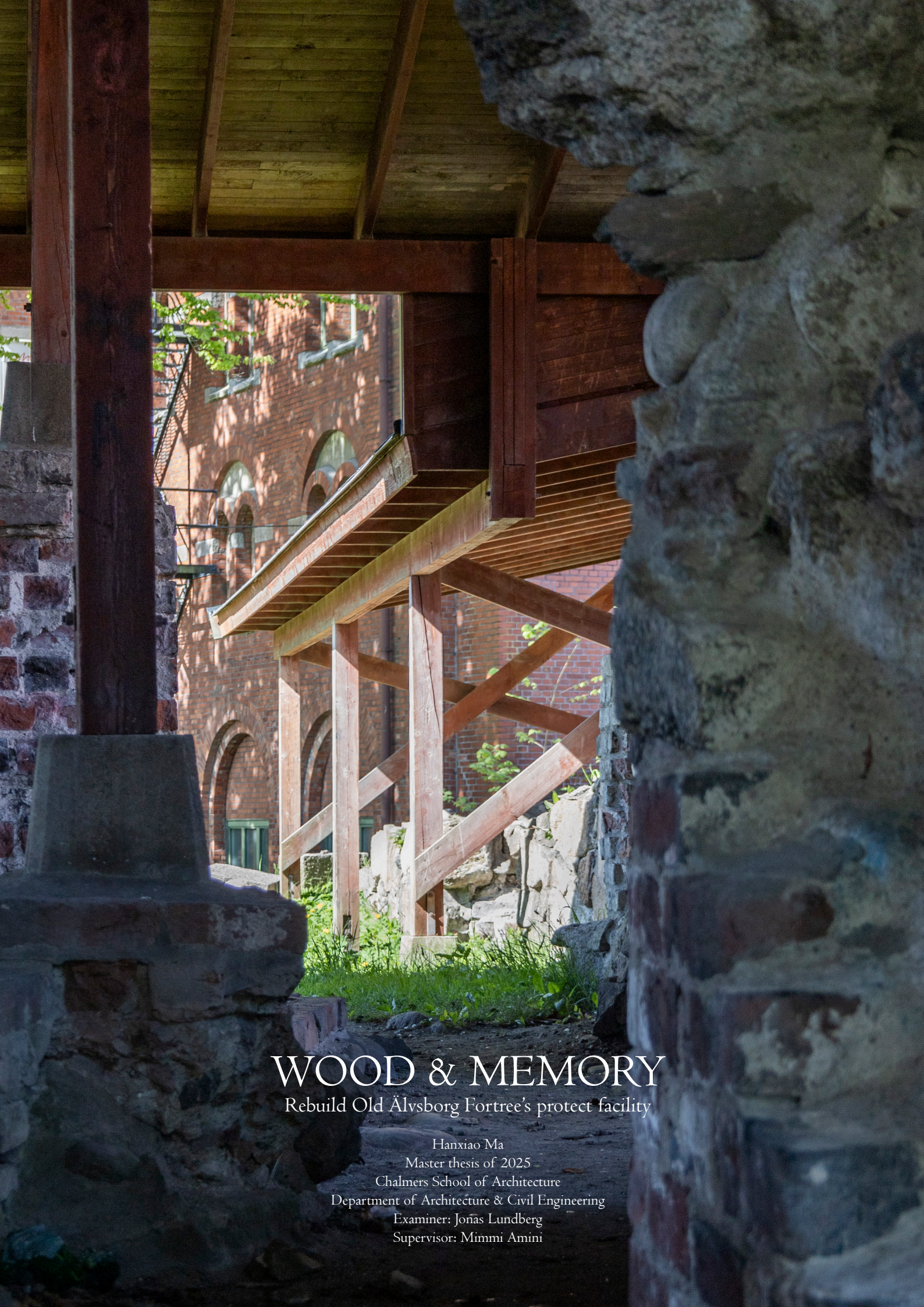

WOOD & MEMORY

Rebuild Old Älvsborg Fortree's protect facility

Hanxiao Ma
Master thesis of 2025
Chalmers School of Architecture
Department of Architecture & Civil Engineering
Examiner: Jonas Lundberg
Supervisor: Mimmi Amini

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Acknowledgement

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Architectural Internship
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Architectural Internship
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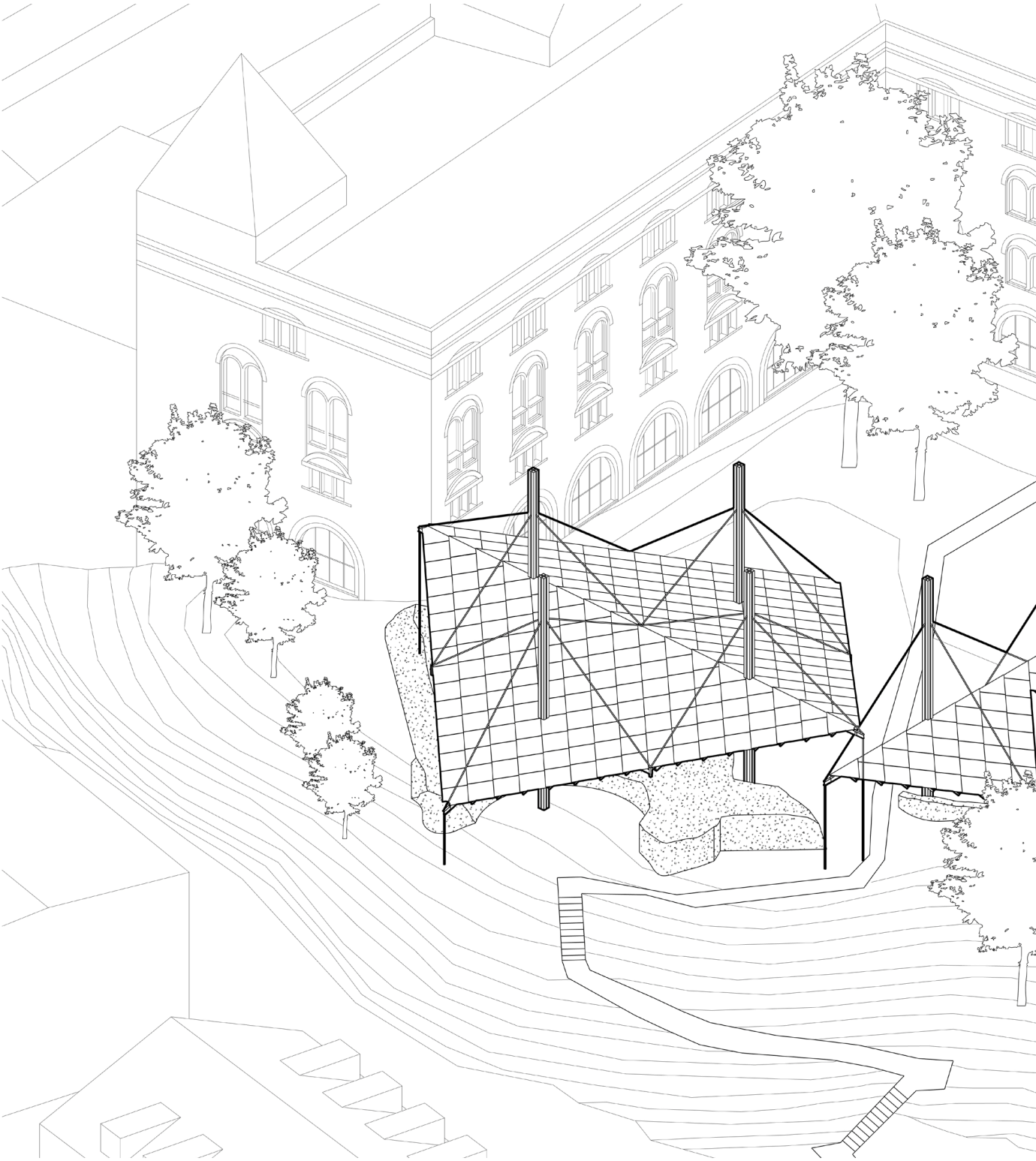
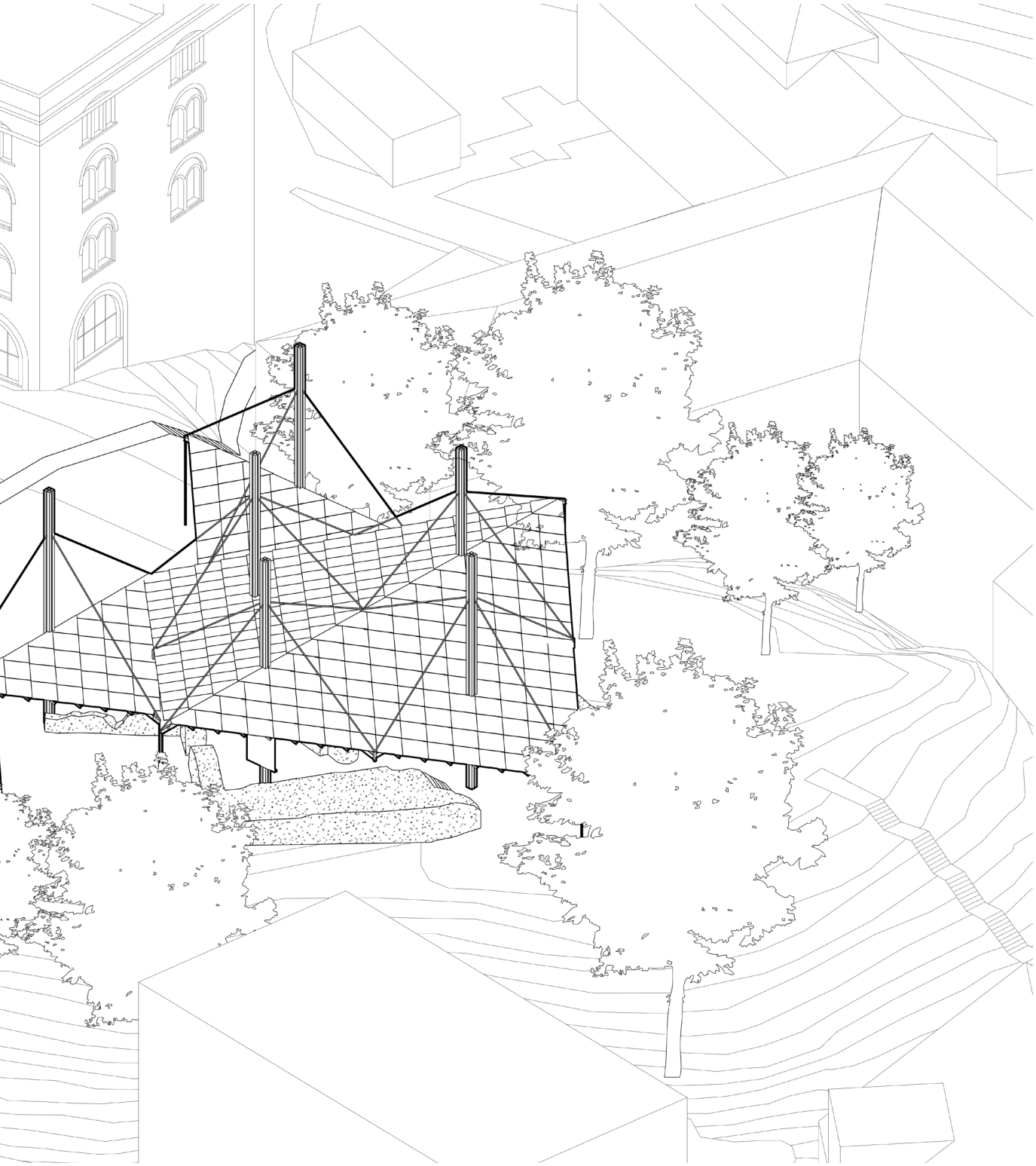
Content





Chapter 1

Abstract

Älvsborg is an important historical site in Gothenburg, but the current state of its preservation is concerning. The wooden roof added to the site not only partially obscures the historical appearance of the ruin, but also encourages destructive human activities. In light of this situation, the thesis proposes the reconstruction of a protective structure for the site, with an emphasis on maximizing the reuse of existing wooden materials from a sustainable development perspective. The core of the design focuses on utilizing the aesthetics and temporal value of reused wood to highlight the beauty of time passing and to strengthen the historical narrative atmosphere of the site.

The design employs methods such as literature review, case studies, photo scanning, and image collaging to examine the compatibility between new and existing materials and the site. Through surveying, documentation, systematic analysis, drawing, and handcrafted modeling, information about existing materials is gathered and used as the basis for design decisions. Reclaimed wood from the site serves as a key medium, forging a close connection between people, time, and place.

The final design features a roof inspired by the shape of a mast and a wooden walkway, echoing the nearby dock and Älvsborgsbron. The use of a tensile structure enables the large-span roof beams to be formed from small-sized recycled wood, minimizing the number of supporting columns and showcasing the original appearance of the site to the greatest extent. Both the roof structure and the walkway surface use reused timber from the existing wooden structure. Through measuring, documentation and classification of the materials, joint studies of the structure, details and connections were designed based on the shape and number of materials. Removable connection components, such as bolts and mortise-and-tenon joints, are used to facilitate the subsequent recycling and reuse of materials.

Keywords: timber reuse; materiality; historical narratives; ruin preservation; multisensory experience

Introduction

Purpose

Living in modern society, we have grown accustomed to the conveniences brought by industrialization. “New” things can be easily obtained. Whenever a space is assigned a new function—be it a new restaurant or a new company—it inevitably leads to the renovation of a space that was perfectly functional. Even amidst the contemporary surge in sustainable thinking, where the reuse of waste is increasingly encouraged, the notion that “new is better” still subconsciously prevails. People repair, sand, and repaint recycled building materials, striving to make them look as good as the new ones. However, the traces of time and era carried by these materials are erased, turning them into ordinary building materials devoid of any distinctive features. But can’t old things be more beautiful and appealing than new ones?

Wood, as a natural material widely used in our daily lives, is sensitive, malleable, and alive—like a book that constantly records its surrounding environment. When a tree is still alive, its growth rings document each year’s sunlight, rainfall, nutrients, injuries, and bends. After the tree is felled and becomes building material, the wood continues to bear traces of sunlight, rain, humidity, mold, insects, and other influences. The carvings, graffiti, and paint left by people on the wood also tell different stories. While new materials may appear aesthetically pleasing at first glance, materials with history and stories often allow users to establish a deeper connection with the past and the local context.

The thesis aims to answer these questions:

-How to activate Old Älvsborg by redesigning the existing structure?

- How to utilize reused timber in a way it can reflect the beauty of time and bond human, place and time?

- How to design with pre-determined materials, and how to design to be disassembled?

Aim

This thesis aims to investigate how the material qualities and temporal traces of reclaimed wood can be integrated into architectural design to enhance the relationship between people, place, and memory. Using the Old Älvsborg site as a case study, it examines how material reuse can evoke spatial narratives and contribute to a deeper, multisensory connection between individuals and the historical environment and how materiality influences not only the perception of place, but also personal and collective memory, contributing to a deeper understanding of identity in relation to built heritage.

Delimitations

Place memory is a subjective concept, as each individual has a unique understanding and experience of space. Therefore, a design centered around place and memory does not aim to convey a specific or predetermined experience or spatial narrative. Instead, it seeks to enhance and enrich people's spatial experiences, encouraging feelings and reflections while deepening their impressions of the place.

The site's visual and transportation connections with its surroundings are relatively weak. However, this design focuses on shaping the site itself and does not address the surrounding transportation links. Nevertheless, the new structures will be designed to establish a good visual connection with the surroundings.

Literature research

Literature research runs throughout the entire project and can be roughly divided into three stages. In the first stage, the focus is on timber reuse, linking the design with the broader context of reclaimed wood, and combining it with the unique characteristics of the site. Under the theme of “materials and memory,” the deeper value and significance behind the design are explored. The second stage involves collecting background information on Old Älvsborg, as well as professional books on timber roof frame construction methods and joint types. This helps deepen the understanding of the site and timber roofing, serving as a foundation for the next phase of design. The third stage focuses on learning about the structural principles and construction types of mast-like structures, leading to the completion of the final design.

Case studies

The case studies involved in this project mainly include heritage conservation architecture, timber reuse projects, demountable timber joint structures, and mast-type building structures. Given the author’s limited experience and access to physical testing conditions, case studies significantly enhanced the depth and realism of the design and also broadened the design perspective.

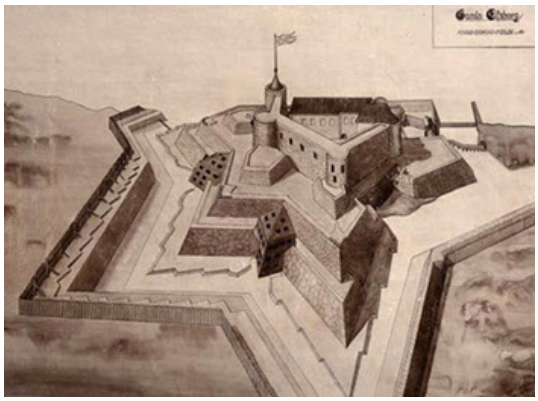
Material documentation and research

As the timber roof frame could not be dismantled to obtain real materials, photography and collage were used to simulate the combination of new and old materials as realistically as possible and to test their harmony with the site. To meet the design requirements, material data from the timber roof was collected using techniques such as on-site surveying and photo scanning. A material database for the project was then created using 3D modeling, analytical diagrams, and physical models, serving as the foundation for subsequent design work.

Context

Google, n.d.

Paul, 1502



Gamla Älvsborgs fästning

Old Älvsborg Fortress

Old Älvsborg Fortress, a significant castle built in the Klippan area of Gothenburg during the 14th to 17th centuries was once a central part of Gothenburg's defences. This castle witnessed pivotal historical events, including the Engelbrekt Rebellion, the Northern Seven Years' War, and the Kalmar War, and was fiercely contested by Norway, Denmark, and Sweden. Due to the development of military, the stratagic importance of Old Älvsborg declines. In 1650, Nya Älvsborg was built on an island in Göta river, taking over the mission of Old Älvsborg. In 1660, Old Älvsborg was razed by blasting. (Udda Utflykter, 2024)

Today, all that remains of Old Älvsborg is a ruin protected by a wooden roof, partially buried under an old sugar factory which is now occupied by an art institution. Sitted on a hill and surrounded by buildings, making the ruins nearly invisible from the outside. The site has become an place of mischief, littered with bonfire ash, bottles, trash, and graffiti. The wooden roof was skillfully-made, but lack of space organization. It was renovated by the Stad in 2008, but the original builder can not be traced. Despite its historical significance, the ruins of Alvsborg remain largely forgotten, hidden amidst the urban sprawl and bearing the marks of neglect.

Theory

Wood and memory

As an organic material, wood continues to "breathe" and change even after it's dead. Variations in environmental temperature and humidity, exposure to light, the presence of insects and fungi, as well as human interventions such as carving or marking, all leave traces on its surface. This characteristic is defined as mutability by Sands (Sands, 2022). This inherent property renders wood a natural "chronicle" of environmental change. In the field of archaeology, scholars are able to extract significant information from wooden artifacts—such as major historical events, socio-economic structures, and modes of production. In the case of Old Älvsborg, the wood reclaimed from the original roof captures traces of changing light and humidity on-site, as well as marks of human activity including smoke stains, graffiti, and construction or processing traces—all of which narrate the history of the site.

