

A Reflection of a Revolution

# A Reflection of a Revolution

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in partial fulfilment of the requirements for the degree of

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in Architecture

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## Abstract

This thesis explores form and flow of space through the program of a theatre and gallery. It studies the relation between a building and its surrounding landscape, in order to create public gathering spaces. It also deals with the question of scale and its reflection on how you feel the space. In this project, the building is an extension to the landscape where the ground becomes the roof, and where the boundaries of a space are blurred.

The project is also a memorial for the 2011 and 2013 revolutions in Egypt. It is a place of memory but also a space to inspire future generations. In studying the relationship between two elements, model making and sketching were the primary means of generating the form. Then the design was advanced through a series of digital models and hand sketches. My drawings in general are a rational representation of the spaces. It deals with the *sense*, rather than the material aspect, of the space.

## Acknowledgments

An important part of my life journey is concluding this thesis. I wouldn't be where I am today if it were not for all of you. You are all part of my success and to you I am thankful.

I should begin with a very special thanks to my family. My Father, Mokhtar, and my Mother, Rifka, you believed in me when I doubted myself. You taught me to never give up and to keep going. My wife Maissa and my son Yousuf, for their love, support, and bearing with me during the long nights of work.

Words cannot express how I feel finishing this thesis and fulfilling this dream. My sincere thanks goes to: my committee, Hans, Scott, and Mitzi; the graduate program chair, Steve; all of my professors; and my classmates. Each of you supported and encouraged me and continuously challenged me to excel. You changed my life forever, and forever I'll be grateful.

Hans, you always pushed me beyond my limits and opened my eyes to new possibilities. Thank You!

Scott, you knew how to guide me when I was lost. You inspired me from my first day at Virginia Tech. Thank you!

Mitzi, your form studio changed me in many ways that I can't even describe. You really made a difference. Thank you!

Steve, you always left me wanting to know more and learn more. Your advice and help was indispensable. Thank You!

I want to also thank my Saudi Diyar family for their continuous support along my journey.

From the bottom of my heart, Thank You!



## Table of Contents

Abstract	ii
Acknowledgements	iii
Table of Contents	iv
Introduction	1
The Revolution	2
The Form	6
The Final Design	12
The Interior	43
References	70
List of Figures	71

## Introduction

This thesis is about form exploration, about forms and the opportunities they may present to their surroundings. My study was done as a search for an answer to several questions: How can form respond to an event? How can form present opportunities in a society? How can form be a memorial and a place to inspire generations to come?

The questions led to a study of space as it flows one to another? What is an opening? What is the relationship between the interior space and the exterior space?

How can the exterior flow to the interior? How can you have a sense of the building's surrounding while inside the building, and how can the openings and natural light explain that?



## The Revolution

“For every action, there is an equal and opposite reaction” – a law of physics that applies beyond the world of science. A revolution is a demand for change, a power that is greater than any established system. It’s the *will* of the people.

People gave their lives in exchange for freedom – a change that is built on a big tragedy, a tragedy that will be remembered, and a change worthy of that tribulation.

A memorial to such a spirit shouldn’t be passive, but positive: a memorial where you can feel the magnitude of what’s happening around you; where you can see the multitudes of people that share your voice; a place for contemplation; and, a memorial for the collective to express itself. Every corner is a possibility for inspiration.



fig. 01 | Egypt in the world map



fig. 02 | Satalite image of Al-Tahrir Square, Cairo, Egypt  
Credit: DigitalGlobe, satellite GeoEye-1





fig. 03 | Protesters gathered Al-Tahrir Square  
Credit: GIANLUIGI GUERCIA/AFP/Getty Images





a.



b.



c.



d.



e.

fig. 04 | Scenes from the Revolution

Credit:

a. Miguel Medina /AFP/Getty Images

b. MOHAMMED ABED /AFP/Getty Images

c. Sherif Zaazaa / <http://www.madamasr.com/file/tahrir-square-3-july-13jpg>

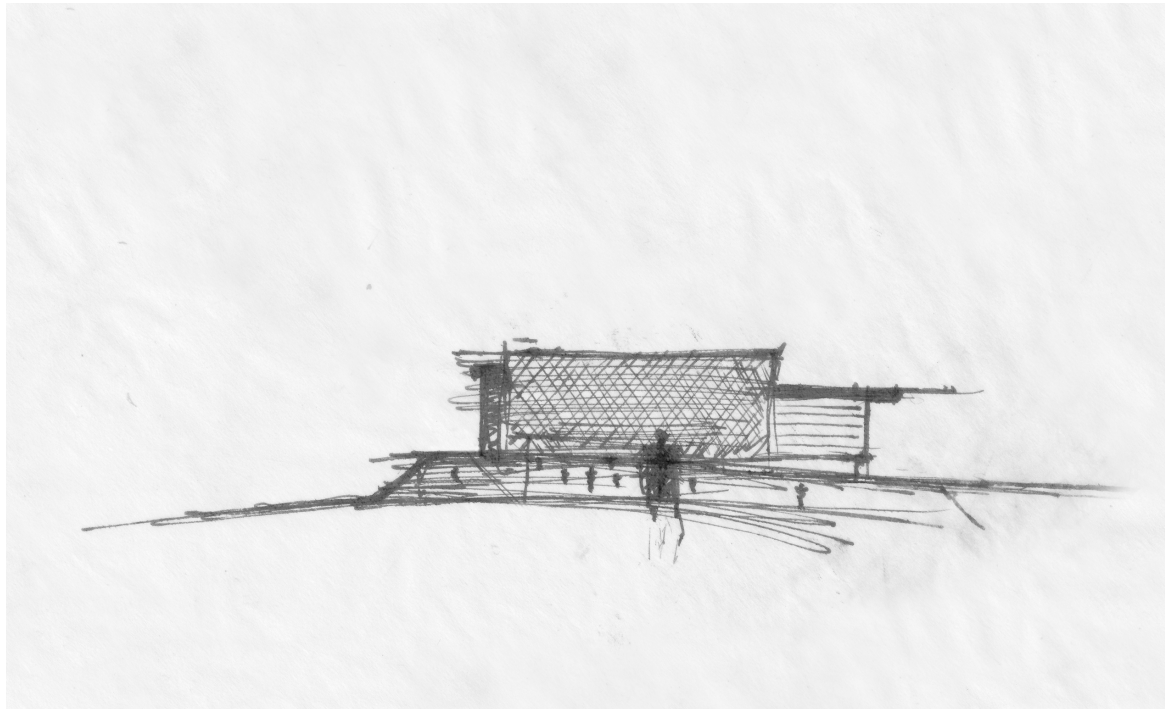
d. REUTERS/Amr Abdallah Dalsh

e. Miguel Medina /AFP/Getty Images

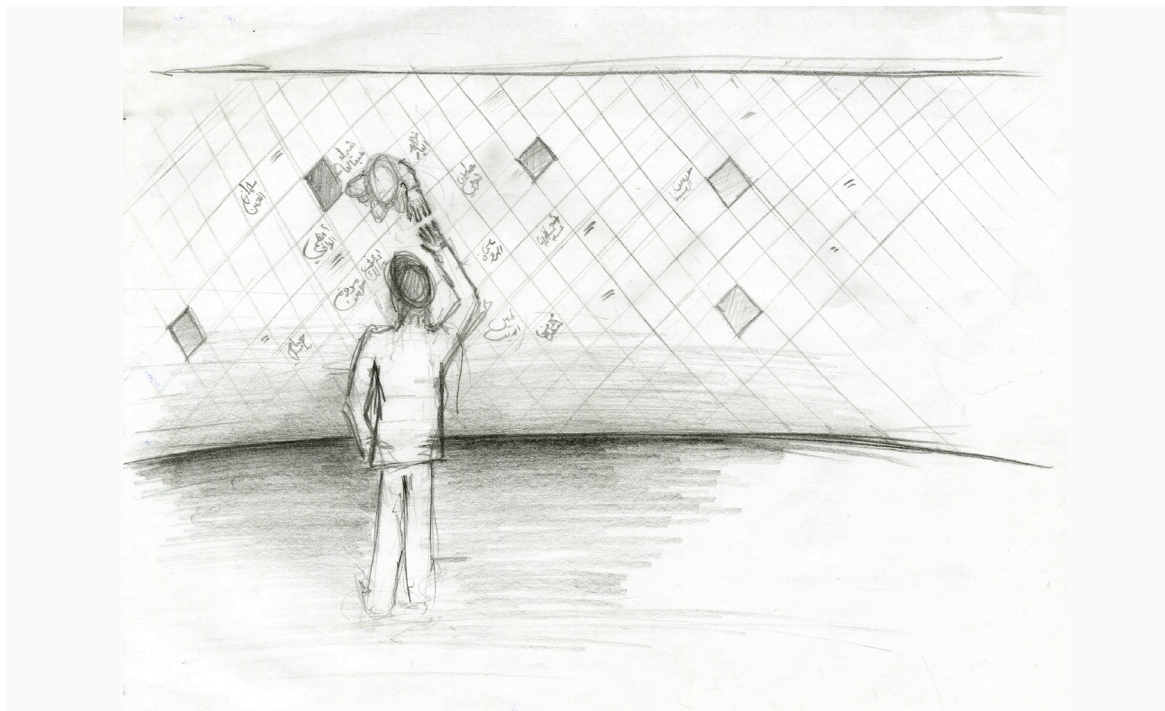
A great goal demands a great *will*.

A building born from a revolution is a reaction, a strong reaction that shows the *will* of the people. A building that reflects the past and projects the future is what the reaction should be – a place where a great *will* is present. It is not a typical memorial; it is a place to honor their sacrifice by *moving forward*.





b. The reflective surface in the landscape



a. Detail sketch of the reflective surface

## The Form

The project idea began with a reflective surface – surface where you can see your extended surrounding and yourself within it. It was an idea about how to sense what goes beyond your immediate surroundings. The idea was to express the need of seeing the bigger picture, to feel the spirit of the community, and to have a larger understanding.

A question of scale then became important, as well as what is the relation of such a reflective surface to the ground?

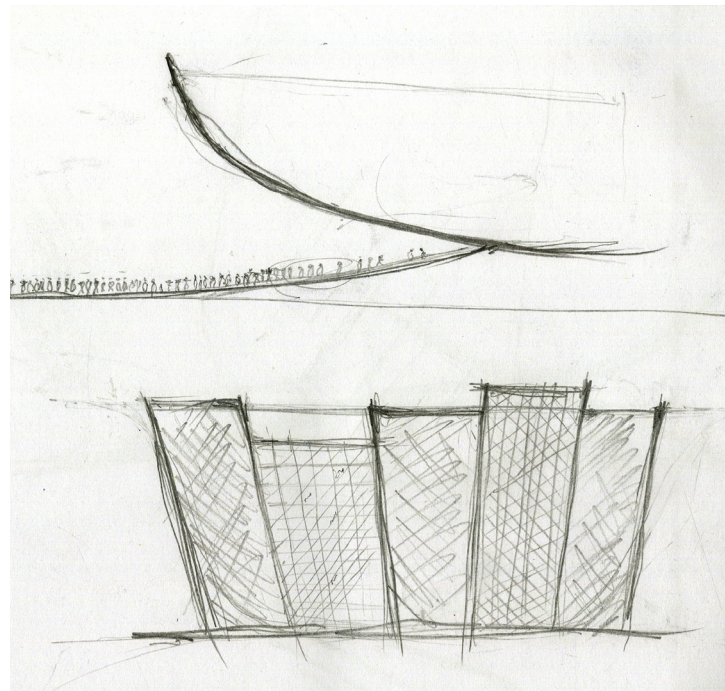
I worked with physical models and sketches to try and find the proportion and relations between the form elements that would fit the purpose of the project.

I studied different curvatures with wood and how the curves meet and how they join and separate. I looked at the visual tension between the elements if they don't touch. I looked at the joints and tectonics between elements and volumes and how they can strongly affect our feeling of a space.

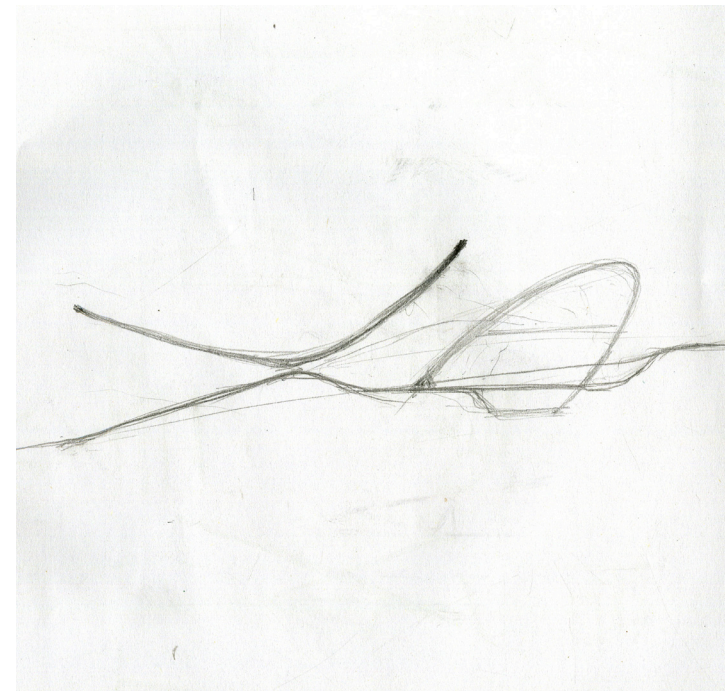




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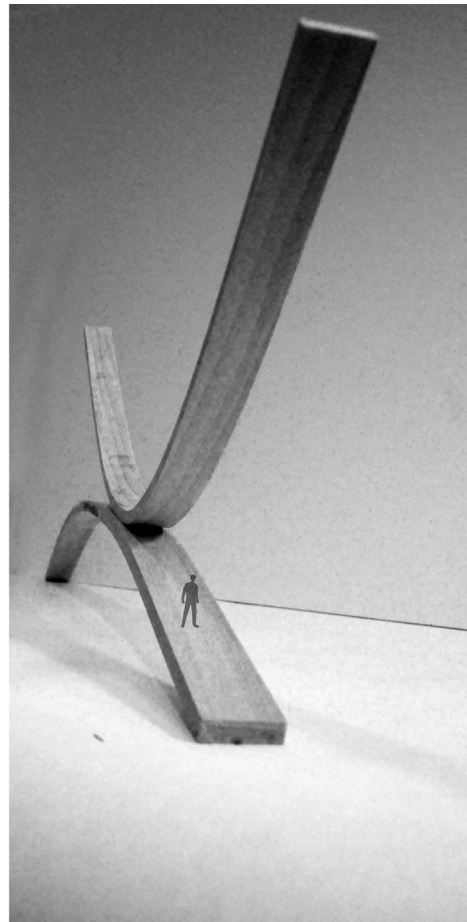
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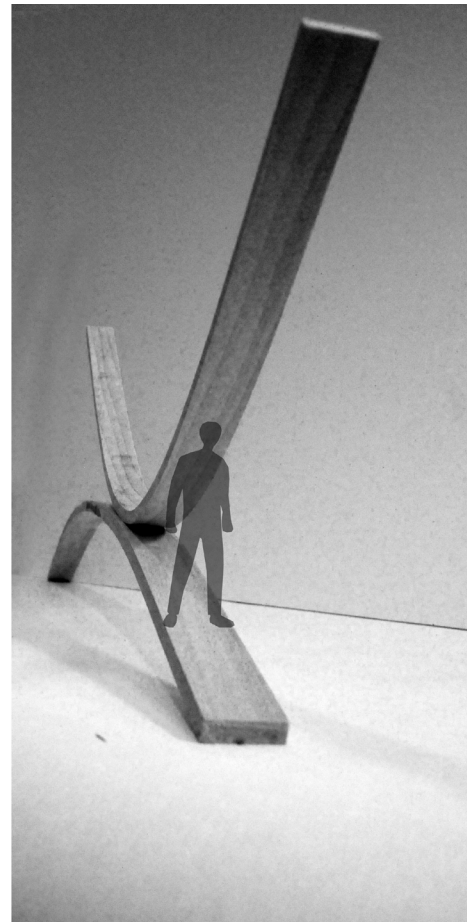
d.

fig. 06 | Concept study sketches

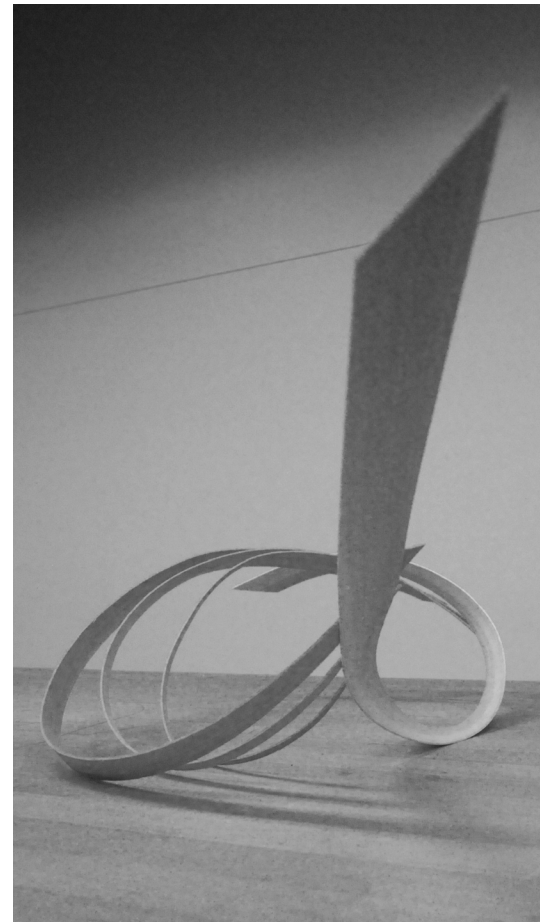




a.



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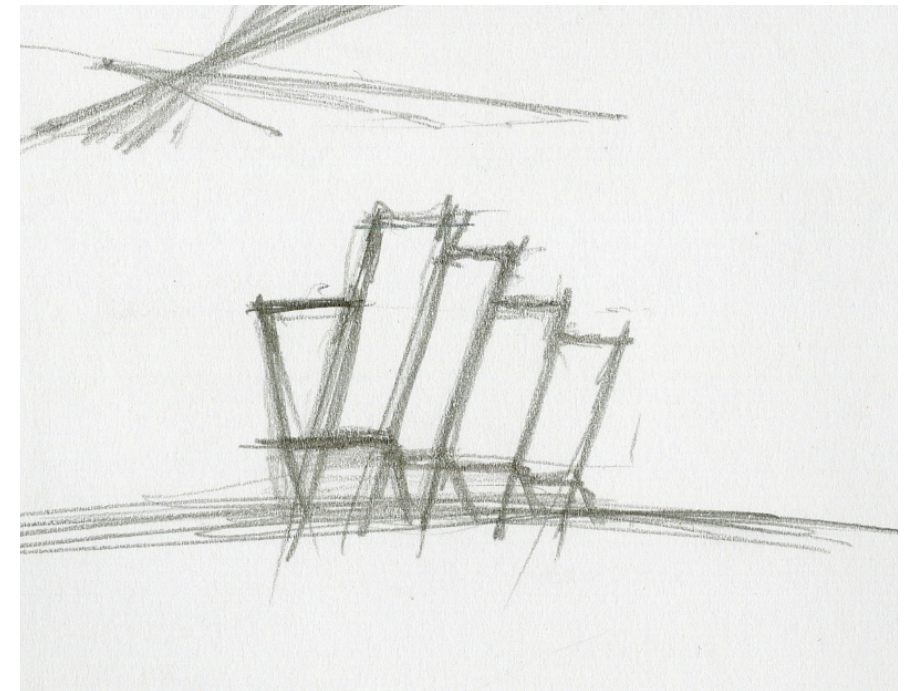
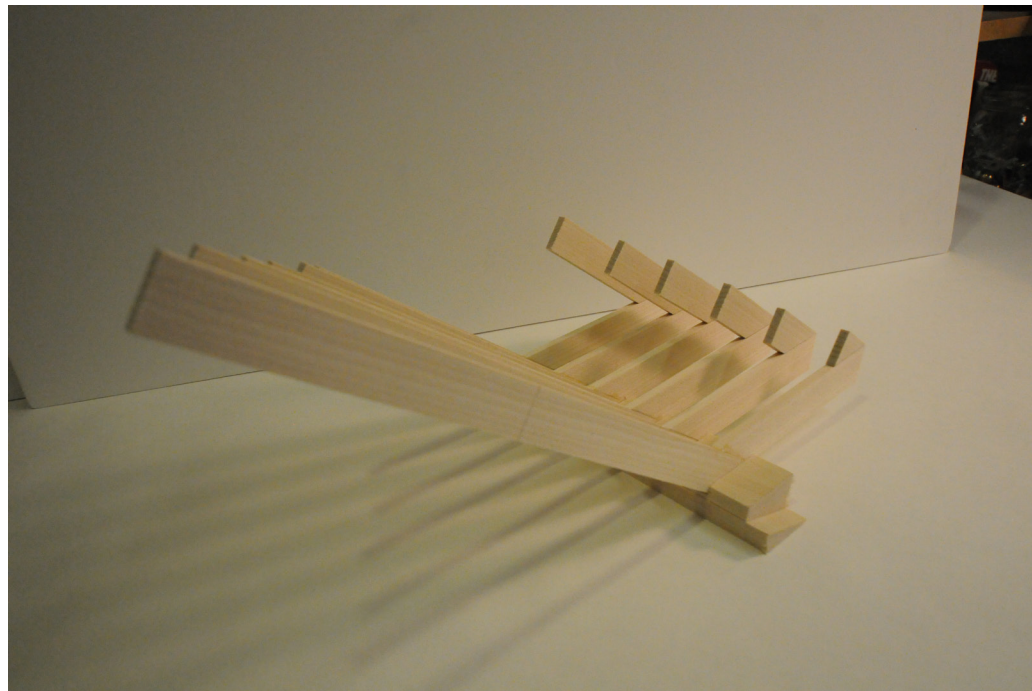
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d.

fig. 07 | Concept study models





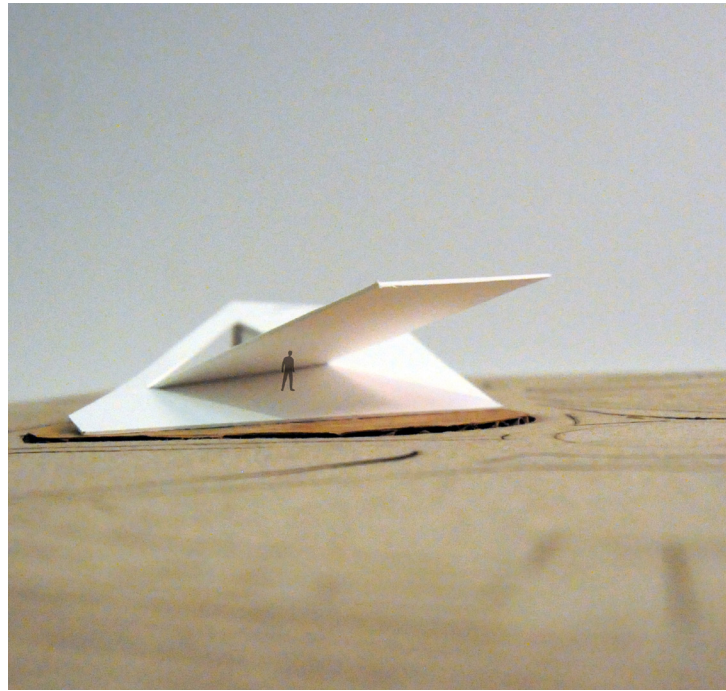
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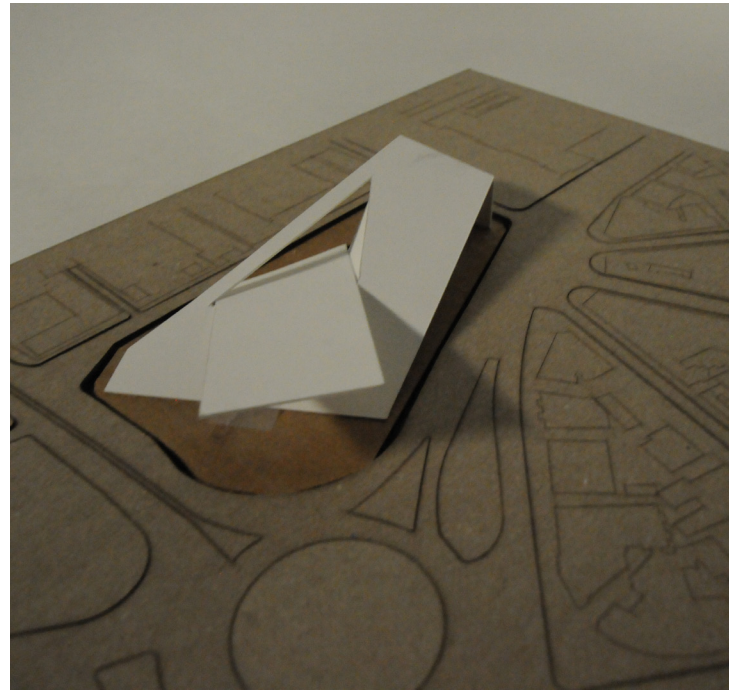
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fig. 08 | Concept study model & sketch

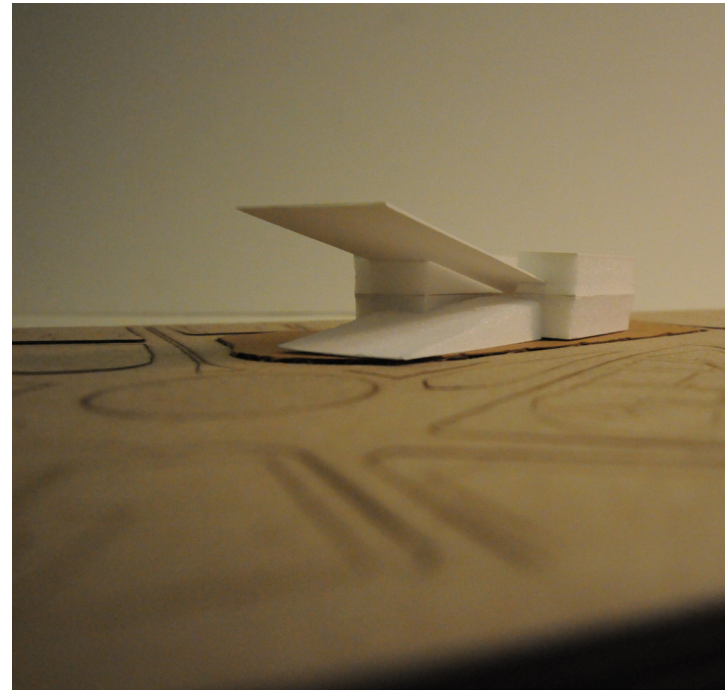




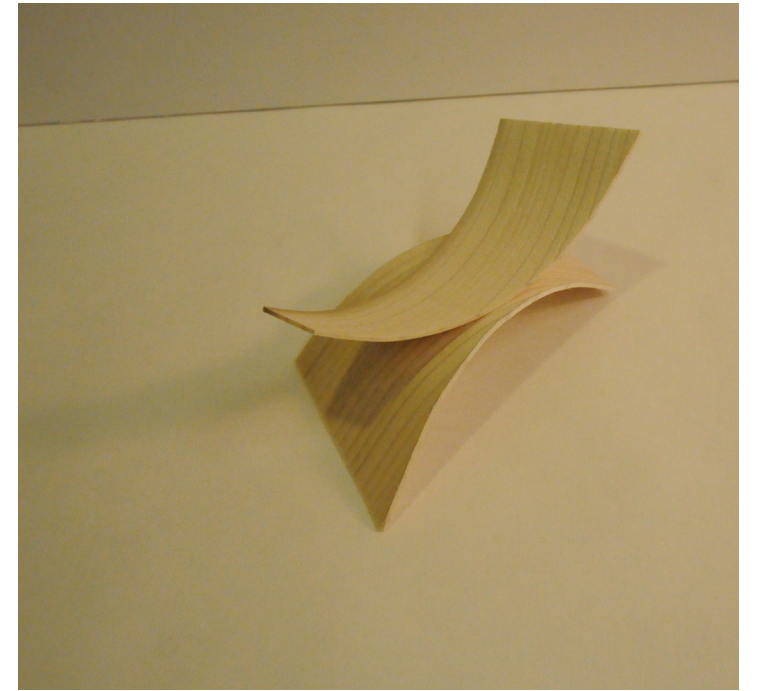
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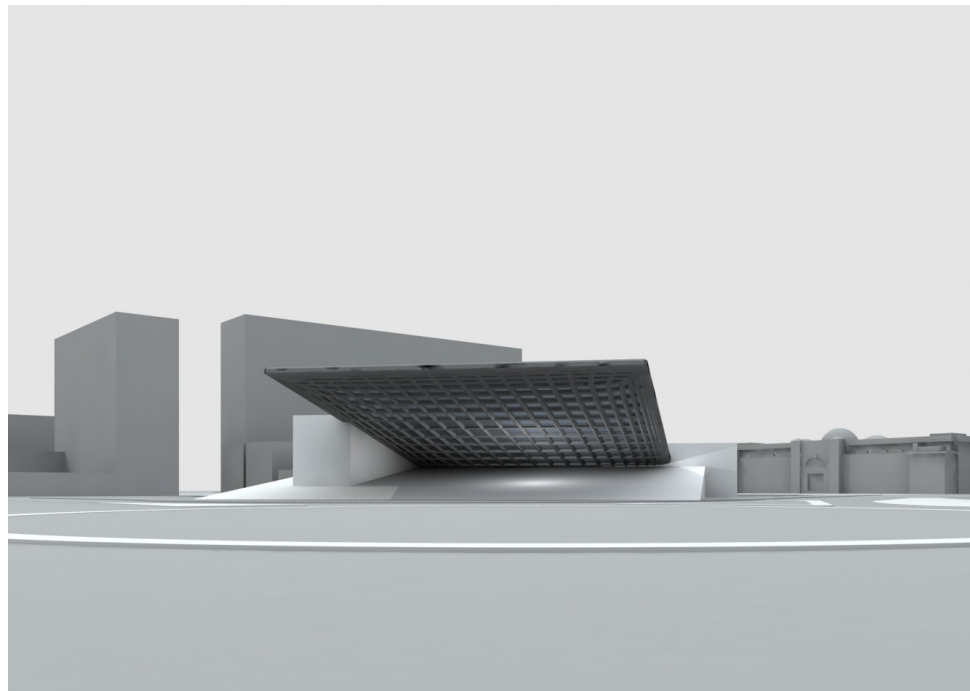


