



Funäsdalsbadet

A Master Thesis in architecture by

Tove Mattsson

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CHALMERS
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Abstract

This thesis has explored how to situate a complex building, such as a public bath, in challenging terrain, and how this terrain can become an asset to the architecture.

Near the Norwegian border in the municipality of Härjedalen lies the small village of Funäsdalen. It is nestled between Lake Funäsdalssjön to the west and Funäsdalsberget to the east. It is a popular holiday destination for outdoor activities during both summer and winter seasons. Nature is the main attraction, offering cycling and hiking trails, snowmobile tracks, and ski systems. Currently, there is no public bath in the area, so both residents and visiting tourists must rely on hotels with swimming facilities. This project has therefore positioned itself somewhere between a swimming hall and a spa, in order to meet the needs of both the local community and schools that require facilities for swim training, as well as tourists, for whom a spa adds a touch of luxury to the vacation experience.

The bathhouse is an attempt to merge the striking natural surroundings of the site with the architecture of the building. Ideas about light, darkness, and materiality are grounded in the mountain in which the building is embedded.

Research through design has been the main method used, together with texts about atmospheres, bathing and bathing history, along with analyses of buildings situated in similar terrain or with similar functions.

Keywords: Bath, Spa, Steep terrain

Thank You!

Catharina Dahl Palmér | *Examiner*

Björn Gross | *Kritic*

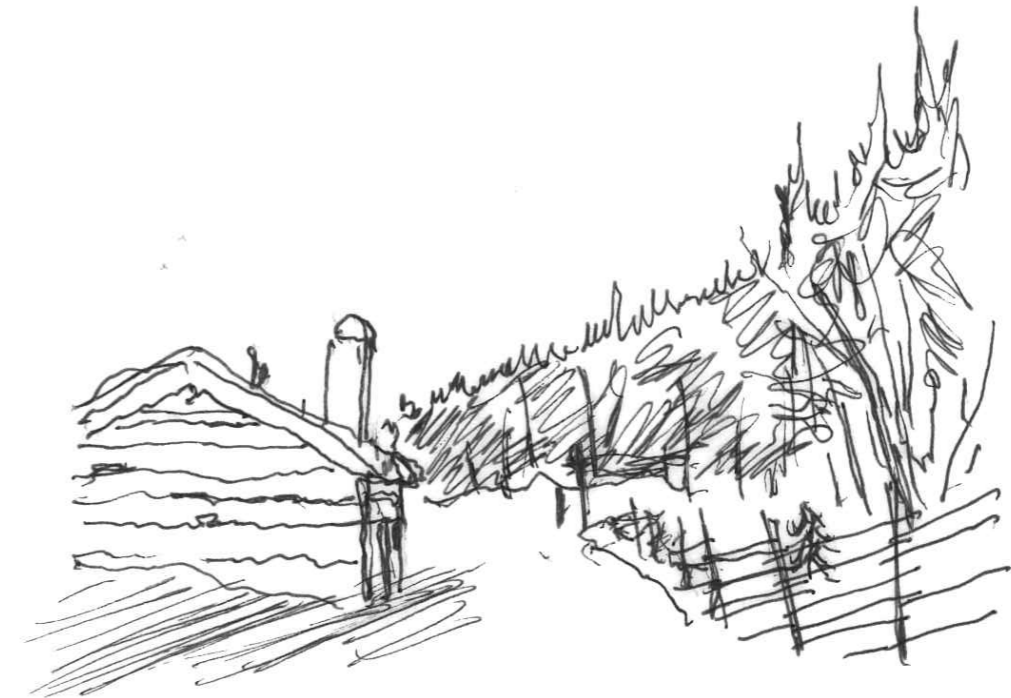
External critics

Friends & Family

Fellow students at Chalmers

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Sketched view from the walking path that runs through the Forntids park towards the site. Made by me, 2025.

Purpose|Exploration

The project's task and focus are to investigate how an architectural design project can be influenced by the landscape in which it is situated.

I position the project in between the large sports facility swimming hall and a spa.

Aim

The aim of the design proposal is to explore how a public bath and spa can be designed and placed in extreme terrain and how that terrain can be an asset to the design—how the terrain can contribute architectural qualities that are desirable in a public swimming hall and spa.

The project will contribute to an expanded understanding of how swimming pool construction can be

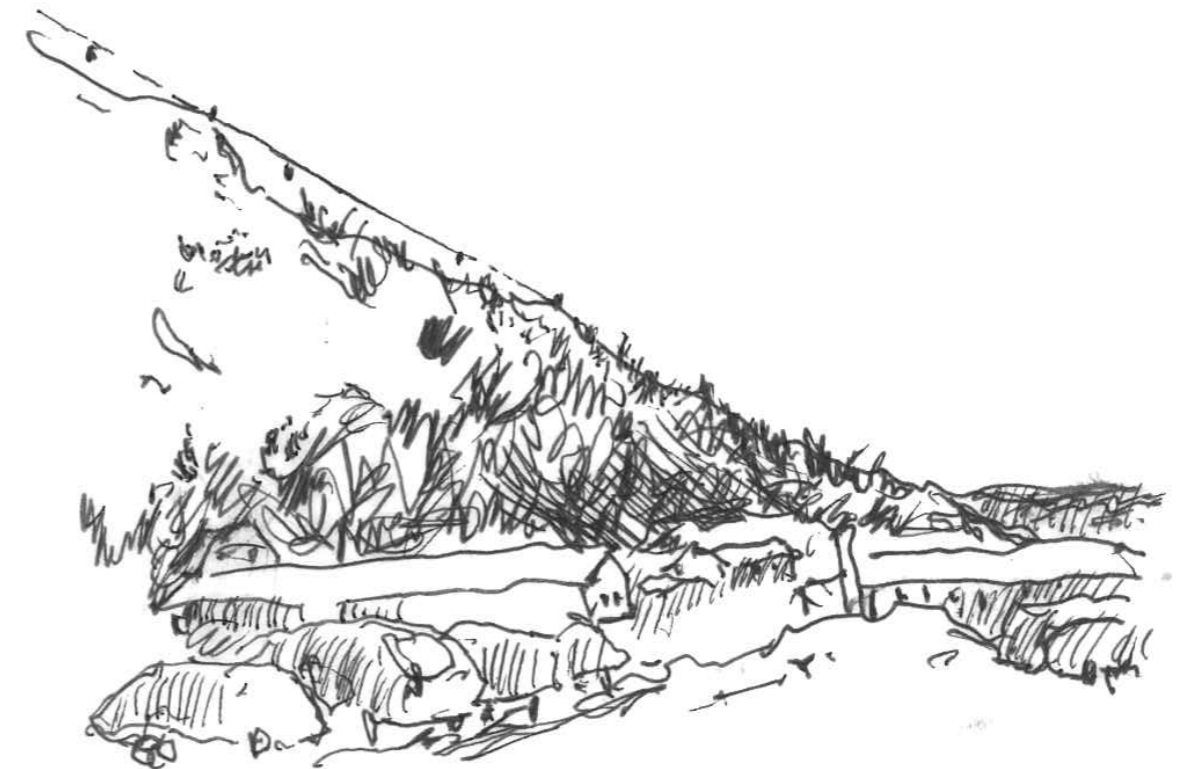
Objective

A public swimming hall and spa facility in Funäsdalen expressed in drawings and models, supported by a booklet with the theoretical background behind the choices taken in the design.

situated in complex terrain and how the terrain can be utilized for architectural qualities.

Thesis Question

How can a sloping terrain on the site attribute to the architecture in a public bath in Funäsdalen?



Sketched view facing the site . Made by me, 2025.

Method

The approach towards the thesis is context driven. The theories chosen for the thesis are being based on the site and the surrounding area. Due to the location of the site being remote from the university there will only be one conducted site visits during winter time.

The thesis will start with a quantitative research period, during the preparatory courses, and the move on to a qualitative research period, the actual master thesis term. The goal is that the quantitative Research for Design phase will be done

before the qualitative Research through Design phase starts.

Research for design: reading theoretical texts, site analyses, analysing architectural typology on site

Research through design: sketching, models

Modelmaking

- Large landscape model with placement building showcasing the relation between building and landscape.

- Site model showing specific site and placement of building.

Delimitations

The outcome of this master thesis is a speculative design of a bath in Funsädaalen.

The site's topography and the surrounding landscape provide the main inspiration for the design. The project is an exploration of a public building in connection with an extreme terrain.

Background

Bathing and bathhouses have always been about sharing and community, both in terms of architecture and spatial design, as well as the rituals associated with bathing—the collective practice of bathing and sauna. Historically, bathing has had both practical and cultural significance. It is about elevating the everyday. (Pearson, 2020)

The bathhouse represents an "artificial" version of the water landscapes that we have historically turned to for purification and rituals. This project is situated in a location where the greatest asset is nature and the surrounding landscape. The design will therefore utilize the site's natural features to create architectural qualities that might not have

been possible elsewhere. The work will serve as an example of how to manage extreme terrain on a site and turn it into an architectural advantage.

Currently, there is no bathhouse in Funäsdalen that offers facilities for swim training. The only available options for sauna and spa experiences are limited to a few hotels in the area. However, the demand and desire for a new bathhouse are significant. (Anna Samlar Namn För Simhall i Funäsdalen: "I Första Hand Tänker Jag På Barnen" - P4 Jämtland | Sveriges Radio, n.d.) In an effort to meet the need for both a public swimming facility and a public spa, this project will position itself between these two functions.

Theory & References

The first text discusses how we have historically have bathed in Sweden, in order to support my project and highlight the importance of facilities for learning to swim. The second text is about atmospheres and presents architect Peter Zumthor's ideas on atmospheres.

About| Bath

About| Atmospheres

The references below all have a strong connection to the landscapes in which they are situated, with a distinct material expression linked to them.

Buildings

Therme Vals

Peter Zumthor

Mountainside

MacKay-Lyons Sweetapple Architects

Andrum Spa

Blasberg Andreasson Arkitekter, Johan Sundberg arkitektur

City Of London Freeman's school
Swimming Pool

Hawkins/Brown

About | Bath

Bathing has been a tradition in Sweden since the Viking Age. It was considered both a health-promoting activity and a ritualistic practice. Steam baths in bathhouses were mentioned in texts as early as the 13th century. In cities, public bathhouses served as both meeting places and entertainment venues, where food and games were commonly found. (Hela Kroppen Badades En Gång Om Året | Popularhistoria.Se, n.d.)

However, during the 17th and 18th centuries, attitudes towards bathhouses in Sweden changed. They became associated with immorality, shame, and uncleanness. There was a fear that diseases could spread, and that prostitution took place in these facilities. As a result, public bathhouses began to close, with the last one shutting down in 1725. However, medical bathing continued, with the focus on cold baths, which were believed to cure ailments such as scabies, leprosy, and insanity. (Wiell, 2018)

During the 19th century, bathing as a health treatment became common,

primarily among the upper classes. Saltwater bathing was considered the most beneficial. Cold bathhouses were built, and spa resorts became increasingly popular. However, there was still a widespread fear of water, and even those visiting cold bathhouses for health reasons often had poor swimming skills. (Wiell, 2018)

The beginning of swimming education in Sweden started when the Life Saving Society from England came to Stockholm in 1898 and demonstrated their skills. This inspired the establishment of the Swedish Life Saving Society, with the goal of saving lives through swimming proficiency. In 1899, the Life Saving Society conducted a survey that showed only one in ten school-aged children could swim. At the turn of the last century, 1,100 people drowned each year, with nine out of ten being men and two out of ten being children. Swimming instruction was conducted during the 18th century but was limited to select groups, such as naval officers. There was a significant

lack of swimming education until the 1920s when dry-land swimming was introduced into folkskolan. Around the same time, municipalities began to take responsibility for providing resources for swimming education, and swimming facilities started to be built. In the 1950s, municipal swimming schools were introduced (Simskola För Alla | Popularhistoria.Se, n.d.).

About | Atmosphere

Atmosphere can be seen as a force that guides our decisions, desires, and experiences without us being fully aware of it. The architect Peter Zumthor describes his view on atmosphere as the interaction between people and objects. He calls this "The magic of the real."

To access and shape the atmosphere of a building, Zumthor has developed a list of nine strategies. These strategies involve materials, temperature, and acoustics, among other aspects.

The Body of the Architect refers to the materiality, structure, and mass that one encounters in a building.

Material Compatibility concerns the knowledge of how different materials fit together and harmonize.

The Sound of Space deals with how acoustics in a room can be influenced by material choices, but also how different rooms should be experienced

acoustically depending on their function.

The Temperature of Space refers to both the physical experience of temperature and the psychological perception of it. How materials can affect the actual temperature of a room, but also how you psychologically perceive it as warm or cold.

Surrounding Objects is about how objects are placed in a room and how this affects the atmosphere. Architecture can be seen as a space for placing objects and things.

Between Composure and Seduction explores how atmosphere can guide movement and use within a space. It examines how design choices—such as inviting, enclosing, directing light, or shaping a corridor—can influence behavior.

Tension Between Interior and Exterior addresses how the relationship between

inside and outside affects the atmosphere and our perception of a building.

Levels of Intimacy relates to scale—how different scales and contrasts between them can influence the perceived atmosphere.

The Light of Things, emphasizes the importance of both light and shadow in how we experience spaces. It also considers how different materials interact with light and darkness. (Zumthor, 2006)

Mountainside

Location | Powder mountain, Utah, USA

Architect | MacKay-Lyons Sweetapple Architects

Mountainside is a larger and more modern version of a ski lodge, where the mountain has been the primary design factor. By allowing the building to step down along the mountainside, the architect has enabled the structure to reflect the mountain itself. (Mountainside - MacKay-Lyons Sweetapple Architects, n.d.)

The use of multiple volumes emphasizes the mountain's varied natural form. It also creates spaces with different

sightlines and qualities, forming natural outdoor terraces that connect to various interior areas and allow for multiple circulation routes. It resembles crevices in the rock, where one can seek shelter from the elements.

