

Stationshuset

The rebirth of an abandoned building and its historical heritage

Silje Ildgruben / Magnus Nyström Lindé / Master's thesis 2024

Chalmers School of Architecture / Department of Architecture and Civil Engineering

Examiner: Daniel Norell / Supervisor: Sara Olsson

STATIONSHUSET

Thanks to,

Sara for guiding us throughout the process,
Daniel for your feedback,
PO for great enthusiasm,
friends & family for patience and support.



Title: Stationshuset
The rebirth of an abandoned building and its historical heritage

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Abstract

In the early 1900's, a built environment along the Iron Ore Line was brought up to support the railway's electrification. As time passed, advancements in technology made many of these structures obsolete, resulting in their demolition. Despite their technological degeneration, the remaining buildings stand as monuments, embodying the industrial heritage of Norrland. This thesis focuses on the abandoned Torneträsk substation, proposing a speculative transformation initiated by two primary motifs. Firstly, it aims to elevate it from a decaying relic to an architectural asset that resonates with importance through its historical significance and architectural expression. Secondly, it utilizes transformation as a strategic tool to unravel the narrative around its context of Malmbanan and Sweden's industrial heritage, consequently embedded within the building.

Through site visits and archive material an extensive investigation of the building was conducted, documenting its current state through a set of "As found" drawings. Through adaptive reuse the building was altered based on observations gathered from the initial investigation by subtly superimposing new spatial scenarios to emphasize current compositions. This generated a strategy guiding

these actions, dealing with the subtraction of elements, addition of new matter and care of the existing. Applying this strategy on the transformation process allows for the preservation of the building's identity while simultaneously generating new values, treating the building as an evolving palimpsest.

The project reconfigures the building's previous typology, proposing a workplace in the form of a restaurant in relation to a dwelling. The transformation results in a number of situated interventions, testing its spatial boundaries. The outcome is represented in a fragment model and supported by drawings and visualizations that explore the duality of the building's before and after. Through adaptive reuse, previous compositions are made visible by deliberately altering and adding elements while observing the traces left behind as tangible reminders of the building's past. The result manifests a perception on how to revitalize an abandoned building while safeguarding its identity - recognizing transformation not just as a physical change, but also as a form of storytelling.

Keywords:

Transformation, adaptive reuse, identity, Malmbanan



Figure 1: Torneträsk (1913)

*O Norrland, o, Norrland
Jag vill nästan gråta -
det skymmer för ögat på mig.
O, Norrland, o, Norrland.
Hur kan du så låta
Ditt värde gå bort ifrån dig?
Ack, Norrland, du råkat i rövarehänder.
Det synes kring backar och stränder.*

Ur "Till Norrland", Albert Viksten 1908

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Figure 2: Torneträsk (1926)

