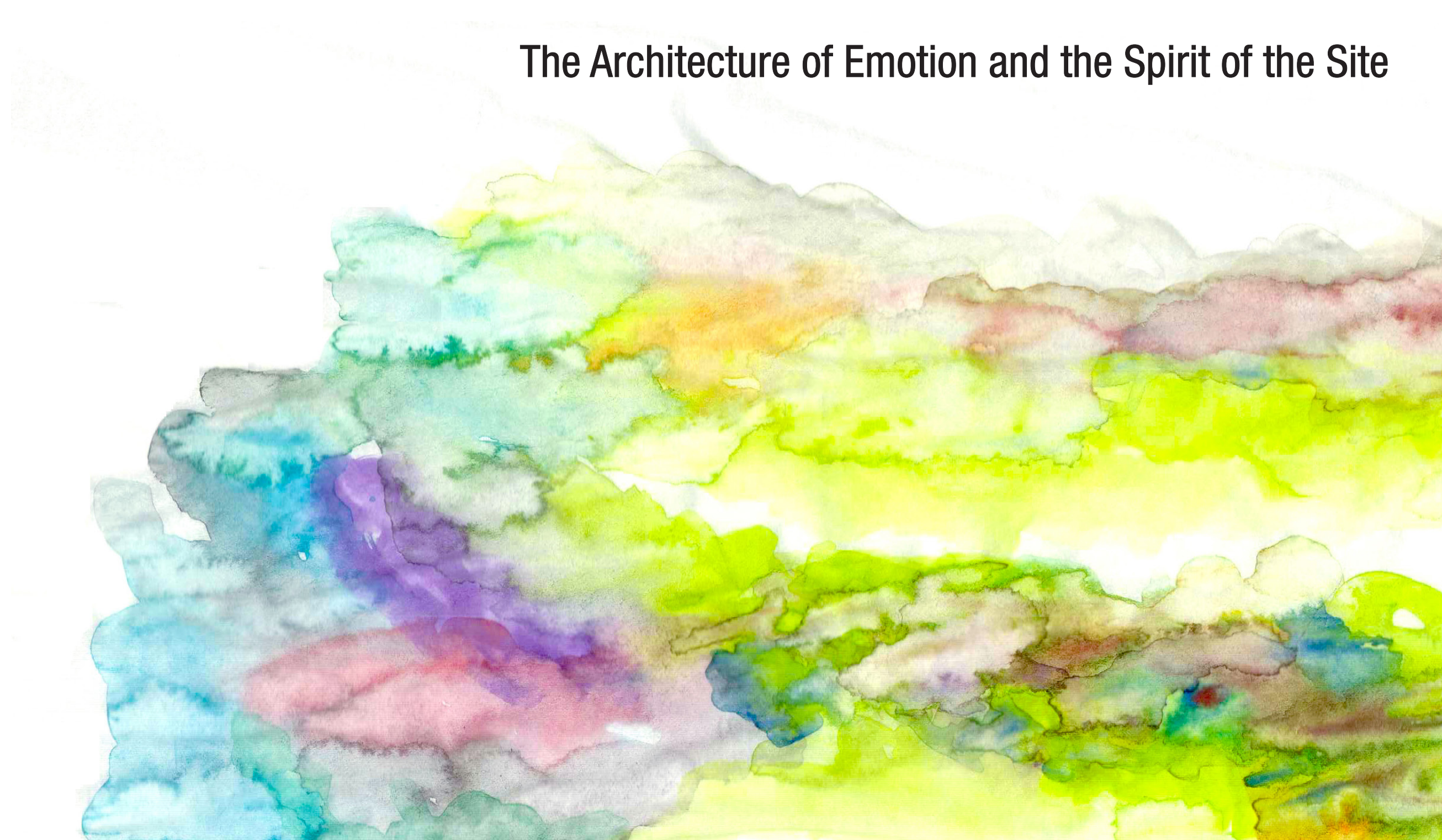


# The Architecture of Emotion and the Spirit of the Site





The Architecure of Emotion and the Spirit of the Site

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Thesis submitted to the faculty of the Virginia Polytechnic Institute and State University  
in partial fulfillment of the requirements for the degree of

Master of Architecture  
In  
Architecture

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ABSTRACT

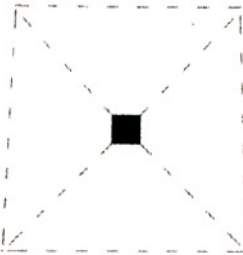
Architecture has the unique ability to use its surroundings in a way that can create a profound impact; it has the power to generate emotion. To connect with the character of a place, we need to observe it, converse with it, and learn from it. No matter what the place, understanding its spirit is essential to design for it, because every addition to the place adds to its soul, its spiritual and emotional identity.

It is important to note the first users of each site are what already exists, they define the spirit of the site and these users are not limited to just people, but rather they include the landscape as well. The trees that are growing and flourishing within the site are an important part of it. Architecture should look at the existing site and not take away from it but rather add to it.

This thesis explores Daingerfield Island; Located along the existing Mt Vernon bicycle trail and the Potomac River, Daingerfield Island is an ideal location for a Bicycle and Water Taxi rest stop. It is a site that is mostly forested development, however, it is in a state of disrepair. It has great potential to become a wonderful pause space in the urban environment. The project explores emotions associated with resting and waiting, in hopes to prove that architecture has the ability to repair a damaged site.

The Architecure of Emotion and the Spirit of the Site

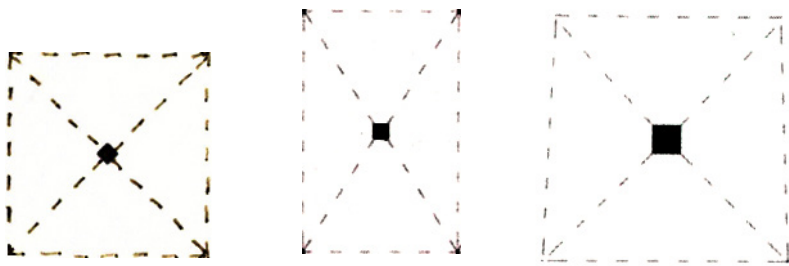
Marium Rahman



GENERAL AUDIENCE ABSTRACT

Architecture not only affects those that inhabit it, but also its surroundings. Whenever we design a building, we need to understand that it is an addition to an already existing site; this addition should make the location better. Analyzing the site is essential in order to create an appropriate design for it.

The thesis project is a Bicycle and Water Taxi rest stop located on Daingerfield Island, which is located along the existing Mt Vernon bicycle trail and the Potomac River. The design began with the sole intent of understanding the site; what its history is, what its present is, what its shortcomings are, what its strengths are, and what it needs. Only then did the architectural design begin.



## ACKNOWLEDGEMENTS

This thesis could not have been possible without the wonderful insight of my amazing committee members, and the love, support, and encouragement from my friends and family.

Thank you *Susan* for your sage advice throughout the year. You made me believe in myself. Your guidance helped me stay focused and keep my design grounded.

Thank you *Jaan* for encouraging me to be fearless while designing. You gave me the confidence to make bold choices that helped shape my design.

Thank you *Paul Emmons* for believing in me. You helped me challenge myself. In addition, whenever I encountered a mental block, our discussions always inspired me and carved a path for my design to move forward.

Thank you *Paul Kelsch* for motivating me to understand and learn from the site. You inspired me to explore, comprehend and appreciate my site. Without that, my thesis would not be what it is.

*Loay*, my thesis buddy, the final stretch was difficult, but a lot more enjoyable with you there. Also my thesis book would be incomplete without you, thanks for being a fantastic friend and going out of your way to retrieve the information I did not have.

*Saanika* and *Sangyoon*, you were my constant support throughout the entire process, you gave me advice and encouragement, but most importantly you listened to me constantly drone on about my thesis for an entire year, I know it wasn't an easy task. Thank you for everything!

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Lastly, I would like to thank my parents, without their support, this journey would have been impossible.



Image 1 - final model; showing view of final design from the south

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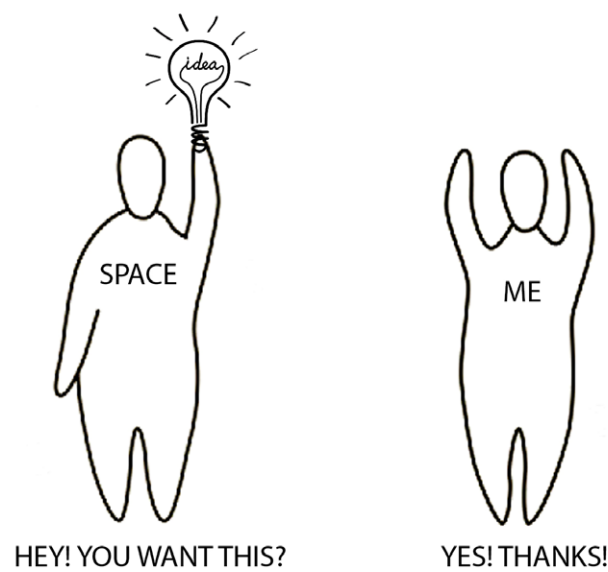


Figure 1 - Represents the idea of learning from the site in order to design.

## INTRODUCTION

In our fast paced, demanding, yet monotonous lives, it is easy to get stuck in the physical realm and forget about the existence of the metaphysical realm. We no longer appreciate the character and the spirit of our surroundings. Every place has an identifiable essence, and to practice architecture, understanding this essence is necessary. Architecture is a difficult form of art, one that has the purpose to help man inhabit yet, practicality is not enough and requires us to acknowledge and understand the place.

When I began my thesis journey, I had no idea where it would take me. I only knew that I wanted the site analysis to be a major part of the design. I wanted to delve into my site and try my best to understand it, connect with its character, observe it, converse with it, and learn from it. I wanted my findings to inform the concept and design of my thesis project.

“Instead of my overlaying my ideas onto that space, that space overlaid itself on me” – Robert Irwin

My findings and analysis led to the design of a Bicycle and Water Taxi Rest stop on Daingerfield Island. The project was about the Spirit of the Site and the Emotions associated with resting and waiting.

**"You can only experience a site for the first time once"**  
- Paul Kelsch

I recorded what I observed and felt throughout the walk. Later I used watercolors to map my emotions and observations (Figure 2). I started my journey feeling very excited; I walked along King Street towards the waterfront. When I arrived at the waterfront, I turned north and walked along the parks. The strip of joined parks were all very well connected to the water, there was ample amount of green space and it made me feel calm, relaxed and generally happy. However, there were three anomalies. Firstly, the Robinson Terminal was inaccessible from the waterfront, and I had to walk between two warehouses without any connection to the exterior, I felt a bit apprehensive and scared as I was walking through the bare, empty, and narrow street. Secondly, the former coal-firing power plant comes after crossing a covered tunnel and the sight of the large structure suddenly looming over my head left me feeling overwhelmed. Finally, Daingerfield Island, also the final destination of my route, at 107 acres large the site had many experiences to offer. I was immediately taken by the site. It made me both confused and calm, sad and happy, annoyed and intrigued; in short, it made me feel. It was far from a pristine site, but it had enormous potential and I wanted to explore it and see where it could take my architectural journey.



HISTORY OF ISLAND

In order to understand the past one cannot negate its history. Daingerfield Island had a rich history and saw a lot of physical transformation (see figure 3).

Timeline:

It was a true island in the beginning; a stream divided it from the main land. There was Native American presence; they travelled the river and fished on the banks of the land.

1674 – John Alexander purchased parts of the land

1696 – The first permanent establishment in Alexandria. It was established by Simon Pearson and thus initially named Pearson's Island

1715 – Much of the area cleared and under tobacco cultivation

The transportation corridor, the Alexandria-Washington Turnpike, the Alexandria Canal, the railroads and then Route 1 developed just to the west of the island, and did and not disrupt its solitude.

1850's –Henry Daingerfield, who bought the land and its name was changed to Daingerfield Island

1932 – Plans were laid out for the George Washington Memorial Parkway

1942 – Daingerfield Island was acquired by National Capital Parks

1942 – Airport opened

1946 – Proposal for Washington Sailing Marina with parking area and public swimming pool (swimming pool was never built)

1946 – National Park Service established Daingerfield Island Nursery. Set up on the lower two-thirds of the island, it produced plants used at the parks in the National Capital Region. The nursery has been in operation for over 60 years and currently grows elm and cherry trees for the National Mall collection

Mid 1950's – An existing surplus Military Structure was turned into a Food Service Building

1963 – 1964 – Fill was added, as added protection, the new shoreline was armored with rip-rap to prevent future land loss

1977 – Protection of Wetlands Act - ensuring the preservation of the existing wetlands present

1980 – Discussion of development of Island – The consensus reached was that it should only be for recreational purposes and there should not be an over development of land

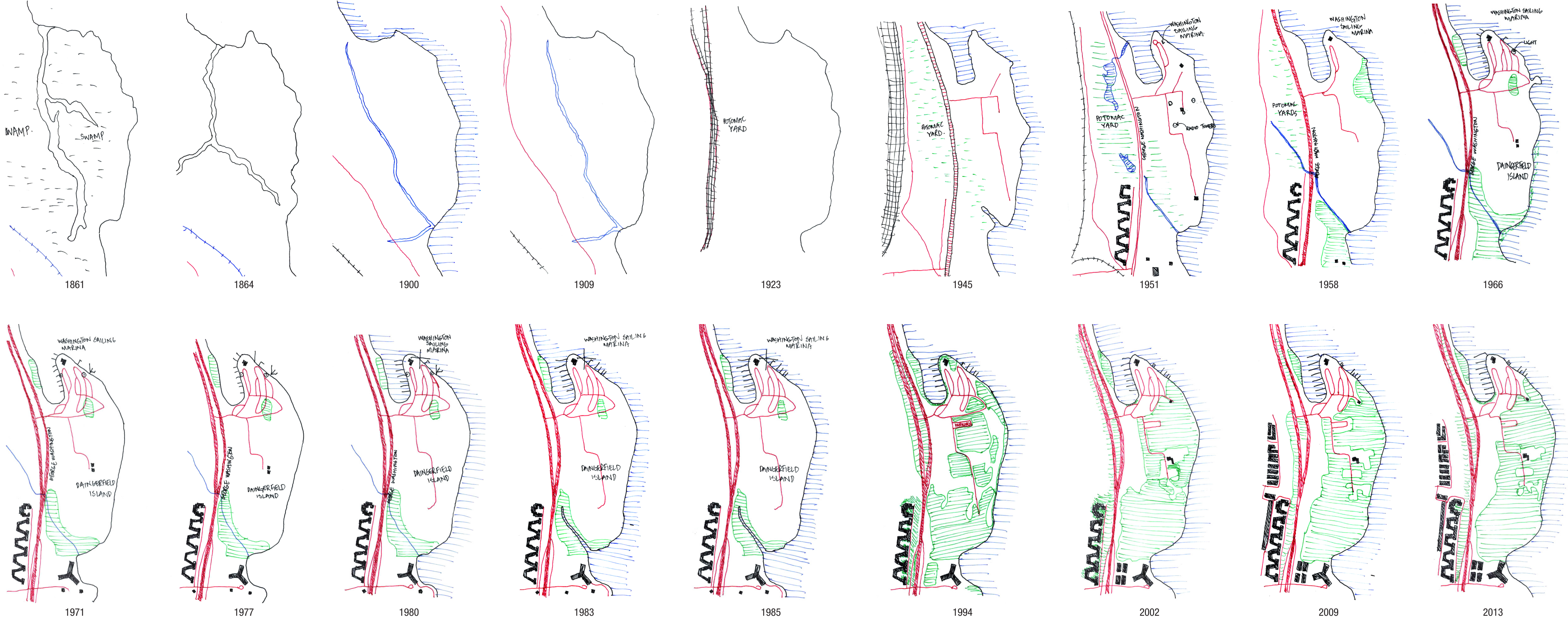


Figure 3 - Mapping the land development of Daingerfield Island from 1861 to 2013; based on maps obtained from Library of Congress and Nationwide Environmental Title Research

SITE CONTEXT

Site: Daingerfield Island

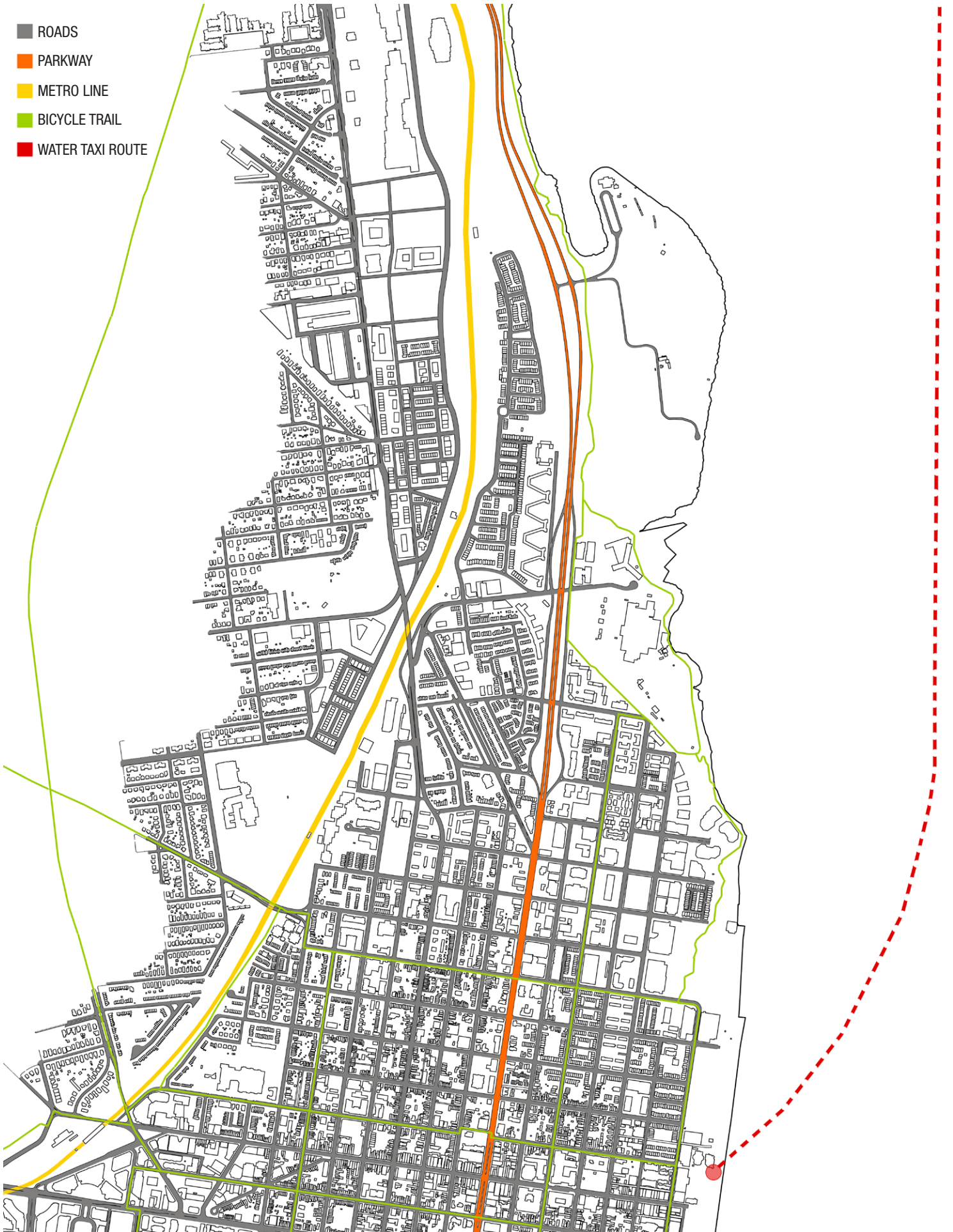
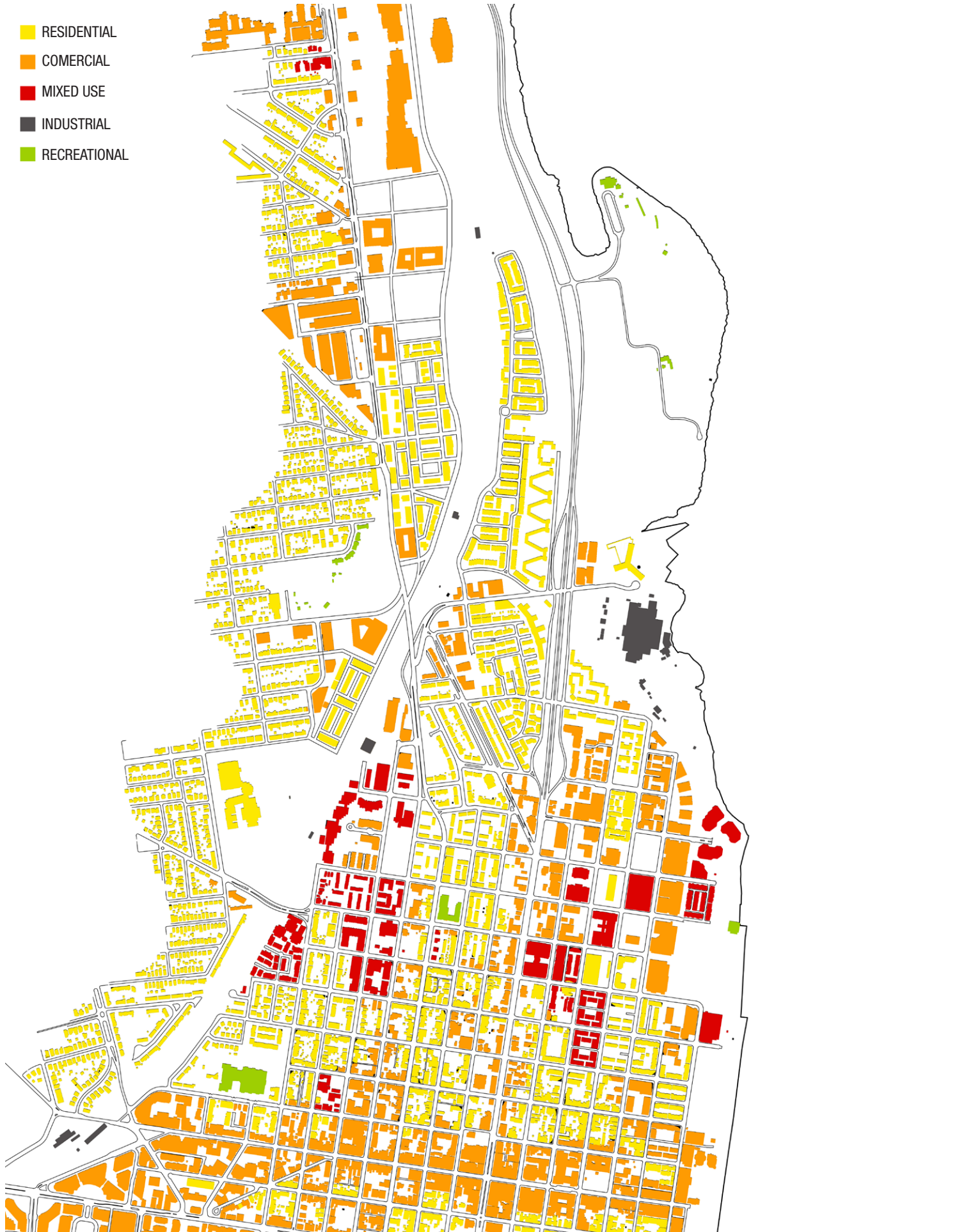
Location: Alexandria, Virginia

Size: 107 Acres

The site is a large green open space in the fabric of the city, located along the waterfront (see figure 4). The Washington Sailing Marina is located on the northern part of the site. The Southern part of the site used to be a nursery operated by the National Park Services to grow trees for the National Mall. The majority of the site is a forested area. With wetlands bordering it on the southwest side and the Potomac River on the East. Although still called an island, the site is no longer an island; the northeast side of the site has been filled, creating a land connection granting access to the site.

Around the site there are mostly residential buildings (see figure 5) but the site itself is zoned as a recreational area by the City of Alexandria.

The site has the potential to be very well connected as it is located near many modes of transportation including the George Washington Memorial parkway, the Mt. Vernon bike trail, the water taxi route on the Potomac River, and WMATA Metro line (see figure 6). However it can currently only be accessed by the George Washington Memorial Parkway and the Mt. Vernon Trail.



ACCESSIBILITY

A new metro line is to be constructed by 2021 right along the George Washington Memorial Parkway, which will allow users to access Daingerfield Island using public transit. However, the Parkway lying in the middle of the proposed metro station and the site makes pedestrian access to the site very difficult. The distance between the station and the site is 880'-0" and should typically take pedestrians 3 minutes to cross. However due to the way the Parkway is planned a pedestrian needs to walk 1.4 miles in order to cross the parkway, which takes around 26 minutes (see figure 7).

EXISTING CONDITIONS

The site is located along the Potomac River and is mostly a forested area with a wetland bordering it on the southeast side. It is full of wildlife, and you can hear them as well including various birds, frogs, deer, etc. However, there is a major disconnect felt from the river with minimal views of the river from within the site and it is not well maintained. The trees are overgrown with vines. Piles of sand, wood, gravel and trash can be seen within the site. The road running within the site is not always smooth and has many potholes (see figure 8).