The understated facade in dark wood does not stand out but blends seamlessly into the landscape.

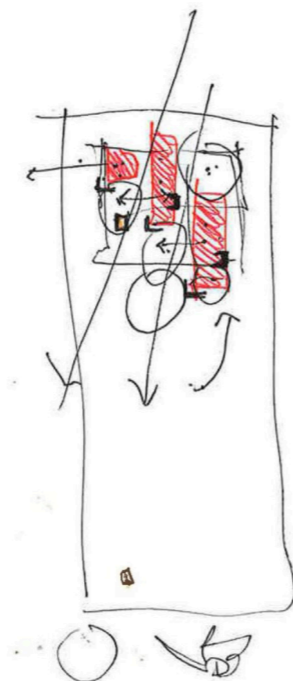


Fig 1.

A sketched diagram of sightlines between the buildings by MacKay-Lyons Sweetapple Architects. The simple illustrations easily shows the possible spaces that can happen when dividing the different functions into different volumes. When placed in an environment with changing weather conditions these many different options of outdoor spaces is a good quality in the design.



Fig 2.

Mountainside cabins by MacKay-Lyons Sweetapple Architects (Paul Bundy, Nic Lehoux retrieved 2025)

Therme Vals

Location | Vals, Graubünden,
Switzerland

Architect | Peter Zumthor

Unlike Mountainside, the Therme Vals Spa is embedded into the mountain rather than resting on top of it. Zumthor's design concept strongly emphasizes integration with nature and the atmospheric experience of architecture. (The Therme Vals / Peter Zumthor | ArchDaily, n.d.)

By embedding the building into the mountain, the limitation of natural light

becomes a design quality, creating a perceived journey through light and shadow, cold and warmth. The local stone, used both inside and out, strengthens the connection to the landscape and gives the architecture a sense of weight and presence.



Fig 3.

A sketch by Zumthor illustrating the possible movements between volumes that divides the room. The use of the large pillars as both room dividers and rooms in them selves, as can be seen when looking at a plan view, is a genius way of creating small and large spaces with different atmospheres, suitable for a spa.

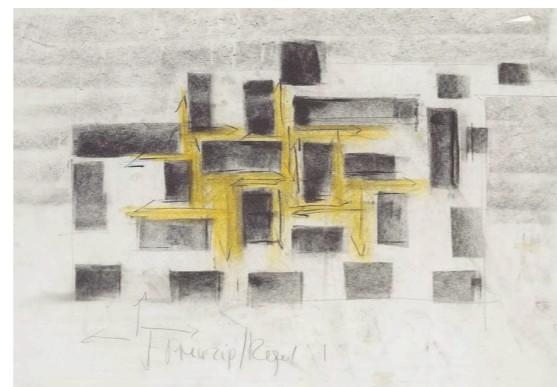


Fig 4.

Therme Vals main building, by Peter Zumthor. (Gunnar Klack, retrieved 2025)

Fremen's school Swimming pool

Location | Surrey, United Kingdom

Architect | Hawkins\Brown

The swimming hall features a distinct timber construction with CLT beams that contribute architectural qualities, such as natural seating along the pool. The metal facade connects to details in the neighbouring buildings and the surrounding landscape. The shape of the roof is accentuated inside the pool area

by shifting the highest point of the beams.(City of London Freemen's School Swimming Pool | Hawkins\Brown, n.d.)

The souterrain building also mimicks the small slope it is situated in with its entré on the first floor, with direct view in to the pool room on the floor below. Utilising the terrain instead of changing it.

Illustration by me showing the way Hawkin\Brown have integrated seating in the bearing glulam pillars, making the bearing construction part of the furniture.

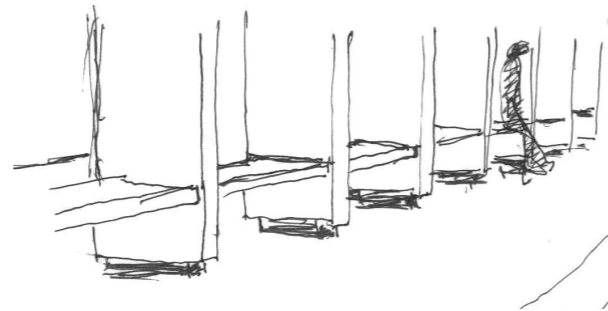


Fig 5.

Fremen's school Swimming pool designed by Hawkin Brown architects. (Jack Hobhouse retrieved 2025)

Andrum Spa

Location | Höör, Sweden

Architect | Blasberg Andreasson
Arkitekter, Johan Sundberg Arkitektur

Andrum Spa is a two-story spa located on a slope. The entrance and foyer are on the first floor, and then you move down to the second floor to reach the spa and relaxation area, similar to Fremen's school Swimming pool. The materials used have been kept in their purest and rawest forms. (Project: Andrum | Johan Sundberg Arkitektur, n.d.) The raw concrete facade blends well with the wood and stone on the inside. The glazed

facade at the entrance is also present in the relaxation area, creating long sightlines and a large influx of natural light.

Fig 6.

Photo showing how Andreasson and Sundberg have worked with different materials, concrete wood and granite. (Peo Olsson retrieved 2025)



Fig 7.

Andrum Spa in Höör, designed by Blasberg Andreasson Arkitektur and Johan Sundberg Arkitektur. (Peo Olsson retrieved 2025)

The Site

The location for the bath is centrally situated in Funäsdalen's town center, on the western side of the mountain. A pedestrian pathway leads to the site through the village, passing by the church, museum, and prehistoric park. From the site, there is a scenic view of both the lake, Funäsdalssjön, and the mountains Lill Skarven and Stor Skarven.

Härjedalen municipality is a sparsely populated rural area where forestry, reindeer husbandry, and agriculture have historically—and still today—been important sources of income. However, in the early 20th century, tourism began to grow and is now one of the municipality's major economic sectors. (*Vår Historia, En Kärlek Över Generationer - Funäsfjällen*, n.d.) This shift requires the municipality to adapt to fluctuating visitor numbers throughout the year, which can present challenges for the project.

Funäsdalen serves as a service hub for the municipality with a school, elderly care, and basic healthcare facilities. The town is expected to develop further with more housing for permanent residents as well as

accommodations for an increasing number of tourists (Häggkvist & Nordlander, 2020).

A bathhouse could be a valuable asset for both the local population and visiting tourists, offering recreational and wellness opportunities year-round.

The site was chosen for its central location, ensuring easy access by both car and foot. The building is designed to blend into the background of the town, without obstructing or dominating any existing structures near by.

Sweden



Fig 8.

Funäsdalen

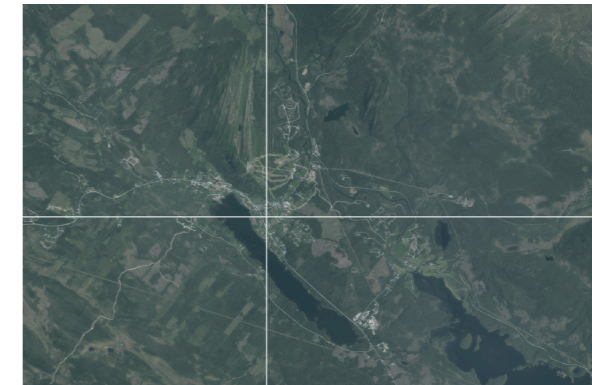


Fig 9.

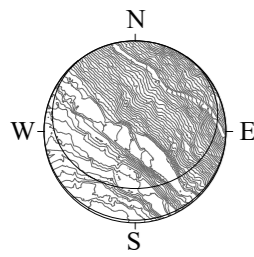
The site



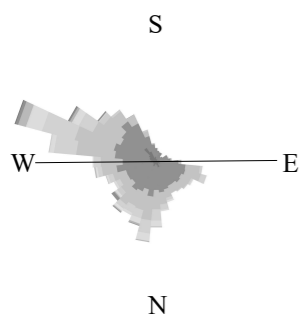
Fig 10.

Site Analysis

- 1. Church
- 2. Museum
- 3. Forntids park
- 4. Systembolaget
- 5. Coop
- 6. Peak restaurant
- 7. Elderly care home



Sun Path, lowest & highest during the year.



Wind Rose





Fig 11. Funäsdalen 1:5000

Main Road, Rörosvägen - - - -

Walking Path - - - - -

Important views <

The project site 

Stores 



View Towards the site from the road leading to it. Photo by me, Februri 9, 2025



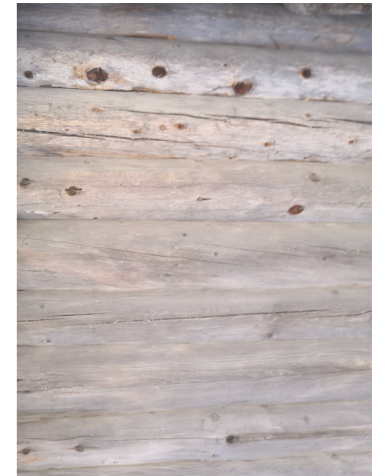
View towards the lake Funäsdalssjön. Photo by me, Februri 11, 2025



*View towards the site, photo taken from Rörosvägen,
by me, Februri 11, 2025*

Materials

A material and colour palette taken from buildings and structures near by the site. Wood is the dominating facade material, weathered, painted or tarred.



Pictures taken by me 2025

Design Proposal



Sketched view from Rörås road towards the site, Funäsdalsberget in the bakground and the trees and the forest in front. Made by me, 2025.

Space Program

Program Description

The bathhouse consists of three buildings—the entrance building, the spa, and the swimming hall—which are connected underground by a corridor. To allow natural light in, the corridor features skylights.

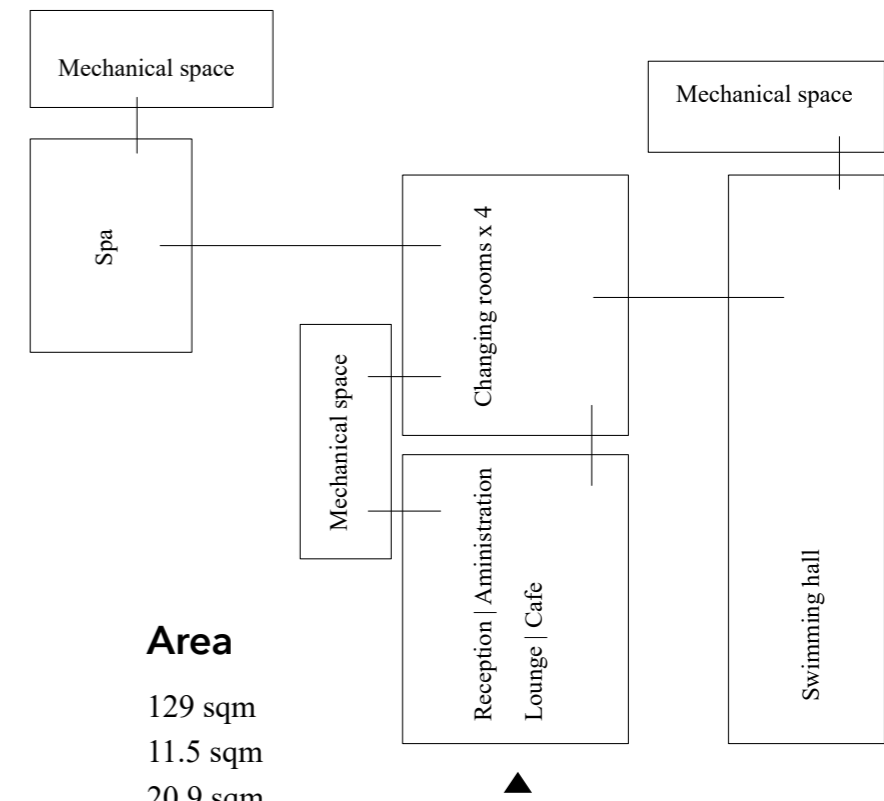
The entrance building has two floors, with a reception area, café, and administration on the ground floor, and changing rooms on the second floor. There is four identical changing rooms with two chared saunas, this to accomodate to the varying numbres of visitors over the year. To access the upper floor, there is both a staircase and an elevator. The public areas in the spa and swimming hall are on the same level as the changing rooms.

The spa building, located to the north, contains five different pools with varying temperatures, three saunas, two cold showers, and two warm showers. There is a change in floor level between the pool

area and the section with lounge furniture.

In the swimming hall, there is a pool with five 25-meter lanes and a diving platform, a teaching pool with an adjustable floor, and a shallow pool for the youngest children. Along the southern wall of the main pool room, there are spectator stands.

The load-bearing structure is similar in all three buildings, combining concrete construction with a glulam beam and column system. This design reinforces the feeling of solidity and connection to the mountain as one moves deeper into the buildings, while the wooden structure provides a sense of lightness toward the façade.

