

Amicus

a cancer center for youth with an emphasis on improving patient independence in relation with concept of rooming-in

Vanja Divic, 2022
Master Thesis in Architecture
Chalmers University of Technology
Master Programme Architecture and Urban Design
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Master Thesis in Architecture in the Master Programme Architecture and Urban Design

Healthcare studio

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Chalmers University of Technology
Department of Architecture and Civil Engineering

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Master studios

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/ ARK258 / autumn 2021

Future visions for healthcare, housing and work 2: Housing inventions
/ ARK137 / spring 2021

Future visions for healthcare, housing and work 3: Healthcare architecture
/ ARK263 / autumn 2020

Bachelor's degree in Architecture and Urban Design,
University of Technical science / Novi Sad / Serbia / 2015

Pre-amble

Choosing this topic for my thesis came out of two reasons.

First one being the close personal connection with the people who have went through cancer treatment. Witnessing first hand how much can a space, in which patients are, affect the mental health as well as physical, I wanted to investigate how I as an architect can help. What can be done to make the recovery journey more enjoyable from my profession. Being so close to this and experiencing it from personal perspective is the starting point for both the research and design phase.

Second reason is connected to my wish to develop as an architect in a healthcare branch and learn as much as possible. I wanted to continue my journey with designing healthcare buildings after having done one course in healthcare I was eager to see what more can be done. Healthcare direction is expanding and changing at a fast pace now and it is exciting to push the limits and see what can come out of it.

Setting these two challenges I started working on my thesis, keeping them in my mind throughout the process.

Abstract

The purpose of this master thesis is to reach young patients' mental health and physical independence by challenging the current set-up of patient rooms used by young patients in long term recovery from cancer treatment. Thesis is questioning the mental health in young patients after they have gone through therapy treatment and need to go back into the social life. Patient rooms are the space where kids spend most of their time and design needs to compliment their stay during the process of recovery after the intense treatment. This could be achieved by implementing the concept of rooming-in. Additionally the parents and siblings needs are included in the rooming-in concept in order to reach the support for the whole family .

By carefully designing these rooms we can encourage their physical independence which can improve mental health. This principle is the foundation for the design of the other spaces in a care center. Rooms with different levels of privacy and different programs can encourage patients to be more independent and feel like themselves despite the health condition thus resulting in better mental health as the final result.

The project is a smaller care center based on universal and salutogenic design with an emphasis on mental health and patient independence. The location is green hill under the name Hamrinsberget, north of the Norrland University hospital in Umeå. The care center is an addition to the existing hospital and it is placed on the top of the hill, in the area surrounded with greenery protected from noise. It is used by patients that are going through post cancer treatment recovery and are up to 18 years old.

The thesis is divided into three phases : research for design with the support of theory, project context with a closer investigation into the site and volume and final design development. The research methodology of this project includes a qualitative exploration of salutogenic and children-based design along with case studies with a similar topic. The research also includes workshops with children who spend some time in the hospital for different reasons as well as interviews with an architect, experience expert and a child psychologist.

Keywords : rooming-in, cancer patients, universal design, salutogenic design, independence, parent-child patient unit.

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Introduction

General issues

Going through any healthcare treatment that is difficult on the body eventually leads to the point where patient is partly recovered but it is not ready to step out in the world or doesn't know how because the factor of mental health is not addressed during the therapies. This problem is particularly strong with children, where they are not skilled in socializing or dealing with their mental health after the treatments. Patients and their families need to be taught how to continue their life and need to feel supported until they are ready to step out. Acknowledging what they have gone through, participating in the physical recovery can help with the mental recovery in both parties.

Roger Ulrich proposed that physical and social healthcare environments promote well-being if they are designed to foster a sense of control over physical-social surroundings, access to social support, and access to positive distractions.

Setting

I am focusing on children between the ages 0 and 18 years old who are going through post cancer treatment recovery. These children need help in recognizing and learning how to deal with the challenging situation they have gone through and getting back in society after going through cancer treatments. Depending on the age of the patient the focus on mental health is done differently. Cancer treatments are usually hard to handle but soon after them there is a challenge of recovering mentally and gaining back social skills.

Architecture specific

One of means to achieve their mental and social recovery is to design a space that is flexible and offers a choice of a parent staying in the room with a child. By focusing on universal and salutogenic design a space that supports patients and focuses on the full person recovery can be created. Architecture can certainly help with the recovery in patients, allowing them to be in a space that is welcoming and supporting.

Problem statement

Since the early 1980s, patient parents in Europe have been allowed to stay overnight in the patient rooms. During this time, it was scientifically proven that parents are the primary source of psychosocial support for their children in the hospital (Shepley, M. n.d).

However, the size and overall architectural design of the rooms were never adapted to the doubling of the occupancy rate.

Research is urgently needed to better understand the needs and preferences about family accommodation during a child's hospitalization.

Introduction

Design brief

I am designing a space that can serve as a transition between cancer treatment therapies in the hospital and a life outside of the hospital when the focus is on mental health and reaching independence. Focused on the cancer patients between the ages of 0 to 18, the center needs to be designed to accommodate them and their family first in reaching the full mental help and independency they need in order to overcome challenges after the cancer treatment. The center will resemble the home feeling in a village concept, thus having direct influence in size and shape of the center.

Purpose and aim

This Master thesis is aiming to create a care center that is focused on children who are going through a post treatment recovery phase where the focus needs to equally be on reaching independence and taking care of mental health. Creating a space that is welcoming, warm, interesting and supports these children by giving them the space they need to fully recover.

Thesis question

How can rooming-in aid in achieving mental and physical independence in hospitalized youth?

Introduction

Method

How?

This Master Thesis will try to reach a thoughtfully designed healthy environment that can support patients and families psychologically by providing greater control, protecting privacy, and facilitating communication and participation in care. The research methodology of this project includes a qualitative exploration of mental health, salutogenic and universal design as well as workshops with children to study their needs through relevant questions about healthcare facilities.

Literature studies

Literature is based on the aim of the project, meaning that I got acquainted with the studies that are done in the fields of mental health in children during their stay in hospital, salutogenic design and universal design. The topics that are of interest for reading are the meaning of independence, individual needs of people inside the hospital, healing through design, flexibility of spaces and a new term "rooming-in". I am using the terms salutogenic design and universal design as two pillars to achieve physical and mental recovery and independence with young patients in designing spaces.

Case study analysis

The focus is on children's hospitals that are built all over the world and their logic behind the design. The healthcare projects build over the last few years have similar focus and looking at the result is used as a learning step. First focus is on patients' rooms that are in long term recovery and how they are designed. Analysis expands on the rest of the hospital as well as outdoor space.

Workshops

Workshops with children were done in order to get the perspective of a child and how they perceive the hospital space. Workshop was done in a smaller group of 12 children with different ages. Having the age gaps as a possible obstacle they were asked the question "How do you imagine a hospital and what would you like to have in a hospital?". They were given the option of answering this question in any means they like to express themselves (drawing, writing, speaking).

Interviews

Parallel to the workshop, interviews were done to give a new and professional perspective regarding the topic. Interviews were done with:

- an architect, giving a design perspective
- an experienced expert, giving the personal experience
- a children psychologist, giving the insight to child psychology

Delimitations

The thesis is focusing on promoting mental health in patients with the help of architecture and including the family of the patient in the process of healing. While I am focusing on the patients and their families, I also include the perspective from the hospital staff and visitors for certain parts of the project. Since the location for the center is close to the existing hospital the size of my building as well as needed amenities are designed according to this. The economic factor is included to some extent in the project, but it is not the guiding line for design choice. For the possible future continuations, the economic factor would be included in a bigger scale.

Theoretical background

Literature review

Literature review

According to the Children's Hospital association most patients in hospitals are children between ages 0 and 14. Children require extra time, more monitoring and special caregivers that can communicate differently and are compassionate and patient. The mission for these hospitals is to prioritize children's health and innovate new ways of helping them with the recovery. One of the factors difficult to overcome is the age span between children since there has to be a space for everyone. My focus is on the children that are under 18 years old and have partly recovered from cancer. This means that the care center will be used as a space for post recovery when children are more stable in health and can be more independent.

There is no literature explaining if there is a need for a transition between the recovery in the hospitals and recovery from home. It is an open topic, that is discussed mostly between the patients and staff and being noticed only by the people who go through different recovery processes.

As previously stated parents have been allowed to stay overnight with their children and it was proven that the psychological support between children and parents has been beneficial for the patient's recovery. Staying together in one room is also beneficial for the parent as they are taking an active role in the care of their child. The concept of parents staying in the rooms is named the rooming-in concept. Rooming-in according to Cambridge online dictionary is "an arrangement in some hospitals where new babies stay with their mothers rather than being taken to a separate room for special care". The concept is now being used for all ages and not just new-borns. According to the article under the name "The parent-child patient unit: evidence based patient room design and parental distress in pediatric cancer centers" there are five architectural determinants that are needed when using the rooming-in design. Those determinants are function and place of interaction, distance between parent and child, used space for interaction, used possibilities for withdrawal, and duration of the interaction (Volmer TC). Rooming-in should not be fully overtaking the design of the room. It is beneficial to have a separate space for both child and parent to spend time alone.

Theoretical background

Literature review

The new patient room typology based on the architectural design concept of rooming-in is called Parent-Child Patient Unit or PCPU. It was developed by Kopvol architecture and psychology (Koppen, G.; Vollmer, T.C.). The concept is called OKE (ouder kind-eenheid) in the Dutch original and was developed for the Princess Maxima Centre of Pediatric Oncology, Utrecht- formerly known as the National Child Oncology Centre (NKOC) (2010). PCPU is divided into one part for a child and one part for a parent. Both parts can be separated and closed if needed, and in other situations it can be one space for both parties. There is a play zone where parents and children can spend their time together and it is separated from the sleeping space. Another important factor in these rooms is daylight and the possibility for a child to see through the window and if possible, go out on the balcony. The balconies should be accessible for both patients and parents.

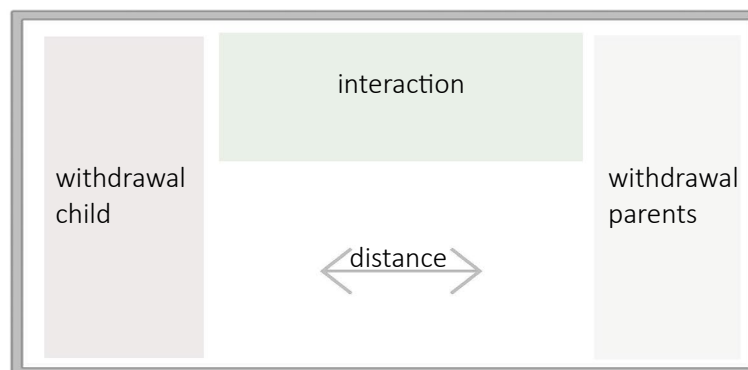
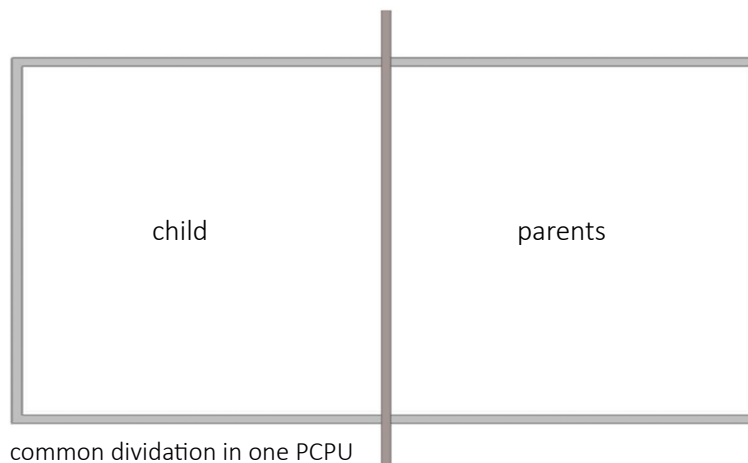


diagram showing the areas in one PCPU



common division in one PCPU

Theoretical background

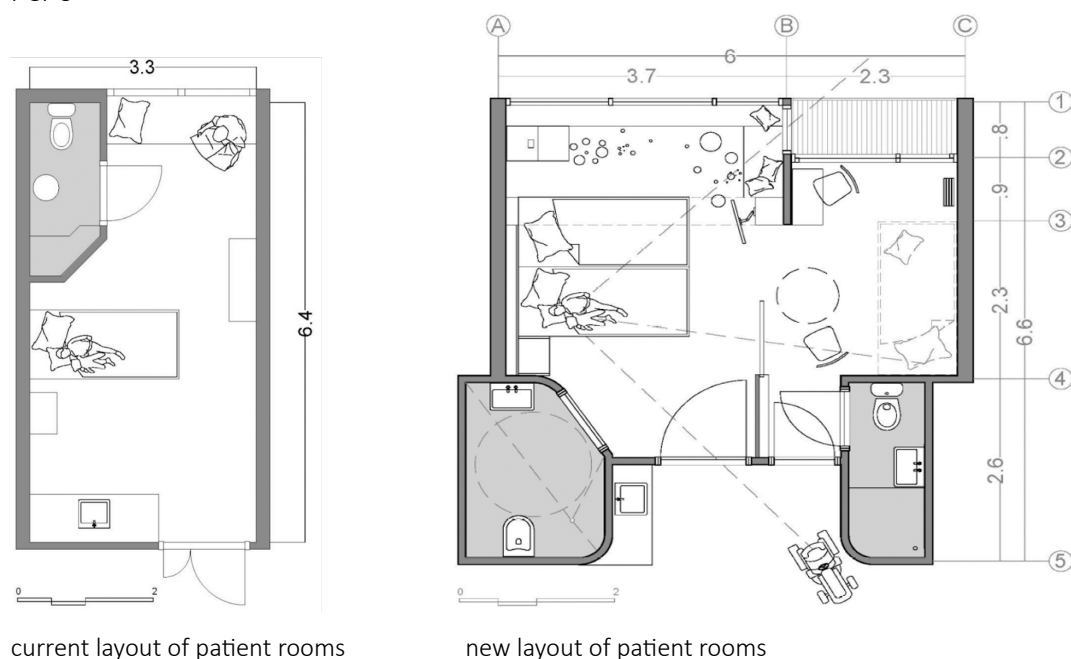
Literature review

In the paper under the name: “The parent-child patient unit: evidence-based patient room design and parental distress in pediatric cancer centers” writer, Tanja C. Vollmer, compares one of the standard hospital rooms for children and the new design that is done by Princess Maxima Center for Pediatric Oncology. The new design, or officially known as PCPU has different criteria that were also defined by the same center. The criteria are:

1. The patient room is divided into a child part and a parent part
2. Both parts can be separated acoustically and/ or visually and gradually, for example, by a sliding door.
3. Both parts have their own entrance and bathroom, as well as their own work or play and dining table.
4. Parents have a view of their child from the bed when the door is open.
5. The child part is clearly zoned into an entrance zone for medical and nursing activities and a private (play) zone where these activities do not occur.
6. The parent part has direct access to an outdoor area, such as a terrace or balcony
7. The PCPU is embedded in functional services for parents within a perceived walking distance of one minute (1 minute rule).

I am using these criterias and drawings to reflect on when designing my patient unit. Looking at the design and questioning different aspects as well as accommodating the design to location and program needs.

Figure 1
PCPU



Theoretical background

Theoretical framework

For the thesis I have used two theoretical pillars on which are based on my design ambitions. I have used universal and salutogenic design as guides for making design decisions in the project.

Salutogenic design

“What are the origins of health?”, the famous salutogenic question that was formulated by Aaron Antonovsky. He was a sociologist and anthropologist that started questioning the healing of people and how we can take care of the person as a whole. The word “salutogenesis” coined by Antonovsky, comes from the words origins (genesis) of health (saluto). Salutogenic model is not a theory which focuses on “keeping people well”, rather it is a theory of the health of what complex system the human being is (Antonovsky, 1979). Previous practice was to identify the disease and that becomes the sole focus of attention, which is not a sustainable system for a person in the long term. Antonovsky started identifying the principles that made sense of coherence (SOC) as an integral part of the natural healing process and that a strong SOC is supported by three factors which are: comprehensibility, manageability and meaningfulness. (Golembiewski, 2010) Sense of coherence is central to successfully coping with challenges (Antonovsky, 1978), while comprehensibility is making sure that perceptual cues present to assist perceptual processes, manageability is allowing patients to exercise control of the environment and meaningfulness is enriching the environment with complexity, order and aesthetic considerations (Golembiewski, 2010). All these approaches come together to create an architecture that serves the needs of mental health patients. When it comes to children and emotional health, according to Golembiewski, it is strongly influenced by their environment and the nature of their relationships. Children understand, manage, think, feel and talk about their experiences differently at different ages. This leads to the need of creating a space that is supporting the children at any stage and activity they are doing. Family ecology consists of parental, familiar and environmental characteristics that may affect the capacity of the family to provide optimal care (Greenberg, Spelts and De Klyan, 1993). Olson (2000) identified cohesion and adaptability as two major parameters for evaluating the functioning of the family. Cohesion is connected to closeness and adaptability reflects on the ability to change along the way. Salutogenesis is a way of understanding the entire spectrum of wellness and illness, regardless of details. An architect armed with an understanding of salutogenic can go much further, paying attention to how design can enhance the patient’s resource for recovery (Golembiewski, 2010). It has been observed that sports or outdoor activity like planting have a salutogenic effect for patients as it creates meaning and independence. Another factor that can be beneficial is affordance for pets, though the allergies could be a problem, it must be remembered that relationships with pets are often more significant to the patients, specially to children (Searles, 1960).

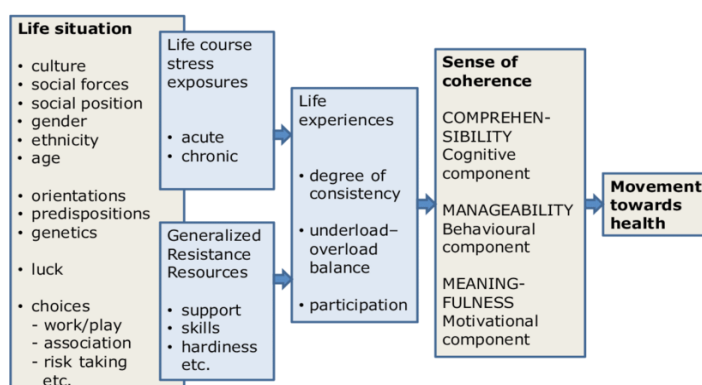


Figure 2
The Salutogenic model

Theoretical background

Theoretical framework

Universal design

“Universal design is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.” (Ronald L. Mace, n.d.). It is important to mention that universal design is not a movement on its own, but a method or a guide for architects and designers. It has a direct influence on the design process. It is connected with urban planning, architecture as well as product design. (Aslaksen et al, 1997) It is understandable that some products and environments can never be fully usable by every person but there is a great benefit when incorporating universal design from the start of designing.

The “Principles of Universal Design” were developed by a team of U.S. experts organized by the Center on Universal Design at NC State University in the 1990’s. Those principles are:

- Equitable Use

The design is useful and marketable to any groups of users

- Flexibility in Use

The design accommodates a wide range of individual preferences and abilities

- Simple and Intuitive Use

Use of the design is easy to understand, regardless of the user’s experience, knowledge, language skills, or current concentration level

- Perceptible Information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user’s sensory abilities.

- Tolerance for error

The design minimizes hazards and the adverse consequences of accidental or unintended actions

- Low physical effort

The design can be used efficiently and comfortably and with a minimum fatigue.

- Size and Space for Approach and Use

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of the user’s body size, posture, or mobility.

Apart from these principles it is important to use participation when designing. There are two reasons why participation is important in taking care of the regard for universal design. Participation increases knowledge about the needs of various groups of the population and it ensures that consideration for various groups of the population is developed at an early stage (Aslaksen et al, 1997). This achieves universal design incorporated at an early stage of designing.

There is also a set of goals that were formed to link universal design to bodies of knowledge and identify measurable outcomes. Those goals are:

- Body fit

Accommodating a wide a range of body sizes and abilities

- Comfort

Keeping demands within desirable limits of body function

- Awareness

Insuring that critical information for use is easily perceived

- Understanding

Making methods of operation and use intuitive, clear, and unambiguous

Theoretical background

Theoretical framework

- Wellness

Contributing to health promotion, avoidance of disease, and prevention of injury

- Social integration

Treating all groups with dignity and respect

- Personalization

Incorporating opportunities for choice and the expression of individual preferences

- Cultural appropriateness

Respecting and reinforcing cultural values and the social, economic and environmental context of any design project.

These goals were made in effort to clarify what universal design is trying to accomplish, as well as to incorporate human health and social participation.

When it comes to architecture the movement from which universal design is the most similar is functionalism. Functionalism (1920-1940) is the style that demands functionality which is also important in universal design. "While functionalism is a movement with a clear ideology of cultivating an aesthetic which removes all unnecessary details and demands pure lines where the design is given by the material and its use, and puts functions and people into standardized needs and solutions, universal design is a method as well as a tool which does not put any demands on aesthetics, but only to the functional demands which are to be achieved." (OPET VISE PISACA) Architecture today is based on the main principles of functionalism. There is a wide range of examples in which architects have put emphasis on accessibility and usability. It is important to understand that universal design should be considered at the start of designing as only in that way will it be fully incorporated and eventually sustainable. Comparing Da Vinci's Vitruvian Man and Staingeld's "The Enabler" we realize that there is a shift in the way of thinking. Instead of designing for the universal person this goal is being modified into universal designing for the variety of people in real situations. (H. Froyen,2013)

Figure 3
Vitruvian Man

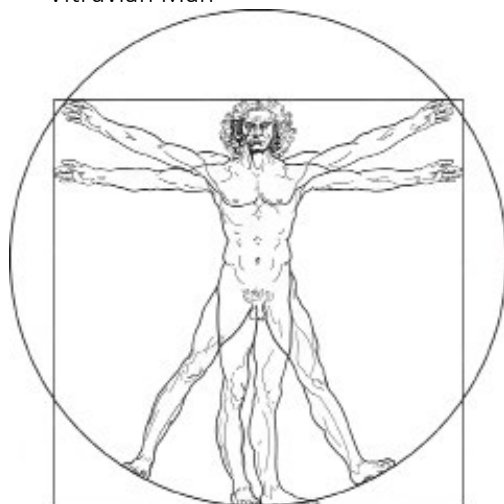
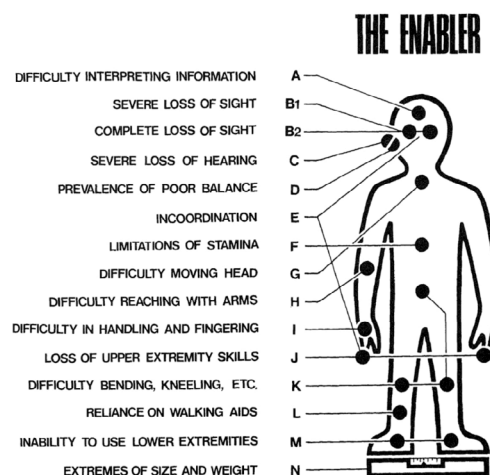


Figure 4
The Enabler



Theoretical background

Problem definition

Since the early 1980s, patient parents in Europe have been allowed to stay overnight in the patient rooms. During this time, it was scientifically proven that parents are the primary source of psychosocial support for their children in the hospital (Shepley, M. 2005). However, the size and overall architectural design of the rooms were never adapted to the doubling of the occupancy rate. There is lack of privacy for both parties and no flexibility in the room, creating a space that is too crowded and not supportive. Furthermore, the focus is on physical recovery from the cancer, meaning that mental health is left as the secondary focus. The design of the hospitals is accommodating to the focus, leaving the problem of sizes of the rooms and how supportive the architecture is when going through health problems as an open discussion of recent designs. Problem that is occurring due to lack of attendance to mental health is the problem of child independence and managing the life after the treatments. Not having the option to adjust, slowly transfer and improve mental health before going back into society is considered an issue that is not addressed enough. Research is urgently needed to better understand the needs and preferences in order of family accommodation during a child's hospitalization and how to reach the mental health and independence needed for living after the treatments.

Research for Design

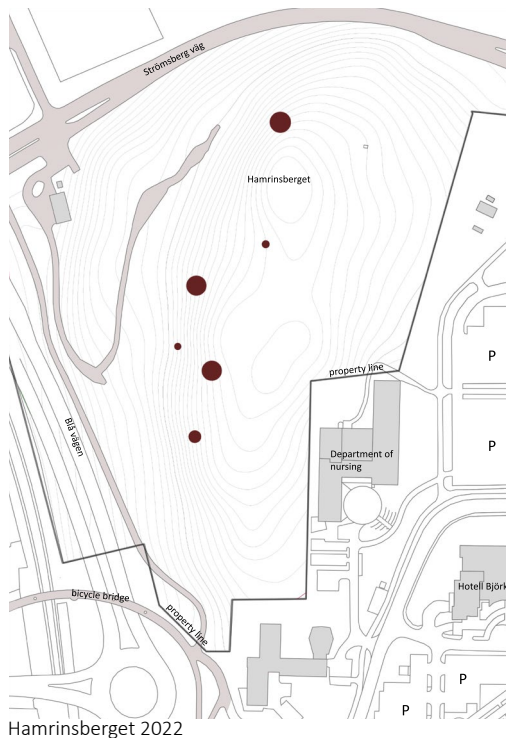
Site analysis

Hamrinsberget

Hamrinsberget is a green area north of the Norrlands University Hospital in Umeå. It has been inhabited for a longer period and there are plans for future developments on the hill. Hambrinsberget was formerly known as Öberget or Inneröberget. It consists of a north-south mountain ridge with rocky ground, in places with elements of superficial moraine. The north peak is slightly higher than the south peak. The western part of the hill is affected by activities like ski jumping that was constructed in 1931 and demolished in 1960. To the east and south, the area borders Umeå University and Norrland University Hospital.



Figure 5
Hamrinsberget 1931-1960



Hamrinsberget 2022

Red dots signify the archeological remains along with the black property line and bicycle road that lead to the bicycle bridge.

Hill is close to the Svingen bicycle bridge, the bus terminal at Norrland University Hospital and central Umeå which enables sustainable travel to and from the Hamrinsberget.

Baltic group company has plans of building the residential buildings together with office spaces. The plan is to densify the area and make it more usable.

On the other hand, the hill is above the sea level which makes it a place for possible archaeological remains that could be important and set boundaries to the area that are free to build on. The Västerbotten Museum has carried out an archaeological investigation. The top of Hamrinsberget (about 44m) rose from the sea at about 2000 BC. There are multiple stone settings on the location. On the north side there is a burial ground and a settlement area. All of these findings are of historical significance but could be moved in a museum in case of construction. I have tried to perseave as much as possible when deciding on the volume and position of my complex.

Research for Design

Site analysis

Reasons for choosing this site

This site is chosen for several reasons. It is close to the existing hospital and this changes the scale of the project to the idea I wanted. It is surrounded by nature which is a vital point when designing a space for relaxation and recovery.

The infrastructure is developed and makes it easier to reach the care center. Depending on the type of trees that will be cut down on the site, they can be reused on the building either as a material or as part of the load-bearing structure.

There are a few places that are clear of green areas and it is possible to build on those. Comparing these areas, with height differences and archeological finding I have marked places that are the possible areas where the center will be. The shape and position of these areas will affect the shape of the final volume.

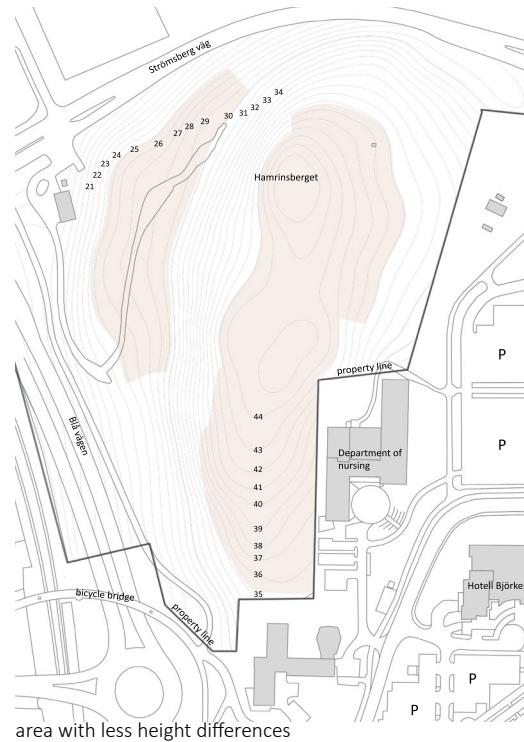


Diagram on the left is showing the possible places for the complex according to the previously mentioned criterias.

There are 6 possible spots. Number 6 is a road which makes it a little less desirable. Depending on the size of the complex a possible location out of these will be chosen. All the areas are similar sizes but on different height positions on the hill. These 6 places are the spots that will prevent the greenery in total but there is a possibility of cutting down some of the greenery and replacing it in a different way.

There are 4 large parking lots (P) and a Department of Nursing with homes for nurses in the close proximity. This will affect the size of the complex and the need for parking spaces on the hill.

Research for Design

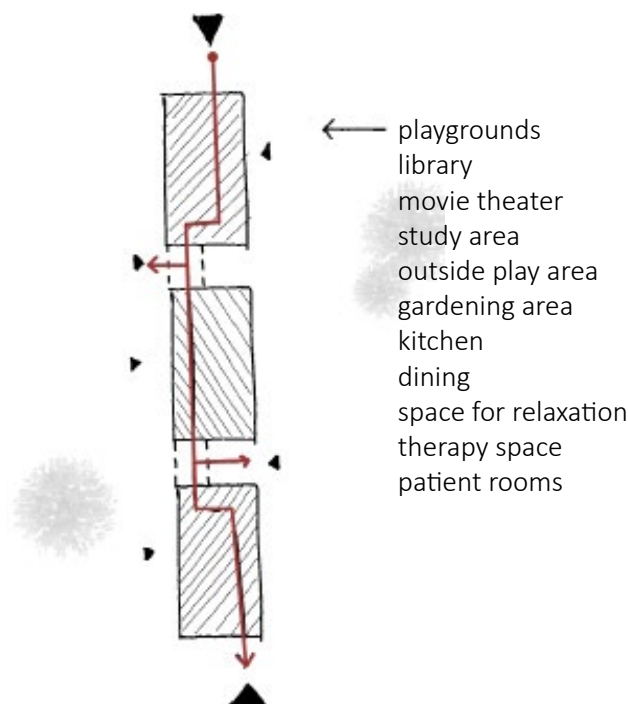
Program investigation

Center as well as the outside space, needs to be in proportion regarding the dimensions since it should have a home feeling and resemble a village in order to be comfortable for everybody who is there. Apart from this the center is in close proximity to the existing hospital which regulates the size of the new building and needed amenities. Center is set deep in nature on top of the hill. Due to the archeological findings on the location and steep landscape the best position for the building is the top of the hill. It also gives a better quality view from the center.

