Bergslagen belonging

An investigation of traditional building techniques in relation to place identity.

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ABSTRACT

As a constant coming and going of trends could risk fueling a lack of context within contemporary architecture, perhaps using regional architecture as inspiration could enable the creation of something that is rooted in place identity. Through this thesis a traditional building technique of vernacular architecture, more specifically the log timber construction, is investigated in relation to how it can be used within contemporary architectural projects in order to connect to the history of a region.

The cultural geographical area of Bergslagen, Sweden, originates from its many accumulated mining industries and the scattered developments of old log timber buildings are still characteristic for the area today. My hometown Sala, situated in a part of this area, is known for its silver mine that used to be the most important resource for extracting silver in Sweden. Its main function today is tourism-related and there is a need for an additional building in the form of a visitor center. Designing a contemporary building to a historically valuable site like this puts emphasis on the ability to connect to the identity of the place, making it a relevant project for res arching the topic of interest.

The design process is mainly based on research by design where the log timber construction and its qualities are being investigated through a design proposal. Research for design is also implemented as reference studies on contemporary buildings using the log timber construction are carried out and research is done on vernacular log timber traditions.

Critical regionalism functions as a theoretical framework with the ambition of achieving a result that hopefully relates to the context without simply being a nostalgic image. The design focus is put on enhancing the construction through exposing it, making it readable and by doing so exploring its possibilities of functioning as a link between the addition and the already existing buildings.

Key words: *log timber construction, vernacular architecture, visitor center*

Thank you,

Björn and Mikael
for tutoring and guidance

Fellow students
for encouragement

Henrik, friends & family
for all your support

Timber knots at Sala Silvermine

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Theoretical framework

Aim & purpose

The aim of this thesis is to investigate local building traditions of vernacular architecture and how they can be used within architectural projects in order to connect to place identity. The area of interest for this investigation is Bergslagen, Sweden, and the research will be conducted through designing a visitor center as an addition to the historically valuable site of Sala Silvermine in Västmanland. Focus will be put on the traditional log timber construction and how to incorporate its tectonic and spatial qualities into a contemporary design.

Research question

- *How can a contemporary building relate to the identity of Bergslagen through the use of traditional building techniques of vernacular architecture in the region?*

Method

The process is mainly based on the method *research by design* as the research question is explored through the architectural design in itself. Emphasis is put on developing precise architectural drawings, illustrations and models that together will display the project in a range of scales as a means to get close to built reality. The material also contain studies of literature and references of both vernacular architecture and contemporary projects in relation to log timber constructions. This means that *research for design* also is implemented and carried out in parallel throughout the design process.

Delimitations

Almost the entire area of Sala SIlvermine is listed due to its cultural-historical value and although issues in regard to designing an addition to a historically valuable site like this will be noted, the thesis will not take into consideration the strict regulations that it implies. This is due to the fact that no buildings can be added to the site without specific permission from the county. Furthermore, it will not go into depth of ground conditions as it is a speculative project, and the research would become too extensive.

Reading instructions

This thesis is divided into four parts, namely introduction, background, design proposal and conclusion. The introduction presents the scope of the thesis whereas research on context, construction and selected references are gathered within the background. The main part is made up of a final design proposal which showcases the project and the conclusion reflects upon the thesis in relation to the discourse and aim, the achieved results as well as the process.

Critical regionalism

'There is the paradox: how to become modern and return to the sources; how to revive an old dormant civilization and take part in universal civilization...' - Paul Ricoeur (1965)

The term *critical regionalism* came into existence in 1981 with the essay *The Grid and the Pathway* written by the architectural historians/theorists Liane Lefaivre and Alexander Tzonis. In 1983 Kenneth Frampton built upon this idea in his manifesto *Towards a Critical Regionalism: Six Points for an Architecture of Resistance*. *Critical regionalism* can be described as an attitude within architecture that refers to combining locally rooted culture with universal civilization. Frampton (1983) emphasizes that this does not imply creating simple copies of vernacular architecture deriving from nostalgia but rather representing regional architecture in a more critical sense. Architecture should include a sensitivity and commitment toward regional culture and its expressions while still having a modern approach (Frampton, 1983).

In Frampton's writing *Ten Points on an Architecture of Regionalism: A Provisional Polemic* from 1987 he brings forth the differences in having either an architectonic- or a scenographic approach toward built form. The term architectonic is closely related to construction whereas scenographic could be regarded as a mainly visual approach that could risk reducing architecture to an image. Frampton (1987) argues that the construction should rather be enhanced than covered up as doing so would risk depriving the built form of its expressiveness and architectonic impact. The thesis relates to this argumentation in the sense that it aims at putting emphasis on the construction through exposing it and due to the fact that the wanted outcome is a contemporary design and not a vernacular reproduction.

BACKGROUND

Context: Bergslagen

Log timber construction

References

Project area: Sala Silvermine

Space program

CONTEXT: BERGSLAGEN

History & area

Extraction and processing of ore for metal production in Sweden dates back more than a 1000 years and throughout this period approximately 3000 mines have existed. The majority of these mines were concentrated in the large cultural geographical area often referred to as ‘Bergslagen’, located in the middle of Sweden. This was due to the rich resources it held in terms of raw material, water streams and large forest areas which were determining factors for the development of mining industries. (Ekomuseum Bergslagen, n.d.)

The original term ‘Bergslag’ refers to the group of mine workers, or ‘bergsmän’, in areas that had mining privileges meaning that they had retained certain rights and obligations from the swedish crown in regard to the extraction of ore (Ekomuseum Bergslagen, n.d.). Thus, the area with the highest concentration of privileged mining industries has since come to be known as ‘Bergslagen’.

Although iron was the most commonly extracted ore in Bergslagen, various other metals were also found in parts of this area. This includes silver which was mainly extracted in the project area for this thesis, namely Sala Silvermine.

Timber traditions

According to the writings of Finn Werne (1993) in his book *Böndernas bygge,* almost all houses in Sweden were constructed using timber until the middle of the 1800s and wood has consequently been the dominant building material. The log timber construction, more specifically called “knuttimring” in Swedish, has been the most common method of construction historically and also the preferred technique in areas with rich resources of timber (Werne, 1993).

The timber was derived from near forest areas which meant that the buildings were directly linked to the landscape and its local conditions. As the type of forest and the access to it varies throughout Sweden, this has resulted in many regional variations when it comes to traditional building techniques. Werne (1993) brings forth that the log timbering technique was dependent on the substantial resources of timber that the coniferous forests offered. In areas with deciduous forests or with scarce access to forests, typically in the southern parts of Sweden, other timber techniques such as ’skiftesverk’ and ’korsvirke’ were more common.

As Bergslagen is situated within the coniferous belt that runs through Sweden there has been rich access to large forest areas historically which have resulted in the log timber construction being the most common method of construction in the region. Most mine workers were, in addition to being metal producers, also independent farmers that owned some land and/or forest area and the historical ‘bergsmansby’, or mining village, is typically characterized by a development of scattered log timber buildings (Ekomuseum Bergslagen, n.d.).

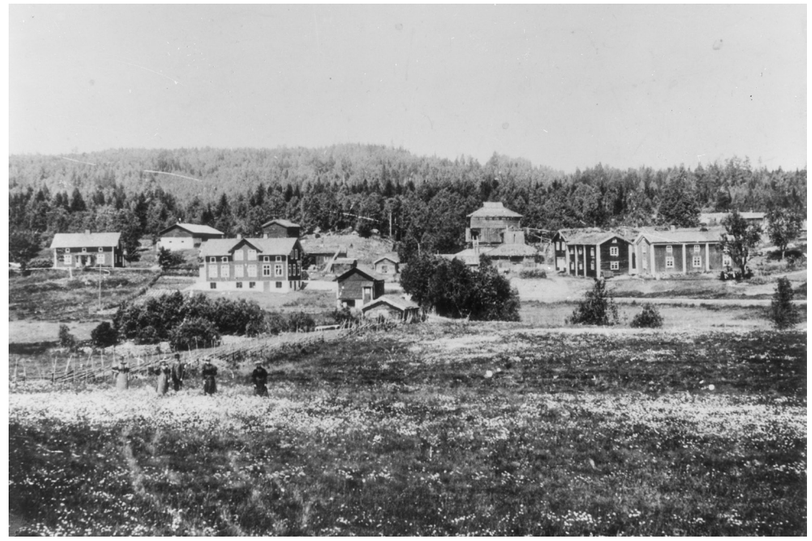


Figure 1. Greksåsar [Photograph], Örebro Läns Museum, (n.d.), digitalt museum (https://digitalt-museum.se/021016549535/greksasar). CC BY-NC.

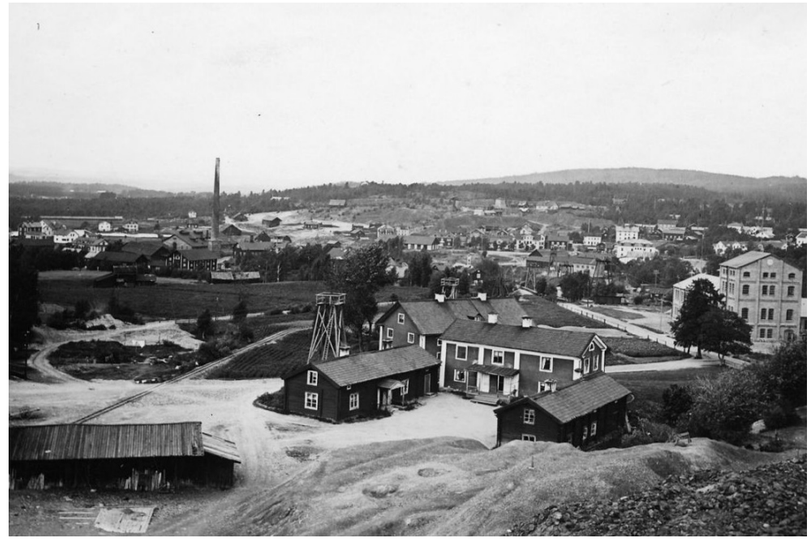


Figure 2. Kaveltorps Bergverk [Photograph], J von Montogomery, (n.d.), Tekniska museet (https://commons.wikimedia.org/wiki/File:Kaveltorps_bergverk_2.jpg).. CCo 1.0.

CONSTRUCTION: LOG TIMBER (KNUTTIMRING)

Structure

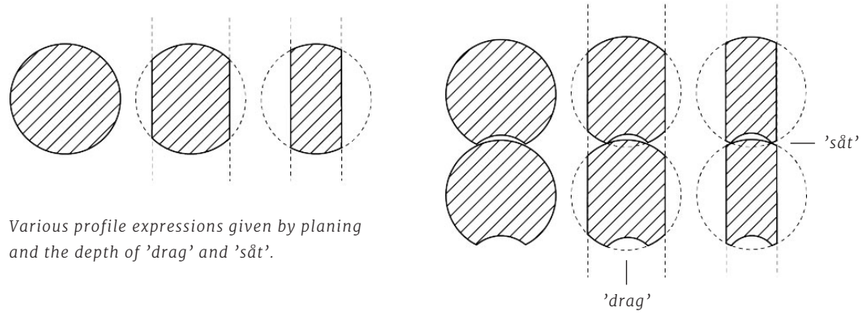
In the publication *Timmerbyggnader - tematiska undersökningar av traditionella timringsmetoder*, Göran Andersson (2016) describes the log timber construction, 'knuttimring', as consisting of horizontal timber logs stacked on top of each other forming walls which are knotted together in the corners and most commonly assembled into rectangular units. As Andersson (2016) writes, the knots are stable enough that the walls are load-bearing without the need of any vertical timber as stabilization and this type of timber construction has historically occurred with somewhat the same proportions throughout Sweden as many traditional timber buildings are relatively long and narrow. This is partly due to the function of the building but also due to aspects of handling and processing the material and the possibility of joining multiple structures together.

