

Starting from the ideas of Dom Hans van der Laan concerning proportion and perception, this design for a modern monastery in Rotterdam is a statement towards our mental health and the importance of careful design in relation to that.

Graduation design book
Joppe Douma

TU Delft Faculty of Architecture and the Built Environment

Teachers:
Henri van Bennekom
Pierre Jennen
Peter Koorstra



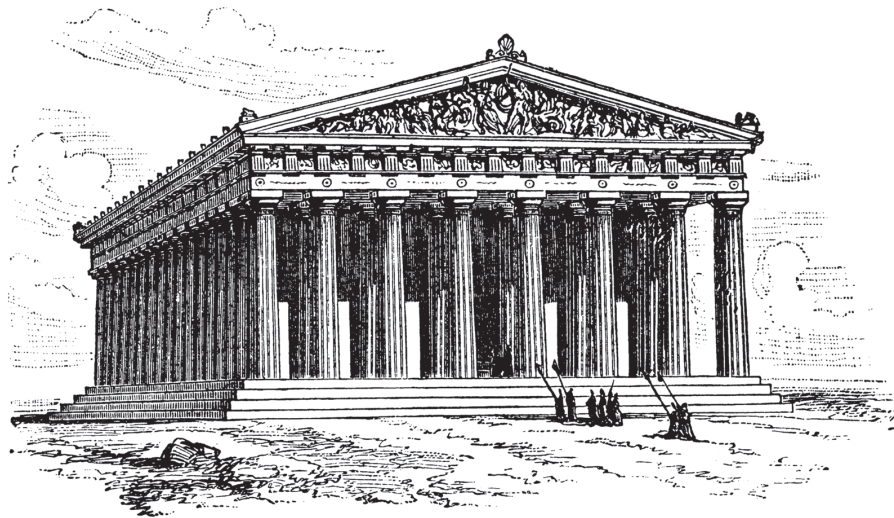
PROLOGUE

That architecture has an influence on the human body and our sensory perception is acknowledged by most people. We can feel a certain satisfaction through the structure of cognizable forms that show measure and order. Buildings with proportions that are perceived as pleasant, therefore, correspond to the way our mind functions. Dom van der Laan tried to capture this in a proportional system to achieve harmonious architecture.

Prior to this design, I researched this proportional system and the corresponding sensory aspects of the architecture of Dom Hans van der Laan. It made me realise how important it is for architects to be aware about the way we measure, perceive and discern space, and thus how we choose to dimension this space.

As a student I have always been fascinated by material, light, colour and the human scale, always comared with care for details. It were exactly these themes that made the architecture of van der Laan appeal so much to me.

Thinking about proportions seems so relevant and logical now, but it was until now that I never really consciously thought about it during designing. I consider this learning process therefore as an enrichment to my education and future as architect.



DESIGN INTENTIONS

During the design I was always guided by these distinctive but interrelated themes:

- * proportion: throughout the whole design process I make use of the plastic number
- * holism: the design of the site, the building and the landscape must be developed together, so that the monastery complex becomes an integral part of the surrounding area and neighborhood fabric.
- * functionality: the monastery and its different parts should be organized in a way that allows them to function both individually and as a whole
- * public presence and visibility: the presence of the building should have a modest character that fits the function, whilst having references to monumental and religious architecture.
- * tectonics: particular emphasis was put on the development of convincing tectonic concepts, the integrity of each chosen material, and the care with which its components were assembled and joined.

DESIGN TYPOLOGY

the monastery

Choosing what do design brought me back to what motivated me to research this subject. The philosophy of perception and it's sensory aspects. I was fascinated every time I visited the monastery of Hans van der Laan and specifically by the persuasiveness of the architecture to create a certain rest and encourage contemplation.

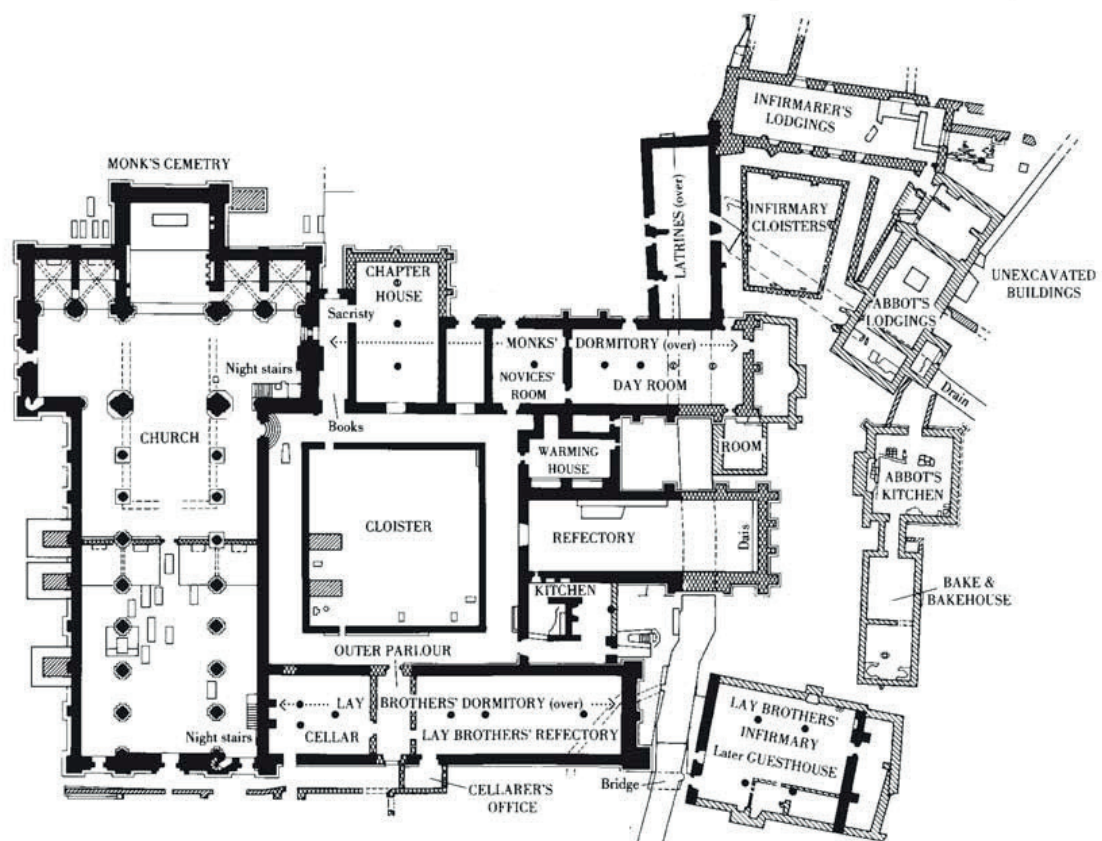
Specifically the themes of rest and contemplation seem highly relevant to me, as I'm experiencing my generation as rapidly moving and suffering more and more from stress and pressure, resulting in depressions or burn-outs. And that's how the idea of a modern monastery amidst the city came to mind. It's a statement against this movement, and will advocate the importance of our mental health.

TYOLOGY RESEARCH

the monastery

The monastery is a rich and interesting typology, with some very typical programatic and spatial principles.

In fact they combine different typologies and programatic elements into complex ensembles that organize the daily lives of their inhabitants. Offering them housing, work, food, education and, arguably, even entertainment. Functioning as little cities, the architecture is always mediating between seemingly contradictory principles: the individual and the collective, thus: the need for spacial separation and the desire to facilitate communal life.



the chapel



“a place for meeting and being”

Originally in a monastery, the chapel brings together all inhabitants to engage in the activity of praying together. In a modern, urban context, this is translated into a “hall”. A place open for people to be, to meet and to be aware of one another. To create a sense of community.

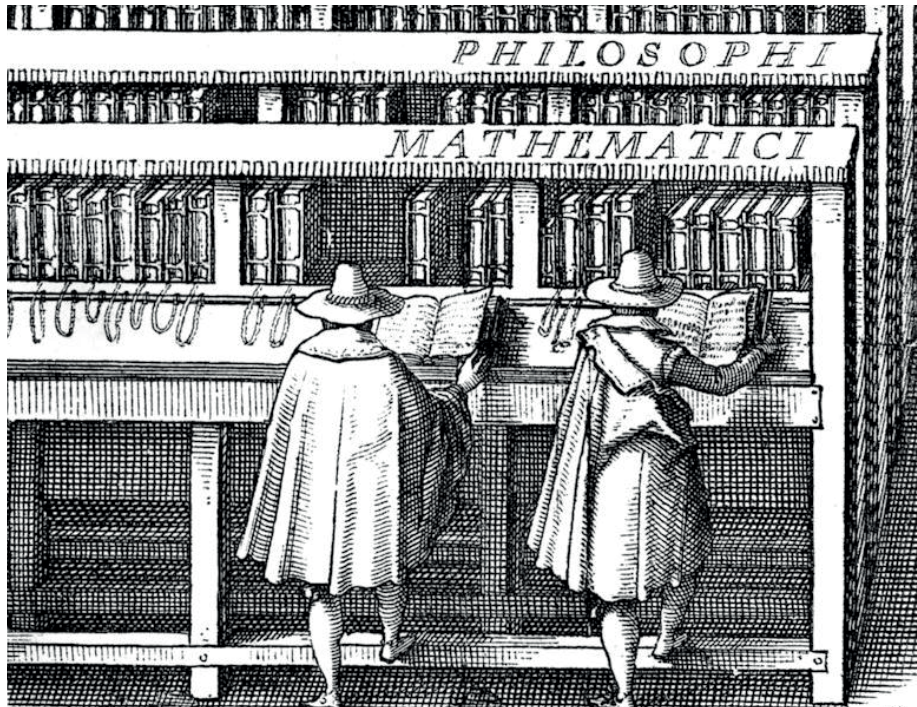
the refectory



“a place for eating”

The word refectory is originally monastic, but is also often used in a modern context to refer to a café or restaurant that is open to the public.

the library



“a place to read and learn”

Medieval monasteries accumulated large libraries. These libraries were devoted solely to the education of the monks and were seen as essential to their spiritual development.

Acquire knowledge and learn is still important for your personal development, but diving into a book has another important function: it offers a way to escape the busy (online) world around you.

the scriptorium



“a place for craft”

In the scriptorium, monks scribbled away for hours a day, interrupted only by meals and prayers. Hence the expression for doing “monks work”.

With fast growing technical developments, a lot of crafts are disappearing. In this way, the scriptorium is translated into a modern workshop, where people can keep working with their hands and produce tangible things.

the enclosed garden



“a place of calmness and peace”

The enclosed garden or courtyard is indispensable in a monastery. Here, one finds peace of mind. As the building encloses it, it's at the heart of the complex and thus always visible. It can even offer small scale food production.

In a wild garden, one can wander around, enjoy the bright colours of flowers and the butterflies around them. It's an unexpected oasis of calmness.

the cloister



“a place for thoughts”

A cloister (from Latin *claustrum*, “enclosure”) is a covered walk, open gallery or open arcade running along the walls of a building. In a monastery the cloister serves as the connector between all the functions.

The act of moving through the building accompanied with subtle different experiences encourages one to think and contemplate.

City monastery Rotterdam

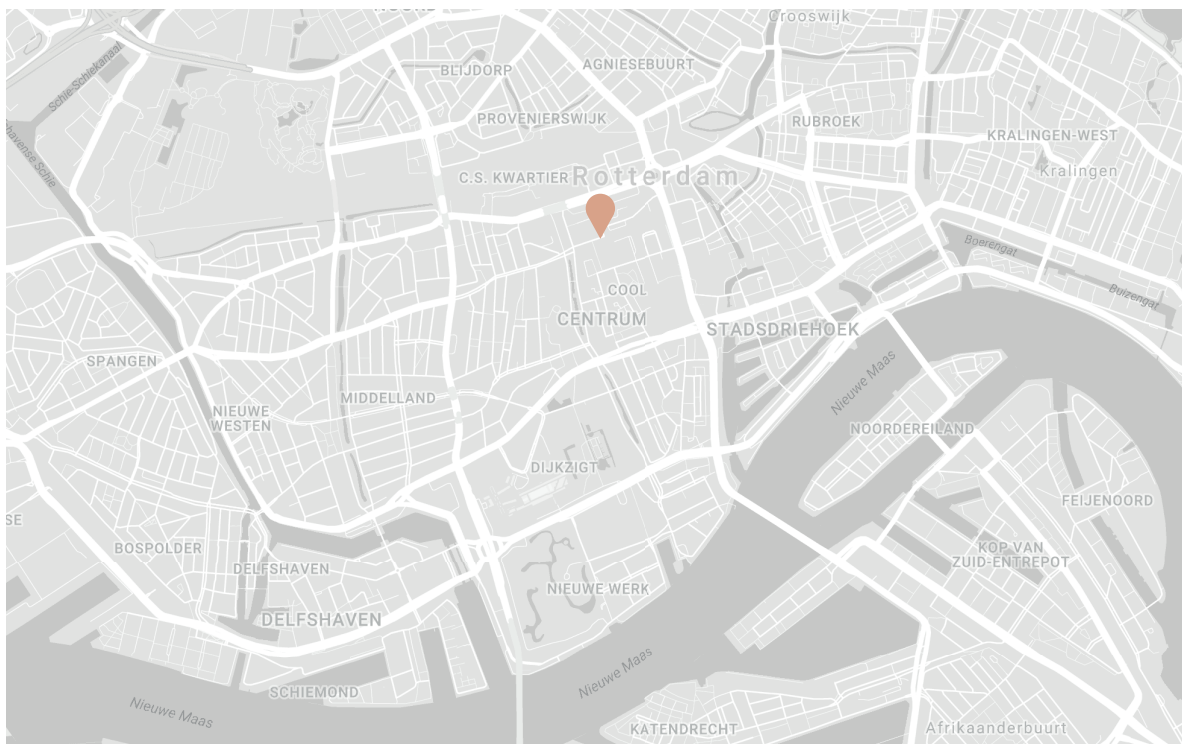
A place amidst the ever-crowded city that can offer moments of rest and room for contemplation in the urban context of Rotterdam.



