter, all visible through plate glass windows. Despite the animals' imposing physical presence, the room exudes a sense of tranquility and peacefulness.

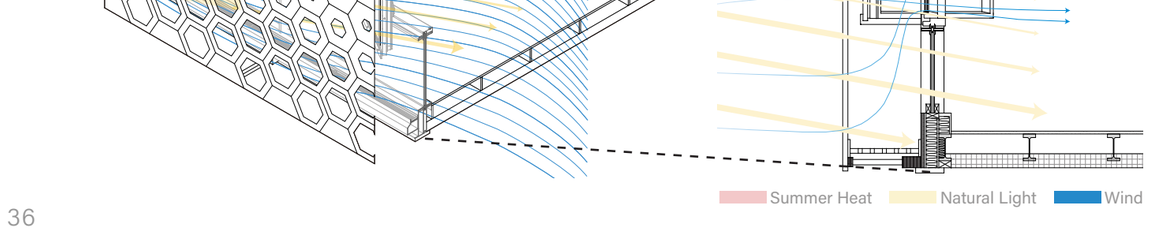
The exhibit boasts a 27-foot curved acrylic wall that extends approximately four feet into the lower level of the tank, providing visitors with a captivating and immersive experience. Additionally, there are interactive elements such as a dynamic electronic wall that enables visitors to post their thoughts and impressions using their mobile devices. These elements add a new dimension to the already engaging exhibit, making it an exciting and educational experience for all.

