



PORTFOLIO

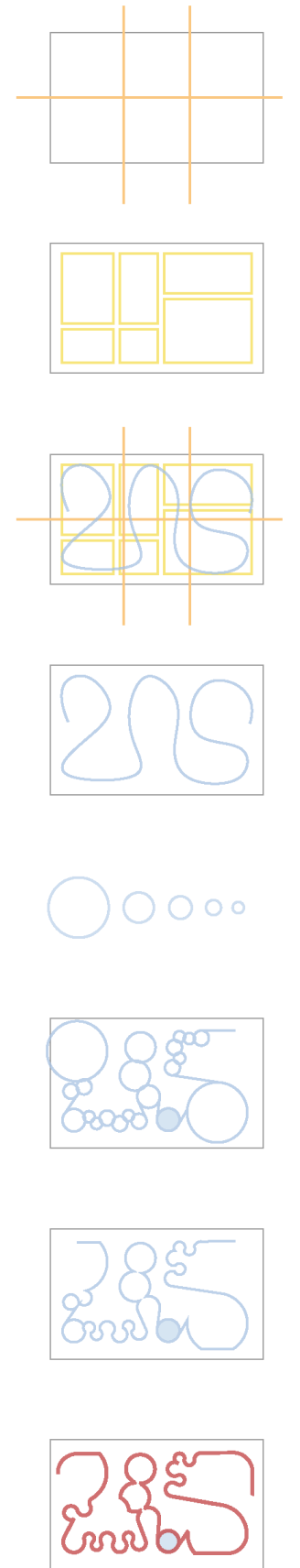
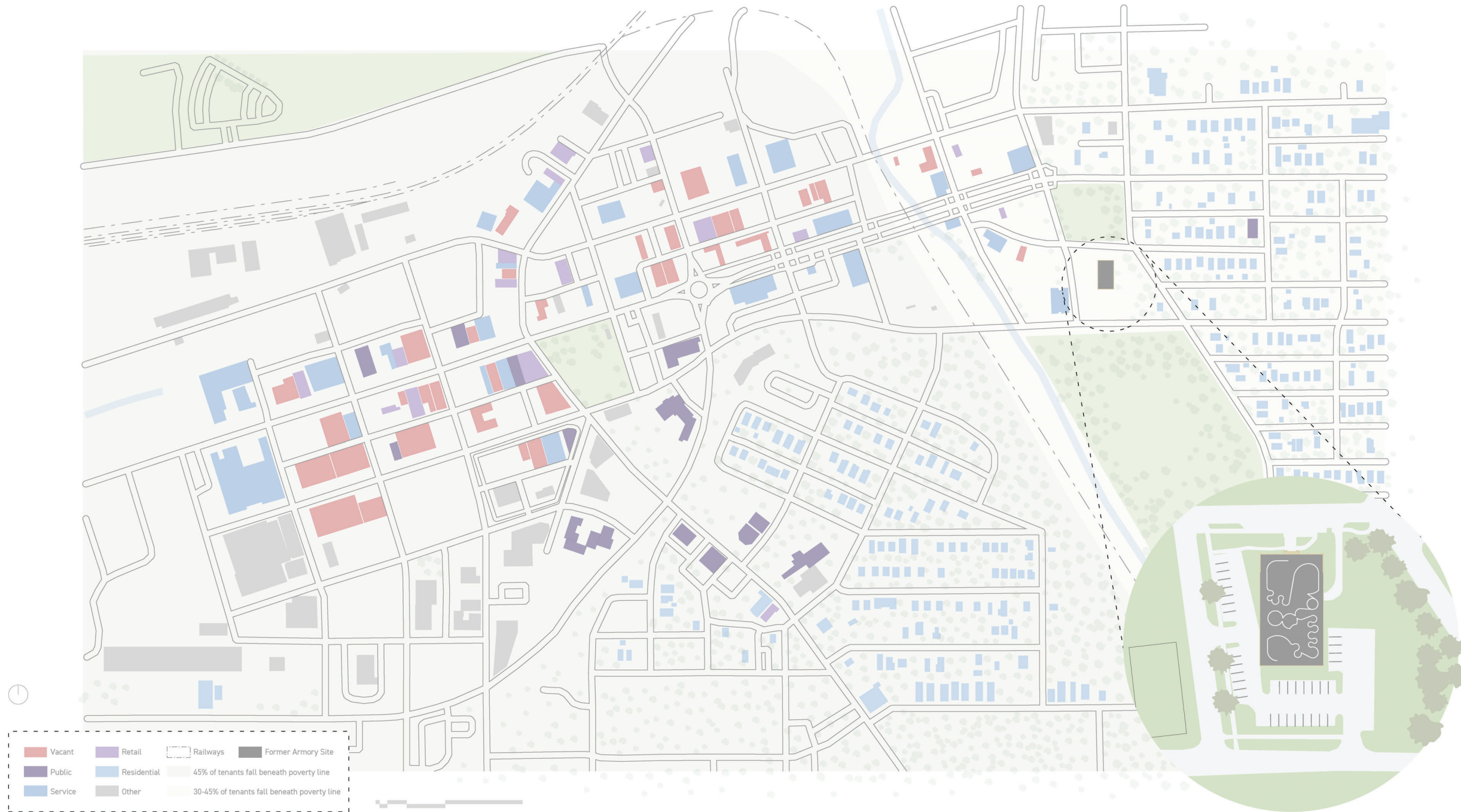
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2 types water
↳ potable
↳ non-potable → bathroom, heating system?
water fountains & wall
Heating elements w/ wall (collect in School or Management
leaking? Resyn piping diagram!
↳ hot water tank to lead water well pipes
Keep old roofing, water in addition to floors
more standard rooflines
Doorways? windows? porches?

part one
**BENTON
HARBOR
BUSINESS
INCUBATOR**



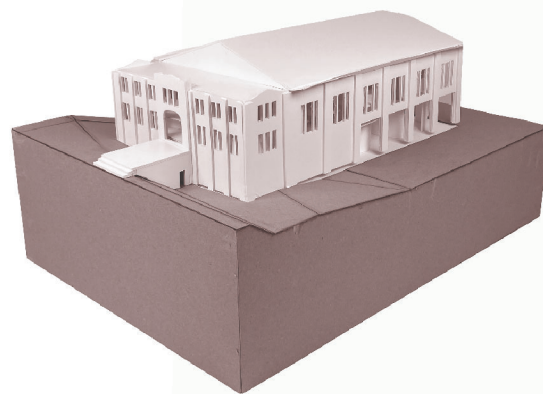
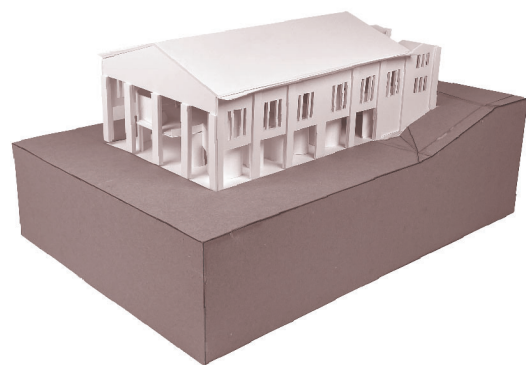
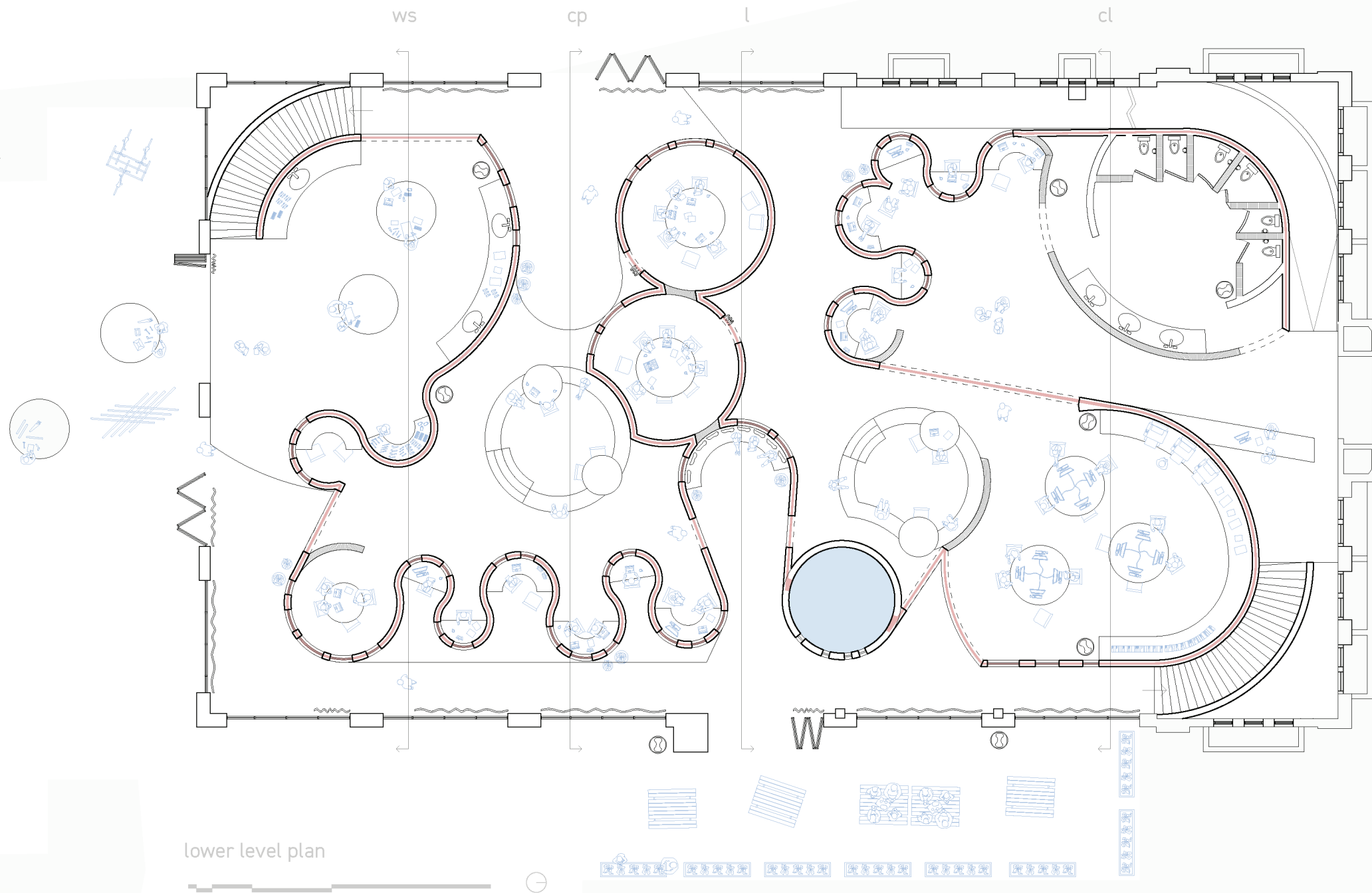
**Undergraduate Studio III
Fall 2023**

Skills Used:

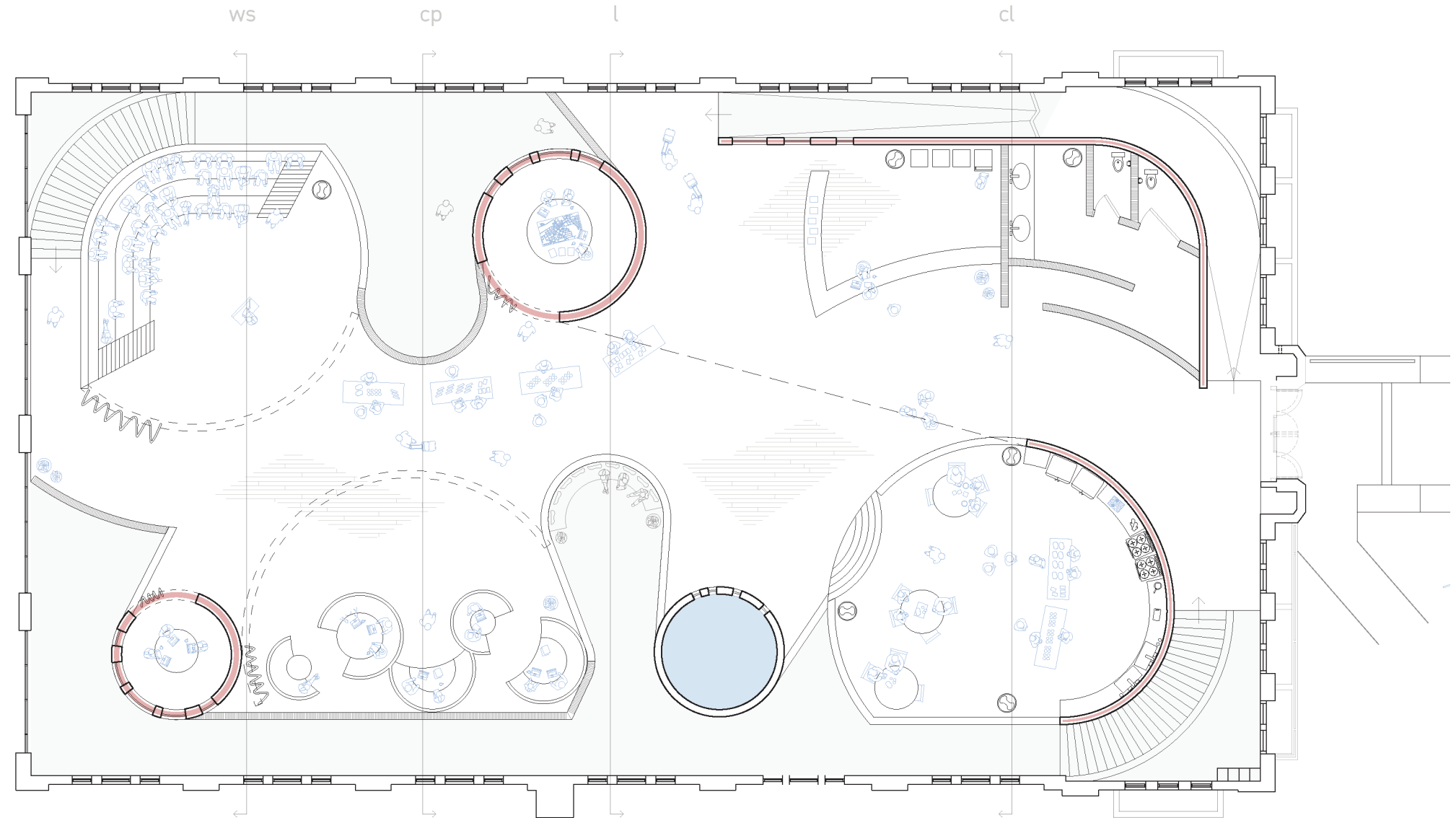
Adobe Suite, Rhino3D, 3D Printing

The city of Benton Harbor has been experiencing a loss of business since the 1990s, leaving more than half of the population in poverty. In an effort to reintroduce more jobs and local businesses to the city, this project transforms an abandoned recreational center into a business incubator. Additionally, it serves as a community resiliency center in the case of an emergency.

