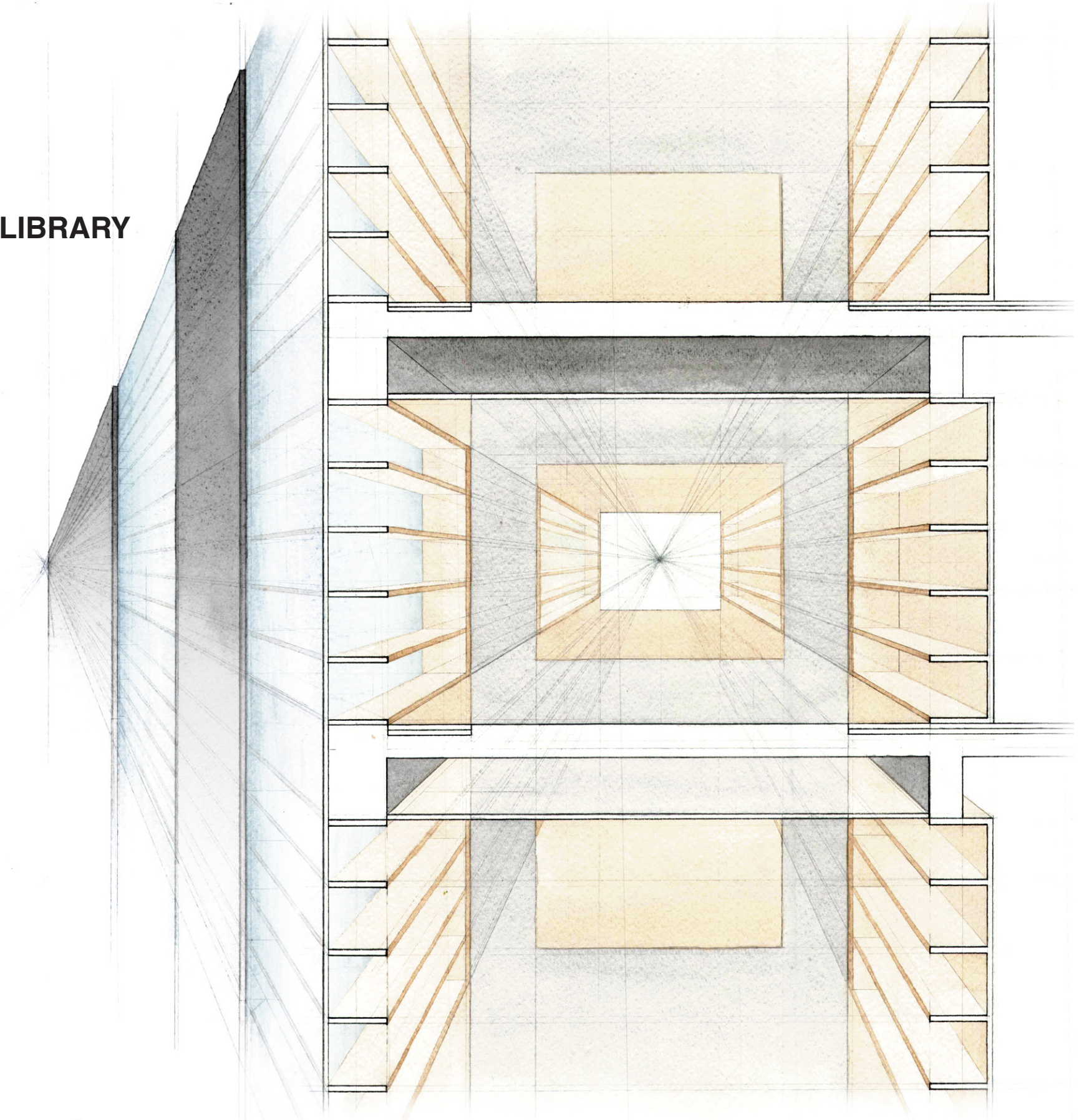


THE ANAMORPHIC LIBRARY

Kelley Adair Davies



THE ANAMORPHIC LIBRARY

Kelley Adair Davies

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
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Paul Emmons

Marcia Feuerstein

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ABSTRACT

The Anamorphic Library

Kelley Adair Davies

This thesis examines the idea of perspective, specifically anamorphic perspective, and how anamorphosis can be applied to architecture. Anamorphosis is a distorted image that appears regular only from a certain point. With a focus on anamorphosis, perspectival drawings became the key component in the design of the library. Perspectives have been embodied in architecture; however, they remained limited to the realm of illusion, distinct from constructed reality. The library contains this duality of illusionism and realism. Similar to reading a book, one might get lost in the story, imagine themselves as one of the characters, and question if they are in reality, or in the illusion of the book.

To further enforce this falsehood, the library holds fictional books, ranging from fairy tales to mythological books.

The library is constructed with three main corridors, which wrap around the inner core, an open-air courtyard. The corridors contain the illusion while the “reality” resides adjacent to these corridors. This gives the spectator a chance to witness the stage of the illusion and the behind-the-scenes of the illusion, the reality.

GENERAL AUDIENCE ABSTRACT

The Anamorphic Library

Kelley Adair Davies

Anamorphosis is a type of perspective distortion which requires the viewer to occupy a specific vantage point to reconstitute the image. This is commonly referred to as “forced perspective.” An anamorphic image appears irregular, or distorted, until the viewer reaches a certain point. Only from this point will the image be restored and appear with regular proportions.

The Baroque era exhibited the first known applications of anamorphosis, which was often used in drawings and paintings; however, only few accounts of anamorphosis have been found within architecture. The purpose of this research is to explore the anamorphic drawing methods and how anamorphosis can be employed in the design of architecture.

ACKNOWLEDGMENTS

I give thanks to

Mom and Dad for continuing to support me through my educational and athletic careers. You both have sacrificed so much for me and I could not be more grateful.

My husband, Michael, for the endless support throughout this journey. You have continued to put me at ease even during the most difficult times. I cannot thank you enough.

My committee members: Paul, Marcia, and Jaan for your guidance. I first presented the vague idea of perspective and you have helped me develop that idea into a thesis. You have pushed me farther than I thought I could go. I have you all to thank for the architect I have become.

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My classmates / coworkers / friends for accompanying me on this adventure, and for all the suggestions, tips, and encouragement.

TABLE OF CONTENTS

Abstract	
History of Anamorphosis	1
Constructing in Perspective	4
Finding Anamorphosis	8
The Site	15
The Library	21
List of Images	44
References	45

HISTORY OF ANAMORPHOSIS

Anamorphosis is a distorted projection or drawing, so made that when viewed from a particular point, it appears regular and properly proportioned. In classical Greek, the term *anamorphosis* literally translates as “distortion.”

This type of perspective “distortion” was developed during the Baroque period. In 1510, Leonardo da Vinci drew the first anamorphic image and wrote down the first description of how to look at an anamorphic image.

“The observer should situate himself with his eye at a small aperture, and then through this hole the perspective will be well displayed. But because many spectators will strive to see at the same time the one work made in this manner, and as only one can see well how such perspective functions, all these other people will find it confusing.”

- Leonardo da Vinci, from Grootenboer, *The Rhetoric of Perspective*, 104.

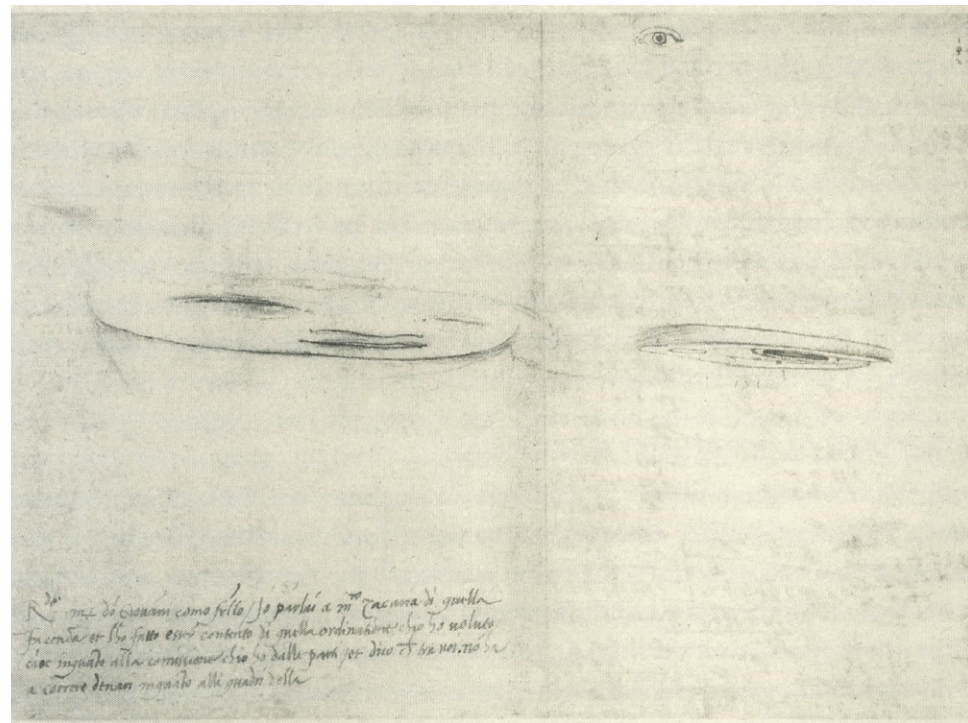


Fig. 1 - Leonardo da Vinci's Anamorphic Drawing

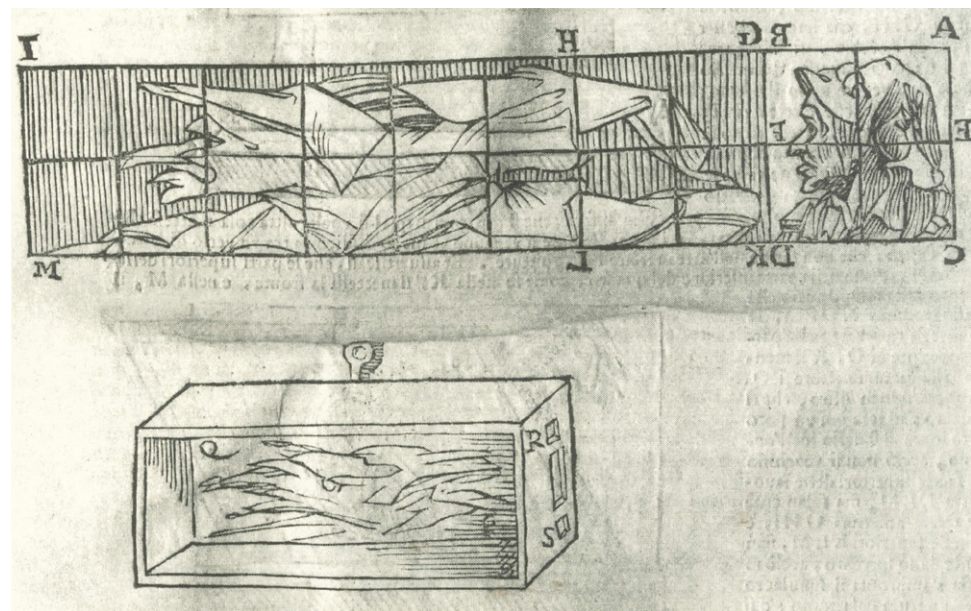


Fig. 2 - Egnazio Danti's Anamorphosis

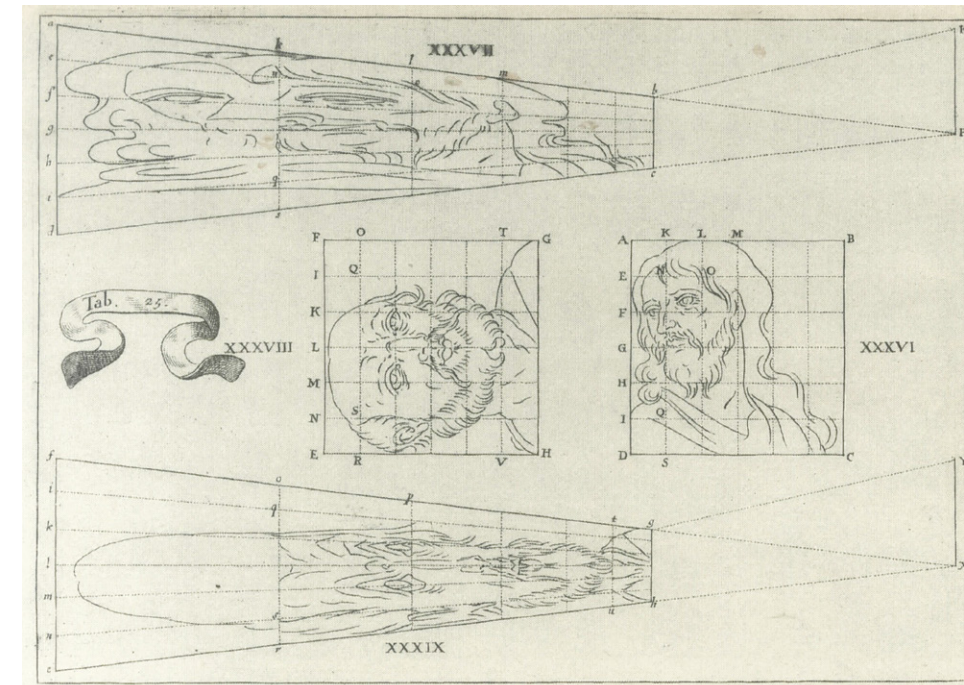


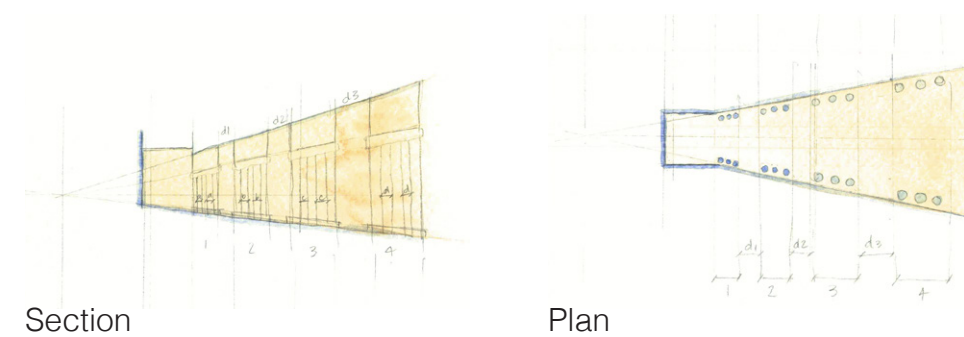
Fig. 3 - Jean-François Nicéron's Anamorphic Grid

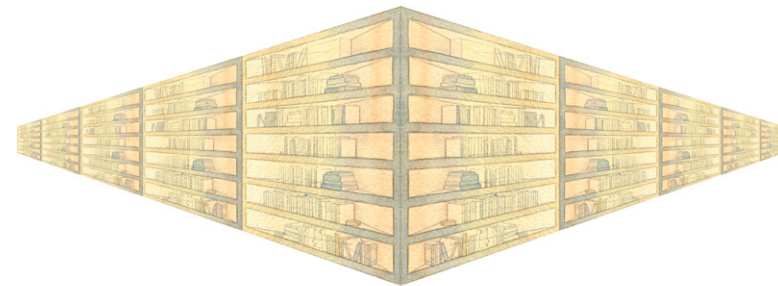


Fig. 4 - Corridor at Palazzo Spada

Francesco Borromini's corridor at Palazzo Spada in Rome, Italy, became the key influence for this thesis. Borromini's corridor, constructed in 1652, is an example of a type of architectural distortion that exaggerates the perspectival view. The round columns decrease in diameter and height. The spacing of these columns diminishes as the corridor converges in perspective. Borromini made the front arch larger, while the farthest arch is smallest. The sculpture at the end of the corridor stands at 2 feet in height although it seems properly proportioned in perspective. Angled walls and ceilings further exaggerate this illusion. The corridor appears as if it is 100 feet long, but in reality it is only 24 feet in length.