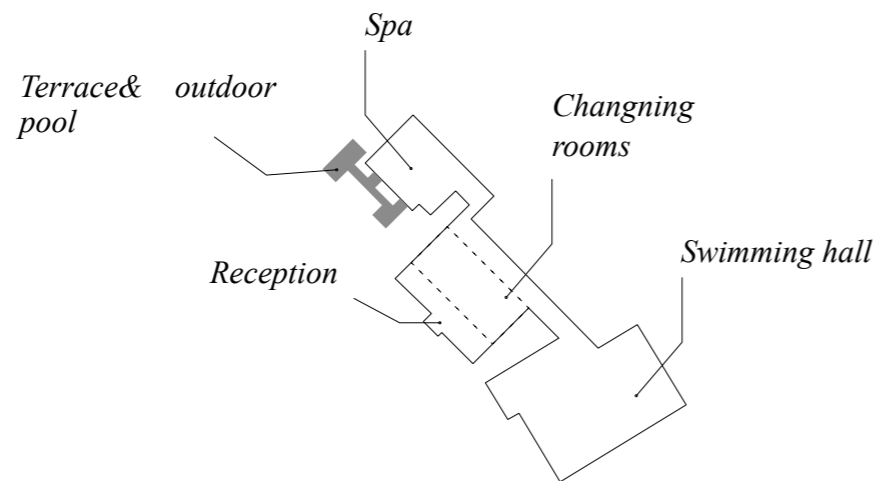


Program

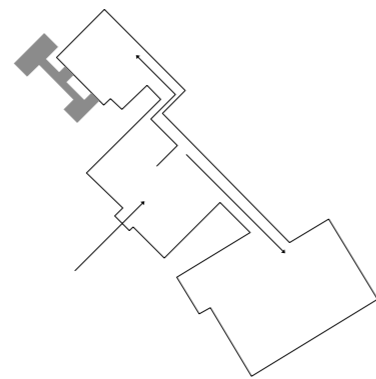
Area

Entré	129 sqm
Toilets	11.5 sqm
Reception	20.9 sqm
Changing Rooms	321 sqm
Toilets	33.9 sqm
Showers	25.9 sqm
Sauna	24 sqm
Changing Booth	15.6 sqm
Locker room	133.6 sqm
Swimminghall	754 sqm
Swimming Pool	312 sqm (25 m x 12.5 m x (1.2 - 4 m))
Education Pool	60 sqm (6 m x 12.5 m(0.6 -1.5 m))
Childerns Pool	21.8 sqm (3.6 m x 6 m x 0.3 m)
Spa	280 sqm
Pool	77.5 sqm
Sauna	40 sqm
Shower	5.2 sqm

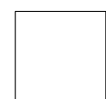
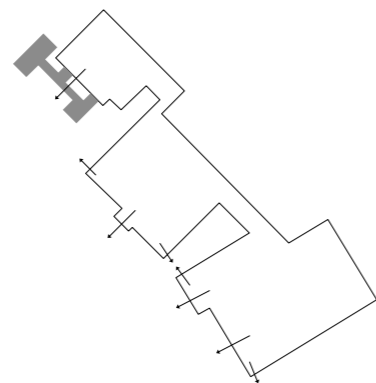
Plan Concepts



Flow of movement and ritual



Sight lines



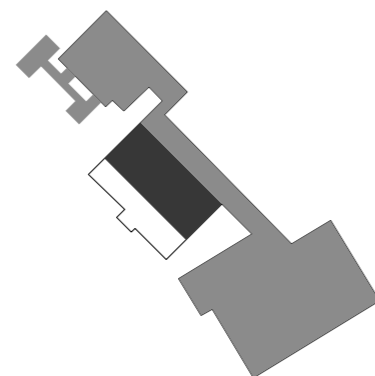
Dressed



Undressed



Bathing clothes



Sketched view from Rörås road towards the site.
Made by me, 2025.

3.

The Plan | Movement | Ritual

The plan is shaped based on the important views and inspiration from the reference buildings.

The building faces the distant mountains and the community below the mountain.

You enter the building on the groundfloor meeting the reception and cafeteria. To reach the changingrooms on the second floor you can either take the staircase or the elevator. When on the second floor you can enter one out of four changingrooms.

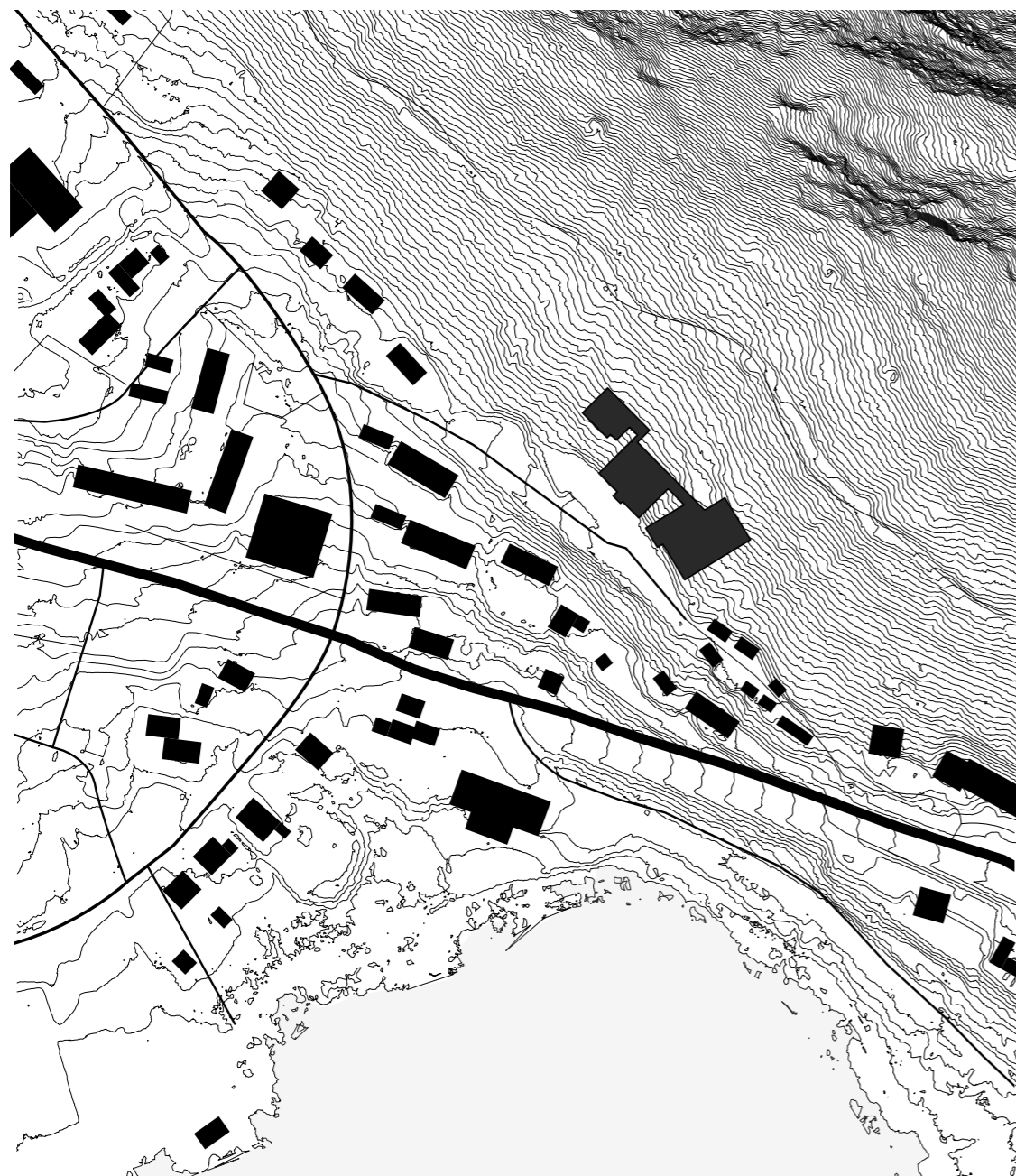
After changing in to bathing clothes you enter a corridor where you can walk to the spa facility or the swimminghall.

Visually are you as a visitor moving from the light in the reception area in to the mountain, the changingrooms and then out again in to the light in the spa and swimminghall. The materiality in the building follows this theme with a lighter wood interior towards the glazed facades and a harder rock and concrete finish further in in the building.

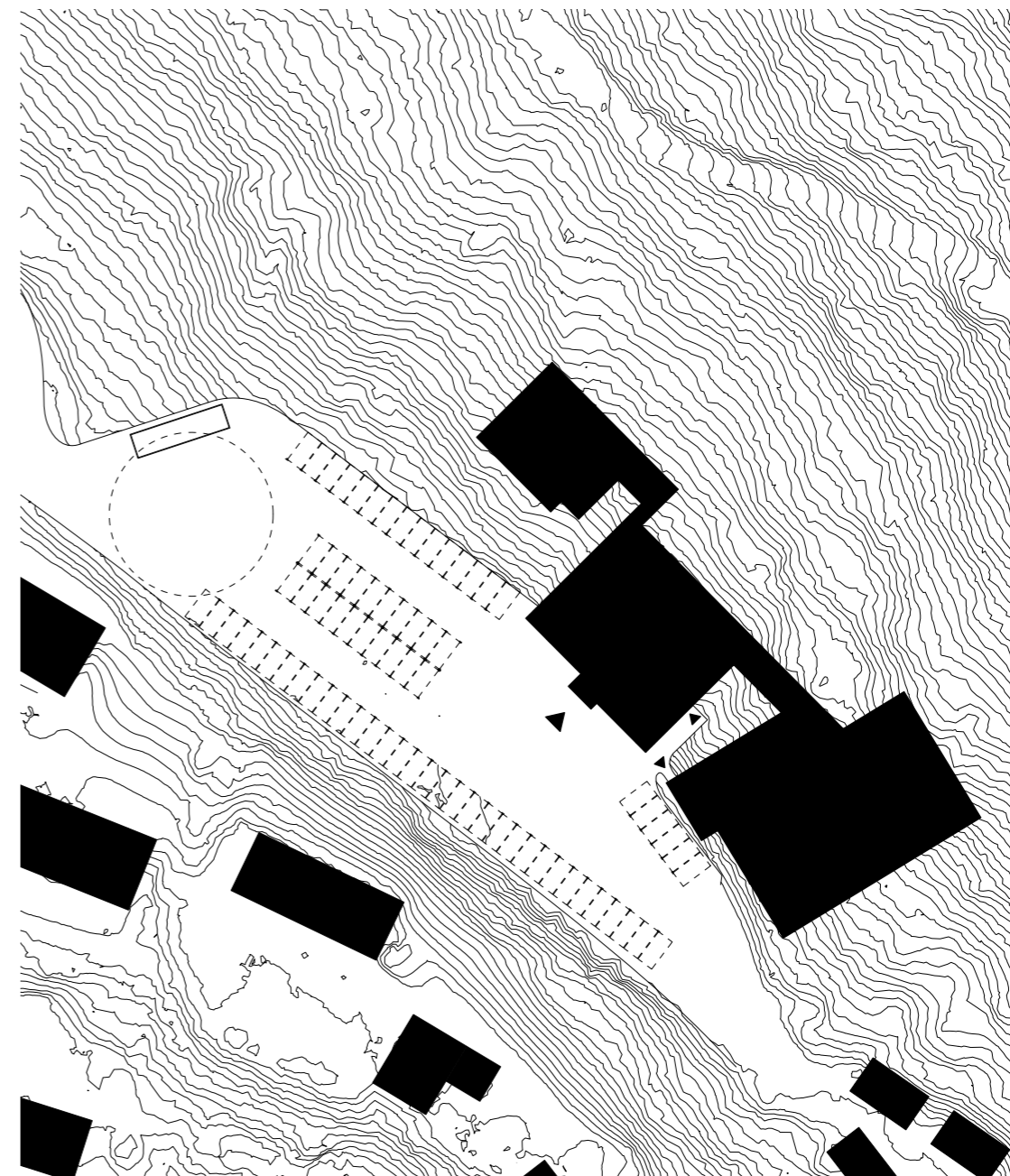


Sketch model made in the middle of the design process.