It has to have an additional entrance that can be used by visitors and people that are delivering goods. This entrance should be placed on the north side of the location as there is already a car road that can be reused to go up the center. The other entrance needs to be on the south east side as there is a hospital and the closest communication between two buildings for staff and emergencies.

In regards of the roof shape the center needs to respond to the harsh winter conditions. The sides of the building with the most windows need to face the east and west side. The best solution for the roof is a two pitched roof with a design detail where one side of the roof is coming all the way to the ground. Due to the inclination and the shape of the roof, there will be an alternative solution for the light.

The center is used for post recovery which means that these patients have been through the therapy and are able to walk and need to continue going back to social life and everyday tasks. The age span is up to 18 years old and these ages can be separated in two different volumes if needed. Having different ages in mind, the center needs to have different programs like playgrounds, library, study spaces, outside play area, gardening area, common kitchen and dining area, space for relaxation, therapy areas and movie theaters.



Research for Design

User information/ Persona development

Users of the center are put in four groups:

- staff
- patients
- family of the patient
- visitors

These users are formed by me and according to these groups I have developed personas who are representatives of each of the groups.

There are common areas that can be used by all of them and areas that are meant for only one or two members of the group. The sizes of areas are made according to the amount of people that will be using that area.

The biggest area is an outside area where all groups can be together and share the space.

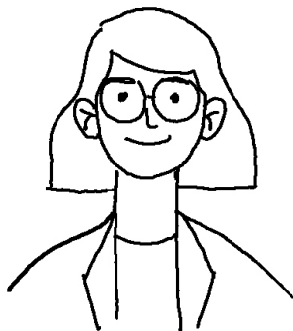
Group: Staff

Maria 45, medical worker

Nurse in the complex. Works day shifts. Nurses work in shifts and there is no need for them to stay overnight

Needs:

- Easy access from the existing hospital to the complex.
- Place to change, eat, relax and maybe take a nap during the day.
- Easy access to the patient complex.

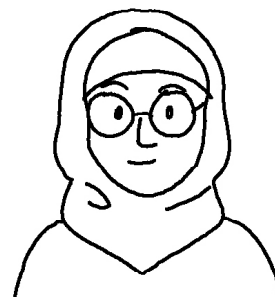


Anna 35, therapist

Comes in only for scheduled seasons. Enters the complex the same way as nurses due to health regulations.

Needs:

- An office and easy access to the patients, and doesn't need to have a kitchen of her own.
- The possibility to have a relaxing outside space.



Research for Design

Persona development

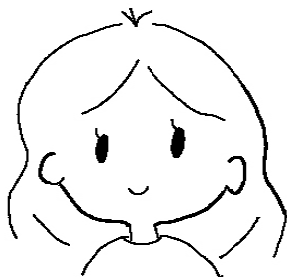
Group: Patients

Arija 4

The complex can't be too big as she needs to feel comfortable. Arija is young and requires more attention from staff and parents

Needs:

- Room to sleep in.
- Space for relaxation.
- Space for learning.
- Space for playing.
- Outdoor space.
- Access to direct light and nature.
- Comfortable and home feeling of a space.
- Pleasant outside space with greenery.
- Large amount of playing interesting spaces.
- Have the ability to decorate her room as she wants.
- One or both parents with her in the room as a support.
- Fun place for watching movies or plays.
- Place to eat with the rest of the patients.
- Space where other people can visit her without going into her room or the complex too much.

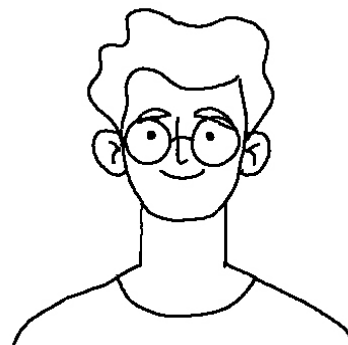


Johan 15

He is a teenager and doesn't require as much attention as Arija.

Needs:

- Room to sleep in.
- Space for relaxation.
- Space for learning.
- Access to direct light and nature.
- Comfortable and home feeling of a space.
- The flexibility of the room, having the option of socialising with his family or having the privacy if wanted.
- Place where he can relax, watch movies.
- Outside space that is not too open to the public eye and yet not too close.
- Space where other people can visit him.
- Space where he can eat.
- Have access to the therapist.
- Connection with nature through the room and light spaces which he can dim down if needed.
- Have the ability to personalise his room as he wants.



Research for Design

Persona development

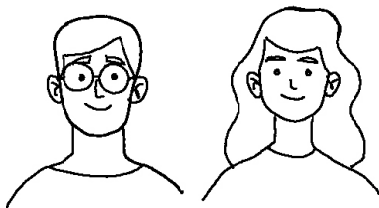
Group: Family

Cristof and Hanna, Arijas' parents

Either both or one parent are staying in the room with Arija, living the complex while supporting her.

Needs:

- Place to sleep, close to Arija.
- Place to eat, cook, relax.
- Outside space.
- Have the possibility to visit a therapist if needed.
- Place where they can work if needed.

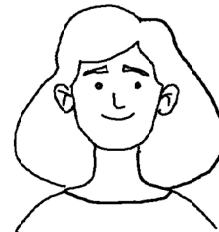


Elin 26, Johans' sister

She is staying in the room with her brother. Depending on the lifestyle she can either be there all the time or come from time to time and stay there for a few days.

Needs:

- Have the possibility of sleeping in the room with her brother.
- Space where she can study or work, a silent place.
- Place where she can eat and outside space to go and enjoy.



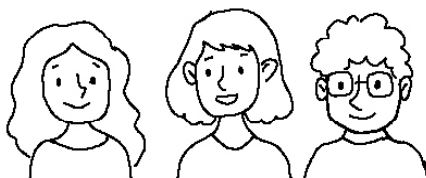
Group: Visitors

Arijas' kindergarden class

These visits are organized in smaller groups for health safety. This can be done indoors or outdoors.

Needs:

- Space to interact, play and talk with Arija.
- Easy access to the visitors area from the town.

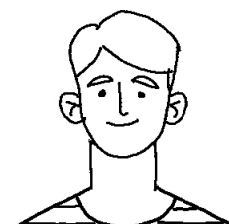


Klas 17, a friend of Johan

He comes from time to time and spend his visitation in the assigned room or an outside space.

Needs:

- Easy access to the center from the town where he can spend some time with his friend.
- Easy access from the road, no matter the means of transportation.



Research for Design

Interviews

In order to get a broader knowledge of the topic I did three interviews with professionals from different fields. I decided to interview an architect, an experience expert and a child psychologist. These three perspectives allowed me to look at the topic in different ways when designing the building.

Notes from interview with an architect

“Attention means respect”

With an experience of 23 years my interviewee had a lot of interesting responses to my questions. Some of the biggest challenges when designing a hospital is to be able to implement functionality, aesthetic, sustainability and future proofing in one hospital design. When it comes to designing space for children the challenge is to make all ages happy with their space, so architects must be able to give something to everybody. One of the crucial factors are parents and it is important to give them the space they need to destress and make their stay in the hospital as pleasant as possible. Topics to have in mind is universal design, play therapy and home feeling in the rooms. Rooms being like their small flat brings out the answers about design requirements in the room and the importance of them being able to personalize their rooms as much as possible. Having a rich social life even in the hospital will help the child recover better and faster. Stimulating movement with the design in spaces like common rooms as well as inspiring places outside brings satisfaction in parents, patients and their siblings.

Notes from interview with children psychologist

“Mental health is an important tool in recovery”

With 24 years of practice behind her my last interviewee was more than equipped to answer my questions and help me with understanding the children mentality better. Before opening her private practice she was working in a hospital as a child psychologist in a developing country. Same as my previous interviewees, she wishes to stay anonymous. There is a big difference between the children that are patients and family and friends who are there for a visit. They are looking at the same space from a different perspective. Patients are usually less active and don't want to interact with other children too much. They tend to become introverted and spend their time in bed. This creates a big problem since the motivation to play and socialize is low and the chances for a better recovery are less. Their mental health is affected and the hospital becomes equal to a place they never want to go in again. They don't see it as comfortable and approachable as it should be. There is, of course, a difference between these kids but all of them need to have interactions with other people. Family visits are something that always makes them happy and more open to playing or taking a walk, if possible. This difference in behavior is normal and it is expected of a child to be more comfortable next to its family than strangers. That is why family stay is important for recovery. Having the option to be next to your mother while going through something that is heavy and hard is an option that should be encouraged in every hospital. Family could be a great influence and staying in the room together can benefit both parties.

Research for Design

Interviews

Younger children do not fully realize what is happening and it is important to emphasize different methods for healing like healing through playing. They are not always able to express how they feel and thus, we need to make it possible for them to express themselves with different means, like drawing or playing. It is important to keep up with the healing process and give them a safe environment where they are comfortable. Patients wish to be heard no matter the age and this is an important part of their not just recovery but childhood too. Giving them the options to decorate their rooms and decide where they want to eat, or play in the hospital can have positive results.

Notes from interview with experienced expert

Having gone through the recovery process herself along with her family this interview gives another perspective on the spaces and feelings that are present during the therapy process. The therapy lasted for a few years just in hospital and it is still ongoing but from home.

Hospital recovery during therapy

During the hardest time the interviewee was spending her time in one of the biggest state hospitals in developing countries where patient rooms are shared between two or more people, depending on the type of care. Sharing a room can have its benefits but it is best when you have your own room with a private bathroom. Visitors were allowed only for a few hours during the day and family was allowed to stay overnight but on the small couch. This made things difficult and uncomfortable both for the patient and the family. Staying overnight was not in favor with doctors and this would lead to arguments and disagreements about staying over. Hospital was not equipped to support family stay in any way. Apart from this the room had two chairs, two small bedside tables, tv and a small window looking out. The colors in the room were gray and white, leaving no space for coziness and warmth. The greenery that was in the room was the only welcoming detail. Toilet was shared between two patients, and this was not in favor of each of them. Since the visiting hours were the same for all, the room was full of two families in a small space. This leads to less communication and lack of emotional connection and support between the patient and her family. The positive side was that the patients were allowed to speak on the phone any time they wanted. Although this was possible still the emotional strain on family and patient could be seen, this led to anxiety and fear in both parties which resulted in slower recovery.

Home recovery after the therapy

Coming home after the therapy can be overwhelming for a patient. Although it is good to be surrounded by family and getting the emotional support that is needed, it is often the case where I felt weak and couldn't perform simple tasks and was ashamed that my family had to do them for me. In the hospital you are expected to be helped by the staff and in those moments, you are okay with them helping you, but it is a different situation when the people that are helping you are your family. In my case I had two girls that were little and had to take for example house chores on themselves to help me. Nobody in the hospital is preparing you for the mental state you get into once you are home. It is a confusing time where you must start socializing and answering questions about your health now without feeling fully like yourself. There is no transition space or time between the hospital therapy and continuing your recovery from home.

Research for Design

Interviews

The interview was done while patient is recovering from home, and it focused on both recovery process from hospital and home in order to better understand the perspectives and mental state of the patient.

Conclusion from the interviews

- Independence is as important with patients as it is with healthy children.
- Patients need to feel “in charge” and comfortable in the hospital as it is a place where they spend most of their time.
- Hospitals, or in my case care centers, should be designed in a way that allows children to see their health problems as something they can overcome and not as something that is holding them down.
- Siblings tend to see the space as tedious and they need more activities, allowing them to have this can also lead to positive feelings and motivation that can later be transferred to a patient.
- Having the options for families to go through the process of healing together in different settings can connect them more and give them the “home feeling” they need.
- The transition phase between hospital stay and home stay does not exist now and patients are left to adjust back to social life on their own without working on mental health.
- One of the biggest topics to have in mind is universal design, play therapy and home feeling in the rooms
- Having a rich social life even in the hospital will help the child recover better and faster.

Research for Design

Workshop

Workshop with kids in collaboration with Sara Nyangena, a project manager at Tidsnätverket in Bergsjön

Date: 2022.01.21

Time: 17h-20h

Number of kids: 12

Girls: 6

Boys: 6

Age group: 9-12, one child 4 years old

The purpose of the workshop is to get the insight of the general impression hospitals leave on children. As adults we can only assume what the children would want but with the workshop with children I got a first-hand insight into the topic.

After the interviews and different perspectives from adults the workshop was a another perspective on the topic of hospitals. Designing a space that is closely connected with a certain group of people

should lead to asking the users what they would like to see. Unfortunately, I was not able to have a workshop with kids that are also patients, but I worked with kids in general to try to understand what they see. The workshop gave me valuable insight into the topic of hospital spaces. The age group that I worked with is similar to the one that I am having for the care center so the difference in opinions is very little and I have tried to compensate this with interviews and literature. The topic was complex for them, and I have given them the options to express themselves how they want. Most of them choose to draw and some wrote what they have seen in hospitals.

Children focused on the environment were more observant of the colors of the hospital and the noises. Their impression is that the hospitals are tedious places with a lot of crying infants and that is what is bothering them the most. They would like to have some food in the hospital and if they need to stay inside the hospital for a few days then they would like to have their technology and friends with them. One of the wishes was to have a warm pool or a playground inside the hospital.

Children focused on the people were observant of the looks of doctors that were, to them, scary because they were wearing masks. All the children agreed that the hospital is a tedious space and all they see while waiting for a doctor is a lot of doors. Meaning that the hallways are dull for them to spend time in. For the room, technology and personalising the rooms is vital to have in order for them to feel relaxed.



Research for Design

Workshop

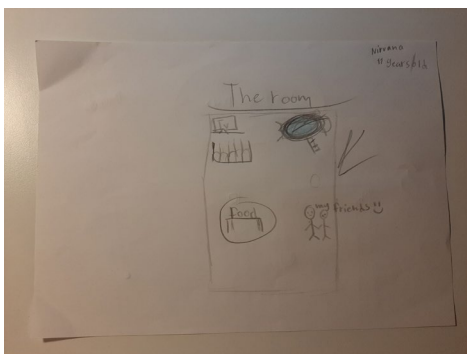
Conclusion of the workshop

- Children would prefer to have interesting things to do during their stay in the hospital
- Spaces in hospitals should be fun and interesting as much as possible
- A few of them mentioned the possibility of having food in the hospital
- they are easily distracted by the noise of the new-born babies and do not like the loud sounds
- the hallway where they have to wait for the doctor should also be interesting and more spacious with the multiple side views if possible



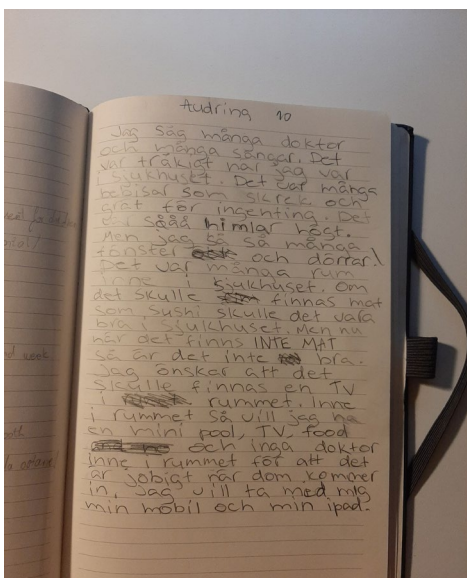
The view from the waiting room in the hospital.

"It is boring and there are a lot of noises everywhere"



The wish list for what to have in the room

"I would like to have a pool, tv and good food maybe sushi and also for my friends to visit me"



Another way of expressing what is in the hospital and wish list what to have in the room.

"I want to have my phone or iPad in the room"

Research by Design

Design ambitions

Final project would be a place that resembles a home in the sense of shape and size. On a bigger scale the center would resemble a village in order to make patients feel comfortable and easy to navigate. The building needs to communicate with the location, weather conditions in the area and nature. Materials should be reused and sustainable in order to keep the cost of the building low. It is important to consider the sun position and amount of light that is coming in the building as well as the greenery and programs around the complex. Communication, programs, and entrances should be clear and easy to follow throughout the project.

- Home feeling
- "Village" concept
- Communication with the location
- Weather conditions implemented on the complex
- Reused materials
- Communication and entrances easy to follow throughout the building

I have set two previously mentioned main pillars that serve as a guiding line for design decisions in the complex and patient rooms. For universal design I am aiming for creating spaces that are flexible and adaptable for all ages that will spend their time in the center. This means that all rooms will have structures that can be used by everybody and on a bigger scale, the spaces will support different universal activities. Another important aspect of why I have chosen universal design is the lower costs when designing since for example, patient rooms will have one universal toilet instead of two toilets with different dimensions. With salutogenic design the aim is to focus on mental health and patient independence as much as possible. This is achieved through stimulating movement and supporting the whole family with the complete process of recovery and adjusting.

Salutogenic design:

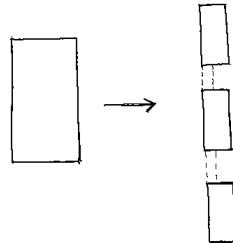
- Mental health-access to outdoor spaces, balconies in the rooms, gardens, private and common spaces in the patient rooms
- Independence through play- rooms with playing that are interesting to see by all ages, rooms used only by children
- Rooming-in in the sense of family health- patient-centered parent unit (PCPU)
- Stimulating movement- common TV rooms with encouragement to leave the private room, outdoor playgrounds that are easily accessible
- Meaningfulness
- Manageability
- Sense of coherence

Universal design:

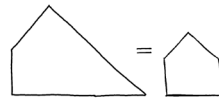
- Support of the whole family in the room- universal sizes of the furniture
- Support of different types of visitors to the space- wheelchair accessible all spaces, playgrounds for children with disabilities
- Lower costs- one bathroom for everybody in the room, areas that can be used by everyone.

Research by Design

Design strategies for volume



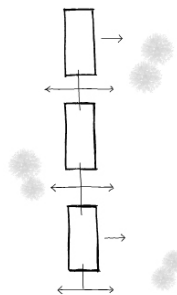
breaking one volume into smaller ones
in order to create "village" impression



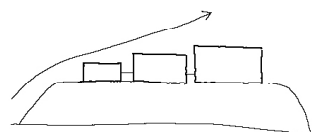
shape of the volume resembling the house



connecting volumes with a closed communication in
order to segregate programs inside



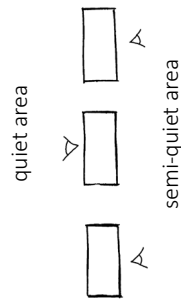
access to nature



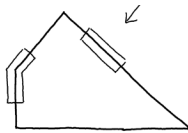
different heights of the volumes continuing the
growing height of the hill

Research by Design

Design strategies for volume



different views from each volume



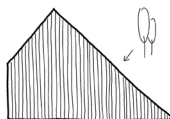
windows configuration due to the shape of the volume



steep roofs aligned with the weather conditions on the site



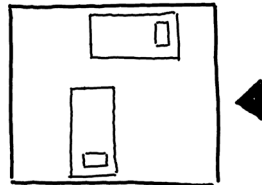
multiple use of the roof



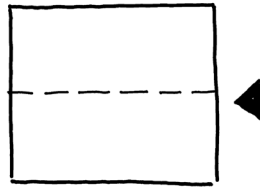
wooden facade corresponding to the surrounding and reusing the wood from the location

Research by Design

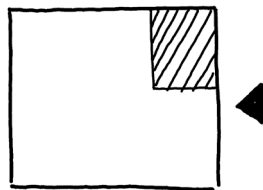
Design strategies for patient rooms



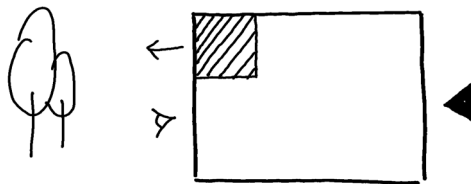
both patient and parent/sibling in the room



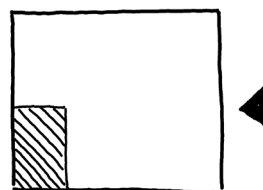
flexibility of space, dividing the area



one universal bathroom



direct access to nature/ balcony



play/study area

Research by Design

Reference projects

Reference projects are taken with the goal to design a care center that will be a home for the family and the patient. The care center is located close to the existing hospital which makes the scale of the care center smaller, and it is designed for children who have partly recovered from the cancer and are under 18 years old. All these aspects led to the close choice of reference projects.

Snohetta / Friluftssykehuset- the Outdoor Care Retreat 2015-2018



Figure 6
Outdoor Care Retreat

The Outdoor Care Retreat provides a peaceful space where visitors can benefit from therapeutic qualities of nature. Cabins that are 35sqm provide a space for treatment and contemplation as well as spending time with family away from the hospital corridors. The cabins are open to every patient connected to the hospital regardless of the disease group. Its location is in Oslo and Kristiansand in Norway and it is in the middle of nature.

The project is done in hope to inspire more outdoor retreats near hospitals and this is an ambition I share with the project. The scale of the project as well as the concept and location inspired me to create something that will give the same feeling. Even though the cabins are in the hospital campus they are separated in nature and can be seen as a place on its own. The material for interior as well as exterior is wood, blending with the landscape and giving a feeling of comfort. Snohetta created a space that is helping anybody to recover mentally next to the health problems they are experiencing. These spaces are the inspiration and motivation behind my design of the care center.

Research by Design

Reference projects



Figure 7
Outdoor Care Retreat

Cabins are accessible for wheelchair users and the entrance is large enough to fit hospital bed. It consists of a main room, a smaller room and a bathroom.

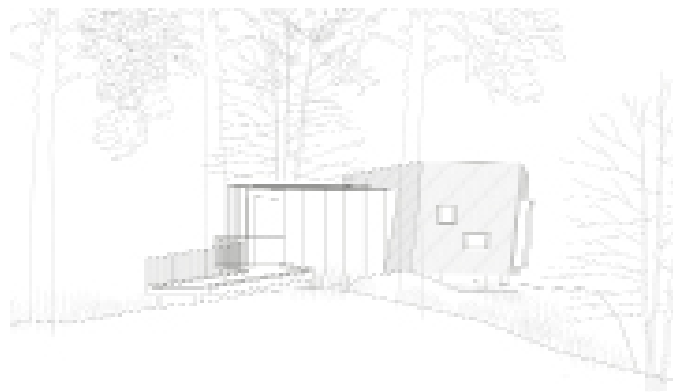


Figure 8
Outdoor Care Retreat

Cabins are made of wood and they extend into the landscape. The massive wood of the main structure will turn gray over time.

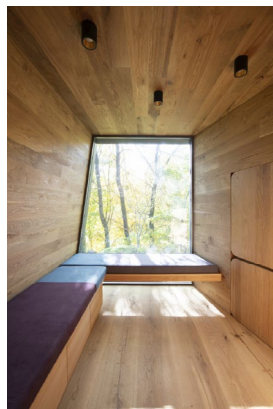


Figure 9
Outdoor Care Retreat

The interior is done in oak. It is furnished with pillows that can be moved around by anybody. The windows can be fully open, letting the nature merge with interior.

Research by Design

Reference projects

White Arkitekter / Hjältarnas Hus- House of Heroes
2017



Figure 10
House of Heroes

House of Heroes is a place with an uplifting environment which has the goal to ease the rehabilitation process for children in their most fragile state. The new facility refurbishes an older existing building as well as incorporating a new one. It has small apartments, or hotel-like suites, along with kitchen and activity rooms. The location for the project is Umeå, Sweden.

The idea of a house has a strong impression and it is closely connected to children. This inspired me to look at the care center as a home and not only a healthcare building. The project serves as a temporary home for children where they can recover with the support of their relatives. The concept of having a space where the whole family is included in recovery is another guiding line I used for my design ambitions. As this is a large scale project that is incorporating administrative offices and conference rooms the programs for my design will be more focused on the areas for patients and family, leaving staff in the second focus. This is largely due to the fact that my location is set close to the existing hospital and there is no need for large scale projects or certain programs.

Research by Design

Reference projects



Figure 11
House of Heroes

The interior is spacious and light with wooden features and interesting window coverings.



Figure 12
House of Heroes

The main focus was on creating a playful environment where young patients and their families can focus on healing.



Figure 13
House of Heroes

There is a two-storey glass atrium, creating an indoor courtyard with a tree inside. The entire building is made from wood with facade features Tricoya panels with patterns

Design proposal

Argumentation

Having gone through the heavy cancer treatment and physical recovery patients need a place where they can reconnect, recharge and mentally heal and prepare for the world. The idea behind cancer center is to give them the space to do that. They are given a center that is supporting them and their families with different programs, spaces for relaxation, nature and comfortable areas where they can recover. One important factor is the possibility for having the family present during this recovery. Since my focus is on the children below 18 years old family plays a big role. By designing the patient rooms big enough to fit two to three people I give patients the option to heal in the health facility but still close to the family. Scale of the center plays a big role since it shouldn't look intimidating to patients. I have decided to go with village typology, creating smaller volumes with different programs that are surrounded by nature. Having children as the main users the scale and shape of the volumes are adjusted in order to look like a house to them. The location is still central and well connected as well as close to the existing hospital complex but still separated in the quiet area, allowing patients to recover in peace. Mental health is an important factor and often disregarded when going through something like cancer treatment. Focus is on physical recovery and mental health is often left unsolved and patients are not helped with how to deal with what they have gone through. This takes a toll on the family as well. For this reason it is important to have a center like this where people can fully recover before continuing with their lives. For children it is also important to have the family close and this is achieved with simple patient room design change. This is beneficial not only to the patient but to the family too. Center is designed in a way to accommodate the needs of the family too.

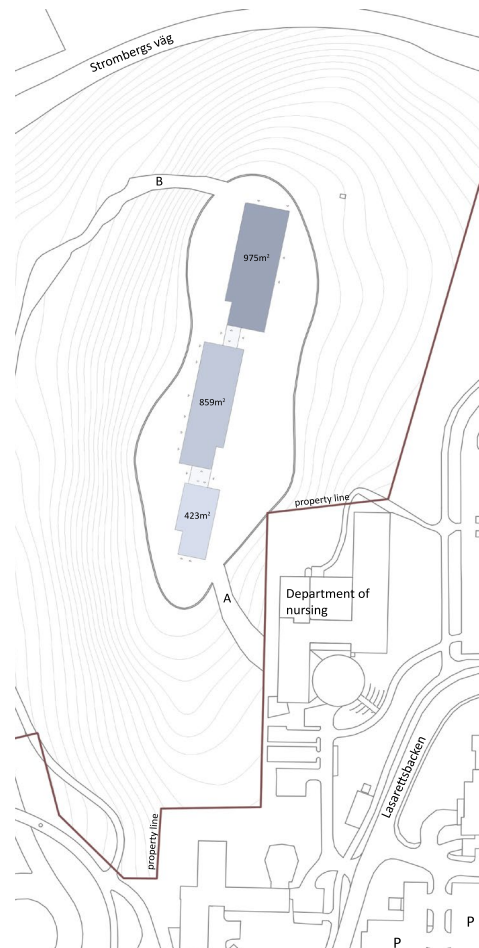


The urban context

Site for the project is set on Hamrinsberget in Umeå.

Due to the typology of the terrain the best solution is to place the cancer center at top of the hill. This way, there is a view, privacy and calmness for users of the center. Center is surrounded with nature and this protects the center from noise of the busy roads that are close to the location.

Currently there is one road (B) that leads to the area close to the top of the hill. That is reused for the access to the center by visitors and different types of delivery. The road is connected to the bike lane so there is a possibility of reaching a center with a bike also. On the south side of the center there is another additional road (A) that will connect the current hospital complex with the new center. This road is used by staff and patients that are coming from the hospital. Both entrances lead to the outside area of the cancer center where north entrance leads to the visitors area and common area volume and south entrance leads to the staff volume in the cancer center. The entrances are divided keeping in mind the easiest and fastest way for the users to reach the cancer center.

