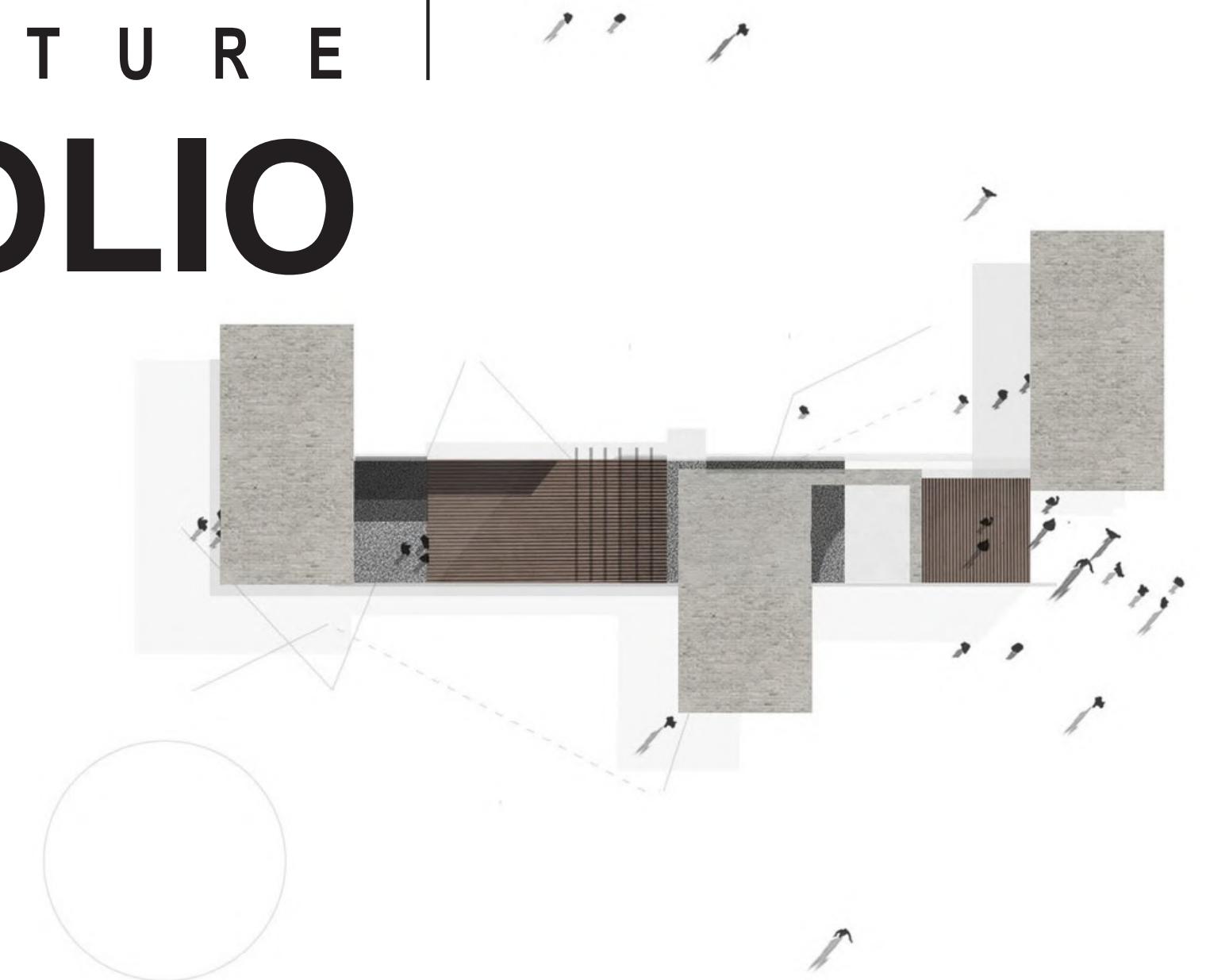


A R C H I T E C T U R E
PORTFOLIO

2019 - 2025

Fang (Frank) Sun
Bachelor of Science (UVA) 2019-23
Master of Architecture (UPenn) 2024-27 (Expected)

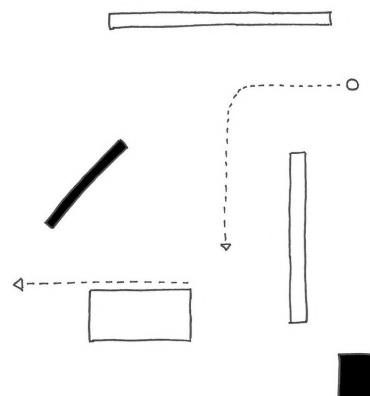


PROLOGUE

My approach to architectural design is a combination of logic, creativity, and passion. I firmly believe in the transformative power of architecture, not just as a tool for solving social issues but as a beacon of humanistic values. Architecture, from my perspective, transcends beyond mere functionality or aesthetic appeal; it is a sanctuary where safety, health, and happiness converge.

This portfolio illustrates designs in a wide range of scales. It ranges from intricate bridge designs to the expansive layout of cities. Each project navigates a delicate balance between practicality and innovation, reflecting a forward-thinking mindset. The works presented address a spectrum of contemporary challenges - urban flooding, spatial fragmentation, vehicular congestion, and the evolving complexities of future urban living.

In each design, I strive to carve a path which not only solves these issues but also lays the groundwork for a more harmonious and sustainable future.



PROJECTS

- 01 Orbit Playhouse**
Reimagining a Play-Based Learning Environment Through Interconnected Geometric Spaces
Spring 2025
- 02 The Church: Without Walls**
A Confluence of Timber, Light, and Local Spirit
Summer 2025
- 03 Welcome Center of Columbia University**
Visioning Climate Resilience and Sustainability in a High-density Urban Site
Fall 2021
- 04 "Reborn": A Mixed-use Building at the University of Virginia (UVA)**
Experimenting Architectural Intervention on the Spatial Separation of the Built Environment
Spring 2022
- 05 A Renovated Bridge in an Old Water Town**
Bridging Humans and Vehicles
Summer 2022
- 06 An Aggregatable Collective for Industrial Settlement**
Exploring Architectural Growth with Modular Design
Fall 2022
- 07 Arctic Brewscape**
A Beer Spa with Harmonious Fusion of Iceland's Culture and Modern Amenities
Fall 2023
- 08 Lightwood House**
An Entity Construction for Stay and Rest
Summer 2021
- 09 Leisure Pavilion**
A Parametric Design Test for Light and Tangible Material
Summer 2020
- 10 Professional Works (Selected)**
Work Samples Developed While Employed Full-Time (STUDIOS Architecture) Post-Graduation
Summer 2023 - Now

01 **Orbit Playhouse**

Reimagining a Play-Based Learning Environment Through Interconnected Geometric Spaces

Competition Work (Shortlisted)

Team Work

Team Leader

Spring 2025

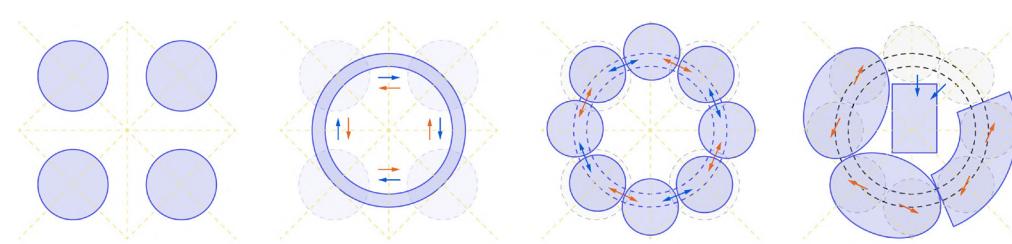
This project explores how spatial geometry can shape a child's learning journey. Rather than using traditional classrooms separated by hallways, our design organizes the kindergarten through a series of interconnected forms — circular sectors, rectangles, squares, and cylinders — each hosting a distinct function.

The concept for these forms is inspired by the **building block toys** children often play with — simple, familiar shapes that encourage creativity, stacking, and exploration. Just like in play, these architectural blocks become tools for learning, movement, and imagination.

These spatial units are unified by a **continuous loop ramp**, allowing seamless movement and fluid exploration. Each geometry defines a specific learning, social, or play space, while the ramp encourages organic circulation across the site. Children are invited to move freely through the environment, discovering new experiences as they travel between zones.

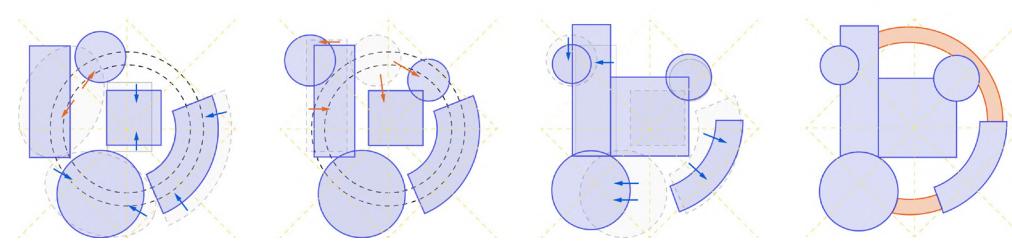


Form Development



Step 1 Separate, Connect, Split, Stretch

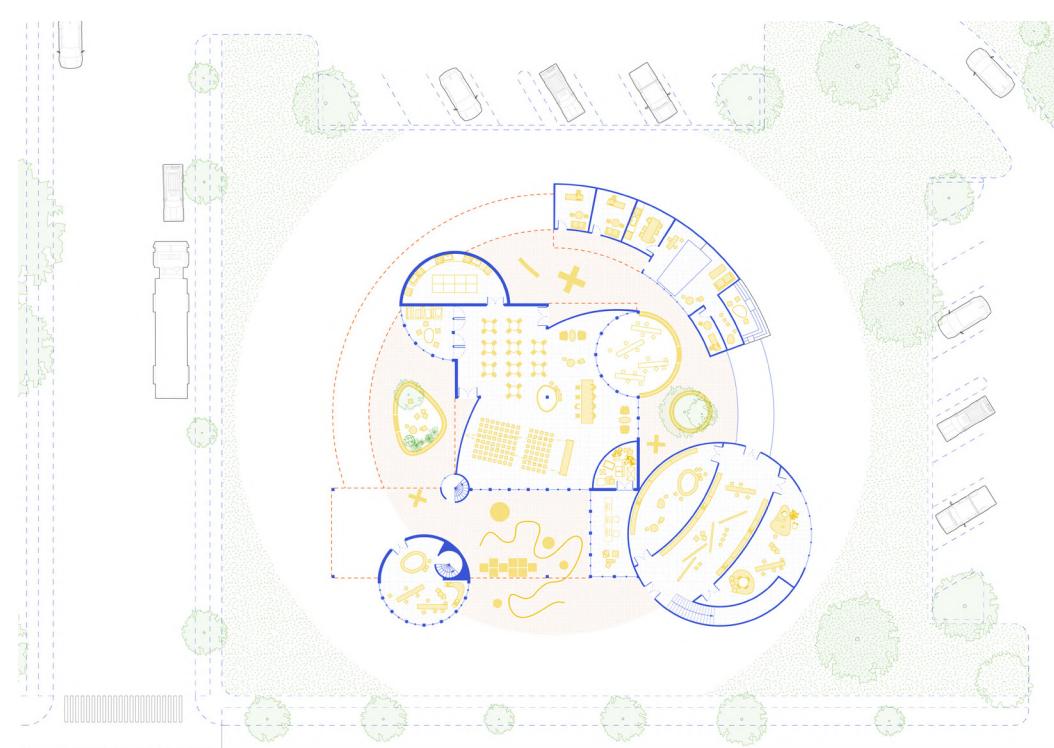
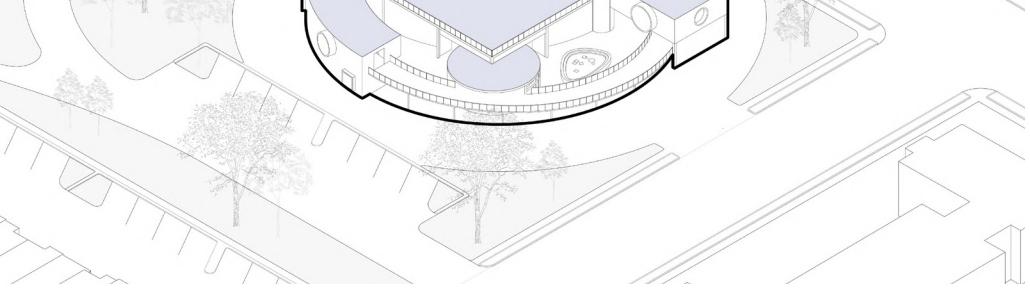
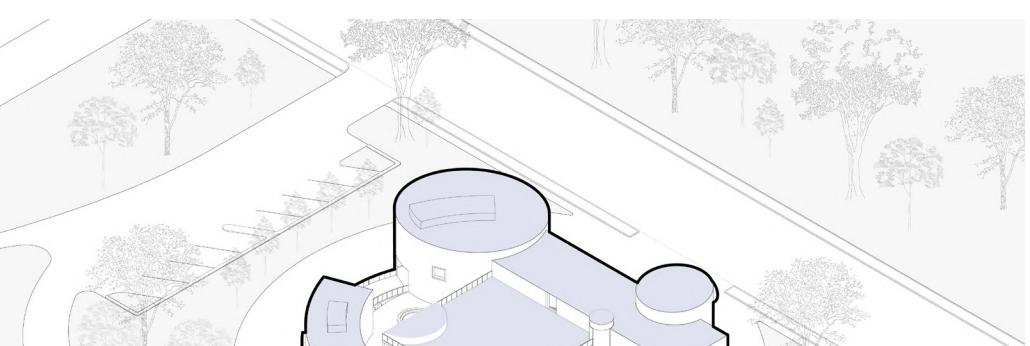
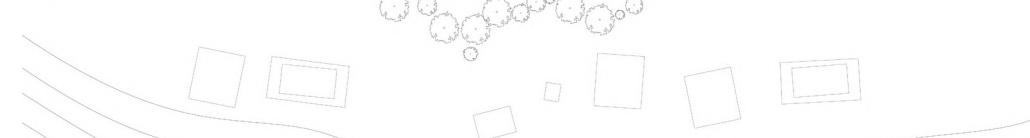
Split the site into four equal zones and establish connectivity using a central ring structure.



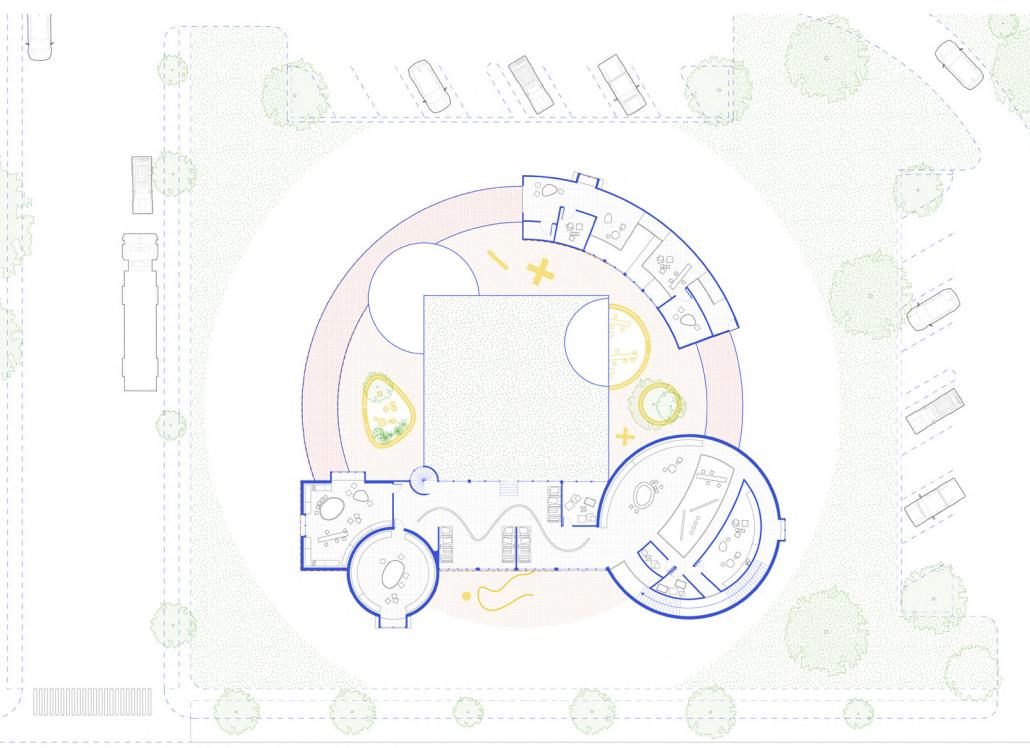
Step 2 Squeeze, Resplit, Move, Reconnect

Reshape and redistribute the segments to new positions based on program requirements.

Reorganize the pieces and restore their connection to the central ring.



First Floor Plan



Second Floor Plan



Interior Rendering Image 1 (classroom building hallway)

Programs:

Indoor: 16,000 - 16,500 sq ft

Classrooms

- G1: 1600 sq ft (40 x 40)
- G2: 1600 sq ft (40 x 40)
- G3: 1600 sq ft (40 x 40)

Activity Rooms

- Music: 750 sq ft (30 x 25)
- Art: 750 sq ft (30 x 25)
- Sensory: 750 sq ft (30 x 25)

Multipurpose Hall

- Main Room: 1600 sq ft (40 x 40)

Administration

- Reception: 150 sq ft (15 x 10)
- Staff Room: 200 sq ft (20 x 10)
- Counseling / Meeting Room: 150 sq ft
- Storage / Supplies Rooms: 200 sq ft
- Offices (x5): 5x 150 sq ft

Support Spaces

- Kitchen: 200 sq ft (20 x 10)
- Dining Area: 2,000 sq ft (40 x 50)
- First Aid Room: 200 sq ft (20 x 10)
- Restrooms: 500 sq ft (25 x 20)
- Janitor: 100 sq ft
- Circulation: 2,000 sqft
- Others: 1000

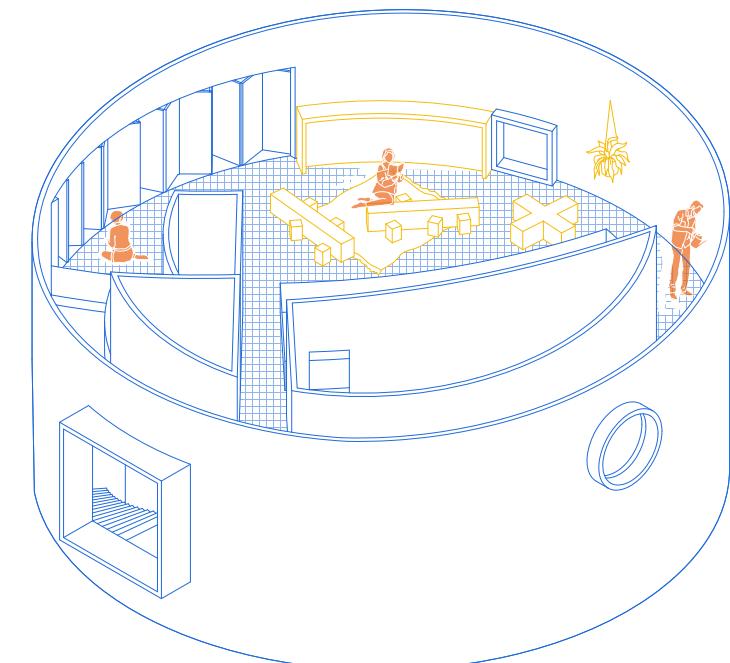
Outdoor: 8500 - 9000 sq ft

- Playgrounds: 2,500
- Nature Play Areas: 2,000 (500 indoor)
- Sport Court: 2,000 (500 indoor)
- green spaces: 2,500
- Bike Parking / Scooter Area: 200 sq ft

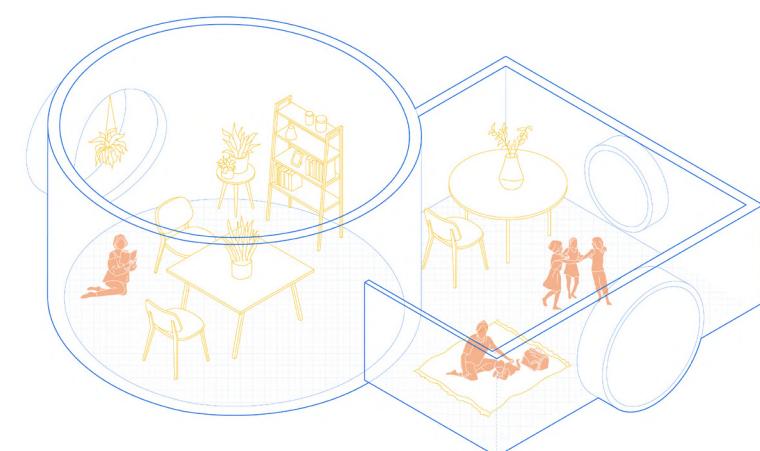
Module and Form Studies



Interior Rendering Image 2 (Multipurpose Room)



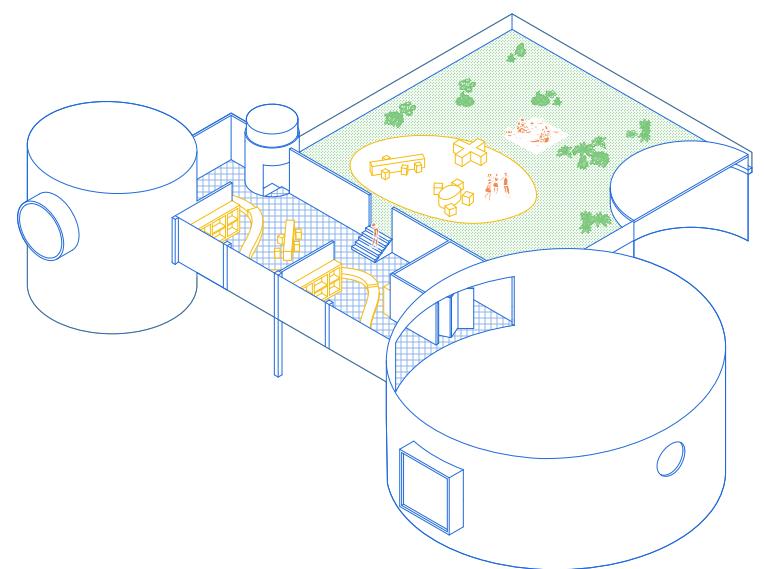
1 Cylinder:
Public Playing Area / Classroom



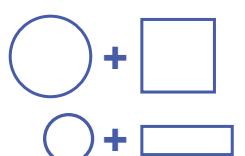
1 Cylinder + 1 Square:
Reading Area / Activity Room



Section View (Northwest to Southeast)



1 Cylinder (large) + 1 Square
1 Cylinder (small) + 1 Rectangle:
Playground, Classrooms, Multipurpose
Room, Dining Area



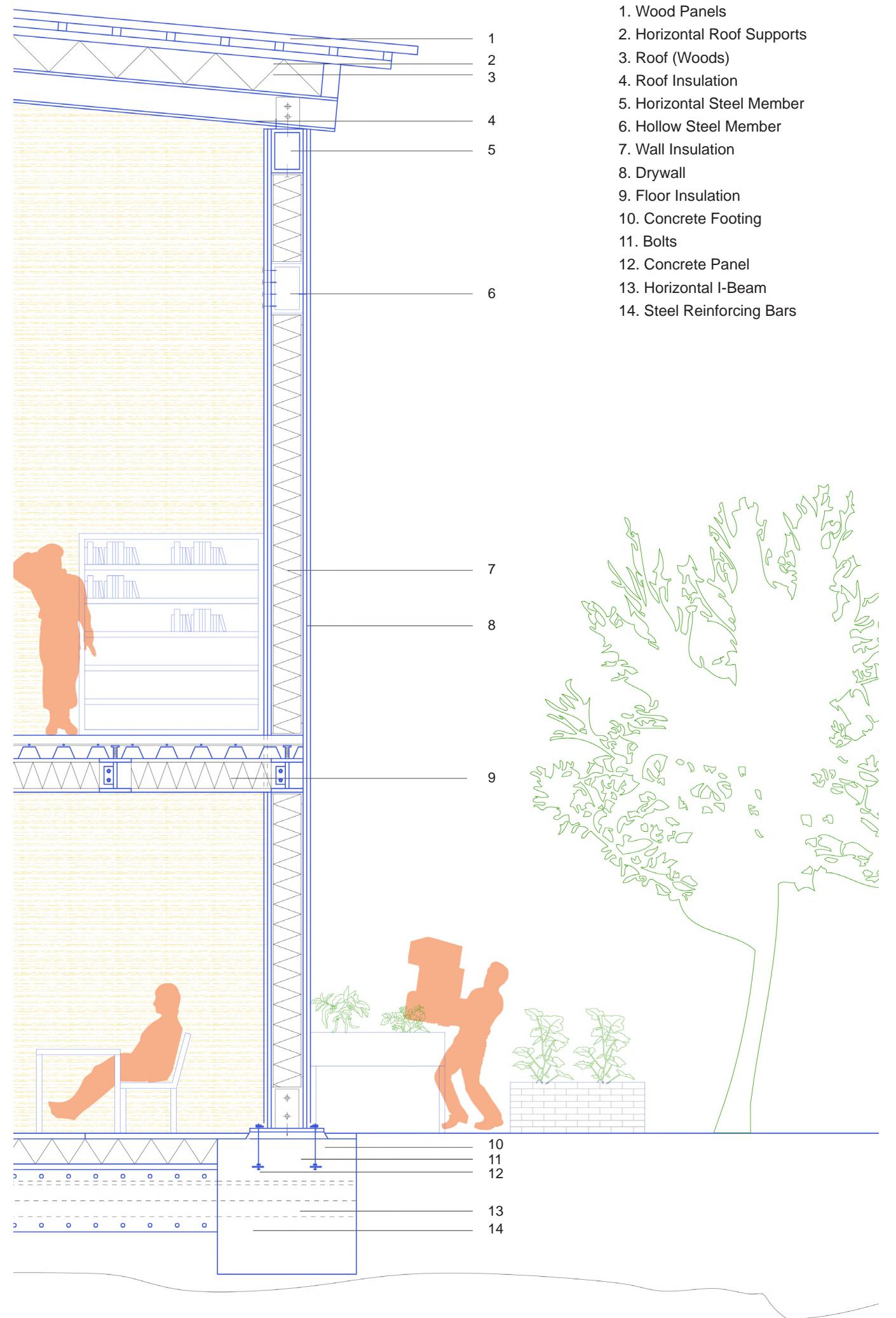
Module Axonometric Drawings



Exterior Rendering Image 2 (on the ramp)



Section View (Northeast to Southwest)



Detailed Wall Section Drawing

1. Wood Panels
2. Horizontal Roof Supports
3. Roof (Woods)
4. Roof Insulation
5. Horizontal Steel Member
6. Hollow Steel Member
7. Wall Insulation
8. Drywall
9. Floor Insulation
10. Concrete Footing
11. Bolts
12. Concrete Panel
13. Horizontal I-Beam
14. Steel Reinforcing Bars

02

The Church: Without Walls

A Confluence of Timber, Light, and Local Spirit

Competition Work

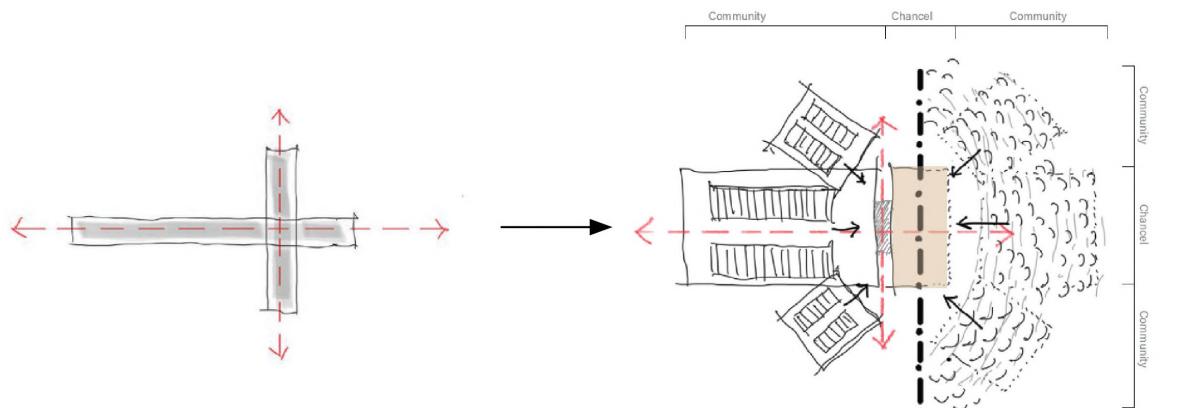
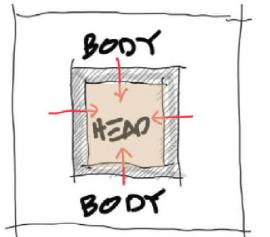
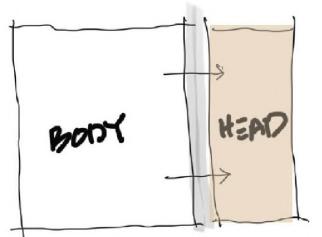
Team Work

Summer 2025

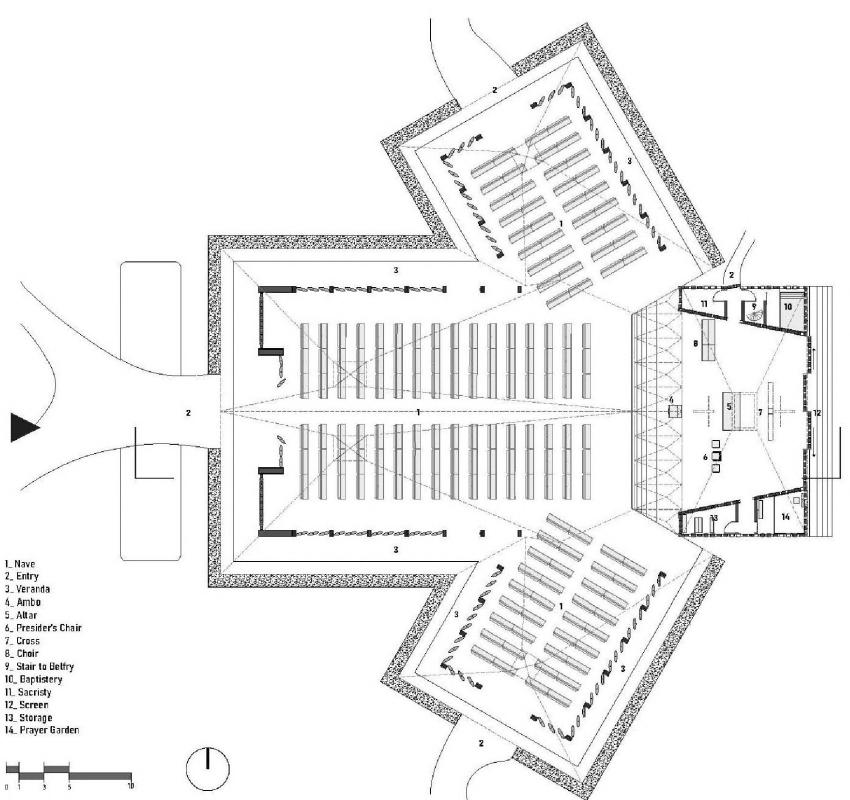
This chapel is conceived as a nexus of community, culture, and faith—collecting the memories of Moramanga and inviting people into a space for worship, connection, contemplation, and healing. As a “Church Without Walls,” the design dissolves boundaries between inside and outside, blurring the line between church and community as **echoed in Romans 12:5**. Instead of a traditional linear procession, three naves bring “the body” closer to “the head,” while a 20-meter-high central vista anchors the chancel and allows the altar to open toward the landscape, reinforcing Christianity’s ethos of openness and accessibility.

Reimagining orthodox Christian spaces, the design arranges the congregation around a series of pavilion-like “huts” inspired by **local vernacular forms**. Three rectilinear platforms radiate from the altar, each crowned by a conical timber-raffia roof whose extended eaves and pivoting vertical fins provide shade, ventilation, and enhanced acoustics. Local materials—indigenous Malagasy fabric expressed through brick patterns, along with timber, laterite, and fired brick—root the chapel in its cultural context, ensuring it is built by and for the community, becoming a place where divinity meets humanity in Moramanga.

