

CERAMIC SPACES

*Exploring Clay Building and
Ceramic Heritage in Höganäs*

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Master Thesis | 2022
Chalmers School of Architecture
Department of Architecture and Civil Engineering

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Abstract

This thesis is an exploration of clay and ceramic building, manifested in the design of a public ceramic workshop and exhibition space in Höganäs.

Situated in the south Sweden, the material context is determined by the clay-rich earth and local ceramic production that began here in the early 1800's, including bricks, tiles, industrial ceramics and the famous brown salt glazed stoneware pottery produced by Höganäs Keramik. Connection to the town's ceramic heritage remains strong to this day with small-scale production of salt glazed pottery enduring, although industries have since closed. This presents both a challenge and possibility of tending to this heritage before it is weakened, or eventually, lost.

Using clay and ceramic building materials as a point of departure in defining the architectural design, the project aims to explore how material, architecture and functions can relate to local context and heritage when applied in a contemporary building. The design process of which is anchored in material explorations that draw influence from the ritual of making ceramics, local building traditions and techniques, conversations with craftsmen and architects alike and through own explorations of the materials.

The material explorations are applied in the architecture of the proposed building, which explores and showcases contemporary clay building as part of its local context. Simultaneously, it enables a creative space for ceramic artists and enthusiasts alike to practice their craft, share knowledge and exhibit their work to the public. The thesis explores local traditional materials and craftsmanship in creating a space that relate to local heritage through architecture and the ritual of making ceramics. But the work also raises questions regarding how we value craft in objects and architecture.



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Ceramic Spaces – Exploring Clay Building and Ceramic
Heritage in Höganäs
Master Thesis 2022

Chalmers School of Architecture
Department of Architecture and Civil Engineering
MPARC Architecture and Urban Design

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Supervisor John Helmfridsson

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“... the architect’s materials, our materials. We know them all. And yet we do not know them. In order to design, to invent architecture, we must learn to handle them with awareness. This is research: this is the work of remembering.”

P. Zumthor, Thinking architecture
(Zumthor, 1998, s. 58)

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To all who I have had inspiring conversations about architecture, clay and ceramics during the course of the project, for sharing ideas and expertise on the topics.

Anna-Malin Tibe, August Orrling, John Helmfridsson, Jonas Hesse, Johannes Riesterer, Ulf Henningsson, Stina Lord and to my family and friends.

Thank you!



Parallel to my studies in architecture I have practiced pottery in my free time, taking courses and experimented with the clay. I have in some sense fallen in love with the material, the process of creating with it and the clay's ever-changing properties. The many stages of turning a lump of clay into a glazed vessel, the changing nature of the material as it slowly dries and the act of using your hands as a main tool in crafting.

In this master thesis I draw from my own experiences and fascination with clay, in translating it into architecture and exploring material possibilities within the context of a building.

Introduction

Purpose and exploration – *Aim and*
research question – *Background* –
Method – *Reading instructions* –
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Purpose and explorations

Purpose

Ceramic Spaces is an exploration of clay and ceramic building, manifested in the design of a ceramic workshop and exhibition space in Höganäs, Sweden.

Höganäs has a rich history of producing ceramic goods from the local clay. Production of bricks, tiles, homeware goods and industrial ceramics have been produced here since the early 1800's, and Höganäs Keramik has become famous for their brown salt glazed stoneware pottery. Large-scale production and export of ceramic goods have in recent decades dwindled, with only small-scale production of salt glazed pottery remaining under ceramicist Anders Johansson and Höganäs Saltglaserat. (Stiftelsen Höganäs Keramiska Center, 2022)

Yet, the connection to the town's ceramic heritage remains strong to this day with many ceramic artists still active in the region. The closing of the industries that are so closely tied to the town identity presents a challenge, but also an opportunity to work actively to care for the heritage where clay and ceramics are at the core of local craftsmanship, before the connection is weakened or eventually lost.

The framework for the proposed building was developed through conversations with Keramiskt Center, a foundation with the objective of promoting and caring for the ceramic tradition in Höganäs and Sweden. They are currently housed in a cellar of Höganäs Keramik's old factory building, where they provide space for the people of Höganäs to learn about and practice ceramics, showcase ceramic artistry in their exhibits and tell the story of Höganäs' ceramic heritage. (Stiftelsen Höganäs Keramiska Center, 2022)

The conditions for the project originated from an inquiry from Höganäs municipality, for Keramiskt Center to merge their administration and further their collaboration with Höganäs Museum & Konsthall; the existing museum and exhibition hall. Doing so within the frame of a new building that houses ceramic workshops and additional exhibition spaces. (Crespin & Nilsson, 2021) This new building would expand the spaces of Keramiskt Center, giving it a more dignified space in the city as well as giving the public further possibilities to take part in Höganäs' rich heritage connected to both ceramic industry and artistry. The new building would then be part of an effort to connect to and represent the local creative heritage.

Explorations

Explorations for the project start with the context of Höganäs and the site for the building. Seeing to the local connections to clay and how it is represented through the town's creative and industrial heritage and in the built environment.

The design process is anchored in material explorations of clay and ceramics, connecting the material to the craft of making ceramics and built tradition of the context. This is explored in the program of the new workshop and in the material explorations. Through investigating the processes of ceramic craft, the user and rituals of creating with clay, it can inform the design.

In referencing the local built environment comes the possibility to explore local traditional building techniques. With clay and ceramic building materials in focus, I can explore the potentials of the materials and techniques in a contemporary setting. The building then becomes a framework to apply techniques and explore materiality.

Aim and research question

Aim

Using clay and ceramic building materials as a point of departure in defining the architectural design, the project aims to explore how material, architecture and functions can relate to local context and heritage when applied in a contemporary building.

The design process and explorations aim to contribute to a discourse of implementing local traditional building. Specifically, in the potentials of unburned clay as a sustainable and versatile building material, and especially in combination with bricks and wood.

The building design should enable and showcase contemporary ceramic production in Höganäs, in reflecting craftsmanship and artistry, local design traditions as well as in inspiring future development in the local community.

Research question

How could the material heritage of Höganäs; bricks, ceramics and clay building techniques, impact the design of a public ceramic workshop and exhibition space?



Salt glazed ceramics, Höganäs keramik.
Photography: auctionet.com

Background

Building from tradition

Designing a building for clay and ceramics in Höganäs presents an opportunity to look to using the building materials and techniques that are represented in the local tradition.

Discourse regarding traditional building materials have gained momentum in recent decades, as explained by Elizabeth Golden in *Building from Tradition: Local Materials and Methods in Contemporary Architecture*. As a result of increasing concerns about climate change, environmental issues and economic development, the interest in minimally processed and transported building materials have risen. They include materials such as wood, earth, straw and other vegetable fibers, materials that often can be found in local traditional building. (Golden, 2017)

Potentials in using traditional building include that they are often based on simple processes and require minimal energy resources. They are also commonly either renewable or considered abundant resources and biocompatible with the surrounding ecological and economical systems. In the instance of earth building, it is an abundant material that does not require particularly advanced tools and as it is of the same composition as the surrounding earth the material can return to the ground at the end of its lifespan without harm to the surrounding environment.

Earth has been ever-present in the southernmost parts of Sweden where agriculture has been at the center of society since preindustrial times. In the region of Scania (*Swe: Skåne*), the open landscapes that are especially prominent to the south and west diverges from the forest landscapes seen in most of Sweden. Although this type of landscape does not define all of Scania, where the northern and eastern parts are still clad with forests, the agricultural landscape has become the most closely associated with the region, and with it its built tradition. This lack of local forest resources is reflected in the use of building materials, where materials such as clay, brick and masonry have been common throughout history. (Tägil, 1996)

Half-timber building (*Swe: Korsvirke*), closely related to North-German and Danish building tradition, was the dominant building technique used in pre-industrial times in both urban and rural landscapes. However, the technique is now usually associated with the rural tradition and with the Scanian homesteads and housing typology called *Skånelänga*.

With the industrial revolution and construction of the railway network in Scania brick building would become dominant, as several large brickyards were established in the late 1800's and technology in brickmaking advanced. Around the railway stations on the countryside small towns grew that were defined by a uniform brick architecture, built from bricks from the local brickyard.

Sustainability

The discourse around sustainable building in Sweden has in recent years focused on wooden architecture. The vast forest resources available in Sweden and the technological development in construction with engineered timber such as Glulam and CLT, has made timber building a viable and renewable alternative to concrete. In a recent edition of *Arkitekten (1: 2022)* the discussion is lifted of whether the timber building-boom actually favours the climate. Some concerns that are voiced are increased exploitation of forests to a point past where its growth cannot keep up with demand, the amount of energy and glue that is used when producing engineered timber and how effectively we can utilize the wood once the tree is cut down. (Nordström, 2022)

To turn to other renewable building materials and reusing materials that already exists would relieve pressure on the exploitation of forests in the name of the construction industry. Earth building could be a suitable alternative, especially in regions that have clay-rich earth but are lacking in local forest resources.



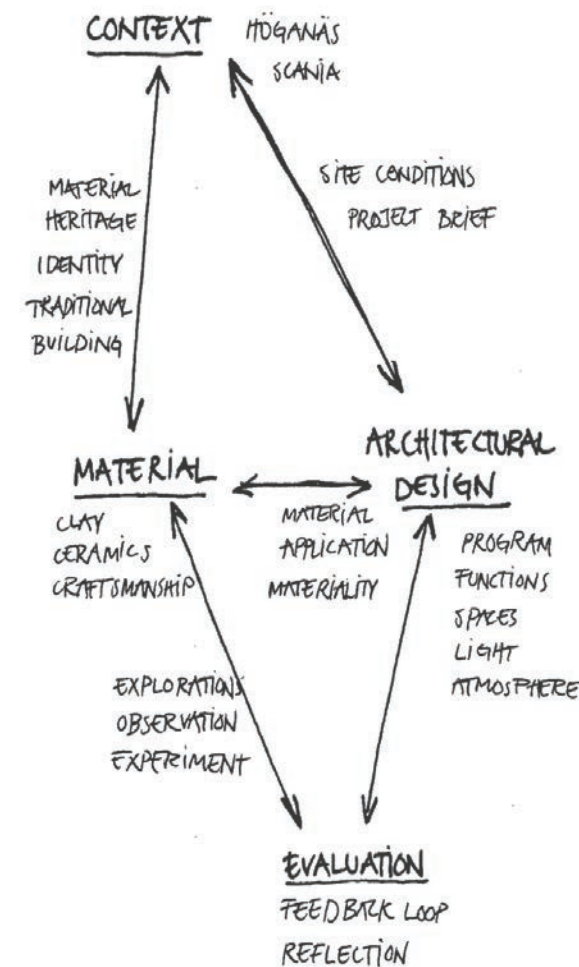
Unprocessed clay, a byproduct from dredging a lake near Gunnebo slott, Mölndal.

The method of the thesis takes a research-by-design approach and revolves around three tracks: The context of Höganäs, material explorations and the building design proposal. The tracks inform each other in both design and research.

i. In researching the context of Höganäs I have turned to literature to research the history of Höganäs and the town's ceramic tradition. I have visited Keramiskt Center and Högnäs Museum och Konsthall and met with the project managers for the inquiry to merge the two, as well as visited the site and its surroundings. This resulted in a site analysis and mappings of materiality represented in the area.

ii. Focusing on clay and ceramics, material explorations investigate both the ceramic process as it relates to the function and users of the building, and the clay-based materials and building techniques that could be applied in the design of the project. The explorations include built architectural references, literature research, own explorations in building and craft, study visits and conversations with architects and craftsmen alike. They all contribute to my own reflections of clay and ceramics in architecture, and are compiled into a separate book, where chosen parts are brought into this booklet.

iii. The design proposal is used as a test bed for applying the material explorations within a context and is iterated throughout the process. In sketching and designing I can reflect on how the building connects to the local heritage and material use in a contemporary setting, as well as in how the users and visitors alike would interact with the building.



Reading instructions

This booklet presents 5 chapters.

1. *Introduction* gives background to the topics that are considered in the scope of the thesis and following chapters.
2. *Material explorations and observations* is a condensed version of the book under the same name that is exhibited as part of the exhibition of the thesis. It is a diary drawing from my own experiences with ceramics and clay in craft and building, conversations with architects and craftsmen alike, reference projects, study visits and literature studies.
3. *Context* presents the rural context of Höganäs and the local historical connections to the clay, as well as site conditions of the area and site for the design proposal.
4. *Design proposal* presents the architectural design of a ceramic workshop and exhibition space on the site presented in the context and is where material explorations are applied.
5. The concluding chapter includes discussions and reflections on the project and topics that are touched upon within the thesis.

Delimitations

The thesis project explores clay and ceramic building as part of the given context of Höganäs and implementing it in the design of a building. The design centers around the activities that will take place in the building and driving the design are the material explorations in ceramics and clay building that are conducted as part of the thesis.

The material explorations are executed with a hands-on approach that considers materiality and craftsmanship and explores a range of clay building techniques in the given context. They do not cover all methods of earth building that can be found today, and those not represented are therefore not included in the final design.

The scope of the project showcases possibilities in clay and ceramics in architecture inspired by local traditional craftsmanship and represented in contemporary building. Low tech building strategies are considered during the design process and informs the design, but specific systems are not investigated in detail or presented as part of the final design. Specific building technological performances of the implemented materials are not part of the design and high-tech aspects of building has not been considered in the design.

The thesis does not discuss regulations and standards regarding building with clay and ceramics in Sweden. It is instead to be seen as a way to inspire new ways of implementing the materials and techniques in building today and showcase their material qualities.

Theory

In approaching the project with a focus on the local material heritage of Höganäs, it presents the questions of how it would be adopted into architecture and what role clay could play as a material in building. The themes presented here are approaches to architecture that take heritage and materiality into consideration.

Tradition, regionalism and material

Drawing from tradition and historical narratives is a common practice in architecture and are represented in many architectural styles and impulses that draw from the past. Tomas Tägil explains in his dissertation *Arkitekten Hans Westman, funktionalismen och den regionala särarten*, 1996, that here are several ways of approaching it in design, whether through motifs, building typologies, building technique and materiality, or through climate, topography and culture that are unrelated to the built tradition. A regionalism in architecture may be approached by either preserving a past tradition in building or through regional transformation of emerging architectural impulses. (Tägil, 1996)

In the region of Scania, the approach to a regional architecture does not seem to follow a certain uniform approach, especially in contemporary architecture. But an interesting example of connecting to the built local history can be seen in the work of architect Hans Westman, 1905-1991, who implemented local Scaninan regional motifs and materiality as part of a modern architecture and the functionalist movement.

When these approaches to design is applied in its local context, they can be powerful tools to connect architecture to local identities. Elizabeth Golden explains that when we turn to local traditional materials in architecture, they can create strong connections with both local geography and culture. They also provide the possibility to engage and experiment with material, due to their closeness and often uncomplicated techniques. (Golden, 2017)

Low tech and low impact

Traditional building techniques and materials are very much connected to low tech architecture, as the building practices were developed without the technology that is available to us today. In turn, by referencing traditional building techniques and building materials, the project is positioned within the discourse of low-tech and low impact architecture.

Strategies in low tech architecture include relying on low-tech methods in construction and the application of low-tech systems within the building, such as through natural ventilation and relying on the heat from the sun or activities within the building. Massive earthen or brick construction have a high thermal storage capacity and in the instance of unburned clay in indoor surfaces, it can have a positive impact on indoor climate as it absorbs excess moisture and particles in the air. (Golden, 2017)

Low impact architecture sees to sustainability aspects and refers to minimizing the impact the building and its materials has on its surrounding environment and climate, including the before, during and after of a building. It might include the energy it takes and carbon emitted in the production and transport of the materials used in building, to heat its spaces or the amount of waste produced when the building might eventually be torn down.

Turning to Critical Regionalism

In approaching architectural design with regional identities in mind, there is a risk that a romanticization of the local past can turn into a literal interpretation of historic architecture. As there are many styles and movements represented in the historical layers of a site, who are to decide which ones connect to the local identity or not? Instead, I turn to Critical Regionalism, an approach in architecture that is centered in the notion of place, with the objective to counteract placelessness. As the term is used by Kenneth Frampton in *Towards a Critical Regionalism: Six Points for an Architecture of Resistance*, 1981, the approach provides a way of relating to unique regional aspects without having to revert to historical motifs and a romanticization of the past. (Frampton, 1981)

“The fundamental strategy of Critical Regionalism is to mediate the impact of universal civilization with elements derived indirectly from the particularities of a particular place. [...] It may find its governing inspiration in things such as the range and quality of the local light, or in a tectonic derived from a peculiar structural mode, or in the topography of a given site.” (Frampton, 1981, p. 21)

Although Frampton’s text is now 40 years old there is still a lot to draw from it in practicing architecture today. As discussed by Léa-Catherine Szacka and Véronique Patteeuw in the article *Critical Regionalism for our time* in Architectural Review, the text deals with notions of globalization in trends and identity that are highly relevant considering ecological, economical and political challenges of today. Critical regionalism as an approach provides means to create architecture anchored in authenticity, tectonics and materiality, which may reflect in knowledge of building, local materials and craftsmanship that are all relevant in working with local perspectives and ecology. (Szacka & Patteeuw, 2019)

Pheonmenology and craftsmanship

In the design of a new ceramic center in Höganäs, planned for many visitors and practicing ceramicists alike, emphasis may be placed on the functions of the building and its spaces, in movement between workshops, kiln room and glaze room and how they are arranged rationally in terms of the ceramic process. Although important aspects, ceramics is not only practiced as standardized functions, but in a frame of mind that is creative, focused and a close to material. Turning production into ritual.

