

# **OPENING AND SPACE: A CONTEMPLATIVE TOWER IN THE WOODS**

JIAQI DAI

Thesis is 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

June, 2019

Blacksburg, Virginia

David Dugas

William U. Galloway

H. Scott Gartner

keywords: opening, tower, natural light, view

## **ABSTRACT**

This thesis aims to explore architectural experience by addressing how different types of openings exert an impact to the space. The openings not only play a critical role in giving a palpable presence to natural light in a space, but also facilitate a specific way of seeing the world – together generating a spiritual resonance through a sequence of well-designed spaces.

The journey happens in a four-story tower, which is influenced by four parts of a tree, providing a space to experience tranquility removed from a chaotic world and to gain a deeper understanding of the trees. With an emphasis on the manipulation of natural light and views, certain kinds of atmospheres are created on each floor to shape the perception of space.

## **ACKNOWLEDGEMENT**

I would like to express my deepest appreciation to all my committee members – Professor Dave, Bill and Scott.

I would like to express my great gratitude to my parents.

I am grateful for all the friends I met in Virginia Tech.

## TABLE OF CONTENTS

Title	i
Abstract	ii
Acknowledgements	iii
Table of Contents	iv
The Site	01
The Beginning	05
The Program	07
Appendix	27
List of Figures	32

As the sky dimmed, the clouds were floating in dusky purple. Rays of weak sunlight occasionally filtered through the clouds. Within a glimpse, it vanished. The ground still smelled of rain, but everything was so fresh and pure. This was the third time I came to Heritage Community Park. On the right-hand side of the path, there was a little pond. The water was remained in stillness, serving as a mirror to reflect the trees that surrounded it. A series of rolling hills loomed in the distance, covered with trees that had just begun to bud. While I continued walking downhill along the path, I approached the woods. Far and near, high and low, the trees were all around—just like an extraordinary landscape painting—everything seemed so quiet in the environment. Listening to that silence immediately created a state of peace and stillness inside me.



Fig. 1



Fig. 2



Fig. 3



Fig. 4



At that moment, I envisioned the contemplative tower should also be quietly standing in the woods. From outside, the form of the tower looks simple and absolute; but inside, the building is experiential with a rich feeling, defined largely by how daylight presents itself at the very moment it is encountered. At the same time, one begins to better understand the trees through a visual connection that is caused by specific designs of opening on each storey. What comes after the perception is to provoke a unique spiritual linkage between each individual and nature. Upon walking into the tower, the visitor can calm down their mind, and enjoy the silence and peace that comes from the environment.

The design began with section. For each floor of the tower that corresponds to a certain level of a tree, I established distinctive openings to frame particular views of the outer world, as well as to manage how light enters each space.

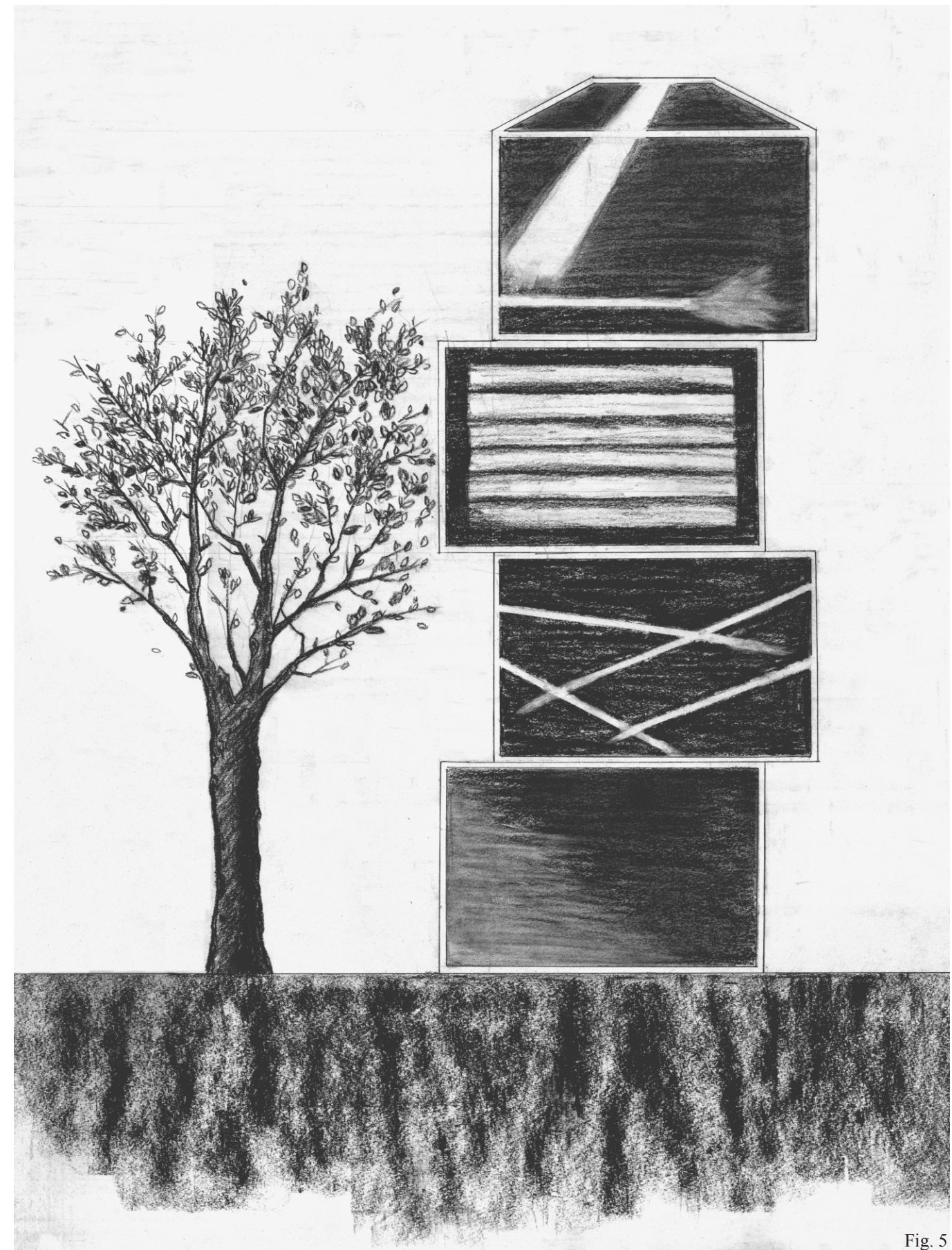
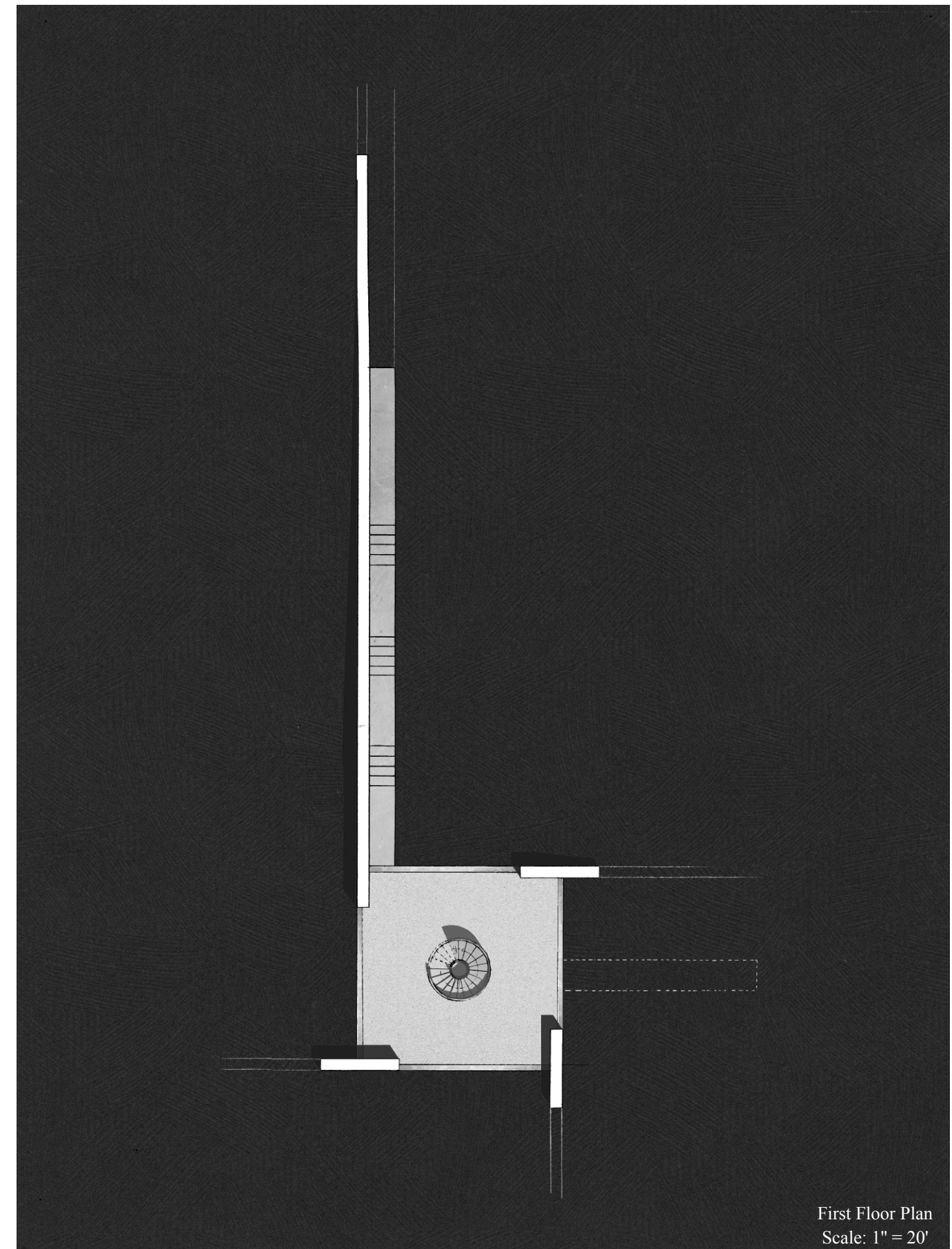


Fig. 5

As a massive concrete wall extends to the arrival points of the site, the journey starts here. Slowly moving down the slope with the guidance of the wall, the visitor's view changes constantly along the topography, gradually blocks the horizon of the tree as they approach the building. Conceived to start and end the walls to create openings instead of subtract materials, the design features four adjacently arranged concrete walls that are staggered on the ground floor. The space is opened to all directions, so the visitor can have an extremely close relationship to the trees while they enter and exit the tower. But once people get inside the space, their sightlines are pre-determined to only observe the tree trunks, far and near, isolating the view from branches and leaves. Maybe at some point one is able to see the shadows that cast on the walls and the floor. A graceful concrete helical stair is positioned at the center of the space, taking the visitor upstairs.



