COLLEEN DUONG

Bachelor of Architecture | 2021
Carnegie Mellon University

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CONTENTS

COLLEEN DUONG

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EDUCATION

Carnegie Mellon University (CMU)
Pittsburgh, PA
Bachelor of Architecture
Minor in Animation
2016 - Present
Class of 2021
GPA 3.31/4.00

SKILLS

Software
Adobe Photoshop, Illustrator, Indesign, Rhinoceros 5/6, AutoCAD, Revit, SketchUp, Lumion, RobotStudio, Premiere, After Effects, AutoDesk Maya, ZBrush, Substance Painter, Unity, MS Office, Solidworks, 130 WPM

Fabrication
CNC Machining (Mill and Lathe), Woodwork, Lasercutting, 3D Printing, Industrial Robot Arm

Analog
Drafting, Model Making, Drawing

Programming
P5JS, Javascript, HTML, Basic Python

RELATED COURSES

Architectural Studios
Analog and Digital Media
Fundamentals of Computational Design
Materials and Assembly
Computing for Creative Practices
Rapid Prototyping
Introduction to Architectural Robotics
Mobile Web Design
Introduction to 3D Animation
Technical Character Animation
Character Rigging for Production

WORK EXPERIENCE

G70 Architects *June 2019 - August 2019*
Summer Intern I
• Worked on graphics and diagrams for submittals: AIA Honolulu Design Awards 2019, Due Dilligence Reports, and Multiple Project Proposals
• Project Submittal won Award of Merit for AIA Honolulu Design Awards 2019
• Construction Administration work done on project Construction Change Documents

Carnegie Mellon University - Professor Joshua Bard *February 2019 - Present*
Research Assistant
• Explore robotic steambending wood properties to design and fabricate five steam bent swings as part of the Hazelwood Green development plan

Carnegie Mellon University Pittsburgh, PA *April 2017 - October 2018*
CMU Ambassador
• Connect with alumni, parents, and friends of the University to gain an understanding of how their college experience shaped their lives
• Develop strategies to encourage new or increased participations

Leadership Enterprise for a Diverse America *Fall 2017 - Spring 2018*
LEDA Peer Mentor
• Mentor incoming LEDA first-year college students through hosting regular meetings focused on the adjustment to college, study skills, and social interactions

ACTIVITIES

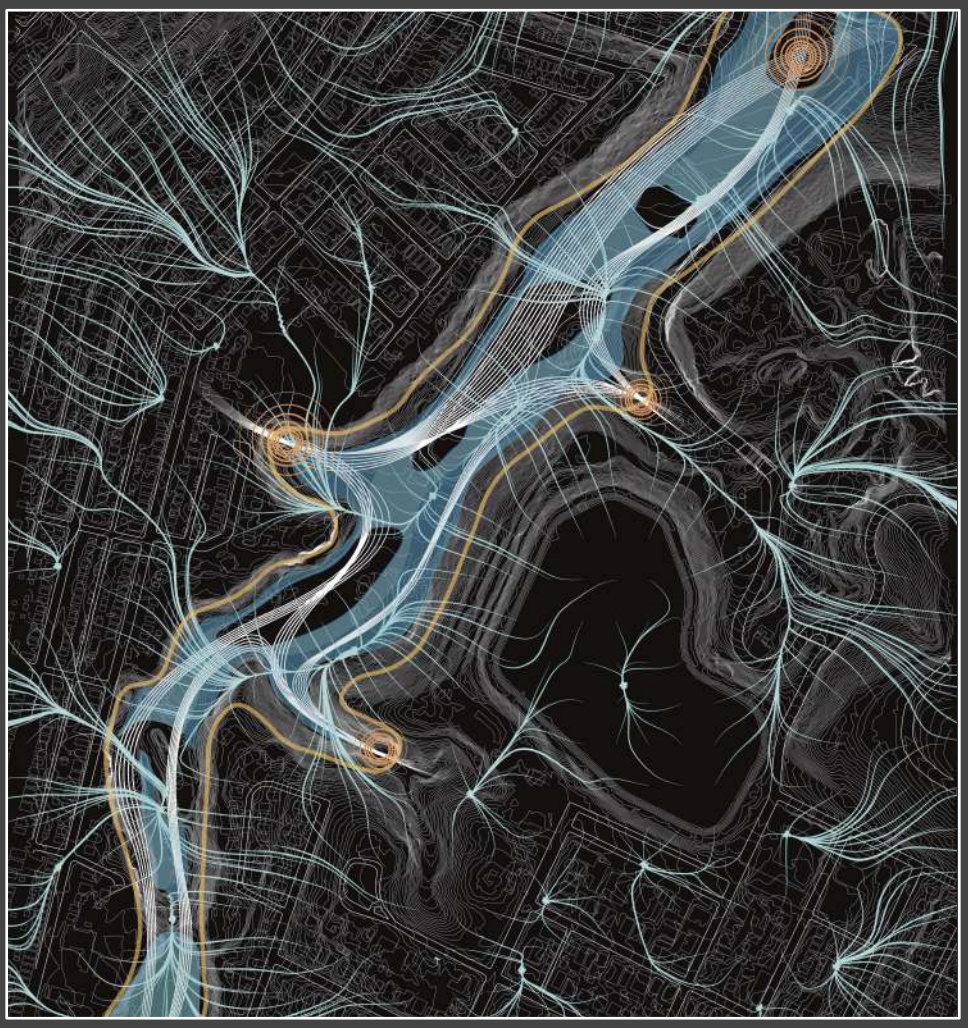
Alpha Phi Omega Kappa Chapter, Carnegie Mellon Pittsburgh, PA *August 2018 - Present*
FellVP (Fall 2019)
• Approve project proposals and plan large brotherhood bonding events, such as Retreat.
Assistant FellVP (Spring 2019)
• Coordinate weekly activities that promotes companionship and respect within the fraternity
Spring Booth Committee Chair (Spring 2019 - Present)
• Prepare construction details for the upcoming CMU Carnival Spring Booth Concessions event
PR Chair (Spring 2020)
• Update social media and the organization's website. Communicates with other organizations to advertise service activities to the campus.
PR/Rush Design Team (Spring 2019 - Present)
• Design posters, calendars, stickers and t-shirts for the positive promotion of the fraternity

Habitat for Humanity, Carnegie Mellon Houston, TX *January 2018*
• Assisted in the construction of houses to help with the hurricane relief program in Texas after recent events with Hurricane Harvey

LEDA Career Fellow Providence, RI *August 2017*
Fellow

Robotics Team, Team Kika Mana #368 Honolulu, HI *Fall 2012 - Spring 2016*
Captain (Fall 2014 - Spring 2016)
• Prepared weekly progress and goal-oriented presentations to present robot progress and discuss what needed to be accomplished for meetings, scheduled fundraising and PR team events, and wrote grant proposals
Coach (Spring 2015)
• Coached the team to Einstein Field at the 2015 FIRST Robotics World Championship; this marked the first time a Hawaiian Robotics Team ever made it to the Einstein Field

Highland Park
Sculpture Park



Highland Park, PA
INFRAstructure Studio
Christine Mondor
Fall 2019

This project aims to act as a recreational site for learning and the environment. This project assumes that the animals have been freed from the Highland Park Zoo and the existing parking lot is no longer there, leaving the valley clear for design. Taking into consideration the existing reservoirs, the Sculpture Park collects the water from the neighborhood above at various entry points and brings the water down into the site.

Throughout the park there are different ecological conditions located on this site depending on the part of the valley it is within: wetlands, grasslands, streams, forests, etc. The site is constantly changing depending on the weather and the season conditions, which will affect the experiential aspect of the site for visitors.

ZONES

The sculpture park is separated into four different zones that have four different conditions and experiences.

HARDSCAPES

Each zone is separated by dams that allow for water to overflow from one zone to another (each zone is at a different elevation from the last) and also acts as a bridge for the main circulatory path on the site for visitors.

These dams are also shaped in a way that guide the water and collect them into the different water channels in each zone.

ZONE 1

The **First Zone** is the where the main water storage is located. It is also where the main entrance to the park is and where the main parking lot is located. This zone contains the visitor's center. The water from this water storage is collected and stored until there is an overflow of water, which will flow into an existing hill underneath the bridge at the end of the site.

ZONE 2

The **Second Zone** is the recreational field. This zone contains the learning center and the ampitheater on top of the visitor center. Since this area is made up of grasslands, it is used for more flexible outdoor activities and outdoor stage performances.

ZONE 3

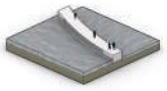
The **Third Zone** is the outdoor sculpture park, which also houses the indoor art center. This zone has several streams that form these sculptural islands that visitors can walk on. Depending on how much water is on the site (light, heavy, or no rain) the islands can change in size, altering the experience visitors can have. This zone is partially dry and wet.

ZONE 4

The **Fourth Zone** to the south of the site is a Biosmass Wetland. Connected to this zone is a rain garden at Heth's Field, which is above the valley. This field collects the majority of the water from the neighborhood and transfers it to the wetlands with pipes. This zone is considered the wettest zone on the site since it is in the narrowest part of the valley.


