

LIVING MONUMENTS IN THE HONOUR
OF
CONSISTENCE

In the world heritage site of Røros,
Norway

-A bathhouse with an extension through a culture landscape-

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A thank you

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Linn, Johannes, Mattias, Jens, Hanna, Sandra, Ergin, Edvin and other supportive and creative master colleagues during the months in process.

My family and
my very best
Johan.

ABSTRACT

It is about time and immaterial values through a material narrative - A celebration of the consistency and survival in a harsh climate and a challenging typology. It is about investigating the role of the living monument in a world heritage setting.

In sensitive world heritage sites all over the world, there are challenges in how we adapt. Is there to blend in or being in a contrast to the context? In a tradition of reproduction of architectural historical ideals, it is important to develop the management of how we pass the cultural heritage to further generations. This master thesis would be a contribution to the discussion on how we could look upon a further narrative, focusing on the relation between materials and the human body. How could modern monuments be infiltrating these vulnerable environments, with respect for both its contextual past and the present time it is born into?

The objects are a new bathhouse and a shelter, which would be breaking a long tradition of wooden architecture, in the UNESCO world heritage site of Røros, Norway. The small mining town and its circumference are filled of preserved traces after a 333 years copper industry. A different utilization of the landscape and decay during time singles out fragile traces, especially those who have not yet gained its status as a monument.

This master thesis is a physical study in materiality and contrasts, based on the history of the use of the landscape in Røros. The intention is creating a new living monument to celebrate vanishing, immaterial heritage in a material package. It is a result of a hands-on design process, with investigations in the adequate building material.

The experiments have been focusing on a casting technic with concrete, in a relation with fire and water. It has been searched for a bodily experience appealing to all our senses and our intellectual understanding of our presence in time.

Keywords: #Living monument #world heritage #material exploration #contrasts



“A monuments persistence or permanence is a result of its capacity to constitute the city, its history and art, its being and memory”

Aldo Rossi

...that is not the permanence or the presence of an object that identifies it as a monument, but rather its very fragility and remoteness that singles it out.

Thordis Arrhenius

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^{1/}Background and Site

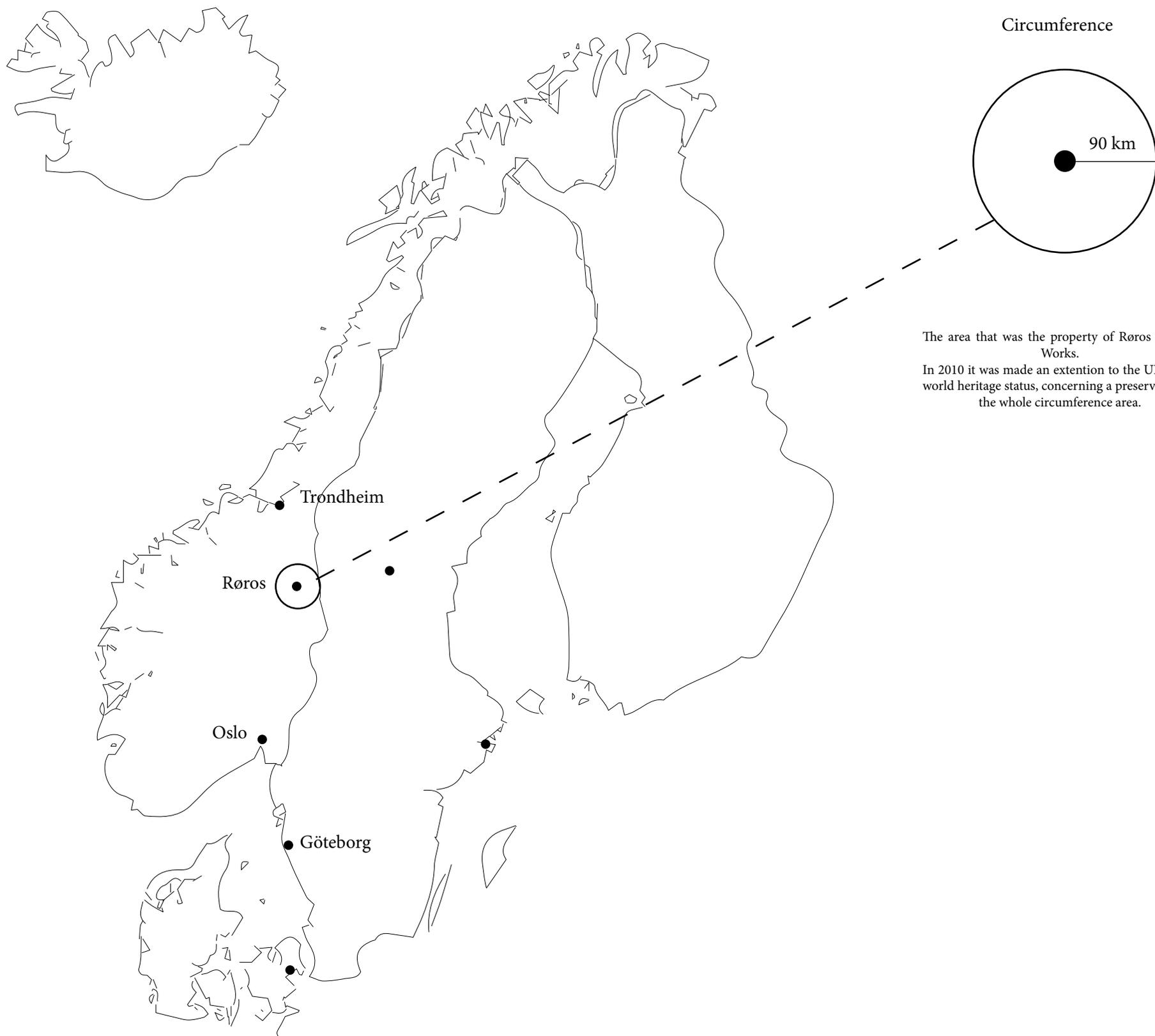
The new bathhouse and the shelter would be breaking a long tradition of wooden architecture, where the ideals have been and still are the existing building structures.

The small mining town in the Norwegian mountains and its buffer zone is filled of preserved traces after a 333 years copper industry - and of this reason a part of the UNESCO world heritage list since 1980. The built environment is picturesque and small scaled, mostly consisting of one to two storey buildings. (<http://whc.unesco.org/en/list/55>)

Within a 17th century city structure there is combined residential and household farming around private courtyards, built as shields against an unfriendly climate- one of Norway's roughest. There is a high presence of materiality shaped after many years of tough survival. The town is an appreciated tourist destination, a maintained living production-society and a historical testimony worth preserving for future generations.

A different utilization of the landscape and decay, during time, singles out fragile traces, especially those who have not yet gained its status as a monument.
(Arrhenius 2012:p.6)

Urbanisation and depopulation are factors that are threatening many smaller towns in many of the Nordic countries. To consist it is necessary to be a part of the development and create own and new factors for endurance. The new bathhouse could be one of these factors, both with its function and the celebration of its context.



The area that was the property of Røros Copper Works.
 In 2010 it was made an extension to the UNESCO world heritage status, concerning a preservation of the whole circumference area.

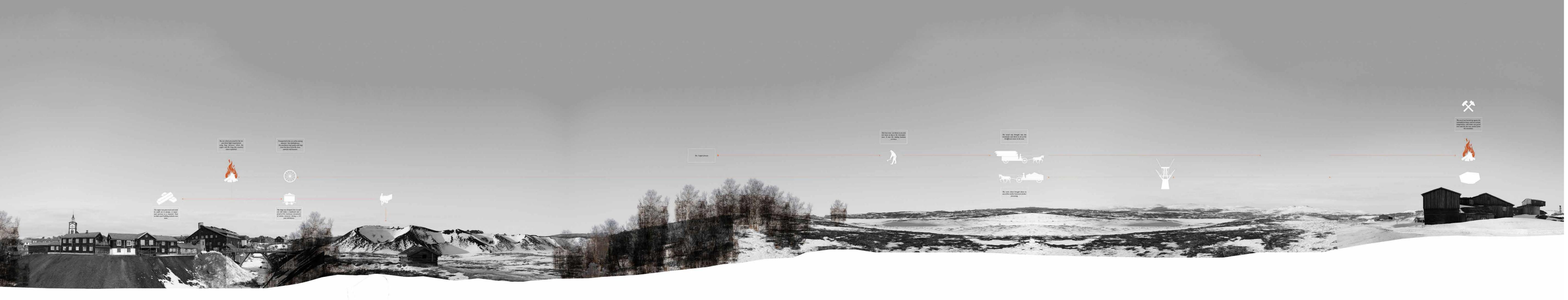


There is a highly presence of a materiality shaped from a survival in a harsh climate and testimony of an influential mining industry.

OUV

The World Heritage Site Røros Mining Town and the Circumference comprises a unique mining town, established in 1646, built entirely of wood, and surrounded by a cultural landscape that shows in an outstanding and almost complete manner how the mining operations, transport and way of life had to be adapted to the requirements of the natural environment – the mountain plains, the cold climate, the remote location without roads and with marginal growth conditions for forests and agriculture. On this basis a unique culture developed that has disappeared in part, but outstanding testimony of its existence has been preserved.

(<http://whc.unesco.org/en/list/55>)



The copper was processed and smelted in small furnaces. A typical household carried a small amount of copper. Lead is both typical building material and fuel.



The ore was processed to the metal from high temperature using "furnaces" which was copper and the slag (the remaining waste material).

The slag was dumped along by and on the side of the road. A typical household carried a small amount of copper. Lead is both typical building material and fuel. The slag was dumped along by and on the side of the road. A typical household carried a small amount of copper. Lead is both typical building material and fuel.



Transported to the river with mule pack. The mule pack was used to transport the slag from the river to the smelting furnace.



The Copper Process



The mule pack carried the ore and slag to the smelting furnace. It was the mule pack that carried the ore and slag to the smelting furnace.