This thesis proposes to design a reverse perspective of Borromini's corridor. As he creates architectural elements reducing in size, the library contains elements that increase in size so that in perspective, the elements appear equal in scale.

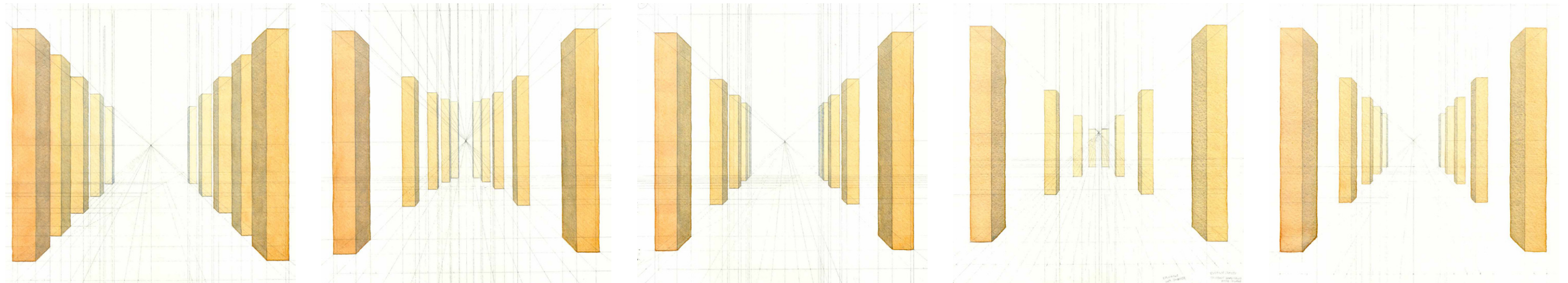




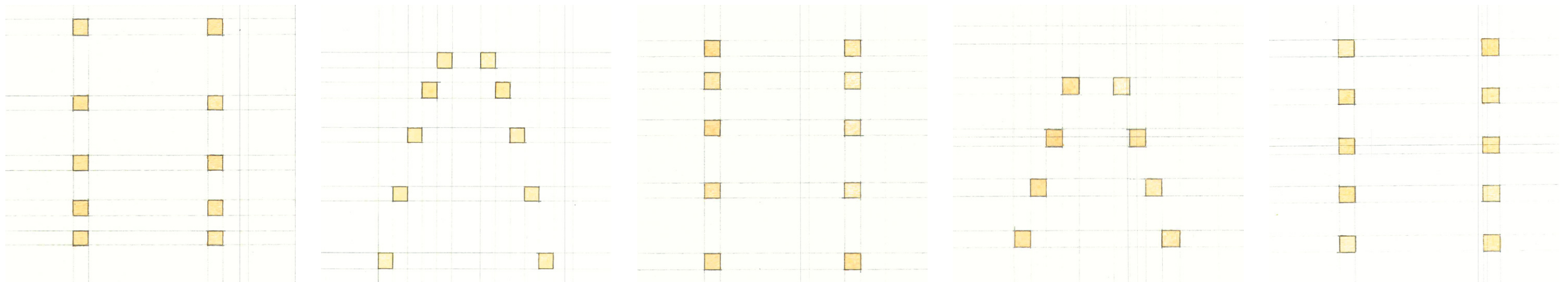
CONSTRUCTING IN PERSPECTIVE

To begin this thesis, a study of perspectival drawings was conducted in order to fully understand the construction of perspectives. In previous studio projects, perspectives were the last drawings to be constructed. For this thesis, a “top-down” style, as detailed by Le Corbusier, was used to design the library. Le Corbusier described *du dedans vers le dehors*, or “from the inside to the outside,” as a way of designing architecture. Starting with perspectives was not the only means of working backwards in the design of the library, but the library was in fact designed beginning with the interior and ending with the exterior.

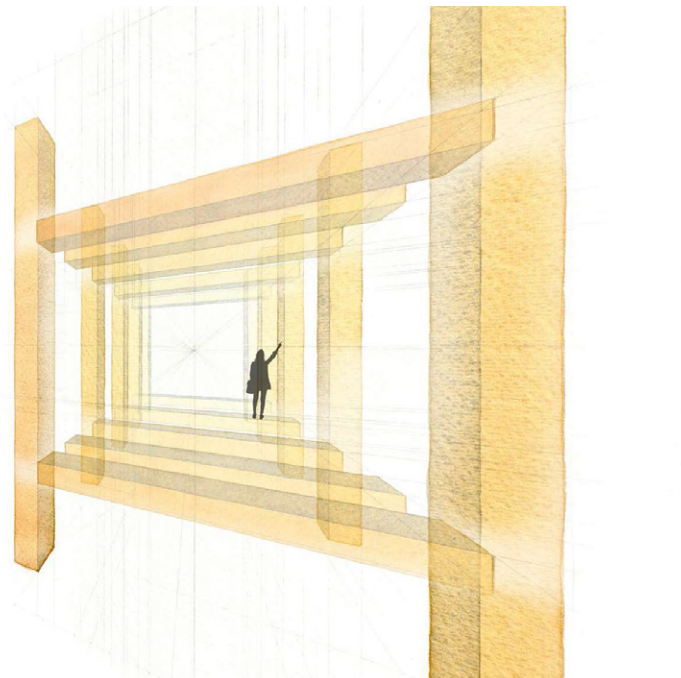
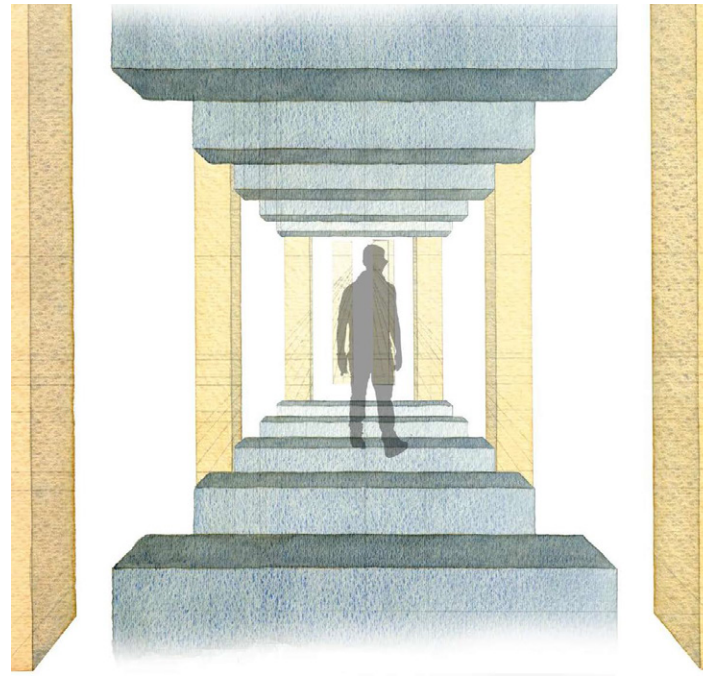
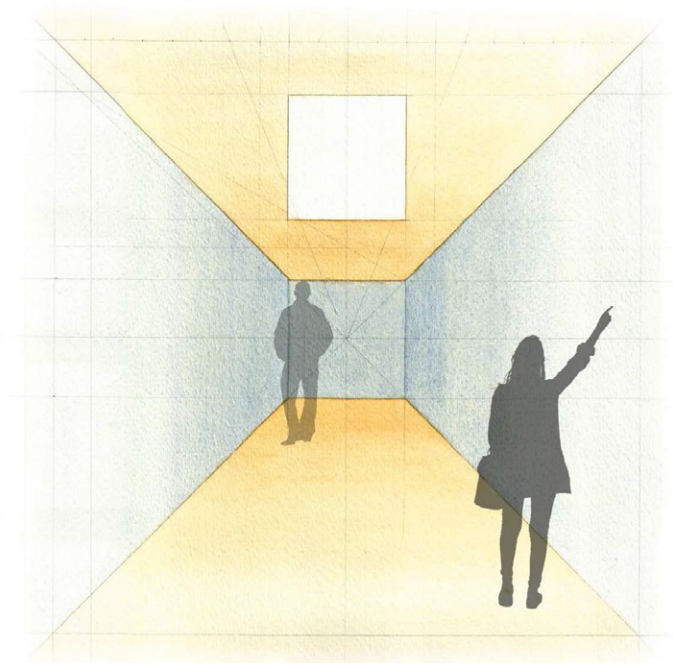


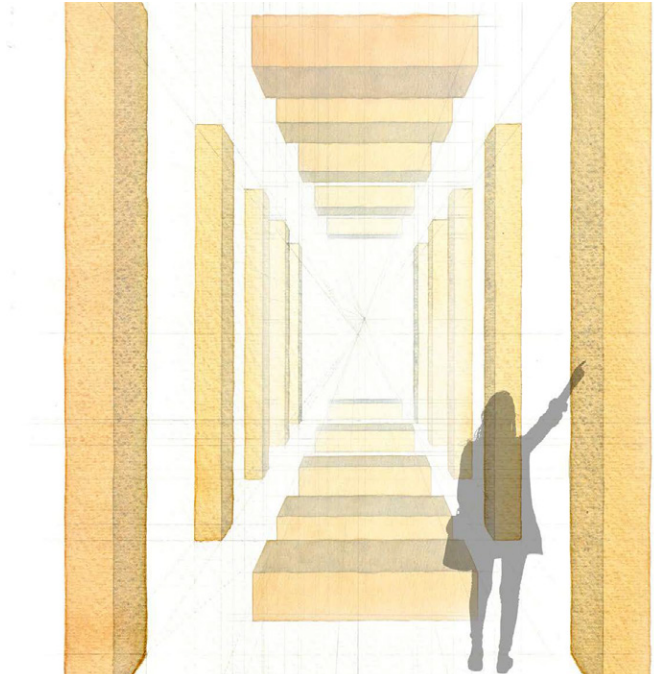
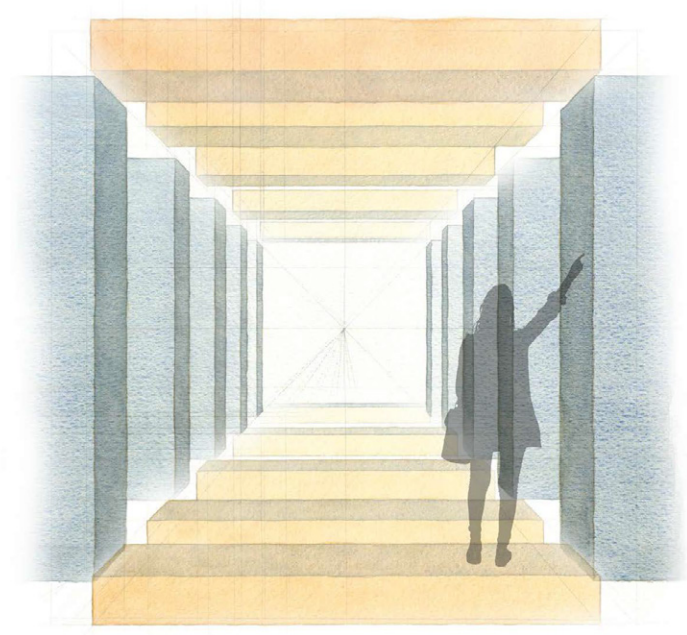