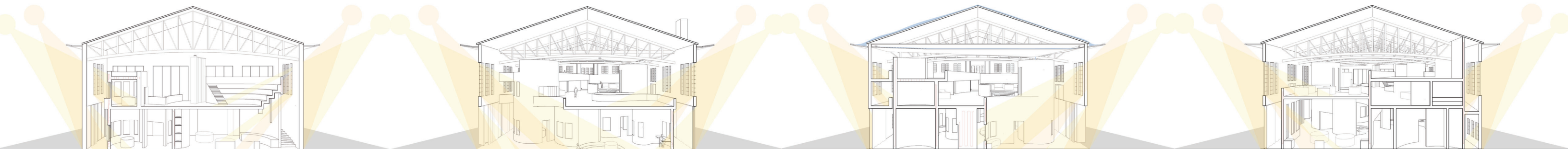
The design process began in the basement, which had previously served as storage. Here, a range of spaces was envisioned to function as offices—some small enough for lone individuals or small teams, while others were large enough to host business meetings or workshops. Interwoven throughout are communal and shared spaces, including lounges and computer labs, to foster community building. The single, curving wall connecting these spaces promotes inclusivity across all areas, yet it folds in on itself to create a sense of privacy for occupants. The wall was crafted around standardized circle sizes to offer a plausible construction approach, with central and surrounding circulation paths. As this was an existing basement, exterior glass doors replaced many cement walls to allow natural lighting within the office spaces.



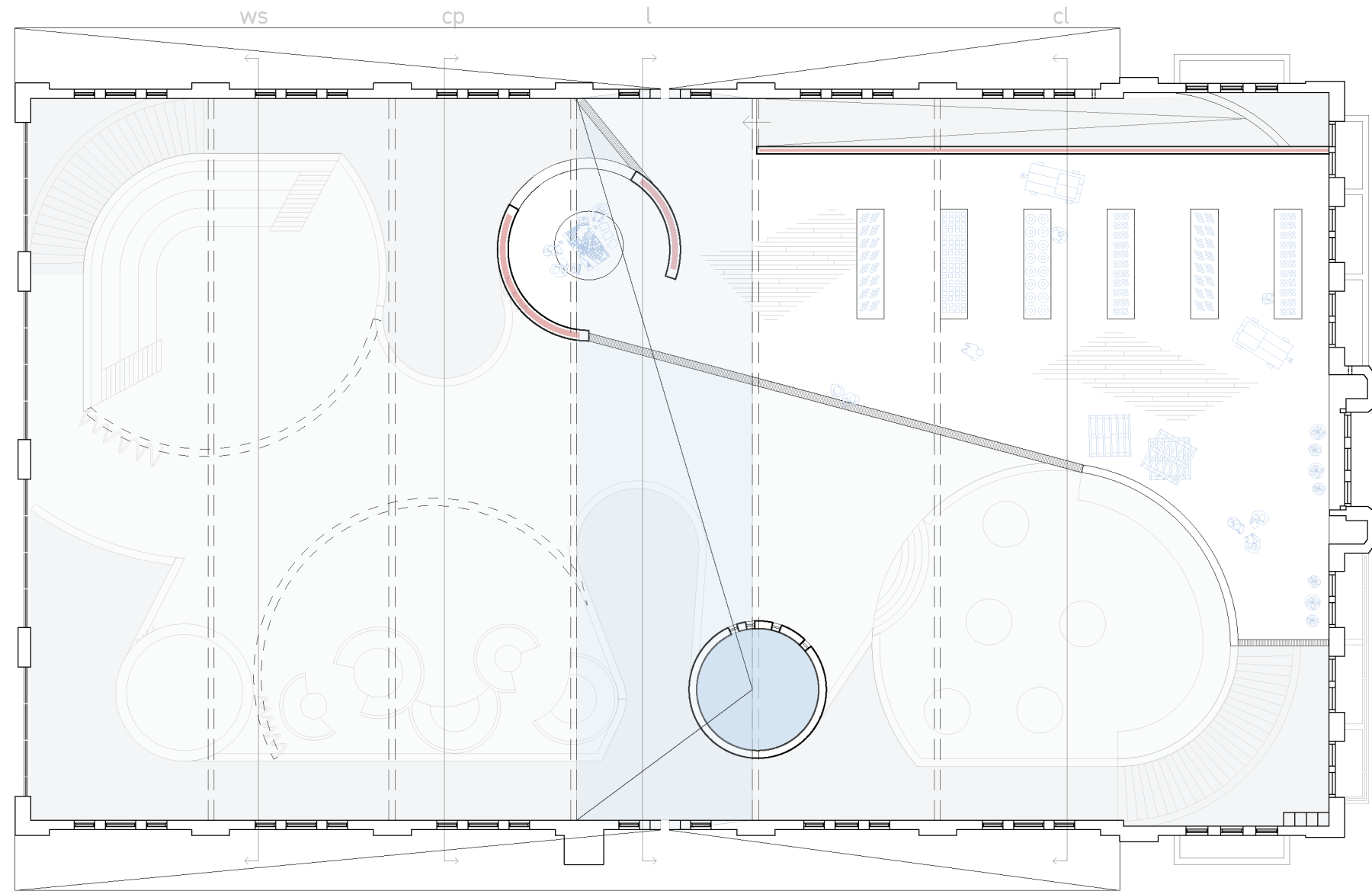
The middle floor is more flexible than its predecessor, designed to accommodate both coworking and emergency situations. The areas can serve as a break room or a soup kitchen, as well as transform into an auditorium hosting a business lecture or a town hall. The shape of this floor is influenced by the curving walls below. However, certain areas of the floor are cut away to allow natural lighting to reach the lower level. The elevation of the auditorium seating and dining area enhances this effect. To balance the public nature of this level, thick curtains are strategically placed to allow the division into smaller spaces and help absorb the audio in such an open environment.



first floor plan

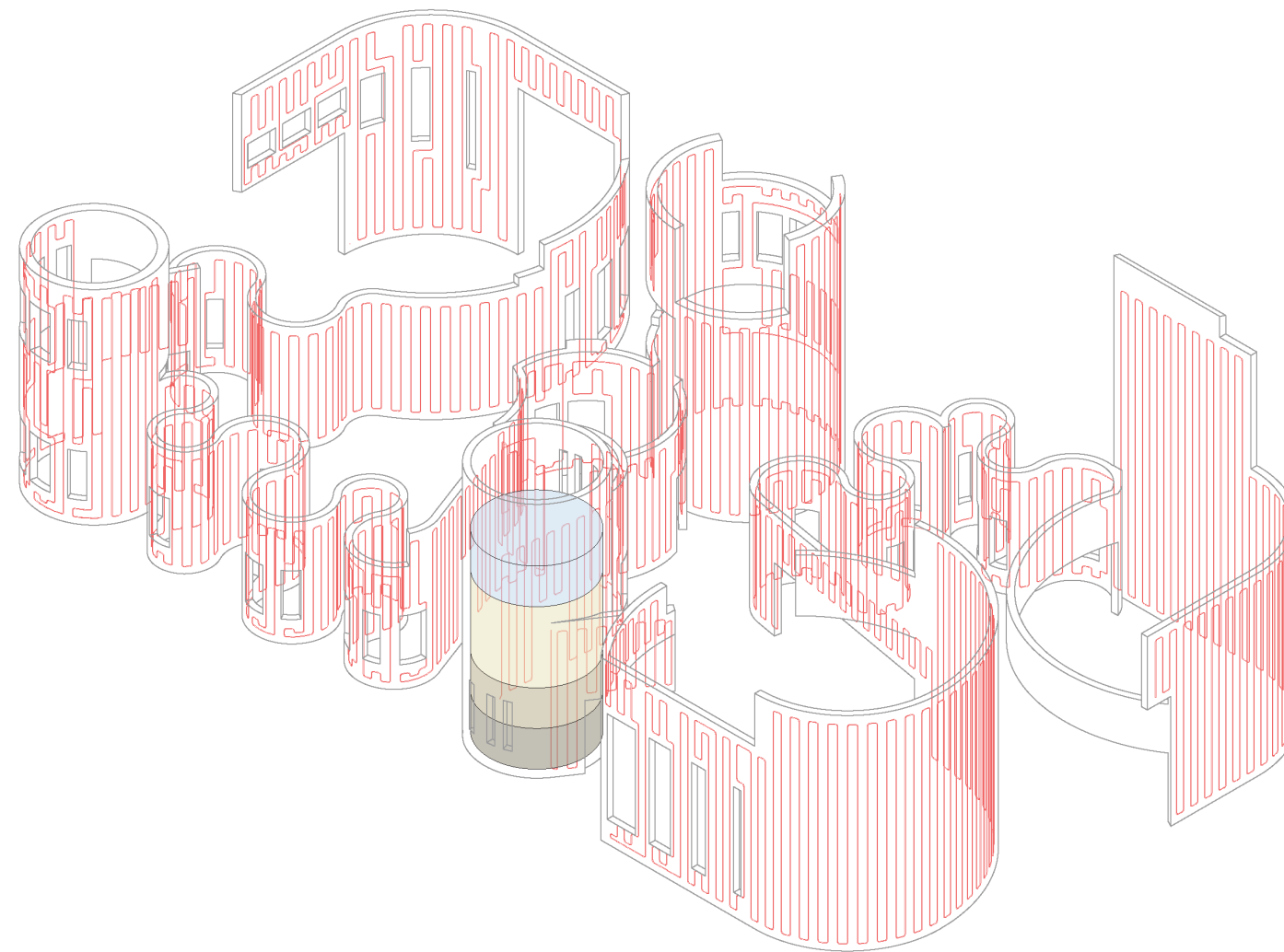
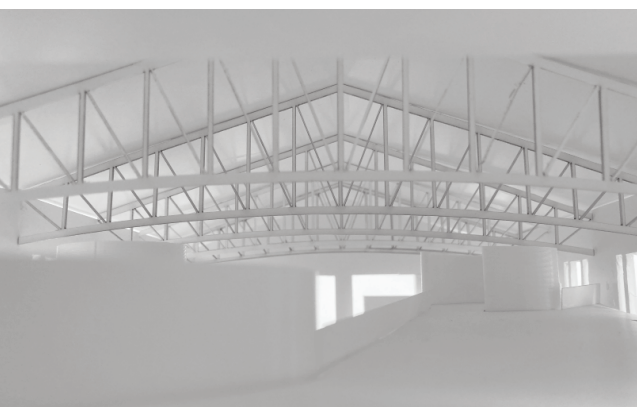


The last floor, the smallest of the three, is geared towards emergency settings. Once again, based on the walls below, this floor acts as an overlook to the southern park, magnificent existing trusses, and the floor below. Apart from one last meeting room, the space intentionally remains empty and is meant for storing emergency supplies. In addition to supply storage, this level also houses water storage. Large gutters were added to the existing roof, funneling water through a channel placed between two trusses. The channel directs all captured rainwater to a large water tower embedded within the walls of the lower floors.



second floor plan





All of the walls are connected by one continuous vertical radiant heating system, sourced by the recycled rainwater stored in the center of the building. Radiant heating is an efficient and increasingly popular alternative to forced air, guaranteeing a warm shelter for Benton Harbor residents in the case of power outages or harsh winters. Although the water will get colder as it travels away from its course, one side ending exposed to the southern sun, and the other ending where the building gains thermal mass from being embedded in a hill, evens out the heat loss. This thermal mass is further enhanced by the entire mechanical system being enclosed within curving brick walls. Altogether, this contributes to the resilience of the space by recycling water and its use.

