

***Light in Architecture:***  
***Smithsonian Museum of Photography***

*Douglas Burton White*

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

*Master of Architecture  
in  
Architecture*

*Susan Piedmont-Palladino (Chair)*

*Paul Emmons*

*Marcia Feurstein*

*November 20, 2015  
Alexandria, Virginia*

*keywords:*  
*architecture, light, photography, museum, Washington D.C.*

*Copyright 2015, Douglas White*

"No man has the right to dictate what other men should perceive, create or produce, but all should be encouraged to reveal themselves, their perceptions and emotions, and to build confidence in the creative spirit."

- Ansel Adams



*Light in Architecture:*

*Smithsonian Museum of Photography*

*Douglas Burton White*

ABSTRACT

This project will address light use in a museum. The focus and the program will require give and take in order to provide sources of natural light without compromising conservation standards. The building will house exhibits of film and photography, including theatres, dark rooms, prints, and projections as well as all the necessary program to support the building including a cafeteria, restrooms, a gift shop, as well as indoor and outdoor gathering spaces.

The building site is in DC. When choosing a site I consulted with the National Capital Planning Commission's urban plan of Washington. They have published on their website a study that has listed the city's potential monument and museum sites. When evaluating these sites I decided to use views to and from the sites, as well as acreage to dwindle down the options.

## TABLE OF CONTENTS

1	INTRODUCTION/SITE ANALYSIS
8	DESIGN PROCESS
11	FINAL DESIGN
28	BIBLIOGRAPHY/LIST OF IMAGES

To my family,  
for their support throughout my academic studies.

### Images:

1. National Capital Planning Commission Map
2. Aerial Map

INTRODUCTION/SITE ANALYSIS

For my final academic project I chose to design a museum in the heart of Washington D.C. I am proposing the Smithsonian build a new museum to devote entirely to photography, providing a venue to display contemporary artists' work alongside historically monumental works.

Contemporary museums of today much like cathedrals were in past centuries in the sense that they are some of the most innovative designs being built. People flock to museums for the exhibits and the architecture. Spectacular museums, like the Museum of Art in Bilbao designed by Frank Gehry, can attract huge crowds and supplement tourism.

The main idea behind the design of the Smithsonian National Photography Museum is to honor L'Enfants abandoned city grid by reinstating the presence of his Maryland Ave. axis. In doing this I created angles, based on the axis and the city grid, that the building follows. These angles form into triangles which anchor the building to the site and allow the connecting sweeping form to rely on them structurally and programatically.

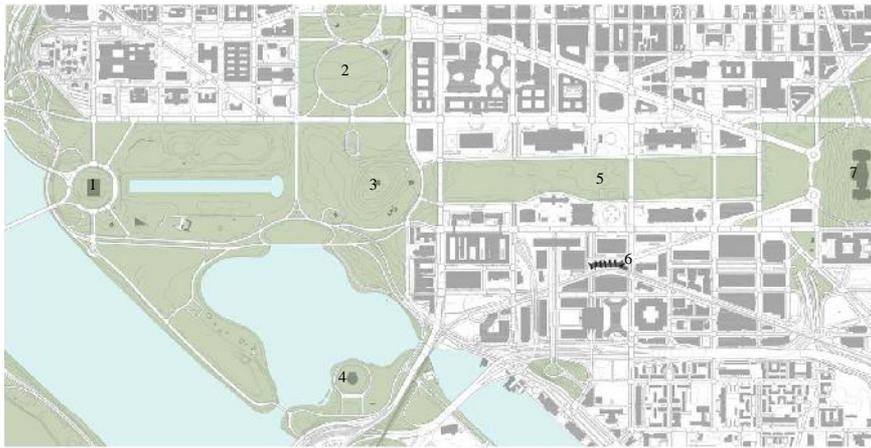


1.

This diagram is meant to show how L'Enfants diagonal avenues pass through the site. Currently the site is a park without any seating or shelter that is surrounded by government office buildings. The placement of this museum also hosts a direct line of site down Maryland Ave. to the western facade of the Capitol Building.