First Floor Plan  
Scale: 1" = 20'

Fig. 6

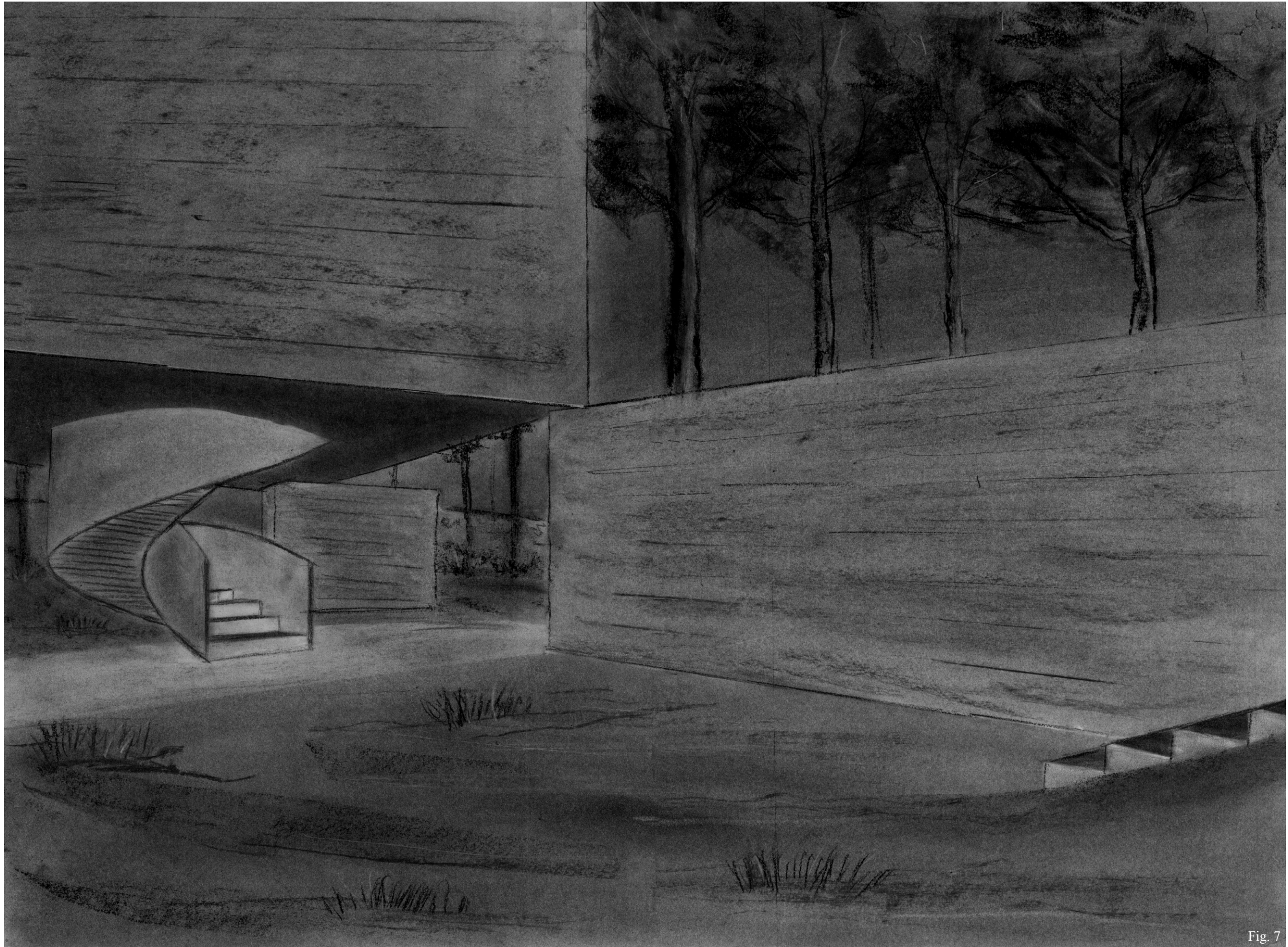
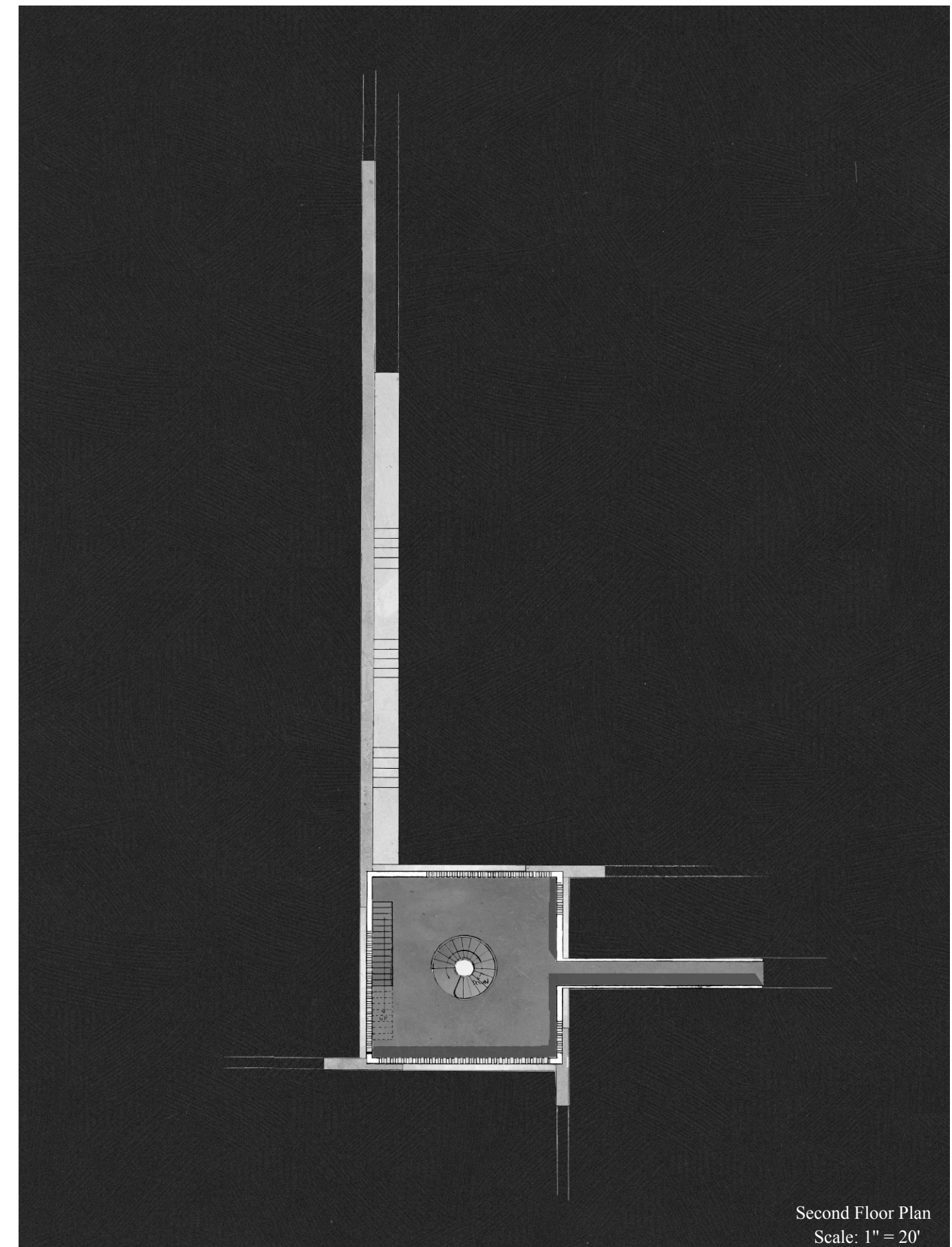


Fig. 7



Fig. 8

The second level incorporates large openings on every side of the wall that catches the most sunlight; together offer the visitor a wide view to appreciate the sight of the most luxurious part of the trees. In order to make the space more fun to explore, a vertical grid pattern is used as the screen for the openings on this level in order to transform changing daylight into vivid forms and to offer intriguing graphics as an opportunity to subvert usual ways of seeing the trees. At the same time, the porous screen gives a possibility of fading away the building mass by aerating the facade, as the wall seemed a little monotonous and stuffy from the outside without the screens. In addition to the staircase that is located on the first floor, there is also another way to enter the second floor by the corridor that bridges the path to the tower. Its essential aim is to create a transition of illumination from brightness to darkness, while light and shadow form a rhythmic approach that leads people entering the room.



Second Floor Plan  
Scale: 1" = 20'