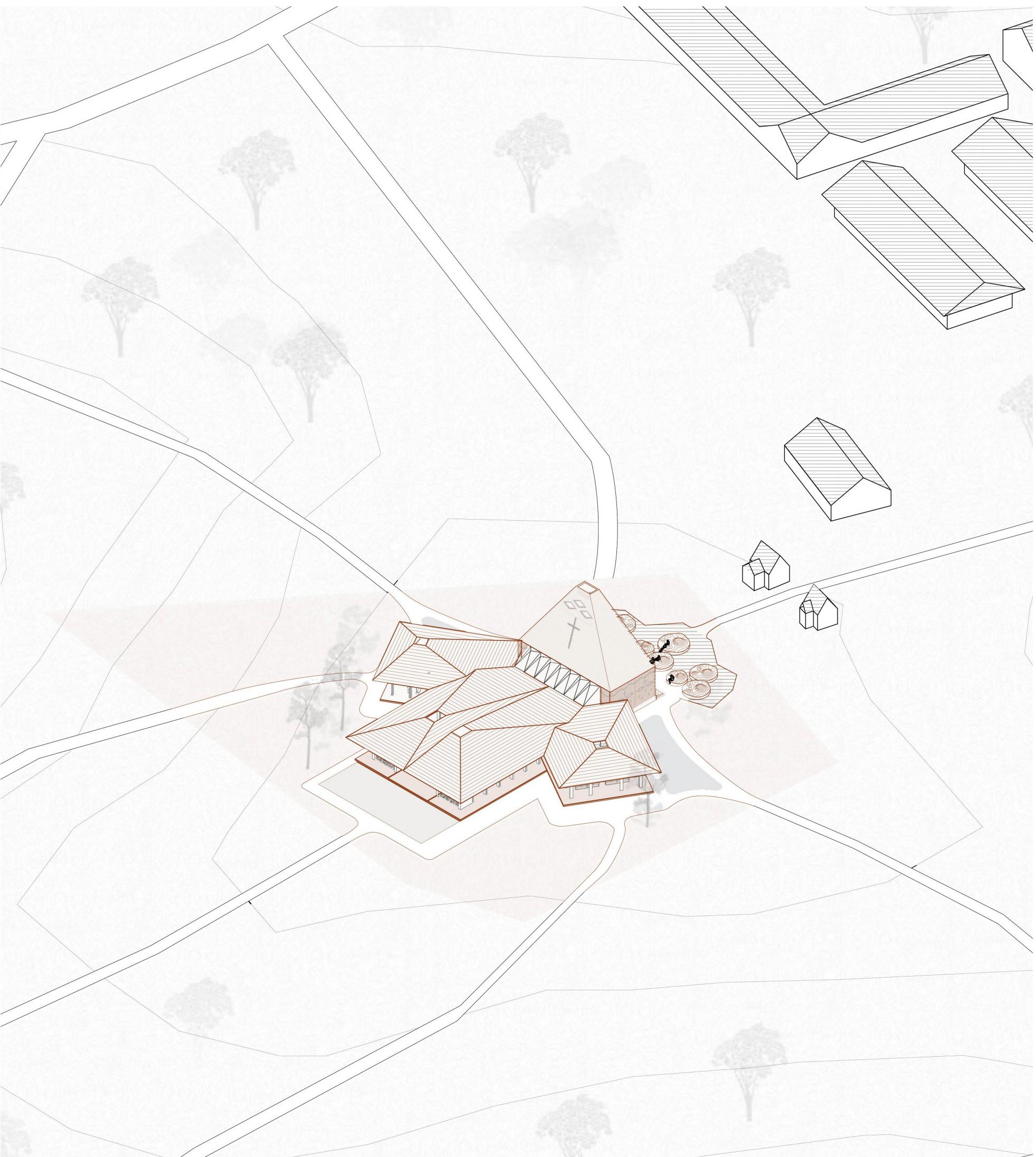
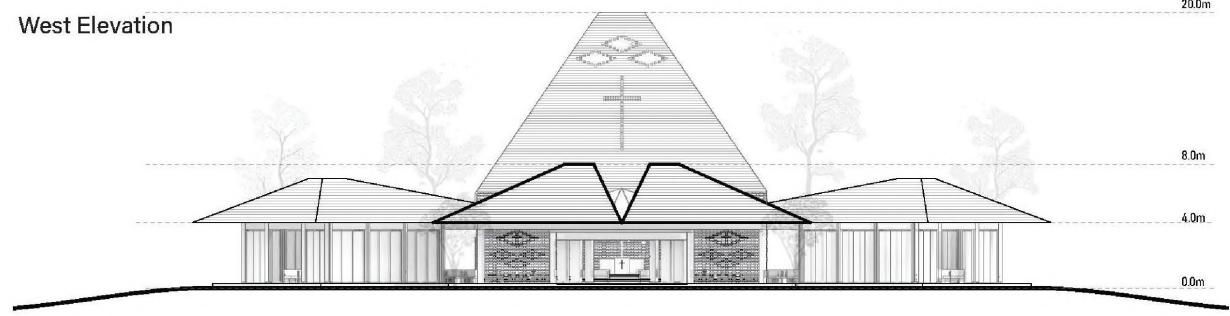




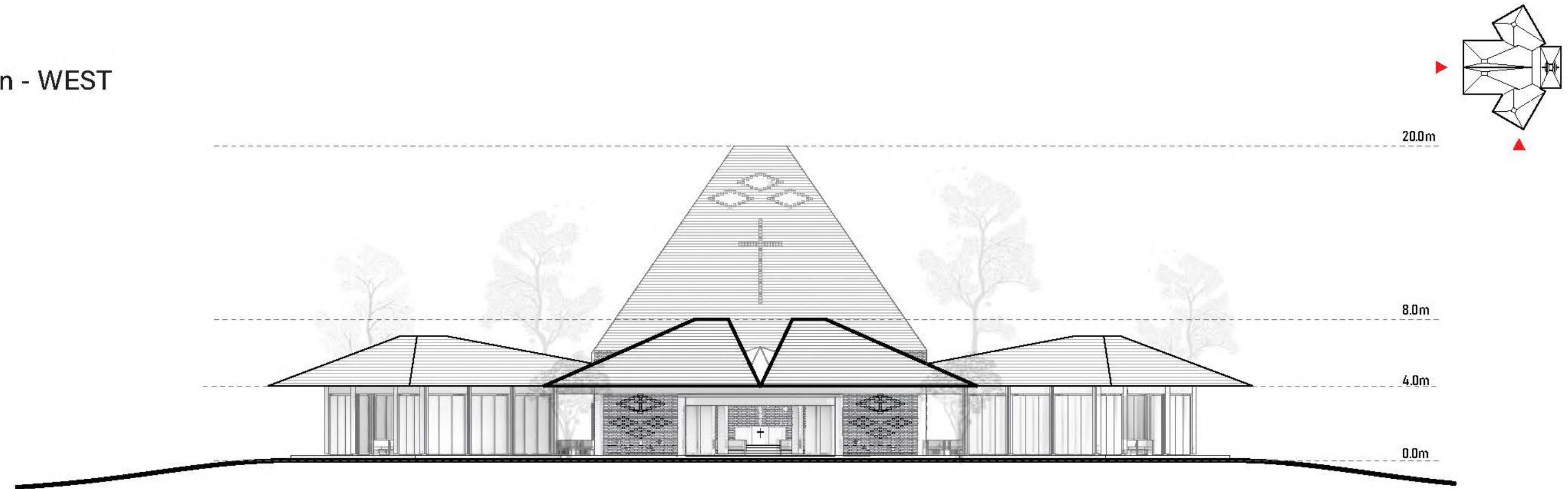
Plan



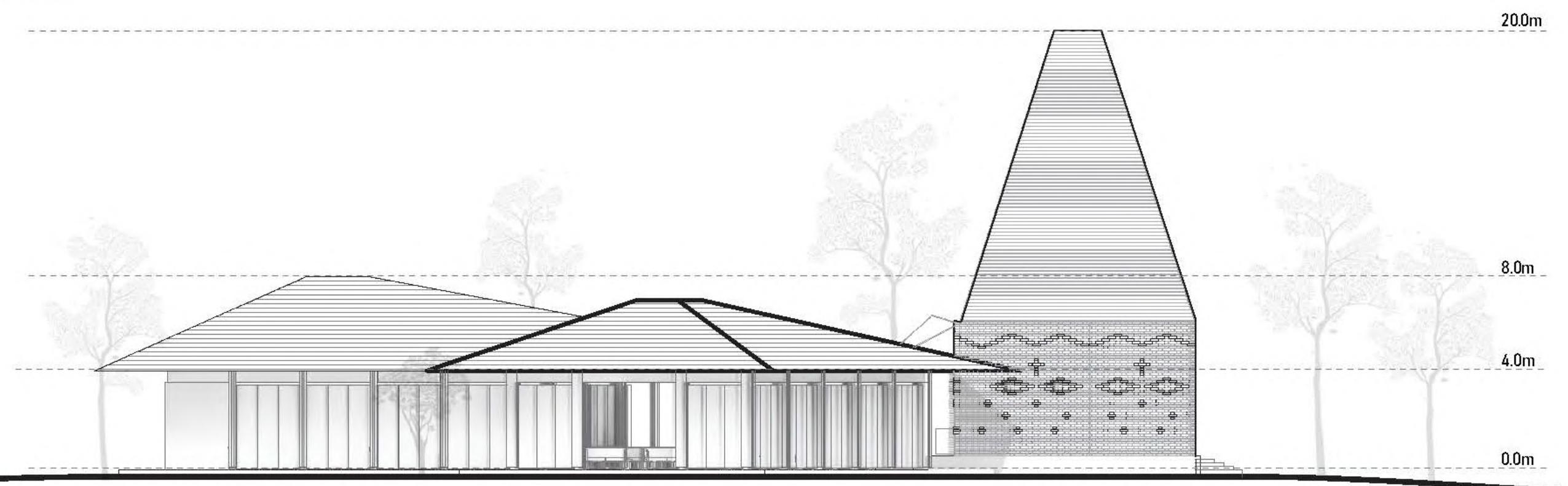
West Elevation



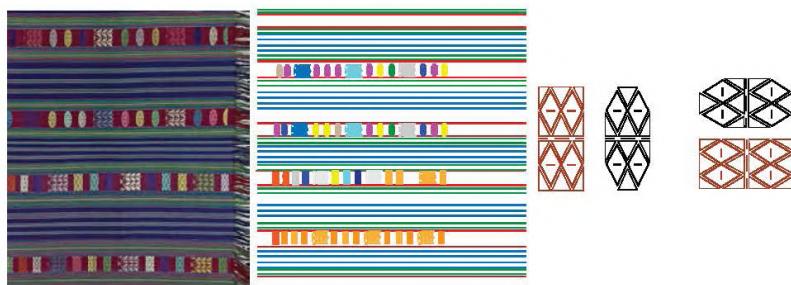
Elevation - WEST



Elevation - SOUTH



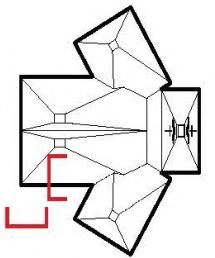
Brick Pattern Vivisection

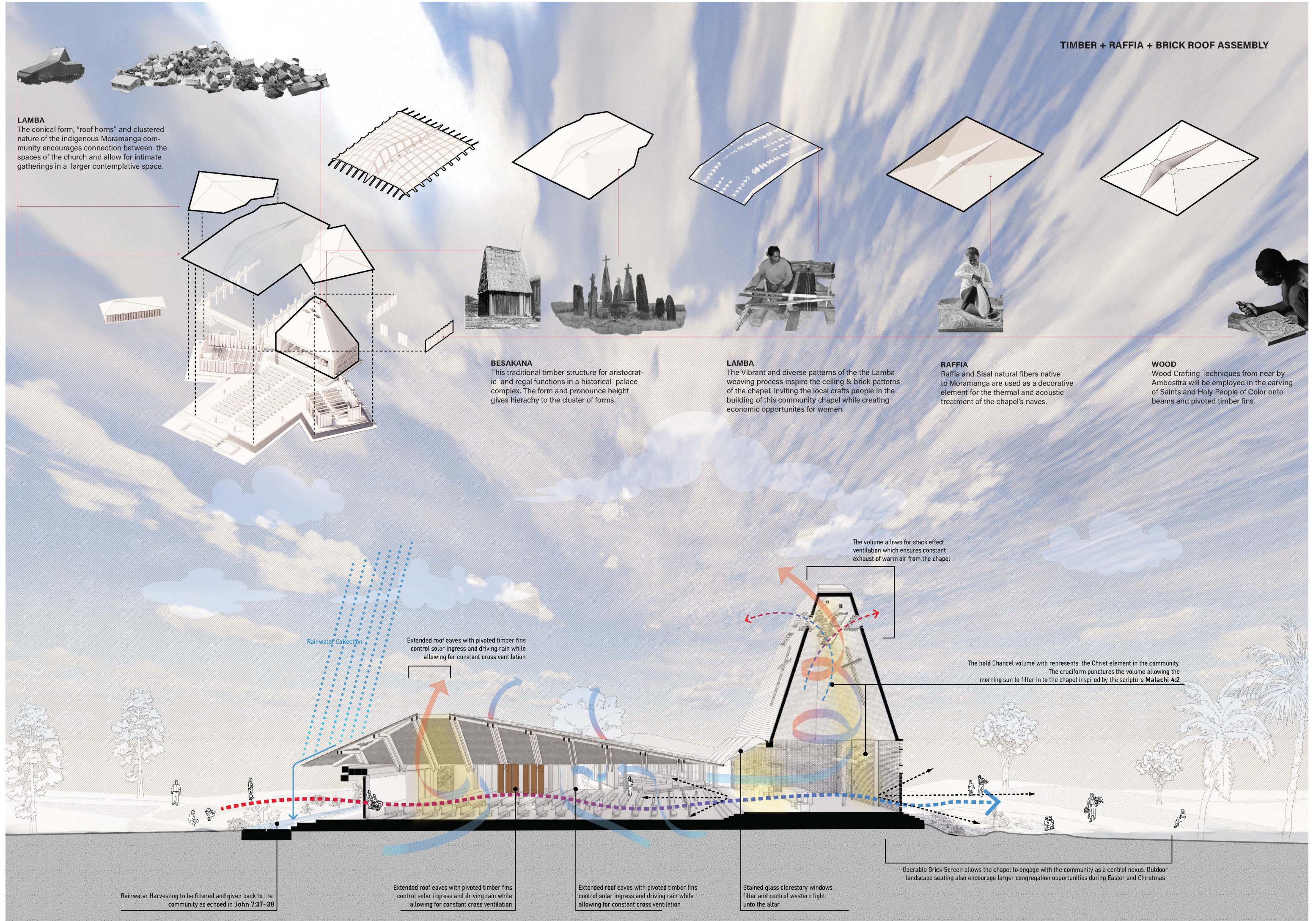


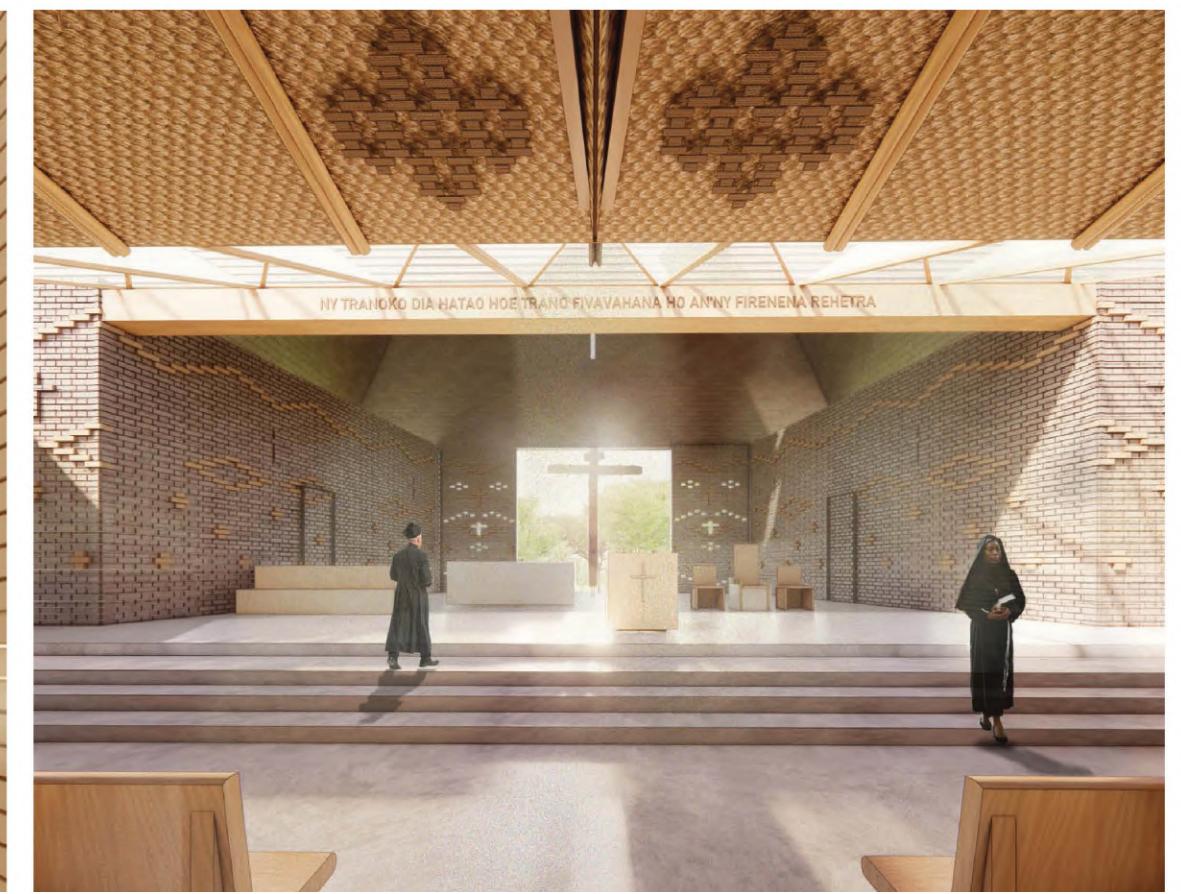
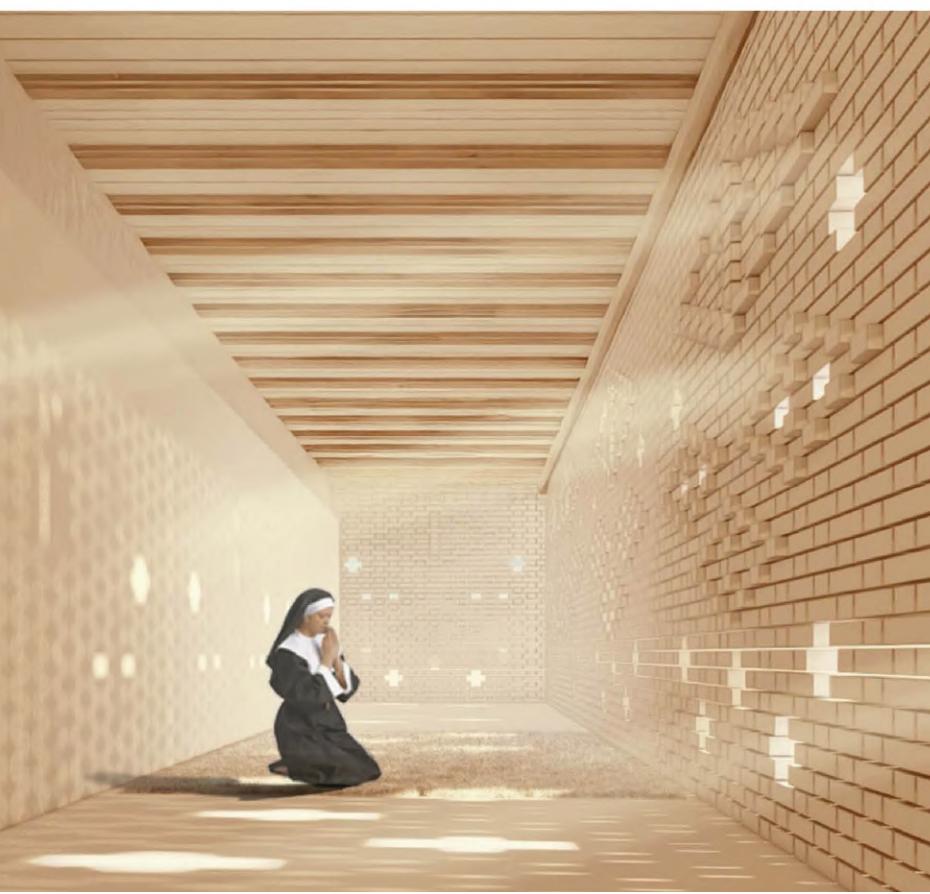
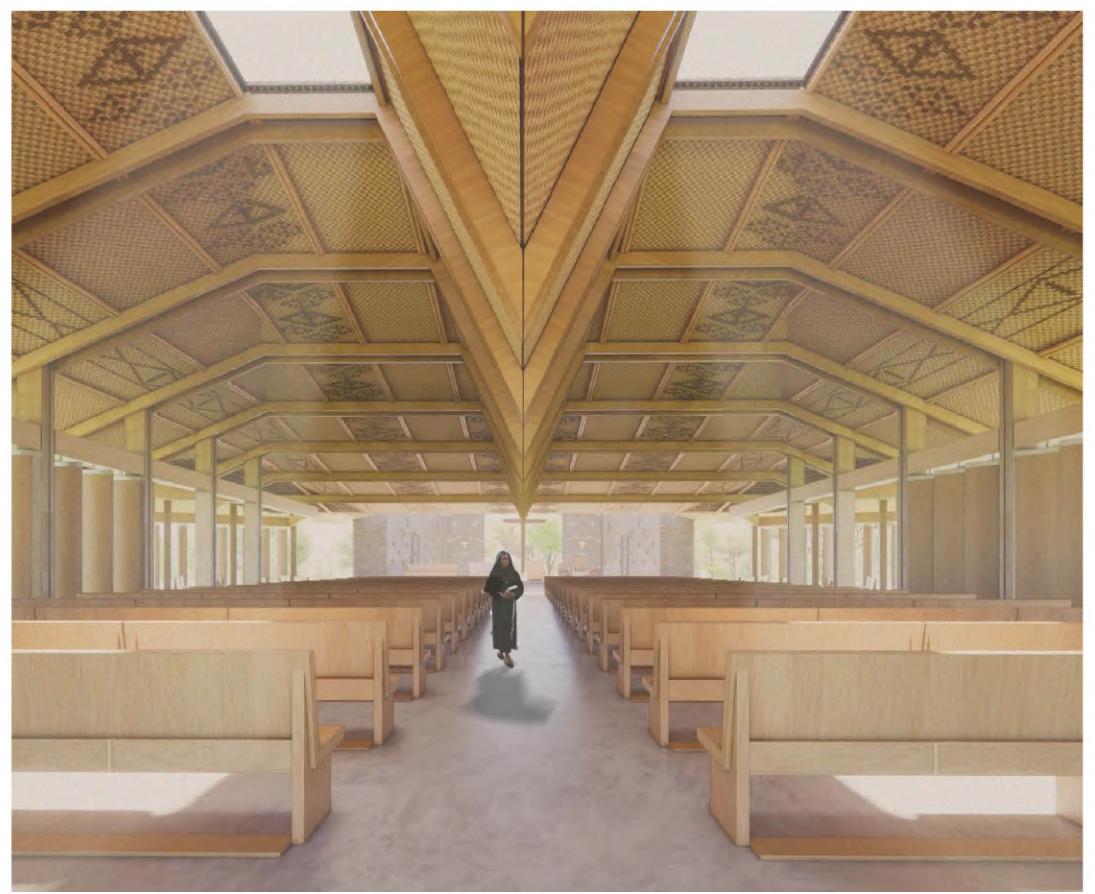
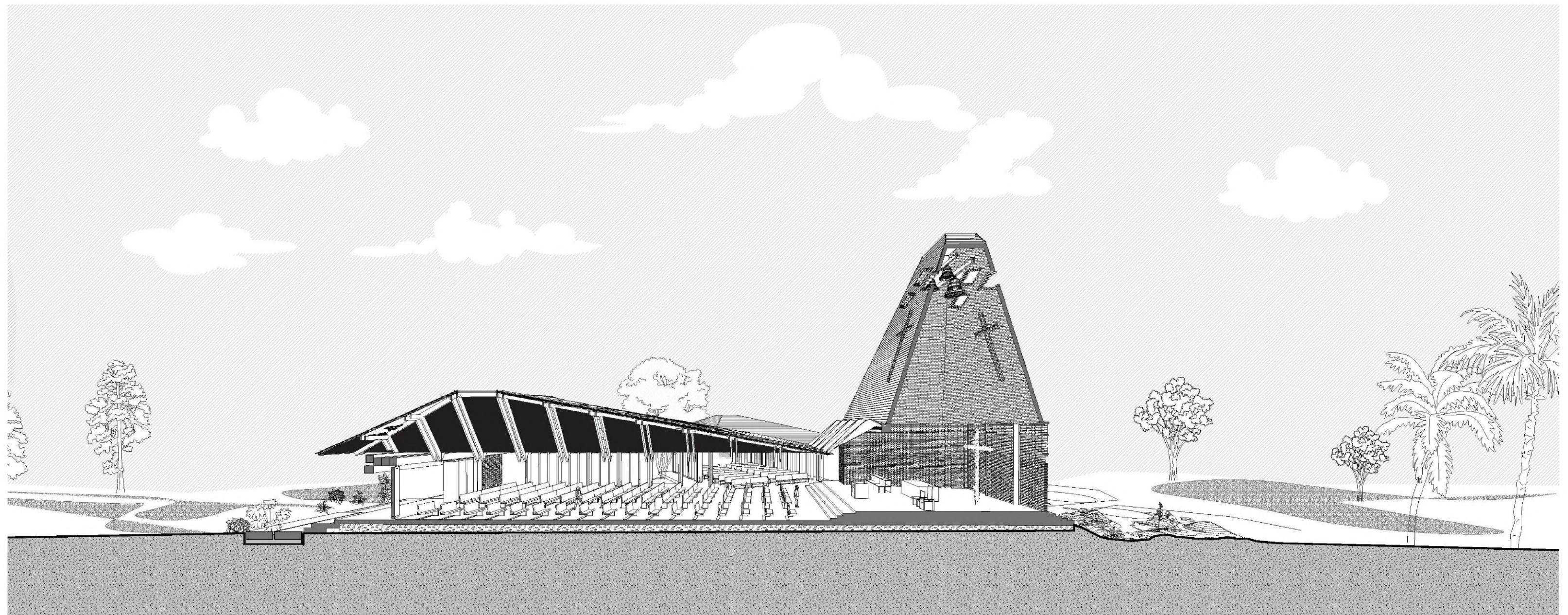
Wall Elevation



Wall Section







03

Welcome Center of Columbia University

Visioning Climate Resilience and Sustainability in a High-density Urban Site

Studio Work

Instructor: Peter Waldman

Individual Work

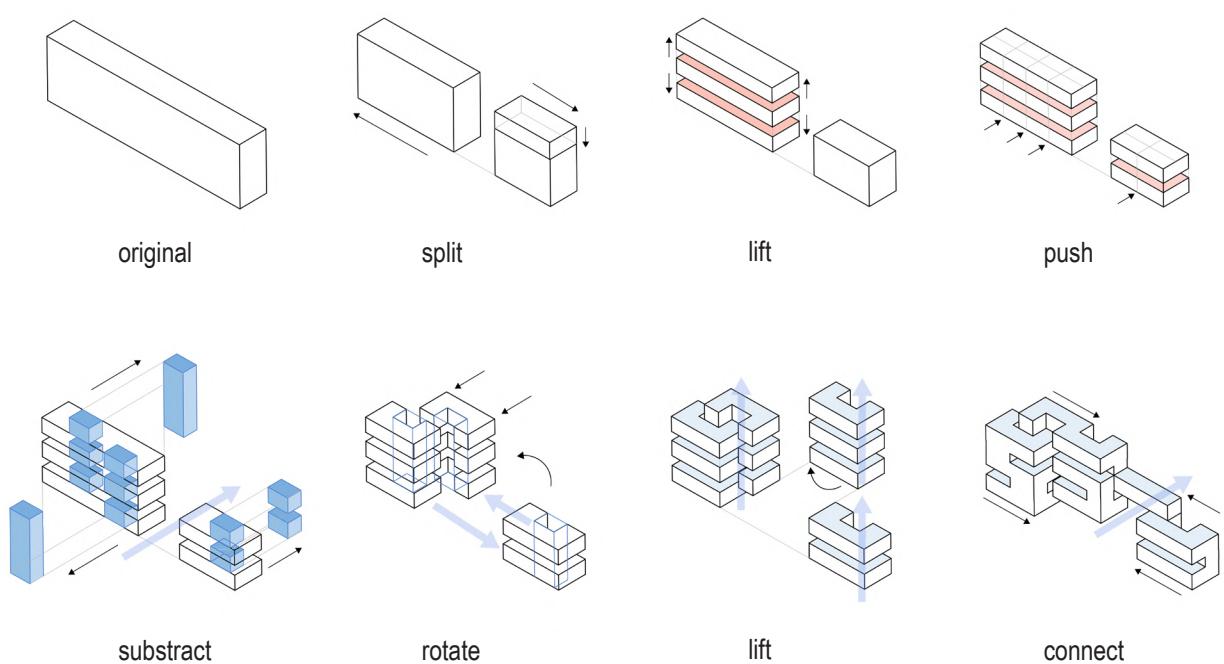
Fall 2021

This project aims to explore how to incorporate **sustainable development** into a building located in one of the busiest regions in the world.

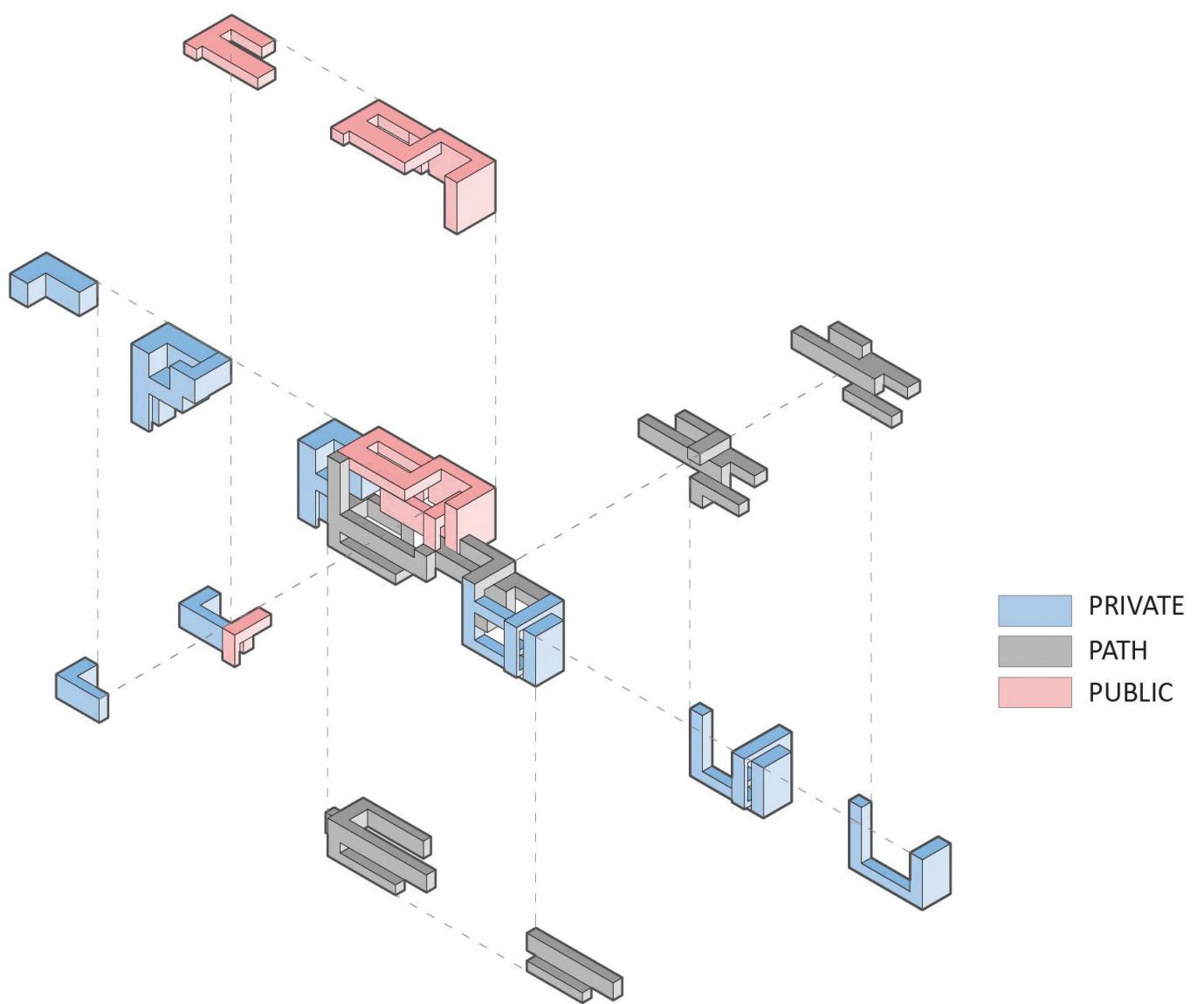
Due to climate changes, the Hudson River will overflow its banks and flood in Manhattan within the next twenty to thirty years. Therefore, the Welcome Center is designed with a higher base level to reduce flooding vulnerability. In order to improve **space efficiency and lower energy waste**, meeting rooms, study rooms, libraries, auditoriums and exhibition galleries are incorporated into this building to fulfill different visitors' needs.