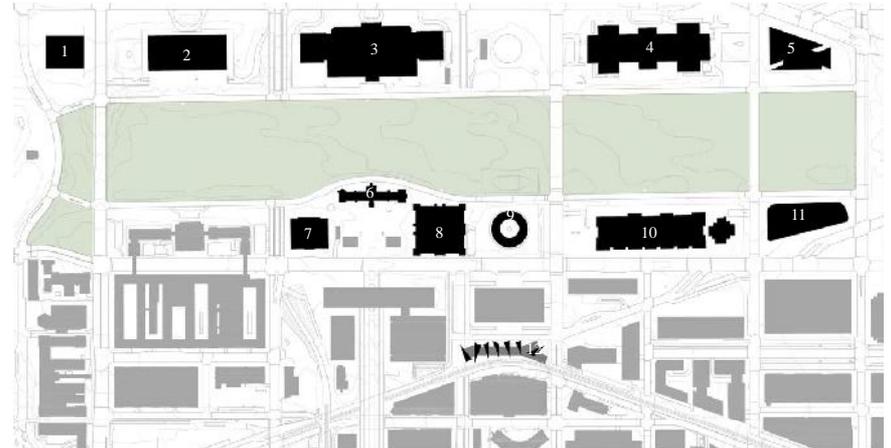


2.



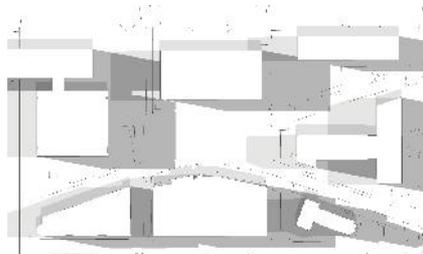
The location of the site is also in close proximity to the National Mall, which are home to many of the Smithsonian's museums.

- 1 Lincoln Memorial
- 2 White House/South Lawn
- 3 Washington Monument
- 4 Jefferson Memorial
- 5 National Mall
- 6 Project Site (massing of design shown)
- 7 Capitol Building

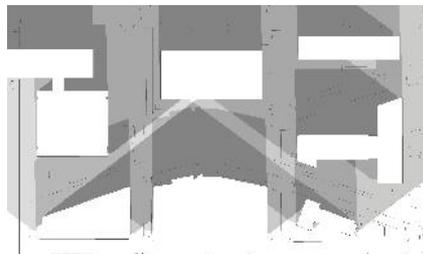


- 1 Museum of the African American
- 2 Museum of American History
- 3 Museum of Natural History
- 4 National Gallery of Art
- 5 National Gallery of Art - East Building
- 6 Smithsonian Castle
- 7 Freer Sackler Gallery
- 8 Smithsonian
- 9 Hirshhorn Museum
- 10 National Air and Space Museum
- 11 National Museum of the American Indian
- 12 Site (concept massing shown)

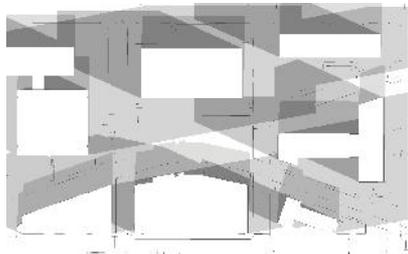




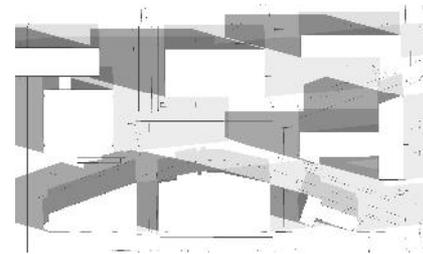
Summer



Winter

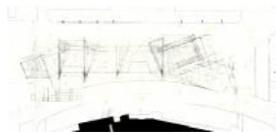
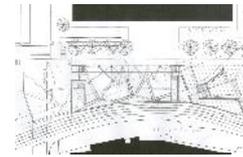
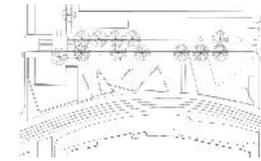