LOCATION

Choosing a location, my main criteria was a place in the middle of the city centre. With my project I want to collide the calmness with the chaotic, in order to make a stronger statement.

During exploration in the city I came across the site of the “Westenwagenhofjes”. This plot is right next to Blaak and the busy shopping centre. Yet, it also has a more calm waterside with view on the Laurenskerk.





westwaggenstraat

URBAN INSERTION

It was important to create a dynamic composition that reacts both on the streetside and on the waterside. The streetside now has the character of a backside and has not much qualitative public space. Whereas the waterside should retain its open character with access from both sides.

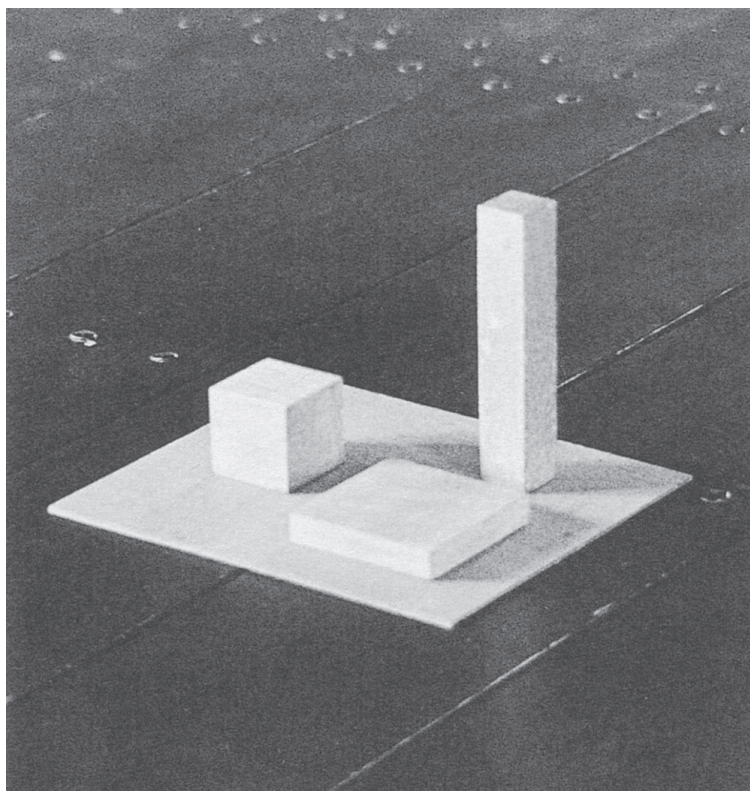
Another requirement followed from my site analyses is the view to the church from the Westewagenstraat.

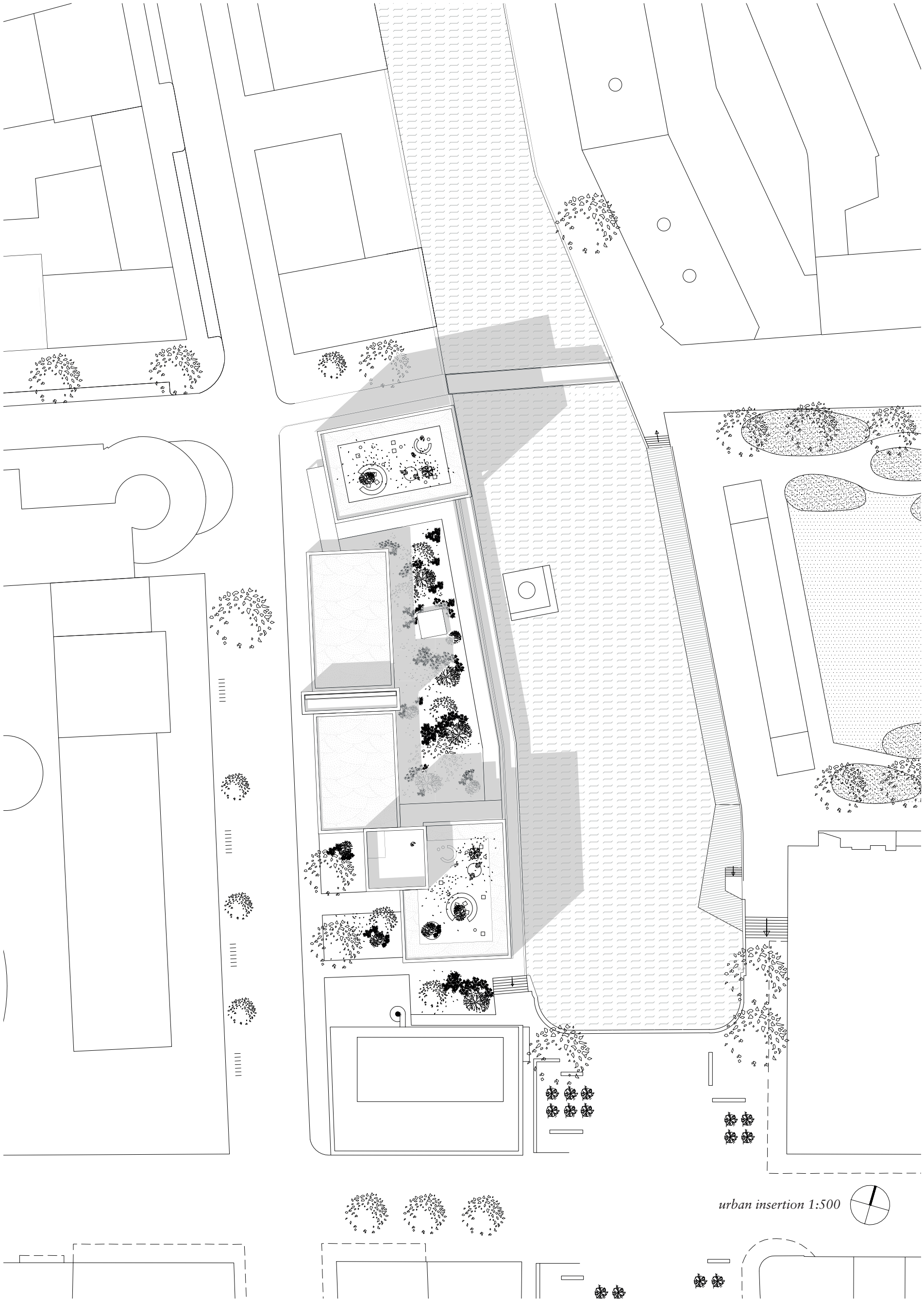
In the plan, this resulted in the placement of various separate volumes that work together as a whole.

On the streetside, there is a play of set backs that create room for little squares and places to sit. The two outer volumes enclose the garden along the water. The sidewalk continues around the complex and offers a route along the canal.

The upper volume is rotated slightly to open up the view to church and as invitation to the garden.

According to van der Laan, an ensemble of buildings can best be composed out of a combination of sitting, standing and laying forms, referring to the human body.





The two outer volumes are higher, so that they react on their neighboring buildings, but also form a sort of closure towards the inner part. Whereas the volumes in between are kept lower to still allow sun in the courtyard.

