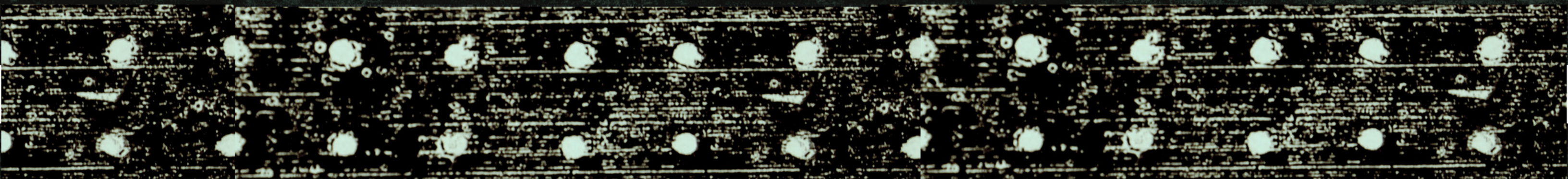
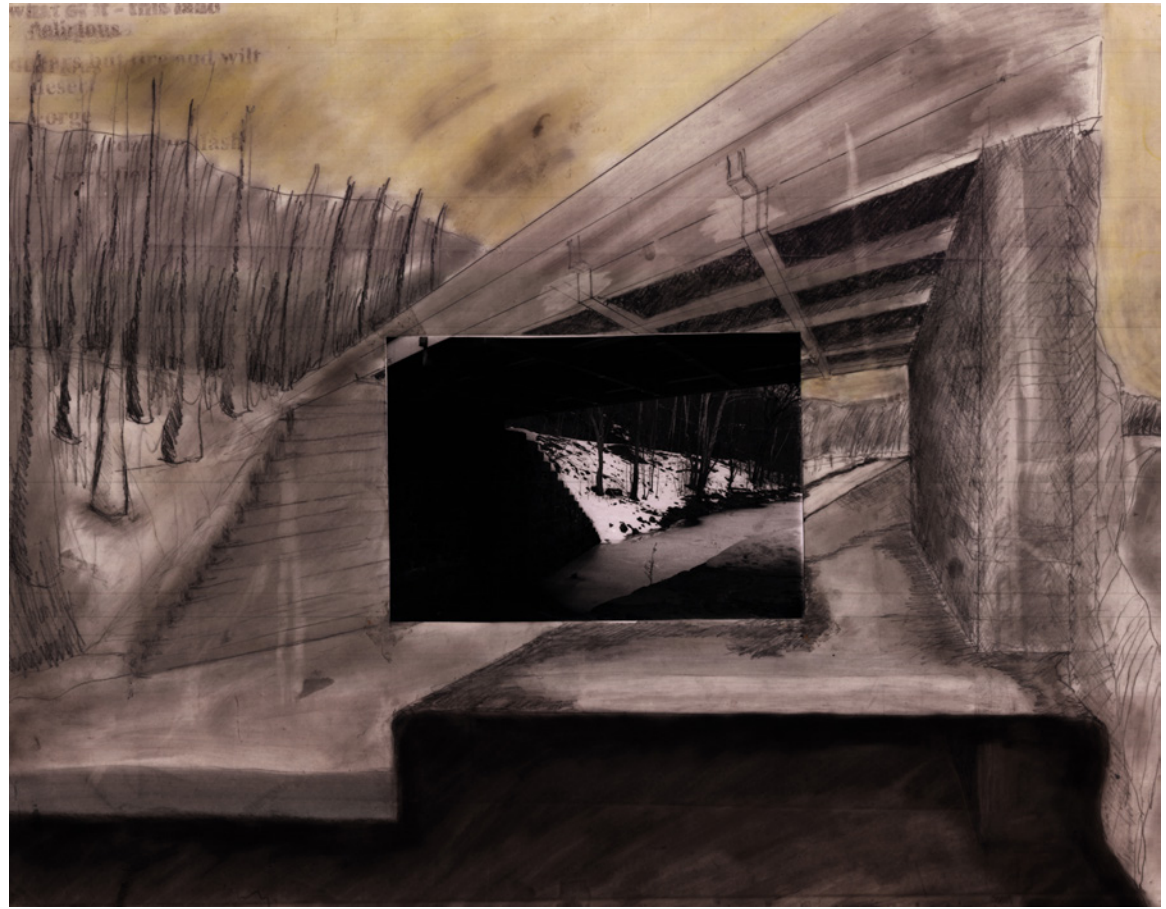


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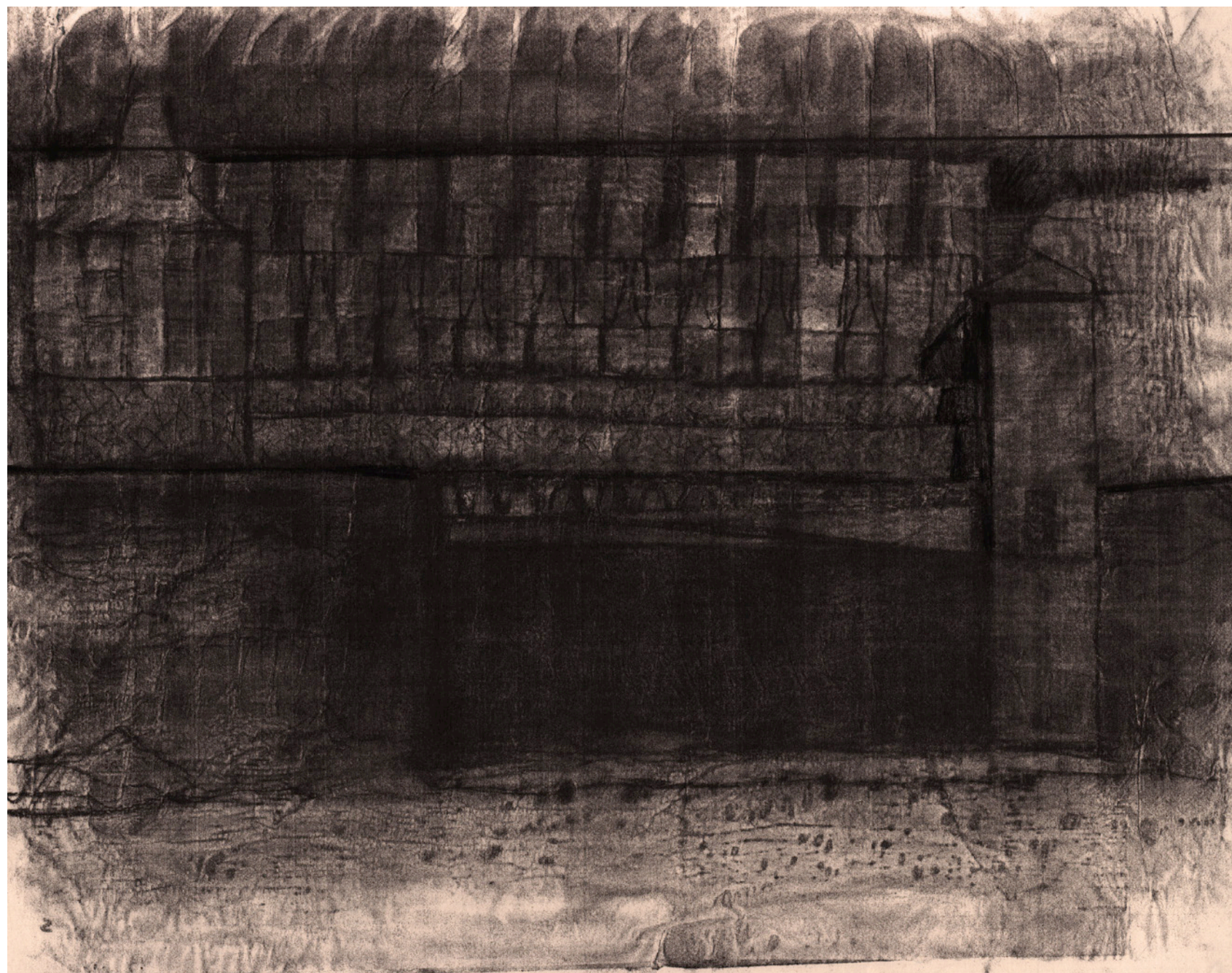
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PLi

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PLii

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Matron, Ruin and New Mineral

A Thesis of Iconic Materiality

Fekade Selassie Amare

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 Architecture

**Jaan Holt
Paul Emmons
Marcia Feuerstein
Carolina Dayer**

**June 30th, 2011
Alexandria, VA**

Key words: Materiality, Iconic materiality, Monastery, Benedictine order,
C&O canal

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Matron, Ruin and New Mineral

A Thesis of Iconic Materiality

Fekade Selassie Amare

Abstract

This thesis is an academic exercise set out to understand the secrets of Architecture. It is a compilation of a series of gestures made on behalf of Architecture. These gestures confront the materiality of Architecture to reveal the imprints beyond what makes the material exist according to the law of its nature, the imprints that reveal the material as an imprint for the human desire, the human will, and the human wish, for the material as a tool of representation and interpretation, thus the human thoughts, the human purpose and the human work.

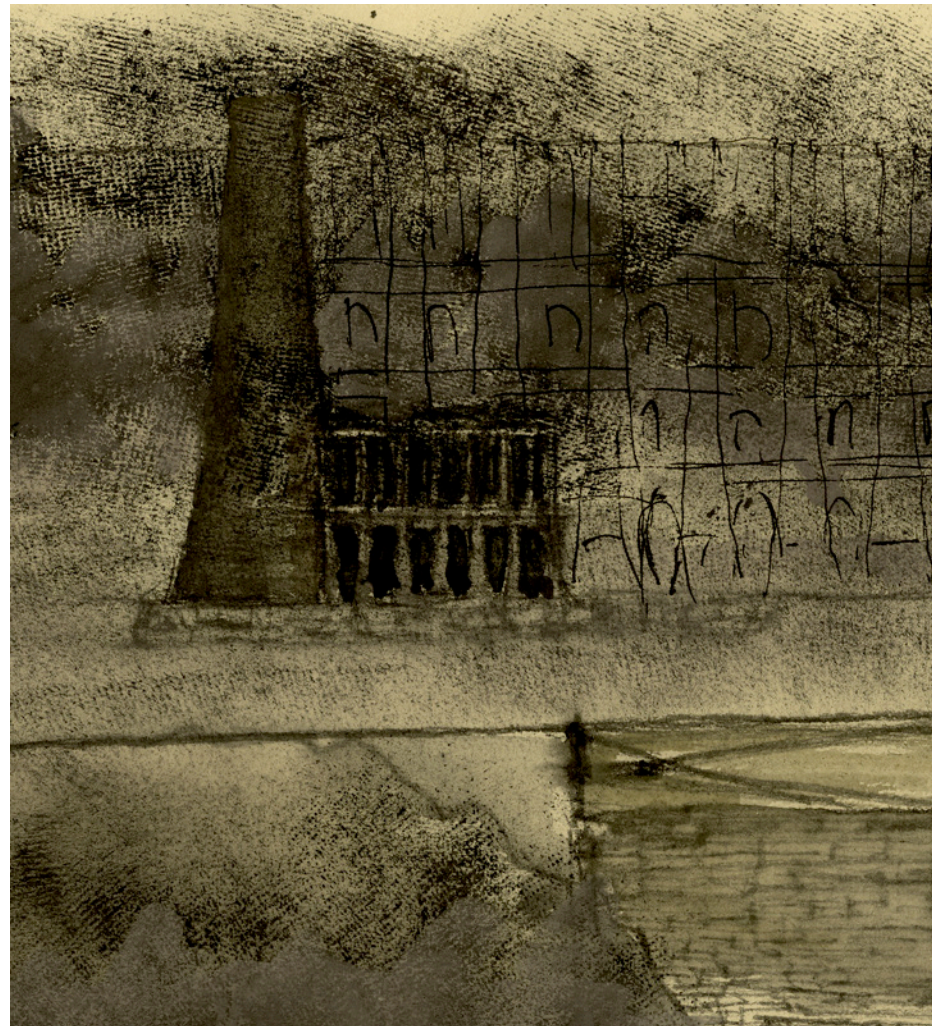
Explained in terms of space or environment, in terms of form or function, Architecture is never quite fully and satisfactorily understood. These terms reveal their anxiety about the mundane and the prosaic in the material constituents of Architecture. They tend to inadvertently distance themselves from the material seeking to appeal to the conceptual.

As much significance as the conceptual and the intangible contribute to the principles of Architecture, this thesis revels in the tactile, the vivid, in what is all together sense perceptible, the real, the present. As much as it regards the secrets that reside in the divine and in the spiritual, it is eager to find them embodied in its material reality. Truth, poetry, beauty, all things conceptual, that reside in abstract immaterial form beyond reach in the upper ethers, are afforded by Architecture to exist within a corpus.

Without the material imagination, one is prone to participating in the exercise of Architecture, with undue weight given to its form, its shape, its geometry, to how readily it will serve a functional need, a need that seems to reduce life around it to that specific act, overlooking what will eventually reside alongside us in matter.

Without the material imagination, one is prone to readily accepting what modern technology or modern alchemy can afford this exercise of Architecture thereby readily adapting techniques and systems without careful thought. Without the material imagination, one is prone to overlooking the prima materia¹ and the primordial architectural gestures, and thereby unduly and unwisely willing the material to conform to the conceptual. Without the material imagination, one is prone to overlooking what is in the nature of a material and thereby missing what its inherent beauty informs us.

Along with trying to understand the iconic elements of Architecture, this thesis is also an investigation in its materiality. It is an exercise in trying to understand what confronting the materiality of an artifice reveals. It is an attempt to define architecture by man's endeavour to understand the creature, to understand the material presence, to unravel the mysteries of the material constitution and organization.



PLiii



PLiv

Matron, Ruin and New Mineral

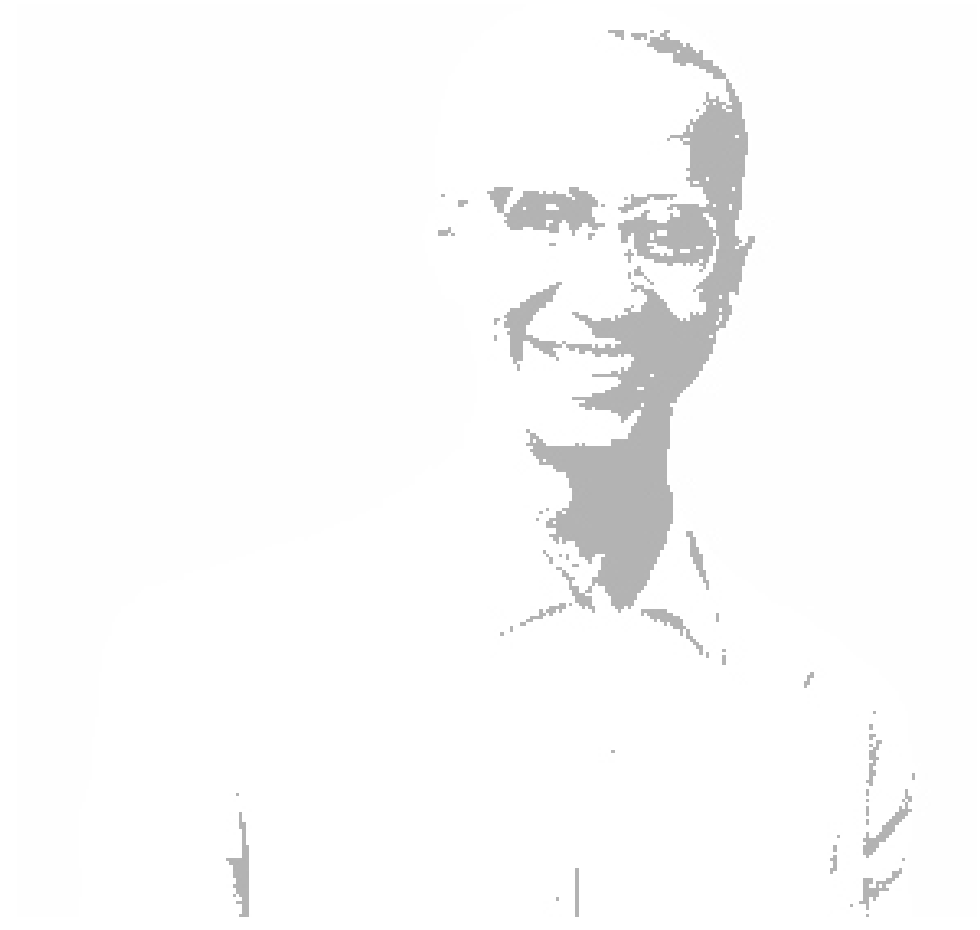
A Thesis of Iconic Materiality

Fekade Selassie Amare

General Audience Abstract

I used this thesis to better understand architecture by focusing less on the shapes of built objects and more on their constitution. I tried to focus less on the form that we see and more on the body that is present among us. Instead of making a specific use for a building the impetus for building, I tried to consider the experience one has in inhabiting an environment.

To conduct the above exercise, This thesis is structured with three main parts. The first part looks at the material environment and how it is organized before man intervenes. This part is what is referred to in this thesis as 'Matron'. The second part looks at man's intervention on the same environment from a time that precedes us, and is referred to in this thesis as 'Ruin'. The third and last part is referred to as new mineral. This part contains the main body of work relying on the research material from the previous two, to produce a design for a monastic complex for 36 Benedictine monks.



Dedicated to my late father **Amare F. Legesse.**



PLvi

Acknowledgements

To my committee chair Jaan
Thank you for believing in me. Thank you for the privilege of studying at the WAAC. Thank you for all the work you do to keep this gem of a school carrying along. Thank you for always keeping insight and inspiration about you. Thank you for your kindness.

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To my roommate and good friend Kyle, and to my good friend Jarri

To the entire WAAC and Gallery family.

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To Building College, Saint Joseph's school and Nativity Boys' School of Addis Ababa

To Brother Matthew Nylund of St. Anselm's Abbey

To Sam Tamburo and Ahna Wilson of the C&O Canal Historic National Park HQ



PLvii

1M2R3NM

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PLviii

II. Introduction

This thesis attempts to make a case for the understanding of Architecture as a material imprint, the constitution of which reveals human thoughts, decisions, work.

All creatures with a material constitution, human beings, other organisms, and inorganic minerals have their own constitutional vocabulary, by which they are made, built, made into creatures, made to exist.

If one was to investigate for evidence, clues, imprints, in a multitude of constitutions man made or otherwise one would find how formations, organisms, materials, beings, creatures, all things real, present, all things that exist as subjects of sensory perception, they will reveal the secret to their constitution, organization, what it took to allow how they are, what was displaced, what was assembled, what constituent part is asked if its fidelity, and what is transformed, and the agents and manners of transformation.

All things prior to human intervention have a truly material vocabulary of what their existence is like, as material citizens of a world. From the nuanced and distilled 'matters and organisms' as we understand them now, onwards along the scale progressively, to how they were understood by the early thinkers as the providers of solidity, fluidity airyness and fieryness, as the terra, aqua, aer and ignis²² of the cosmic order, as the planet earth.

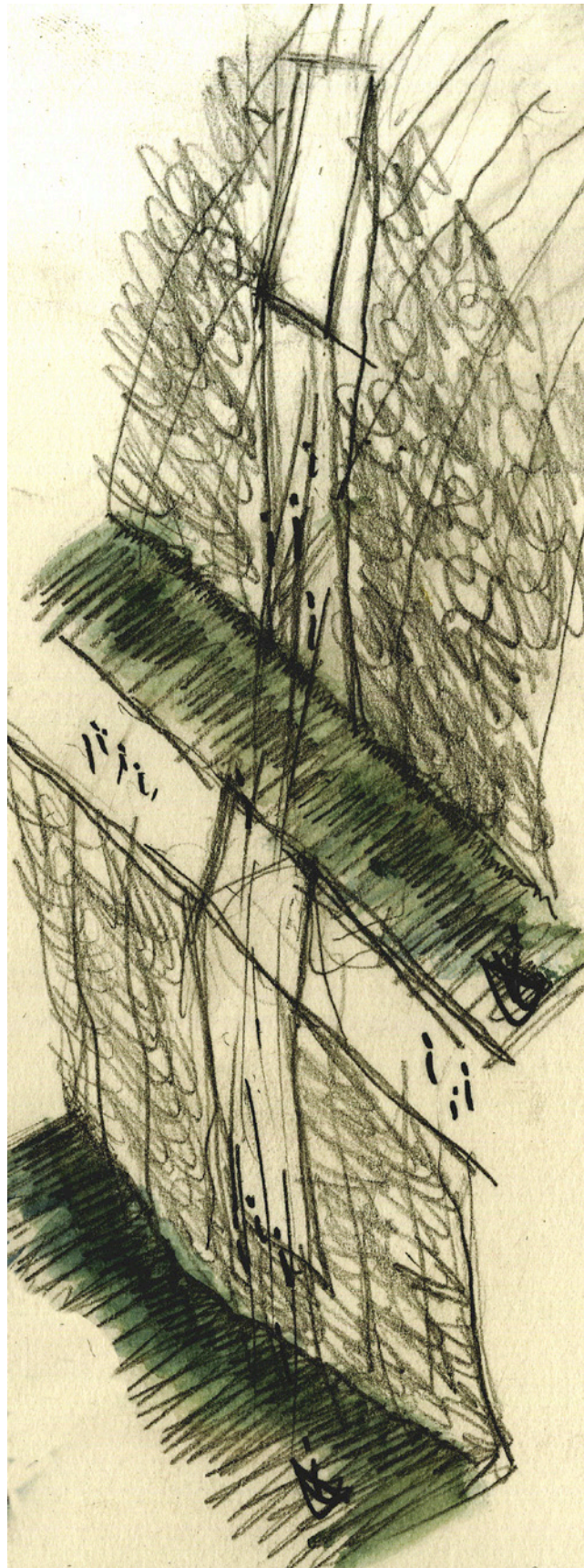
They exist as themselves with their own characteristics in a pure objective form, prior to the human desire to intervene, to will them into material representations, as tools of interpretation.

We come into being amongst them, sharing manners of organization and constitution with other living vessels of energy and biomass. What the material evidence of how nature organizes itself reveals is different from what human imprints reveal.

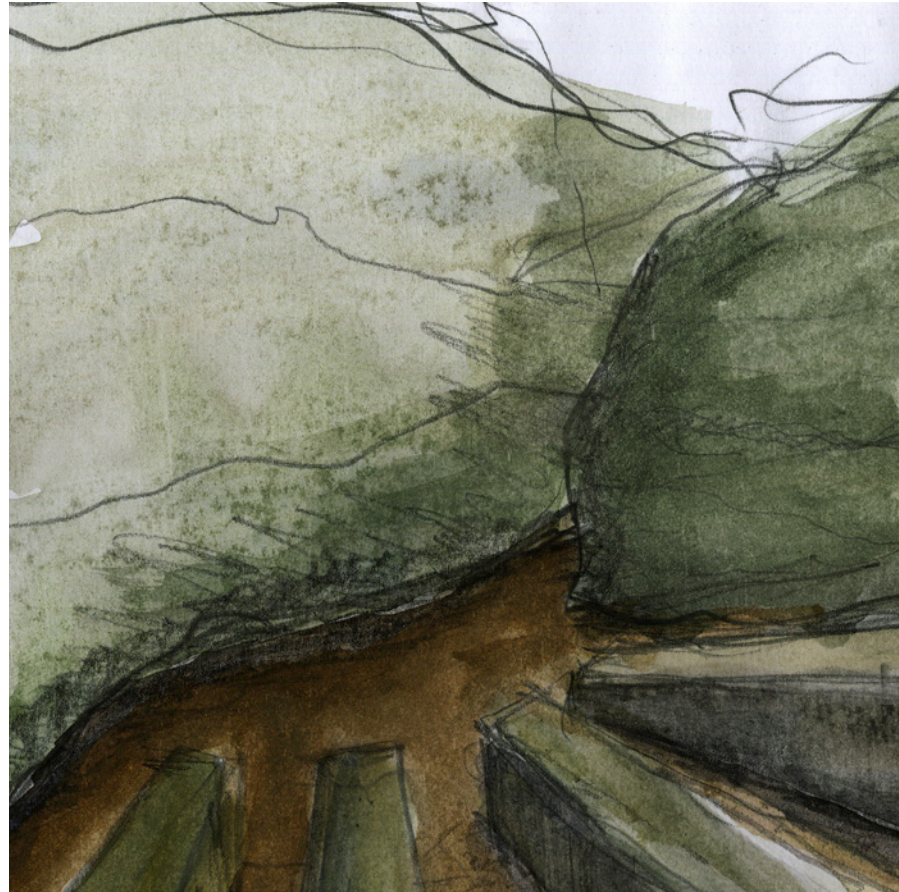
What is found in nature reveals the laws of nature. However rational or arbitrary. all natural beings exist as subjects and as creatures of this law. Their properties, their yields, their anomalies, suggest no will in their individual part, other than what can be discovered in the laws of nature, as to what drives the cycles in their existence.

The material seeks to exist and to exist alone. It is only through the human sensibility that we animate it. Only when the material seems to seek the honour to exist as a tool for interpretation, to carry in itself the will of a larger order, and when it is discovered as having been the subject of a transformation through human intervention, the material being exists as an imprint of a human story.

Architecture is another human artifact. It is a corpus with material constituency. This constituency, these organs in their solidity, in their aggregation, relent to give us cavities, a volume of air, merely another manner of materiality, when we see beyond the abstract 'space' that we reduced these cavities into.



PL1



PL2

The most prominent argument in this thesis is that, within the purpose of building, within the purpose of realizing this corpus is found a consciousness to the material, a desire to reveal the order by which the material is allowed to exist, by which it allows us to exist.

There is not a fully formed pure immaterial ideal initially, that the material is burdened to represent subsequently. The material informs the ideal. There is nothing that is known in an absolute sense before we confront the material. Our desire, our will, our hope, our sentiment is not surrendered to abstraction. Instead we use the material as fuel for the subjunctive as we do our intellect. Then it will be as though the material is as aware of the subjunctive as we are.

The traditional architectural vocabulary identifies the material giving us the component, giving us the basic architectural elements, giving us the assembled building, giving us the community of buildings, onto the next scale in the progression. In the case of this thesis, at every stage of the process, we find a creature, the previous version of which is a fragment of the next creature. Creature of a material anatomy that is animated by the human work, by organization, by displacement, by dispersion, by congregation. Creature with a soul in its own right.

This thesis is fueled by the fascination with the creature, by its presence, by its realness, by its vividness, by the torment of the desire to disassemble it and reveal the logic in the organization of its organs. It is the contemplation of the fate of its innards. It is speculating what is subject to transformation, and what takes the honor of fidelity.

The tools for the making of this thesis are a series of gestures, made in the effort to understand this creature that is born from the architectural investigation. The fragments from these gestures reveal rituals of the human regard to the materiality of Architecture. They carry imprints of the human thought and effort.

At the end of all the work that is done on behalf of these gestures, is found a cloister for 36 Benedictine monks along the C&O canal.

The start of the thesis was a mere gesture made in the interest of thinking more and learning more of what we are presented with, alternating between different scales, in terms of the specific place along a 184.5 mile long canal, in terms of large sections and eventually the entirety of the canal, in terms of the solidity and the fidelity of the terra, the fluidity of the aqua, the aer that allows materials to be displaced within it and the ignis that allows for energy to exist and for its material vessels to be transformed and animated, and the greater scale - the cosmos that allow all these different scales and states to exist.



PL3

All the different works that were created during the entire thesis period were fragments of a bespoke architectural corpus, the anatomy of which, the constitution of which was yet to be determined. This meant working on understanding the purpose for building, and what a function really is or means.

The thesis body has 3 different parts, the Potomac valley pre human intervention as a matron, the imprint of the canalers as a ruin, and the work for the bespoke cloister as a new mineral mass.

However, this work was not merely a bookend for my three years in graduate school. It is slightly less like a culmination as well. Much like an anthology, it rather regards the full body of a process over the entire stretch of the masters program, to explain how each step shaped my thinking and my understanding of Architecture.

The structure of this document therefore follows a timeline of different academic exercises, geared towards developing the ideas in my thesis

It is also important to point out that, the subtitle “A Thesis of Iconic Materiality” refers to a recurring Studio topic in the school program. Although this studio “Iconic materiality” spans a single semester, traditionally in the fall, and is within the confines of the design lab category, it is possible to qualify my thesis as a variation of this studio. The following section will further explain this concept.

Iconic Materiality - The Precursor

Out of the three years during which I studied at the WAAC, I was a commonwealth student for the first one, and a Master of Architecture candidate for the last two. I went along this academic journey with the general sentiment that everything in my pursuit shall contribute towards the thesis.

Particularly after being accepted for the Masters program, I sought to steer every instance of my educational experience towards laying the ground work for my thesis. Despite variety and breadth, I can not think of any subject matter, any form of training that we received, any research assignment and independent investigation suggested, that I didn't attempt to employ for my thesis directly or indirectly.

This had its own drawbacks. In some sense the lack of focus endangered the integrity of my thesis. The greater arch of this pursuit is understanding the ever evolving question that is Architecture. Not unlike the manner in which I was tempted to commit everything in the breadth of the program to my thesis, Architecture doesn't seem to want to restrain itself on what it should address. And yet in the end, Architecture is not about anything else, not about what it draws from, but about Architecture itself.

'Architecture is not about anything else, It is about Architecture' the Finnish Architect Mikko Heikkinen once said. A little over a year before I witnessed Mr. Heikkinen speak those words, at a similar event, another remark in the same vein, this time from my committee chair professor Jaan Holt; *'We never saw Architecture as something that came out of the movements but as something that came out of the individual.'* What I learned from these two statements was, understanding the individual's role to be as a subject to the greater pursuit of knowing Architecture, that it is equally imprudent to will Architecture into something outside itself nor into a reduced and unsuitably linear version of itself.

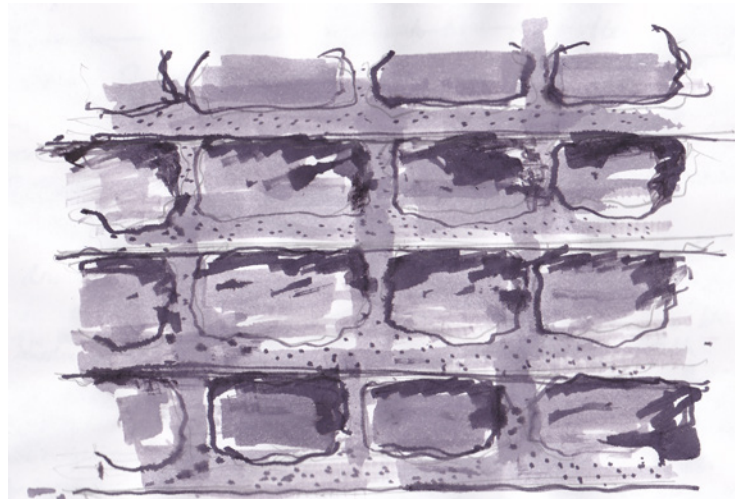
Linear or pointed as they may have been, some instances of my education were particularly important in establishing the argument and the process for my thesis. In this section, I will address three of the following four instances that helped shape my thesis.

The first is the studio project in the semester preceding the start of thesis. This studio project and my thesis work share the same site. This studio has however influenced more than the eventual selection of a place for my thesis work.

The second revolves around an area of research I selected for a treatise on the Earth that we had to write after studying 10 different Architectural treatises

The third is another area of research, more scientific in nature than Architectural, in as far as the two can be separated, a nuanced and more prosaic look at matter and nature as a precursor to the poetry in the materiality of Architecture.

The fourth and final part which is found in part 4 of this document is also the subject matter for a research paper regarding the ideas of function.

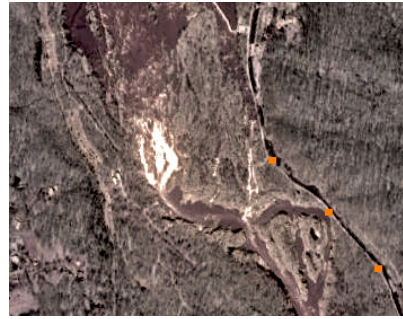


PL4

Part 1

'...I am convinced that real things do exist, however endangered they may be. There are earth and water, the light of the sun, landscapes and vegetation; and there are objects, made by man, such as machines, tools or musical instruments which are what they are, which are not mere vehicles for an artistic message, whose presence is self-evident.'

Peter Zumthor.



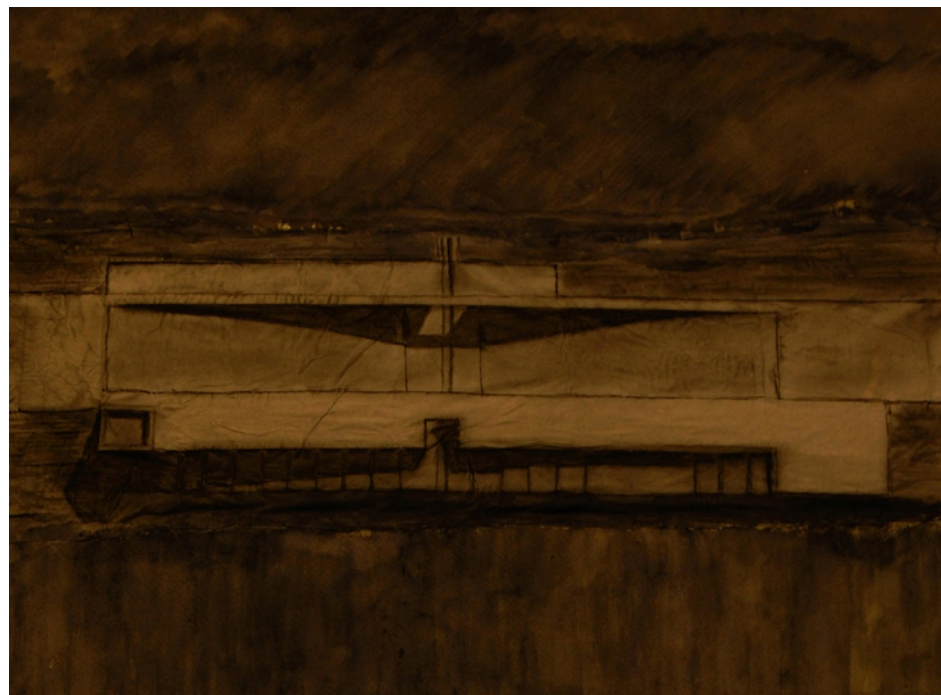
PL5.1



PL5 .2



PL5 .3



PL5 .4

Iconic Materiality

Because of the year I spent as a commonwealth student at the WAAC, I had accrued enough studio hours and was ready to start work on my thesis only after a semester as a Master of Architecture candidate. But the studio in that first semester was crucial to the subject of my thesis work. It was called Iconic Materiality. The description on the studio listings that is published at the beginning of each term was as follows.

'Reconstruction of material/ Composition/ Construction as a reality oriented to profundity and revealed by the Architecture of a Well-House/ Spring-House/ Camping Way-Station/ Fire/ Observation tower/ Roadside Chapel/ Solar Cabin/ Bath House. The intent of this choice is to allow a complete comprehension of Architectural elements: Floor-Wall-Column-Ceiling-Roof and chosen others. it is an exercise in starting over and knowing the events for the first time.....'

Although it sought small structures, the site along which participants choose a location for their exercise is vast. We were to pick a place along a 184.5 mile serpentine corridor of the C&O canal that starts out in Georgetown in Washington DC and ends at Cumberland in Maryland.

In an upcoming section I will delve further into the details of the site as it pertains to my thesis project. For now I will focus on the specific location that is shared by both my thesis work and the Iconic Materiality studio.

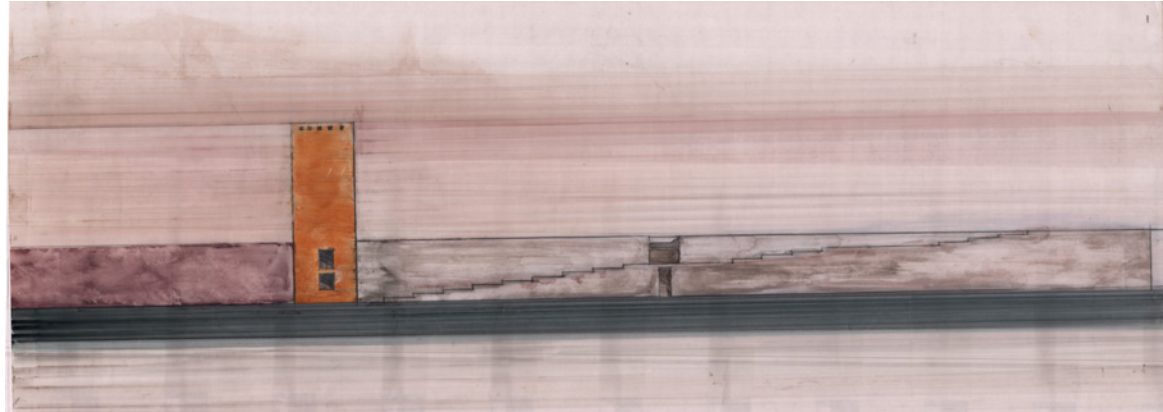
The place is found about one half of one mile south of the C&O Canal Historic National Park Visitors' Center (What used to be a Lock house and later the Great Falls Tavern) in Great Falls, MD. It is at a virtual mile marker of 13.9, between locks 17 and 16.

About a mile to the north west, the Potomac river is forced into a bottle neck by a cluster of Rock outcroppings hugging the east bank, known as Olmstead Island; and the land mass of the Great falls National Park on the west bank. This bottle neck is the spectacular Great Falls.

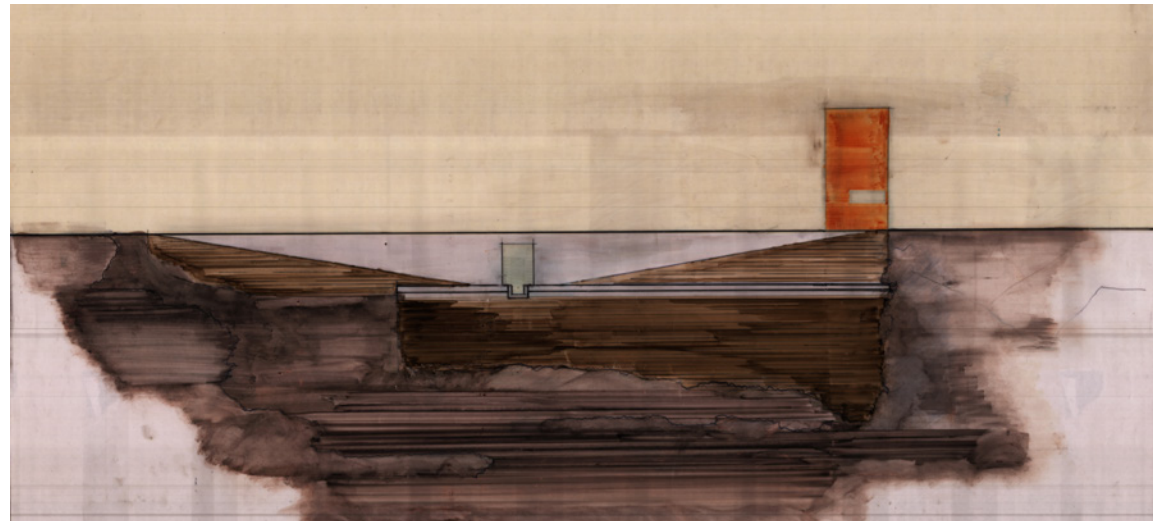
Right after the falls, the river makes a sharp turn eastbound before it is confronted by the valley wall in a little less than a mile, and is forced once again to turn southbound and enter a long neck that is known as Mather gorge. The geological evidence of this confrontation is the next set of Outcroppings known as the Rocky Islands, at the mouth of Mather gorge. It is here where the river spreads its tentacles and lingers before it once again collects itself and moves on through the gorge.

Around 1829, when the canal builders reached this location, their canal and tow path was intersected by a 70 feet drop to the river below behind the Rocky Islands. They had to therefore build a wall, to use both as an embankment to their canal and as a tow path. They built a second shorter wall to buttress the towpath / embankment wall.

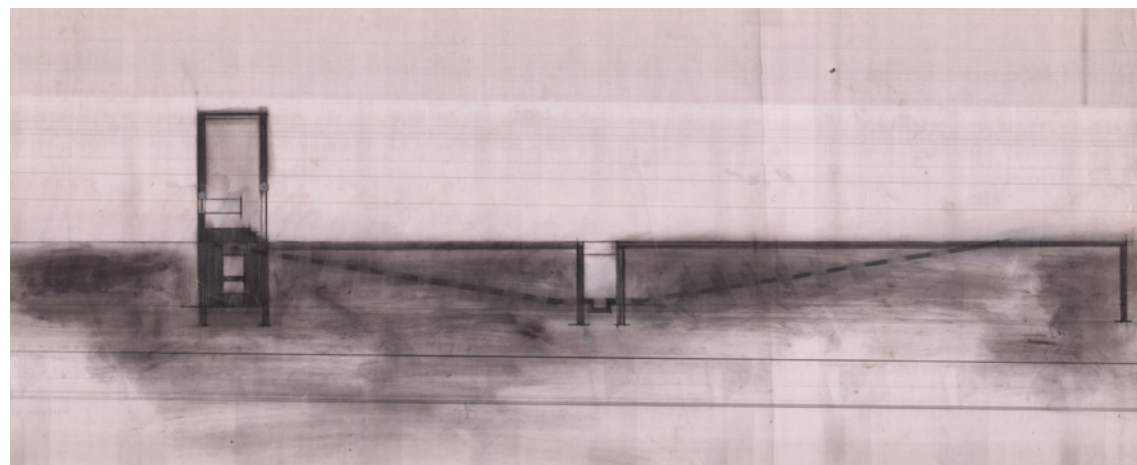
In seasons when the trees and shrubbery along the canal have full foliage, the only evidence of this drop is the wooden guard rail and the small C&O canal HNP sign depicting the history of the wall, also known as Mary's wall.



PL6 .1



PL6 .2



PL6 .3

Iconic Materiality

But once fall comes around, one can catch a glimpse of the edge of the buttress wall below, upon leaning over the guard rail. I also discovered later a small detour off of the towpath. It started out as a footpath and quickly turned into a steep cascading cluster of large boulders that lead to the bottom of the drop.

It was down here at the foot of the drop that one has the best view of the Rocky Islands. One could imagine that it would be just as pleasant a view from the top of the buttress wall, and a safer one at high water (although the river is known to have scaled the tow-path and flooded the canal at times). The buttress wall is about 10 feet shorter than the main embankment wall/ tow path.

What I chose to do for this project was a trio of installations. The central and most prominent one was at Mary's wall. The other two flanked this installation, along the tow path, each at a distance of 1500 feet from the central installation on opposite directions. These two secondary installations were to be the tactile gates into a three part experiential world.

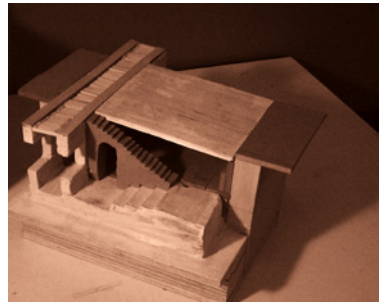
The human activities that I witnessed whenever I went to this place, be it running, hiking, leisurely strolling, biking, walking to find an outlet to the river with a kayak in tow, park rangers riding horses, and engineers driving utility ATVs, all were kept along the towpath. It was interesting to observe that all this linear traffic, was treading the line that is the tow path, with a drop into the river to one side and a towering cliff along the valley wall to the other. Walking past Mary's wall was like walking along the top of a narrow parapet, walking on top of a wall.

I wanted to pronounce this passage with these installations. All three were installed onto the towpath itself, to be walked onto, but also to be walked into.

The main central piece was comprised of two parallel walls, on each side of the towpath. a thin wall on the river side and a more substantial one at canal side. Inbetween these walls, the towpath dips down to level with the shorter buttress wall, and springs back up to its original height. As a result, at the foot of the dip, one can walk through an opening on the thin wall, onto the buttress wall. The buttress wall therefore becomes an overlook, with an unobstructed view to the Rocky islands.

The canal side wall has lapped onto it, a longitudinal leisurely stair. At the bottom of this stair is a fire tower. People who hike along the entire 184.5 miles and who are forced to set up camp at dusk can use this fire tower. They can walk down these leisurely stairs, and gather around the fire place at the foot of the tower. The parapet at the top of the leisurely stair is warmed by heat exchange from the fire place. They can lay down their sleeping bags and sleep on the parapet. During inclement weather, they can move inside the tower.

This central installation exists either as the middle piece of a tactile and experiential trinity for the hiker walking by, or as a destination for the camper seeking shelter. But both the transient and the staying have a permutation of experiences between all three installations.



PL7 .1



PL7.2



PL7.3

NORTH ▲

Iconic Materiality

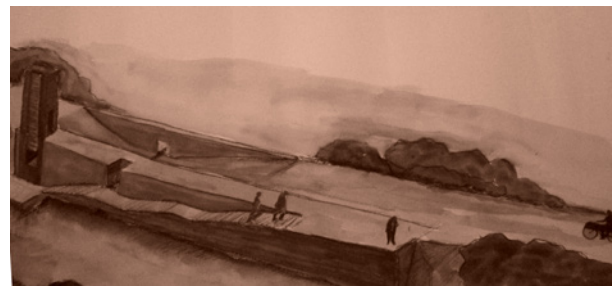
The northern flank has an installation of a life sized trough, the roof of which is level with the towpath. It is strategically placed between locks 18 and 19 where there is a significant elevation between the towpath and to the floor of the canal. There is a significant drop on the river side as well.

When the water level in the canal is normal or below normal, the water slowly sheathes across this trough onto the other side to fall into the river. If on the other hand the canal water rises, it floods the trough, and man has to give up the trough until water levels normalize.

Man returns to uncover the imprints of water, from the innocuous stain on the wall revealing how high the water was, to mild silting on the trough floors, to twigs, to drift-wood. It is a place that has a particular atmosphere, with a story to tell of each inter-changing of occupant. The water is not just a story teller. It is also a horizontal door, dictating with its level how far down man can venture into the trough.



PL7 .4



PL7 .5



PL7 .6

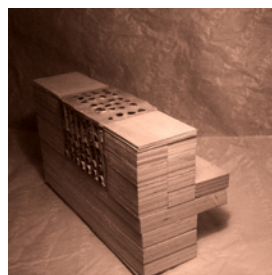
The southern flank on the other hand is a solid habitat shelf. Since at the vicinity of Mary's wall the towpath is built up as a wall, it needs reinforcing, or patching whenever necessary. This installation can be repeated as a reinforcement or as a repaired segment. It is a series of upright logs, interwoven with a horizontal cross-bracing of smaller logs. The spaces in between are filled with layers of pebbles, concrete and sand.

Because it is solid, its only offers a tactile experience for the human as one walks over it. The round cross section of the upright logs and the filling in between provide a different experience from that of the gravel on the towpath, heralding the arriving- to, or the departing- from this trio of installations.

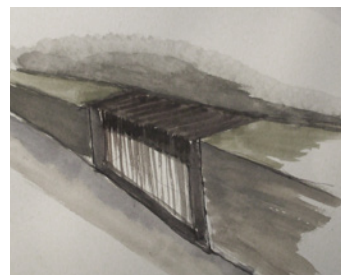
Plants and animals could on the other hand find this to be a habitat. The snake or the squirrel could hibernate undisturbed and undetected. A small plant specie can grab a foot hold on the filling and maybe find nourishment from seeping water or trapped silt. Insects and even smaller organisms can make it their habitat.

These installations are a cross section of experiences, atmospheres, moments, with variables subject to transformations and displacements, man as variable, time as variable, the physical environment as a variable.

These experiences are preceded by an exaggerated vivid environment with a progression of scales, a ferocious river, a massive gorge, massive cliffs, over a vast terrain, under a vast sky, and on a comparative scale of human intervention that is the canal and the towpath. It is where nature reveals its vivid bowels, and is followed by the human imprints of how this vividness was negotiated in respective scales.



PL7 .7



PL7 .8



PL7 .9

SOUTH ▼



PL8

Part 2

“...For if the intervention is to find its place, it must make us see what already exists in a new light. We throw a stone into the water. Sand swirls up, and settles again. The stir was necessary. The stone has found its place. But the pond is no longer the same....”

PETER ZUMTHOR

The beautiful Matron and The forlorn man's desire

This section is about using The matronly earth, the ruins that preceded today's experience and the new mineral of our new intervention as an instrument for thinking.

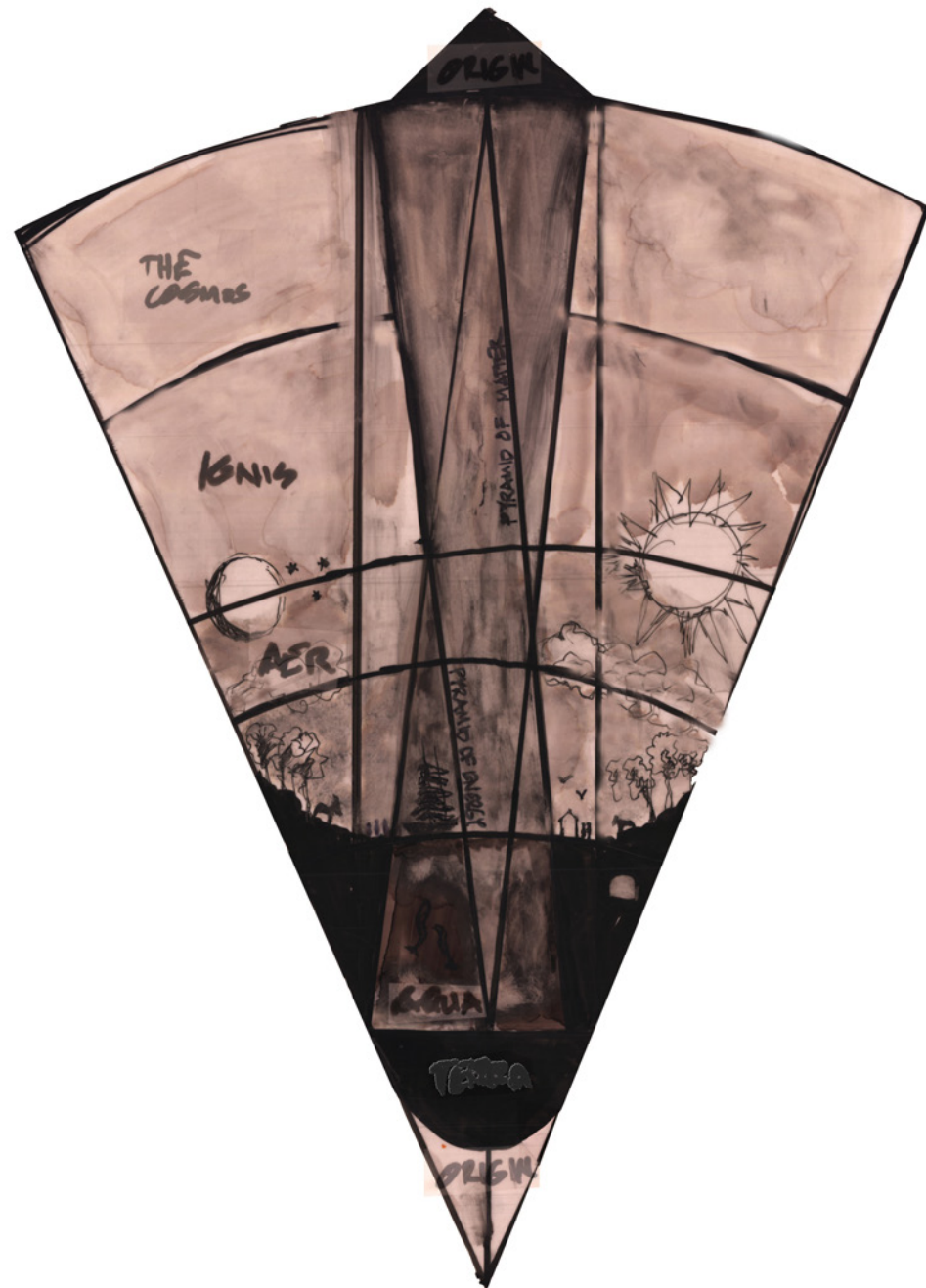
In a way it is thinking about the concept of place, time and man, in varying scales.

The matron exists in different scales, each scale being at once overwhelming and diminutive in their respective contexts.

Matron is the site, or the river valley, or a segment of the canal within a series of locks, or the entirety of the canal, or the earth, or the cosmos.

2.1 Earth and the Cosmos

As we saw in the previous section, the installations exist in the realm of Mary's wall vicinity. The canal and towpath exist in the realm of the Potomac valley. The valley exists in the realm of the greater physiographic provinces, which exist in the realm of the greater *terra*, which in turn exists in the realm of the cosmos.



PL9 .1

Alternating between scales from the elemental to the all encompassing is a consequence of the place that is the Potomac valley. One is to walk on a 22 feet wide parapet, on top of a random rubble wall. On one side is a ferocious river unraveling the bowels of the earth that tries to contain it, while on the other side there is a canal at the foot of a cliff, fashioned by the human hand to tame this water. It is a vast and vivid scene, where framing it with human references could prove to be a challenge.



PL9 .2

The markings and the milestones are so far apart and out of the immediate vicinity that one can not help thinking of the place, along with what is not immediately observed. It is only natural to seek a mental and physical vantage point that reveals the greater environment. Even the locks and the lock houses, six of which are congregated around this place in close proximity to each other than usual, are graduations of a scale larger than the ones found in urban environments.



PL9 .3

On one end of this progression of scales is found the earth and the cosmos. But the earth is not just an abstract idea of a planetary arrangement. The earth is also composed of the *prima materia*. The earth is also a flatness (levelness), it is a solidity, it is a fidelity. It is a stage. It is a matron for place. It is a matron for nature. It is a matron for matter, a matron for energy.

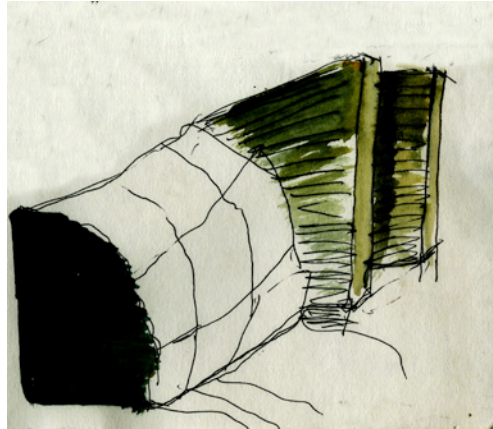
In the fall of 2010, we reviewed 10 Architectural treatises in a History & Theory seminar. In the end, each student wrote an 11th treatise on a topic of their choice. It was a result of the above experiences and thoughts, that I selected the Earth as the chosen element for a treatise subject.

While I stood on here on the towpath thinking, I was conscious of the city tempered by man, ordered and rationalized. The vast vivid world of the towpath, with its stones, water & trees, makes me feel forlorn, making me miss the familiar despite its own convincing beauty.

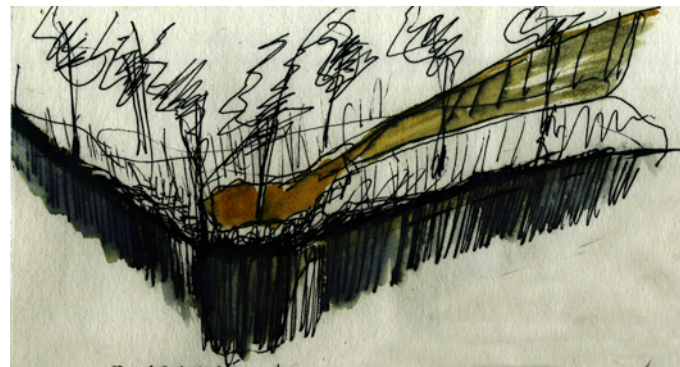


PL9 .4

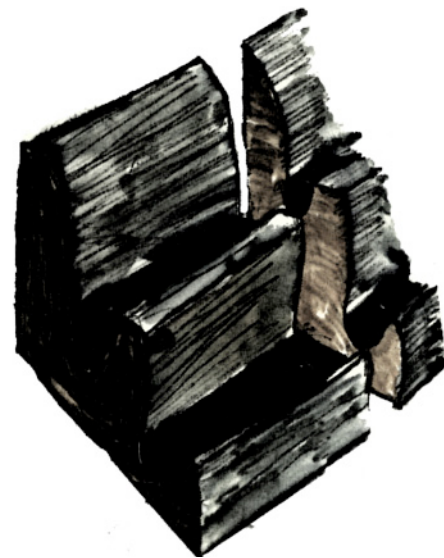
While I leave this place and seek refuge in the city, I try to confront and temper the canal as an academic exercise.



PL10 .1



PL10 .2



PL10 .3

But what were the primordial thoughts and gestures like? How were places divined from such vastness in ancient times? How much of this floor and this world was in the human consciousness over the periods?

The earth : The immediate floor underfoot

In ancient Architectural treatises, there are references to the earth, as the immediate ground (terra) or as a constitution of the prima materia along with aqua, aer and ignis. From immediately what is underfoot humans sought life and fertility, and from the surrounding environment they sought the right amounts of moisture, breeze, and heat.

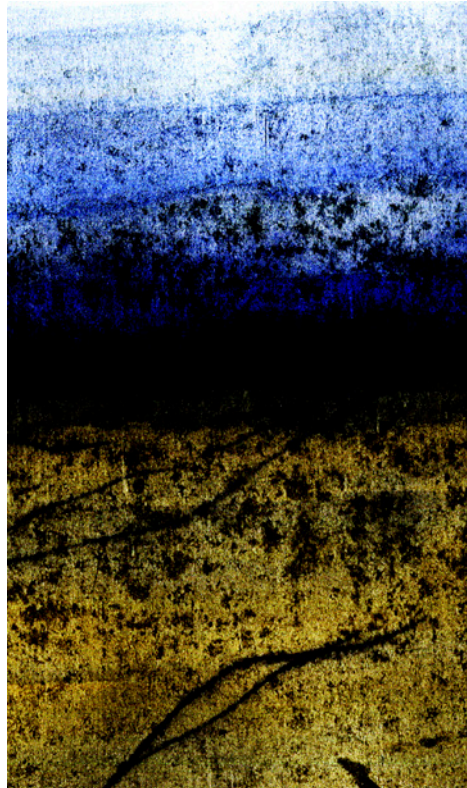
Even from the earliest Architectural treatise, Vitruvius explains in Book - I, the healthy site as *high, neither misty nor frosty, and in a climate neither hot or cold, but temperate; further without marshes in the neighborhood.*¹

Because of the fleshy warm body of man and land animals, it was believed that their make up was *moderately supplied with the elements of air and heat, and having less of the earthy and a great deal of moisture*². This belief indicates the recognition of the earth as the source of solidity . Man believed in the earth's fidelity and durability, and sought solid ground to place the foundation for his buildings. This durability was to be assured when *foundations are carried down to the solid ground and materials wisely and liberally selected.*³

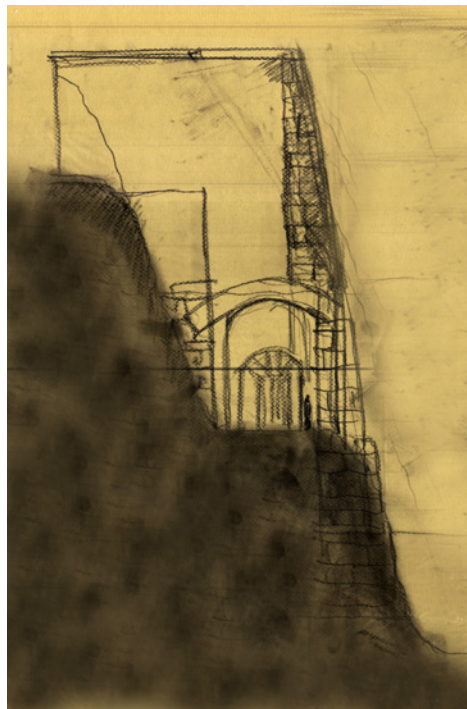
While the earth was recognized to provide solidity, its inconsistency was also acknowledged. Vitruvius instructs in Book III that, *if however solid ground can not be found, but the place proves to be nothing but a heap of loose earth to the very bottom, or a marsh, then it must be dug up and cleared out and set with piles made of charred alder or olive wood or oak.*⁴

As well in Filarete's treatise, Book - II describes the site of the city as a *salubrious place that is healthy and also fertile. At least there is the wherewithal for man to live.*⁵ For what it provided for human subsistence, the earth was believed to be alive and hence *it should be full of all that gives life to man.*⁶

Filarete explains in Book IV , how some of the bounties of nature shall be committed to the foundation as a cornerstone laying ceremony. Vases were filled with millet, and wheat or grain, water, wine, milk, oil and honey. They were covered with paintings that depicted the three fatal goddesses, Clotho, Lachesis & Atropor *above whom nothing is written but life and death .*⁷ Each item signified a fundamental aspect of life, water for its purity and lucidity, wine for its benefits in its modest use, milk signifying a distilled blood, oil in its rise above water signifying man's dominion over those smaller than itself, olive signifying victory and peace, and honey for its sweetness and many uses.



PL11 .1



PL11 .2

The Earth: The larger World and the cosmos

Along the range of the human perception of the earth lies what is immediately underfoot, on to the immediate environment and on to what is beyond, on to the world, on to the heavens, and the cosmographical order.

One of the earliest and most rudimentary cosmographical orders is the Aristotelian system. It divides the universe into the mundane and the heavenly. The mundane, contains earth water air and fire, the arrangement of which is dictated by the heaviness versus lightness of each element. This formed a sub lunar *elementary region*,⁸ while the celestial sphere outside the realm of the mundane was the *heavenly region*.⁹

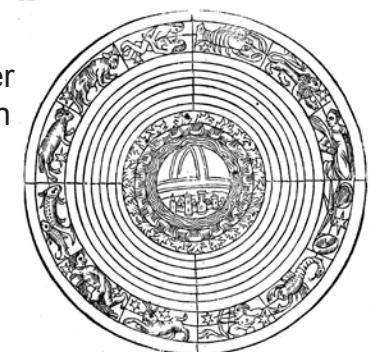


PL11 .3

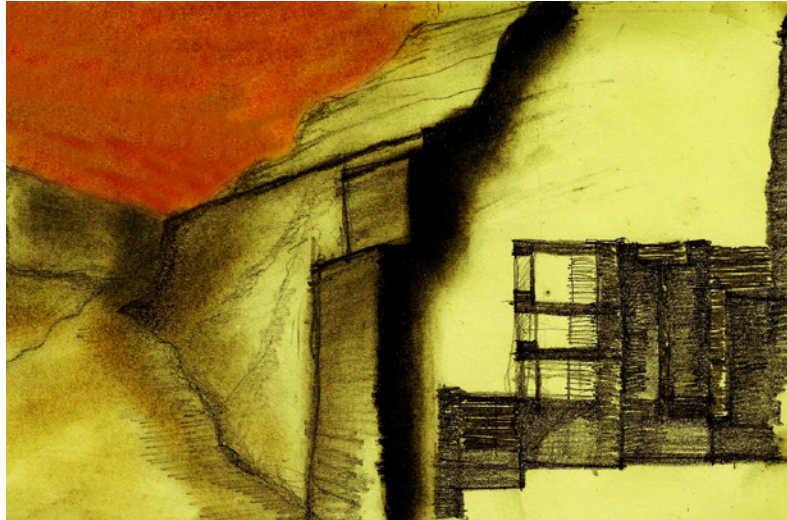
Vitruvius writes in Book IX, that *the heaven revolves steadily round earth and sea on the pivots at the ends of its axis*.¹⁰ Different regions of the earth were characterized by different environmental properties according to their positions in relation to the cosmos. This is according to Vitruvius is *because 'one part of the earth is directly under the sun's course, another is away from it, while another lies midway between the two. Hence as the position of the heaven with regard to a given tract on earth leads naturally to different characteristics, owing to the inclination of the circle of the zodiac and the course of the sun'*.¹¹

The prima materia remained as substantial elements in the center of the universe through the different periods. Renaissance cosmographers believed that the quality of these elements resulted in the different meteorological phenomena. The air was believed to be hot at the top from the fire above it and hot at the bottom from the sun's reflection on earth, leaving the middle air cold and making the vapor rising from earth to congeal and produce rain and snow. Believed to be out of reach of these meteorological phenomena, the heavenly regions were assumed to be the *incorruptible fifth element*.¹²

While there are iterations of the cosmographical order that use a layering system placing the sub lunar earth at the bottom, a sphere of several planets and fixed stars in the middle and the Christian heavens at the top, the prevailing stratification was concentric with the earth at the center, or geocentric.



PL11 .4



PL12 .1



PL12 .2

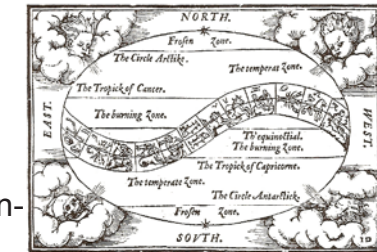
Beyond the sense perceptible and the elemental, cosmographers employed the Pythagorean theory. They identified the sphere, with a surface area that allowed it to have the maximum possible volume out of all shapes. Being circular, with no beginning or end, it was perfect and godly. This proof of the world's roundness argued *the universe must be spherical because God, working from the archetypal idea, would not have created anything short of perfection. The world's sphericity reflects his justice and bounty and eternity.*"¹³



PL12 .3

As the authority of the earth's sphericity was established, the two dimensional geocentric system developed into an armillary / hoop/ bracelet system. The earth was represented by a three dimensional sphere centered on its axis and surrounded by a network of bracelets signifying the arctic, antarctic, Cancer, Capricorn, equatorial and the zodiac circles.

The armillary system identified the earth's five climatic zones, the frigid zones at the Arctic and the Antarctic, the temperate zones between the tropic of cancer and the Arctic, and between the tropic of Capricorn and the Antarctic, and the torrid zone centered on the equator between the tropics of cancer and Capricorn.



PL12 .4

It supported however a theory of the earth's fixity. As the sun moved from east to west, it was believed that the earth was fixed and the celestial sphere on the other hand with its stars and planets, and the heavens moved around it.

The foundations of the cosmographic order varied from Aristotelian and Platonic philosophy to Pythagorean mathematics, from mythology to Christian symbology. Other than the geocentric and the spherical representations, different cosmographic diagrams employed the zodiac signs, ecclesiastical references and the human body.

In some instances the human form and the human body were used to create a human microcosm as a representation of the higher order, the mind and the heart typically corresponded with the heavenly, while the bowel and the reproductive regions did with the mundane.

The substantiality of the elements however, and the earth/terra maintaining a central or otherwise prominent place remained to appear where relevant. One common theme throughout the progression of the orders was the polarity of the material and the non material.



PL12 .5



PL13 .1

One of the ideas from the armillary system of the renaissance with a scientific aspect is the identification of the major climatic zones of the planet, and how the air in the atmosphere is affected by the sun both directly from above and from the reflection from earth below. What modern atmospheric science would elaborate along the same line is that effects of atmospheric and oceanic circulation are fundamental parameters in determining climatic conditions across the globe. Moreover, these oceanic and atmospheric circulations are ultimately driven by the incoming sunlight.

However, another aspect of ancient cosmography, which is appropriately challenged, is the fixity of the planet. The earth rotating on its own axis daily and revolving around the sun annually creates a healthy solar cycle that allows for only 1% of the original influx of the solar energy is absorbed by our planet to drive the powerful atmospheric and oceanic currents.¹⁴ If the earth was fixed and was to absorb as much radiation as it would in a fixed position, it would have been inhabitable.

The Earth and the earth in a non - linear cosmology

Outside of the western cosmography and cosmic philosophy, there are very peculiarly constructed views of the Earth in different civilizations.

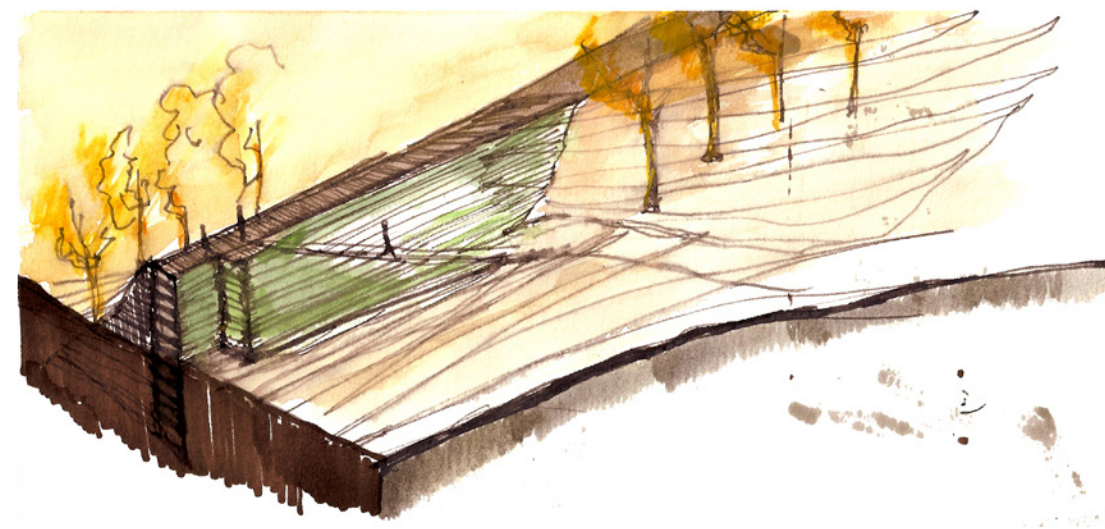
Where the heavens feature at one end of the cosmic order in the Christian west, the canopies of the Congo rainforest, which limits the view of the sun to scattered patches of light on the forest floor, curtail the views of the universe for the Pygmies.¹⁵

Whereas the bushmen in the Kalahari desert have the sky added to their cosmic strata. What is out of reach transcends the day to day and yet is believed to be participating in the human drama where the sun chases and melts the morning star.¹⁶

Whereas for The Pueblo Indians who live on plateaus of their cosmic order is based on the shape of the landscape in the clearing vista before them. Their earth was square and layered. Their cosmic construct had strong aspects of vertical dimension, location and orientation.¹⁷

Nomads in Siberia and Central Asia had multi-storied cosmos, each with a sky, earth and underworld, where the upper cosmos were slashed open by a meteor to form the sky.¹⁸

These and many other different interpretations of the cosmic order bring about a different notion of the Earth. What was the outer surface of the terra that humans occupied, the threshold between solidity and the ethereal, has now been inverted. The earth is an underworld.



PL13 .2



PL14 .1



PL14 .2

This non - linear stratification of the cosmos was a very important image in my mind. It was also an important milestone, greatly influencing the direction and the interest in the way of my thinking about Architecture. I had two different thoughts in trying to understand these linear and non linear cosmologies.

In the elemental cosmologies, with the transition from the solid to the lesser solidity, on to the pure and light, the real and the palpable lives diametrically from the ideal and the unattainable.

Towards the direction of the earth, to the ground, to solidity, lives the mundane and the cyclical. Man straddles the threshold, the outer shell that is the terra, and aspires to the heavens, to what is in the other dimetrical direction. All pursuit of the heavenly has a very aetherial representation. They are thoughts, lights, voices, geometries. They are abstract. On the terra, with solidity underfoot, the corpus in the air, in the light, in the space, is where man is alive, animated, an agent of the heavenly, made in the likeness of the heavenly god. When life ends, the corpus is committed towards the solidity of the earth and the spirit ascends towards the heavens.

The image of the stratified cosmos on the other hand, with the notion of the aer followed by another cosmic assembly of the earth and the underworld, playfully alludes to a respite from exponential airyness and lightness. The real and the sensible progressively transforming itself into an infinitesimal abstract state of the unknown, into an eternally unreachable immaterial distance, is jarring.

Architecture can not exist without the real. But it can not make sense of itself without the higher ideal, without the unreal, either. And it is this world of the ideal that always left me unsure of what I knew about Architecture. I never was able to fully accept the logic of a form that amplifies its subject, its geometry, its abstract interpretation, more than itself. I suffered from not even believing what I drew. There was a distance between my drawings and me. The lines were there, but the earth wasn't, the stone wasn't. The space was there, but the air wasn't.

My introduction to the material consciousness was triggered by this experience. Suddenly I remembered to turn to the gravel underfoot. Suddenly, imagining walking on the towpath, the story didnt begin at the line under my foot, but far below, where layers upon layers of the petrified, the stacked, the compacted, grew towards the surface.

It was very fortuoutus that at the same time we were reintrocucing ourselves to the basic Architectural elements in the *Iconic Materiality* studio. Suddenly the sweeping and the monolithic had a lot to answer for.

2.2 Earth - thoughts on Matter and Nature

This section finds itself on the other end of the cosmic scale from that of the previous one. The heavenly side of the cosmic spectrum, by the nature of its scale and location, tends to exist in a distant and intangible world. Therefore its materiality could only be extrapolated. As we descend down the cosmic scale however, we find ourselves in an environment where the prime elements do not typically exist in homogenic autonomies.

Our immediate environment is a diverse manifold of material creatures built from organic matter and inorganic minerals, acting as vessels of matter and energy. The material creature can not be simply reduced to a mere linear construction of its smaller parts. It is also a creature with innate nature that allows for degradation, regeneration, reproduction, and all forms of transformation and transfer of energy. The nature of the transformation itself is as vast as the extents of the material realm.

This nature dictates manners of transformation from the mere physical displacement, that allows for dispersment and congregation, to complex agents of alchemization. These different processes do not just reveal how materially constructed beings achieve a mere physical transformation, but they also reveal a system in which there is a generation, maintenance and exchange of energy through these transformations.

Matter and Energy

Perhaps the primordial agent of transformation and the most prominent in the imagination of the architect is that of fire and heat energy. From the symbolic significance of the fire in the divination of the ancient city, to the building as a vessel for air, the tempering of which is conducted by regulating the presence and removal of the heat energy contained within it, fire and heat is the spirit that animates the architectural elements.

In his book - **'Fire and Memory'**, Luis Fernandez - Galiano makes a case for the notion of Architecture as something beyond a mere physical accumulation of the physical, mute and immutable object. He argues that energy is vital in the process of transforming matter beyond mere displacement as follows:

*Architecture as an artifact of the human environment regulates natural energy flows and channels the energy accumulated in combustible substances for the benefit of living beings who inhabit it. Architecture as organized matter is subject to permanent deterioration and needs continuous supply of materials and energy to enable it to construct its form.*¹⁹

Conditions of matter and energy are met in our material resources. They create the material structure They also allow their energies that they gathered from the sun to be exploited through combustion. The aspect of the ancient philosophy that excels by avoiding the mistake of separating matter and energy is one that draws parallel between fire and the body. Like the body, fire is warm. Like the body, fire consumes matter and leaves behind waste. Like the body, fire went cold when it died. The body had soul and the fire was believed to be the embodiment of the city's spirit. Beyond the foundation rites and the rites of occupying a newly divined tract, the hearth was the altar of the city.



PL15

A times I feel as if I am spread out over the landscape and inside things, and am myself living in every tree, in the splashing of the waves, in the clouds and the animals that come and go, in the procession of the seasons. There is nothing...with which I am not linked.

C.G. Jung



PL16

The larger system of the matter- energy flow under which other species and other energy processes are included is the ecosystem. While the main form of matter-energy flow is through circulation of flesh/ biomass in food webs, inorganic matter is as crucial an element in the flow of energy and materials as plants and animals.

In '**A Thousand Years of Nonlinear history**', Manuel De Landa explains *living creatures and their inorganic counterparts share a crucial dependence on intense flows of energy and materials.*"²⁰

De Landa explains that all organic species and their inorganic counterparts are simply manifestations of the flow of energy: *We capture the flow at birth and release it again when we die to be transformed into a new batch of raw materials by micro-organisms.*"²¹

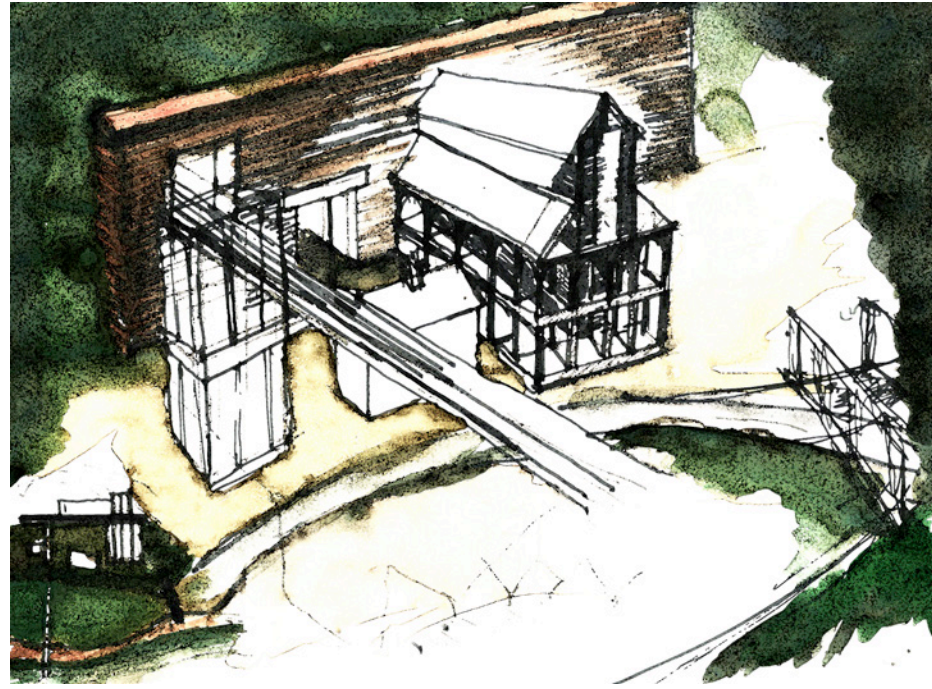
In De Landa's argument, man and animals, as a vessel of matter and energy, have a role that is entirely different much less significant from their place in the contingent systems of renaissance cosmography

By the merit of their efficiency in energy generation and transfer, it is rather plants are the foundation of any food web. De Landa designates plants as the only non parasitic creatures in the ecosystem, *re-mineralizing and re-injecting dead plant and animal bodies back into the web and by processing some of the solar radiation through photosyntheses.*"²² De Landa indicts man and higher animals, *mere fancy decorations*"²³, as consumers transforming biomass with efficiency inversely related to their size.

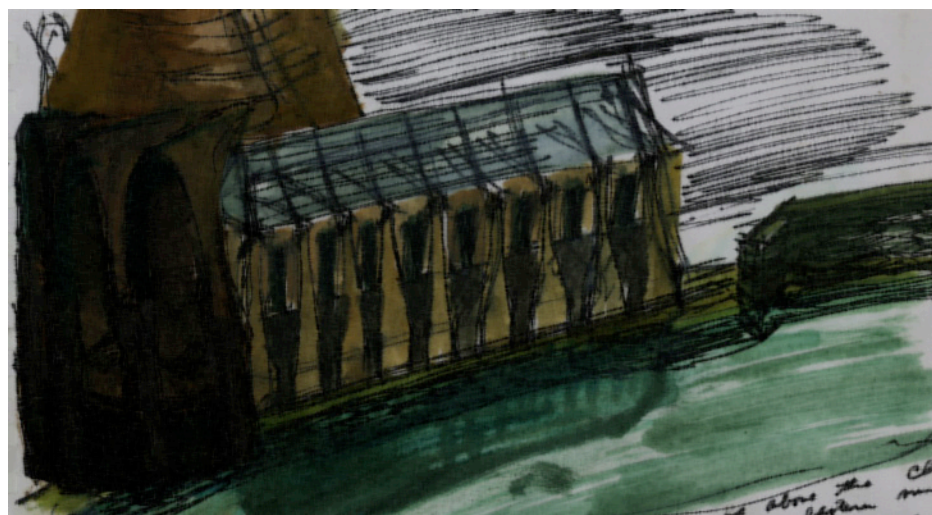
The different ecosystems prior to human intervention are structured by distinct groups, in each of which, complementing species and non organic matter are arranged to form a stable matter-energy flow. These *self-organized meshworks*"²⁴ could become unstable whenever a new specie is introduced and. The instability increases with the heterogeneity and increased diversification of the ecosystem.

This heterogeneity and the change in the energy process is as a result of intensive farming, domestication of animals, and eventually the creation of cities. The City as a large mineral accumulation in its physical presence stores heat from the sun during the day and releasing it during the night."²⁵

The city's properties as a heat island not only come from being a *large mineral infrastructure* "²⁶", but also from being an *industrialized* system that creates a network of supply of edible biomass from the adjoining villages"²⁷". Human habitat becomes a concentric network with a mineralized and industrial heat island at the center radiating out towards spheres of farm & pastoral land and forest respectively.



PL17.1



PL17.2

The urban ecosystem becomes a homogenous sub-system resulting in shortening the food web and eliminating intermediaries. Its inhabitants direct edible biomass directly to themselves and to their domesticated animals. The matter-energy flow in the larger ecosystem is altered by this urbanization with the energy and nutrients directed towards a single point at the top of the web. With the increase of population increases the sustained increase of this homogenization of the food web and the heterogenization of the pre-intervention ecosystem.²⁸

On Nature and the Real

As shown above by the theses of Galiano and Delanda, astute and almost forensic methodology could be employed to philosophical thinking.

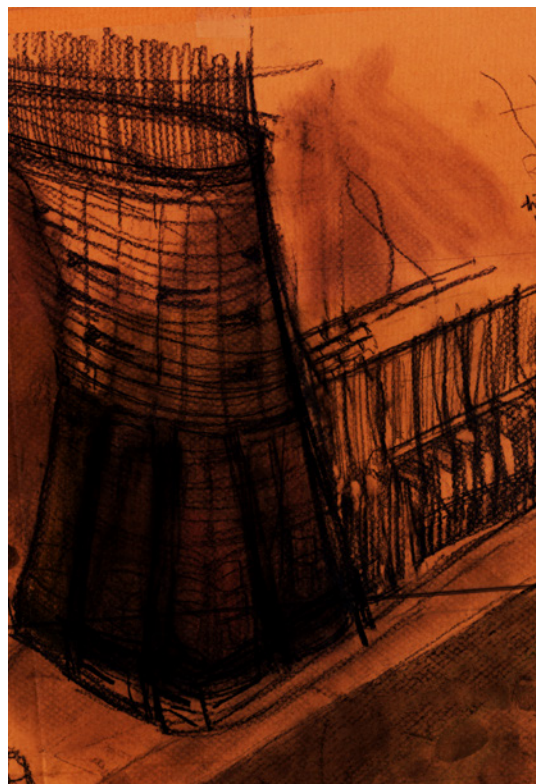
The above theories encourage thinking in terms of the law of nature of the material and the real and tangible creature. Regarded and understood either as scientific theory or historical philosophy, they reveal the true immutable nature of the material existence without relying on abstractions.

I believe that in this day and age, we use the words nature and reality with such liberty that their meanings become ever so ambiguous. It was another fortuitous moment for me to come across De Landa and Galiano while learning about and thinking of abstract ideals that establish the nature and reality of different immaterial disciplines.

These natures, or laws, and realities can easily shift with the shift of their respective essential ideals. Where the shift occurs is also governed by the arbitrary decision of humans as opposed to an immutable law of nature. For example the nature or the realities of an economic model could change with the change in the value system of its fundamental driving ideal. The transformation of matter on the other hand occurs as per the unalterable laws of nature.

Architecture, very much dependent on the material reality to be allowed into presence, should therefore be a discipline that makes a case for its immutable, material, real nature. My problem in understanding Architecture stemmed from, its ideal by primarily residing in a separate world from the materiality that constitutes it. Where Architecture is made to exist solely as a vessel for a specific cultural or individual ambition, unanswerable to these natural and cosmic laws, an idea achieves full growth while materially unconscious and purely in the abstract. The material that has primacy in its own right, is now merely an agency willed into a form to carry out this ambition.

In such instances, the law of nature that dictates is the law of the ideal, which could potentially be based on liberally shifting parameters, thereby allowing for liberal definitions of nature - the nature that is understood to remain immutable. In the interest of the specific place this thesis deals with, Let us consider the nature of the bucolic setting. What is defined and understood to be the nature of the bucolic is much less volatile than that of the city, with the fundamentals in the definition having somewhat universal elements.



PL18 .1



PL18 .2

The material nature of the bucolic surrounding has a certain enduring beauty, owed to a certain kind of truth. Dominating over the sparingly visible human imprints, it is still a raw primordial beauty. Man can understand this beauty that is without the vivid, urbane, cultural markers because within this setting is embedded a certain transcendental truth.

Unlike in art, the rational of this natural beauty is not subject to unwarranted shifts. The beauty of the wooded valley, the stream, the meadow, has steadfastly appealed to man over the ages. Man has never sought to challenge the truth in the bucolic beauty, to up-end it. Instead he has been trying to discover the truth behind what makes this beauty enduring.

Whether the explanation is of a mystical nature, attributing the secrets to the gods, or of a scientific nature, trying to establish the truth of the system, or the truth as a system, man has always sought to understand what he discovers, more so than will upon it what he desires.

Having built more and more of his surrounding, and what he builds resulting in the shift of this established definition of nature, the truth in the nature itself shifts along with his values. Therefore we can argue that the act of building can be either the act of understanding and discovering, or the act of creating a shift in a value system. With this shift, a creation materially constituted by an immutable nature relents to an ideal constituted by a value subject to its variables.

In the materiality of Architecture, thought and work realizes the built nature. The thought is both a gesture of understanding and strategy. The work is where the imprints of the thought are revealed in the material. Amongst what is not built by humans, in the creature is found the inherent truth of the part and the whole.

The inherent transcendental truth allows creatures to exist. And in this truth is found their beauty. The material in nature and the material in man make up the place. In other words, nothing should owe its material presence to the abstract ideal.

The phenomenon that is rain water leaving its mark in eroded soil is nothing but a prosaic imagery to the modern man. It is only relevant when it is willing to carry within this imagery something that needs to be interpreted. But in the very phenomenon there is a profound truth that can be traced from the lines of the erosion. The the built city, a corpus, is willed to owe its existence to economy, to war, to politics. These realities the modern man will readily accept as the very thing that allows the city to exist, not just as immaterial agents of transformation, but as essential phenomena, with their alterable and volatile variables, with their threat to the *eternal ideals embedded in matter*.²⁹

Despite the material ceding its primacy however, there is still the consequence of the unconsciously and collaterally created imprint on or in the bowels of the city.

This thesis is in a way trying to secede from this trend and in the spirit of *Iconic materiality* to re-examine the meaning of nature and beauty.



PL19

“..... And from this chasm, with ceaseless turmoil seething,
 As if this earth in fast thick pants were breathing,
 A mighty fountain momently was forced:
 Amid whose swift half-intermitted burst
 Huge fragments vaulted like rebounding hail,
 Or Chaffy grain beneath the thresher's flail:
 And 'mid these dancing rocks at once and ever
 It flung up momently the sacred river.
 Five miles meandering with a mazy motion
 Through wood and dale the sacred river ran,
 Then reached the caverns measureless to man,
 And Sank in tumult to a lifeless ocean.....”

Samuel Taylor Coleridge

2.3 Architecture tempers the overwhelming vastness

In the previous sections, We have seen the investigation of the matronly earth in varying scales - at a cosmic scale that examines the vast (E)arth as a relatively diminutive member of the universe, and the (e)arth in terms of its infinitesimally large number of constituents of matter.

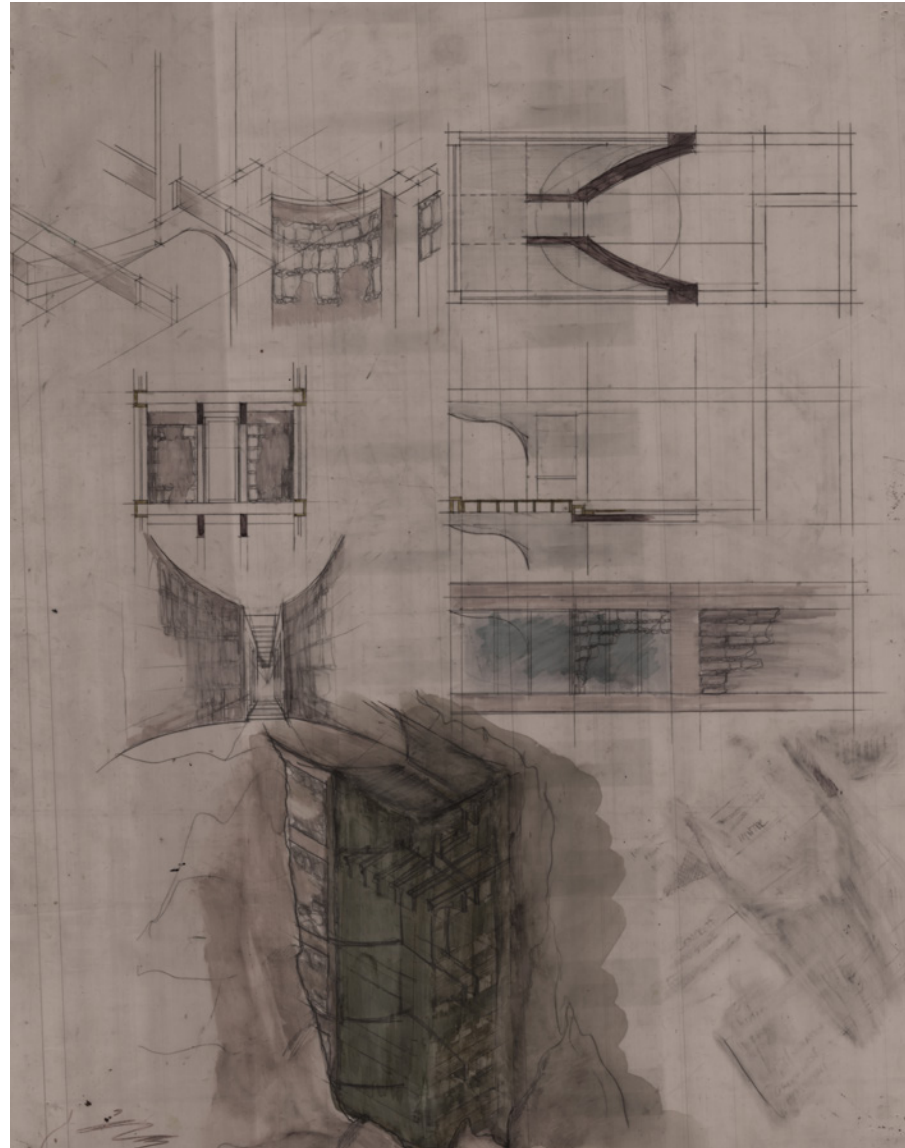
Before we delve into tempering of the cosmic scales, it is important to touch on the fact that there is beauty and comfort in the immensity as well. (E)arth in its sheer size provides a sense of invincible and vast bed of solidity. Its eternal relationship with the sun provides a cycle of dependability.

This approach could also be related to Le Corbusier's view of the sun, as a precise, logical and luminous being. The sun's perfect cycle, which was clock like and rational was an integral part of Le Corbusier's design. His precise design decisions were the product of *mathematical trajectories of equinoxes and solstices*.³⁰ The daily rotations and annual revolutions of the sun design the Architecture.

The (e)arth with a corpus of different states of matter, and with its relationship to the larger cosmic organization, provides a certain environment of different atmospheric properties. The close up (e)arth, the prima materia are a vessel of energy, bringing about physical, chemical and biological transformations upon expending and processing different forms of energy, among different interdependent systems.

A contrasting view to Le Corbusier perhaps of the sun by Frank Lloyd Wright could be related to this approach. With Frank Lloyd Wright, the fire, *igneous, organic, agitated and emotive*,³¹ predominantly figures in his design. To Wright, the sun is heat more so than it is light. And he doesn't see the clockwise rationality in its cycle. The sun that is a regular cyclic organizer of life to Le Corbusier, is the beginning of life and growth to Wright. To Wright the sun is its fiery warmth . It is a cosmic fire. As a result , the fire is what figures prominently in Wright's designs.

As a further example of the balance between cosmic and human scales, in some of the previously cited cosmic orders (*Section 2.1*), while the unreachable ethers were shown as a place of the gods, The middle world that is familiar and reachable , the terra was the place for man and earthly creatures. In Ramon Lull's 'De Ascensu & Descensu' (*PL 13.5*), the elaborate etherial hierarchy is represented by the sun on top. In the middle, the sensible world from which ascent to the intelligible begins is measured with an iconic Architectural element that is the stair. The stair is crowned with a castle. At the bottom of the frontispiece, familiar earthly creatures are shown with animals and plants to one side and man at the foot of the stair.



PL20

The breadth of the aperture through which we looked at the earth however could be overwhelming to the human sensibility and intellect. What we investigate with our intellect is overwhelming, so is what we sense by our mere presence amongst the material organization from which this empirical investigation is derived.

Architecture can not be derived from empiricism alone. Architecture demands that we ourselves, a materially constituted part of the whole system to be present as well.

From the previous two studies of the 'varying scales' approach, I understand that Architecture is needed to temper the scale to create a sensible and comfortable human environment.

Another way of arriving at this is a mere experience upon the presence of man in place. Upon visiting the place repeatedly, upon the repeated roar of the river, the gaping vividness of the gorge, the jagged boulders, the immense length of the towpath, the loneliness of the trees, revealed a beauty that at the same time aimed to colour all my senses with and speculate onto all my endeavors a heightened and yet forlorn emotion.

I was filled with a desire for markers that would tame my environs. I longed for a chiming bell, a footstep on a set of stairs, a door squeak, a smell of smoke, iconic markers of a place tempered by man .

The absence of these, or the presence of evidence for their disappearance, was what created this longing.

Architecture in this instance is not one amongst many in its long and immediate past or future, but could be imagined as appearing for the first time where it had either long been absent or was inexistent. It appears with an answer to our emotions from what we see through the undulating scales. It establishes a measure. What we then qualify as appropriate, or beautiful, or true, will be determined by this measure.

The study of the matron is therefore to imagine the primordial decisions to make Architecture appear for the first time, to learn of it by imagining of a time and a space before it.



PL21

Part 3

*Only the virgin stone knows why
the arches swing against the sky
We use ruins for idle time
to take a bath in the sublime*

Peter Levi

The Ruin - A preceding Architectural gesture

The same scale variation that was used to study the matron applies to the ruins and the new mineral mass.

All three elements bring into the picture the idea of time, the matron in its formation measured along a linear time, its enduring existence measured by a cyclical time.

For the ruins as well, their time is measured in terms of their conception, the act that constitutes them, their use and the end of their use - their life as a ruin, at once being the embodiment of decay and enduring not to relent to absolute peril.

Also thoughts on the ruins and the mineral mass is thinking of man's intervention upon its surrounding, from what can be marked on a time line, from past present and future, to what can not, such as thinking about what the primordial gestures of intervention might be like.

In this section, I will try to show in two parts, the history of the ruin that is the C&O canal.

In the first part I will touch on the history of its construction and use, to paint a picture of the canal imagined not as a mere historical artifact, but as a place, a destination not to tourists or to people that regard the place in passing, but to people whose lives were lived there. I will try to help imagine a life that placed humans along the canal in a much larger number and interdependence. I will try to create a picture of an endeavour that built a life that is now evident in only the marks that are left behind.

In the second part I will try to examine these marks. I will try to learn not only from the people but from objects and constitutions.

The first part should serve to evoke a sense of absence - an absence of a life lived in along a line defined by a river valley, a vigorous life that was lived intently along this linear city that it is somehow hard to imagine its disappearance altogether.

The second part will be a study of their environment and the marks that they left. It will be key to understanding the ruin as a requirement to undertaking an exercise of designing a second generation of interventions.



PL22

"...As he finished his benediction, he took the spade and with appropriate words and flourishes went through the motions of breaking the ground. Much to everyone's consternations, the spade struck a root, and the President's effort was foiled. Visibly calm and Undaunted, the President tried again, and again the spade failed to bite into the soil. Here indeed seemed to be a bad omen for the canal: but this was the nineteenth century, and all knew there was an explanation for every occurrence and a way where there was a will."

On President John Adams and the ground breaking ceremony of the C&O Canal

3.1 The Canal's background history: Lives that built and dwelled

On the ground breaking ceremony of the C&O canal on July 4, 1828, the moment when President John Adams's spade struck roots and rocks¹ was an apt symbolism for its inauspicious beginnings and for the relatively short lived endeavour of canal building in America.

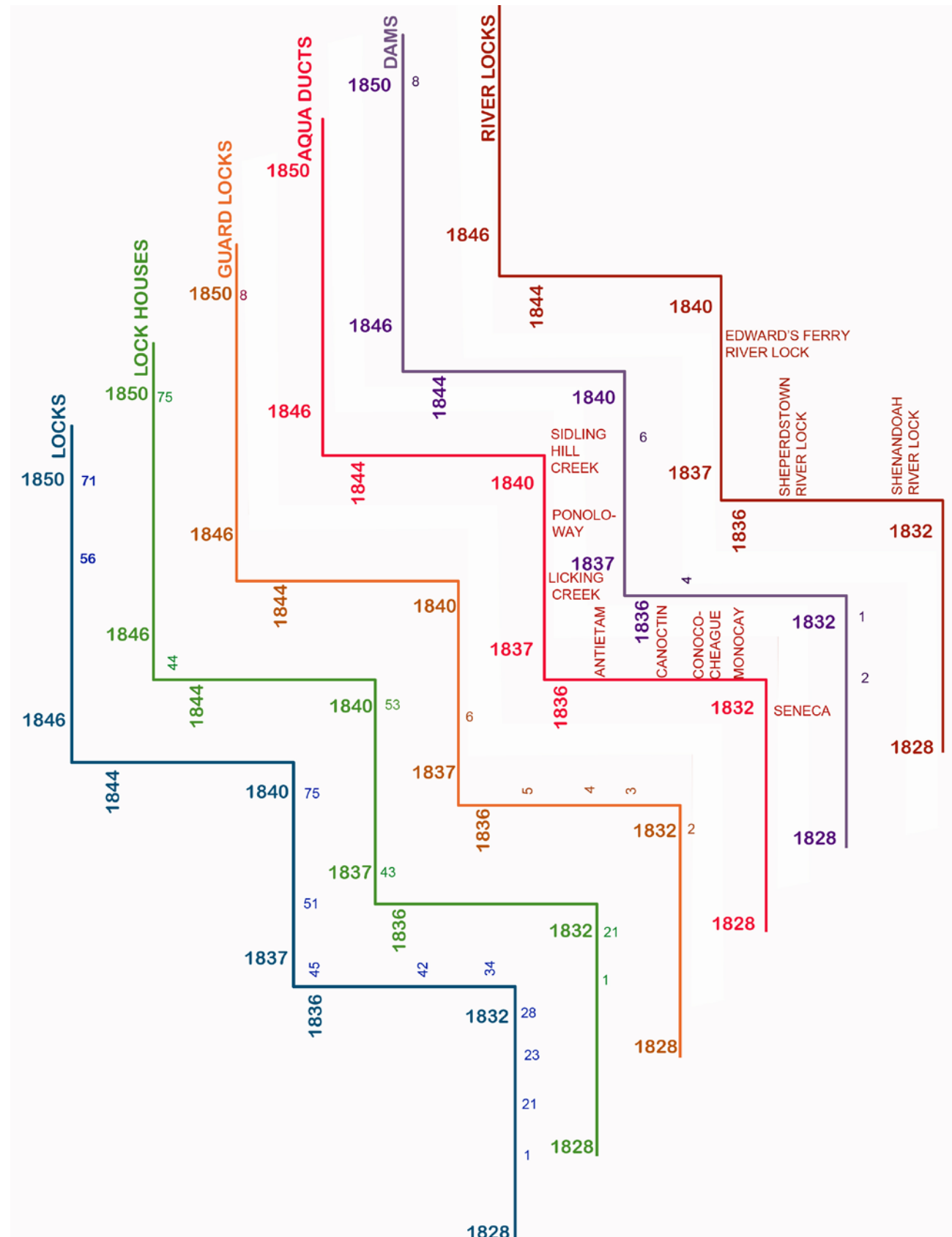
The life and death of the C&O as a transportation canal would occur within a century. The sparse American canal system, the total connected length of which is only about 4000 miles² would later be supplanted by various forms of transportation, and the immediate successor would be the railroad. (The construction of the Baltimore Ohio railroad began at the same time as the C&O canal and its completion was the cause of the canal's termination at Cumberland as opposed to at the Ohio river)³

But the desire to create trade routes from the eastern and northeastern sea ports into regions further inland, and the subsequent engineering that enabled the transporting of goods by pulling barges with mules across a canal was paramount. This meant increasing payload and reducing the time it took to transport cargo on land with horse drawn carts.

The duration that changed 184.5 miles of the Potomac valley into a canal system with 75 lift locks, 4 river locks, 7 dams & 7 guard locks, 11 aqueducts, 182 culverts and a tunnel, contained a rich life that was lived along the axis of the canal, which meant life around its engineering and construction from the 1820s to the 1860s, a life of engineers, contractors, immigrant and local workers.⁴

This rich life was a life of boatmen, lock keepers, and canalers until it ceased to operate as a transportation canal in 1924.

It therefore meant a life of masons and ironsmiths, a life of hardship, disease riots and violent skirmishes amongst workers, a life lived on boats, a life lived in lock houses - a life punctuated by floods, a life during a civil war, and a way of life that had to eventually give way to progress and surrender the place where it existed - leaving its prints behind.



The commencement of work was marked by an estimated cost that proved far smaller in amount than it took to actually construct the canal, and by a lack of skilled labour. This resulted in underpaid contractors and poor quality in the masonry work ⁵ of some parts of the canal works.

From a lack of skilled labour and subsequently lack of quality in the masonry work of the canal, The Potomac Canal Company had to look into recruiting a labour force ⁶ from Ireland and Northern England .

The lives of these immigrants was punctuated by harrowing ocean travel, meager accommodations & payments. There were major events of gang and clan violence amongst each other.

They lived and worked under abject conditions. Due to the unhygienic conditions in the Potomac Valley and the severe nature of their work ,they suffered a great deal from spread of diseases.

Lack of proper food & lodgings, sickness and mistreatment caused them to flee to Washington as runaways and debtors seeking help. Records describe in detail how they were met on one hand, with hostilities from locals, with indictment by their employers, and on the other hand with sympathy both from DC legislature, citizens, the city's poor house, private charities and in some cases foreign dignitaries ⁷ that hailed from the British isles.

Hostility from the locals was as a result of a rising sense of nativism and anti immigrant sentiments, ⁸ and as a result of being seen as having brought the diseases.

Having endured interruptions and delays from severe winters, delays from underpriced contracts, and subsequently poor work, problems amongst locals, violent skirmishes among labourers, and disputes with the canal company, the canal work that started in 1828 was completed in 1850.⁹

On October 10, 1850, the canal was formally opened to navigation.¹⁰ Although the formal opening was not until much later, trade on the canal had commenced as early as 1830 in the sections of the canal that were already completed and opened.



PL24 .1



PL24 .2

Down river from the Potomac valley interior towards Washington and the Georgetown port, agricultural products harvested in the valley farmlands such as apple, wheat, oats, corn and building materials such as brick, rough stone, shingles, staves, and animal products such as pork and bacon, offal, livestock, coal, and many other products were typically traded.

In the ascending route from Georgetown into the interior of the country, items such as salted fish, salt, plaster, coal, whiskey, cider, ale, tobacco, coke, lumber, iron ore, bricks, oysters, bacon, livestock, hardware, farm equipment, potatoes, lard and butter,¹¹ and many more items were typically traded.

While, the canal company, contractors, workmen and their families featured prominently in life of the canal during its construction, the navigation that enabled this trade was supported by the two distinct communities living and working along this 184.5 mile canal, namely, lock tenders and canalers.

Canalers:

A typical canal boat captain occupied his boat with his family. While he navigated the boat, his wife and older children would tend to domestic duties in the cabin along with feeding the towing mules. The younger of the children would spend their days playing on the cabin deck, tethered so that they wouldn't fall into the canal water. Older children would sometimes swim in the canal water. They have work duties as well of driving the mules on the canal path,¹² or calming the occasional mule spooked by a snake or a locomotive.

A canaler would navigate the boat over stretches between locks at 2-3 miles per hour, a task that is sometimes given to older sons in the form of training.¹³ Upon approaching lock houses, they use a horn or shout traditional call outs.

The relationship between lock tenders and canalers was at times fractious. Different forms of confrontations, from raised voices and arguments, to physical scuffles and armed violence have been recorded.¹⁴ The reasons as seen by the canalers is the barges not having been secured to stabilizers properly by lock tenders, during raising or lowering of lock water, resulting in boat damage, and on the other hand as seen by lock tenders, damage to lock walls on the part of the canalers' negligence.

Travels along the waterway were not without fraternity either, both with fellow canalers passing each other and lock tenders with whom the boatmen sometimes traded in more than conviviality. At times they bartered goods and liquor.¹⁵



PL25 .1



PL25 .2

Aside from the work scow that tended to barges and broke snow, and the pay packet boat, the typical canal boat was a 90-95 feet long 14 1/2 feet oak bottomed pine sided barge with a bank of hatches and protrusions at the front middle and end. A family cabin occupies where the stern would be on a typical boat, a hay house at mid ship, and a mule shed at the bow.¹⁶ The hay house also doubled as deck hand sleeping quarter.

In winter months, some boatmen went to where they kept homes nearby in areas such as in Cumberland Georgetown Williamsport Alexandria Washington Hancock, Sheperdstown and Antietam, while others kept living on their tied up boats¹⁷ in the drained canal.

The canaling family worked 18 hour days . An 1858 law prohibited running the boats on Sundays. ¹⁸ Fear of riots and disturbances by idle boatmen lead to the repeal of the law.

The Canaling culture saw a change in character, when the principal trade item on the waterway became coal and when the independent family canaling gave way to a corporate structure¹⁹ where all boats were ran by a towage company.

Lock tenders:

As in the case of the canalers, married men with children were preferred for the lock tender's job.²⁰ Under special circumstances, for instance, when a lock tender's wife is widowed, the canaling company made provisional to let the widower remain in charge of the lock house and respective locks.

The lock houses typically have of two rooms per floor, with main floor and attic floor, sometimes with above grade basement/ storage floors. The rooms in each floor typically flank a chimney, or in the case of an end chimney, the kitchen and the main sleeping room in the upper floor will have a stove and a fire place respectively.²¹

The lock tender family will also have a piece of land along with the lock house where they would maintain a garden ²² to sustain the family.

Where there is a relationship that is amicable amongst cananlers and lock tenders, the lock tenders family would sell produce, bread, whiskey and other goods to the canaler's families.²³



PL26 .1



PL26 .2

The lock tender had to be available to operate the lock and let barges through at all times of day and in all weather conditions. The lock house had to sometimes oversee more than one lock. Sometimes it has multiple canal locks or it includes guard locks, river locks and stop locks.

Upon the arrival of the canal boats the lock tender would operate the lock by using the massive swing beams affixed to the lock gates to open and close gates and allow boats in, or by using the lock keys to fill or drain the locks through the sluice valves. In some instances when the lock gates would have a gear and lever mechanism to winch the doors open and closed.

At night and in inclement weather, the lock tender stayed out of his lock house and waited in a shanty looking out for the boatmen's torches or shouts.^{"24"}

The lock tenders were responsible for maintaining the section of the canal that is in the vicinity of their locks. This put them at odds with canalers that drive their boats with potentially damaging speed^{"25"} or that approach the locks in what they perceived was a reckless manner.