Biomass Wetland


Building Edge

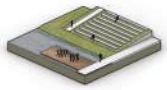

Bridge

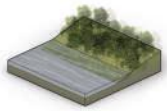

Tributary


Sculpture Islands


Soft Waterfront

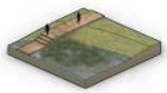

Circular Plaza

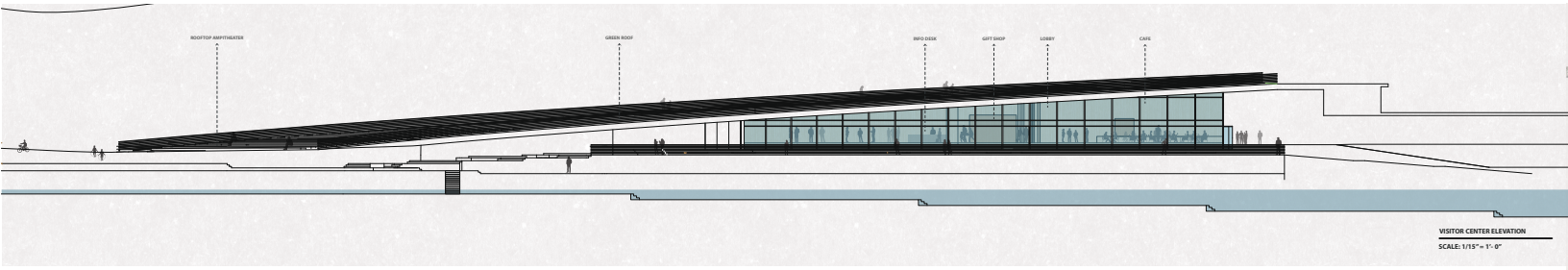

Stage + Amphitheatre

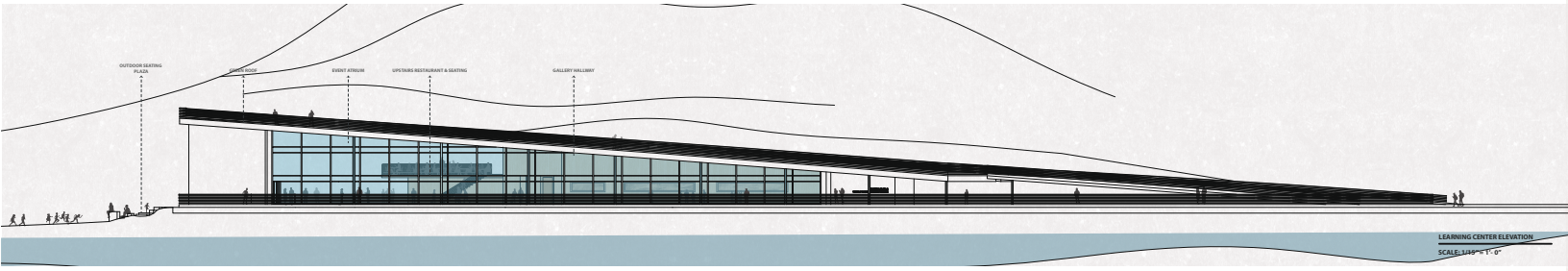

Productive Woodland

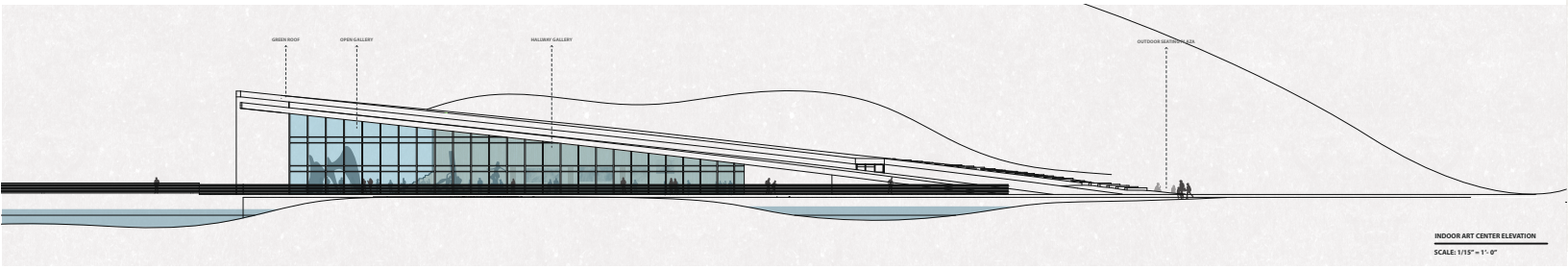

Fractured Plaza


Rainwater Stair + Filter


Natoli Rain Garden



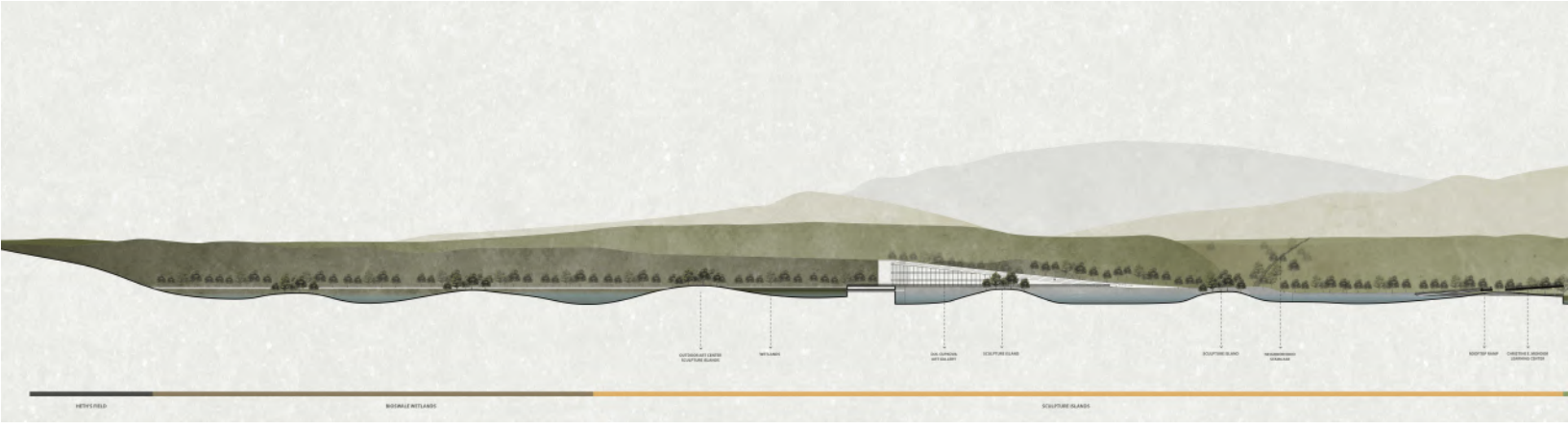


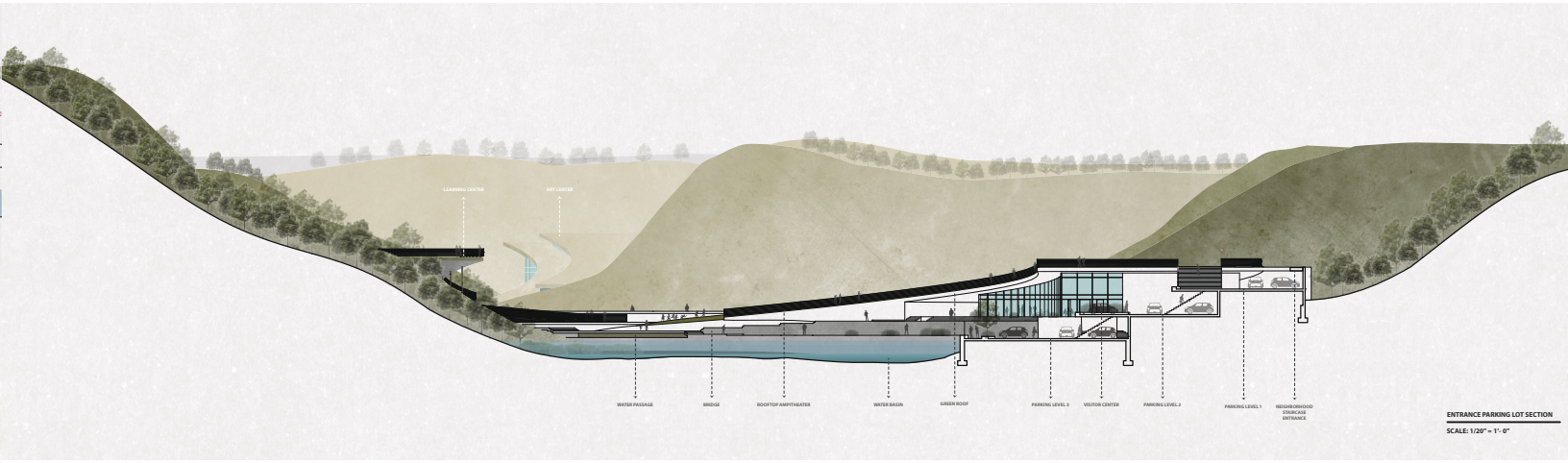


THE ARCHITECTURE

The architecture is integrated into the landscape. Each building hugs the edge of the landscape and actually brings it into the building when necessary. The side that hugs the landscape is where more private activities take place, depending on the building. The more open side of the building is a glass facade that allows for people to have a full view of the water that they are next to in the building. Each building also integrates a different roof condition. The visitor center and learning center have a roof that slants into the landscape and becomes a part of the landscape. This allows for people to go onto the roof and see an unobstructed view of the entire site in different perspectives.

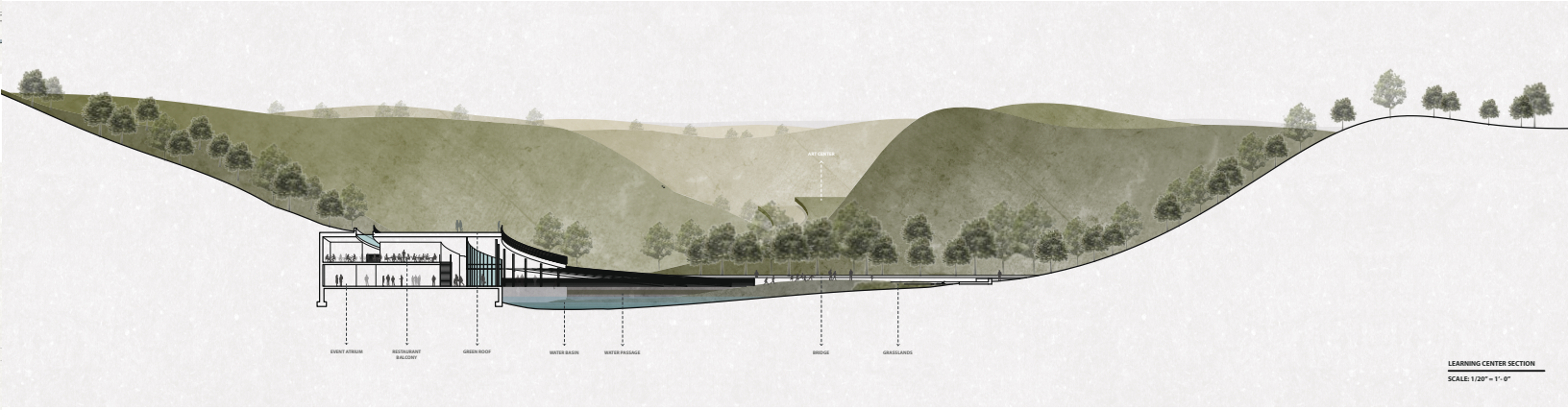
The art center's roof is split into 2 to allow for light to come into the building and hit onto the artwork. The learning center's roof is also split into 2 to allow for light to filter into the hallway that is pushed against the landscape.





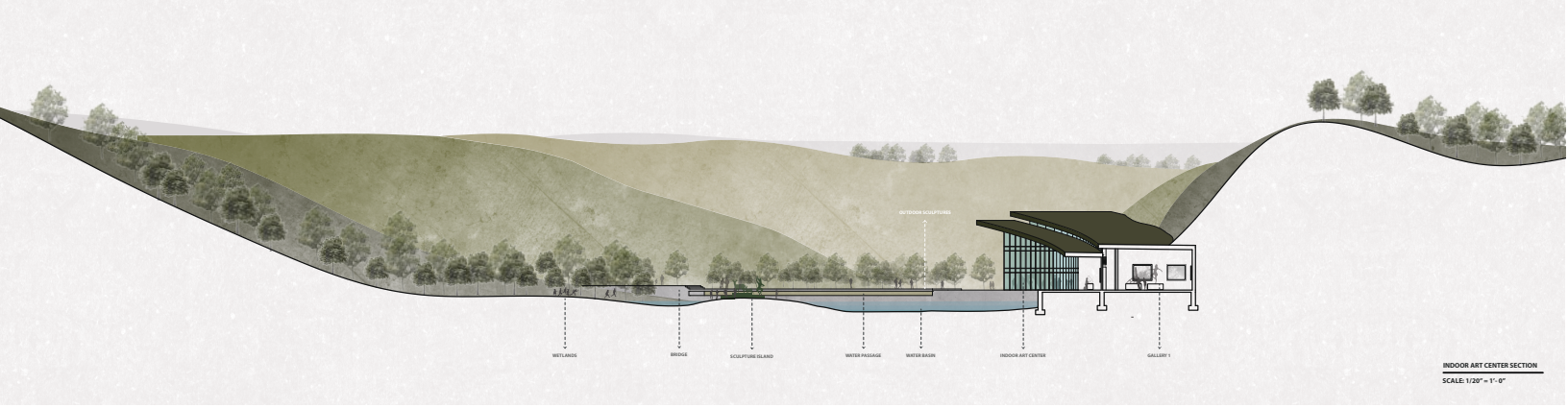
ENTRANCE PARKING LOT SECTION

SCALE: 1/20" = 1'- 0"



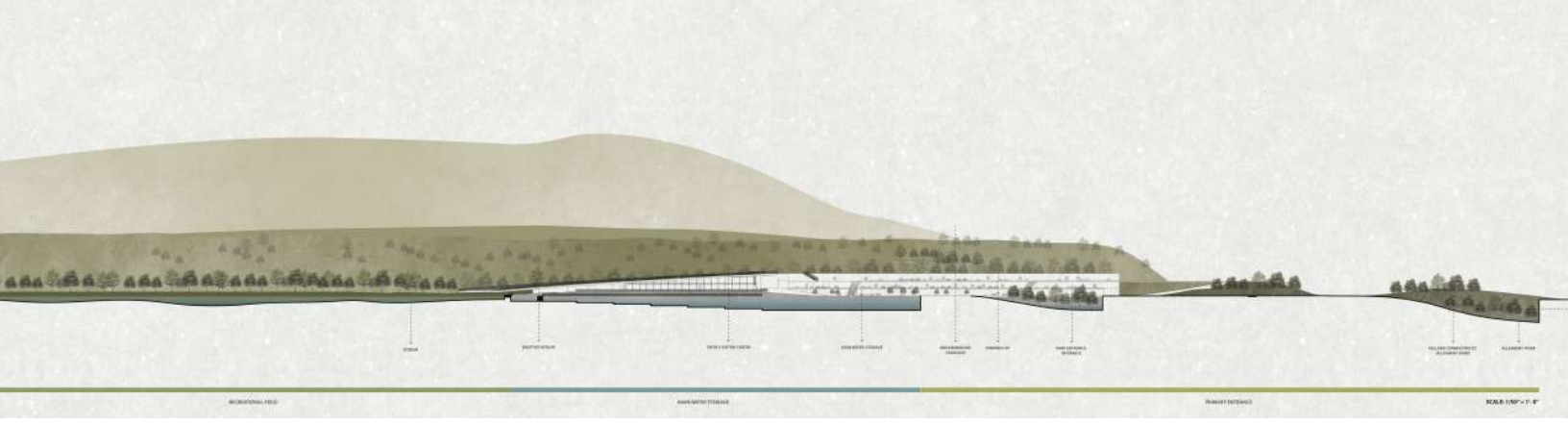
LEARNING CENTER SECTION

SCALE: 1/20" = 1'- 0"