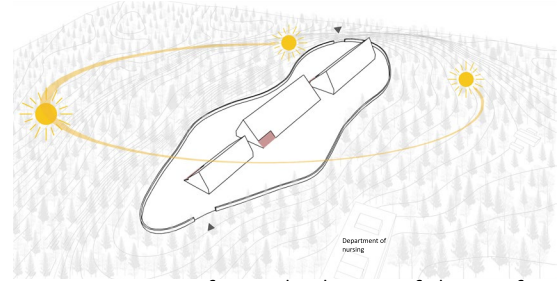


Design proposal

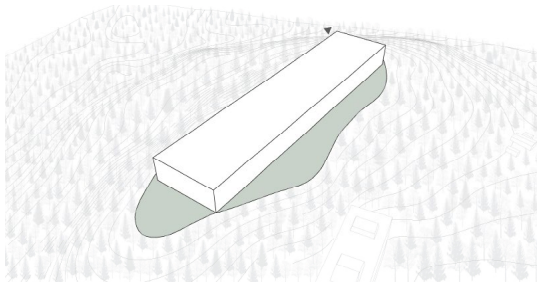
Volume development



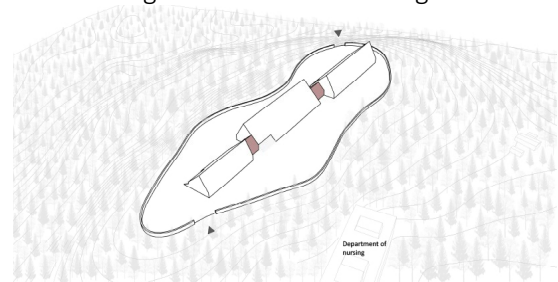
existing location



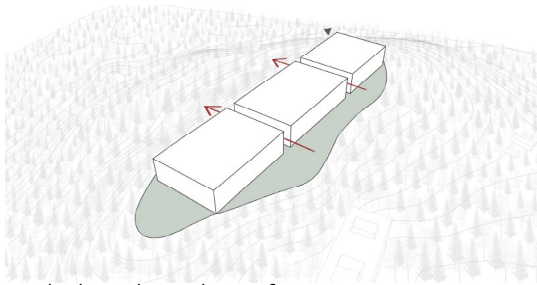
creating seating for multiple use of the roofs and rotating the volumes according to sun



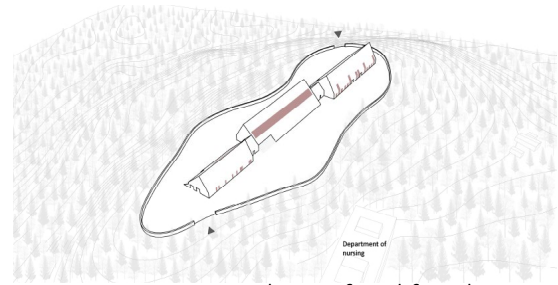
maximum use of the location



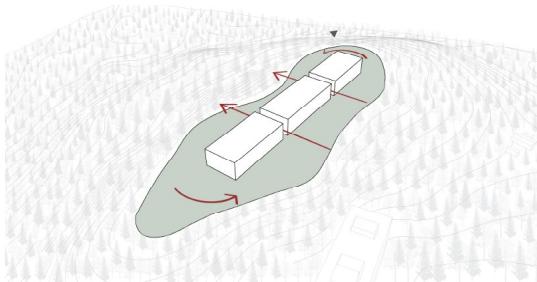
connecting the center with smaller volumes



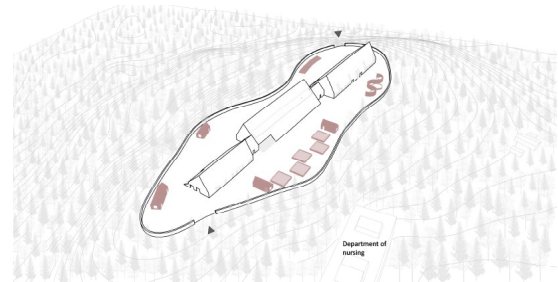
exploding the volume for views



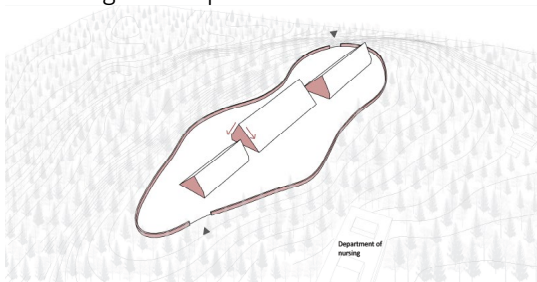
creating openings in the roof and facade



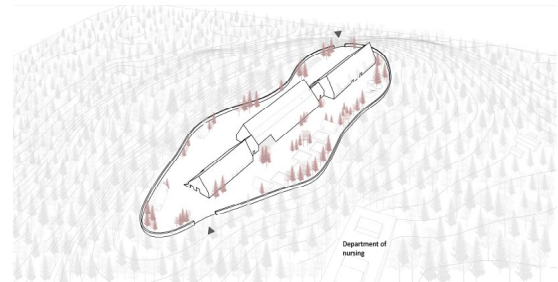
downsizing the volume for privacy, nature and village concept



adding outside programs



creating two entrances into the center with pitched roofs shape in communication with the weather conditions and house feeling



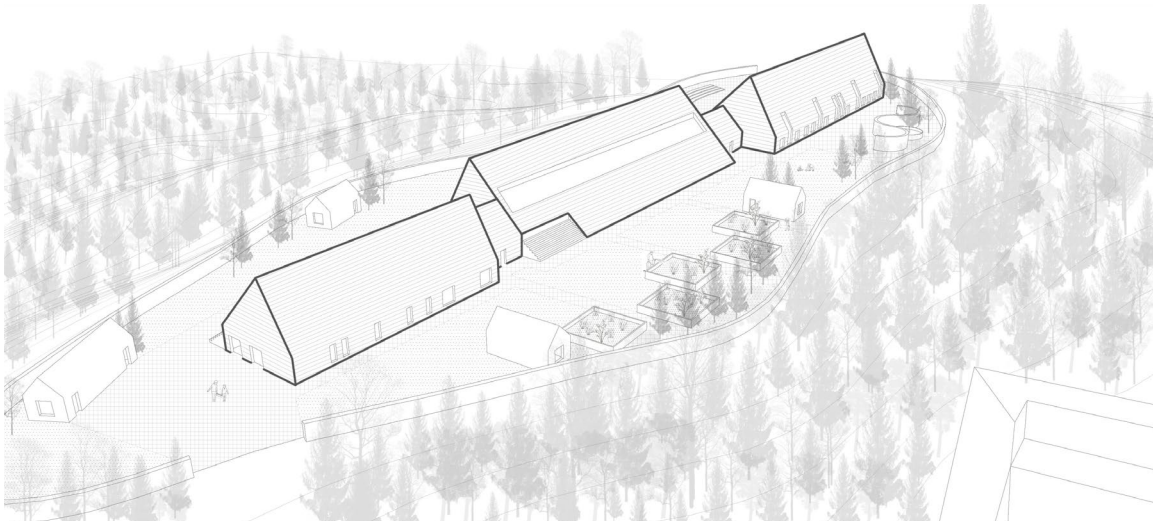
returning part of the greenery back on the site

Design proposal

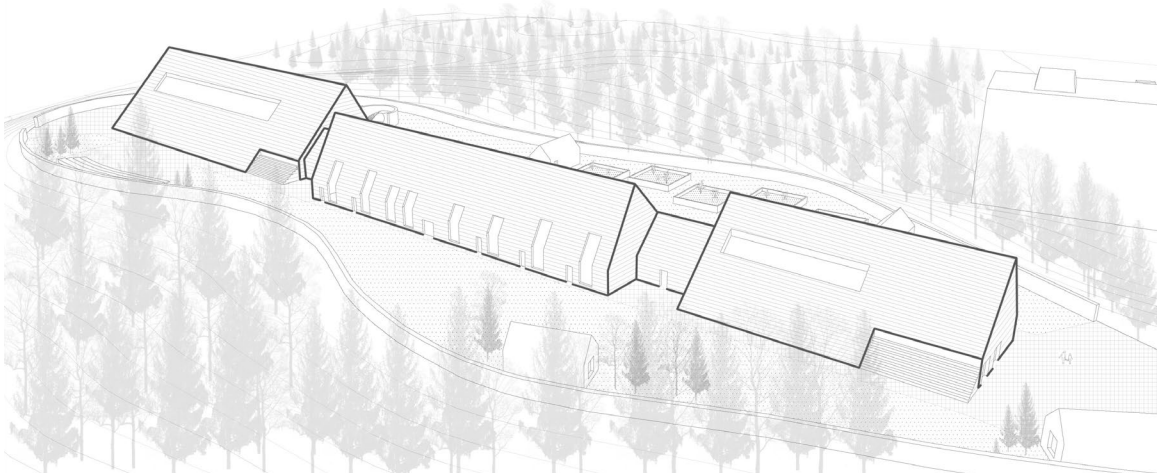
Composition

Shape of the volume is made based on the numerous conditions on the site as well as design ambitions. Due to the long winter and heavy snow the center required to have a pitched roof. I have made a pitched roof with one side of the roof going down to the ground, creating an asymmetry in the design. By having this roof I wanted to achieve a dynamic and interesting design where the roof can be used for something else. In this case the lower part of the roof can be used as a seating area overlooking nature, when the weather allows it. Instead of having one big volume I have created a three smaller volumes that have different programs in them. I have divided staff, patients and common areas in order to create easy understanding of the space. The volumes are rotated differently and the rotation is decided based on the program inside. The patient volume is rotated so that exits on the east side of the center creating a private and quiet area. The other two volumes exit on the west side of the yard creating a semi quiet area. There is a possibility of reaching both yards since they are not physically separated anywhere else. One of the reasons for creating smaller volumes was the idea of having a village typology where buildings are smaller. In this way the scale of the center is not intimidating to patients and corresponds to them as the main users. All three volumes are connected with a smaller volume between them that is only used for communication and exit.

Each of the volumes is different in size in order to correspond to the program inside, making the common area volume the biggest and highest one. Each volume is a little higher than the previous one answering the landscape and growing height of the hill. In this way the center is a continuation of the landscape.



bird view from east



bird view from west

Design proposal

Atmosphere

Materials for the center are taken from the surroundings. The goal for the center is to fit into the landscape and nature in order to create a peaceful and comfortable place for the users. The location is covered with trees and some of them will need to be cut in order to fit the center. After the site analysis the best location for the center was on top of the hill since there are less trees on top. The trees that are cut from the location are reused in creating a structural part of the center.

Facade is done in wood as well in order to keep the village idea and house like comfortability in the project. The wood is light brown that will become gray over time. For the roof I have decided on treated wooden roof tiles.

The views from the top of the hills are making the center a place of relaxation and a place where the calm and relaxing atmosphere is overtaking. It is separated from noise and it creates a space for users that is pleasant to be in and gives them the support needed for full



Figure 14
Wooden House on a Meadow



Figure 15
EKH Children Hospital



Figure 16
Materials

Design proposal

Functionality

Center is a linear shape with one south and one north entrance. These two entrances are connected with the visitors and staff entrances into the building. From this the flow through the building is going linear with the openings that lead into the yard. Vertical communication is done with elevators and stairs in patient and common volume. Flow for the patients is focused on being as easy as possible, having multiple options of going out in the yard. Every patient room has a direct exit to the yard, making the room connected with nature.

Next to the main entrances for visitors and staff there is a delivery entrance.

Staff flow is starting with "dirty zone" before entering the center and joining patients in the patient volume.

Visitors can only enter into the space where visitation is allowed, making them separated from the patient zone due to health precautions.

Now the volumes are connected between them but there is a possibility of separating these volumes and creating different space.

Each of the volumes is different size, making them flexible for any other future use.



Sustainable development

The location for the project is set in the woods on top of the hill. In order for the center to be built some of the nature needs to be cut down. To create as little waste as possible cut trees would be reused for the structure of the center. The center is made out of wood with a wooden ventilated facade.

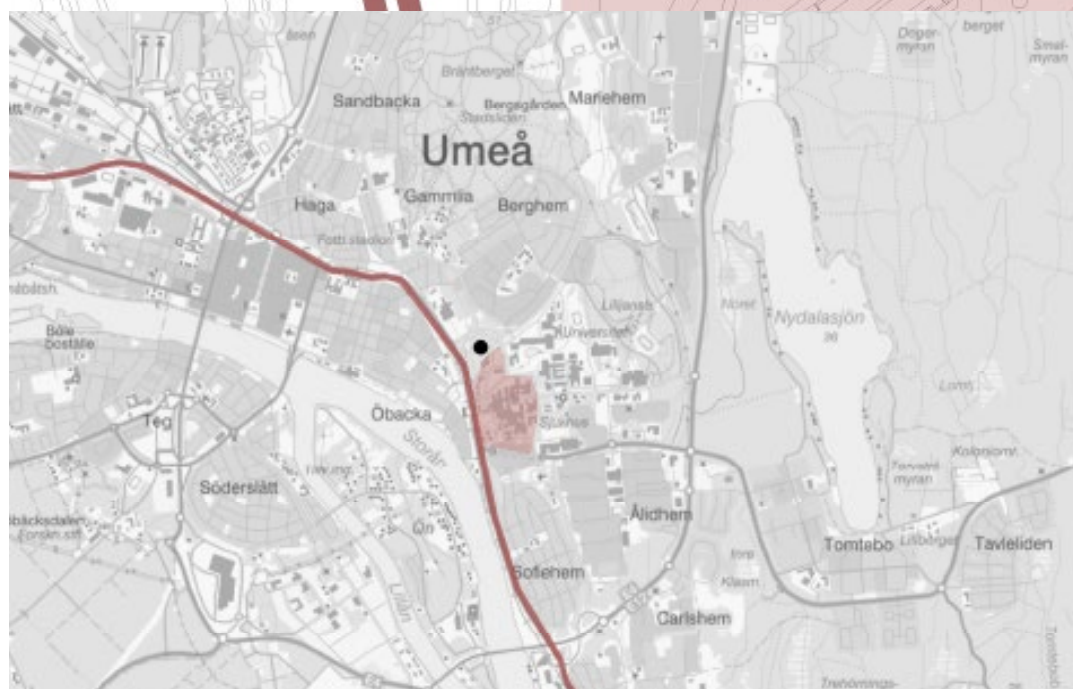
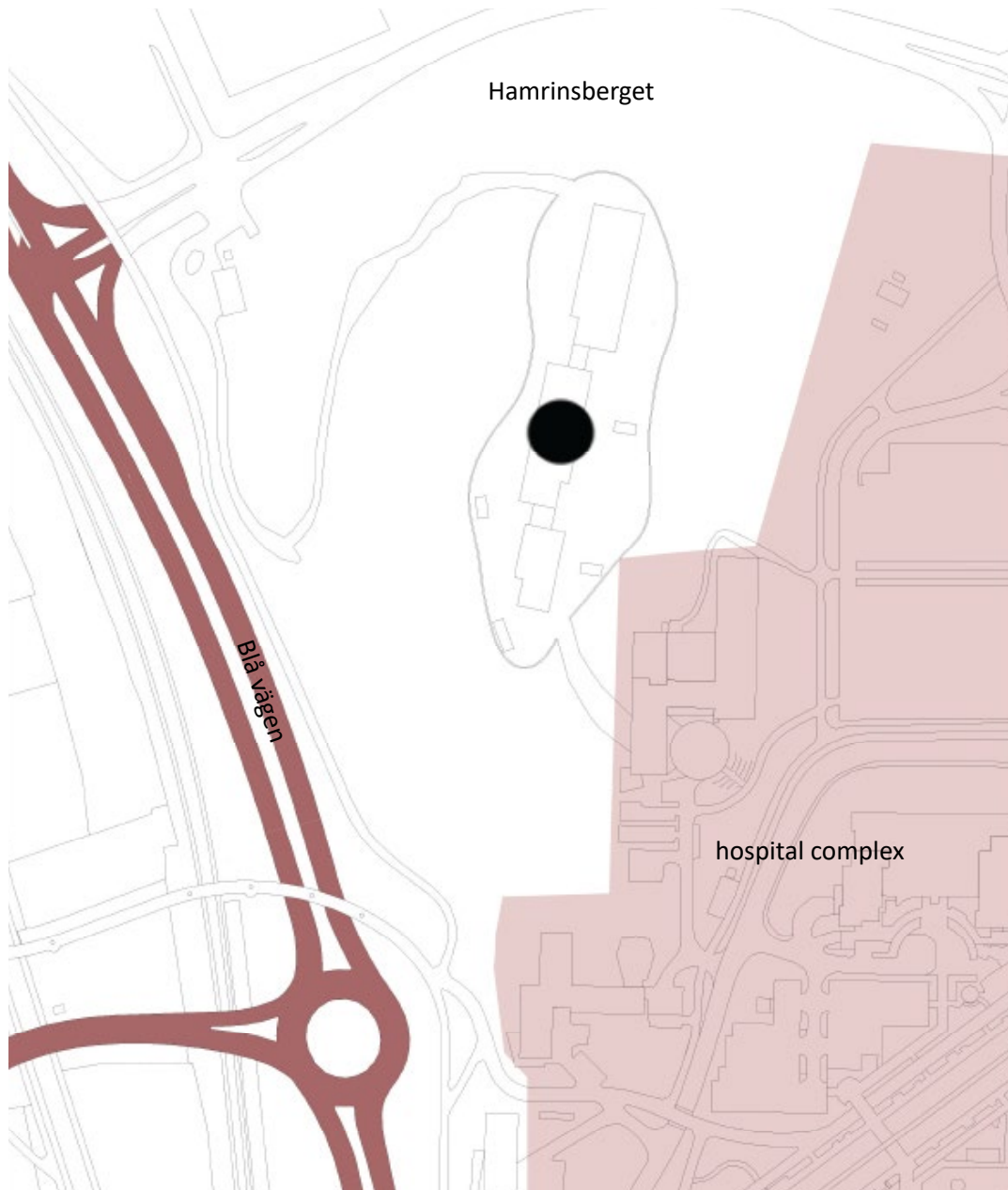
Making as little impact on the nature as possible center is reusing the existing road as one of the paths to reach the center from the main road.

Being placed in nature it is a space for relaxation and could be reused for different programs in the future if needed. The three volumes can be reprogrammed. Having implemented universal design the center is flexible for any age users and can be easily adjusted.



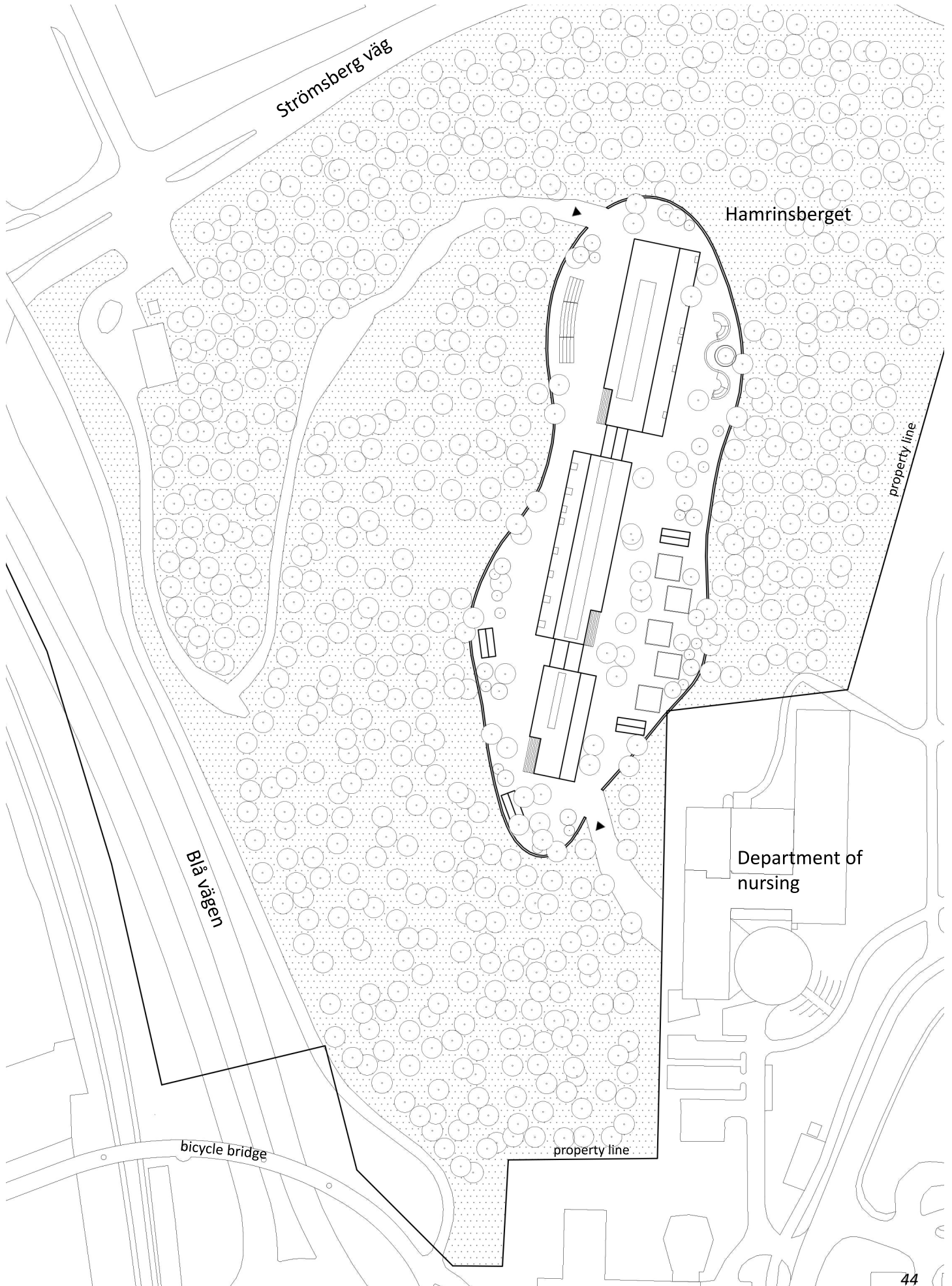
Design proposal

Urban setting



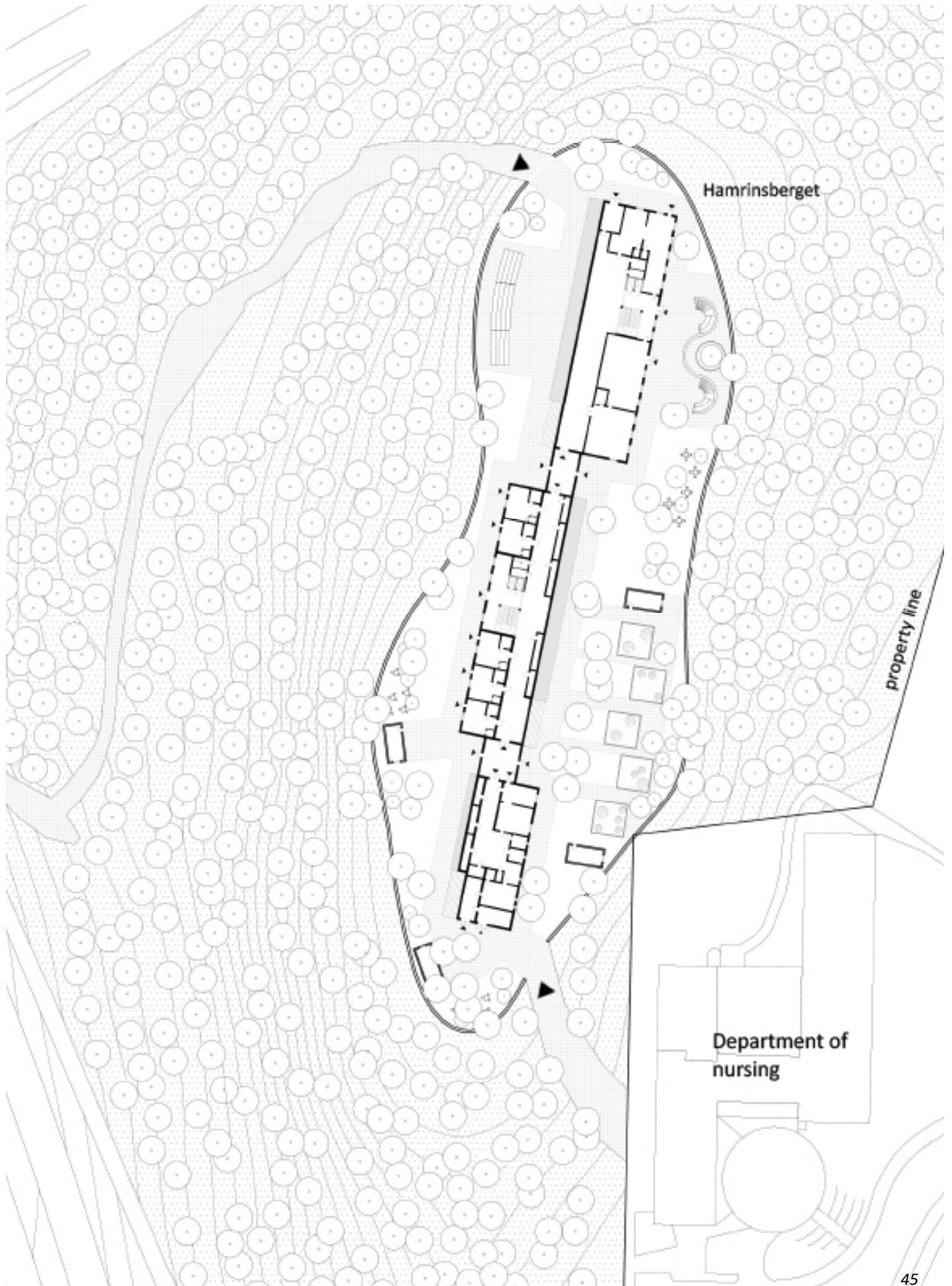
Design proposal

Site plan 1:1000



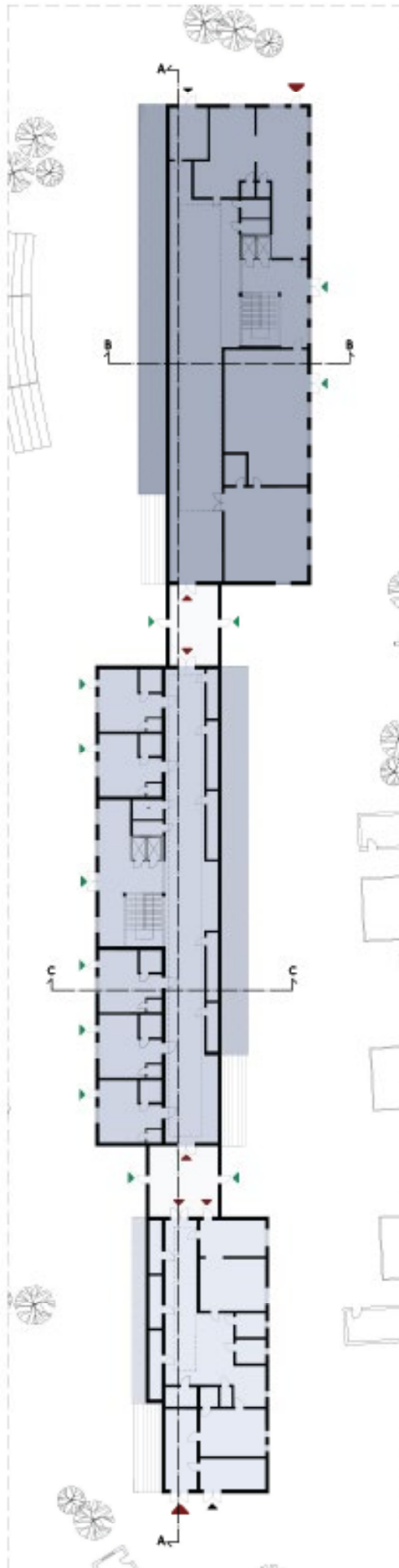
Design proposal

Site plan 1:500



Design proposal

Cancer center/ First floor



First floor of the cancer center is a collective of three volumes with different programs inside them. The volumes are different sizes and this corresponds to the program's needs.

First volume is 423m². It is in the south part of the center and it is connected with an existing hospital complex and the nursing home. Having this connection the volumes is meant for staff.

Through the first volume and connection hallway there is a second volume with 859 m². This volume is meant for patients and in the first floor there are patient rooms mostly as this way direct connection with nature is easily made. The volume is in the middle and easily accessible from any other volume. In this way flow for users is easy to navigate and understand. Patients can first enter the center through either the north or south entrance.

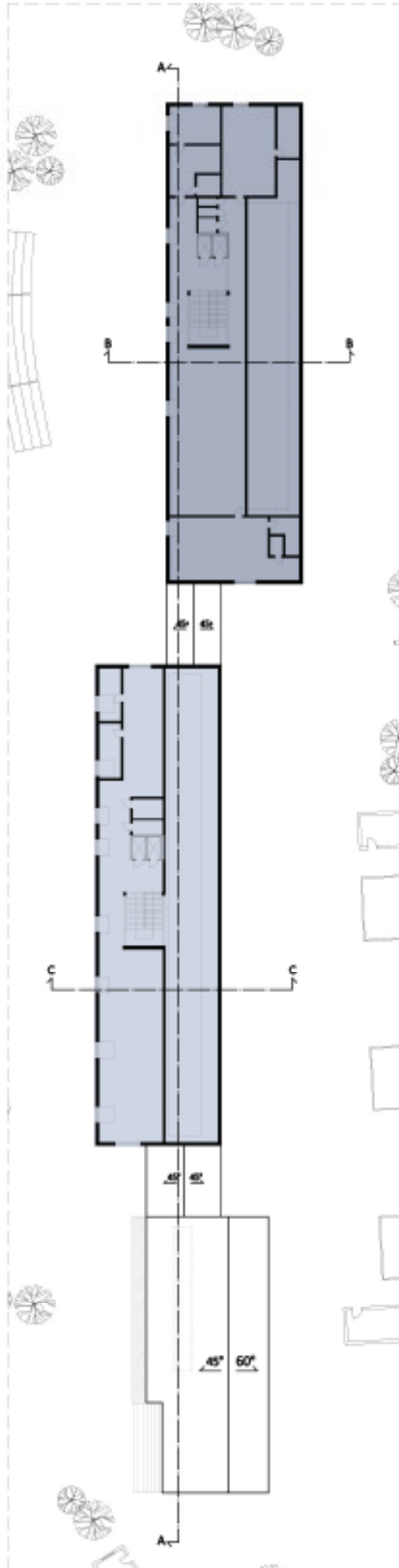
Third volume is on the north side of the center and it is connected with patient volume with a hallway. It is 975m² and it is made for common areas. In this volume on the first floor there is a visitor area and delivery in the north. This space is connected with a road that is coming from the north, making the communication for visitors easier.

All three volumes have access to the outside space. I have rotated the staff and common volume to have exit on the east side and patients volume has exit on the west. This is mostly to create a peaceful space for patients and keep the outside programs on the east side of the center.

- first volume (staff)
- second volume (patients)
- third volume (common space)

Design proposal


Cancer center/ Second floor




Second floor only has patient and common area volume. There was no need to create a second floor for the staff as there is no need for a large group of staff, nor do they need to stay longer in the center. They are working in shifts. In both volumes the second floor has a gallery overlooking the lower floor. This is to ensure the light in the lower floor too and to create an interesting space for children. Light is coming from the east side with a roof window that is stretching all the way above the hallway in the first floor and from the west there are windows that are stretching over the roof in the second floor creating an interesting detail.

Patient volume has spaces for relaxation and study in the gallery. This way the space under the pitched roof is used for different programs.

