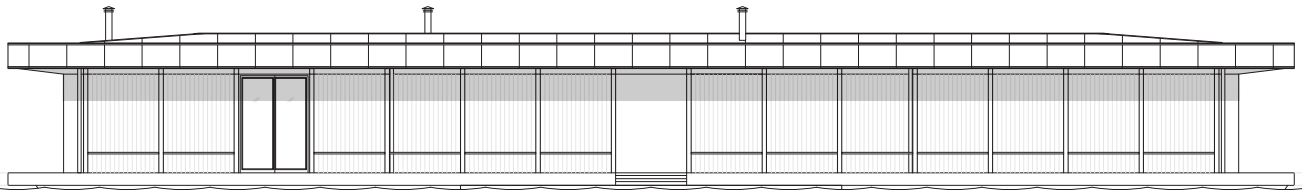
LILJEHOLMEN COLD BATH

- THE RE-BIRTH OF A HISTORICAL MEETING PLACE IN STOCKHOLM



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Master's thesis | 2023

Chalmers University of Technology
Department of Architecture and Civil Engineering

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Master's Programme of Architecture and Urban Design
MPARC | Building and tectonics
2023

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Abstract

Whether it's a moment for yourself or time spent with others, public baths should be a space free from the hectic pace that characterizes the city-life. Liljeholmsbadet in Stockholm, a now closed public bath built in the 1930's, is presently discussed to be demolished and rebuilt as a replica of the original building. This thesis is offering an alternative to the replica by exploring how a new version of Liljeholmsbadet can be designed with the ideals of today, while still incorporating the values of the original building.

The aim was to create a space for recovery and increased social cohesion among urbanites, within a building with a long lifespan flexible to meet uncertain future demands. Driven by a research by design approach the final proposal was created through model testing, analysis of built references and studies of historical examples of architecture around the bathing ritual.

The resulting building consists of the construction principle of a pillar and beam grid, which allows for changing the layout of the outer and inner walls without having to change the load-carrying structure. Standardized building components, techniques and materials have been used in order to promote replacement of parts instead of building with a predestined lifespan.

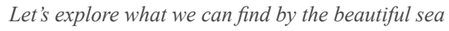
Keywords: Cold bath, health, recovery, social cohesion, public space

Acknowledgements

Creating this master's thesis I did far from alone. There are many people I have shared this journey with, who has shown me the greatest support all along. It's with endless of gratitude I thank all of you who has been by my side during the years of my studies and the internship. That through inspiration and cheer, have been a great part of making it possible for me to create this final project.

Thank you.

Let's explore what we can find by the beautiful sea



Student background

Jan - June 2023	ACEX35 Master's thesis in Architecture, Chalmers University of Technology, Gothenburg
Aug 2021 - Nov 2022	Architectural intern / Junior architect, Joakim Häggström Arkitektkontor, Stockholm
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Aug 2017 - Jun 2020	Bachelor of Science in Architecture, Chalmers University of Technology, Gothenburg

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Introduction

Purpose & Aim

The function of public baths in an urban context has shifted throughout history. Once an important place for taking care of personal hygiene, two of the main functions today are to be a place for relaxation and a meeting place stimulating social cohesion for the urban community. The public bath of Liljeholmsbadet in Stockholm is presently discussed to be demolished and rebuilt as a replica. As a contribution to this discussion, and at the same time challenging the proposal of a replica, the aim of this thesis is to create a building with longer lifespan by using modern building construction principles. Furthermore, this project aims to create a space for health and recovery in an urban context, with the hope to inspire to more similar projects. Lastly, the construction should be flexible enough to change the function of the building that can meet uncertain needs of the future.

Research questions

How can a culturally and historically important building like Liljeholmsbadet be replaced with a building designed with modern building principles, achieving the same values as the old?

What design strategies can frame the expected qualities of a bath house today, but be flexible enough to meet the needs in a future context?

Which qualities can be brought into a public cold bath in a central context like Hornstull in order to gather people and contribute to better health?

Methodology

This master's thesis is driven by a research by design approach. The project was divided into four phases, which are described below. The order of the list is also a suggested reading guideline for this thesis.

I. An introduction through theory focusing on (i) historical research around the bathing ritual and of the site, (ii) the design guidelines of "Real architecture" by Michael Benedikt (1987) (iii) and analysis of built references.

II. The second phase represent the work of understanding the site deeper through site visits and analysis of the current context.

III. In the third phase the new design proposal is presented. It's a result of physical model studies, drawing and digital modelling, based on the findings in the previous phases.

IV. The fourth phase is concluding the project with a discussion and reflection.

Delimitations

This thesis is focusing on creating a cold bath suited for the context of Hornstull, understanding its means for the city of Stockholm in the current moment. Nonetheless, this thesis hope to inspire to similar projects in other parts of the world. The proposed design is taking the environmental conditions of the site as: weather, noise, sight, privacy, built environment, and historical meaning into consideration. It's not handling the specific technical aspects connected to shoreline protection, nor the exact technical solution for the floating pontoon construction. Instead the proposed solutions are focusing on the design that is being experienced above sea level.

Background

Public baths in Stockholm: Then & now

In the early years of the 20th century Stockholm was a city that went through some radical changes in society when it comes to the built environment and the living standards. When entering the new century people still lived in poor housing conditions. Especially around the first world war when they struggled to put food on the table (Leijonhufvud). The working class people in Stockholm lived in small apartments without any water or bathroom in their homes. Instead of going to school, kids started working at an age of 8-10 years old. Many people died in diseases like tuberculosis because the lack of hygienic environments overall. In the 1920's the authorities worked hard to make the living conditions better for the citizens of Stockholm. With the new industrialisation it was possible to decrease the working hours per person to 8 hours a day. They also fought for better housing conditions and making kids go to school (Leijonhufvud).

Until the housing conditions got better the public baths had an important role in the health of the citizens. At some places in the city public baths, so called "Treöresbad" (Three-penny-baths), were open for the citizens to get washed and clean. The places got their names from the simple reason that it cost 3 penny to get a bath. When the new ideas of functionalism entered the Swedish housing ideology, the bathroom became a common facility in the homes (Leijonhufvud). The purpose of the public baths have for most people have changed since then, and therefore gotten another role in the society. Perhaps, it is still serving people a kind of cleaning, but rather a cleansing of the mind than a cleaning of the body. The public baths is more of the place for a moment to focus on mental health in all aspects and also for relaxation. It can be by yourself or in the company of others, which may be one part of the ritual we still share with the past.

Introducing Liljeholmsbadet

Whether it's a moment for yourself or time to spend with others, the bath should offer a space free from the hectic city-life. A space that once was available at the shore of Hornstull in Stockholm, at Liljeholmsbadet, designed by the architect Gunnar Leche and built in 1930. The bath is known for being a unique central public bath of its kind in Stockholm. Nonetheless, it was closed in 2016 because of poor quality in the construction. Due to its unique location in the city and historical value it seems nothing but right to bring this meeting place in the city back to life.

Men on the diving board at Liljeholmsbadet in 1952. Image by Tore Burnäs for Svenska Dagbladet. From Digitalastadsmuseet. Used with permission.

History of Liljeholmsbadet

The original bath was designed by the Swedish architect Gunnar Leche, born 1891. The building was built off shore and brought by boat to Hornstull in 1930. During more than 80 years it served the citizens of Stockholm, with its special features, until it was closed in 2016. At that time around 55 000 people were visiting the bath each year (Lundevall, P). Still, to this day, the bath is the only building to be found in central Stockholm in this character and therefore it carries an important cultural role in the history of the city (Hannes).

The bath arrived in a time where a lot of changes were happening in the local context of Stockholm. The Swedish living standards were overall about to change, and has been totally changed since. People came from all over the country to seek for a better life in Stockholm in the belief of that in the capital the money was to find. The population in the capital grew a lot.

The industrialisation both changed the speed of the society and at the same time made the machine outcompete the labour of the people. Many people were lacking work opportunities due to this, making it tougher to survive in the capital city than many probably expected. People lived packed in small apartments with low standards and without any well developed hygiene facilities like toilettes and showers. The public baths served an important role due to hygienic aspects.

The bath of Liljeholmen is built on a concrete pontoon making it a unique building of its kind in Stockholm. As you might notice on the photos, the building has been placed on different places of the site during the years. When it first came, it was placed a bit more south-east from its placing today. On this picture taken 1960 the building already was been moved to where it is found today.

Due to poor quality the pontoon almost sank in the 1950's. It was renovated and put back in service shortly afterwards. Sadly it seems like the renovation wasn't enough to give the building another 100 years, because in 2016 it was closed again due to infirmity in the construction. It has been acknowledge as a high culturally worth object by the Stockholm City Museum (Hannes), therefore the municipality has decided to demolish the building and replace it with a new replica. A renovation has been declined due to funding constraints.

Photo to the left: Orthophoto of Hornstull year 1960, also showing the chosen site for this master thesis project in relation to the original building of Liljeholmsbadet. Processed map from Lantmäteriet. Used with permission.

Liljeholmsbadet in the 1930's. Image by Axel Malmström. From Digitalastadsmuseet. Used with permission.

Liljeholmsbadet towed in 1950 for reparation at Hammarby boatyard. Image by Olle Widfeldt for Svenska Dagbladet. From Digitalastadsmuseet. Used with permission.

”In a hot climate, should you not dream that you are somewhere cool; in a cold climate, that you are somewhere warm [...]”

- Michael Benedikt, quote from *On The Poetics of Space Now.*

Theory

"Real architecture"

From a text written in 1987 by Michael Benedikt four key concepts are presented as main approaches when creating what he refers to as ”real architecture”. The four key concepts are:

presence, purpose,
materiality, emptiness

Each four of them adds a certain value to what Benedikt believes is making a building present in its context, therefore also making it feel real.

For example: Presence is about the building being firm in its environment, in the sense that it is not hidden or inferior than what is surrounding it. Purpose on the other hand Benedikt is explains in a much more subjective way - meaning that the purpose of the building shouldn’t be too fixed or designed for the usage of people. Instead, like ”how we use a tree on a rainy day”, he says we can seek to create our buildings. Trusting that their purpose will be clear once people start using them without being to controlled by the layout of the design. Materiality is important to be honest and visible in order for the viewer to experience its origin state - like stone and wood.