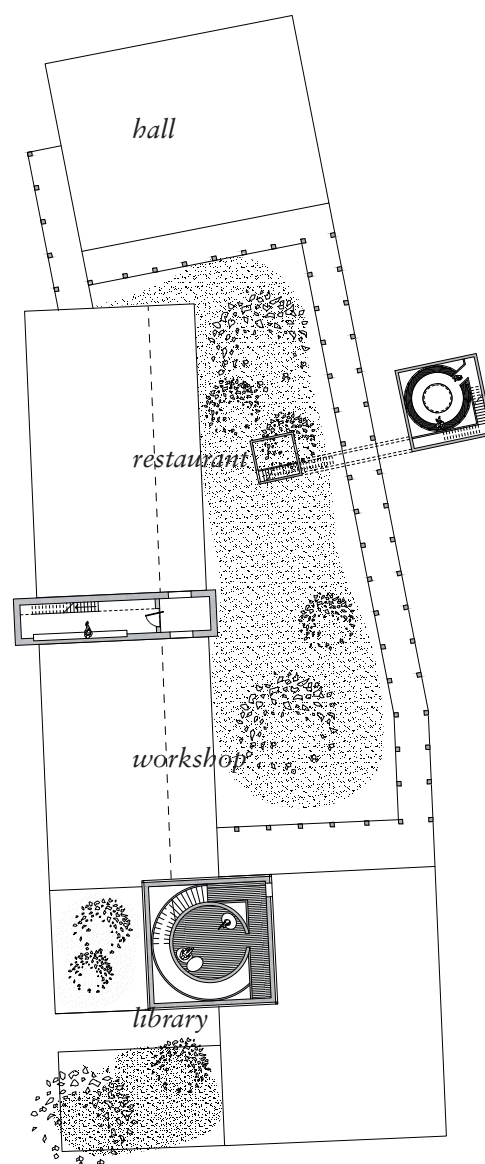


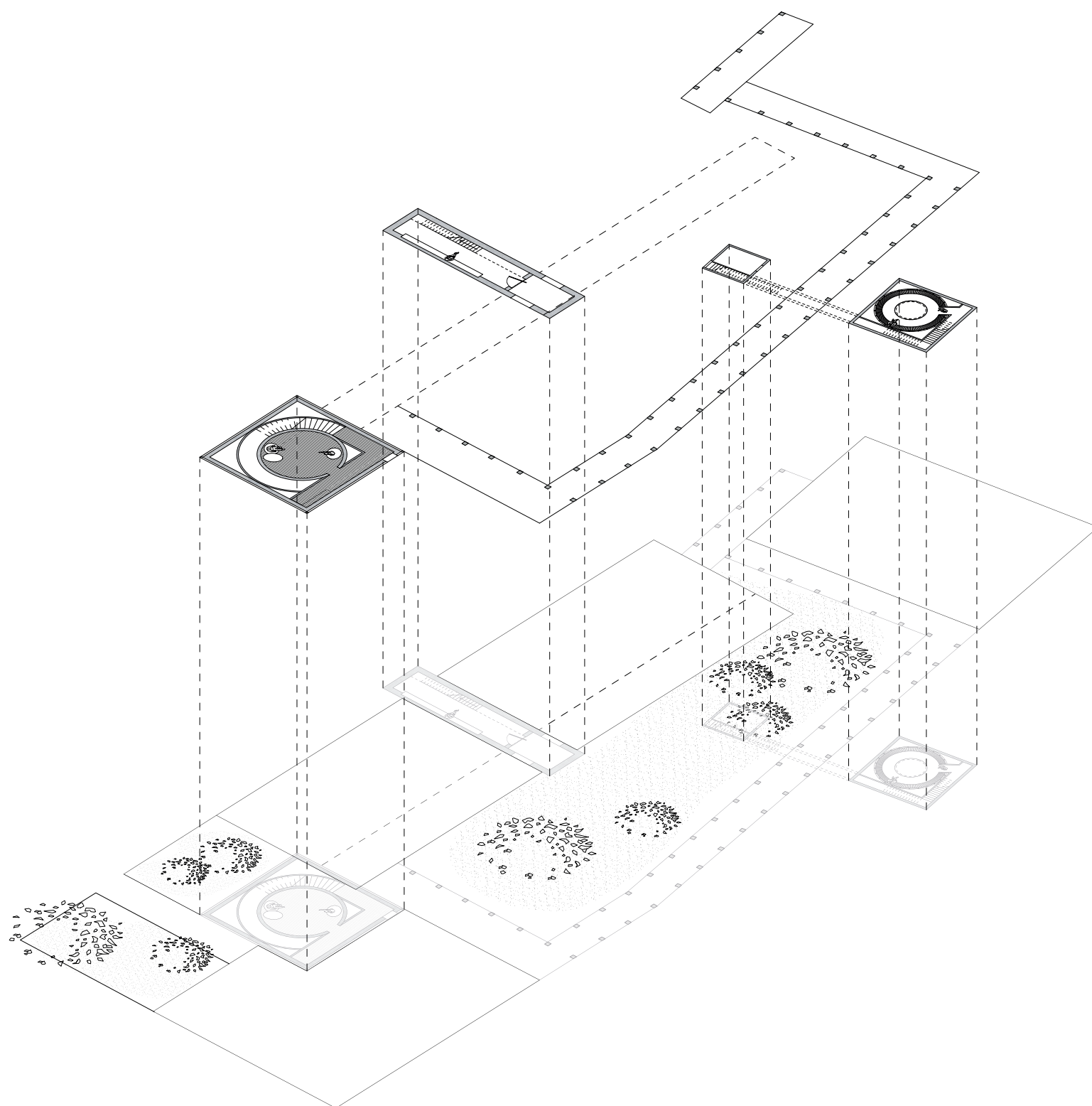


PROGRAMME

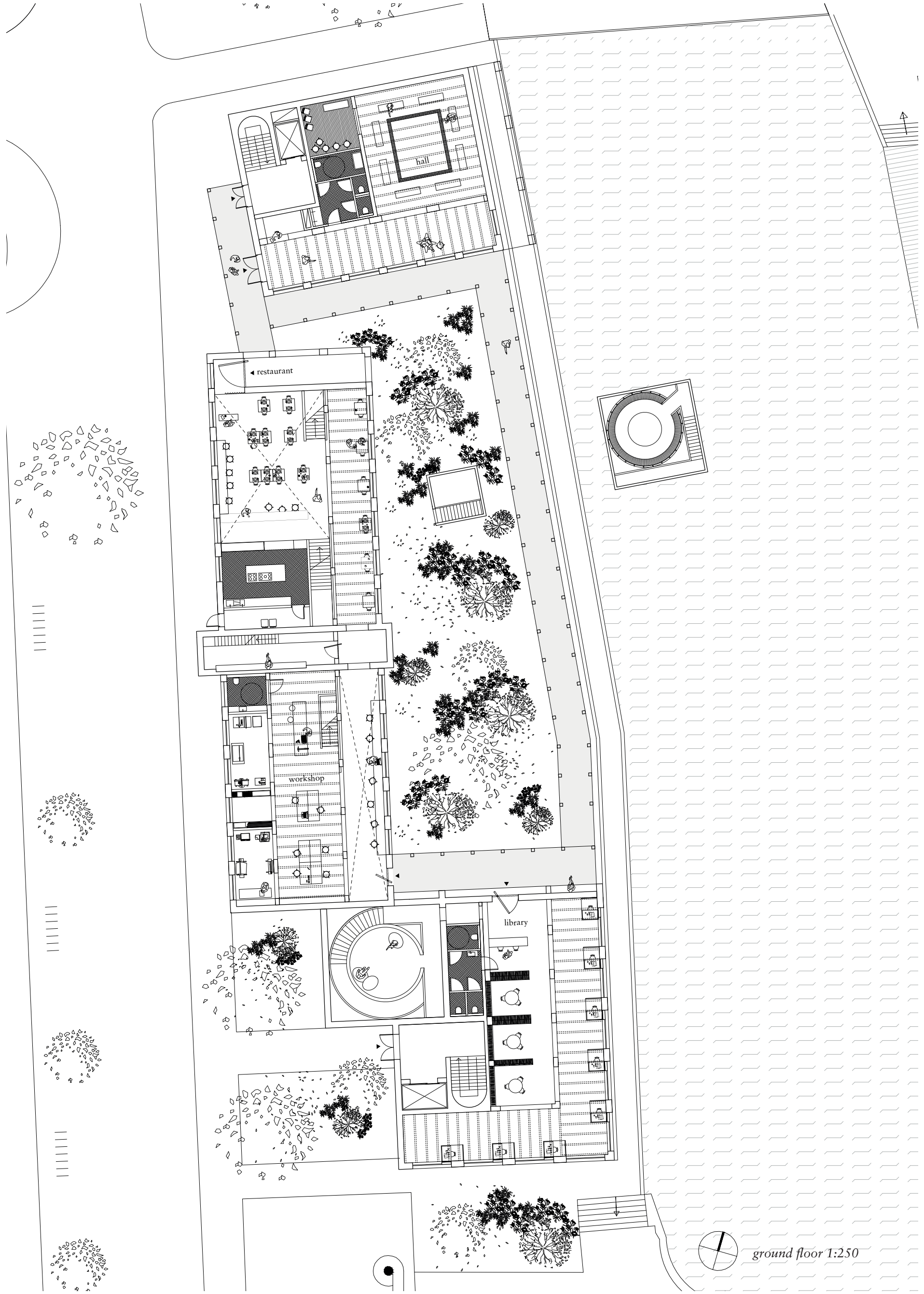
The general layout of the complex consists of three layers. There are four main volumes that house the functions of the library, the workshop, the restaurant and the hall. The volumes are connected by the cloister, which is partly inside, partly outside, with an open courtyard at its heart.

Along this route, one can find the particular spaces devoted to rest. Spaces without a specific function, but purely as an invitation to silence and contemplation. Each of these spaces are designed with the idea of a different experience.





The building is composed so that a change from one activity to another is accompanied by a spatial narrative. Changing one's actions means leaving a space, walking through an in-between space or even stepping outside, to only then enter the next space and engage in the next activity. The inner courtyard is always visible along the route through the building.



ground floor 1:250

The two outer volumes are dedicated to living, an important element in the typology of the monastery. The idea is that the inhabitants are actively involved in the complex and the corresponding activities. Unlike in the traditional monastery, where every inhabitant has the same small cell, there is a variation in sizes and sorts of apartments.





first floor 1:250

MATERIALITY

Dom van der laan was really basic in his use of material and rich in working out the details, although they appear to be straightforward. In this project I worked with the same approach. The three base materials are: brick, concrete en wood. They alternate each other with different finishes or particular details to achieve a certain refinement.



FACADE

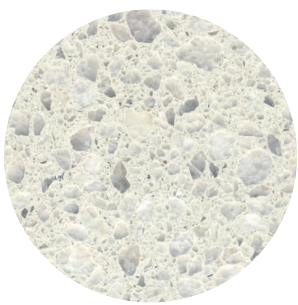
By investing in a good, durable and carefully detailed building envelope it's possible to save on expensive installation techniques. Together with the structure I tried to design a sustainable low impact building.

In the facade there is a separation between the base and the upper floors. The base consists of polished concrete, while the upper floors have a particular pattern in brick.

Biofoam insulation

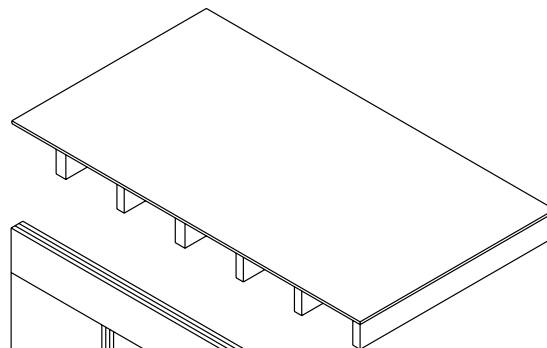
rigid biological cradle to cradle
insulation made with vegetable waste.

$\lambda=0,034$



Concrete facade element

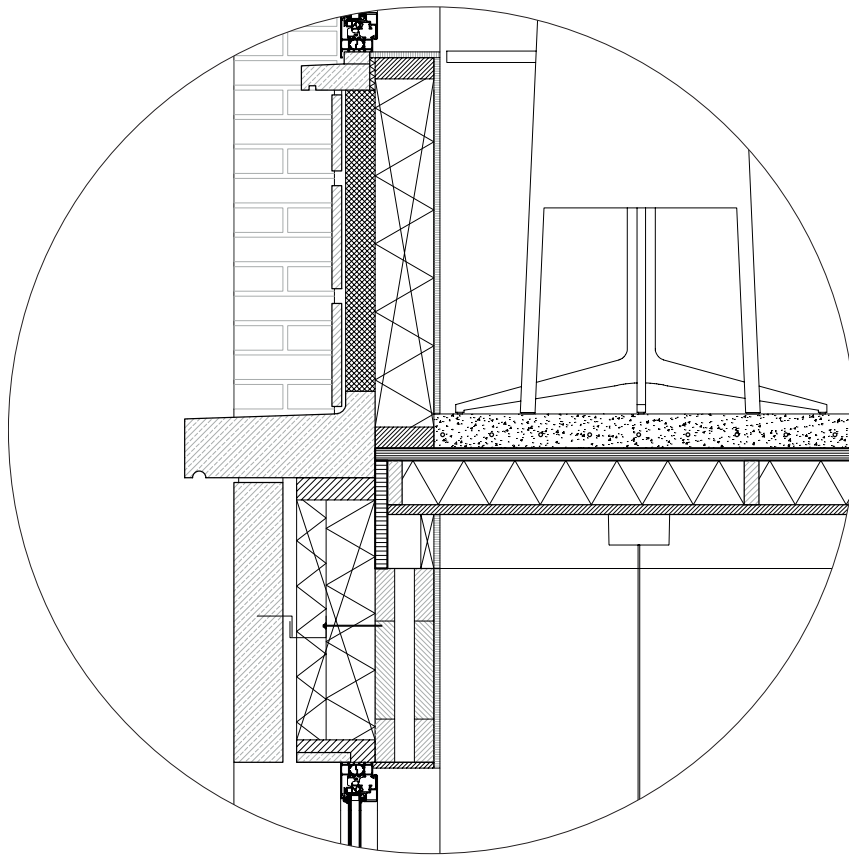
Precast concrete facade element with
carefully picked pigment and aggregates,
polished.



CLT structure

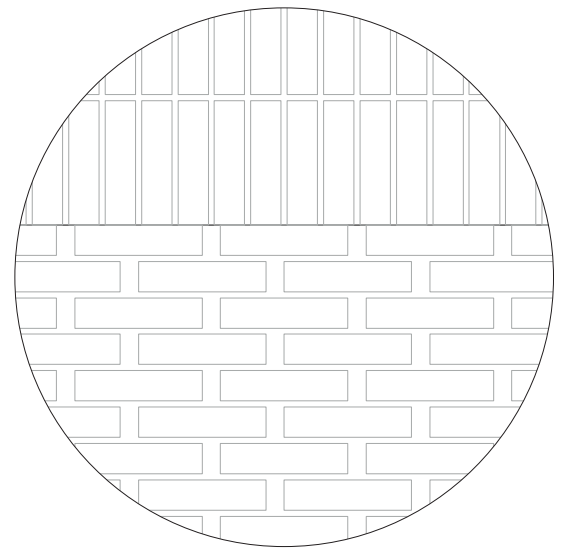
The whole building is
constructed out of wood. The
main bearing walls are CLT
panels. Columns and beams
in the interior are laminated
timber.