This design first splits the module into two pieces, and then alters the shape by using **interlocking in both two and three dimensions**, which enables the building to expand from the Columbia University site to W 125th Street and connect with the park in the south end. The elongation of the building implies architecture's potential to grow and ultimately solve environmental problems by reducing unnecessary waste of space.

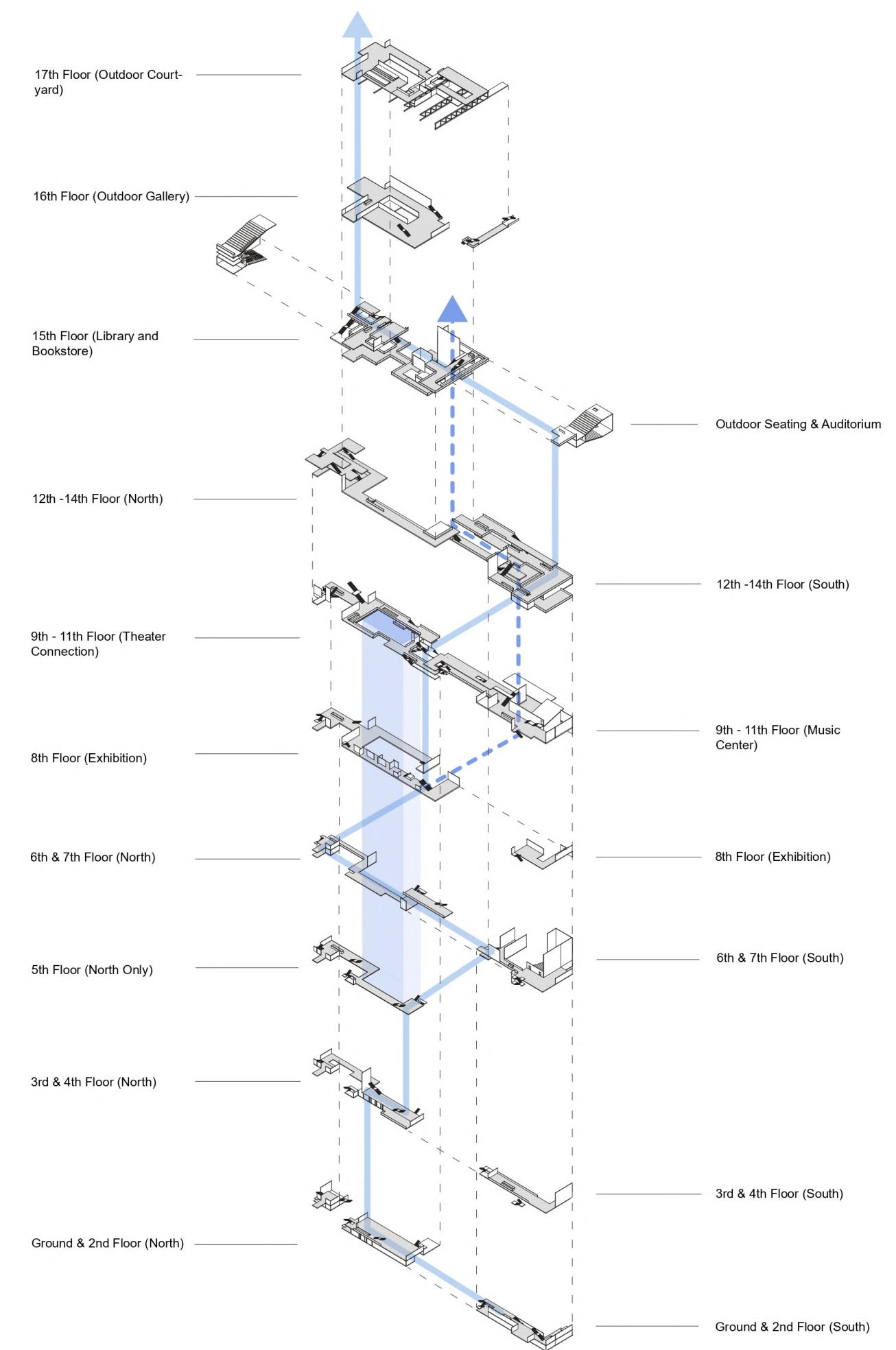




Form Analysis Diagram

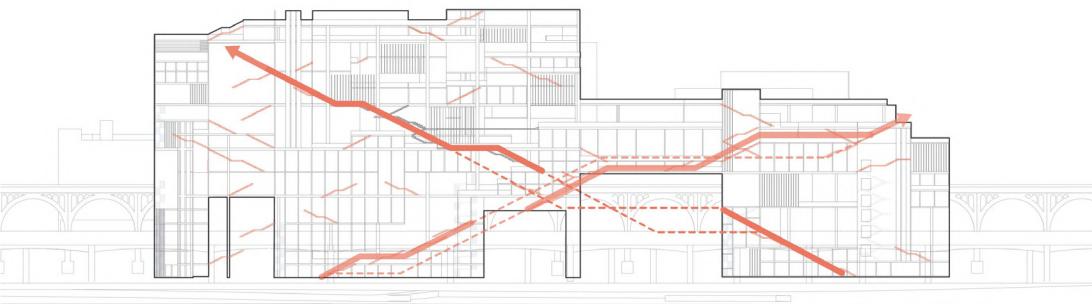
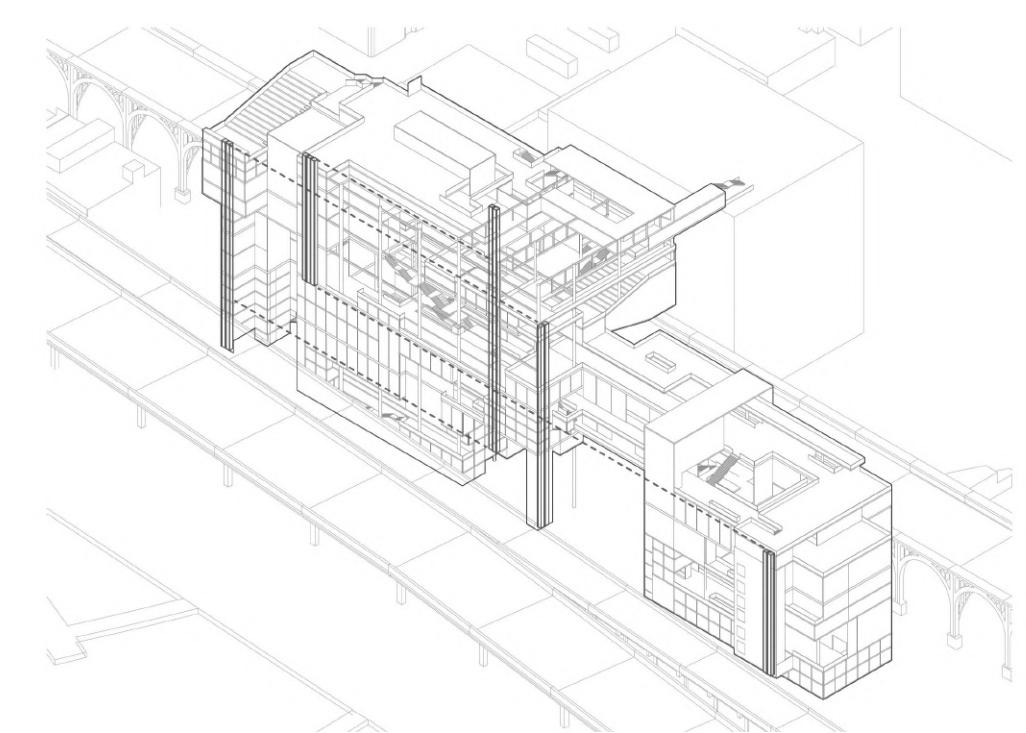
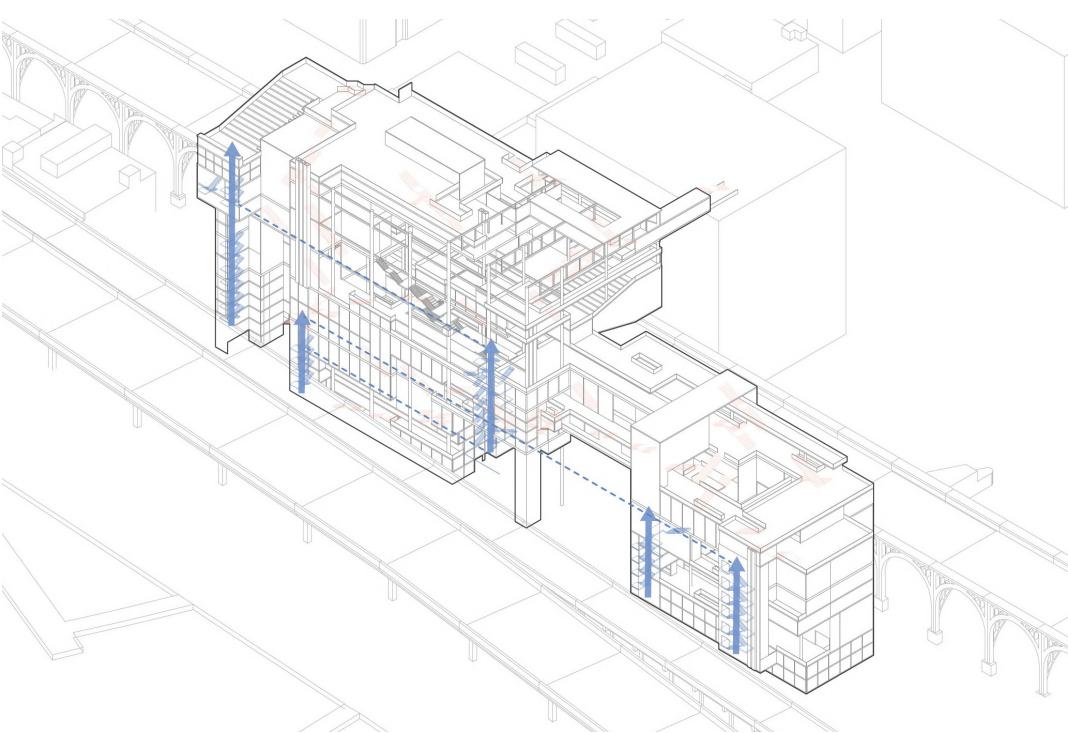
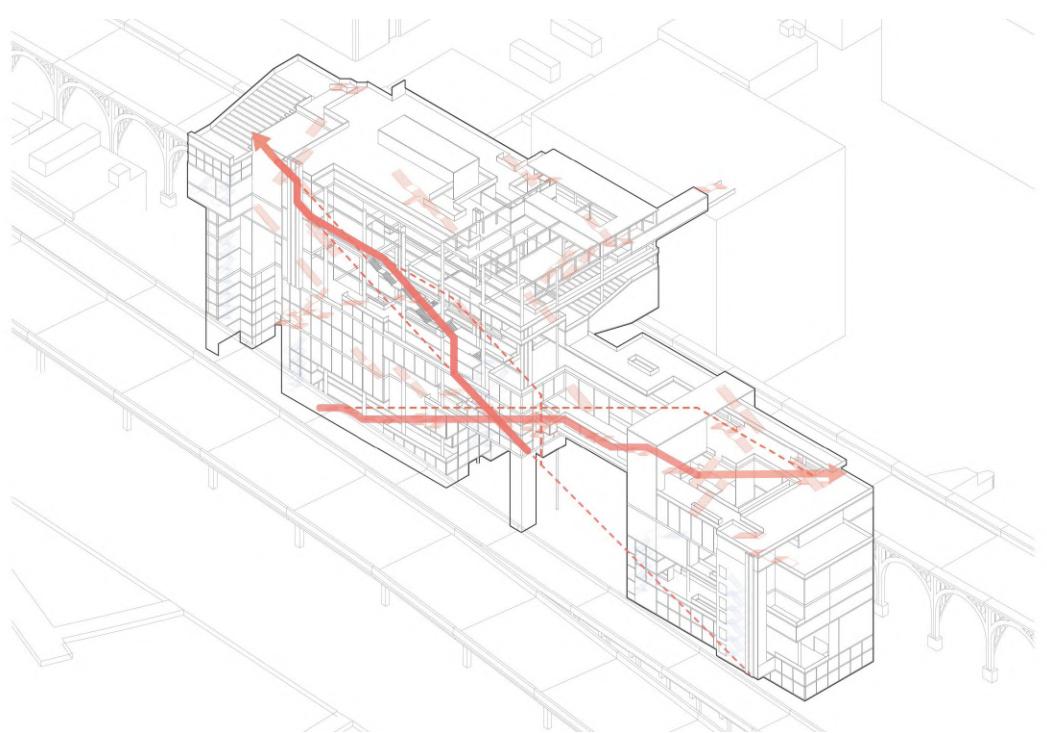


Function Analysis Diagram

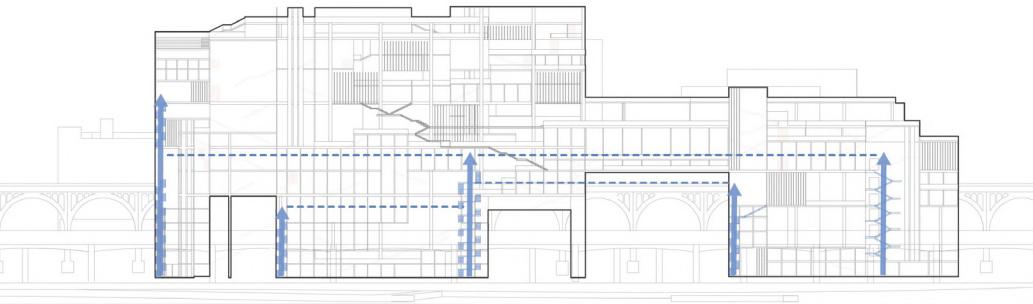


Exploded Axonometric Diagram

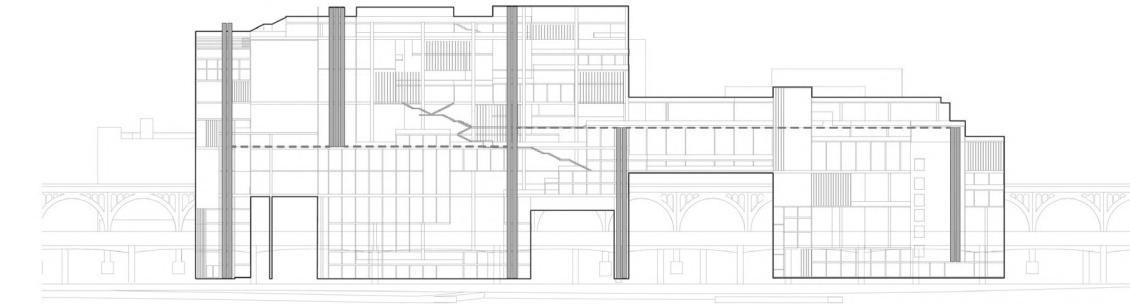
Circulation Analysis Diagrams



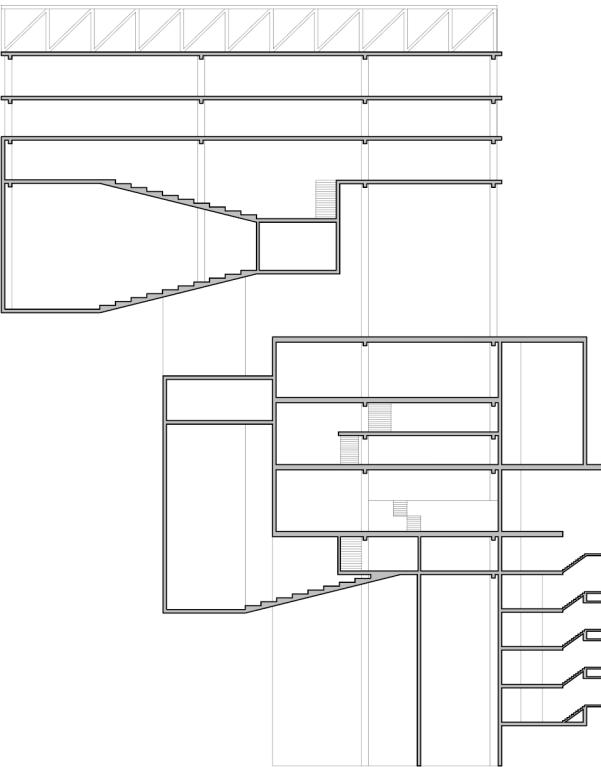
Primary Circulation with Straight Stairs



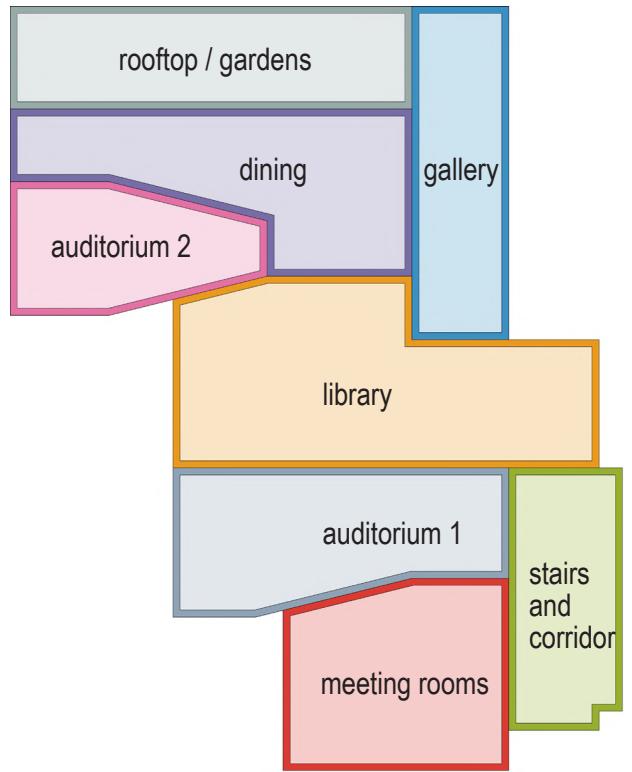
Secondary Circulation with U-Shaped Firestairs



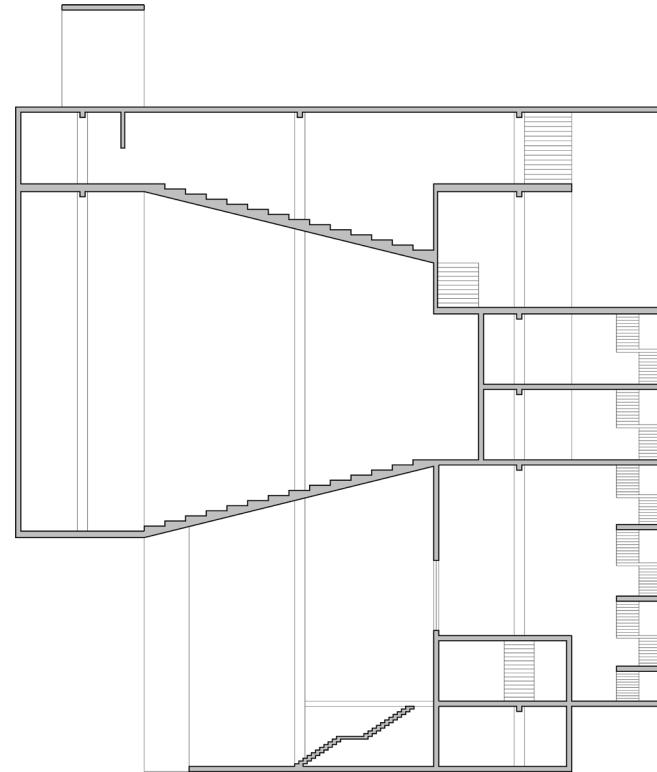
Tertiary Circulation with Elevators



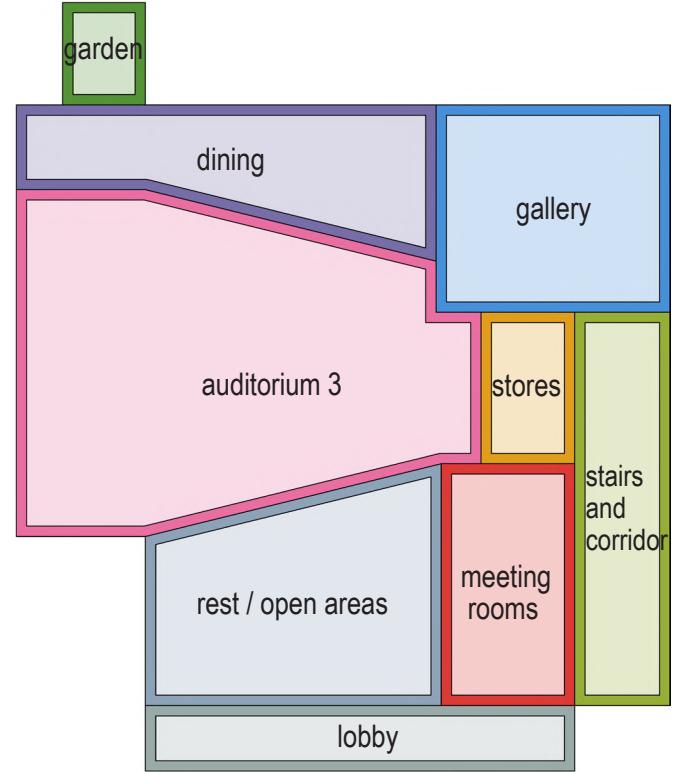
Short Section 1



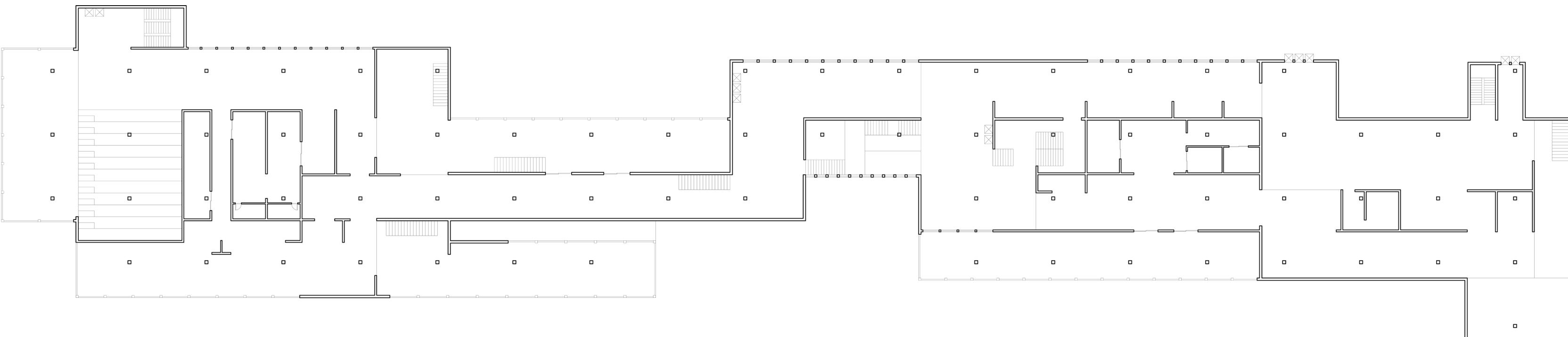
Function Diagram 1



Short Section 2

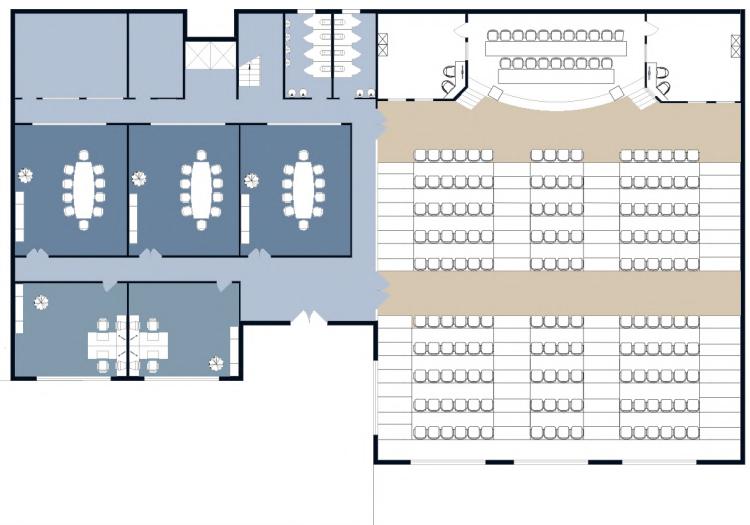


Function Diagram 2



Level 12 Master Plan

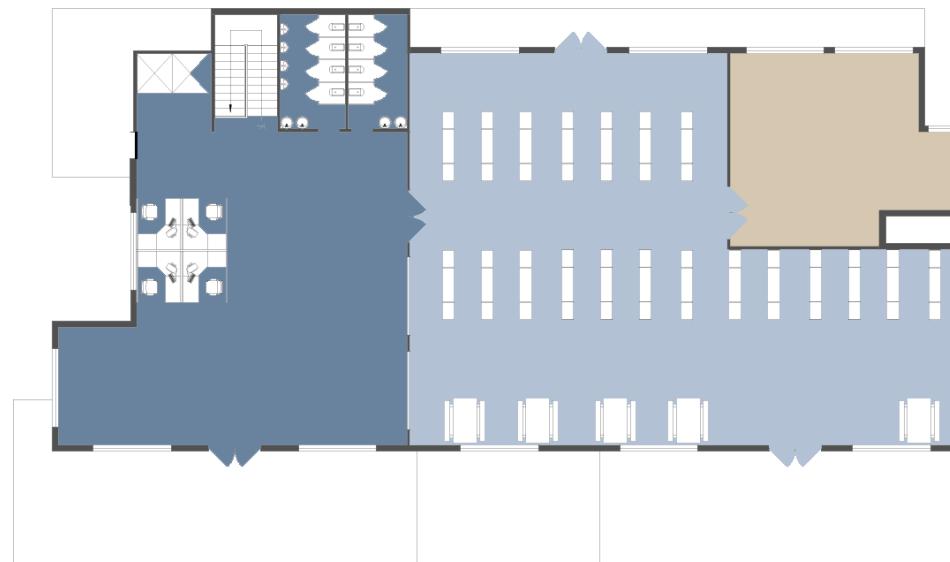
Detailed Plans (1"=20')



Auditorium 3

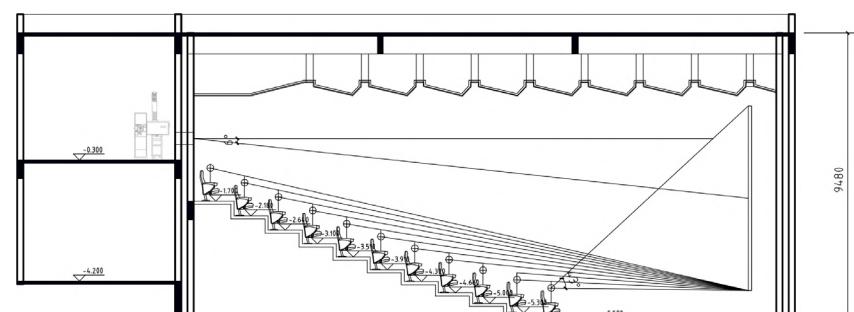


Library

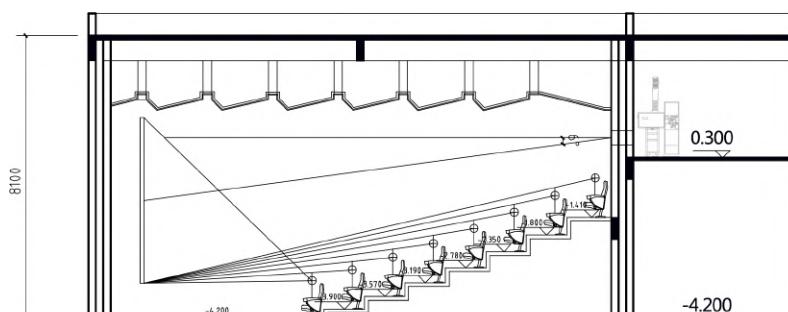


Dining Area

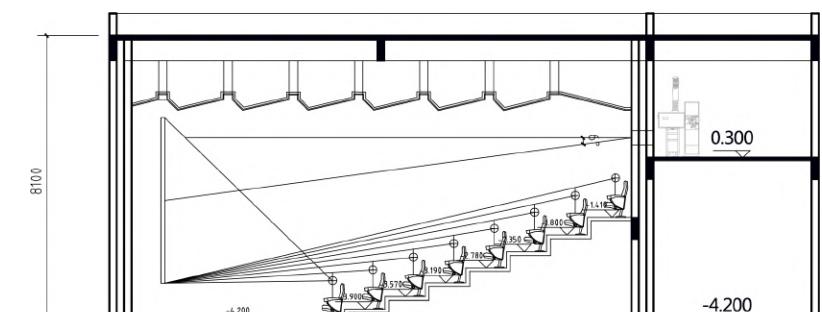
Auditorium Type Analysis (1"=16')



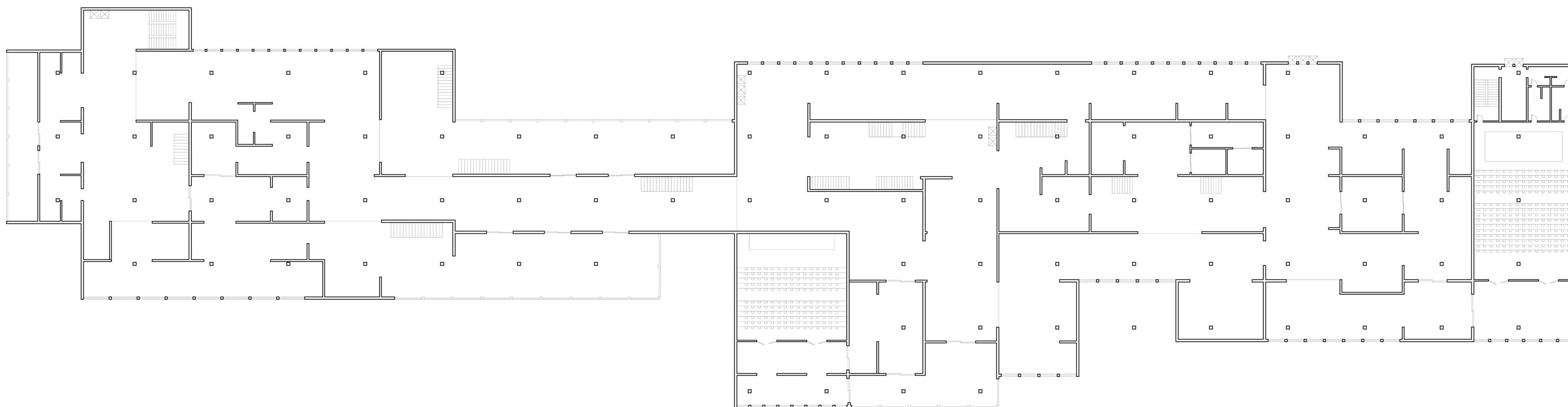
Auditorium 3 or 2



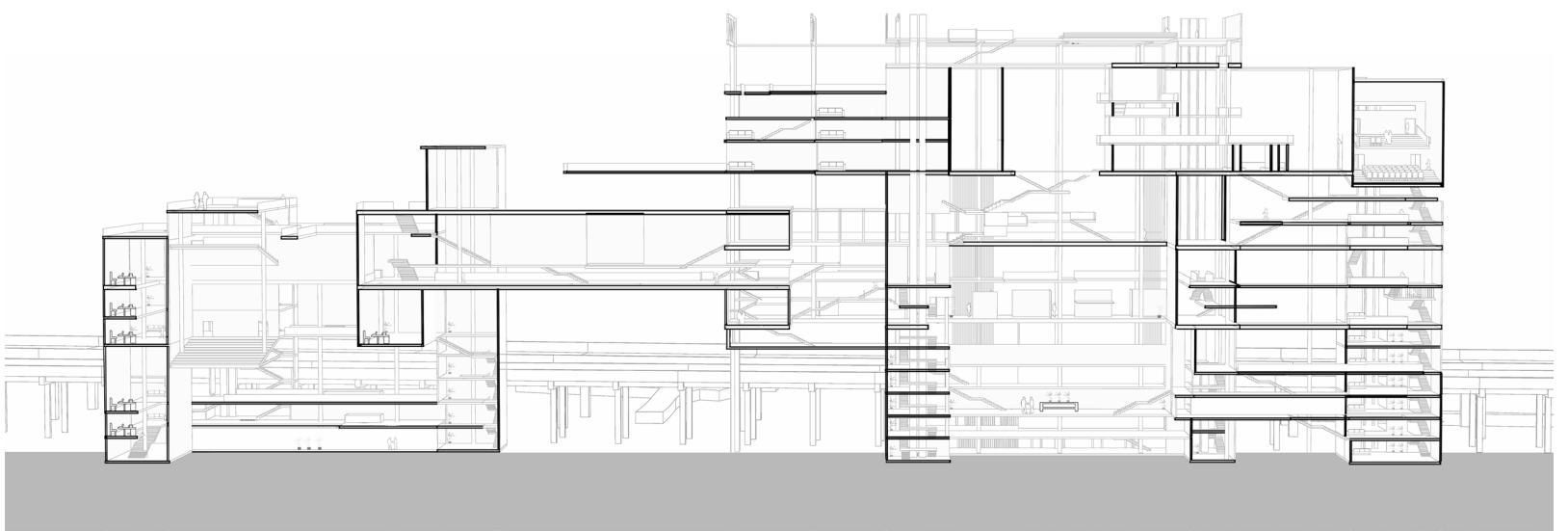
Auditorium 3 or 1



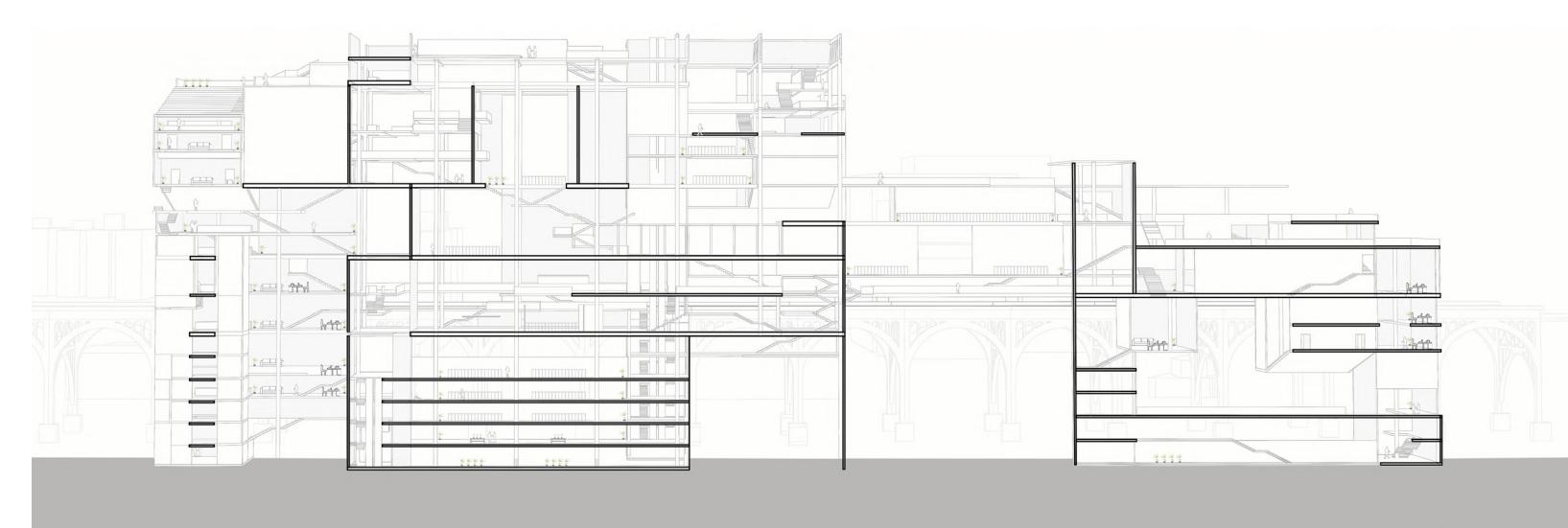
Auditorium 2 or 1



Level 06 Master Plan



Linear Section from Campus



Linear Section from the Hudson River



View from the Hudson River



View from Drivers on Highway

04

"Reborn": A Mixed-use Building at the University of Virginia

Experimenting Architectural Intervention on the Spatial Separation of the Built Environment

Studio Work

Instructor: Schaeffer Somers

Individual Work

Spring 2022

The active railway cutting through UVA's campus **weakens the connections** between the North and South grounds of UVA. This project, designed to be located at Lambeth (North Grounds), is dedicated to changing this situation.

