LIGHT AND SPACE

Photography Institute

Antonio Paz Morales

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

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Alexandria Virginia
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[Keywords]
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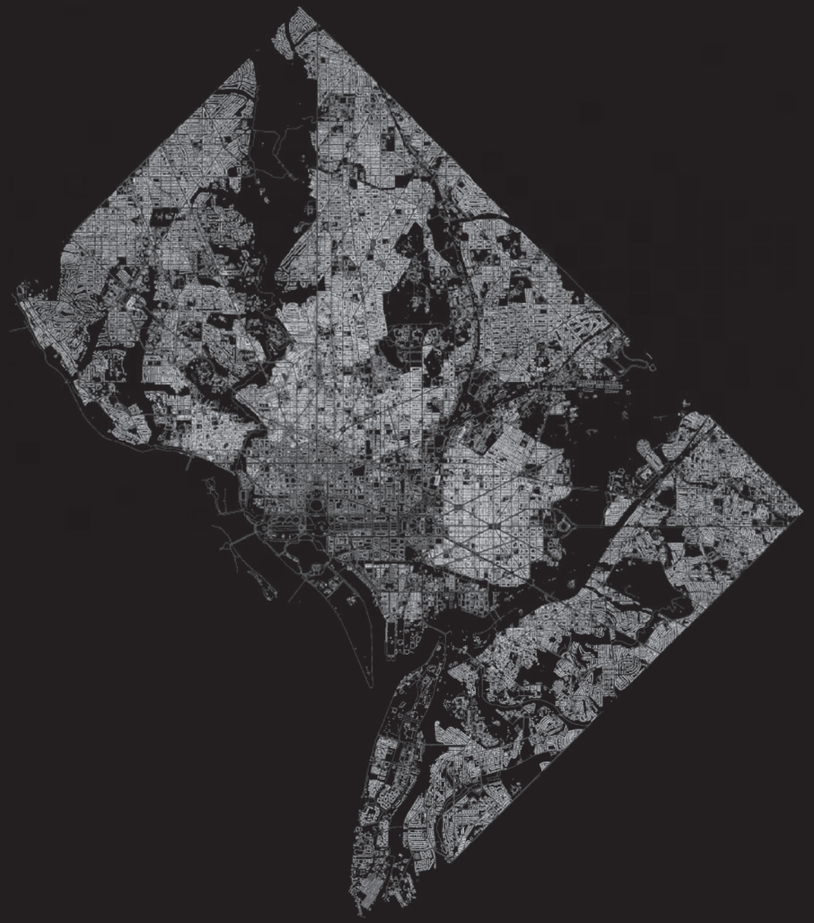
LIGHT & SPACE

Photography Institute

Dedicated to: Matha Morales [mom], Victor Paz [dad], Vicmar Paz [sister], Margot Paz [sister]



a b s t r a c t

Photography now days challenge our perception of space, light, and architecture. Photography has challenge the way we perceive, interact and communicate in the world. In today's society photography has find ways to communicate faster through images. Technology has played a big part on how we exchange pictures making it very accessible to all ages and cultures. As photography has become more accessible and it has become more technological advance, new challenges and problems have emerge. I consider that society has lost the ability to be aware of two basic essential elements which are light and space. These two elements are very important in photography but also in the human physical and emotional existence. I wanted to celebrate the learning process of photography and to be more conscious of the superficial world we live in today. I consider that by educating new generation the process of light and space can influence how people can become more in touch with its spiritual being. By providing a educational space in Georgetown where people are able to interact with visual media and learn the process of photography can have a positive impact individually and collectively. Considering that many people visit Georgetown every year became a important portal to spread the knowledge globally.

by Antonio Paz-Morales

Acknowledgement

Thanks to my committee; Jaan, Paul and Susan. Thanks Jaan for sharing your wisdom and letting me find it out, and experience it by myself. Thanks Paul for teaching me how to discover the poetics and the soul of architecture. Thanks Susan for your passion for architecture and always pushing me harder to be a better architect. Thanks Carolina for the support and the guidances through thesis.

I am very grateful to the many people who have helped me to finish this thesis project and complete my masters degree. I am incredibly thankful for the many ways my parents have willingly invested in my education ever since I was young. I would certainly not be here without your help. Margot and Vicmar for their patience and guidance I will no be here without you. I want to thank all the friends I have made trough out this process, for keeping encourage and believing in me.

Thank you all!
Antonio Paz

t h a n k s

Special Thanks to: Caro, Jon, Manuel, Lupita, Berrin, Karima, Gui, Mili, Javi, Guada, Juli, Agus, Azar, Noel, Ace, Negar, Derick, Marilyn, Henry.

These people who in own unique ways have helped me became a better person and architect.

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“Architecture is the thoughtful making of space”

Louis Kahn

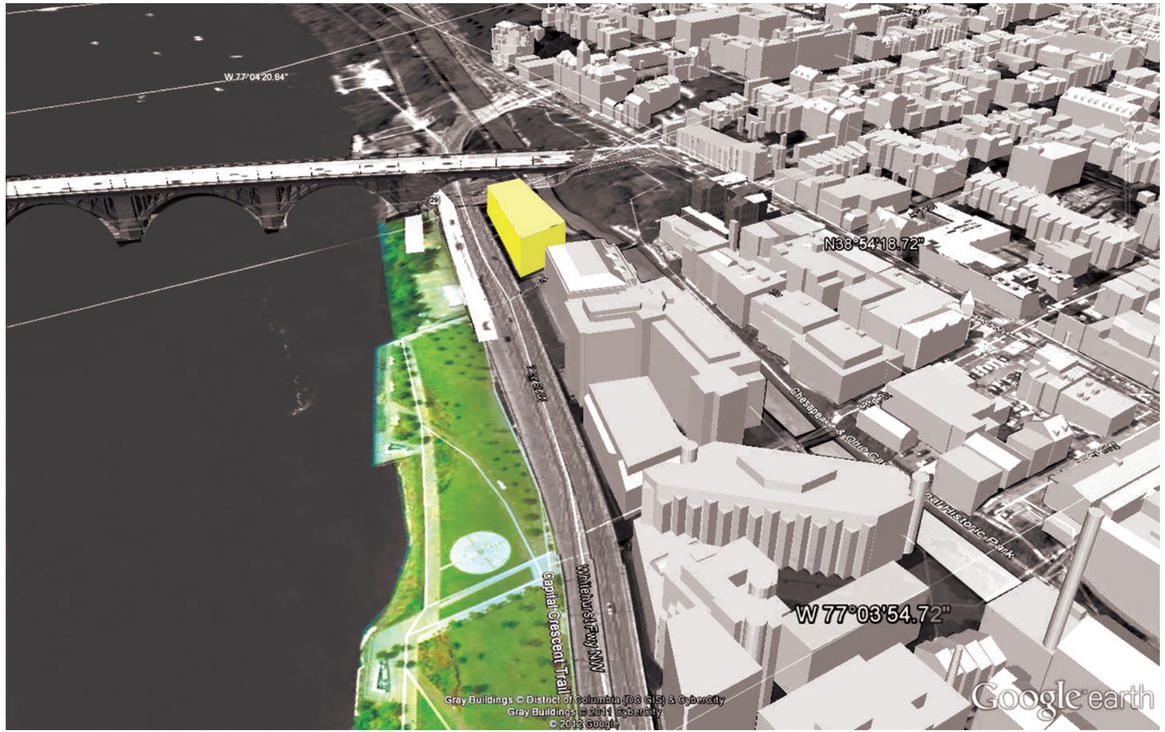
“A room its not a room with without natural light”

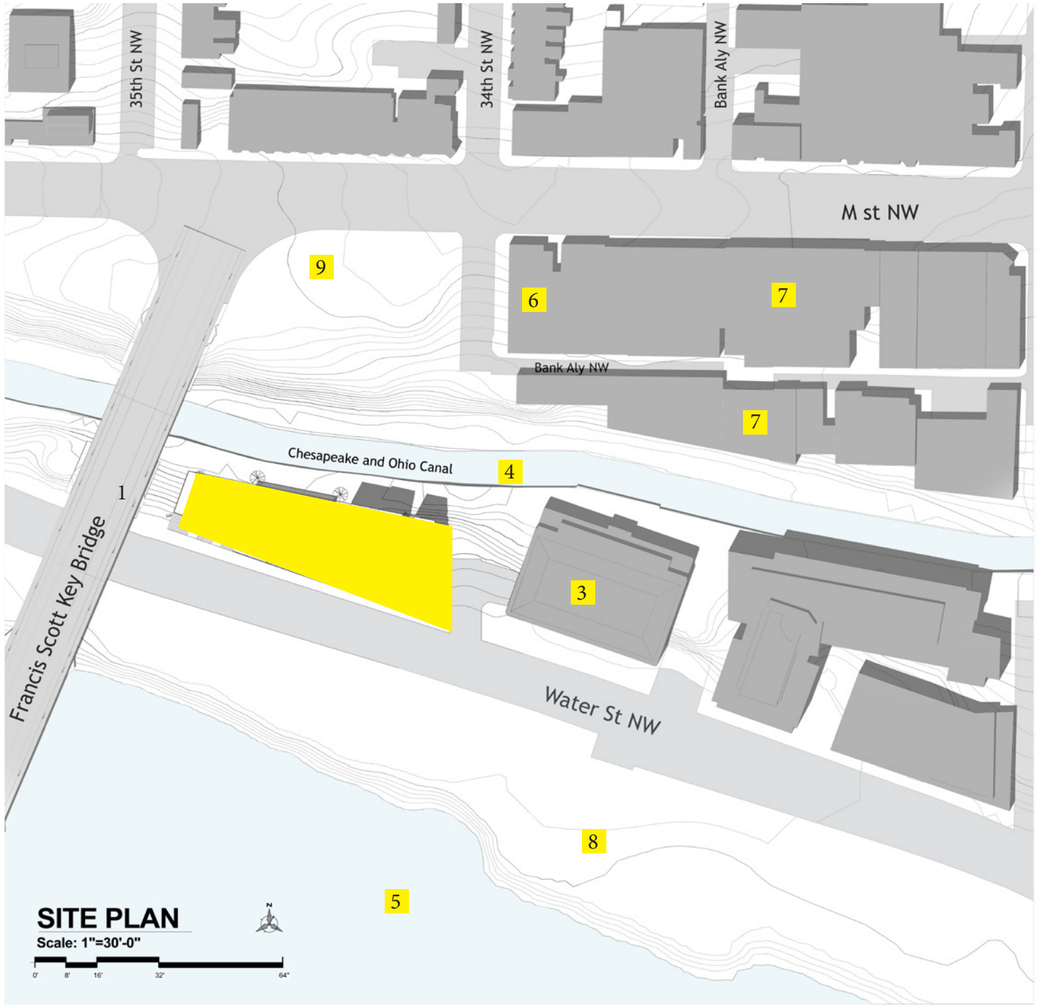
Louis Kahn

The site I have chosen is located in Georgetown in Washington DC, next to the Key Bridge, I decided to choose this site because of its dynamic interaction with the public as well as its context. This part of Georgetown was currently abandon so it was a great opportunity to rethink for a more sustainable use.

site location


W 77°04'20.64"
W 77°03'54.72"
W 77°03'28.8"
Francis Scott Key Bridge
M st NW
Chesapeake and Ohio Canal
Water St NW
Google earth


W 77°04'20.64"
N38°54'18.72"
W 77°03'54.72"
Capital Crescent Trail
Waterfront Fwy NW
Google earth