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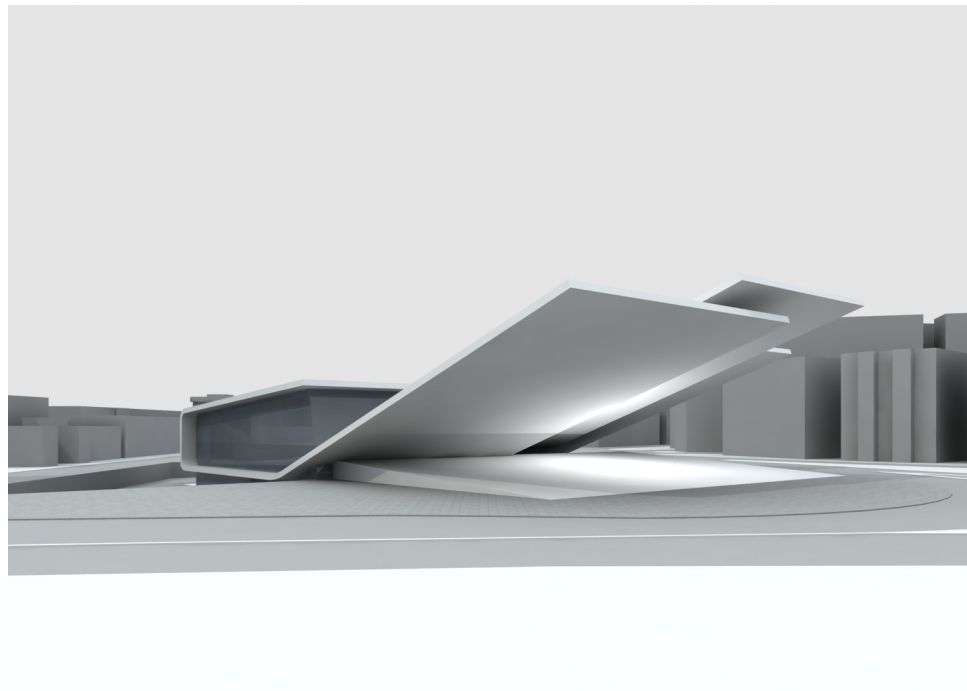


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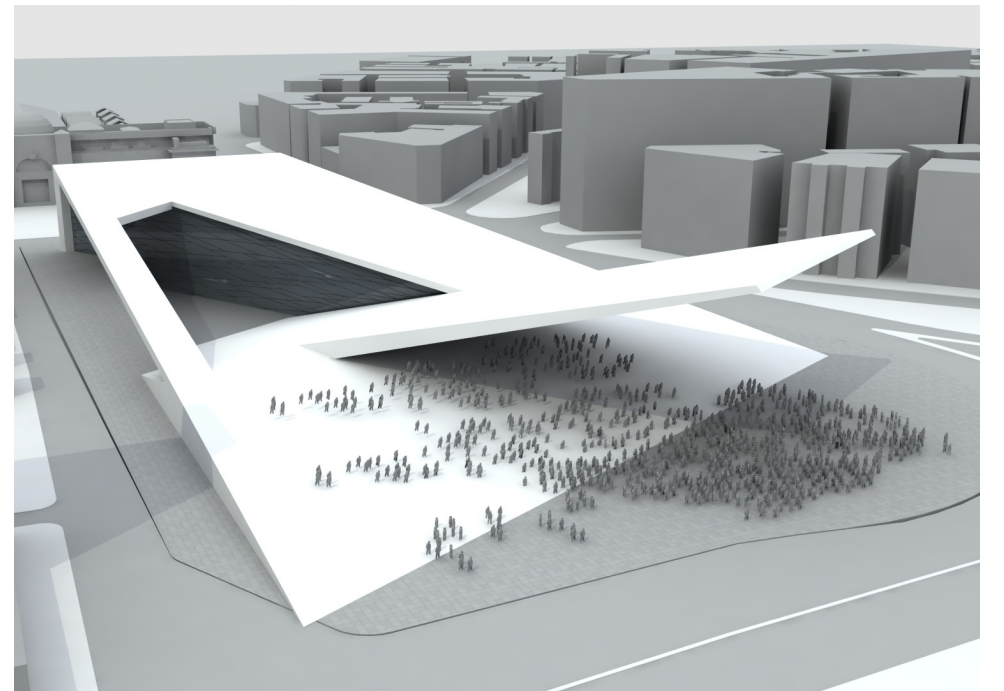
fig. 09 | Concept study model



a.



b.



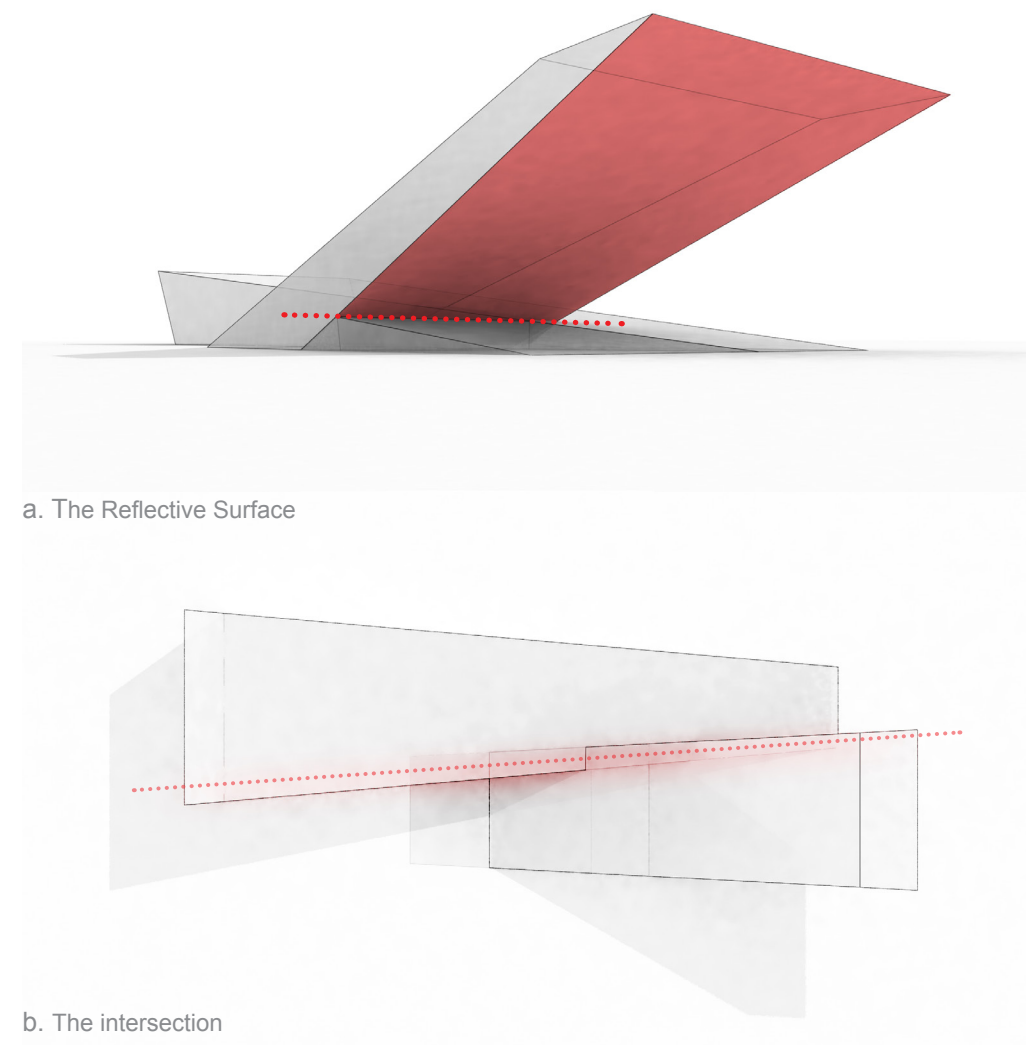
c.

fig. 10 | Early stages concept study models



## The Final Design

Through the conceptual process the reflective surface became a building, and the form exploration was concluded with two intersecting angular and tectonic volumes. Where the reflective surface descends to meet the ground, the ground plane simultaneously rises up to meet the surface creating the second volume. Raising the ground plane and elevating the intersection where both surfaces meet accentuates the moment when you reach and touch the reflective surface (fig. 11a).



The two volumes are too dynamic, and the intersection between them has to respond to that dynamic effect and flow of spaces generated by the intersection. The intersection became the main path through the building emphasizing the tectonics and intersection between the two volumes (fig. 11b). This path became a journey from the square to the museum (two of the existing features of central Cairo, that border the site). The journey begins from the exterior space where the sloped surfaces create a natural flow of spaces taking you to the interior. The interior of the main path is now a natural extension from and to the exterior.

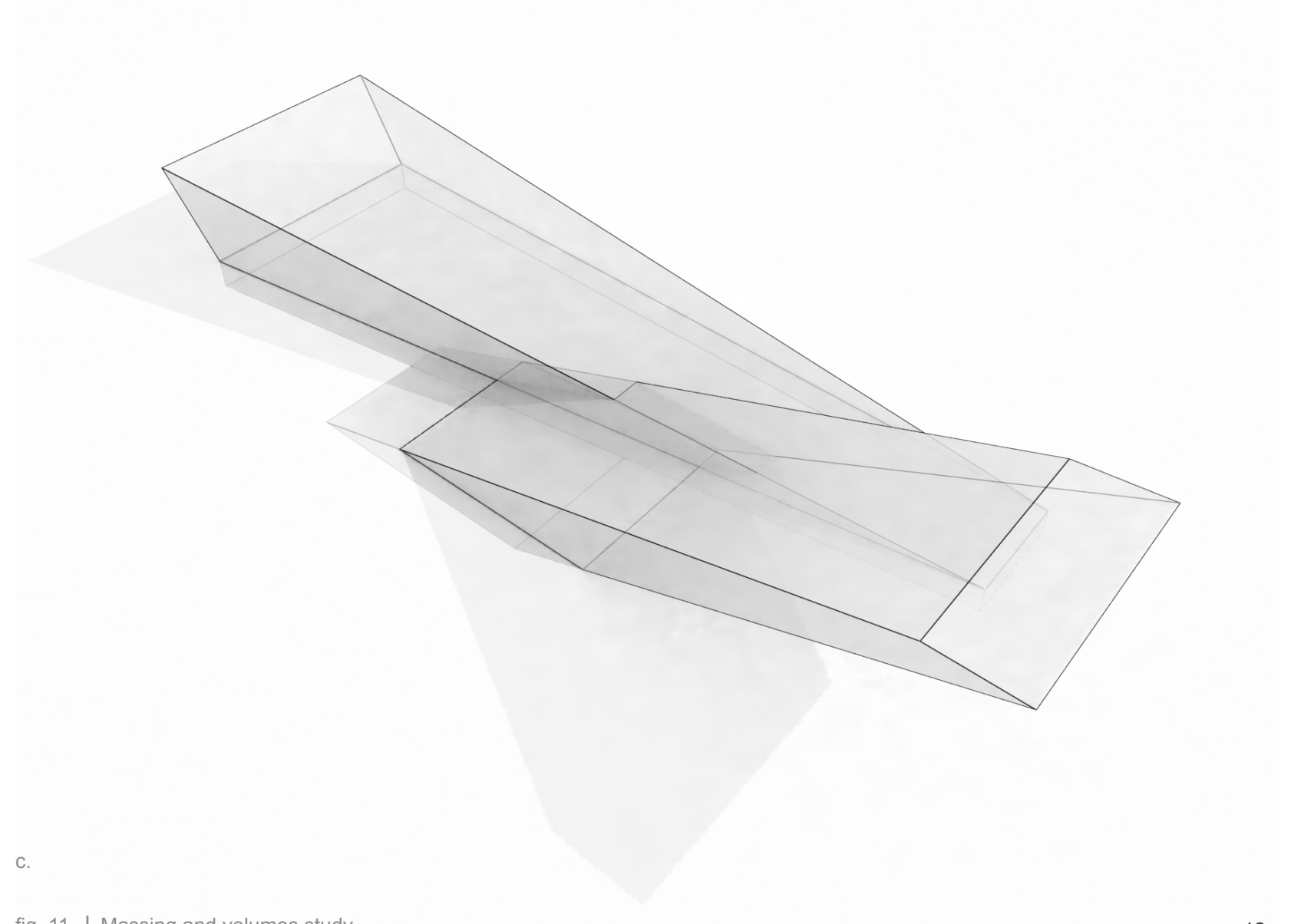


fig. 11 | Massing and volumes study

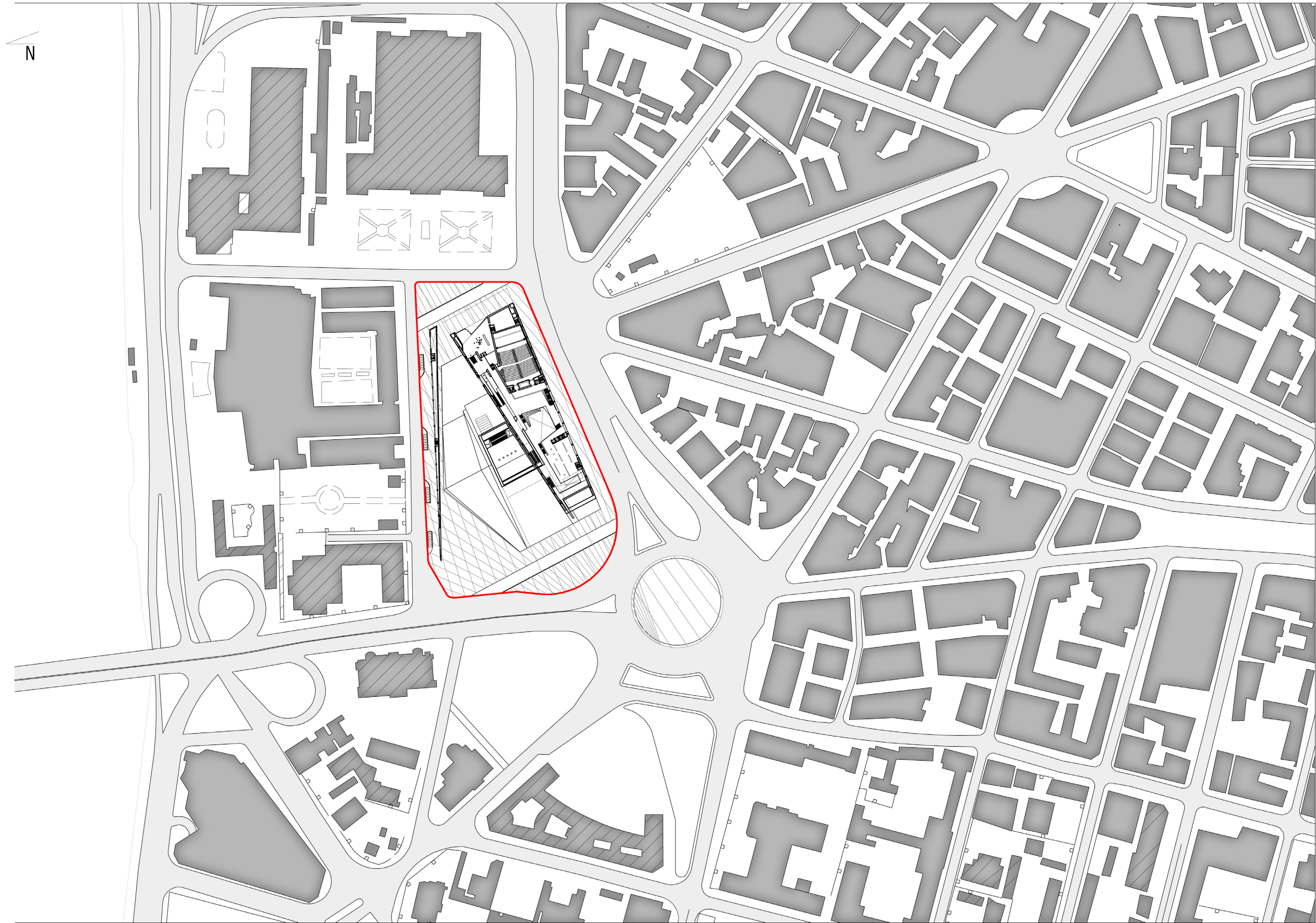


fig. 12 | Site Plan



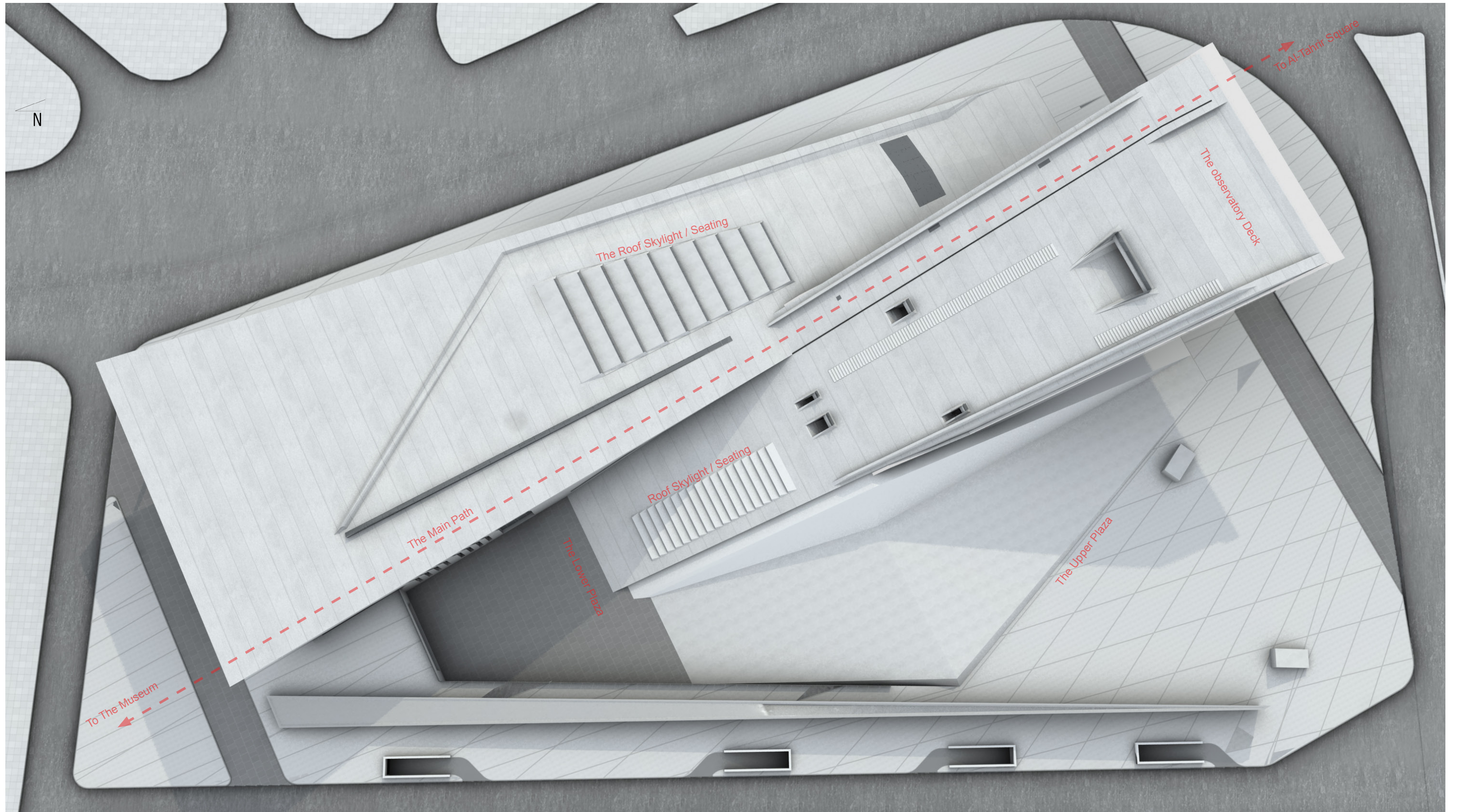
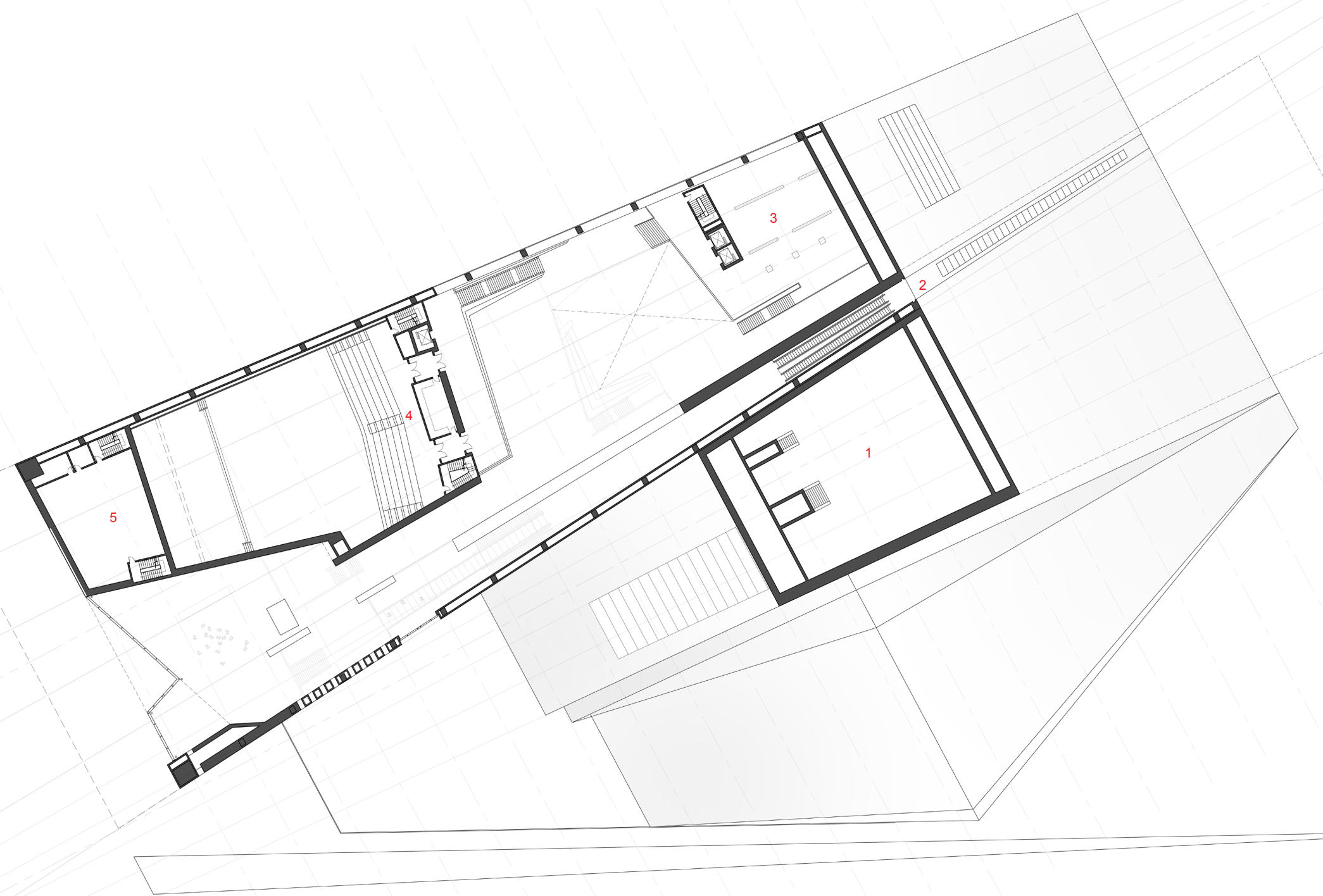


fig. 13 | Site plan 3D model





- 1 Meeting Area
- 2 South Entrance
- 3 Gallery Area
- 4 Theatre Hall Balcony
- 5 Back Office



fig. 14 | Third Floor Plan



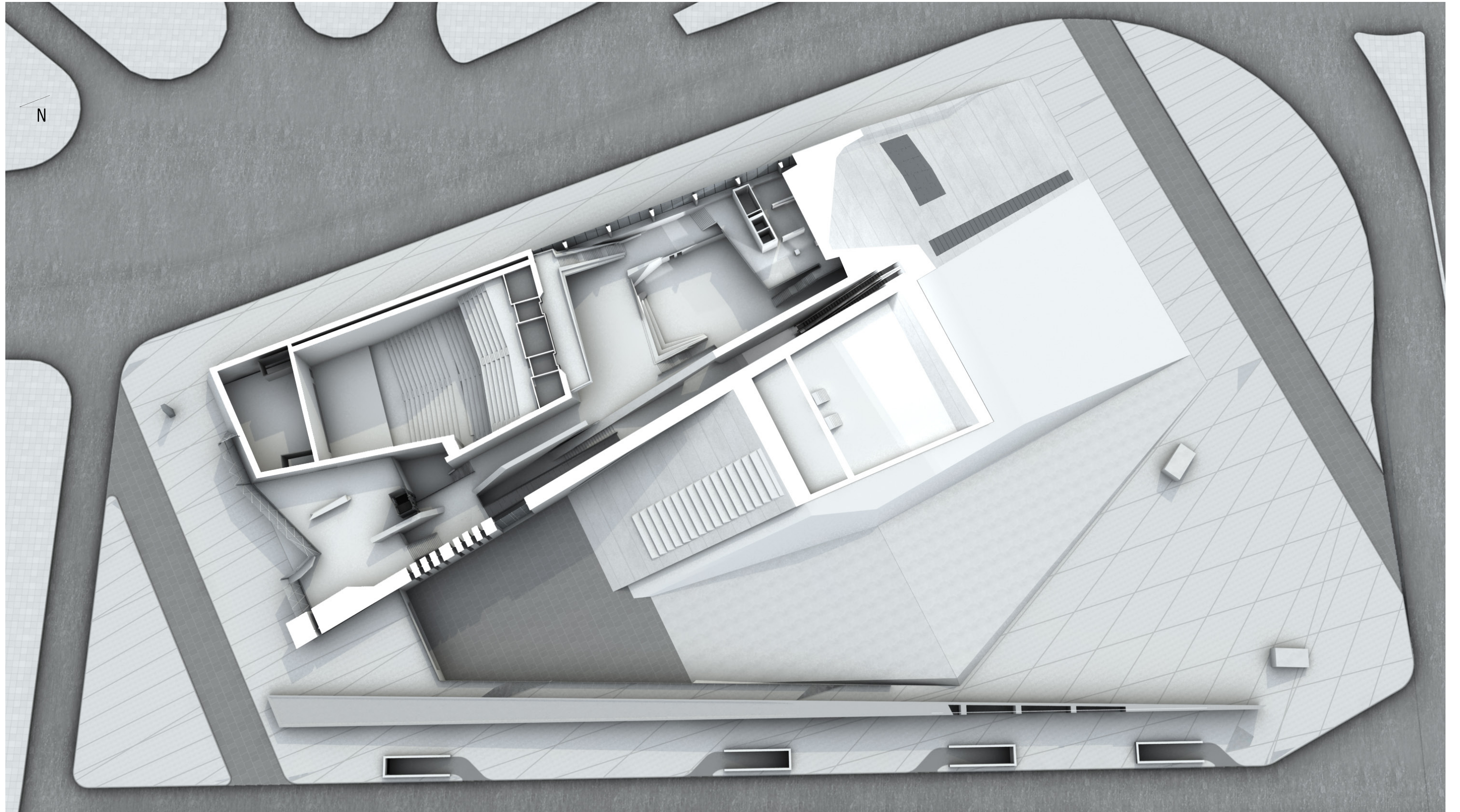
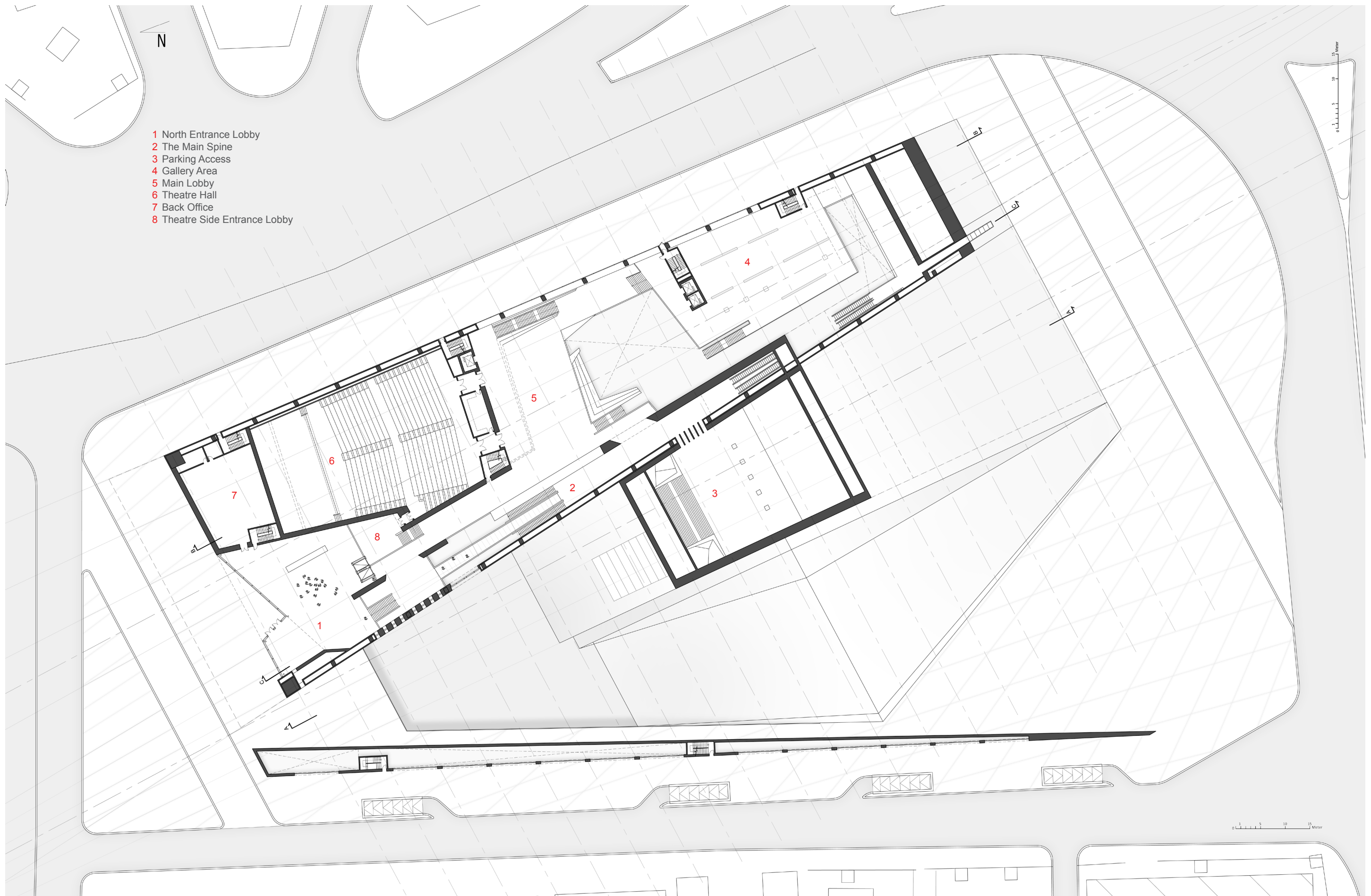