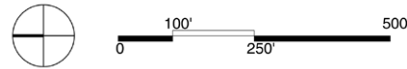


Figure 7 - Plan showing the upcoming metro line to be constructed near the site and the access to site from the opposite side of the parkway



FIRST LOOK OF DAINGERFIELD ISLAND FROM THE SOUTH ON THE MT. VERNON TRAIL



LARGEST CLEARING ON THE SITE; PILES OF SAND AND DRIFTWOOD AND BRANCHES



MT VERNON TRAIL BRIDGE OVER WETLAND



VIEW OF THE RIVER FROM THE END OF THE EXISTING ROAD; PILES OF GRAVEL AND SAND



PILES OF OLD TIRES AND SCRAP



ROAD LEADING TO NURSERY



REGULAR ROWS OF PLANTED TREES IN NURSERY



VIEW OF WETLAND LOOKING TOWARDS THE PARKWAY



DEER RUNNING AROUND IN THE SITE



OVER GROWN VINES COVERING TREES

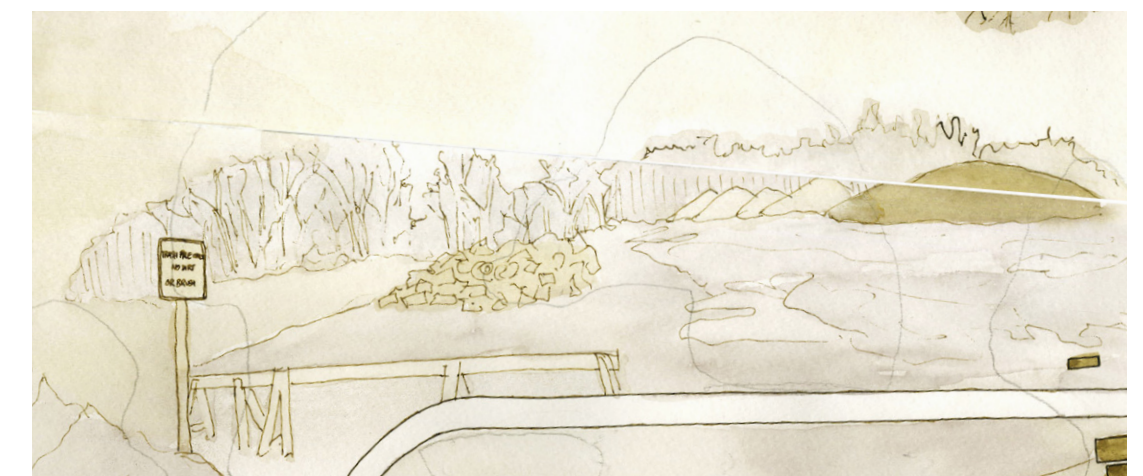


PILES OF DRIFTWOOD AND DEAD BRANCHES ON SITE

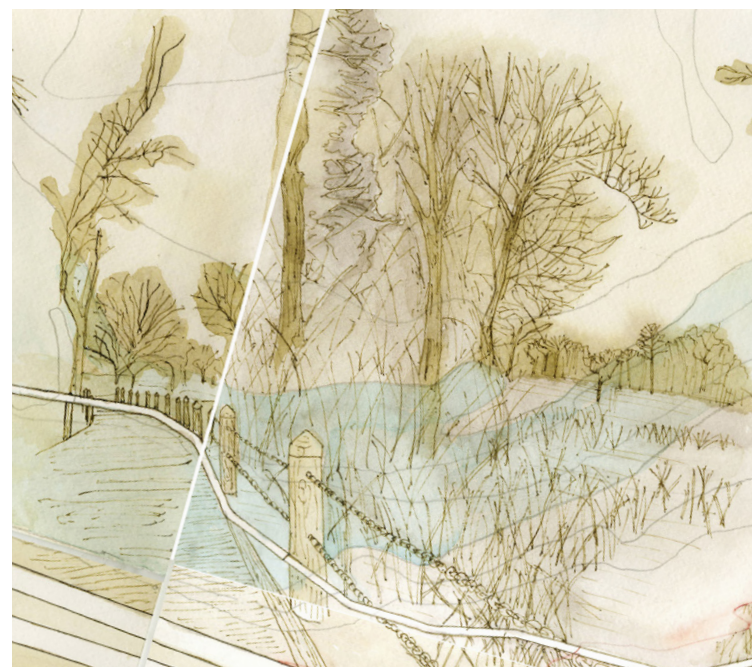
Figure 8 - Collage of images showing the existing conditions of Daingerfield Island

SITE ANALYSIS - THE BASE PLAN

The site plan is overlapped with sketches of elevations and perspectives of the existing conditions found in the site (see figure 10). The drawings penetrate each other and create connections between the plan and the existing site conditions. This help add an extra dimension apart from just showing the technical aspects of the plan; it adds a layer of emotion and sensual perception.



PILES OF SAND AND TRASH FOUND WITH IN THE SITE



MT. VERNON TRAIL BRIDGE GOING OVER WETLANDS



BOATS DOCKED IN THE WATER AT THE WASHINGTON SAILING MARINA



VIEW OF WETLANDS & PLANE THROUGH THE GAP IN THE TREES



CLEAR VIEW OF THE POTOMAC FOUND AT THE END OF A NARROW TRAIL ON SITE

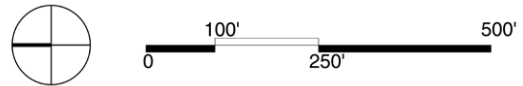


Figure 10 - Site Plan; Mix Media - Sepia ink and watercolor

SITE ANALYSIS - THE LAYERS

Mapping Emotions (see figure 13):

When entering the site from the south on Mt. Vernon trail, there is an immediate disconnect from the river. The trail leads to and starts going along the George Washington Memorial Parkway, right next to the noise of all the cars on the busy road. This was unexpected and mildly annoying since I was expecting my journey to continue along the waterfront. However, the path led to a bridge that went over wetlands, bringing me to a different form of water, which intrigued me.

Along the road there was a solitary bench facing the wetlands, beyond the wetlands there was a line of trees with a gap in it. If you sat on the bench long enough you would see the planes going to and from the Ronald Reagan National airport, making it an ideal location to sit and enjoy watching the planes pass by.

Confusion ensued when I entered Marina Drive towards the Washington Sailing Marina and tried to get through the maze of boats on the land to get to the water. Moving inland towards the nursery, the noise of the cars decreased and the sounds of the birds and wildlife increased, but there was a constant rumble of planes from above.

Moving along the road, I was always in anticipation of when I would get to the water, however for being called an “island” there was very little connection or views to the water. Apart from the Marina, there were only two moments where there were views to the water. First, a small-unmarked trail led to the edge of the riverbank. Second, where the road came to a dead-end, there was a single row of trees separating the river’s edge from the land, allowing a view through the trunks.

There was a sense of calm I felt walking through the site, yet at the same time the site was also in a state of disrepair, which was sad to see. There were piles of trash, sand, gravel and dead wood littered all over the site. The trees were unhealthy due the to the overgrowth of vines and there was a general air or neglect you felt while there. Even though there were many flaws, it was clear to me that there was also great potential in the site.



Figure 11 - Plan showing the tree canopy



Figure 12 - Plan showing rows of planted trees (dark green) and the trees along the old shoreline (light green)

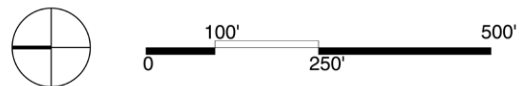


Figure 13 - Plan showing emotions (based on figure 2 on page 4)



Figure 14 - Plan showing pedestrian trails

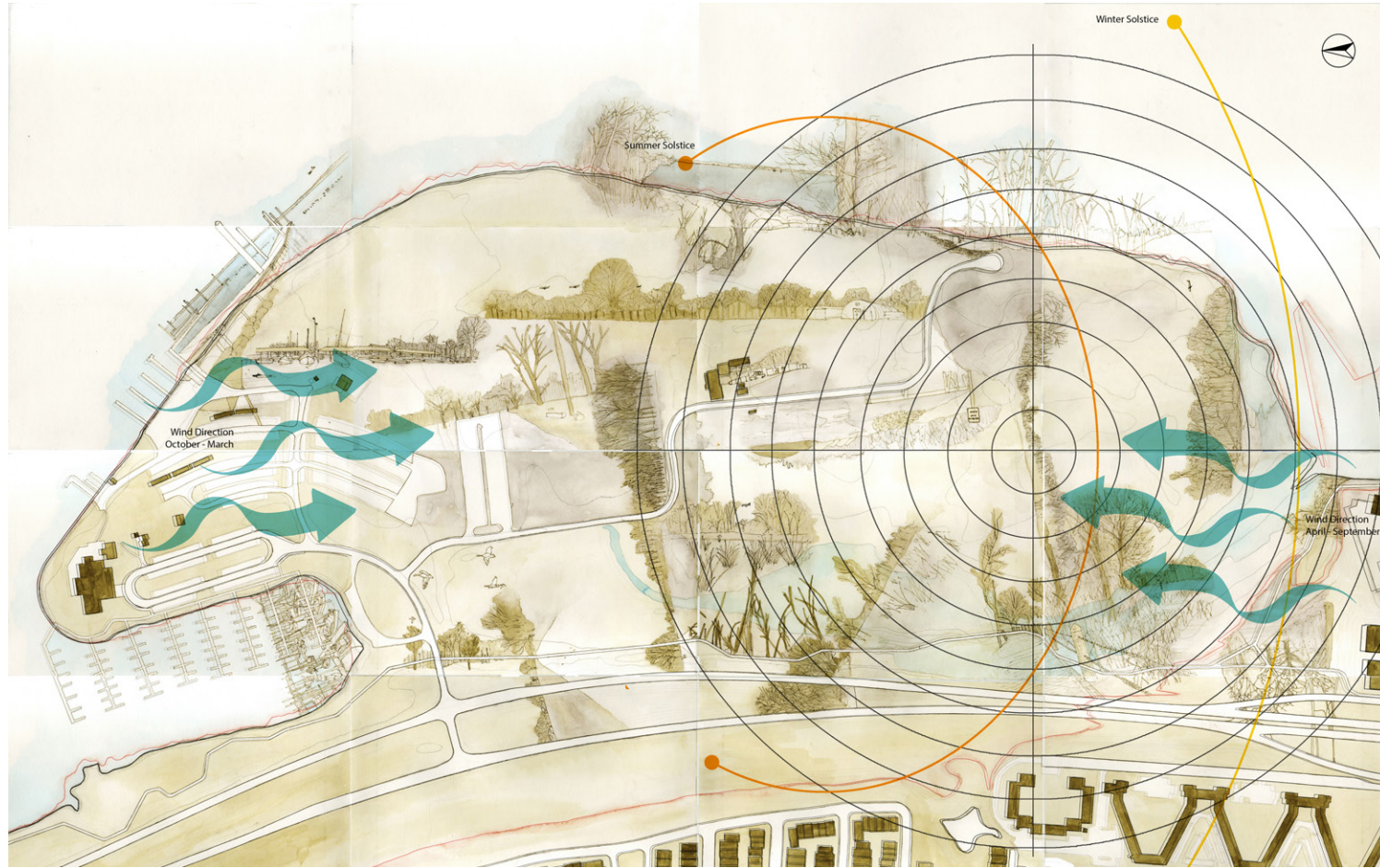


Figure 15 - Plan showing the wind direction and sun study

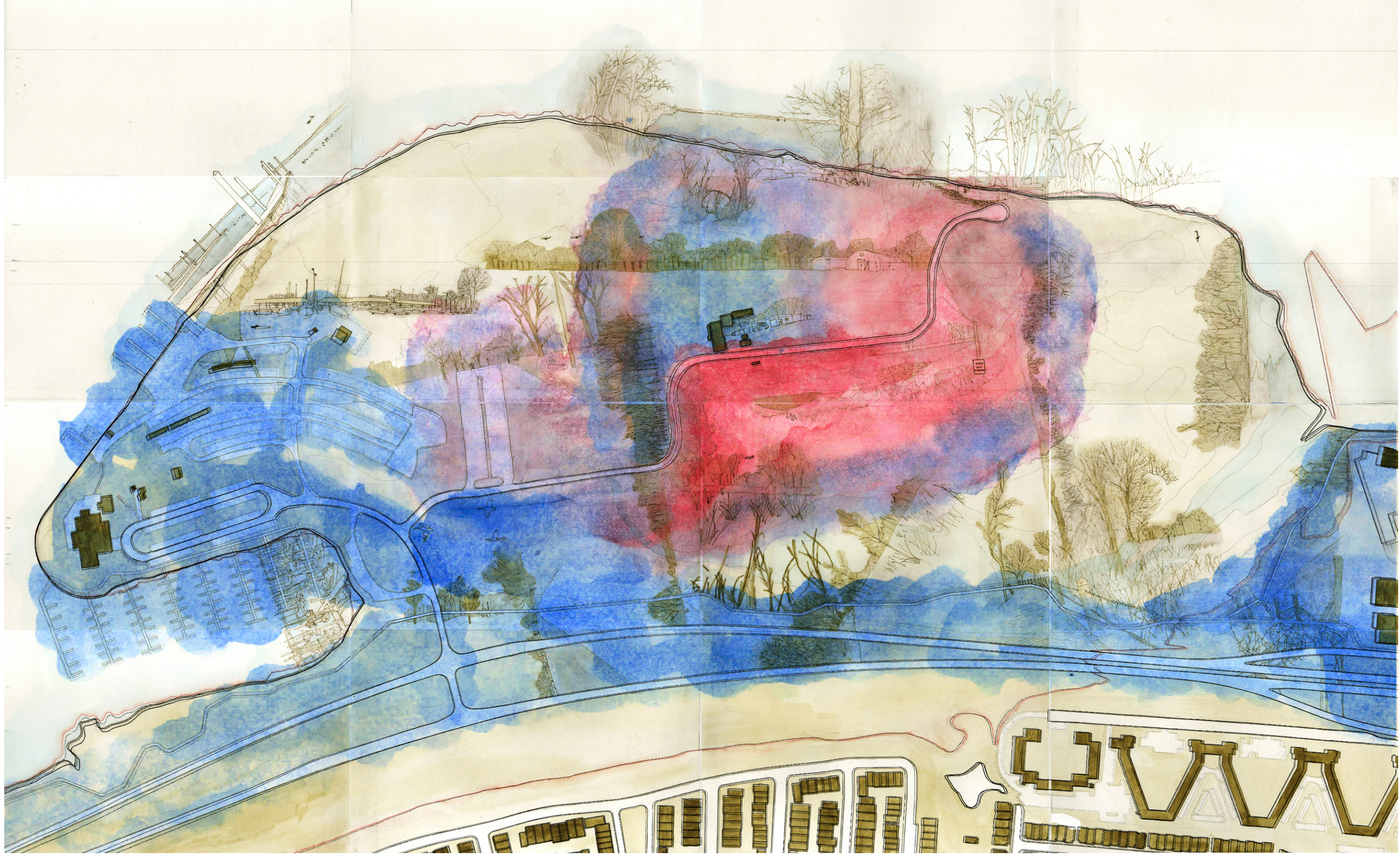


Figure 16 - Plan showing degree of blightedness found on the site - the blue represents the maintained spaces and red represents the unmaintained spaces



Figure 17 - Plan showing noise - Orange represents the parkway sounds, blue represents the water sounds and green represents the wildlife sounds



Figure 18 - Plan showing the 100 year floodplain

CONCEPT; A PAUSE SPACE

Understanding the metaphysical connections created by physical space is important because that creates the identity of a place, and without understanding the identity of a place, we cannot begin to design for it.

After the site analysis, it became clear that Daingerfield Island has the potential to be a pause space in the urban fabric; a place where people can take a moment to breathe before returning to the monotony of life.

Because of its location along the Mt. Vernon bicycle trail and the Potomac River water taxi route, it is an ideal location to design a bicycle and water taxi rest stop. This program will allow people to filter in, experience, and appreciate the site, while also becoming a place of resting and waiting.

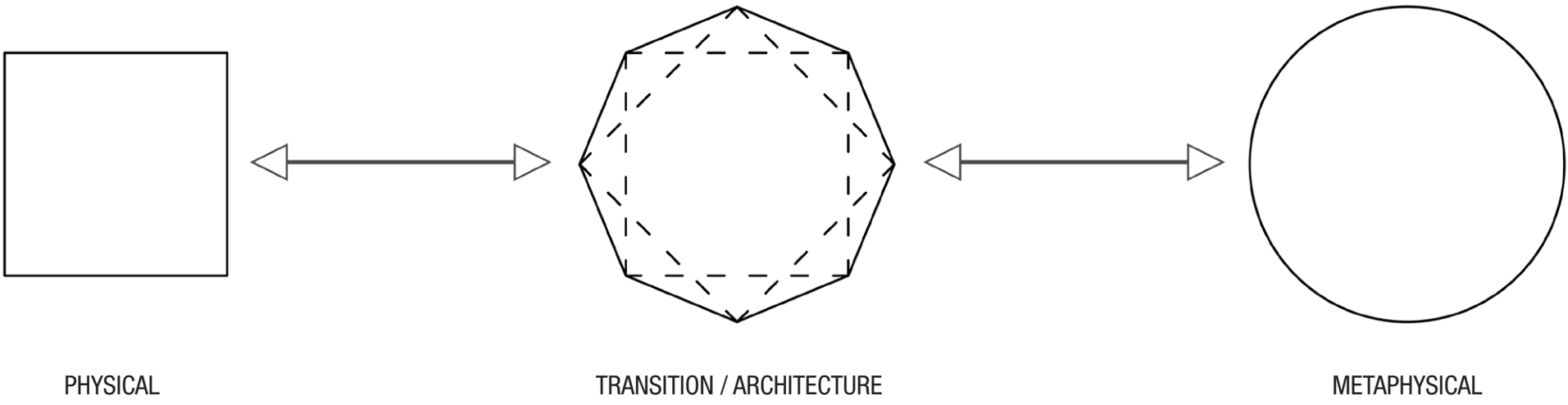


Figure 19 - Physical to Metaphysical; Architecture as the connection between the two realms

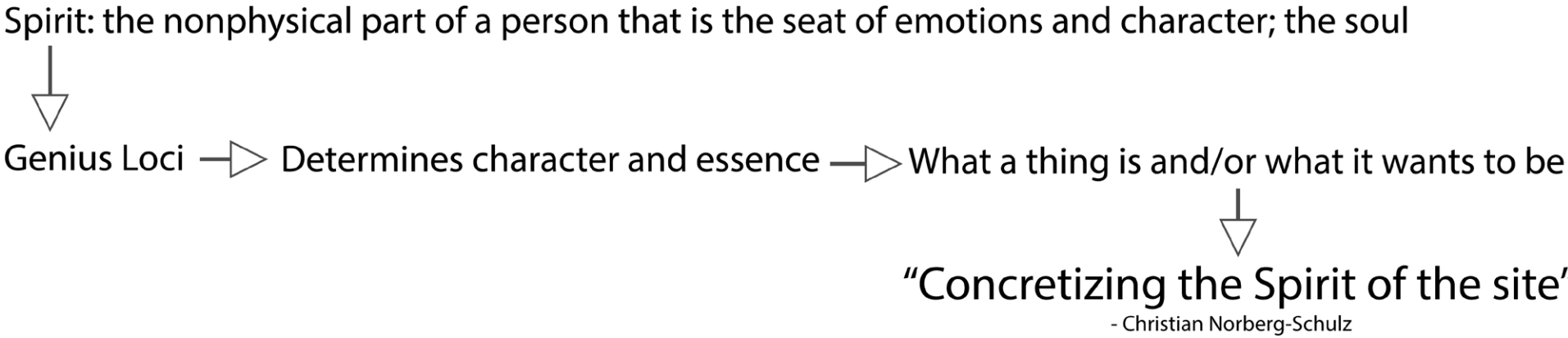
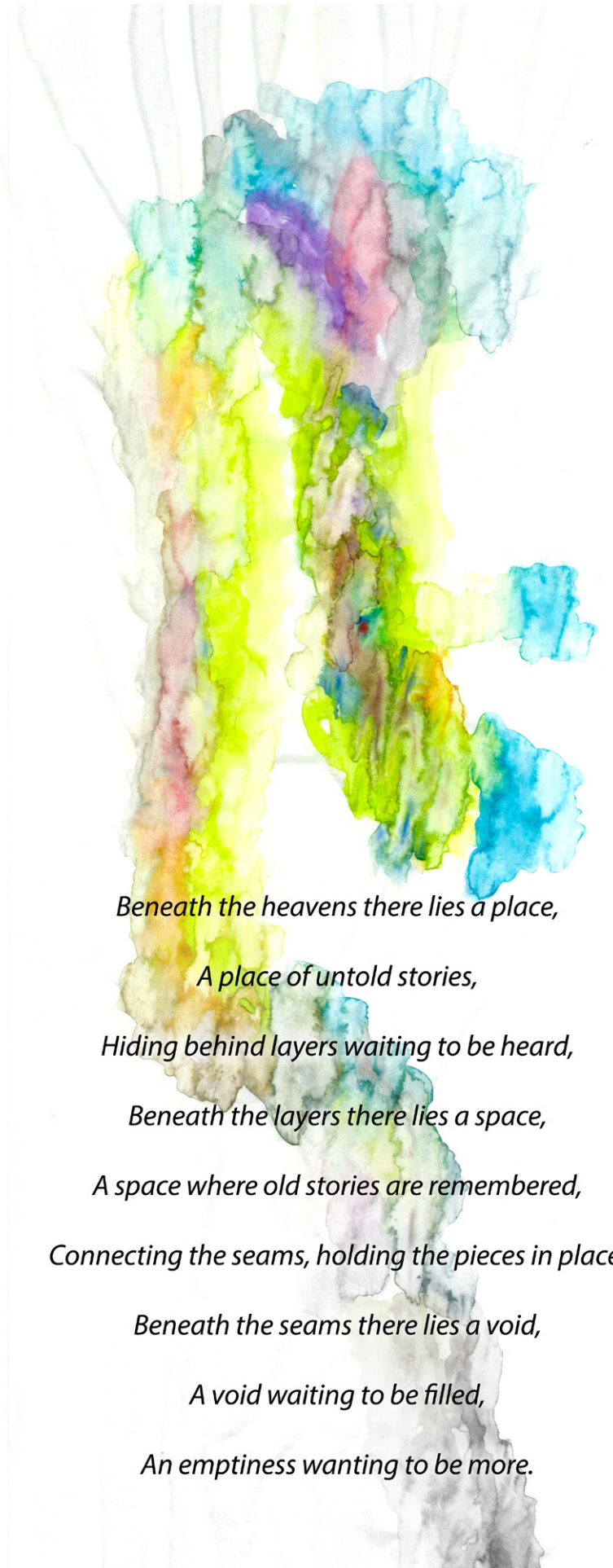


Figure 20 - Explanation of Genius Loci; concept derived from the writings of Christian Norberg-Schulz



*Beneath the heavens there lies a place,  
A place of untold stories,  
Hiding behind layers waiting to be heard,  
Beneath the layers there lies a space,  
A space where old stories are remembered,  
Connecting the seams, holding the pieces in place,  
Beneath the seams there lies a void,  
A void waiting to be filled,  
An emptiness wanting to be more.*

Figure 21 - Poem; based on understanding the essence of a place

# RESTING AND WAITING

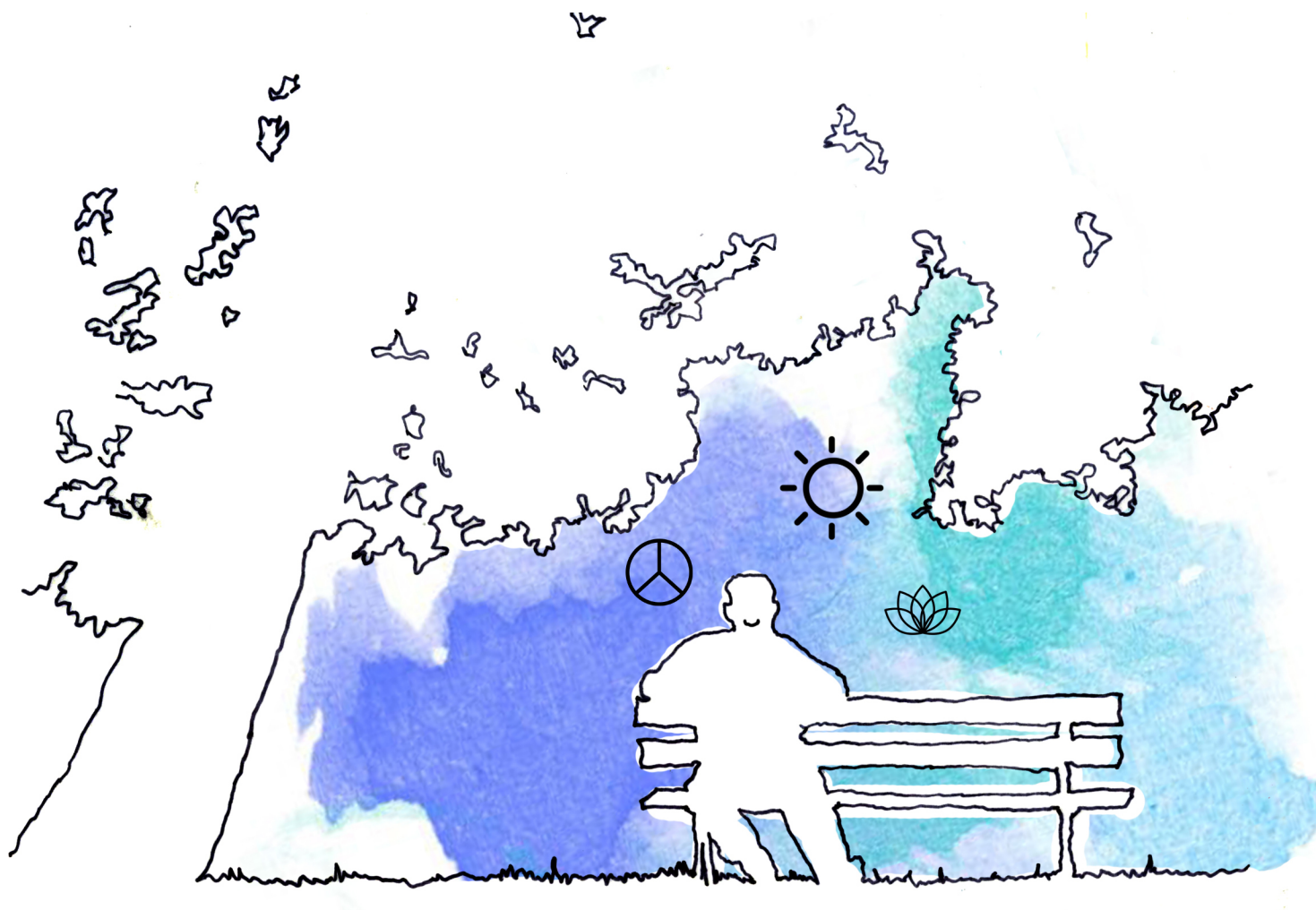
Rest is defined as ceasing work or movement in order to relax or recover.