SITE

1 Key Bridge

2 Whitehurst Freeway

3 Form Architecture & Design Building

4 Chesapeake and Ohio Canal

5 Potomac River

6 Ukraine Embassy

7 Retail Stores

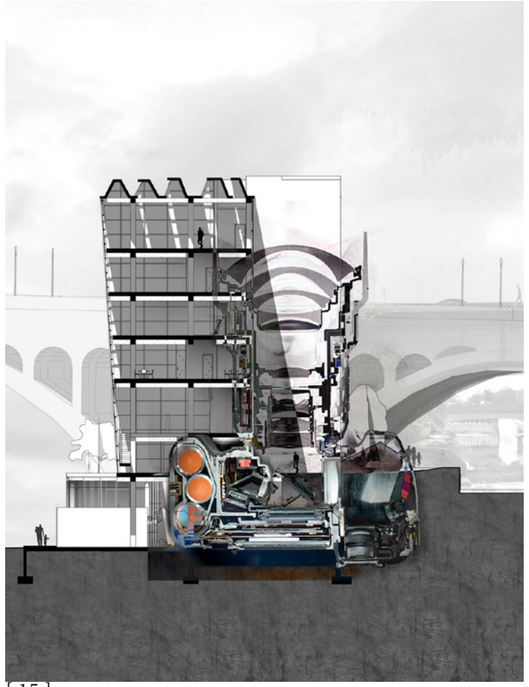
8 Georgetown Waterfront Park

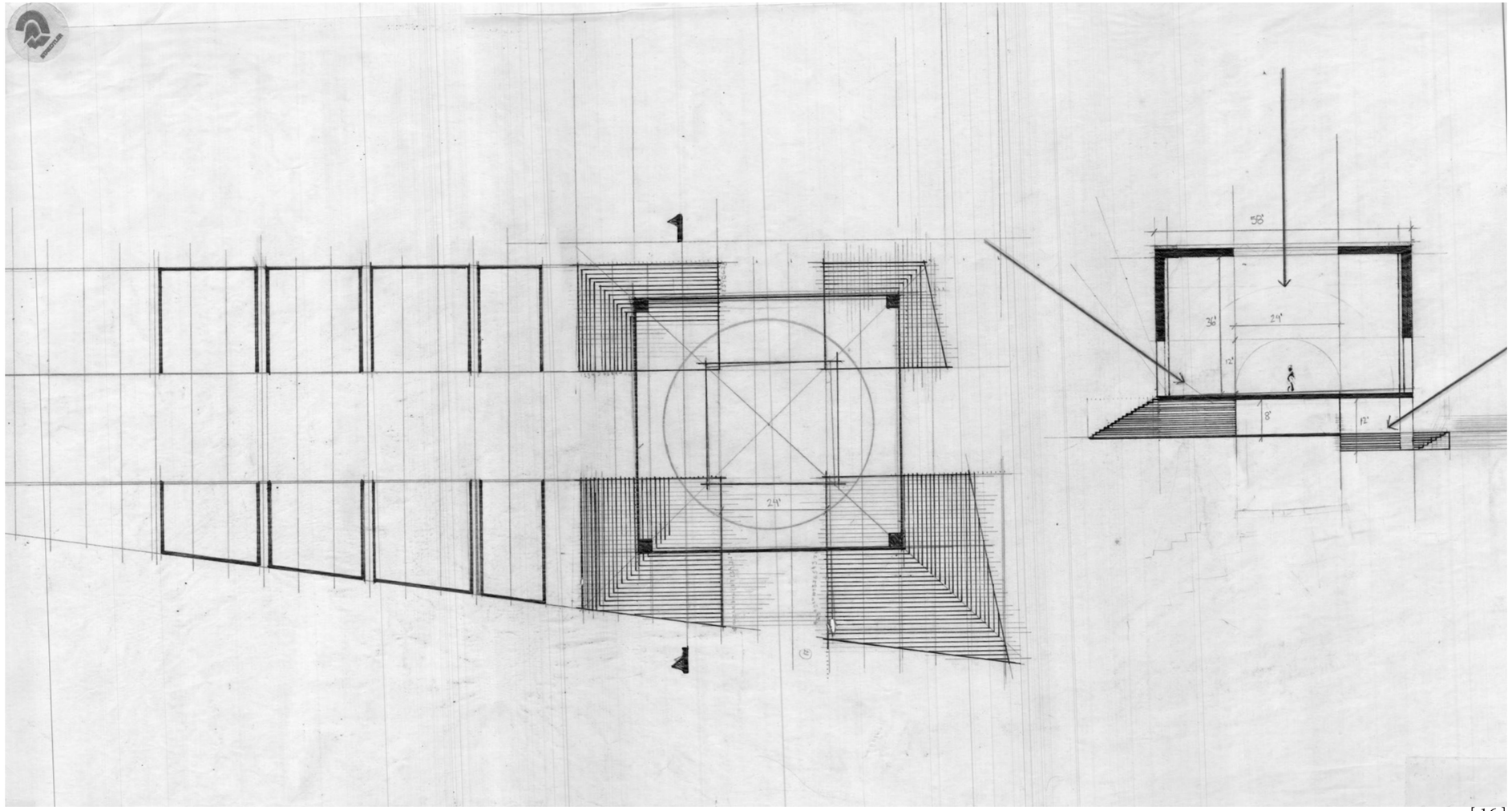
9 Francis Scott Key Memorial Park

bridge removal

District Department of Transportation (DDOT) conducted a survey to determinate the impact of the Whitehurst Freeway Deconstruction Feasibility, http://ddotsites.com/documents/whitehurst/ in 2006. DDOT study area in terms of traffic, access to Georgetown and the future waterfront park, land use and value, and other factors. This information is used to develop and evaluate alternative roadway configurations and connections to accommodate current and future traffic patterns if the Whitehurst Freeway is removed. Over the course of the study, the project team of the DDOT and consultants worked closely with city officials, community and business groups, and individual members of the public to identify goals and objectives for the study and a range of alternatives that would be analyzed. This outreach took the form of technical groups and public meetings in which the project team learned about the options that were preferred by a variety of groups. Members of the public suggested several new alternatives, which the project team consider and added to the study. Some of the alternatives were, short tunnel along K street, elevated sidewalk on existing structure, grade avenue with connections to key bridge and canal road.

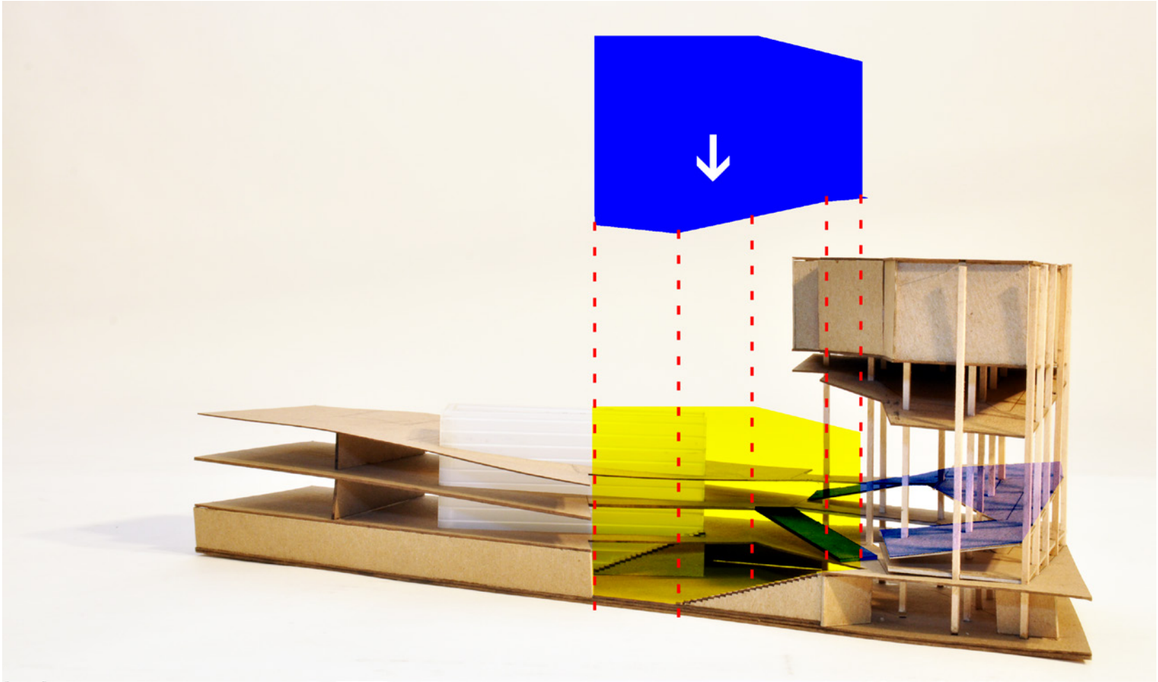
space analysis

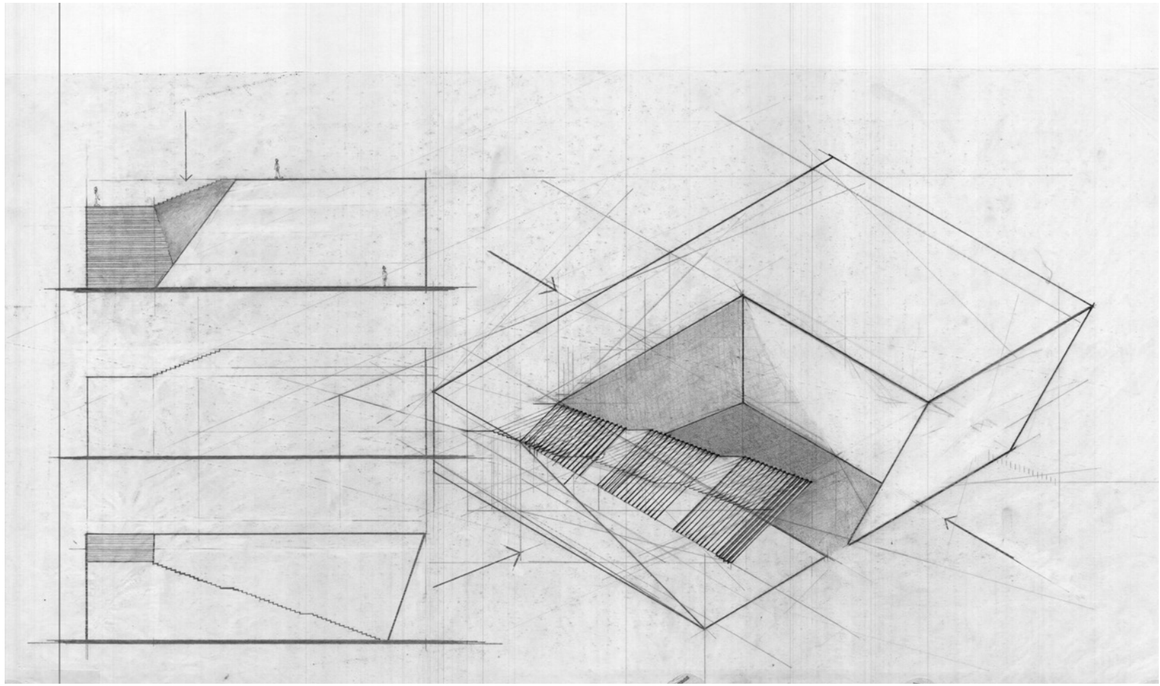


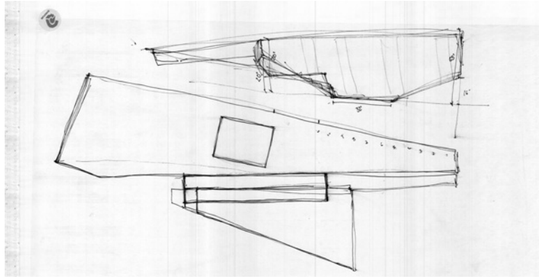


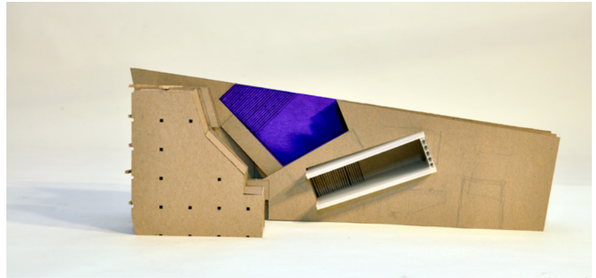
void i

After looking at the site conditions it was important to address public and private spaces. In order to create a harmonious space for people to interact I started thinking about solid and void spaces. The void spaces started to mark transitional thresholds from public to private spaces. It was important for the in between spaces to feel comfortable as moving through the building. As I developed study model the void spaces became skylights, patios, gardens for people to interact with urban fabric.