In philosophy, phenomenology is the study of how we experience and perceive what is around us. With its application in architecture it refers to how we experience the built environment, where space, materiality and atmosphere is thought of in terms of the senses – touch, hearing, smell etc. (Pallasmaa, 1996) The theory can be closely associated with critical regionalism as described by Frampton, with notable architects such as Alvar Aalto and Peter Zumthor being mentioned in relation to both approaches.

To me, it is important that the architecture of the project reflects the ritual of ceramics – in staying true to material in terms of materiality, craftsmanship and atmosphere. It is architecture that is more than activity based, but immersive in relation to the tactile and aesthetic qualities of clay and ceramics and actively crafting spaces that reflect that.

Approaching explorations and design

The themes that are discussed above are important lessons to bring into my approach to investigations and design. The first theme presents a context and aspects that I may want to avoid, to steer away from pastiche architecture and instead turn to the approach of critical regionalism and how a material heritage could be applied as part of it. The second theme presents potentials of using clay and ceramics as building materials in the context of a building and sustainable practices to be considered in design. Finally, the phenomenological approach guides the explorations and their application into design.

Material explorations & observations

This chapter is a condensed version of the exhibited book under the same name that is part of the exhibited material in the master thesis. Including documentation of experiments, study visits, historical and contemporary architectural references and conversations with architects and craftsmen alike, they all contribute to my own reflections of clay and ceramics in architecture and craft.

Rituals of ceramics – *Light and space*
– *Clay building typologies*

Rituals of ceramics



PREPARATION

sourcing material → wedging/kneading → wheiging →

THROWING

centering → opening → lifting walls → shaping →

DRYING (leather hard)

REFINING SHAPE

trimming → shaping (adding or subtracting) →

DRYING (bone dry)

FIRING

bisque fire → open kiln →

glazing → glaze fire → open kiln

The ceramic ritual centers around refining the raw earth and the different stages of the material represented within the ceramic process. It must begin with a homogenous lump of clay, without air pockets and impurities, not too wet and not too dry. It is achieved through kneading, or wedging, preparing the clay for the next steps and getting familiar with its consistency.

At the throwing wheel the lump of clay is shaped into a vessel – a vase, a bowl or perhaps a cup. The stages are the same regardless of the shape, the only thing that differentiate the cup from the bowl is a slight difference in movement of the hands.

It demands a focus and presence that becomes almost meditative – a strength and stability in movements – constantly feeling for slight irregularities of the clay as it spins.

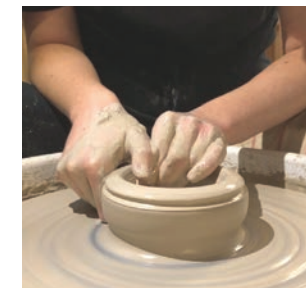
Centering



Opening



Lifting walls



Shaping





Bisque fired pottery in a recently opened kiln, Capellagården 2021.

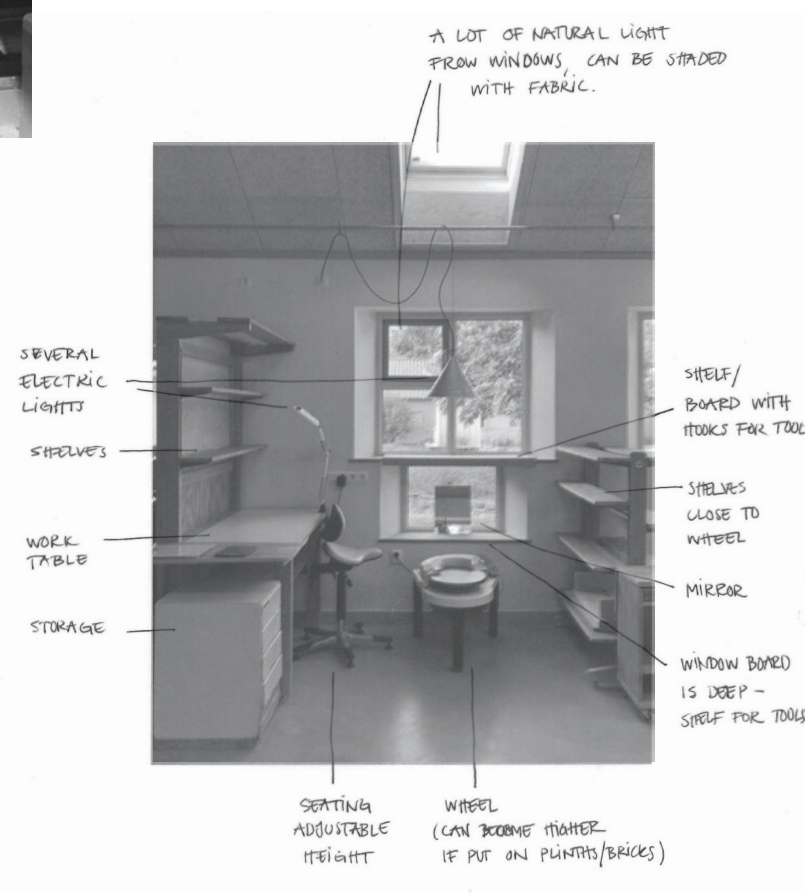
Capellagårdens Keramikverkstad
Erik Asmussen
Vickleby, Sweden
2000

Capellagården's ceramic workshop on Öland is a unique example large scale contemporary building that has been designed with the creative ceramic process in mind. To inform the design, ceramics teachers Torleif Johansson and Leon Simonsson made visits to different ceramic schools in Europe to evaluate their facilities and from it set their own criteria for the workshop at Capellagården. (Capellagården, 2022)

I spent two weeks making ceramics here in the summer of 2021 and the workshop a generous and peaceful space to work in. Seeing to the functions of the building, as well as my own experience of the space, it can inform the design of the thesis project in Höganäs.

Then, the dried finished clay vessel is placed in a kiln to turn ceramic in two separate firings. The first bisque firing, where the clay is fired at a lower temperature around 1000°C, turns the clay into a porous fragile ceramic in preparing it to be glazed. The glaze firing is the final step of the process, fired at a temperature around 1280°C for stoneware, the ceramic sinters to become hard as rock and the glaze melts into glass.

Opening the kiln is both suspenseful and exciting. The firings are daylong and is always accompanied by risk, with the cracks or explosions that can occur in the bisque firing or that the glaze fails in the final firing. But when all goes well, it is the final reveal in the ritual of ceramics.



Notes on throwing wheel station, Capellagården 2021.



The process of making ceramics is one of many steps, a collaboration between the material and the ceramicist. It is a process that cannot be rushed, with the changing nature of the material as it slowly dries and the day-long firings that turn the clay into a ceramic. It becomes ritual-like, where each step is executed guided by the clay and it's ever-changing properties.

In my own practice I enjoy the many possibilities that the clay provides in playing with shapes and colour, taking a lump of clay and crafting something unique and refined. In knowing all the work that went into the pieces, I can appreciate them even more.

Ceramics is a celebration of craftsmanship, the handmade and the incomprehensible ability to turn a piece of dirt into a glazed vessel – with your hands, water and heat. The craftsmanship inhabits the finished ceramic not in perfection but in the imperfection; in the slight trace of the hand that made an imprint in the soft clay that became permanent once fired, or in the irregularities in how glazes pool and interact with each other and the shape of the vessel.

Light and space



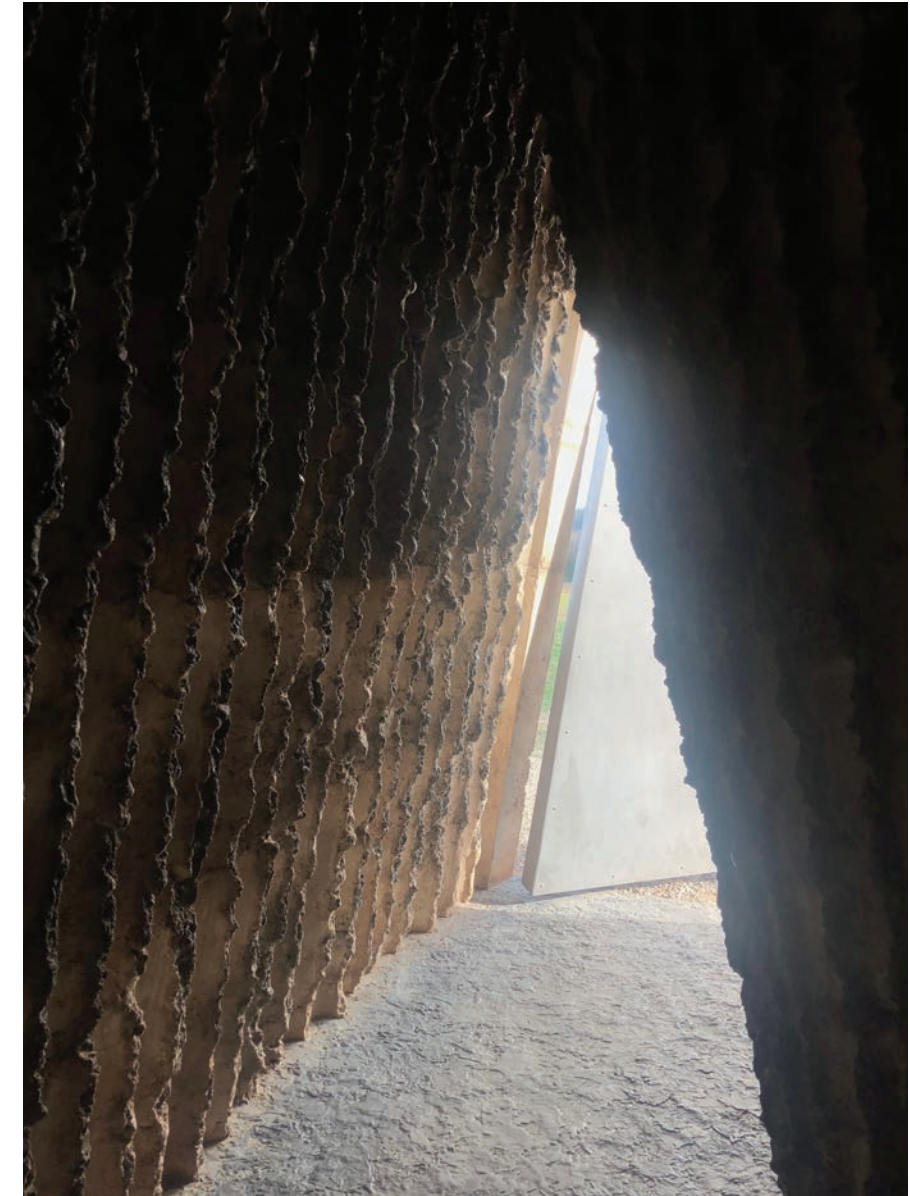
Louisiana Museum of Modern Art
Jørgen Bo and Wilhelm Wohlert
Humlebæk, Denmark
Additions built from 1958 to 2006

Visiting Louisiana in Humlebæk I am always intrigued by the sequencing of rooms around the garden, alternating the totally transparent with the solid brick walls. The brick, wood and material textures are exaggerated with the use of daylight – with direct light from large windows and indirect light brought in through the many smaller openings between the wooden beams.

The glazed walkways through the garden and sculpture park allows it to become part of the exhibition and the boundaries between inside and outside are blurred.



Louisiana Museum of Modern Art, 2022



Bruder Klaus Field Chapel, 2018

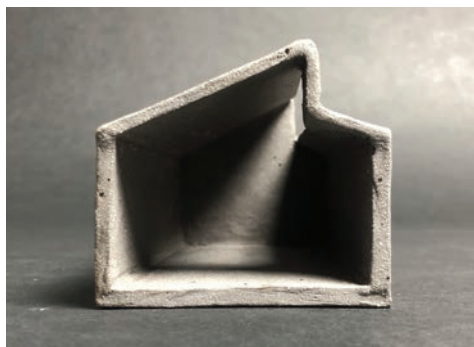
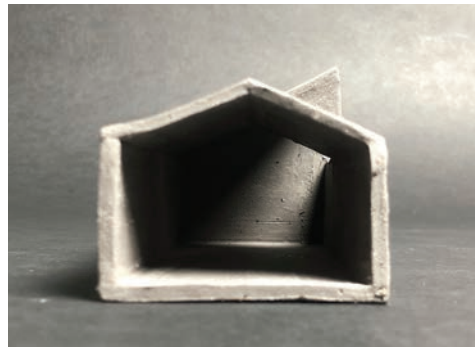
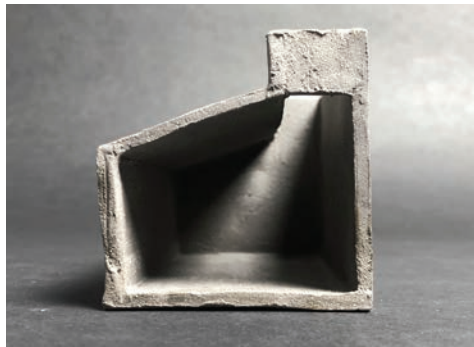
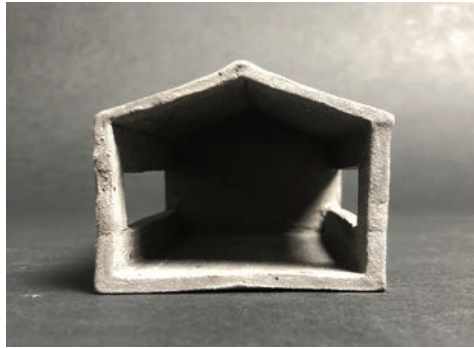
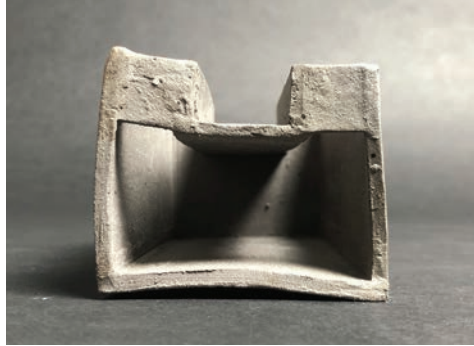
Peter Zumthor

Materiality, texture, light and atmosphere are always present in Peter Zumthor's projects, in showcasing craftsmanship through architecture and staying true to material. Many projects include details that are allowed to remain intentionally rough or dirty. It can be seen in the soot and imprints of the burned logs in Bruder Klaus Field Chapel or in the dripping water leaving its marks on the wall in Therme Vals, both of which I have had the pleasure of visiting.

“Sense emerges when I succeed in bringing out the specific meanings of certain materials in my buildings, meanings that can only be perceived in just this way in this one building.”

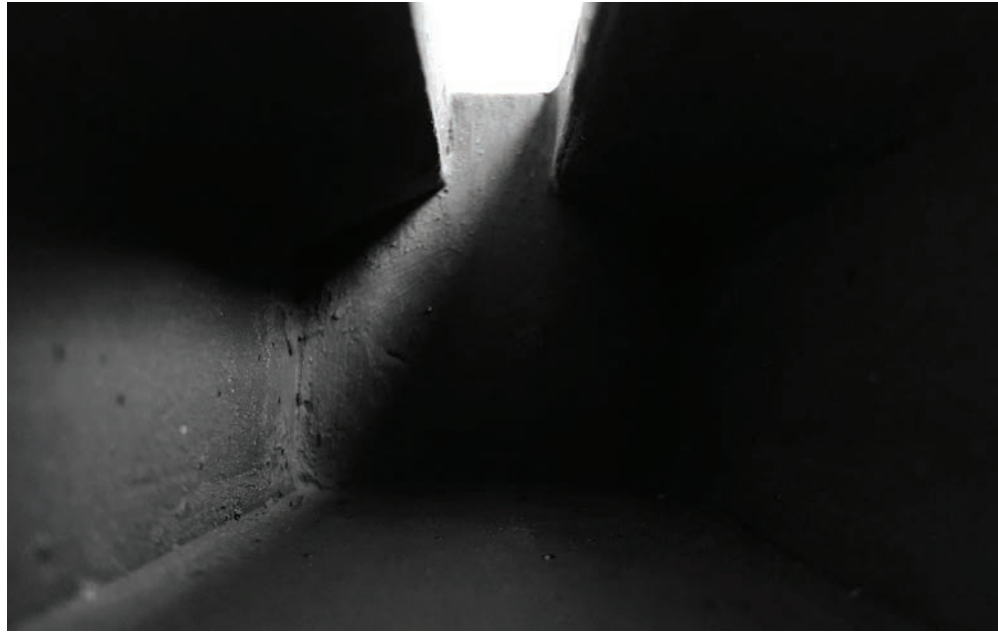
Peter Zumthor , Thinking architecture
(Zumthor, 1998, p.11)

Light and space



In investigating the potentials of daylight in the project I made ceramic models for light studies. Each presents a silhouette and situation to bring daylight into the building.





