THE FUTURE TRADITION
in
PANELLING ARCHITECTURE

A proposal inspired by wooden
architecture from 1870-1910

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Architecture and Urban Design
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ABSTRACT

The future tradition in panelling architecture

Standing in the middle of a climate crisis wood has come into attention as a solution to decrease the amount of carbon dioxide that the building sector emits every year. Cross laminated timber construction prefabricated in large elements is becoming the new standard building solution. Generally, these elements lack detailing that is characteristic for older wooden architecture.

Our investigation maps out details in wooden architecture from the era around 1870-1910, why they are designed the way they are and what qualities these details provide to an architectural project. This is done in order to design a contemporary building with qualities from the investigated era.

The research has been conducted through literature studies of the history and development of panelling architecture, as well as literature studies surrounding qualities in residential architecture. The information found has been compared to reference projects in Umeå. The qualities have then been incorporated into a contemporary building through site analysis, sketches and models.

The result is two multi-residential buildings in Umeå that are situated in the city centre and have neighbouring traditional wood buildings. The building proposal combines inspiration from older panelling architecture with contemporary architecture and modern demands.

Our findings propose that the architectural qualities found in traditional panelling architecture are created through a play with light, patterns and symmetries. Through these a gradual unveiling of details is created, meaning that there are things to look at both from far away and standing right next to the building, and new details to discover from the different distances.

ABOUT THE AUTHOURS

We, the authors of this master's thesis, met during our bachelor studies at Chalmers. After three years of studies we went on to work at different architecture offices. Back at school we then chose different master programs, but during the final year we met up again. When the master thesis was coming up, we realized that we shared an interest for the Swedish tradition of wooden architecture and decided to work together in the research of this cultural heritage.

Figure 1. Emmi Olsson and Medeina Urbonaviciute.

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Architecture and Engineering
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READING INSTRUCTIONS

How to read the booklet

The thesis is divided into the chapters Introduction, Historical overview, The facade, Umeå, Design proposal and Discussion. The *introduction* presents the background for the thesis, research question and framework for the investigation. In *historical overview* the development of panelling architecture in Sweden is presented, together with a comparison of the wood building practices of today. The chapter *the facade* describes the different details in a facade and the qualities of them. In the chapter *Umeå* the context is presented through the history of the city, reference projects and a description of the chosen site. *Design proposal* shows the final result that consists of two multi-residential buildings in Umeå. The *discussion* comments the outcome of the thesis and concludes our results.

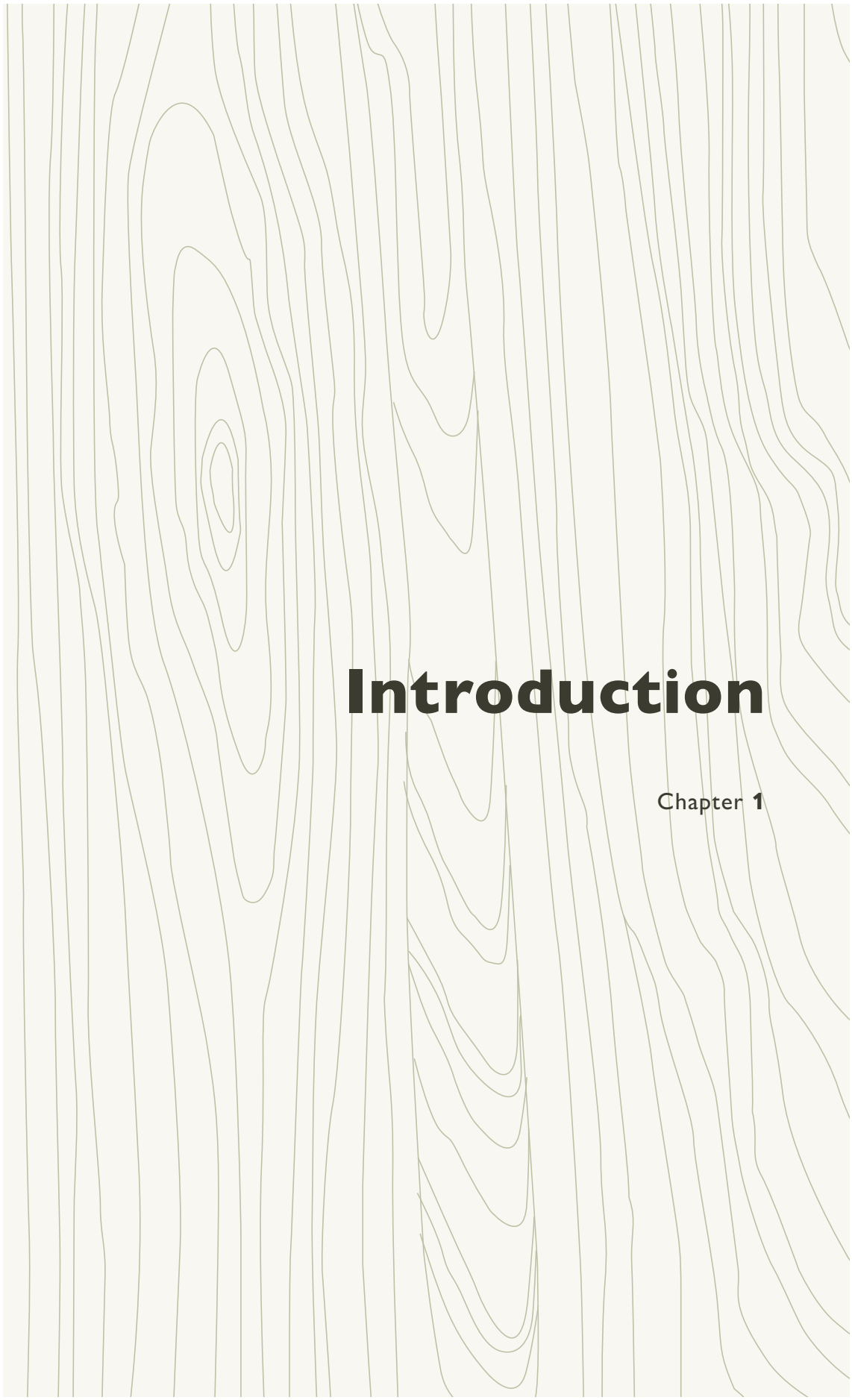
In the thesis traditional architecture refers to architecture built around 1750-1910.

Unless otherwise stated, the pictures are photographed in Umeå and belong to the authors.

A translation of the thesis' vocabulary from English to Swedish

Batten	List
Balloon frame	Regelkonstruktion
Board and batten siding	Locklistpanel
Board on board siding	Lockpanel
Chamfering	Fasning
Chamfered tongue and groove siding	Fasspontpanel
Eave	Takfot
Edging board	Knutbräda
Downpipe	Stuprör
Frieze	Fris
Furring strips	Spikläkt
Garret	Vindskupa
Head casing	Överstycke
Hip roof	Valmat tak
Interior stop	Smygbräda
Lean-to roof	Pulpettak
Level-ribbon	Våningsband
Lombard band	Bågfris
Mullion	Spröjs
Pitched roof	Sadeltak
Planed	Hyvlad
Plank construction	Plankhus
Raking light	Släpljus
Reversed board and batten siding	Omvänd locklistpanel
Siding	Fasad
Side casing	Foder
Stud	Regel
Swiss chalet style	Schweizerstil
Timber frame	Stolpverk
Tongue and groove siding	Spontpanel
Vapor barrier	Fuktspärr
Vertical timber construction	Restimmerhus
Vertical sawn timber construction	Resvirkeshus
Window casing	Fönsteromfattning

TABLE OF CONTENTS



Introduction

Chapter **1**

Figure 2. Construction of a multiresidental building in cross laminated timber, Växjö.

BACKGROUND

Towards a sustainable future

We stand in the middle of a shift towards an irreversible climate change and we are in an urgent need for sustainable solutions. EU has a long-term plan for a low carbon economy (European Commission, n.d.) and the building sector in Sweden alone stood for 18% of the country's total greenhouse gas emissions in 2015 (Boverket, 2018). According to Swedish Wood (n.d.), renewable resources as wood can be one part of the solution to reach the goal for a sustainable building sector.

We can divine an increase of wooden architecture in the coming years. In Sweden today, we build approximately 10% of the multi residential buildings in wood, but this has been estimated to increase up to 50% until 2025 (Svenskt trä, 2017). We can already witness an expansion of wooden constructions and by looking at upcoming projects cross laminated timber (CLT) construction is the main trend. The upswing of CLT departed in 1994 when the ban of high wooden constructions was removed. CLT has its similarities to the traditional construction type, timber, where it takes advantages of the good characteristics of massive wood structures (Brandt, 2015). However, CLT is easy to pre-fabricate in big elements (Brandt, 2015) and together with a trend of maintenance-free facade cladding (Fredriksson, 2009) the contemporary construction often lacks the details that can be found in traditional wooden buildings.

Figure 3. Contrast between Heimdal 1 from 1892 (in beige) and Kulturväven from 2014 (in white).

The tradition of wood in Sweden

Sweden has a long history of wooden architecture due to its rich forest landscape. In a traditional building process the focus was to minimize the economical and physical strain and therefore the use of the local material, wood, was the common option. Due to its long tradition the material has been tested and developed for the local climate. (Aronsson, Bristow and Bristow, 2002)

A sustainable approach would be to take advantage of this long-proven knowledge even today and not let the knowledge get lost in the rush for new innovations. This is an issue highlighted by Pallasmaa in 1995, he states that one tragedy of today is the rejection of our tradition and that contemporary architecture often has a uniform expression without any connection to its context. He advocates a balance between the inventive and traditional in the development of the architecture language. (Pallasmaa, 1995)

The site of the thesis project is in Umeå. The city centre was, and is partially today, characterized by low, panelled buildings mainly from the turn of the century. Nowadays the centre is mostly seen as a potential for densification, but it is not densified with local materials as wood, but instead with glass and brick - so called "big city building materials". (Berggren, 2018)

If we are going to expect a renaissance of wood as a building material would it only be fair to look at its golden age. In terms of the context Umeå, it refers to buildings built after the city fire in 1888 and to the start of the 20th century.

"There is a tacit wisdom of architecture accumulated in history and tradition. But in today's panicked rush for the new, we rarely stop to listen to this wisdom" (Pallasmaa, 1995, p. 319)

THESIS FRAMEWORK

Objective

This thesis objective is to research the tradition of panelling architecture in Sweden and to understand why this type of architecture is still widely appreciated. The exploration of the thesis is to highlight the qualities of the traditional panelling architecture and to describe why they can contribute to a higher architectural value.

The focus is mainly on the outer wall: the facade details and cladding, as well as the construction connecting the exterior with the interior. The architectural qualities of the details are analysed and developed to fit a contemporary building proposal in a context with buildings from 1888 and onwards.

Research question

What qualities are there in panelling architecture and how could these qualities be used in a contemporary wooden project?

Purpose and aim

The purpose of the master thesis is to challenge how we build wooden buildings today. There is a trend of cross laminated timber constructions assembled in big elements and this kind of projects often miss the detail level found in traditional panelling architecture.

The aim of the thesis is to investigate how traditional panelling architecture in Sweden can be a source of knowledge and inspiration for the future development and increase of wooden buildings. The thesis is an exploration of how and if qualities in panelling architecture, mainly from 1870-1910, can be captured and developed into a contemporary building proposal.

Method

The master thesis is a combination of research for design and research by design. The theoretical part is founded on literature studies and together with investigations of reference buildings and details a detail bank is created. The theoretical part of the thesis together with analyses, models and sketches is interpreted into a design proposal that showcases how a new building can relate to its surrounding buildings and interpret historical references in a contemporary way. An illustration of the working process can be seen in figure 4.

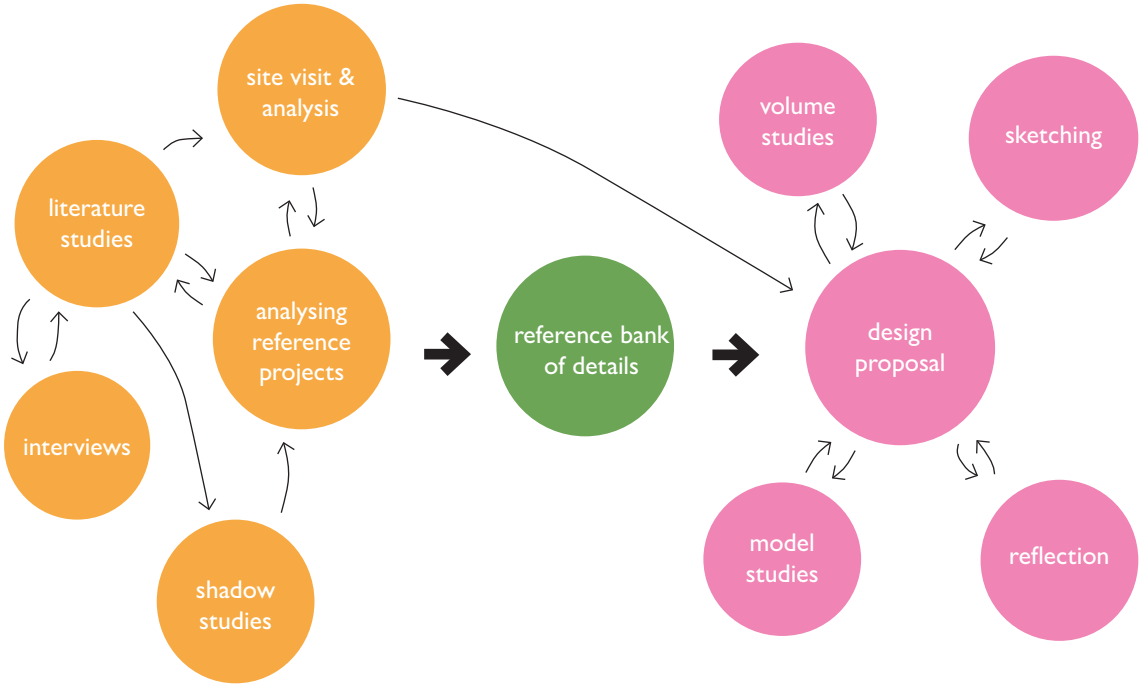


Figure 4. Illustration of the working process.

Theory

The thesis has a strong base in literature. The literature has been a guide on how to interpret the studied reference projects and how to analyse why certain qualities are appreciated. The fact that some of the literature about the built tradition and panelling architecture is written over 50 years ago has been taken into consideration. However, the knowledge about architectural qualities is still highly accurate since the facts are not dated.

Delimitations

The thesis is limited geographically; in the theoretical part it is limited to Sweden and the Swedish built heritage. In the analysis of details and reference projects the investigation is limited to Umeå and to buildings from 1870-1910.

Economy and production methods have been considered on a conceptual level, but no calculations have been made. The quality of the wood is important in a building proposal like the one proposed in this master thesis, however, this thesis does not investigate different wood qualities nor what part of the log that needs to be used for the different building components.

Historical overview

Chapter **2**

Figure 5. Gathenhielmska huset, Gothenburg, built 1740.

HISTORY OF PANELLING ARCHITECTURE

Classical style

Wood panelling has a significant role in the cultural heritage of Swedish architecture (Rentzhog, 1986, p. 14). The style can be divided into different eras, the older *classical style* and the later *post industrialisation* panelling architecture that was in accordance with the prevailing style at that time (Rentzhog, 1986, p. 11). It is difficult to determine the exact time for the start of panelling due to the shortage of written sources. However, the mid-18th century is established to be the breakthrough time for the style (Rentzhog, 1986, p. 19-20). The hundred years from 1750 to 1850 is to be defined as the years of greatness for classical panelling architecture (Rentzhog, 1986, p. 11). The breakthrough can clearly be connected to the upswing of the sawmills that started at the west coast of Sweden, in Gothenburg. The newly introduced fine-leaf saws made it possible to saw planks more precise (Rentzhog, 1986, p. 20).

The birth of panelling architecture has a clear connection to the classical stone architecture. Built examples in stone was acting as a key source of inspiration (Rentzhog, 1986, p. 14). The indoctrination since the 16th century of stone architecture as the ideal made wood less desirable (Rentzhog, 1986, p. 22). Stone and brick were however more expensive and therefore only used in rare occasions when you wanted to splurge on a building (Balgård, 1981, p. 97). The panelling technique did not only derive from a wish to mimic stone architecture. The panelling also worked as a way to protect the timber construction from rot, above all, a necessity in the west of Sweden. The facade protection made it possible to use wood of lower quality for the construction and therefore also save money in the process (Rentzhog, 1986, p. 21-22).

However, the technique of building in wood had its restrictions. With tools such as saw and plane the forms were limited to mainly straight and perpendicular ones. The plastic forms of the stone architecture did not transfer into the facades in wood. That made the panelling architecture a new independent style not only copying the predecessors in stone (Rentzhog, 1986, p. 27).

Gathenhielmska huset is one of oldest buildings left in Sweden which has kept its original panelling architecture (see figure 5). The building is from around 1740. Rentzhog states that the developed and rich panelling of the building shows that the panelling probably had been used long before this time (Rentzhog, 1986, p. 137). The characteristics of the building resemble rococo and baroque styles (Hall and Dunér, 1997, p. 97).

Figure 6. Slöjdskolan, Umeå, built 1879.

Figure 7. Close-up of slöjdskolan, Umeå, built 1879.

Industrialisation

A majority of Sweden's cities were built in wood up until the turn into the 20th century. Until the mid-19th century the wood tradition had been characterised by craftsmanship (Hall and Dunér, 1997, p. 97). The industrial revolution had a great impact on the development of our society and not the least on the building industry. In Sweden one of the greatest impacts was on wood industry (Bedoire, 2015, p. 65-66). The industrialisation in Sweden took off around 1850 and a huge influencing factor for the wood industry to grow was the export trade, for instance to England. The export made it possible to invest in the industry and the development from water driven saws to steam driven ones (Ryytty, 2018). A style originally defined by craftsmanship developed to a more standardized process.

Rentzhog (1986) states that the panelling architecture after the industrialisation mostly consists of renaissance revival. This style was occurring in almost every city in Sweden during this time. It was just some local adjustment depending on the architect. The characteristics for the style are big head casing over windows and portals and rich decorations in the facade. In some cities the decor was as restrained as the prevailing stone architecture, and in some it was more playful with details in swiss chalet style. The roof of the building was often protruding. (Hall and Dunér, 1997, p. 103-104).

The buildings also borrowed characteristics from other revivalism styles during this time, such as the gothic revival. In opposite to the previous era, the buildings now had horizontal panelling or shift between horizontal and vertical panelling along the facade. (Hall and Dunér, 1997, p. 103-104).

Slöjdskolan is one example that showcases the industrially produced wooden details that arose in the mid-19th century (see figure 6 and 7). It has wood details such as chamfered horizontal panels and more unified, standardised and precise details of the facade (Hall and Dunér, 1997, p. 103).

Figure 8. Vidar 3, Umeå, built 1890.

Facade colour

Painting the panels had both technical and aesthetic reasons. It worked as a protection for the facade, but also as a way to decorate the city. The government issued an order that at least the street facades of the city should be painted. Just as the physical shape of the facade, the paint was also a way to mimic the highly desirable stone architecture. (Rentzhog, 1986, p. 23)

The red colour of the facade is what we all can identify as a classic Swedish style. It was used from the late 16th century to mimic the late-gothic buildings in brick. The grey details of the facade were probably a way to mimic the sandstone on brick buildings. The yellow colour was starting to trend in the beginning of 18th century, mimicking buildings built in sandstone. The reason that the red paint has spread more was the lower price. The red colour was a water-based paint and the yellow was an oil paint, and it was only for the more noble buildings that one could splurge on oil paint. The different paints also corresponded to if the panels were planed or not. Oil paint was more suited for planed panel and the water-based paint for the not planed panels. It was not uncommon to put extra effort on the street facade with oil paint and then paint the rest in a red watercolour. (Rentzhog, 1986, p. 23-26)

An important part of the tradition was to emphasize the contours of the facade by paint (Rentzhog, 1986, p. 25-26). The details were dependent on light colours that enhanced the shadows of the profiles and depth of details. Saturated colours, which are more common today, can counteract the shadows of the profiling (Balgård, 1981, p. 137-138).

Different colours for different parts were a common attribute of the facade, even though the colour range was still limited. If the colour range was too wide the attention went from the details to the colours instead. The guidelines for many traditional buildings have been to enhance the depth of the different parts. The darkest colour was aimed for the parts furthest in and the lightest for the parts furthest out. (Balgård, 1981, p. 139)

Figure 9. Profiled board and batten.

Figure 10. Smooth tounge and groove.

Figure 11. Reveresed board and batten.

Figure 12. Chamfered tounge and groove.

Figure 13. Board on board.

Figure 14. Board and batten.