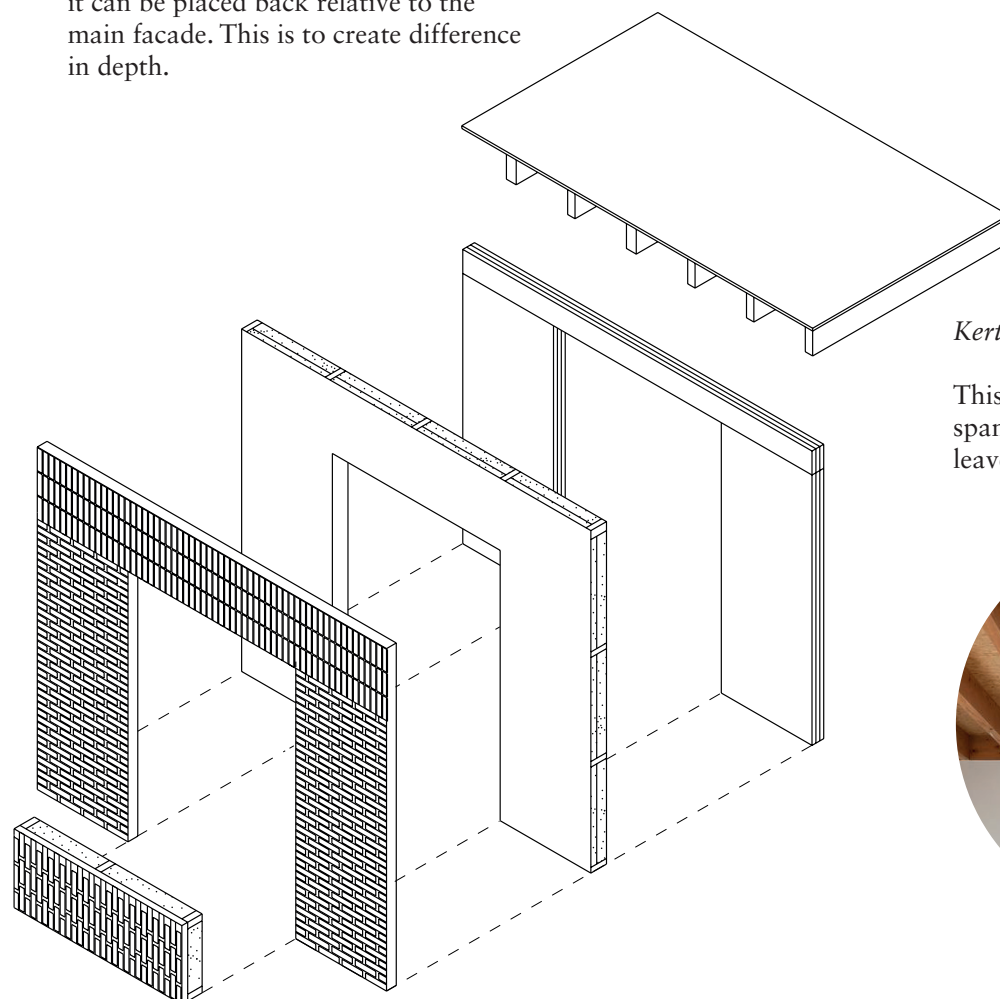
Prefab brick slips with insulation

This prefab element is slimmer so that it can be placed back relative to the main facade. This is to create difference in depth.



Brick pattern

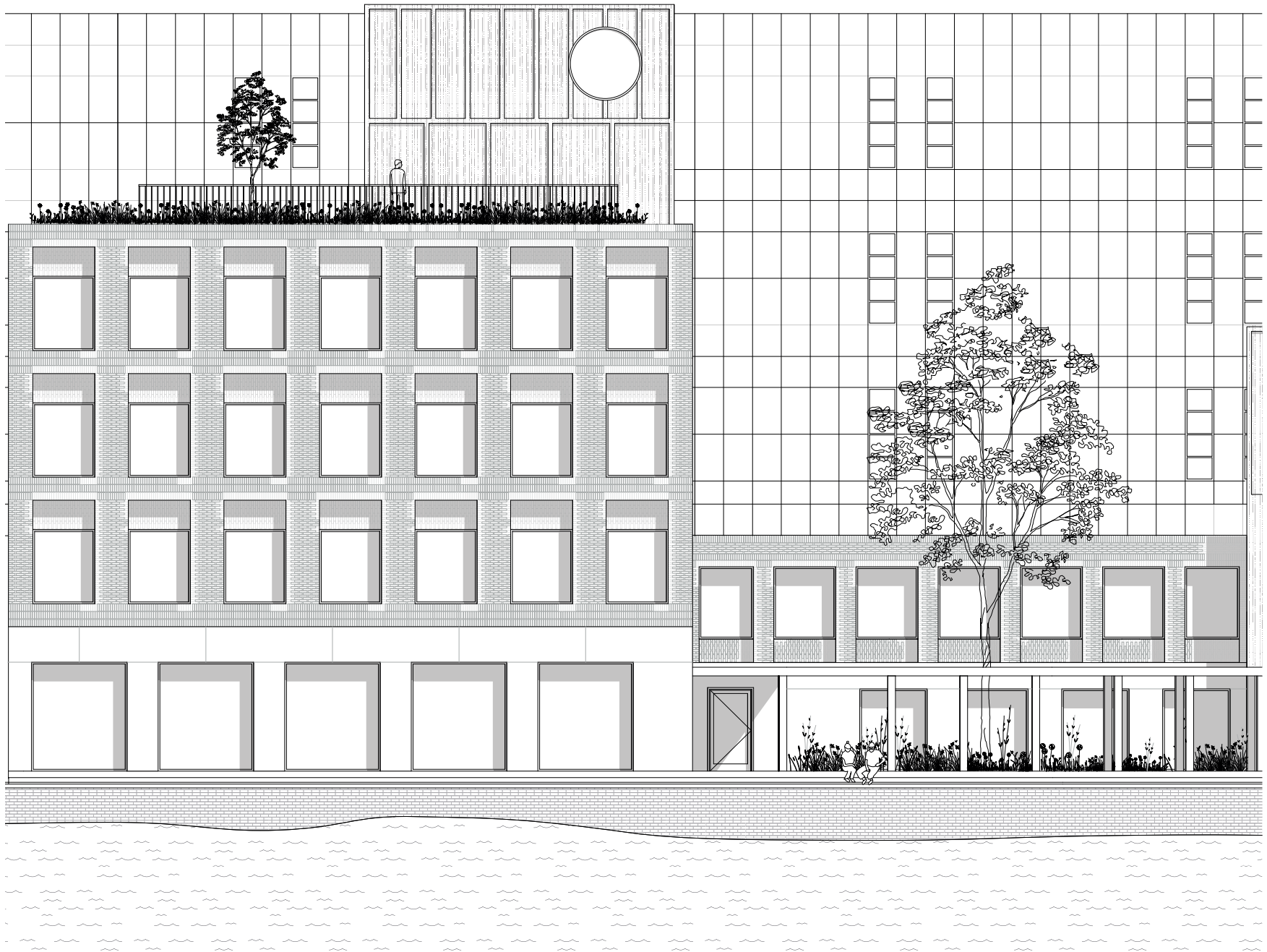
The masonry has a particular pattern, alternately horizontal and vertical. The horizontal bond has a bigger joint. The mortar is generously applied so that the effect is a rough joint with texture.



Kerto Ripa floor element

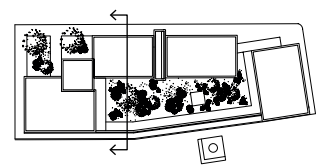
This type of floor construction can span up to big sizes. It's possible to leave the ribs in sight.