Some of the lock tenders were not without fault either. Records showed cases of drunkenness, abandonment & absence without replacement, sale of intoxicating drink to canalers, etc.^{"26"}

Apart from the nature of the work and having to negotiate with canalers and the canal company, they also faced hardship dealing with the weather and the mercurial rivers that fed the canals. Over the 100 year that the canal was in operation, a series of floods, jumped the river banks, hurtled down canals damaging canal infrastructure and lockhouses, and disrupting livelihood along the canal. While there were substantial localized annual flood events in multiple separate instances,^{"27"} what were coined as great floods occurred in 1877, 1886 and 1889.

Along with the different lock types, some lock tenders would have in their vicinity, stop locks where they drop a roll down shutter like mechanism to reroute flood water back into the river and avoid further damage downstream. They also used the stop lock during canal wall damages to limit water loss to the area of the damage.

The canal community of boatmen and lock tenders went on for 96 years despite difficulties among which were floods and the civil war, With the spectre of the locomotive industry looming, which was also built on the canal company land in the canal's vicinity. The canaling world decided to capitulate after the spring flood of 1924.^{"28"}



PL27

3.2 A closer look: Objects and Constitution

The main purpose for this section is to formally investigate the canal area where I proposed a building for the thesis exercise.

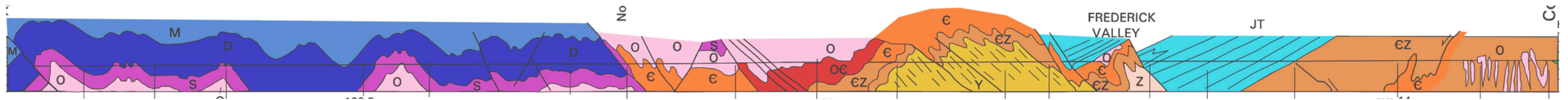
The previous section investigates the canal life of that of the canal builders, the boatmen/ canalers, and the lock tenders, through recorded documents. For the purpose of this section it is important to look at what is there in reality, what is present, to look at the objects, to look at how the Potomac Valley was formed, to study the Potomac river's physical characteristics to learn how it behaves, how it lends itself to the design and engineering of the C&O canal, and the relationship of the canal and the river in physical and material terms.

Although some of the notable engineering feats and canal structures, such as tunnels, dams and aqueducts are found in other areas along the canal, the area of focus for the thesis project is the area between locks 16 & 22 of the C&O Canal. The epicenter where the actual thesis building is placed is between locks 16 & 17.

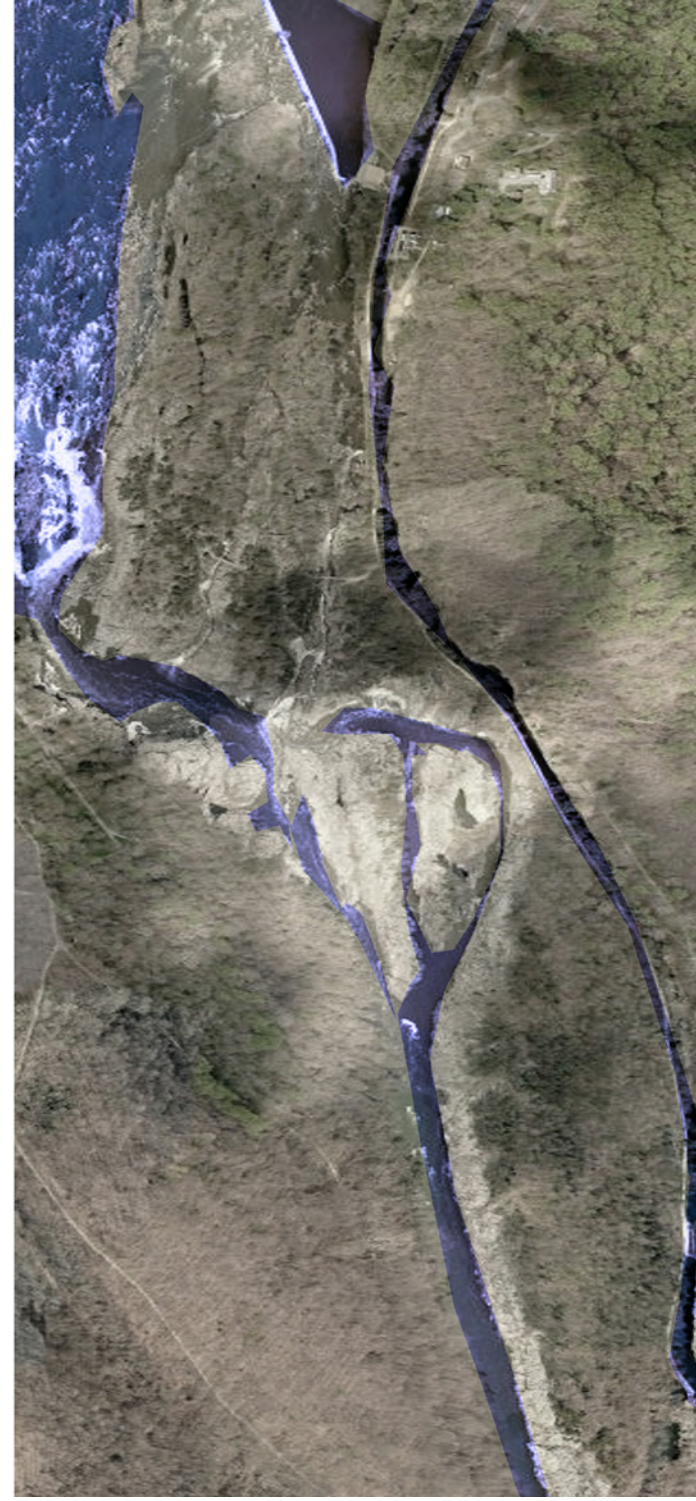
Before we attempt to understand this locality by starting to have a closer look and focus on the vicinity of my thesis project in the later parts of this section, let's however take a look at the geological characteristics of the greater Potomac river valley region by looking at the general topography and watershed.

A USGS survey cross-section with a depth of three kilometers above and below sea level, that spans from the coastal plain in Georgetown to the Appalachian plateaus in Cumberland, reveals both the time line for the geological formation and the physical properties of each constituent part. The great falls/ Seneca region of this cross section is identified as having been formed in the Cambrian and neoproterozoic era from about 500 to 800 million years ago. This formation is followed to the north by large basins and valleys, indicating the erosive work of the river over the years while the above mentioned constitution held on to define the river valley.

A planar survey on the other hand shows what each region's ecological make up looks like. In the Potomac terrain, which is the next distinct geological family following the coastal plain, and where the great falls area is located, we find constitutional evidence that reveal the shape and form of the river.



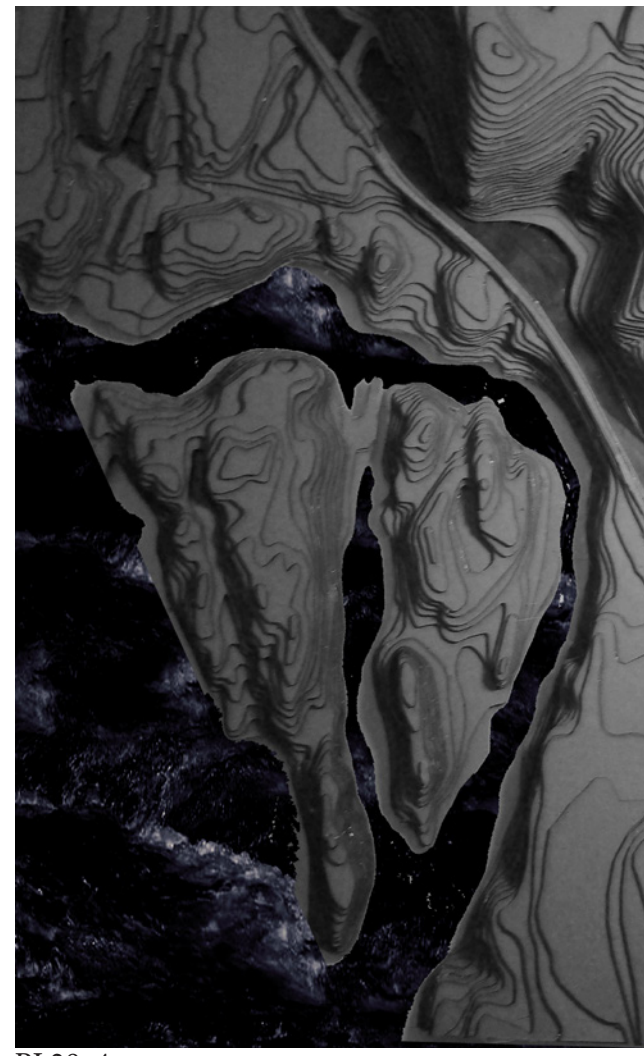
PL28 .1



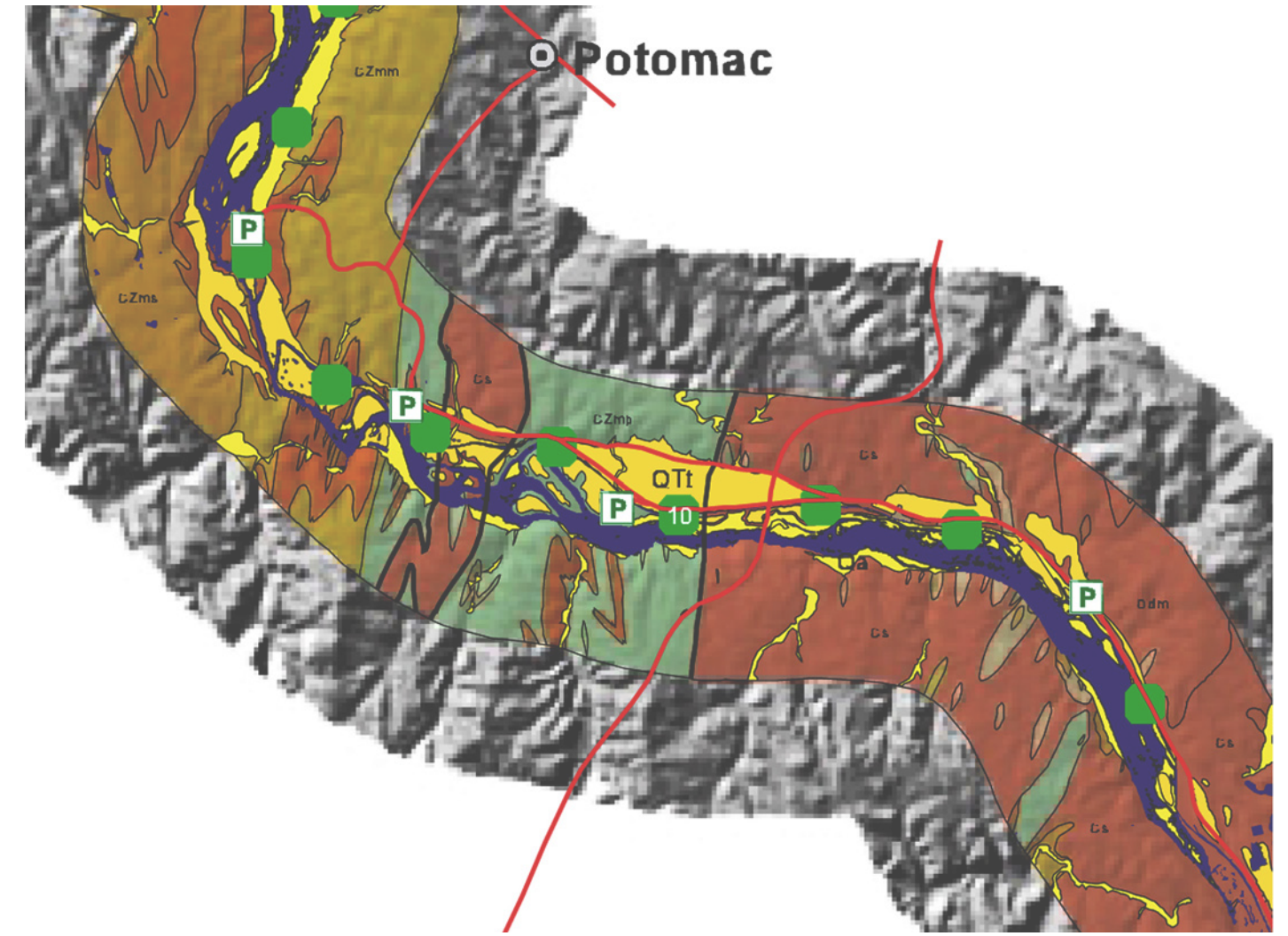
PL28 .2

schist	Migmatite	phyllonitic	Metagraywacke

PL28 .3



PL28 .4



PL28 .5



PL29 .1



PL29 .2

The outer boundaries of the immediate Great Falls region has large swaths of rock formations known as Migmatite, a mixture of dark grey schist and white & light grey quartz.²⁹ Inside of these and along the edges of the river, we find metagraywacke inter-bedded with schist.

The rock outcropping that have resisted the relentless confrontation with the river that appear in the channel as islands, at times hosting vegetation when water levels are clement, are sheets of Clarendongranite, mineral rich muscovite, boitite, and monzogranite.³⁰

These survey plans and sections reveal the secret to the geological formation of the Potomac valley, We can take the above information and piece together, how it all took shape, what gave way and was displaced, and where it ended up sedimenting, why certain formations resisted and defined the form, why certain areas are stark and devoid of vegetation, while other areas host a rich profile of flora and fauna, and so forth.

The above described rock types for instance, by their igneous and metamorphic nature reveal the reason for their survival of the river's ferocity and define the shape of the river path.

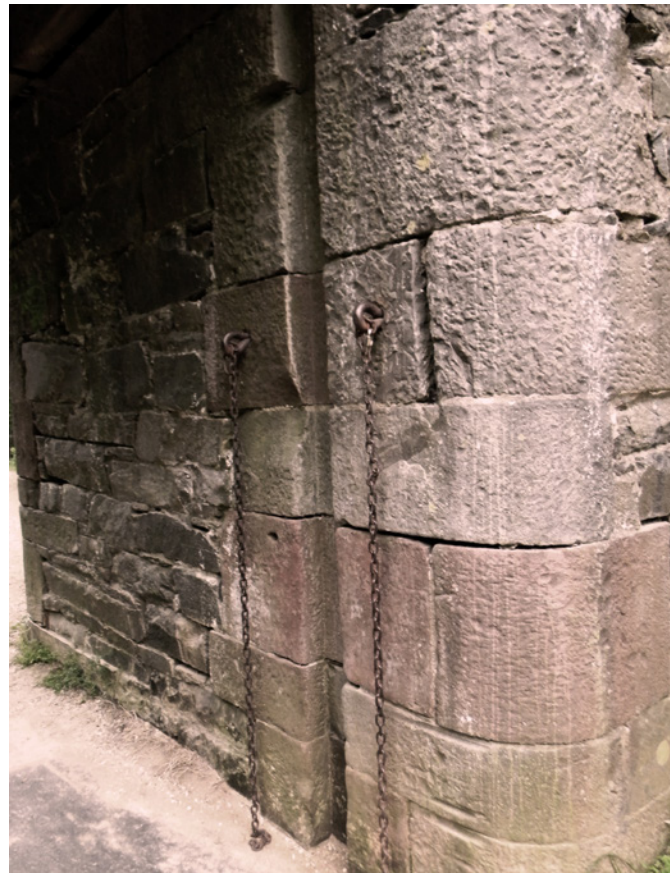
On the other hand , we find alluvial deposits at river bends where the ferocity of the river is tempered by the change of direction. We can also detect sedimentary formations immediately after magnified drops in the river channel where we find basins. We can easily identify how the river water could have brought what it managed to loosen and erode upstream and placed it in these basins and gorges.

As such we can trace the life of the river valley , from when it started by water finding the logical streaming path and thereby relentlessly eroding land mass over many years, from where large masses gave way to gorges and basins, from where the displaced material was deposited and over many years created sedimentary formations, and how what we see that remains today carries the genes of this great geological story line.

And as such, from the greater geological arch of the river valley, we now zoom into the immediate vicinity of the thesis project , between locks 16 &17.



PL30 .1



PL30 .2

This area is called Mary's wall, the name of which comes from a large but-tressed wall built to overcome the above discussed geological displacement.

It is evident that while the Rocky Islands resisted erosion by the virtue of their make up, whatever constituted the river bank beyond them gave way. It is also evident that the river bank at Mary's wall is vulnerable as a result of floods over the years, that jumped the river at this location, to hurtle down the canal

Beyond the river bank where the canalers built Mary's Wall, there is a rocky hill that plateaus at approximately 70 feet above the towpath. The canalers have no option but to build a wall that acts both as the river's west edge and the canal's east edge. The top of this wall also serves as a tow path.

Not only is the towpath approximately 70 feet below the plateau on its west, but it is also approximately 70 feet above the river bed. This treacherous stretch of towpath has to be built essentially as a 70 feet high wall. This needed another 60 feet tall buttressing.

Where Mary's wall and its surroundings are concerned, the ingenuity of the canalers did not stop there. Because the river jumps its bank and hurtles down the canal, destroying canal structure, including weirs, locks, and at times lock houses, the canalers devised a stop gate that would divert the water back into the river. This consisted of two abutment walls at each side of the canal with channels on their jambs. An enclosed structure spans over these two abutments, where wooden slats are stored.³¹ When there is a threat of flooding, these slats are slid down the jamb channels to form a shutter and prevent water from going further down the canal.

Apart from engineering unique devices to specific problems faced at specific locations, the concept of a canal engineering is essentially to create a series of shallow channels of water, in this case, typically 60 feet wide and 6 feet deep, where a barge or boat gently floats at 2 to 3 miles per hour, being towed by a mule from a tow path. The canal typically runs alongside a water source, in this case a river, that can feed these cascading terraces of channels by way of dams. How the series of terraced channels are arranged is engineered to create a consistency that is not available in the river bed topography.



PL31 .1



PL31 .3



PL32 .2



PL31 .4



PL32 .1



PL32 .2

Wherever there is a change in elevation from one canal bed to another, there are masonry locks used to lower or raise the boat onto the next segment. Sluice valves at the bottom of lock gates open, from lock gates up stream to fill up the lock and raise the barges, and from lock gates down stream to drain the lock and lower the barges.

Excess water is removed from canals by way of culverts or distributed amongst adjacent canals by way of bypass weirs.

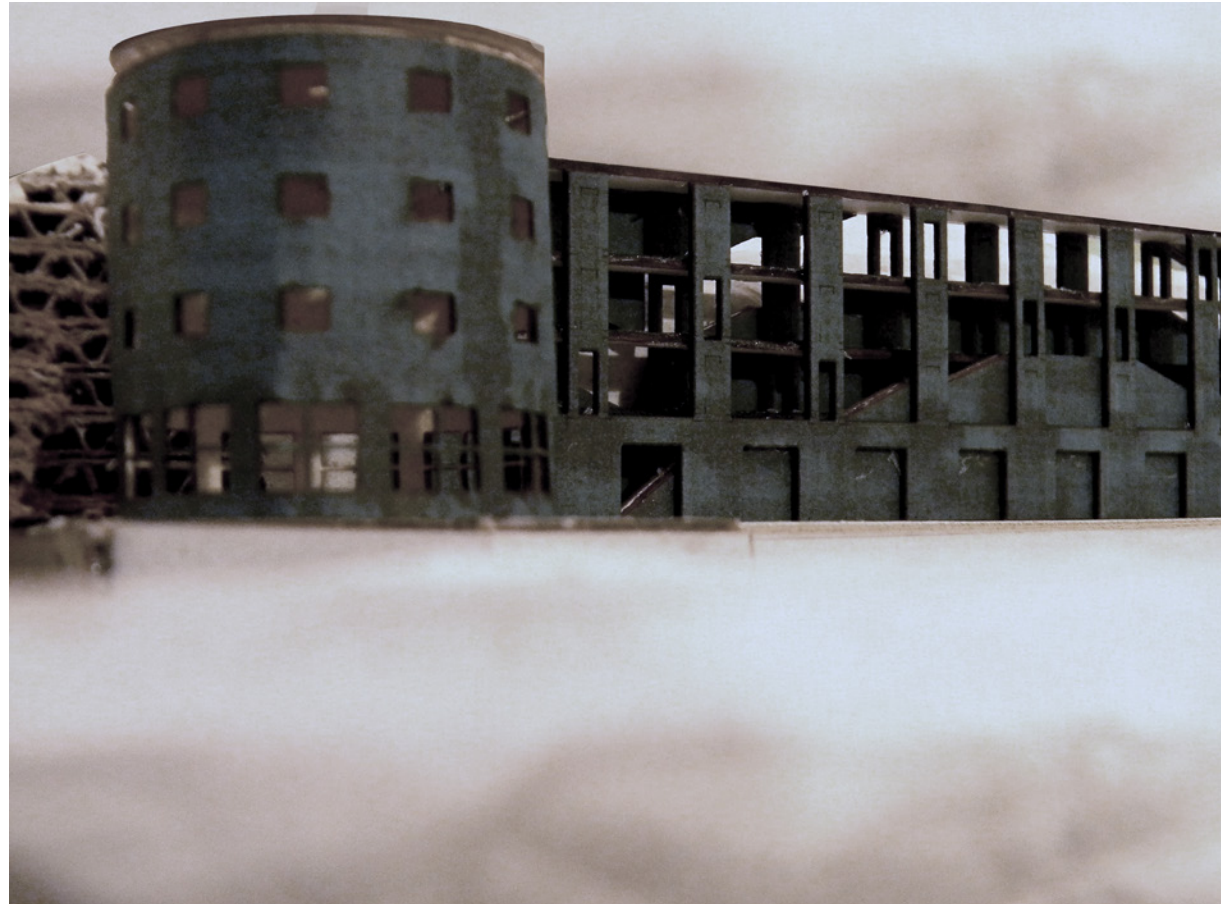
Human ingenuity, technology and construction conspired to create this large staircase of water vessels, with engineered pieces of outlets and valves to regulate intake and movement of water.

Water resided in a dual world of wild rugged unrestrained ferocity in the river, and at times migrated to be tamed in a graduated, terraced and down scaled environment where it sheathes and cascades elegantly.

The canal environment in its current state is a footprint of these two dualities. It exhibits in a pronounced manner how the topography was sculpted to form the river valley, formed with sweeps of a scale far more immense than what man is capable of, and then we find the canal and the tow path, graduated by locks and sized to a finer human scale, detailed and put together to reflect the engineering and construction vocabulary of mankind.

It is also a footprint of a particular type of settlement that no longer exists, that could almost be described in the manner of Italo Calvino's invisible cities.. It is a ruin of a linear city, stretched along a singular line for miles and miles. It is inhabited by static settlers and roaming citizens. The city is graduated by the homes of the static settlers . The settlements are divined by the water, where the water cascades down from one terrace to another is where the static inhabitants build their homes. The roaming inhabitants heed each of these settlements as they travel back and forth to each ends of the city.

After having investigated this place before and after human intervention, the next part of the thesis exercise is to suggest to intervene upon it , and to determine what manner of intervention it should be.



PL33

..Now architecture itself must be the object....

SVERRE FEHN

Part 4

New Mineral for Monasticism

Having looked at the matronly earth, both as a cosmic citizen and as the body underfoot, we moved on to an endeavour that sought to intervene upon this earth and make a place, an endeavour that precedes our times by 188 years at its beginning, and by 92 years at its end.

Now it is our turn to presume to intervene upon this place, to complete this Architectural exercise. In order to proceed, it is essential to figure out the agency by which this exercise should take place. As such we will look into the concept of function in the immediately following section.

Having done so, we will explore the specific agency, which in this case is monasticism.

Then we will move on to the exercise, first by laying out the process, then by following that with the penultimate collection of drawings & images, and in conclusion by showing the design of the monastic cloister that was presented to defend this thesis.

4.1 Thoughts on Function



PL34

...

*And now O sea, you're lost by aeroplane
Our Sailors ride a bullet for a boat
Our coverage of distance is so facile
It makes us to have had a sea in vain
Our moat around us is no more a moat
Our continent no more a moated castle*

...

Robert Frost

In the spring of 2010, I elected the topic for a term paper of an urbanism seminar, given by a professor who also happened to be in my thesis committee, to be the study of the idea of function. This was a deliberate selection of function as the topic, because, at the same time, as I was beginning to work on my thesis.

The decision to investigate concepts of function was triggered by a discussion in class about the 18th century Italian architect and theorist Carlo Lodoli, specifically his hospice for the friars in San Francesco della vigna. It was discussed that Lodoli let the circumstances of particular rituals (such as the relationship between the shape of the friars habits and the cross section of colonnades upon the ritual of passage through the said colonnades).

This discussion in turn triggered thinking through the act itself of walking through a colonnade, as a significant phenomenon that needs to be regarded in architectural considerations, as much as the greater functional demands of the hospice. This suggested that the question of function doesn't just dwell in the end use. It dwells just as much in the process - not just in the what but in the why and how.

The how was question of how to inhabit the site, how to make a place, how to intervene by displacing and congregating, how to regard both the matron and the ruin, is a question concerning function. It is a question of how the new mineral constitution is to function, both within the matter-energy system¹ as a further heterogenizing agent, and as a material mass carrying, holding, letting through, sheltering, etc. Humans, and the flora and fauna in the immediate ecosystem, and its spirit along with the human spirit.

The why resulted in the desire to avoid placing (as a starting point) an autonomous building of a certain function (the term used in a present day sense serving a specific functionalism/order), (retail, transportation, etc.), where the agenda of this order or culture could easily dominate and demand priority over the reality/ transcendental truth the place is owed as a material citizen of its environment. I wanted to carefully examine the function of the place and its constituent materials.

I wanted to re-examine the meaning and idea of function, and to look at function as the phenomenon of a ceremonial act as opposed to a sense of functionalism or an action designed to uphold a certain planned order. (e.g. building with dwelling as its goal). It is possible to look at autonomous functionalism as something that could potentially ignore other 'functions' of more weight.

The purpose of this investigation was to make decisions and gestures that result in realization through displacement, congregation, transformation, etc. Decisions that result in new truths of a place, thoughtful and reasoned decisions. It is to find reason to all the decisions, even ones that are most arbitrary and personal.

Etymology - Function

*Function also *funcion*, *foction* (French), *funzione* (Italian), *function* (Spanish) is etymologically "2" 'the action of performing, discharge or performance'. The above etymology and the subsequent usage cited in the Oxford English dictionary, '... his hand, his eye, his wits all present, wrought The function of the glorious part he bears"³', suggest that there had been a use for the term in the greater action/ procession of the whole as opposed to the function of the part. In support to this, the following definitions state 'action in general, whether physical or mental, of a person, bearing, gestures', followed by , 'the special kind of activity proper to , the mode of action by which it fulfills its purpose"⁴'. In addition to other definitions such as proper action"⁵, basic operation"⁶, official duties"⁷, following a profession/ trade"⁸, etc., the argument here is whether the 'mode' and 'action' in the definition are referring to just purely operational actions of inanimate parts or to the actions of a greater autonomy that judges/ dictates its constituent parts. Definitions such as 'function of the intellectual and moral powers' (cited usage: '...functions of comparison, judgment, and interpretation')"⁹, and 'a public ceremony, a social or festive meeting conducted with form and ceremony' (cited use: '... then was held a grand function')"¹⁰, make a case for the later.*

*There is also a definition for *funzione* (Italian) that directly links its use to religious ceremony in the roman catholic church (cited use: '... wee have had neyther prayers nor any other functions her thes two years') "¹¹*

Based on excerpts from The Oxford English Dictionary

Historical investigation of purpose - Ancient founding and divining rituals

The integral part of the founding of Rome was the act/ritual by which the location for the city was divined, more so than a purely functionalist process of surveying the location for the building of the city. The vital agents of divination, such as the animal's liver, the templum, the augurs, the cow and ox, the plough to make a furrow of the boundary, the animals that are used as signs of divination and even the natural elements such as thunder and fire that are also used as signs and symbols, have their individual significance. However, the broader ceremony, the elaborate rites of prayer, animal sacrifice and looking for signs of divinations"¹² are the greater functions in which are recorded the desire of the founders to build a living city on a location suitable and fertile free from evil and disease. It is this symbolic significance of the greater function of the divination rites, that give each individual artifice its functional significance.

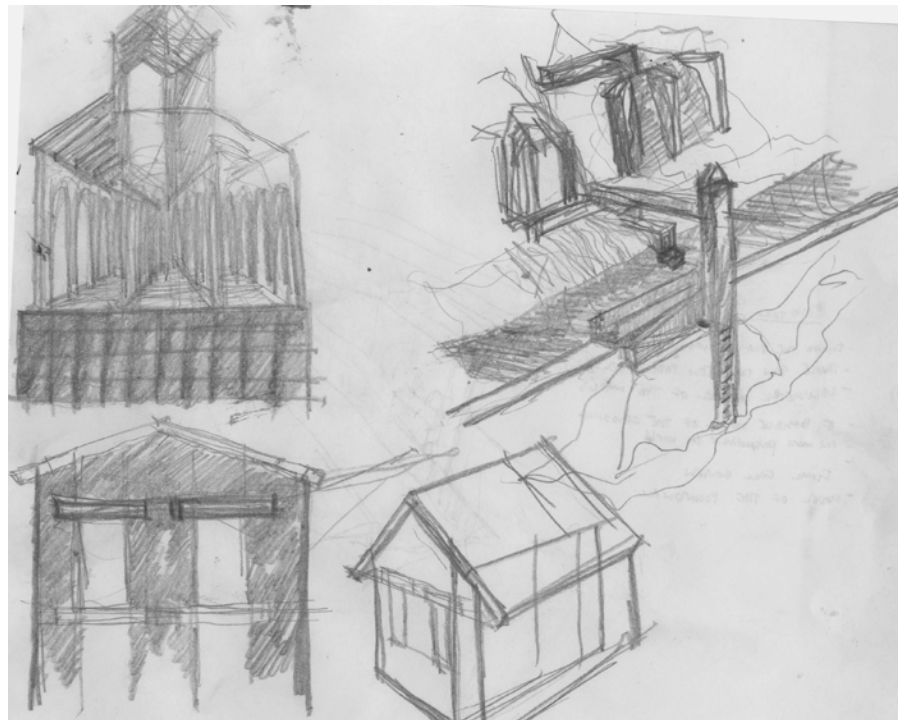
Another similar ritual of a functional significance is the foundation rites that take place as a cornerstone laying ceremony, as explained in Filarete's treatise; items vital in sustaining life are committed to the earth, believed to have life itself, upon which the foundation rests. Each item is buried is to signify both characteristics of life (water for its purity and lucidity, milk as the distilled blood, etc)"¹³ and the humanity that is to take place above, their utilities promoted, to symbolize the record of the lives of the generation which laid the foundation, and given to the generations that are to follow them and to discover their city.

Modern Theories Significant to the Idea and Meaning and Function

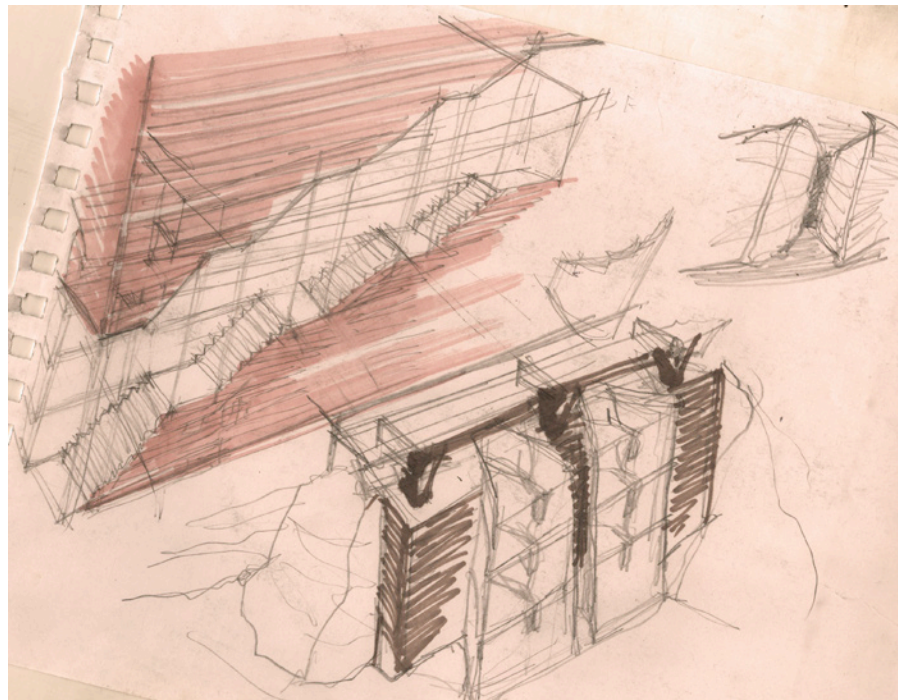
A case can be made for the idea that, the distinction between beauty from decoration, and beauty from measured and reasoned appropriation, is in its function. As we saw in the previous section, through decoration and elaborate rituals mankind creates art and beauty contingent on the fulfillments of their desires, wishes and prayers. The acts of decoration are that of committing through a formal representation these desires. With the emergence of the modern era, mankind started to seek the truth in beauty by employing reason. Laugier's notion of *bienseance* supports this argument.

With the emergence of the modern ideal and the need to adhere to a 'true' principle that employs rationale, a call for restraint from arbitrariness and unwarranted elaboration occurs. Laugier declares that '*beaute arbitraire*' "¹⁴ is not beautiful. Laugier's notion of *bienseance* wants to appropriate a magnificence commensurate with the magnificence"¹⁵ of the owner and user. The gestures and decoration accorded to a building is measured against scruples, nobility, simplicity and reason. The pomp and weight attached to the rituals and elaborate appropriations onto a building are scrutinized against decorum and traded for gaiety and air of lightness (*degagement*)"¹⁶.

Laugier's assertion could be seen as a useful investigation of function. The transition from arbitrary beauty and magnificence to one measured in a rational manner against what it represents, is a key shift in thinking.



PL36 .1



PL36 .2

The protagonist whose mention in the class readings generated the idea for this study, and a contemporary of Laugier, was Carlo Lodoli. Although known to have only built the hospice for San Francisco Della Vigna¹⁷, he was a teacher and theoretician on function. Lodoli collected pictures of artistic and architectural styles starting from the middle ages to teach the step by step progress of the art of design, which Kruff refers to a collection of architectural fragments¹⁸.

His unfinished notes ultimately used for a projected thesis, were later published and argued by his students, Andria Memmo and Francesco Algarotti. Memmo and Algarotti, examined his notes from differing points of view, both of which were informative to my interest in the material imagination.

According to Memmo's publications of Lodoli's notes, Lodoli's theories critically examine the classical orders, and state proper form and function (function and representation¹⁹) to be the ultimate aims of civil architecture. Solidity, proportion (analogy), convenience and ornament are to be secondary²⁰. Like Laugier he was a proponent of reason as the central idea of Architecture. He believed a rational architecture to be organic, and reason to be maintained to the smallest detail.

While believing in the nature of materials and differences in materials dictating differences in form, Algarotti argued on the other hand that, what he believed to be Lodoli's rigor of functionalism, overly purifies architecture and discards as non-integral, elements of nonspecific function. Algarotti was a proponent of imitative architecture, refuting what he saw in Lodoli's theory of function, as architecture being reduced to the property of the material.

I find these very useful to my thesis investigation: the theories and arguments and approaches of Lodoli's work, as interpreted by Memmo and Algarotti. Lodoli's collection and study of fragments, Memmo's account of Lodoli's definition of Architecture in terms of shaping, ornamentation and representation, their order of significance in accordance with reason and rationale, and Algarotti's case for nature of materials and defense for the ornament and affectation, are all compelling arguments that could inform my thesis despite being seemingly conflicting. Another contemporary of the above argument, that works within the same framework of proportion, character and stability, and yet breaks from the rigor of functionalism of Lodoli's and Laugier's, is that of Lodoli's friend Giambattista Piranesi.

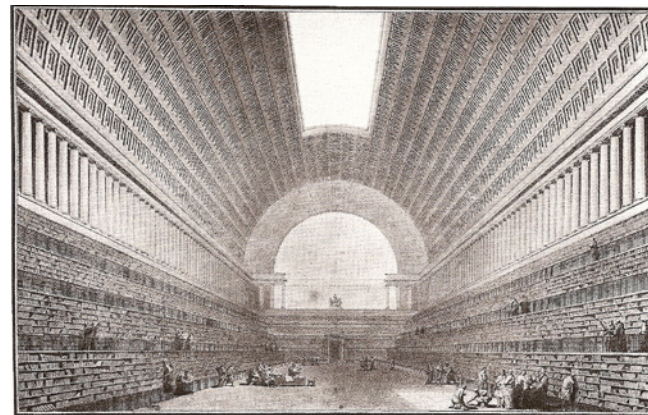
Piranesi advocates *liberta*²¹, he trades order for novelty and irrationality, arguing that, it is with irrationality and liberty that nature creates delightful arrangements.

The most interesting point in Piranesi's theory is the possibility of being governed by laws of good design, at the same time advocating for greater artistic freedom and seeking magnificence, while staying away from a rigorist approach which he regarded as simple and facile.

One of the reasons why I chose to focus on the aspect of function that is connected with the ceremonial action in itself, is that, I believe the greater place for how architecture should address function is in the continuous events during the life of a piece of architect



PL37 .1



PL37 .2

-ure, rather than the nodal goal and means relationship that either abstracts or overlooks everything in between. Even though most modern assertions, including those of Laugier and Lodoli make a case for purifying architecture with reason, some of their contemporaries, tried to derive the merits of Architecture, both from the rationalist laws that govern it, and from its soul. Boullée's regard for the beauty and mood of nature and deriving from the principles of it, his regard for what can be derived convention and regularity, his ability to achieve designs that even through their most simplified forms could evoke profound sensations of celestial proportions, is evidence to his phenomenologist approach. One of the clues lies in his description of the greatest formal beauty as the quality of life that comes from an animated air.²² Therefore, I am compelled to ask, How can I perform to create immensity and infinity with finite materiality and rational execution?

As the intervention for my thesis takes place on a site that has ruins as imprints from previous acts of place making, it is worth looking at Violet Le Duc's ideas on the nature of restoration. Because Le Duc's definition of restoration²³ as a modern idea of reinstating to a sense of completeness that existed before is a precursor to phenomenology and material imagination.

Looking at the ruins from Le Duc's idea of restoration yields to an attempt to understand what the ruin was, or what it was meant to be, and what we want it to be, and the meaning we attach to it, which is the idea of interpretation in accordance with what we comprehend.

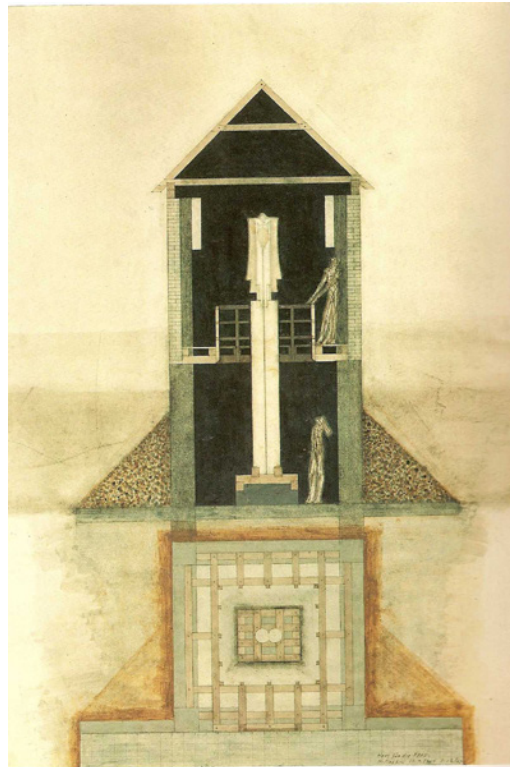
Le Duc ideas that touch on phenomenology are not limited on his writings on restoration alone. In his essay 'The artistic instinct defined'²⁴, he analyzes sentiments aroused by artistic instincts, all the senses taking in a natural phenomenon which, upon repetition establish an unconscious relationship with imagination, and therefore elevating our thoughts to a poetic world.

These theories so far I believe justify that, the focus on function should be as much the artistic endeavour of sensation, imagination, thought, making, and understanding the building as a form through material, studying and attempting to establish the governing principles of its beauty or truth. Function is vital to the creative process, which supports the intellectual formal logic, the sole application of which, as Louis Sullivan explains, makes 'tasty' buildings that are either dry, chilling or futile.²⁵

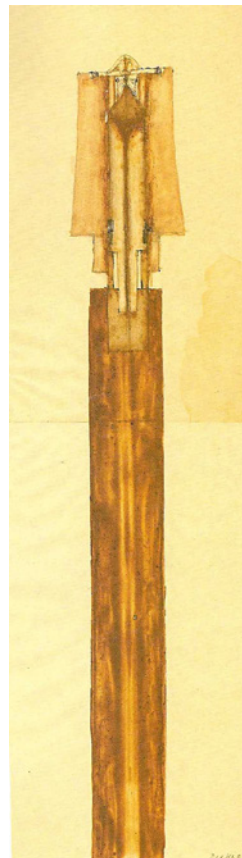
My desire is for the idea of function in my thesis, to address meaning and purpose and, to make sure that, while important, a strict functionalist sense of use and operation should not overshadow its strength.

Identifying a Philosophical shift - What is the Purpose of Building?

My thesis investigation started with identifying the nature of the environment where my thesis proposal is to take place. Long before I even started considering the result of this particular intervention, I was heavily invested in the existing architectural reality, so much so that a thesis could easily be developed both on the existing reality, and on the natural environment preceding the intervention by the canals. What then is the purpose for my actions? What is the purpose for an intervention all together? What laws govern the desire and decision to build?



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Although we have seen in reviewing the above theories and arguments, that Architecture is qualified by reason and purpose, we can build just as well with desire and the very act of being and living as our justification.

Walter Pichler, disillusioned by the post WWII functionalism, and the architecture that it was fueling, declared that human beings are merely tolerated in the domain of absolute architecture²⁶. A machine, detached from history, deeds, and man as its object, a non-objective architecture. Pichler opined that an adventure by those who set out to learn new architecture resulted in the uncommitted phenomenon of absolute architecture.

Pichler resorted to designing and building exquisite artifacts and shelters to house them. Indeed, he undoubtedly built beautiful houses. He built structures, which even by the most conventional measures of the earlier modernist theories could qualify as beautiful and rational.

The architectural purposes of his works however, were diametrically opposite to the strict functionalism he avoided, and his drawings artifacts and houses became architectural and artistic commentaries.

How did Pichler manage to avoid the non-objective, purposeless, and detached architecture himself, that which he saw coming with the machines? What other idea can we find other than the sheer exquisite beauty of his artwork and his buildings to justify their realization?

After an extensive etymological journey that starts from the word *'bauen'*, Heidegger tells us that 'building is really dwelling'. He goes on to say that 'dwelling is the manner in which mortals are on the earth', and that 'building as dwelling unfolds into the building that cultivated growing things and the building that erects buildings'.²⁷

Utilitarian purpose versus phenomenological experience - How to approach appropriating purpose/ function for thesis work

While the purpose of citing Pichler's work is not to justify mirroring Pichler's approach for my thesis, I believe it is important to acknowledge the architectural and artistic merits.

The general approach for my thesis is geared towards fragments as opposed to autonomy, meaning and purpose as opposed to strict functionalism, phenomenological experience over utility.

So far, I have identified the sentiment of absence and abandonment, which resulted in the desire to inhabit, which gave birth to a series of designs of fragments. This in turn brought about the realization that these exquisite fragments, while their realization fulfills in some formal and material presence, the desire to inhabit and make a place, lack a human touch: a squeaking door, a bell chime, the sound of footsteps. This raises the question of who the stewards should be. Through their actions and dwelling and through their marriage with their material counterparts they make us see the architecture and the poetics of the place. Who should it be? Monks? Archivists? This is where I look into these possibilities, study of monasteries, chapels, archives, plants, pavilions, etc.

The mention of Lodoli and his idea of function and representation caught my attention. And therefore I chose to explore his theories and that of his contemporaries to learn more about my thesis.



PL39

*Here man more Purely lives, less oft doth fall, more promptly
rises, walks with stricter heel, more safely rests, dies happier, is
freed earlier from cleansing fires, gains withal a brighter crown*

Bernard of Clairvaux

4.2 Monasticism

In this section, I will attempt to explain how a study of function in the preceding chapter led to determining that the thesis project shall be a monastic cloister, which will be followed by a brief history of early Christian monasticism, the Benedictine order and the day to day aspects of living in a monastic cloister.



PL40 .1

A comprehensive study of a place should demand human involvement in a more intimate and engaged manner than can be achieved with places of singular functions. We occupy offices, banks, schools etc., for a certain part of the day and leave them empty overnight. Their place both in our intellect and sentiments could be reduced to fragments of memory or potentially be terminated when the period of engagement comes to an end (e.g.: school). It could also be altogether eradicated when we relocate away from them.

The 20th and 21st century's social, political and economic structure encourages such disengagement and relocation at a historically unfamiliar rate. Even societies that consider themselves at home have a casual reliance to the most intimate of their structures as this poem by Philip Larkin suggests.²⁸

*Home is so sad. It stays as it was left
Shaped to the comfort of the last to go
As is to win them back, Instead bereft
Of anyone to please, it withers so,
Having no heart to put aside the theft.*

*And turn again to what it started as
A joyous shot at how things ought to be
Long fallen wide. You can see how it was
Look at the pictures and the cutlery
The music in the piano stool. That vase*

But monastic environments have an engagement to the places they occupy unlike any other society. Not only do they take vows of chastity, poverty, silence, etc., they also, at times, take vows to commit to a place. Their environment is one of living, learning, working, praying, and eventually death and burial.

In a sense, they are a constituent element of their built environments. Their presence in their place is unlike our presence in ours. Their structure and sense of stewardship is different from that of ours.

They will build their environments for their needs and utility, they will mark occasions with devotion and fidelity, and upon passing, they will offer themselves seeking the honour of being part of the material constitution of their place.

In the following sections, I will delve into the history of monasticism in general and Benedictine monasticism in particular.



PL40 .2



PL41 .1



PL41 .2

Although the larger history of monasticism in the world's various religions may precede the history of Christian and specifically western monasticism, my focus of study is on that of the latter for two reasons.

Firstly, being raised in Ethiopian Orthodox Christian household, while receiving all of my formal education prior to University in Catholic schools, I approach this with a belief that studying monasticism in the realm of western Christianity is a more suitable avenue with the facility for examination and innate understanding of the subject matter.

Secondly, the principal exercise in this thesis is that of Architecture. Any hesitation on my part on the virtues of using a singular order as an instrument for this exercise is addressed by this reminder. The only way that the right questions can be asked and the right answers can be given, or the right direction can be taken is through rigour. Having the chance to focus on a specific order lends itself to a rigorous work, which in turn provides one with abundance and richness of knowledge.

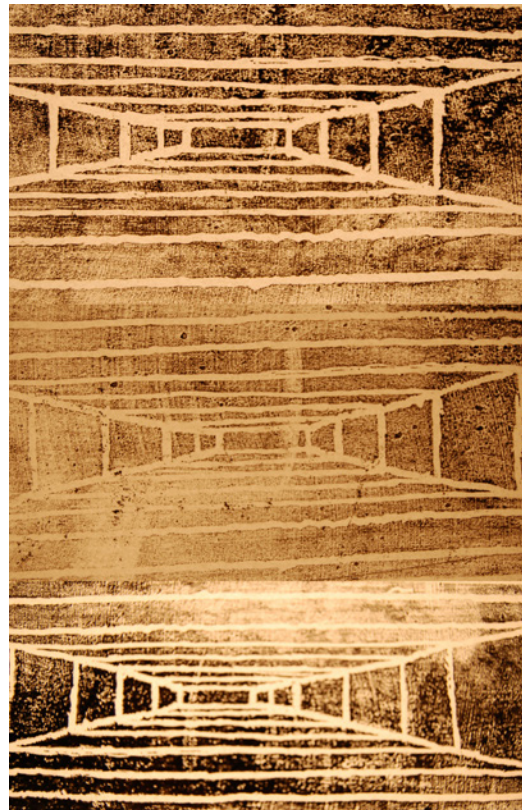
Early Christian Monasticism and Saint Benedict

The apostles of Jesus Christ are considered by some scholars as the first members of Christian monasticism, both in their decision to abandon everything and follow Christ, and in their subsequent endeavour to disperse in different regions and teach the virtues of Christianity. It is Chronicled that they travelled to various parts of the world, including Armenia, Egypt & North Africa, Palestine, India, Burma, Ethiopia, Iran, Spain, Asia Minor, Osroene (modern day Turkey), Syria, Rome, Greece, Scythia (modern day Ukraine), and Britain, in a period from the ascension approximately up to 70 years.²⁹

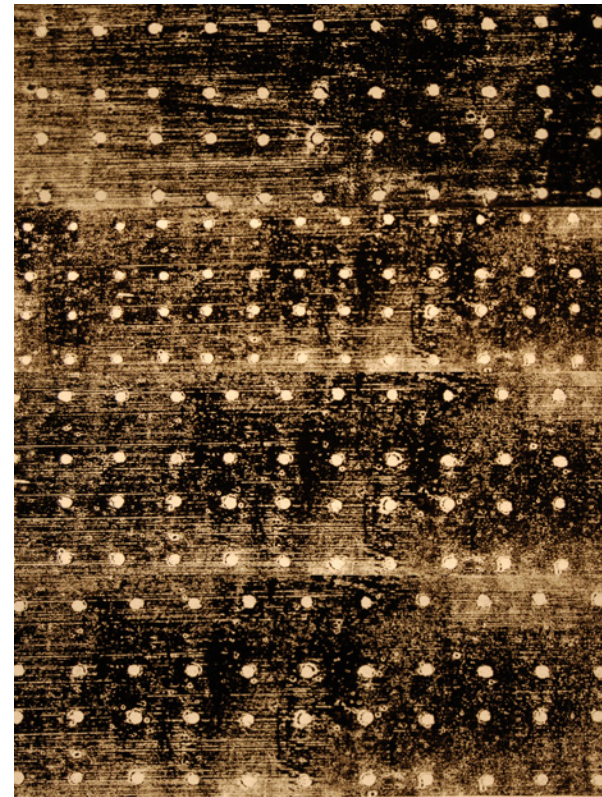
Their lives consisted of very austere arrangements, long and arduous travels, immense physical and spiritual tests, and ten of them were met with gruesome deaths at the hands of their detractors.

They passed the torch of their teachings and ministry to various other hermits, and small groups of wandering monks that went into the deserts of Egypt and various other places in Asia Minor and southern Europe.

In the first few centuries after the birth of Christ as the Roman Empire is nearing its end, the scripture of new testament was coming into being, and as the chronicling of the Christian monastic endeavour was taking place by the likes of the Hermit St. Anthony (4th Century) St. Paul, St. Jerome (who chronicled the



PL42 .1



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life of St. Paul), St. Athanasius (follower of St. Jerome and believed to have chronicled the last days of St. Anthony in Egypt), St. Augustine (whose treatise is believed to be the foundation of western Christianity), Hilarion (in Palestine) and Cassian (Egypt) and Gregory (Pope in 6th Century)³⁰ to name a few.

St. Benedict was a monk from Nursia in the Umbria region of Italy and a prominent figure towards the end of this period. He was born on 480 AD, and spent his early boyhood studying in Rome.³¹ Despite not being the first to preside over a community of monks, he is responsible for the introduction and growth of monastic communities in western Christianity.

He oversaw the establishment of different monasteries. To guide the heterogeneous collection of hermits that followed him, he established a rule³² and established as part of the monastic vow, a life long vow, also known as vow of stability.

The Benedictine rule was the parent to a variety of orders that came about from the 11th century onwards. In the 11th century, reformists believing the Benedictine rule to be primitive and seeking to transform it,³³ adapted the Benedictine order into a new variety. The Carthusian order was founded by Bruno of Cluny. The Cistercians were founded by Bernard of Clairvaux.

Further creations of new orders took place in the 13th century, such as the Franciscan, Dominican, Carmelite and Augustinian to name a few, after the respective figures in the names.³⁴ The transformation sought to address aspects beyond Saint Benedict's rule. In the case of the Franciscans and Dominicans, it sought to reform the orders' commitment to the ministry of the poor and challenged the monasteries' land possession that came with the prominence and influence of the church at the time.

The Rule of Saint Benedict

The rule of Saint Benedict (RSB) was preceded by two similar writings. The first was by the Egyptian monk Cassian in the 5th century (in the first 20 years of Benedict's life) and the second was written by an unknown monastic figure, titled *The Rule of the Master*,³⁵ in 500 AD - 30 years before Benedict wrote his.

Before it delves into the routines and methods, the required characteristics of the monk, and that of the abbot over the first seven chapters, the RSB begins by expounding on the virtues of listening, not in its literal sense, but rather in a



PL43 .1



PL43 .2

transcendental form of listening. This listening from the heart led to obedience and onto obedience of the abbot - onto humility and various other virtues listed under a chapter titled ' The tools for good works'.³⁶

The rule is characterized by a tremendous deal of solemnity and eschewing of mirth, laughter, self will and gratification. If any lightness and sublimity was to be sought, it was to come from its regard for the hope of God's mercy, toiling in faith and love.

In addition to their earthly duties of daily manual labour, Saint Benedict identifies their spiritual duties in the form of daily offices, seven times a day to correspond with Psalm 118:164 " *seven times a day I have praised you*" and night vigils to correspond with Psalm 118:62 " *at midnight I arose to give you praise*". The seven offices are known as Lauds, Prime, Terse, Sext, None, Vesper and Compline.³⁷

The RSB instructs in elaborate detail, how vigils and psalms are to be conducted for different occasions.³⁸ It also elaborated on discipline, amendments, excommunication and re-admission, on sleeping arrangements, on food and meals, on cellars and cellarers,³⁹ on kitchens and kitchen servers⁴⁰ duties, on caring for the elderly and the sick,⁴¹ on journeys and receiving guests,⁴² on eschewing private possessions and communal banks.⁴³

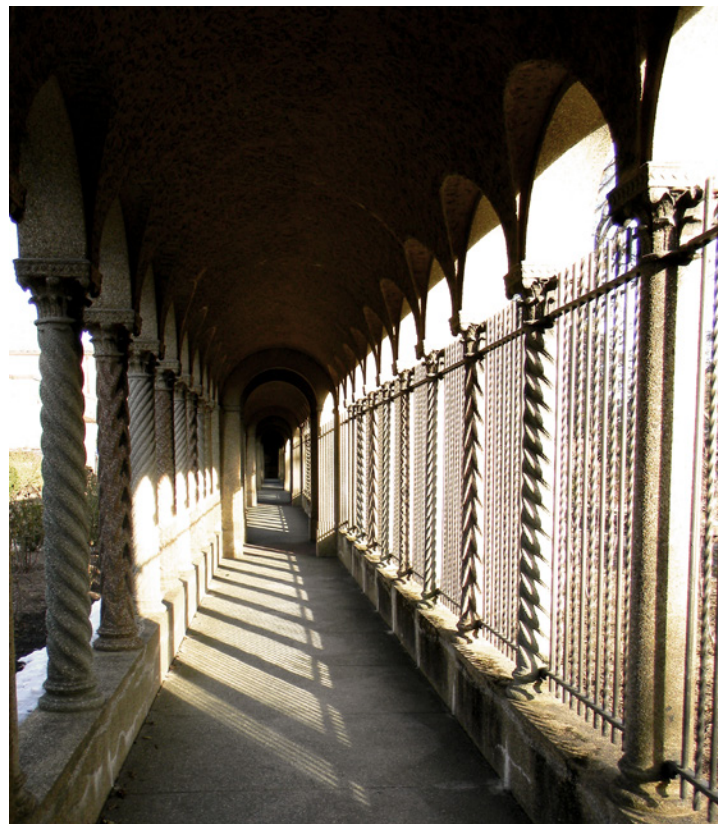
Taking into consideration the inapplicability in modern day monasticism (for instance, RSB advises that monks sleep in a large room with their tunics and belts on, without their knives, with the candle burning all night, with senior monks and novices interspersed so that the seniors could stir novices should the novices feel inclined to sleep past the waking moment,)⁴⁴ and the subsequent changes to adherence over the intervening centuries, I will go through the daily rituals of the Benedictine monks as it pertains to today's monasticism in a forthcoming section.

The role of monasticism beyond the cloister

Throughout the middle ages and on into the later centuries of the second millennium (until the role of the church significantly diminishes in the affairs of the state), monasteries had been very influential institutions that played roles of the learning center for the community, the social service center for the poor and invalid, and a power center as the high priest closely associated with the monarchy. As owners of vast land and property, monasteries also played the role of bank and treasurer.



PL44 .1



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Monasteries were more than a mere order engaged in religious practices alone. Their self sufficiency and aptitude in labour and craft resulted in their contribution to culture, literature, art, sculpture, animal husbandry and horticulture.

Their knowledge of stone work in cloisters and abbeys contributed both to ecclesiastical and secular stone carving and sculpting.⁴⁵ Their centuries old expertise and collections of herbs, liqueurs, and elixirs made them pioneers of medieval medicine.⁴⁶

It is apparent in the beauty of abbeys and cloisters, their contribution to Architecture. They also perfected the art of the floor plan layout, specifically certain prototypes , such as the crucifix shaped abbey and the cloister quadrangles.

Monasteries fostered a culture of written language and poetry as silent meditation prevailed over spoken language in the confines of the cloister. Spoken language was reserved more for psalmody than for social communication. Despite the fact that the original Latin with which Saint Benedict wrote his rule was believed to be inferior in quality, subsequent writings in Latin in monastic scripture refined language both by way of ecclesiastic scripture and local poetry of each region.⁴⁷

Monasticism also contributed to the art of writing and bookbinding. Both scholars and the monarchy highly sought books from monasteries. This fostered book hunting by different interested parties resulting in some of the worlds most important collections of monastic books.

Their role in illuminating religious scripture also contributed to the world of painting and medieval art. What could be considered a schooling of scripture, poetry, and art in a form closest to current day schooling was available at the monasteries and churches in the medieval era. Scholars argue the case for medieval scholarship and its virtues to separate the period from how it is readily perceived from the manners of armed conflicts and the condition of the peasantry.

To conclude the narrative of the monastic influence anecdotally, upon my visit to the Benedictine Monastery , St. Anselm's abbey of Washington DC, the tour master shared with me his theory of why some of the psalmody and chants happen to be sung in a high note to this day. He believed that, in the earlier periods, the students joined in as a choir during some of the offices, and influenced the note with which the novitiates and seniors conducted the offices and psalms.



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The dwindling monastic influence

Their close alliance with the monarchies had also allowed them to wield power. The first crusade was preached by a Carthusian monk in 1088.⁴⁸ Both in western Christianity and in the eastern religions, monks and monasteries were involved not only in politics, but in armed conflicts as well. Records show various military orders affiliated with monasticism especially during the crusades.⁴⁹

As monarchies manoeuvred to consolidate power by diminishing the influence of the church, monasteries experienced the effect indirectly as is evident in the emergence of new orders without proprietary and financial powers (from the 11th to the 14th century), and directly by losing their prominence from the loss of their role in the monarchy, and by facing persecution.

Monastic submission to rulers of post Roman Europe is chronicled starting in 11th century, and a much severe fate such as the dissolution of catholic monasteries after the reformation under Henry VIII in England.⁵⁰

This undertaking took disparate forms, from mere legal and administrative proceedings to the more severe marauding and pillaging of monasteries, and hanging abbots at the gates of the abbeys.

The day to day life of monks and the cloister

Although it is observed in various manners in modern day monasticism, the monastic day begins as early as 3:30 am when monks wake up for a vigil. Benedict wrote in his rule for monks to sleep with their tunics and belts on, so that they could ready themselves quickly for the vigil. RSB also identifies the manners in which the vigils shall be conducted for different occasions.

The monks would observe the next office, Lauds - at 6 am, Prime at 7:45 am, after breakfast, retire to their dorms, attend Terce at 9:00 am, Sext at 12:00 pm, and None at mid afternoon. The times in between are for earthly duties (labouring in different vocations), rest and silent contemplation. At early evening, they will attend Vespers in the dining room (refectory) with light supper while a chosen brother whose duty it is at the day will read psalms, a hymn, a prayer that is followed by a response from the monks (a versicle), a gospel song (cantic), a prayer alternated by the conducting monk and the congregant monks (a litany) and the vesper is concluded with the Lord's prayer.⁵¹

The last office of the day is Compline, which takes place at midnight.



PL46 1



PL46 .2

The monastic structure evolved from the Egyptian caves of the centuries following the ascension, to complexes of individual huts and gardens settled by a larger group of hermits and wandering monks (gyrovages), to small stone built prayer chapels and occupied crypts of the early middle ages, to far more elaborate structures and surrounding settlements of monasteries of central and southern Europe.

Sometimes, a monastic complex would have a number of churches, for male clerics, for the nunnery, and a cemetery church. These are mainly built around a large abbey oriented east - west. The rising sun signified salvation, while the setting sun represented death and declination, and hence the laity entry would be in the west and the altar or the tabernacle in the east).

The adjoining structures around the abbey occupied by monks were built around a courtyard (cloister) where monks walked the perimeter of the courtyard, usually a colonnade in silent prayer, passing a repetition of colonnades, which induces a lulling of the mind from distraction and creates a sense of absorption and a strong sense of focus and concentration.

Cloisters could be more than one for different groups of the monastic community, one where the dorms and chapter houses of the fully fledged monks and another for the novitiates, oblates and general attendants of the monastery in question.

Depending on the economic and social involvement of the monastery, the auxiliary structures could be as numerous and as varied in their use, From the coach house, to the granary, to the stable and pens, to the winery, tannery, brewery and many more. It is determined by the complexity of the abbey's ministry in the community.

At the heart of the cloister,⁵² the fundamental structures are however the abbey and the various small chapels (the abbot's for one), the monks' dormitories (sometimes the abbot has a separate lodging), a chapter house for the congregation of the monks as sacred in the manner as they would in the church, the guest house (hostelry), where a dedicated monk would receive clerical guests and devotees, a calfactory (a sun lit room where monks congregate for warmth, situated according to the cloister's respective geographical hemisphere), a kitchen, a refectory and a library (scriptorium).

While the most elaborate and the most involved monasteries have various auxiliaries, smaller monasteries would have a single worldly function in which the monks engage, such as a school (as in the case of St. Anselm's abbey).



PL47 .1



PL47 .2

I was fortunate enough to visit two monasteries in Washington DC during my thesis study. One of them was the Benedictine Saint Anselm's abbey and the other was the Franciscan Monastery of the Holy Land, whose complex was built to depict in scale the actual site of the calvary.

While touring the Franciscan monastery of the Holy Land, I observed the various landmarks and what they represented in Golgotha, the different artifacts and the symbolism in the church design and orientation, It was in St. Anselm's abbey that I got the opportunity to receive a tour tracing the monks' daily rituals and passages.

St. Anselm's abbey was founded by a sister abbey in Scotland in 1923. Although the first abbot was not elected until 1946, the founding candidates were priests and scholars with ties to Catholic University of America. The founding priests joined the order for scholarship and research, and as such, the monastery has teaching as its primary vocation. The monks built all of the Abbey's millwork and furniture, including a large crucifix in the church. They maintained the monastery, and until a few decades ago, maintained their own vehicles as well.

Even though the current St. Anselm's academy built adjacent to the abbey in 1942, has a few monks in its employ today, The original school, built in 1930 was part of the abbey complex, and is currently functioning as the infirmary.

In 1960 St. Anselm's was elevated from priory to abbey and shortly after added a wing that houses the dormitory and the calfactory, designed by the renowned Architect Phillip Johnson.

For the different offices during the day, equal number of monks rendezvous at a pair of hallways mirroring each other on each side of the chapel, and enter in a procession to occupy the stalls on the respective sides between the tabernacle and the pews. Each stall contains two rows of 8 built - in chairs each, with folding seats. During the offices when monks are required to stand up, they fold the seats, but the old and weak lean on a small protrusion attached to the underside of the folded seat, called misericord. The misericord allows the weakened monk to be in a semi standing semi seated position and give his tired body a little bit of a respite.

Because these stalls were out of bounds for the general public, early monasteries had misericord with carvings made by monks, of caricatures ranging from the supercilious to what would today be considered politically incorrect.



PL48 .1



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The dorm rooms are Spartan in provision. They contain nothing more than a small bed, a desk and a small cupboard. Furniture types and furnishing layouts are sparse and left to each monk's discretion. But in general, the hallway leading to the dormitories and the dorm rooms themselves evoked a serene atmosphere created by a combination of the absolute quietness, and the drama of the natural light whose presence is inevitably observed as a result of the lack of noise of any kind.

The refectory is furnished in a horseshoe shape as is customary, created from a series of tables. There is a center table from which the monks are served. Outside of meal time, a box of cereals and miscellaneous flasks and jars could be observed.

The reading during vespers takes place at a table near one of the horseshoe legs. There is an old model sound system with a microphone. Sometimes, the monks solely rely on the sound system and play recorded material. Other times, monks conduct the reading with the aid of the microphone. If they have guests that they would like to honour, they take their meal at the calfactory.

Some of the offices are consolidated at St. Anselm's to meet their the monks' scheduling needs, as some of them are engaged in modern day scheduling obligations such as teaching at St. Anselm's academy. I learned that the early morning Vigil and Lauds are combined to be observed as one office called Matins.

Despite taking vows of stability, monks at St. Anselm's travel when it becomes an absolute necessity, for things like medical emergency, seminars and symposia. Because they do not take this vow as Franciscans, the friars at the Monastery of the Holy Land, travel and serve at different locations for extended periods of time. The Franciscan friar and tour master at the Monastery of the Holy Land, who was in charge of a cemetery in Jerusalem for years preceding his service in Washington, DC, made a humorous quip about the exception to this rule in his previous service.

The monks don a large dress known as a tunic, girdled with a belt, over which they wear a scapular. (*Lat. Scapulae - means shoulder*). Some monks use a short tunic, about knee high, to prevent a likely hinderance to manual labour. Benedictine Monks are sometimes known as black monks after the colour of their habits.



PL49 .1



PL49 .2

The old tradition of receiving guests and having oblates is still practiced at St. Anselm's abbey. Oblates are observant catholic laity who join the cloister for brief periods, such as weekends, to pray amongst monks and give service at the cloister. When they are not attending offices, they serve by cooking, cleaning, looking after the infirm, etc. In the time they spend at the cloister, they carry themselves as a monk would, before they head back to their day to day lives in the outside world.

St. Anselm also receives other types of religious observant guests. During my visit, the tour master shared with me an anecdote of an elderly Orthodox Christian woman from my country of birth, Ethiopia, who was received and provided with accommodations so that she could spend time secluded, in silent and vigorous prayer and contemplation. I remember from childhood when priests of the Ethiopian Orthodox church issued directives to the congregation to conduct these prayers, known as 'Su-ba-ie', especially in times of national difficulties, such as armed strifes and famine.

Virtues and strength that inspire

All in all, the experience of studying monasticism and monastic communities was edifying. Architectural thinking can no doubt be edified by a discipline other than itself, a discipline inherent in which are strength and virtue.

Monks inspire with their purity of heart, with their devotion, with their rigour, with their work ethic. The humility with which they carry themselves inspires even though from the inception of monasticism to this day and age, they possess some of the most brilliant minds and some of the most astonishing literary, artistic and artisanal skills. Their asceticism reveals their strong character and discipline. The extent of their ministry reveals the extent of their humanity and kindness. The way they contemplate God reveals that faith should not be presented with just crude and reductive conclusions, but should instead be defined by enduring philosophical theses.

More importantly, they have taught me to seek beauty in the unassuming and to seek the extraordinary in the ordinary.

This was also a necessary counterbalance to the focus in the earlier sections on the mundane and the material, by identifying the importance and the virtues of the sacred and etherial.

4.3 Process: Confronting Materiality:

This section is a collection of study sketches, drawings and models made in the process of confronting the different aspects of place, materiality, function (not just accommodating a function but determining how we should function in the place/ experience it), assemblage, tectonics, and examining whether the intervention upon this place is merited.

Instead of trying to arrange all these aspects over one big puzzle piece, I tried to divide them in four different experiences to respond to each with architectural gestures.

The first is the experience of arriving at the place. The agent of our arrival is a narrow towpath cutting across two distinct water bodies.

Upon being received by water bodies that flank your arrival, the inevitable desire is to cross the tamer of the waters. Therefore the second set of Architectural gestures revolves around the experience of crossing.

We cross the water to grapple with a 70 ft. high cliff before us. The third set of gestures therefore is intervening upon the cliff to make our place. This will eventually become the spine and the main corpus of our cloister.

The south end of the cloister is where we cross the canal water. It is both a crossing, and another arrival in a manner of speaking, into the world of the cloister. Whereas, at the north end, we need our fourth and last gesture to make a terminus and conclude our story. And so this terminus is a chapel

The following sections contain process material for these four Architectural gestures.



PL50



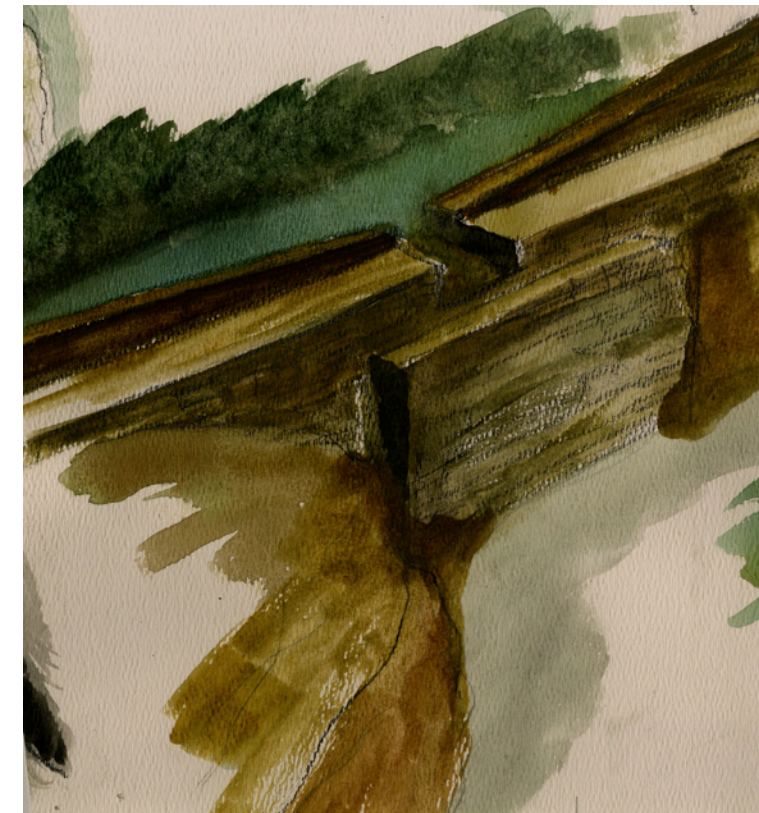
PL51 .1

Excerpt from a Sketchbook:

The Transverse Furrows on the towpath mark the place. Arriving upon the furrows is not a mere indication that one is soon to be greeted by Monks and welcomed into the cloister. Albeit an invariable response by the monks should the bell ring at the tower. Walking upon the bridge that goes from one end of the furrows to the other is an experience. It is up to the traveller to deem it a spiritual experience. But it is undeniably a material one. As I closed in on the bridge, the crisp autumn air, the relentless cavalry of the river below the broad dark presence of the canal water that almost seemed to echo its sprawling eerily silent presence with a progressively enveloping wail. A wail not just heard but seen and felt. The cliff across the canal, the parting of the red sea carved in stone. The trees that call this reality, this starkness of lunar proportions home, staking their places where this giant sculptures capitulated and through time sedimenting into stratified ledges. A feeling of pity and unwarranted concern for these seemingly unfortunate trees. But it was difficult to imagine the tranquility of the place without them.

4.3.1 The Arrival

It seems as though their material presence earns them a transcendental truth. The furrow beneath my foot carry the canal water and with their slope gently pour it gently into the dog-legged trough on the other side of my path. The sheet of water unravels upon hitting the far edge of the trough, then composes itself and sheathes down gently once again, down the slope of one leg, around onto the other, shimmering, serpentine, pouring into the belt hole at the waist of the tower. The tower sits at the mouth of the trough. The water eager to plummet to the sole of the tower and become river water once again. The furrows and the trough carrying the memory of the water though their stains and their eroded skin, lest we fail to remember how the river became the canal. The dramatic reunion of canal and river at the towers foot is a material imprint, a reminder of man's action and ingenuity to displace, congregate, merge, melt, stack, forge, to bring delight in the very thought if a canal bed soaring high above the river bed.



PL51 .2



PL52 .1

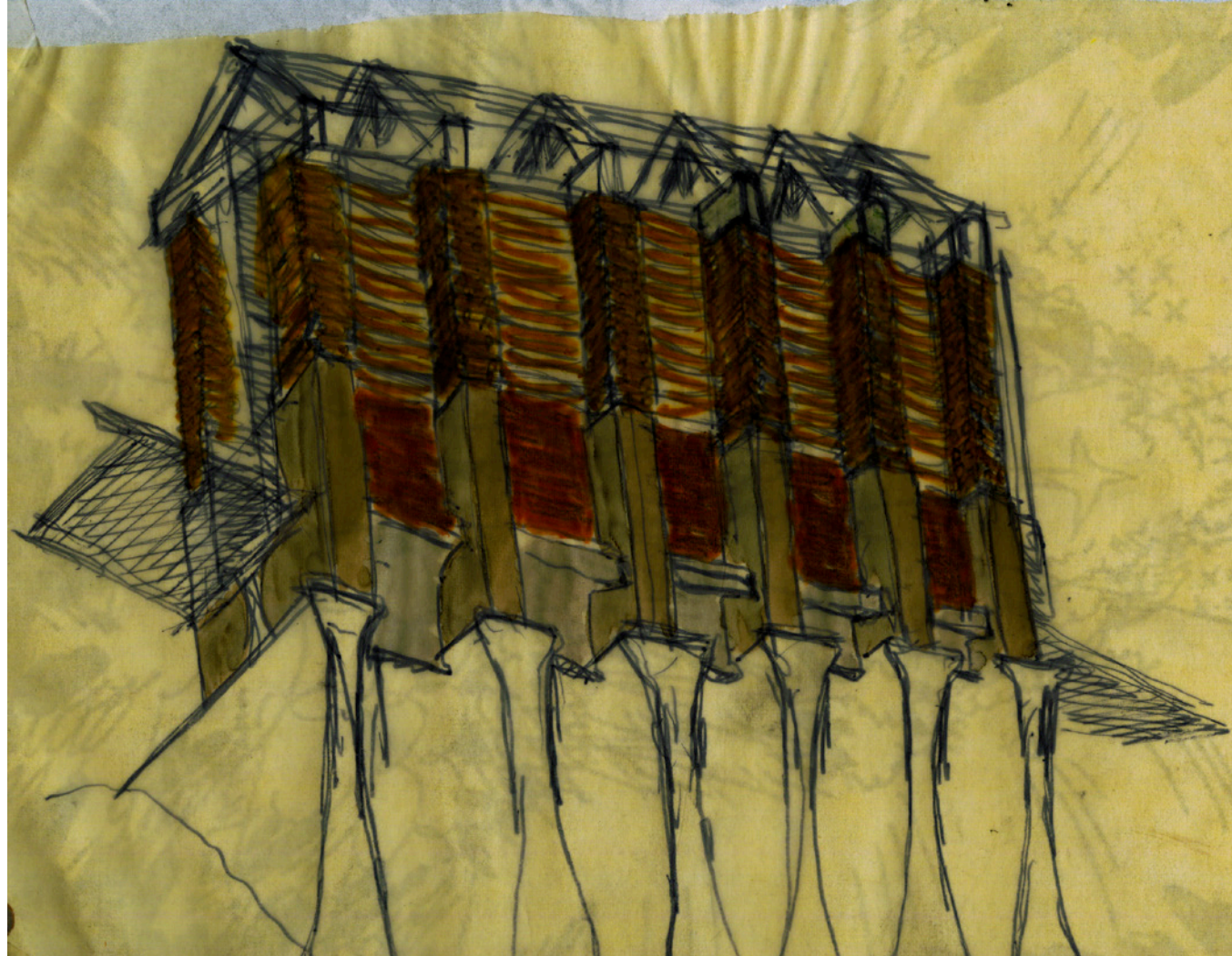
Much like the *Iconic Materiality* project, the exercise at the start of the thesis project involved making an Architectural gesture that was based on arriving at the place and happening upon the gorge and the cliff.

And much like *Iconic Materiality*, these architectural gestures included structures that allowed water in the canal to cut across the towpath. They sought to find the best possible way to make a vessel that holds water and a vessel that allows water to move gracefully.

And much like *Iconic Materiality*, these Architectural gestures included a tower like structure/ structures that marked the place as an arriving point or a beginning of an endeavour



PL52 .2



PL53 .1

If we use the canal water to mark the occasion of the arrival, the water will have to be engaged in two stages.

The first stage has to allow the water to cross the towpath in manner that involves Architecture.

The second stage witnesses water falling from a great height once it is made to cross the towpath.



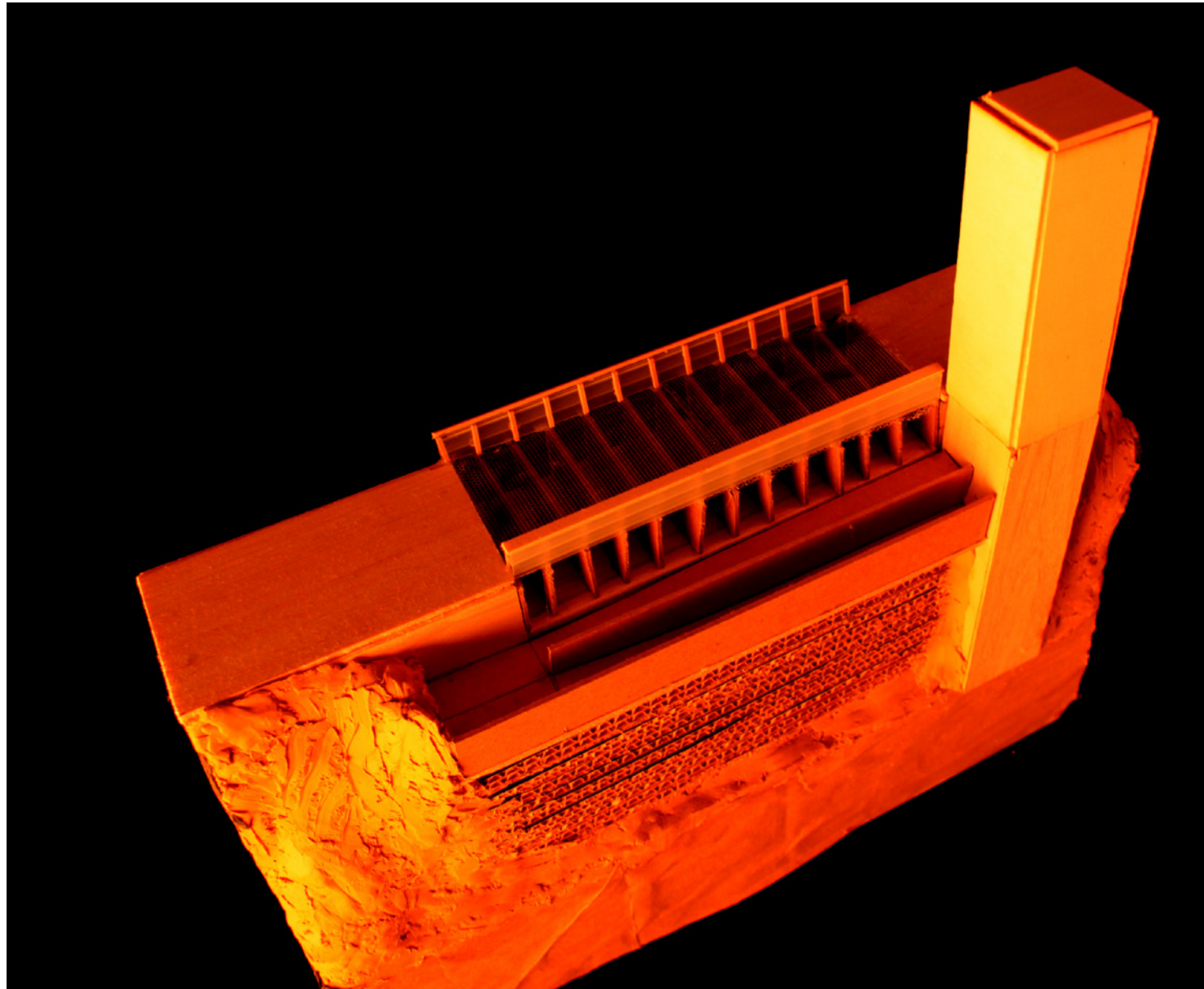
PL53 .2

The canal water can be made to cross the towpath in the most casual of manners and made to fall back into the river.

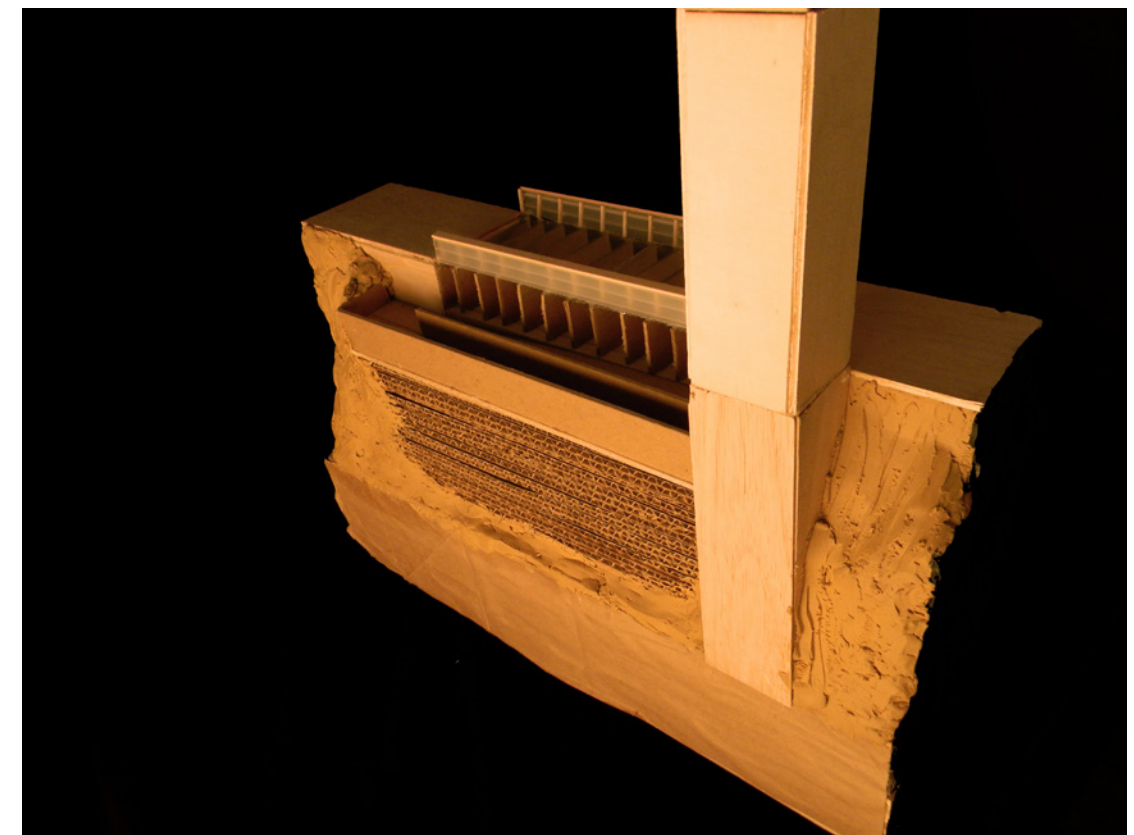
On the other hand, once it leaves its vessel that is the canal and enters another vessel that prepares it to fall back into the river, the preparation could be made into an event.

This vessel that prepares the water for its fall can attempt to show us the majesty of water, by allowing it to sheath, lap, splash, cascade, and so forth.

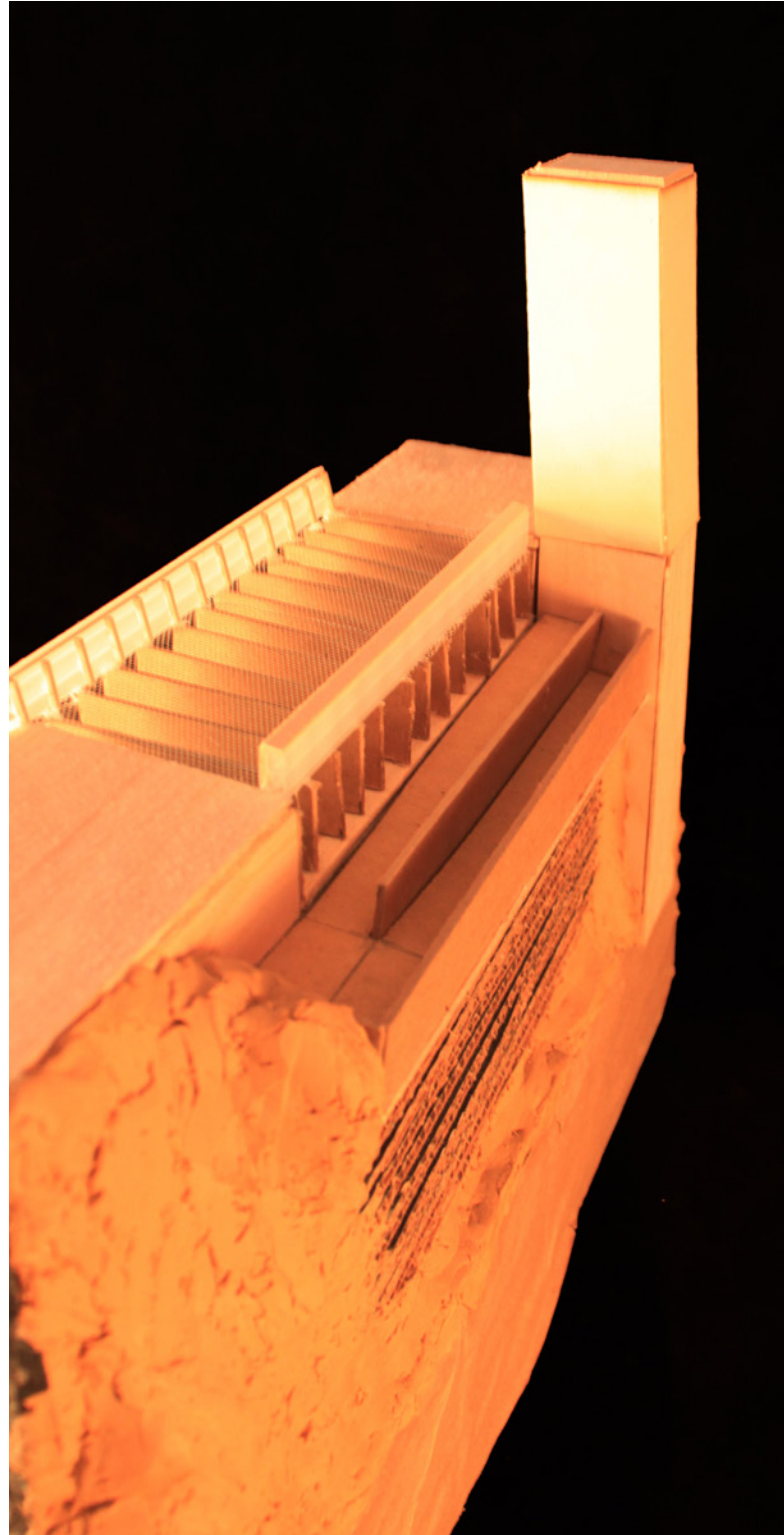
We can see water merely as the ever ubiquitous utility or we can attempt to reveal the poetic quality of its presence in Architecture.



PL54 .1



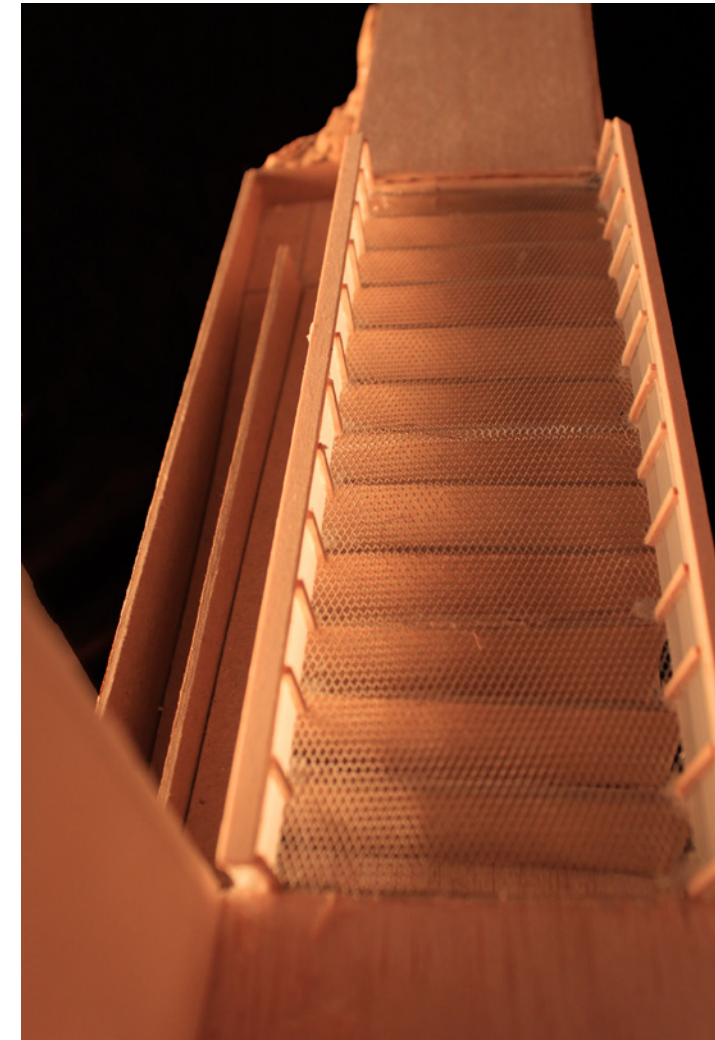
PL54 .2



PL55 .1

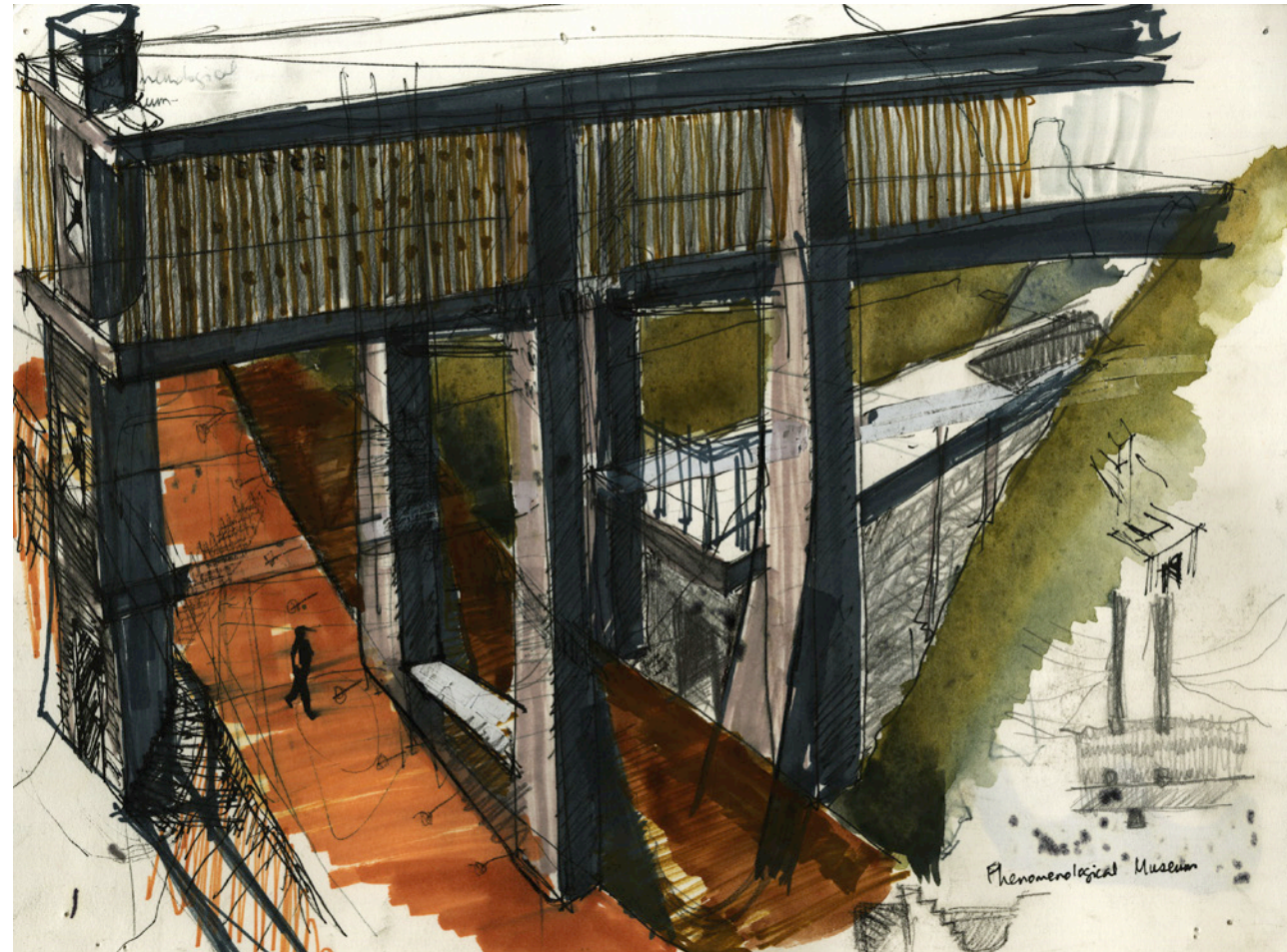
Excerpt from a sketchbook

Upon arrival at the tower, there is a moment where the two waters meet once again. One of the moments where these two bodies momentarily cease to travel side by side and change direction to meld into one. They happened at the feeder dams, at the levees, at the relief culverts, But this was different. It had preparation. This had a ceremony. The moment was elevated. Right before the canal water plunges, It surrenders to gravity, it falls and falls eternally, with the certain majesty . A chorus of splashes and scuttles. It imposes itself on the turbine blade, and is at once humble, useful, decidedly material, shedding all notion of majesty to amorously displace the air in the rock and concrete vessel, with a hum of homogeneity,



PL55 .2

4.3.2 The Crossing



PL56

..... you rejoice in observing all the bridges over the canals, each different from the others: cambered, covered, on pillars, on barges, suspended, with tracery balustrades. And what a variety of windows looks down on the streets: mullioned, Moorish, lancet, pointed, surmounted by lunettes or stained-glass roses: how many kinds of pavement cover the ground: cobbles, slabs, gravel, blue and white tiles.....a caper bush jutting from the fortress' walls, the statues of three queens on corbels, an onion dome with three smaller onions threaded on the spire.....

From 'INVISIBLE CITIES' by ITALO CALVINO

Enough time has lapsed now contemplating this place, and its virtues and its truth which is defined by overwhelming scales and very vivid geological phenomena. The towering cliffs, the disemboweled earth that is the gorge and the ferocity of the river, reminds man that it is a desolate place bereft of elements that humans make to temper environments with a comforting scale.

Instinctively, we desire these elements.

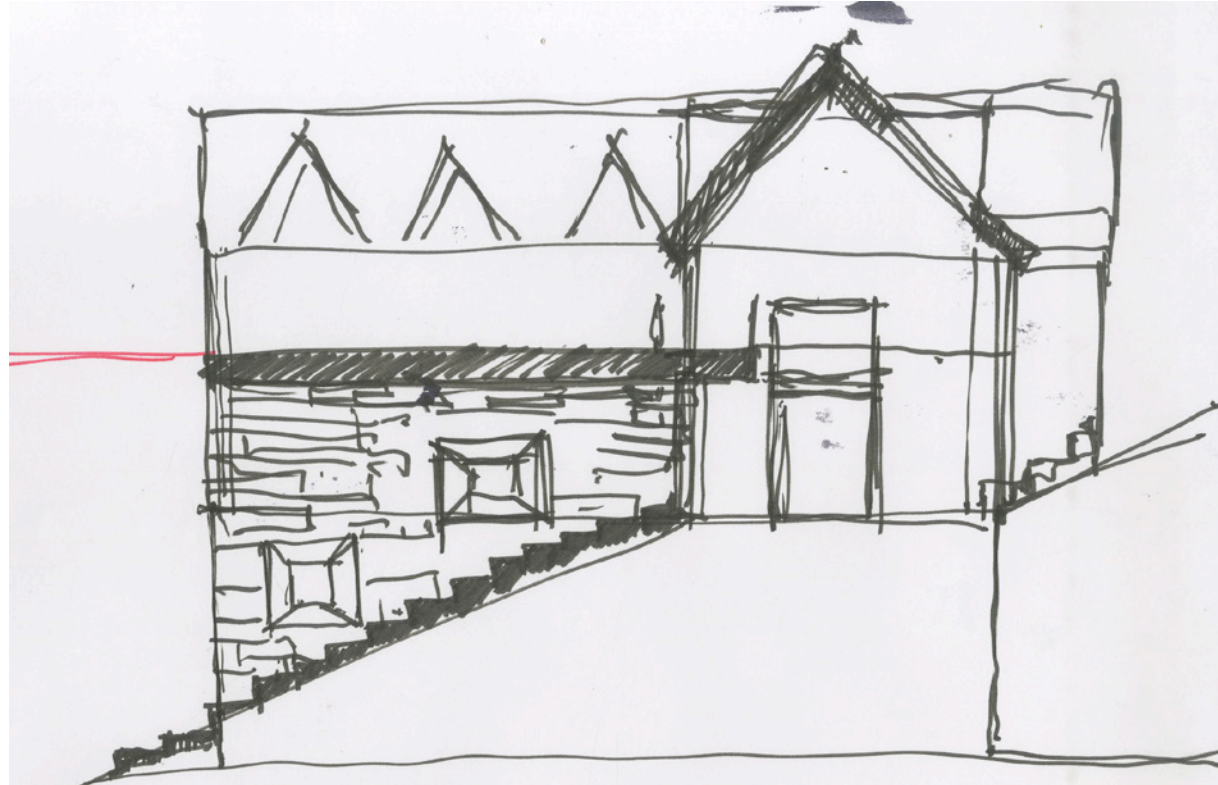
The following were elements and atmospheres conjured up and placed in my sketch book - and later built into a collage:

A door - grandiose - wooden, thirsty of lard on its hinges, labouring under its weight, wailing upon its swing, a crackling latch, a bell, a call for prayer, echoes of footsteps on marble stairs, a horse carriage, a mill, a hub, grains spices incense market...

edges, corners, tips, boarders...a store house...a terminal, a stairway - of forty steps, of seventy steps, a seat, a plaza, an altar, a court

And towards finding and making this tempered place, we cross the canal - the water that shows more clemency, to find a small ledge.

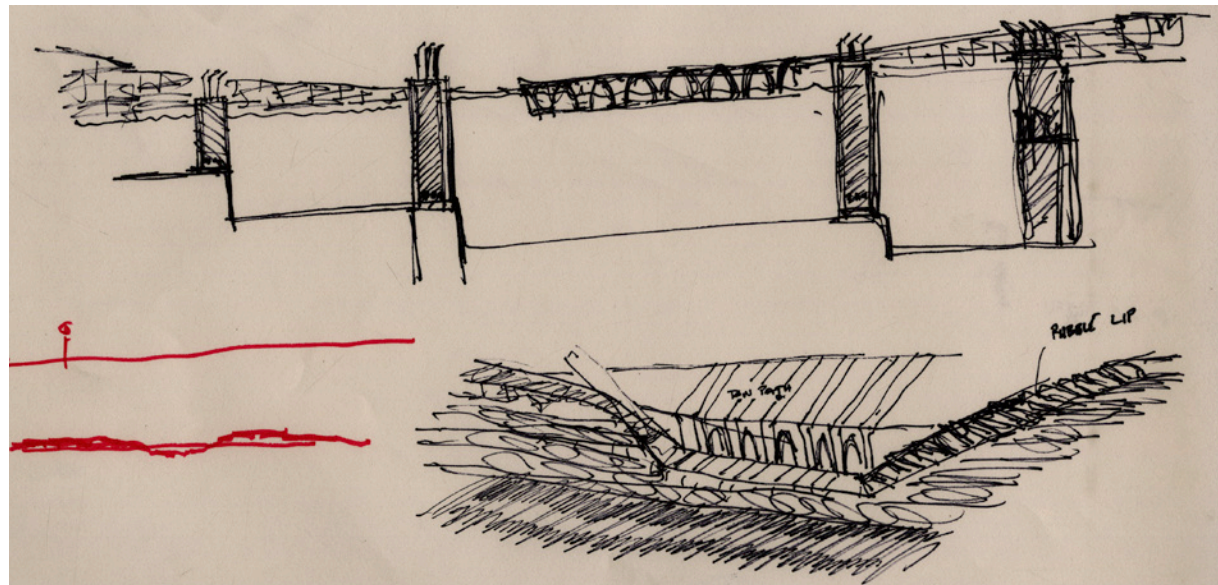
In this section, the architectural gestures are made to consider all manners of embarking on the crossing, the very event of crossing and the conclusion of the crossing, including the 'receiving' structure that is made in preparation of taking on the cliff.