Panel types

Buildings in wood were mainly cladded with vertical panels up until the mid-19th century (Hall and Dunér, 1997, p. 94). Horizontal panels did occur, but only for a few buildings (Rentzhog, 1986, p. 14). The traditional vertical panelling can be divided into three kinds, *board and batten*, *board on board* and *smooth tongue and groove*. The smooth panel was the most expensive of them all and the one that resembled stone cladding the most. The majority of the buildings had board and batten, board on board was mostly used for more simple buildings. The batten was often profiled for the more lavish buildings, and the styles of the profile did vary over time. (Rentzhog, 1986, p. 30)

The ambition for the profiling of a facade has varied due to economic reasons. It was common to put extra effort of the facade facing the street and create a simpler facade towards the courtyard (Balgård, 1981, p. 101).

In the end of 19th century the *chamfered tongue and groove* became the common facade cladding (Nordin, 1996). This can clearly be seen in Umeå were the panelling is from the late 19th and early 20th century. The chamfered tongue and groove can be used both in horizontal and vertical direction.

In the beginning of the 20th century the panelling trend went to a more minimalistic approach. The chamfered tongue and groove did eventually get replaced with board and batten which have dominated from the 1930´s onwards. However, the tendency was to make the batten very thin and the panelling smooth and anonymous. Details such as side casing gradually started to disappear. (Nordin, 1996)

To achieve a more minimalistic expression the classic board and batten has an alternative, *reversed board and batten* creating a smoother surface.

Figure 15. A timber wall without panelling.

Figure 16. Close-up of a joint.

WOOD CONSTRUCTION

The difference between a traditional and modern wall

Wood as a building material has extensively been used in Sweden for a long time. Only for lavish building projects has brick or stone been used (Balgård, 1981, p. 96-97). A timeline of the different eras in Sweden can be found on page 38.

The expression of the facade is dependent on the construction behind it. To be able to recreate details and expressions of traditional facades knowledge about the construction is inevitable. What were the properties of a specific construction method and what restrictions and possibilities were enabled?

Timber construction, also known as timber jointing, is the oldest wood construction method in Sweden and was used up until 1920. Logs are laying on top of each other and are joined in the corners (Björk, Kallstenius and Reppen, 2013, p. 136). The buildings are restricted by the length of the logs and joints can be seen in the middle of a facade as well as in the corners. Timber buildings can be with or without panelling, and pilasters that cover the joints is a common feature of the panelled buildings.
Timber frame is another common construction method in traditional buildings. It became common during the 19th century, especially in the northern parts of Sweden (Björk et. al, 2013, p. 30). The timber frame uses less wood than the timber jointing and it can be seen as a predecessor to the balloon frame. The frames are placed at a centre distance of 1-1,5 m and is covered with panel inside and outside. The wall is then filled with sawdust for insulation (Björk et. al, 2013, p. 136).

In both the timber jointing and timber frame construction methods the whole wall is made of wood. Wood has appreciated qualities in that it absorbs and gives off moisture and heat which in turn lead to a good environment inside the building (Ekobyggportalen, n.d.). In these constructions there are no air gaps ventilating the panel so the windows can therefore be placed aligning with the outer panel. The problem with both of these construction methods is that they do not live up to today's insulation standards.

The balloon frame is a further development of

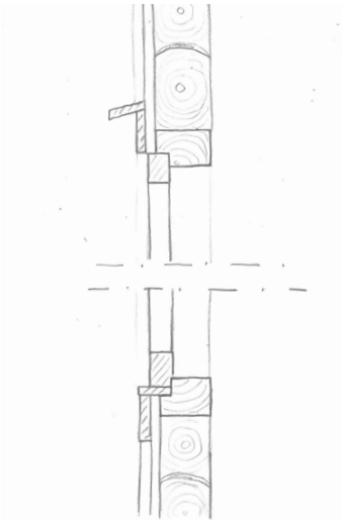


Figure 17. Principle of a timber wall.

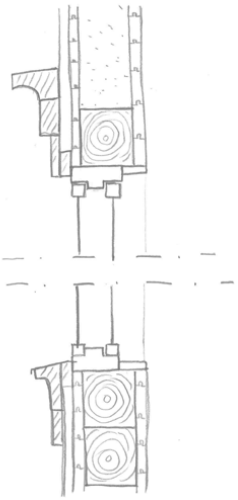


Figure 18. Principle of a timber frame wall.

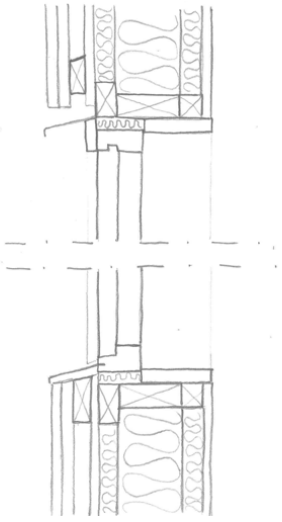


Figure 19. Principle of a balloon frame wall.

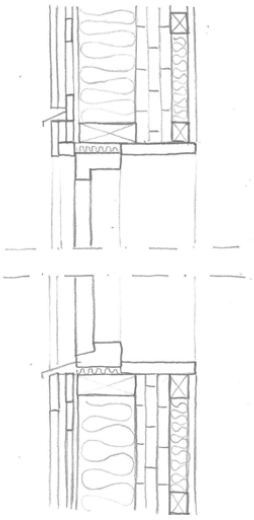


Figure 20. Principle of a CLT wall.

the timber frame. It is a lightweight construction with wood of smaller dimensions than in the timber frame and the insulation is usually made of inorganic materials such as glass wool (Björk et. al, 2013, p. 136). Compared to the earlier construction methods, the balloon frame wall is more complex to build and more sensitive because it consists of many different materials, not only wood, and these behave in varied ways compared to each other (Ekobyggportalen, n.d.).

Today there is a modern version of the massive timber construction without the restriction in bearing length and without the movement that massive timber has. The solution is constructed of nailed, screwed or glued wooden components that create a solid wooden element, one example is CLT. Usually walls using this construction method are insulated from the outside to get better U-values. The insulation is on the outside of the building to not take away the qualities that the solid wood contributes to the interior in terms of heat and moisture buffering. (Ekobyggportalen, n.d.)

Figure 21. Johanneberg Science Park, Gothenburg, built 2019.

Figure 22. Different proportions in the mullions of a ”katalogvilla” in Gothenburg.

TENDENCIES IN WOOD TODAY

The minimizing of details

Trends are an ever-changing matter and to define the prevailing style is not the intention, if it's even possible to do. But based on built examples you can highlight tendencies of different characteristics in architecture.

Balgård discusses in his book (1981, p. 101), originally printed in the 70´s, about the trend of a minimalistic approach to details in contemporary architecture, and this is still a legitimate description of current tendencies in design projects. The facade is not seldom a homogenous surface restricted from any form of significant details.

There is a revival of massive wood constructions; the traditional timber house is now exchanged with prefabricated massive wood elements, such as CLT (Ekobygportalen, n.d.). Projects, like Johanneberg Science park 2 in Gothenburg, showcase how the effort of building in wood often ends with only the construction and interior space showing the quality of the raw wood. The facade has glass panels that do not reflect the richness of the wooden interior. Other projects that correspond to the statement are Växjö city hall and Skellefteå culture centre.

Fredriksson (2009) states in an interview with three architects that we can divine a trend of facade cladding that is maintenance free. The statement is confirmed 8 years later at the website Svensk Byggtidning (2017) where Cembrit did a survey about trends according to Swedish architects. They underline three major architectural trends: sustainable profile, maintenance-free facade cladding and neutral colours with colourful details.

Big construction elements such as CLT and maintenance-free facade cladding such as glass panels can miss the quality of details in architecture often seen in traditional buildings.

The panelling architecture today mostly consists of villas in the outskirt of the cities. It is not seldom a house from a catalogue, a so called “katalogvilla”. Visually it often tries to resemble the traditional building in wood, an appreciated building design. (Möller and Olsson, 2018, p. 45)

However, the characteristics derived from another building era and with today's standards and construction methods it can instead come across as a bad copy. The mullions have no technical function and is just snapped on the window making it look fragile and a bit sloppy. The traditional proportions of mullions where based on the maximum glass size and then the window proportion were based on how many panes it contained. The width was fixed, and the height could be changed in a clear system (Balgård, 1981, p. 106-107). Today the proportions of the window can be chosen freely and with the same mullion divison but different window sizes the expression can look messy and unsystematic.

TIMELINE WOOD INDUSTRY & ARCHITECTURE STYLES

1700-1800

1740
Gathenhielmska huset

1750 Upswing of sawmills
Developement of fine-leaf saws

Vertical timber construction

Timber frame

Timber construction (from 9th century)

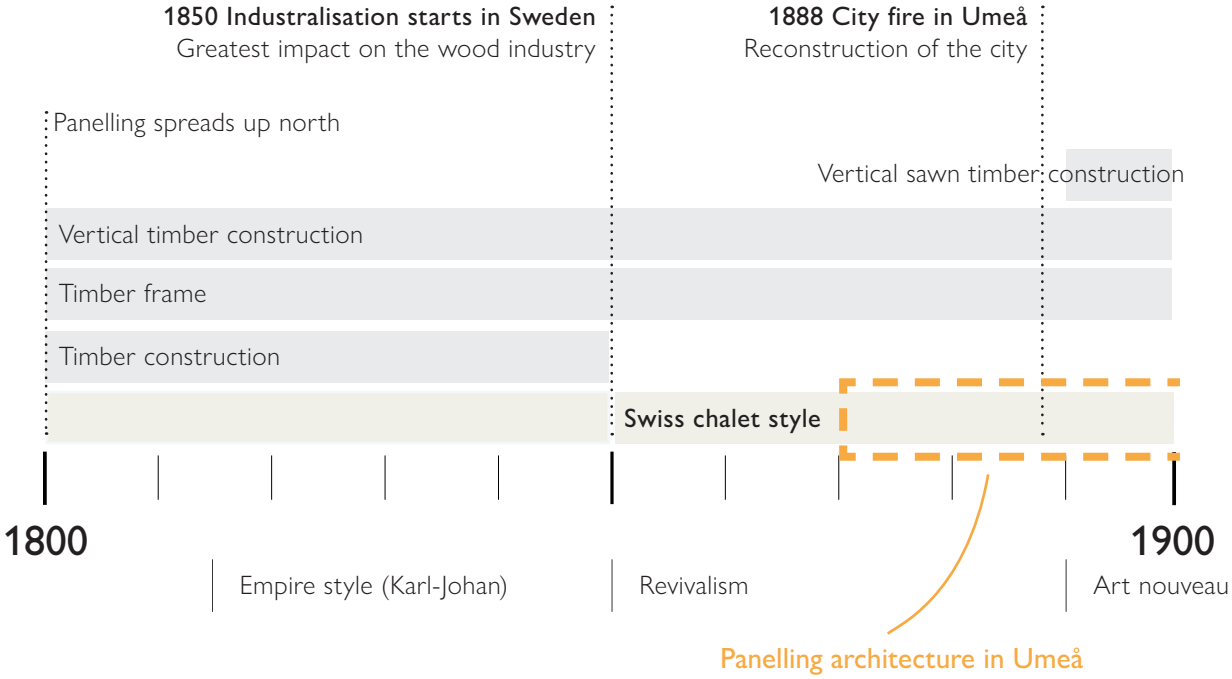
Classical panelling architecture

1700 — 1800

Baroque | Late Baroque | Roccoco | Classicism (Gustaviansk)

1800-1900

1870-1910 The majority of the panelling architecture building stock in Umeå.
(The era studied in the thesis)



1900-2000

1994 Upswing of CLT
Sweden changes the fire regulations for wood buildings.

Plank construction

Vertical sawn timber construction

Vertical timber construction

Timber frame

1906 Glulam, The start of glulam-structures.

1900

2000

Nordic Classicis

Modernism

Post Modernism

The facade

Chapter **3**

Figure 23. Höder 7, built in 1899.

THE IMPACT ON THE STREET

How the facade affects us

Outdoor spaces are defined by the buildings that surrounds them and it is their facades that we experience. How we design the facades regulates how we want to use the space beside them, and it is the ground floor we experience the most intensely. Gehl (2010) discusses in the book *Cities for people* how the city have long been planned with the car in the centre and the human dimension have been neglected. Long, monotone facades can well be suited for a speed of 50 km/h but walking along such a facade is boring and tiring. (Gehl 2010, p. 3, 76-77)

"We intensely appreciate all the details of the facades and display windows. We experience close-up the rhythms of the facade, the materials, colours and people in or near the buildings and they largely determine whether our walk is interesting and eventful" (Gehl, 2010, p. 77)

Möller and Olsson (2018) investigate in their bachelor essay the impact different architectural styles have on the streets of a city. They found that there is a correlation between how beautiful people experience a street and if they would like to spend time there. People want to spend time in a neighbourhood that they find beautiful and would also show it to visitors such as tourists. They do not want to stay in a neighbourhood they do not find attractive, nor would they show this to visitors.

Through a study where Möller and Olsson compared how different parts of Gothenburg where perceived, they identified seven factors that are important for an area to be perceived as beautiful; a balance between uniformity and variation, a richness in details, colourfulness, a link to the location, originality, and generally a traditional style was preferred by the questioneees. (Möller and Olsson, 2018, p. 45)

Figure 24. A facade with few details. Vaktposten 12, built 2014.

Figure 25. A facade rich in details. Vidar 3, built 1890-1897.

DETAILS

The significance of details

As Gehl (2010) stated in *Cities for people*; details are an important element in architecture and in the city. A facade with a richness of details is more adapted to the human scale than an empty homogeneous one and is therefore more interesting to pass. A rich facade unfolds itself as you walk by, new details are to discover along the way.

Human scale in architecture is referring to how humans interact with the environment physically but also sensory (Human scale, 2019, January 31st). When talking about details in architecture is the definition often elements in the scale referring to human proportions. We tend to measure buildings with our bodies, it helps us relate to the things we experience. "This wall is high enough for me to sit on" or "the batten is as wide as my hand."

All the details of a facade form a whole and we tend to organise the facade, grouping the elements in patterns. If we are able to organize the facade, we experience the facade as more coherent. As stated in the book Public places urban spaces: "We desire an environment with a richness of detail that is larger than our immediate ability to process it" (Carmona, Heath, Oc and Tiesdell, 2003, p. 132). However, there is a fine balance been a complex facade and a messy one. (Carmona et al., 2003, p. 131-132)

The experience of the detail level of a building is highly related to what material it is assembled of. There is a difference of a building constructed with elements small enough for a builder to assembly it by hand or large elements in need of a crane. We can imagine a brick wall being assembled by a mason placing brick by brick to create a whole or a carpenter nail the panels of a panelled wall. This approach can well be rooted in a traditional way to construct a building, something that can be outdated shortly. However, elements that we feel we can carry is more tangible than large elements in need of a crane. (Sottile, n.d.)

Details in residential architecture enhances the experience of one's living situation. It contributes to a feeling that care and effort had been put into your home (Forshed and Nylander, 2011, p. 13).

Figure 26. Färgaren 1, built 1882.

Balgård (1981) discusses in his book *Nya hus i gammal stad* the different levels of details in a facade. In older buildings the facade can be divided into different fields which can be reinforced by using different depths of the details (Balgård, 1981, p. 132). The picture above is an example of a building using different depths of the details (more pictures at page 76), where the pilasters have the strongest appearance, then comes the horizontal batten, then the casing of the window and the furthest in is the mullion. The division of the facade makes the scale of the building smaller and more adapted to a human scale. The varying depths contribute to hierarchies in the facade. As you approach the building the field divided by the pilasters will be visible first, then the field created by the horizontal batten and onto smaller fields. The varying scales are adapted for you to approach the building to the point where you are so close that you can see the profiling of the panels.

Balgård (1981, p. 133) states that during the 20th century there has been a trend of minimizing the details and its different levels to a point where the facade is not seldom a flat surface.

Profiled panel

Figure 27. Close-up of Brogård 1, built 1871.

The key element of panelling architecture is that it is cladded with a wooden panel. As stated before, the panel can be designed in many different patterns. However, profiling and chamfering are often seen as details belonging to the wooden tradition (Balgård, 1981, p. 98-99). In contrast to the contemporary more sharp and flat facades, the battens of the cladding create a rhythm to the facade. According to Balgård (1981, p. 98-99) the profiling of the battens enhances the effect of depth to the facade and smoothens the transition between the different layers. It helps the eye follow the different depths with ease. The rhythm of battens work as design element with a clear direction and can either enhance the horizontal or the vertical direction of the facade.

Figure 28. Höder 7, built 1889.

The pitched roof is a common phenomenon in the Swedish built heritage and is today still a strong design factor in contemporary examples (Balgård, 1981, p. 93). The eaves are the transition between the facade and the roof. The eaves can have an embracing effect on the street and create a feeling of a more enclosed space. When the transition between facade and roof is occurring gradually it has even stronger effect (Balgård, 1981, p. 54). The picture above shows the common design feature in Umeå where the eaves are cladded and decorative consoles visually demonstrate the bearing construction of the roof.

Window scope and mullions

Figure 29. Njord 4, built 1905.

Figure 30. Tjädern 1, built 2014.

Windows are an important part of a facade´s composition. The casing of wooden planks around the window arose as a technical solution of timber houses but transformed to also be a way to decorate the facade. The window casing can together with the mullions either enhance or counteract the proportions of the facade. (Balgård, 1976, p. 103, 109)

The decor and the mullion will draw attention to itself and therefore minimize the insight to the rooms inside the building (Balgård, 1976, p. 109). The mullions could also give an embracing feeling of the interior space, in contrast to today's large windows maximising the view (Nylander and Forshed, 2011, p. 30).

The way we decorate the windows has significantly changed through history and today we can see a trend of stripped-down window details. The transition from surface to opening for windows is often sharp making it a distinct contrast. (Balgård, 1981, p. 114)

Figure 31. Close-up of a mullion at Ymer 2, built 1889.

The mullion is strongly connected to the architectural heritage and not to the present times. When the mullion is being used today, it is frequently a simplified version of the traditional one (Balgård, 1981, p. 115). The mullion derived from what was possible to produce in glass size and the mullion worked as frame to assembly a whole window (Balgård, 1981, p. 103). Today it is only a decorative element not based in the technical function regarding window size.

Profiling at the interior of the window niche is a way to play with the light and spread it into the room. It can be profiling of the window frame, the mullion or the interior stop (Forshed and Nylander, 2011). The profiling of a traditional mullion makes the light reflect in a way that creates the illusion of a thinner mullion. (Balgård, 1981, p. 115)

Chamfered corners

Figure 32. Sparven 2, built 1885.

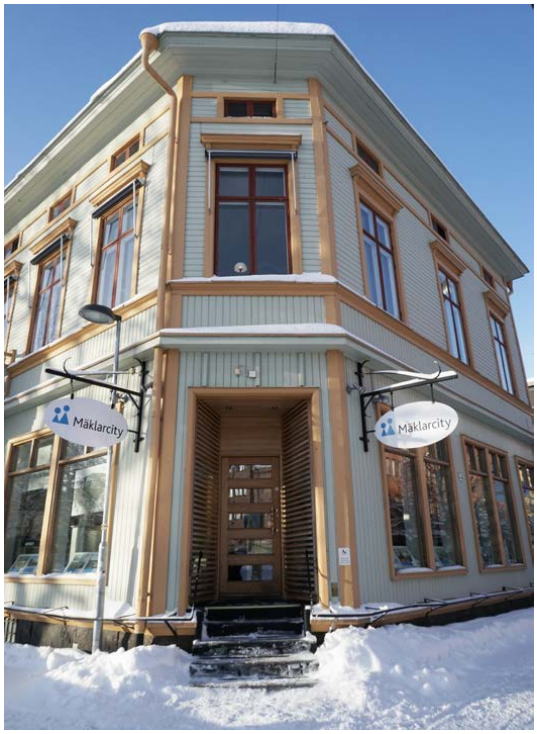


Figure 33. Höder 7, built 1899.

Buildings with chamfered corners is a recurring characteristic in Umeå. It was a part of the 1874 building code in Sweden (Hall and Dunér, 1997, p. 103-104). The cut corner is often used as an entrance spot. By eliminating the strict corner, you are allowing a more soft transition between two perpendicular streets giving them a better sight around the corner.

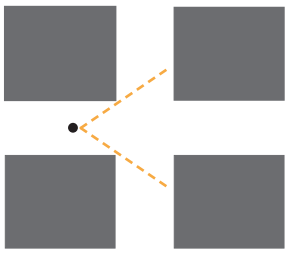


Figure 34. Sightlines without chamfered corners.

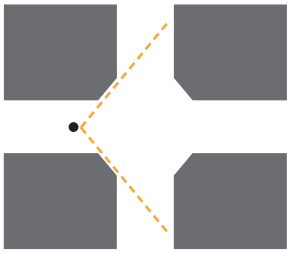


Figure 35. Sightlines with chamfered corners.