The Development of Huntington's Industry and Infrastructure in Images



1837.

1870s.
1871.



1888.



1913.
1914.



1937.
1938.



1950s.



1977.

1981.

1984.

1993.



2020.

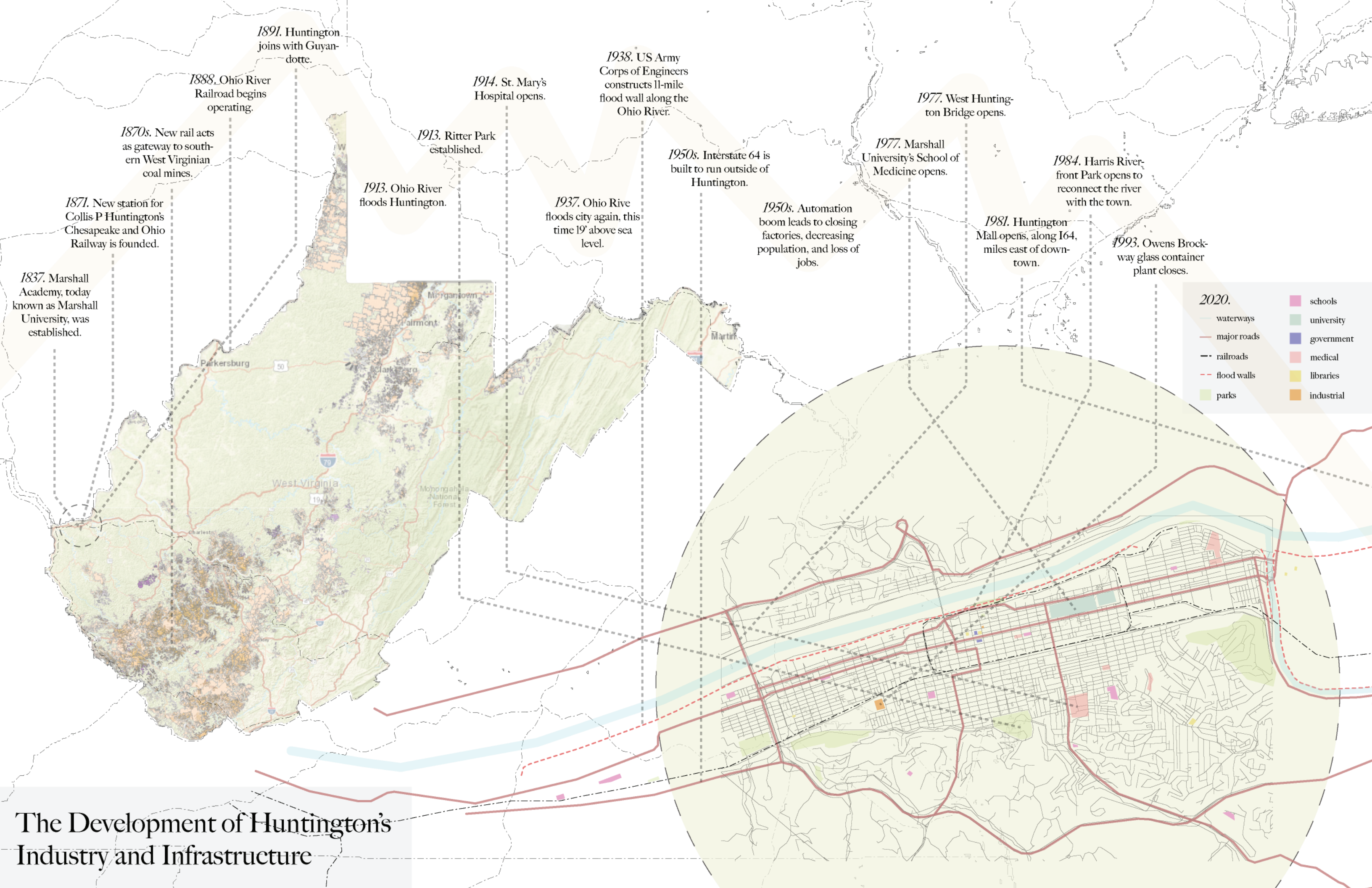


part two HUNTINGTON RESEARCH

Undergraduate Studio IV
Winter 2023

Skills Used:
ArcGis, Adobe Suite, Rhino3D

Huntington, West Virginia, is one of the many Appalachian towns impacted by the national shift away from the coal industry. This research frames the town's infrastructure and industrial trends in response to economic and historic events.



1891. Huntington joins with Guyandotte.

1888. Ohio River Railroad begins operating.

1870s. New rail acts as gateway to southern West Virginian coal mines.

1871. New station for Collis P Huntington's Chesapeake and Ohio Railway is founded.

1837. Marshall Academy, today known as Marshall University, was established.

1914. St. Mary's Hospital opens.

1913. Ritter Park established.

1913. Ohio River floods Huntington.

1938. US Army Corps of Engineers constructs 11-mile flood wall along the Ohio River.

1937. Ohio River floods city again, this time 19' above sea level.

1950s. Interstate 64 is built to run outside of Huntington.

1950s. Automation boom leads to closing factories, decreasing population, and loss of jobs.

1977. West Huntington Bridge opens.

1977. Marshall University's School of Medicine opens.

1984. Harris Riverfront Park opens to reconnect the river with the town.

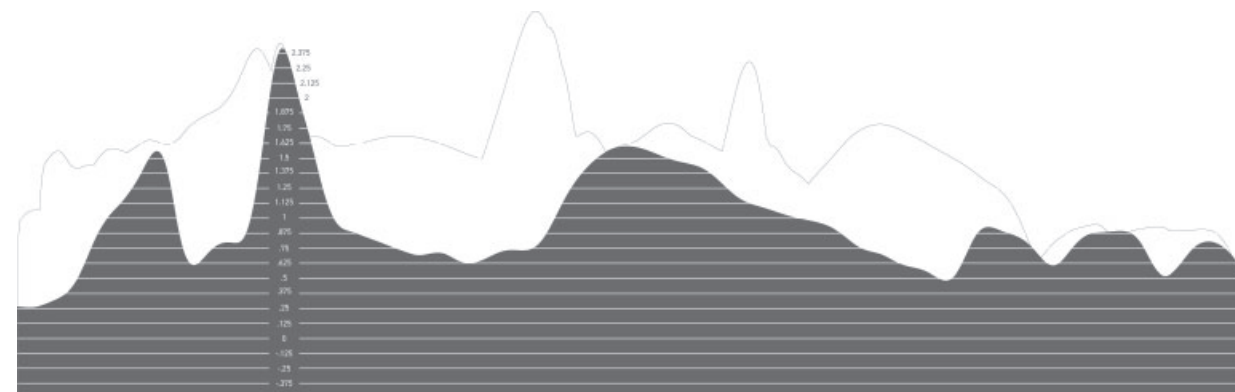
1981. Huntington Mall opens, along I64, miles east of downtown.

1993. Owens Brockway glass container plant closes.

2020.

- waterways
- major roads
- - railroads
- - - flood walls
- parks
- schools
- university
- government
- medical
- libraries
- industrial

The Development of Huntington's Industry and Infrastructure



part three

TOPOGRAPHY OF LUNCH

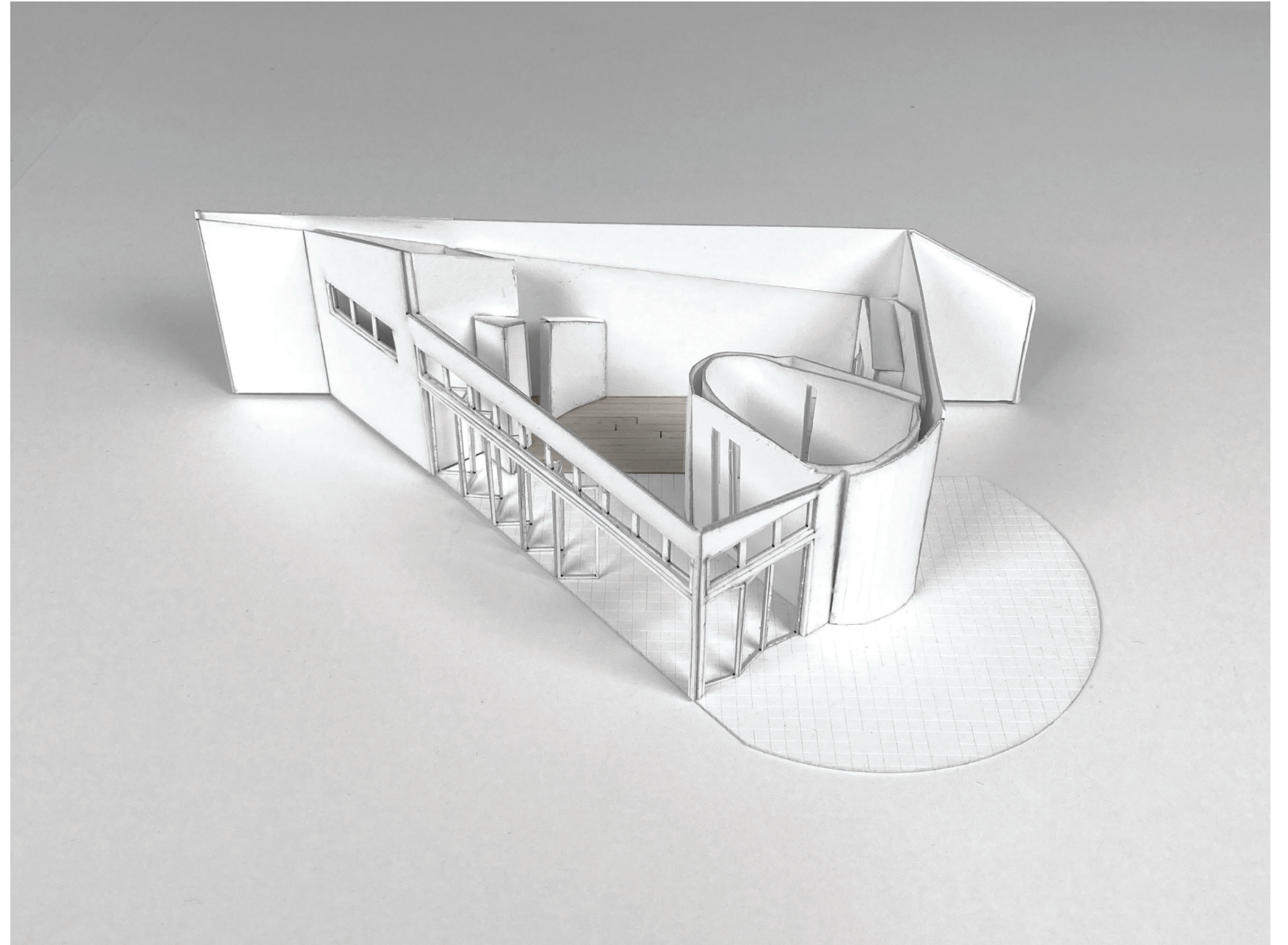
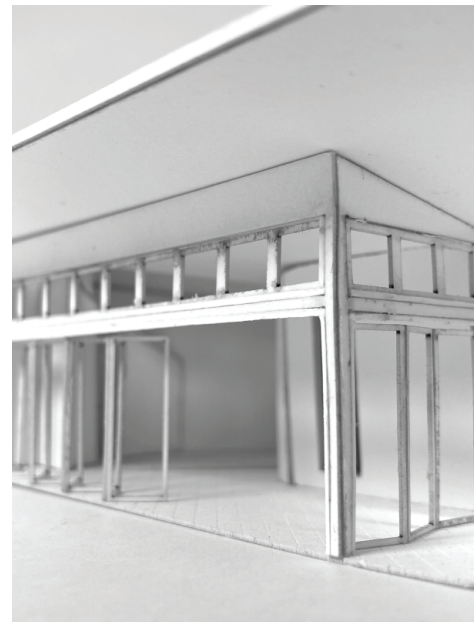
Undergraduate Studio II, Winter 2023

Skills Used:

Topography mapping, Rhino3D, Adobe Suite, Vacuum Sealing

In preparation for a studio focused on site-specific designs, we turned our lunches into topography drawings and 3D models.

part four
PICNIC PAVILION



Undergraduate Studio III, Fall 2023

Skills Used: Rhino3D, Adobe Suite, Physical Modeling



With the middle of the roof being depressed, all rainwater is collected into a central tank, which is then roughly filtered and reused for the shelter's bathroom. The upward angle of the roof matches the neighboring hill and serves as a buffer against strong western lake winds. Both the water tank and the retained hill create thermal mass for the pavilion. The building's large southern overhang allows the winter sun to reach the interior tank and warm it, but prevents summer light from overheating the space. While accordion doors permit plenty of natural light to reach the southern half of the building, a clerestory ensures that the northern half is exposed to light as well.

part five

CREEKSIDE WELLNESS CENTER

Undergraduate Studio II

Winter 2023

Skills Used:

Adobe Suite

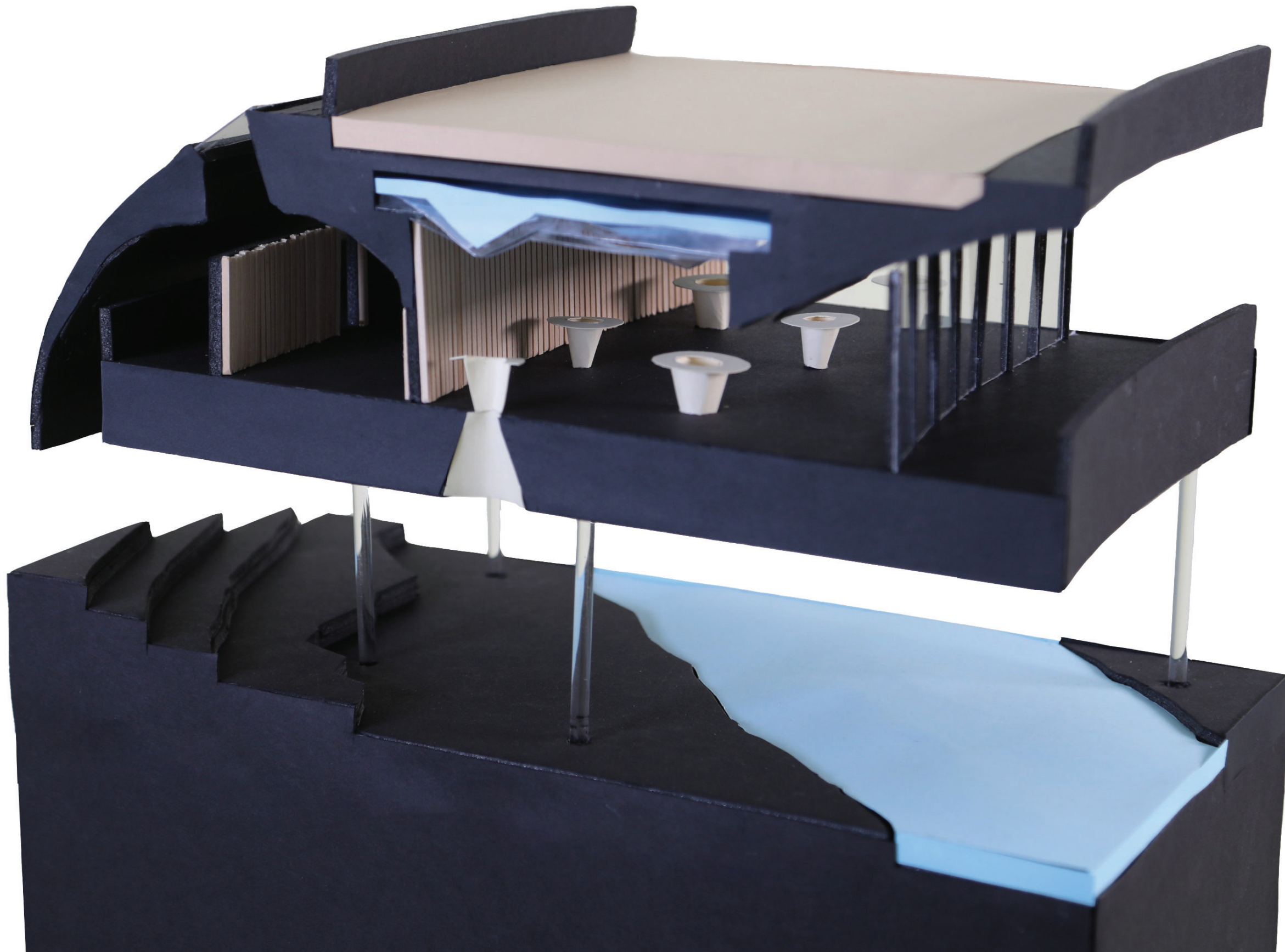
Rhino3D

Physical Modeling

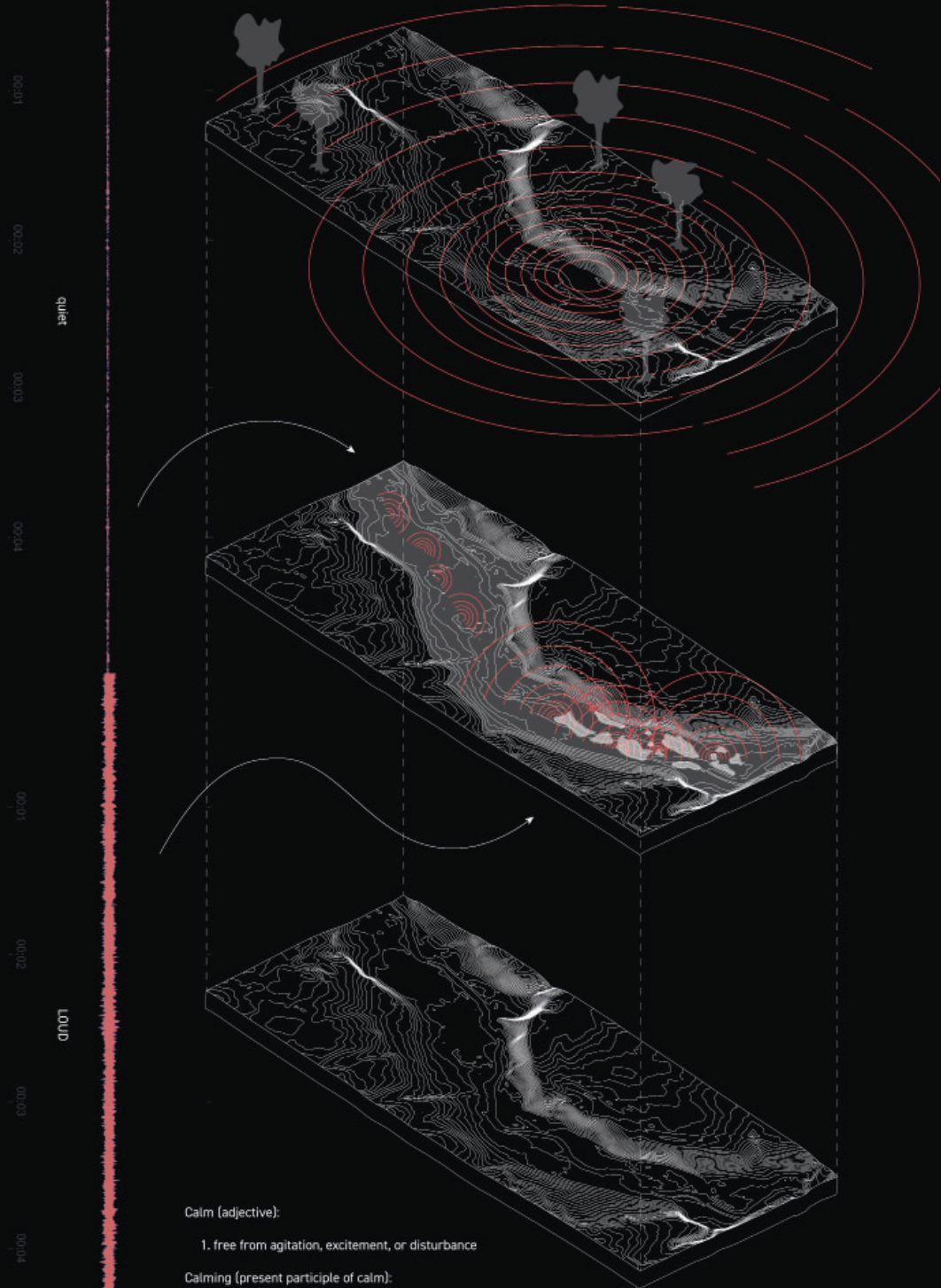
The creek as an audio source is this building's primary source of wellness. The constant white noise of meandering water is one that aids its listener in focus, whether it is on a task at hand or on the noise itself. Capturing, projecting, and emphasizing the audio of moving water, and having it accompany the wellness center visitors with their tasks, is the premise.

For a building focused on the sound of water, it needs to have a large source. The building utilizes Olafur Eliasson's *Versailles Waterfall* as a permanent exhibition and primary water source. The waterfall towers over the rest of the building, providing a sharp contrast to the low-lying levels. The path of the water begins by cascading its way down the waterfall, then carving along the staggered rooftops.

The waterfall leading to the roof creates splashing pools and green spaces for visitors to enjoy. Each roof level also contains opportunities for the water to enter the building, where it continues to flow and create a variety of interior auditory experiences. Once the water has reached the end of its journey within the building, it crashes into the bay at the bottom of the hill, and joins the moving current of the creek below.