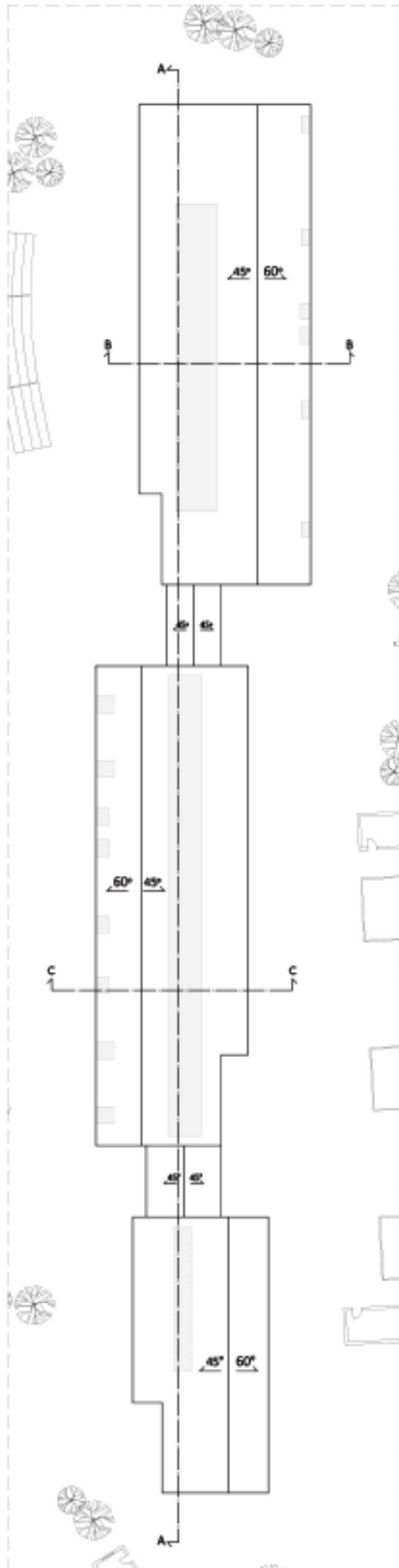
Common area volume gallery is reserved for spaces with different programs for different ages. Space for therapists is also set here, giving everybody an option to go.

 second volume (patients)

 third volume (common space)

Design proposal

Cancer center/ Third floor



All volumes have the same type of roof. Roofs have different degrees, where one side is 45° and the other is 60°. The side that is 45° is going all the way to the ground, creating a roof that can also be used for seating. The steepness of the roofs is made due to the climate and weather conditions on the location. Due to the different sizes and heights of the volumes each of the volumes is slightly higher, creating a continuation of the hill.

Because of the programs inside, volumes are rotated and this gives spaces for seating in the roofs on both east and west side of the center.

Design proposal

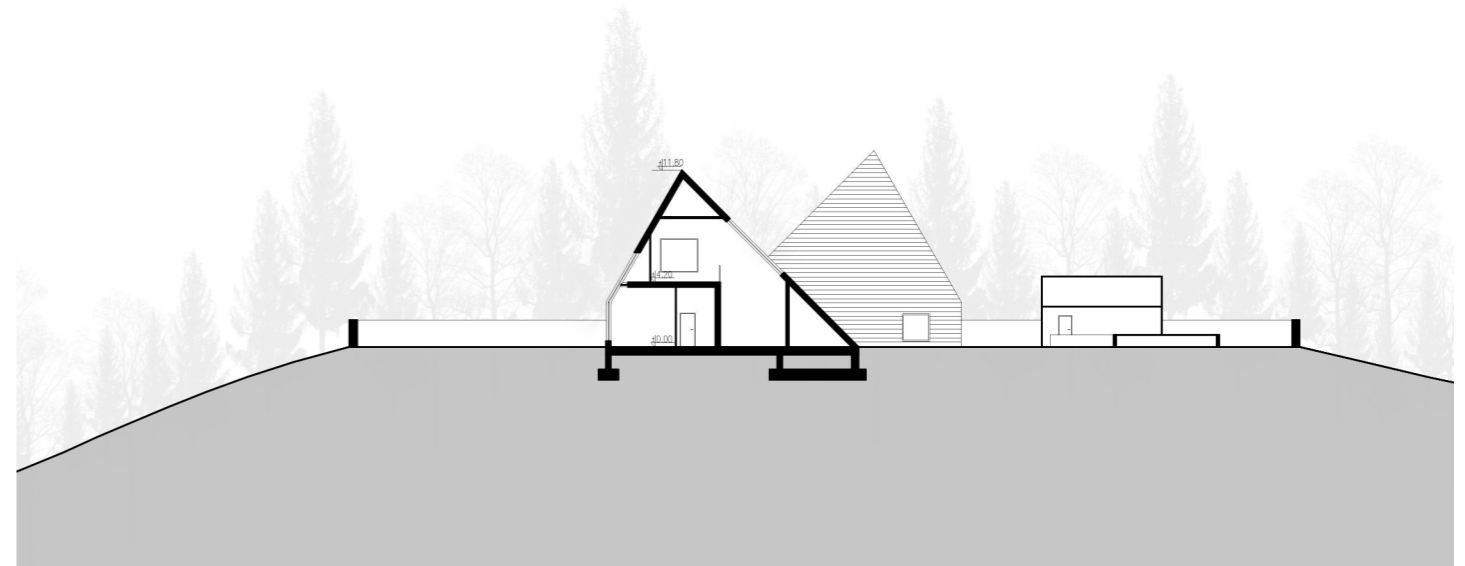
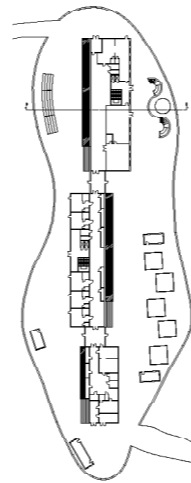
Cancer center

In the longitudinal section of the center it is shown the difference in heights in the volumes, making the staff volume the shortest and common area volume the highest. The section is showing an outside storage that can be used for storing the furniture for the yard or amenities needed for gardening. Complex is surrounded with greenery on all sides.

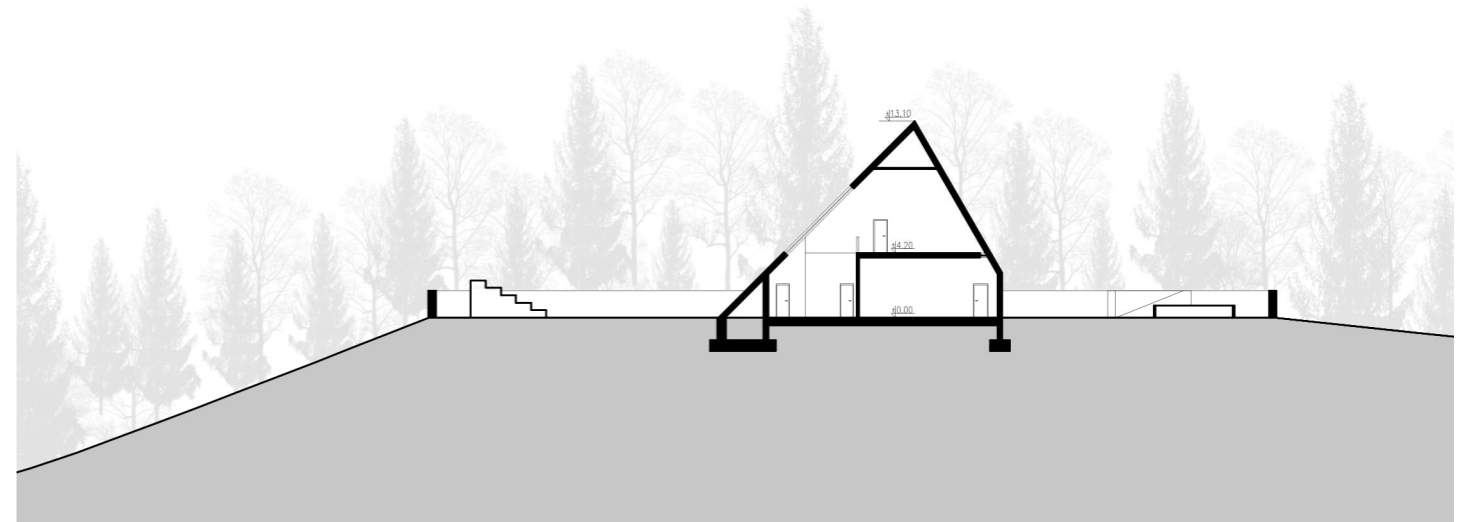
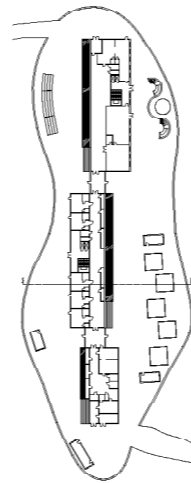
Sections B-B and C-C are showing the shape of the roof as well as relation to the volume and outside space with outside storage and seating. Having the wooden beams and roof construction exposed the space seems open and inviting. Roof can be seen from the first floor since the second floor is made into a gallery.

The sections are done in a larger scale in order to show the relation between center and location. Focus on details will be added later with the separate sections of each volume.

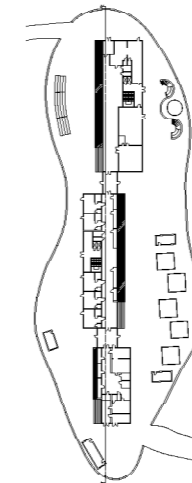
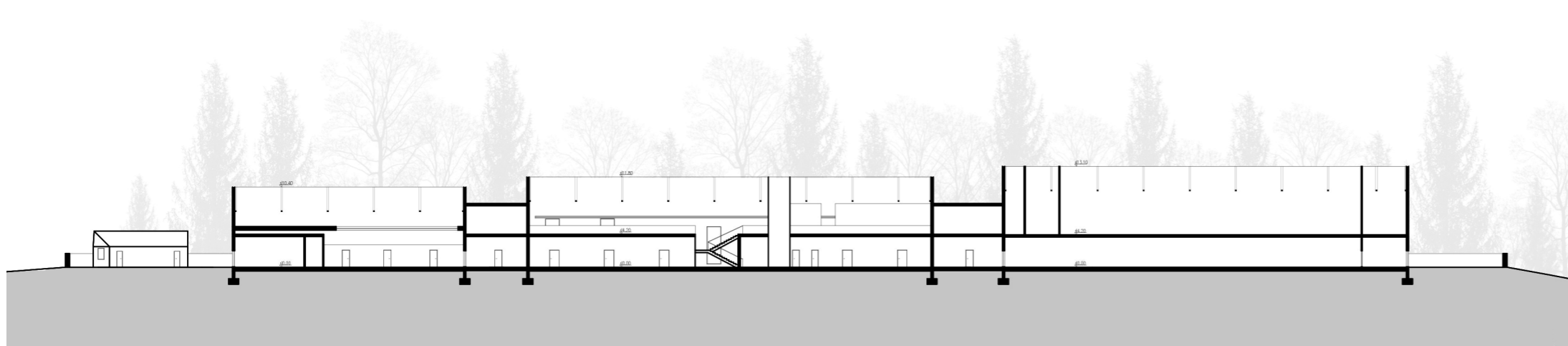
Section B-B 1:500



Section C-C 1:500



Section A-A 1:500



Design proposal

Cancer center

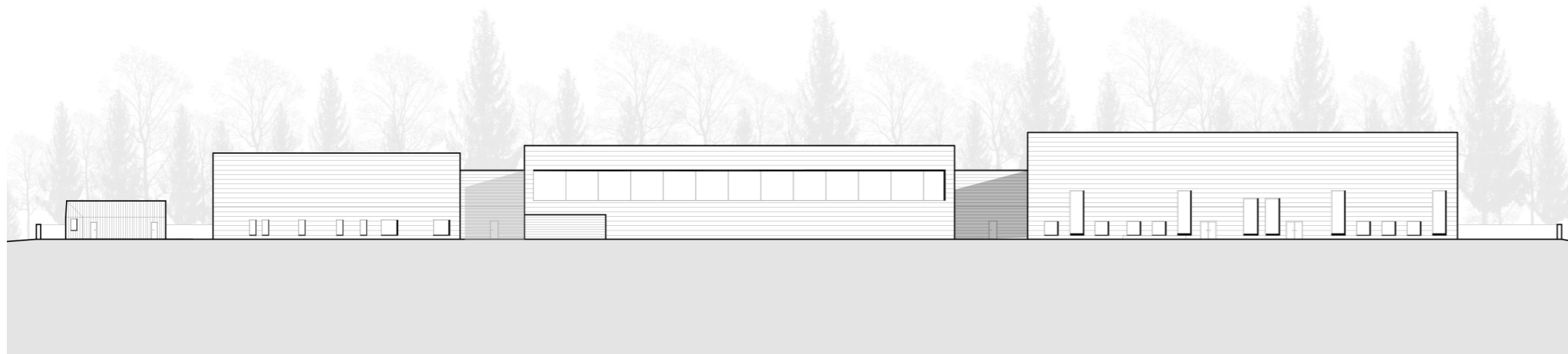
East and West facades are showing the relation between heights in the volumes and position of the windows that are going continuing on the roof. Having the village typology and house feeling North and South facade are showing the center seen from two different entrances being the first thing users see. The North facade is seen from the entrance for visitors and The South facade is seen from the staff entrance.

Facade is done in wood as well in order to keep the village idea and house like comfortability in the project. The wood is light brown that will become gray over time. Lighter pine wood is put on all four facades in horizontal orientation. Details around windows are done in darker pine wood. The relation between light and dark wood apart from the aesthetic is also used to cool down or heat the unit.



Figure 16
Materials

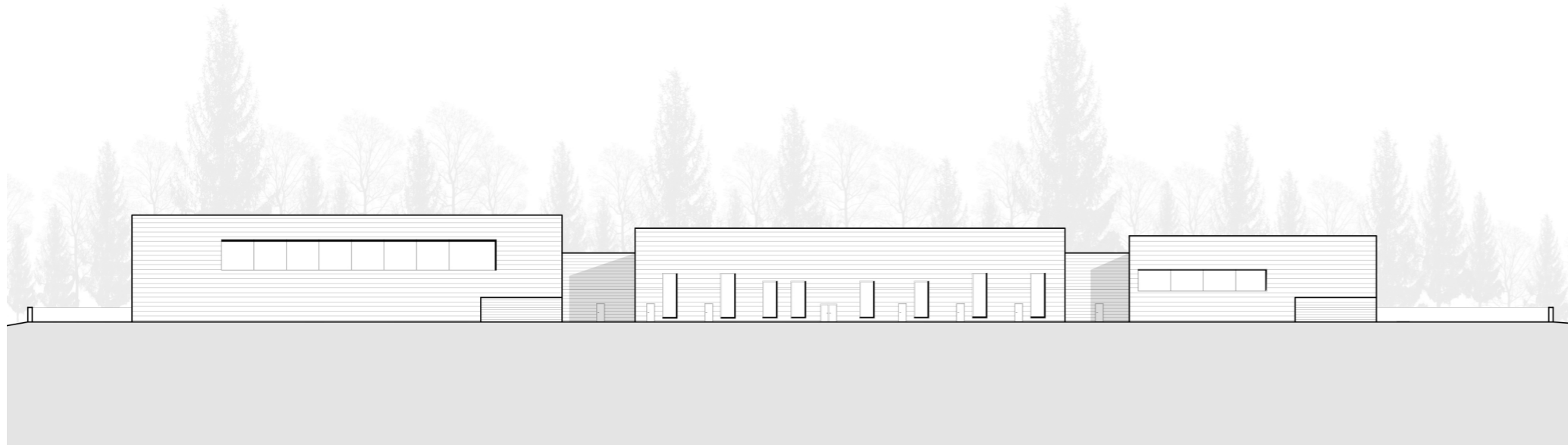
East facade 1:500



South facade 1:500



West facade 1:500



North facade 1:500



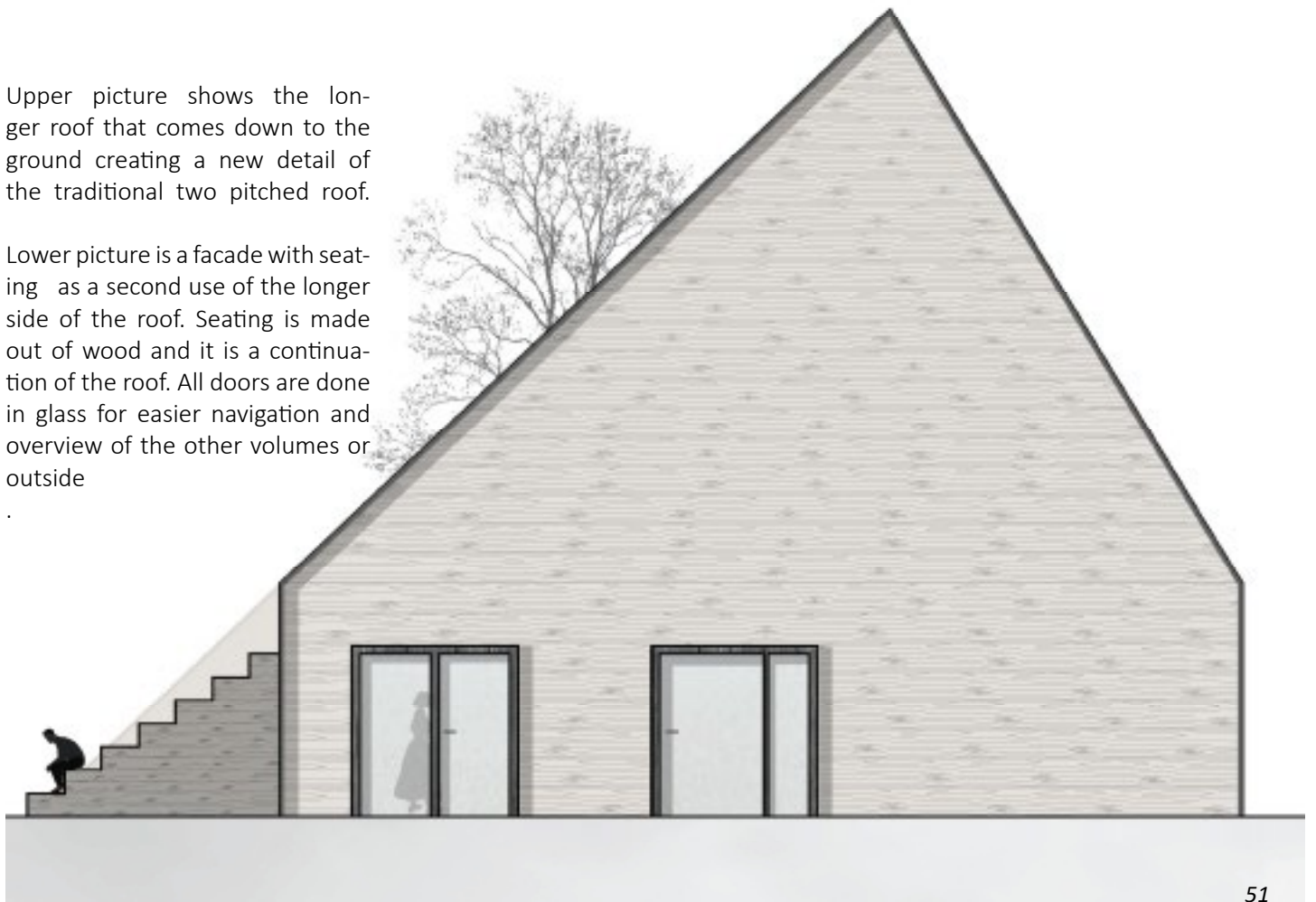
Design proposal

Facade detail materials 1:100



Upper picture shows the longer roof that comes down to the ground creating a new detail of the traditional two pitched roof.

Lower picture is a facade with seating as a second use of the longer side of the roof. Seating is made out of wood and it is a continuation of the roof. All doors are done in glass for easier navigation and overview of the other volumes or outside

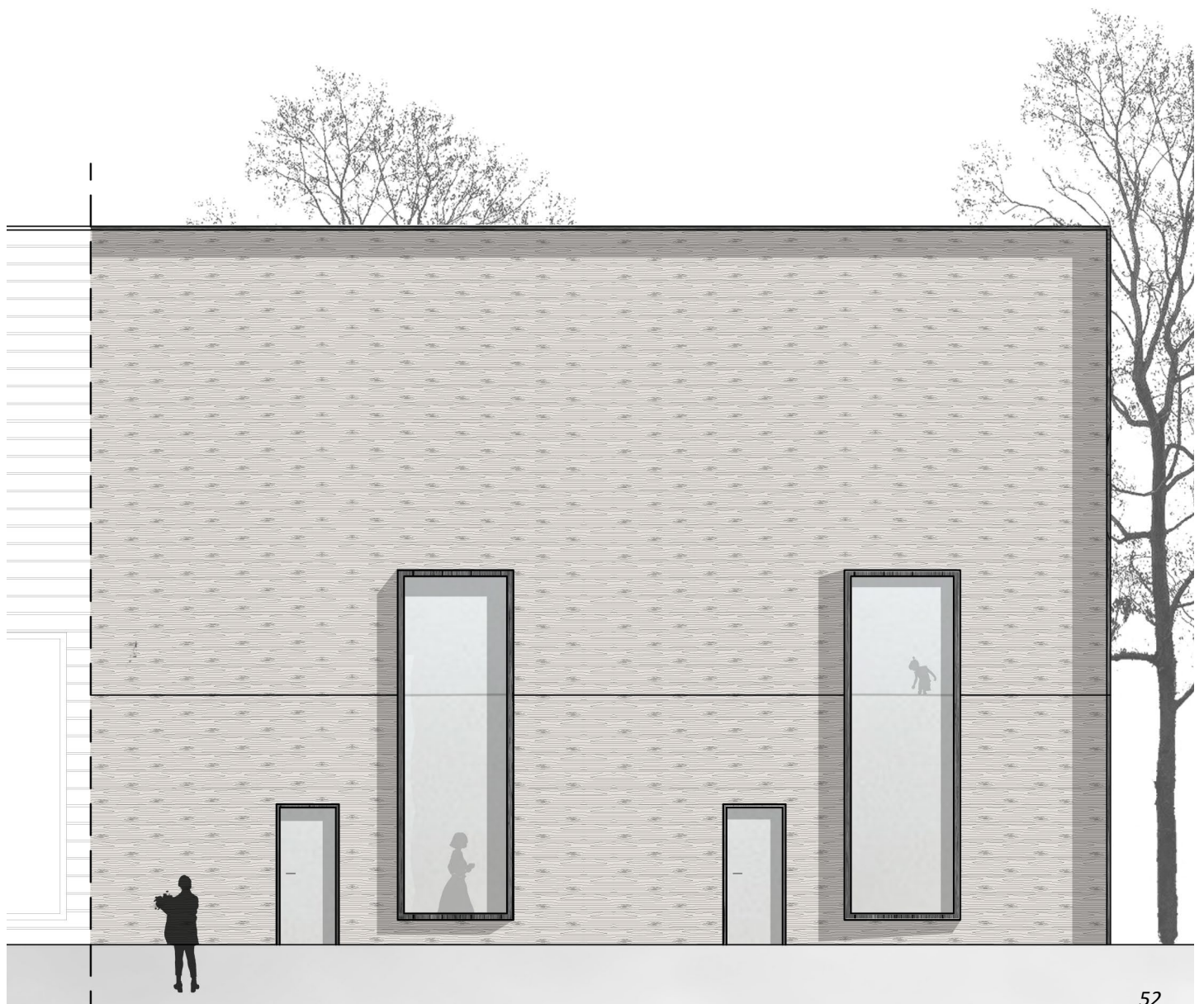


Design proposal

Facade detail materials 1:100

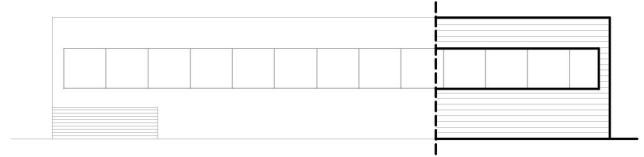


One side of each volume in the complex has a more dynamic facade with different windows. Longer windows stretch from bottom to one third of the roof, creating an interesting detail for the upper level in the volume. Due to design choices some windows are shorter, mimicking the dynamic of the landscape and site. Materials are the same, wood and glass for windows and doors. For the unified feeling I have used treated wooden roof tiles, creating a continuous line of wood materials along the facade.

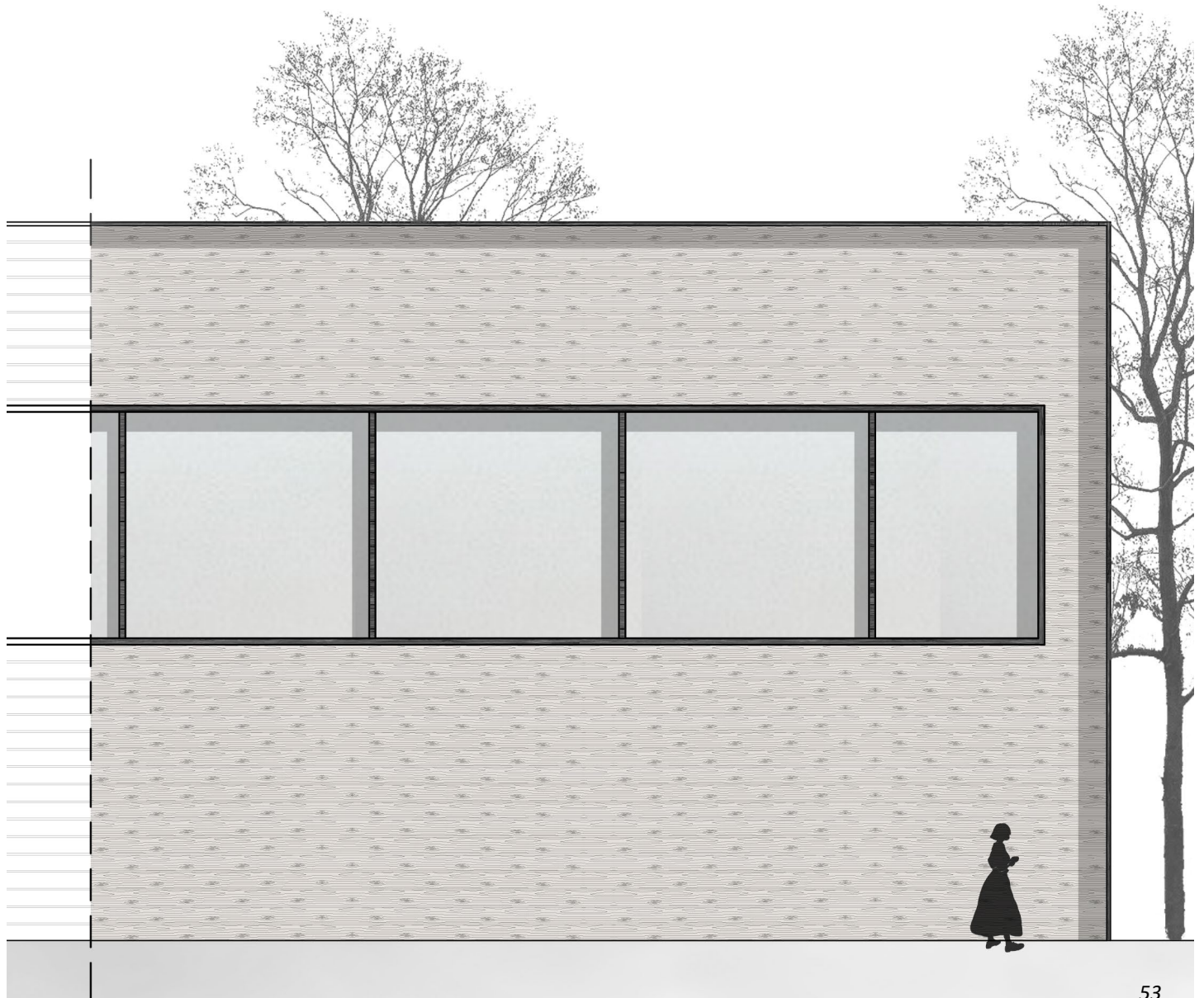


Design proposal

Facade detail materials 1:100

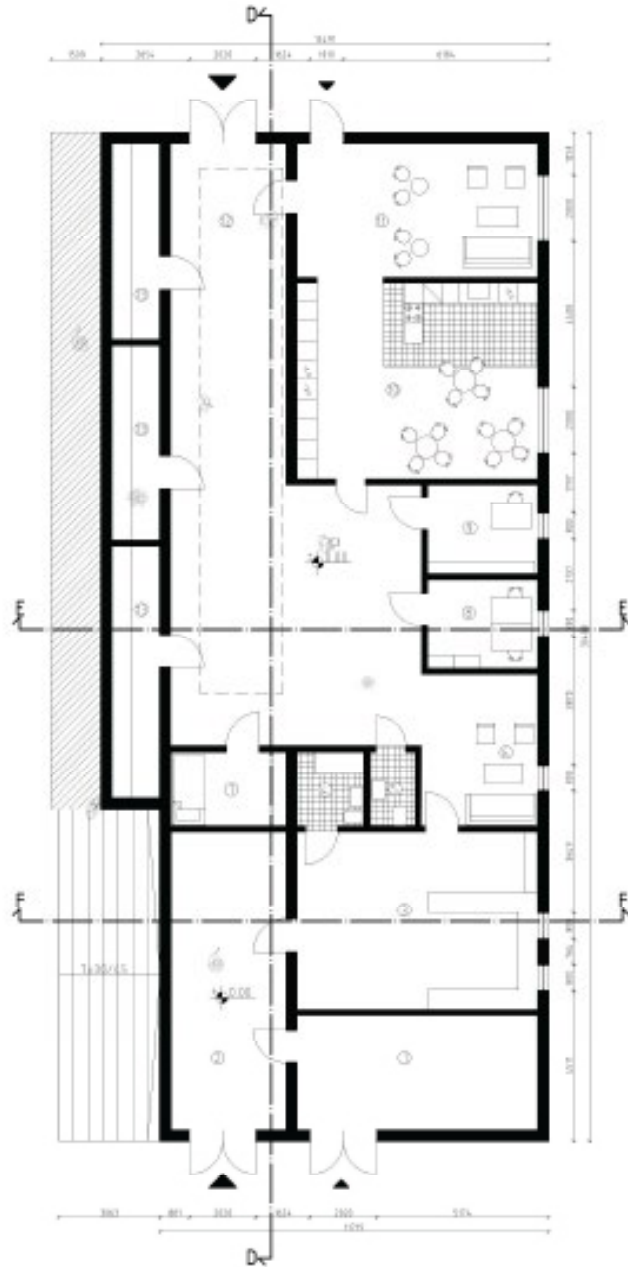


Other side of the volume, where the roof is going to the floor, there is one long roof window. The light from this window goes to the ground floor since the second floor is made into a gallery. The windows are big and stretch along the facade. Materials are the same, wood and glass. The rest of the facade has seating on the other side. Apart from these details the roof goes down to the floor, creating an interesting detail. For the unified feeling I have used treated wooden roof tiles, creating a continuous line of wood materials along the facade.