EXAMPLES OF DETAILS

End panelling





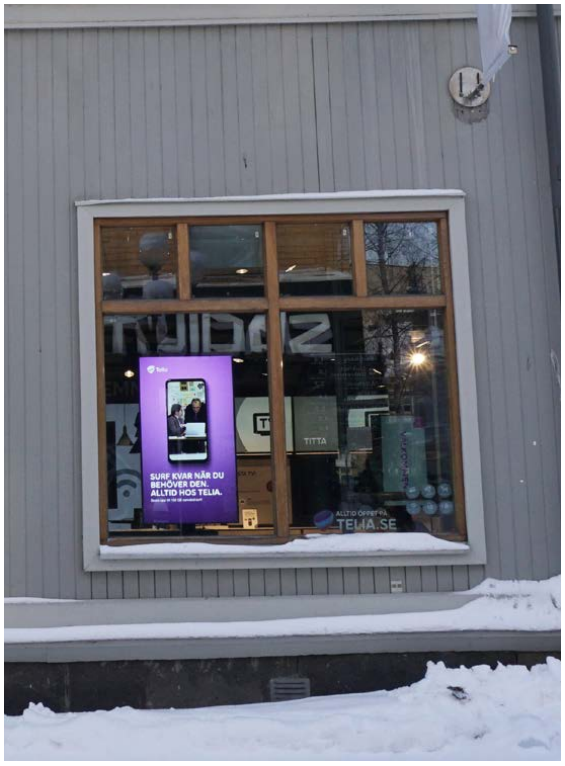

Windows










SURF KVAR NÄR DU BEHÖVER DEN. ALLTID HOS TELIA.
TELIA.SE


salong
No.44


REA
30-50%
50-70%
SLUTREA
30% - 70%
SLUTREA
30% - 70%

Chamfered corners

Figure 36. Vaktposten 12, built 2014.

Figure 37. Brogård 7, built 1885.

SUN AND SHADOW

Interaction with the sun

One common attribute of the traditional buildings is how the details create a play of light. The sun will highlight the richness of details of the facade and the different sun angles during the day contribute to a plasticity of the facade, meaning that it highlights the three-dimensionality of it. How different parts of the facade interact with the sun plays an important role in the way the facade is perceived. Just the smallest depth difference can create a shadow changing the expression. Today the effect of the sun is rarely used neither on the interior nor the exterior. (Balgård, 1981, p. 96, 115)

In previous sections profiling has been highlighted as an important design element to soften edges and spread the light. With today's building standard strong contrast is an often-occurring effect. One example is the deep window placement in the wall creating a strong shadow, a dark hole in the wall. This can create an intense contrast between the window niche and the outer wall. To strong contrast makes it harder for the eye to move between the different surfaces. A comparison between deep and shallow window placement can be seen in figures 36 and 37. The two buildings are on the same street.

Glare is a consequence of a too intense contrast between light and dark. Inside the apartment one can experience this for example when there are sharp edges on the window frame that do not soften the light.

How the panelling type interacts with the sun is important for the facade's expression. It can create a rhythm and the appearance can change during the day. The most common panelling types in traditional and contemporary buildings are board on board, board on batten, reversed board and batten, chamfered tongue and groove, profiled board and batten and smooth tongue and groove.

A shadow study (on the following pages) have tested the different panels and how the expression changes during the day. The shadow study has been made towards south and the different times are 11:45, 13:15, 14:30 and 15:20 (from top down) on the 9th of April.

Shadow study

Profiled board and batten

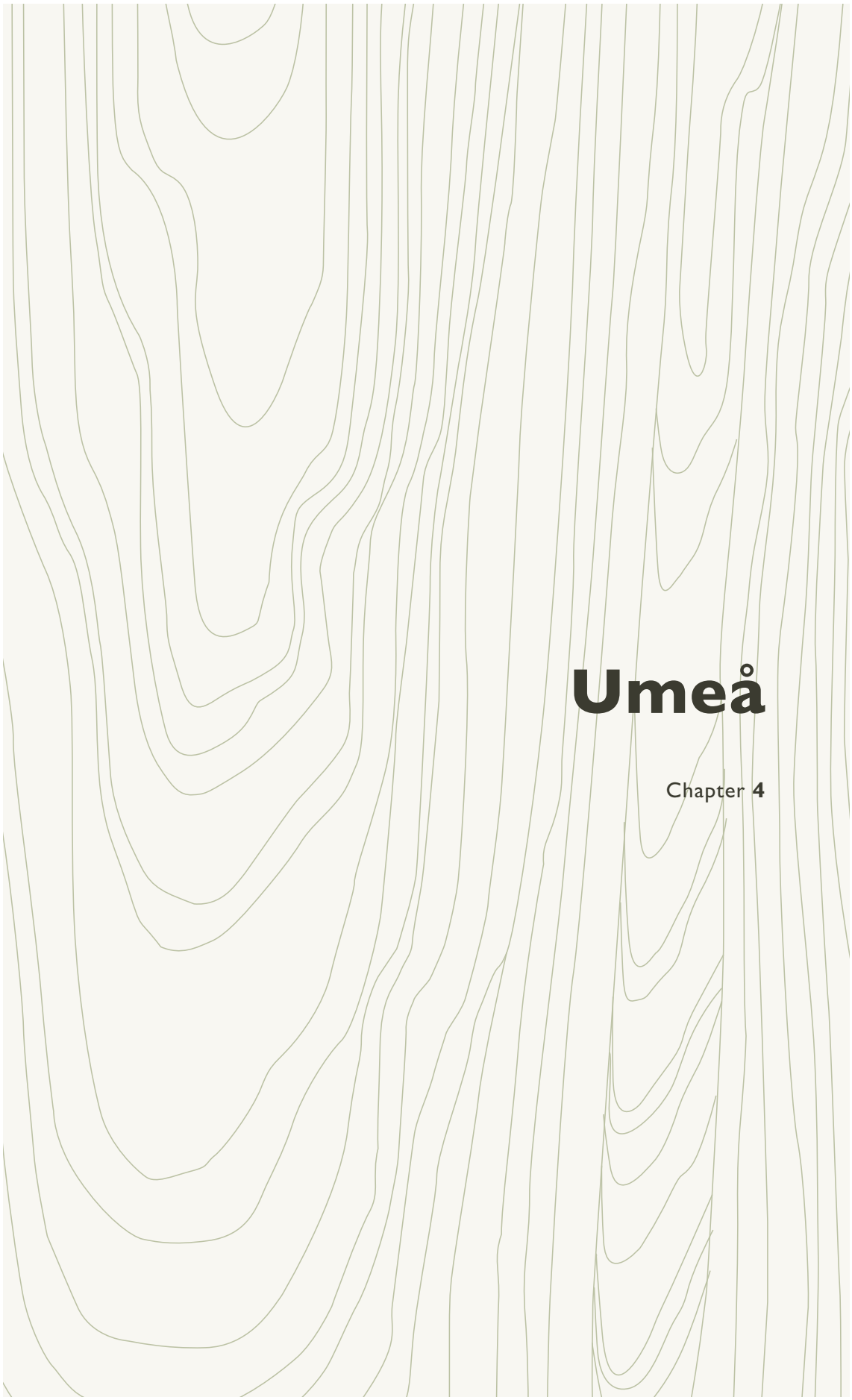
Board and batten

Reversed board and batten

Board on board

Chamfered tounge and groove

Smooth tounge and groove



Umeå

Chapter **4**

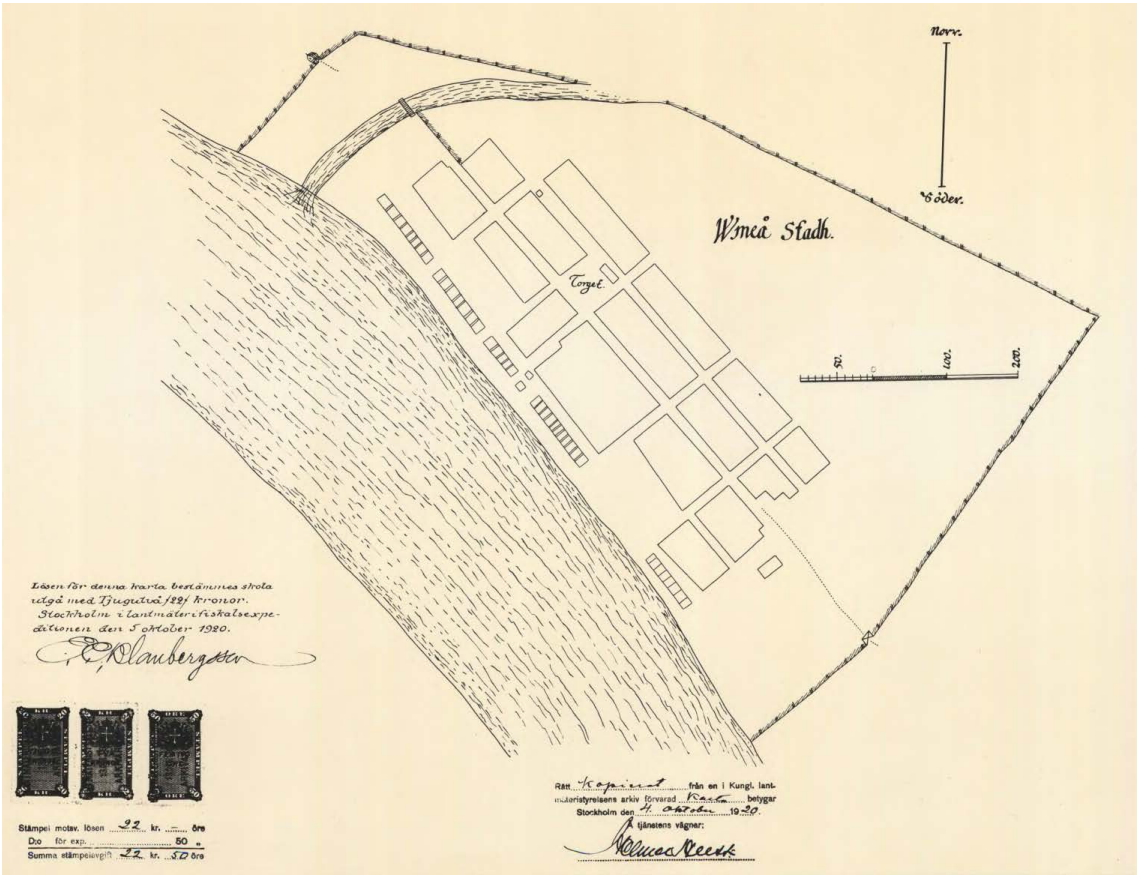


Figure 38. Wmeå Stadh (Widman, 1643). In public domain.

CITY DEVELOPMENT OF UMEÅ

History of Umeå

Umeå is located at the east coast in northern Sweden. The city Umeå was established 1621 but the land had been occupied long before that (Tedebrand, 2013 p. 25-30). In the beginning of the 17th century, the Dutch inspired grid plan made its entry into Sweden. However, the new trend did not affect Olof Bureus which was the man behind the city plan of Umeå. His plan can seemingly look like a grid, but it was uneven just like a medieval plan, adapted to existing buildings, the shoreline and the topography. (Eriksson, 1975, p. 15-16)

Umeå´s history can be defined in two eras; before and after the city fire in 1888 (Eriksson, 1975, p. 11). The fire, on midsummer's day, devastated almost the whole city centre in just a few hours. After the fire the building council saw a good opportunity to introduce a city plan from 1864, a grid system with no consideration to the old property boundaries (Eriksson, 1975, p. 138). There were limited resources to rebuild the city after the fire and therefore wood was the common, cheaper option, though the buildings where more lavish than before (Eriksson, 2013 p. 90-97).

The focus on wood construction in city centre continued up until 1950´s. In modern times the contributions to the wooden building stock in Umeå mainly consist of small houses in the outskirts of the city. (Eriksson, 2013 p. 90-97)

Figure 39. Umeå centre in 2019, viewed from the river.

Umeå today

Umeå was one of the European capitals of culture in 2014 (European commission, n.d.) and leading up to this year several new buildings were built (Folkbladet, 2010, March 27th). One of these was the new culture house Kulturväven (white building on the left in figure 39) that had its grand opening during 2014 (White arkitekter, n.d.). This project is one example of glass buildings that have been built during the latest years in Umeå and is also one that Berggren (2018) refers to while stating that many projects in Umeå are built in glass or brick rather than the local material wood.

Umeå is today one of the fastest growing cities in the country with over 120 000 inhabitants (Tedebrand, 2013 p. 25-30). It is the biggest city in the north of Sweden and the population is young, the mean age is 38 years. The city has two universities, Umeå University and the Swedish University of Agricultural Sciences. This leads to many students in the city and 54% of the population has moved to the city from other places (Umeå kommun, 2018). The municipality has a goal that in 2050 the population will have increased to 200 000 inhabitants (Umeå kommun, 2019) and therefore an increasing need for more housing can be divined. Already today there is a housing shortage in the city (Åberg, 2019, May 19th).

Figure 40. The city of Umeå with marked out reference projects. Background from Ortofoto raster (© Lantmäteriet).

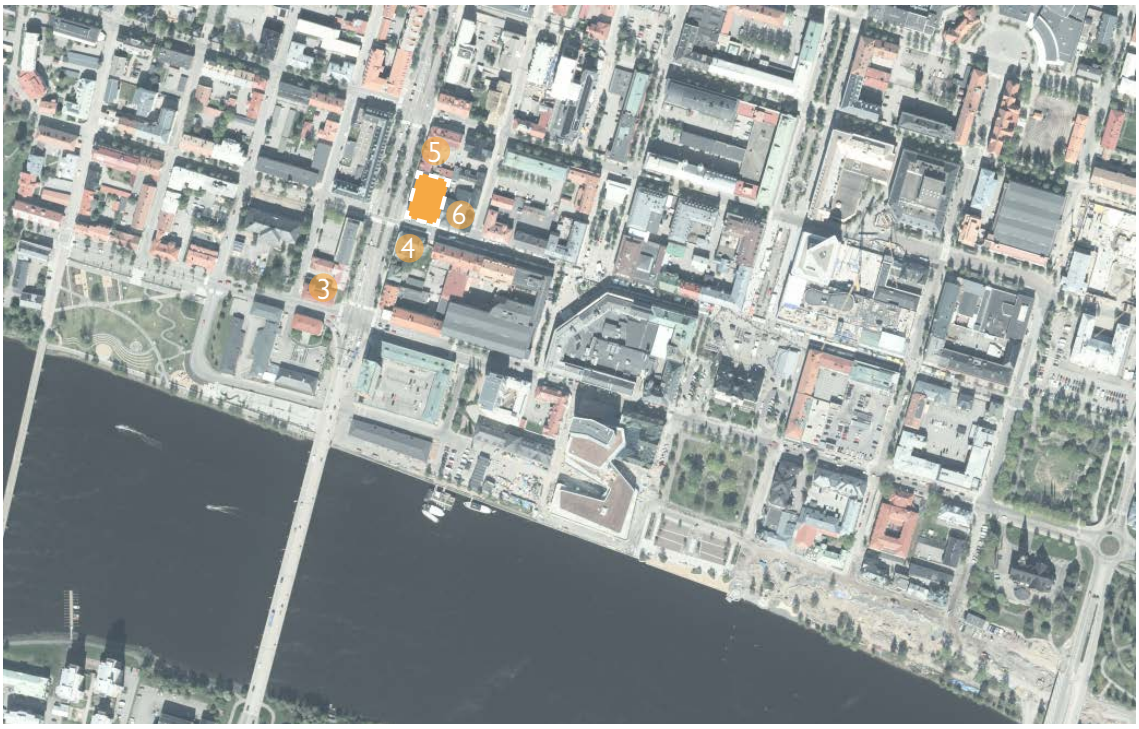


Figure 41. Central parts of Umeå with marked out reference projects and project site. Background from Ortofoto raster (© Lantmäteriet).

REFERENCE PROJECTS

What projects were investigated?

Investigating reference projects have been important to examine how the theory about details of traditional panelling architecture translates into reality and to see what the buildings in Umeå from the time period 1870-1910 look like. In the following chapter six examples have been investigated more thoroughly. The first three, called Ripan 3, Sparven 2 and Färgaren 1, are buildings of special interest from a heritage point of view and buildings that we have found interesting. The following three, called Njord 4, Ymer 2 and Ymer 4, are wooden buildings adjacent to the site for the building proposal. These are of interest to understand the building character in the area.

Reference projects marked
out in pictures on the left:
1. Ripan 3
2. Sparven 2
3. Färgaren 1
4. Njord 4
5. Ymer 2
6. Ymer 4

Ripan 3
1876, Öst på stan, Umeå

Figure 42. Facade towards the street.

This building is one of few buildings erected before the city fire in 1888 that has been preserved. It is two stories high and has a timber joint construction that is cladded with board and batten panelling. The panel is painted in a water based red colour (Riksantikvarieämbetet, 1981). Except the windows, everything is painted red. The windows are light grey and divided into six parts by mullions. The building has big head casings for the windows and discreet pilasters covering the timber construction, which is characteristic for the renaissance revival. The building also has a Lombard band working as a separator between the two stories, this is typical for the gothic revival. The pitched roof has red roof tiles.

The facade is built up in a symmetrical way around a displaced, higher middle part. The facade is also divided into smaller fields by the pilasters and downpipes. The windows are far out, aligning with the facade and creates a homogenous surface without heavy shadowing. The building volume stretches out along the ground, emphasizing a horizontal direction. This is counteracted by a higher middle part and the shape of the windows that instead emphasize the vertical direction.

Different depths of the facade, in order:
Eave
Pilasters/ Downpipes
Head casing
Lombard band/ Sill
Side casing
Panelling/ Window frame

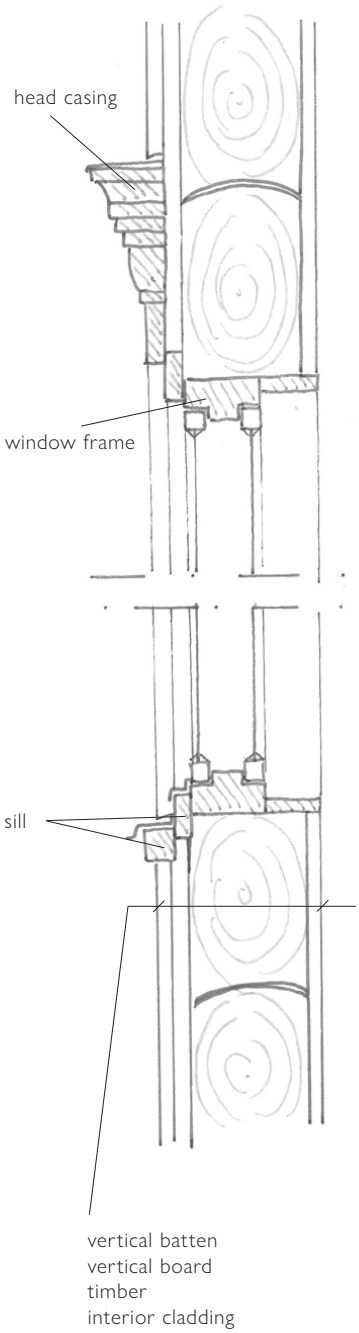


Figure 45. Detail sketch of the window.

Figure 43. The head casing of a window.

Figure 44. The sill of a window.

Figure 46. Ending of panel towards tha base of the building.

Sparven 2
1885, Öst på stan, Umeå

Figure 47. Facade towards the street.

This building was built for residential use and has two stories. It has a timber frame construction (Umeå universitet, 2016). The panelling is a vertical board and batten cladding that is painted bright yellow. Some details are painted white and the windows are green. The facade has horizontal battens and pilasters. The windows head casings and the frieze are large and carried by consoles. The roof is a low hip roof with black standing-seam metal sheets. The side casing of the windows was altered in 1893, and the windows were replaced in 1934 at the same time that a stair was added (Umeå kommun, 2014, p. 31).

The facade is based on a simple symmetry with the windows at the same distance from each other. The body of the building and battens highlights the horizontal direction, while the panelling, pilasters and windows underline the vertical direction.