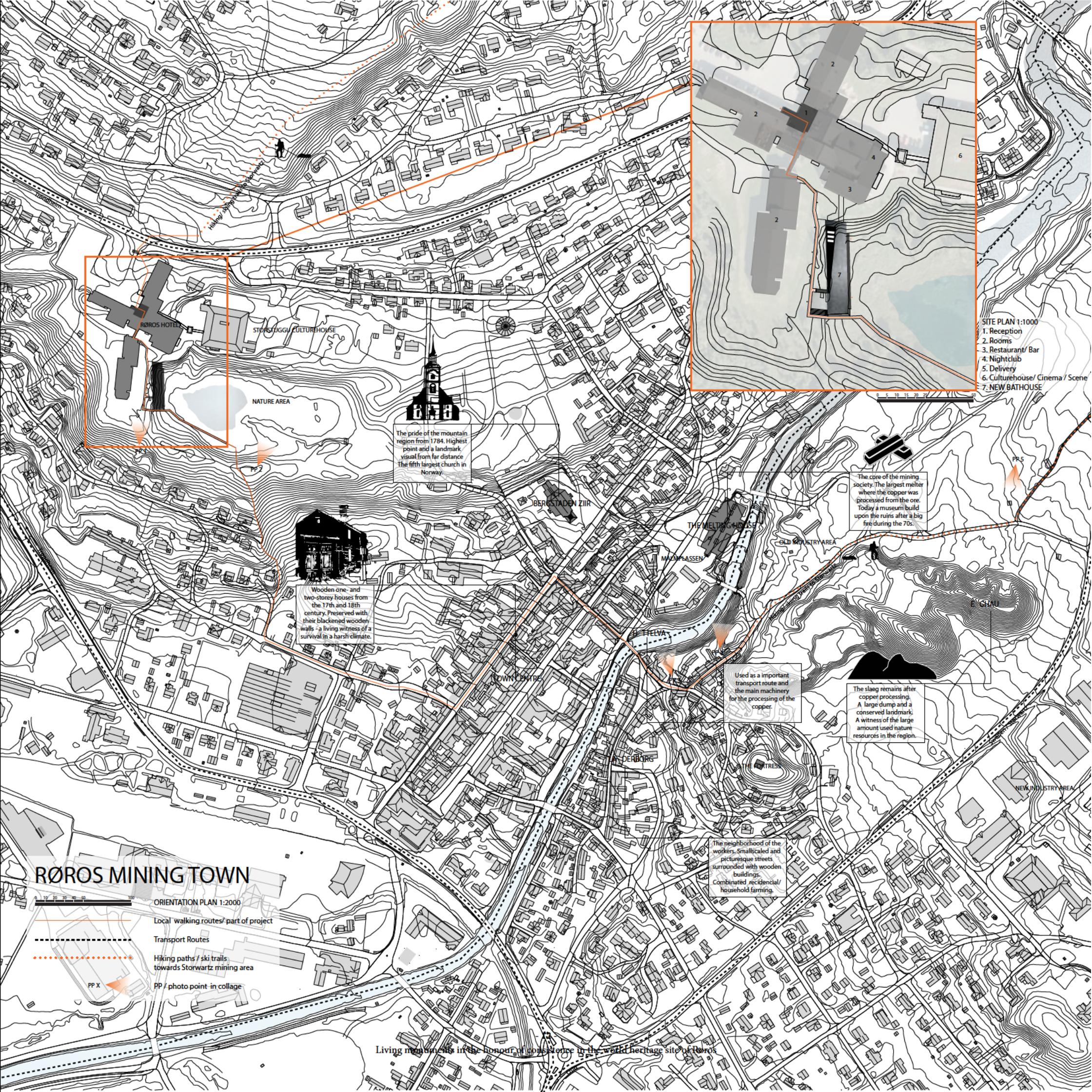
The road was brought into the mountain and down to one of the old-fashioned mines in the area.



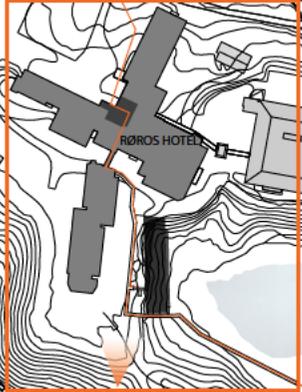
The road which brought down to one of the mines for further processing.



The smelting furnace was used to smelt the copper and slag. The smelting furnace was used to smelt the copper and slag. The smelting furnace was used to smelt the copper and slag.



- SITE PLAN 1:1000
1. Reception
 2. Rooms
 3. Restaurant/ Bar
 4. Nightclub
 5. Delivery
 6. Culturehouse/ Cinema / Scene
 7. NEW BATHHOUSE



RØROS HOTEL

STORSJØGGV KULTURHUS

NATURE AREA

The pride of the mountain region from 1784. Highest point and a landmark visible from far distance. The fifth largest church in Norway.



Wooden one- and two-storey houses from the 17th and 18th century. Preserved with their blackened wooden walls - a living witness of a survival in a harsh climate.

BERGSTADEN ZIR

THE MELTING HOUSE

The core of the mining society. The largest melter where the copper was processed from the ore. Today a museum build upon the ruins after a big fire during the 70s.

OLD INDUSTRY AREA

MAINPlassen

FELVA

Used as an important transport route and the main machinery for the processing of the copper.

The slag remains after copper processing. A large dump and a conserved landmark. A witness of the large amount used nature resources in the region.

TOWN CENTRE

DERBJØRG

The neighborhood of the workers. Small scaled and picturesque streets surrounded with wooden buildings. Combined residential/ household farming.

NEW INDUSTRY AREA

RØROS MINING TOWN

ORIENTATION PLAN 1:2000

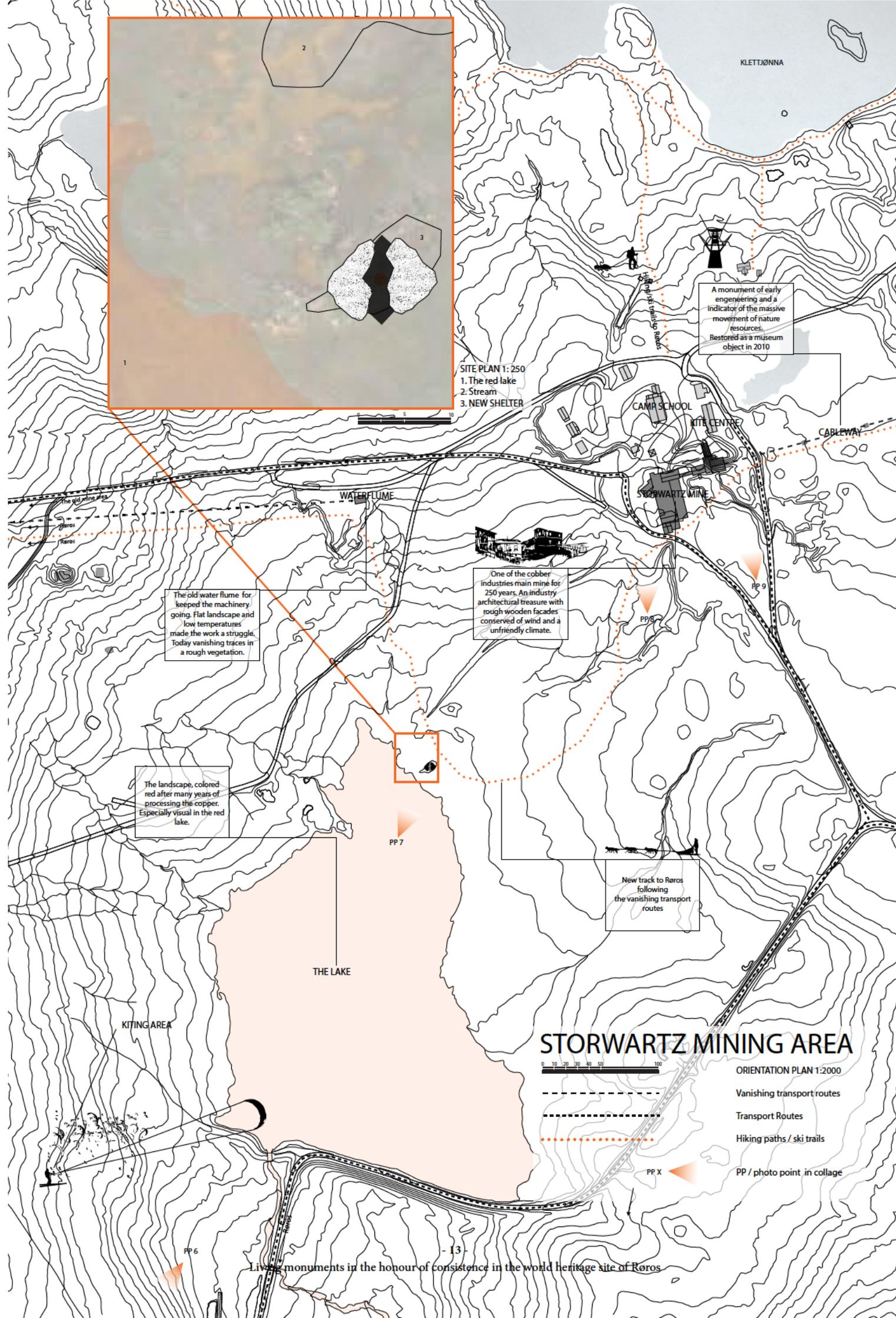
Local walking routes/ part of project

Transport Routes

Hiking paths / ski trails towards Storwartz mining area

PP X PP / photo point in collage

Living monuments in the honour of persistence in the world heritage site of Røros



^{2/}The process/ experiments

This master thesis is a physical study in materiality and contrasts, based on the history of the use of the landscape in Røros. It started with an intention of creating a new living monument to honour immaterial cultural heritage in a material package. The approach is influenced by Bruder Claus Chapel of Peter Zumthor and the Truffle house by Ensamble Studio in Spain.

The main source of inspiration has been the many year old tradition of copper processing and the huge movement of nature resources, which is the core of Røros' identity and origin. One limitation of the designprocess has been a hands-on investigation, making sketching models in the adequate material.

A part of the study has been getting to know with the material concrete and its processing methods. Challenges have been the scale, inexactness and elements of "design by accident" - in both a positive and negative direction. Gained, a larger understanding of the material, its process, its expressions and its appealing to the human senses. Zumthor wrote that each material has a million possibilities. (Zumthor, 2006) I have been experimenting with 43.

An excerpt collection of the process is available beneath.



The chosen material

It started with producing models in concrete, to try some of the same techniques from the copper process. It is a material that have many of the same qualities as the rock walls within the mines. The concrete was chosen because of its contradictory to the existing building structure and the method of casting was an interesting way of petrifying time and processes.



The building is a camera obscura for viewing the extraordinary landscape and focusing on the distinct aspects of the setting that also figure in Hamsuns literary work.
(Pallasmaa 2012: p. 103)

A sentence from the Embodied image, Juhani Pallasmaa describing the Hamsun centre of Steven Hall. The role of buildings in the way they constitutes the historical context and its landscape. A certain view of thinking architecture that became important during the process.