Fig. 9

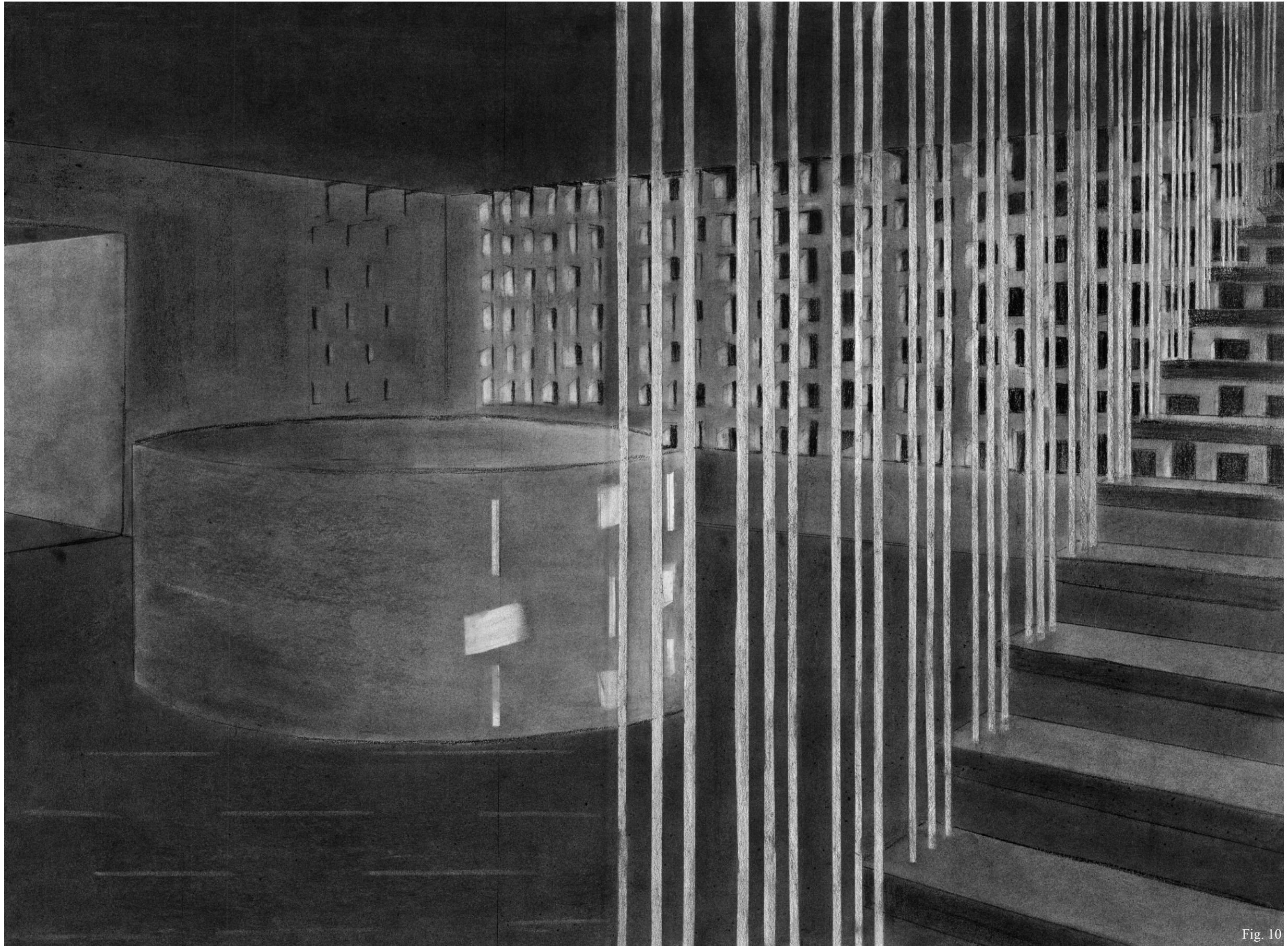
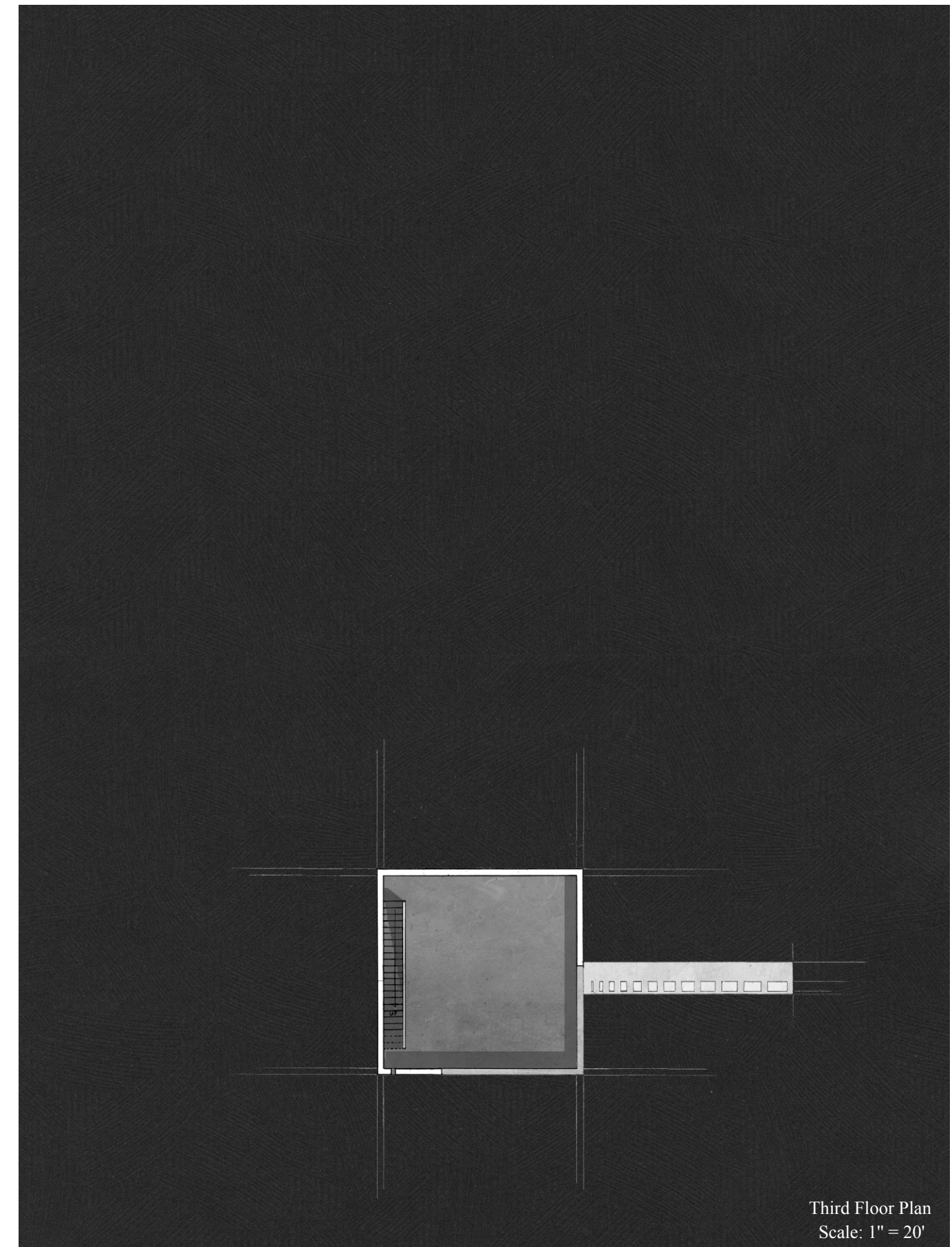


Fig. 10



Fig. 11

The third level gets even darker. The natural light is carefully controlled: it only comes from the narrow strip openings that are both horizontal and vertical. At this height, the trees still have a small amount of leaves. The intention is to make it hard and discomfort to grasp the outside from this floor, so the horizontal aperture is set slightly below the eye level. In order to escape from the heavy darkness and oppressing sensation of this room, the visitor have to pass through a long, dark staircase that is designed in strong accordance with the space, squeezing the narrowness by another piece of added partition wall.





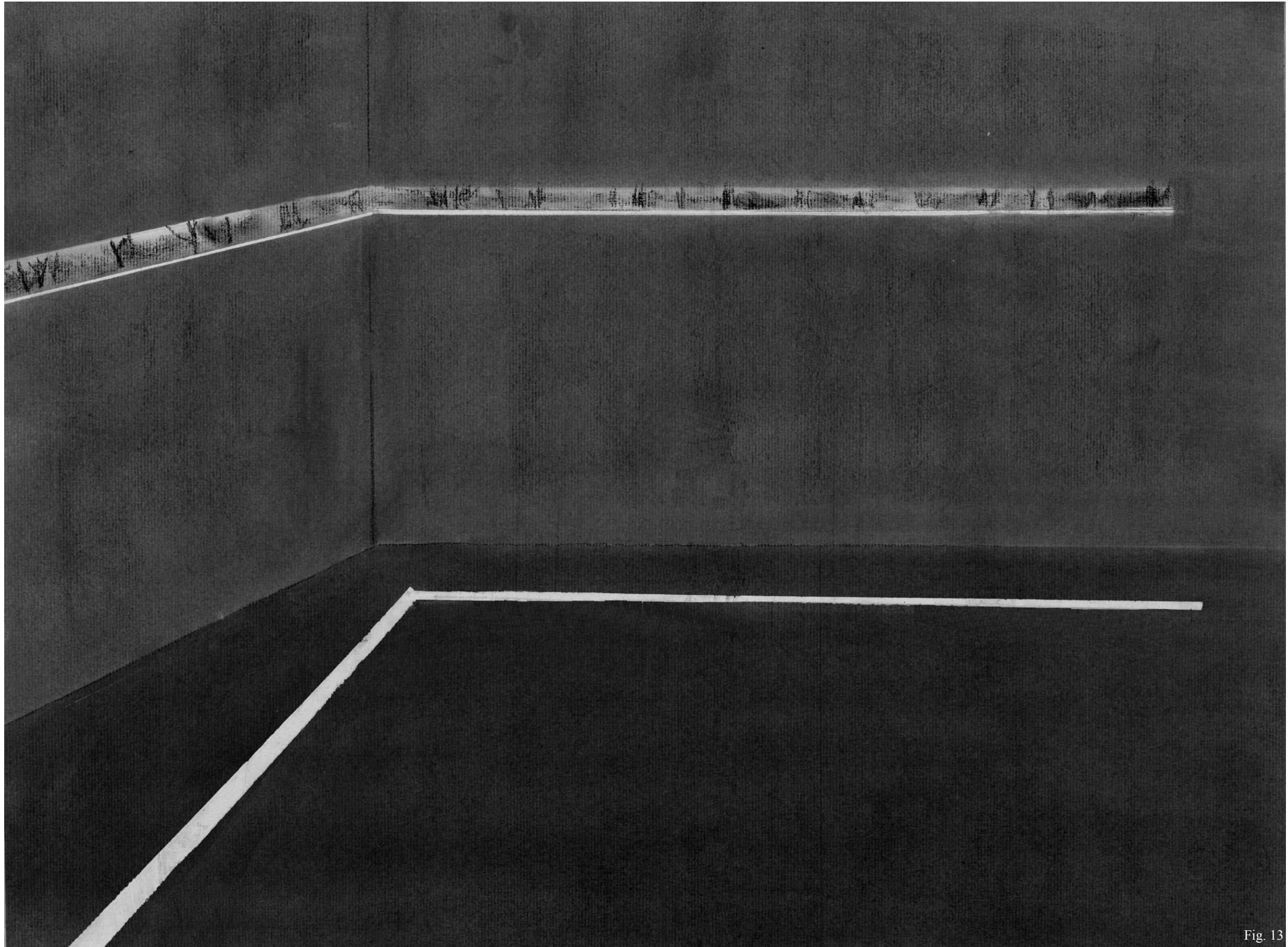
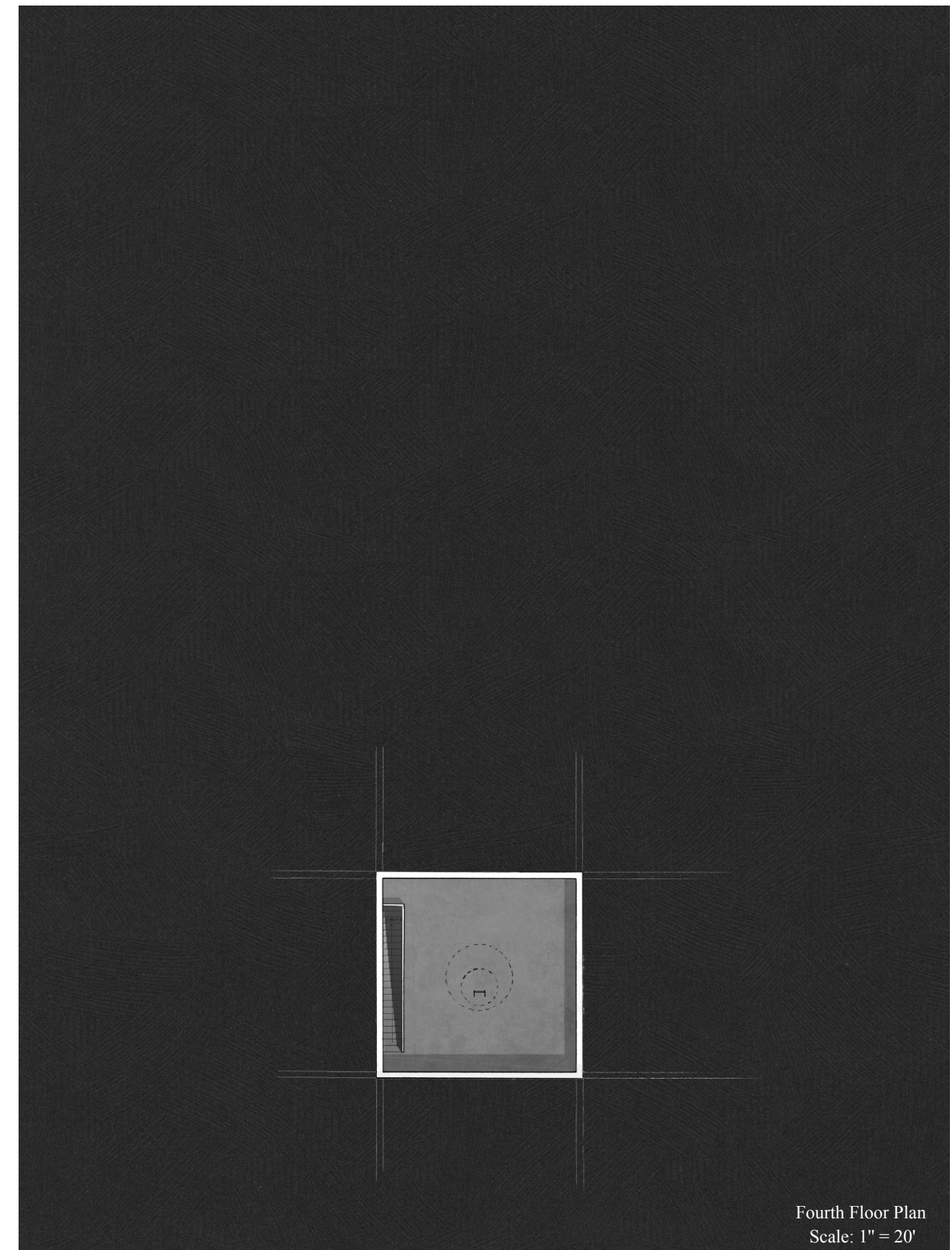