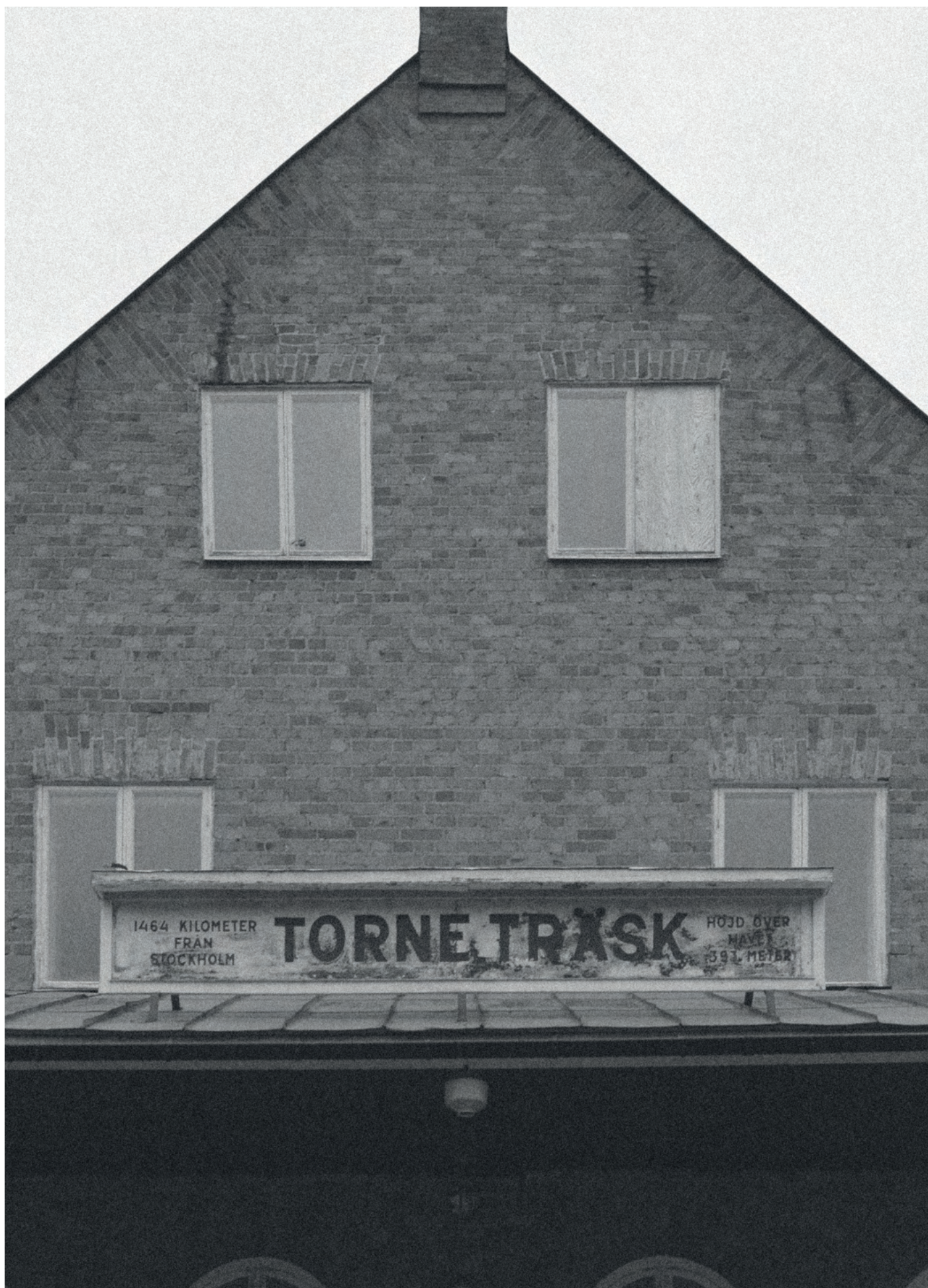
Background

The intangible values embedded in our surroundings make up the foundation of our identity, and define the context in which we dwell. While we acknowledge that our lives are influenced by those who came before us, the specifics of this influence - by whom, how and where - tend to fade into obscurity. The built environment around us accumulates the memory of the place, where the structures act as a reservoir of traces suggesting the context's past. Through the lens of phenomenology, Norberg-Schulz (1996) argues for architects to create spaces that resonate with the specific context, fostering a meaningful connection between people and the built environment. This allows for the exploration of the spirit of a place, delving into the profound connection between architecture and the unique essence of a location.

The prosperity of Sweden lies in the many natural resources and with industries that have been developed throughout history. The majority of these resources, concentrated in the northern regions, have been a subject to exploitation by southern actors for decades (Tidholm, 2014). The mines in Norrbotten are a great example of this, being the world's largest underground iron ore mines (LKAB, 2023). This continuous exploitation has not only shaped the welfare of our country, but has also left lasting imprints on the people, places, infrastructures and the indigenous people of Sápmi, shaping a narrative

of exploitation evident in our built environment. The resources in these regions seldom remained but were rather exported for the benefit of others. This historical development has defined both the urban and rural context of the northern region, leaving valuable traces of history behind, without further acknowledgment or maintenance.

Looking at the current architectural discourse, the contemporary sustainability objectives advocating for building less and maximizing the use of existing resources is a central part of the future development. Nevertheless, factors like urbanization, depopulation, and advancing technologies have, in many ways, led to neglect and abandonment of numerous once-significant structures and areas. Viewing today's built environment as a reservoir of both historical value and potential for future sustainable development, existing buildings therefore hold a profound key in this debate. Through revitalization, this thesis aims to shine light on Sweden's industrial heritage, addressing contemporary sustainability needs while considering the existing built environment as the threshold into a new existence. Decay is viewed as a catalyst for transformation, and acts as a valuable component in the rebirth of the existing (Cairns, et al. 2017).



Torneträsk - 1464 kilometers from Stockholm

The major subject of this project is to explore the potential of architectural transformation as a strategic tool for revitalizing abandoned buildings, while shedding light on the identity and heritage of a local context in Northern Sweden. The core objective is to repurpose an existing yet neglected structure by acknowledging it as a valuable architectural asset.