The models were used as a tool to evaluate and reflect on the daylight situation throughout the spaces of the building. Viewing them from different angles in daylight simulates the directions and placement of the building and windows on the site, which can give you a sense of the atmosphere that each situation would imply. This was considered in choosing the light situations for the different spaces in the proposed building, along with how the light would interact with functions and materials of the spaces.

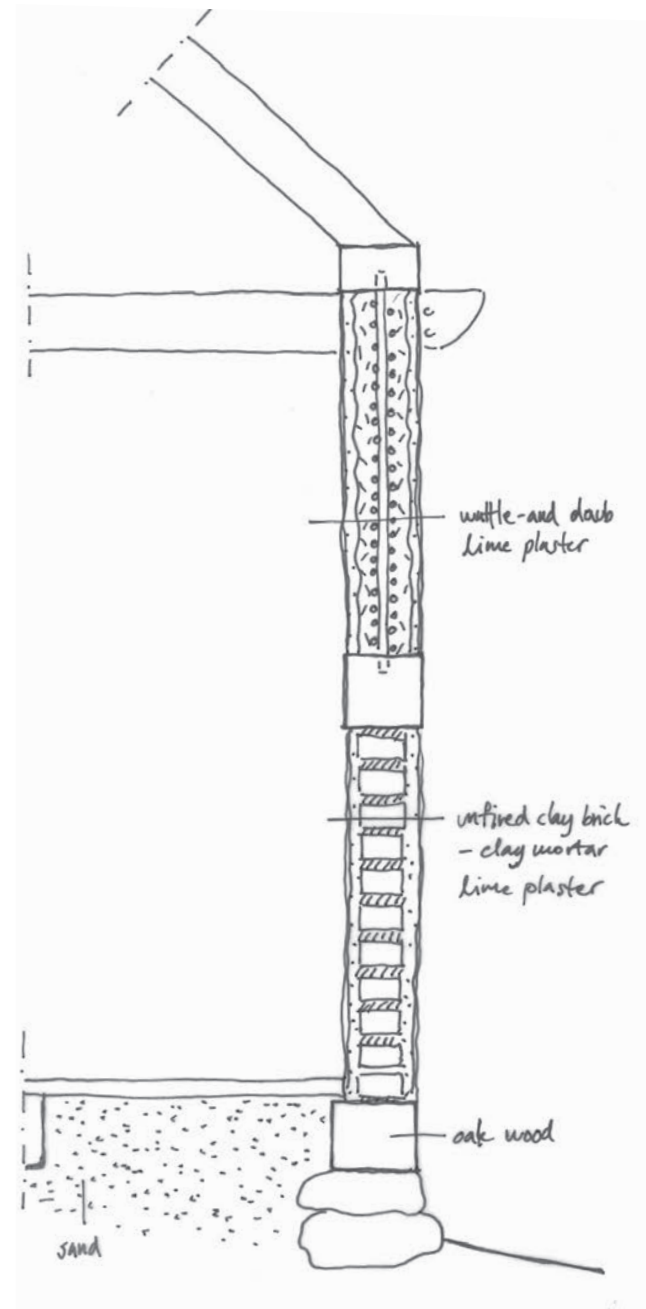
Clay building typologies

Half-timber building

Half-timber building

Half-timber construction is a building technique closely associated with Scanian building tradition. The technique consist of a framework of timber providing the structure combined with infills of clay, stone or brick. This way of building was common in parts of Scania with lacking forest resources, and the building technique used in building a so called Skånelänga is documented in *Carl von Linné's Skånska resa* from 1749. (Torgny, 1984)

Clay walls in half-timber buildings were either made using a wattle and daub technique by weaving wooden reeds and covering with clay plaster, or walled up with unfired clay bricks. To protect the unfired clay walls from the weather the exterior was usually painted with lime. Fired bricks were a more durable option and became a more common once brick production increased in the mid 1800's.



Drawing based on descriptions and drawings in:
Torgny, O. (1984) *Skånelängor Att förstå och bevara ett kulturarv*
Svedberg, O. (1975) *Kort vägledning i Skånsk byggnadsvård*



Half-timber house in Mölle, north of Höganäs.

Clay building typologies

Half-timber building

Bricks of unfired earth, often called adobe or mud bricks, are made by pressing a mixture of clay, sand and the optional addition of straw or grass into a frame. Ingredient ratios are varying depending on what type of mud brick is made, but they generally have a high clay content. The bricks are dried and can then be used in constructing walls, usually with a clay mortar. (Golden, 2017)

In Scanian building tradition, they were commonly used in half-timber structures and clad with a lime plaster to make it weather and water resistant. But they were also used in combination with fired bricks well into the 1800's. The fired bricks were used as a facade material and the back wall and interior walls were constructed with unfired clay bricks. (Tägil, 1996)



Exposed unfired bricks in walled up doorway in my grandparents' barn.



Wattle-and-daub exhibited at Sörmlands Museum.

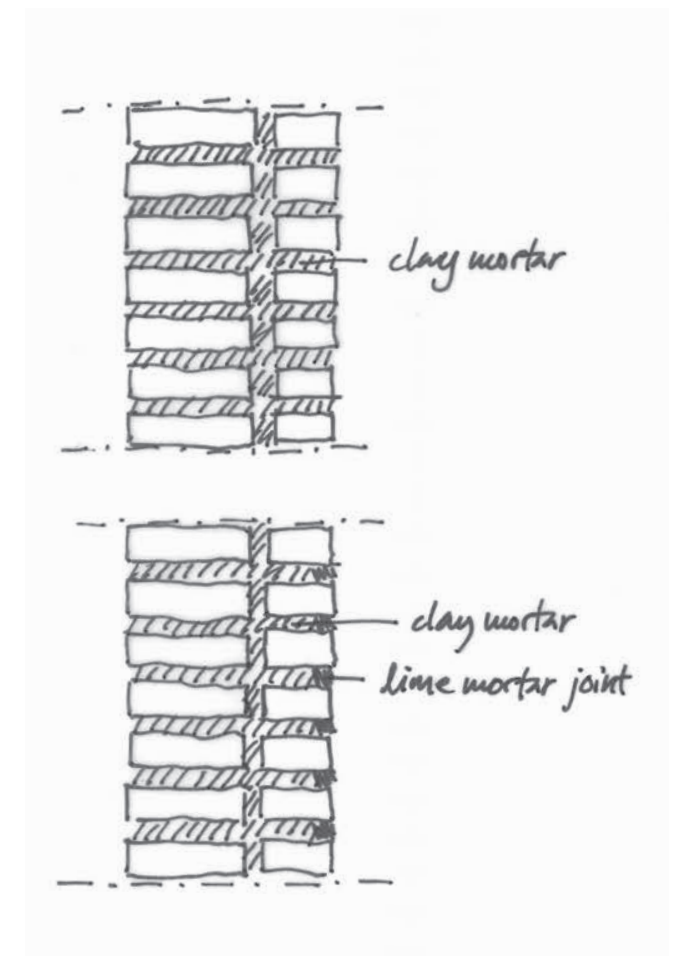
Wattle-and-daub is an ancient example of vernacular clay building. Used to fill walls in half-timber construction among others, it is made by weaving reeds and then plastering it with a mixture of clay and straw or other waste from the local agriculture (K. Taawo, personal communication, February 25, 2022). This material test was exhibited at Sörmlands Museum in Nyköping as part of their exhibit *Mera lera*, that I visited early spring 2022.

Conversations and own explorations

In my explorations of ceramics and clay building I contacted craftsmen who specialize in clay building in their practice; Johannes Riesterer and Ulf Henningsson. Johannes is an oven-mason and clay builder and Ulf Henningsson specializes in building with clay and straw. Through conversations with them I have gained an understanding of the material in practical knowledge and in its potentials.

In my conversation with Johannes (personal communication, February 21, 2022) we spoke about the versatility and potentials of the material, but also the general lack of knowledge surrounding it in the building industry. Johannes utilizes several different clay building techniques in his practice but frequently uses a clay mortar in the construction of kilns and in bricklaying, both with fired and unfired bricks. The clay mortar, consisting of sand and clay, is durable enough to be used in outdoor settings and has the advantage of being softer than a hard lime-cement mortar, which puts less strain on the bricks with temperature and humidity changes.

However, the clay mortar can feel very different to work with if you are used to conventional mortar, which might be why there is a reluctance to using it on a broad scale in building, according to Johannes. This goes for other clay-based materials as well, where a general knowledge of the material and its craftsmanship seems to be lacking. A part of his practice therefore revolves around educating and promoting the material and its potentials in building.



Sketch of how clay mortar could be used in a brick wall. Top: Only clay mortar. Down: Clay mortar is used in the bricklaying and the exterior joints is then finished with a lime mortar to further protect it from weather and erosion.

Clay building typologies
Conversations and own explorations



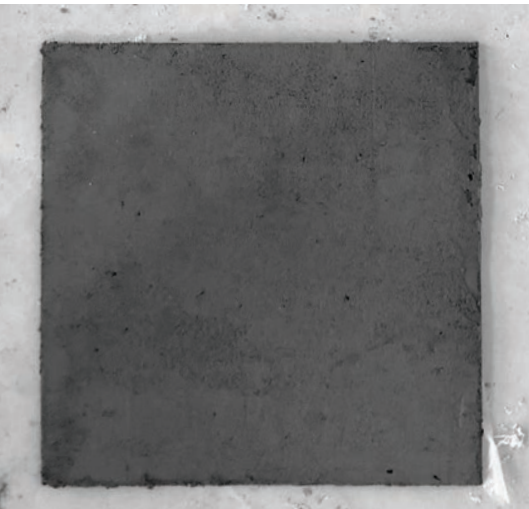
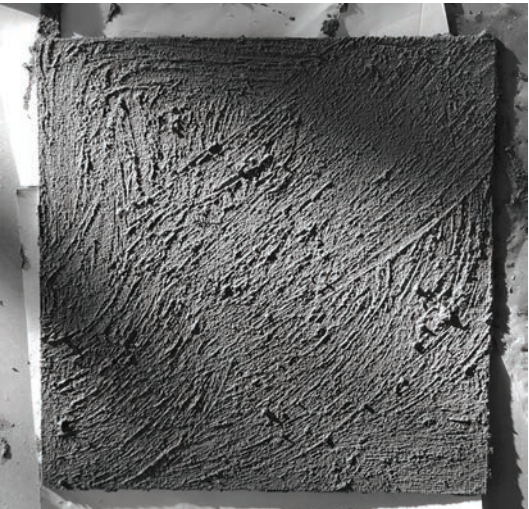
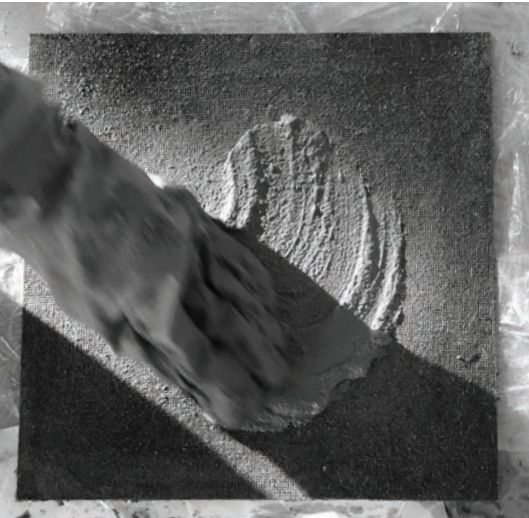
1. Ceiling, with and without finishing coat
2. Tools and clay slurry 3. Spraying previous coat
with water between layers 4. Applying
5. Leveling 6. Compacting and smoothing

Clay plastering

I spent an afternoon with Ulf Henningsson at Gunnebo Slott in Mölndal (March 7, 2022), where he was currently plastering the ceiling of the newly built orangery with finishing coats of clay plaster. Ulf showed me the tools used and explained the process of clay plastering.

The building is a reconstruction of the original building made according to original drawings from the 1700's, mainly made in timber. The clay plastered ceilings is made by first applying a layer of rough clay plaster on bamboo reeds that are fastened to the wooden surface and when it is partially dried a finer layer of clay plaster is applied. If an even smoother surface is wanted a finishing layer of extra fine plaster can be applied, which is what Ulf and I did during my visit. The finishing layer was pigmented with dust from bricks in another part of the orangeries, which gives it its red colour. We applied it in a thin layer to the damp previous layer with a large brush, leveled it with a tool with a felted surface, and finally compacted and smoothed it whit with a metal trowel.

While visiting Ulf Henningsson at Gunnebo Slott, he helped me to make a material test tile with the clay plaster he had used on the ceilings of the orangery. On a piece of wooden board that I had brought with me, we first applied a rough layer of clay plaster to bind it to the surface of the board. Then a second layer of fine clay plaster was added and smoothed and compacted with a metal trowel, which I was able to do with my new plastering skills that I had learned when plastering the ceilings with Ulf.



Clay building typologies

Conversations and own explorations



Clay plaster test tile 1: Control tile made with fine clay plaster at Gunnebo slott.



Clay plaster test tile 3: Course clay plaster mixed with gravel and pressed with mixture of dry clay, sand and rocks.

A rough and earthy texture can be achieved in rammed earth or by pressing a coarser mixture of clay and sand into the still wet clay plaster, as seen in the material test tile.



Clay plaster test tile 2: Extra fine clay plaster, sealed with linseed oil and polished.

By applying a finishing layer of fine clay plaster a very smooth and refined surface can be achieved and if treated with linseed oil it can be polished, which was used on the material test tile. The surface becomes shiny and durable as the linseed oil hardens and seals the clay to make it more water resistant.



Clay plaster wall painted with red egg tempera paint, containing linseed oil, pigment and eggs. Seen at visit to Halmfrid, a private villa near Alingsås, Sweden.



Pigmented rammed earth wall at visit to Korpaberget, a private villa outside Alingsås, Sweden.

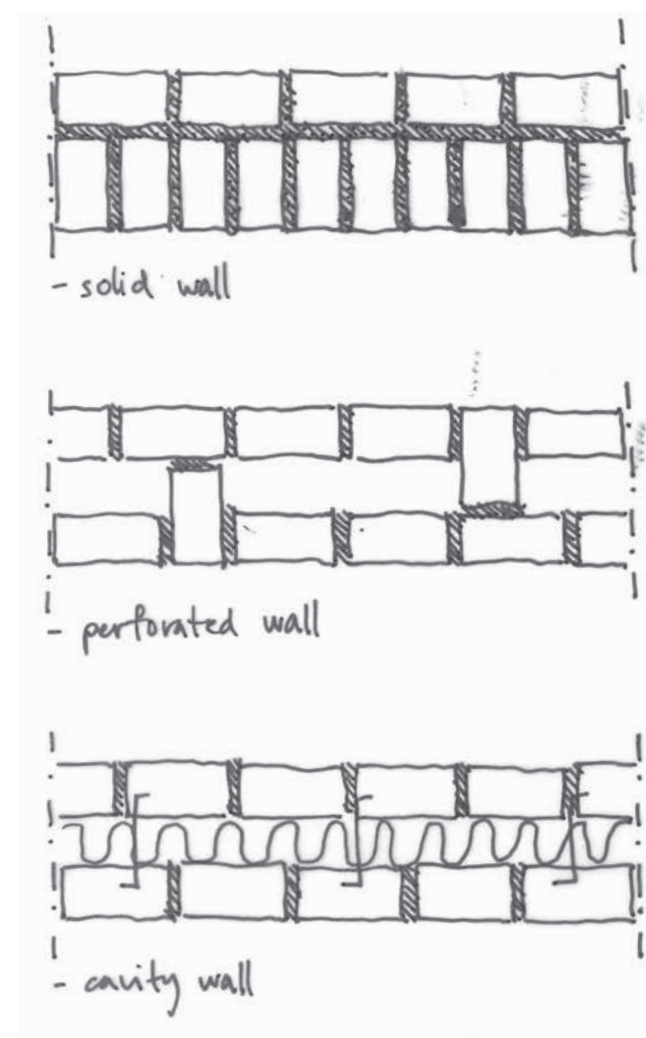
Clay building typologies

Brick building

Brick building

With the abundant access to clay in the region of Scania, brickmaking has been a practice here since the Middle Ages. Before the industrial revolution brickworks were small and local and were often founded as part of larger construction projects. (Rosborn, 1985) Bricks were made by hand using the local clay and simple methods, with the quality and colour of the brick being dependant on the composition and of the clay and the firing of the bricks. With industrialization in the latter half of the 1800's brick production grew in the region, building larger kilns for firing and using the railway to transport the finished bricks. Industrialized methods using machines for different stages of production were implemented around the turn of the century, but the production always depended on the local clay findings. (Bjerning, 1985)