Different depths of the facade, in order:
Eave
Downpipes/Head casing
Battens
Pilasters
Sill
Side casing
Panelling
Window frame

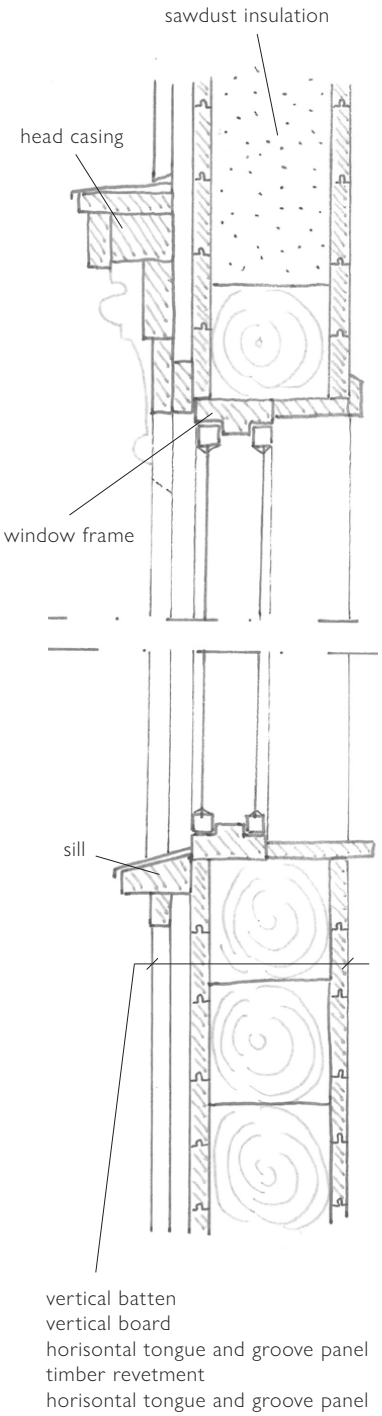


Figure 48. Detail sketch of the window

Figure 49. Head casing of a window.

Figure 50. The sill of a window.

Figure 51. The facade has different depths.

Färgaren 1
1882, Väst på stan, Umeå

Figure 52. Facade towards the street, showing the different fields of the facade.

This building is an example of a typical building in the centre of Umeå before the big city fire. It was built for commercial use at the bottom story and for residential use in the second story. The building has a timber jointing construction and the facade is a divided by pilasters and battens in a way typical for the neo-renaissance style. (Riksantikvarieämbetet, 1989)

The panelling is vertical board and batten siding painted in yellow. Details in the facade are green and the windows are red. The head casing of the window is large, and the windows are divided into six parts by the mullions. The building has a low hip roof with red, standing-seam metal sheets. The construction is highlighted by pilasters marking the timber joints. The frieze is carried by consoles.

The facade is completely symmetrical and the pilasters together with the Lombard band and battens divide it into smaller fields. In figure 50, different levels of fields are illustrated. At first the eye notices the biggest field, then goes on to smaller and smaller ones.

Different depths of the facade, in order:
Eave
Head casing
Pilasters
Lombard band/ Batten/ Sill
Panel/ Side casing
Window frame

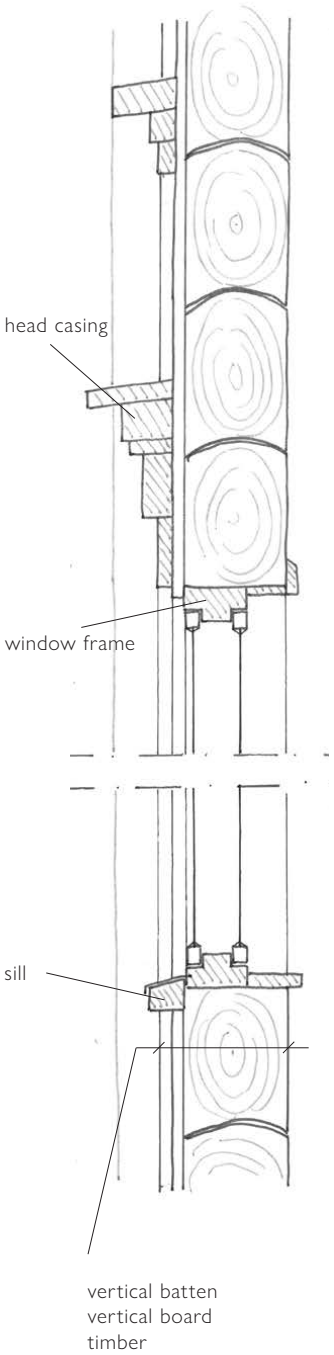


Figure 55. Detail sketch of the window on the first floor.

Figure 53. The headcasing of the window on the first floor.

Figure 54. Sill of the window on the first floor.

Figure 56. Facade, showing the depths of the panels.

Njord 4
1905, Centrum, Umeå

Figure 57. Facade towards the pedestrian street Kungsgatan.

This building is situated across the building site for the master thesis' proposal. The building is a two-story building of a light-yellow colour with white details and green mullions. The panelling is a horizontal chamfered panelling, the battens in the facade are horizontal and the building has a hip roof with green standing-seam metal sheets. The backyard has swiss chalet details. The windows have mullions in the shape of a cross and have big, profiled head casings. The big store windows that replaced the original smaller ones in 1914 also have detailed head casings. Originally a building with apartments in the upper floor and stores and hairdresser in the bottom floor, the building is used in a similar way today. (Umeå kommun, 2014, p. 34)

Figure 58. North facade. Perceived perforation of the facade, scale 1:400.

Figure 59. Profiled head casing of a window.

Figure 60. Head casing of a store window.

Figure 61. Big, profiled batten separating the floors.

Figure 62. Sill of a store window.

The facade is built up within a consistent framework. The facade is not completely symmetrical, but parts are, and alignment of windows and doors is important. The facade is divided into different fields by battens. The panelling and battens emphasize a horizontal direction while the windows have a vertical direction.

The windows have hierarchies that showcase the function behind them; commercial, residential or attic. They are also placed far out in the facade, creating a homogeneous surface and avoiding heavy shadowing.

The colour scheme follows the traditional way of colouring a wooden facade; darkest colour for the mullion (furthest into the facade), the lightest for the side casing (furthest out in the facade) and the panelling in a colour in between.

Different depths of the facade, in order:
Eave
Level-ribbon
Sill/ Head casing/ Downpipes
Side casing
Panelling
Window frame

Figure 64. Facade towards a pedestrian street. Buildings, in order, built in 1918, 1999 and 1888.

This is the plot right next to the site for the master thesis' proposal. The grey building was originally built as a cinema in 1918, but already in 1921 the Salvation Army took over the building and has used it as their gathering hall since. It has a classicistic facade with horizontal, chamfered tongue-and-groove siding and arcades towards the pedestrian street. The roof is a hip roof. The exterior is well preserved from the time the building was a cinema. (Riksantikvarieämbetet, 1999)

The middle building is an addition from 1999 that connects the other buildings (Forsberg,

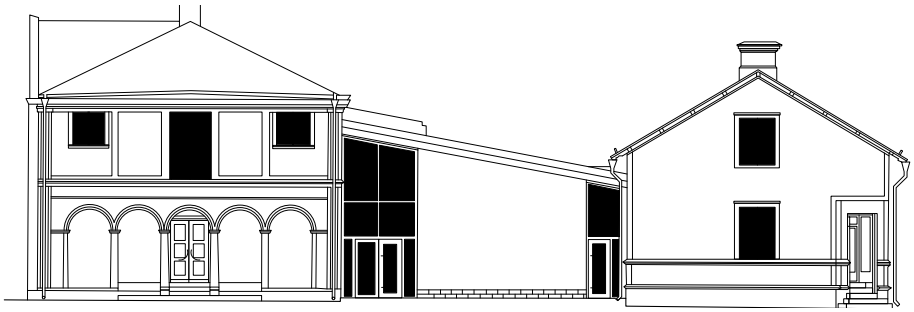


Figure 63. South facade. Perceived perforation of the facade, scale 1:400.

Figure 66. Entrance to the corner shop.

Figure 65. The former entrance to the old cinema.

2001, p. 38). It was built to fulfil the new needs of the Salvation Army in terms of a new accessible entry and new gathering halls (Sveriges arkitekter, n.d.). The building is a greyish shade of green with reversed board and batten panelling. It has a lean-to roof. The windows and doors are simple.

The beige corner building was originally built as a wash house and living quarters for servants. In 1934 it was rebuilt to its current appearance, with an entry from the corner for a store (Umeå kommun, 2014). The building has chamfered tongue and groove panelling, the base has vertical panelling while the rest is horizontal. The windows are simple, but with a protruding head casing. The roof is pitched. The detailing, such as window casing and edging boards have a darker beige colour than the panel. The windows have an even darker, brown colour.

All three buildings have black roofs. The buildings from 1888 and 1918 both have simple, clear symmetries in the facades. Different parts align to each other. The base is a distinct part of the facade, grounding the building into the street.

Different depths of the facade for the beige building, in order:
Eave
Battens
Sill/ Head casing/ Edging board
Side casing
Panelling
Window frame

Ymer 4
Unknown year, Centrum, Umeå

Figure 68. Facade towards the street, showing the different fields of the facade.

This building lays right next to the site for the thesis' proposal. Today a hostel, the building has earlier been a hotel. The building date is unclear, but changes to the building where made in 1934 and an extension was made in 1936 (Umeå Bygglovsarkiv). The building is green with white details and red mullions. The roof is a pitched roof of red metal sheets that resemble roof tiles. It has chamfered tongue and groove panelling that changes direction at every story; just over the base the panelling is vertical, the first story has horizontal panelling, the second has vertical and the attic story has horizontal panelling. This, together with level-ribbons, create different fields in the facade.

Figure 67. West facade. Perceived perforation of the facade, scale 1:400.

Figure 69. The windows create ”holes” in the facade.

Figure 70. Head casing of a window.

Figure 71. Sill of a window that rests on a level-ribbon.

The facade has a consistent framework. Within this framework different parts of the facade have their own symmetries and windows and other details align with that.

The shape of the building, as well as the battens marking different levels, emphasize a horizontal direction. The windows, downpipes, garrets and window alignments emphasize the vertical direction instead. The garrets and downpipes also create a rhythm to the long facade.

The windows are far into the facade, which gives heavy shadowing around the windows during the course of the day.

Different depths of the facade, in order:
Eave
Downpipes
Level-ribbon
Sill/ Head casing
Side casing
Panelling
Window frame

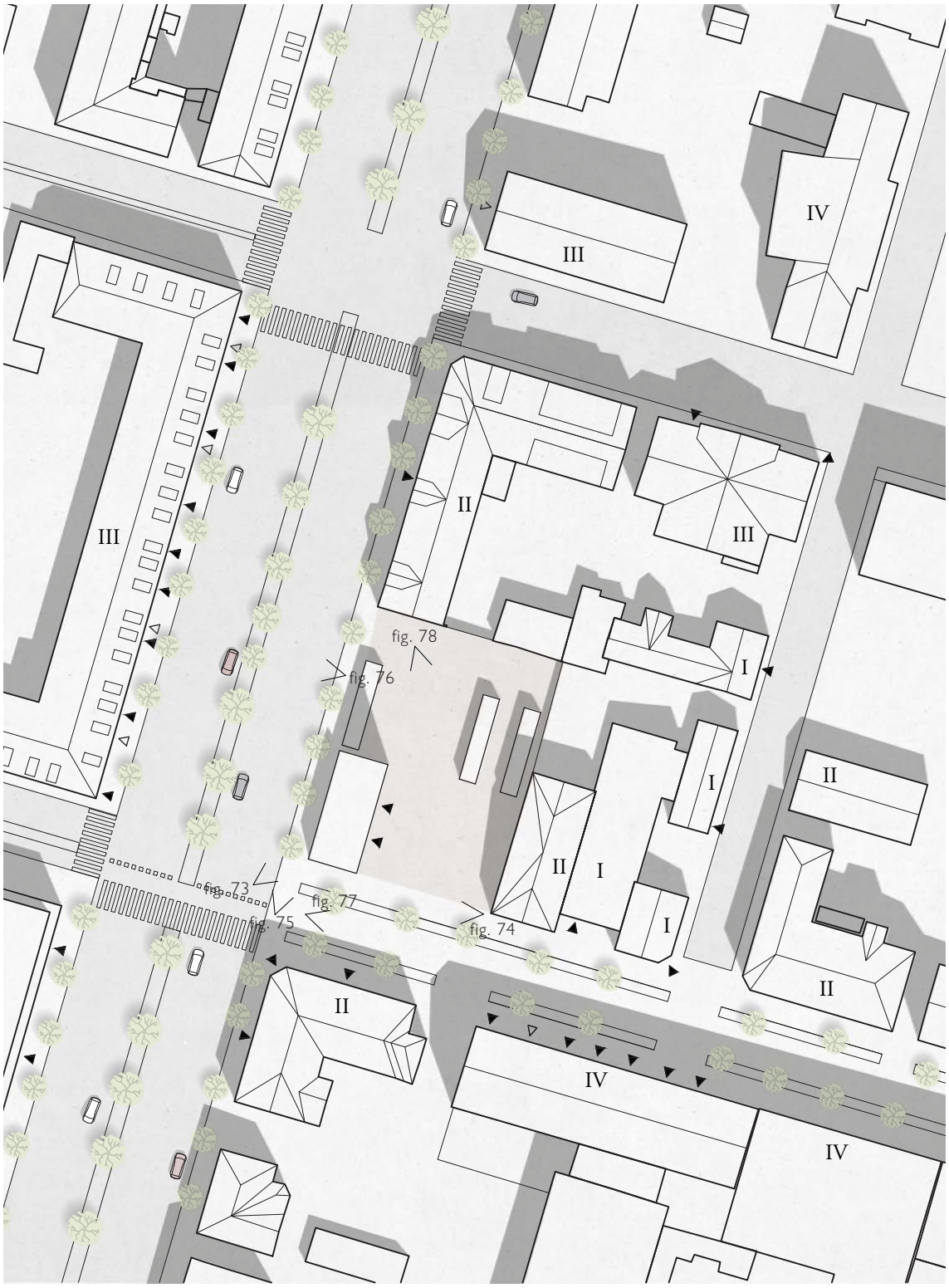


Figure 72. Siteplan showing the site with surroundings today, 1:1000.

SITE

Preconditions for the proposal

The project's site, Ymer 1, is located in the central parts of Umeå at the intersection between the main pedestrian street, Kungsgatan, and Västra Esplanaden, a big car road that after 2021 will be transformed into a city boulevard (Umeå kommun, 2018). The former building at Ymer 1 was demolished in the beginning of 2017 (Ivarsson, 2017, March 23).

In an interview the acting chief for overall planning at the municipality of Umeå, A. Edman (personal communication, January 2, 2019), mentions that the municipality owns the property and has a reserved the site for a possible car park. The decision surrounding if there is a need for another car park in the city, and if it should be built at this site, will be made in 3-4 years' time.

The municipality is in the process of changing the detailed development plan to allow for residences, a car park, and commercial activities (Umeå kommun, 2018). In the meantime, the municipality is trying out solutions for sharing economy at the site and today it contains bike rental and a warmed-up bike garage (A. Edman, personal communication, January 2, 2019). This master thesis project is based on the scenario where the car park is not needed, and residences and commercial spaces are being built instead.

The block structure in this part of Umeå consists of semi-open yards with gaps between the buildings. The building height along Västra Esplanaden varies from 2 to 4 stories. The building height along Kungsgatan varies from 1,5 to 5 stories. However, the buildings adjacent to Ymer 1 are 2 to 3 stories high.

The flow of people is biggest along Kungsgatan where both pedestrians and bicyclists move to and from the city centre. There are also many entrances along this street, both commercial and residential. Along Västra Esplanaden there are less people in motion, but instead a large flow of cars. Because of this the sound levels are high, with a daily mean value from 65 up to 75 dBA (Umeå kommun, 2016). Entrances are unevenly distributed along Västra Esplanaden with several facades without any entrances at all, and this contributes to the low amount of people walking here.

The buildings surrounding the site were built right after the city fire in 1888. However, today part of them are replaced with newer buildings. This gives the site a great mixture of architecture styles from different eras.

Figure 73. The site, called Ymer 1, with current bike garage and rental facility.

Figure 74. Pedestrian street in front of Ymer 1, looking west.

Figure 75. Street next to site, looking north.

Figure 76. Building on the opposit side of car road, looking west from Ymer 1.

Figure 77. Character of pedestrian street, looking east towards the centre.

Figure 78. Ymer 1, looking south.

The design proposal

Chapter **5**

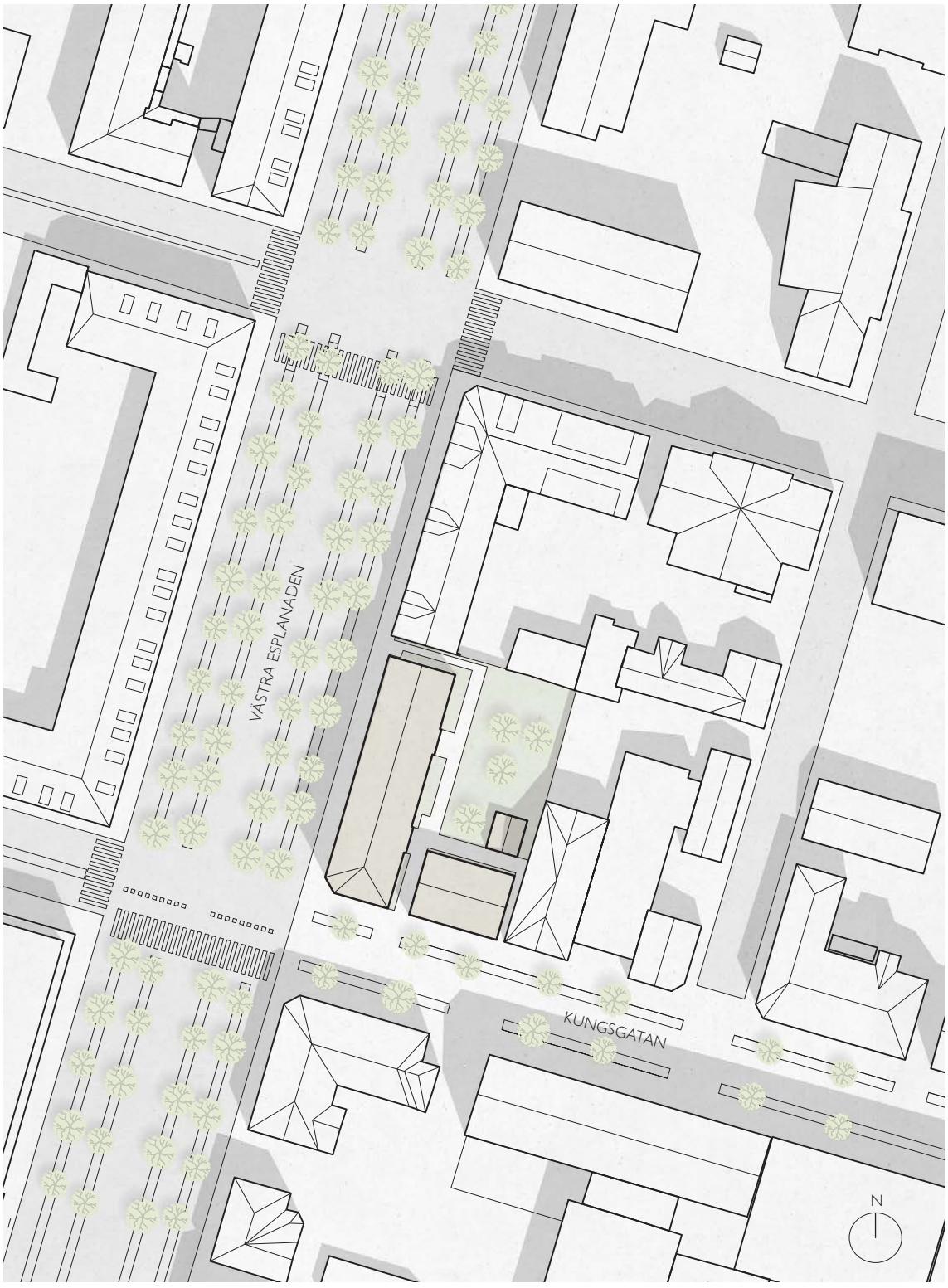


Figure 79. Siteplan, 1:1000.

SITE

The future neighbourhood

The site is located with the pedestrian street Kungsgatan to the south, and along Västra Esplanaden to the west. The old car road Västra Esplanaden is remade into a city boulevard with separate lanes for bikes, cars and buses, according to the municipality's plans (Umeå kommun, 2018, p. 30-31).

The new residences at Ymer 1 are divided into two buildings with commercial areas in the bottom stories. A two-story building to the south that connects to the small-scale character of Kungsgatan and a three-story high building to the west that connects to the slightly more large-scale character of Västra Esplanaden.

The yard is a semi-open yard with gaps in between the buildings. The gaps allow for a visual contact between the street and the courtyard but the narrow width of it still gives the yard a private feeling. The gaps have different width making one of them the head entrance, one the secondary entrance and the third just a sneak way into the yard.

The buildings have a green colour that continues the pattern of colourful houses in the area. A single shade is used to let the details and their shadows be seen more clearly than a contrast between colours.

Figure 80. The buildings looking from southwest.