Specifically, the project centers on the substation in Torneträsk, a combined station house and a transformer typology. It used to serve its purpose together with a handful of similar buildings which were originally erected to support the electrification of Malmbanan (the Iron Ore Line) in Norrbotten. It is now abundant, standing as a symbolic monument of the railway's industrial heritage.

Despite its recognition as an industrial monument, it is now abandoned and uncared for. In this thesis, the Torneträsk substation, located 1464 km from Stockholm, will act as the main object for this investigation, allowing an in-depth exploration of its spatiality and heritage as a forgotten architectural resource.

The non-urban context raises the complexity tied to the historical and ongoing exploitation of Northern Sweden,

and the consequences visible in the built environment as a result of this. Abandoned buildings, initially erected to support the periphery of the local industries, now act as a manifestation of their own degeneration. The site of Torneträsk has no urban fabric, but rather a magnificent landscape with intriguing historical layers. There will never be a demand for a new built environment here, which causes the existing buildings to fall into obscurity, turning Torneträsk substation into a decaying relic. The discourse is rather questioning how to safeguard the values accumulated over time in the existing context. Today, this monumental structure stands as a casualty of historical exploitation of natural resources in Northern Sweden. Despite possessing architectural qualities and historical value, it is forgotten and uncared for.

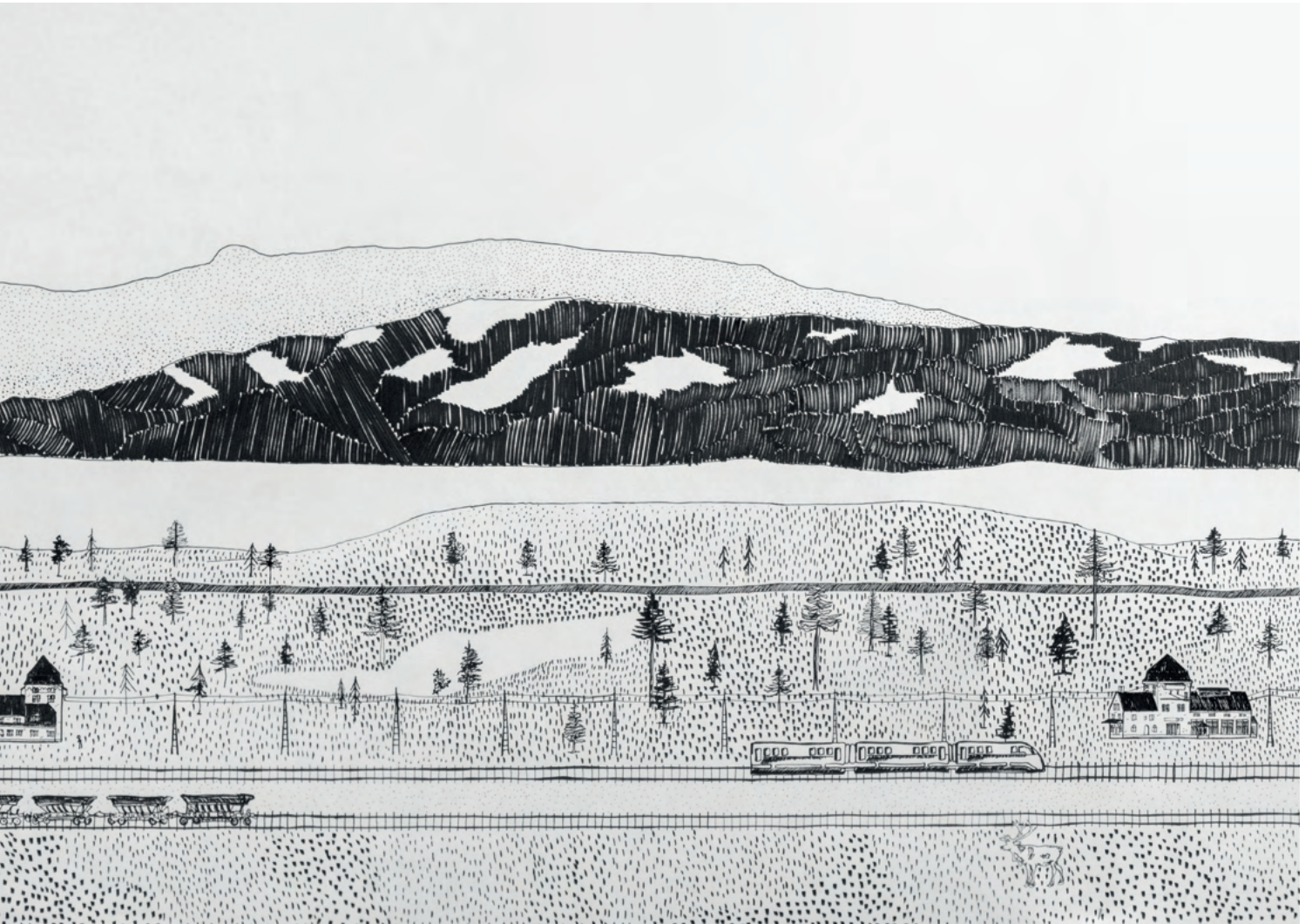
The project operates on multiple scales, conducting a broader investigation of the local context and its history, with a primary focus on the building scale. Through a speculative transformation, interventions are carried out with the aim to leverage the building's current state while showcasing traces and remnants of its heritage. This acts as a point of departure when bringing it into a new contemporary existence.

