

wood program

teknillinen korkeakoulu

helsinki

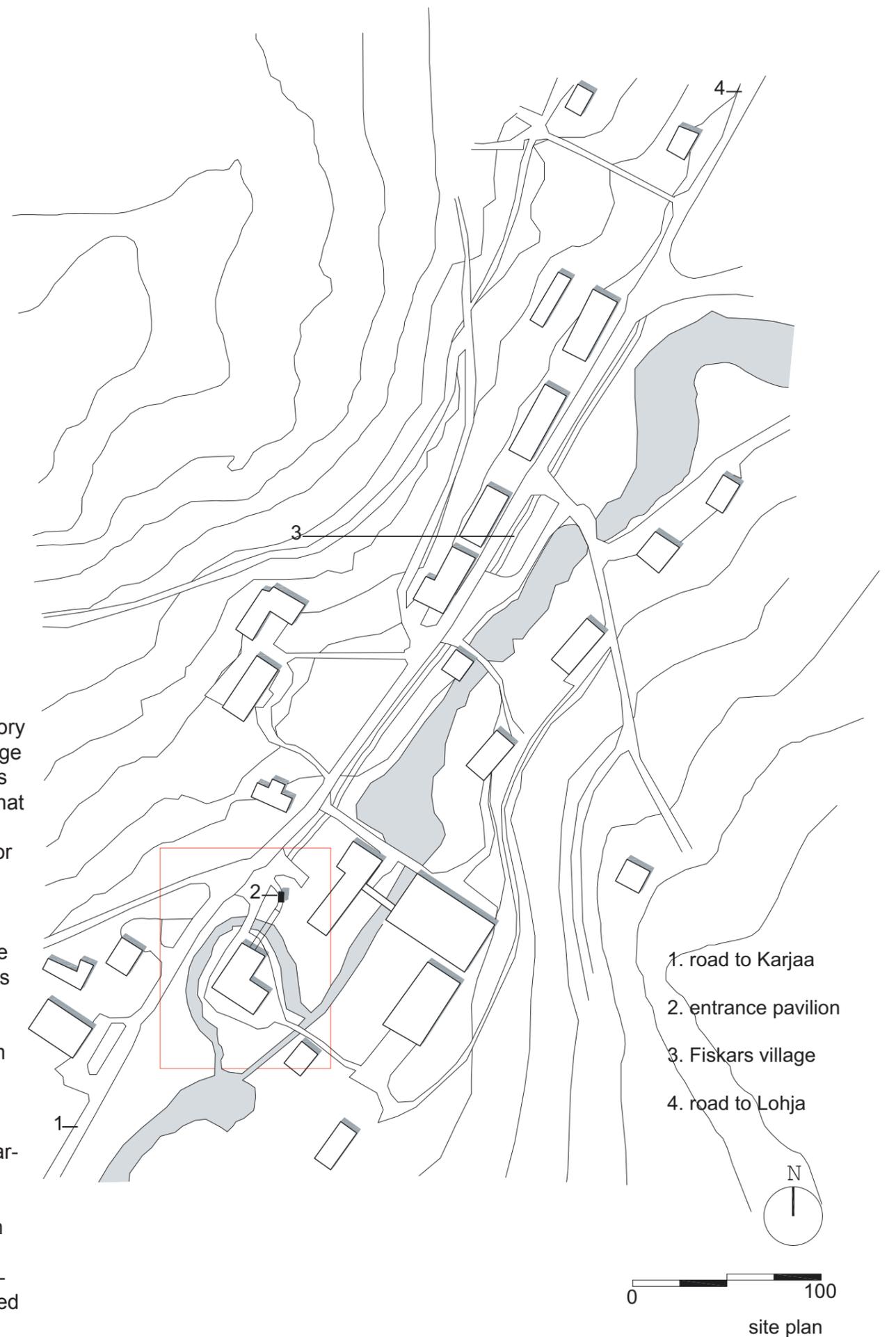
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Fiskars in south east of Finland the old scissors factory Fiskars started in 1649. Most of the buildings in the factory village was erected in the 19th century. Not only the factory also but it's environment is unique with the great amount of wood species that grow here. With it's own sawmill carpenters are common here. The old factory village with it's surroundings are now a center for art and crafts in Finland.

Every year there are several art exhibitions in the old buildings. One of them, the Granary was to be an exhibition with the name Sato, Harvest. The wood program was invited to take part in this exhibition. For this purpose a competition was appointed to the students in the Wood program to make a gardener's hut. The winning entry was to be build in scale 1:1 during the spring term and further designed and developed by the whole group.

The gardener was to be able to store tools, rest and plan the garden in the hut.

Two projects are presented from Fiskars the first one is my own entry for the competition
The second one is the wood program group work. Originally designed by Jonathan Montandon from Switzerland. This hut ended up as an entrance pavilion.





the gardener, the wall and density

the Gardener's Hut
5 m²

The wall is organized to create a difference in density. Behind the wall the right amount of privacy and shelter for the gardener's different needs are found.

The space tightly enclose the needs: storage, rest and work. The small measures of the space allows as much of the garden as possible to be left untouched.

The roof sits on top of the wall and space. It is folded inwards in order to leave the line of density undisturbed but yet add an extra dimension to the space.

Seinämä on jäsentynyt tiheys eroista. Seinämän takaa löytyy puutarhurin tarpeisiin sopiva määrä yksityisyyttä sekä suojaa.

Tila rajaa tiukasti tarpeet: varastoinnin, levon sekä työskentelyn. Tilan pienellä mittamaailmalla saavutetaan se, että mahdollisimman suuri osa puutarhaa voidaan jättää koskemattomaksi.

Katto on tilan ja seinämän päällä. Se on taivutettu sisäpuolelle, jotta se ei häiritsisi linjoista muodostuvaa struktuuria. Katto kuitenkin antaa lisäulottuvuutta tilaan.

