

IN BETWEEN

Meng Lu

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 and Urban Studies

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ABSTRACT

This thesis is about openness in the architecture.

After traveling and experiencing many different cities in Europe, I was intrigued with open spaces in cities, which offer a stage for different public interactions. I discovered that all these public spaces are formed by the surrounding architecture. This made me wonder about how architecture, as it becomes more independent today, could express and embody this openness within itself.

I picked up my site at the end of the King Street in Old Town, Alexandria, Virginia, which is currently unappealing to the public. I decided to create a urban plaza for the waterfront in an architectural way by generating a pavilion, which will provide various kinds of information and satisfy needs to the visitors and public.

The pavilion has several different services and lies in an area with flood issues. In response to these conditions, I made all the projects suspended between columns and assigned them different heights according to the context of the site and their own functions. The different levels of the projects generate vertical open spaces in order to let the surrounding environment flow seamlessly into the pavilion.

The entire project has been organized under a glass structured roof with a central staircase that ascends from King Street to the Potomac River, which has all the accesses to each level. There is a designed channel in the middle bay, placed within the girder to direct rain back into the river.

DEDICATION

*This book is dedicated to my parents,
who have been support me, love me unconditionally.*

*Also to Zuo,
without your love I couldn't have come through the past seven years.*

ACKNOWLEDGEMENTS

To my Committee. Jaan, my chair, your words always inspire me, and your wisdom and discernment guided me through the entire thesis. You share your insights not only for architecture but also for life. Susan, thank you for helping me to become stronger and overcome my weaknesses, by asking me the tough questions and not relenting until I found the answers. Paul, you are always able to find ways to encourage me. Your support helped me to become more confident. Henry, thank you for all your help and taking care of everything these past two years. Jonathan, you spurred me on to work harder. I feel very lucky to have been under your care in the workshop.

My WAAC friends, Noora and Jae, you two are such wonderful friends. Together, we do grocery shopping, plan trips, and went to the graduation ceremony! It's always a lot of happiness and joy with you girls. Alex, thanks for being a riding buddy with me. Rok, thank you for taking care of me in a lot of ways!

Fung Sham and your lovely family, knowing you and becoming a part of your family means a lot to me. You are like a mother to me. I love you so much!

My best friends back in China, Yun, PXT and Xch, we are always connected to each other. Time and distance won't separate us. Zhiyi in Belgium, it's been ten years, and no matter where I am you are always there for me. Wendy, Human, and Veason in America, my best wishes to you all!

A special thank you to my dearest parents, with all your encouragements, support and love, I was able to reach this point today. Love and miss you all the time! My dearest grandma, I am sorry that I was not able to be with you these past two years. My dearest cousin, you're more than a big brother to me!

Love you all!

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~MY DESIRE~



Piazza St Marco, Venice, Italy (P1)



Piazza della Signoria, Florence, Italy (P4)



Spanish Steps, Rome, Italy (P2)

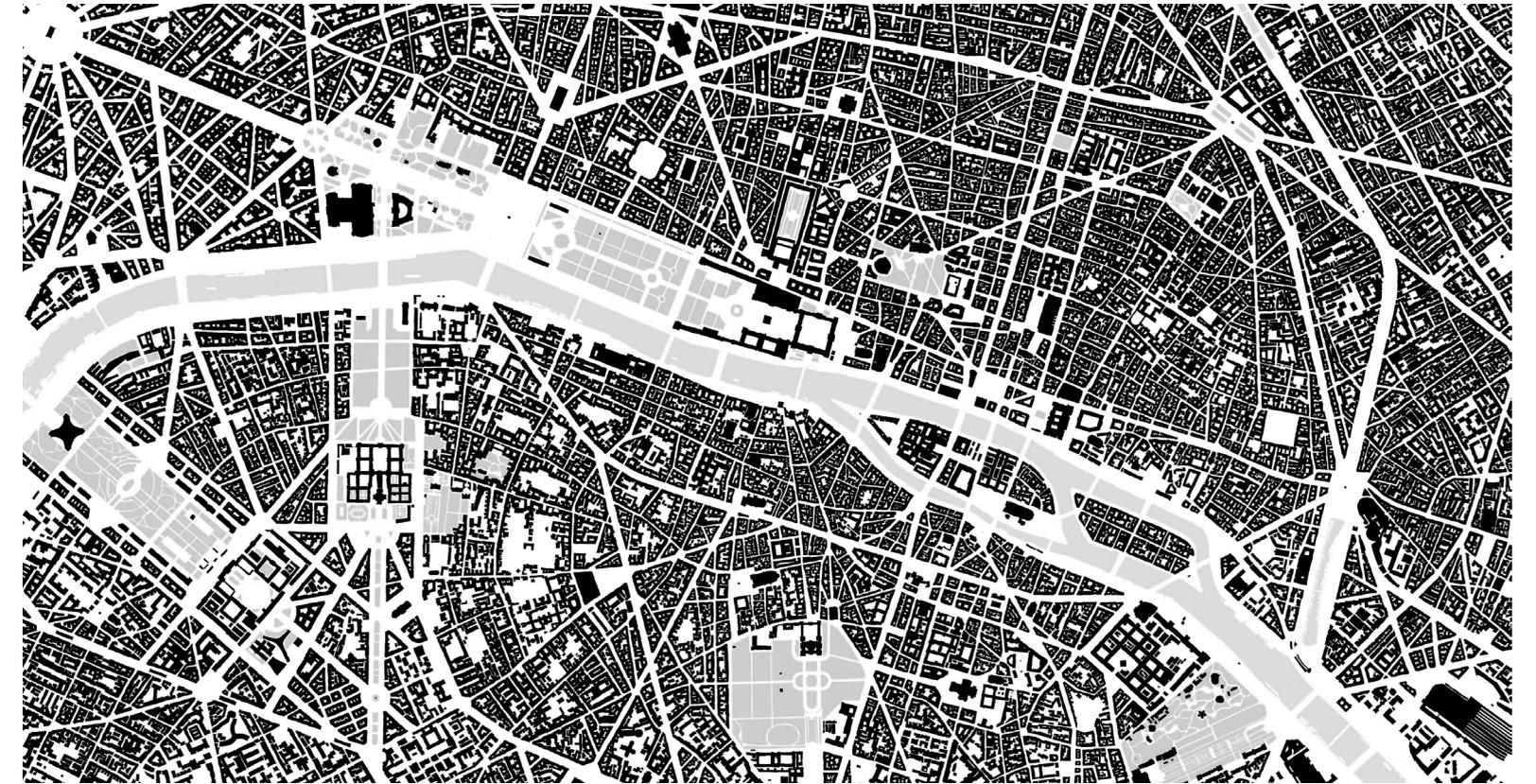


Trevi Fountain, Rome, Italy (P3)



Piazza Navona, Rome, Italy (P5)

During the spring of 2012, I was studying at the Bauhaus in Germany. During that time and also in the summer, I visited cities constantly in Germany, France, Italy, and Switzerland. I found myself not only intrigued by the culture and the architecture, but also by the open spaces in these city. The figure ground of each of these cities was imprinted in my mind. All of the openness were the highlights of the cities, like a central node in the area. They offer a public space for people to participate in or watch performances, to relax and to create memories. In the midst of these densely compacted blocks of the city, this openness was always a pleasant surprise and joy. It is quite unique and I found it all the more intriguing that all the openness were formed by the surrounding architecture. Although these open spaces are similar to the void spaces created by streets and alleys, these open spaces are designed for the needs and desires of the people, not just a negative space created by the absence of buildings.



Paris, France (P6)

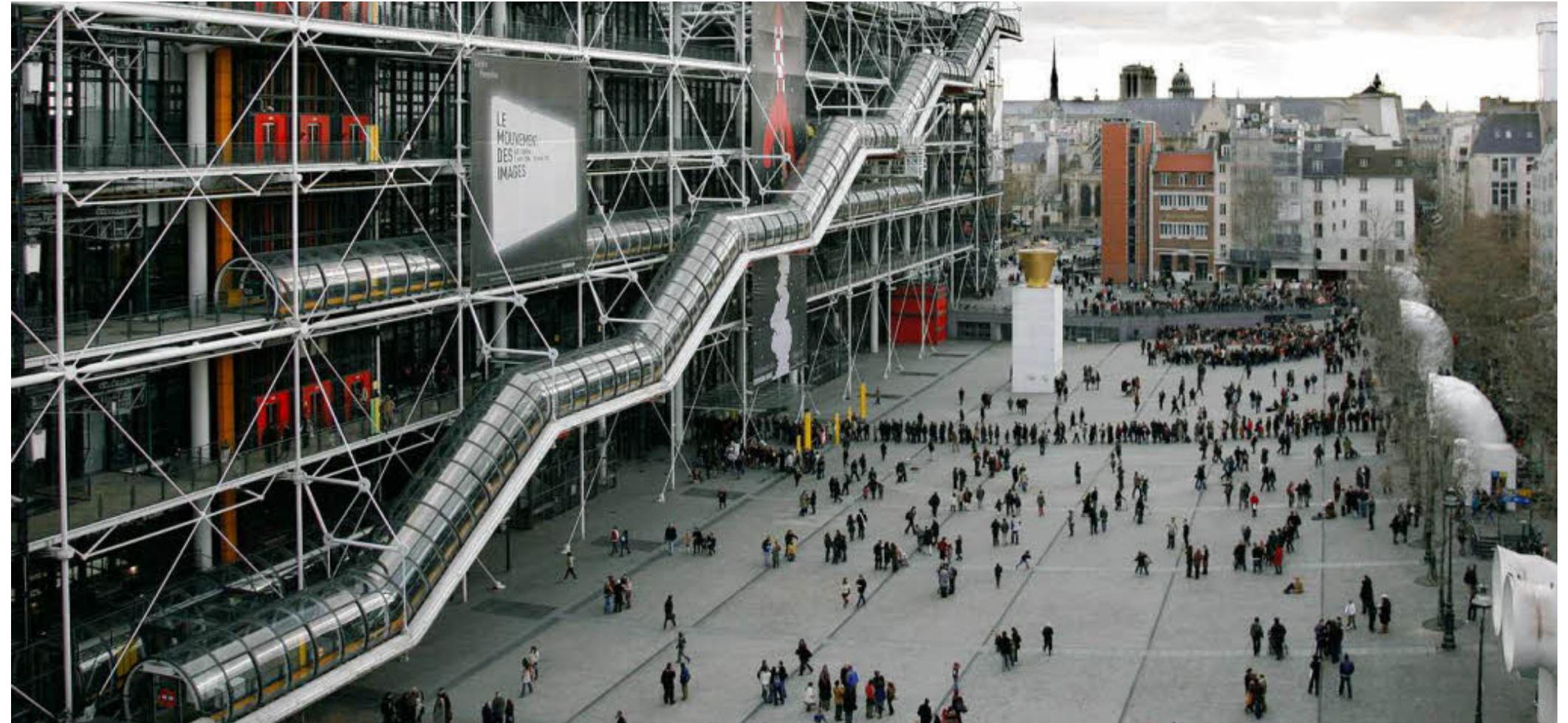


Time Square, New York City, USA (p7)



Piazza della Signoria, Florence, Italy (p8)

These three images illustrate big events that I have been to and experienced. In 2011 at Times Square, I celebrated New Years with my friends. In the summer of 2012 at Piazza della Signoria and Pompidou Center, I visited with my family. These places and the experience made there are memorable. These places attract people from all over the world to celebrate and have fun. It's a pleasant and joyful place. You can become a part of the city, a part of the people and a part of the moment when big celebrations occur. I refer to these public spaces as the stage of the city. Various activities are happening every minute of every day. And what's more beautiful about them is that they make the city alive, and full of surprises.



Centre Georges Pompidou, Paris, France (p9)

~SITE~



Master Plan of Old Town, Alexandria



City Hall of Old Town (P10)



Farmers Market at City Hall (P11)



King Street Aerial View from Mosonic Memorial (P12)

I've been studied and lived at Old Town for two years, I love this place and it seems to be my "home" in America. Walking on King Street is always nice. However, when you approaching the waterfront, the current situation is a little disappointed, not only for me, but also for the public. Because of this, I decide to pick up the parking lot, which located on the right side of the very end of King Street, to make an improvement for this lovely old town.



Flood at the end of King Street

The current site, located at the waterfront in Old Town Alexandria, becomes inaccessible during times of heavy rain. These occasional floods interrupt the possibility for inhabitation by visitors and residents alike. Therefore, mitigating the flood and allowing the site to be inhabited even during the flood was a priority for the design. Since the pavement is an integral part of an urban plaza, it had to have a strategy so that it could be used even when the area becomes flooded. During the flood, the trolley cannot park there. Most visitors reach the waterfront by either from the Torpedo Factory or through the little alley located between the Torpedo Factory and the yacht club. Both of these paths are hard to access when it floods.