The Situation

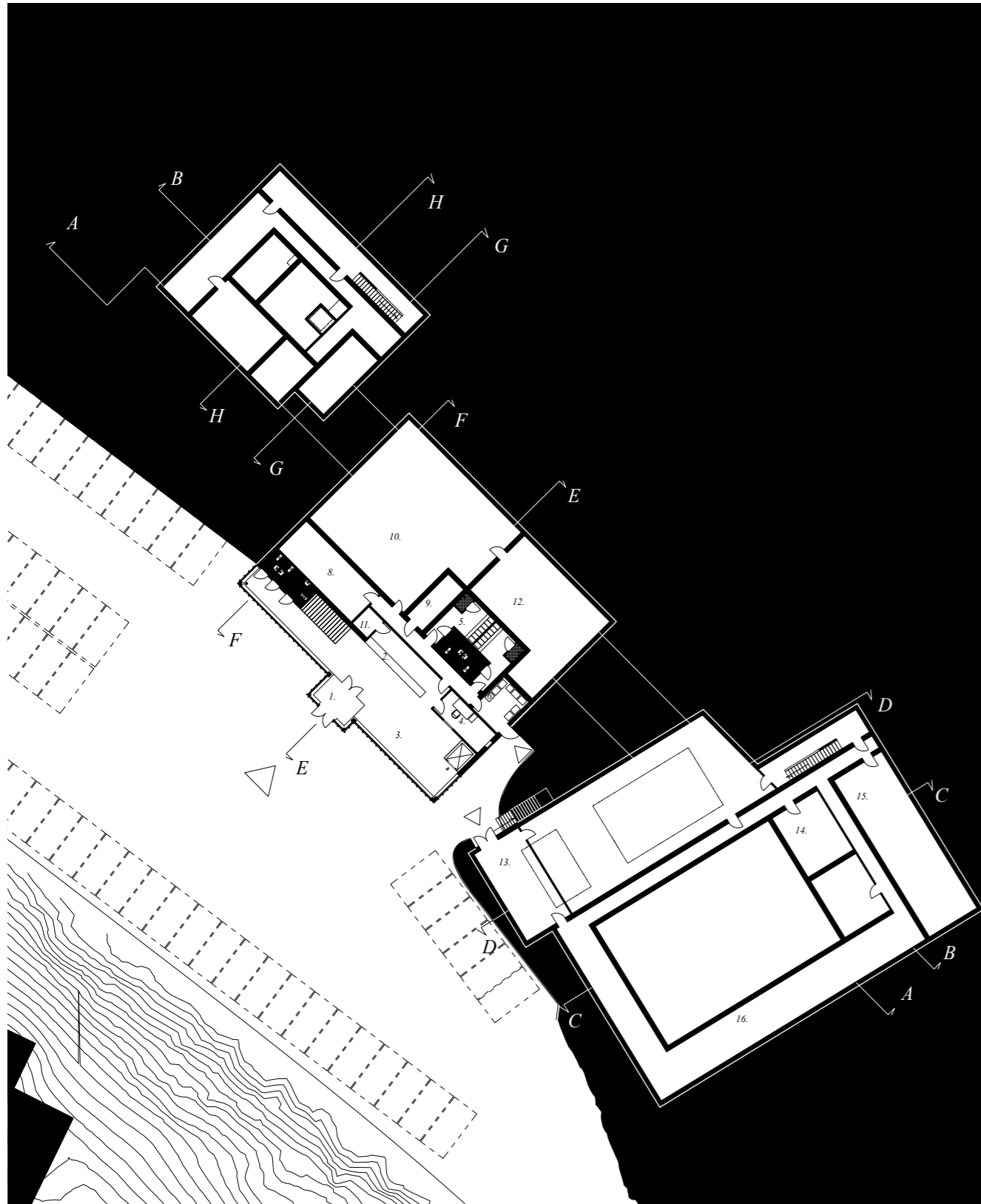


1:3000 ▲



*Each elevation curve shows
an elevation of 0.5 m.*

▲ 1:1000

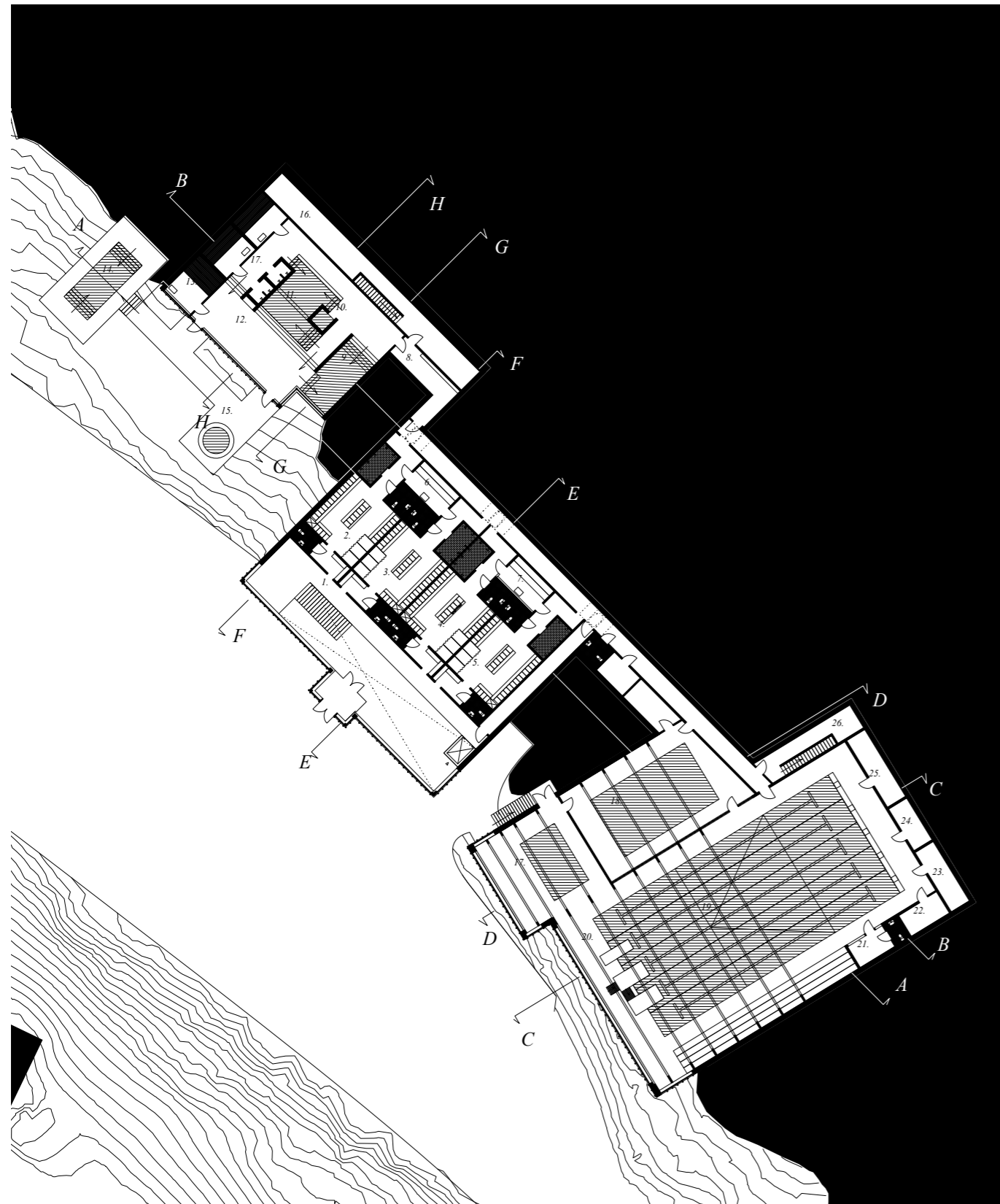


Plan 1. ▲

1:500

Ground Floor

1. Entré
2. Reception / Cafe / Administration
3. Waiting area
4. Office
5. Staff Dressing room
6. Recykling room
7. WC
8. Electrical room
9. Storage / Cleaning Storage
10. Technical space
11. Storage
12. Technical space
13. Deliveries / Chemicla storage
14. Space for surge tank & Water testing
15. Space for ventilation
16. Inspection passage

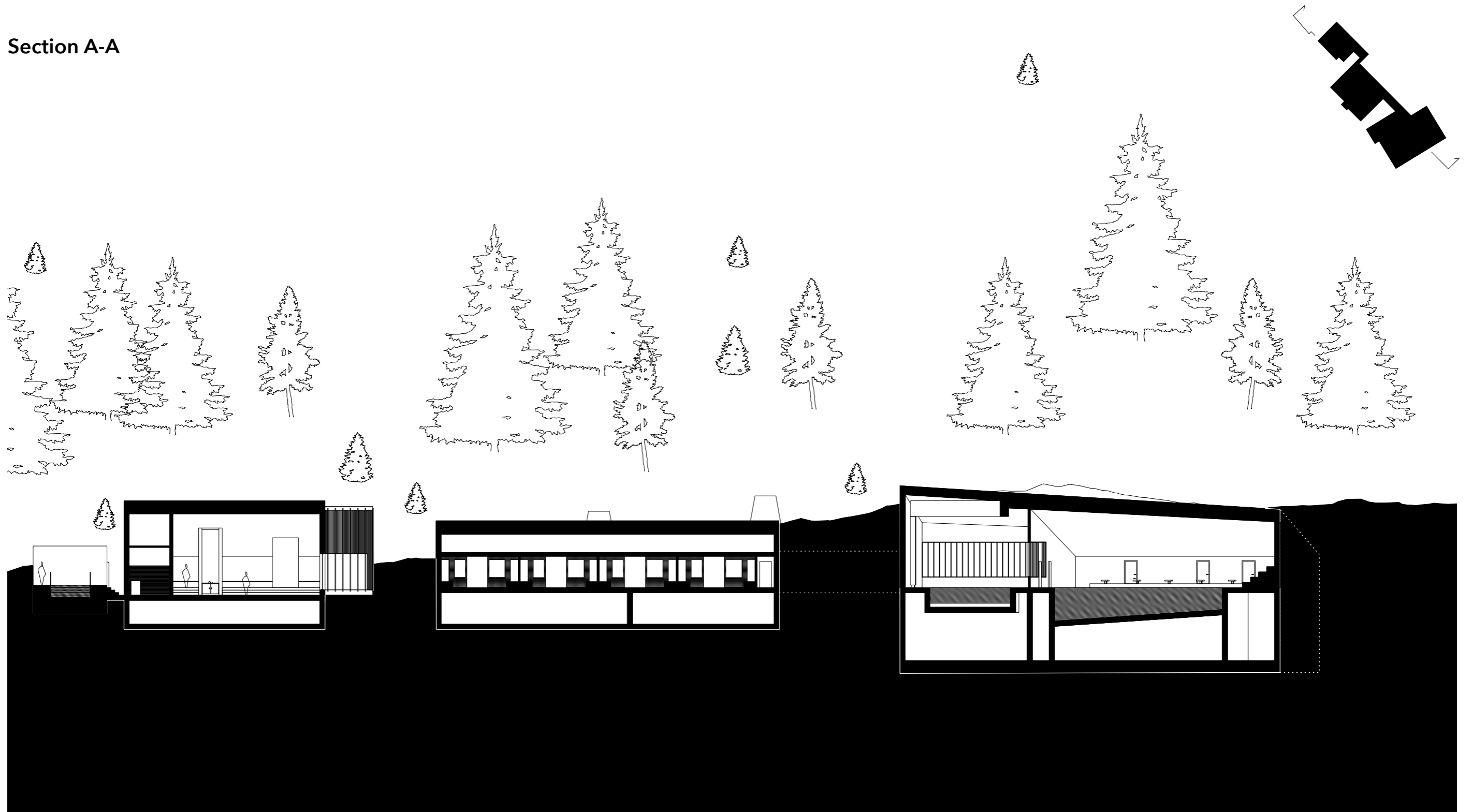


Plan 2. ▲
1:500

2nd Floor

- | | |
|---------------------------|------------------------------|
| 1. Connecting Corridor | 17. Shallow childrens pool |
| 2.- 5. Changing room | 18. Educational pool 10x 6 m |
| 6. Sauna | 19. Swimming pool 25x 12.5 m |
| 7. Sauna | 20. Hump tower 1,3 & 5m |
| 8. Towels & Robes for spa | 21. Staff watch booth |
| 9. Pool | 22.-25 Storage |
| 10. Cold pool | 26. Technical space |
| 11. Pool | |
| 12. Lounge | |
| 13. Sauna | |
| 14. Outdoor pool | |
| 15. Hot tub | |
| 16. Technical space | |

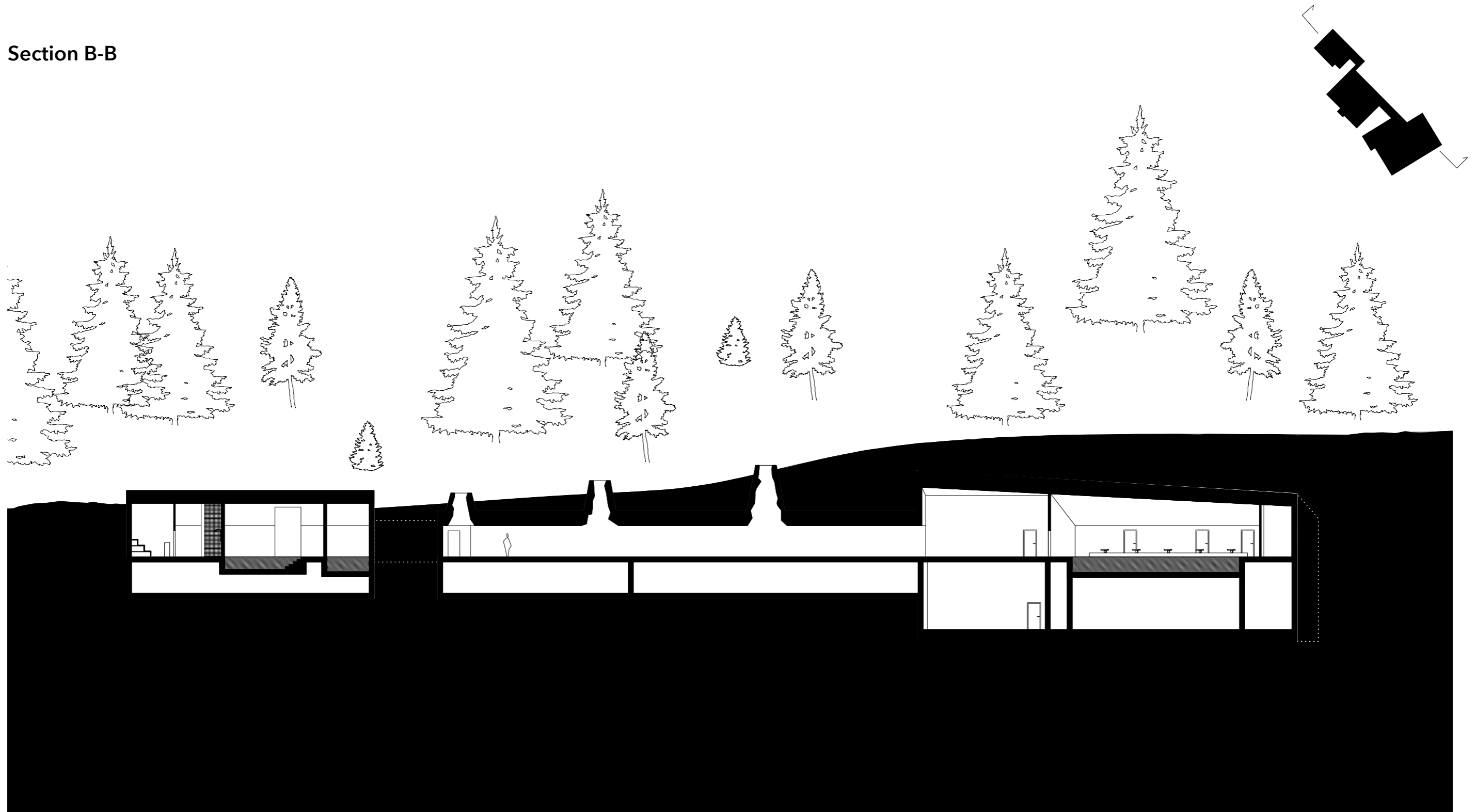
Section A-A



Section Drawn through all three buildings.