Timber structures were joined together into longer buildings in order to work with logs that were manageable in terms of length, weight and also due to the difficulties of making stable knots with logs longer than 10-12m. For example, a traditional single-cottage ('enkelstuga') has the dimensions 6x10 m whereas for a double-cottage ('parstuga') the gable is kept narrow but multiple timber units are joined together in the length-direction. Joints occur in the knots of a partition wall or in the middle of a wall. It can be harder to achieve a dense wall when joining logs in the middle, and joints in the knots can also be preferred due to aesthetic reasons. To stabilize timber walls from bulging, floor structures, partition walls and dowels can function as reinforcement and the number of openings are preferably limited and distributed evenly. (Andersson, 2016)

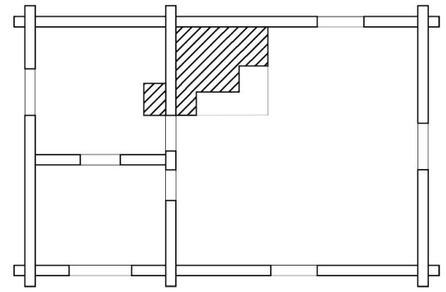
Resource & material

The majority of timber buildings in Sweden are made up of pine wood and several aspects matter when selecting suitable trees in order to make the construction solid and stable. One of these aspects is the difference in top-root dimensions as even logs are necessary to make steady knots and to keep even wall levels. Another important aspect is to have straight wood that contains a high amount of heartwood which makes the construction more durable. (Andersson, 2016)

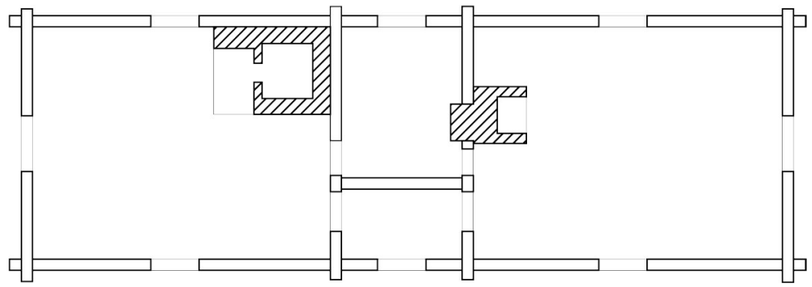
The processing of wood into timber logs consists mainly of two steps which is removal of bark and chopping of sapwood, that is the outer and more porous layers. Planed logs became more common during the end of the 1500s and at the end of the 1600s, round timber logs were seldom used in dwellings (Werne, 1993). In order to receive a dense timber wall another important step was carving out the upper shape of the log beneath to the bottom of the log placed above. This carving is called 'drag' and it is significant for timber buildings in the nordic climate (Andersson, 2016). The profile given by planing and carving the timber also has a significant impact in terms of aesthetics.



Various profile expressions given by planing and the depth of 'drag' and 'sått'.



Plan and structure of the typical 'enkelstuga'.



Plan and structure of the typical 'parstuga'.

CONSTRUCTION: LOG TIMBER (KNUTTIMRING)

Knots

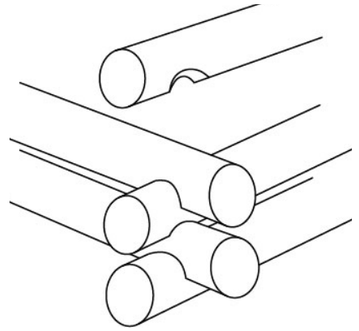
In the countryside it was traditionally common to enhance critical parts of the construction and treat these with especial care in order to show off the craftsmanship and in log timber buildings this resulted in enhancing the knots (Werne, 1993). This gave many regional variations in terms of the carved shape locking the knots together (’hak’) and the prominent knot heads were enhanced through different profiles and appearances. Andersson (2016) speaks of three basic types of knots based on how they are carved which is either rounded, straight or angled and tilted. These categories in its turn hold variations with or without knot heads and with different logics for locking the logs. During the 1700s another aesthetic became common that aimed at instead hiding these constructive elements (Werne, 1993). This resulted in many existing knot heads being chopped off as it allowed for the facades to be cladded with panel or roughcasted as a way to cover up, and also protect, the timber wall.

Stone base

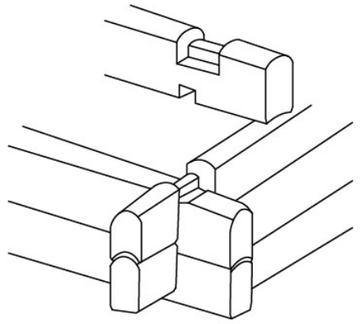
The most general base of swedish log timber buildings historically consists of stones that are lightly dug into the ground and placed beneath the knots of the building (Andersson, 2016). Many times the stones were placed underneath the knots and the space in between could then be filled up afterward, either by making a stone wall or by placing a wooden log in a way so that it could be easily replaced later on when starting to rot (Werne, 1993). The floors were wooden and they could either be part of the timber structure or detached with additional stones as support (Andersson, 2016).

Roof construction

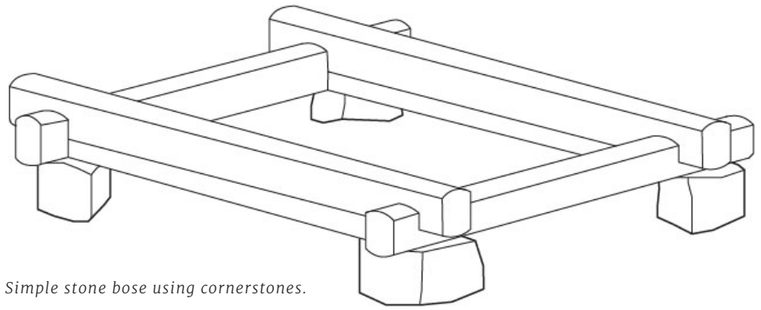
Regarding roof constructions of log timber buildings, Andersson (2016) mentions the historically common examples of roof ridges (’åstak’) and roof rafters (’sparrtak’) as well a combination of the two. Roof ridges are placed in the lenght direction of the building and timbered into the gable. There are different versions with varying amounts of ridges as it can consist of a single one placed in the middle, ridges placed symmetrically to the side, or both. The load on the long walls decreases with more ridges as the stability of the gable increases and the inner roof in this construction goes in the direction of the roof slope. Roof rafters on the other hand, rest on the long walls of the timber structure and the tension often makes it necessary to bind the ends together, making it similar to trusses which can also occur. A combination of these two types of roofs have rafters that rest upon the roof ridges and they are carved in order to lock them into place. The inner roof in this construction goes in the same direction as the ridges. (Andersson, 2016)



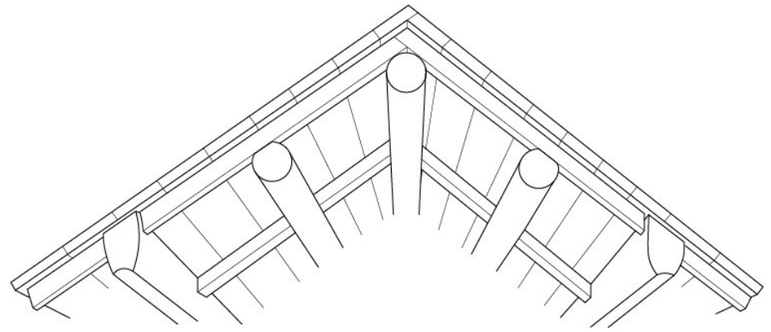
Simple knots in round timber, ’laduknut’.



Traditionally common ’dubbelhaksknut’.



Simple stone bose using cornerstones.



Roof construction using a combination of ridges and rafters.

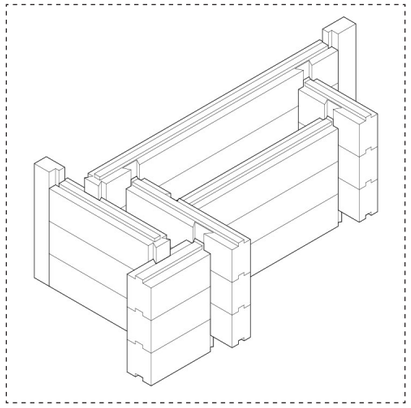
Gion A. Caminada

In the late 1970s, Gion A. Caminada founded his own office and since then a major part of his work has been focused in and around the village Vrin in Switzerland. He is known for his discussions in relation to local culture and building traditions and his work investigates further possibilities of traditional building constructions, such as 'Strickbau' which is a type of log timber construction, and how these can be implemented in modern architecture to suit the needs of today. (Amy Frearson, 2014)

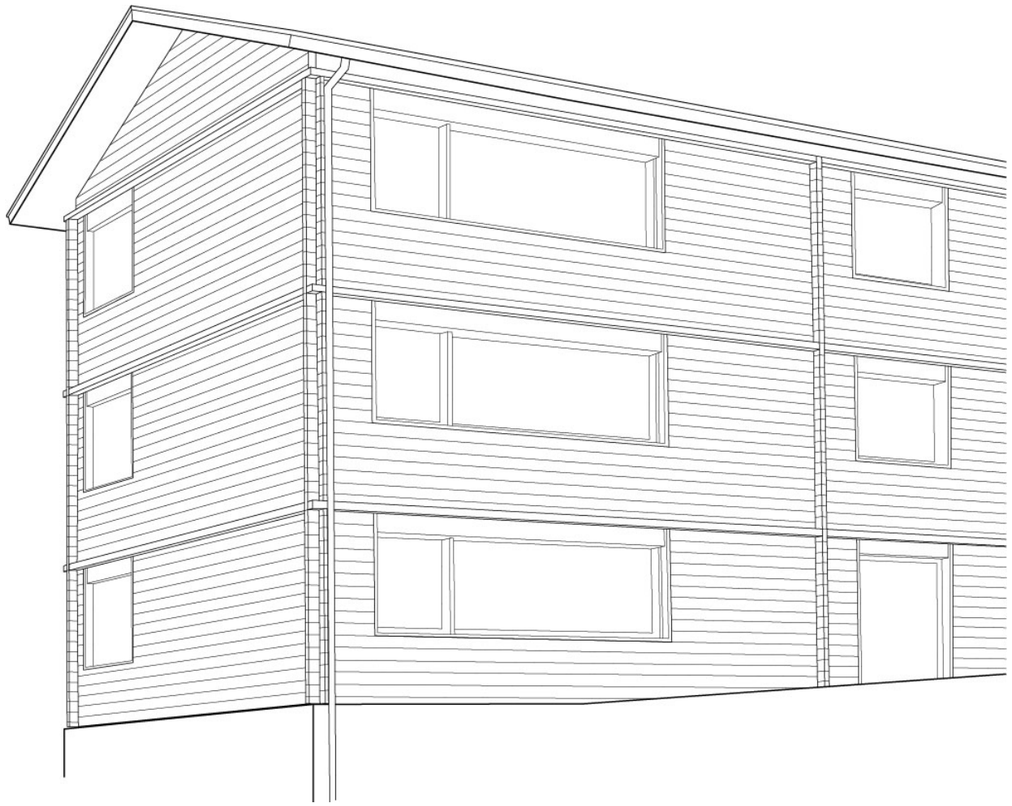
Caminada mentions in an interview (Rodj Ommar, 2017) that he has been influenced by the writings of Liane Lefaivre in his attitude towards locality and how enhancing and respecting specific qualities already present at a place can help strengthen identity and affiliation. He advocates using simple materials to create something meaningful and puts emphasis on the ecological dimension in terms of working with what is already available (Ommar, 2017).