Flood at My Site





The King Street Park



The Entrance Alley of the Waterfront



Fake Pier in front of the Torpedo Factory

These images show the flavor of the current waterfront of Old Town. There is a small park at the end of the King Street. In front of the Torpedo Factory is a pier parked with yachts. On the right side of the site is Waterfront Park, which is a good place for picnicking with friends, reading alone, training a dog or just enjoying the heat of the sun. The decks at the end of the piers are always good spots for tourists. Also, finding the location for the water taxi is hard for visitors.

The night time, albeit a bit quieter than the daytime, hosts quite a number of events, either happening on the waterfront or visible from the waterfront. Examples include boat parades, dining cruises with lovely dogs and firework celebrations.

The waterfront, versus other area of Old Town, hosts the greatest number of and most diverse street performers and artists. You won't miss the chance to have fun for just being here.



The Deck of the Pier



The Pier



The Waterfront Park



Uncontinuity of the Waterfront



Waterfront Activities



People's Favorite Spot



Waterfront Event at Night (P13)

~CONCEPT~

- My Desire

I had an incredible and wonderful summer night at Piazza della Signoria, Florence, Italy.

open space in public
It's not only about architecture +

My desire comes from the site, the waterfront that I've been every week.

After I traveled in Europe for one month in the summer, 2013, I was amazed by these cities, especially in Venice and Florence in Italy. The open space in the city was pleasant and inspiring. The texture of the cities ...



permeability 渗透性

Its unlike most buildings. everything's happening inside, but anything's happening from outside to indoors

- The Pavilion

Vanacular?



large, structural

My building is a Pavilion, five functional rooms suspend between columns under a big roof. It is designed mainly for visitors and tourists, including information center, water taxi tickets office, independent dining restaurant, exhibition room for old town history, a small gallery, observation deck and retail shops.

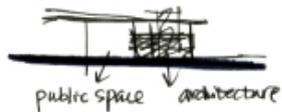
Open Roof of Each Room → More flexible → hold private event. (from gallery) → Education Tour... (the gallery space)

exterior roof gardens

Ingredients → - the climate (flood) ? how to respond to all the things
- the vegetation (the park)
- the water
- the sun - the people

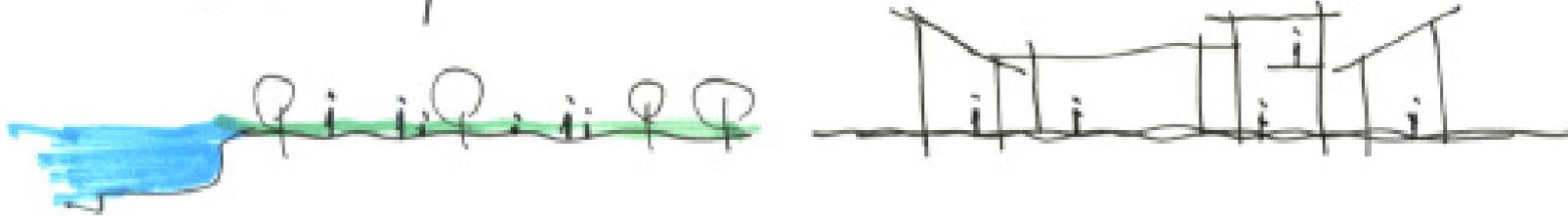
- The Challenges

I wish my building here is more like transforming from city to water.
from density to openness.
from architecture to nature.



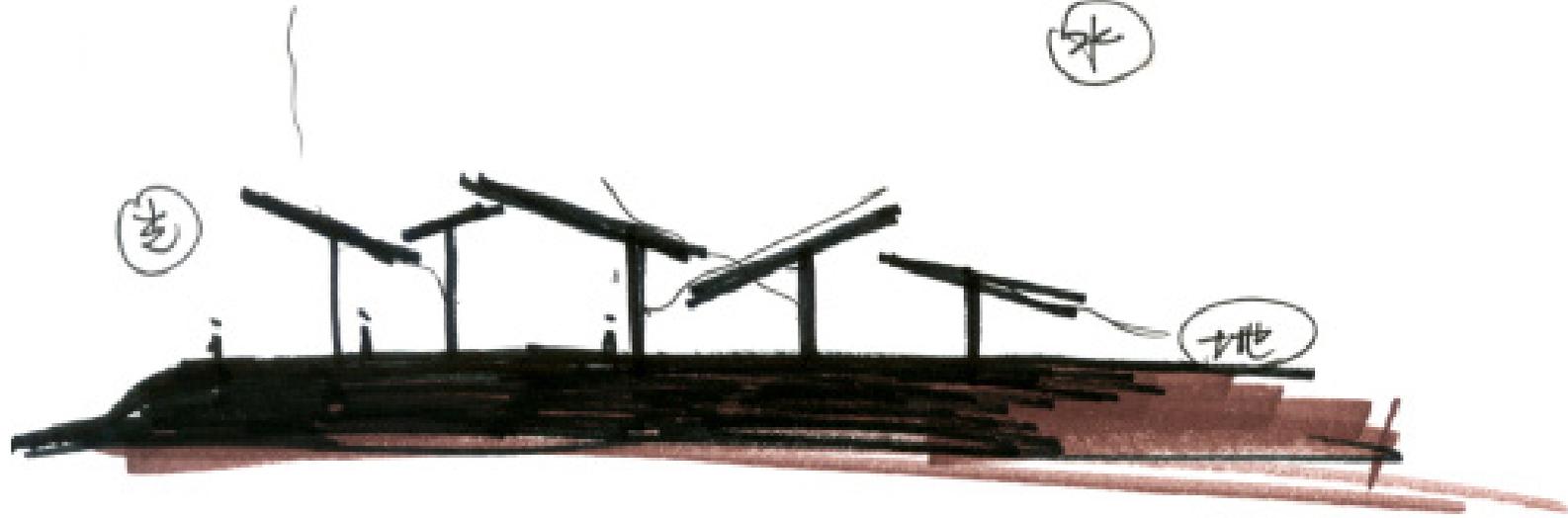
natural space

architectural space



In Between

Space Between Nature and Architecture.



I believe architecture is dealing with the nature.

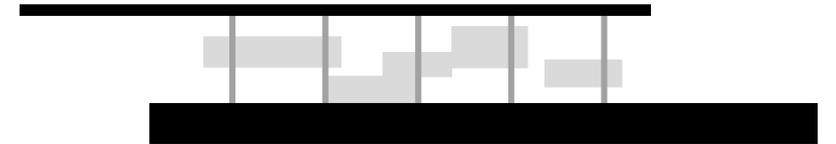
Phase 1 Project under Pavilion Roof



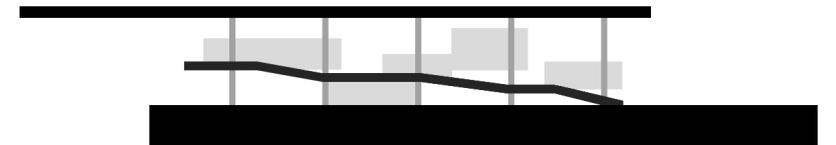
Phase 2 Lift Project above the Ground Level



Phase 3 Separate the Project to create Vertical Openness



Phase 4 Create a Steping Stair connects all the spaces, from the Ground to the Top