The increased local production of bricks brick building would become dominant, around the Scanian railway stations small towns grew, defined by a uniform brick architecture built with local bricks. Apart from this phenomenon, brick building and architecture followed the ideals of the times and during the 1900's new techniques for building with bricks emerged in order to meet higher standards of energy efficiency and insulation. (Tågil, 1996)



Sketch of different principles of brick construction, based on descriptions and drawings in: Gustavsson, T. (2011). Ny teknik vinner inträde, in B. Magnusson Staaf (editor), Modernismens tegelfasader (p. 86-117)



Brick wall, St. Petri Church 2022

Clay building typologies

Brick building



St. Petri Church
Sigurd Lewerentz
Klippan, Sweden
1966

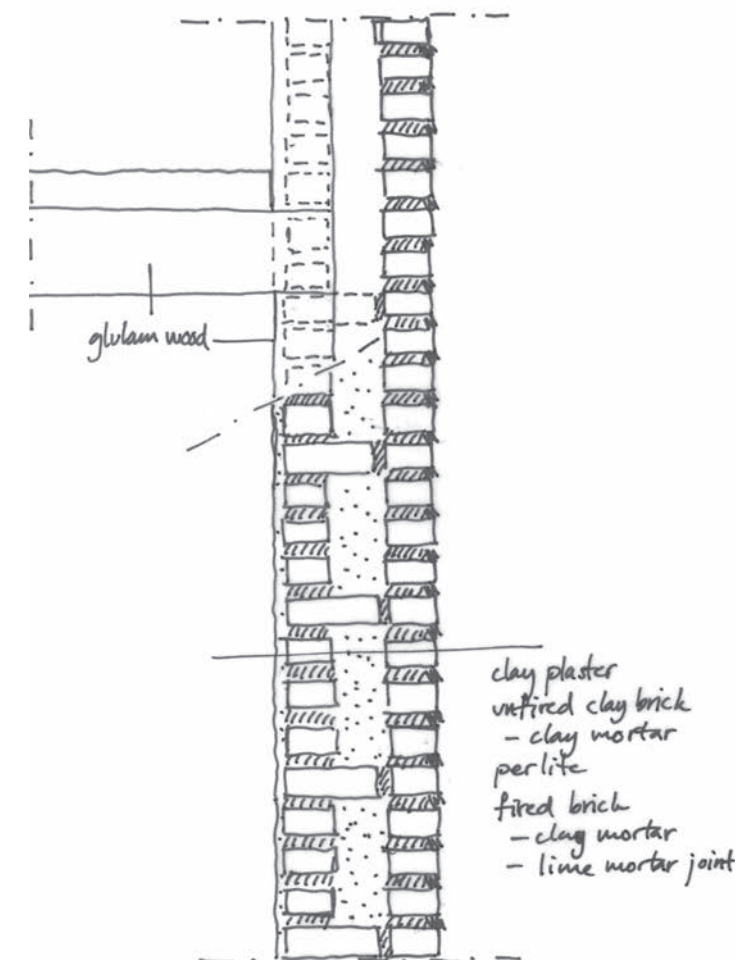
One of the masterpieces of Swedish brick building can be found in Klippan in the northwest of Scania, utilizing local bricks from Helsingborg. The various brick techniques represented throughout the building are can be seen in brick arrangements, mortar joints, detailing and elements of interior design utilizing the brick in the furnishing of the building.

Although the materials of brick and large steel beams are rough and hard, the space is warm and inviting. Through material additions in brass, wood, brown glazed ceramics and the baptismal font made from a large shell, the roughness is broken up. The sound of dripping water is the only sound present in the otherwise silent church.

To explore the material further I contacted architect August Orrling (personal communication, March 4, 2022) who has dedicated his career to brick architecture. He told me about his appreciation with the material that lies in the craftsmanship that can especially be seen in old brick architecture, in the grammar, or tectonics, of the conventional brick and how it reflects in the details. What make bricks into a unique building material differentiated from the clay it is made from is the format of the brick. The shape and proportions are what determine its versatile nature in building, with the possibility to create ornament or patterns though laying the bricks in different bonds. The grammar of the brick is what impacts the architecture, in how and where openings are placed in relation to each other and the wall and in how the brick architecture is “read” by the observer.

We also spoke about the potentials of how we as architects could create brick architecture with sustainability in mind, as the firing of new bricks demand a lot of energy and often depend on fossil fuels. Strategies to turn to include the use of reused old bricks, using softer mortars that would also make future reuse of the bricks possible, and the potentials in creating energy efficient brick walls for the Nordic climate with better insulation properties. In finding a solution for the latter August has in his work experimented with using Foam Glass blocks as binders in a cavity wall filled with perlite, implementing it in the building of his villa.

Another way of reducing the energy demanded and emissions produced in the production of new bricks in building could be to incorporate unfired bricks in brick building, similar to examples found in in older buildings, where the facade is made with fired bricks with a back wall of unfired clay brick (Tägil, 1996). The sketch I made implements this as a cavity wall with an exterior of fired bricks and interior of unfired clay bricks that also acts as binders to the exterior wall, filling the cavity with perlite for insulation. Drawing inspiration from half-timber construction, pillars of wood are integrated into the interior wall to increase its loadbearing capacity and connects to the beams carrying the second floor and roof structure.



Clay building typologies

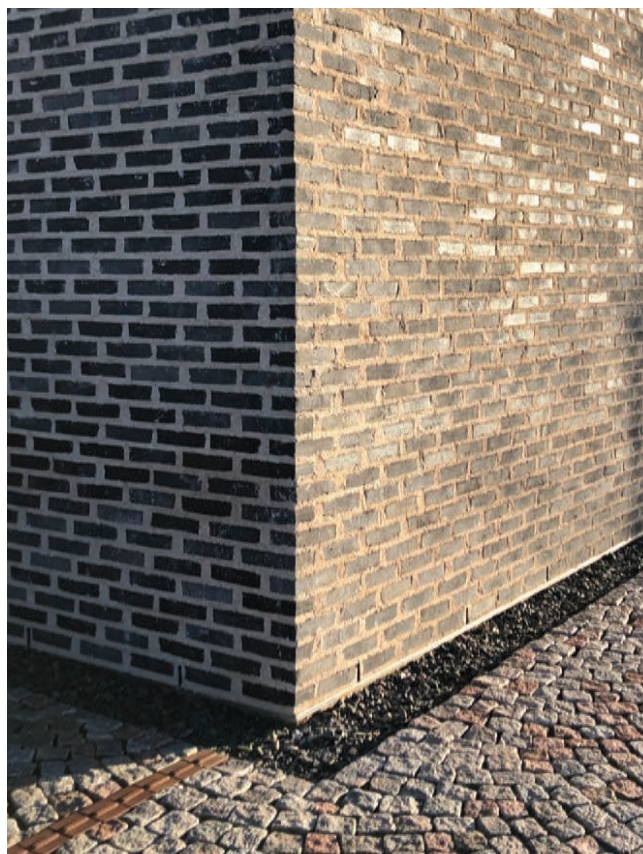
Brick building



Distorting the brick surface

By painting a brick wall its materiality is erased but the general texture of the brick wall remains. I still see the individual bricks and the shadows they cast, but forget about the mortar joints. In the instance of setting the bricks in a three-dimensional pattern this is exaggerated in the play of shadows.

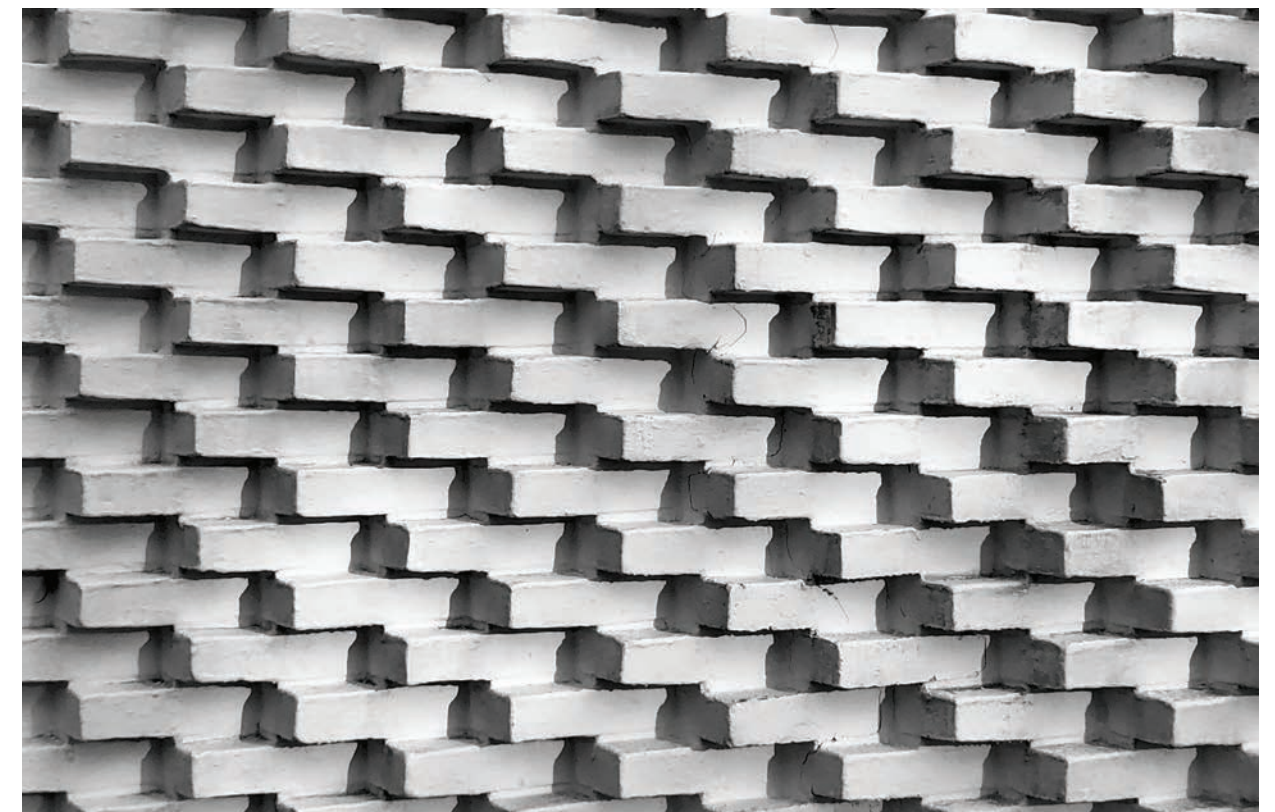
Louisiana Museum of Modern Art, 2022



Bruksgården Gipp Arkitektur Höganäs, Sweden 2018

Gipp Arkitektur's new addition to offices housed in a disponent's villa from 1805, showcases a contemporary use of the brick facade as an architectural element in the context if Höganäs.

In a conversation with architect Jonas Hesse at Gipp Arkitektur (personal communication, March 22, 2022), he explained the referencing to the local heritage of brick building. The architecture explores the solid brick wall, which is accentuated with the deep set windows and expands on the concept of the mortar joints in between each brick, that are wider than what is commonly done in bricklaying. The light colour of the lime mortar contrast the dark brick and is also reflected in the interiors of smooth cast-in-place concrete plastered in white.



Context

Höganäs and its clay

Situated in the north-west of Scania, the southernmost region of Sweden, Höganäs is a town and municipality of 14 000 inhabitants. The landscape of the region is defined by the closeness to the open rural landscape, the sea and the rocky peninsula and nature reserve of Kullaberg.

Höganäs' heritage relating to the clay rich earth is determined by the brick- and ceramic production that began here in the early 1800's. The clay was a byproduct of the coal-mining industry that started here in the late 1700's but soon proved to be an asset in industry too. Industry for brick production and industrial ceramics was established in the 1820's and the production of household pottery began in the 1830's, all of which was fired in kilns heated by the local coal. (Höganäs Kommun, 2021)

Since production started, many companies specializing in different types of ceramics – homeware, industrial ceramics, tiles and brick production – have operated in Höganäs over the years. But what have arguably become the most famous are Höganäs Keramik's brown salt glazed vessels that have been produced here since 1835.

The ceramic heritage in Höganäs has its roots in both craftsmanship and industry, with large scale production and ceramic artists practicing side by side. Ceramic designers and artists have since its early days been part of the production and through collaborating with them, especially in the latter half of the last century, Höganäs has gained its reputation as a center for ceramic artistry and craftsmanship. (Stiftelsen Höganäs Keramiska Center, 2022)

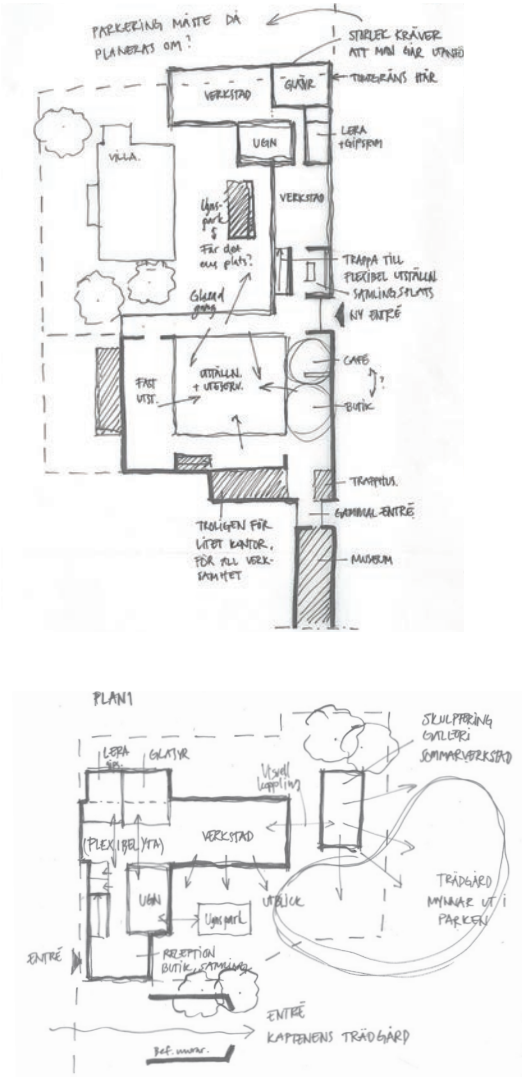
“Critical Regionalism can be understood in different ways: as a compositional understanding of the ground figure of the project; as an interest in the cultural and material histories of a specific site; or as an awareness of the technical constraints and opportunities that a site can imply.”

(Szacka & Patteeuw, 2019, p. 4)

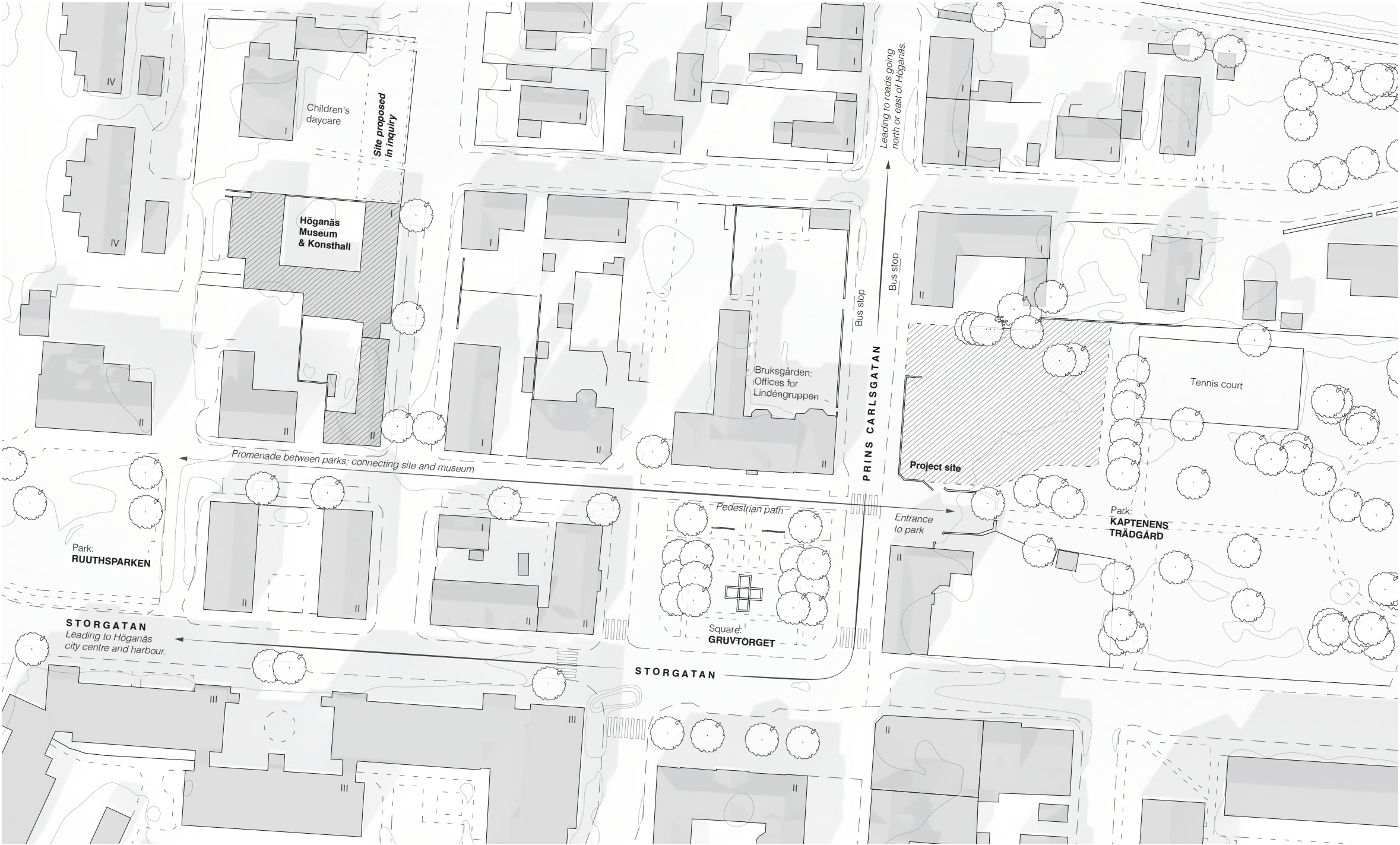


- 1. Keramiskt Center and Höganäs Keramik's old factory
- 2. Höganäs Museum och Konsthall
- 3. Site
- 4. Town centre
- 5. Harbour and beach





Sketches for evaluating potentials of the program on the two sites.