Caminada's extensive work when it comes to exploring and translating traditional timber techniques functions as a reference in regard to their contextual approach in relation to construction and materiality. The project 'Schulhaus Duvin' shows a sleek, modern reinterpretation of the timber construction that is simple in its design and works with the typical straight and rectangular spatiliaty of log timber while still challenging the construction in terms of expression and perforation.

The project 'Stiva da Morts' shows a mortuary building that is an important constructive reference in this thesis project as a massive double-construction timber wall is used. It has also functioned as an inspiration in the sense that Caminada chooses this method of construction, that is both costly and demands a precise craftmanship, in a small scale local project meant for the community.



Double wall construction in Stiva da Morts.



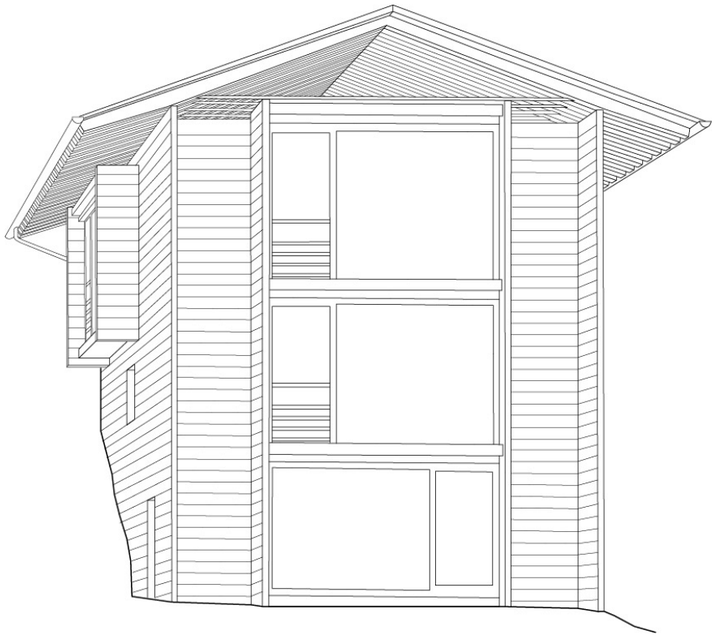
Schulhaus Duvin.

Peter Zumthor - The Leis Houses

'The Leis Houses' show a reinterpretation of the log timber construction that challenges the traditional spatial layout of the rectangular plan and its limits concerning the size of openings. Through using multiple freestanding, rectangular units, containing various utility rooms, as the load bearing structure, it allows for big panoramic windows in the common areas (Peter Zumthor, 2010).

Zumthor (2010) describes this project in his written work *Thinking Architecture* where he puts emphasis on the materiality of solid timber and it's tactile qualities that are constantly present in this project. The beams are smoothly planed with a thin profile which enhances the modern appearance of the design and on the interior the exposed dovetail joints are a characterising feature.

By extruding the head of the knots various box-like motives are framed and enhanced in the facades which contributes to a dynamic expression and a three dimensionality as well as a clear tectonic approach that enhances the timber construction. Some of these boxes function as balconies while others have a window bench for sitting. The extruding of the walls have been a source of inspiration in how a contemporary expression can be achieved while also emphasizing the timber construction.



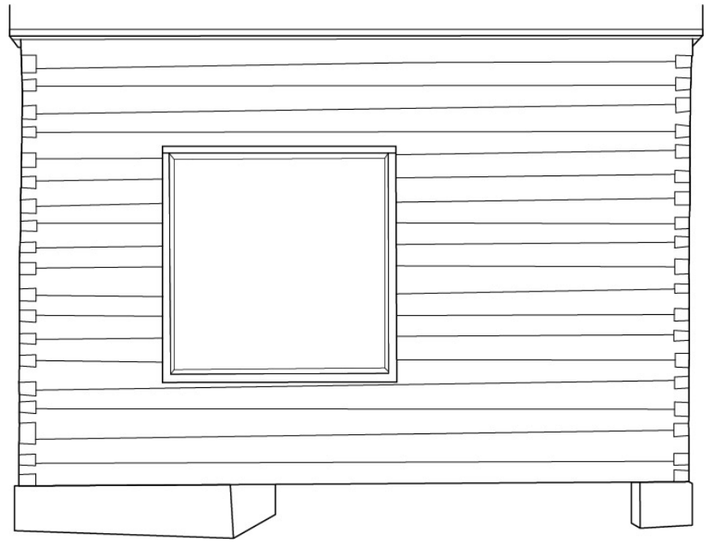
One of the Leis Houses.

General Architecture - Nannberga

'It was a modest construction in design and dimensions but expressed an uncompromising constructive attitude that interested us: Timbering as pure tectonics, materialized as a precise joining of individual elements that form a coherent unity.' – General Architecture on Nannberga (ArchDaily, 2013)

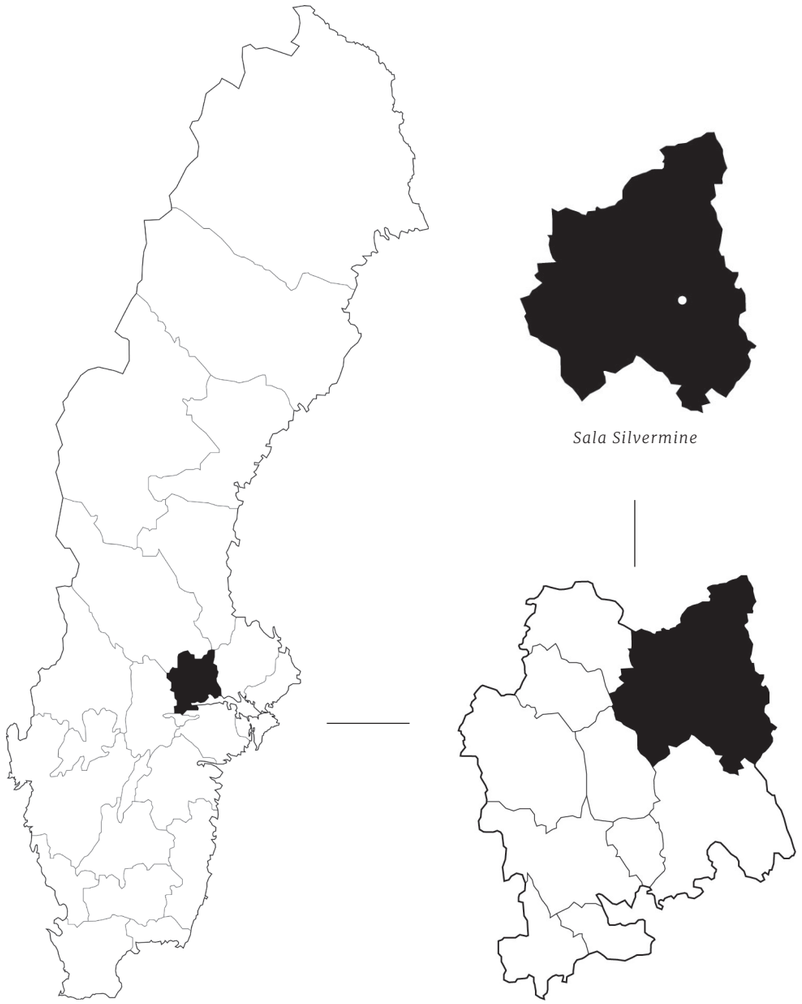
The project Nannberga by General architecture is based on the re-use and modification of an old timber structure. The timber structure of what was previously a granary in Borlänge was disassembled, moved, and then once again put together with the addition of a wooden frame structure. (ArchDaily, 2013)

The timber structure originates from southern Dalarna meaning that it relates to the regional building tradition in Bergslagen that this thesis aims to study. The architects mention that the project brought upon questions such as how this simple construction, that can be seen as a swedish archetype, also can function in a contemporary context (General Architecture, 2013). The additions made to the structure are modern but follows principles given by the construction in terms of facade openings, and the traditional cornerstones have been replaced by concrete fundaments for the building to rest on.



Simplistic window opening in Nannberga.

PROJECT AREA: SALA SILVERMINE



Västmanland County

Sala Silvermine

Sala Municipality

I am originally from a part of Bergslagen, more specifically the town Sala in Västmanland, and therefore I have a personal connection to the place and its longstanding building tradition. As Sala originates from the mining industry, I have chosen Sala Silvermine as the site of this thesis project. The mine is still an important part of Sala as it has had a significant impact on the identity of the town which makes it an interesting context to explore the chosen topic within.

In addition to this, there is a demand that could be met by the addition of a new building as the mine is an attractive location for tourists but is currently missing a welcoming function such as a visitor center (J. Hesslöw, personal communication, November 22, 2021). With this being a historically valuable site that many inhabitants have an emotional connection to it increases the importance of relating to place identity.

Scattered buildings at Sala Silvermine.

PROJECT AREA: SALA SILVERMINE

History

Sala Silvermine used to be the most important resource for extracting silver in Sweden and was referred to as ’Riksens förnämsta Clenodium’ (Ragnarsson, 1993).

The silver mining took place as early as in the late 1400s according to a letter dated 1510 sent to the regent Sten Sture d.y. The mine had its days of glory during first half of the 16th century under the reign of Gustav Vasa. After this the mining declined and even though a big interest was shown in the 1600s it did not lead to any significant success. However, the town Sala was founded in 1624 by Gustav II Adolf due to the mining industry. In addition to silver, extraction of lead has also been carried out, mainly during the 1700s, and in the late 1800s zinc mining began. The mine was privatized in 1887 and the silver mining continued until 1908 when the owners for the time being went into bankruptcy. During some periods in the 20th century mining of zinc as well as dolomite has still been carried out. (Ragnarsson, 1993)

Sala Silvermine presumably had the most extensive water system in Sweden at the time and at most this system included 35 dams and lakes in the surrounding area with connecting channels (Ragnarsson, 1993). Nowadays, the dams are still characterizing for Sala and there are promenades alongside them.

Sala Silvermine in present time

Today, the mine functions mainly as a tourist attraction with guided tours and various events down in the mine on depths of 60 meters and 155 meters. Under ground there are large halls, ‘Bergrum’, where activities such as concerts and dining take place, and there is also a hotel suite, a large echochamber and an underground lake, due to the groudwater level. (Sala Silvergruva, n.d.)

Nature & Terrain

The mining area is widespread with an uneven and hilly terrain and it includes several ancient remains and a nature reserve. ’Herr Stens botten’ in the southern part of the area makes up the oldest section of the biggest mine. After several collapses during the end of the 16th century this part shows as a 30 m big hole in the ground (Sala Silvergruva, n.d.).

The nature reserve Aspentorp located in the northern part of the area is characterized by a varied forest that has been left alone from human impact for a long period of time. Nature trails go through the forest area and along these trails lie parts of what was previously the mine’s water system and there are also ancient remains of mining holes. (Länsstyrelsen Västmanland, n.d.)

Glimpses of the area.

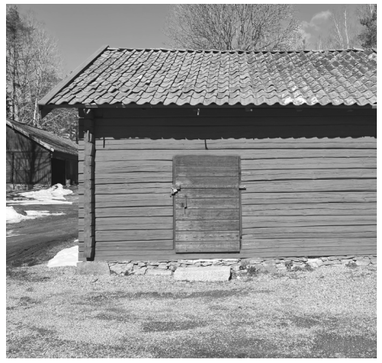
PROJECT AREA: SALA SILVERMINE

Built environment

There are approximately 50 historical buildings scattered around the area (Sala Silvergruva, n.d.). Svärd (1993) claims that the majority of buildings on the site are built sometime during the 1800s but that there are also buildings from the 1700s as well as from early 1900s and most have gone through at least one renovation process.