Fig. 13



Fig. 14

When one moves to the fourth floor, the tower is completely closed horizontally but only opens in vertical direction. A conical skylight is carved out through the hidden thickness of the top building shell, conducting daylight to travel through to where it is needed inside and collecting light diffusion to a floating expression – thereby making that quality of light to a memorable character. The shifting illumination that appears on the silent concrete walls reveals the passing of time, triggering an intense contemplation for the visitors inside the room. Meanwhile, the primary concern of the opening on this level is to incorporate the sky, rather than to communicate with the trees, in the way of displaying a specific portion of sky to construct a greater world of space. A ladder is placed in the middle of the room that leans against the opening, taking the visitor to outside roof terrace. The journey ends at the moment when the visitor finally climb to the top of the ladder and reach the open outdoor area, their sights suddenly become extensive with all the views, attaining the highest spiritual goals of total liberation and full enlightenment within ones inner state.



Fourth Floor Plan  
Scale: 1" = 20'

Fig. 15

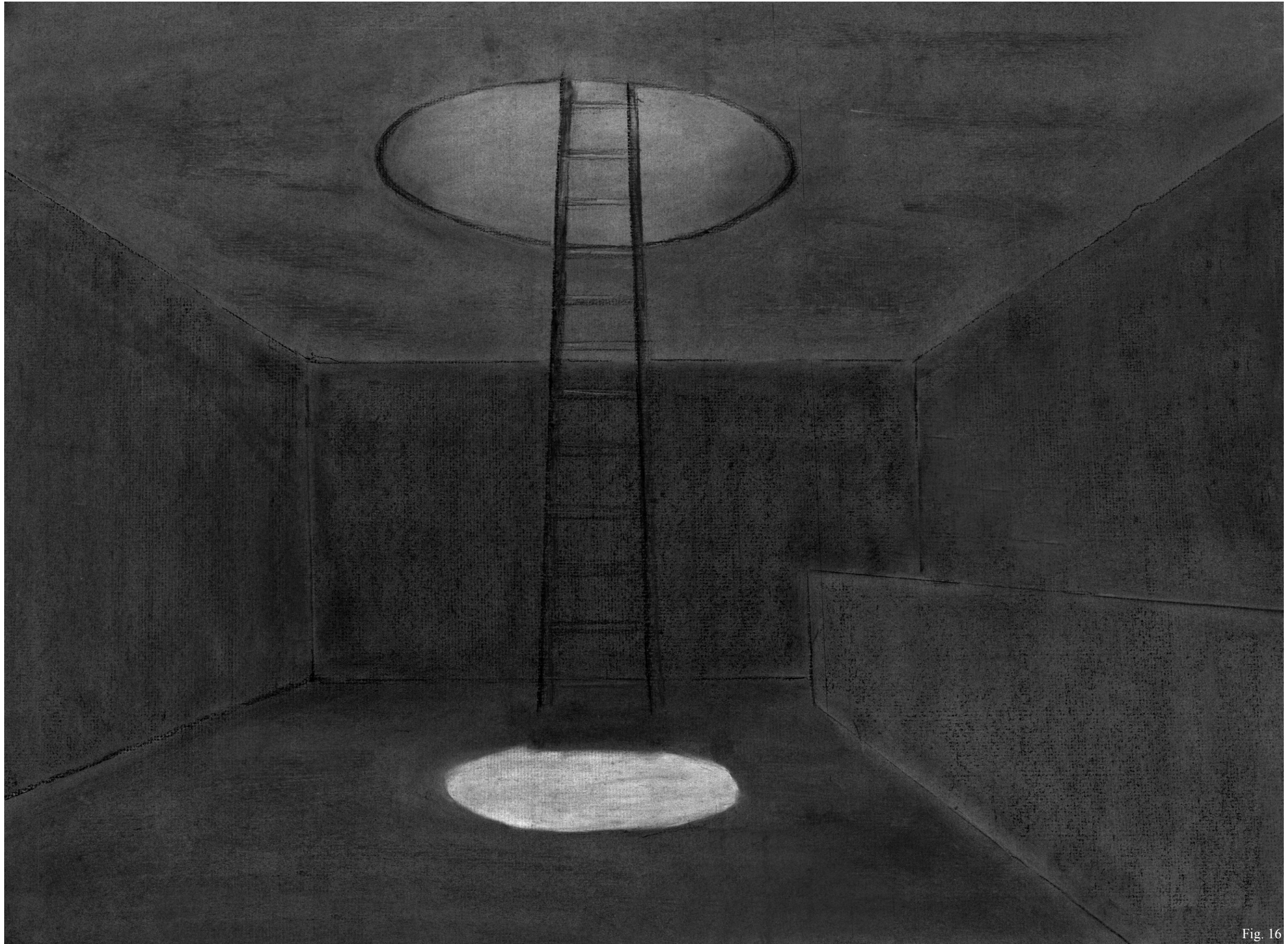
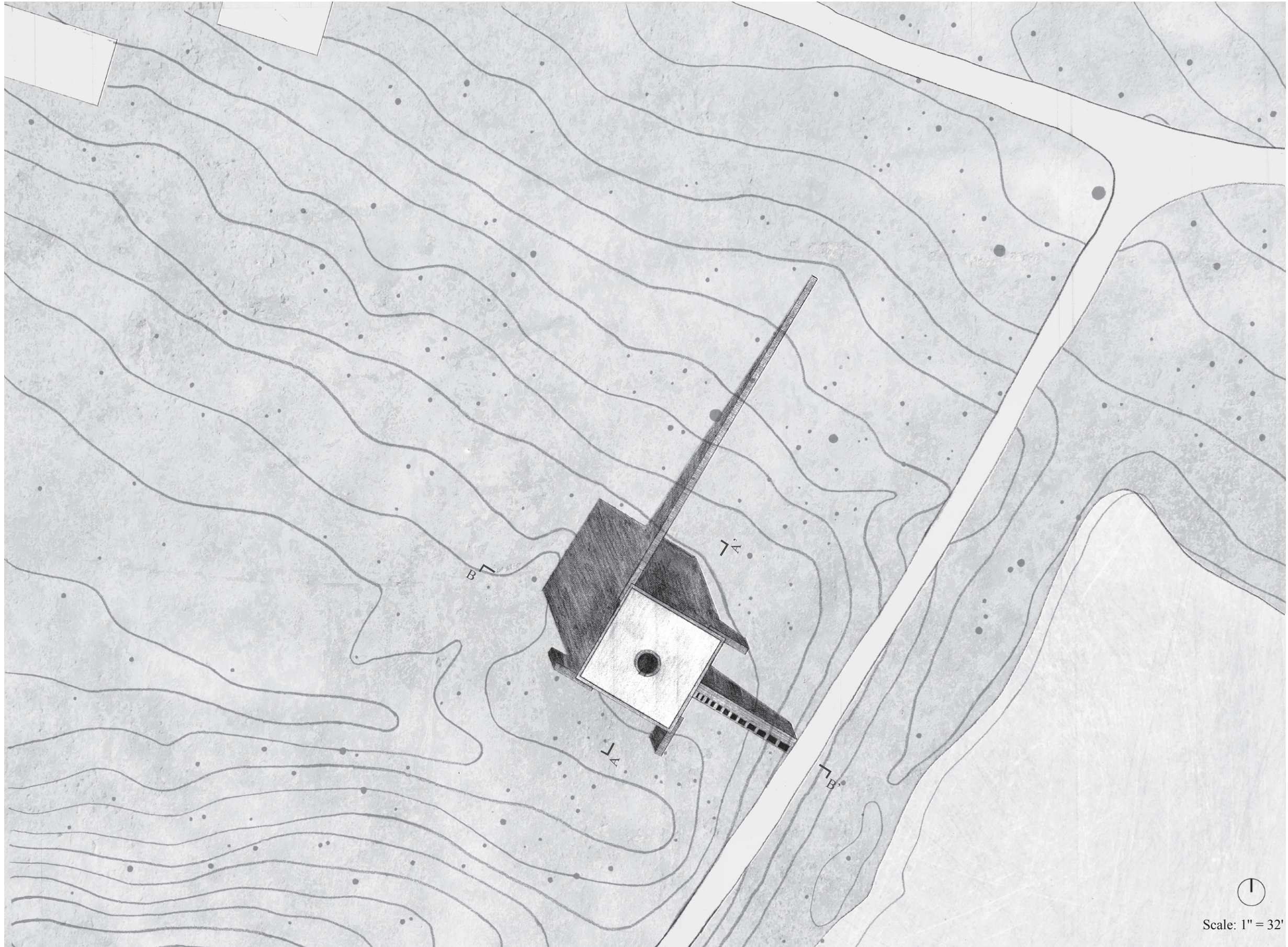


Fig. 16



Fig. 17



Scale: 1" = 32'