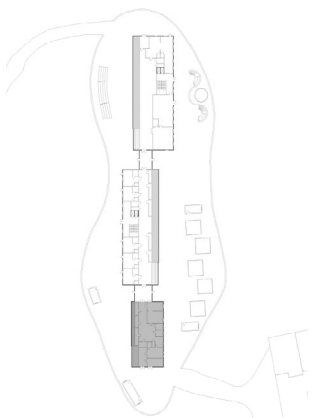


Design proposal

Staff volume/First floor 1:200

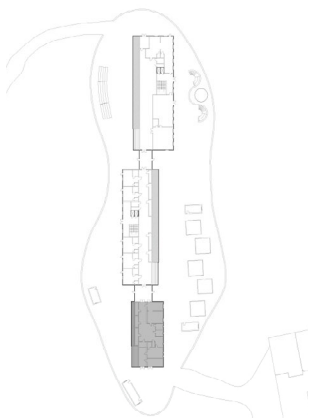
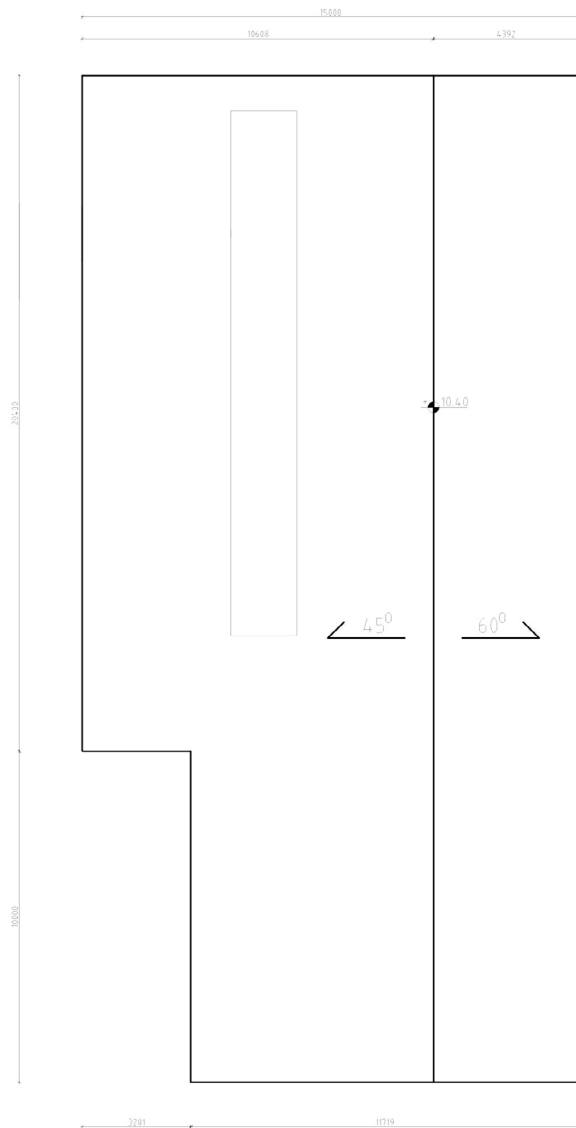


- 1. delivery
- 2. staff entrance
- 3. changing room
- 4. bathroom
- 5. toilet
- 6. lounge
- 7. rest room
- 8. office
- 9. office
- 10. kitchen
- 11. dining room
- 12. hallway
- 13. storage



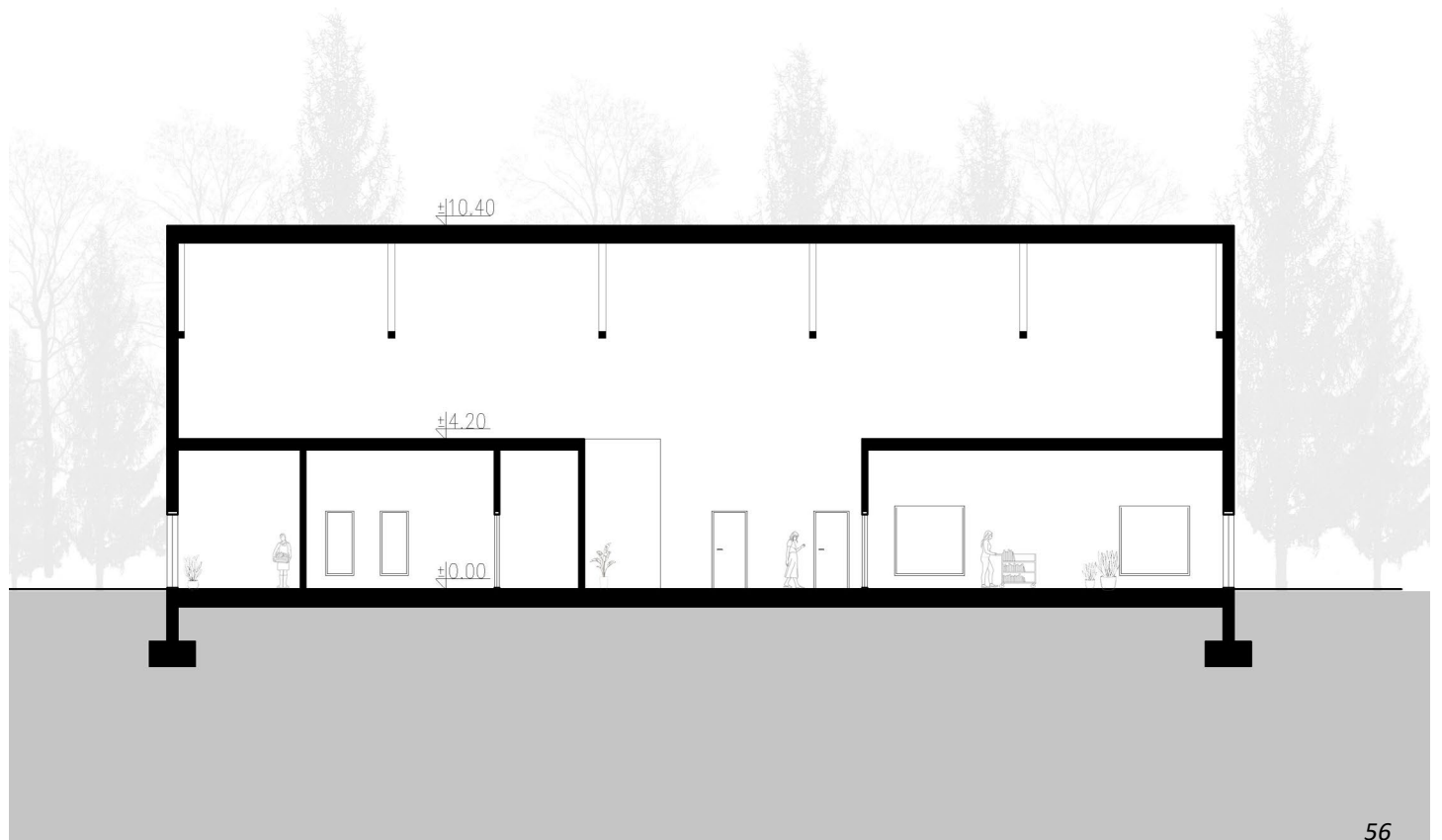
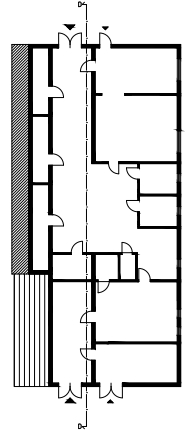
Design proposal