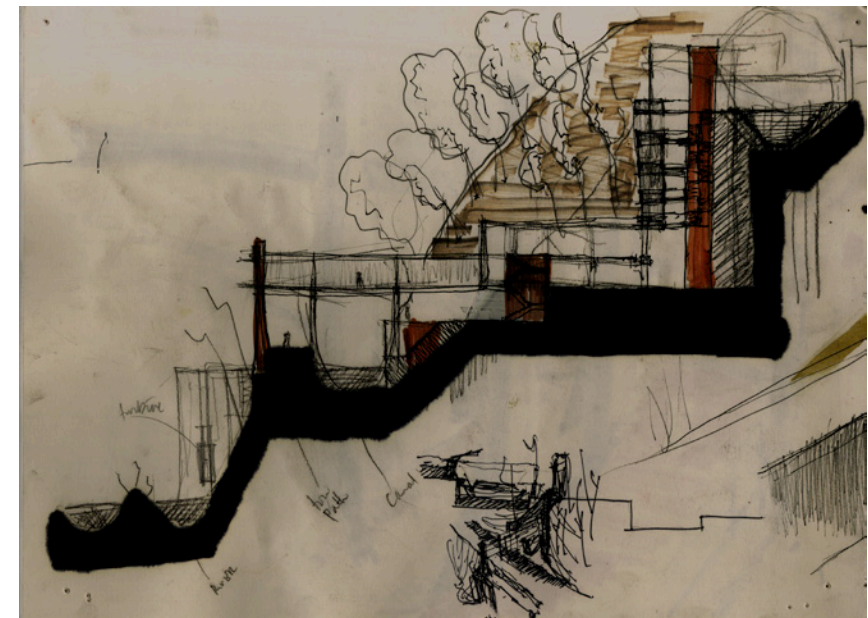
PL57 .1



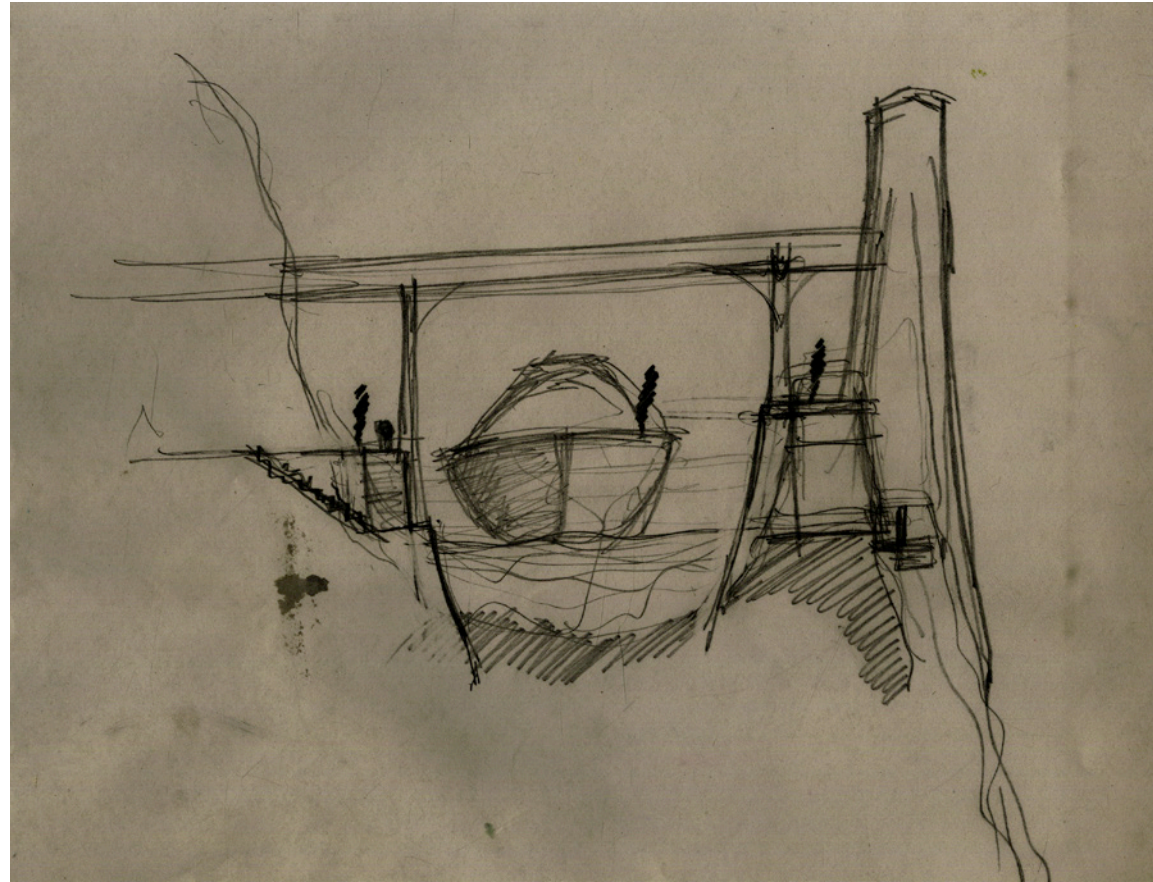
PL57 .3



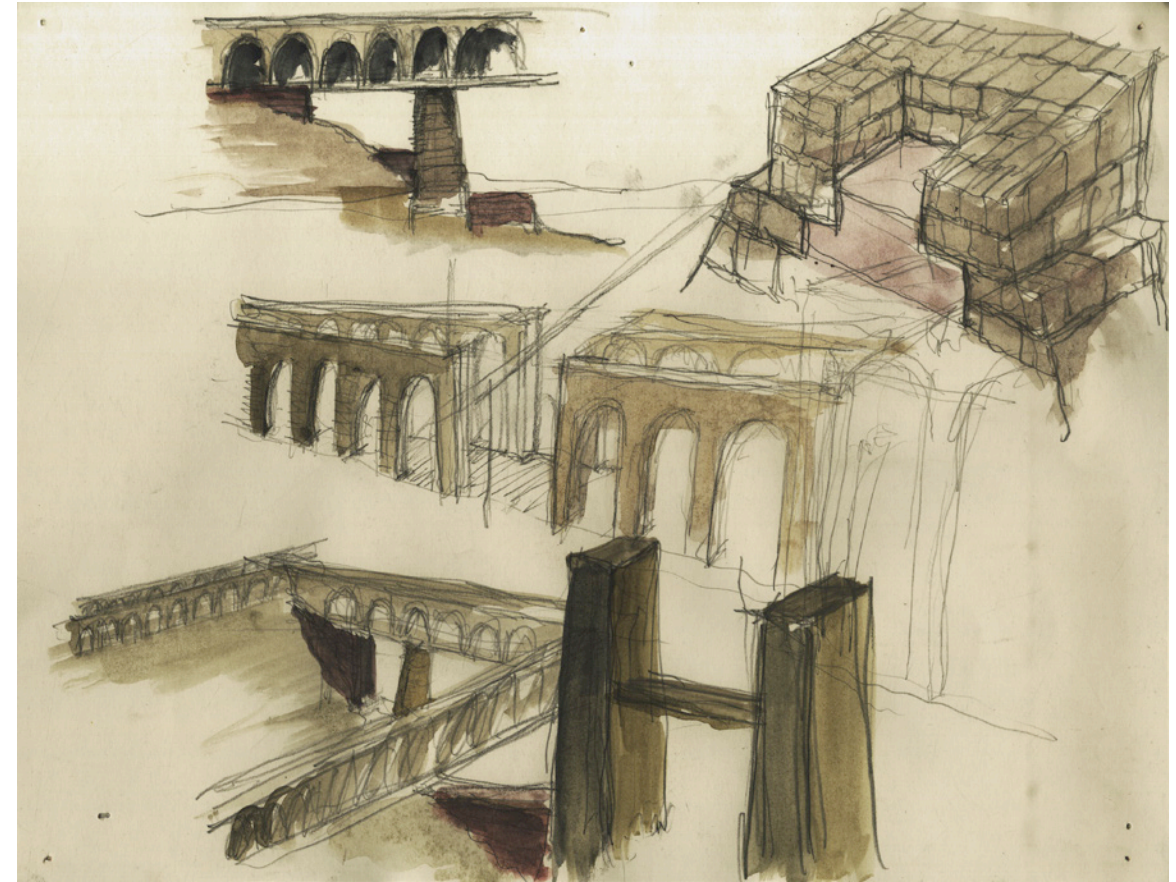
PL57 .2



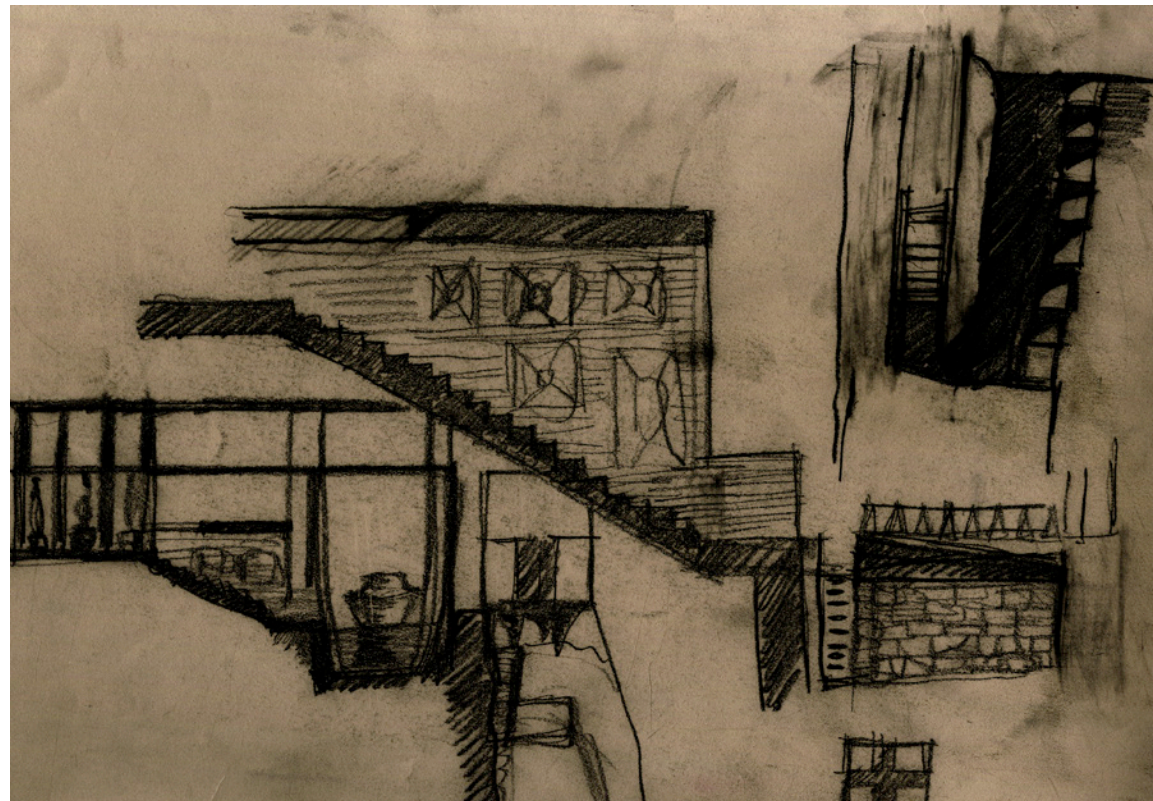
PL57 .4



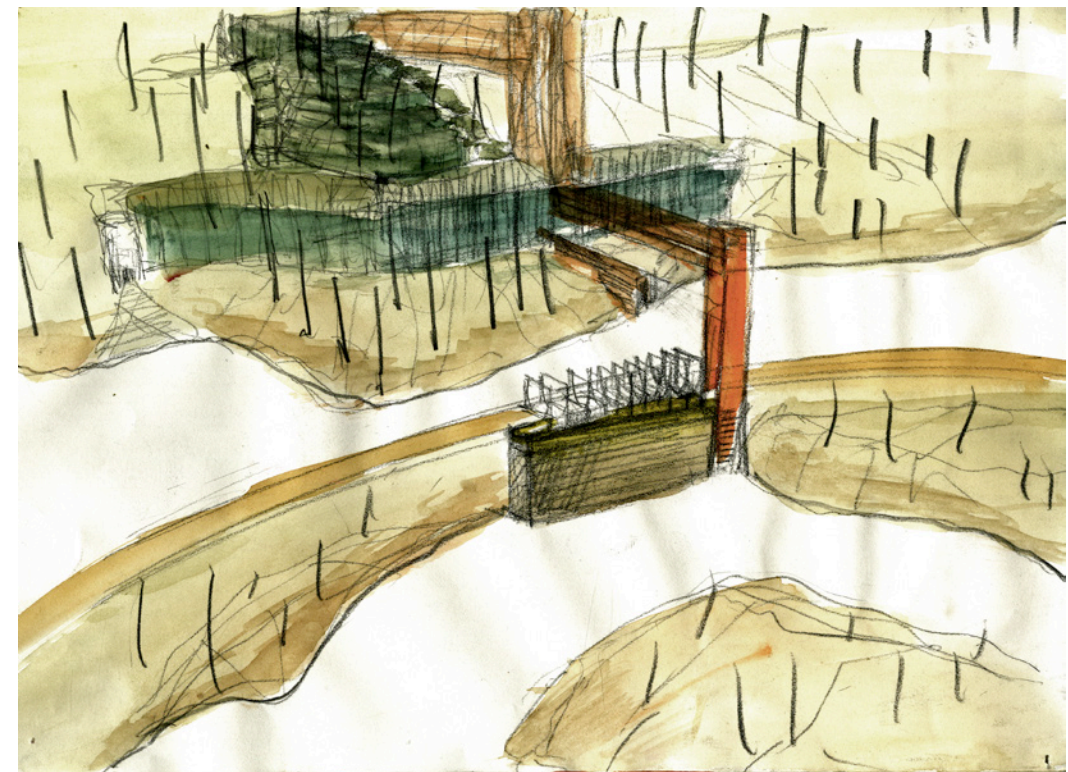
PL58 .1



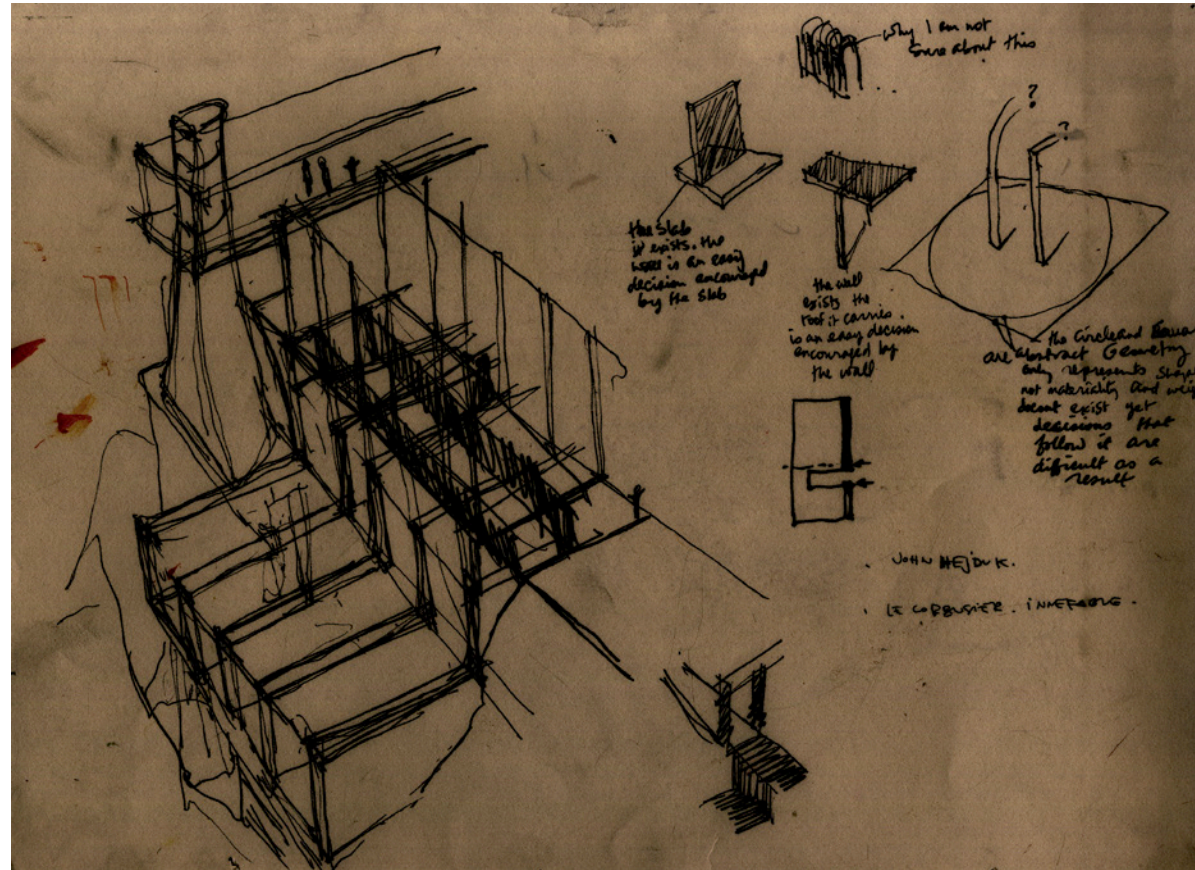
PL58 .3



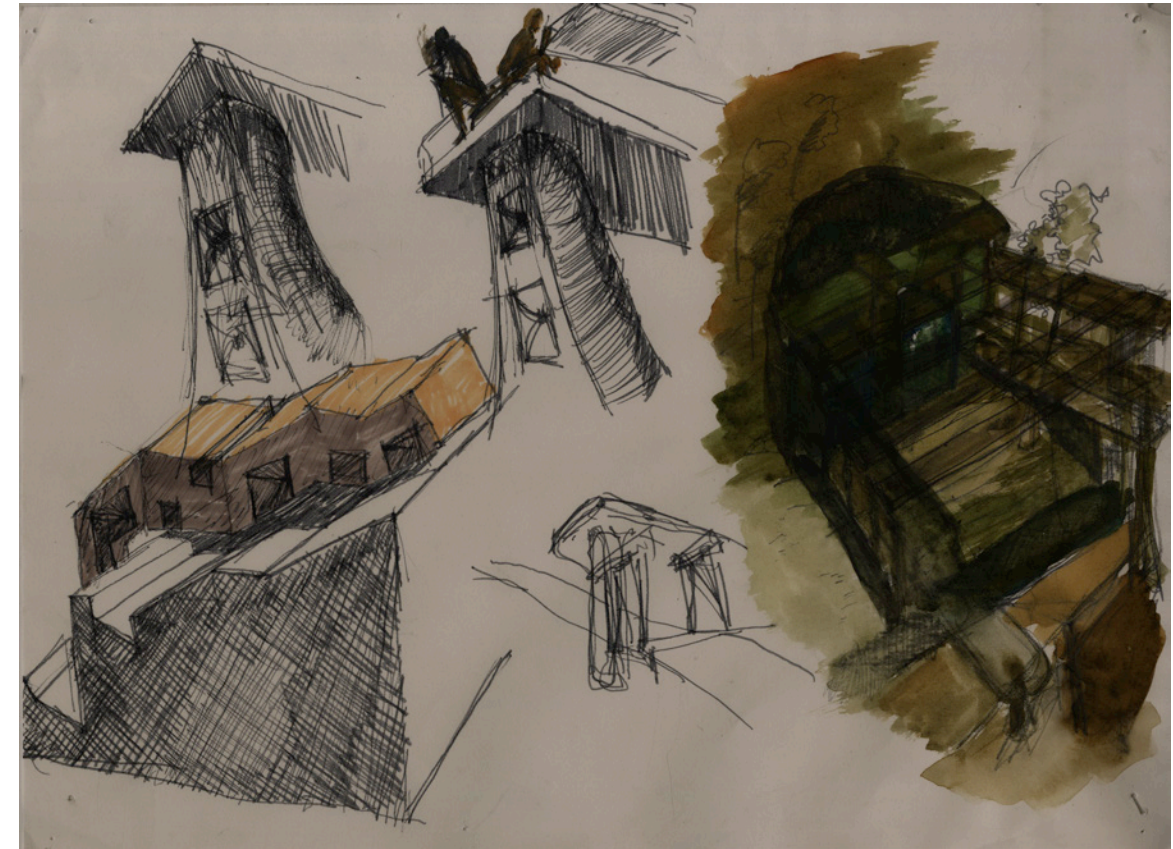
PL58 .2



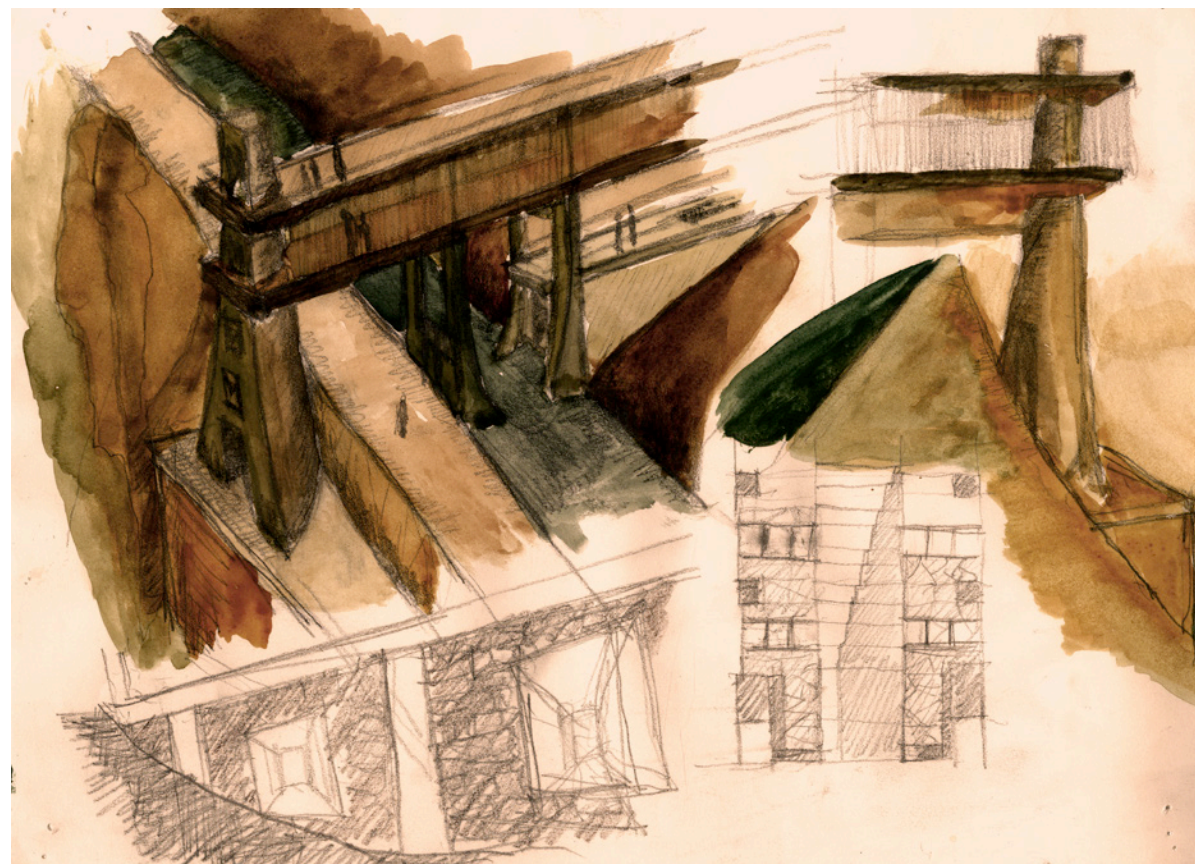
PL58 .4



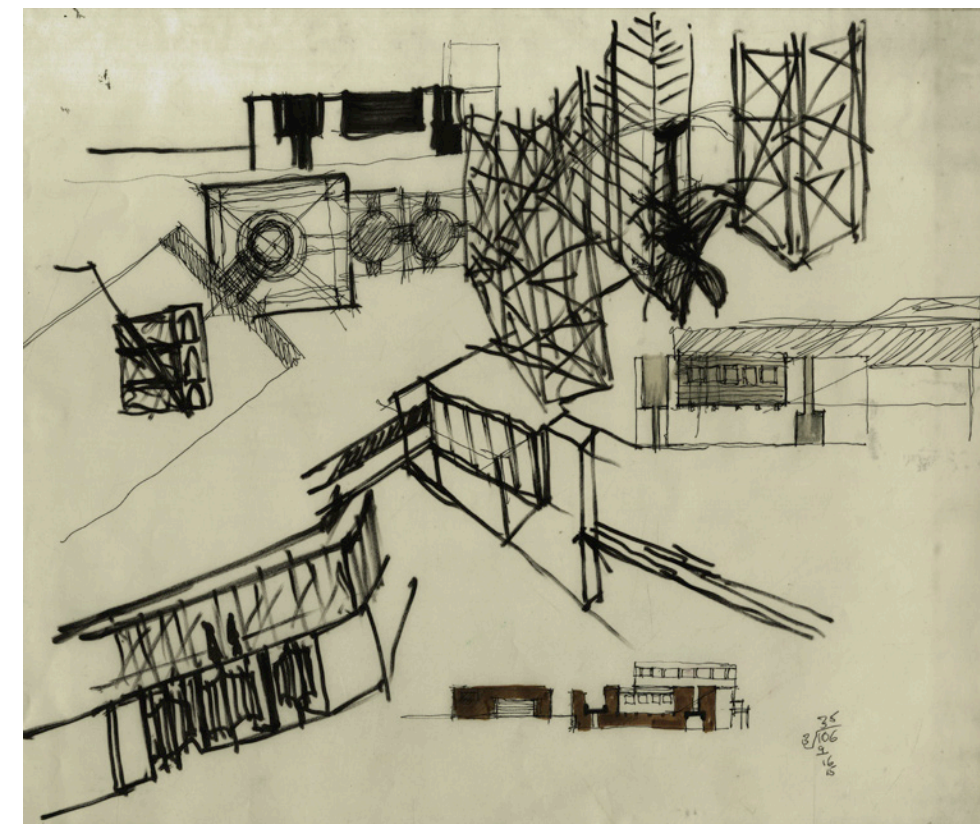
PL59.1



PL59.3



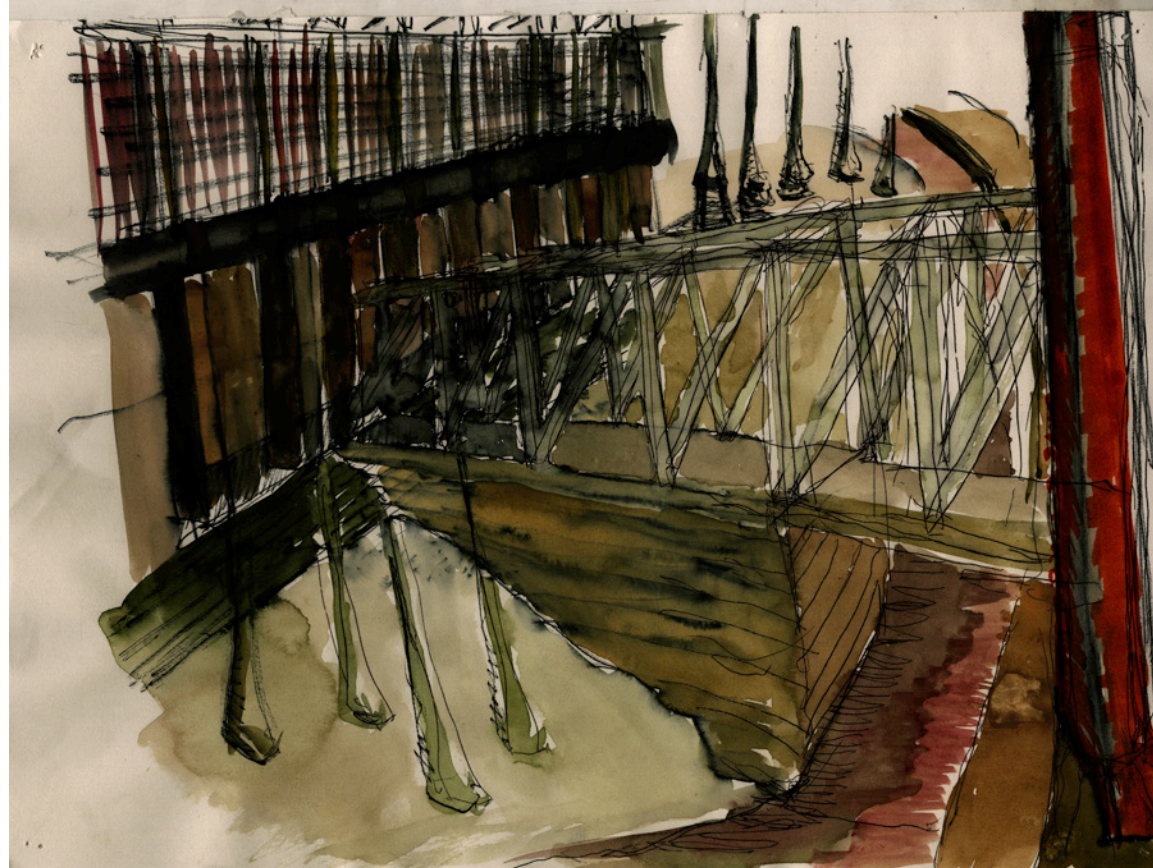
PL59.2



PL59.4



PL60 .1



PL60 .2



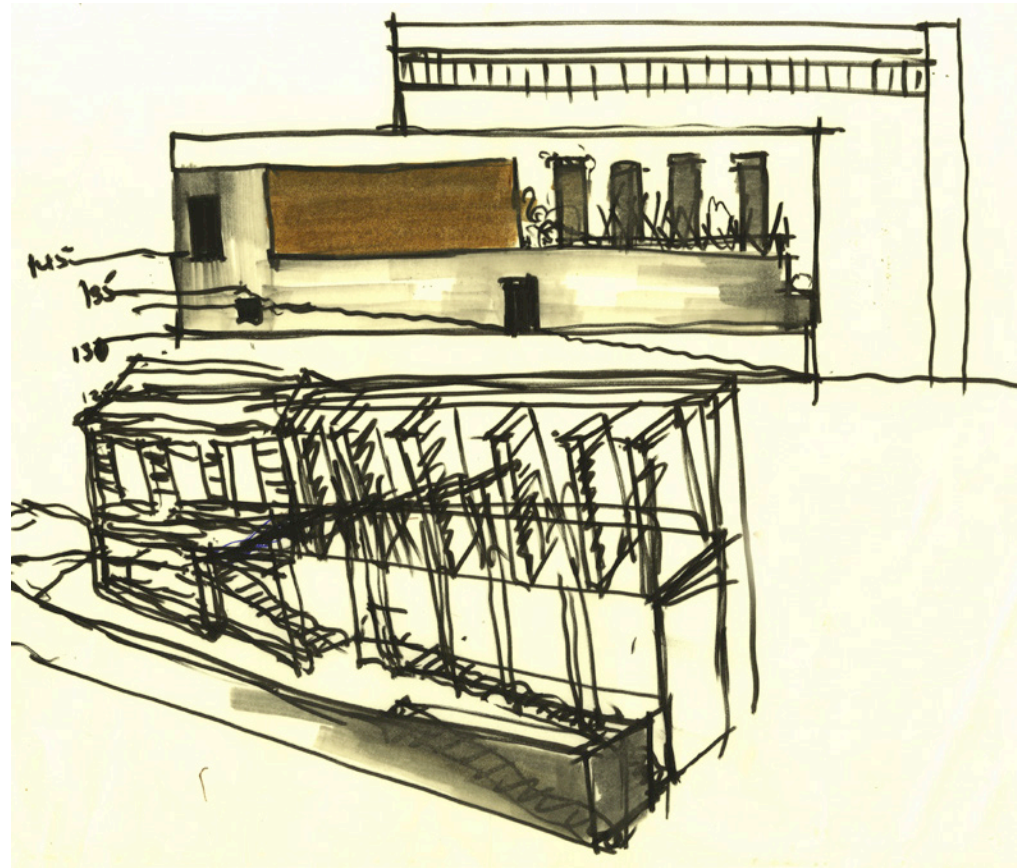
PL60 .3



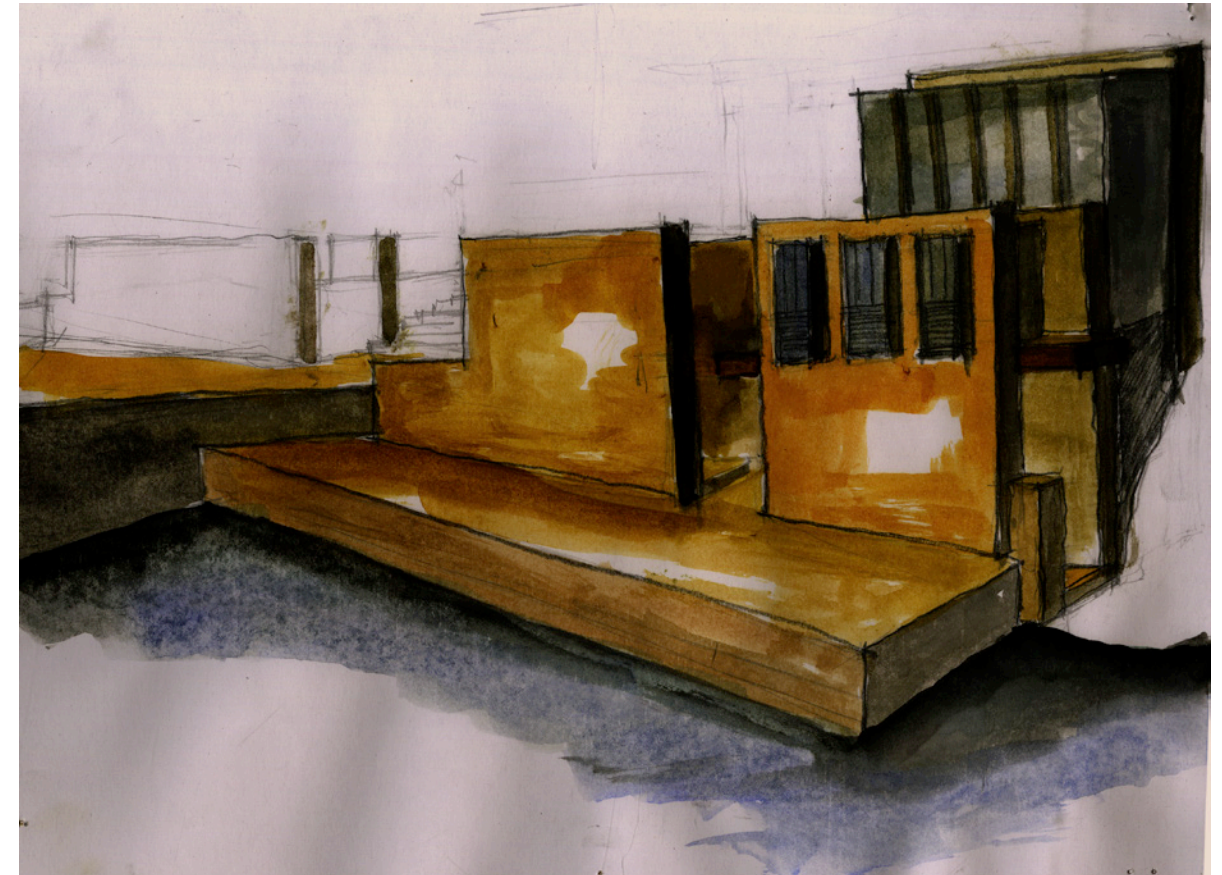
PL60 .4

The preceding sketches explore the act of crossing, both the manner in which we embark and disembark, and how the two bridged places should be constructed to launch and receive the bridge.

The following study sketches and models concentrate on the area that receives the crossing - the first intervention across the canal, which is later developed into the hostelry, refectory and kitchen of the monastery.



PL61 .1



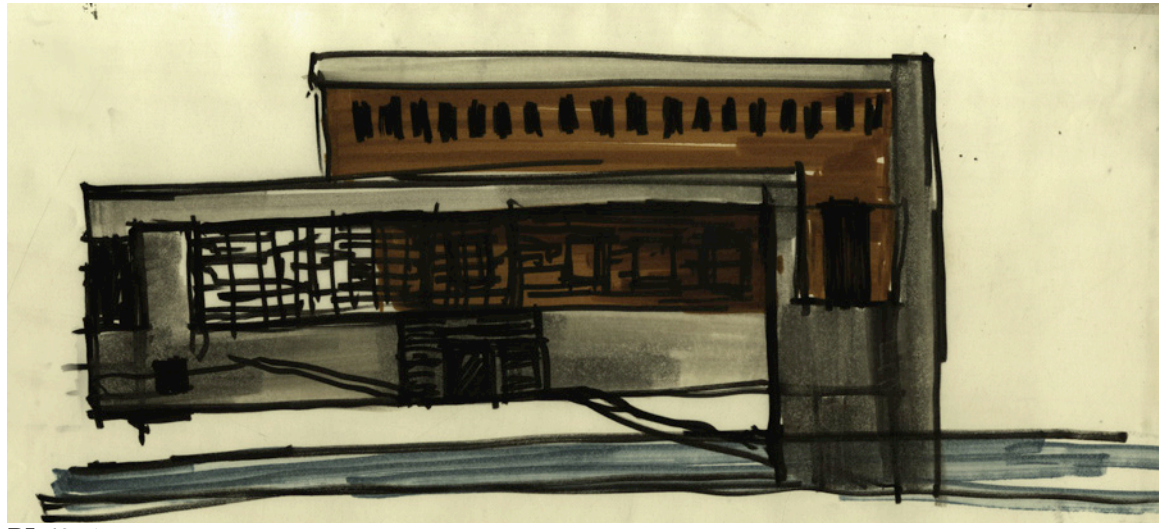
PL61 .3



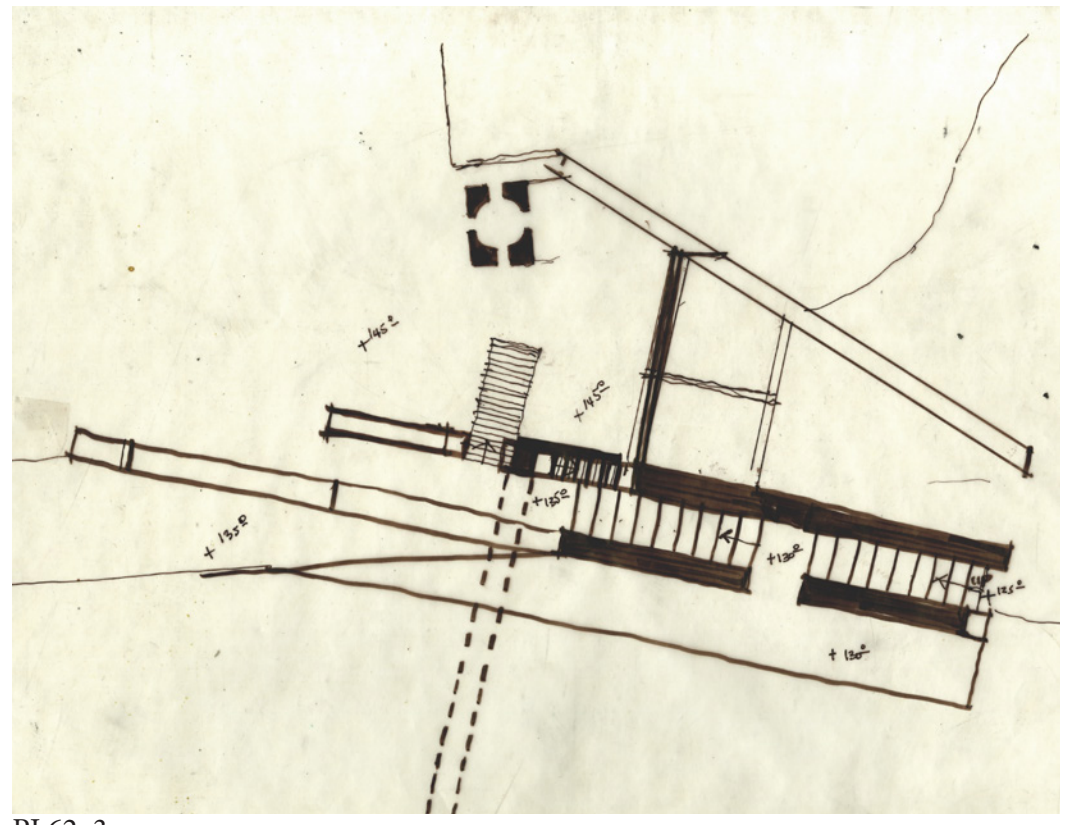
PL61 .2



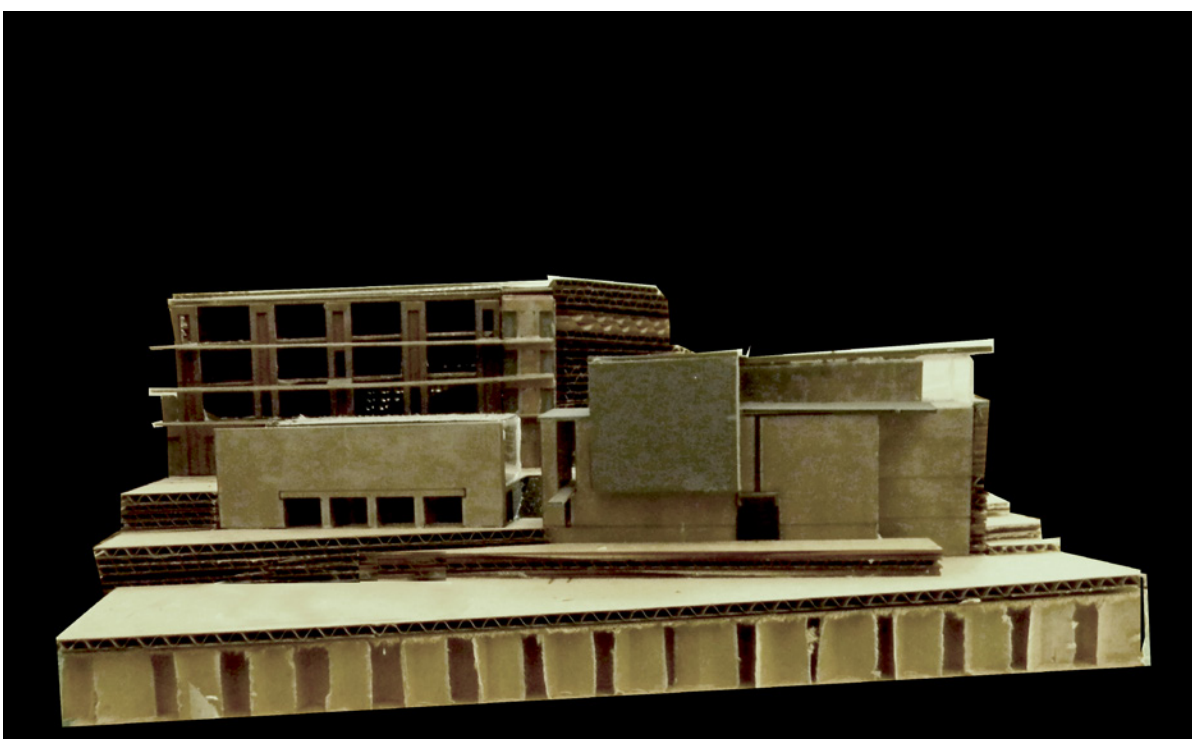
PL61 .4



PL62 .1



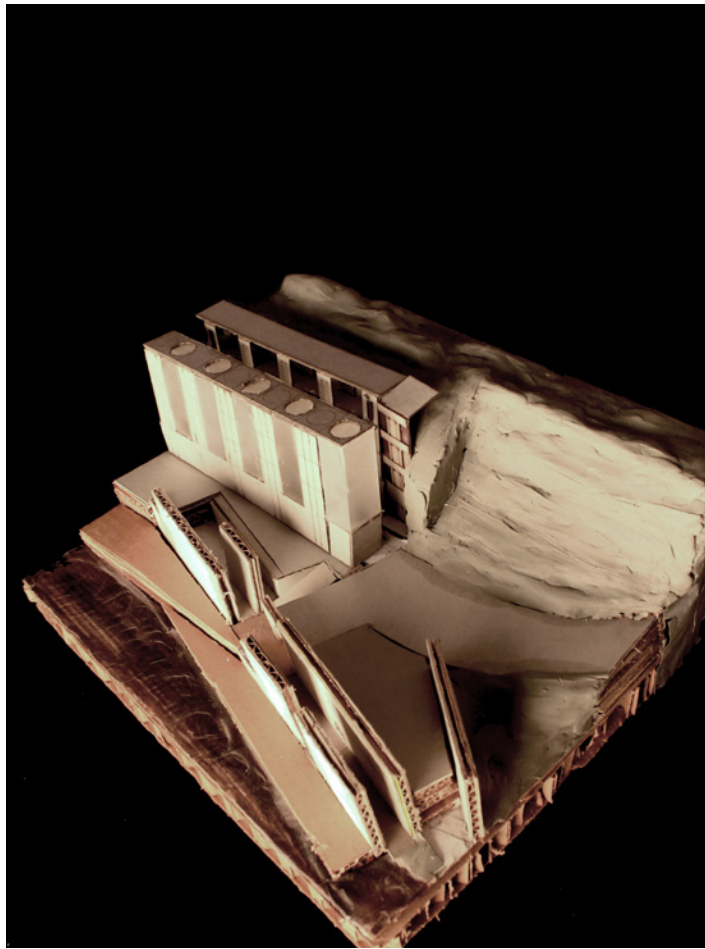
PL62 .3



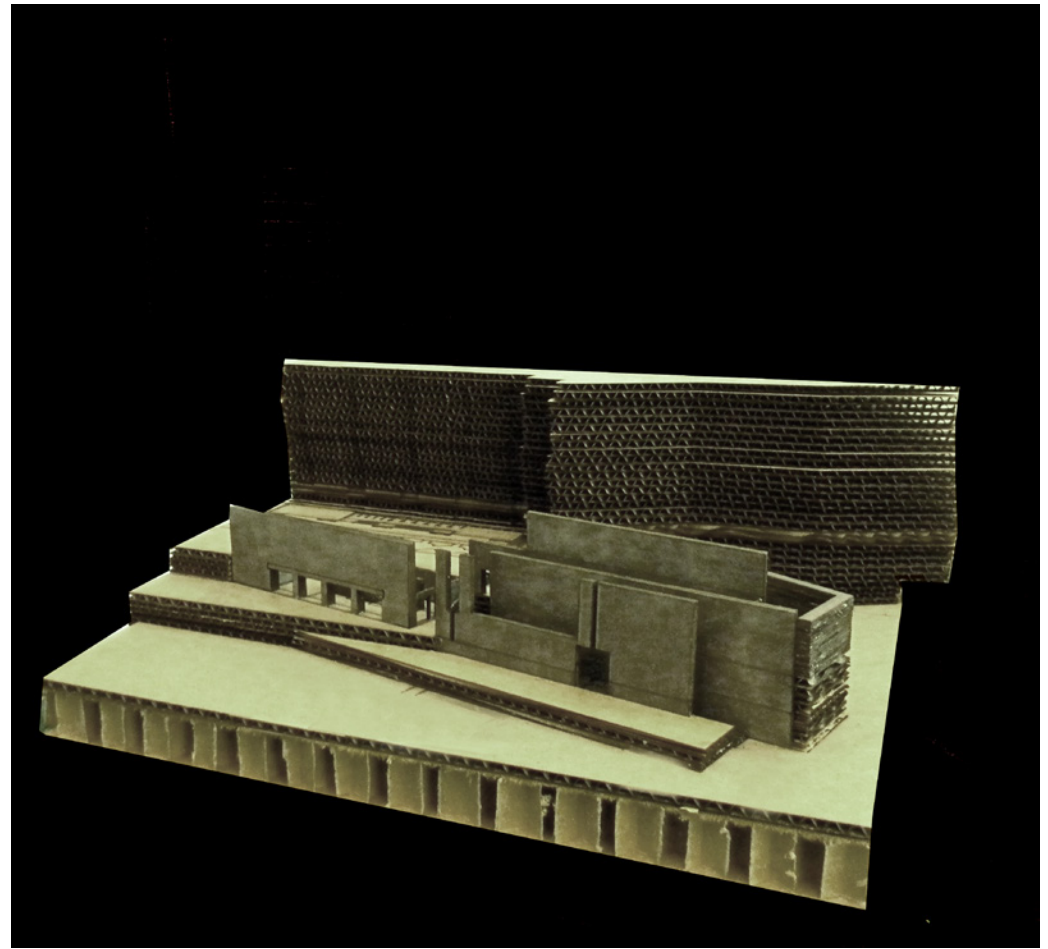
PL62 .2



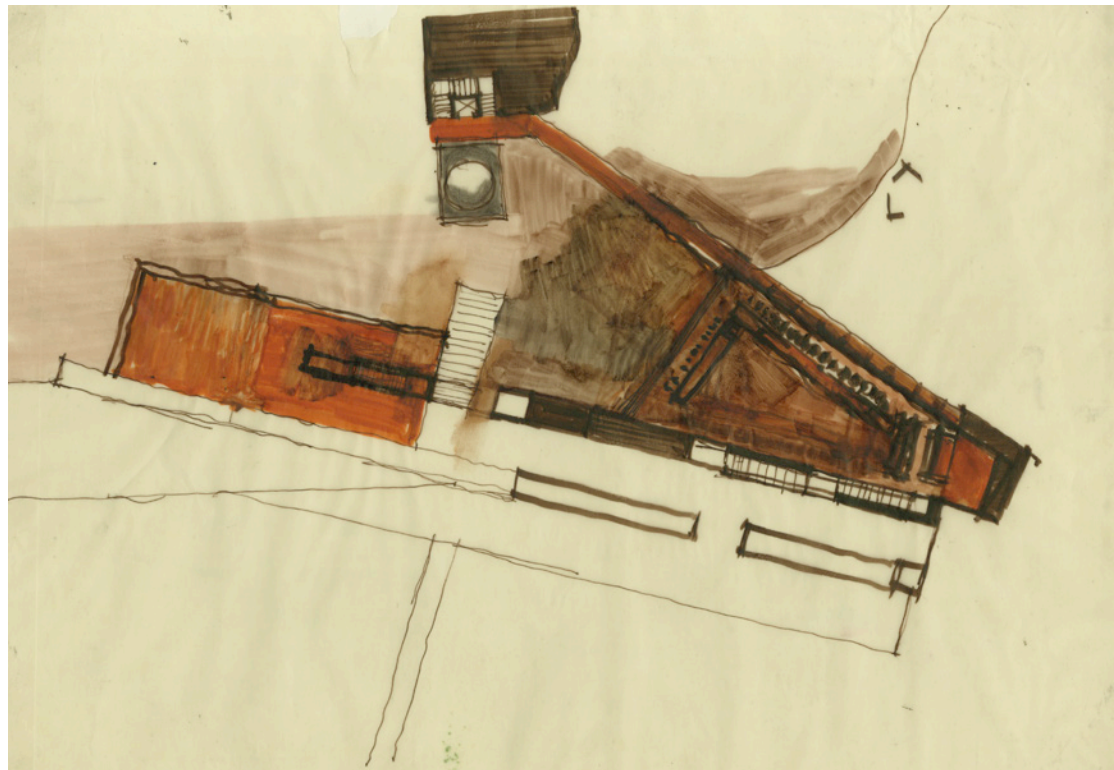
PL62 .4



PL63 .1



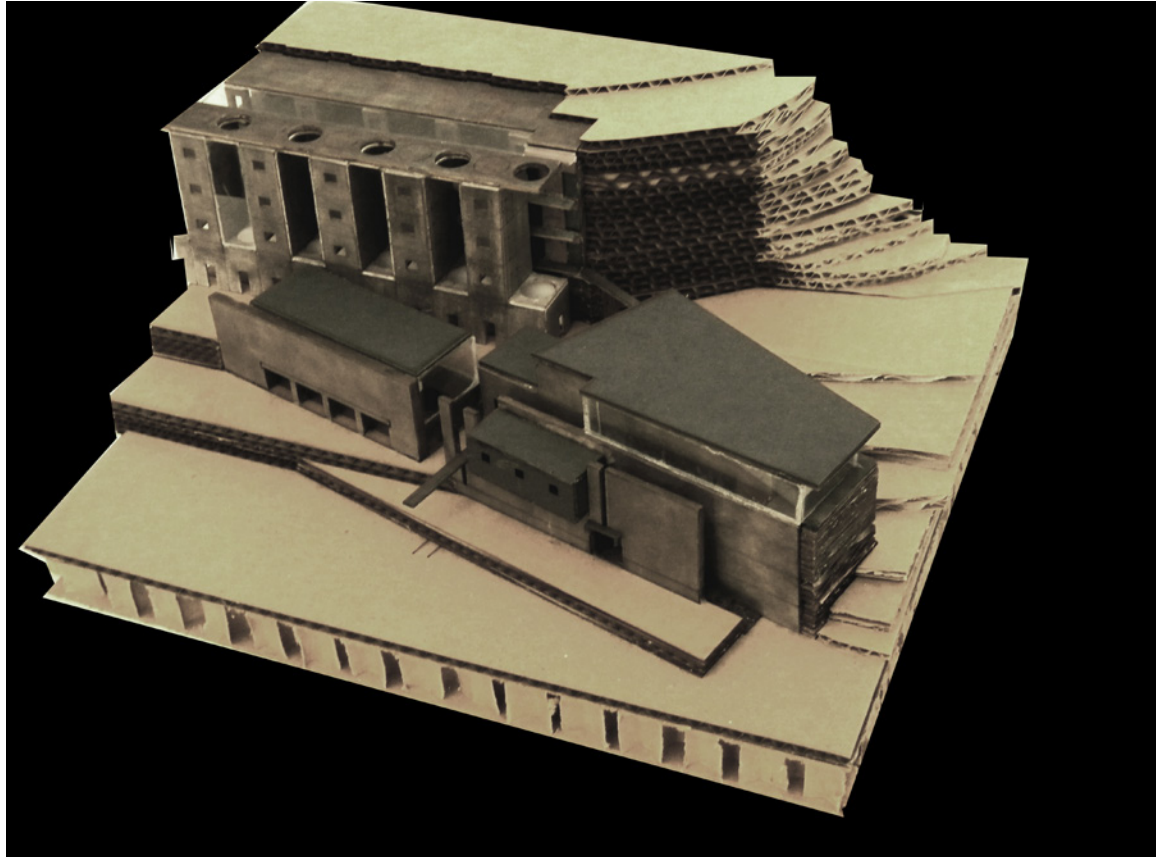
PL63 .3



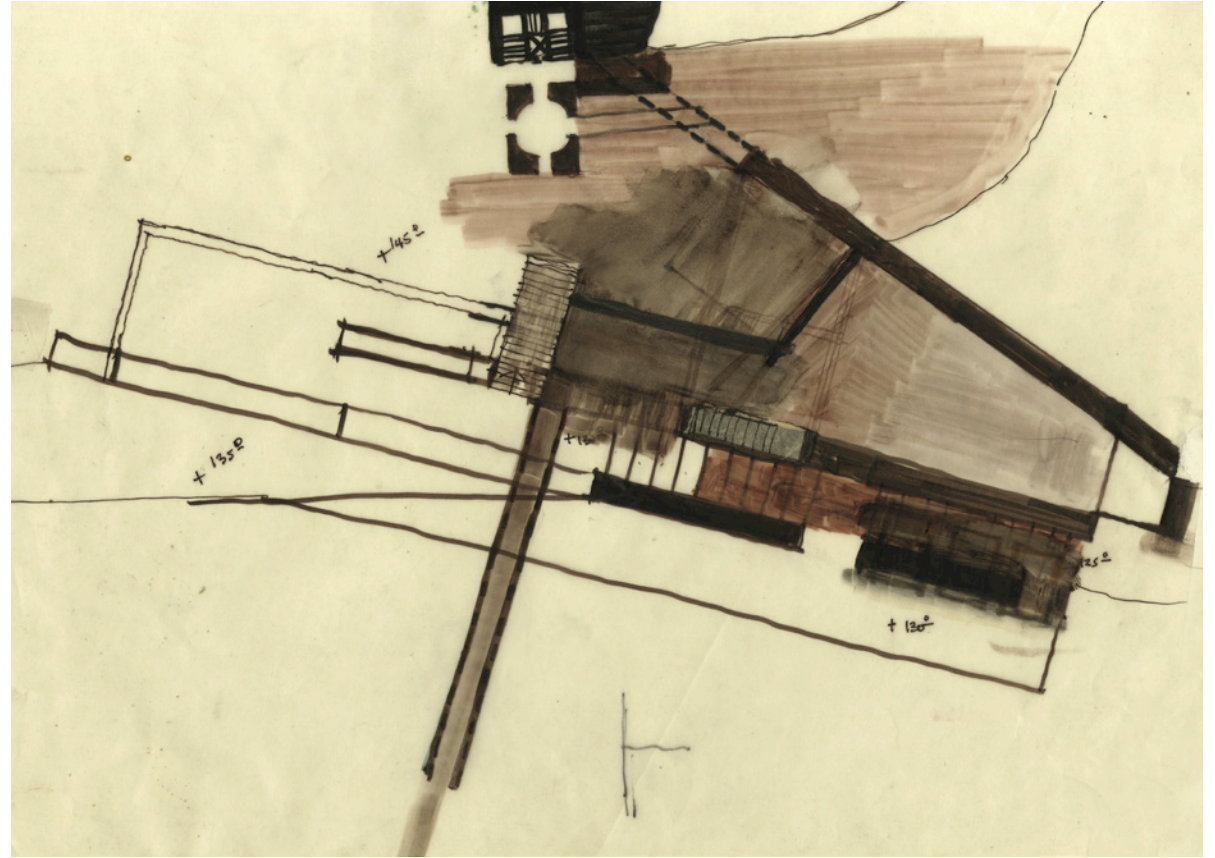
PL63 .2



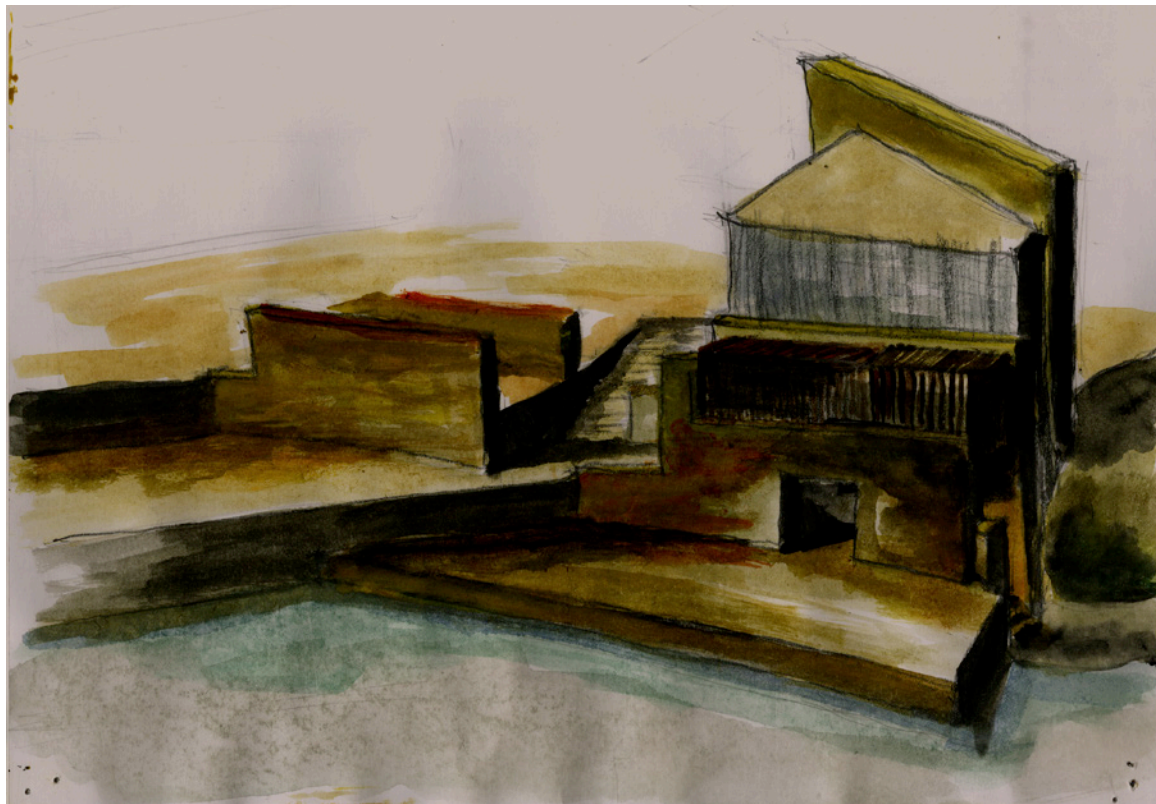
PL63 .4



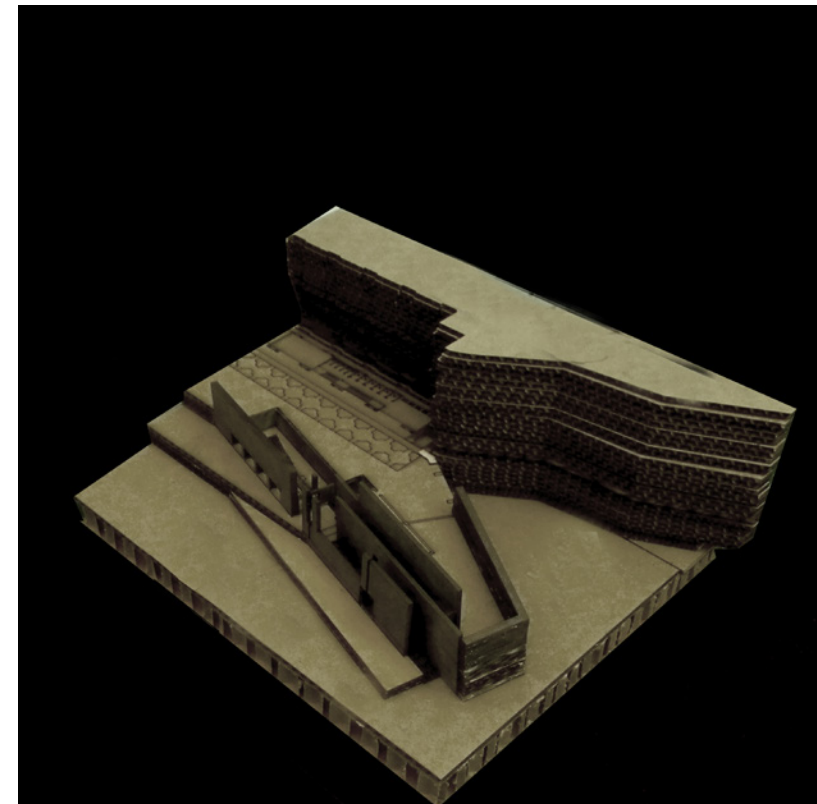
PL64 .1



PL64 .3



PL64 .2

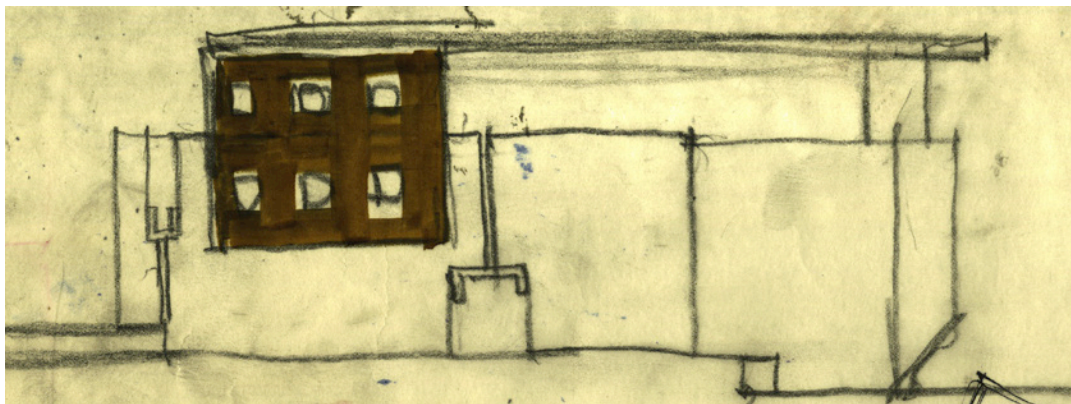


PL64 .4



PL65 .1

We have finally crossed the canal and settled at a small ledge at the foot of a trail known as 'Gold Mine Loop'. we have a series of terraces that boarder the canal, a leisurely stair that connects these stairs to the main ledge. This ledge would later become the main parapet of the cloister and the built structures would later be the frontier of the cloister, receiving, guests and supplies alike.



PL65 .2

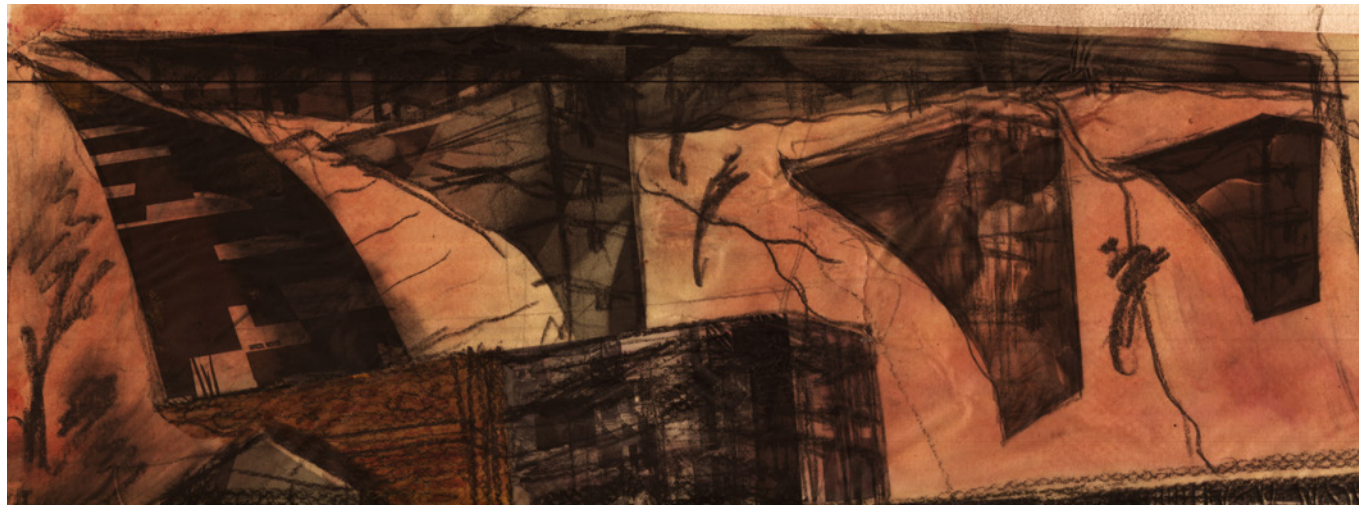
4.3.3 The Cliff

Having had a footing on a ledge at the south end of the cliff across the canal, It is now time to confront the cliff. It is now time to dig into the visage to make room for a series of parapets and to build our cloister.

Just as the ancient Egyptians would bore a series of holes and insert wet timber, which upon expansion would split the rock and remove a cliff face, we would drill 12 holes through the head of the cliff and use explosives in lieu of wet timber to carve out the cliff face and make room across the canal. The twelve scars on the new cliff face represent the twelve apostles, whom in some aspects could be considered the first Christian monks.

With these twelve scars, our journey in making the third Architectural gesture begins, building back towards the parapet, by mending these scars. And what begins with scars of a monolithic cliff proceeds with mending by small aggregated pieces, by construction, by technics.

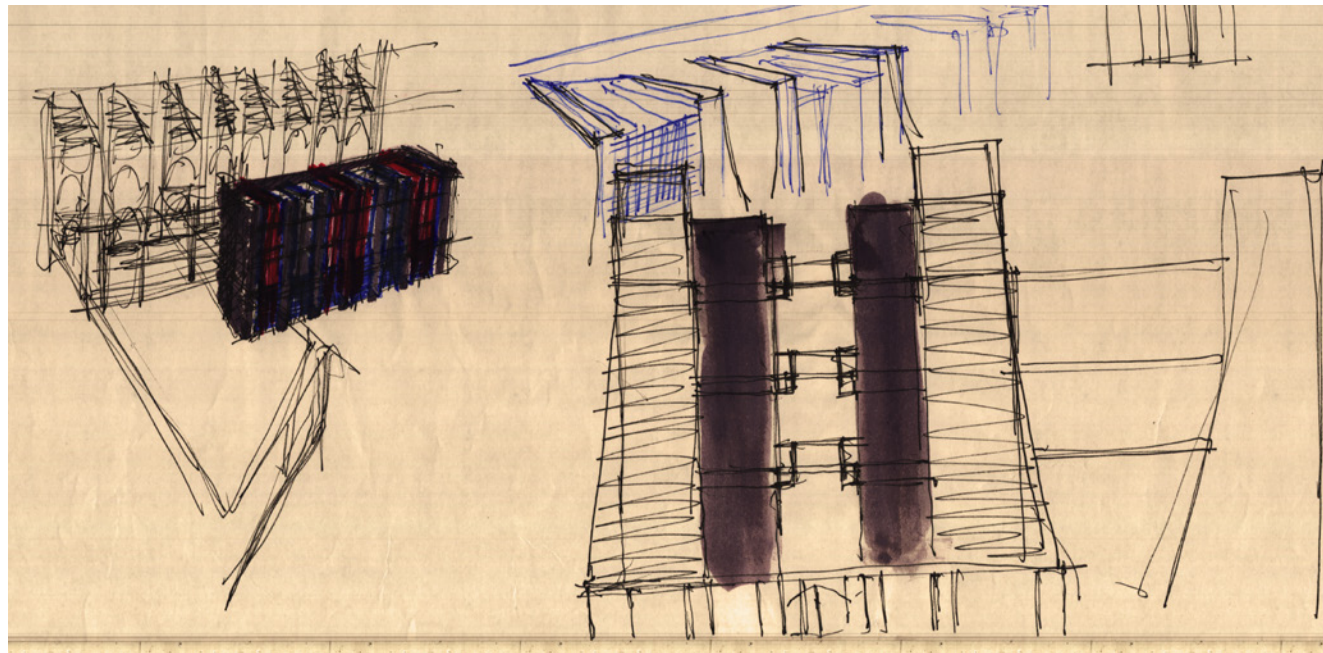
After exploring different methods and arrangements, the main spine of the cloister along the face of the cliff would eventually be refined and built, from the scars out to the parapet with a geological cloister where contemplative monks also traverse upwards and downwards as well as back and forth, an atrium, a rosary cloister - a row of binary (lit followed by dark) apses carrying a style of calfactory and a style of dorms respectively, and two levels of parapet.



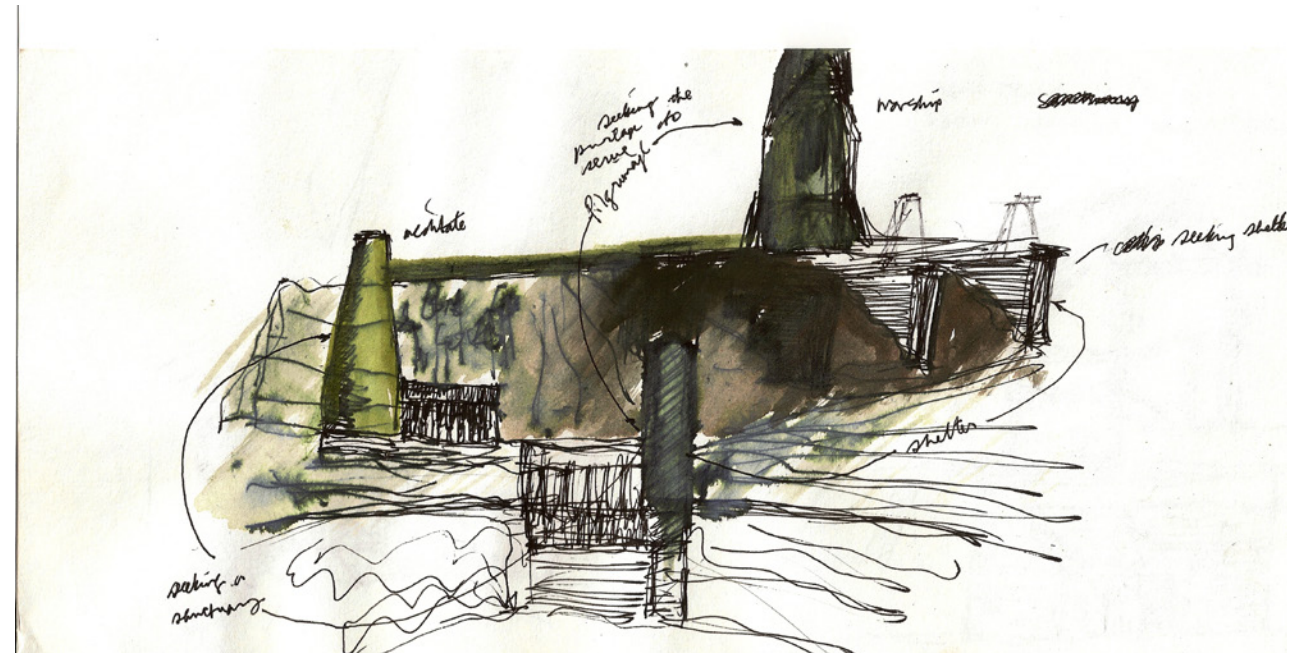
PL66

...The order of making the wall brought about an order of wall making which included the opening. Then came the column, which was an automatic kind of order, making that which was opening, and that which was not opening. A rhythm of openings was then decided by the wall itself, which was then no longer a wall, but a series of columns and openings. Such realizations came out of nothing in nature. They came out of a mysterious kind of sense that man has to express those wonders of the soul which demand expression.....