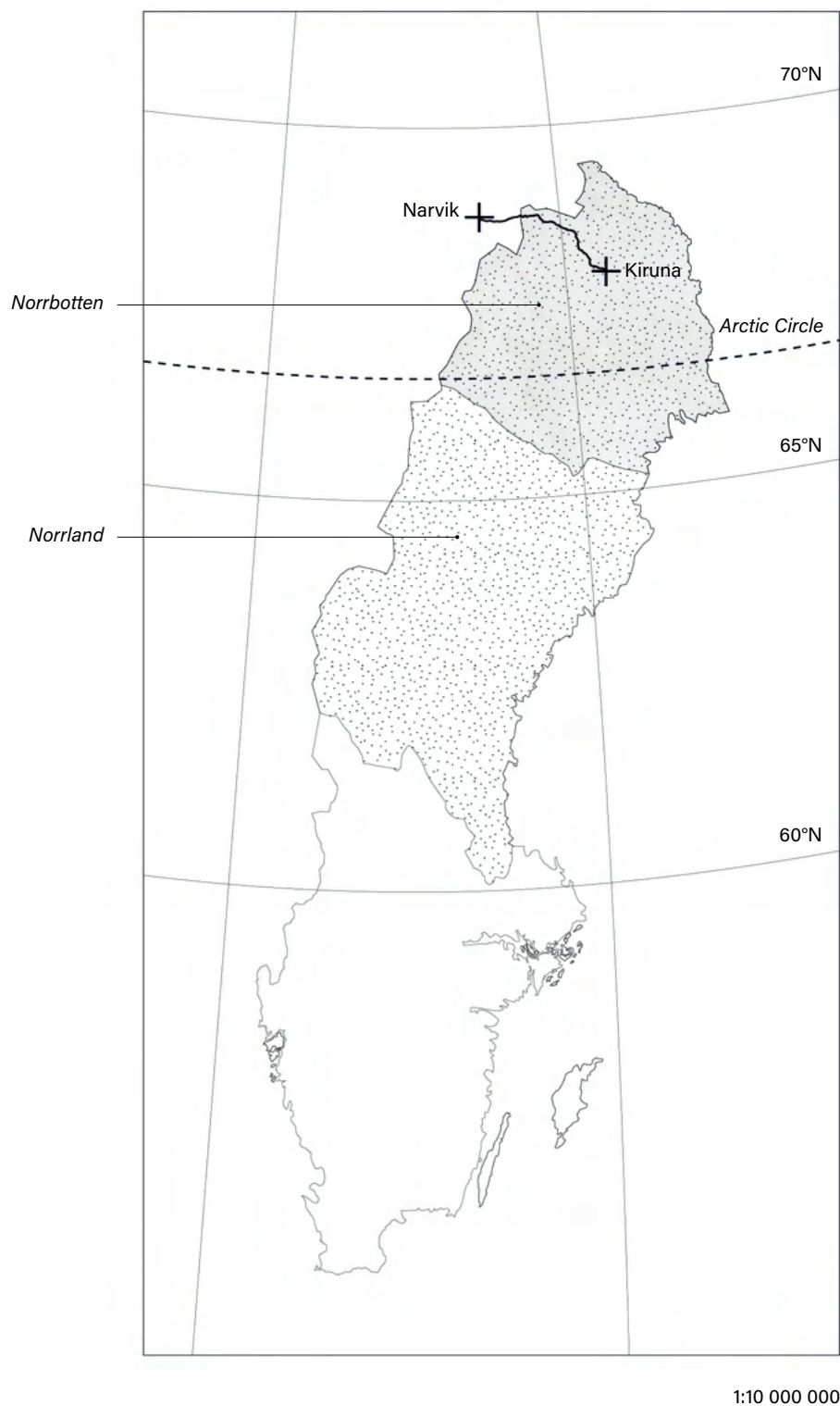


Genius Loci,

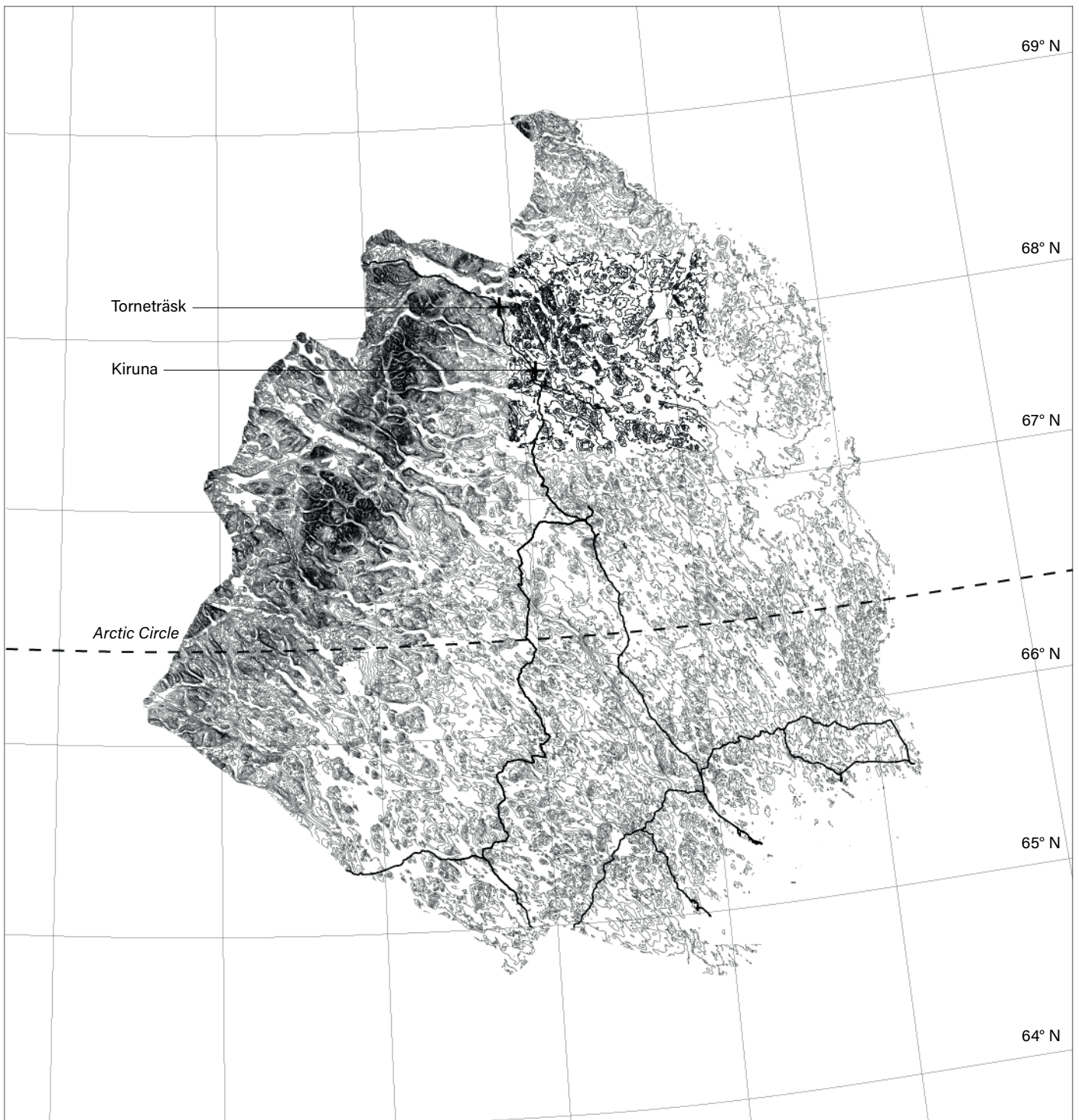
Portrait of the three substations in Vassijaure, Abisko and Torneträsk, placed in their context adjacent to the railway