Staff volume/Roof 1:200



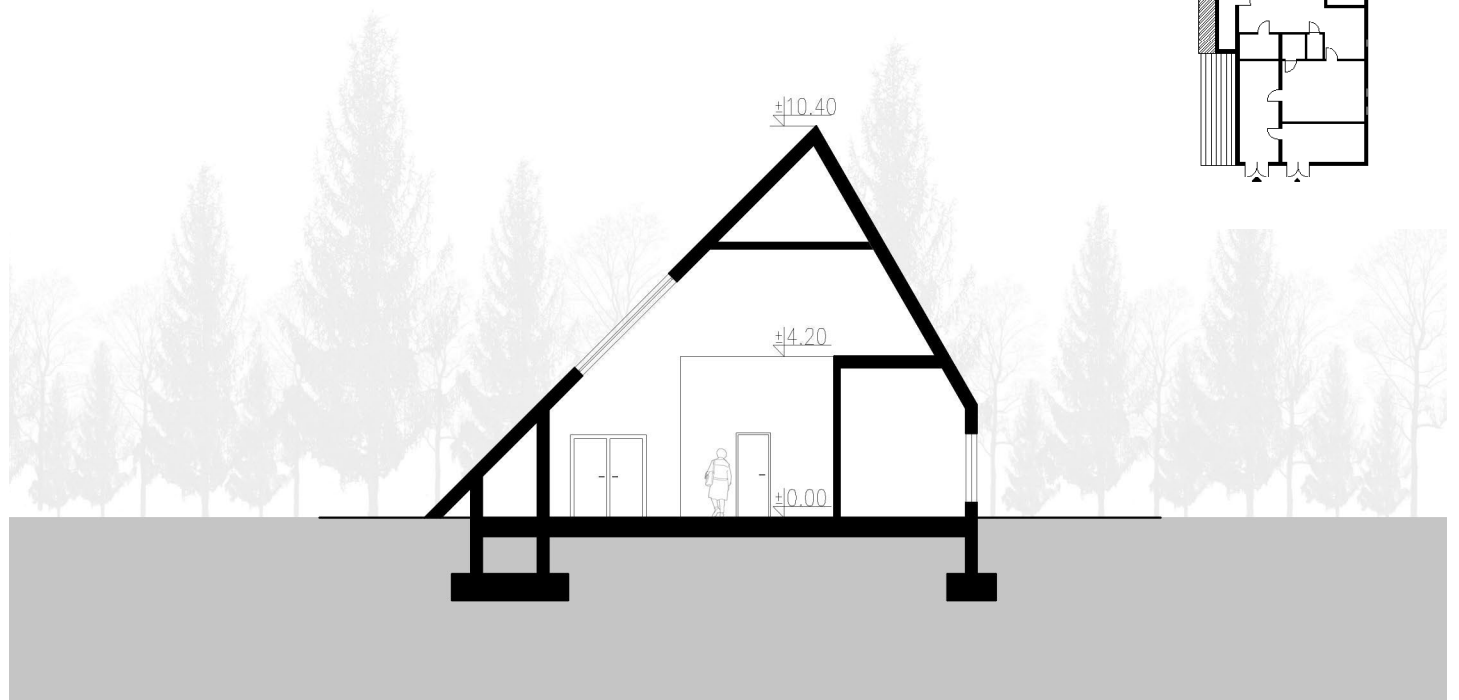
Design proposal

Staff volume/Section D-D 1:200

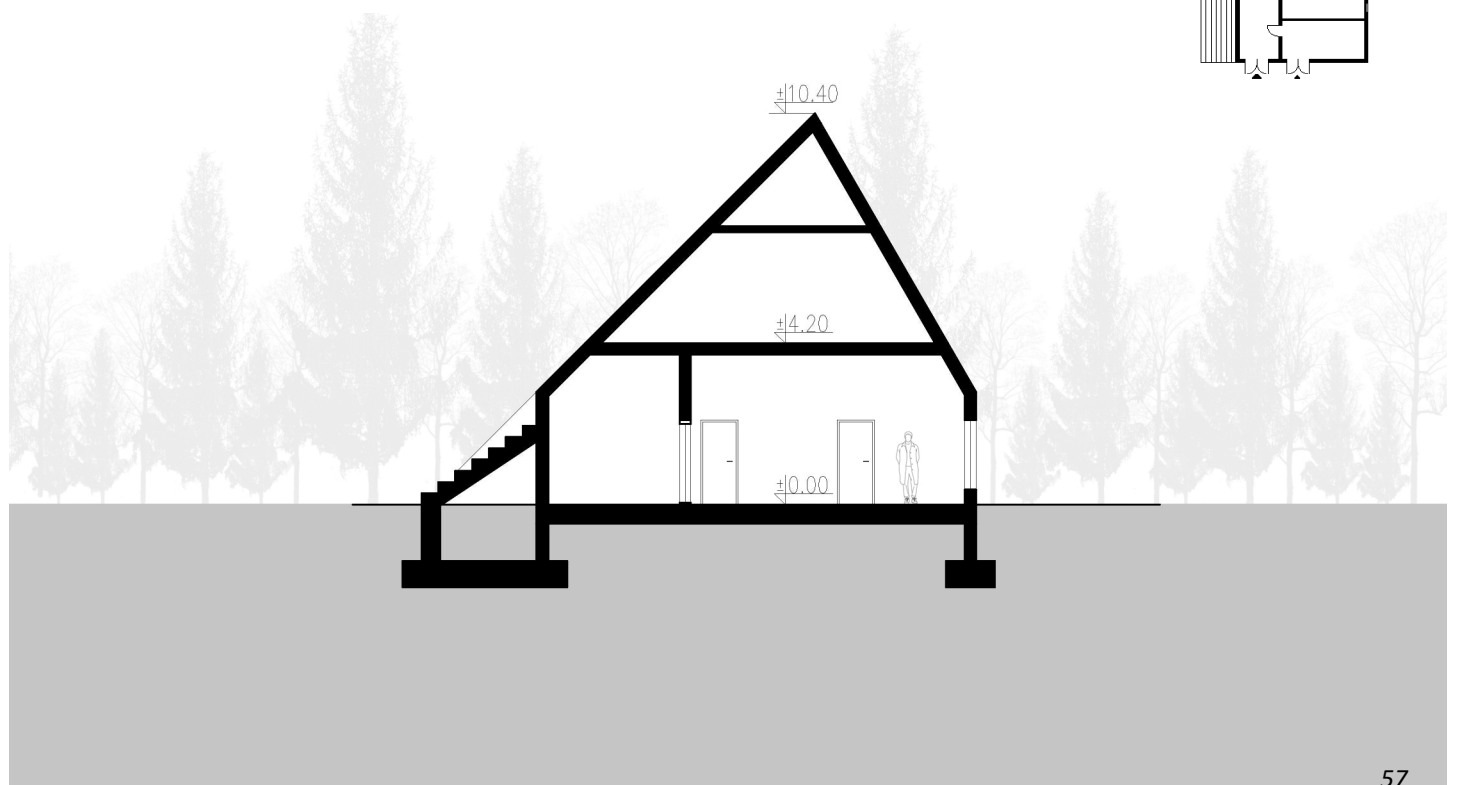


Design proposal

Staff volume/ Section E-E 1:200

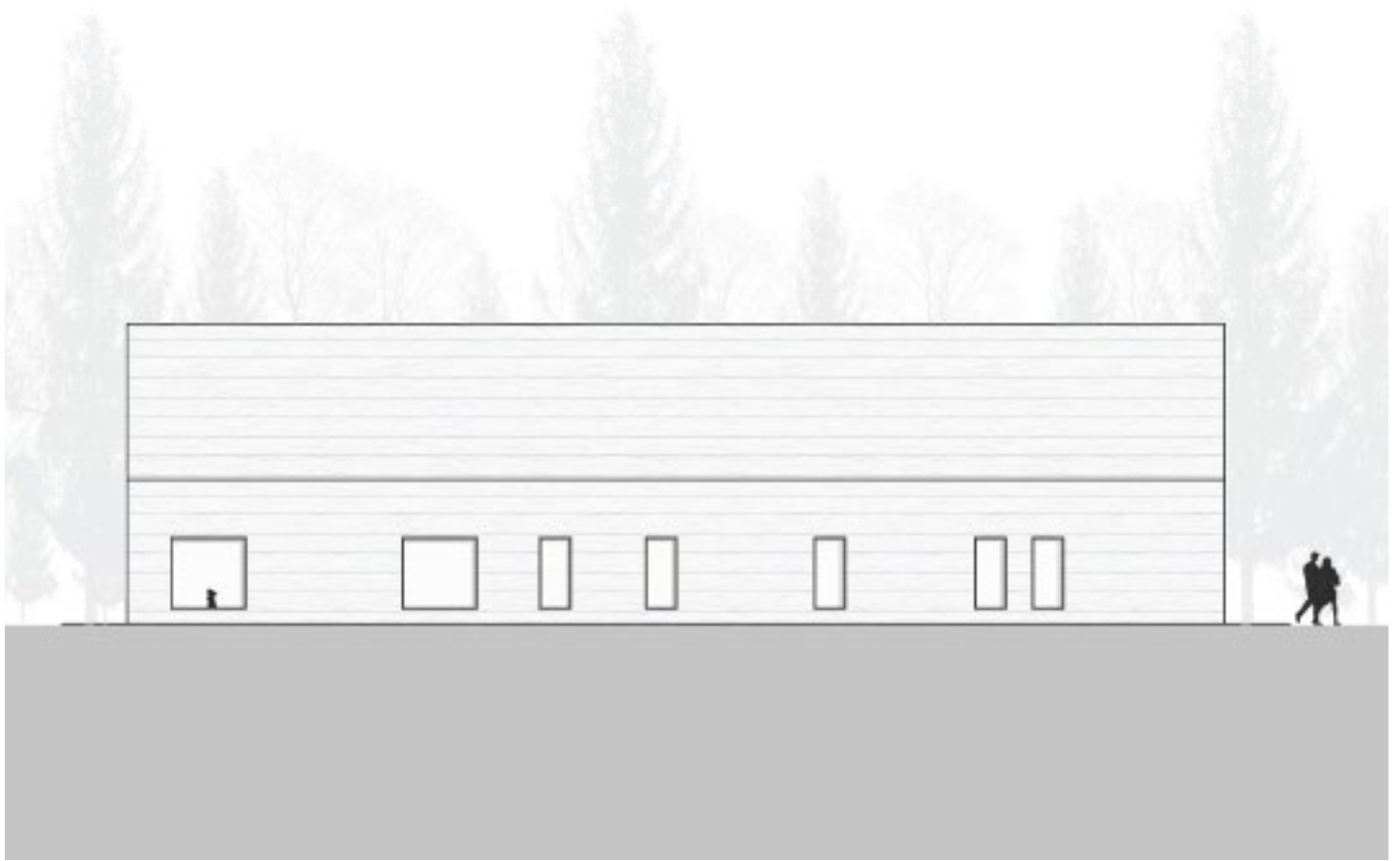


Section F-F 1:200

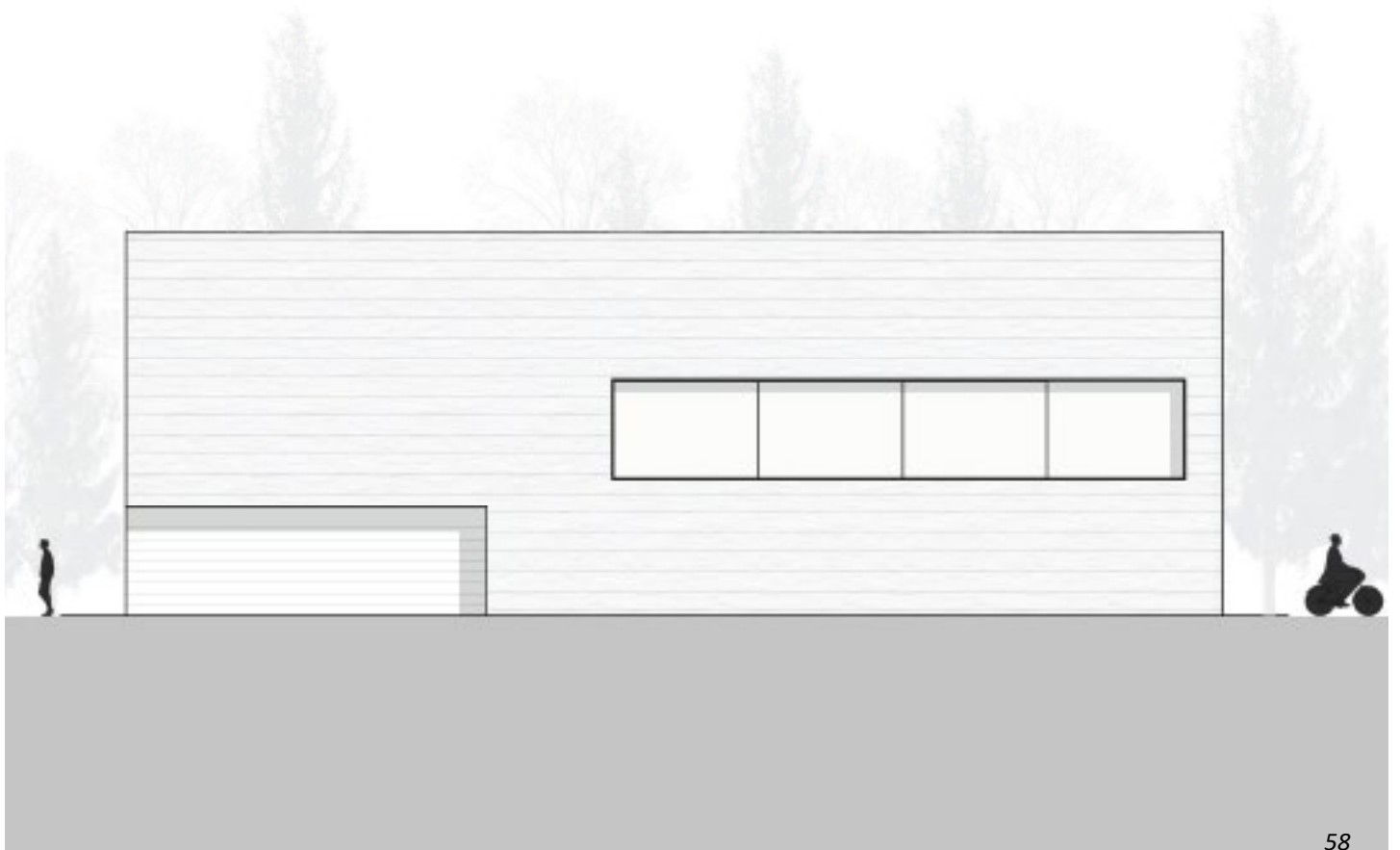


Design proposal

Staff volume/East facade 1:200

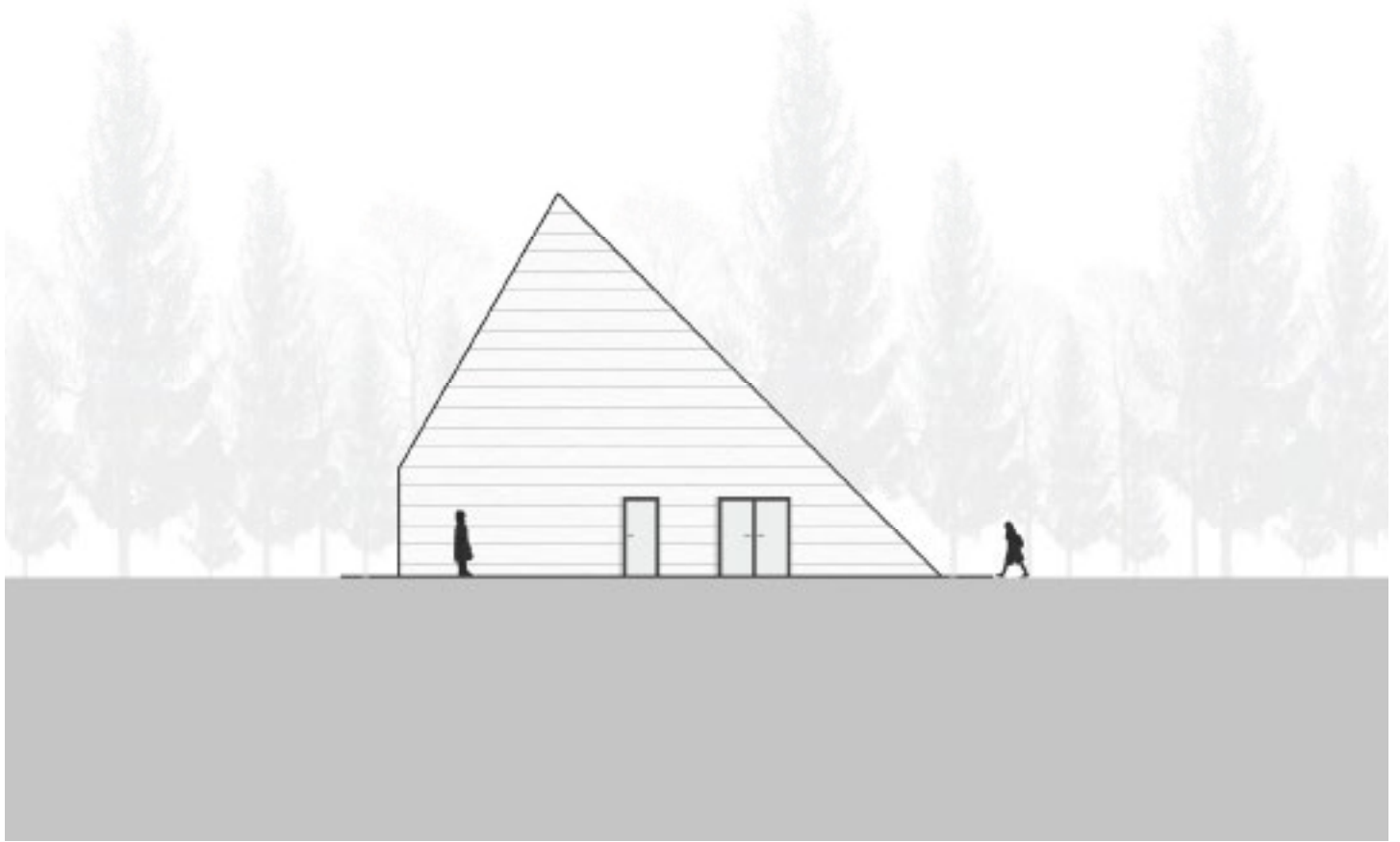


West facade 1:200

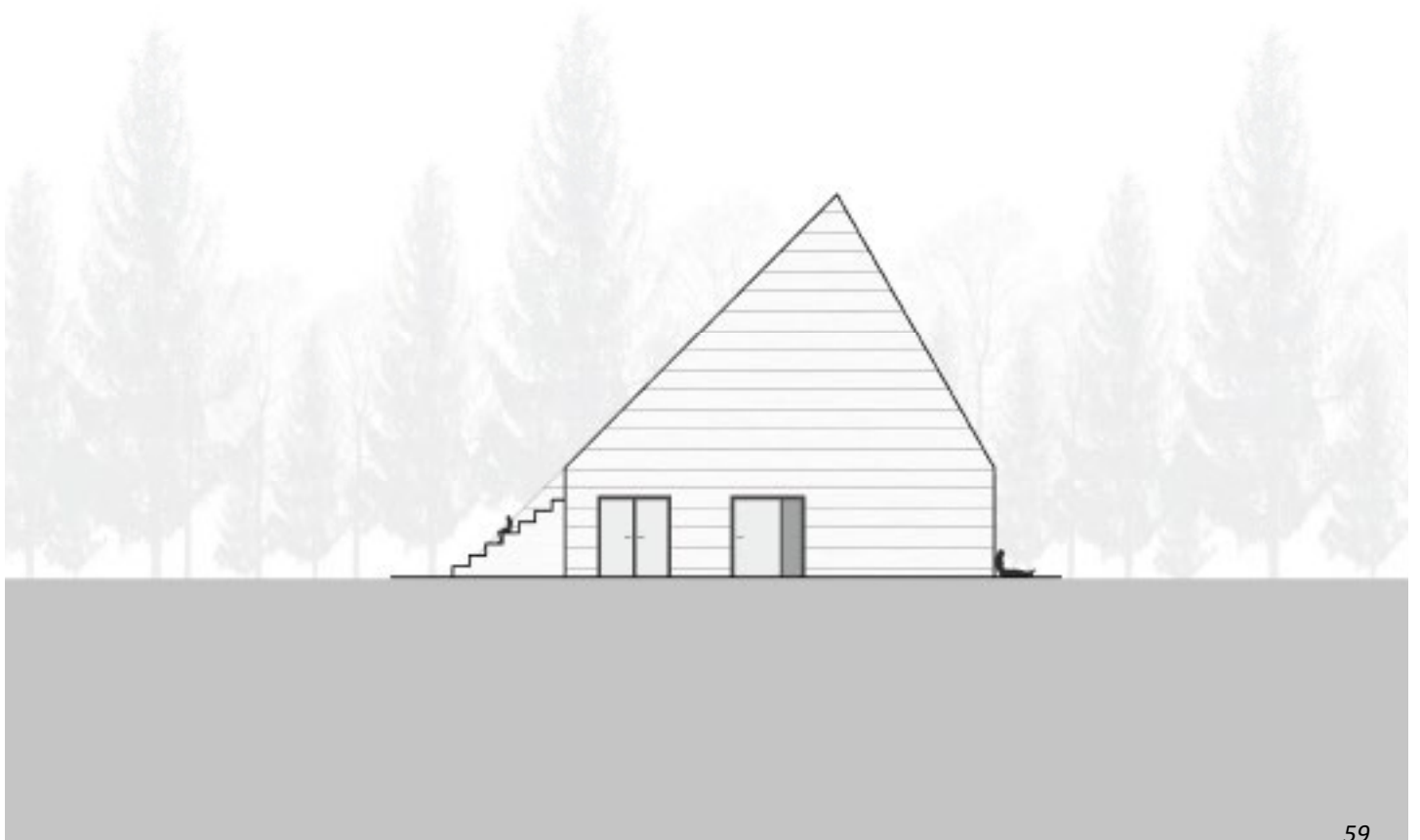


Design proposal

Staff volume/North facade 1:200

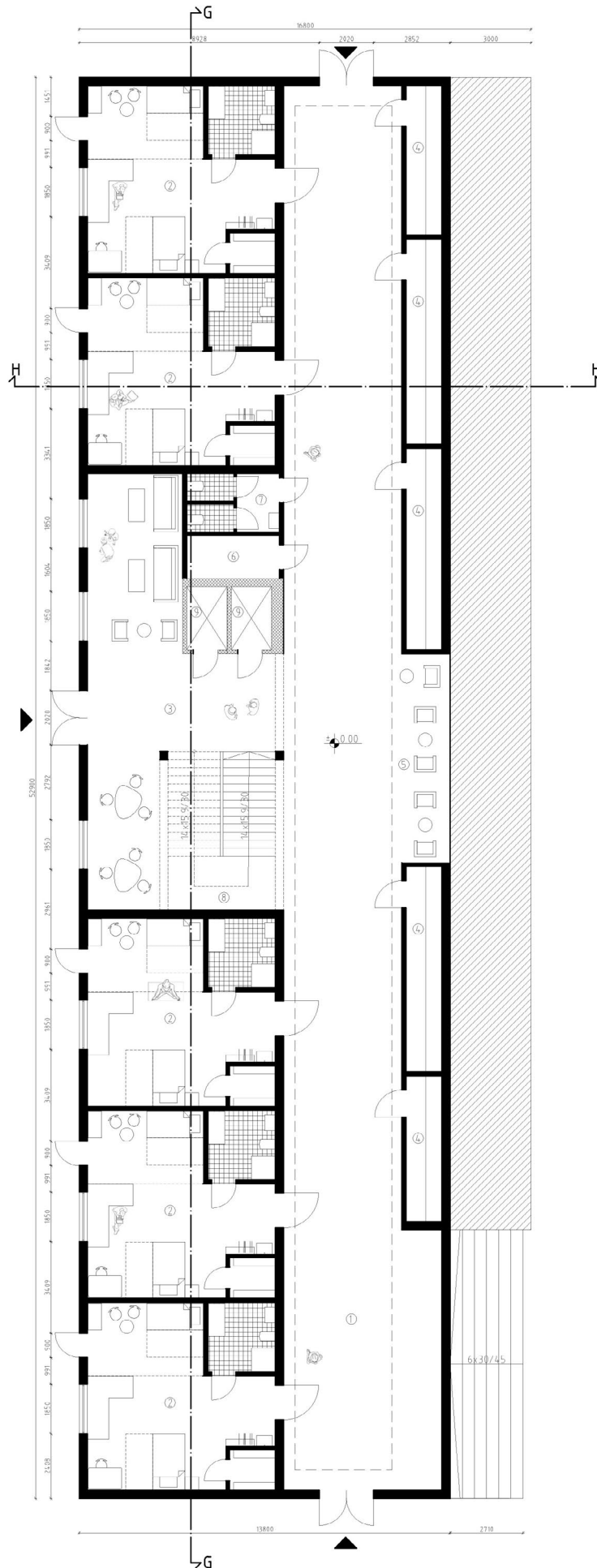


South facade 1:200

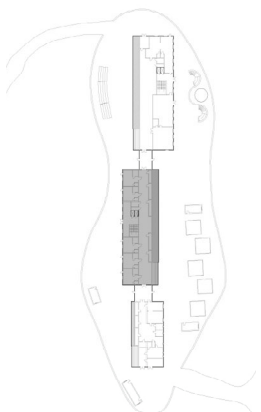


Design proposal

Patient volume/First floor 1:200

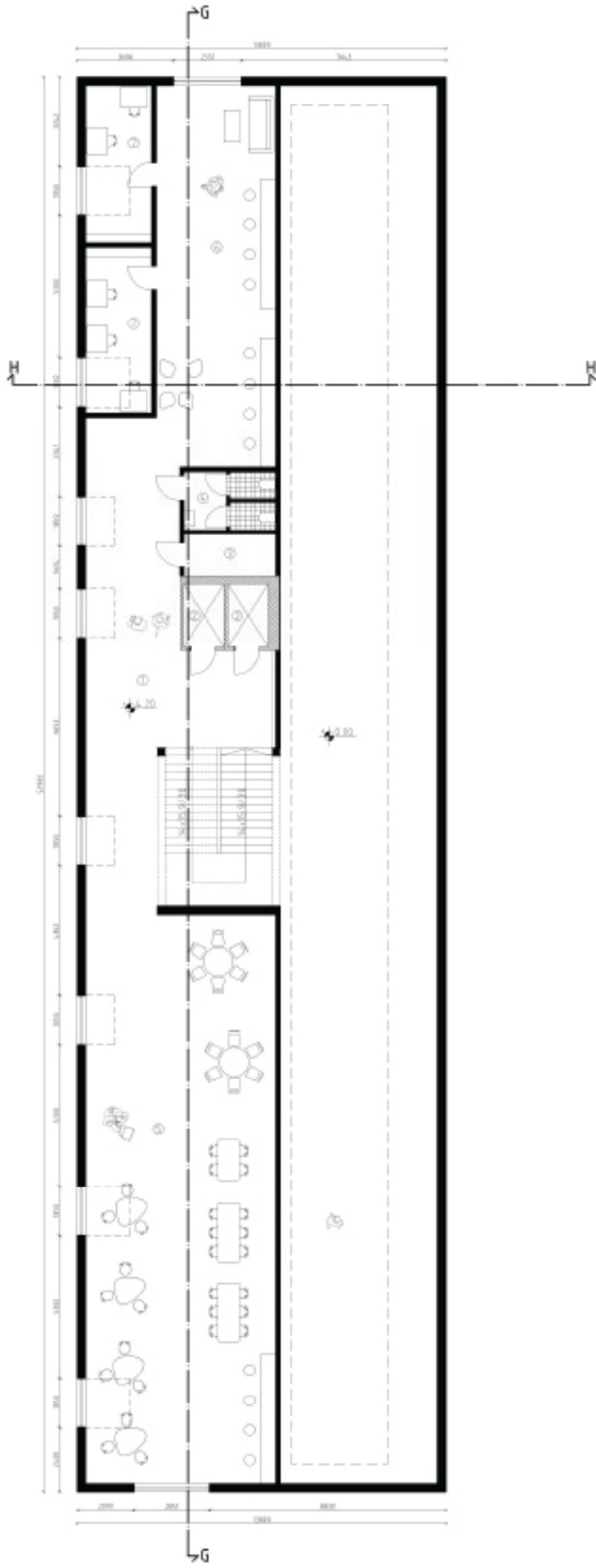


- 1. hallway
- 2. patient rooms
- 3. lounge
- 4. storage
- 5. mini lounge
- 6. cleaning storage
- 7. toilet
- 8. vertical communication
- 9. elevators

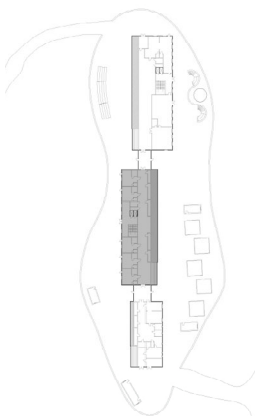


Design proposal

Patient volume/Second floor 1:200

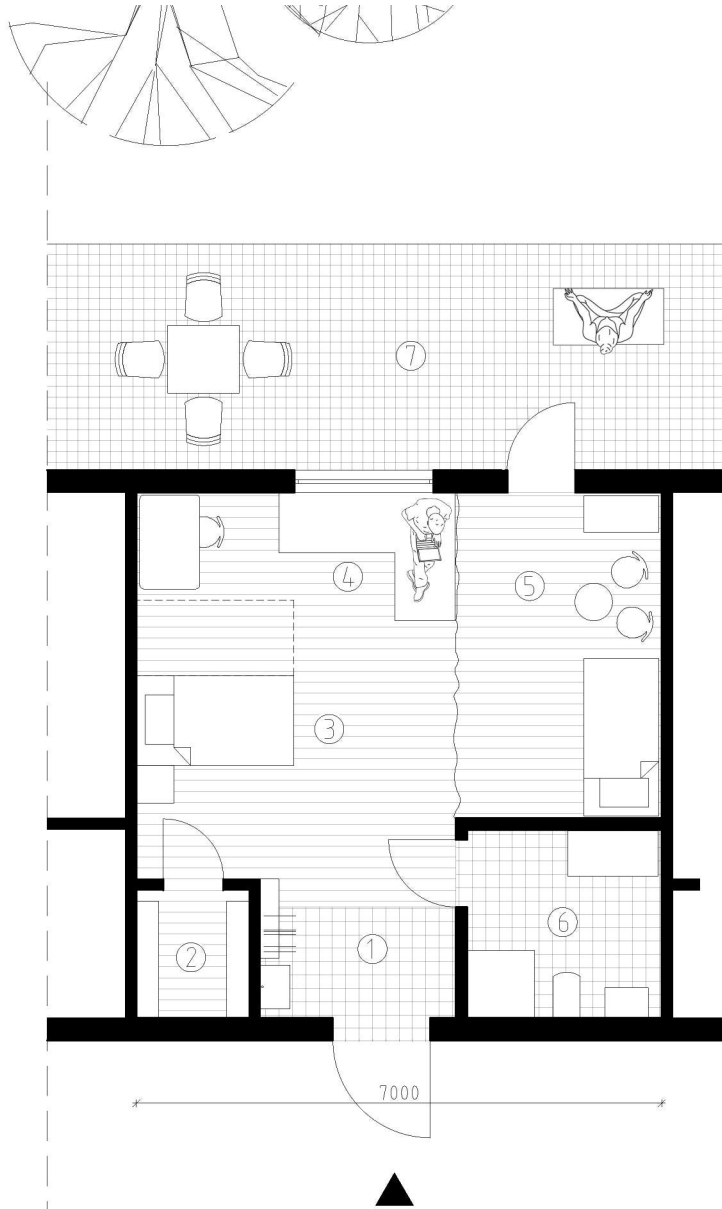


- 1. hallway
- 2. vertical communication
- 3. cleaning storage
- 4. toilet
- 5. open group study area
- 6. open study area
- 7. study rooms



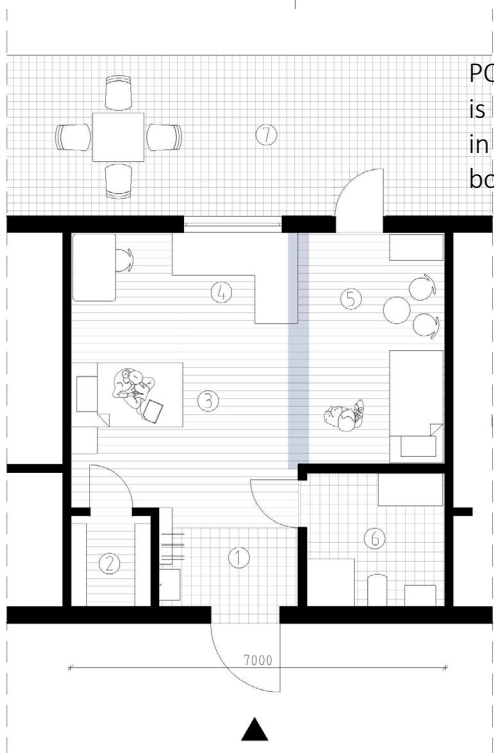
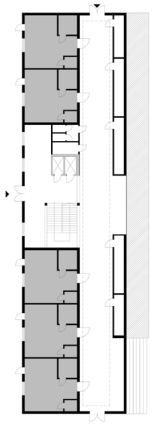
Design proposal

Patient volume/Patient room 1:100

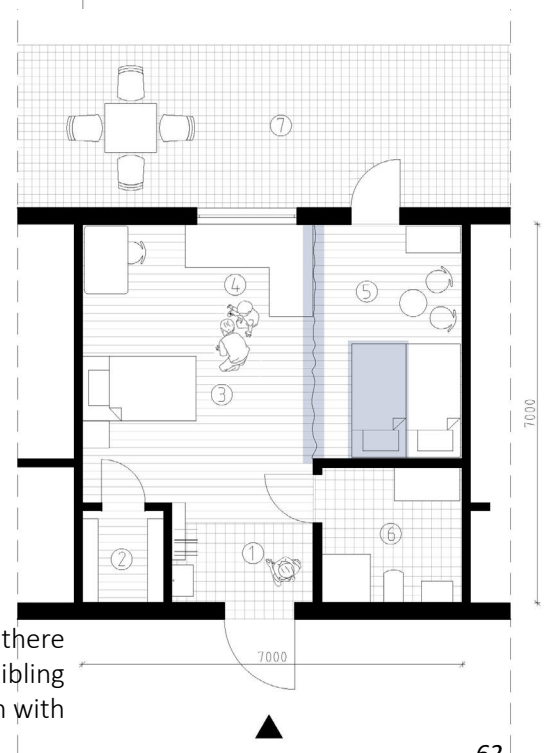


PCPU version 1 where there is one parent with a child in the room with a closed boundary.

- 1. hallway
- 2. storage
- 3. patient area
- 4. study/play area
- 5. parent area
- 6. toilet
- 7. terrace



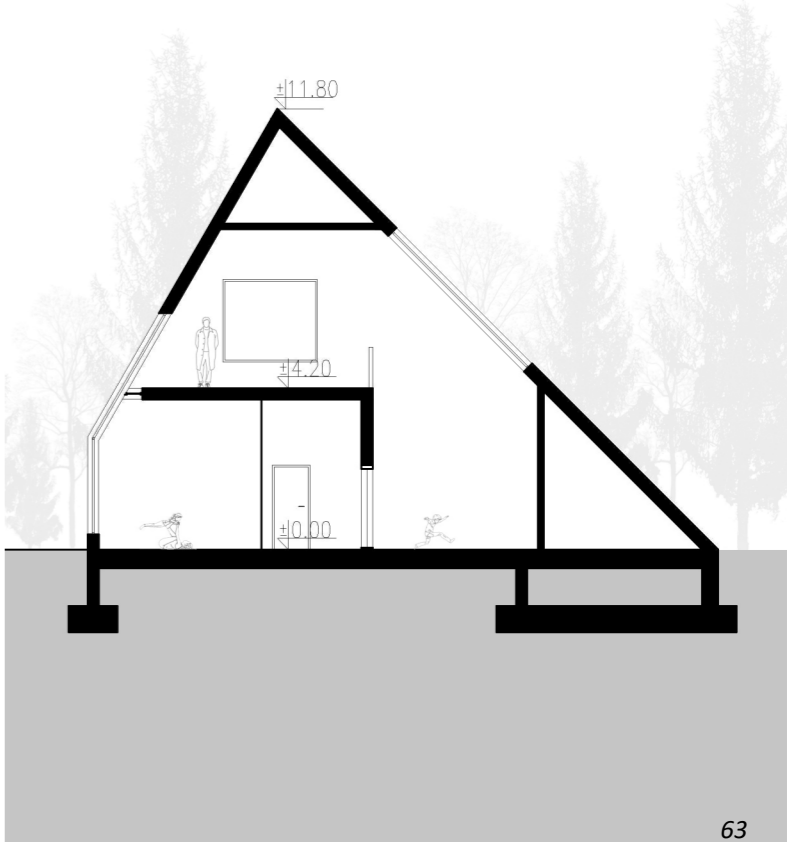
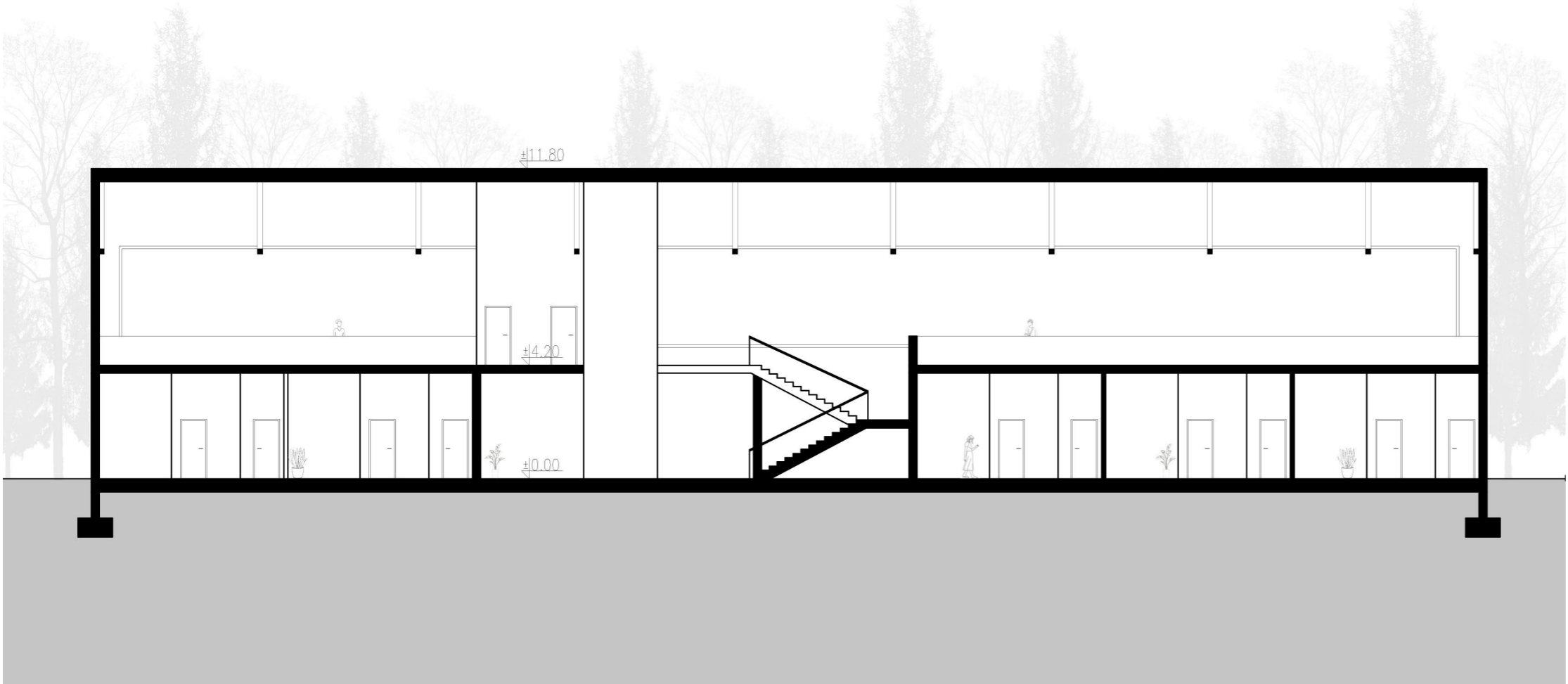
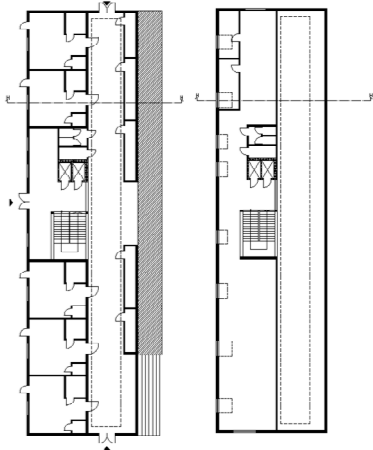
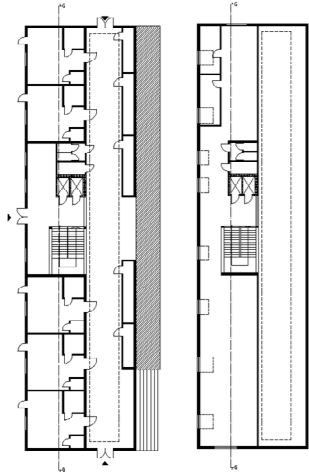
PCPU version 2 where there is one parent with a child in the room with an open boundary.



PCPU version 3 where there is one parent and a sibling with a child in the room with a close boundary.