There are industrial buildings, various service buildings, distinct headframe buildings, and several buildings that were originally built as dwellings. The headframes functions as landmarks and the one connected to Queen Christina's shaft is a central node in the area. Most buildings are constructed out of wood and painted in falu red but in addition to this, several buildings are made up of brick or stone, plaster appears on some facades and yellow is a reoccurring color. Today, most buildings hold other functions whereas some stand empty. Many of the buildings in the southeast part of the area are privately owned whereas the buildings of the mine belong to the municipality.

There are a number of log timber buildings in the area which connects it to the building tradition that is in focus for this thesis. In a cultural historical building inventory of the area carried out in 1978 it was stated that the main part of the inventory consists of a log timber construction (Falk, 1978). Several examples can be seen on the site today, however, most of them have had the construction concealed behind a layer of panel or through roughcasted facades, with the exception of several smaller sheds.



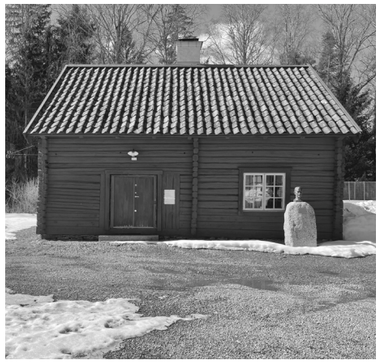
Log timber shed.

Headframe building, Queen Christina's shaft.

Headframe building, Wilhelm's mine.

Shed with natural stone base.

Headframe building, Karl XI's shaft.



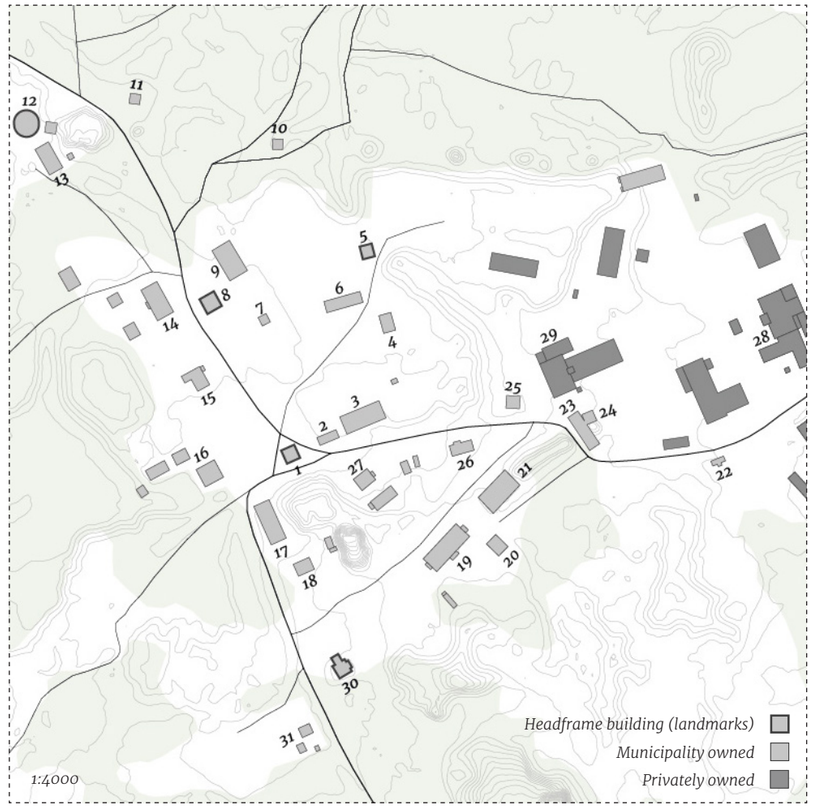
Log timber shed.

Timber detail.

Anfarten and the current museum in the back.

BUILDING INVENTORY

1. **Headframe building, Queen Christina's shaft (1858)**
   Stone construction/wood construction, red brick, falu red, tile roof.
2. **'Anfarten' (1870)**
   Traits of swiss chalet style, stone construction, high stonebase, yellow plaster facade.
3. **'Skrädhuset', for sorting of ore (late 1800s)**
   Wood construction, falu red, exposed overhanging roof base.
4. **Stables (1868)**
   Stone construction/wood construction, traits of neo-gothic style and swiss chalet style, falu red, yellow details.
5. **Headframe building, Willhelm's mine (1868)**
   Wood construction, falu red.
6. **'Pumpborrningshus' (1868)**
   Wood construction, falu red.
7. **Clock-tower (1733)**
   Wood construction, falu red.
8. **Headframe building, Gustav III's shaft (1847)**
   Wood construction, falu red.
9. **House of the director (1828)**
   Brick construction, white plaster facade, neoclassical style, tile roof.
10. **'Gröna spelet'**
    Wood construction, green, tile roof.
11. **'Krutbod' (1799)**
    Stone construction, white plaster facade, tile roof.
12. **Headframe building, Karl XI's shaft (1834)**
    Stone construction/wood construction, red brick, falu red, tile roof.
13. **Machinehouse (1890)**
    Brick construction, industrial architecture.
14. **New mining cottage (late 1600s) + sheds**
    Log timber construction, roughcasted, white plaster facade, tile roof ('säteritak'). Sheds with timber construction, falu red.
15. **House of the engineer (1888)**
    Log timber construction, roughcasted, yellow plaster facade, traits of neo-gothic style.
16. **House of the master of art (1810) + sheds**
    Log timber construction, wooden yellow panel. Sheds in log timber construction, falu red, tile roof. One shed built in natural stone.
17. **'Spelhus' (1888)**
    Wood construction, falu red, tile roof.
18. **'Gamla hagelverket' (1773)**
    Wood construction, falu red, tile roof.
19. **'Marketenteriet', canteen (~1920)**
    Wood construction, falu red, tile roof.
20. **'Gruvfogdebostaden' (1906)**
    Wood construction, falu red, tile roof.
21. **Old wheelhouse (1769)**
    First building constructed 1640, timber construction ('stolpverk'). Current building in stone construction/brick construction. Only remains left.
22. **'Vågen' (1917)**
    Wood construction, falu red, tile roof.
23. **The mine office (1823)**
    Log timber construction, falu red, tile roof.
24. **Turbine house (1876)**
    Tower constructed in red brick, partly attached to the mine office.
25. **Smithery (1807)**
    Wood construction/brick construction, white plaster facade, tile roof.
26. **House of the coachman (late 1800s)**
    Wood construction, falu red, tile roof.
27. **'Gruvstigare bostaden' (1742)**
    Wood construction, falu red, tile roof.
28. **The smeltery (1889)**
    Red brick construction, industrial architecture from the late 1800s.
29. **'Pressverksbyggnaden' (1879)**
    Red brick construction, industrial architecture.
30. **Headframe building, The Jack's shaft (1887, reconstruction from 2003)**
    Wood construction, falu red. The building is a replica of the original.



Overview project area 1:3000

PROJECT AREA: SALA SILVERMINE

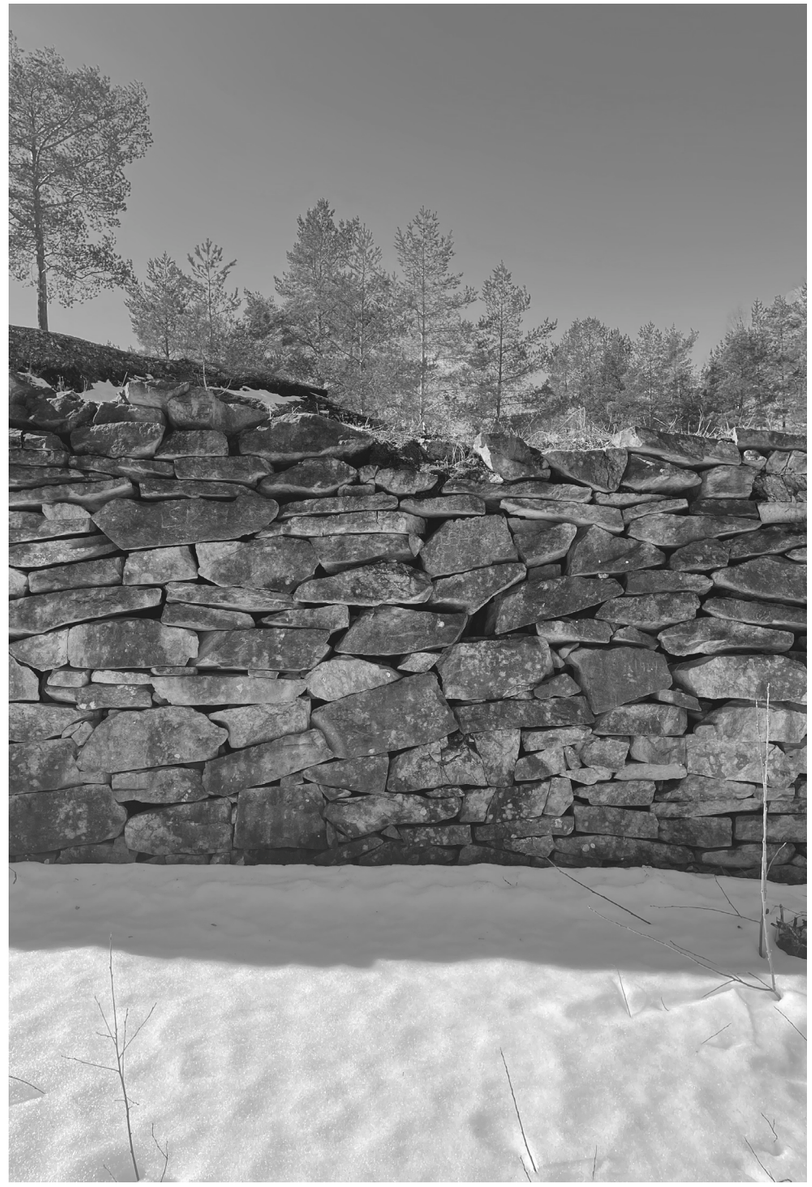
Proposed site

When meeting with Jennie Hesslöw, CEO of the Silvermine, she mentions that the present situation is unclear for guests as they arrive to the area, increasing the importance of a visitor center to welcome and receive people properly. The most common way to arrive is from Västeråsleden and the management of the mine plans to concentrate the incoming traffic even more to that direction. This will decrease traffic from Fagerstavägen, especially during summer when all traffic through the area is shut off. (J. Hesslöw, personal communication, November 22, 2021)

The proposed site lies at the beginning of the mining area from the direction of Västeråsleden, right after passing the privately owned buildings. It is situated on an elevated plateau next to the road and the welcoming sign as you arrive. The parking is near and the idea is that the building will functions as an introduction and gathering space before heading up for further exploration of the area.

The site is adjacent to culturally valuable objects that are included in the listing of the area making it a sensitive site. In the back of the plateau there are large piles of warp stone that are leftovers from the mining industry and therefore represents a part of the mine's history. There is also a drystacked stone wall which frames the plateau and that holds cultural value. (Västmanlands län, 2013)

From above the piles of warp stone.



Stone wall framing the site.