As every stitch counts to portray the totality of Britta Marakatt Labba's famous embroideries, every layer within the context of Norrbotten counts to embody the complexity between the realities of industrial development, natural vanity and its inhabitants. Like a knife could rip through her canvas fabric, the railway cuts through this region like a blade





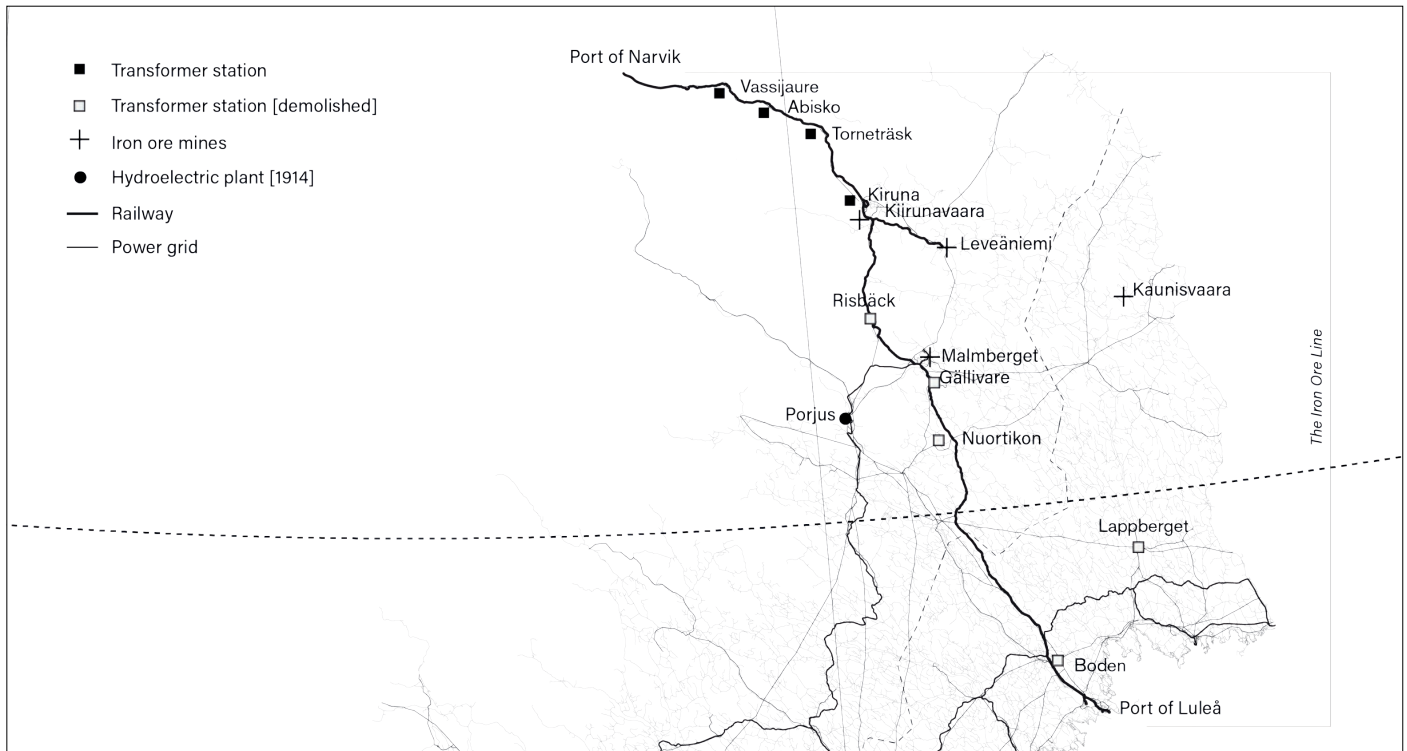
*Norrland in relation to Sweden as a whole, with
Malmbanan in relation to Narvik and Kiruna.*



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Norrbotten, showing Malmabanan in relation to the rest of the railway system around the Arctic Circle.