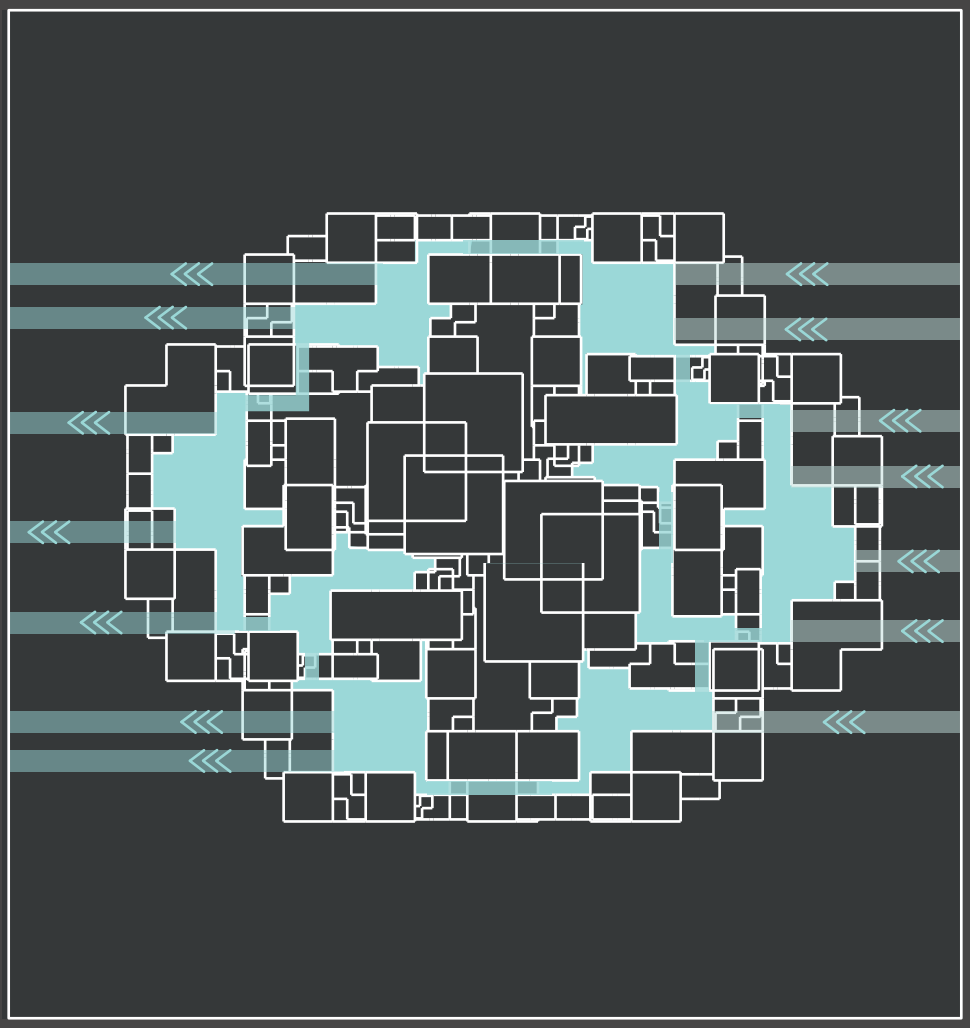
INDOOR ART CENTER SECTION

SCALE: 1/20" = 1'- 0"



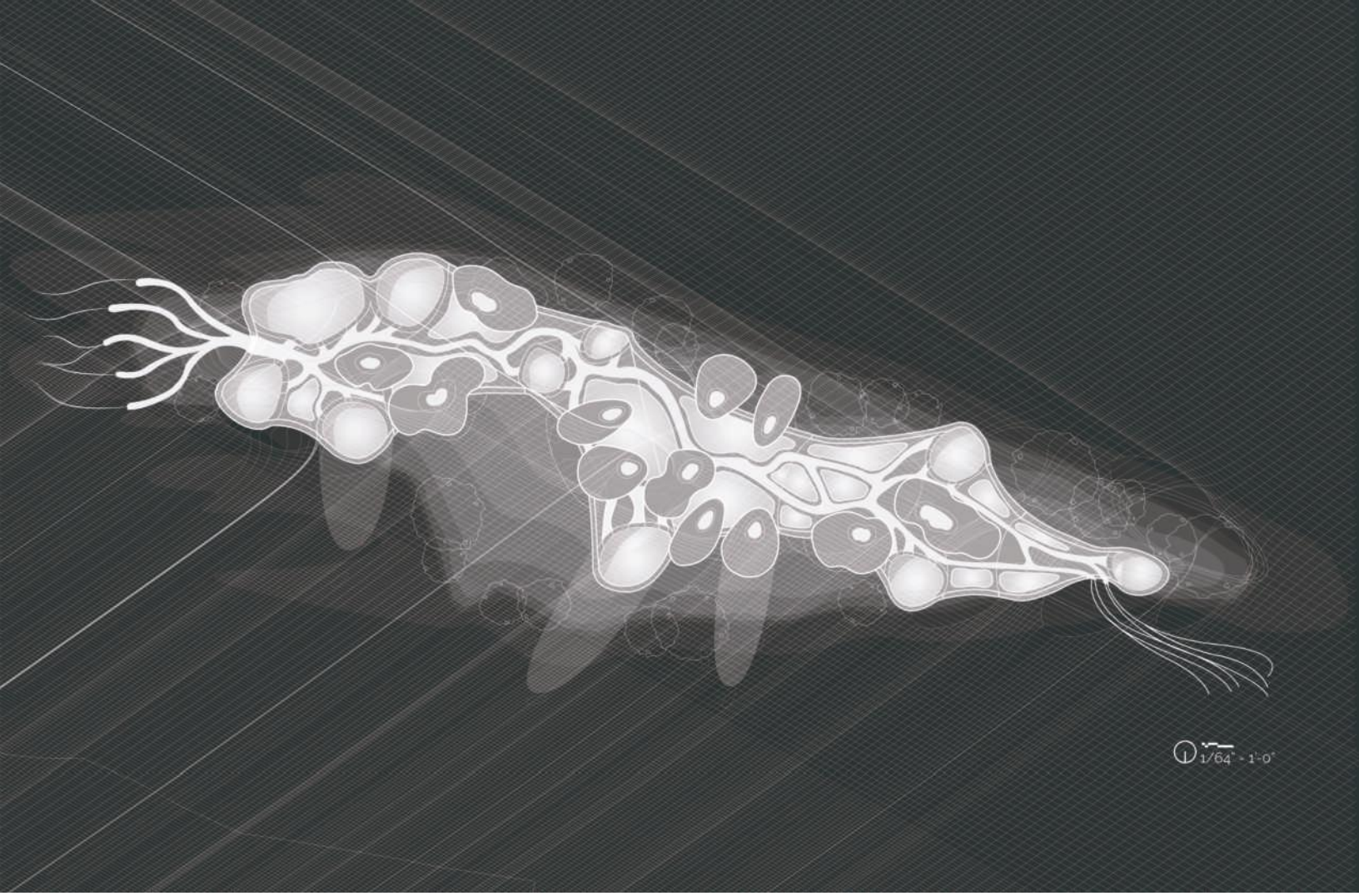
SCALE: 1/10" = 1'- 0"

Six Mile Island
Eco-machine Co-Housing



Six Mile Island, Sharpsburg, PA
Integration_Studios
Dana Cupkova & Matthew Huber
Fall 2018

Students developed urbanization strategies to create co-housing and eco-machine prototypes onto the site. The project began by allowing students to develop an understanding and focused knowledge of a specific system's behavior and logic to get a clear understanding of how it could be incorporated into the site and integrated into the lives of those living there. The goal of this design was to design a large biofiltration system that would take water from the Allegheny River, clean it, and return it back to the river. The biofiltration system aims to use streams, waterfalls, and greenwalls to treat the water.