Selected Retrofit Zone

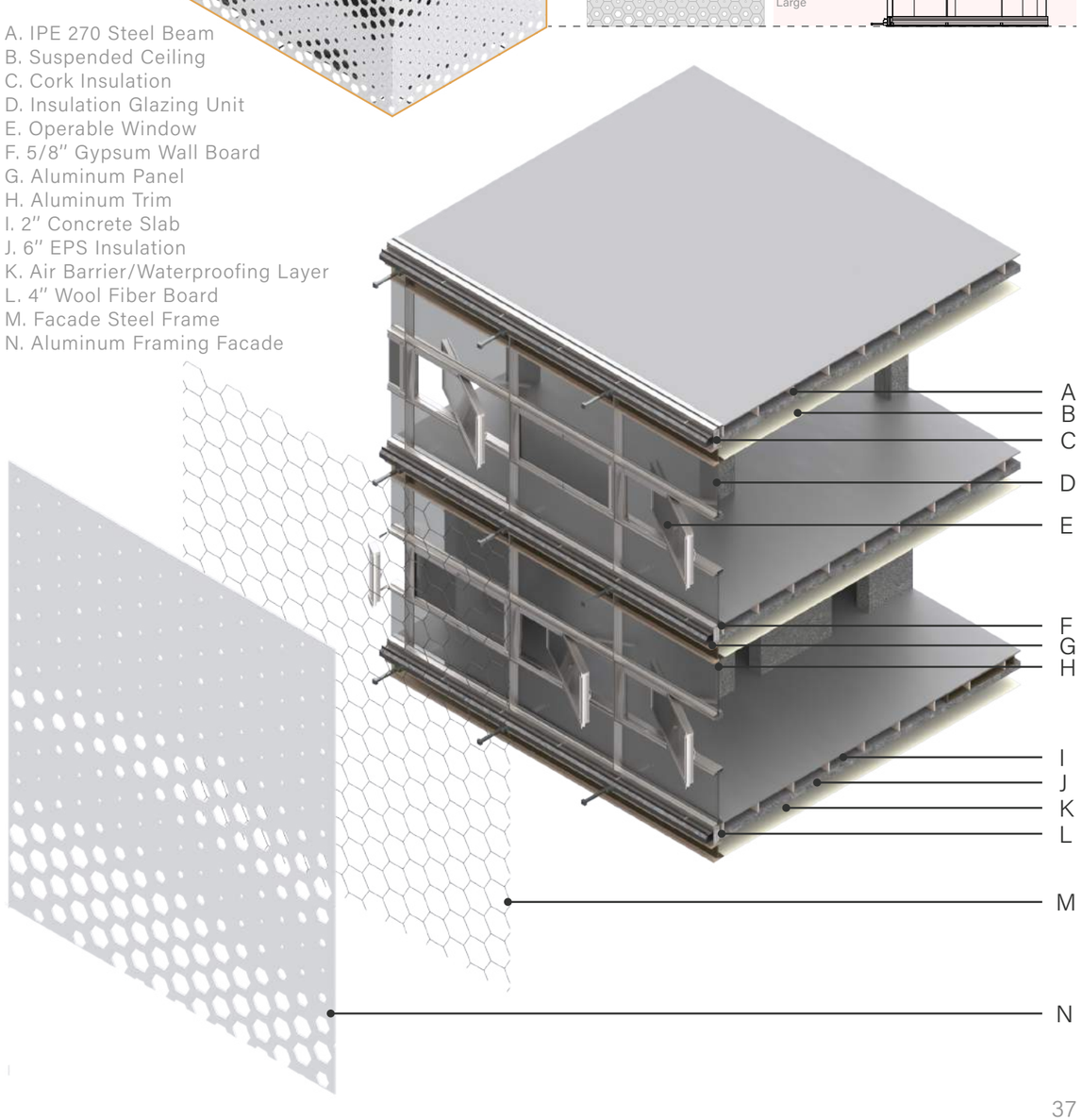




After conducting a series of daylight analyses, the project has selected a specific zone for a façade redesign. The new approach focuses on varying hexagonal holes generated by grasshopper, based on different levels of sunlight. After conducting a series of experiments on the shapes and sizes of the hexagonal holes on both layers, the final result was determined by the average height of the human eye level. While retaining the original envelope, individual windows have been extended to create a continuous entity, and a gradual change in the size of hexagons has been introduced to ensure that they allow sufficient daylight to penetrate, while protecting people from direct western sunlight.



A. IPE 270 Steel Beam
B. Suspended Ceiling
C. Cork Insulation
D. Insulation Glazing Unit
E. Operable Window
F. 5/8″ Gypsum Wall Board
G. Aluminum Panel
H. Aluminum Trim
I. 2″ Concrete Slab
J. 6″ EPS Insulation
K. Air Barrier/Waterproofing Layer
L. 4″ Wool Fiber Board
M. Facade Steel Frame
N. Aluminum Framing Facade



Other Works

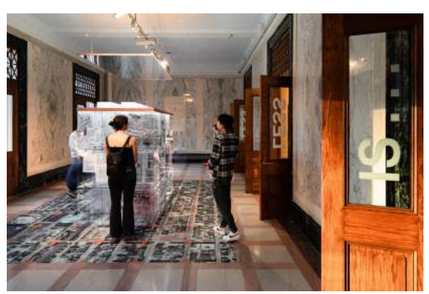
- Boghosian Fellow Exhibition
- Unreal Engine Game Design
- Epoxy Installation
- Magazine Debris