Fig. 18

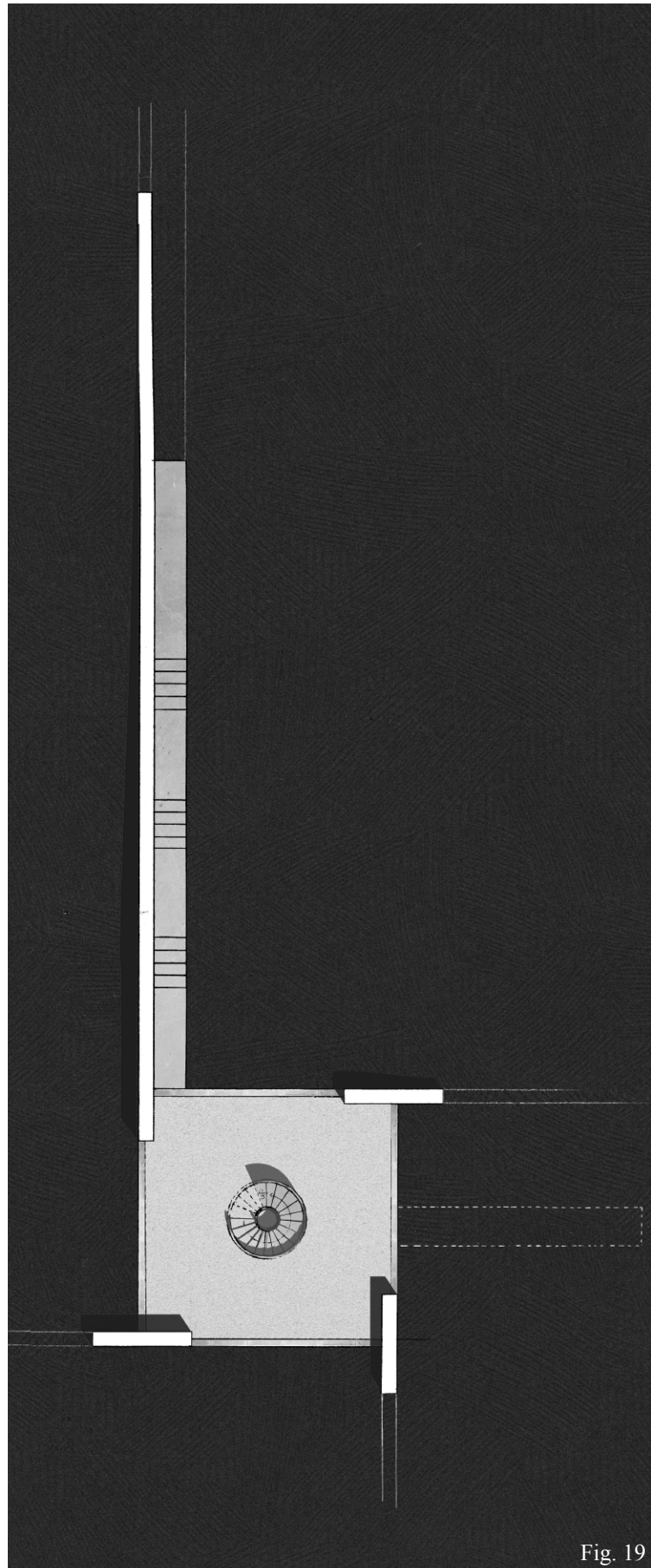


Fig. 19

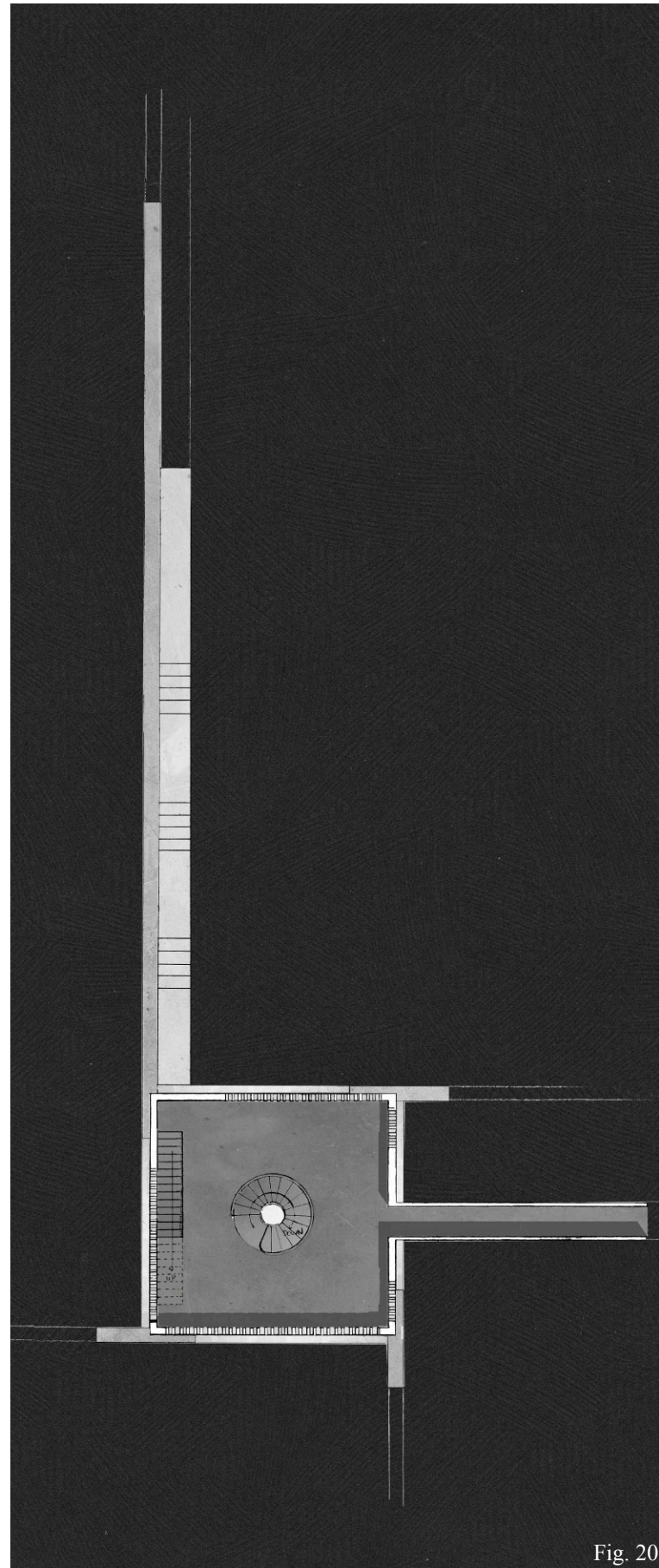


Fig. 20

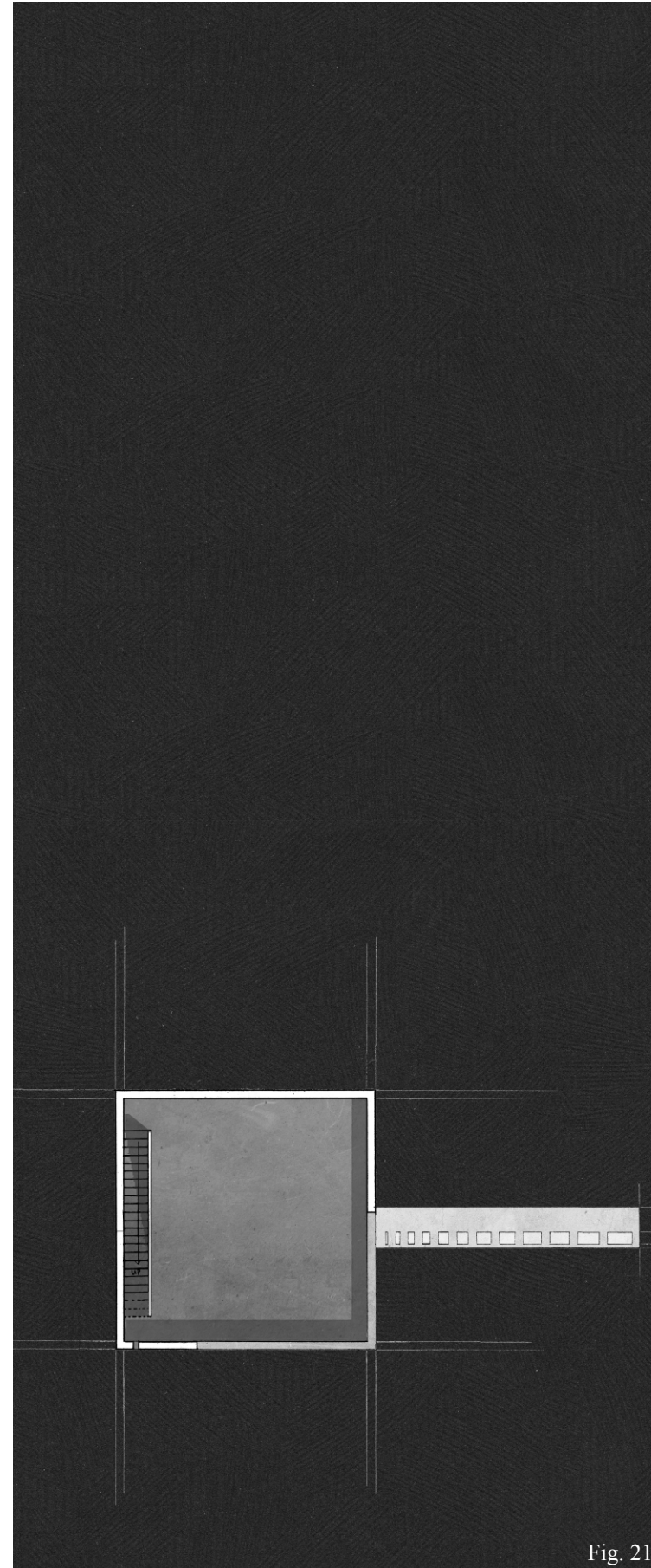


Fig. 21

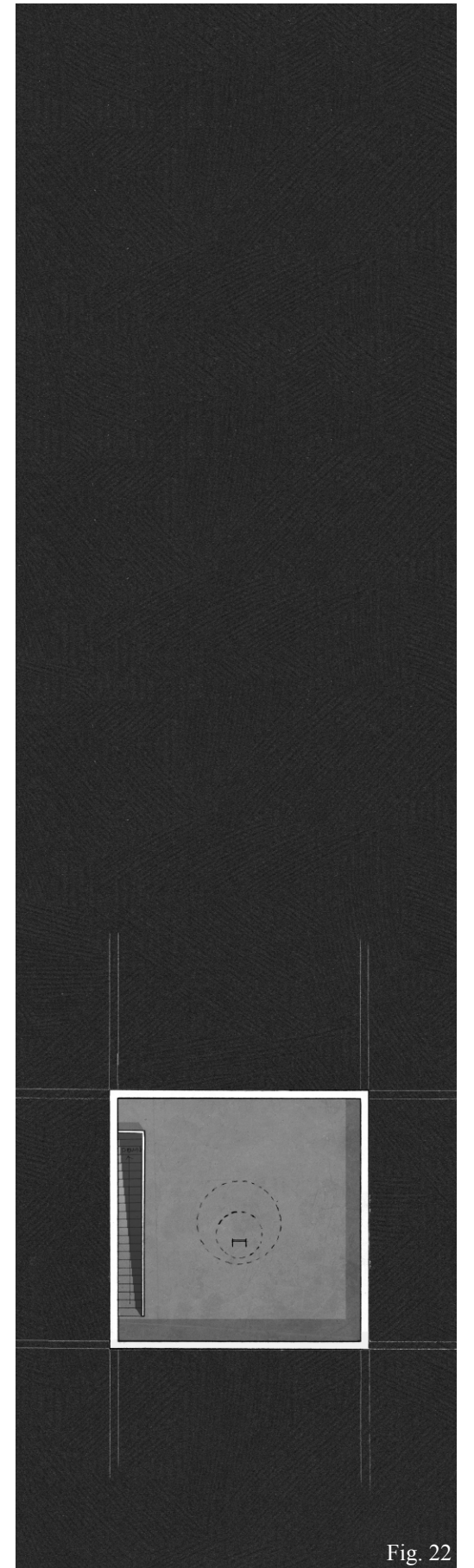