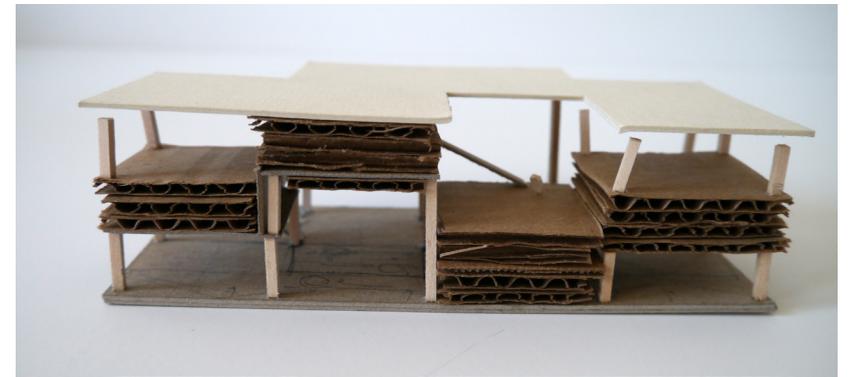




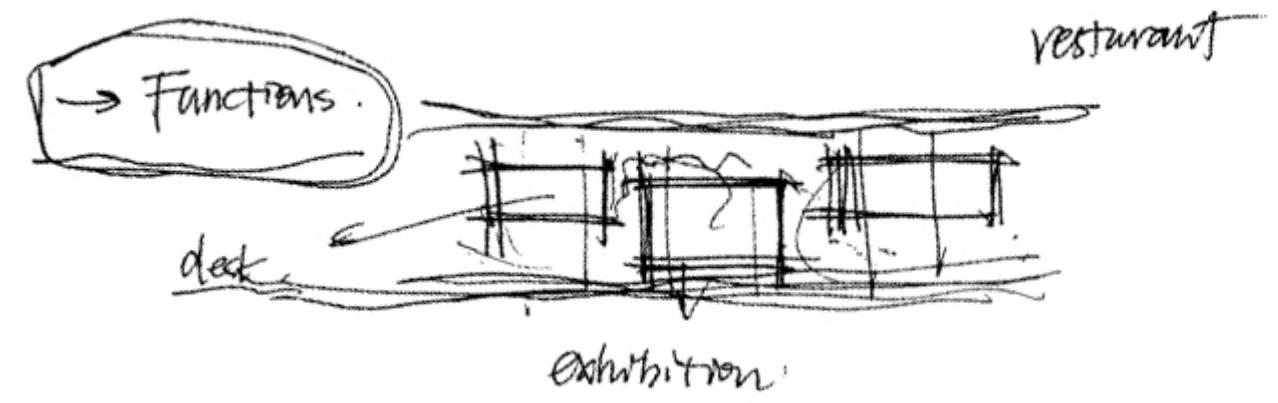
Concept Model



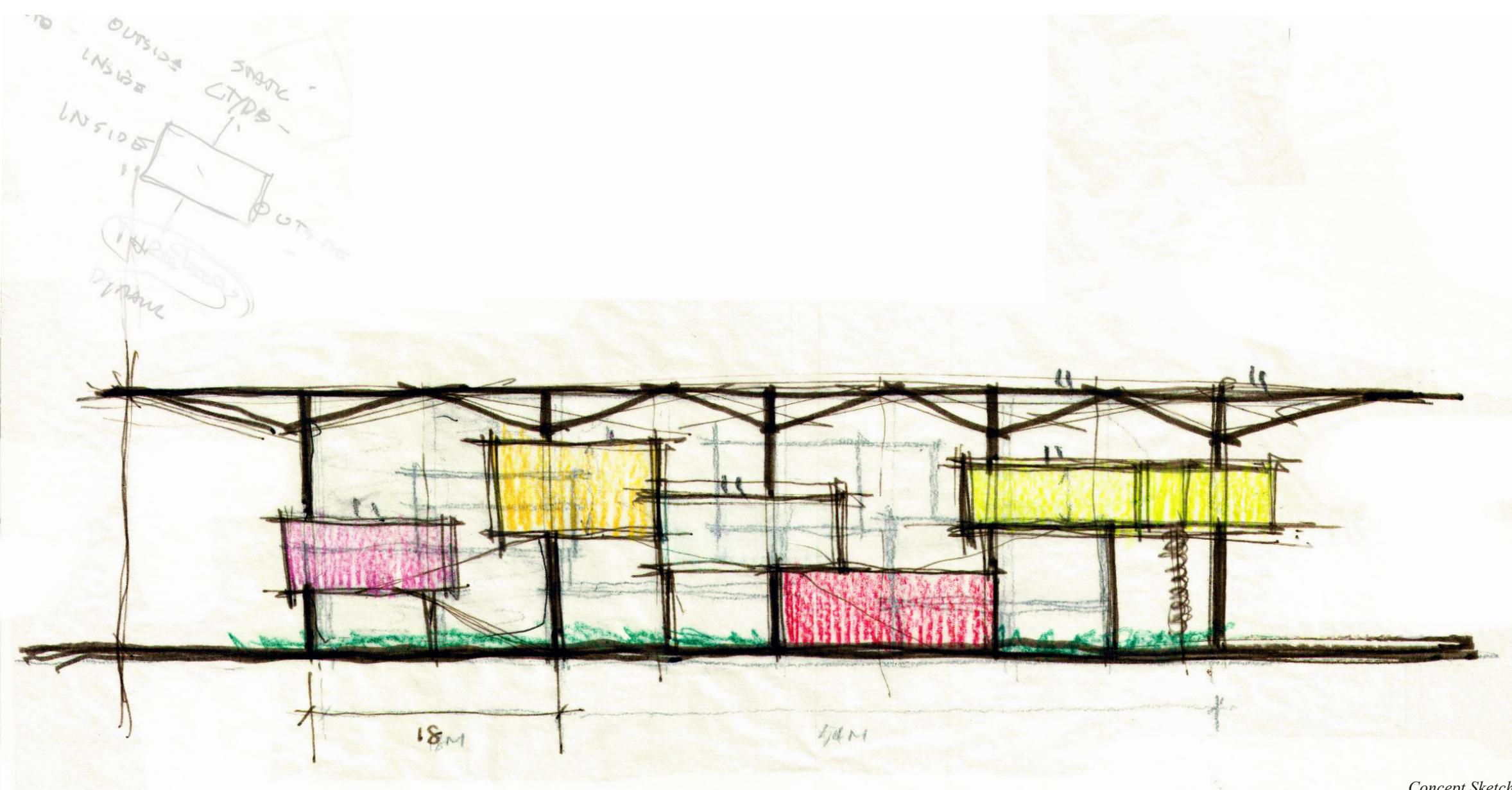
Concept Model Front



Concept Model Back



Concept Sketch

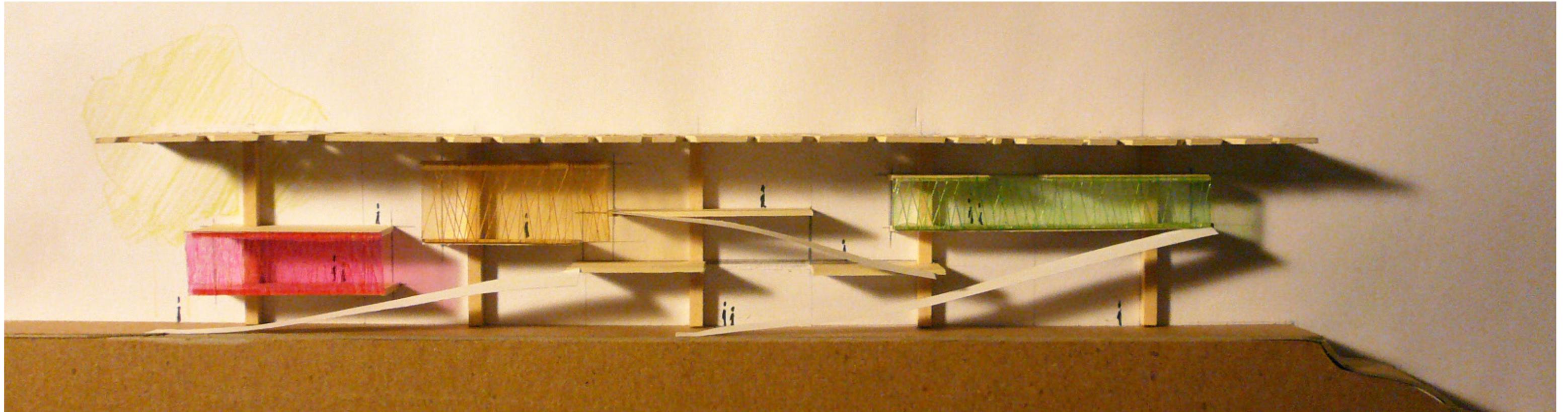


This concept sketch is my favorite as it embodies the main ideas I had in mind. One of my advisors, Jonathan, directed me towards working out how this sketch can become concrete and real, instead of coming up with more different concepts.

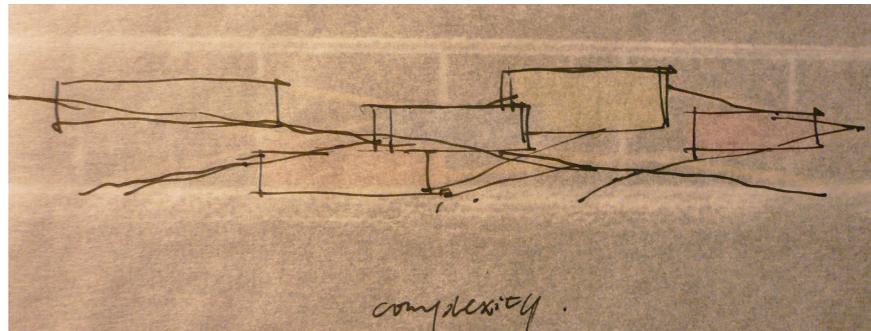
This particular drawing helped to start designing the pavilion and effectively communicated the thoughts in my mind. The enclosed functional rooms are not merely left over space but intentionally designed first in order to form public platforms. These also allowed for the possibility of different activities.

By designing a large roof, it is hard to define what is inside and outside. The boundaries between architecture and nature become blurry. The building, people and nature merge and intermingle here. This is the main concept for my project.

Concept Sketch



Concept Model

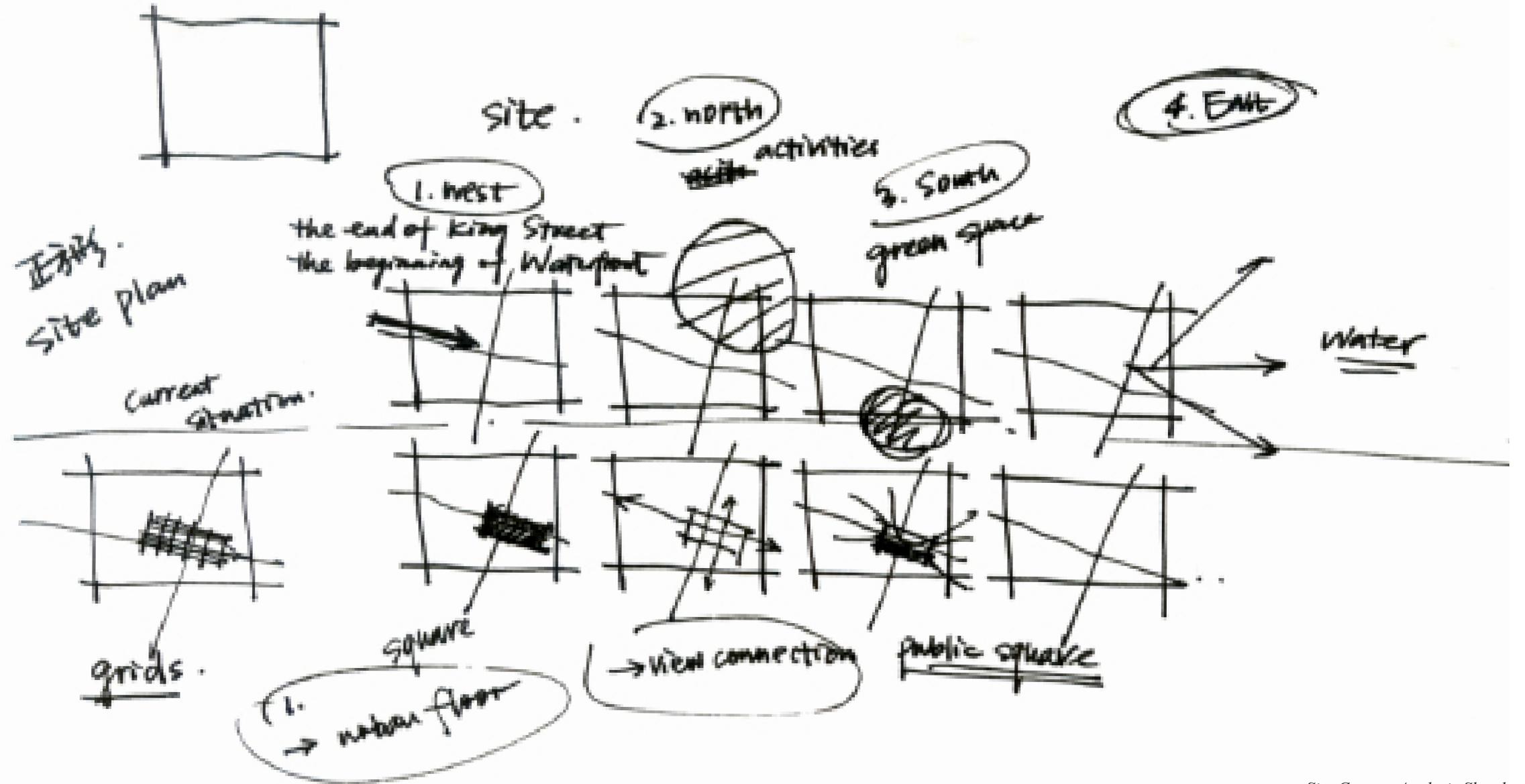
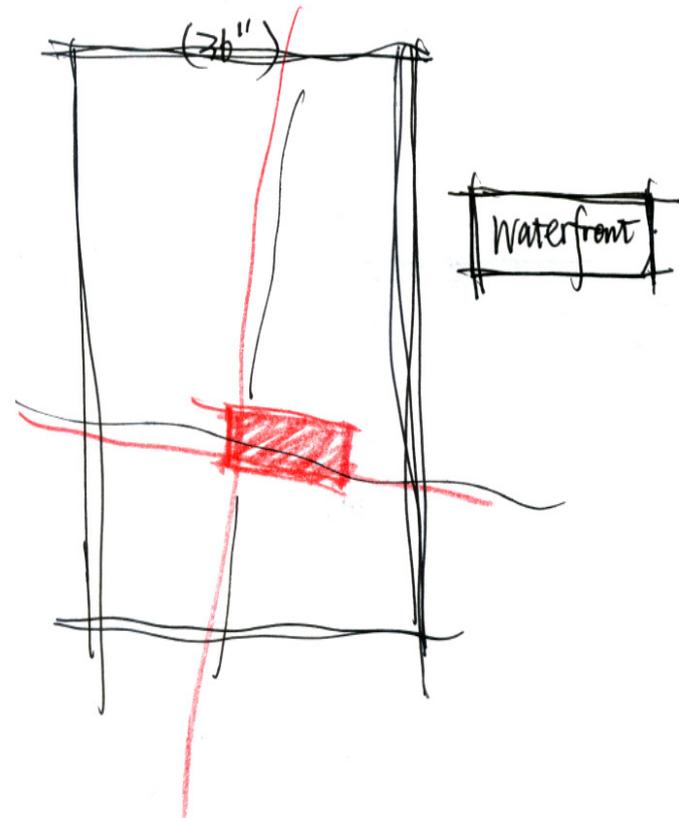