Fall

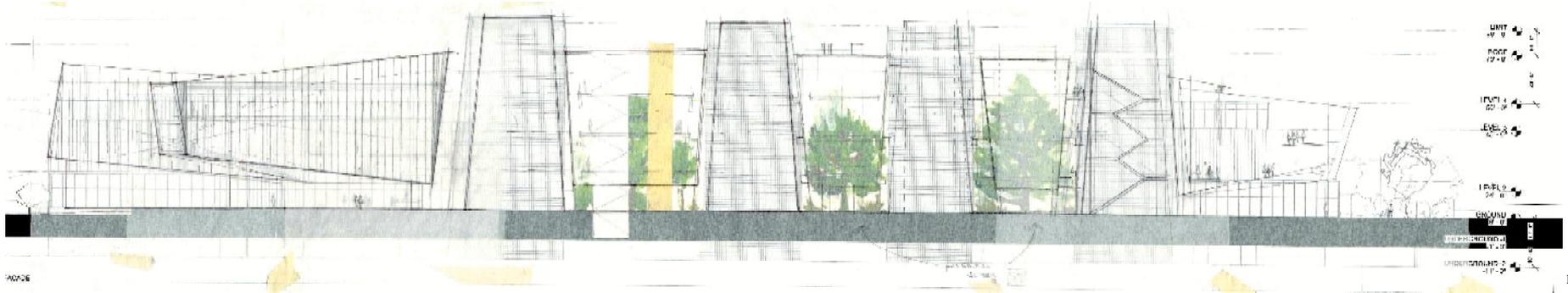
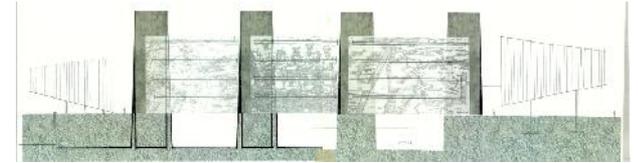
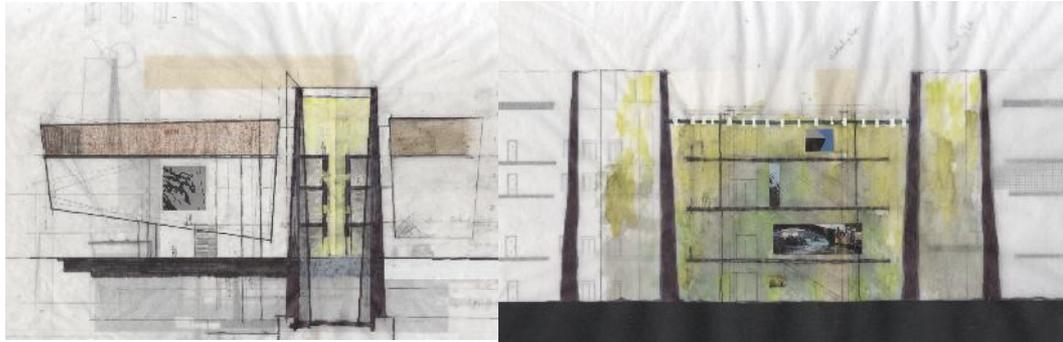


Spring

Light, being essential to both architecture and photography, was studied to decide the translucence of the southern facade. Keeping in mind that much of the work housed in naturally light areas are replications of negative, or digital files, thus are able to be reproduced if need be.