SPACE PROGRAM

As previously stated, the mine is missing facilities for welcoming guests to the area and in conversation with Jennie Hesslöw (November 22, 2021), the CEO of Sala Silvermine, she expressed need of a visitor center. The visitor center should be able to receive roughly 50 people at a time which is about one full busload. Facilities that allow for gathering groups of people and holding presentations etc., such as an auditorium, are needed. Furthermore, the visitor center should also include some exhibition space that could hold for example an introductory exhibition to the mine and the area which can function as a complement to the site's already existing museum. A café is included as a public, social space that is meant to be used both by tourists and the inhabitants of Sala with the ambition that it can help activate the building more throughout the year when it is not high season.

Function

Entrance area: 25 m²

Wardrobe (lockers): 6 m²

Restrooms: 13 m²

Reception + office: 17 m²

Seating with fireplace: 2x15 m²

Café incl. kitchen: 65 m²

Space for exhibitions: 65 m²

Auditorium: 65 m²

Paus area/seating: 25 m²

Staff pentry: 10 m²

Changing room & WC: 10 m²

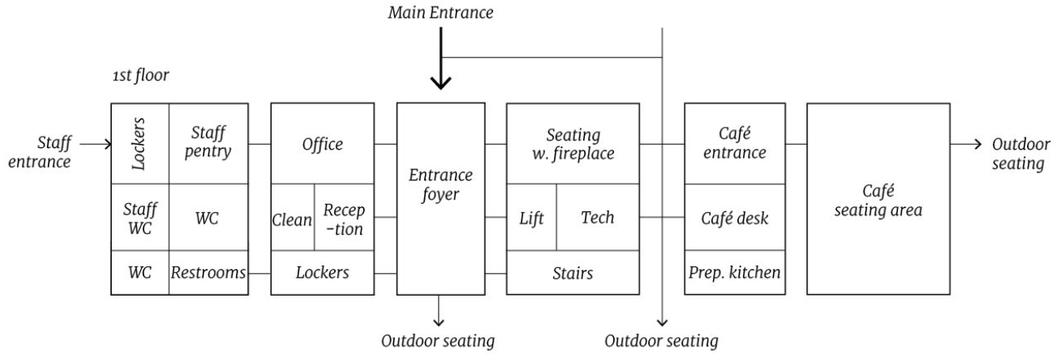
Storage: 6 m²

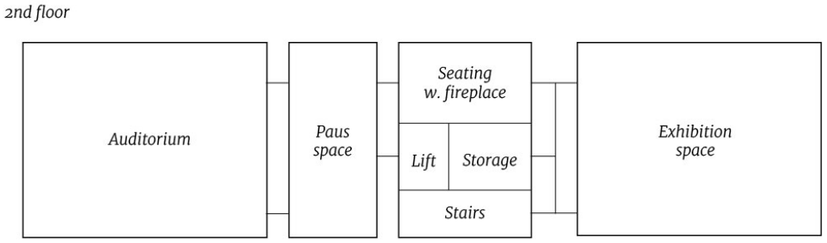
Cleaning: 4 m²

Technical space: 10 m²

Total: ~350 m²

(communication not included)





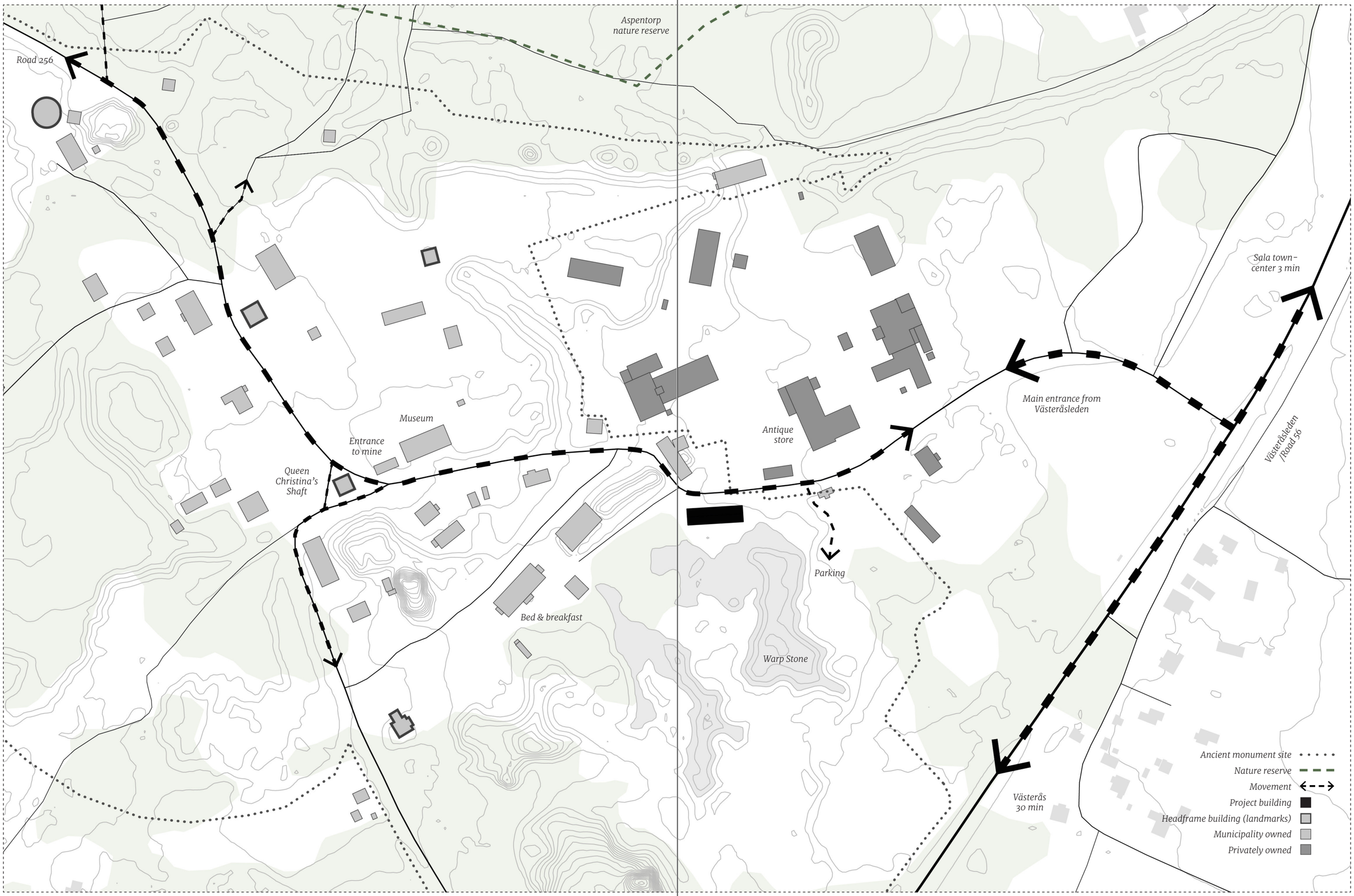
DESIGN PROPOSAL

Situation & placement

Building design

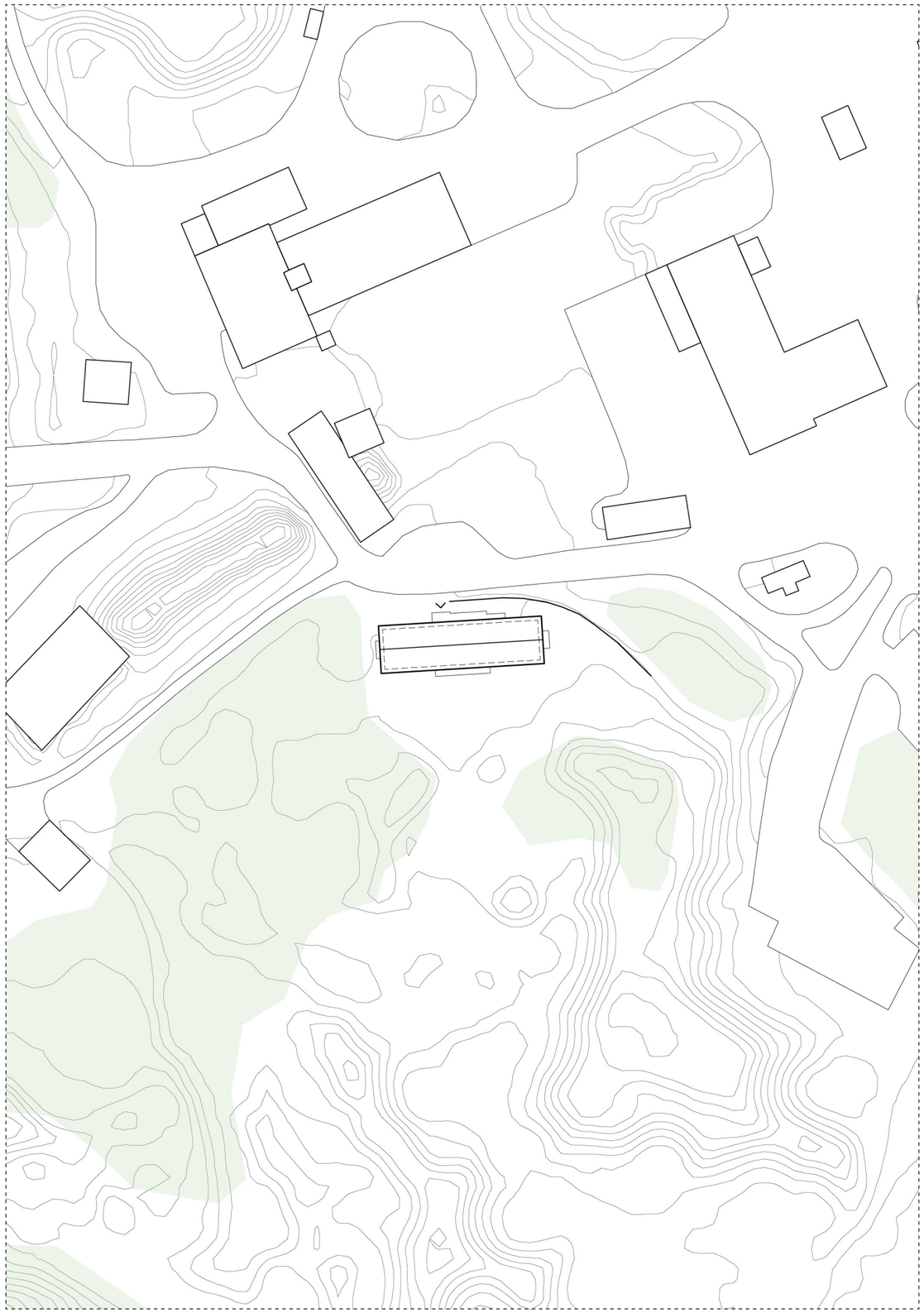
Construction

Physical model



2 m contours

Overview site 1:2000



Siteplan 1:1000 1 m contours N 0 25

0 10 N 0.5 m contours Siteplan 1:400

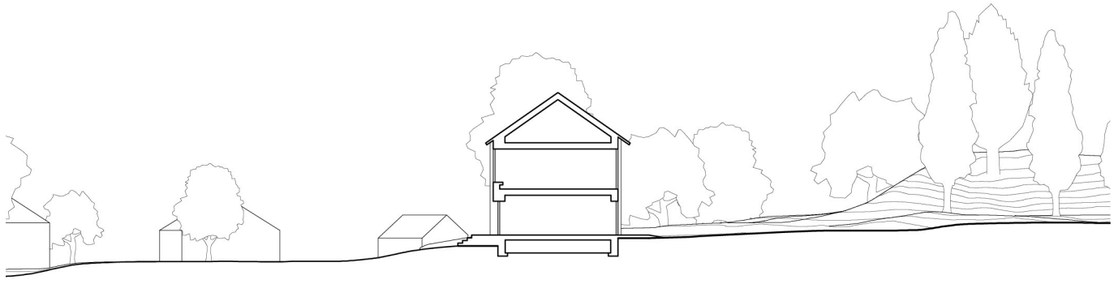
Exterior perspective

Exterior perspective

SITUATION & PLACEMENT

As previously mentioned the site lies in the beginning of the mining area located on an elevated plateau that is framed by a stone wall. The plateau gives the building a prominent stature and the welcoming facade is the eastern gable that has a framed motif. The length of the building is placed alongside the road where you start moving up through the area from Västeråsleden and the adjacent parking lot and the stone wall guides the visitors in a natural way to the main entrance of the building. The main entrance in its turn is accentuated by an extrusion of the timber structure that aims at making a clear entrance for welcoming the visitors, as well as it creates a hierarchy in relation to the sub entrances. The height difference brought on by the elevated location and the sloping terrain is handled on the entrance side of the building with stairs and a ramp that partly uses the slope of the landscape as a means to decrease its visual impact.