Contextual mapping

Industrial Landscape

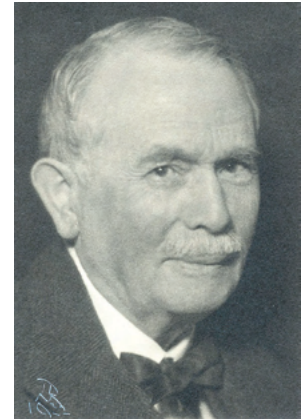
Malmbanan (the Iron Ore Line) reveals a rich narrative that has profoundly impacted the region and its local context. This narrative, however, extends beyond the region, encompassing the industrial development of Sweden and the global influence of the country's mining industry. At the center of this narrative is currently the city of Kiruna, a hyper project that resonates with the broader infrastructure throughout the region.

To comprehend the significance of the substations, it is important to trace their origins and understand the historical backdrop that gave rise to them. The mining activities in Norrbotten date back to the 1600s when the discovery of minerals such as silver, copper, and iron was made. The systematic development of the mining industry in the mid-1800s had far-reaching consequences, not only locally but for Sweden as a whole (Sörlin, 1988).

As the mining industry expanded, so did the need for efficient transportation of iron ore from the region to adjacent harbors. In response, a railway was constructed under challenging Arctic conditions, reaching from the ore fields to Luleå. The establishment of Luossavaara-Kiirunavaara aktiebolag (LKAB) in 1890 marked an

important moment, aligning the growth of the Kiruna mine with the growth of the city itself. In order to utilize the deposits that the company had at its disposal, it became necessary to extend the railway. The project could embark in 1898, and on the 15th of November 1902, the first iron ore train left for Narvik (Boman, 1988). Today, Malmbanan stands as Sweden's busiest railway, accommodating the weight of 31 tons per axle, facilitating the daily transit of 24 iron ore trains between Kiruna and Narvik (Trafikverket, 2023).

The railways connected to the mining industry have served as the backbone of the region's infrastructure since its establishment. Beyond their original purpose, these railways have evolved into tourist attractions, further embedding their significance in the cultural and economic fabric of the region. Kiruna, in this context, aligns with the philosopher Timothy Morton's concept of a hyper project—an object distributed widely across time and space, transcending localized boundaries (Golling et al. 2020). In essence, the mining industry in Norrbotten embodies a symbol of enduring industrial and infrastructural transformation with implications that stretch far beyond its immediate surroundings.



*Figure 3: F. Zettervall
(1932)*

The Station Houses

As the railway took form, a parallel development unfolded, giving rise to a series of buildings lining its path in order to facilitate the railway's operations.

Some structures received more attention to details than others, such as the station houses due to their significance in the overall scheme of the railway (Boman, 1988). These buildings were designed to accommodate passengers, staff and goods. The ground floor would be the dedicated traffic floor and contain a ticket office and a waiting hall, while the upper floor often housed the residence of the station inspector and other staff (Hagren, 1988).

In 1910, it was decided to electrify sections of the railway, prompting the expansion of a hydroelectric power station in Porjus to support the electrical trains. This expansion required the installation of transformers along the Iron

Ore Line, resulting in the construction of nine standalone transformer buildings. In Kiruna it was integrated with the locomotive workshop and in Torneträsk, Abisko and Vassijaure they were combined with the station house, giving birth to transformer stations, a seemingly unique typology of its kind (Hagren, 1988).

The transformer stations were designed by the chief architect at SJ (Statens Järnvägar) Folke Zettervall. Typical for SJ during this period was the use of type-models, utilizing standardized drawings to construct similar buildings in multiple locations which was both cost and time efficient. One such model was the Torneträsk design, resulting in the neighboring stations at Abisko and Vassijaure sharing many similarities being built in the same manner (Hagren, 1988).