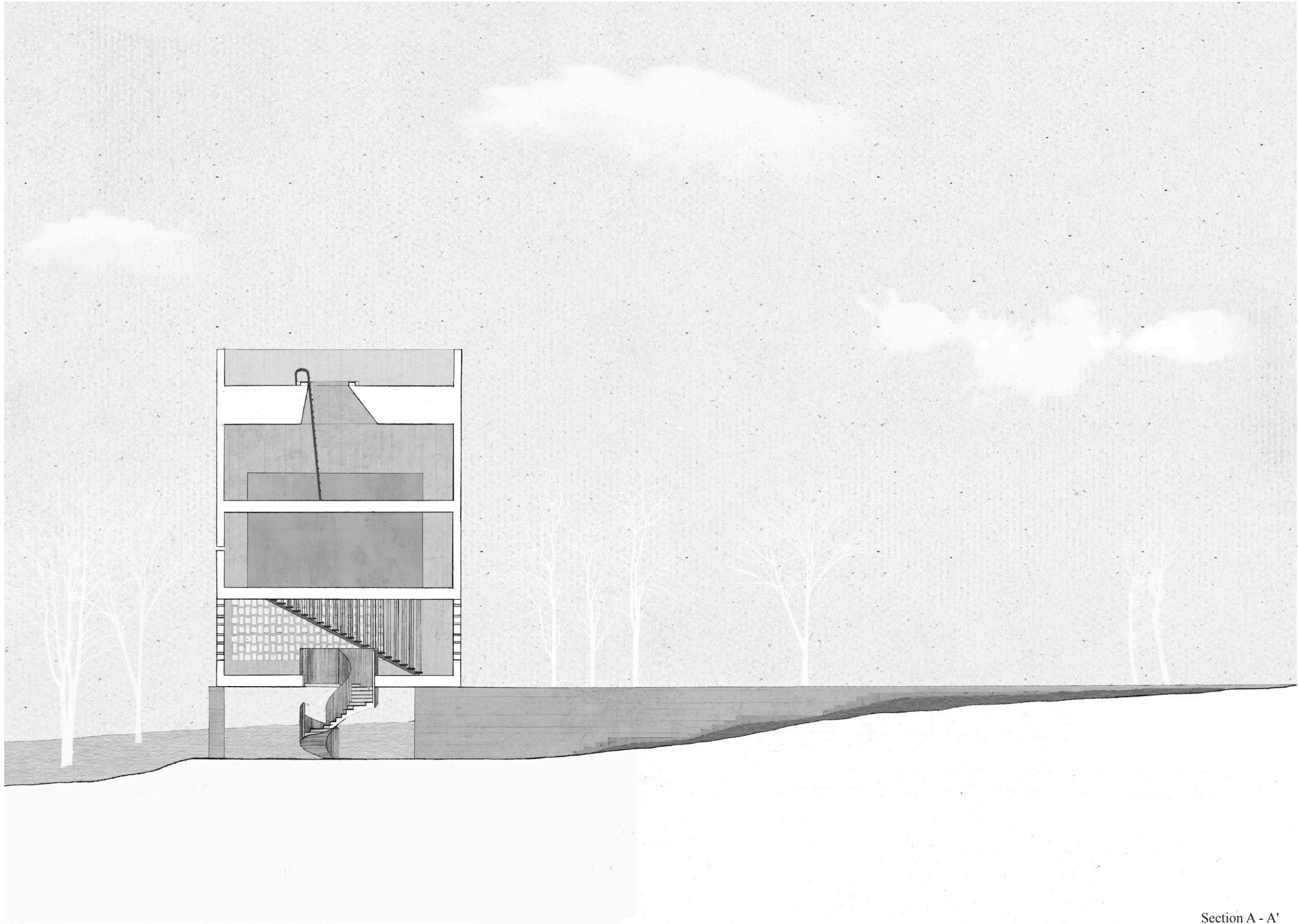


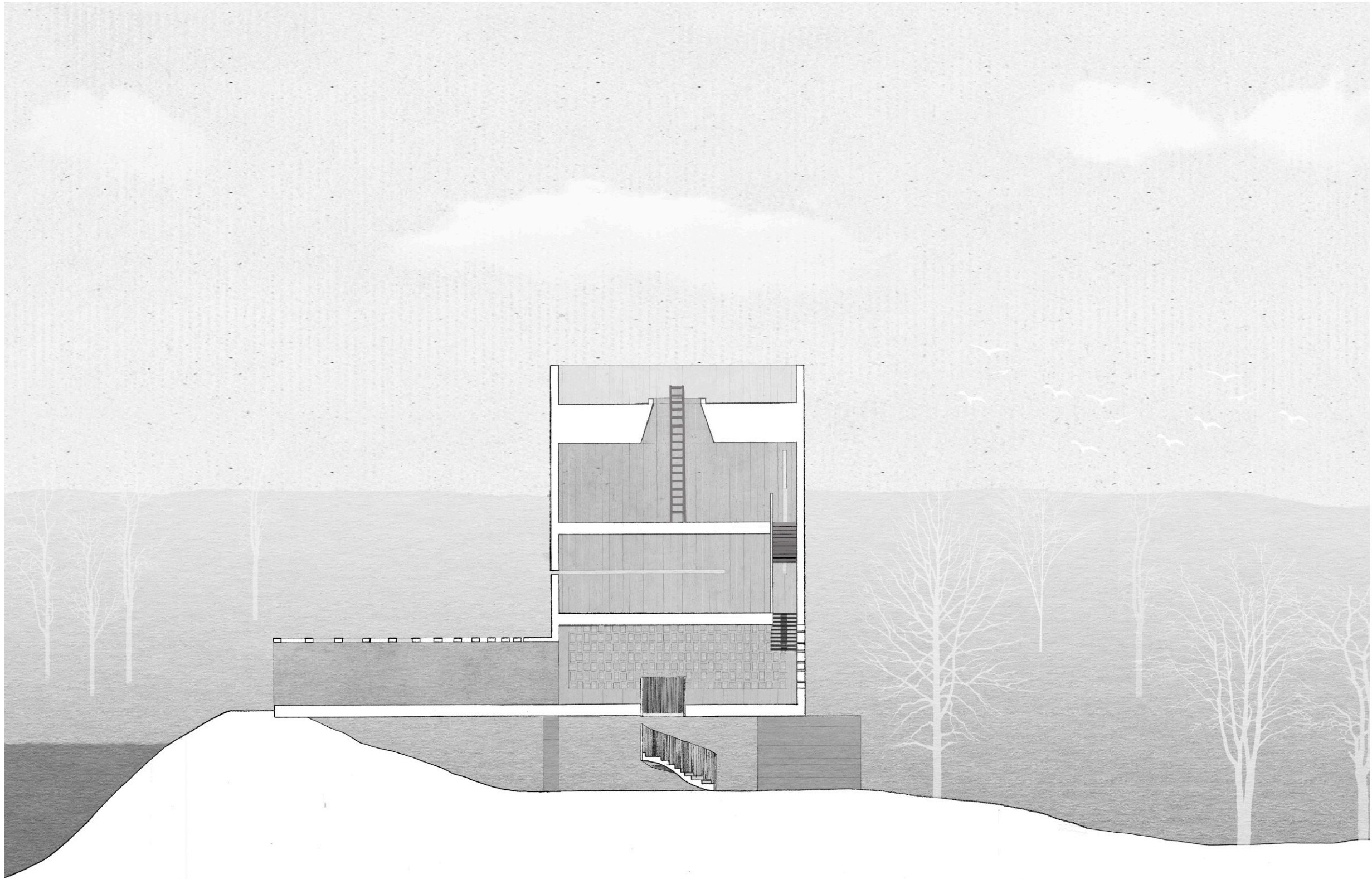
Fig. 22



Section A - A'  
Scale: 1" = 20'

Fig. 23





Section B - B'  
Scale: 1" = 20'