To restore the connections for the grounds, a **skyline walkway over the rail** is used to connect the main campus, Carr's Hill Field and Nameless Field. The building includes **collective commons** on the base section (1-4 floors) and **student-faculty housing** on the top section (5-7 floors). The form and shape are generated to ensure potential entrances on the site.

On each floor, a **half-floor** is added to allow people to look down and enjoy the beauty of "flows" inside the building. The central courtyard **introduces water** from Dell to Lambeth, which will flow around the railway and finally gather at the center and become **the major supply** for people living in the dorms of the building.

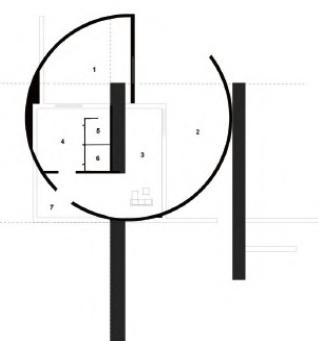
Last but not least, this building is named "Reborn" because it is "rebornable". For every level above, the future constructor can **follow the similar pattern** as what it has for now, so when there are more residents, no extra design or new materials will be considered.



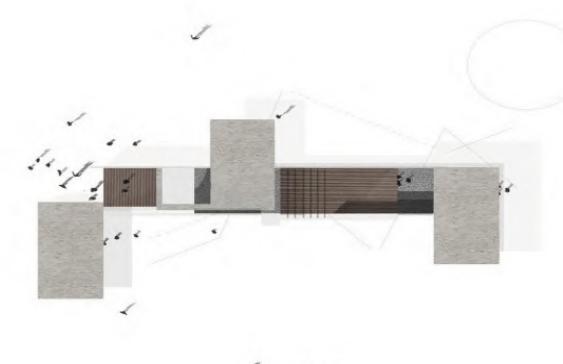
Form Analysis (by Collage)



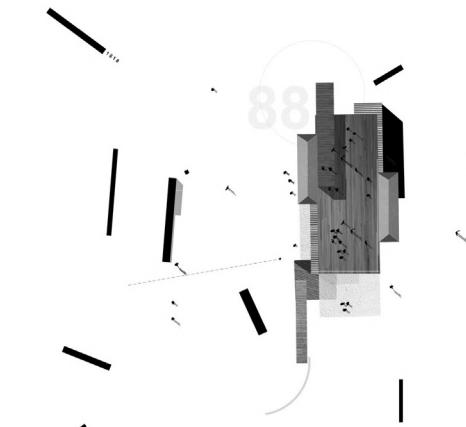
Drone Image



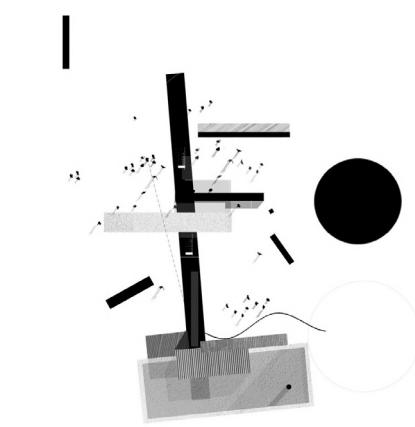
Circle Analysis



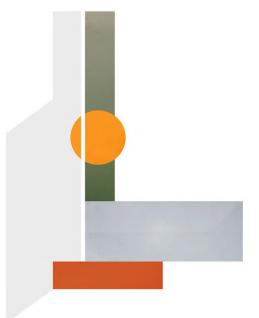
Block Analysis (Straight Line)



Line Combination Analysis 1

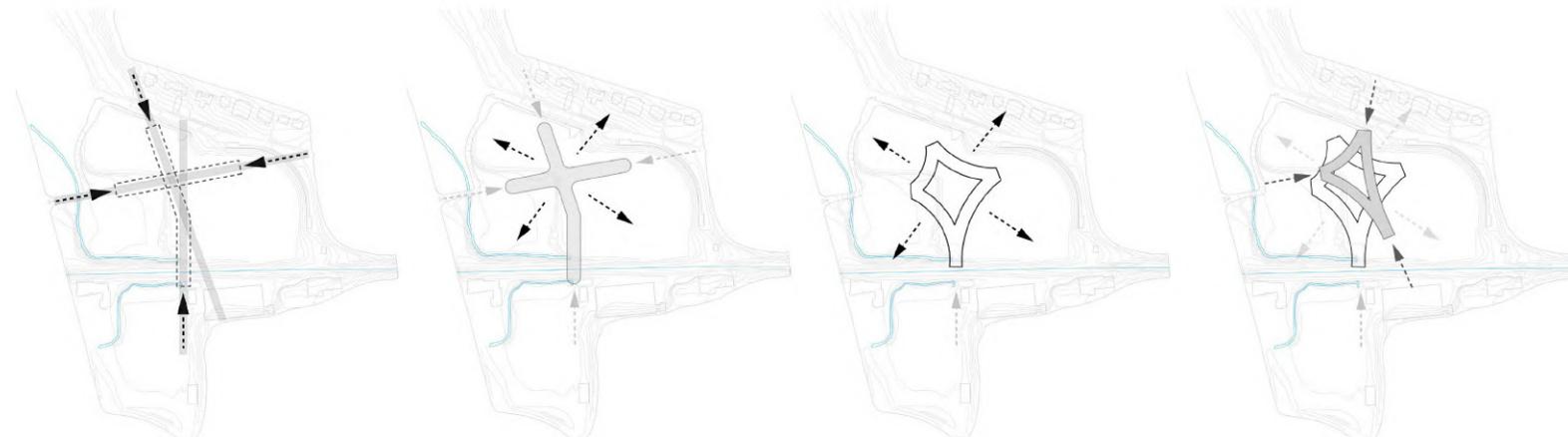
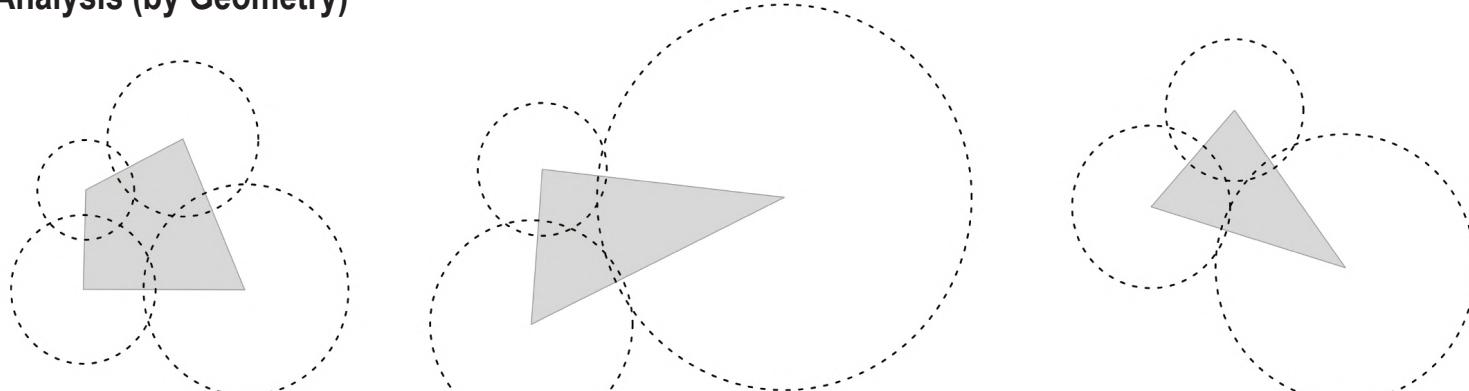


Line Combination Analysis 2



Geometry Analysis
(Extract Ideas from Previous Steps)

Form Analysis (by Geometry)

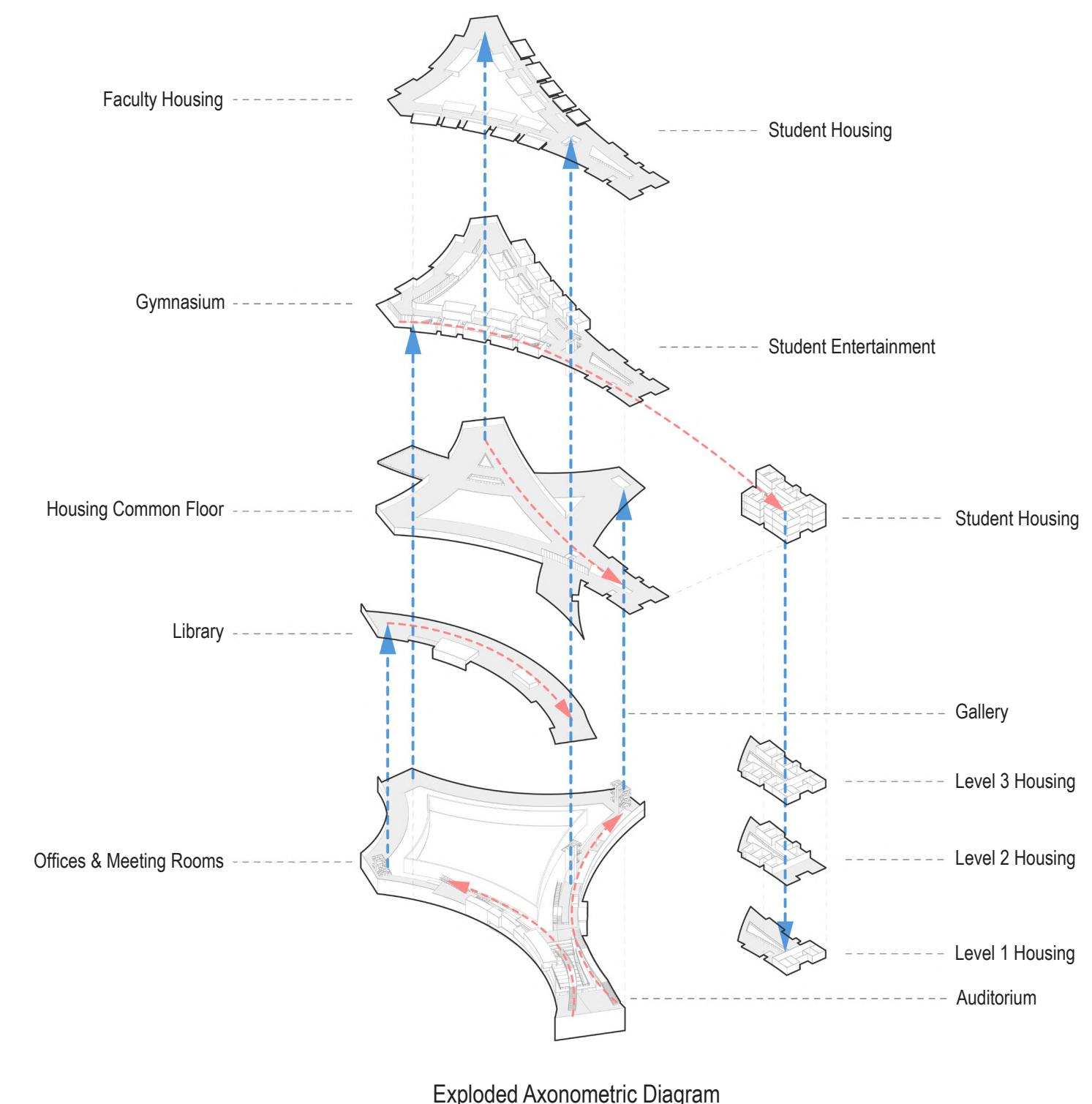
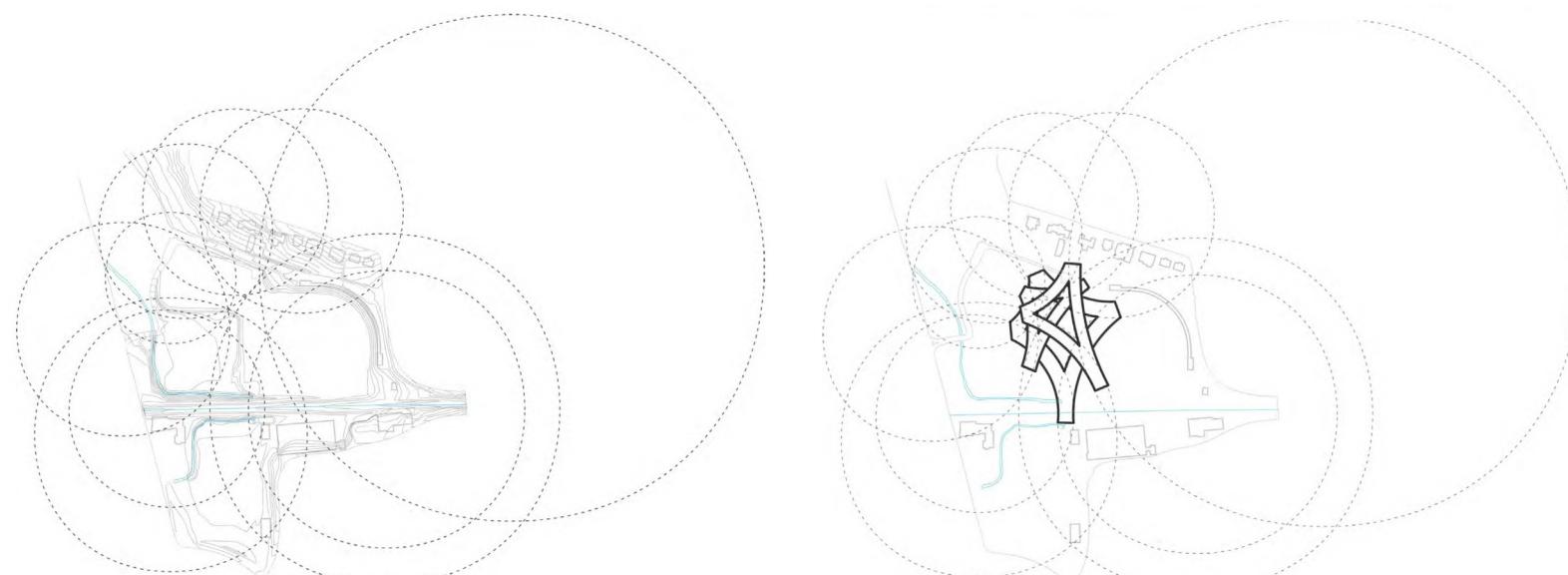


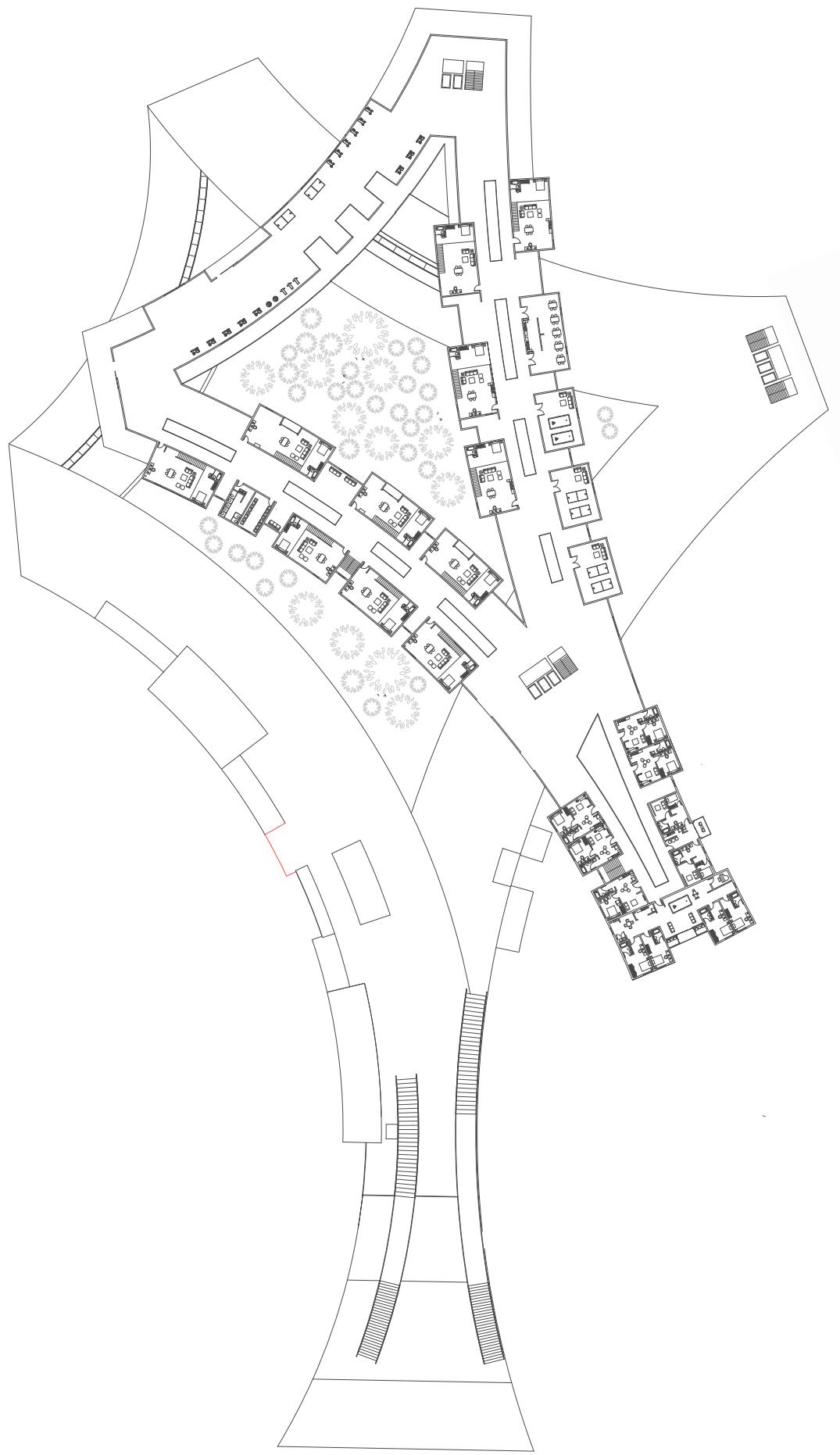
push

pull

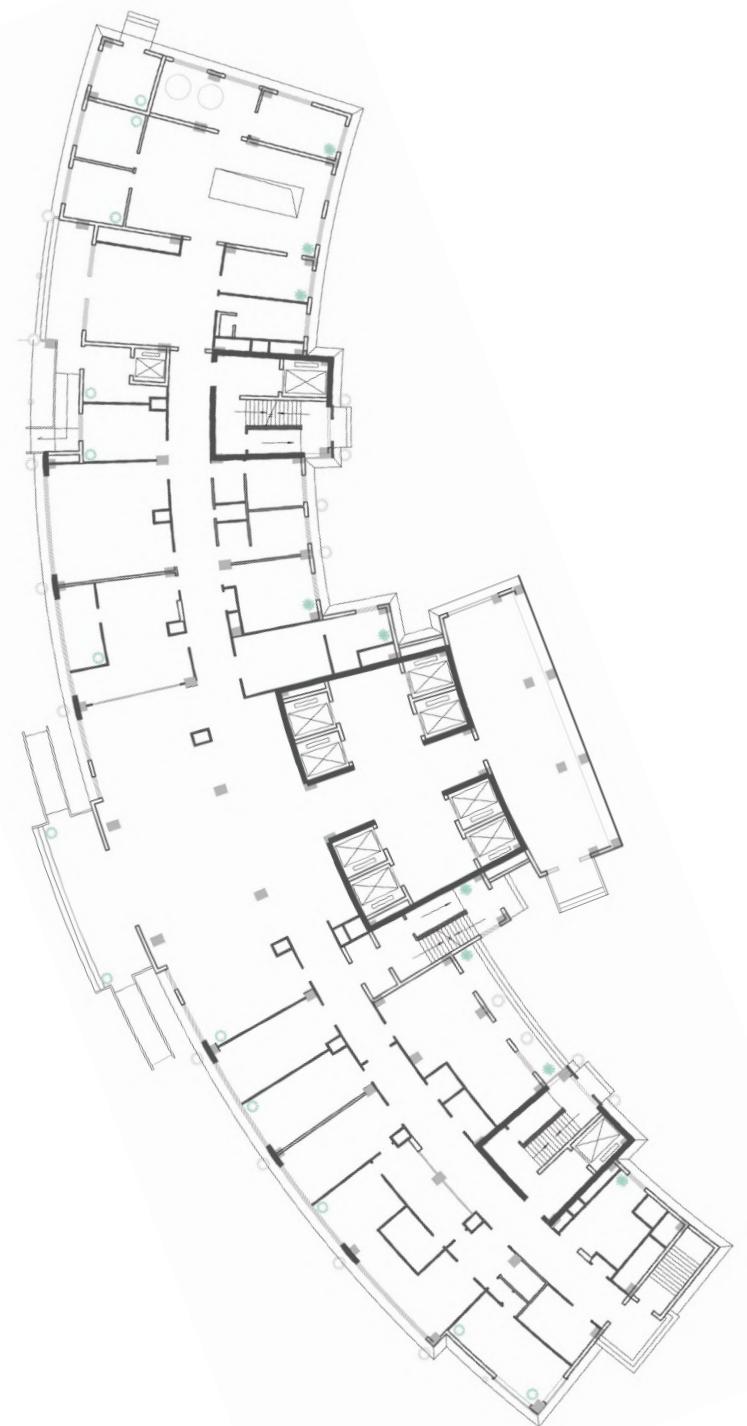
drag

push and shear

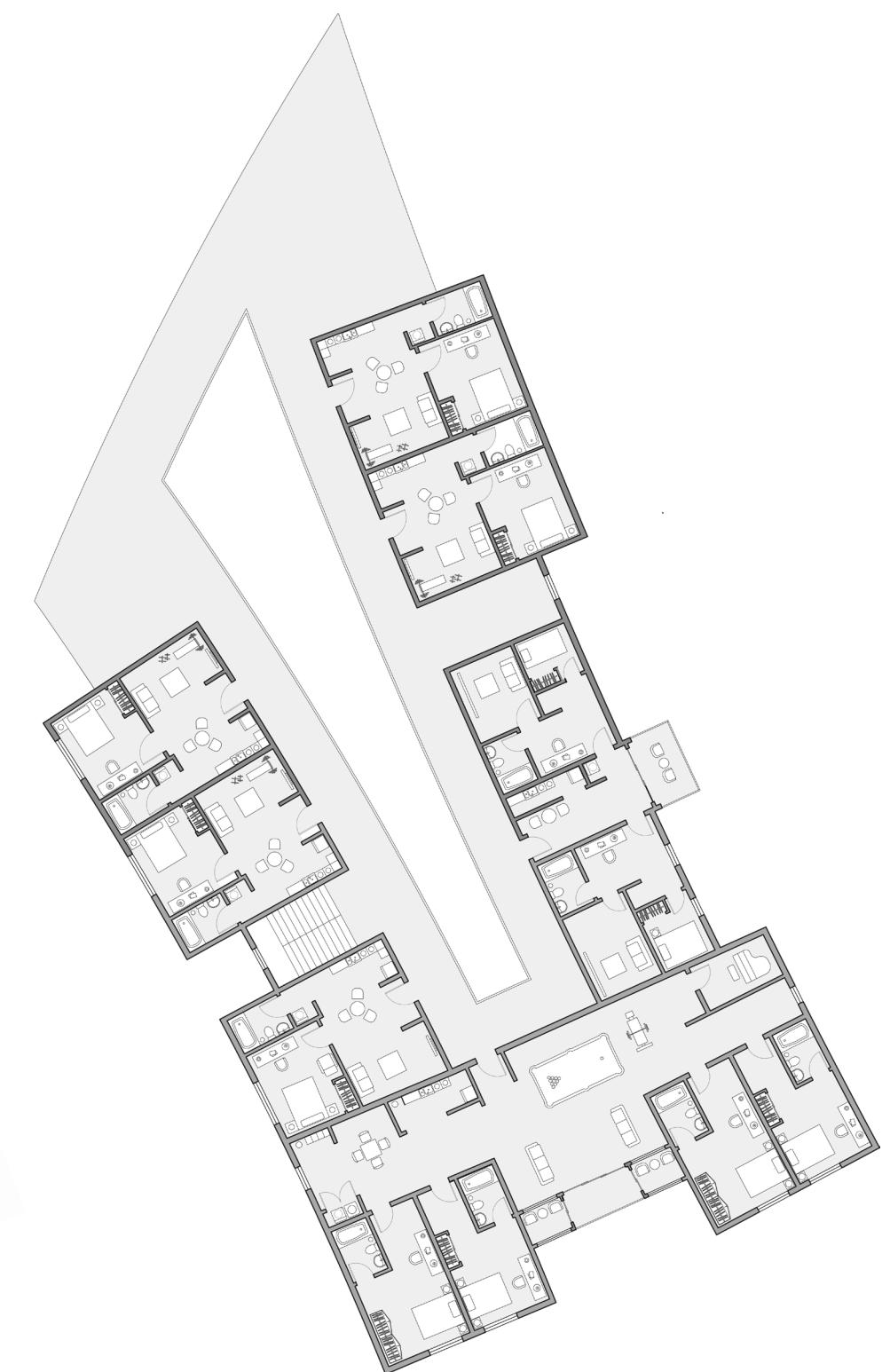




Master Plan on Level 3

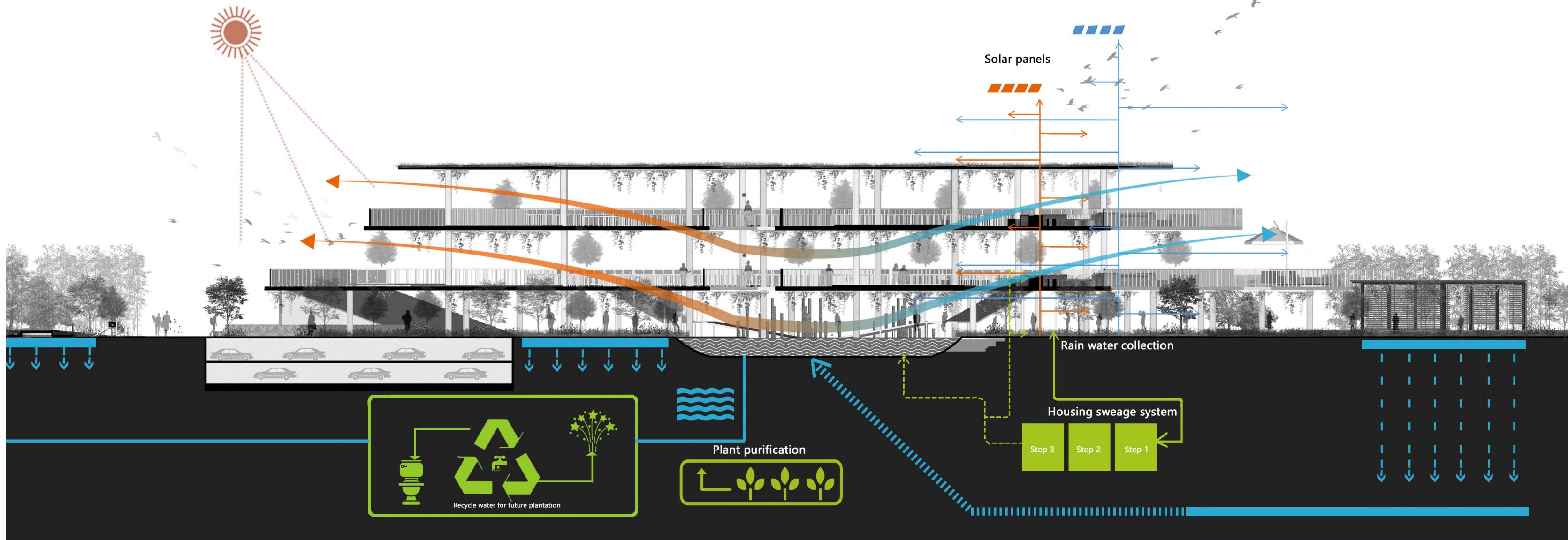
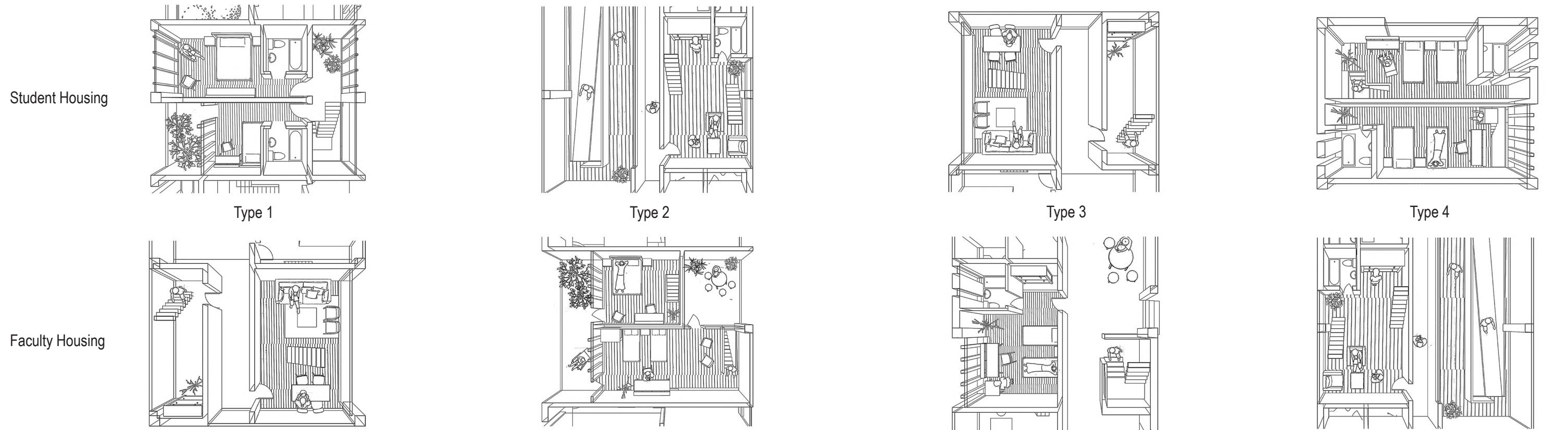