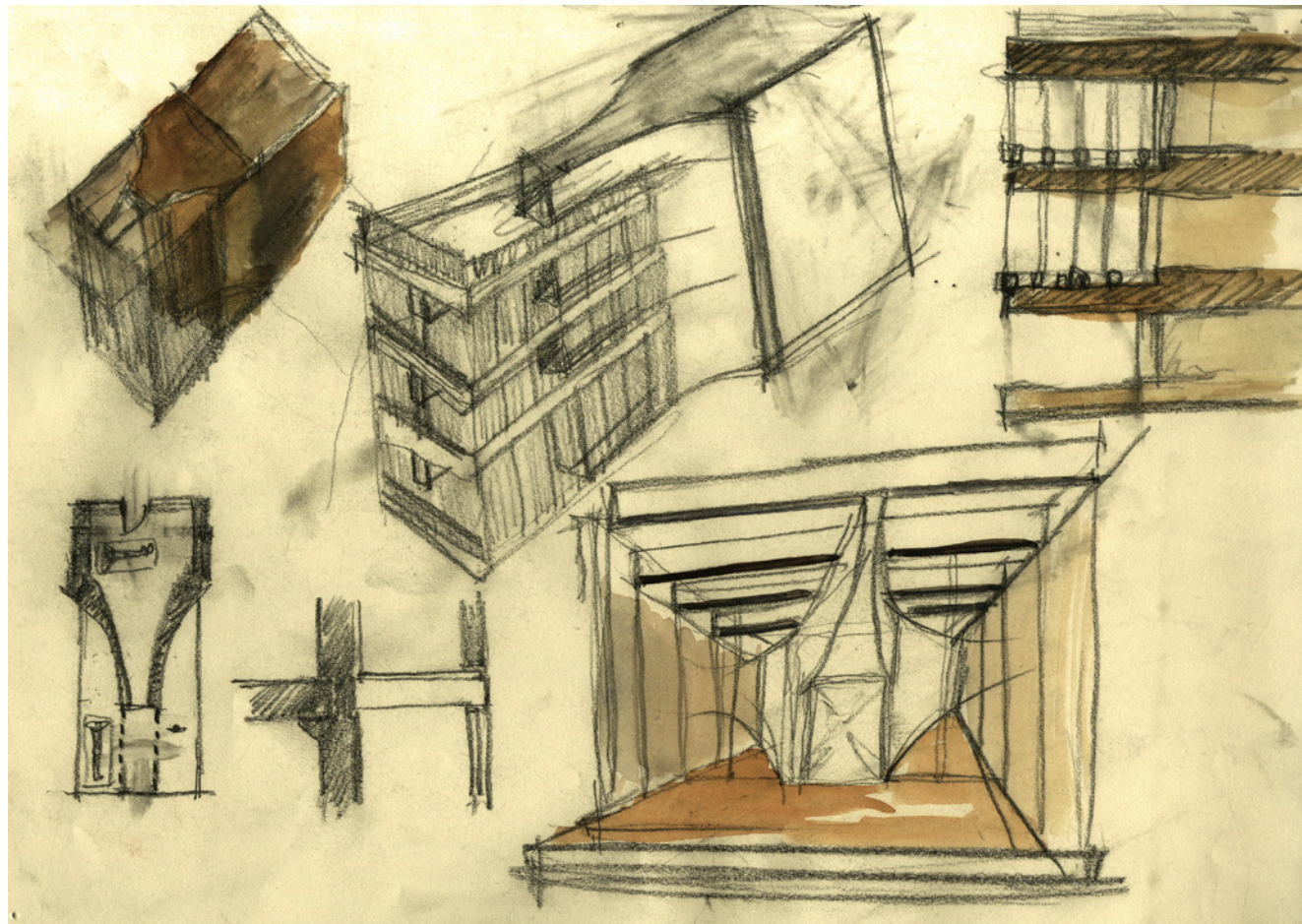
LOUIS I. KAHN



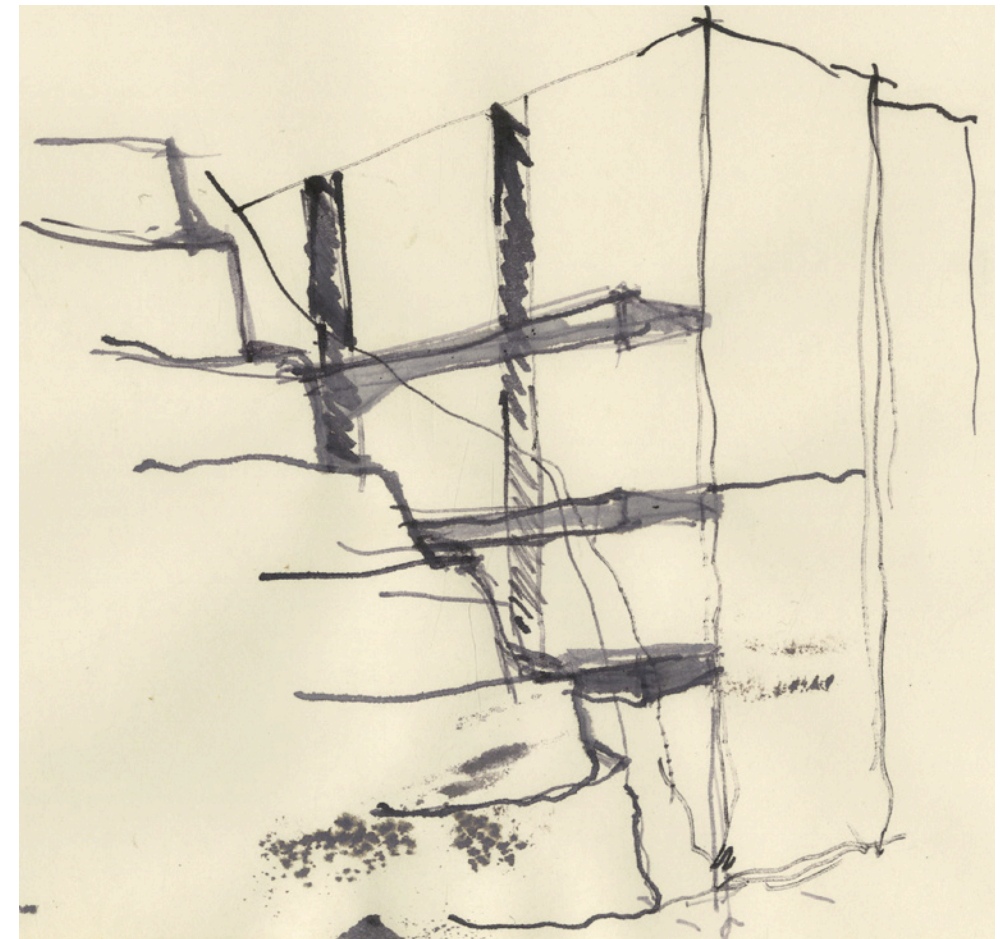
PL67 .1



PL67 .3



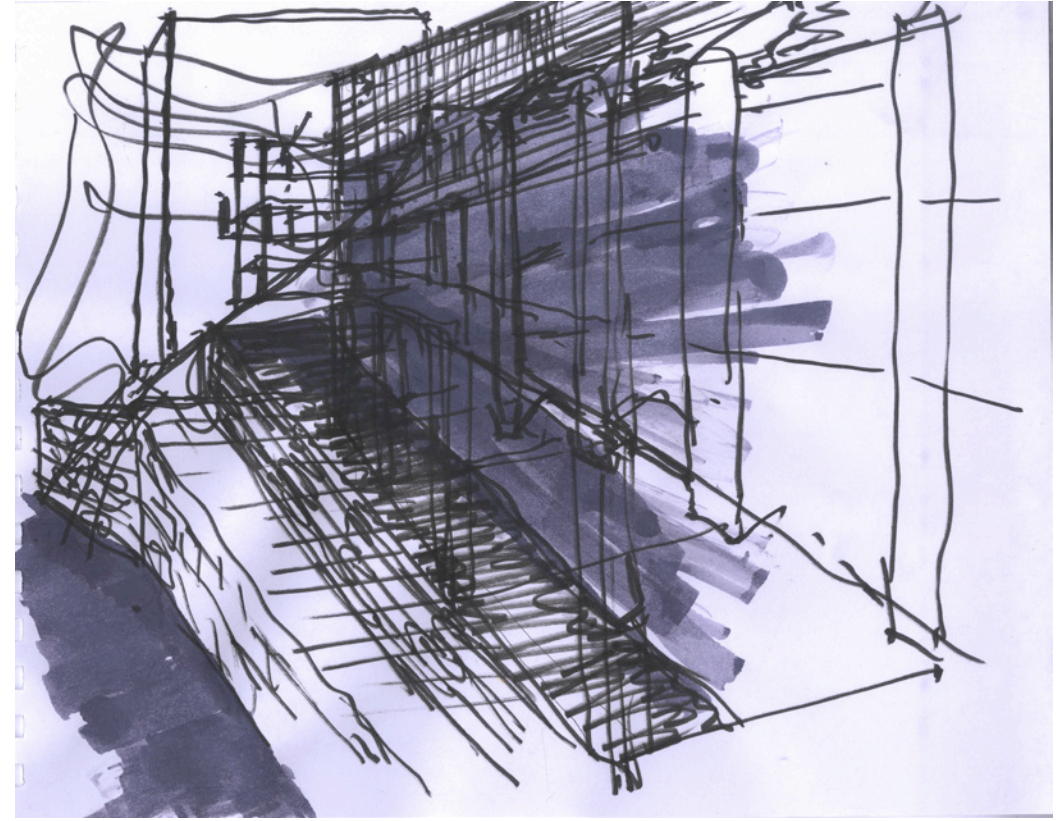
PL67 .2



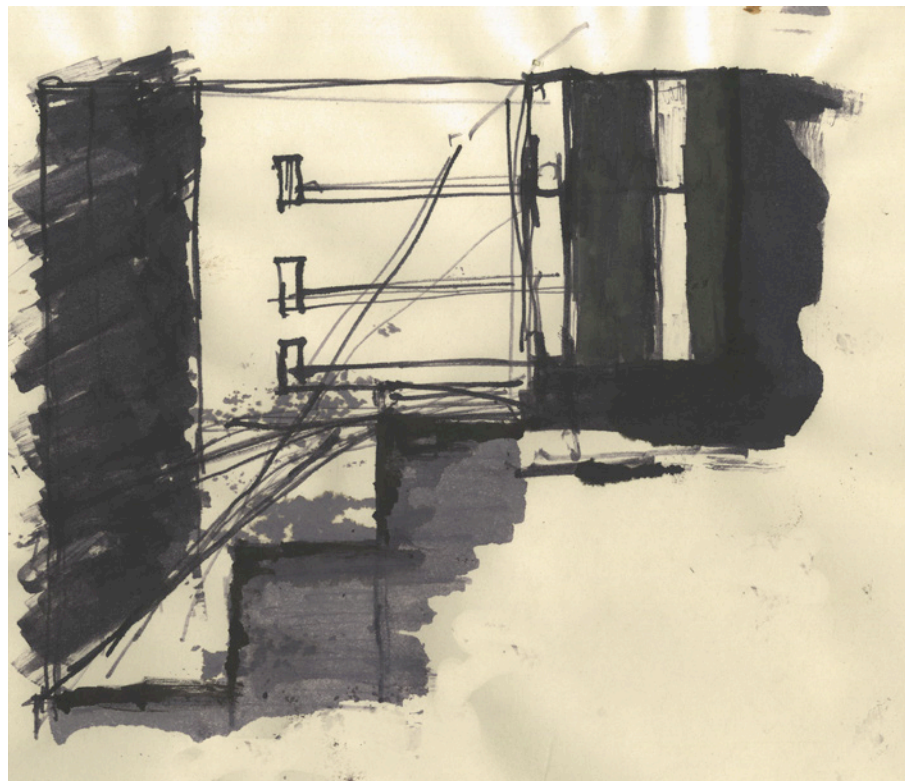
PL67 .4



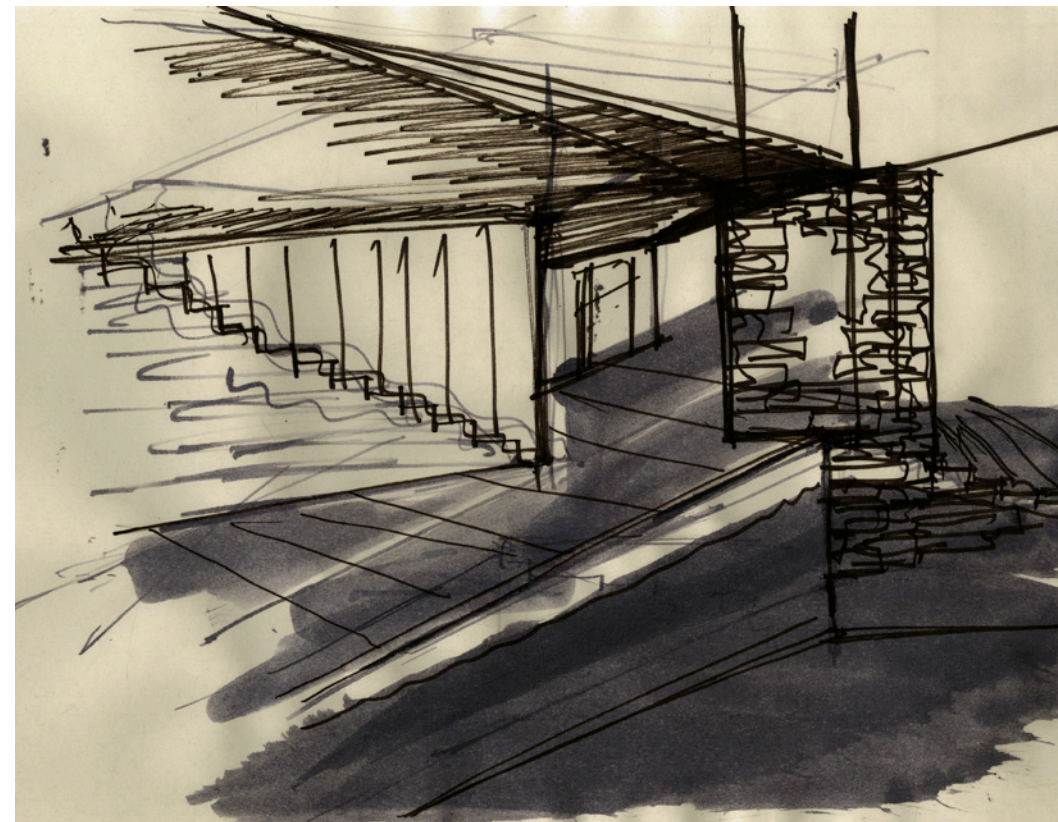
PL68 .1



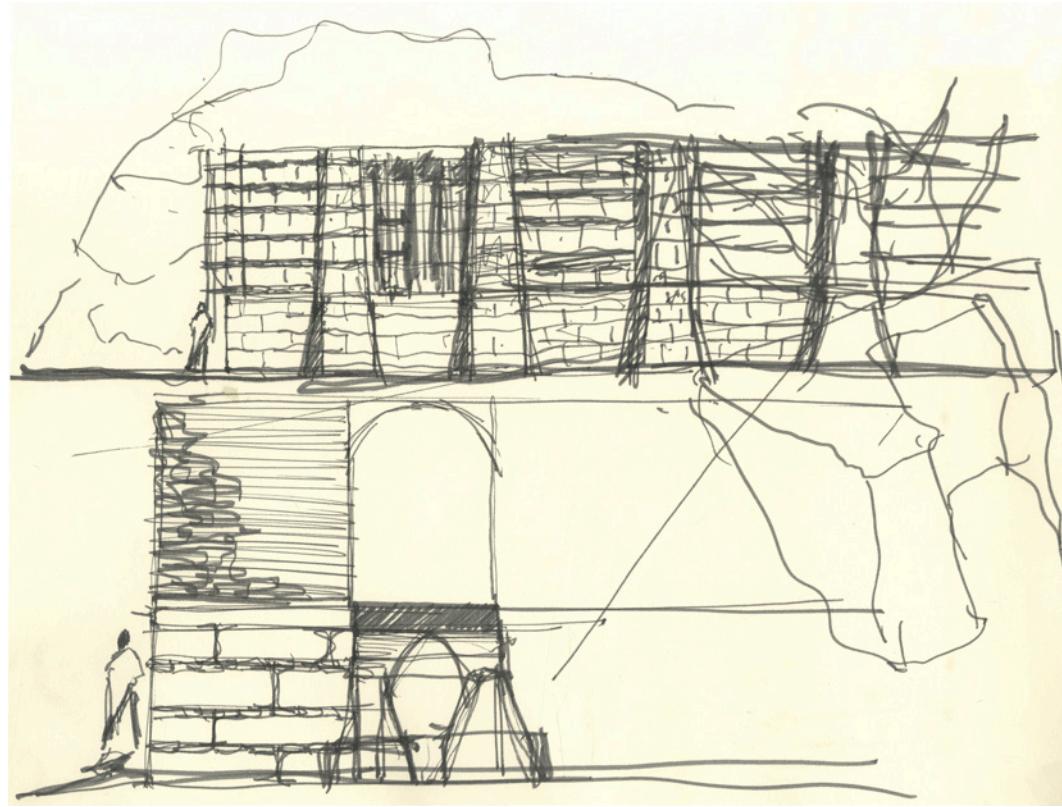
PL68 .3



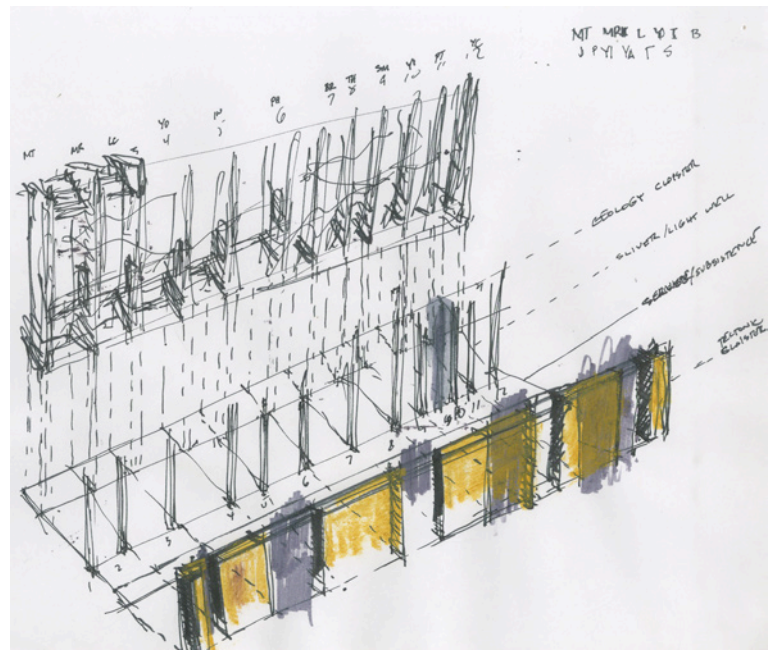
PL68 .2



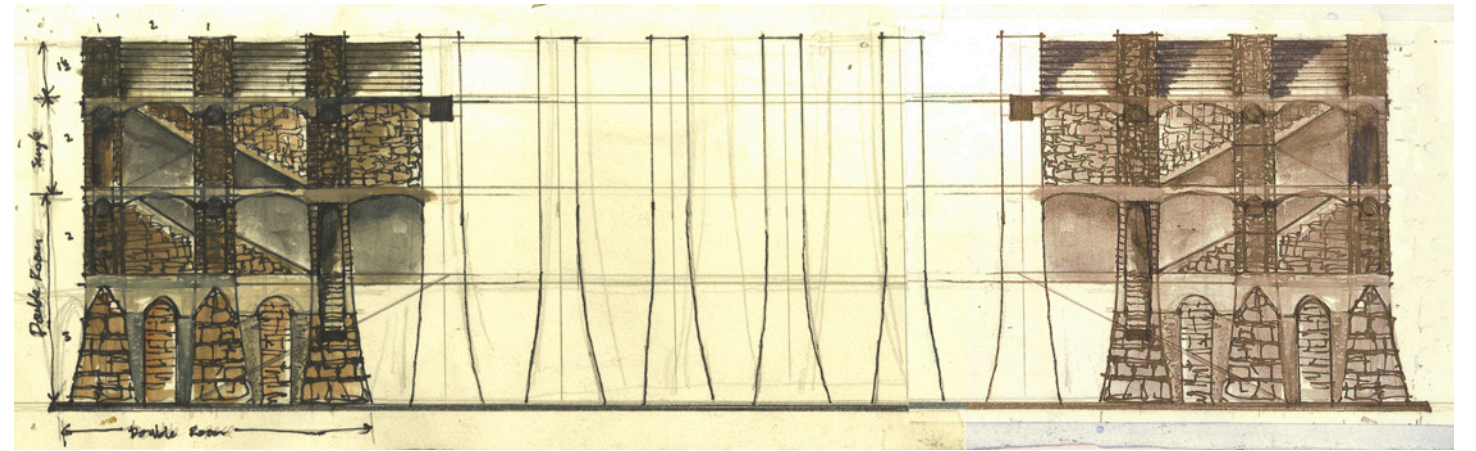
PL68 .4



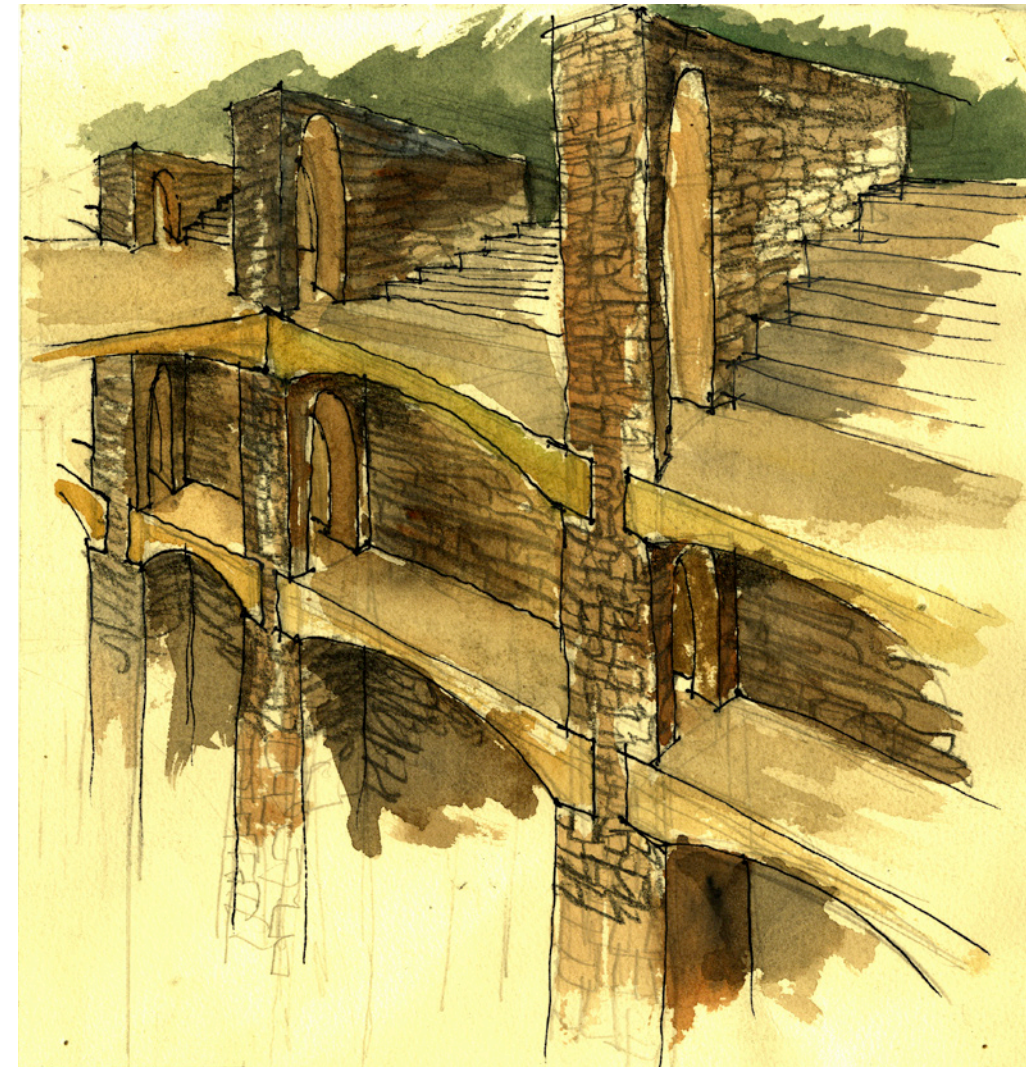
PL69 .1



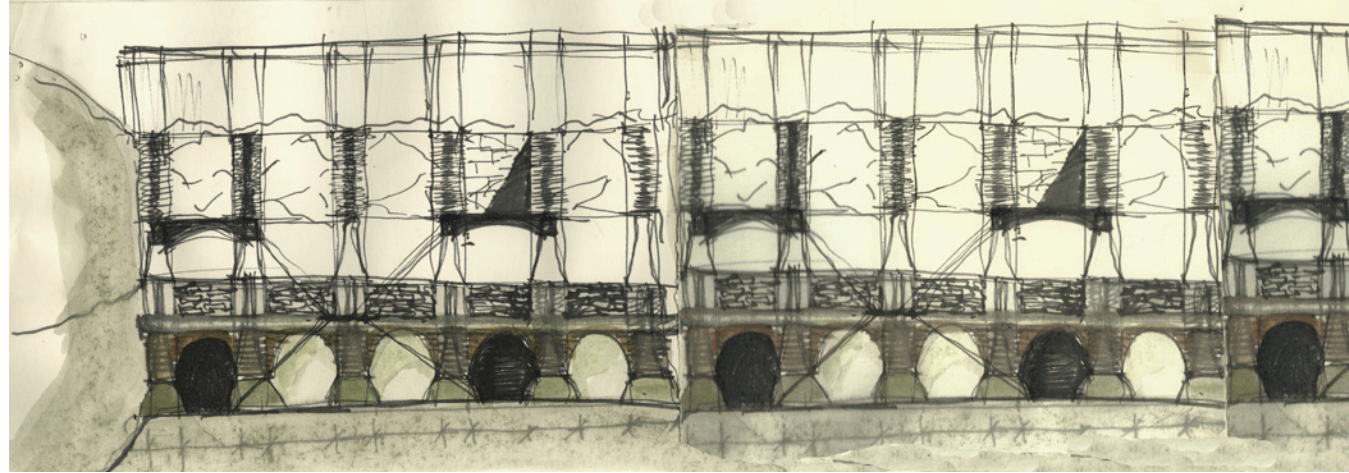
PL69 .2



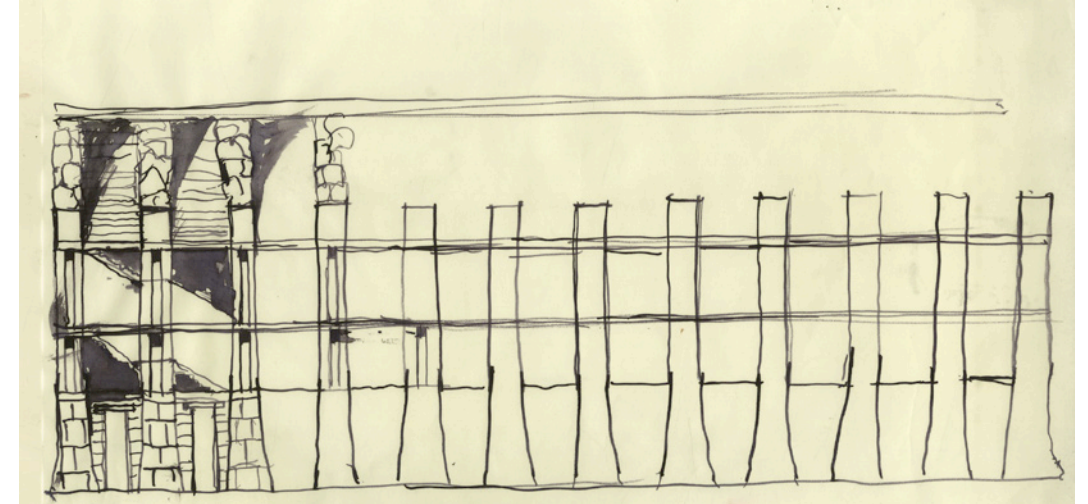
PL69 .3



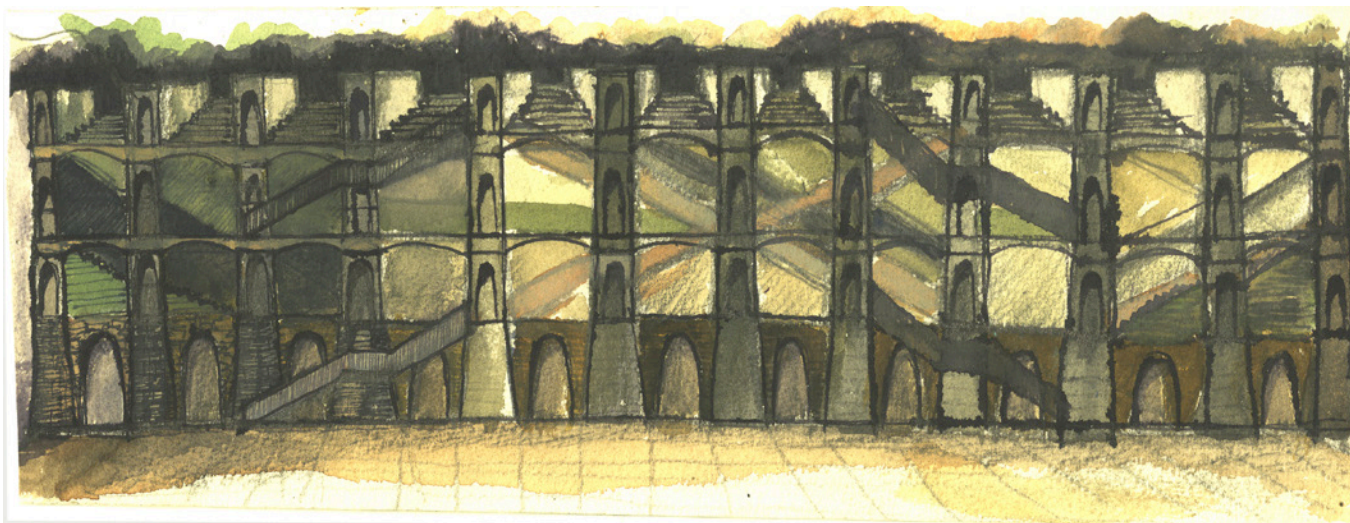
PL69 .4



PL70 .1



PL70 .3



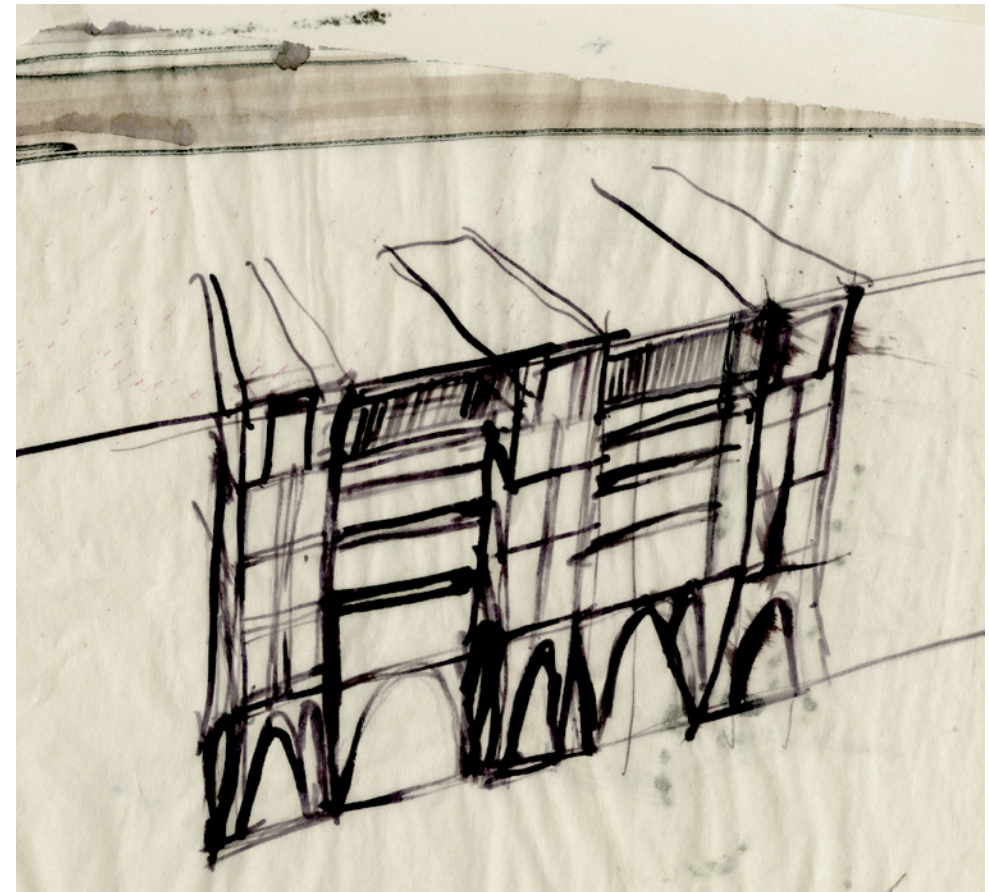
PL70 .2



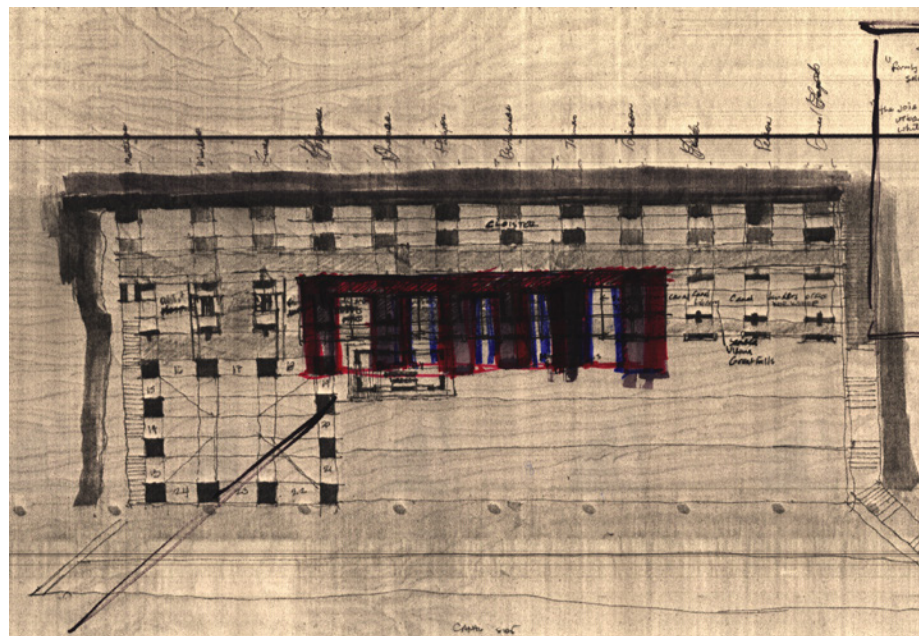
PL70 .4



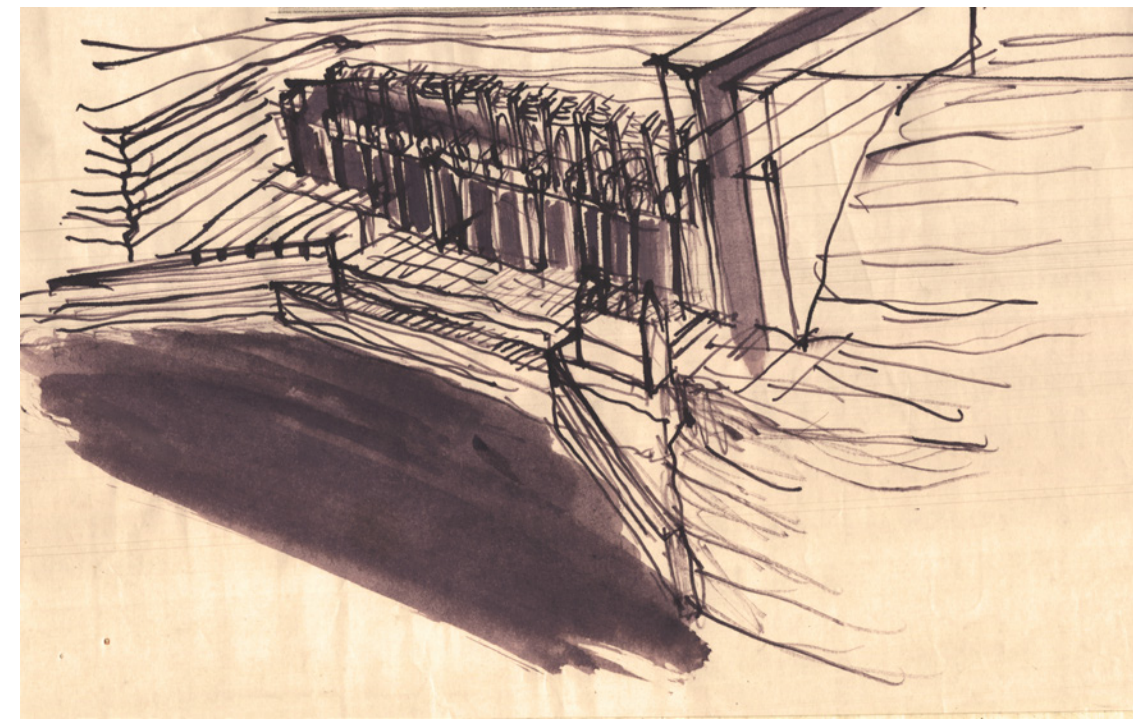
PL71 .1



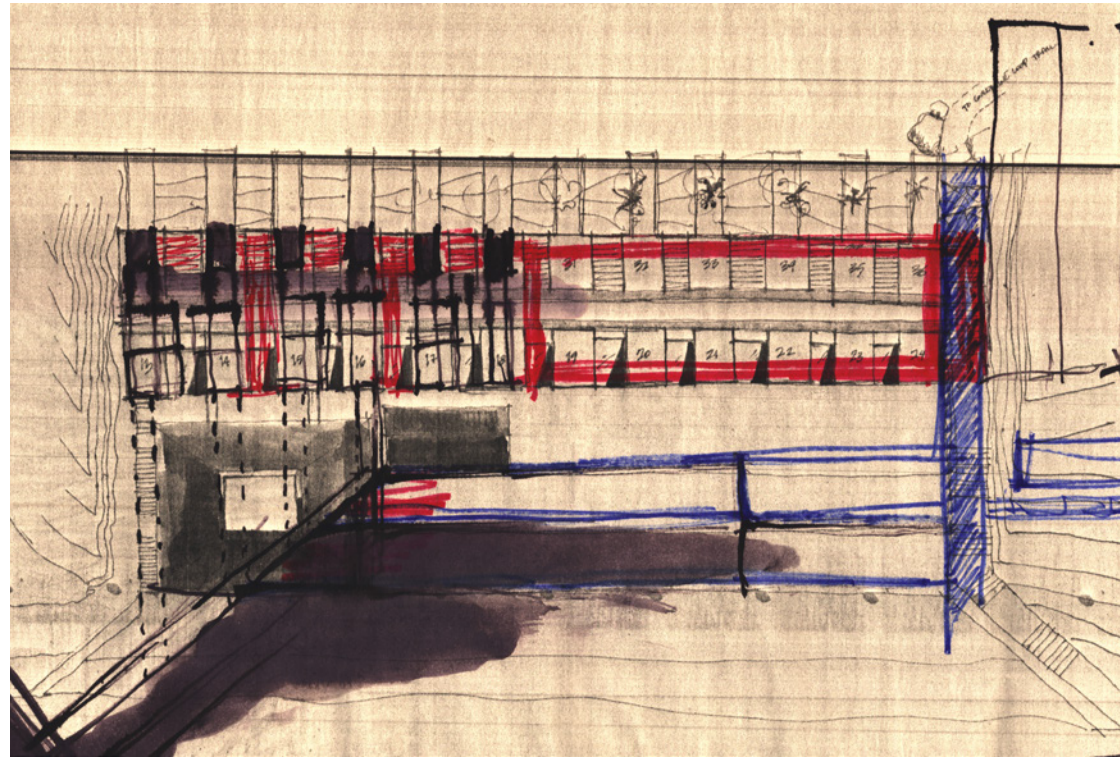
PL71 .3



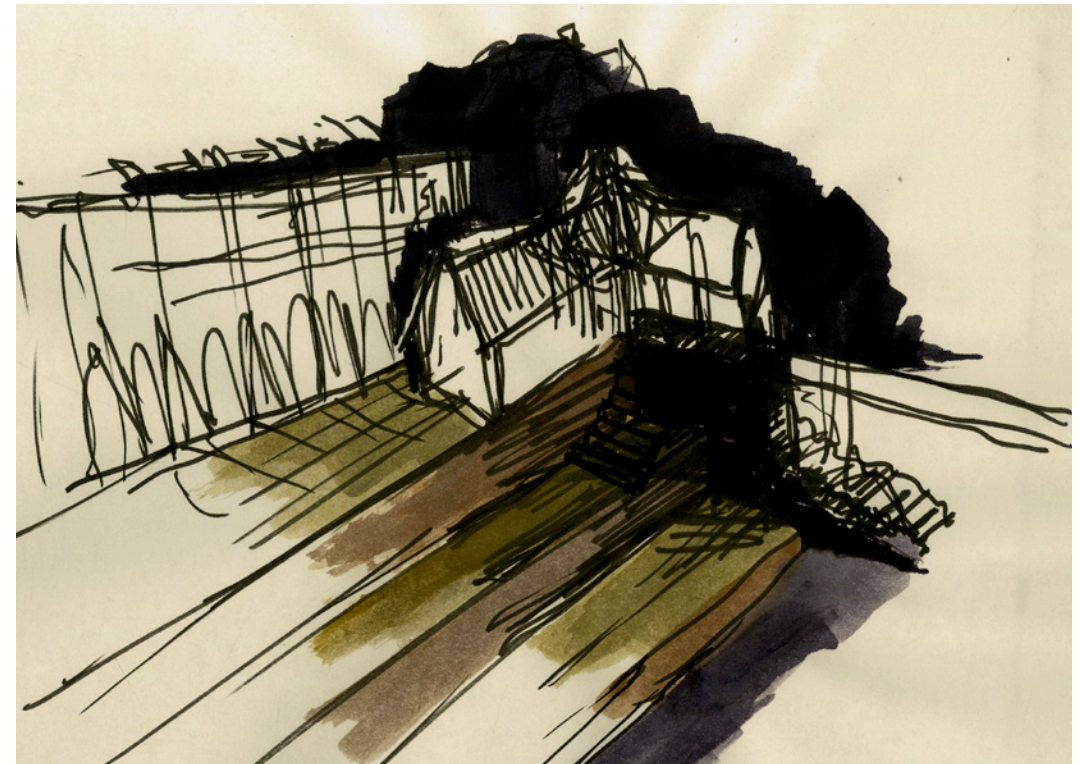
PL71 .2



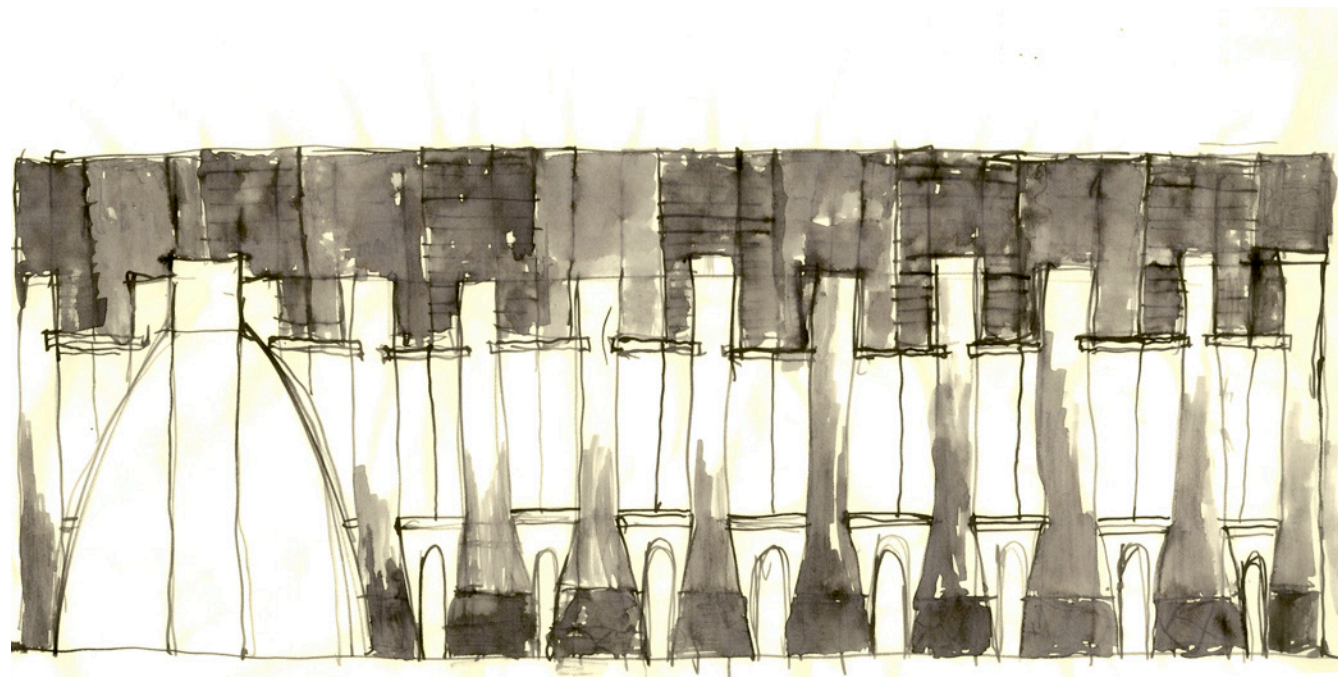
PL71 .4



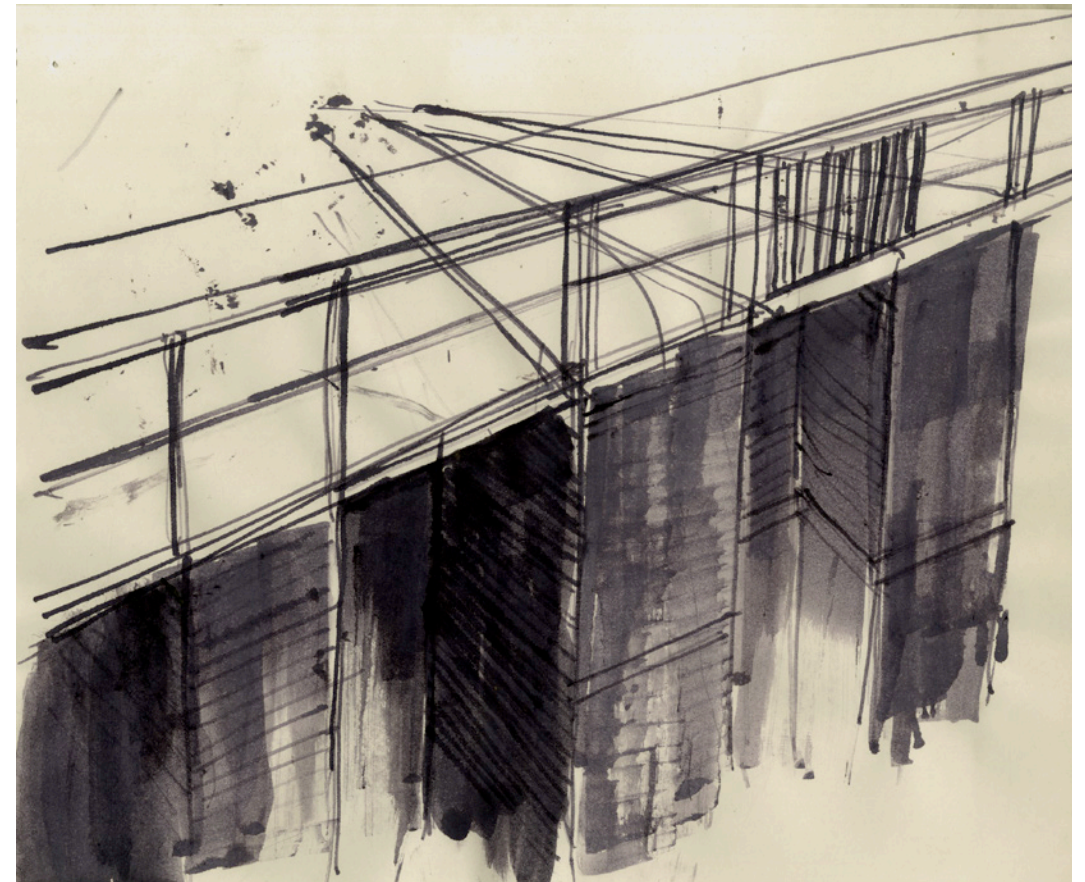
PL72 .1



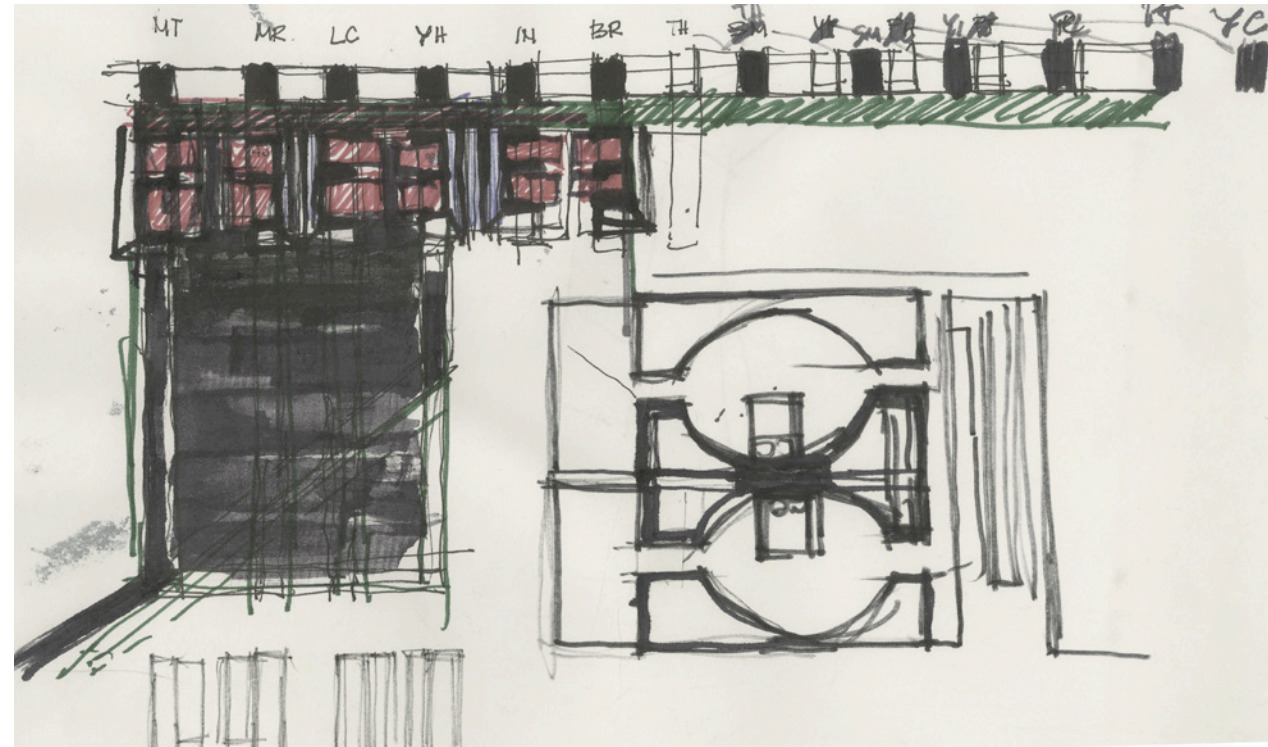
PL72 .3



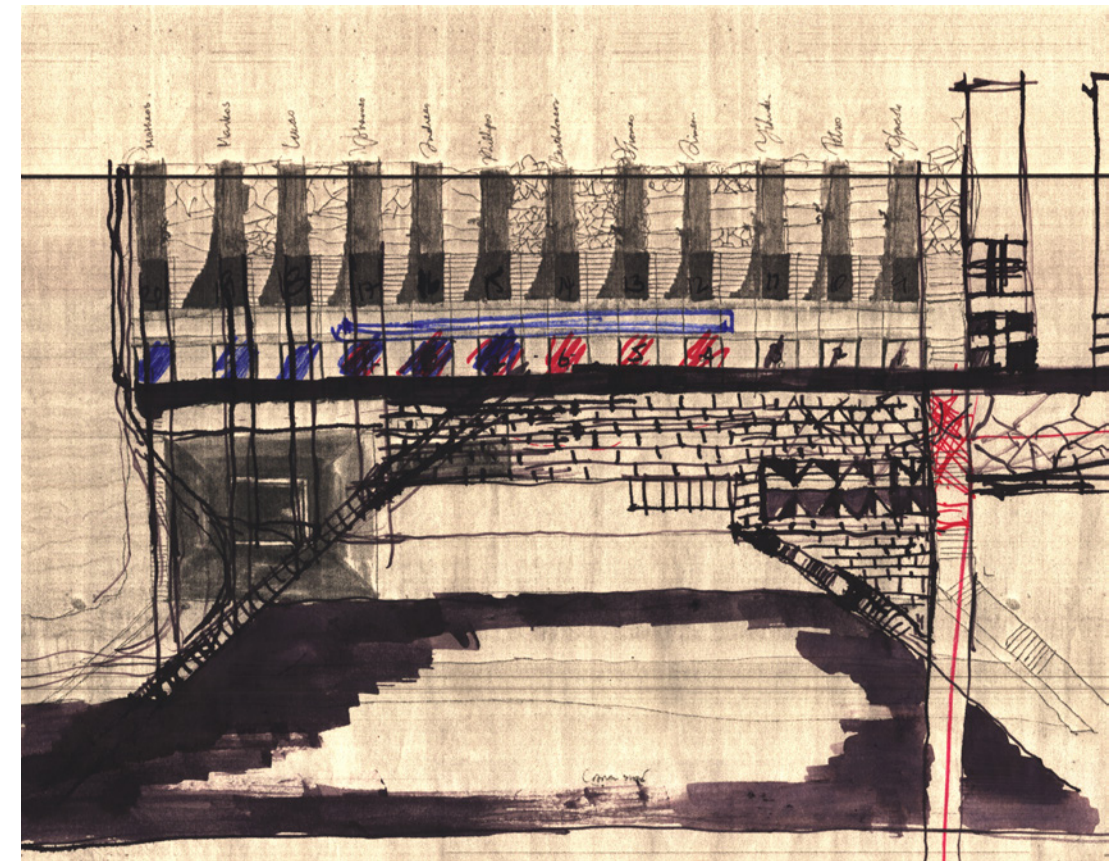
PL72 .3



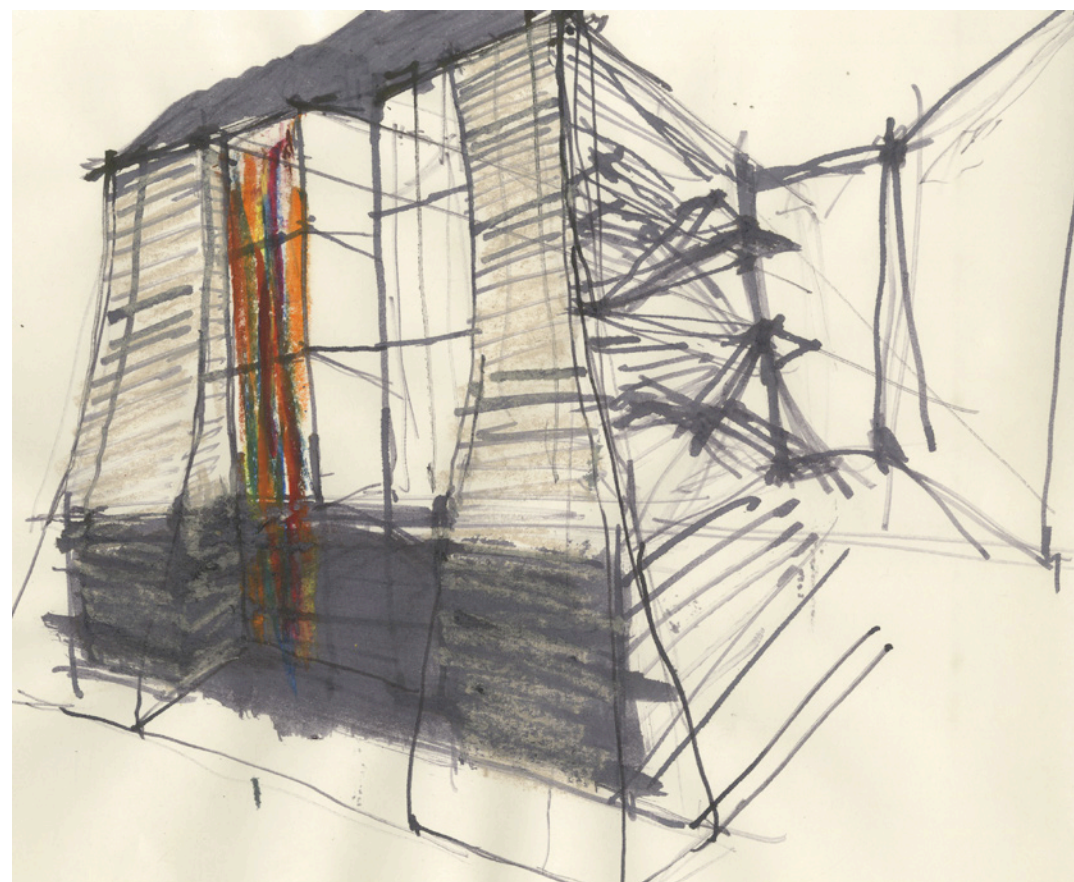
PL72 .4



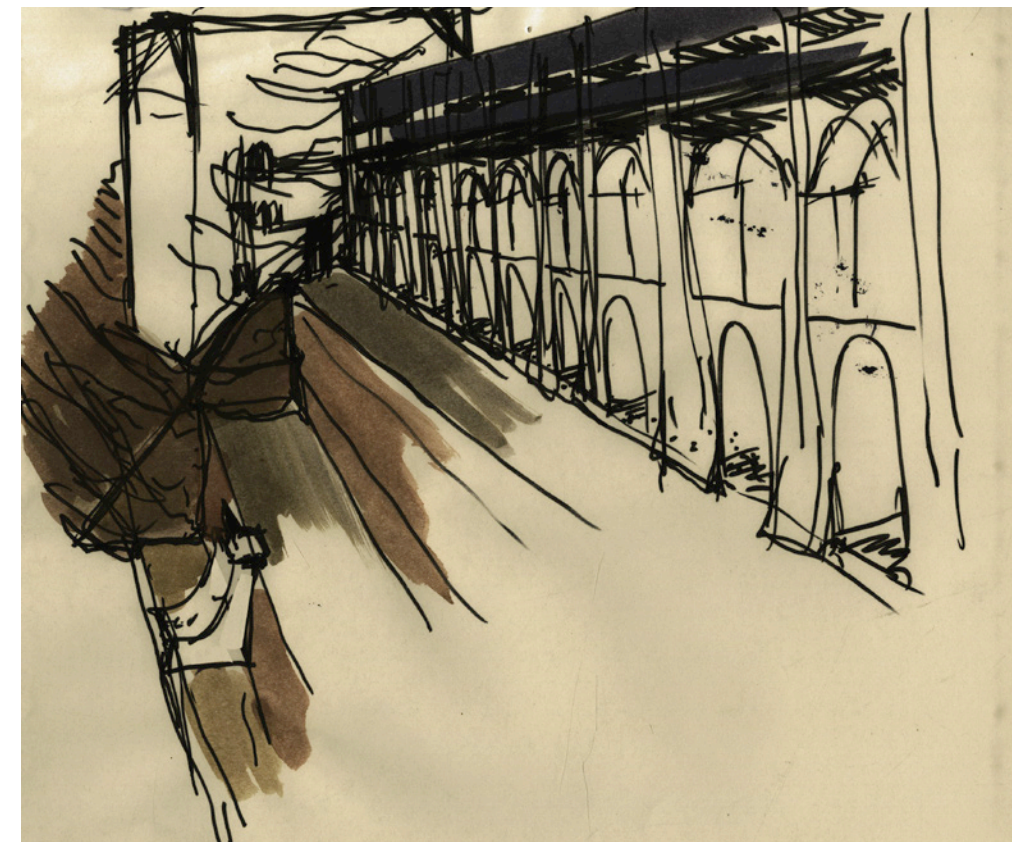
PL73 .1



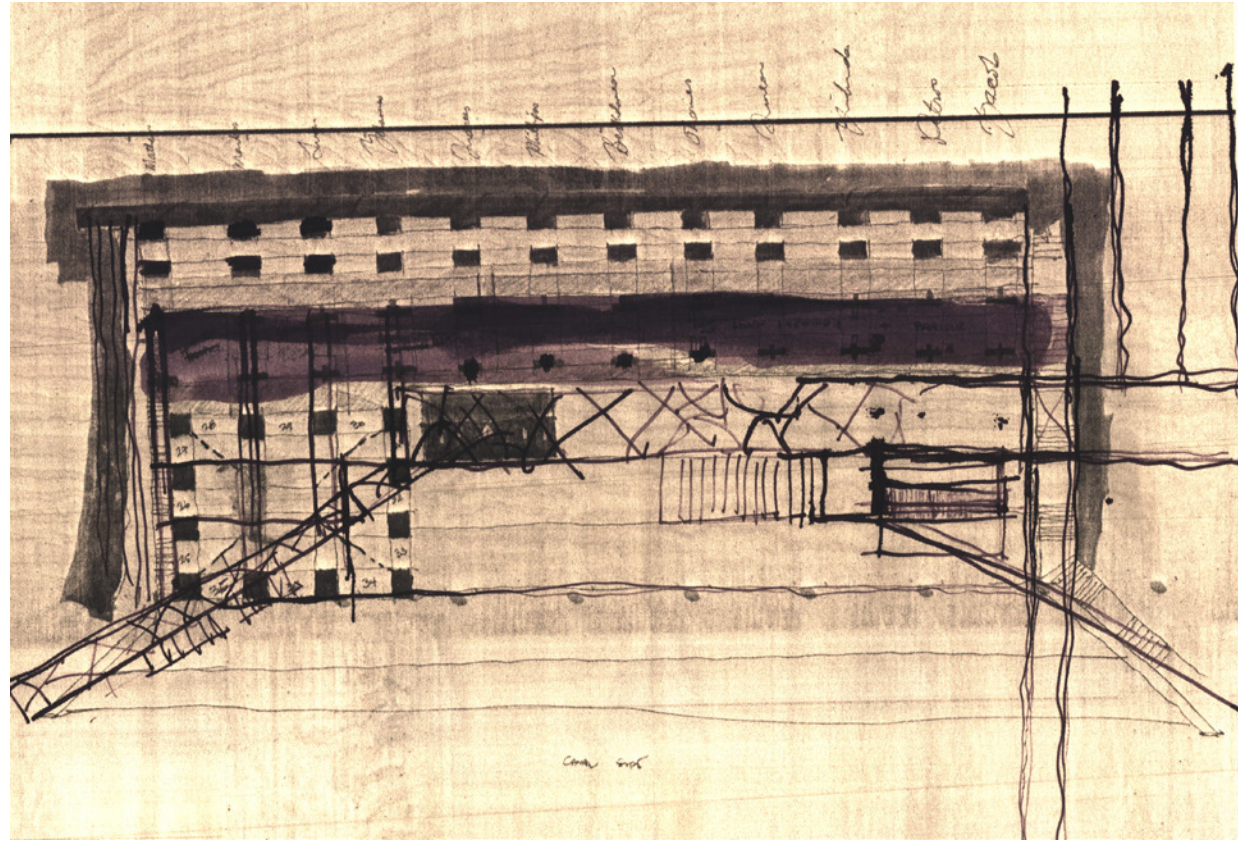
PL73 .3



PL73 .2



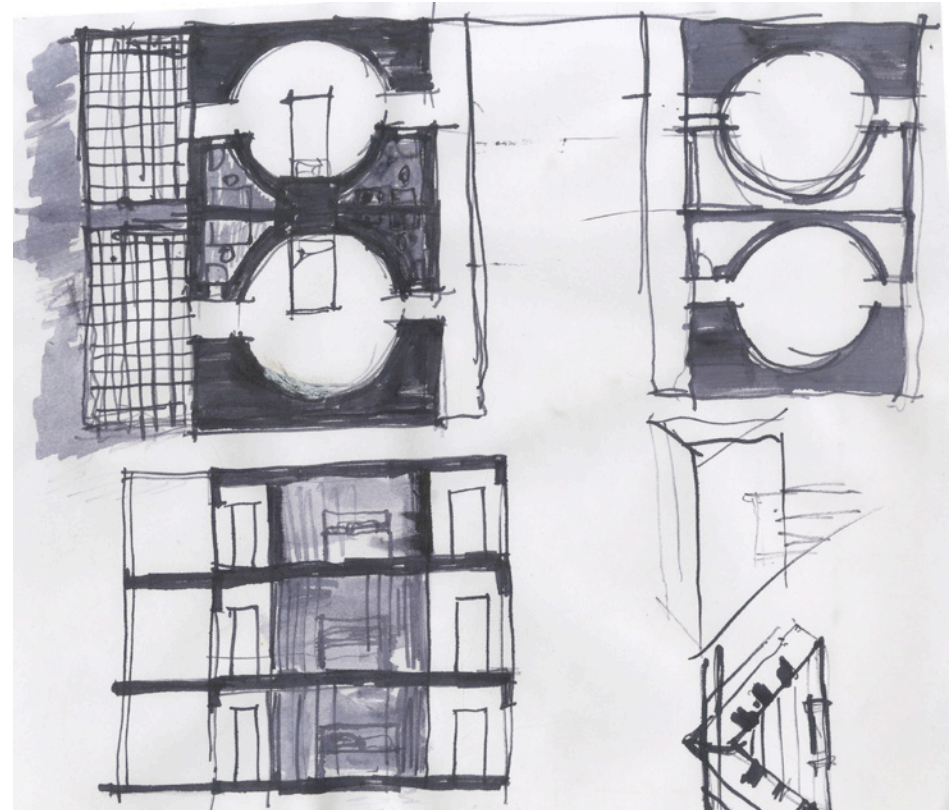
PL73 .4



PL74 .1



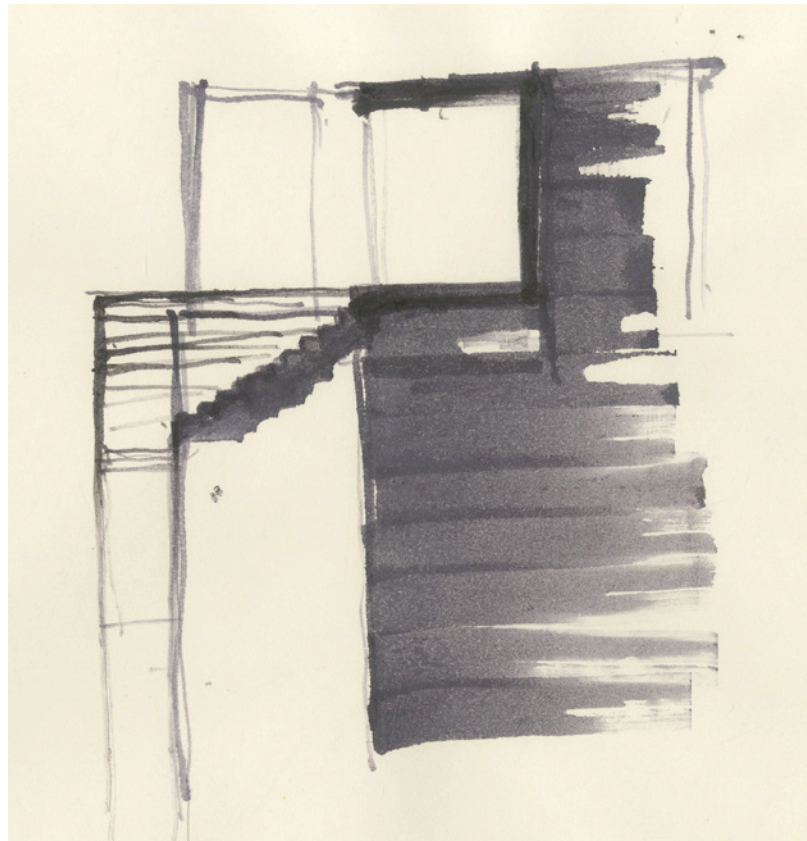
PL74 .2



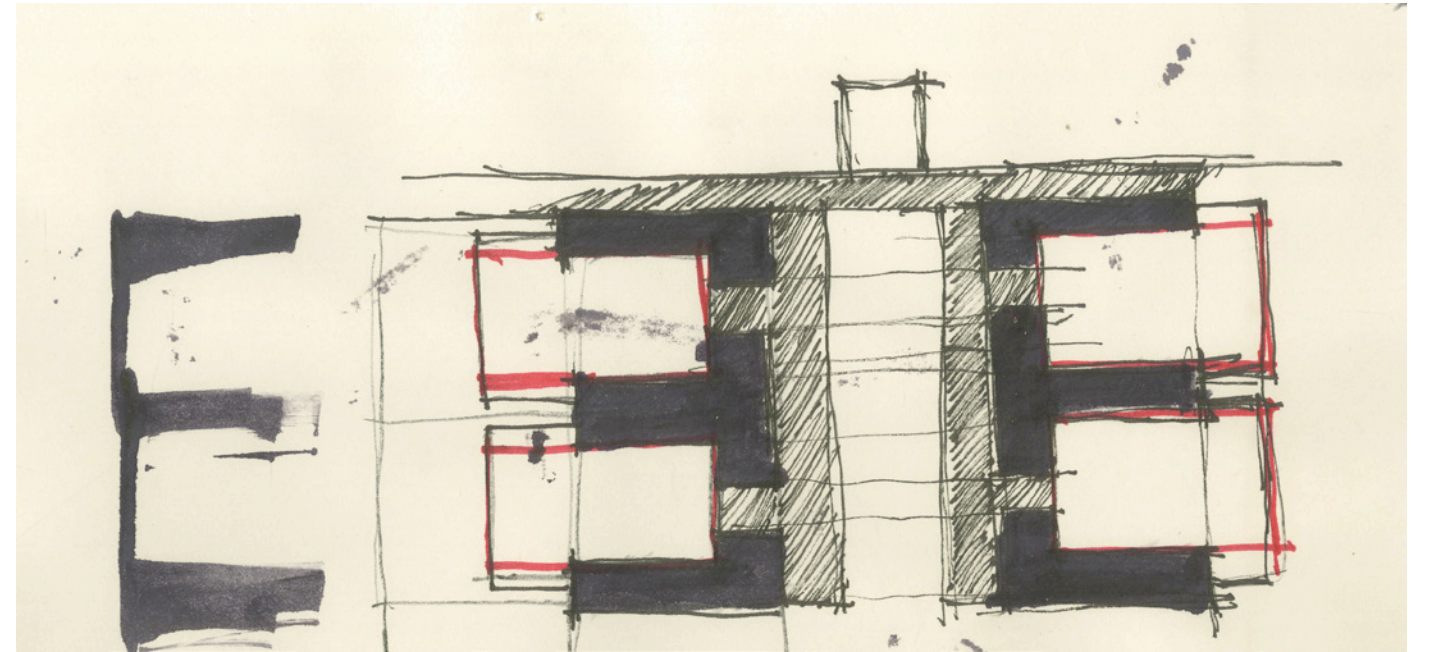
PL74 .3



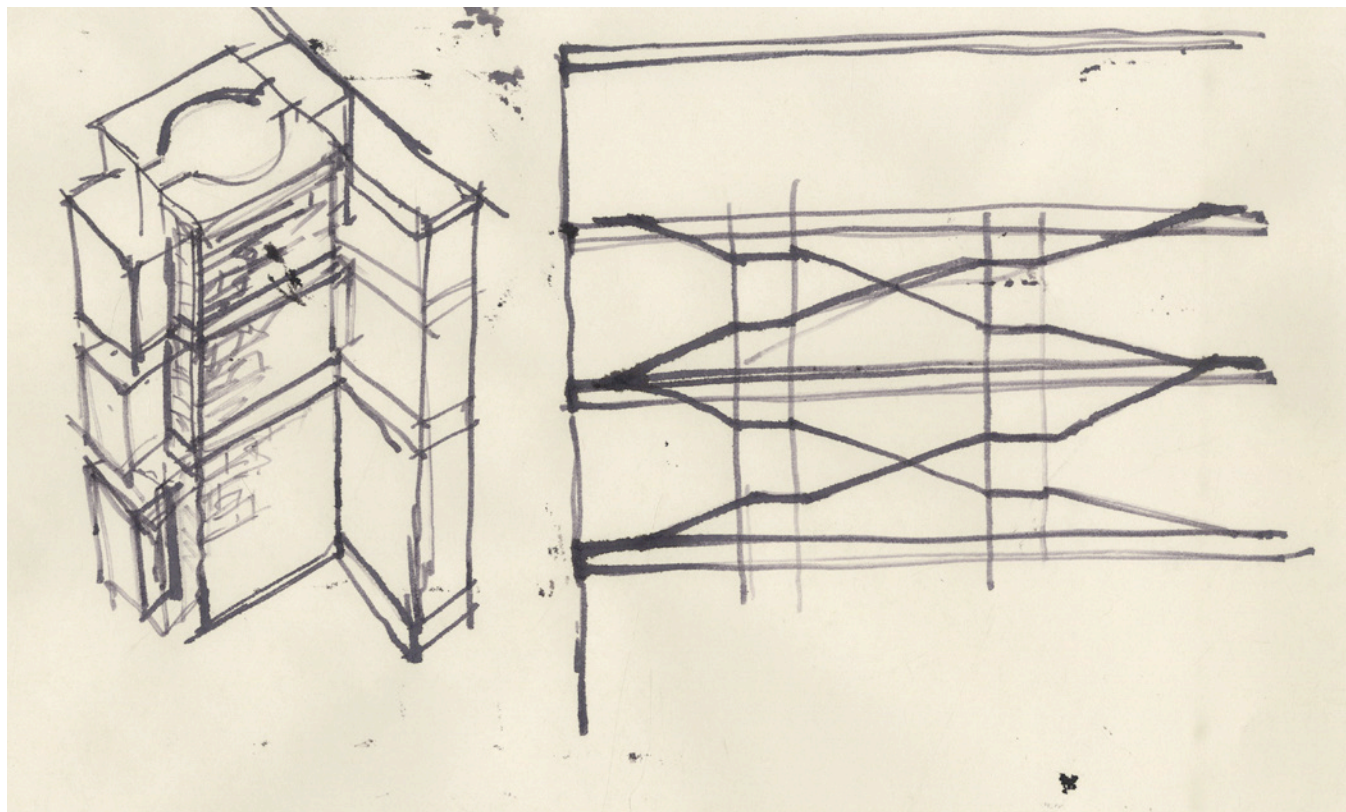
PL74 .4



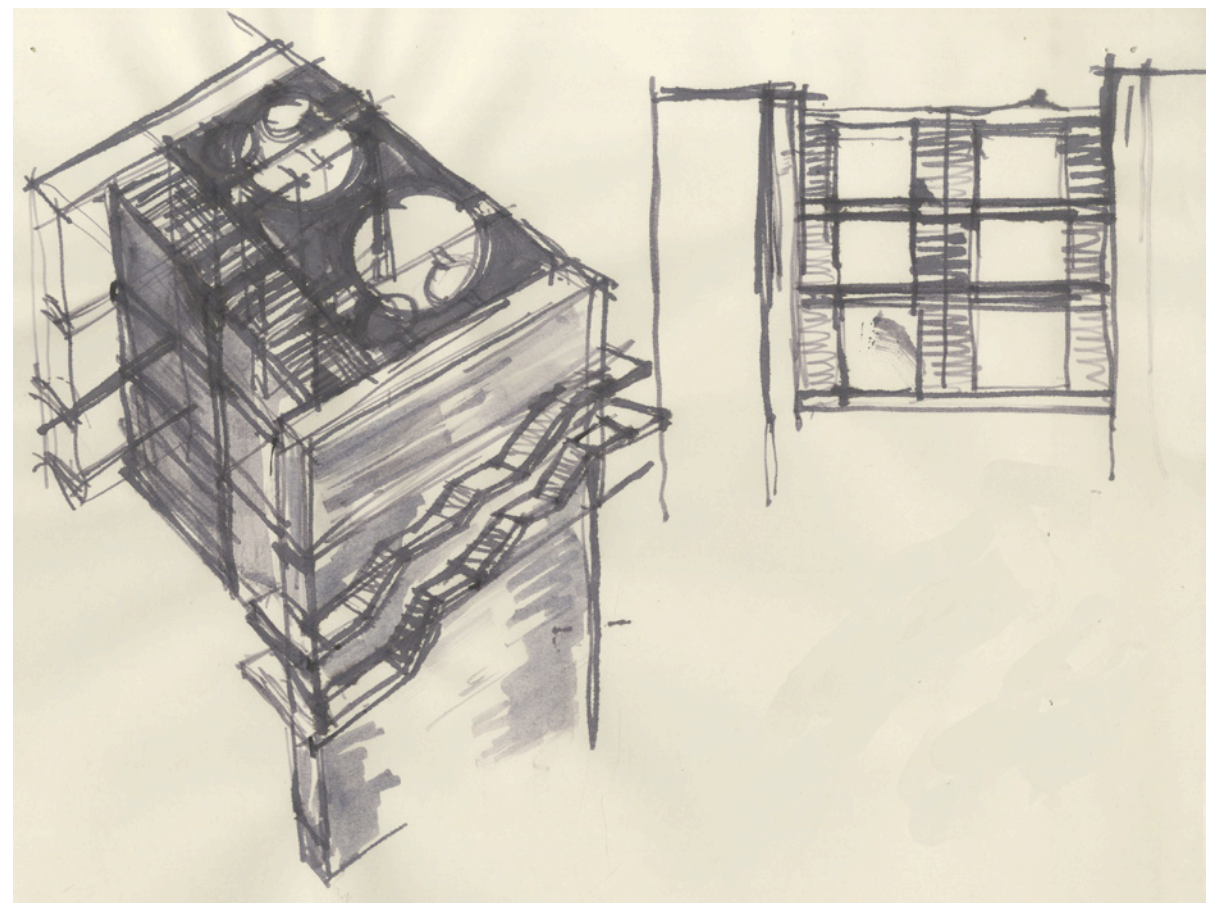
PL75 .1



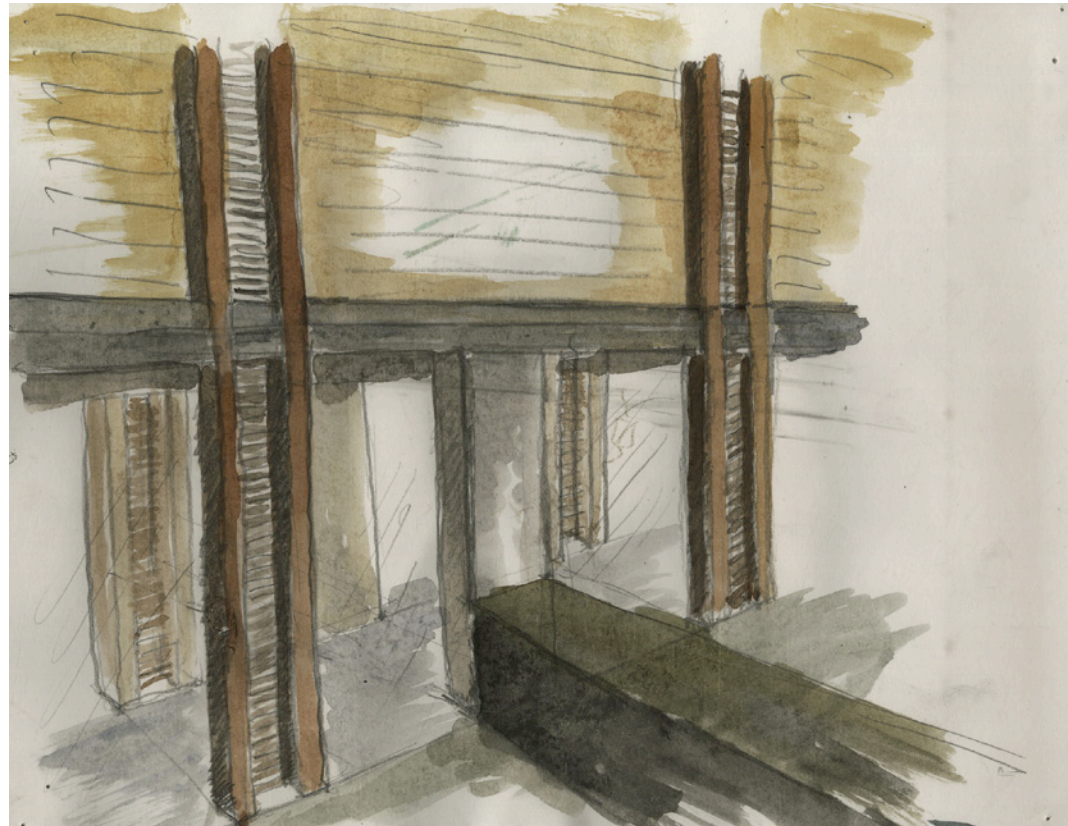
PL75 .3



PL75 .2



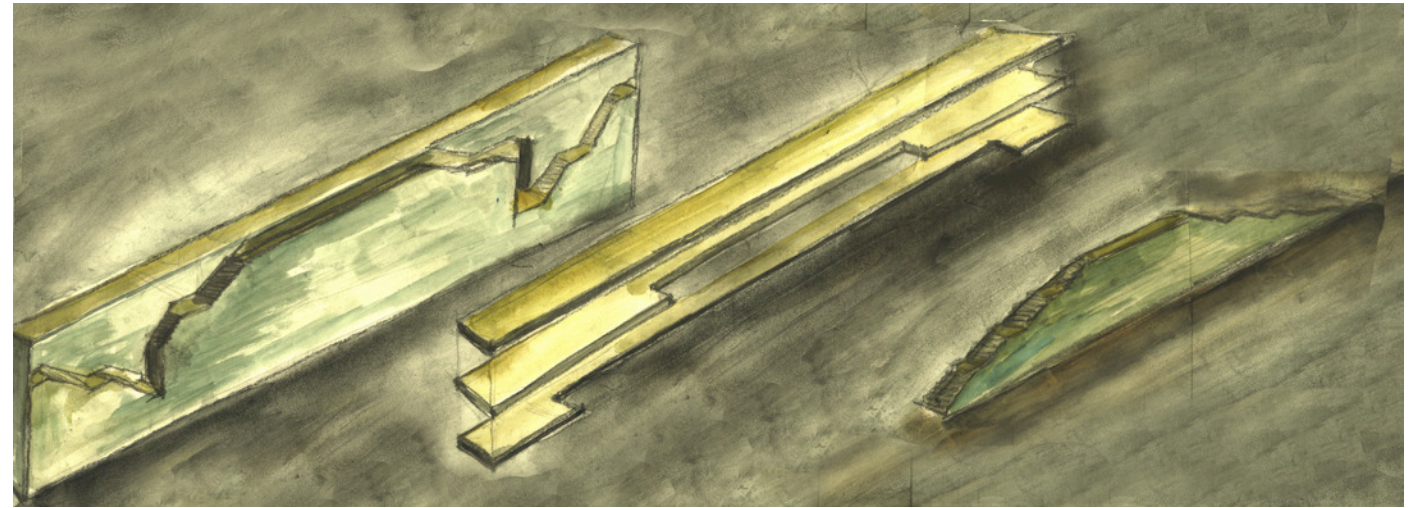
PL75 .4



PL76 .1



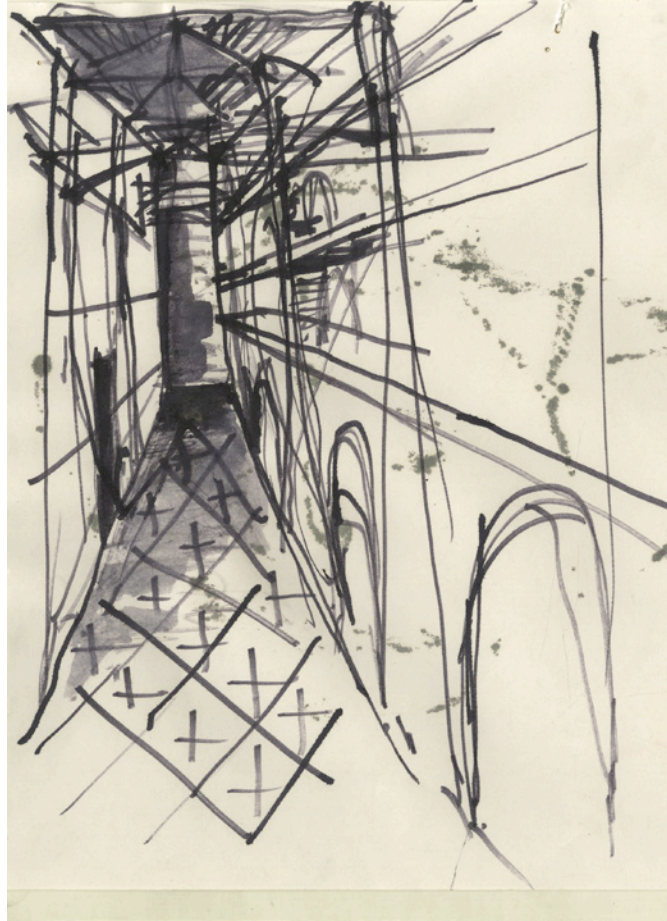
PL76 .2



PL76 .3



PL76 .4



PL77 .1



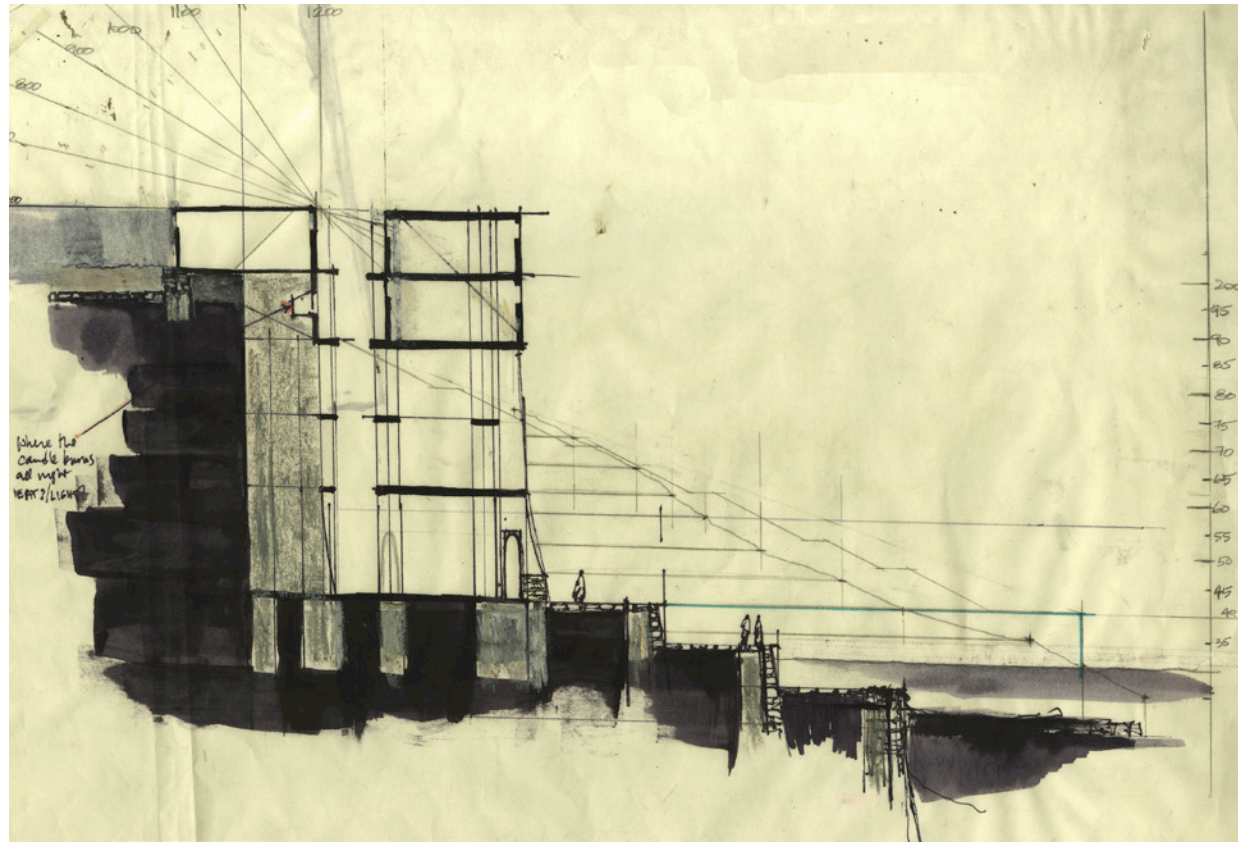
PL77 .3



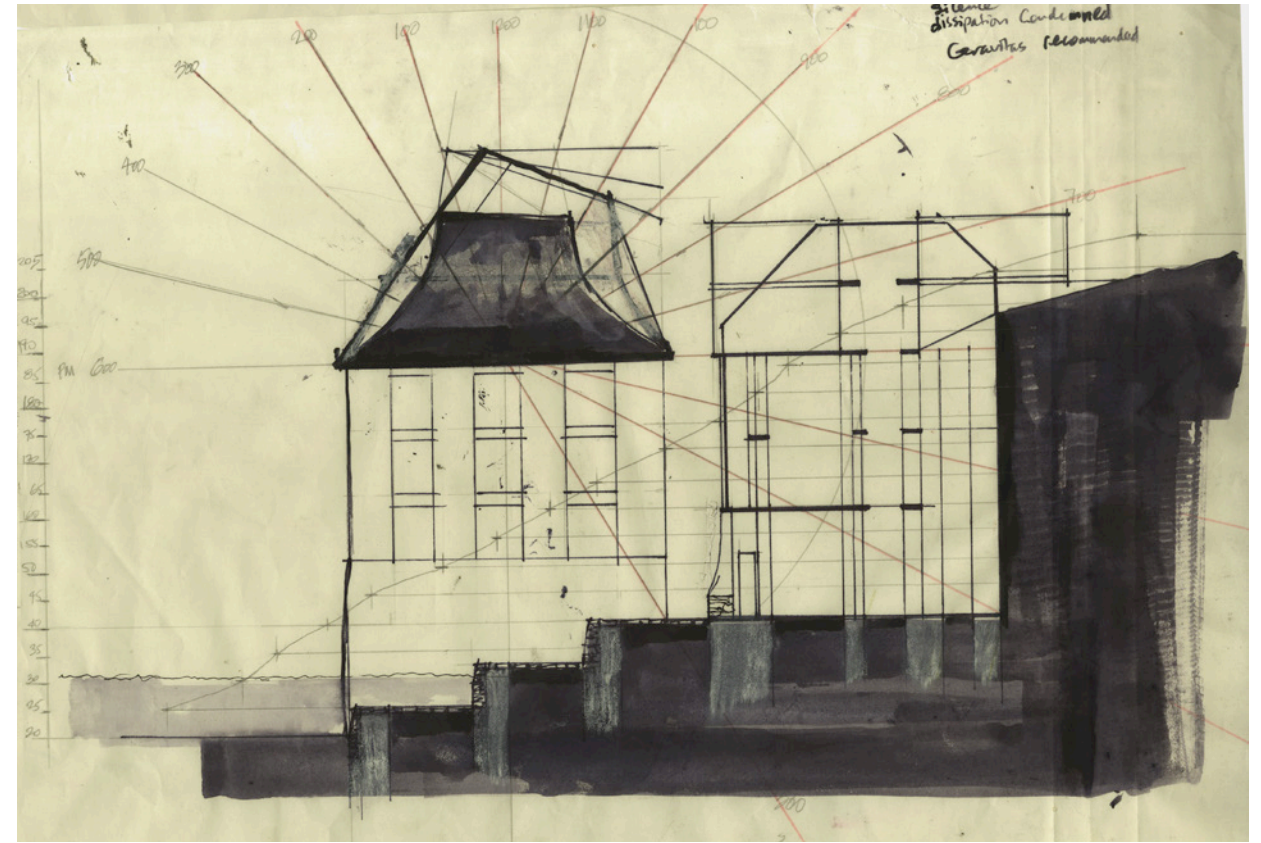
PL77 .2



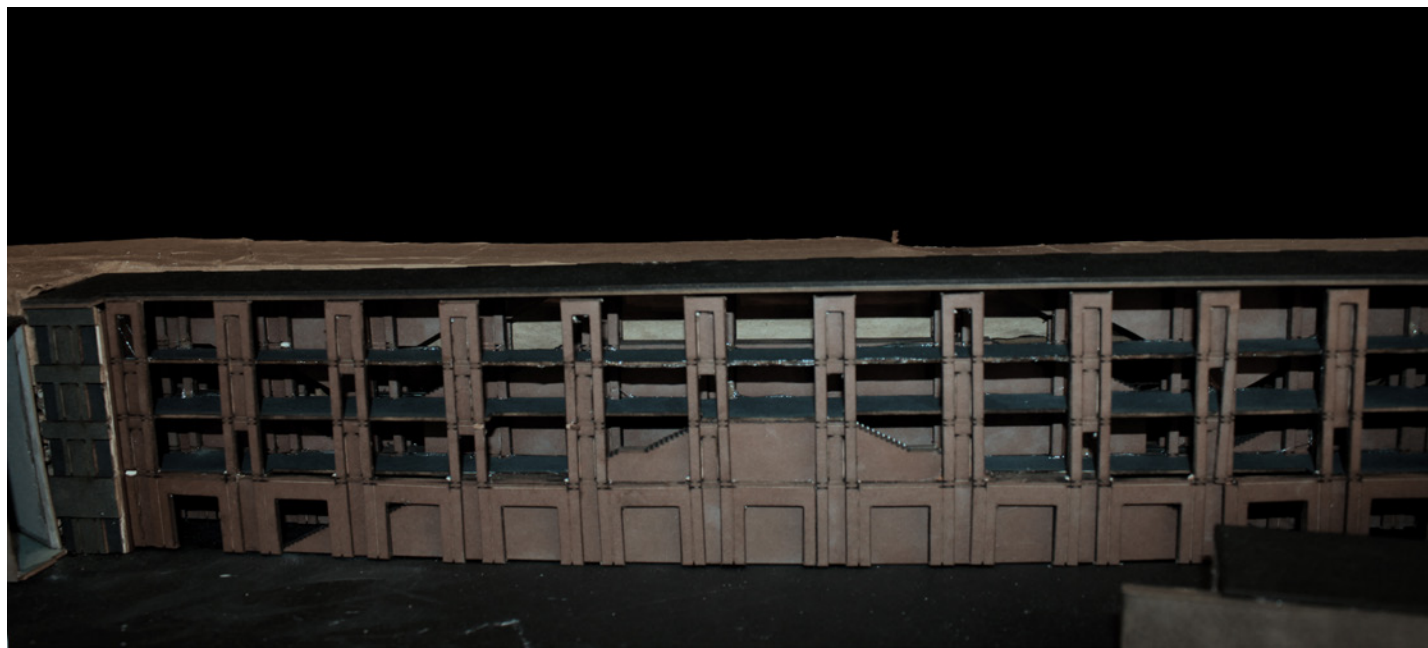
PL77 .4



PL78 .1



PL78 .3



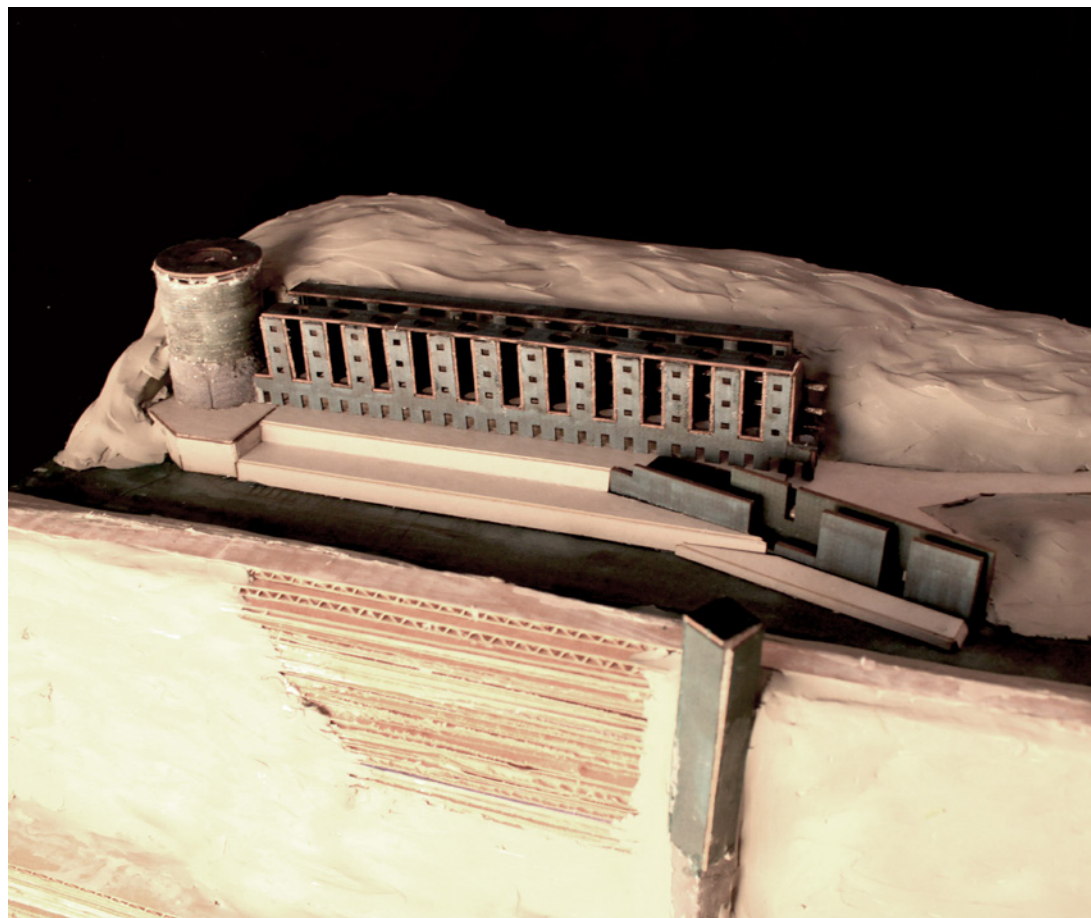
PL78 .2



PL78 .4



PL79 .1



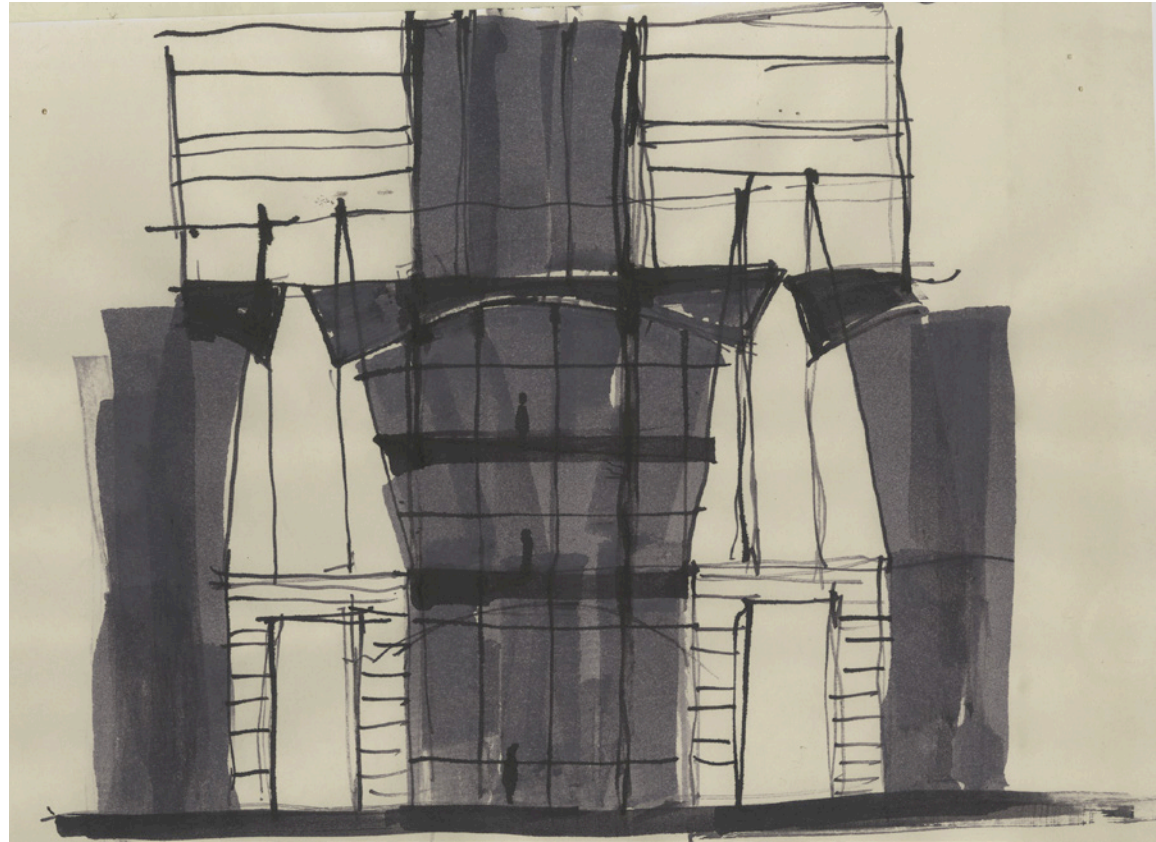
PL79 .2



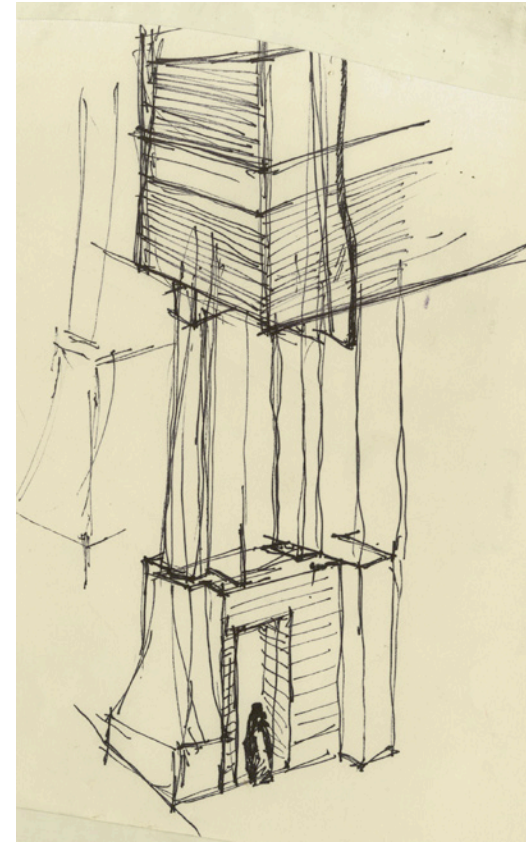
PL79 .3



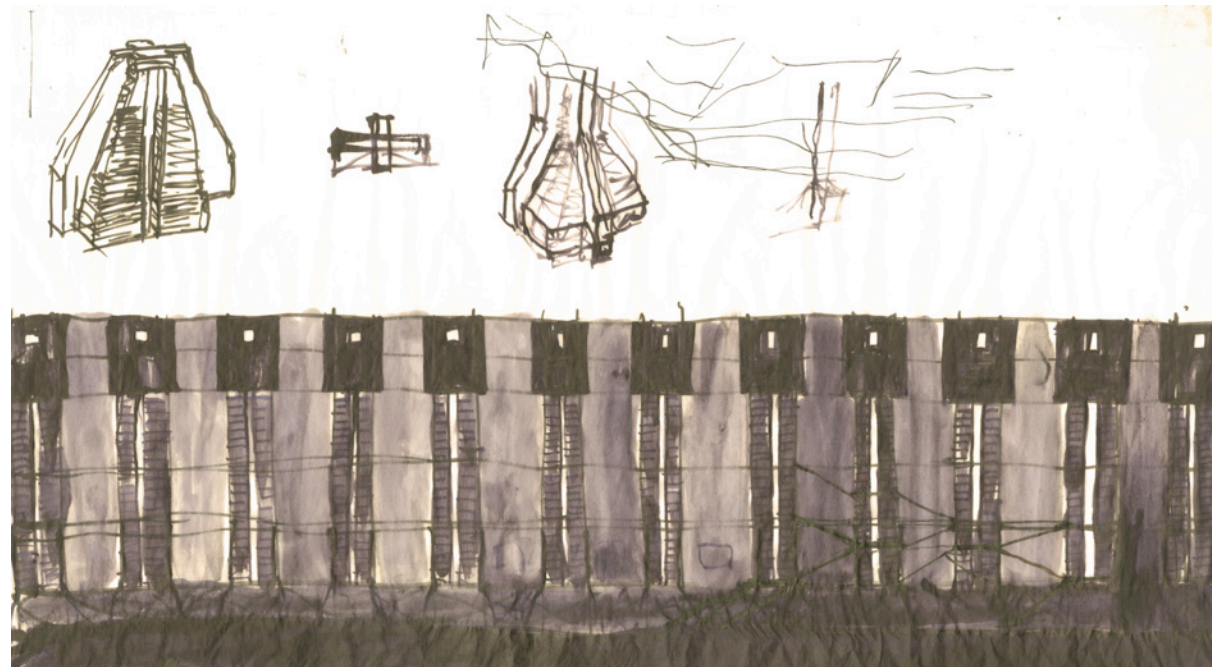
PL79 .4



PL80 .1



PL80 .3



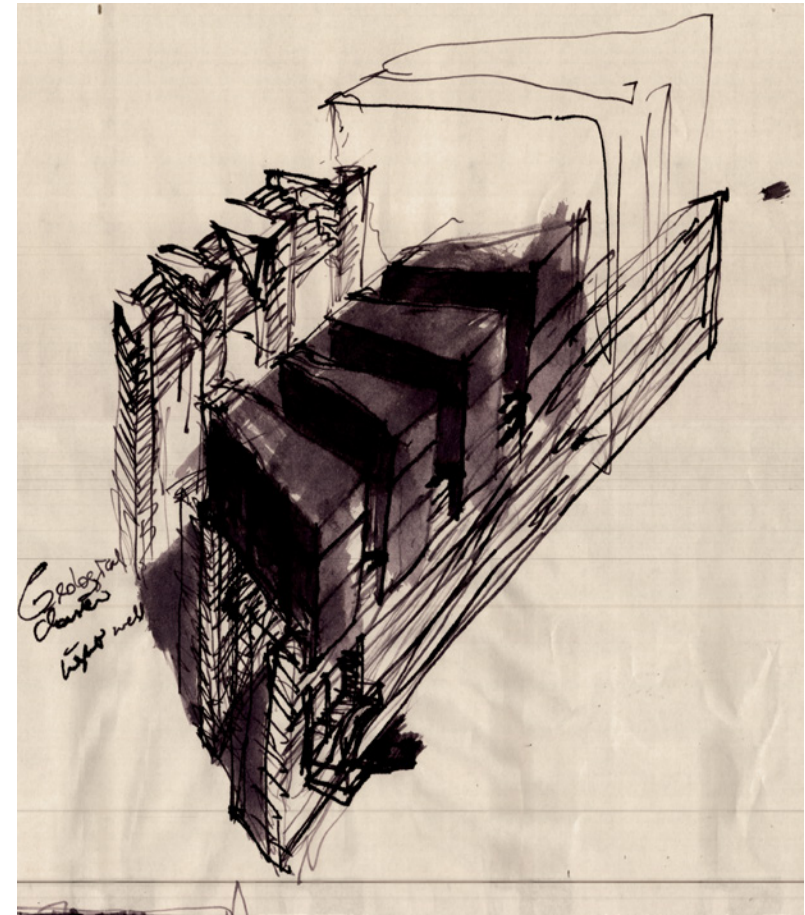
PL80 .2



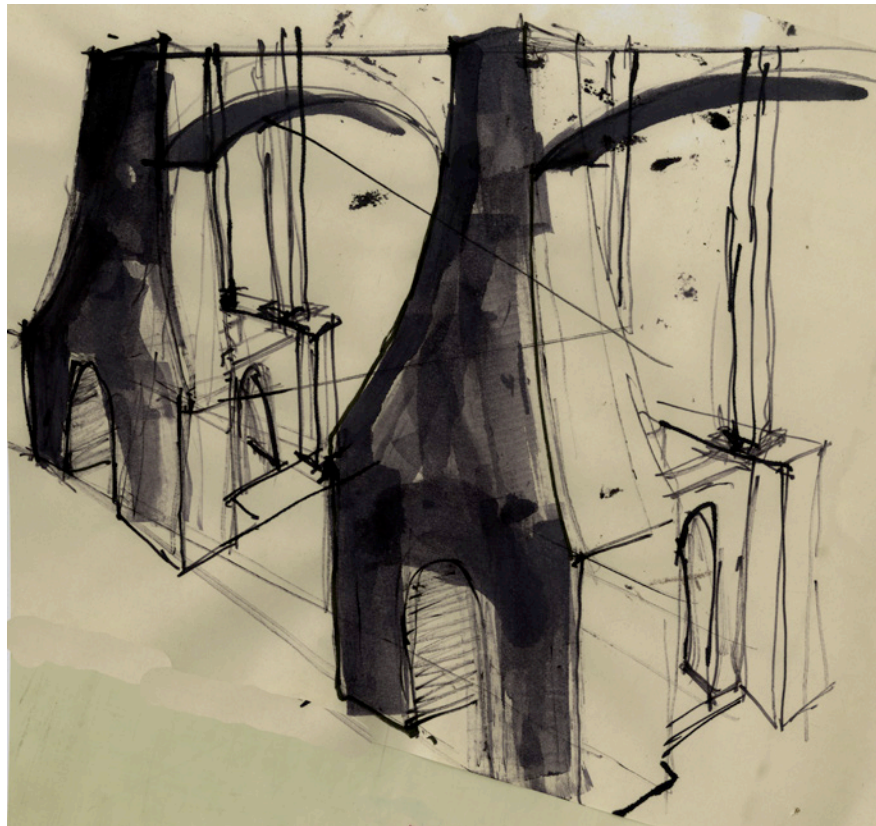
PL80 .4



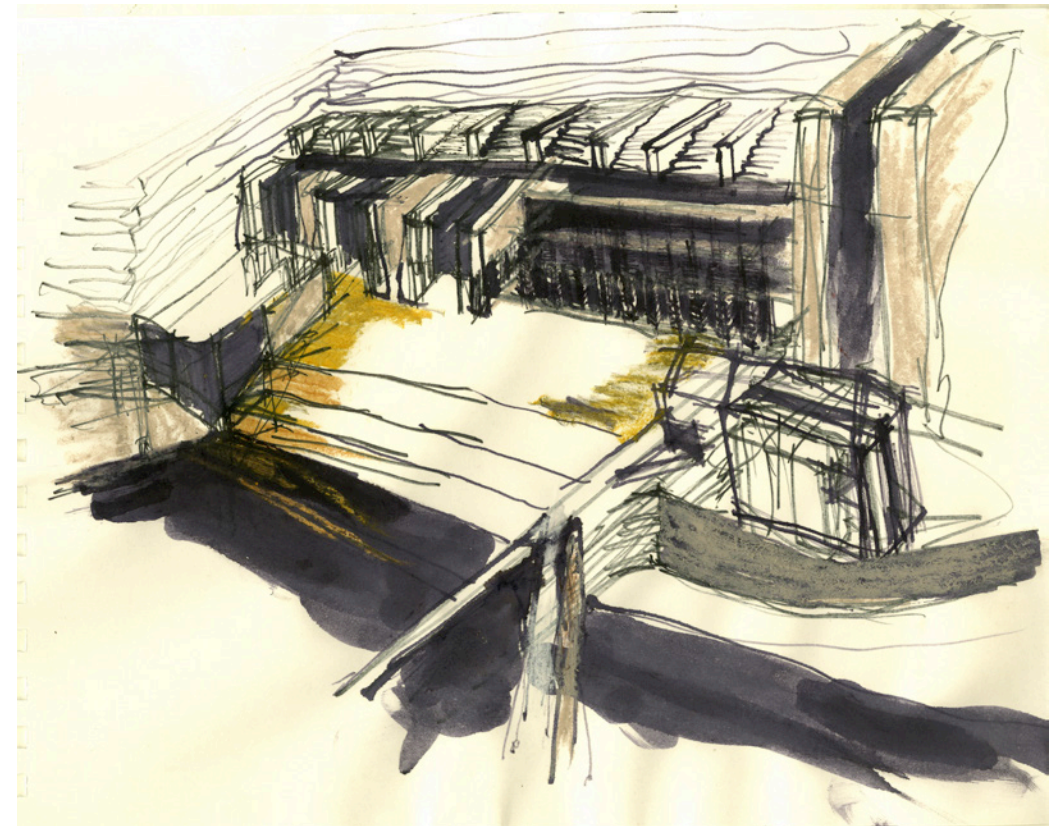
PL81 .1



PL81 .3



PL81 .2



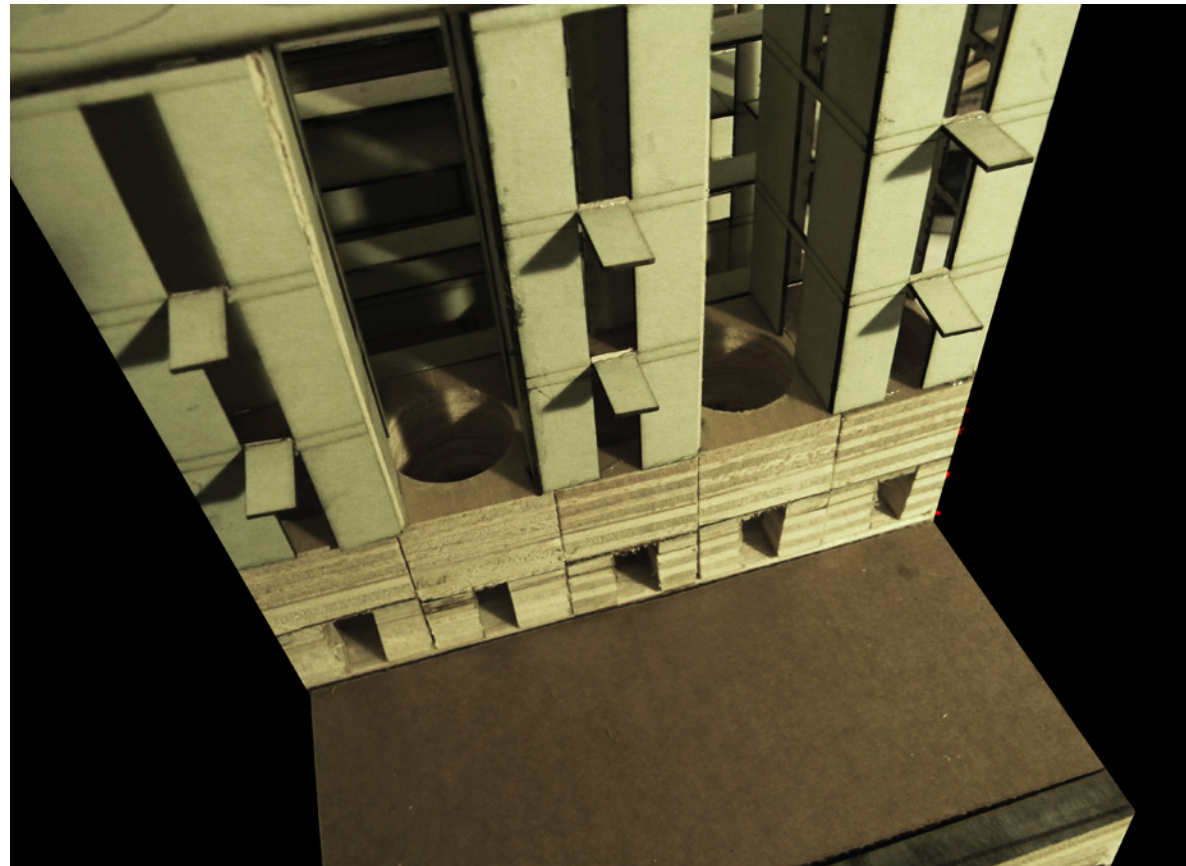
PL81 .4



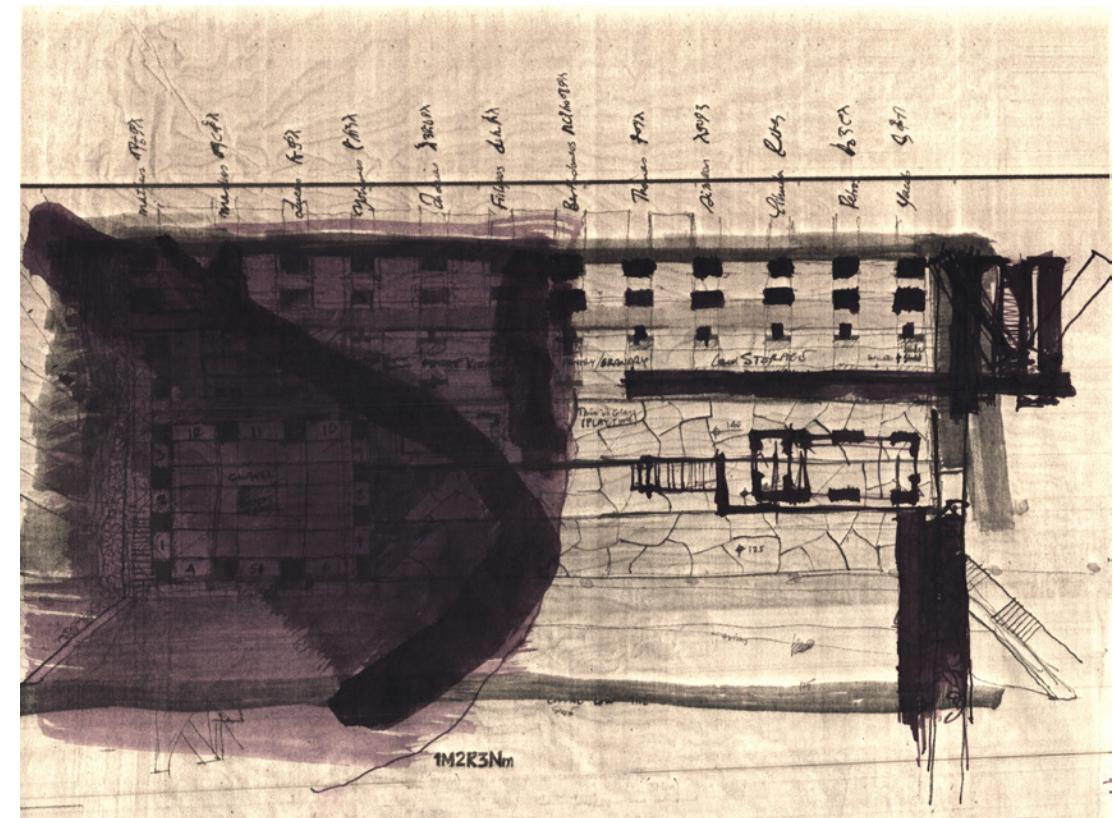
PL82 .1



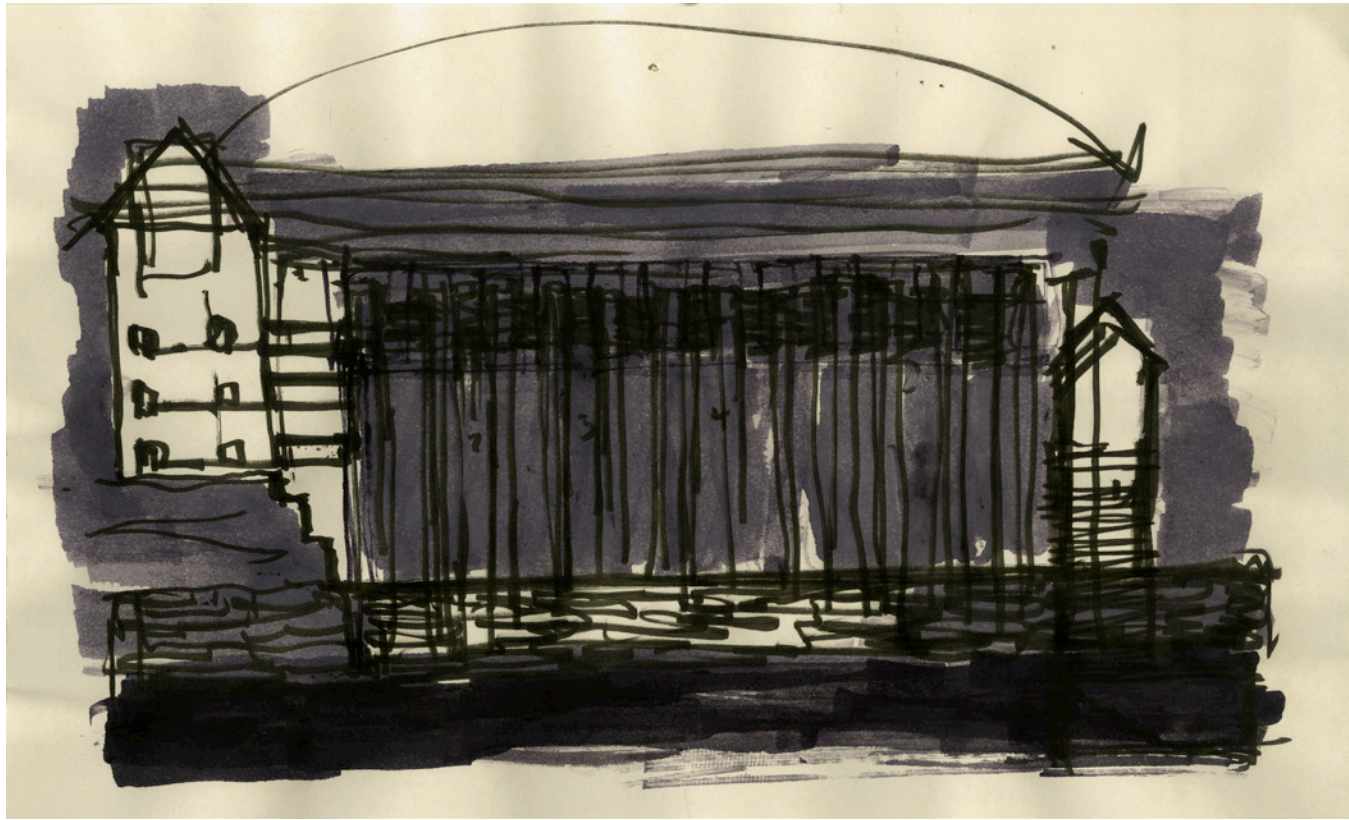
PL82 .3



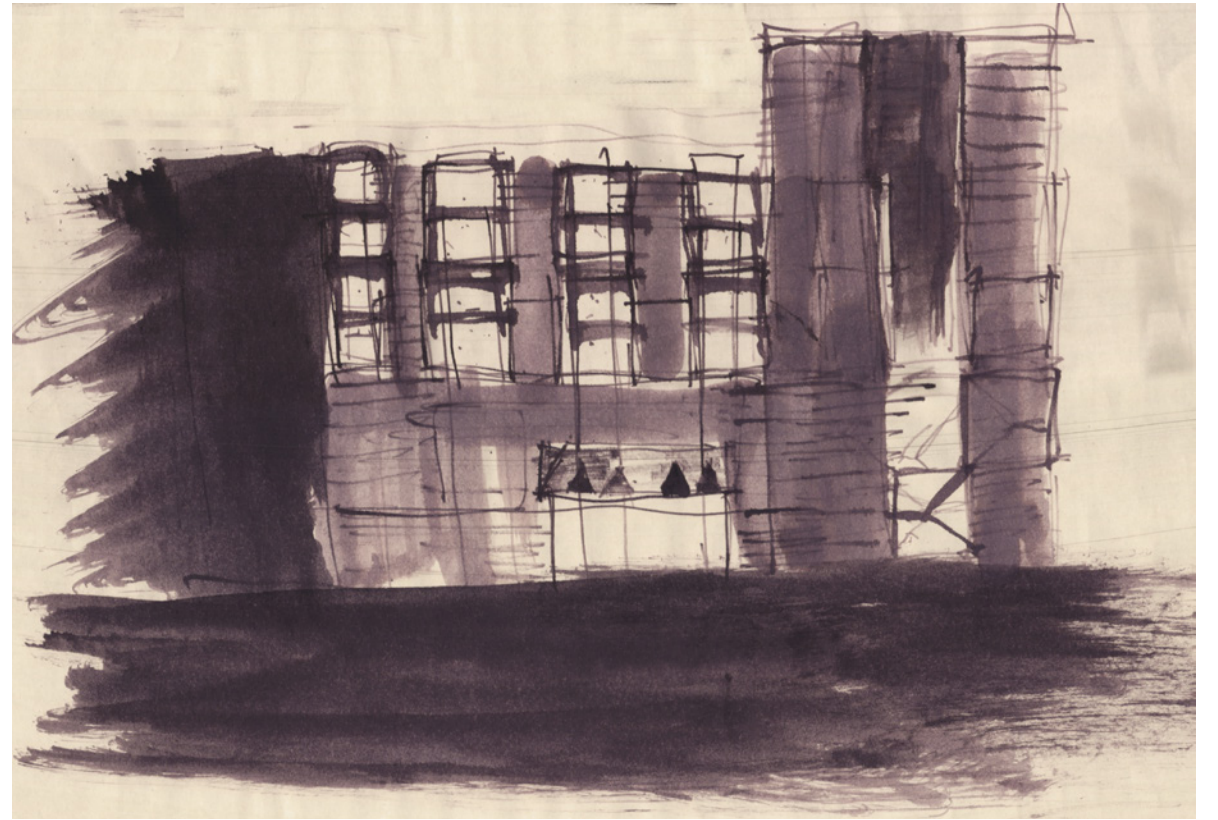
PL82 .2



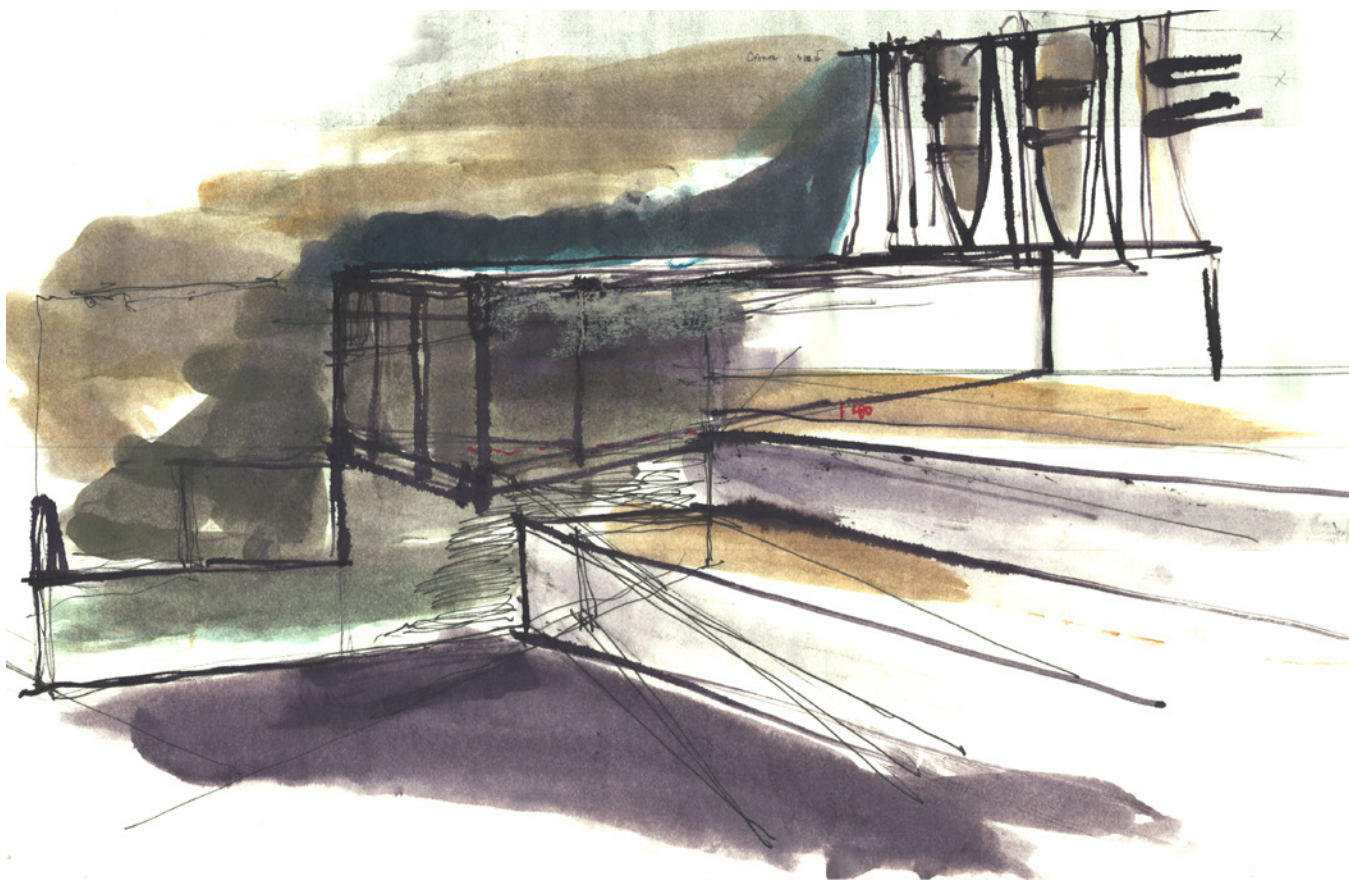
PL82 .4



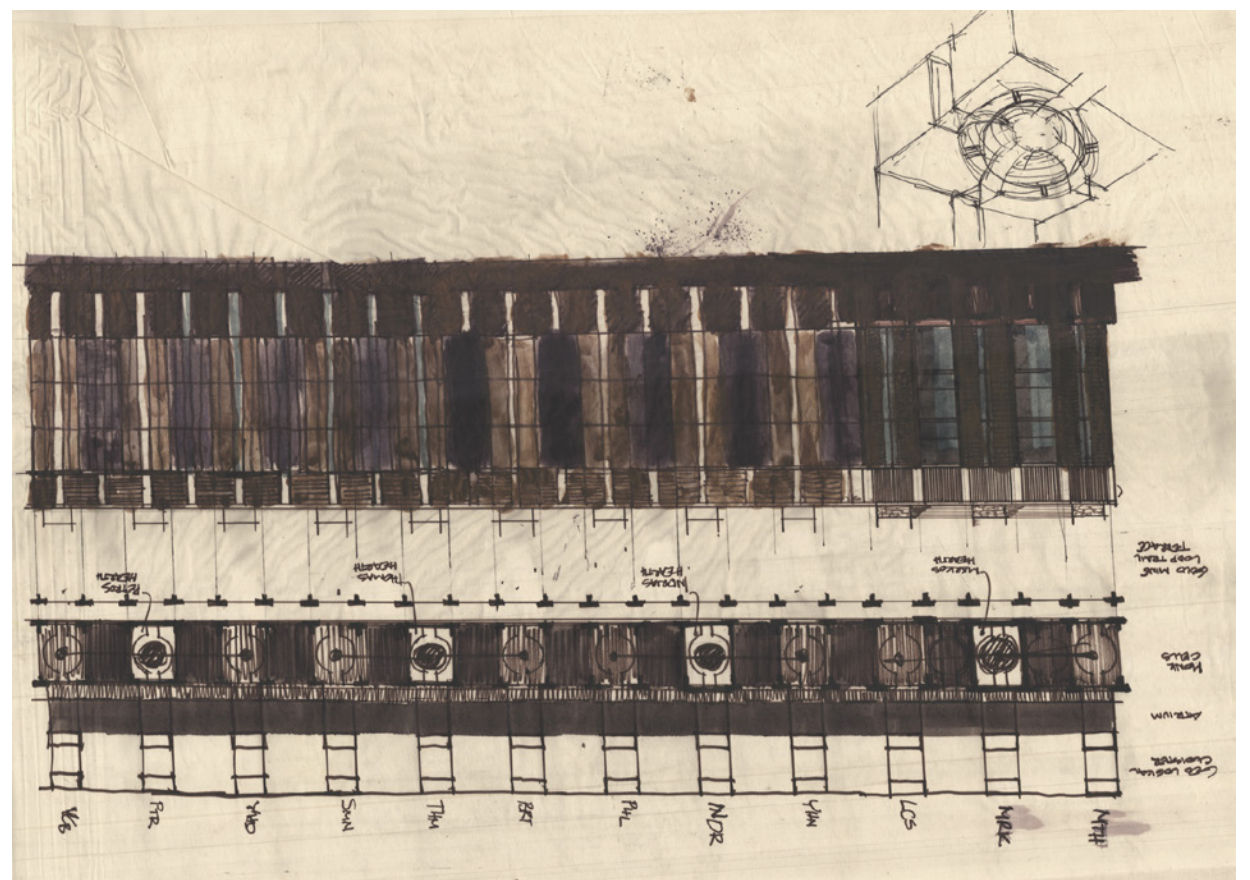
PL83 .1



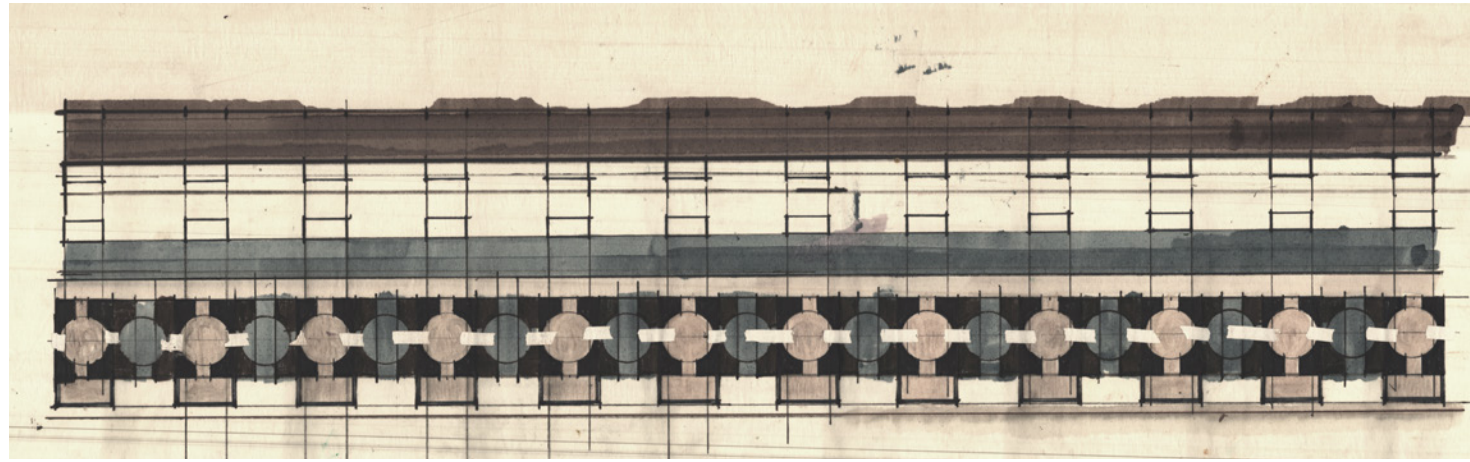
PL83 .3



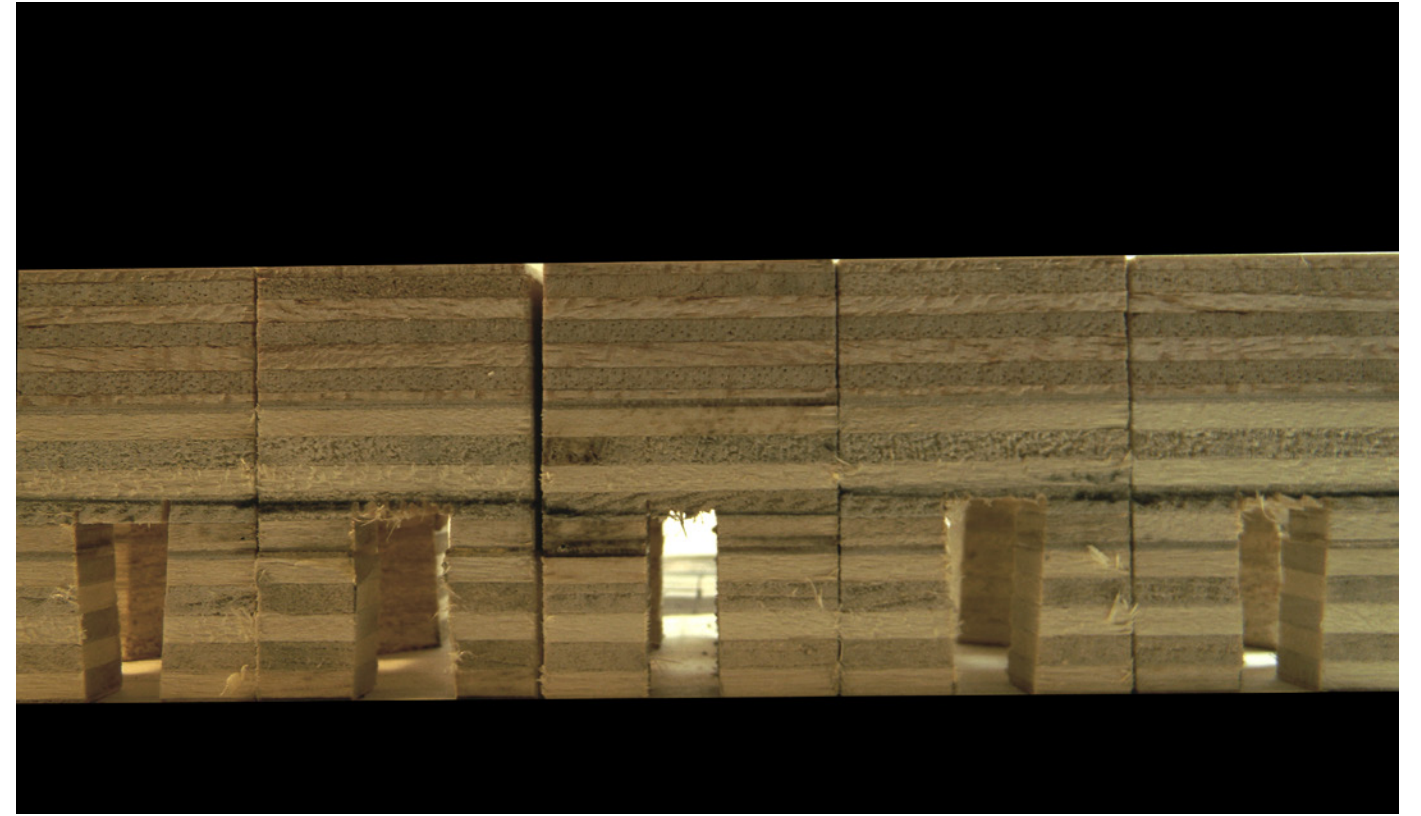