Fig. 24





Fig. 26



Fig. 27

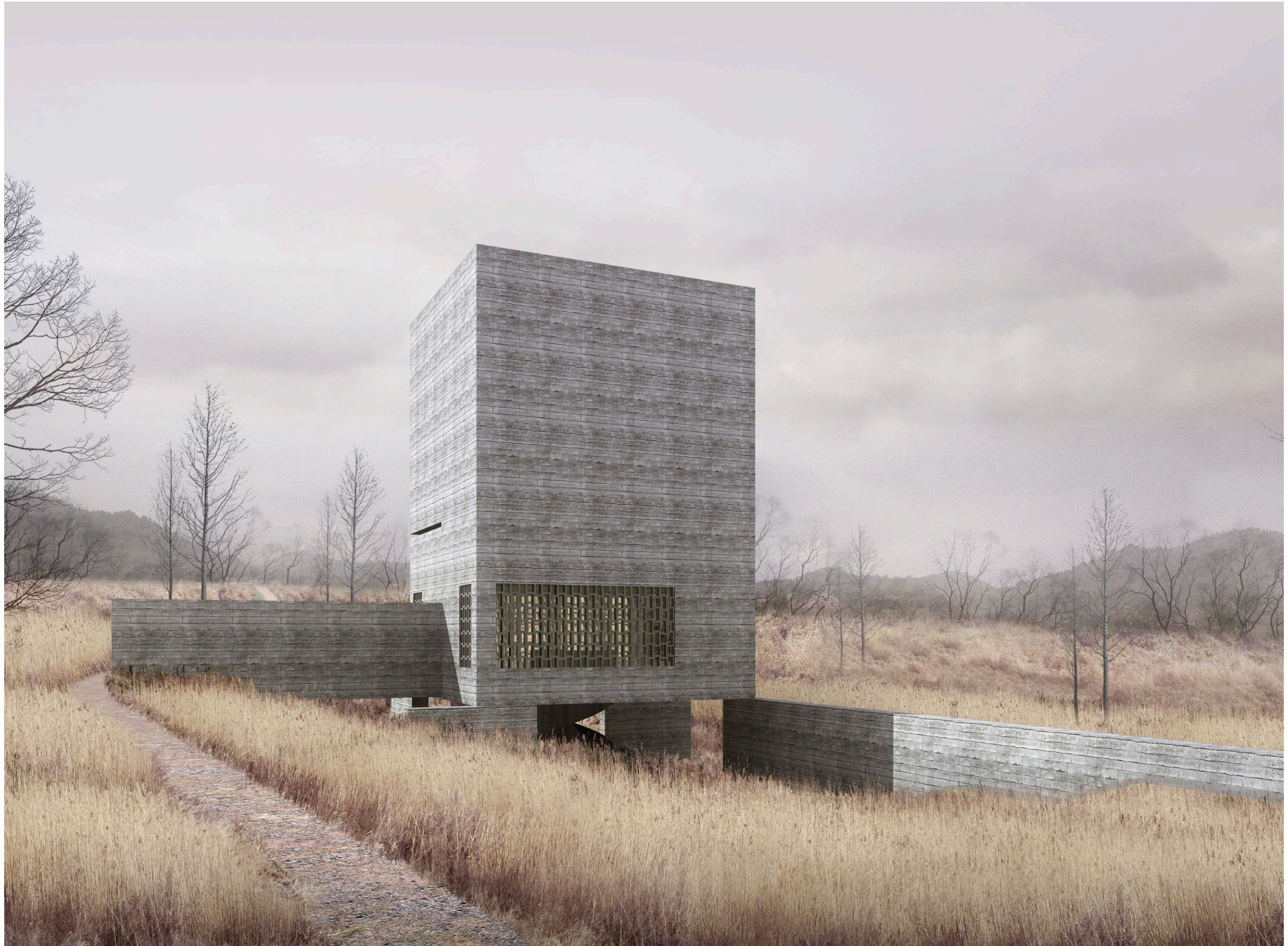


Fig. 28





Fig. 30

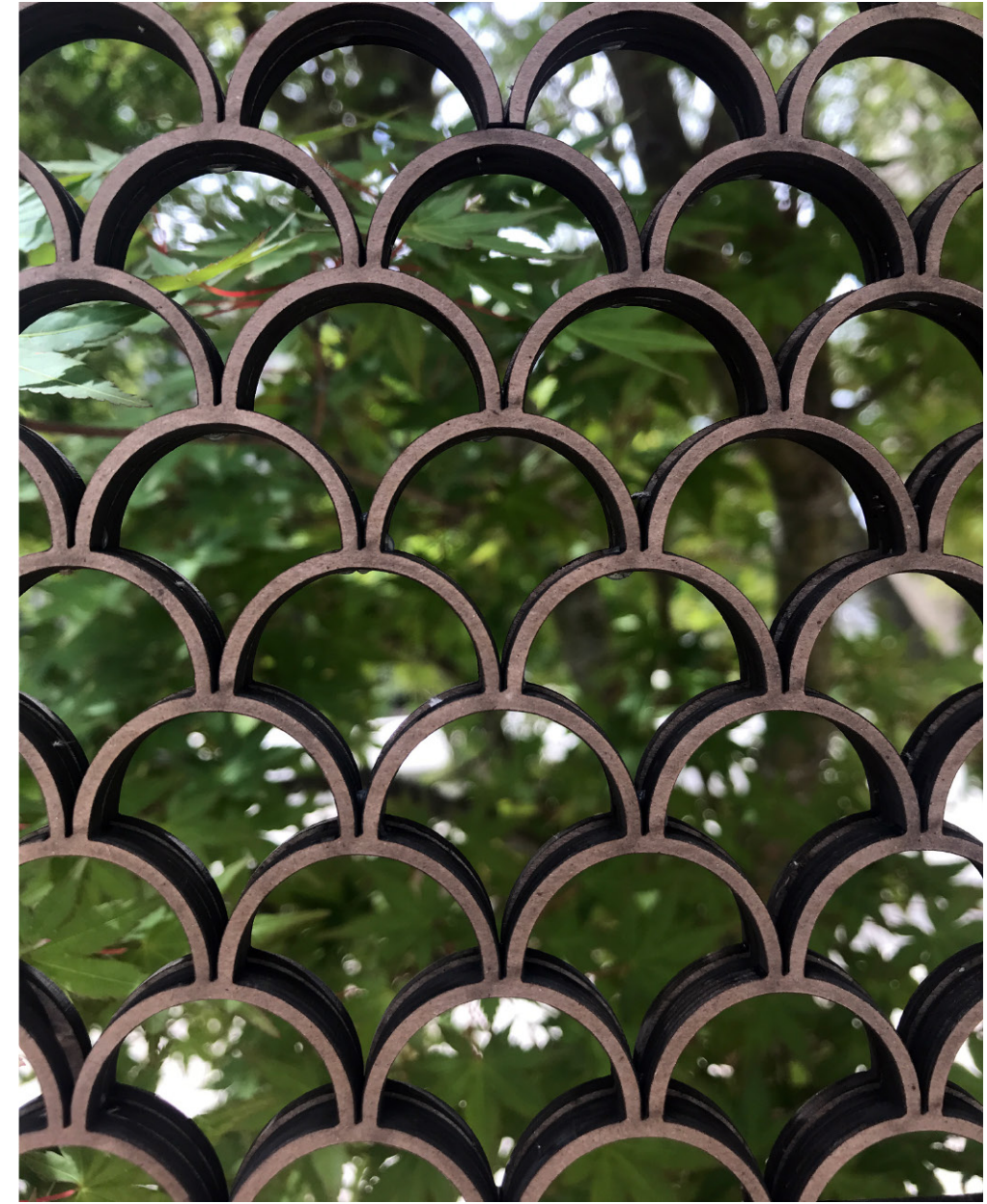


Fig. 31

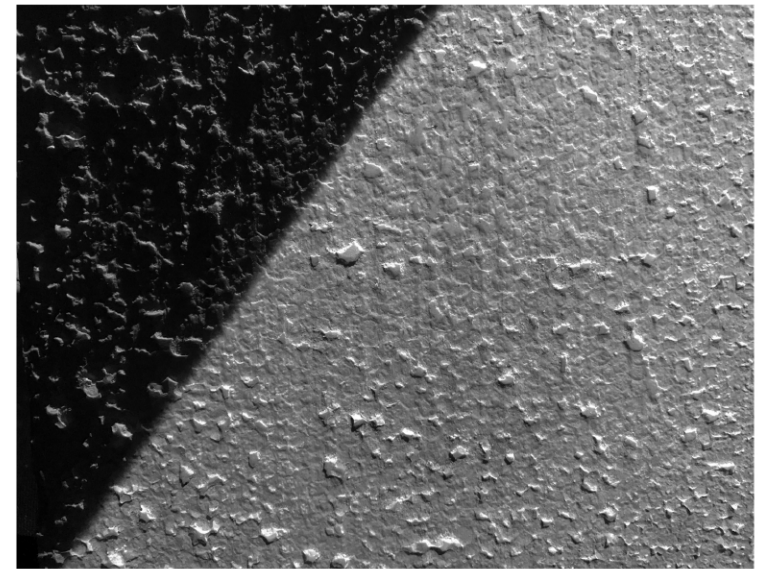
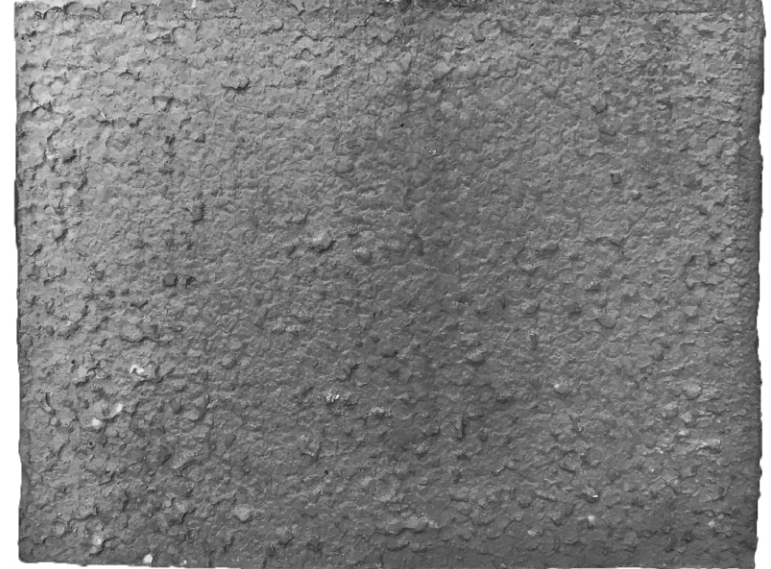