Enlarged Plan for the Northeast Wing



Enlarged Plan for the Faculty Housing Floor

Detailed Housing Plans



Elevation with Ecological Analysis

Rendered Images



Central Courtyard



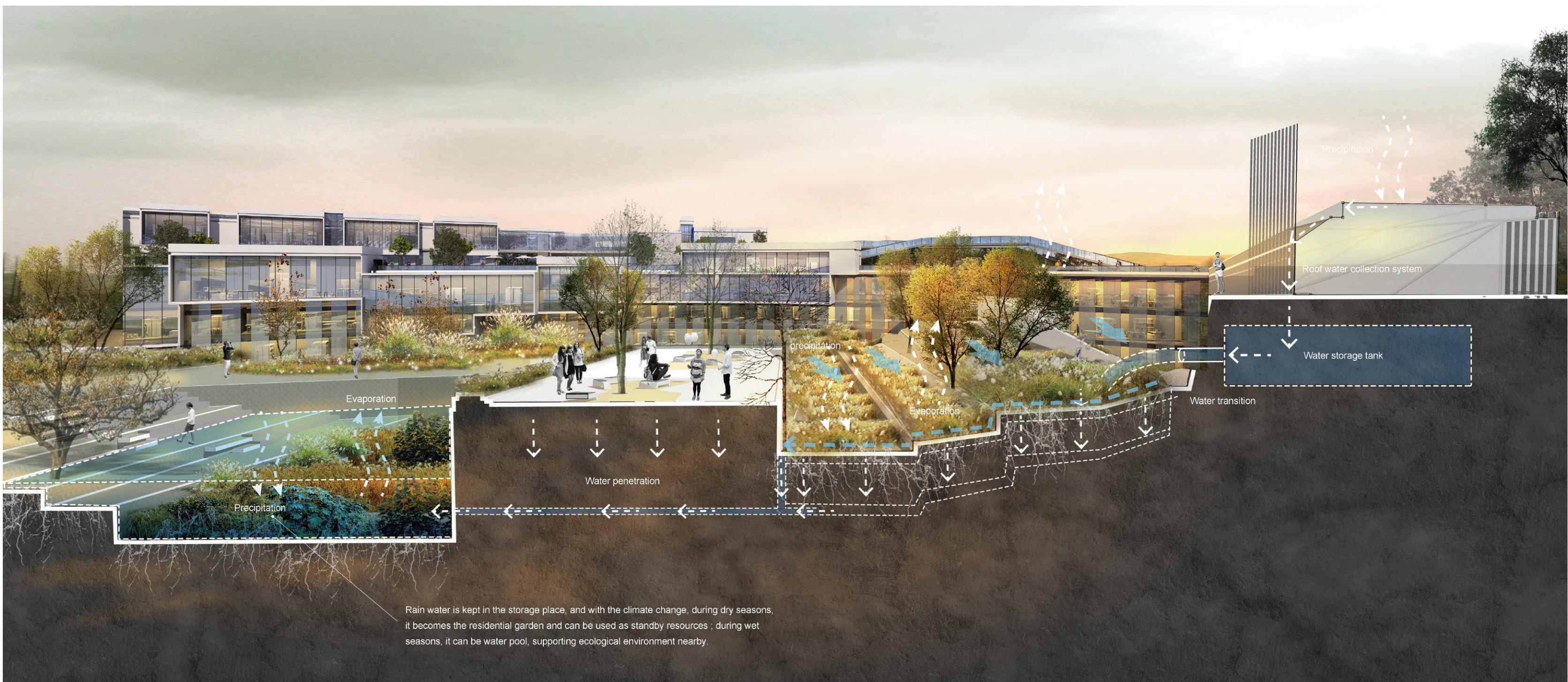
Birdeye View



Entrance to the Second Level



Fitness Center



Long Section With Designed Water Storage and Reuse System

05

A Renovated Bridge in an Old Water Town

Bridging Humans and Vehicles

Instructor: Lifeng Lin

Individual Work

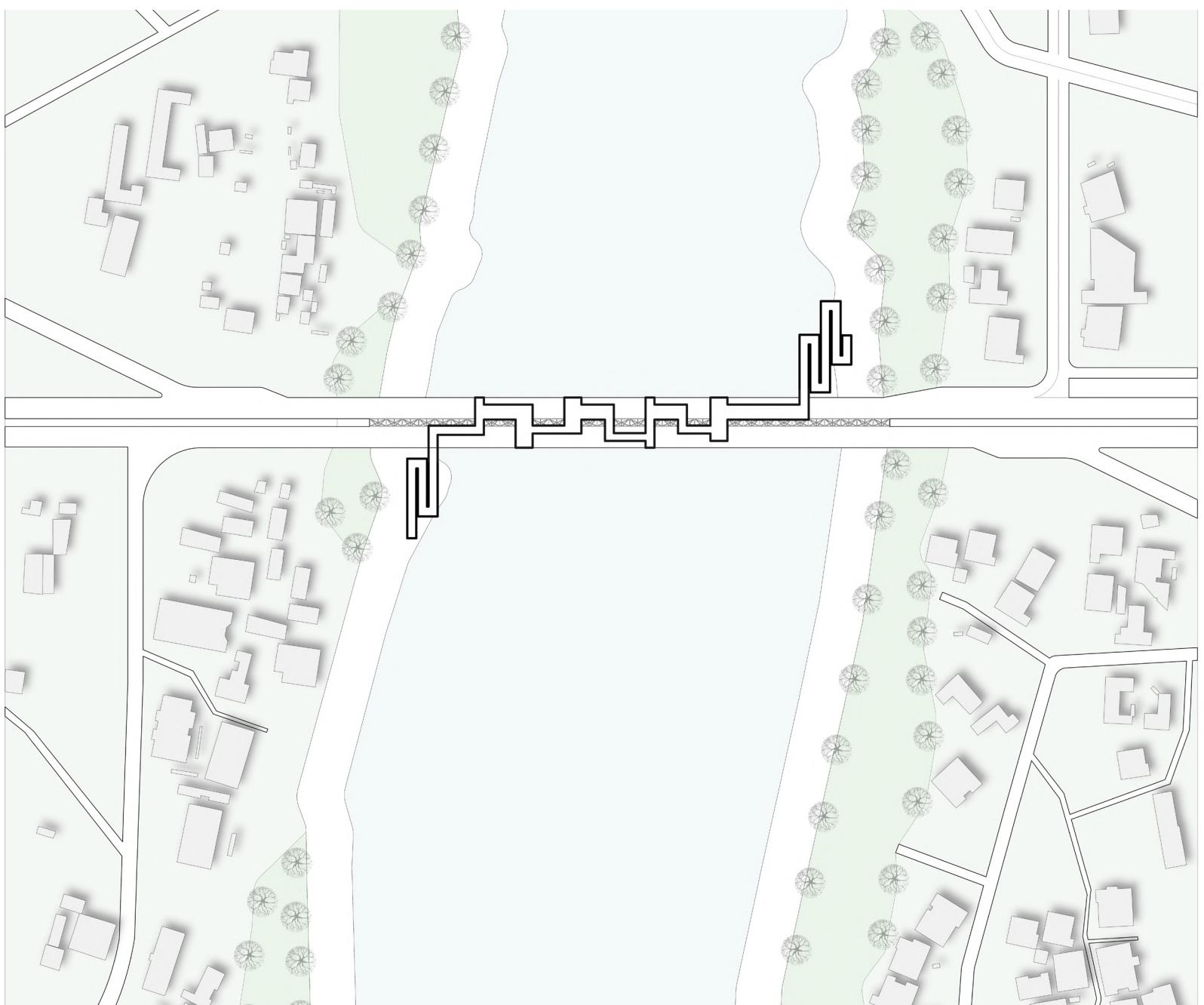
Fall 2022

Traditionally, a bridge is **a simple connection system** to make two sides meet. However, a modern bridge can be more sophisticated.

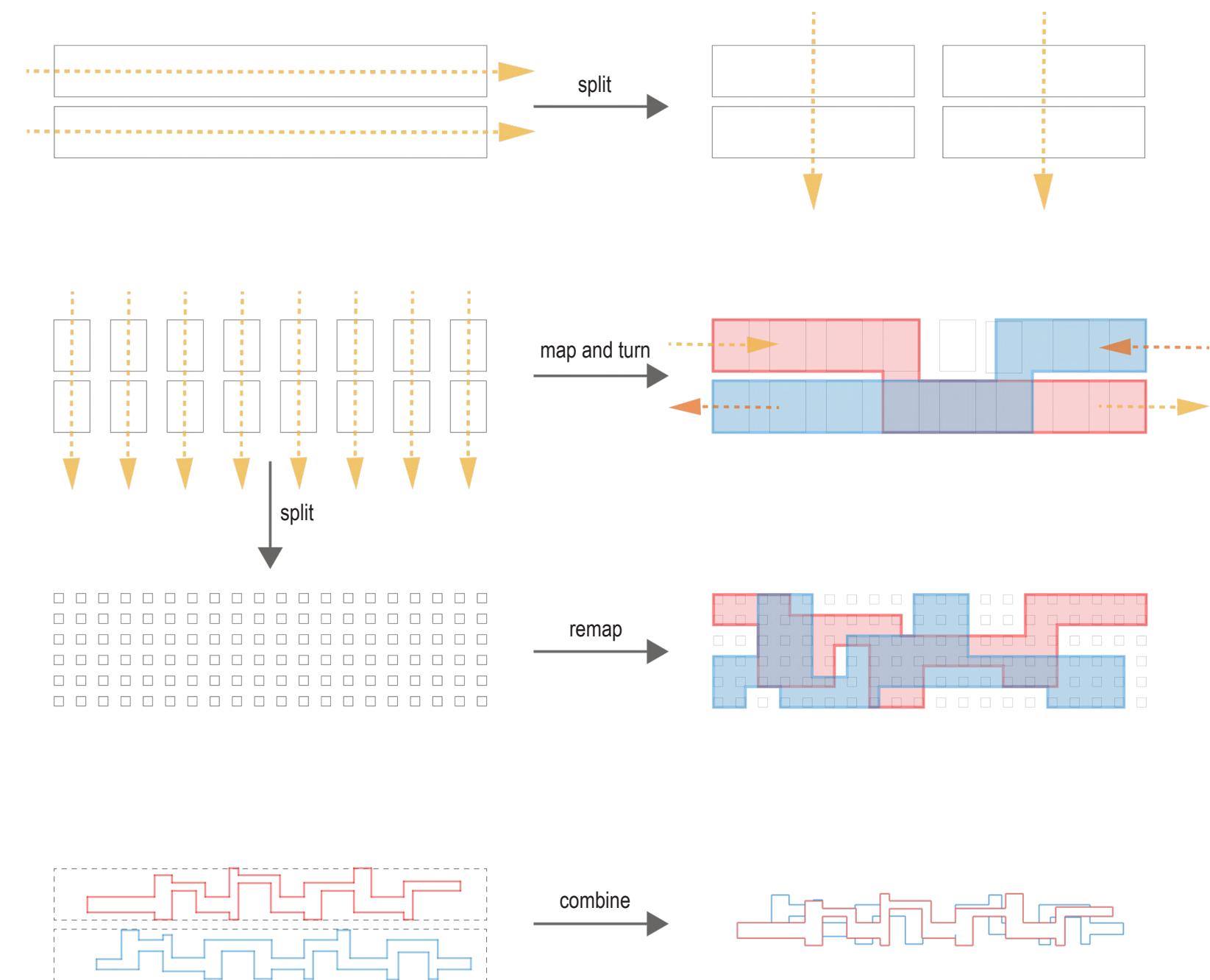
Spanning over the Yongxin River , the 150-meter bridge takes the shape of a zipper to allow both vehicles and pedestrians to pass conveniently and thus **ease traffic pressure**. The walkable aisles are above and below the driveway, and **pedestrians can go up and down** through connected stairs. The lower aisle is mainly for passing, while the upper aisle is designed to accommodate small shops. At both ends of the bridge, there are **ramps, stairs and elevators** so that pedestrians can directly go up to the aisles from the shore.

The entire bridge is supported by **a mesh steel frame structure**. The middle part of the structure can carry the vertical force of the three floors, and extend the beam from the center to **achieve the effect of horizontal support** at the same time.

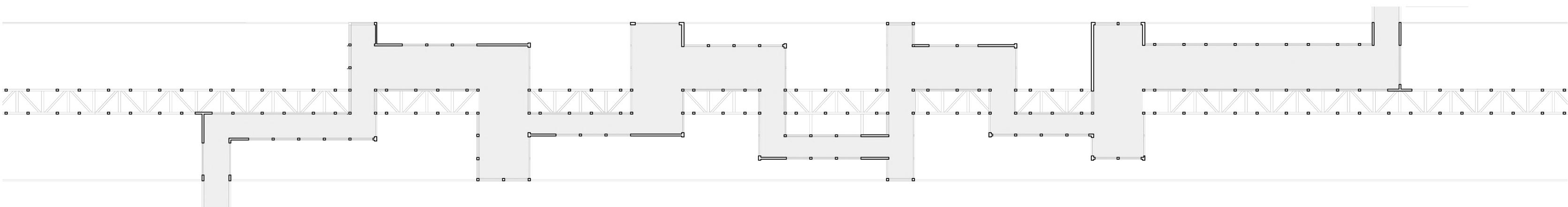




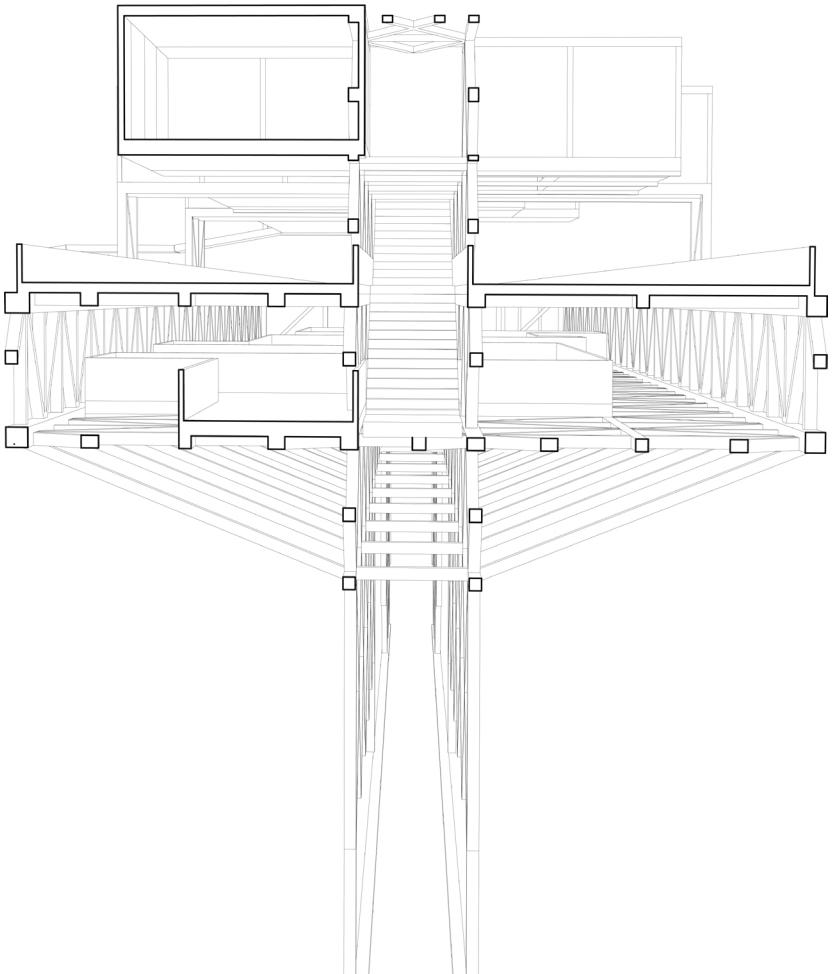
Site Plan



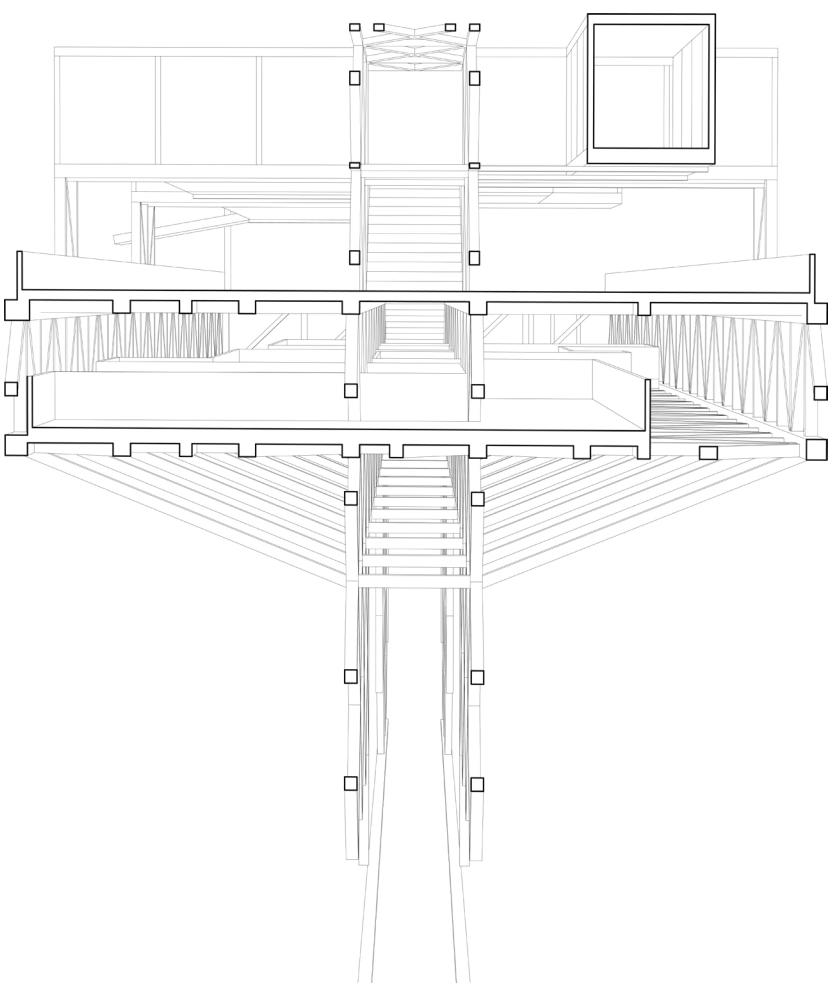
Form Analysis



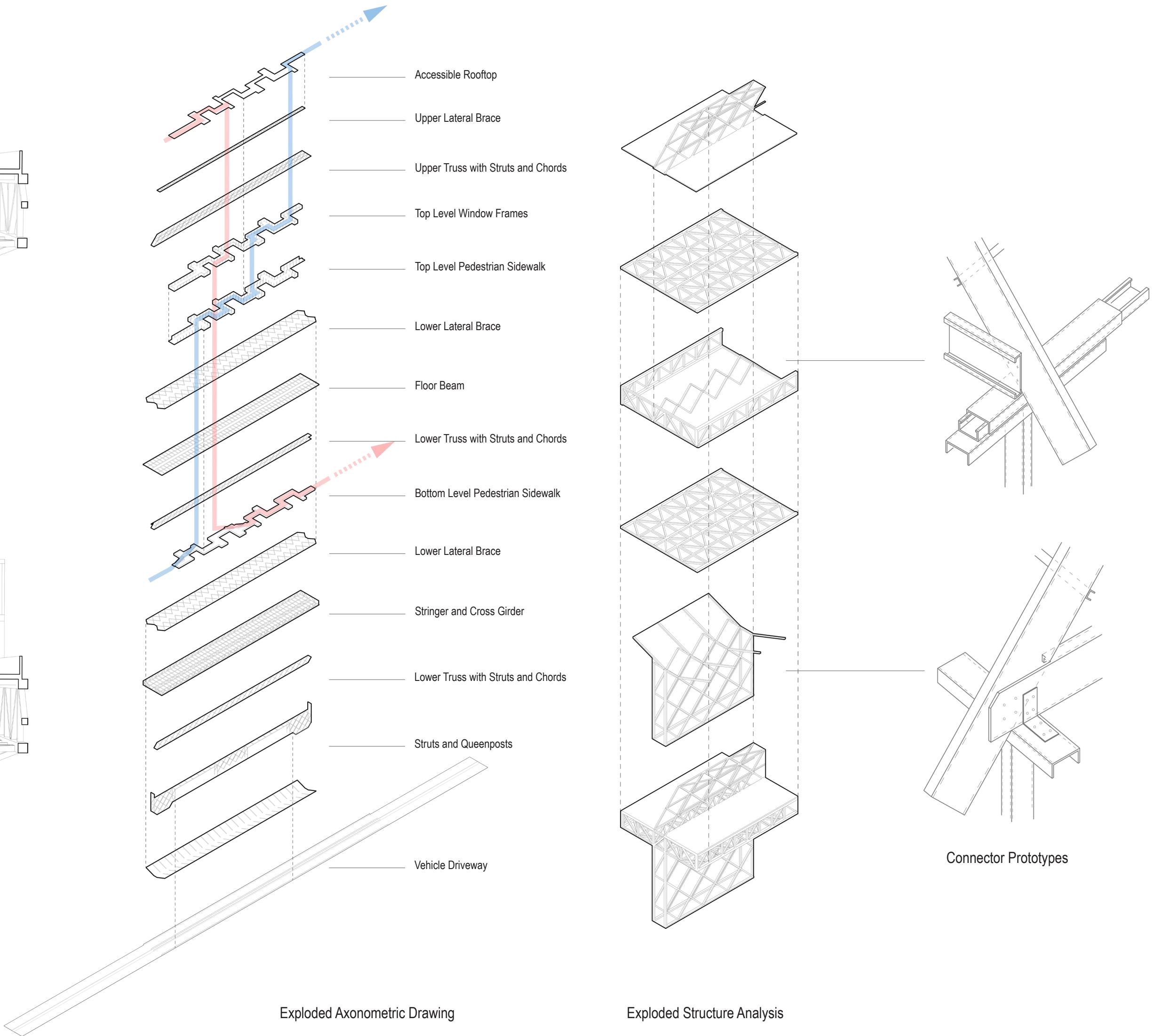
Upper Sidewalk Level Master Plan

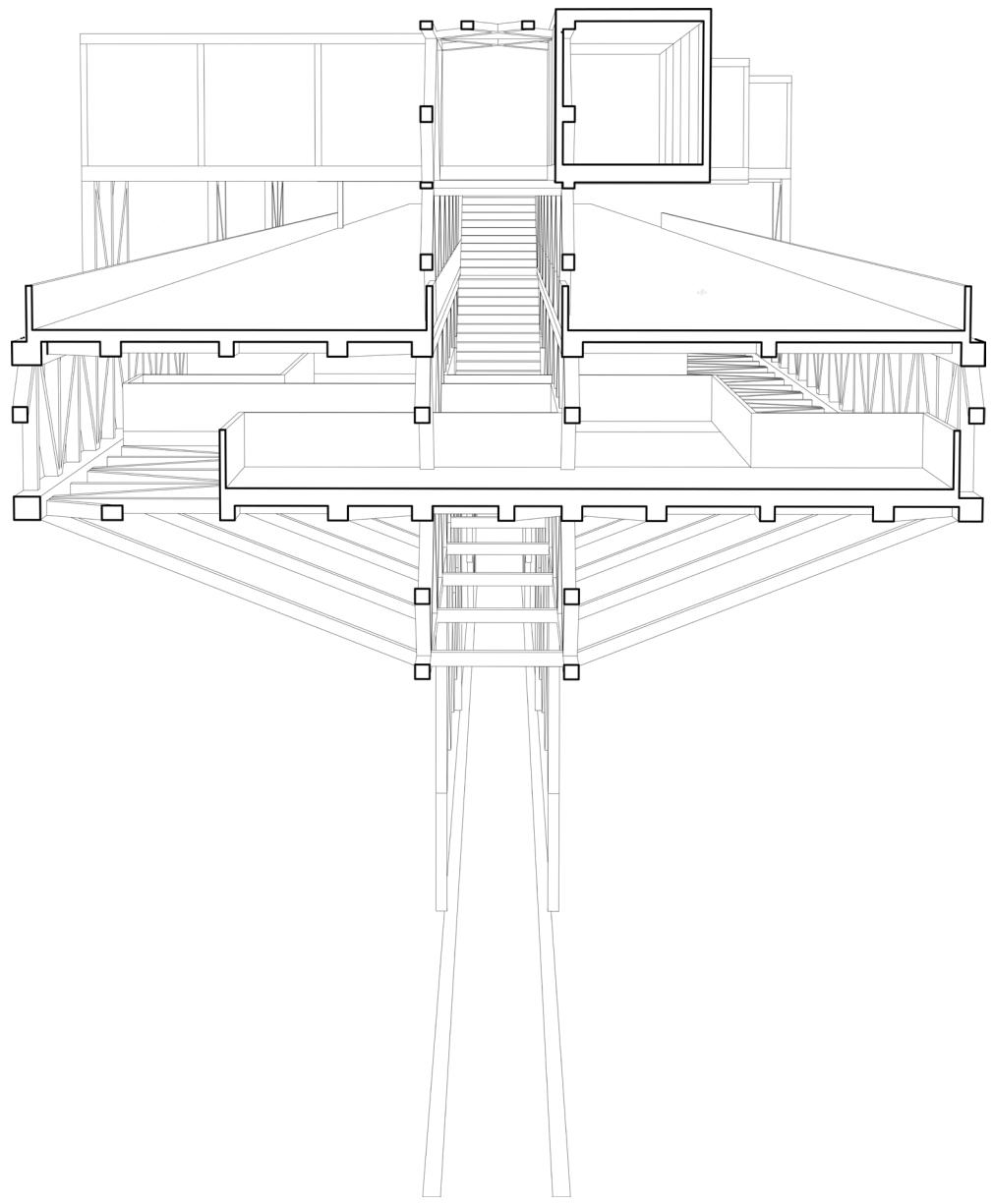


West End Section 1

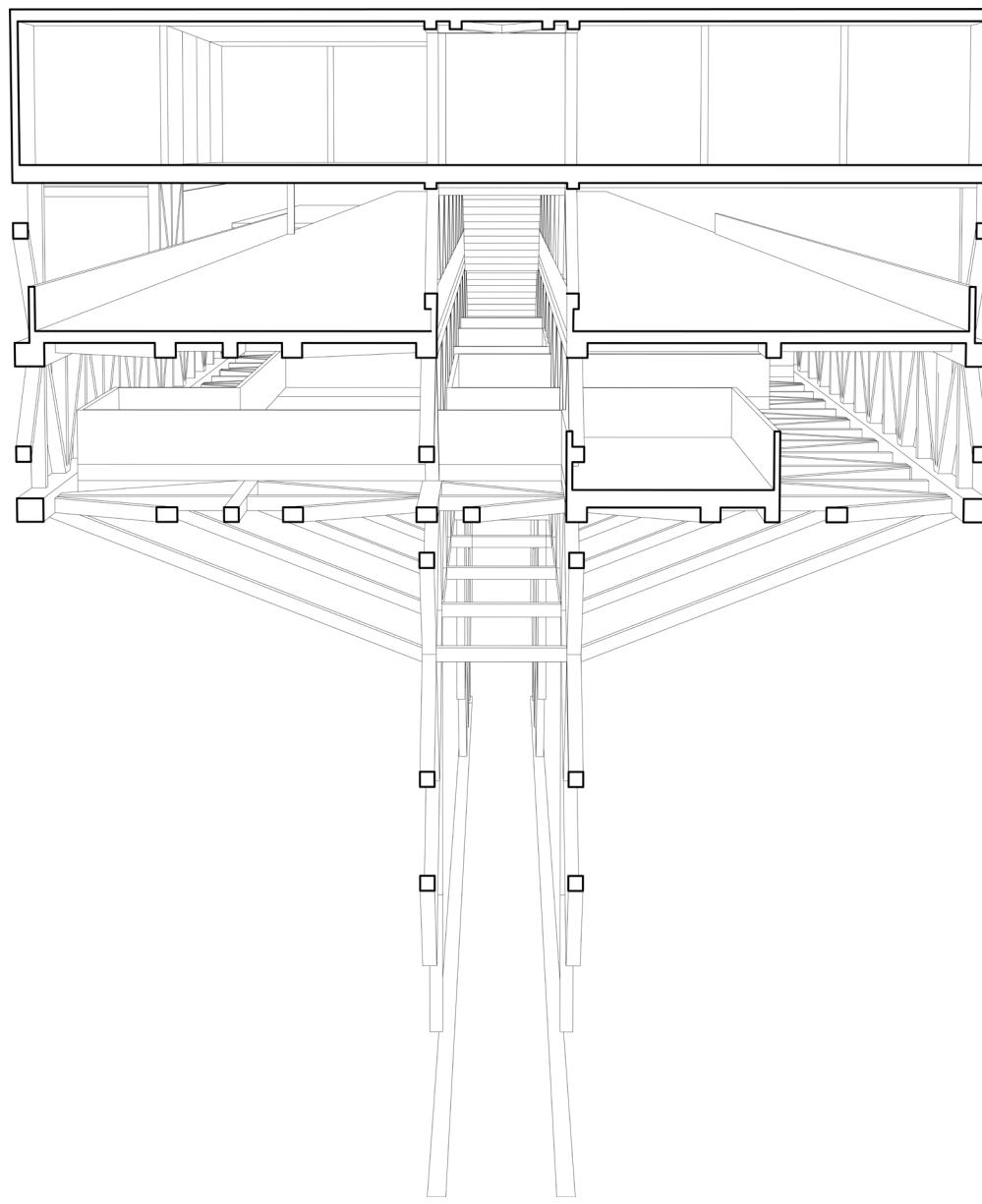


West End Section 2

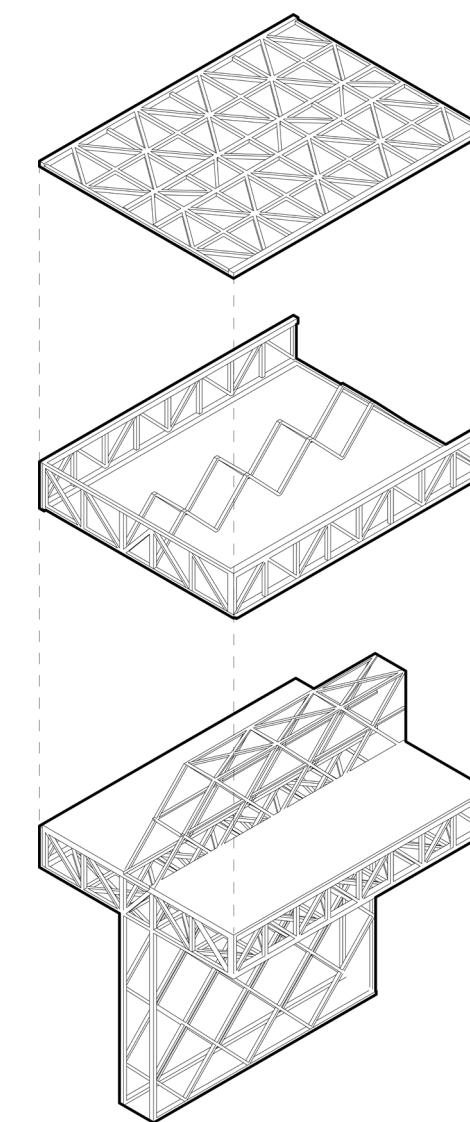




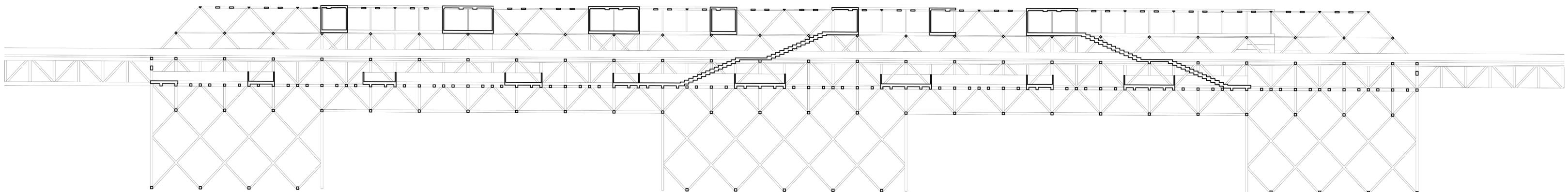
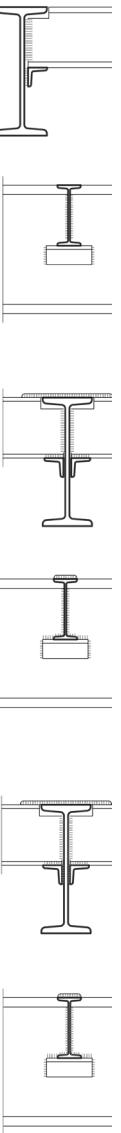
East End Section 1