Then, lastly but not least, emptiness is divided into two categories. One explaining the importance of voids in architecture and the other something we can only sense - what they in Japan call ”Ma”. It is many interesting thoughts Benedikt presents around these four key aspects because they can all quite easily be concretised and adapted to a design programme. The question is: can ”real architecture” be concretised as simple like that and are ”real” architecture experienced in the same way for all people?

”Bathing bring us closer to all our senses.
Closer to our bodies and materials than we are used to in public spaces.”

- Christie Pearson, quote from *The Architecture of Bathing: Body, Landscape, Art.*

Built references

Facade of the Mill House. Copyright by Åke Eson Lindman, taken from Archdaily.

The Mill House

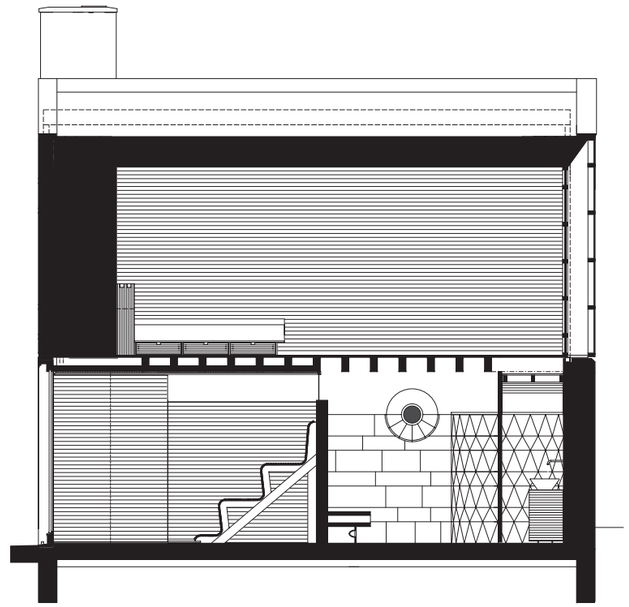
Västra Karup, 2000

Interesting material choices
Created sequences
Relation between inner and outer spaces

Gert & Karin Wingårdh
Dan Danielsson

Inspiring in how materials has been used combined with the structure of the building, being visible and beautiful but still serving different purposes of the spaces - stated by its placement and function in the structure.

The sequences between the different rooms and functions in the building are inspiring too, how the outer environment floats together with the inside.



Section of the Mill House, by Wingårdhs Arkitektkontor. Copyright by Wingårdhs Arkitektkontor. Used with permission.

Exterior photo of the facade. Copyright by Luc Boegly taken from Divisare.com.

Maison de santé / Vézelay (89)

Vézelay, France, 2014

Balanced porportions
Construction principle
Materials and expression

Bernard Quirot Architecte + Associés

Elegant modern architecture with a construction principle of heavy pillars, that in its way frames what becomes the inner spaces, creating a sequence of what could appear as a movement in the building. The repetitive sequence also creates a freedom to where there are openings in the facade, yet holding on to an order. Between each pillar a small space is created, making it possible for each and every person to have a their own private moment.

Exterior photo of the facade showing the pillar structure. Copyright by Luc Boegly taken from Divisare.com.

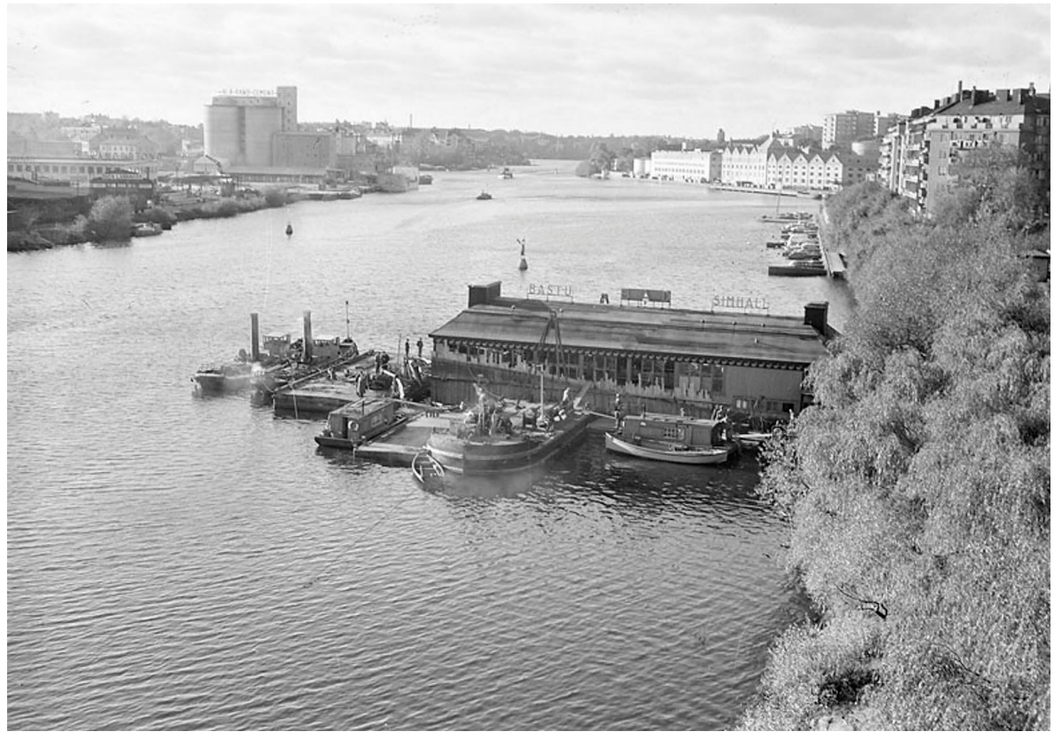
II

Map of Stockholm, 1:50 000, showing the project site. Processed map from Lantmäteriet. Used with permission.

Hornstull

Hornstull is a well known and popular area in Stockholm, where people from all around the city go to enjoy different kinds of venues, green areas and stores. It's used by the citizens as a residential area, commerce and meeting point. Hornstull could be most known for its big recreation area called Tantolunden which is popular to visit all year around, but really flourishes during the summer and the social life is also thriving. People are coming here to enjoy the beach, outdoor gym, beach volleyboll area, mini-golf court, bars, restaurants and the very popular walking path along the water of Årstaviken.

Thanks to the bridge going between Hornstull and Liljeholmen the area is also well connected to the south-western areas of Stockholm: Liljeholmen, Gröndal, Aspudden and Midsommarkransen. In the north of Hornstull the other big bridge called Västerbron connects Södermalm with Kungsholmen. It is frequently trafficked by cars, buses, pedestrians and bikers that moves between the northern and the south-western parts of the city. All in all, Hornstull is an area that is well connected with many popular places in central Stockholm, making its location for a public space like a bath convenient.



Liljeholmsbadet on site, year 1950. Image by Jan Ehnemark for Svenska Dagbladet. From Digitalastadsmuseet. Used with permission.

Site visits

In front of the plot site there is a popular walking path following the shoreline of Hornstull. One of the main attractions of this area today is the proximity to the water. Therefore, the presence of the water for the pedestrians passing by needs to be acknowledged in the new proposal. However, the public bath could potentially fill the role as a new landmark which then deserves to take place in this environment.

The streetscape of the area consists of multiple levels. Ranging from highest to lowest level are: the bridge between Hornstull and Liljeholmen, the car road named Hornstulls strand, the walking path following the shoreline. Hence, there are two possible approaches regarding the height of the proposed new building. Either make it higher than the car road in order to make the building visible from distance. Or to make it lower than the height of the existing building letting the environment and natural elements be the focus for passersby.

Today, the old building share the same light color and features as one of the buildings behind it. However, one outstanding from the site visit was how important and to what degree a new building has to relate to the existing buildings in the area? Considering that the bath house already stands out by floating on a pontoon, a new building could arguably stand out in other forms of expression as well.

By changing the site plot slightly to north-west, it can relate to the small square above the walking path in a better way. At the same time it could create a more distinct space in this area.

The plot is close to the recreational area called Tantolunden where many people exercise at the outdoor gym, run and walk. The cold bath could potentially be the new final destination of their physical activities.

View from Bergsundsgatan.

View from where the walking path begins.

Overview of the site today from Liljeholmsbron.

View over the site from the industrial area.

Photos by Helena Maripuu.

Site analysis

Placed on the south-western part of Södermalm, the plot is given direct sun both during the summer and winter months. With its position between two of the biggest bridges of Stockholm, the site is part of an area in the city that is connecting some of the bigger residential areas of Stockholm. That makes this a good spot for a space to gather the citizens. As mentioned before the walking path along the water is very popular and brings a lot of people to this area.