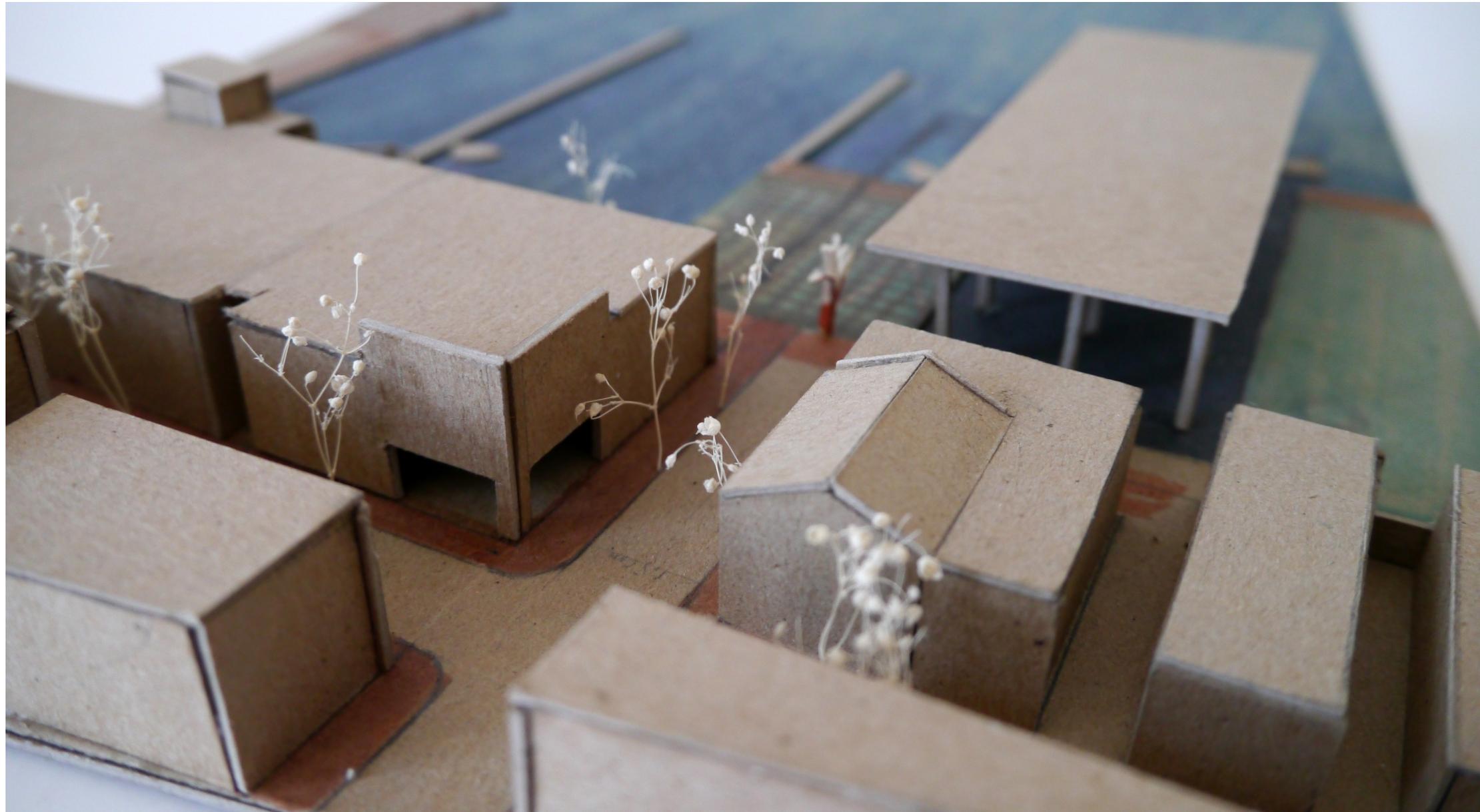
Concept Sketch

When I started to think about the circulation in the building, Susan asked me how each of these rooms would be connected to each other. At that point, I had not designated a program each room. Instead of being vague, each room gained its own function based on where it was located in site. The first room, closest to the city, is a relatively independent restaurant. The room farthest away from the city, that spans more than one set, is an observation deck that allows visitors to have a view of the entire waterfront. The middle room, where all the rooms are connected to, contains several stories. The ground floor includes a visitor's center containing information for Old Town, the second floor contains an exhibition room for the history of Old Town, and the top floor will be a gallery that offers fine artworks and hosts a small space to watch digital media. All the roofs of the rooms are easily accessible. Visitors can easily go anywhere under the big pavilion roof to enjoy their time.

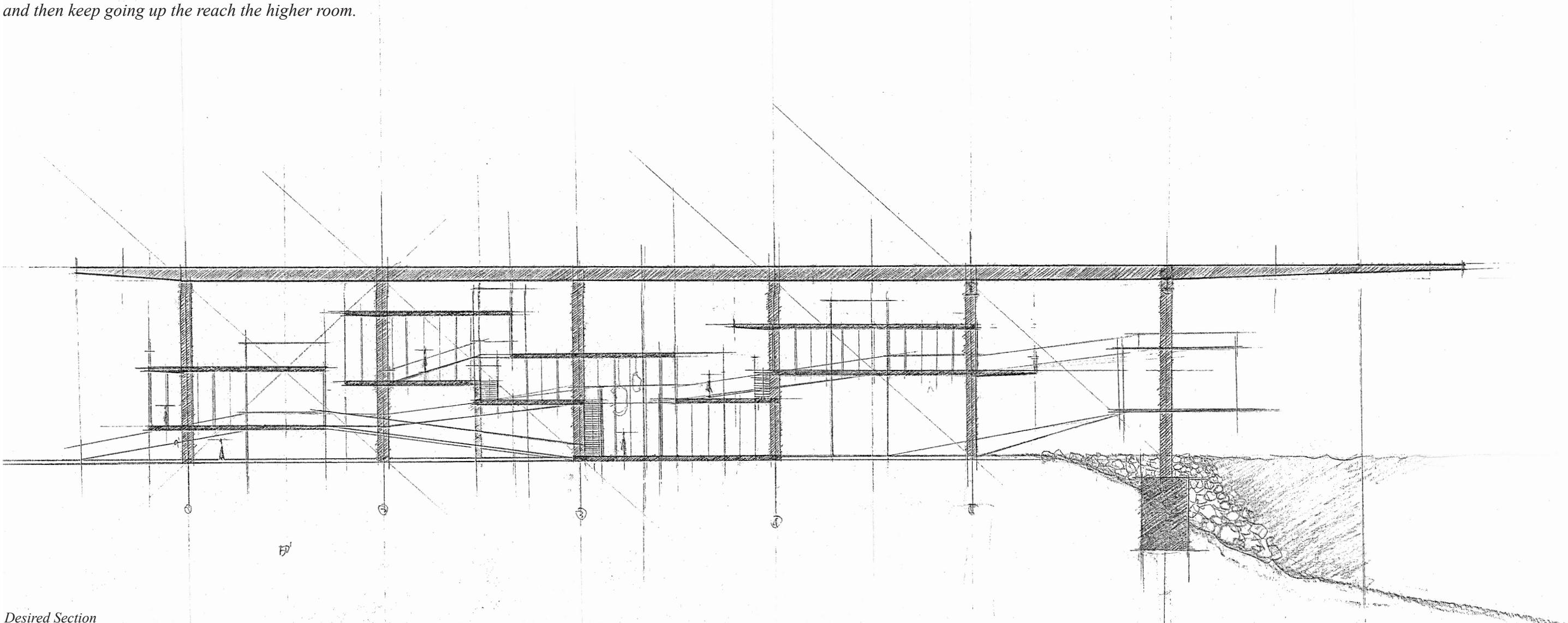
After all the rooms were set up, I explored how to make the connections. Instead of making it simple, I brought a complexity and surprise to the building. The ramps are clues to how you can travel between the spaces. You always have choices and are able to make your own adventure under the pavilion.

Since the pavilion is a free standing building at the waterfront, all the four sides are facing different situations. The north side is the main waterfront and the urban plaza for people, the south side is a big green park, the east side is the Potomac River, and the west side is the whole city blocks. How the pavilion will deal with the different contexts and how the pavilion's existence won't break the connections of the surroundings are great challenges for me.

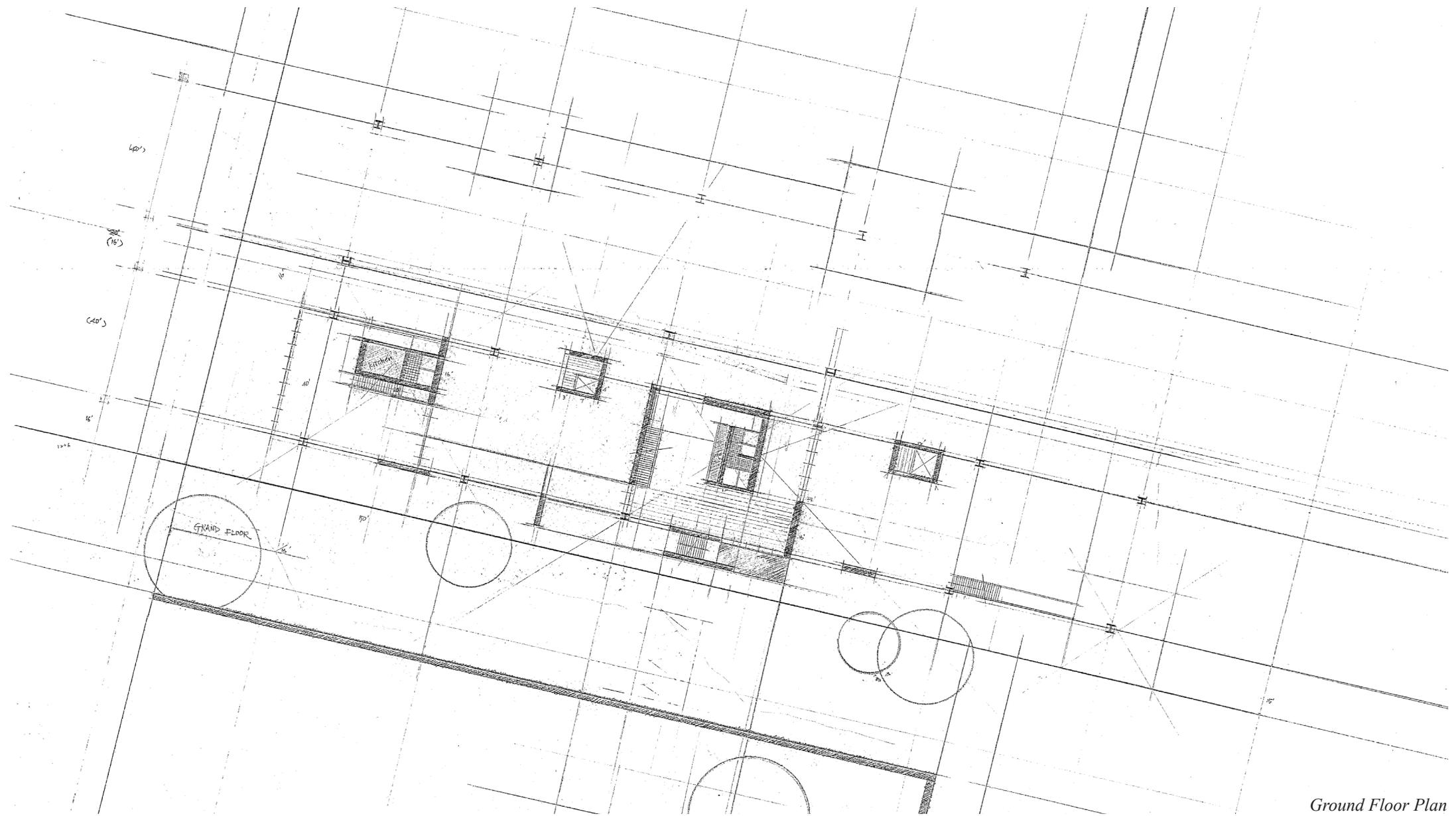




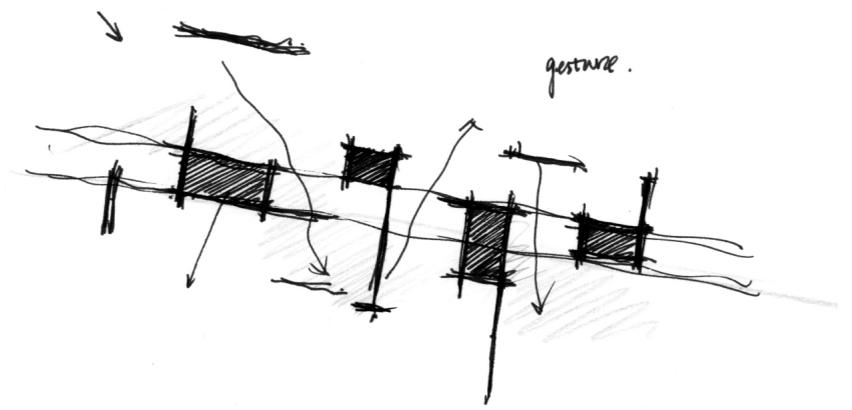
I drew the cantilever as a threshold to reach the water. And later I tried to add one more room above the water to serve as the last platform that public could easily access from the ground level to reach the water and then keep going up the reach the higher room.