Riegl introduces the concept of the value of age (Riegl, 1982), distinguishing it from historical value. This notion refers to the aesthetic appreciation people experience in response to aged objects, despite the fact that they lack the expertise of archaeologists or historians to interpret them professionally. It is a straightforward and intuitive feeling, requiring no specialized training to perceive. Although somewhat vague and loosely defined, this concept encapsulates the atmosphere evoked by historical settings or objects. Riegl argues that achieving a harmonious spatial atmosphere requires the appropriate use of aged materials in old environments. Conversely, employing new materials in such contexts—or using aged materials in brand-new spaces—can feel distracting.

From the author's perspective, while the use of new materials may indeed disrupt the visual coherence of a historic setting, such materials typically lack historical imprints and embedded narratives. From this standpoint, new materials may actually help focus the visitor's attention more directly on the historical context. Conversely, reused materials, although more harmonious in terms of ambiance, often carry their own historical narratives, which may divert attention away from the broader historical scene. Thus, in the author's view, both approaches have their own merits.

Leworthy contends that when historic settings and aged materials are presented together, visitors instinctively compare both to themselves along a temporal continuum. While this temporal perception may not be accurate down to specific years, it evokes a sense of relative oldness. Through this act of comparison, individuals find their own position on the historical timeline and, in doing so, engage in a form of dialogue with the past. (Leworthy 2024)

Materials not only shape the atmosphere of a space but also influence how we perceive and remember it. Malpas emphasizes that the multisensory experience elicited by materials, as well as the interaction between people and materials, is fundamental to how environments are remembered. (Malpas 2012) The narrative of architecture depends heavily on its materiality. While the interpretation of place is inherently subjective, architectural design—through diverse material expressions and interactive spatial experiences—can significantly enhance the possibility for individuals to construct memories within space.

Timber reuse

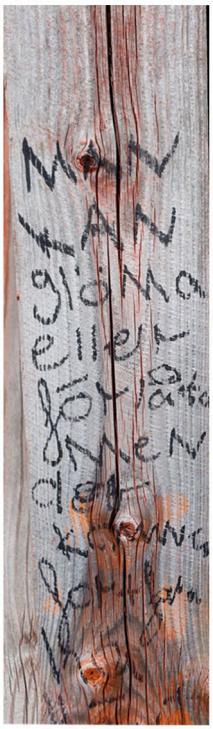
Wood, as a significant traditional building material, is widely used in Sweden today as a renewable resource and carbon sink, aligning with contemporary sustainability principles. Approximately 20-30% of Swedish buildings are constructed from wood. In 2022, Sweden generated 1.78 million tons of construction wood waste, accounting for 10% of the country's total waste. Of this waste, about 30-40% is recycled, 50-60% is incinerated for energy, and less than 5% is landfilled. Although wood is a natural, renewable building material with biodegradable and non-toxic properties, when incinerated, the carbon it once stored is released back into the atmosphere, nullifying the carbon sequestration benefits calculated during construction. In countries like Germany, Denmark, the Netherlands, Luxembourg, and Belgium, waste recycling rates reach 90%, while Japan achieves a 95% recycling rate for wood waste. In Sweden, the government has set a target to achieve a 70% recycling rate by 2025. (Zakrisson, 2024) For wood alone, there is still much work to be done to improve recycling rates.

Waste management guidelines prioritize waste treatment in the following order: waste prevention, reuse, material recycling and biological treatment, other forms of recycling, such as energy recovery, and disposalrecycling, disposal. (Zakrisson, 2024) Prefabricated wooden structures can significantly reduce wood waste during construction. Using detachable joints, such as bolts, metal fittings, and mortise-and-tenon connections, facilitates the later disassembly and reuse of wood. Layered construction methods, which separate materials based on their type, lifespan, and function, also aid in material separation and recycling.

The timber reuse market has a lot of challenges as well as potentials. Scaling up can bring a series of upcoming problem, the whole material chain from deconstruciton to reuse and construction is very time and labor consuming, which doesn't provide enough profit to sustain itself for now. Besides, it's hard to control the quality and contamination of used timber, which makes it hard to meet the requirement of current building material reuse regulation. The high expense of shipping and storage, along with the poor profit from selling old wood, makes it difficult to invest.

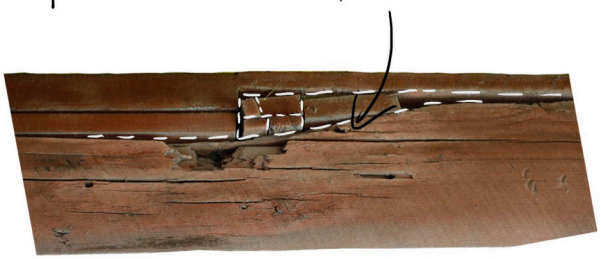
One solution to balance the invest and profit is on-site reuse. Compare to recycling centers that transport materials to a central location to await buyers, on-site wood reuse can save substantial transportation and storage costs. What's more, on-site materials carry stories and historical significance, fostering a deeper connection between users and their context. With proper design, this can be turned into great value. (Lendager, 2020) For example, the Danish design firm Lendager designed Upcycle Studios using materials from a nearby train station, creating a compelling narrative and helping new residents integrate into the local environment. At the Bergen School of Architecture, a column that once stood in the city center was repurposed as a bench, new students are told about the story and are connected with the city's past in this way. Sometimes, reused objects also preserve local craftsmanship or styles, serving as witnesses and carriers of history.

What can you read from a wood?



Someone likes to draw graffiti

The builder did a lot patch work to compensate the lack of material.



The bottom of a pillar always rot first due to high pressure and moisture.

* This one is in the worst situation with nodes concentrate at the bottom, which makes it more vulnerable.

Conclusion

The weathered appearance of reclaimed wood allows it to integrate seamlessly into the architectural context of historic buildings or sites, enhancing the sense of historical atmosphere. The traces found on the surface of wood not only convey information from the past but also enrich the experiential dimension of human engagement with space. These marks help individuals locate themselves in relation to the temporal narrative of a site, fostering a sense of self through interaction with the environment. As such, these valuable signs of age should not be indiscriminately erased during the reuse process; rather, they deserve to be preserved and thoughtfully highlighted.

The multisensory stimuli evoked by materiality, along with human interaction with space, play a critical role in shaping memory associated with a place. In architectural design, the material expression should serve as a point of departure to enhance the depth and quality of spatial experience.

Compared to other materials, the reuse of timber presents unique challenges: embedded nails, signs of decay, and irregular dimensions often complicate the recycling process and contribute to its relatively low recovery rate. Therefore, during construction, greater consideration should be given to the ease of disassembly and separation at the end of a building's life cycle. This includes the adoption of reversible fastening techniques and the use of non-toxic chemical treatments, which together can promote the sustainable reuse of wood materials.

Wood and memory design principles

- Shift space focus to mateiral

- Guide people to engage, encounter with the space and material

- Show age marks on the timber, rather than hiding them

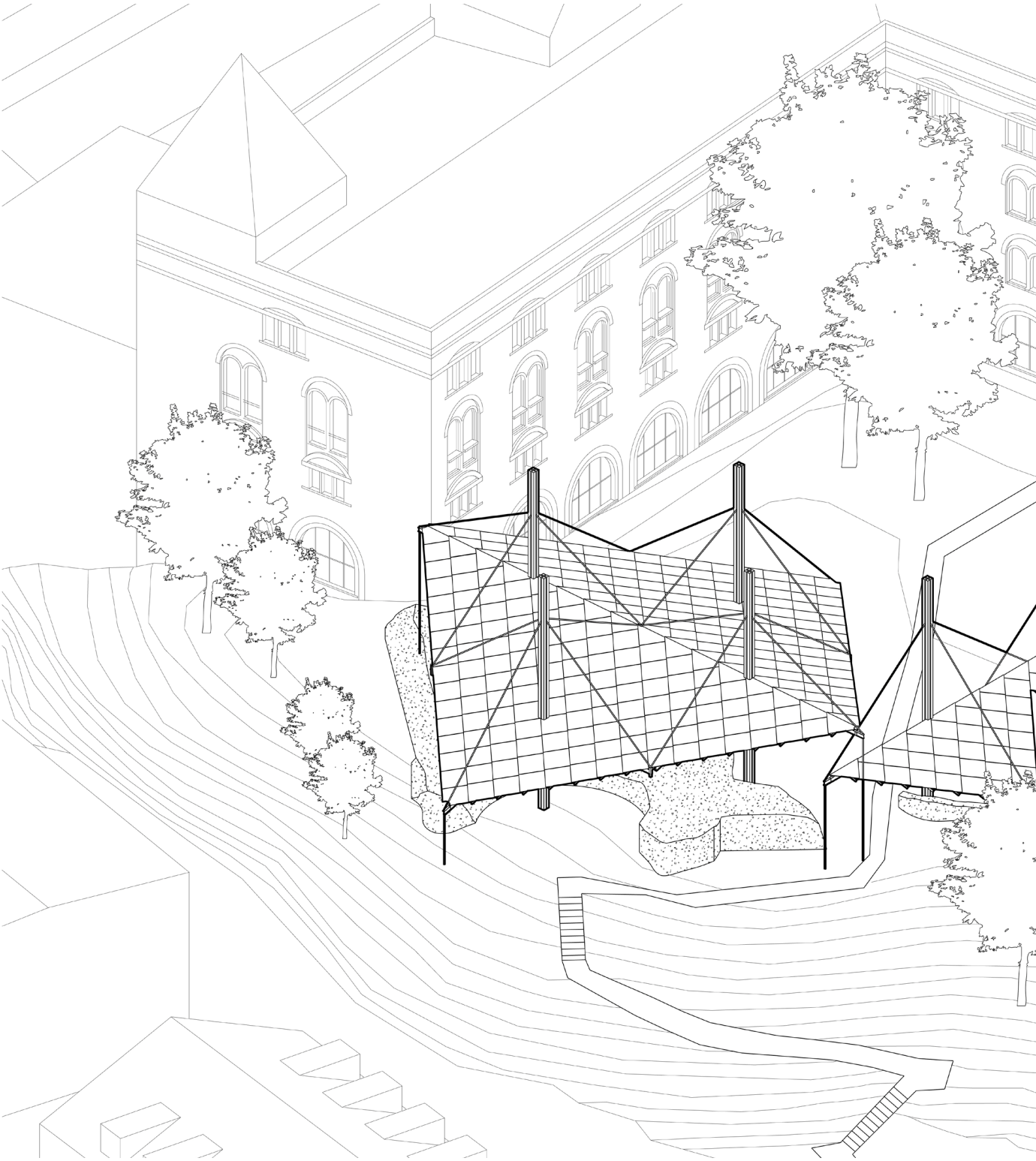
Reuse design principles

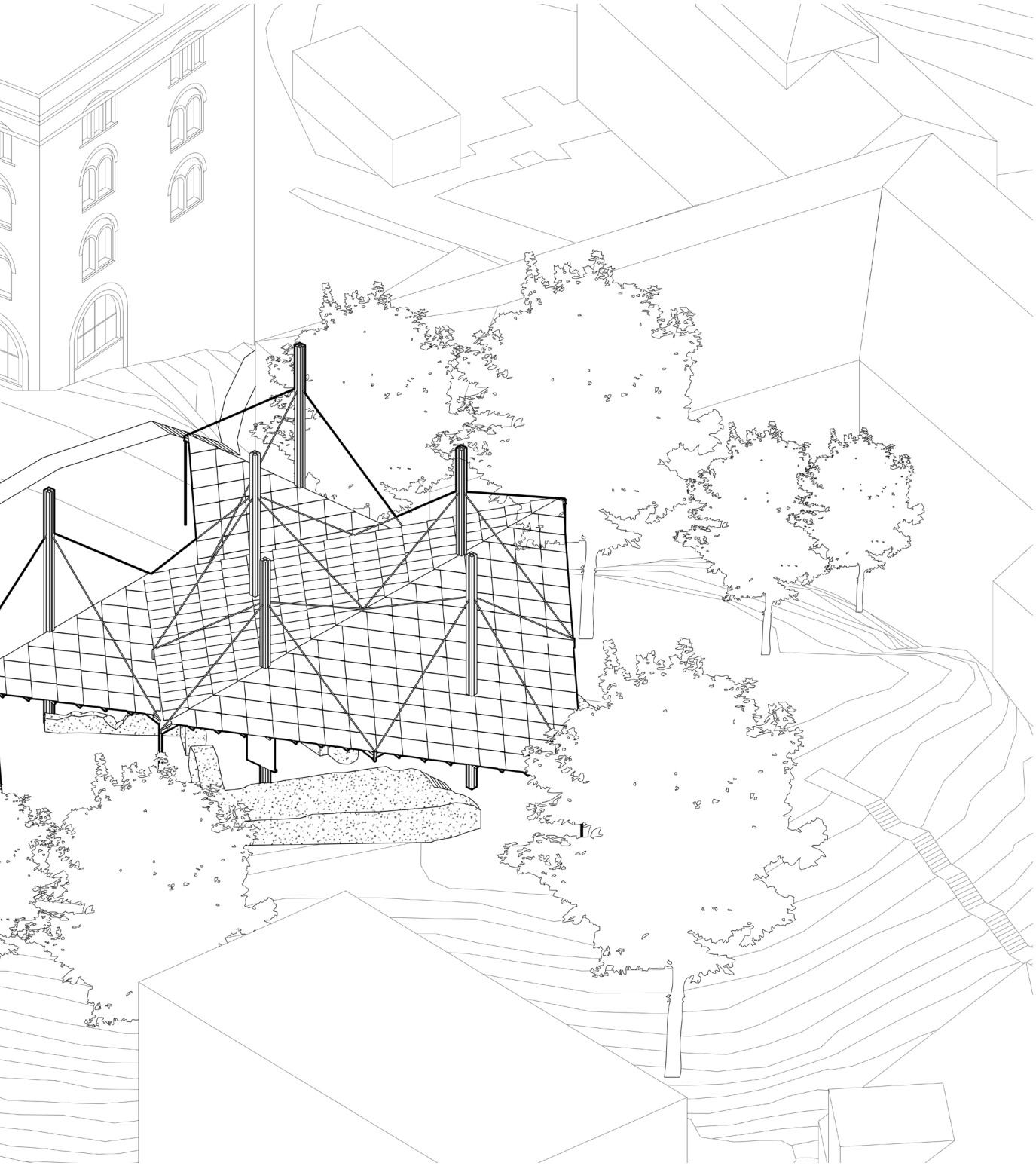
- Design with reused timber from the origianl structure

- Design to be reconstructed and reused

- Make it easy to repair

- Make design to educate on the environment





Chapter 2









Site investigation

The current roof was not the result of a well-planned project. It was renovated in 2008 by Gothenburg's Stadsmiljöförvaltningen (City Environment Administration), and no original drawings of the roof structure could be located. The primary intention behind the renovation was to protect the majority of the ruins from rain and water damage. However, due to a lack of thoughtful site design, the roof inadvertently created a space for informal gatherings by nearby residents. This unintended use led to increased human activity in the area, which further exacerbated the damage to the ruins.

The new structure must fulfill several key objectives: it should be more visually prominent from a distance, capturing the attention of passersby and drawing them to the site. It must also clearly define pathways and establish a distinct boundary between visitors and the ruins, thereby bringing order to the site. Additionally, the design should evoke the original appearance of Älvsborg through its architectural language, offering subtle hints of its historical form. Finally, the structure should foster a sense of place by incorporating specific activities into the space, encouraging visitors to develop a deeper respect and care for the site.

History of Älvesborg

1366
The first wooden castle built by the Swedish.

1502
Burnt by the Danish.

1519
Rebuilt by the Danish.

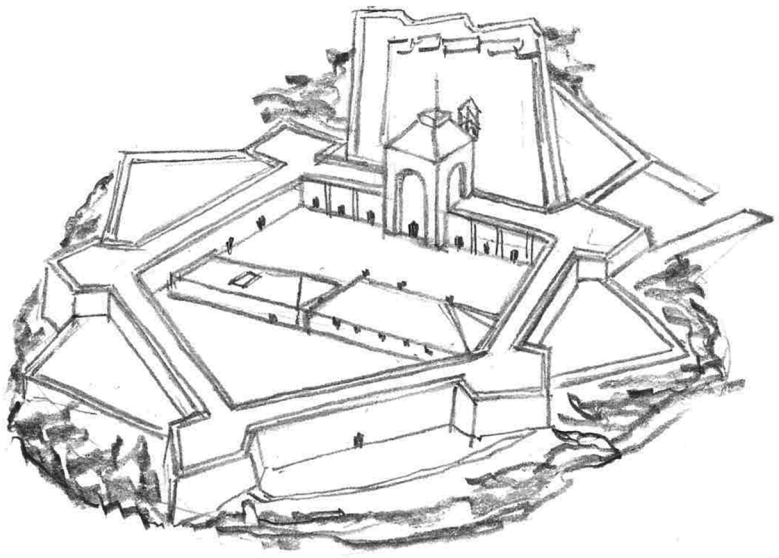
1523
Burnt by the Danish.

1520'
Rebuilt in stone.

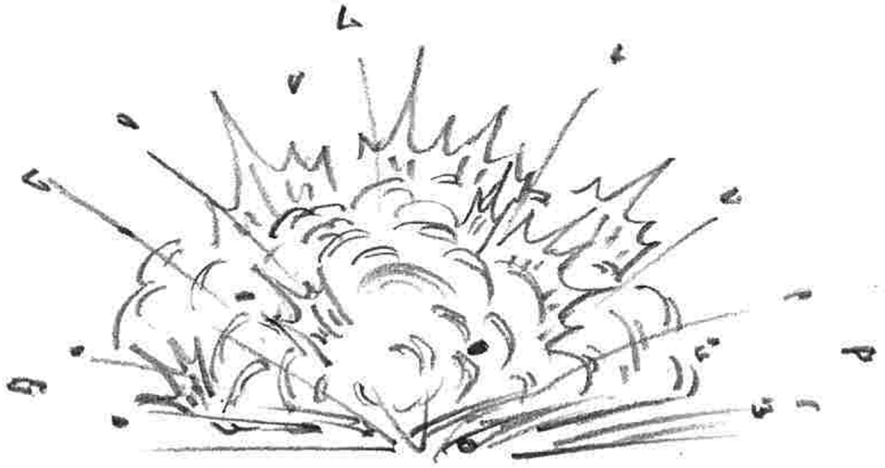
1563
The Älvsborg town around it was burnt by the Danish.

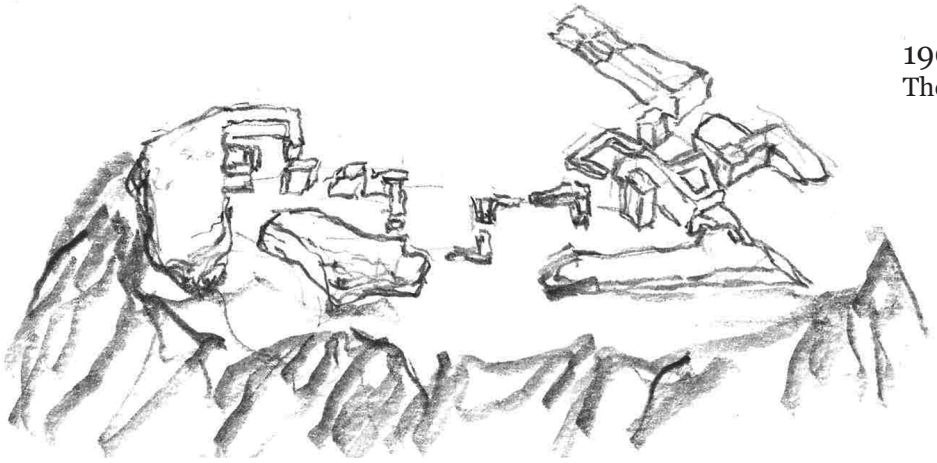
1570 & 1613
Sweden paid large ransoms to regain the control of Älvsborg and the area.