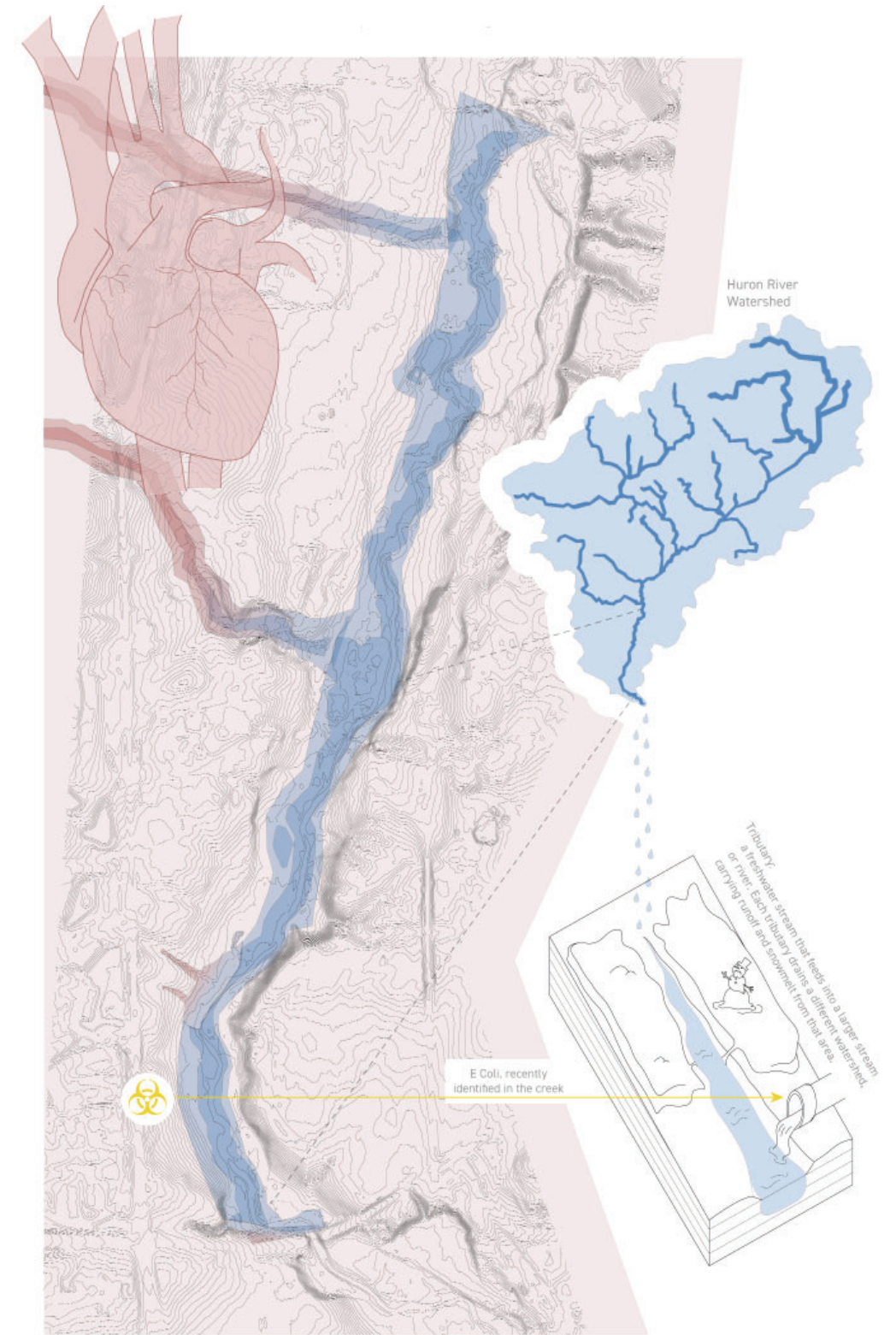


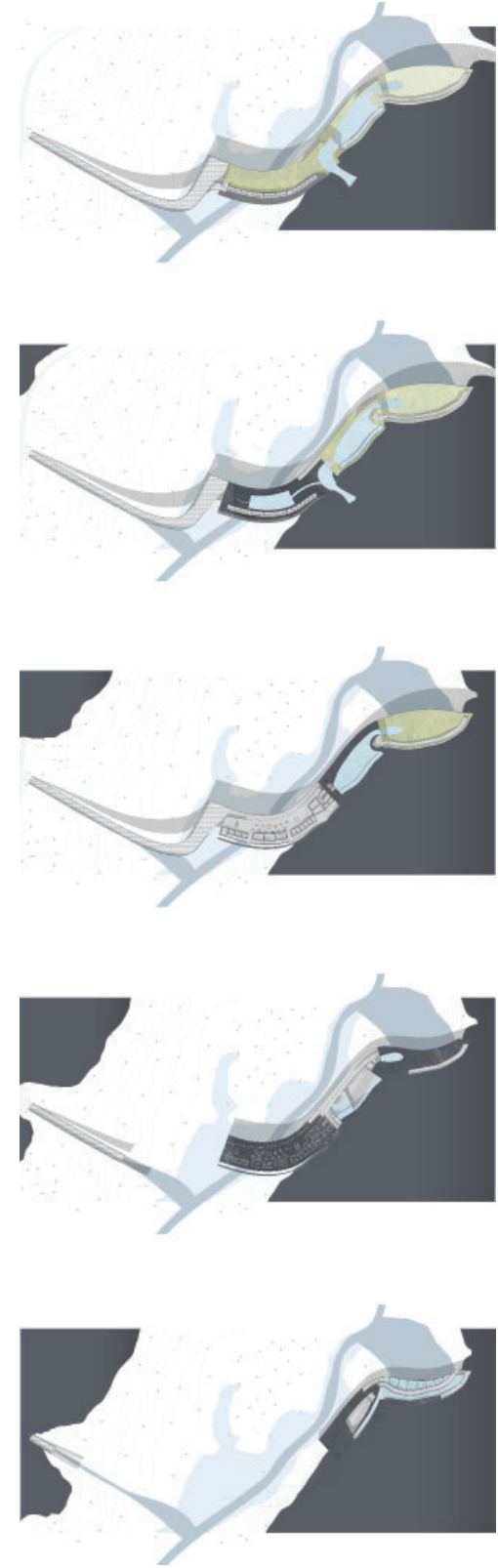
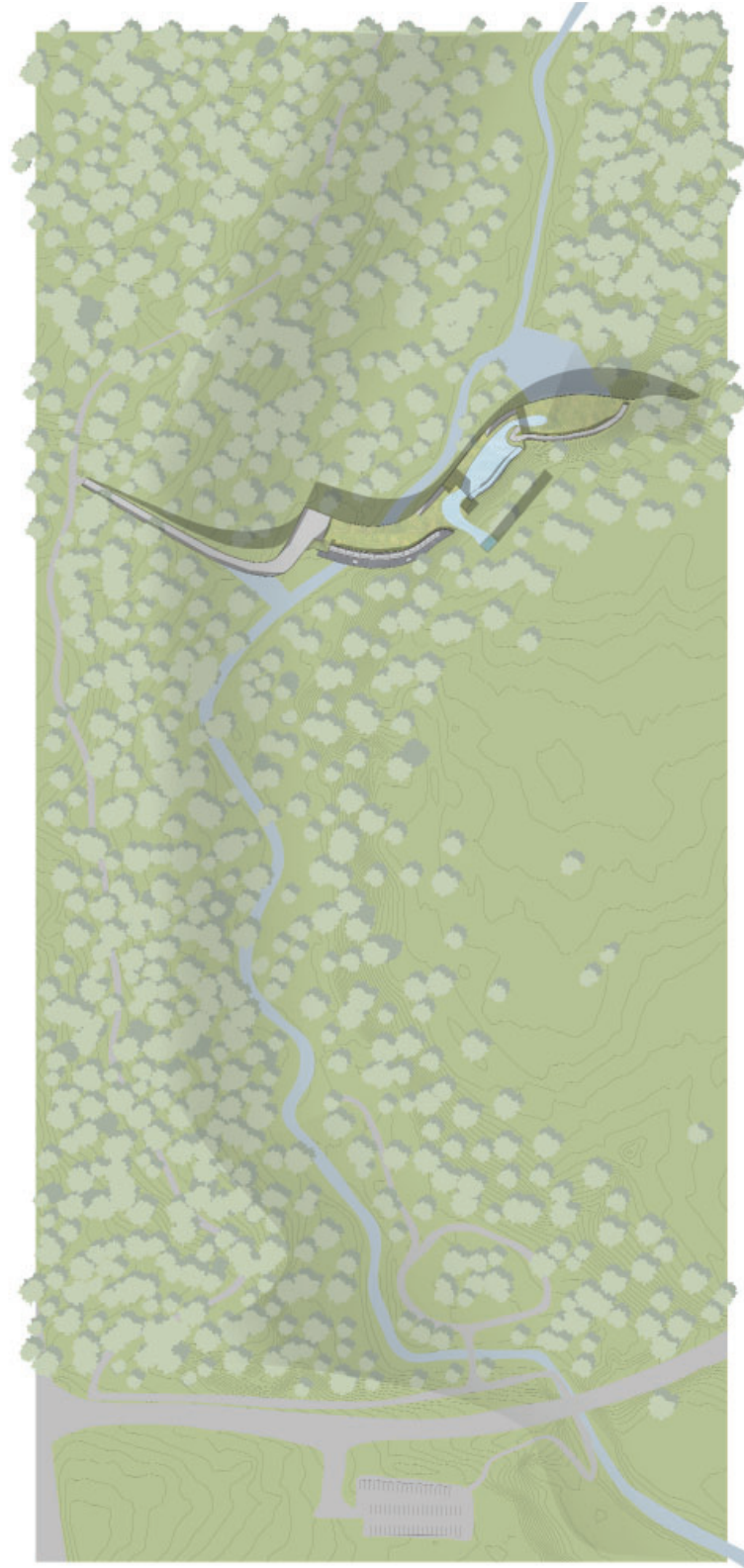
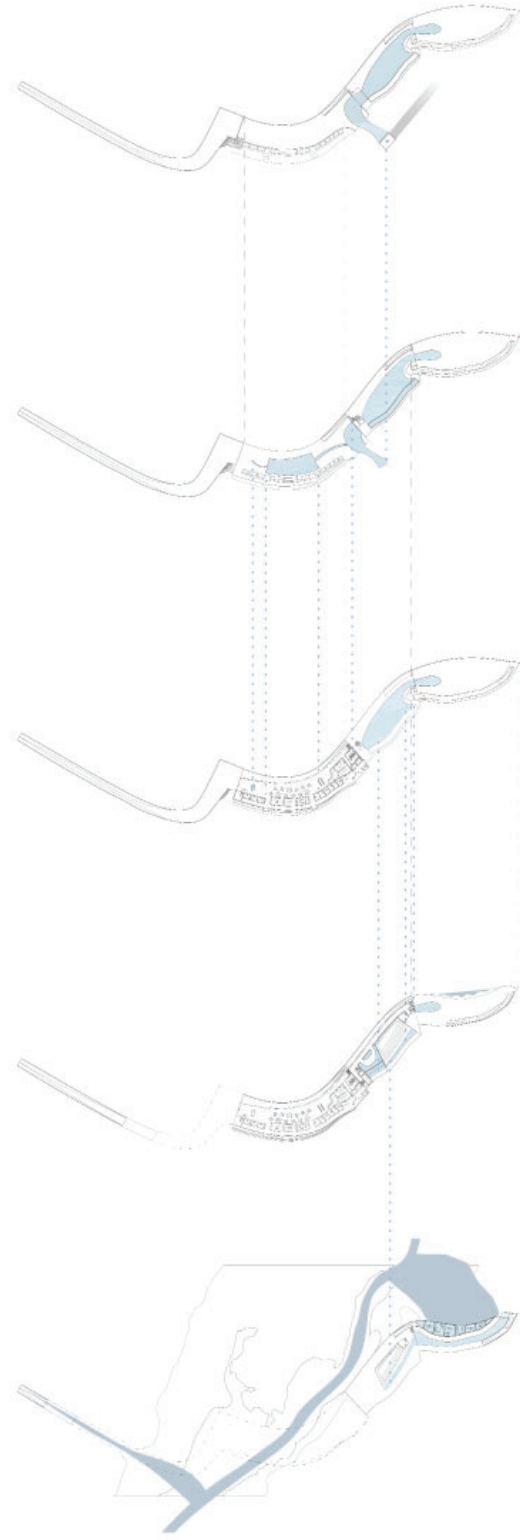
Fleming Creek as an Audio Source

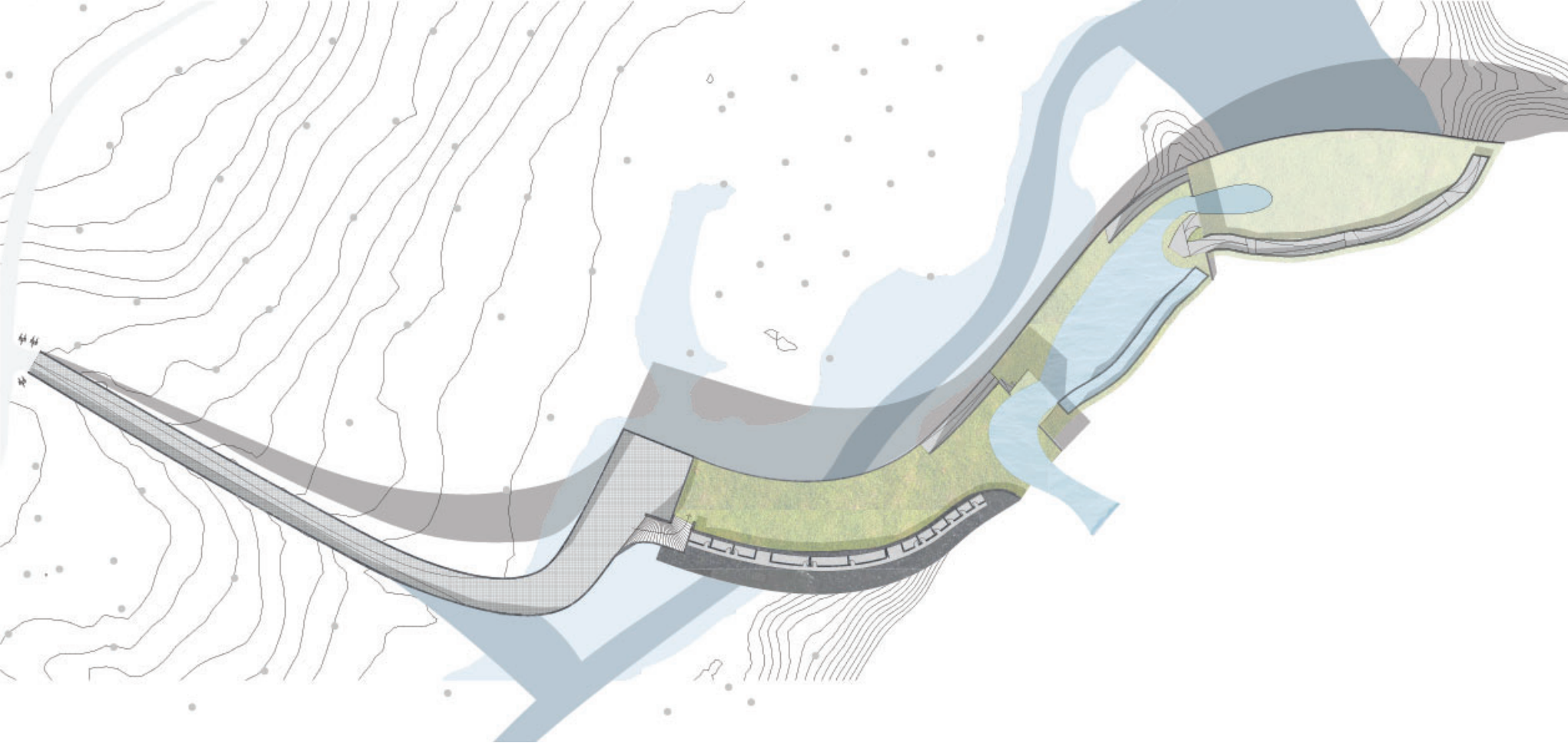


Calm (adjective):
 1. free from agitation, excitement, or disturbance
 Calming (present participle of calm):
 1. to stop someone feeling upset, angry, or excited