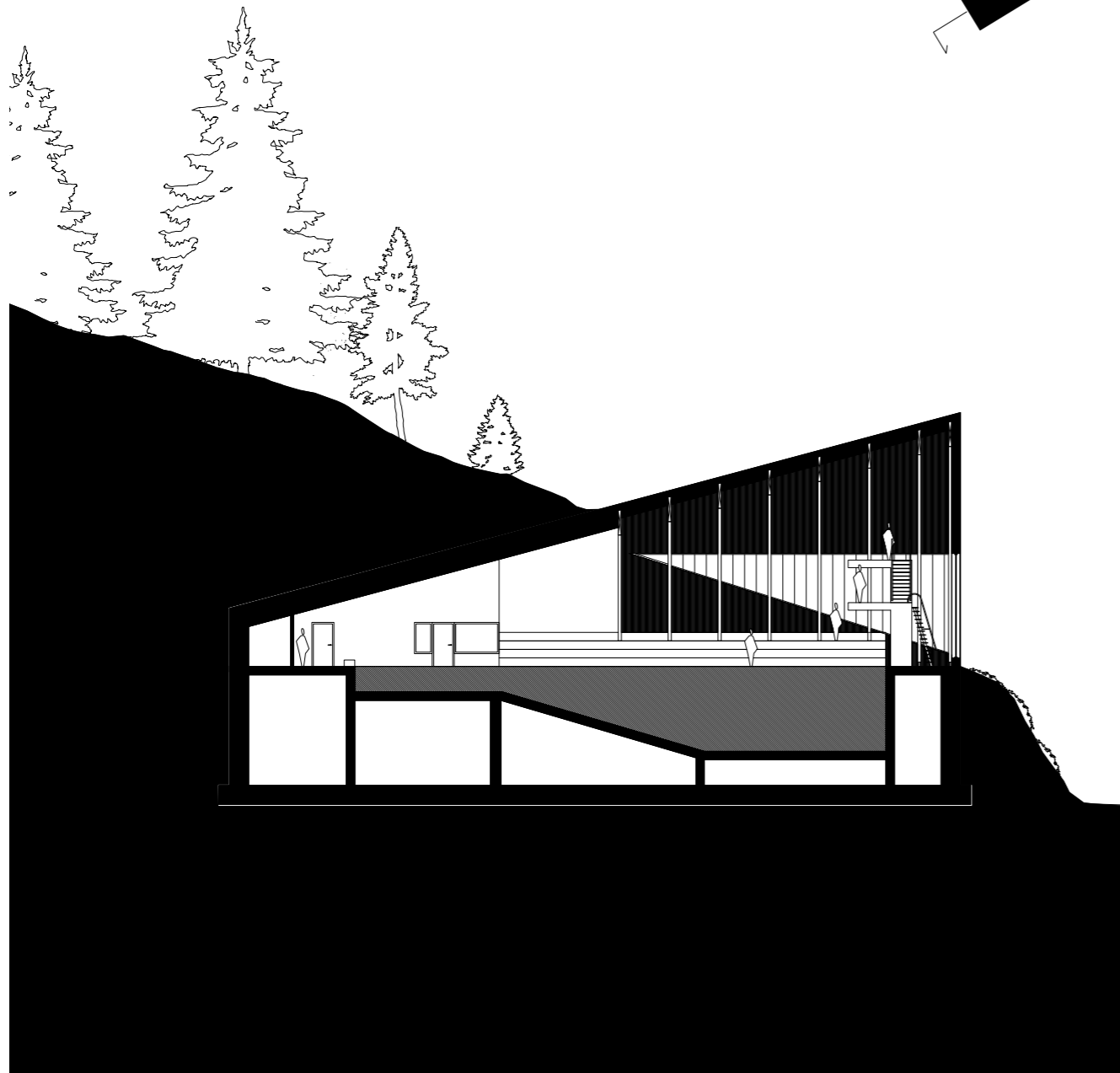
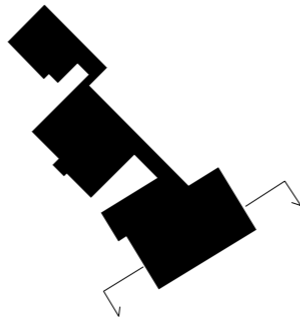
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Section B-B



Section Drawn through all three buildings and connecting corridor between swimminghall and changing room building.

Section C-C



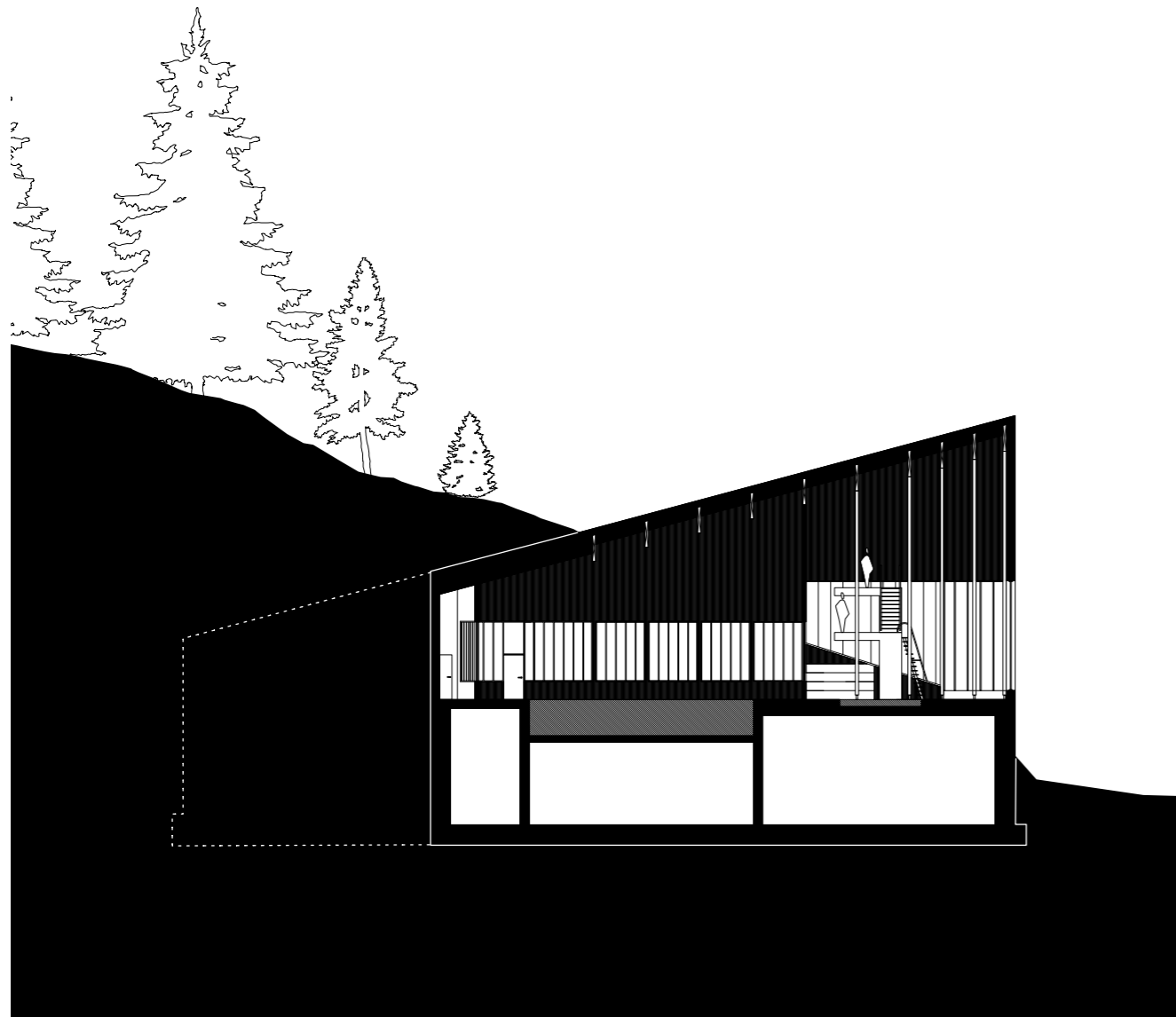
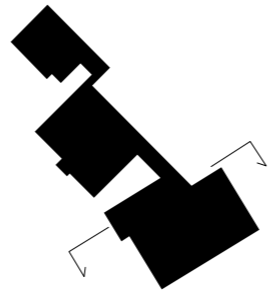
Swimming hall, main pool, 25 x 12.5 m.

1:300



*View towards the park and its historic buildings, photo taken from the site.
Photo by me, Februri 11, 2025*

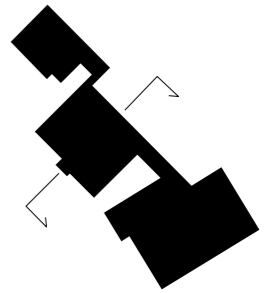
Section D-D



Swimming hall, education pool & childrens pool.

1:300

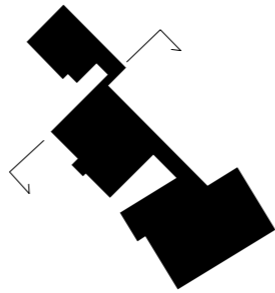
Section E-E



The reception and changingroom.

1:300

Section F-F



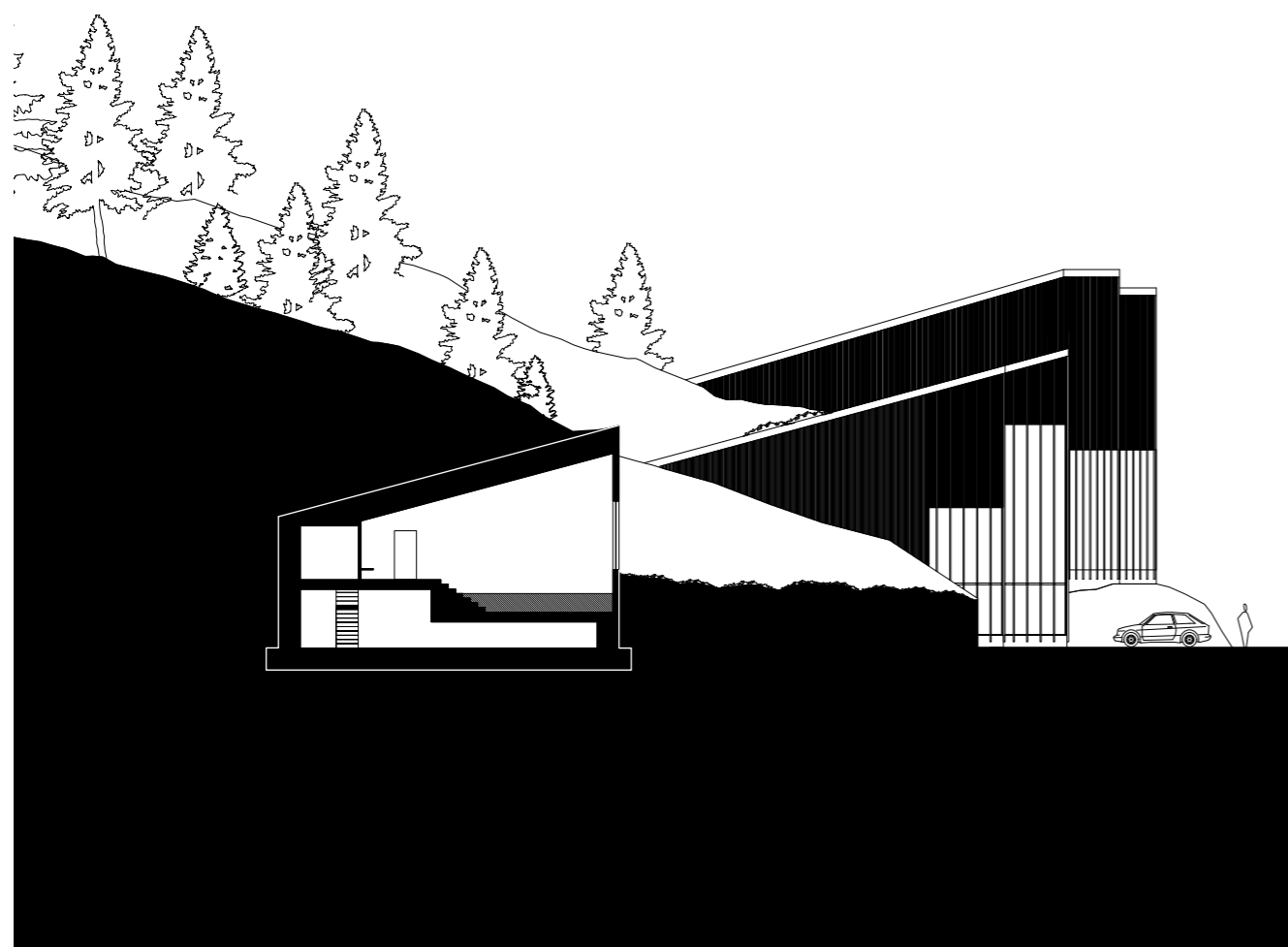
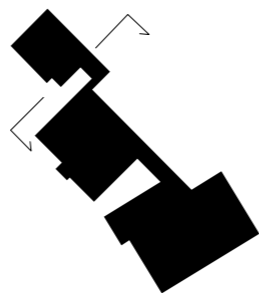
The reseption and changingrooms.