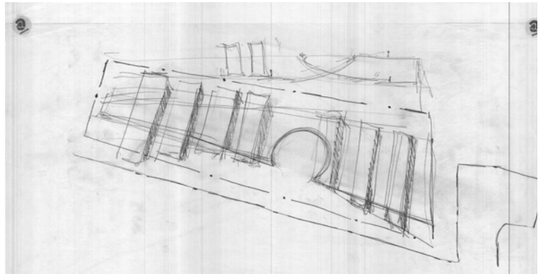


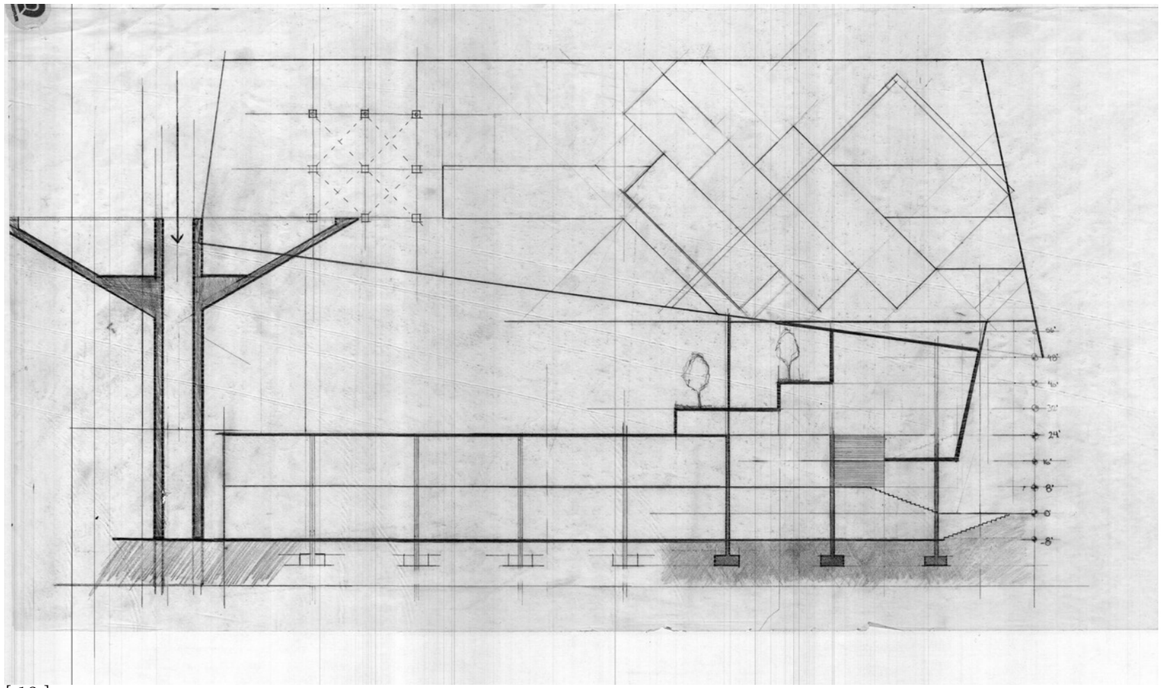




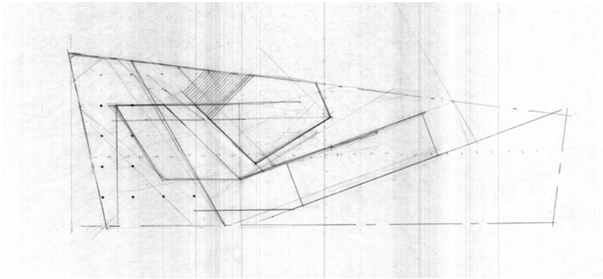


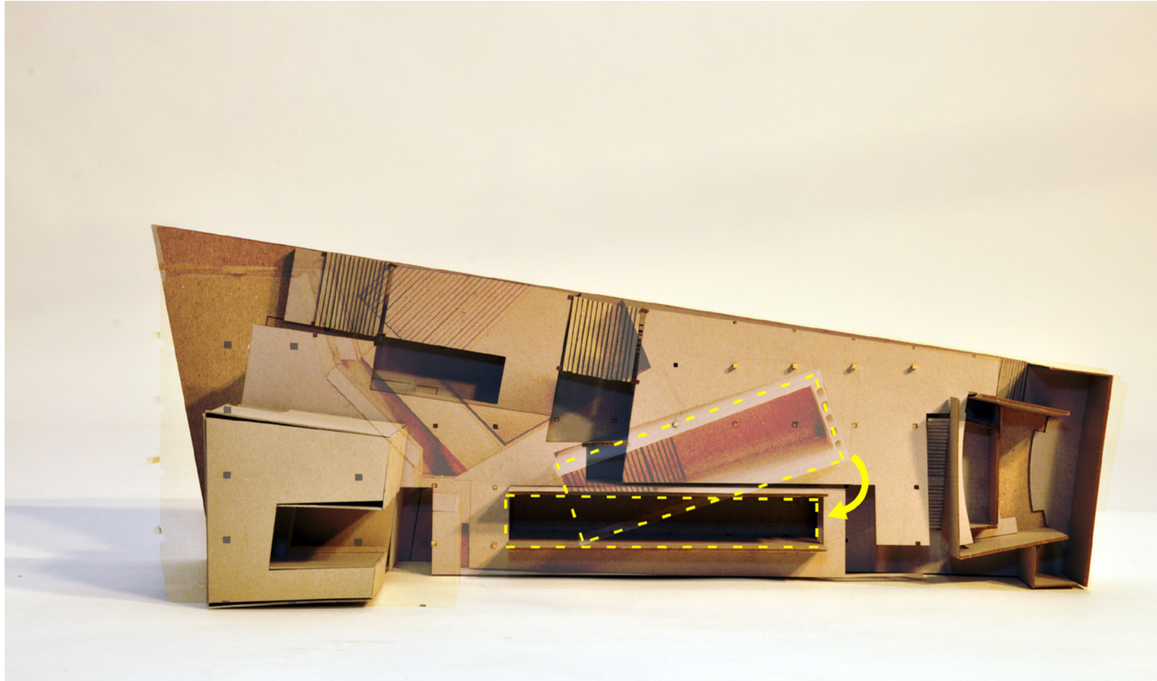
void ii



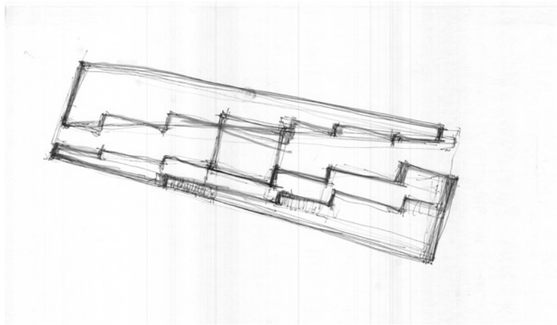


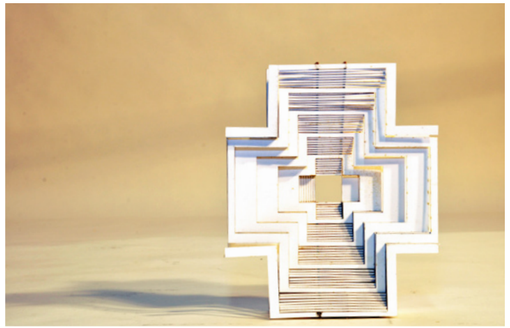
One of the challenges in developing the program was an existing retaining wall which became the spinal cord to organize private spaces, which need little or no light. Darkrooms, libraries, conference rooms, egress stairs, theaters where place along the retaining wall. A conference room was place strategically to the NW of the site to define the edge of the building. This model and hand drawings were created early in the design process and rebuilt to analyze the relationship between circulation, voids, private and public spaces.

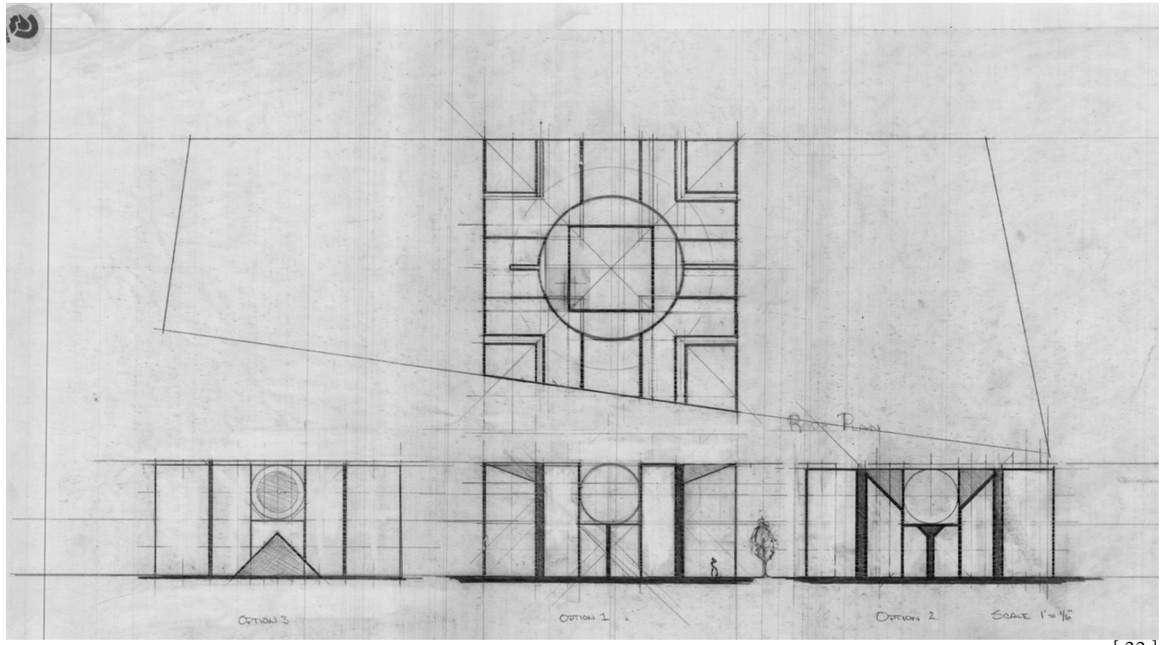


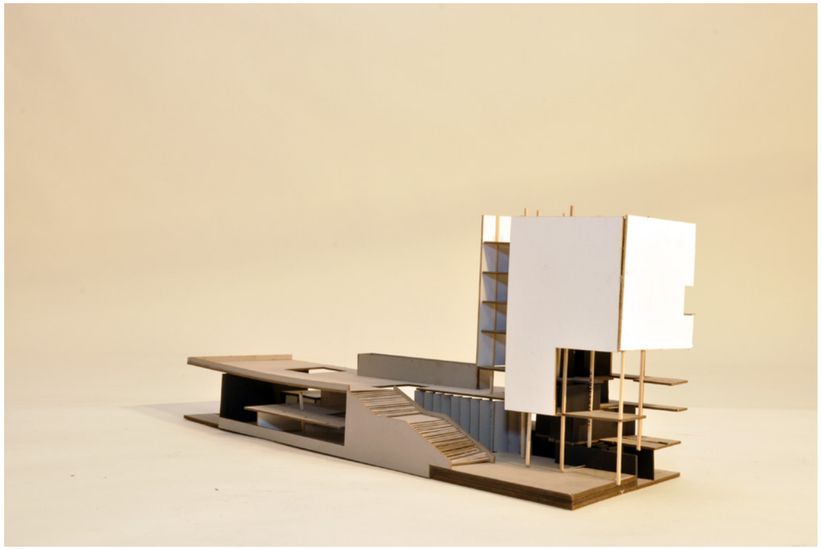


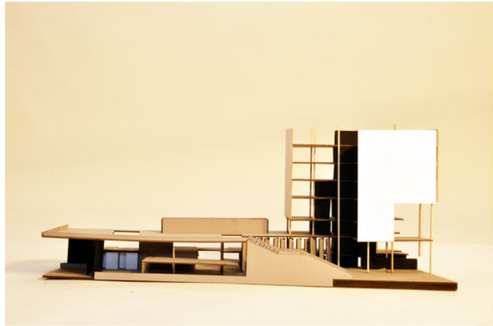
Framing the views around the site became important in order to control the natural light for the building to be energy efficient. The waterfront provided with magnificent views to Rosslyn, the Potomac River, and the Chesapeake and Ohio canal. The south facade made out of glass wall with louvers allow light to travel deeper into the spaces, reducing the use of electricity from the power grid lines . Having a very transparent envelope gave me the opportunity to add solid concrete bearing walls, and redirect the views toward the O&C canal, Georgetown Waterfront Park, the key bridge of to the Kennedy center.