SITEPLAN 1:1000

The site is situated in the eastern parts of Höganäs, by Gruvtorget and Kaptenens trädgård, an area with several well preserved old buildings and cultural significance. Once a thriving space with many public functions, today it is mostly residential area with villas and multifamily dwellings.

The future plans for Keramiskt Centrum is to merge with Höganäs Museum och Konsthall, has proposed the site for a new building as the plot neighbouring the museum to the north that currently houses a

children's daycare. Although the plot would provide enough space for a new building, the site is situated in a complicated context with three other buildings from different periods (1810's, 1920's and 1970's) and has a far-off placement from the square and flows of people in the area. Due to these aspects, as well as a general suitability in the scope of the thesis, another option for a site was investigated.

The chosen site for the thesis is instead an empty plot currently used as a parking lot, situated between Gruvtorget and Kaptenens trädgård. Only 100 meters from the museum, the site of 1500 sqm connects to the museum via a promenade that also connects the two parks. The proximity of the museum and the new site would still make the collaboration possible, as well as activating the area with pedestrians.





1. View from square. The plot is walled off from the street and pavement with a large brick wall.



2. Entrance to Kaptens Trädgård, framed by the two brick walls with salt glazed adornments and view of a sculpture in brick.



3. View from park. The plot is currently a parking space covered in gravel with a hedge dividing the area.

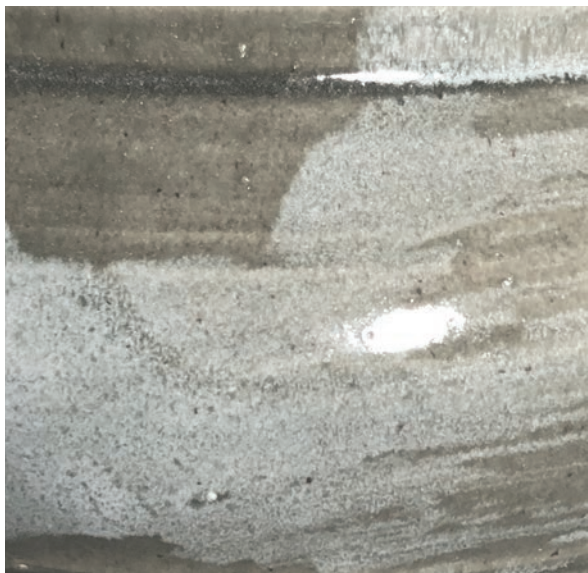


Material palette from buildings near site.

The heritage connected to the local ceramic industry can be seen as traces in the built environment of Höganäs. In the brick buildings and walls, the salt glazed tiles and adornments, or in the masonry buildings from the 19th century built from the riches that the mining and ceramic industries provided.

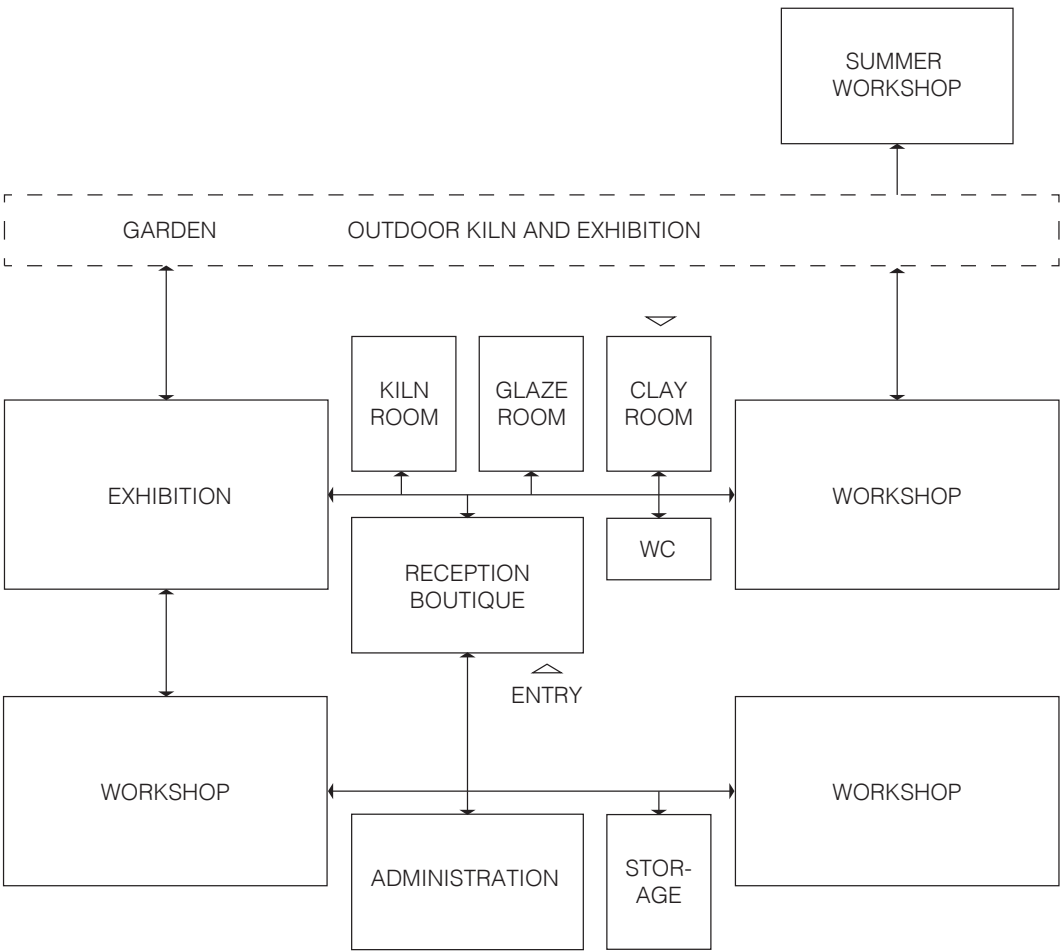
Design proposal

<i>Program</i>	–	<i>Entance floor</i>	–
<i>Upper floor</i>	–	<i>Workshops</i>	–
<i>Exhibition</i>	–	<i>Exterior</i>	



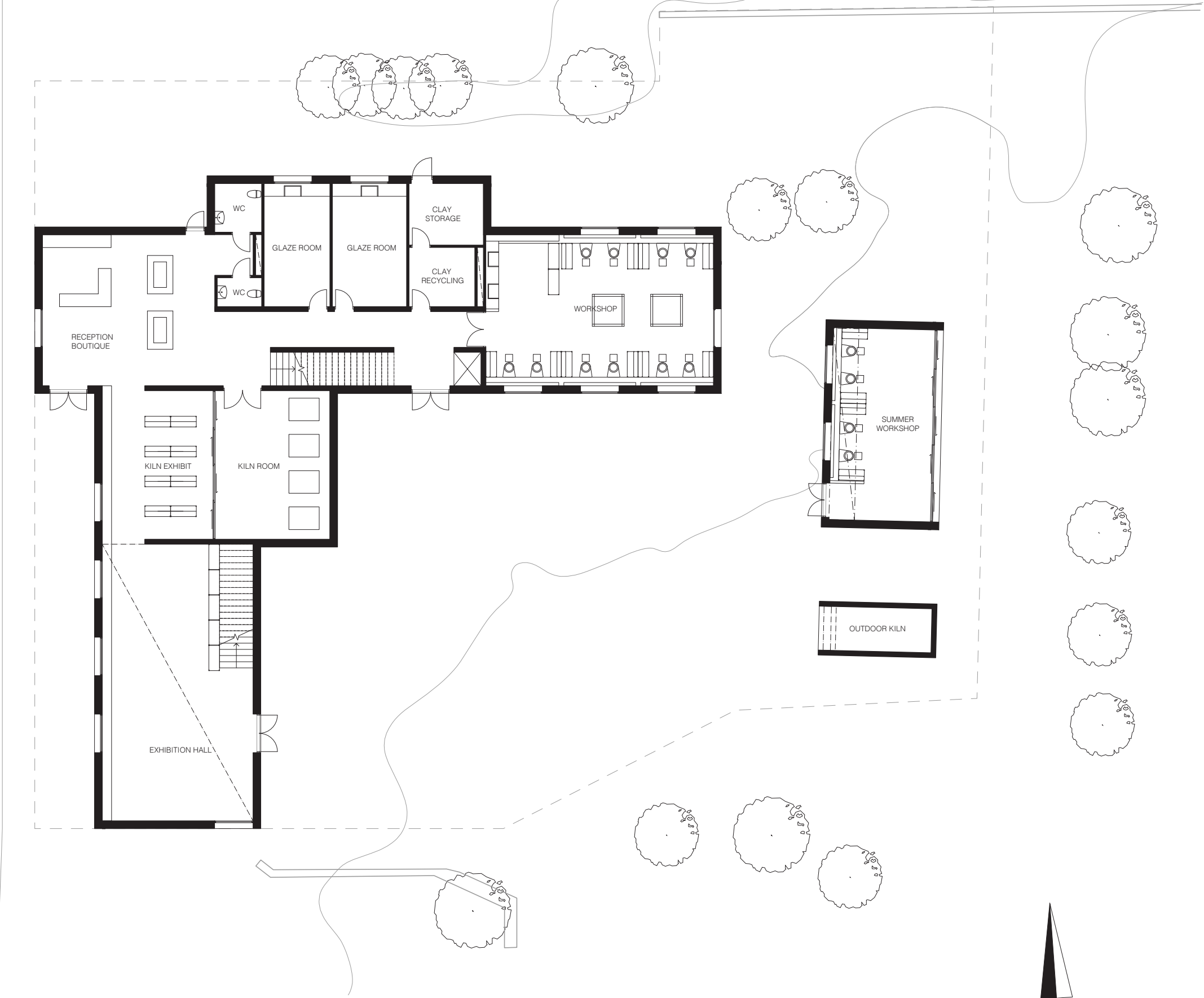
With the aim of creating a space for ceramic artists and enthusiasts alike to practice ceramics, exchange knowledge and participate in the creative heritage of Höganäs, the building design is defined by the material at the center of the craft. It is a representation of the ritual of ceramics and the stages of refining clay, from raw earth to glazed vessel, translated into architecture by drawing from *Material explorations and observations* and in interpretation of building techniques found in the local building tradition.

- 1. The raw earth – Clay bricks, and textured unfired clay.
- 2. The cared for and processed unburned clay – smooth clay plaster walls.
- 3. The fired – Bricks and tiles.
- 4. The refined – Glazed brick and tiles.



Entrance: Reception and Boutique	60 m2
Exhibition	180 m2
Workshops	
Kiln room	38 m2
Glazing, two rooms	38 m2
Clay storage	10 m2
Clay recycling	10 m2
Workshop space	222 m2
Administration	40 m2
WC	
Summer workshop	44 m2
Extended space in summer	

Entrance floor



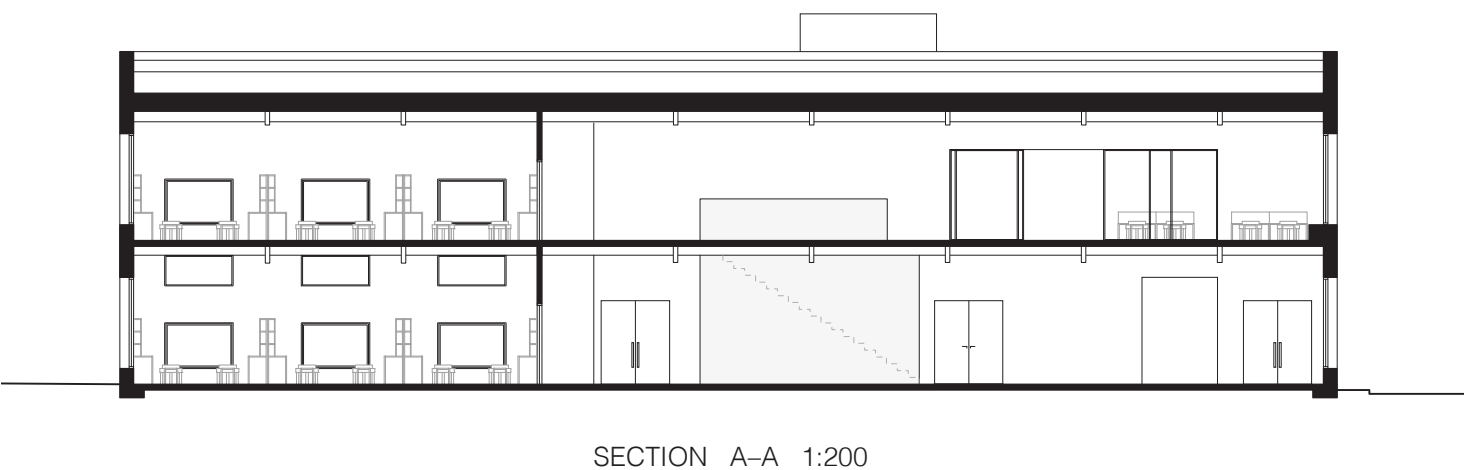
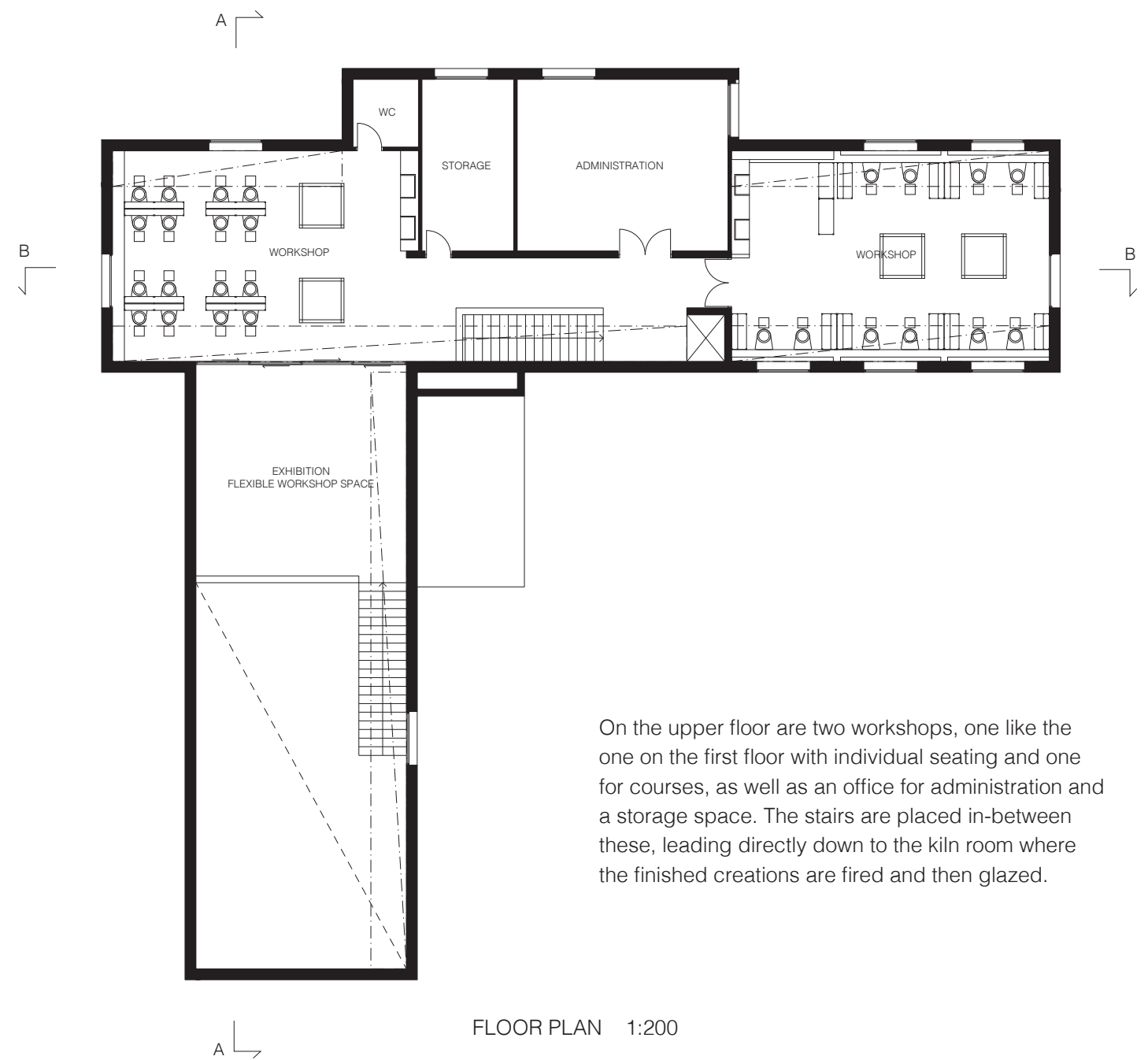
FLOOR PLAN, ENTRANCE FLOOR 1:200

The first floor in the proposed design houses the exhibition space and a ceramic workshop. Exhibition spaces are placed towards the square and entrance to Kaptenens Trädgård, meeting the public. Workshops and accompanying functions, such as glaze rooms and clay storage, are placed perpendicular to this, facing the courtyard and park. In the middle of the building the kiln room is placed, close to the glaze rooms where vessels are glazed in between the two firings and opening up to the exhibition space where the finished ceramics are exhibited to the public.