### DESIGN PROCESS

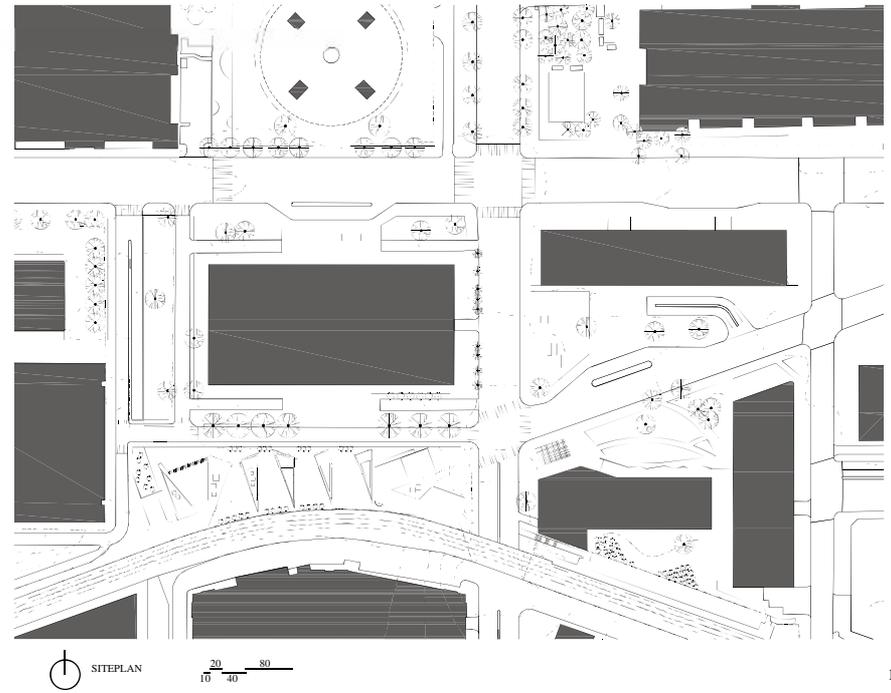


## FINAL DESIGN

While researching the history of the camera and photography's relationship with architecture I came to discover the *camera obscura*. This device acts much like the human eye. The basic concept is to have a completely dark room with one small opening on one face. The result of this basic setup is the view to which the hole points toward is projected onto the far wall. With the view down Maryland Avenue framing the Capitol Building I found this a great way to activate the lobby and create interest and wonder in photography. This concept can be shown in the rendering to the right.

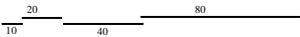
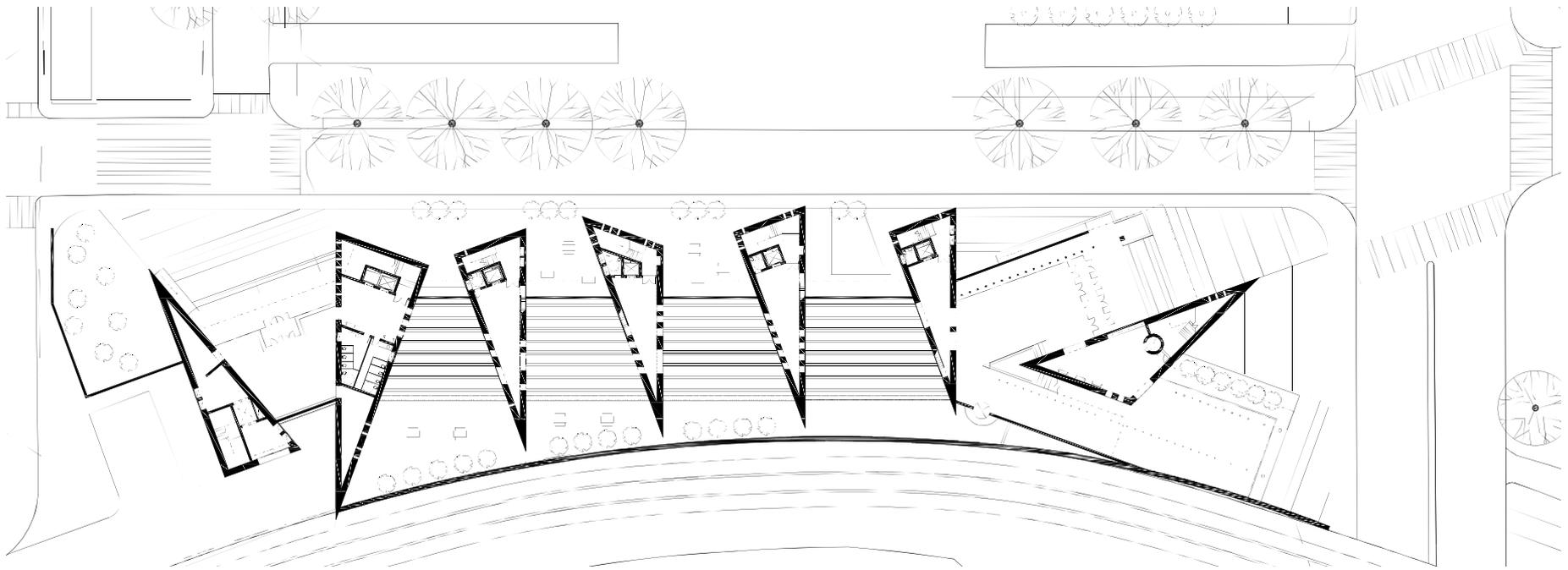