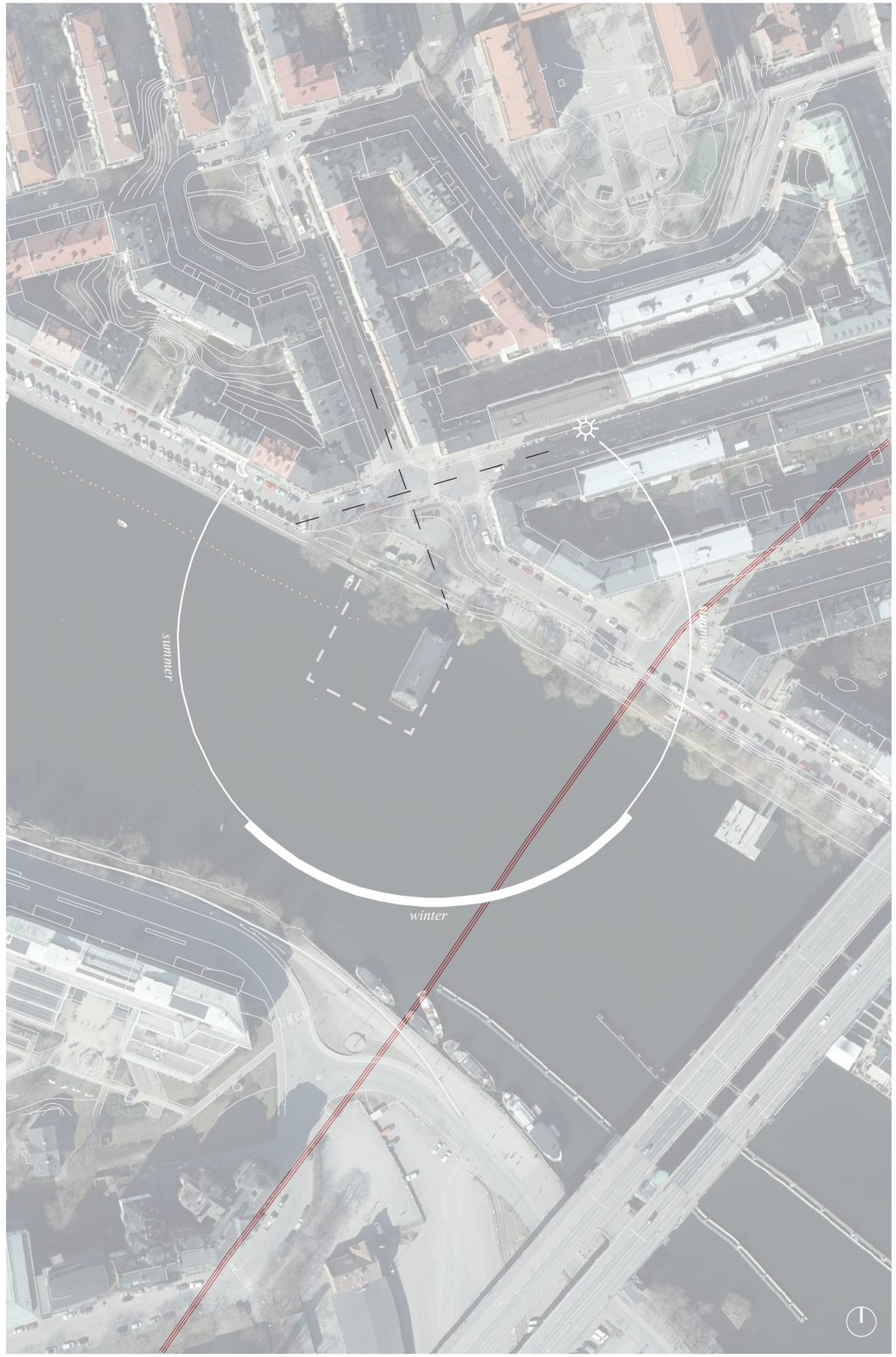
The noise from the traffic around this area is something to take into consideration since the traffic noise has been measured up to 70 decibel at some of the nearby streets.

Along the walking path the row of trees between the shore and the path is covering the potential sight from passing by people into the new building, depending of the shape of it. From the bridge and the other side of the water the sight is very good and would potentially be protected.

The red-line of the subway is passing by under water on the south-eastern side of the plot. Placing the new bath more to the north-west would be to prefer.

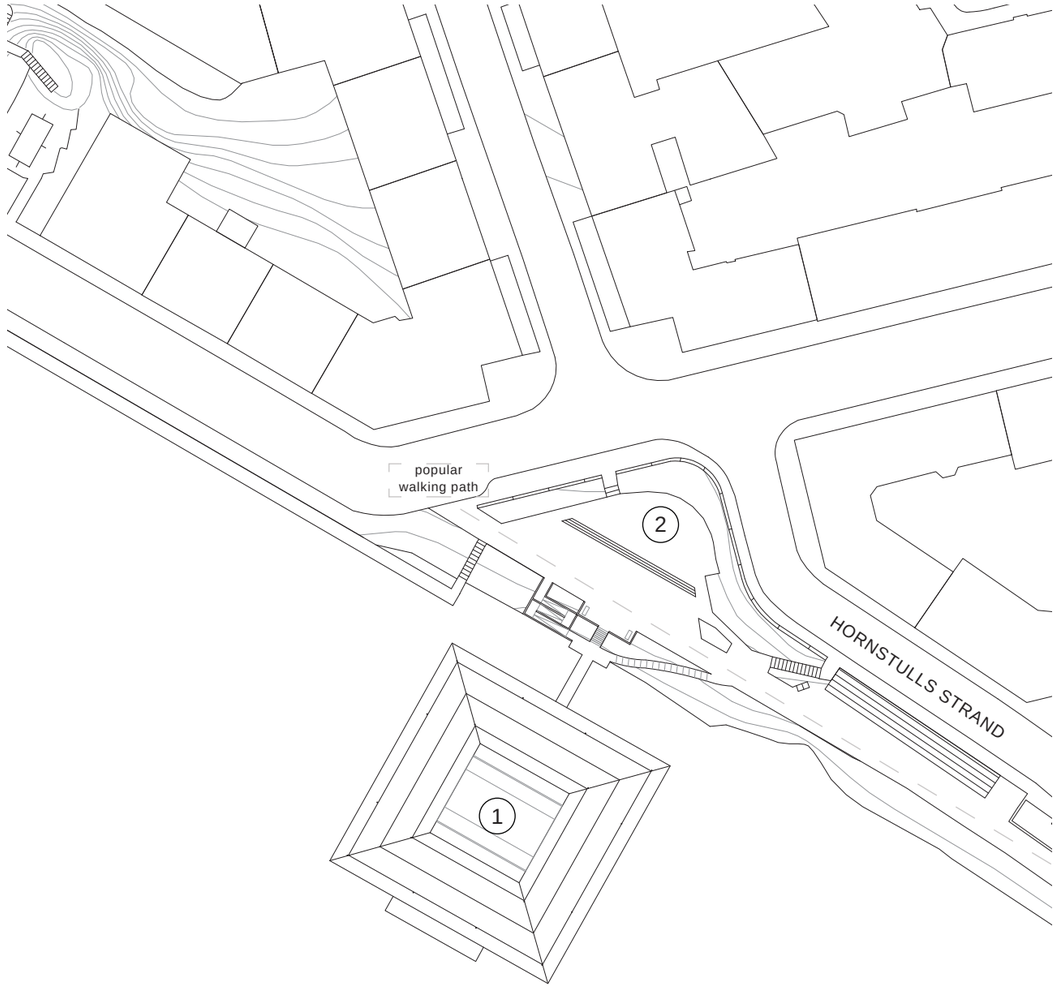
Around the site there are lights from the streets and the surrounding area all day long making this spot a relatively safe area, also since many people are walking around this area throughout the whole day.

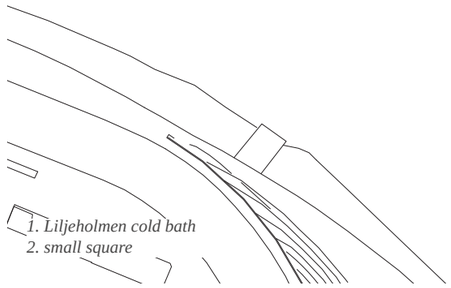
There are places to sit and hangout nearby, especially connected to the close-by cafés and restaurants.



Subway

III





1. Liljeholmen cold bath
2. small square

Site plan 1:1000

Proposal

The building & its characteristics

In order to meet the needs and conditions of today, a new design for the public bath has been investigated by applying modern ideals in building and tectonics, along with finding a design strategy based on the theory of ”Real architecture” by Michael Benedikt (1987). The four concepts presented by Benedikt has inspired to focus on pure materials and a simplicity in the features of the building. The aim has been to make it easy for the visitors to understand and use the building in a comfortable way, yet being an appealing experience for our senses.

As a contrary to the original building that only offered an indoor swimming pool, this proposal has shifted the focus to creating space for the cold bathing ritual. The desire has been to offer an option to a target group of cold bathers that hasn’t been accommodated in the city center previously. Unlike most cold baths, this proposal is offering as much indoor space as outdoors to offer a comfortable experience during all seasons and weathers. Due to this, space for other facilities like an indoor yoga and meditation room and indoor space for the staff was created.

The conceptual floor plan, presented on the coming page, gives a brief idea of how the new building is designed, also showing the load-carrying structure based on a construction principle of pillar and beam. The building consists of an inner core, where the purpose of the pool area is to gather people, whereas the outer areas of the pontoon facing the water is more focusing on giving space for the one that seeks a time alone. The three openings in the structure creates sight lines, making the outer bay always near and present. The exposed pillar system along the facade partly serves the purpose of creating small private spaces, to sit and relax while enjoying the outer environment.

Due to the Swedish building construction standards, the grid of the pillar and beam is based on a 2.4m distance. By following the standard measures in the industry, every piece in the building will fit better and therefore making the building process easier. The pillar and beam construction principle made it possible to divide the building into two layers: (i) the load-carrying construction and (ii) the insulating layer. This opens up for the possibility to move the outer walls within the frame of the load-carrying structure which makes the building flexible to meet new ideals and needs in the future.

One challenge in the design process has been to create a building that is as appealing seen from above as from the front. This is because the building is situated on the lowest level in the multilevel streetscape.

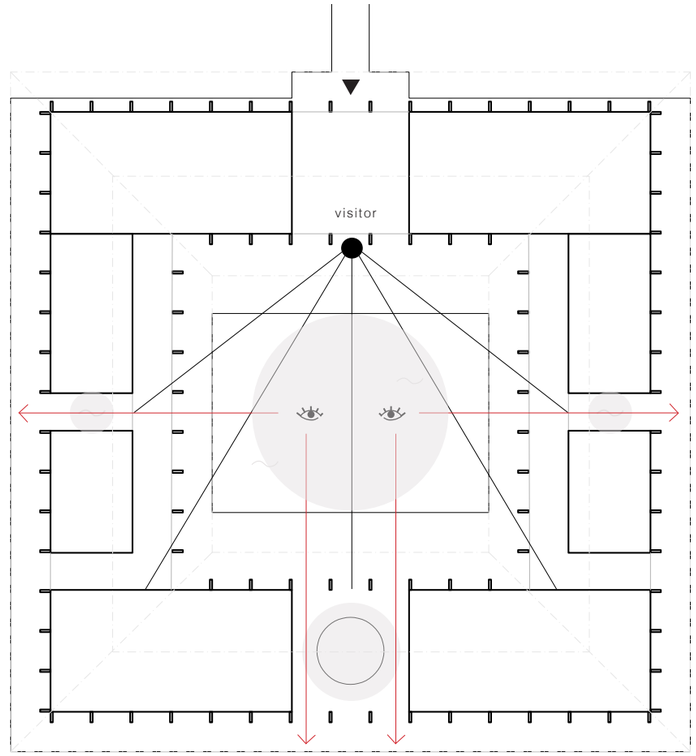
Due to the aspects of sustainability, decisions of the design has carefully been made around the shape of the roof and the choice of material. The chosen design of the roof is partly created to reduce the material use of insulation, only using insulation connected to the parts of the building that is indoors. The overhang of the roof will remove the heaviest wear and tear on the facade from precipitation. The facade consist of wood panels that can easily be replaced if needed. Well suited for environments exposed to a lot of moisture, the material for the pillars and facade panels is a surface treated spruce. Hopefully giving the public bath a longer life than the what the existing building on site had.