fig. 15 | Third Floor Plan 3D model





- 1 North Entrance Lobby
- 2 The Main Spine
- 3 Parking Access
- 4 Gallery Area
- 5 Main Lobby
- 6 Theatre Hall
- 7 Back Office
- 8 Theatre Side Entrance Lobby

fig. 16 | Second Floor Plan



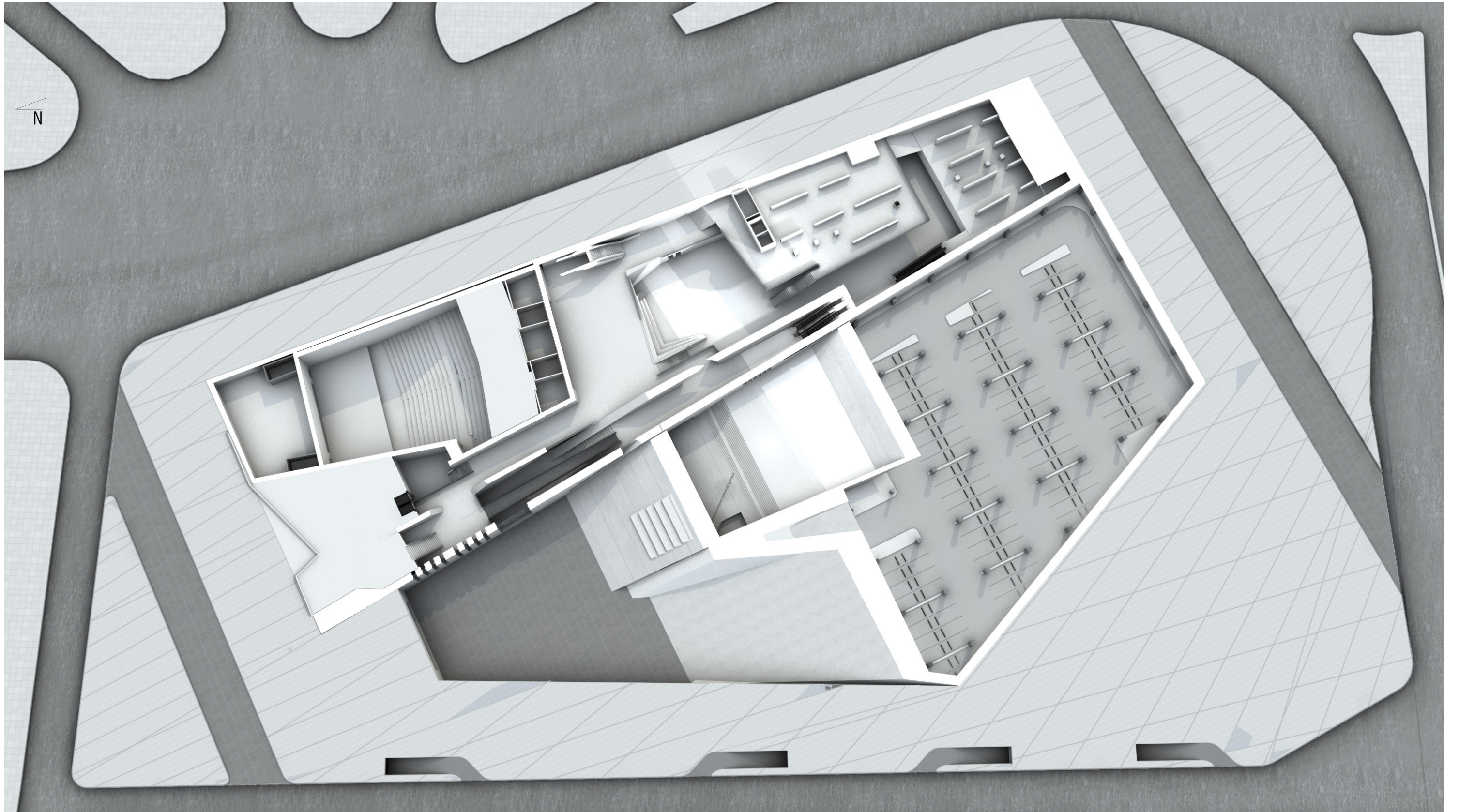


fig. 17 | Second Floor Plan 3D model





- 1 Storage
- 2 Service Area
- 3 Loading / Unloading
- 4 Cafe
- 5 Out Door Plaza
- 6 Mechanical Area
- 7 Parking
- 8 Parking Entrance Lobby
- 9 Gallery
- 10 Closed Galleries
- 11 Main Hall
- 12 Gallery
- 13 Storage
- 14 Theatre Hall
- 15 Back Office
- 16 Service Area
- 17 Side Entrance Lobby

fig. 18 | First Floor Plan

0 1 5 10 15 Meter



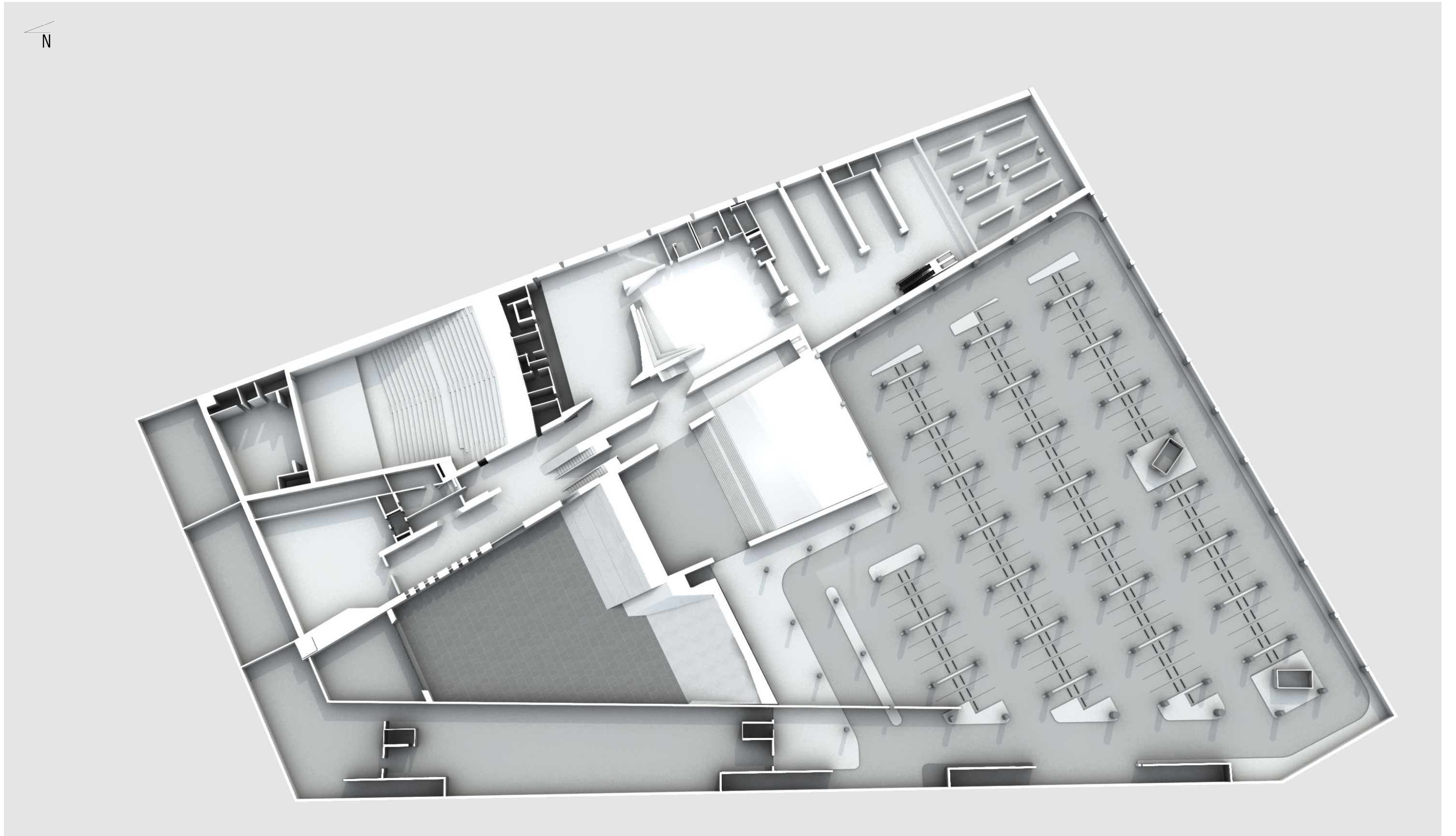


fig. 19 | First Floor Plan 3D model

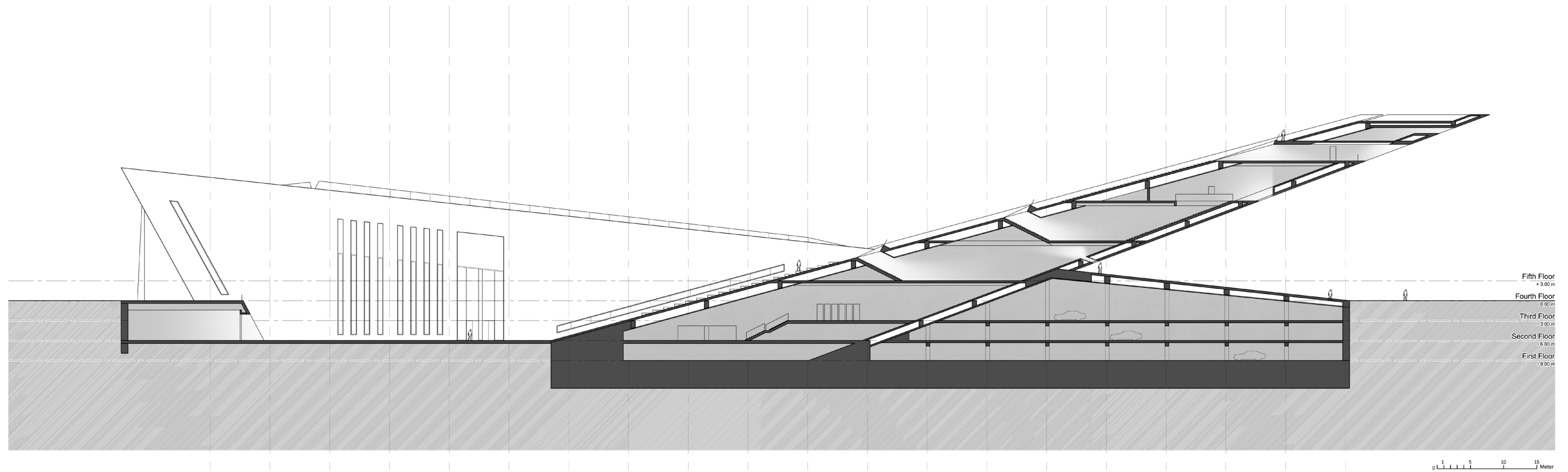
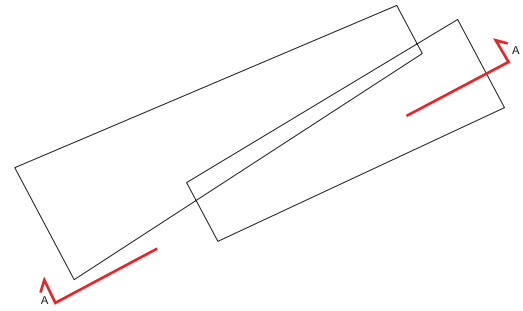


fig. 20 | Section Drawing



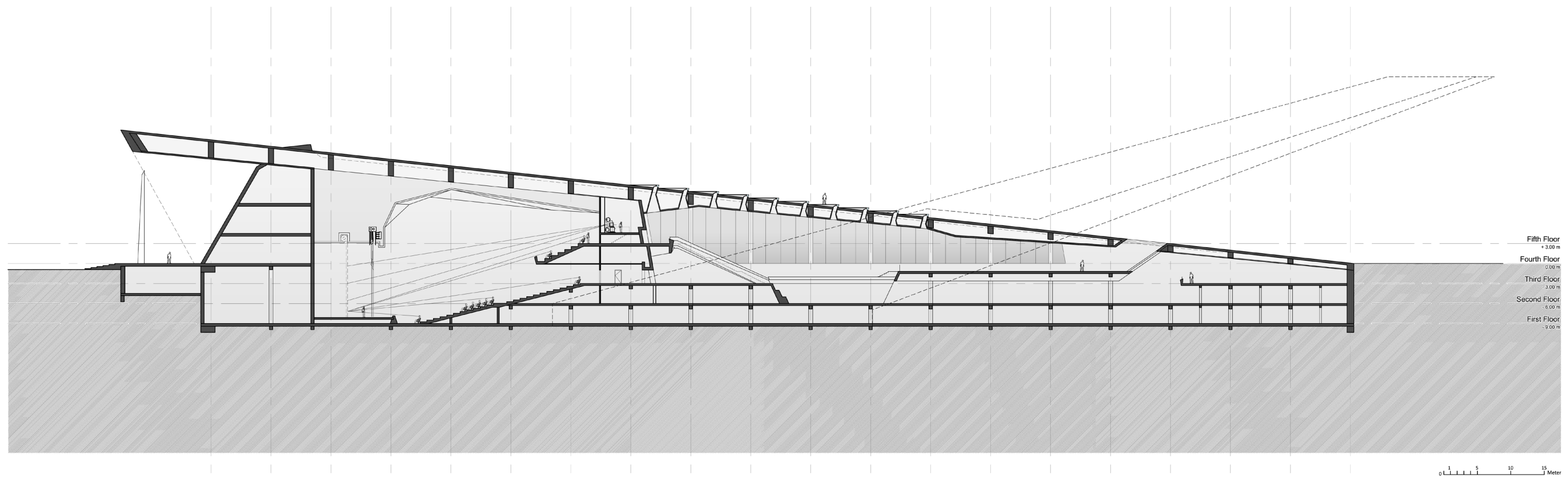
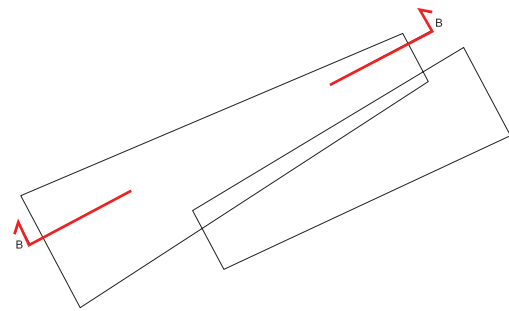


fig. 21 | Section Drawing

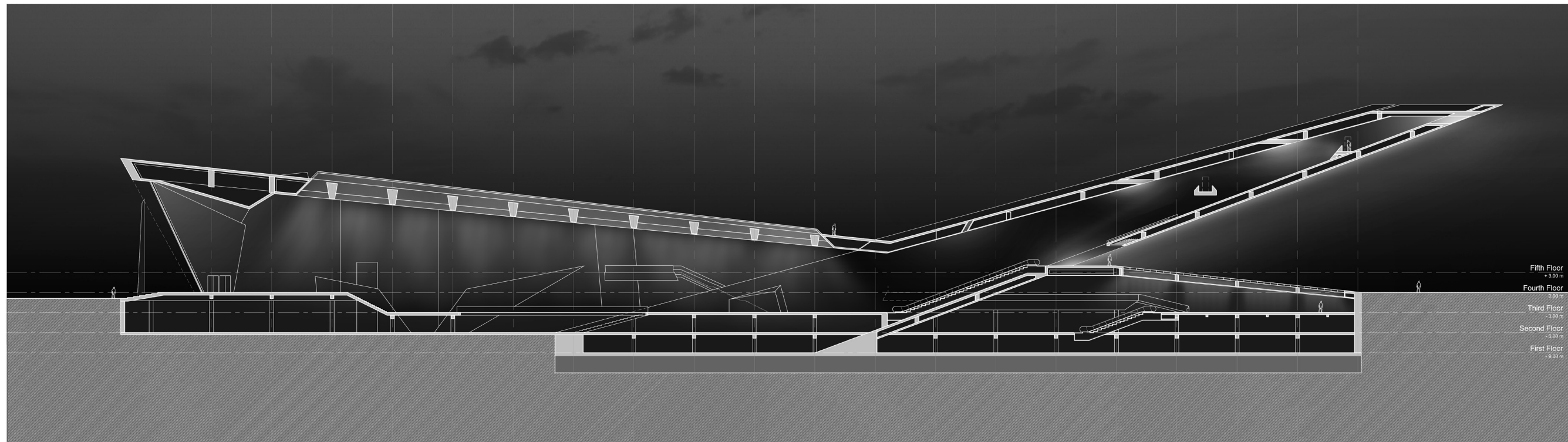
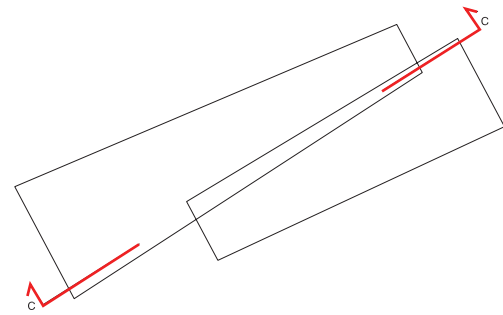


fig. 22 | Section Drawing



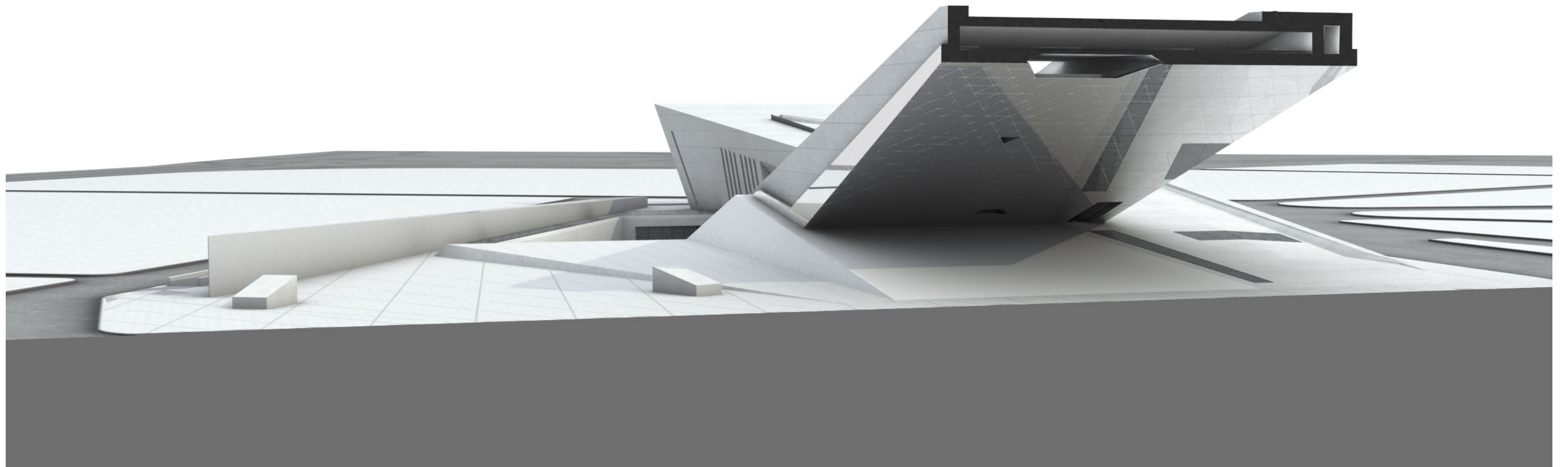
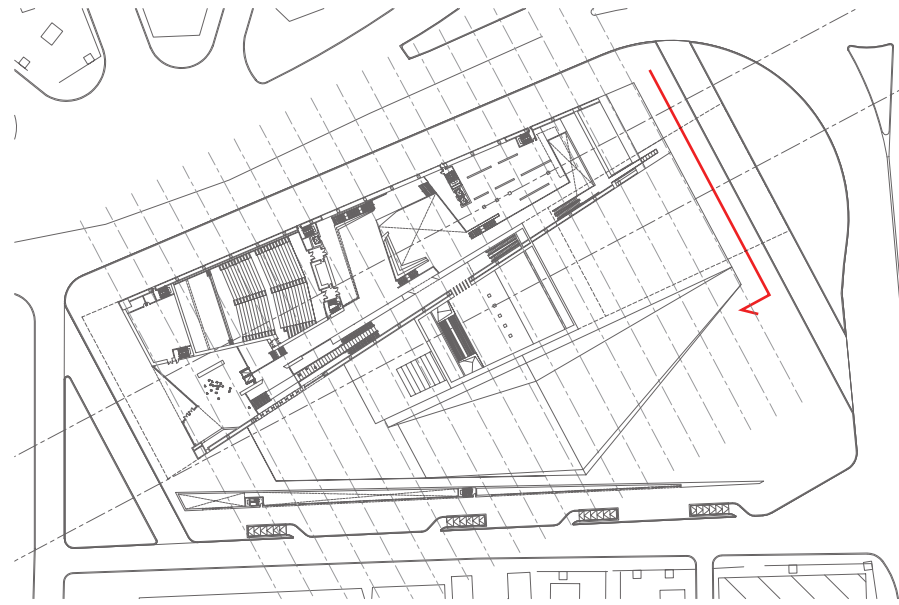


fig. 23 | Cross Section Drawing (The Observatory Deck)

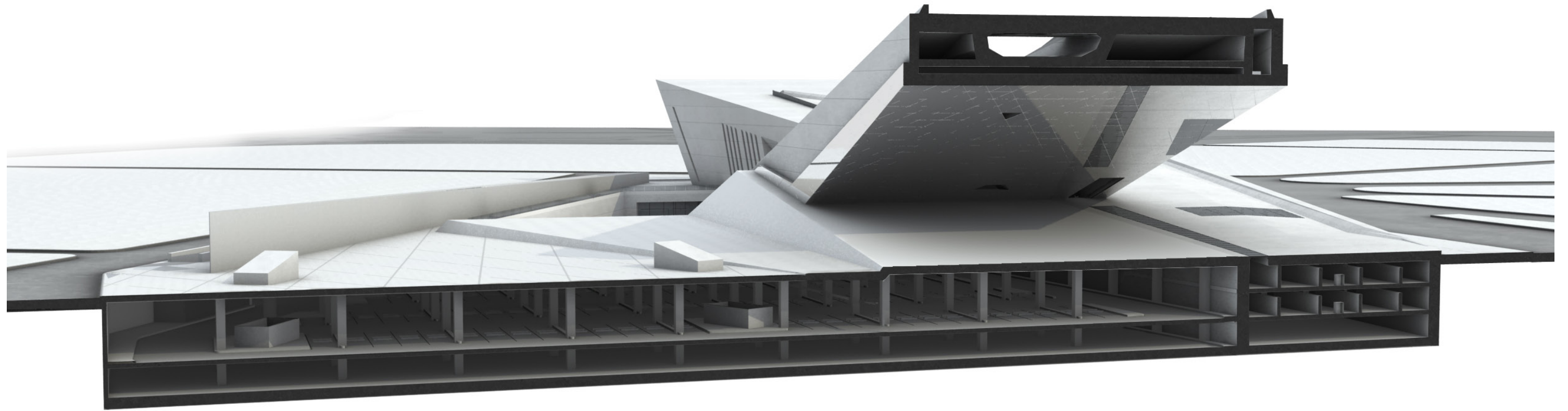
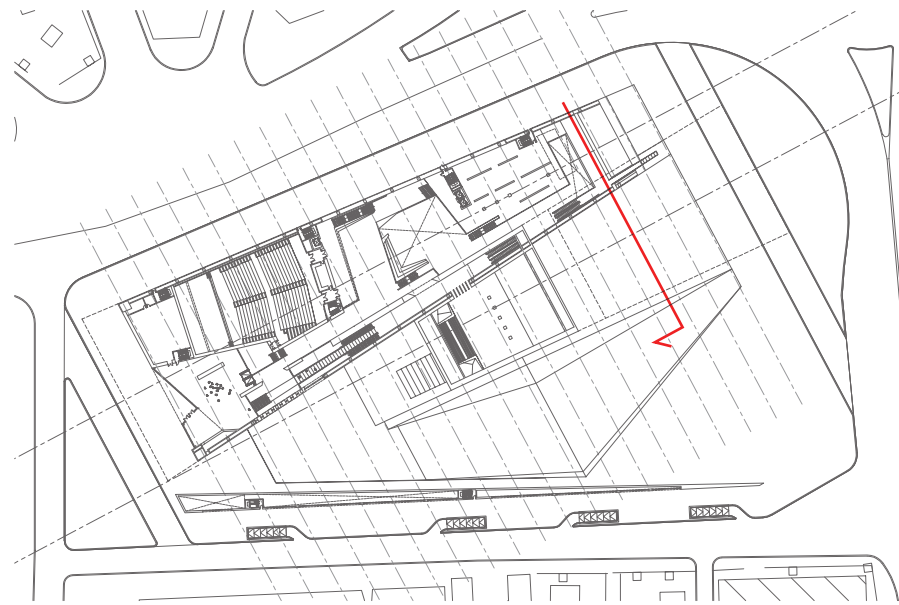


fig. 24 | Cross Section Drawing



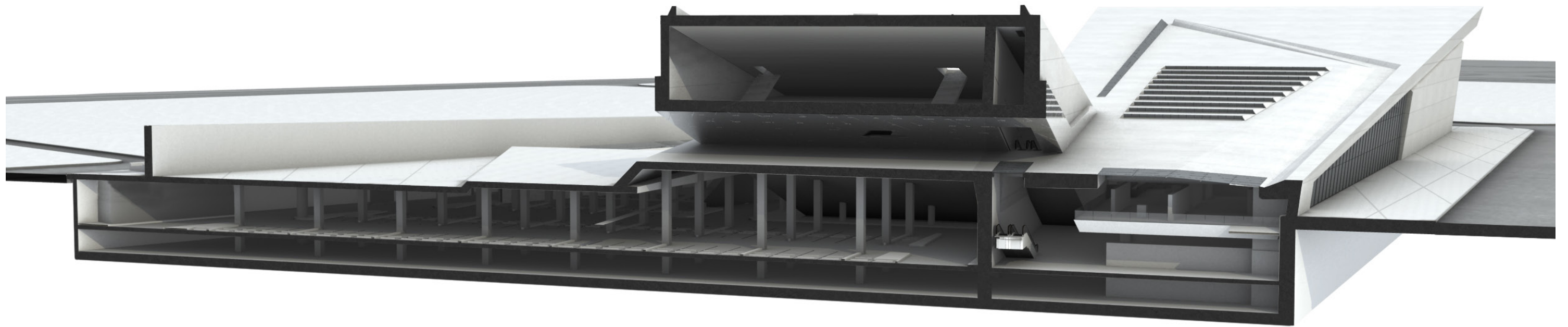
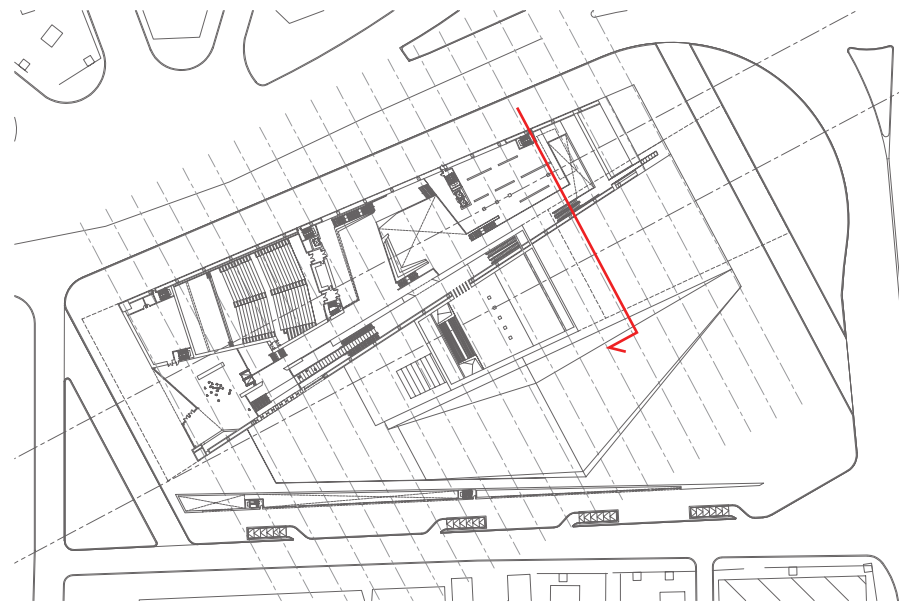


fig. 25 | Cross Section Drawing (Contemplation places)