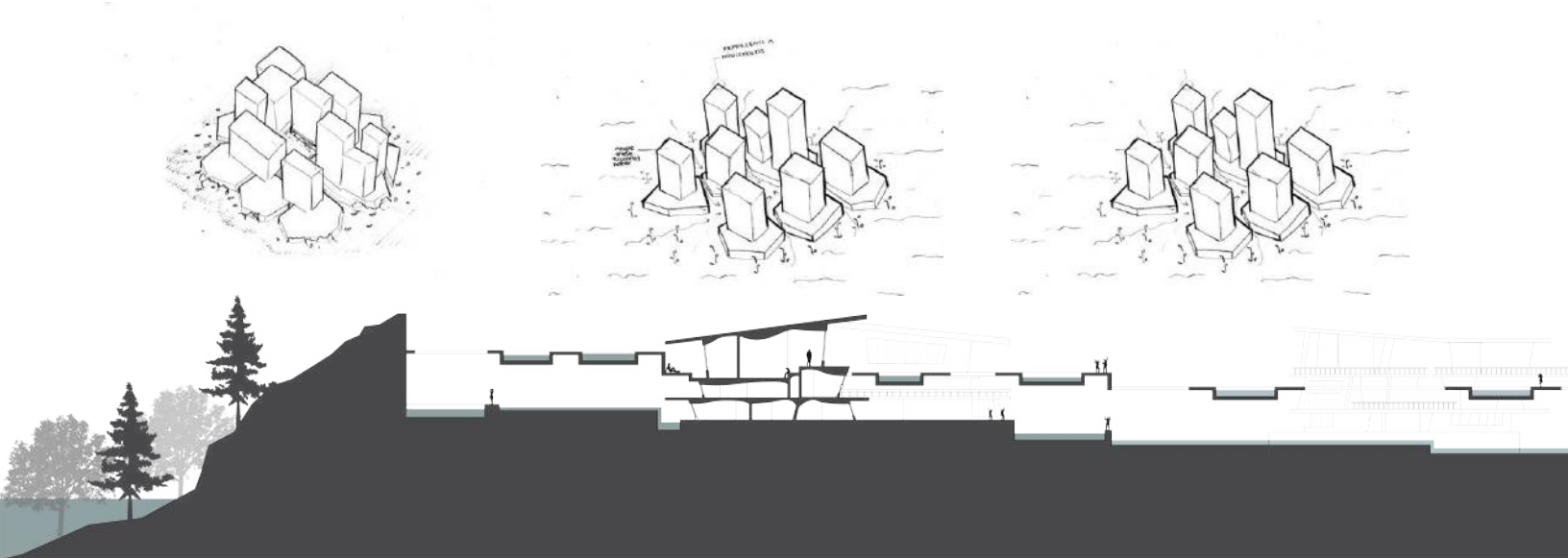
ISLAND OVER TIME

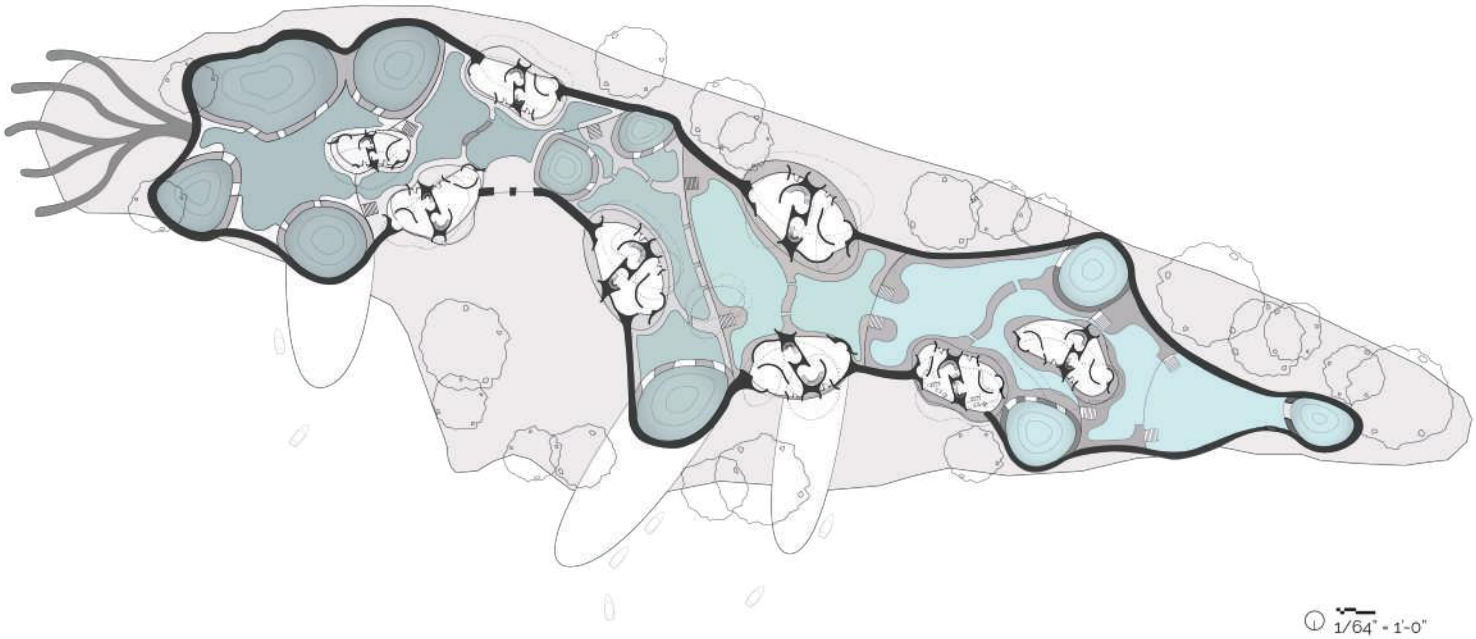
Over time the island will start to grow smaller and smaller (with the rising sea levels and erosion), but the architecture aims to still stay standing even as the island begins to fade away into the river. The architecture was carved through a wind analysis on the island.

SITE PLAN TOP LEVEL

Series of streams and openings that help guide the water through the structure and allow water to fall through the top and into the bottom layer of the system. The pump at the beginning tries to mimic the appearance of water flow streams and helps bring water into the system.

The image below displays a series of initial sketches that conveyed the idea of using streams to dictate paths and circulation of the water and the residents moving.





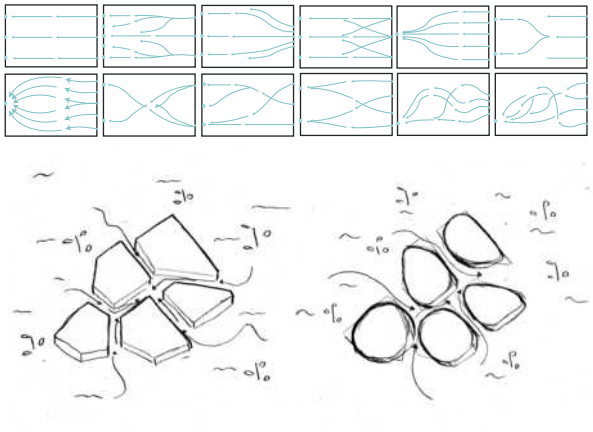
SITE PLAN BOTTOM LEVEL

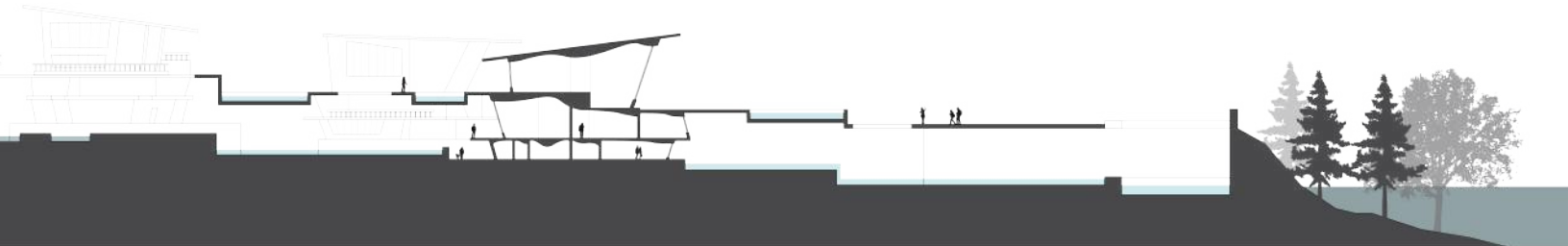
The bottom level of the system consists of a series of large pools that are surrounded by walkways to allow for residences to get into their homes. The water from the top level flows into these pools to create a waterfall effect for the residents to experience.

ARCHITECTURAL FORM

The overall architectural form derived from an understanding of how water flows. Water tends to erode sharp turns and likes to free-flow through curved paths, which helped create the final form which mimicked the language of the water's movement.

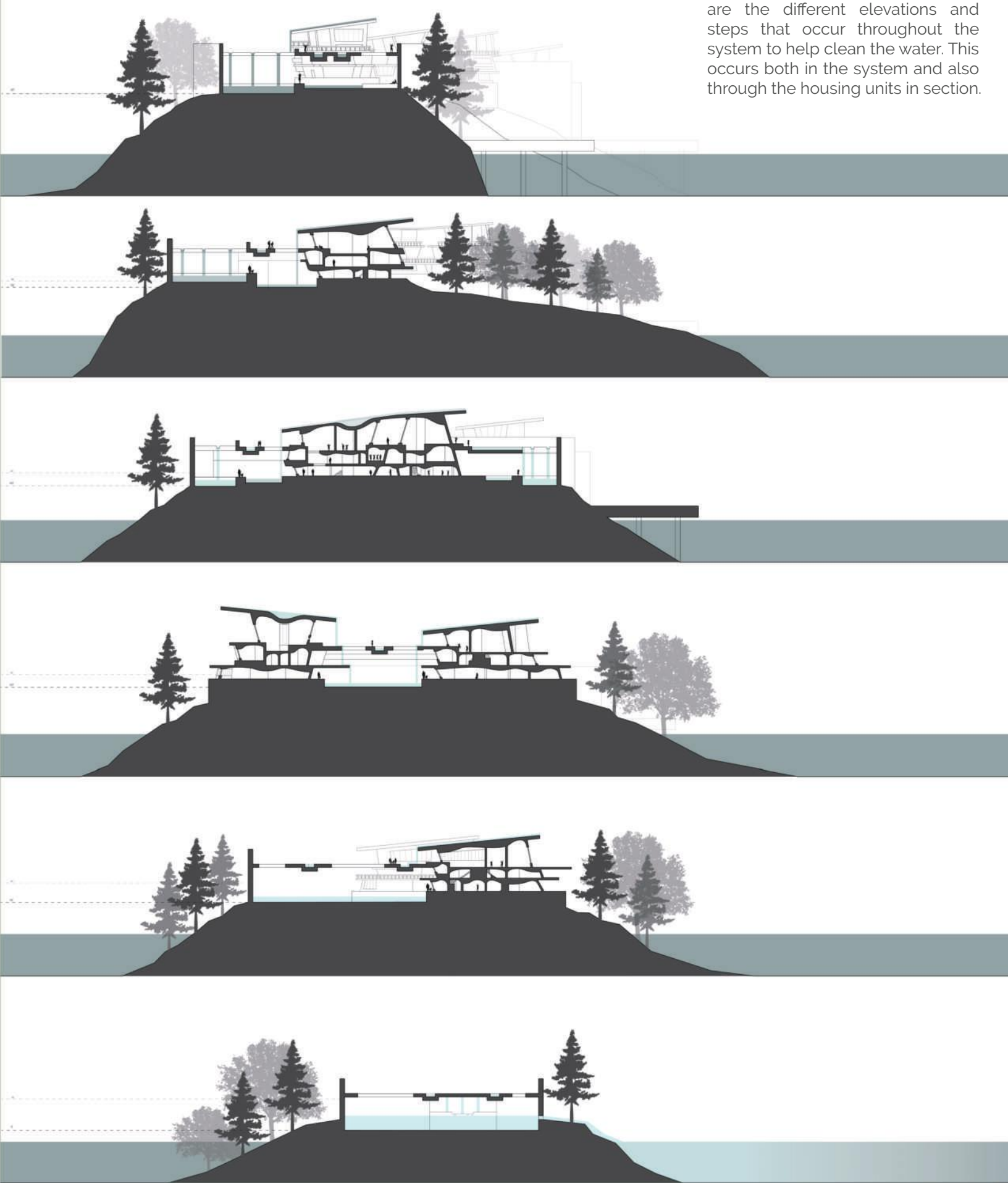
The image to the right displays a series of diagrammatic studies to understand how water flow patterns can be affected by physical objects, like buildings, and help dictate over-all form.





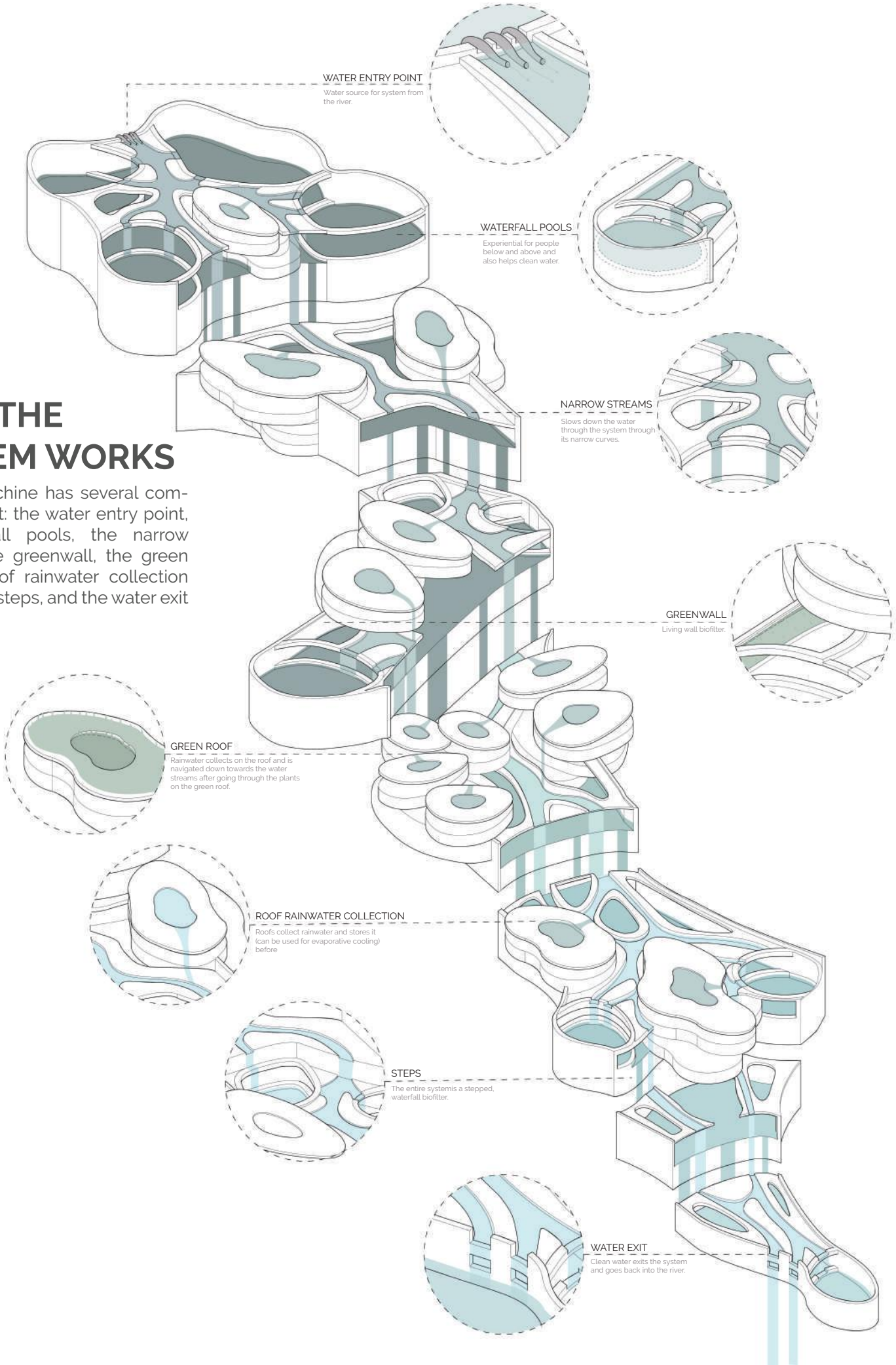
SECTION SERIES

The series of sections help show the main concept of the design, which are the different elevations and steps that occur throughout the system to help clean the water. This occurs both in the system and also through the housing units in section.