Ylva Hammarstedt, Sweden
Wood Program 05-06
Helsinki University of Technology



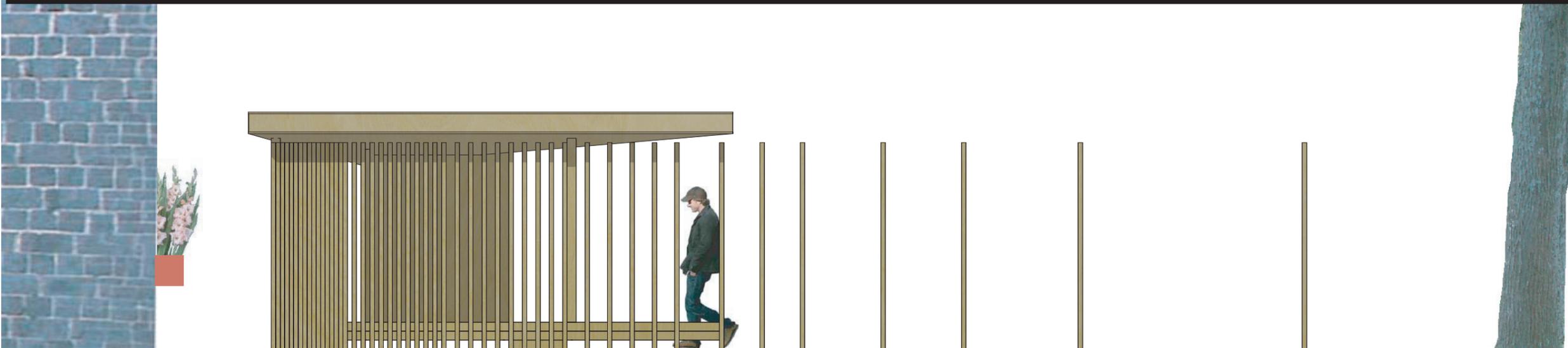
situation
scale 1:100



storage



elevation northeast 1:50



elevation southwest 1:50



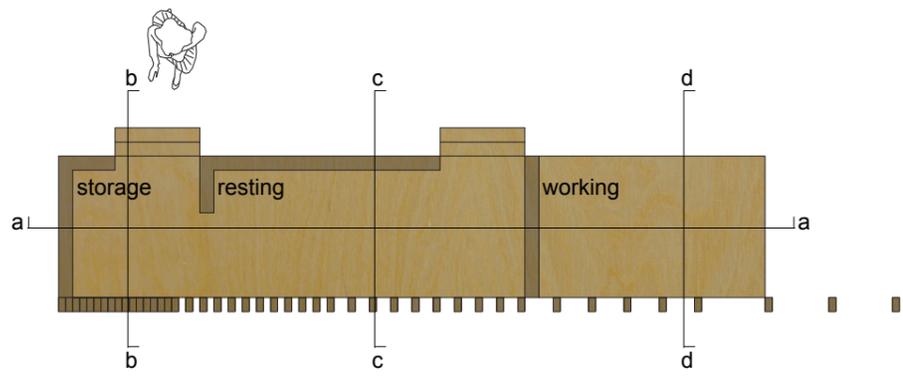
elevation northwest 1:50



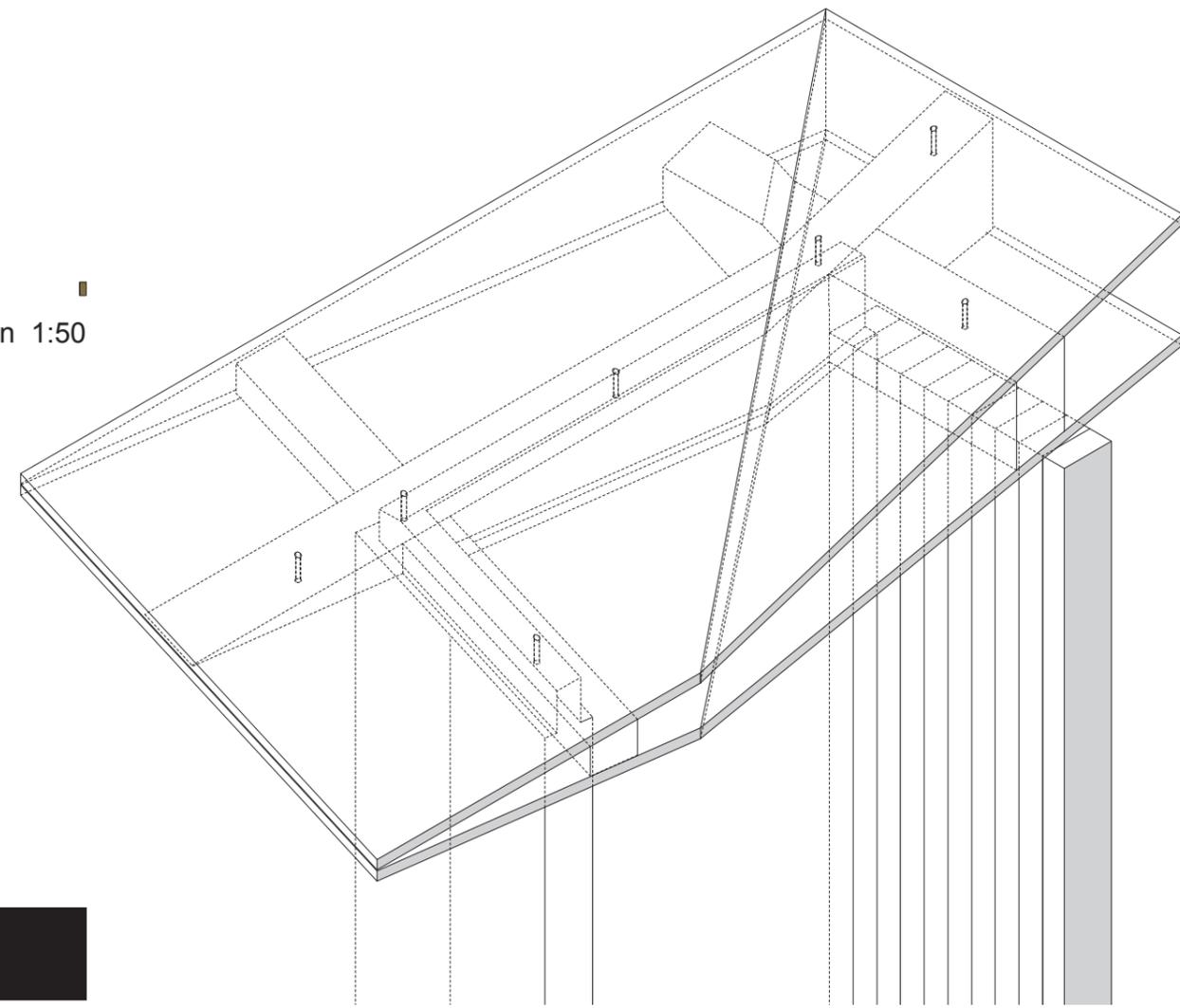
elevation southeast 1:50



resting



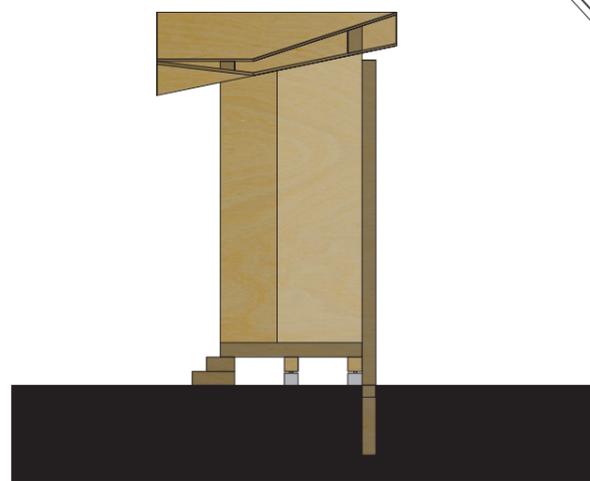
floor plan 1:50



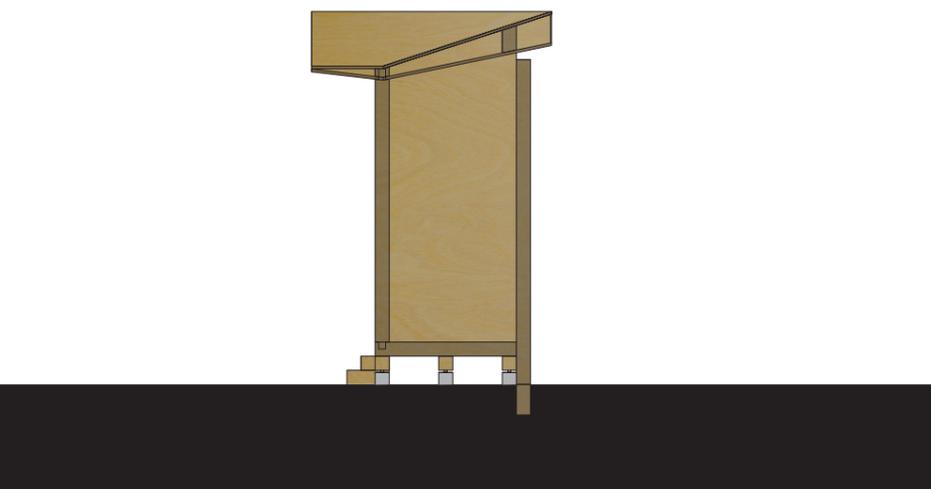
detail, roof 1:10



section a-a 1:50



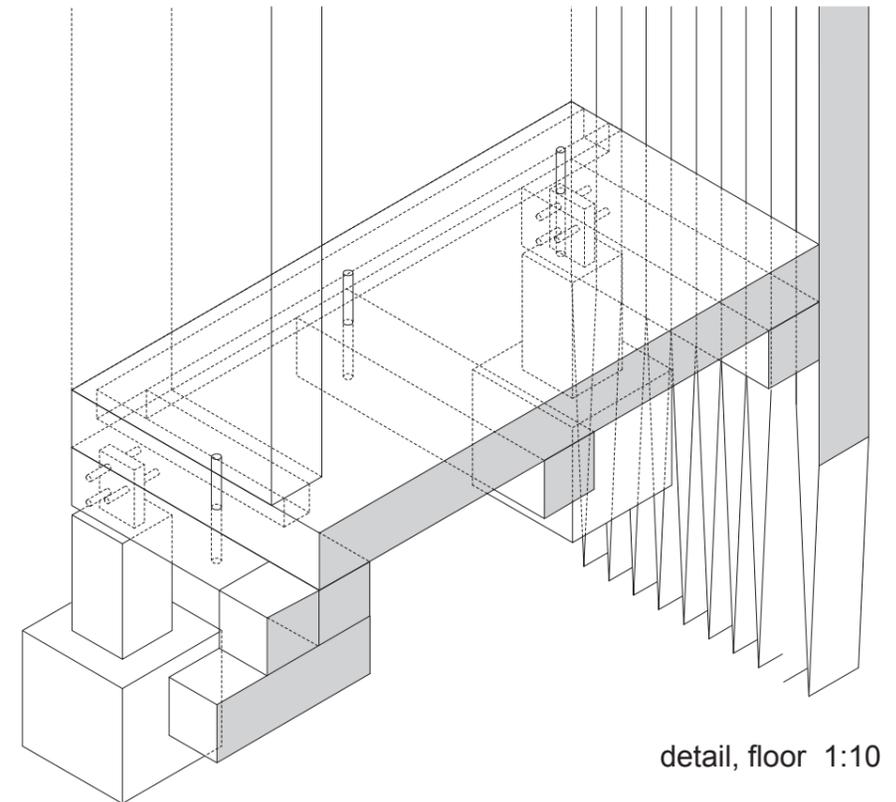
section b-b 1:50



section c-c 1:50



section d-d 1:50



detail, floor 1:10



In an old environment in central Helsinki lies the home of one of Finland's greatest writers, Aleksis Kivi. His home is transformed into a literature club with performances and meetings.

The task consisted in making a cafe where not only the members of the club could sit down and enjoy the view and maybe even a poetry recitation.

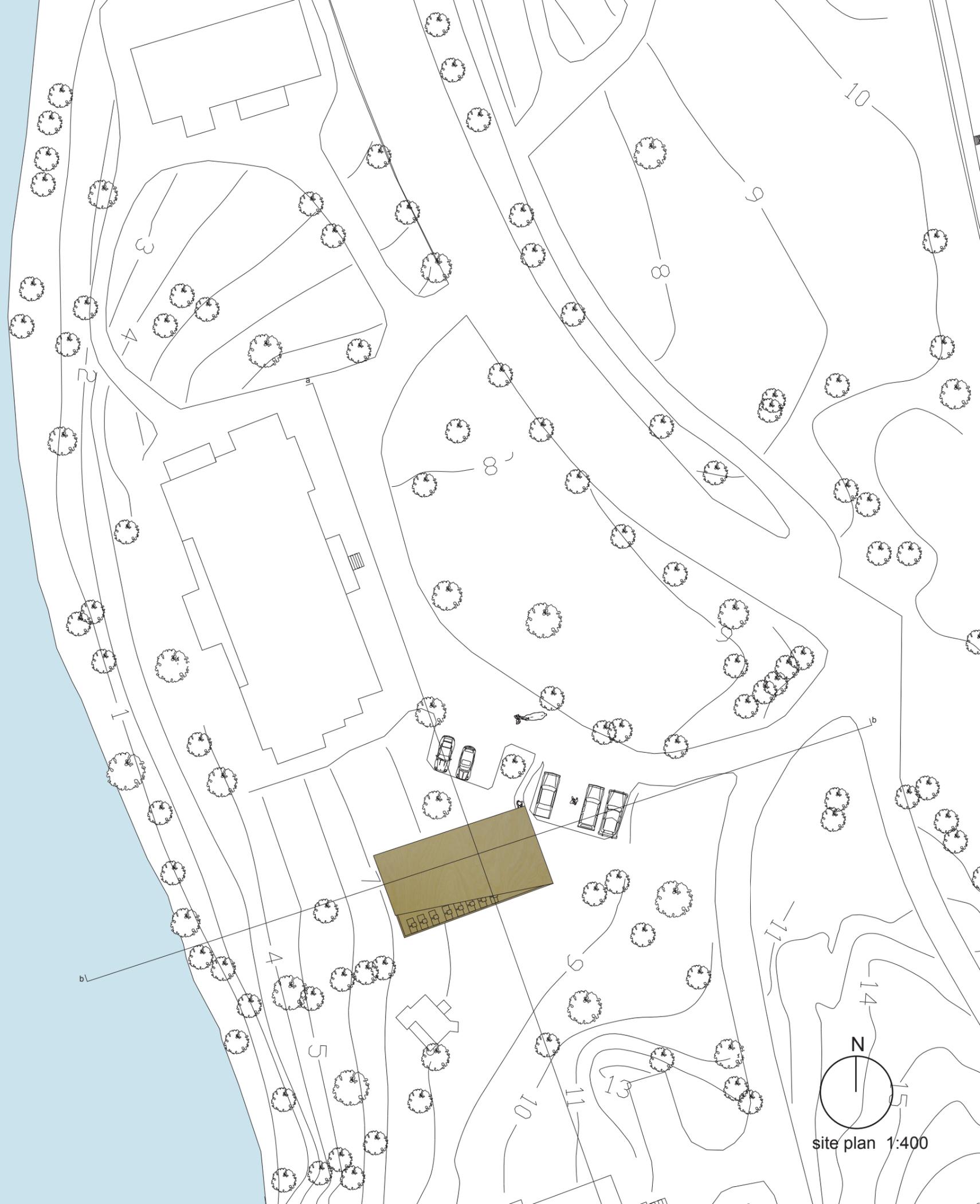
The difficulty in the task was to fit in a new wooden building in this area of wooden buildings from the turn of last century.