The building is situated so that there is a distance both in relation to the stone wall and the piles of warp stone, that are located south of the building, in order to respect their historical value and sensitivity. In passages on the bottom floor there are entrances through the building which opens it up to the landscape created by the warp stones. There are outdoor spaces on the eastern gable and the south side of the building with platforms that are sloping in order to meet the natural terrain, which is primarily flat in those areas where seating is situated.



Landscape section 1:400

0.5 m contours

Siteplan 1:400

BUILDING DESIGN

Readable construction

As the focus of the project has been the log timber technique, or ‘knuttimring’, the design strives toward enhancing this specific construction. This is done by exposing the timber and letting the head of the knots extend to make these structural elements visible, similar to traditional timbermen who enhanced these parts but in this case with a tectonic ambition rather than a decorative one. The knots contribute to making the structure readable by creating vertical divisions in the facades. Furthermore, the building refers to the long and narrow traditional timber buildings as it is made up of several timber units joined together which also results in similar proportions to that of some nearby buildings.

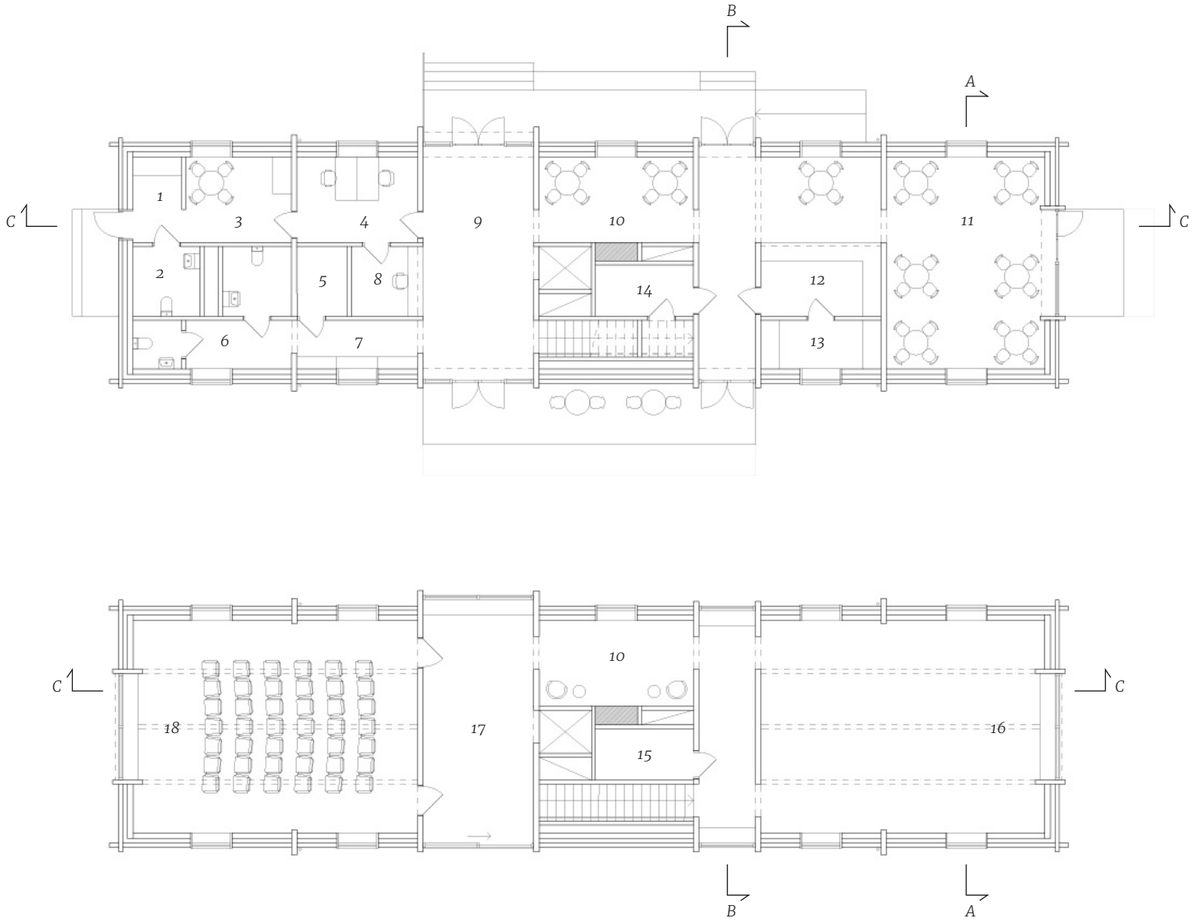
Sequences & movement

As the structure is made up of these joint timber units, it forms a sequence of rectangular spaces. When moving along this sequence the idea is that you experience the length of the building and straight sightlines through the rooms help give an overview of the spaces. The movement is focused around the core of the building in which a fireplace with a seating area is placed centrally as a reference to the historically important hearth. The two distinct passages through the building create a contrast of transparency in the sequence and they also open up the building to the area and the surrounding landscape.

Layout & functions

The entrance space is situated in the main passage through the building and it has large openings that connect the different sides of the building. Vertical communication and technical spaces are located in the core and the central fireplace will be present when moving through the building. The café has an additional entrance allowing people to enter there directly and the seating area has easy access to outdoor spaces. The staff functions and support functions such as wardrobe and restrooms are concentrated to one part of the building.

The rooms on the bottom floor are quite intimate whereas moving up the building, the exhibition space and the auditorium are more open and airy as the ceiling is opened up to the roof. The large transparent area allows for a paus space outside the auditorium whereas the smaller transparent passage helps in order to avoid the exhibition space becoming an area of communication which also enables it to be used seperately if wanted. These spaces as well as the gables have larger openings framed both on the interior and the exterior by the extruded ends of the timber walls. The niches created are designed with generous window benches that can be used to either sit or to place objects, in the paus space there is also a french balcony which opens up to the warp stone landscape.



1. Staff entrance
2. Staff restroom
3. Staff pentry
4. Office
5. Cleaning
6. Restrooms
7. Lockers
8. Reception
9. Entrance area
10. Seating with fireplace
11. Café seating area
12. Café desk
13. Prep. kitchen
14. Technical space
15. Storage
16. Exhibition space
17. Paus space
18. Auditorium

0 5 N

Floor plans 1:200

Section A-A 1:200 (café, exhibition space)

0 5

Section B-B 1:200 (sub entrance, passage)

Section C-C 1:200 (sequence of rooms)

0 5

Elevation east 1:200

0 5

Elevation north 1:200

Elevation west 1:200

0 5

Elevation south 1:200

Interior perspective

CONSTRUCTION & DETAILS

Timber walls

The construction of the timber walls derives from a previous master thesis project at Chalmers namely ‘Naturum Vålådalen’ by Mikael Junehag (2020) as well as it is inspired by previously mentioned ’Stiva da Morts’ by Gion A. Caminada. The wall is a double construction timber wall with two layers of timber that allows for insulation in between and where the inner layer is slightly thicker as it carries the loads of the floors and the roof. This construction functions in the nordic climate while still enabling timber to be exposed both on the exterior and the interior, something that has been of importance in this project that strives toward enhancing the timber and its materiality. The facades are not painted in contrast to the other buildings in the area and is instead meant to be treated with a penetrative wood oil to make it more durable toward rough weather conditions.

Although this is a costly construction that requires a big quantity of timber and a high precision craftmanship it can be argued for due to its inherent qualities. A timber construction made out of pine with a high amount of heartwood has a long lifespan and is resistant to rough weather, it is also a renewable material that can function as a reservoir for carbon dioxide as it binds it from the atmosphere. Furthermore, it functions as a symbolic gesture in the sense that this robust construction is applied in a public builing that is an addition to a cultural historical valuable site which has been of economical importance to all of Sweden historically and that is still of importance to the local community.

Roof

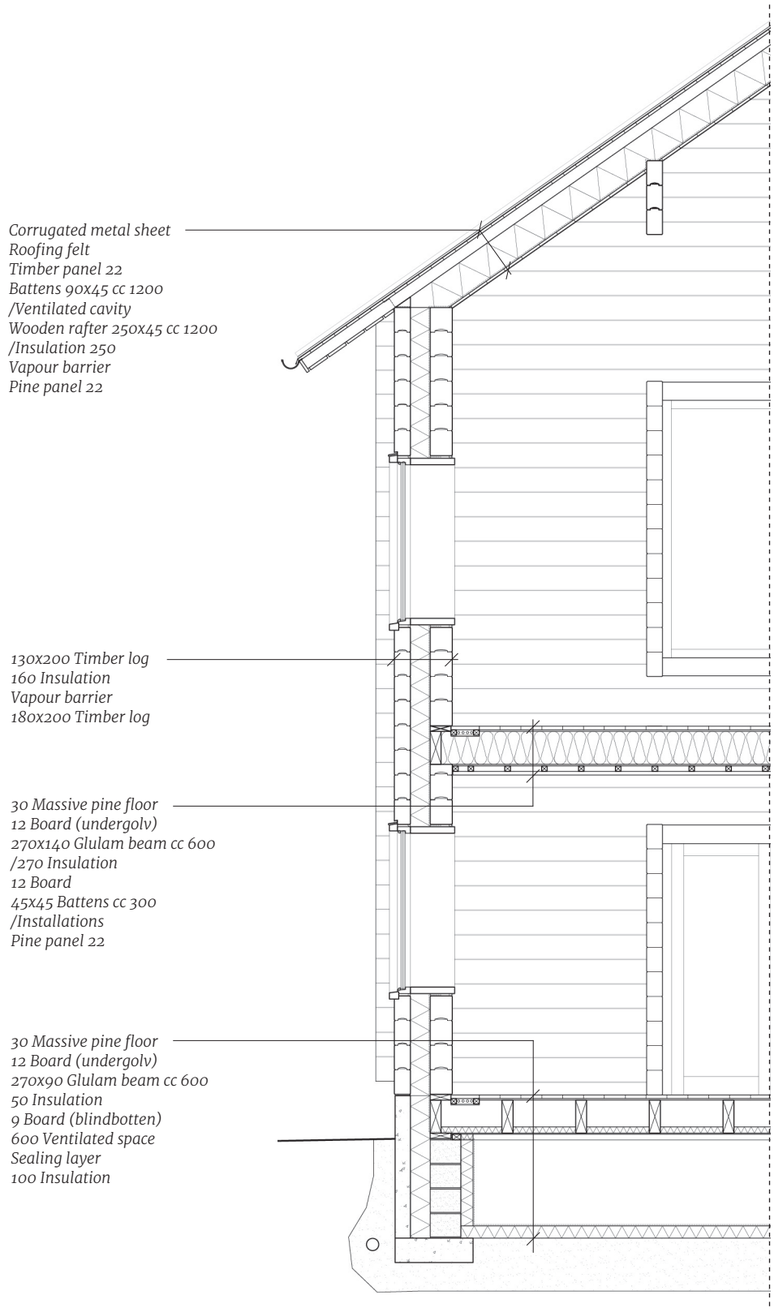
The roof is constructed using a combination of roof ridges and roof rafters. There are three massive roof ridges placed in the length direction of the building. These rest on the inner timber wall of the gables and are also supported by the partition walls. The ridges consist of mutliple timber logs joined together and as roof ridges are characteristic in many timber buildings the ceiling is opened up in the exhibition space and the auditorium to expose these. The rafters are placed on top of the ridges in the counter direction to help support the roof and allow for insulation. These are covered with pine panels on the inside to only let the ridges emerge. The exterior surface is a metal sheet roof and the drainage is mounted hanging over the roof base, giving it a quite simplistic expression.