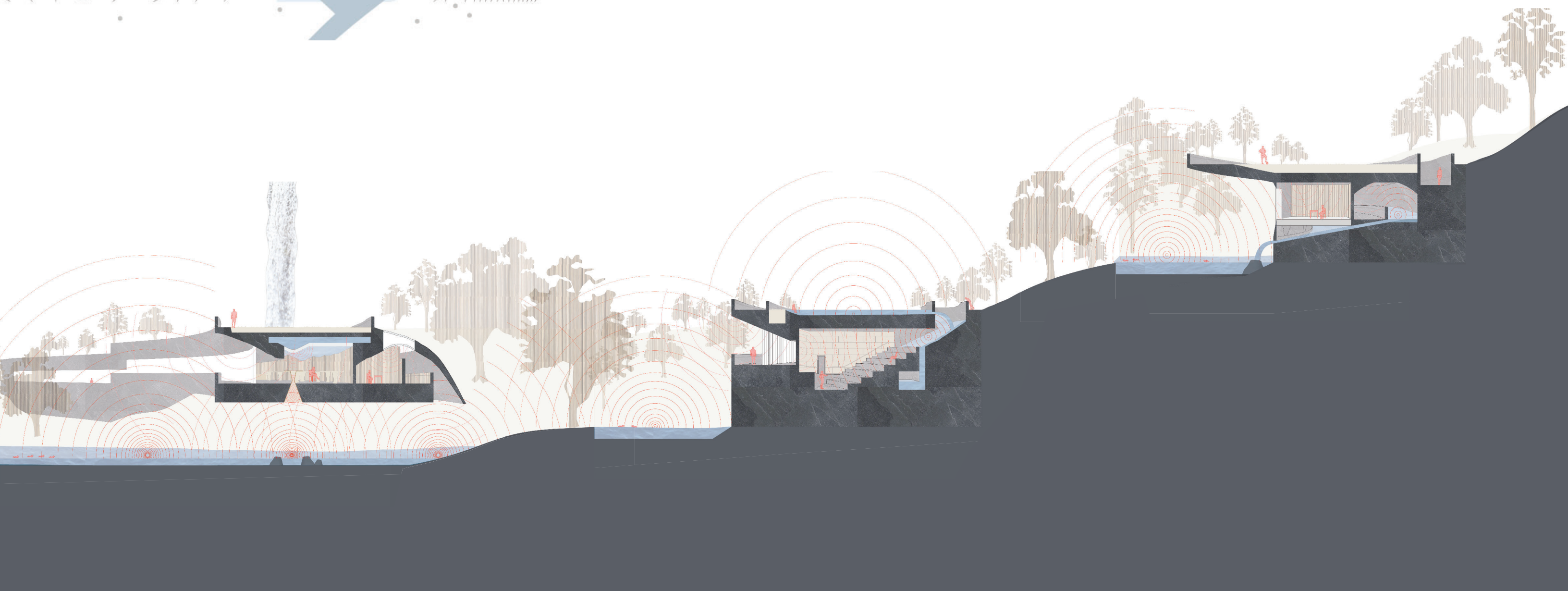
The Importance of Tributaries to Fleming Creek

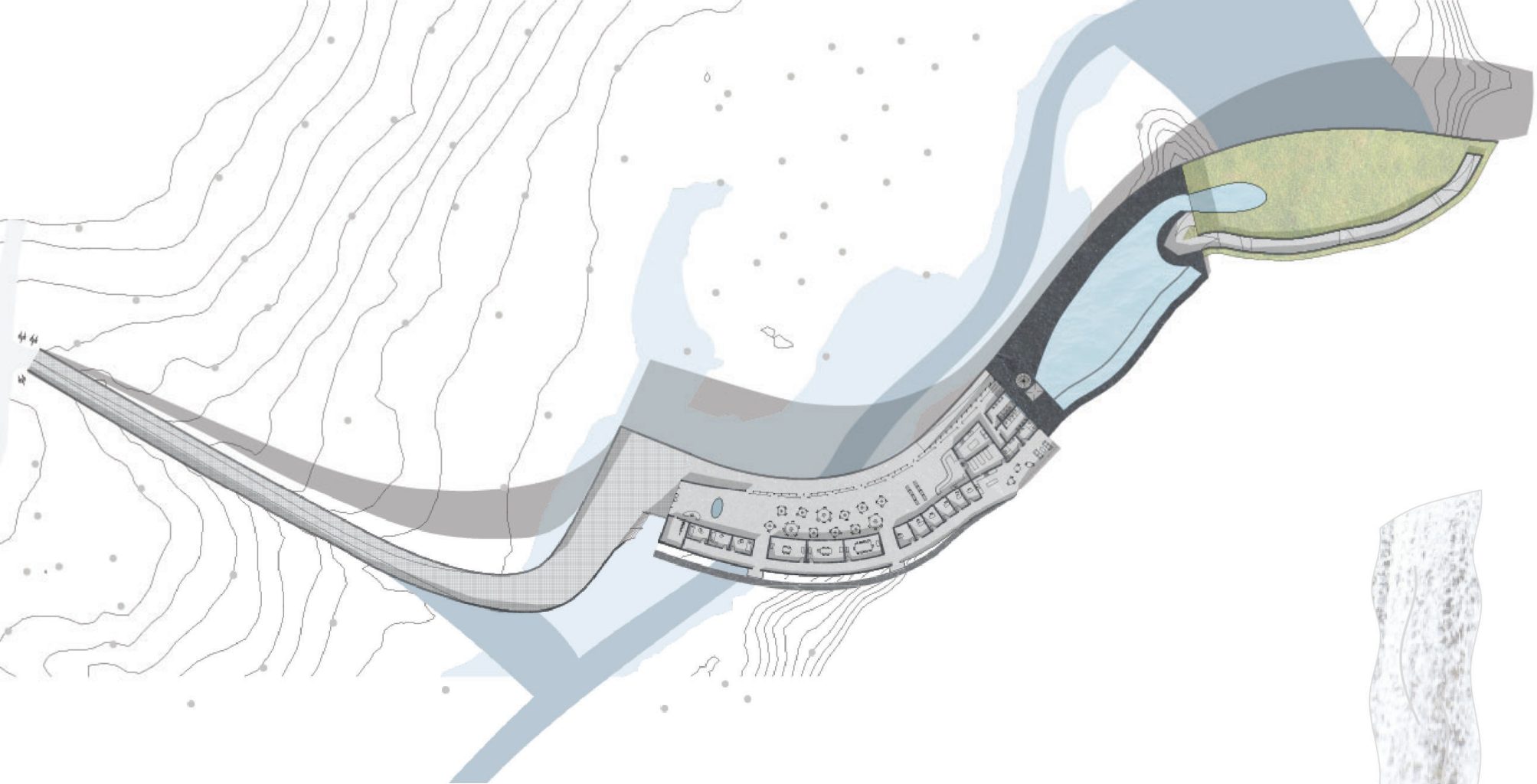




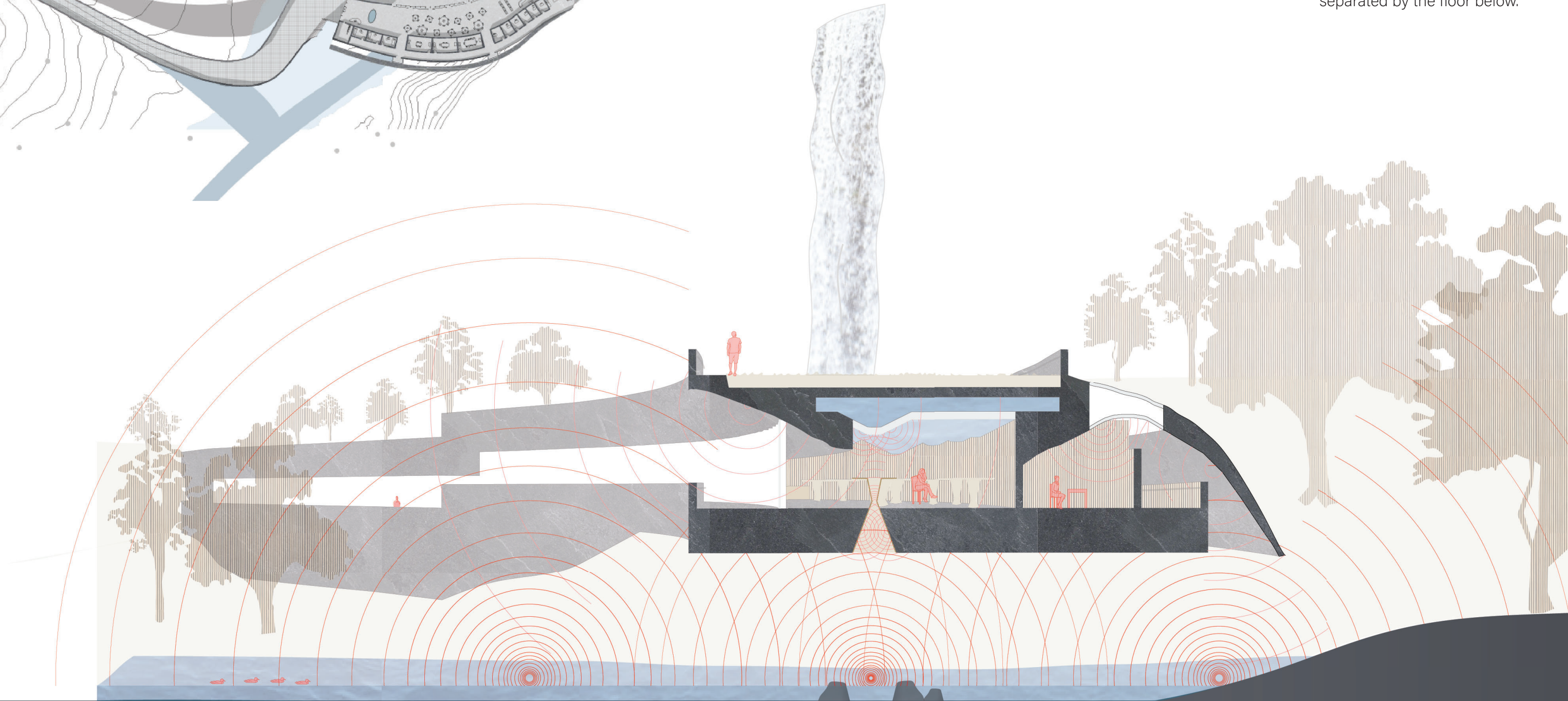


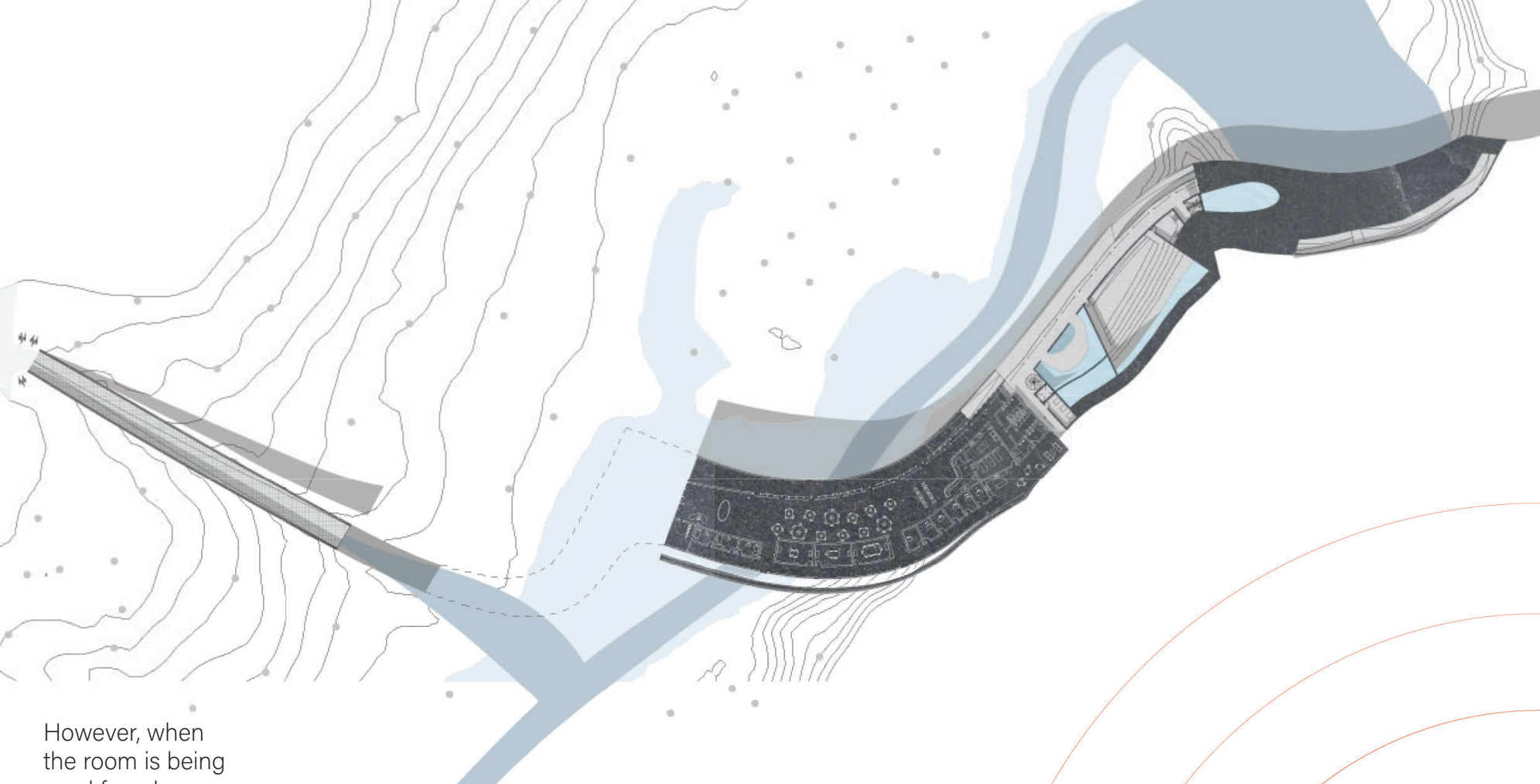
The building's placement and form capture the sound produced by the nearby creek. The building's interior is full of specialized areas that utilize different methods, sizes, and locations of flowing water in order to manipulate water and audio. With this, the sound of the creek is present in any area inside or outside of the building. However, the intensity of the water audio varies greatly depending on the location. The sound of water is weakest when one first enters the building into the cafe, since the cafe gives more emphasis to the sound of people interacting. Then, as one travels further into the building, the program is aligned to have the functions get quieter and quieter, in turn creating a larger emphasis on the sound of the water. No matter what, one can always hear the constant, relaxing creek nearby, and have it accompany them with their tasks.