The pontoon is connected to land by chains, inspired by the boat club Strandbryggan also floating on water just a few kilometres away from the proposal site. The pontoon is not only adaptable to change of the sea level, but also making it possible to change site of the building if needed.

Translating theory into design

As mentioned above, “Real architecture” has been used as a framework for the design of the new proposal. A short summary of the outcome is listed below:

presence = appearance in the urban context
purpose = new functions / qualities given to the area
materiality = the building’s tectonics
emptiness = voids free for the visitor to define



Conceptual floor plan

Challenges

Appearence of roof
Shelter for unpleasant weather
Keep connection to water
Traffic noise
Insight

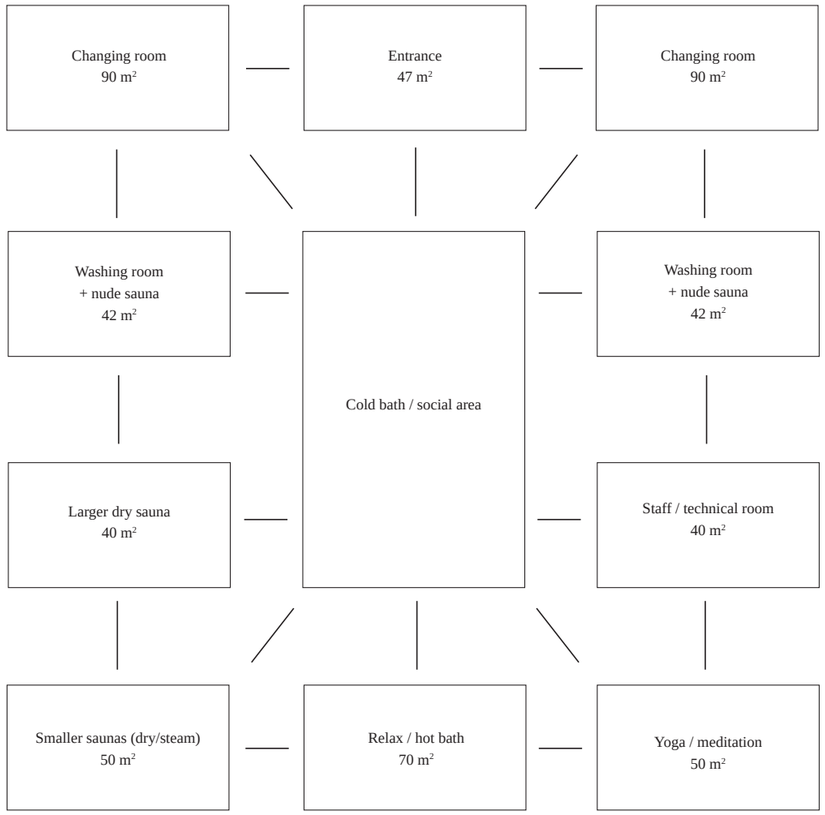
Striving for

Closeness to water
Oasis in city
Gather & privacy
Sensory experiences
Clarity of functions

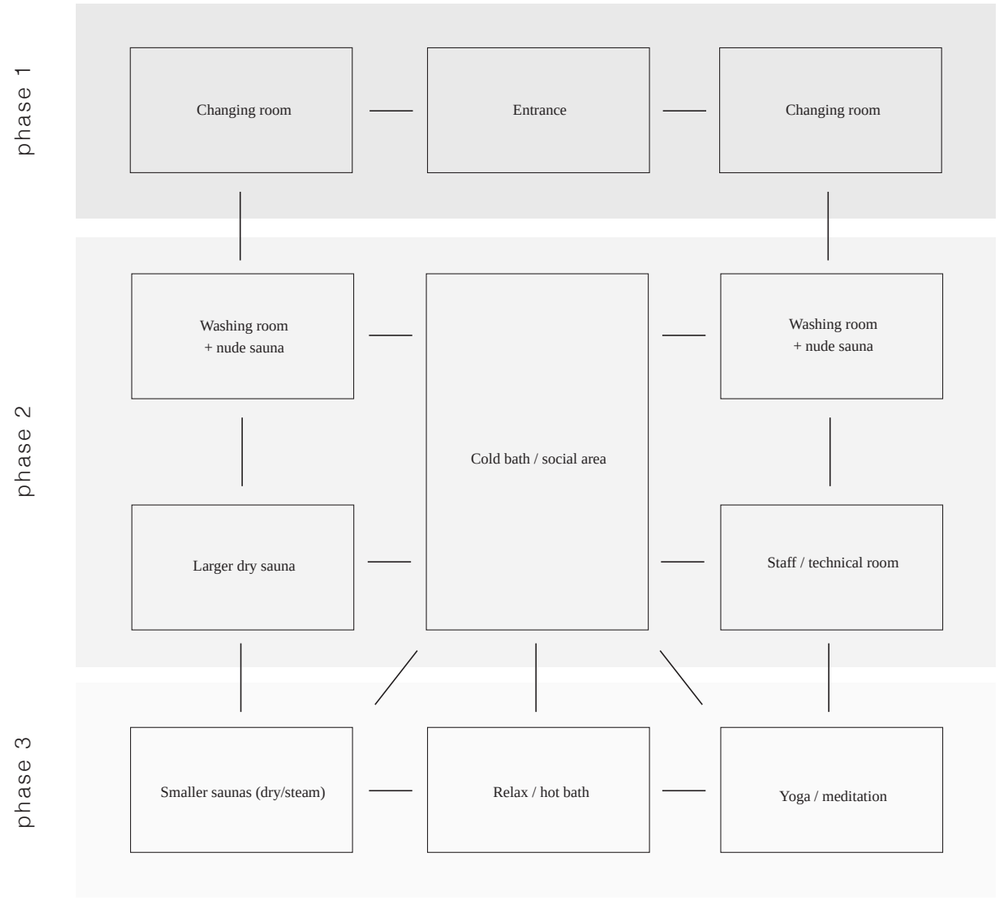
Bathing areas

Outlooks from the core

Space programme



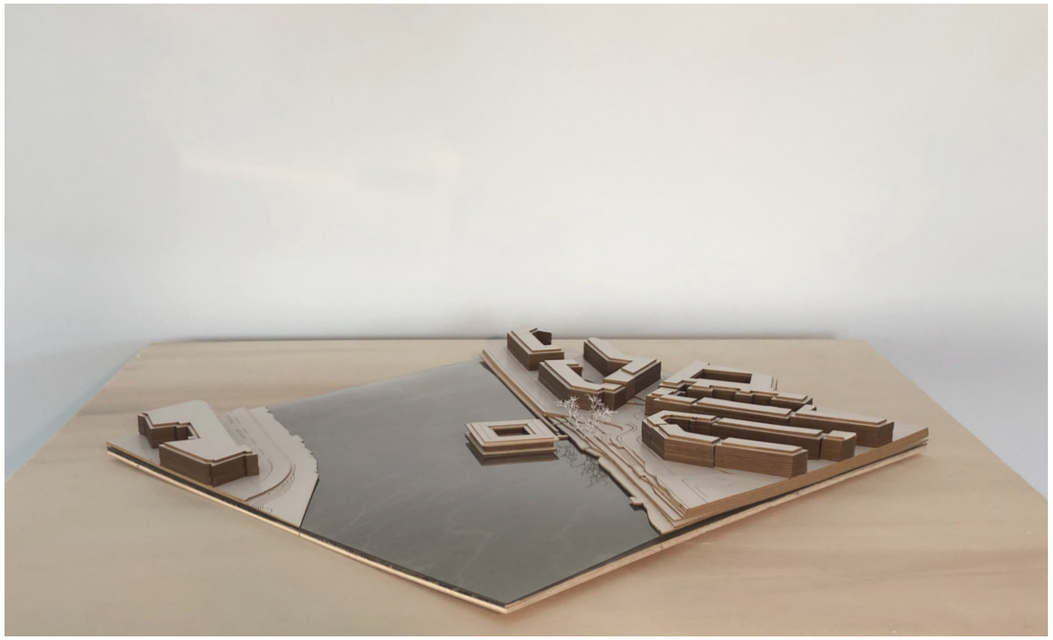
Sequence of bathing



*The visitors potentional experience / feeling

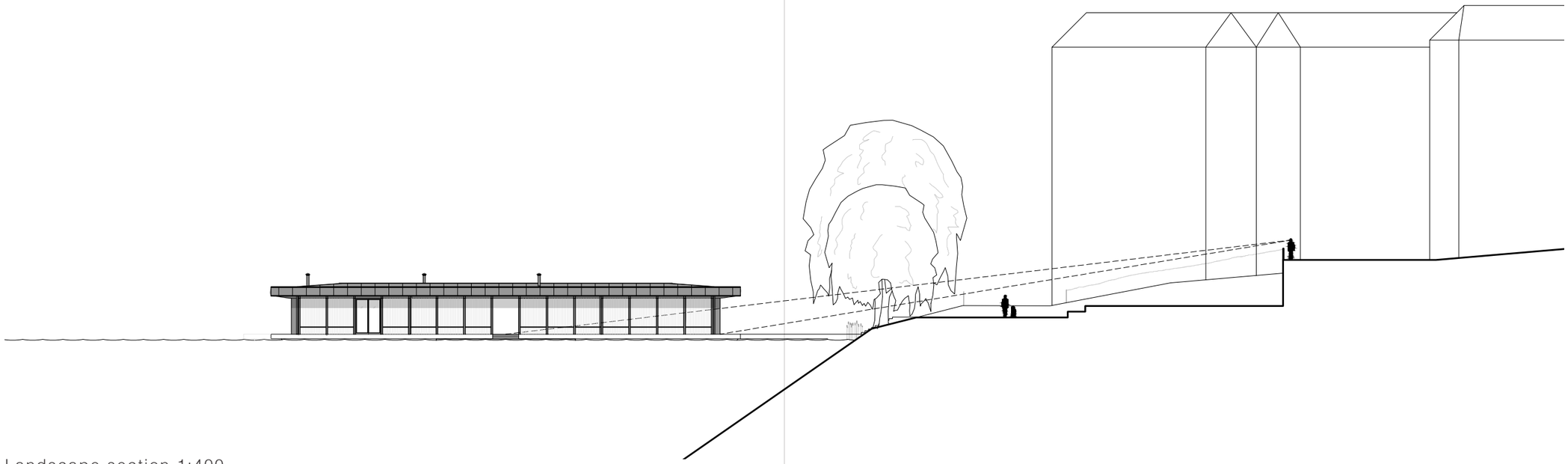
phase 1	phase 2	phase 3
Stressed/tired/disconnected Thinking of: work/studies/everyday life/relationships	Getting engaged Self-care/connecting to body Exposed to new perspectives	Experiencing/feeling Socializing/connecting Relaxing/breathing Learning/sharing
stuck in mind (imaginary state of mind)	in body (experiencing space)	in body and mind (imagination + experience comes together)
past/future	present (hopefully)	past/present/future

*This is based on my own experiences, and stories being told, and therefore it need further investigation, evidence and analysis in the coming phase.