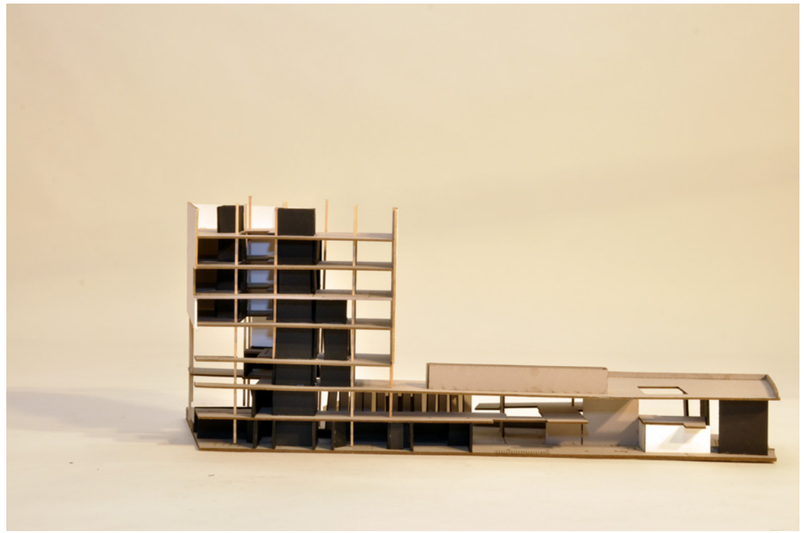


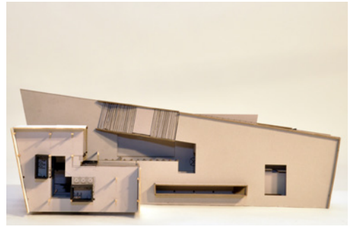






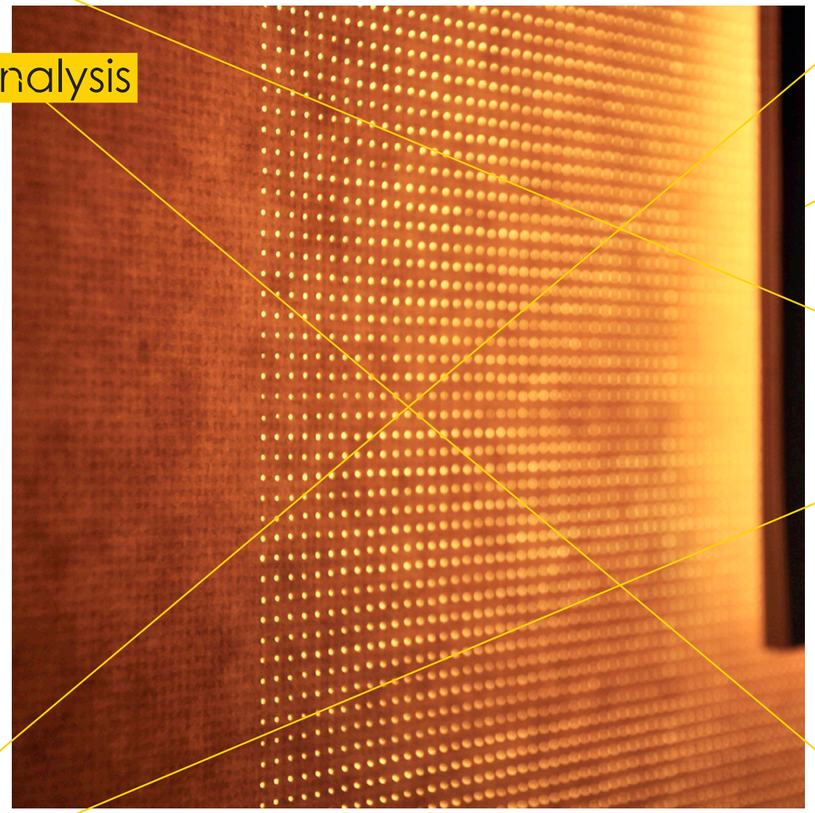


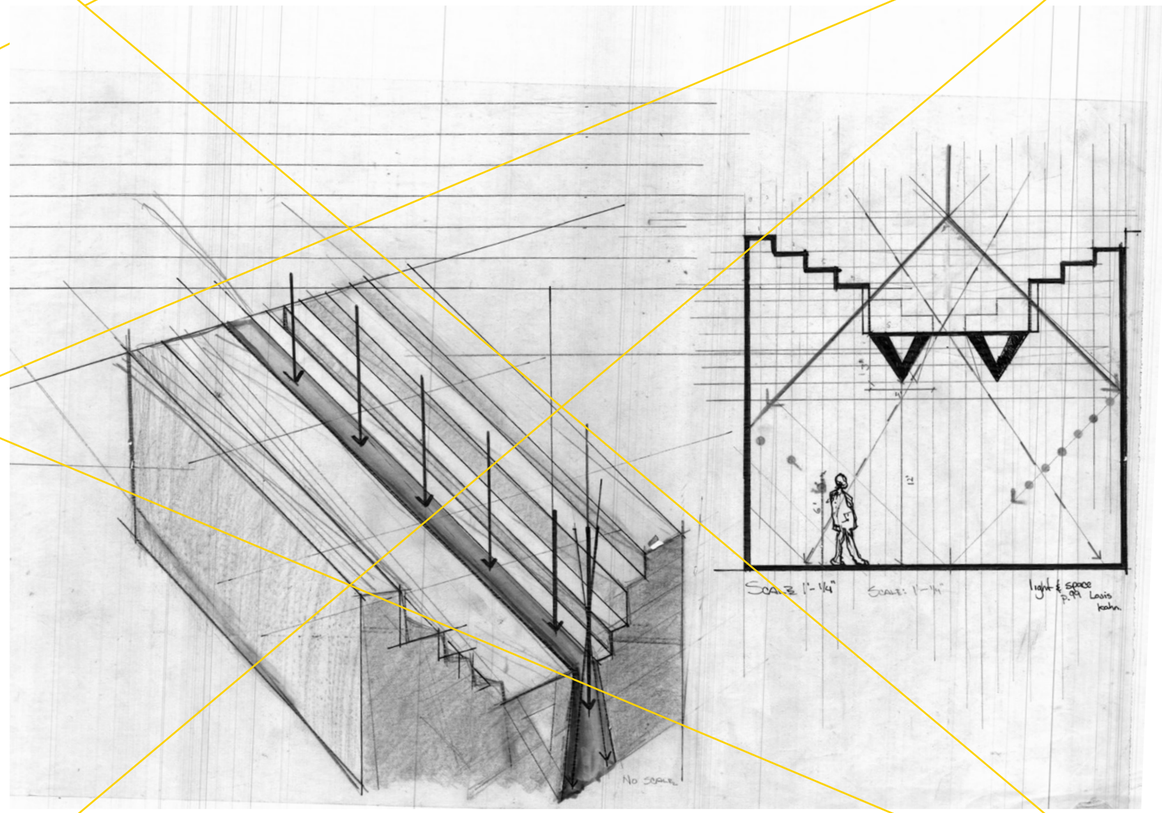


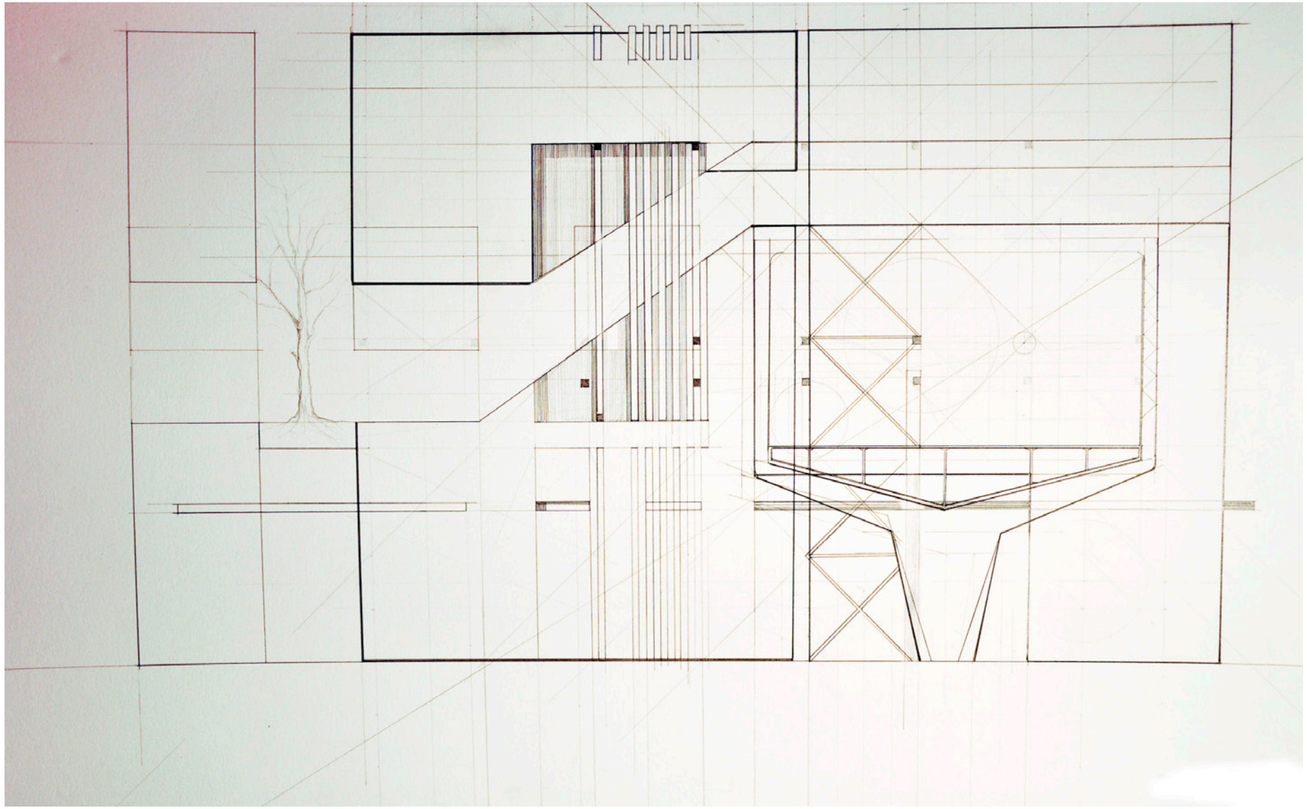


The study model explore void and solid spaces which shift accordingly to the program. Egress stairs, elevators shafts became problematic as these spaces had to connect all floors. Many walls define exhibition spaces, but also became blank canvases for students to accommodate their work. The step built-in theater I consider one of the most dynamic spaces, which is a way to access the exhibition space, but also in summer times its an outdoor theater for the public.

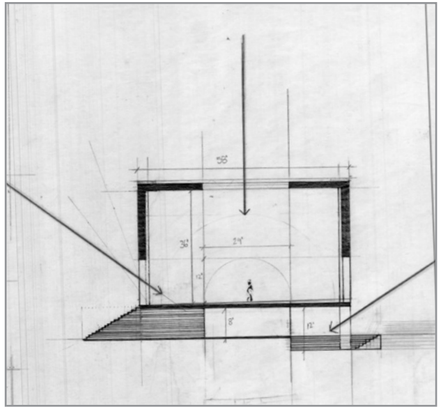
light analysis

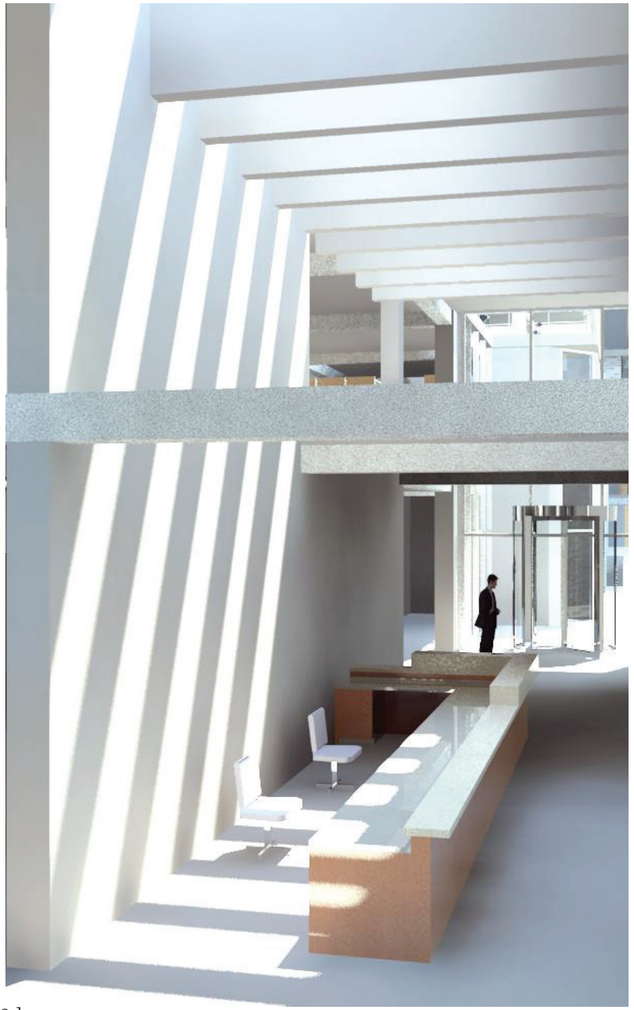




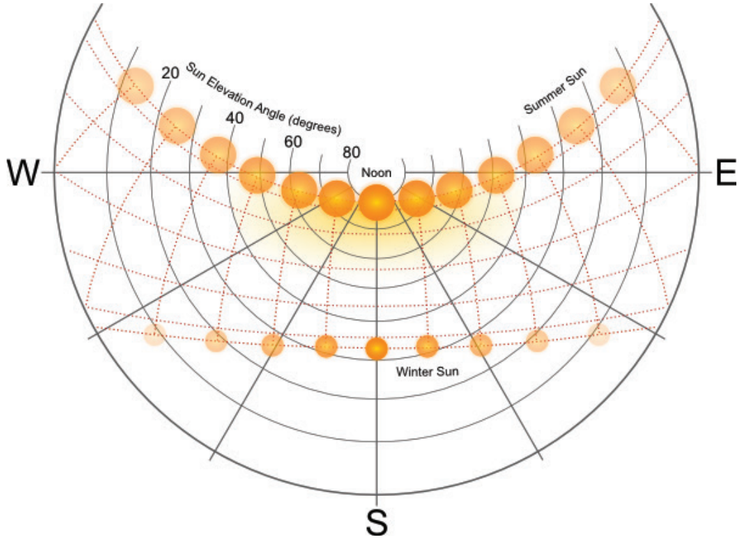


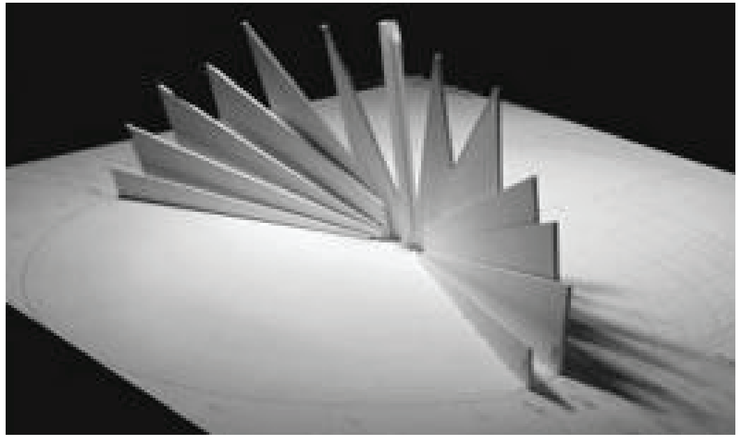
Process drawings were made to explore and to find solutions to the different spaces for the program. I started to analyze sun light by making models of the sun path for the solstice and equinox. This gave me a clear idea of the angles and structure will interact with the shadows. Also on the South facade its was important to analyze the louver system to consume less energy and to enrich the spaces with natural light. Light was an important factor to develop for the School of photography and the process that photography is able to capture light.



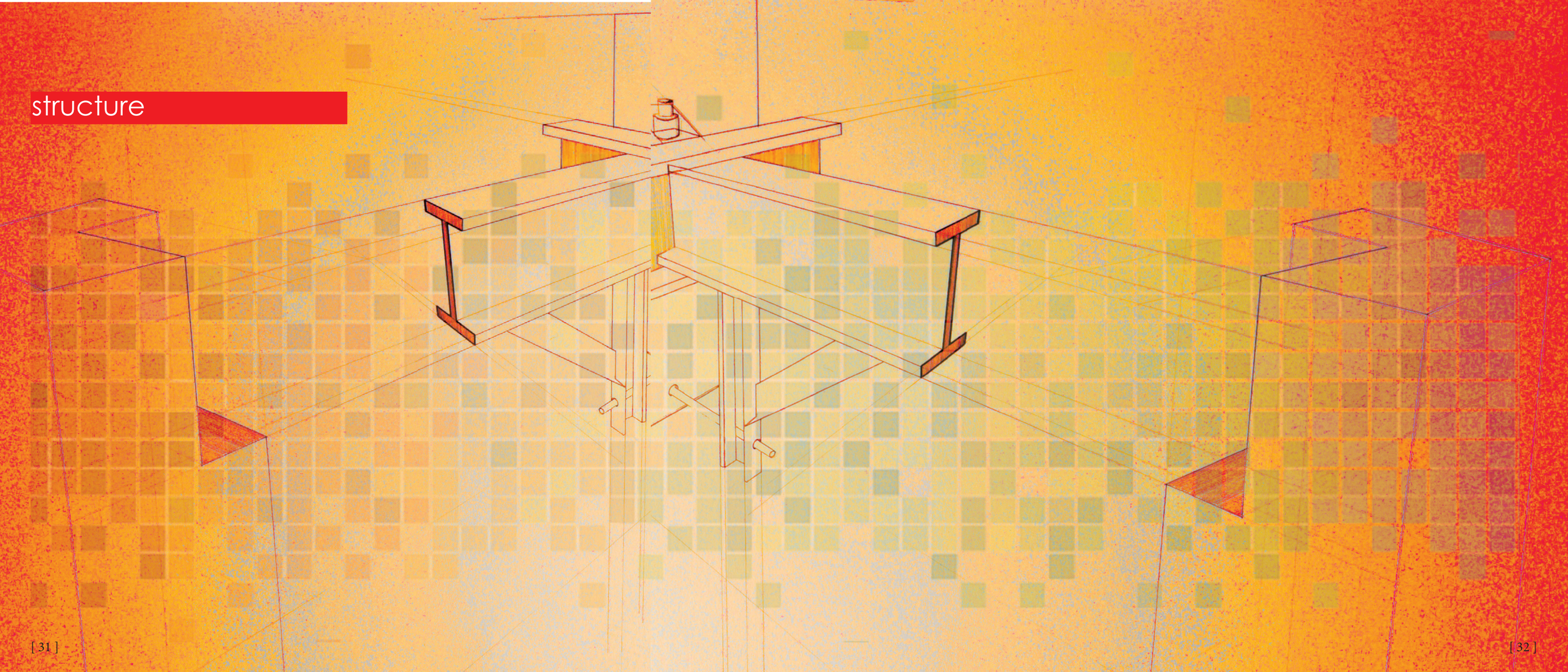


I developed different physical and digital models studying how the sun path travel to the site and how will impact the building. I started looking at the solstice and equinox, I develop three physical models to understand the angles and the change in diameter of sun light throughout the year. After, I started to look in a digital format the light that will travel to the public spaces such as lobby and exhibition space. Using light as paint I was able to draw textures in walls to define lobby spaces.