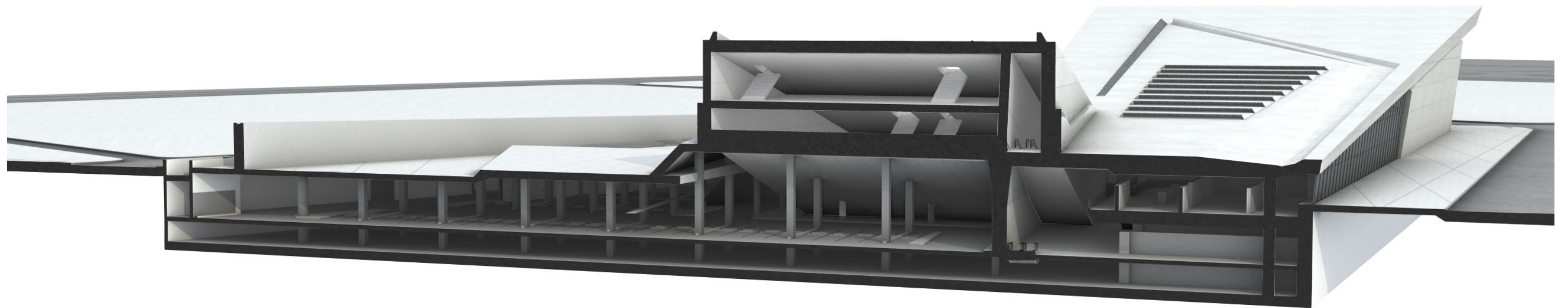
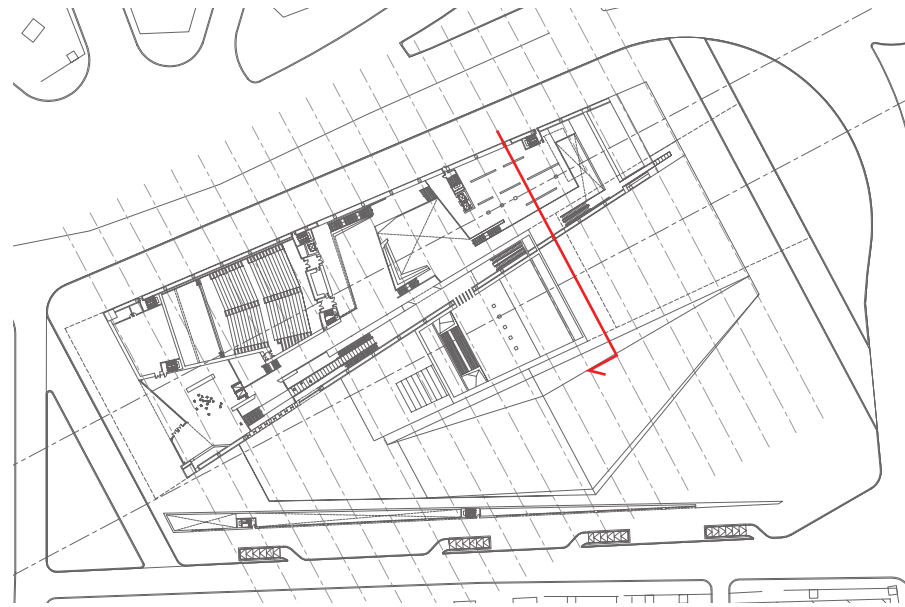


fig. 26 | Cross Section Drawing (The Gallery)



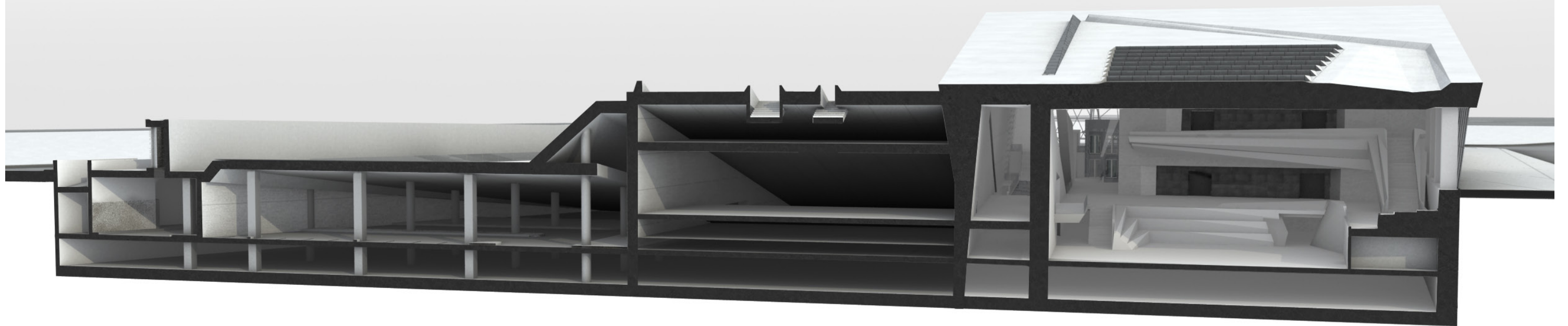
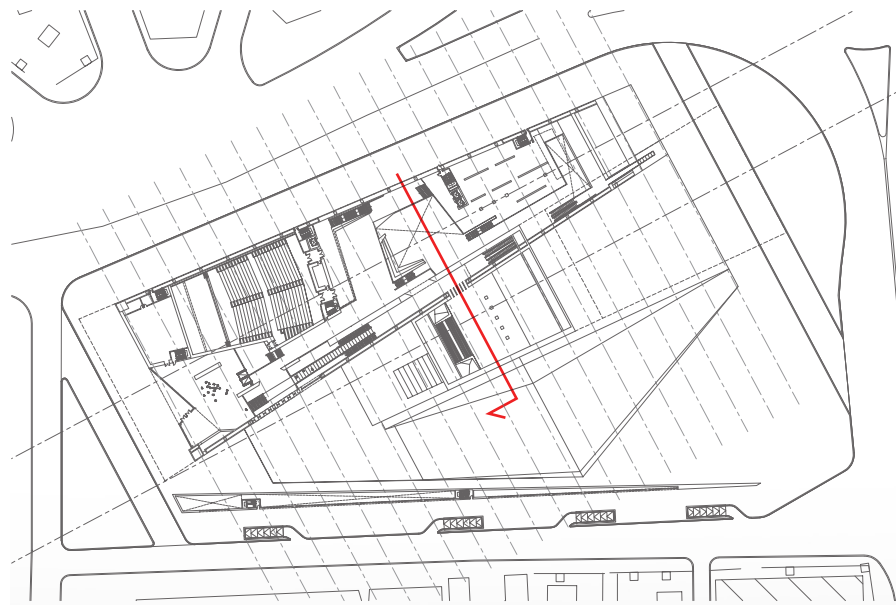


fig. 27 | Cross Section Drawing (The Main Hall)

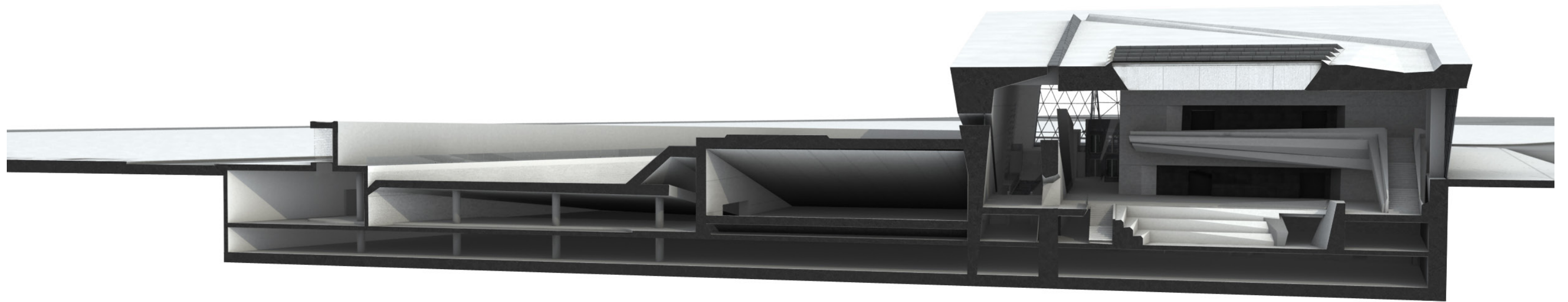
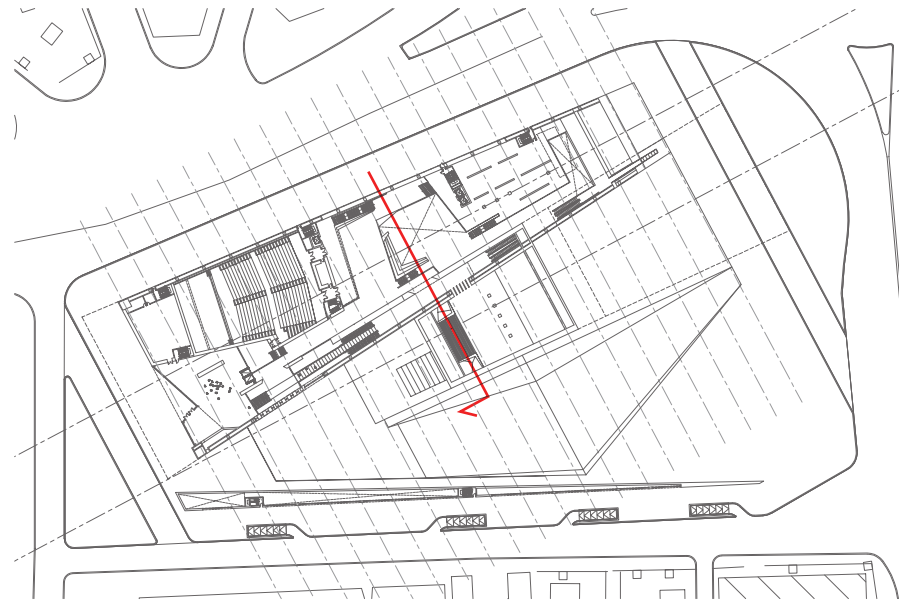


fig. 28 | Cross Section Drawing (The Stair to the Mezzanine Level)



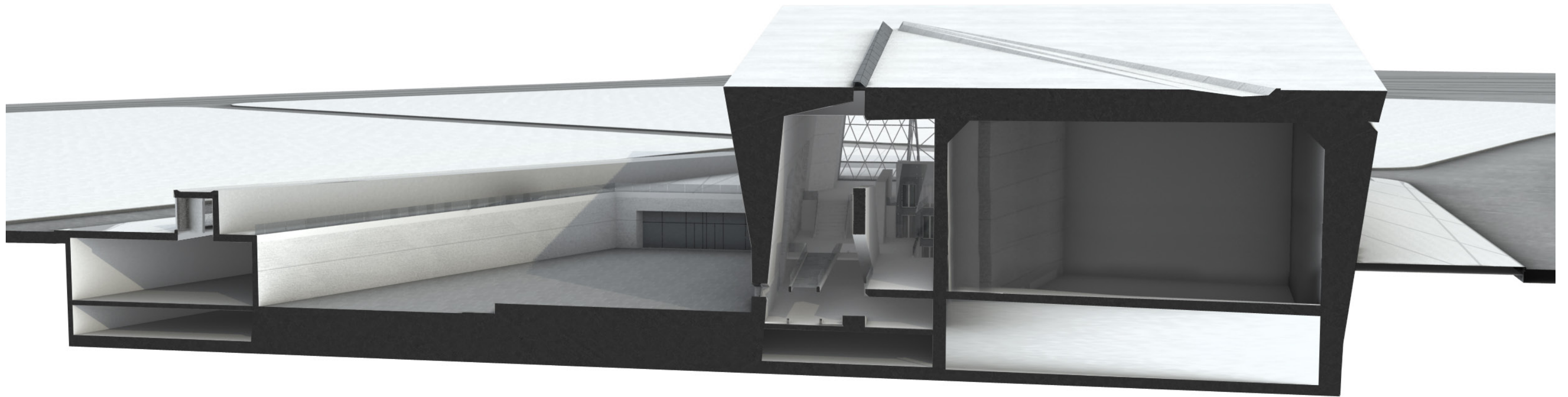
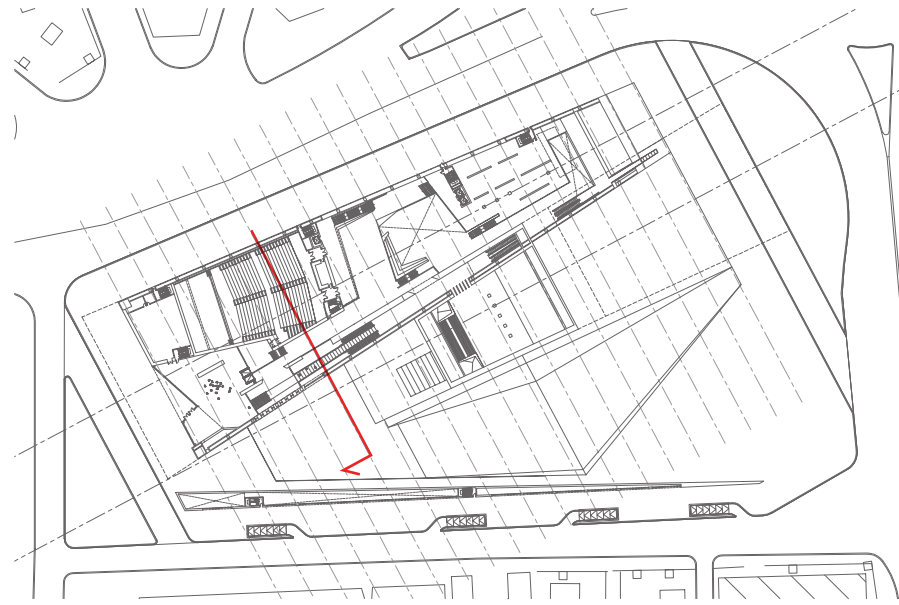


fig. 29 | Cross Section Drawing (The Theatre)

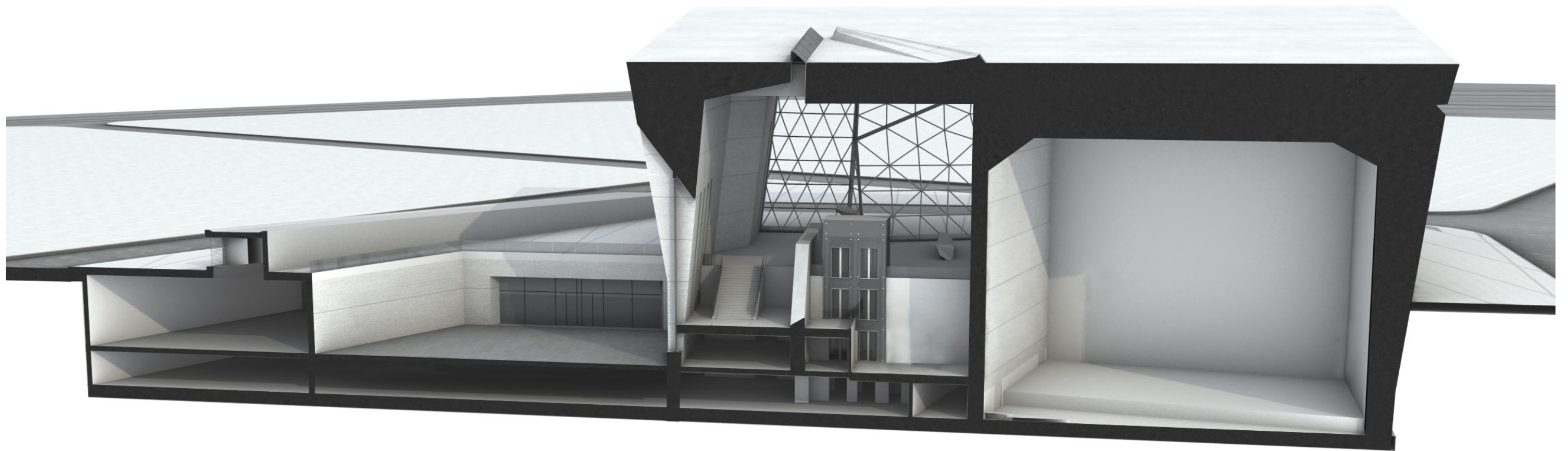
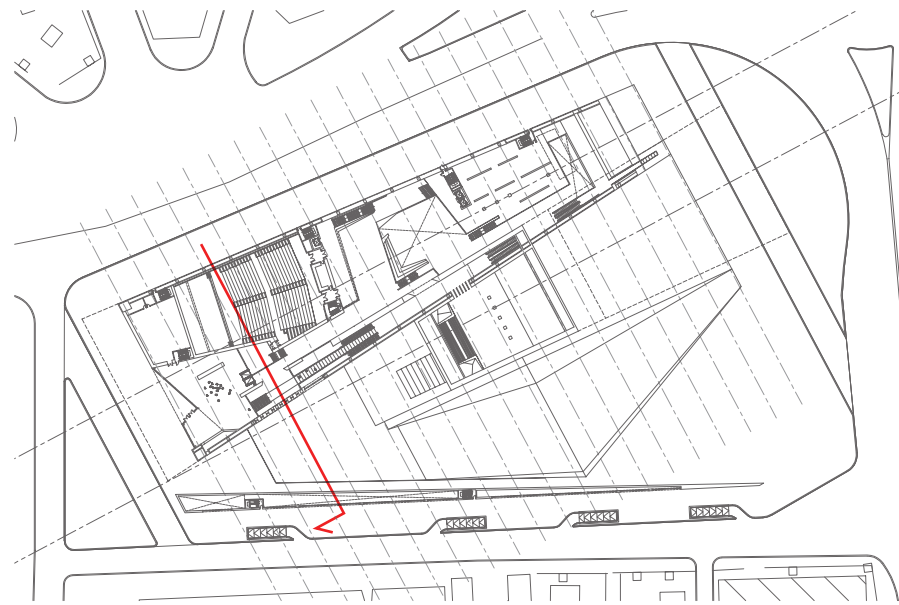


fig. 30 | Cross Section Drawing (The Lower Plaza - The Stage)



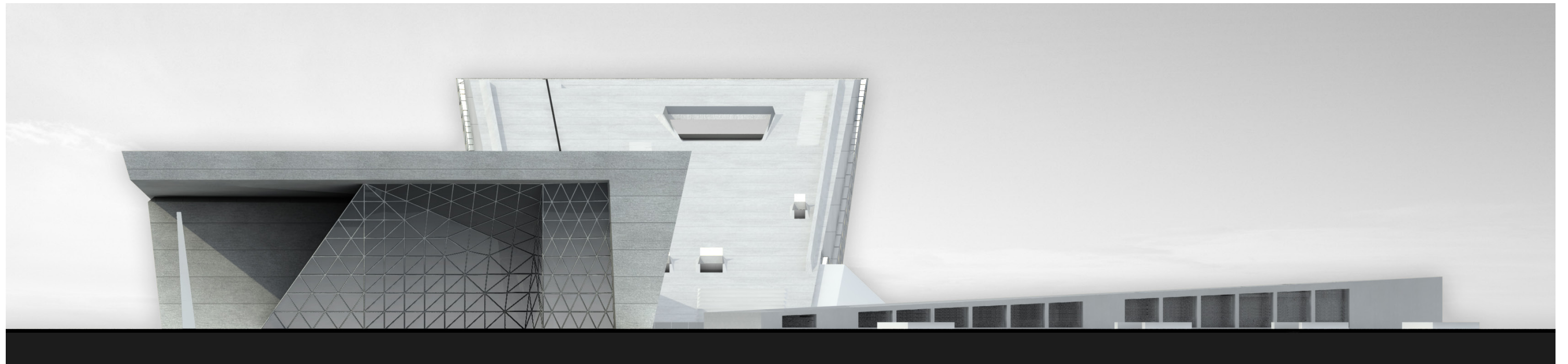
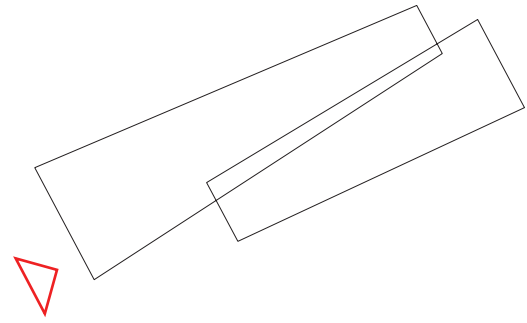


fig. 31 | North Elevation

0 1 5 10 15 Meter

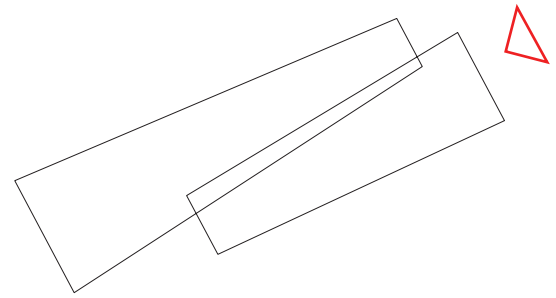


fig. 32 | South Elevation

0 1 5 10 15 Meter



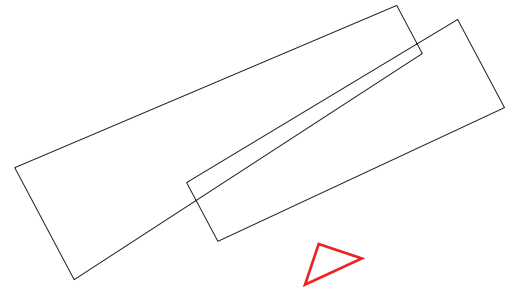


fig. 33 | West Elevation

0 1 5 10 15 Meter

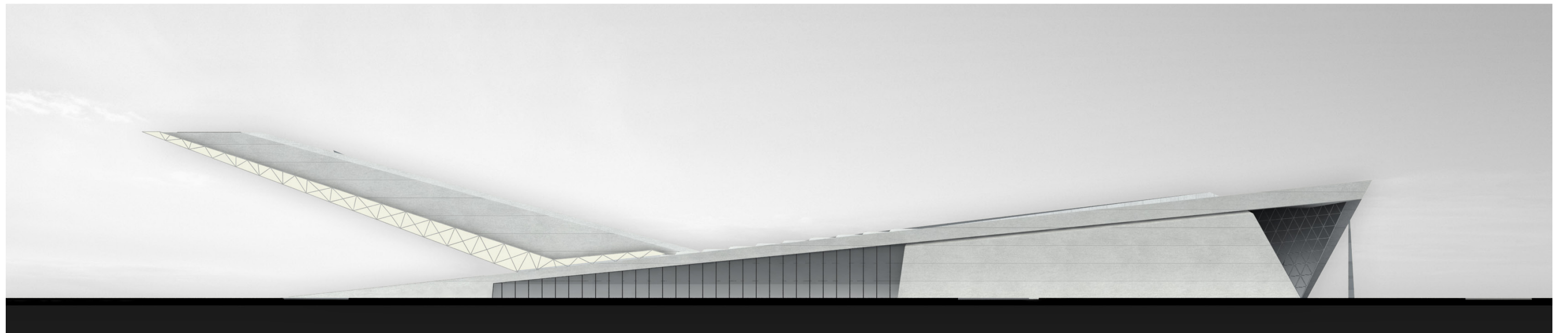
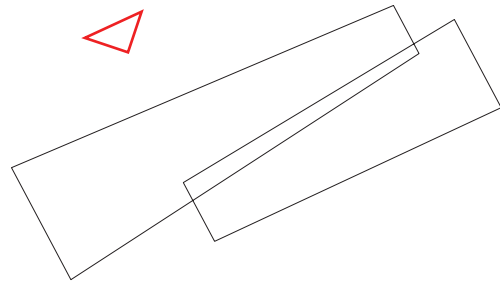