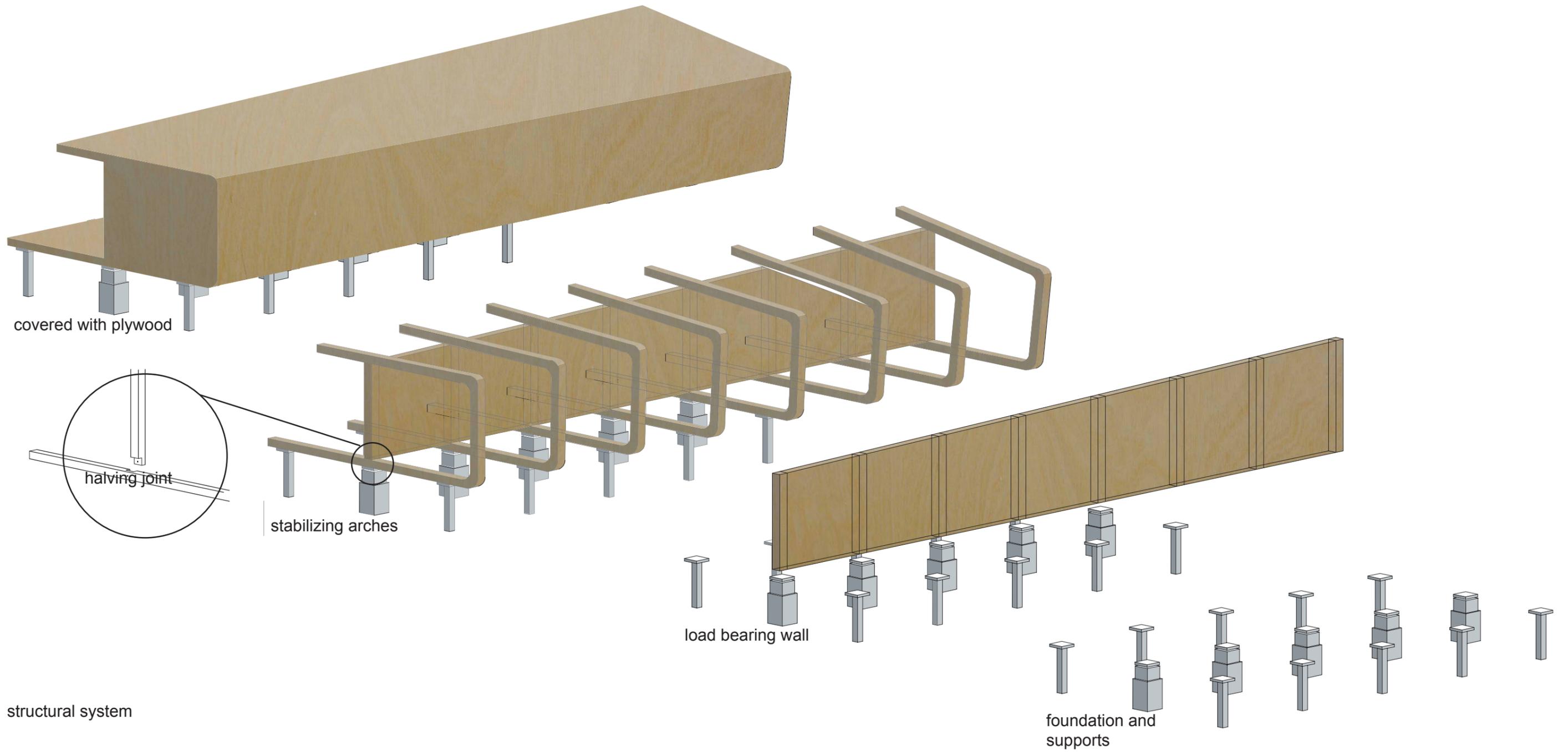
In solving this task I found two main issues:

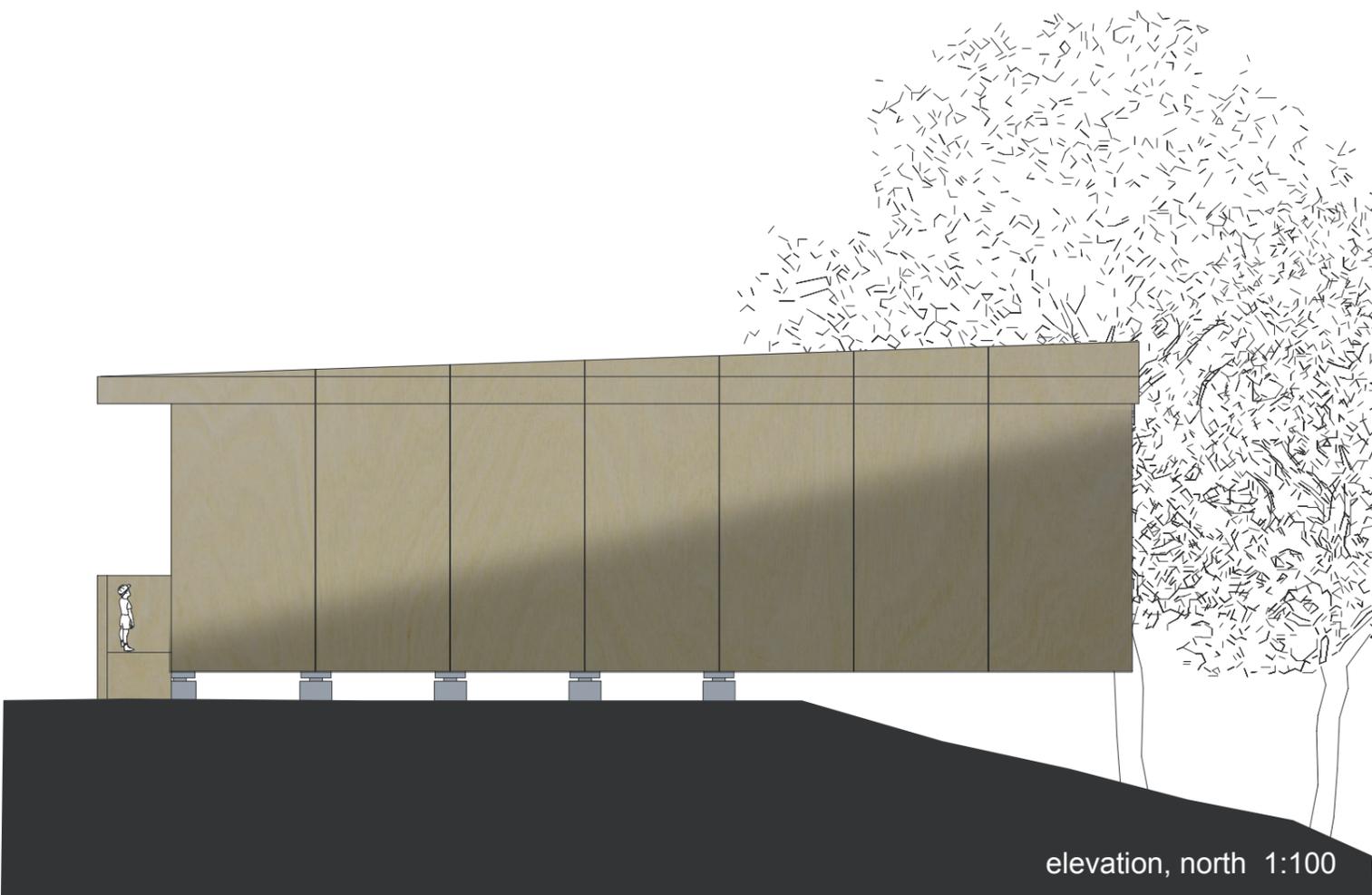
The older buildings are covered with information, details, ornaments and angels. I wished to make a building with as little information, details and ornament as possible. A smooth building.

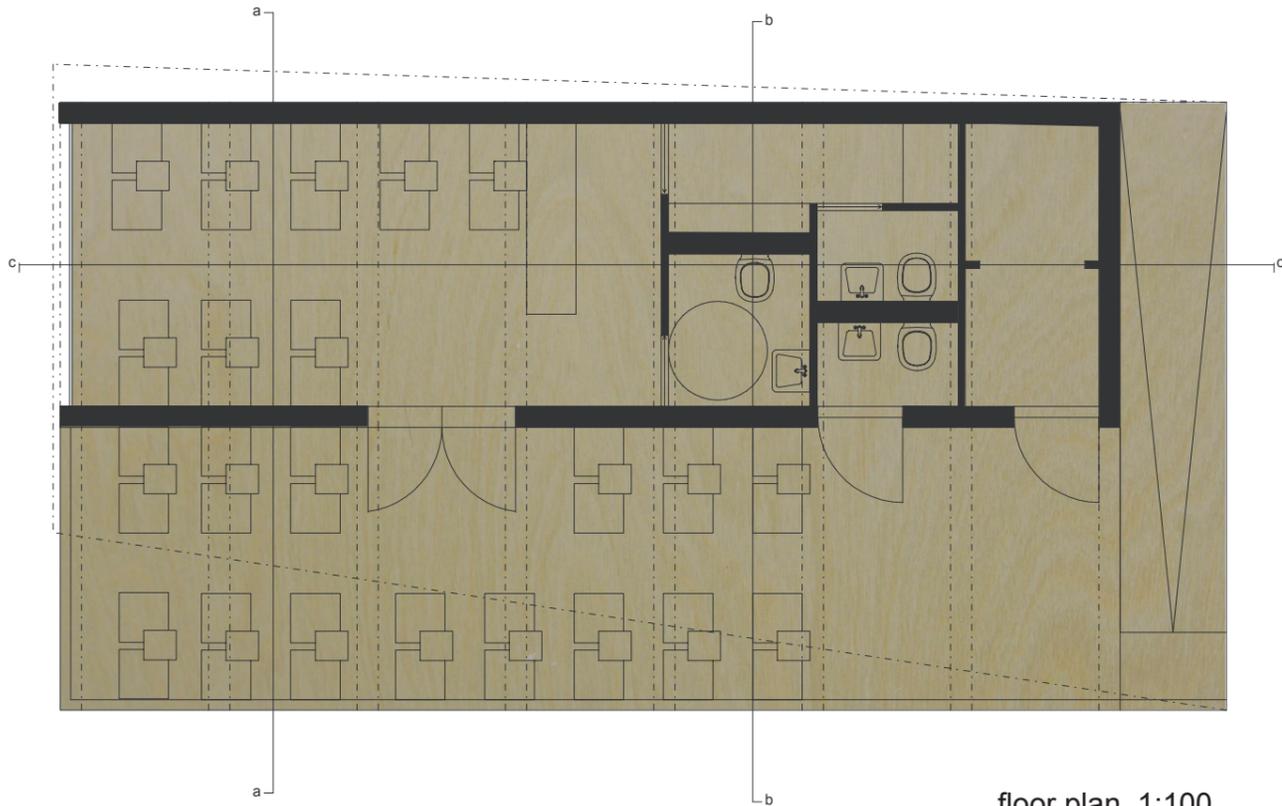
The Töölö bay gives you a wonderful view. As the site is situated in a slope down towards the water you got a nice overview over the area and parts of the city. I wished to focus the view from the inside to separate the outside from the inside and to make a scene for the artists and writers to perform on.