East End Section 2



I-Beam Structure Prototypes



Linear Section

Rendering Images



Traffic Lane View (a)



Traffic Lane View (b)



Overall Structure View



Commercial Space in Sidewalk



06

An Aggregable Collective for Industrial Settlement

Exploring Architectural Growth with Discrete Design

Instructor: Meizi Li

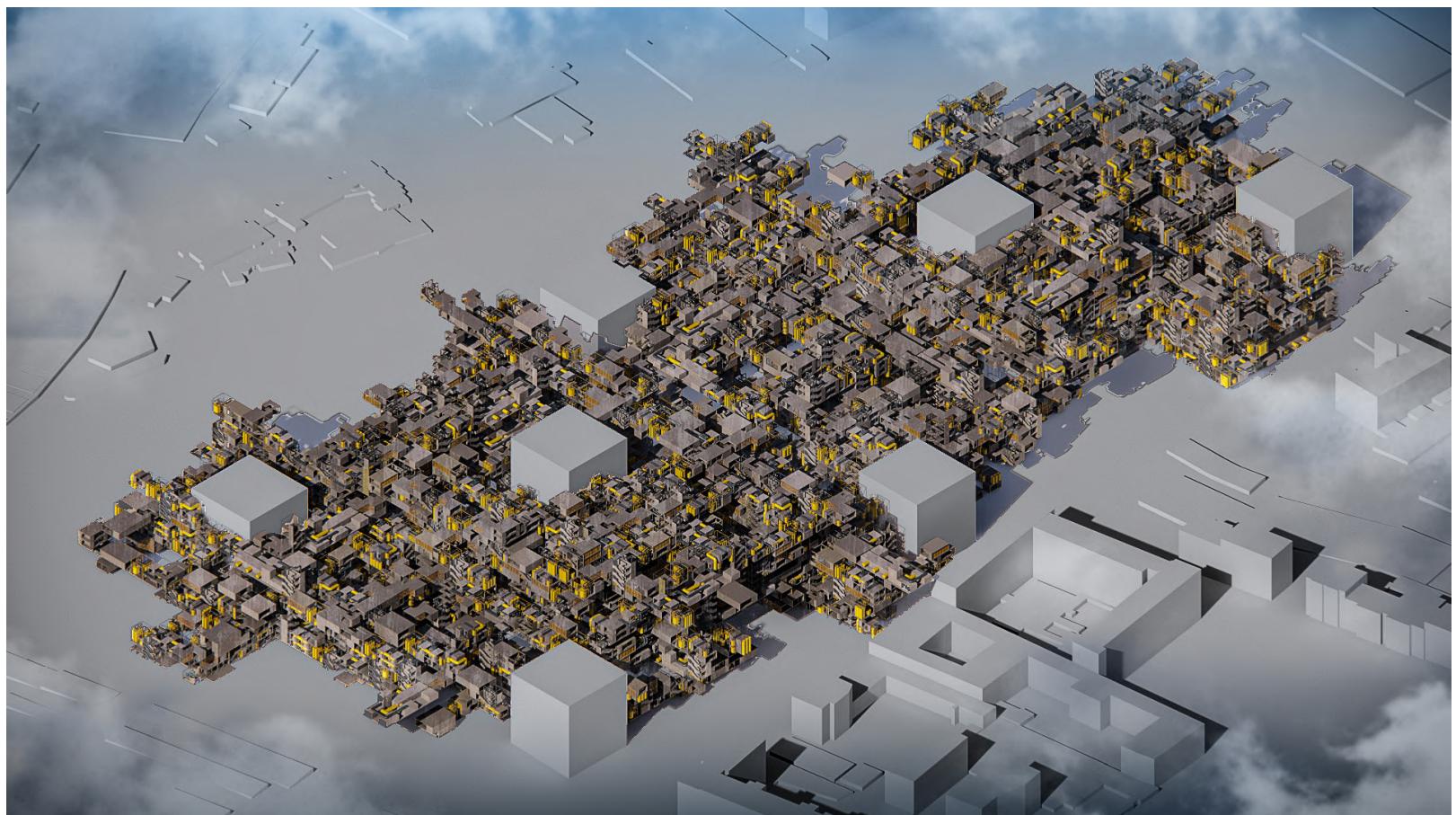
Teammate: Fenghua Lin

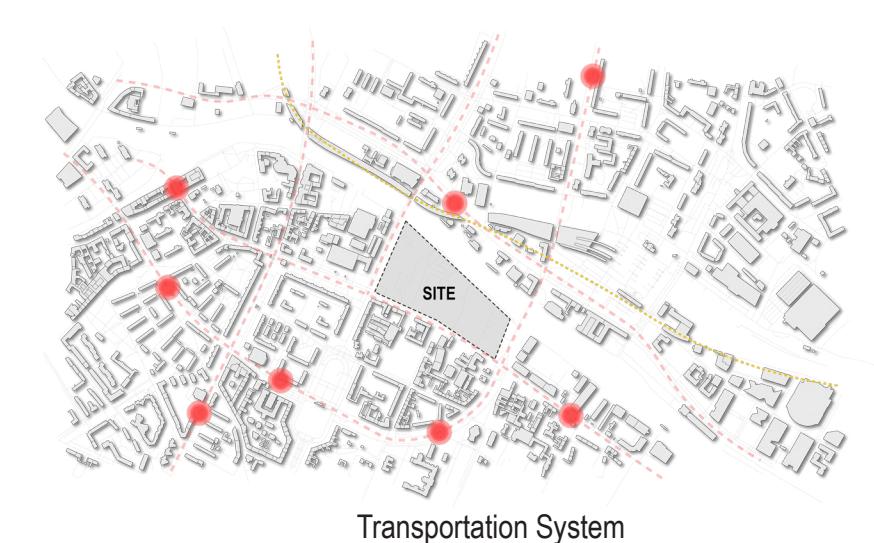
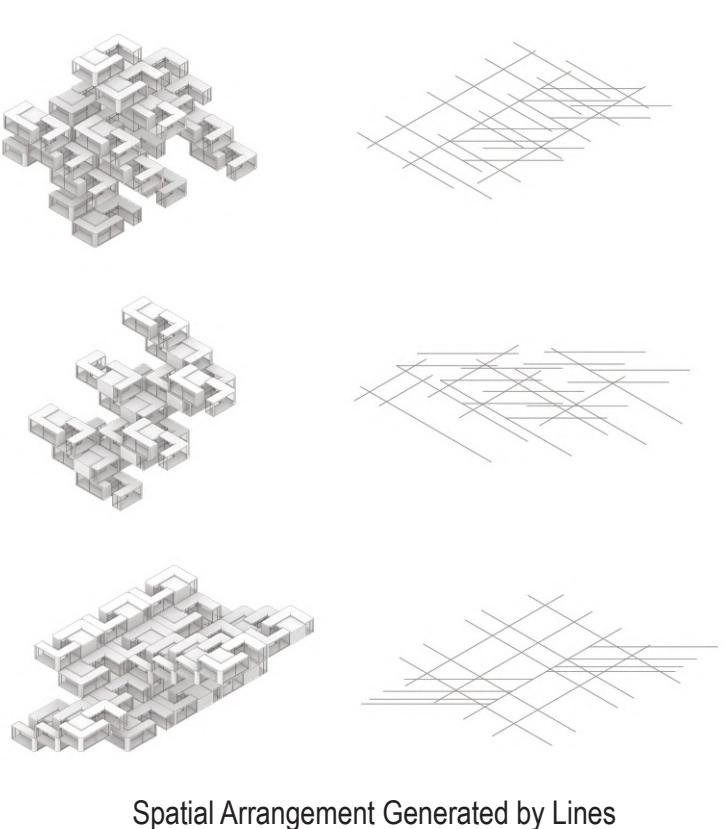
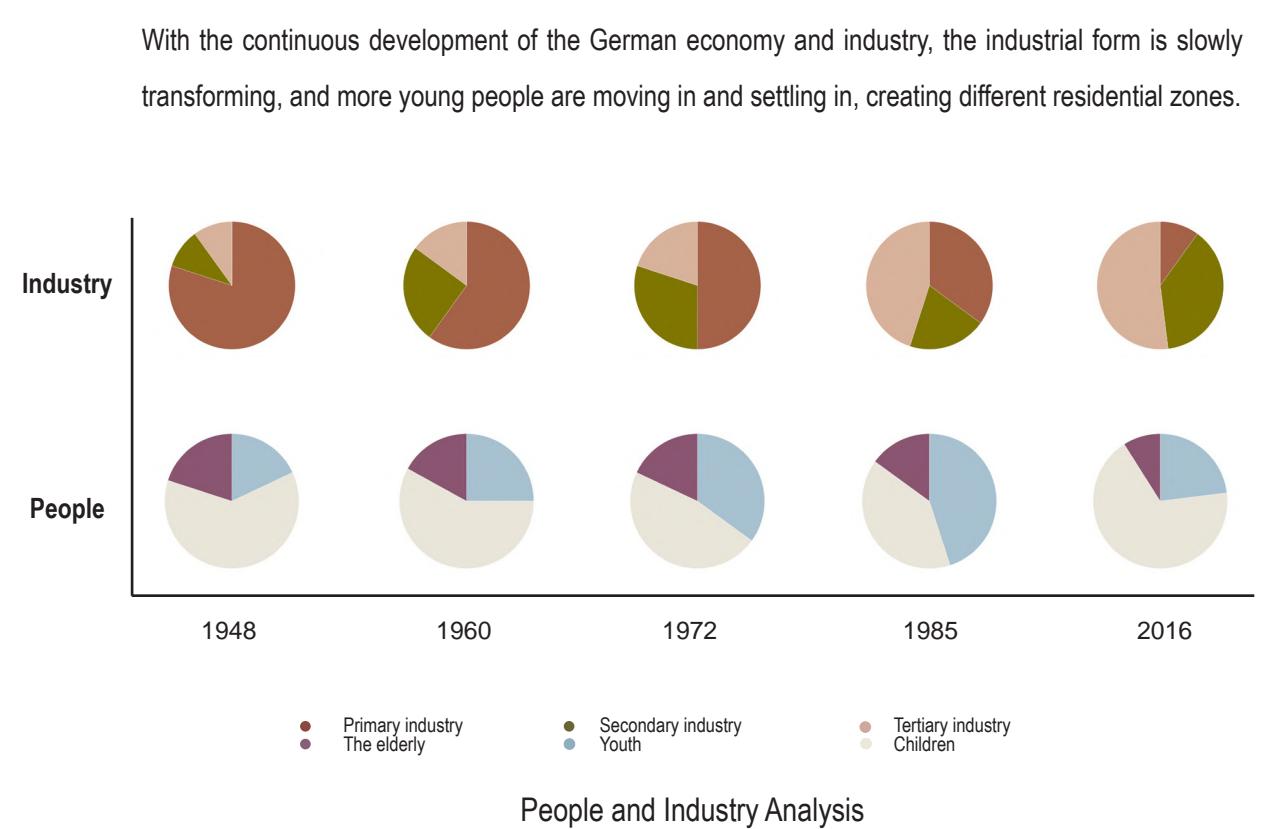
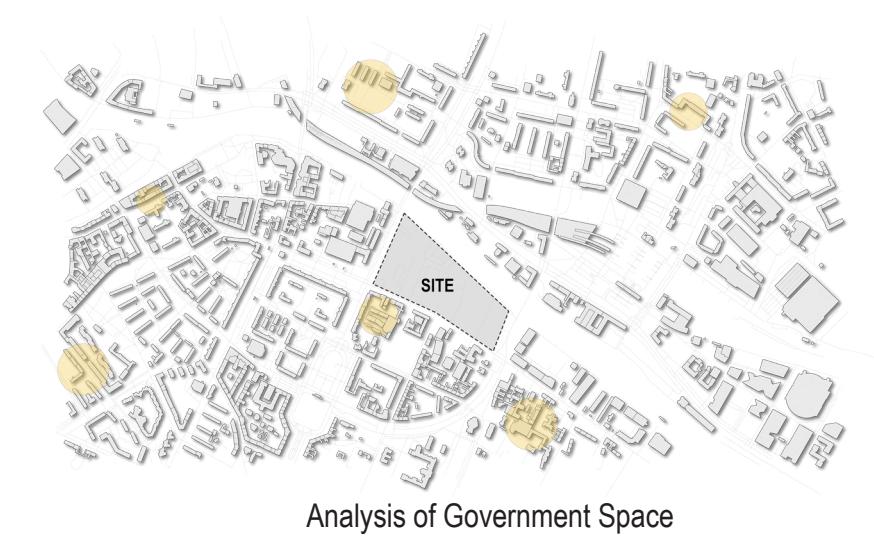
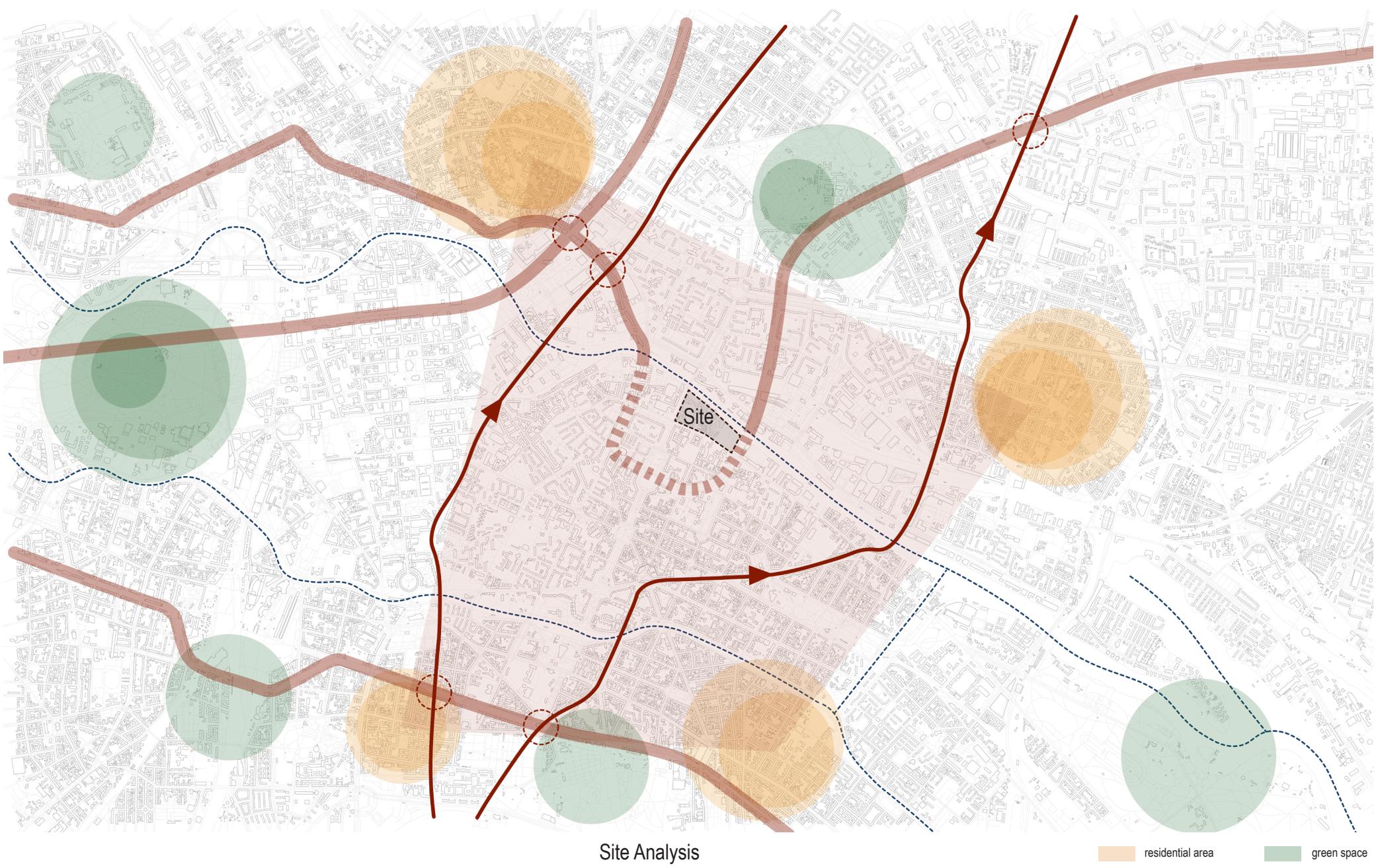
Fall 2022

As a wall is constructed by bricks, an architecture/community could be **aggregated by parts**.

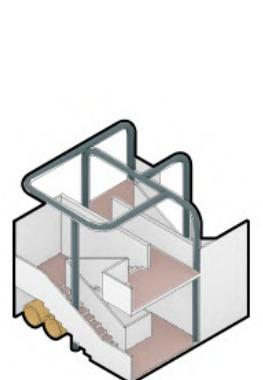
This design site is located around an industrial park in Berlin, Germany. The location is chosen to incorporate the industrial park into a more **compact, multi-functional** building cluster that can “grow.” In this design, basic discrete spaces include apartments, offices, power plants and laboratories, and shared discrete spaces include learning areas and transportation areas.

The prototype of this project can be **extracted, arranged, and augmented** through **parametric operation** to generate a whole city as well as an innovative urban life mode. Their flexibility and inclusiveness allow them to fit into **different city vibes** and promote social interactions.

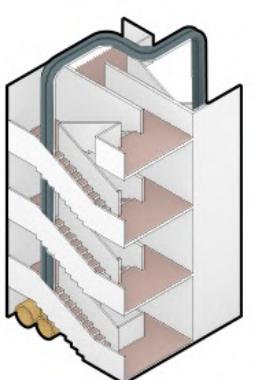




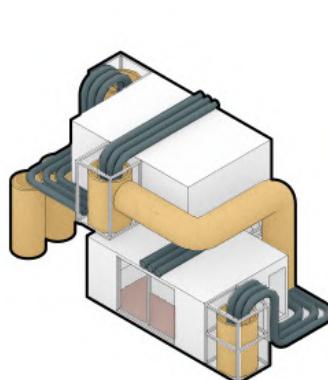
Prototype Analysis



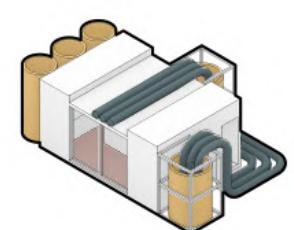
Vertical Transportation I
20'x20'x20'



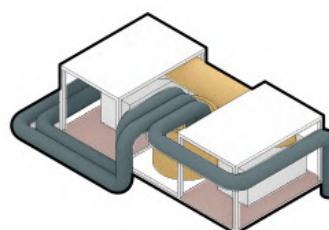
Vertical Transportation II
20'x20'x40'



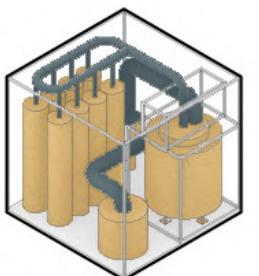
Housing Unit I
20'x40'x20'



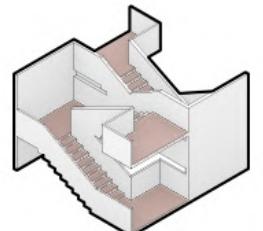
Housing Unit II
20'x30'x10'



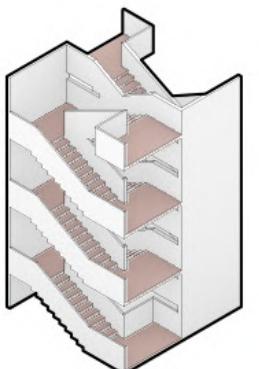
Electrical Room
20'x40'x10'



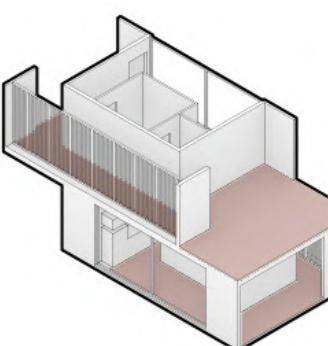
Mechanical Room
20'x20'x20'



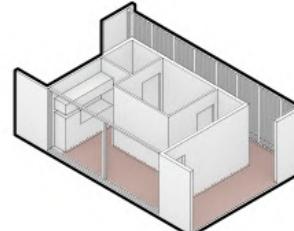
Vertical Transportation I
20'x20'x20'



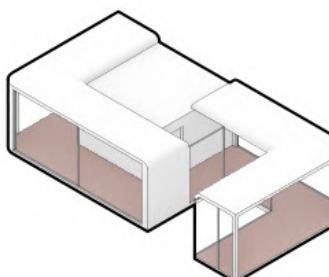
Vertical Transportation II
20'x20'x40'



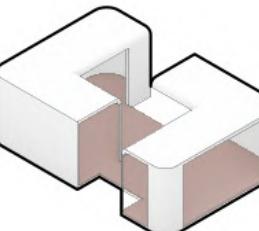
Housing Unit I
20'x40'x20'



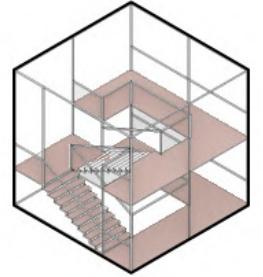
Housing Unit II
20'x30'x10'



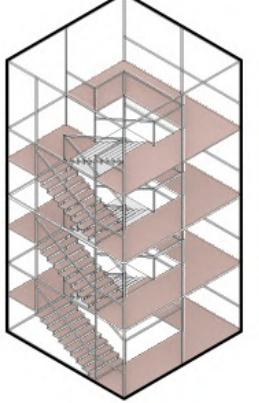
Electrical Room
20'x40'x10'



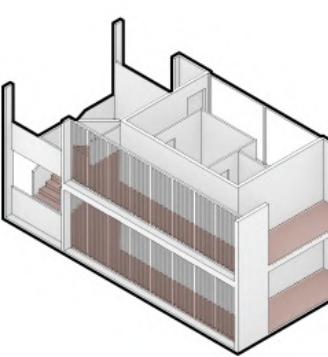
Exhibition Space
20'x30'x10'



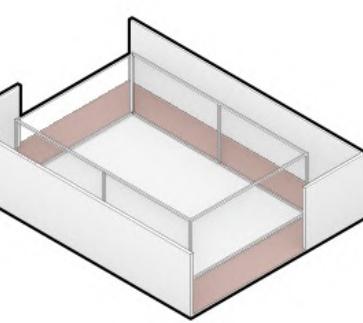
Vertical Transportation I
20'x20'x20'



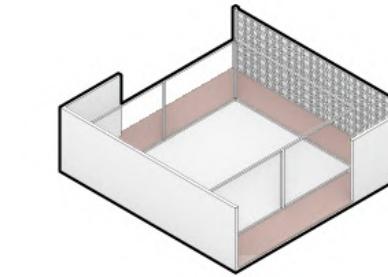
Vertical Transportation II
20'x20'x40'



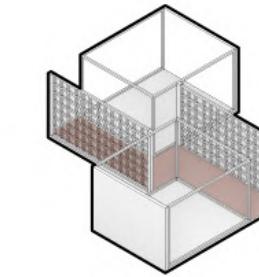
Housing Unit I
20'x40'x20'



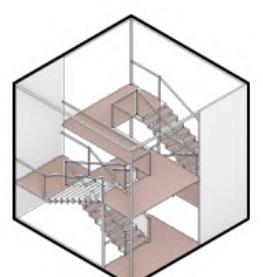
Lab
30'x40'x10'



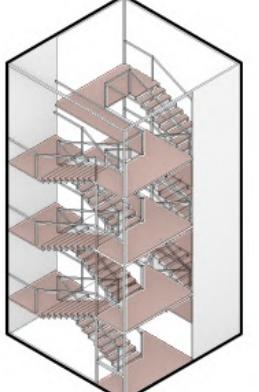
Discussion Room
30'x30'x10'



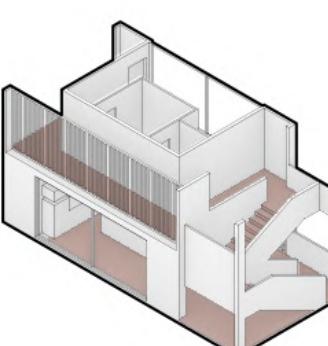
Exhibition Space
20'x30'x10'



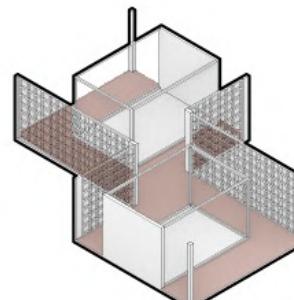
Vertical Transportation I
20'x20'x20'



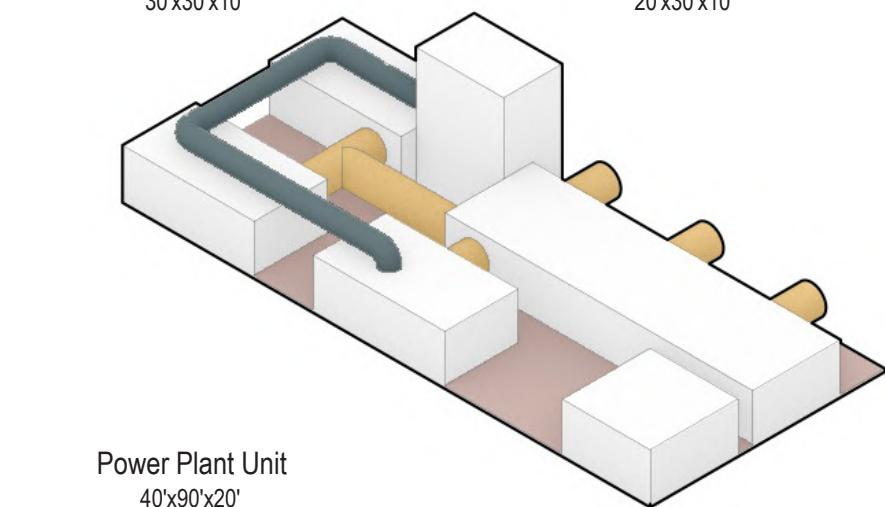
Vertical Transportation II
20'x20'x40'



Housing Unit I
20'x40'x20'

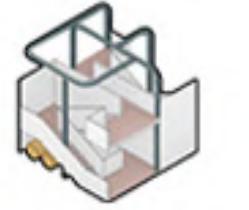


Lab
30'x40'x10'

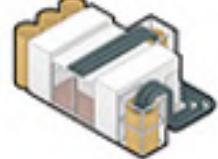


Power Plant Unit
40'x90'x20'

Assembly 1 (100 units)



Connection: 25



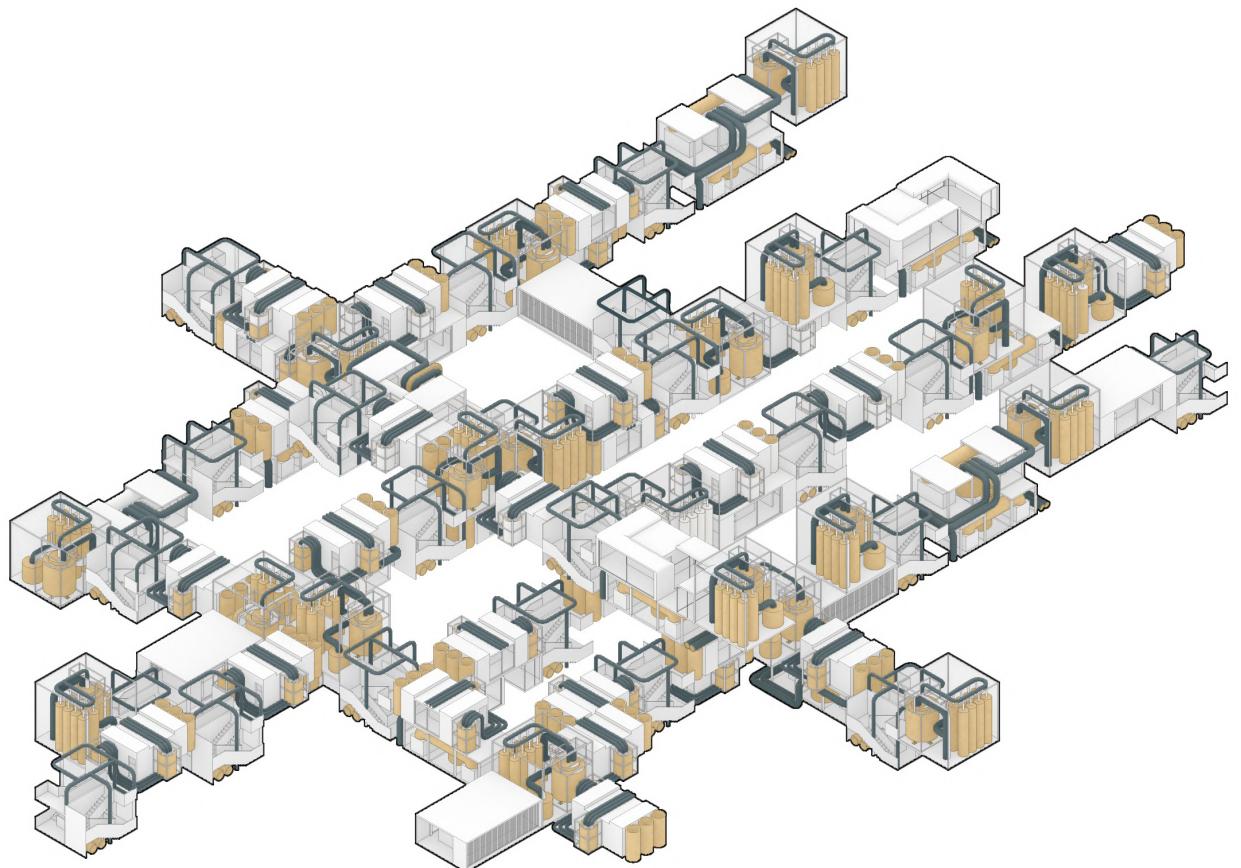
Private: 18



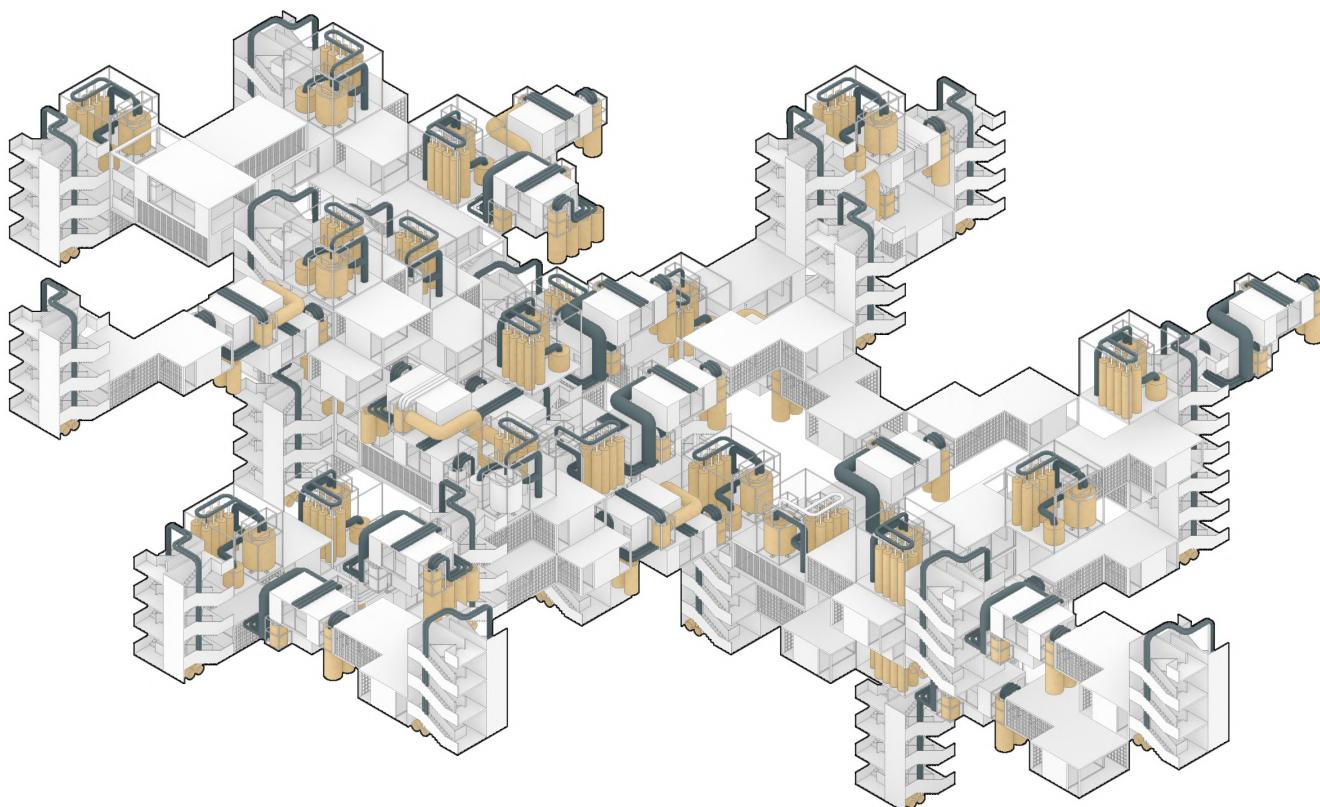
Public: 19



Public: 18



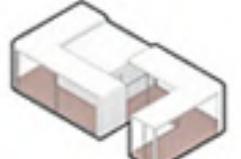
Assembly 2 (100 units)