fig. 34 | East Elevation

0 1 5 10 15 Meter



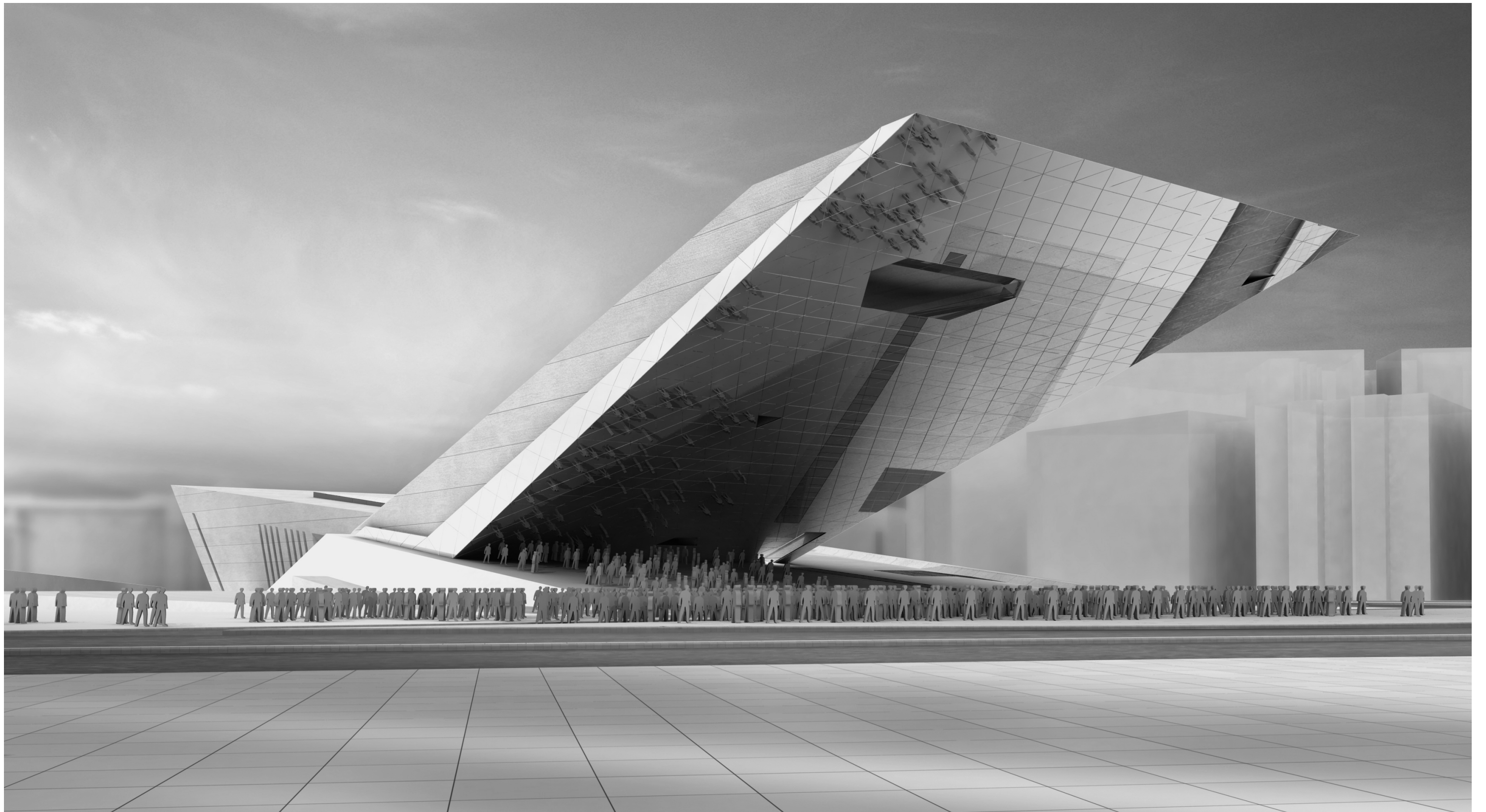


fig. 35 | The Reflective Wall



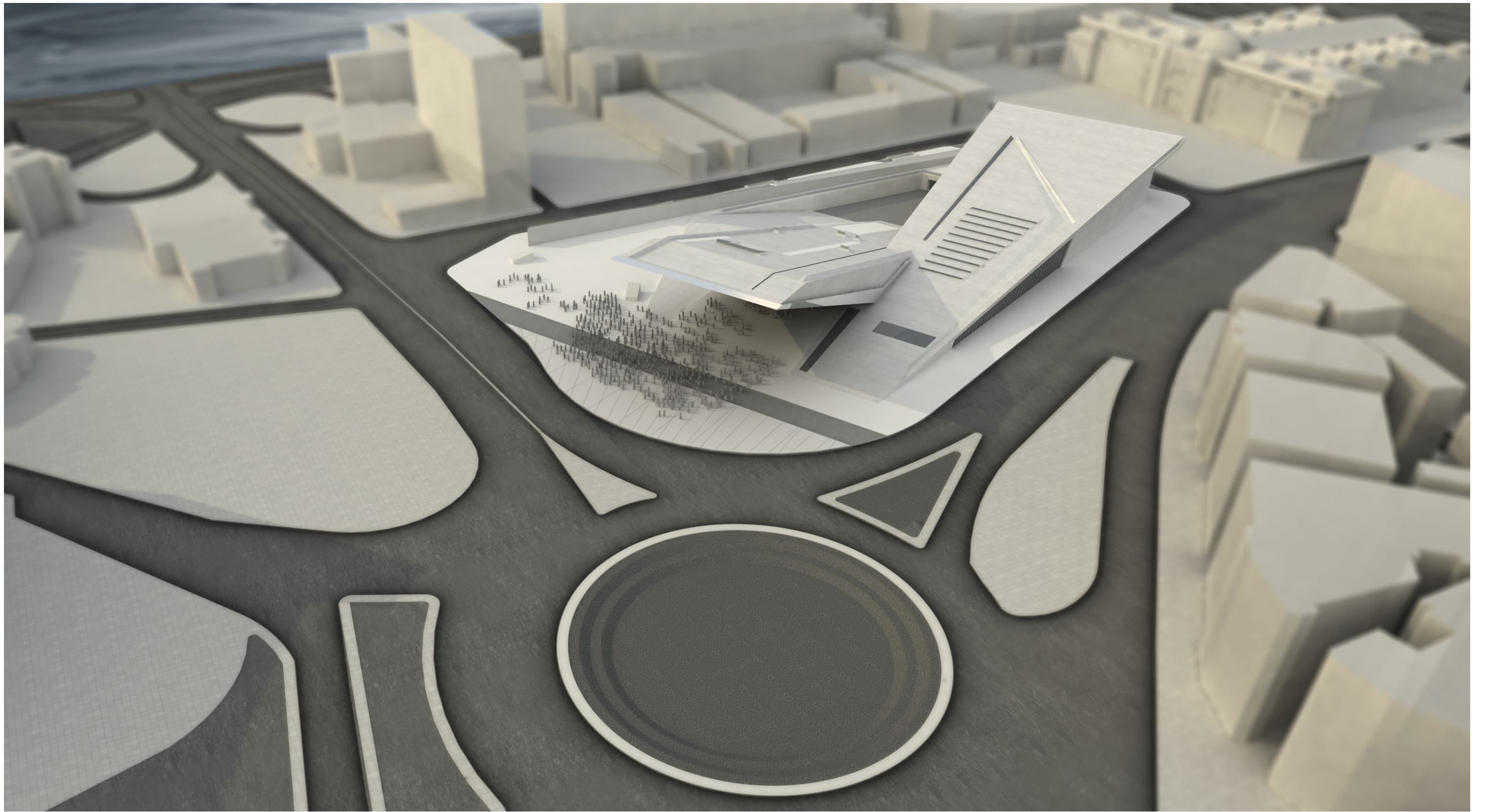


fig. 36 | Aerial View



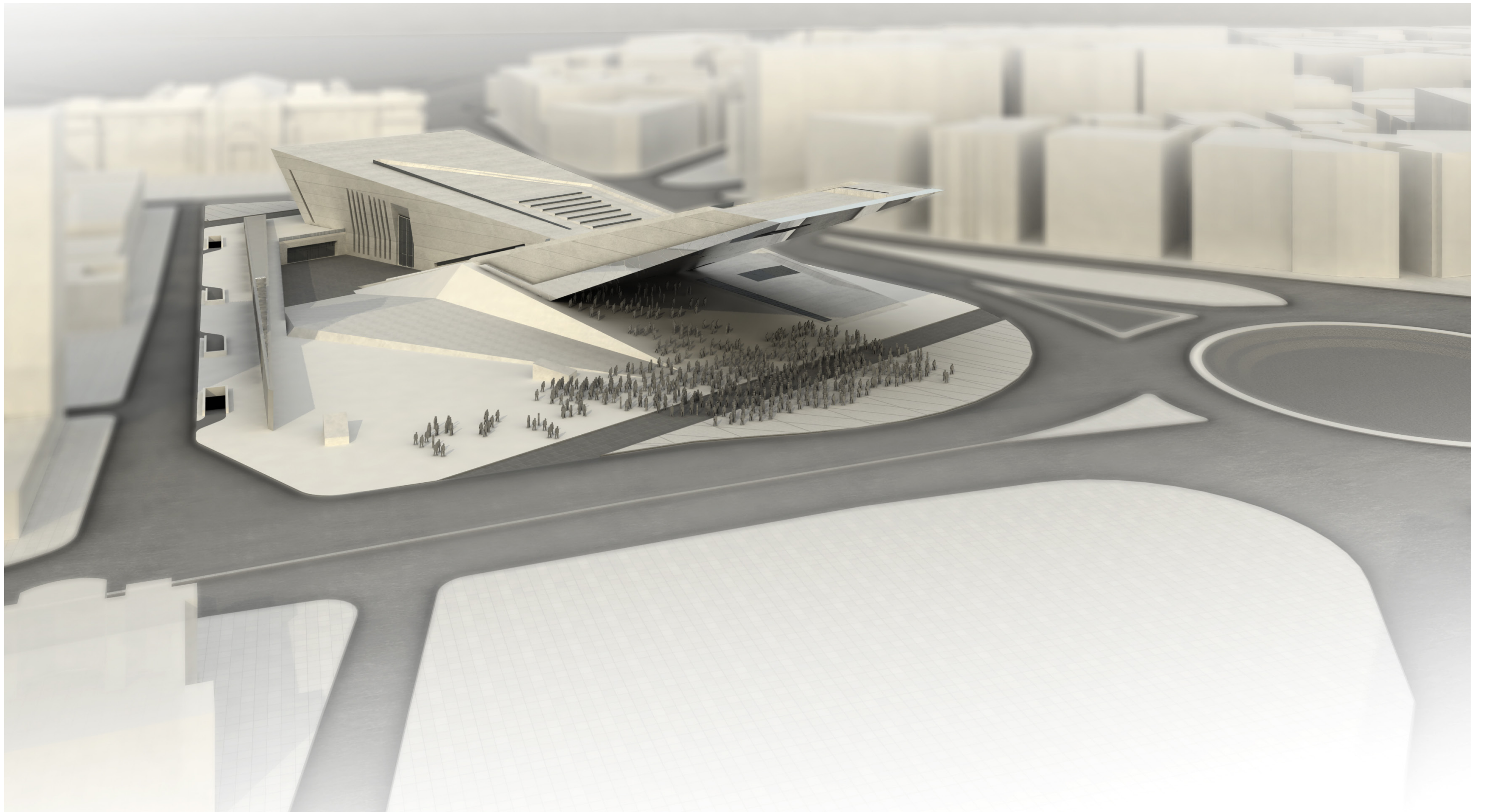


fig. 37 | Aerial View



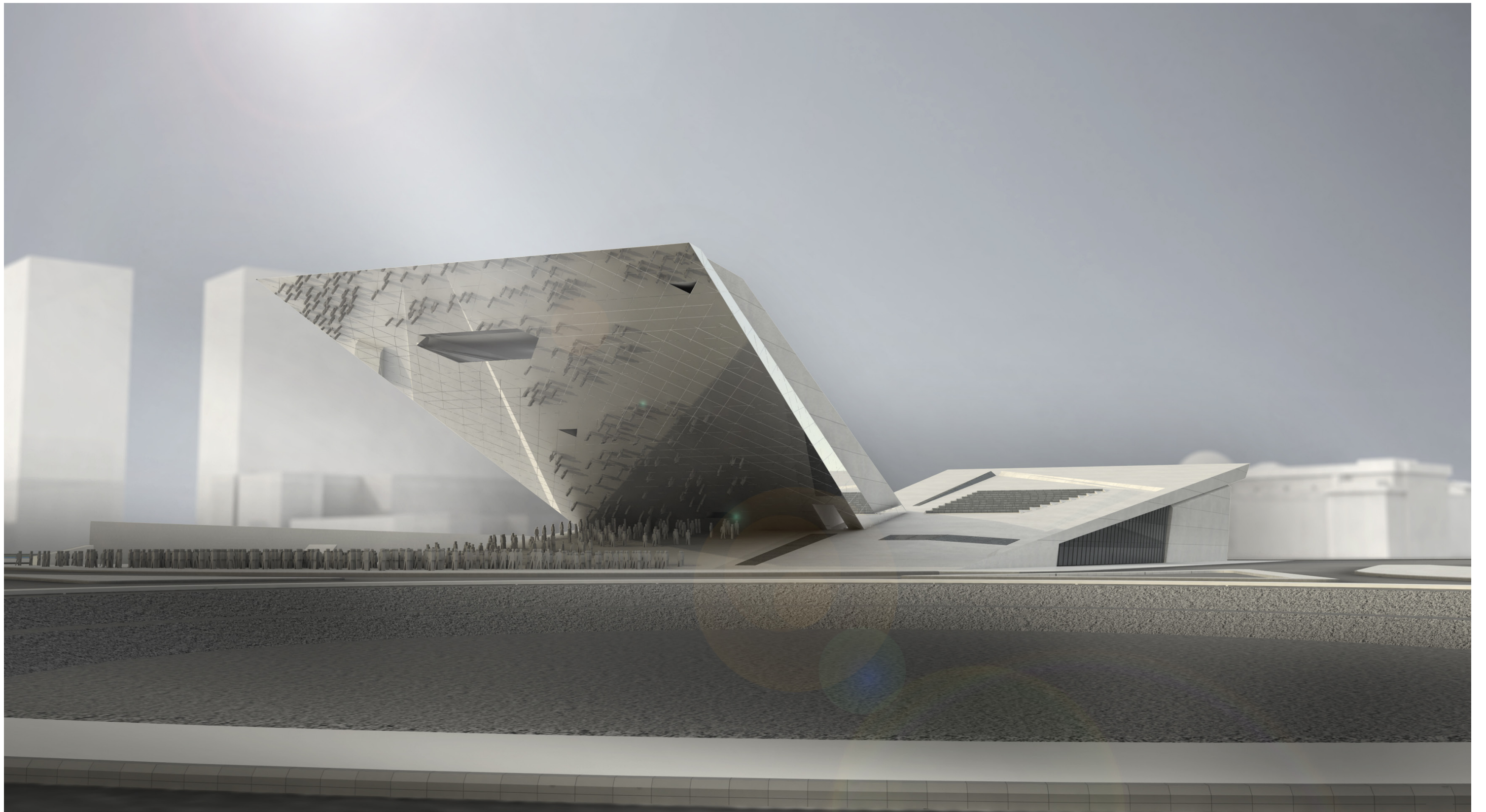


fig. 38 | Perspective View



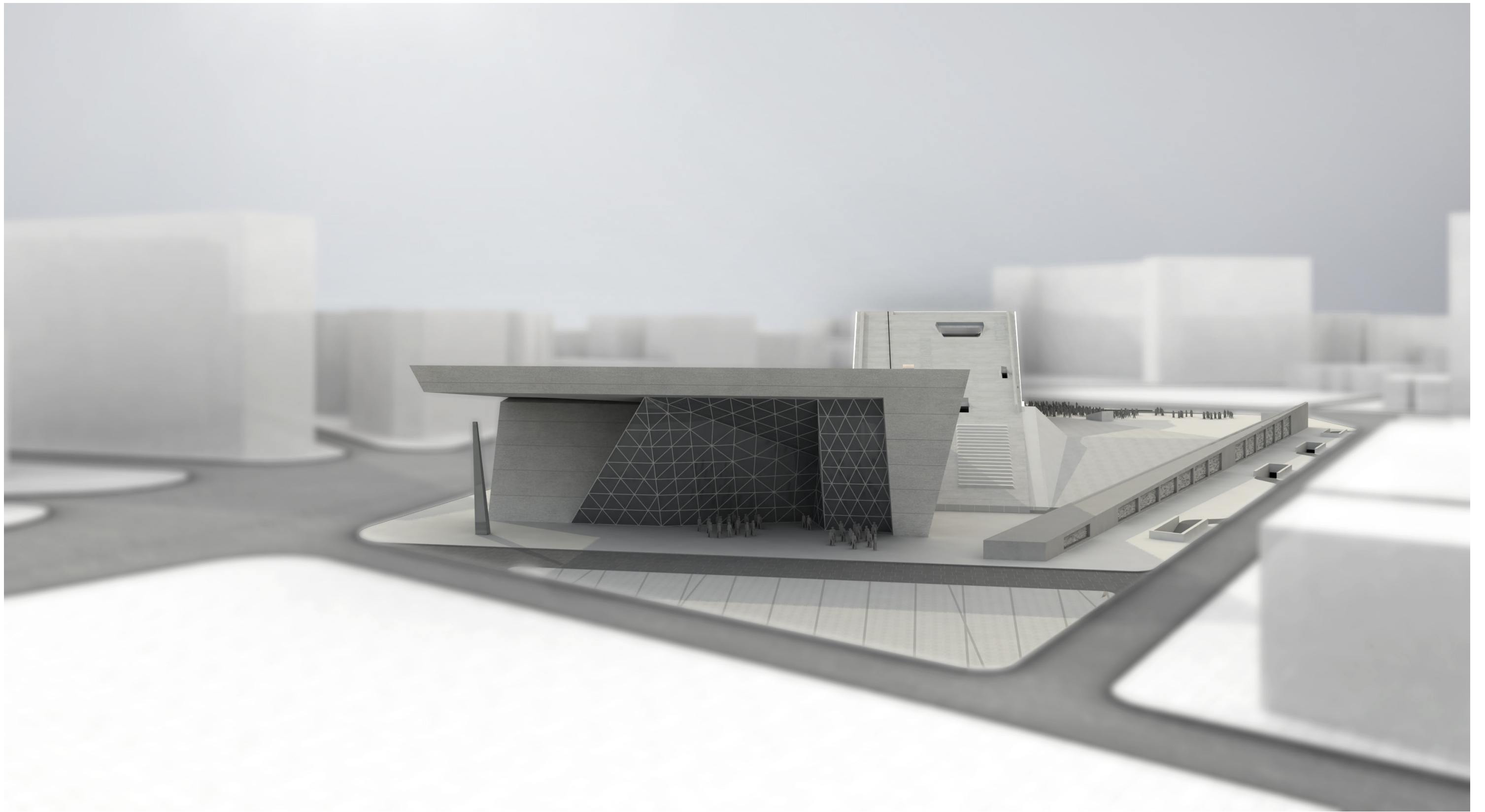


fig. 39 | North Entrance Perspective View

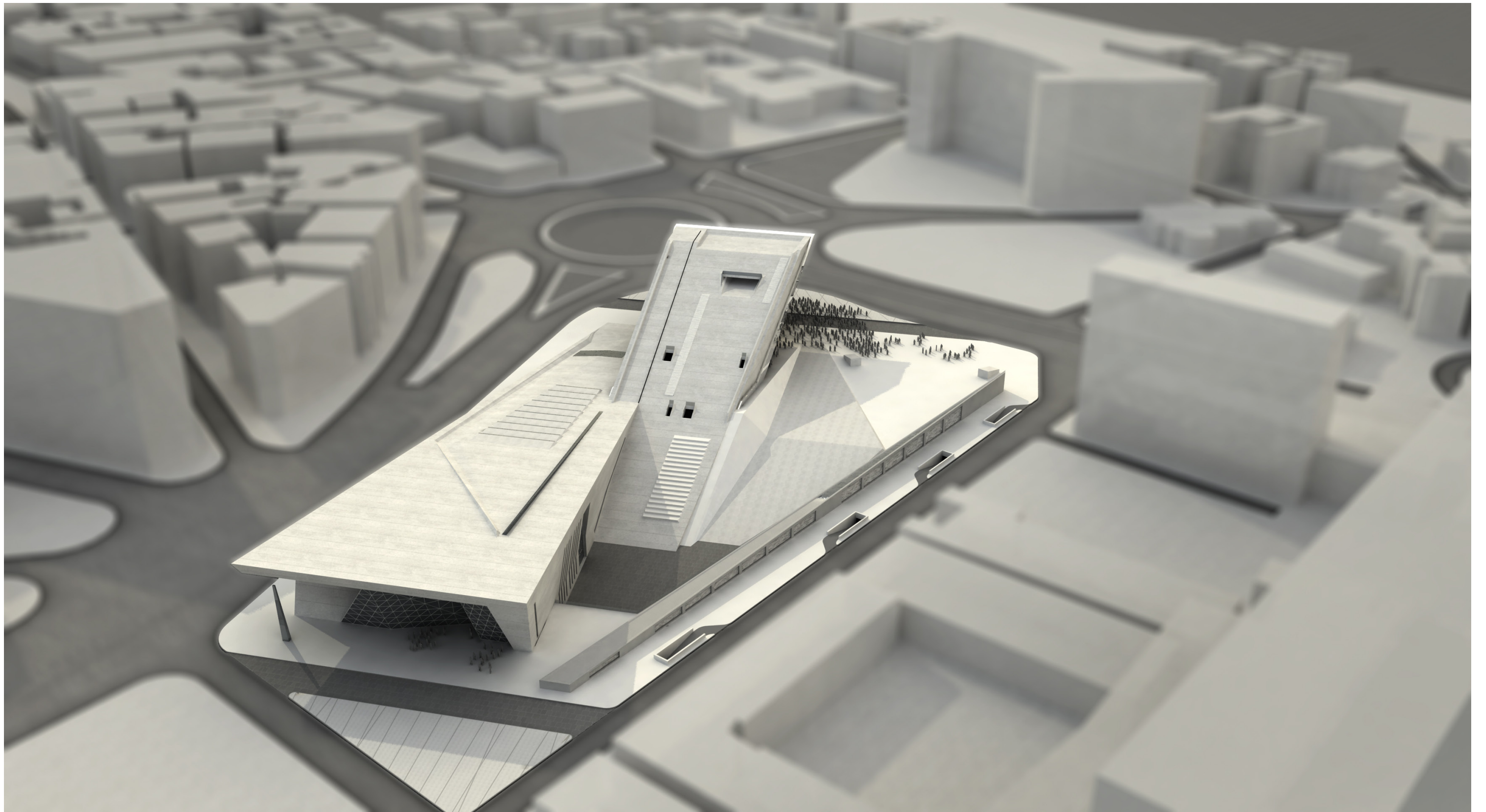


fig. 40 | Aerial View



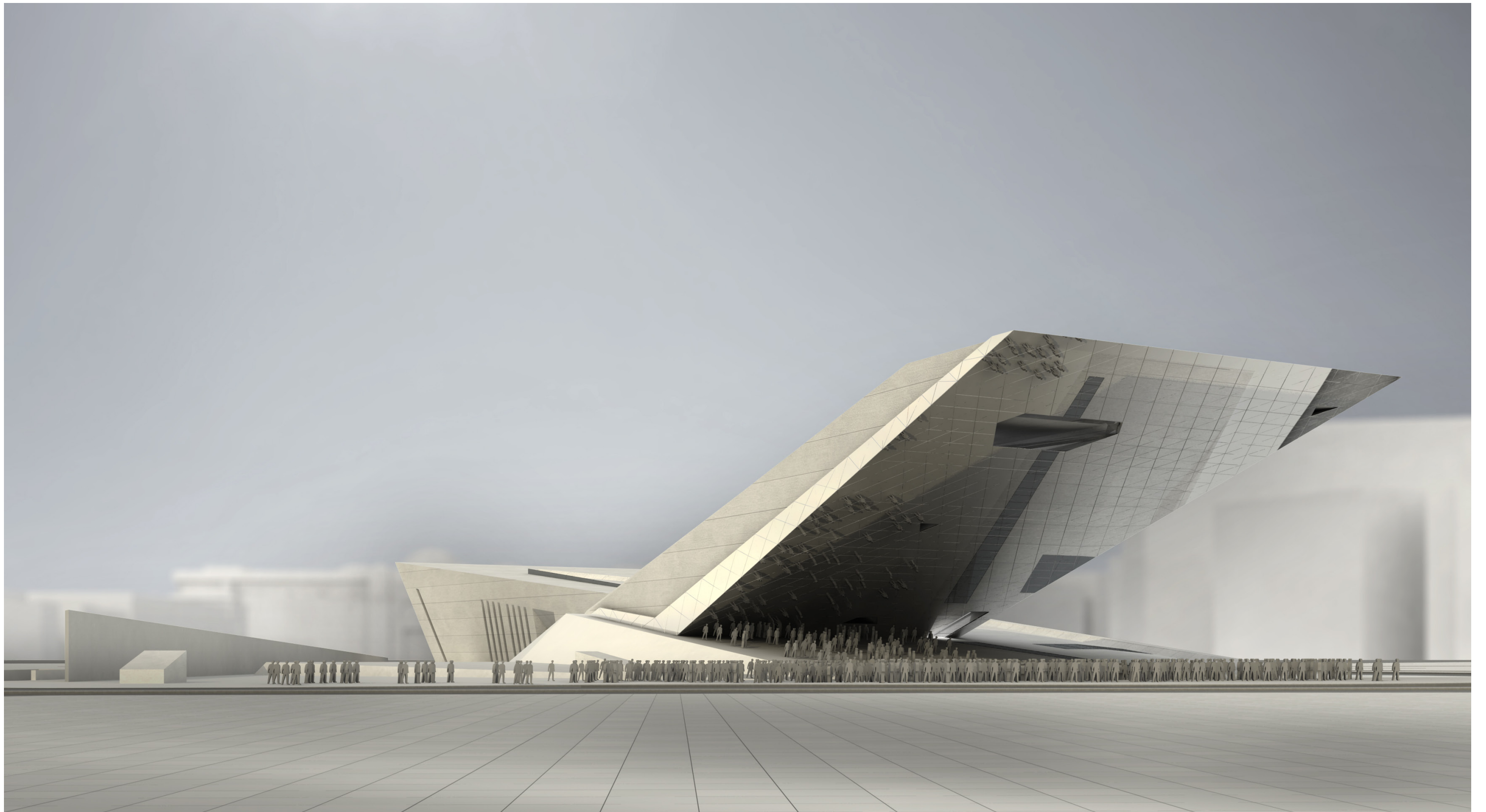


fig. 41 | Perspective View

## The Interior

Working with the openings and controlling where the natural light penetrates the space integrated the interior with the exterior, making it more than an extension. The goal is also to have people inside the space understand what is occurring in the surroundings of the building, all the time. For example the skylight on the roof became a seating area for big gatherings on the top, impacting the interior light...fewer people equals more light in the interior. Other openings are placed with specific angles to emphasize the main path. They are also placed to create beams of light at certain times of the day presenting a sequence of scenes inside.

Although the path is open from start to end, the light beams control how far you can see down the path, and each space reveals only the next space. Even the highest point of the path, where it should be absolutely dark, there is a small opening as an indicator of just how dark the space truly is.

*“A plan of a building should be read like a harmony of spaces in light. Even a space intended to be dark should have just enough light from some mysterious opening to tell us how dark it really is. Each space must be defined by its structure and the character of its natural light.”*

– Louis Kahn, Essential Texts



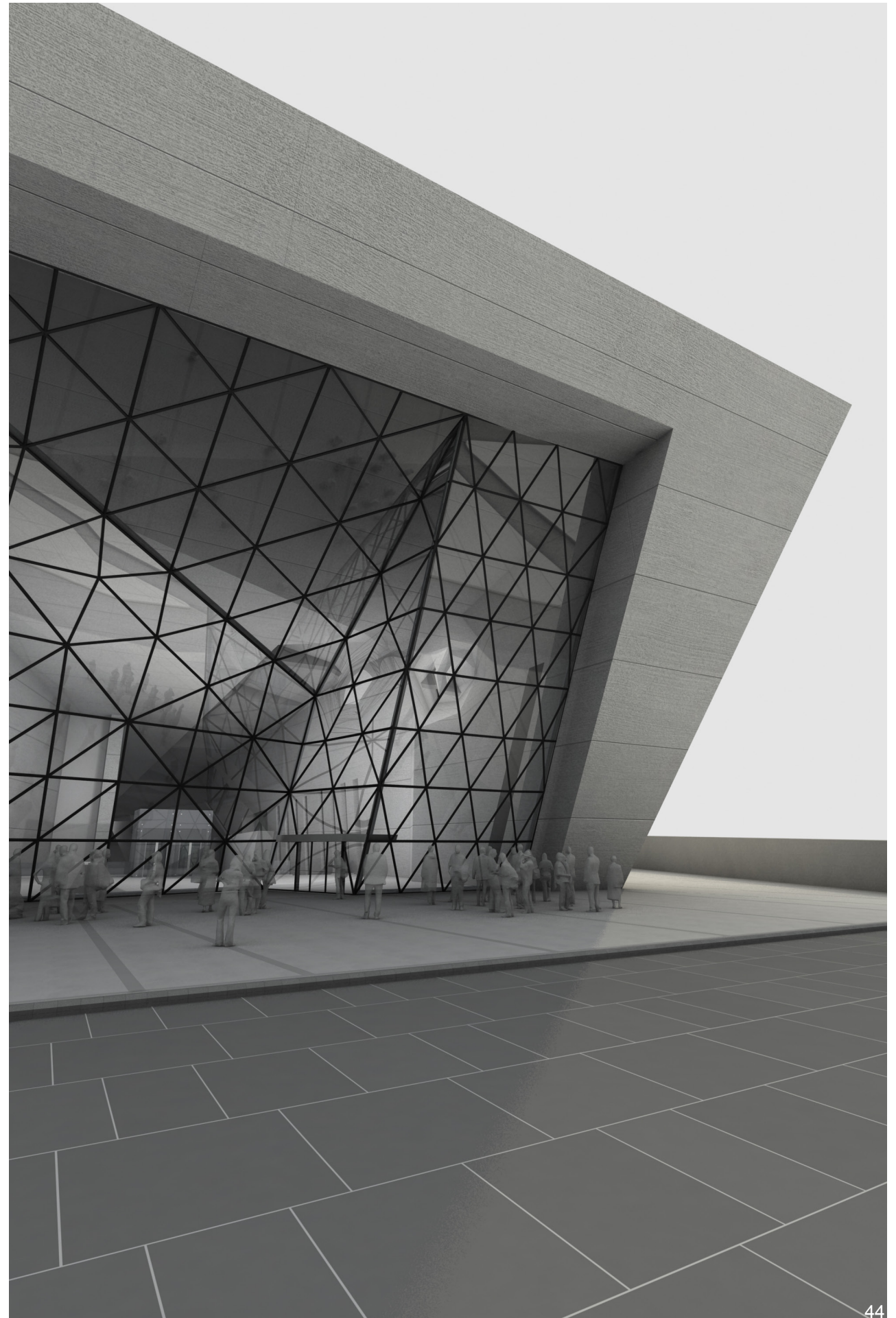
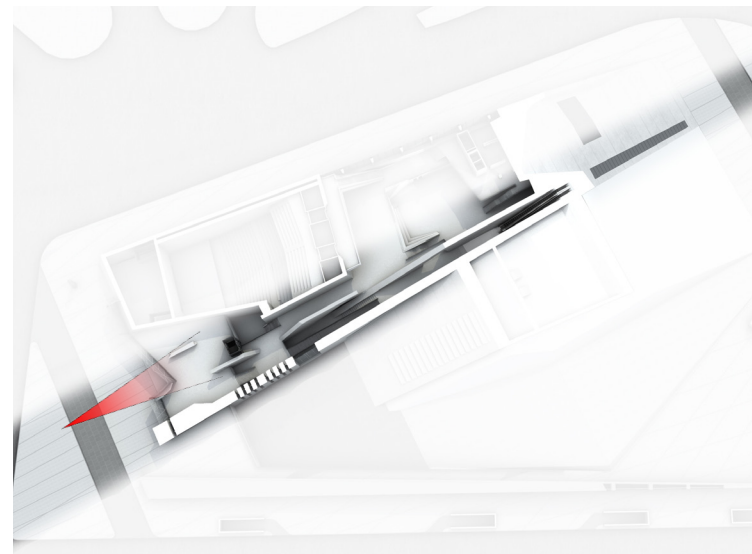


fig. 42 | The Main Path (North to South)