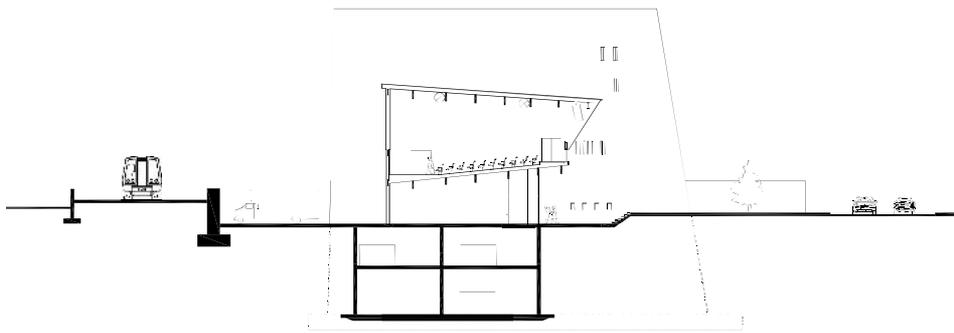
The final geometry of the building can be seen below and to the right. This is a view of the NE corner of the building as it looks down L'Enfants diagonal avenue. The CoreTen mass on the right houses the *camera obscura* and provides a porch entry into the lobby. To the left you can see the offices and the giftshop connected to the lobby.



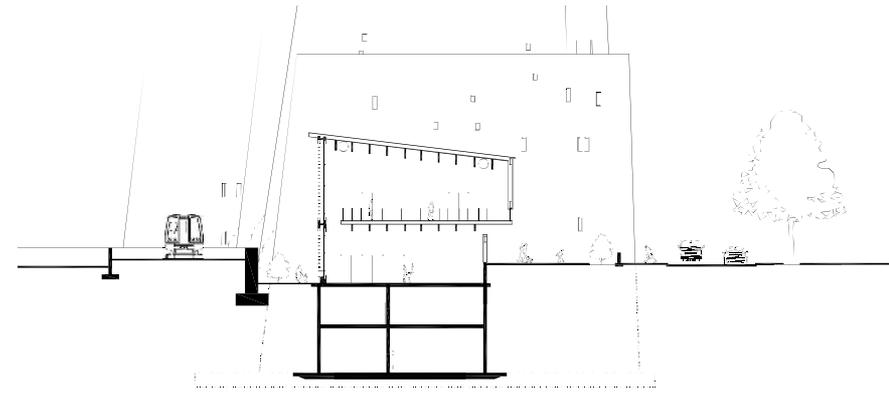
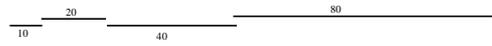
On the NW corner of the site an auditorium is housed. It is also clad in CoreTen steel with a ribbon window at the floor to reveal that the structure of the space is a clear span glued laminate beam.