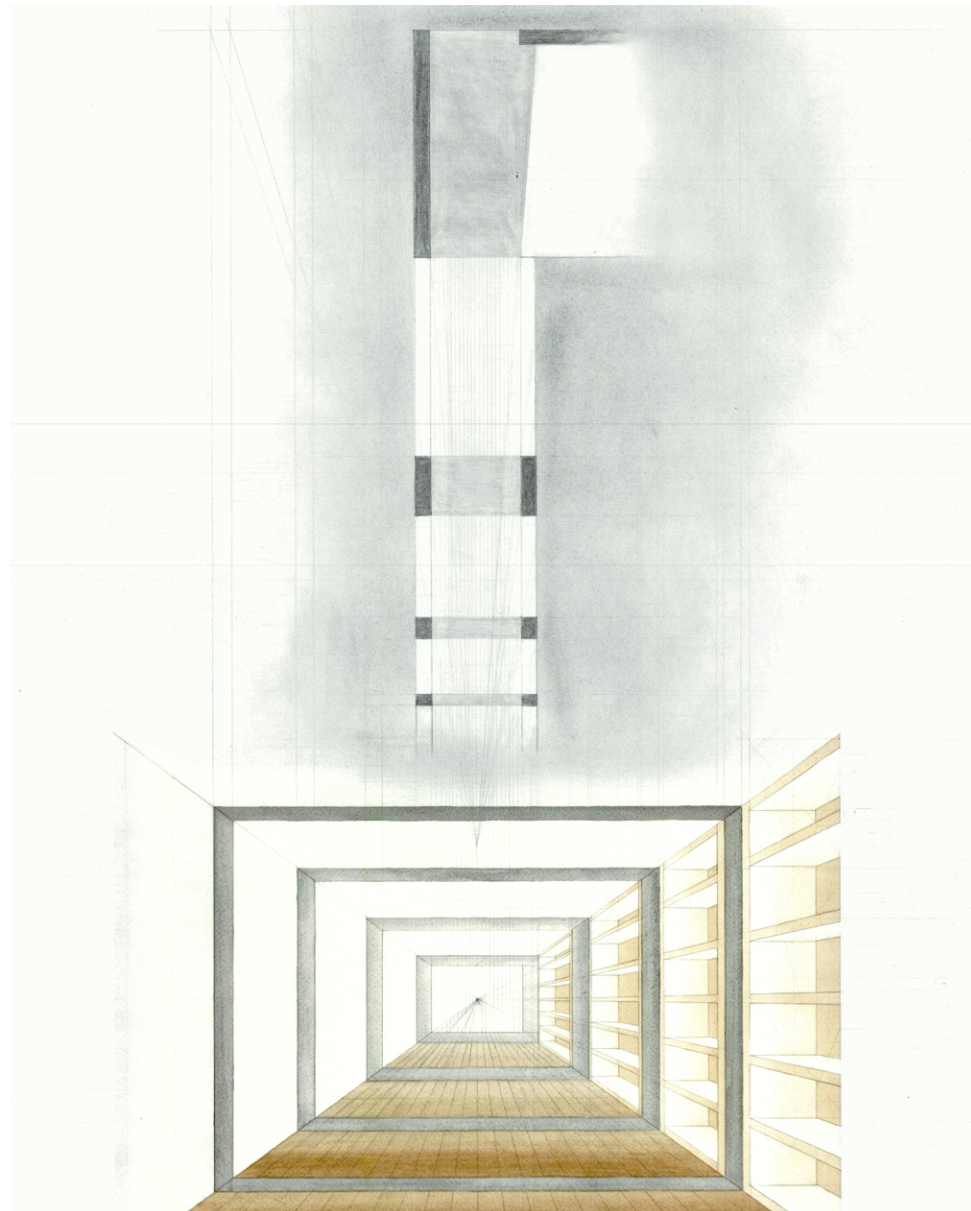
Perspectives



Plans

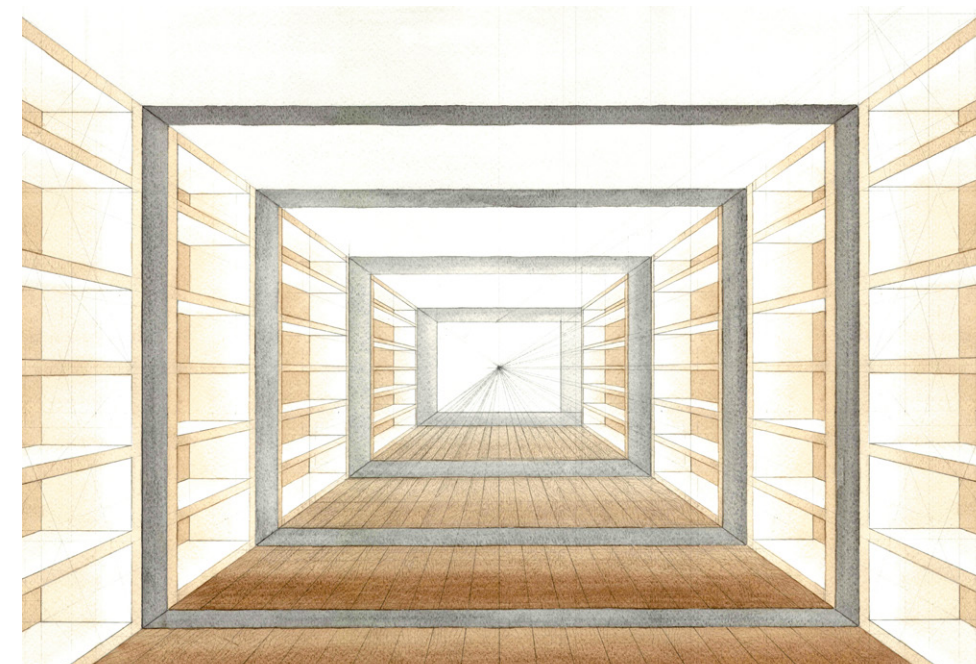






FINDING ANAMORPHOSIS

The illusion of the library began with a view looking into a corridor. A series of gray squares was drawn equally proportioned in perspective to represent the load-bearing walls. Deriving the plan from the perspective unraveled the truth of the image. In plan, the squares increase in size, as the walls increase in length and the floor increases in depth. The image became elongated in plan, yet it was not distorted.



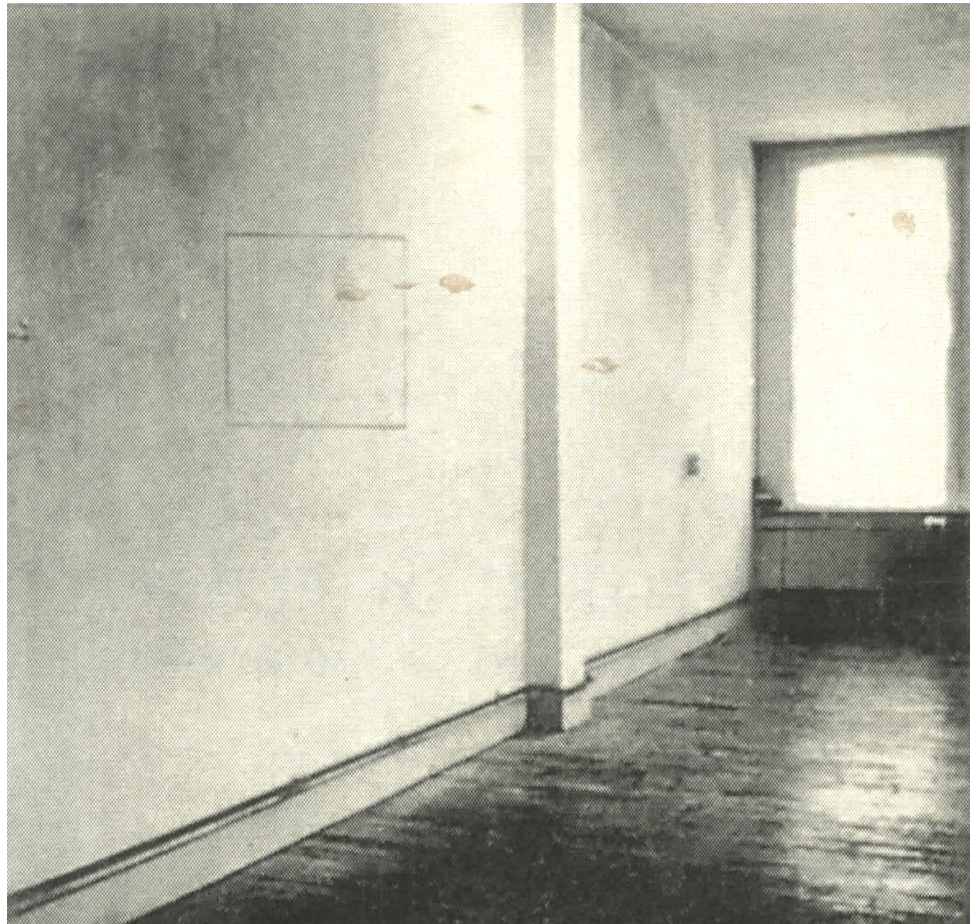


Fig. 34 - Jan Dibbets' Square on the Wall

Anamorphosis has been referred to as *prospettiva inversa* because it reverses the direction of projection. It aligns the vanishing point, the image, and the viewpoint with the picture plane. It fixes the observer's point of view in an unusual location. From only a single point is the distorted image magically unveiled, as it appears to "lift off" the wall. Jan Dibbets' *Perspective Correction* is a series of black-and-white photographs that represent distorted images "lifting off" the wall.

"On the wall, a square has been drawn, divided by two diagonals into four triangles. As in every picture in the series, the square disrupts the spatial coherence of its environment. It appears as if it does not fit in the photograph at all; as if it was drawn on the photograph's glossy surface rather than on the studio wall. Our eyes are confused because we see this geometrical figure as if standing directly in front of it, while we throw an oblique glance, between its lines, at its ground, the wall behind it. What we see is not simply a drawing of a square, but an anamorphic figure; that is it appears as a square only at the point from which the photograph was taken and from which we view it."

- Hanneke Grootenboer, *The Rhetoric of Perspective*, 97.



With influence from Dibbets' photograph, the squares were further extended beyond the original perspective planes to spark confusion. It becomes unclear as to whether the squares belong to the planes of the floor and ceiling, or the walls. After drawing the perspective, lines were translated to reveal the plan, which sequentially revealed the truth of the illusion. In plan, the walls resemble those of the first corridor as they gradually increase in length; however, the pattern in the floor appeared distorted, or anamorphic.