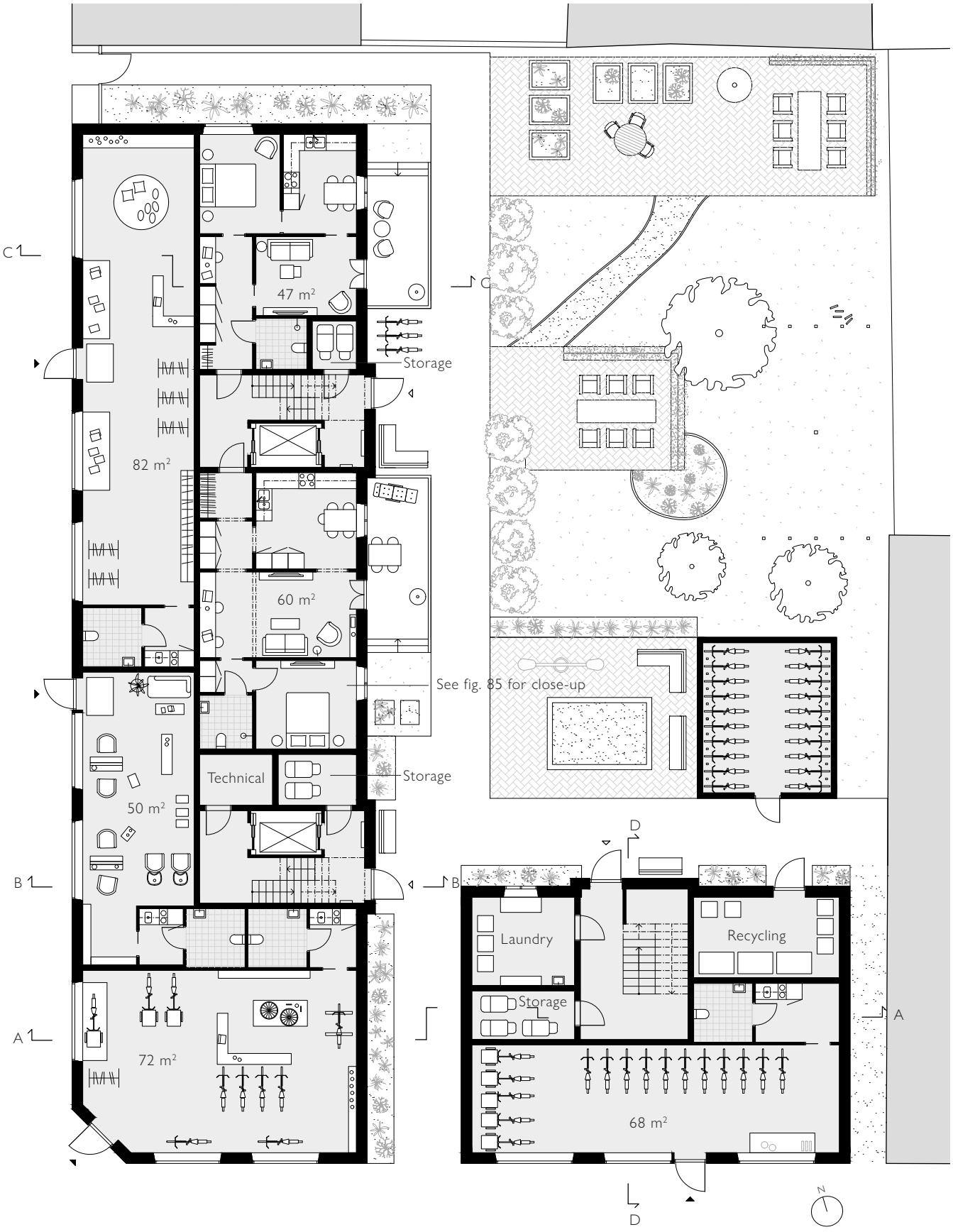


Figure 81. Entry floor, scale 1:200.

FLOORPLANS

The project contains ten apartments and four rentable spaces for commercial use. In total 889 square meters apartments and 272 square meters rentable space. The residents will come home from either north or south, enter the yard and access their apartment through a staircase from the yard. The entrances to the commercial spaces are from the street side.

Generally, the apartments are from facade to facade due to high noise levels in the area. However, this also contributes to qualities in the home like natural light from different sides of the apartment throughout the day, a feeling of bigger space, and allows for creating draught on a hot summer day. In the apartments, the more private rooms such as bedrooms are towards the yard and the public rooms like kitchen and living room are towards the streets.

At the entry level from the street side the four rentable spaces are located. Here the bike rental business and warmed up bike garage, currently at the site, could keep operating. On the yard side there are two apartments half a story up compared to street level. There is also a laundry room, a recycling room and a stroller storage connected to the staircases.

The second and third stories in the western building are the same, two 3-bedroom apartments and two 2-bedroom apartments. Both types have French balconies to the yard. The second floor of the southern building has two 1-bedroom apartments.

The yard has a bike garage for the residents, a playground for small children and a big lawn with space for outdoor dinners and grill parties.

Figure 82. Second floor, scale 1:200.

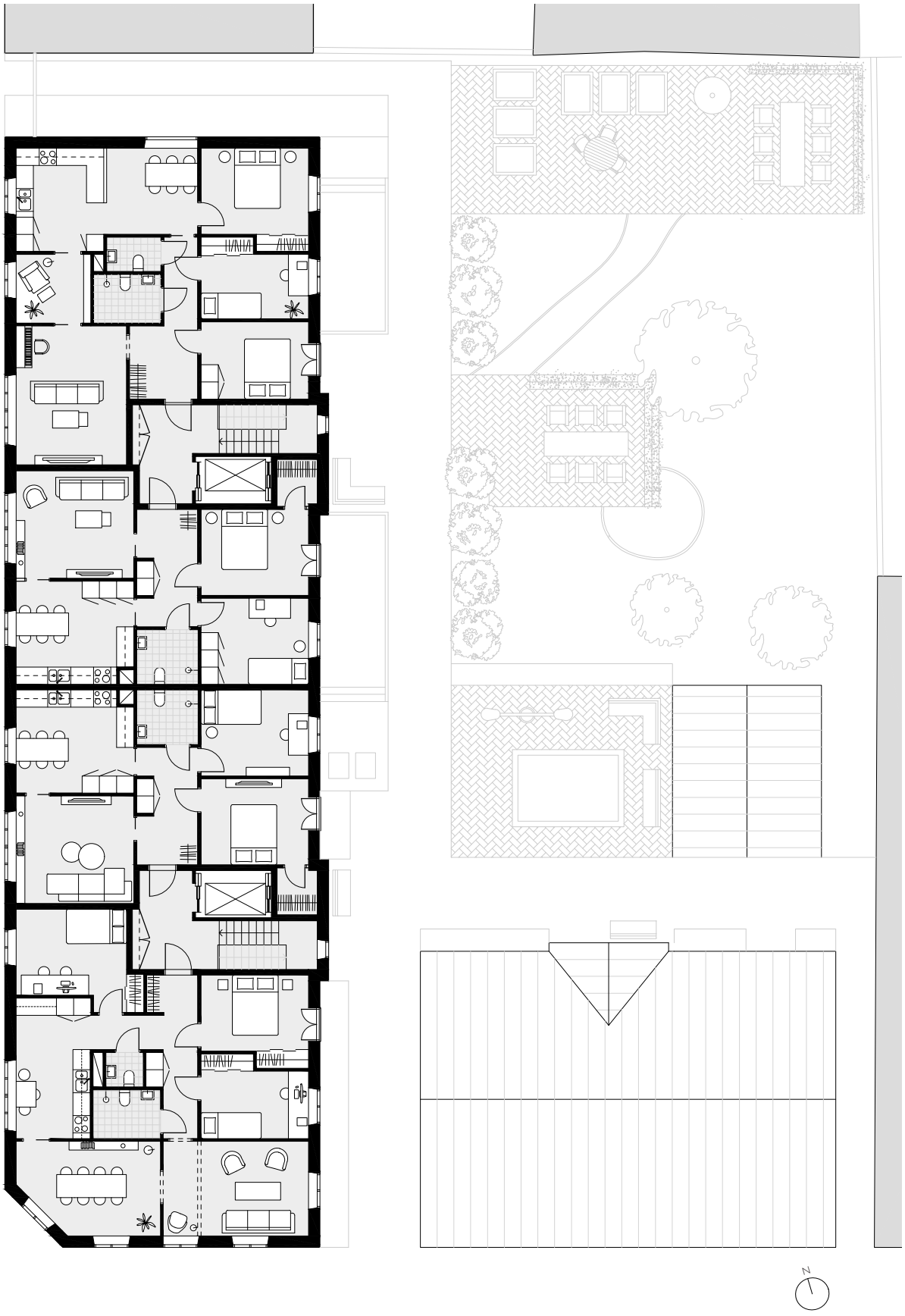


Figure 83. Third floor, scale 1:200.

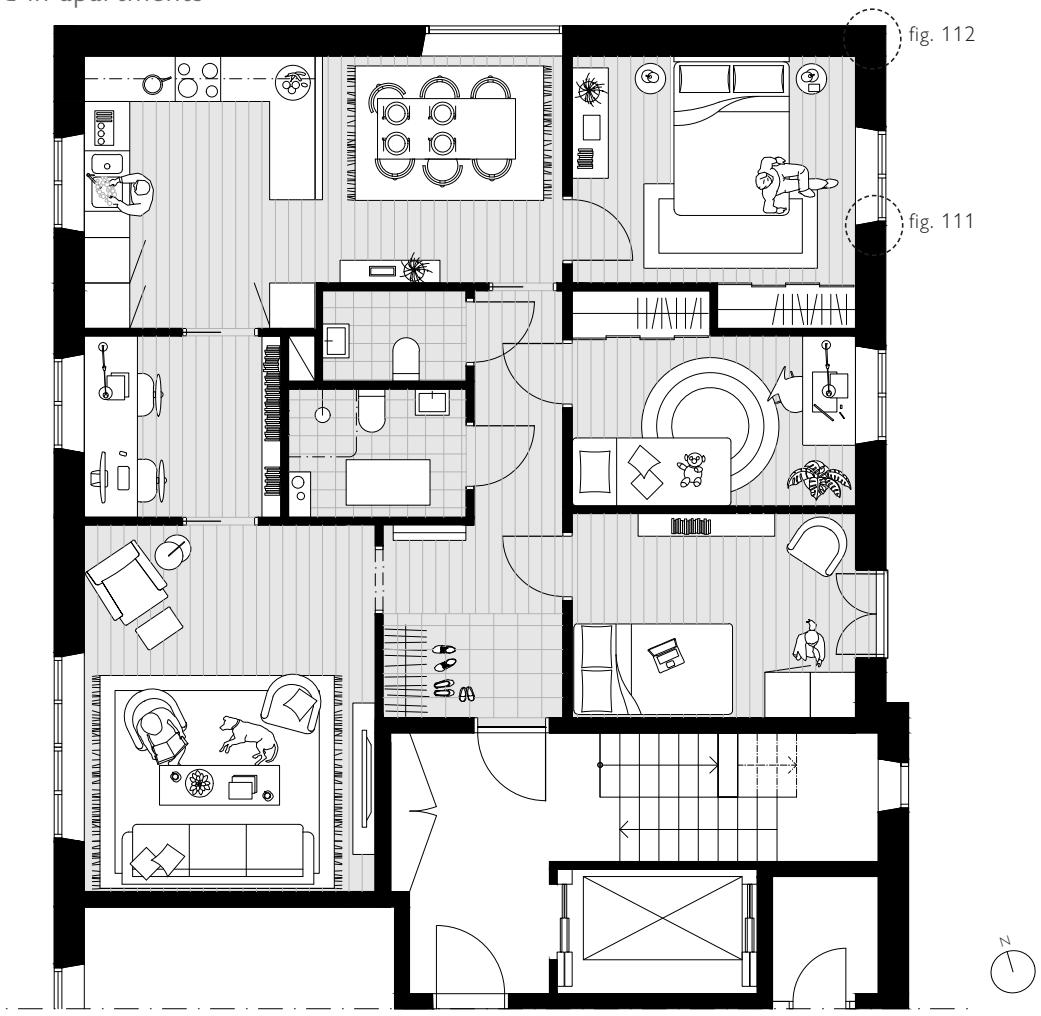


Figure 84. 3-bedroom apartment, scale1:100.

This 3-bedroom apartment has two halves; one is a closed, private half and the other a more open, public part where one invites the guests. Walking into the apartment one immediately gets a sightline through the apartment and out onto the rugged firewall belonging to the neighbouring building in the north. On the right side, towards the yard, one has the three bedrooms and in one of them a French balcony. To the left one has the living room with a large view of the street and the evening sun. This room is connected to a smaller room, possibly an office or library, which in turn leads into the kitchen. The kitchen and dining place have views both onto the street and onto the same firewall as from the entrance. In the core of the apartment lies two bathrooms.

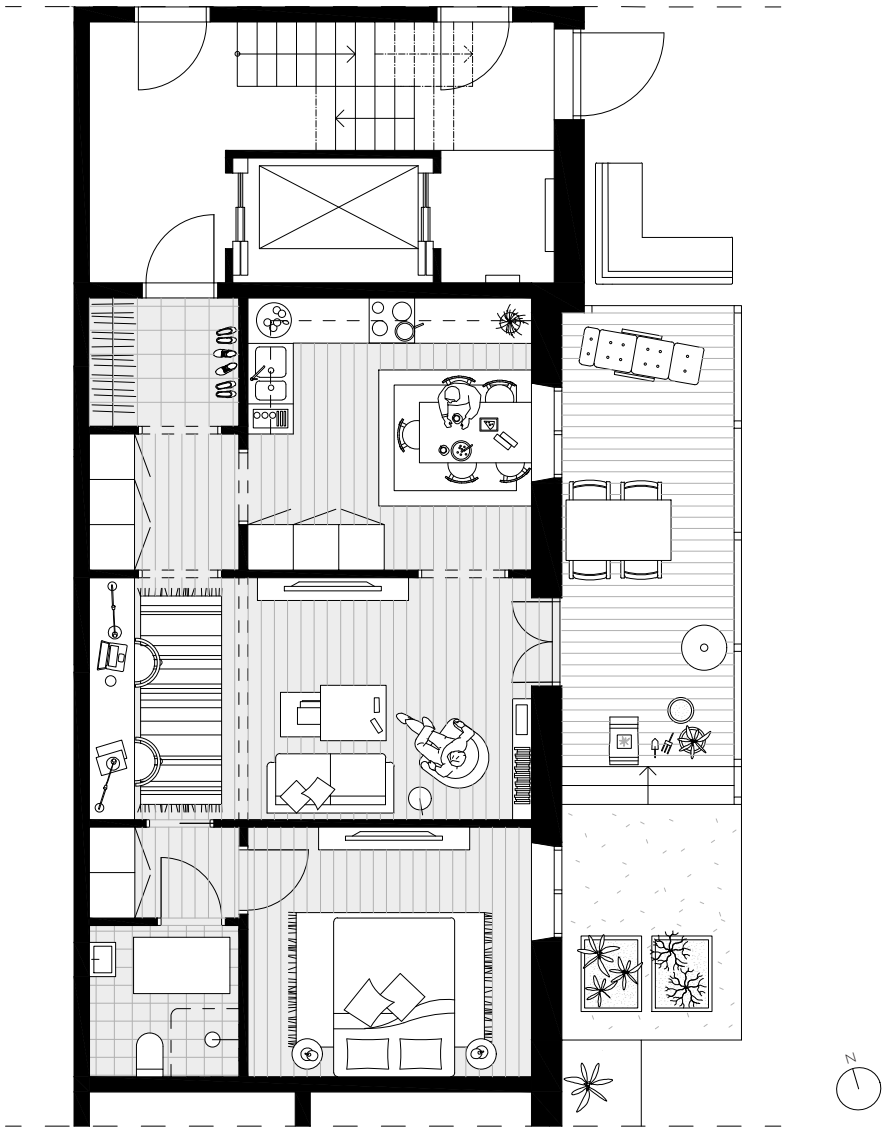


Figure 85. 1-bedroom apartment, scale1:100.

This 1-bedroom apartment is elongated along the east facade and light always comes from the east. Here there are also two halves, first a public one with kitchen and living room, and furthest into the apartment a private part with bathroom and bedroom. When one enters the hallway a long view through several rooms greets you. The light comes in from the east and there are two paths to take in the apartment, straight on from the hallway straight into the living room or along the light going through the kitchen. From all the rooms there is a view out onto the patio, where one can drink his or her morning coffee or have a lunch in the sun, and out to the yard.

Figure 86. Facades along Västra Esplanaden, to the west. Scale 1:400.

Figure 87. Facades along Kungsgatan, to the south. Scale 1:400.

FACADES

The facades of the design proposal have been inspired both by surrounding buildings with panelling architecture but also other reference projects in Umeå. As mentioned before, it has been important to match the height of the design proposal with surrounding buildings. Therefore, the building towards Kungsgatan is two stories high and the building towards Västra Esplanaden is three stories high. The facade design for the two buildings has been composed through the same design strategy but the end result varies slightly since they have different preconditions.

The long facades of the bigger building have automatically a horizontal appearance through their elongated shape. To balance that the facades have been composed by vertical elements, the panel, the boards and the windows have a clear vertical direction. The standing boards behind the downpipes create a rhythm in the facade making it not monotone to walk along. The facade has a distinct horizontal ribbon separating the entrance floor and the commercial facilities with the second and third floor and the residences.

The windows also contribute to differentiate the different floors; large windows for the commercial spaces and smaller for the residences. There is also a subtle difference between the two residence floors, both in window size and in window casing. This is to emphasize the different levels even more as well as the details closest to the ground are the ones that will be most seen.

All these elements create fields in the facade (marked in orange) that are strengthen by the different depths of the details.

The depths of the facade in order are:
Eave
Level-ribbon/Edging board/Vertical board behind downpipe
Sill/Head casing
Side casing/panelling batten
Panelling board
Window frame

The gables towards the gaps have a different expression than the other facades. The main reason is the different preconditions of this space. There is a reduced risk for insight and therefore a great possibility to maximize the light inlet by bigger windows. The view from these windows is to a firewall covered in beige plaster. The west gable of the smaller house faces the larger house and has a narrower window to avoid insight between the two opposite apartments. The window also creates a raking light on the interior wall.

Facades of the big building

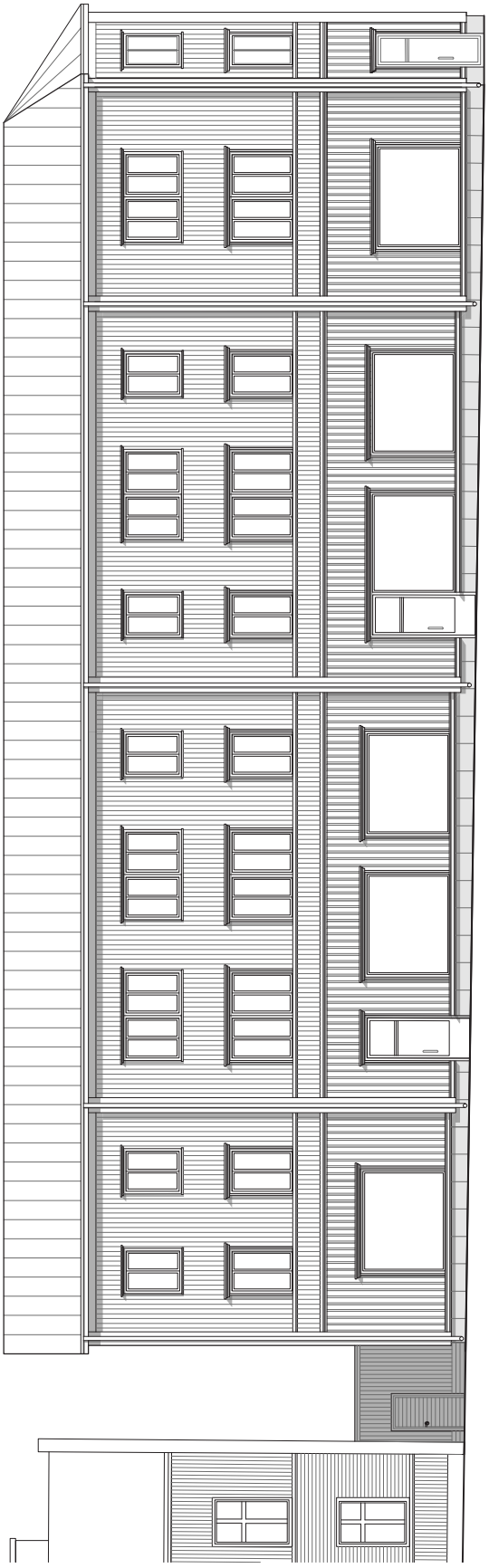


Figure 88. Facade towards west, scale 1:200.

Figure 89. Facade towards south, scale 1:200.

Figure 90. Facade towards east, scale 1:200.