1:300



View towards the mountains Lill Skarven and Stor Skarven, photo taken from the walking path through the park. Photo by me, Februri 11, 2025

Section G-G



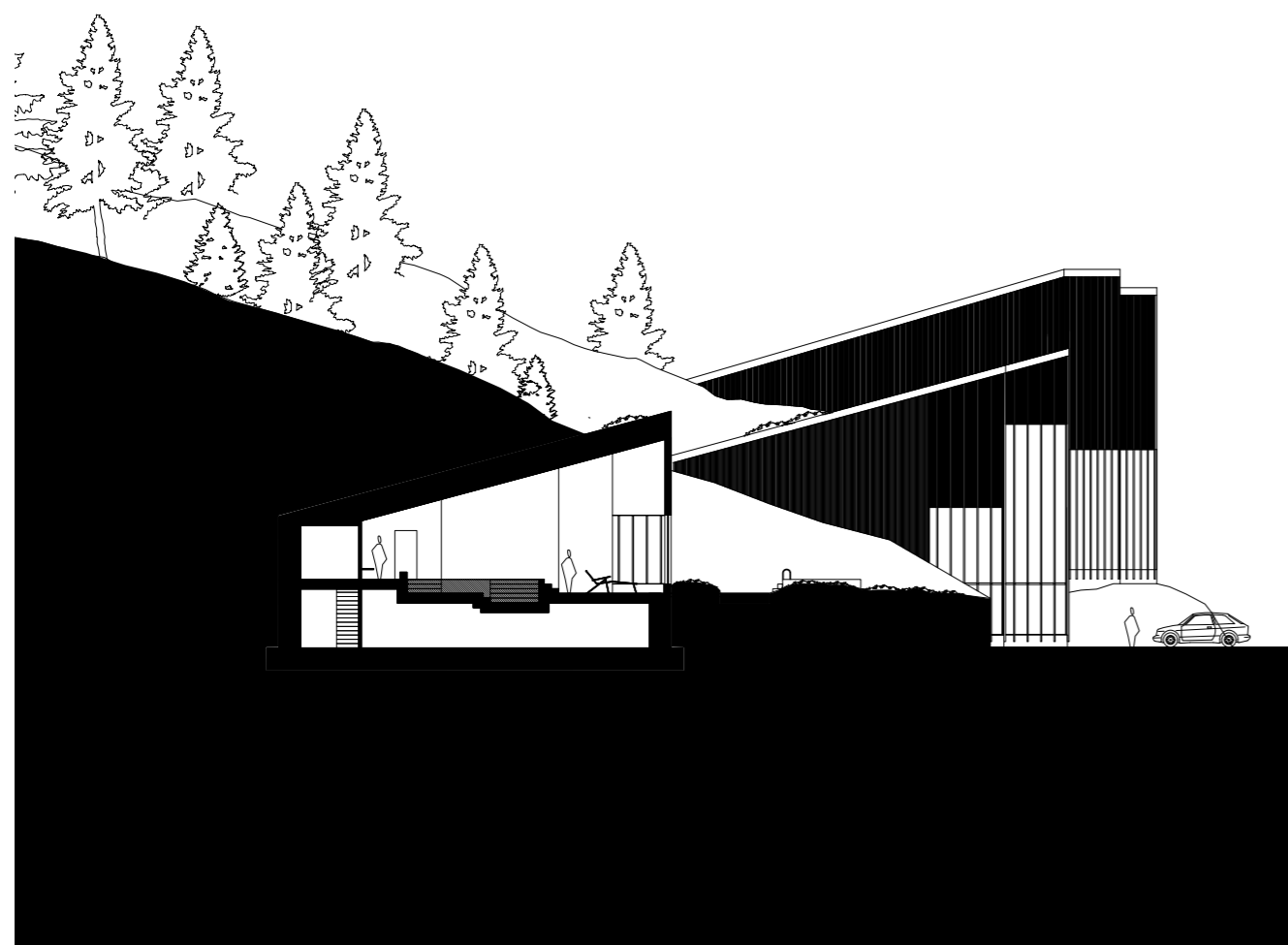
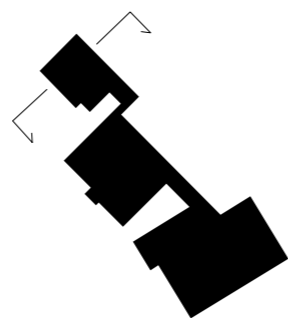
The spa

1:300



View from the site up towards the mountain behind. Photo by me, Februri 9, 2025

Section H-H



View towards the mountains Lill Skarven and Stor Skarven. Photo by me, Februri 11, 2025

The spa

1:300



View from the reception towards the stairs leading to the changing rooms.

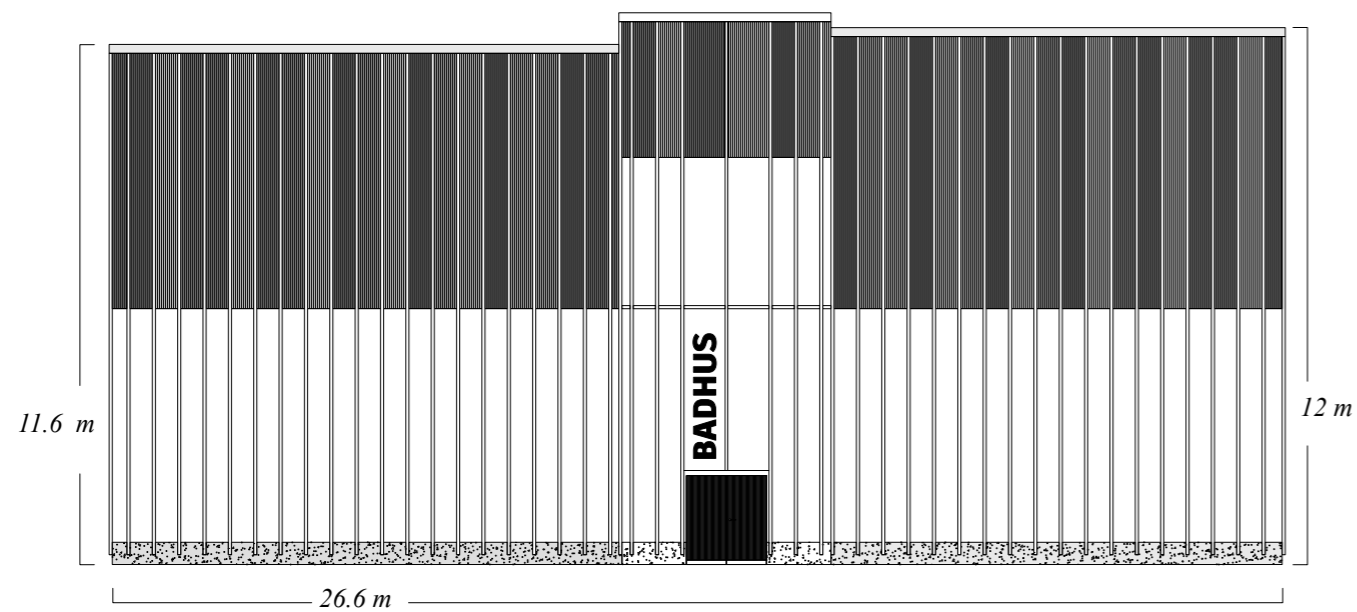


The spa relaxation area.

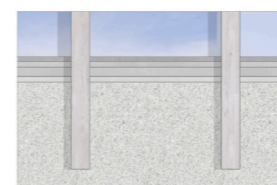
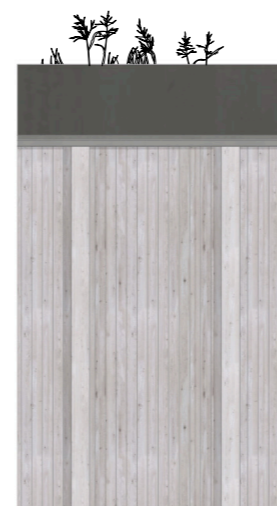


The swimminghall and the main swimmingpool.

The Reseption & Changing room



1:170



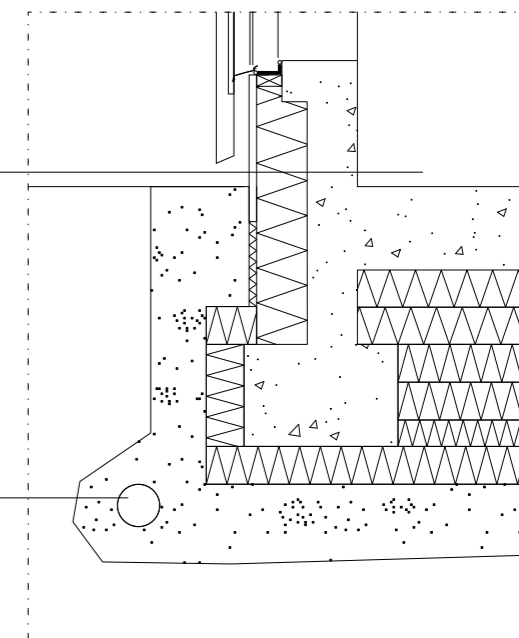
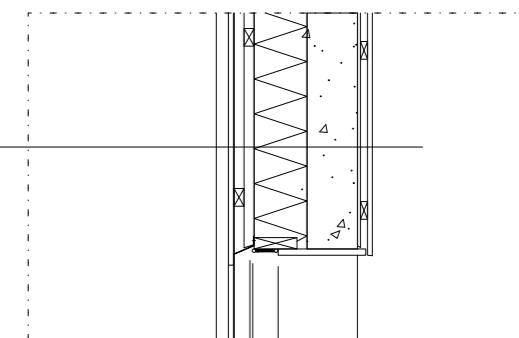
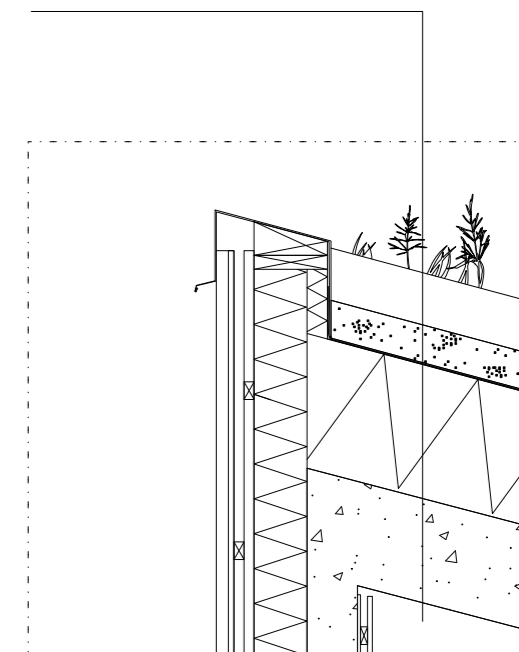
1:30

Panel 70x60 mm
 Panel 22x40 mm
 Wooden batten 40x70 mm
 Wooden batten 40x70 mm
 Concrete 200 mm
 Vapor Baarrier
 Wooden batten 40x70 mm
 Wooden batten 40x70 mm
 Panel 19x50 mm

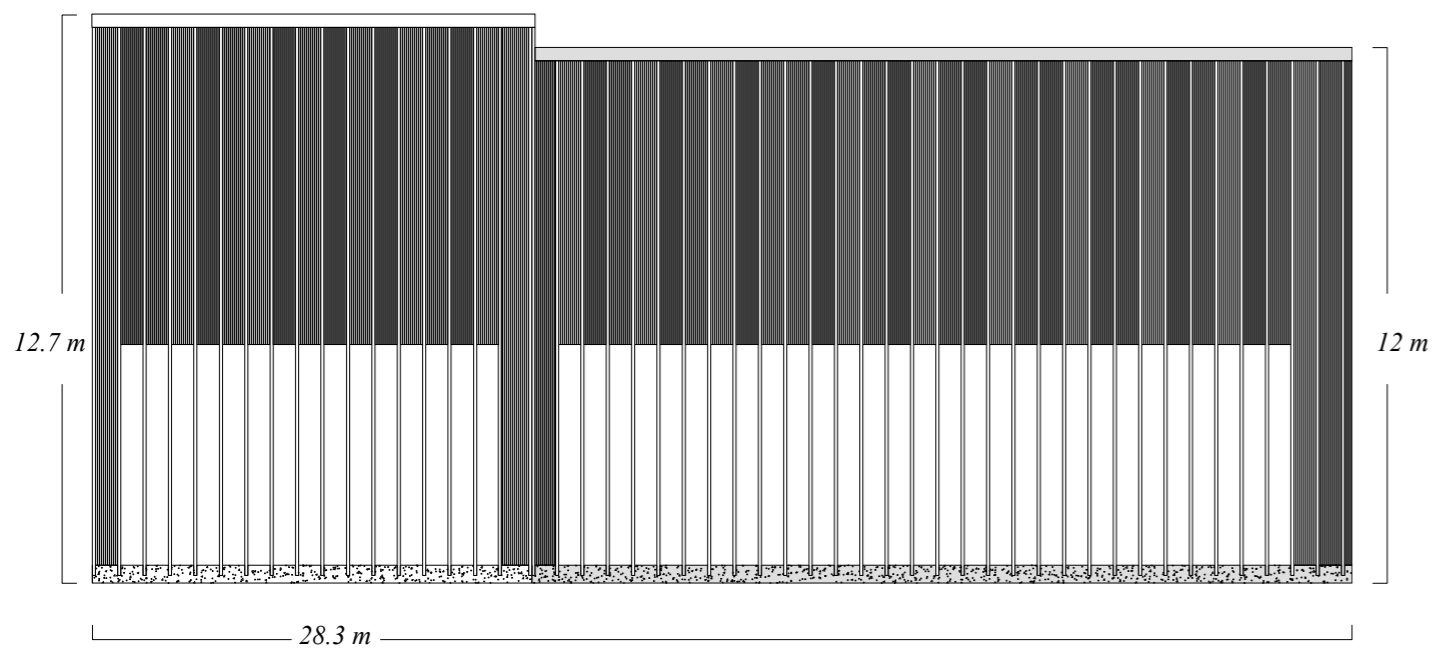
Drainage
 Insulation 250 mm
 Concrete 200 mm

Drainage pipe

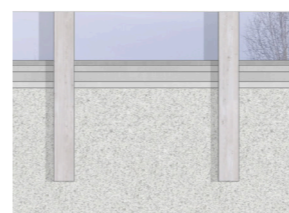
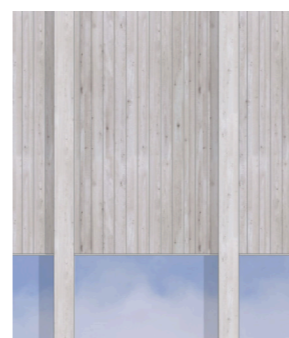
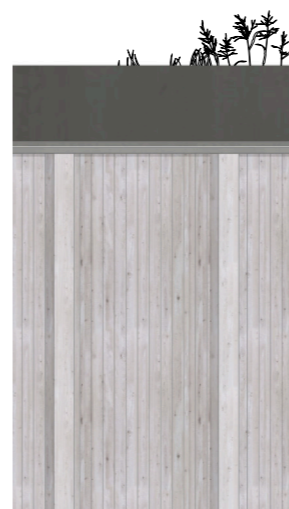
Vegetation bed
 Drainage 150 mm
 Vapor barrier
 Insulation 300-500 mm
 Concrete 400 mm