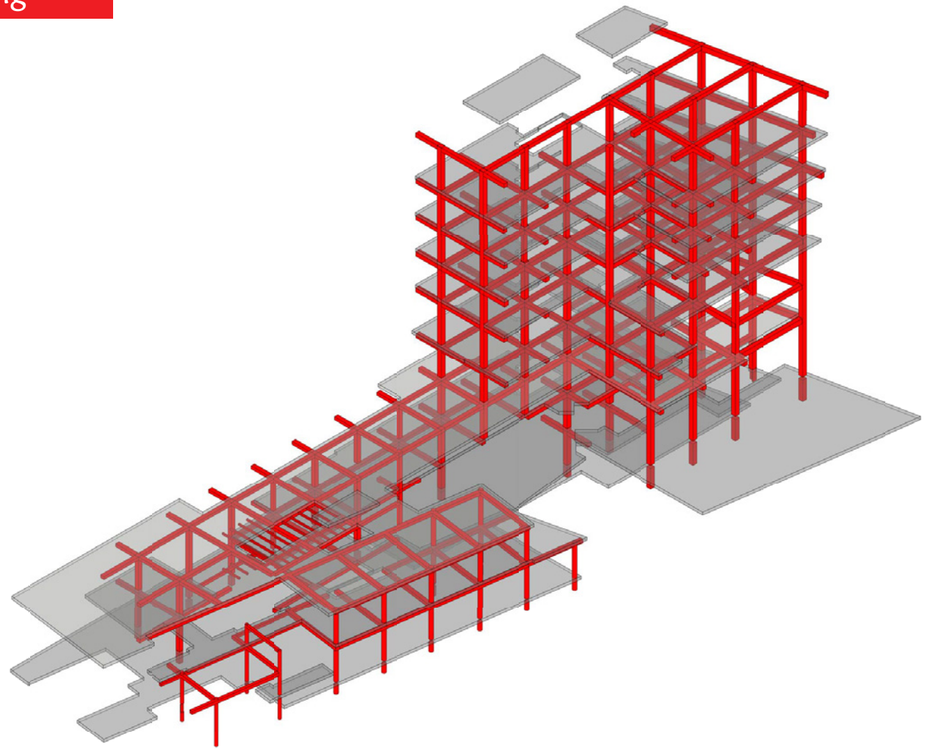


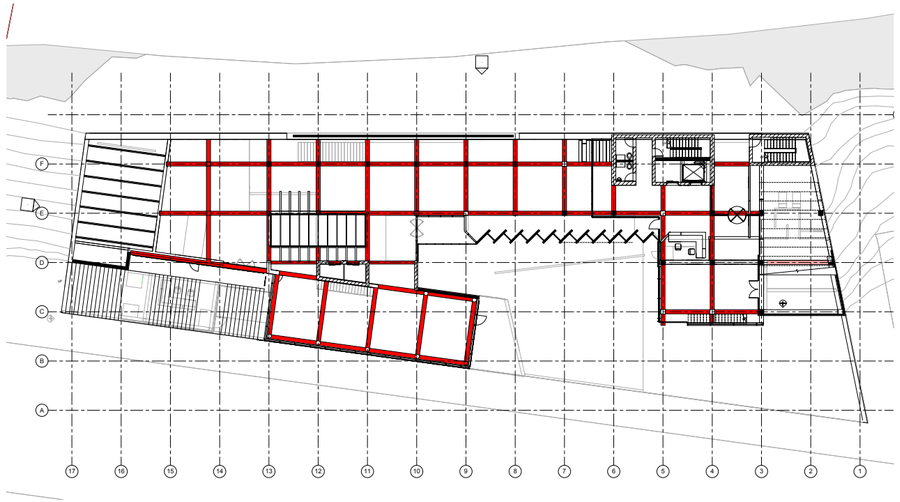


structure

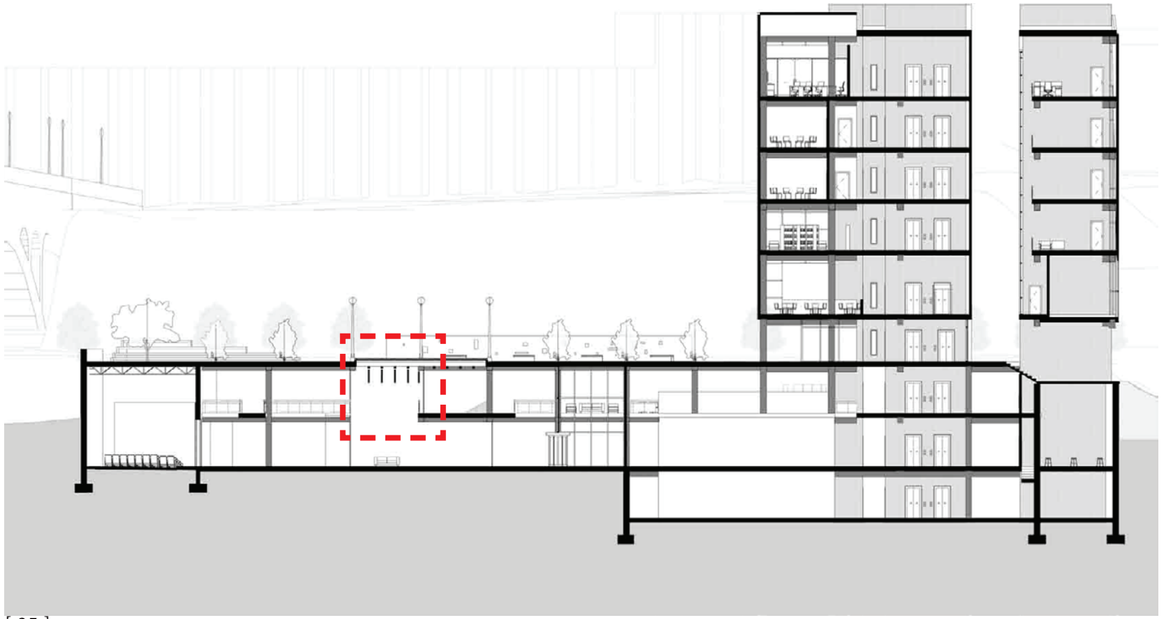


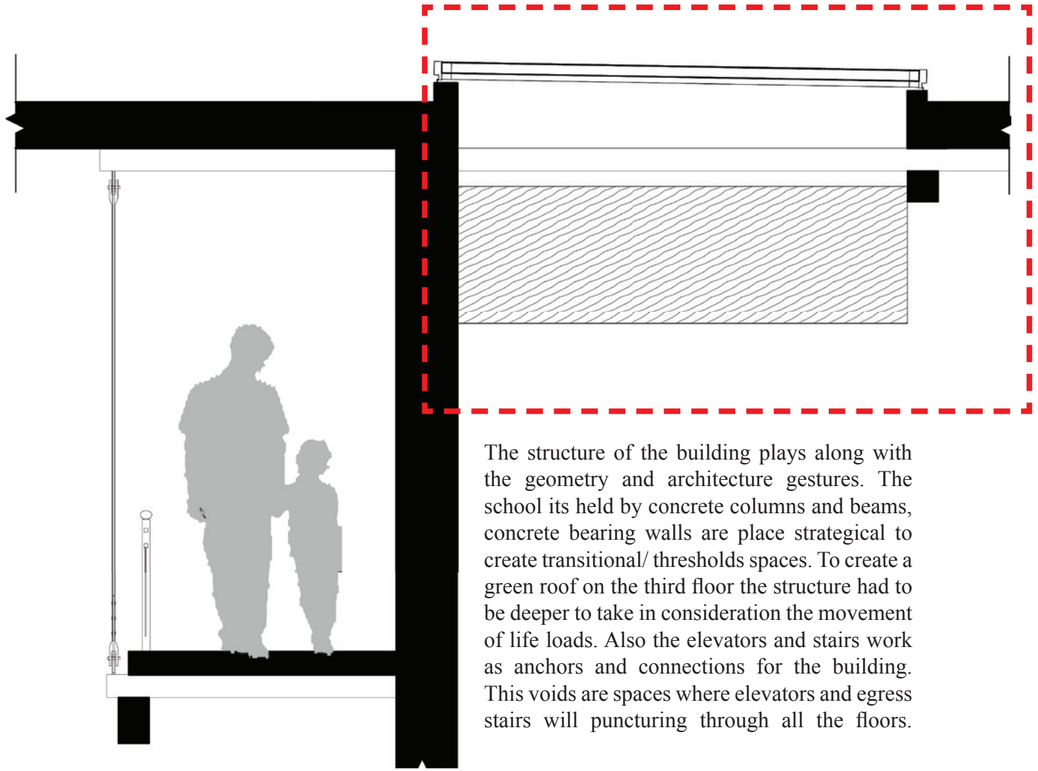
framing



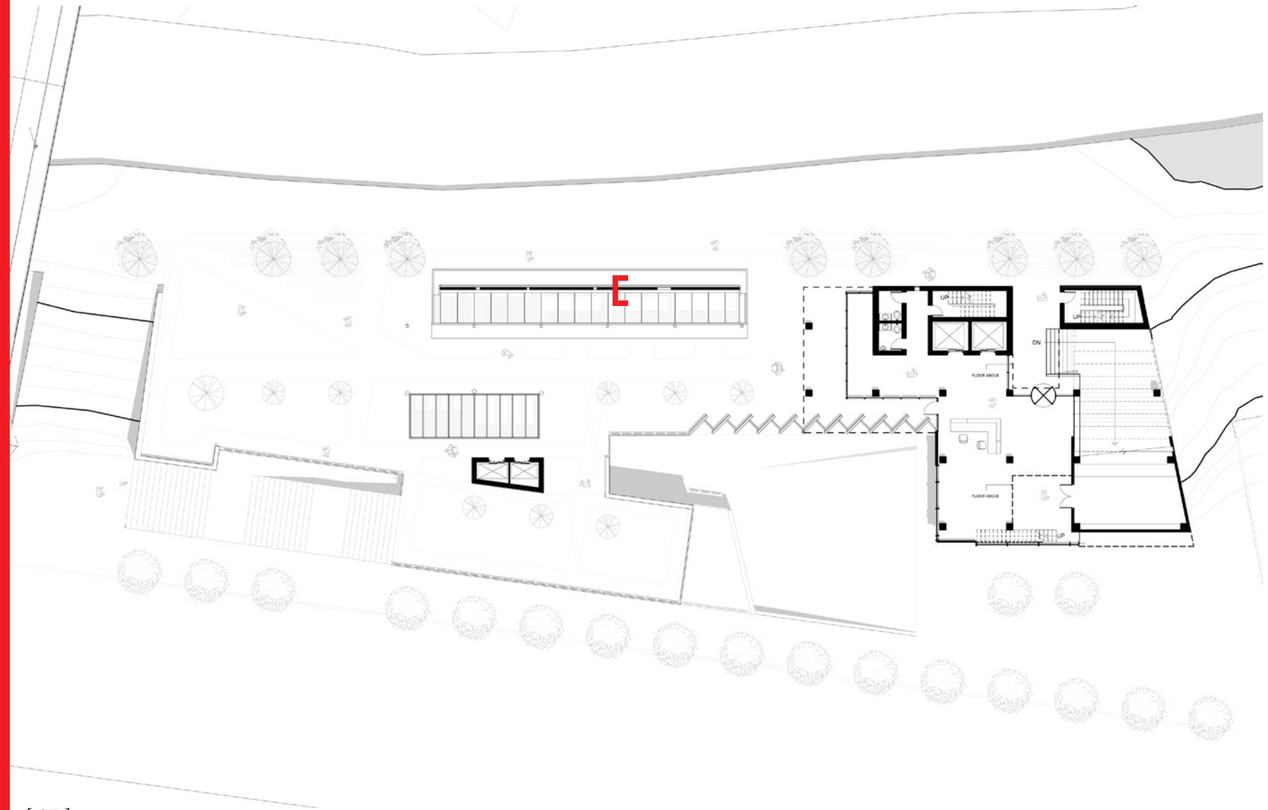


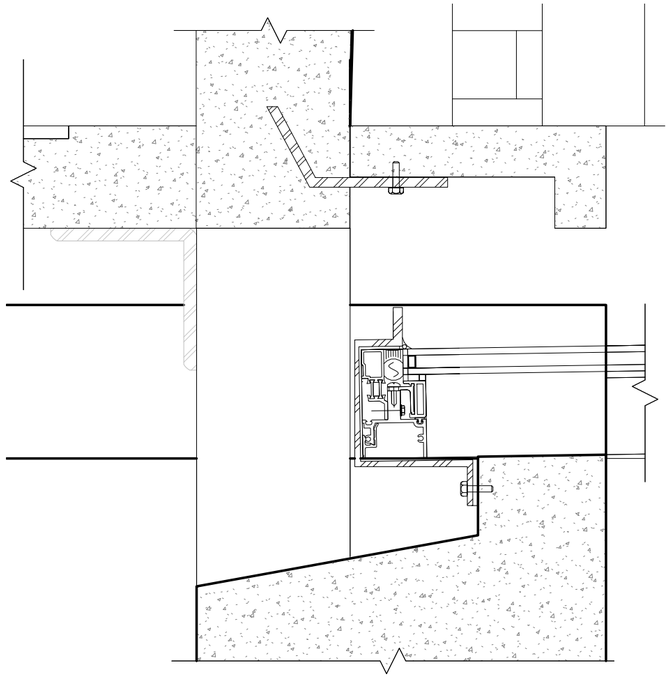
The structure for the building became a significant struggles, and challenge. The cantilever tower and the third floor green roof were important part of the concept in order for the building to harmonious coexist with neighbors conditions. The third floor public garden space needed to consider additional reinforcement to hold the live loads and dead loads. Concrete beams and columns had to be adjusted and space accordingly to spaces usage. Another struggle was to provide enough support for deeper and bigger trees to be planted in green roof. I explore several ideas with the structure and decided to make most structure out of reinforce concrete. Another reason I decided to use concrete was to have direct relationship to wood, which was one of the main elements through out my building. I used wood forms to create concrete columns and beam to leave the wood texture imprinted on its surface. I find this relation same as how light its transfer to the paper to create a photograph.





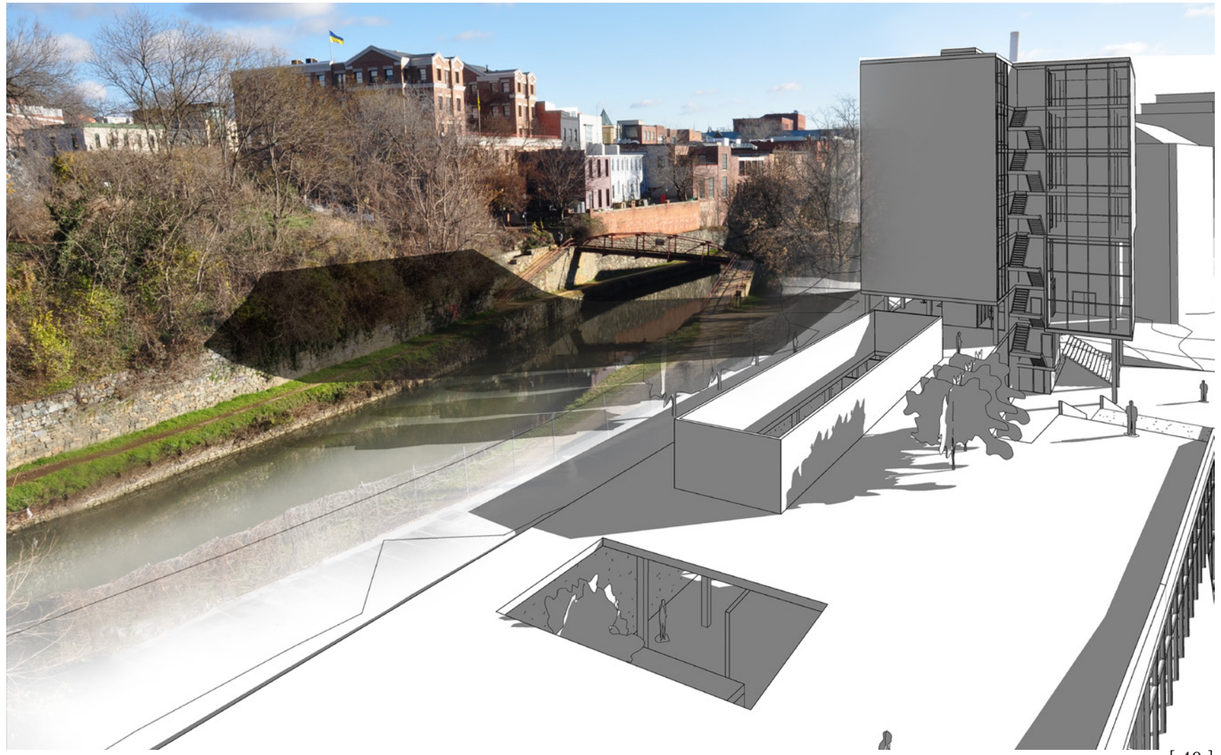
The structure of the building plays along with the geometry and architecture gestures. The school its held by concrete columns and beams, concrete bearing walls are place strategical to create transitional/ thresholds spaces. To create a green roof on the third floor the structure had to be deeper to take in consideration the movement of life loads. Also the elevators and stairs work as anchors and connections for the building. This voids are spaces where elevators and egress stairs will puncturing through all the floors.