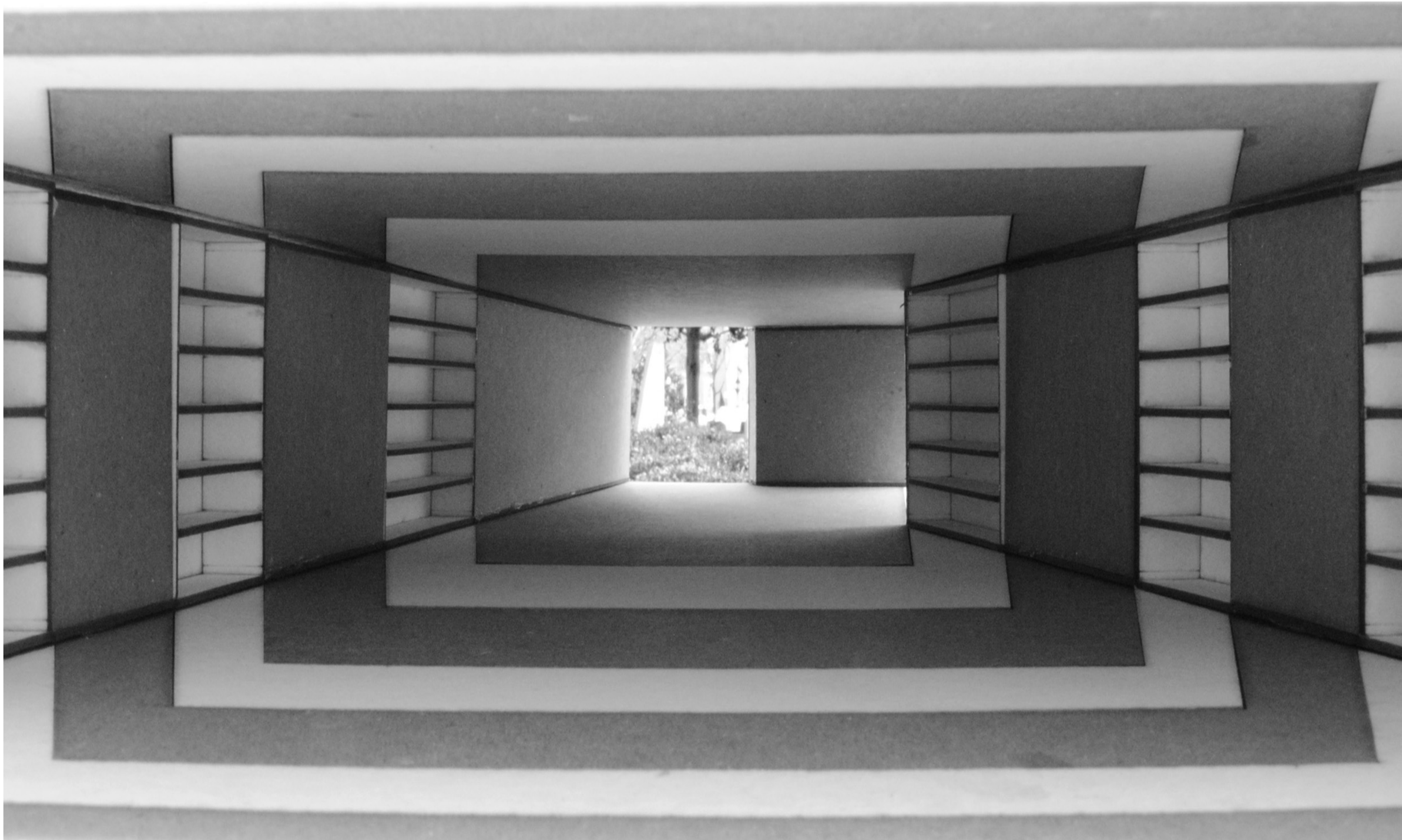
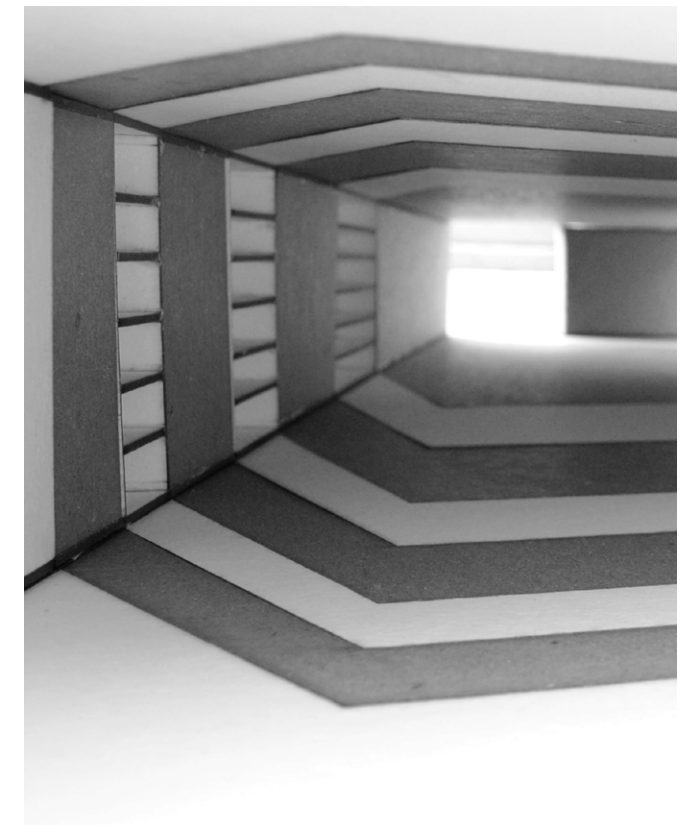
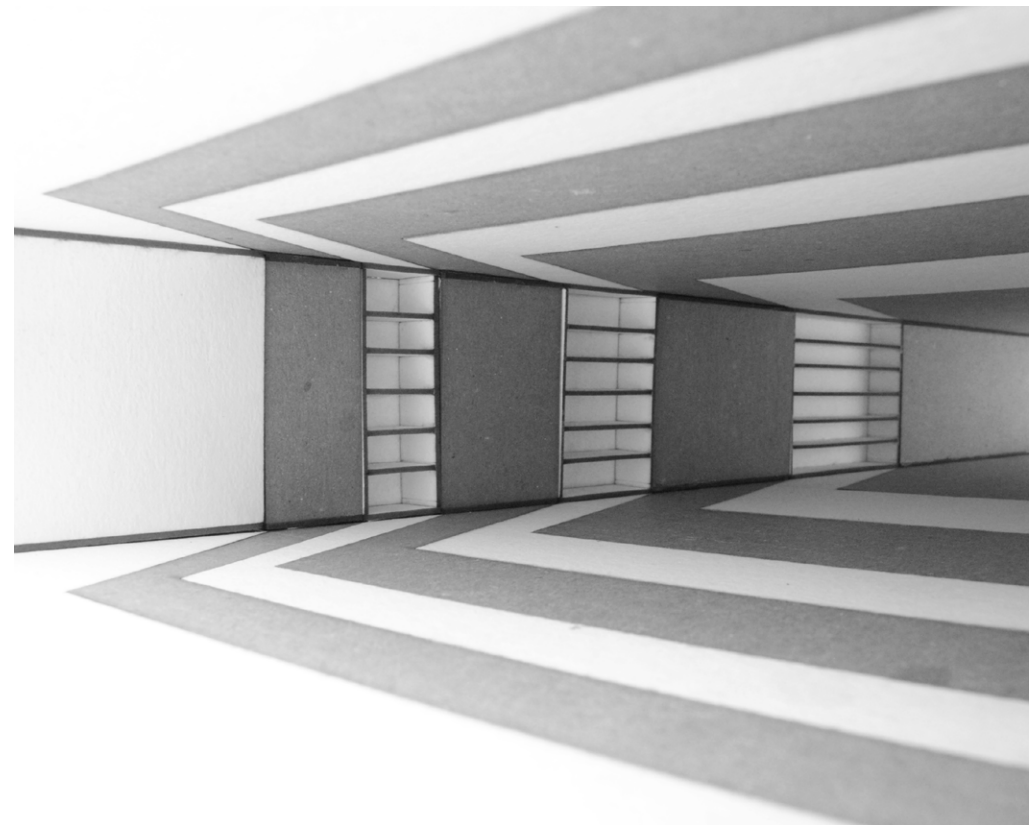
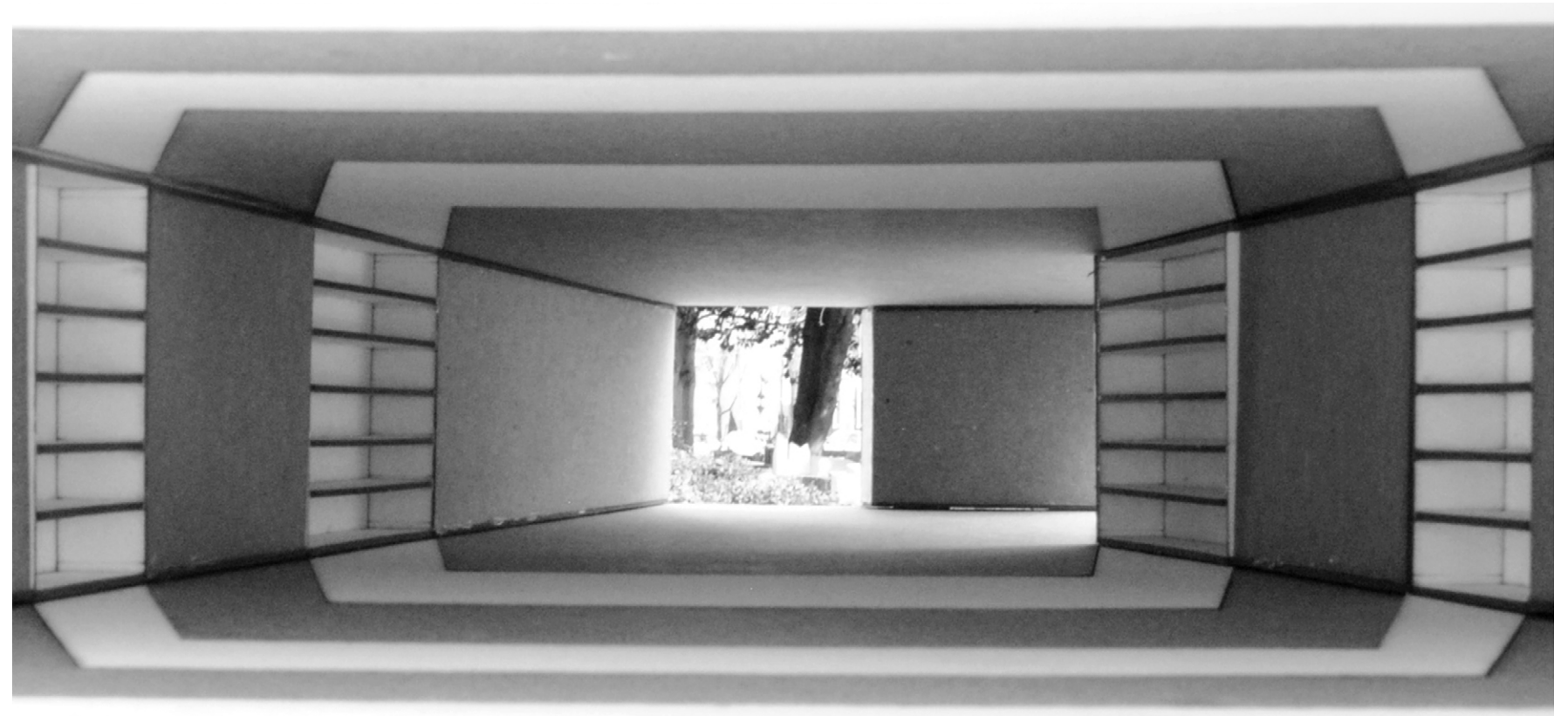
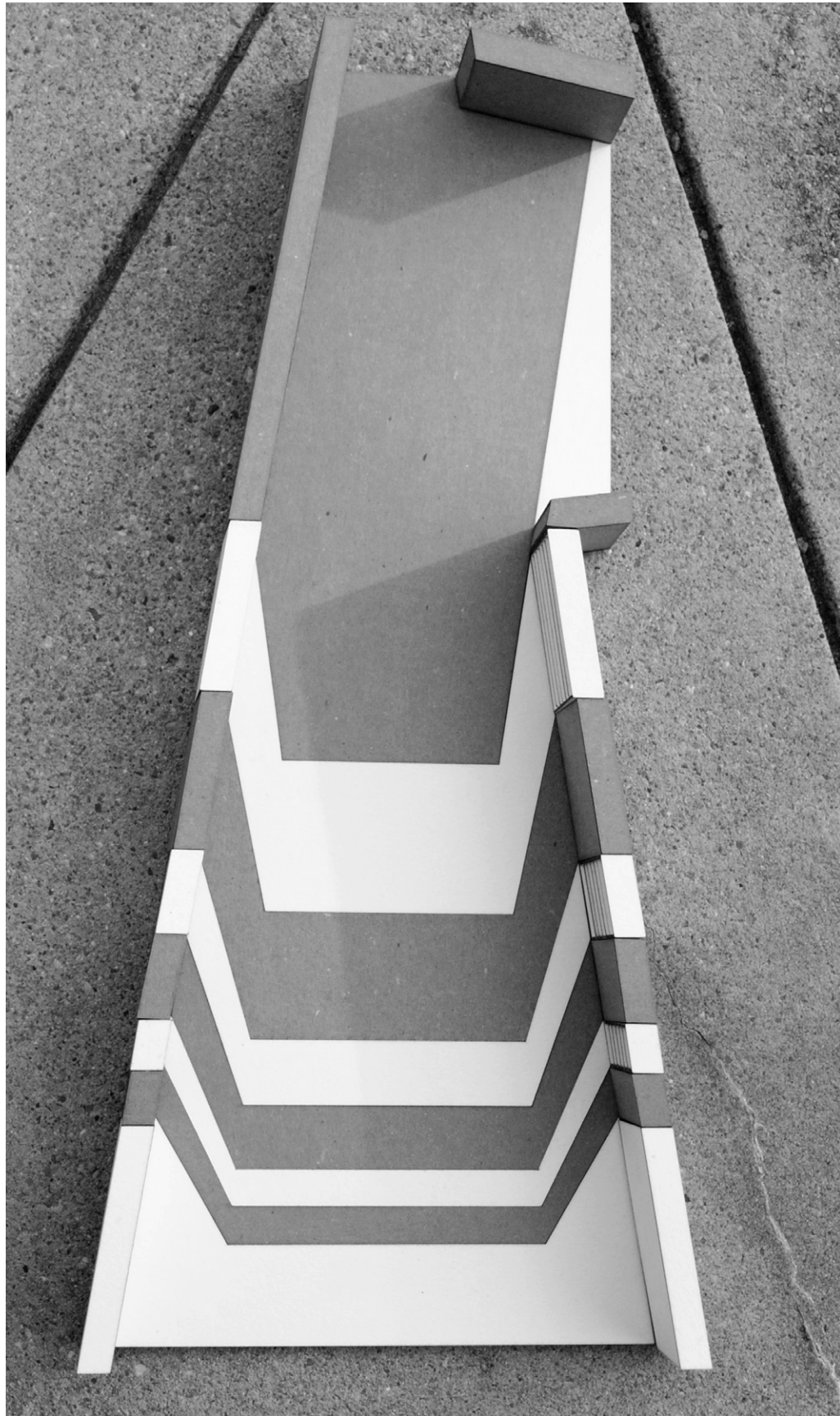
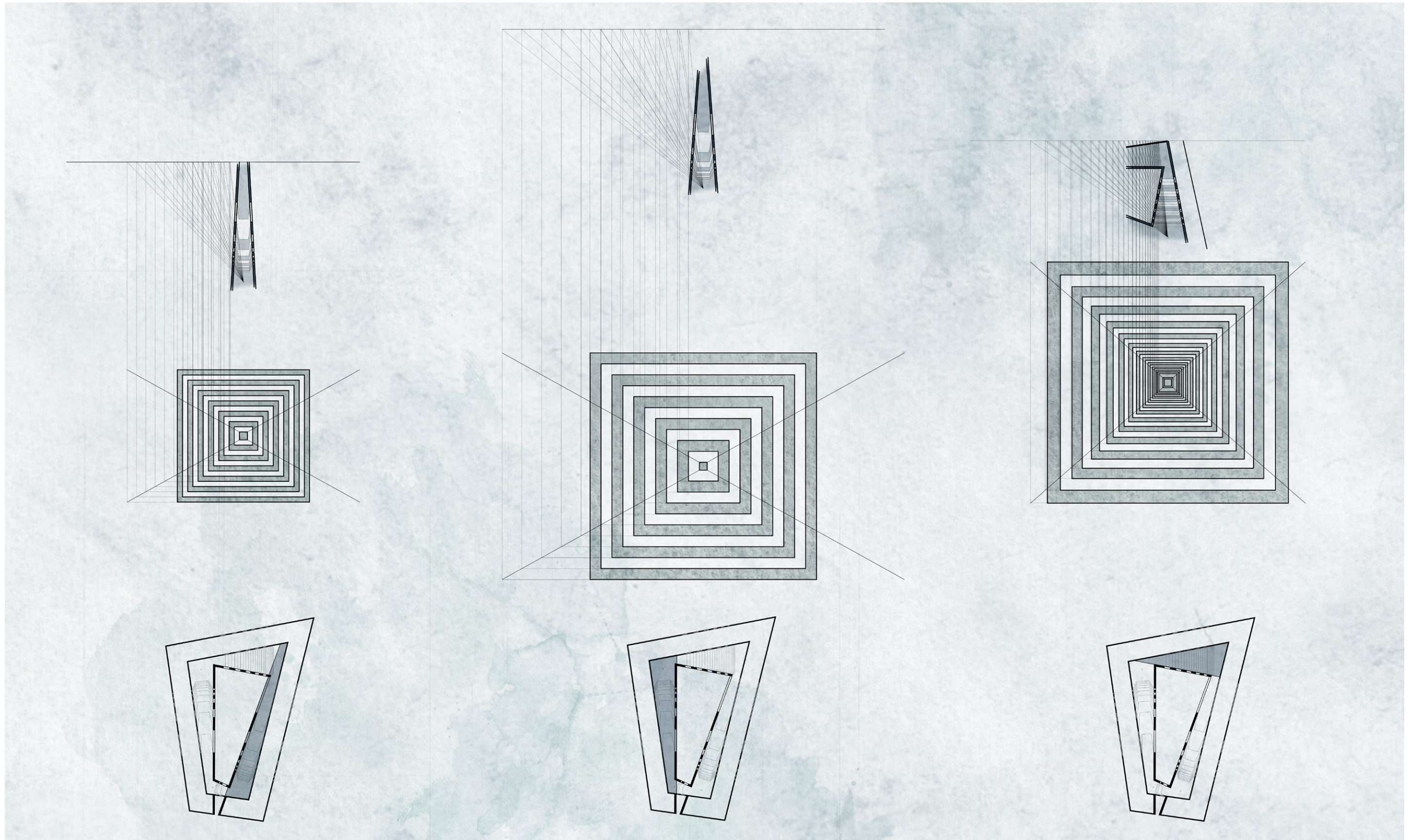


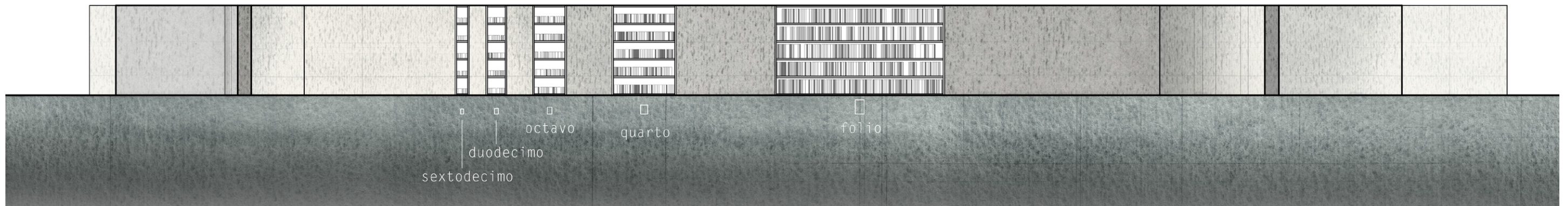
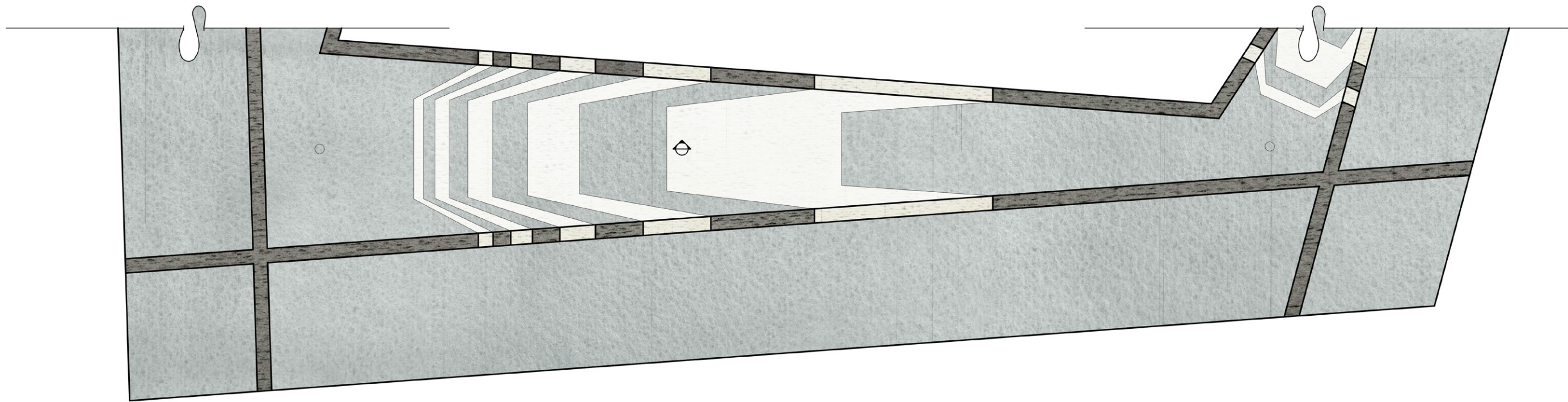
Photo of Corridor Illusion



Photos of Corridor Study Model



Construction Drawings of Three Corridors



Plan and Interior Elevation of Corridor



THE SITE

The library is located on “Times Square” of historic Old Town Alexandria, Virginia. The site is referred to “Times Square” as it resides within an intersection of three streets: Commerce Street, Fayette Street, and the main street of Old Town, King Street.

The three-block long Commerce Street was constructed in the late 1700s to accommodate large wagons traveling from the western farmlands to the port of Alexandria. The diagonal roadway maintained these wagons from taking sharp right-angled turns onto King Street.

In keeping with the history of Commerce Street, the design of the library retains the original intent of Commerce Street, avoiding any sharp right-angled turns. Consequently, Commerce Street continues as a one-way vehicular street through the ground level of the library. In addition, the northeastern end of Commerce Street shifted slightly south to accommodate a larger entry for the library on King Street.



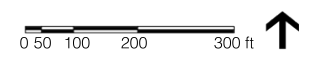
Photos of Buildings on Commerce Street

As one of the few diagonal streets in Old Town, Commerce Street contains some of the most oblique and skewed buildings in the historic district, which made it an ideal site for a library based on anamorphic perspective.

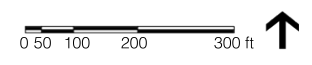
Currently, a rug gallery resides on the site. The building is rectilinear and does not fit within its angled site. The form of the library combined the angles of the surrounding buildings with the angles of three interior corridors of the building. Its triangular shape descended from the simple rotation of the site to allow three exterior perspectival views and to maintain the perspectives of the internal corridors.