Kivi
cafe
töölönlahti, ylva hammarstedt, tkk 2006-05-08

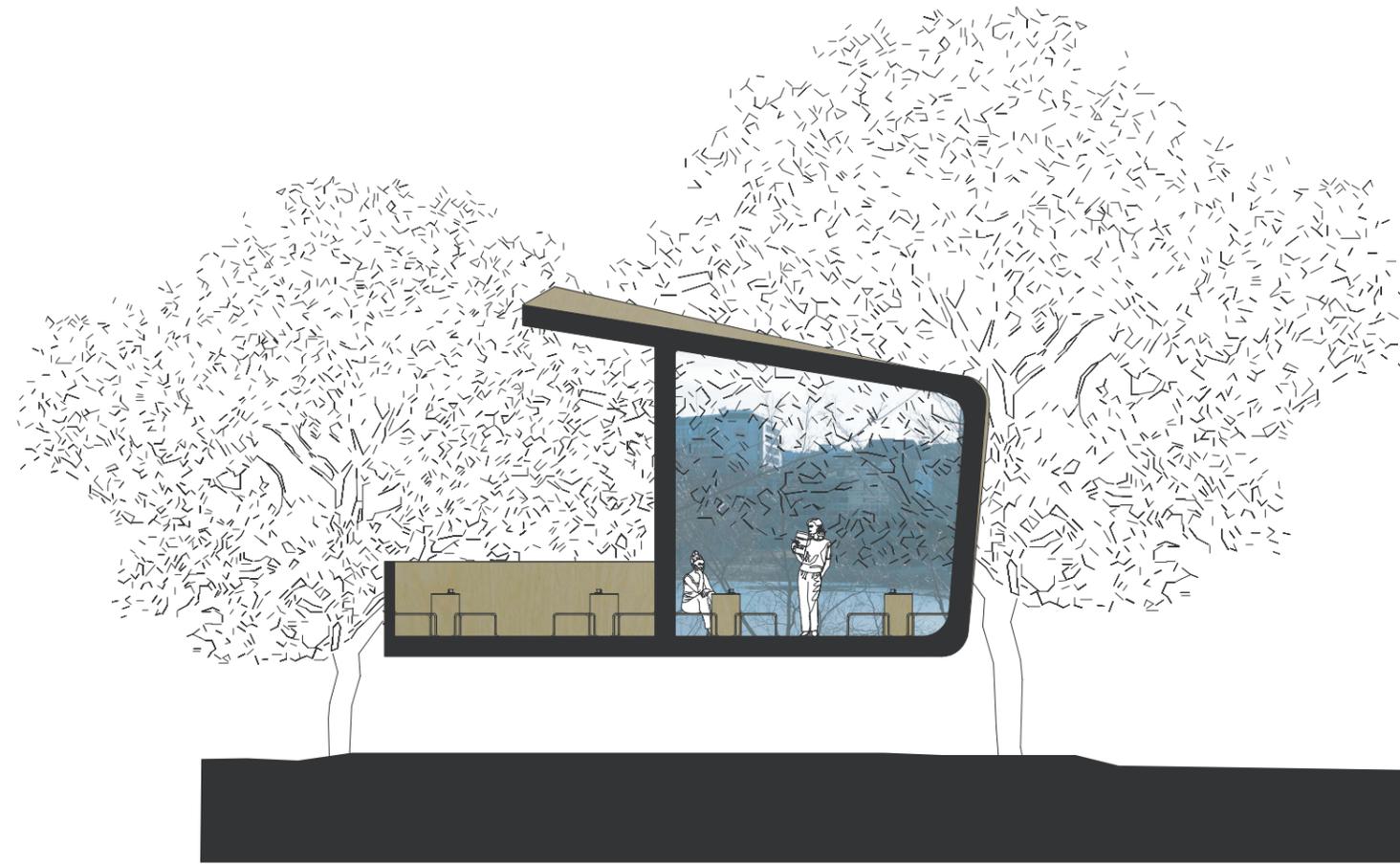








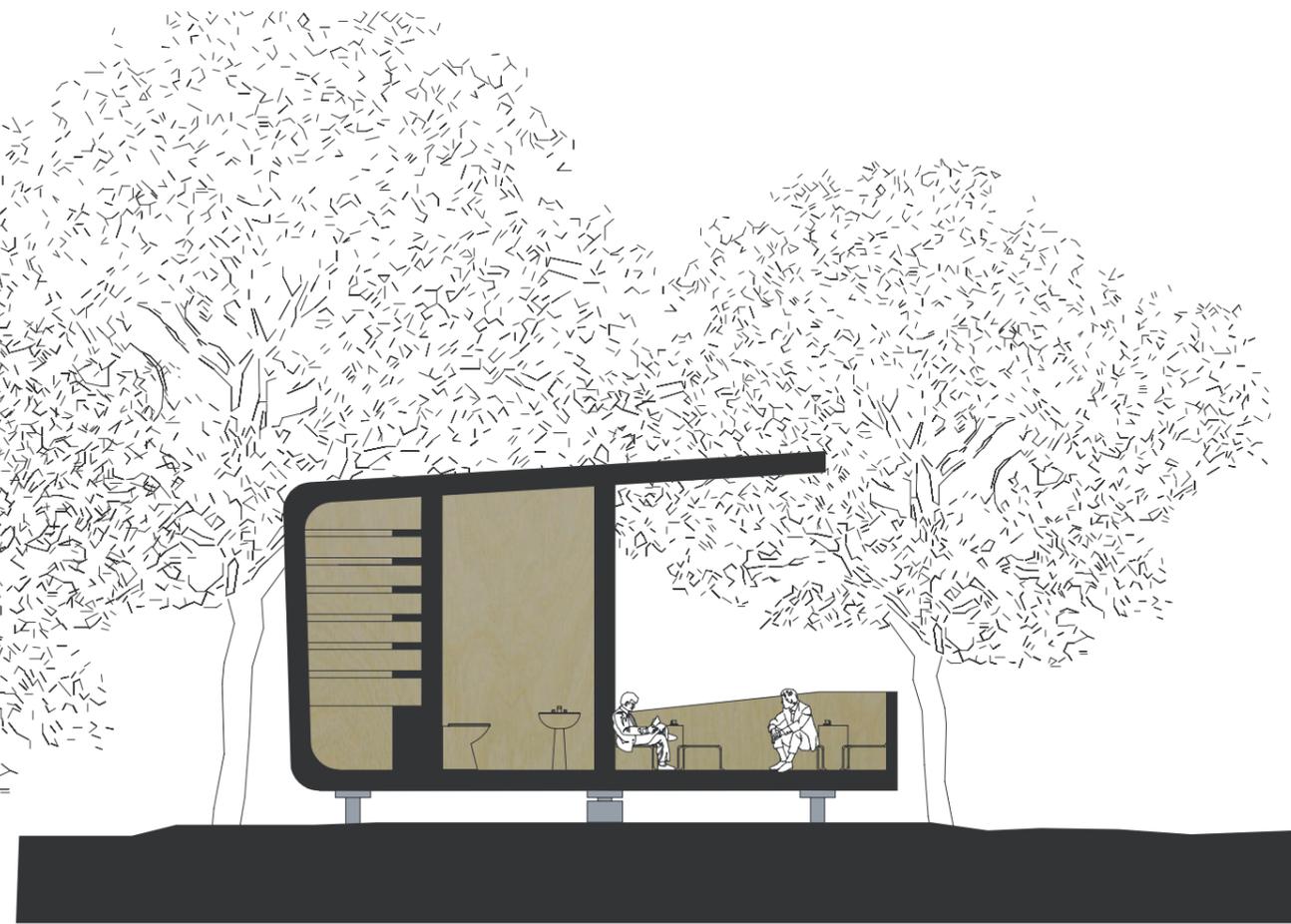
floor plan 1:100



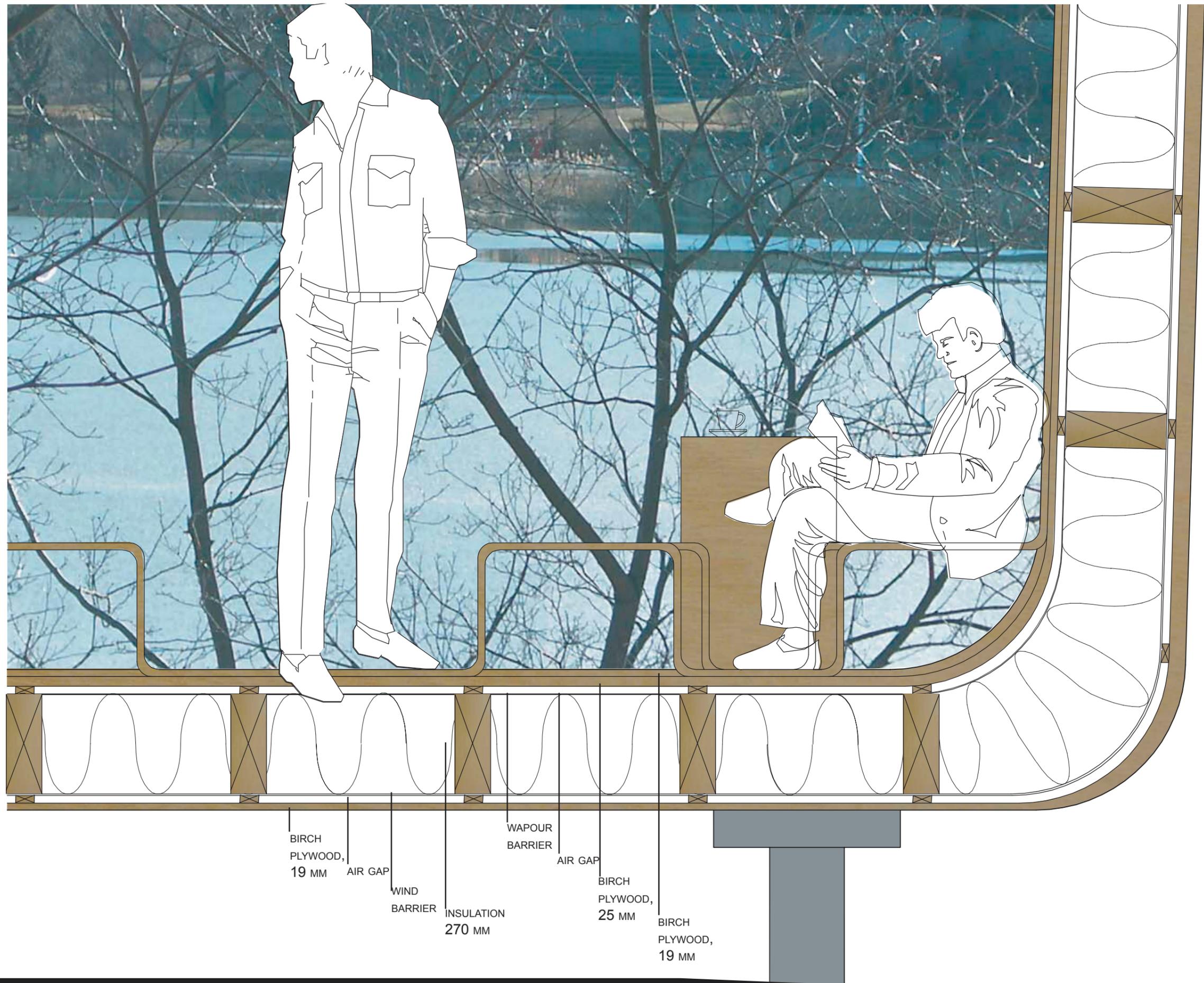
section a-a 1:100



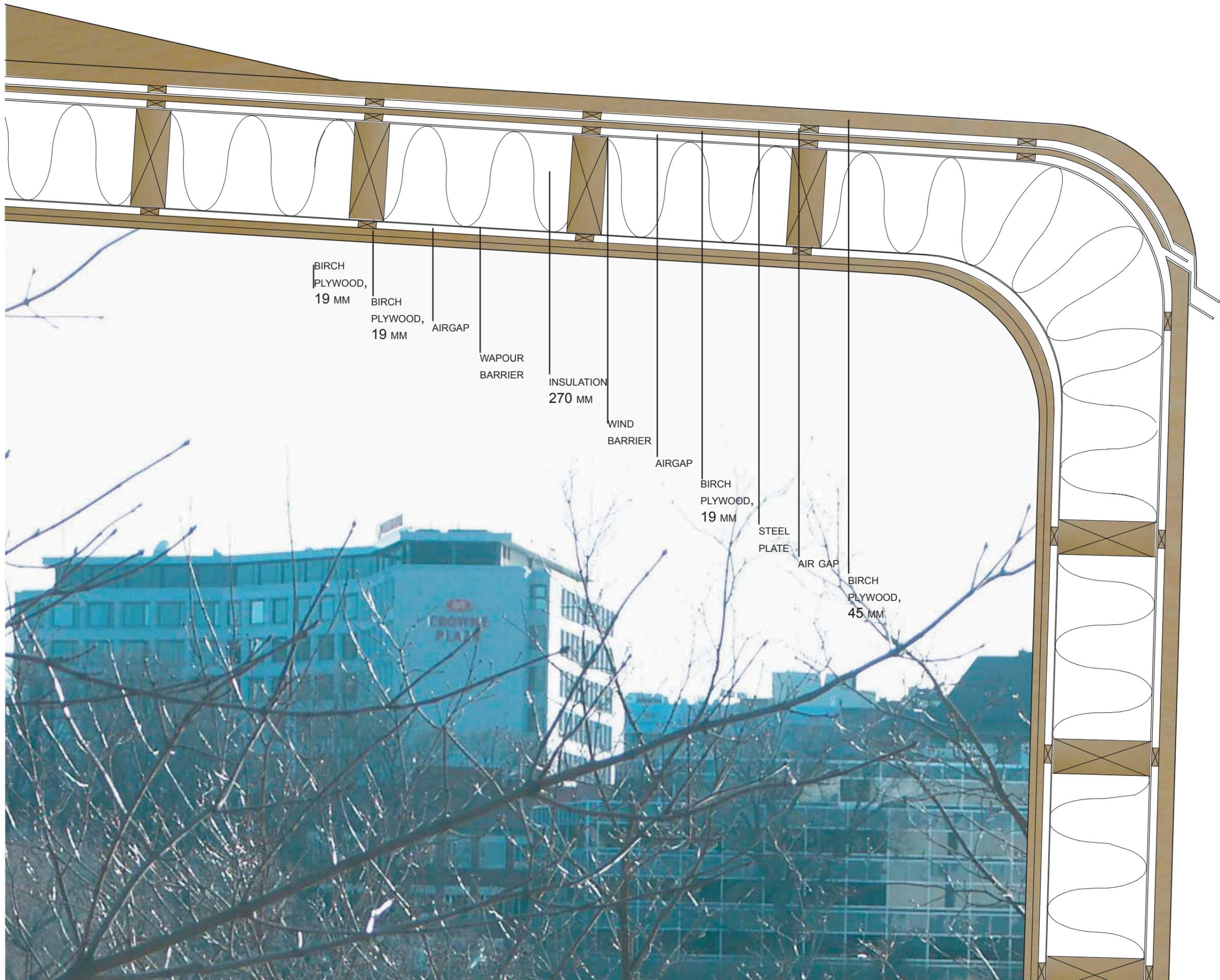
section c-c 1:100



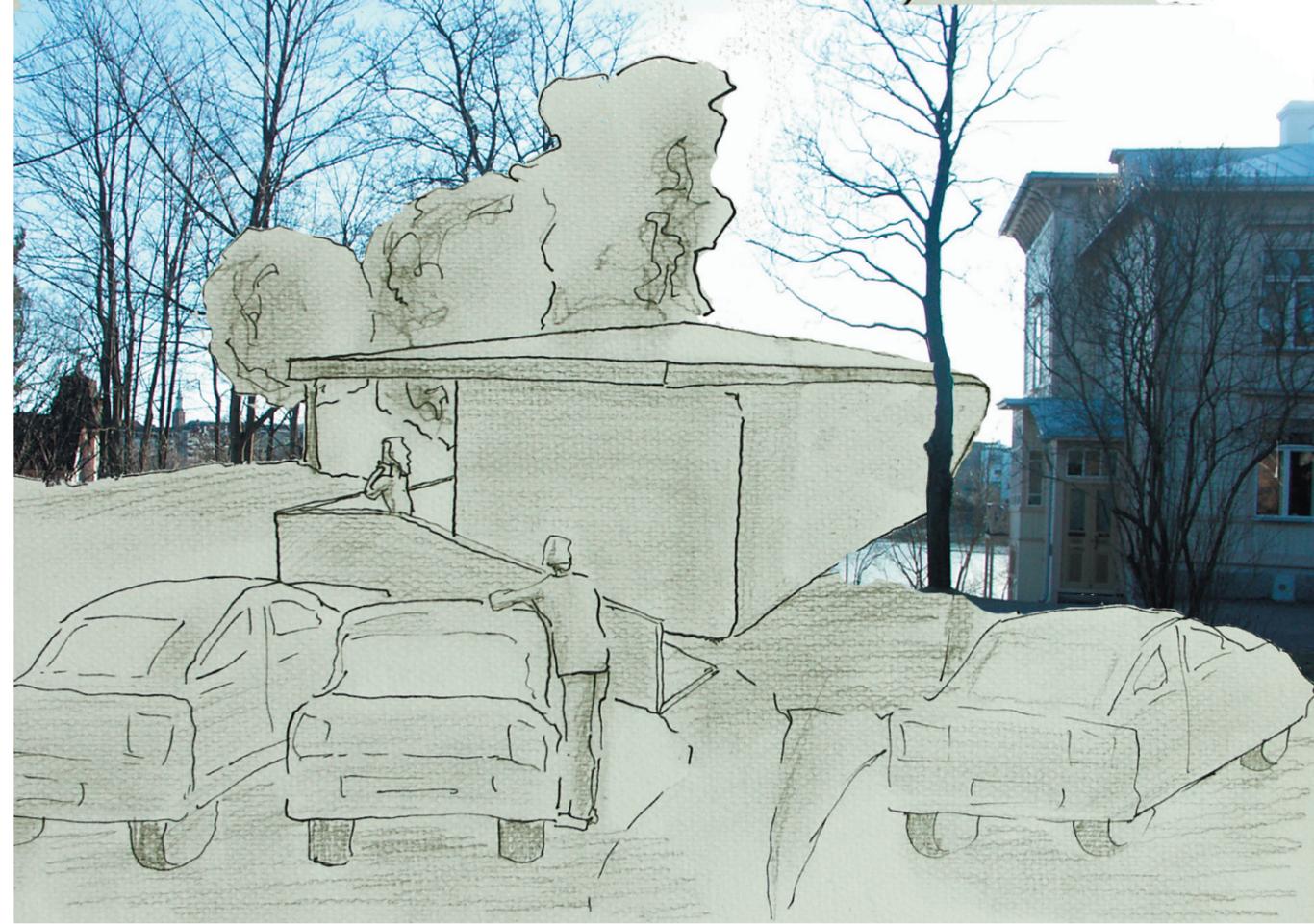
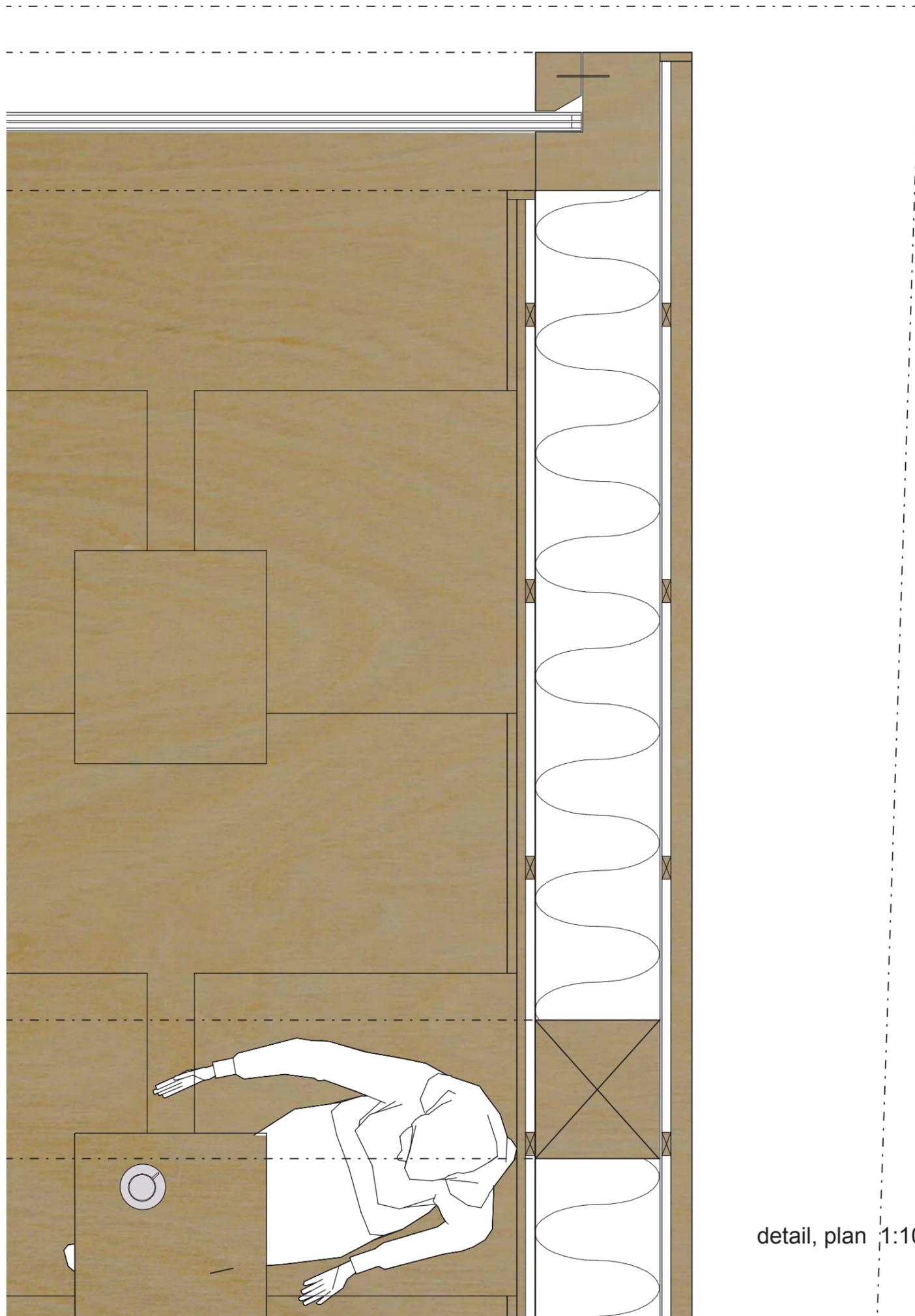
section b-b 1:50



detail, floor 1:10



detail, roof 1:10



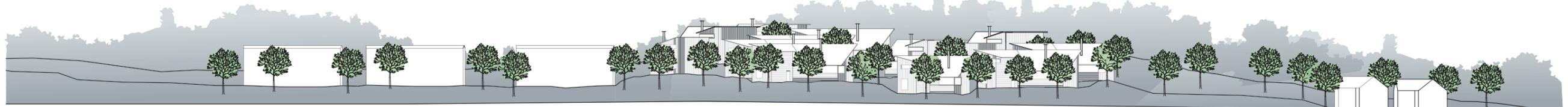
detail, plan 1:10

the Sunny Hill housing area consists of:

- 5 buildings of 72 m² for one to two persons
- 5 buildings of 92 m² for one to three persons
- 10 buildings of 112 m² for three persons or more
- 1 playground along the walk path
- 1 pump house for the ponds of purifying water from within the area
- 1 house for producing biogas, a fuel cell and the sorting of household waste



sunny hill of kauklahti



main elevation 1:800

Housing for tomorrow must of course consider the energy consumption, but solutions for this problem exists already. Today there has to be a wider way of looking at tomorrow. It is not enough to make the insulation thicker and windows mainly facing south. It should be asked of new buildings to actually produce energy rather than consuming it. If that is possible, a housing area like this could provide energy to nearby older buildings. Building nuclear power plants or importing coal from Polen is not a part of our future. Our other big problem is the enormous consumption of water. Every person uses 155 liters in 24 hours. No matter the end use all water has been purified until drinkable. In many cases the water is also heated something that requires energy. Bearing this in mind and create a livable area where people still can be clean and warm. That is housing of tomorrow.