PL83 .2



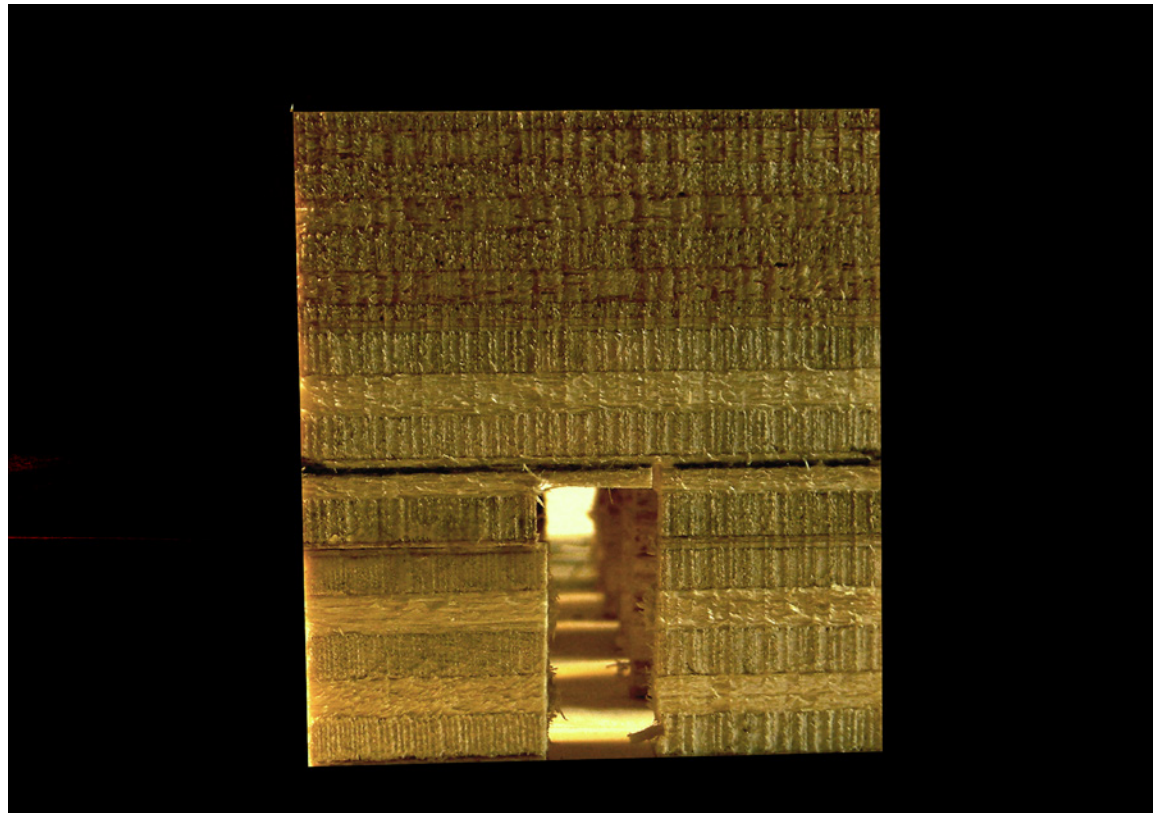
PL83 .4



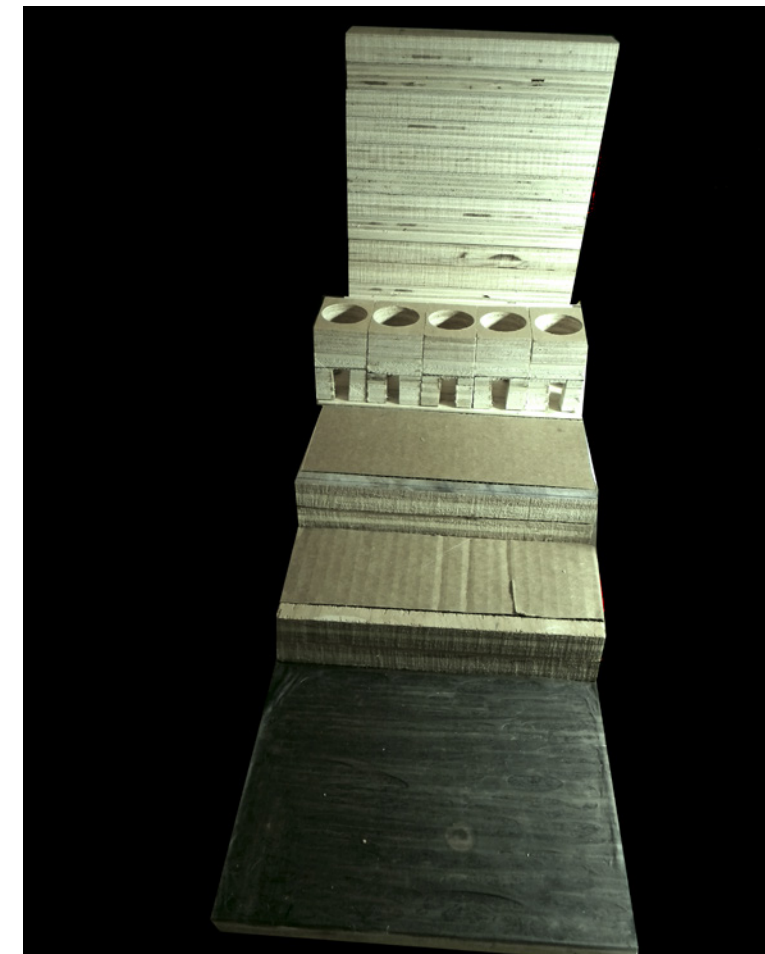
PL84 .1



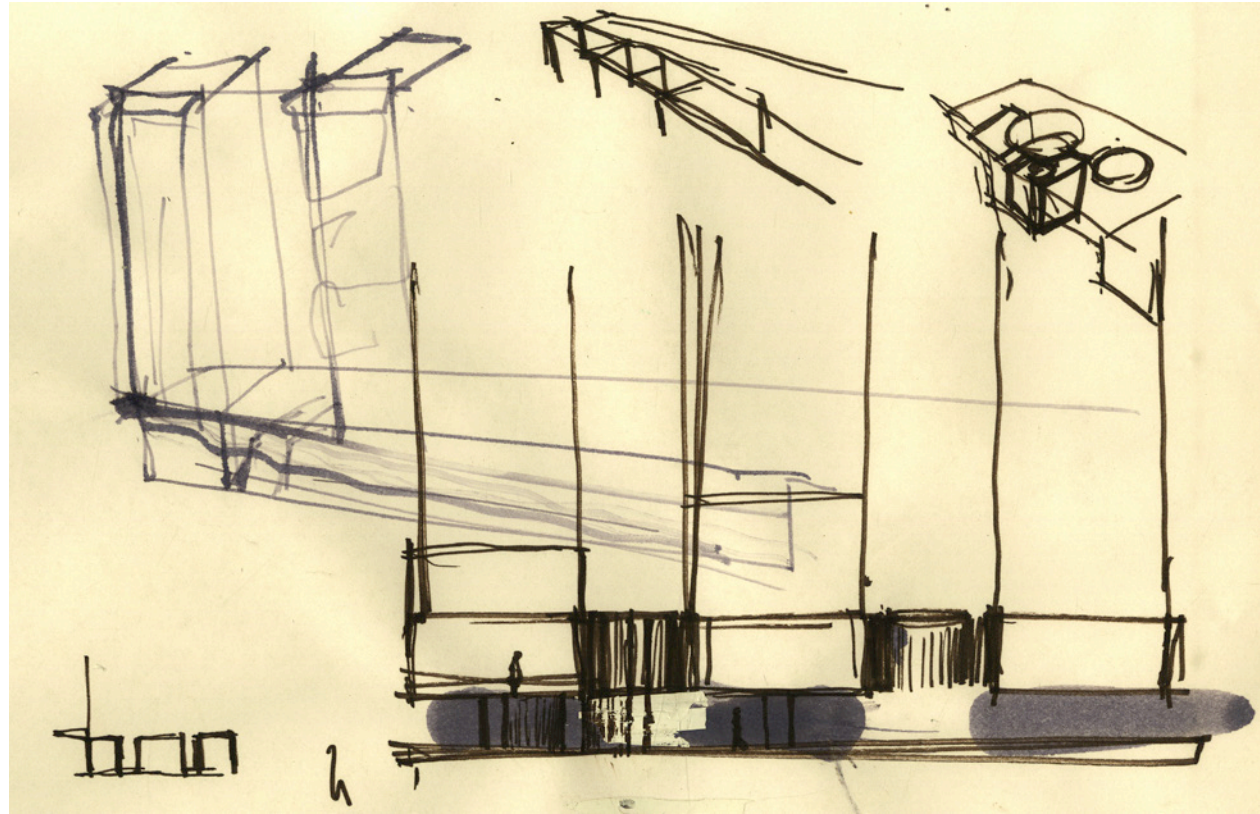
PL84 .3



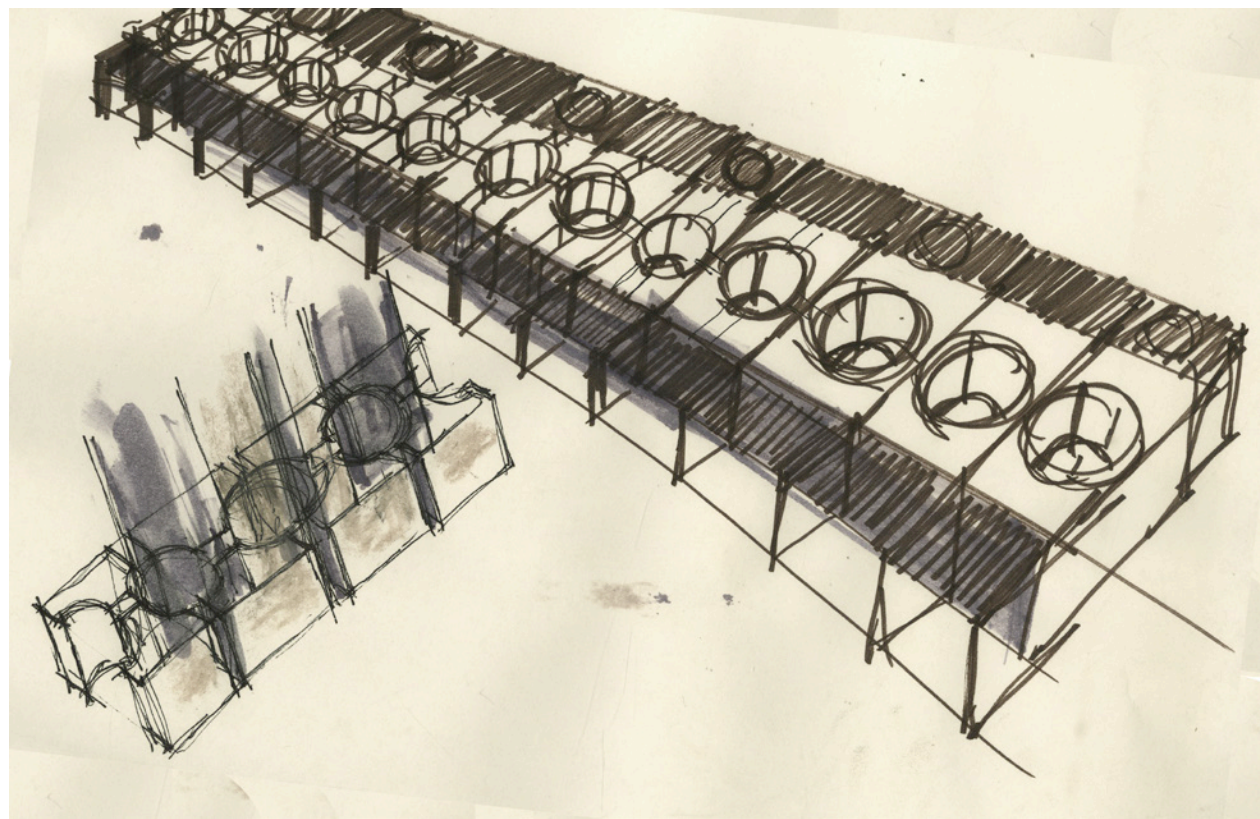
PL84 .2



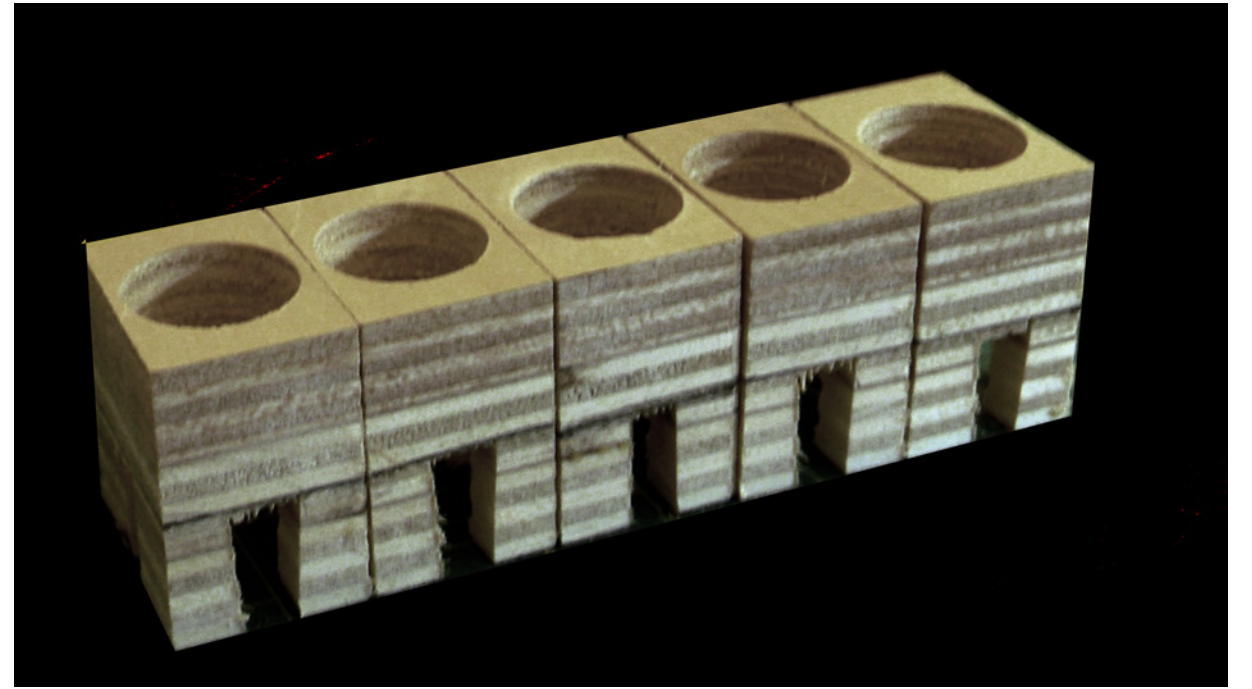
PL84 .4



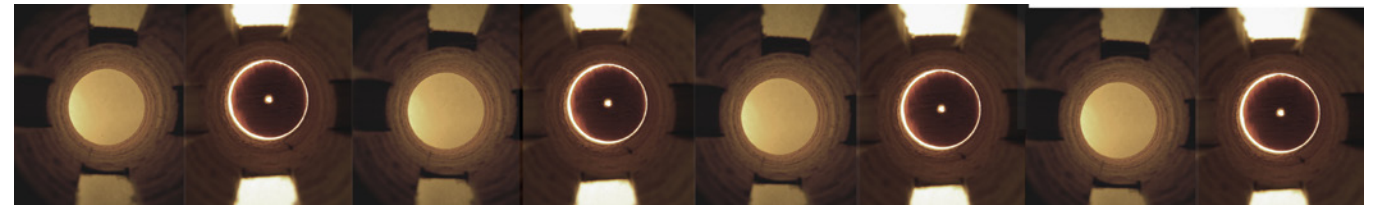
PL85 .1



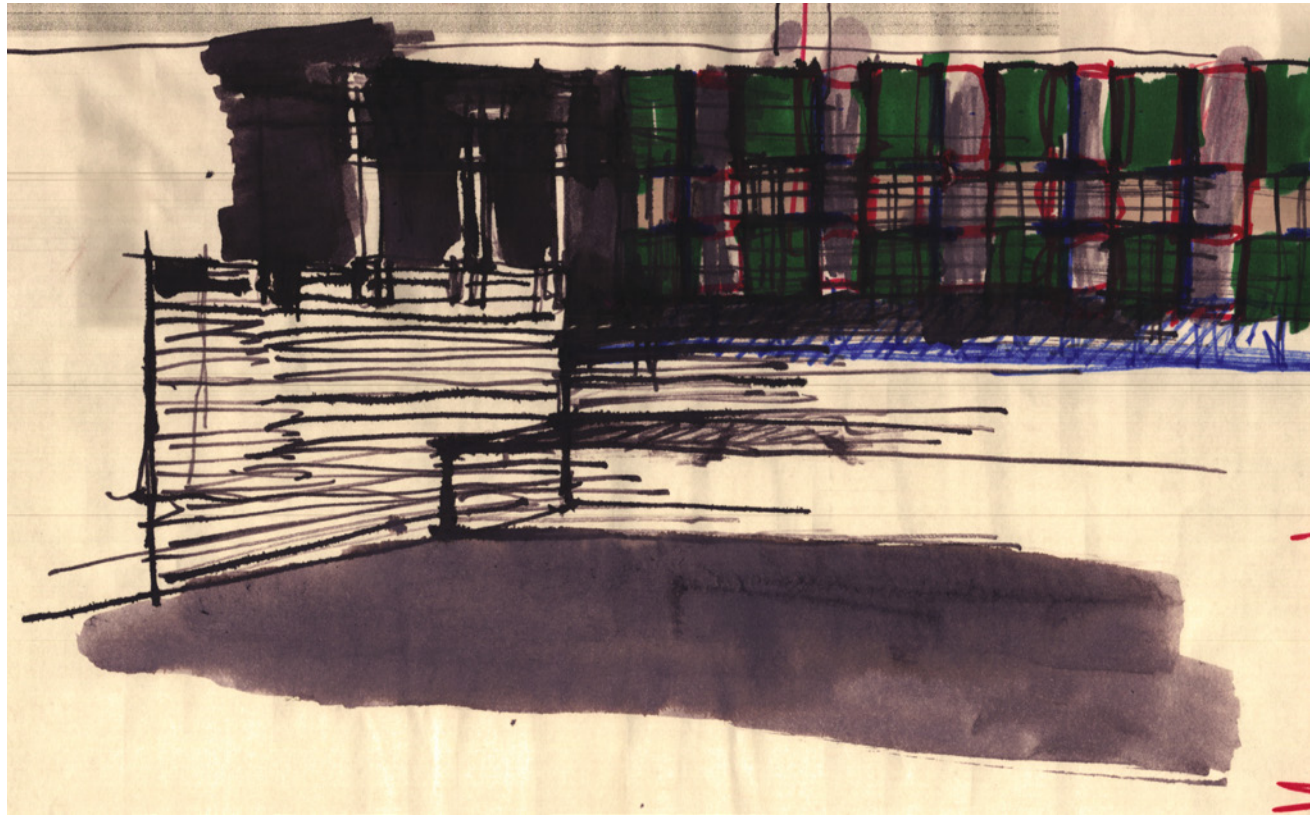
PL85 .2



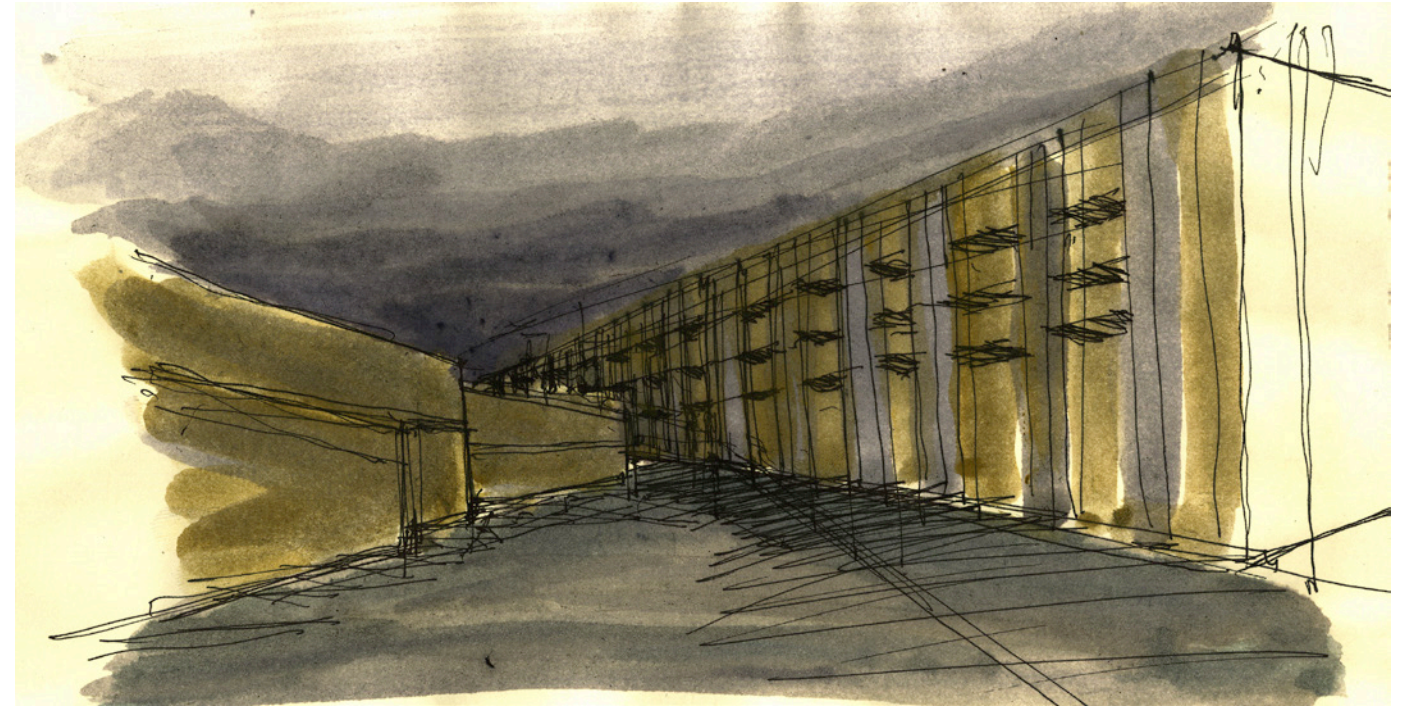
PL85 .3



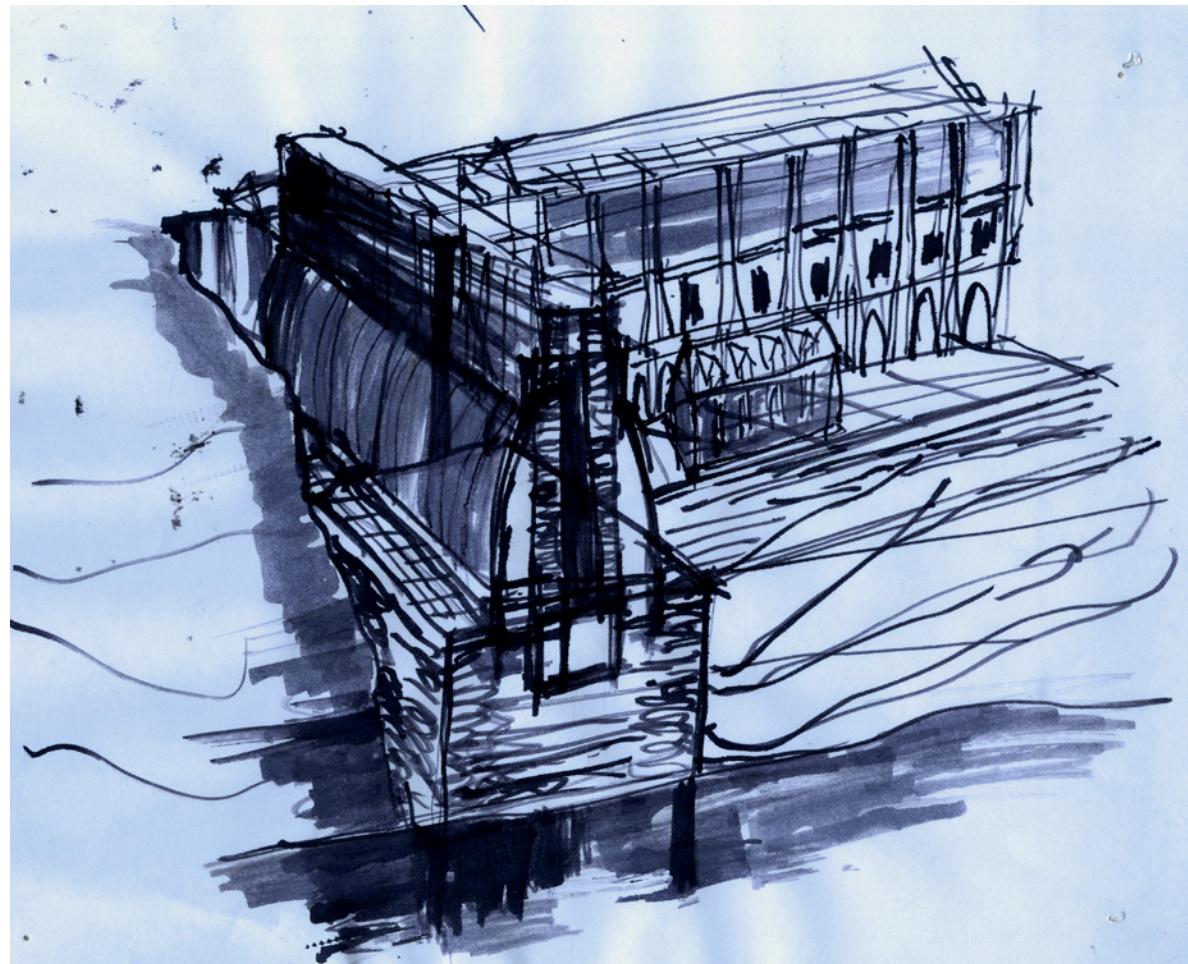
PL85 .4



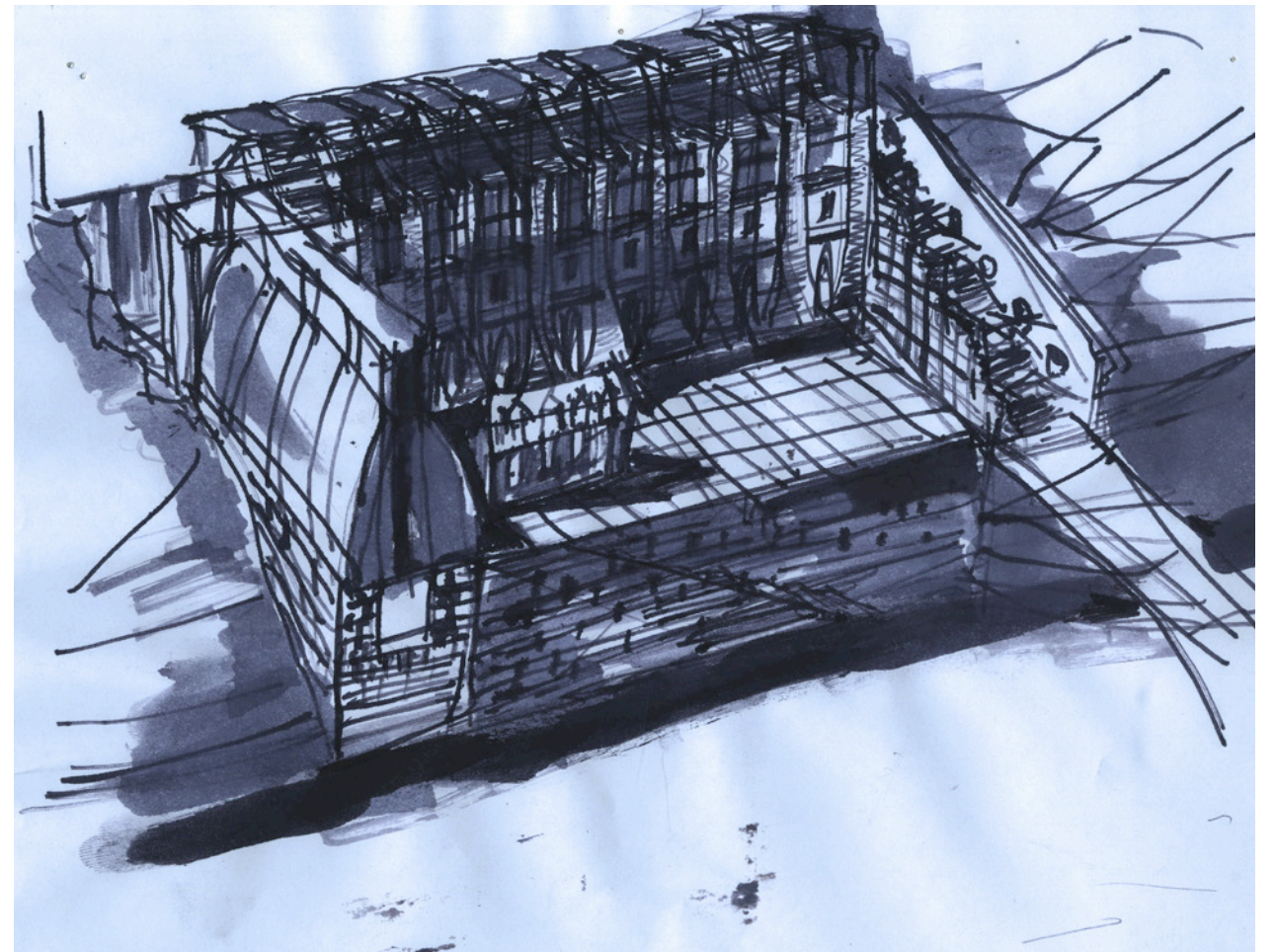
PL86 .1



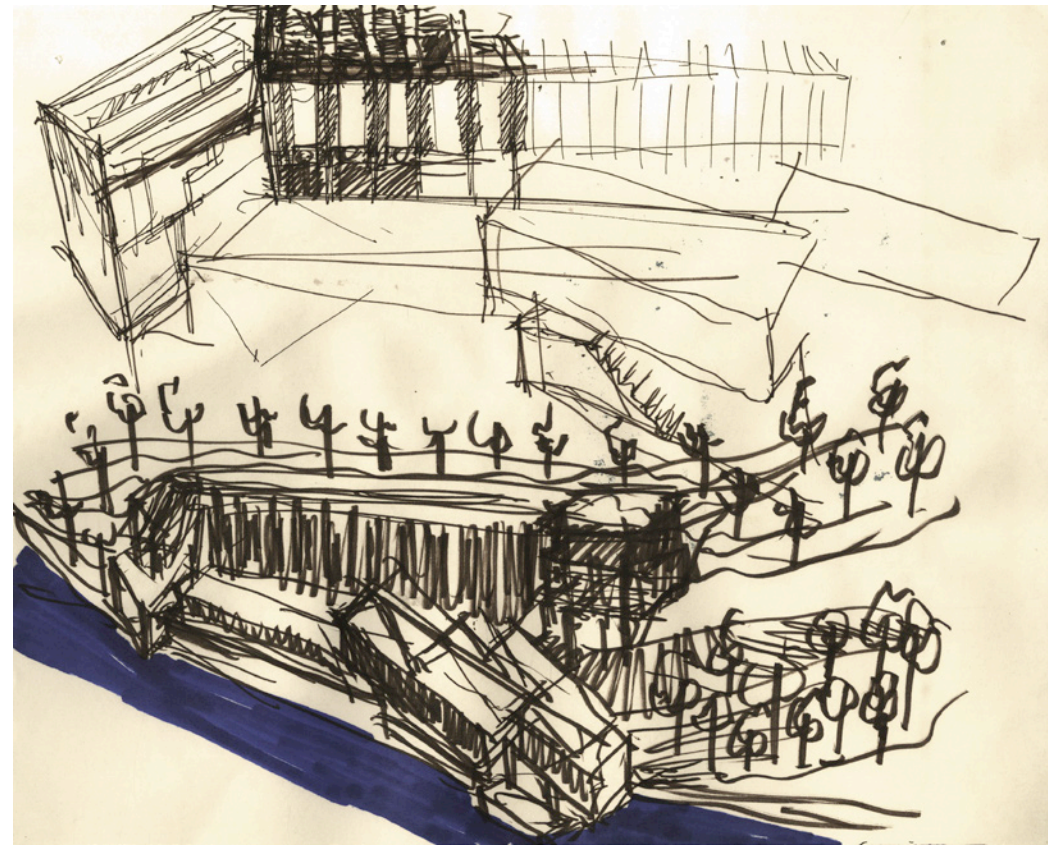
PL86 .3



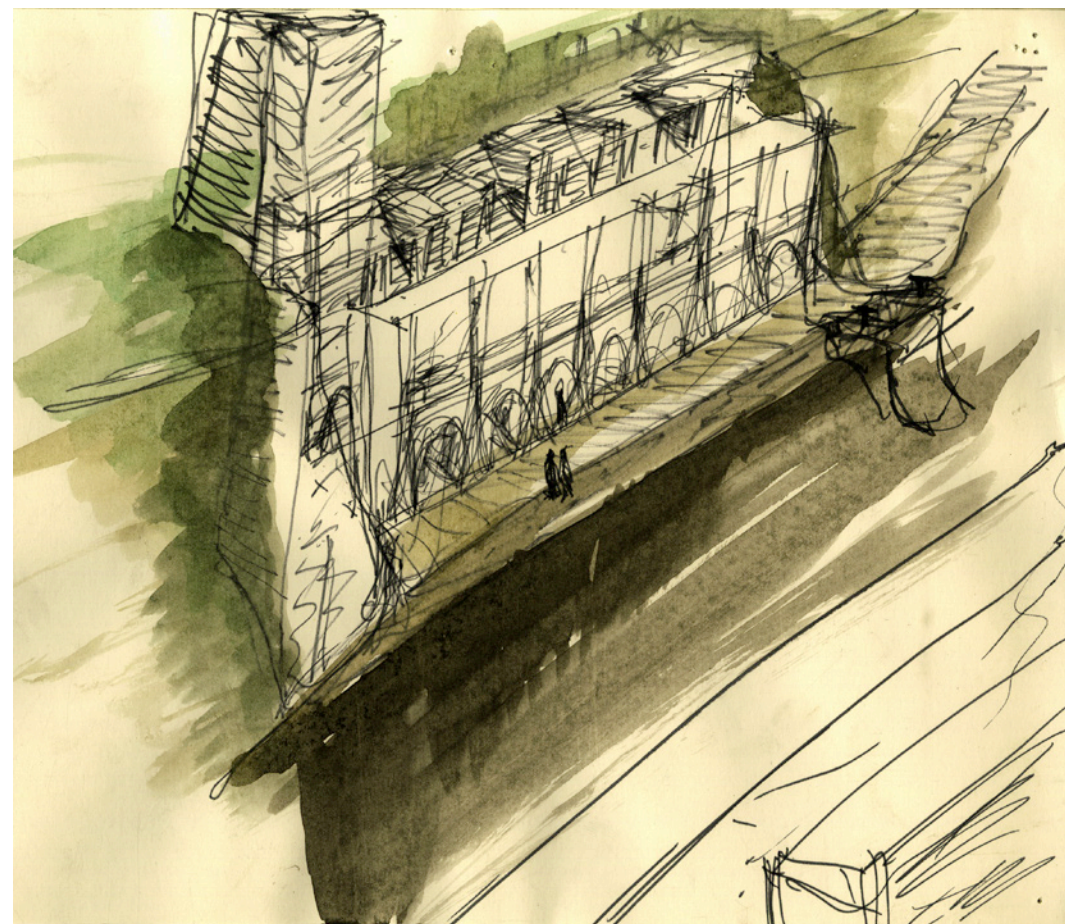
PL86 .2



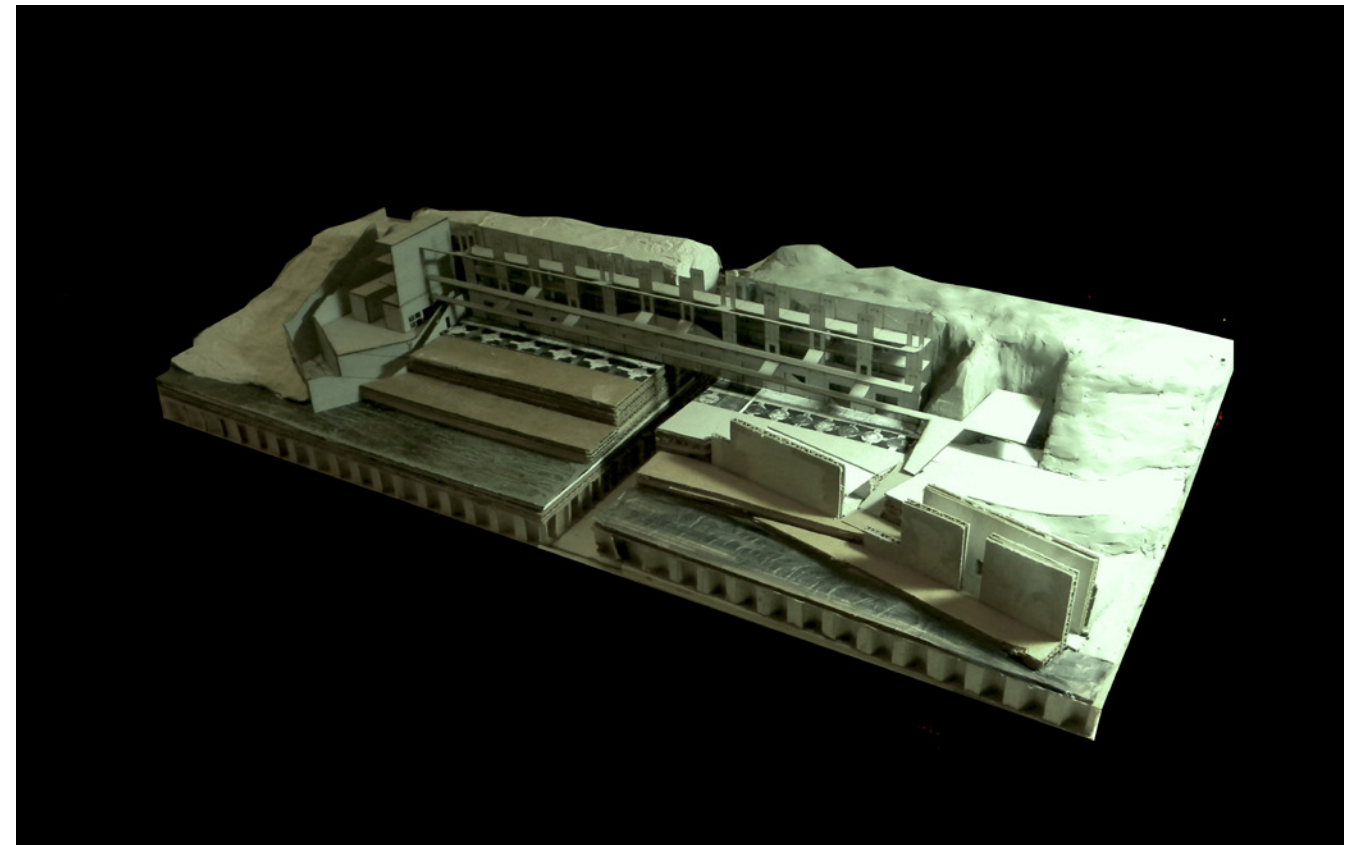
PL86 .4



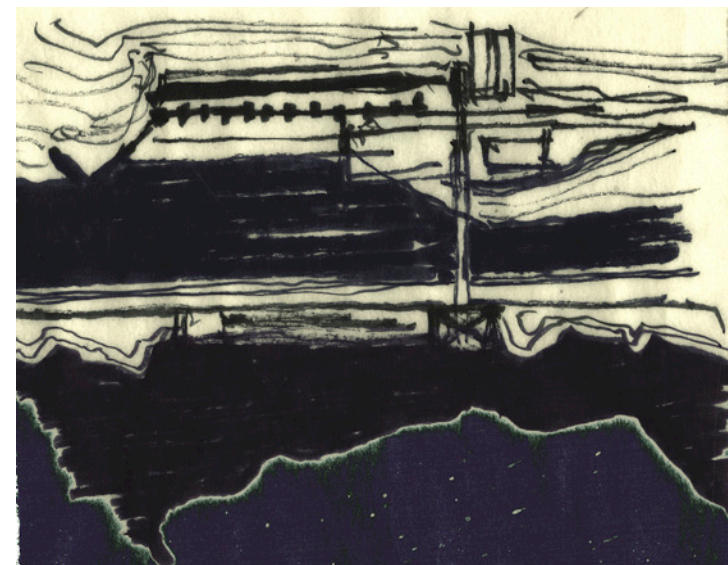
PL87 .1



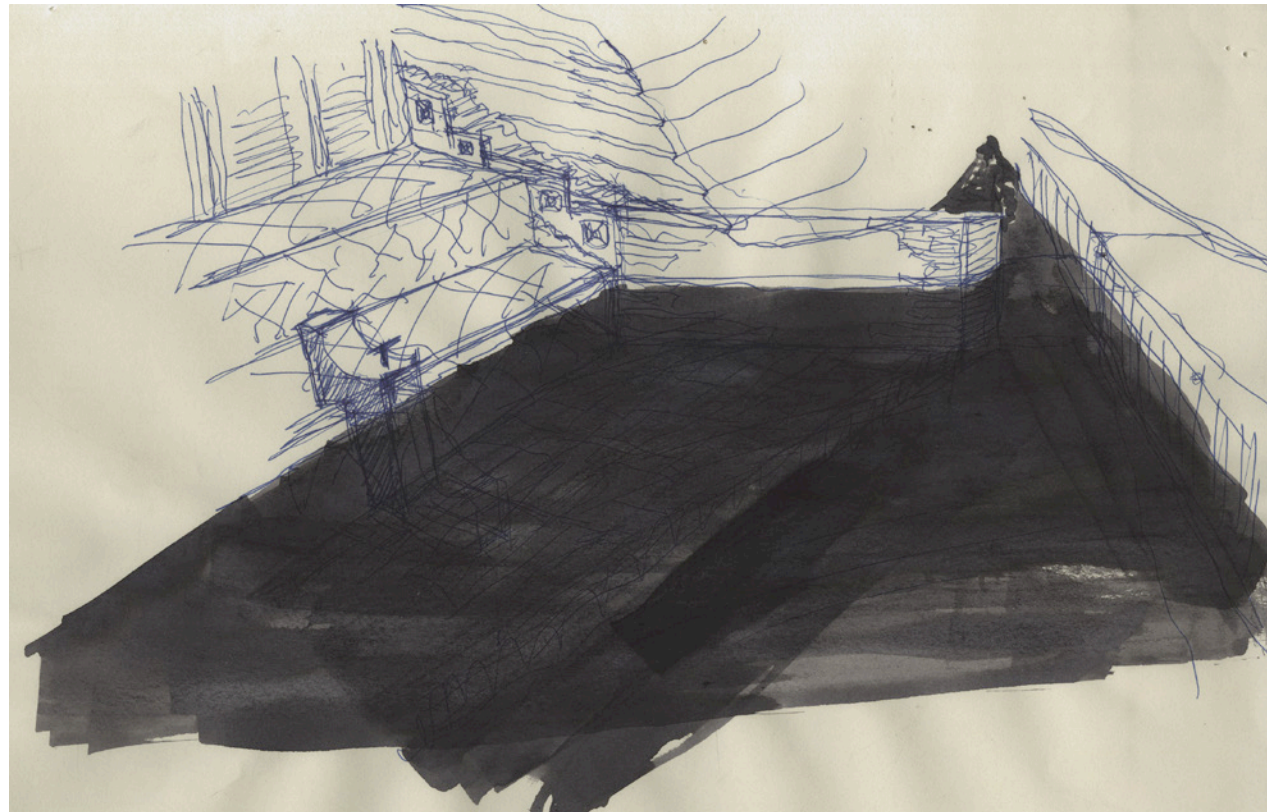
PL87 .2



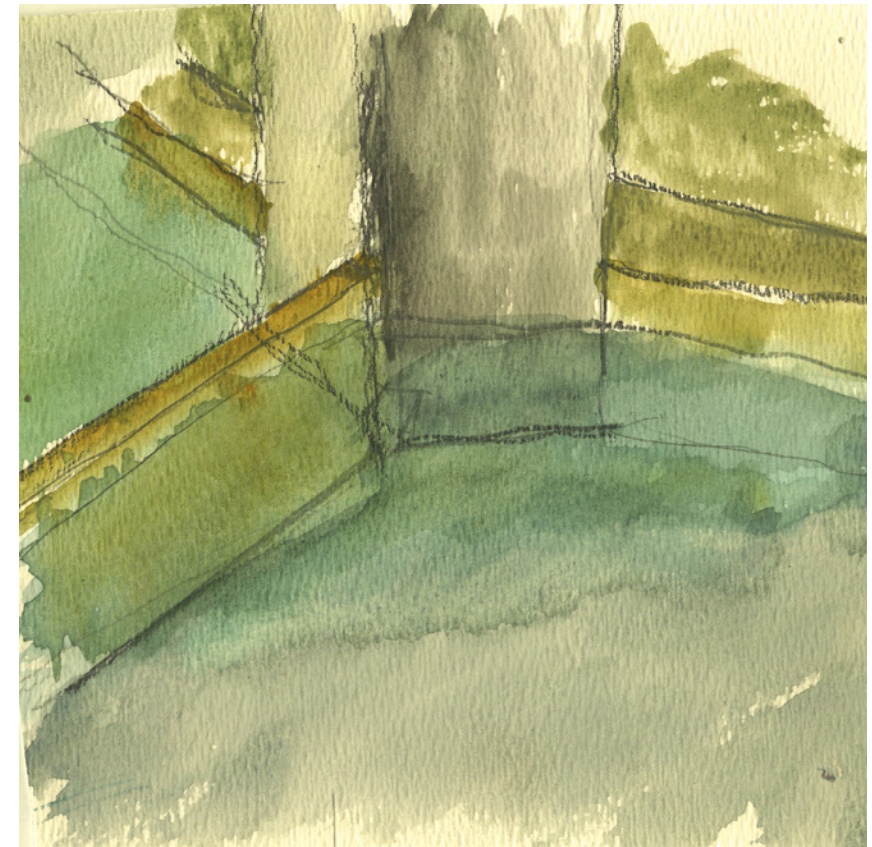
PL87 .3



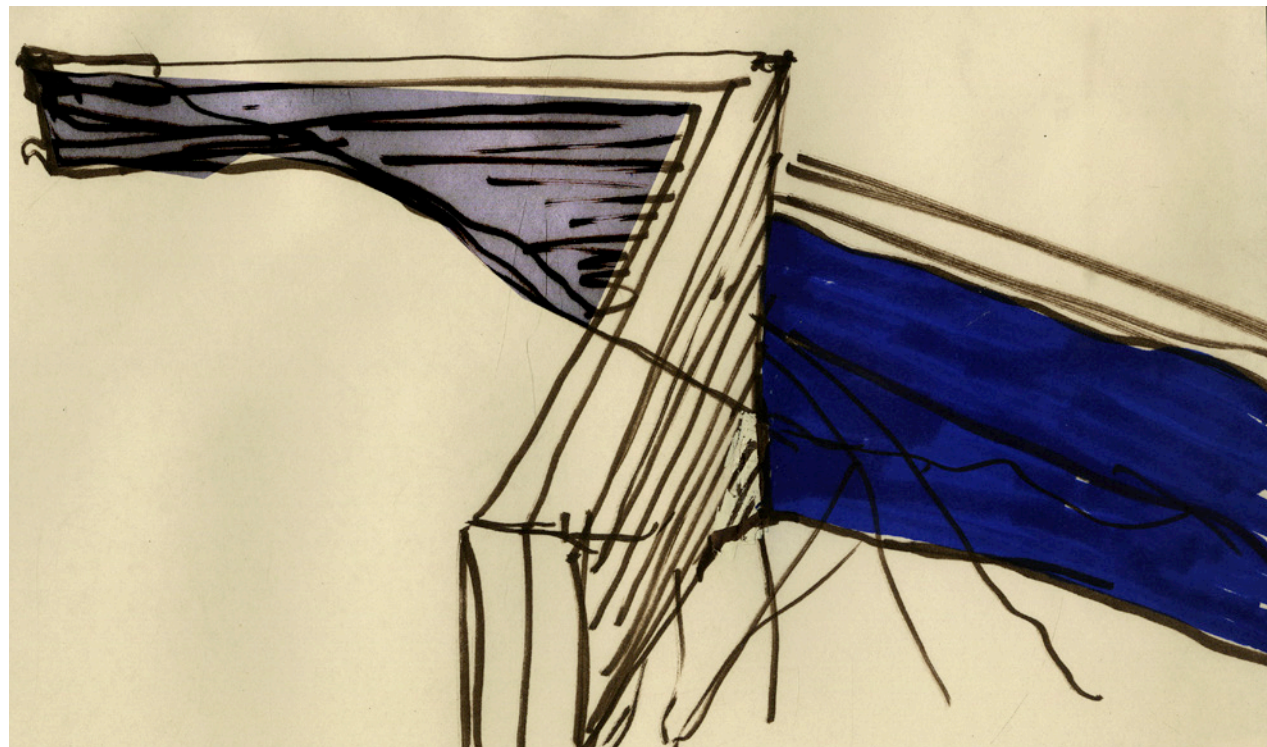
PL87 .4



PL88 .1



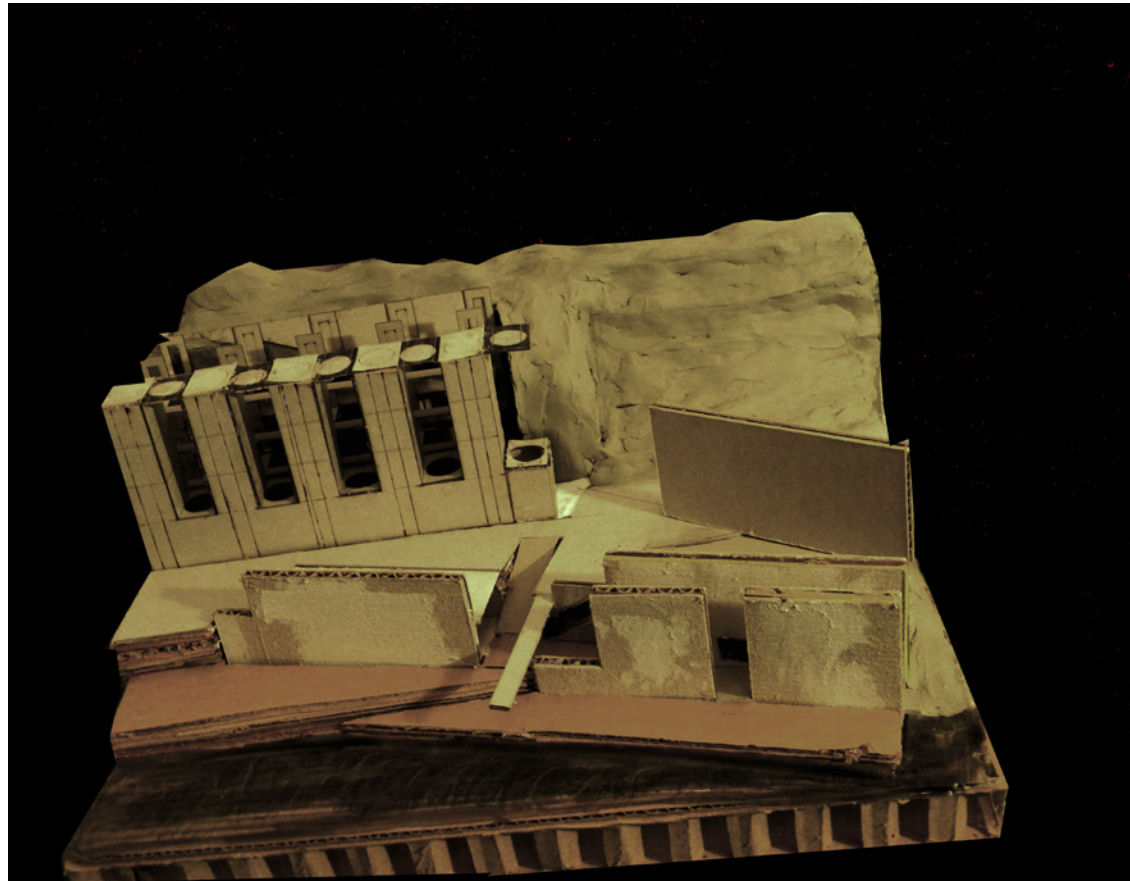
PL88 .3



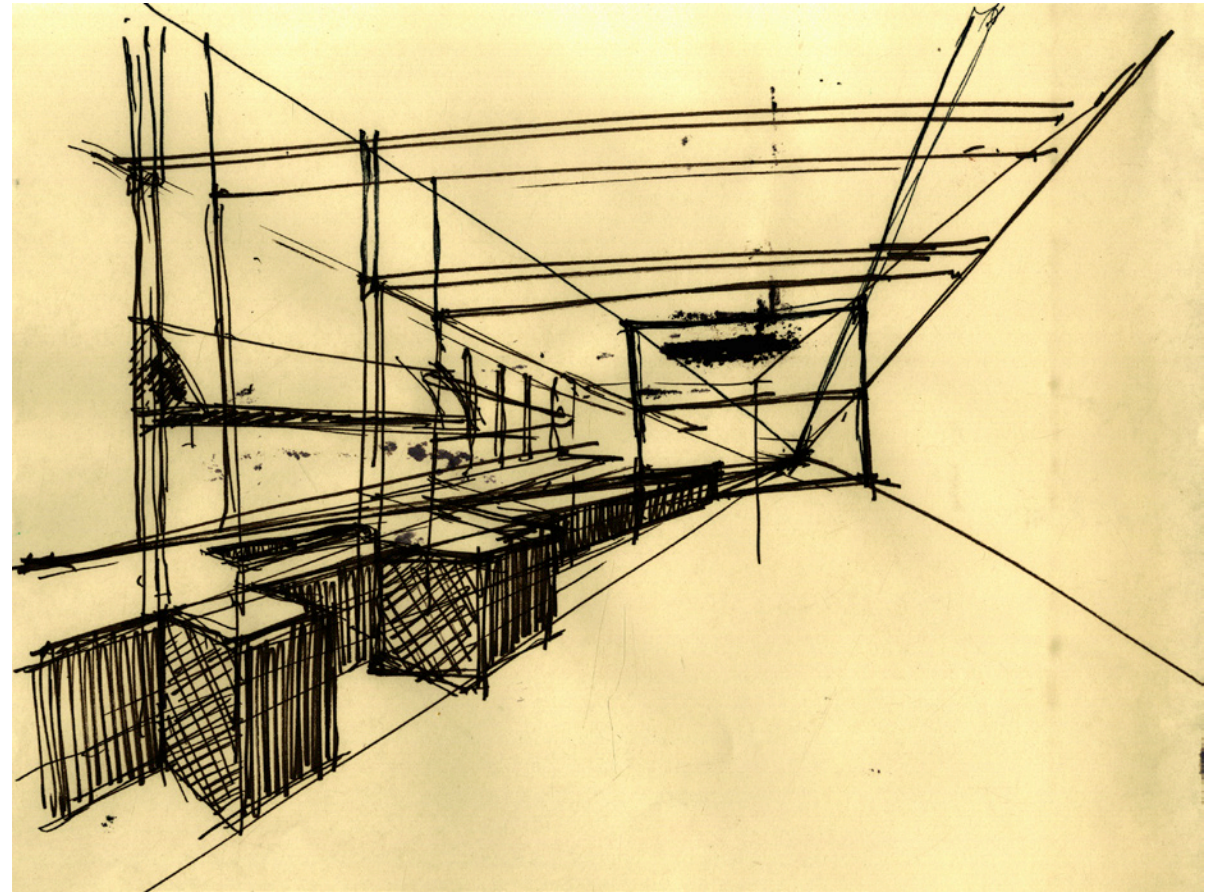
PL88 .2



PL88 .4



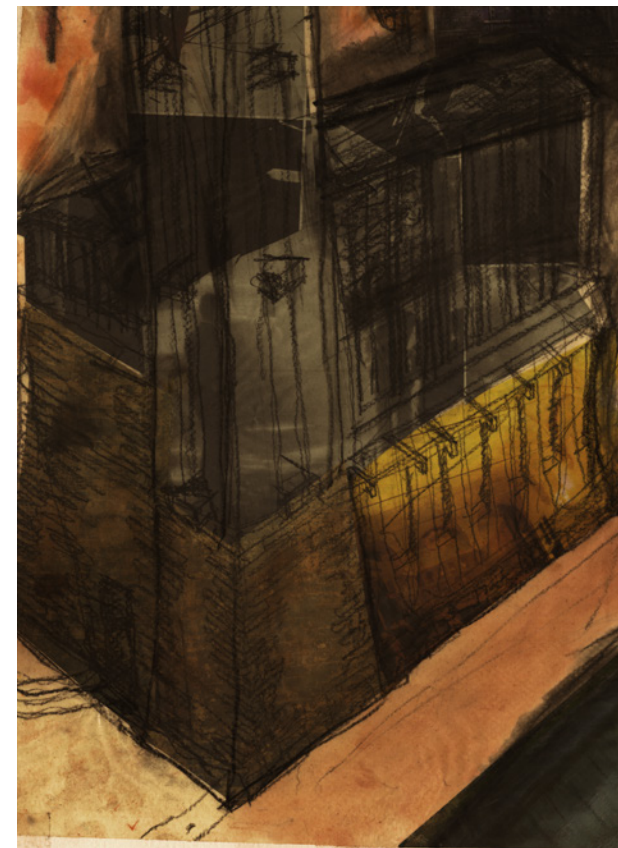
PL89 .1



PL89 .3



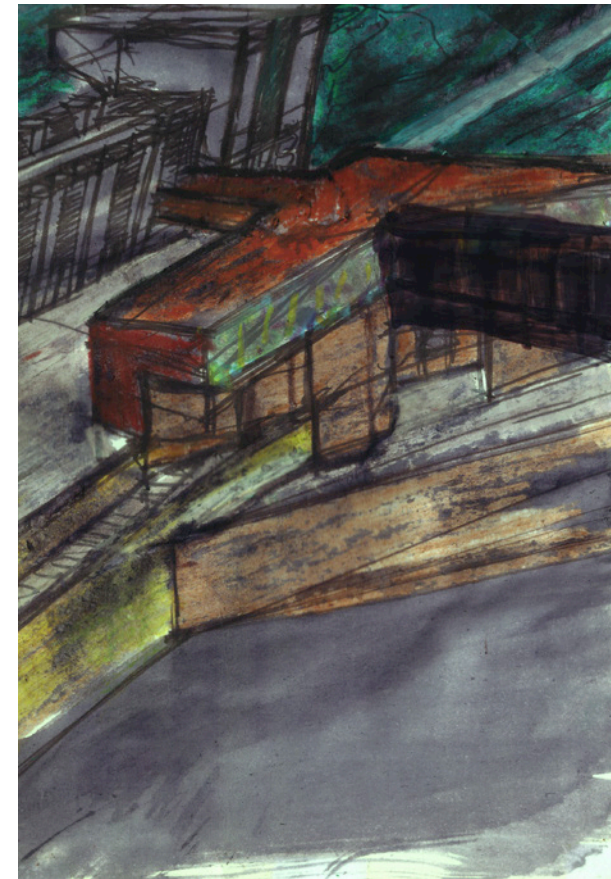
PL89 .2



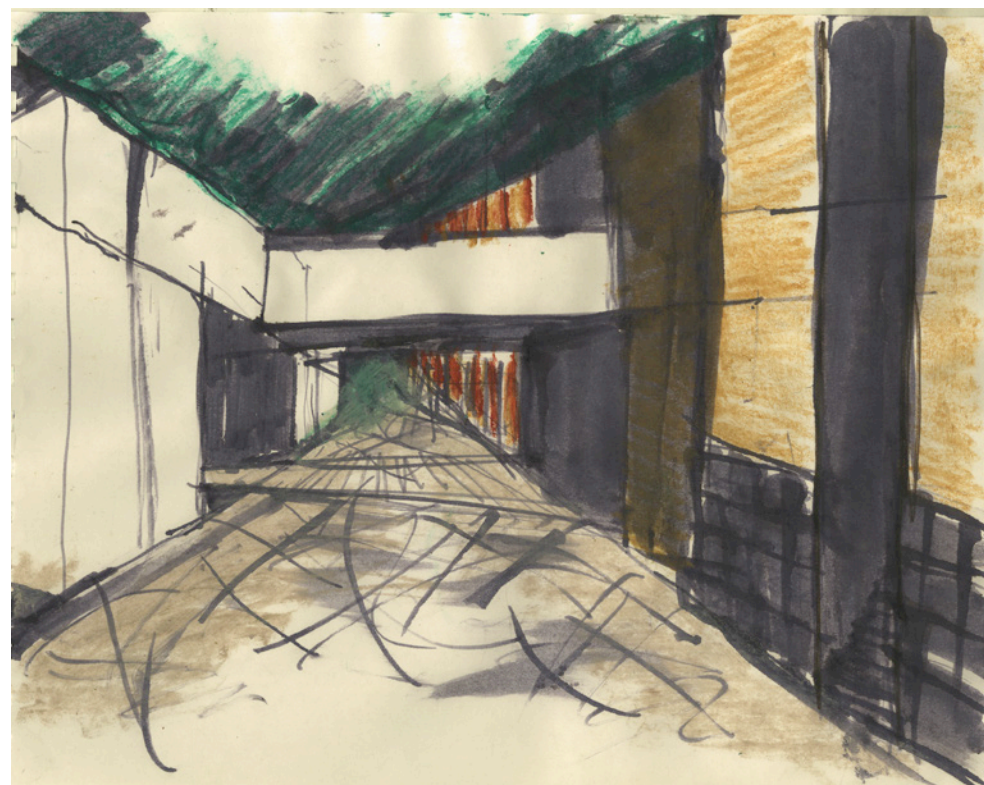
PL89 .4



PL90 .1



PL90 .3

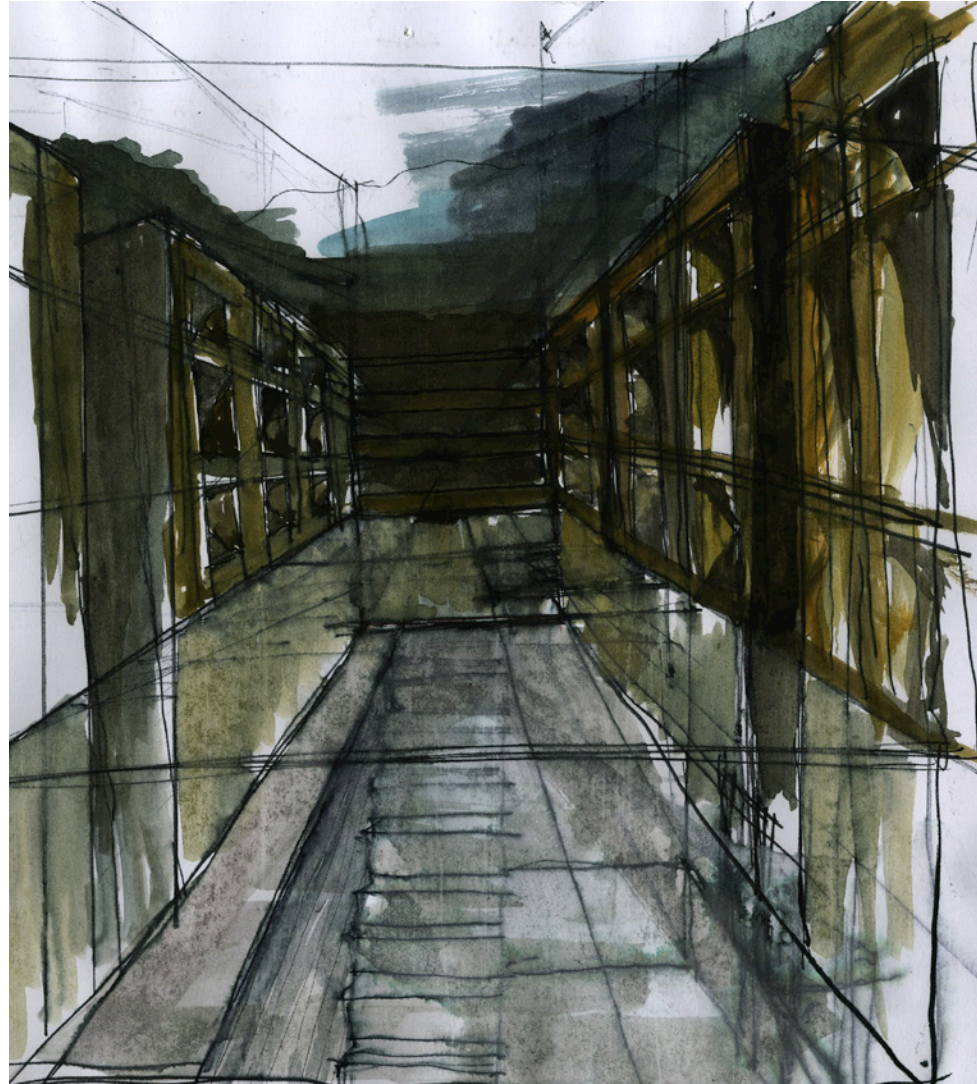


PL90 .2



PL90 .4

4.3.4 The Chapel



PL91

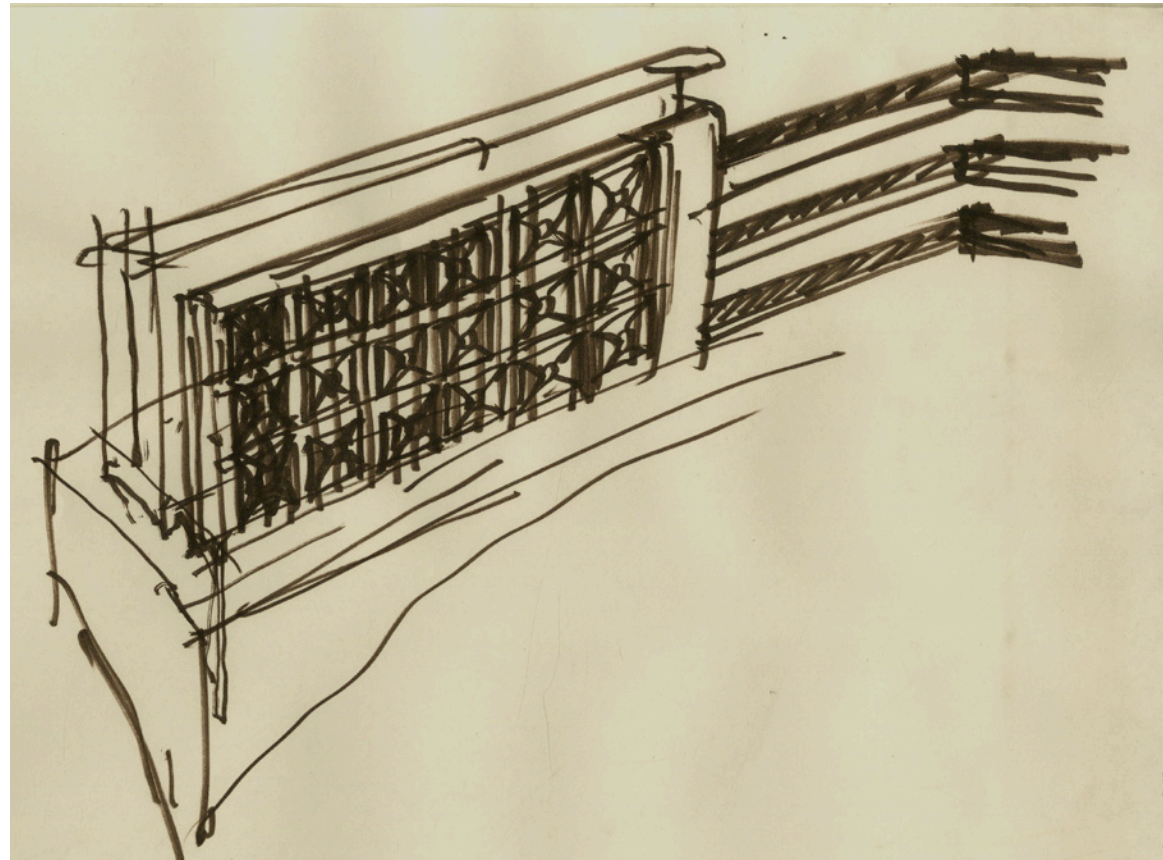
..... for it was of these hours during the day that he said Seven times a day have I praised you (Ps 118[119]:164), Concerning Vigils, the same prophet says: At midnight I arose to give you praise (Ps 118[119]162). Therefore we should praise our creator for his just judgements at these times: Lauds, Prime, Terce, Sext, None, Vespers and Compline; and let us arise at night to give him praise....

From 'The Rule of Saint Benedict'

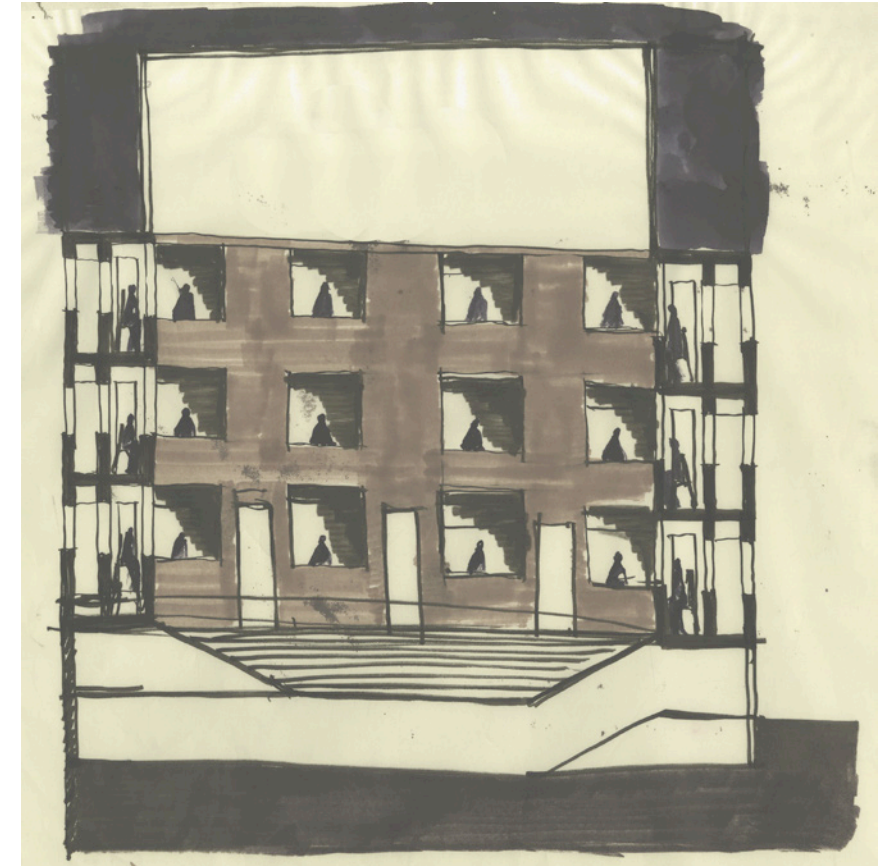
The cloister that has taken root where we disembarked from the bridge at the end of the Gold Mine Loop Trail, has grown north along the canal. In *'The Arrival'*, We started out on the tow path, which is a public domain. In *'The Crossing'*, our first structure across the canal is where the monks interact with the outside world by way of guests. In *'The Cliff'* the level of privacy grows with the cloister spine that followed, as it is a space to be occupied only by monks and oblates.

The final act of this story is placing the most sacred and hierarchically the most important building at the north end of the cloister.

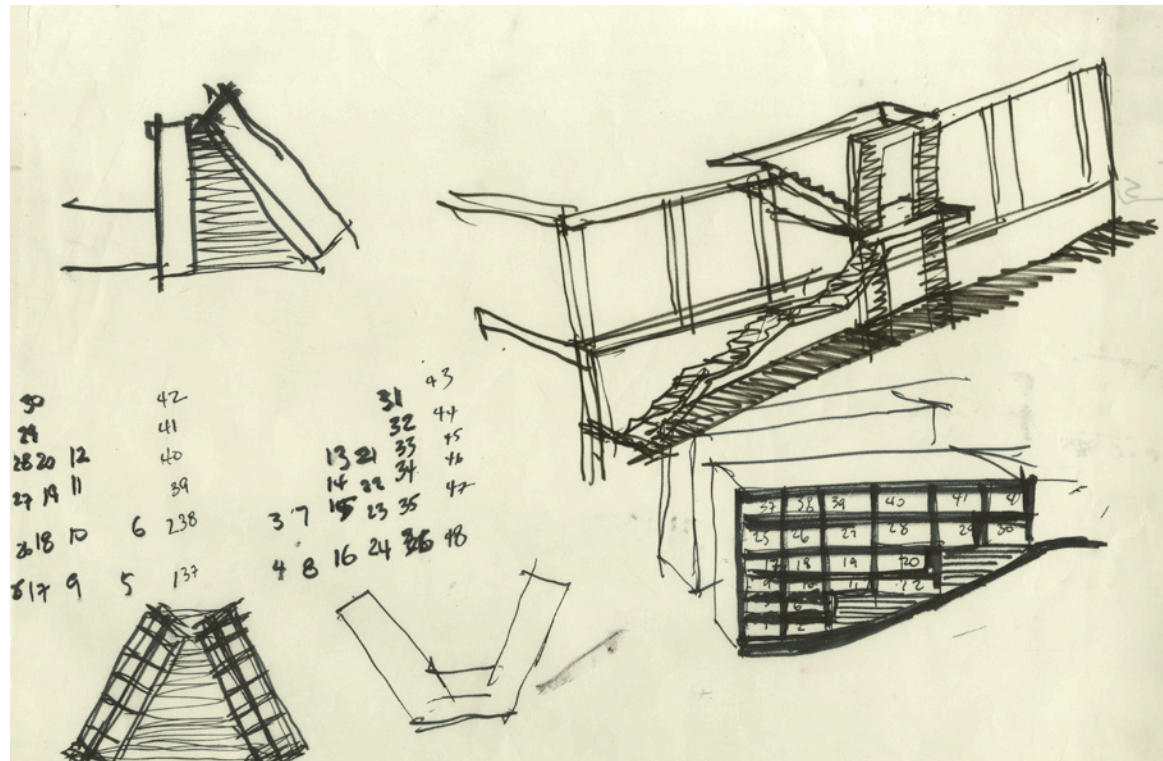
The following sketches, drawings and models chronicle the process of this fourth and last Architectural gesture. They also include the study for a seating to make available as a utility chair in the monks' dorms, a version of which I built, and a study of the seating in the monks' stalls.