Wait is defined as staying where one is or to delay action until a particular time or event.

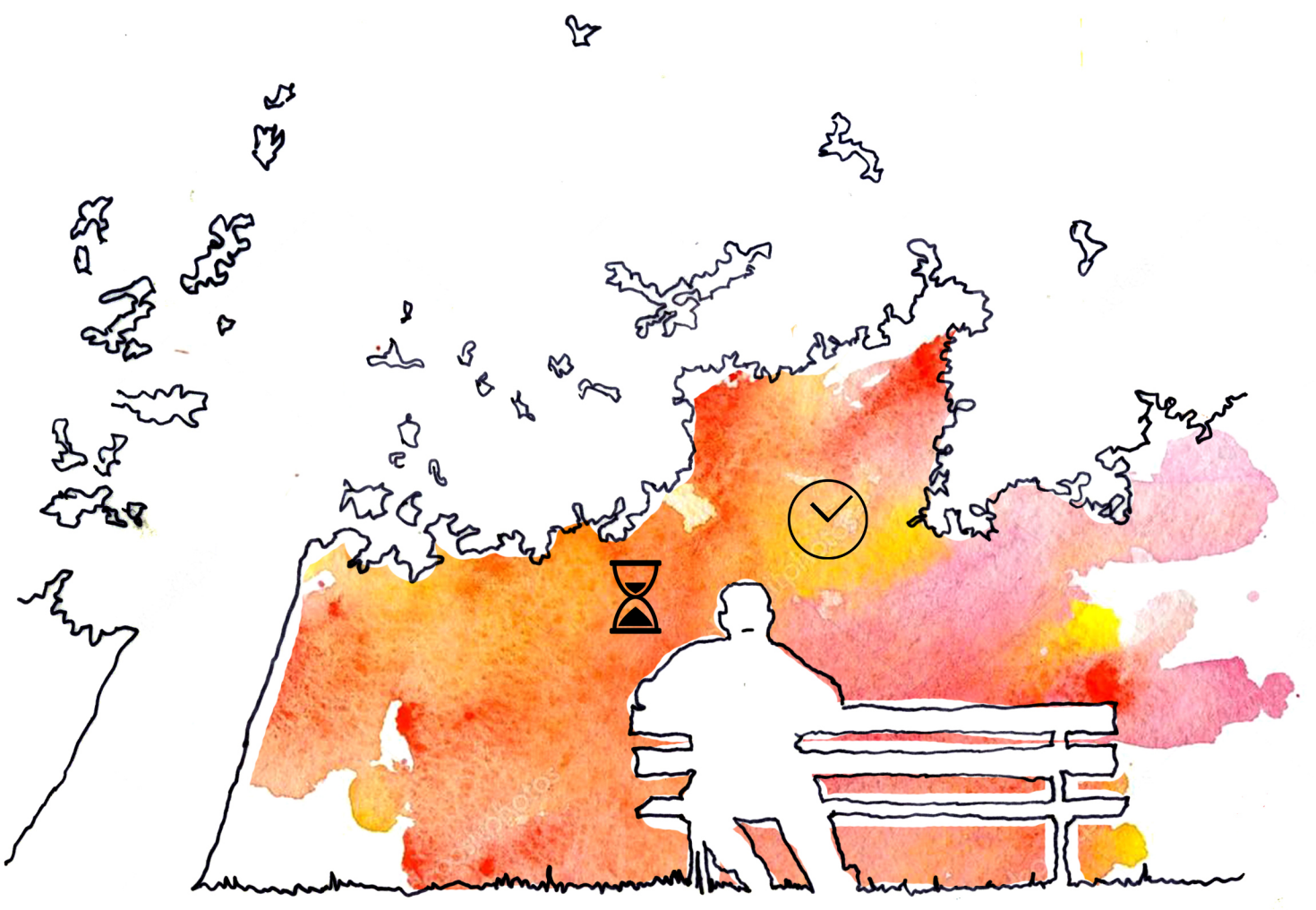
Both resting and waiting indicate a pause from what one is doing. However, they both differ in that resting is about something within us, while waiting is about something outside of us. This distinction allows a person resting or waiting to outwardly look the same while still feel differently inside (see figure 22).



They can look visually the same but the emotions are very diferent



Resting  
Emotions: Calm, relaxed, happy



Waiting  
Emotions: Expectant, anxious

# SITE REPAIR; SELECTING A LOCATION

Does Architecture have the ability to repair?

Repair means to fix something that is damaged. However, at the same time it does not imply that the thing being fixed will be restored to its original condition. In my thesis, I am also exploring this question of site repair (see figure 24).

I believe Architecture should always add to the site rather than take away from it; therefore, in order to select an exact location within my site I looked for a place that will actually benefit from an architectural intervention. So in order to hone in on a specific site within Daingerfield Island, I looked for places that were not pristine but rather those that were damaged and required care.

In order to zoom in and select a site, I overlapped the layers of the tree canopy, tree rows and degree of blight (see figure 25). This allowed me to see the open spaces that exist in the site and if they are in a state of disrepair. Using this method I was able to zoom into four locations (see figure 26), each a different terrain; a forested area, an area bordered by wetlands, a clearing surrounded by trees, and an area along the river (see figure 23).

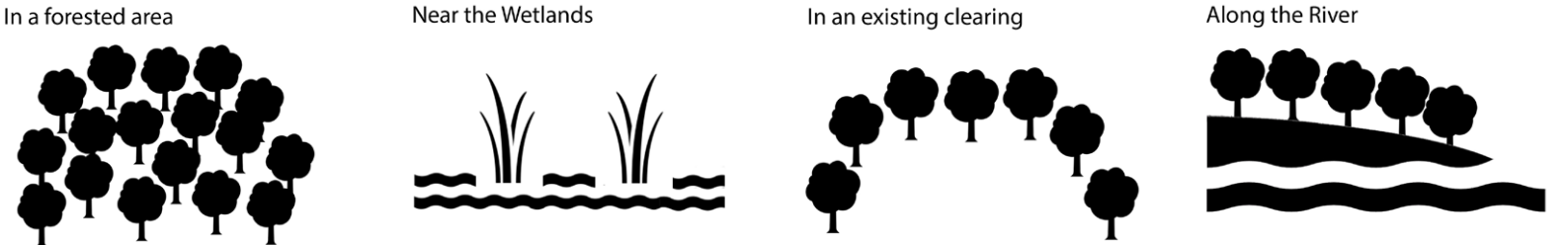


Figure 23 - 4 types of terrain



Figure 25 - Plan showing layers of the tree canopy, tree rows and degree of blight

## Does architecture have the ability to repair?

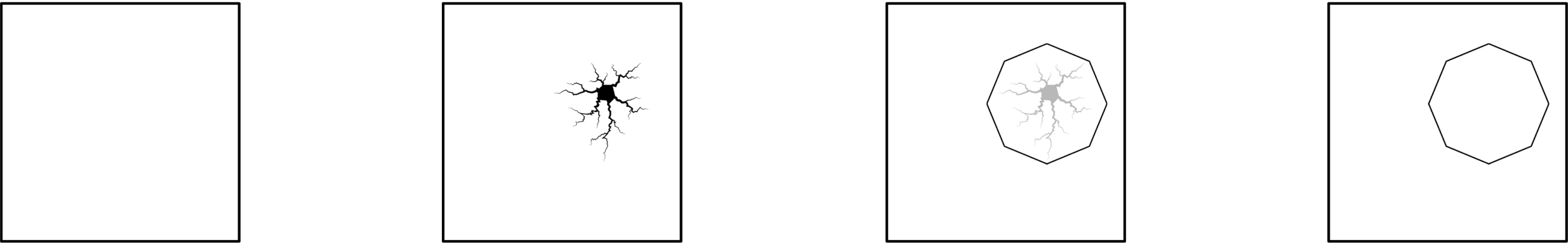


Figure 24 - Diagram showing site repair using architecture



Figure 26 - Plan showing the 4 potential locations for an architectural intervention

# SITE SECTIONS; UNDERSTAND THE LAND

After selecting the 4 locations, I further analysed the locations by studying their sections.

The forested area (see figure 27,) is teeming with life. It is a place where the animals are living; it was a place of rest.

The wetland area (see figure 28), is more dynamic, it had both highs and lows, the trees are covered with vines and unable to grow under them, it was a section in the state of transition. Making it a place to wait.

The clearing (see figure 29), is surrounded by trees on both sides. It is full of piles of sand and broken tree branches and driftwood. There is a void in the fabric that needs to be filled.

The river bank (see figure 30), has a break in the fabric at the end of the road giving this “island” its connection to the Potomac River. It is the climax of the journey.

After studying the four sections, I concluded that the forested area would not benefit from an architectural intervention; however, it was a great inspiration for designing the quality of space.

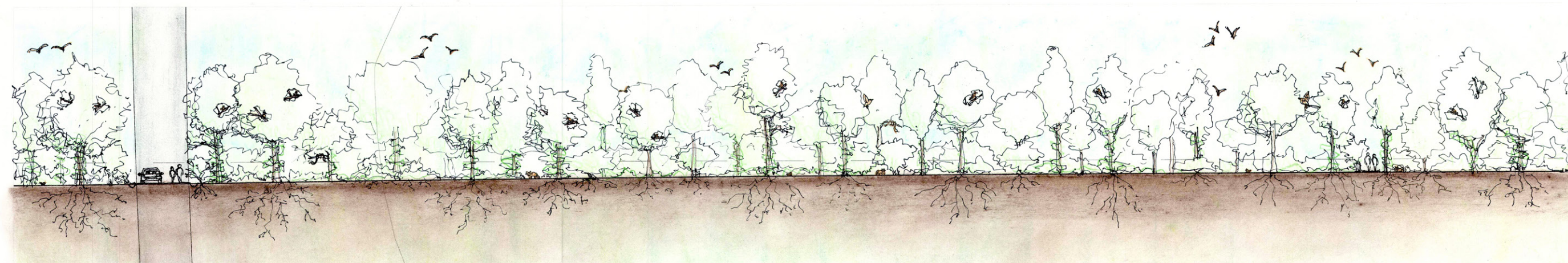


Figure 27 - Section A - cut through the forested area

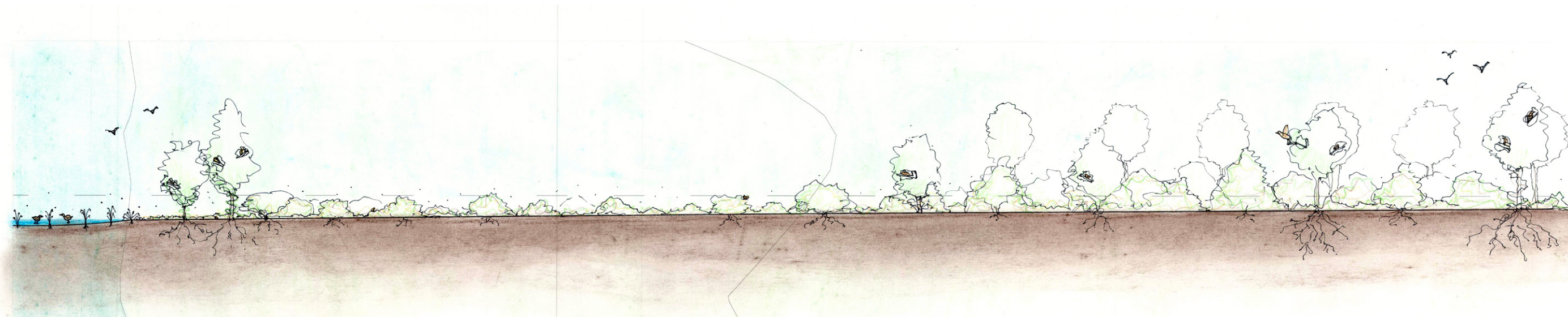


Figure 28 - Section B - cut through the wetland area

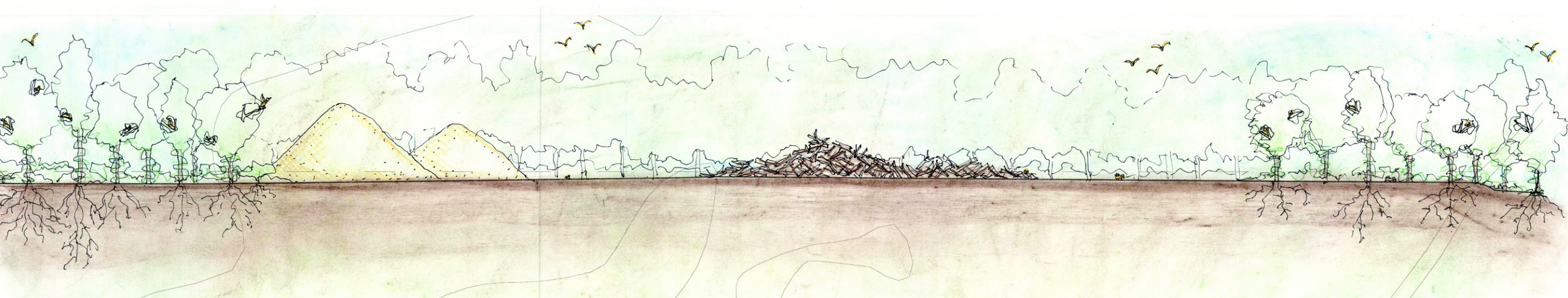


Figure 29 - Section C - cut through the clearing

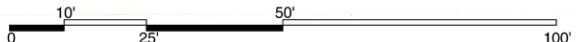


Figure 30 - Section D - cut through the river bank

# ENHANCING THE ISLAND FEEL

The study of Daingerfield Island reveals that there is disengagement between the land and water. Although when one cuts a section of the site and you see the a mass of land between two bodies of water (see figure 34), calling it an island still feels far from true when one is experiencing the site. With the new design, I wanted to minimize that disconnect and enhance the feeling that this was an “island”. In order to do that I had to bring my potential sites closer together. I began by finding similar conditions found in the wetland section analysed earlier, thus allowing me to find a location closer to the largest clearing and the riverbank at the end of the road (see figure 31).

This move allowed me to create a straight axis that went over the wetlands, then between an allée of existing rows of tree, and finally arriving at the banks of the Potomac River (see figure 32).

The next move was to bring the water in and maximize the edge of the river bank to get full advantage of the waterfront experience (see figure 33).



Figure 31 - Moving the section over



Figure 32 - Creating a direct axis



Figure 33 - Bring the water in

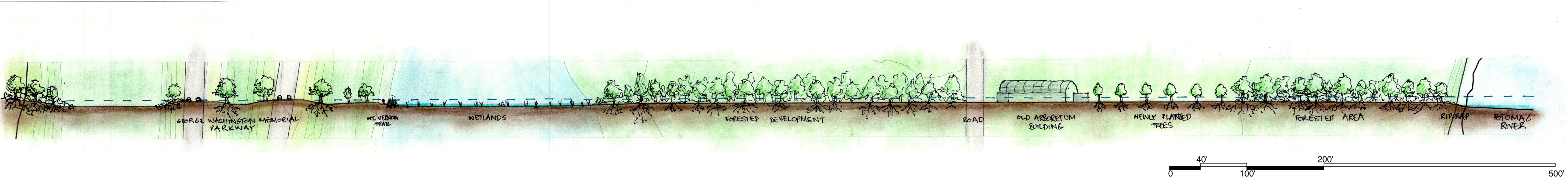
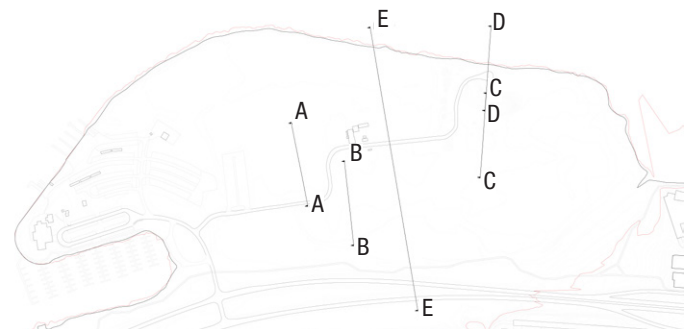


Figure 34 - Section E - cut through the entire site from the GW Memorial Parkway to the Potomac River

RESTING VS. WAITING; DESIGN INTENT

The program for the Bicycle and Water Taxi Rest Stop is divided into two parts; resting and waiting. Each of those will be treated differently in terms of design (see figures 35 and 36).

The structure will be the same for both; tree columns. Tree columns not only help emulate the forested surroundings but also will have a minimal footprint on the ground. This allows the design to not only appear light but also be gentle on the site.

When users experience the structures, resting and waiting will differ.

While resting, the visual connectivity will only extend to the immediate surroundings, allowing the experience to be internal rather than external. While in waiting, the user will have expansive views looking outwards. Allowing for a more dynamic experience, knowing that there is yet more to come, and more places to go.

In terms of sounds, the places of rest will rely on trying to minimize the external sounds, by engaging other senses, like smell. Fragrant plants will surround the structure. The plane sound cannot be fully removed but the plane itself will be visually blocked. Furthermore, a heavier and more solid material like concrete will be used in the structure to minimize the vibrations felt from the plane crossing above. The concrete will be left rough, so it feels like the rough forest around, and really feels like a part of the surroundings. In addition, the concrete structure will be thicker and the material itself will give more of a sense of permanence, making it truly a place of resting.

On the other hand, the places of waiting will enhance the sounds of the surroundings; the structure will be made of wood, which will vibrate with the passing of the planes. The openness will allow the outside to permeate inside. Moreover, the thin wood columns will be smooth and polished enhancing the feeling of lightness of the structure and making it seem more ephemeral. Truly making it seem like a place of transition, a place to wait until it is time to go to the next one.

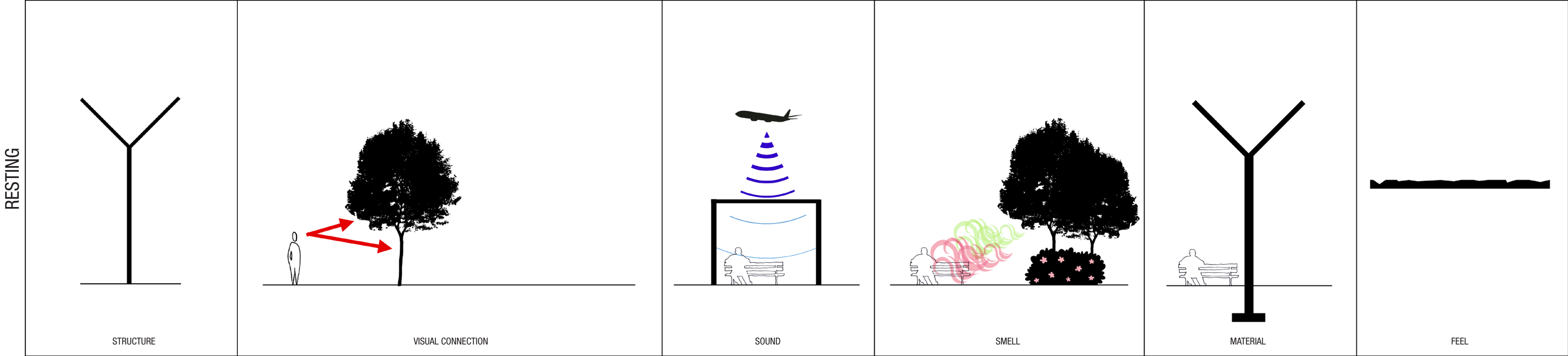


Figure 35 - Diagrams showing design intent for resting

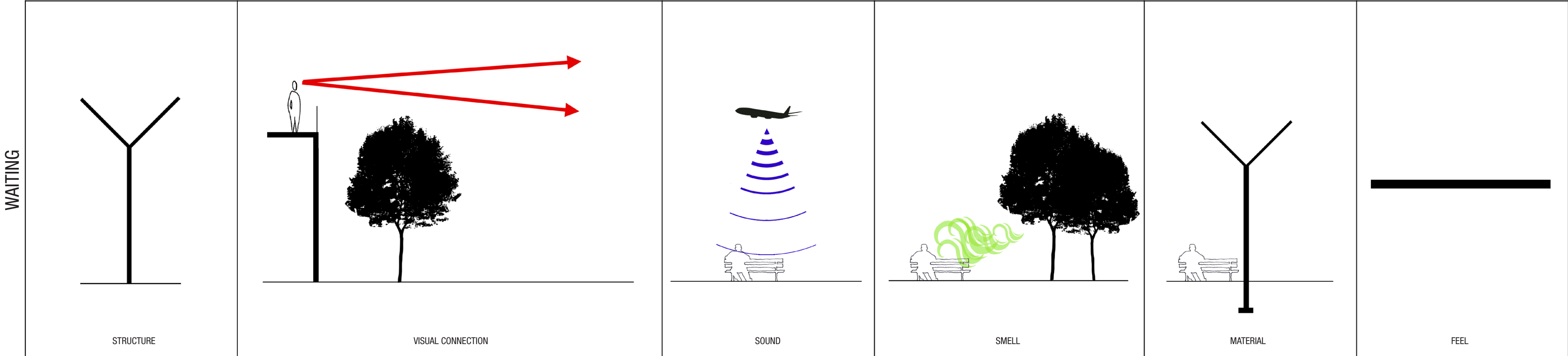


Figure 36 - Diagrams showing design intent for waiting

# PROCESS; STUDIO DESK

Emotions flow on the paper even when you sketch a single line.

Architecture design is a palimpsest of drawings; the spaces, and design overlap to create stories. The drawings penetrate each other and create connections between the architectural program and the existing site. With the first mark on the paper, we create a narrative. The question then becomes, where does this narrative end? The beginning is always clear but the conclusion is always in question.

“...drawings act as mediators between conception and construction...The techniques used in performing these drawings can vary from artwork to technical modelling and from poetic to prosaic drawings.”  
 – Marco Frascari



Figure 37 - Collage of my studio space - Images taken between Oct 2018 - Dec 2018 30

THE JOURNEY; SITE PLAN

“Make no little plans, for they have no magic to stir men’s blood and probably themselves be not realized”  
- Daniel Burnham

The journey created is to help the users experience and connect to the site, whether it is the wetlands, the forest or the river. It matters not where your journey begins or where it takes you, but rather that your explorations allow you to appreciate where you are. Whether you want a place to rest, to wait or to pass quickly through, you will find the means to do so.

The program splits in to four; the wetland building, the river building, the forest pavilion, and the water pavilion.

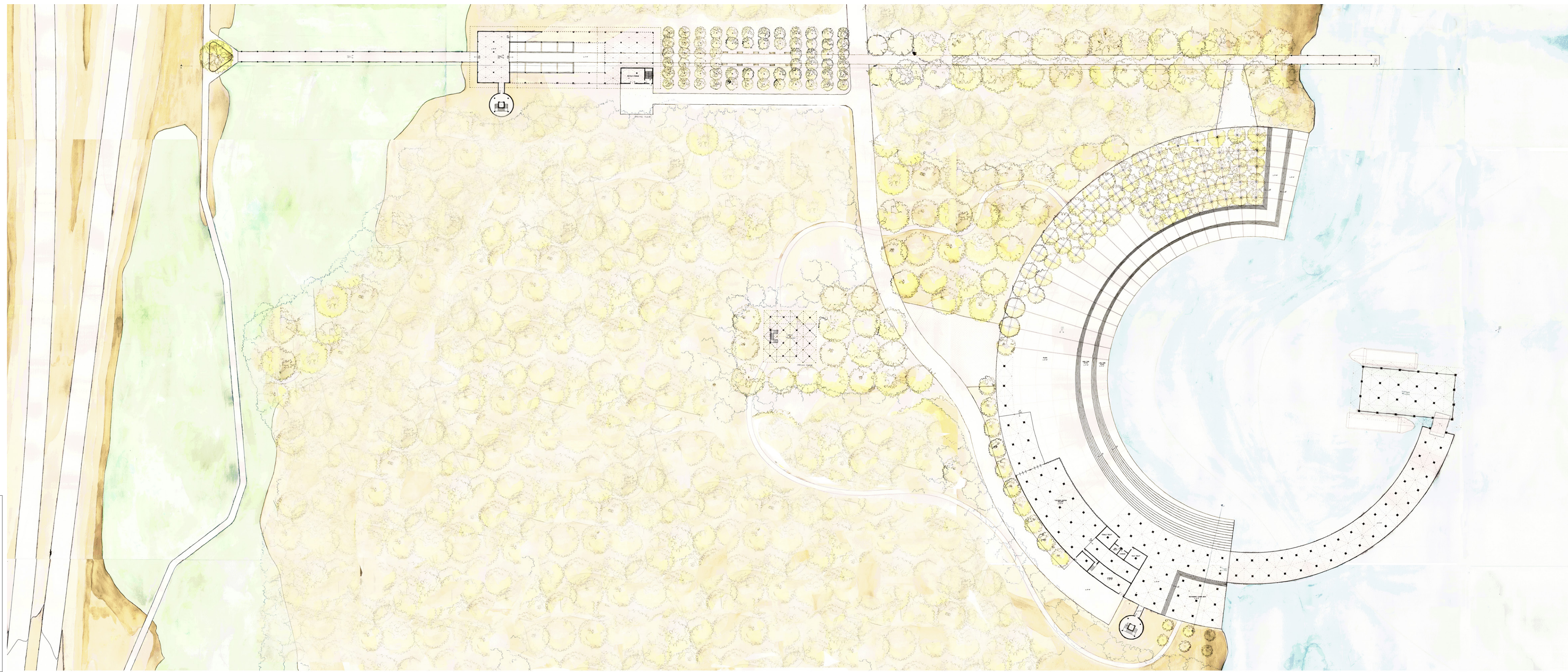
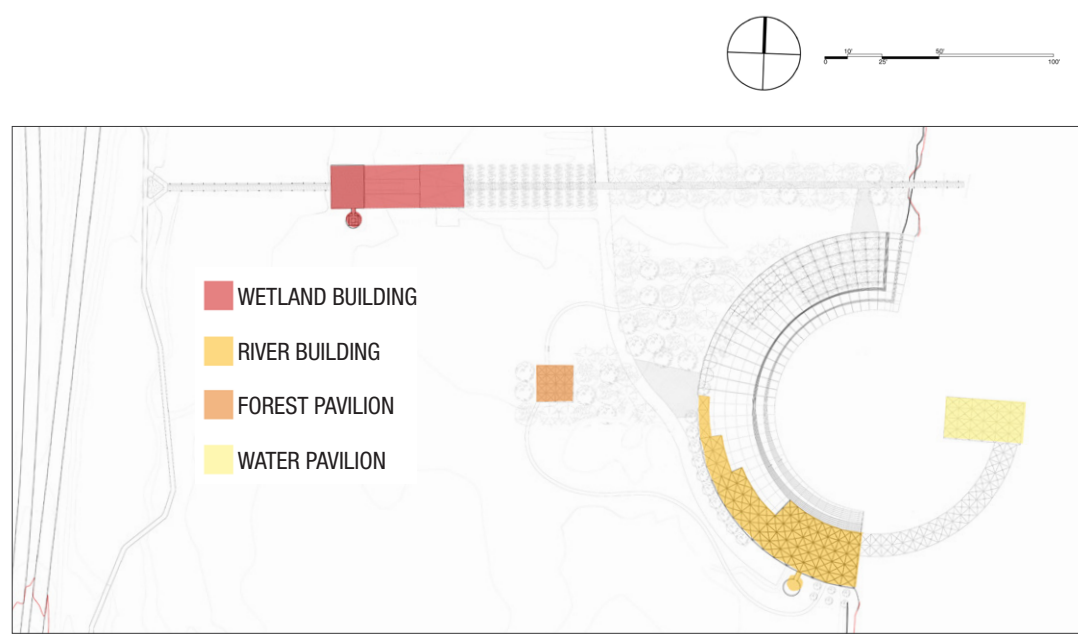


Figure 38 - Site Plan - Ground Floor 32

SITE PLAN

The design creates a dialogue between the water and the land, it creates connections within and to its surroundings as well (see figure 39).