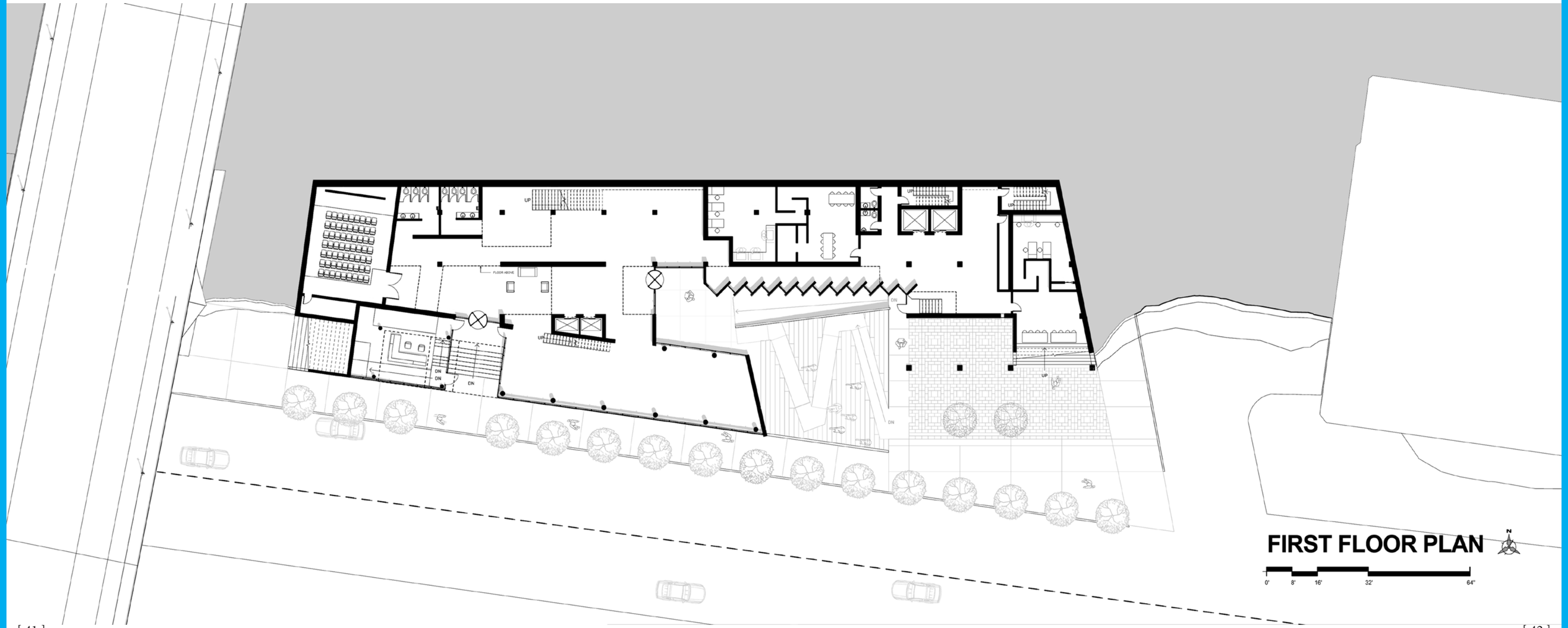


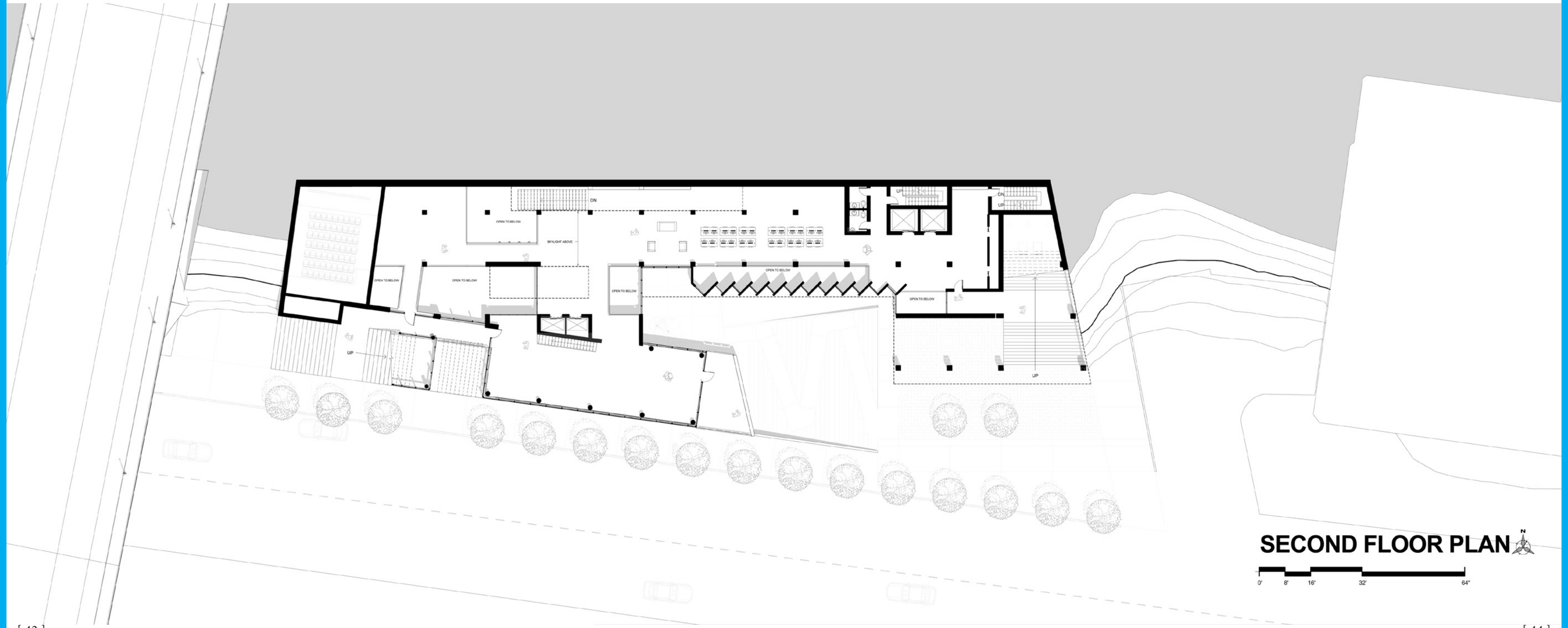


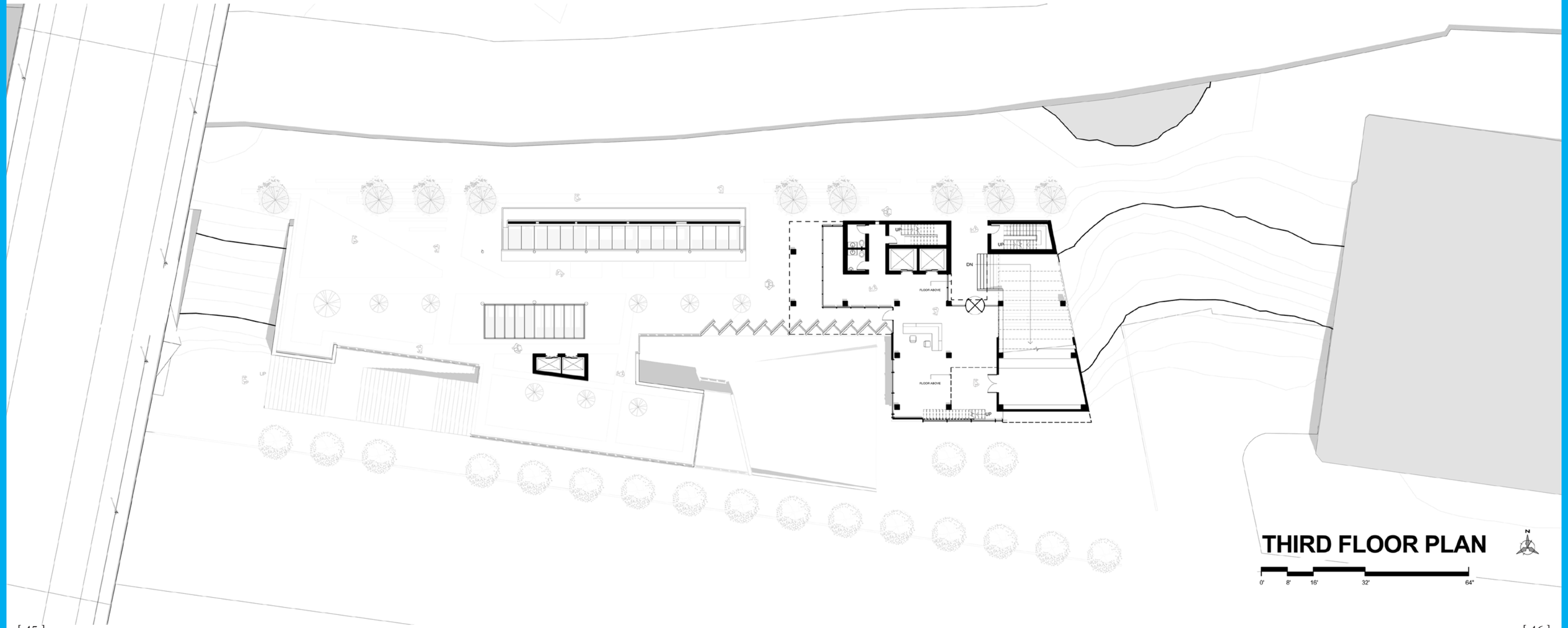
SKYLIGHT DETAIL a-a

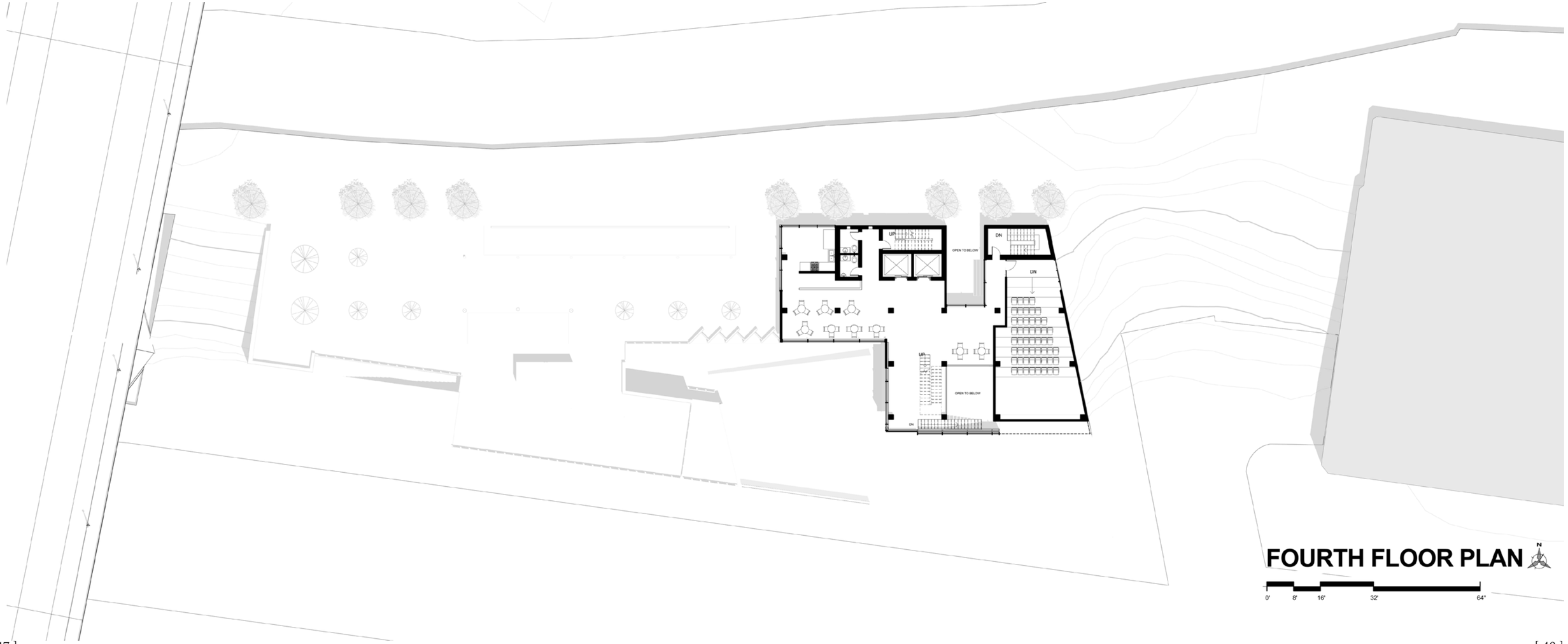
final design



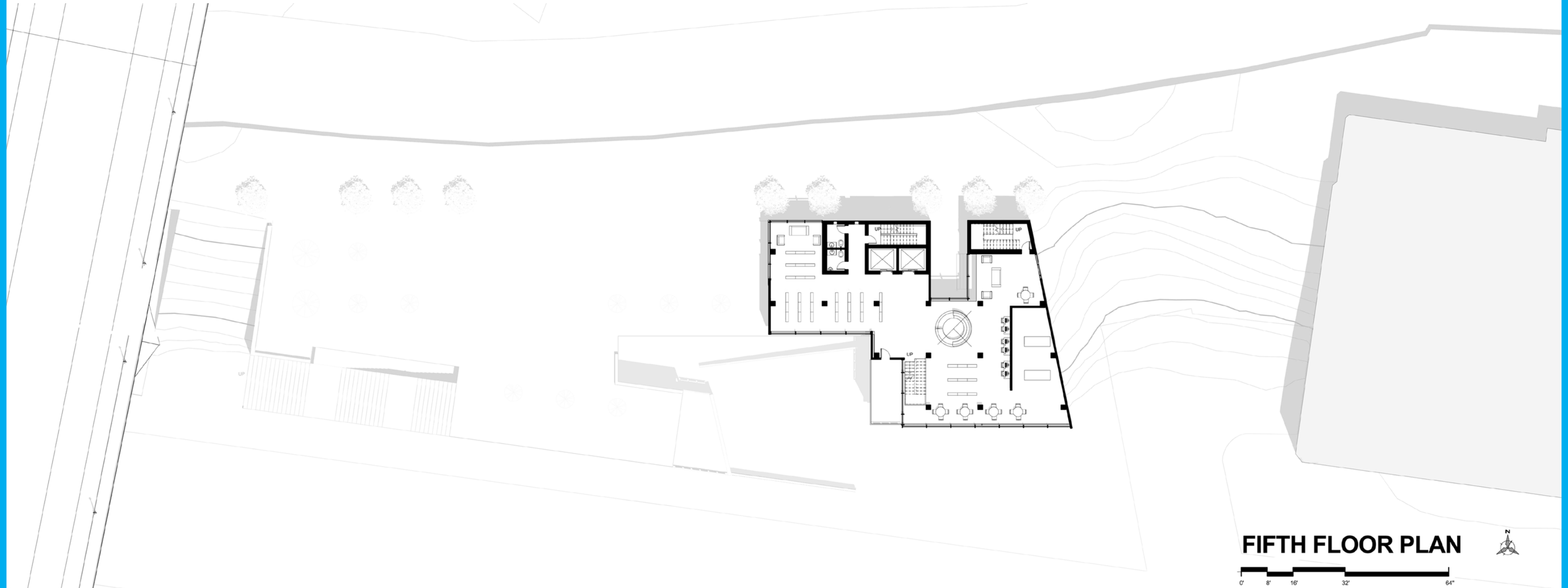

FIRST FLOOR PLAN
N
0'
8'
16'
32'
64'
UP
DN
FLOOR ABOVE


DN
OPEN TO BELOW
SKYLIGHT ABOVE
OPEN TO BELOW
OPEN TO BELOW
OPEN TO BELOW
OPEN TO BELOW
OPEN TO BELOW
UP
UP
UP
DN
UP
SECOND FLOOR PLAN
N
0'
8'
16'
32'
64'