HOW THE SYSTEM WORKS

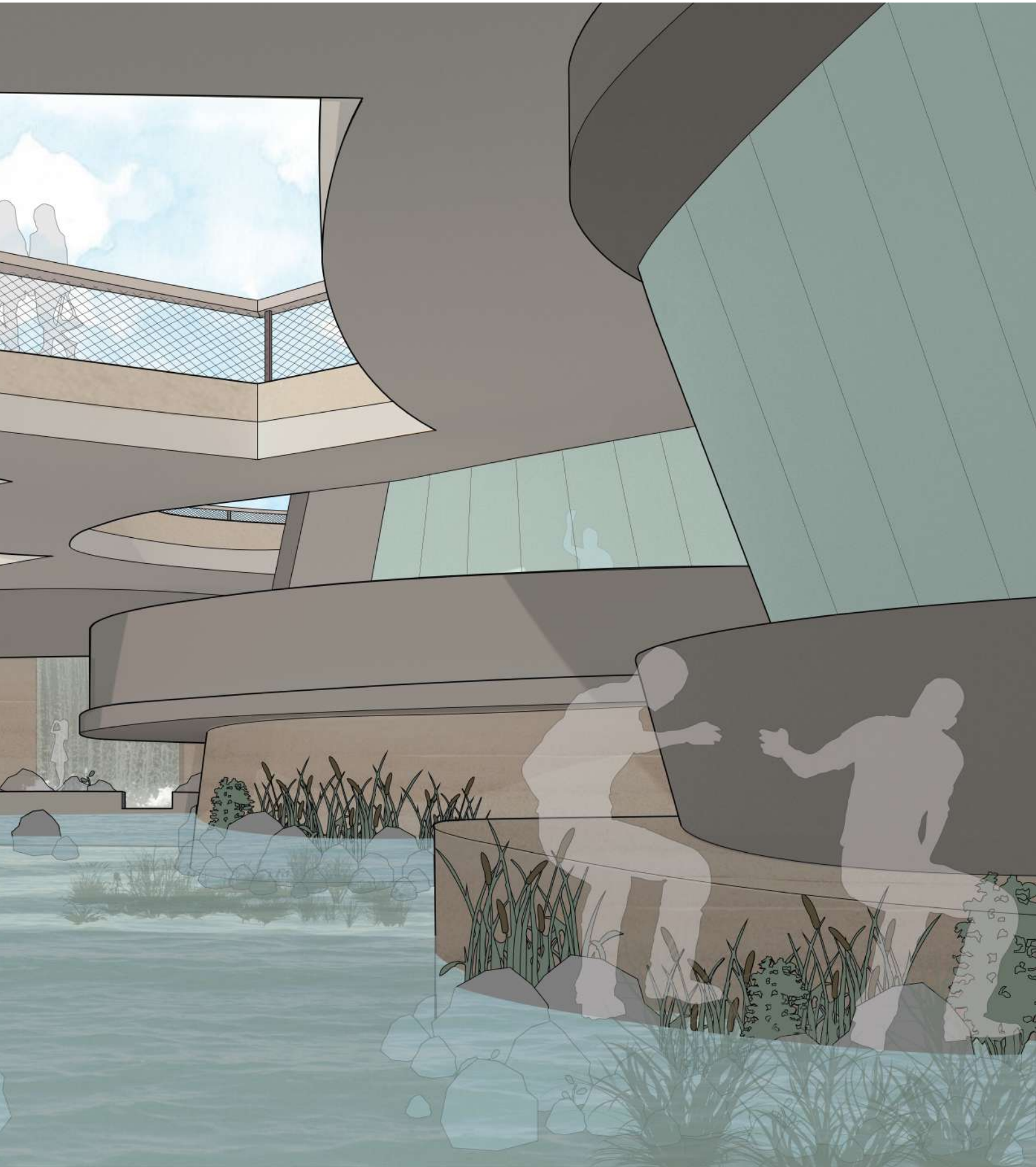
The ecomachine has several components to it: the water entry point, the waterfall pools, the narrow streams, the greenwall, the green roof, the roof rainwater collection system, the steps, and the water exit point.



MATERIALITY AND EXPERIENCE

The materiality of the architecture is mainly concrete because the goal of this structure is to make sure it doesn't erode or dissolve with the constant contact with water. However, there is also rammed earth walls and floors that is used in the structure (not the housing units) that would potentially wear away over time, but wouldn't wear away too quickly. This opens the architecture to multiple possibilities of what it could change into or become in the future. The rammed earth material is also used at the top level where residents walk to potentially wear away the streams up there and

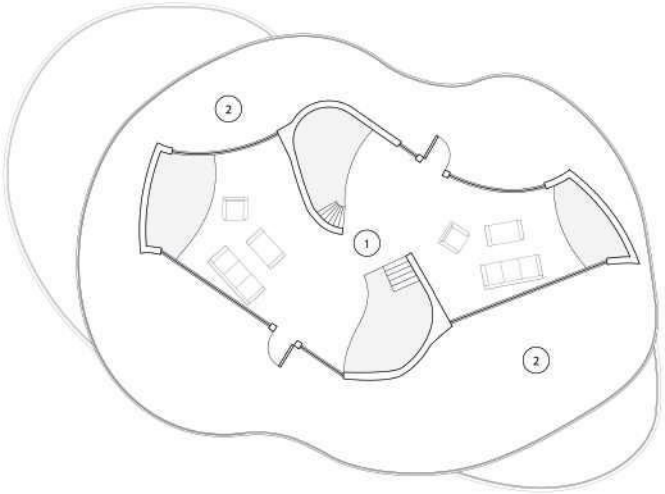
create new water openings that would allow more water to trickle down into the bottom of the system in the future. Another potential material that couldn't be shown in this perspective view is sand, which enhances the idea of architecture changing over time; this material would be used in pools or streams to create a certain textured feel for people experiencing the clean water physically.



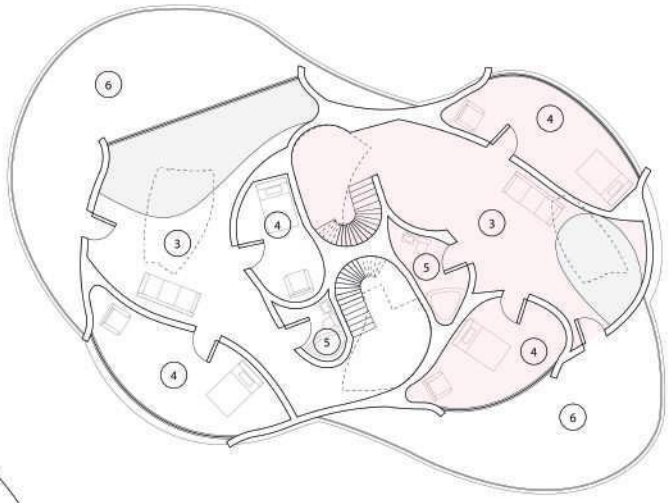
CO-HOUSING PLANS

Each building holds multiple housing units depending on the shape of it. The core of the building consists of stairs that help inform that orientation of each floor; each floor is rotated a specific way (the first floor is rotated to follow waterflow, the second floor is rotated to try and get as much sunlight as possible, and the third floor is shaped by the wind).

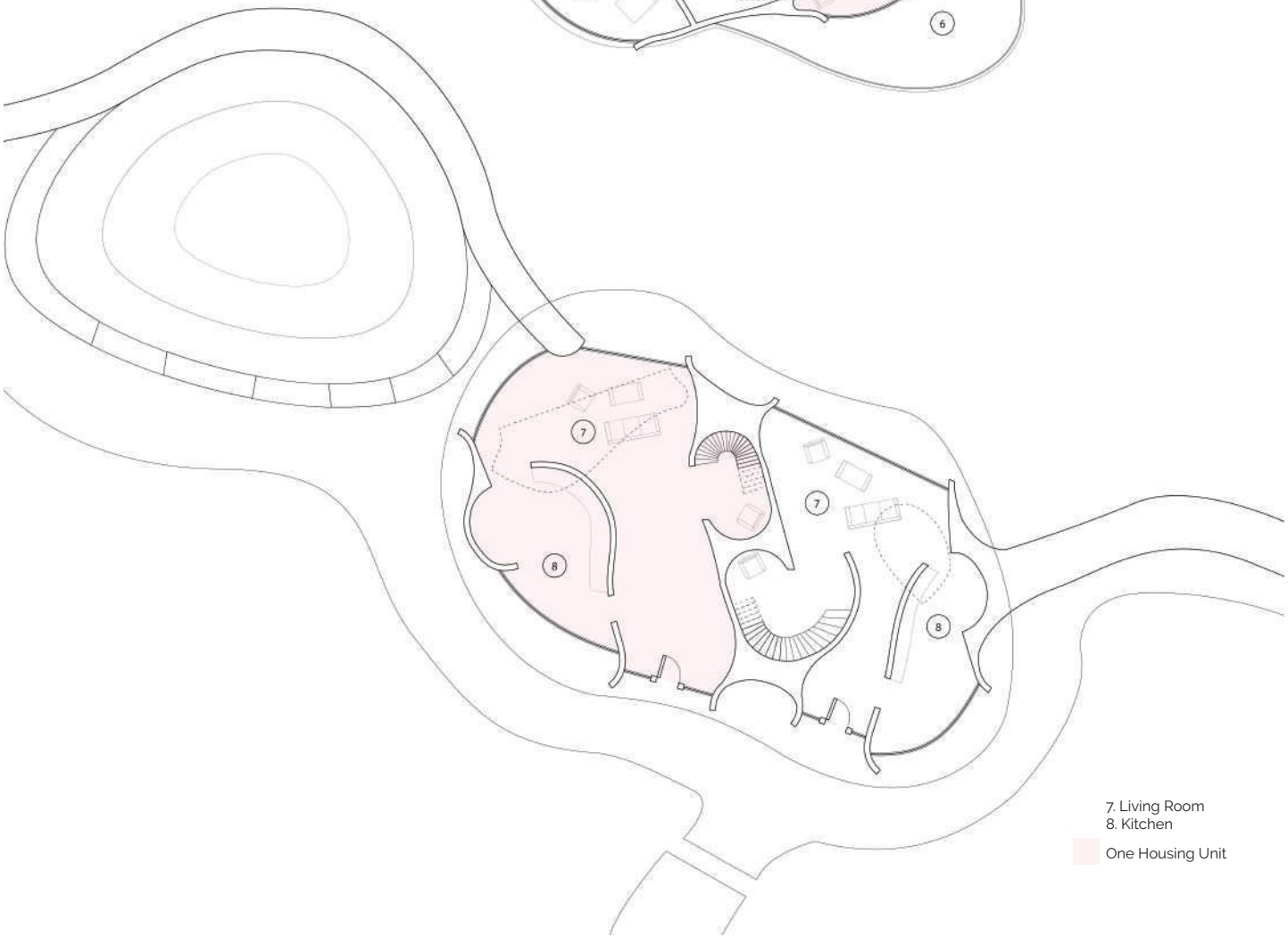
The walls of the unit help inform the circulation flow that someone would walk while going through the house.