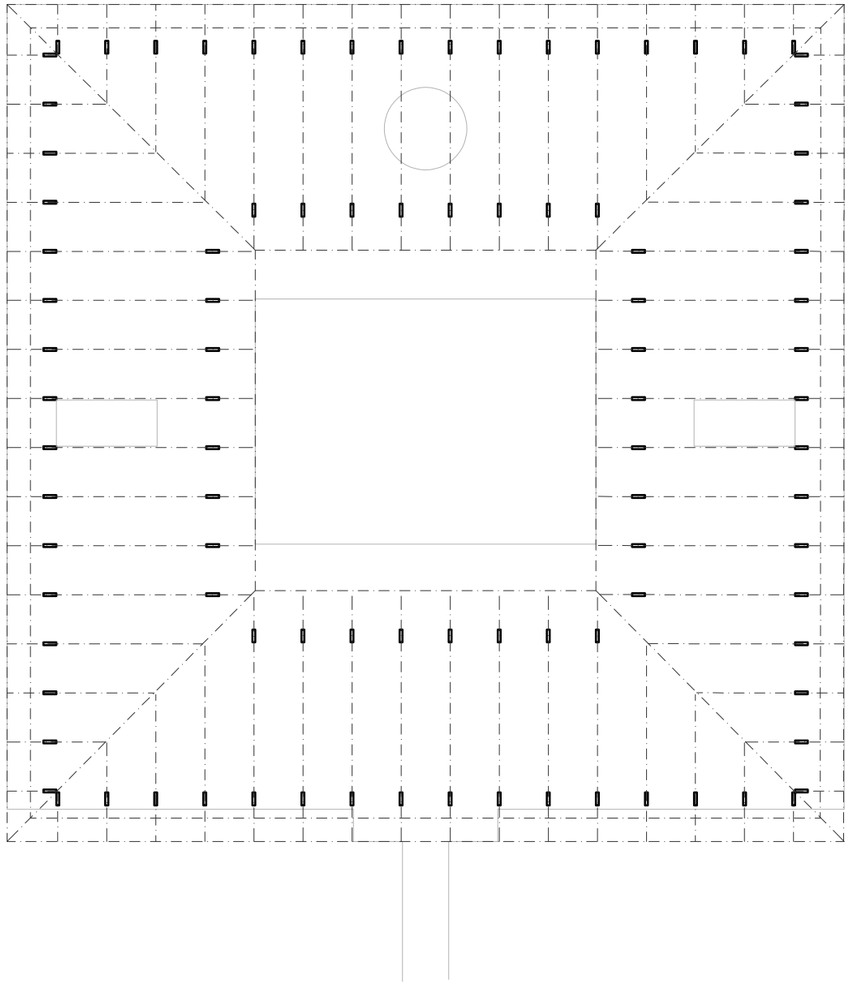


Landscape model 1:400

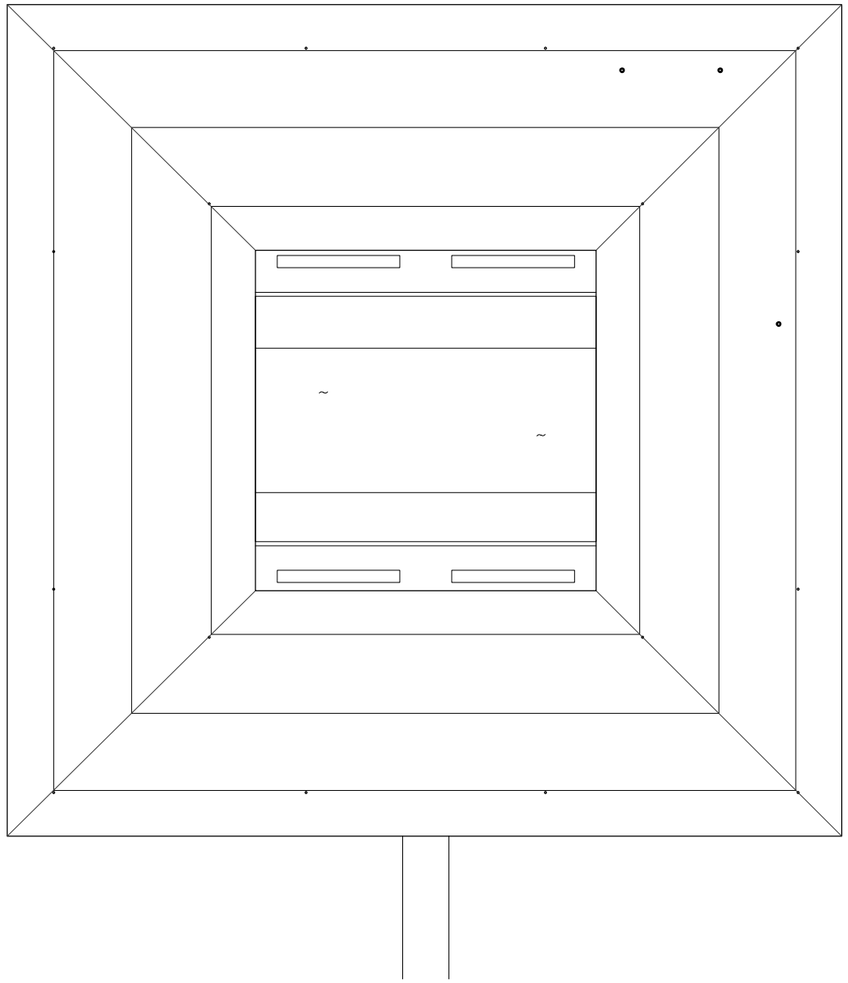
Model of the buildning 1:100



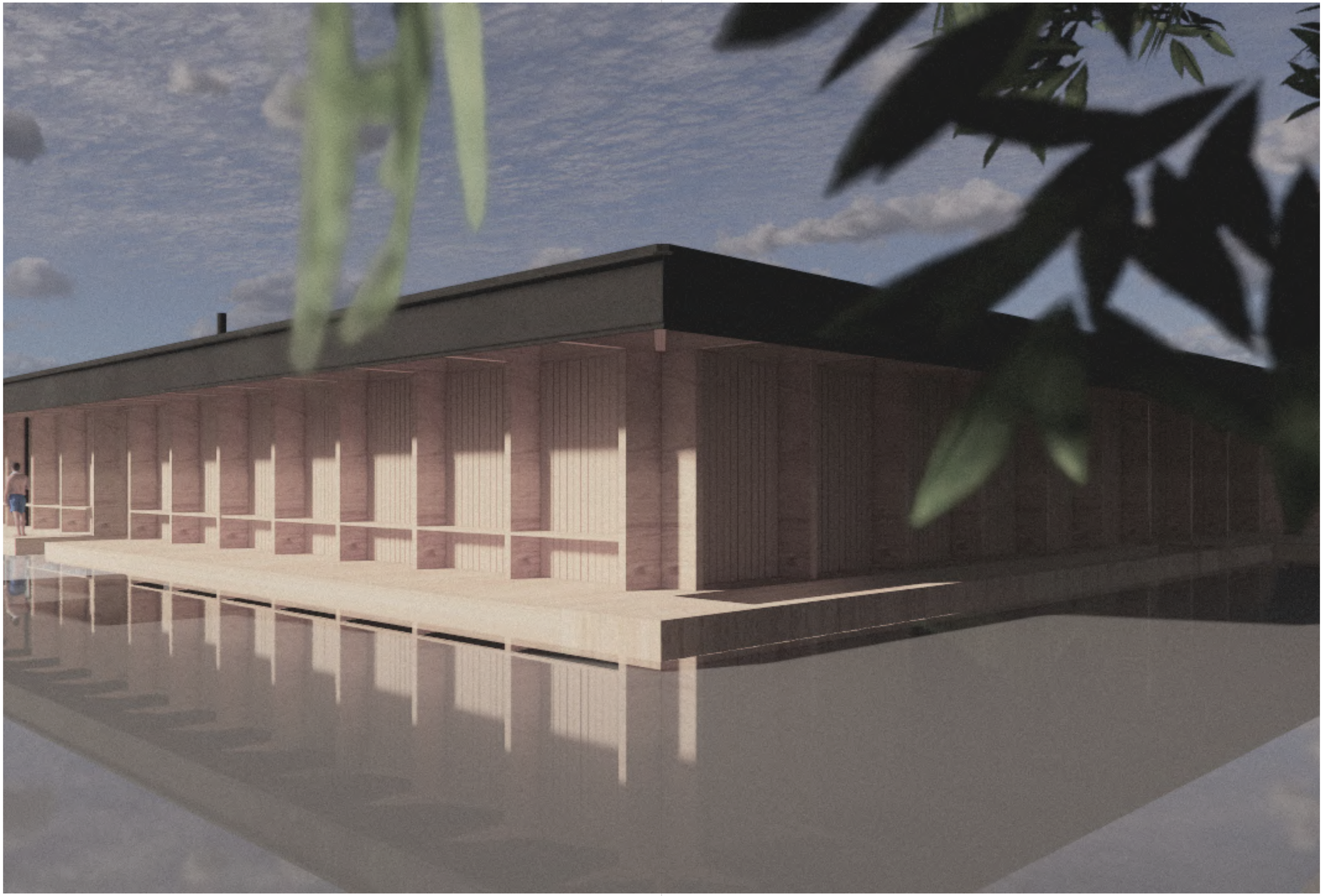
Landscape section 1:400

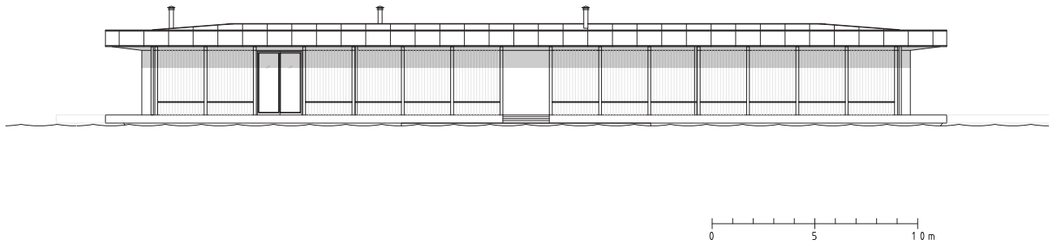


Construction principle 1:300
Grid of 2.4x2.4m with 140x630mm glulam pillars & 140x360mm beams