Both exhibition and workshops are accessed through the common entrance that is reached by walking along the facade from Gruvtorget and the promenade that connects the building to the museum and parks. Here is the reception and boutique where you can buy ceramics produced in the building, a book about the history of Höganäs or a coffee to drink from a handmade cup outside in the courtyard.

In the courtyard facing the park is an atelier that extends the workshop and exhibition spaces in summer when most visitors arrive, an outdoor kiln for raku firings and salt glazing and extending the exhibition into a sculpture park.

Upper floor



To get to either of the workshops the visitor passes the stairwell anchored in a heavy wall of unburned earth. A rough texture to represent the first stages of the ceramic ritual and remind you of where the clay you are about to create with comes from.

Material as seen in Clay plaster test tile.

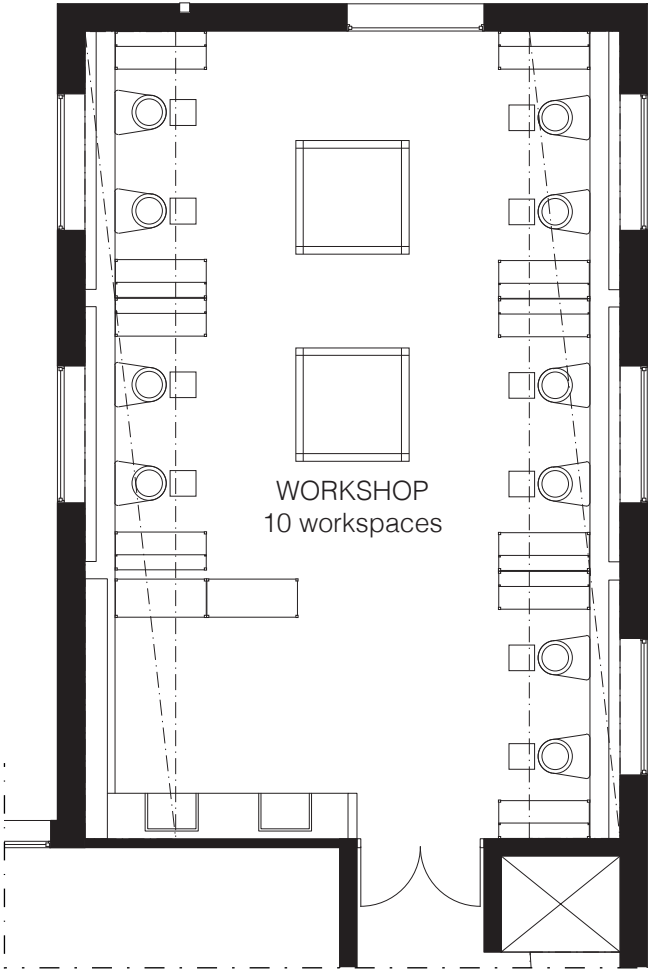
Workshops



Second floor workshop.

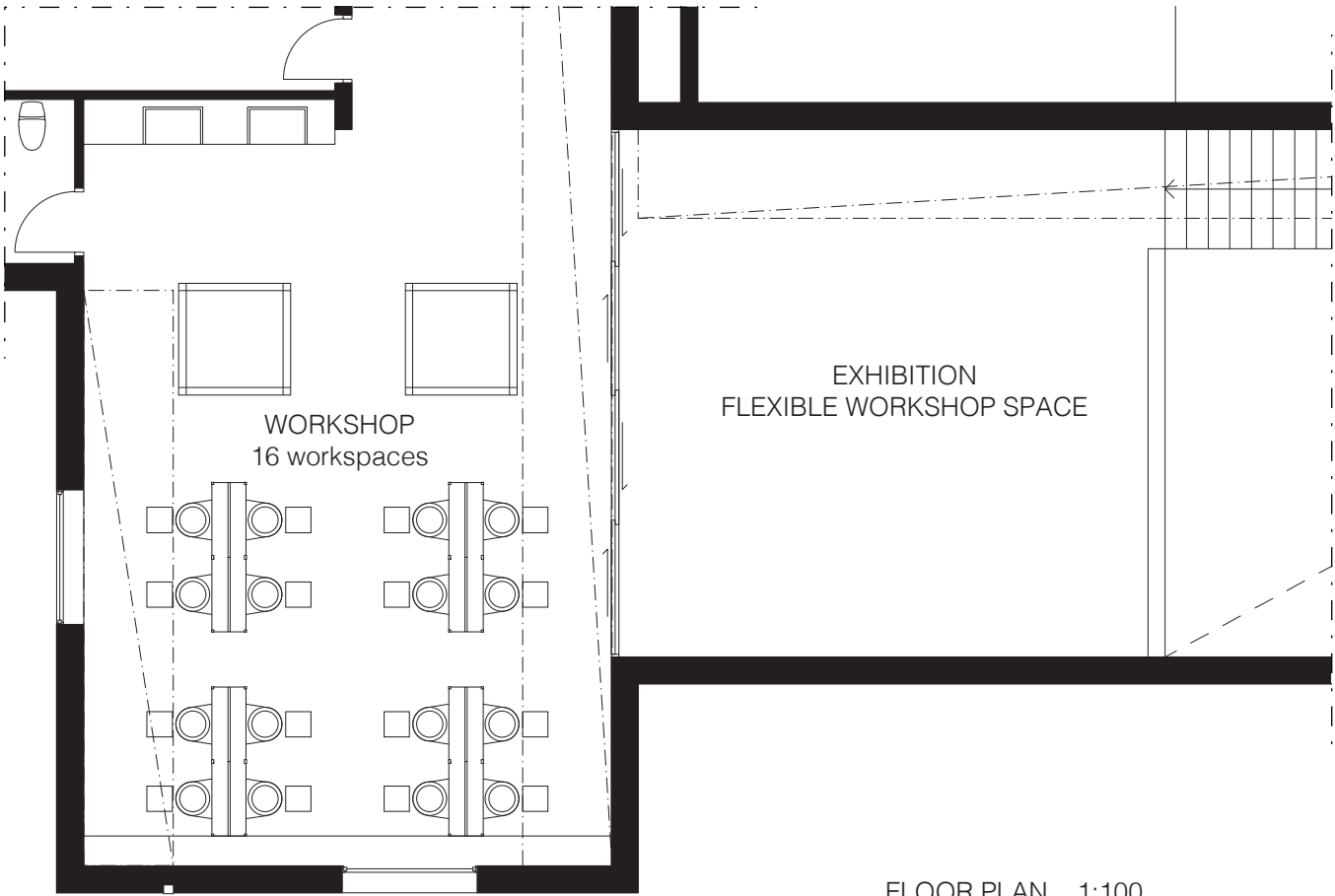


Light study of skylights.



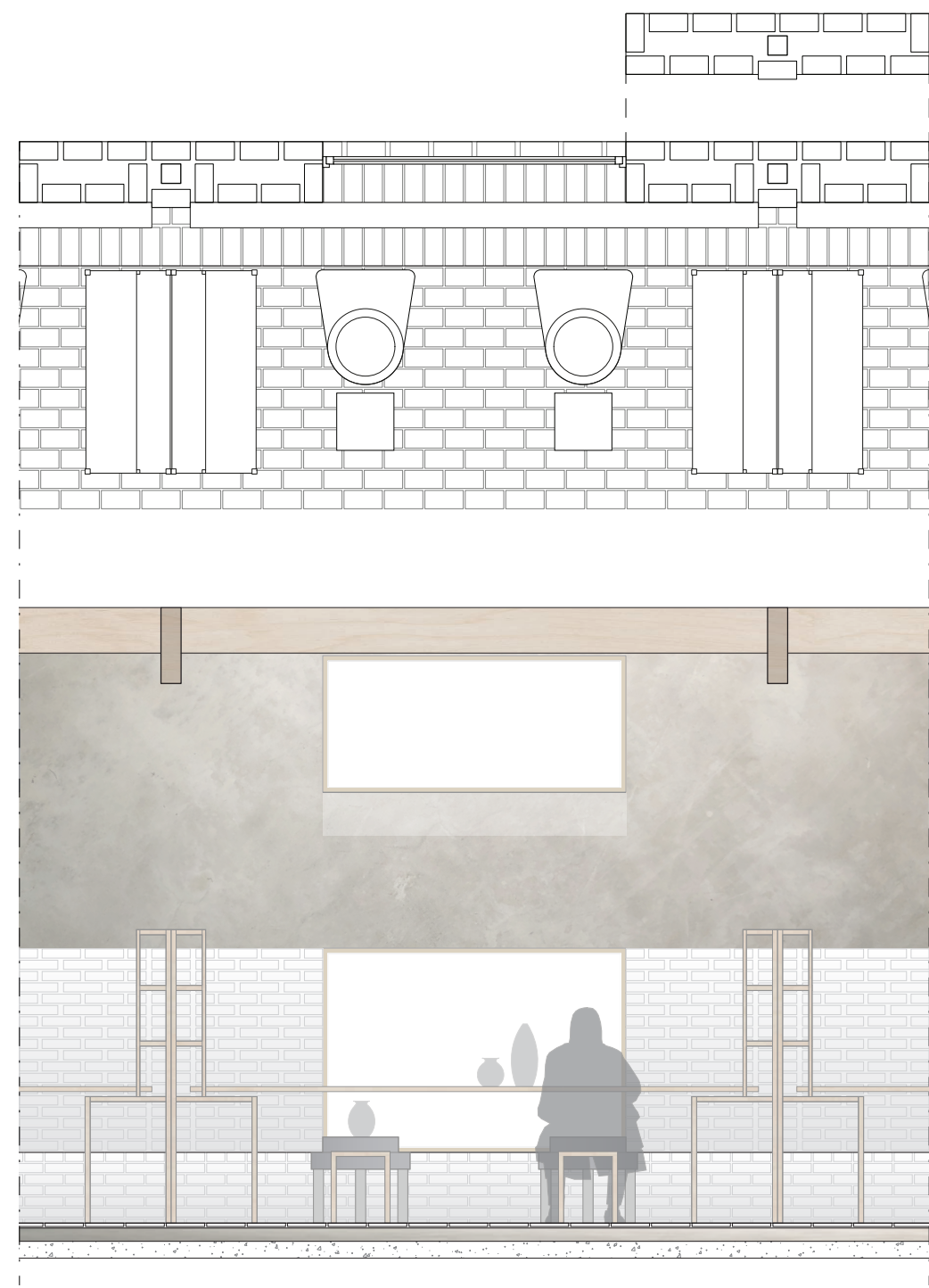
On each floor there is a large workshop with ten generous workspaces each. At the center are two large kneading tables for preparing clay or activities that does not require a throwing wheel. Water, tools, and additional shelves for drying are placed in the corner of the room.

On the second floor there is a workshop intended for courses and group activities. This space is connected to the mezzanine that is part of the exhibition space, separated by sliding glass doors. The mezzanine becomes a flexible space where visitors of the exhibition can view the activity in the workshops, be a place for lectures and seminars or it can become an additional workspace.



FLOOR PLAN 1:100

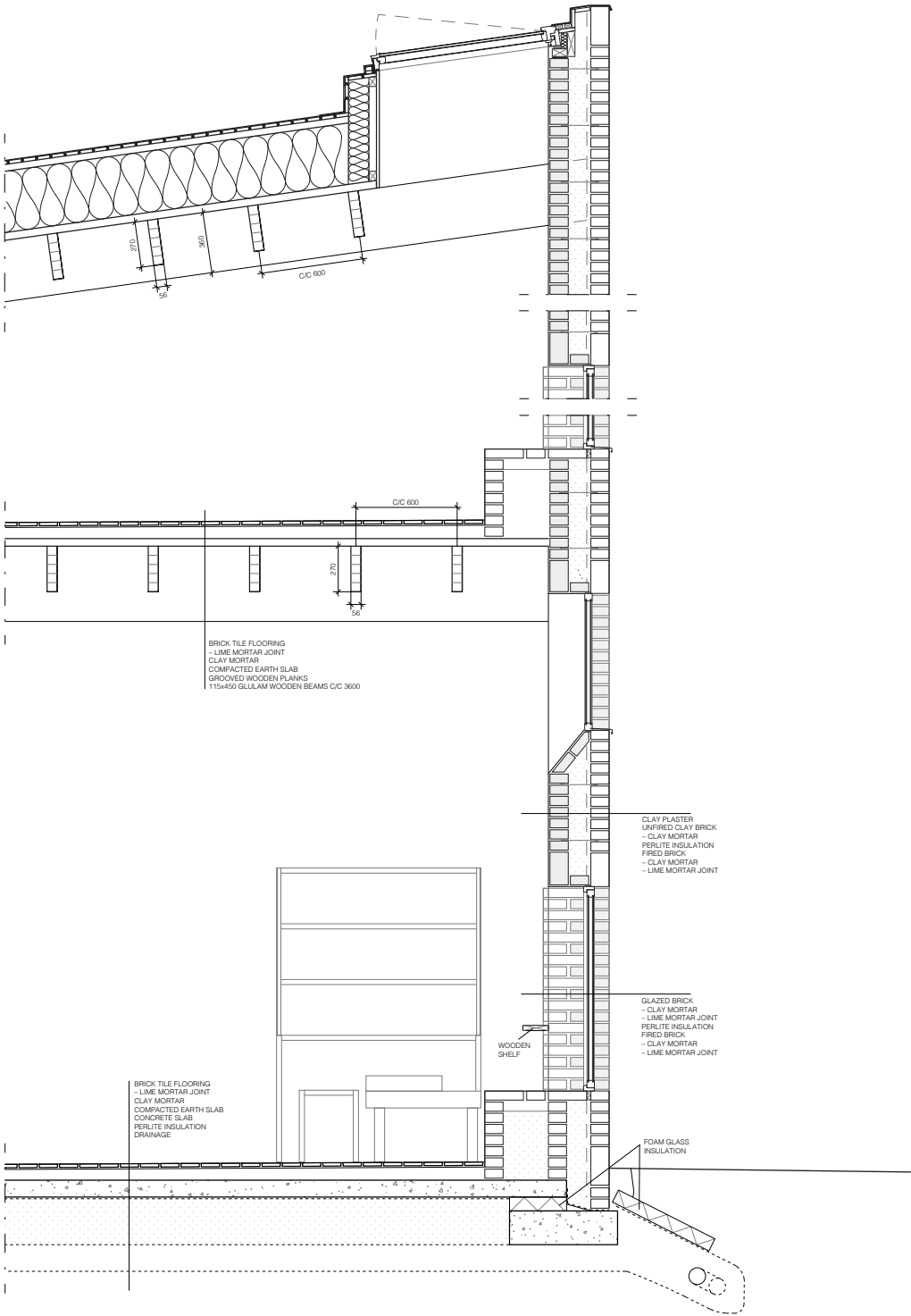
Workshops



DETAIL CERAMIC WORKSPACES 1:40

The design of the workshops starts with the person behind the throwing wheel and the ritual of ceramics. Whether in the workshops on the lower floor or upper floor, there is direct light and views to the outside from the window in front of you and indirect light from above. The lower part the wall and window niche in glazed brick becomes an extension of the workspace, with space to place tools, hang a

mirror or to set the newly thrown pieces to dry on the wooden shelf. The glazed brick along with the flooring made form brick tiles, allows for the space to be easily cleaned with water to remove splatter of wet clay or clay dust. Above the wet space the wall is a smooth clay plaster.