1653
Sweden started building Nya Älvsborg on an island in Göta river to replace Älvsborg due to the change of military need.



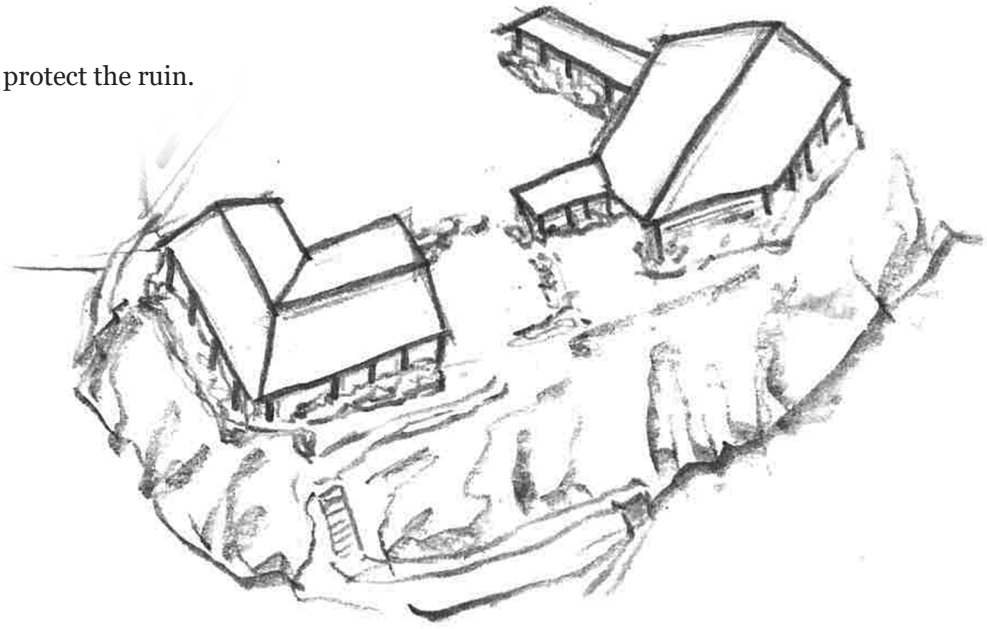
1660
Old Älvsborg was razed by blasting.





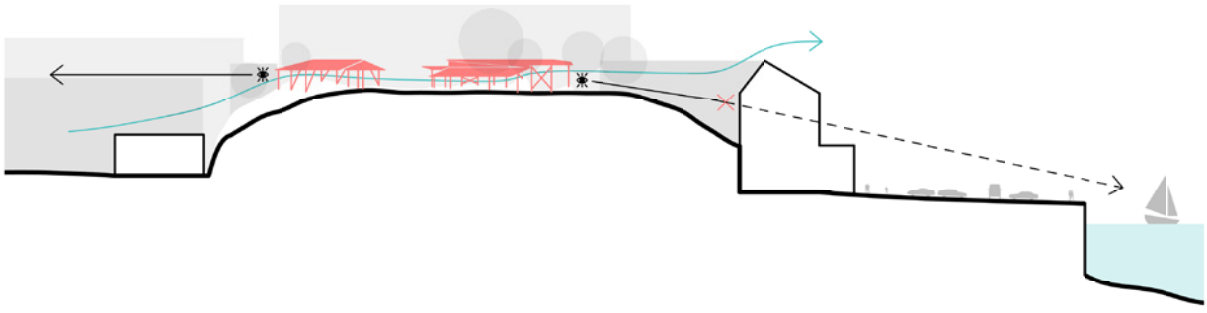
1900
The ruin was uncovered.

2008
A roof was built to protect the ruin.

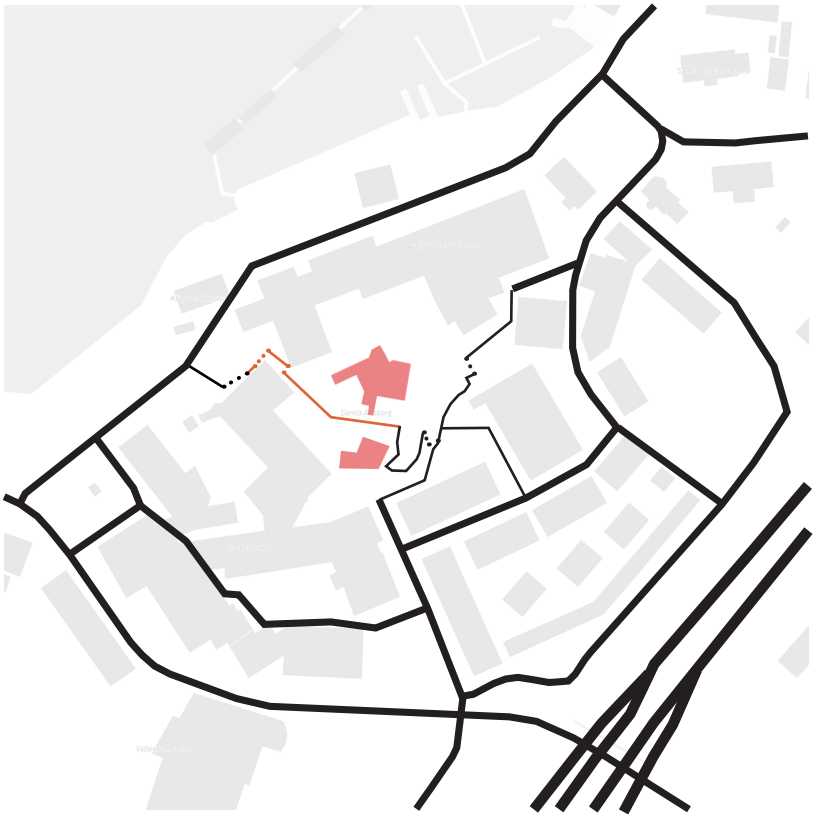


Site location

Site plan & Section



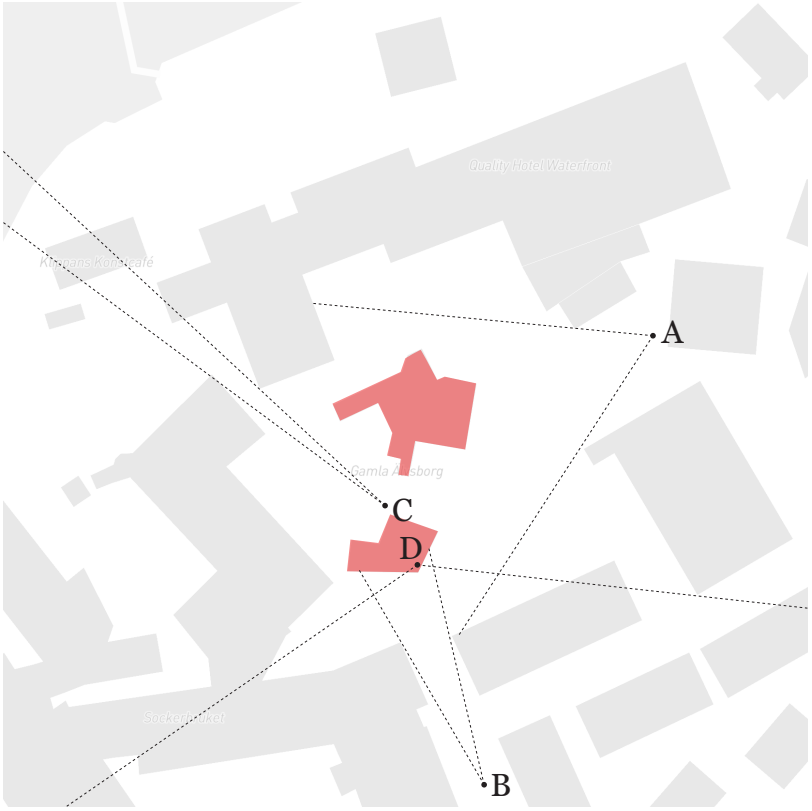
Site analysis



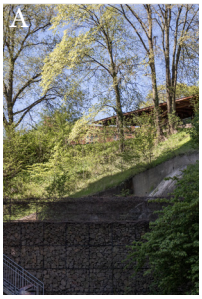
City road
Internal car way
Track
Stairs
Proposed track

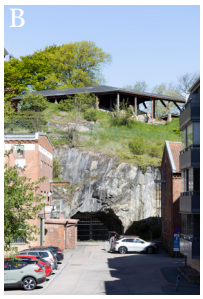
Accessibility

Sitted on a hill, and surrounded by buildings, the site is only accessable through a small track, which connect to the Internal car way on the east and south direction. There's potential to extend the path through the site, and connect to the road on the northwest direction.



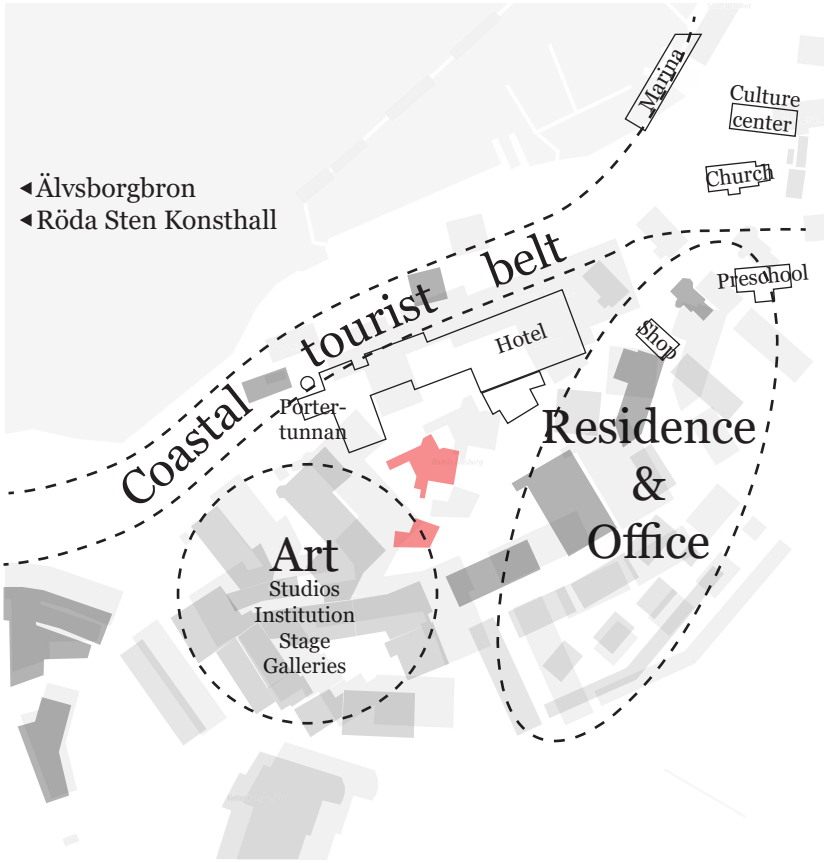
View of the site





View from the site

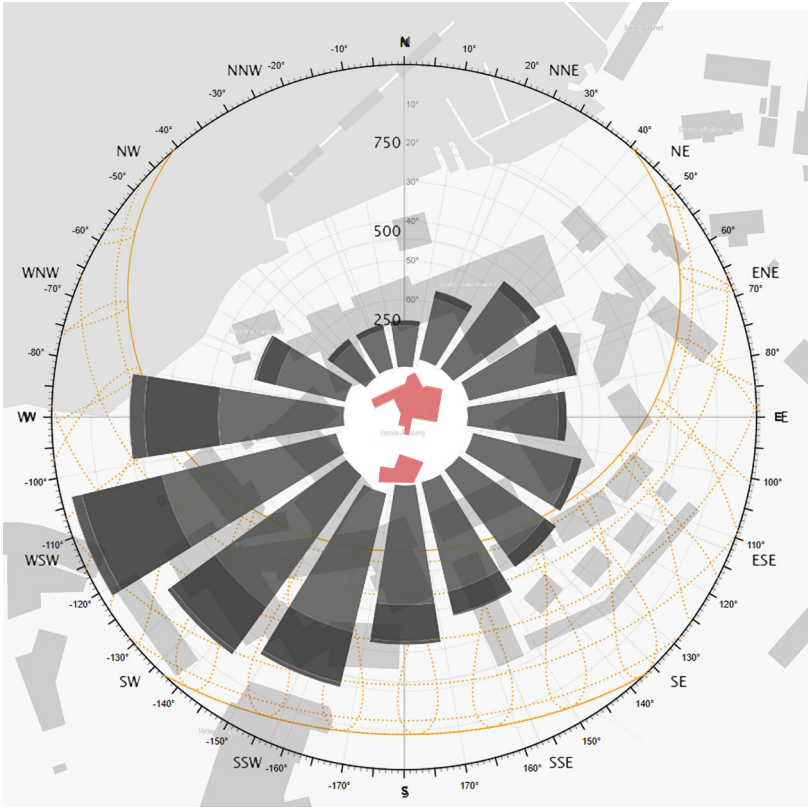
There are two view points and two visual connections with surrounding area on the site.



Point of interest
Residence buildings
Office buildings
Art facilities

Surrounding functions & POI

The site has adequate tourist and art resources, it has the potential to become a view-point and activity place for surrounding artists, residents and tourists.



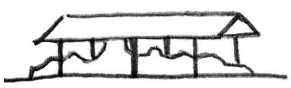
Wind rose and sun path

The prevailing wind direction in Gothenburg is from West and South. The roof need to protect the ruin from the rain from this two directions.

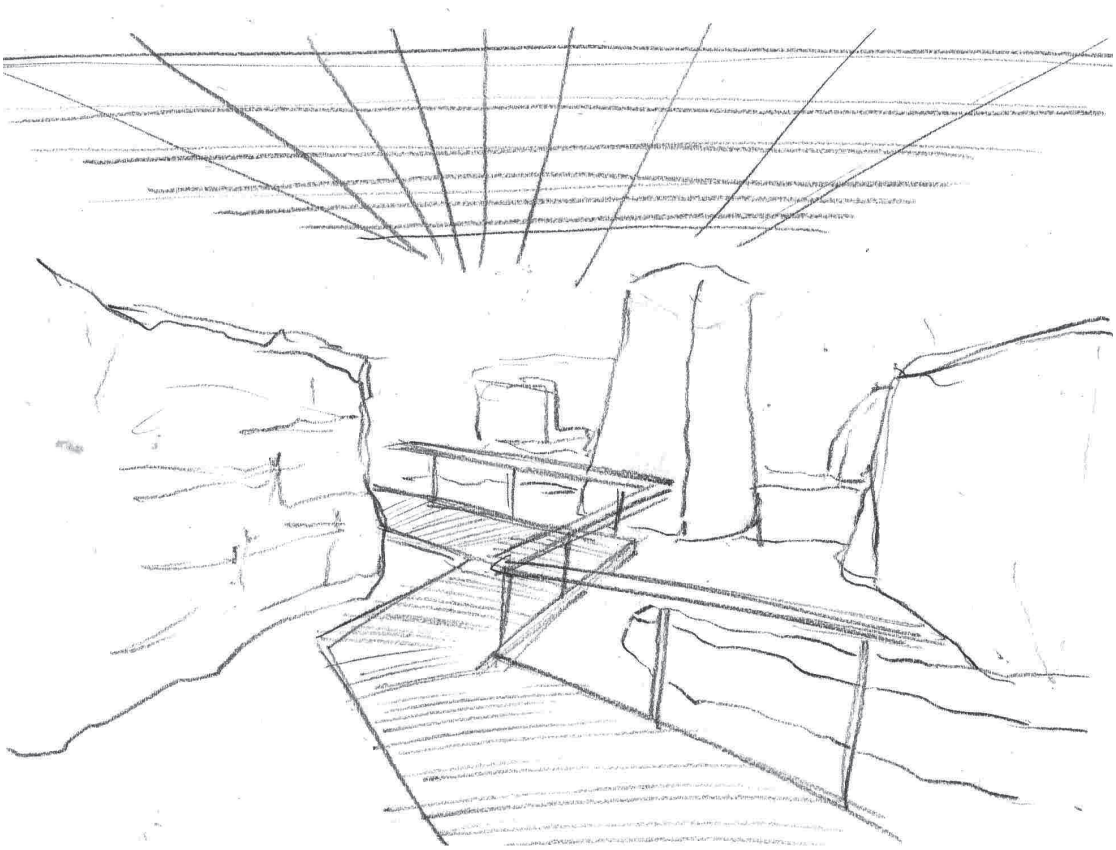
What make Old Älvsborg a passive place?

Physical isolation from outside
- Surrounded by buildings, only be accessed by foot
- Sitted on a hill, lack of visual connection with outside

Unpleasent space experience
- Darkness
- Lack of order

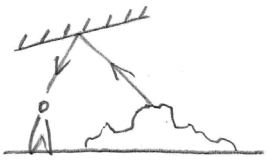


Absence of historical value
- Lack of wholistic view of the ruin
- Lack of introduction of the ruin and history
- Poor protect condition



Make connection with surroundings
- Extend track through the site
- Focus on the design of the east and south elevation
- Use reflective ceilling to reflect the ruin to outside

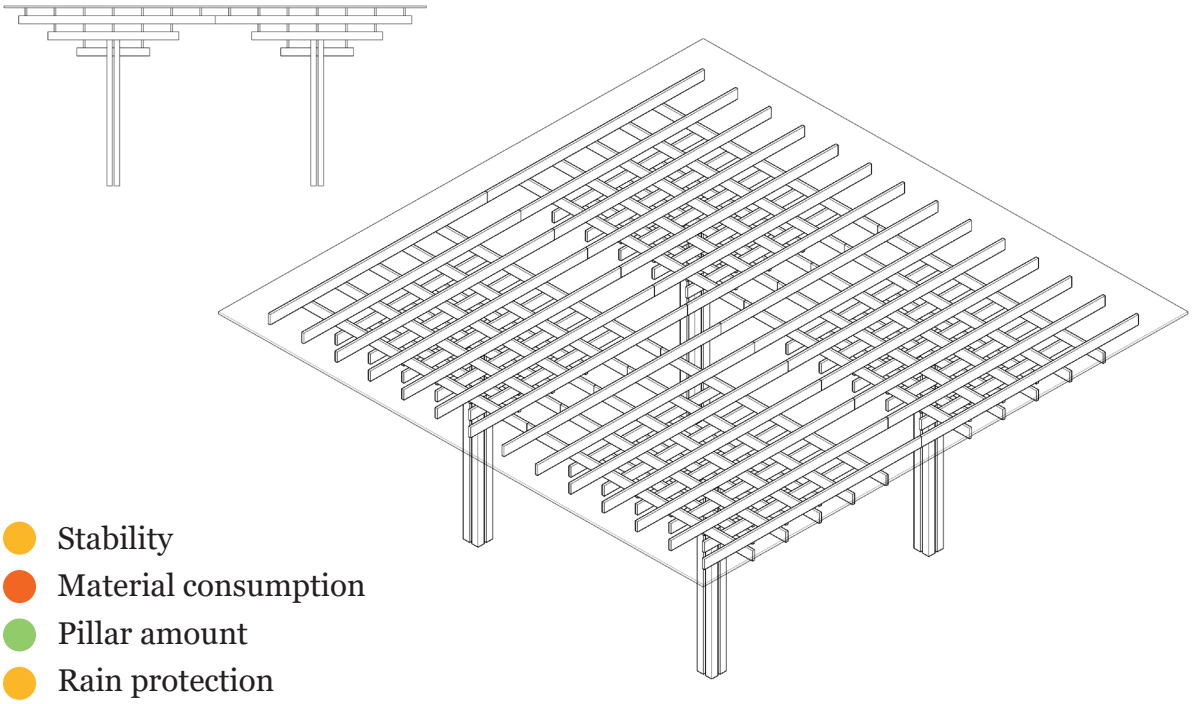
Improve space quality
- Replace roof sheating with translucent PC board
- Add guiding walkway through the ruin
- Set up space order with systemetic architectural design