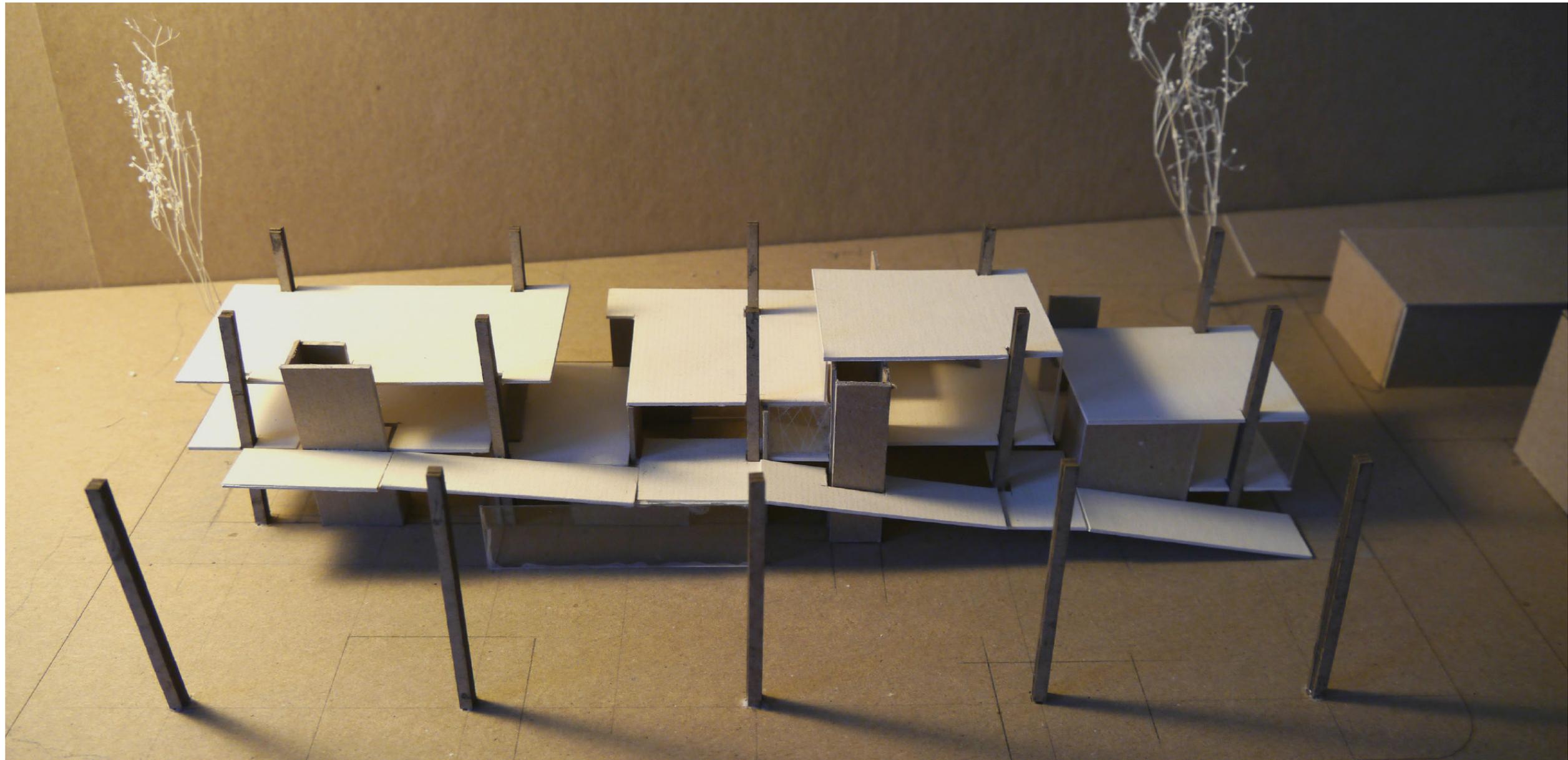
Desired Section

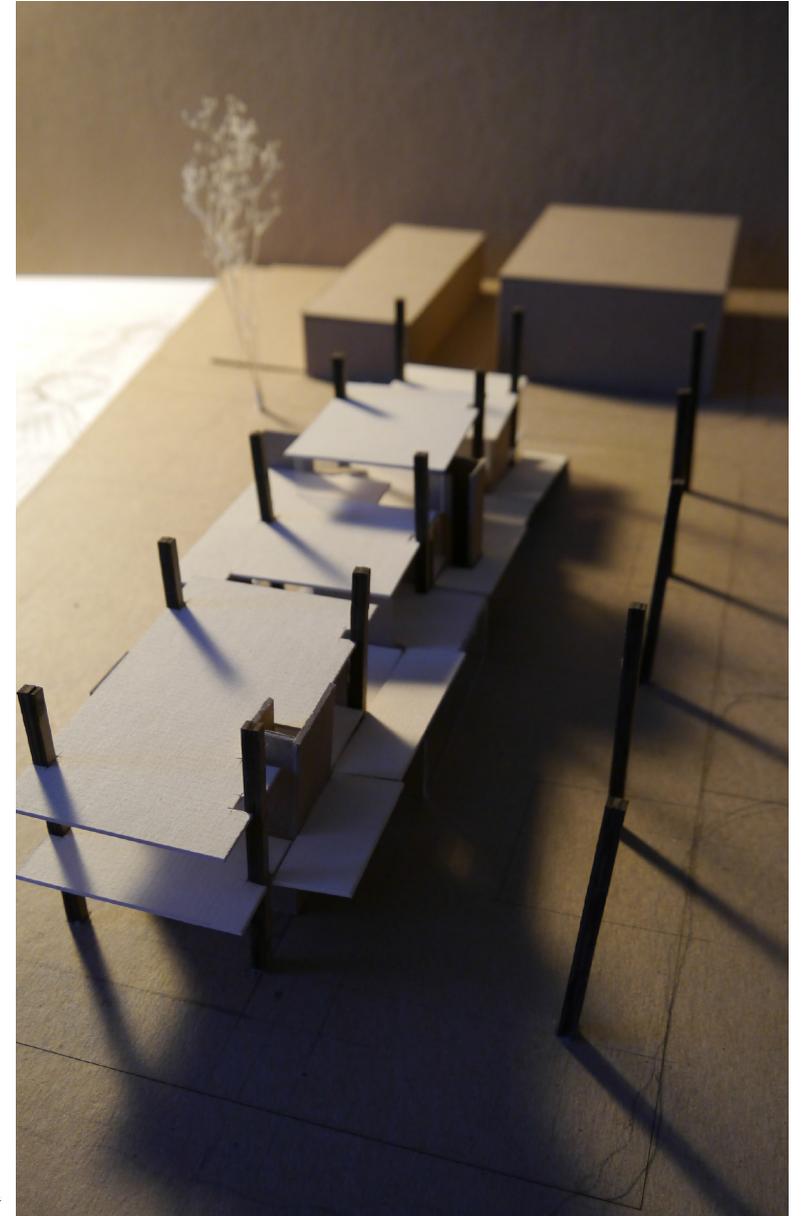


Ground Floor Plan



Ground Floor Sketch





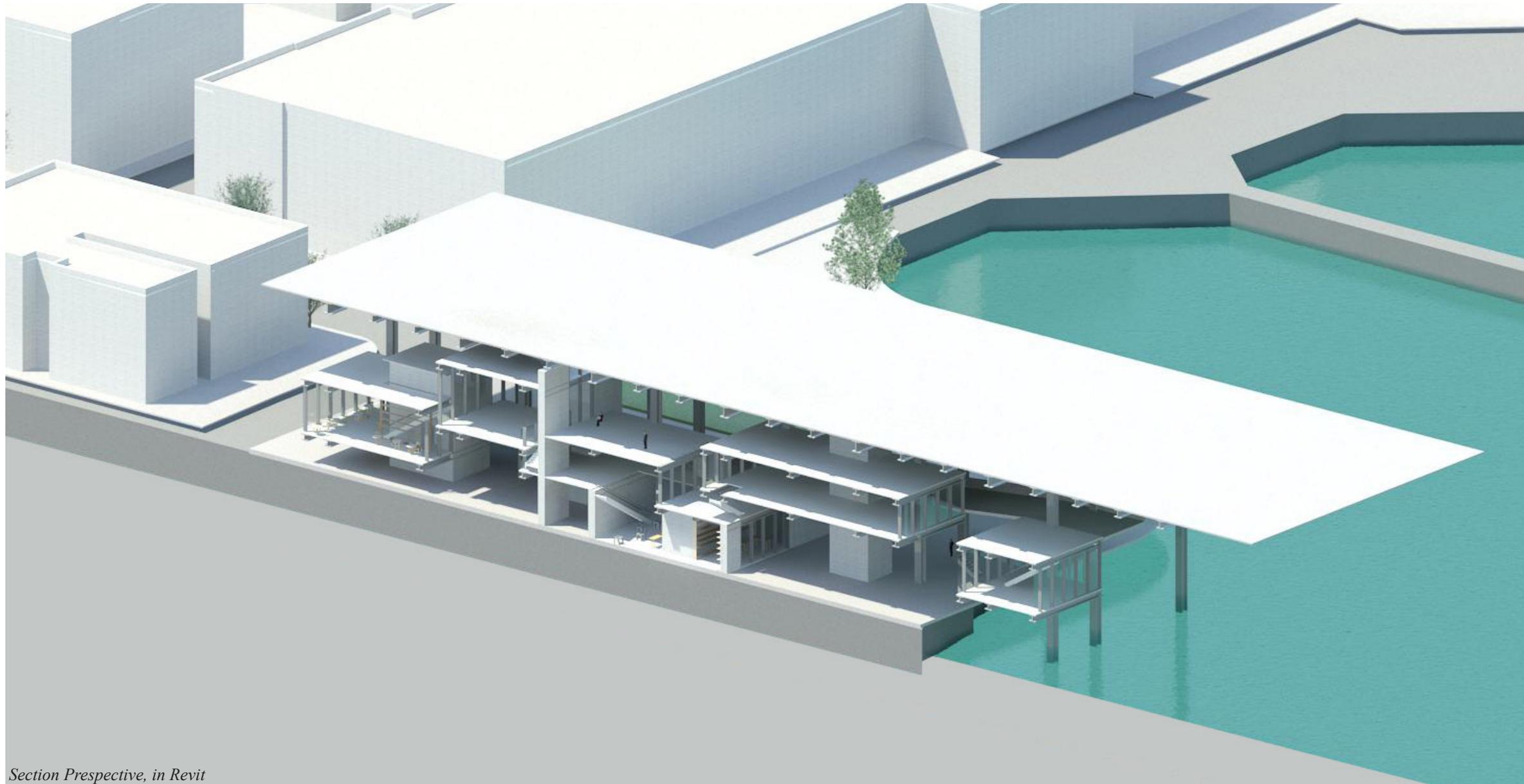
Model for the Concept

~DEVELOPMENT~



Pavilion form Waterfront View, in Revit

I started to build the pavilion in Revit, one point is to analyze the relationships with the surrounding buildings, like Torpedo Factory. Another point is to make sure the pavilion is not a solid block, but a more transparent and fluent created place. I treated the site as a very important node, not only opens a clear waterfront view from the compact King Street, but also make a connection between the waterfront and the park on the southside. Also, one clear steps goes higher and bring people a great view from the city level to a water panorama level. At this moment, the scale of the span and column are all fit to the site.



Section Perspective, in Revit

I built the I beam in Revit as a structure study. Since the span is 50 feet between columns, some of the rooms need structural support in the middle. Then I introduced concrete core as another vertical element for the pavilion. The I beams only spaned north-south way.

For the Roof, there are four girder spaned west-east as the main structure. All the I beams come secondary and spaned north-south.