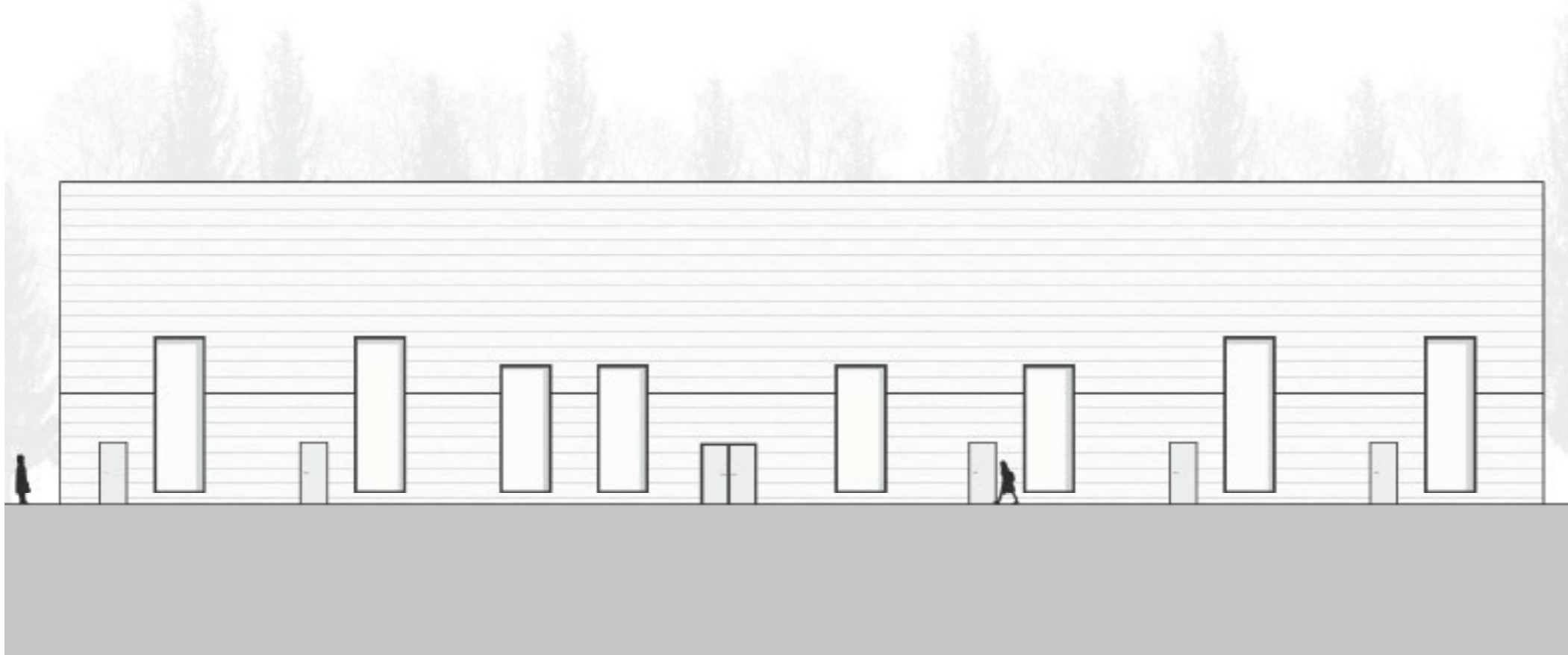
Design proposal

Patient volume/Section G-G 1:200
Section H-H 1:200

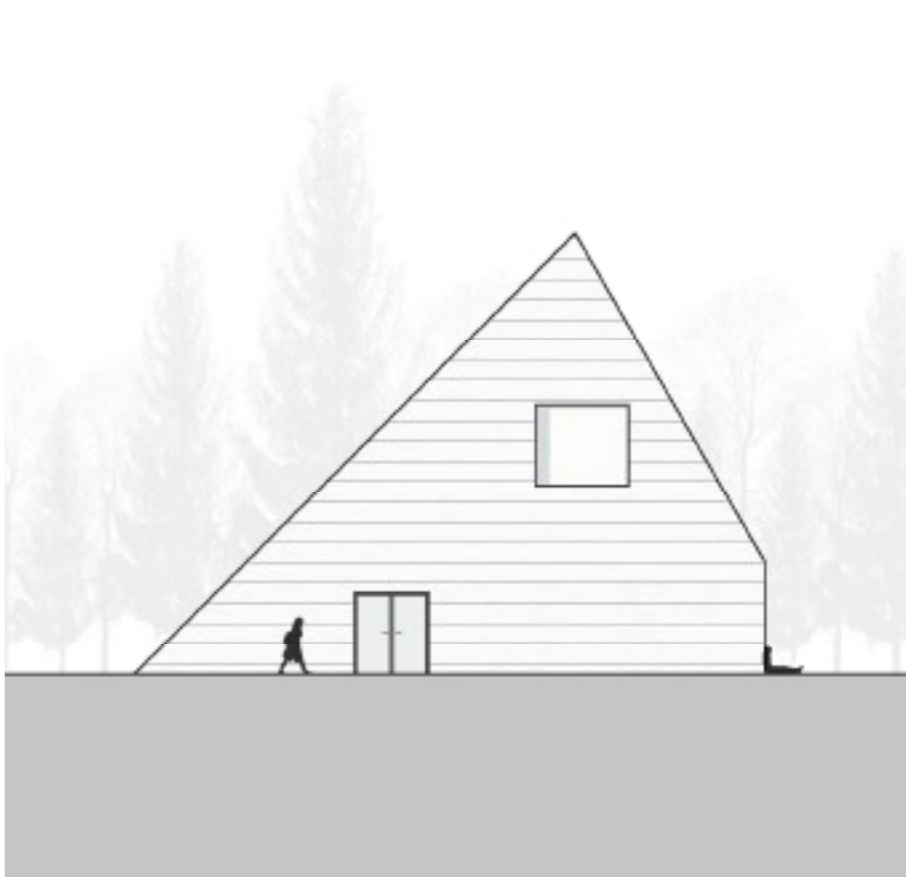


Design proposal

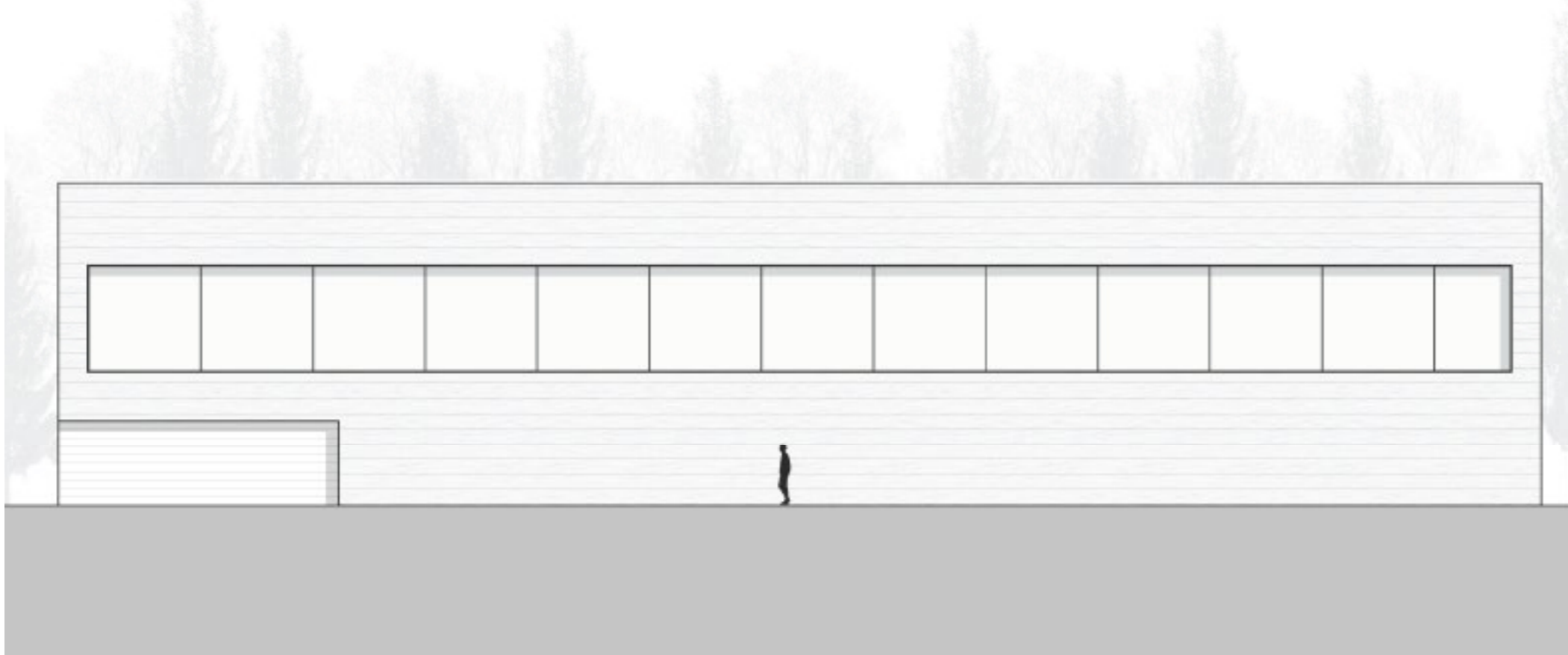
Patient volume/West facade 1:200



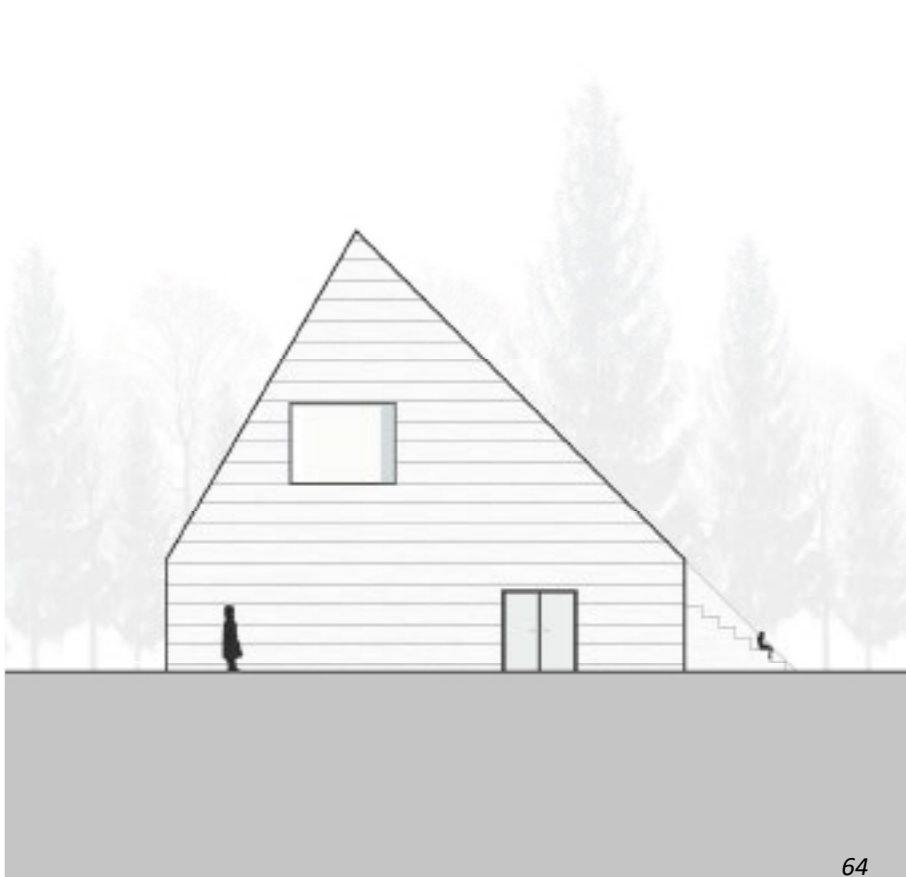
North facade 1:200



East facade 1:200

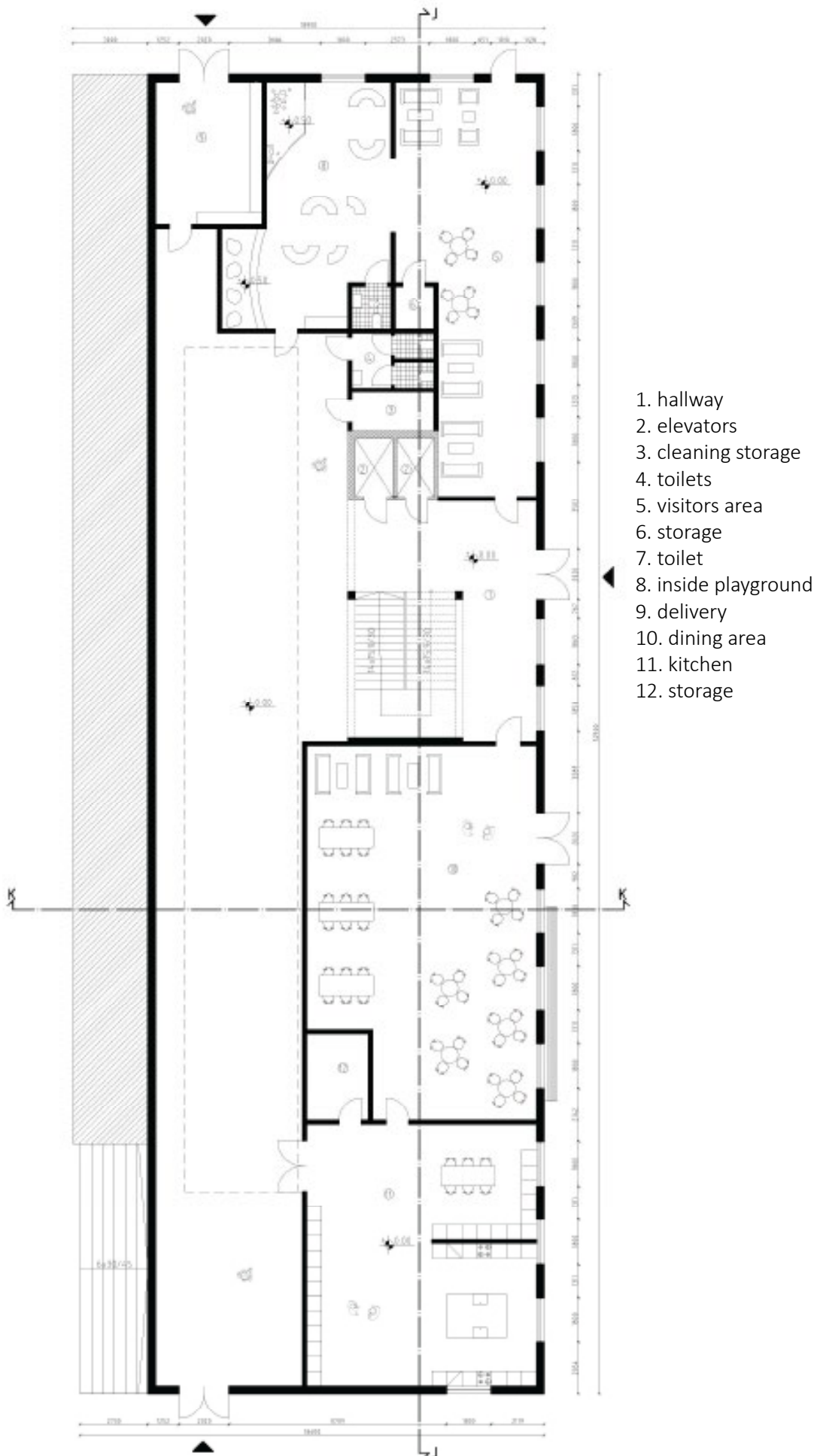


South facade 1:200



Design proposal

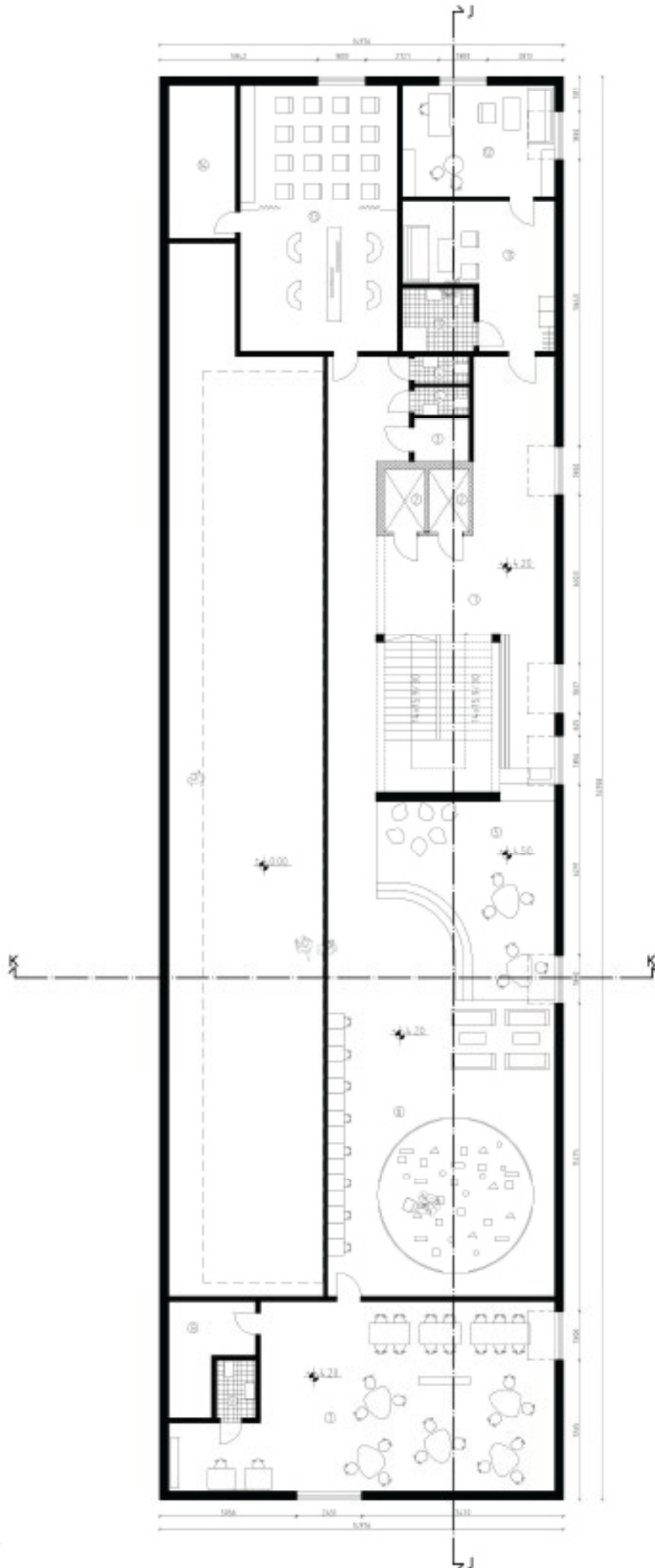
Common area volume/First floor 1:200



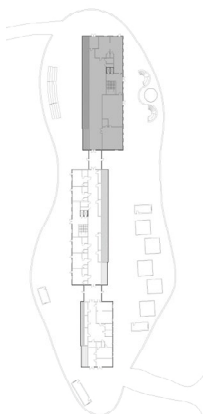
- 1. hallway
- 2. elevators
- 3. cleaning storage
- 4. toilets
- 5. visitors area
- 6. storage
- 7. toilet
- 8. inside playground
- 9. delivery
- 10. dining area
- 11. kitchen
- 12. storage

Design proposal

Common area volume/Second floor 1:200

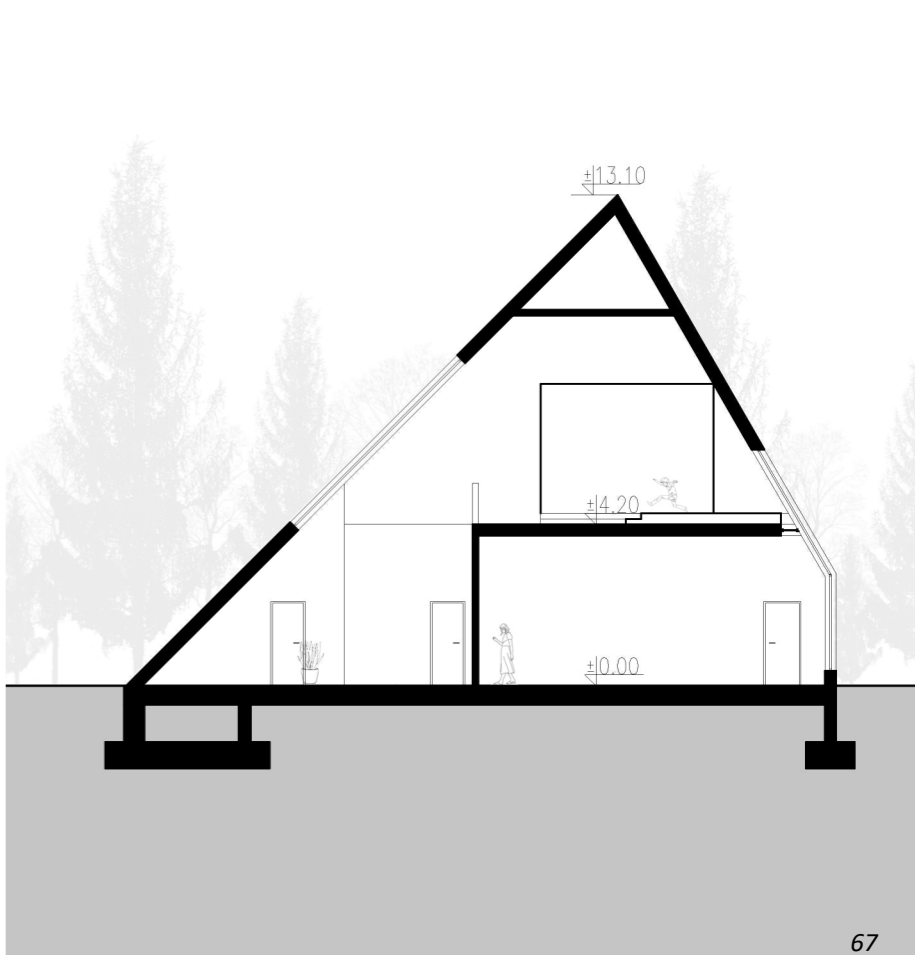
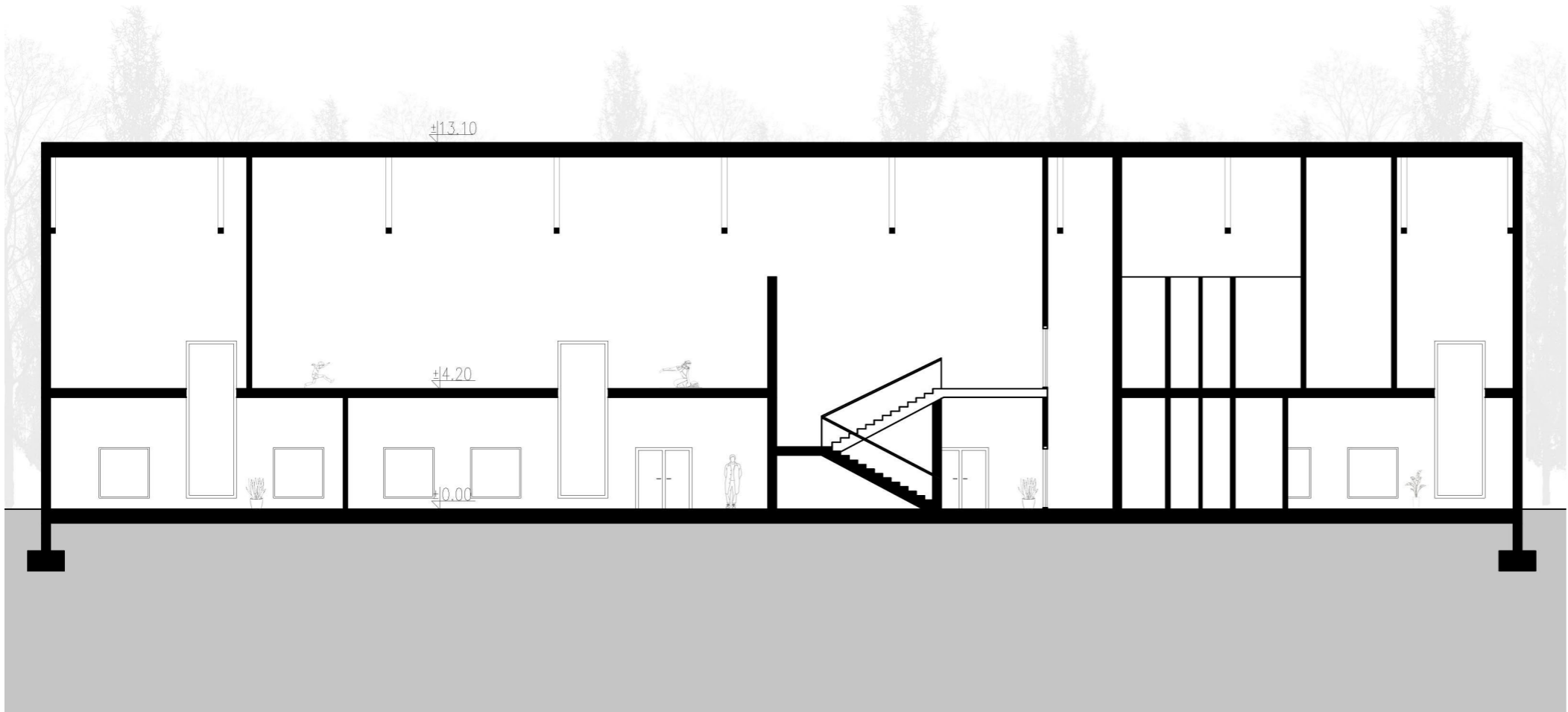
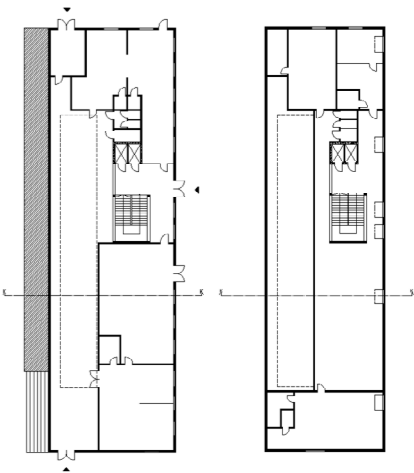
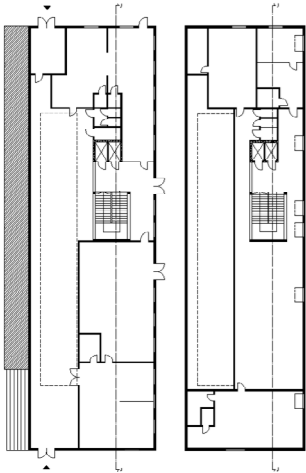


- 1. hallway
- 2. elevators
- 3. cleaning storage
- 4. toilets
- 5. playground
- 6. playground
- 7. library
- 8. storage
- 9. toilet
- 10. toilet
- 11. therapist office
- 12. therapist waiting room
- 13. movie theater
- 14. storage



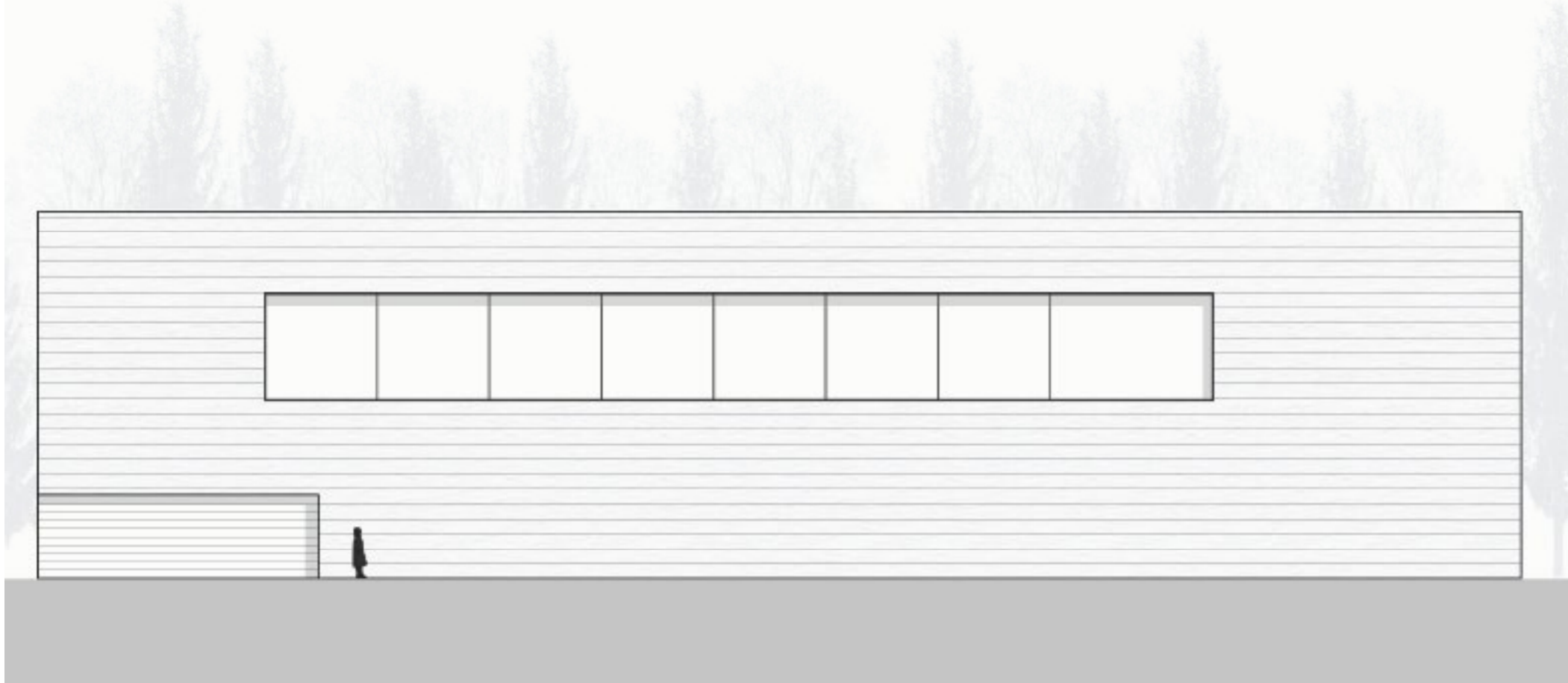
Design proposal

Common area volume/Section J-J 1:200
Section K-K 1:200



Design proposal

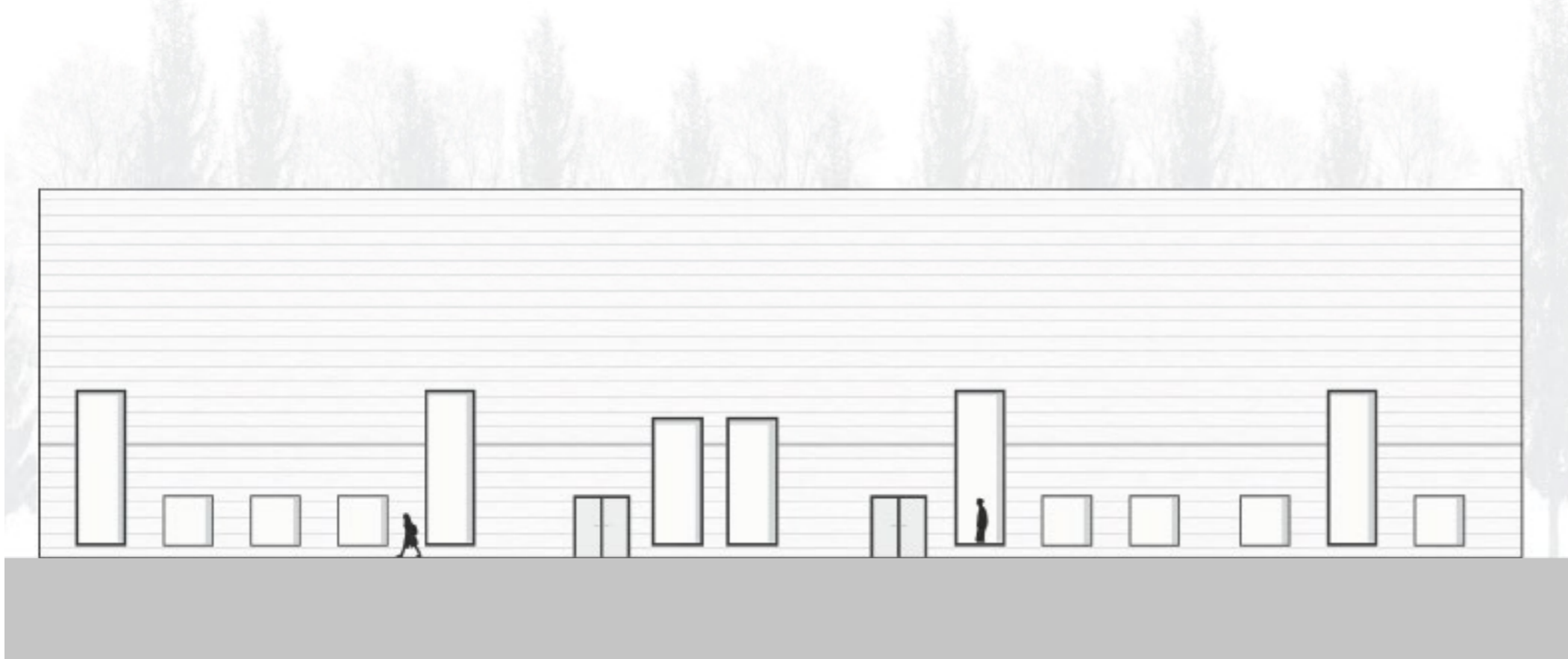
Common area volume/West facade 1:200



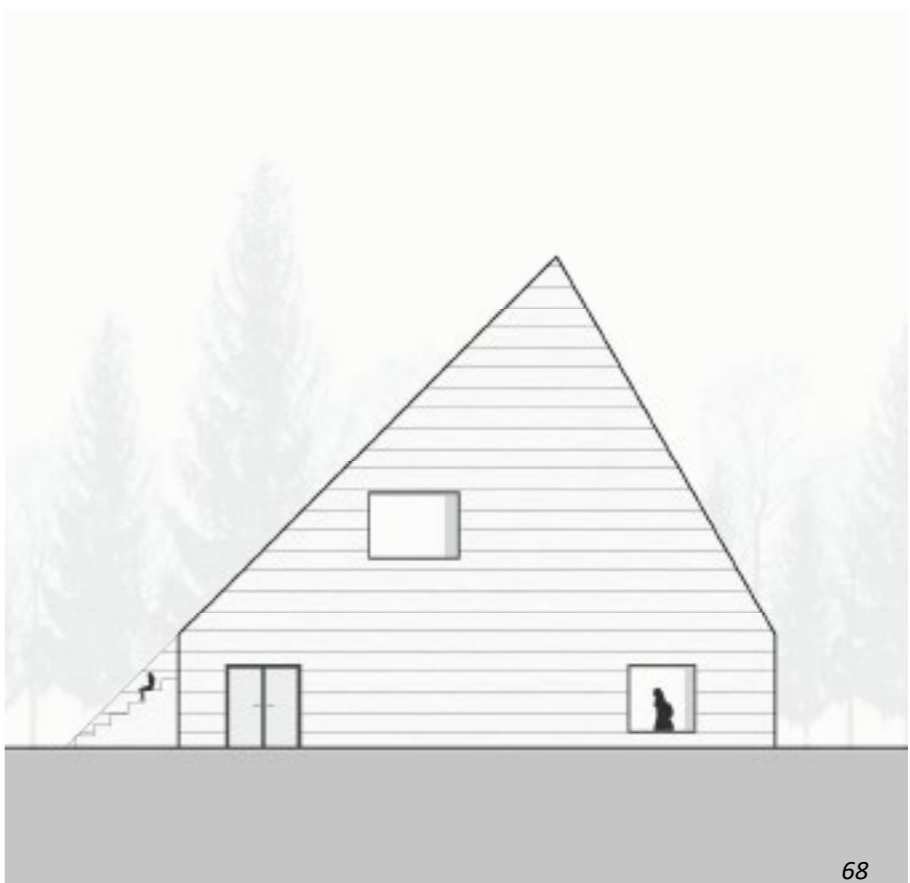
North facade 1:200



East facade 1:200

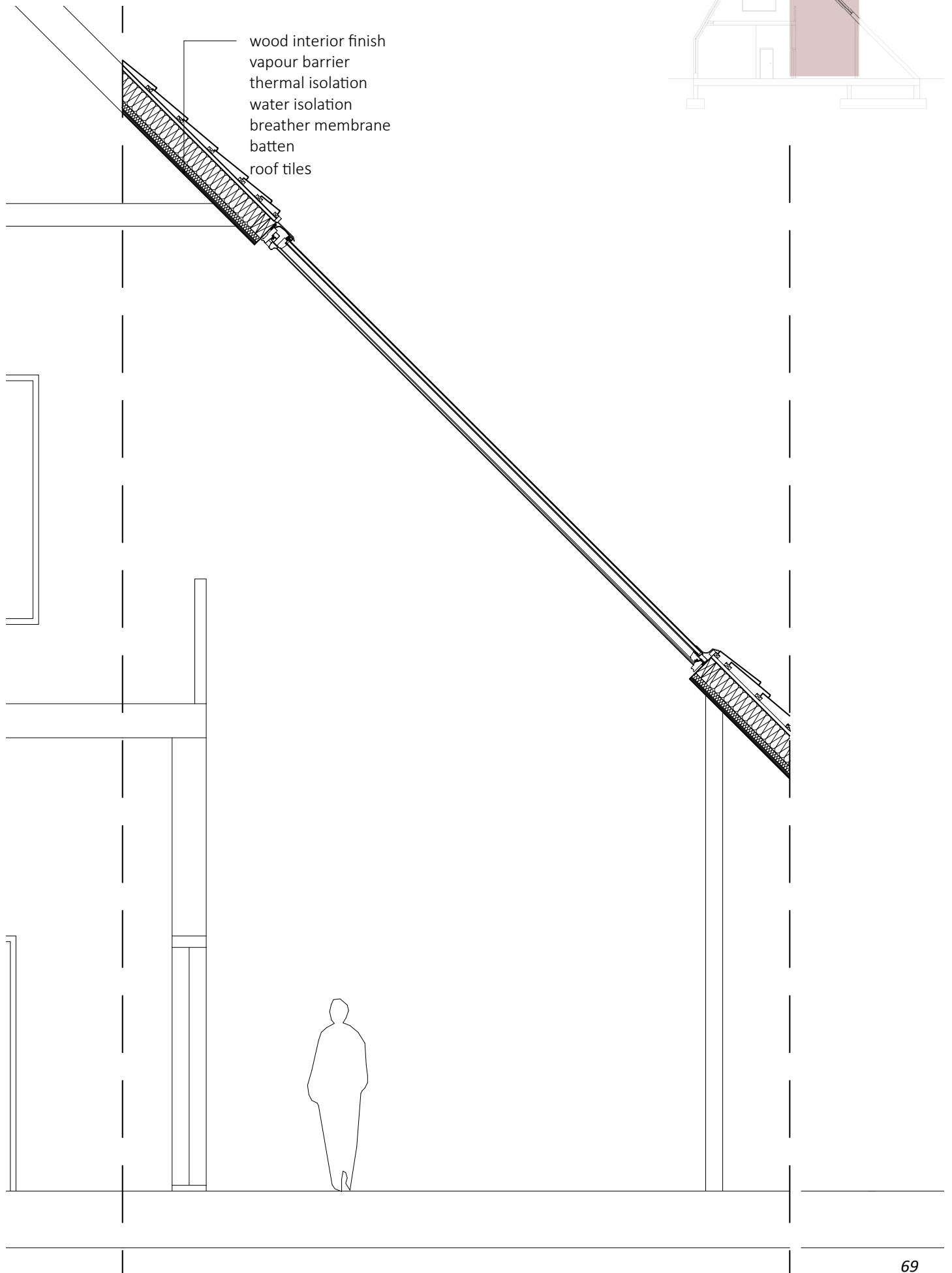


South facade 1:200



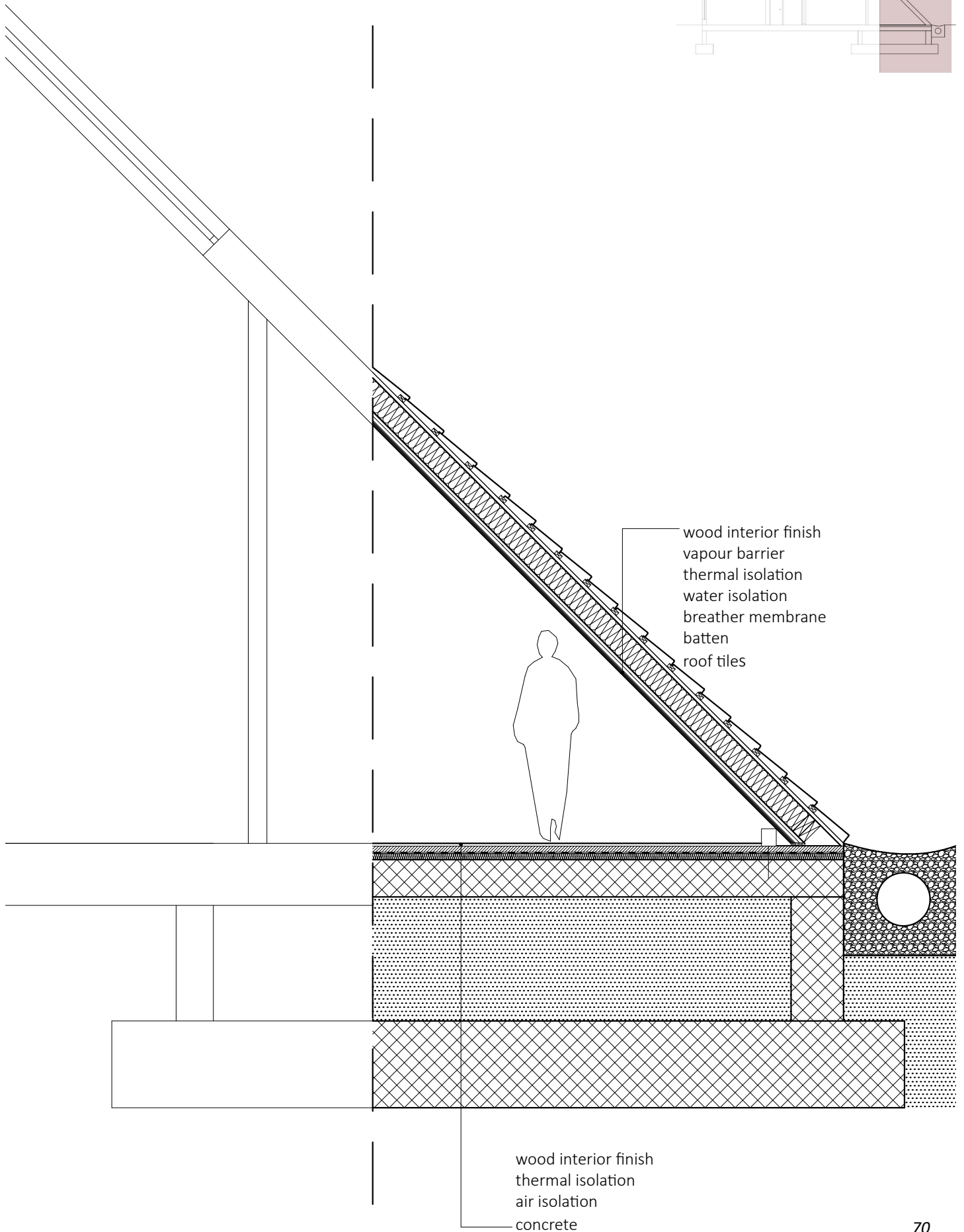
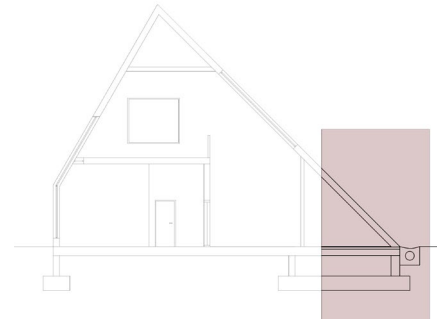
Design proposal