Flameable molds

A huge part of the processing of the copper was related to fire and water/ hot and cold elements. It was interesting to investigate the same methods in a concrete mold. What happened with the surfaces, how easy was it to remove the molds made of flameable materials, what was the optimal shape to create a chimney effect? What happened if you poured cold water over a heated concrete surface?



The vegetation experiment

One of the biggest changes of the culturlandscape is the vegetation growing.

A result of a landscape that no longer keeps the role of serving a demanding copper industry society.

The vegetation is covering important traces and changes its historical character.

What if the vegetation could fill another role in the making of a new bathhouse and become a part of a new history?



The inverted experiment

The soil in Røros and surrounding culture landscape has during a period of 333 years been continually under change. There has been an enormously movement of masses, water and other nature resources. What if these movements could be transformed into architectural experiences? Could the result of a cast of the nature create an interaction between the past and present and become a celebration of its context?



Honoring the remaining modern industry- experiment

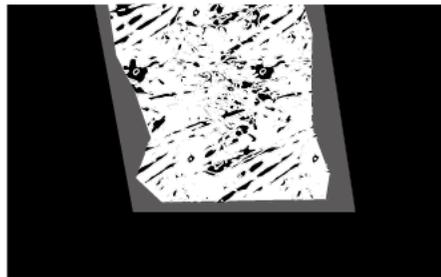
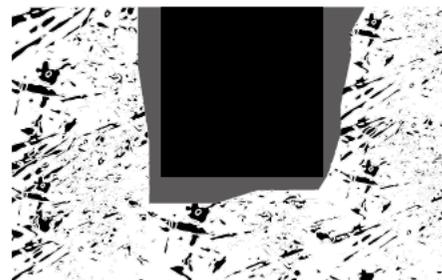
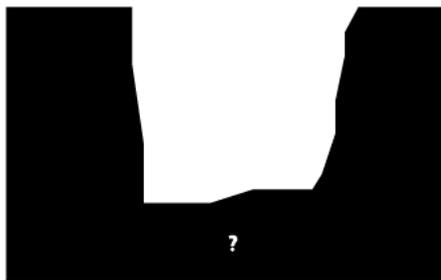
The industrial heritage is significant in Røros. The production industry is still an influential and crucial factor of consistency in the old mining town. This experiment became one way of trying to honour this not very acknowledged aspect of the society. Could waste from these valuable industries be recycled in some way in the bathhouse?



Contrast/ contradictory

Working with contrasts towards the rough surfaces has been an important tool for creating tensions and highlight less visual elements.

3/ The proposal



Contrast/ contradictory

01/ Could the result of a false mold create a interaction between the past and present? A celebration to its context?

02/ Could the result of a cast of the nature create a interaction between the past and present?
A celebration of its context?

THE CAVE

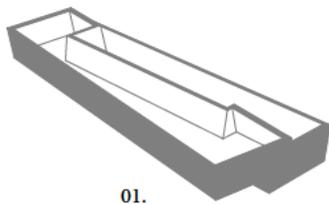
The appearance of the bathhouse and its extension is a result of several studies using concrete and contrasting materials as an element of freezing time. It has been searched for a bodily experience appealing to all our senses and our intellectual understanding of our presence in time.

The buildings could be seen as two opposite relatives to each other, or as individuals. Both a part of a larger walk through the culture landscape, with a strong relation to water and fire. The bathhouse located in a modern building typology has an exterior straight edge, half immersed into the terrain, a sharp contrast to the surrounding nature area.

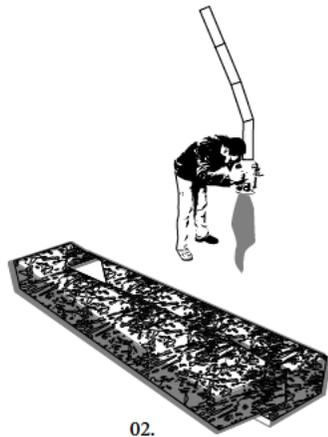
The interior experience should be operating as a stylized camera obscura of its presence in a world heritage mining site. Inspired by Sou Fujimoto and his definition of primitive future architecture- the cave is where it occurs a relation between space and the human body. (Fujimoto, 2011.)



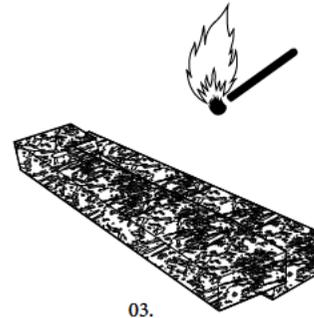
The result from **the Hay experiment** was chosen as inspiration for the further process and design of the bathhouse.



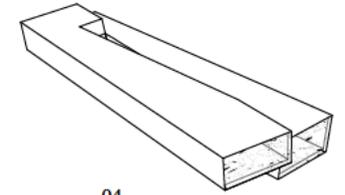
01.



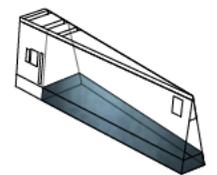
02.



03.



04.



05.

THE CAVE/ DIAGRAM

01. The mold/

In situ framework creating sharp volumes.

02. The hay/

Filled with a flameable material for casting. The distance between is filled with concrete.

03. The burning/

The flameable mold being burned out, leaving an inverted imprint with the smell of its origin.

04. The Cave/

The organic shaped volumes as a result of the burning technique.

05. The Wedge/

The core between the cave-like volumes. Consist of the bath, the chimney/fireplace and main sauna in a three storeys height.

06. The boxes/

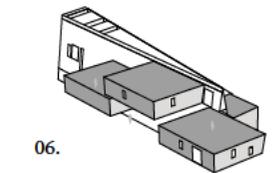
The rooms that demand a closed structure, such as dressingrooms etc.

07. The walkingpath/

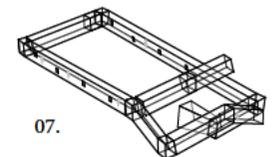
A tube for communications penetrating the three types of volumes. Made in a semi transparent, contrasting plastic material. With openings framing the views.

Rule.

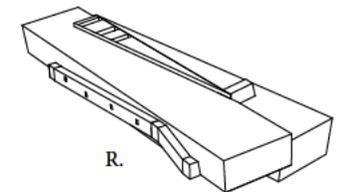
Non of the interior volumes could touch the cavelwalls.



06.



07.



R.

THE INVERTED

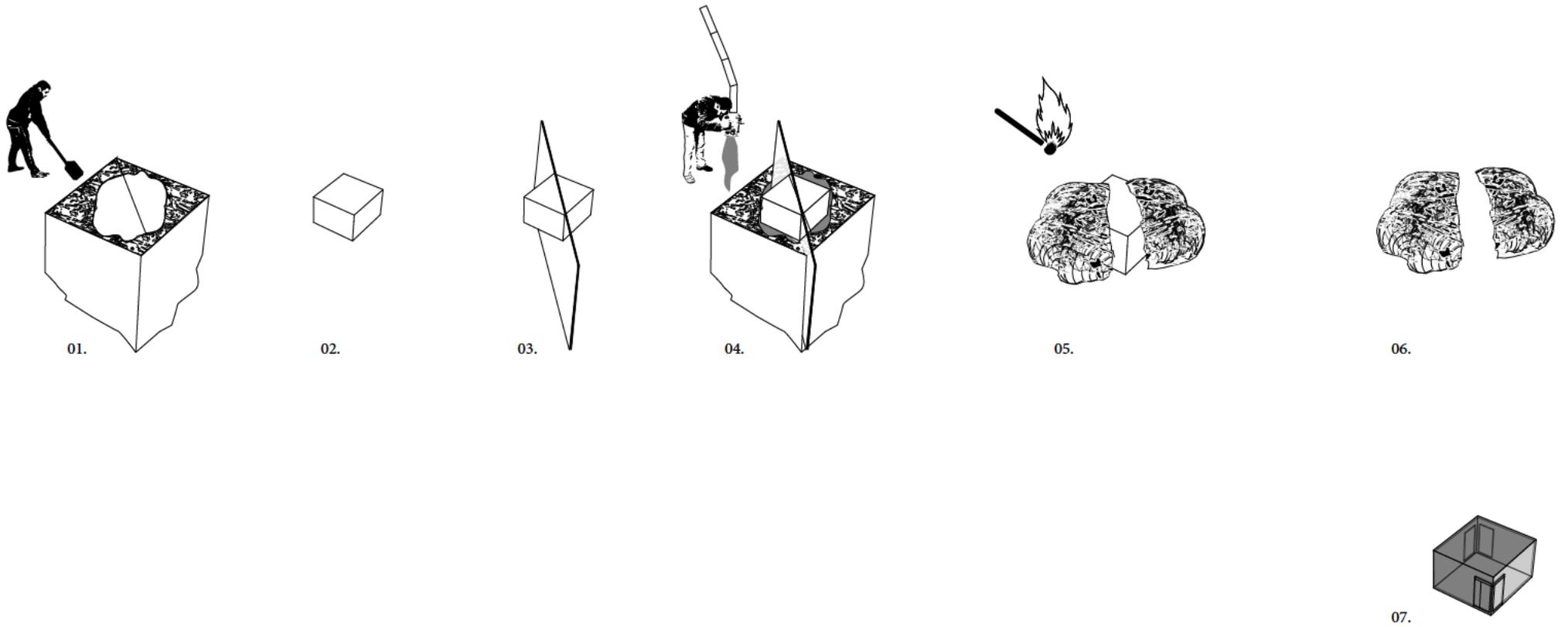
The buildings could be seen as two opposite relatives to each other, or as individuals. Both a part of a larger walk through the culture landscape, with a strong relation to water and fire. The bathhouse located in a modern building typology has an exterior straight edge, half immersed into the terrain, a sharp contrast to the surrounding nature area.

The shelter is an inverted experience of the cave. Its organic exterior would be blending into the surrounding mountain landscape. The façade filled with remains from the soil it is casted in, could be a modern testimony of its context. Another movement of nature resources is done; some stones are moved back close to where it all started.

The appearance of the interior, with its sharpness, is framing the grand view, being a contrasting element in a carved, wide landscape.



The result from **the inverted cave experiment** was chosen as inspiration for the further process and design of the bathhouse.