Plaza under the Pavilion, in Revit

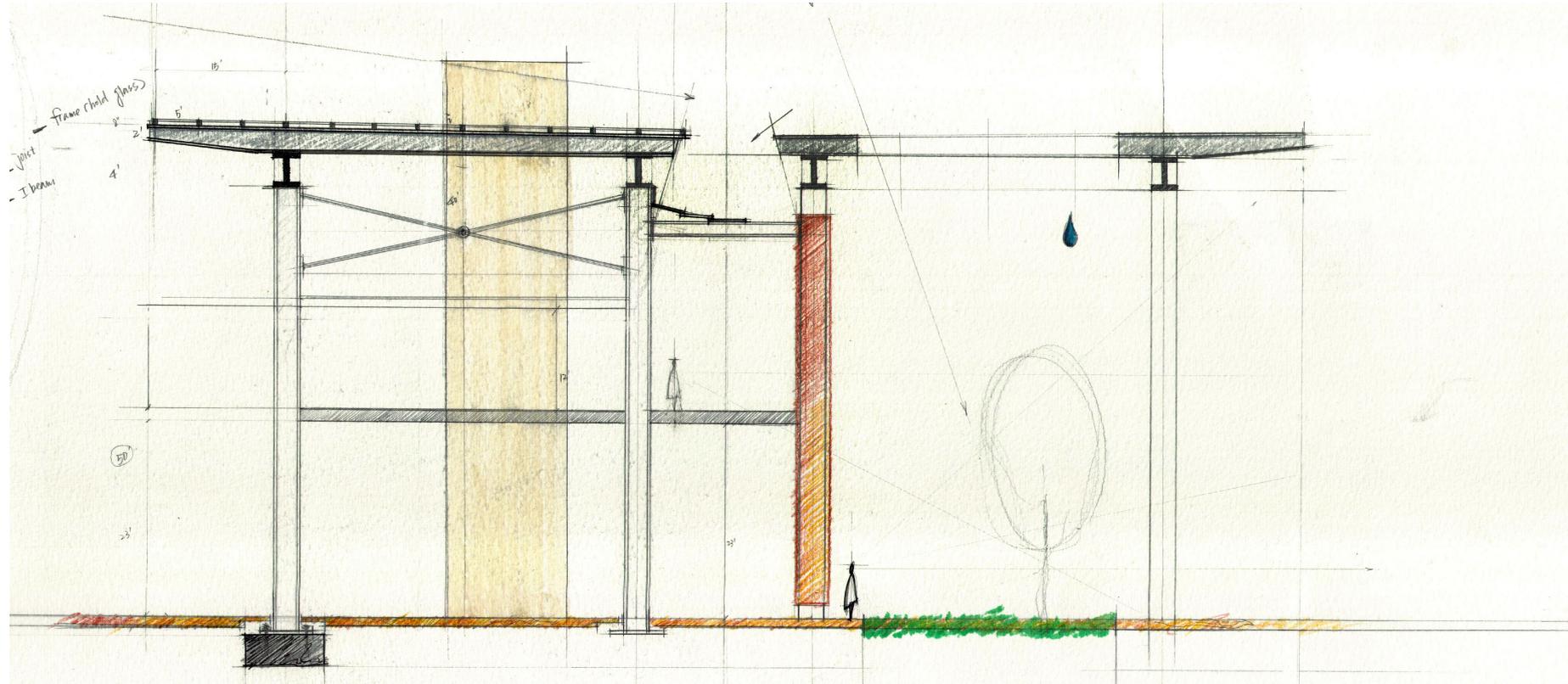


Stairs in Pavilion, in Revit

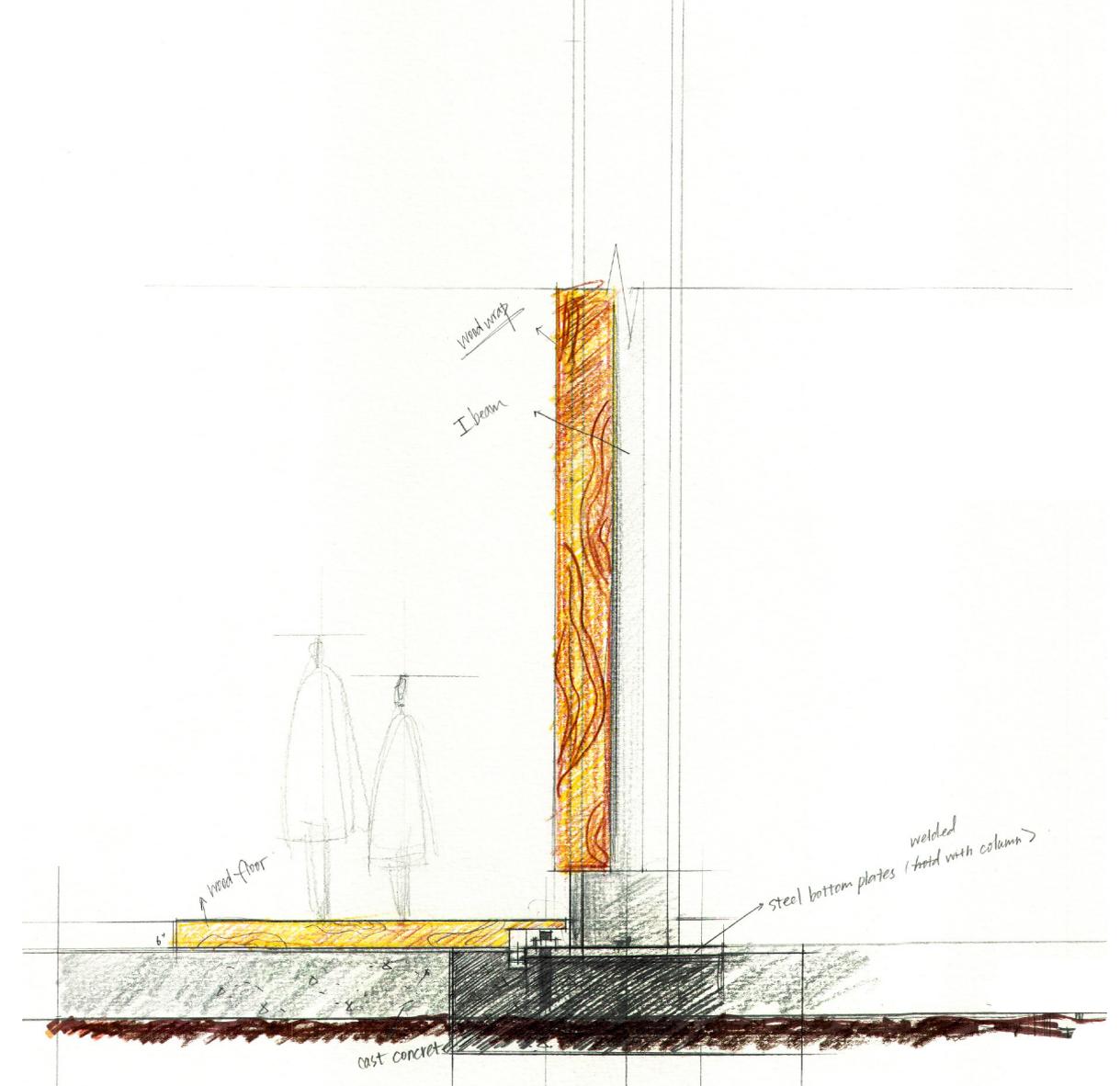
As the moment that I kept drawing green to present grass in my drawings, Jaan helped me realized that it's very hard for any plants to grow under the shadow, without sunlight and rain. Then I started to thinking about have openings in the big roof, if I insist to have grass floor under the pavilion. I did some studies about how the make an opening, where to make an opening and why to make an opening. The reasons I was trying to have openings all seem not quite clear and convincible.v

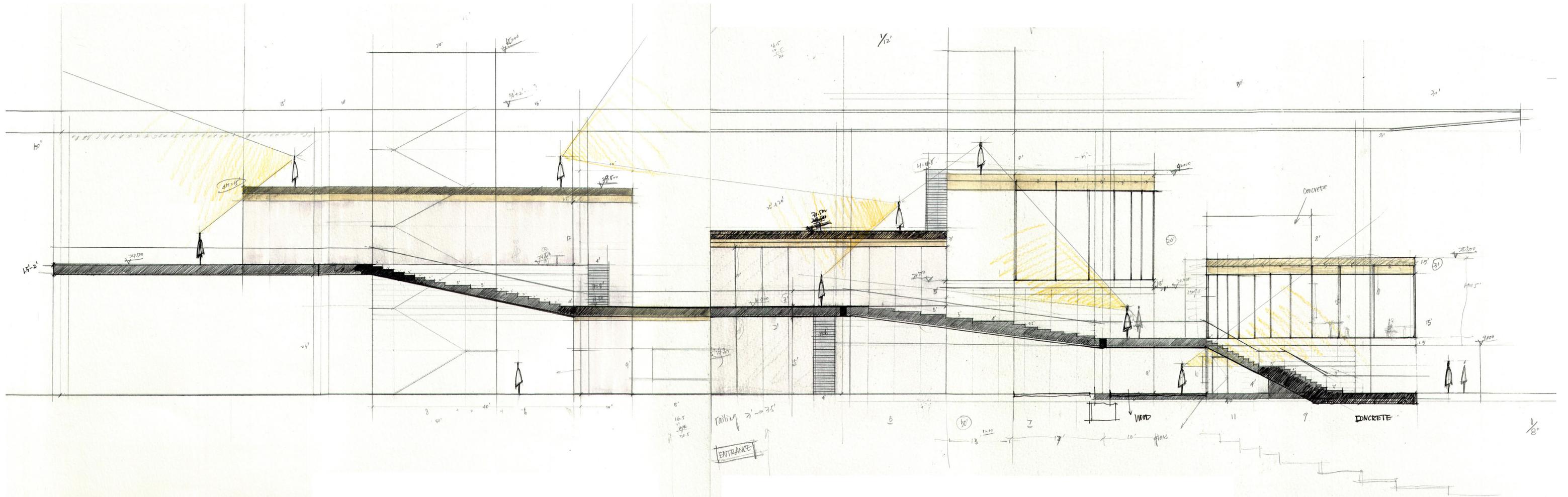
Later, I was worried about the huge steel columns could be too cold for such a public place, then I tried to have a warm wood surface attached to it. When I thought about the basement, how it receives the columns, I decided to have the concrete joint covered by wood panel on the ground. However, since the site easily gets the flood, wood panel for the ground surface seems not a good idea.