There is also a conversation between the built and the natural. The trees columns of the structures are mirrored in adjacent courts by small trees. Creating a juxtaposition between the static trees and the growing trees (see figure 40).

The roof covers vary to create a distinction between the quality of spaces underneath (see figure 41). The glass roofs are there to protect users from the rain and snow, but allow the rays of the sun to come through. They are places meant for walking through rather than to pause under. The copper roofs protect you from all three; rain, snow and light, therefore the places beneath become pause spaces. In the resting pavilion, the screen roof allows light to filter through mimicking the light rays falling through leaves, making that structure feel like a true part of the surrounding forest.

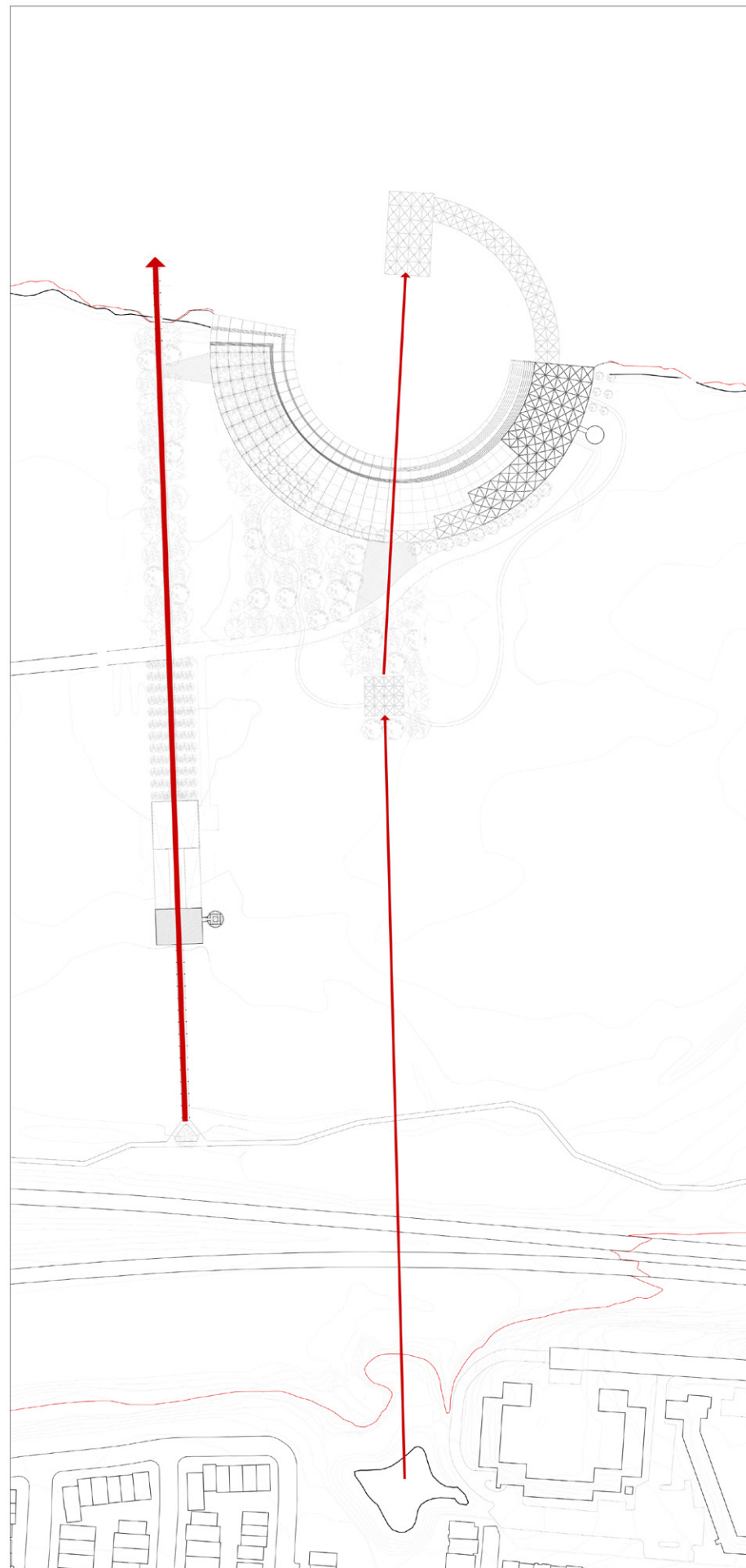
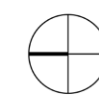


Figure 39 - Site Plan - showing the axes created, both within the design and the city context

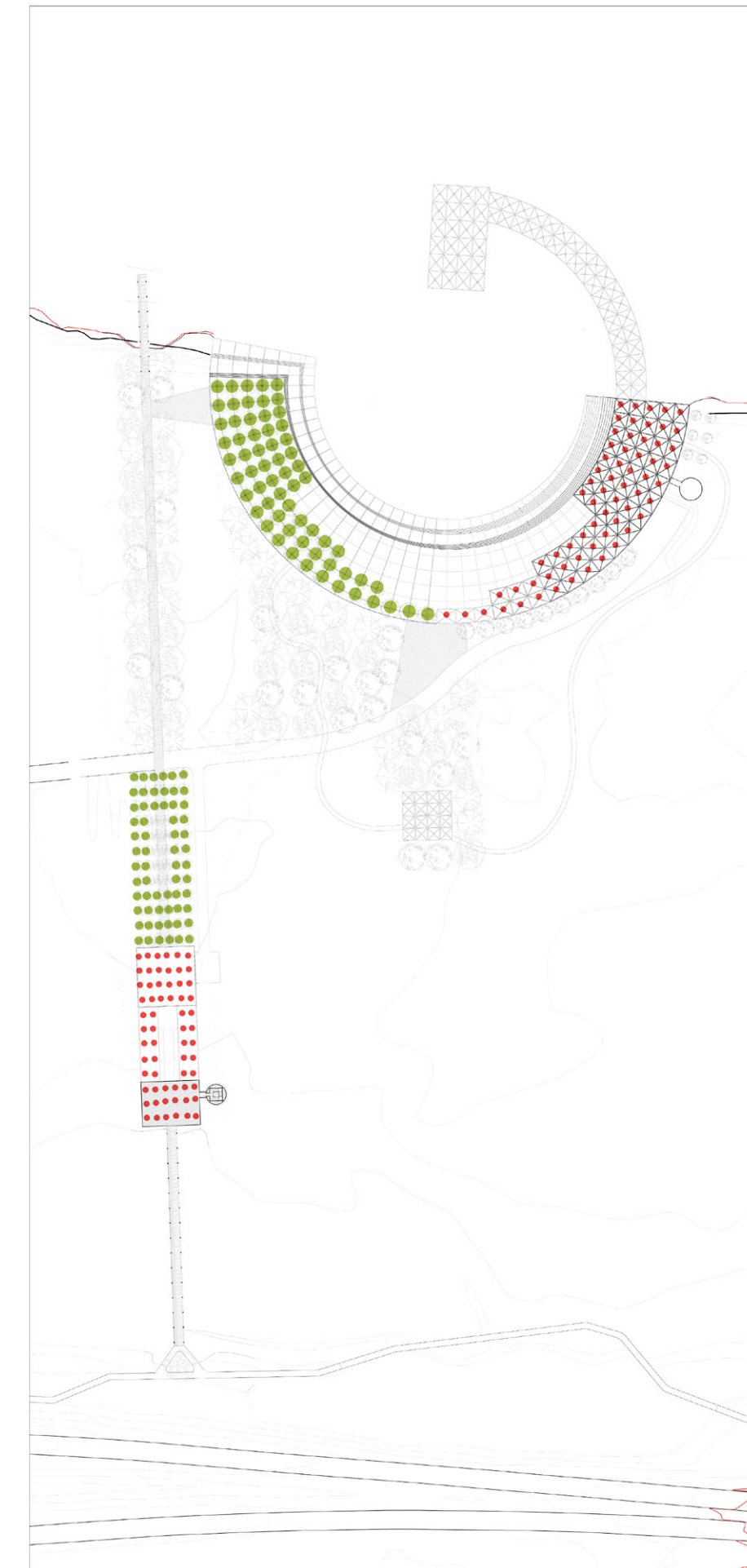


Figure 40 - Site Plan showing the mirroring between the columns and trees

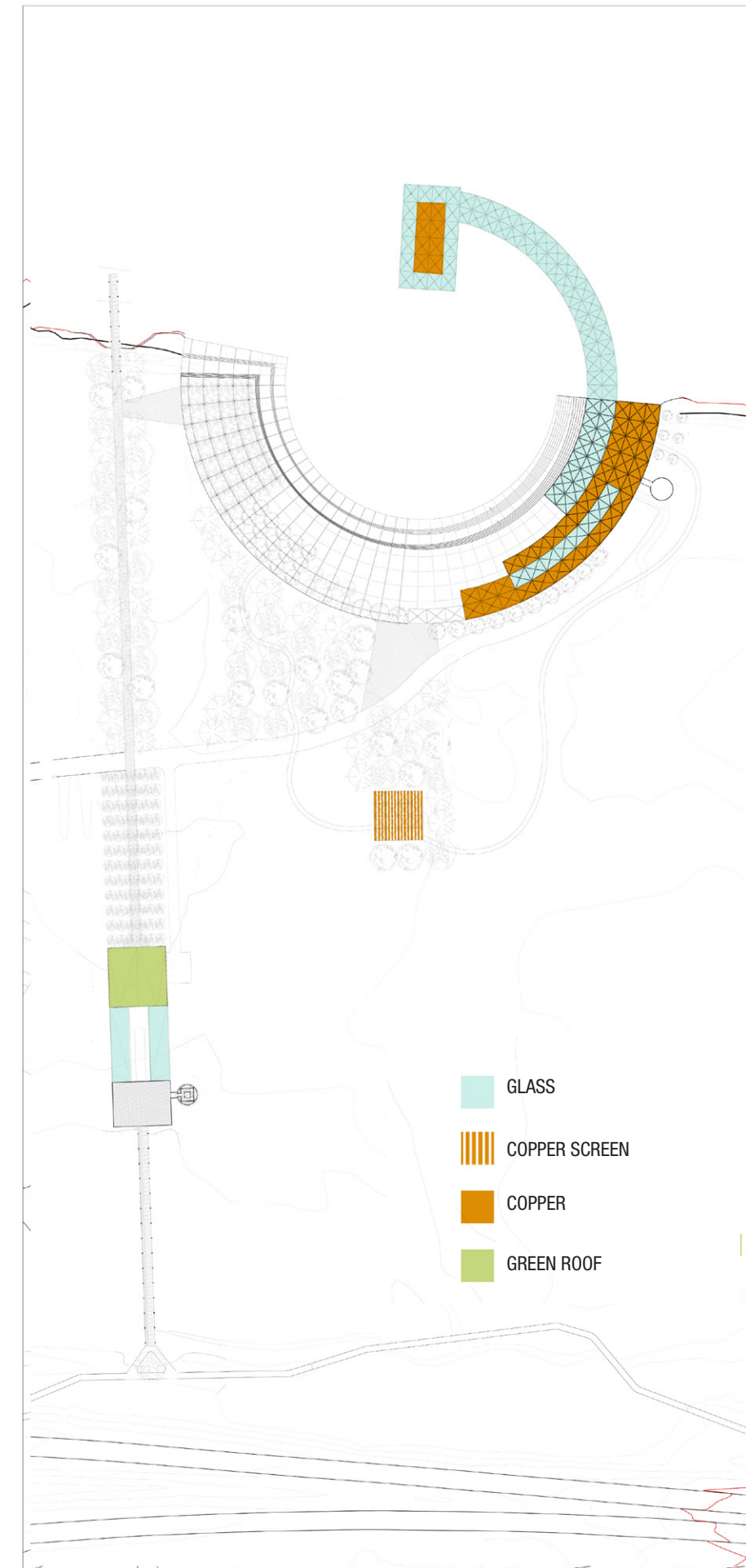


Figure 41 - Site Plan showing the different kinds of roof coverings in the design



Image 2 - Final model; Plan view showing materiality

THE APPROACH; WETLAND BUILDING

Filling the gap between the trees, the pavilion-like, wooden wetland building has the water extending underneath the structure. A wooden bridge going over the wetlands connects the Mt. Vernon trail to it. When approaching the building, there is a taller concrete tower, standing like a marker (see figure 45). This tower has three functions, apart from marking the entrance to Daingerfield Island. Firstly, it contains a staircase and elevator allowing people to ascend to the roof. Secondly, it has a light that when on lets the users know that the shops within are open. Lastly, its rings a sound 15 minutes before the departure of the water taxi, giving people ample time to get to it on time.

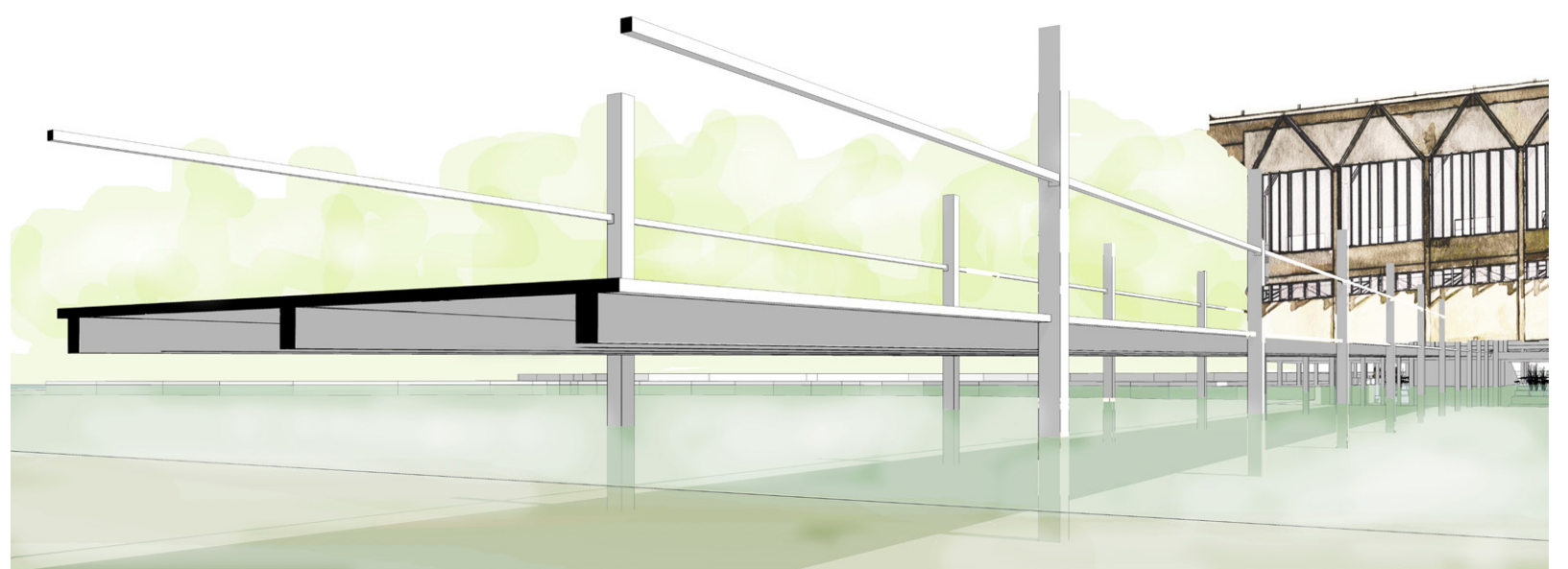


Figure 42 - Sectional Perspective of bridge -The wooden planks on the bridge extend over the structural member casting a dark shadow. Showing only the thin line created by the wooden planks, making the bridge appear like a lighter structure. This idea is carried throughout the design.

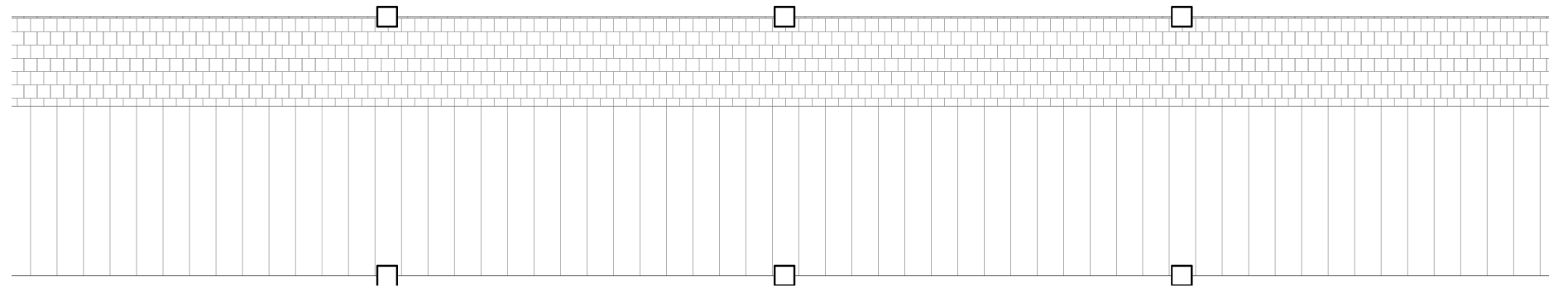


Figure 43 - Plan of bridge showing the pattern of the wood - small divisions are for pedestrians and larger divisions are for bicyclists

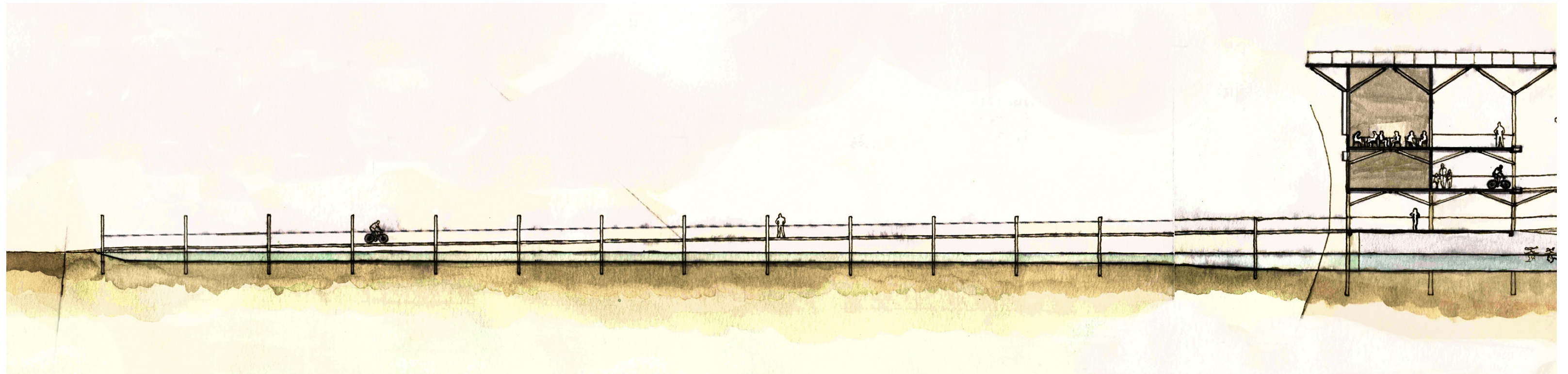
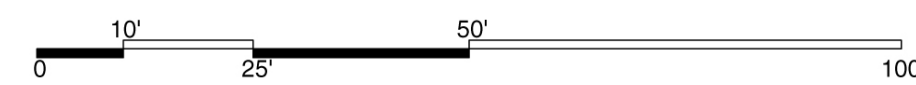


Figure 44 - Section of bridge over wetland showing the bridge slopes up at 1.6% while the height of the columns are static, marking the 100 year floodplain

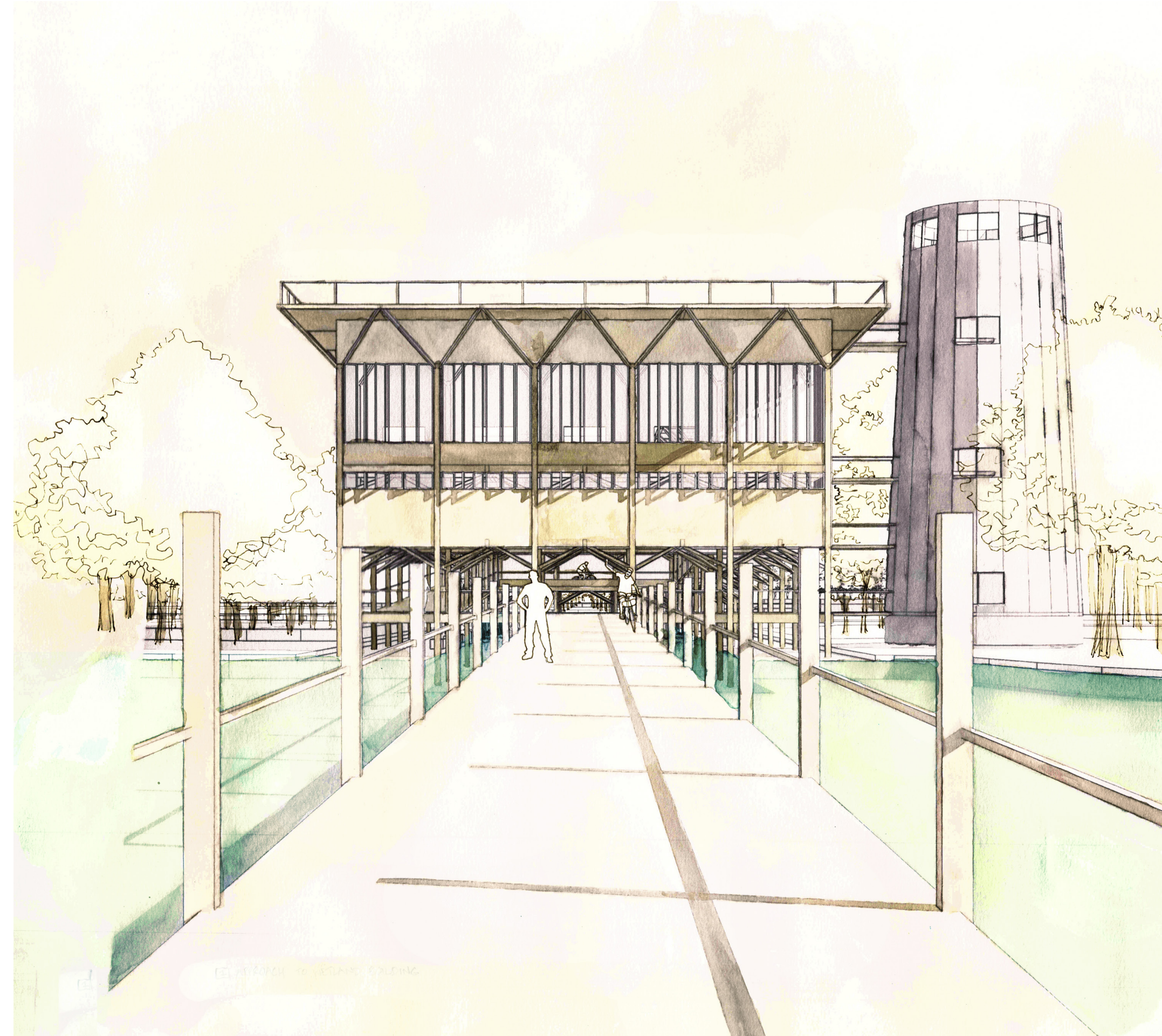


Figure 45 - Approach to the Wetland Building; view from the bridge

WETLAND BUILDING; PLANS

The building serves as the bicycle rest stop. The building is connected through a series of ramps sloping up at 4.2%, allowing both pedestrians and bicyclists to ramp up through the building.