THE INVERTED/ DIAGRAM

01. The organic mold/

Digging a hole in a piece of soil with 333 years old mining history

02. The classic mold/
the creator of the inner space.

03. Divided
into two halves

04. Added to the hole
and the distance between is filled with concrete.

05. Remove the molds/
make a fire if necessary!

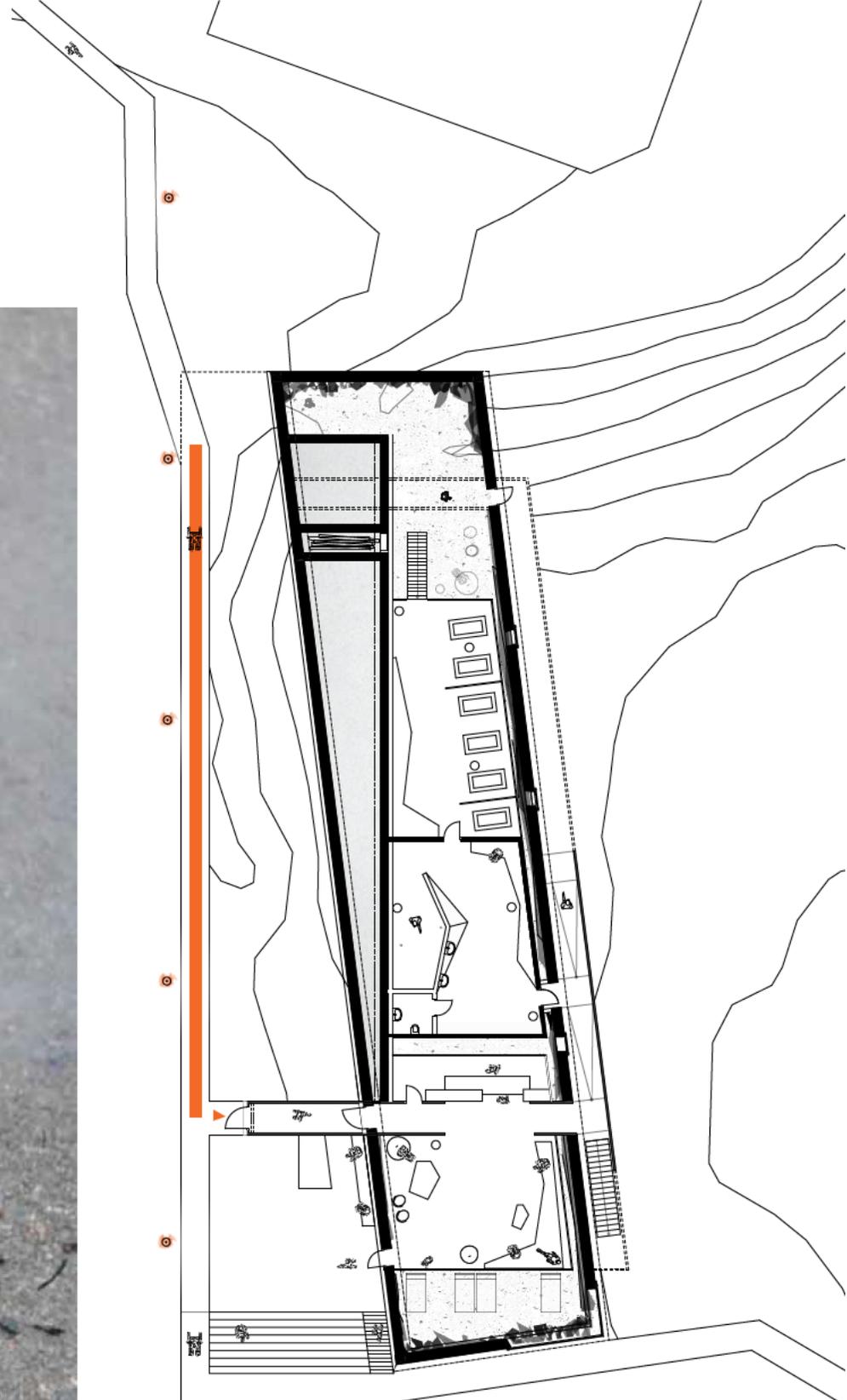
06. The inverted Cave/
Filled with remains from the soil it was casted in.

07. The glass box/
A contrasting element which opens up towards the landscape.

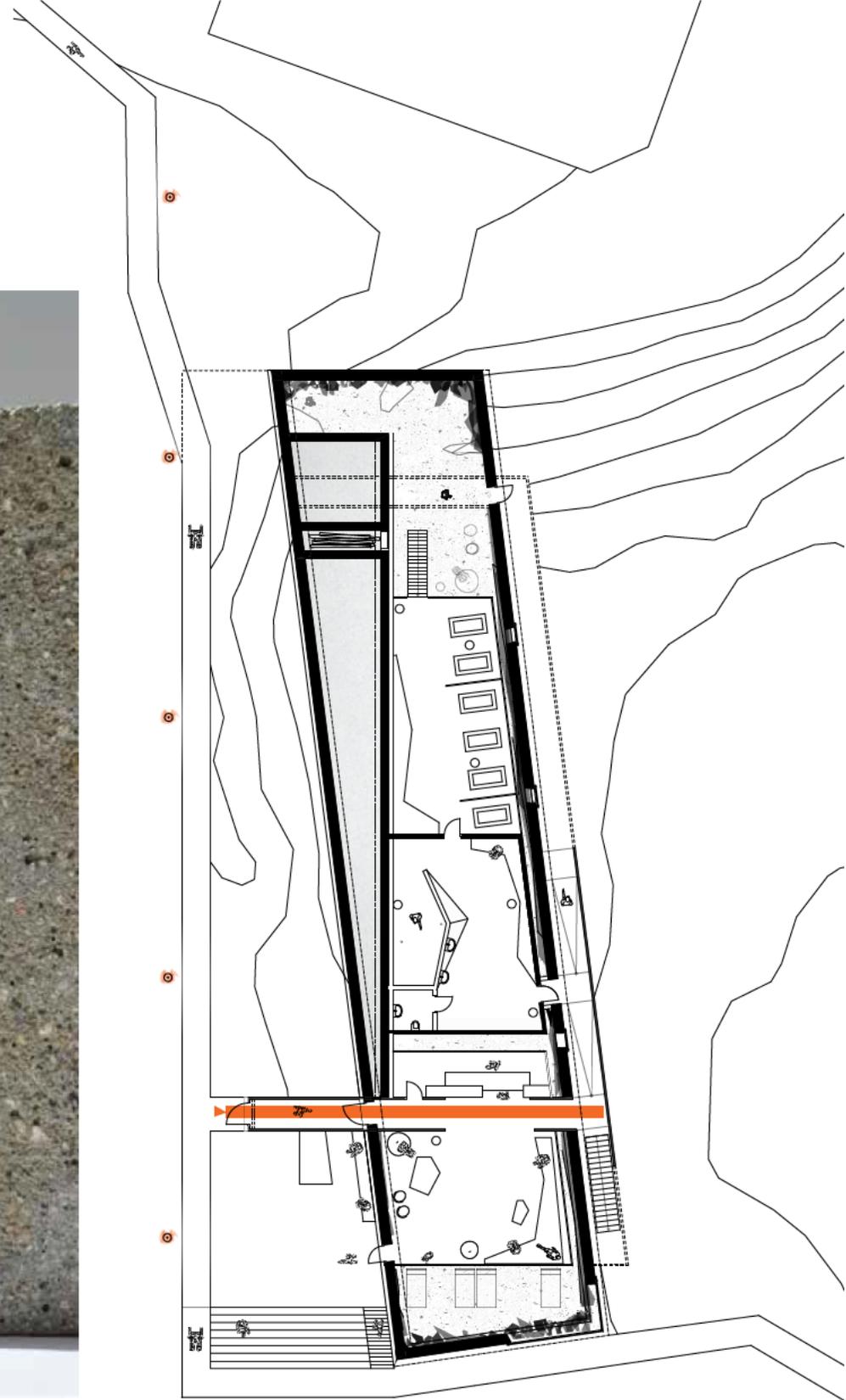
The new movement of nature resources
What if the organic mold could be the soil from the slag?
It would be a way of bringing back some of the materia that was brought out from the mountains and taken back to its original setting.



^{4/}And the walk begins..