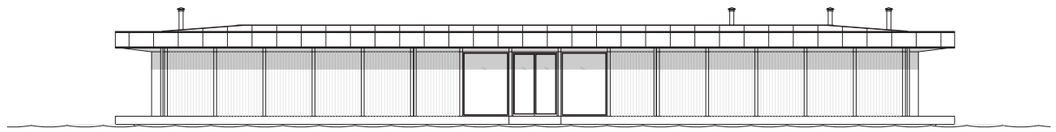


Roof 1:300



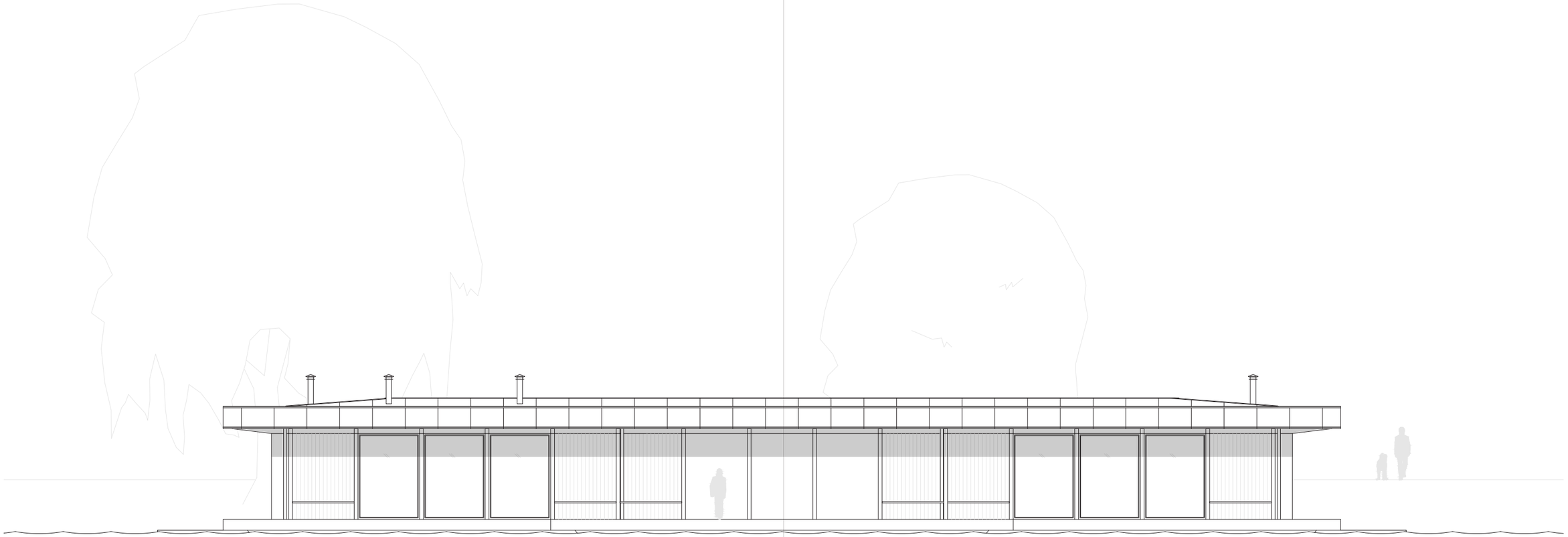


Elevation S-E 1:300

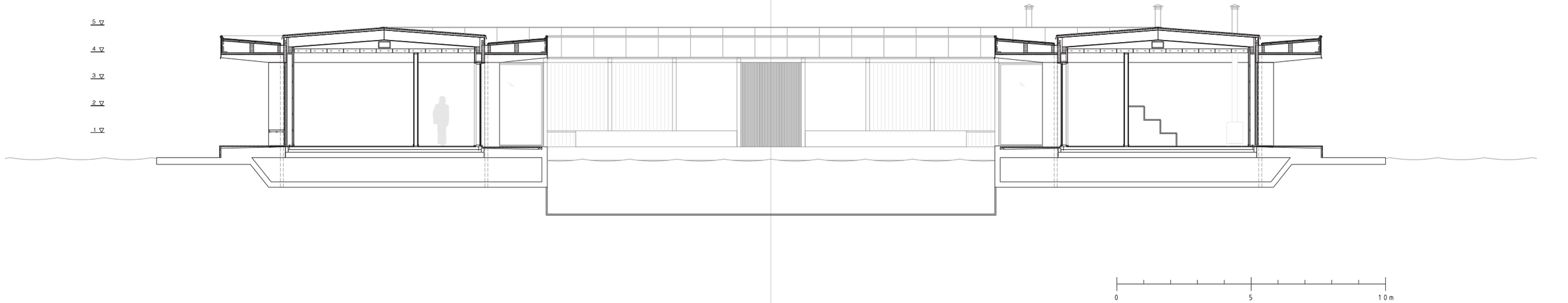


Elevation N-E 1:300

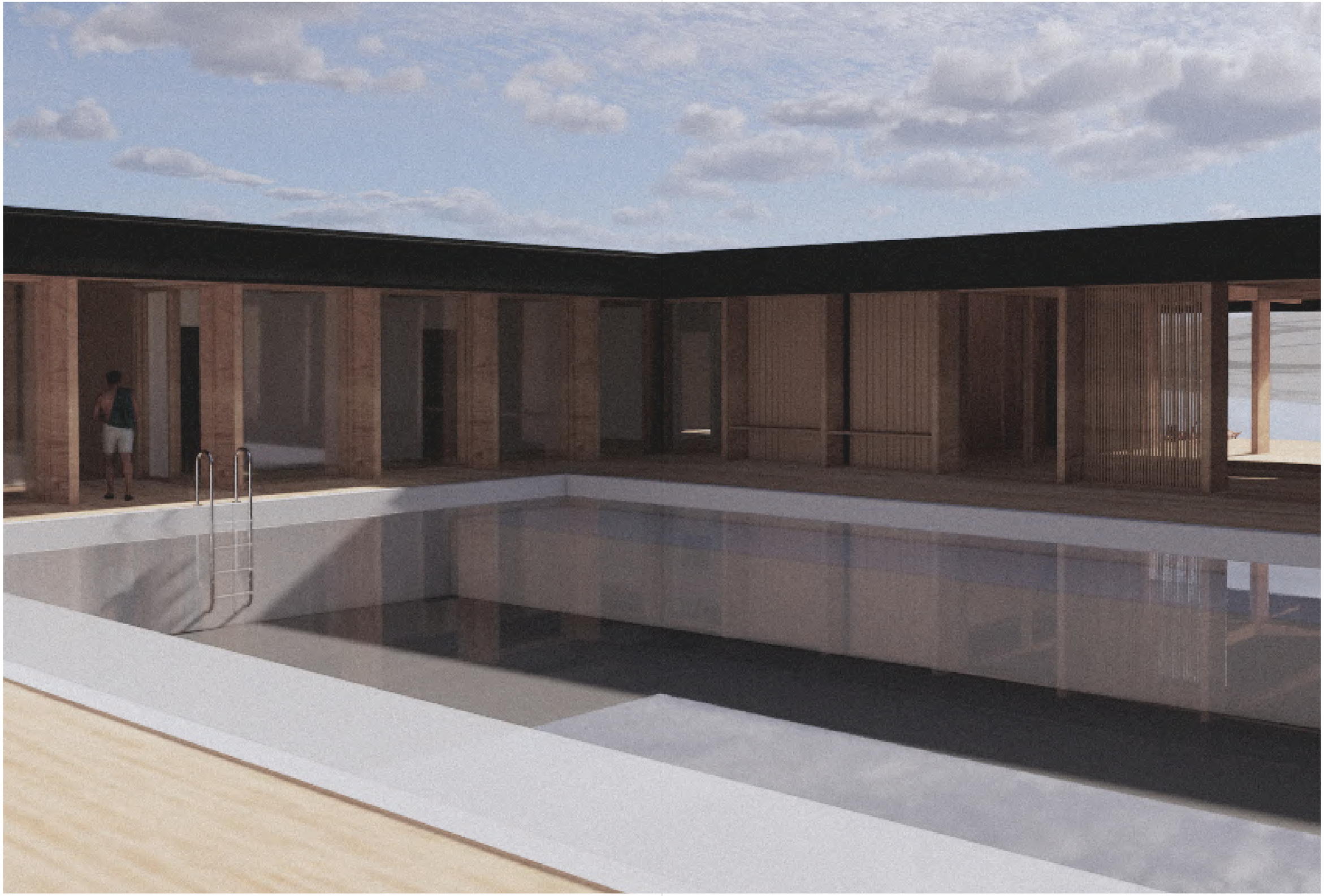
Elevation N-W 1:150

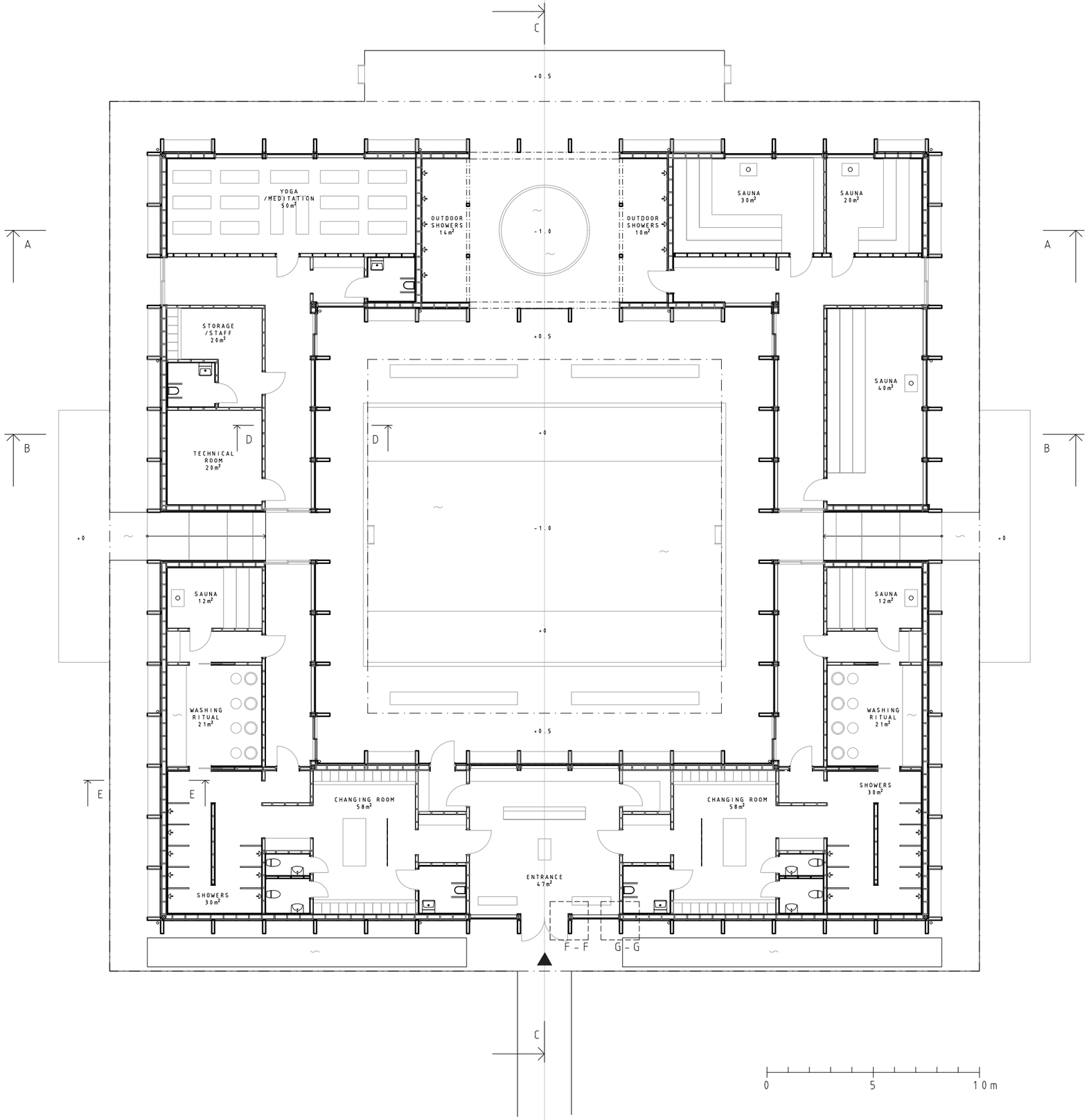


Elevation S-W 1:150



Section B-B 1:150



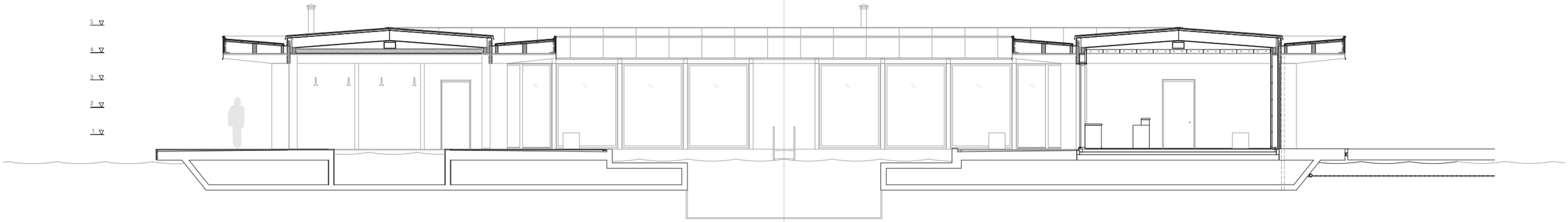


Floor plan 1:200

Section A-A 1:150

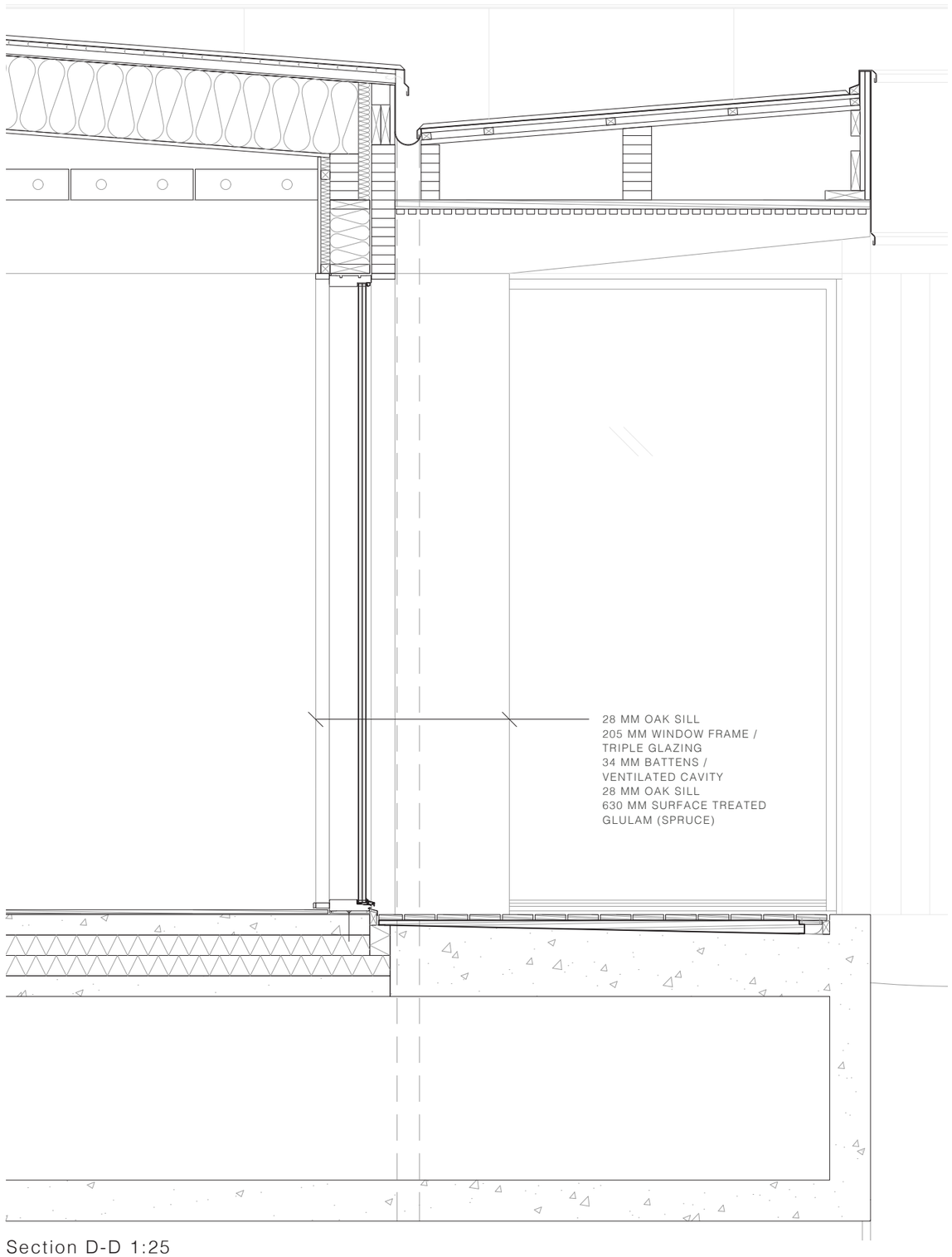
Interior perspective of corridor

Interior perspective of entrance by night

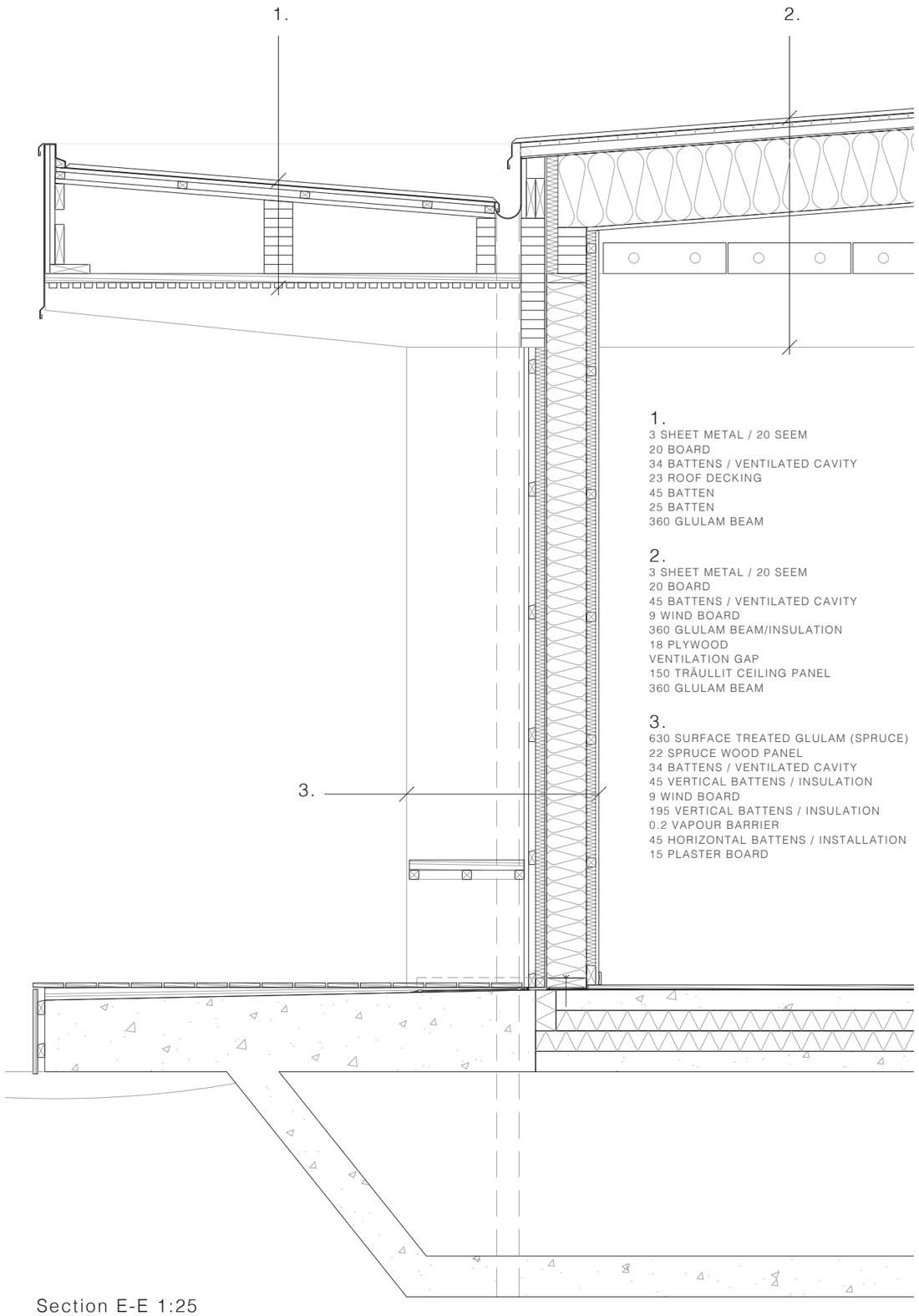


Section C-C 1:150

View over the pool area from the outdoor showers



Section D-D 1:25



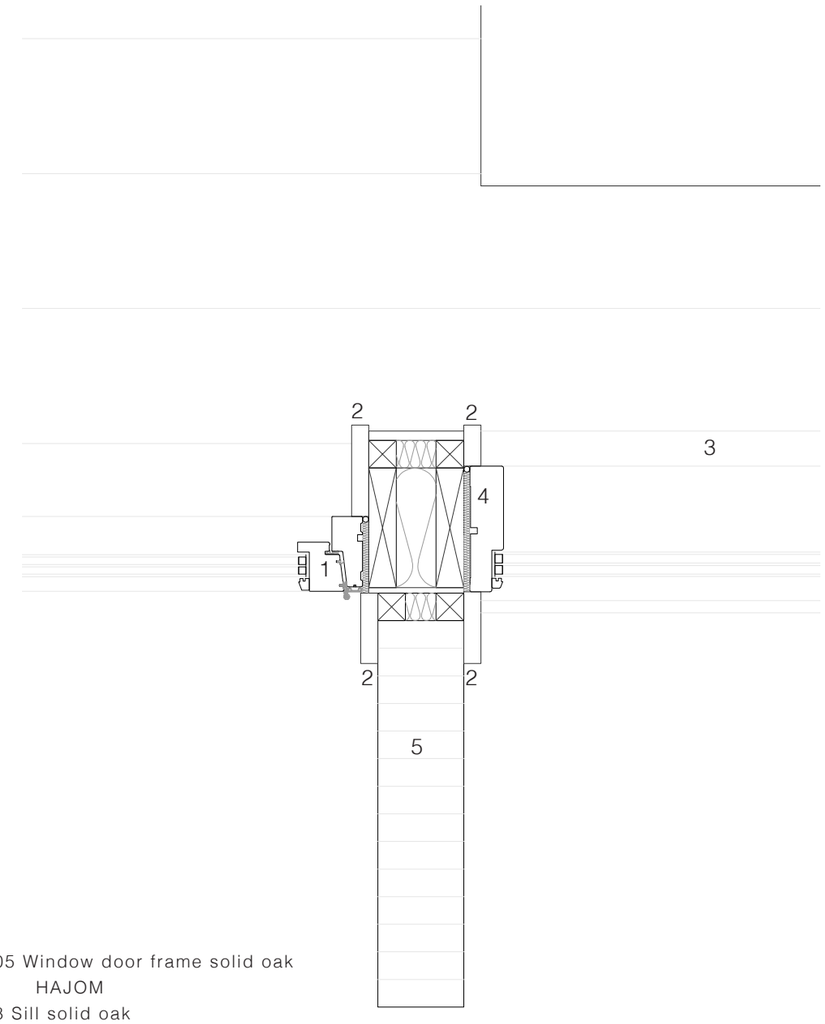
1.
3 SHEET METAL / 20 SEEM
20 BOARD
34 BATTENS / VENTILATED CAVITY
23 ROOF DECKING
45 BATTEN
25 BATTEN
360 GLULAM BEAM

2.
3 SHEET METAL / 20 SEEM
20 BOARD
45 BATTENS / VENTILATED CAVITY
9 WIND BOARD
360 GLULAM BEAM/INSULATION
18 PLYWOOD
VENTILATION GAP
150 TRÄULLIT CEILING PANEL
360 GLULAM BEAM

3.
630 SURFACE TREATED GLULAM (SPRUCE)
22 SPRUCE WOOD PANEL
34 BATTENS / VENTILATED CAVITY
45 VERTICAL BATTENS / INSULATION
9 WIND BOARD
195 VERTICAL BATTENS / INSULATION
0.2 VAPOUR BARRIER
45 HORIZONTAL BATTENS / INSTALLATION
15 PLASTER BOARD

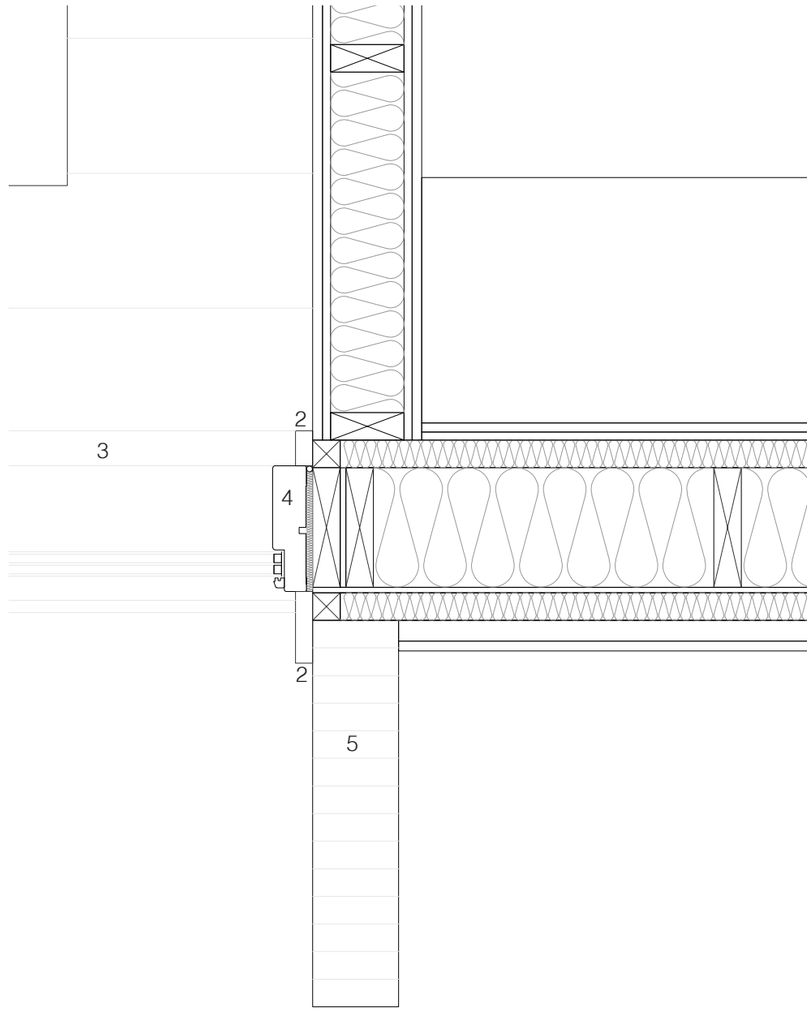
Section E-E 1:25

Detail model of wall meeting the roof



1. 105 Window door frame solid oak
   HAJOM
2. 28 Sill solid oak
3. 28 Sill solid oak
4. 205 Window frame solid oak