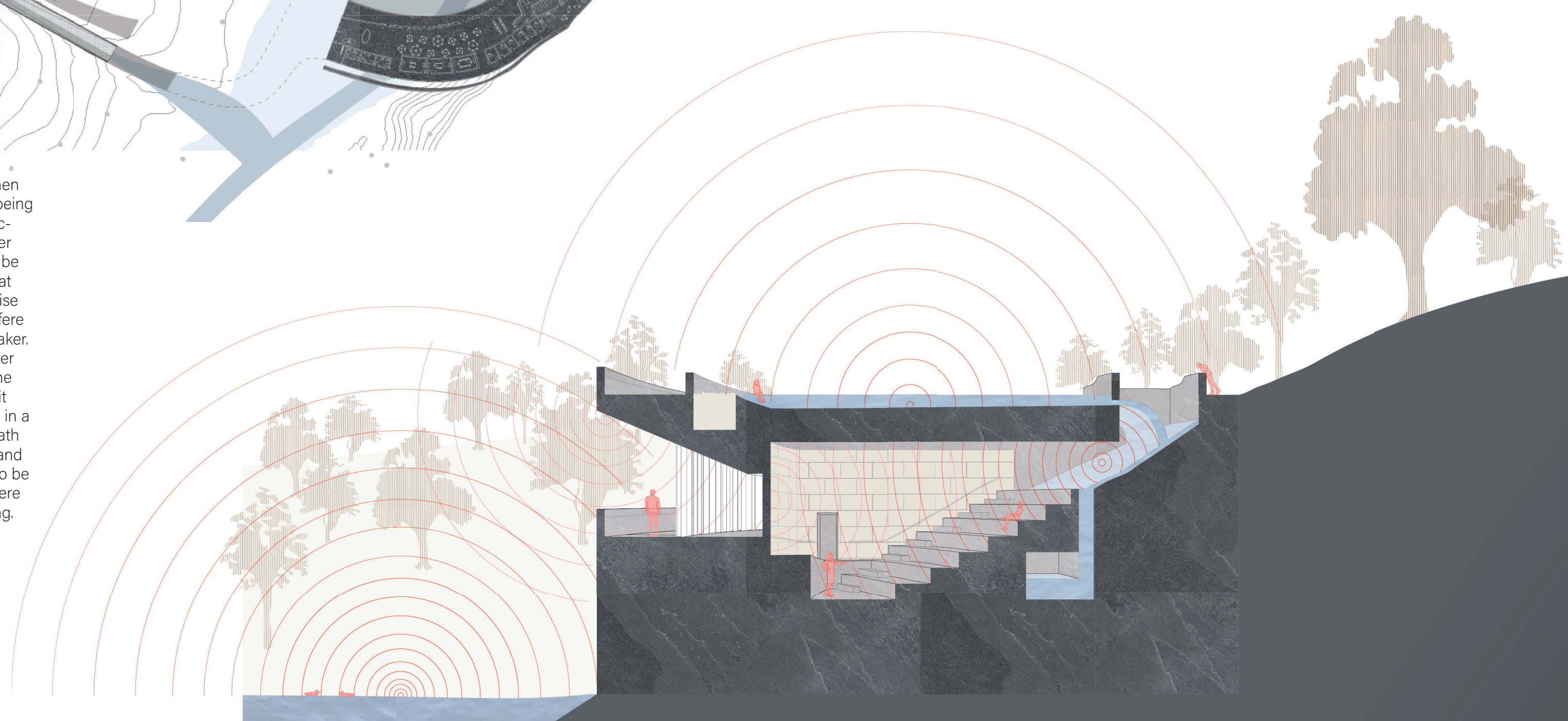
One of the best examples of how the building's form manipulates the sound waves from the creek to create an auditory experience for the visitors can be found within the wellness center's cafe. The cafe, hovering above the creek, has conical cut outs throughout the floor. These cones capture the sound waves coming from the moving water, and project them upward through a floor opening into the cafe above. The openings are surrounded by projecting cones, which double as cafe tables. Above the openings, the ceiling is shaped into mounds that reverberate the waves back down towards the user of the cafe table, instead of letting the audio be muted by hitting a flat ceiling above. The ceiling cones are also shaped to mimic the appearance of moving water, to further the water immersion within the building. With this manipulation of form, the visitors are able to hear the sound of the creek that is separated by the floor below.

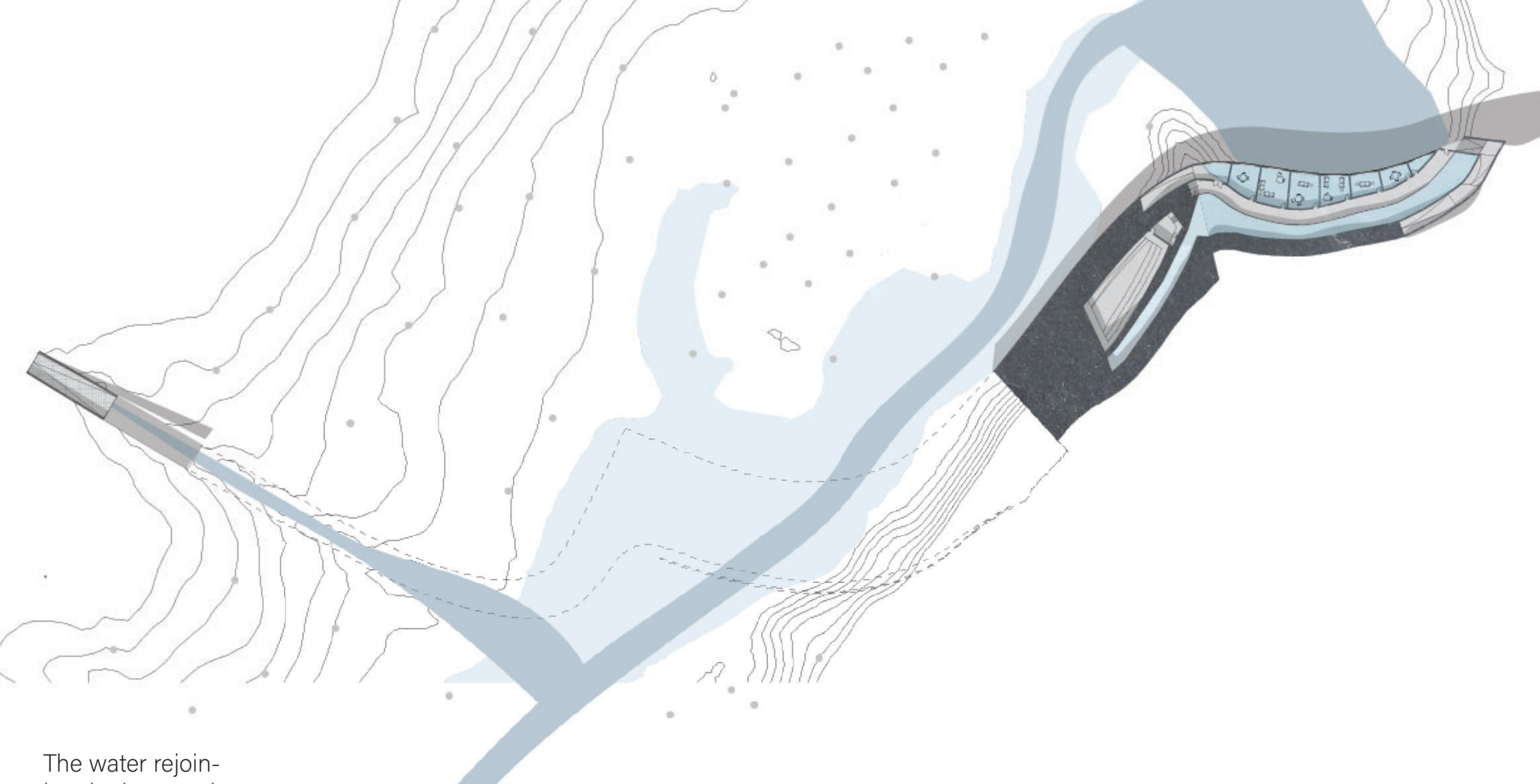




The next example of the wellness center creating an auditory experience for its user can be found with the auditorium. Above the auditorium there is one of the shallow splashing pools formed by the nearby waterfall. On top of the roof, people are able to relax and wade within the pool. However, this water also has the ability to enter the building via an opening in the roof. Once within the building, the water runs down an angled wall, creating a crashing noise within the auditorium. This noise acts as a soothing background for people lounging or studying within the space.

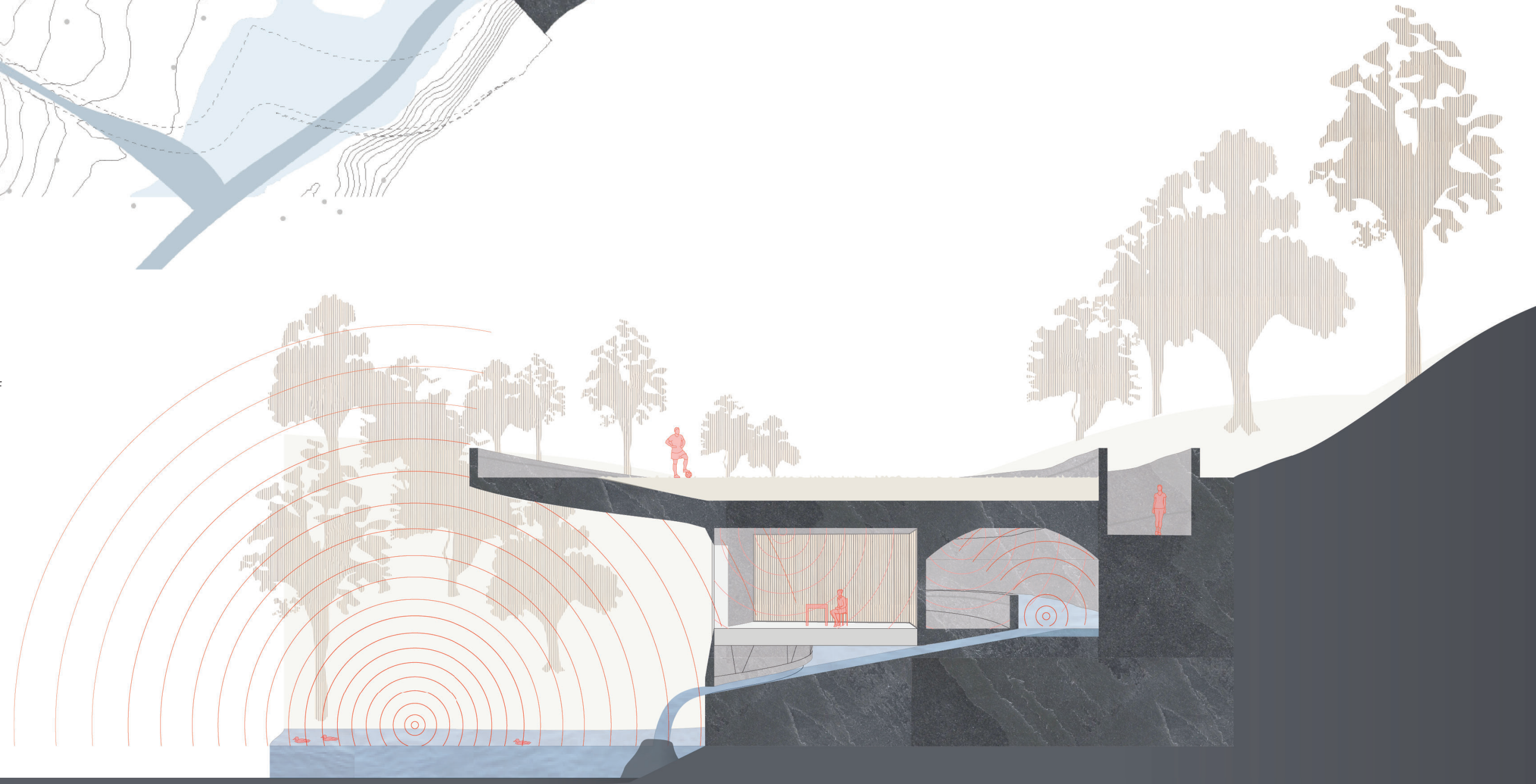
However, when the room is being used for a lecture, the water channel can be closed, so that the water noise doesn't interfere with the speaker. After the water runs down the angled wall, it then collects in a cavern beneath the seating, and is collected to be used elsewhere in the building.