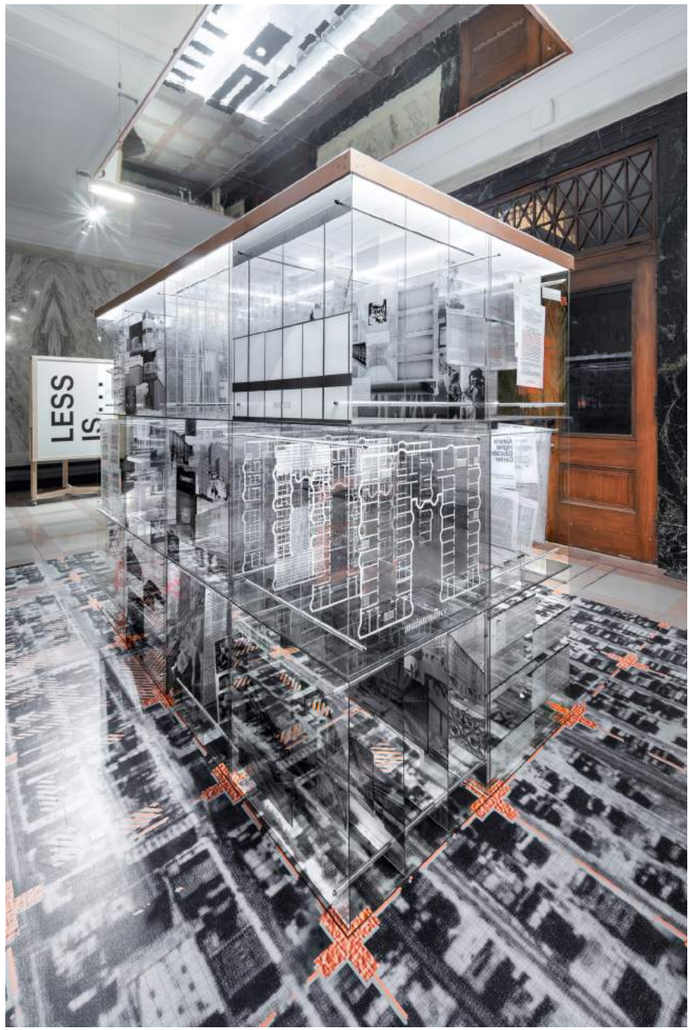
LESS IS...

Boghosian Fellow Exhibition

Academic / Work - ARC 500: Debris
Location - Slocum Hall, Syracuse
Professor - Lean Katrib
Role - Exhibition Assistance
2022.01 - 2022.12 - Group

"LESS IS..." deconstructs Mies' 1941 flattened photomontage of the campus expansion proposal to reveal the complex and co-authored mechanics behind the campus expansion and the material record that was literally, figuratively, and necessarily suppressed—all in the name of progress. The vehicle of that suppression was the tabula rasa, enacted by an "apolitical" architect intent on creating an "apolitical" architecture. Taking its cues from the very spatial and ordering systems that govern Mies' master plan—the 24-square-unit grid and flattening— "LESS IS..." reveals the same materials, narratives, and people that were suppressed, hidden, and covered over by the creation and maintenance of the Miesian myth adopted as official history.