Fig. 32



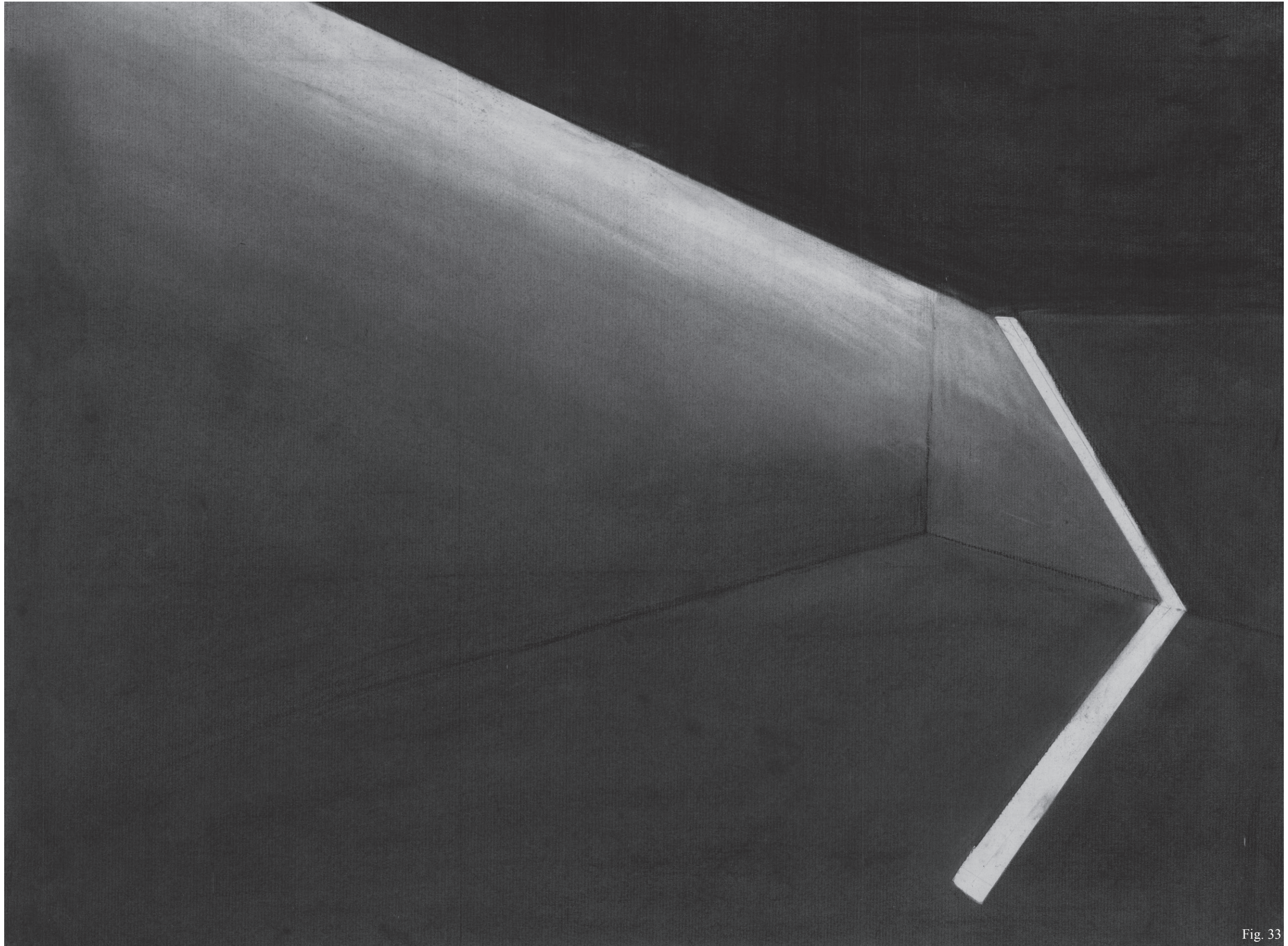


Fig. 33

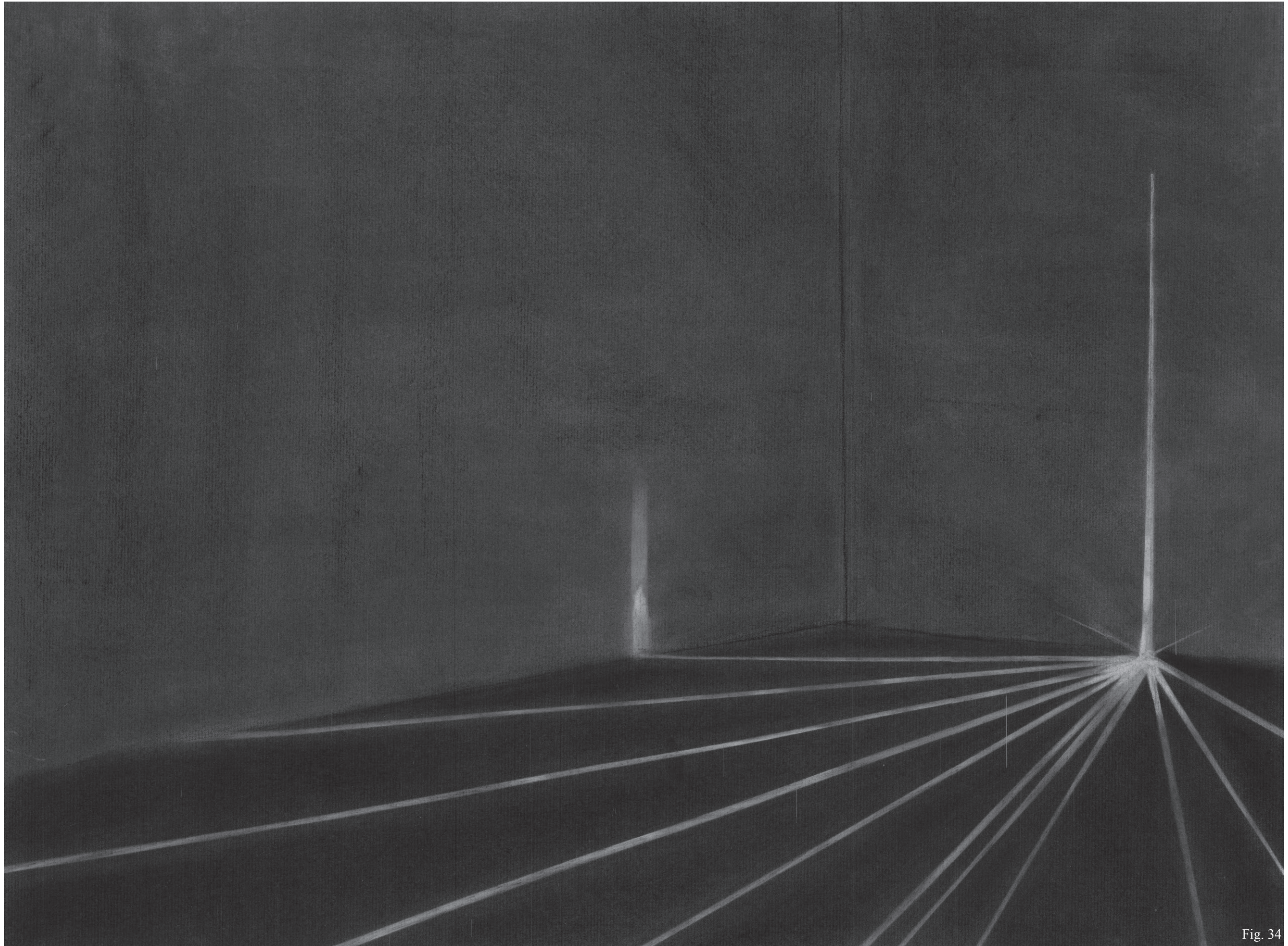


Fig. 34

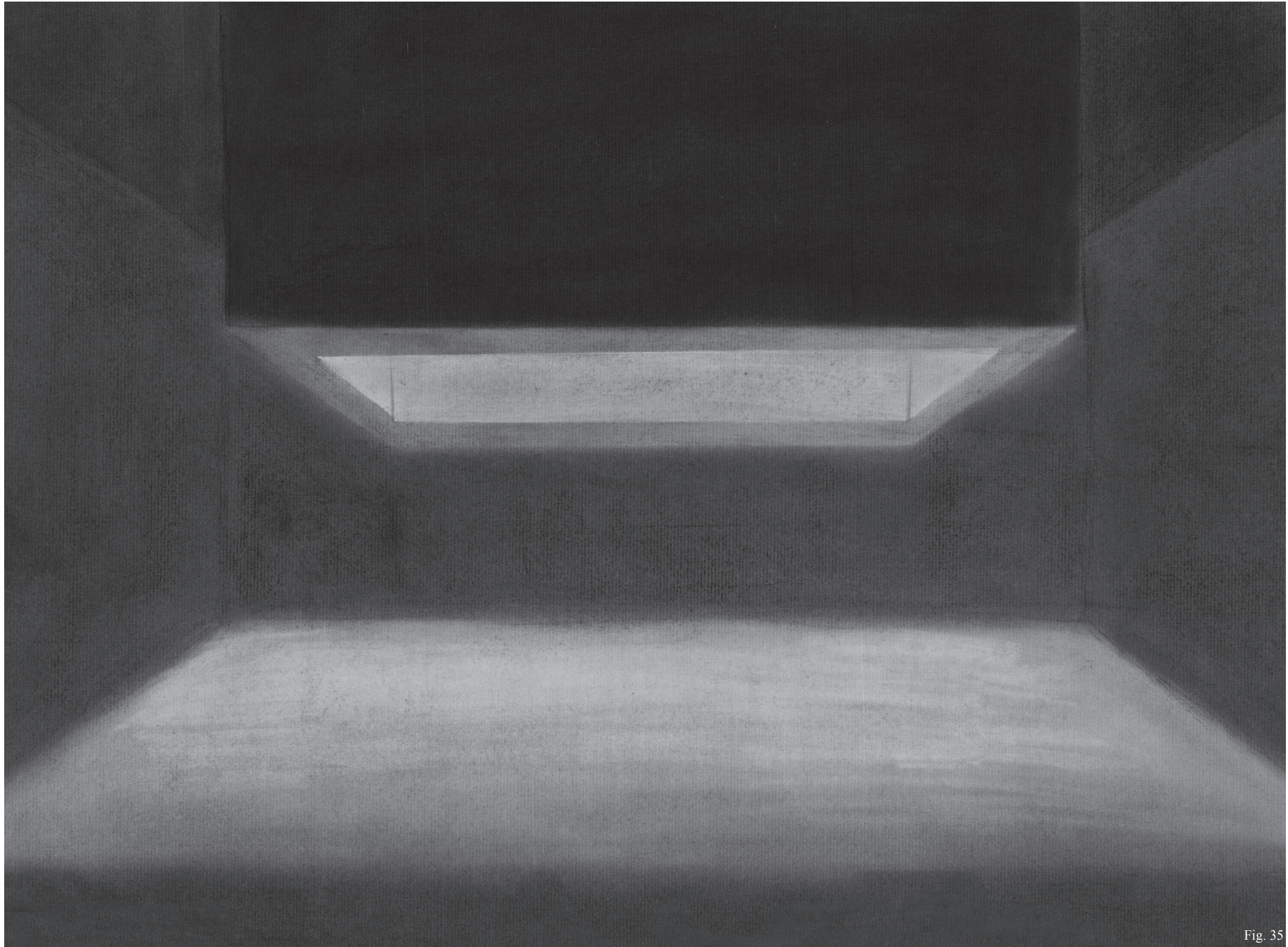


Fig. 35

## LIST OF FIGURES

Figure#	Page#	
1	01	Map of heritage community park / Digital rendering - Source: Google map
2	02	Sketch of site - loomed mountains / Charcoal on 18in x 24in newsprint
3	03	Sketch of site - little pond / Charcoal on 18in x 24in newsprint
4	04	Sketch of site - the woods / Charcoal on 18in x 24in newsprint
5	05	Concept section / Charcoal on 18in x 24in bristol
6	06	First floor plan / pencil drawing on 18in x 24in bristol / digital rendering
7	07	Perspective drawing - exterior of first floor space/ Charcoal on 18in x 24in drawing paper
8	08	Perspective drawing - interior of first floor space/ Charcoal on 18in x 24in drawing paper
9	09	Second floor plan / pencil drawing on 18in x 24in bristol / digital rendering
10	10	Perspective drawing - interior of second floor space/ Charcoal on 18in x 24in drawing paper
11	11	Perspective drawing - the corridor on second level/ Charcoal on 18in x 24in drawing paper
12	12	Third floor plan / pencil drawing on 18in x 24in bristol / digital rendering
13	13	Perspective drawing - interior of third floor space/ Charcoal on 18in x 24in drawing paper
14	14	Perspective drawing - the staircase on third level/ Charcoal on 18in x 24in drawing paper
15	15	Fourth floor plan / pencil drawing on 18in x 24in bristol / digital rendering

16	16	Perspective drawing - interior of fourth floor space/ Charcoal on 18in x 24in drawing paper
17	17	Perspective drawing - the skylight on fourth level/ Charcoal on 18in x 24in drawing paper
18	18	Site plan / pencil drawing on 18in x 24in vellum / digital rendering
19	19	First floor plan / pencil drawing on 18in x 24in bristol / digital rendering
20	19	Second floor plan / pencil drawing on 18in x 24in bristol / digital rendering
21	19	Third floor plan / pencil drawing on 18in x 24in bristol / digital rendering
22	19	Fourth floor plan / pencil drawing on 18in x 24in bristol / digital rendering
23	20	Section / pencil drawing on 18in x 24in bristol / digital rendering
24	21	Section / pencil drawing on 18in x 24in bristol / digital rendering
25	22	Perspective drawing - aerial view / digital rendering
26	23	Perspective drawing - western side / digital rendering
27	24	Perspective drawing - eastern side / digital rendering
28	25	Perspective drawing - northern side / digital rendering
29	26	Perspective drawing - southern side of ground floor / digital rendering
30	27	Screen study model - grid pattern / digital photograph
31	27	Screen study model - fan- shaped pattern / digital photograph
32	28	Material tests on rookit / digital photograph
33	29	Drawing of light and shadow - earlier opening studies / Charcoal on 18in x 24in drawing paper
34	30	Drawing of light and shadow - earlier opening studies / Charcoal on 18in x 24in drawing paper
35	21	Drawing of light and shadow - earlier opening studies / Charcoal on 18in x 24in drawing paper

All images made by author.