Panoramic Photo of Existing Building and Site



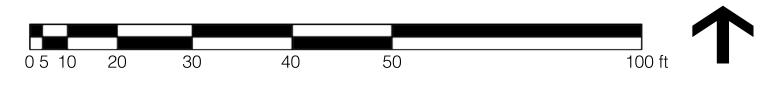
Map of Existing Old Town Alexandria

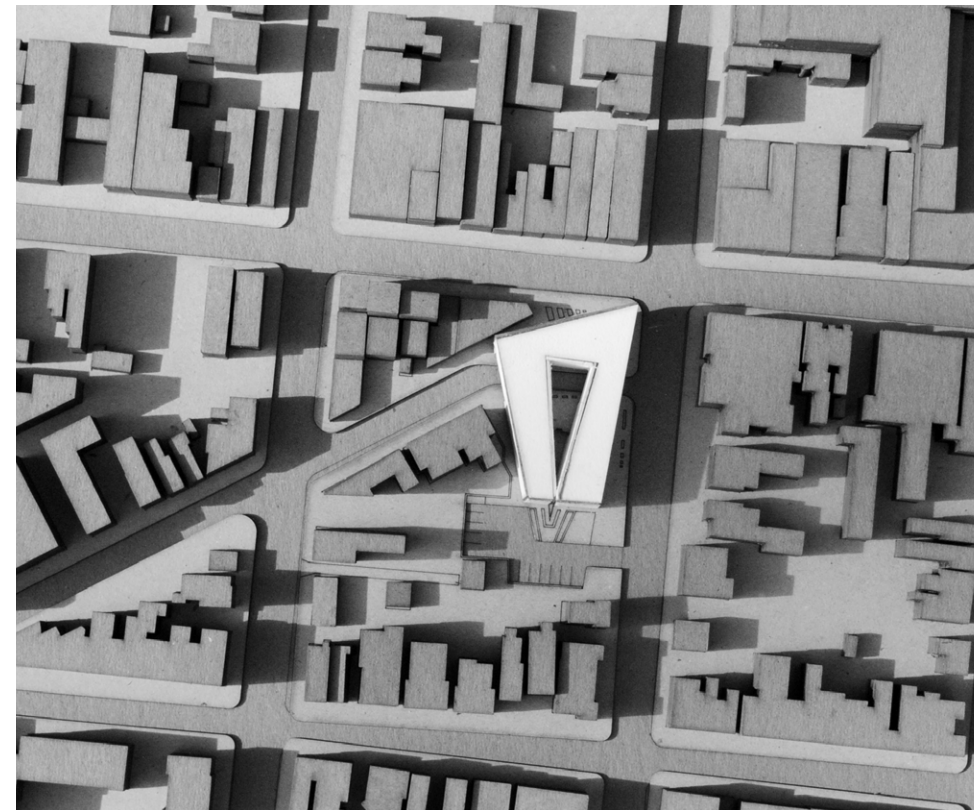
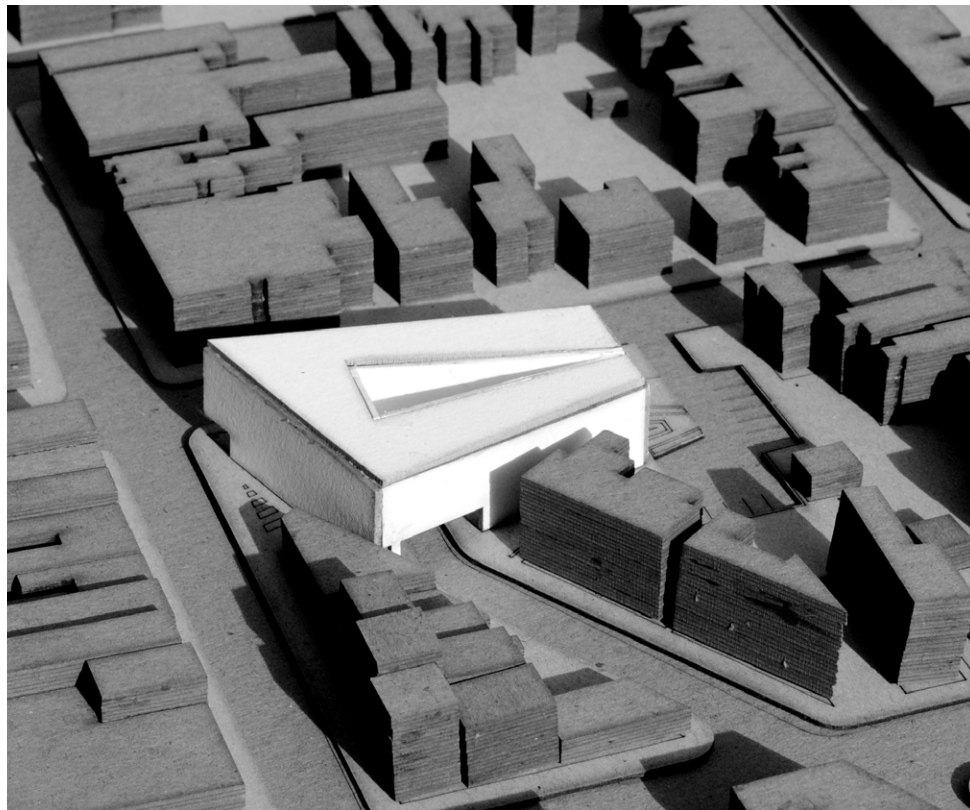
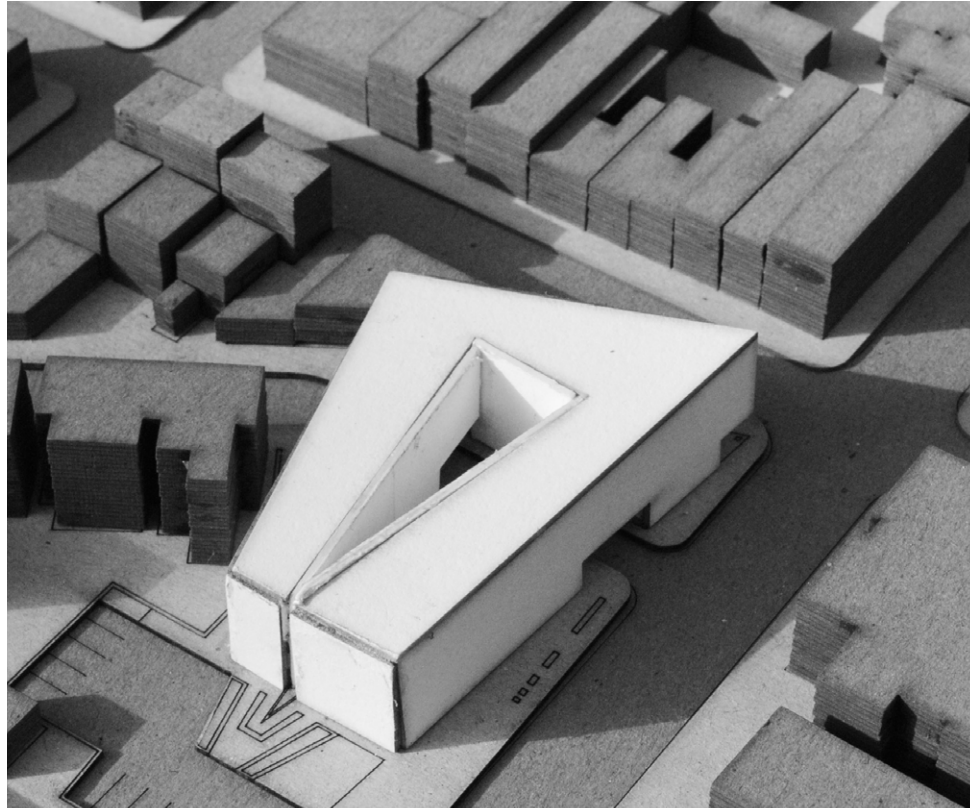


Map of Existing Old Town Alexandria Libraries and The Anamorphic Library



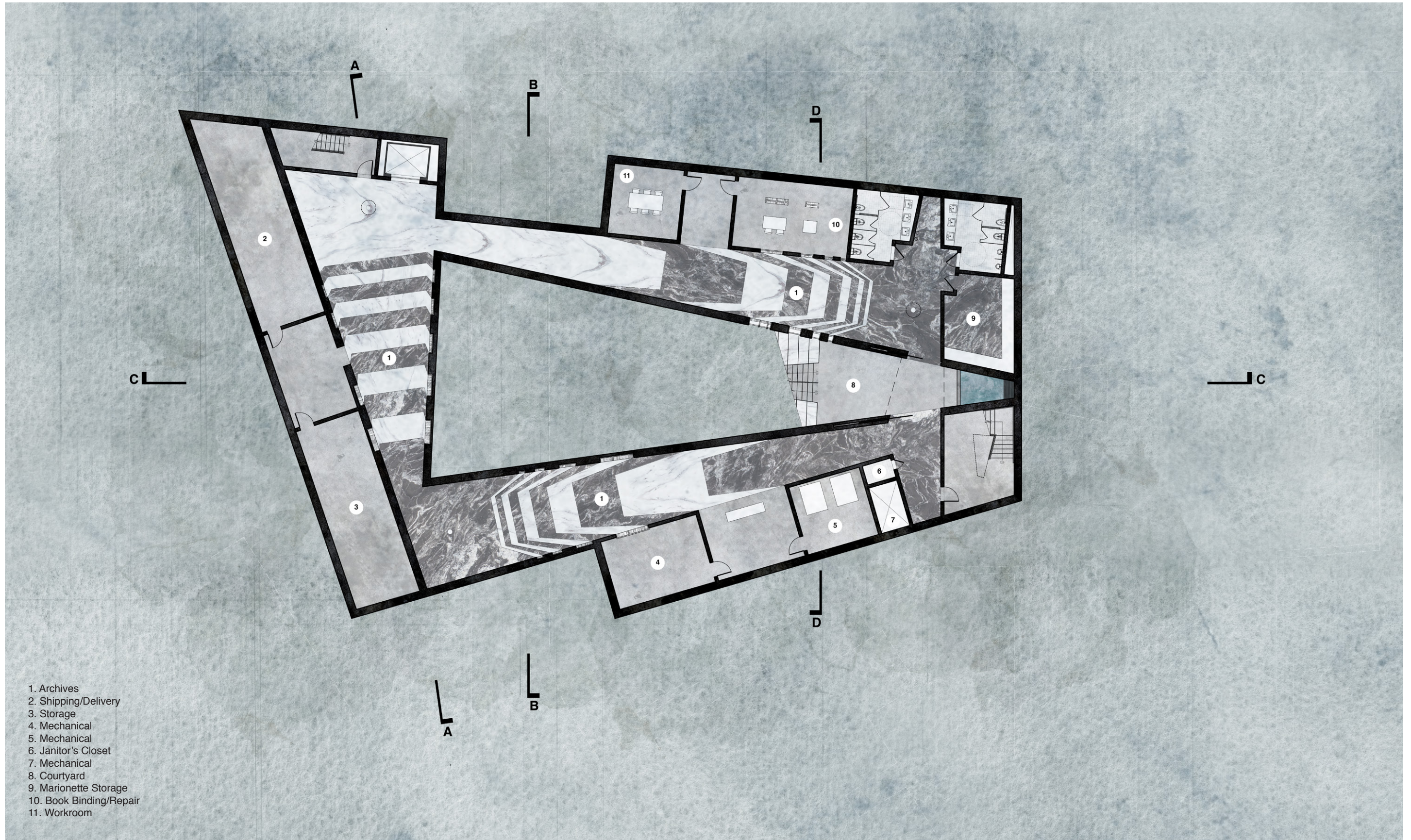
Site Plan





Photos of Site Model

THE LIBRARY



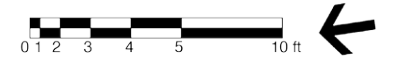
Level -1 Plan

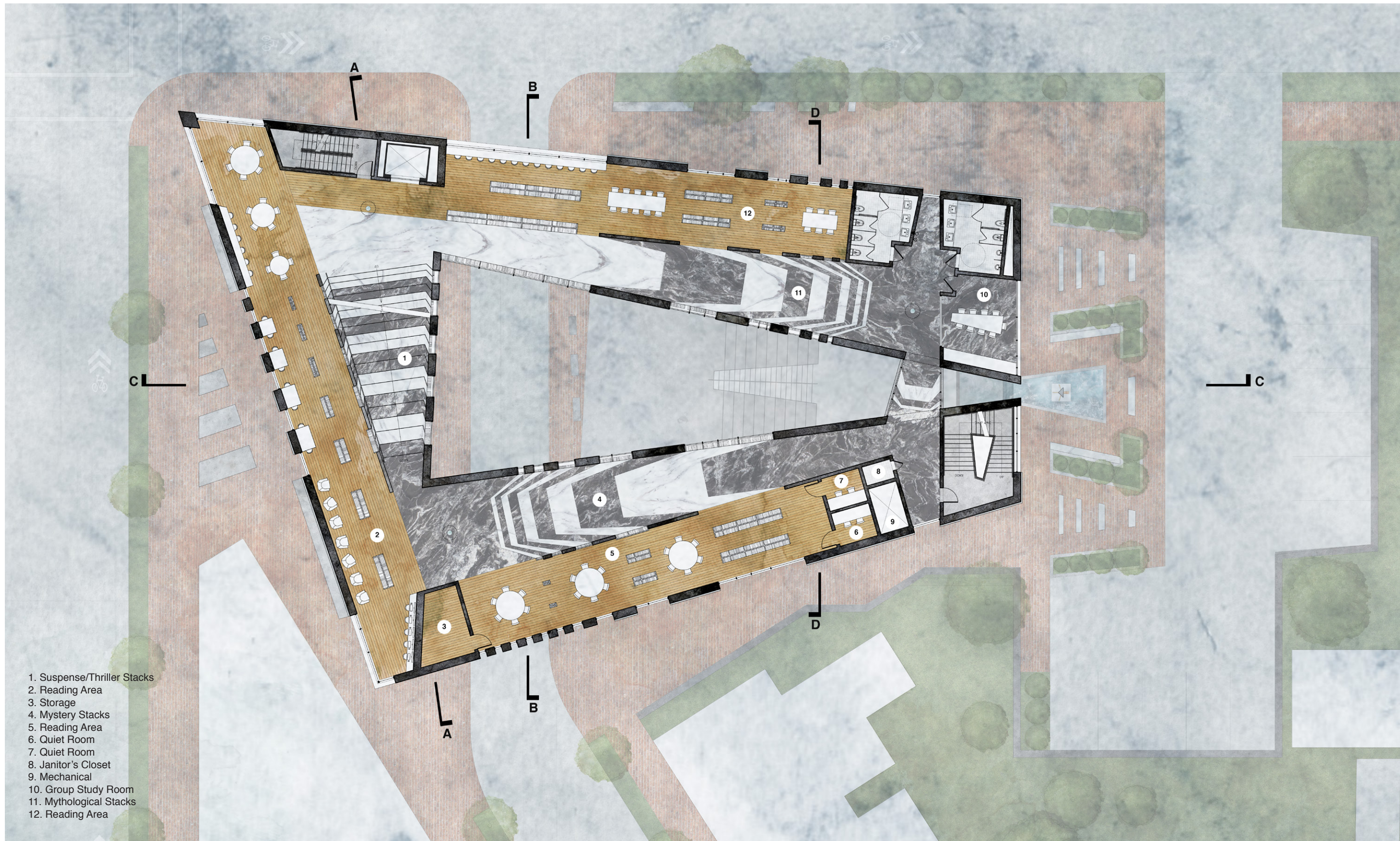




- 1. Lobby
- 2. Circulation Desk
- 3. Gift Shop/Cafe
- 4. Office Foyer
- 5. Offices
- 6. Janitor's Closet
- 7. Mechanical
- 8. DVDs/Films
- 9. Computer Lab
- 10. Courtyard