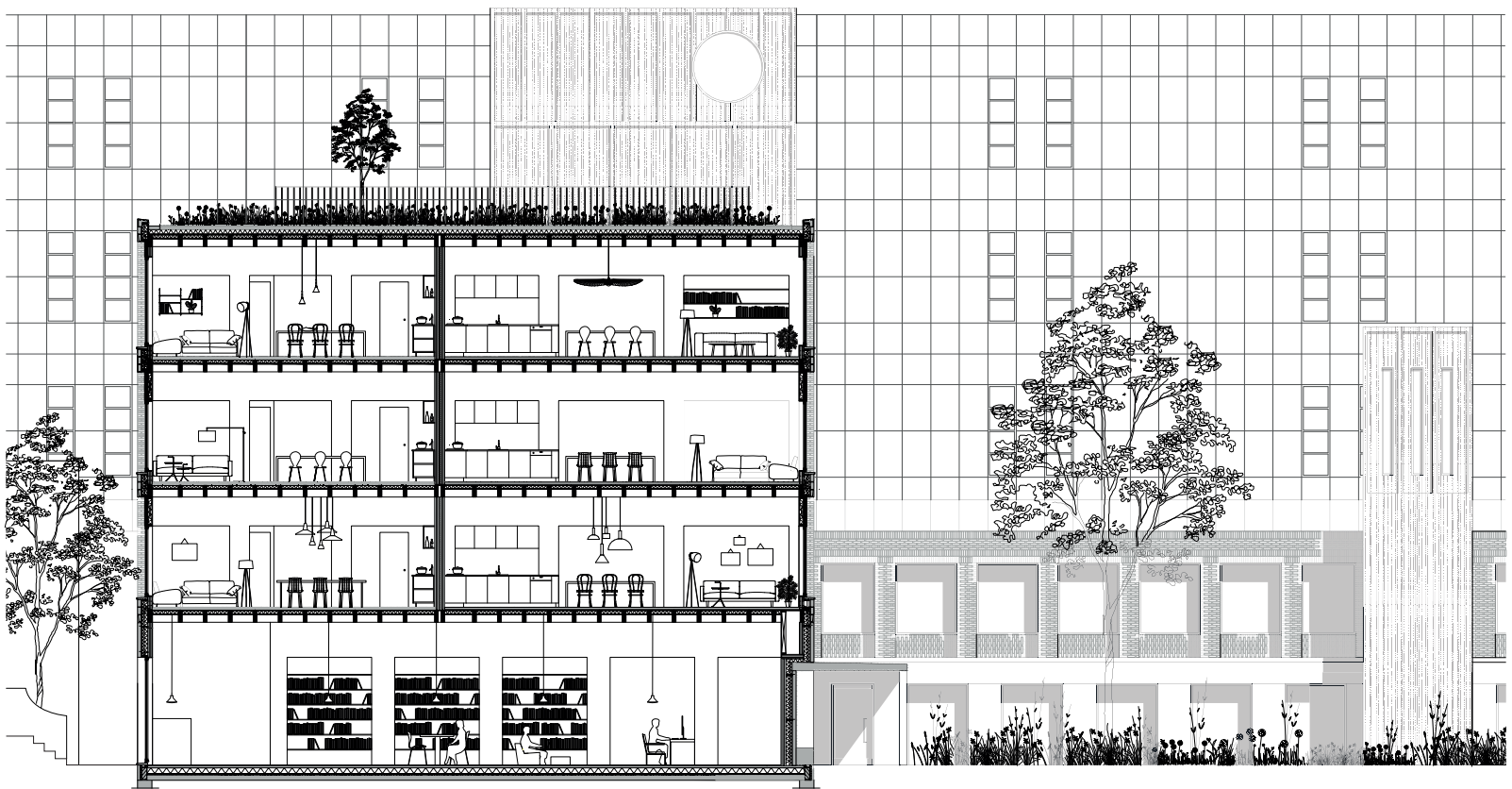




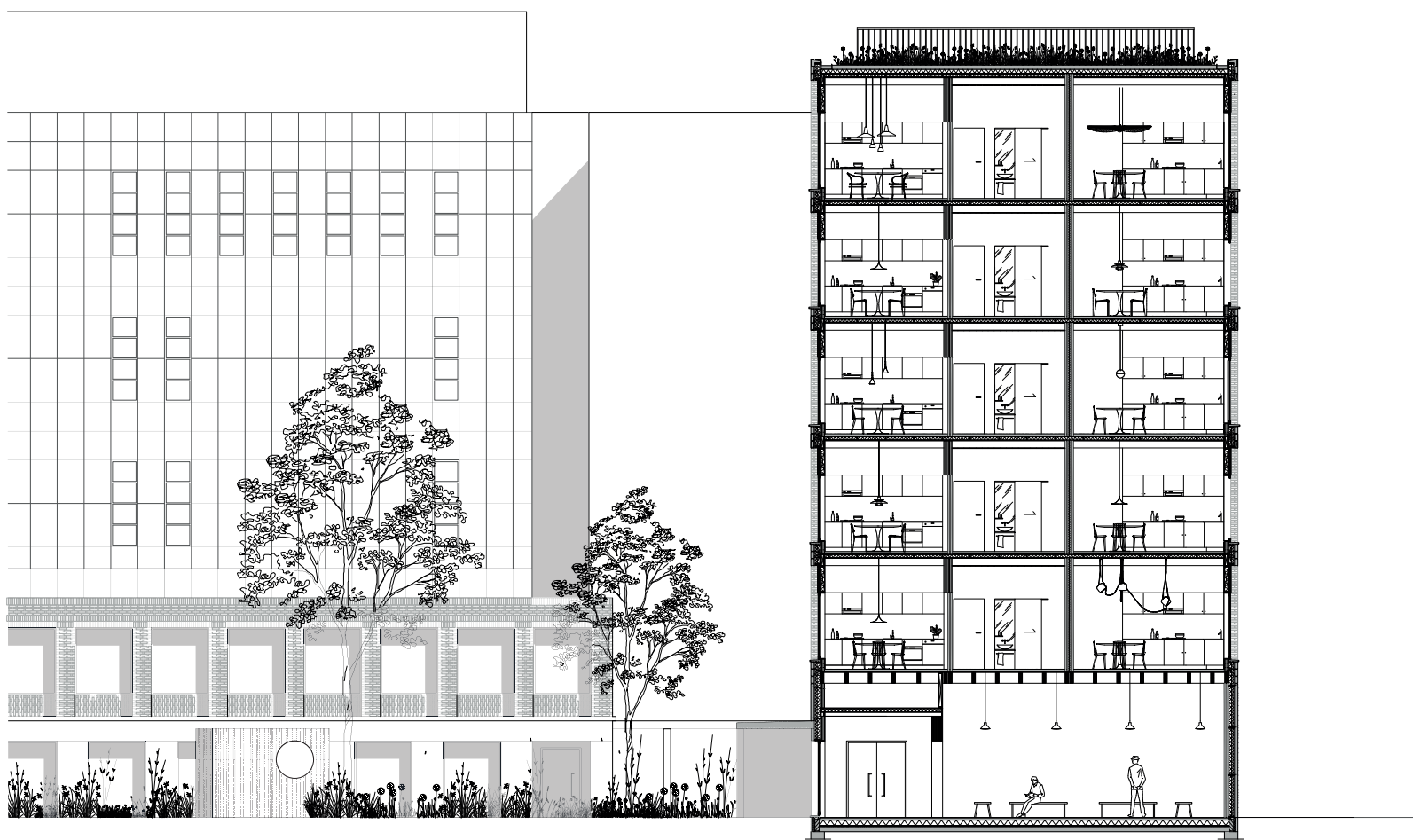




cross section



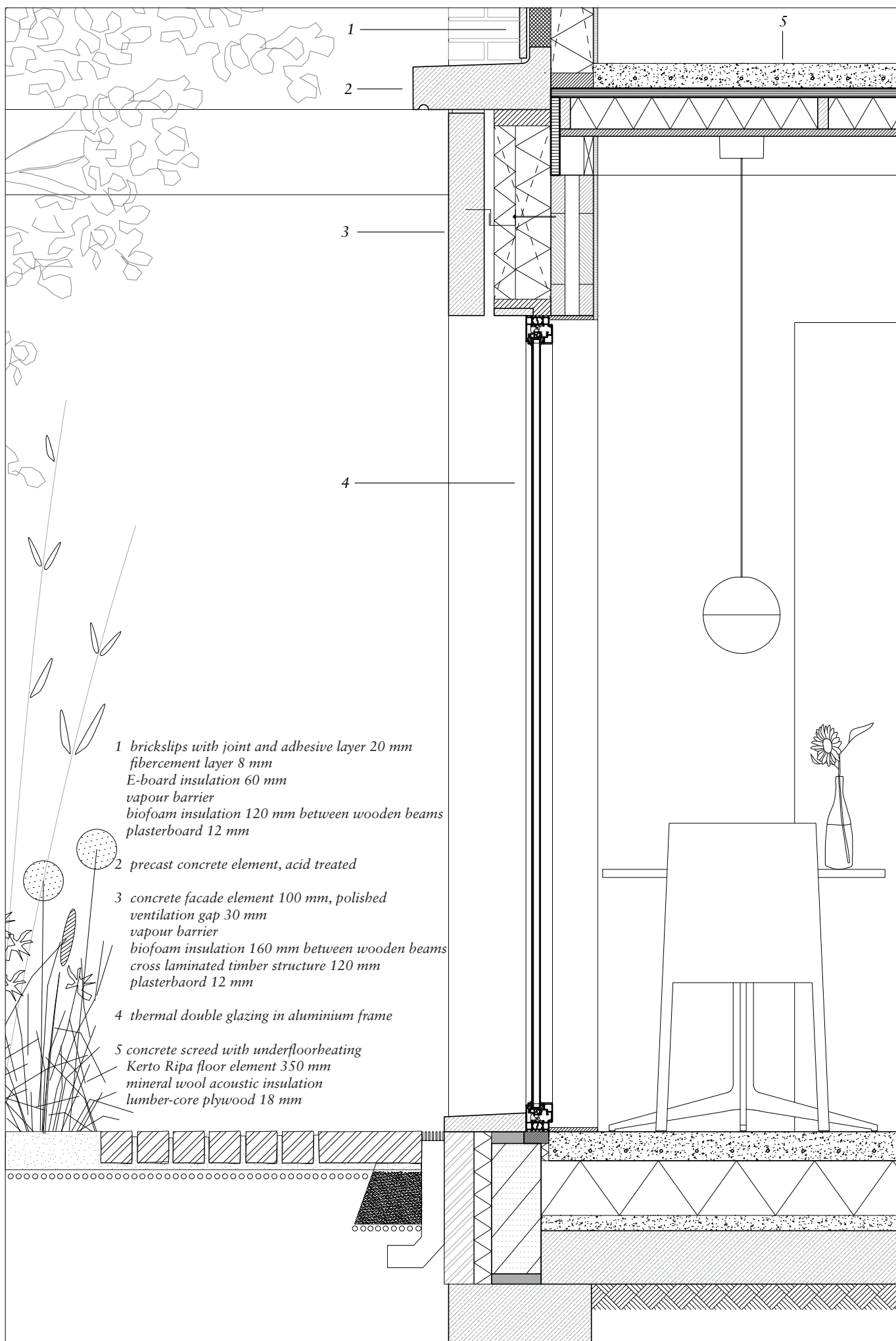
longitudinal section
1:200





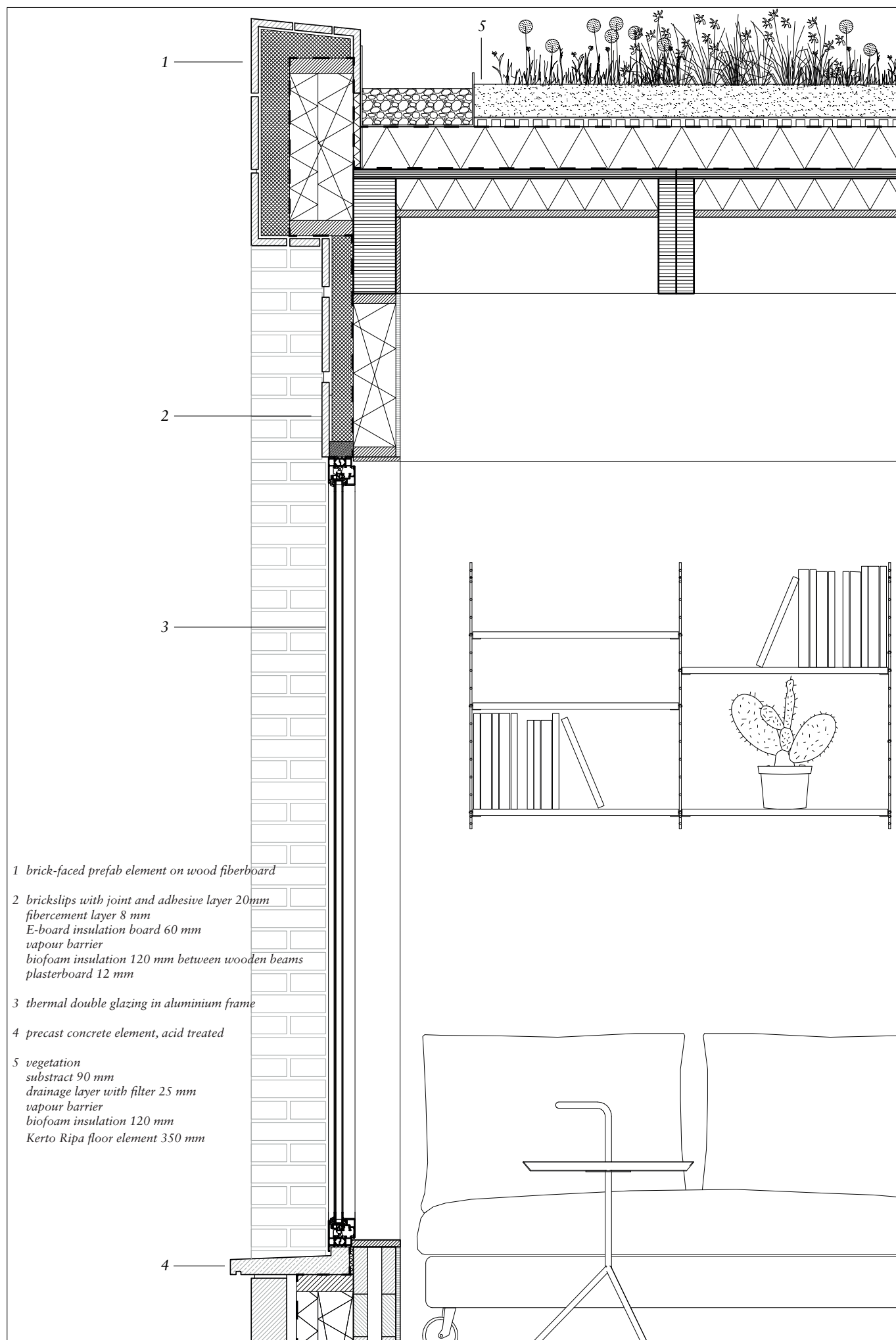
DETAILS

Detailing has been an important theme throughout the design. The goal was to create simple yet rich details that contribute to the perception of the spaces. The significant details are shown in the following drawings, accompanied by impressions.