1. Shared interior roof (library, relaxing space, etc.)
2. Shared exterior roof



3. Living Space
4. Bedroom
5. Bathroom
6. Balcony

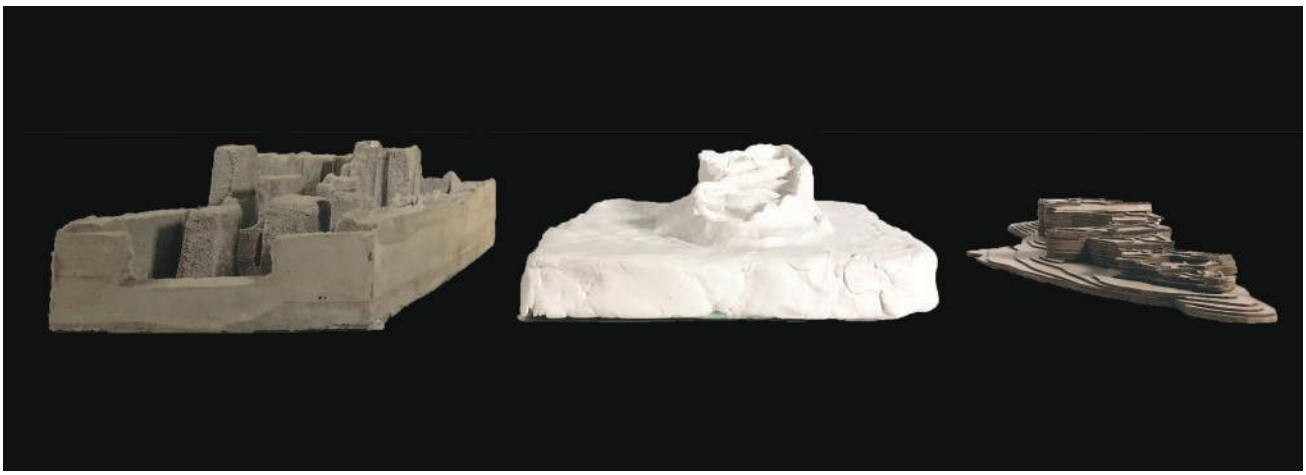


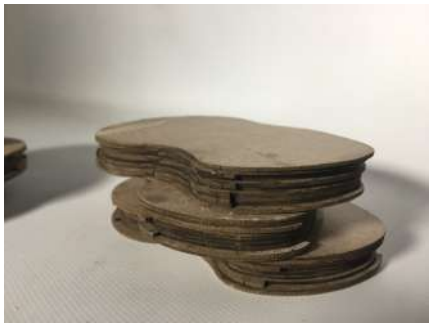
7. Living Room
8. Kitchen

One Housing Unit

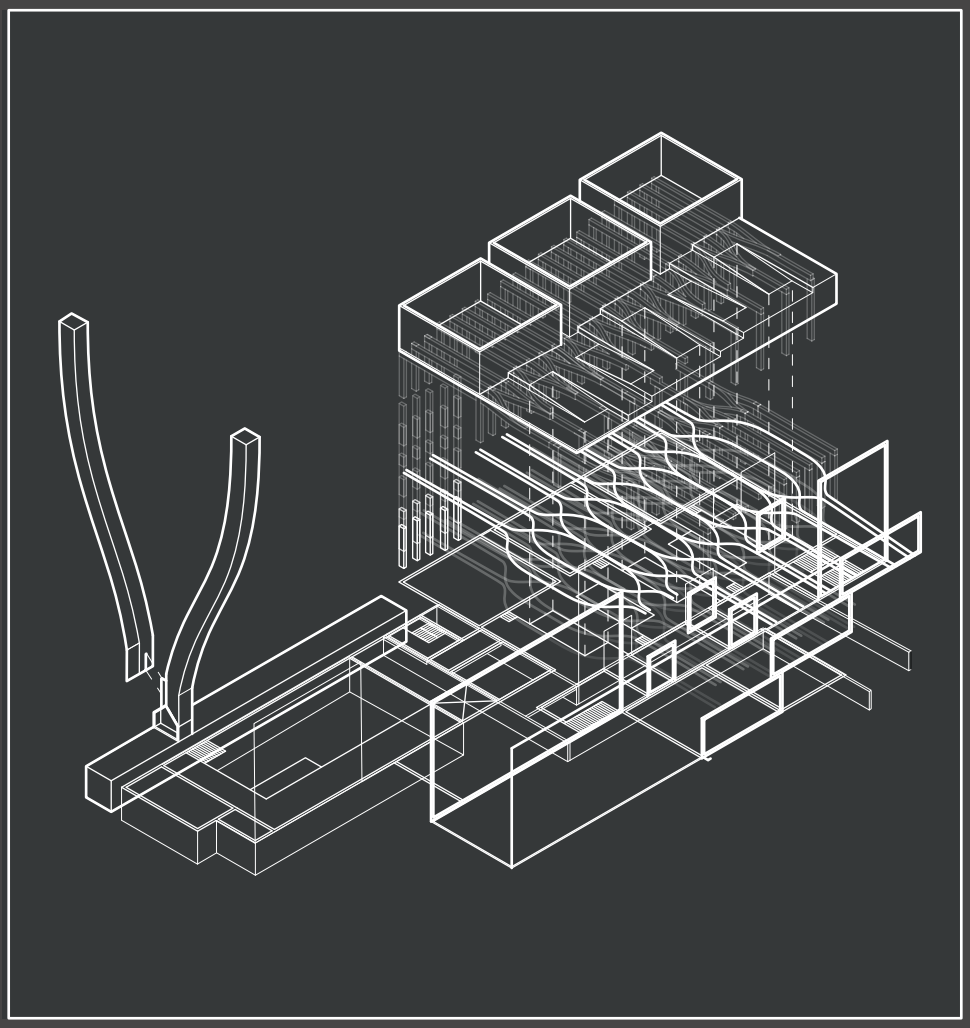
MODELS

Several study models, the two on the left in the top image, tried to understand the main form of the structure and how it would work in section. The bottom left model focused on parametric studies that looked at how spaces could overlap and interwine with one another to create certain spaces. the bottom middle model was a study of how the facade of the housing units could look like and how windows could wrap around a shape.





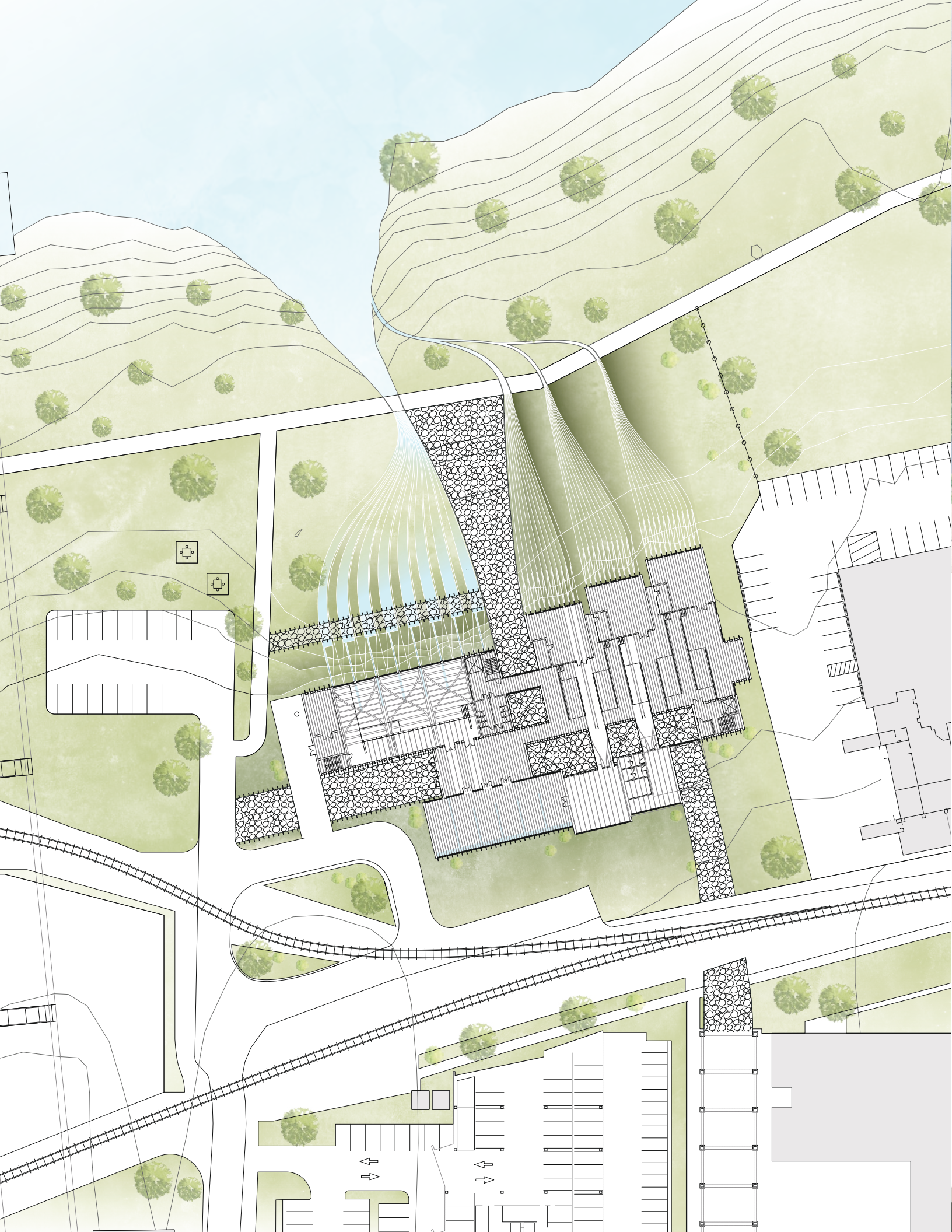
Lawrenceville
Environmental Charter School



Lawrenceville, PA
Advanced Construction Studio
Steve Lee & Matthew Huber
Spring 2019

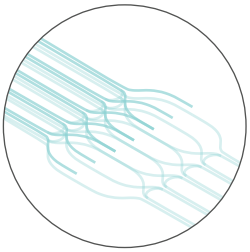
Charter Schools were created to provide opportunities for teachers, parents, students, and community members to establish and maintain schools that operate independently from the existing school district structure to: improve student learning; increase learning opportunities for all students; encourage the use of different and innovative teaching methods; and create new professional opportunities for teachers.

An Environmental Charter School is a multi-disciplinary "out-the-door" learning approach that engages the students with environmental learning. The project aims to make the school into an environmental pedagogy for both the students and the public through green spaces and rainwater collection systems.



The project site has five bounding conditions: The Allegheny River, The National Robotics Engineering Center (NREC), Railroad Tracks, the 40th Street Bridge, and an Industrial Passageway.

The image below displays a visual study of waterflow pathways through the building.



WATER INSIDE

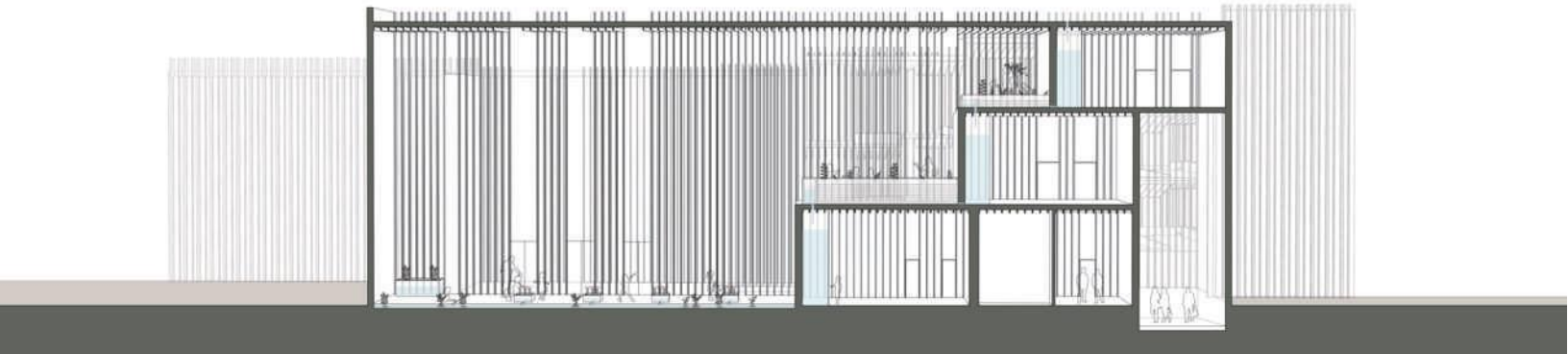
The school creates a connection with the Allegheny River. This provides an education opportunity to teach students about the environmental properties of water.