Level 0 Plan

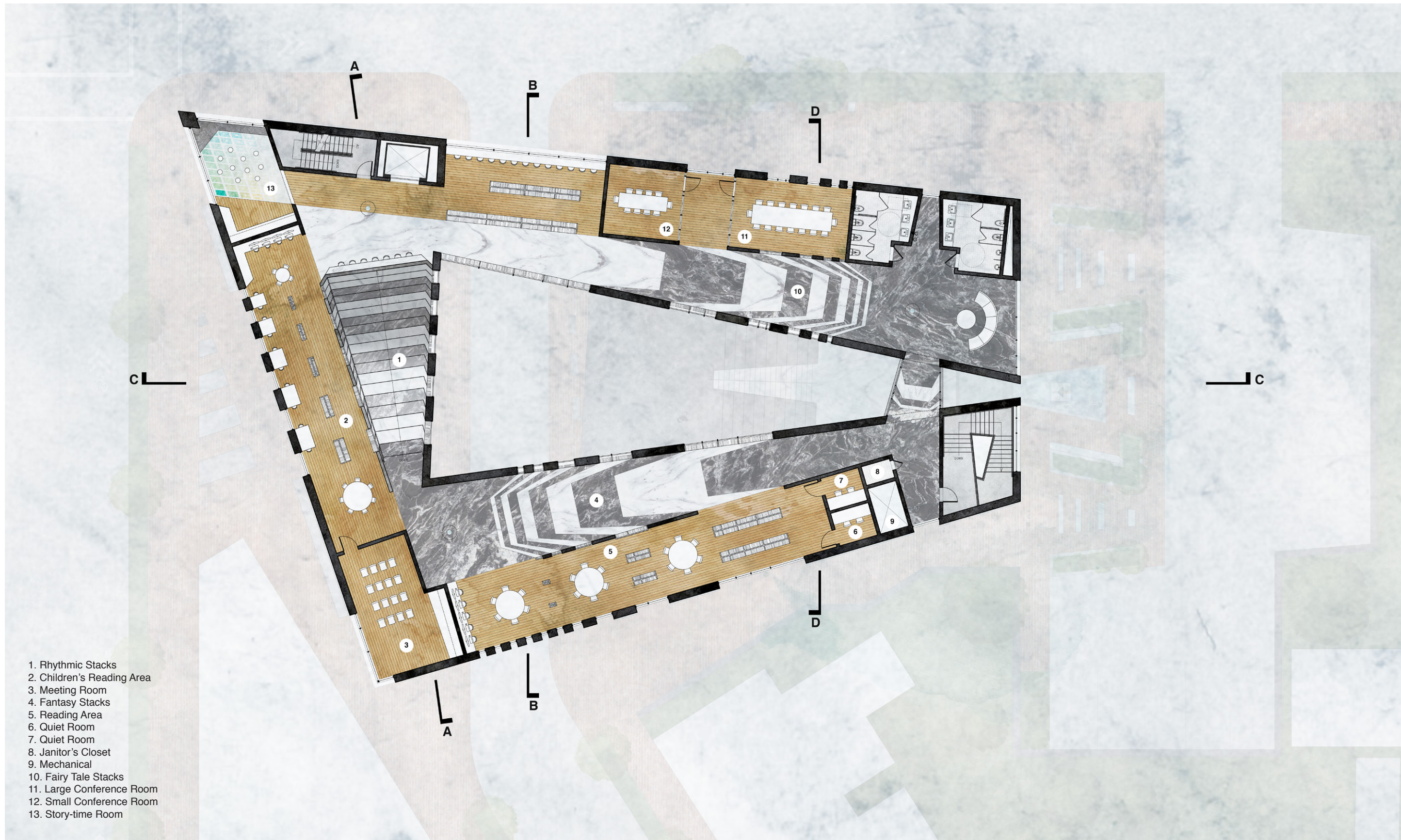




- 1. Suspense/Thriller Stacks
- 2. Reading Area
- 3. Storage
- 4. Mystery Stacks
- 5. Reading Area
- 6. Quiet Room
- 7. Quiet Room
- 8. Janitor's Closet
- 9. Mechanical
- 10. Group Study Room
- 11. Mythological Stacks
- 12. Reading Area