How to make it real?

The Sunny hill resort is build with Spruce frame and Aspen board cladding, with the general Finnish regulations of 20% openings towards north and 80% towards south. For the windows high quality gas filled triple glaze is used plus the extra thick insulation of 270 mm this will help minimize the energy consumption.

Sun heated water filled panels on the roof heats the building with water carried floor heating. The heating is supported with the electricity from the fuel cell running on biogas and hydrogen.

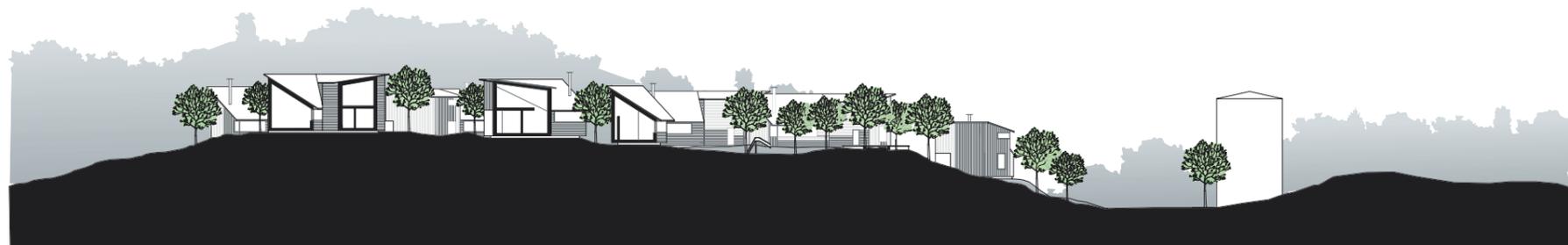
This is how the area will produce energy.

The housing area will use less highly purified water. In the area the faecal is separated from the urine, the urine together with the water from washing, showering and dishes is purified within the area and used for flushing the toilets. This measure will save 40 liters of water per person every 24 hours. The faecal together with food garbage like potato peeling is transformed into biogas and used for the fuel cell.

Pipes are organized along the road. Only two leads out of the area, one which provides Sunny hill with clean drinking water the other transfer the electricity not used, to the surroundings. The other pipes stay within the area. Two of them lead to the pump house and transport not heavily littered water to the cleaning ponds and transporting not drinkable water to use in flushing the toilet back to the houses. The other two leads to the house by the road where the sorting of the household garbage is situated. These two transport the faecal and food garbage for making energy which is transported back to the houses.



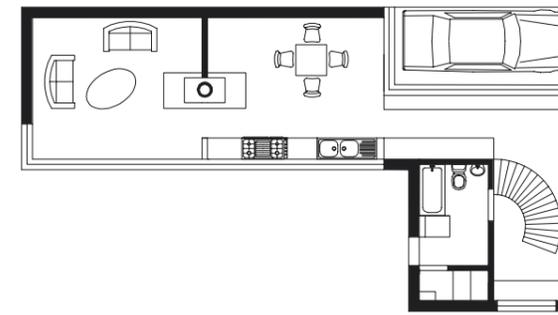
axonometri of schematic pipe organization and solar panel orientation



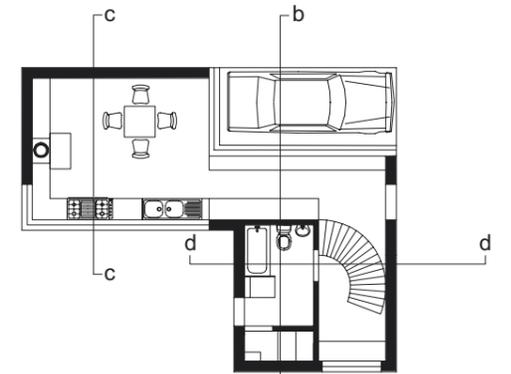
section a-a 1:800



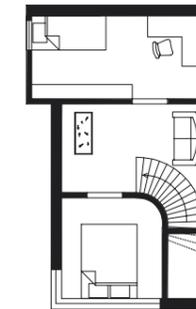
112 m²
ground floor, with surroundings 1:200



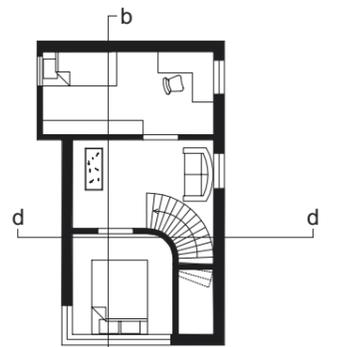
92 m²
ground floor 1:200



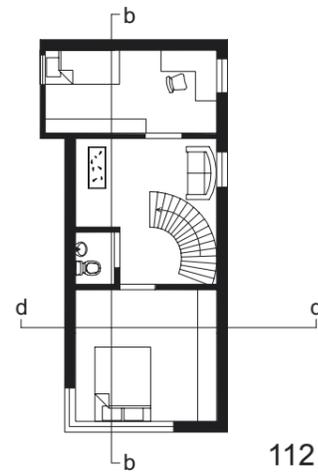
72 m²
ground floor 1:200



92 m²
first floor 1:200

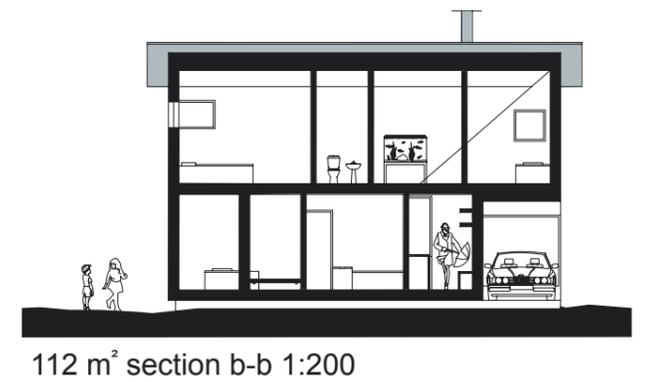
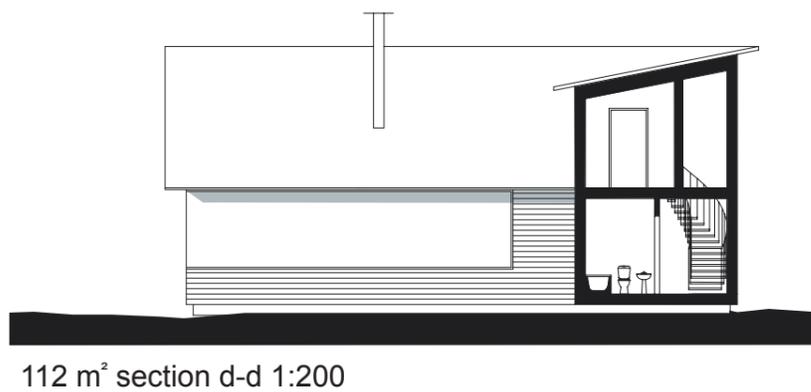
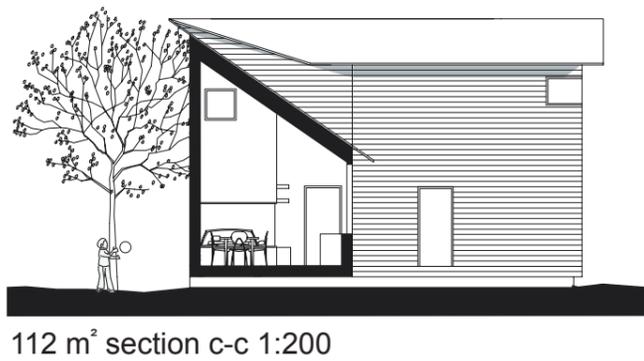
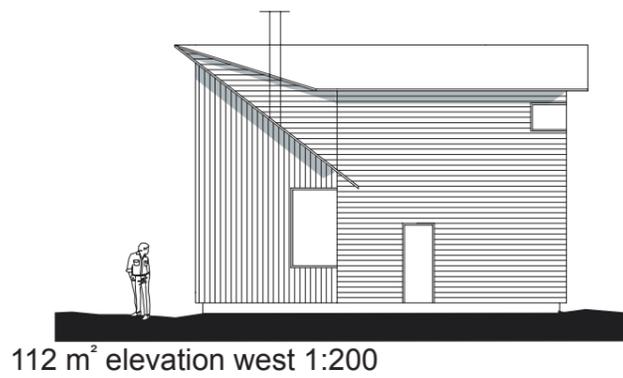
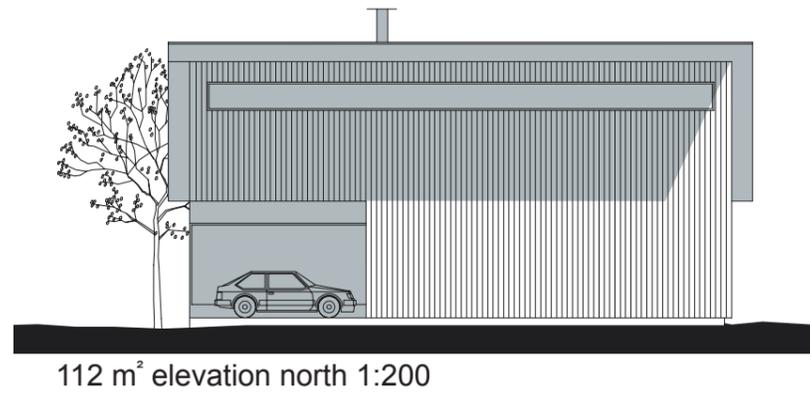
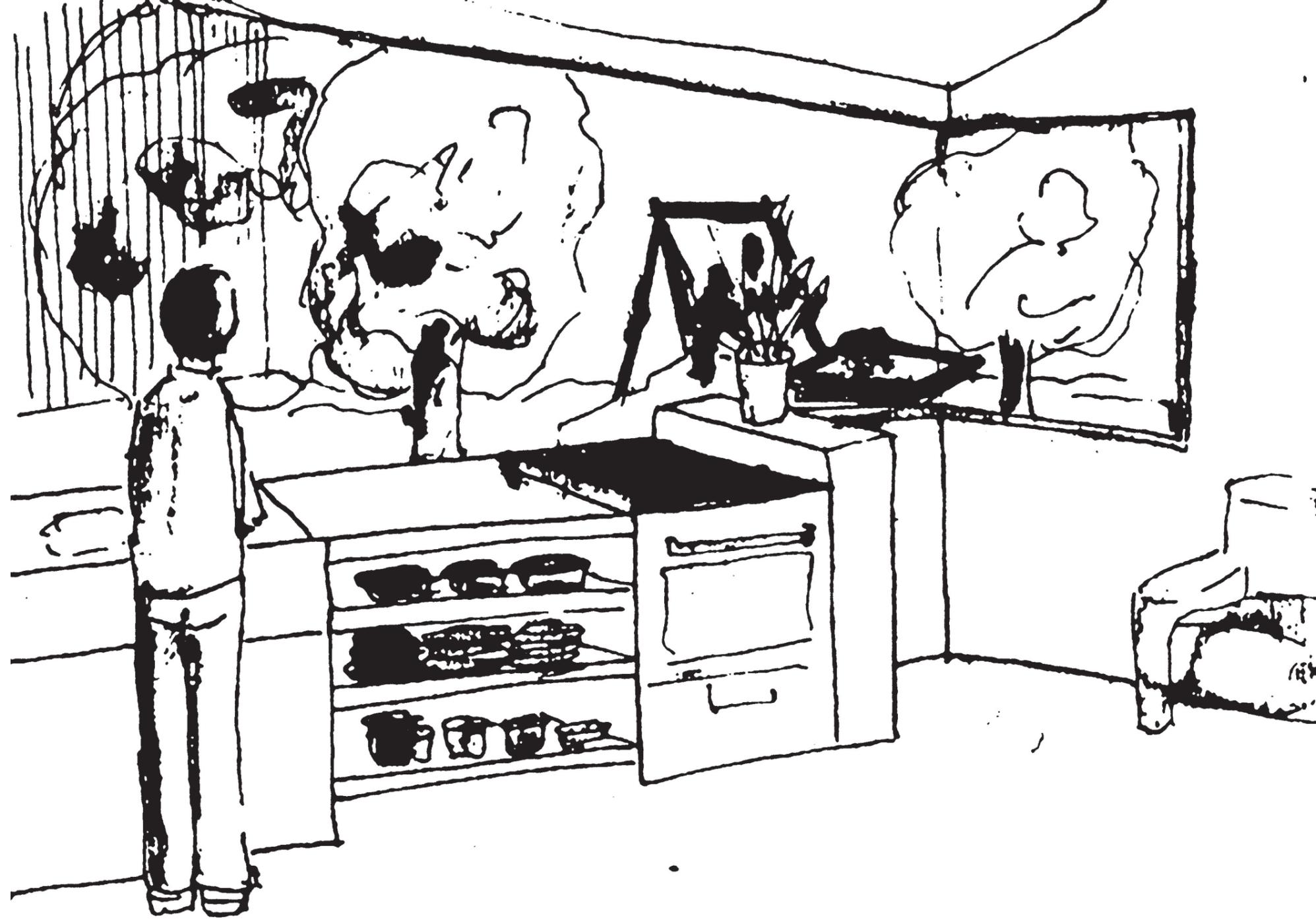
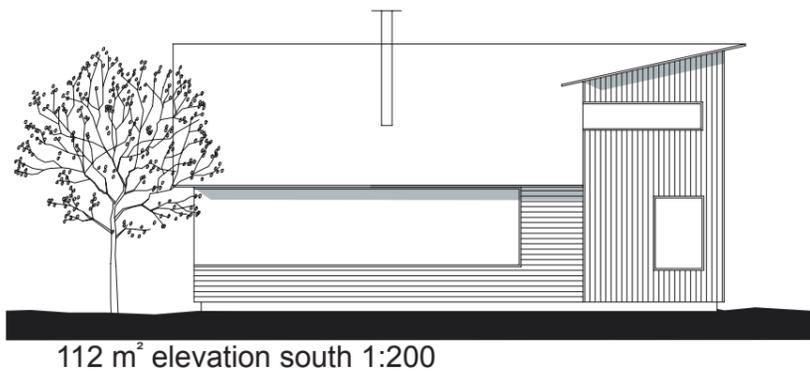