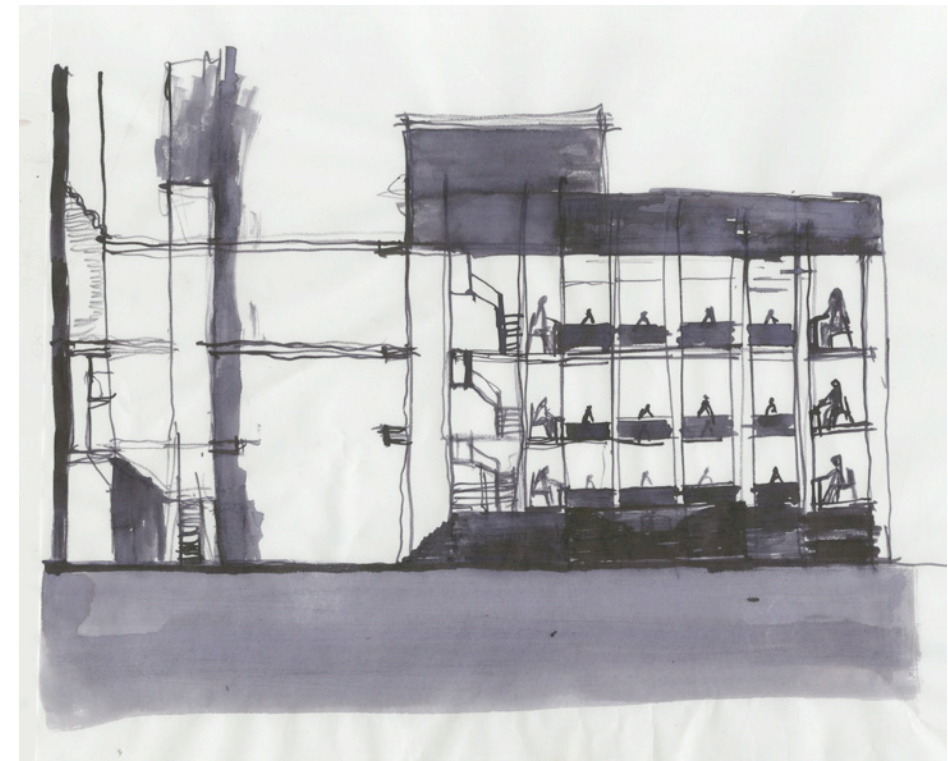
PL92 .1



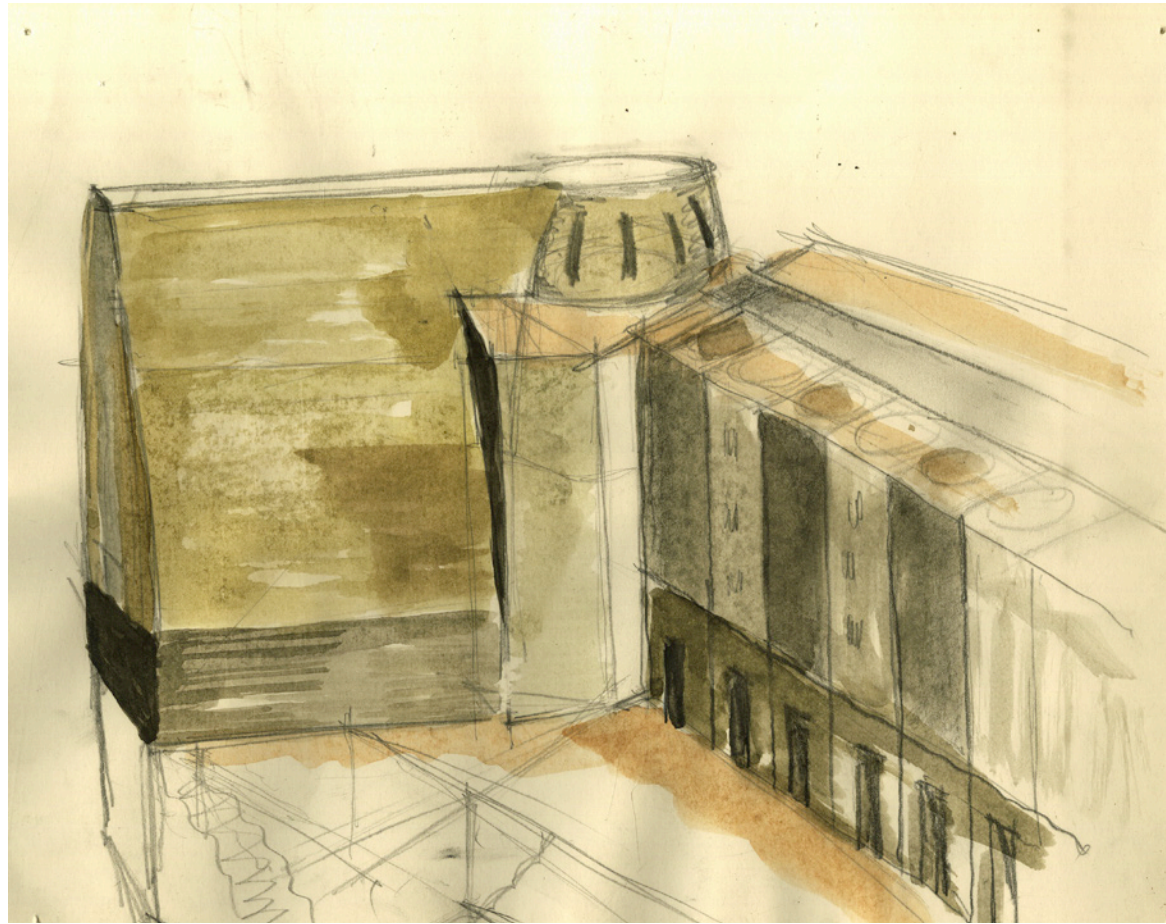
PL92 .3



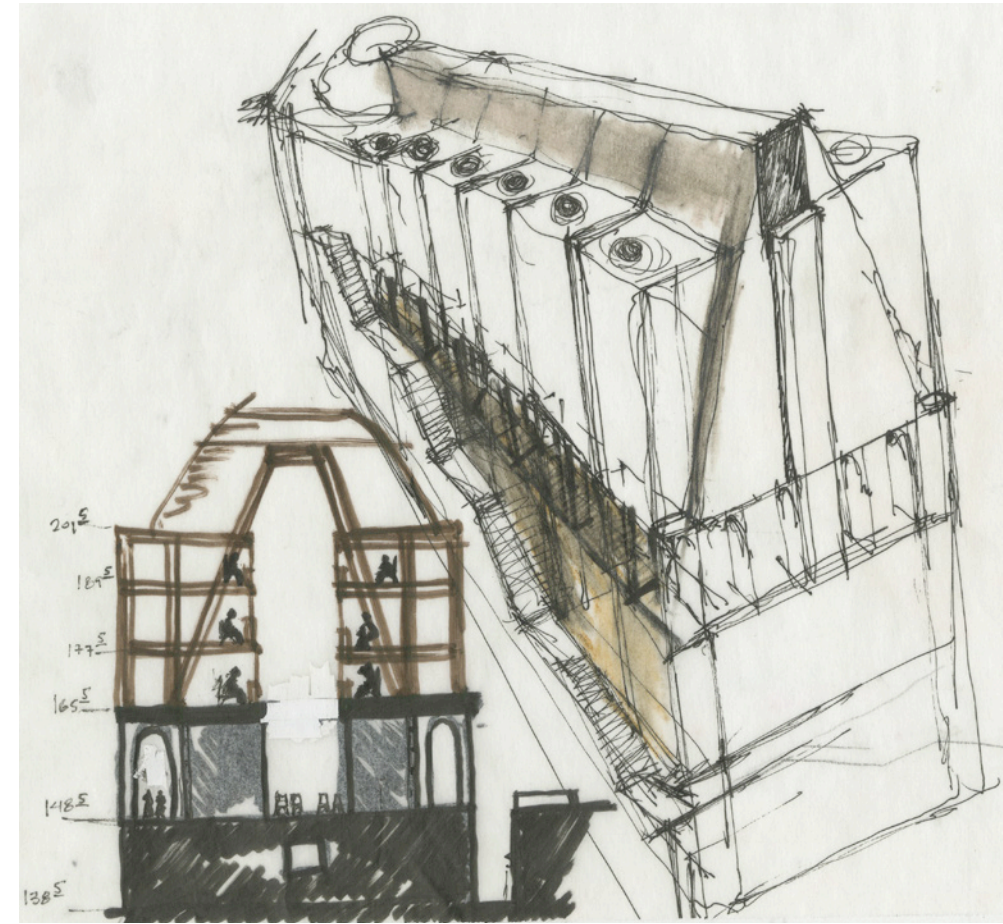
PL92 .2



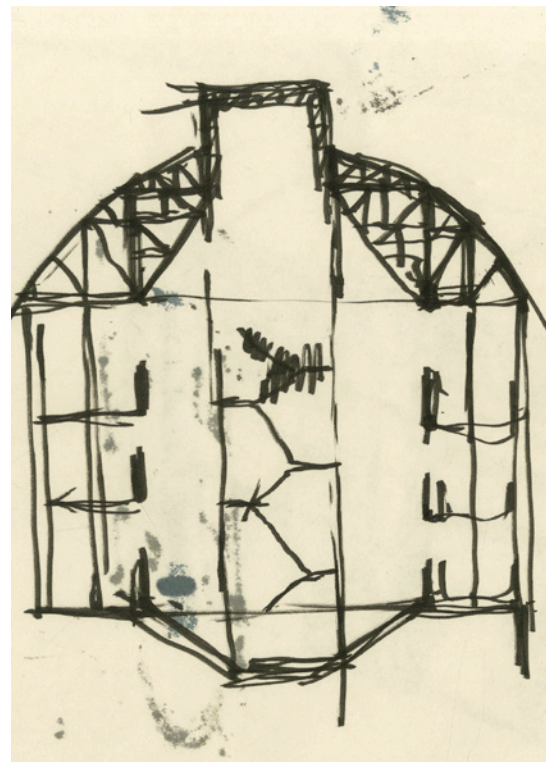
PL92 .4



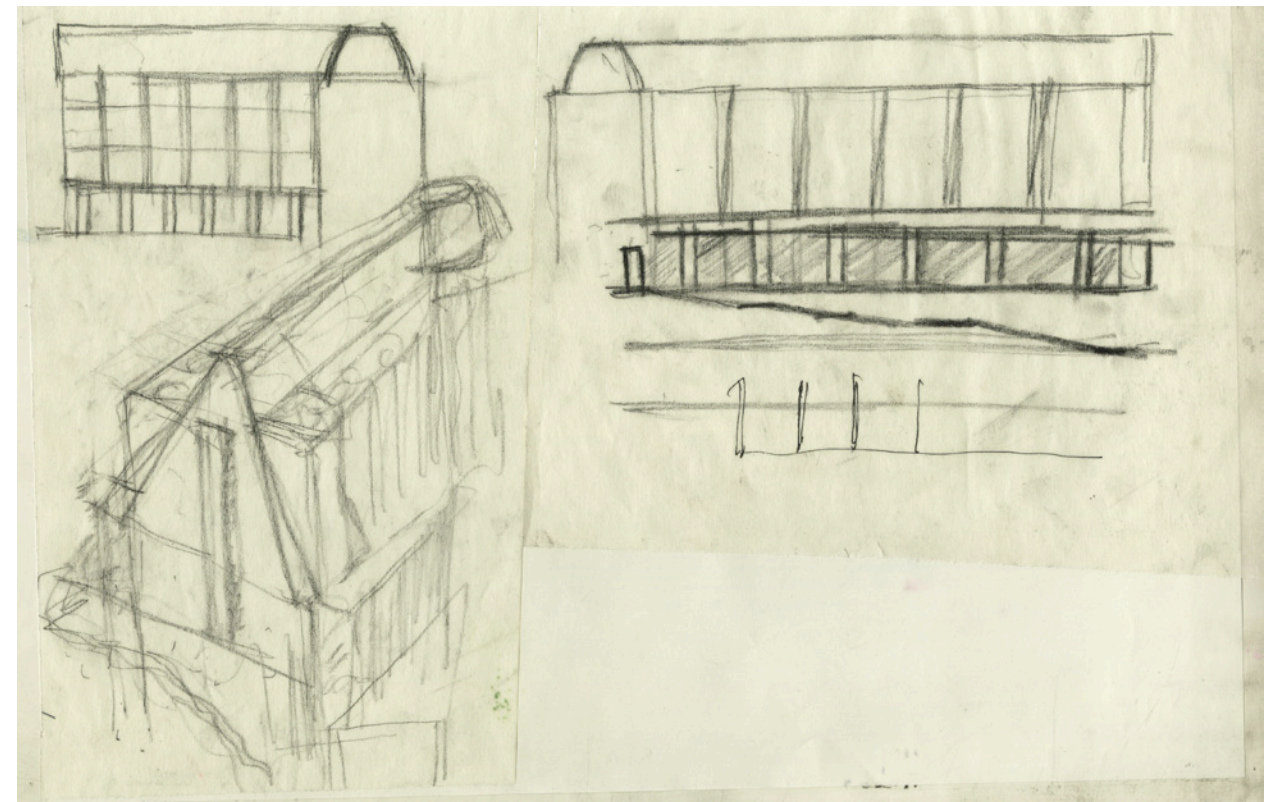
PL93 .1



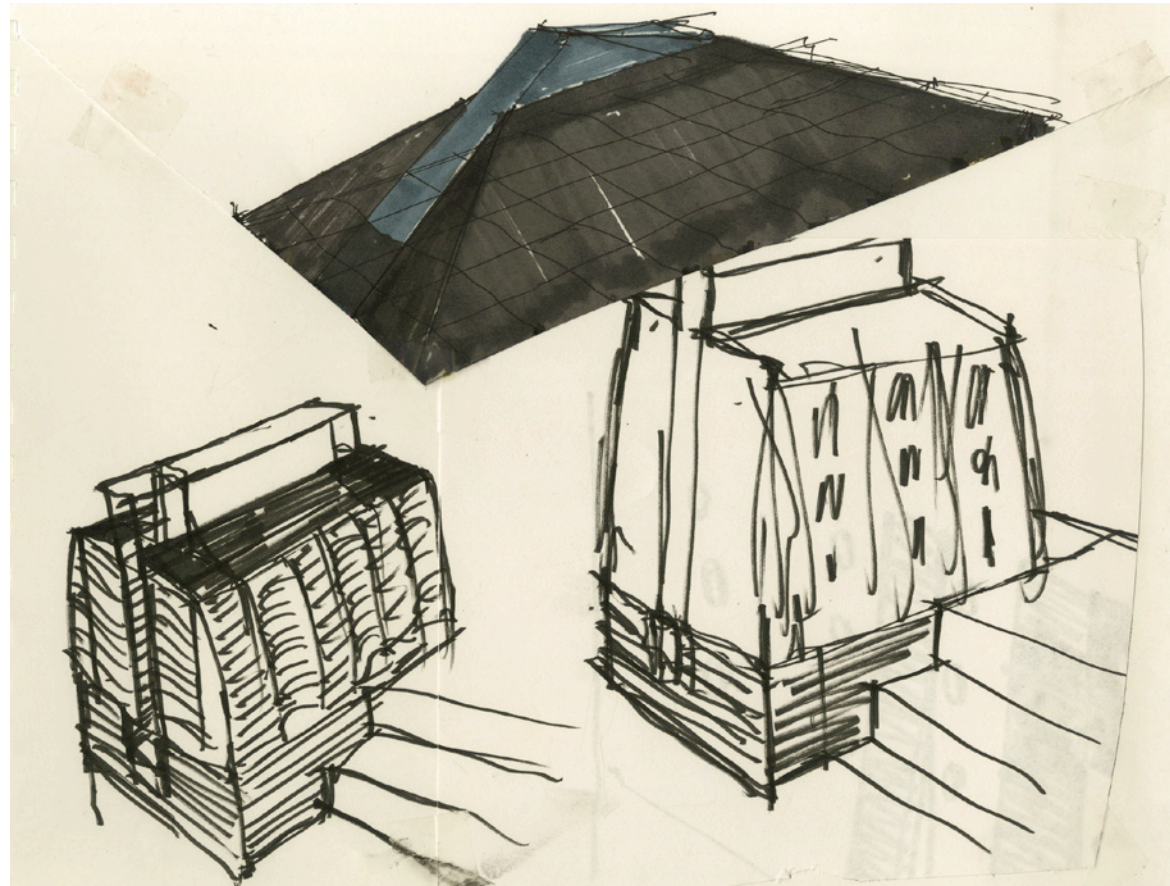
PL93 .3



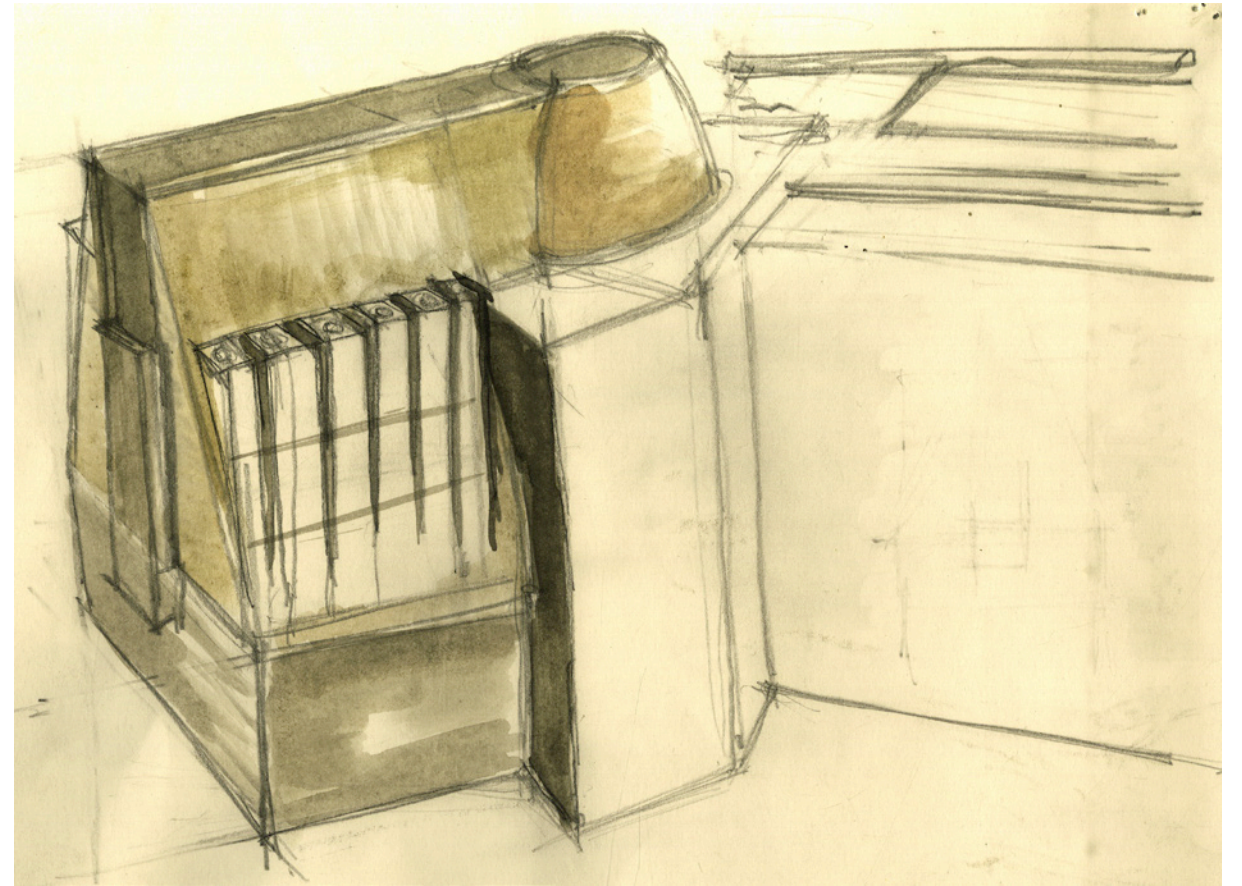
PL93 .2



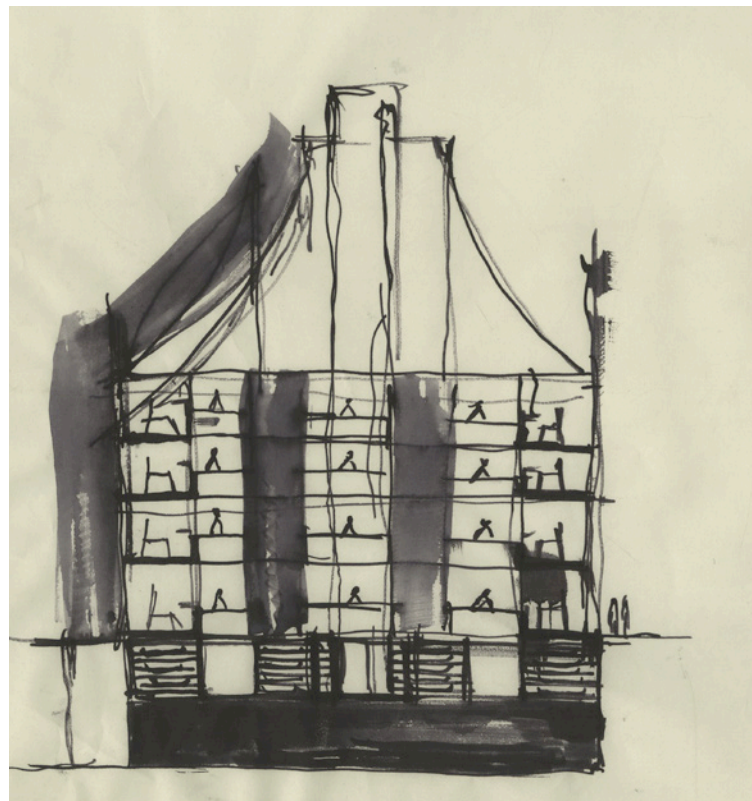
PL93 .4



PL94 .1



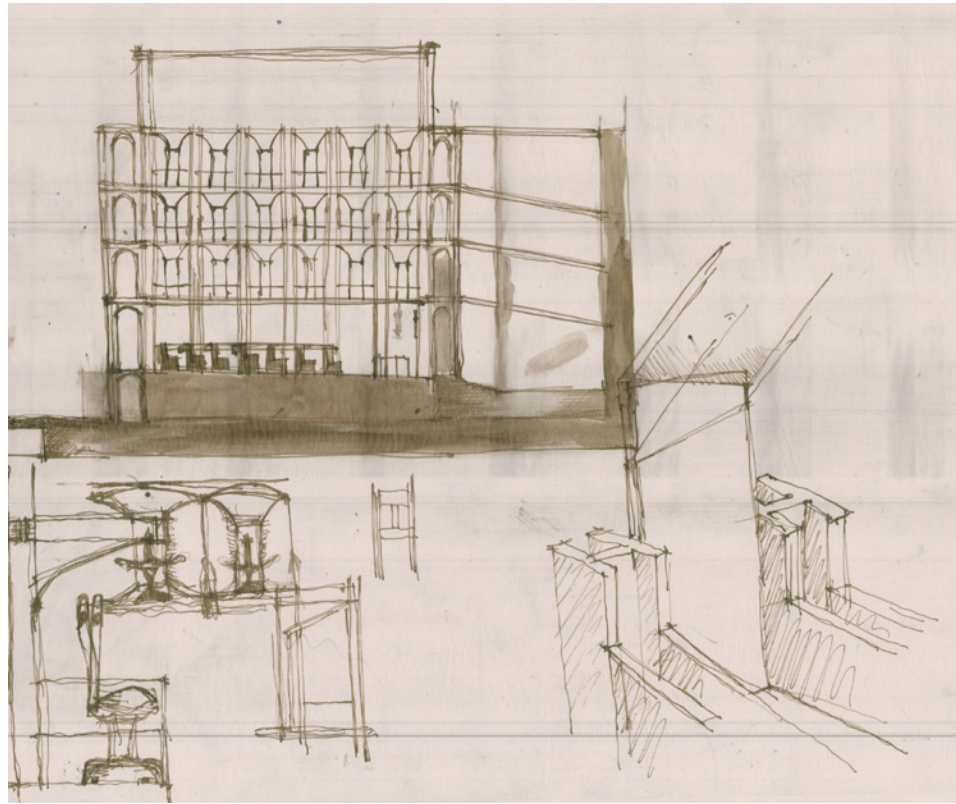
PL94 .3



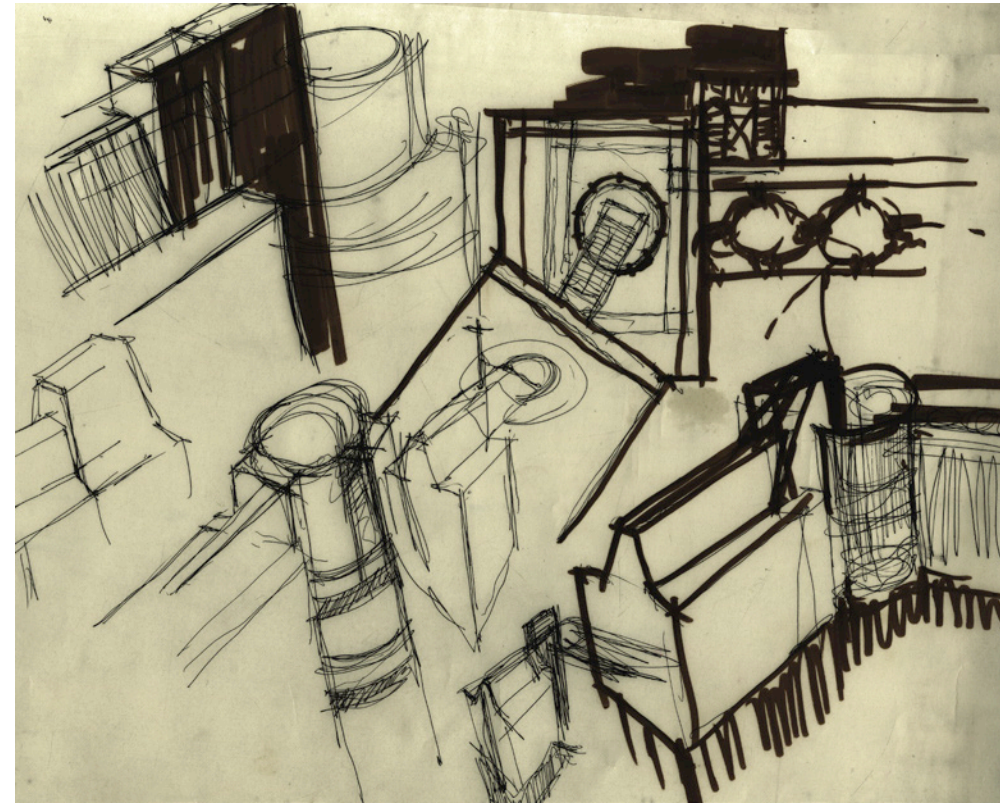
PL94 .2



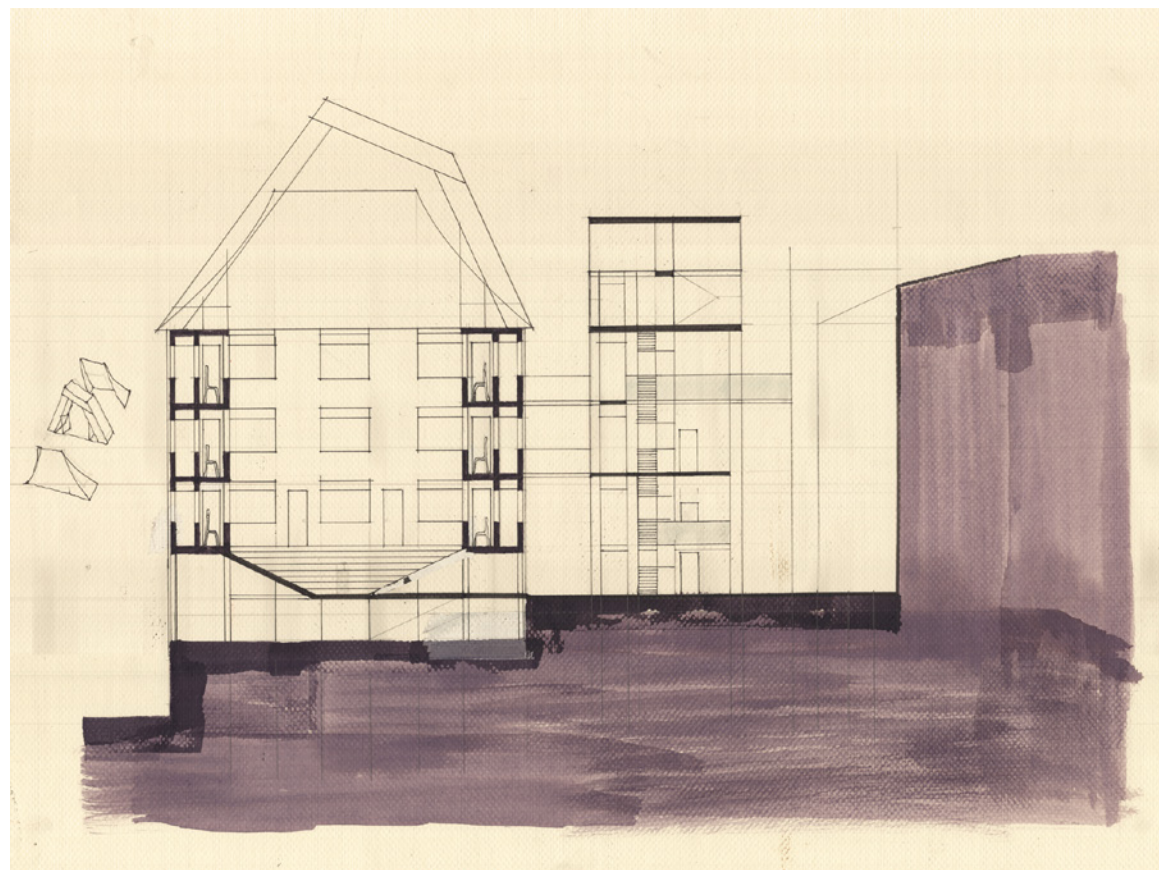
PL94 .4



PL95 .1



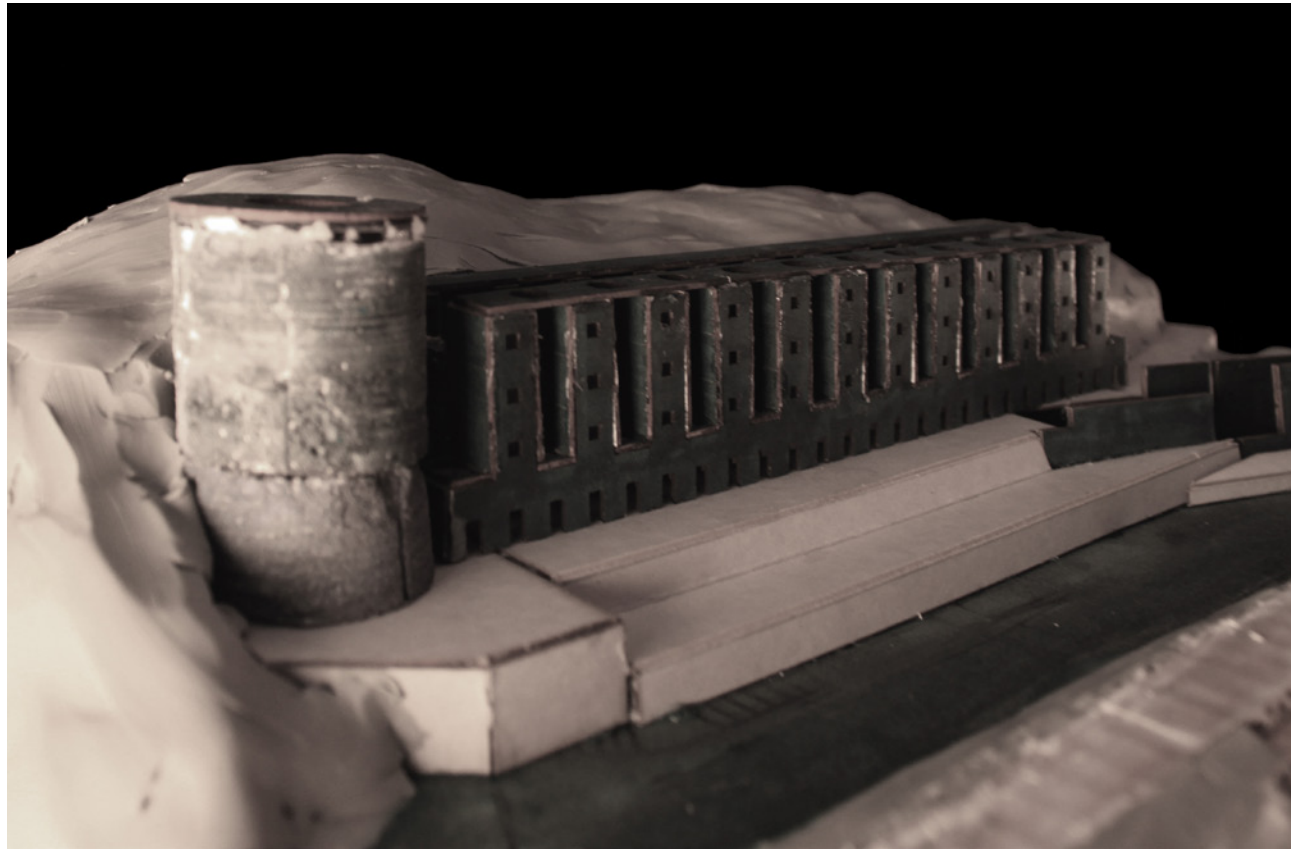
PL95 .3



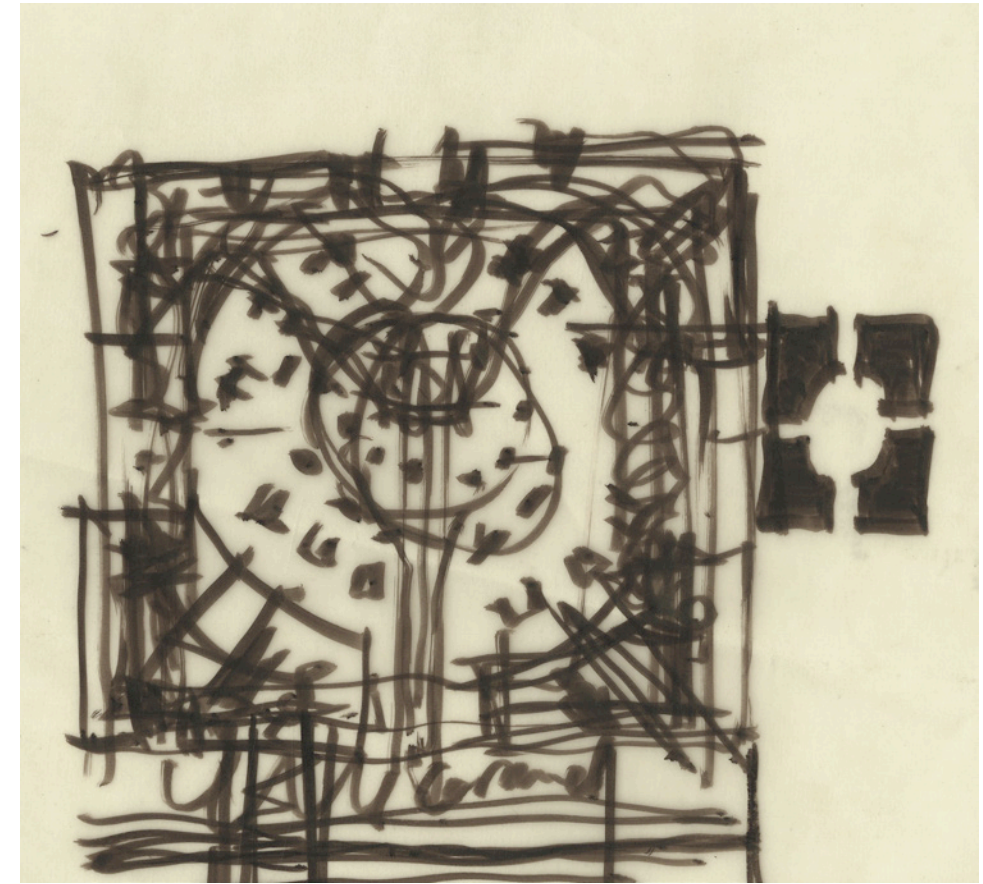
PL95 .2



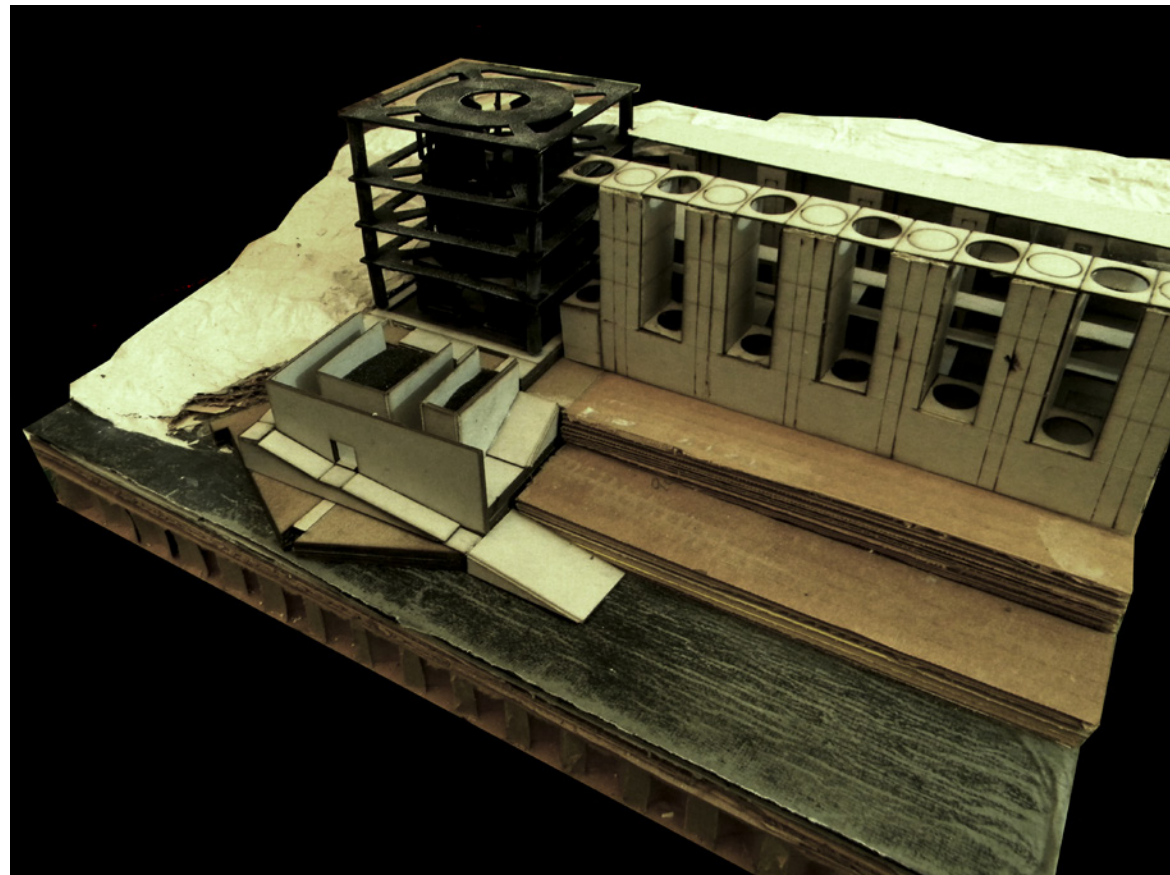
PL95 .4



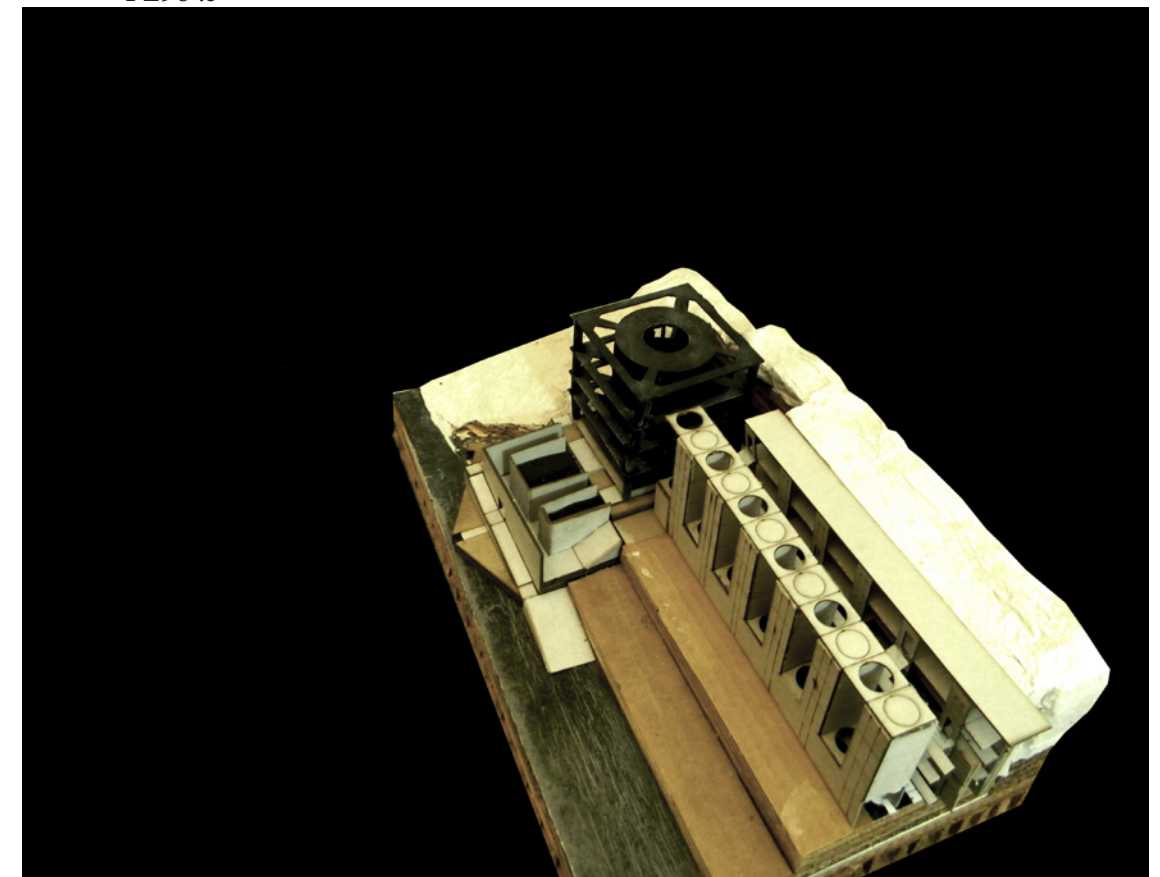
PL96 .1



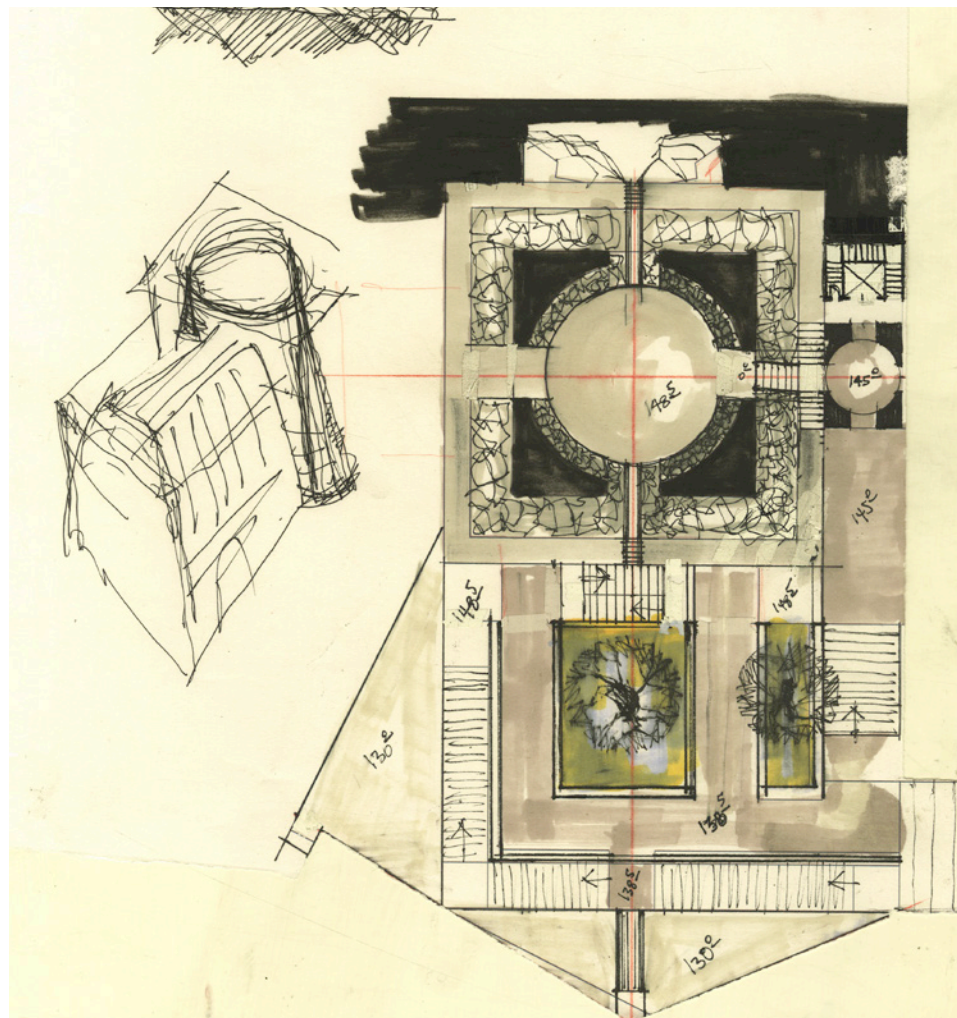
PL96 .3



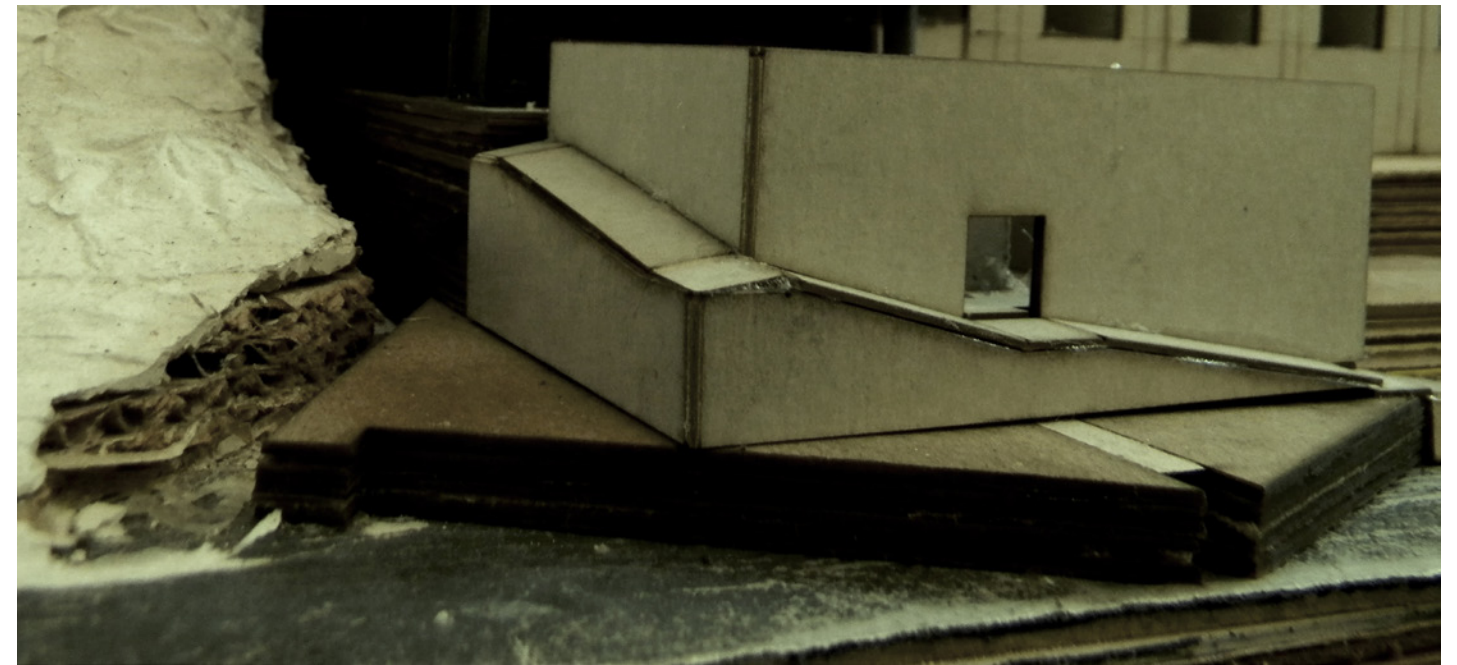
PL96 .2



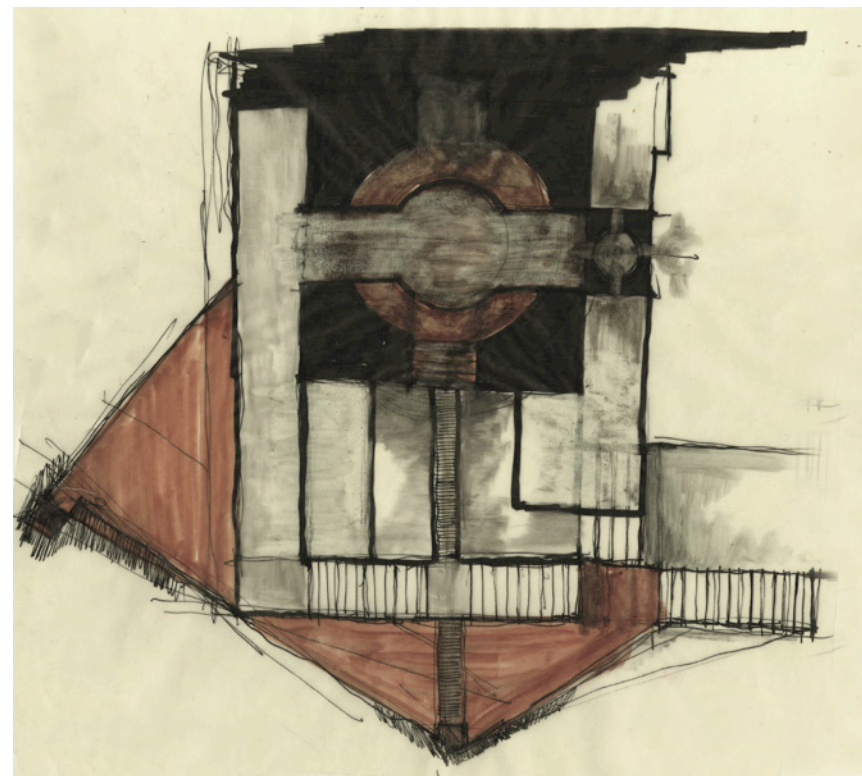
PL96 .4



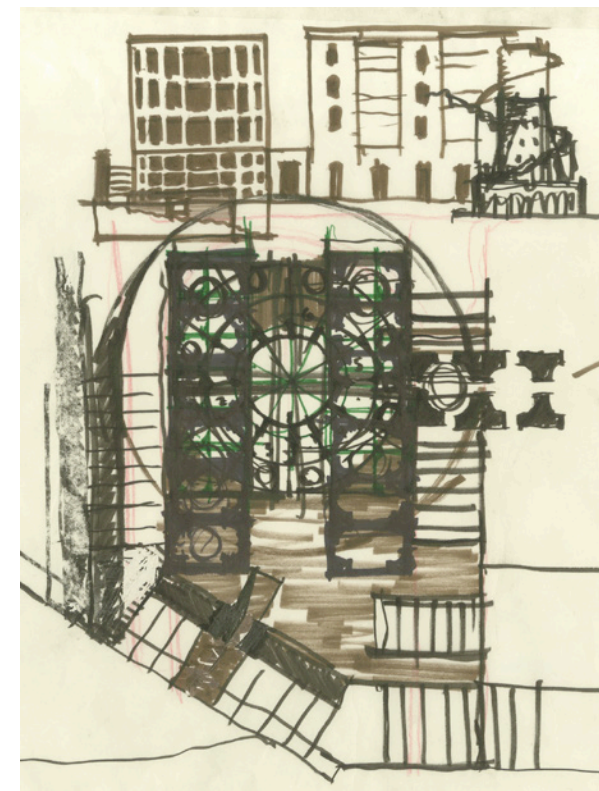
PL97 .1



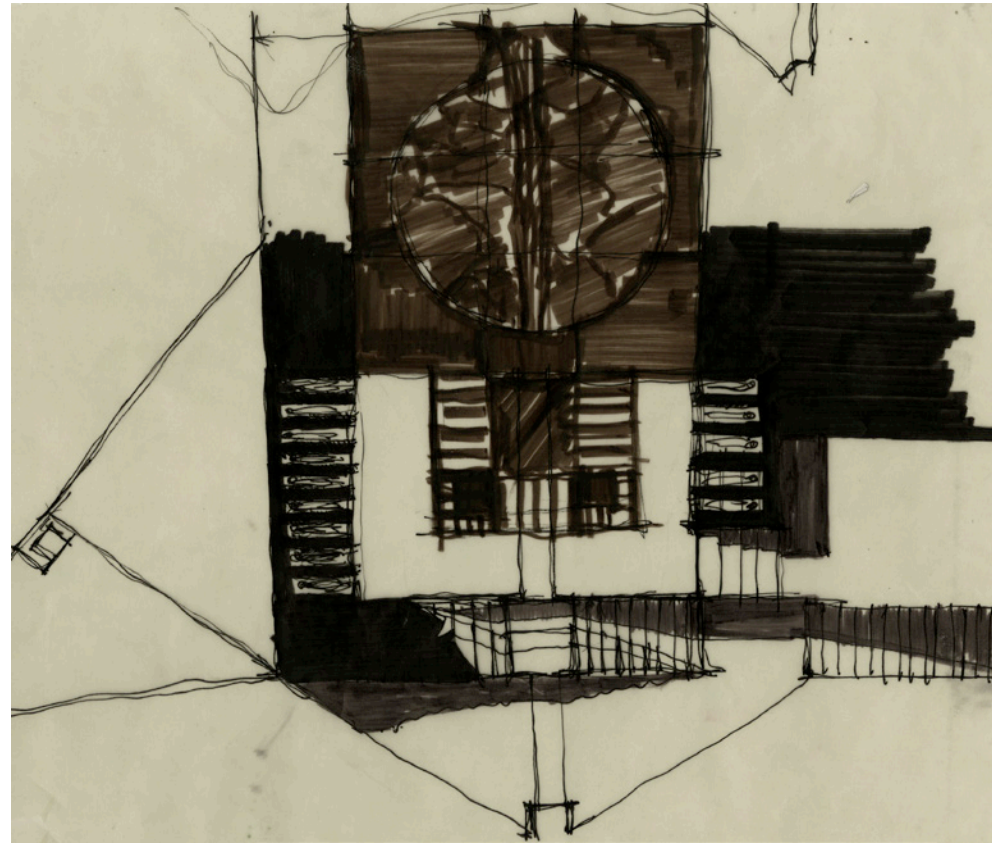
PL97 .3



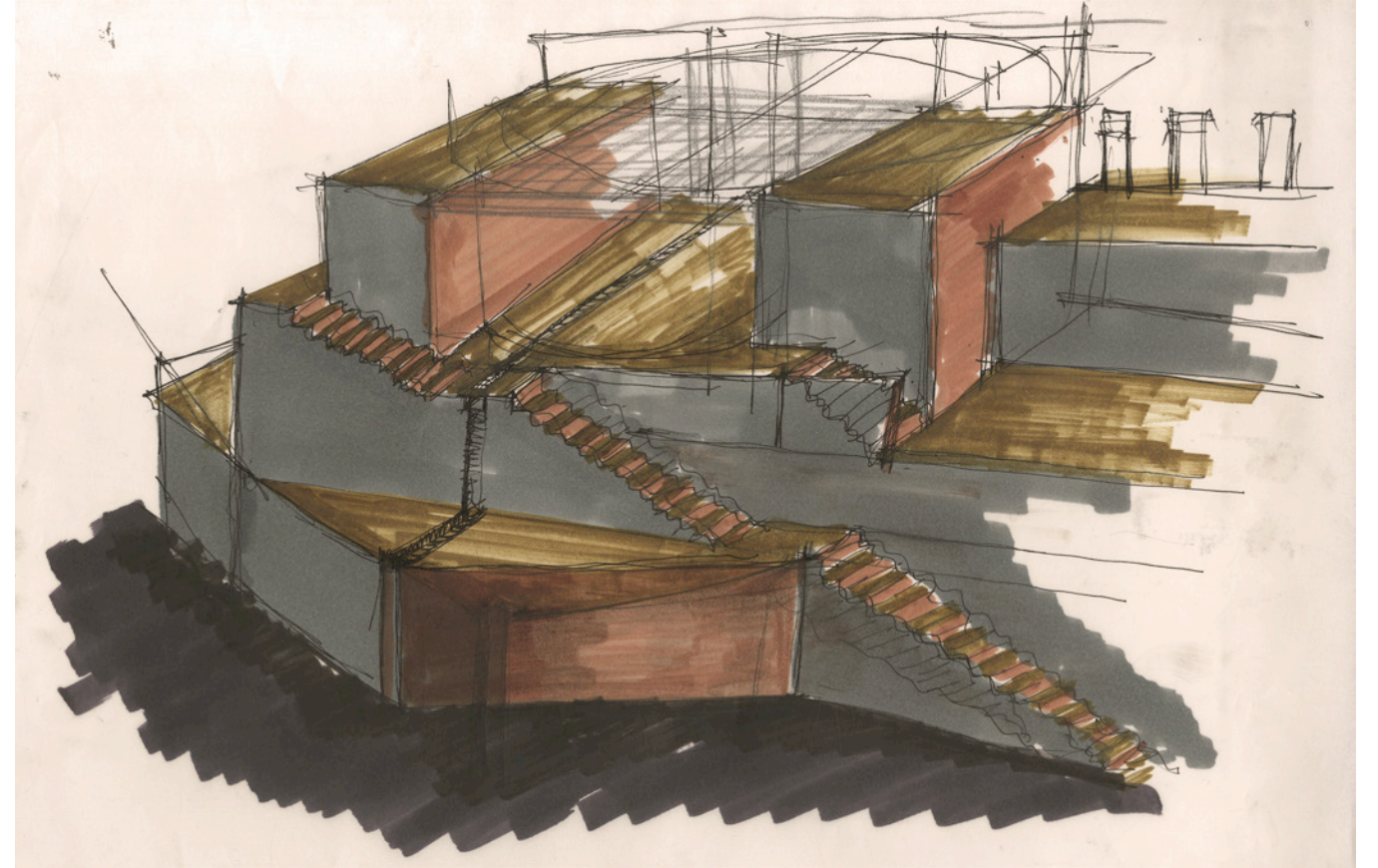
PL97 .2



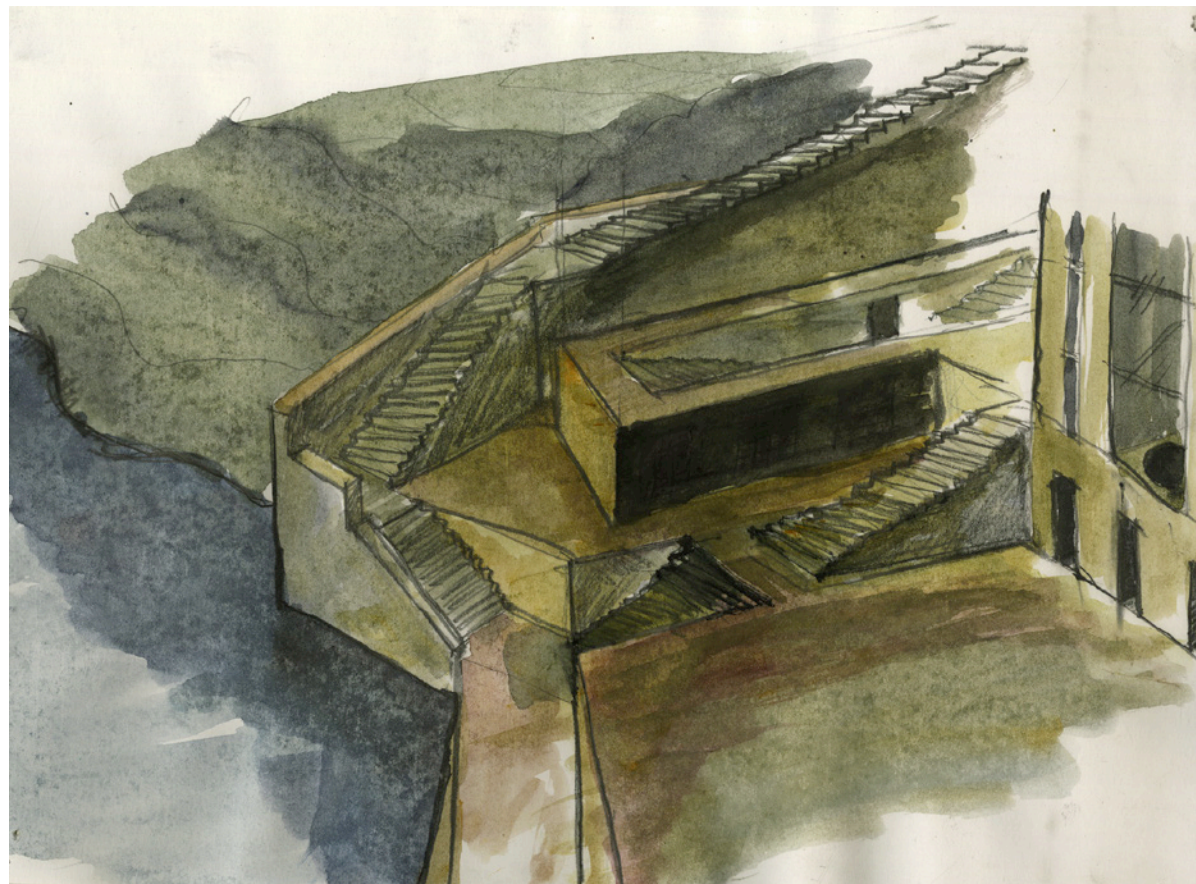
PL97 .4



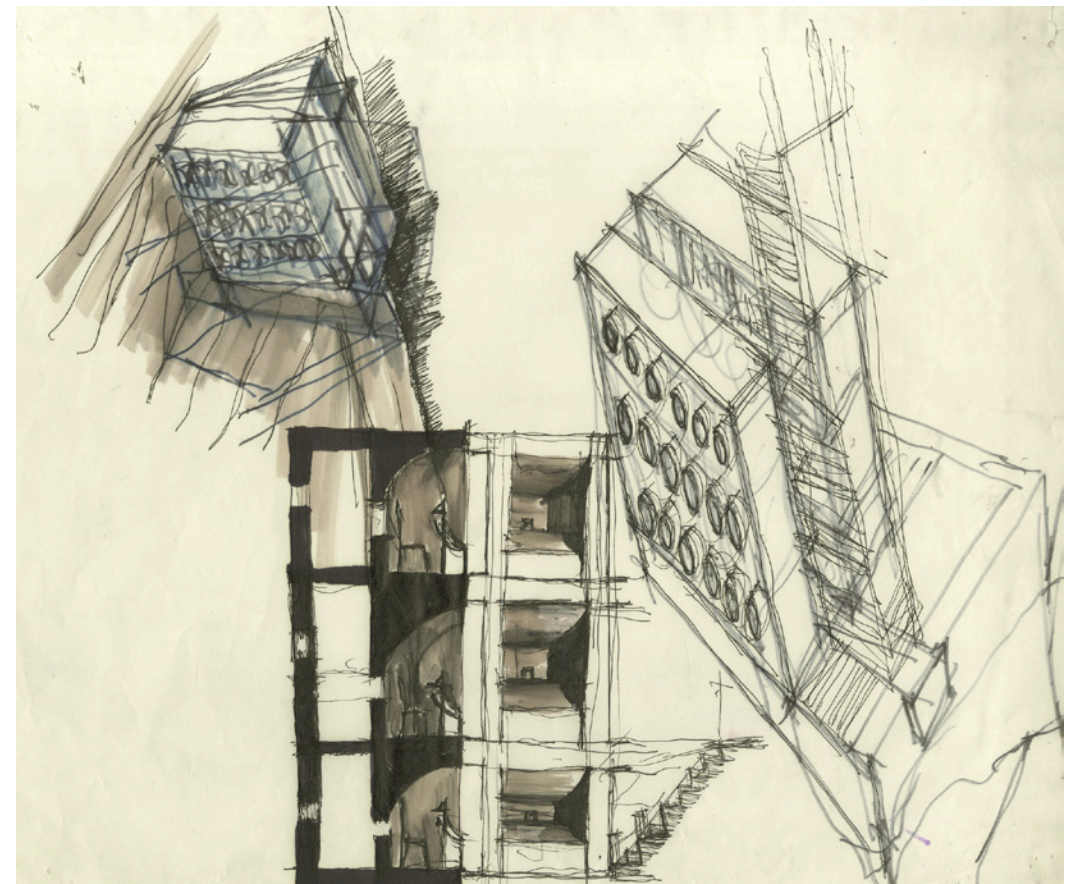
PL98 .1



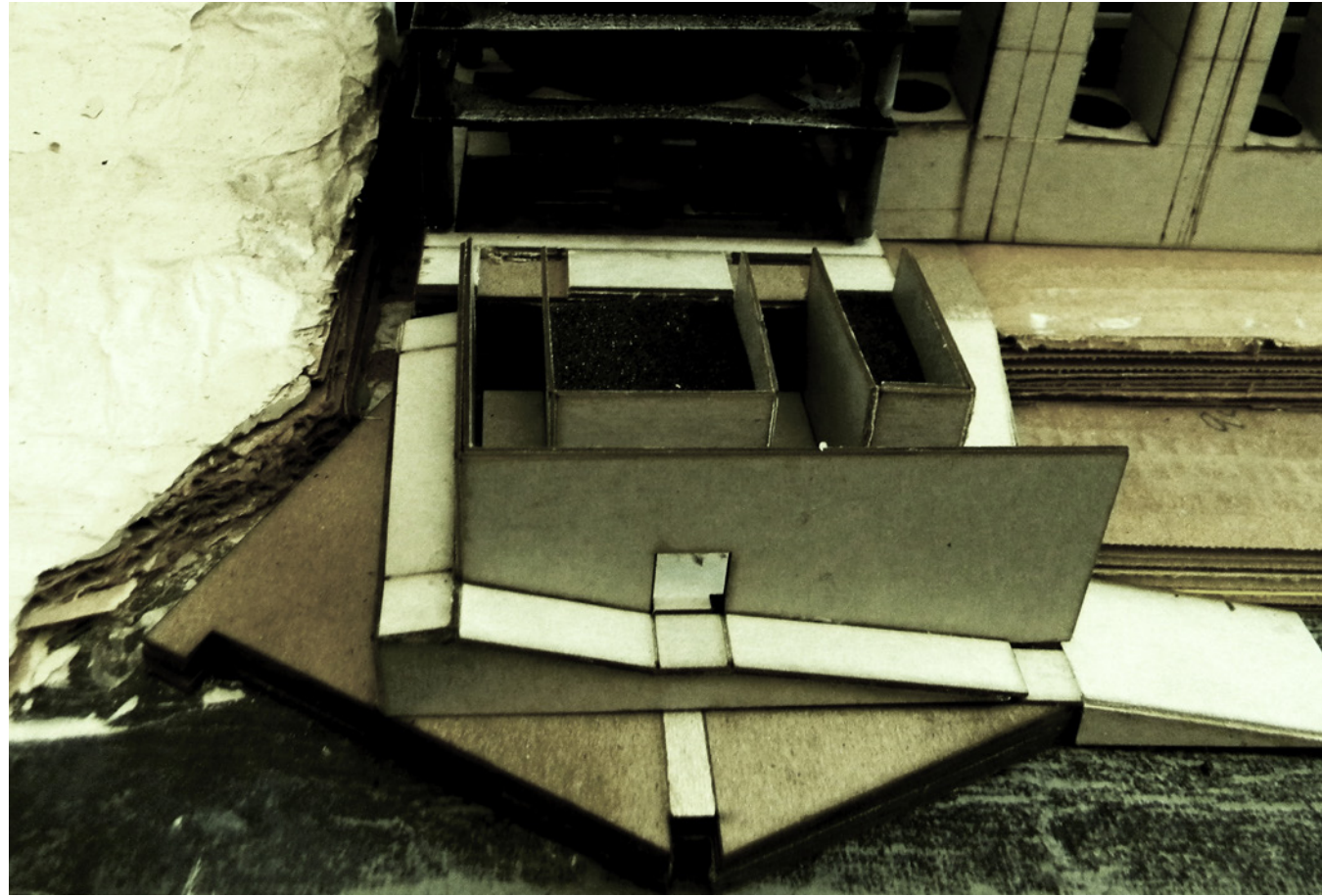
PL98 .3



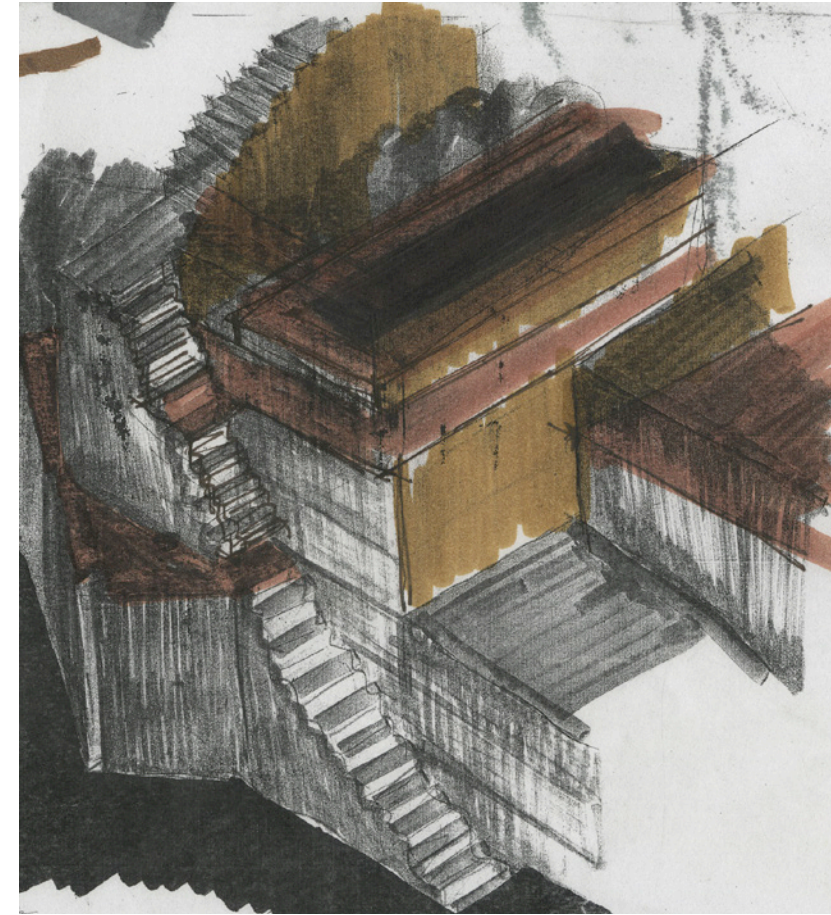
PL98 .2



PL98 .4



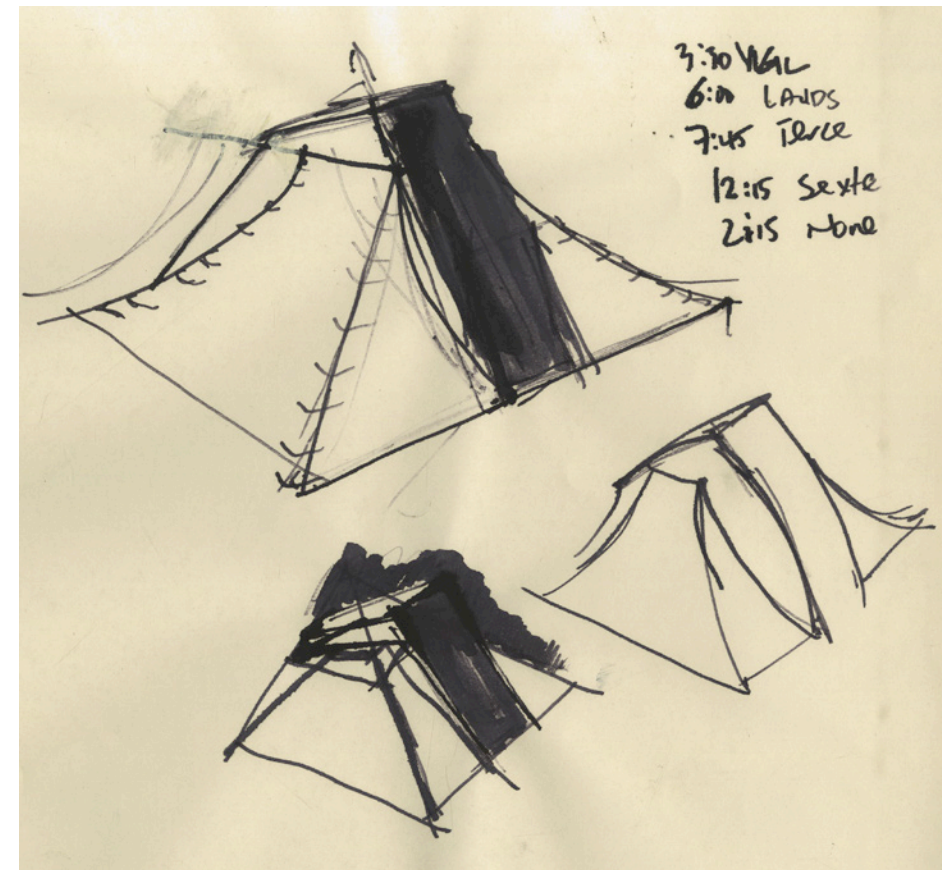
PL99 .1



PL99 .3



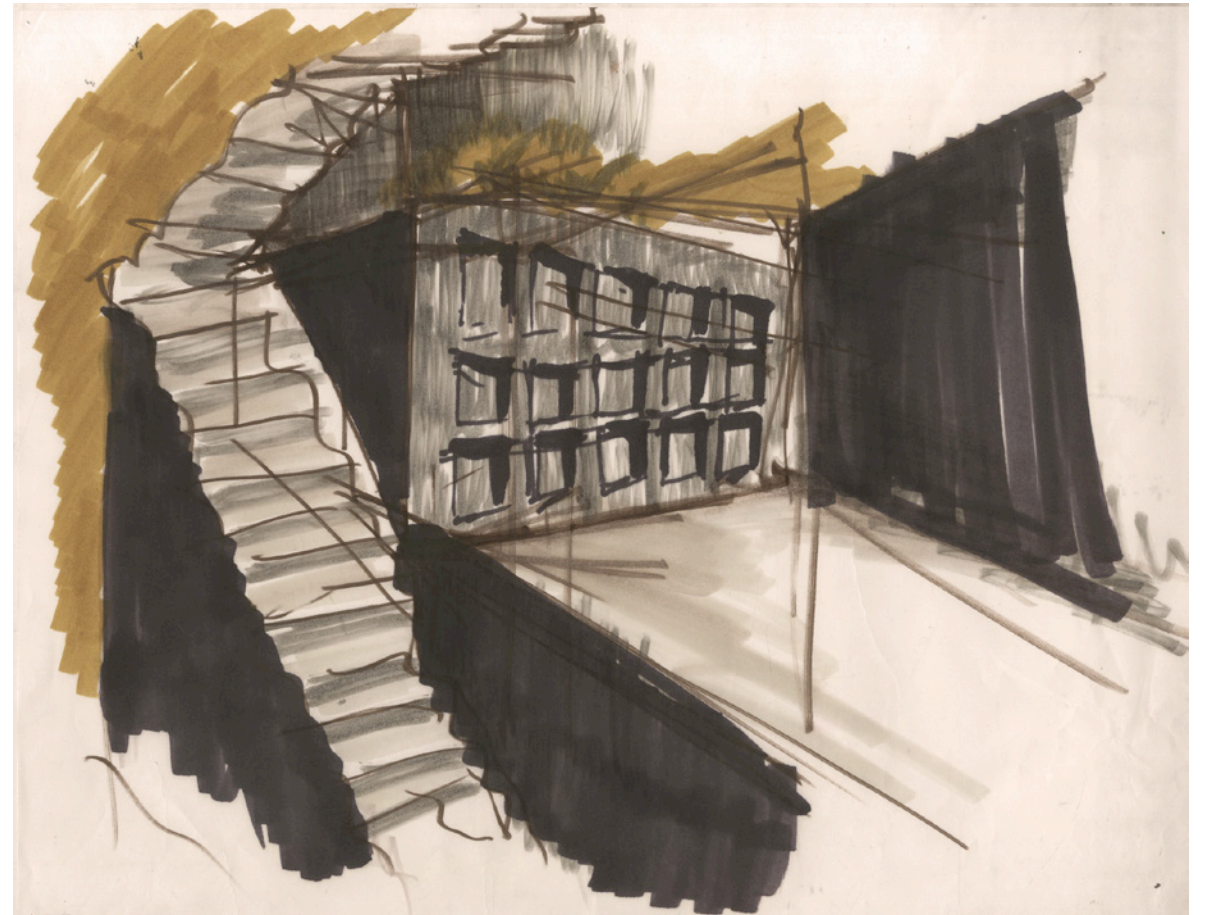
PL99 .2



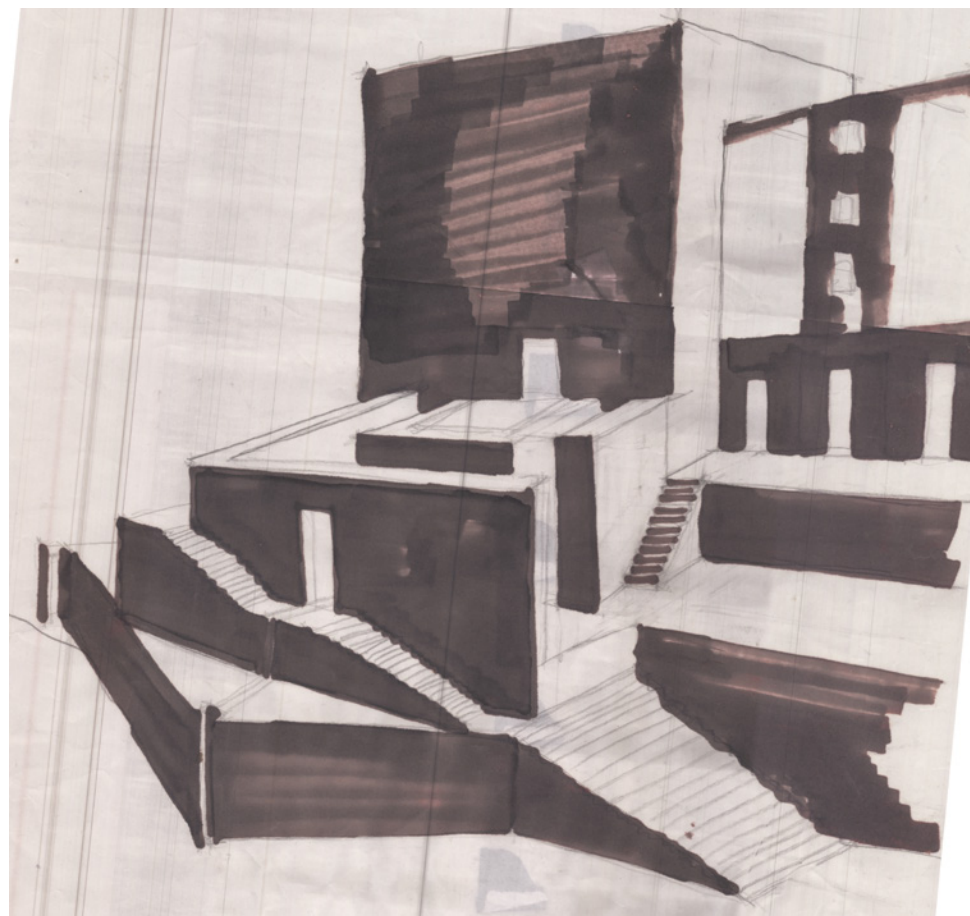
PL99 .4



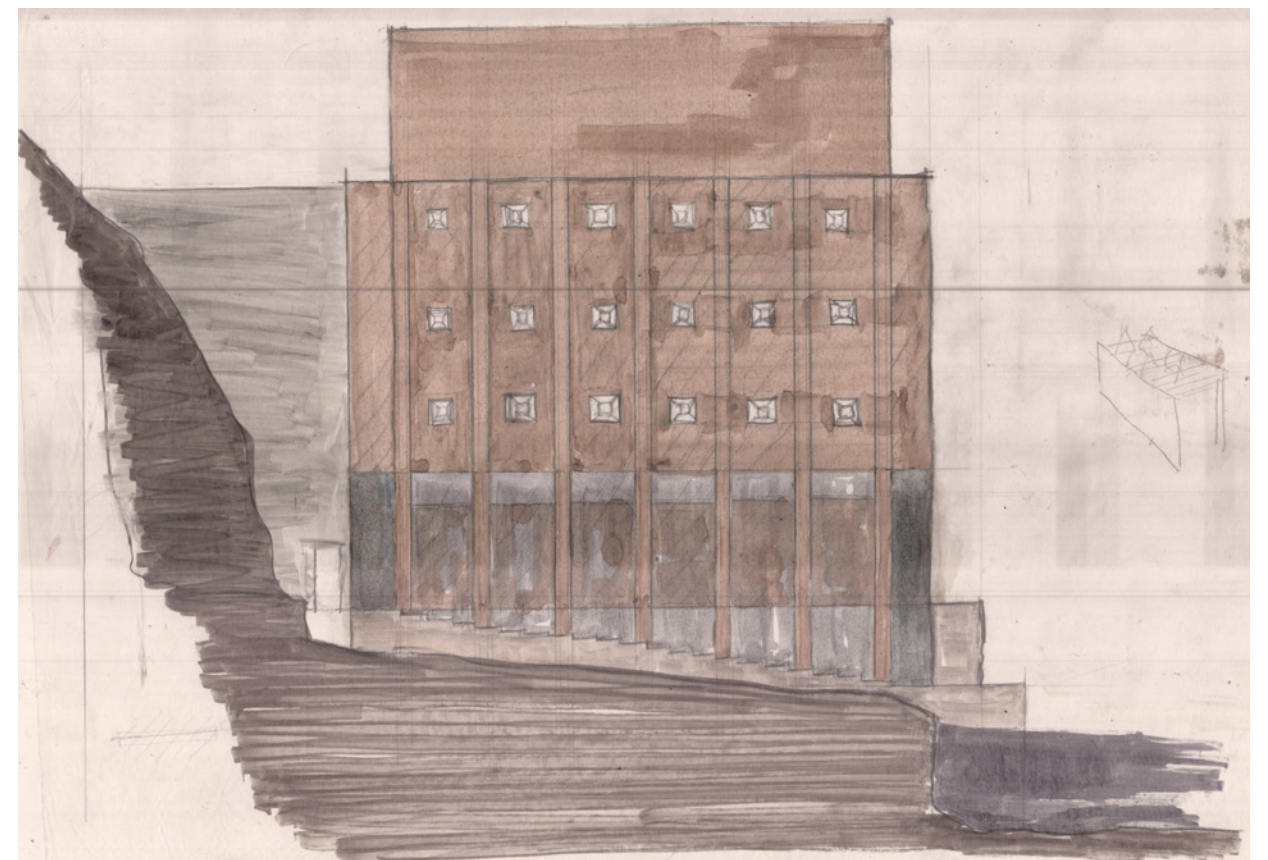
PL100 .1



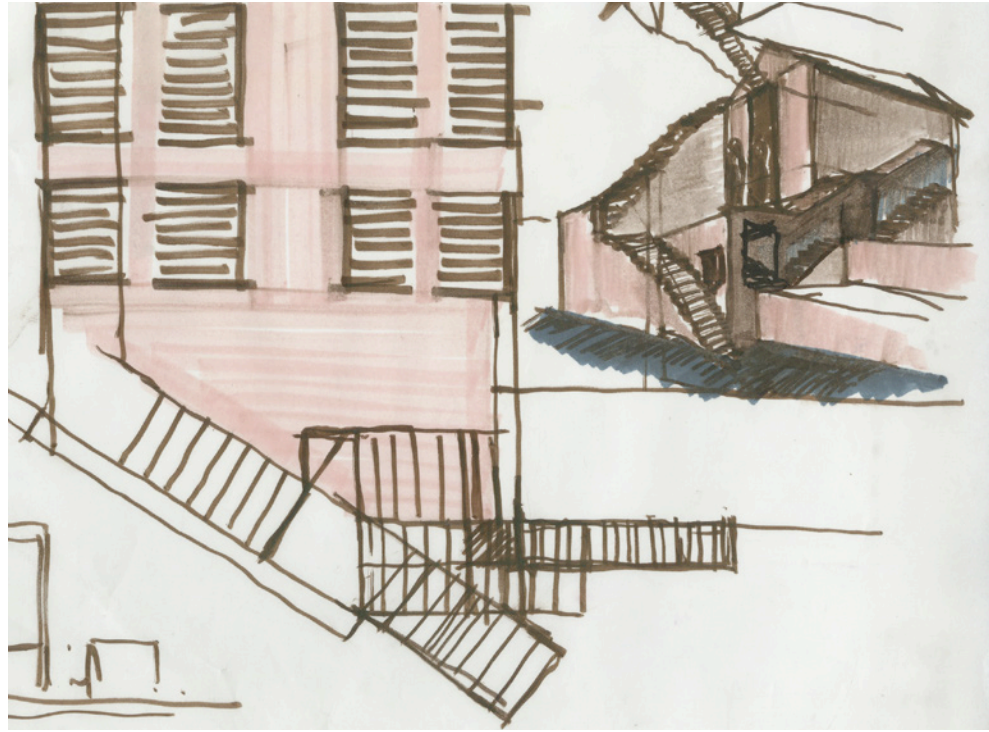
PL100 .3



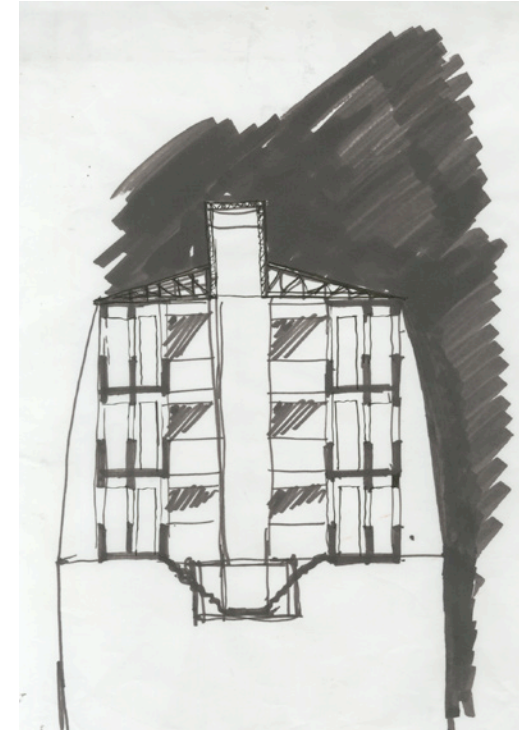
PL100 .2



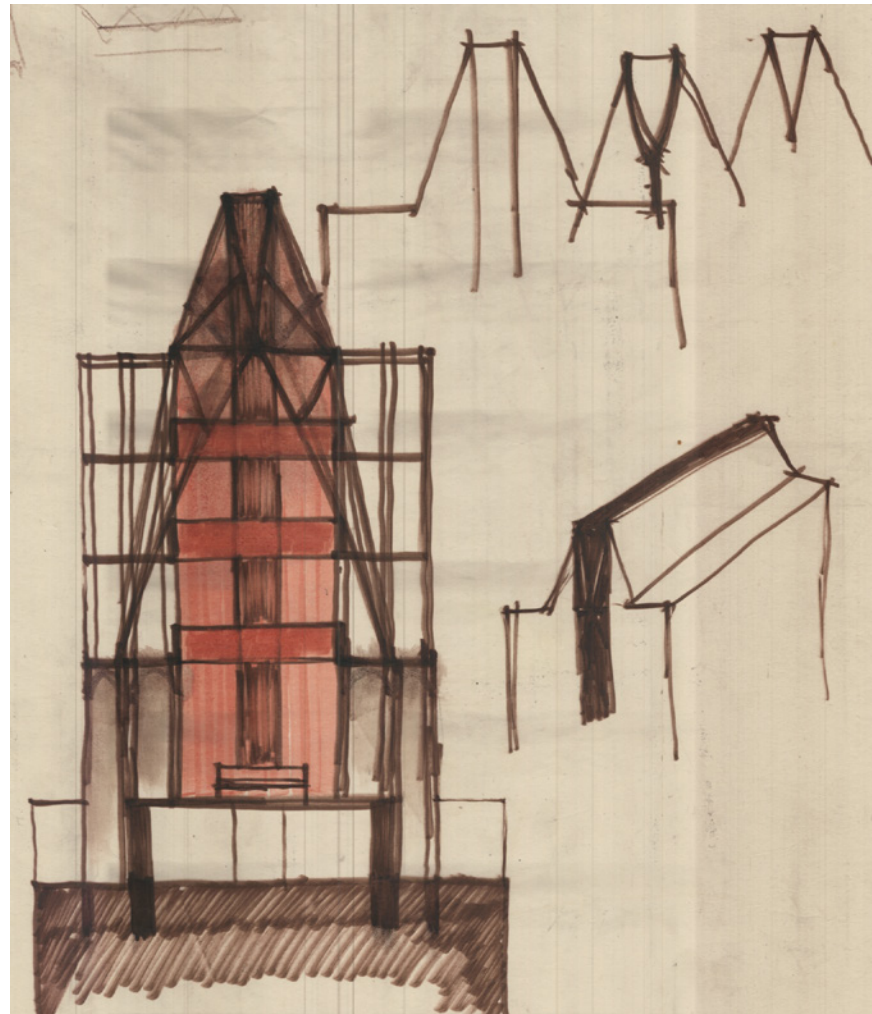
PL100 .4



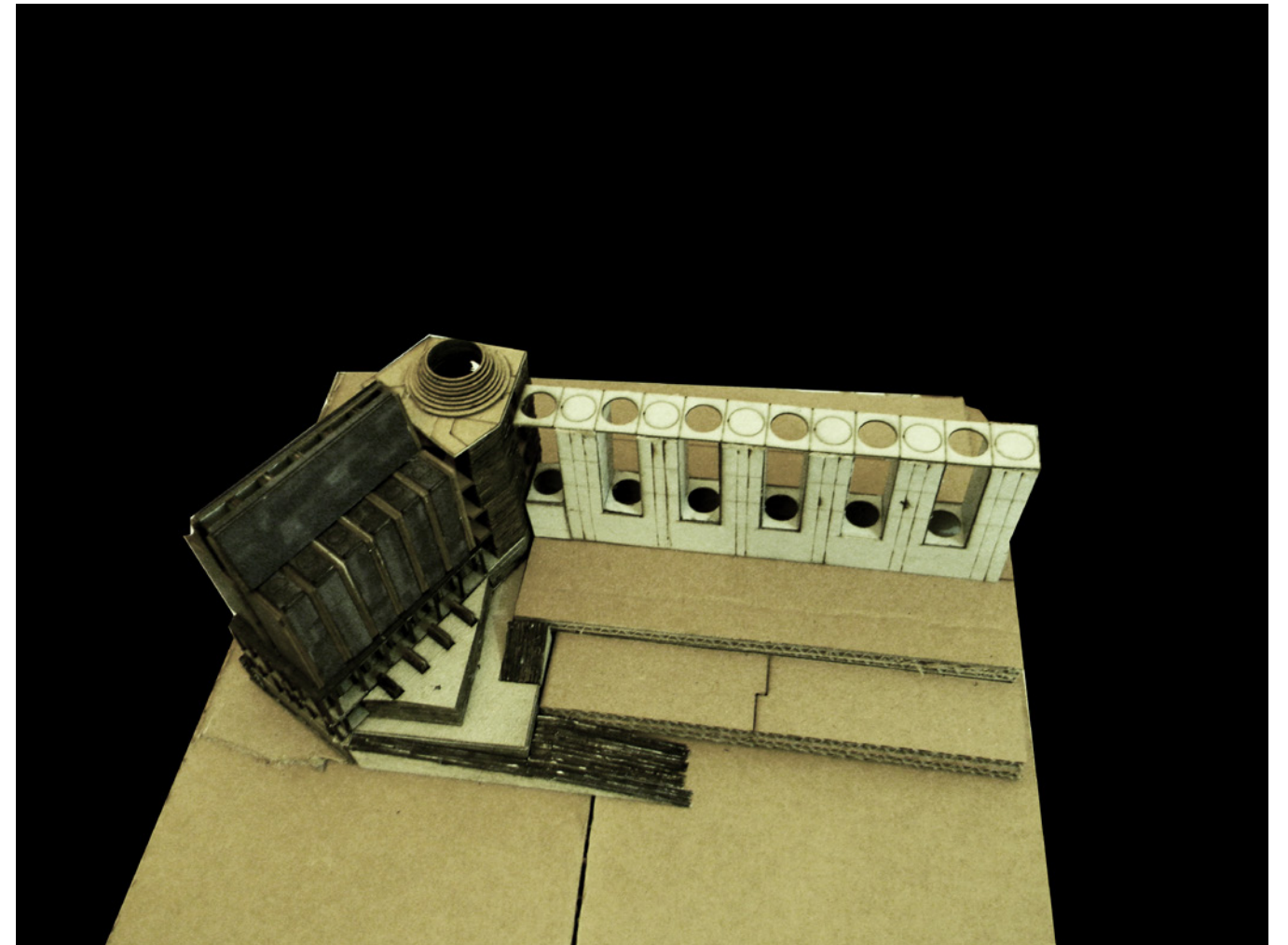
PL101 .1



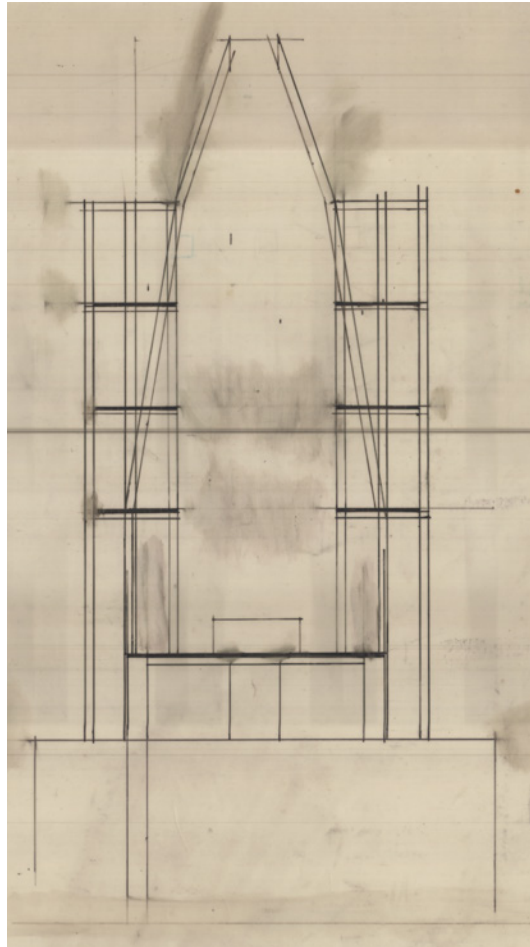
PL101 .3



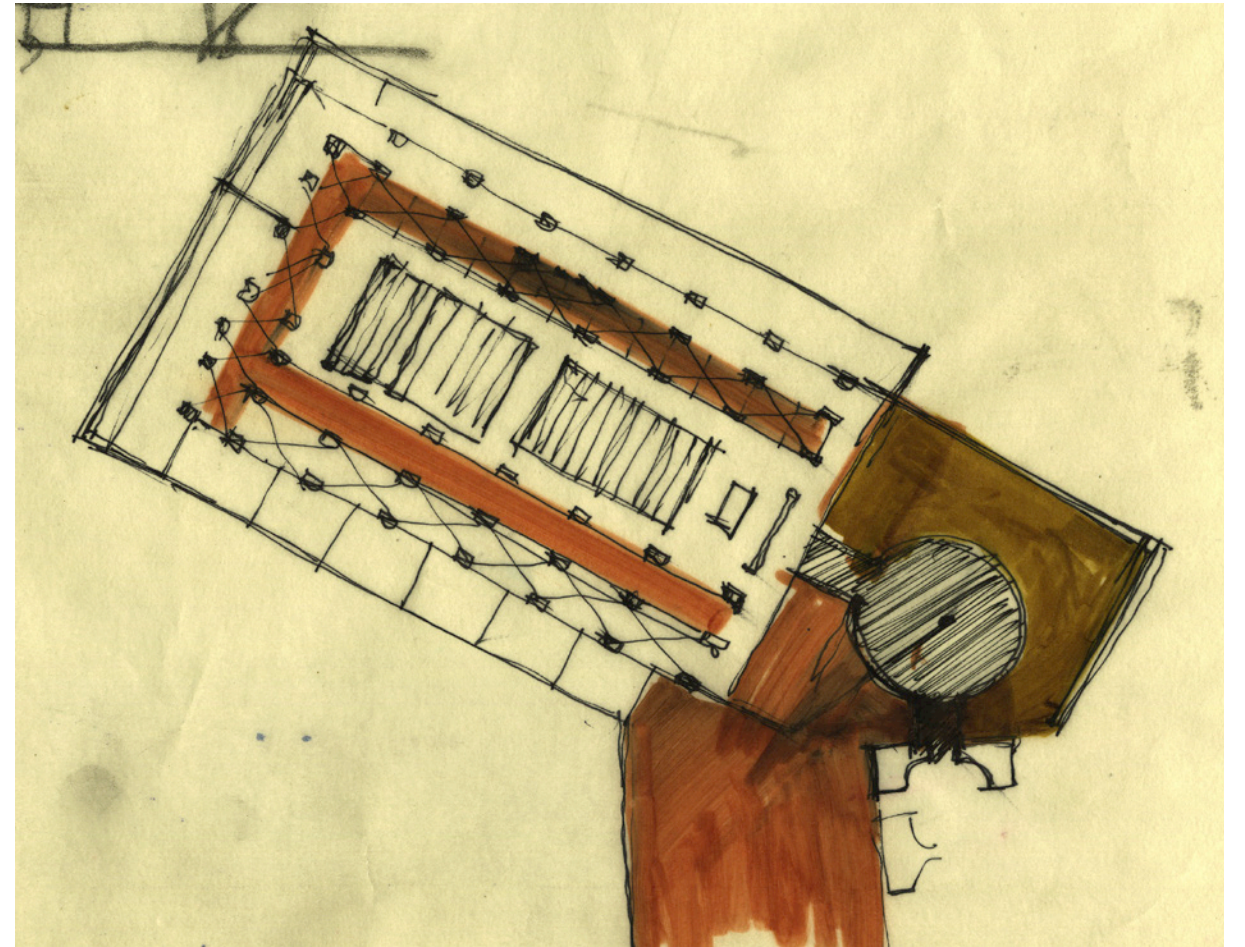
PL101 .2



PL101 .4



PL102 .1



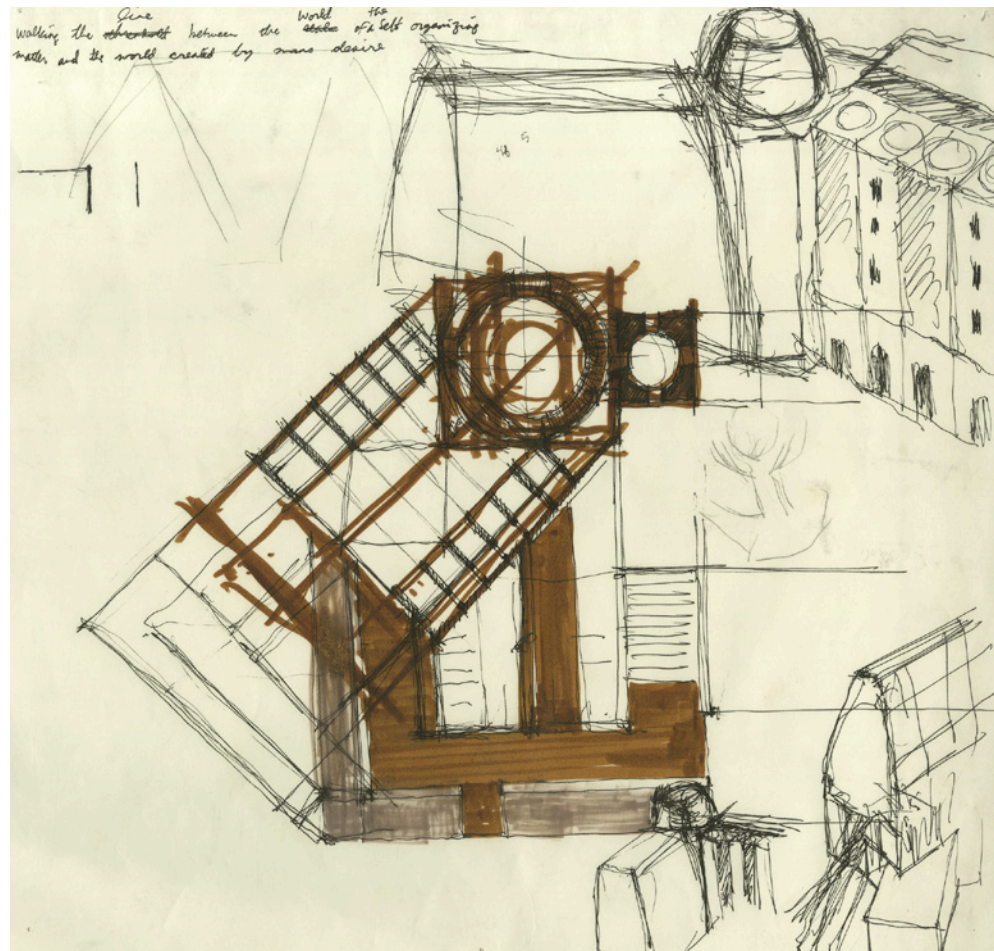
PL102 .3



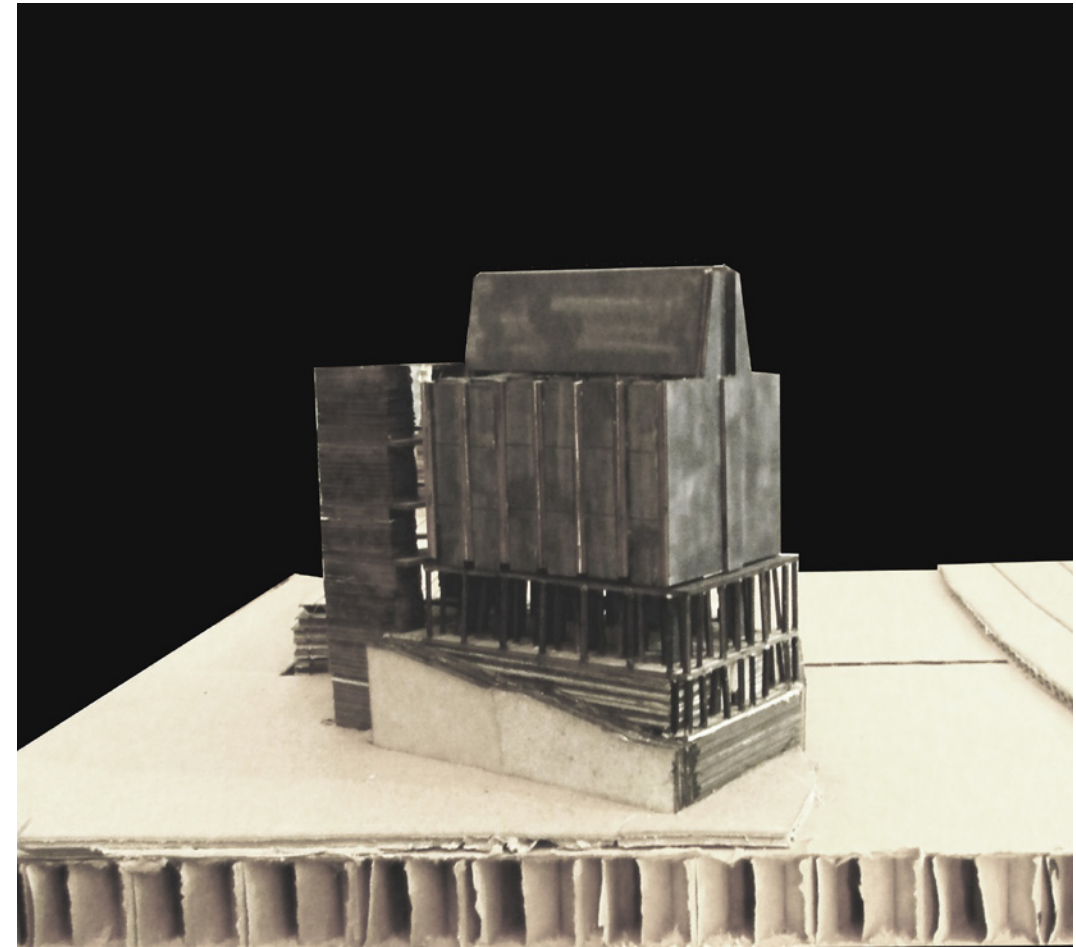
PL102 .2



PL102 .4



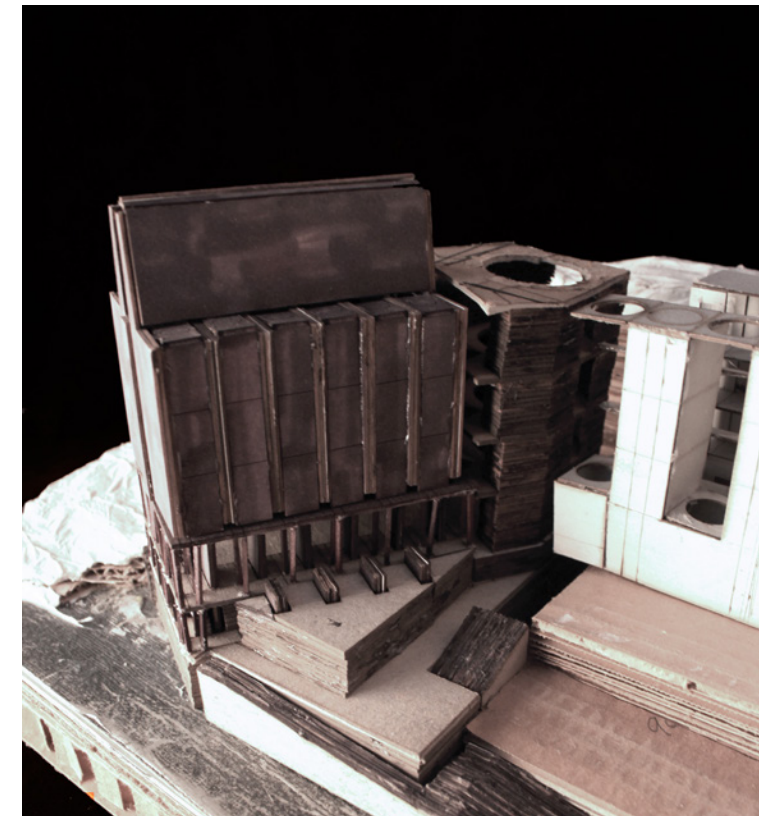
PL103 .1



PL103 .3



PL103 .2



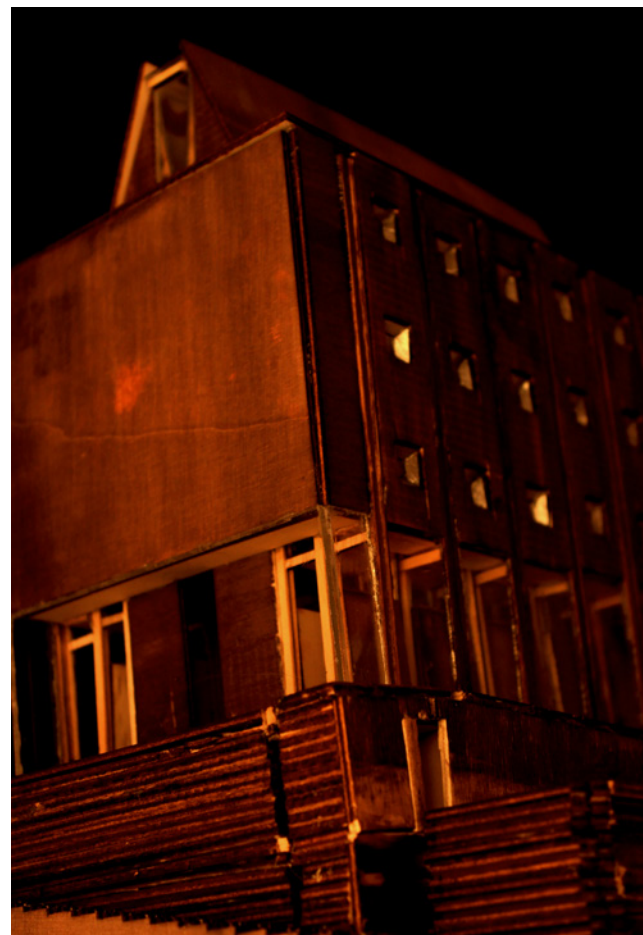
PL103 .4



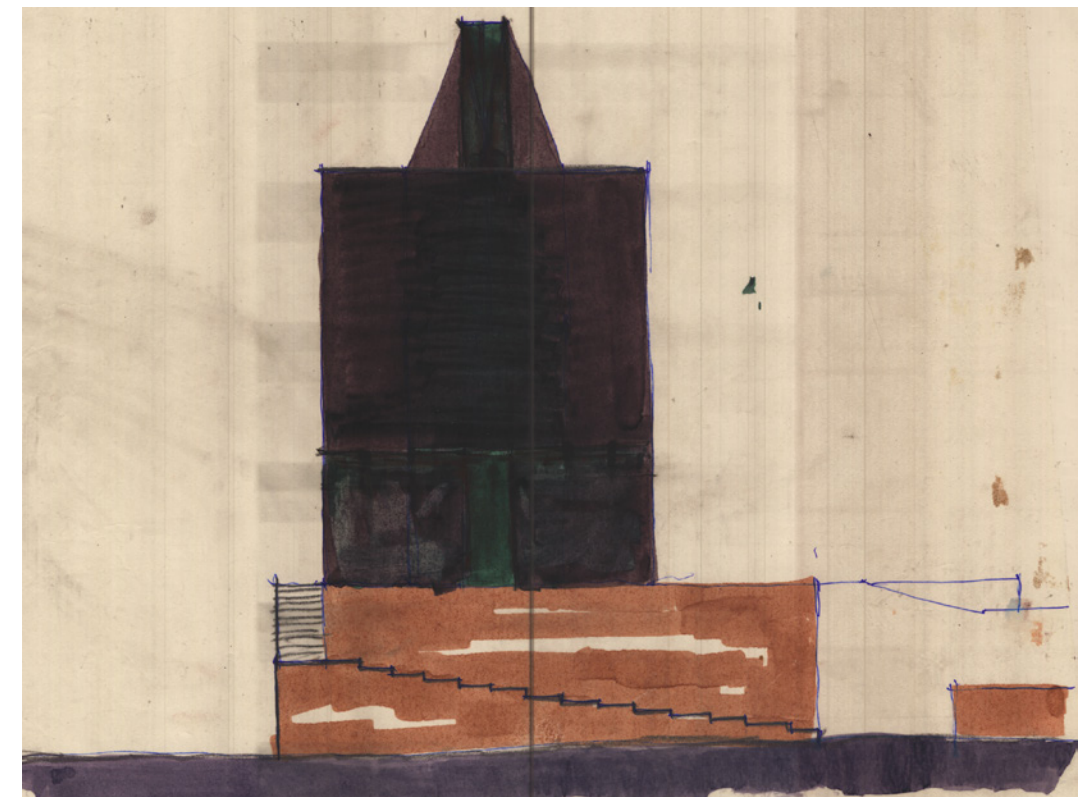
PL104 .1



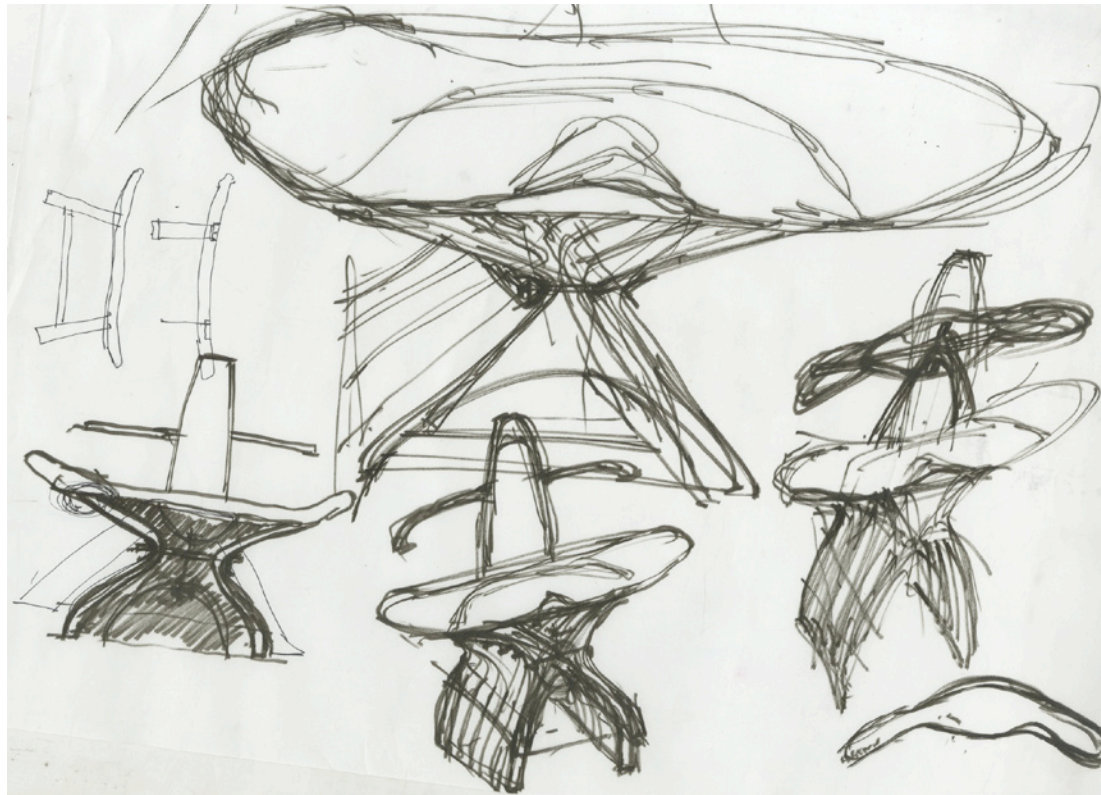
PL104 .3



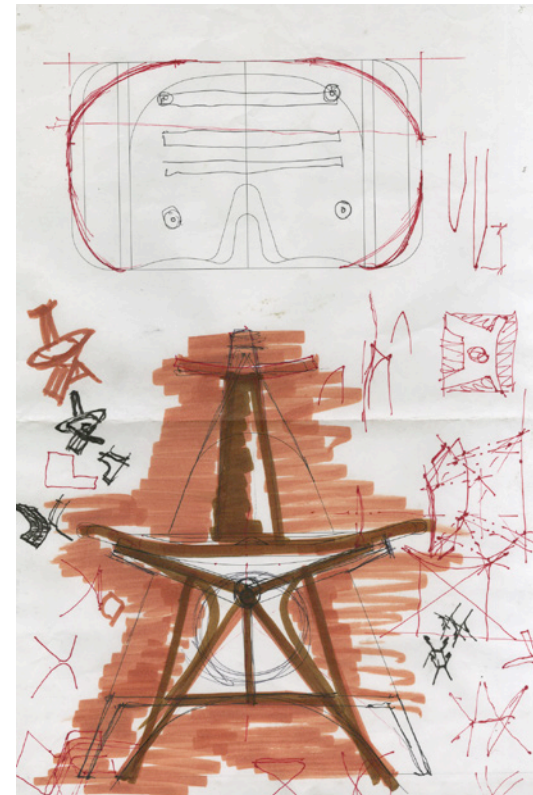
PL104 .2



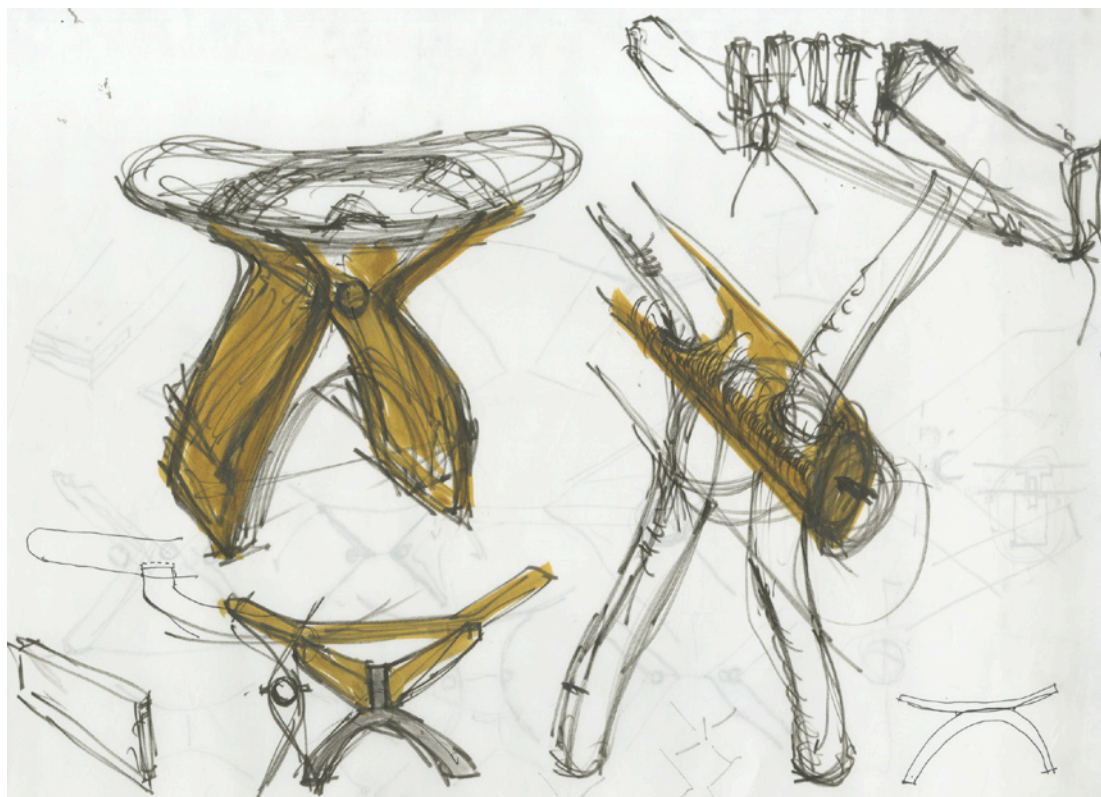
PL104 .4



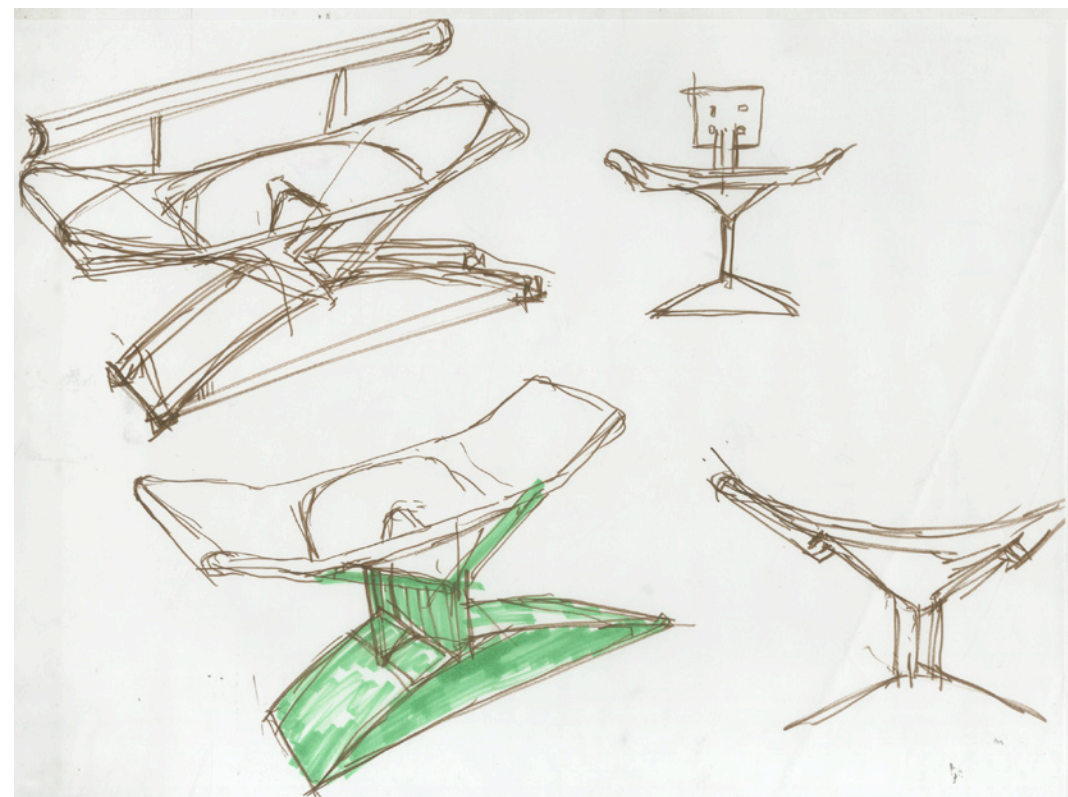
PL105 .1



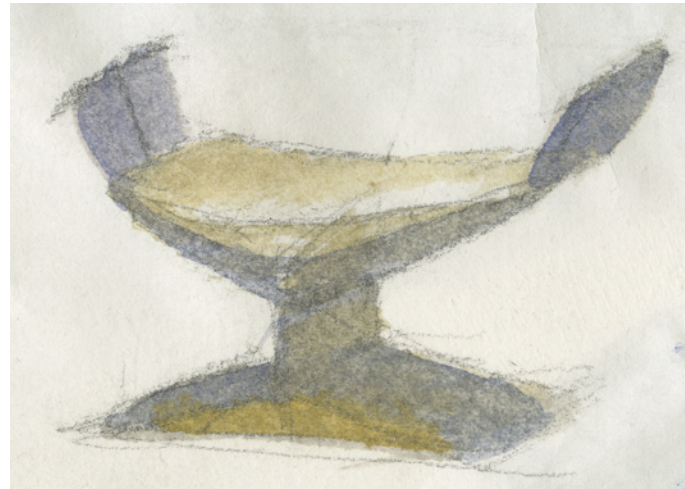
PL105 .3



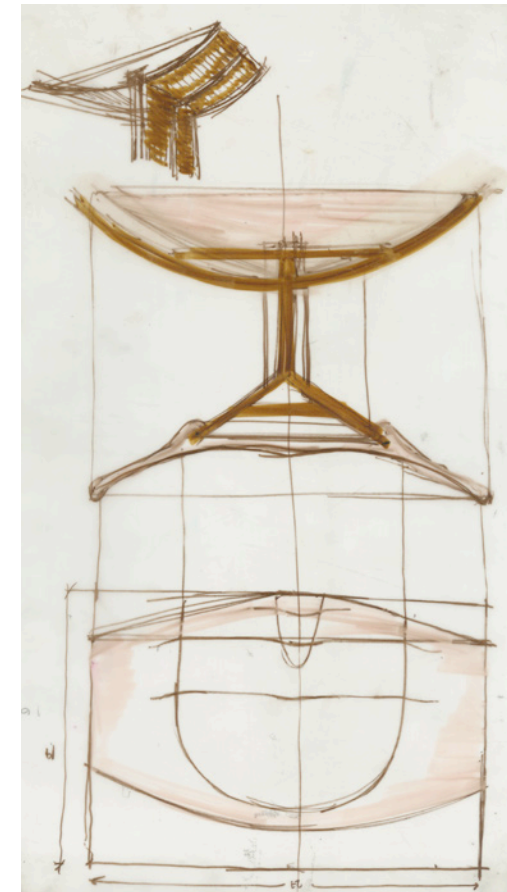
PL105 .2



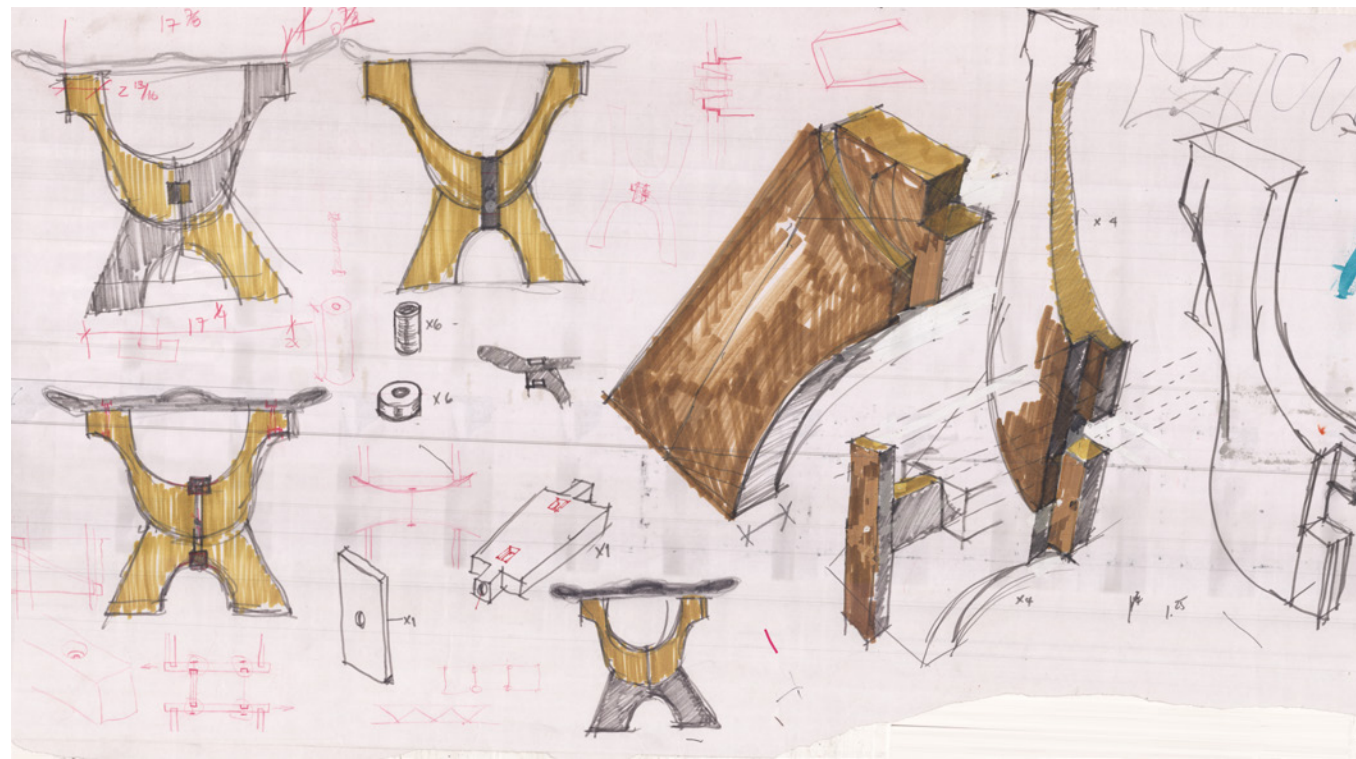
PL105 .4



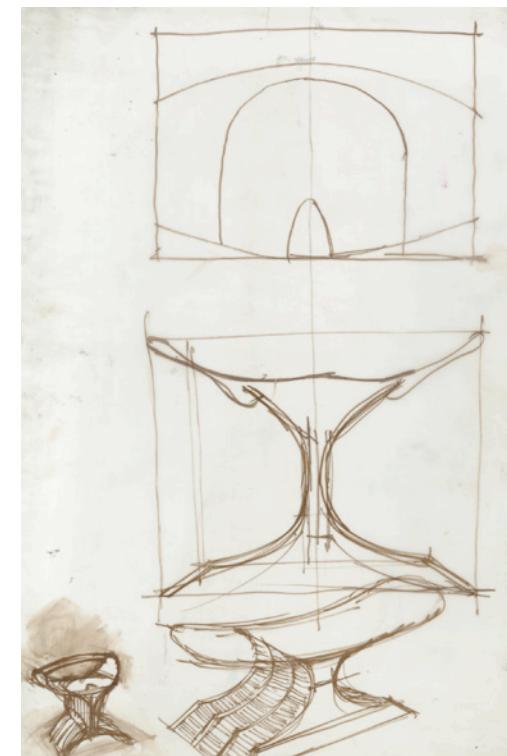
PL106 .1



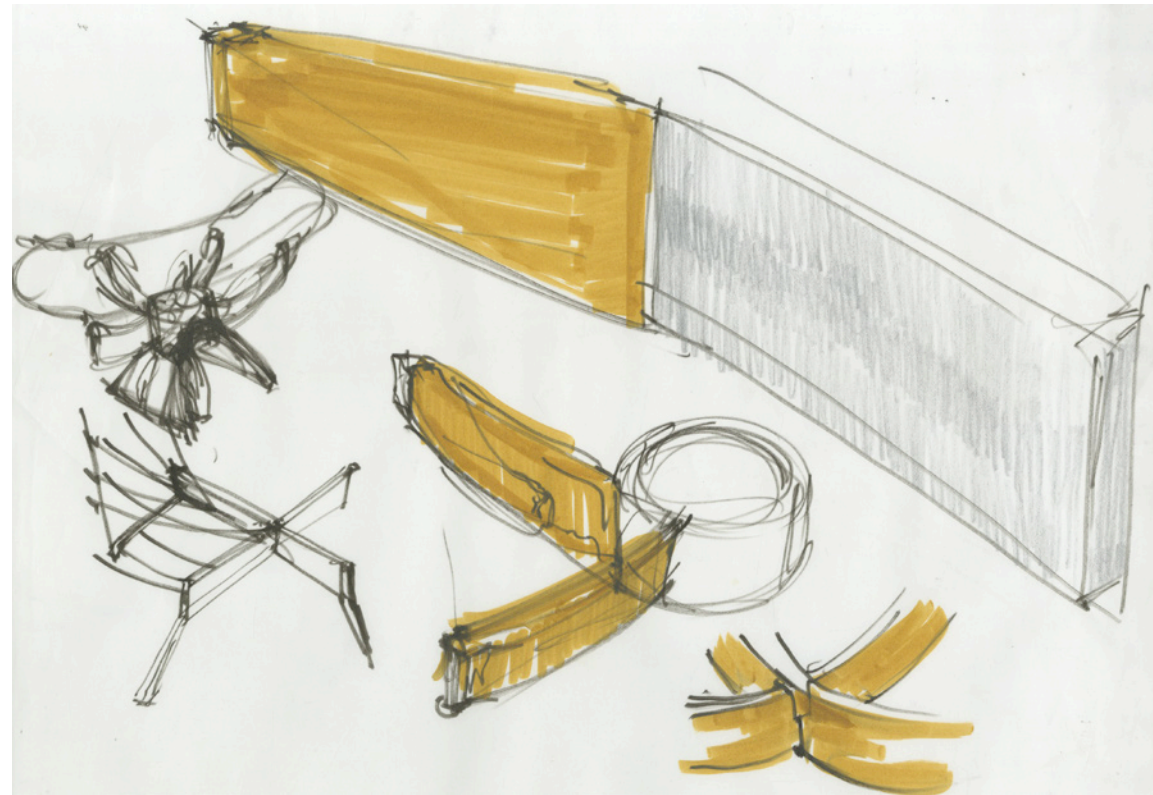
PL106 .3



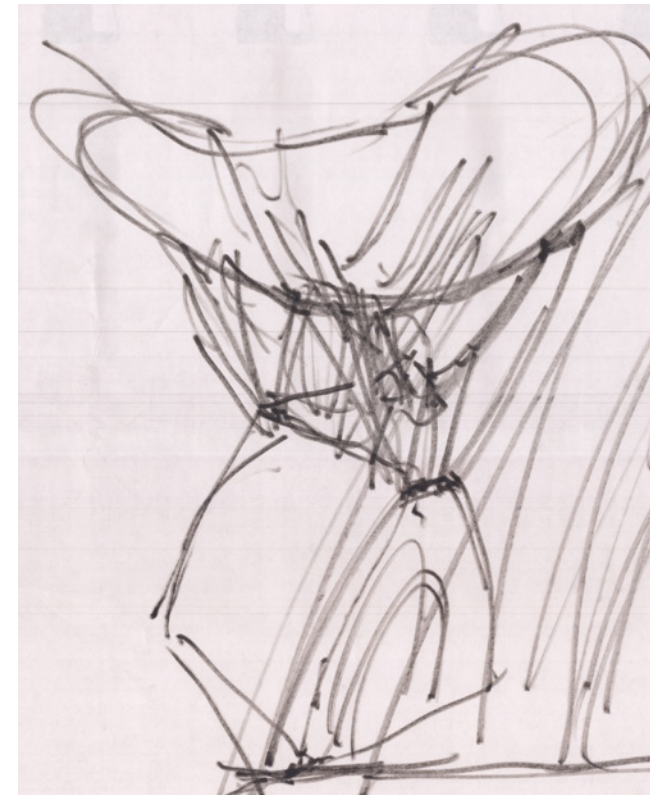
PL106 .2



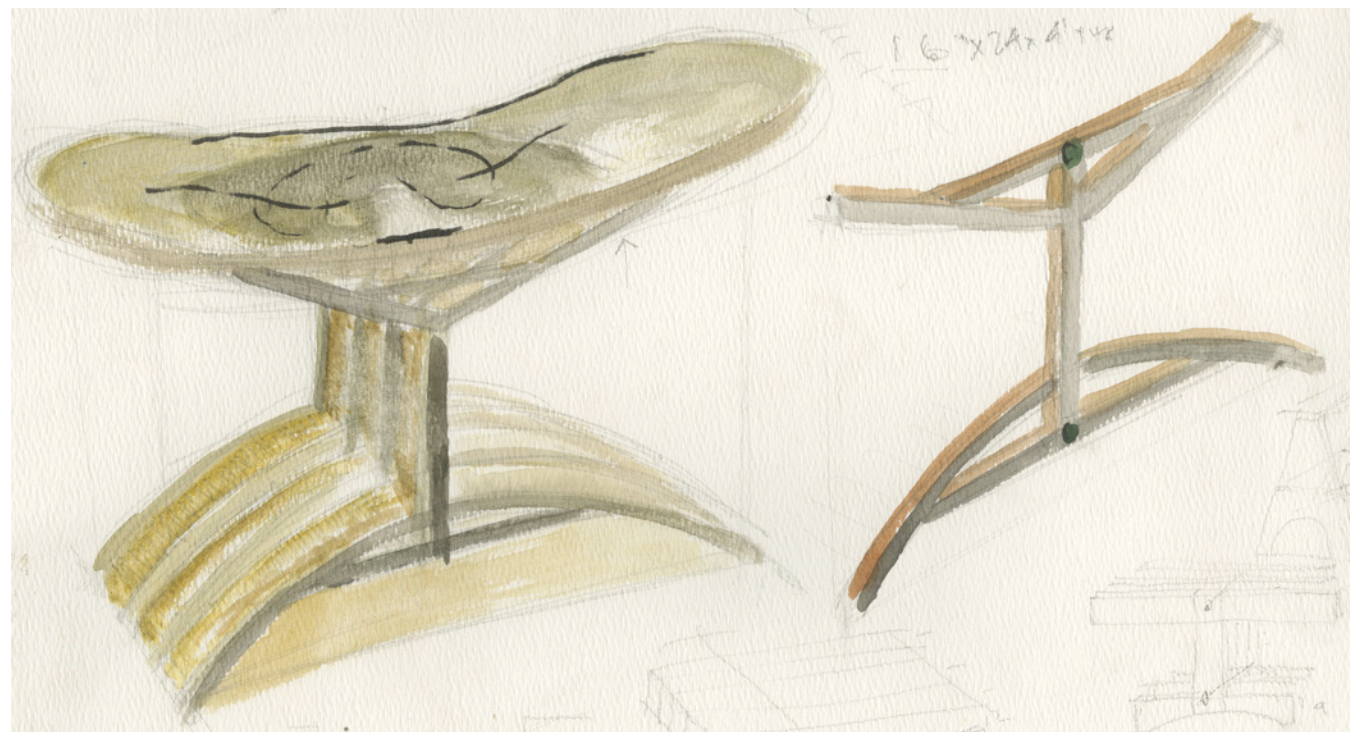
PL106 .4



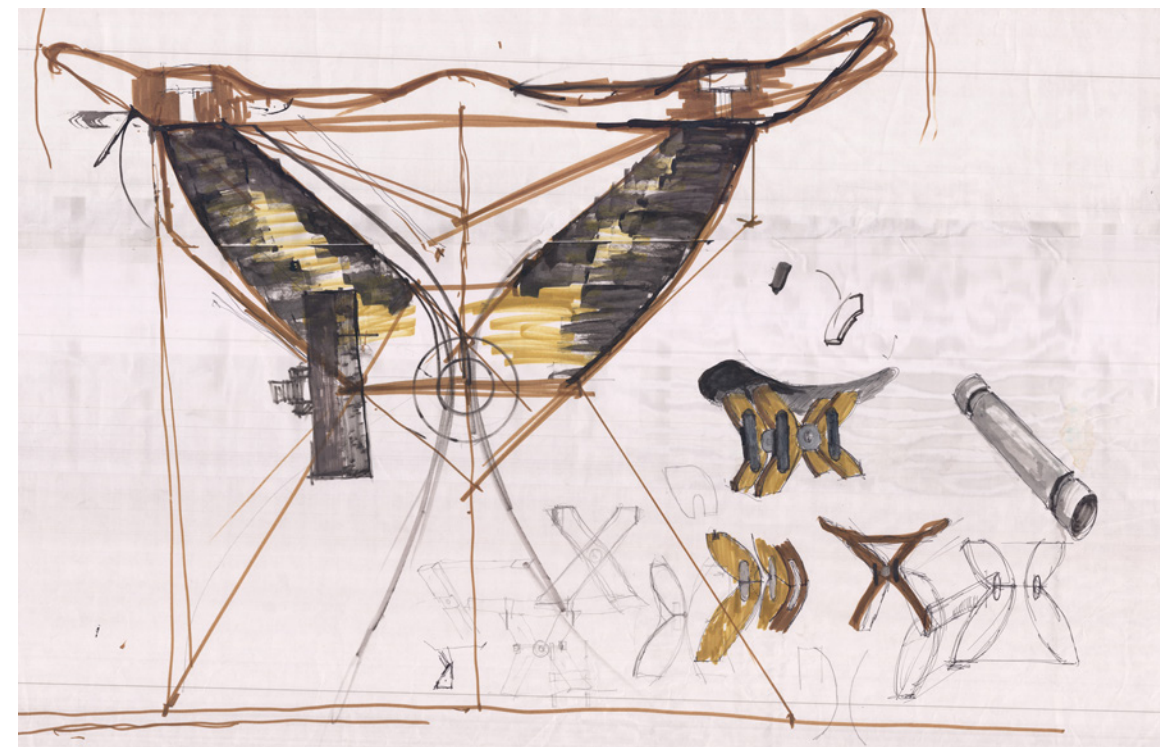
PL107.1



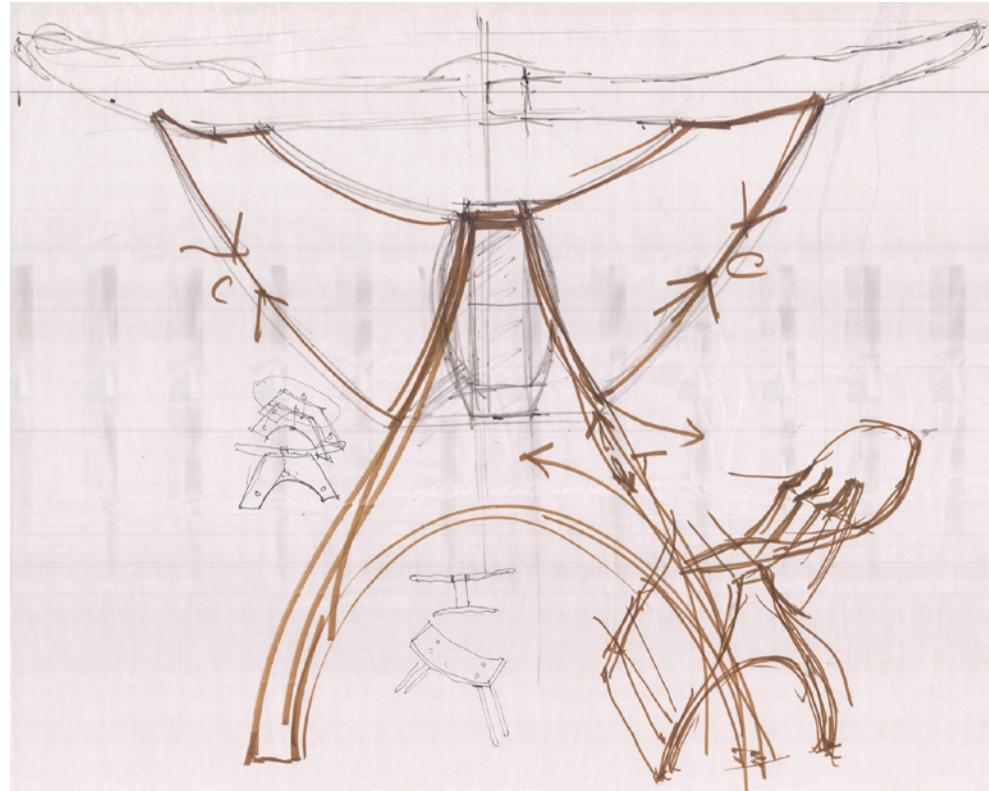
PL107.3



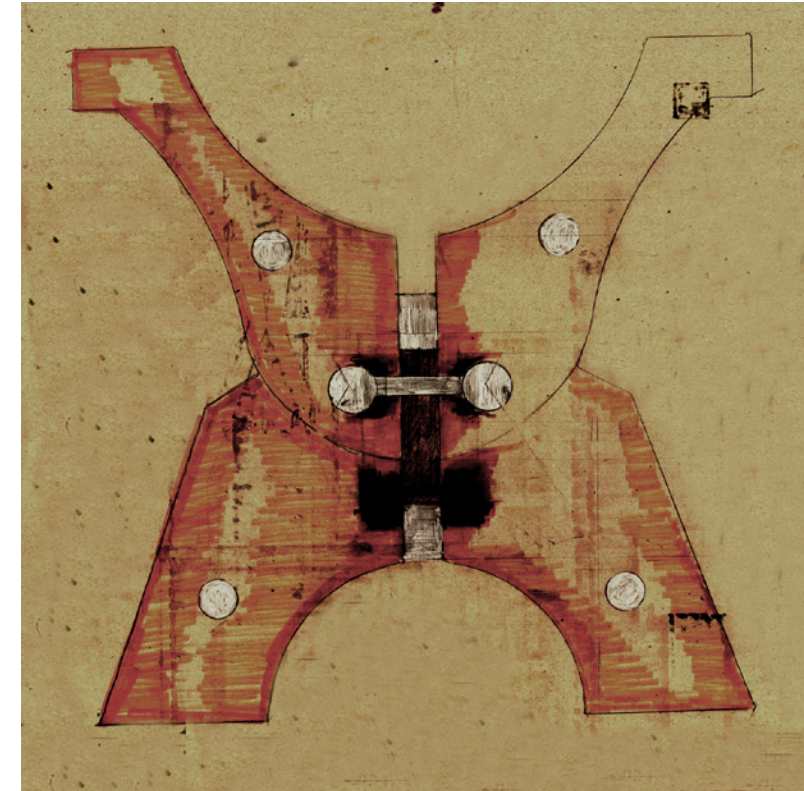
PL107.2



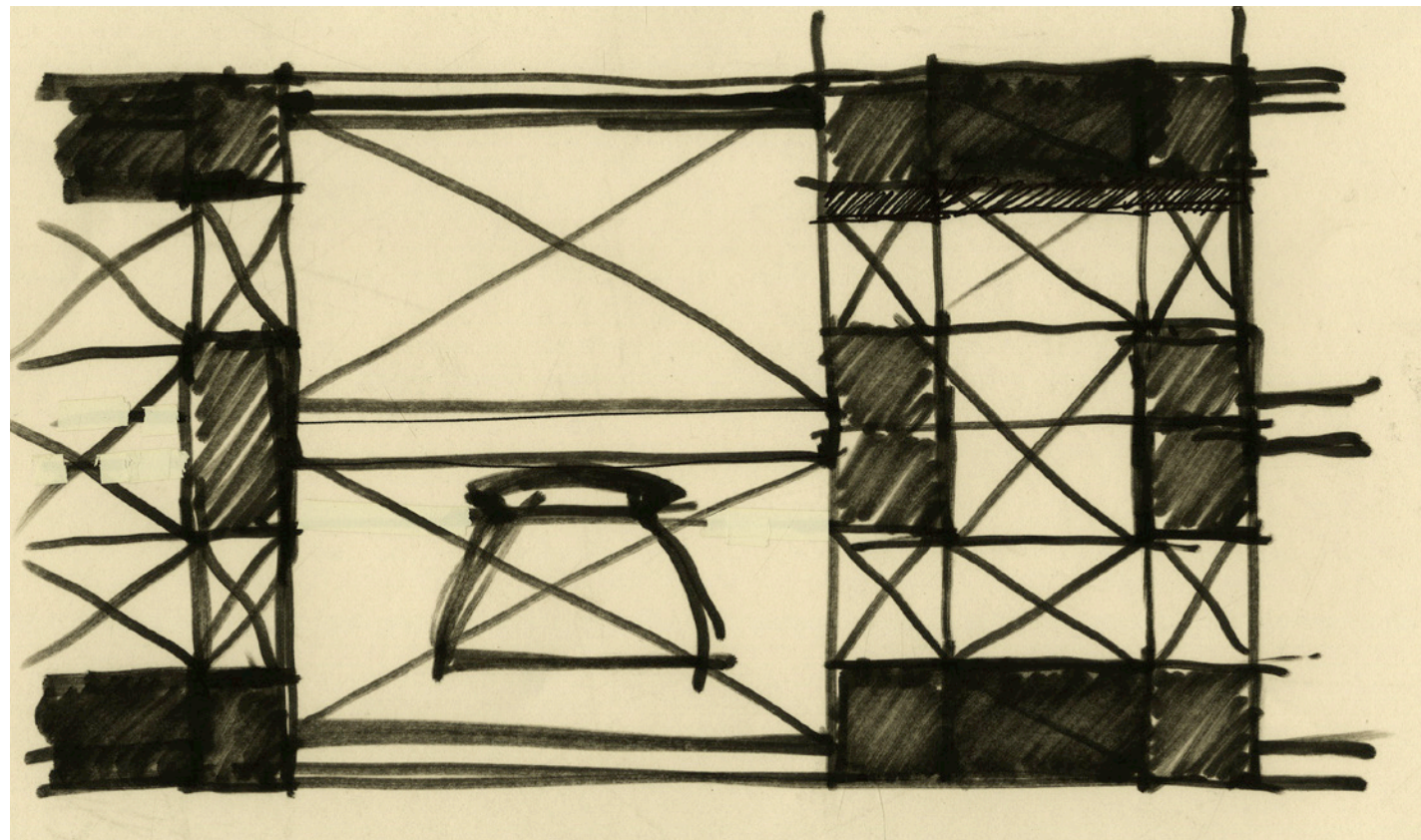
PL107.4



PL108 .1



PL108 .3



PL108 .2



PL108 .4

4.3.5 The Cloister

Aggregation of process

Penultimate



PL109

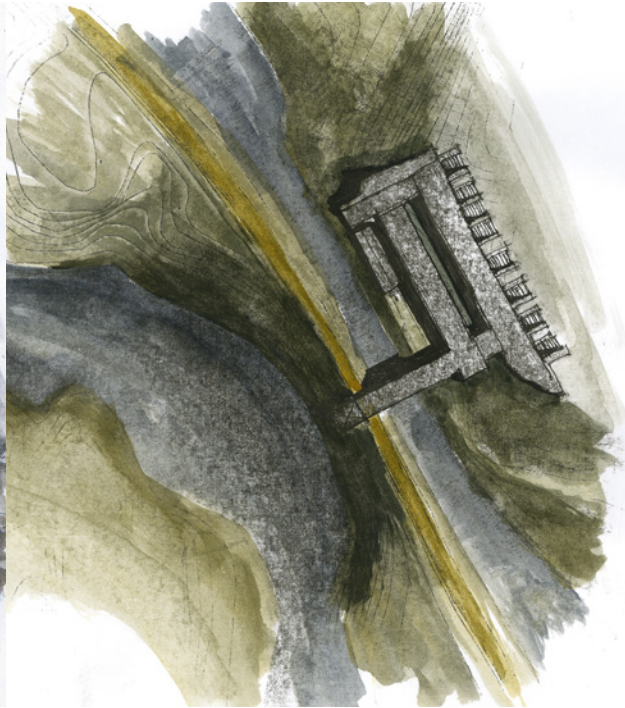
The various parts on which I conducted individual exercises are now aggregated to form a monastic cloister. The entire monastic campus is now formed with a trough, a tower, a bridge, a receiving structure, two parapets, a cloister and a chapel.