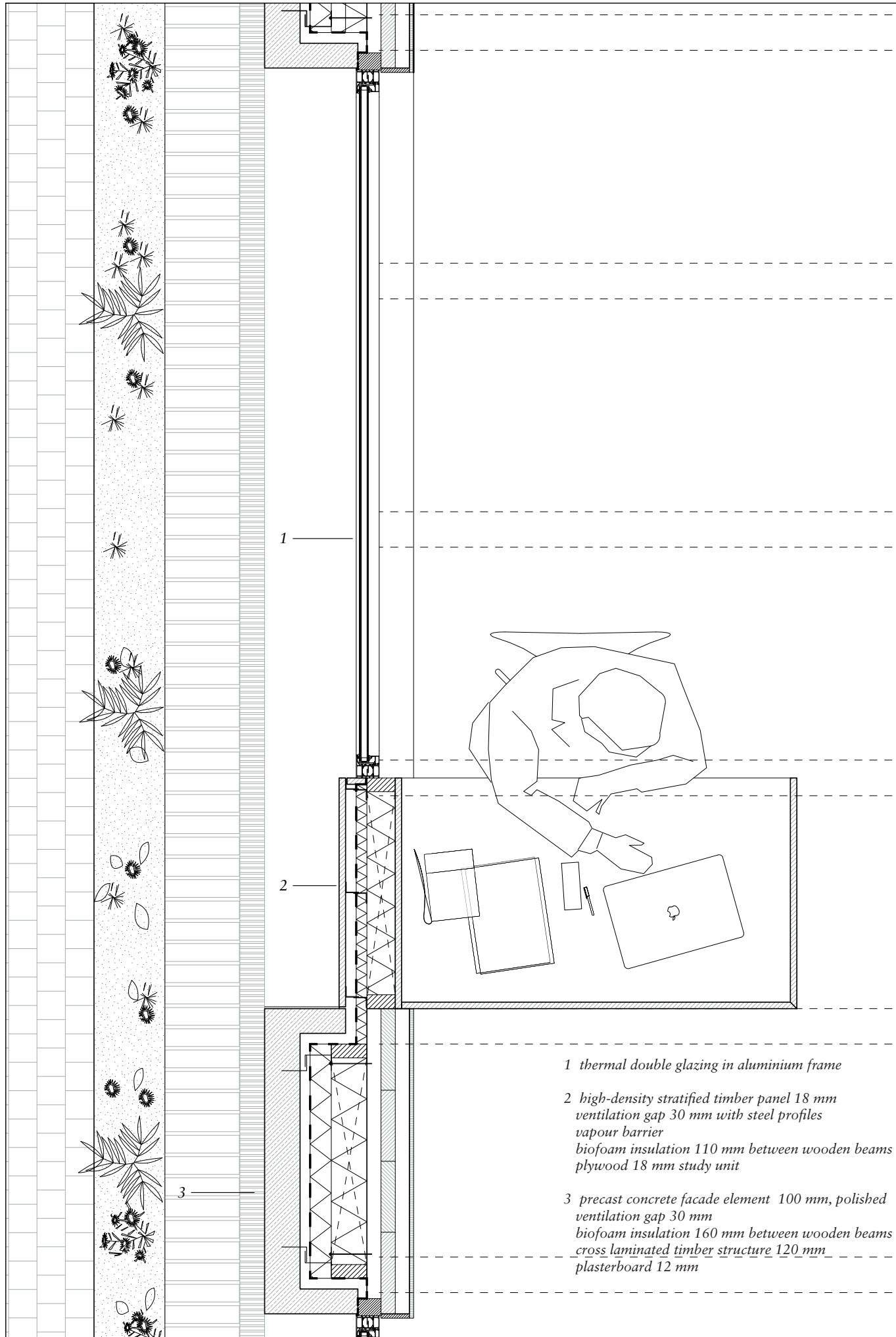
restaurant
vertical section 1:14







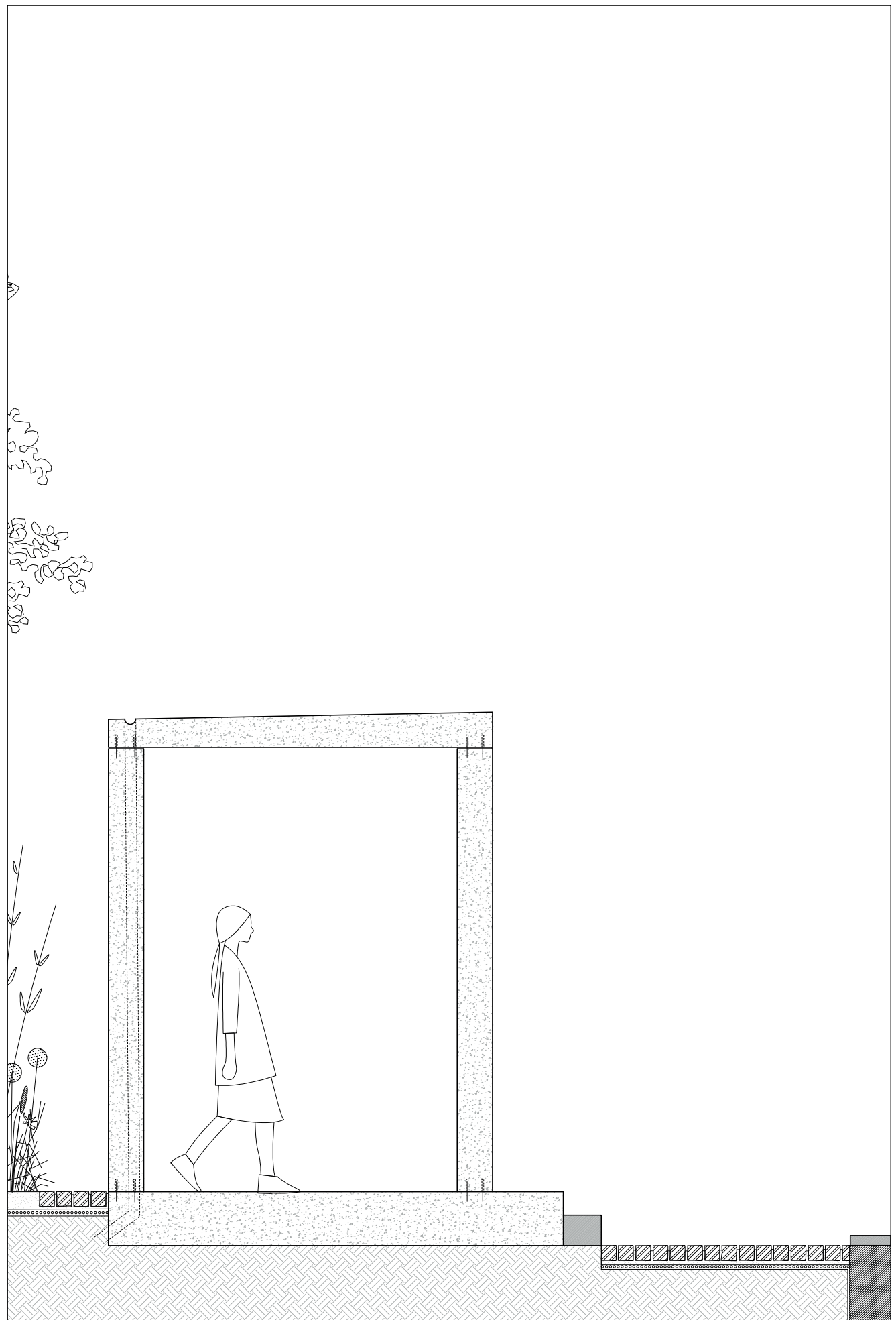




library
vertical section 1:14







colonnade
vertical section 1:25

CONTEMPLATIVE SPACES

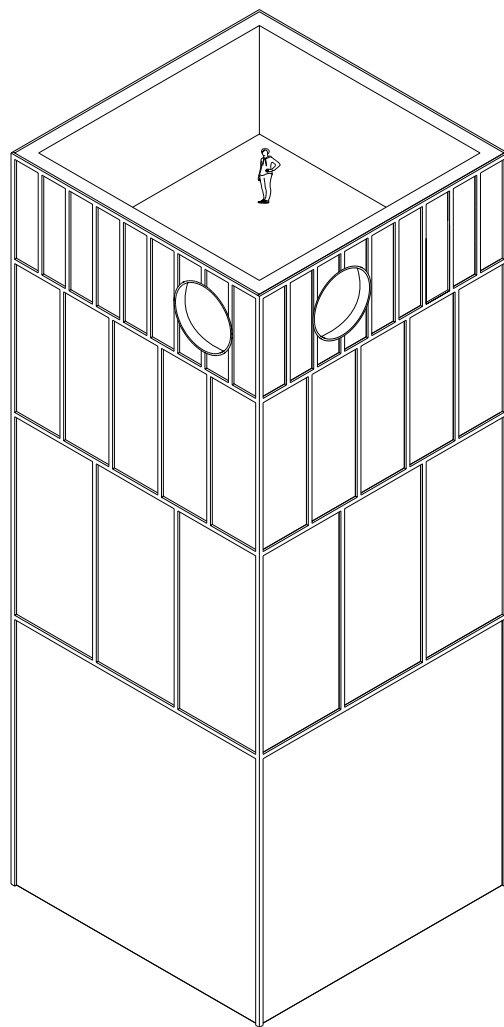
There are three spaces in the ensemble that are designed as exceptions. They stand out in form as they are more resembling religious or monumental architecture, but also in appearance, because the finish of the concrete is a more rough one.

All three are really present in the street image, but non of them is directly or logically entered.

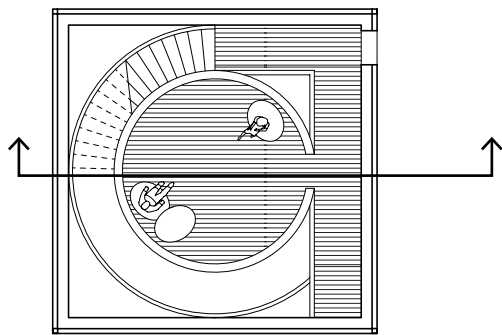
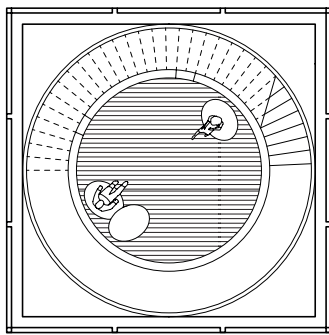
They are highly atmospheric, and meant as an invitation to silence, open for interpretation according to one's own spiritual sense and idea of contemplation.

INTROSPECTION

The tower of introspection stands out in the overall complex through its appearance. It's not only exceeding all volumes in height, the facade has also a particular treatment. As this space is dedicated to introspection, it mainly turned inwards. It's only accessible through a small passage in the library. Once entered the tower, you have the choice to enter the high dome on the ground floor or continue your way up on the spiraling stairs. The route up offers views on the dome through little windows and finally leads up to the top level with only two openings that frame your view on the city.







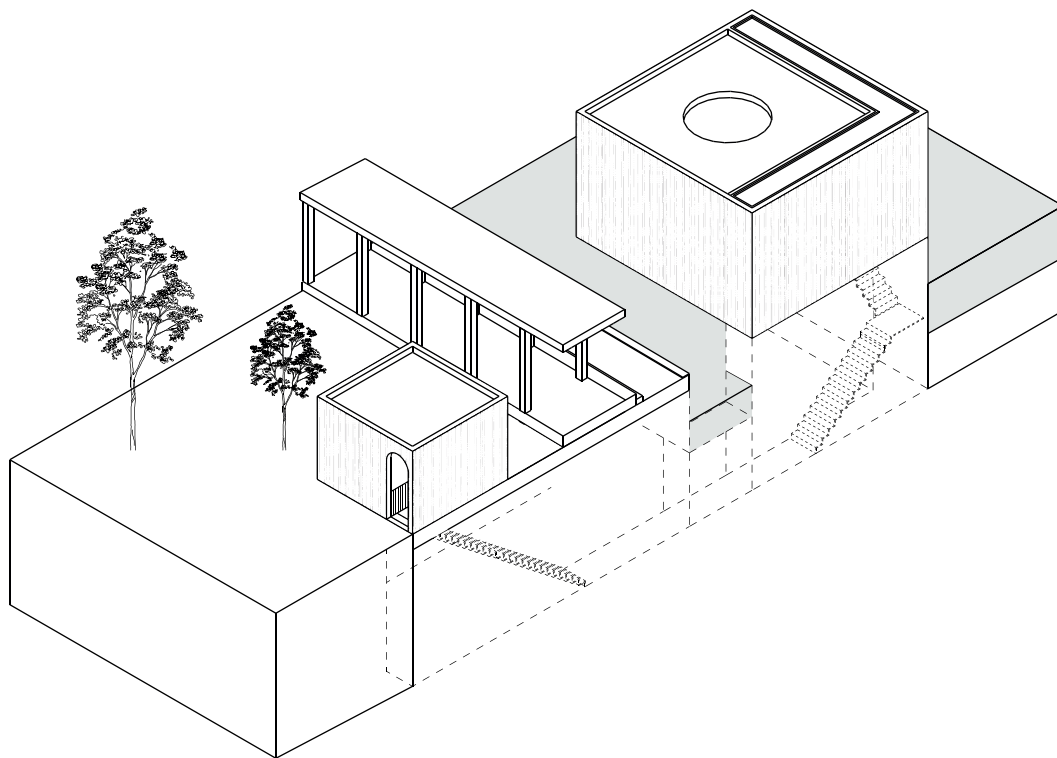
ground floor & first floor
1:200



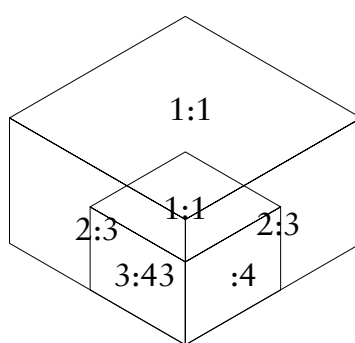
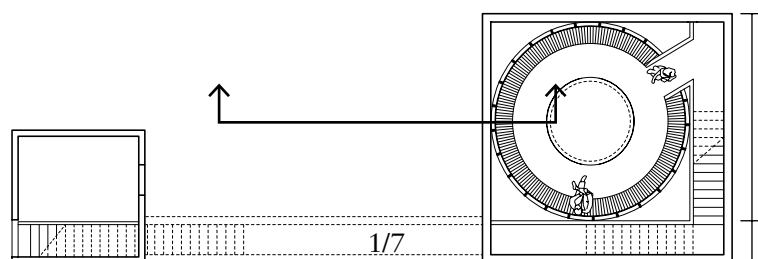
cross section

DISCONNECTION

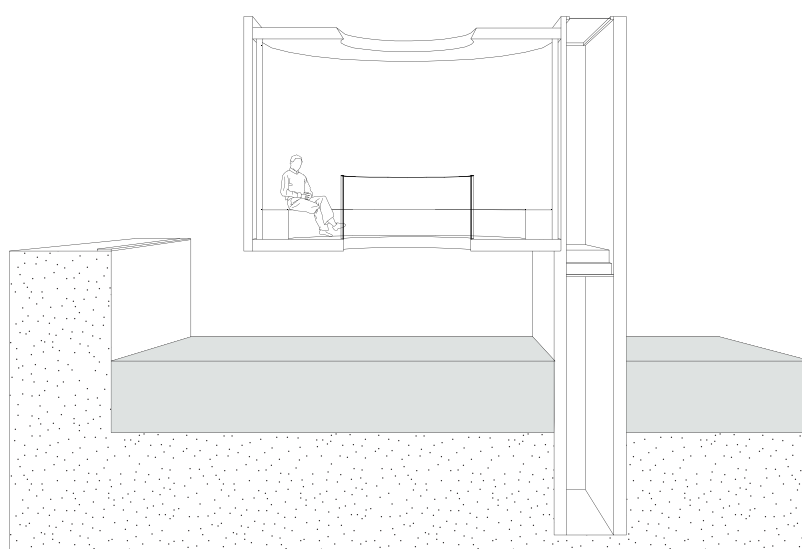
This room is about the experience of being disconnected. The route plays thus an important role. The main volume is placed above the water, but can not be reached directly from the land. A smaller resembling volume in the garden leads you to a underground passage. This route is an important aspect of the experience. From outside you enter a dark, small passage which shows light at the end, automatically you want to go there. If you reach the stairs, you can see the light above you. Turning around the corner suddenly you arrive in a round inner space. Disconnection from your horizontal environment, this space frames the sky and the water underneath you.