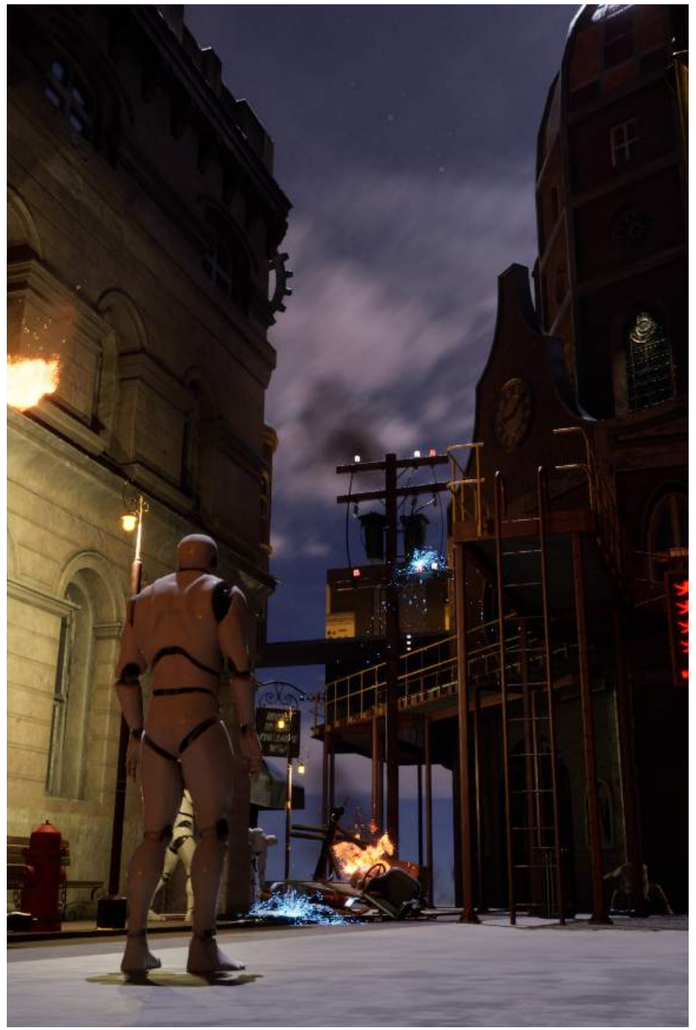


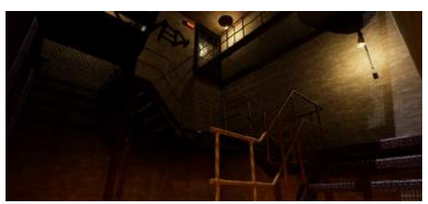
STEAM PUNK

Unreal Engine Game Design

Academic - ARC 500: Immersive Infrastructure
Location - Remote
Professor - Amber Bartosh
Website - zejuns.myportfolio.com
2022.05 (2 weeks) - Individual

As hybrid reality tools become more prevalent, they will increasingly challenge our conventional notions of space and typology. While the diminishing emphasis on the physical environment in favor of a virtual one may seem like a cause for concern for designers at first glance, a more optimistic perspective acknowledges that virtual environments and digital tools offer a completely new realm for designers to practice in, with, and through. Exploring how the intersection between the digital and physical is manipulated and how space is defined through extended reality media presents a significant opportunity to rethink architecture as we currently understand it.





ACID ENV.

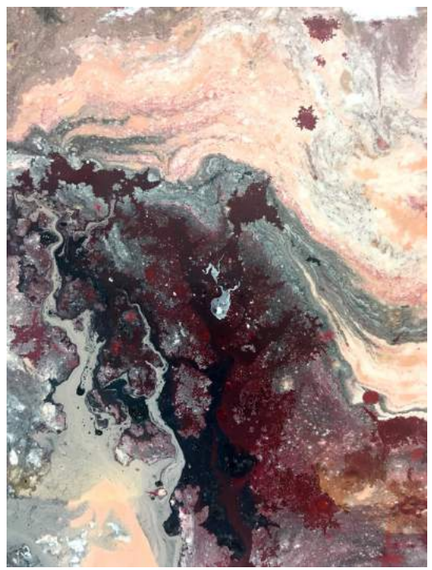
Epoxy Installation

Personal Work
Dimension - 20'' x 20'' x 15''
2018.01 - 2018.04 - Individual

Having spent most of my life in Shenzhen, China, I am aware of the city's peculiar location and the pollution caused by factories, resulting in a relatively high acid rain concentration. As such, I wanted to use "acid rain" as a symbol of nature's voiceless complaints against human behavior. After familiarizing myself with the characteristics of epoxy - its ability to solidify acrylics and maintain a layer on the surface - I decided to showcase the process of acid rain corroding structures using epoxy resin. To convey my main idea in an abstract way, I poured epoxy to represent the etched parts, resulting in an anomalous texture.

After 24 hours, the epoxy solidifies, allowing the mixture of acrylics and epoxy resin to maintain its layered texture, which enhances its fluid beauty. Through a series of experimental works on ceramic tiles, I played around with white, red, and black colors, drawing inspiration from the Earth's interior and its lithosphere's atactic texture. I explored various ways to express my understanding of the different structures of each layer from the Earth's inner core. This series of works aimed to showcase the similarities between each stratum and the unique texture they possess.

In my perspective, representing pollution caused by acid rain using acrylics alone was not explicit enough. Therefore, I decided to express my point by drawing and simulating the blocks that got corroded by acid rain. In the final picture, I first settled on my perspective and started with an observational drawing, adding my imagination to bring out the parts that got eroded.



COLLAGES

Magazine Debris

Personal Work
Dimension - Vary
2017.08 - 2020.05 - Individual

PORTFOLIO

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