Connection: 22



Private: 31



Public: 25

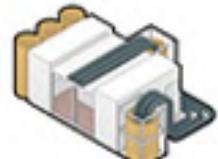


Public: 22

Assembly 3 (100 units)



Connection: 23



Private: 17

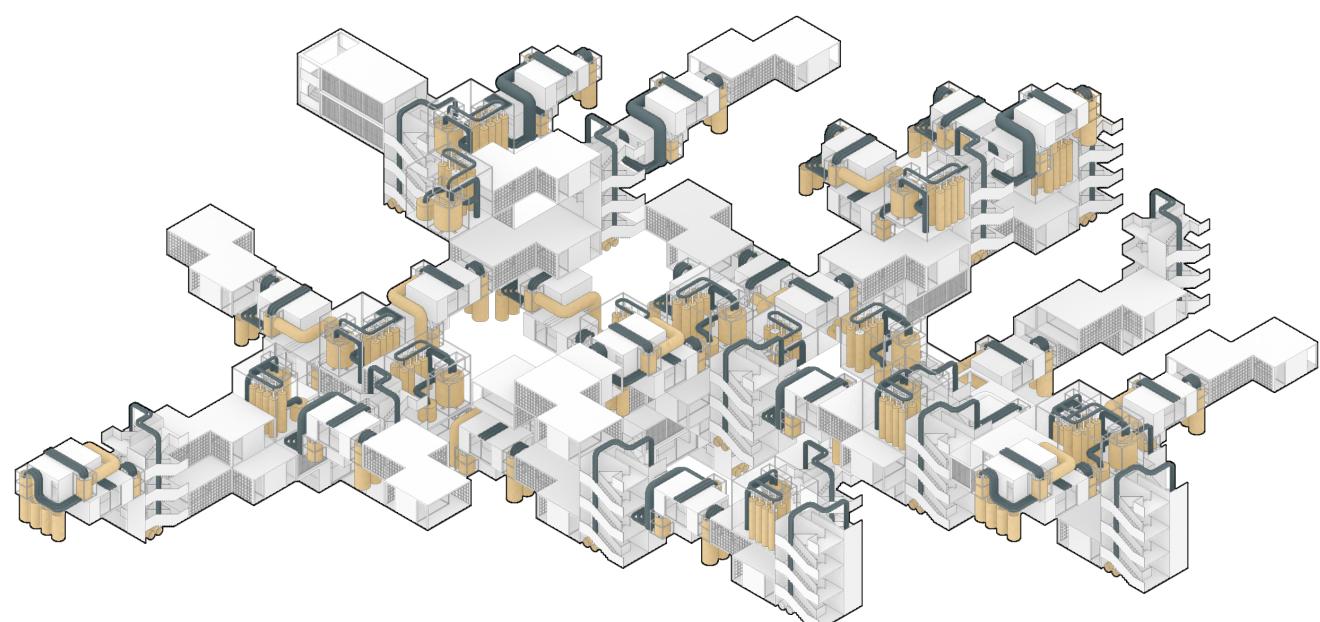


Public: 29

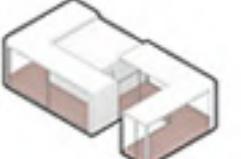


Public: 31

Assembly 4 (100 units)



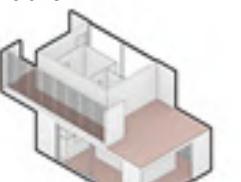
Connection: 16



Public: 23

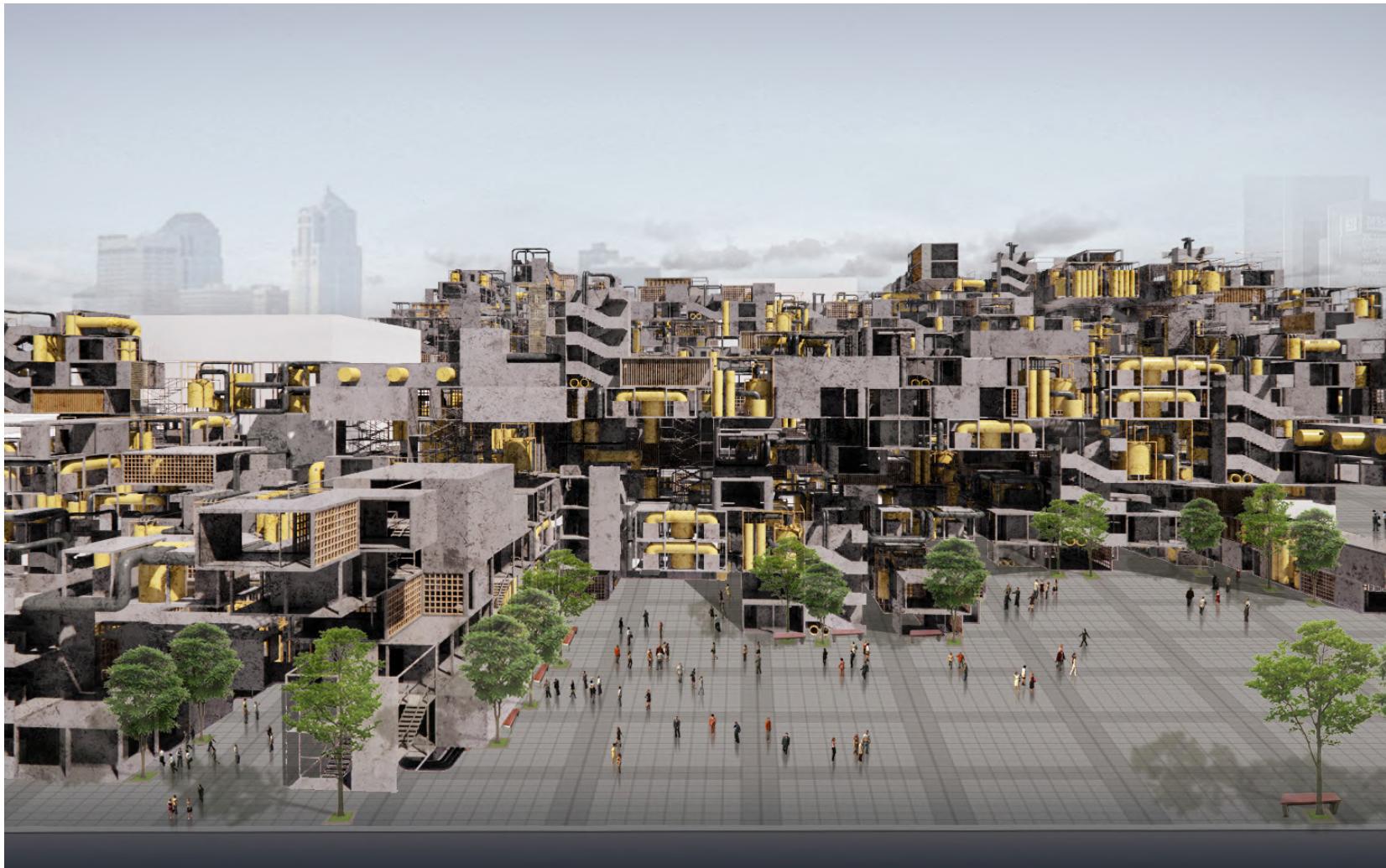


Public: 27



Private: 34

Rendering Images



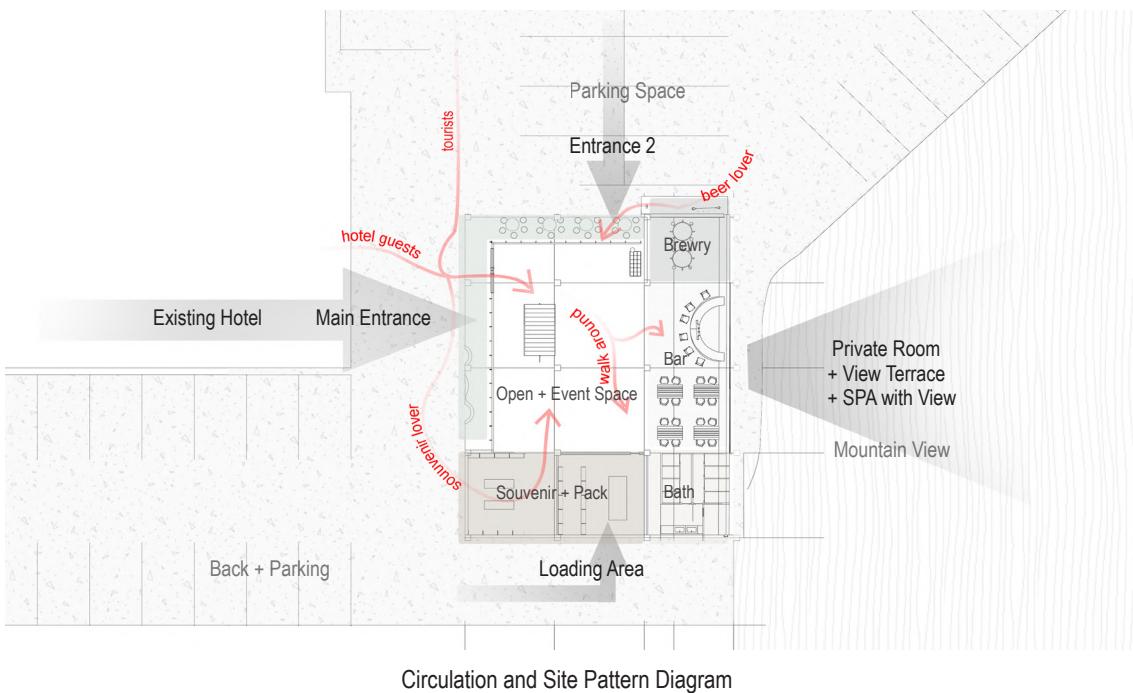
07

Arctic Brewscape

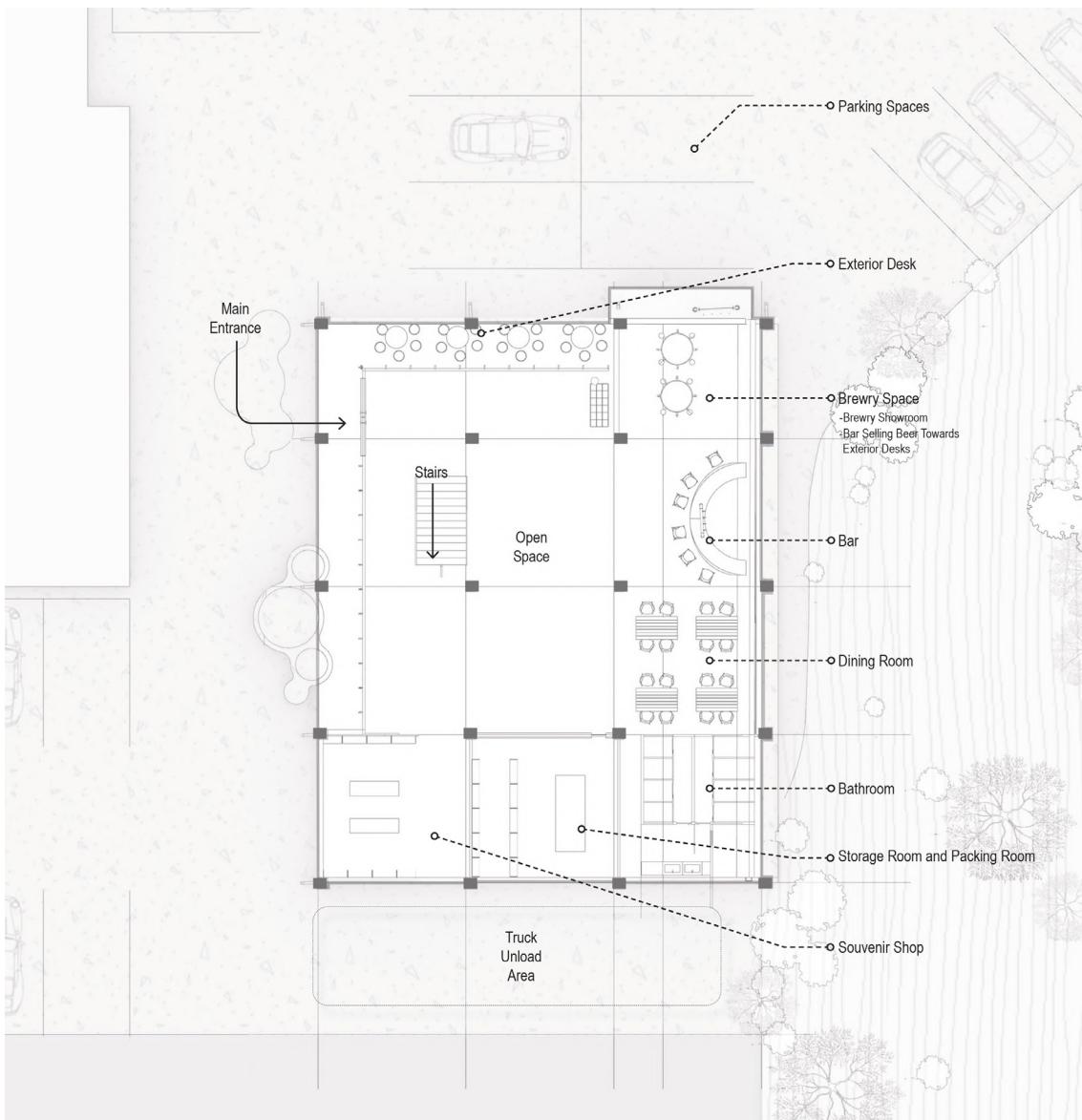
A Beer Spa with Harmonious Fusion of Iceland's Culture and Modern Amenities

Individual Work (Buildner International Architecture Competition)

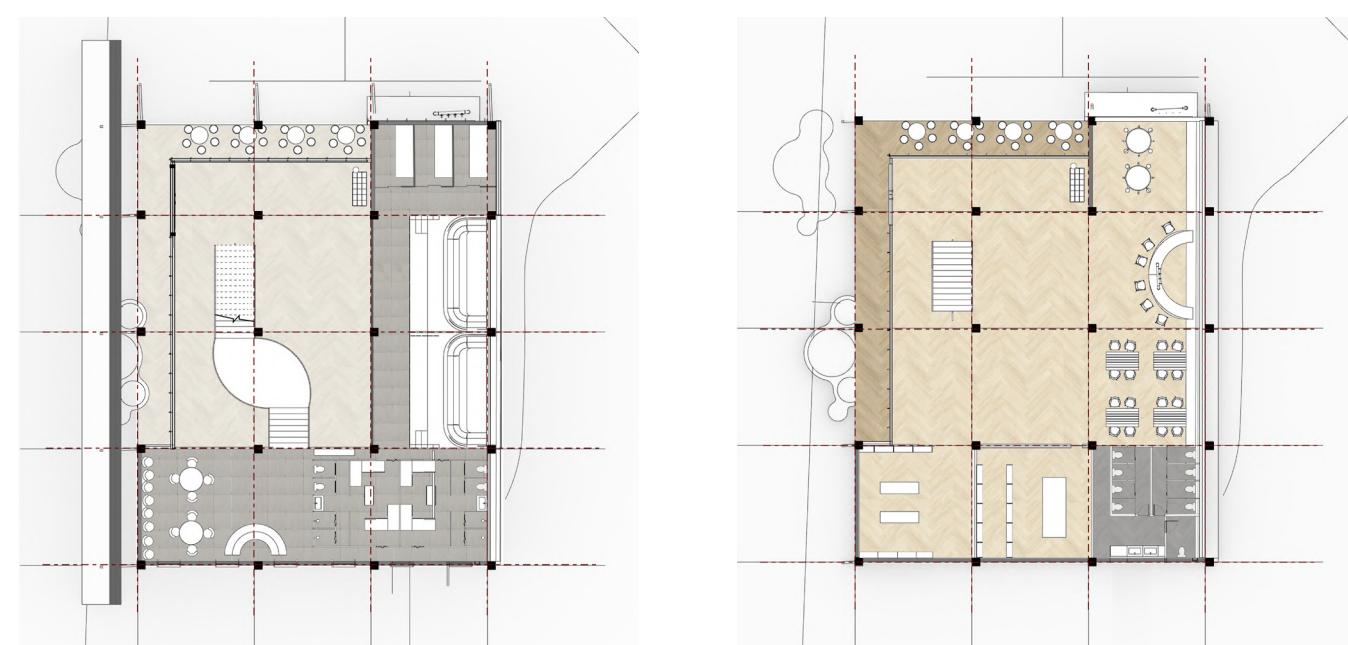
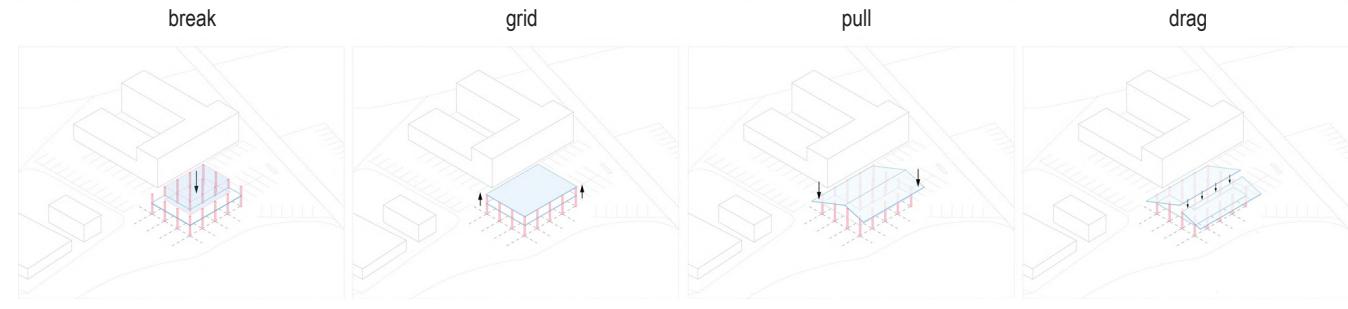
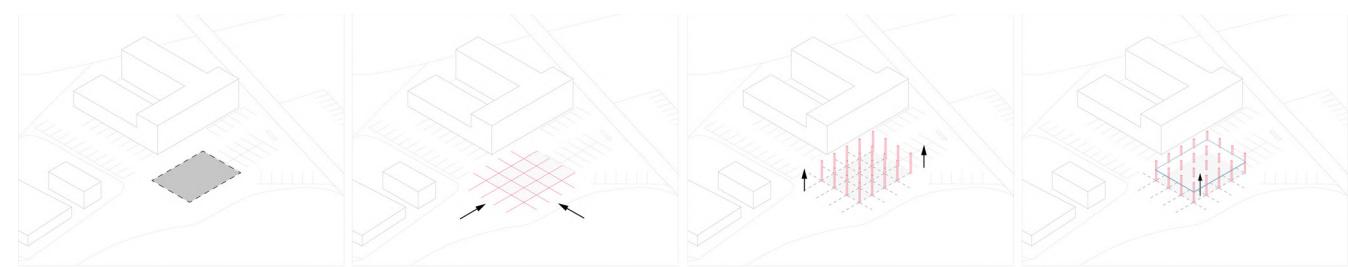
Fall 2023



Circulation and Site Pattern Diagram

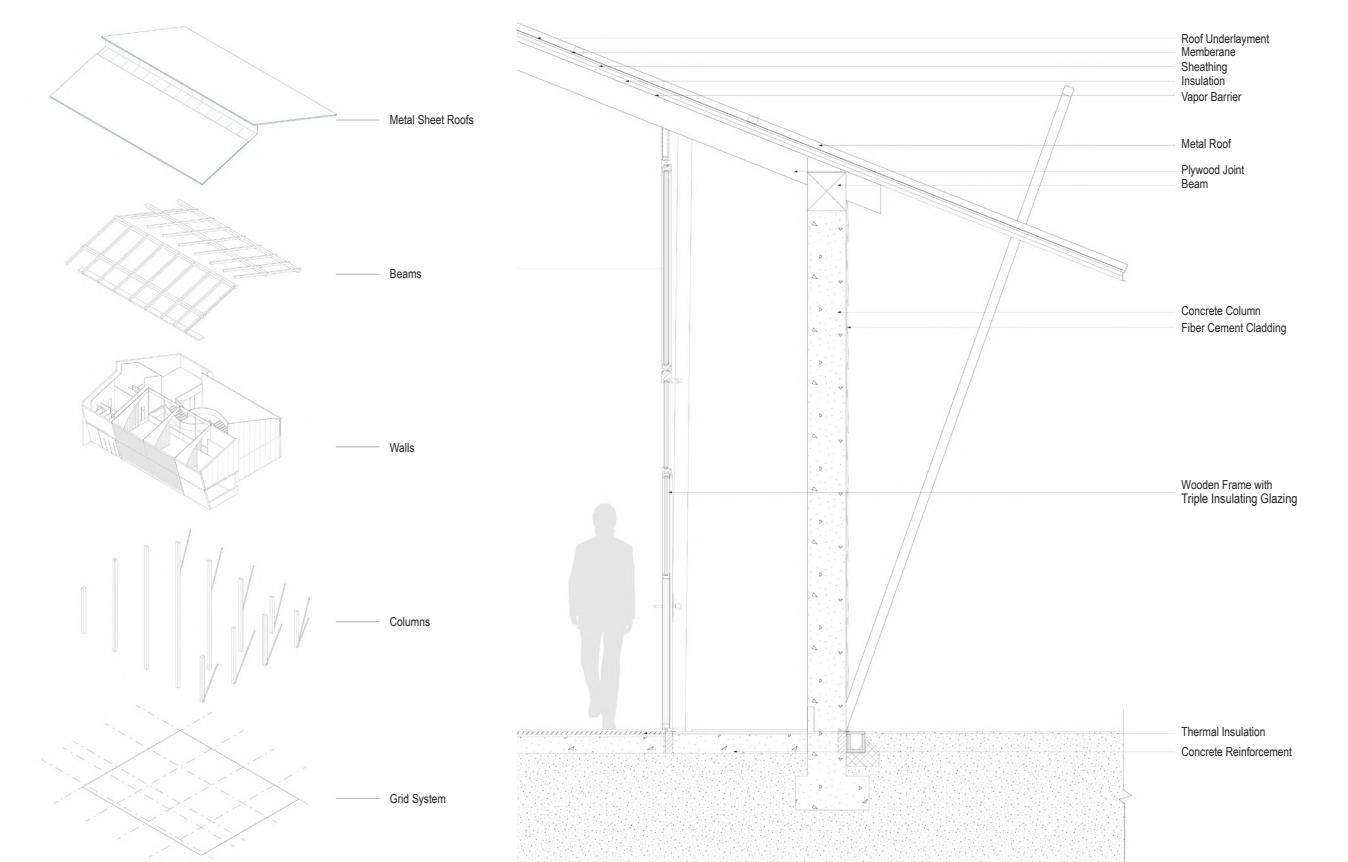


Site Plan



Level 1 Plan

Level 2 Plan



Exploded Structural Diagram

Wall Section Detail



Exterior Renderings



Interior Renderings

08

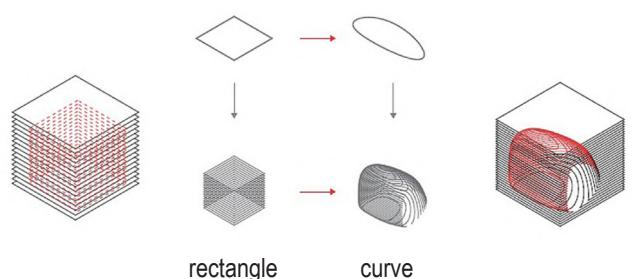
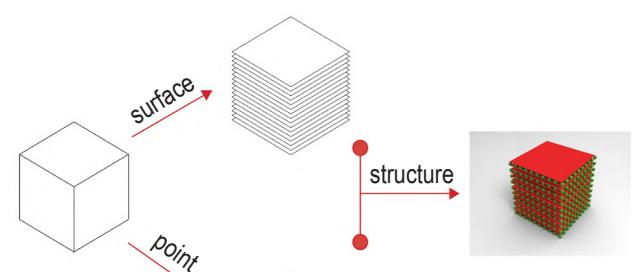
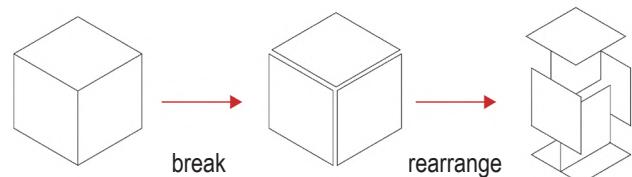
Lightwood House

An Entity Construction for Stay and Rest

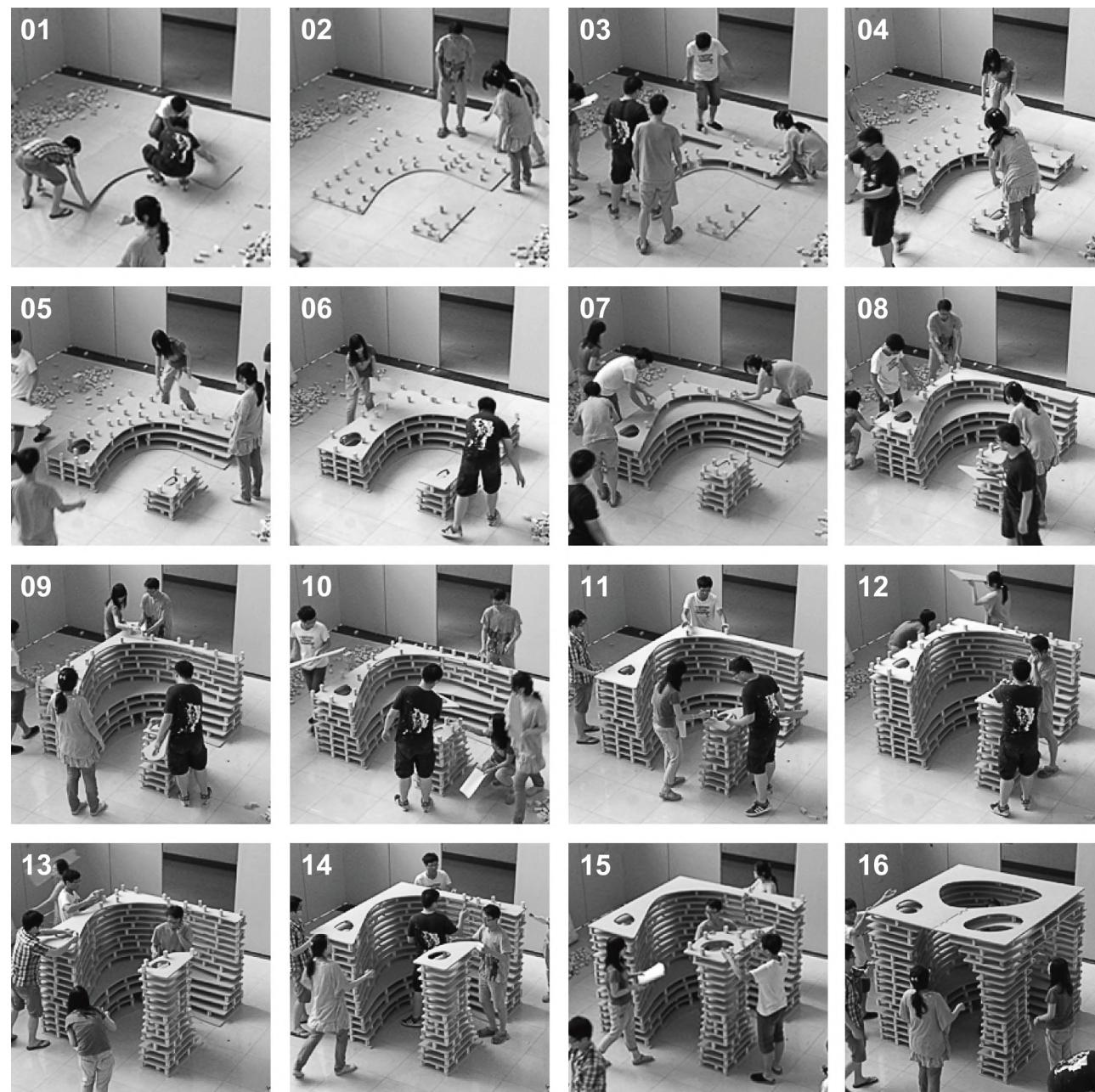
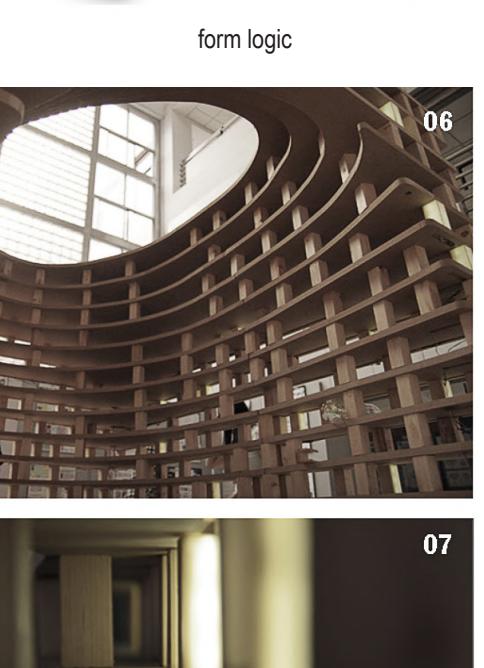
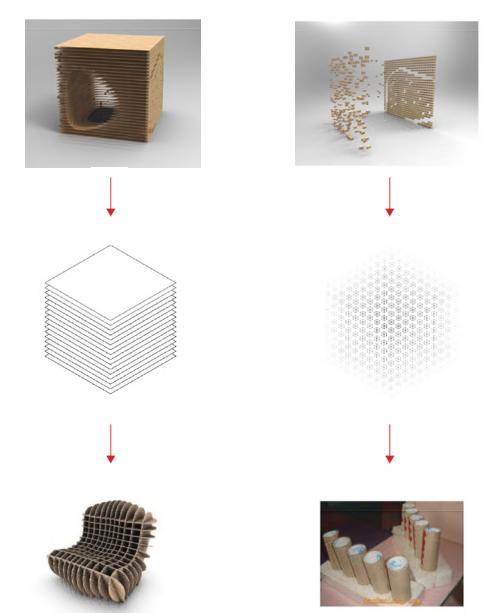
Instructor: Hua Wu, Lei Zhang