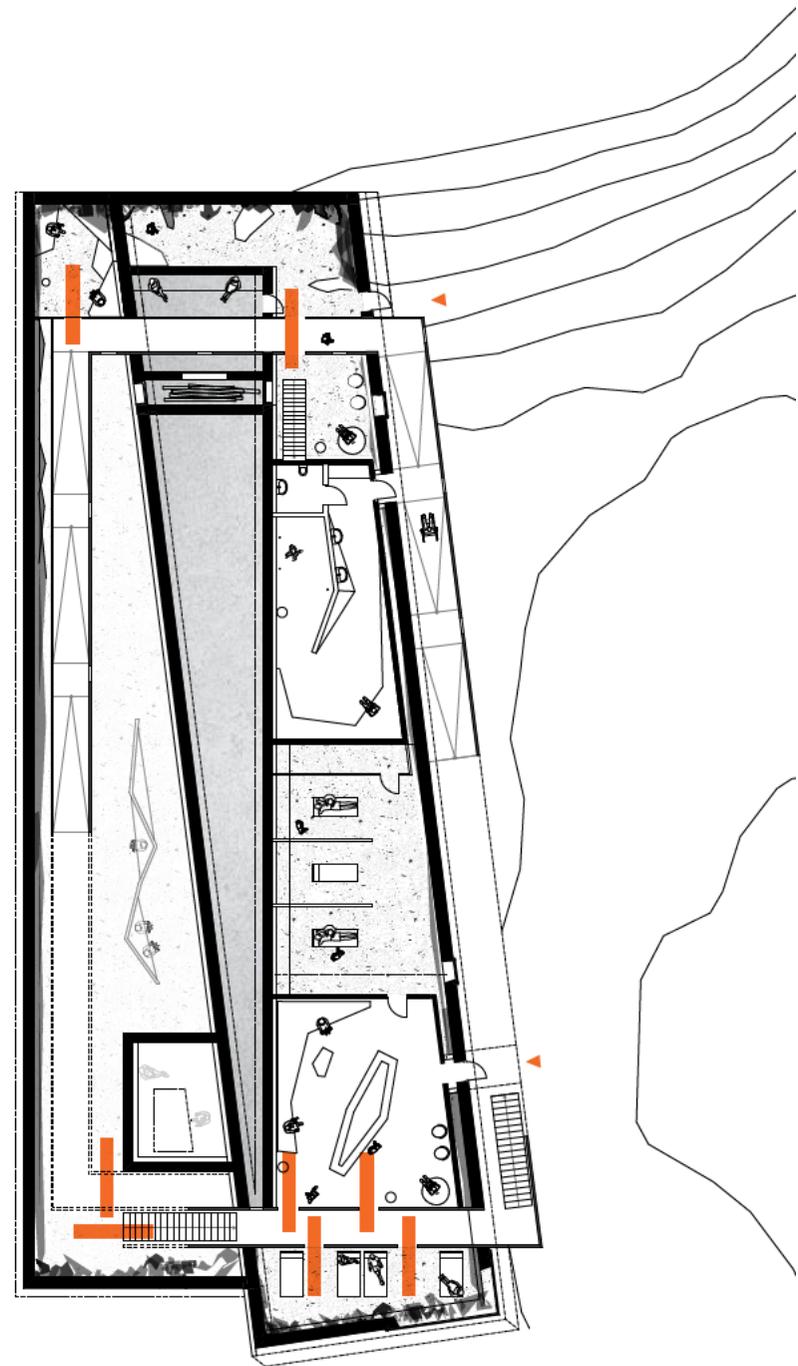
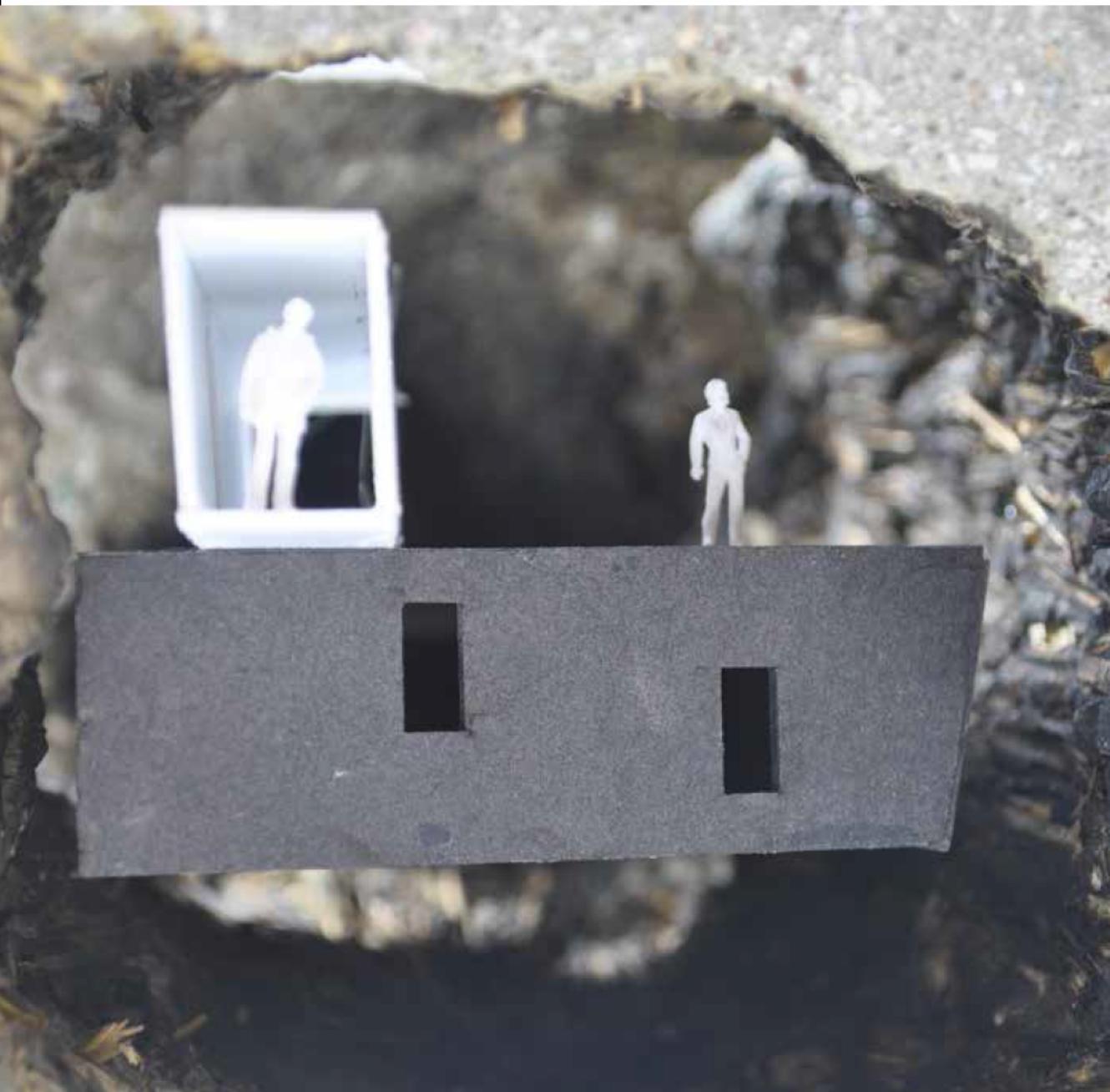
You feel the smell of fireplace as you walks along the volumes rising from the terrain



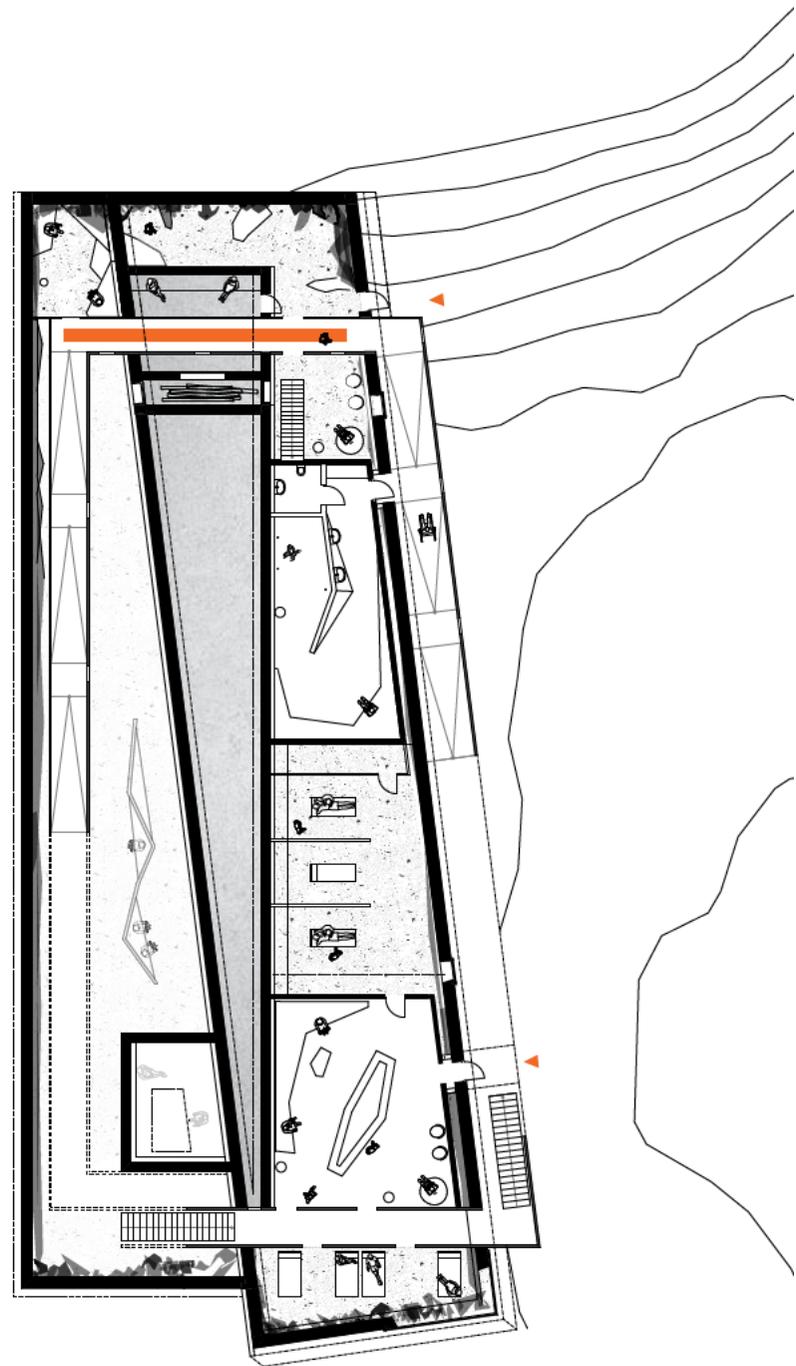
you enter the entrance / a tube penetrating the thick concrete walls



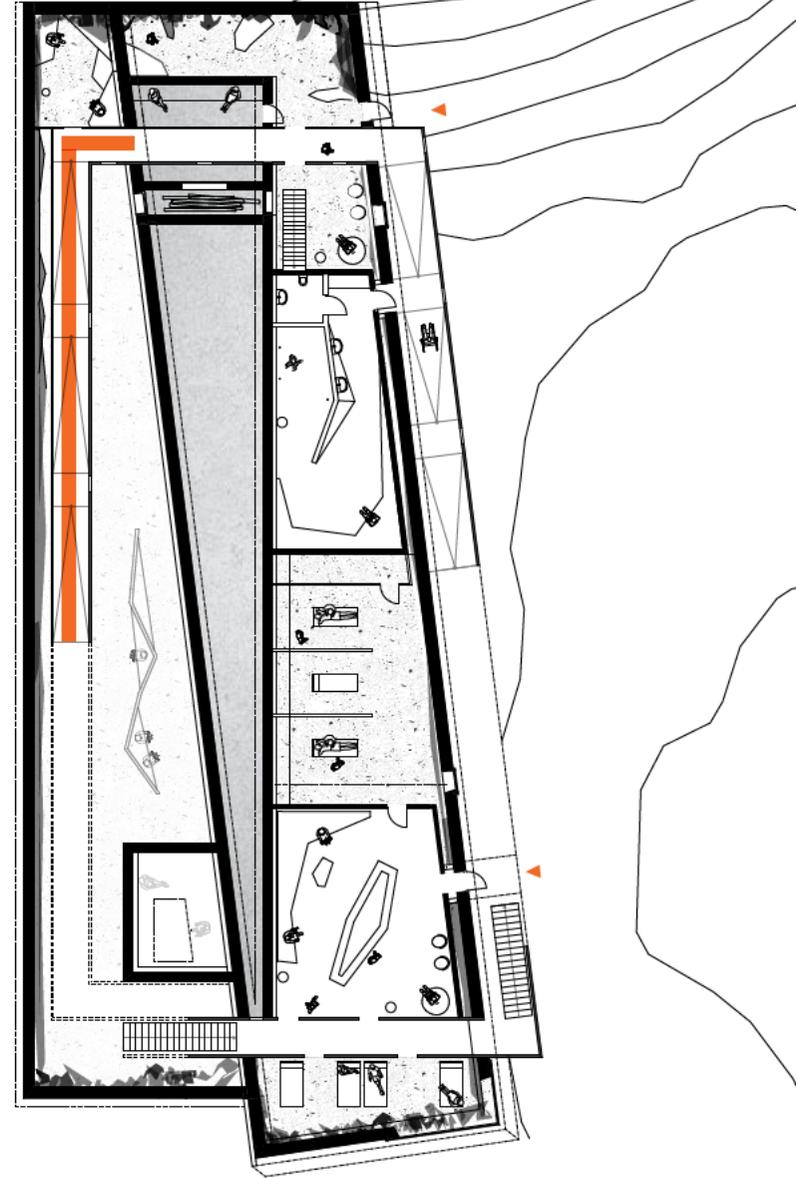
Choose your path/
the light is sharply white as you start descending through the tube
on the outside of the volumes