DETAIL CERAMIC WORKSPACES 1:40

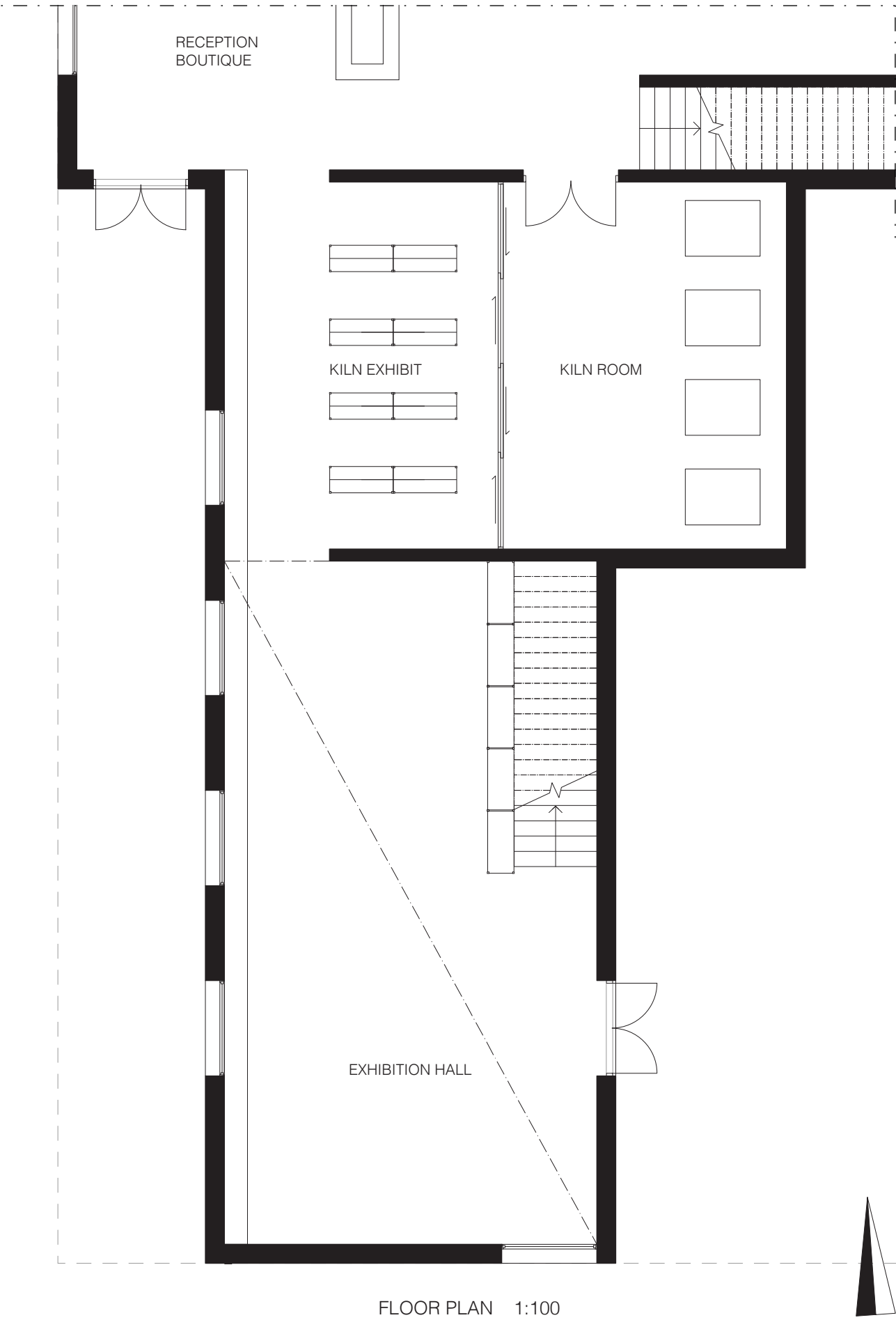
The exterior wall is a translation of local traditional building, drawing inspiration from brick building and half-timer building techniques. It consists of an exterior facade of fired brick and a back wall of unfired bricks that are supported by a framework of glulam beams to carry the load of the second floor and roof structure. The bricks are layed with a clay mortar with an exterior lime mortar joint and the interior is plastered with clay plaster.



Light study of window.

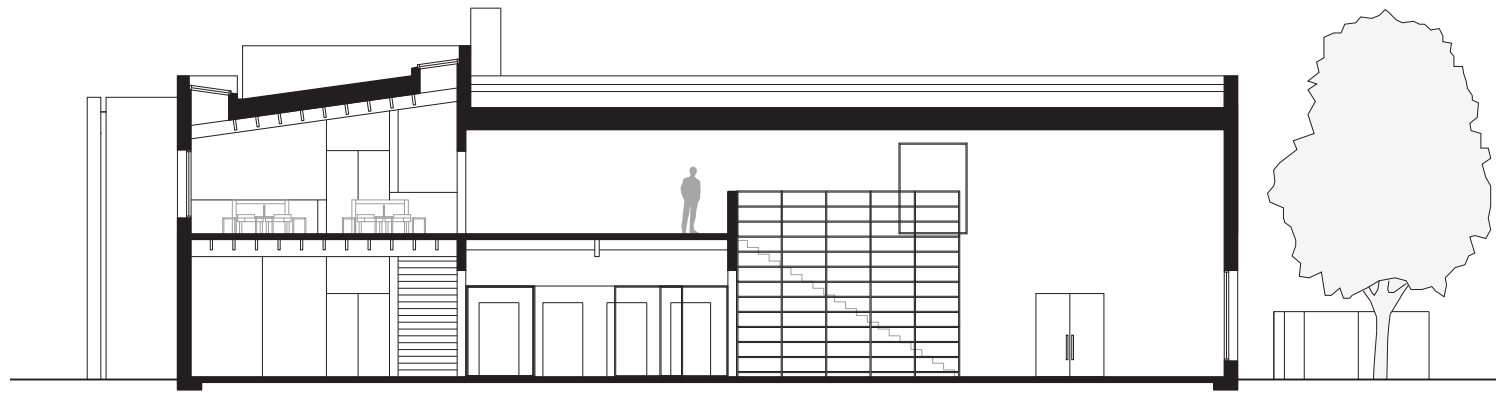
The exhibition starts by passing the kiln room. Here, the ceramic ritual comes to its end and as the kilns are opened, so are the sliding glass doors to the kiln room and the newly finished ceramics are exhibited to the public. This space is closed off, warm and intimate with brick walls and a wooden floor and ceiling.

It is a space where the visitor is invited to view the ceramists at work, loading and unloading the kilns for the first bisque firing and the second glaze firing, sharing the experience of seeing the finished ceramics for the first time.



FLOOR PLAN 1:100

Exhibition



SECTION B-B 1:200



Light study of skylight.

When passing the kiln exhibit into the exhibition hall the space opens up to double ceiling height lit by the skylight that runs along the eastern facade, lighting the wall and stairs leading up to the mezzanine. The smooth and ploished clay plastered walls and ceiling represent the finished ceramics that are exhibited here and is accompanied by the brick wall and stairs.

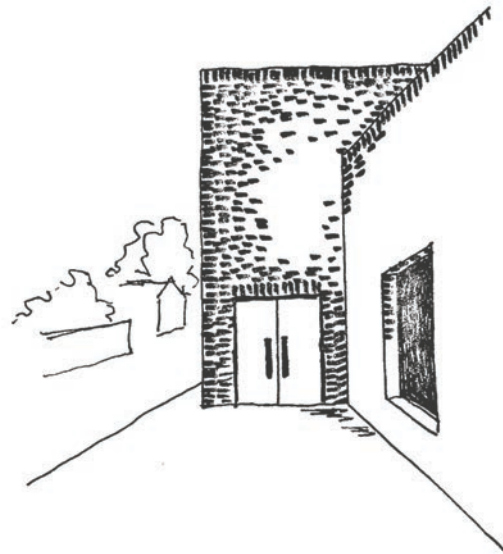


Supporting the stairs are towering sets of shelves that exhibit the finished ceramics. Both pieces historically produced locally and ones produced by the artists practicing in the new workshops.

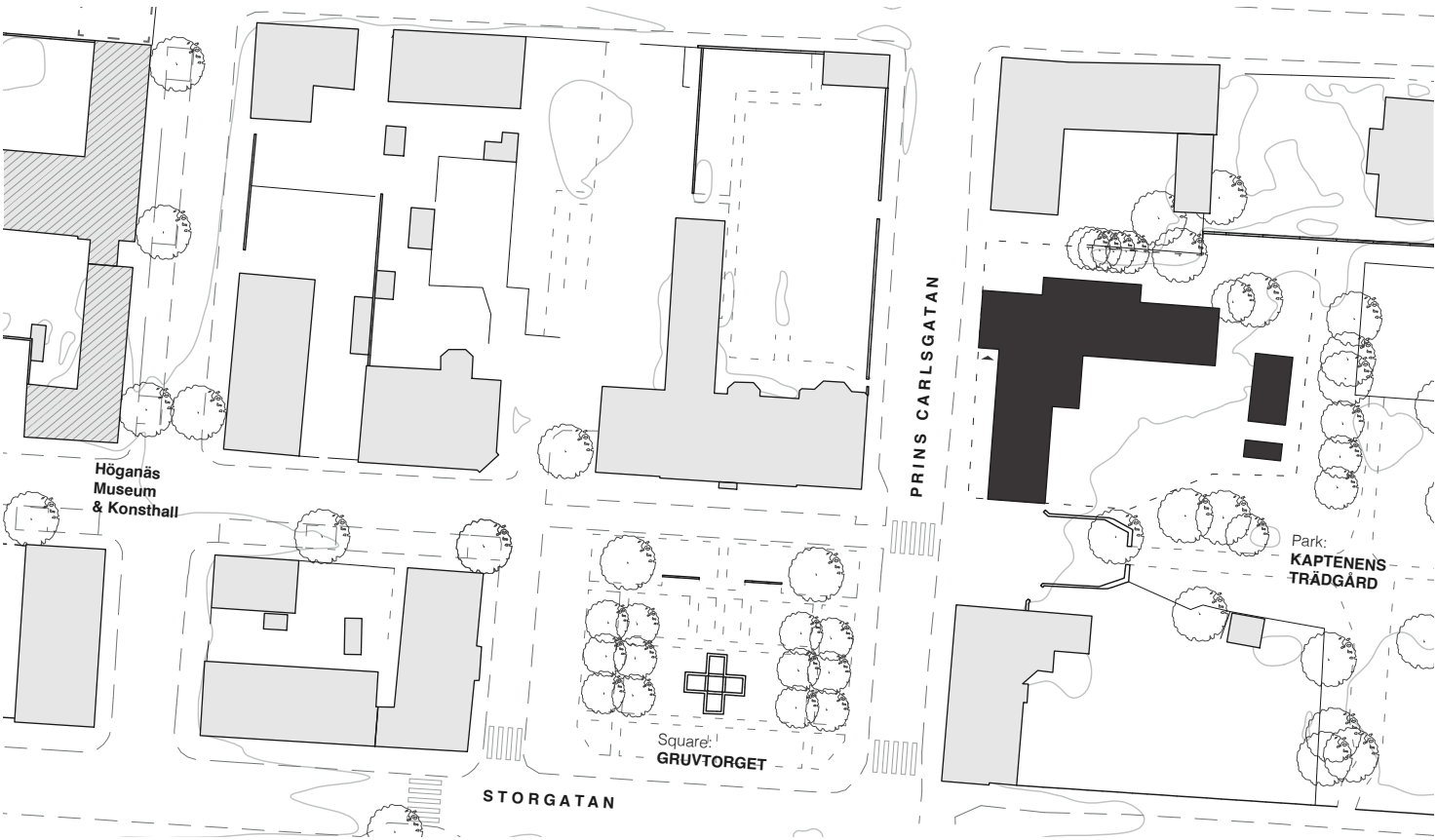
Exterior

The entrance to the building can be seen from the square and pedestrian path that connects the two parks in the area and the new building to the museum. The building frames the courtyard but opens up towards the park that could be used as a further extension of exhibits.

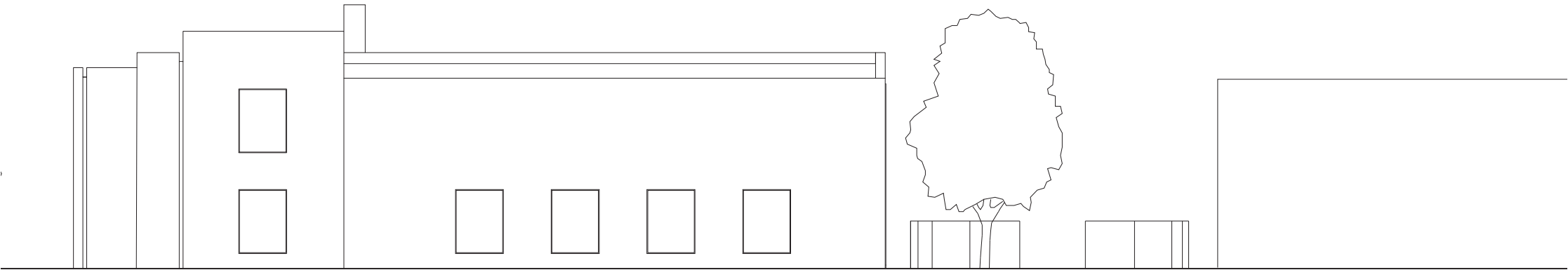
Facades are in a light brick reflecting the warm colours seen in the buildings around Gruvtorget and set with a wide lime mortar joint. This is accompanied by detailing in wood and metal for doors, windows and rainwater management. The brick wall is accentuated with deep set windows apart from in the workshops where windows are further pushed out, creating window nieches that becomes part of the ceramic workspace.