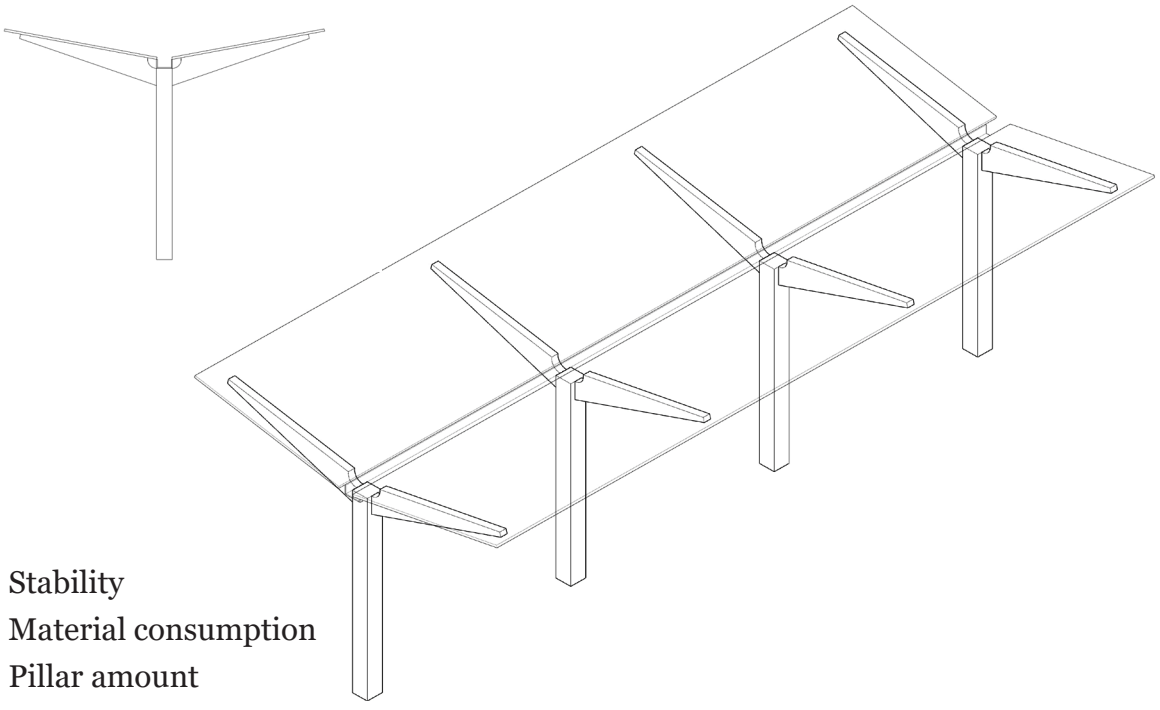
Present the historical value
- Use reflective ceiling to reflect the top view of the ruin
- Minimize the number of pillar
- Add introduction boards
- Add roof to exposed part of ruin

Plan comparison

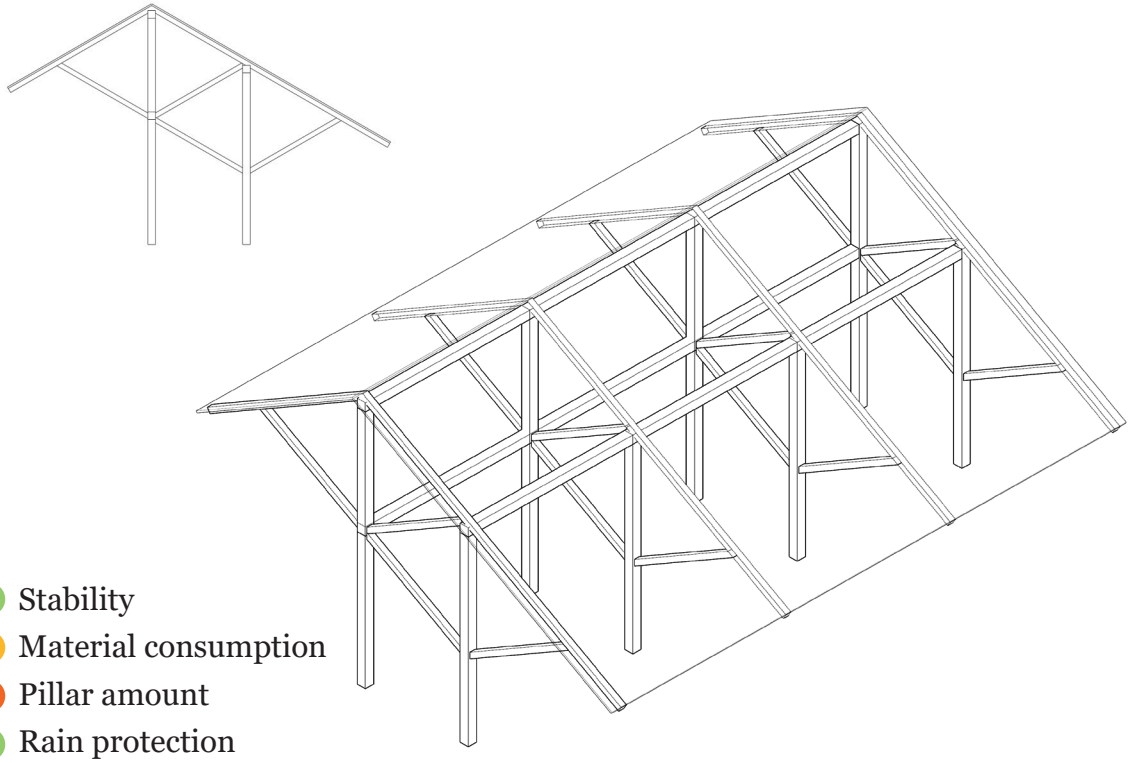
Ideal Need to be improved Will be a problem



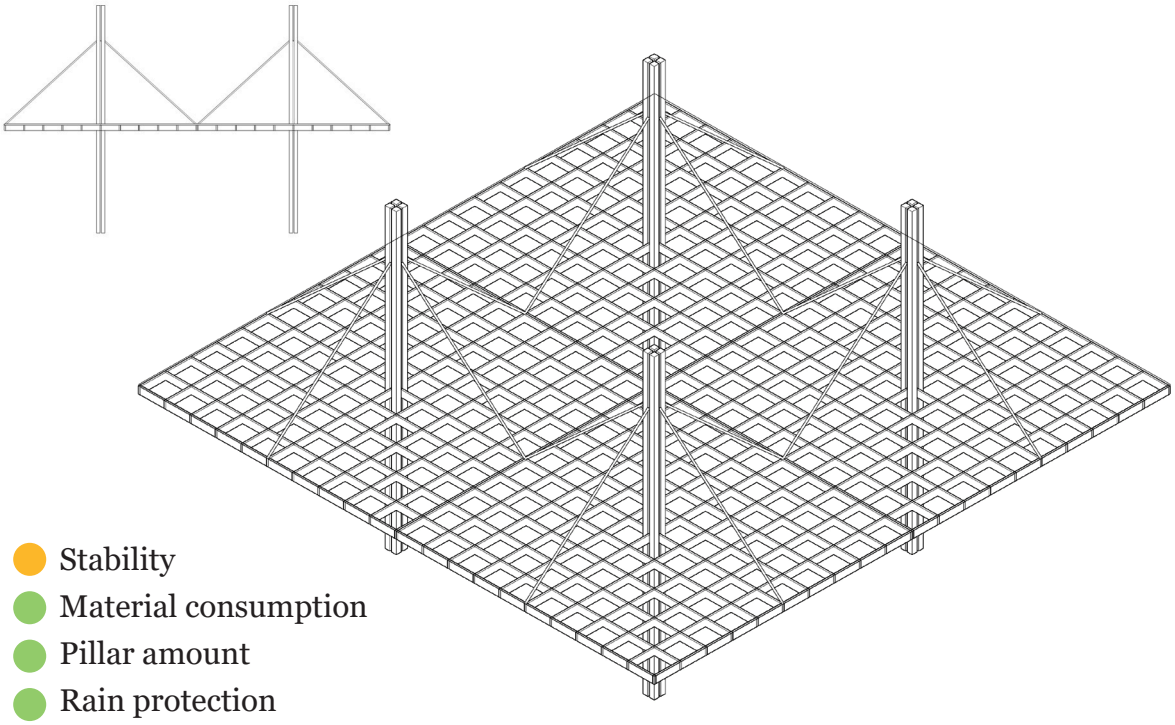
- Stability
- Material consumption
- Pillar amount
- Rain protection



- Stability
- Material consumption
- Pillar amount
- Rain protection



- Stability
- Material consumption
- Pillar amount
- Rain protection

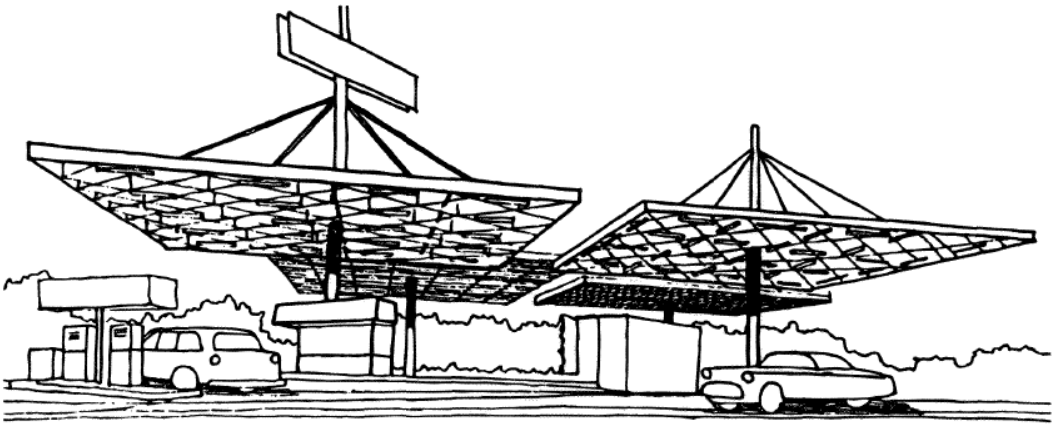


- Stability
- Material consumption
- Pillar amount
- Rain protection

Reference

Mobil Gas Station, Smith & Williams Architects - Anaheim, CA

This simple and light-weight design of the gas station was adopted by the Mobil Oil Company as its standard service station canopy in 1957. The ‘parasol’ stucture provides large span for vehicles to drive through. Each square is an independent modul which can be used singly or in groups. The high-up mast and cables become prominent symbol that can be easily noticed from a distance.

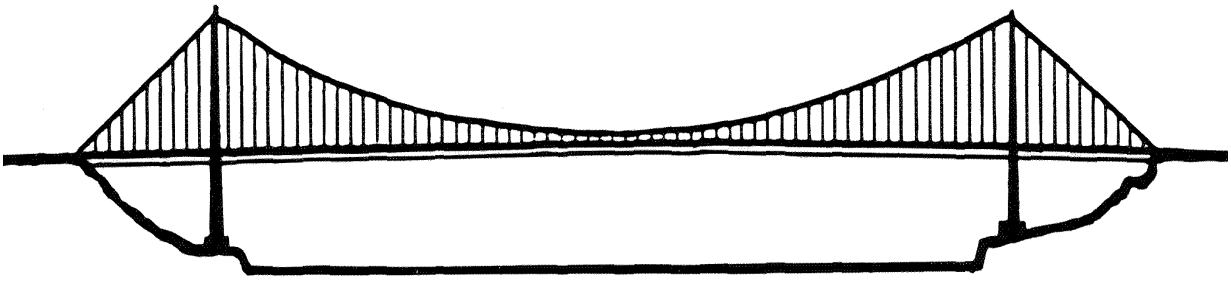


Harris, 1996

Julius, 1956

Älvsborgbron
Sailing boat

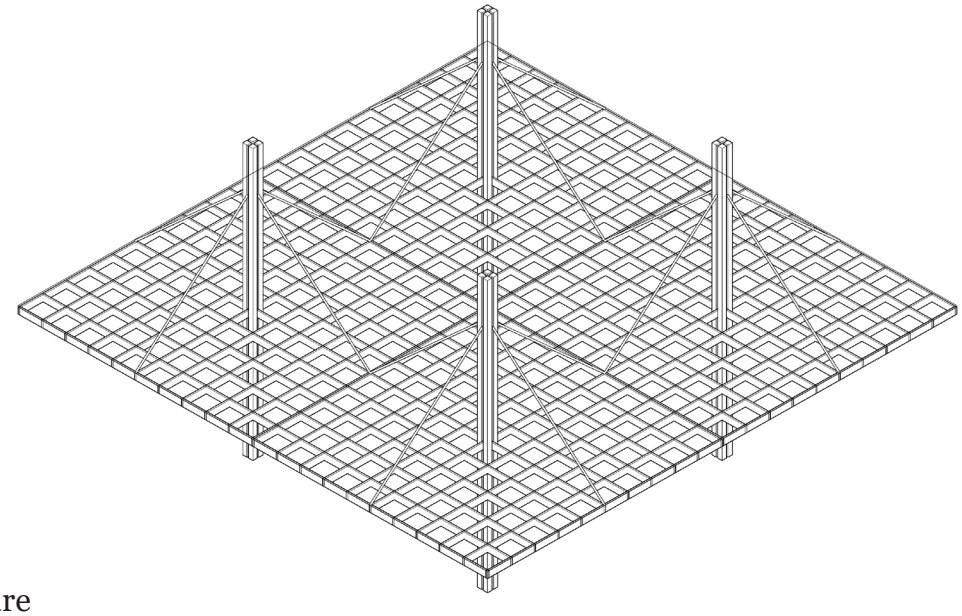
From the site, you get a nice view of the Älvsborgbron bridge and the sea. The design of a mast-structure pavilion echos with the suspension structure of the bridge, and the sailing boats that used to travel on the sea.



Harris, 1996

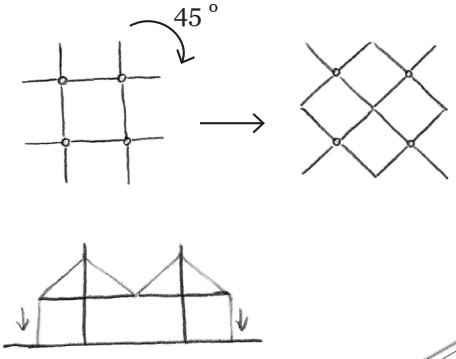
Foray

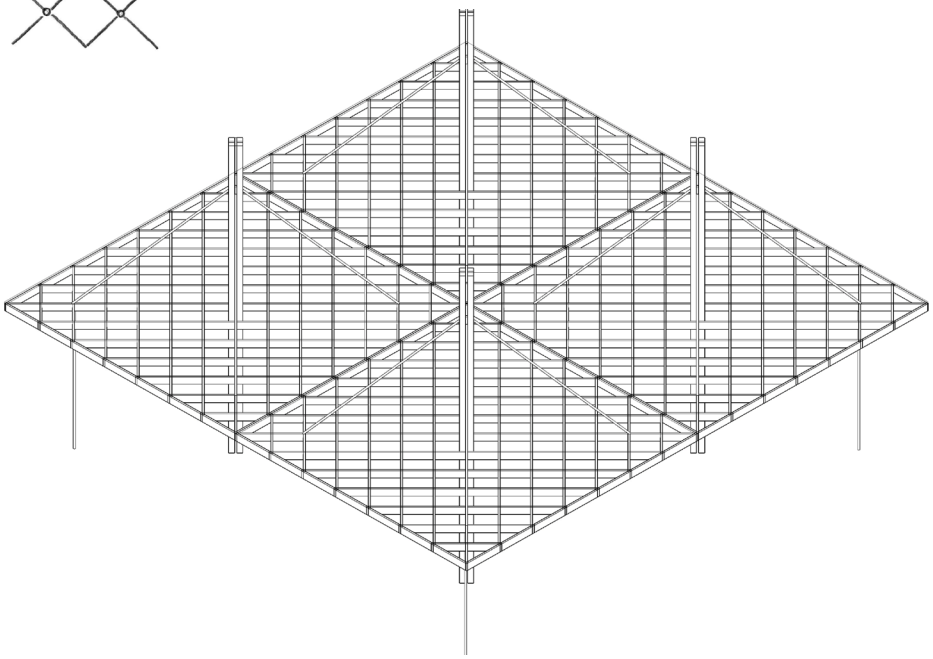
Design develop



1.

The mast structure



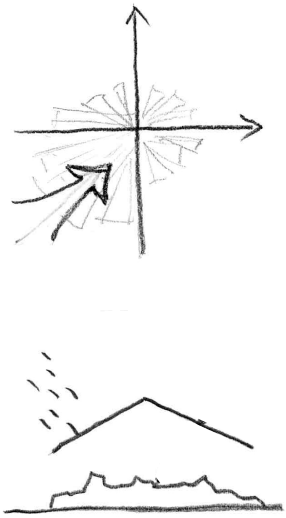


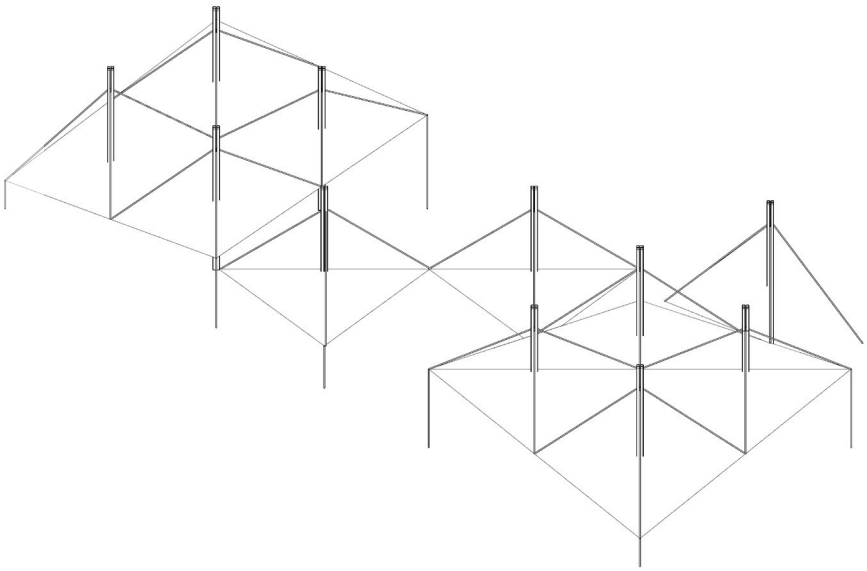
2.