ground floor
1:200

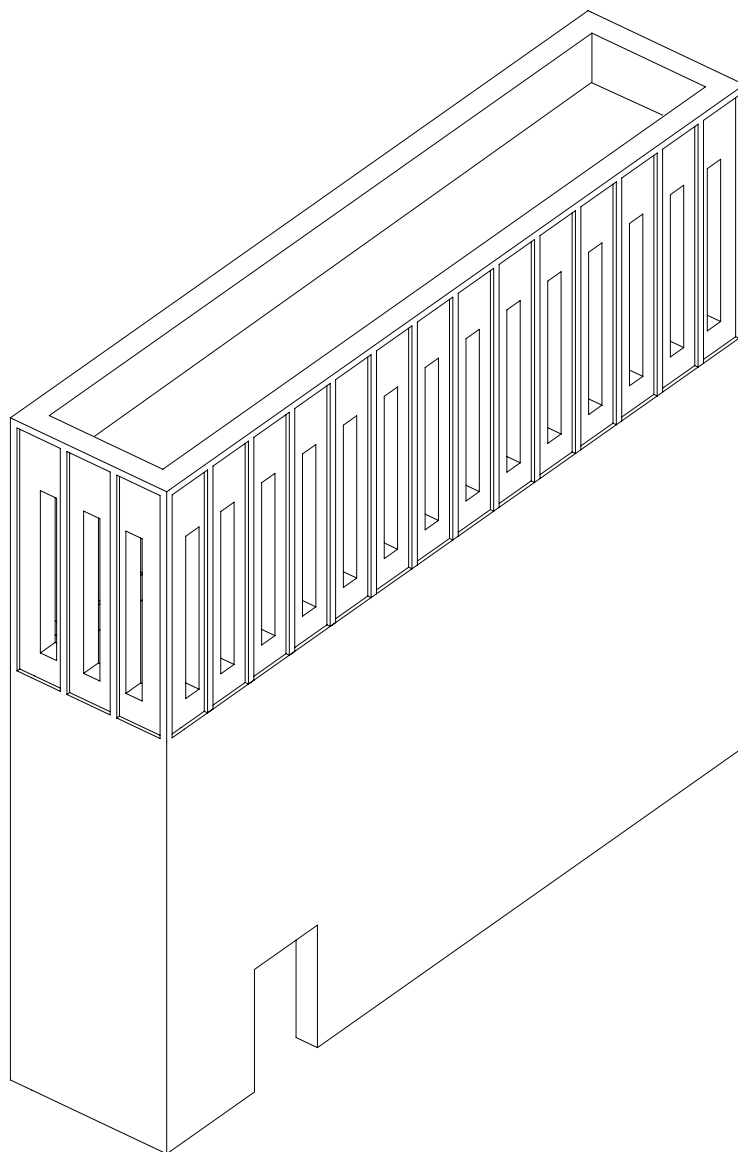


cross section

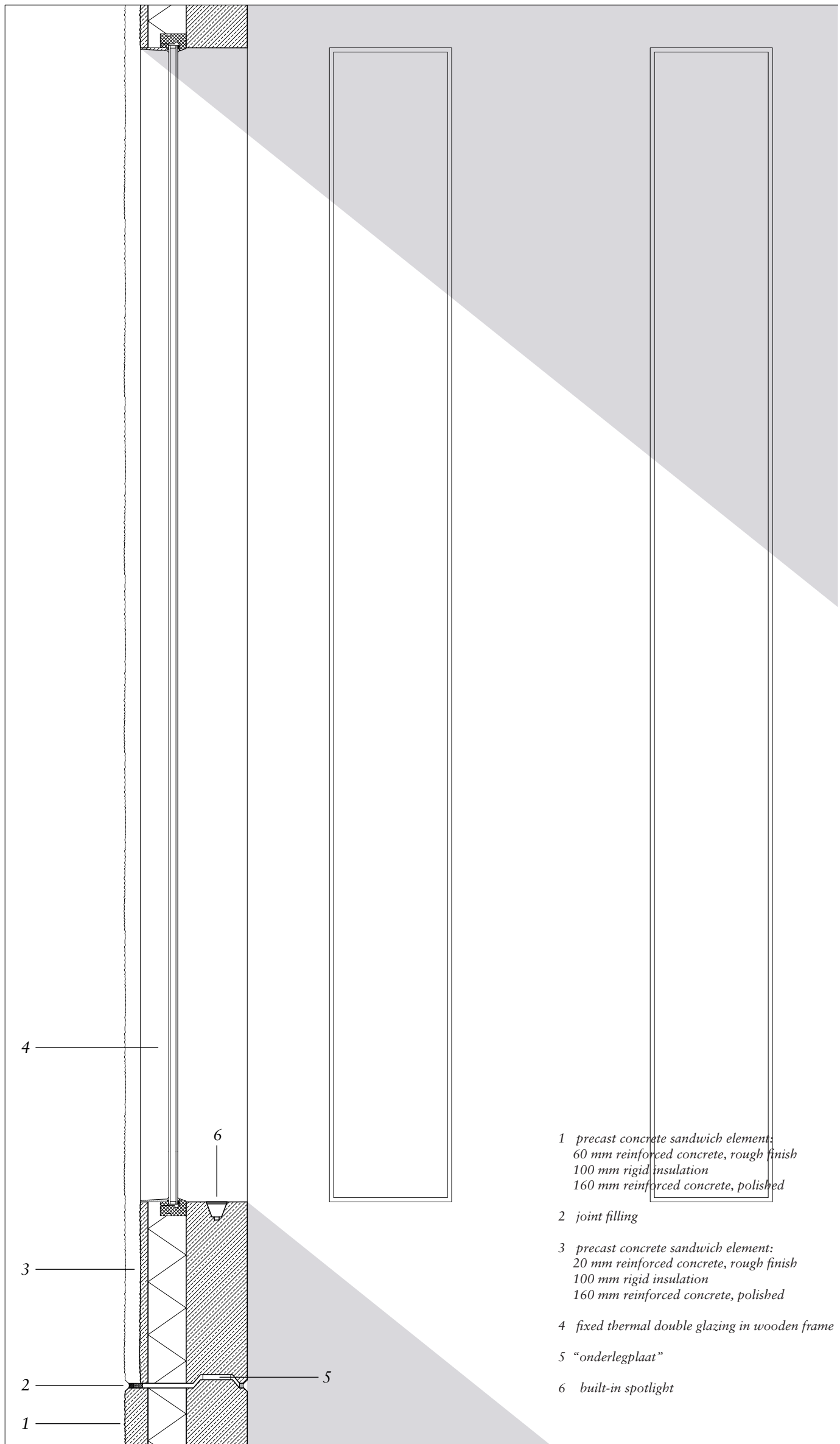
REFLECTION

This form is resembling the most the bell tower of a church, with the emphasize on the slim verticality.

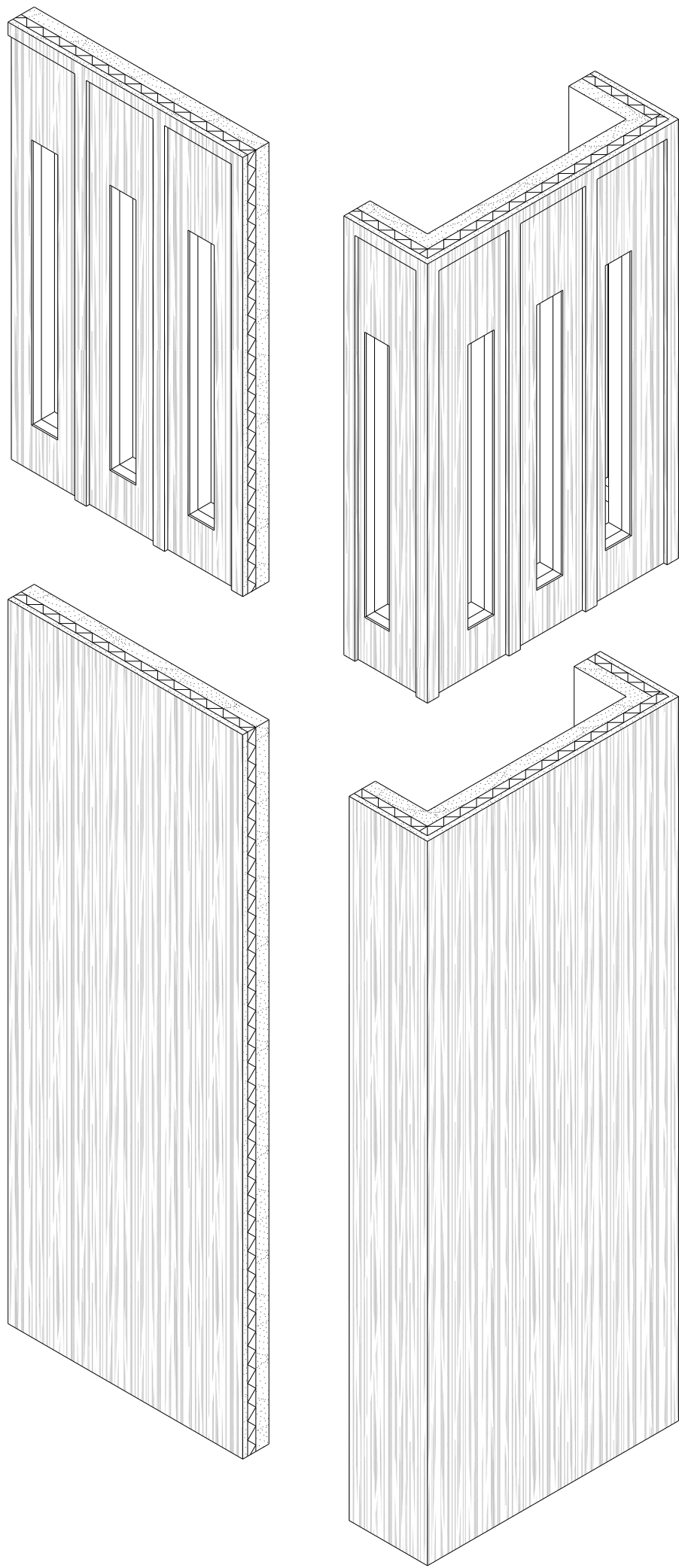
The contrast between light and dark is an important theme in this space. You enter in a relatively dark area, but you see the skylight with the stairs leading up. The high space you enter after is bathed in light with a play of shadows. There is place for one or two persons to just sit and be alone with your thoughts.