- Ground Floor:
- Captured Wetlands
  - Loading and Storage
  - Serviceberry tree Court

- Second Floor:
- Bicycle Shop and Service Station
  - Toilets

- Third Floor:
- Bicycle Rental
  - Bicycle Parking
  - Coffee and Tea Shop
  - Kitchen

- Roof:
- Plane watching deck

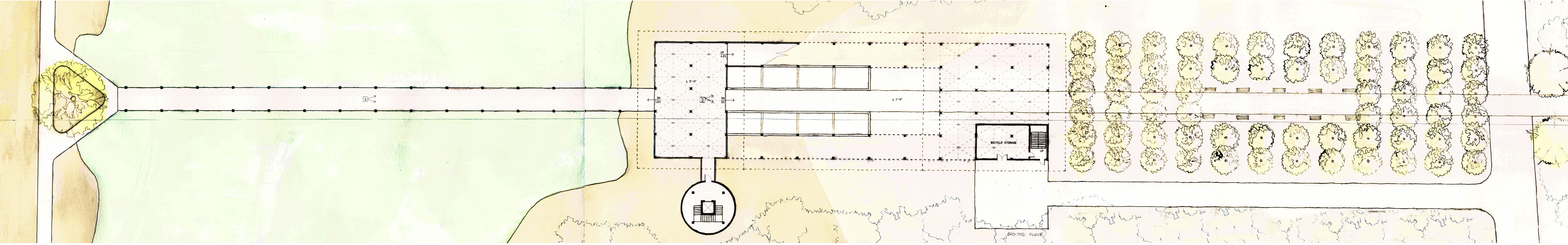


Figure 46 - Ground floor plan of the Wetland Building

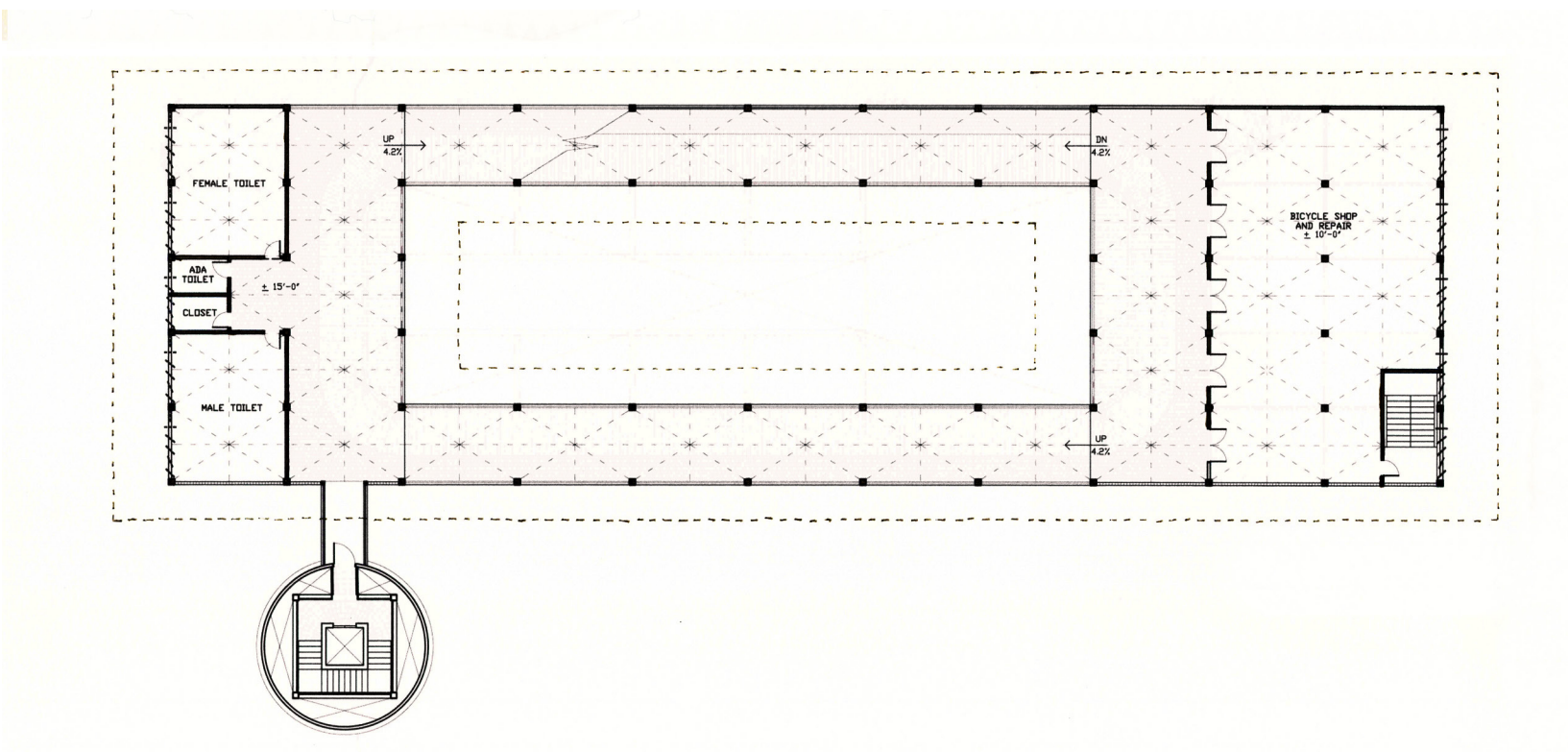


Figure 47 - 2nd floor Plan of the Wetland Building

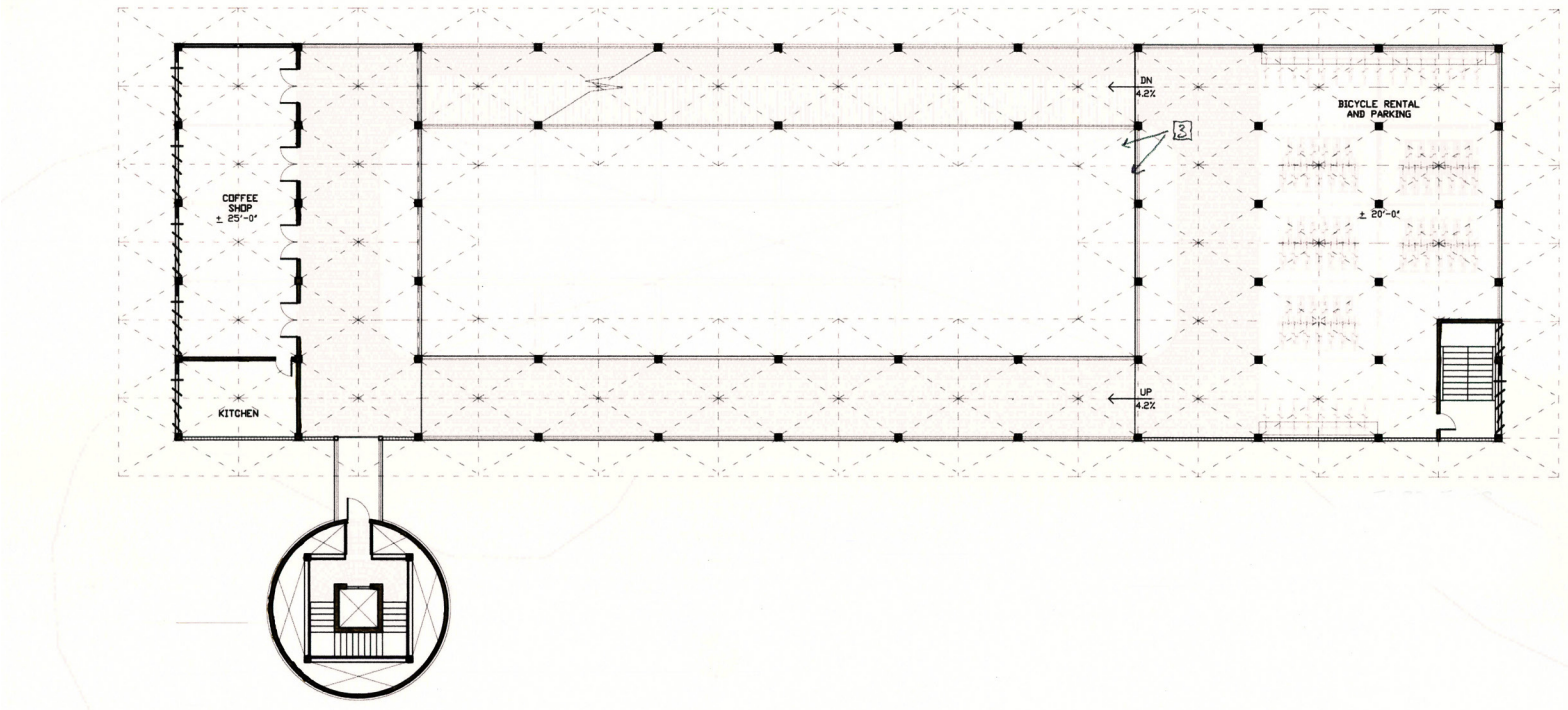


Figure 48 - 3rd floor Plan of the Wetland Building

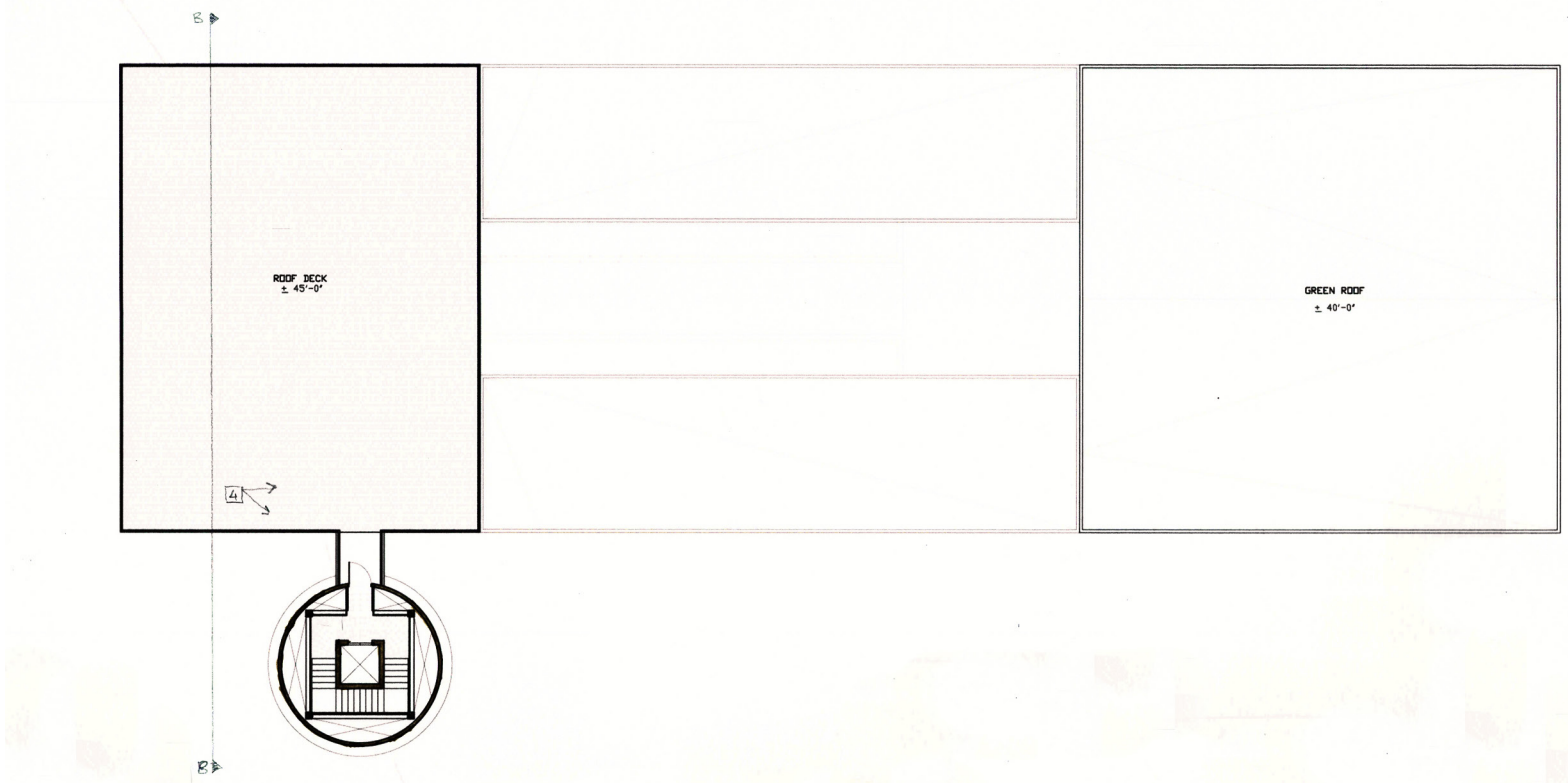
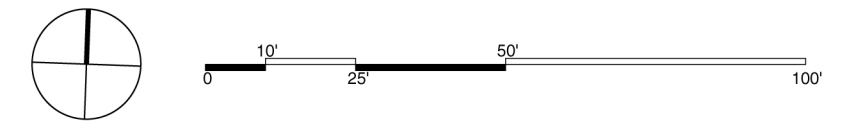


Figure 49 - Roof Plan of the Wetland Building



CAPTURING THE WETLAND

A cut in the earth allows the wetlands flow under the building and extend in to the courtyard. However, there is a major difference between the existing wetlands outside and the captured wetlands inside. Outside you will see a mixture of all kinds of plants growing together, while the captured wetlands are constructed at various depths, which allows the plants within to be organized. The depth right under the building is deep enough that no aquatic plants can survive, thereby stopping the transfer of plants from outside. As it extends further into the courtyard, it steps up to as little as 6" depth. Water hyacinths are planted at 4'-0" depth, water buttercups are planted at 2'6" depth, cattails are planted at 1'-6" depth, and water lotuses are planted at 6" depth.

As the user enters the building and continues towards the wetlands in the courtyard, he goes from being above the wetlands to descending to the level of the wetlands. This transition marks the arrival of the user at the site and he becomes part of it.

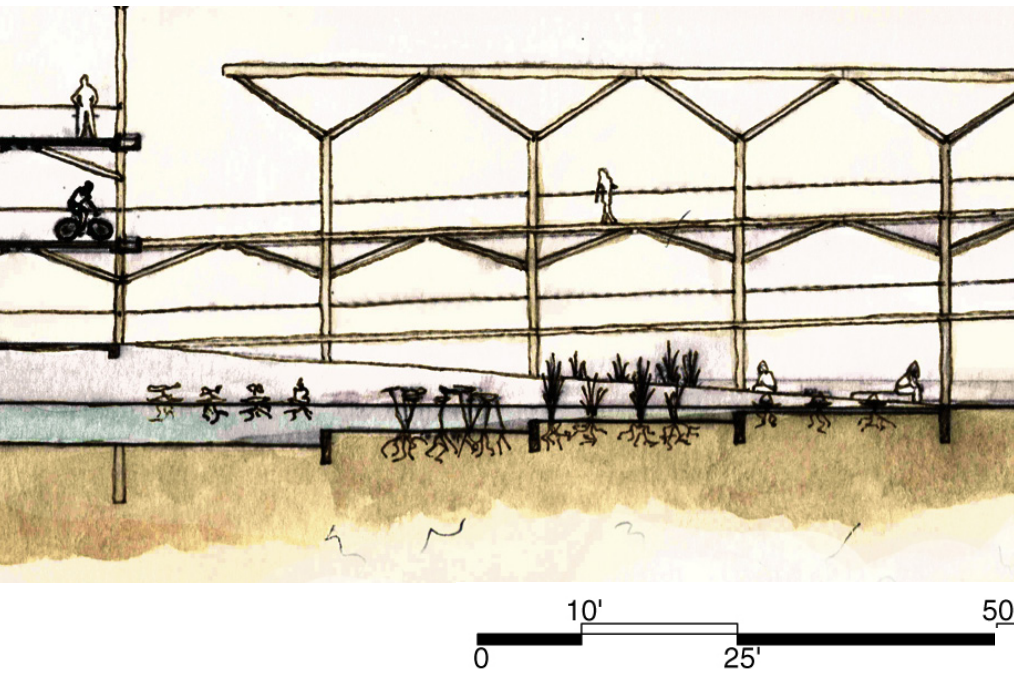


Figure 50 - Section through captured wetland

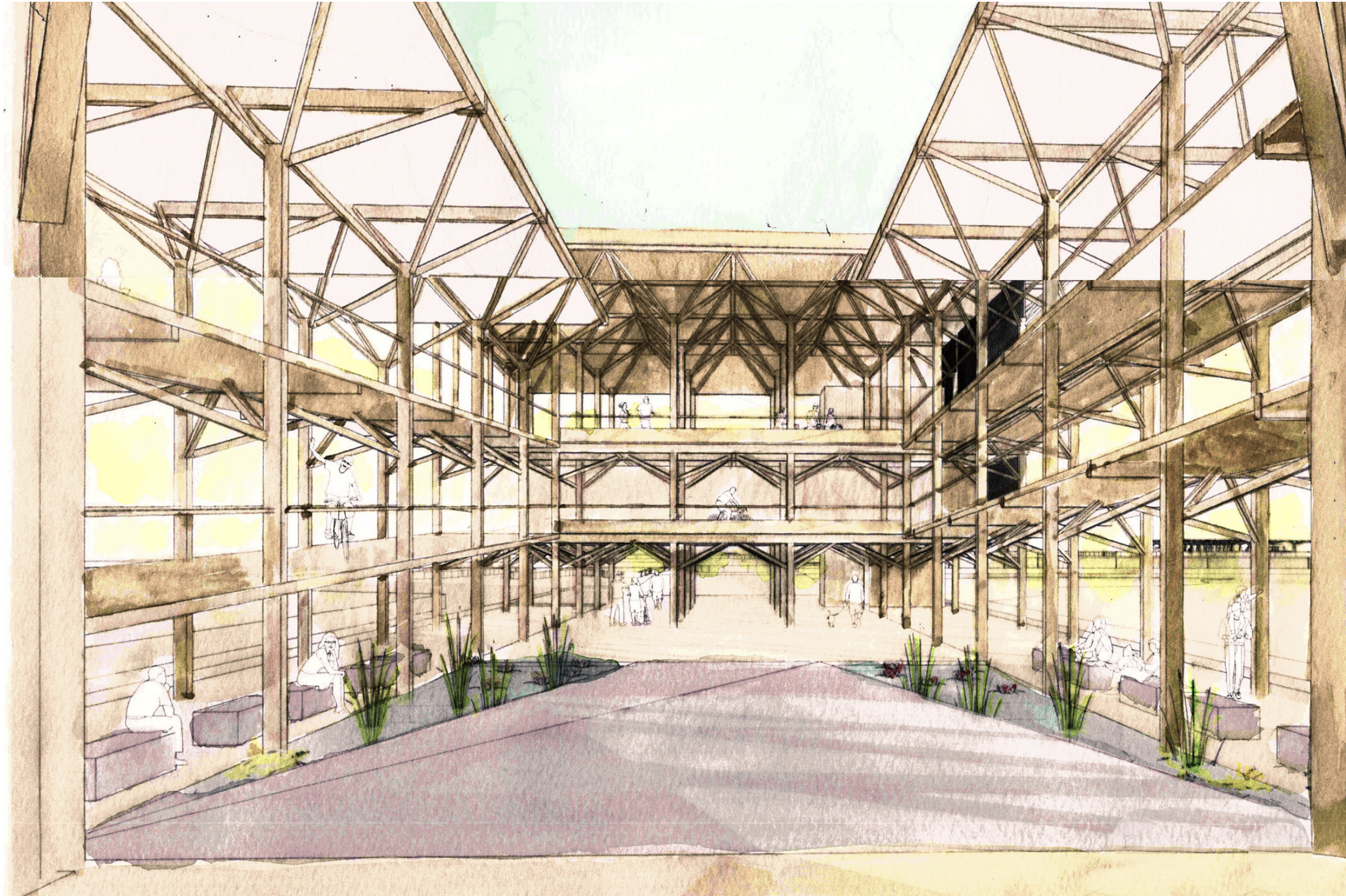


Figure 51- View of Courtyard after entering the building from the Mt. Vernon trail



Figure 52 - View of courtyard and coffee shop from the bicycle rental and parking area

PLANE WATCHING DECK; VIEW FROM TOP

The plane watching deck gives a panoramic view of the site, situated right above the canopy line you not only get an unhindered view of the planes, but you can also see the other structures dispersed in the middle of a sea of green. This lets the users know that there is yet more to come and more places to explore.

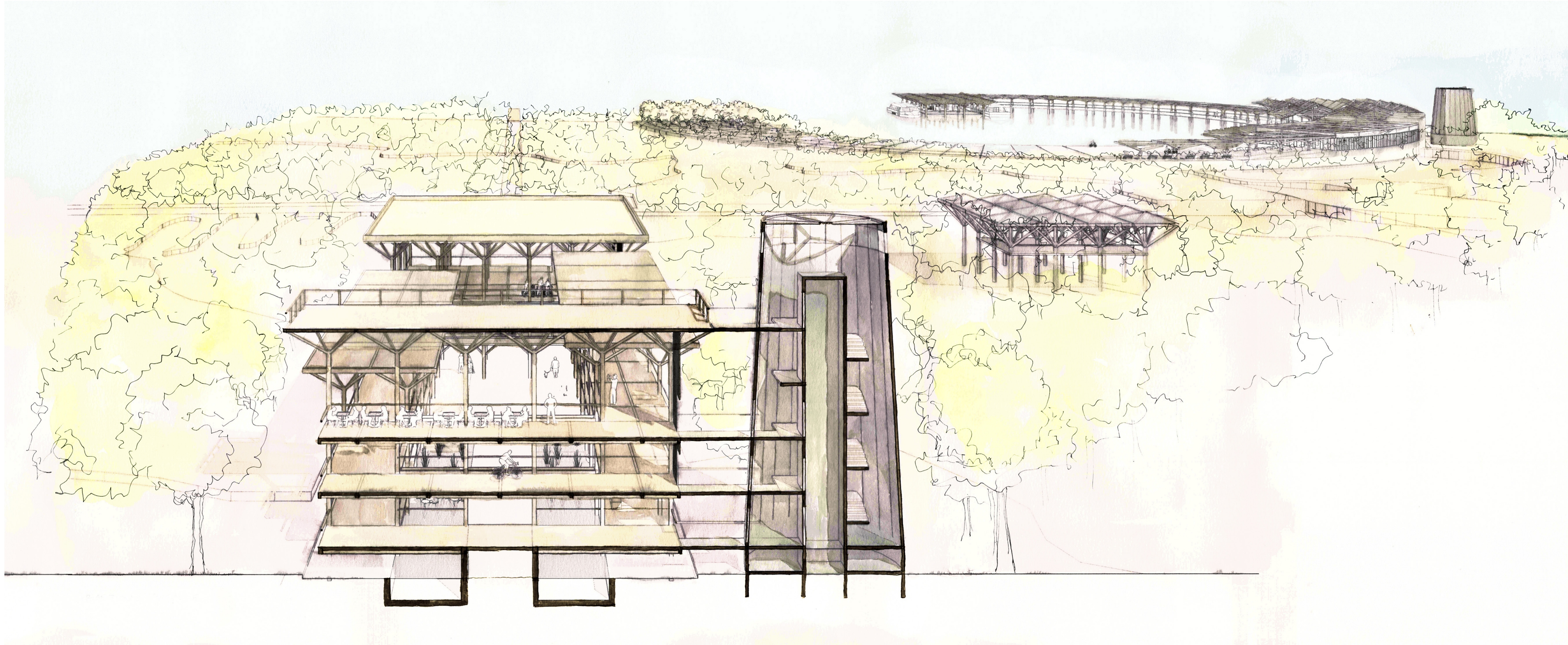
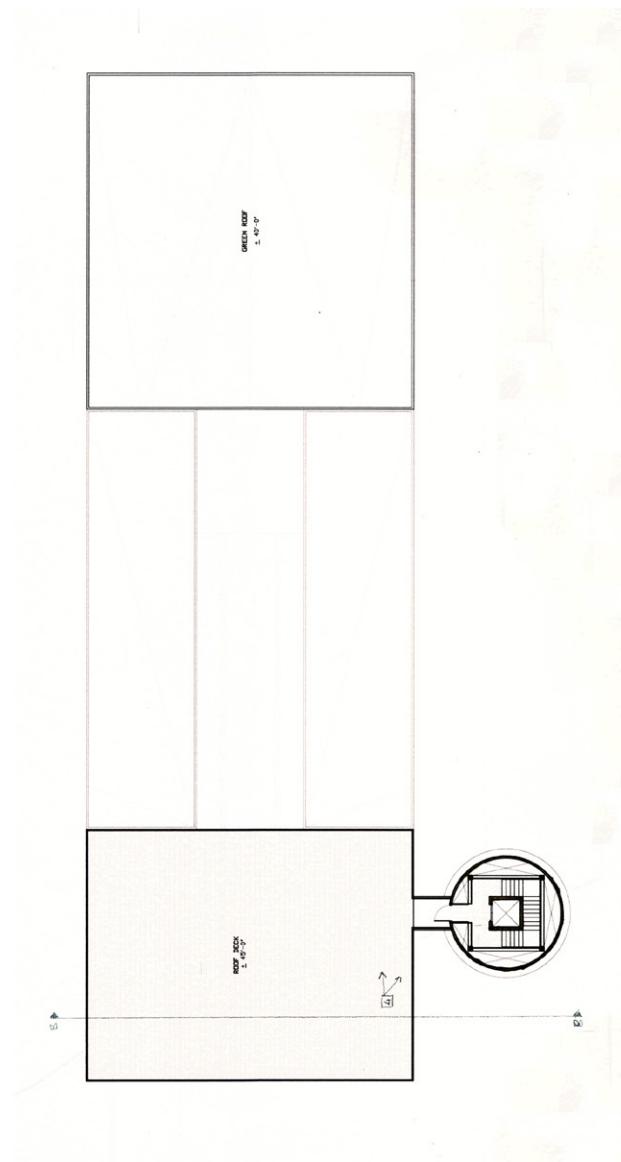