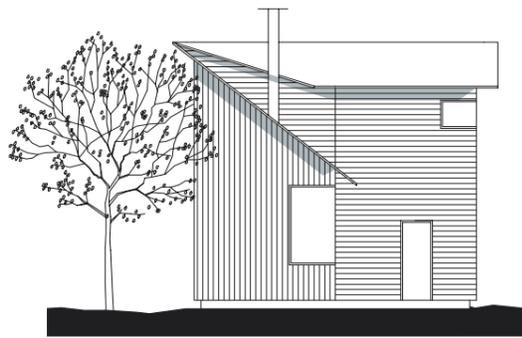
72 m²
first floor 1:200



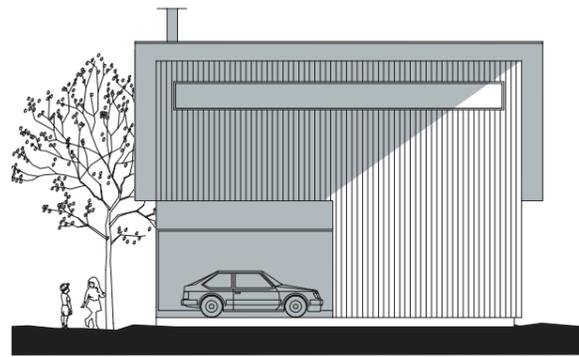
112 m²
first floor 1:200



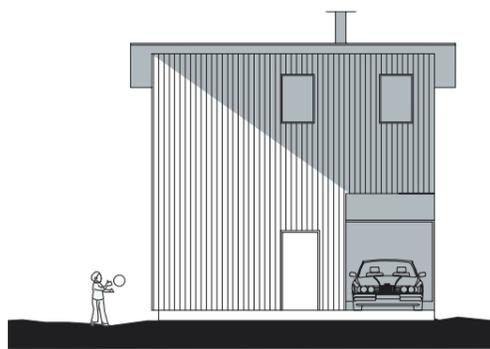




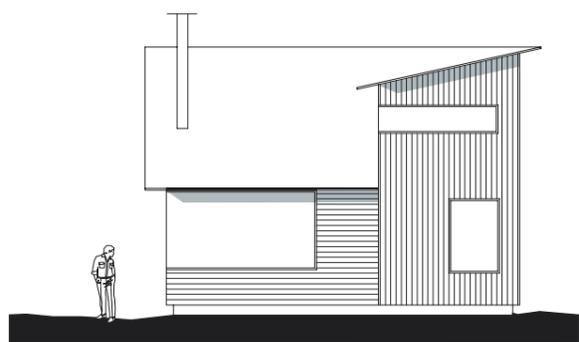
72 m² elevation west 1:200



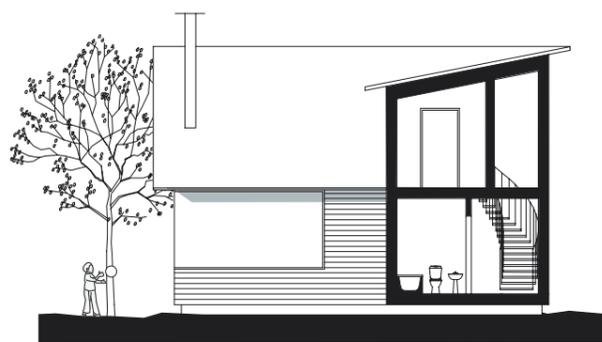
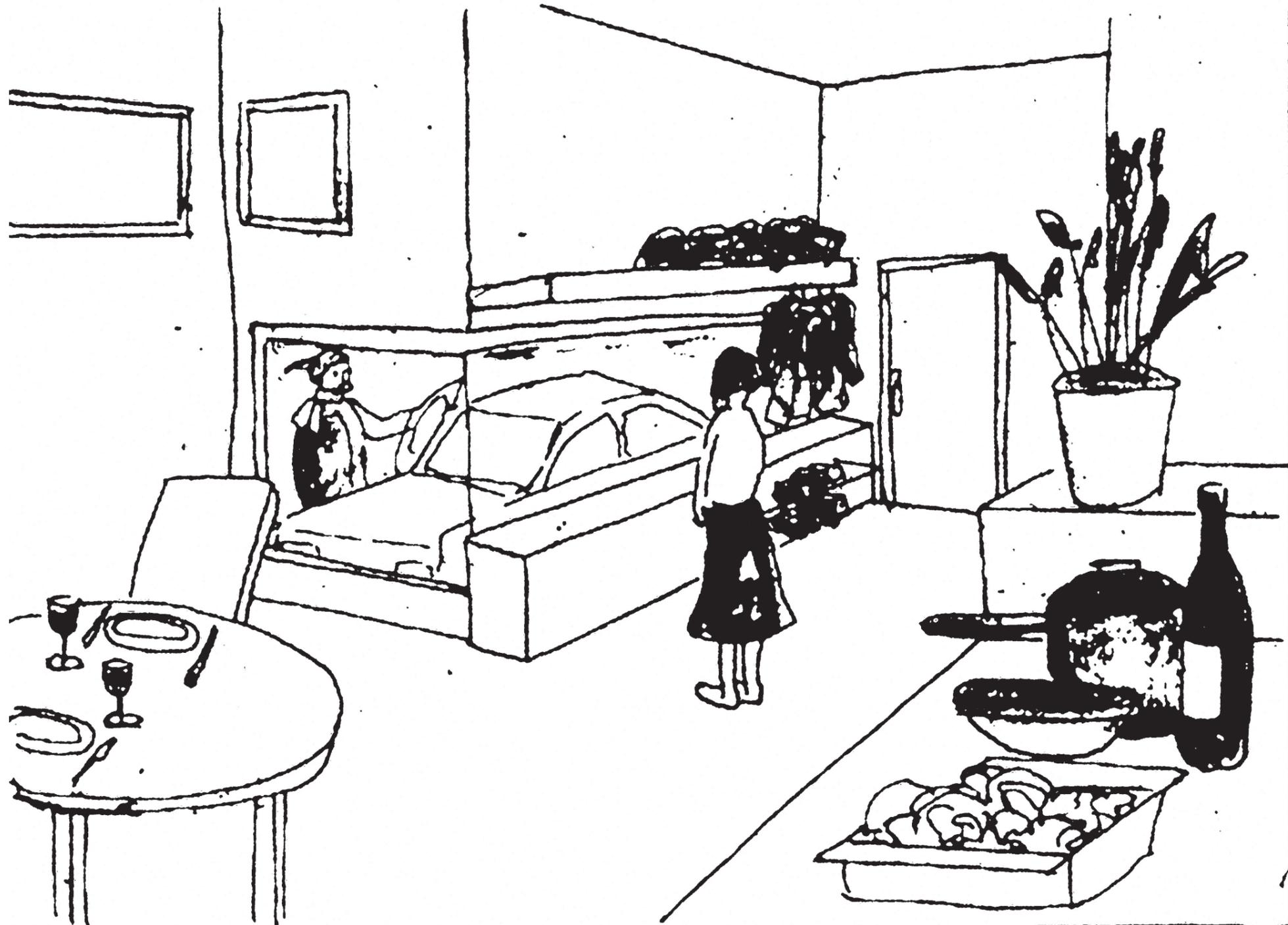
72 m² elevation north 1:200



72 m² elevation east 1:200



72 m² elevation south 1:200



112 m² section d-d 1:200



112 m² section b-b 1:200



112 m² section c-c 1:200



detail roof

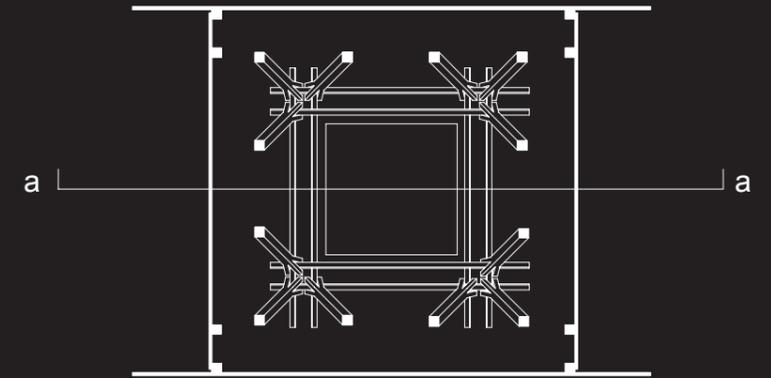
frame, skin and joint

A group work where four people were to design a frame in the first stage. Next step was to covered the frame by a protecting skin. Two week was spend on each of the tasks from the first sketches to the finished product.