Stability:

-Rotate grid direction for 45 °

-Connection 4 corners to ground with cables

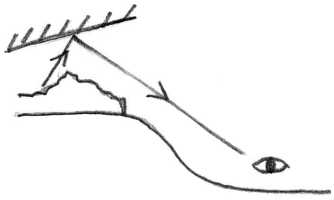


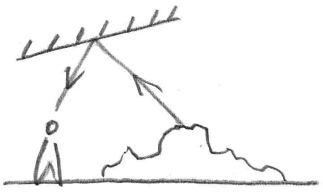


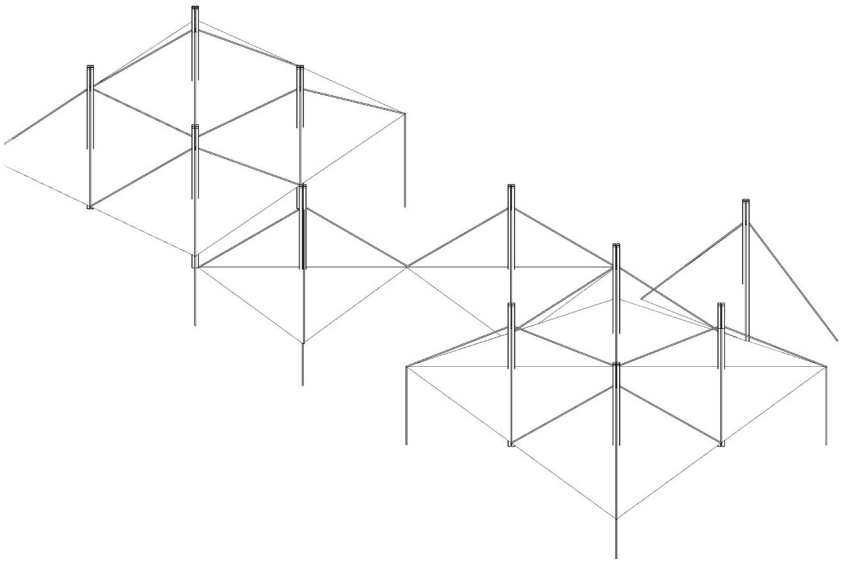
3.

Rain protection:

-Adjust roof angle according to Gothenburg wind rose





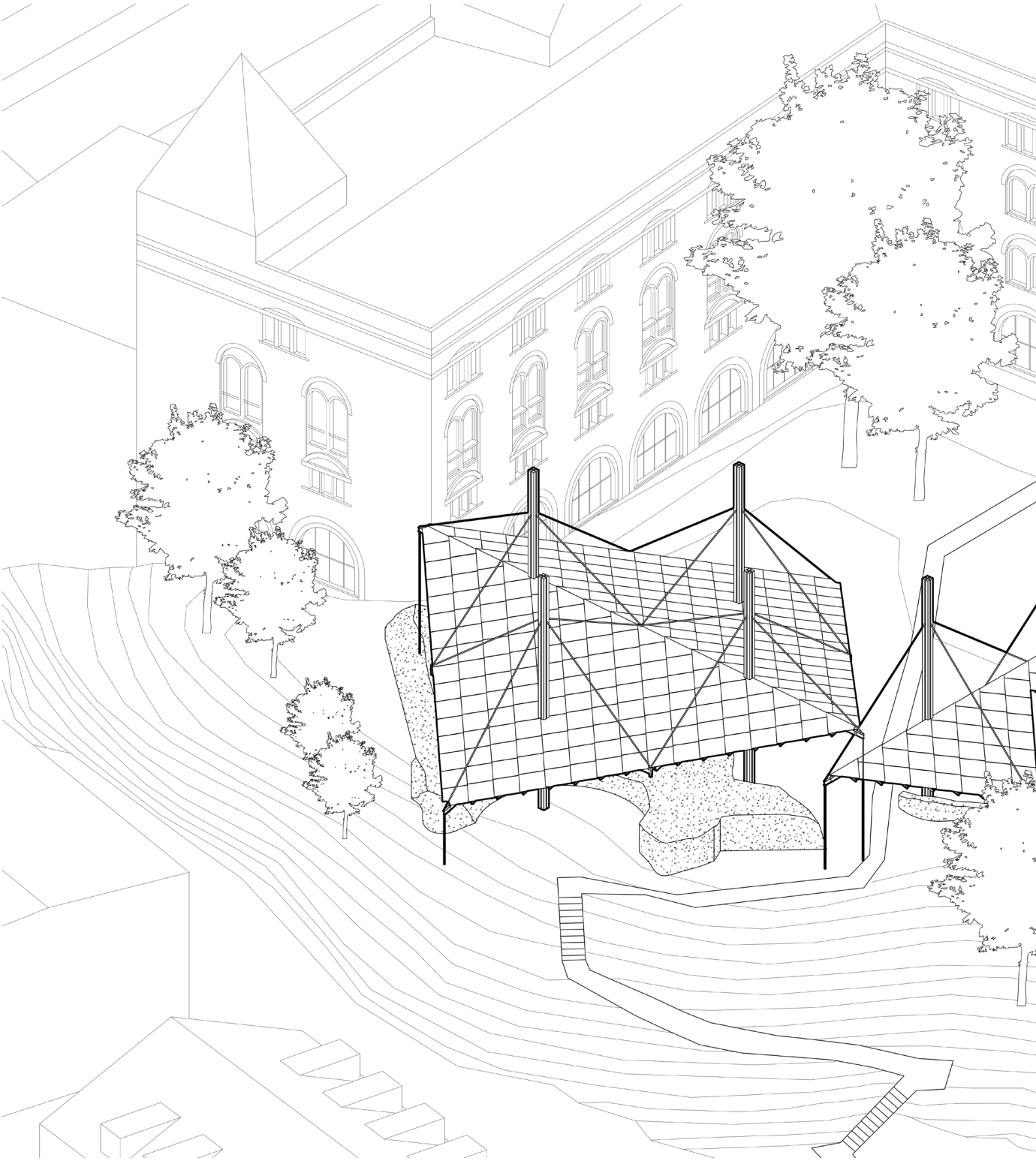


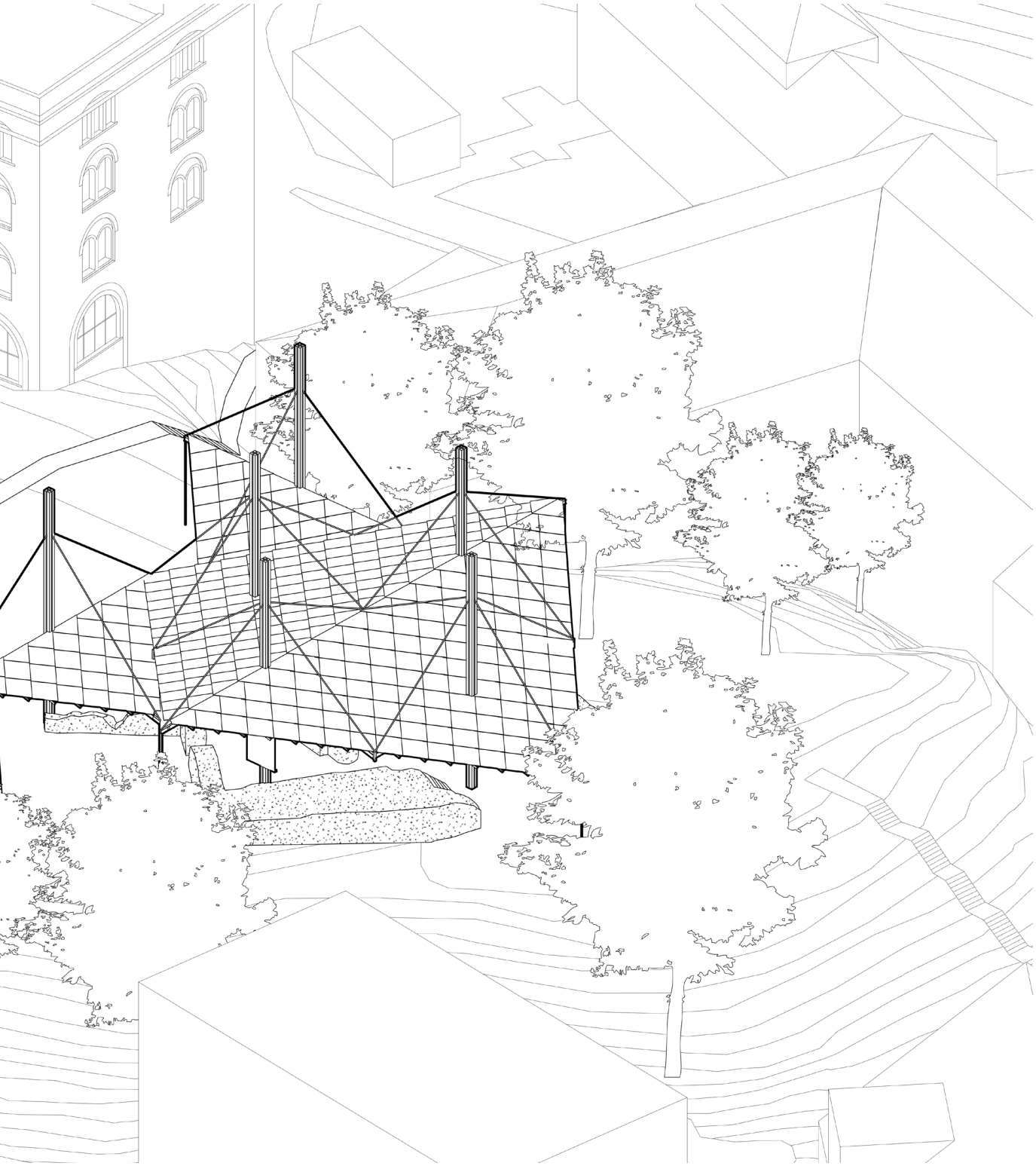
4.

Visual connection:

-Add mirror under the roof, adjust roof angle to reflect

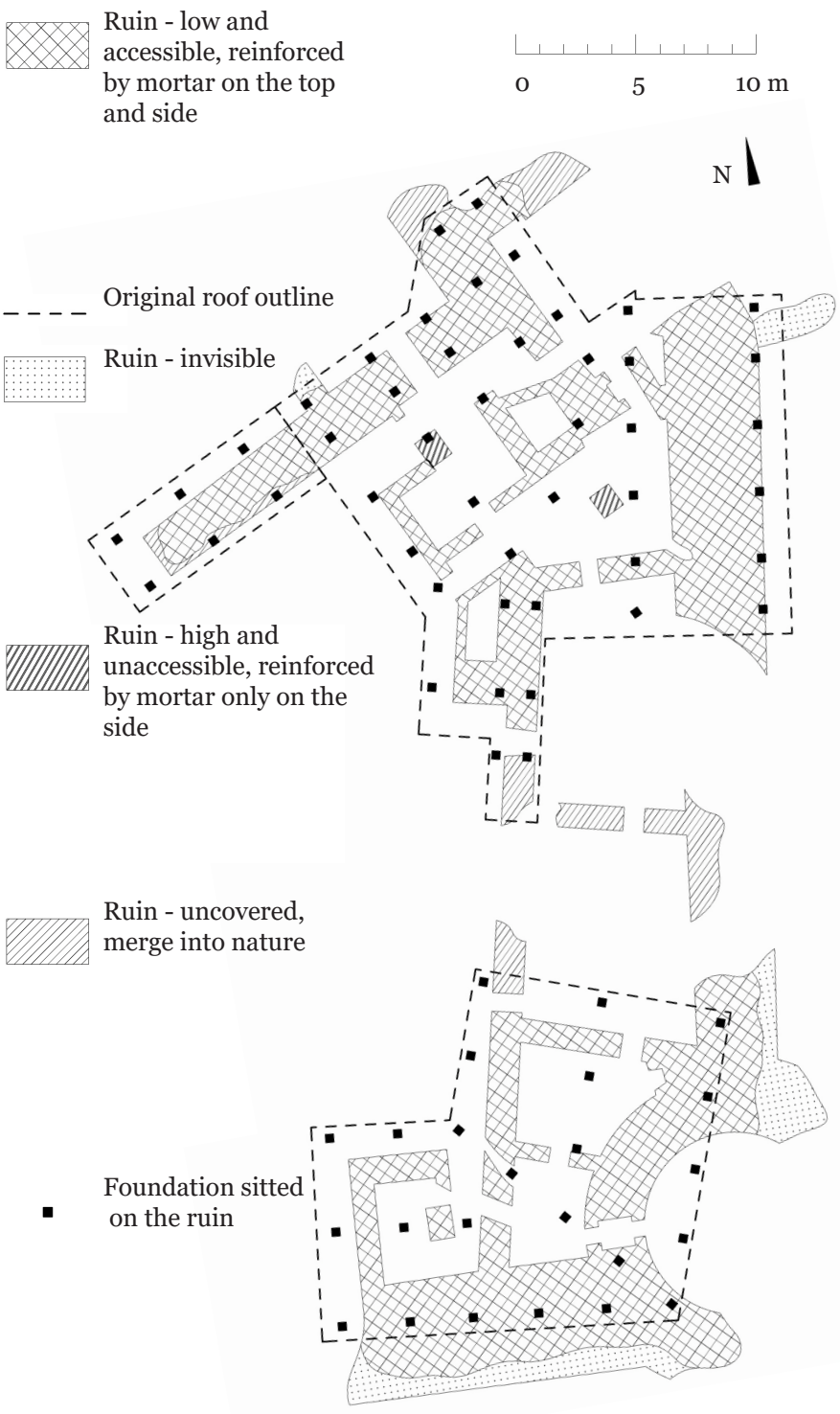
the ruin to ground and entrance



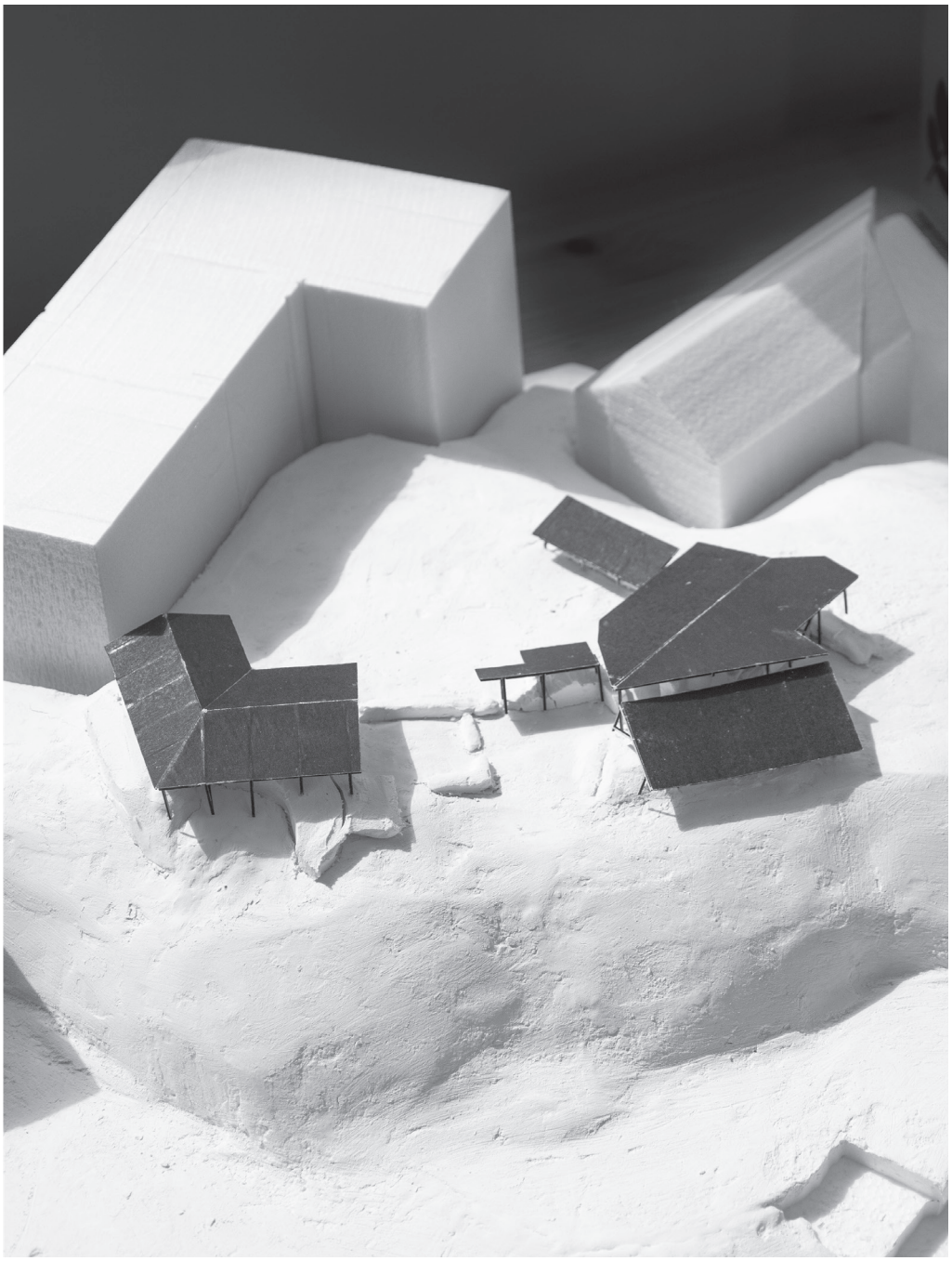


Chapter 3

The ruin is made of brick and stone, which was reinforced by mortar for protection purpose. The height of the remain walls is between 0.3 - 3m. The main part is covered by the roof, and bear the damage from human activity. Those parts that are uncovered or on the edge of the roof are invaded by plants, eroded by rain and ice.



Original roof condition assessment



Material

The original roof is made of timber, painted red. Around 1/3 of the beams and rafters were made by patched timber due to the lack of material. The common damage type are silver damage, rotten, crack, insects and graffite. Most of the timber on the roof are in good condition and can be reused with little repairement. Half of the pillares have silver damage and rotten bottom due to prolonged exposure to sunshine and moisture from the ground.



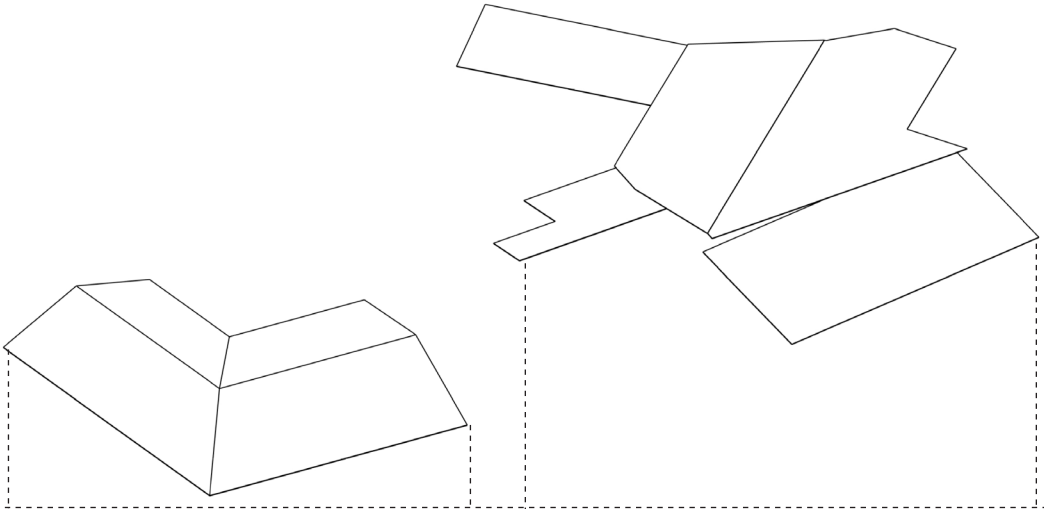

Joint

The main structure of the roof are connected in reversible ways by bolts, metal connectors and screws. The envelope and small parts like roof sheating and fascia boards are connected to the structure with nails. It's easy to disassemble most of the roof with little damage to the material.