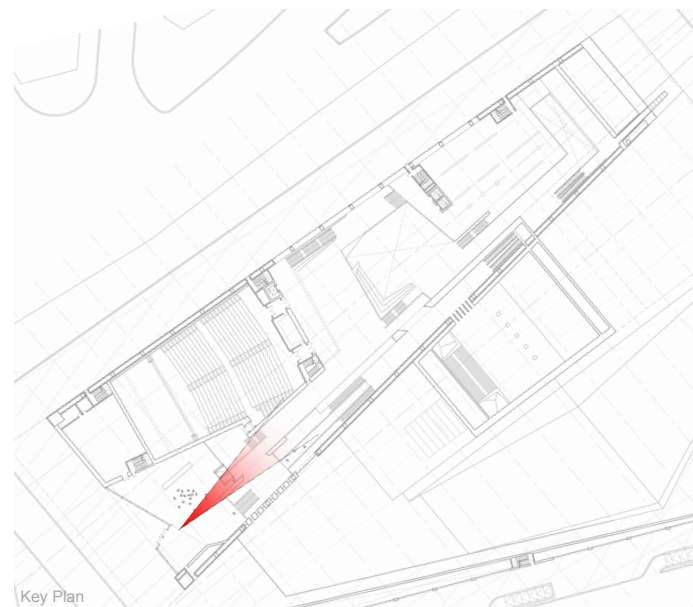


fig. 43 | The Main Path (North to South)



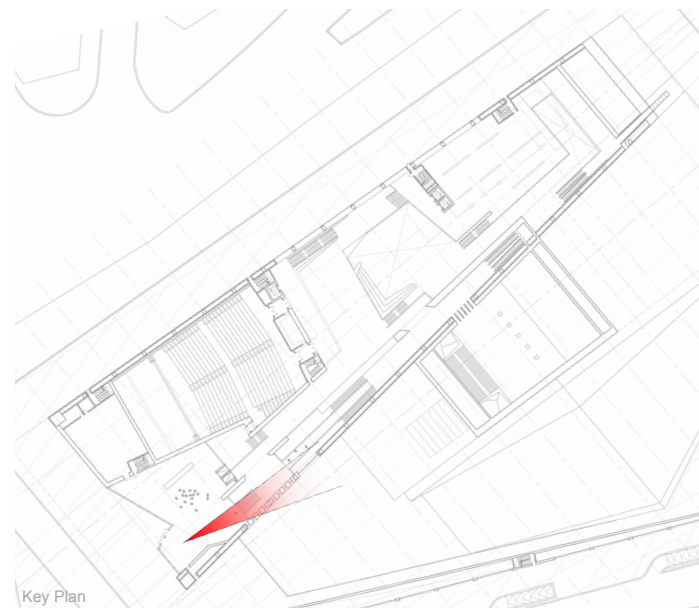
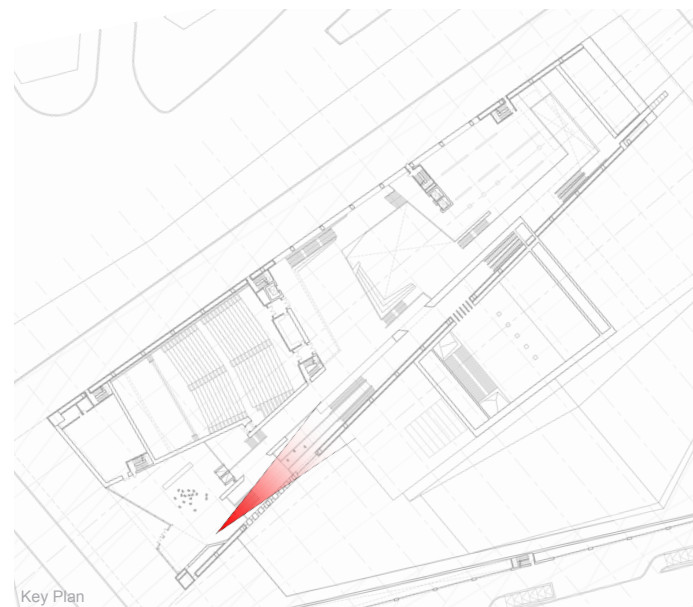


fig. 44 | The Main Path (North to South)

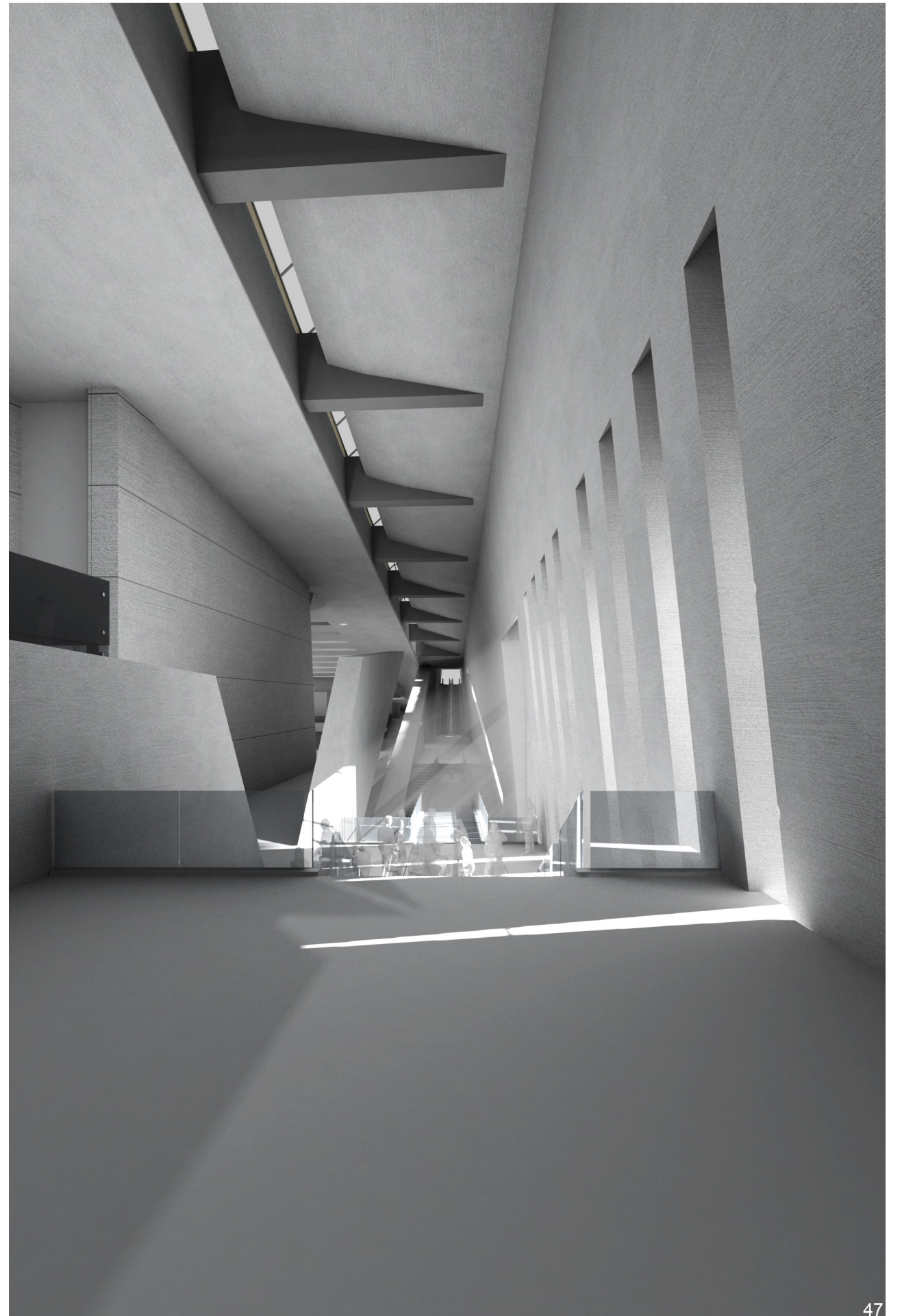






Key Plan

fig. 45 | The Main Path (North to South)





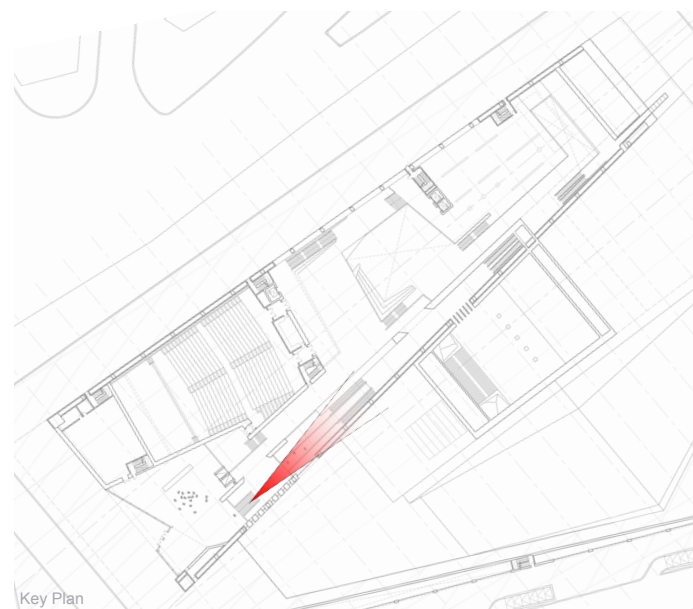


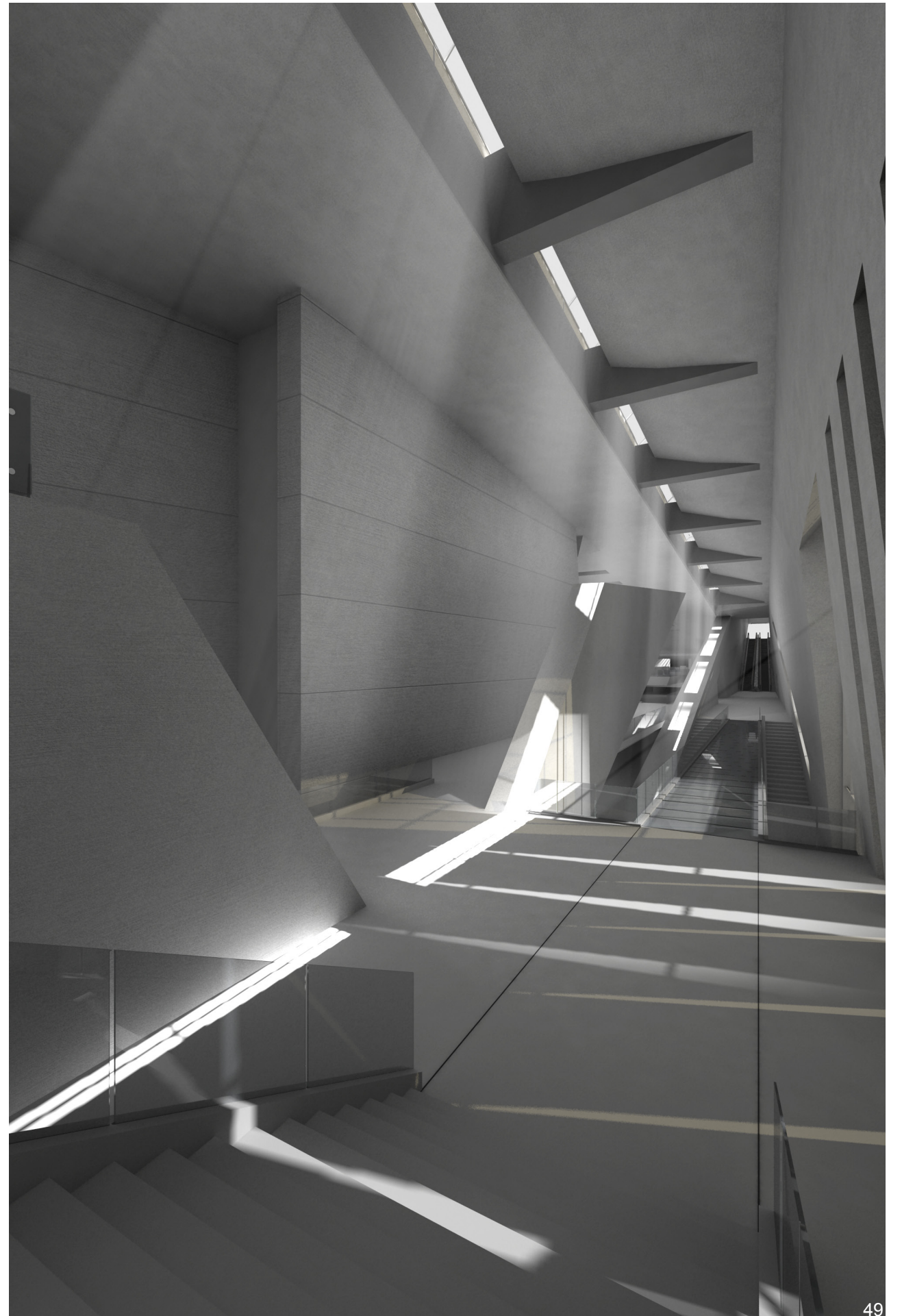
fig. 46 | The Main Path (North to South)







fig. 47 | The Main Path (North to South)

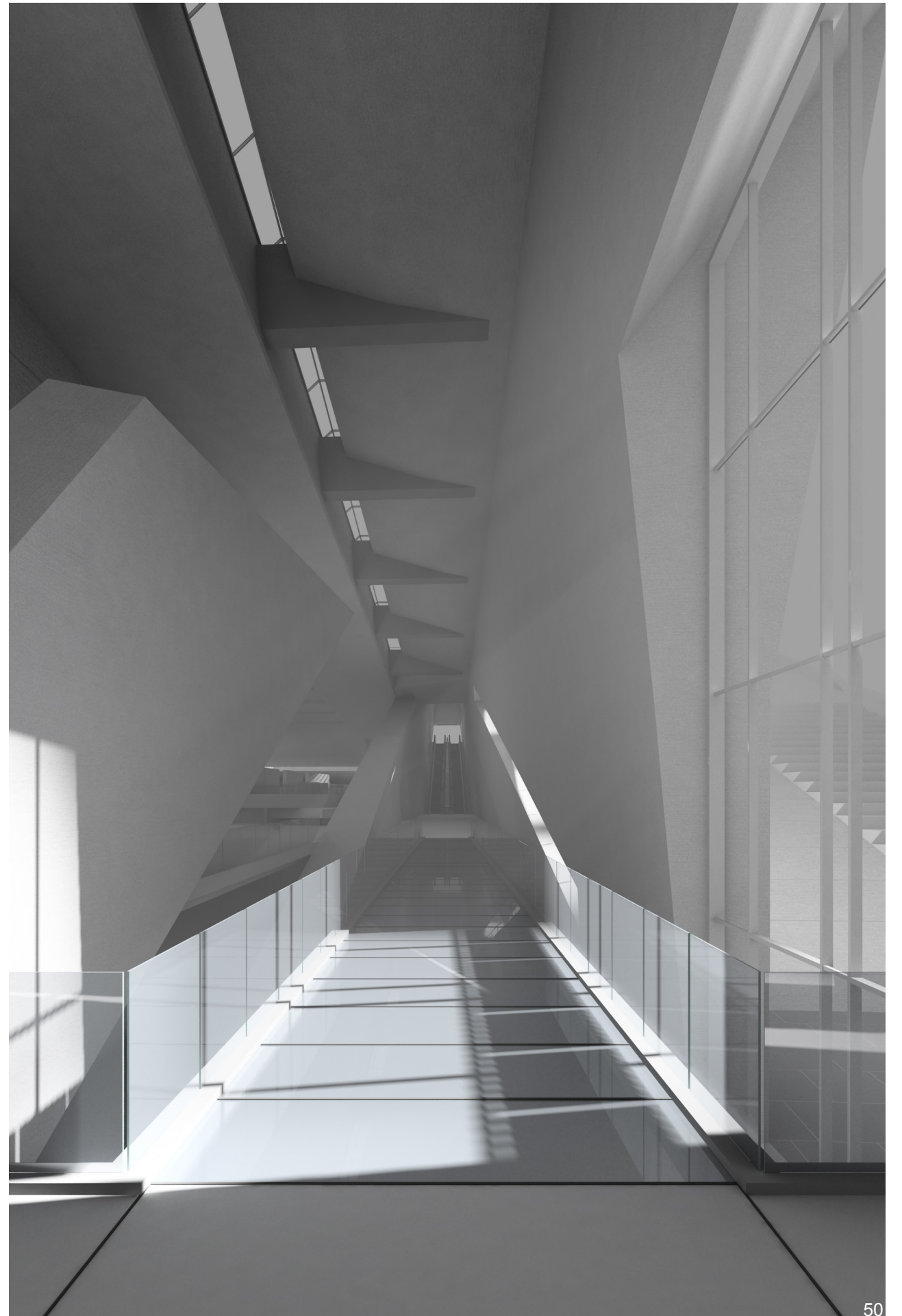






Key Plan

fig. 48 | The Main Path (North to South)



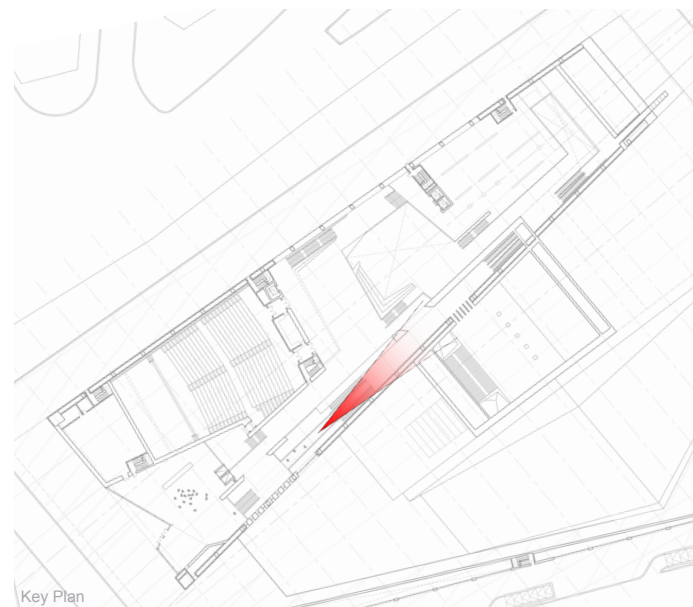
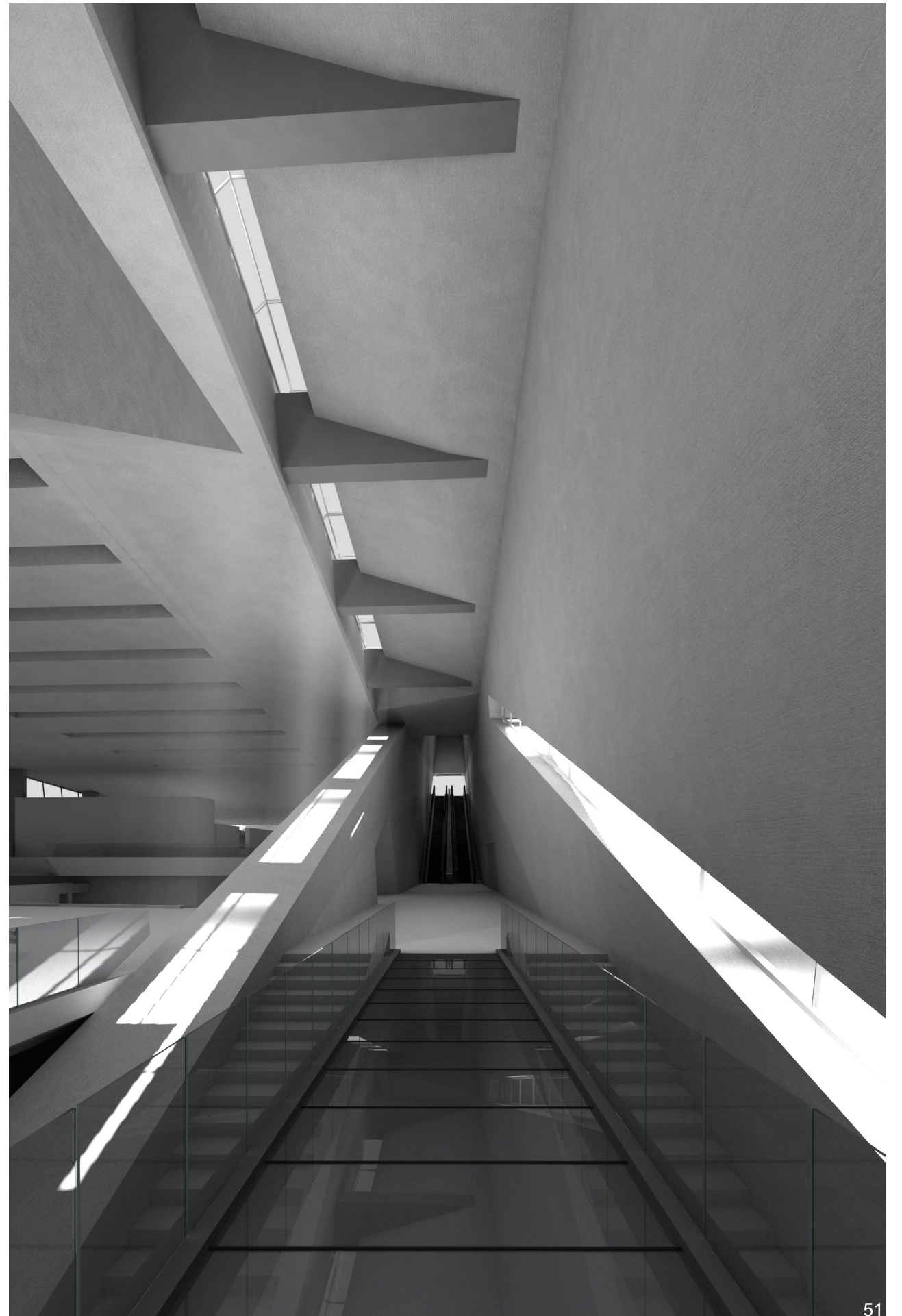


fig. 49 | The Main Path (North to South)





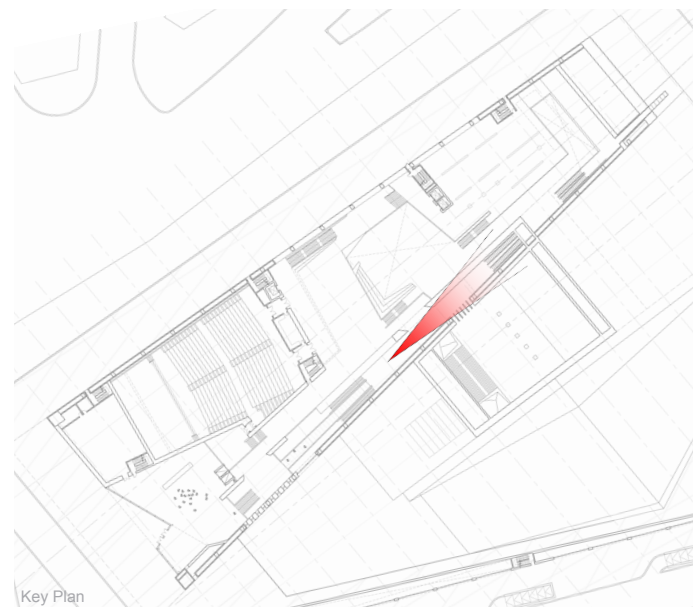


fig. 50 | The Main Path (North to South)





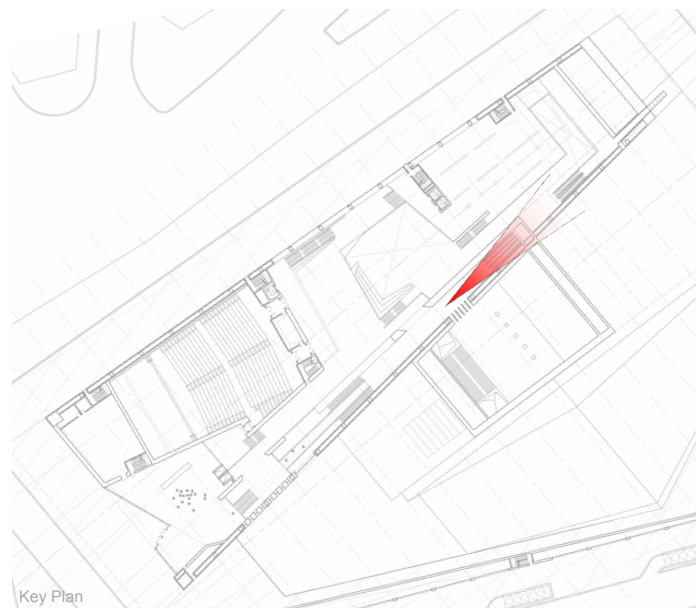


fig. 51 | The Main Path (North to South)







fig. 52 | The Main Path (North to South)





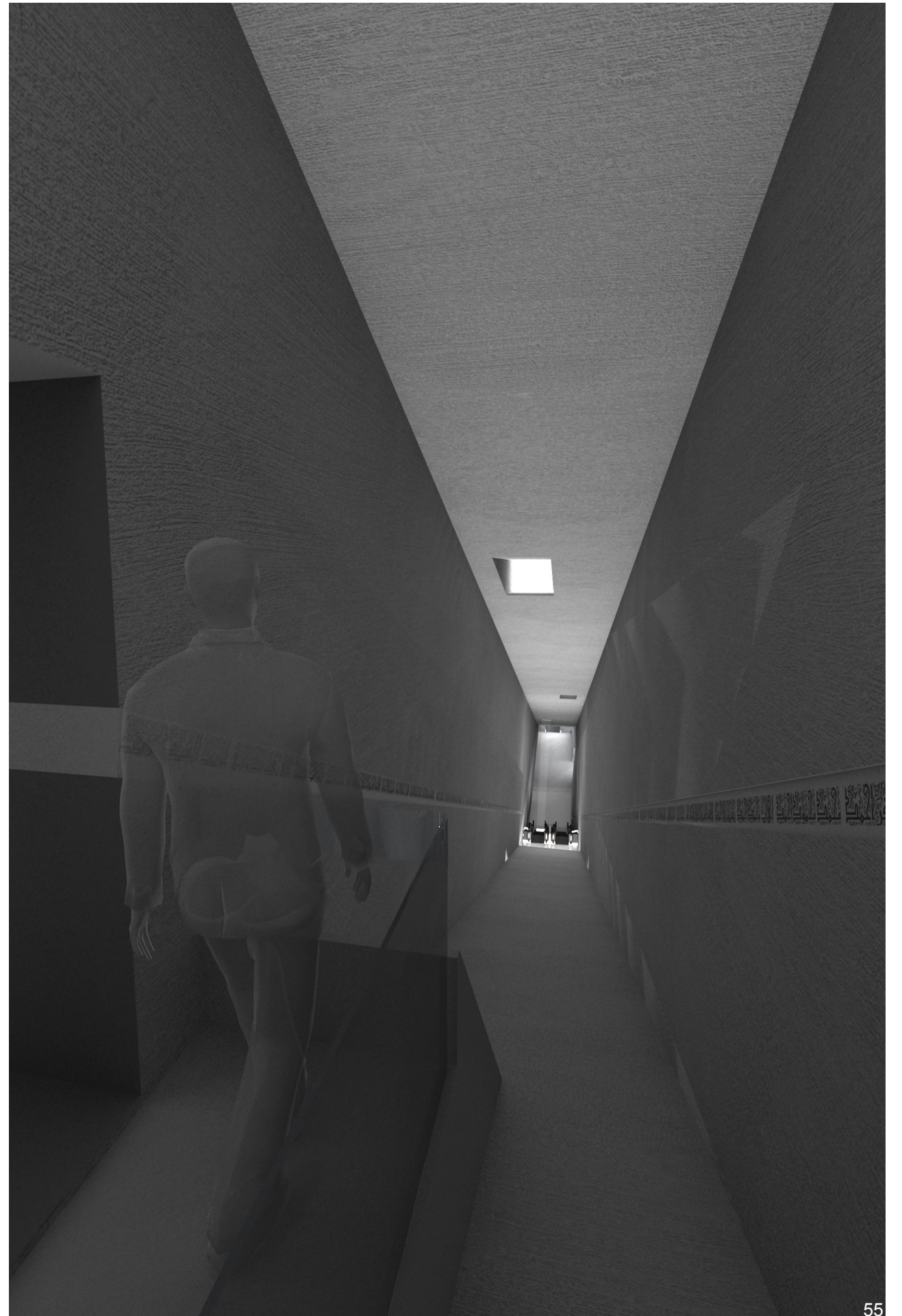
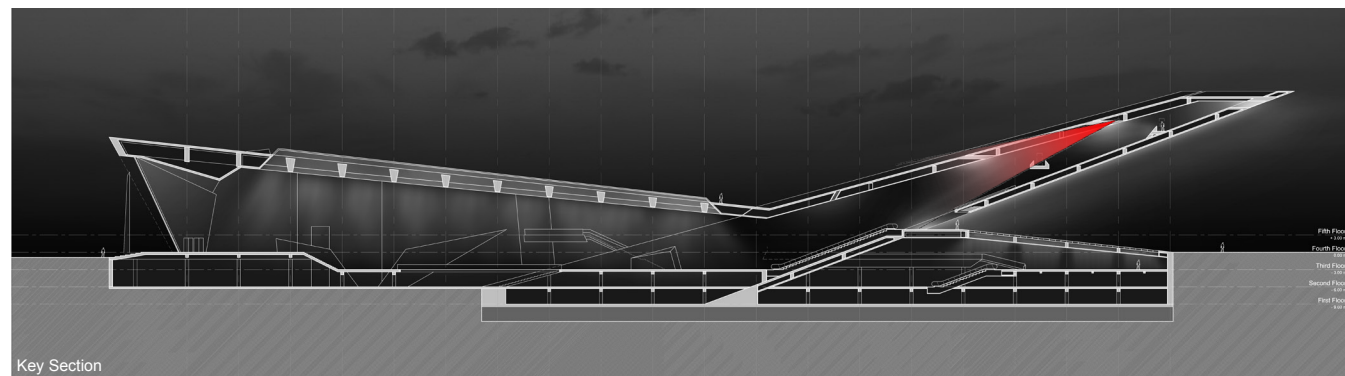