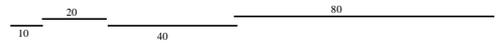


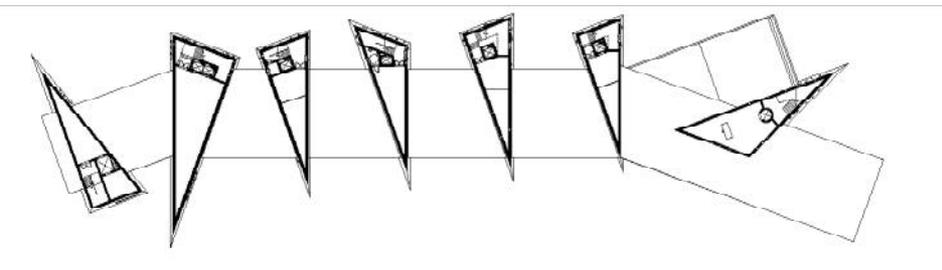


TRANSVERSE SECTION

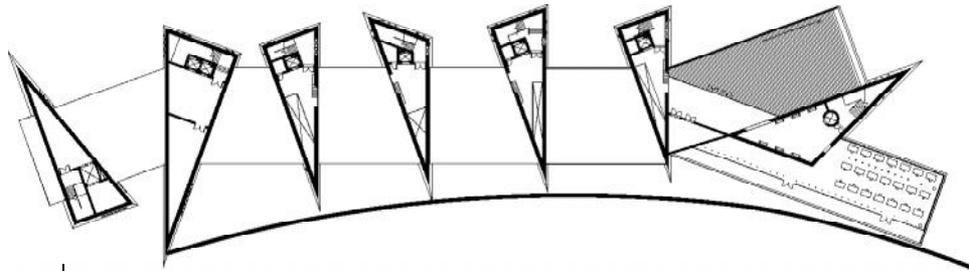


TRANSVERSE SECTION

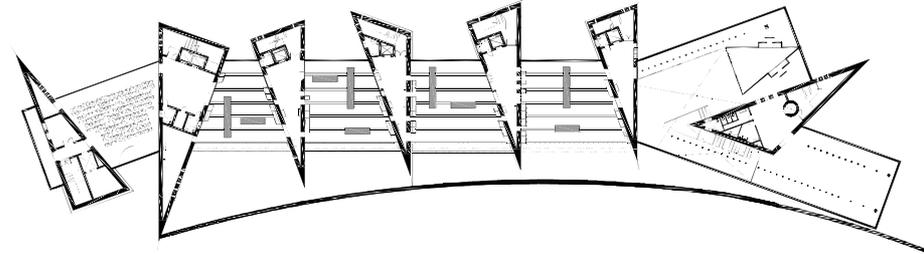




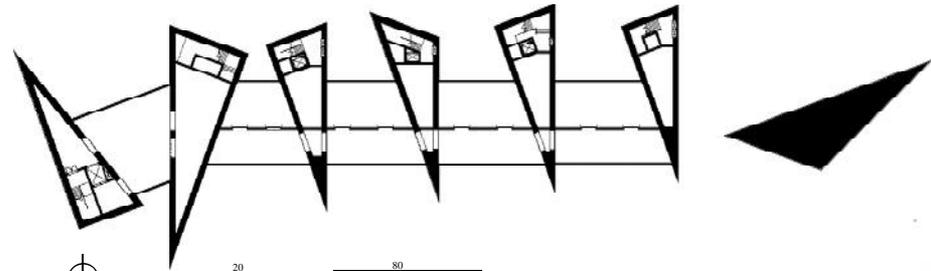
LEVEL 4  
 10 20 40 80



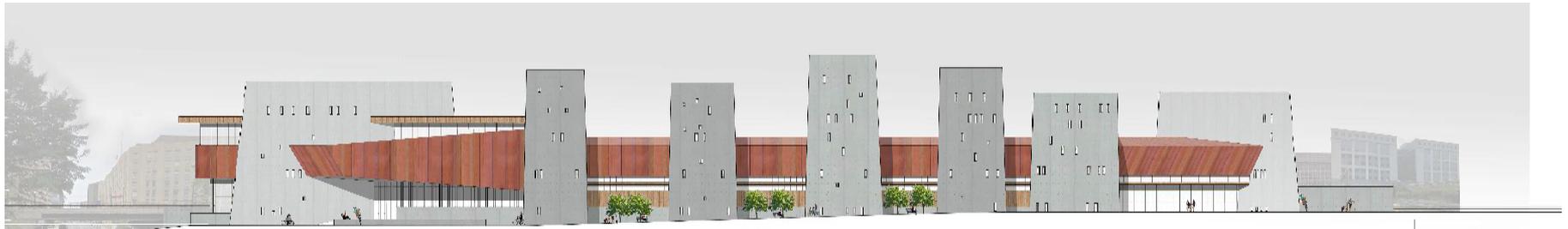
LEVEL 3  
 10 20 40 80



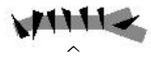
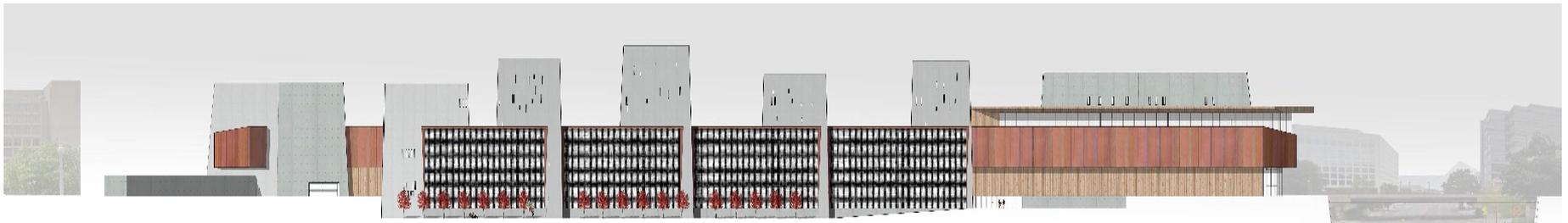
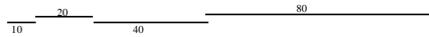
LEVEL 2  
 10 20 40 80



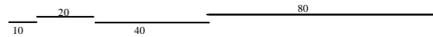
BASEMENT LEVEL  
 10 20 40 80



NORTH ELEVATION

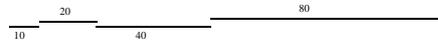


SOUTH ELEVATION





LONGITUDINAL SECTION



BIBLIOGRAPHY:

Benjamin, Walter, and J. A. Underwood. *The Work of Art in the Age of Mechanical Reproduction*. London: Penguin, 2008. Print.

Higgott, Andrew, and Timothy Wray. *Camera Constructs: Photography, Architecture and the Modern City*. Burlington: Ashgate Pub., 2012. Print.

National Capital Planning Commission, Joint Task Force on Memorials (2001). *Memorials and Museums Master Plan*. Retrieved from [http://www.npc.gov/npc/Main%28T2%29/Publications%28Tr2%29/ifrapages/monumental\\_core\\_framework\\_plan\\_a.html#2MPub](http://www.npc.gov/npc/Main%28T2%29/Publications%28Tr2%29/ifrapages/monumental_core_framework_plan_a.html#2MPub)

Piano, Renzo, and Victoria Newhouse. *Renzo Piano Museums*. New York: Monacelli, 2007. Print.

The images listed below are for educational purposes only and were reproduced according to fair use law.

All other drawings, images and illustrations were produced by the author.

List of Images:

1. *National Capitol Memorial Commission* N.p., September 2001. National Capital Planning Commission <[www.npc.gov](http://www.npc.gov)>
2. "Bing Maps." Bing Maps. N.p., n.d. Web. 11 November 2015. <<https://www.bing.com/maps>>.

END