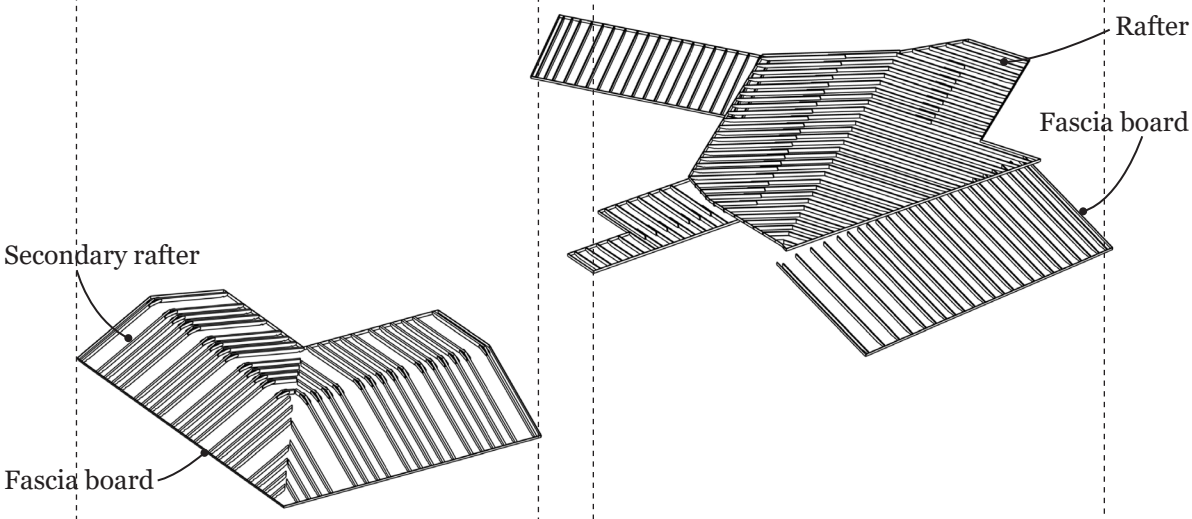


Structure analysis

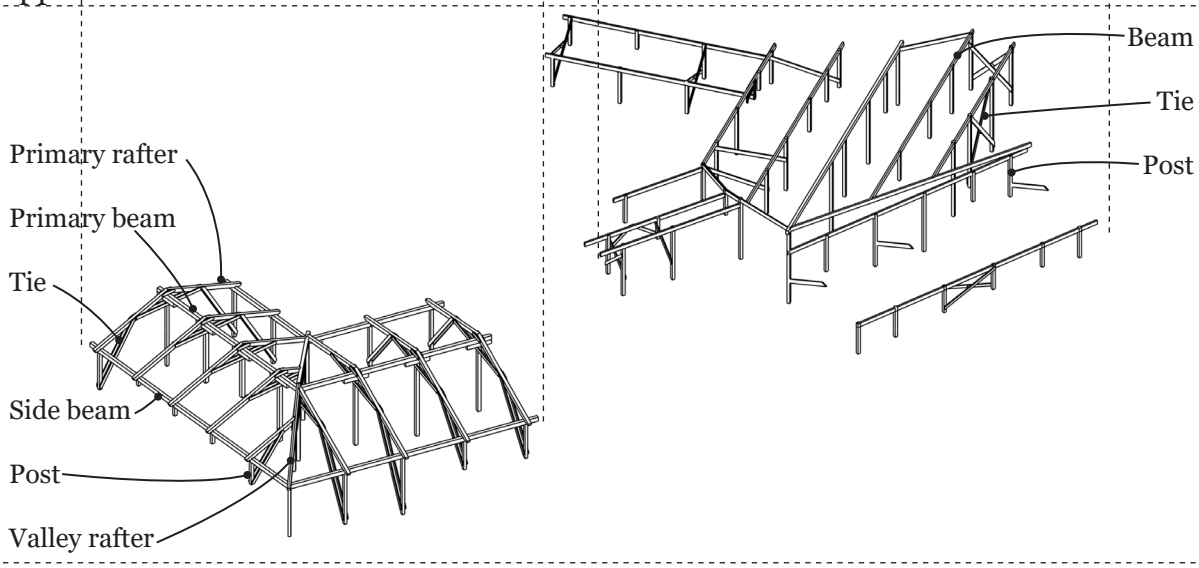
Roof sheating



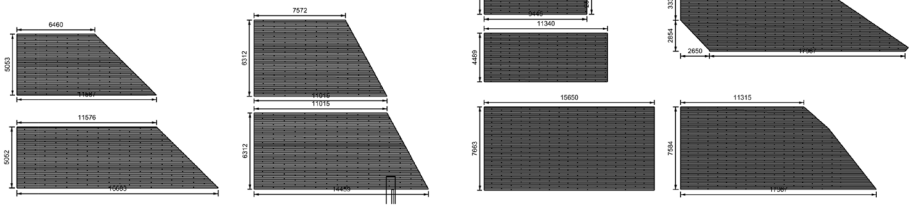
Roof structure



Support structure

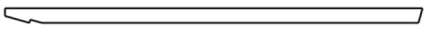


Roof sheating
25 x 50 x 600 mm

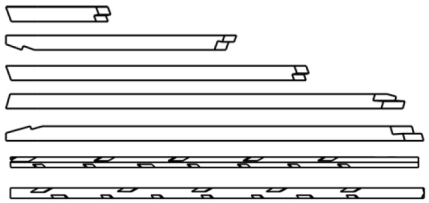


Rafter (in good condition)
220 x 180 mm x 6

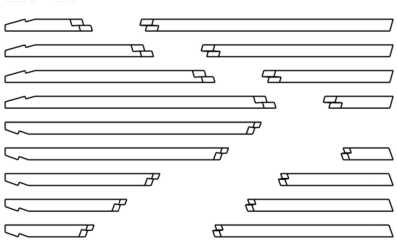
220 x 180 mm x 5



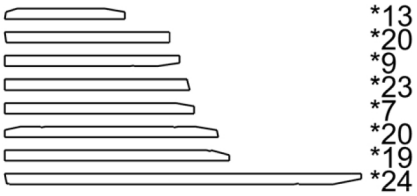
220 x 180 mm x 1



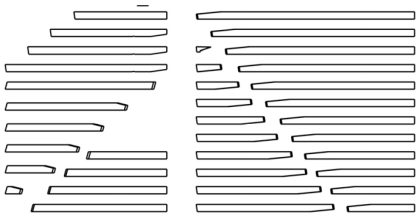
220 x 120 mm x 1



220 x 50 mm



220 x 50 mm x 1

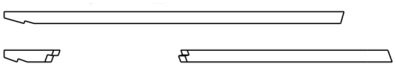


220 x 120 mm x 22

220 x 120 mm x 26

Rafter (need to be repaired)
220 x 120 mm x 2

220 x 120 mm x 1

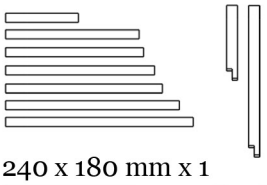


Material list

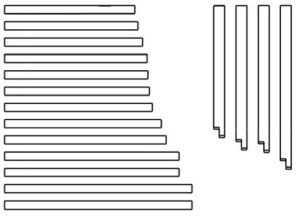
Beam

240 x 200 mm x 7

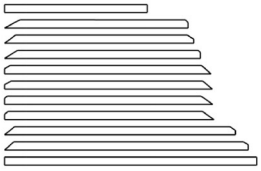
240 x 200 mm x 1



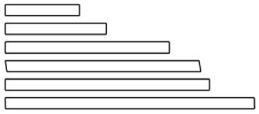
240 x 180 mm x 1



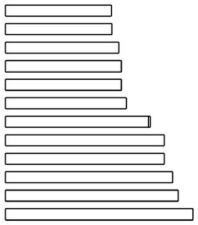
240 x 180 mm x 2



220 x 50 mm x 1



220 x 50 mm x 2

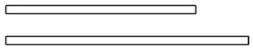


220 x 50 mm x 3

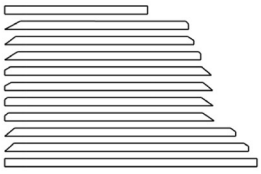
220 x 50 mm x 89

Tie

180 x 50 mm x 6

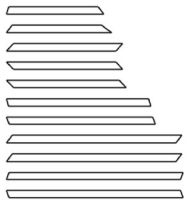


180 x 50 mm x 2

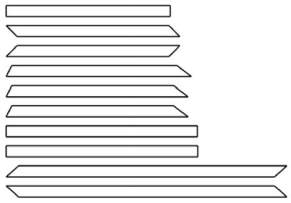


180 x 50 mm x 1

150 x 50 mm x 1

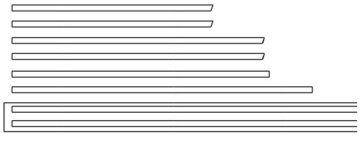


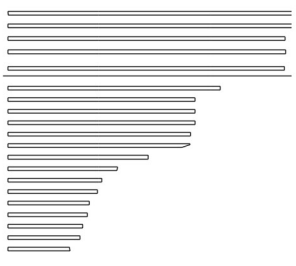
220 x 50 mm x 1



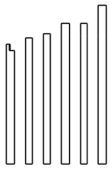
Fascia board

150 x 25 mm x 1

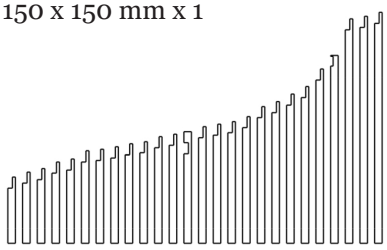




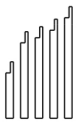
Post (in good condition)
180 x 150 mm x 1