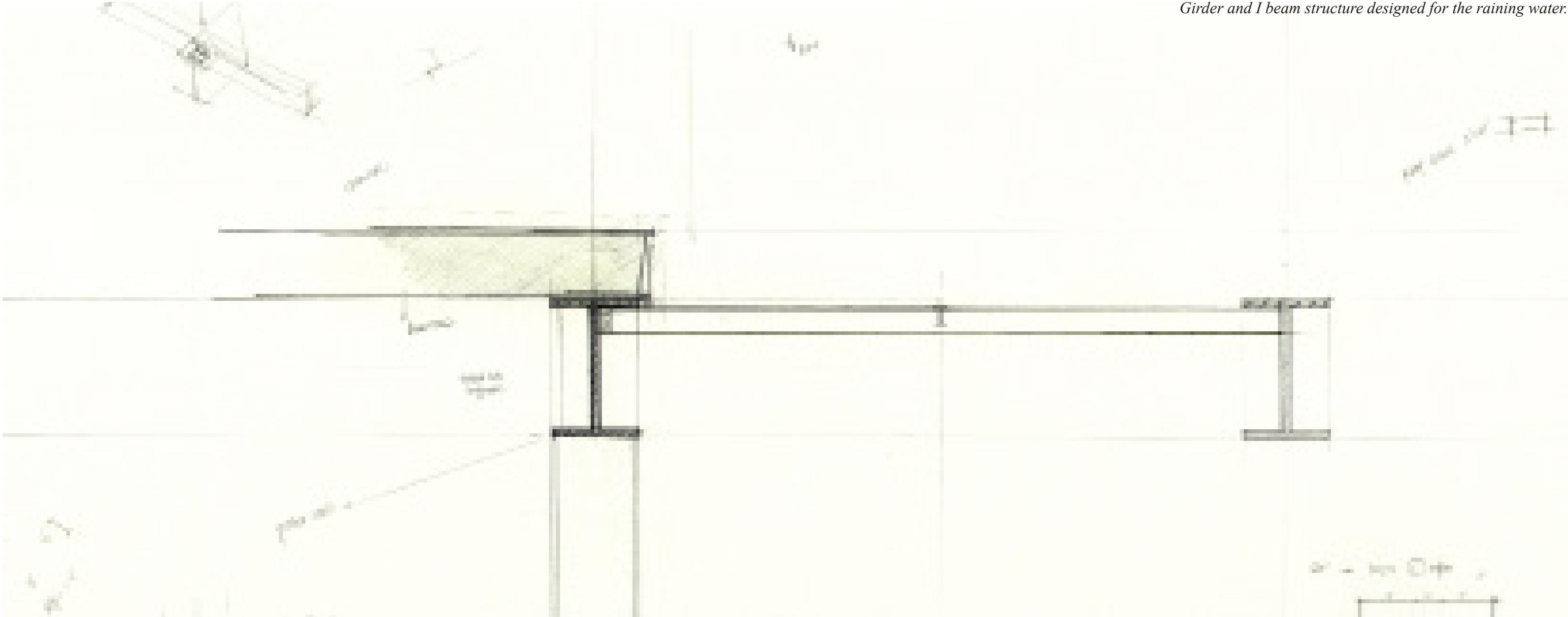
Thinking of the Pavilion Roof



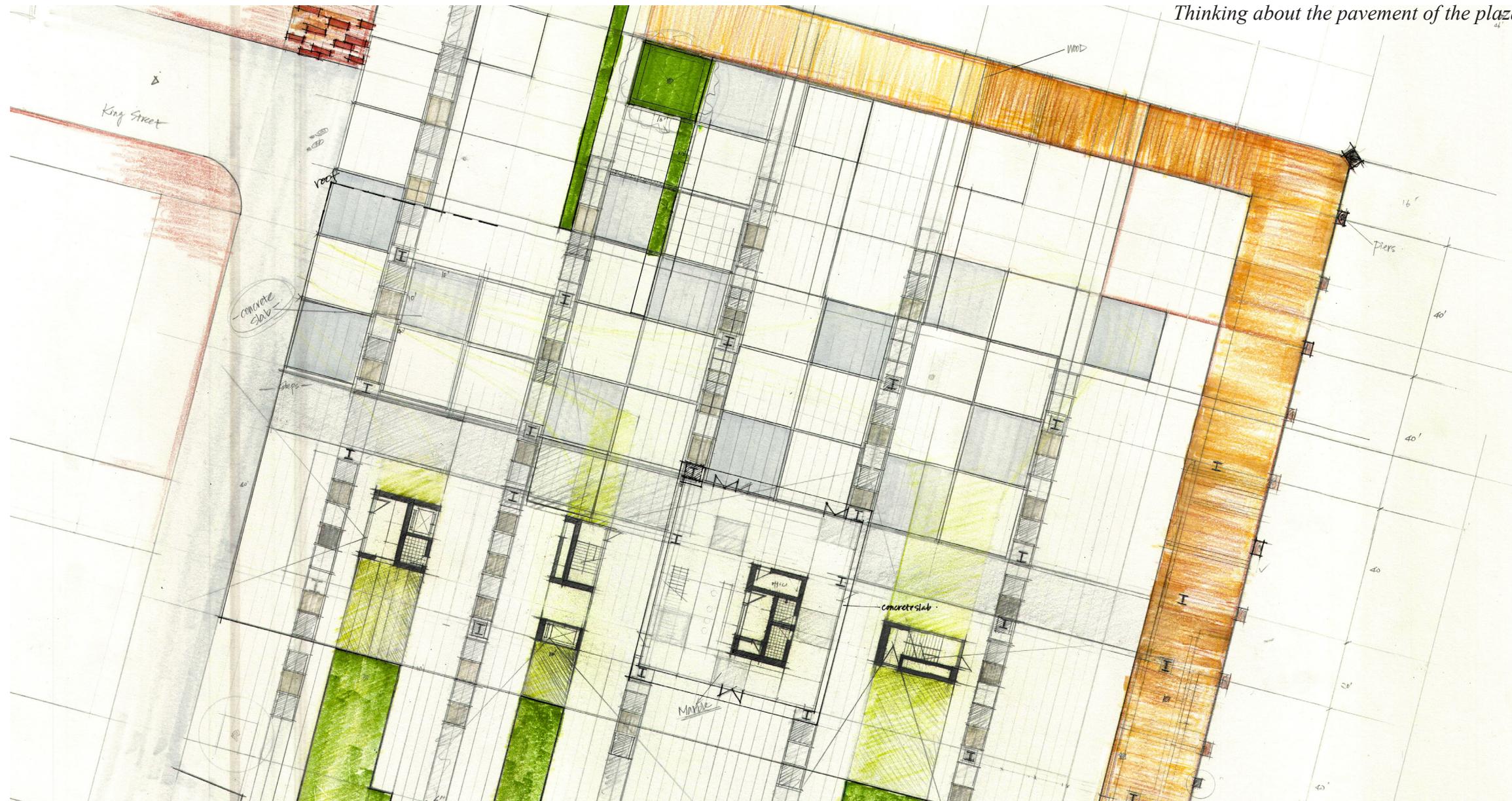
Detail: The I beam basement, paved by wood panel



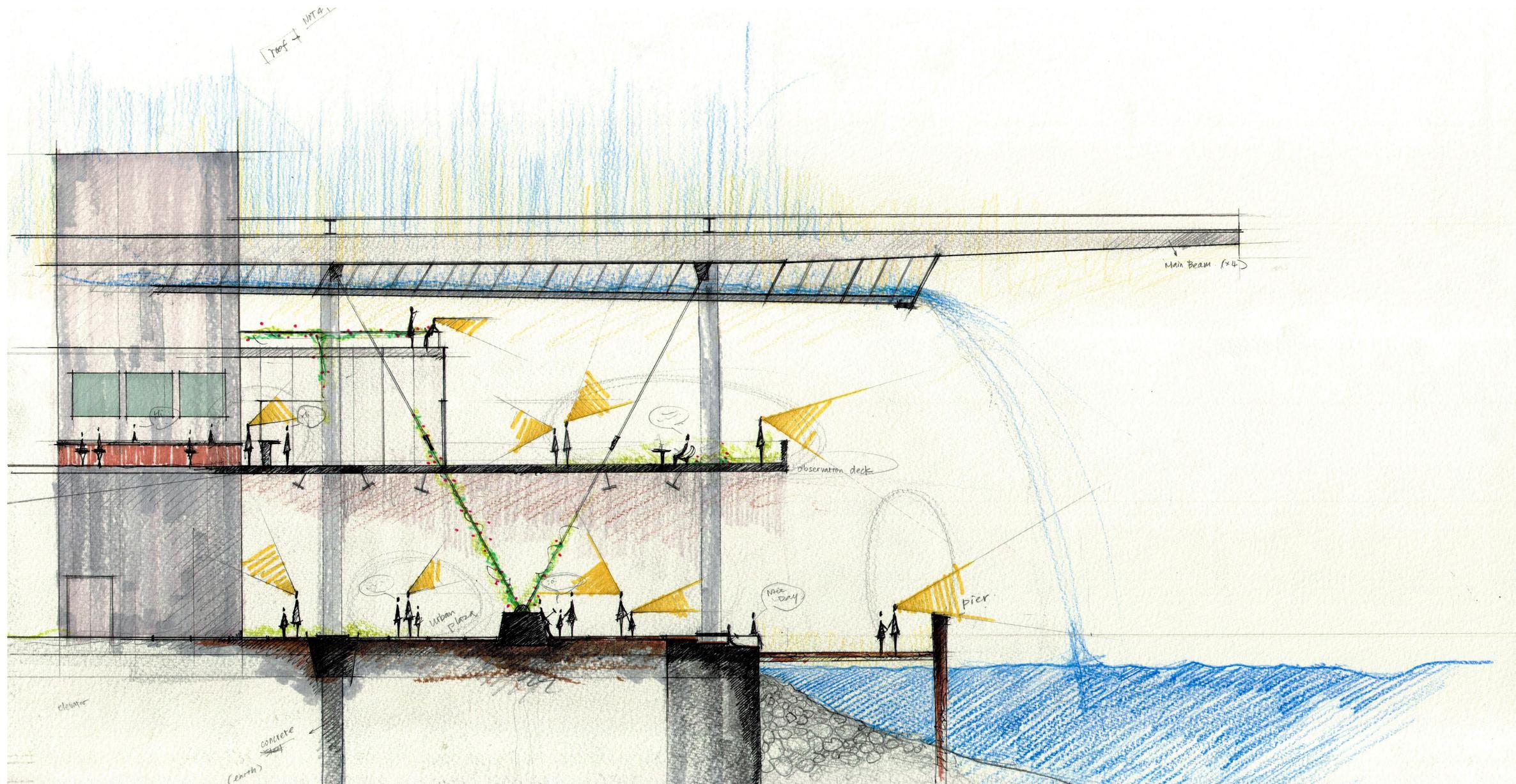




Thinking about the pavement of the plaza



One of my idea is to bring the green into the pavilion, let the building and park have some interwaves. Visitors can follow the pattern on the ground to the park. Then I started to draw lines and tried to fine relationships between the cores and the park. One factor is about the view. When there's an elevator facing the park, I decide to have less pavement for people, then the view won't be blocked by people's staying. Second factor is about the shade from the trees. When there's a tree, I'd like to have people's activities under it, so the pavement usually reaches to the trees. Also, for the building, the restaurant and observation deck would like to have more view of the beautiful park, but for the gallery, maybe less sunlight and more natural shade from the trees.



The view communicate between different levels. Thinking about the foot of the bracing, and how to lead the rain goes back to the river.



The Entrance in Revit Rendering



The Second Floor toward the Park, in Revit Rendering

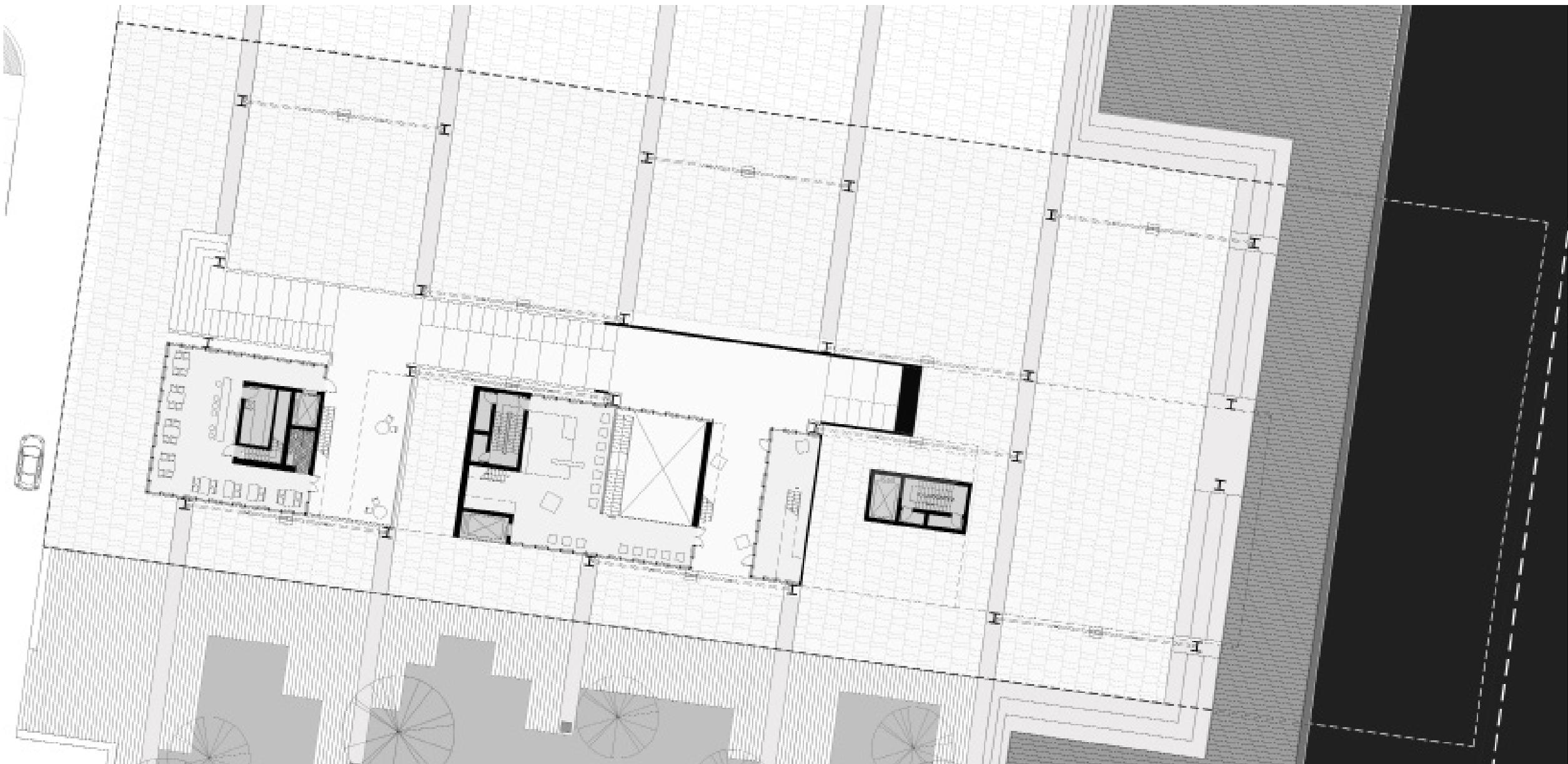


~FINAL PRESENTATION~



The Waterfront of Old Town, Alexandria, with the current yacht club torn down. King Street reaches to the urban plaza with the Visitor Pavilion on the rightside.







The rendering shows the beginning of the stairs, goes up all the way from the city side to the water side. It also connects all the spaces under the Pavilion, the visitors have all the accesses to the rooms and roofs. The urban plaza offers the city an open space for civil activities, for example, farmers market, art festival, performance of street artists, outdoor movies. A sculpture has been placed at the end of the King Street, makes King Street keep going to reach the water.