Figure 53 - Sectional Perspective; Section cut through Wetland Building showing the view of the entire site from the rooftop deck

ELEVATIONS AND SECTION

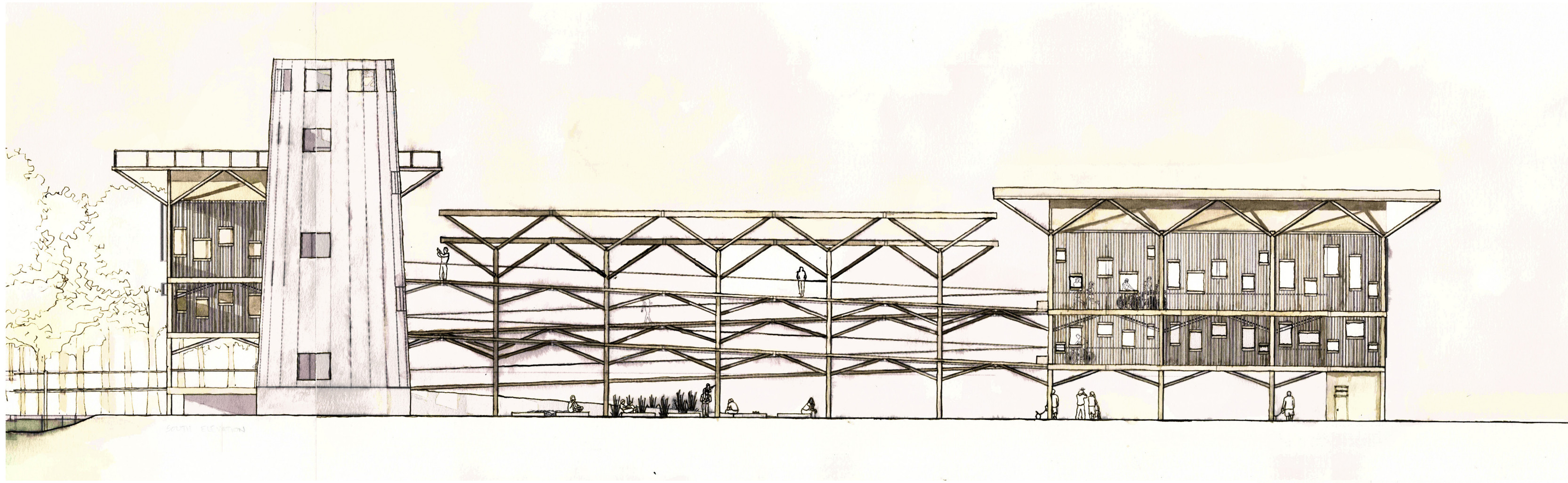


Figure 54 - South elevation of the Wetland Building

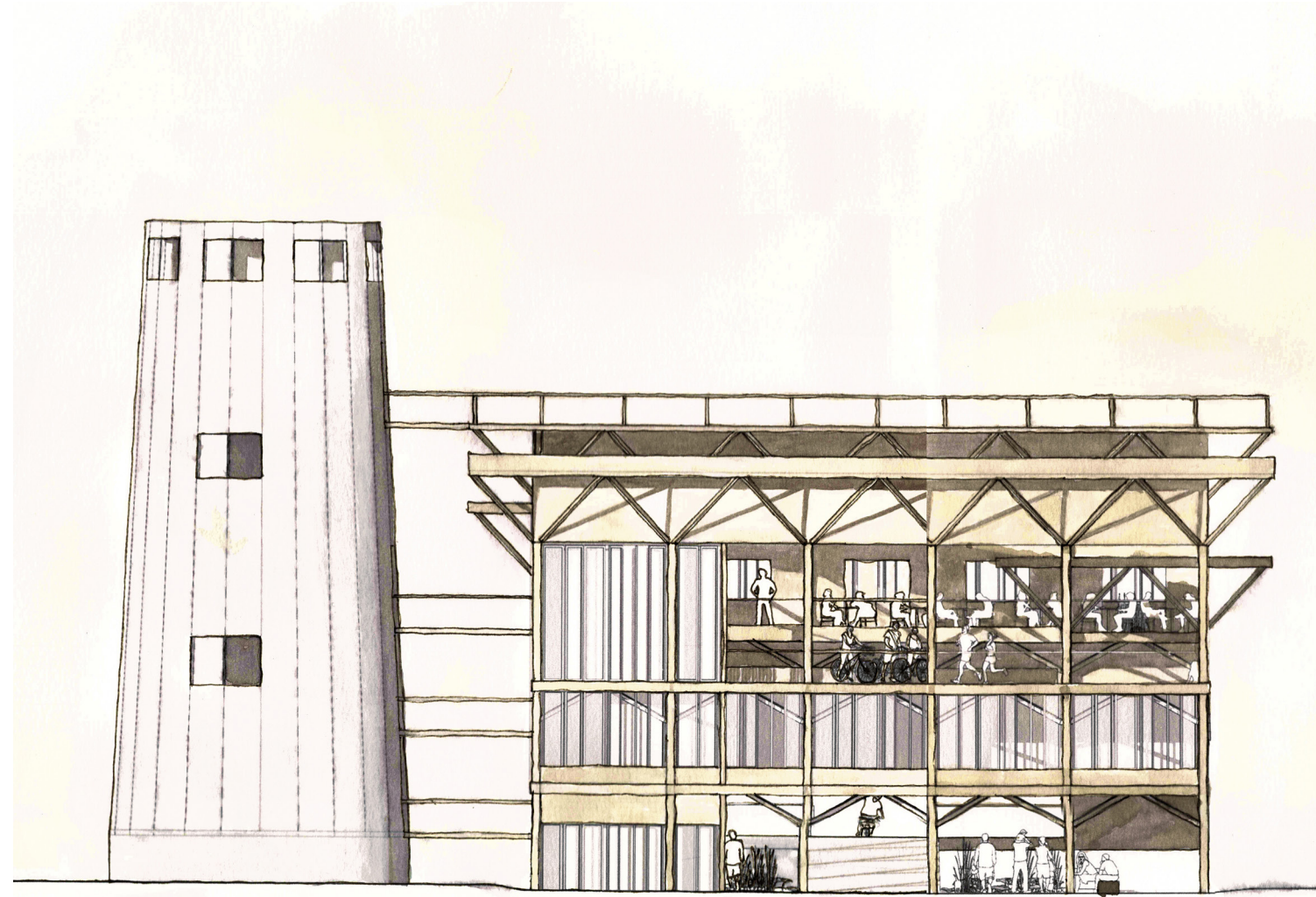


Figure 55 - East elevation of the Wetland Building

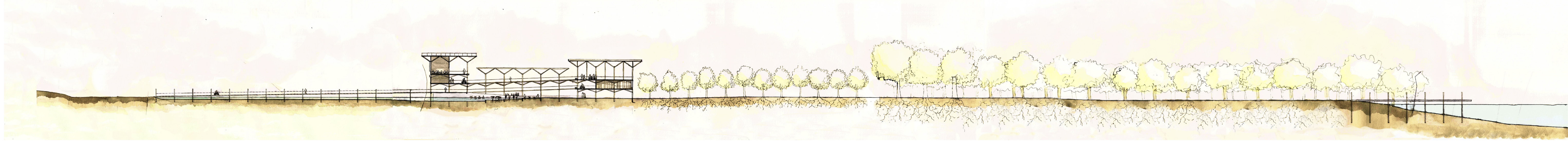


Figure 56 - Site section - cut through Mt. Vernon bike trail, the wetlands, the Wetland Building, the serviceberry tree court, and the allée of existing trees, extending all the way to the dock that overlooks the Potomac River

RIVER PLAZA; FIRST LOOK AND PLAN

The River Plaza is designed to maximize the experience of the waterfront. The geometry is derived based on the existing shoreline and the old shoreline. The center of the circle is at the current shoreline and the circumference of the circle goes to the old shoreline. The plaza steps down towards the water creating large seating steps in places. It has two major landings: the high tide landing and the low tide landing.

The extension of the pier towards the water taxi pavilion creates calmer water for the boats to dock. While a screen running along the southern side of the pier, helps to collect debris and driftwood flowing into the circular bay so that in can be cleared up, thus helping clean the river.

The trees on the plaza are planted as mirror images of the column. Each bay is a different species of small to medium sized trees. Including magnolia, flowering dogwood, bald Cyprus, river birch, pawpaw and American holly. These trees are either flowering, fruit baring or will have fall colors. The plaza will change with the seasons and will be valuable to both people and the wildlife in the island.

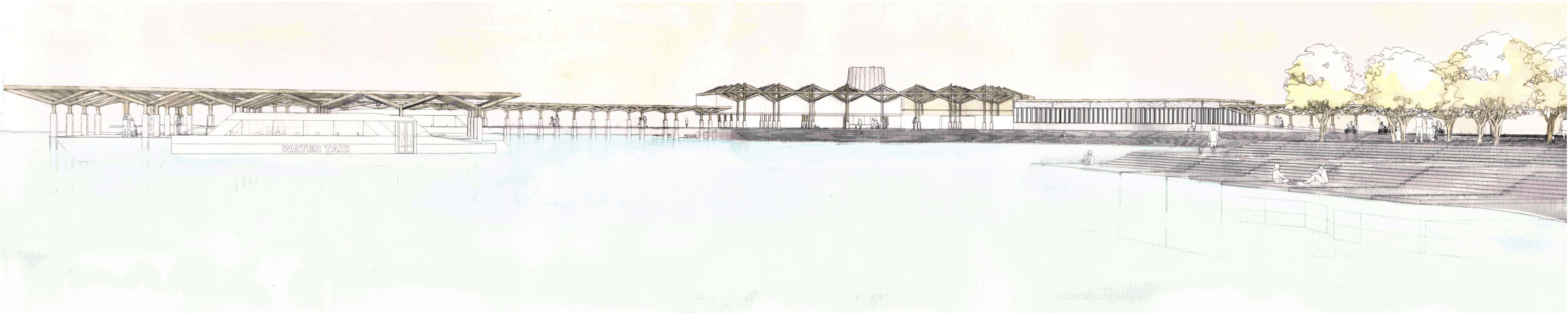


Figure 58 - View from the dock at the end of the axis; looking south towards the plaza

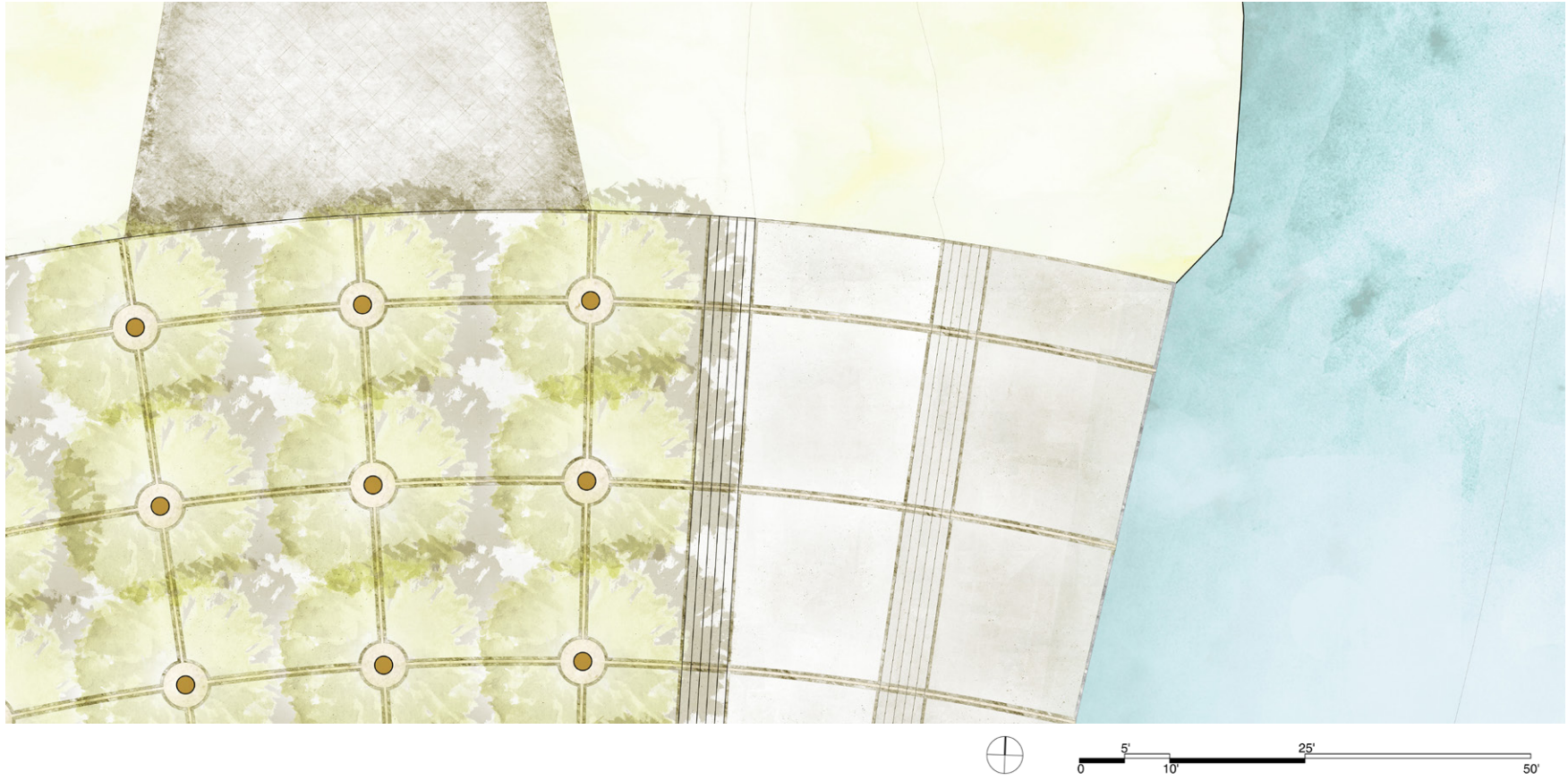


Figure 57 - Zoomed in plan detail of the northeast part of the River Plaza; showing the connected tree pits draining into the river and the floor of the plaza - concrete bordered by stone along the tree pits

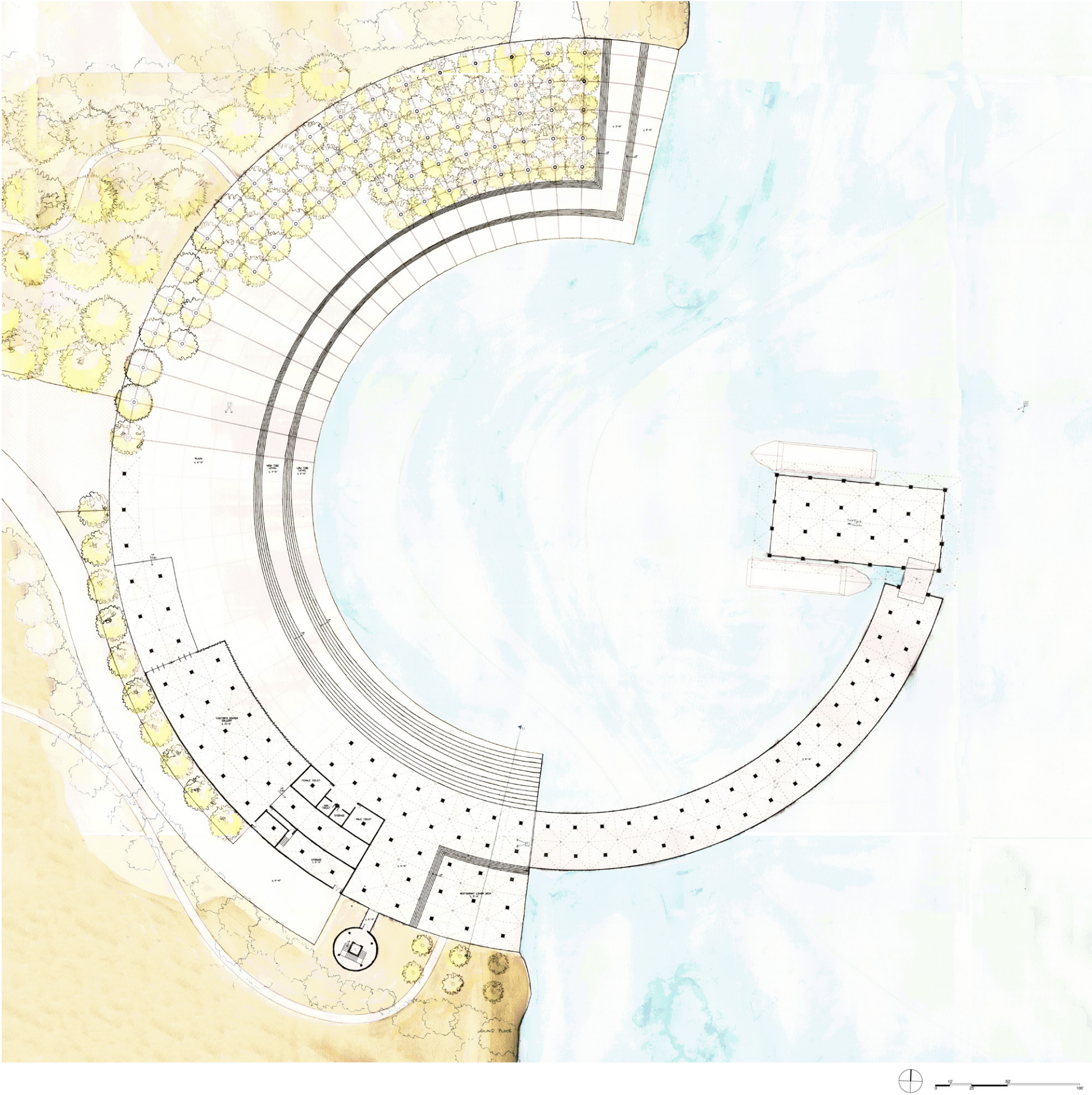


Figure 59 - Ground floor plan of the River Plaza and the River Building

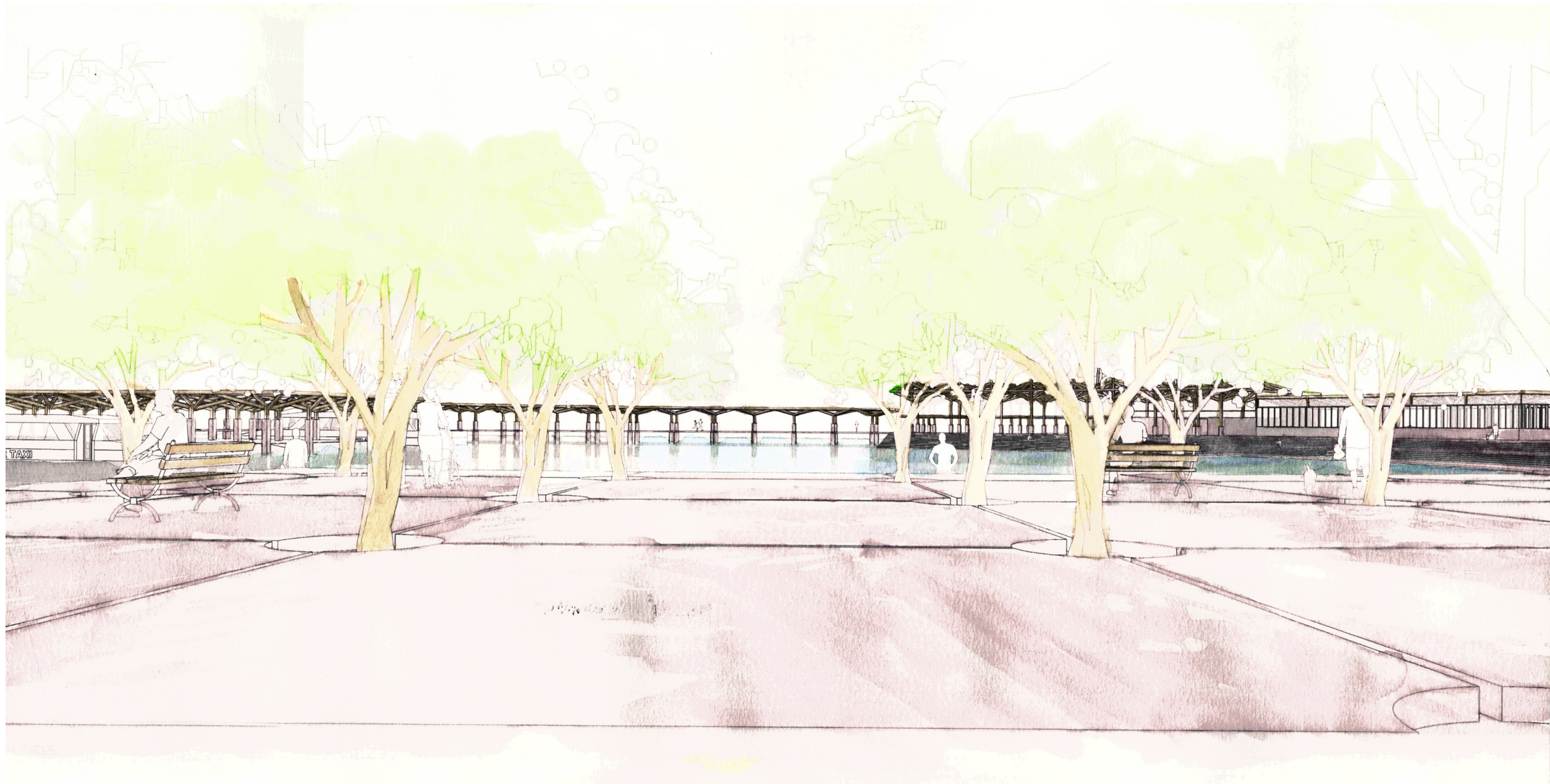


Figure 60 - Approach to the river plaza from the allée; arriving between the trees with a view towards the river building and the water pavilion

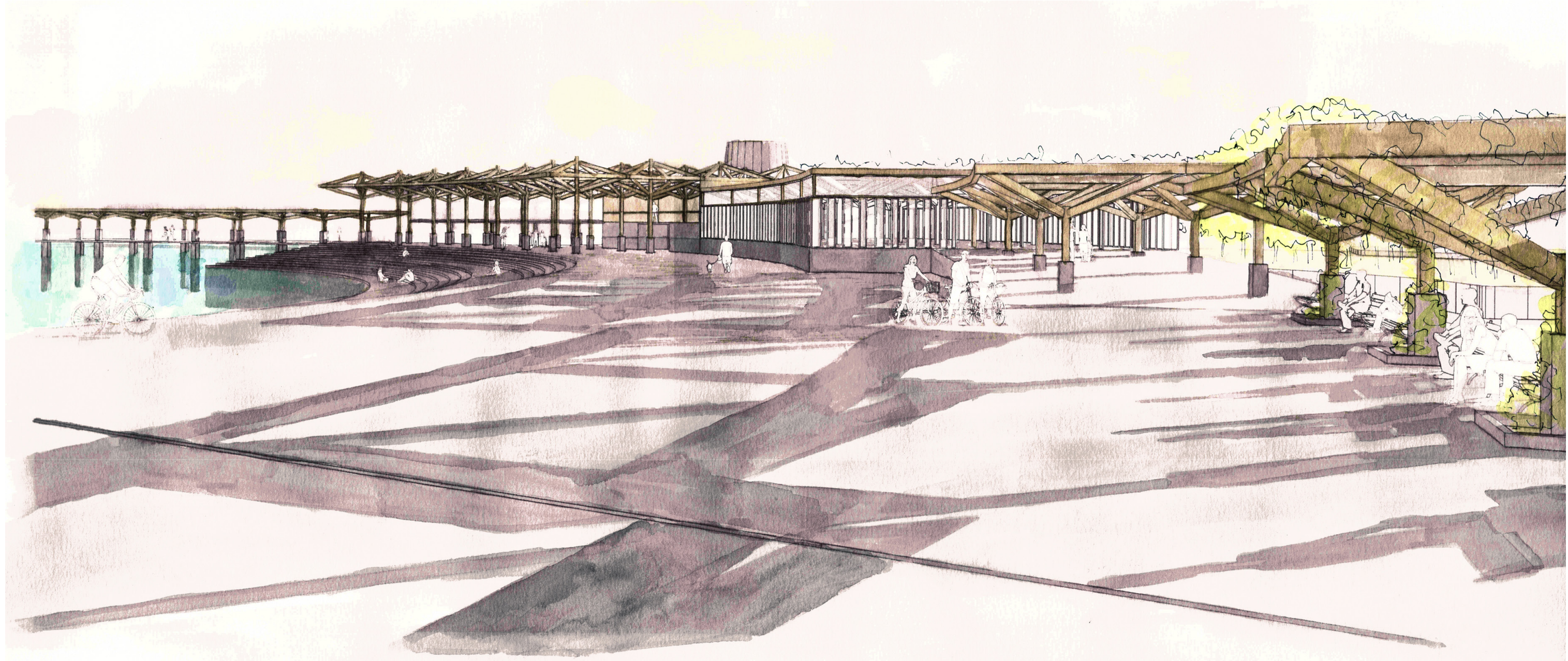


Figure 61 - View of River building from the plaza - view from north

RIVER BUILDING; PLANS

The building serves as the visitor's center and the water taxi rest stop

- Ground Floor:
- Gallery
  - Toilets
  - Loading and Storage
  - Restaurant - Lower Deck