This section contains a collection of drawings and models that show the various arrangements that were attempted once these constituent elements of the monastery were established.

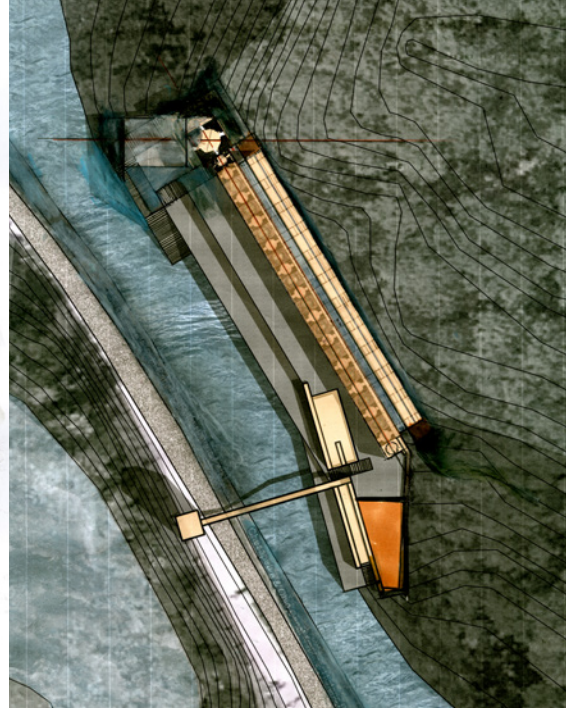
Some of these documents also make up the penultimate presentation I made to my committee prior to my final thesis defense.



P1



P2



P3

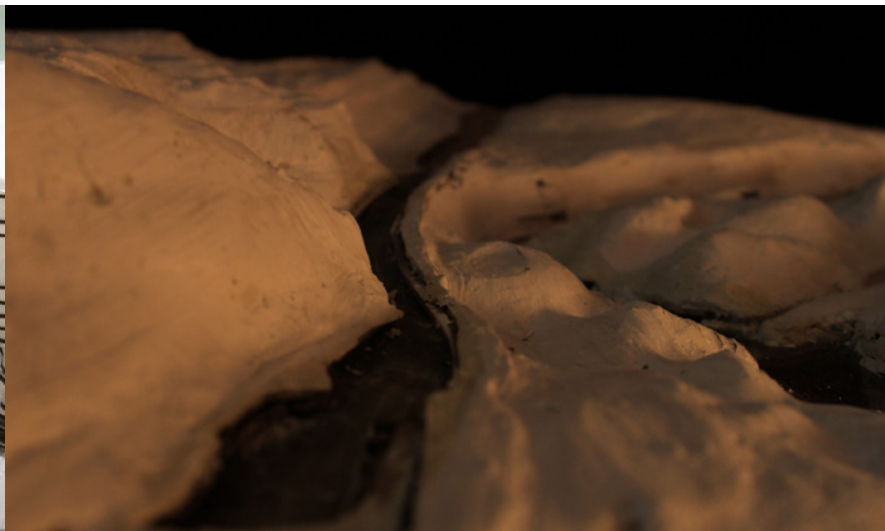


P4

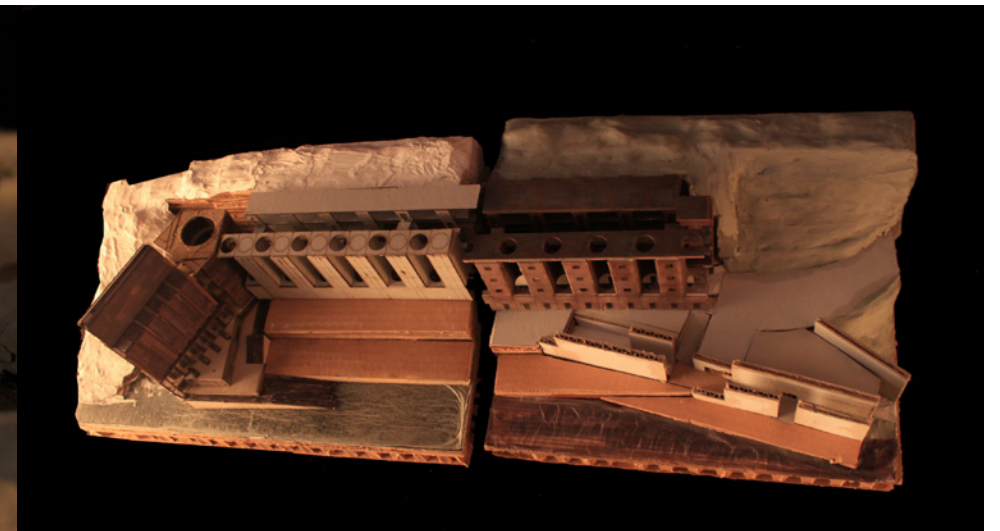
P1 early single bay cloister and bridge P2 early double bay cloister and bridge 2 P3 early site plan study with oriented chapel P4 early site study P5 early site model - chipboard
P6 early site model - plaster of paris on chipboard P7 early study model



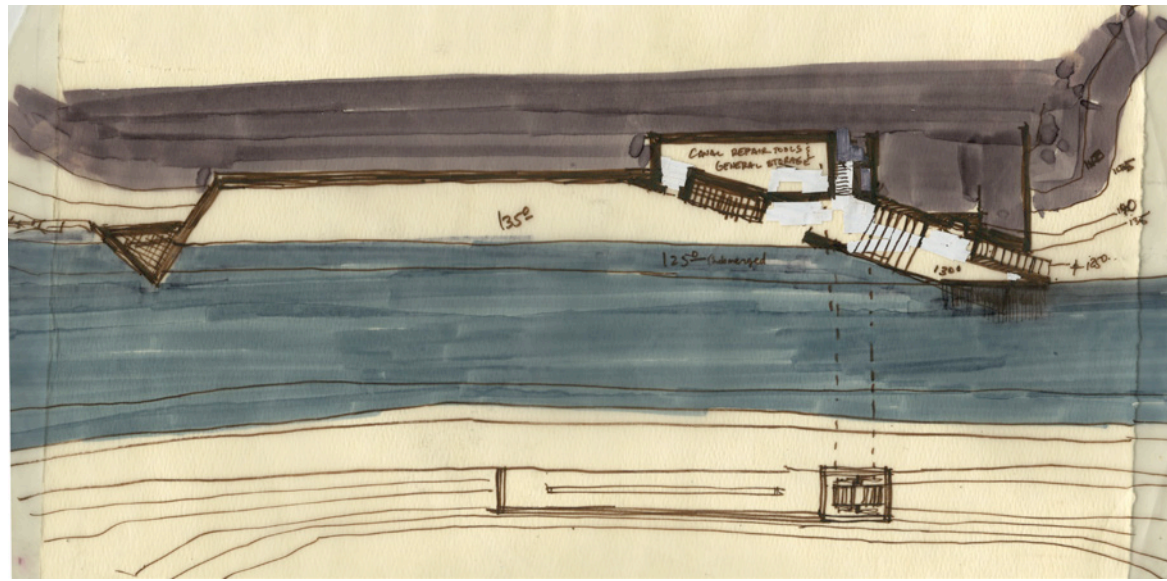
P5



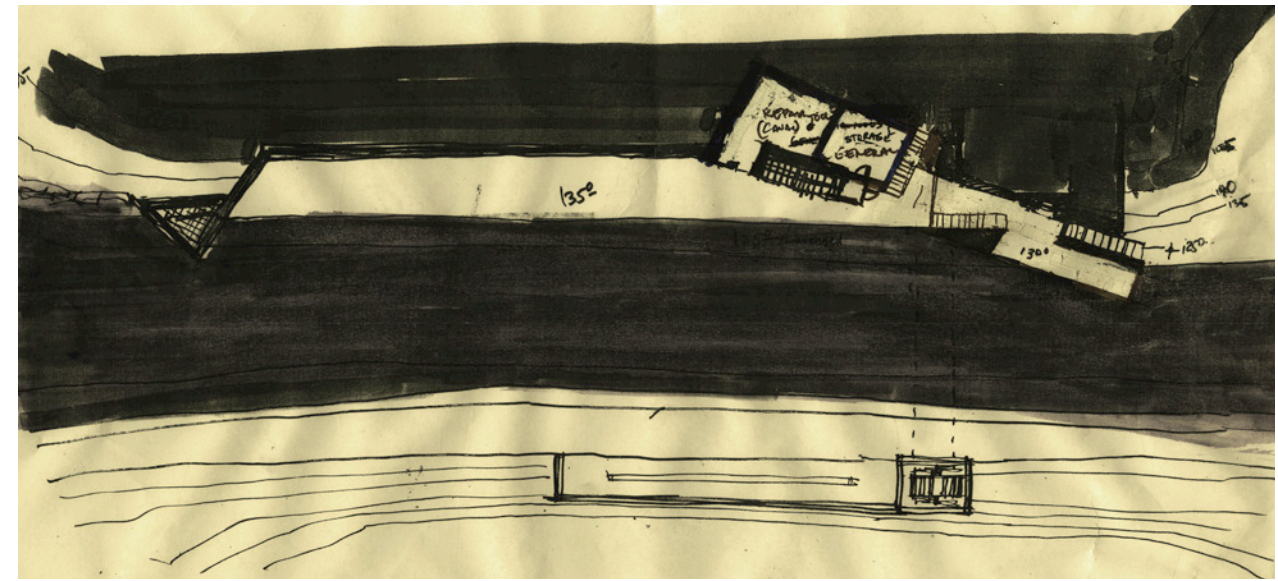
P6



P7

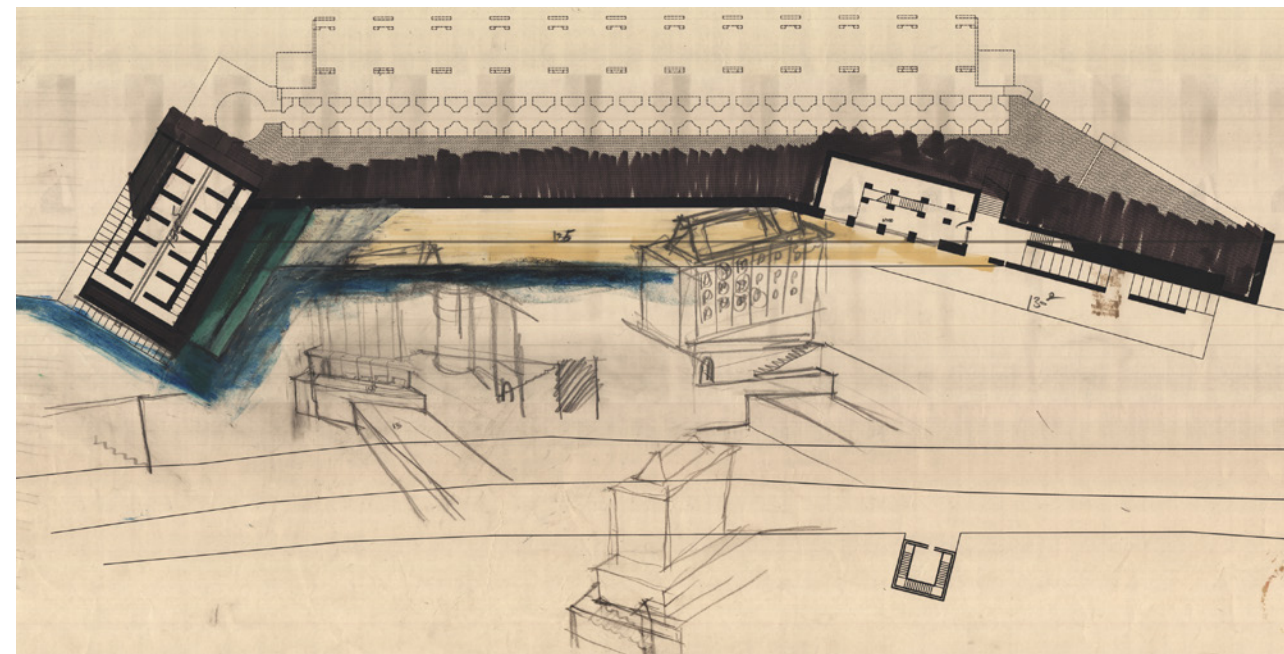


P8

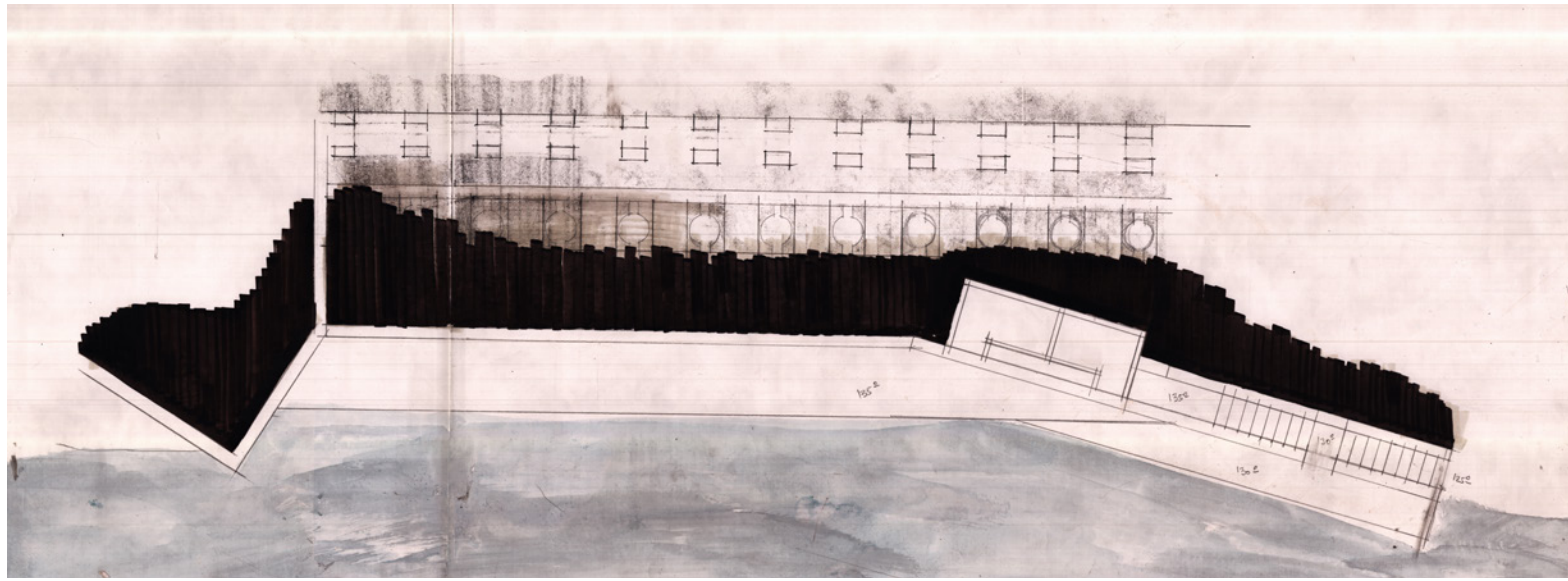


P9

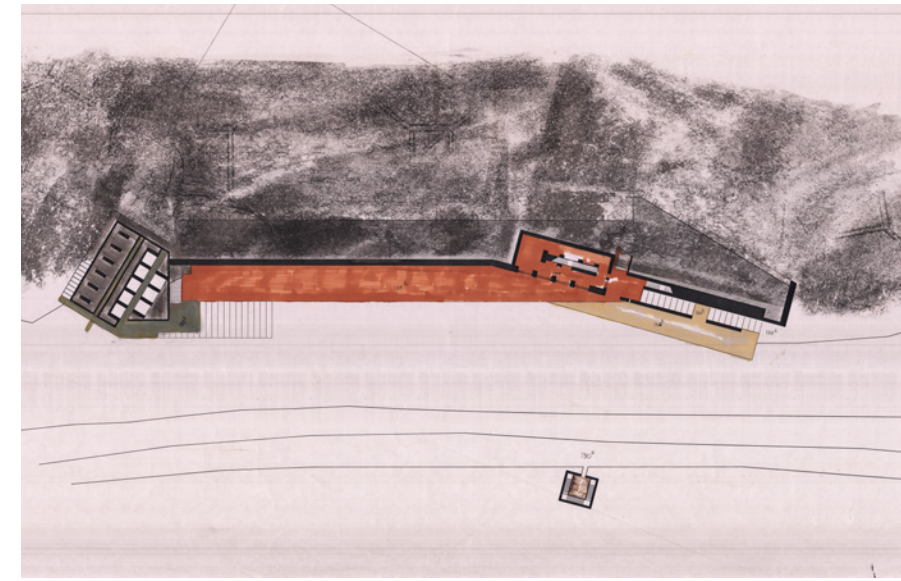
P8 early plan sketch with workshop and leisurely stair at elevation 135.00 marker on tracing paper P9 early plan sketch with workshop and leisurely stair at elevation 135.00 pen and ink P10 early plan sketch with workshop and leisurely stair at elevation 135.00, and catacombs at elevation 138.50 pencil and marker on digital print



P10

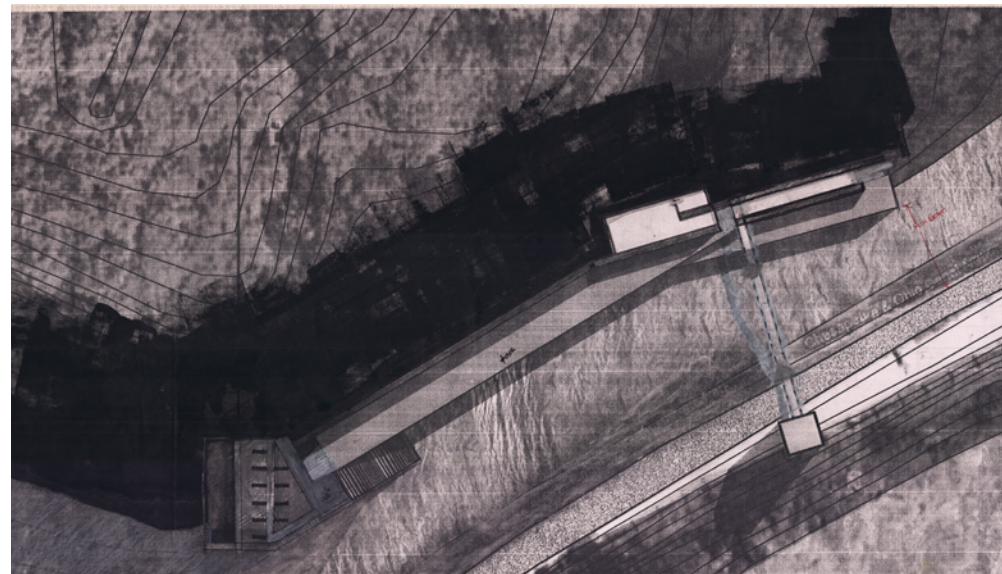


P11

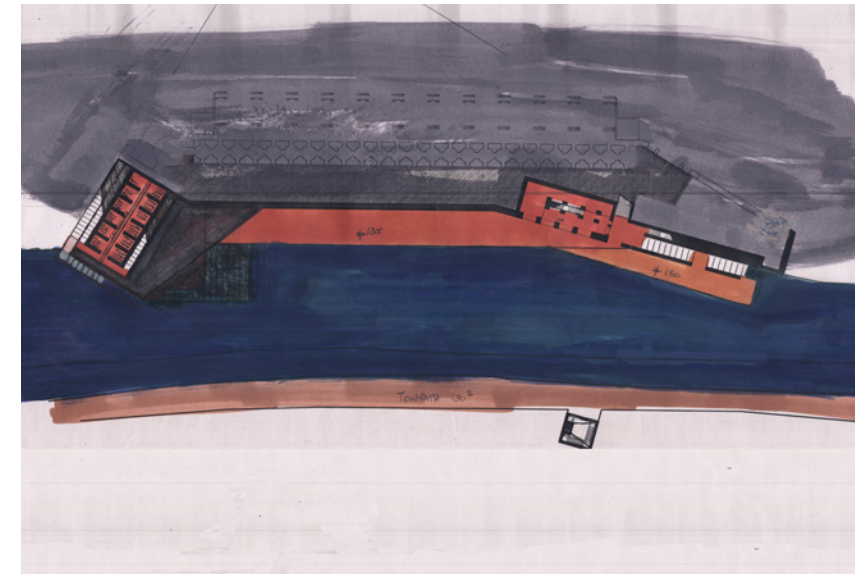


P12

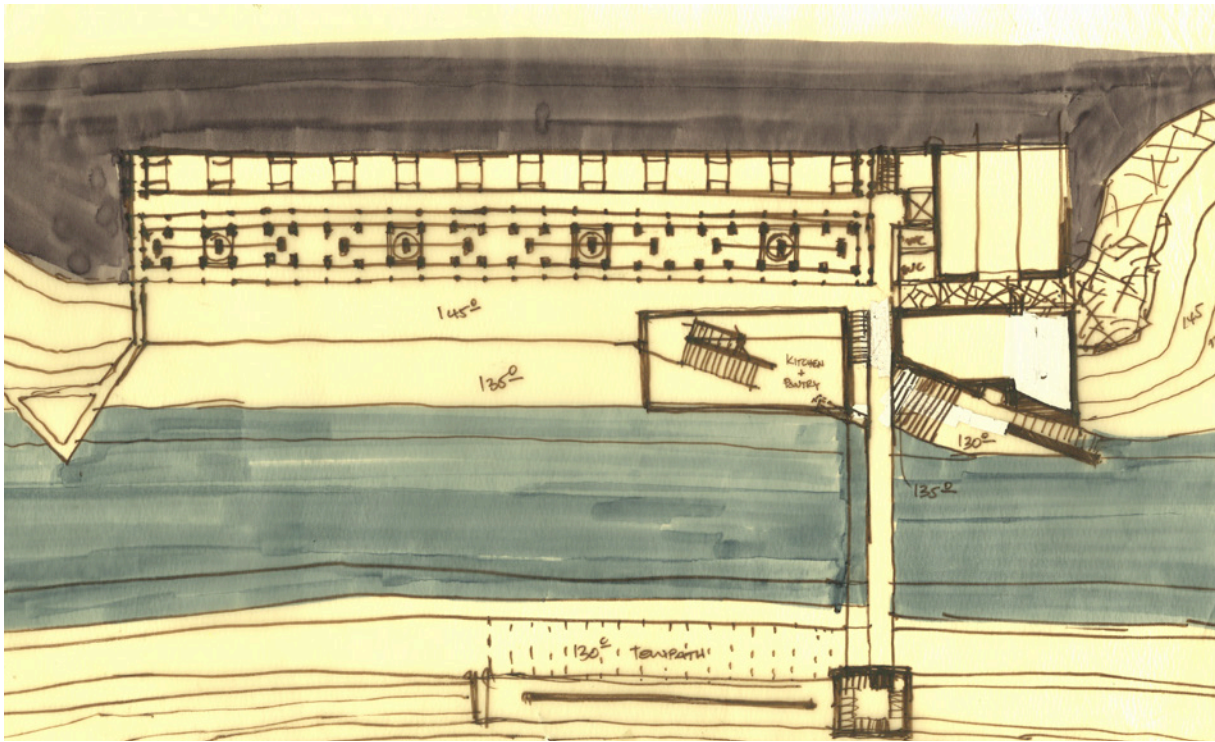
P11 early plan with workshop and leisurely stair at elevation 135.00: marker on synthetic banner paper P12 plan with workshop and leisurely stair at elevation 135.00, and earlier version of catacombs at elevation 138.50, marker and xylol transfer on digital print P13 early plan with workshop and leisurely stair at elevation 135.00, and catacombs at elevation 138.50 : acrylic paint and coloured pencils on building plan superimposed on site contours and satellite image P14 penultimate plan workshop and leisurely stair at elevation 135.00 and catacombs at elevation 138.50 marker and water colour on digital prints



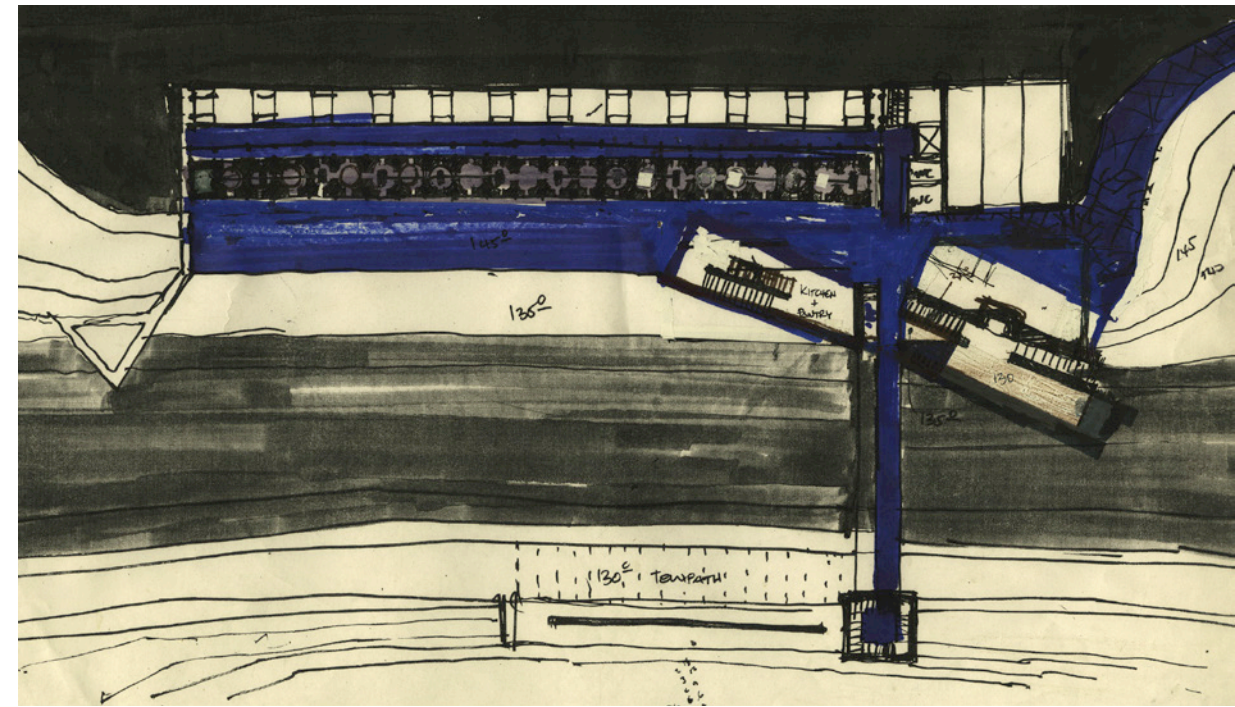
P13



P14

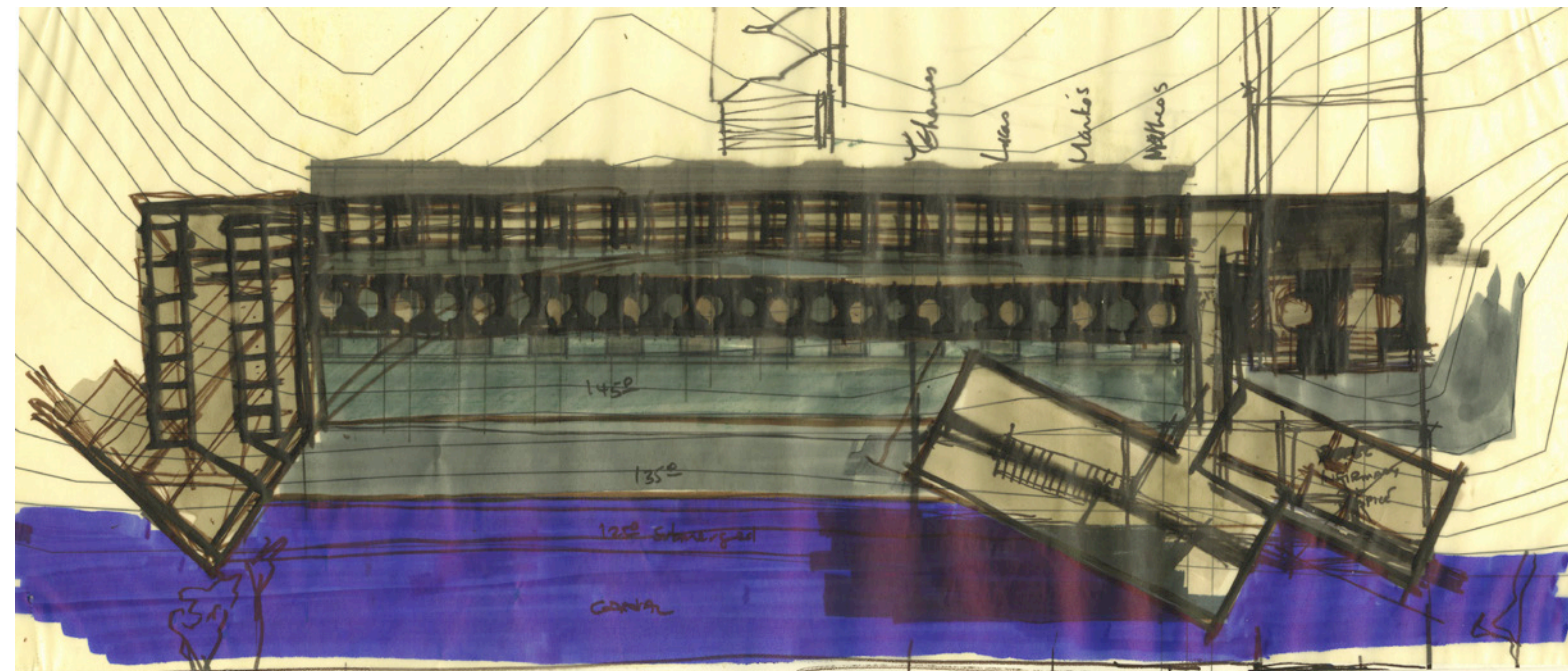


P15

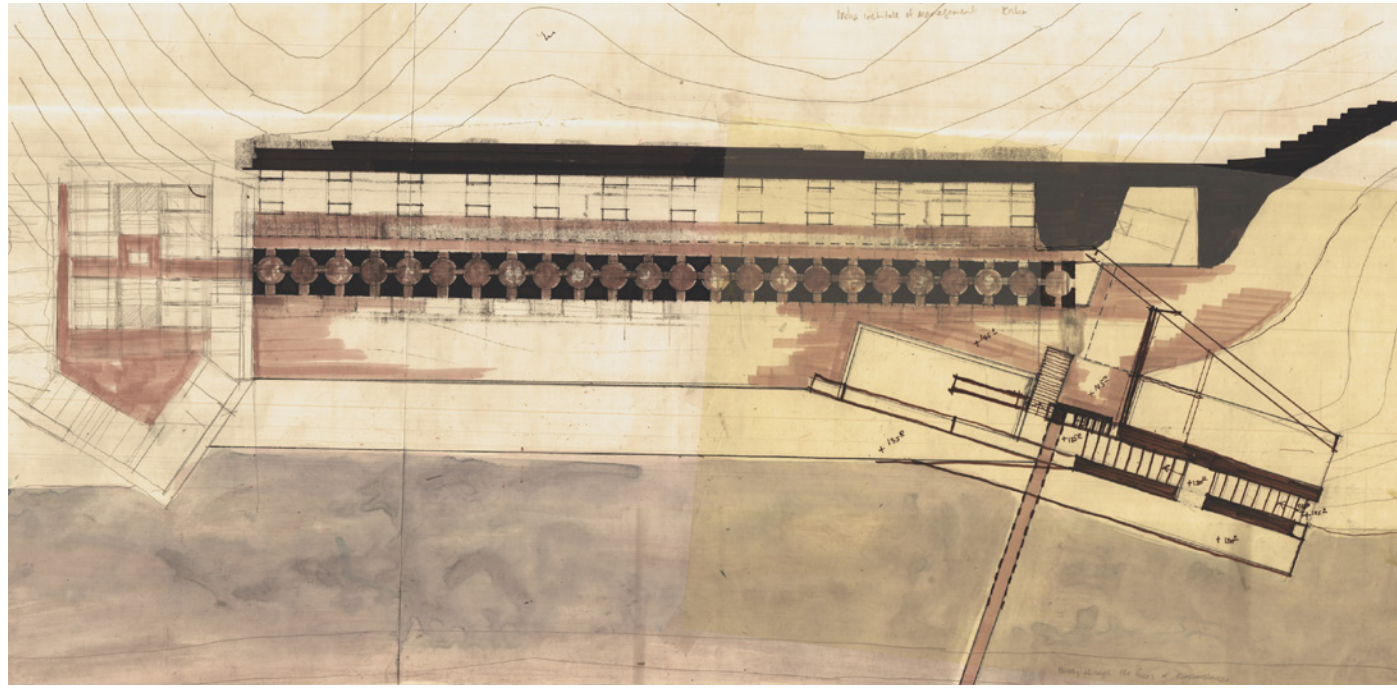


P16

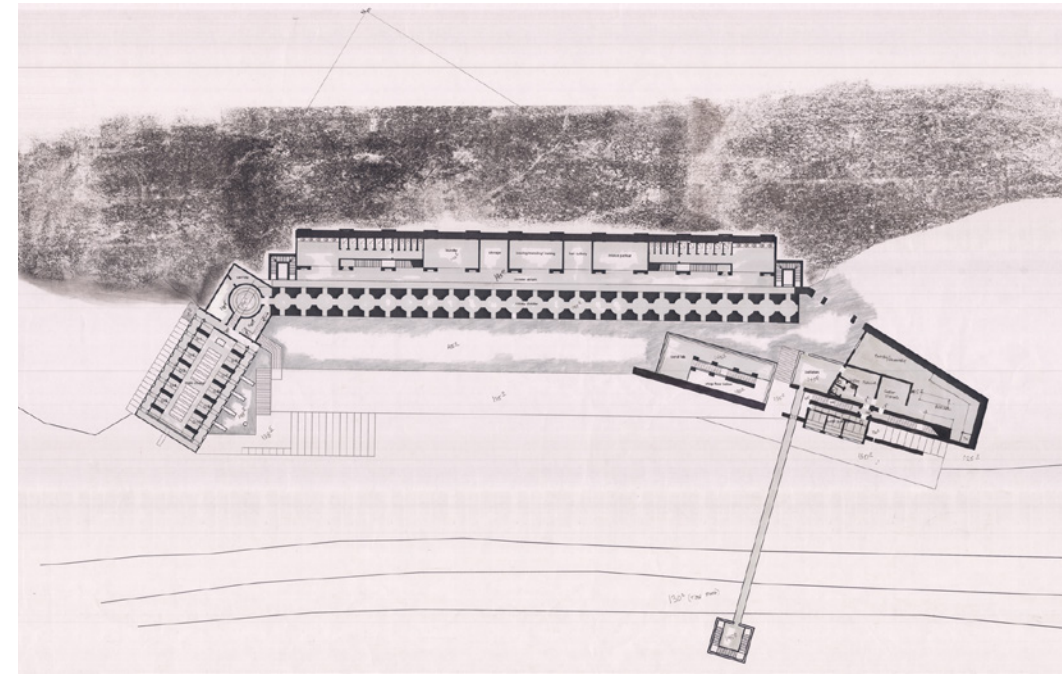
P15 early plan sketch with leisurely stair and cloister at elevation 145.00 marker on tracing paper P16 early plan with and leisurely stair and cloister at elevation 145.00: pen and ink P17 early plan sketch with catacombs at elevation 138.50 and leisurely stair and cloister at elevation 145.00 marker on tracing paper



P17

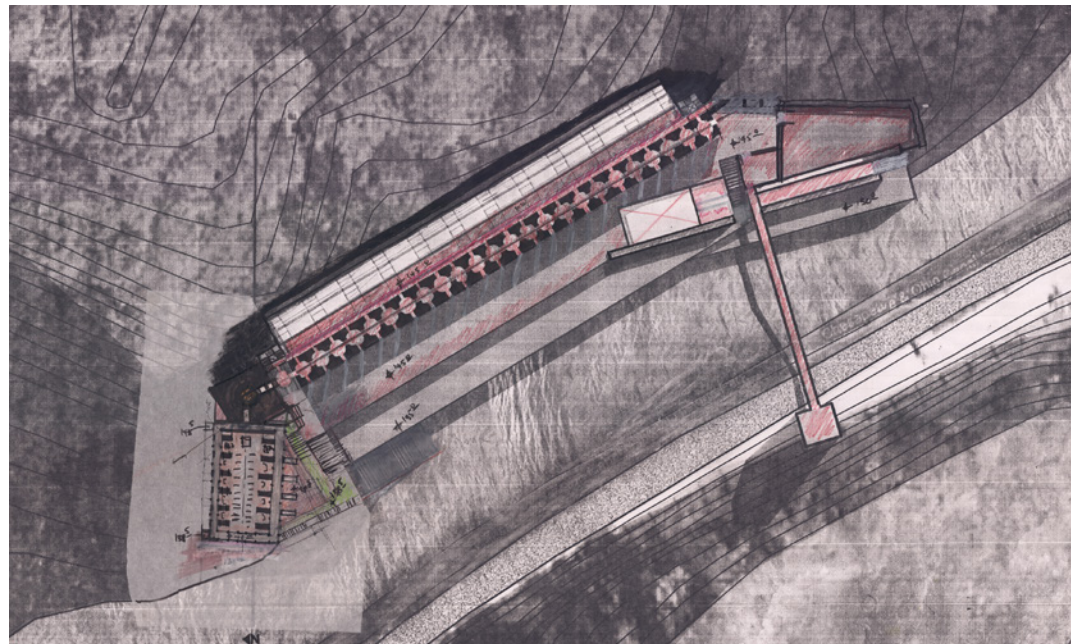


P18

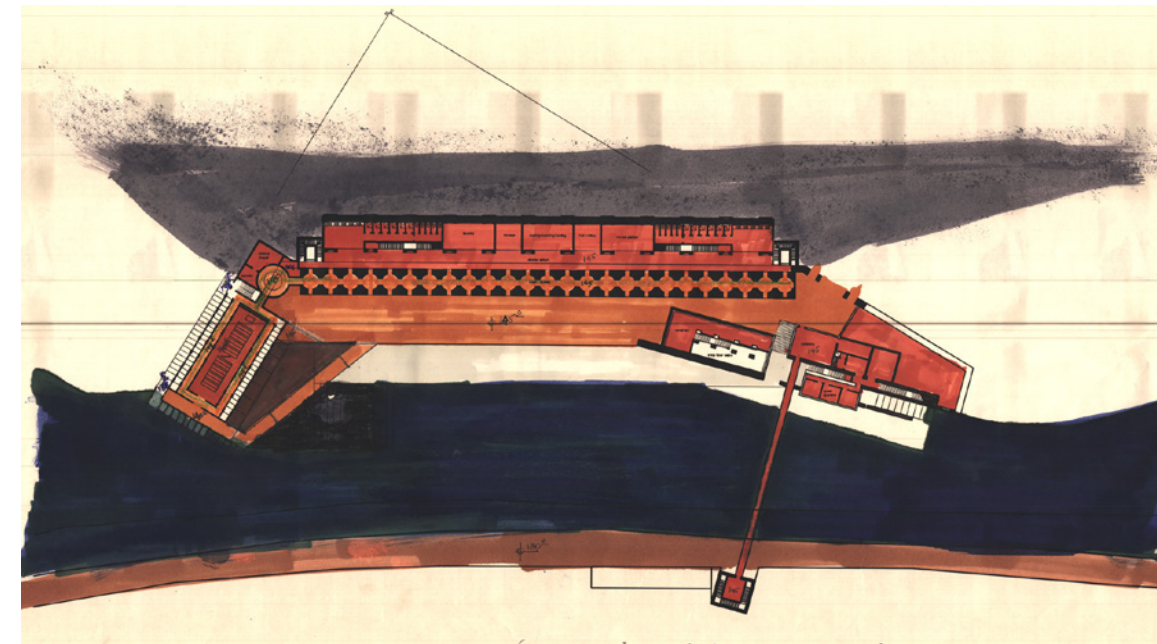


P19

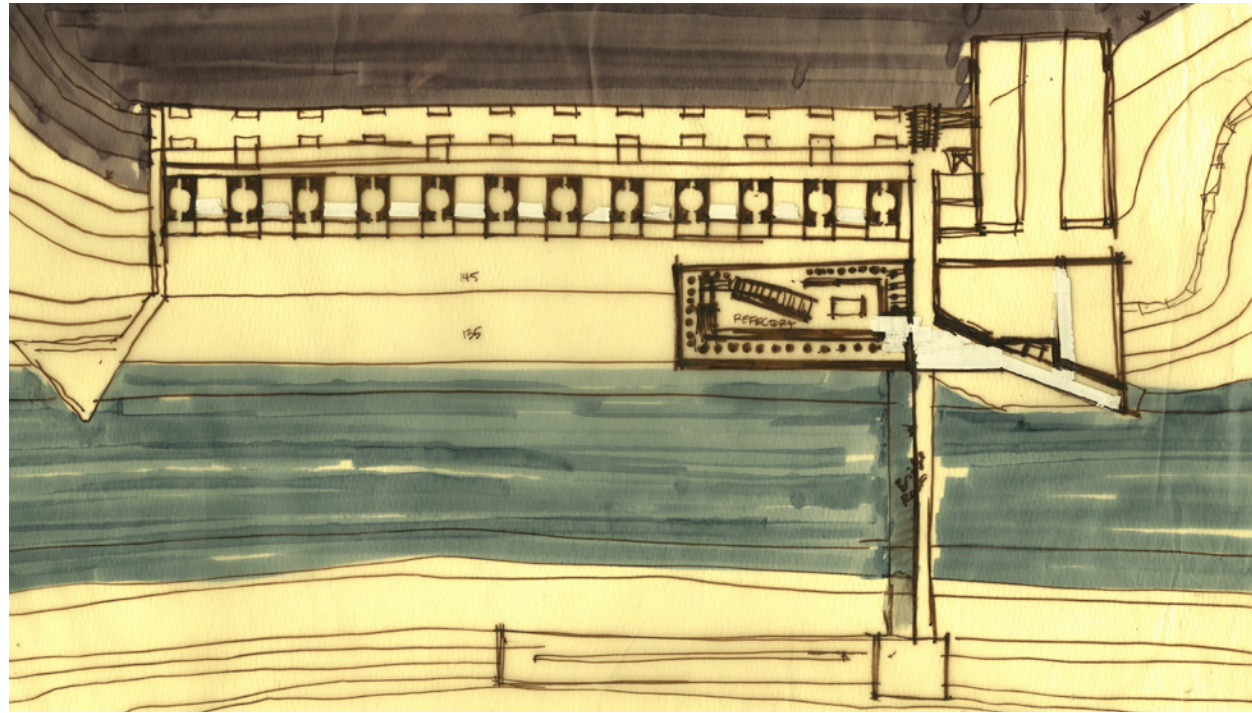
P18 plan with catacombs at elevation 138.50 and cloister and leisurely stair at elevation 145.00: marker on synthetic banner paper P19 plan with chapel, cloister, kitchen, parlatory and main parapet at elevation 145.00, marker and xylol transfer on digital print P20 plan with chapel, cloister, kitchen, parlatory and main parapet at elevation 145.00: acrylic paint and coloured pencils on building plan superimposed on site contours and satellite image P21 penultimate plan with chapel, cloister, kitchen, parlatory and main parapet at elevation 145.00: marker and water colour on digital prints



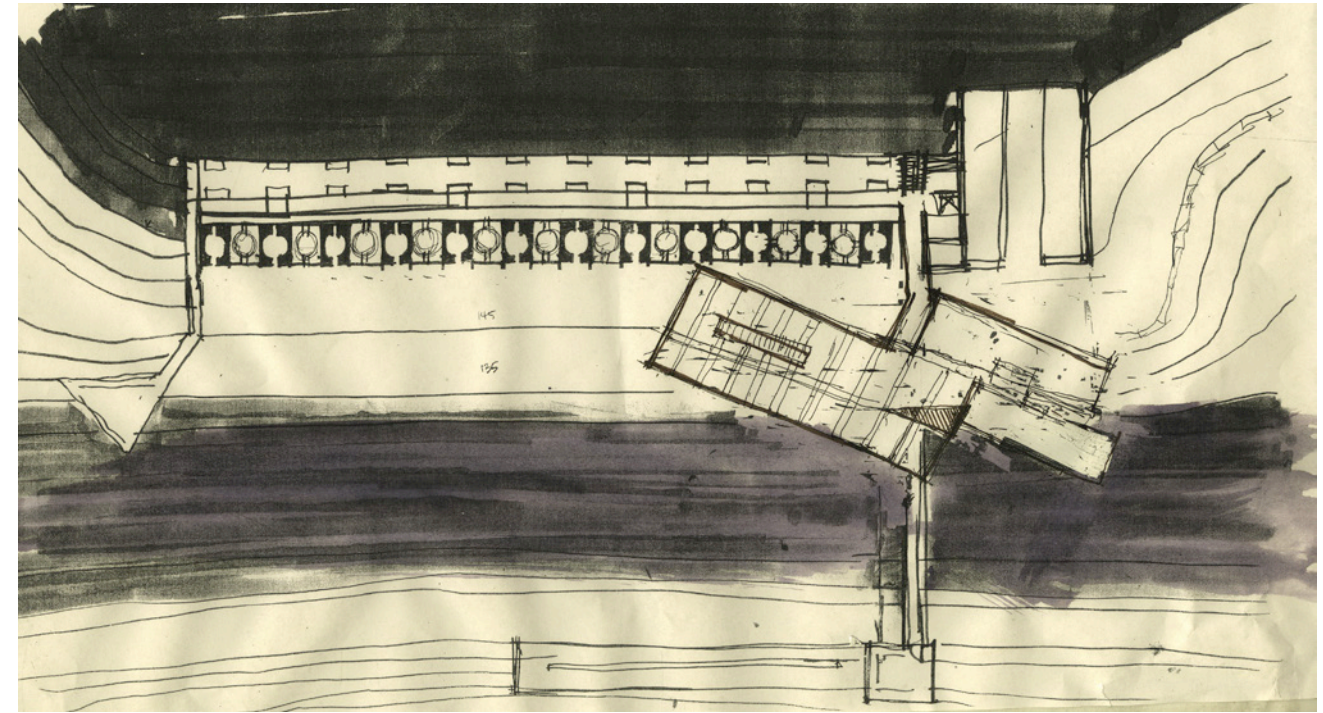
P20



P21



P22

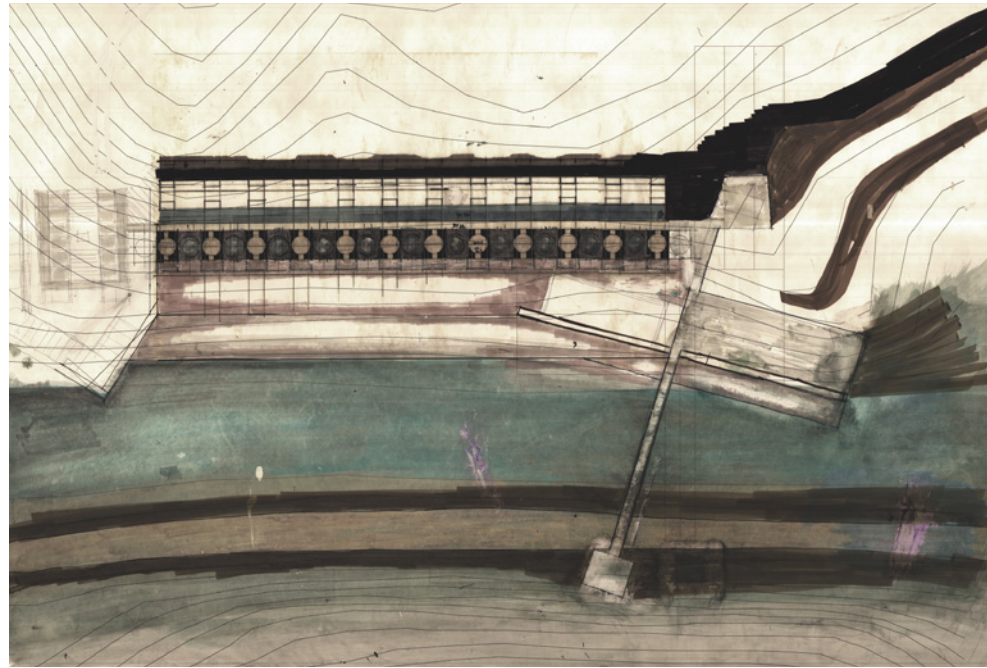


P23

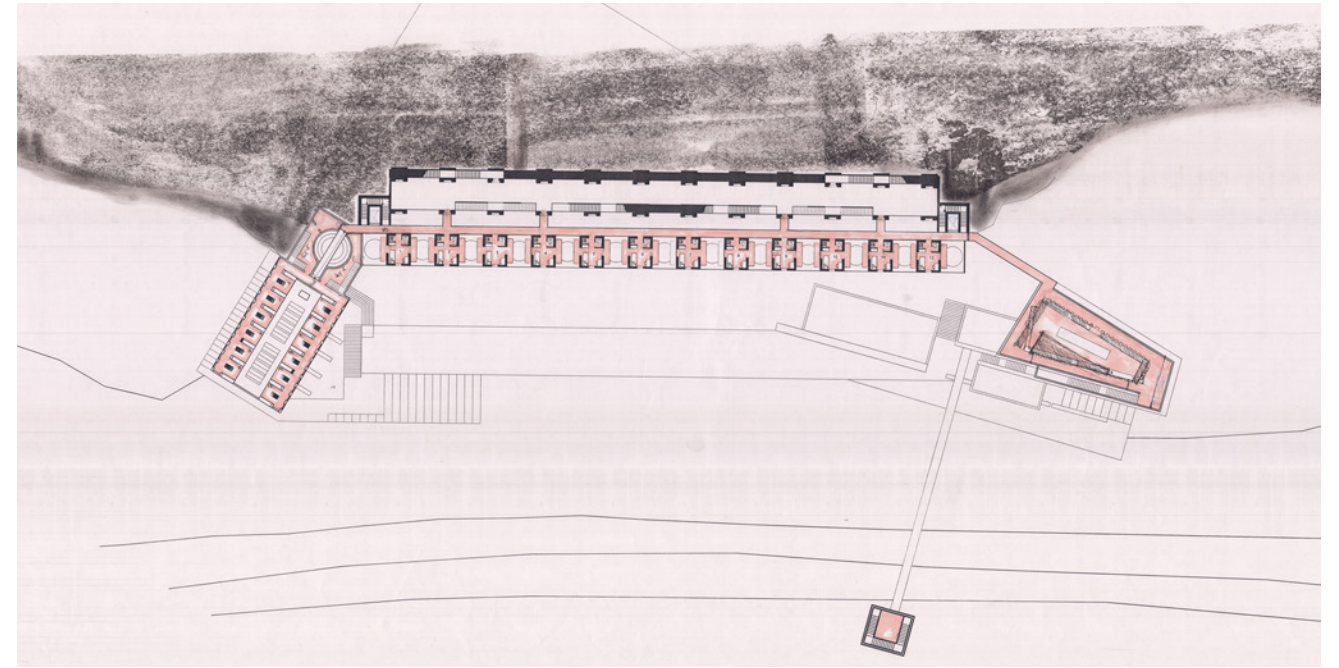
P22 early plan sketch with monks' dorms, calfactory and refectory at elevation 162.00 marker on tracing paper P23 early plan with monks' dorms, calfactory, and refectory at elevation 162.00: pen and ink P24 West Elevation drawing Oil pastel



P24

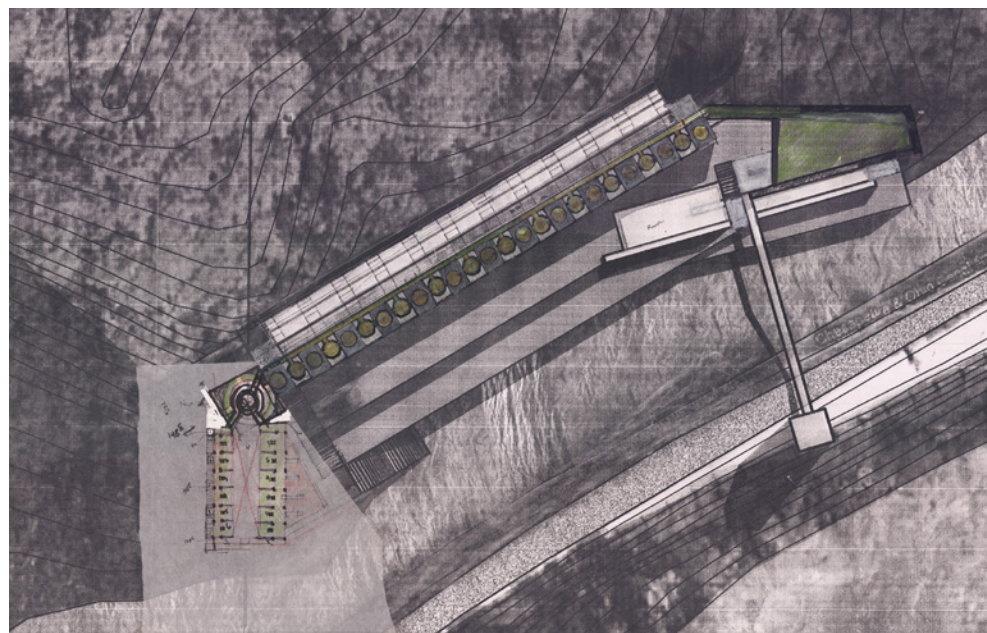


P25

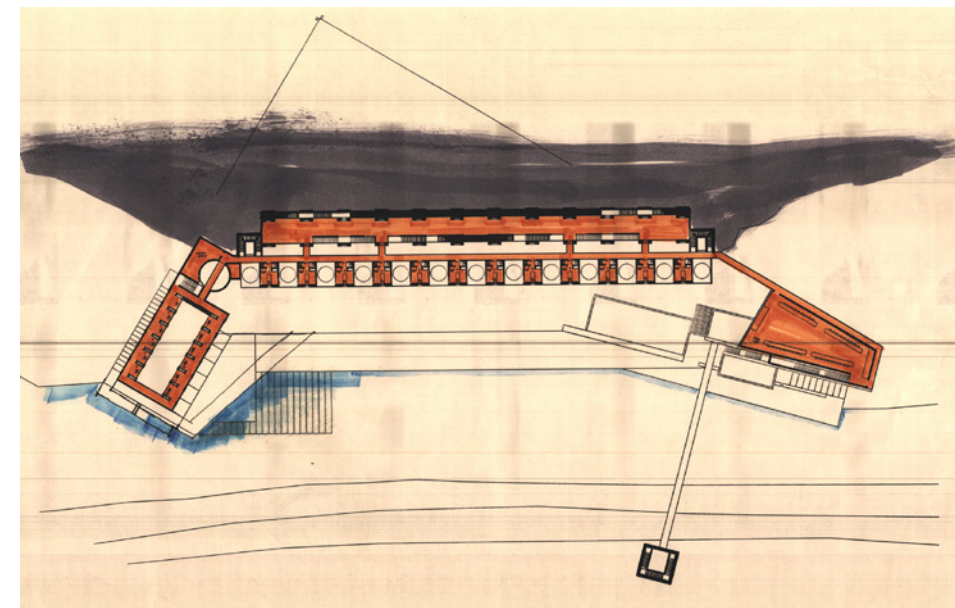


P26

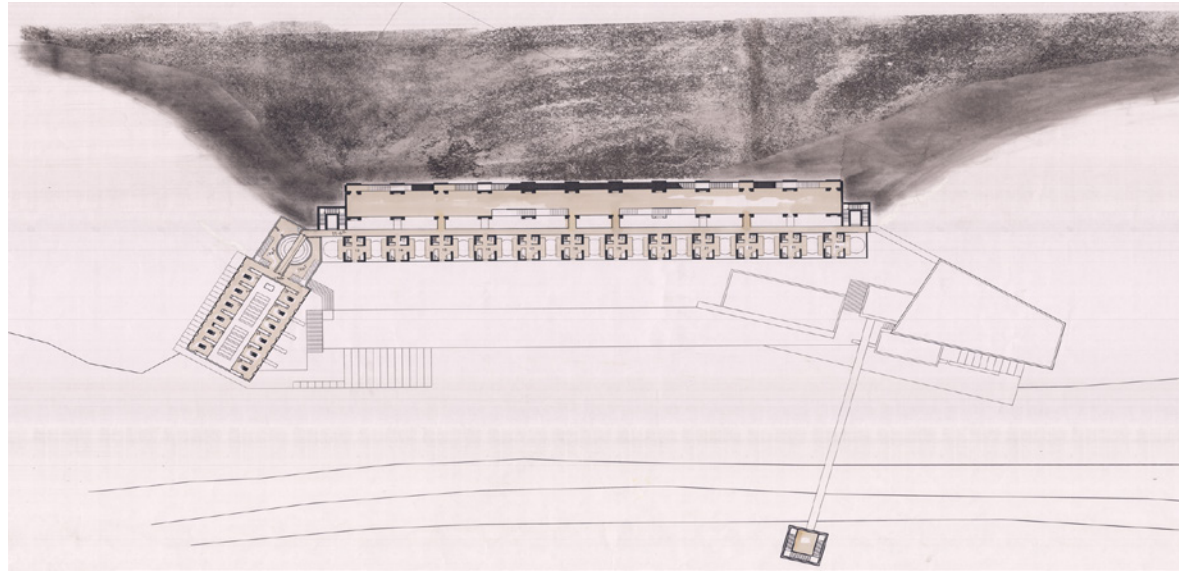
P25 plan with monks' dorms and calfactory at elevation 162.00: marker on synthetic banner paper P26 plan with monks' stalls, monks' dorms, calfactory and refectory at elevation 162.00 marker and xylol transfer on digital print P27 plan with monks' stalls, monks' dorms, calfactory and refectory at elevation 162.00: acrylic paint and coloured pencils on building plan superimposed on site contours and satellite image P28 penultimate plan with monks' stalls, monks' dorms, calfactory and refectory at elevation 162.00: marker and water colour on digital prints



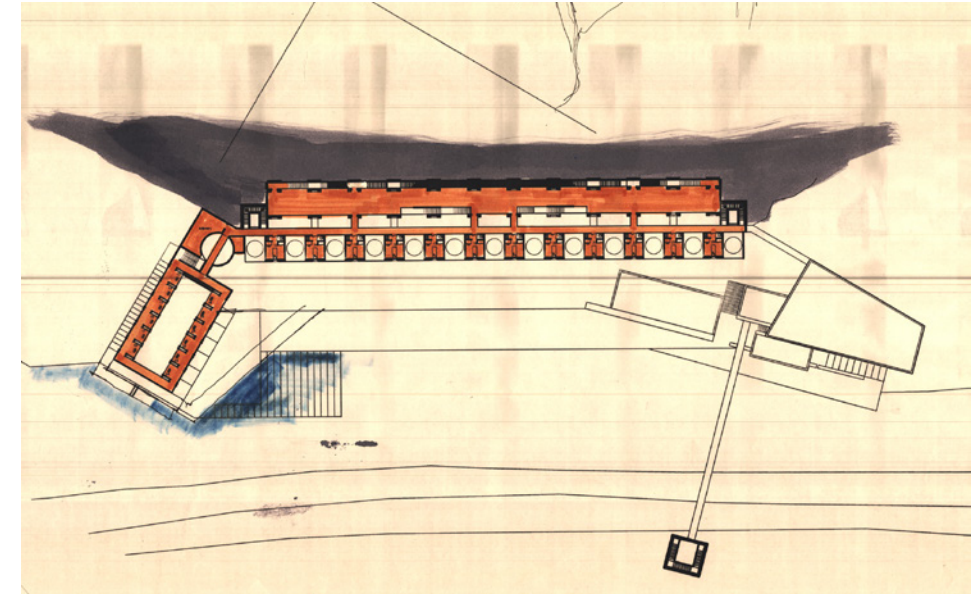
P27



P28

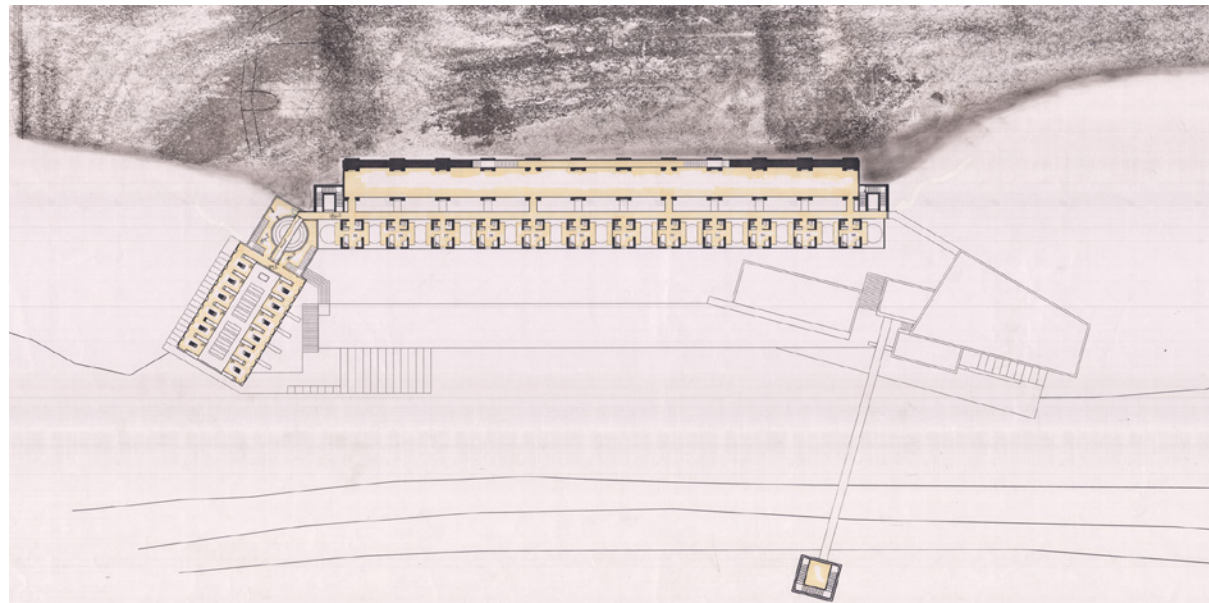


P29

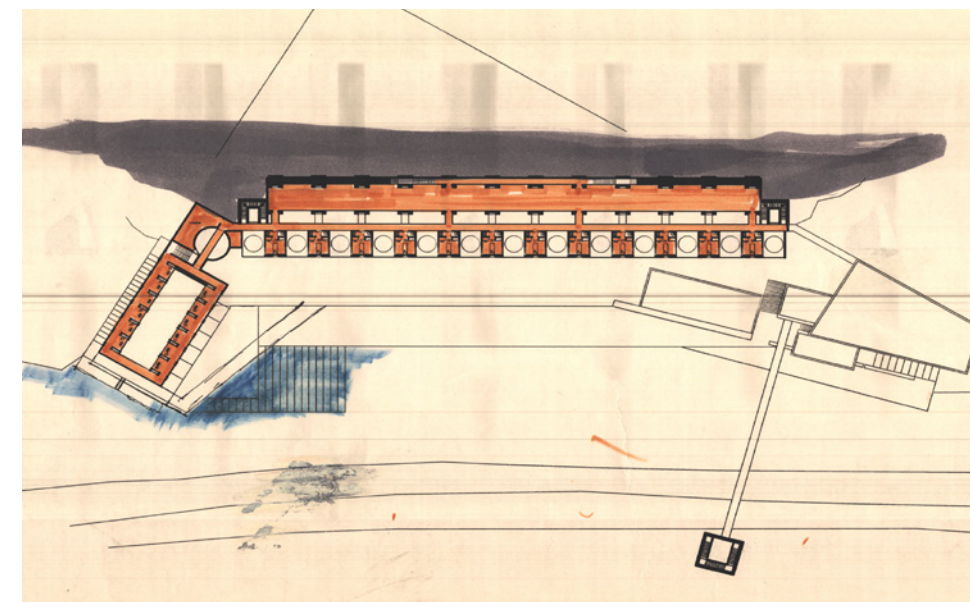


P30

P29 plan with monks' stalls, monks' dorms, calfactory and refectory at elevation 179.00 marker and xylol transfer on digital print P30 penultimate plan with monks' stalls, monks' dorms and calfactory at elevation 179.00: marker and water colour on digital prints P31 plan with monks' stalls, monks' dorms, calfactory and refectory at elevation 196.00 marker and xylol transfer on digital print P32 penultimate plan with monks' stalls, monks' dorms and calfactory at elevation 196.00: marker and water colour on digital prints



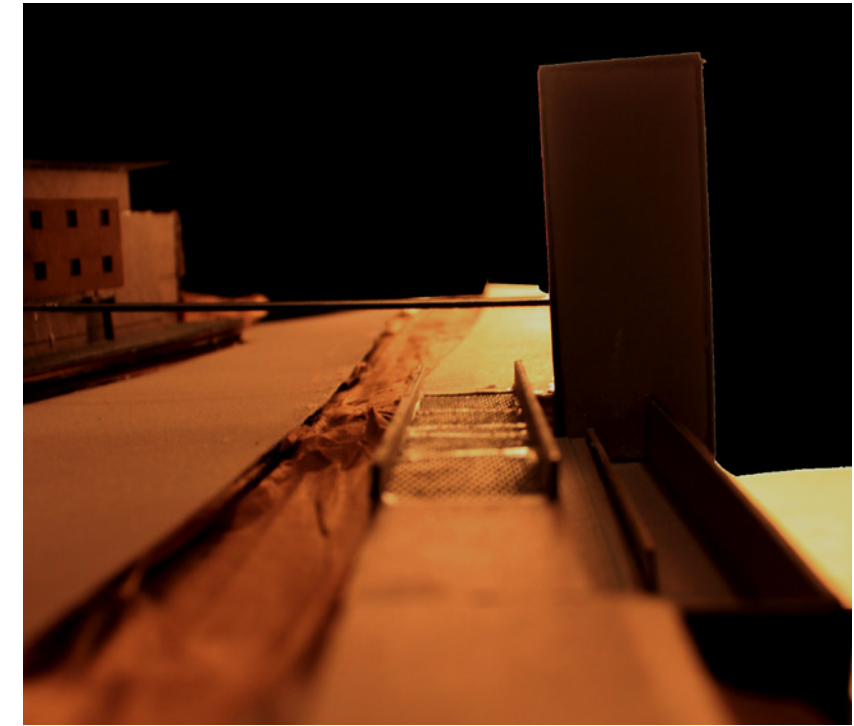
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P32

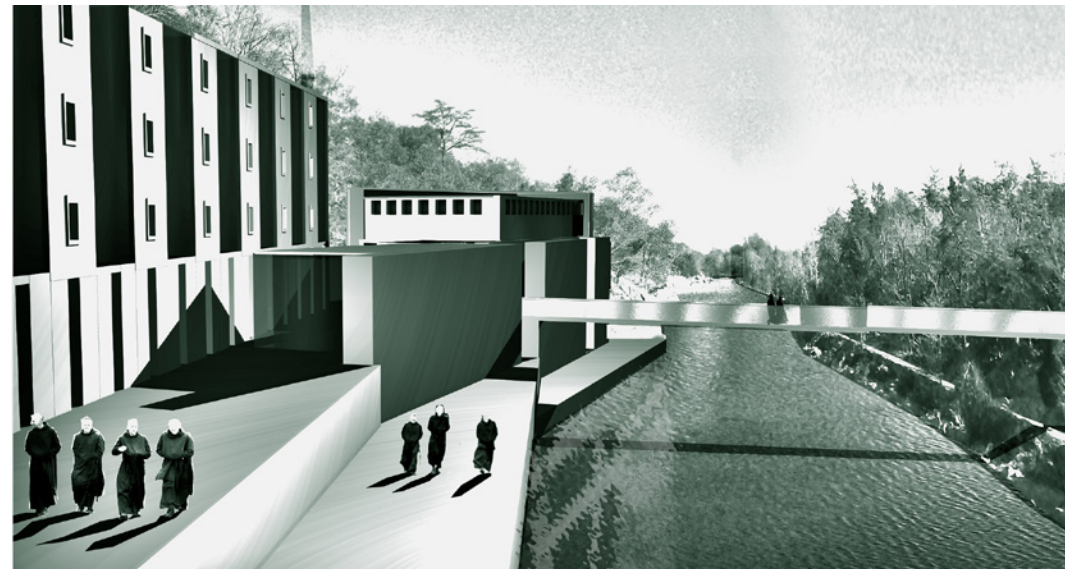


P33

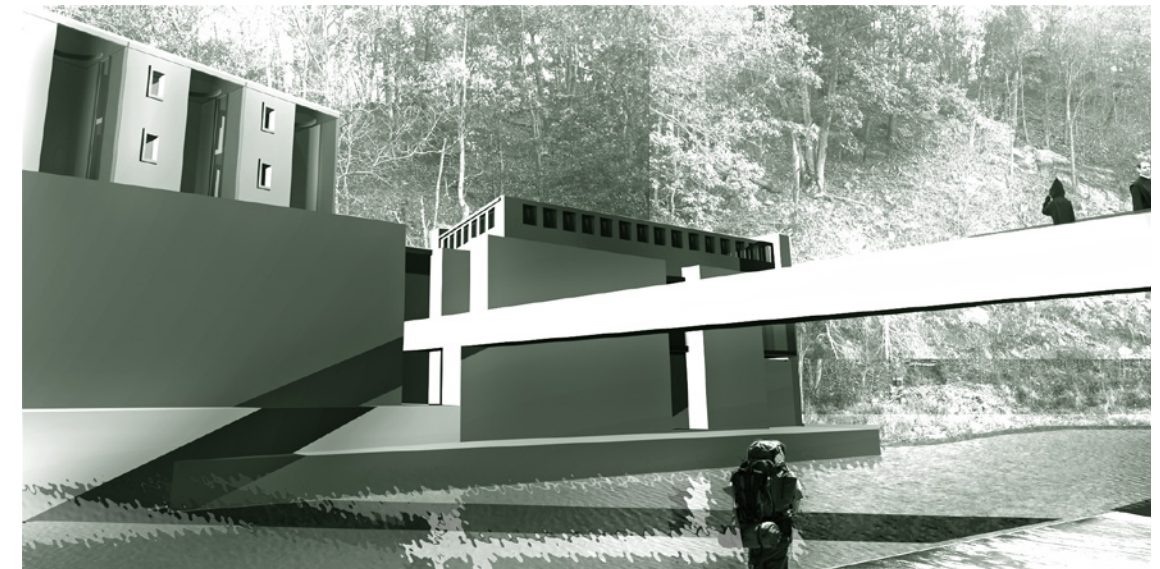


P34

P33 Model: View from towpath towards refectory P34 Model: View from towpath towards tower P35 Perspective: view of lower and main cloister parapet P36 Perspective: View from towpath towards refectory



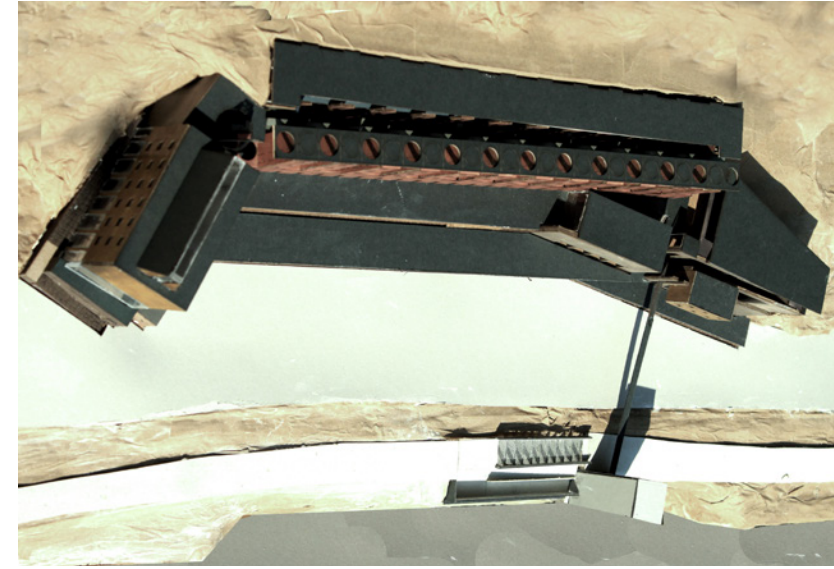
P35



P36



P37

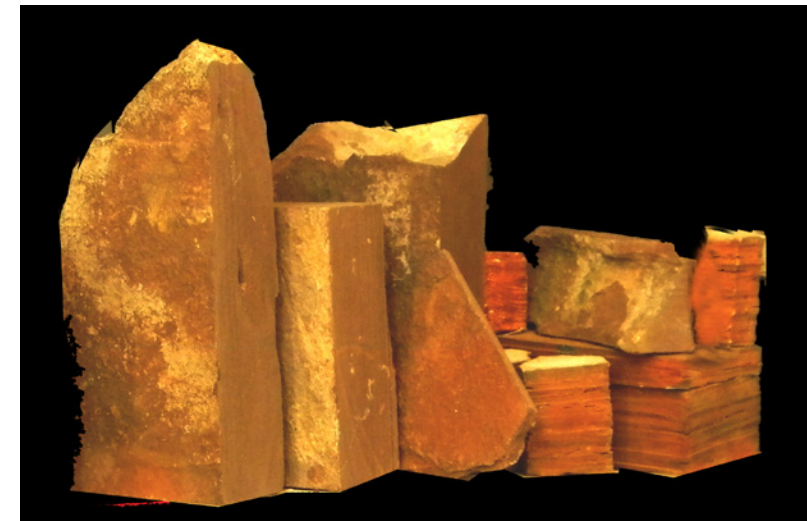


P38

P37 Photo-montage: Model image superimposed on site photo P38 Model: Overall view from top P39 Model: view from canal towards refectory P40 Red Sandstone samples from seneca Quarry and replica from colourized plaster of paris and cardboard for model making



P39



P40

A Monastery for 36 Benedictine Monks

A Corpus of Iconic Materiality Final



PL120

The following drawings and models had the honour of occupying the principal wall designated in the West Room for the occasion of my defense on June 30th, 2011
They presumed to amalgamate the preceding research works and design exercises, desk crits, pin ups, midterms and finals.

Part 4

*Solid bone, meaty flesh, amniotic fluid,
spine limbs tissues, veins stems brows
Warm breath, filling voice, electric mind,
tendrils bark roots apertures petals shrouds*

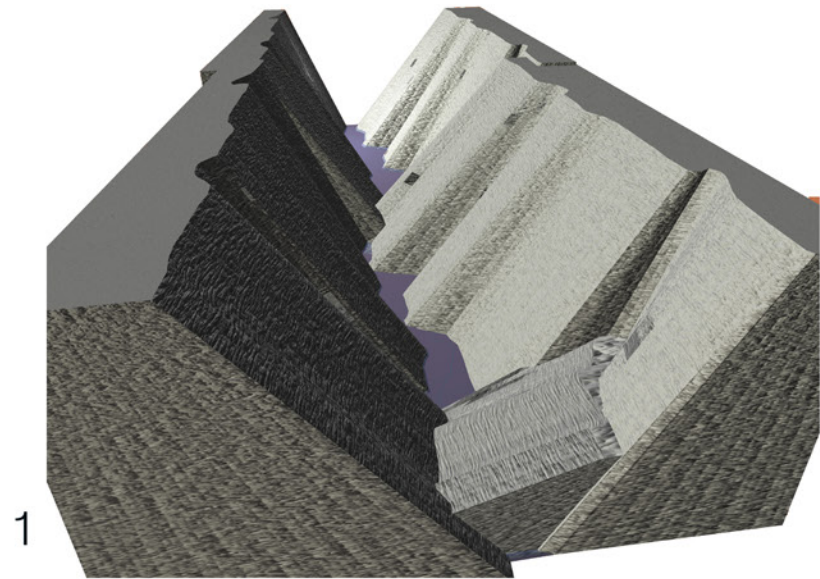
*A creature, a torso, a shadow of organs
articulated innards for the overwhelming breadth ,
A vessel of beings for the harrowing distance
horns tails arms and face for the immeasurable depth*

*The beginning displaced relenting to the end
invoking beginnings with susceptible old scars
But allowed to exist - anywhere as a state
with Imploring prints, suggestible fresh marks*

Index of Prints:

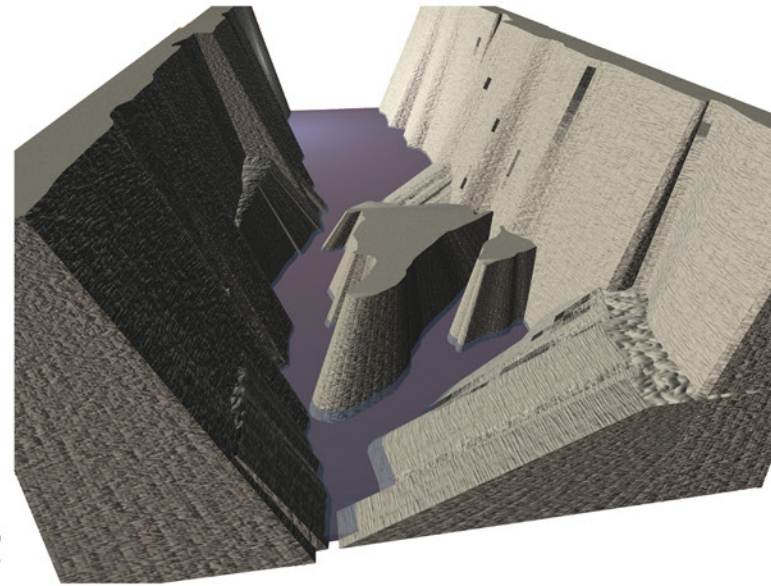
1. GEOLOGICAL HISTORY OF THE POTOMAC VALLEY AT MARY'S WALL
2. SITE PLANS
3. LOWER PARAPET PLAN - CATACOMBS, SHOP
4. UPPER PARAPET PLAN - CANAL LAB, ROSARY CLOISTER, CHAPEL
5. FIRST FLOOR OF DORMITORY, GEOLOGICAL CLOISTER, MONK STALLS, REFECTORY
6. SECOND FLOOR OF DORMITORY, GEOLOGICAL CLOISTER, AND MONK STALLS
7. THIRD FLOOR OF DORMITORY, GEOLOGICAL CLOISTER, AND MONK STALLS
8. TRANSVERSE AND LONGITUDINAL BUILDING SECTIONS - CLOISTER
9. LONGITUDINAL BUILDING SECTION - CHAPEL AND SLYPE
10. LONGITUDINAL BUILDING SECTIONS - CANAL LAB + SHOP, REFECTORY, GUEST QUARTERS
11. WEST ELEVATION OF MONASTREY - FROM CANAL AND FROM RIVER
12. NORTH ELEVATION - CHAPEL
13. WEST ELEVATION - CHAPEL
14. SOUTH ELEVATION - CHAPEL
15. CHAPEL INTERIORS
16. WEST ELEVATION - SHOP + CANAL LAB, REFECTORY, GUEST QUARTERS
17. SOUTH ELEVATION - REFECTORY, KITCHEN, FRONT PARLOUR, MAIN GATE
18. SECTION DETAIL - ROSARY CLOISTER + MONK DORMITORY
19. SECTION DETAIL - ROSARY CLOISTER + HEARTH + CALFACTORY
20. SECTION DETAIL - CATACOMB + CHAPEL + MONK STALLS
21. SECTION DETAIL - TROUGH + WATER TOWER
22. HYBRID DETAIL - TROUGH + WATER TOWER
23. DETAILS - DORMITORY WALL + PARAPET
24. DETAILS - WATER IMPOUNDING AT LEVEE
25. DETAILS - BELL HOUSE
- 26-29 FINAL MODELS

FORMATION OVER MILLIONS OF YEARS



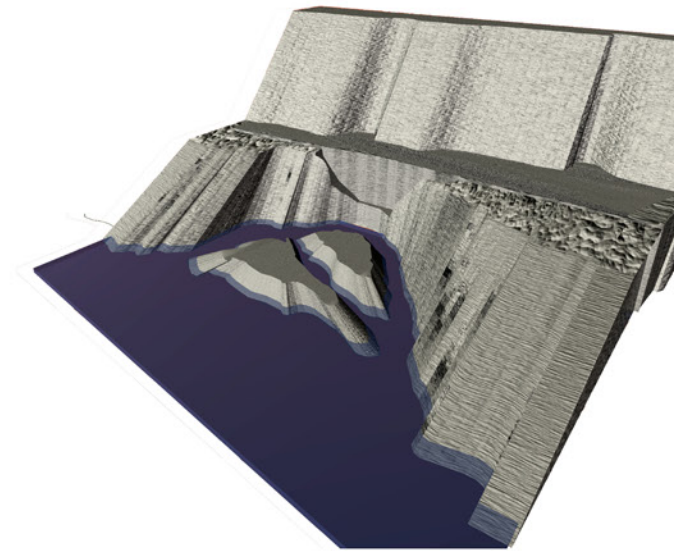
1

Formation of a river valley over millions of years of relentless erosion of landmass by water



2

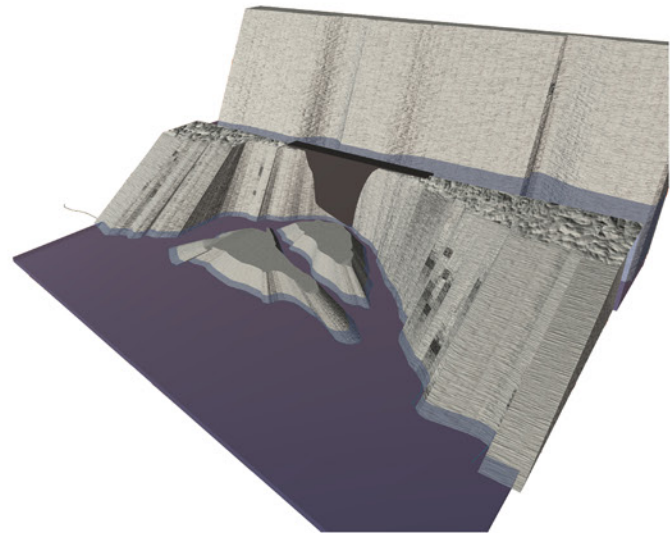
over time the part of land mass that the river meets head on will split creating a gorge



3

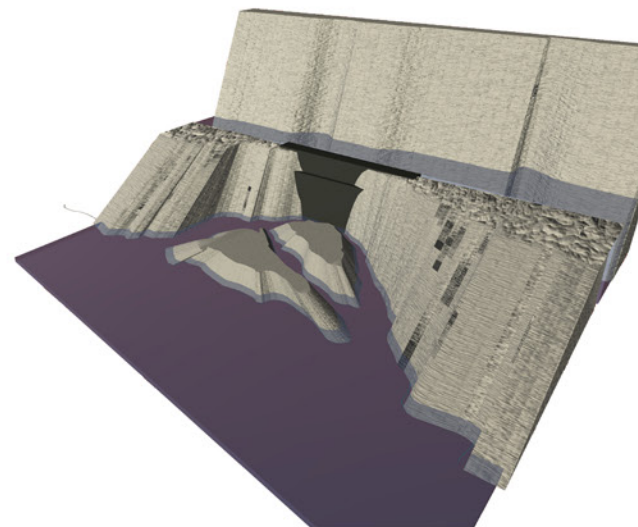
the remaining landmass left is what is now rocky island. because the river is forced to change direction at gorge, it is now meeting the valley wall head on. Over time the valley wall is eroded and weakened

INTERVENTION OVER 187 YEARS



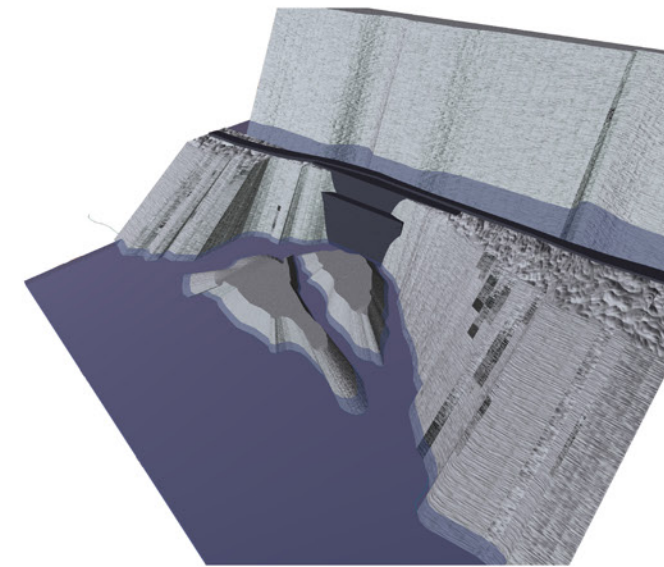
4

The canalers needed to reinforce a part of the gorge to make sure that the wall of the gorge could withstand the pressure from the volume of the canal water



5

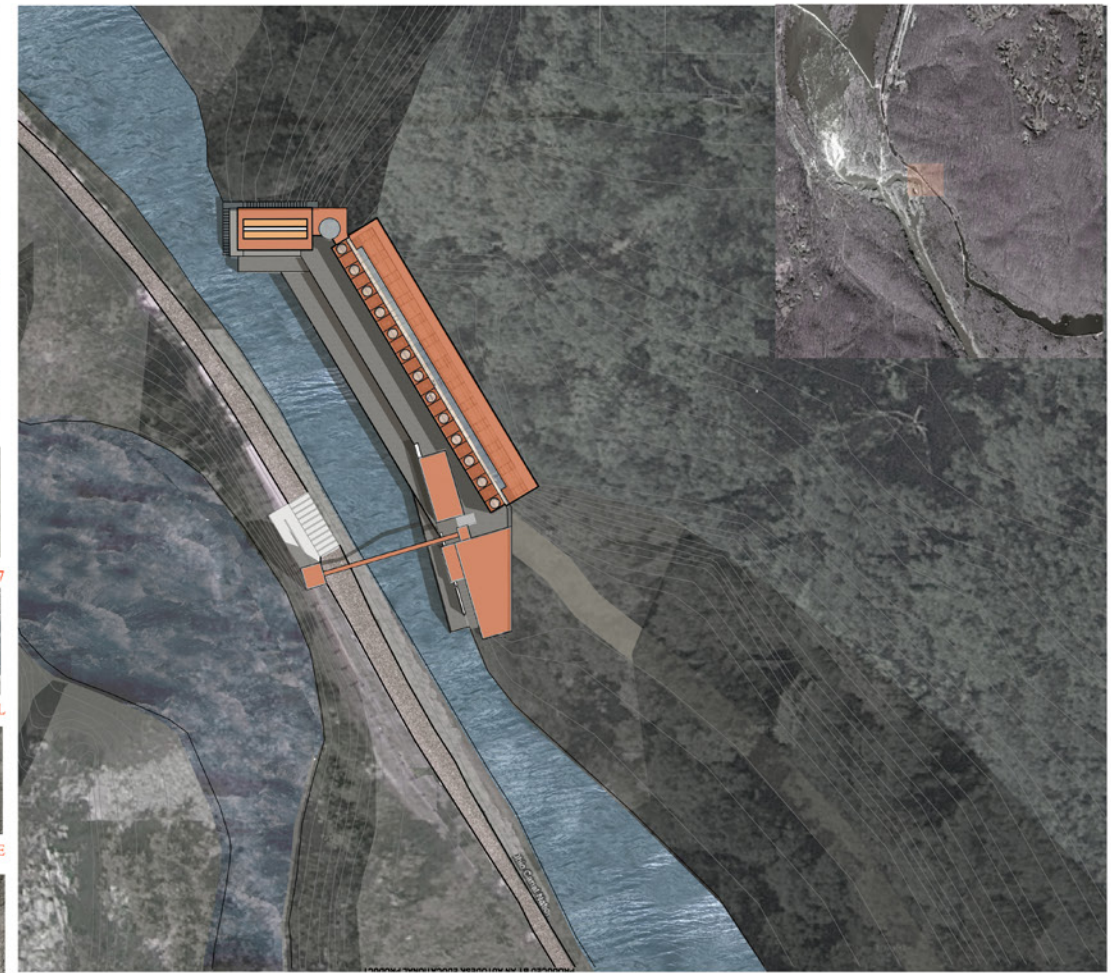
The canalers had to build an additional buttress wall to support the initial filler wall that acts both as a towpath and as a trough carrying canal water



6

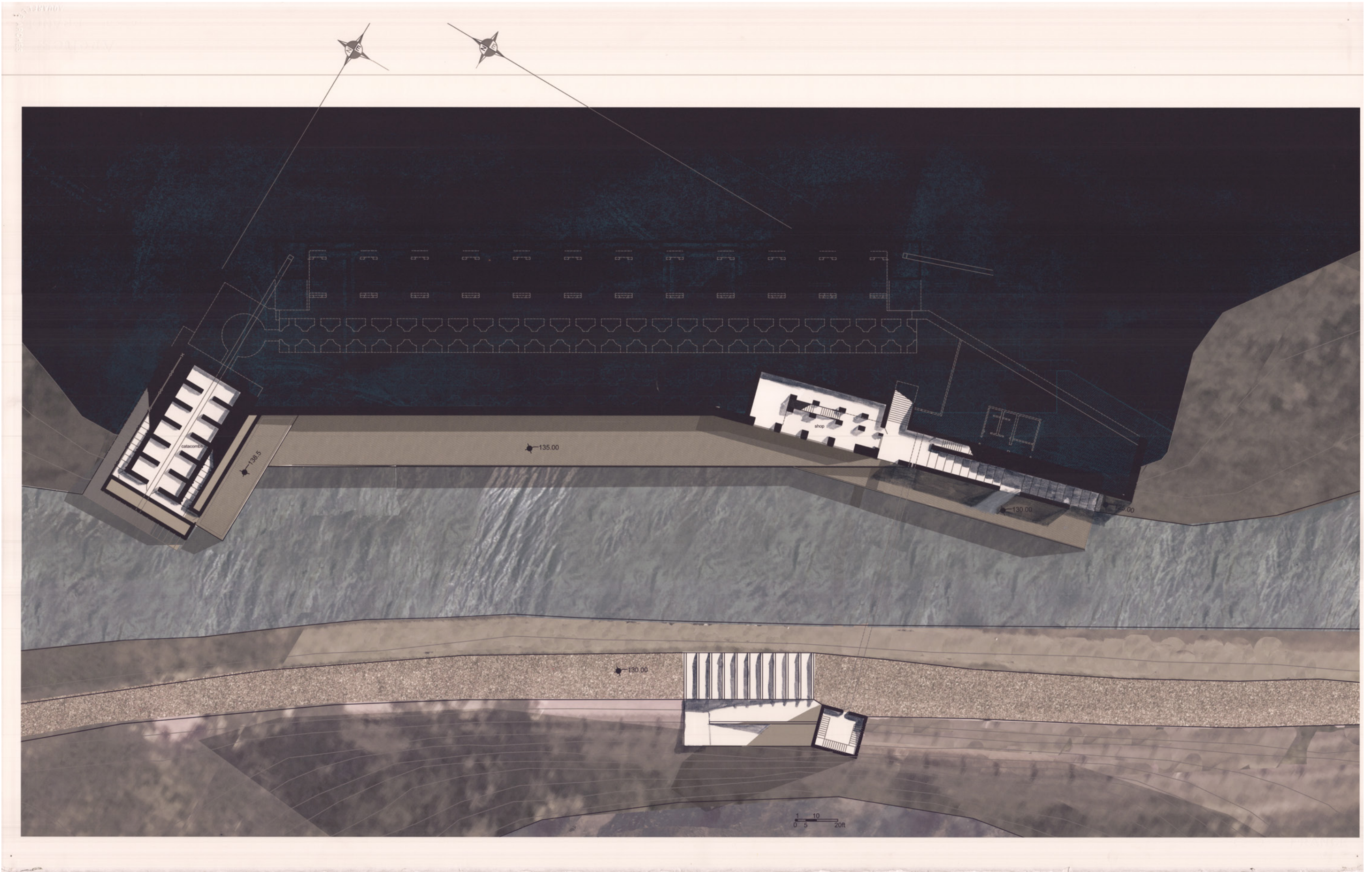
With the filler and buttress walls built in and the canal dug, the final work for the canalers was building the tow path.