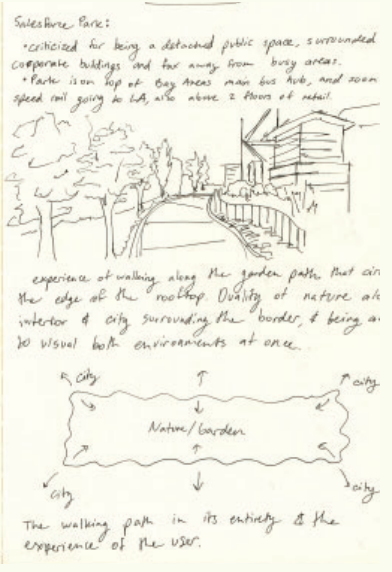
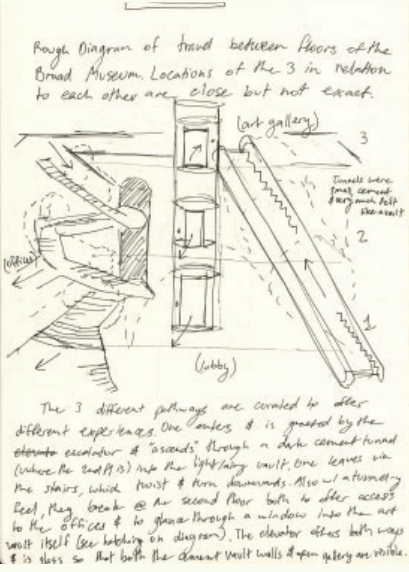




After the water enters the cavern beneath the auditorium, it then flows down the building to the study spaces. Here, as one walks along the hallway to enter one of the many study rooms, they are accompanied by the sound of the water running alongside them in a moat. Once in the moat, the water then filters underneath the walkway and the study rooms, and through a hole in the buildings facade, to crash down into the natural bay that rejoins with the original creek.

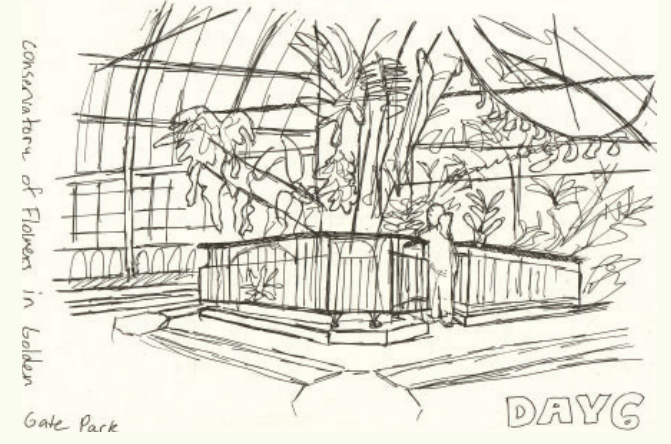
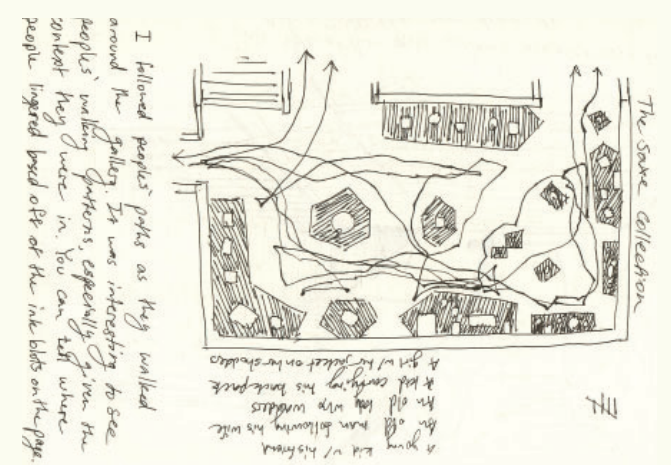
The water rejoining the bay can be heard when one is in a study room through openable windows, and seen beneath the glass flooring. This area of the building contains the greatest concentration of water audio, since these spaces help visitors focus on their task at hand and avoid distracting social situations.





Golden Gate Park

- De Young building is coated in copper, intended to eventually turn green (think Statue of Liberty) & match the rest of the park.
- Academy of Science museum has a greenery room to make it feel like a piece of the park was lifted up

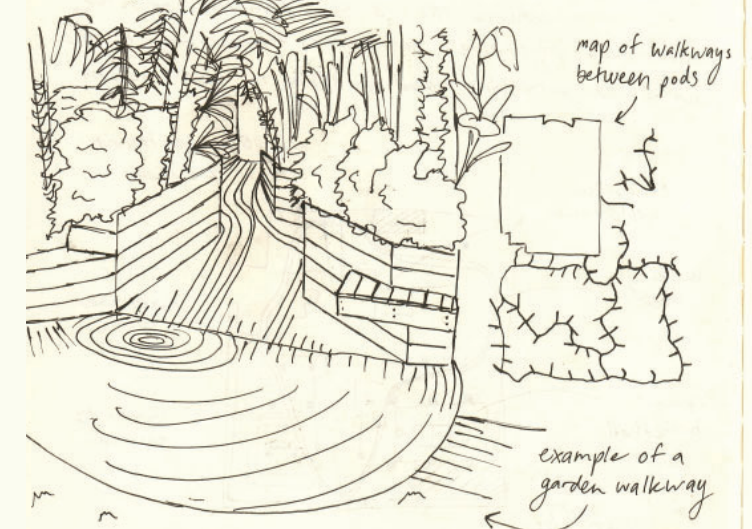


part six
STUDY ABROAD RESEARCH

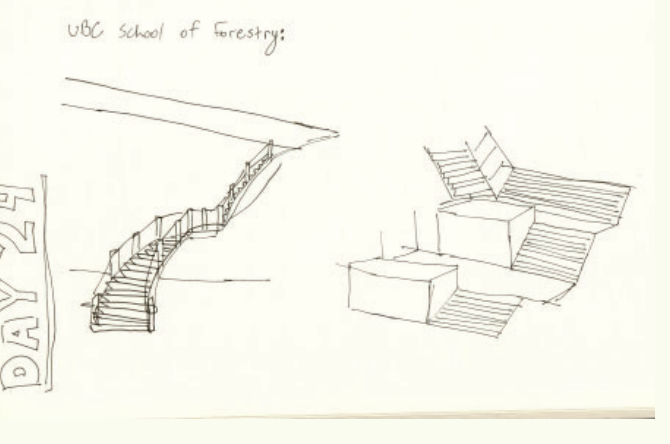
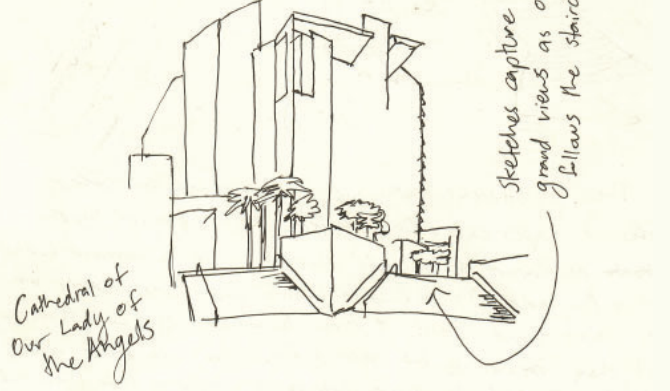
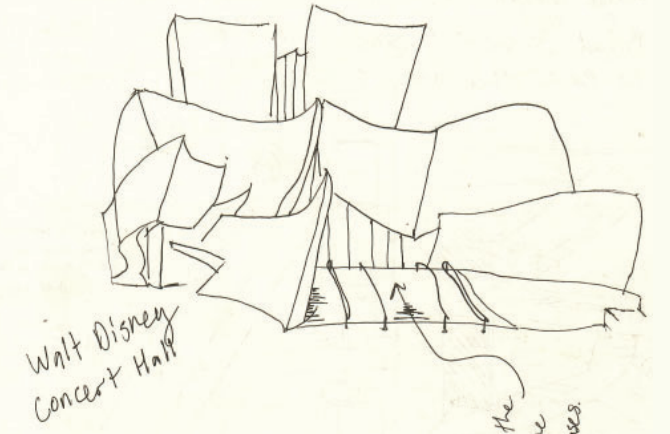
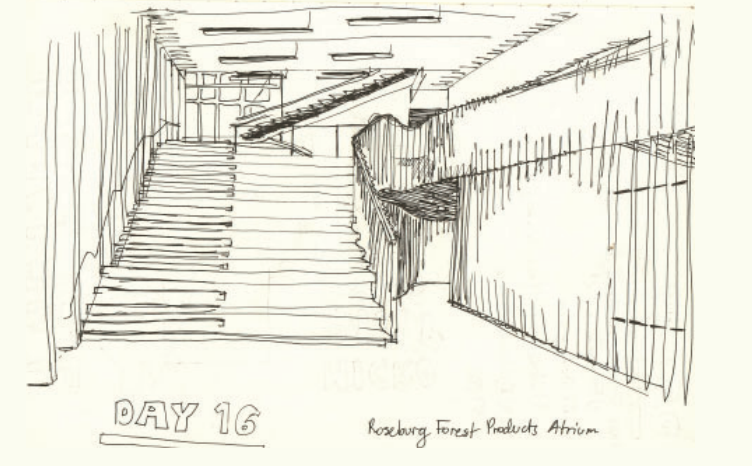
During my study abroad trip to the west coast, I studied and made observations on pathways, freedom of movement, and curated views. I recorded the circulation paths and perspective views of many iconic concert halls, Redwood forests, and university campuses.

second floor university

- Designed by SelgasCano, focused on biophilia, here w/ combination of a variety of unique pods.
- Each tenant gets a pod & all have access to community spaces w/ the site for coworking
- "Not gardens into the buildings, but buildings into the gardens" - Peter
- Building has wide variety of colors, shapes, & cheap materials



The planters rose up to about waist level. They contained both shrubs & taller trees/ferns, leading to a tunnel-like feel. But it still felt light from the greenery & the sunshine. The

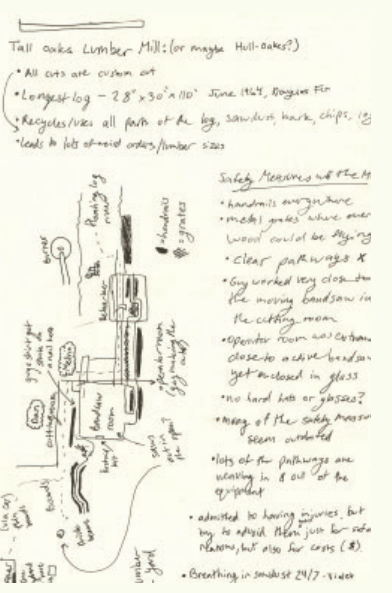
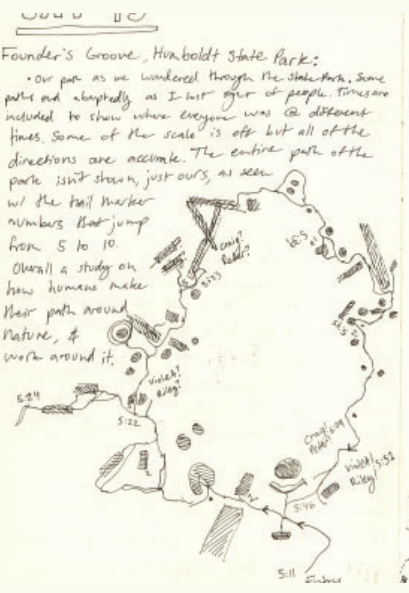
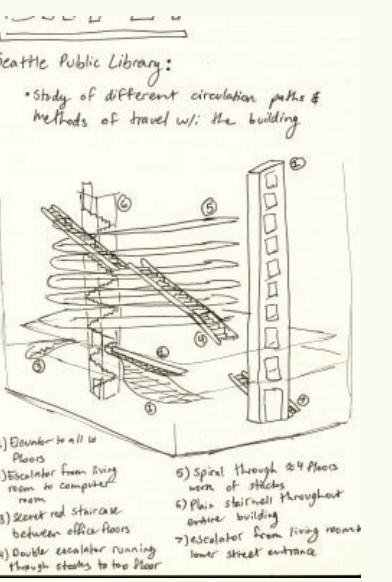


LEVER Architecture:

- Building is one of the first green/CIT buildings in the USA
- Interested in how materials impact the greater landscape
- Oregon is one of the best places to grow Doug Fir

- They focus on simple, yet sturdy connections/joints
- Some architects that did the CTT building in LA
- Thomas shows lots of pretty renderings... (recycled?)
- Your build depends on your audience, developer vs. nonprofits vs. rich tech companies.

Also today, the Canyon Residential Building Rev. very community based w/ inclusive design. 10/10



part seven

RA(U)MP(LAN) HOUSE

**Project selected for the
2022 Student Show**

The focus of project is a multi-generational home based upon accessibility. Using ramps throughout the home, every space of the house is accessible for elderly generations.



Undergraduate Studio I

Fall 2022

Skills Used:

Adobe Illustrator,

Rhino3D,

Hand Modeling

One ramp connects all of the rooms of the home, including spaces for the children, parents, and grandparents. The program is laid out in a way that places the more social rooms towards the bottom of the ramp, and the more private towards the top, to create a sense of privacy for the residents.



The grade of the ramp creates staggered floors, as well as small pockets of space that are used as storage, bookshelves, and more. Along with the ramp, a staircase and ladders add circulation paths.

part eight
**WOODEN
STOOL**

Assembly Course, 2022
Skills Used: Chiseling, Sawing

This class was designed to introduce the relationship between architecture and furniture design. Using no power tools, this stool was designed and assembled by hand.



Intentionally left unglued, the stool can be disassembled and the legs rearranged in any orientation successfully.