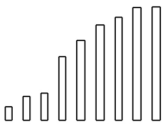
150 x 150 mm x 1



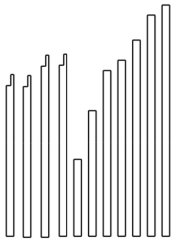
150 x 150 mm x 2



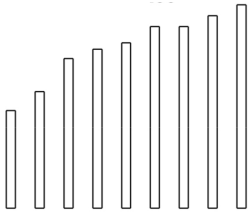
Post (silver damage)
180 x 150 mm x 1



150 x 150 mm x 1



Post (rotten bottom)
200 x 180 mm x 1

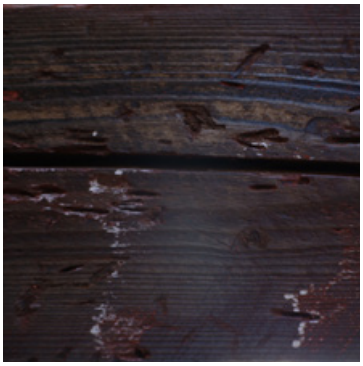


Texture match

The ruin

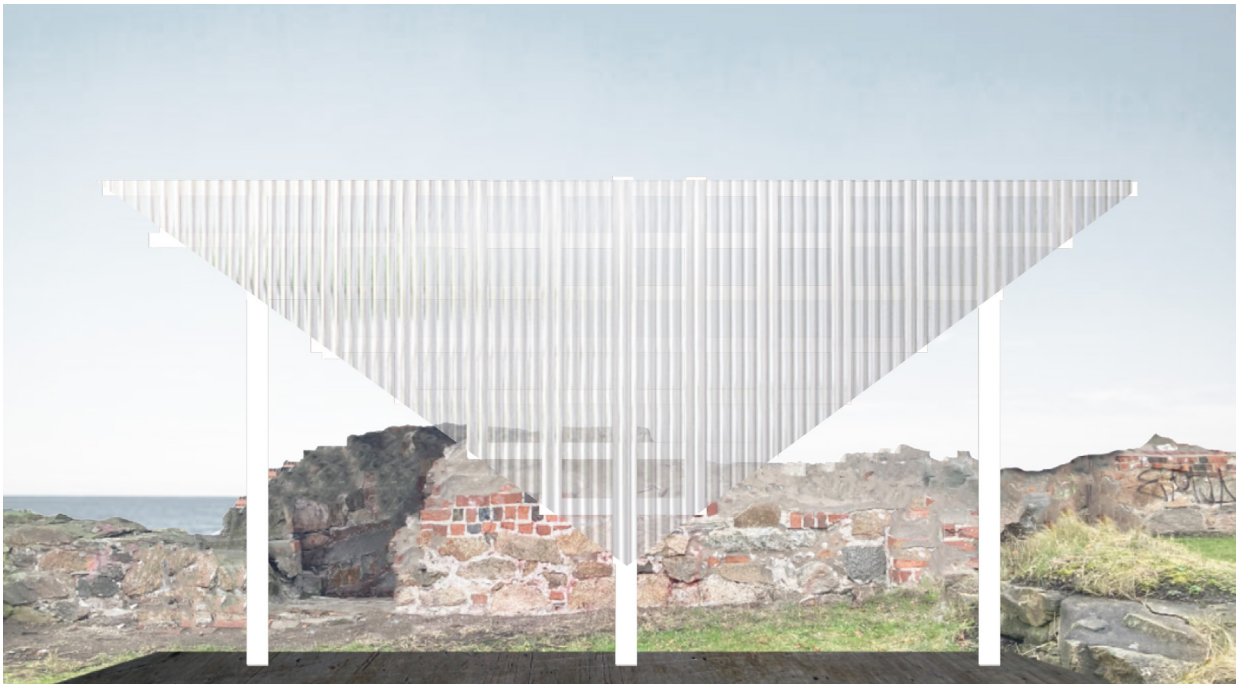
Surrounding nature

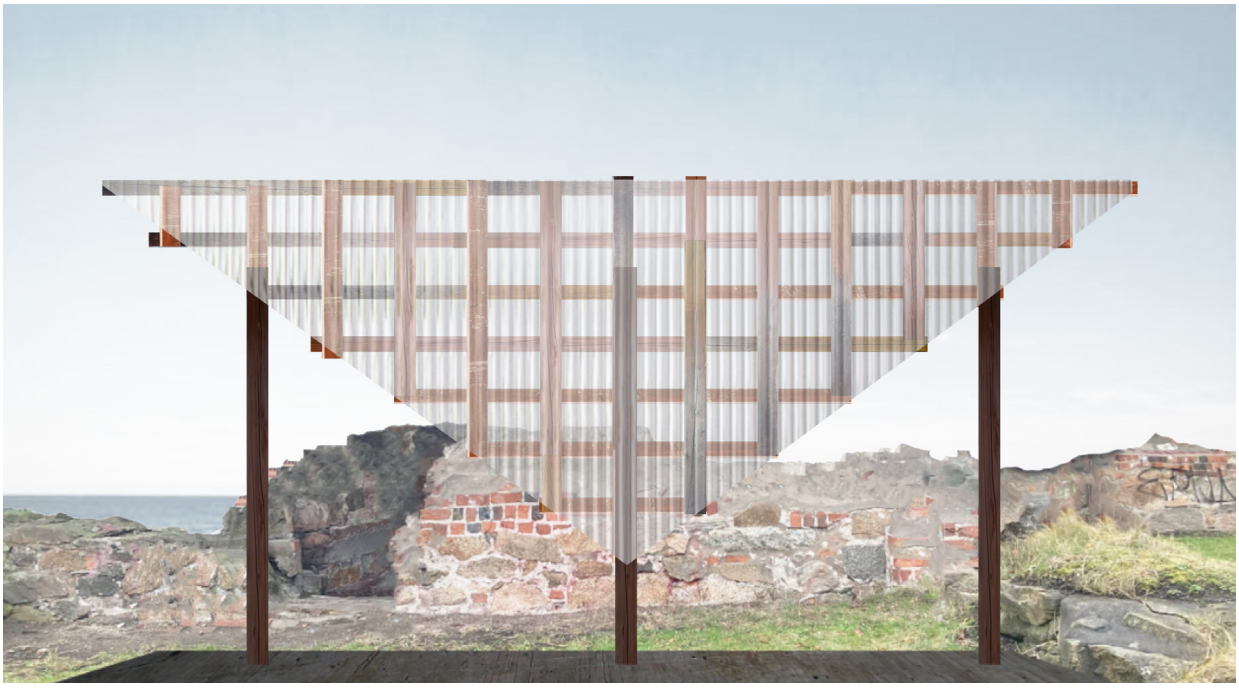
Existing roof

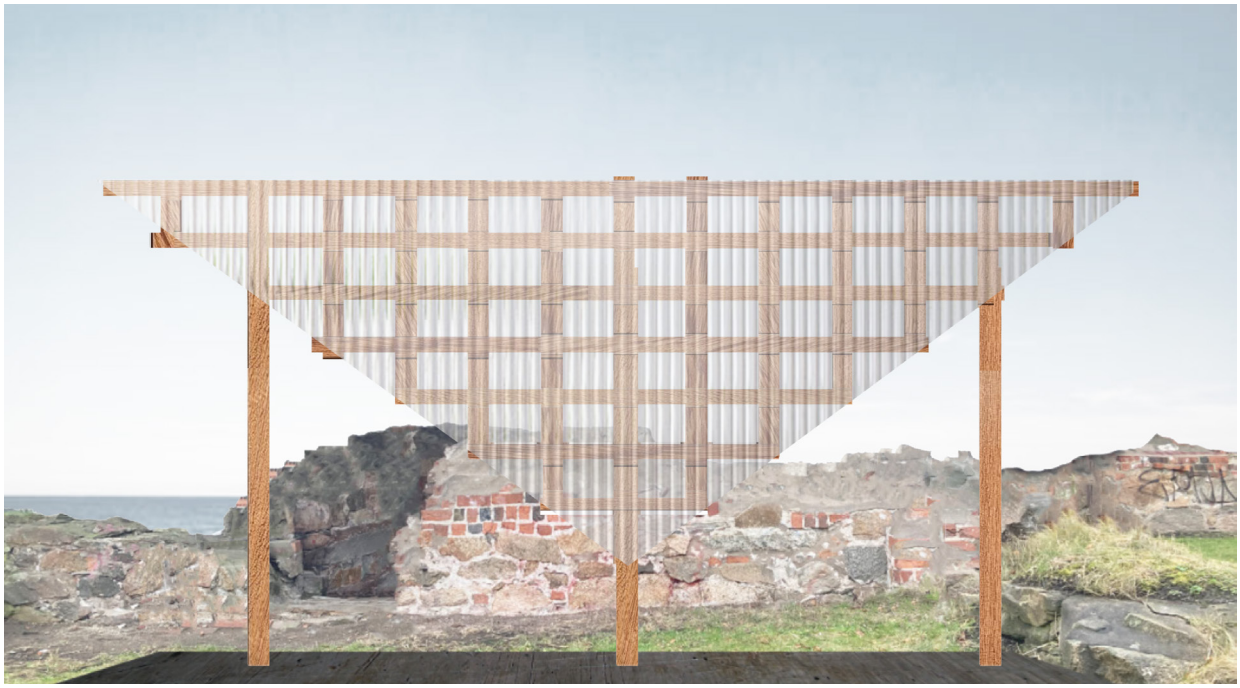


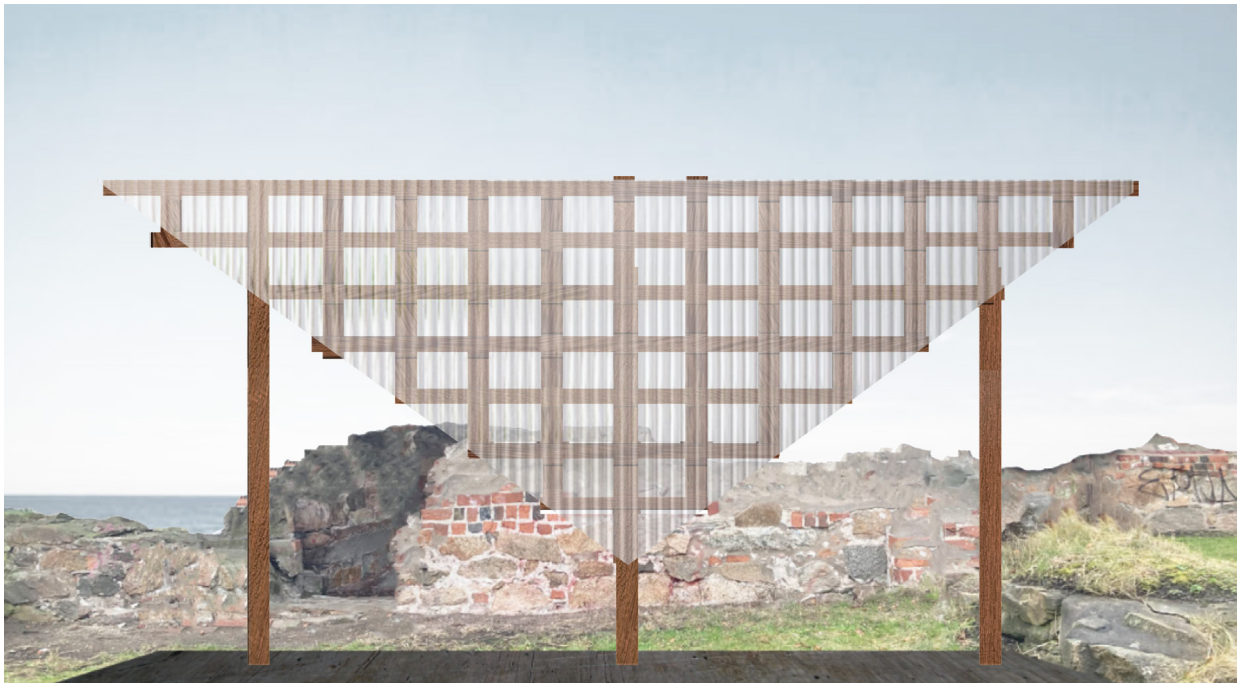
New material

Texture match

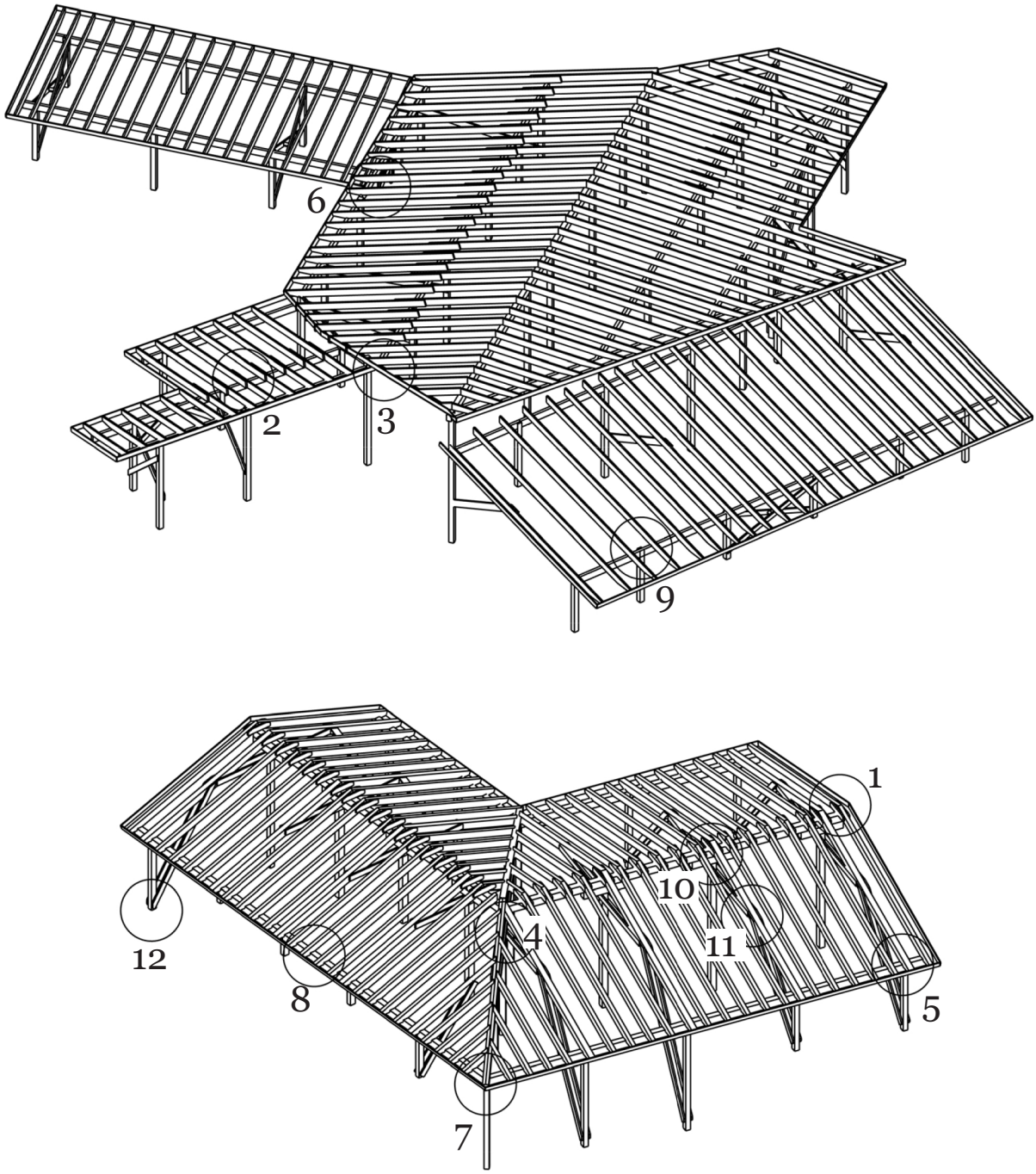




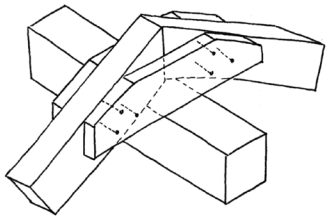




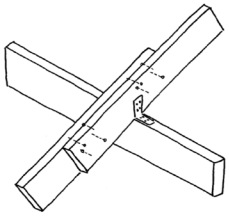
Joint analysis of the original roof



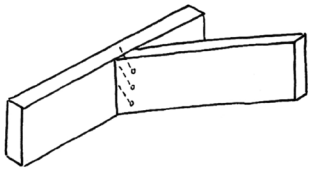
1. Connection in ridge
Gusset plate of timber, nailed



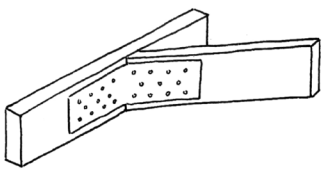
2. Joint of rafter
Assembled nailed joint



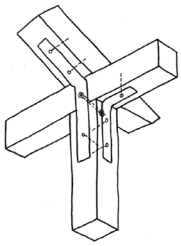
3. Connection of secondary to primary rafter
Nailed



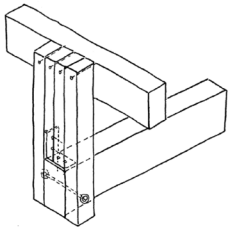
4. Connection of secondary to primary rafter
Steel plate, screwed



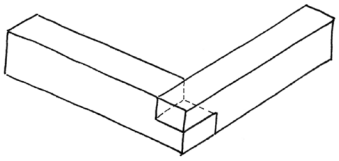
5. Fixing of rafter to beam and post
Steel straps, bolted



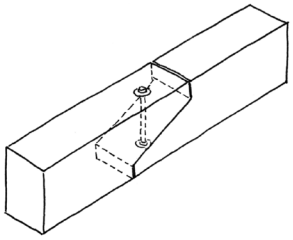
6. Connection of beams (different height)
Bolt with metal connector
Framing anchor, screwed
Screws



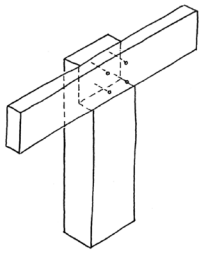
7. Connection of beams (angled)
Scarf joint



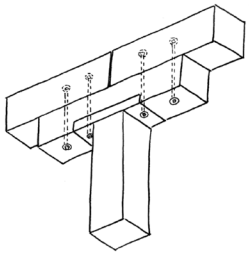
8. Joint of beams
Bolted notched connection



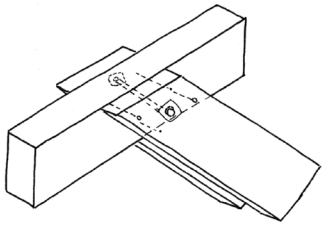
9. Support of beams
Post with cut-out strengthening beam, screwed



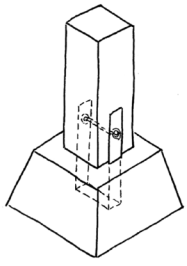
10. Support of beams
U-shaped metal plate, bolted
Bolt with metal connectors