Base

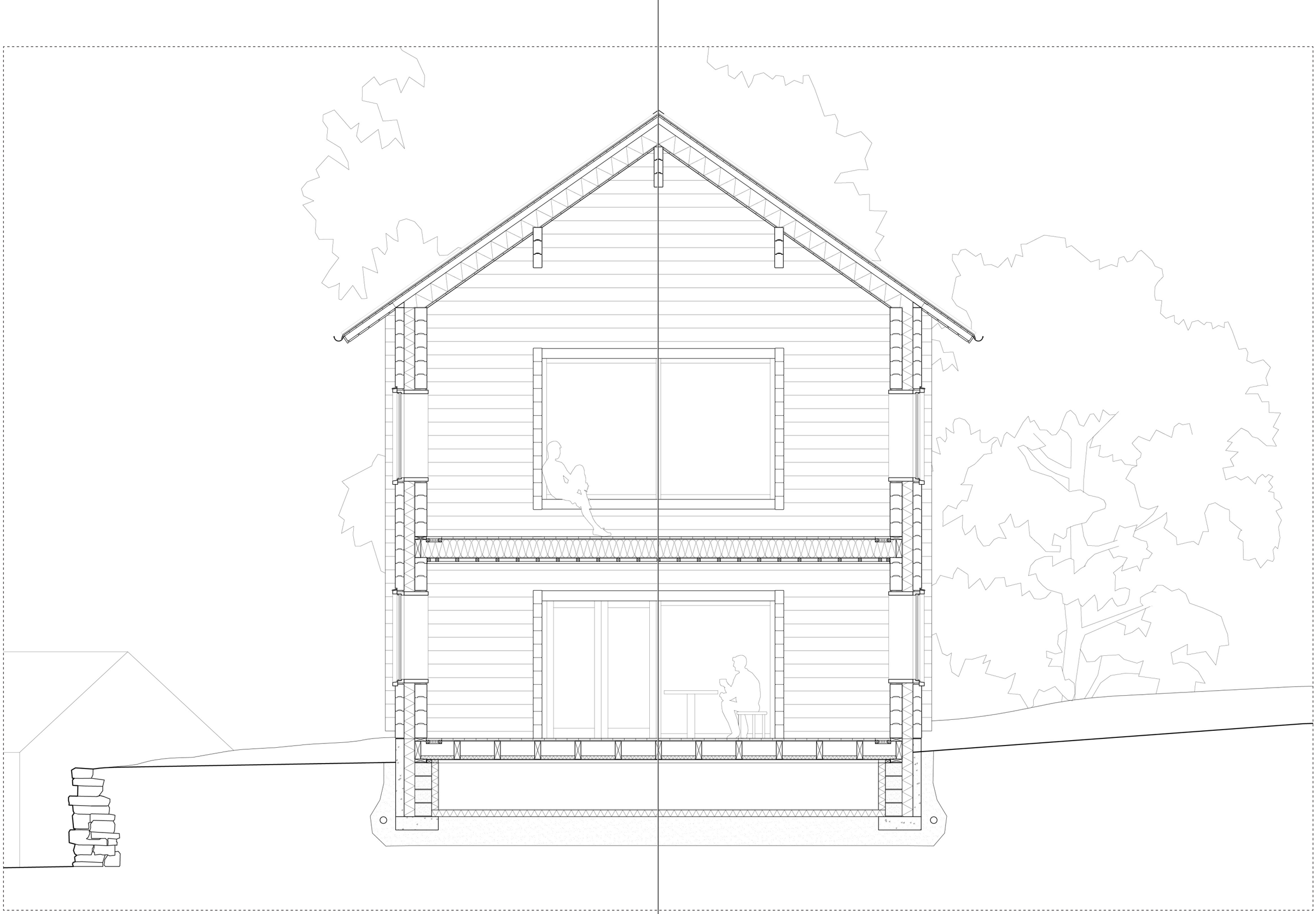
The base consists of an indoor ventilated suspended foundation in concrete that refers to the more traditional stone wall base ‘torpargrund’ often seen in timber dwellings. The floor structures are built up of glue laminated beams and the surface layers of both ceiling and floor consist of pine panels to let the materiality of the timber embrace the spaces.

Interior perspective

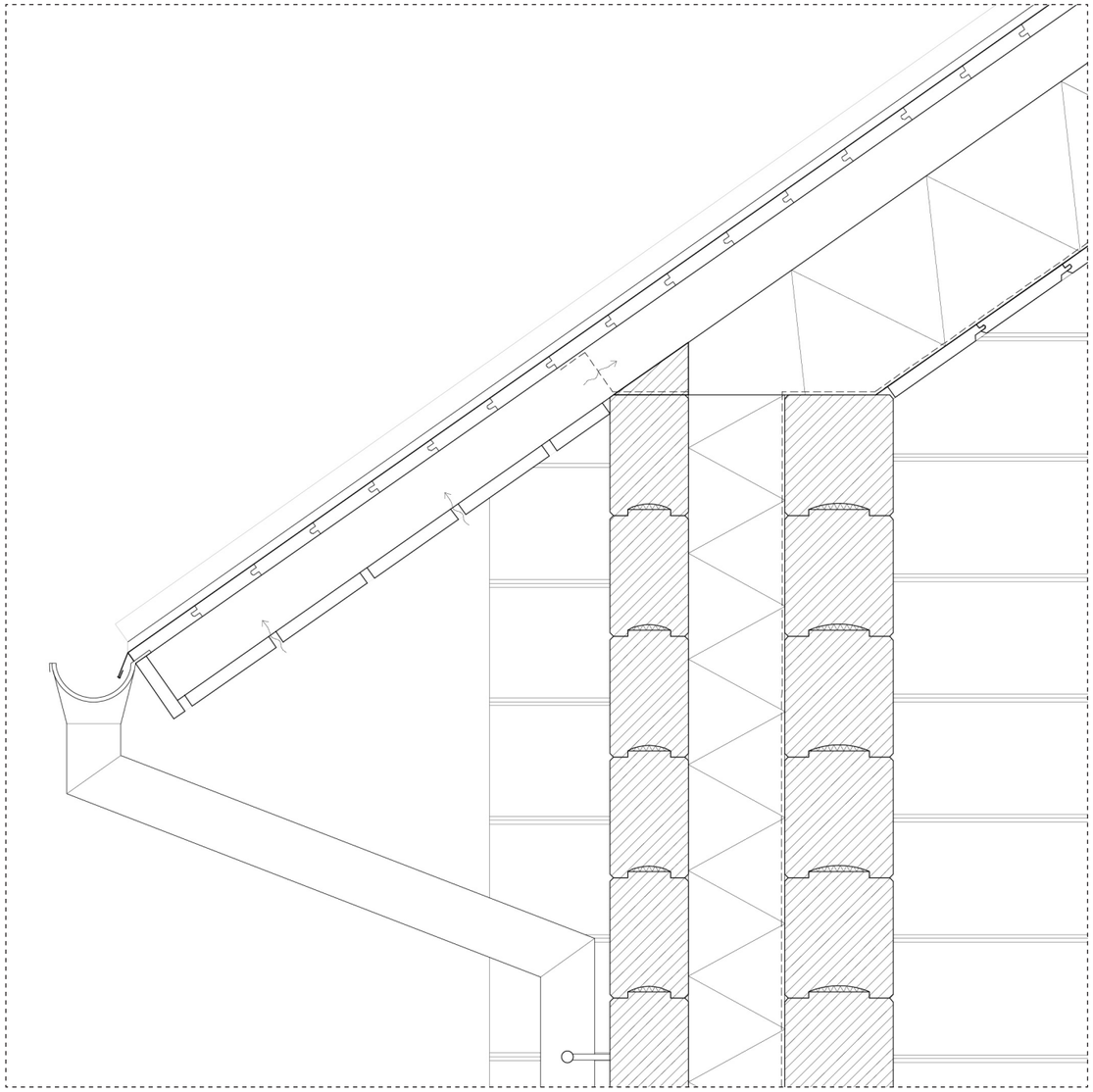
Elevation 1:50



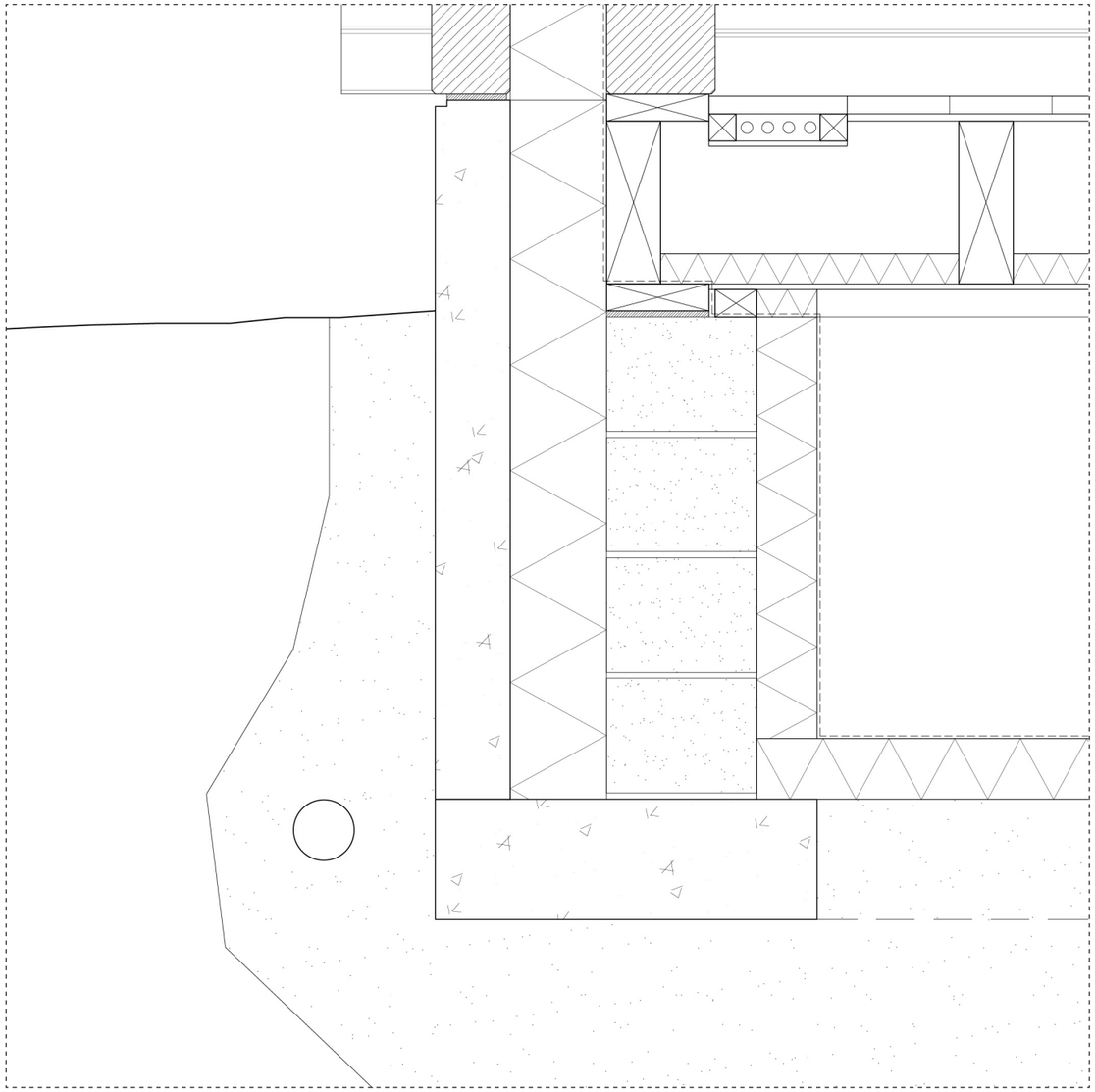
Construction section 1:50 (Section A-A)