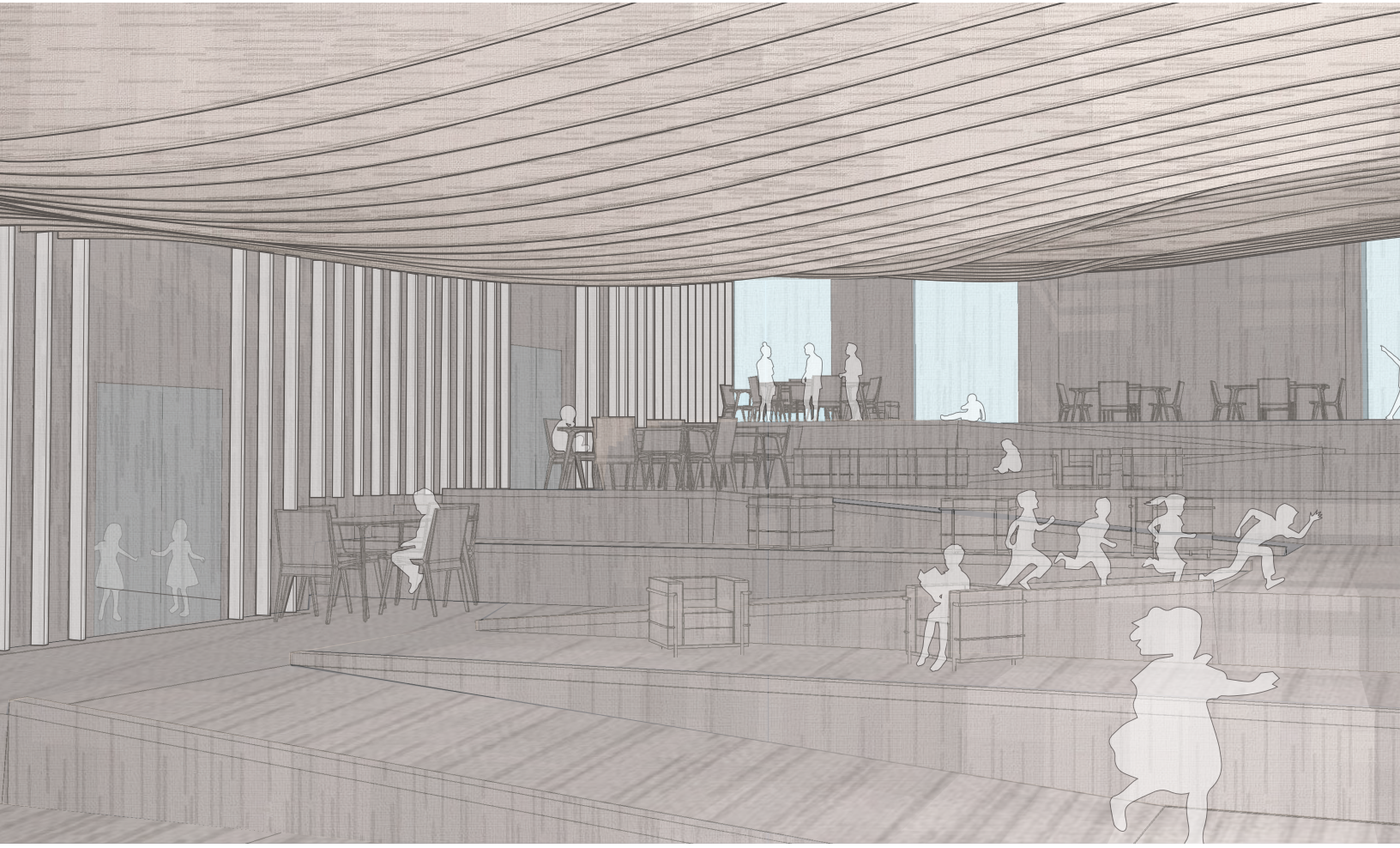
In addition to this connection, the building has an interior system that allows rainwater to collect from the roof. Then, this rainwater physically flows through the building and sustains the different levels of greenery that are located within the school's greenhouse.

WATER OUTSIDE

VIR-GA (noun)
A mass of streaks of rain appearing to hang under a cloud and evaporating before reaching the ground.

To emphasize the use of rainwater within the building, the building facade mimics the visual language of water constantly falling down the building even when it is not raining.





STRUCTURAL TIMBER

The collaborative spaces in the building, pictured above, have structural beams that span across the space's ceiling. These beams grow deeper in the central parts of the space to hold up the weight of the floor above and also mimic the horizontal movement of water through the building.

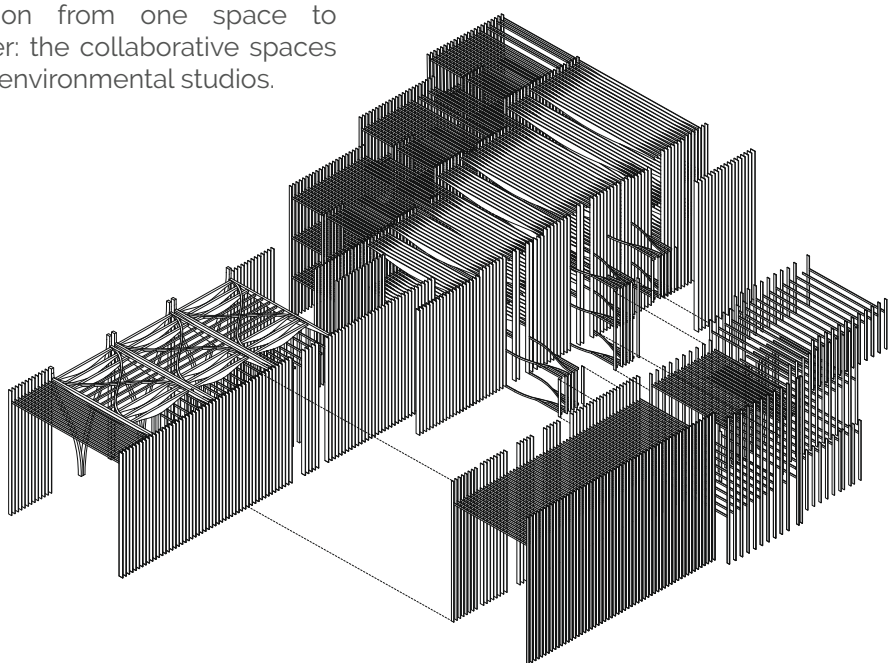
The structure of the entire building is made up of vertical and horizontal pieces of timber to create the idea of building something structural using many small pieces rather than a few large pieces.

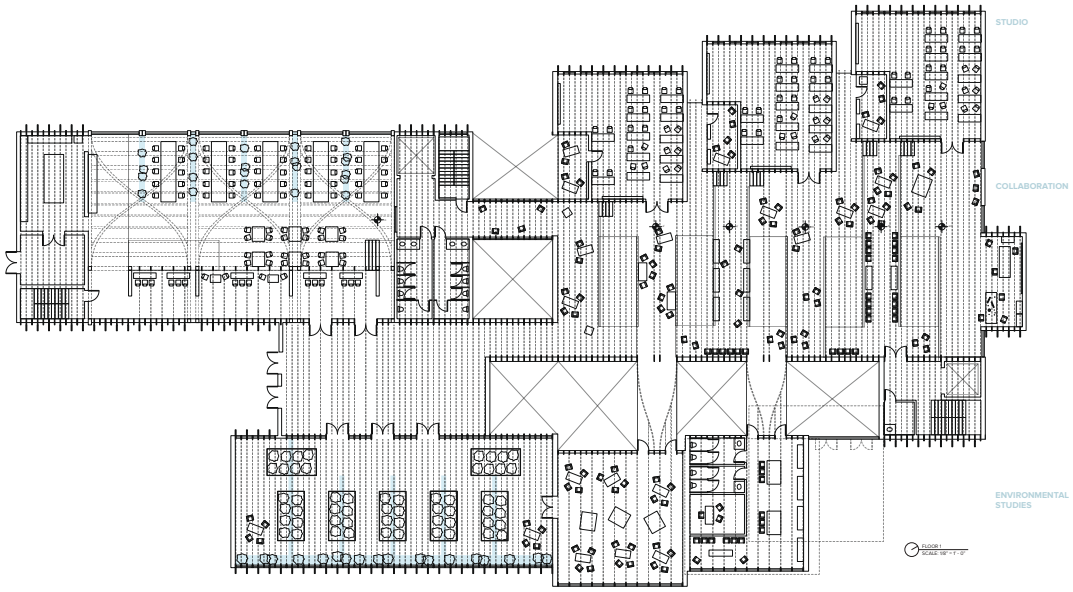
The image to the right displays the overall timber structural system of the entire building.

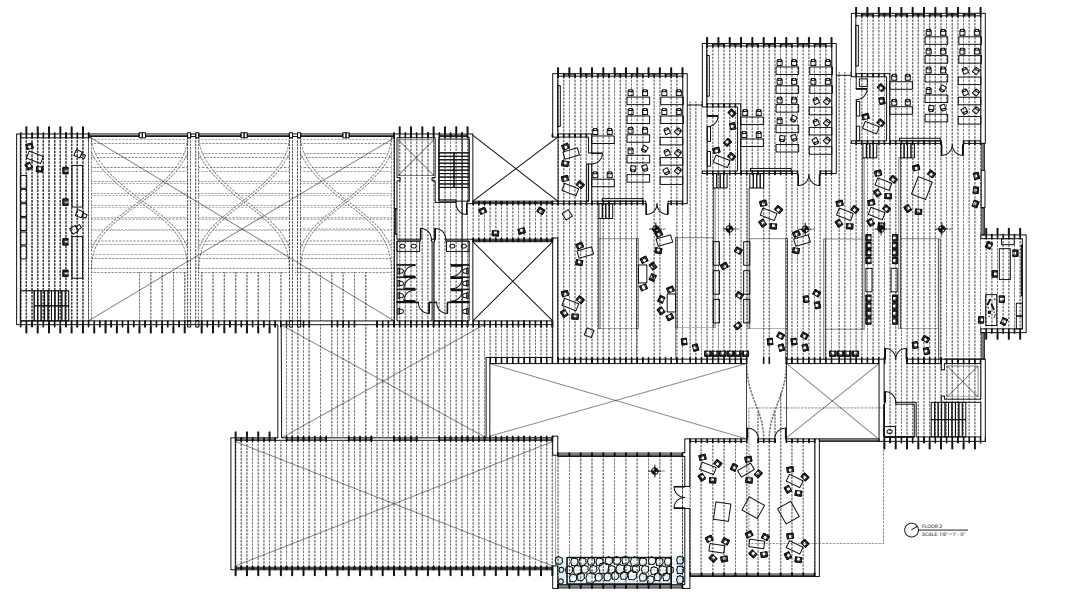
CIRCULATORY RAMPS

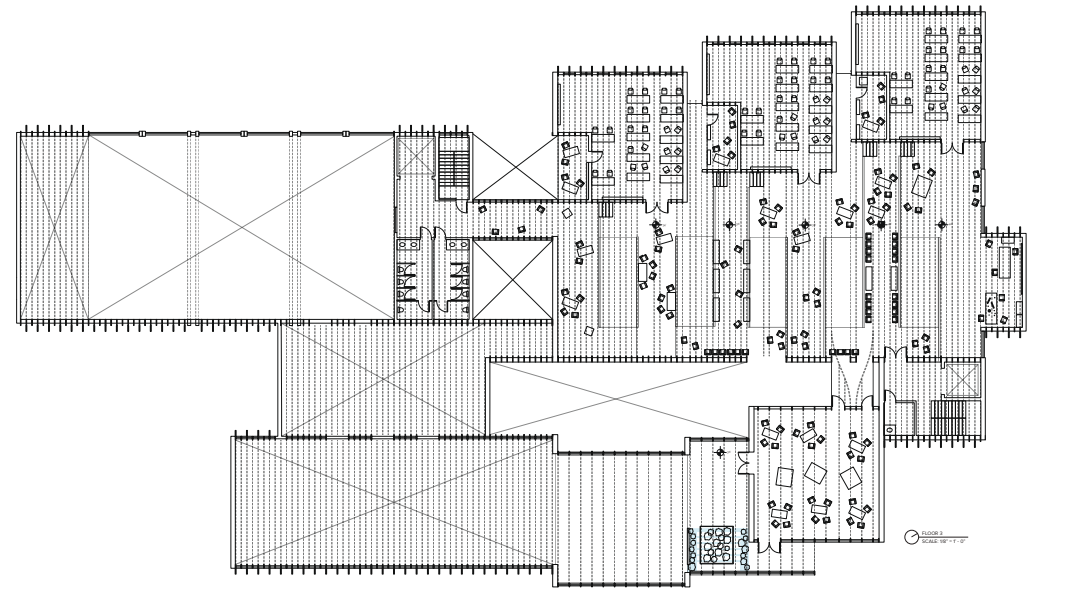
The collaborative spaces are made up of many ramps. The goal was to create a circulation throughout the entire building that the students could use more frequently to create a smooth transition from one space to another: the collaborative spaces to the environmental studios.