- Second Floor:
- Office
  - Kitchen
  - Restaurant

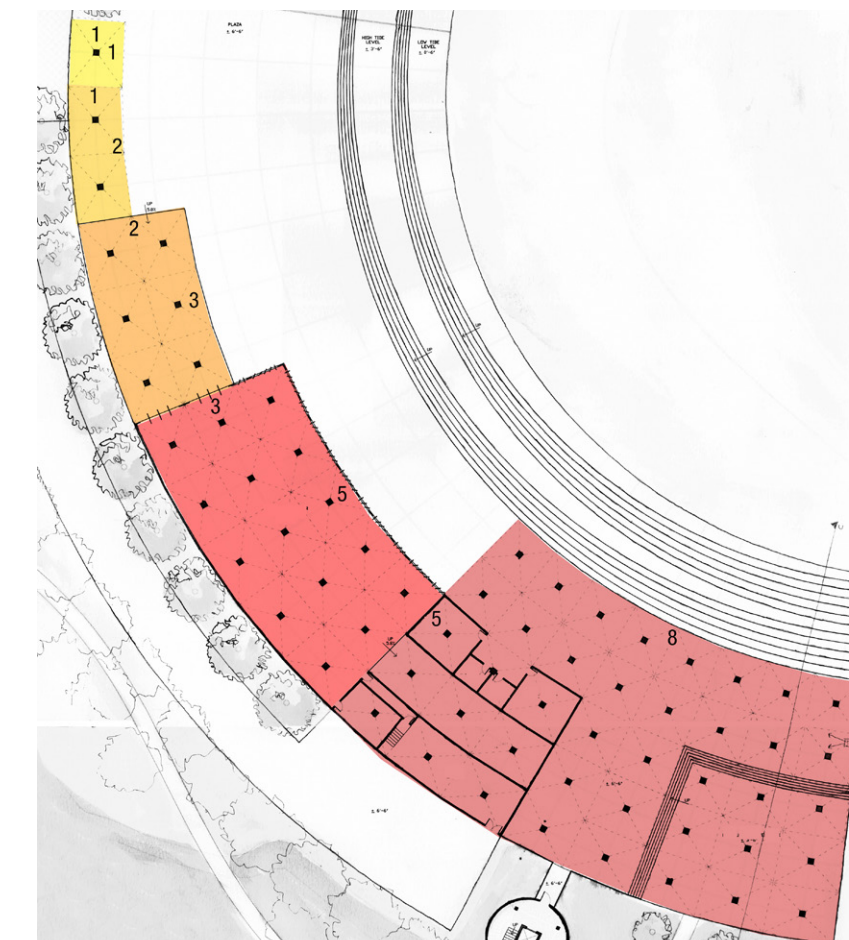


Figure 62 - The 5 bays are increasing based on the Fibonacci series, increasing them this way not only allows enough space for the program to fit well but also creates a rhythm in design

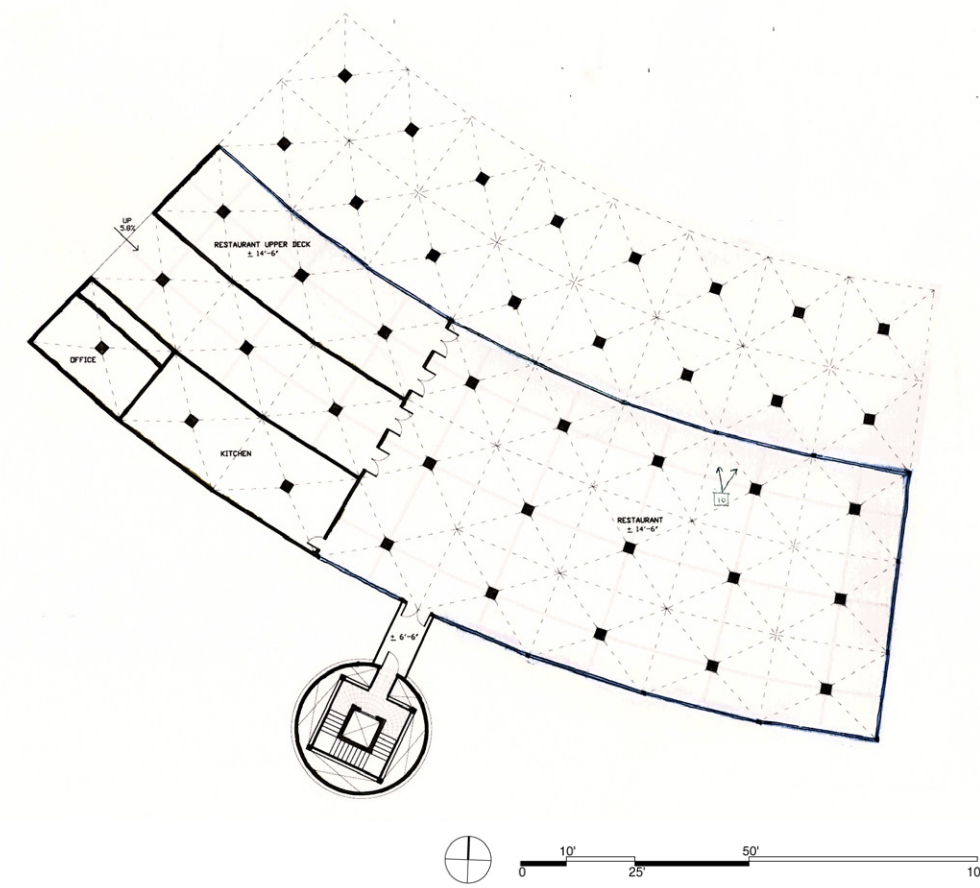


Figure 63 - Second floor plan of river building

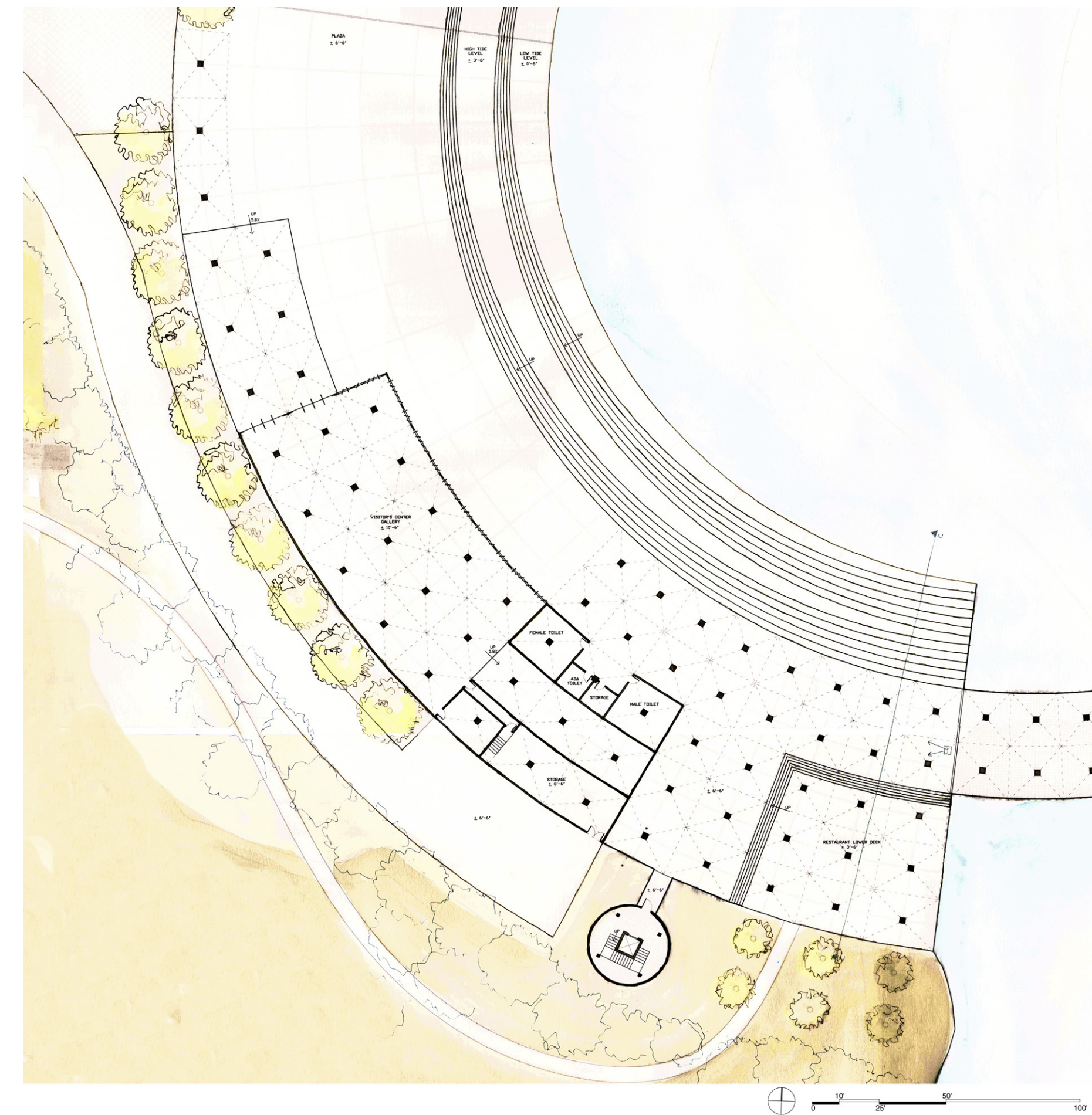


Figure 64 - Ground floor plan of river building



Figure 65 - Plan showing connection between the pier, plaza, and steps - the railing continues from the pier to the steps

VIEWS AND ELEVATION



Figure 66 - View from Restaurant; looking toward the plaza and water pavilion

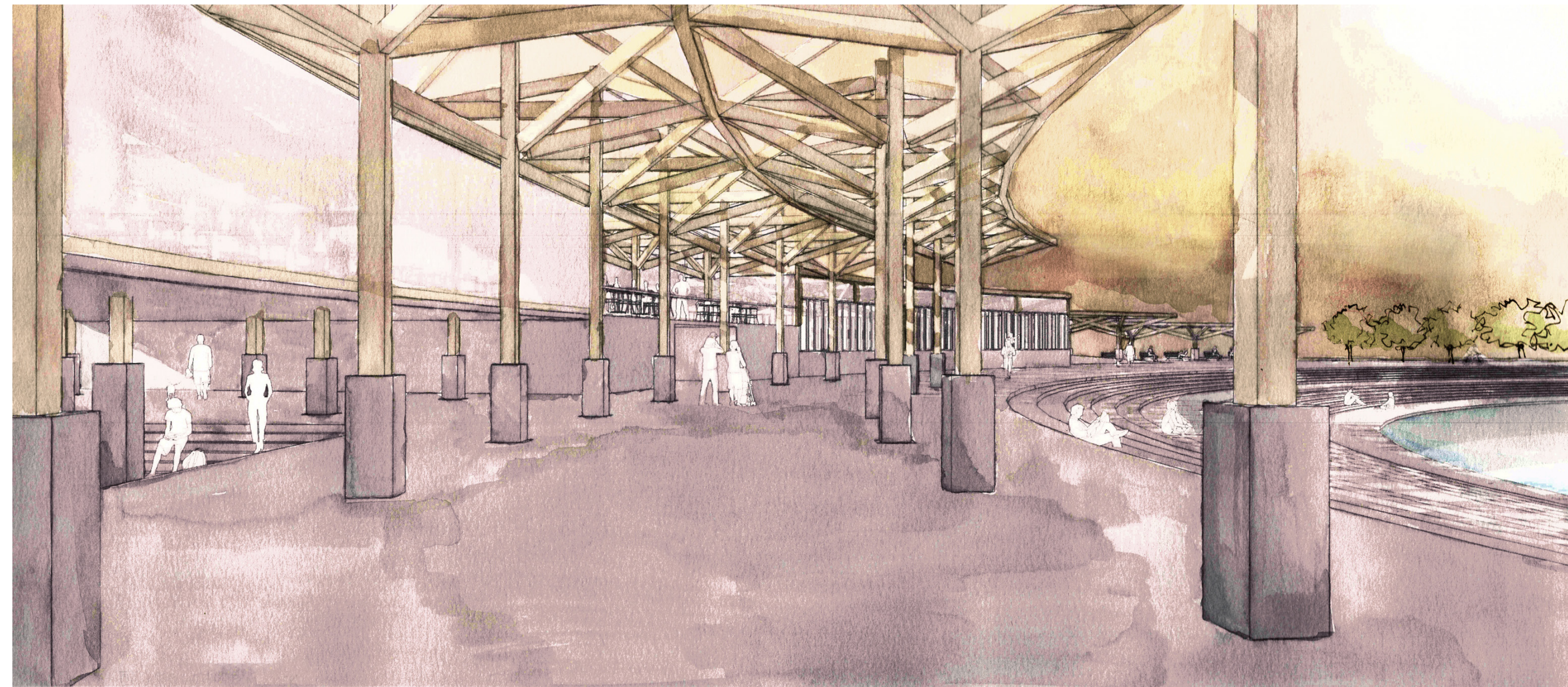


Figure 67 - View of Restaurant and gallery when arriving to the plaza from the water pavilion

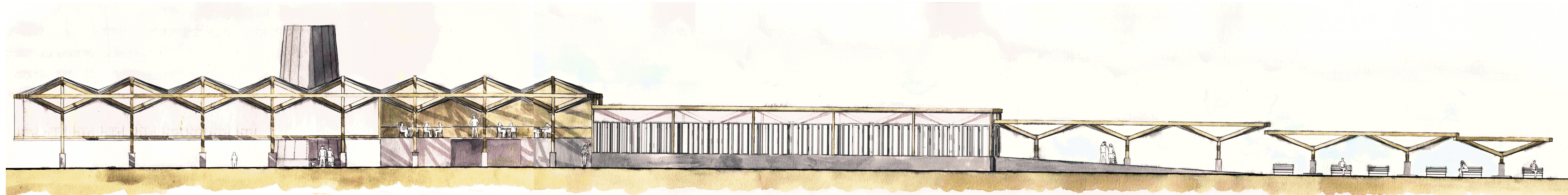
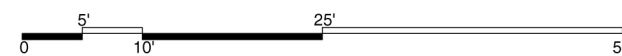


Figure 68 - Developed elevation of the river building; facing the river

THE TIDES AND THE FLOODS

The Potomac River is tidal, and the entire site is situated in a 100-year floodplain. Therefore, consideration was given to both those aspects while designing the River Plaza and the visitors center.

The plaza has three levels, each of which can be accessed depending on the tide and level of flooding (see figure 70). During low tide, all levels of the plaza are accessible. During high tide, the lowest landing and the steps leading to it are submerged, however the mid landing is accessible. During a heavy rain flood, only the main plaza level is accessible and the lower restaurant deck is flooded. The pier is at the same level as the plaza, therefore the water taxis can still operate during heavy rainfall. During a 100 year flood, the entire plaza is flooded, however the gallery, kitchen, and restaurant are above the 100-year floodplain, so incase the event occurs they will be safe from damage.

The plaza and buildings are designed in concrete up until the 100-year floodplain level (see figure 69). After which the structure changes to wood. Hence, throughout the design there is datum marking the 100-year floodplain.

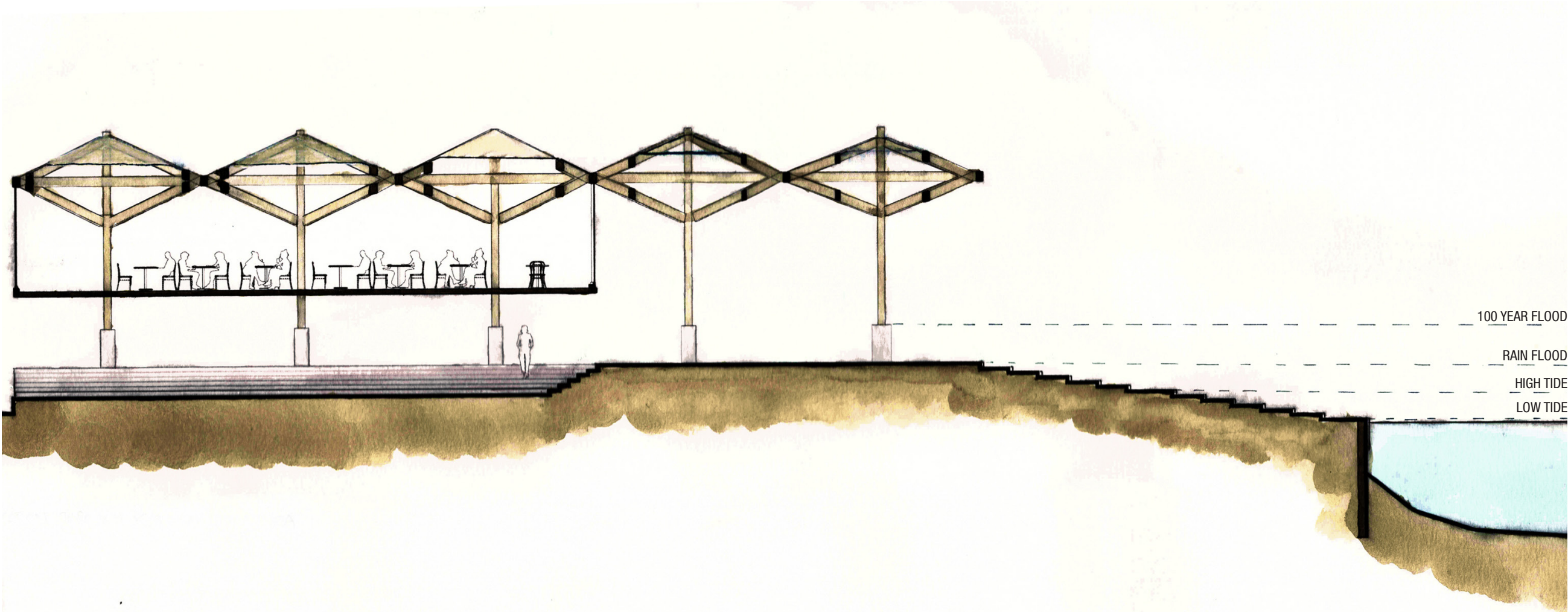
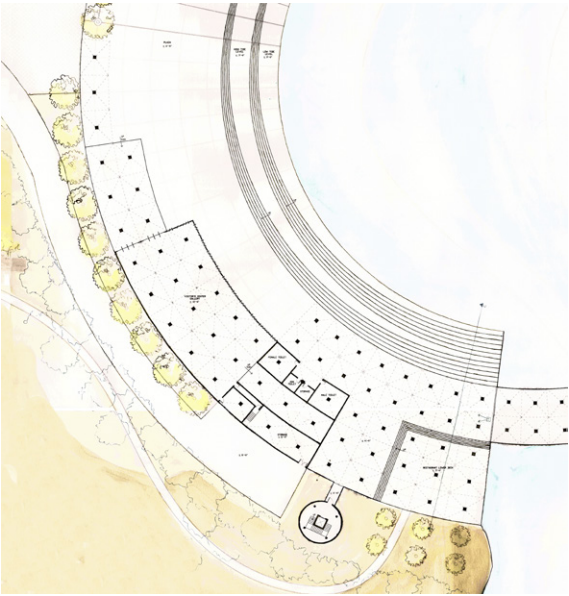


Figure 69 - Section - cut through restaurant and plaza showing the tide and flood levels

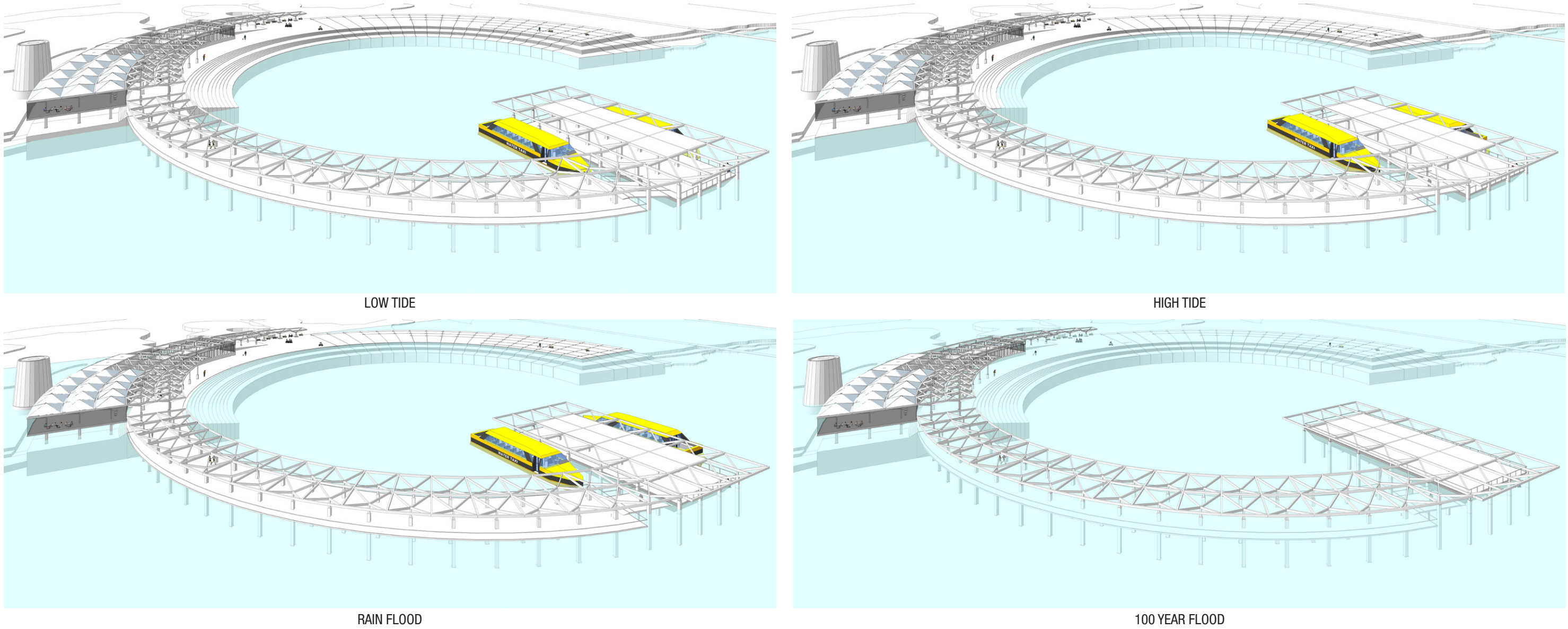
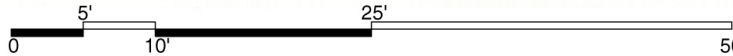
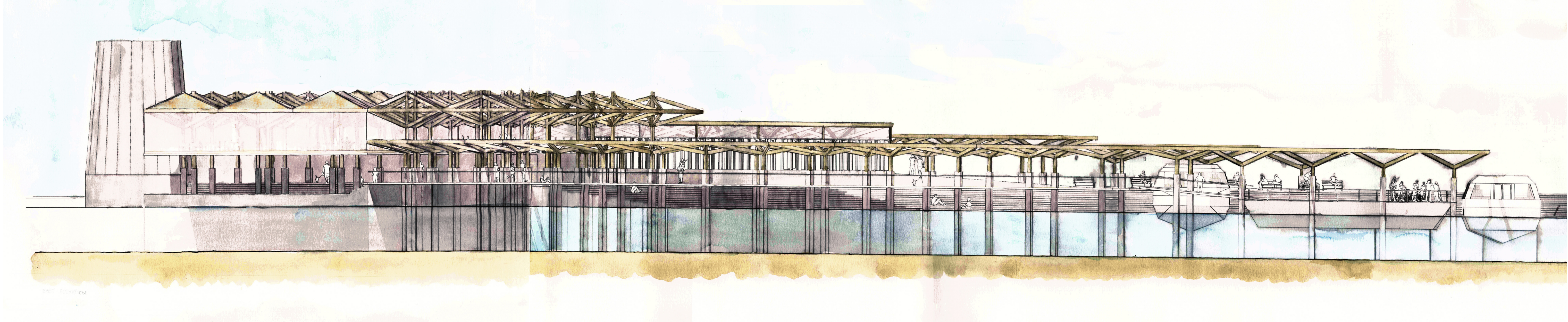


Figure 70 - Diagram showing how the tides and floods affect the river plaza and building



FLOATING PAVILION; A PLACE TO WAIT

Located on the water, the pavilion floats. It rises and falls with the tides (see figure 70 on page 54), and there is constant motion felt on the deck as the river flows beneath it. Situated away from the land it has a clear view of the Potomac River and the water taxis. The pavilion itself is dynamic and its program is transient in nature, thereby, making the pavilion truly a place of waiting.