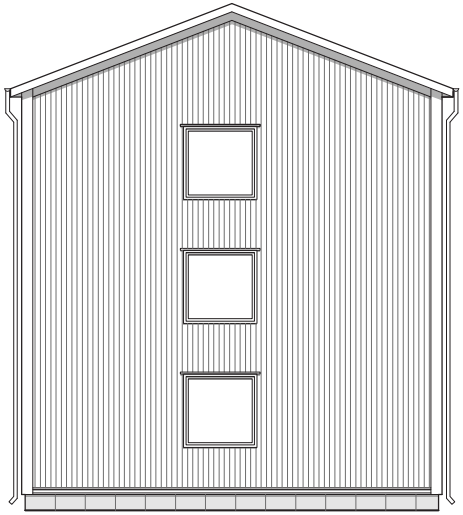


Figure 91. Facade towards north, scale 1:200.

Facades of the small building

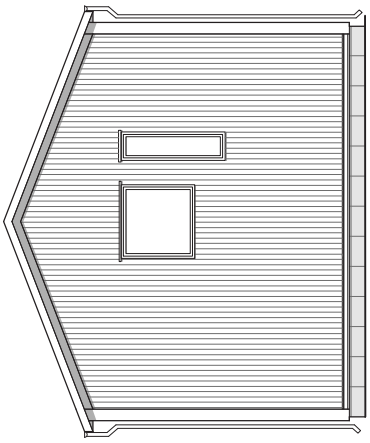


Figure 93. Facade towards east, scale 1:200.

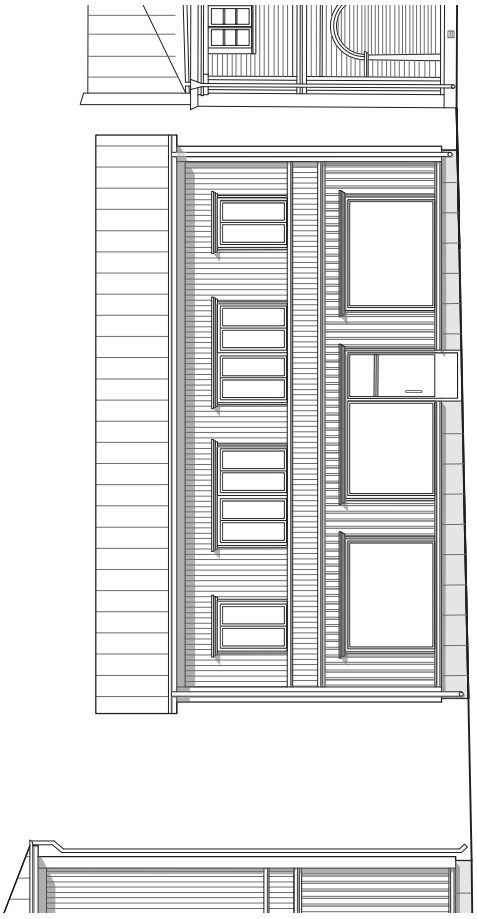


Figure 92. Facade towards south, scale 1:200.

Figure 94. Facade towards north, scale 1:200.

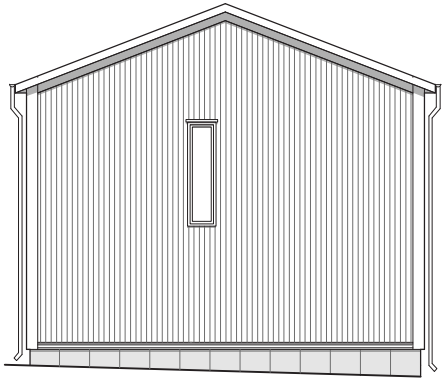


Figure 95. Facade toeards west, scale 1:200.

SECTIONS

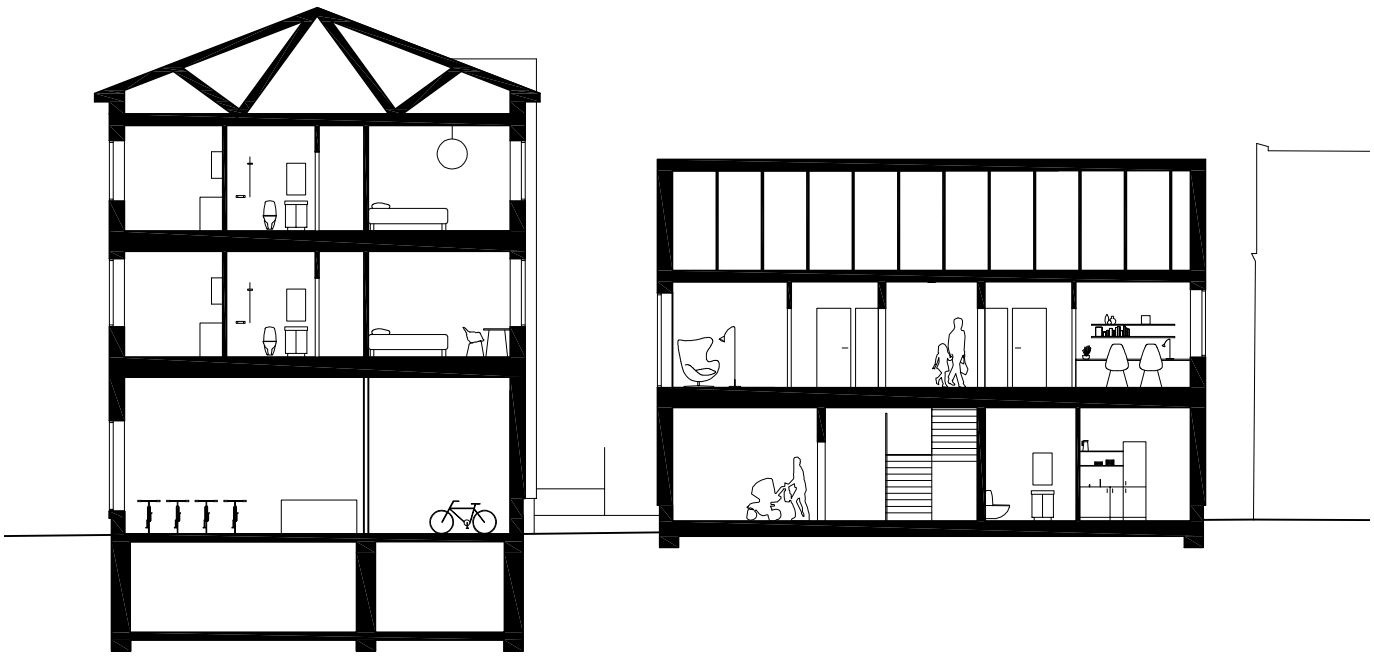


Figure 96. Section A-A, scale 1:200.

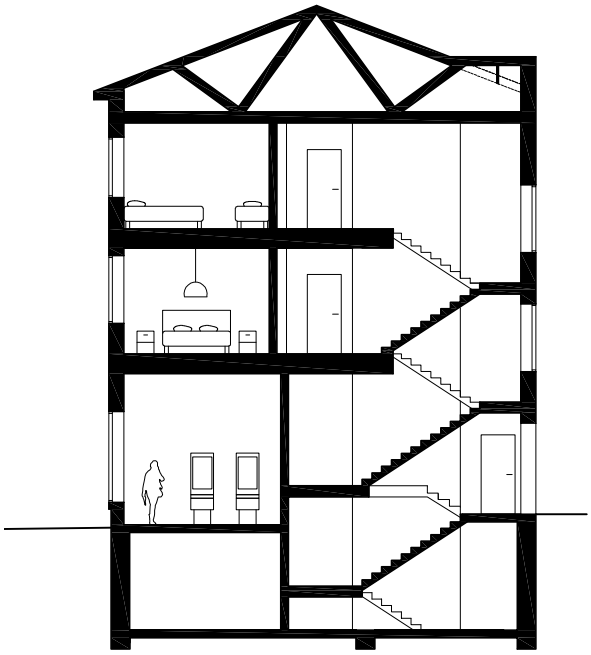


Figure 97. Section B-B, scale 1:200.

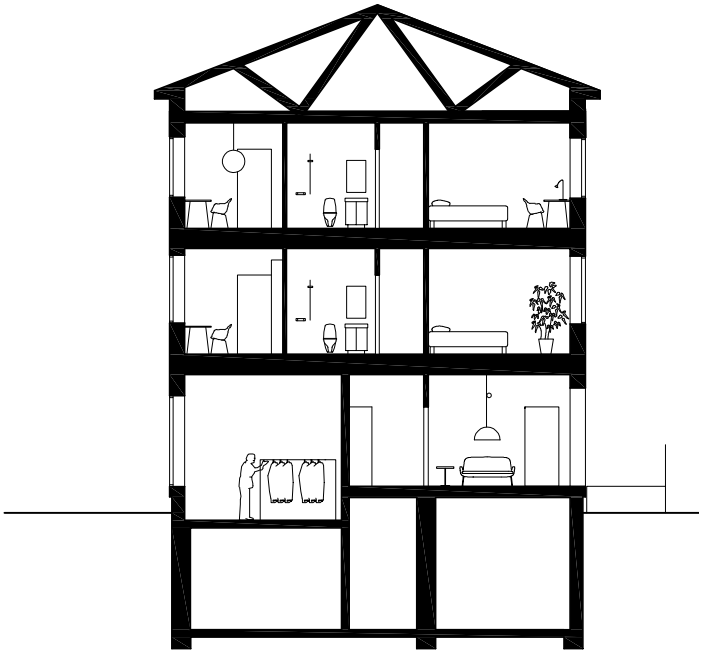


Figure 98. Section C-C, scale 1:200.

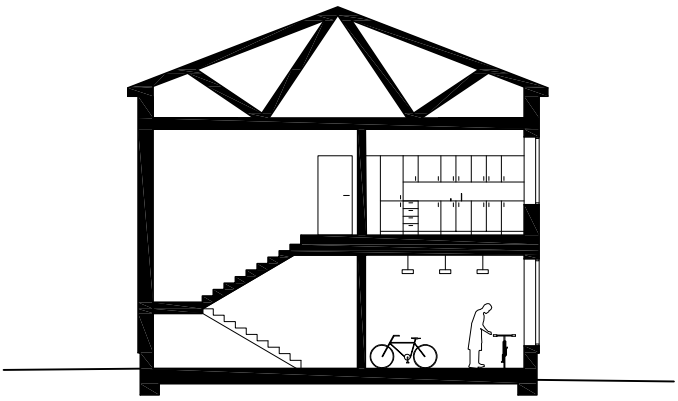


Figure 99. Section D-D, scale 1:200.

Figure 100. Physical model of the first two stories towards the yard. Original scale 1:10.

DETAILS

The ability to see the details of the facade decreases with the height of the building. That is why it has been important to put extra effort at the entrance floor. Here you walk close to the facade or sit at your terrace. At the entrance floor small details make a big difference and it gives a feeling that higher up the same effort has been put into the building.

The panelling of the building varies. At the entrance floor there is a board and batten cladding with profiled battens. The battens give a rhythm to the facade, the shadow gives a varying expression through the day. The profiling of the battens makes it easier to follow the transition between the different depths.

The second and third floor are distinguished from the entrance floor with a different type of panelling, chamfered tongue and groove. It gives the facade a smoother, more contemporary expression, but the chamfering still creates varying shadows through the day which gives rhythm and a depth effect to the facade. The gables connect to the other facades with the same panel, chamfered tongue and groove.

At the base of the facade the vertical panelling ends in horizontal boards, the boards are angled making the water drip down. By ending the panel in a board makes the end distinct and grounded.

The window casing differs between the different floors. The casing of the two first floors is more emphasized than the top floor. This emphasizes the different hierarchies of the windows, also, the further up on the facade, the less details one sees from the ground. The window casing consists of layers with different depth that create a distinct frame around the window. The exterior sill of the window is in wood, making it a firm holder for the drip plate. The interior stop is inclined and with a profile, this is to spread more light into the room.

The size of the different battens in the facade has been enlarged from what you might see in contemporary panelling architecture. This is to make the effect distinct and visible even from a distance. The firm batten contributes to a solid expression of the wooden facade, too thin elements can come across as too fragile and get bent with time. The different depths of the battens will highlight the different fields in the facade.

A traditional wall for this type of building would have been a timber jointing or timber frame wall. This design proposal instead has a balloon frame wall to make it adapted to today's building standards. However, it has wood fibre insulation and thick interior panels instead of the conventional solutions with mineral wool and gypsum board to stick to the tradition that a wooden wall is made of wood. In this scale the balloon frame is more suited than CLT.

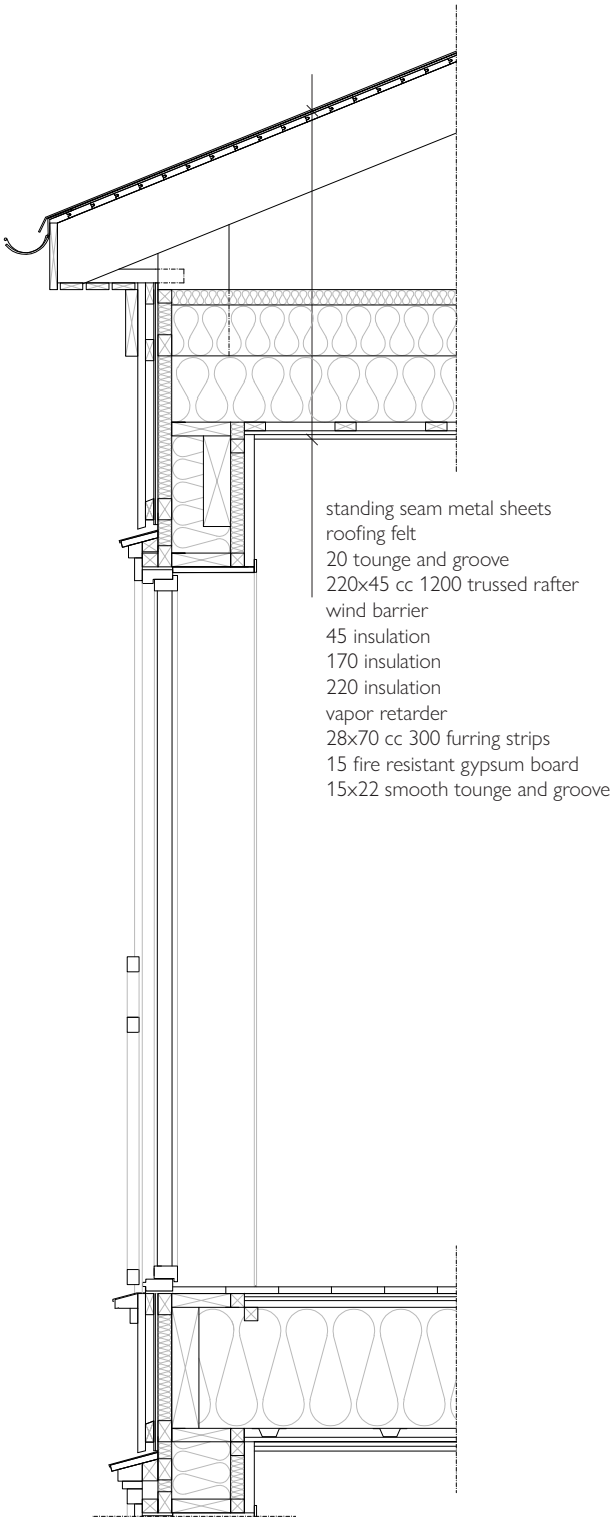


Figure 101. Section detail part 2, scale 1:25.

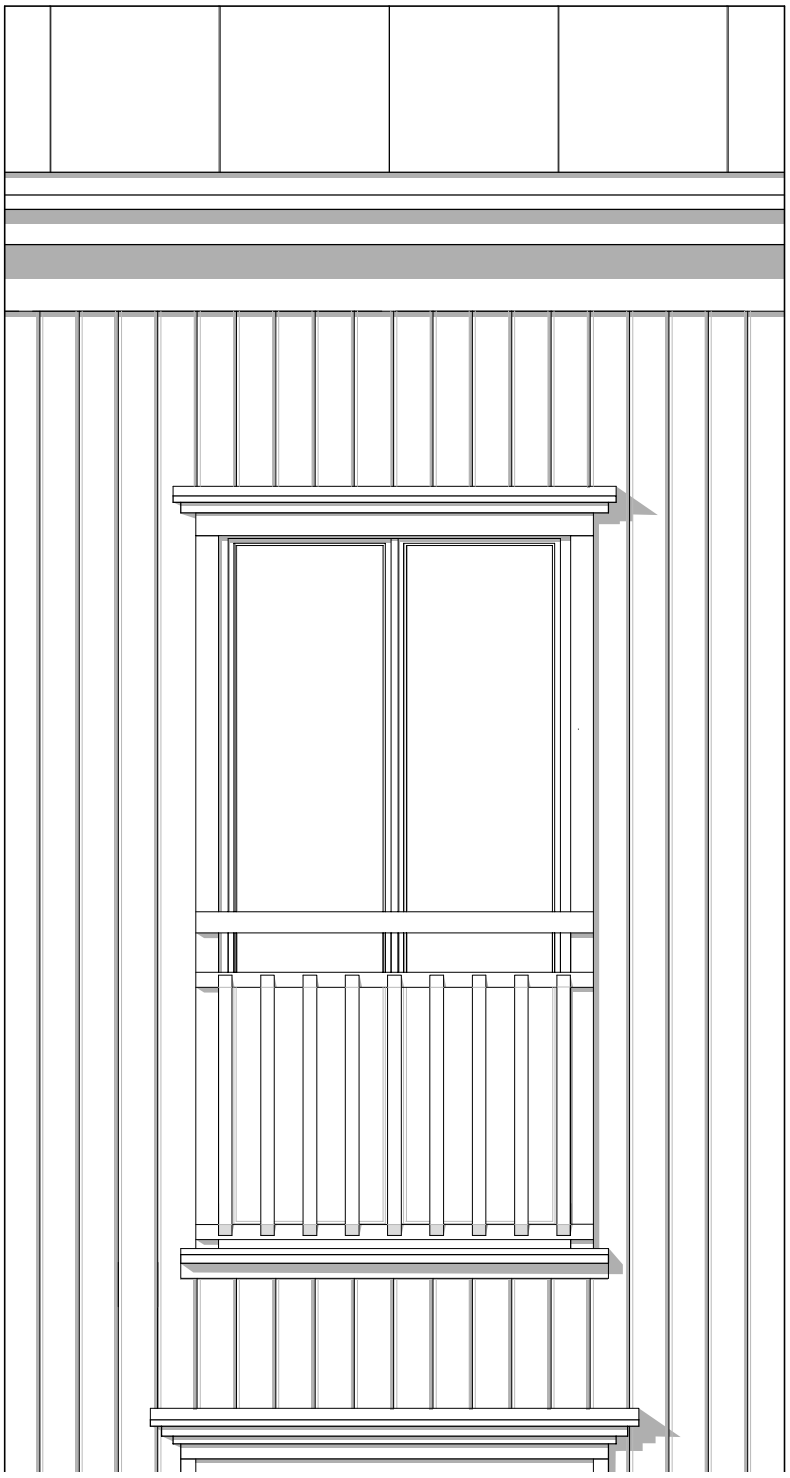


Figure 102. Window detail, scale 1:25.

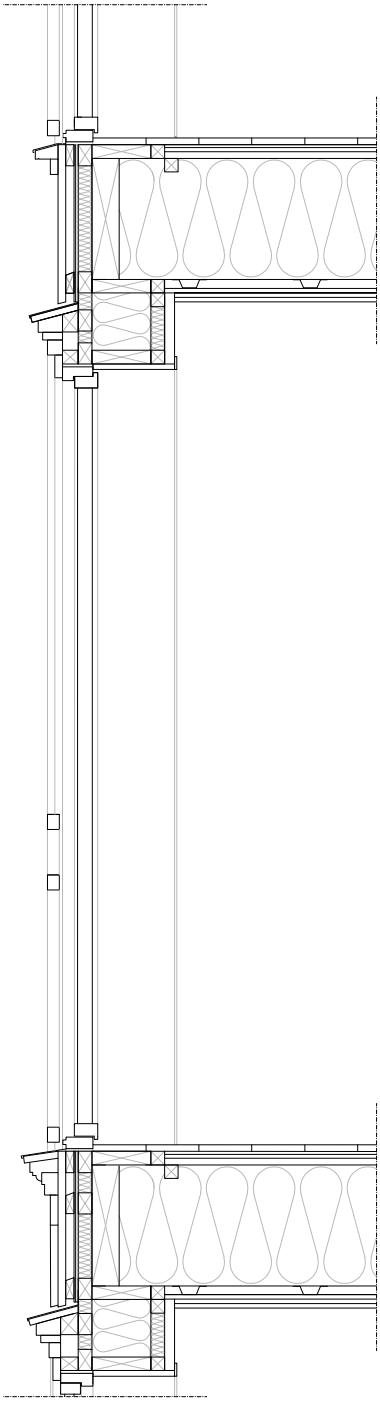


Figure 103. Section detail part 2, scale 1:25.