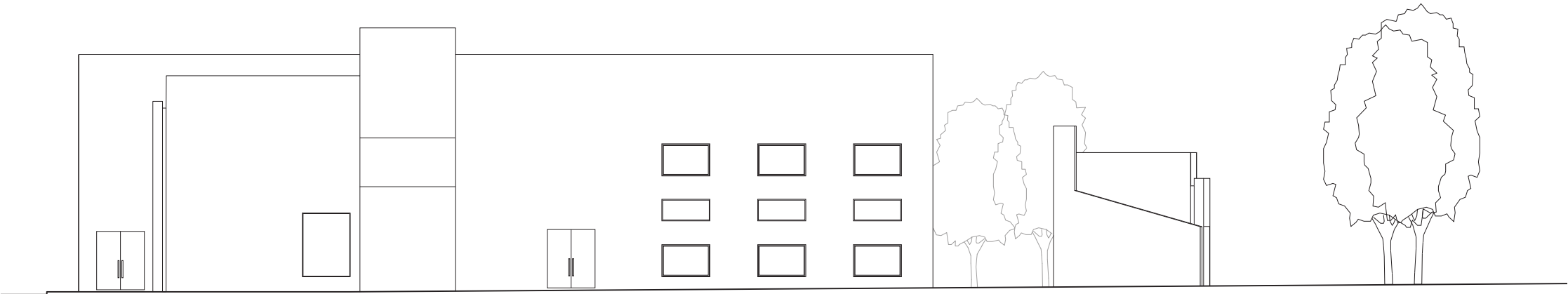
Sketch of entrance situation



SITEPLAN 1:1000

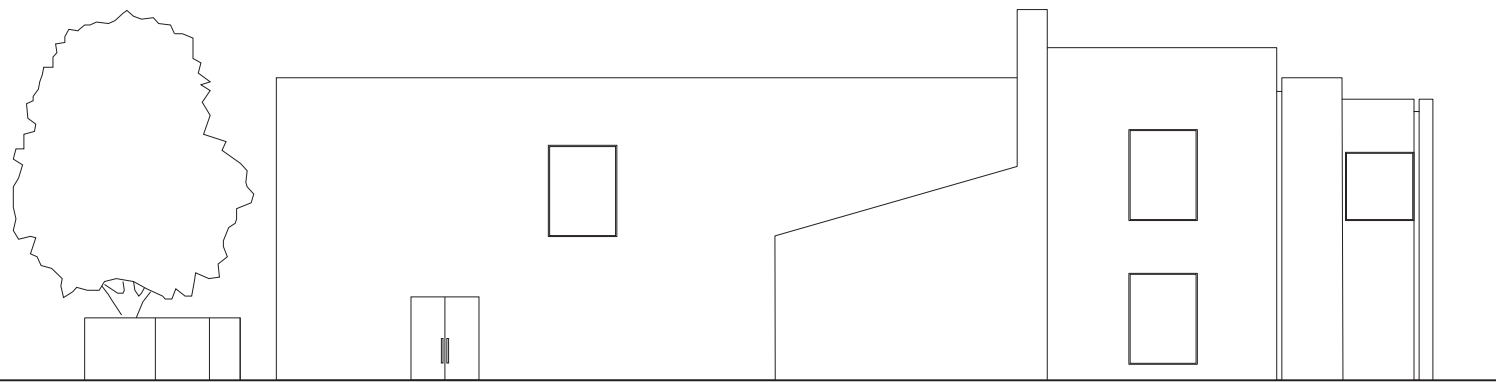


ELEVATION WEST 1:200

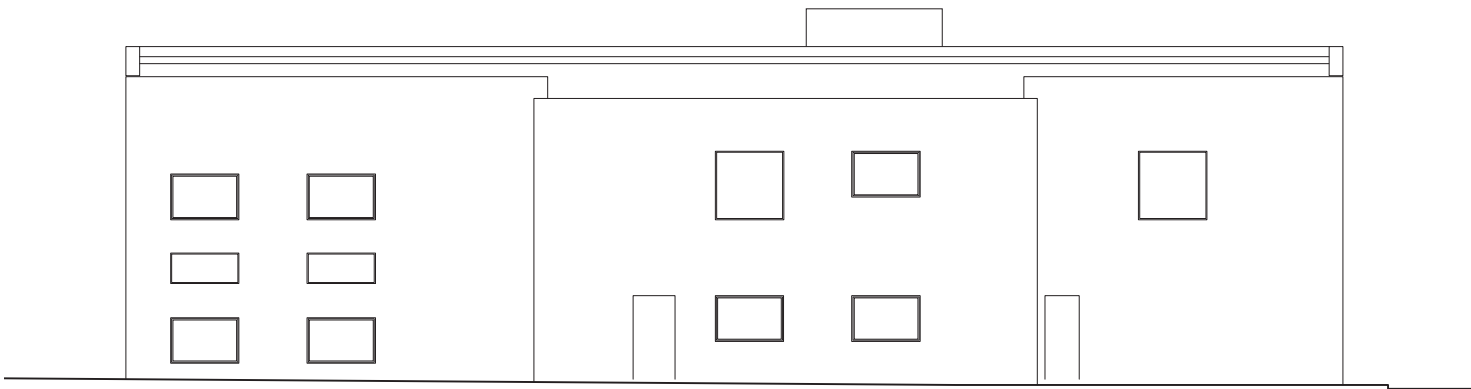


ELEVATION SOUTH 1:200

Exterior



ELEVATION EAST 1:200

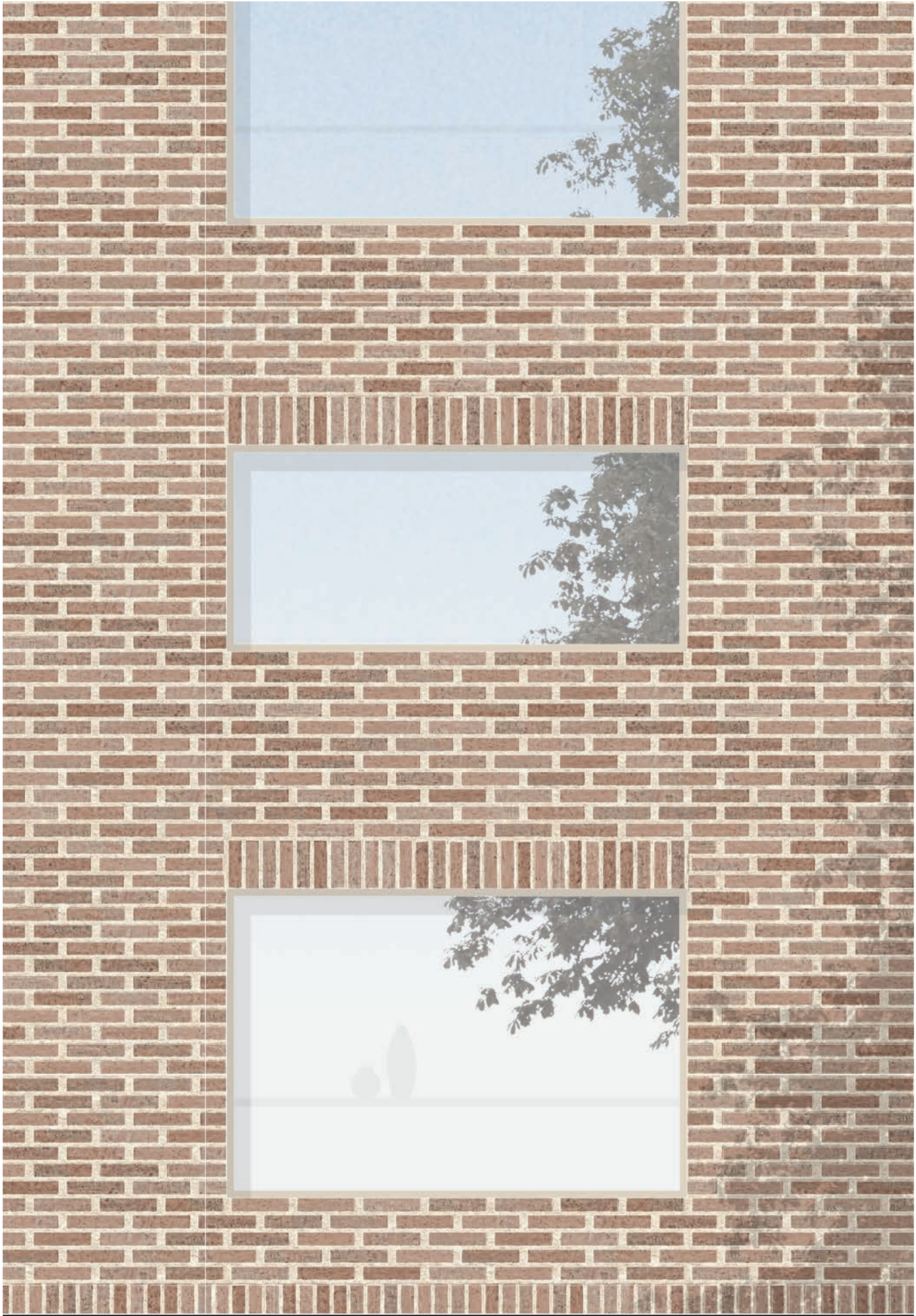


ELEVATION NORTH 1:200



Sketch of view form courtyard

In the courtyard the kiln room can be seen as pushed out of the main building volumes and takes the shape of a chimney. This houses ventilation of the room and reflecting the shape of the outdoor kiln in the courtyard, as well as being a nod to Höganäs' industrial heritage in the form of a sculptural element.



ELEVATION BRICK FACADE 1:20

Conclusion

Discussion

How could the material heritage of Höganäs; bricks, ceramics and clay building techniques, impact the design of a public ceramic workshop and exhibition space?

In investigating the material heritage of Höganäs through my material explorations, I found that building typologies that frame traditional building techniques found in the region could be divided into brick building and half-timber building and the material components they include. These material typologies are not the only ones that could be considered traditional building techniques within the region of Höganäs and Scania, where stone, wood, straw, lime etc. are also represented in local tradition. However, they are the ones based in clay and ceramics and are therefore closely associated with the material heritage in Höganäs related to the ceramic production that has been present in the last 200 years.

In applying the clay building techniques in my project, I drew ideas from my *Material explorations and observations* to gain knowledge of how the material could be implemented as part of my design. It resulted in the detail concept for the exterior wall – combining brick, unfired clay bricks and wood in what could be considered a hybrid of brick building and half-timber techniques.

The other aspect of Höganäs' material heritage is found in the craftsmanship of ceramics, which is of course ingrained in project with the activities that are to take place in the building, but also in how it was considered in the design. To showcase the craftsmanship of making ceramics it was important that it became part of the exhibition, inviting the visitors of the exhibition to view the workshop from the mezzanine and the kiln room being directly connected to the exhibition.

Working with clay and ceramics in the project and applying them in how the building would be experienced as architecture, I did so in terms of the surfaces and spaces, in interiors and exteriors. When making decisions in design I considered factors within three themes.

1. Function of material and space.
2. Materiality, tactility and atmosphere.
3. Craftsmanship and referencing the ceramic ritual.

The first theme was considered especially in the design of the program of the building, in how spaces were placed in relation to each other and on the site, as well as in how materials were applied to the spaces. In the instance of the workshops where the presence of water and clay demands materials that can become frequently wet, glazed bricks were used. This factor also determined why wood was used in the loadbearing structure and fired bricks in the exterior facades.

Materiality, tactility and atmosphere was considered to elevate the spaces with their functions in mind. In the case of the exhibition room connecting to the kiln room, it was important to convey an intimacy and warmth through material choices in wood and brick, and that materiality can act as a symbol and reminder of the natural material in the instance of the rough earth wall that is seen from the entrance and leads to the workshops.

Daylight was both considered in function to create well-lit spaces in workshops and exhibition and in terms of amplifying materiality and atmosphere in how spaces and materials are lit. In this instance I found that my light study models were very helpful to visualize and evaluate the effect the light could have on the spaces.

The ritual of ceramics is referenced throughout the building with material with materiality representing the stages of refining earth – from rough unburned clay to glazed ceramic. However, they do not follow a certain hierarchy in how they are used in the spaces as it was not included as part of the concept for the building, although they probably could have been if I had chosen to represent materiality in the ritual in a more literal sense through the architecture of the building. Instead, I see the ceramic ritual as tied to the ceramicist and that craftsmanship in clay to include clay and ceramic building as I have found in my explorations. It was therefore important to represent the potentials of the materials and techniques where they would be of most use, without hierarchy and showcasing the potential of building with earth.

In the proposal I actively draw from a ceramic heritage of craftsmanship in Höganäs. It steps away from the industrial aspects of making ceramics and embrace the artistry instead, putting the individual behind the potter's wheel in center. Creating a space that celebrate the craftsmanship and connects to the local legacy of craft and the many generations that practiced ceramics here. It is a way of remembering and simultaneously showcasing contemporary ceramic production in Höganäs.

By documenting my explorations and observations of clay and ceramics, I have been able to deepen my understanding of the material through both practice and insightful conversations, gaining a broad knowledge of the material and its potentials. Not only as it relates to building technology and systems, but in values such materiality and craftsmanship. The building materials and techniques I have explored in the project inhabit a versatility in tactility, texture and material possibilities and by getting to know them I have gained knowledge that is invaluable to me as an architect.

As I see it, there is a lot of potential in using clay building materials on a wider scale, especially in combination with other conventional building materials, such as fired brick and wood. Just as the clay historically was a byproduct of the coal mining in Höganäs, it is a byproduct of infrastructure and building projects today. To source local material to build with is therefore usually easy where the earth is rich with clay, although it may require some logistical efforts.

But in using non-conventional materials, which earth building has become, material knowledge become a first obstacle. As architects we often rely on building standards and material norms to aid us in our work, but when a good result is dependent on a skilled craftsman (who might be hard to find) we might be less inclined to apply an unfamiliar material into design. In the case of building in clay, material is cheap and labour is expensive. This raises questions of how we value craft in objects and architecture. *Does coffee taste better from a cup that you know how it was made or that you made yourself? And does this extend to buildings?* These questions also connect to the challenges that Höganäs face in light of the pottery factory closing to move production abroad, as well as in wider discourse regarding consumption and sustainability.

Knowledge is found with experience and with my material explorations I have taken an immersive approach to design to gain experience that has been helpful when applying it to design, practicing a sort of slow architecture.

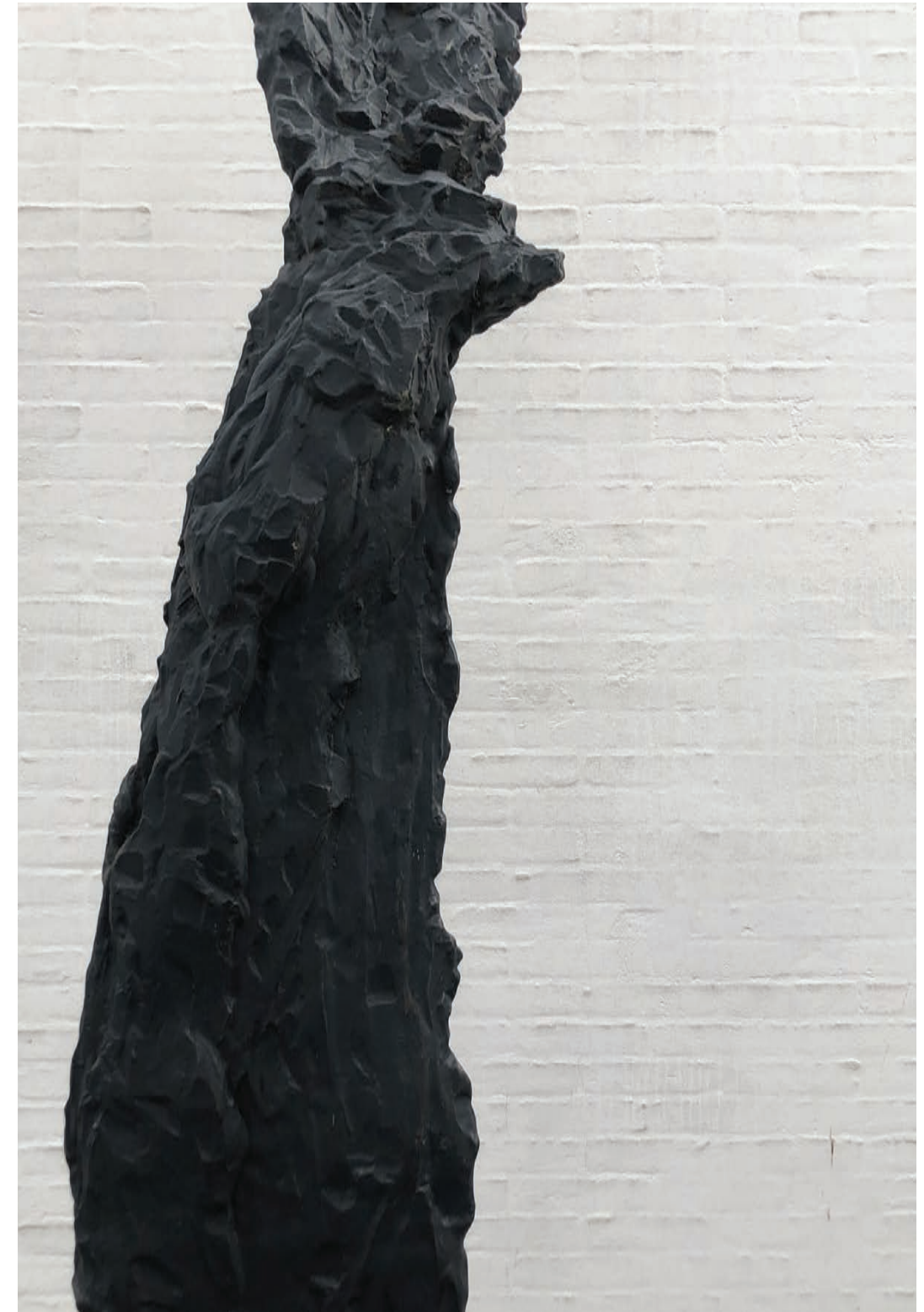
Reflection

The topic of clay and ceramics and its use in architecture is vast and I have barely scratched the surface. This thesis can therefore not be seen as a representation of all clay and ceramic derived building materials. I have neither worked with clay architecture or brick architecture, but what became a hybrid of the two and the results only represent one example of how my material explorations could be applied in a given context.

In my material explorations, each person I talked to seemed to have a specific draw to the material and each have their own approach to working with it. It strengthens my belief that to work with clay is an intuition driven process and there seems to be not one truth in how to practice it. Due to the vastness of the topic, I have at times felt lost in where the explorations would lead and how I would represent the material in the final design.

Clay is on the one hand a natural resource with material qualities that remind us of the raw earth, using techniques such as clay plastering or rammed earth, as the wet clay allows for creating either organic shapes or textures. The clay has on the other hand a potential to become a highly rationalized and industrialized building product in brick building. These are at least the qualities that may be most commonly associated with the different techniques, but through my work I have come to think that it is not that simple. A brick wall may still inhibit the clay's organic qualities, bearing traces of irregularities in the clay and firing and of the hand that laid the bricks in mortar, and a clay plaster wall can be polished to a near mirror finish. How the material is handled and manipulated by the hand is more important than the material itself. I find that to be one of the great charms of clay, both as a material in building and in ceramic craft.

The many properties of the material allow for further exploration if I were to continue my work and could include exploring more ways that clay building techniques could impact materiality and space in the building. The concept of viewing activities as rituals has aided me in the process of designing throughout the project and could be extended to further explorations by studying the different parts of the ceramic ritual in further detail than I have had the chance to do in the project – from the rituals of sourcing to the ritual of opening of the kiln. In addition, the ritual way of thinking could guide the design of the courtyard and park and how they are activated and used as an extension of both the workshops and exhibition spaces in this project. The notion of the ritual has through my work also become a tool that I take with me into other projects and in further work as an architect.



Sculpture in front of painted brick wall, Louisiana Museum of Modern Art, 2022.

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