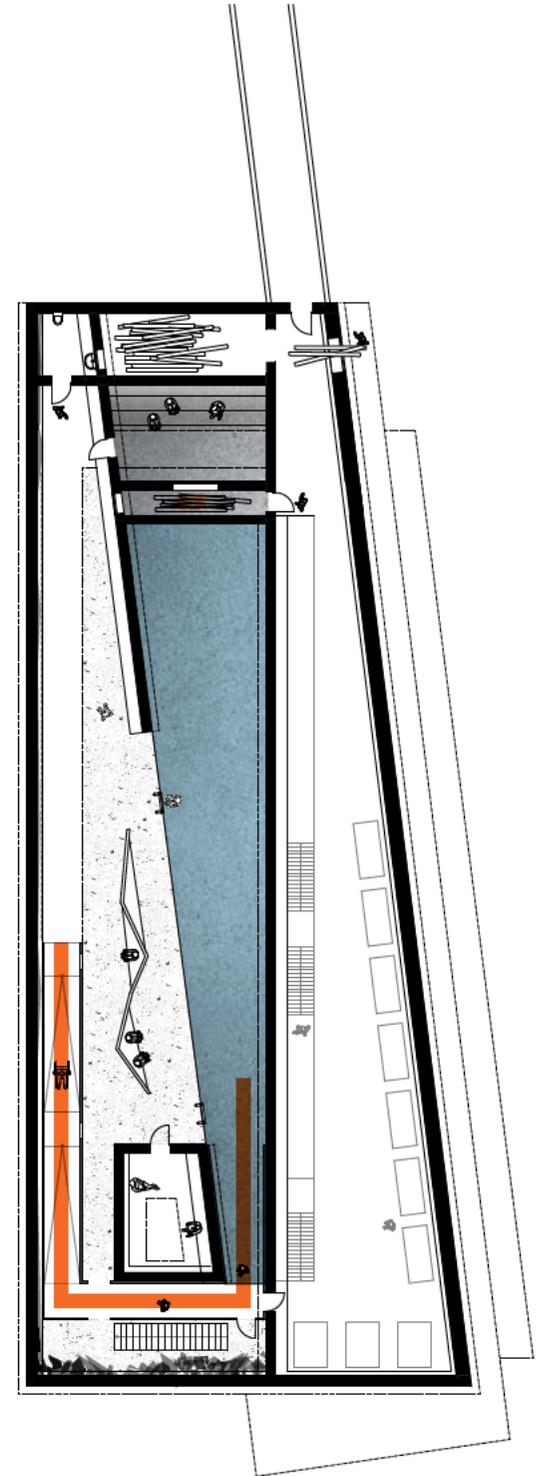
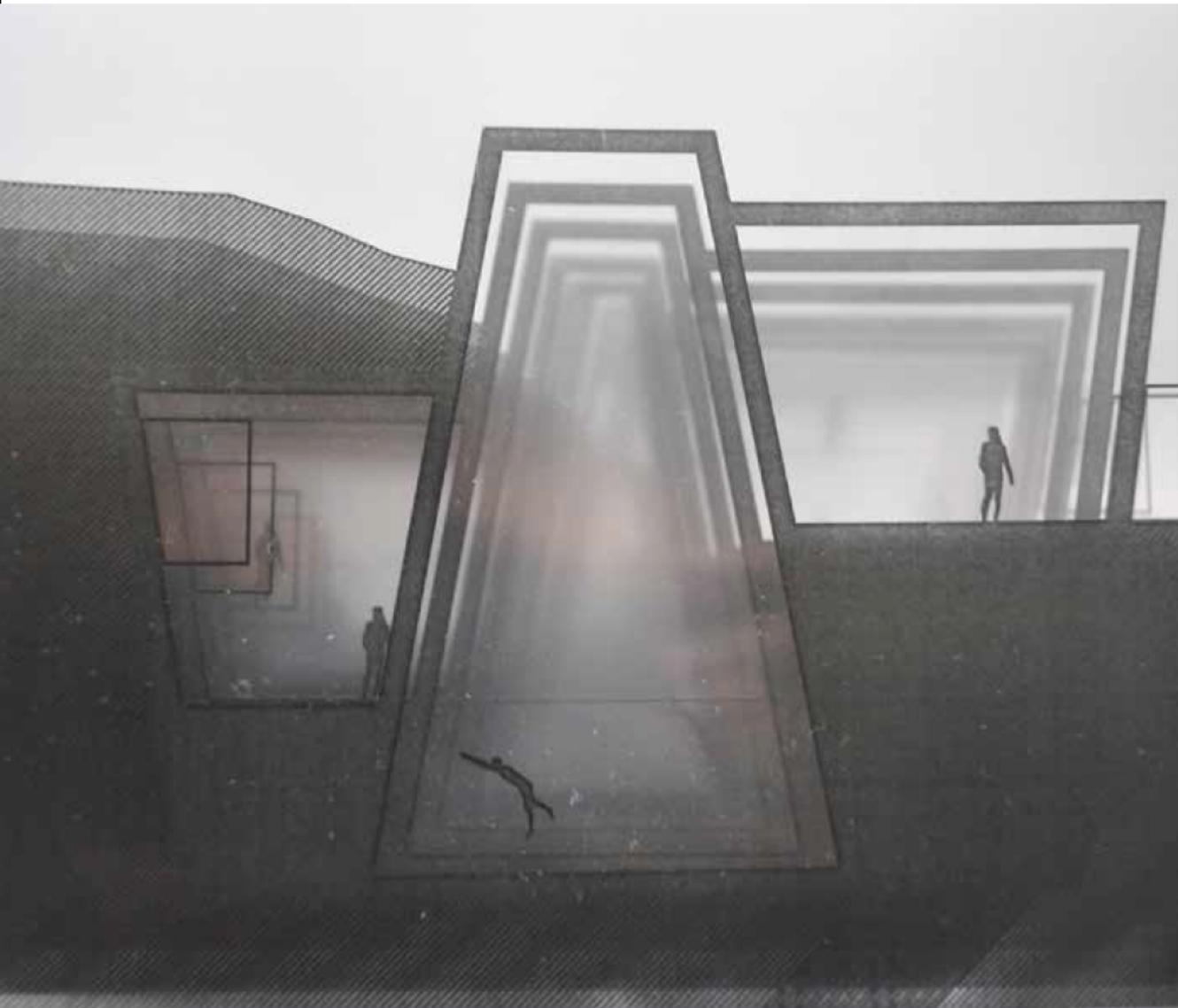
Moving between a cavelike environment and the smooth surfaces of the tube



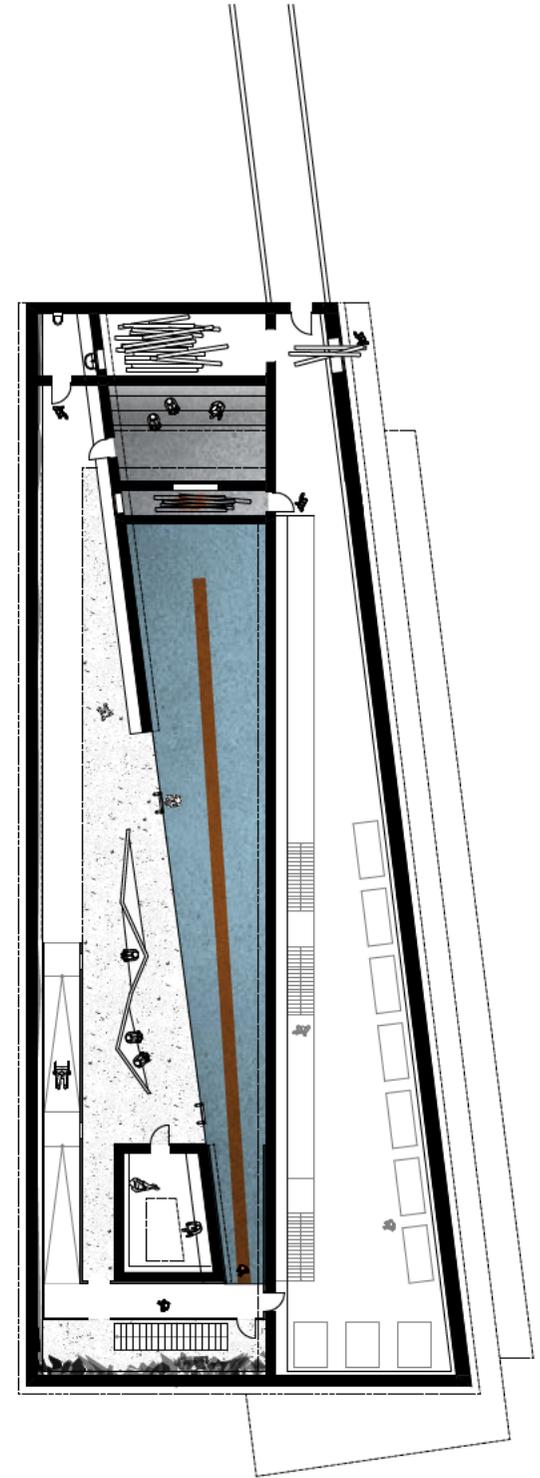
The heat is reinforced, as the walkingtube crosses the sauna.



You start to feel the smell of water and moist..