fig. 53 | The view from the top of the path



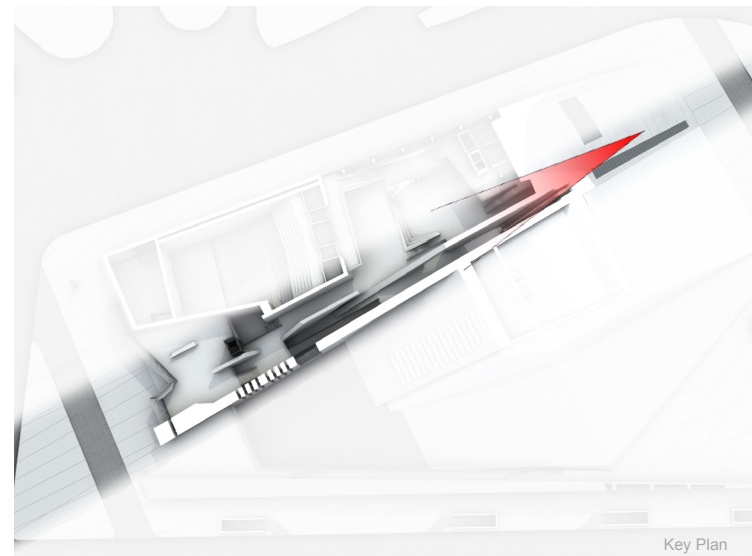
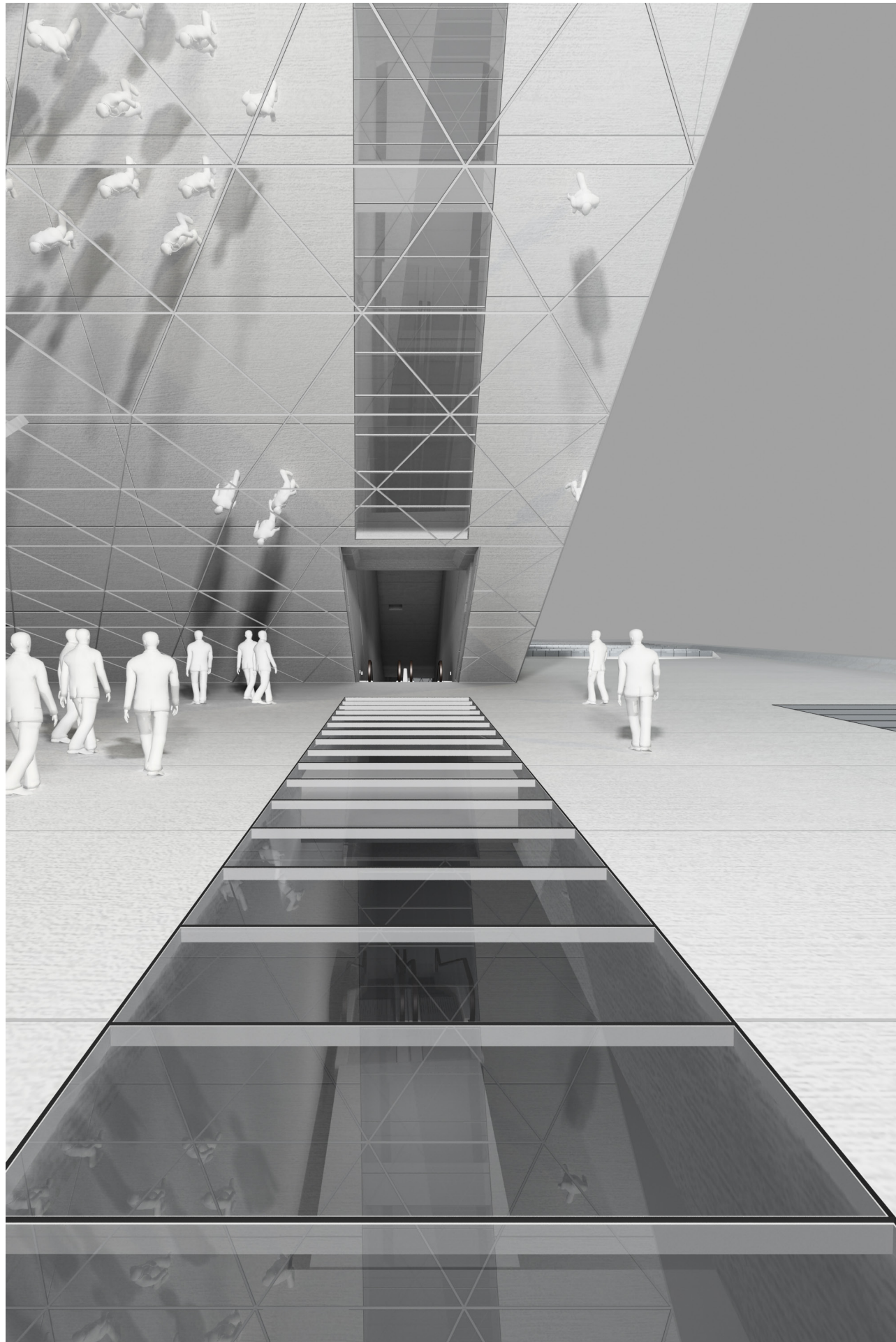
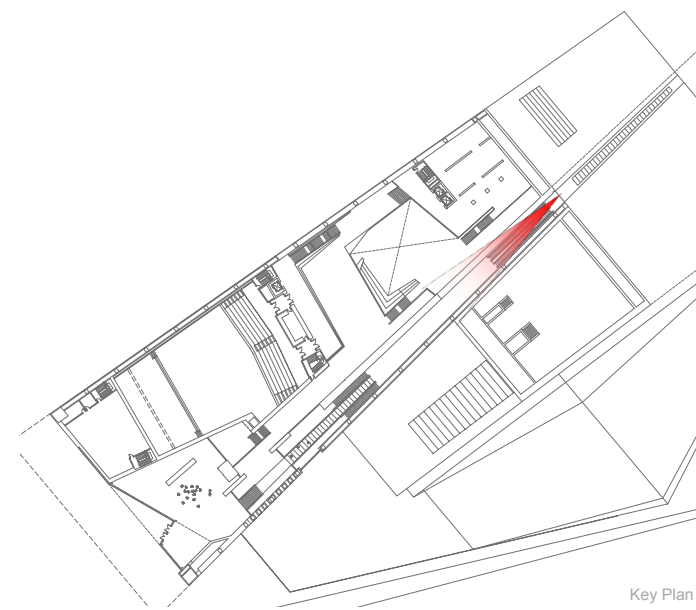
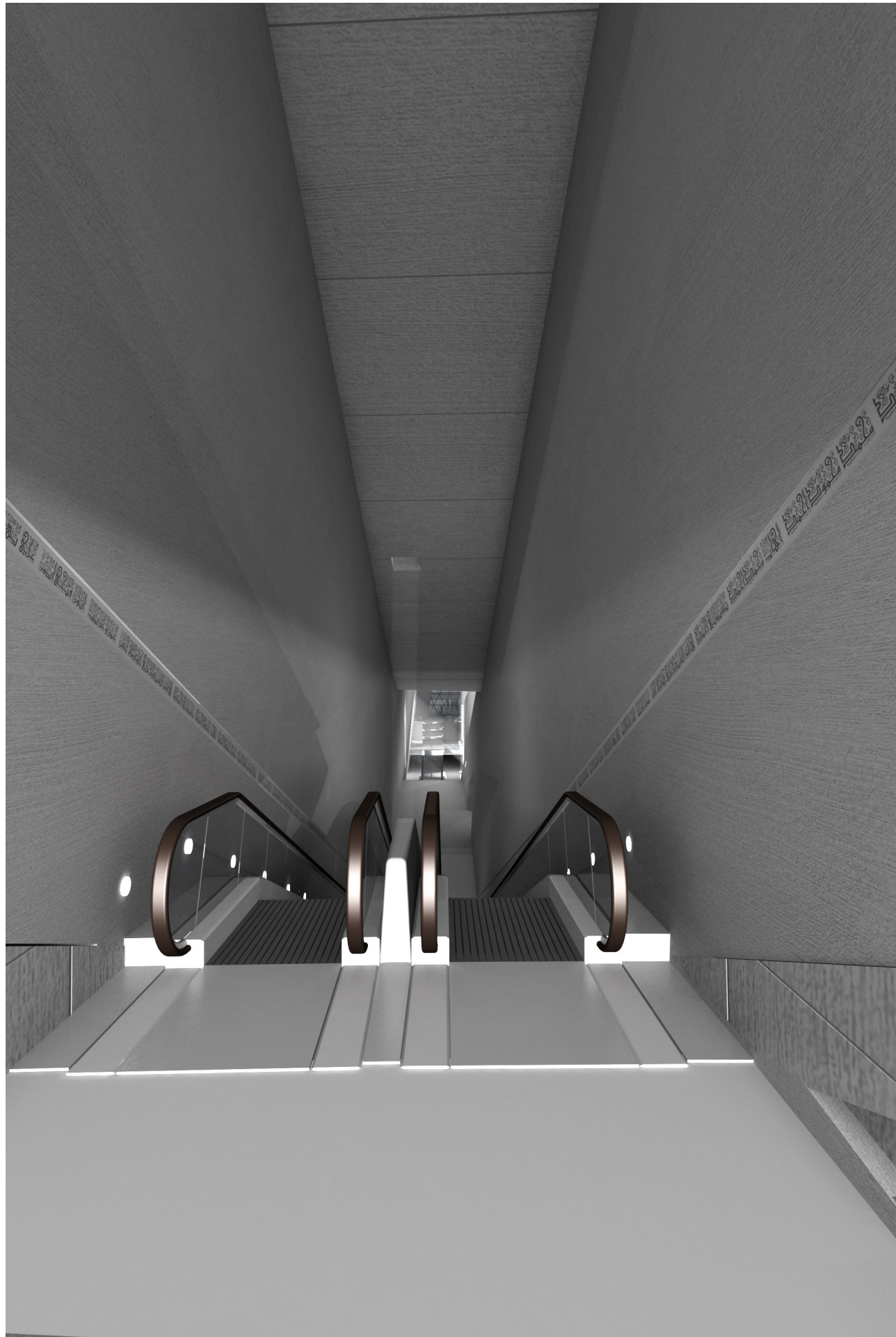


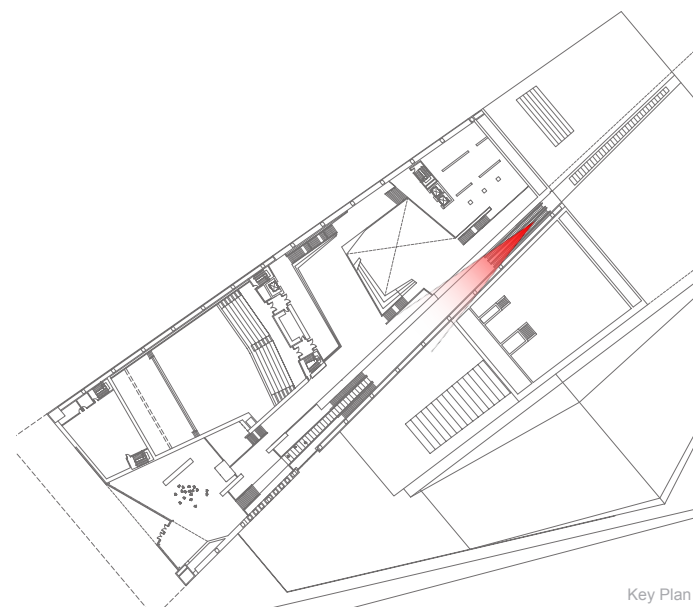
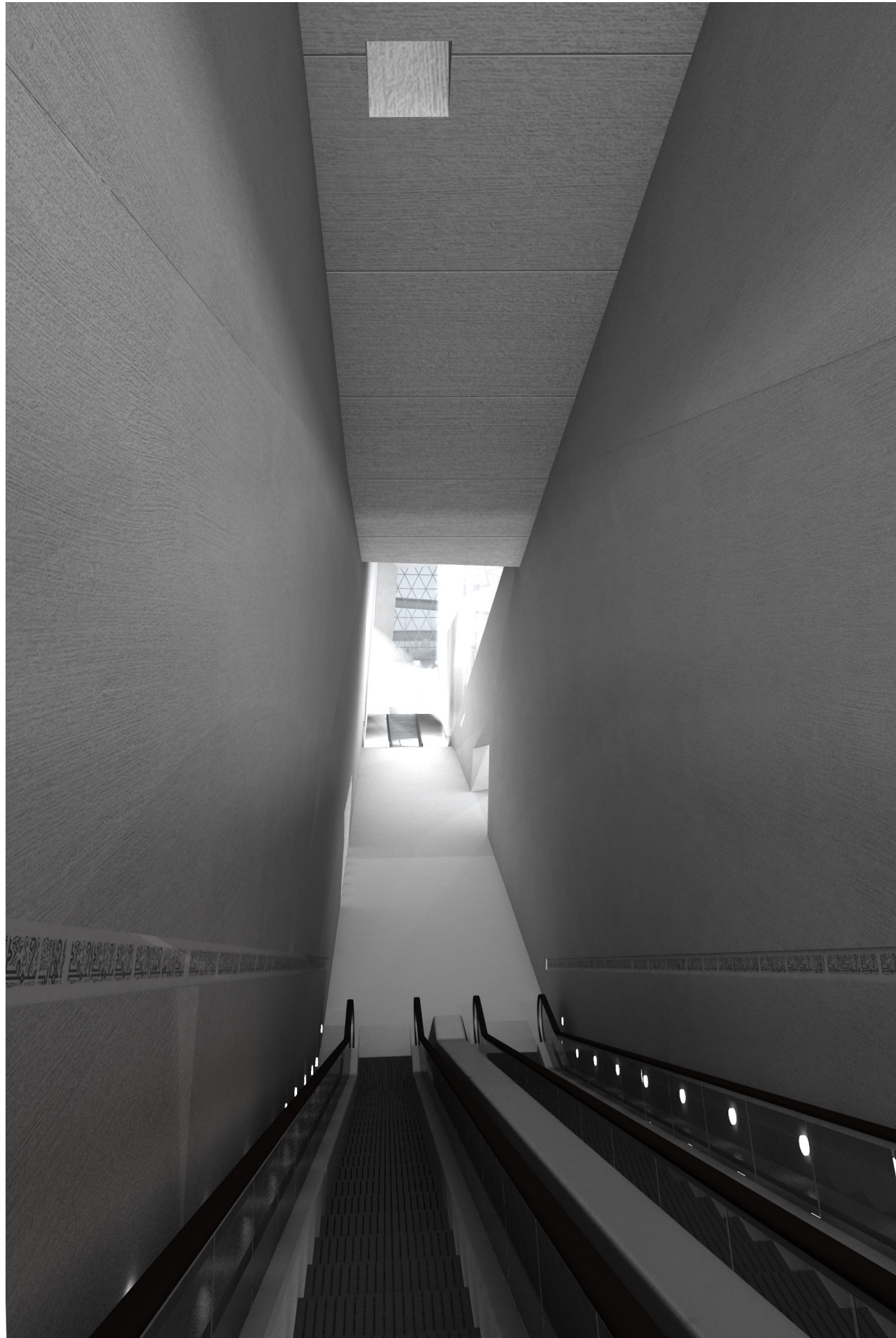
fig. 54 | The Main Path (South to North)



Key Plan

fig. 55 | The Main Path (South to North)





Key Plan

fig. 56 | The Main Path (South to North)



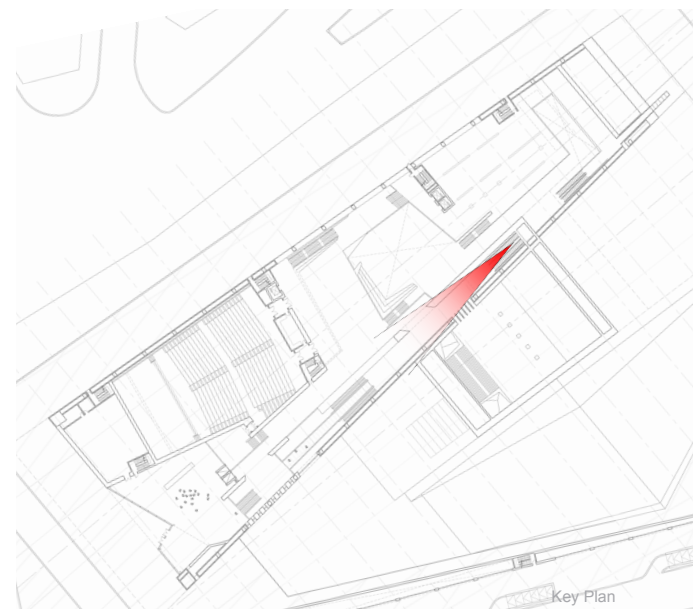


fig. 57 | The Main Path (South to North)



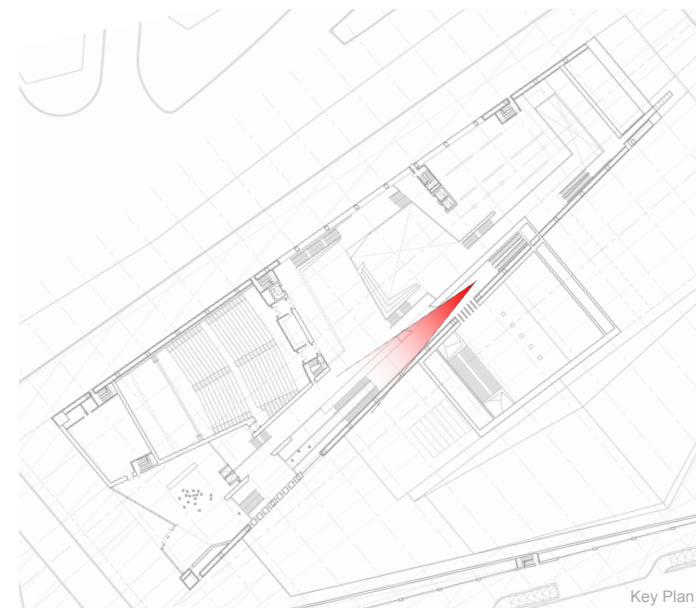


fig. 58 | The Main Path (South to North)

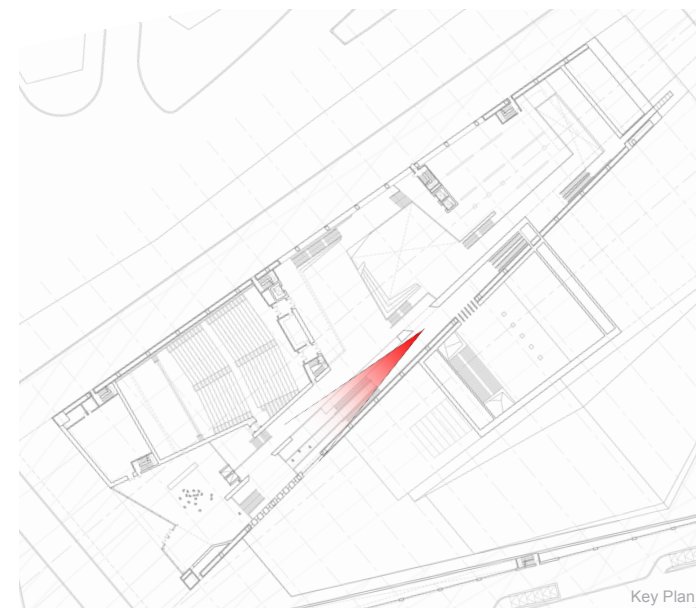


fig. 59 | The Main Path (South to North)



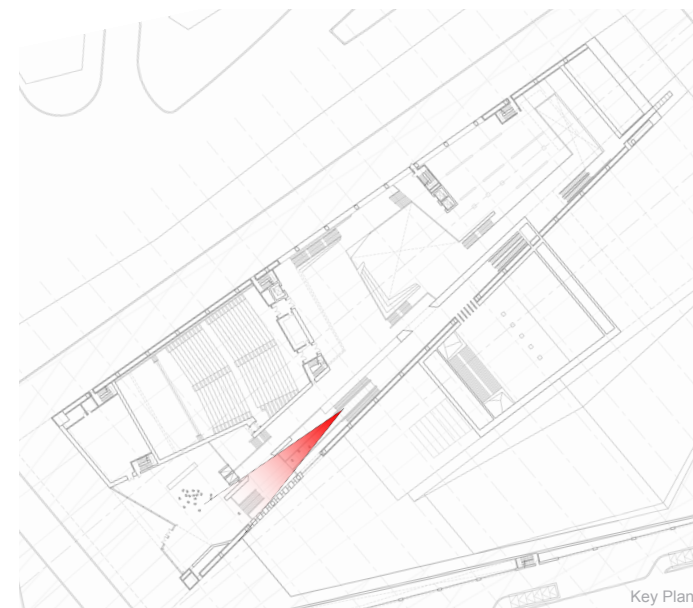
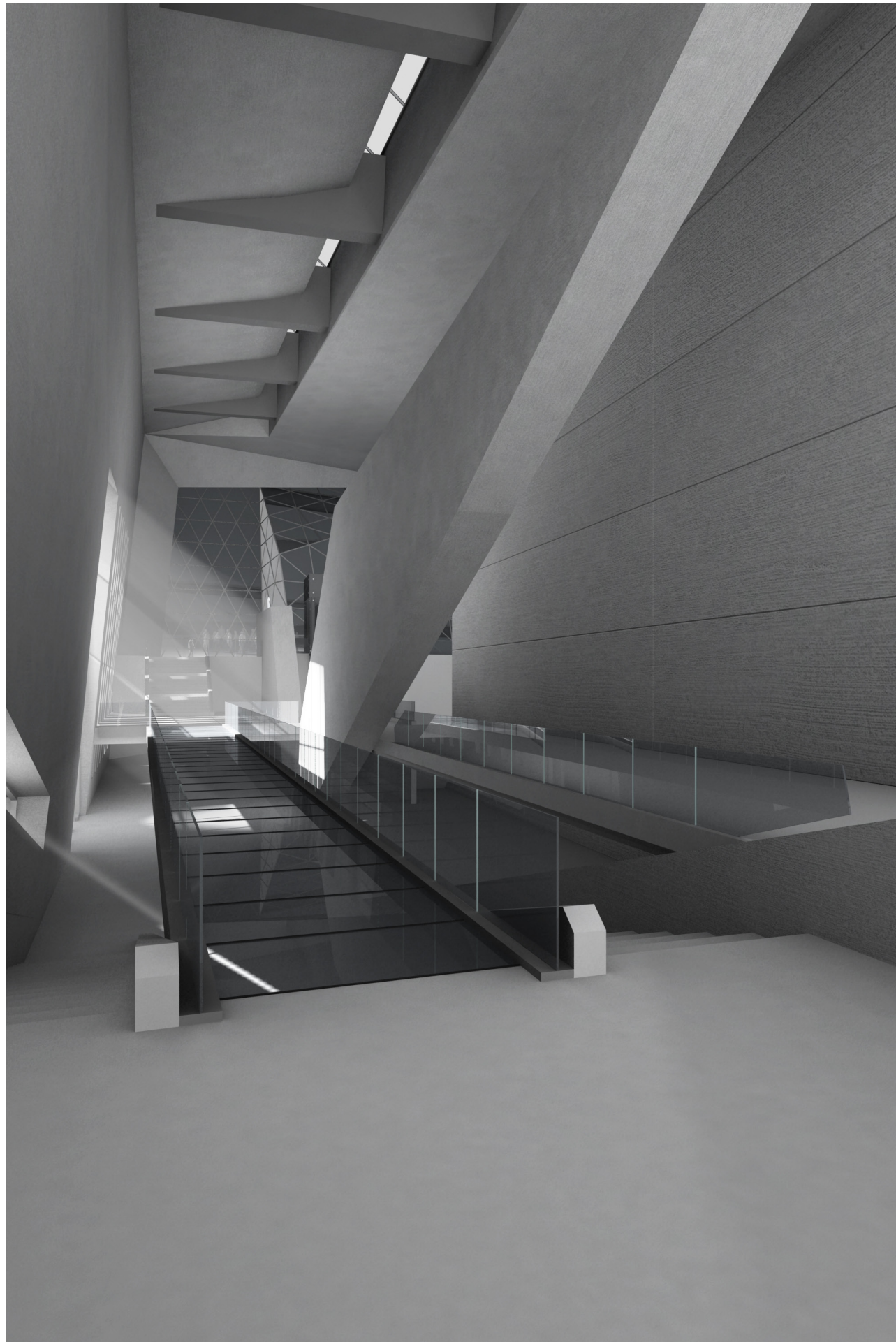


fig. 60 | The Main Path (South to North)



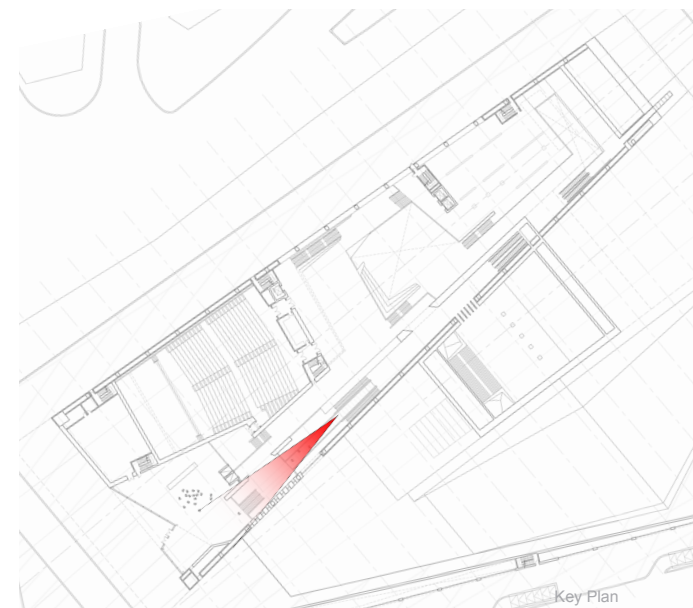


fig. 61 | The Main Path (South to North)



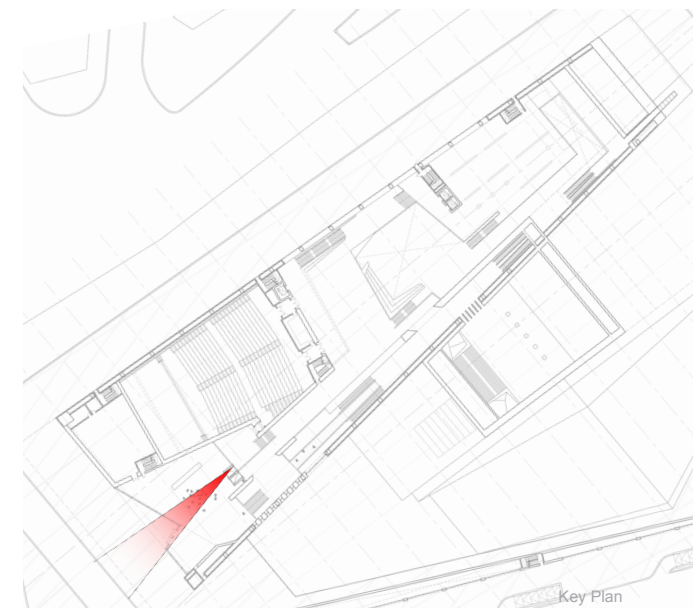
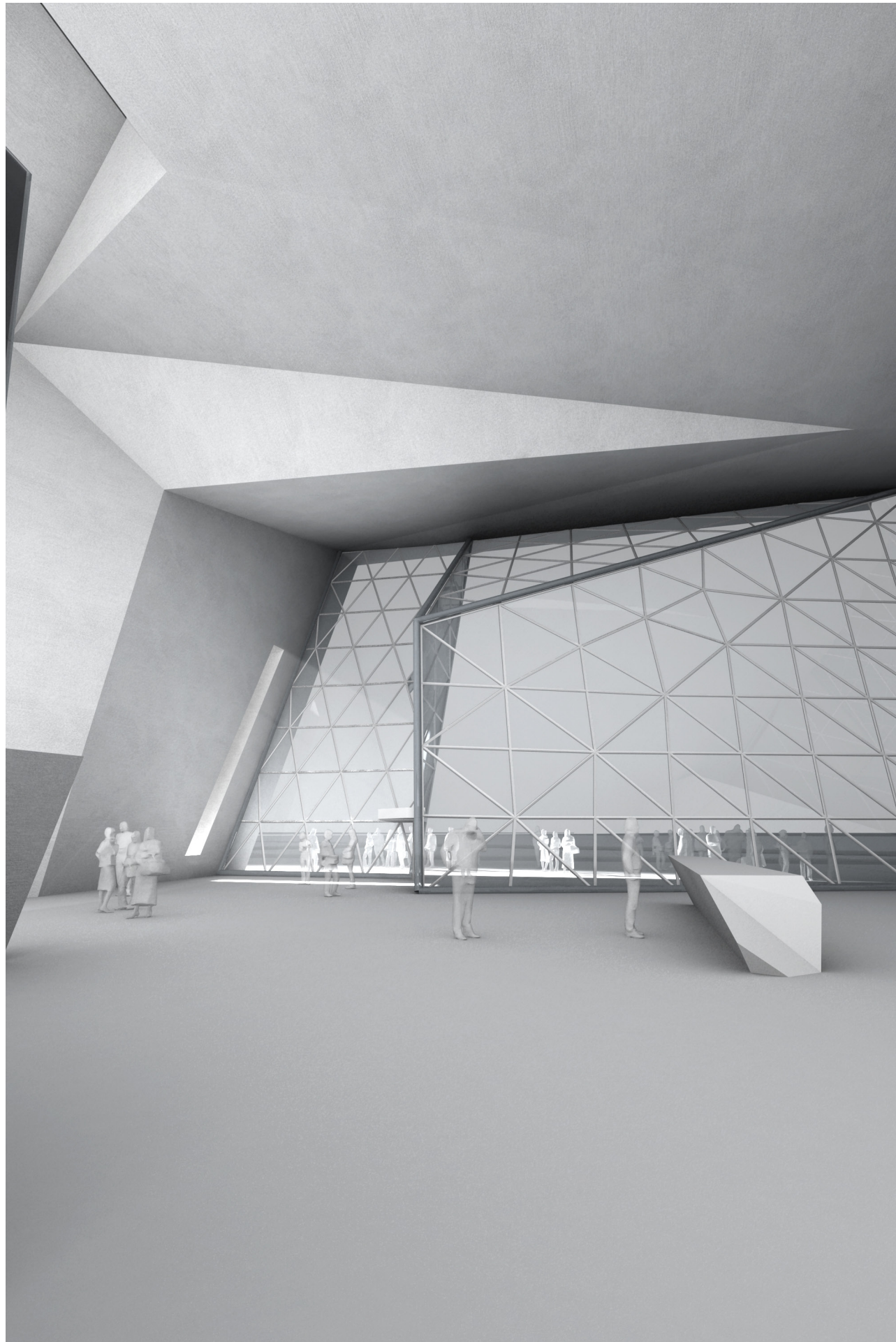


fig. 62 | The Main Path (South to North)