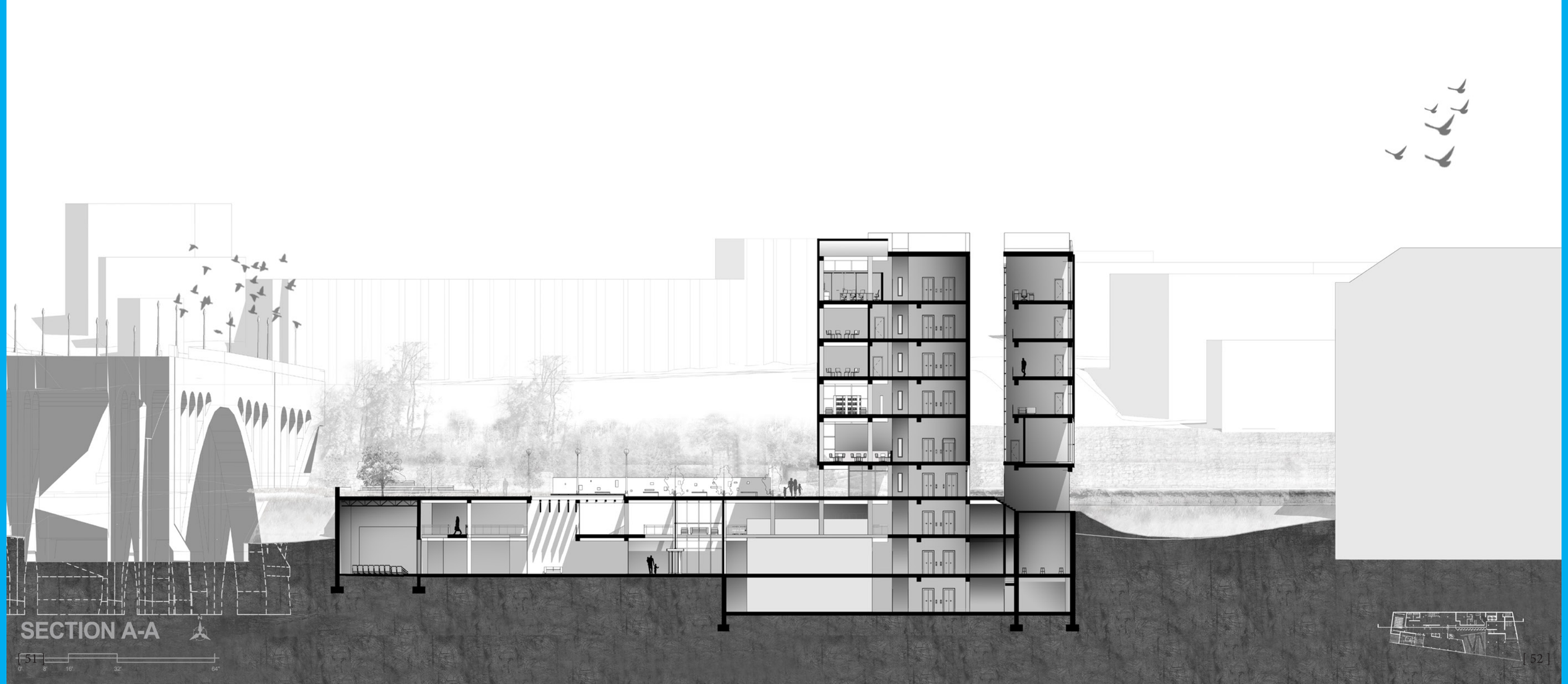

UP
UP
DN
FLOOR ABOVE
FLOOR ABOVE
UP
UP
THIRD FLOOR PLAN
N
0'
8'
16'
32'
64'



FOURTH FLOOR PLAN



FIFTH FLOOR PLAN


SECTION A-A
N
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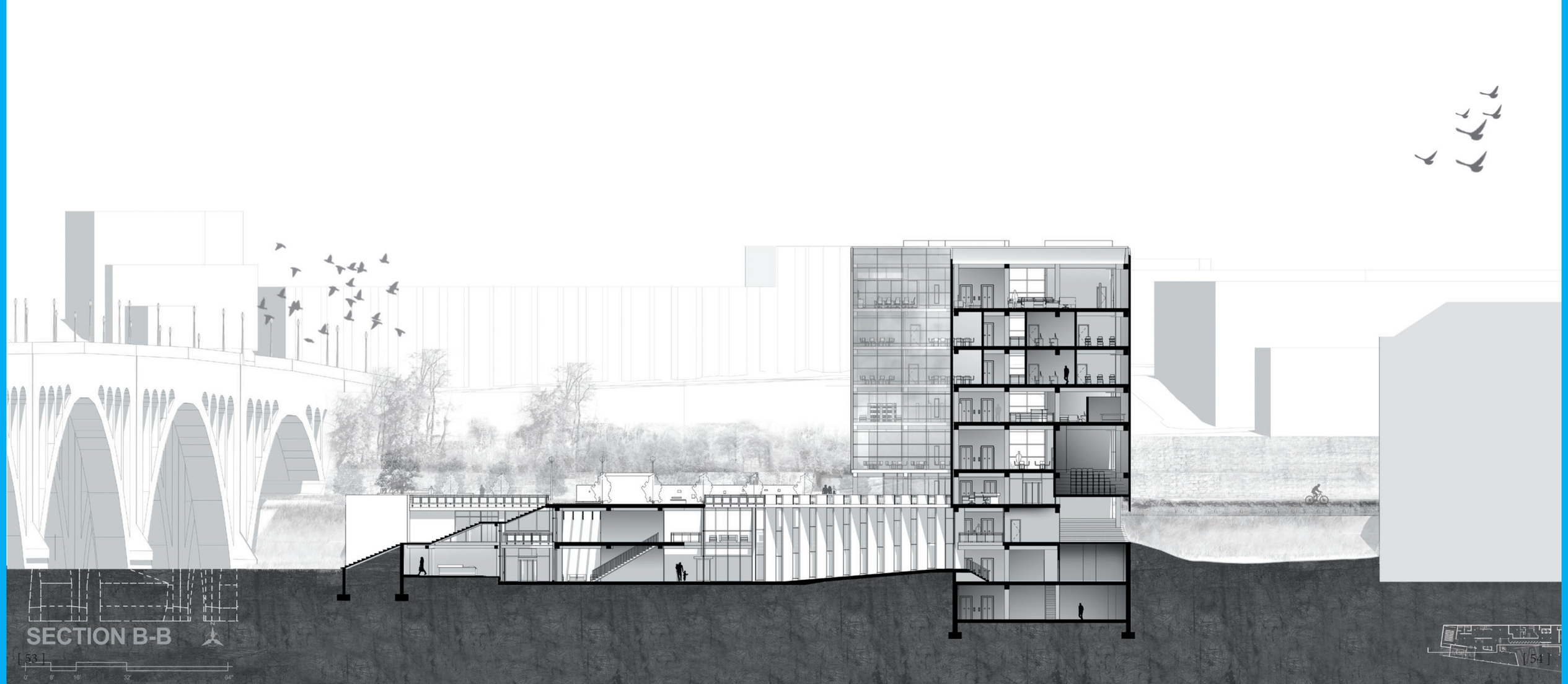
16'
32'
64'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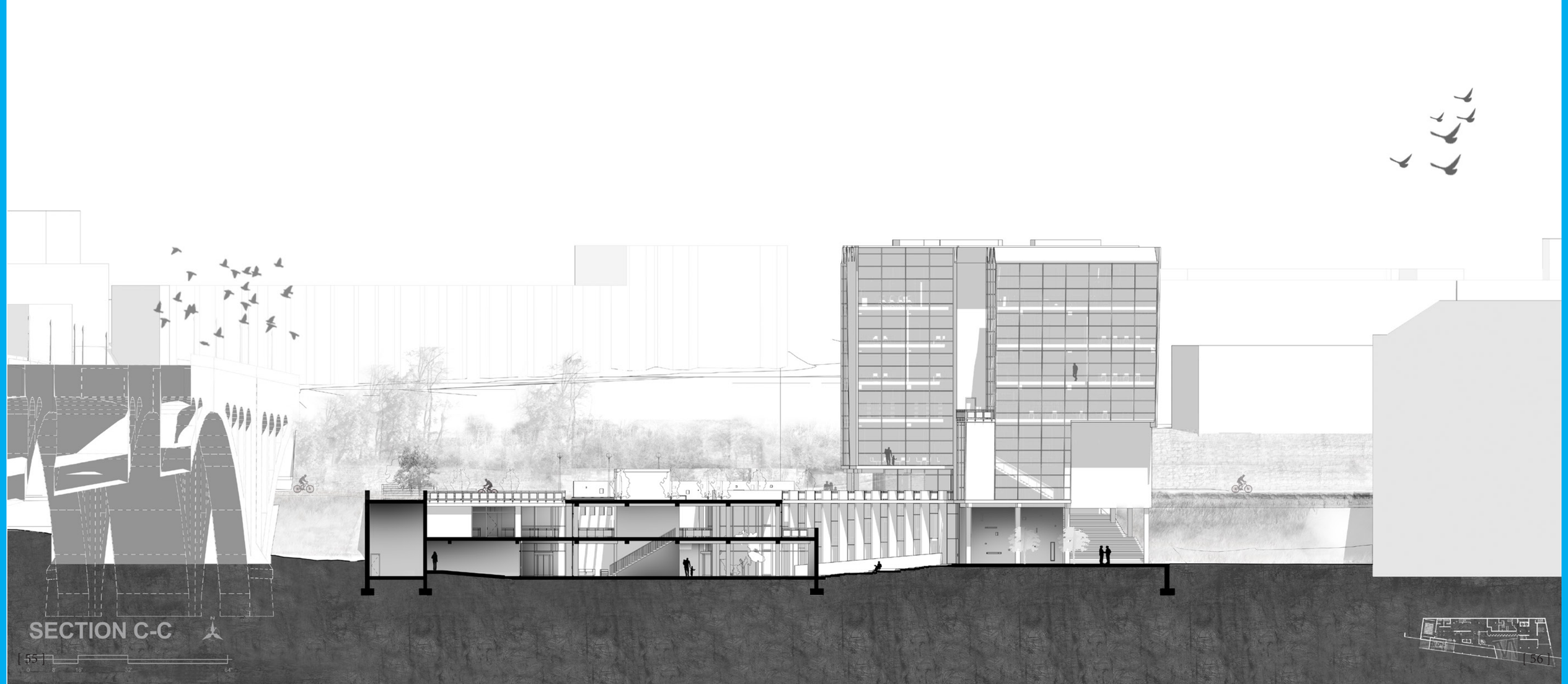
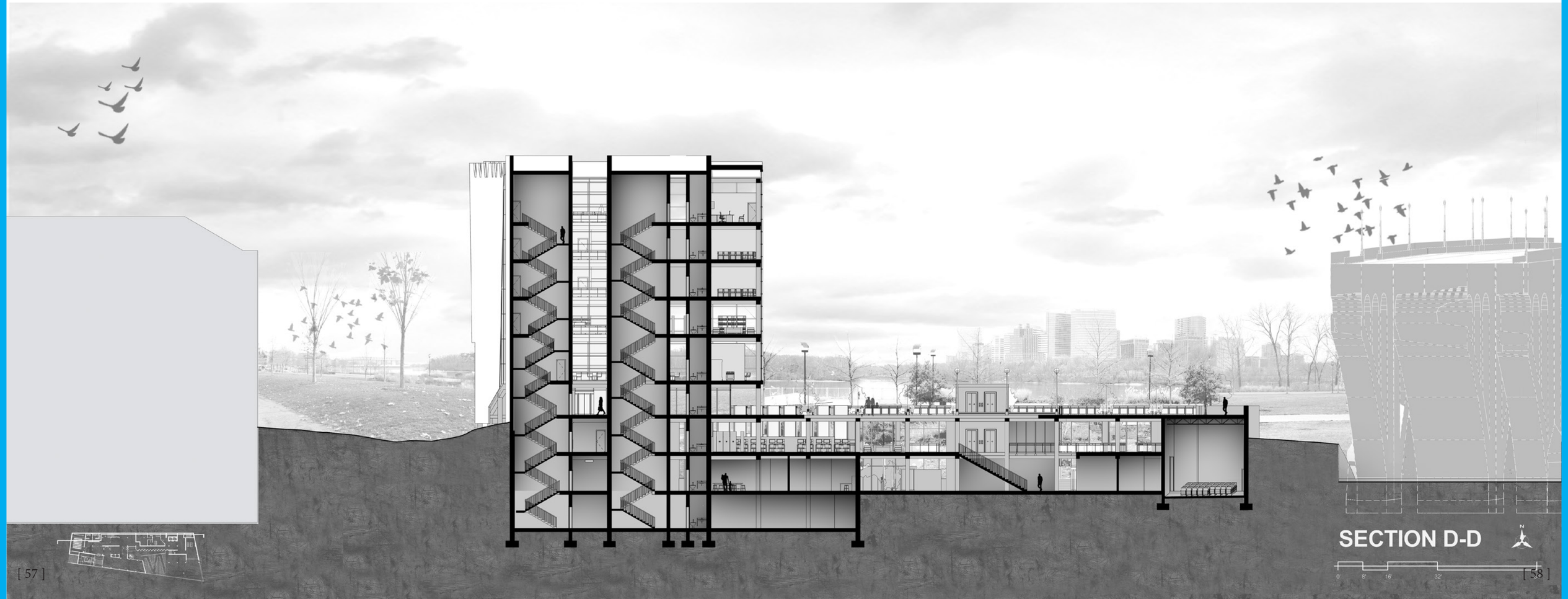
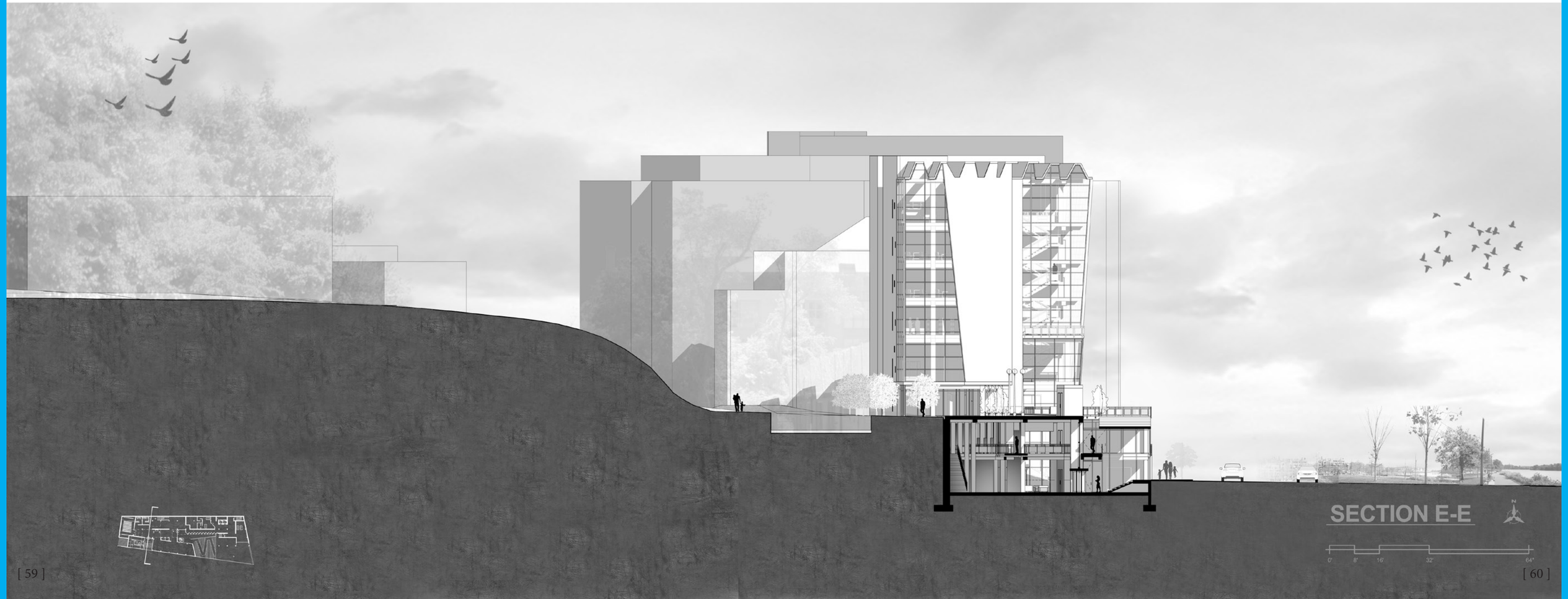
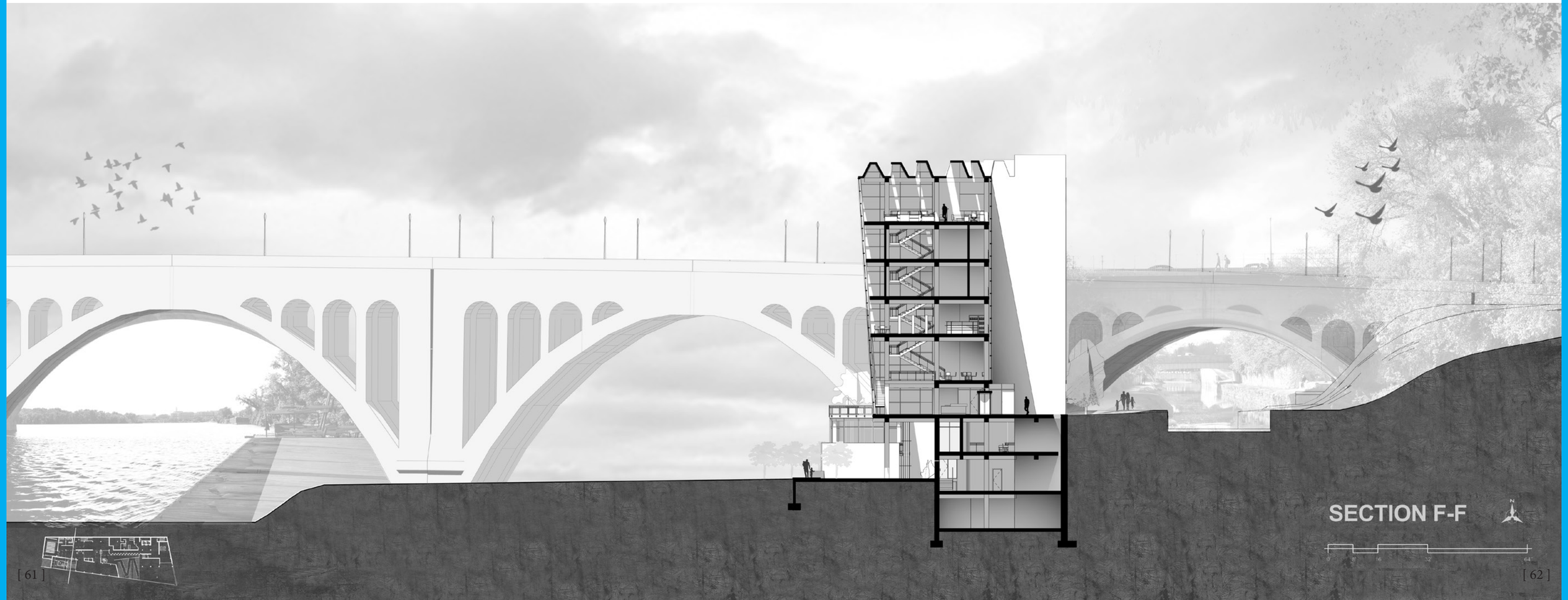
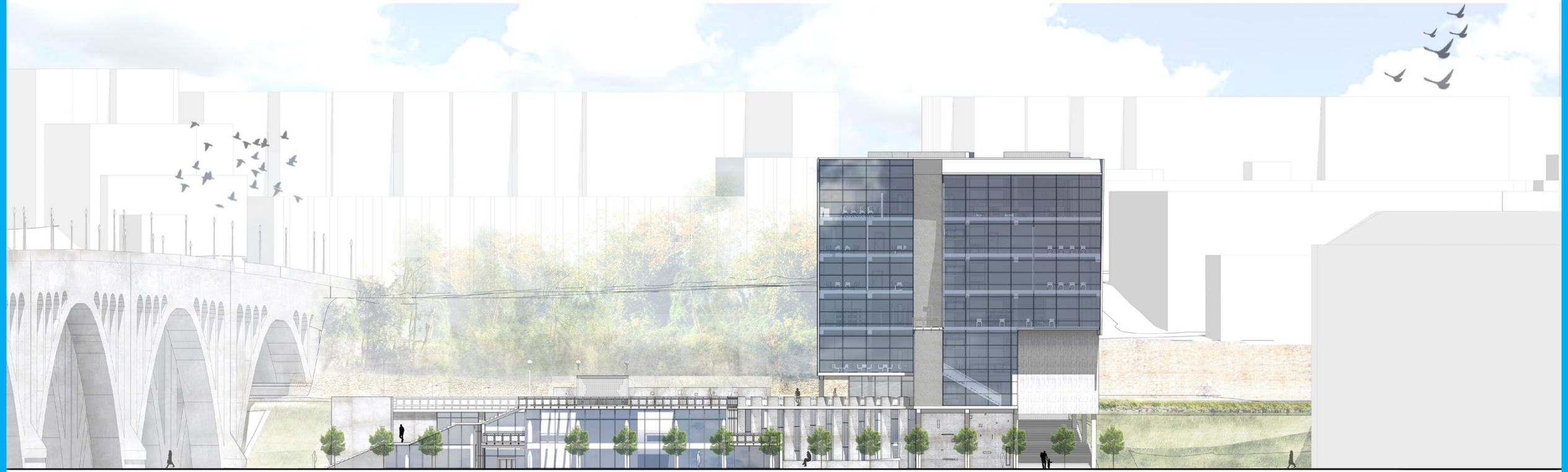