Continues until your feet reaches the water



the light is coming in from above/ you feel quite small / as you were in a cathedral

And the walk continues...

By foot/ skiing/ drawn by a dogsledge/ on a bike...

you hear the sound of 'slaeg' under your feet as you walk...

the buffer zones, hopefully tidied up and restored...

crosses the mountain plateau/ above the three line

Regains the bodyheat/ smell of campfire / absorbing the view



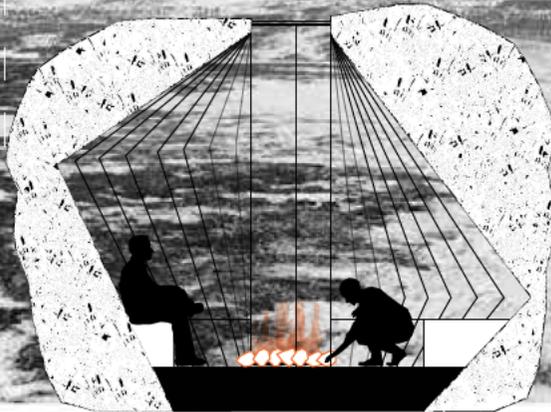
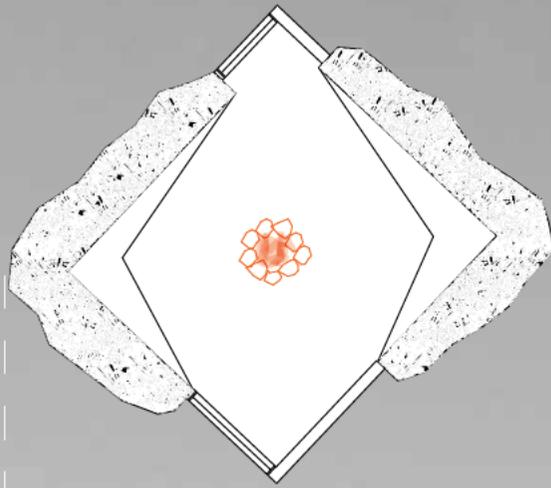
Buffer zone

Rarox 659 MASL

Stegghaugen 675 MASL

Buffer Zone

Storvætz mining area 897 MASL



Regains the bodyheat/ smell of campfire / absorbing the view

5/ The discourse

In sensitive world heritage sites all over the world, like Røros, there are challenges in how we adapt. Is there to blend in or being in a contrast to the context?

In a tradition of reproduction of architectural historical ideals, it is important to develop the management of how we pass the cultural heritage to further generations.

This master thesis would be a contribution to the discussion on how we could look upon a further narrative, focusing on the relation between materials and the human body. How could modern monuments be infiltrating these vulnerable environments, with respect for both its contextual past and the present time it is born into?

Could the anonymous beauty of decaying traces after a mining industry be another role model in how we design our future? One experience is that it is easier to see the beauty of a fading remain, if you see it in the contrast of its contradictory.

The interaction between vanishing ruins and its opposites could expose its value.

These studies are made with an ambition to appeal or communicate towards the human senses; it could not have been done without the focus on the handcrafted work with the chosen material and explorations with the physical model as a tool. This is a physical study, using the same old techniques from an ancient copper industry and using them as a design element in an architectural narrative.

The following pages includes some of the experiences that were discovered during the process:



The beauty of a
fading remain/
in the contrast of its contradictory.

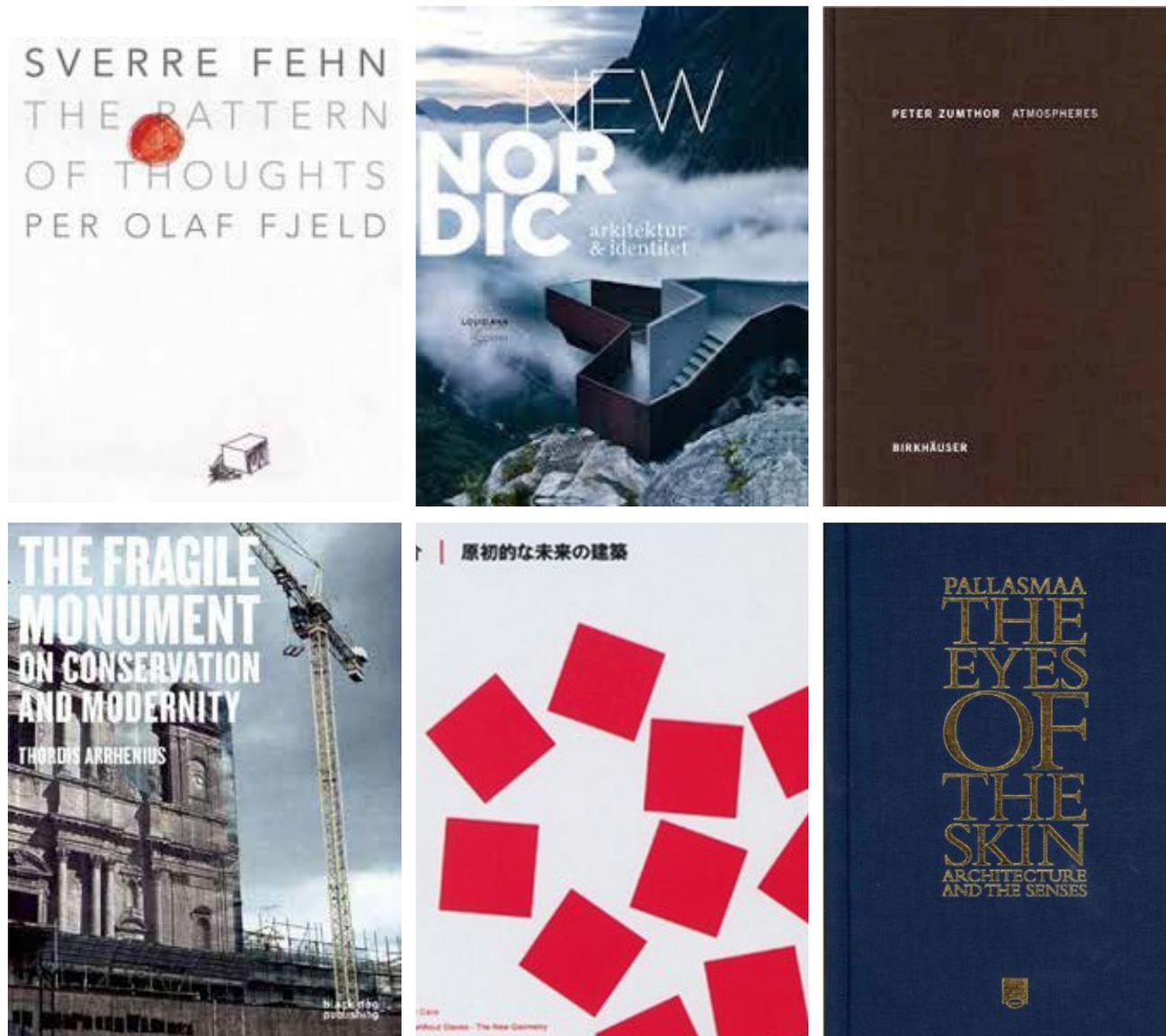


Some qualities are
difficult to see
if no one points them
out for you.



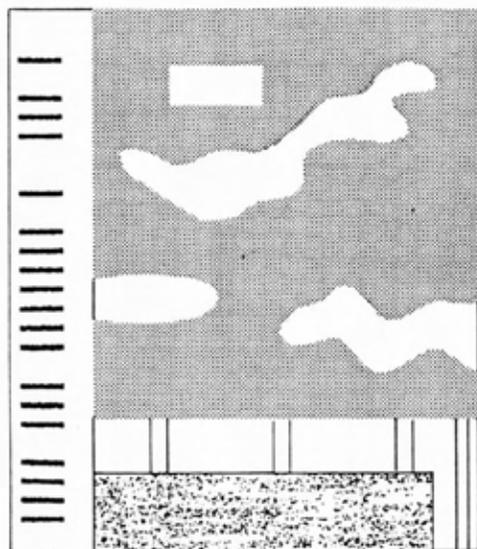
The discoveries through
physical models in the realistic building material /
communicates more directly towards the human senses.

^{6/}Sources and references



Sources/

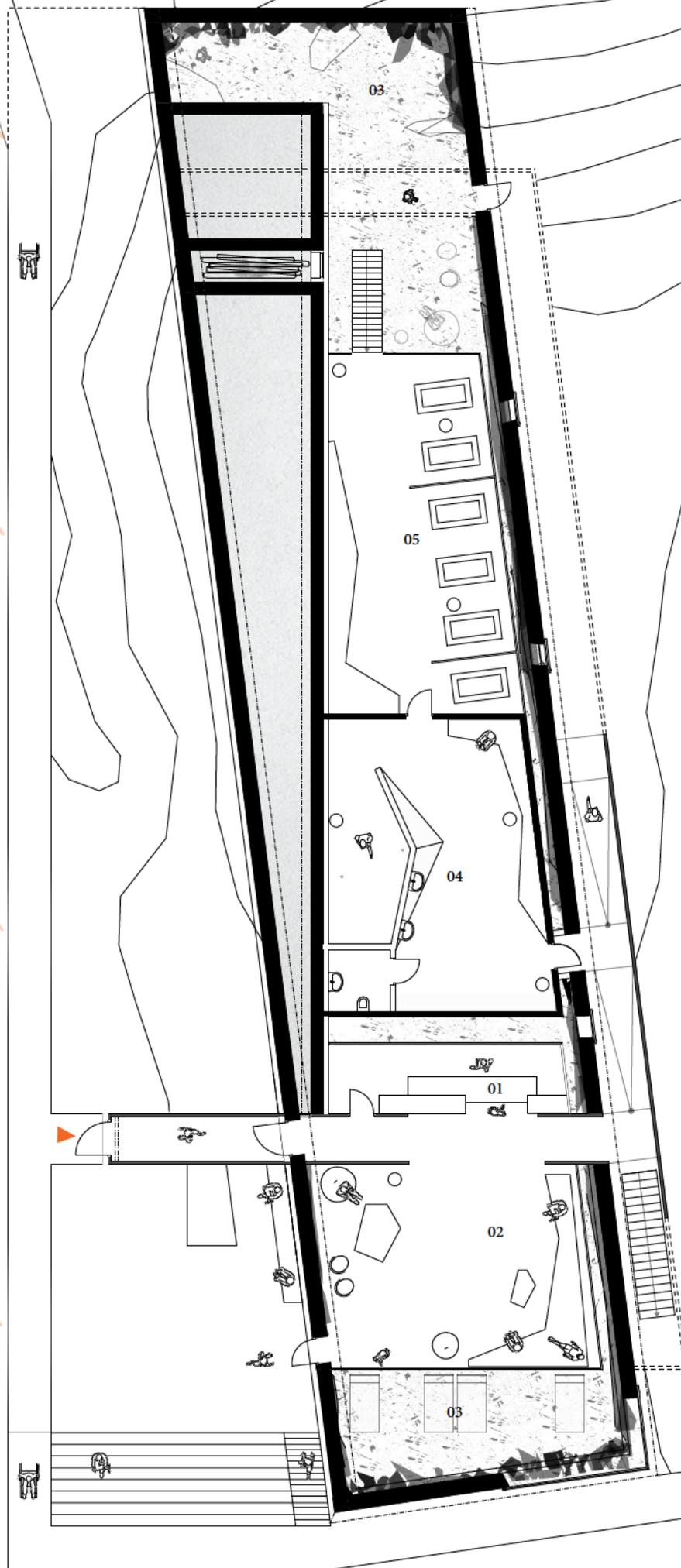
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- Tres grande bibliotheque, OMA, France