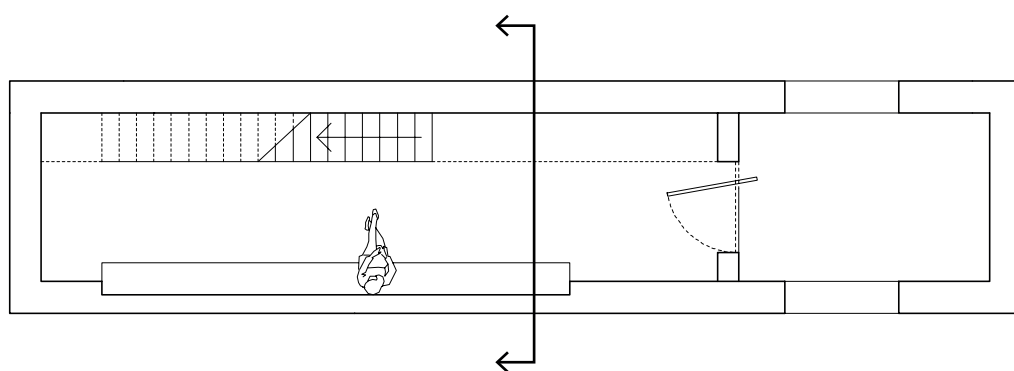
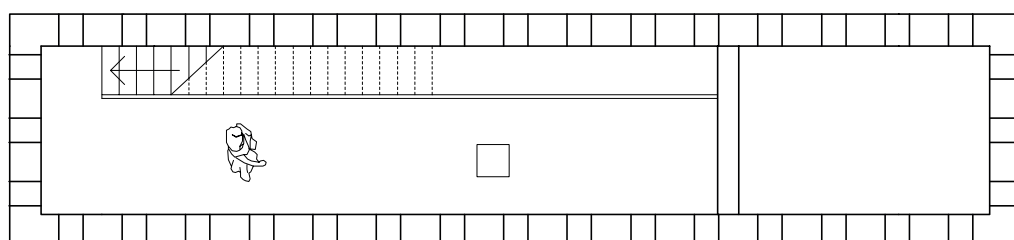




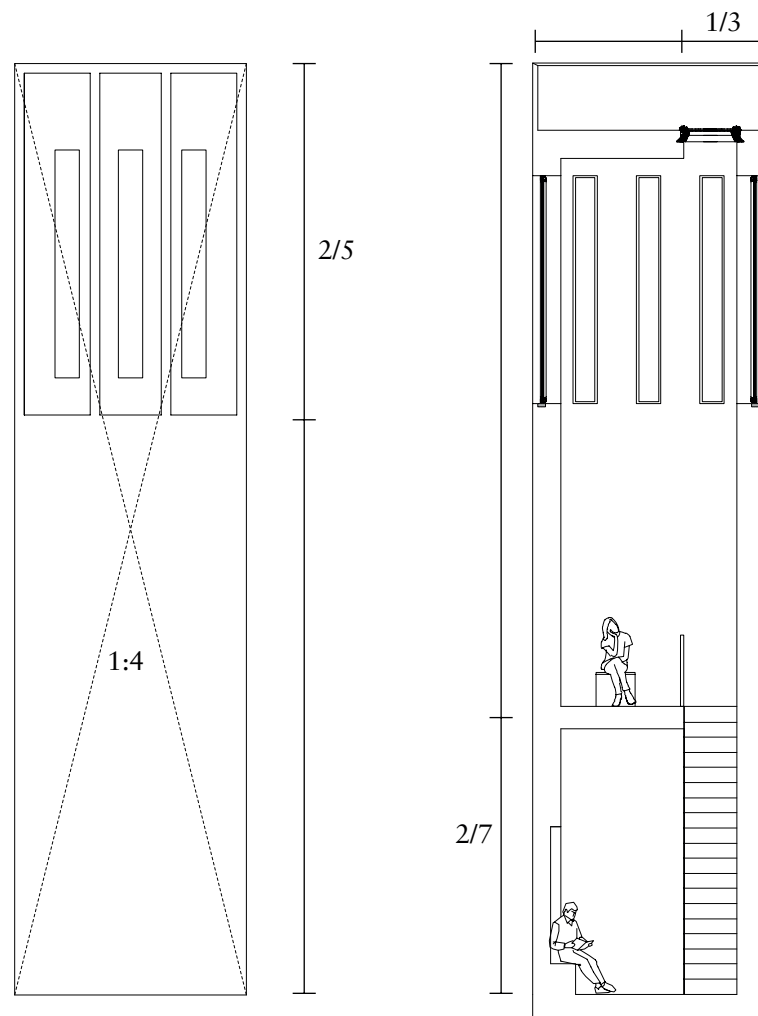
reflection
vertical section 1:12



*Schematic drawing of the assembling
method of the pre-fab concrete elements.*



ground floor & first floor
1:100



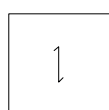
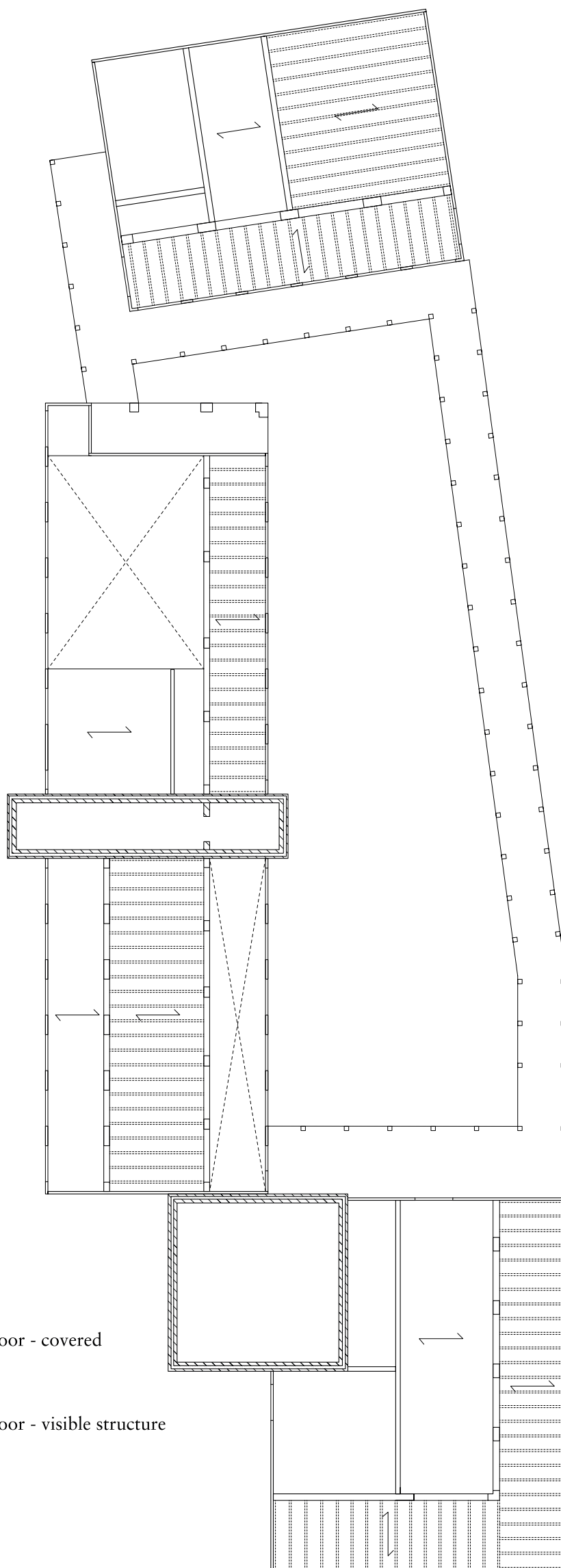
elevation & cross section
 1:100

STRUCTURE

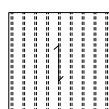
The main structure is built up out of CLT panels. Using wood for the main structure is not very common yet, but it has countless advantages. Both in measurable terms of sustainability as in more subjective mental aspects.

Building in wood is light and strong and can be left visible. Moreover, the use of wood as construction material can contribute to the reduction of CO2 emissions.

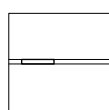
To emphasize the different character of the specific spaces of contemplation, they are built up out of prefabricated insulated concrete panels.



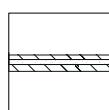
kerto ripa floor - covered



kerto ripa floor - visible structure



CLT panel



prefab concrete

CLIMATE

ground floor

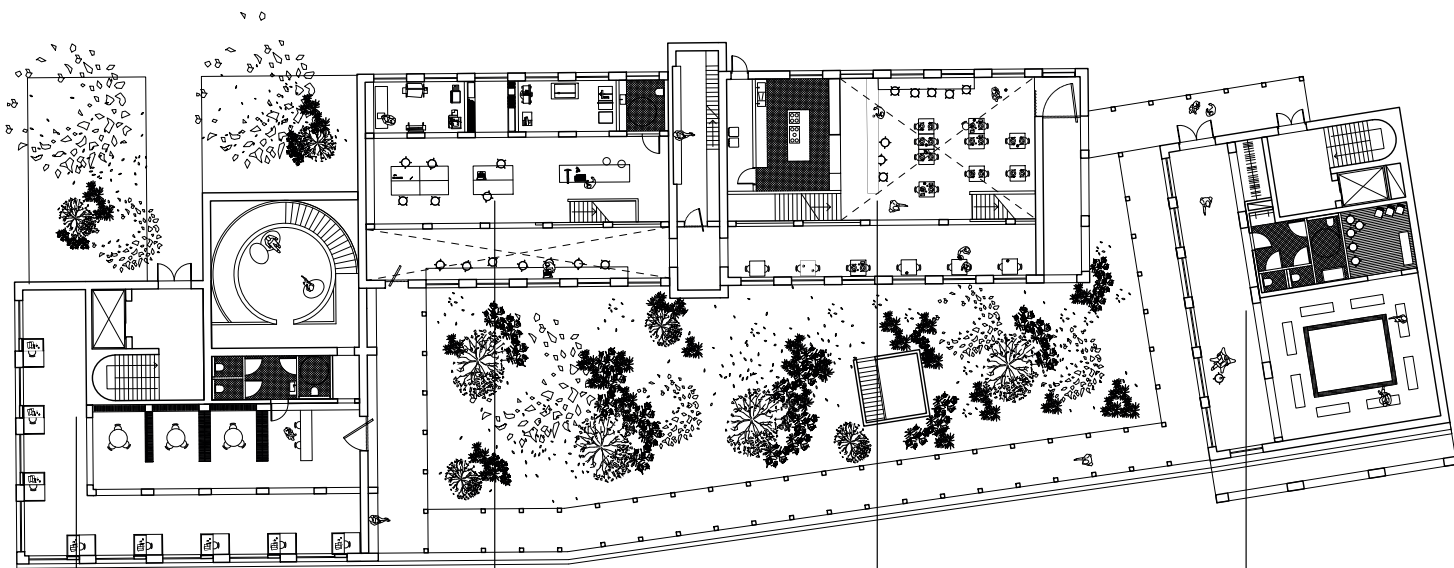
ventilation

due to different capacity and times of use there are separate air handling unit for the library, the workshop, the restaurant and the chapel. The units are placed in the basement and get their fresh air via either the roof or the facade.

heating and cooling

the whole building will be heated and cooled through an underfloor heating/cooling system.

There is a central heatpump with heat recovery. Also there is a additional boiler to heat up the water when necessary

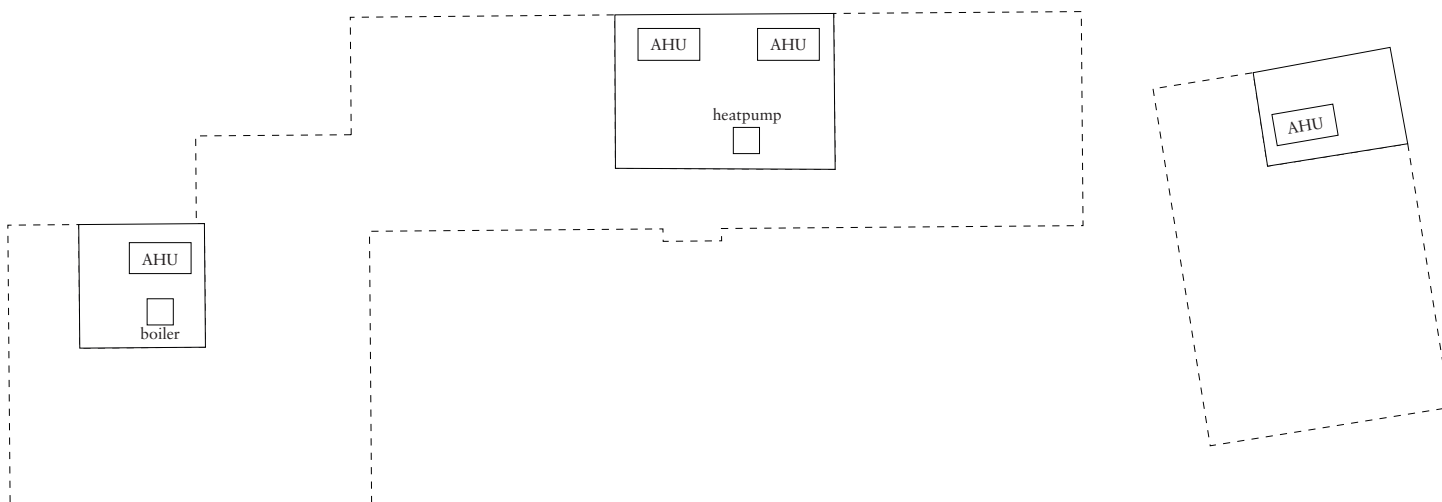


Library
opening hours: 9:00 - 18.00
capacity: 30 persons
flow rate: 25m³/hr

Workshop
opening hours: 9:00 - 18.00
capacity: 30 persons
flow rate: 50m³/hr

Restaurant
opening hours: 11:00 - 23.00
capacity: 60 persons
flow rate: 25m³/hr

Hall
opening hours: 07:00 - variable
capacity: 15 persons
flow rate: 25m³/hr



apartments

ventilation

every apartment is ventilated separately through balanced ventilation systems (type D) in combination with natural ventilation.

In every apartment there is space incorporated for the ventilation units, which are approximately the size of a kitchen cabinet. The pipes are about 125 mm and run through the Kerto Ripa floors to be left invisible.