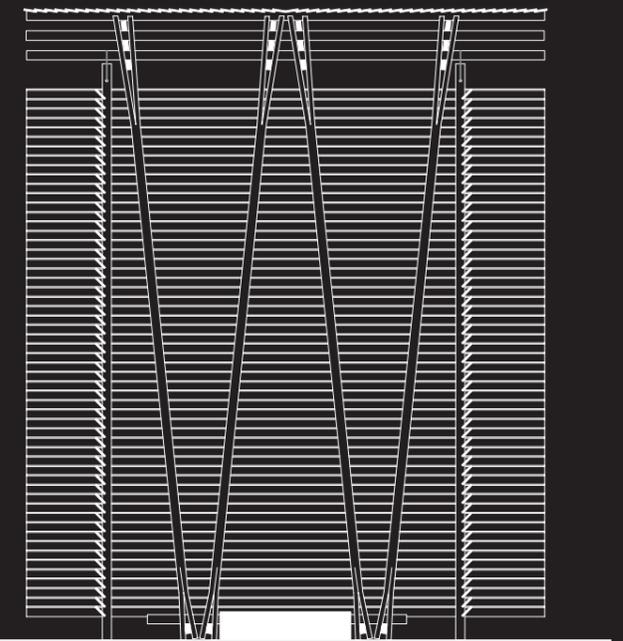
The joint was made as a separate task without any connection with the frame and skin.

We wanted to test the toughness of the wood and did the frame in a manner that is quite impossible in buildings. By splitting wood and piling beams in the splits, secured with rope joints in the roof beams, we managed to make a frame without any other fastenings, no nails, glue or screws. But as the wood was creeping and the rope was stretched the frame lost it's rigidity.

The skin was to follow the same principle. Piling wood in cracks or this time cuts. The angel of the skin boards was to achieve some transparency through which the frame was visible.



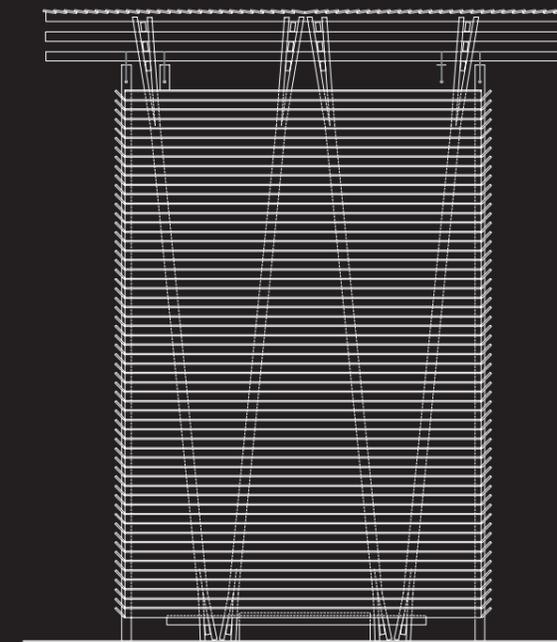
floor plan



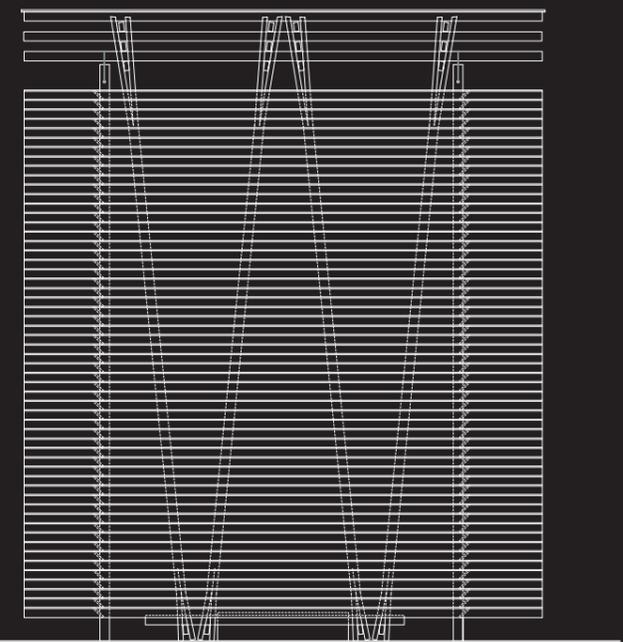
section a-a



detail floor



elevation 1



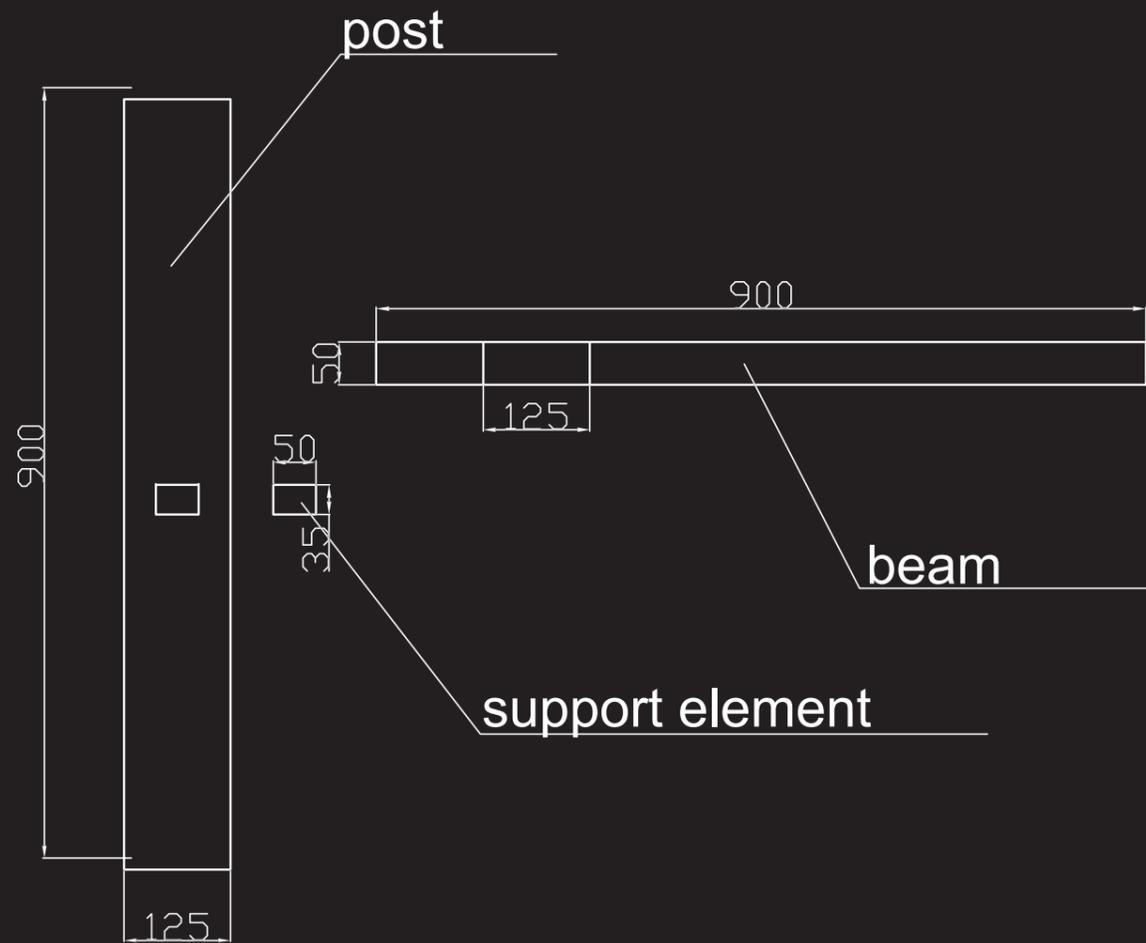
elevation 2



frame without skin



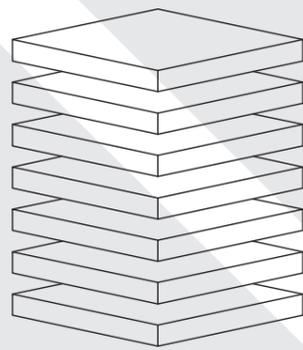
frame with skin



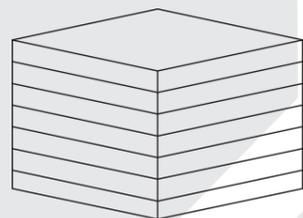
From what we learned by working with the frame and skin we were to make a joint.
 With three different headlines we were to present three different joint, one of those were to be built and tested in a laboratory.

We chose our joint which was completely wooden. Without glue and other fasteners we made a rigid and strong joint with cuts and wooden supports.

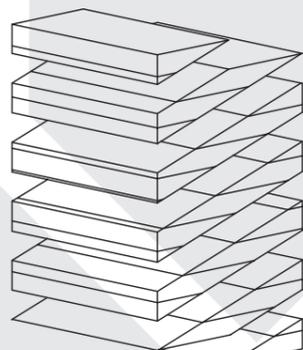




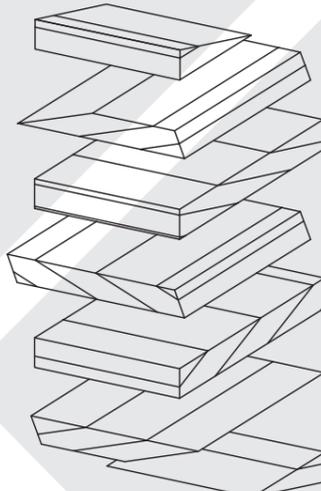
at first turned plates



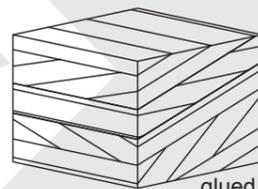
glued together



sawn into pieces



turned

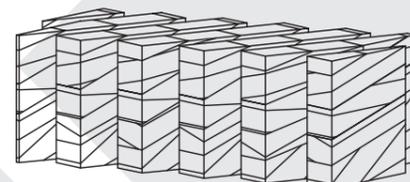


glued

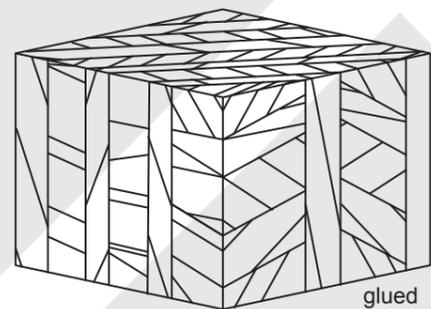
INTARSIA in 20°

Instead of the traditional way of mixing different wood species to form a pattern, this intarsia is made using only spruce and it's different grain directions.

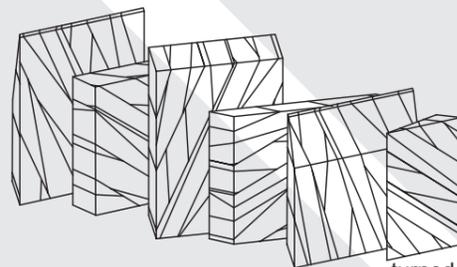
Organised to create chaos with two rules: sawing in 20° and turning the plates 90°.



sawn



glued



turned

Ylva Hammarstedt woodprogram tkk 051012