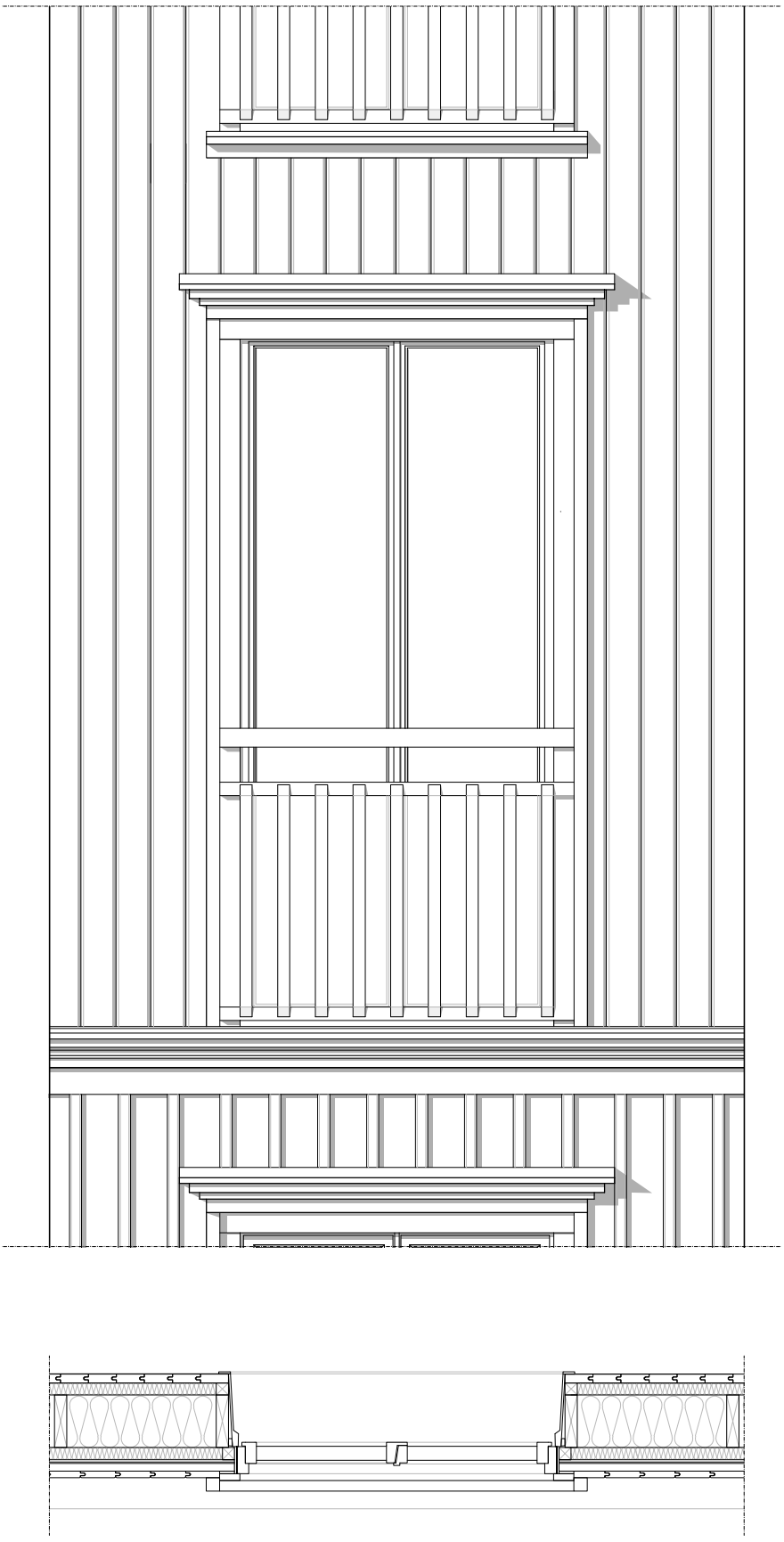


Figure 104. French balcony detail, scale 1:25.

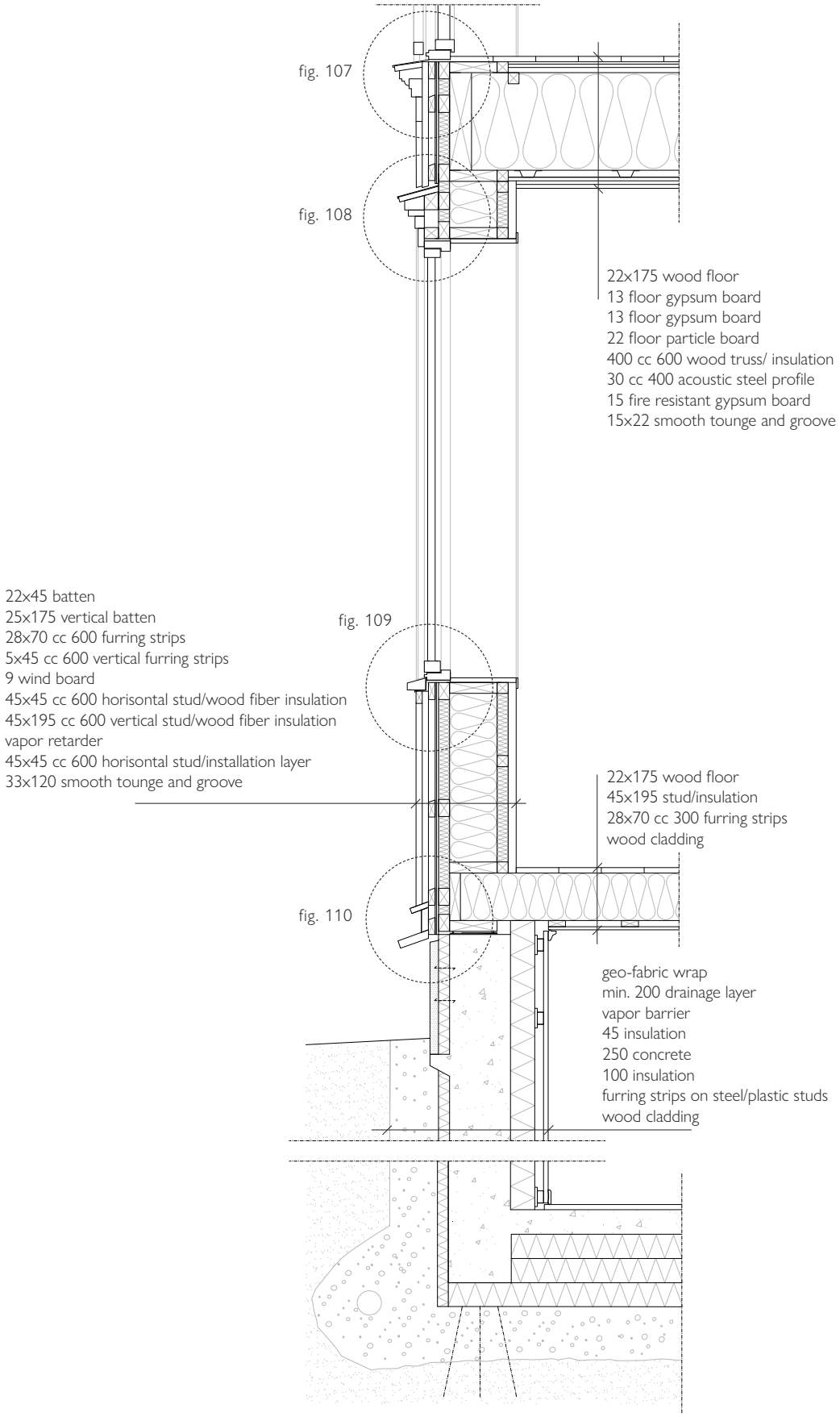


Figure 105. Section detail part 1, scale 1:25.

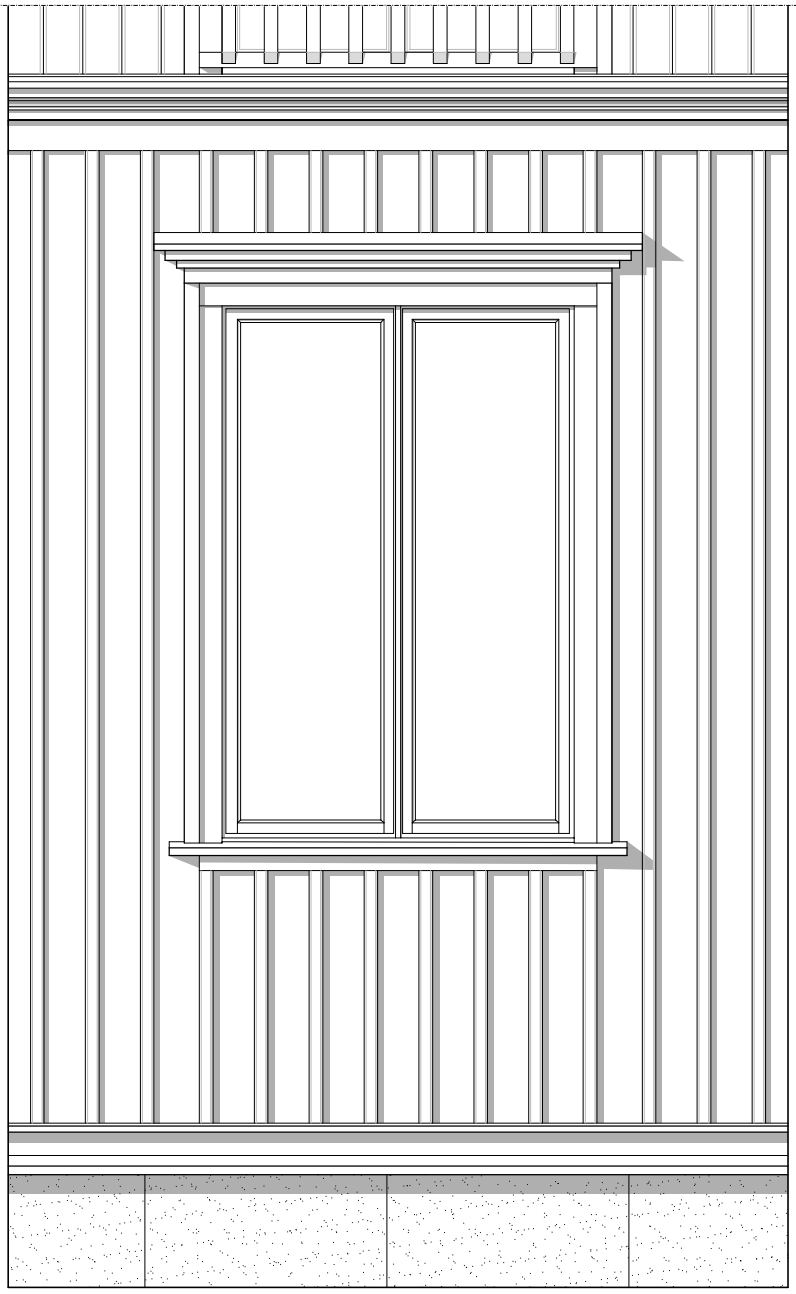


fig. 111

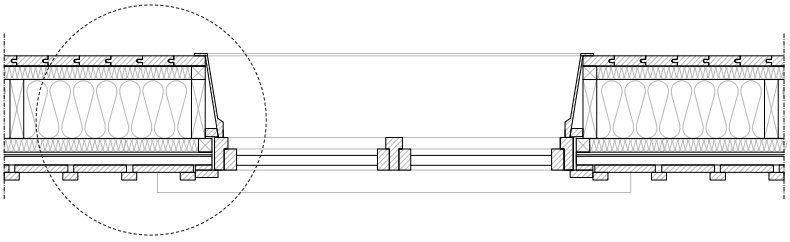


Figure 106. Window detail, scale 1:25.

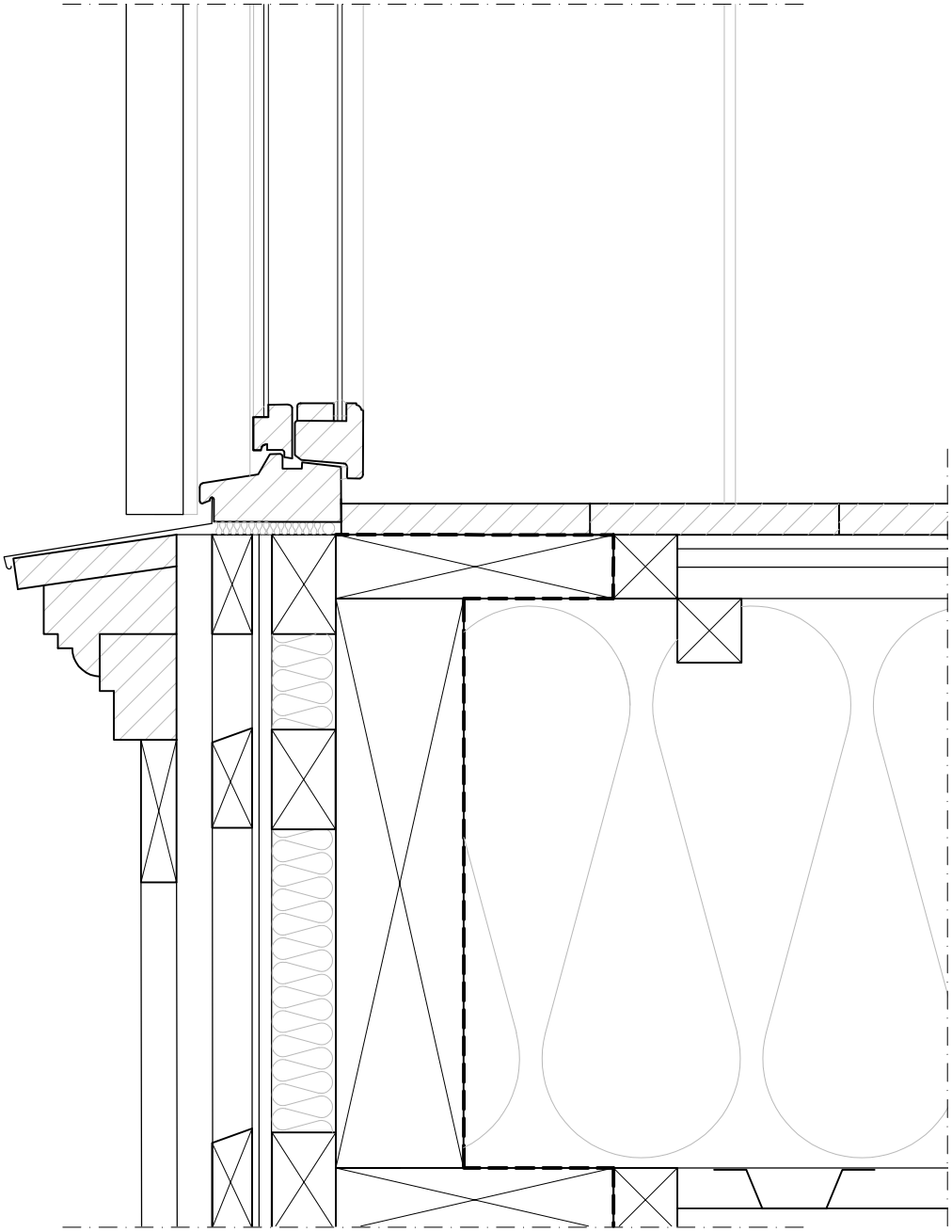


Figure 107. Detail showing french balcony, scale 1:5.

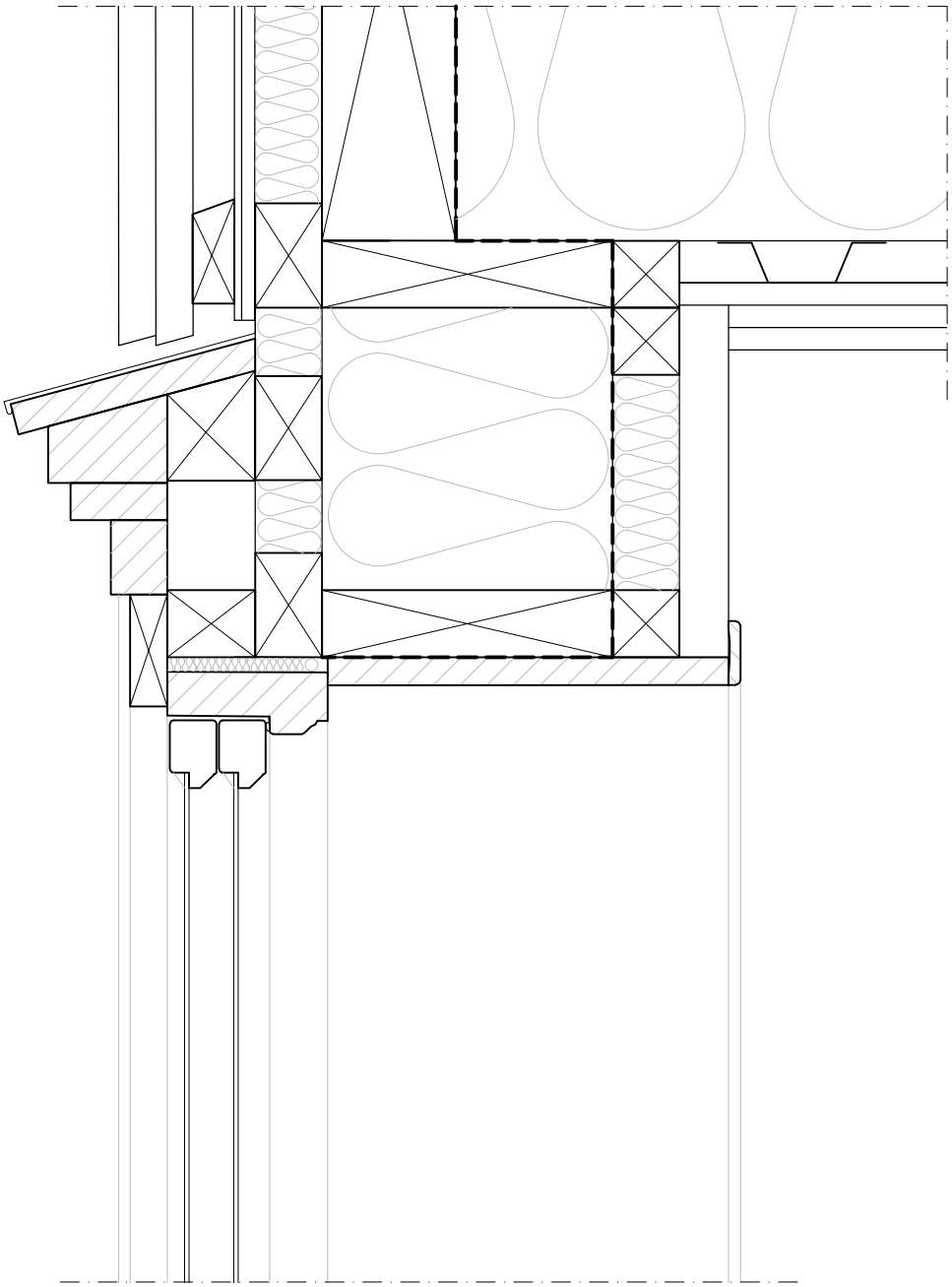


Figure 108. Detail showing window and head casing, scale 1:5.