Detail 1:40/roof window



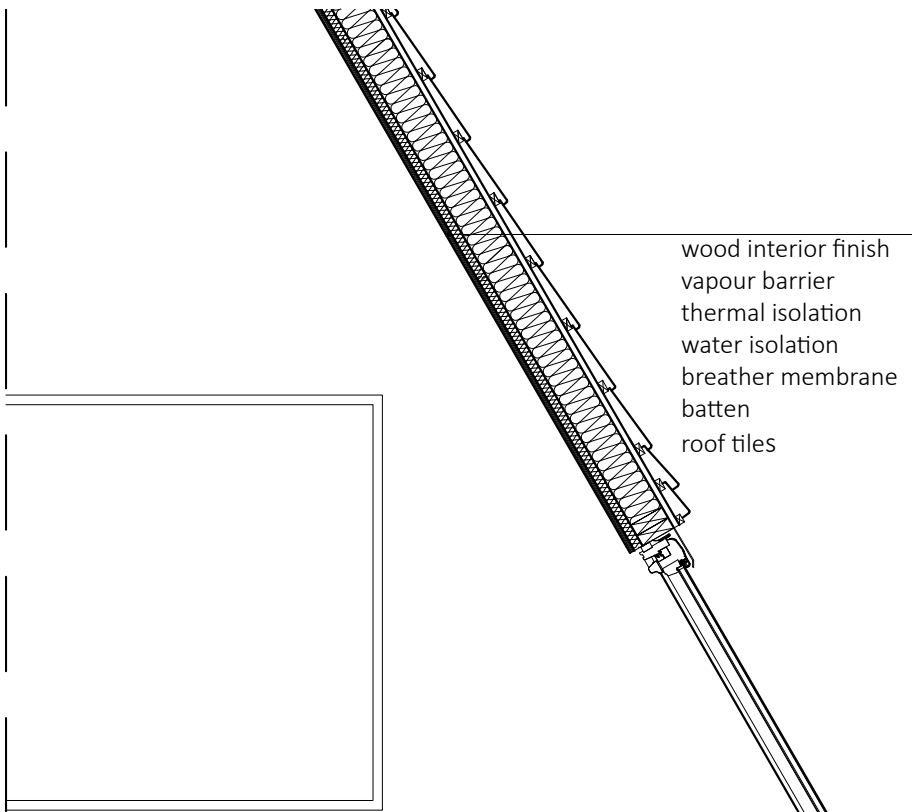
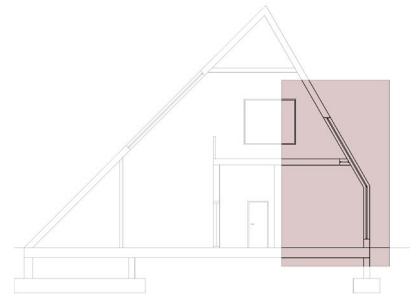
Design proposal

Detail 1:40/foundation and roof connection

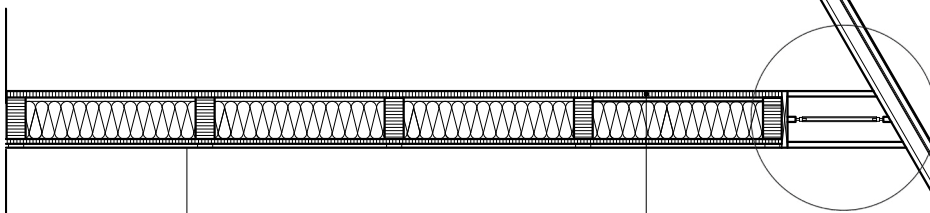


Design proposal

Detail 1:40/window and beam connection

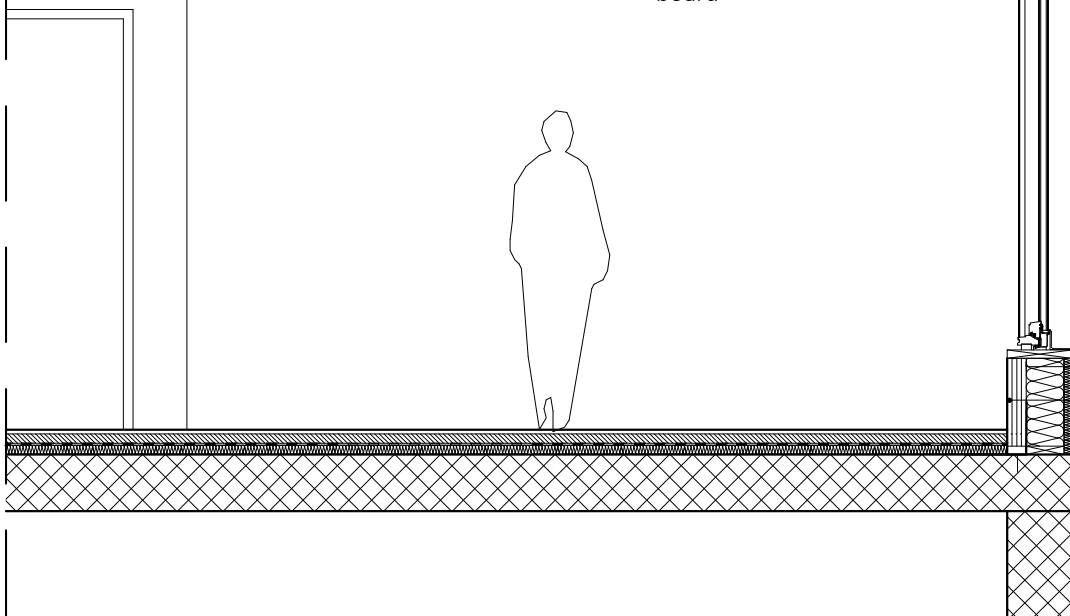


wood interior finish
vapour barrier
thermal isolation
water isolation
breather membrane
batten
roof tiles



wooden floor
cement screed
waterproof layer
thermal isolation board
air isolation
thermal isolation board

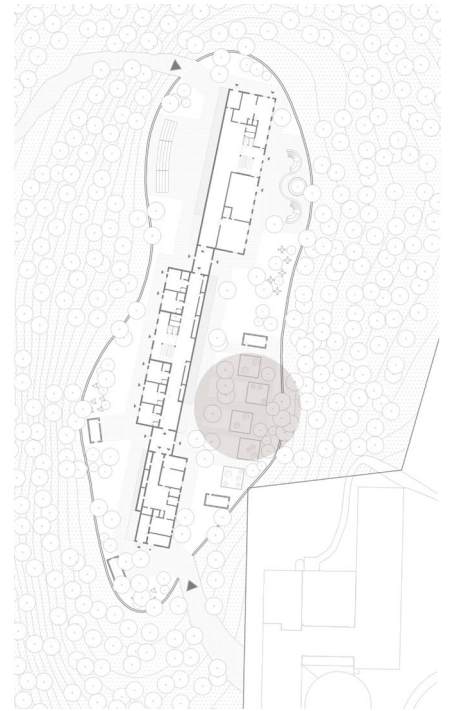
Metal string that is connecting beam and window frame. It is serving as a construction detail and it is transmitting the loads from the roof on the beam, down to the foundations. The string is protected with glass from below and top, creating a light line along the floor and making the detail more interesting for children.



CLT
thermal isolation
waterproof layer
board
air ventilation
wooden facade

Design proposal

Perspectives



I have decided to go with an abstract imaging of the perspectives, both inside and out. This aesthetic is the way I am expressing the focus on the atmosphere and not on coloring.

Outside perspective on the east side of the complex. It is showing the area where children and their family along with the staff can participate in the gardening activities. Having activities like these in the complex motivates children to go out, socialize and learn something new, despite the condition they are in. It is important to keep them active and give them different activities to choose from. Small houses outside are used as a storage area for amenities needed for gardening. Perspective is showing roof seating that every volume has, giving a new way of using the roof. In the back is a small playground. The area is covered with greenery and small roads. It has 5 big pots in which anything can be grown.



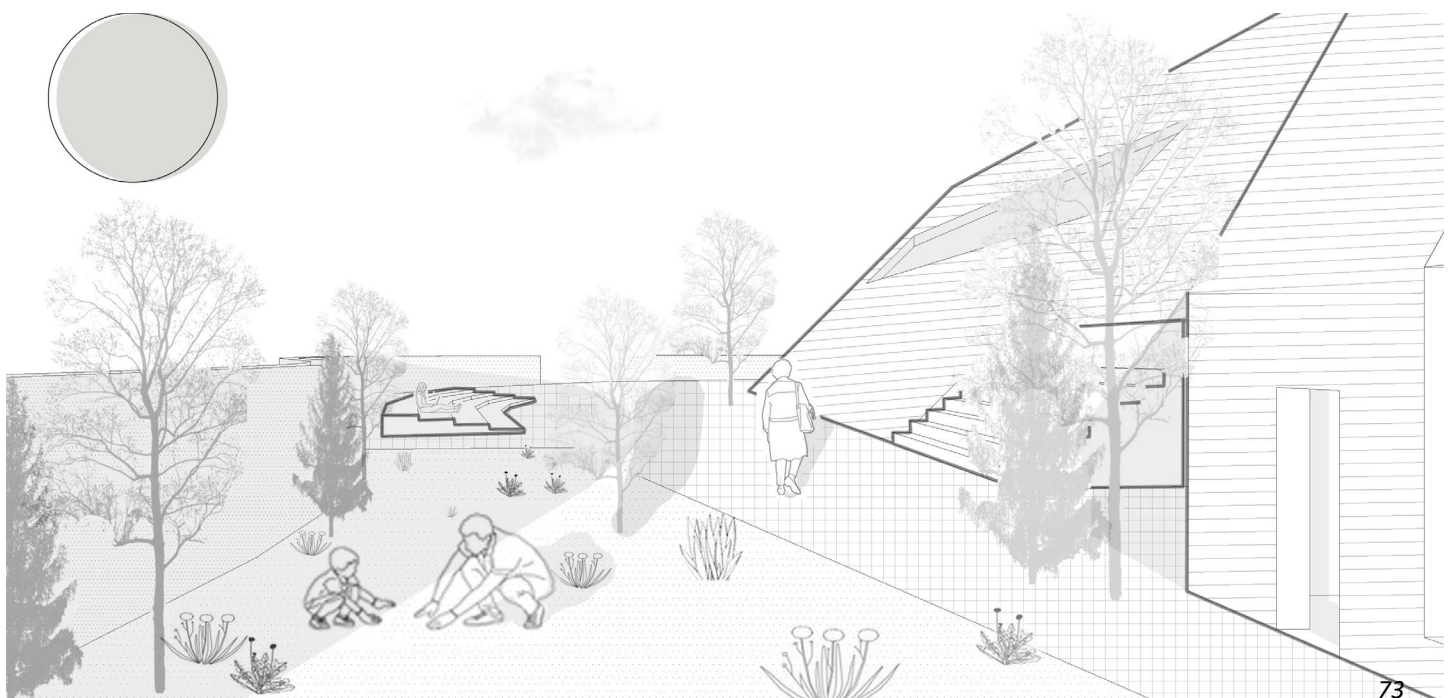
Design proposal

Perspectives



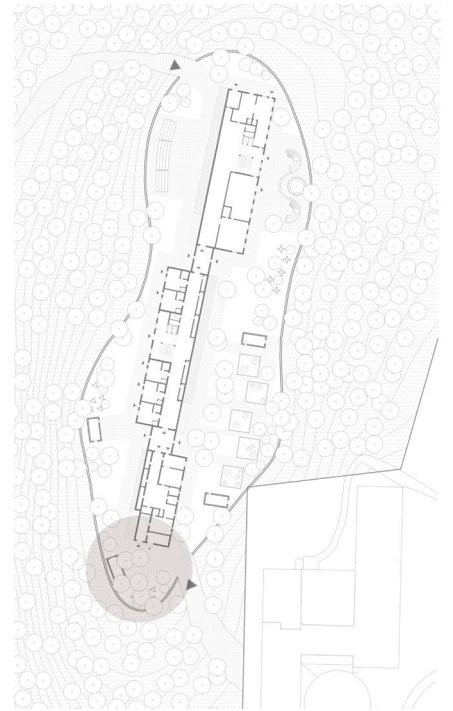
I have decided to go with an abstract imaging of the perspectives, both inside and out. This aesthetic is the way I am expressing the focus on the atmosphere and not on coloring.

Outside perspective on the west side of the complex, close to the entrance for visitors. It is showing the area where children and their family along with the staff and visitors can relax and sit on the big seating or roof stairs. On this side all patient rooms balconies are exiting and the area is designed as a more calming one. It doesn't have any activities but it is an open green area where there are a lot of possibilities of seating and enjoying the calmness. This area is made for relaxation. It has a warm afternoon sun.



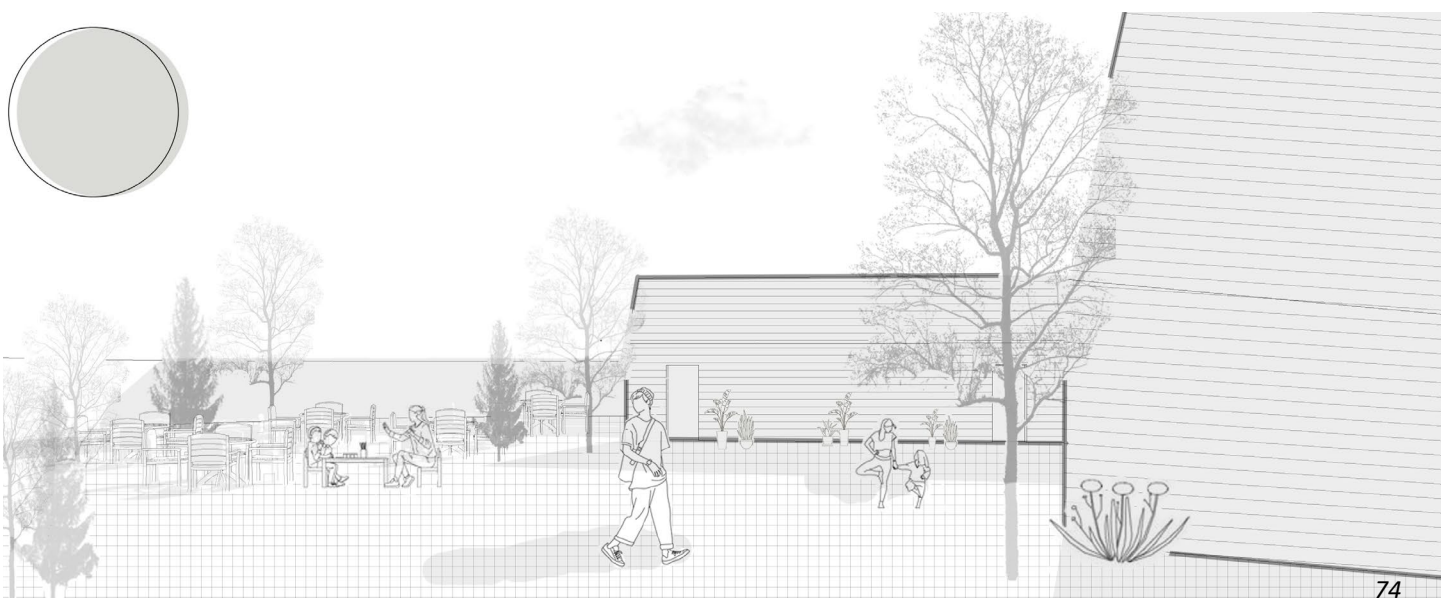
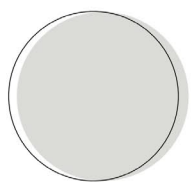
Design proposal

Perspectives



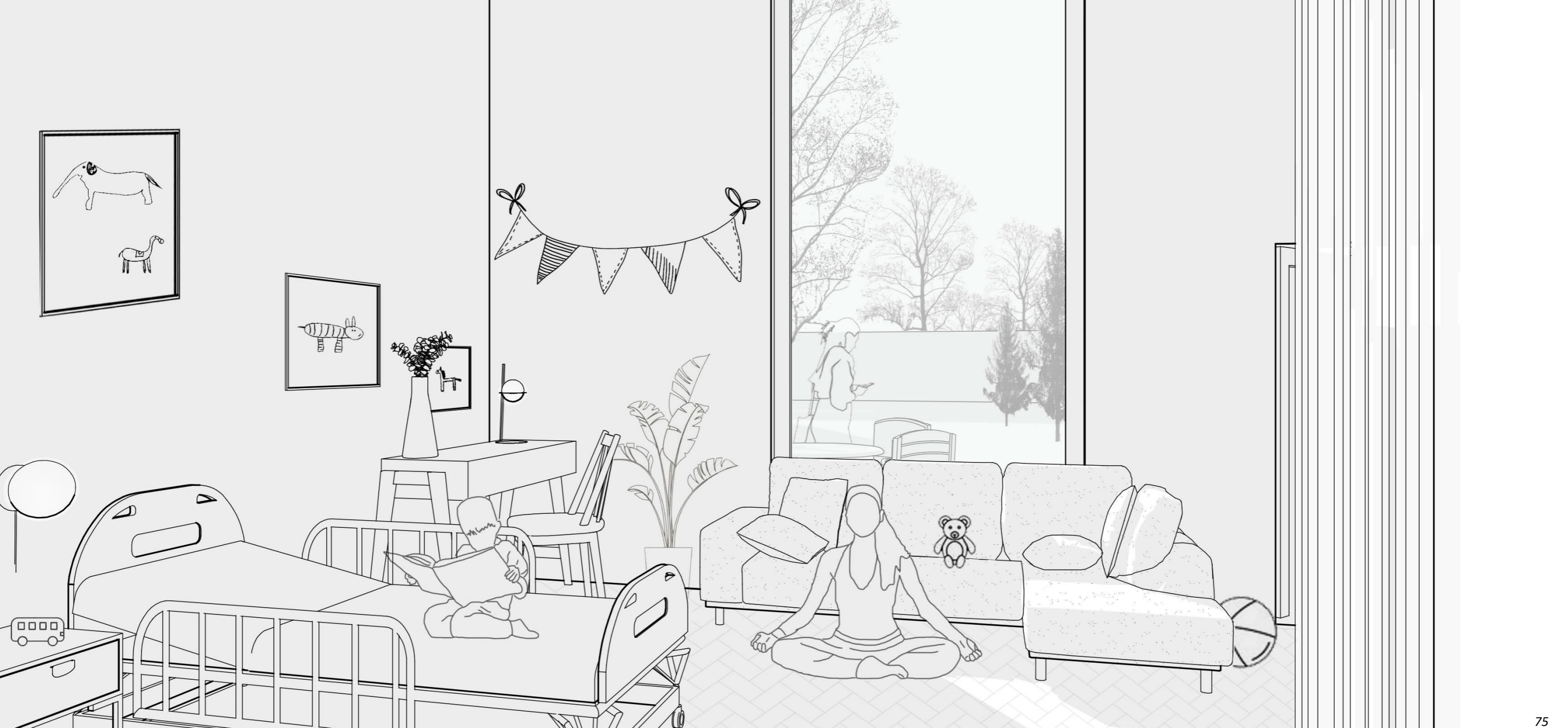
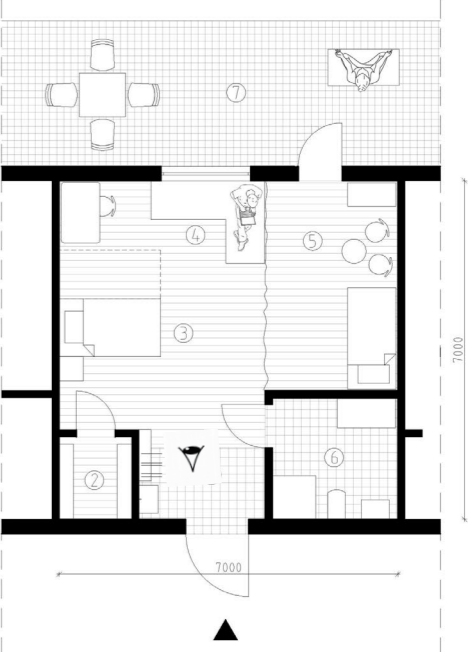
I have decided to go with an abstract imaging of the perspectives, both inside and out. This aesthetic is the way I am expressing the focus on the atmosphere and not on coloring.

Outside perspective on the south side of the complex, close to the entrance for staff. It serves as a south boundary between activated and call outside area. Is complemented with cafe seating with the possibility of using the outside seating for place to eat, talk, study or play. The smaller volume can serve either as an outside storage on an inside free seating area for movie nights or group activities. This is the first area that staff reaches when coming to the complex. It is an active zone.



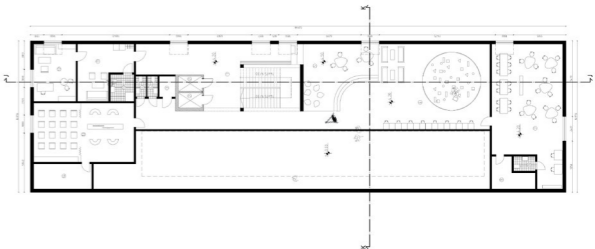
Design proposal

Perspectives/patient rooms

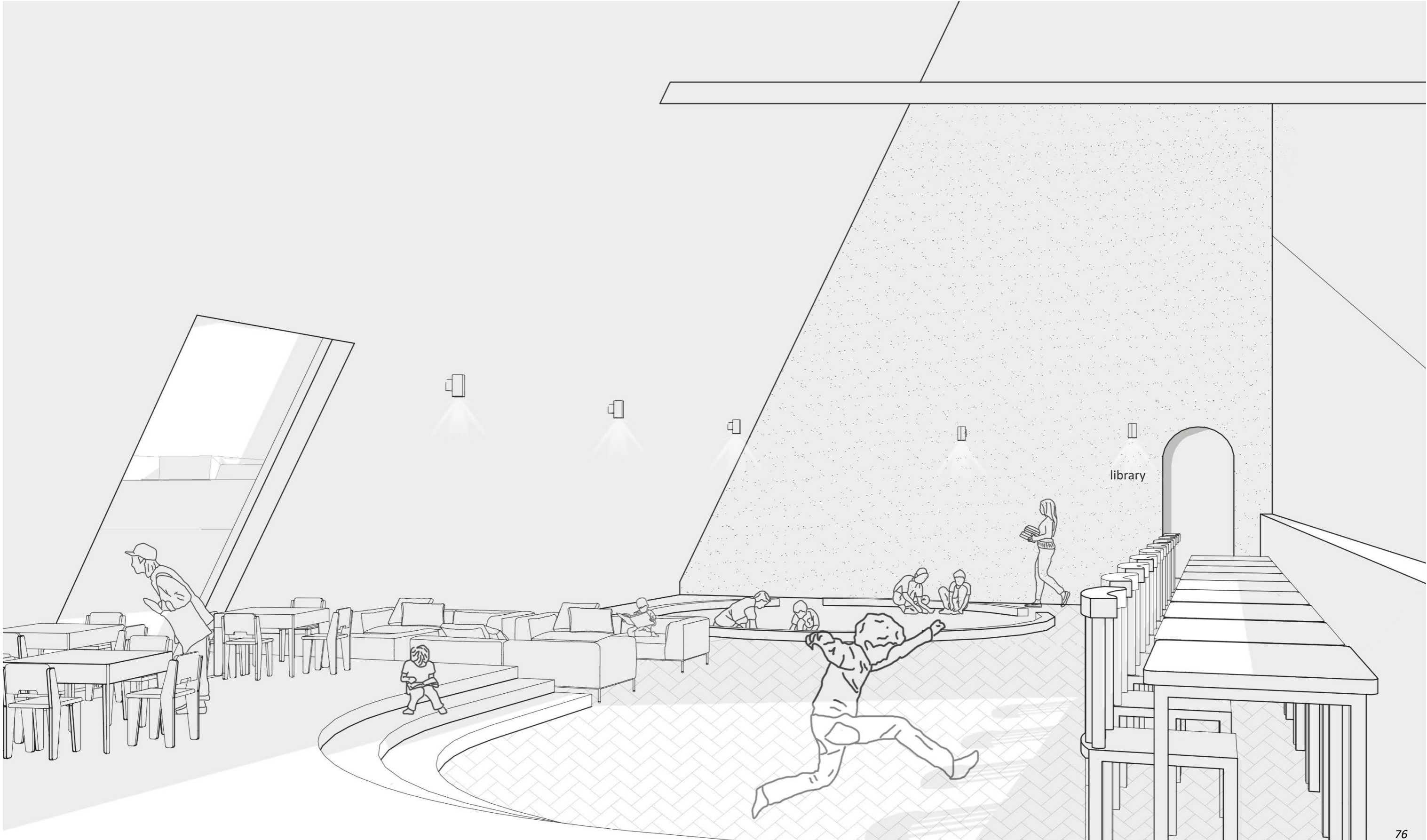


Design proposal

Perspectives/open reading area



Common volume/gallery



Reflection

What went well

Having a topic related to healthcare could run into problems at the research and interview stages, causing the project to stop or lacking information on the topic. I ran into those problems but luckily I have managed to go around them and collect the information and experiences I needed to design my building. Creating the connection with the conditions on the location and building was the interesting part in the design process. It was fairly easy creating this connection once the research of the location was done properly. Having been personally connected to the topic it gave me another perspective on the issues, creating design choices that were partly coming from these experiences. While designing the building and writing the paper it felt natural to talk about this topic and imagine how I as an architect help with this health problem.

What would I have done differently

I would have done the location research more, being a little bit slower when deciding what location would fit best for the project. Once I had the location I would go into investigation at the beginning, resulting in creating the volume of the building much easier and earlier in the thesis. I would make one more interview from the perspective of children who are sick, but unfortunately that is a problem that appears when designing buildings like these.

Future

Even though I have been writing my thesis for almost a year, having more time would give me the space to investigate the outside space more and design spaces that are more communicative. One aspect that I haven't addressed enough, in my opinion, is the topic of sustainability. This topic was investigated on a low level and I would have loved to go more into it and implement it in the design.

Acknowledgements

I would like to express enormous gratitude to my family for supporting me during these two years where I have managed to move to Sweden and finish my Master studies.

I would also like to thank my tutor Elke Miedema. Thank you for providing me the knowledge and guidance needed to finish the Thesis. Your willingness to work with me during an unusual time helped me grow my dedication and wish to work on my project.

I also wish to thank Cristiana Caira, my examiner and teacher during my studies. Your passion and dedication to architecture inspired me to push myself and follow my instinct.

Having the opportunity to do my thesis at Chalmers University is one of the biggest opportunities during my studies in Sweden.

Gothenburg, Sweden

September 23, 2022

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References/images

Photos, illustrations and maps are made by the author unless stated otherwise.

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Figure 3: Da Vinci L.; 1492; Vitruvian man; <https://stock.adobe.com/se/images/homo-vitruviano-so-called-the-vitruvian-man-a-k-a-leonardo-s-man-detailed-drawing-on-the-basis-of-artwork-by-leonardo-da-vinci-by-ancient-manuscript-of-roman-master-marcus-vitruvius-pollio/26469558>

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Figure 6/7/8/9: Snohetta; Friluftssykehuset- the Outdoor Care Retreat; 2015-2018; <https://snohetta.com/project/419-friluftssykehuset-the-outdoor-care-retreat>

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Figure 14: Ultra Architects; Wooden House on a Meadow; 2020; <https://www.archdaily.com/969033/wooden-house-on-a-meadow-ultra-architects>

Figure 15: IF; EKH Children Hospital; 2019; <https://www.archdaily.com/932317/ekh-children-hospital-s-csb>

Figure 16: <https://www.pinterest.com/pin/376191375125068567/>; <https://www.pinterest.com/pin/16466354874651770/>