11. Connection of tie to rafter
Bolted lap joint

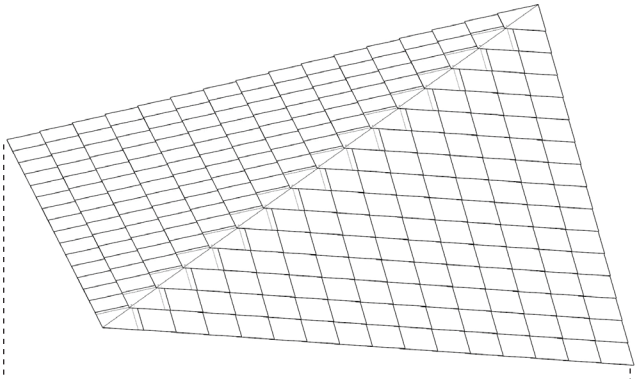


12. Connection of post to concrete foundation
U-shaped steel strap, bolted

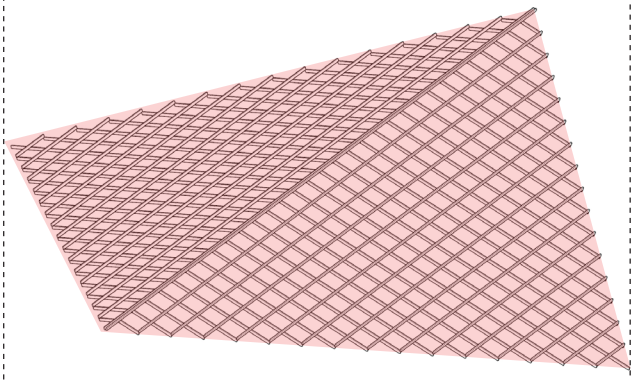


Design with reused timber

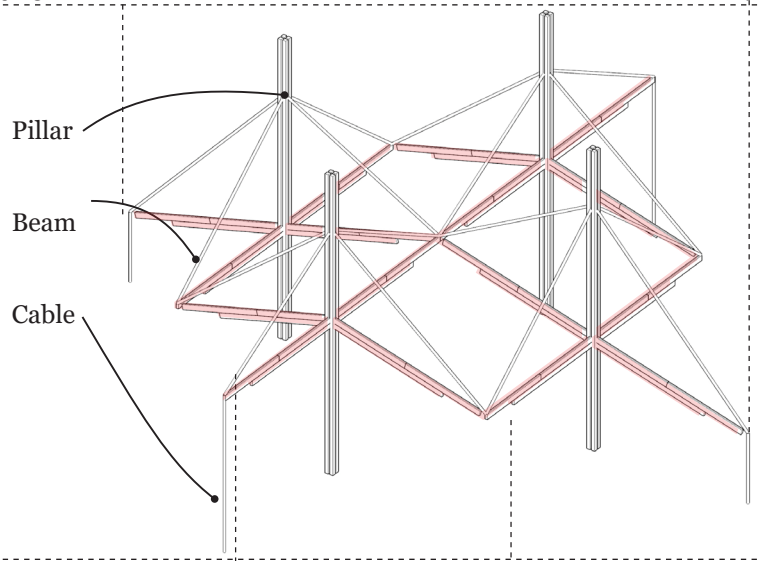
Roof sheating



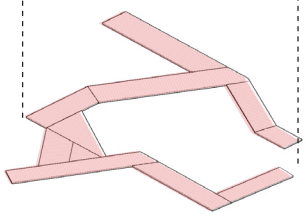
Roof rafters



Main structure

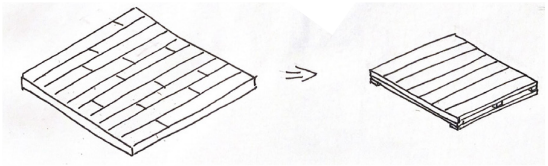


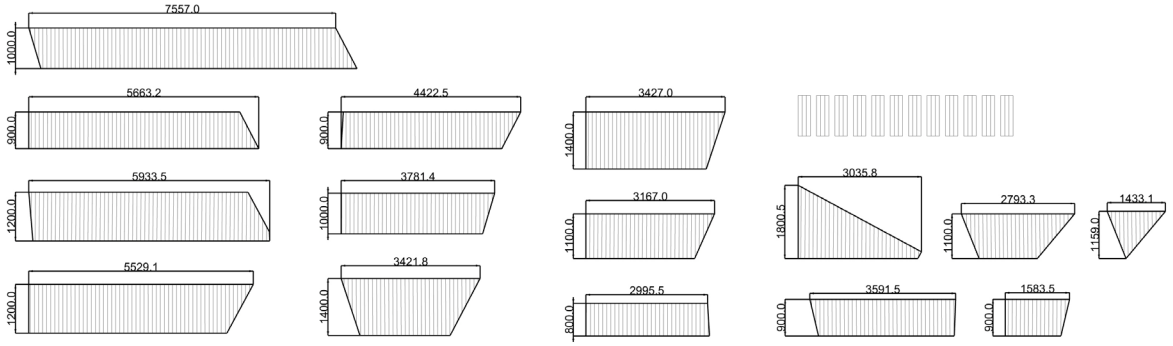
Walkway

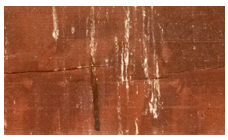


Reclaimed timber
from the original roof

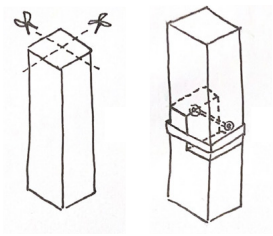
Roof sheating → Walkway paving

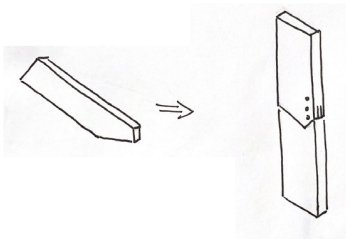




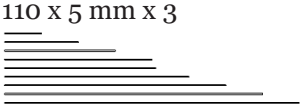


Rafter → Rafter

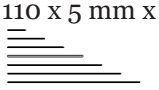




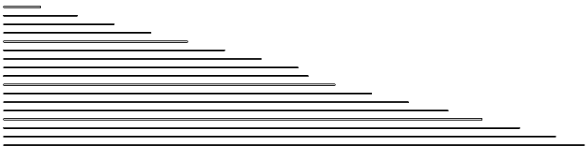
110 x 5 mm x 3



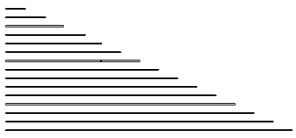
110 x 5 mm x 6



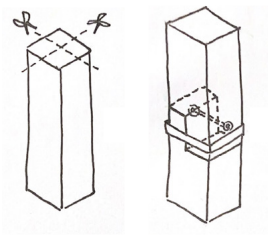
110 x 5 mm x 4



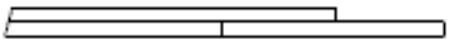
110 x 5 mm x 8



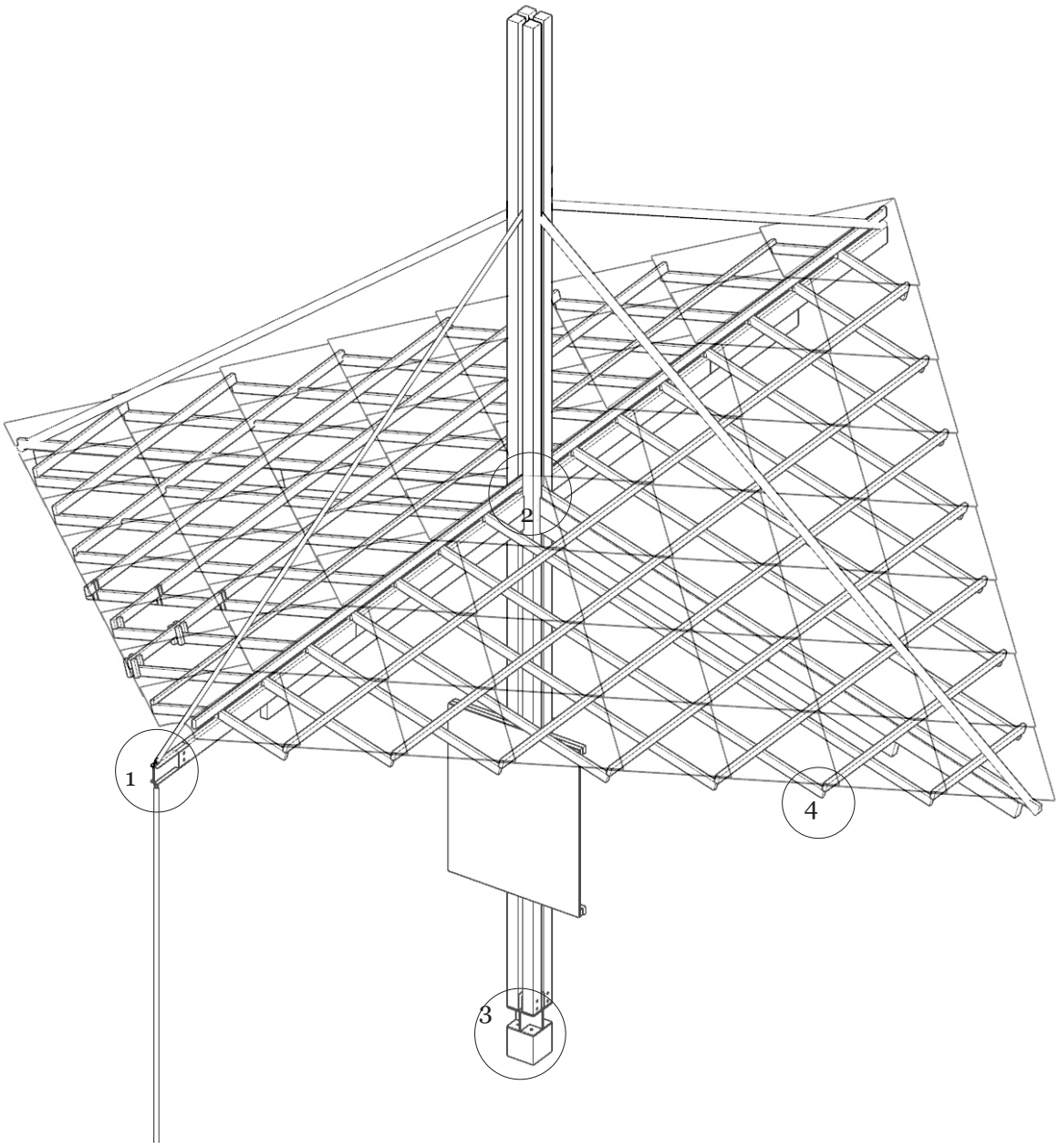
Beam → Beam



(220 x 100 x 3520 mm) x 2 + (220 x 100 x 5140 mm) = 1 beam
48 beams in total

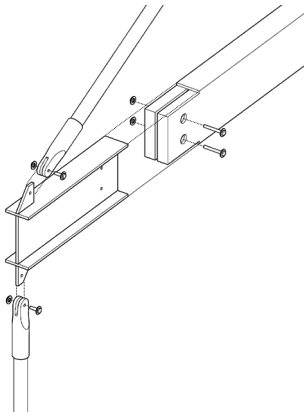


Design to be reconstructed and reused

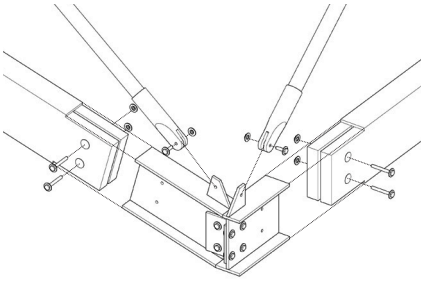


1. Beams & cables

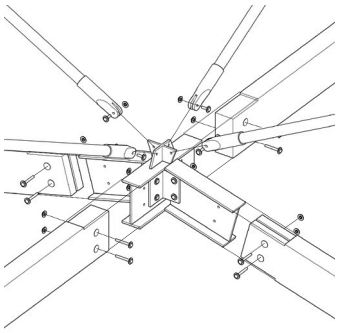
1 beams & 2 cables



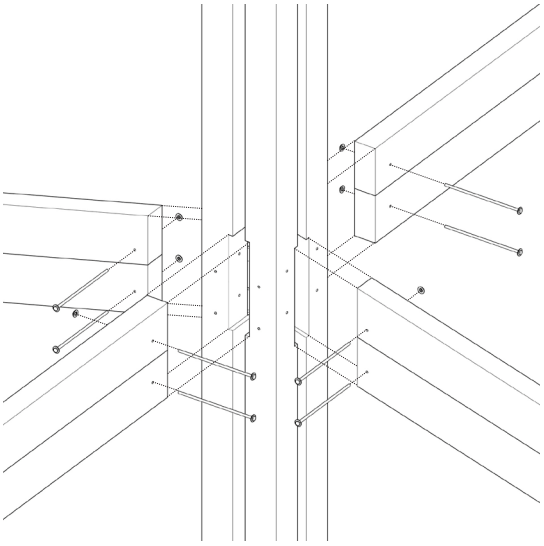
2 beams & 2 cables



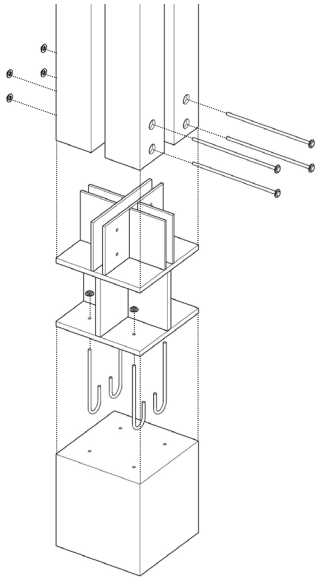
4 beams & 4 cables



2. Pillar & beam

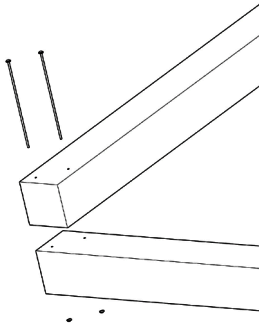


3. Foundation & pillar

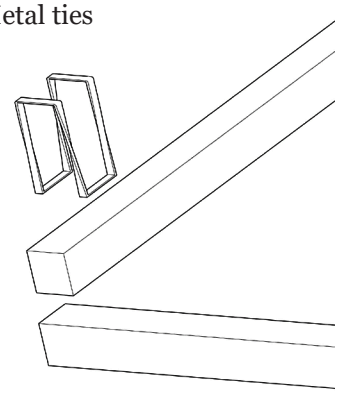


4. Rafter & rafter

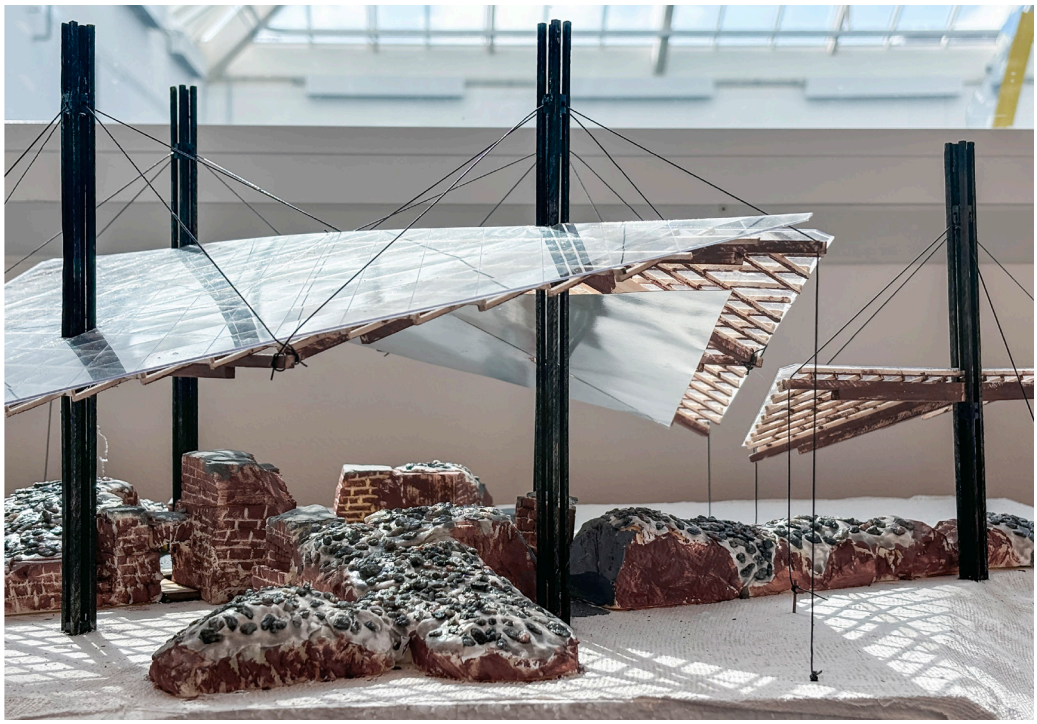
Screws



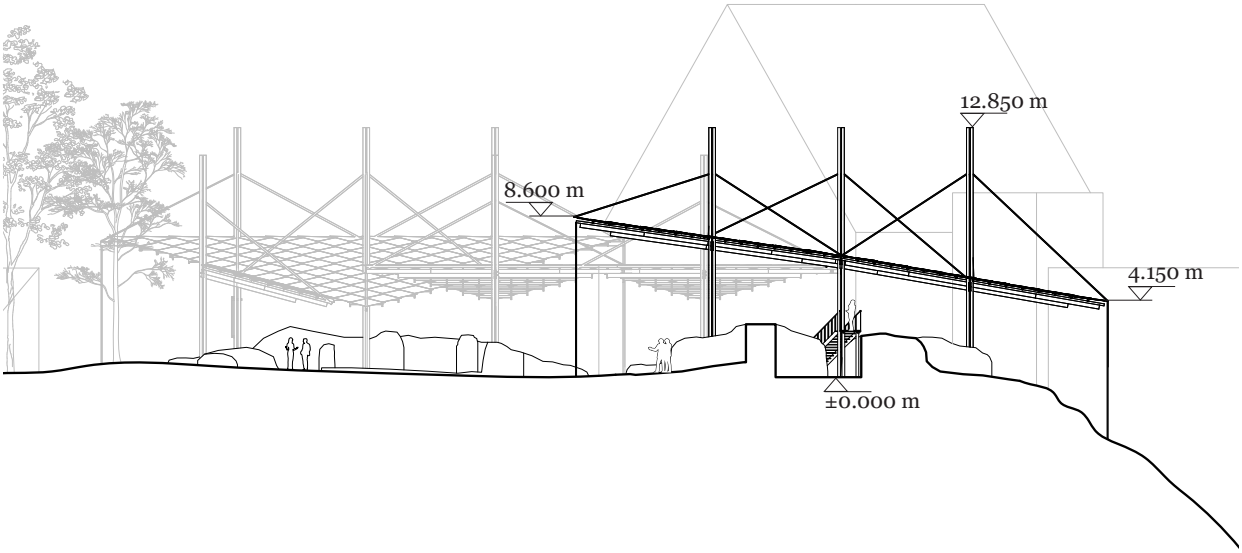
Metal ties



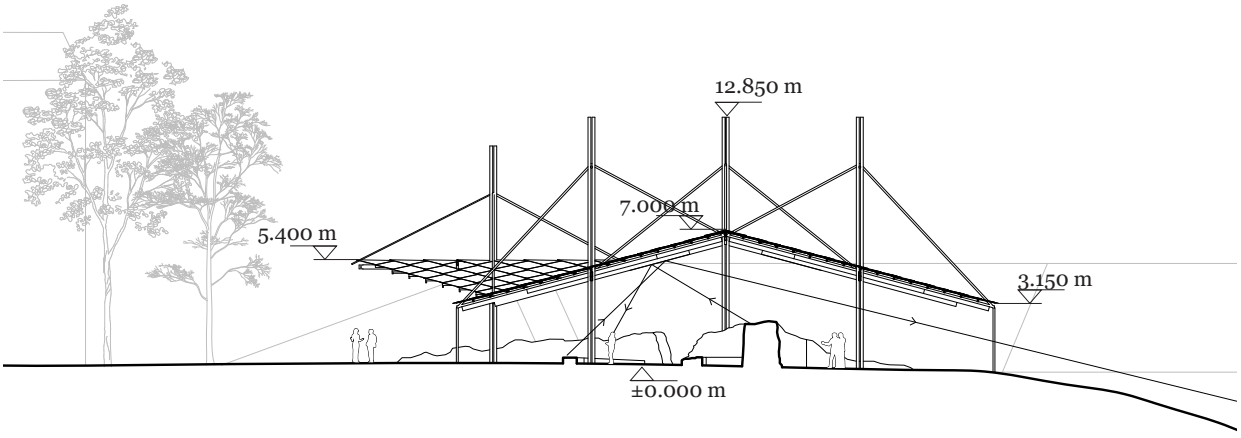

B
A
3
2
1
B
6
Site entrance
Up
5
4
A
1 Main information hall
2 Fire place
3 Brick arch
4 View to the city
5 View to the Älvsborgbron
6 Outdoor activity
N
0
5
10m
Stairs
Track
Roof
Ruin

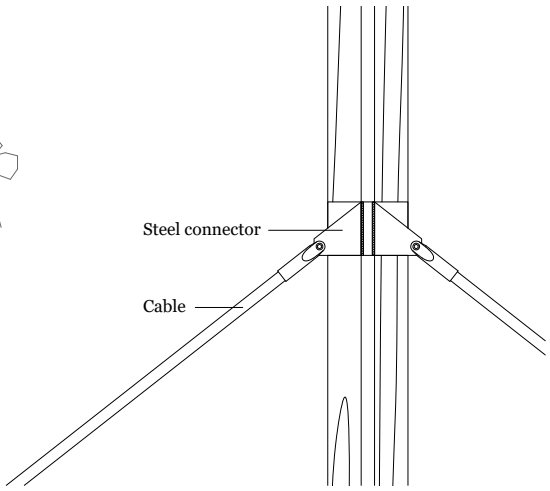


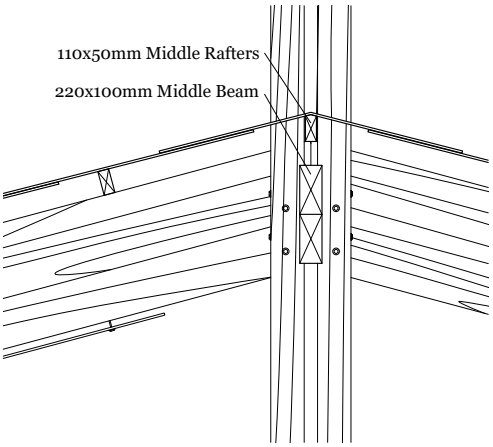
Section A-A

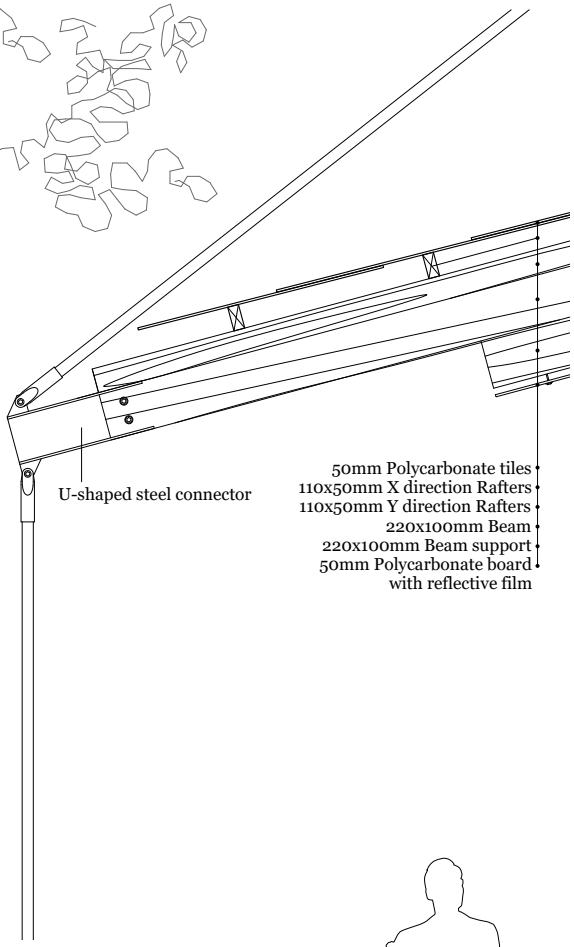


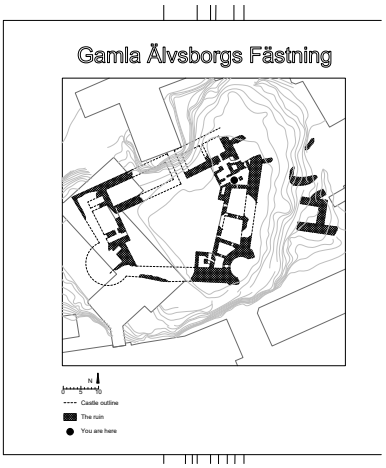
Section B-B

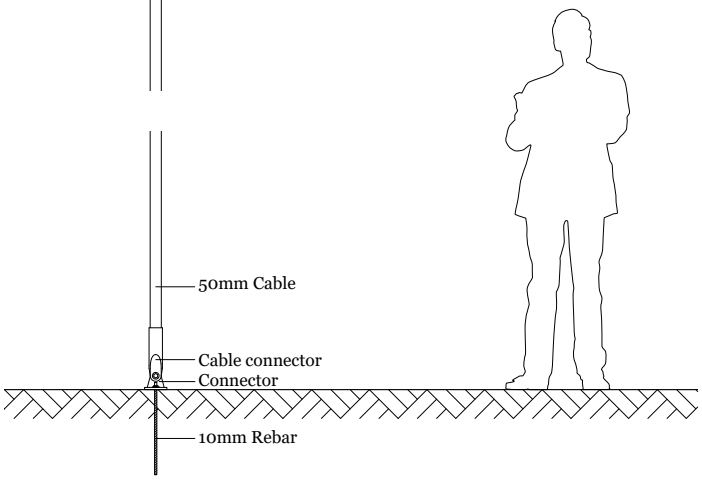


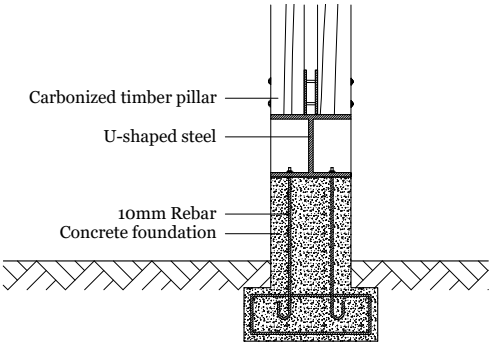

Steel connector
Cable

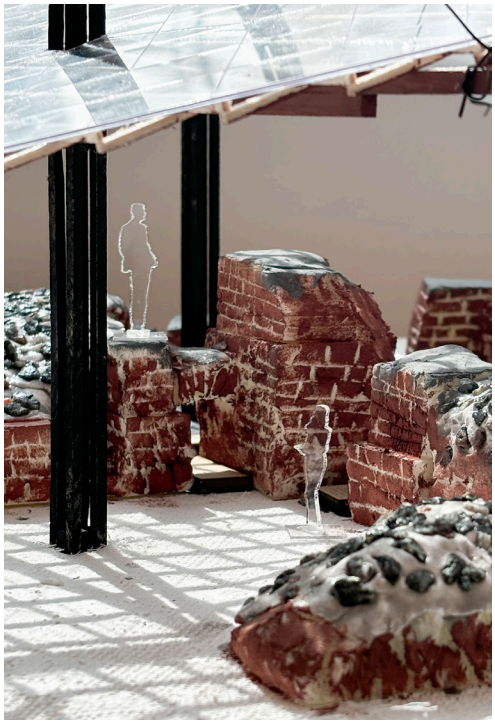

110x50mm Middle Rafters
220x100mm Middle Beam


U-shaped steel connector
50mm Polycarbonate tiles
110x50mm X direction Rafters
110x50mm Y direction Rafters
220x100mm Beam
220x100mm Beam support
50mm Polycarbonate board
with reflective film


Gamla Älvsborgs Fästning
Castle outline
The ruin
You are here


50mm Cable
Cable connector
Connector
10mm Rebar


Carbonized timber pillar
U-shaped steel
10mm Rebar
Concrete foundation



Discussion

In this design, the aesthetic/narrative value and the sustainability value of wood reuse are never separate elements—they interact and complement each other. Reusing locally sourced wood not only reduces carbon emissions and cost, but also connects well with the context, enhancing the site's narrative. Retaining the traces of wood use further reduces reuse costs while conveying a unique aesthetic value that reflects the passage of time. The central idea of this study is to promote and encourage further development and utilization of discarded wood through a low-cost, lightweight approach that still delivers unique value.

In our daily lives, many buildings are poorly designed, or over time, as the surrounding environment evolves, they can no longer meet new functional demands. This design provides a low-cost solution to such situations—by investing minimal resources, buildings can be re-coded to adapt to ever-changing environments and forms.

Although this design aims to revitalize the site and enhance its safety and civility by transforming the built form, as designers, we must also recognize that many problems cannot be solved by architectural design alone. The current challenges faced by Old Älvsborg are caused by multiple factors. Revitalizing this place requires joint efforts in management, promotion, historical education, and more. I believe that as architects, what we can do is celebrate the historical and cultural context of the land and the lives of its people through architectural language. Architectural design does not necessarily aim to solve a single social problem, but rather to express care for and celebration of everything we possess.

From the perspective of the final outcome, there is still much in this design that warrants further exploration. The supporting columns of the structure rely mainly on tension cables for balance, but the form and angle of these cables could be further adjusted to achieve more stable fixation. The current structure's rain protecting ability also requires further calculations for validation. Whether the individual units can be combined and connected to enhance structural stability and provide a more coherent and orderly architectural form is another point of study. Furthermore, how this system could be adapted and applied to other similar heritage conservation sites to accommodate complex and changing site conditions is also worth exploring.

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