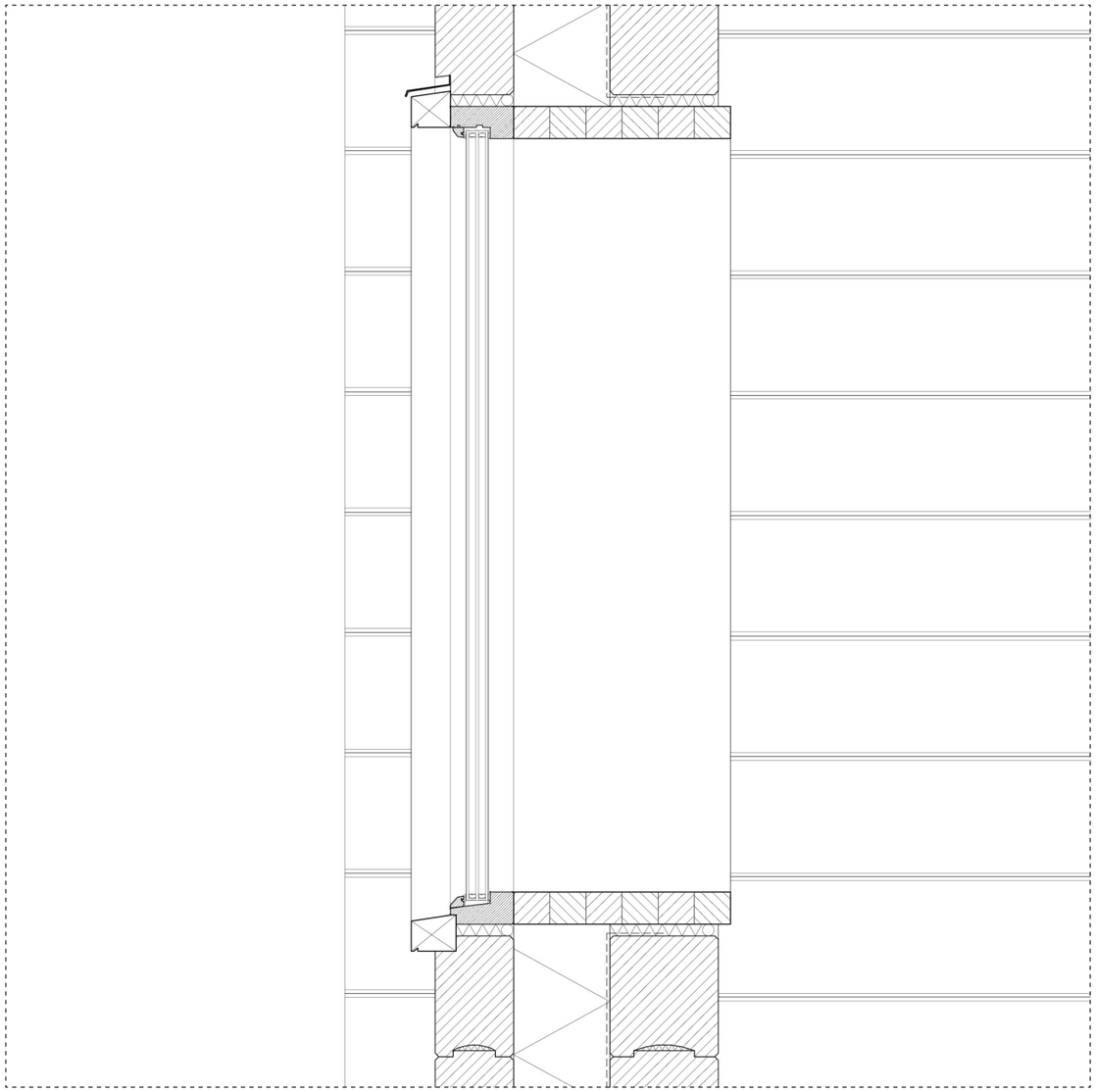
Construction section 1:50 (Section A-A)



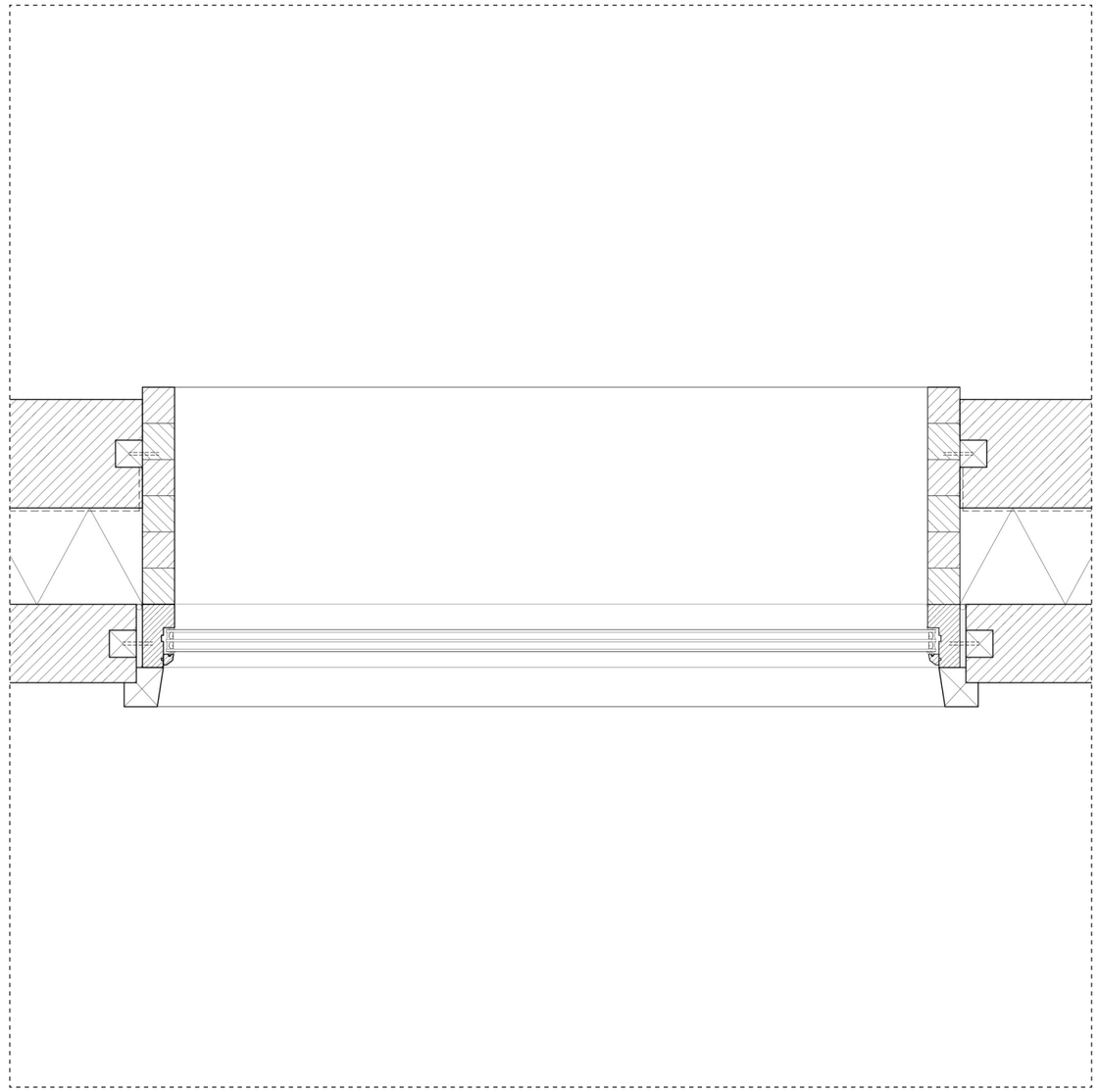
Detail 1:10: Roof



Detail 1:10: Ground



Detail 1:10: Window Vertical



Detail 1:10: Window Horizontal

Physical model 1:200

Physical model 1:200

CONCLUSION

Reflection

Reference list

REFLECTION

In relation to the thesis discourse surrounding local identity and building traditions, the design outcome and the process have given rise to several questions regarding the essence of a place and how it can be conveyed through the built environment as well as how to go about interpreting it in a contemporary design.

While it has been an advantage that I am familiar with the context of Bergslagen there is however a risk that the sense of place identity is partly a personal feeling that can be lost in translation or not conveyed properly to someone who is unfamiliar with the area. Something that I have found difficult is how to relate to the identity of Bergslagen and the log timber tradition in a way that is visible without it being a pastiche, perhaps especially when dealing with this specific site and its many historical buildings. However, the theoretical framework that was set for this thesis early on, mainly based on the writings by Kenneth Frampton on 'Critical Regionalism', has helped me in keeping a focus on the construction and not on the more superficial characteristics of the log timber archetype. Therefore, it has been a conscious decision in the process not to study mere aesthetic qualities of these types of buildings and the buildings in the area but to rather let studies and explorations of the construction be the driving design force.

I think that the chosen method of 'research by design' and learning throughout the process has been interesting in the sense that the design changed and developed with my understanding of the construction and its logic and limitations. Reflecting back however, more 'research for design' in an initial phase could have helped in order to make more conscious design decisions along the way which in its turn could have enabled a further level of detailing and more time for experimenting with the visual expression. I believe that the result could have benefited from this as it perhaps turned out a bit too strict in its expression and attitude toward the construction.

Furthermore, it has been both challenging and interesting to work with the log timber construction in a contemporary building and with the ambition of wanting to retain its materiality. There have been conflicts in regard to wanting to expose and enhance the timber in relation to what can be considered economically and practically rational. For example, there is the conflict of exposing the head of the knots as they are characterizing elements while knowing that they are a sensitive part of the construction as well as the decision to use an unconventional double wall construction. The priority in this case however has been to let the materiality of timber characterize the project.

In conclusion, I believe that this master thesis can function as a contribution to the discussion on contemporary architecture and place identity, or the sense of context, in relation to how one can approach the task of designing an addition to a site of cultural historical value.

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Figures

Figure 1. Unknown photographer. (n.d.). Greksåsar [Photograph]. Örebro Läns Museum. (https://digitaltmuseum.se/021016549535/greksasar)

Figure 2. J von Montogomery. (n.d.). Kaveltorp Bergsverk [Photograph]. Tekniska museet. https://commons.wikimedia.org/wiki/File:Kaveltorps_bergverk_2.jpg

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