These ramps also act as an "endless outdoor space" by going through the entire building. This is made for rainy days when students are unable to go outside.




STUDIO
COLLABORATION
ENVIRONMENTAL STUDIES
FLOOR 1
SCALE: 1/8" = 1' - 0"


FLOOR 2
SCALE: 1/8" = 1' - 0"


FLOOR 3
SCALE: 1/8" = 1' - 0"

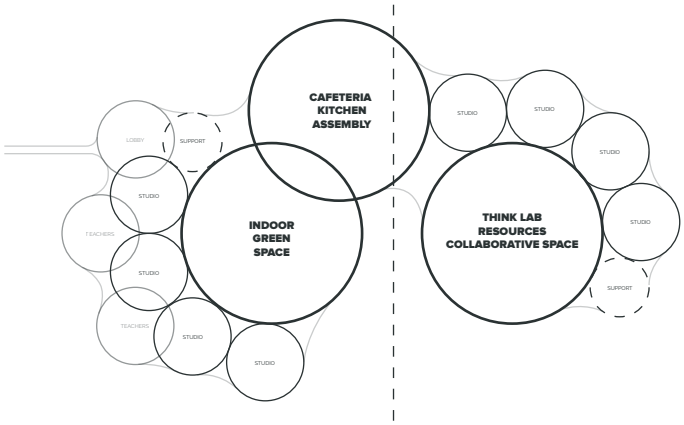
PUBLIC PASSAGEWAY

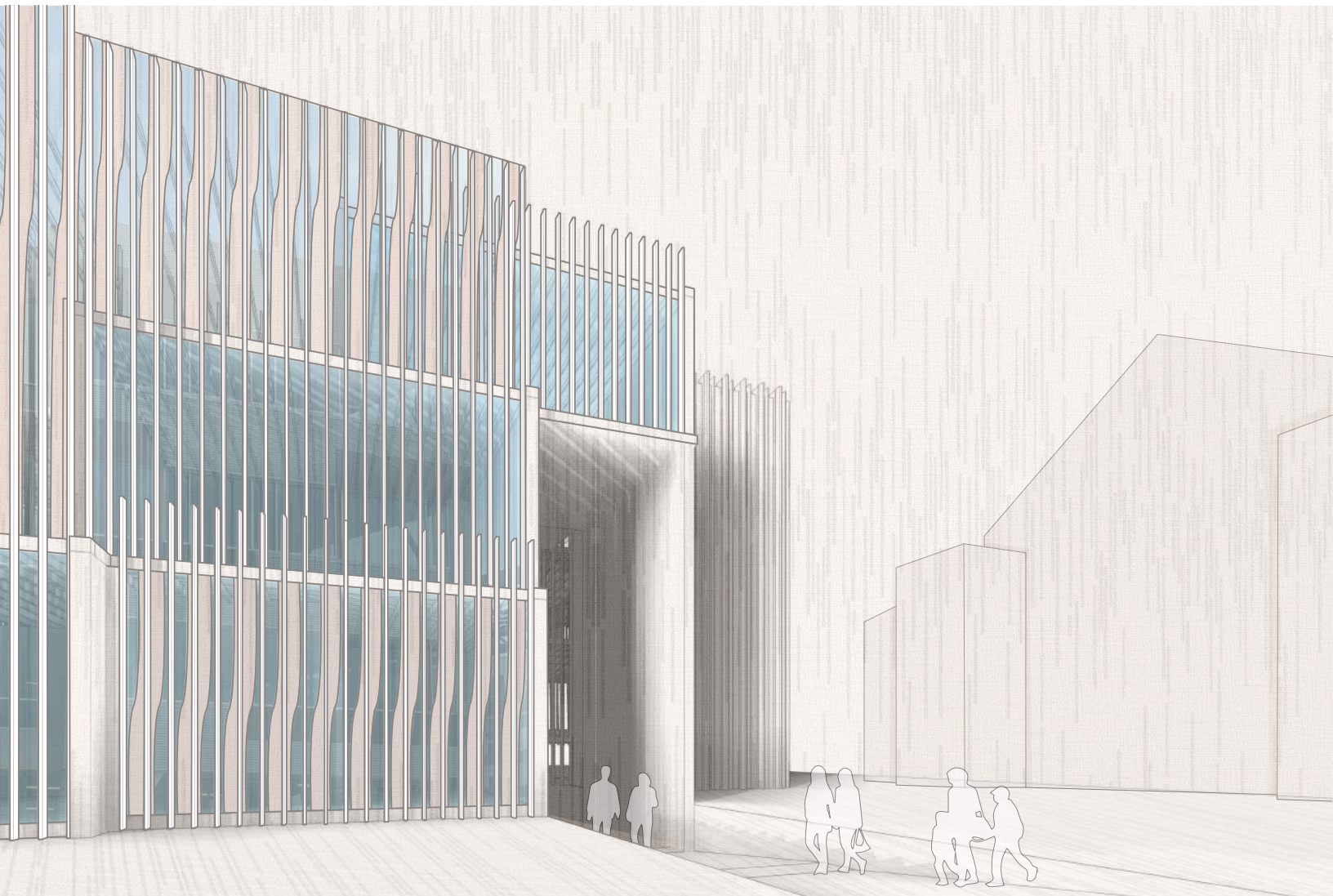
The building is divided into two major spaces by a public passageway. This public passageway directly connects with the industrial passageway across the street. It separates the green spaces and the collaborative spaces to give the opportunity to create "bridges" above this pathway to connect the two spaces.

This pathway is sunken from ground level through the use of subtle ramps that go up and down the pathway. This was designed to create a distinct separation between the public and the private visitors, allowing them to interact with one another with a level of safety.

The main goal of this public passageway was to engage the community of Lawrenceville in learning about the environment by providing a passageway that leads directly to the water channels in the back.

The diagram below describes the organizational concept of the building that was separated by this central pathway.





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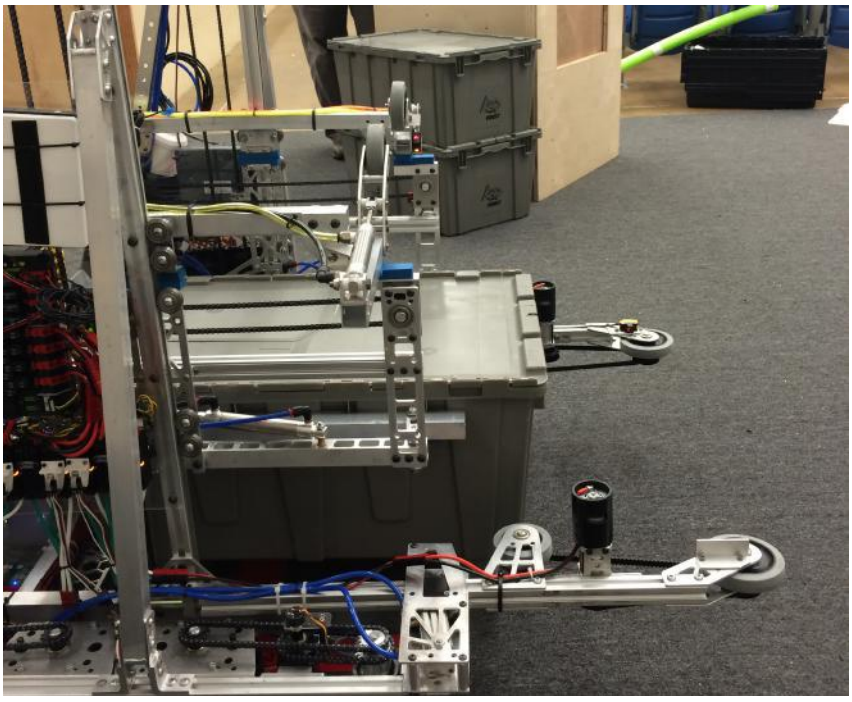
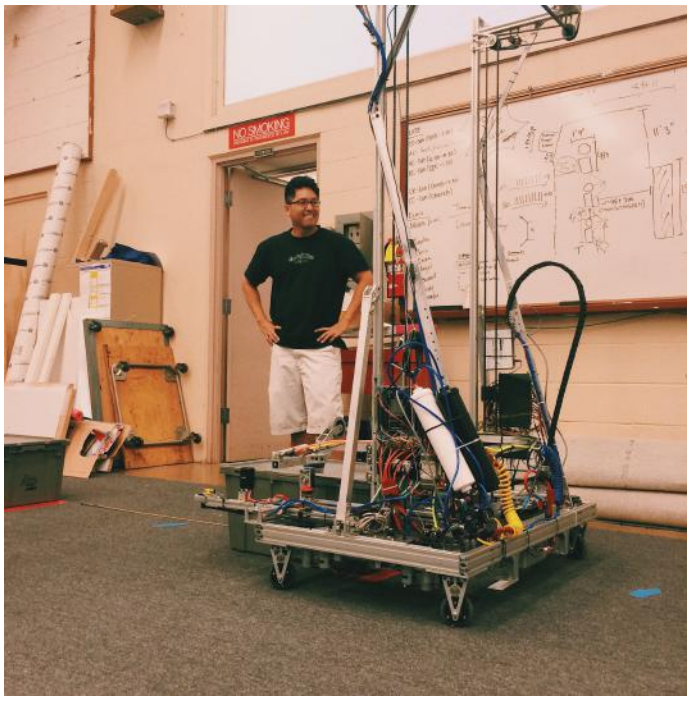
FIRST Robotics
Recycle Rush

Team Kika Mana #368
Positions: *Captain and Coach*
Awards: *1st Place at Hawaii Regionals*
Finalist at San Jose Regionals
World Championship Carver Division Winners
Spring 2015

Recycle Rush was the 2015 FIRST Robotics Competition. The objective of the game was to design a robot that could pick up and stack totes on scoring platforms and putting the recycling containers on top of the scoring stack of totes. Along with these objectives, robots had a 15-second period where robots must act on their own according to instructions from programming. There were two scoring options for teams to program for: picking up the three yellow totes and scoring them or grabbing the recycling bins in the middle of the field to maximize scoring.

In architecture and robotics we are encouraged to use our imagination to create something that we've never seen before that tests our creative abilities to their limits. In FIRST Robotics we are give a manuel with base requirements and a competition brief that we have to use to design and build a robot within 6-weeks. Throughout the competition season we are encouraged to build, test, and iterate as we go through various competitions all over the world.





RECYCLE RUSH

The robot was designed to be able to intake both recycling bins and totes to the maximum height (6 totes + 1 recycling bin). The robot has an elevator system that moves the intook item upward allowing for space for the next item to be intook. The drive was a four-wheel swerve drive to allow for more controlled movement through the game field.

The game rules restricted the robot from going over a certain size, which was a height that was shorter than the height of the maximum stack of items that could be scored. To prevent the recycling bin at the top of the tote stack from falling over, the elevator system had two wheels on both sides of it to hold the recycling bin in place.

Thank you

Please feel free to contact me if you have any questions.
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