Beginning of Pavilion, with Urban Plaza



North Elevation



West Elevation



South Elevation



East Elevation







B-B Section

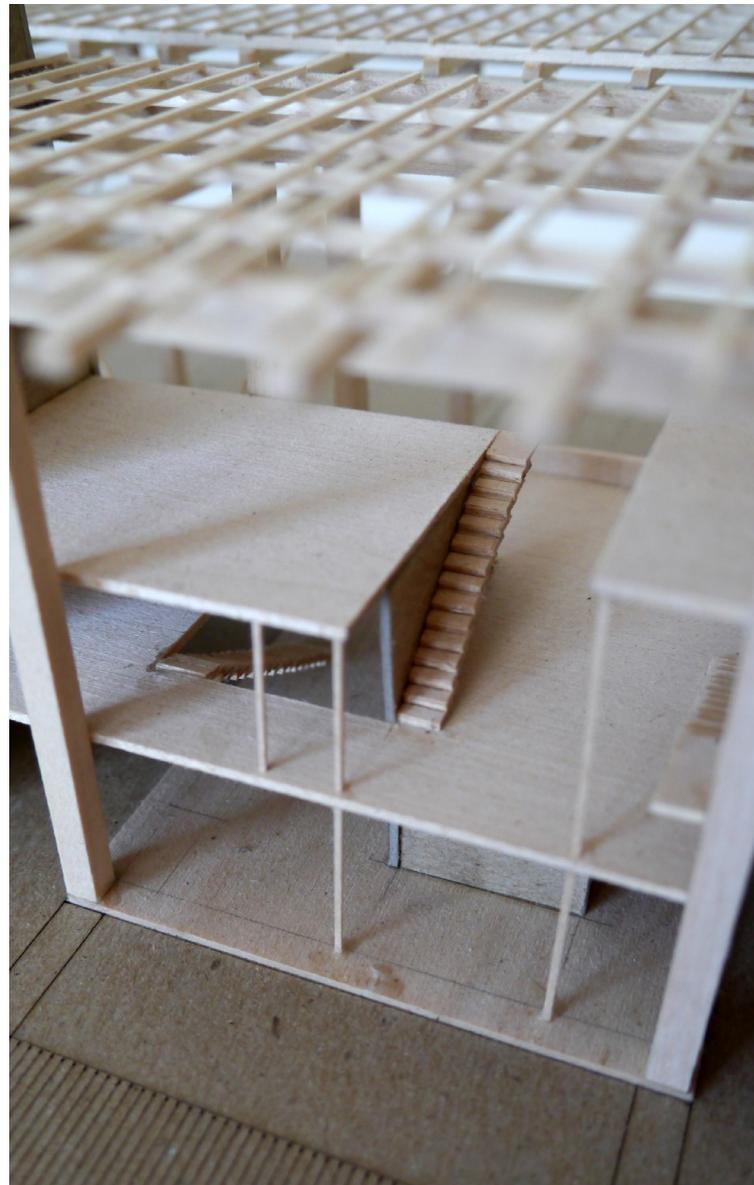








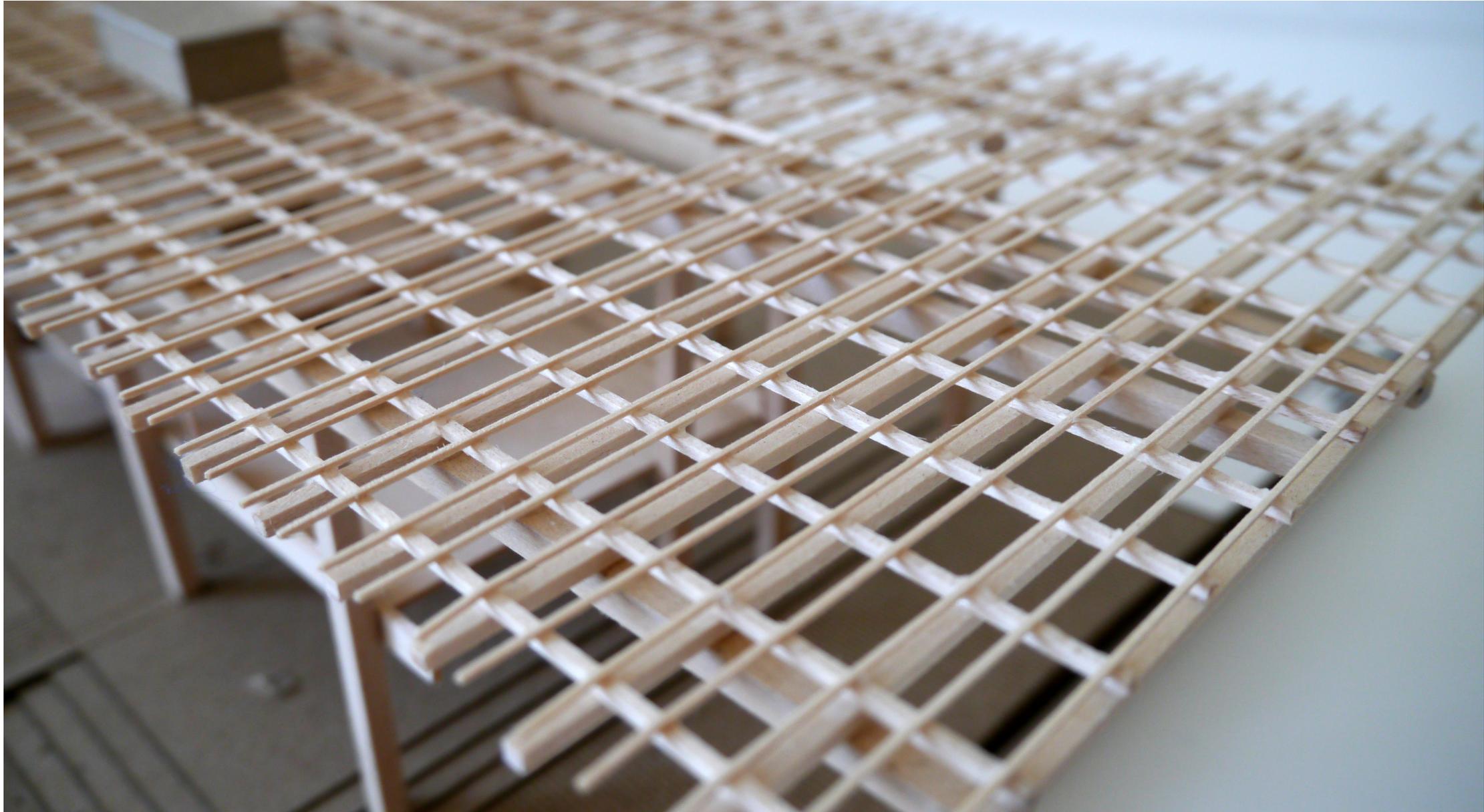
Ground Floor Lobby Rendering



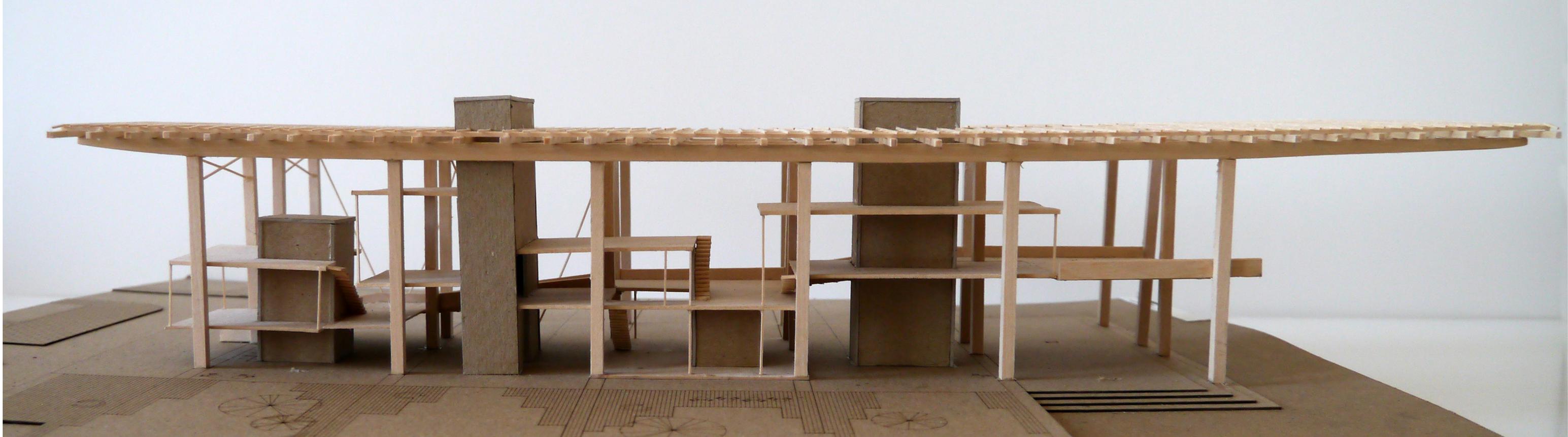
Ground Floor Lobby Model

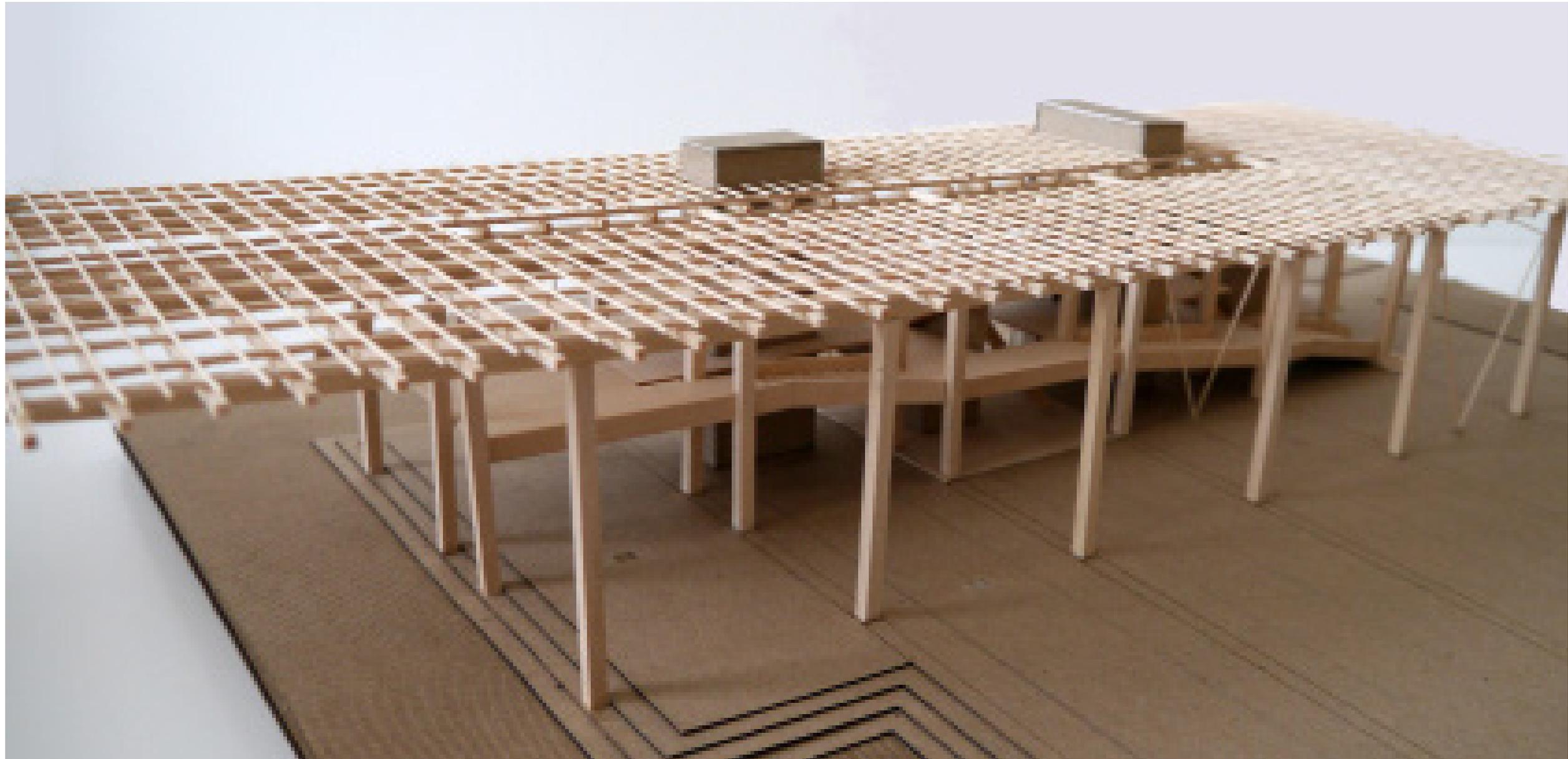


Stairs Model



Model from Park Side





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IMAGE CREDITS

Page 02:

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Sangay Tshogyel. “Venice St Mark Square Aerial View.” Photograph. Dec 17, 2013. Web.
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Trevi Fountain, Rome, Italy (P3)
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Piazza della Signoria, Florence, Italy (P4)
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Peter Art Museum Miami
Herzog & de Meuron, Miami, USA, 2013



Barcelona Pavilion
Mies van der Rohe, Germany, 1929



Farnsworth House
Mies van der Rohe, Illinois, USA, 1945



Centre Georges Pompidou
Renzo Piano, France, 1977



1111 Lincoln Road
Herzog & de Meuron, Florida, USA, 2010



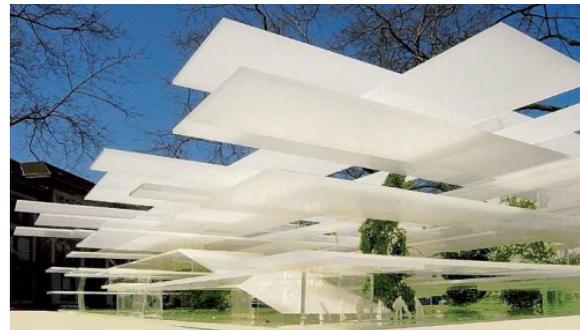
Genoa Trade Fair
Jean Nouvel, Genoa, Italy, 2009



The Modern Wing, Art Institute of Chicago
Renzo Piano, USA, Chicago, 2009



Neue Nationalgalerie
Mies van der Rohe, Germany, 1968



Complexo Cultural Luz
Herzog & de Meuron, São Paulo, Brazil, 2015

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