THE GORGE AT ROCKY ISLANDS & MARY'S WALL

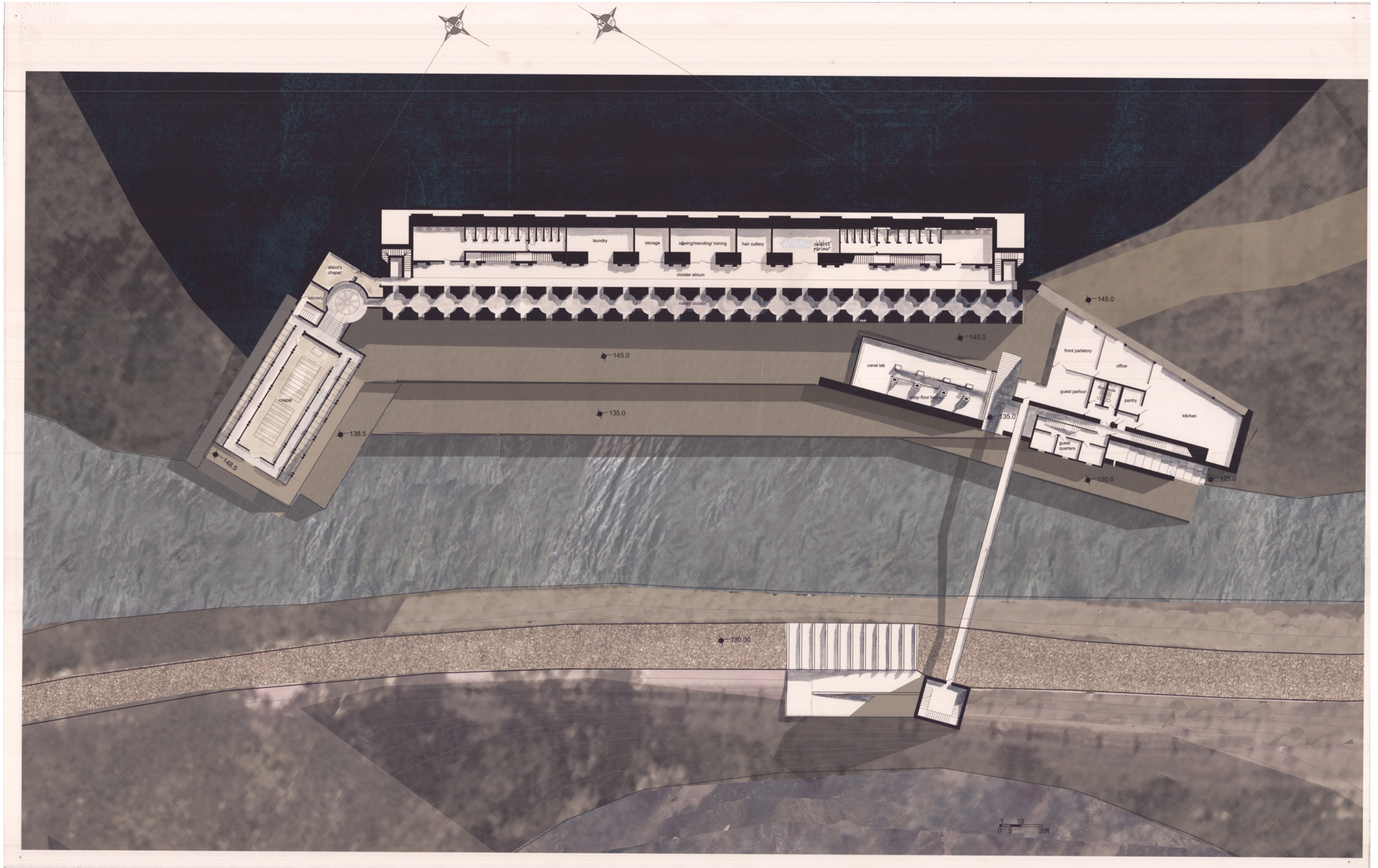


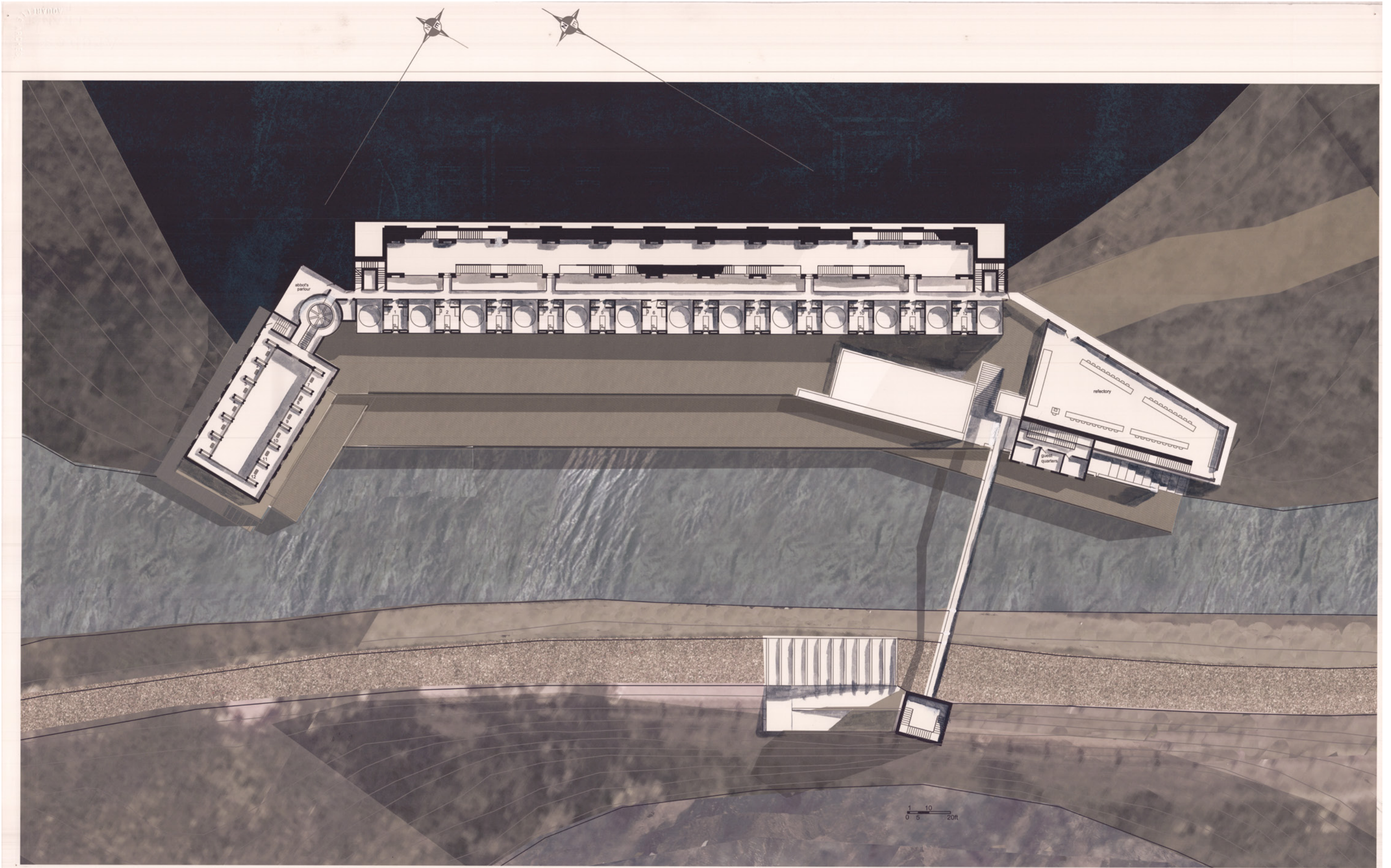
C1 extent of canal under the custody of the monks C2 location map, site in relation to Washington, DC C3 site plan C4 site vicinity, Great Falls, Rocky Islands and Mather Gorge C5 Mary's wall

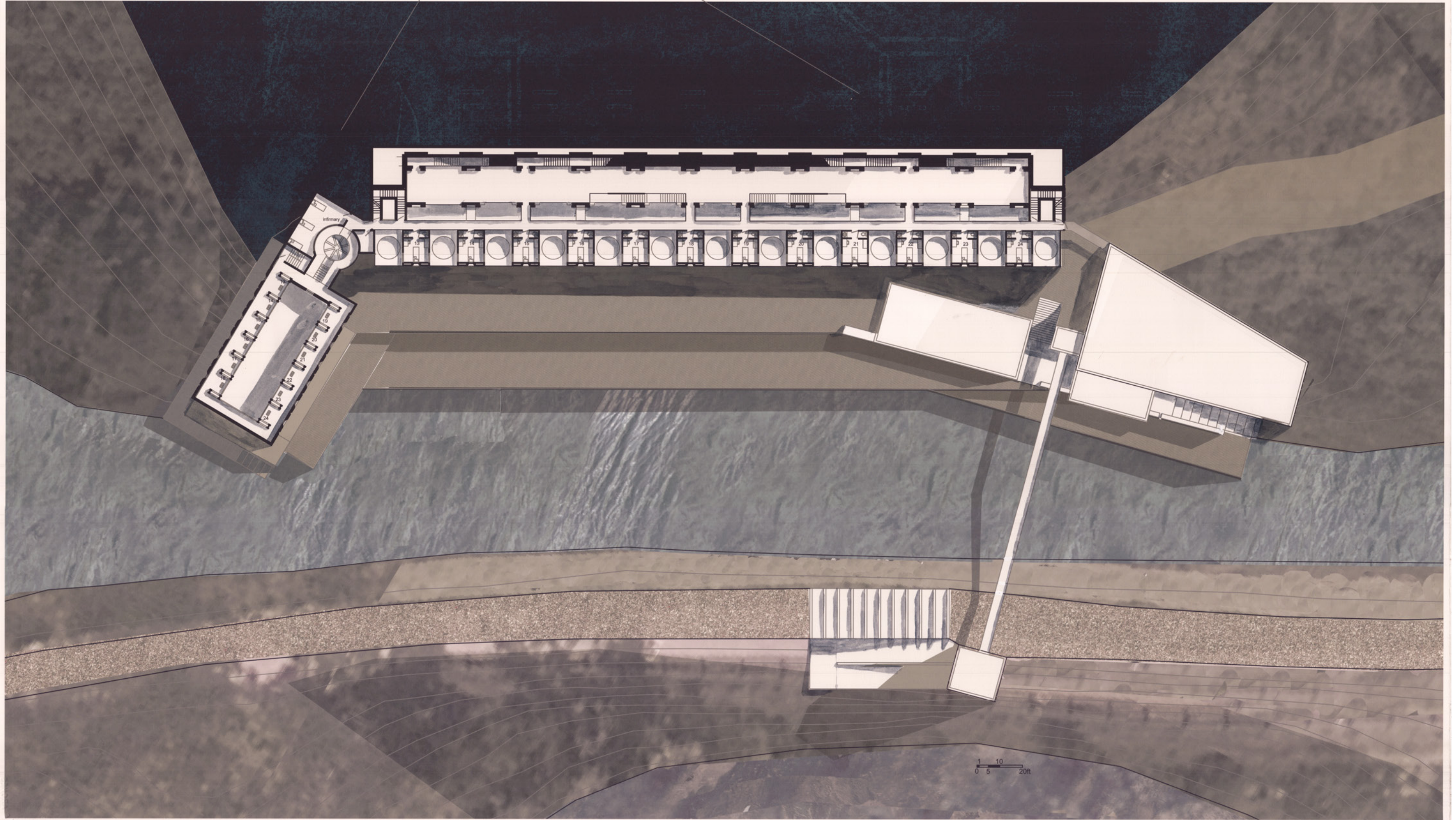
+ 135.00

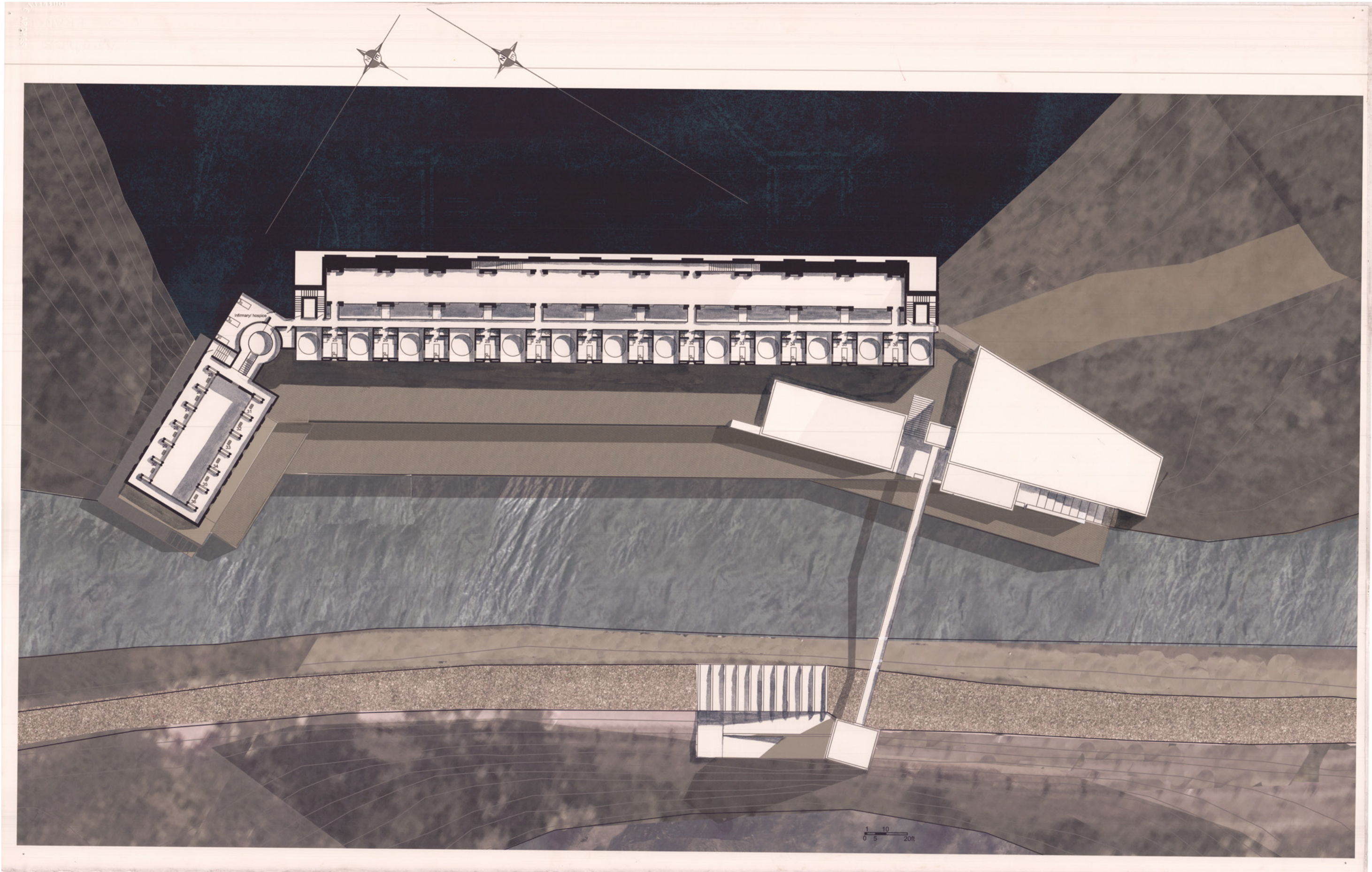


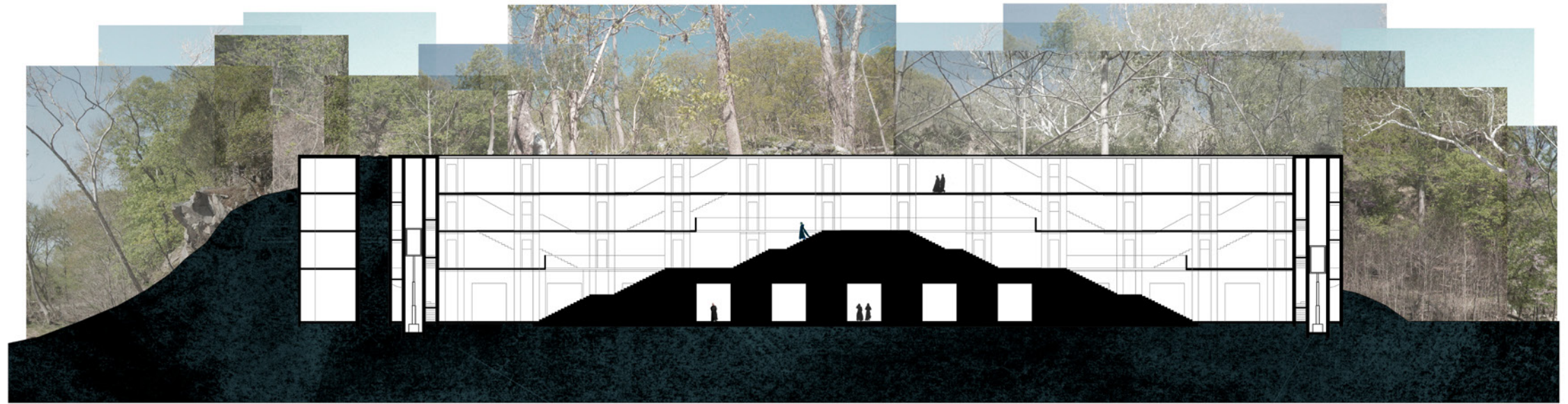
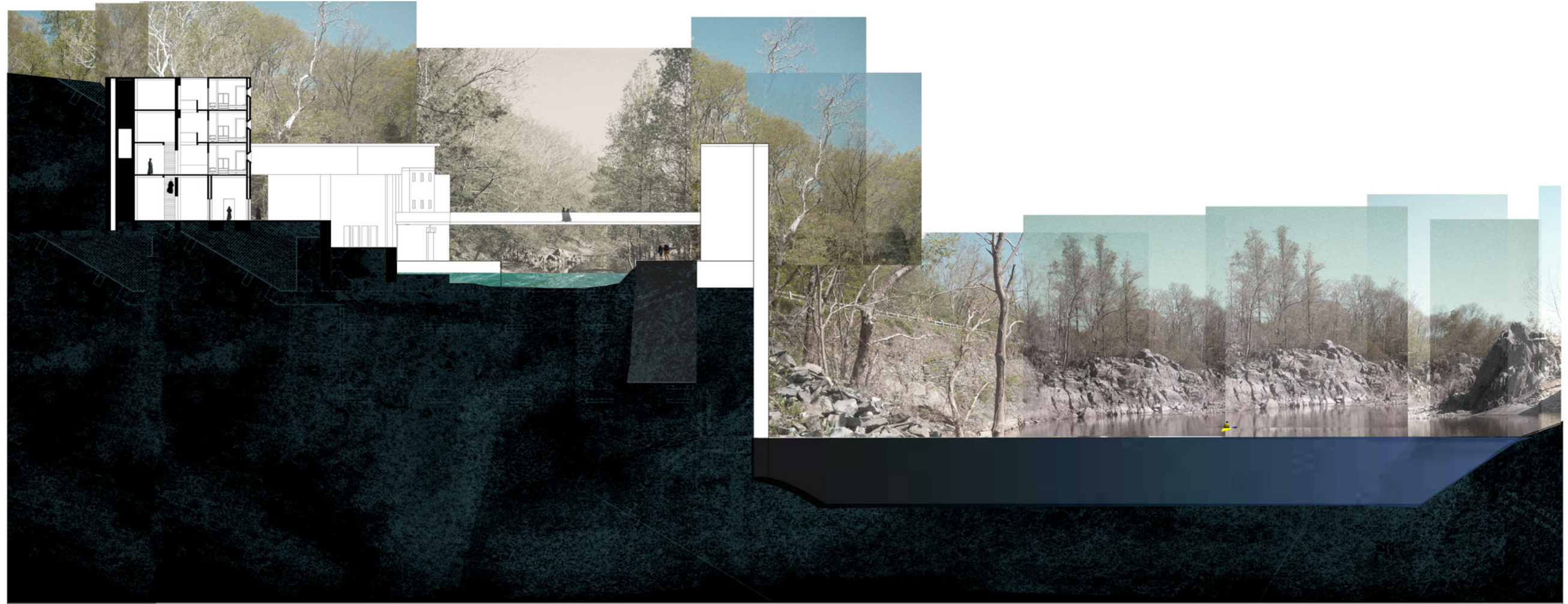
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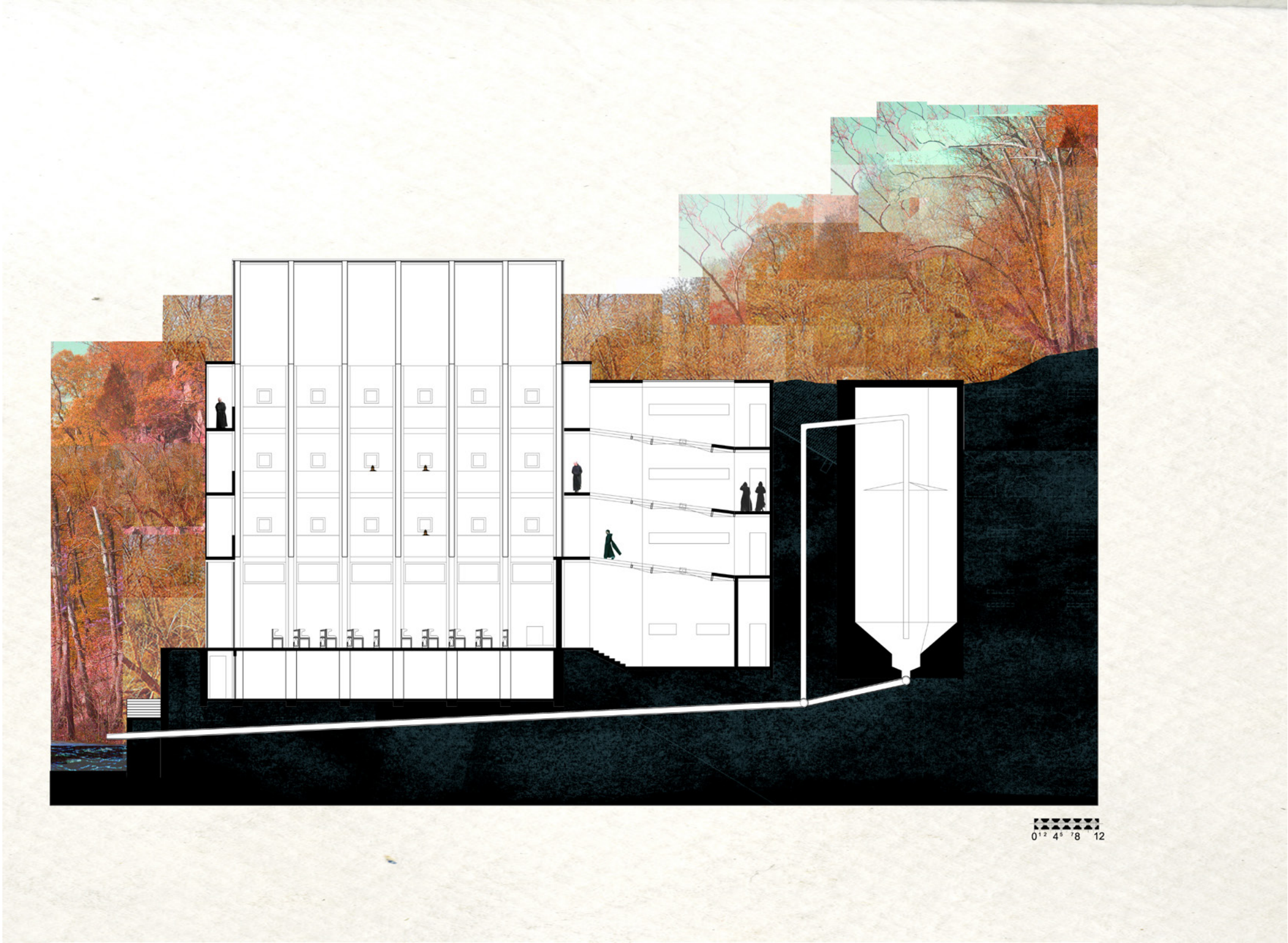


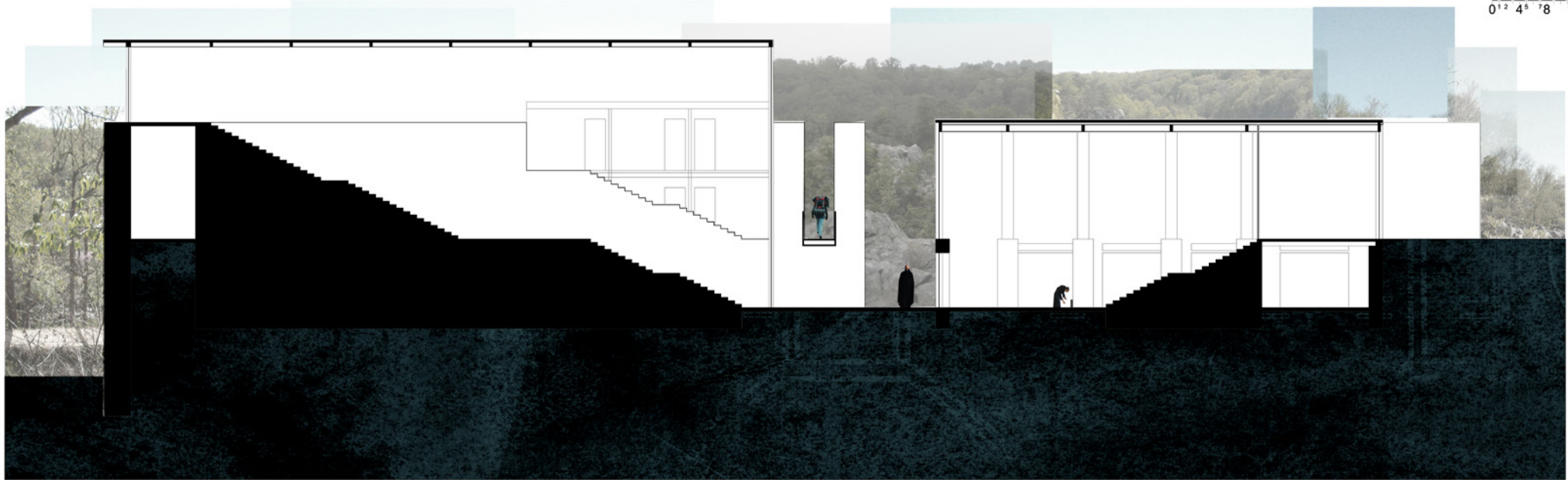
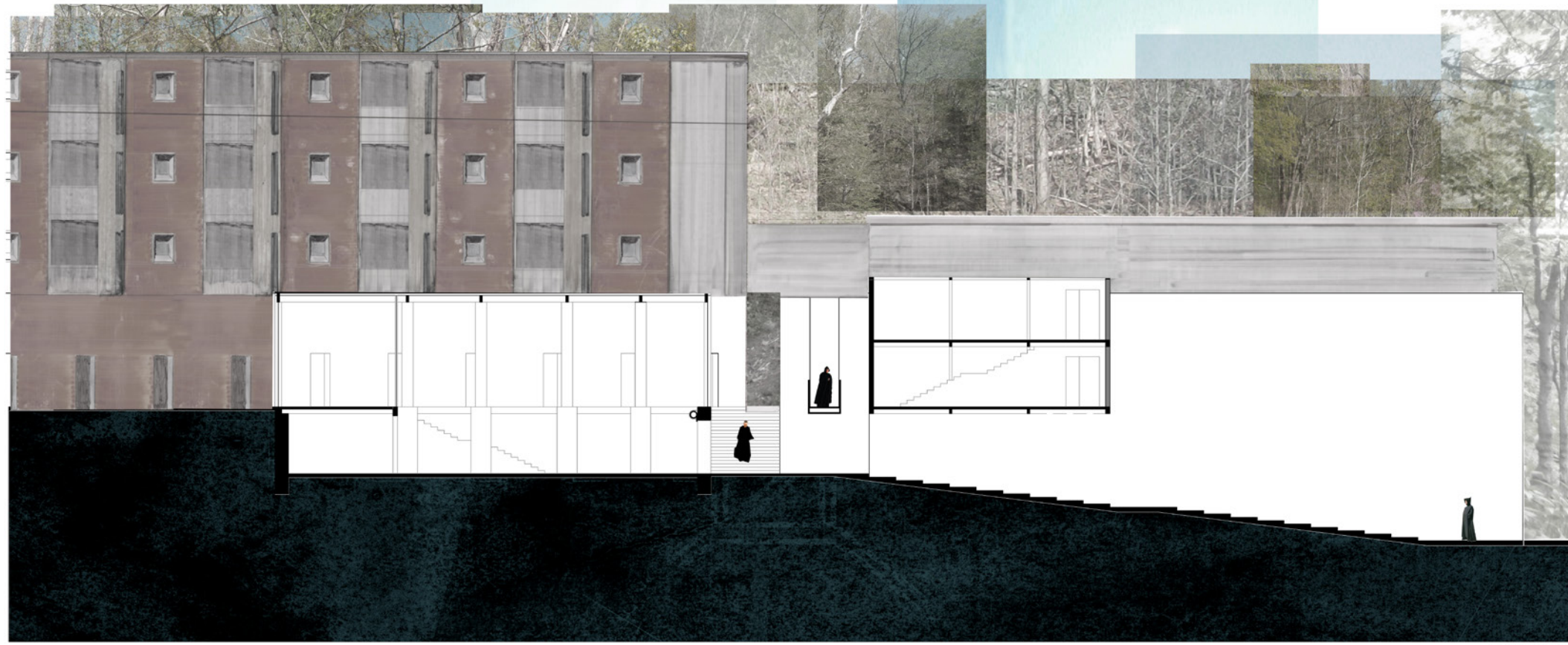


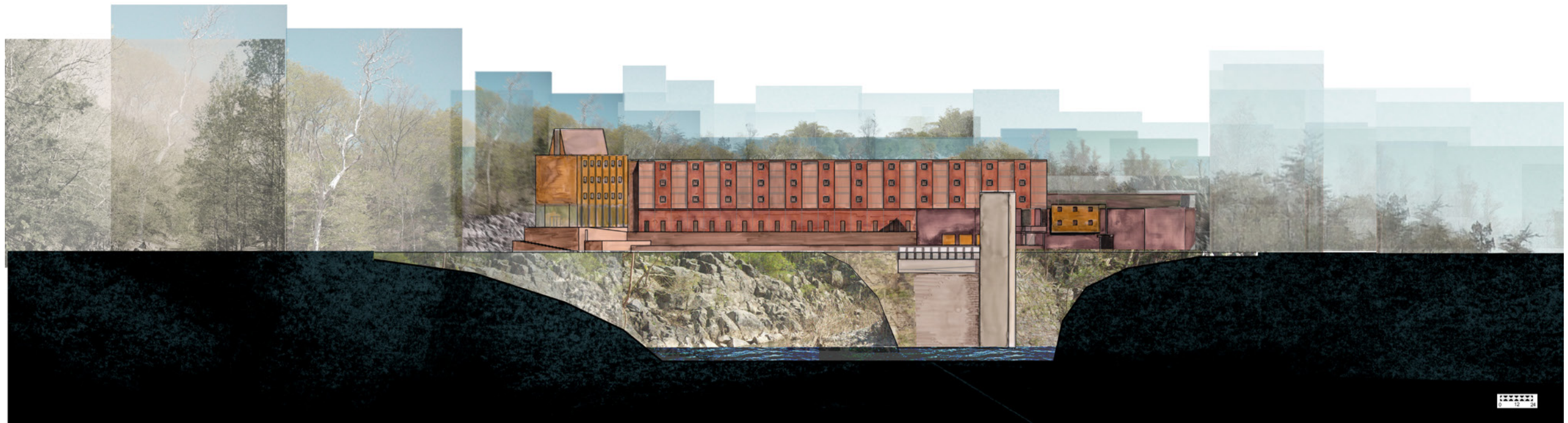


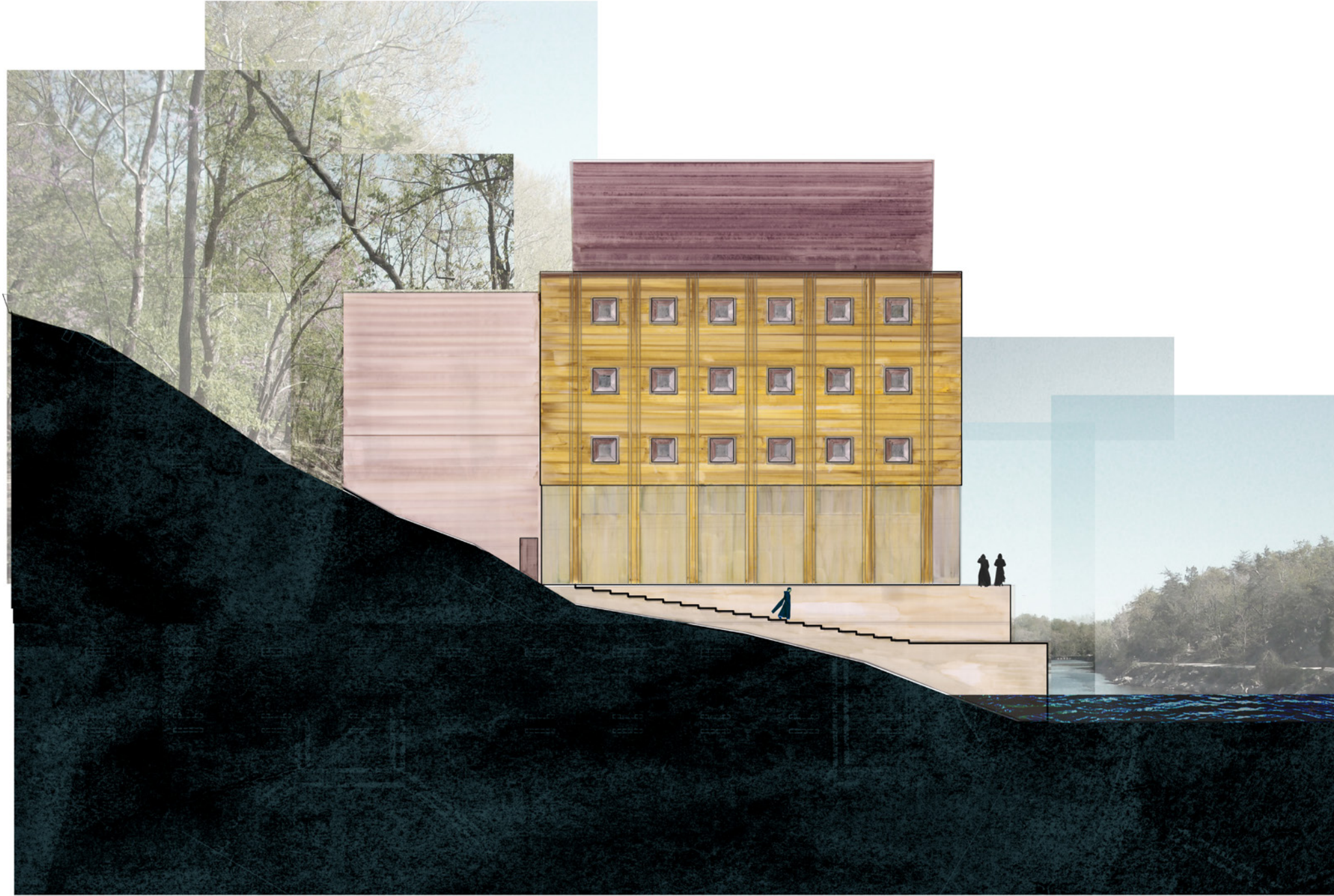




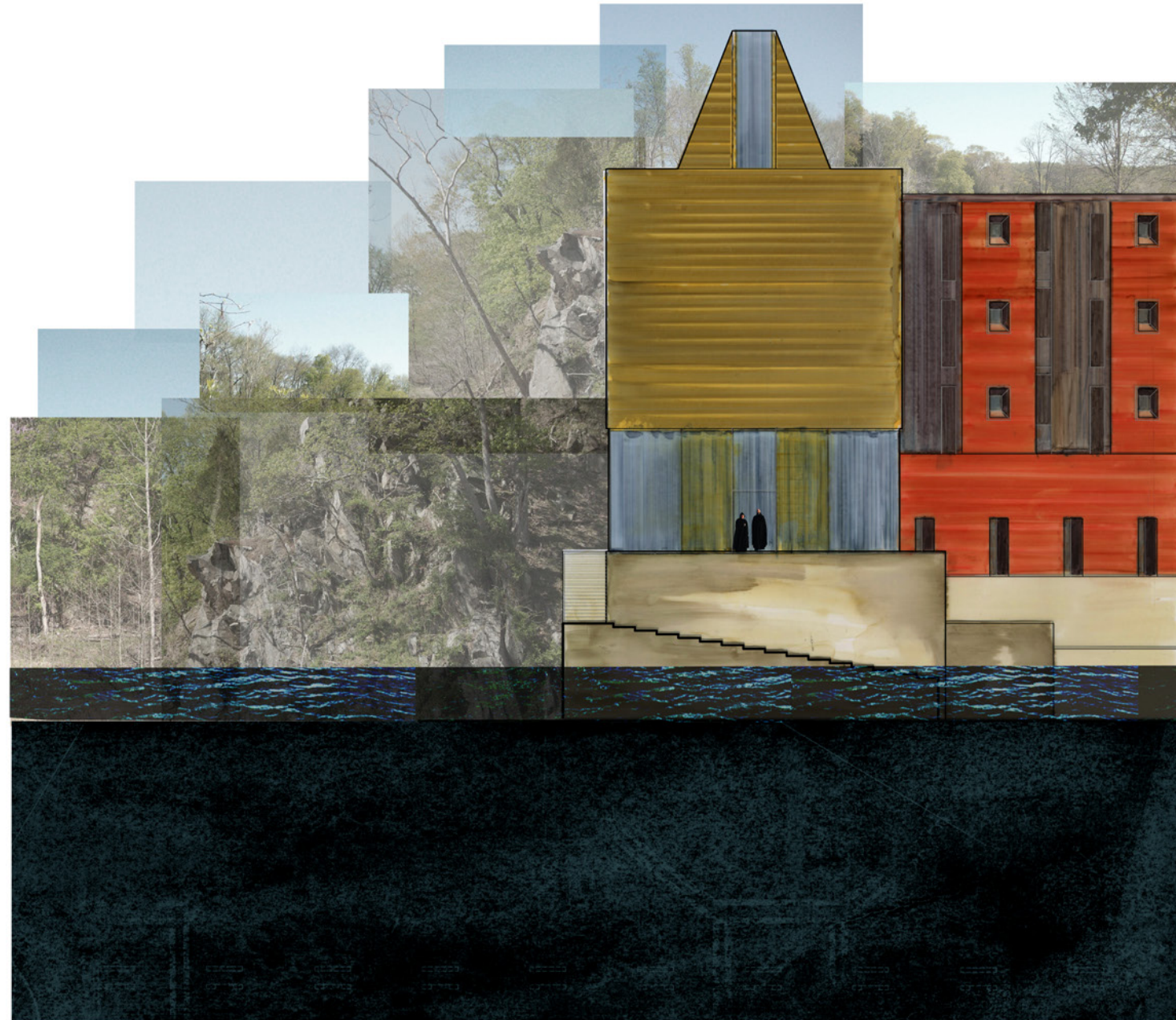




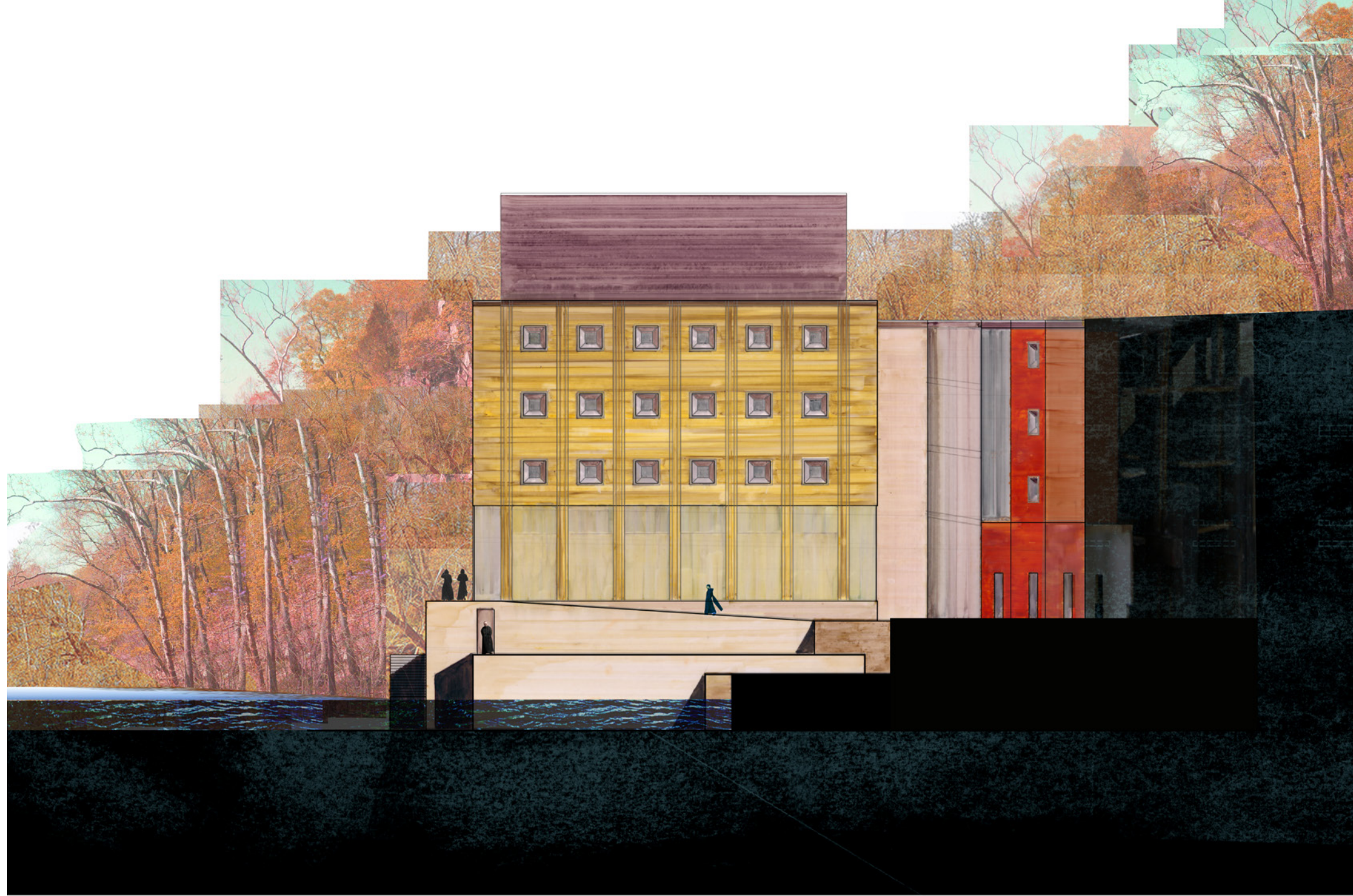




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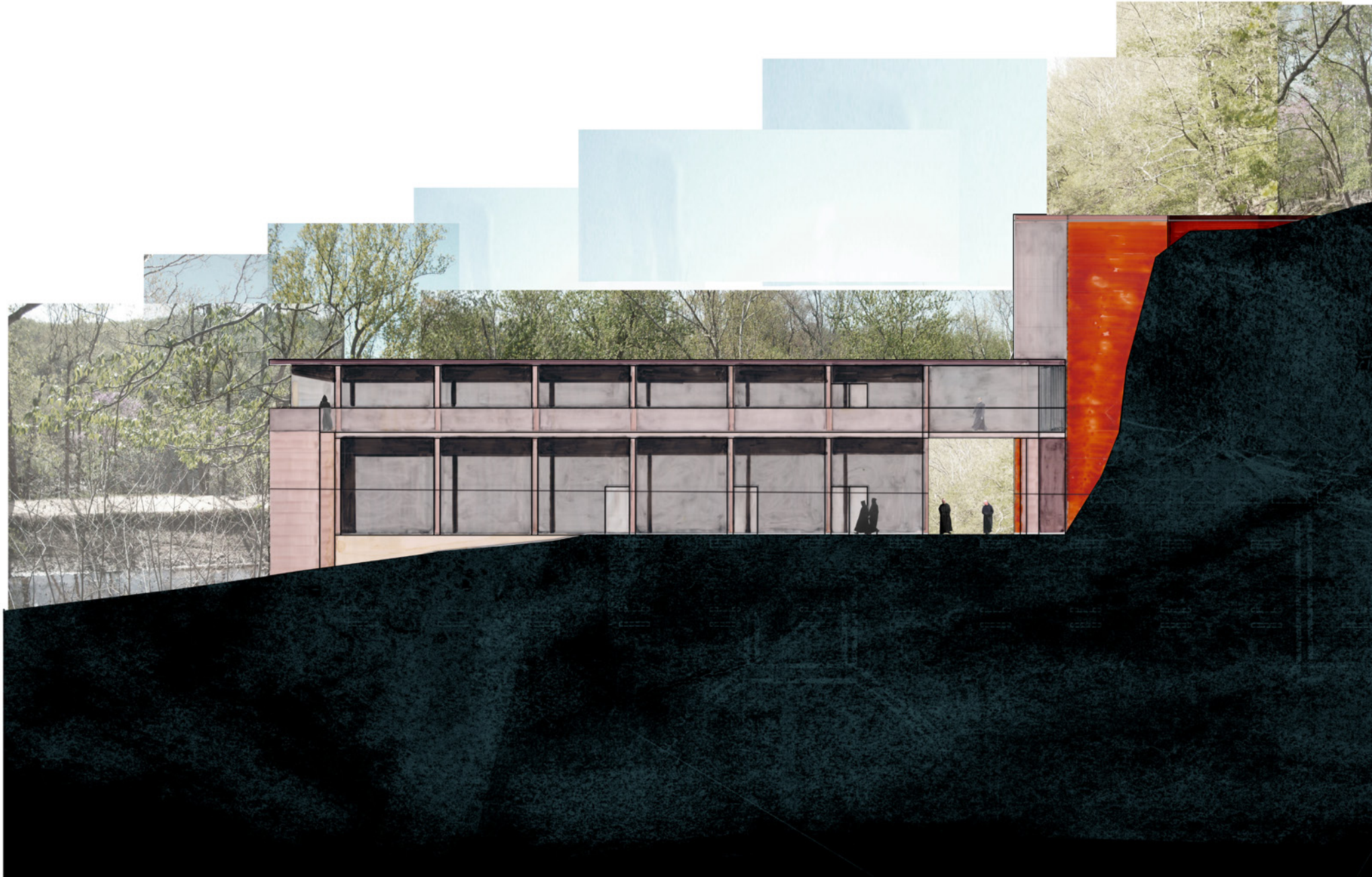


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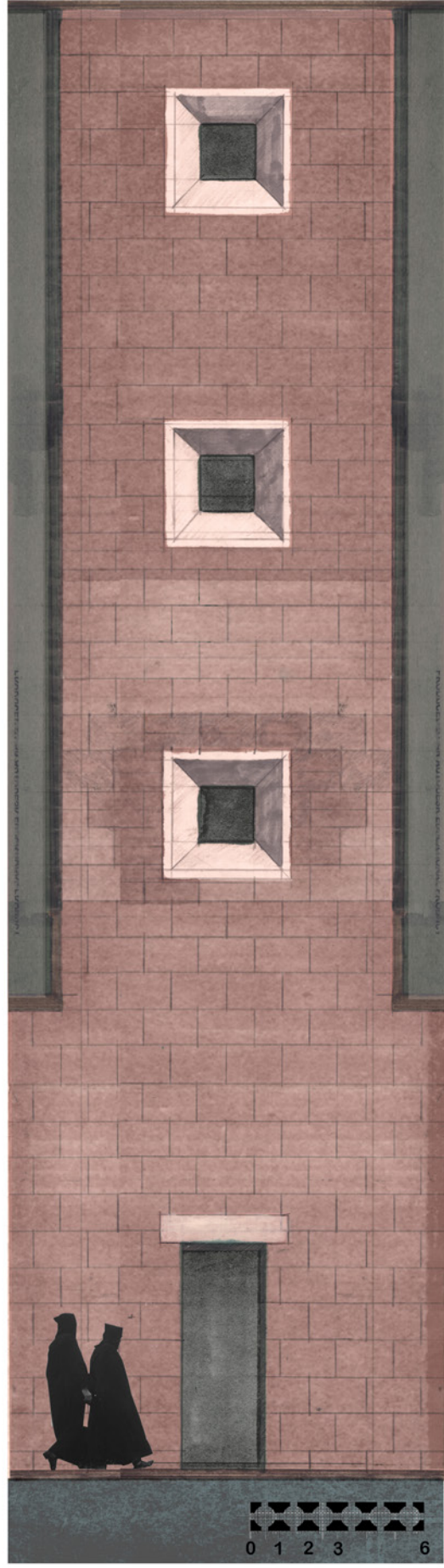
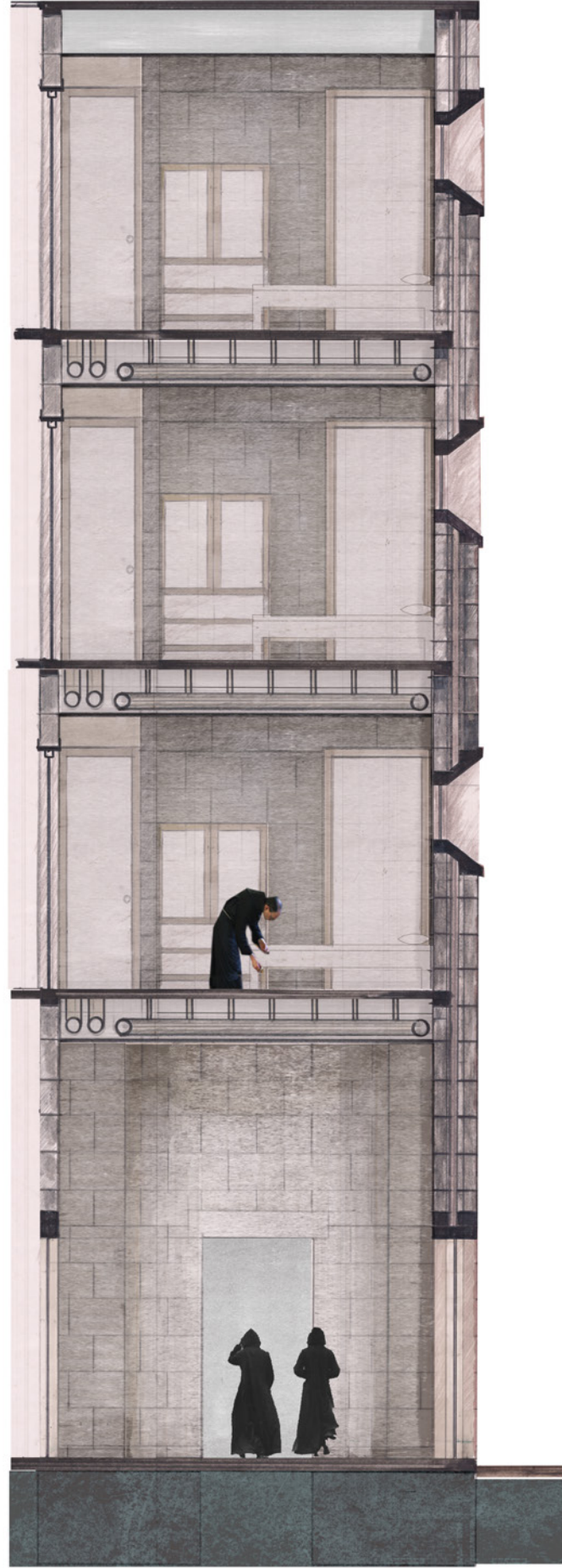


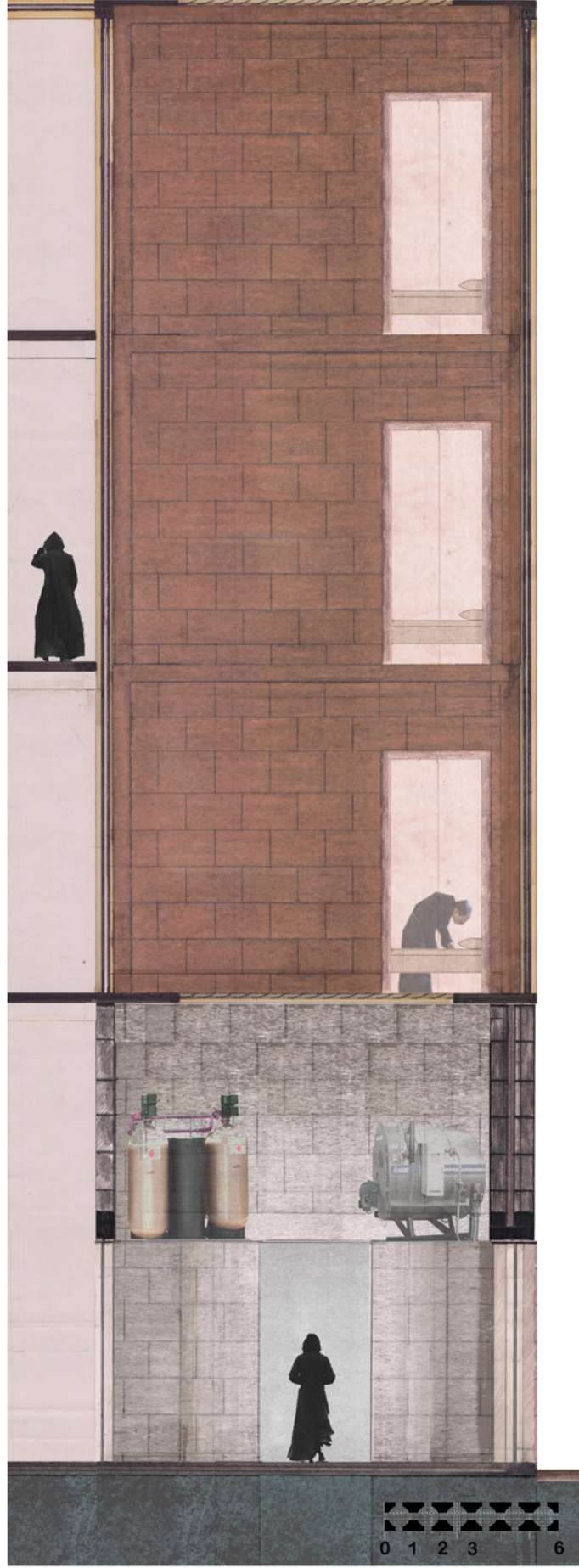


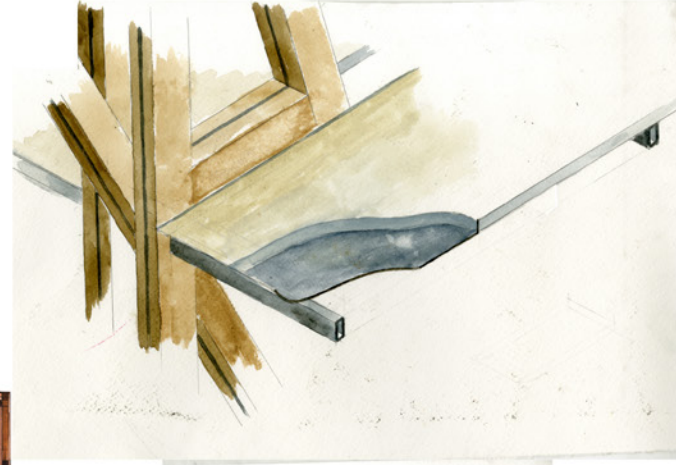
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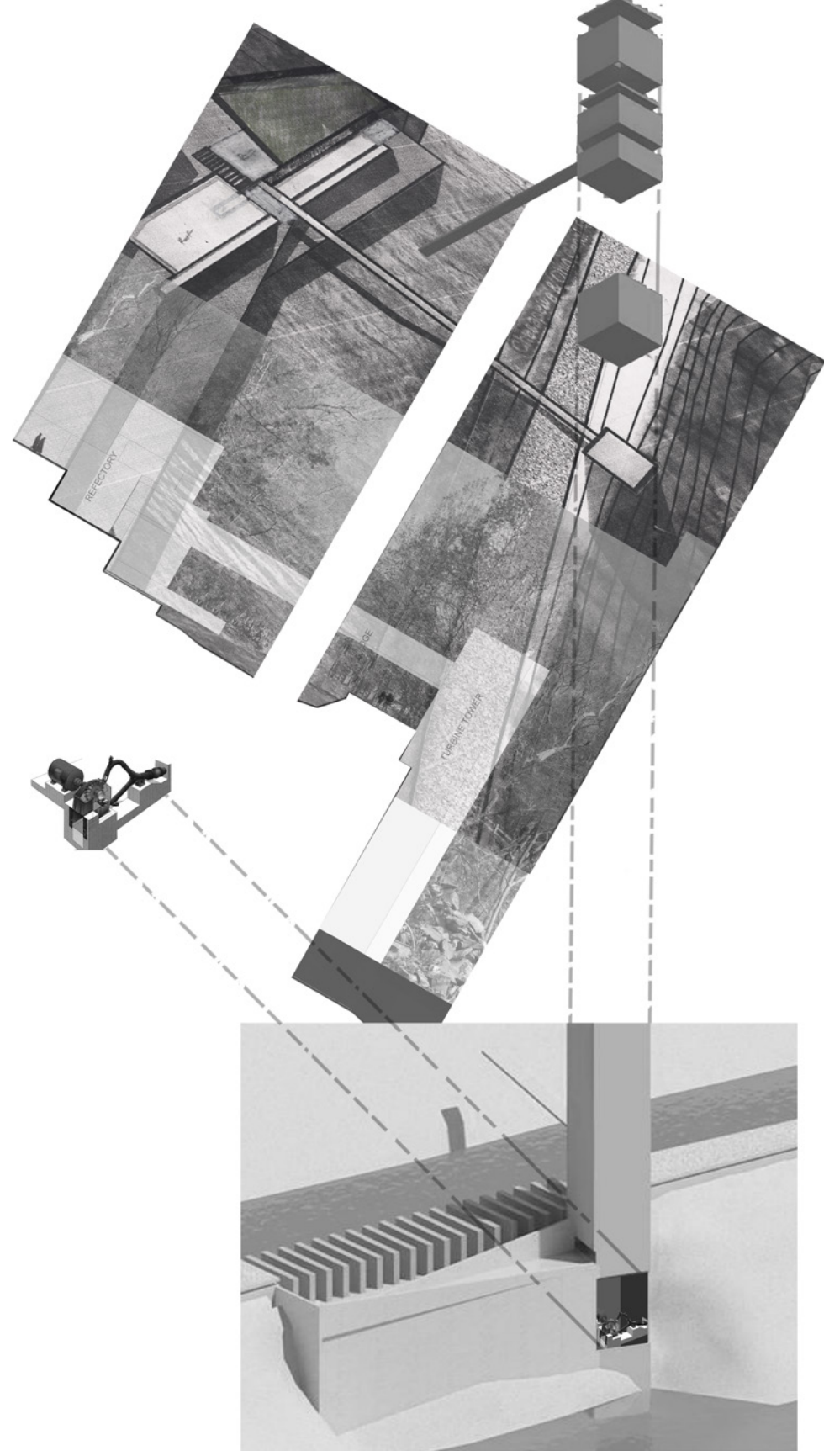
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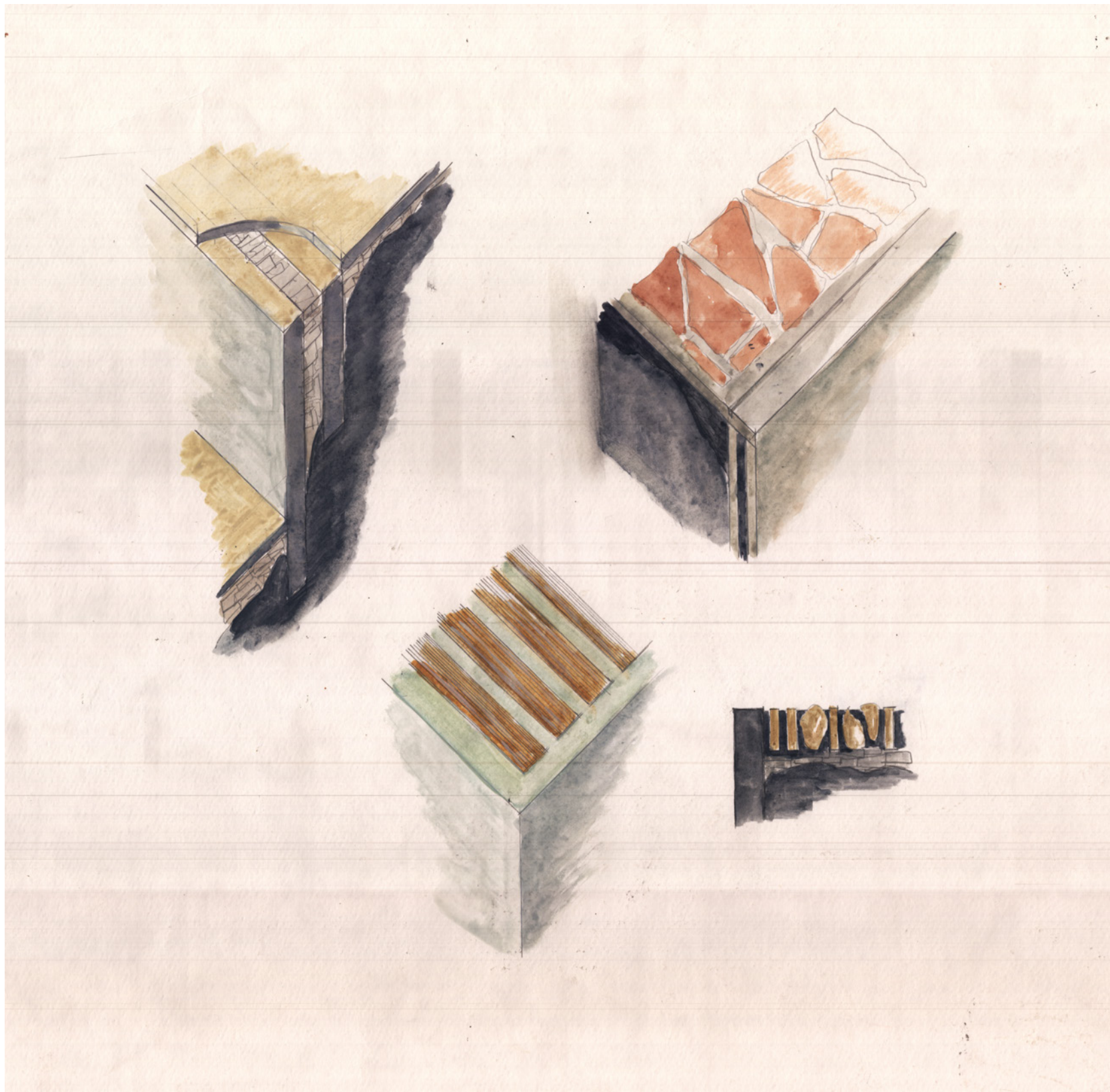
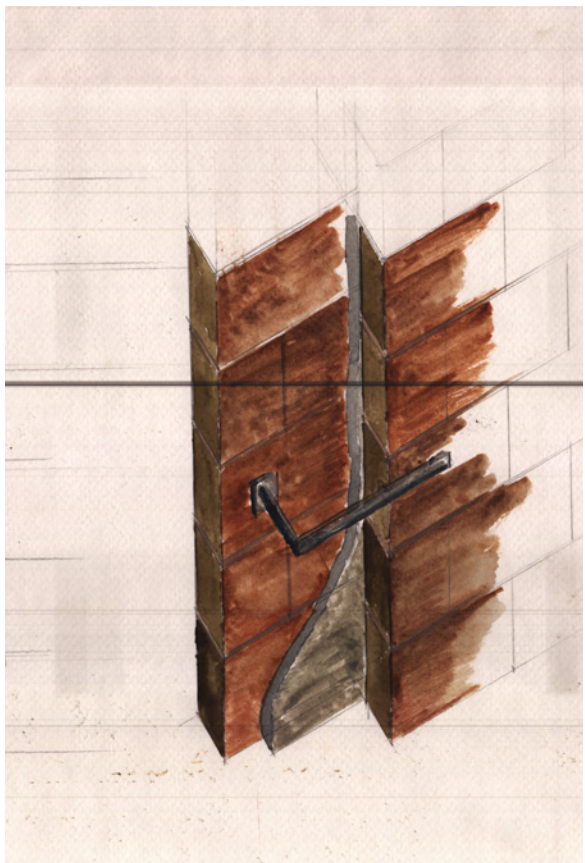
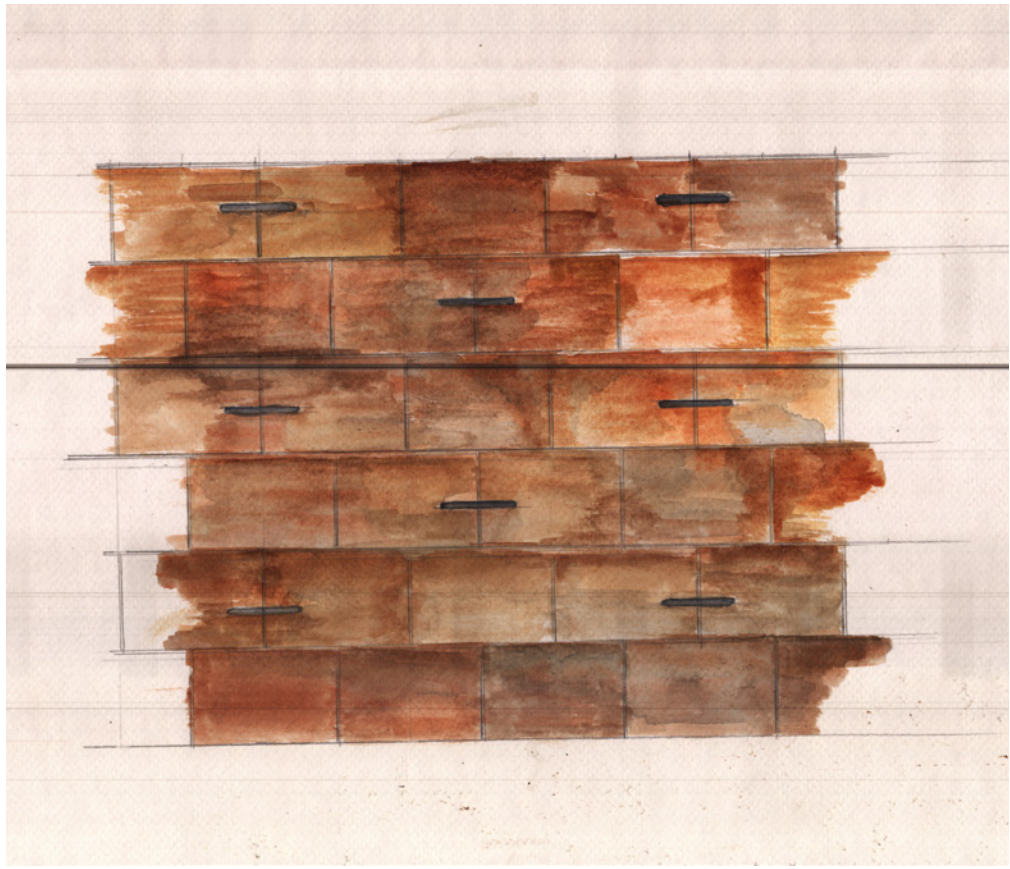


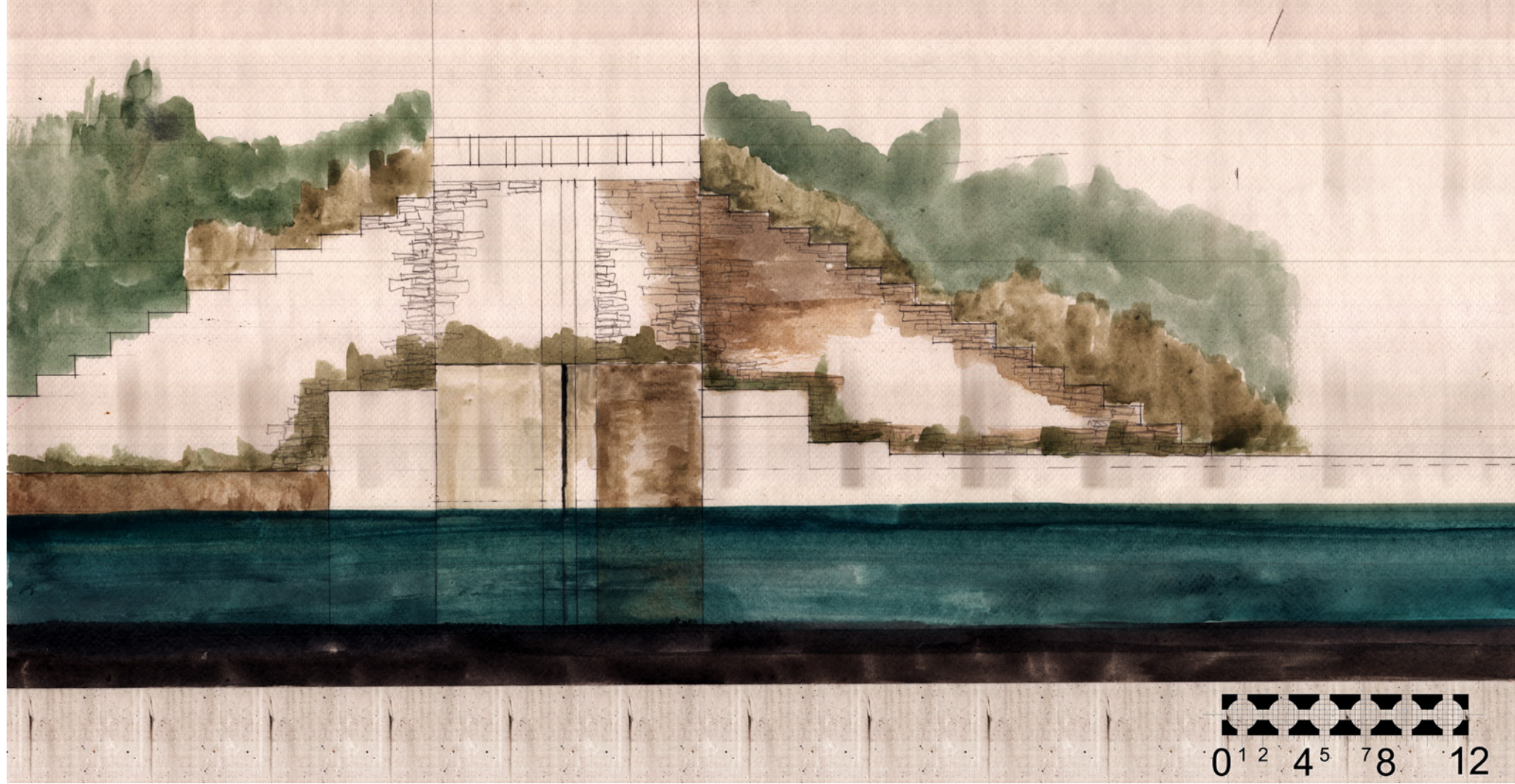


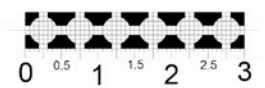
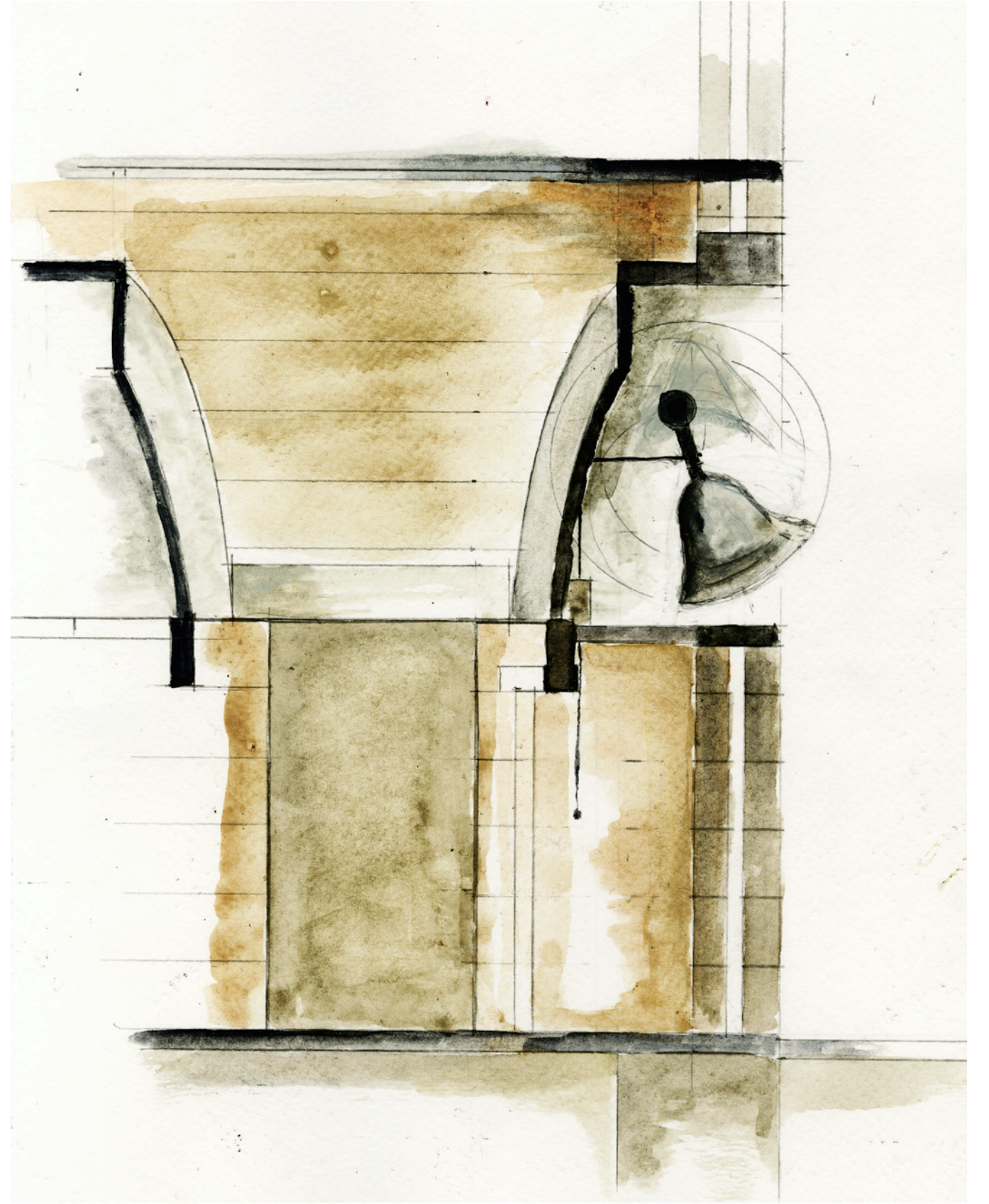


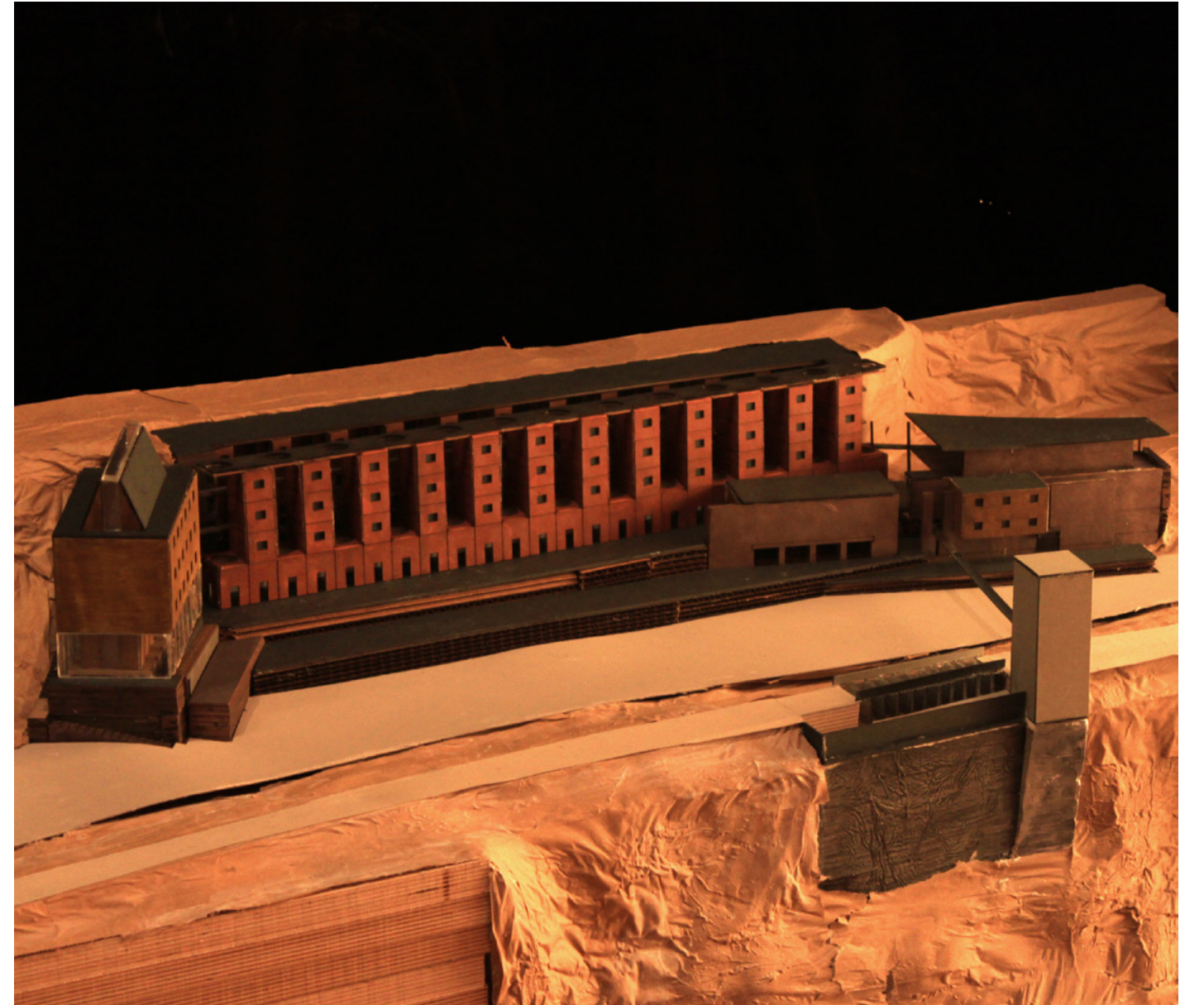
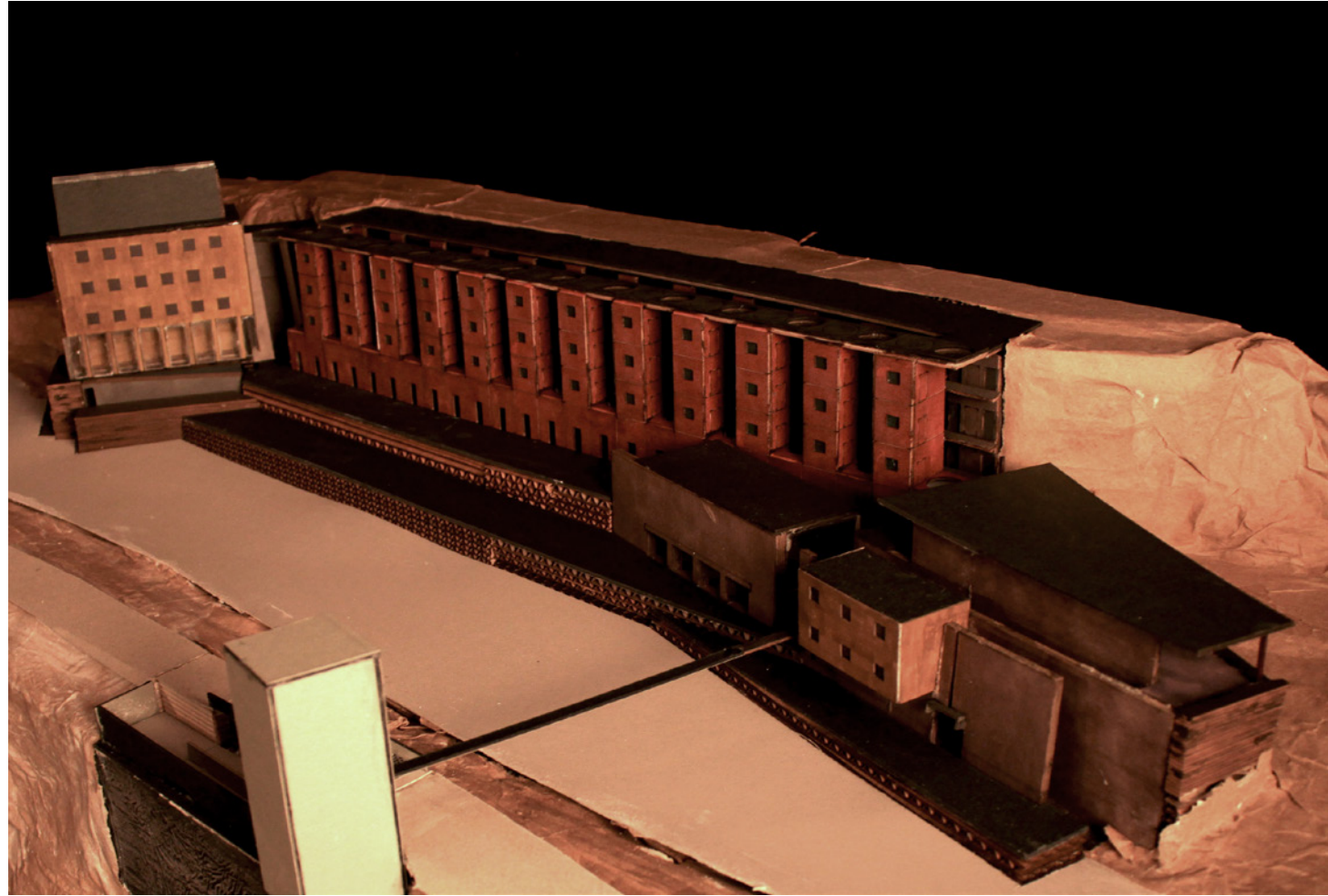


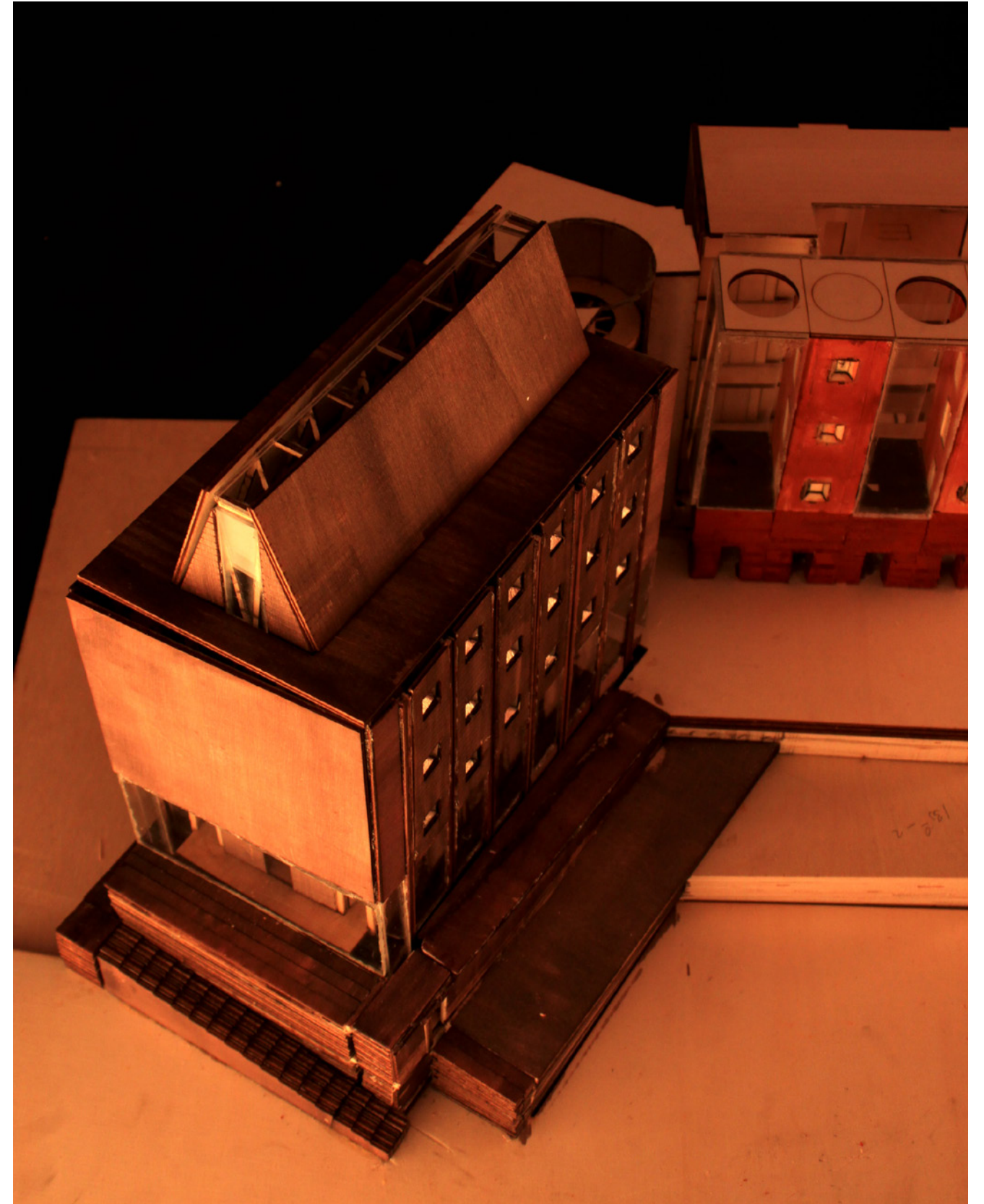


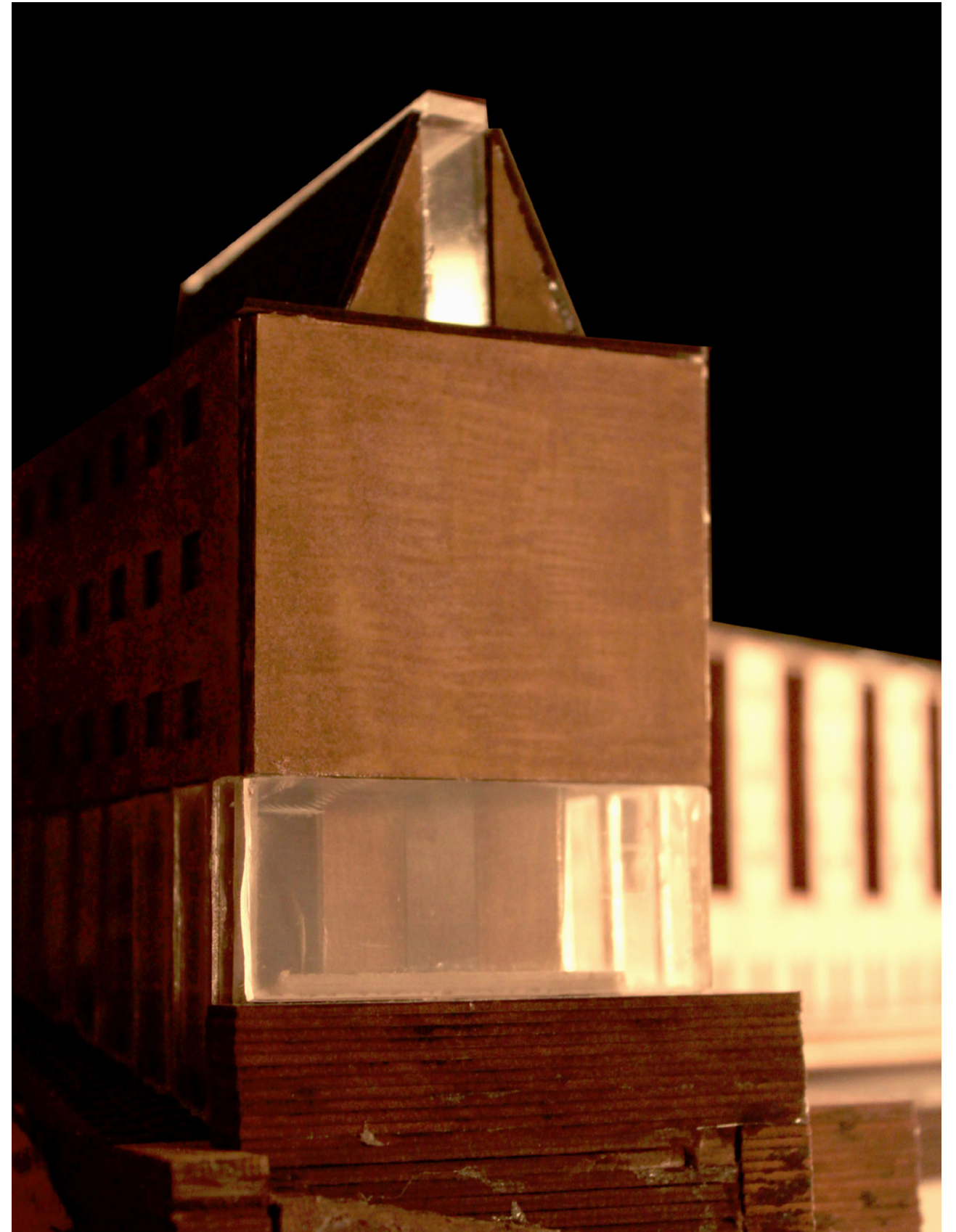
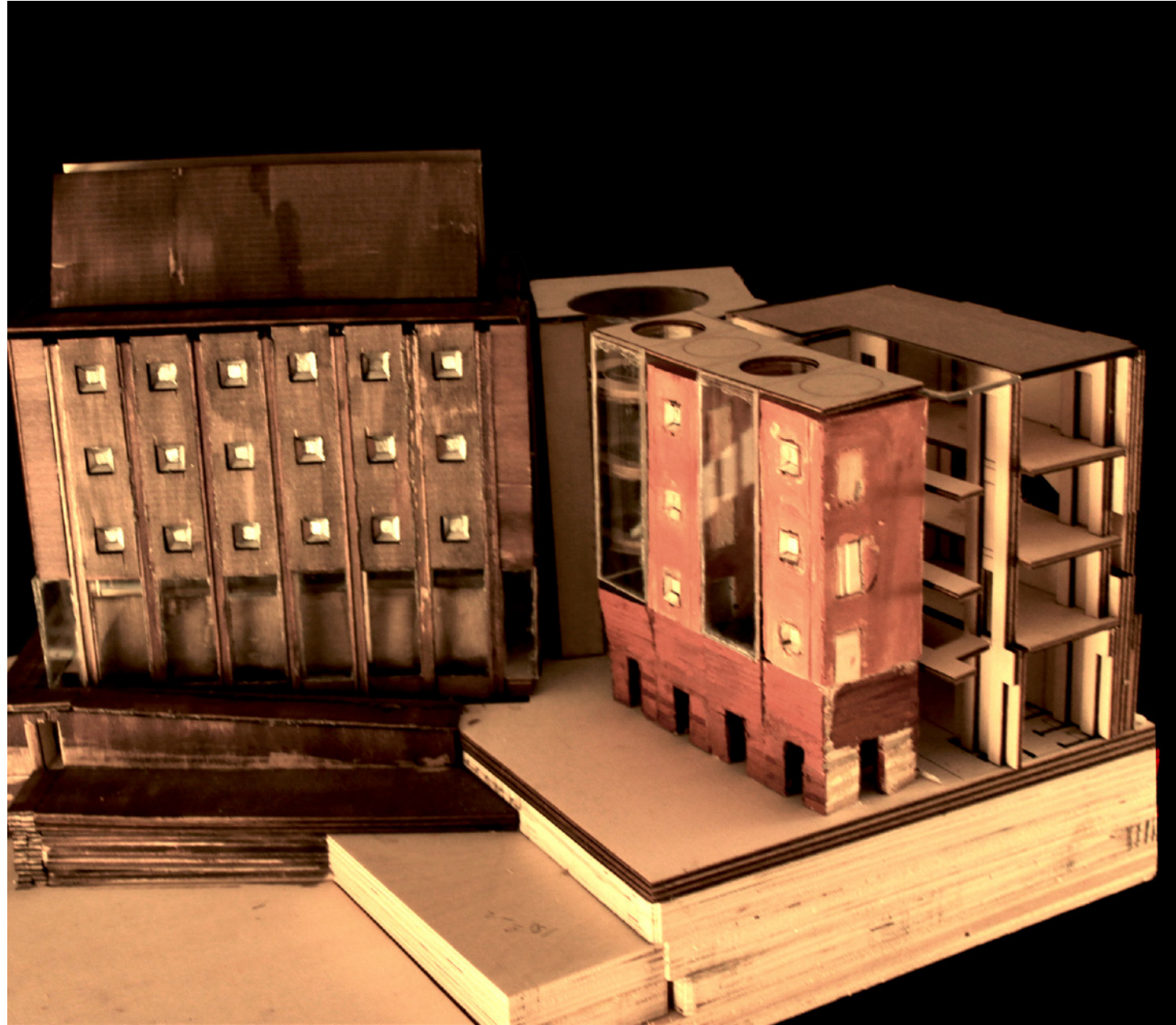


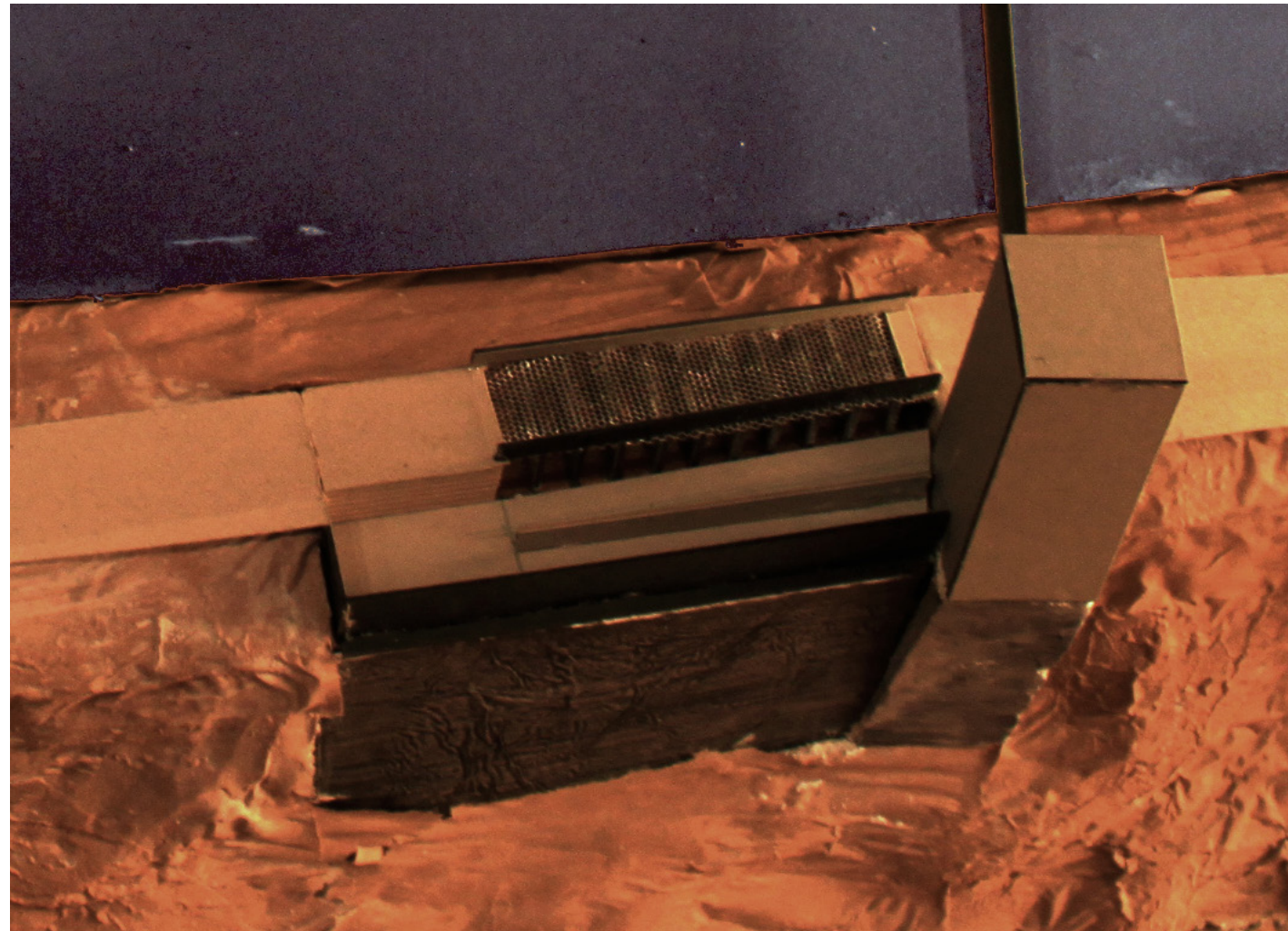












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Notes: Abstract & Introduction

- 1 *lat.* primordial matter as defined in ancient alchemy and cosmology
- 2 *lat.* earth, water air fire

Image credits: front and back pages

Front cover and Recto	Background: Acetone transfer photoshopped - used in plan drawings to represent area below grade Middle horizontal band: Part of wood engraving print on rice paper titled ' <i>cloister</i> '
PL i	photo by author <i>C&O canal - Stop gate</i> superimposed on drawing - pencil and charcoal on mylar
PL ii	early study - <i>cloister and parapets</i> - charcoal on rice paper over chipboard and balsa glued on heavy stock paper for embossing
PL iii	early study sketch - <i>Cloister</i> - pastel over ink and acetone transfer on heavy stock paper
PL iv	photo by author <i>C&O canal</i>
PL v	Portrait picture - Author's Father
PLvi	Photo - Conclusion of Defense
PLvii	Assemblage - <i>Crossing</i> - photos by author on ISO drawing with pencil and oil pastel
PL viii	Photo by Author <i>C&O canal rubble built wall, the top of which is a towpath</i>
PL1	early study sketch - <i>Crossing</i> - charcoal pencil on paper
PL 2	early sketch <i>Crossing from towpath to Rocky Islands</i> Water colour
PL 3	sketch by author based on evocative stone pier scenes in cinema such as <i>L'iceberg</i> and <i>The French Lieutenant's Woman</i> - watercolour
Back Cover & verso	background: Acetone transfer photoshopped - used in plan drawings to represent area below grade Middle horizontal band: Part of wood engraving print on rice paper titled ' <i>cloister</i> '

Image credits:

Part 1

PL 4	early study sketch - Ink and wash
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PL 5.2	Photo by author - location of the center installation - Mary's Wall (<i>See PL 33.1 for a close up view</i>)
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PL 7.8	South Installation - watercolour
PL 7.9	Section - South installation - Pencil and wash

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- 2 Vitruvius p. 19
- 3 Vitruvius p. 17
- 4 Vitruvius p. 88
- 5 Filarete book II
- 6 Filarete book IV
- 7 Filarete book IV
- 8 Heninger p. 32
- 9 Ibid book IX
- 10 Vitruvius p. 257
- 11 Ibid

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- PL 11.2 Early study on a parapet and cliff pencil and charcoal on paper
- PL 11.3 The four elements and the three regions by Finé (© *Huntington*)*
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- PL 12.4 The climatic zones and the Zodiac by Cunningham (© *Huntington*)*
- PL 12.5 The stairway for ascent to knowledge by Lull (© *Huntington*)*
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- 12 Heninger p. 33
- 13 Heninger p. 34
- 14 Utgard p. 9 (heat energy from incoming solar radiation is 3 times the amount of heat energy released into the atmosphere from land and sea, 5 times the amount absorbed by the atmosphere, and 3 times the amount reflected by the earth's surface and clouds)
- 15 Tuan p. 79-81
- 16 Ibid
- 17 Tuan p. 81-83
- 18 Tuan p. 130-132
- 19 Galiano p. 15
- 20 Delanda p. 104
- 21 Ibid
- 22 Ibid p. 105
- 23 Ibid
- 24 Ibid p. 107
- 25 Ibid
- 26 Ibid
- 27 Ibid
- 28 Ibid p. 108-109
- 29 As is argued by Aristotle that material reality is understood by sense as it is understood by intellect.
- 30 Galiano p. 24-32
- 31 Ibid

Image credits:

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| PL 18.2 | Early study sketch intervening upon a cliff pen and water color on paper |
| PL 19 | The Potomac River at Great Falls photo by author |
| PL 20 | First sketch of inhabited structure on cliff – Final of spring 2010 pencil and marker on vellum |

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- 2 C&O Canal official national park handbook (NPH) p. 10
- 3 C&O Canal NPH p.72; Unrau p. 453-450
- 4 Unrau p. 175-272
- 5 Unrau p. 57
- 6 Unrau p. 114
- 7 Unrau p. 119
- 8 Unrau p. 129
- 9 Unrau p. 227-252
- 10 Unrau p. 249
- 11 Unrau p. 431-534

Image credits:

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- PL 23 Diagram showing chronology of construction for canal component from beginning of construction to completion.
Please note that a select number of items is shown in some of the timeline paths (e.g. only 6 of the total number of lock houses are shown). The purpose of the diagram is to indicate general progress of one canal component in relation to other components.
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- PL 24.2 C&O Canal at wide water photo by author
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- 12 C&O Canal NPH p. 56; Unrau p. 425
- 13 C&O Canal NPH p. 56
- 14 Unrau p. 797
- 15 Unrau p. 802
- 16 C&O Canal NPH p. 56
- 17 C&O Canal NPH p. 48
- 18 Unrau p. 802
- 19 Unrau p. 495
- 20 Unrau p. 795
- 21 Unrau p. 843-847
- 22 C&O Canal NPH p. 54
- 23 Unrau p. 831
- 24 C&O Canal NPH p. 43; Unrau p. 819
- 25 C&O Canal NPH p. 43; Unrau p. 811
- 26 Unrau p. 802
- 27 Unrau p. 272-326
- 28 C&O Canal NPH 59; Unrau p. 811
- 29 Pubs.usgs.gov. Geology of the Chesapeake and Ohio Canal Historic National Park and Potomac River Corridor p. 34-40
- 30 Ibid
- 31 Hahn p. 40; Rubin p. 73

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- PL 30.1 C&O Canal Stop gate photo by author
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- PL 31.4 C&O Canal bypass flume photo by author
- PL 32.1 C&O Canal Mary's Wall photo by author
- PL 32.2 C&O Canal across canal at the root of the cliff at the tail end of the Gold Mine Loop Trail photo by author

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*Plates 42.1 and 42.2 are selections from a large number of prints. In traversing the cloister repeatedly, monks commit their physical movements to muscle memory and enter a state of lull from repetition of action. They will be physically present but lost in prayer. I wanted to experience this phenomenon by reproducing these prints continuously until I started to follow the print making steps subconsciously. The wood cuts for each print are singular. It is the printing that is repeated. Although there is one wood cut for each plate, the resulting prints vary from one to another.

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Image credits:

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- PL 43.2 St. Anselm's Abbey – Cloister photo by author
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- 1 Delanda p.104
- 2 Oxford English Dictionary (OED) Volume VI. Simpson, Weiner, Burchfield. Clarendon. 1989.
- 3 OED p. 262 ('Function' definition number 1)
- 4 OED p. 263 ('Function' definition numbers 2 and 3)
- 5 OED p. 263 ('Function' definition number 4a)
- 6 OED p. 263 ('Function' definition number 3d)
- 7 OED p. 263 ('Function' definition number 4c)
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- 11 OED p. 263 ('Function' definition number 5a)
- 12 Rykwert p. 27-71
- 13 Filarete Book IV
- 14 Laugier p. 99
- 15 Laugier p. 98
- 16 Laugier p. 93
- 17 Krufft p. 197
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- 20 Malgrave 'Architectural Theory, An Anthology from Vitruvius to 1872'
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- 22 Boullée 'Essay on Art'
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- 24 Le Duc, Van Brunt p. 11
- 25 Sullivan p. 48
- 26 Conrads p. 181
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- 28 Larkin p. 54
- 29 Ruffin p. 186; Feasy p. 24; Brabbs p. 71
- 30 Levi p. 36-47; Kruger p. 16-22; Feasy p. 71
- 31 Kruger p. 23-25; Brabbs p. 19-20; Feasy p. 54
- 32 Feasy p. 55
- 33 Brabbs p. 106; Feasy p. 55
- 34 Feasy p. 56; Kruger p. 23
- 35 Levi p. 51
- 36 The Rule of Saint Benedict (RSB) Chapter 4
- 37 RSB Chapter 16
- 38 RSB Chapters 8-21
- 39 RSB Chapters 22, 26-29, 39-44; Feasy p. 197-198
- 40 RSB Chapter 35; Feasy 188-193
- 41 RSB Chapter 36; Feasy p. 243-247
- 42 RSB Chapter 67; Feasy p. 219-220
- 43 RSB Chapters 33-34
- 44 RSB Chapter 22
- 45 Levi p. 139
- 46 Levi p. 143; Feasy p. 243
- 47 Levi p. 149-153

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| PL 57.1 | Crossing early study pen |
| PL 57.2 | Crossing early study pen |
| PL 57.3 | Crossing early study pen and marker on tracing paper |
| PL 57.4 | Crossing early study pen and marker on paper |
| PL 58.1 | Crossing early study pencil |
| PL 58.2 | Crossing early study pencil |
| PL 58.3 | Crossing early studies constructed crossing pencil and water color |
| PL 58.4 | Early study crossing by technology pencil and water color |
| PL 59.1 | Early crossing study and desk crit notes |
| PL 59.2 | Early crossing study pencil and water color |
| PL 59.3 | Early crossing study pencil and water color |
| PL 59.4 | Crossing study refectory and sketches pen and marker |
| PL 60.1 | Early study of structure after crossing sculpture garden/colonnade pencil and water color |
| PL 60.2 | Early study of crossing and receiving structure pen and water color |
| PL 60.3 | Early crossing study pen, colored pencil and marker |

Notes:

Part 4: continued

- 48 Levi p. 110
- 49 Feasy p. 269; Kruger p. 242-249
- 50 Levi p. 112
- 51 RSB Chapter 16; Modern adaptations as explained by brother Matthew Nyland OSB (Saint Anselm Abbey's hostillar) during tour
- 52 Richards pp. 12, 38, 52-53, 86, 98, 181 (from study of monastic cloister plans).
Please note that the word cloister is used to describe both the colonnaded portico that monks repeatedly traversed with their rosaries in prayer, and the larger monastic complex especially containing the chapel, the chapter house, and the monks' quarters.

Image credits:

Part 4 continued

- PL 60.4 Confronting the receiving cliff with a leisurely stair pencil and water color
- PL 61.1 Study sketch developing the receiving structure (kitchen refectory and guest house) pen and marker
- PL 61.2 Early study model refectory and receiving parapet
- PL 61.3 Refectory and parapet study water color
- PL 61.4 Refectory and parapet study model with partial dorms
- PL 62.1 Refectory study pen and marker
- PL 62.2 Refectory, parapets, and partial geological cloister study model
- PL 62.3 Refectory, parapet, and leisurely stair early plan
- PL 62.4 Leisurely stair between parapets water color
- PL 63.1 Study model – Refectory and parapets with partial dorms and geological cloister
- PL 63.2 Refectory plan study pen and marker
- PL 63.3 Study model refectory, parapets, and cliff
- PL 63.4 Study sketch refectory and parapets water color
- PL 64.1 Study model refectory, parapets and partial dorm
- PL 64.2 Study sketch refectory and parapets water color
- PL 64.3 Study plan refectory and parapets pen and marker
- PL 64.4 Study model refectory, parapet and cliff
- PL 65.1 Study sketch refectory water color
- PL 65.2 Study sketch refectory with guest quarters pen and marker
- PL 66 Confronting the cliff assemblage
- PL 67.1 Early cloister study pen and Indian ink

Image credits:

Part 4 continued

PL 67.2	First sketch of inhabited/constructed space for final pin up of spring 2016	pencil and marker
PL 67.3	Early sketches of structure on either sides of canal	ink and wash
PL 67.4	Early study sketch of cloister against cliff	pen and Indian ink
PL 68.1	Early cloister study structure resembling lock houses	pen and Indian ink
PL 68.2	Early cloister study with parapets	pen and Indian ink
PL 68.3	Early cloister and parapets	pen and Indian ink
PL 68.4	Early study sketch of parapet	pen and Indian ink
PL 69.1	Mending the scar – building from the 12 scars where the cliff was drilled for explosives	
PL 69.2	The 12 scars correspond to the 12 apostles and later with the 12 dorm styles	pen and colored pencil
PL 69.3	Study sketch mending the scars – Geological cloister	pen and wash
PL 69.4	Early geological cloister	pen, pencil and water color
PL 70.1	Mending the scar	pen and wash
PL 70.2	Mending the scar early geological cloister	pen and wash
PL 70.3	Early geological cloister	pen and Indian ink
PL 70.4	Study model parapet and cliff with scar	
PL 71.1	Cloister study sketches	pen and Indian ink
PL 71.2	Cloister study plan	pen and Indian ink
PL 71.3	Dorm styles	pen and marker
PL 71.4	Early cloister study	pen and Indian ink
PL 72.1	Cloister plan study	pen and Indian ink
PL 72.2	Dorm styles	pen and Indian ink

Image credits:

Part 4 continued

PL 72.3	Early cloister study	pen and wash
PL 72.4	Dorm styles	pen and Indian ink
PL 73.1	Cloister study dorm styles corresponding with Apostles and monk cell study	pen and Indian ink
PL 73.2	Early dorm styles	pen, Indian ink, and oil pastel
PL 73.3	Cloister plan study	pen and Indian ink
PL 73.4	Parapet and dorm styles	ink and wash
PL 74.1	Cloister plan study	pen and Indian ink
PL 74.2	Dorm styles with calfactories in between	ink and wash
PL 74.3	Dorm cells and style section	pen and Indian ink
PL 74.4	Dorm styles and calfactory	pen and colored pencil
PL 75.1	Style termination of top of cliff	pen and Indian ink
PL 75.2	Dorm styles	pen
PL 75.3	Dorm styles plan sketch	pen and Indian ink
PL 75.4	Dorm styles	pen and Indian ink
PL 76.1	Cloister study	pencil and water color
PL 76.2	Cloister study	pencil and water color
PL 76.3	Geological cloister	pencil and charcoal
PL 76.4	Geological cloister model view from atrium. Note footprint of rosary cloister.	
PL 77.1	Cloister atrium study sketch	pen and Indian ink
PL 77.2	Geological cloister	pencil and water color
PL 77.3	Cloister atrium study	pencil and water color

Image credits:

Part 4 continued

PL 77.4	Geological cloister model
PL 78.1	Section study from left; geological cloister, atrium, dorm styles, and parapets pen and Indian ink
PL 78.2	Geological cloister model
PL 78.3	Section study cloister, parapets, and chapel – beyond
PL 78.4	Geological cloister model
PL 79.1	Geological cloister model view from atrium. Note footprint of rosary cloister
PL 79.2	Early cloister model with round chapel
PL 79.3	Plan study with round chapel pen and marker
PL 79.4	Dorm styles ink and wash
PL 80.1	Dorm styles with calfactory between pen and Indian ink
PL 80.2	Dorm styles with cells at top only – early study pen and Indian ink
PL 80.3	Dorm style with cell on top only pen
PL 80.4	Dorm styles study pen and Indian ink
PL 81.1	Dorm styles with calfactories in between marker
PL 81.2	Dorm styles early study pen and Indian ink
PL 81.3	Dorm cells on top of a plinth with geological cloister in the background pen and Indian ink
PL 81.4	Early cloister study pen and Indian ink and pastels
PL 82.1	Dorms and refectory in between pen and marker
PL 82.2	Study model dorm styles over rosary cloister
PL 82.3	Dorm styles pen and Indian ink
PL 82.4	Plan study cloister pen and Indian ink

Image credits:

Part 4 continued

PL 83.1	Cloister study – styles pen and Indian ink
PL 83.2	Parapet and styles pen and wash
PL 83.3	Cloister study pen and Indian ink
PL 83.4	Study plan and elevations, dorm styles and rosary cloister pen and Indian ink
PL 84.1	Plan study rosary cloister pen and marker on banner paper
PL 84.2	Study model rosary cloister
PL 84.3	Study model rosary cloister
PL 84.4	Study model rosary cloister and parapets
PL 85.1	Rosary cloister pen and Indian ink
PL 85.2	Rosary cloister pen and Indian ink
PL 85.3	Rosary cloister study model
PL 85.4	Rosary cloister study model looking up at dorms and calfactory alternatively
PL 86.1	Cloister study pen, markers and Indian ink
PL 86.2	Cloister study with earlier iteration of chapel and parlatory pen and Indian ink
PL 86.3	Early cloister study from top parapet refectory (left) and cloister (right) pen and wash
PL 86.4	Early cloister study with early iteration of chapel and parlatory pen and Indian ink
PL 87.1	Cloister study sketch with oriented chapel pen and marker
PL 87.2	Early cloister study ink and wash
PL 87.3	Study model of cloister parapet and early iteration of chapel
PL 87.4	Site plan study pen and ink
PL 88.1	Early water compounding study pen and Indian ink

Image credits:

Part 4 continued

- PL 88.2 Early water compounding study pen and marker
- PL 88.3 Early water compounding study with stop gate pen and water color
- PL 88.4 Early parapet study with styles pen and Indian ink
- PL 89.1 Study model parapets, refectory and dorm styles
- PL 89.2 Kitchen and refectory interior study pen and marker
- PL 89.3 Kitchen and refectory interior study pen
- PL 89.4 Early cloister study assemblage
- PL 90.1 Cloister and refectory with parapets oil pastel
- PL 90.2 Bridge from dorm to refectory oil pastel and ink
- PL 90.3 Bridge from water town through refectory to dorms oil pastel
- PL 90.4 Early iteration of cloister on parapet oil pastel and Indian ink
- PL 91 Chapel interior study with monk stalls and stair to catacombs below ink and wash
- PL 92.1 Early chapel with monk stalls stacked in rows of six pen
- PL 92.2 Early study sketch work on reconfiguring stalls in chapel pen
- PL 92.3 Early chapel with monk stalls pen, Indian ink and marker
- PL 92.4 Early chapel with monk stalls and slypes bridging dorms and chapel pen and Indian ink
- PL 93.1 Early study of oriented chapel pivoted on a tower of slypes pen and water color
- PL 93.2 Early study of stacked monk stalls pen
- PL 93.3 Chapel with monk stalls pen and marker
- PL 93.4 Chapel study sketch pencil
- PL 94.1 Chapel study sketch and chapel roof study pen and marker

Image credits:

Part 4 continued

- PL 94.2 Chapel and monk stalls pen and Indian ink
- PL 94.3 Oriented chapel pivoted on slypes pen and water color
- PL 94.4 Chapel and monk stalls pen, Indian ink and oil pastel
- PL 95.1 Longitudinal study sketches chapel stalls and slypes ink and wash
- PL 95.2 Study section from left: chapel, dorms, cloister, atrium, and geological cloister pen and Indian ink
- PL 95.3 Chapel study sketches (pen)
- PL 95.4 Chapel plynth study pen and marker
- PL 96.1 Study model cloister with round chapel
- PL 96.2 Study model cloister with inscribed round chapel
- PL 96.3 Study plan sketch inscribed round chapel pen
- PL 96.4 Study model inscribed round chapel
- PL 97.1 Chapel plynth plan study pen and marker
- PL 97.2 Chapel plynth study pen and marker
- PL 97.3 Chapel plynth study model
- PL 97.4 Chapel plynth and catacombs plan study pen and marker
- PL 98.1 Chapel plynth and catacombs plan study pen and marker
- PL 98.2 Chapel plynth and catacombs pencil and water color
- PL 98.3 Chapel plynth study pen and marker
- PL 98.4 Monk stall study pen and marker
- PL 99.1 Chapel plynth study model
- PL 99.2 Chapel plynth study pen and marker
- PL 99.3 Chapel plynth study pen and marker

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Part 4 continued

PL 99.4 Chapel roof and skylight study pen and Indian ink

PL 100.1 Chapel plynth study pencil and marker

PL 100.2 Chapel plynth and catacombs study pen and marker

PL 100.3 Chapel plynth and catacombs study pen and marker

PL 100.4 Chapel elevation study pencil and marker

PL 101.1 Chapel plynth and catacombs pencil and marker

PL 101.2 Chapel section and skylight study pen and marker

PL 101.3 Chapel section with monk stalls pen and Indian ink

PL 101.4 Study model – oriented chapel

PL 102.1 Chapel section with monk stalls pencil

PL 102.2 Study model oriented chapel on plynth

PL 102.3 Study plan – chapel level with cloister at perimeter pen and markers

PL 102.4 Model interior of chapel

PL 103.1 Study sketches oriented chapel pen and marker

PL 103.2 Elevation study of chapel pen and markers

PL 103.3 Study model oriented chapel on plynth and catacombs

PL 103.4 Study model oriented chapel on plynth and catacombs

PL 104.1 Study model oriented chapel interior

PL 104.2 Study model of chapel – worms eye view

PL 104.3 Study model of chapel interior

PL 104.4 Elevation study of chapel on plynth pen and marker

PL 105.1 Study sketches monk utility stool pen

Image credits:

Part 4 continued

PL 105.2 Study sketches monk utility stool pen and marker

PL 105.3 Study sketches monk stall seat pen and marker

PL 105.4 Study sketches monk utility stool with back pen and marker

PL 106.1 Study sketch monk utility stool pencil and water color

PL 106.2 Study sketch monk utility stool pen and marker

PL 106.3 Study sketches monk utility stool pen and marker

PL 106.4 Study sketches monk utility stool pen

PL 107.1 Study sketch monk utility stool pencil and marker

PL 107.2 Study sketch monk utility stool pencil and water color

PL 107.3 Study sketches monk utility stool pen

PL 107.4 Study sketches monk utility stool pen and marker

PL 108.1 Study sketch monk utility stool pen

PL 108.2 Study plan sketch monk stall and seating pen

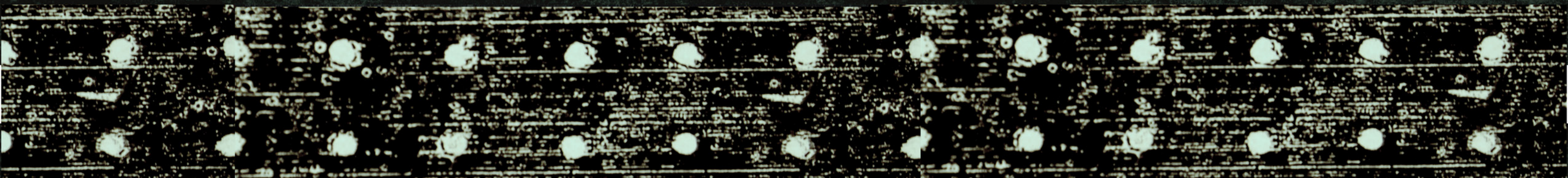
PL 108.3 Shop/production drawing monk utility stool pen and marker

PL 108.4 Study section sketch monk stalls with seating hybrid pen and marker with digital

PL 109 Model image super-imposed on site image. View of refectory and dorms from lower parapet

PL 120 Photo -Defense

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