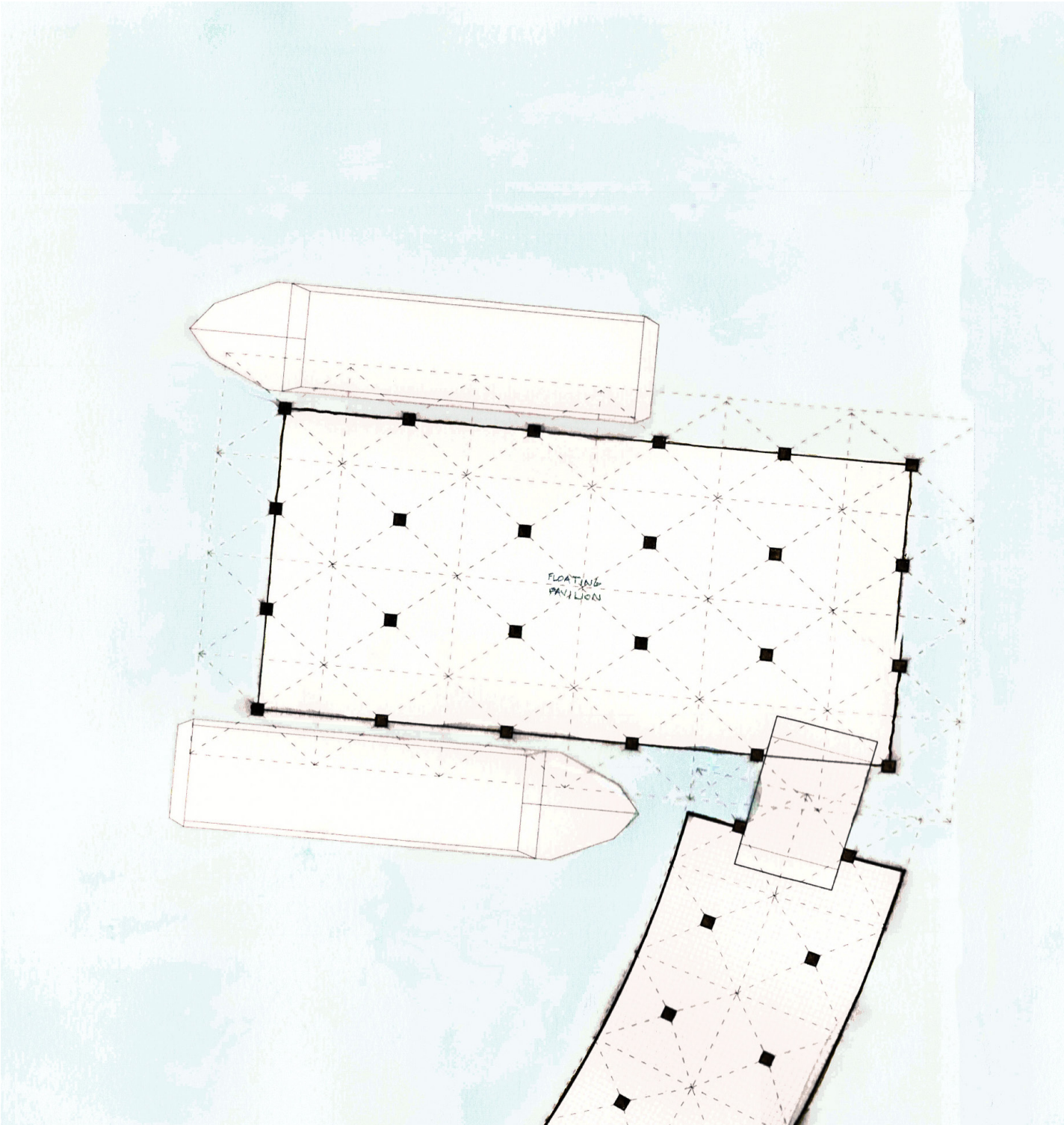
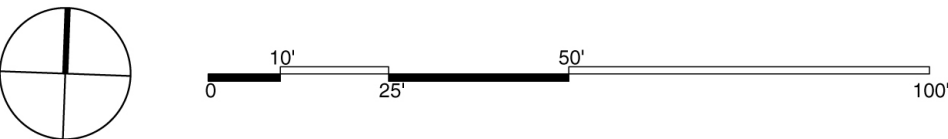


Figure 72 - Plan of the water pavilion

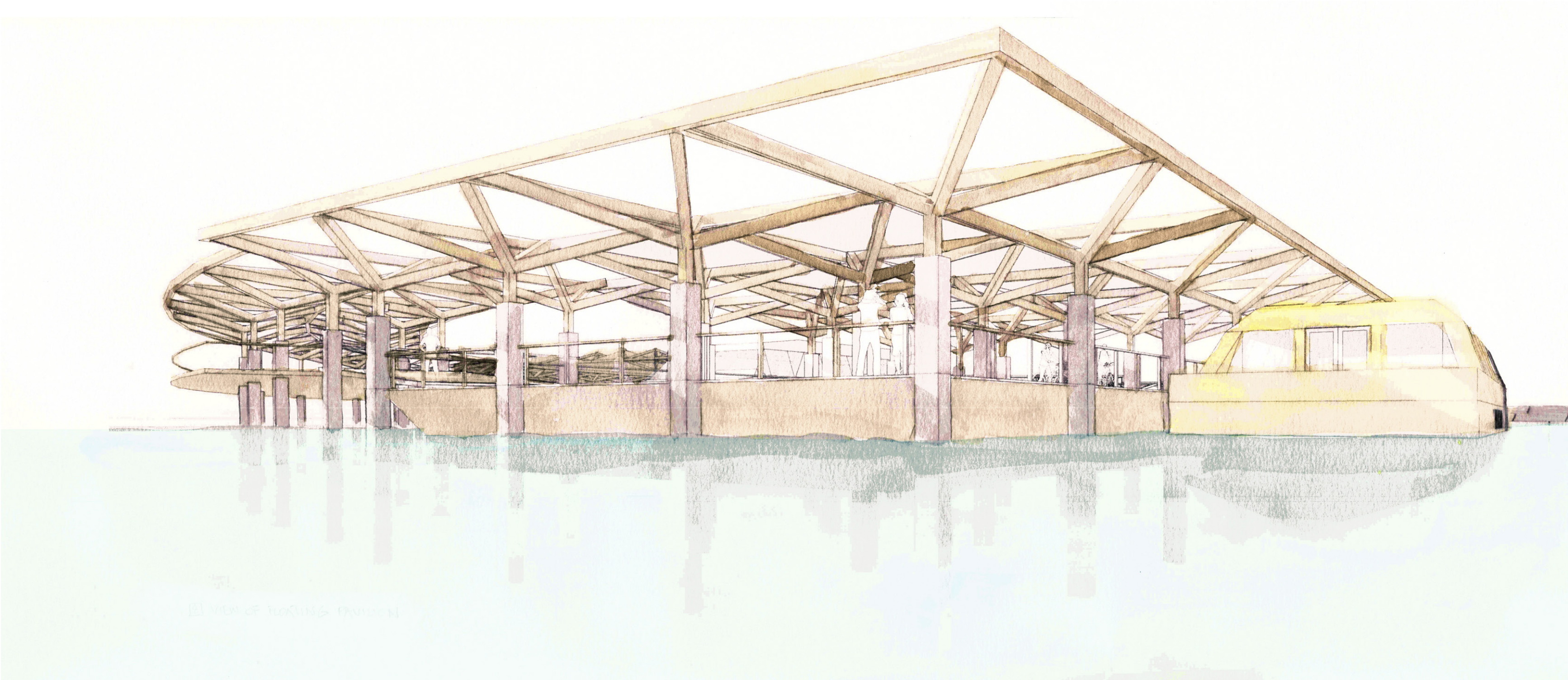


Figure 73 - View of the water pavilion when you approach it from the water taxi

FOREST PAVILION; A PLACE TO REST

Located in the forest, surrounded by trees, the pavilion stands. Situated away from the main activity, it tries to blend in. The pavilion itself is made of rough concrete. In addition, the roof is covered with a metal screen, allowing light to filter in mimicking the light falling through leaves. Fragrant plants surround the pavilion and height of it does not exceed the surrounding trees. When on the second floor, the eyes are drawn towards the “branches” of the structure and the line of vision only extends to canopy of the tree adjacent, internalizing the experience. Therefore, making this pavilion a place of resting.

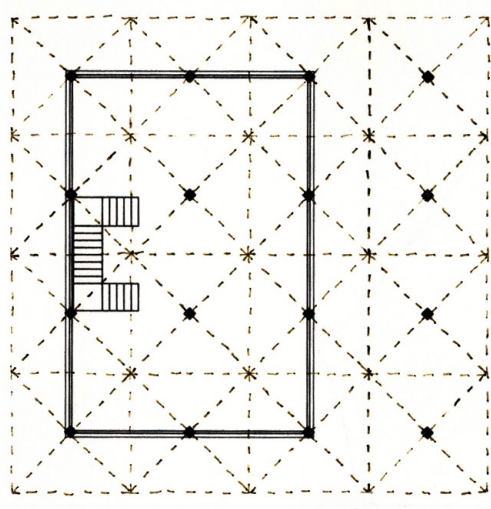


Figure 74 - Second floor plan of the Forest Pavilion

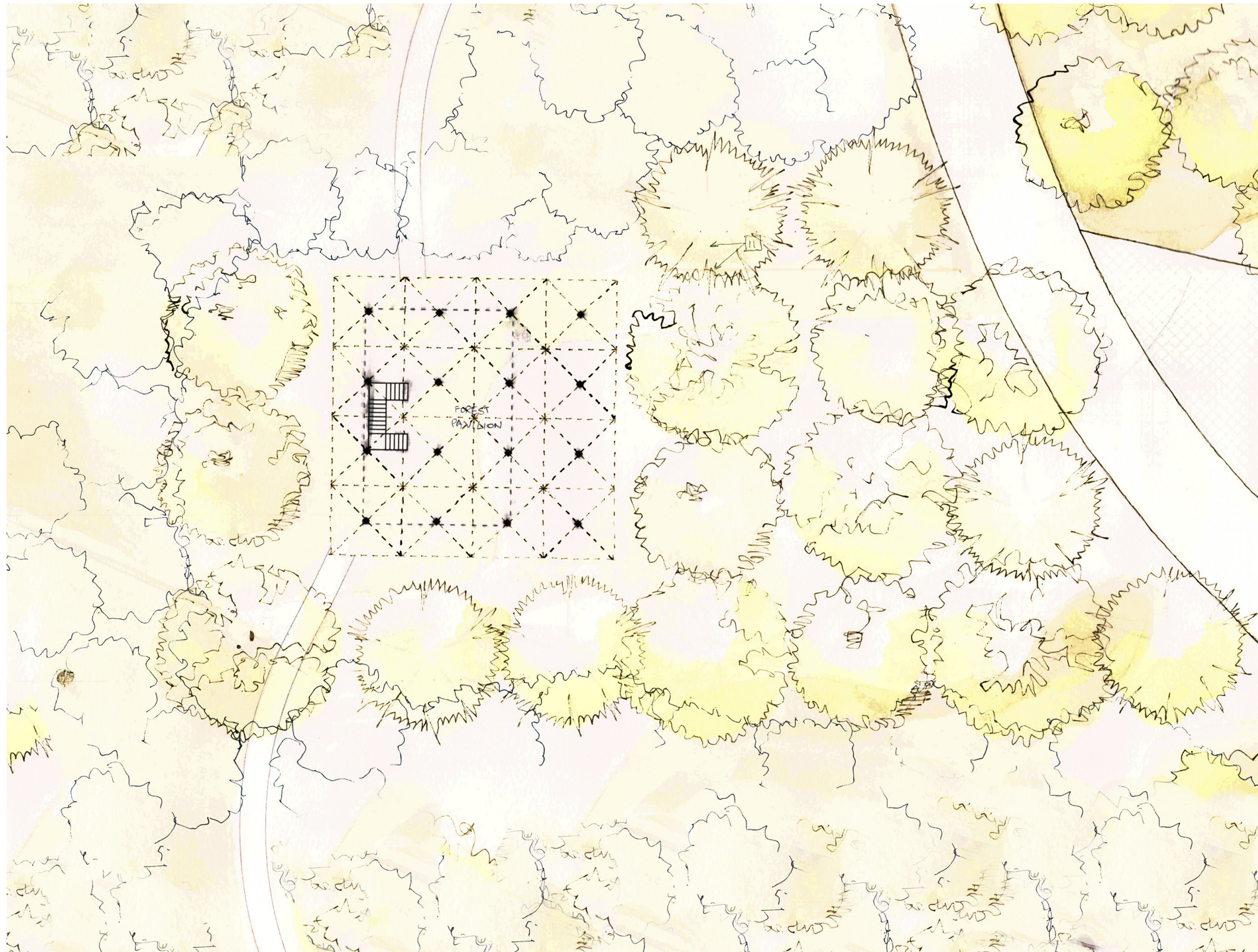


Figure 75 - Ground floor plan of the Forest Pavilion

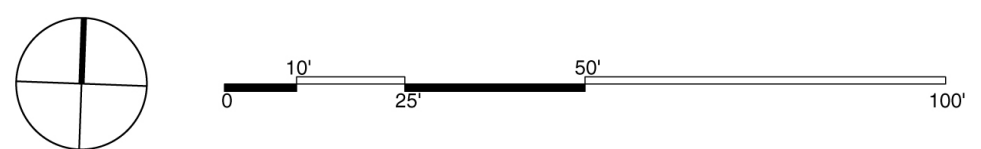


Figure 76 - View of the Forest Pavilion from the northeast

COLUMNS; DEFINING REST AND WAIT

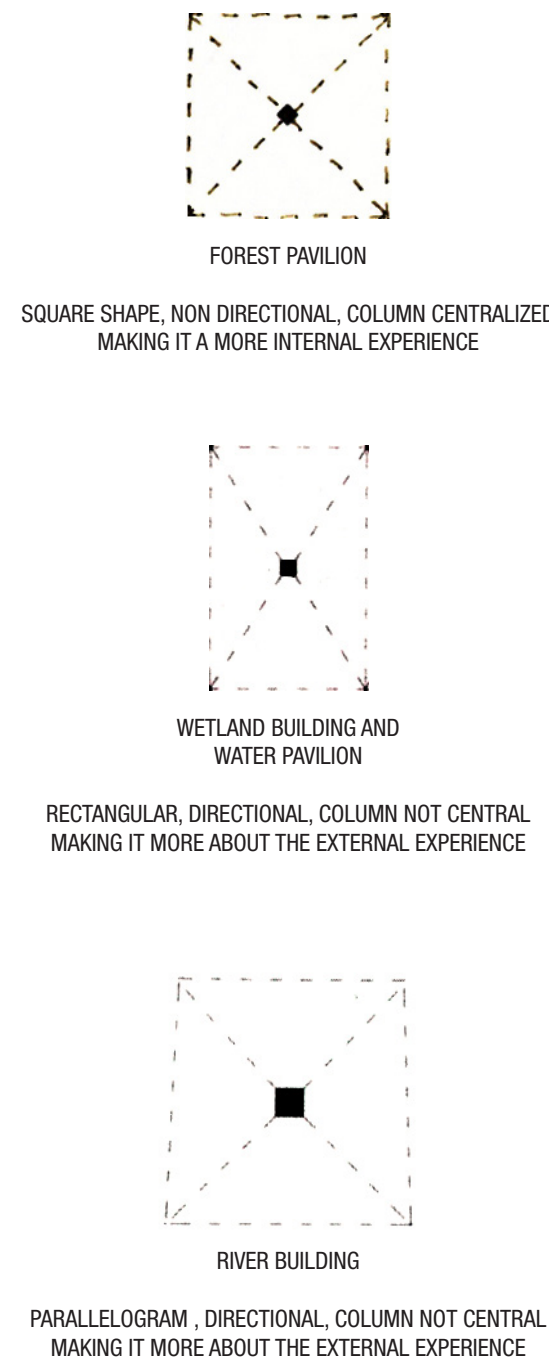


Figure 77 - Basic column shapes in plan

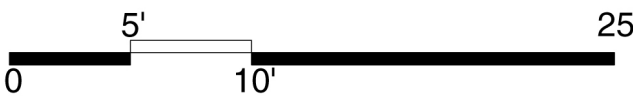


Figure 78 - Section study of the different types of tree columns

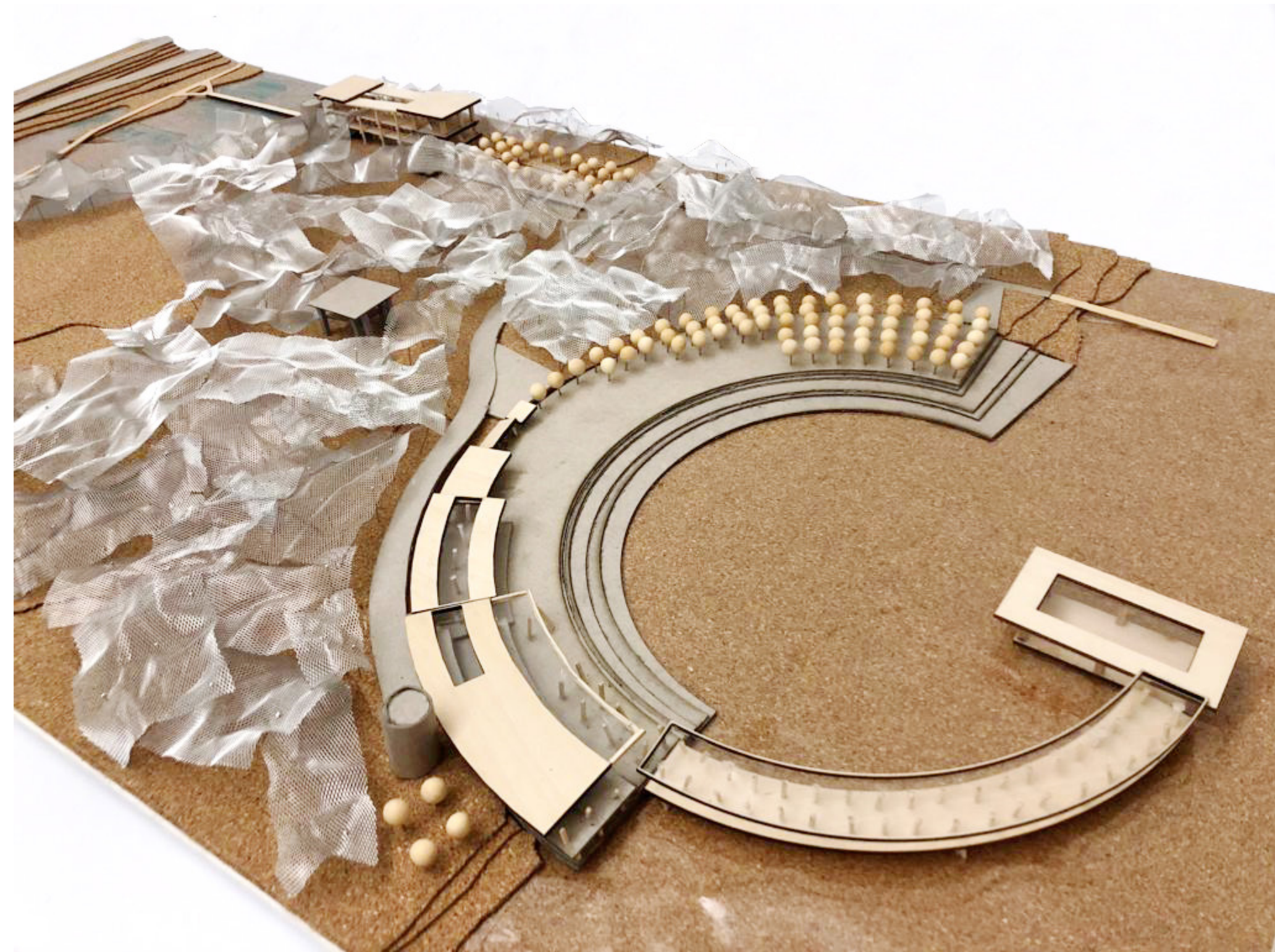


Image 3 - Final model; aerial view from the southeast

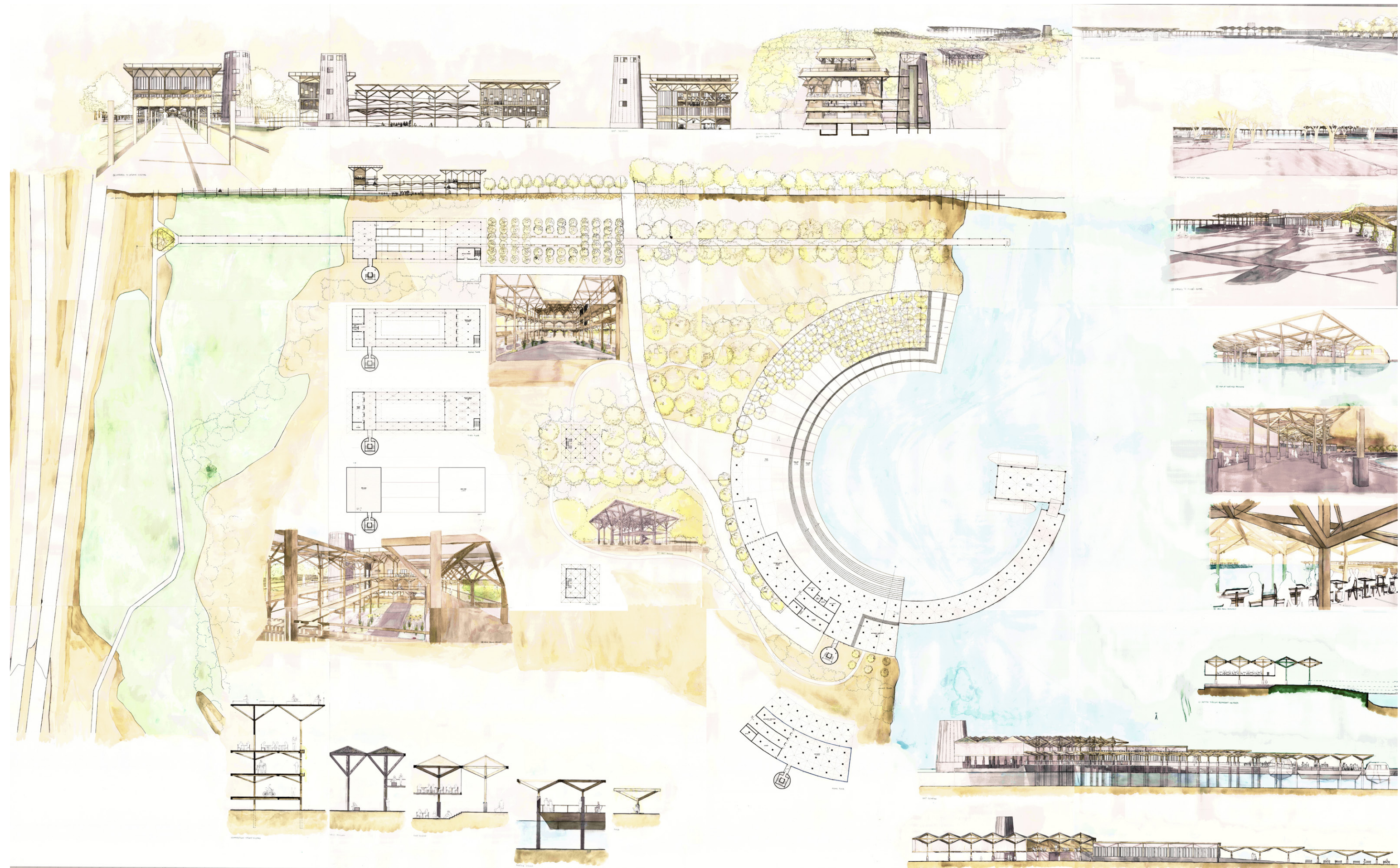


Figure 79 - Overall board of the final design

BIBLIOGRAPHY AND REFERENCES

Books and Publications:

Alexander, Christopher, Sara Ishikawa, Murray Silverstein, Max Jacobson, Ingrid Fiksdahl-King, and Angel Shlomo. *A Pattern Language: Towns, Buildings, Construction*. 1977. New York: Oxford University Press.

Fascari, Marco. *Eleven Exercises in the Art of Architectural Drawing: Slow Food for the Architects Imagination*, 2011. Routledge.

Hall, Peter. *The Cities of Tomorrow; an Intellectual History of Urban Planning and Design*, 1996. Malden, Oxford, West Sussex: Blackwell Publishing.

Noberg-Shulz, Christian. *Genius Loci: towards a phenomenology of architecture*, 1980. London, England: Academy Editions.

Weschler, Robert. *Seeing is Forgetting the Name of the Thing One Sees*, 1982. Berkeley, Los Angeles, London: University of California Press.

Resources for Research, Facts and Figures:

“Common Pond Plants for Your Northern Virginia Landscape.” Green Acres, [www.greenacres-va.com/resource-center/pond-plants-for-your-landscape.php](http://www.greenacres-va.com/resource-center/pond-plants-for-your-landscape.php).

“Tree Species.” Casey Trees, [caseytrees.org/tree-species/](http://caseytrees.org/tree-species/).

Helfrich, Louis A, et al. “Common Water Plants of Virginia.” Common Water Plants of Virginia, 1981. Department of Fisheries and Wildlife Sciences, [vtechworks.lib.vt.edu/bitstream/handle/10919/47751/VCE420\\_844.pdf](http://vtechworks.lib.vt.edu/bitstream/handle/10919/47751/VCE420_844.pdf).

Jay, William. “Daingerfield Island: Much More than Meets the Eye.” Jaybird’s Jottings, 26 Feb. 2016, [jay.typepad.com/william\\_jay/2016/02/daingerfield-island-much-more-than-meets-the-eye.html](http://jay.typepad.com/william_jay/2016/02/daingerfield-island-much-more-than-meets-the-eye.html).

Semedo, Carolyn. “Green and Simple: Great Green Escape at Daingerfield Island.” Stone Mountain-Lithonia, GA Patch, Patch, 3 Nov. 2011, [patch.com/virginia/oldtownalexandria/green-and-simple-great-green-escape-daingerfield-island](http://patch.com/virginia/oldtownalexandria/green-and-simple-great-green-escape-daingerfield-island).

Mapping data:

GIS data was obtained from the City of Alexandria website, <https://www.alexandriava.gov/GIS>.

Historical maps were obtained from Library of Congress, <https://www.loc.gov/>, and Nationwide Environmental Title Research, <https://www.netronline.com/>.

Maps of the city were obtained from the City of Alexandria website, <https://www.alexandriava.gov/gis/info/default.aspx?id=7608>.

Other mapping data was compiled using Google maps, <https://www.google.com/maps>.

IMAGE CREDITS

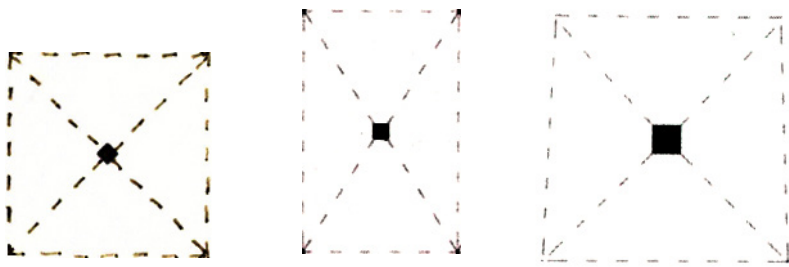
Image 1 (page vii): Photo taken by Loay Elmagri and edited by author

Image 2 (page 34): Photo taken by Sangyoon Park and edited by author

Image 3 (page 65): Photo taken by Sangyoon Park and edited by author

Image 4 (back cover): Photo taken by Loay Elmagri and edited by author

All other drawings, illustrations and photographs were produced by the author



# The Architecture of Emotion and the Spirit of the Site

A Bicycle and Water Taxi Rest Stop

by

Marium Rahman