   HAJOM
5. 630 Surface treated glulam

Detail section F-F 1:10



Detail section G-G 1:10

IV

Conclusion

The aim with this master's thesis was to create a modern version of the public bath in Hornstull that could offer a space for recovery and increased social cohesion among urbanites, within a building with a long life span flexible to meet uncertain future demands. Driven by a research by design approach the final proposal was created through model testing, sketching, analysis of built references and studies of historical examples of architecture around the bathing ritual.

The resulting building consists of the construction principle of a pillar and beam grid, which allows to change the layout of the outer and inner walls without having to tear down the load-carrying structure. Standardised building components, techniques and materials have been used in order to promote replacement of parts instead of building with a predestined lifespan. Built on a pontoon, the structure is not only adaptable for changes of the sea level, it can also be move to another site if needed.

In order for the proposal to meet potentially more specific wishes of the public, the early process of this project could have included more interviews. If more time was given, an expanded focus on the bathing ritual and its sensory experiences would be interesting to explore deeper. Having a sustainable approach in mind, another aim has been to create a design where the built structure is protected from harsh weather conditions as heavy rainfall and snow. The overhang of the roof was an answer to this question. But there are for certain more to explore in this aspect. With more time, a further investigation on how to solve the construction of the roof would be done.

As mentioned, the final proposal is anchored in the findings from the research through reading, sketching, model testing and analysis of references. By taking the opposite standing point from the decision about demolishing and rebuilding a replica of Liljeholmsbadet, the new proposal will in many aspects be the contrary to what is being discussed at this moment. By creating this alternative, the hope is to reach out for a continued discussion about what type of building could be the best suited for this context and for the future.

Hopefully this project contributes to be an overall eye opener to the value of public cold baths in urban contexts for the citizens health and social cohesion. The design solution proposed is just one out of thousands of ways of designing a public cold bath on water. But by contributing to the conversation about Liljeholmsbadet, hopefully this project can inspire to further investigations on how to make the public baths by the sea longer lasting, and through that, create more durable stress-free spaces in our cities, for citizens of today and the future.

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