SECTION C-C
0
8'
16'
32'
64'

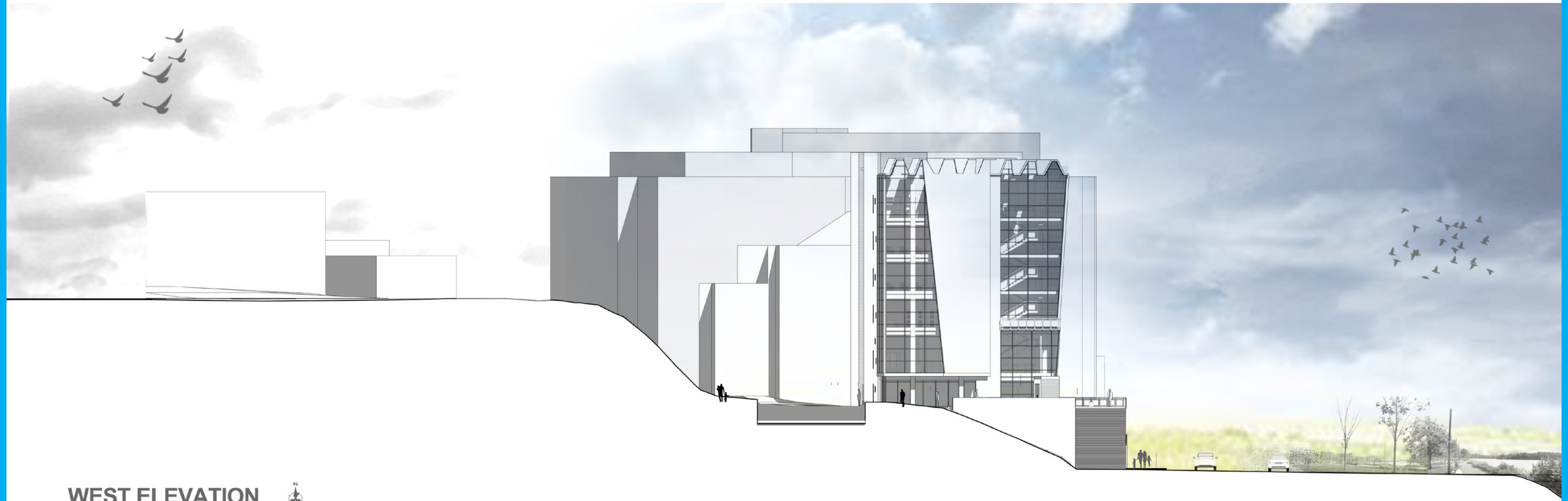

SECTION D-D
N
0
8'
16
32


SECTION E-E
0'
8'
16'
32'
64'


SECTION F-F
N
0
8
16
32
64



SOUTH ELEVATION

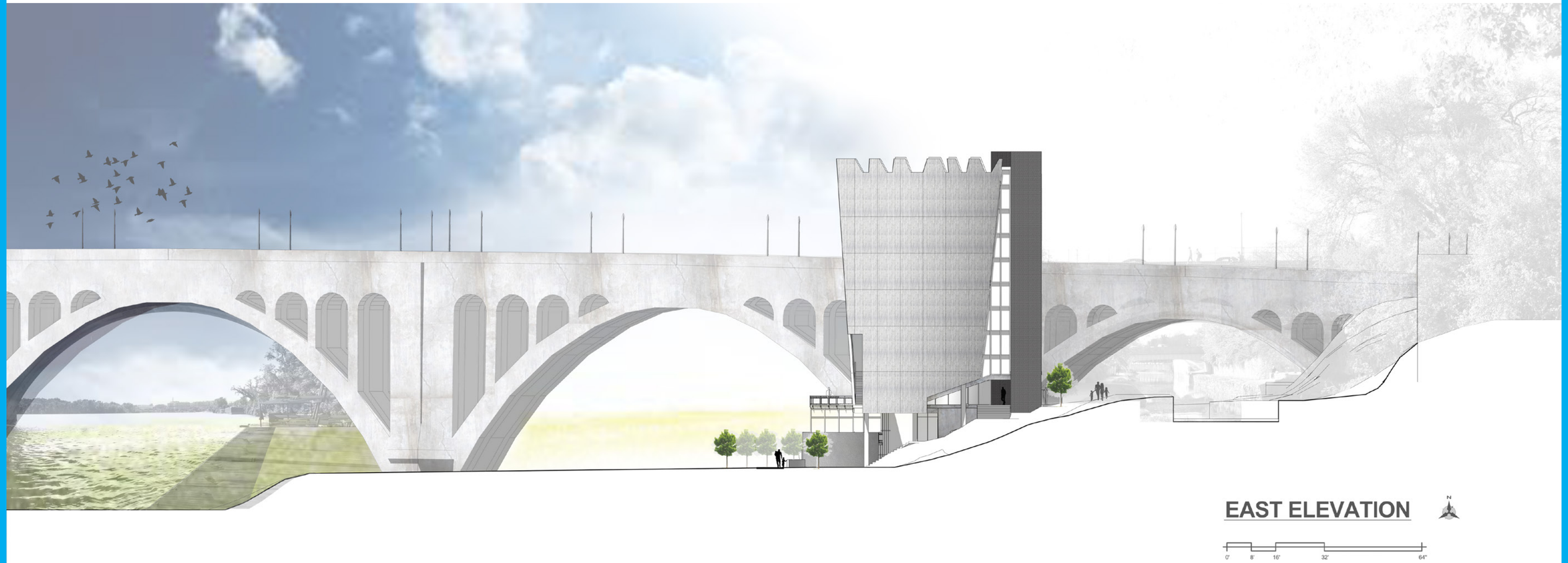


WEST ELEVATION

0' 8' 16' 32' 64'

NORTH ELEVATION

0' 8' 16' 32' 64'


EAST ELEVATION
N
0'
8'
16'
32'
64'

bibliography

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