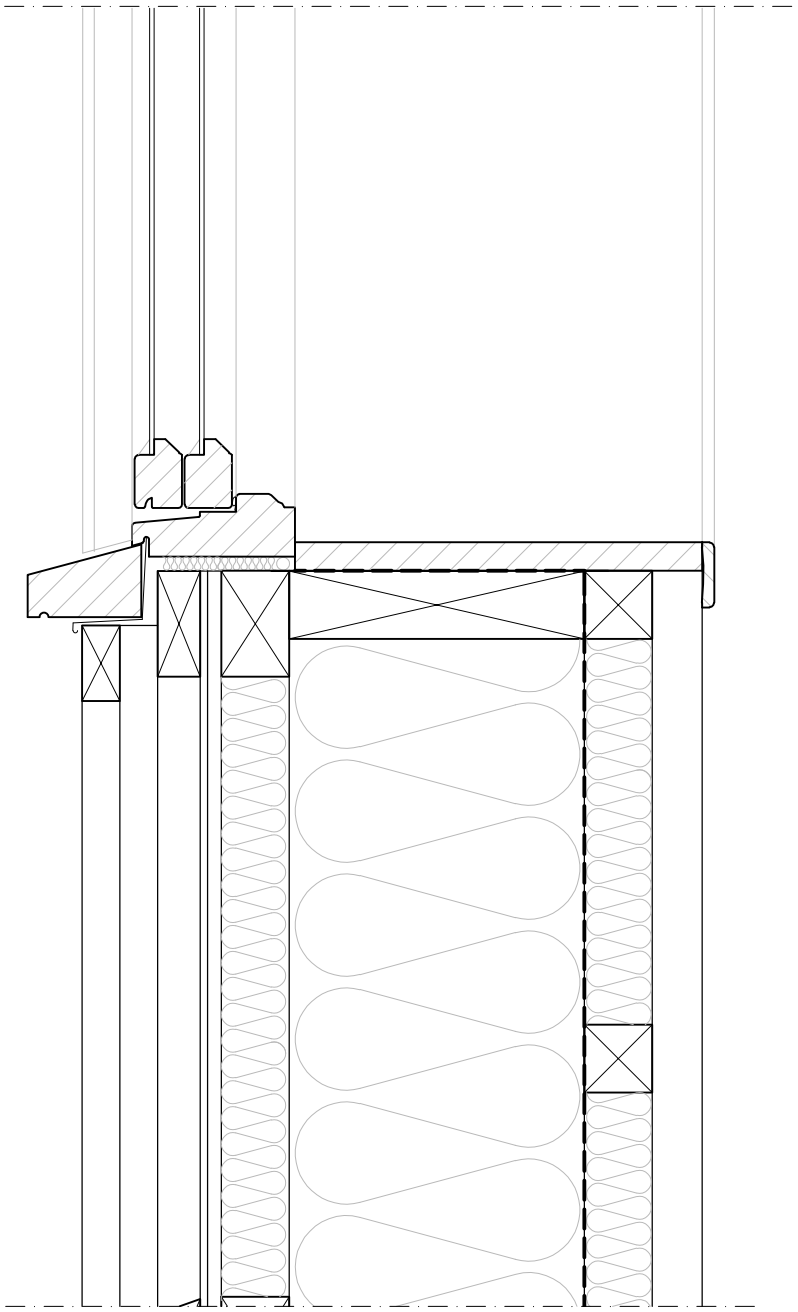


Figure 109. Detail showing window and sill, scale 1:5.

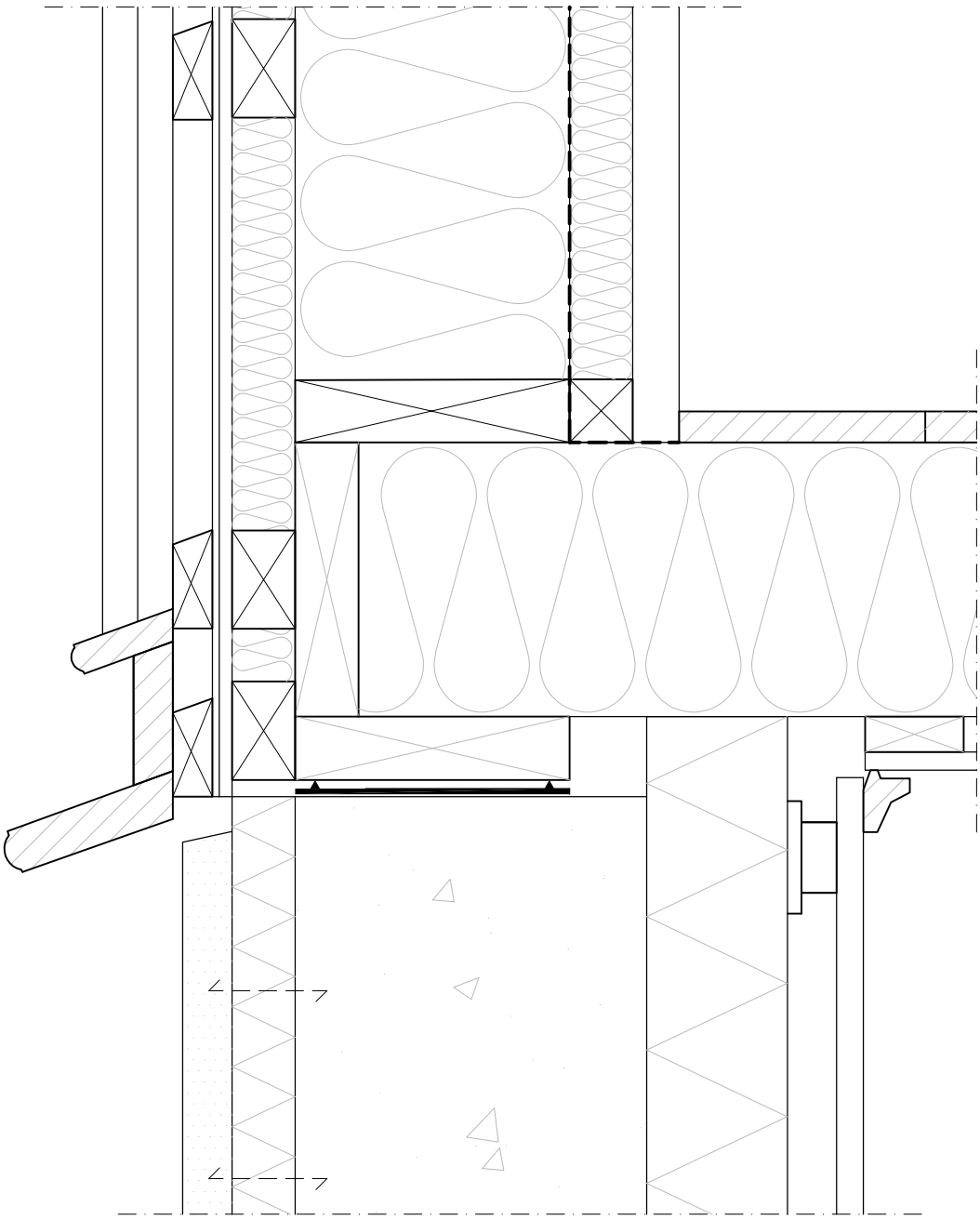


Figure 110. Detail showing wall meeting foundation, scale 1:5.

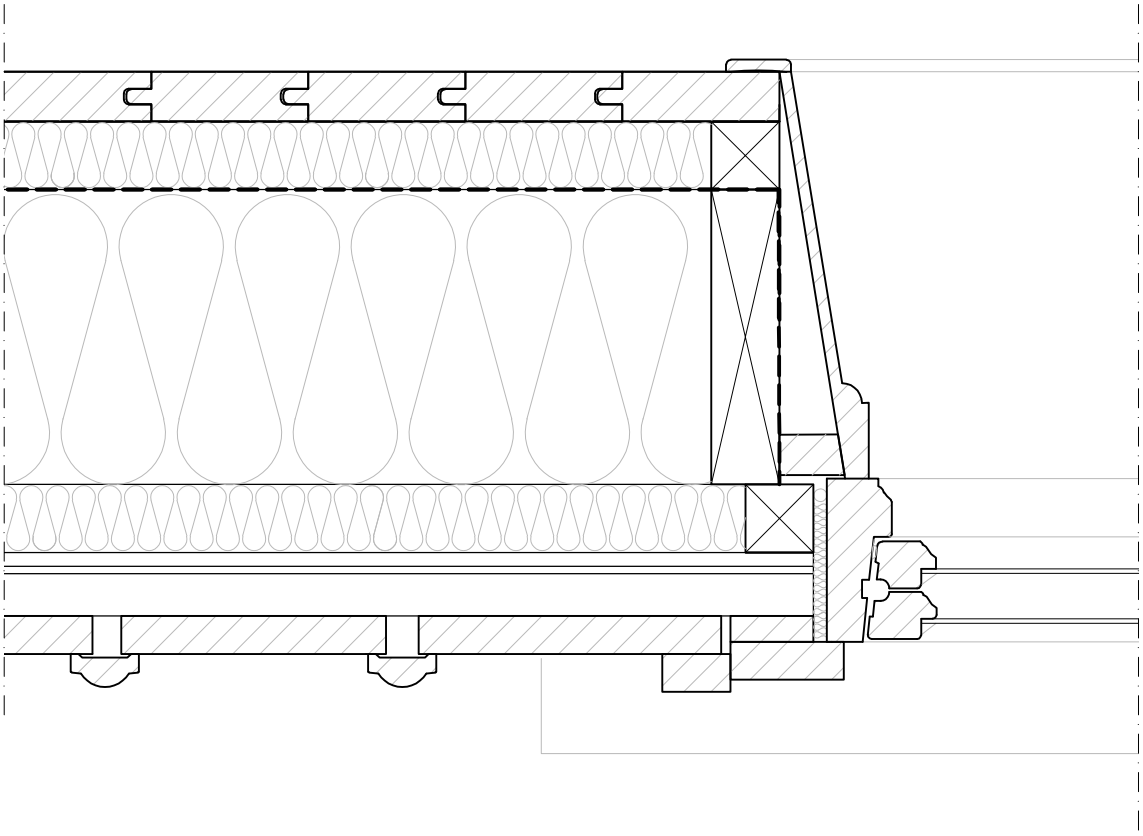


Figure 111. Detail showing window nische, scale 1:5.

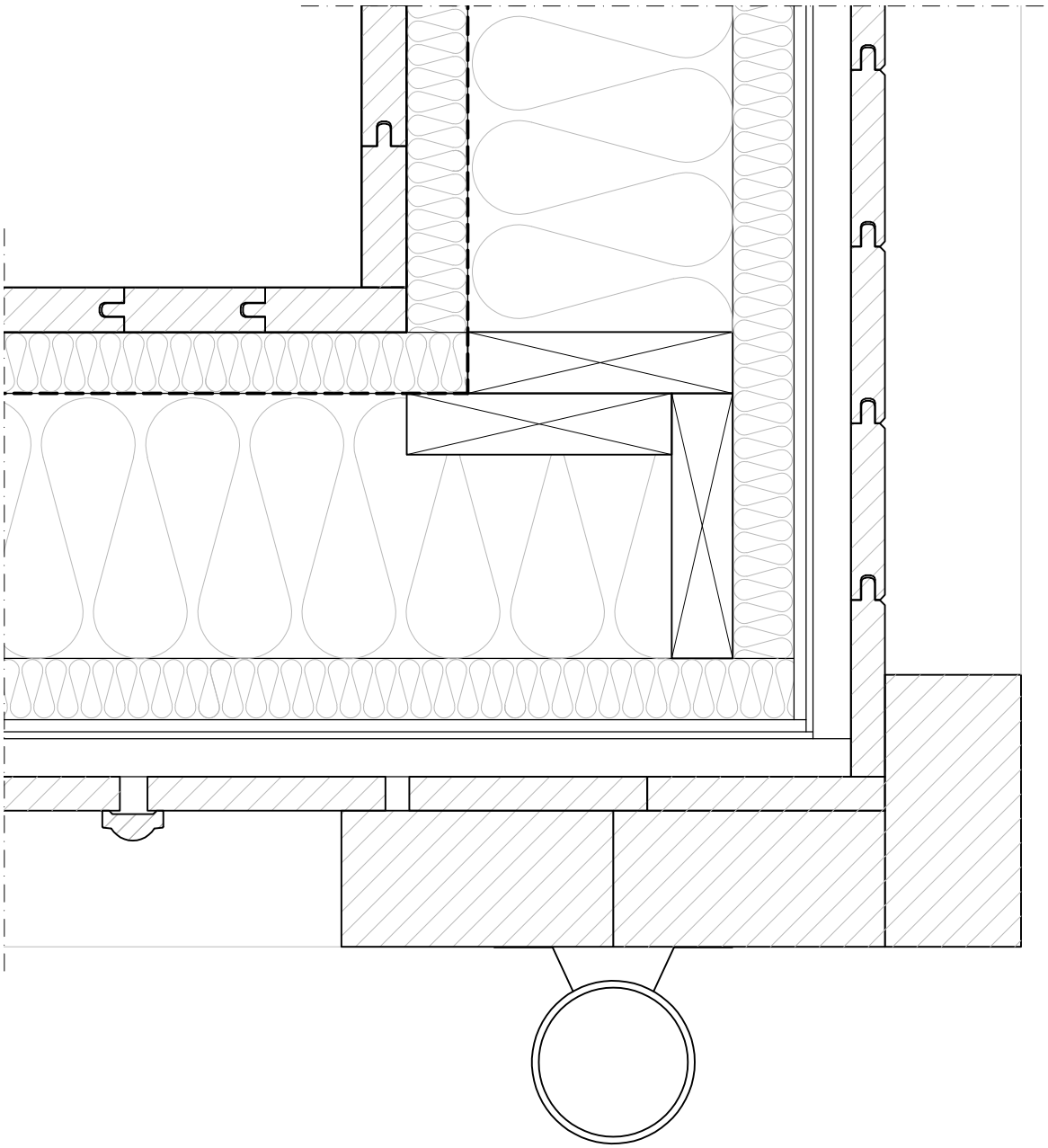


Figure 112. Detail showing the corner of the building, scale 1:5.

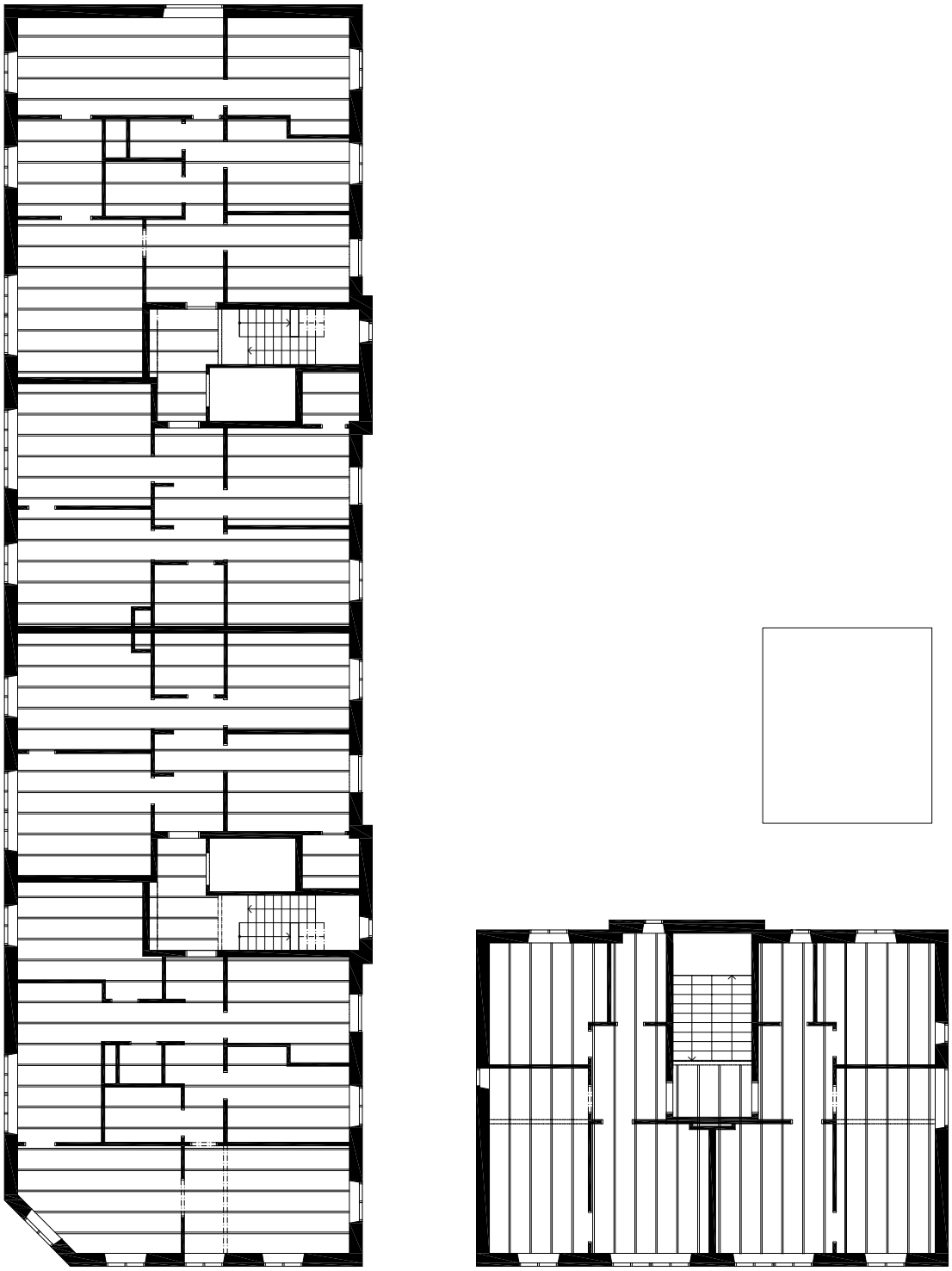


Figure 113. Plan for beams, scale 1:200. Beams showed on second story.

Discussion

Chapter **6**

Figure 114. The design proposal of this thesis.

REFLECTION & CONCLUSION

Shadows, patterns and a gradual revealing of details

The project started from a feeling, how certain architectural attributes belonging to the past contributes to a qualitative space. Throughout the thesis we have had a continuous discussion about how to relate to the cultural heritage. Is it possible to just copy the appreciated qualities from the past anyway you want? Through the process we have concluded that no; for example, mullions are an appreciated detail of the past and therefore they are re-used today. However, most examples miss the profiling, so it looks big and clumsy or it is a snap on mullion that is fragile and easily looks sloppy. Neither of these mullions spread the light into the room as an traditional mullion did, and therefore does not contribute with the architectural feature it was appreciated for.

So, through our work the aim has been to formulate what the qualities in a certain detail are and explain how or why they contribute to a higher architectural value. The description of the details has been a way for us to justify using them in a contemporary project. For us it has never been a quest to just resemble what we believe are appreciated details, but we wanted to understand why it is appreciated and match it with today's building standards.

To summarize, what qualities are there in panelling architecture then? The major things we found through our studies was that many of the qualities could be related back to light and patterns and symmetries, and through these a gradual unveiling of details is created.

A major difference between traditional panelling architecture and modern architecture is that the traditional one uses profiling frequently while the modern one does not. The profiling diffuses light and softens the transition between light and dark areas. This leads to softer contrasts and less experience of glare, and therefore less stress for the eye.

The patterns in form of hierarchies, symmetries and rhythm relate back to human scale. They divide the building into smaller parts that are easier to compare to one's own body and it creates a logic for the eye in how to read the building.

We have through our design proposal shown how we believe this kind of qualities can be incorporated into two residential buildings in central Umeå. We have added the qualities in a way that we found suitable for the area. By reintroducing them in a contemporary project we hope that they will not get lost as something just a part of the history, but also be a part of the future tradition in panelling architecture.

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Photographs and illustrations not listed belong to the authors.

Appendix

MODEL PICTURES

Site model

Figure 115. Site model. Original scale 1:250.

Figure 116. View of Västra Esplanaden towards north. Original scale 1:250.

Figure 117. View of Kungsgatan towards west. Original scale 1:250.

Figure 118. Interior view out of a regular apartment window. Original scale 1:10.

Figure 119. Interior view out from a french balcony in an apartment. Original scale 1:10.

Figure 120. Zoom-in of a french balcony railing and the level ribbon. Original scale 1:10.

Figure 121. Panelling meets the foundation. Original scale 1:10.

Figure 122. Window sill and side casing at entrance floor. Original scale 1:10.

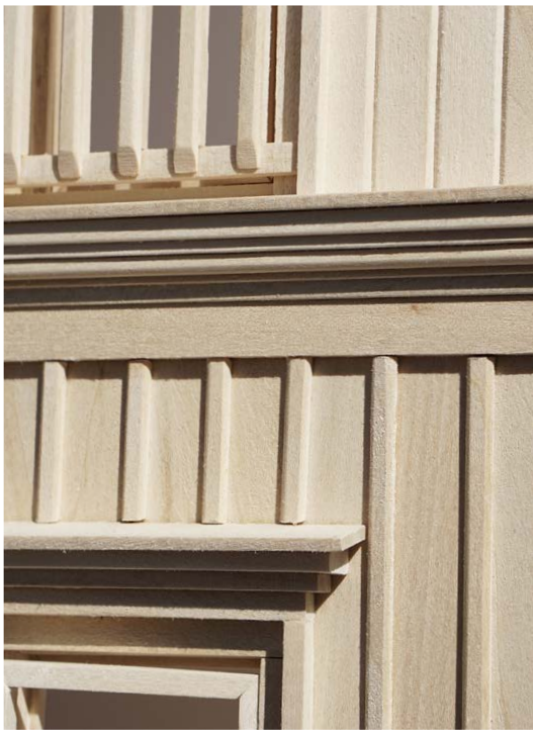

Figure 123. Head casing, level ribbon and railing of the french balcony. Different depths of the facade. Original scale 1:10.

Figure 124. Head casing of window at entrance floor. Different depths of the casing. Original scale 1:10.