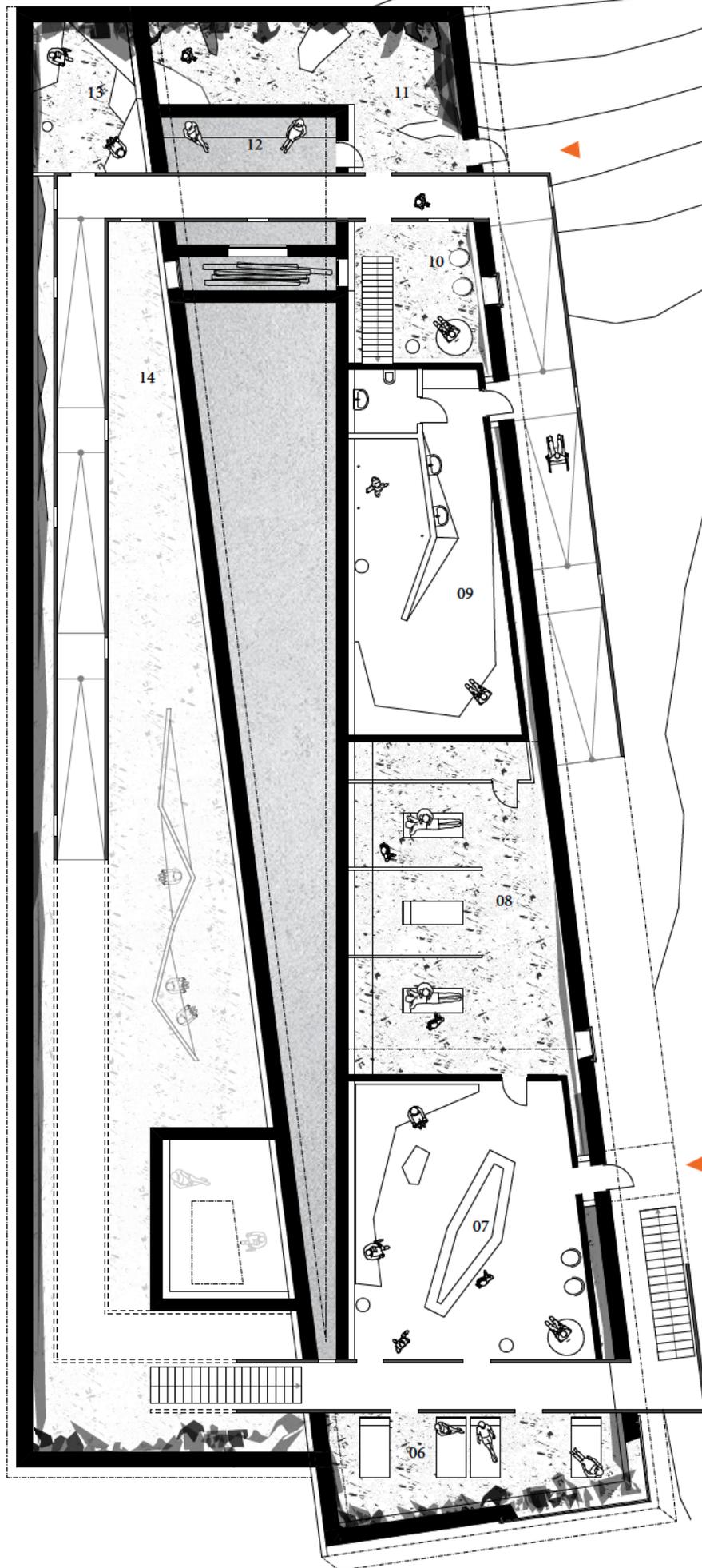
^{7/}Drawings in scale



Plan 2/ 1:200

- 01. Reception/ bar
- 02. Sitting area
- 03. View down
- 04. Dressingroom 1
- 05. Bathtub salon

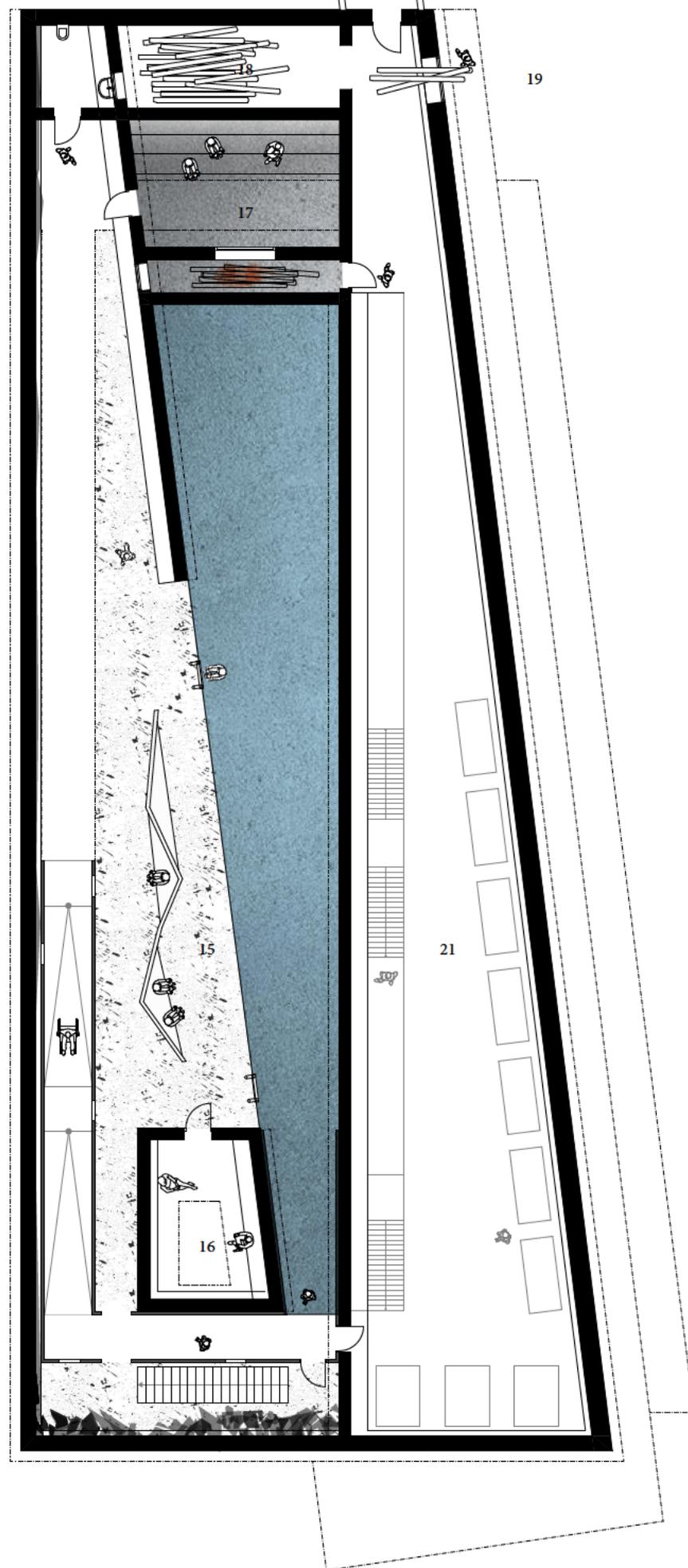




Plan 1/ 1:200

- 06. Relax area
- 07. Self treatment
- 08. Treatment rooms
- 09. Dressing room 2
- 10. Prerom
- 11. Special showers
- 12. Thoughtest sit
Sauna
- 13. Steam sauna
- 14. View





Plan 0/ 1:200

- 15. Bath area
- 16. Heated bath
- 17. Sauna
- 18. Wood storage
- 19. Wood delivery
- 20. Underground passage to hotel
- 21. Tech./ Vent.

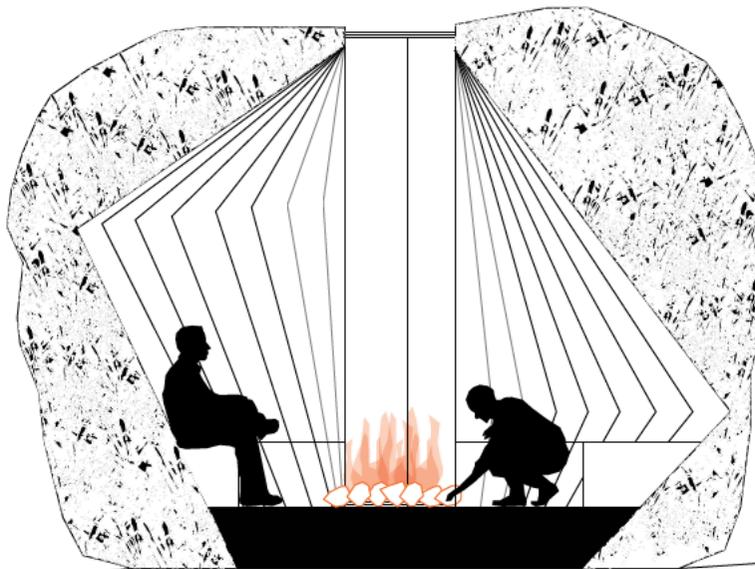




Section/ 1:100

Bathhouse





Section/ 1:50

Shelter



1:50

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DecoMax
Aceton

Utdrøning for...
Sjette skole...
Lærerne vil...