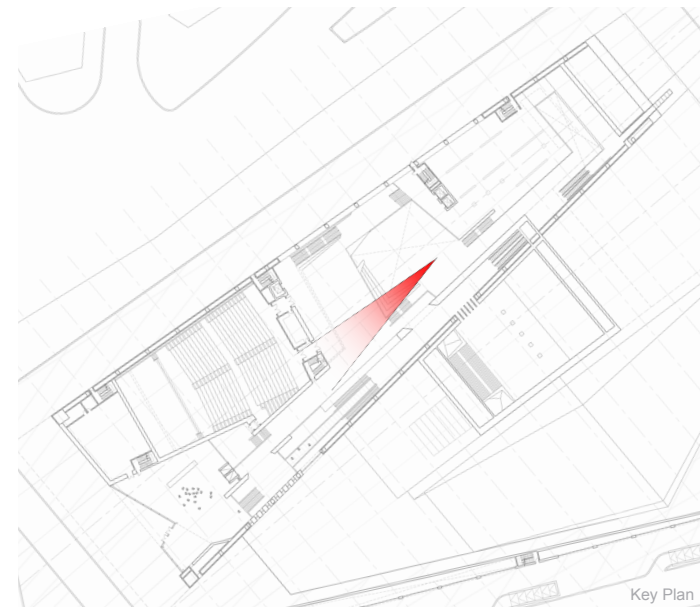
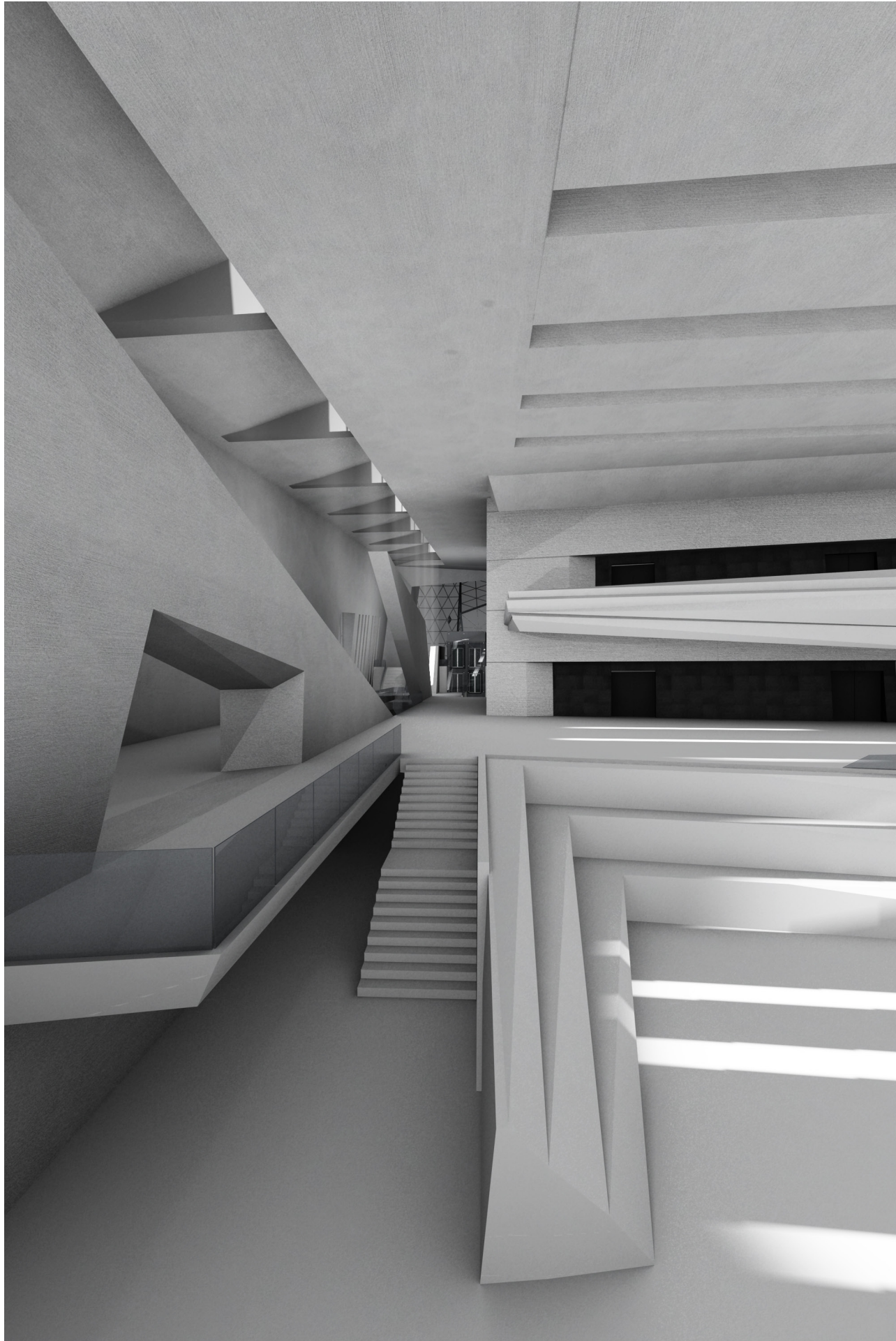
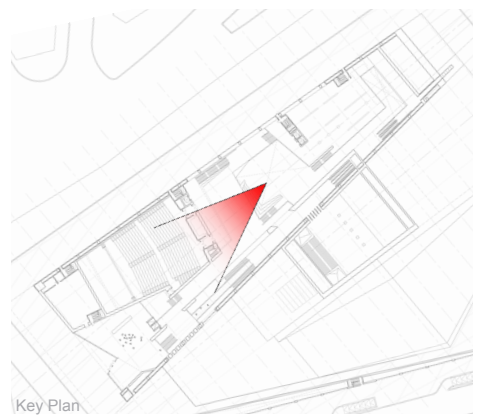


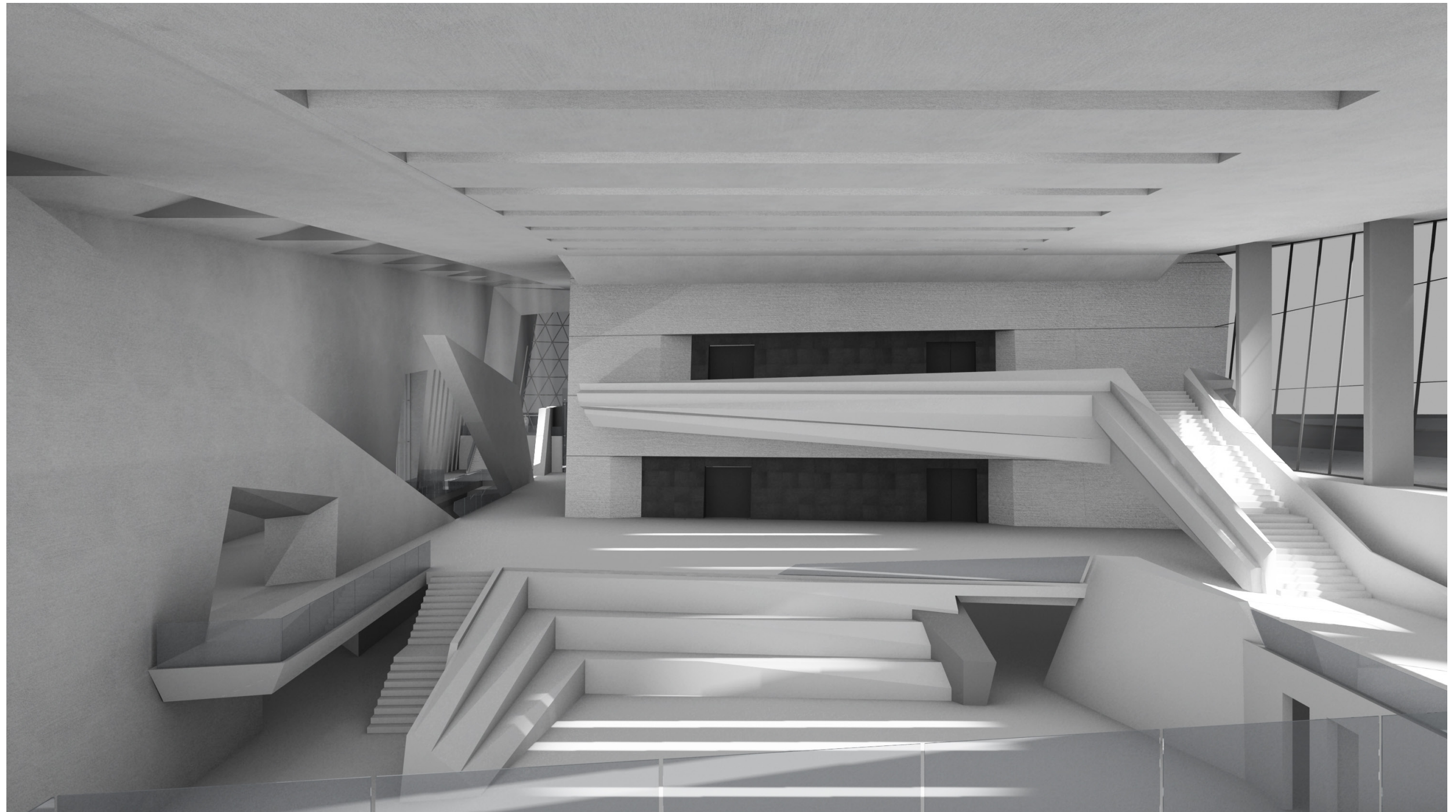
fig. 63 | The Main Hall Interior





Key Plan

fig. 64 | The Main Hall Interior



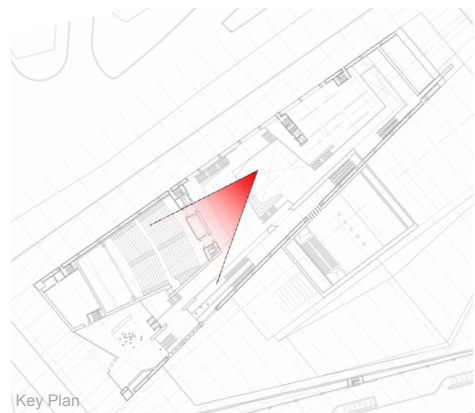


fig. 65 | The stair to the mezzanine level of the theatre

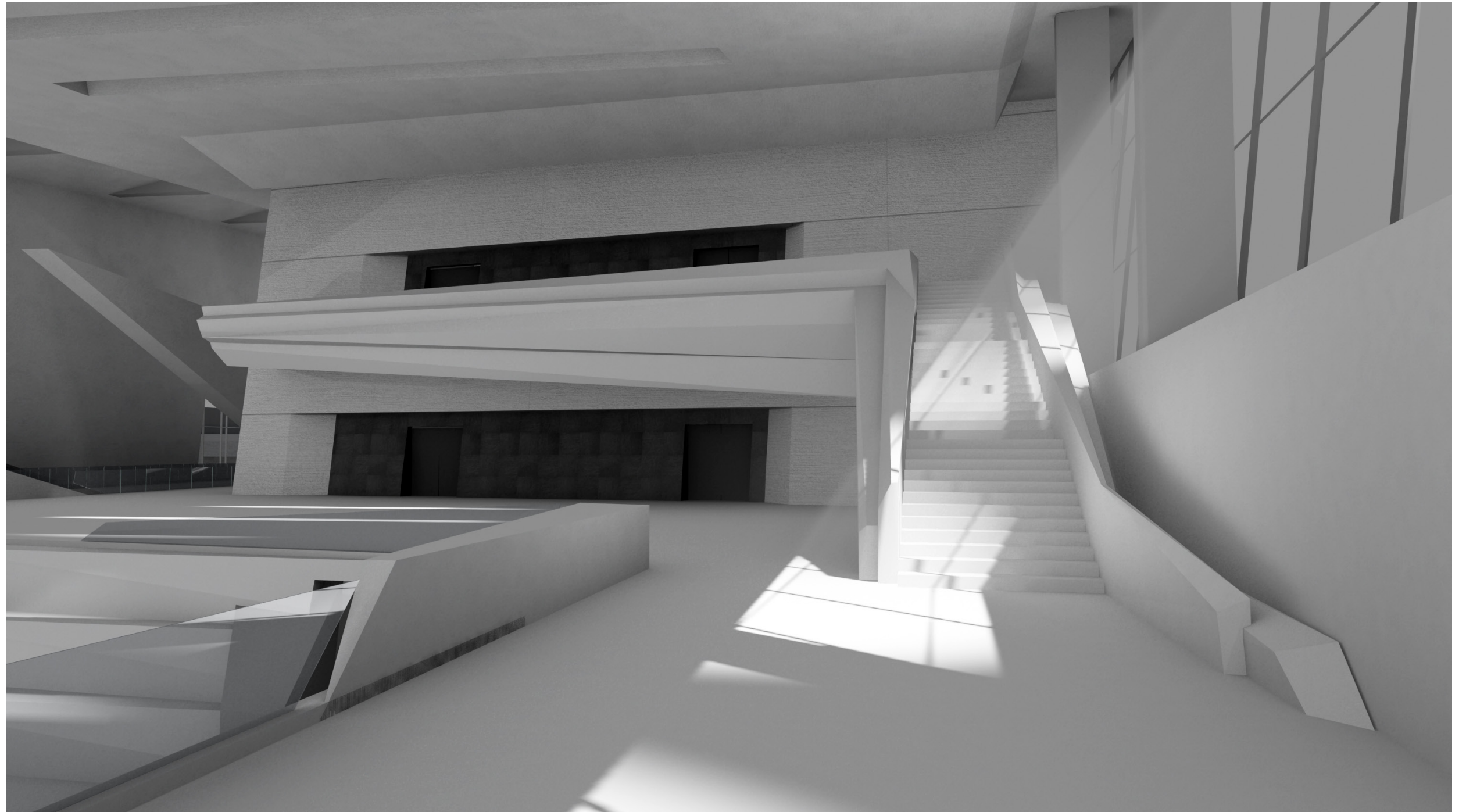
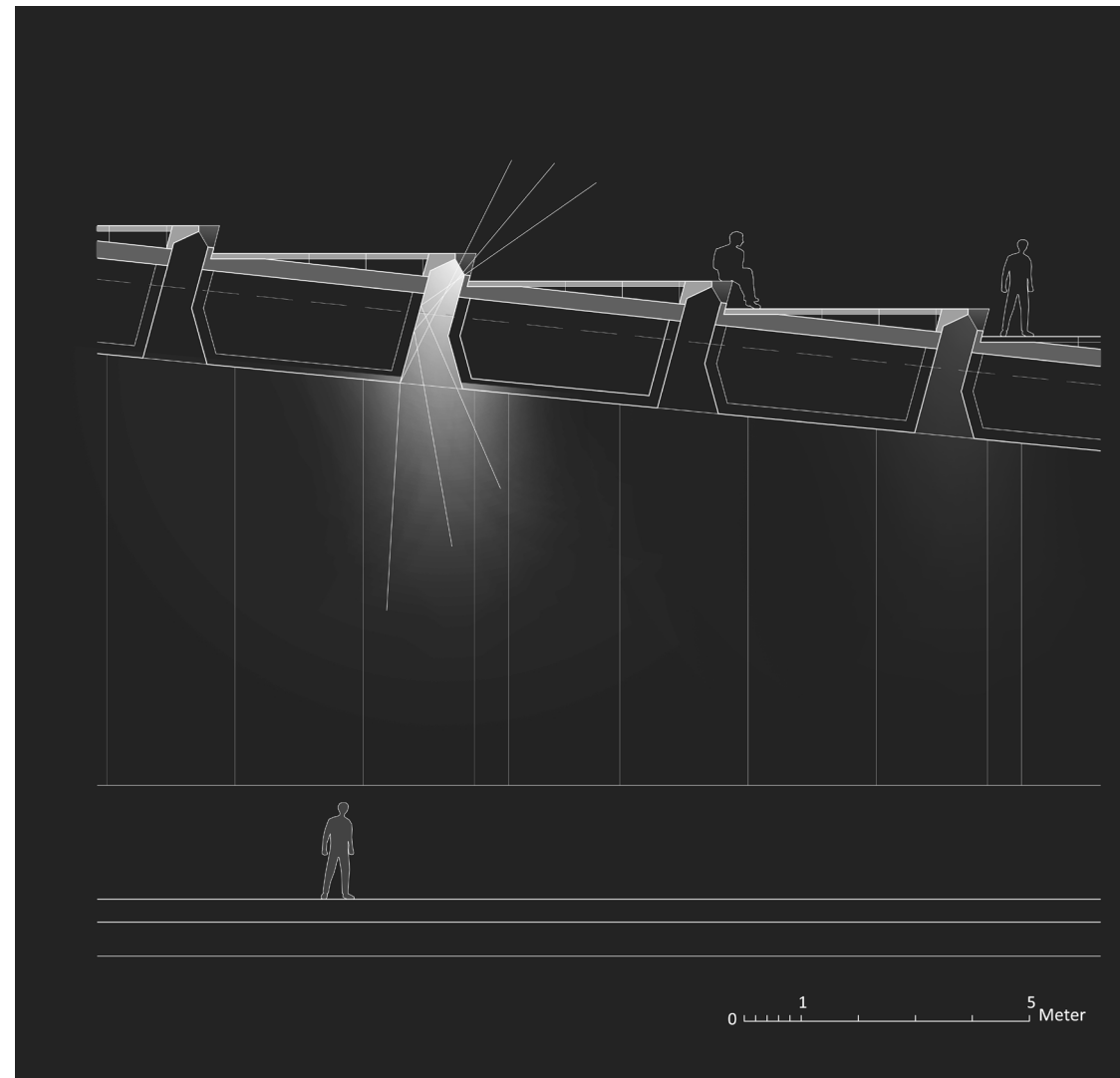
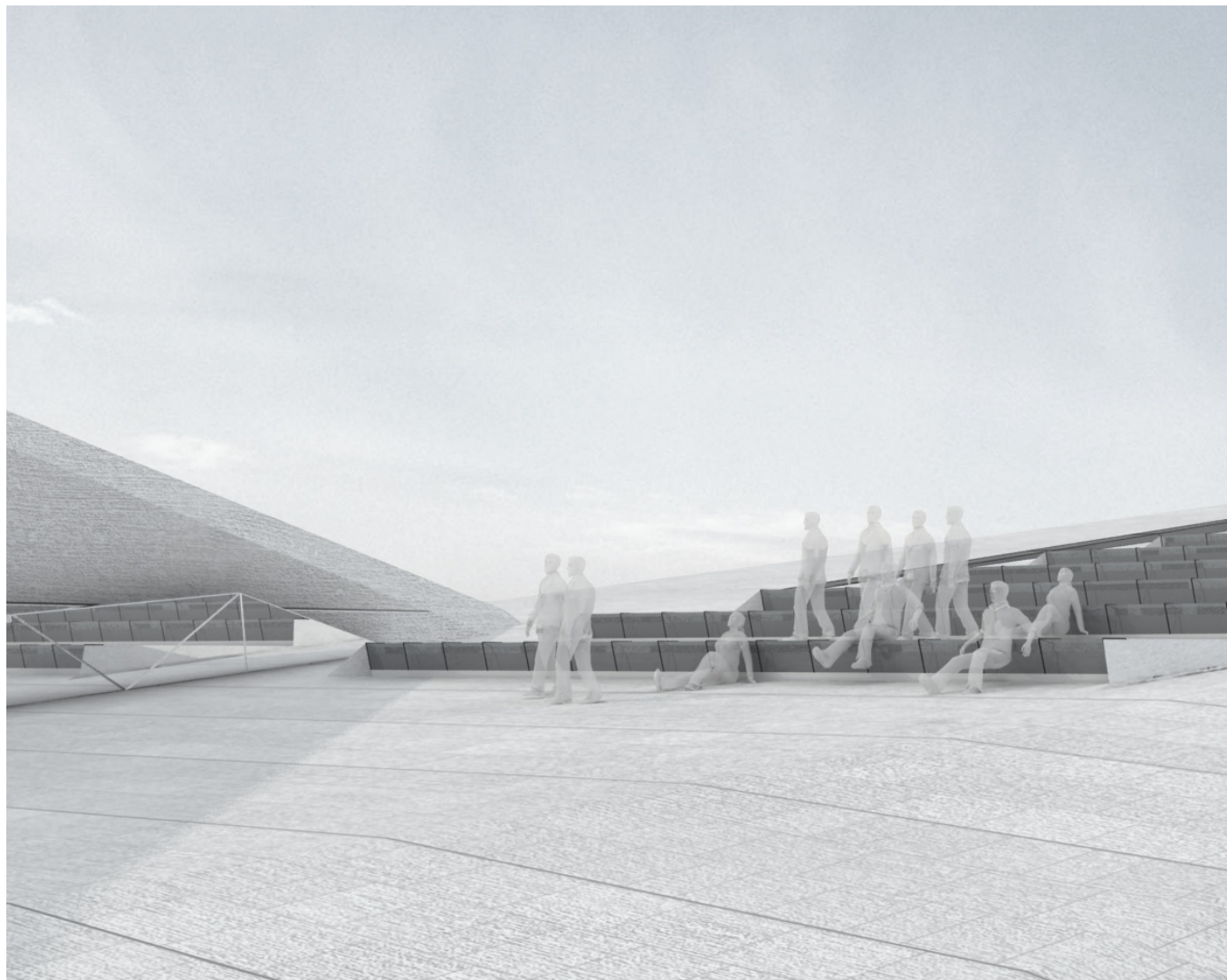






fig. 66 | The Roof top view



The skylight on the roof is the seating area, so if you have big gatherings on the top the inside space will be darker and the fewer people the more light the interior will have.

fig. 67 | The Roof Skylight / Seating Detail



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## LIST OF FIGURES

- 1 Egypt in the world map, 2
- 2 Satalite image of Al-Tahrir Square, Cairo, Egypt, 2
- 3 Protesters gathered Al-Tahrir Square, 3
- 4 Scenes from the Revolution, 4
- 5 a. - b., Concept study sketches,6
- 6 a. - d., Concept study sketches,7
- 7 a. - d., Concept study sketches,8
- 8 a. - c., Concept study model & sketch, 9
- 9 a. - d., Concept study models, 10
- 10 a. - c., Early stages concept study models 11
- 11 a. - c., Massing and Volumes Study 12
- 12 Site Plan, 13
- 13 Site Plan 3D model, 14
- 14 Third Floor Plan, 15
- 15 Third Floor Plan 3D model, 16
- 16 Second Floor Plan, 17
- 17 Second Floor Plan 3D model, 18
- 18 First Floor Plan, 19
- 19 First Floor Plan 3D model, 20
- 20 Section Drawing, 21
- 21 Section Drawing, 22
- 22 Section Drawing, 23
- 23 Cross Section Drawing, 24
- 24 Cross Section Drawing, 25
- 25 Cross Section Drawing, 26
- 26 Cross Section Drawing, 27
- 27 Cross Section Drawing, 28
- 28 Cross Section Drawing, 29
- 29 Cross Section Drawing, 30
- 30 Cross Section Drawing, 31
- 31 North Elevation, 32
- 32 South Elevation, 33
- 33 West Elevation, 34
- 34 East Elevation, 35
- 35 The Reflektiv Wall, 36
- 36 Aerial View, 37
- 37 Aerial View, 38
- 38 Perspective View, 39
- 39 North Entrance Perspective View, 40
- 40 Aerial View, 41
- 41 Perspective View, 42
- 42 - 52 The Main Path (North to South), 44 - 54
- 53 The view from the top of the path, 55
- 54 - 62 The Main Path (South to North), 56 - 64
- 63 The Main Hall Interior, 65
- 64 The Main Hall Interior, 66
- 65 The stair to the mezzanine level of the theatre , 67
- 66 The Roof Top View, 68
- 67 The Roof Skylight / Seating Detail, 69
- 68 North Entrance Perspective View, 72



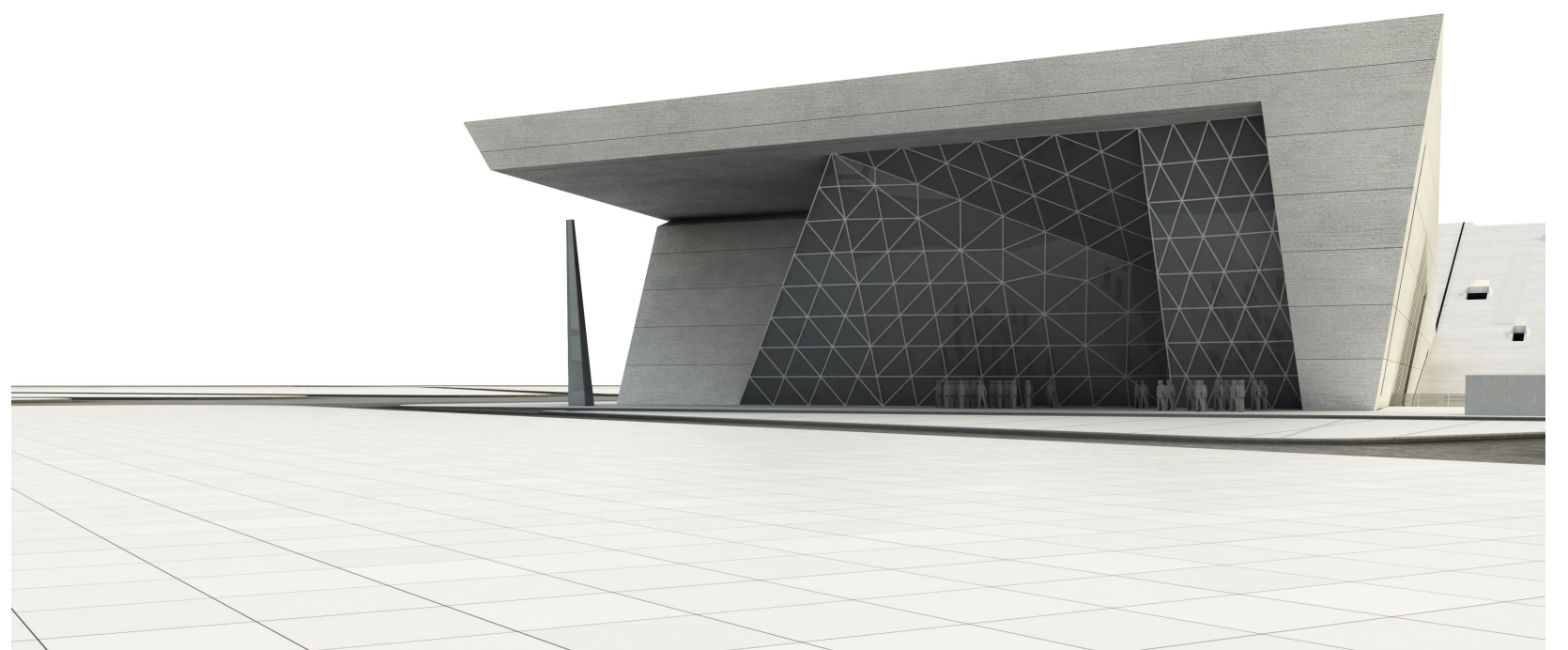


fig. 68 | North Entrance Perspective View