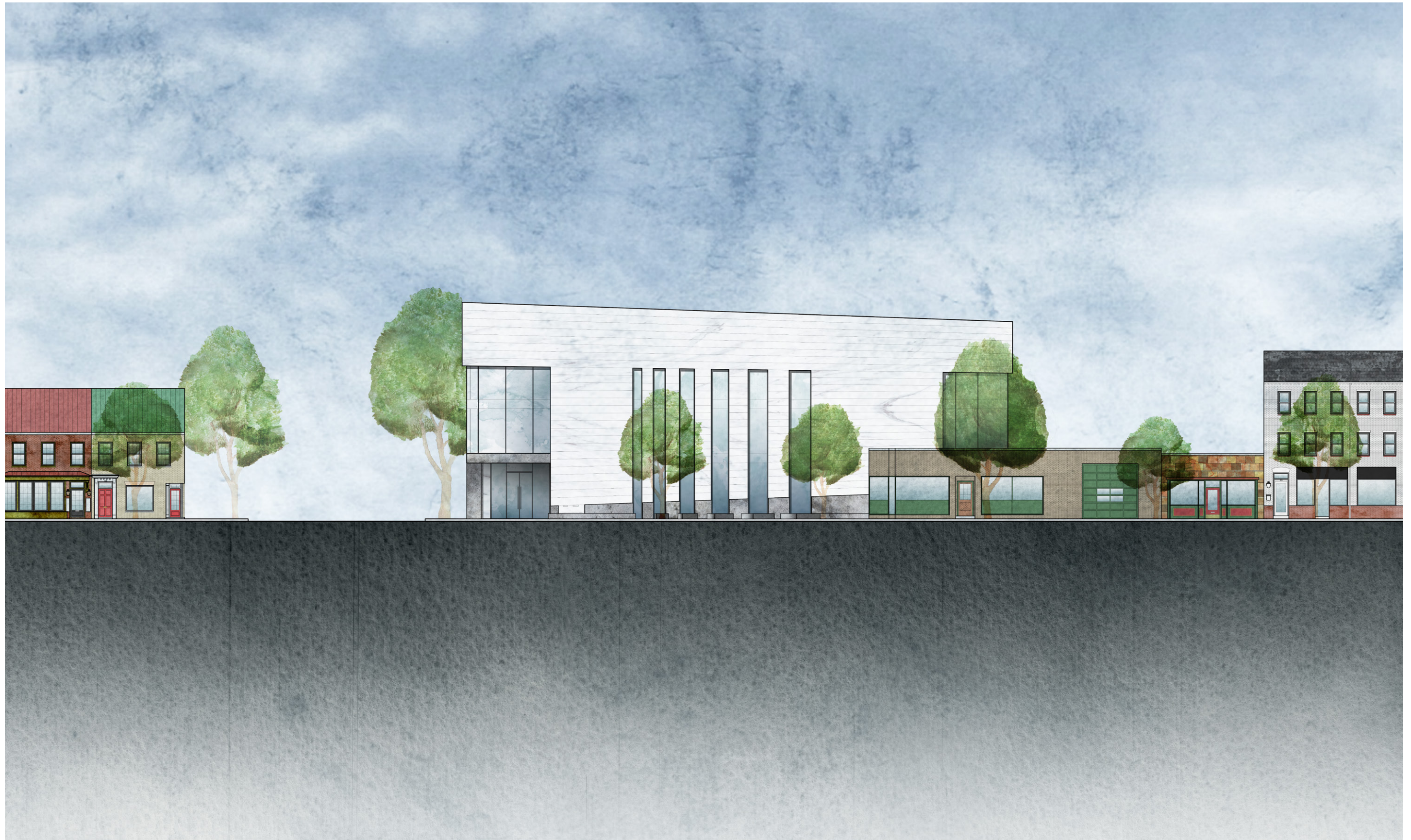
Level +1 Plan





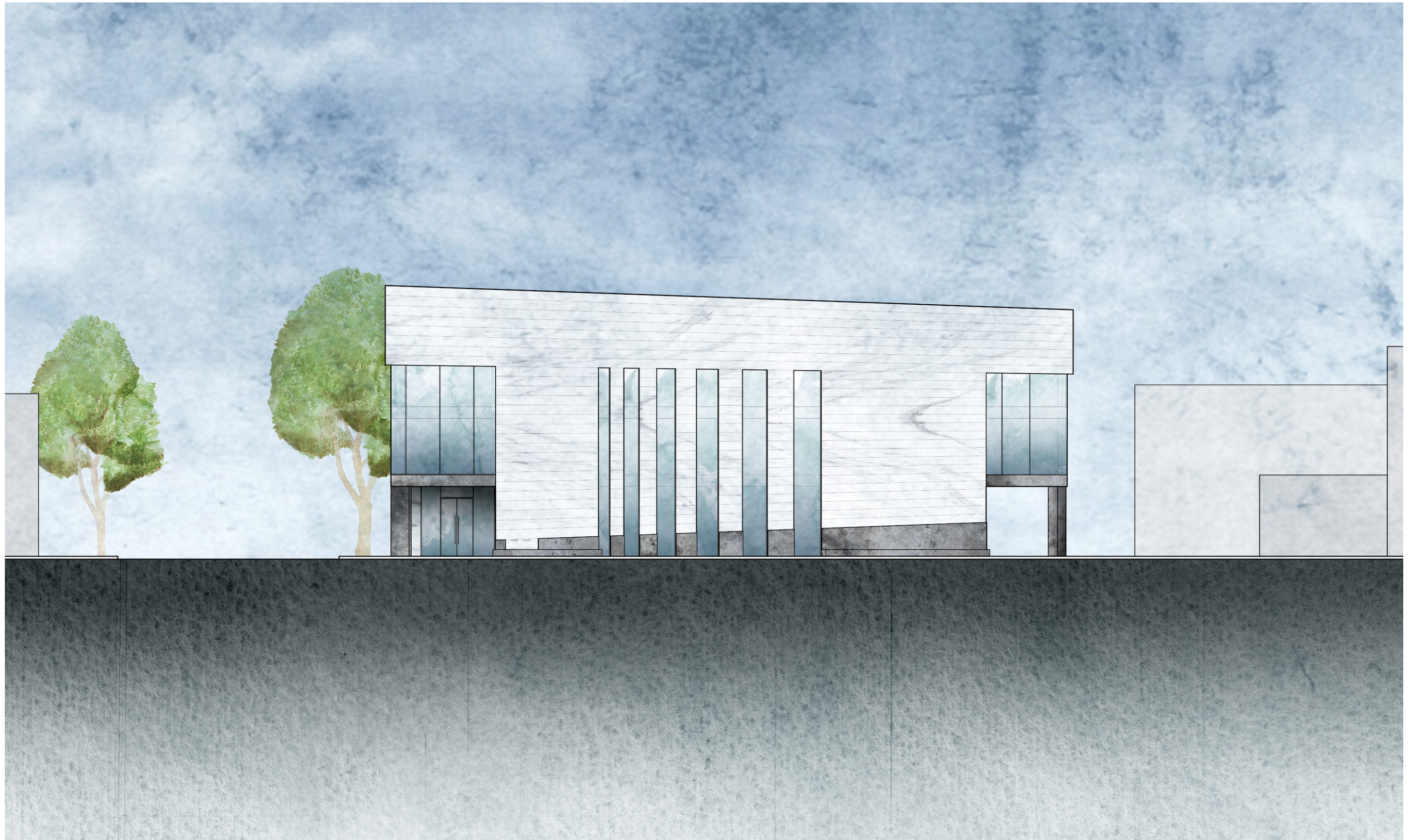
Level +2 Plan



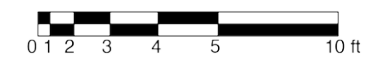


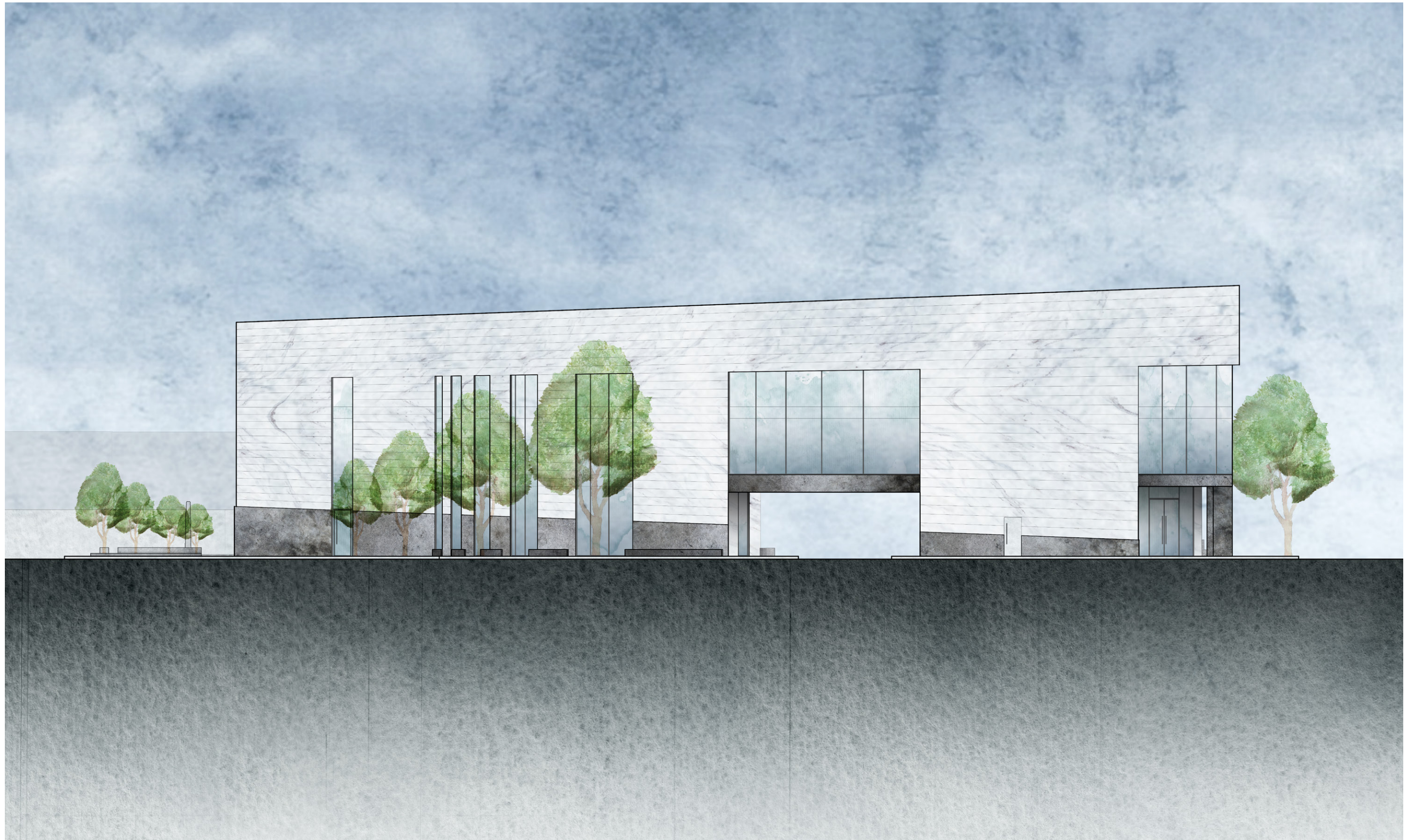
King Street - Streetscape



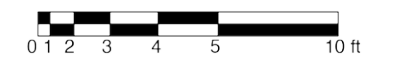


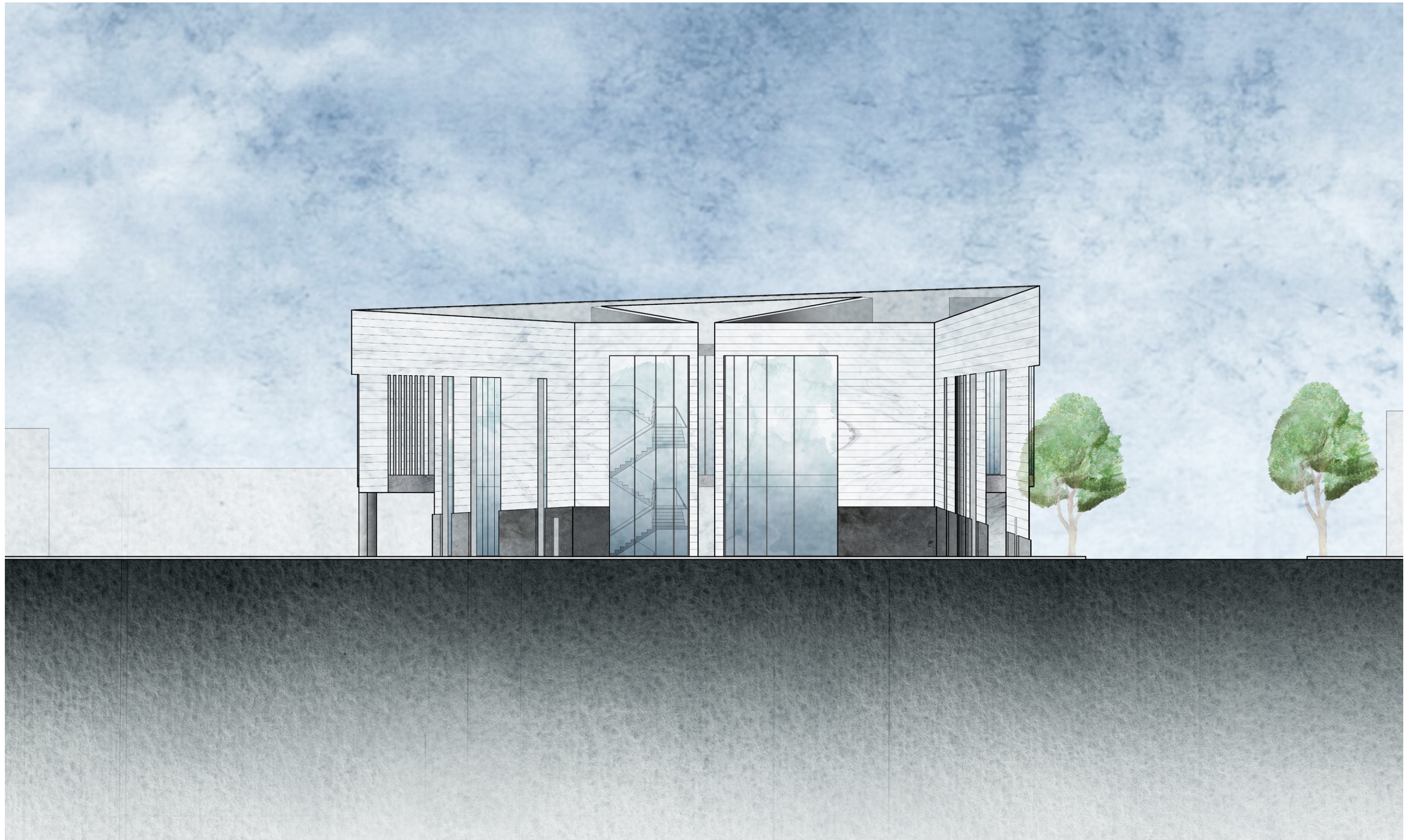
North Elevation



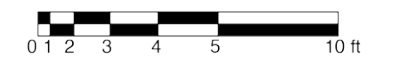


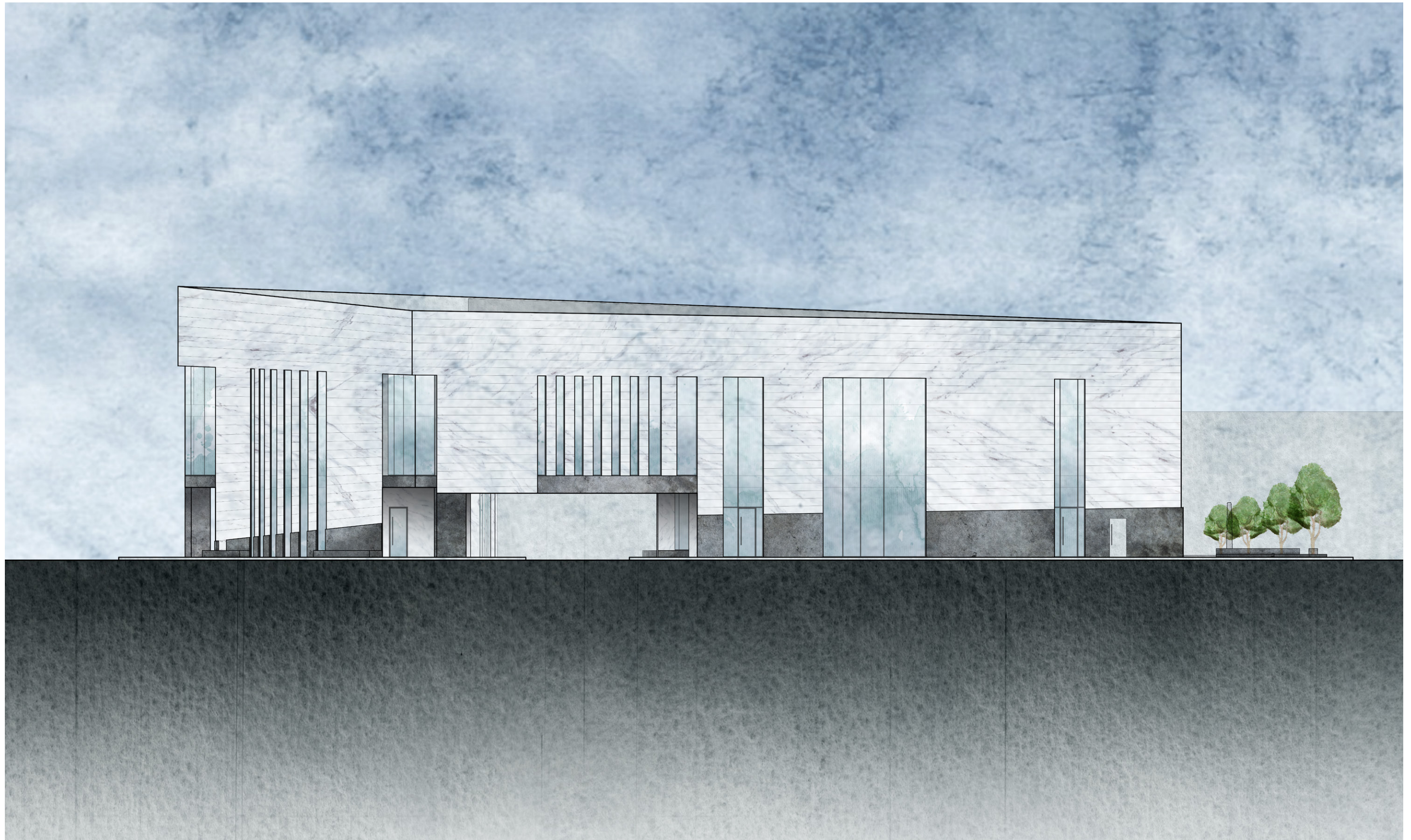
East Elevation



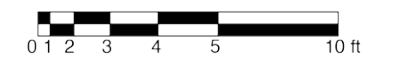


South Elevation



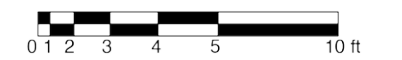
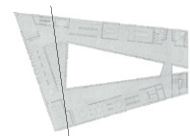


West Elevation



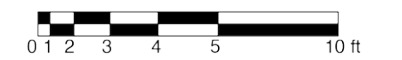
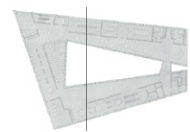


Section AA



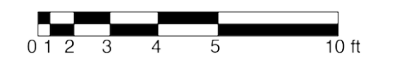
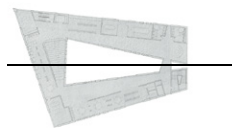


Section BB



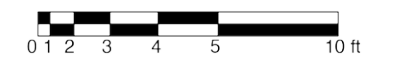
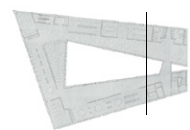