Internship Group Project (Responsibility: designed and programmed the scripts for model, and assembled the model)

Summer 2021



form logic



Wood Board

LED Lighting Boxes

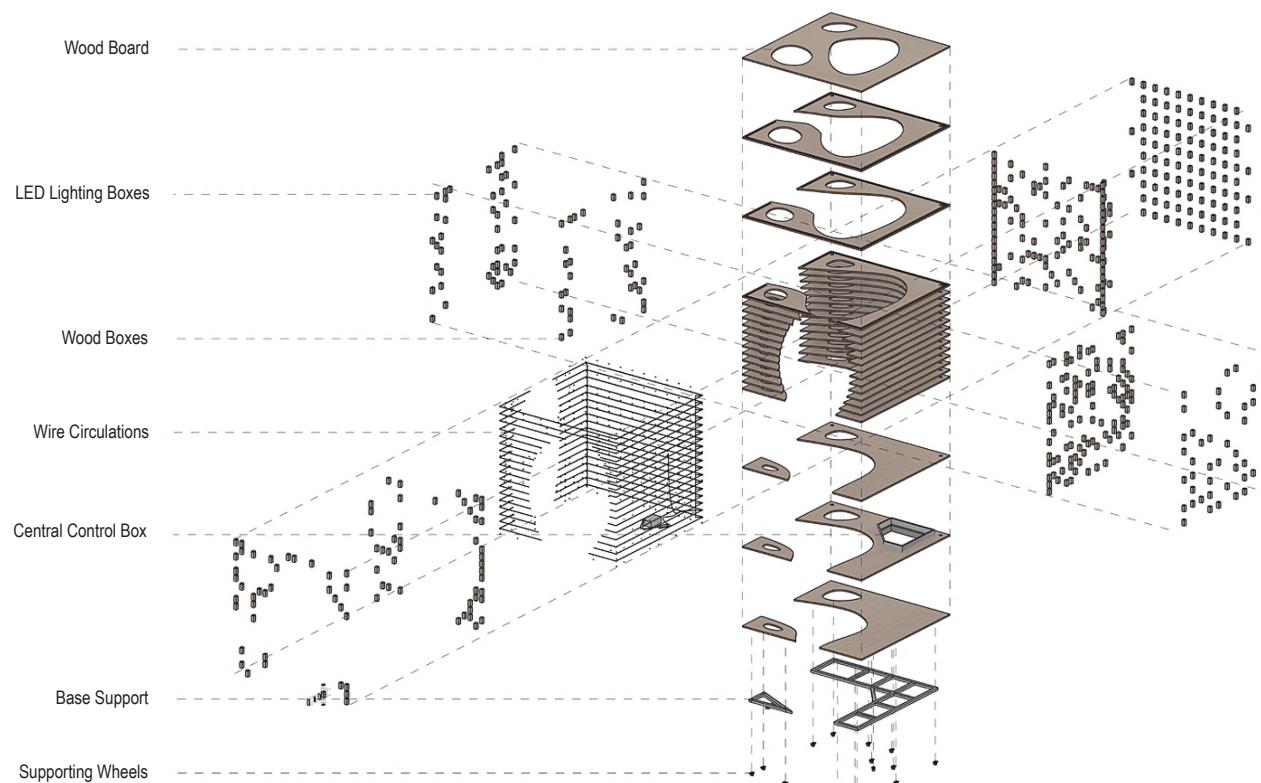
Wood Boxes

Wire Circulations

Central Control Box

Base Support

Supporting Wheels



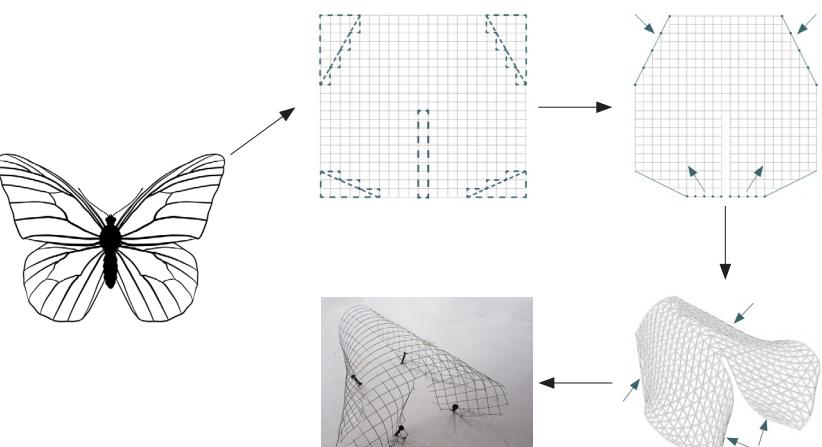
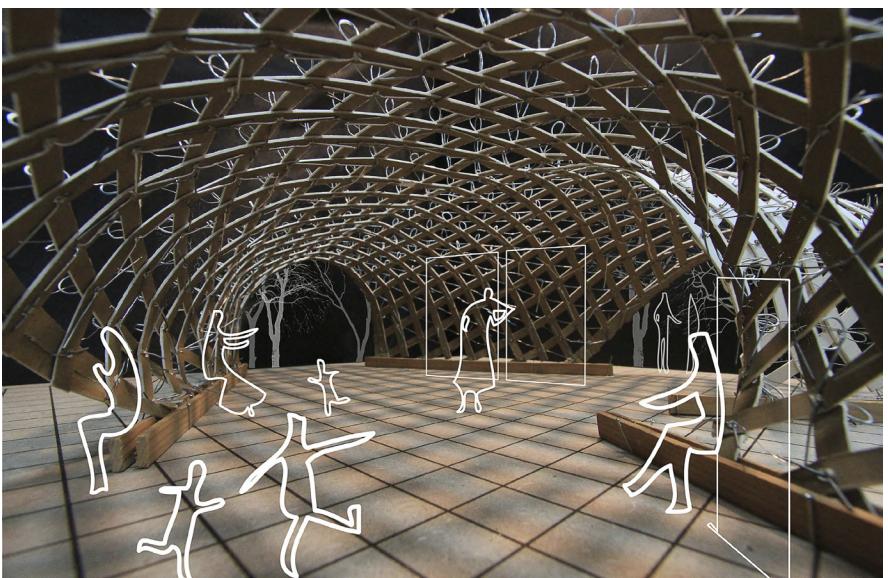
Leisure Pavilion

A Parametric Design Test for Light and Tangible Material

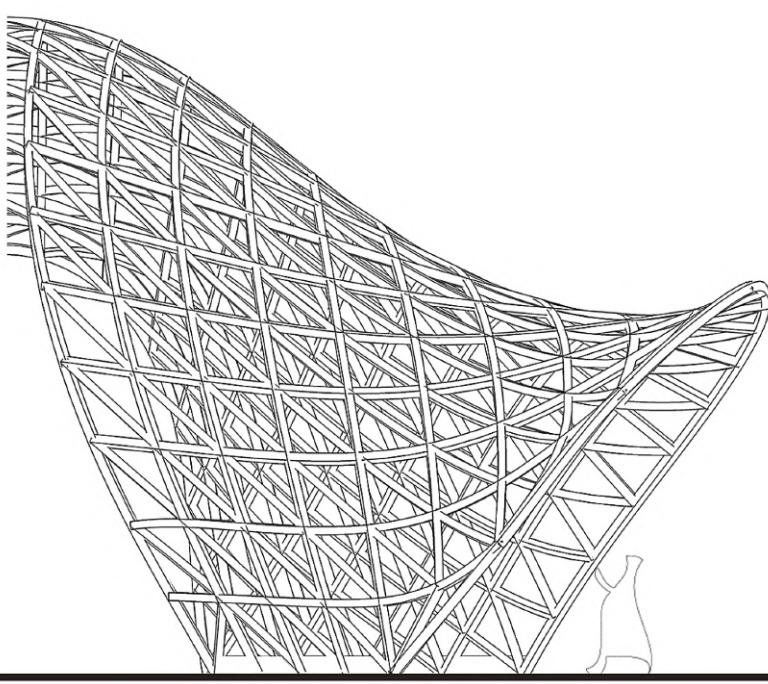
Instructor: Li Chen, Niya Jones

Individual Work

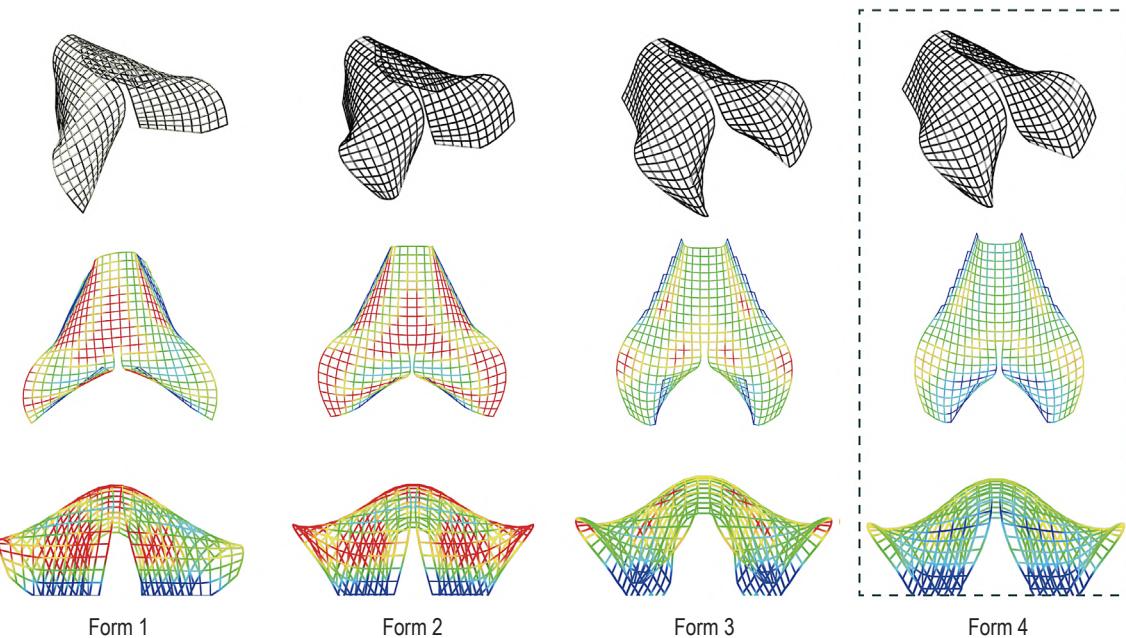
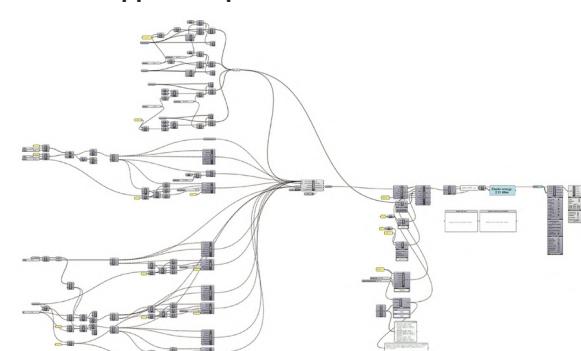
Summer 2020



Form Analysis



Zoom in Elevation

Mechanical Analysis 1**Grasshopper Scripts****Display Legend**

	<1cm		2-3cm		>4cm
	1-2cm		3-4cm		

Fitness: Displacement (cm)

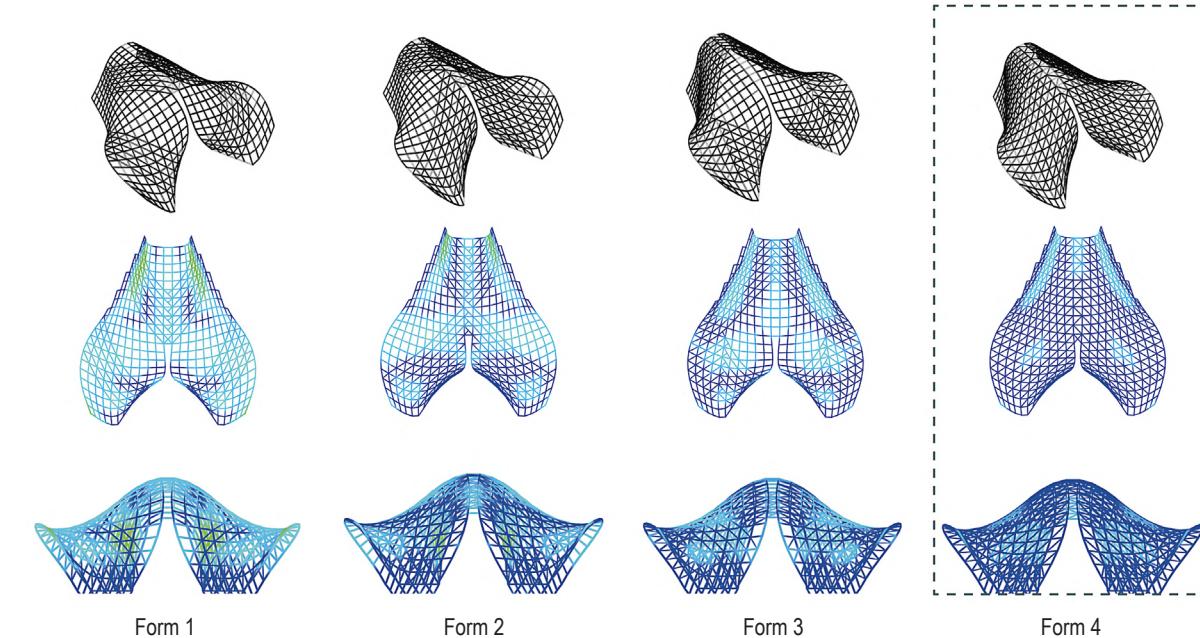
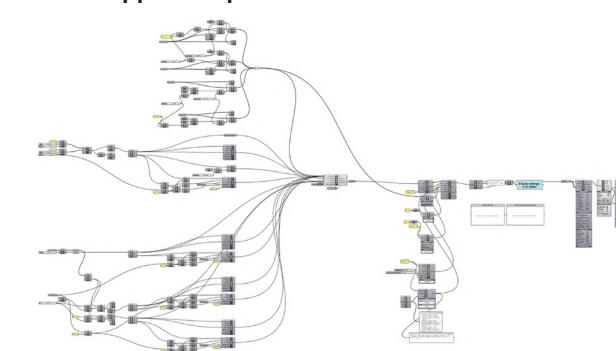
Loads: Gravity & Line= 1KN/m

Support Points: 4 Choosen Lines around with 5,5,5,5 points.

Material Selection: Wood E:1050 [kN/cm²]

Beam Cross Section: Square 5*6cm

Bracing Cross Section: Square 5*4cm

Mechanical Analysis 2**Grasshopper Scripts****Display Legend**

	<1cm		2-3cm		>4cm
	1-2cm		3-4cm		

Fitness: Displacement (cm)

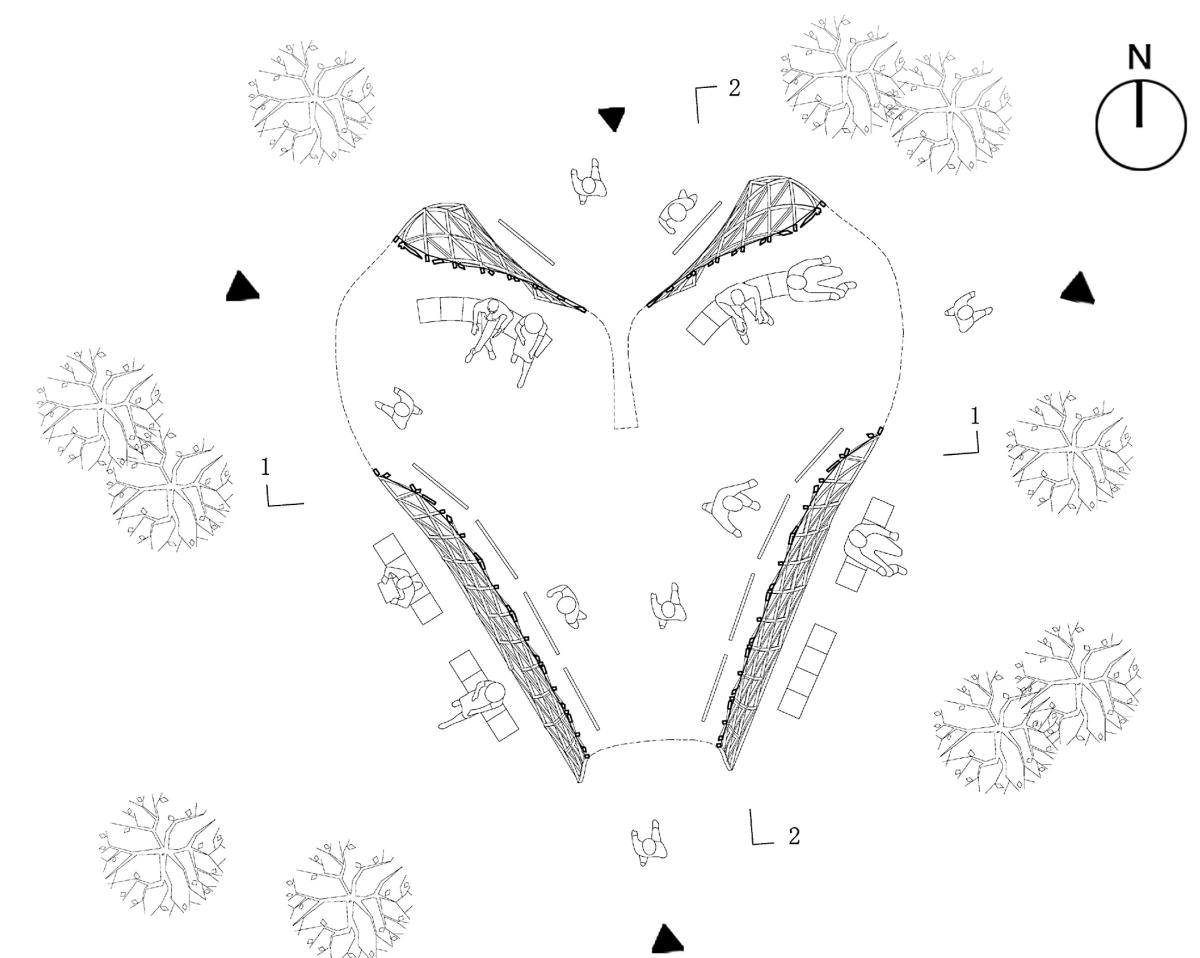
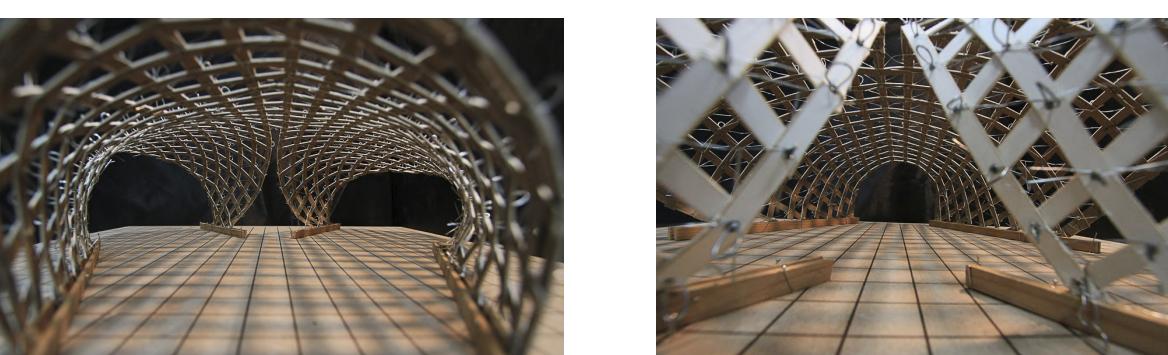
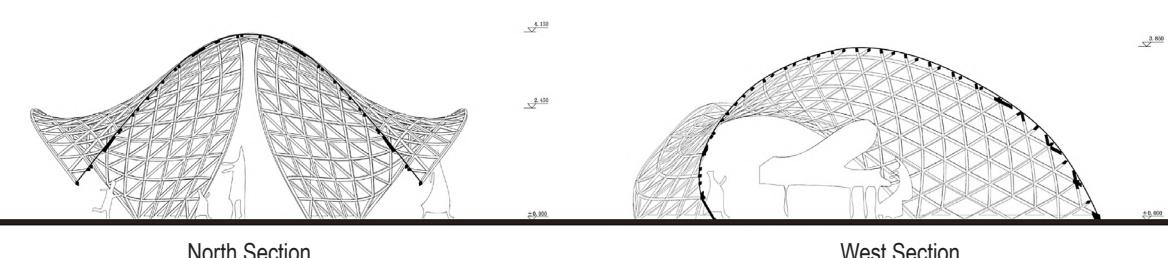
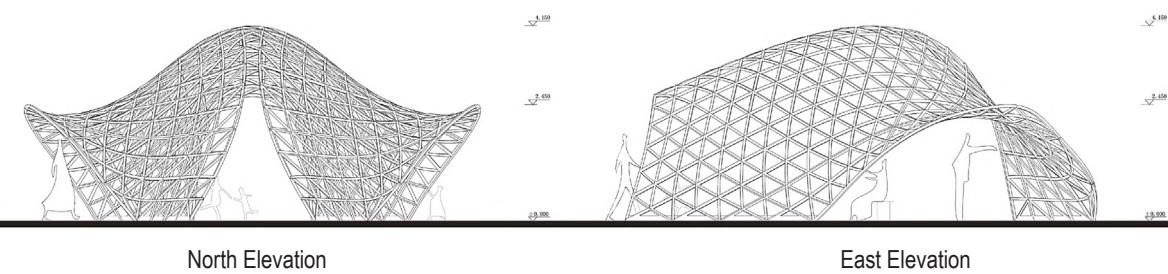
Loads: Gravity & Line= 1KN/m

Support Points: 4 Choosen Lines around with 5,5,5,5 points.

Material Selection: Wood E:1050 [kN/cm²]

Beam Cross Section: Square 5*6cm

Bracing Cross Section: Square 5*4cm



Professional Work (Selected)

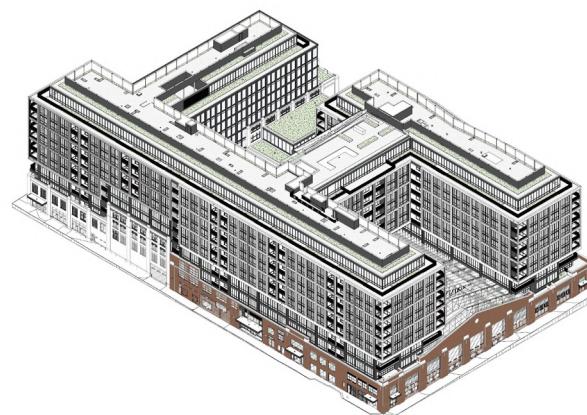
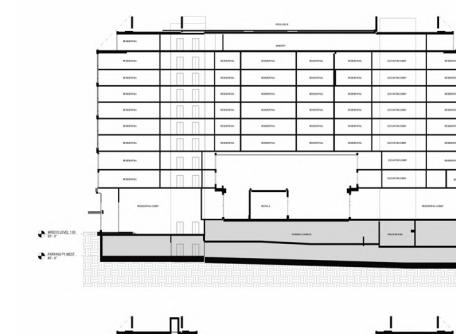
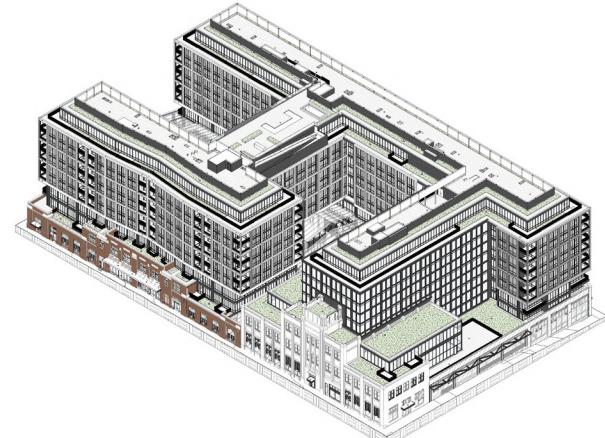
Work Samples Developed While Employed Full-Time (STUDIOS Architecture) Post-Graduation

Responsibility: fixed models, drew completed plans for typical levels, drew sections, rendered images, created wall and window studies; created concept studies, created analysis diagrams and sections, rendered images

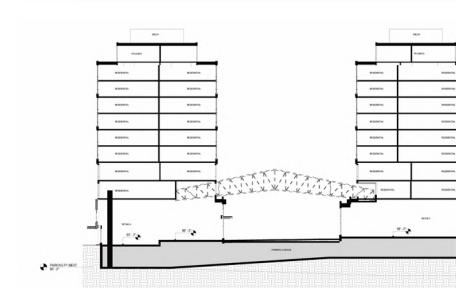
Summer 2023 - Now



Overall Plan for Level 2



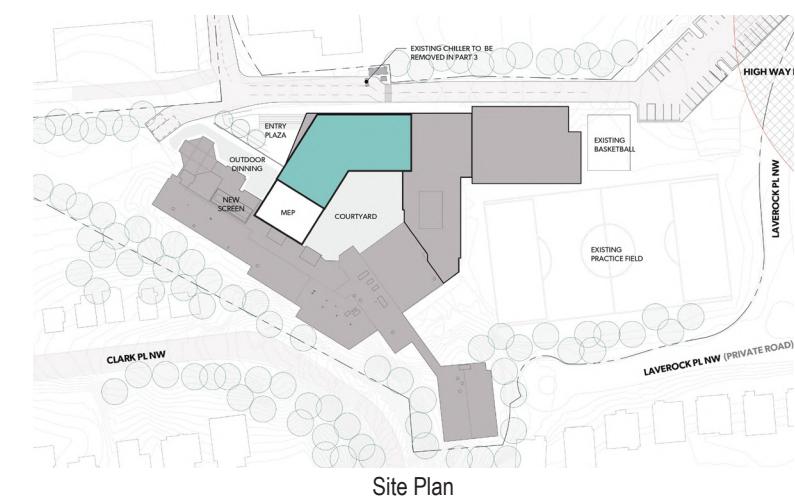
Axonometric View



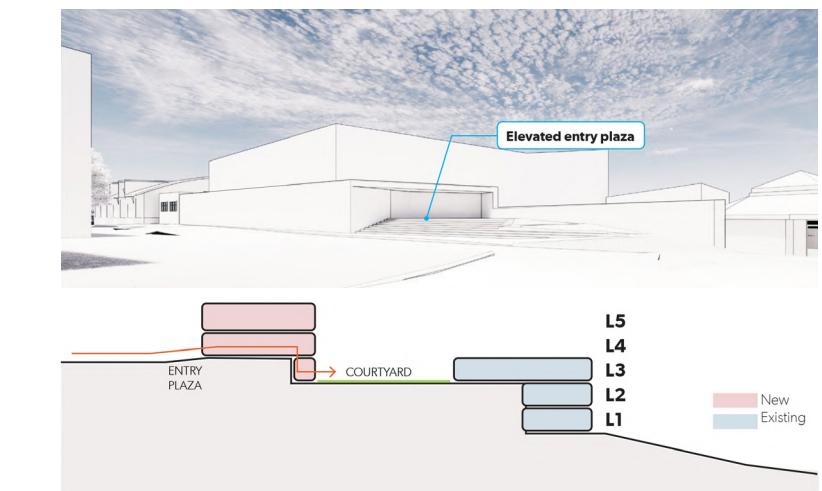
Building Sections



Elevation (Window Type)



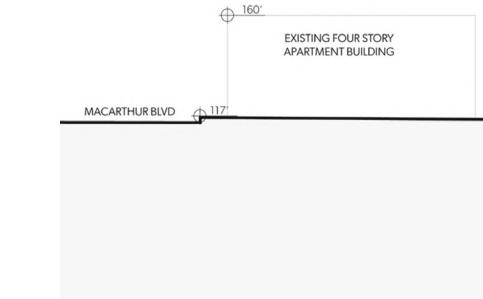
Site Plan



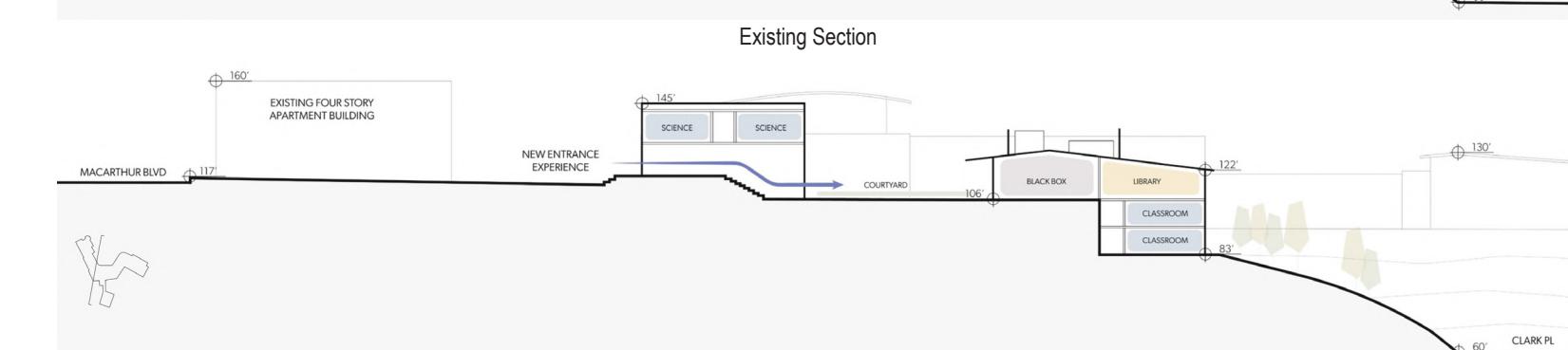
Massing Development Diagram (SD Phase)



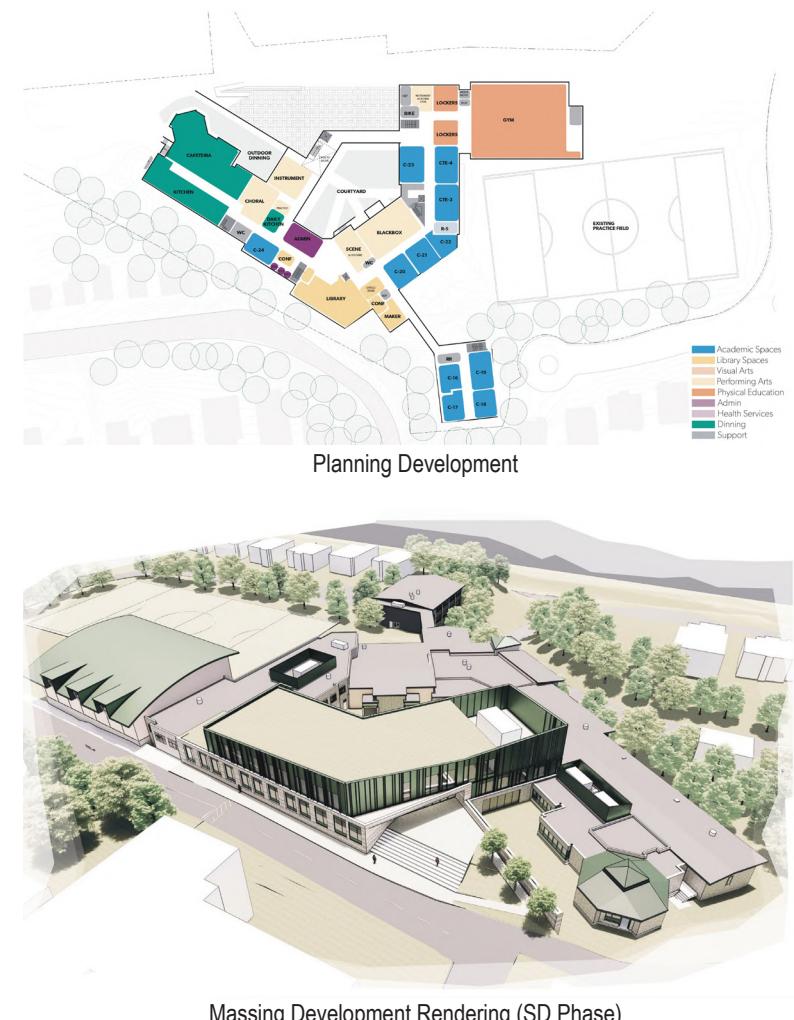
Existing Rendering



Existing Section



Proposed Section



Massing Development Rendering (SD Phase)