The Swimming hall



1:170



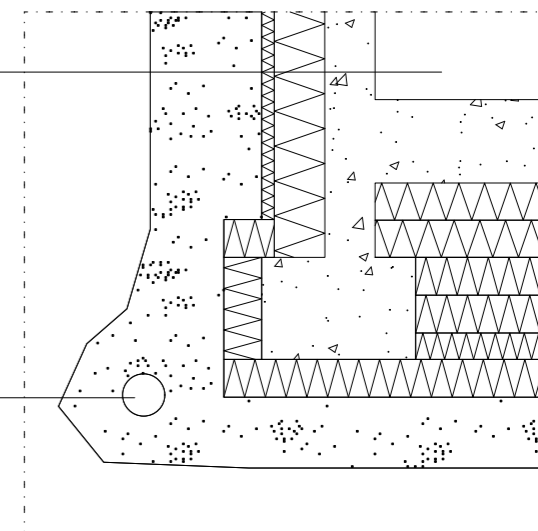
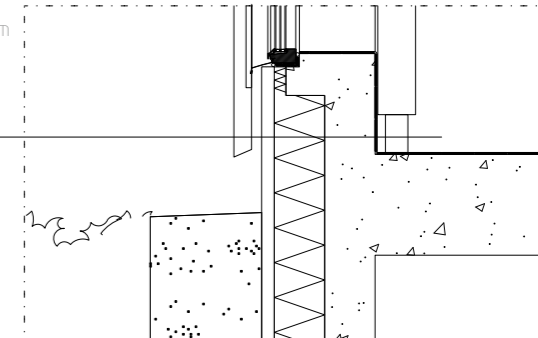
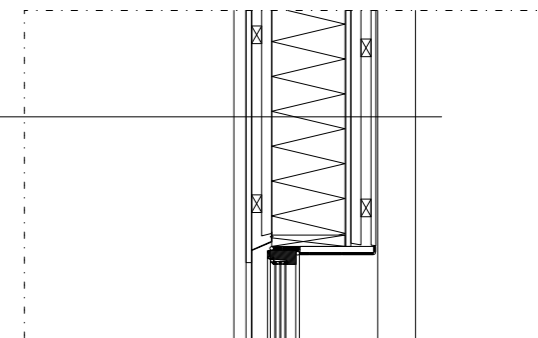
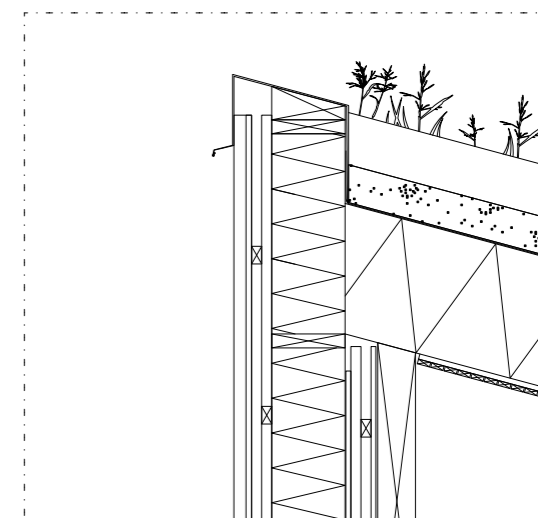
Panel 70x60 mm
 Panel 22x40 mm
 Wooden batten 40x70 mm
 Wooden batten 40x70 mm
 Insulation 250 mm
 Vapor barrier
 Plywood 21

Wooden batten 40x70 mm
 Wooden batten 40x70 mm
 Panel 19x50 mm
 Glulam beam 150x700 mm

Wall cladding Granite 50 mm
 Insulation 200 mm
 Concrete 200 mm
 Clinker 125 x 125 x 7.5 mm

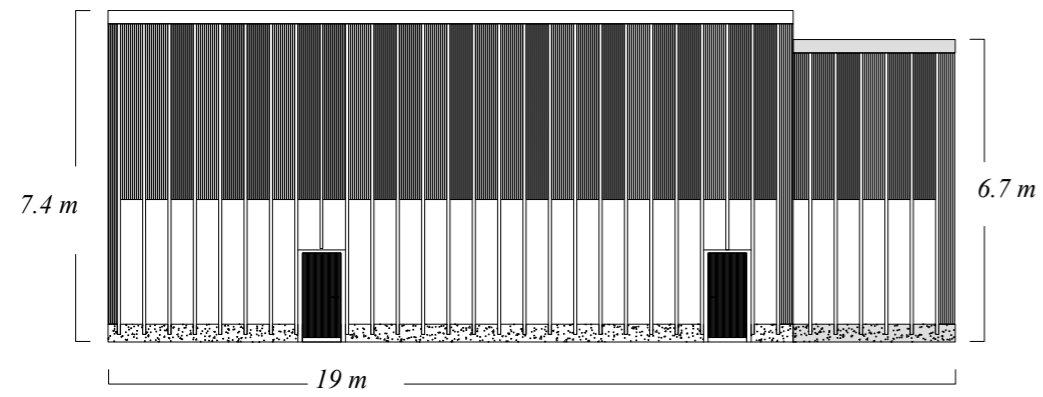
Drainage
 Insulation 250 mm
 Concrete 200 mm

Drainage pipe

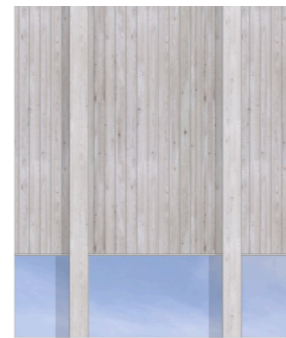
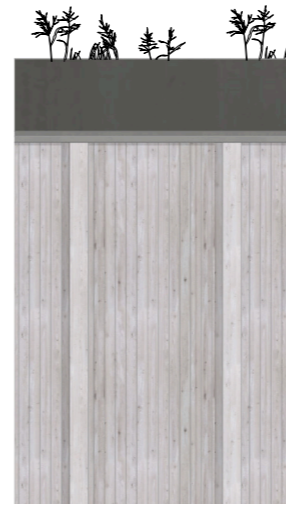


1:30

The Spa

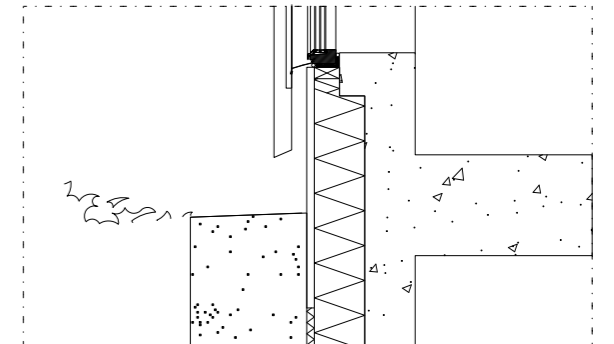
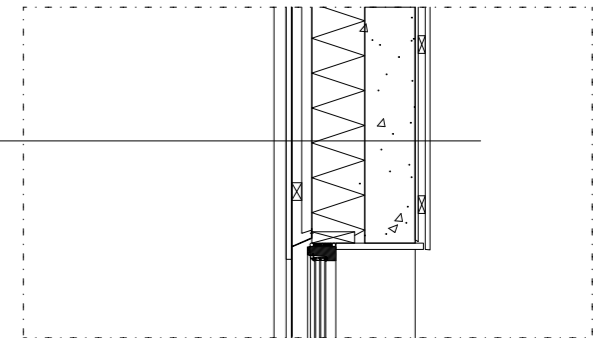
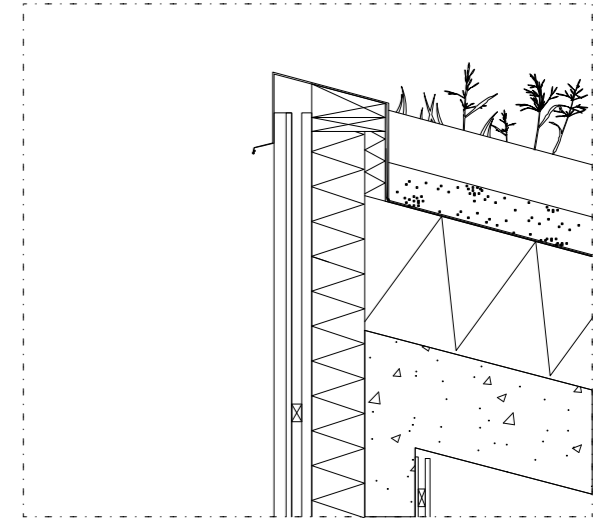


1:170



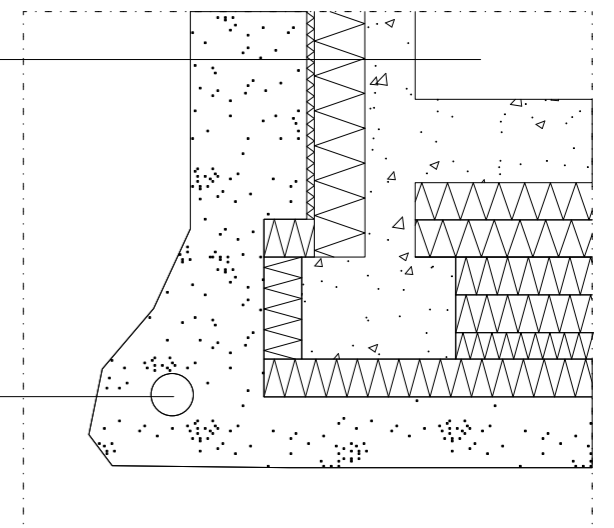
1:30

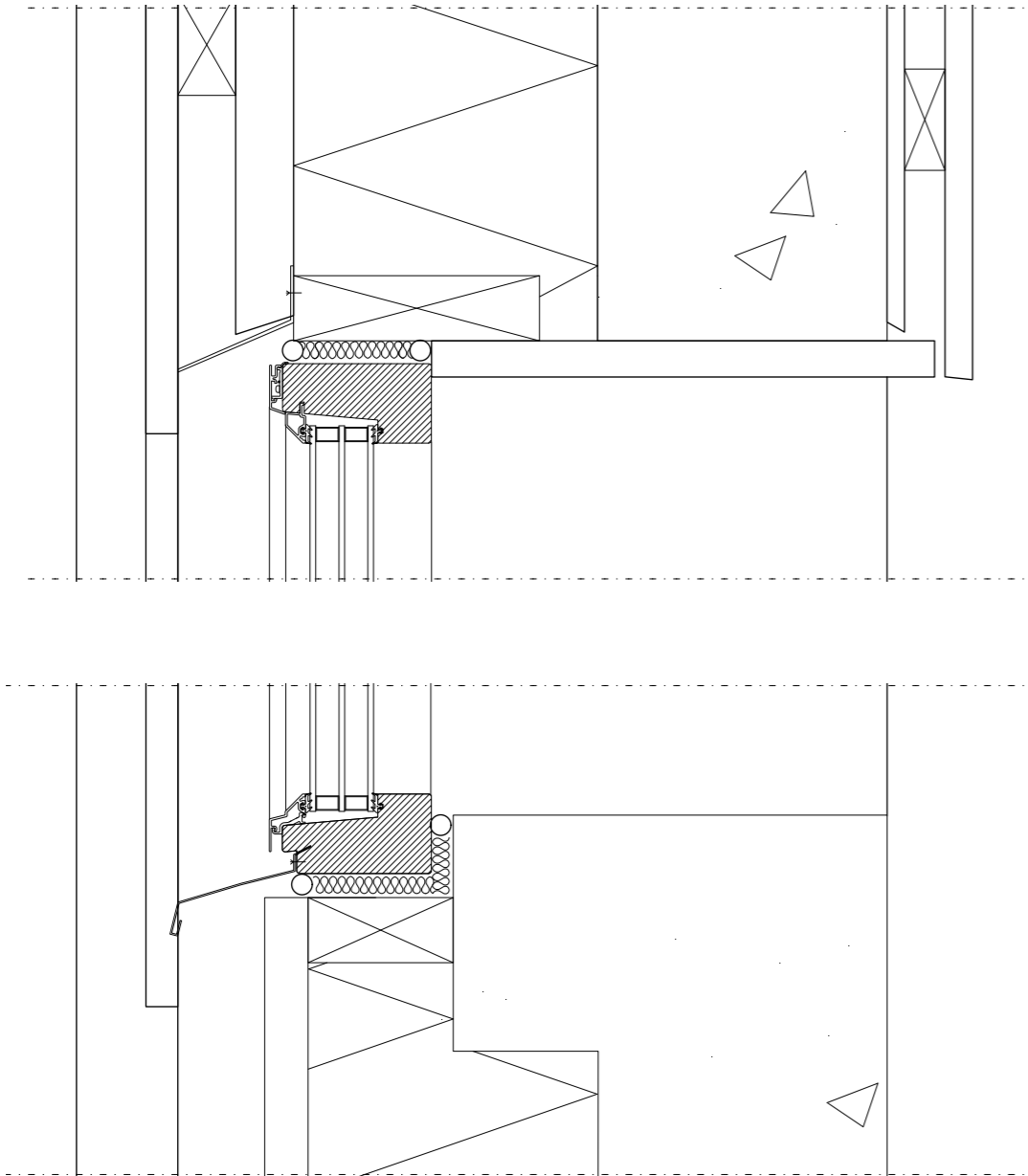
Panel 70x60 mm
 Panel 22x40 mm
 Wooden batten 40x70 mm
 Wooden batten 40x70 mm
 Insulation 210 mm
 Vapor barrier
 Concrete 200 mm
 Plywood 12
 Wooden batten 28x70 mm
 Panel 19x50 mm