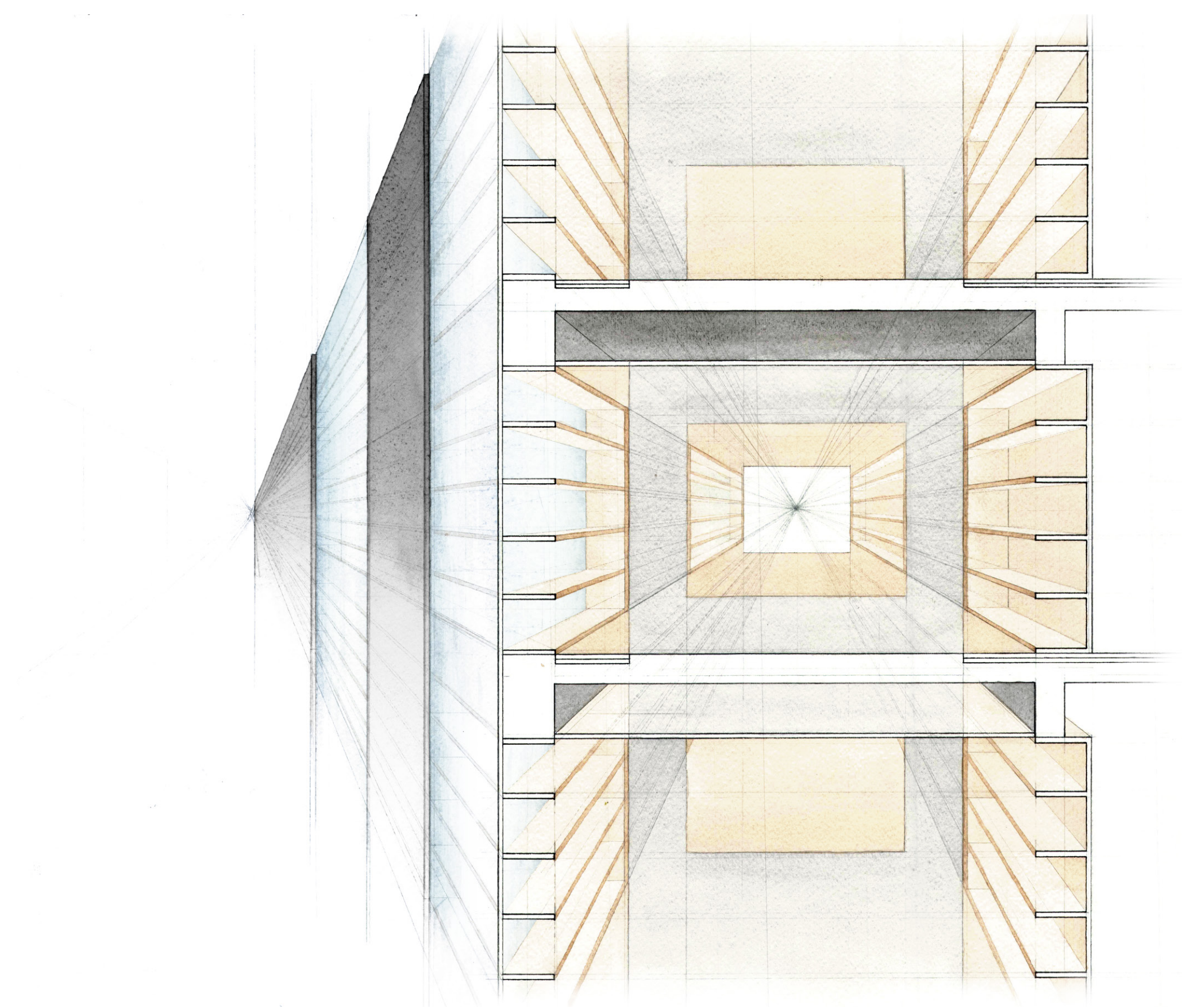
Section CC



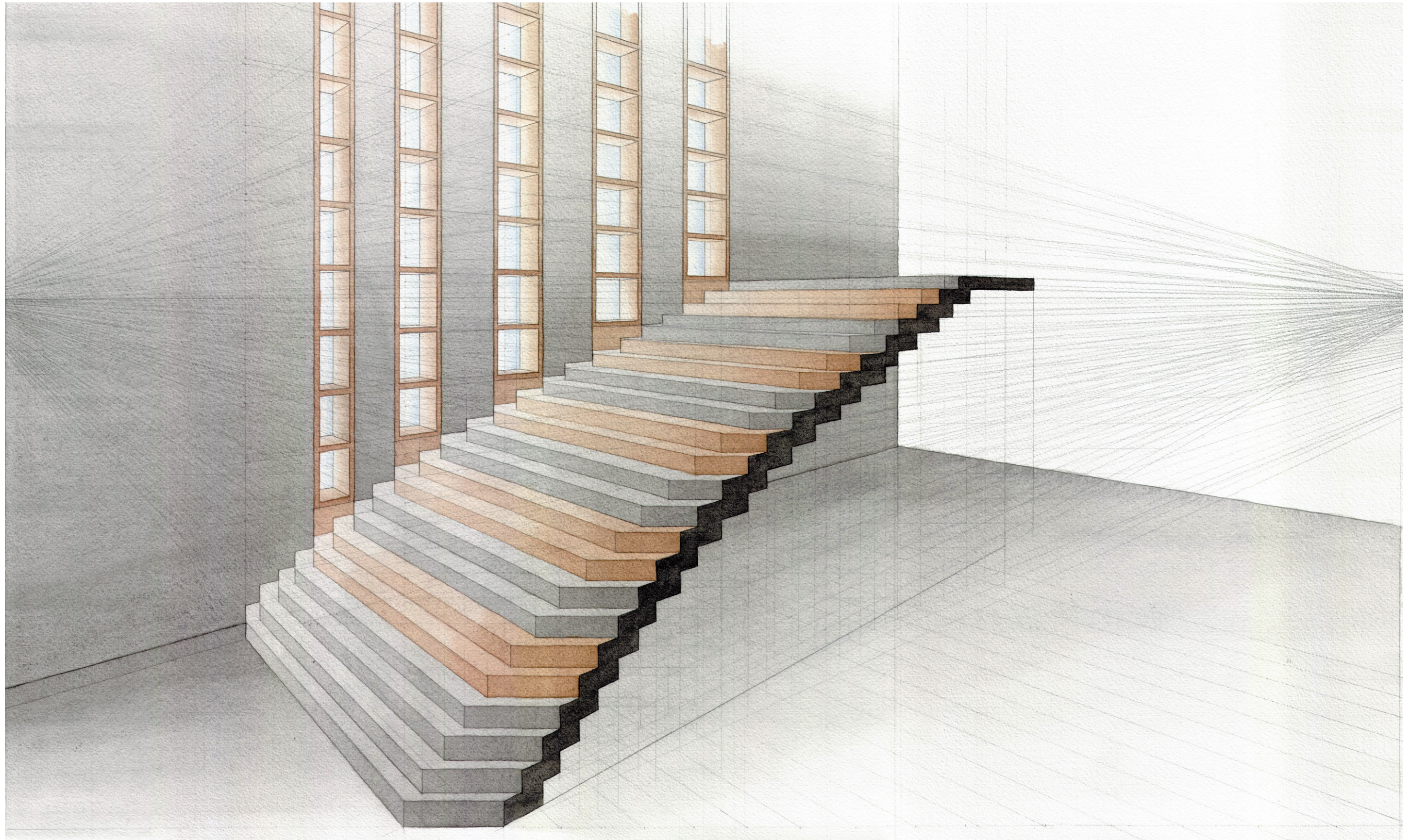


Section DD





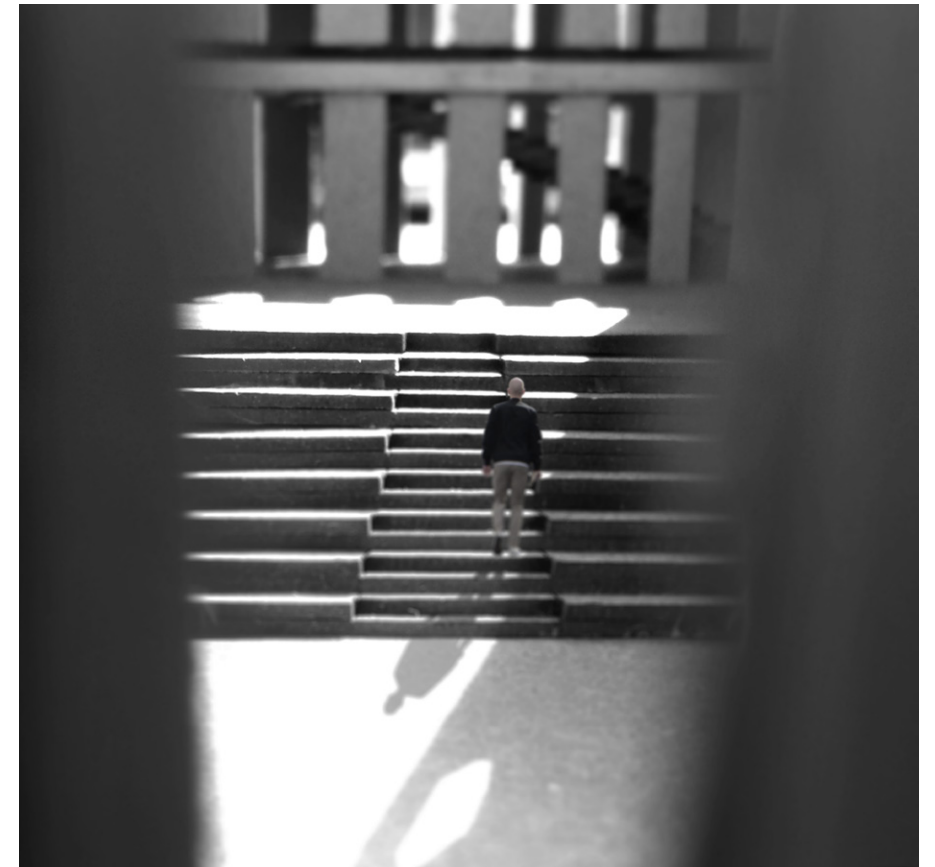
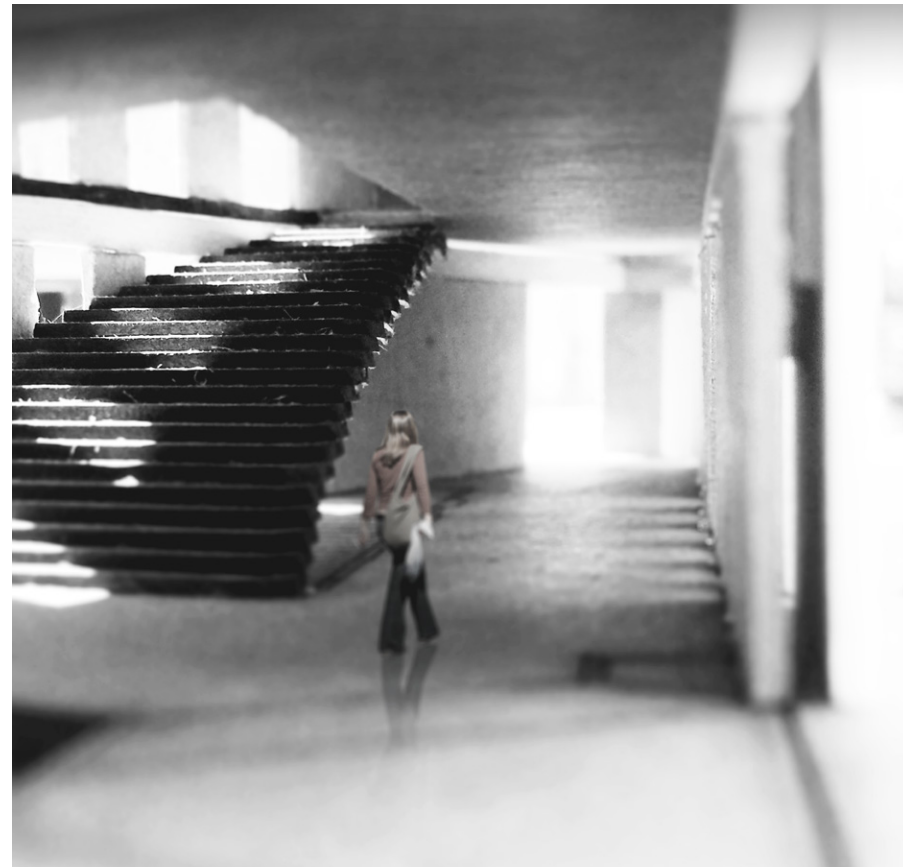
Exterior and Interior Section Perspective of Corridor

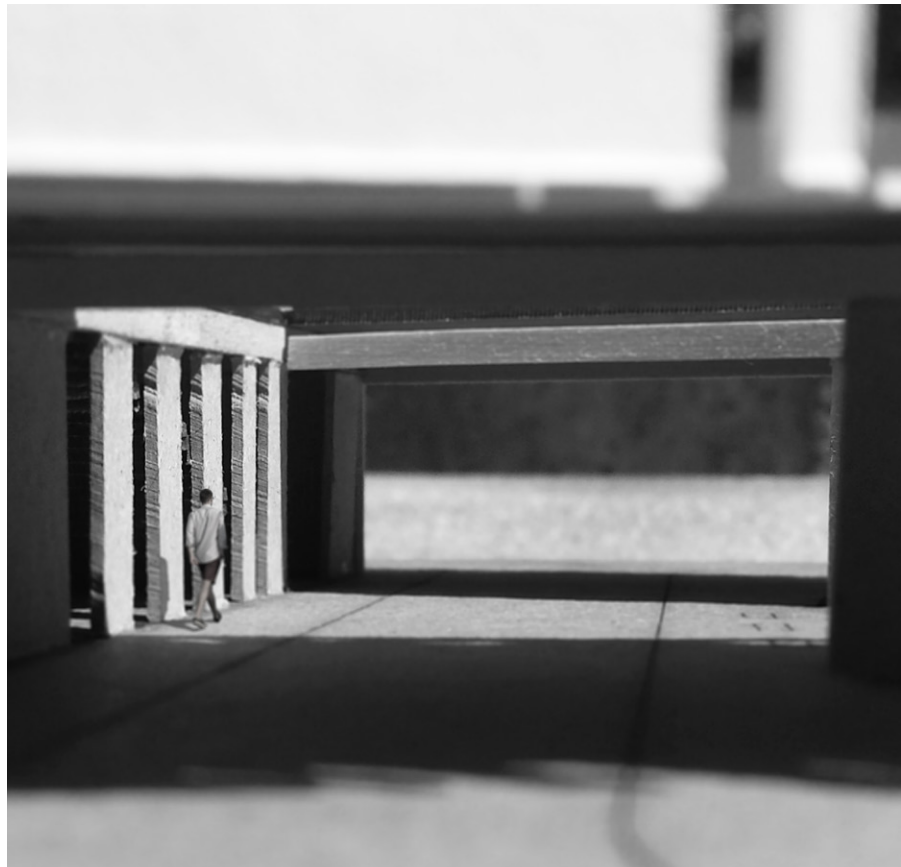


Two-Point Perspective of Monumental Stair



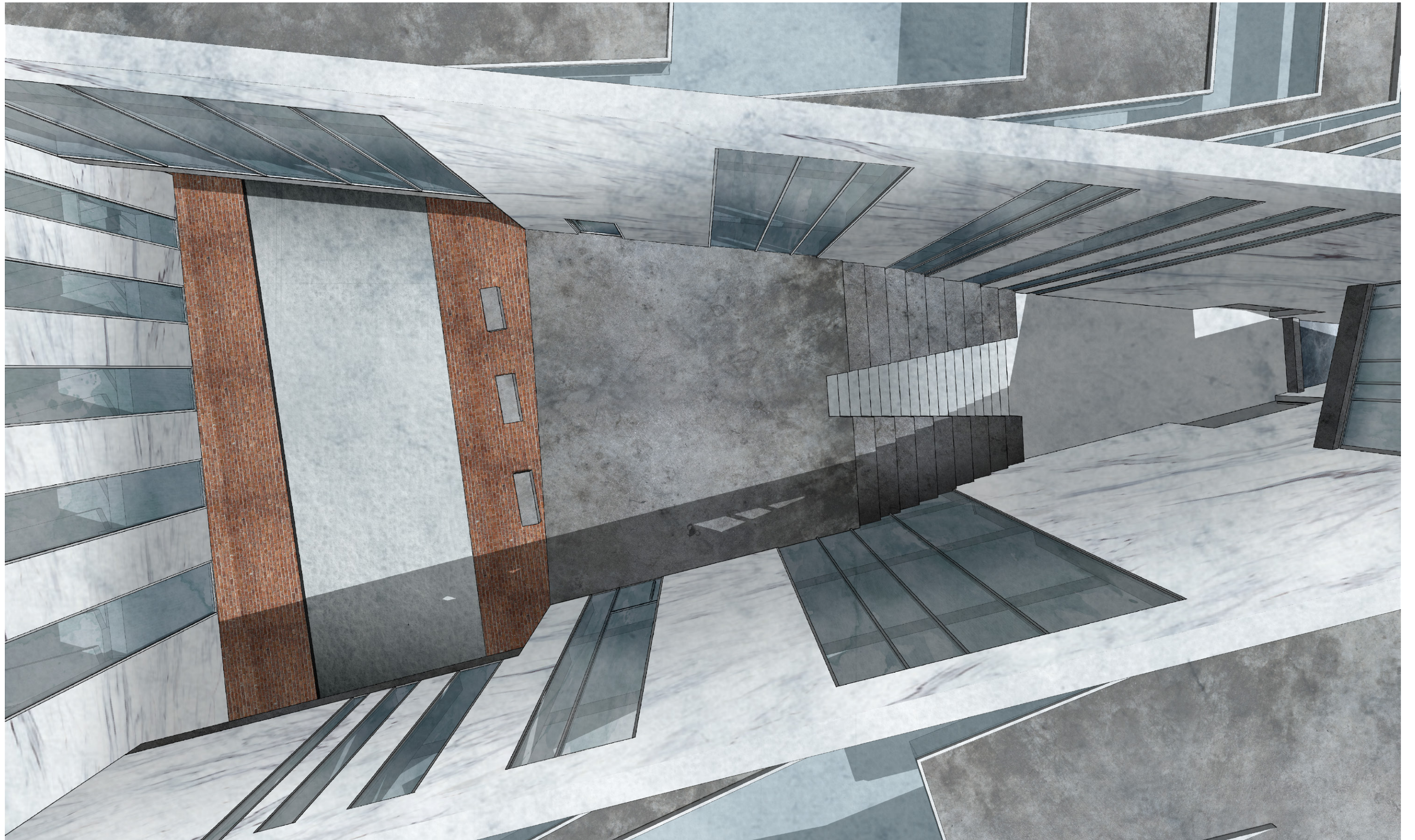
Photos of Model







Perspective of Main Entrance



Bird's Eye Perspective of Courtyard



Perspective from Top of Courtyard Looking Down



Perspective from Bottom of Courtyard Looking Up



Perspective of Corridor Illusion

LIST OF IMAGES

1. Leonardo da Vinci's Anamorphic Drawing [Fair Use]	1	44. Existing Site Plan	15
2. Egnazio Danti's Anamorphosis [Fair Use]	2	45. Photo of Commerce Street Building	16
3. Jean-François Nicéron's Anamorphic Grid [Fair Use]	2	46. Photo of Commerce Street Building	16
4. Corridor at Palazzo Spada [Fair Use]	3	47. Photo of Commerce Street Building	16
5. Borromini Corridor Section	3	48. Panoramic Photo of Existing Building and Site	16
6. Borromini Corridor Plan	3	49. Map of Existing Old Town Alexandria	17
7. Bookcase Perspective	4	50. Map of Existing Old Town Alexandria Libraries and The Anamorphic Library	18
8. Bookcase Perspective	4	51. Site Plan	19
9. Column Perspective	5	52. Photo of Site Model	20
10. Column Perspective	5	53. Photo of Site Model	20
11. Column Perspective	5	54. Photo of Site Model	20
12. Column Perspective	5	55. Photo of Site Model	20
13. Column Perspective	5	56. Level -1 Plan	22
14. Column Plan	5	57. Level 0 Plan	23
15. Column Plan	5	58. Level +1 Plan	24
16. Column Plan	5	59. Level +2 Plan	25
17. Column Plan	5	60. King Street - Streetscape	26
18. Column Plan	5	61. North Elevation	27
19. People in Perspective	6	62. East Elevation	28
20. People in Perspective	6	63. South Elevation	29
21. People in Perspective	6	64. West Elevation	30
22. People in Perspective	6	65. Section AA	31
23. People in Perspective	6	66. Section BB	32
24. People in Perspective	6	67. Section CC	33
25. People in Perspective	6	68. Section DD	34
26. People in Perspective	7	69. Exterior and Interior Perspective of Corridor	35
27. People in Perspective	7	70. Two-Point Perspective of Monumental Stair	36
28. People in Perspective	7	71. Photo of Model	37
29. People in Perspective	7	72. Photo of Model	37
30. People in Perspective	7	73. Photo of Model	37
31. People in Perspective	7	74. Photo of Model	37
32. Corridor Perspective and Plan	8	75. Photo of Model	38
33. Corridor Perspective	8	76. Photo of Model	38
34. Jan Dibbets' Square on the Wall [Fair Use]	9	77. Photo of Model	38
35. Anamorphic Corridor Perspective and Plan	10	78. Photo of Model	39
36. Anamorphic Corridor Perspective	10	79. Photo of Model	39
37. Photo of Corridor Illusion (model)	11	80. Photo of Model	39
38. Photo of Corridor Study Model	12	81. Perspective of Main Entrance	40
39. Photo of Corridor Study Model	12	82. Bird's Eye Perspective of Courtyard	41
40. Photo of Corridor Study Model	12	83. Perspective from Top of Courtyard Looking Down	42
41. Photo of Corridor Study Model	12	84. Perspective from Bottom of Courtyard Looking Up	42
42. Construction Drawings of Three Main Corridors	13	85. Perspective of Corridor Illusion	43
43. Plan and Interior Elevation of Corridor	14		

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