Drainage
 Insulation 250 mm
 Concrete 200 mm

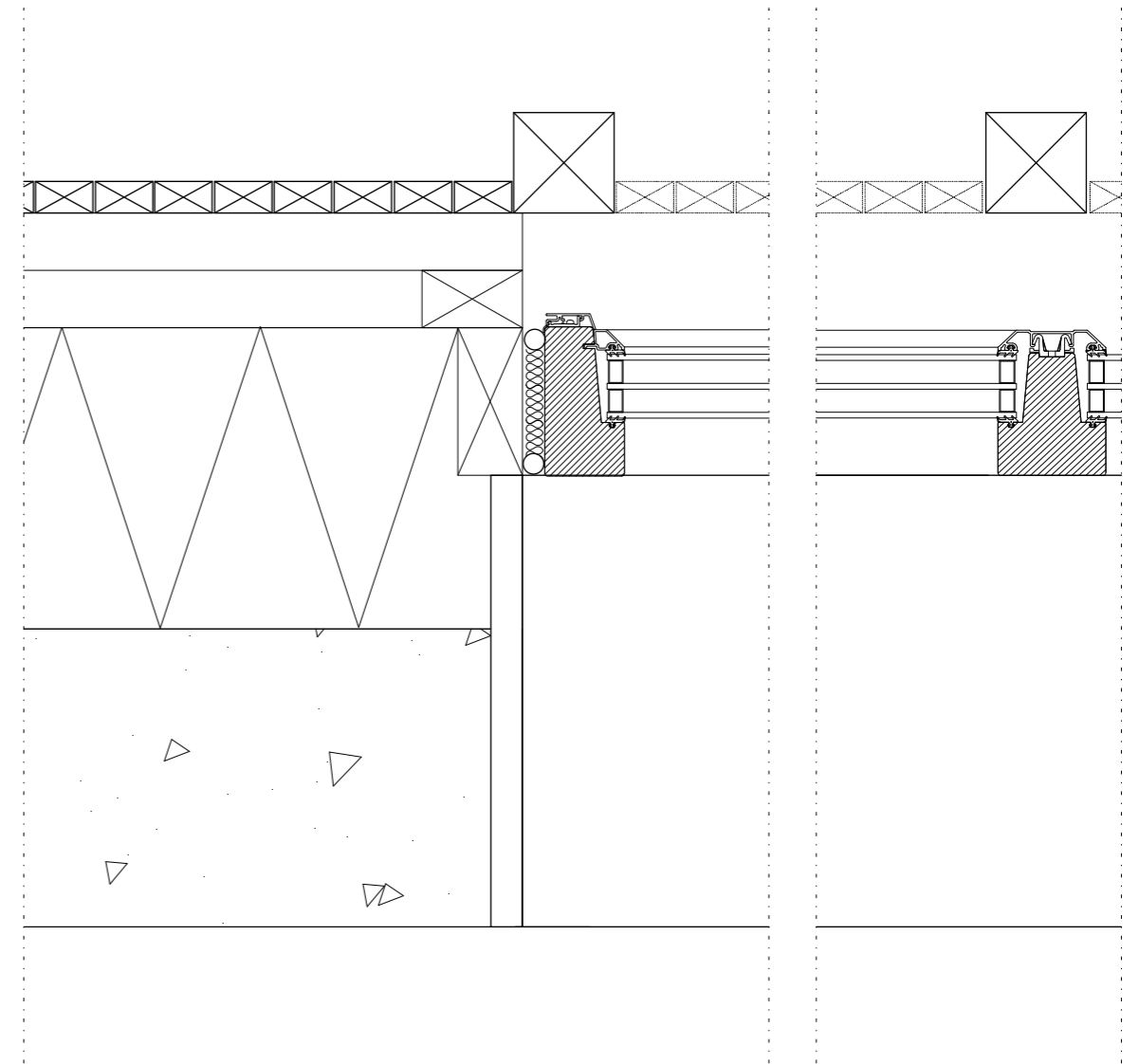
Drainage pipe





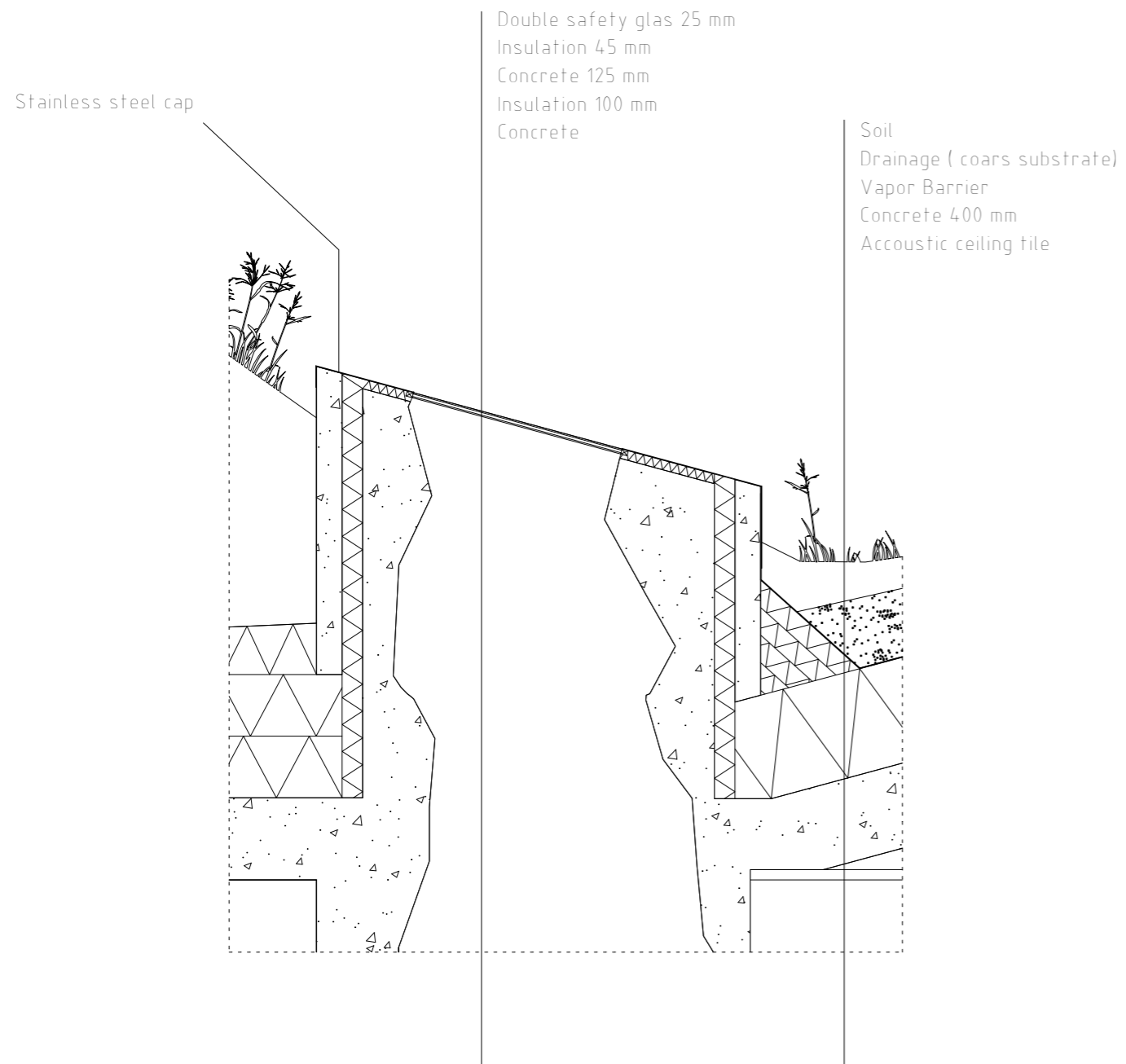
1:5

Vertical detail across aluminum clad wood window. Similar in all buildings



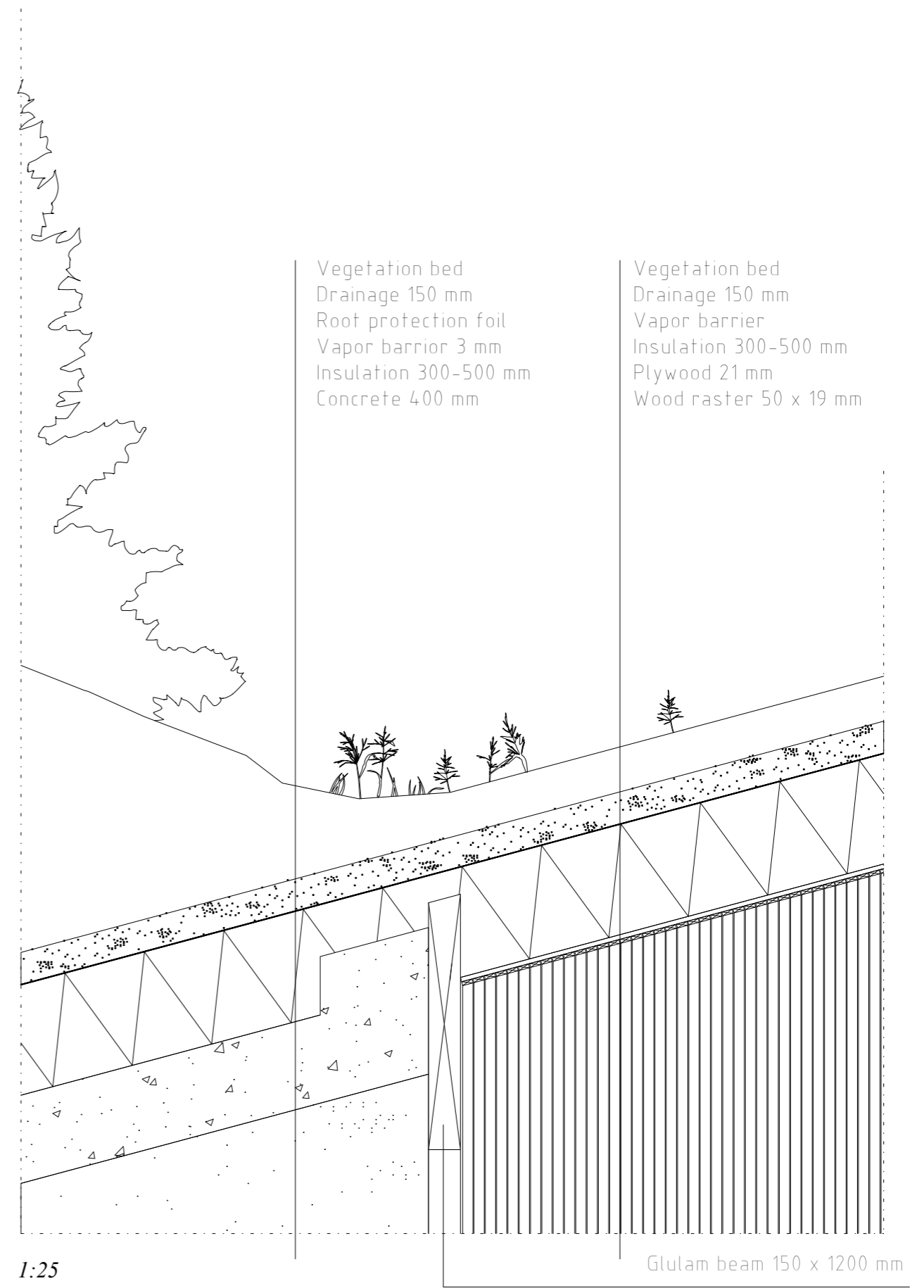
1:5

Horizontal detail across aluminum clad wood window. Similar in all buildings



1:5

Vertical detail across lantern.



1:25

Vertical detail over roof construction in the swimminghall, the change from concrete bearing to glulam beam.

Discussion

The starting point for the project was the need for a public bath in Funäsdalen. The project was then anchored to the site by interpreting nature as the area's greatest asset, with the goal that the resulting building would be unique and adapted to its context.

The final result is a building divided into three volumes, connected underground. This concept was inspired by the reference project Mountainside by Mackey-Lyons Sweetapple Architects, which sought to create a building that resembled and blended with the surrounding nature—a similar situation to this project. The division into volumes was also based on the idea that the new bathhouse should not stand out or dominate or overshadow in a village otherwise characterized by low structures.

The greatest challenge in the project has been the terrain. I have tried to make use of it and create a narrative of movement upward and into the mountain, drawing inspiration from Zumthor's nine strategies. I aimed to develop an idea of materiality that corresponds with the dark mountain—using concrete, stone, and dark tiles—while the rooms facing the outdoors has a lighter material scheme with wood and light-coloured tiles. This inspired from the reference projects, Therme Vals, Andrum and Fremmen's School swimming pool.

The bathhouse consists of two floors, with the entrance and café on the ground floor, and changing rooms, swimming hall, and spa on the second floor. There are three roof lanterns in the corridor leading from the changing rooms to the swimming hall and spa. These are intended to bring natural light into an otherwise enclosed passageway and to give the impression of cracks in the mountain where light falls in. The separation of the spa and the pool area is intentional, as I view them as two different activities with distinct atmospheres that should not be mixed. Hence, they are placed on either side of the changing rooms, which serve as the central hub of the building.

Looking back at the project with a critical eye, I feel that the natural surroundings and topography were not utilized to the extent they could have been in order to truly claim that they were assets and design drivers in the project, as the research question suggested. However, I do believe that the final result is a unique design suited for the site.

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AI appendix

AI has been used in translating text from English to Swedish. AI has also been used for translating my own written text from Swedish to English.



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UNIVERSITY OF TECHNOLOGY

Tove Mattsson
Matser thesis spring 2025