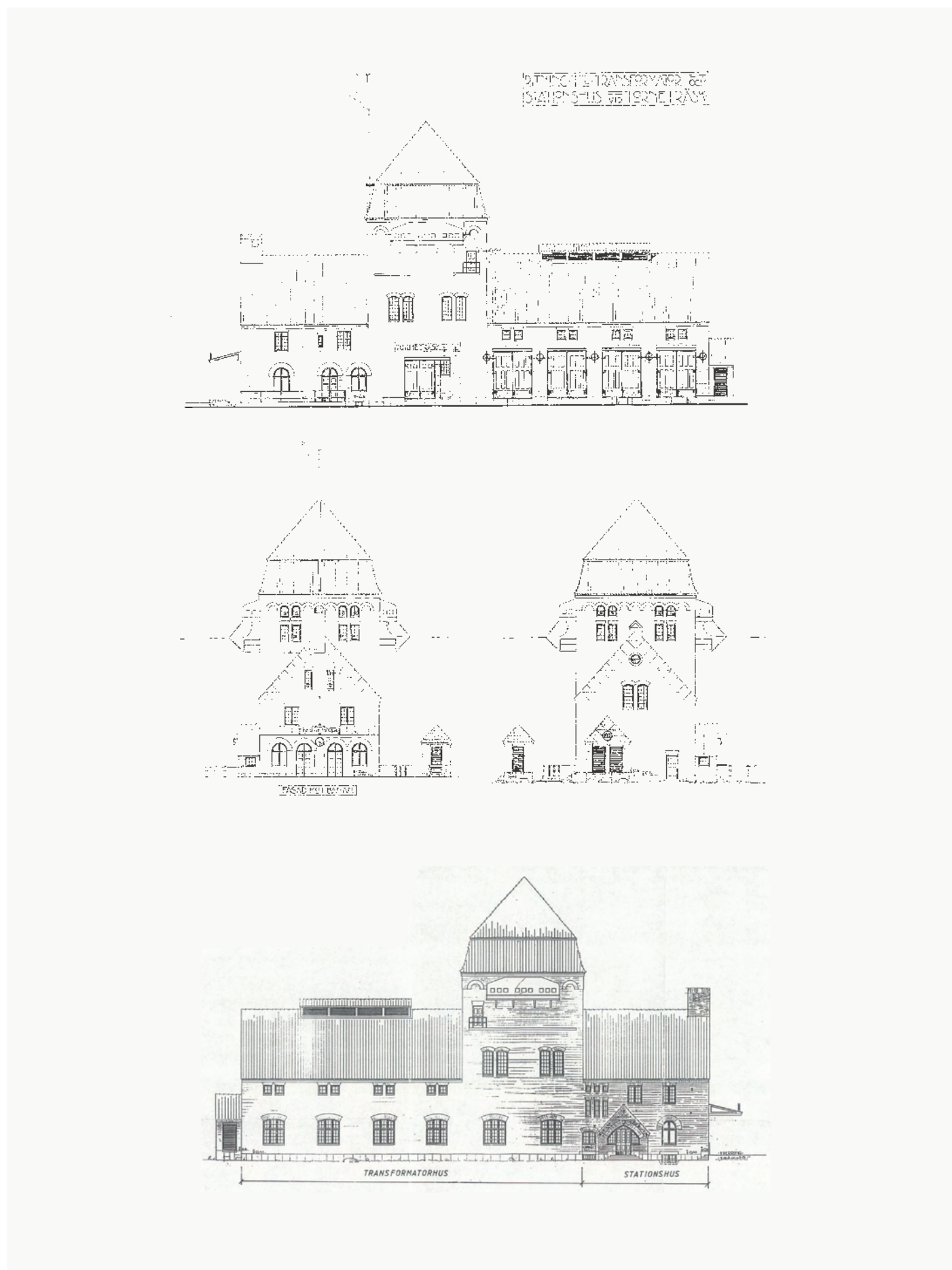


Figure 4. Original set of drawings for the Torneträsk-Model, 1912



Figure 5: Torneträsk station house and transformer, 1914

The architectural expression of these transformer stations holds a strong monumental character in contrast to the rest of the built environment in this region. When viewing them in relation to their rural context, their appearance almost seems illusory. They are carefully bricked with various patterns around openings and edges. The windows vary in different shapes and sizes, and are often placed in pairs (Boman, 1988). A dominating squared tower with large mansard roofs and romanesque friezes shapes the character of the building from its exterior and elevates its visitor through the four floors within the building. The machine hall's tall wooden doors, housing the enormous transformers, articulates the reason for the building's existence (Hagren, 1988).

Today, most of these transformer stations have been abandoned since the 1950s (Svenska

Industriminnesföreningen, 2023). The Torneträsk building is completely abandoned, and owned by Trafikverket. After contacting them, it appears that there has been a wish to demolish the building due to lack of resources and demand, but due to it being recognised as a building monument of Malmbanan this was rejected (Trafikverket, 2023).

Their monumental presence along Malmbanan represents a significant chapter in Sweden's history. Considering this heritage and the abandoned condition of the Torneträsk station, it serves as a fitting subject for this thesis, exploring architectural transformation and heritage. Further on, the transformer station will be referred to as a substation, encapsulating its two former functions in one term.

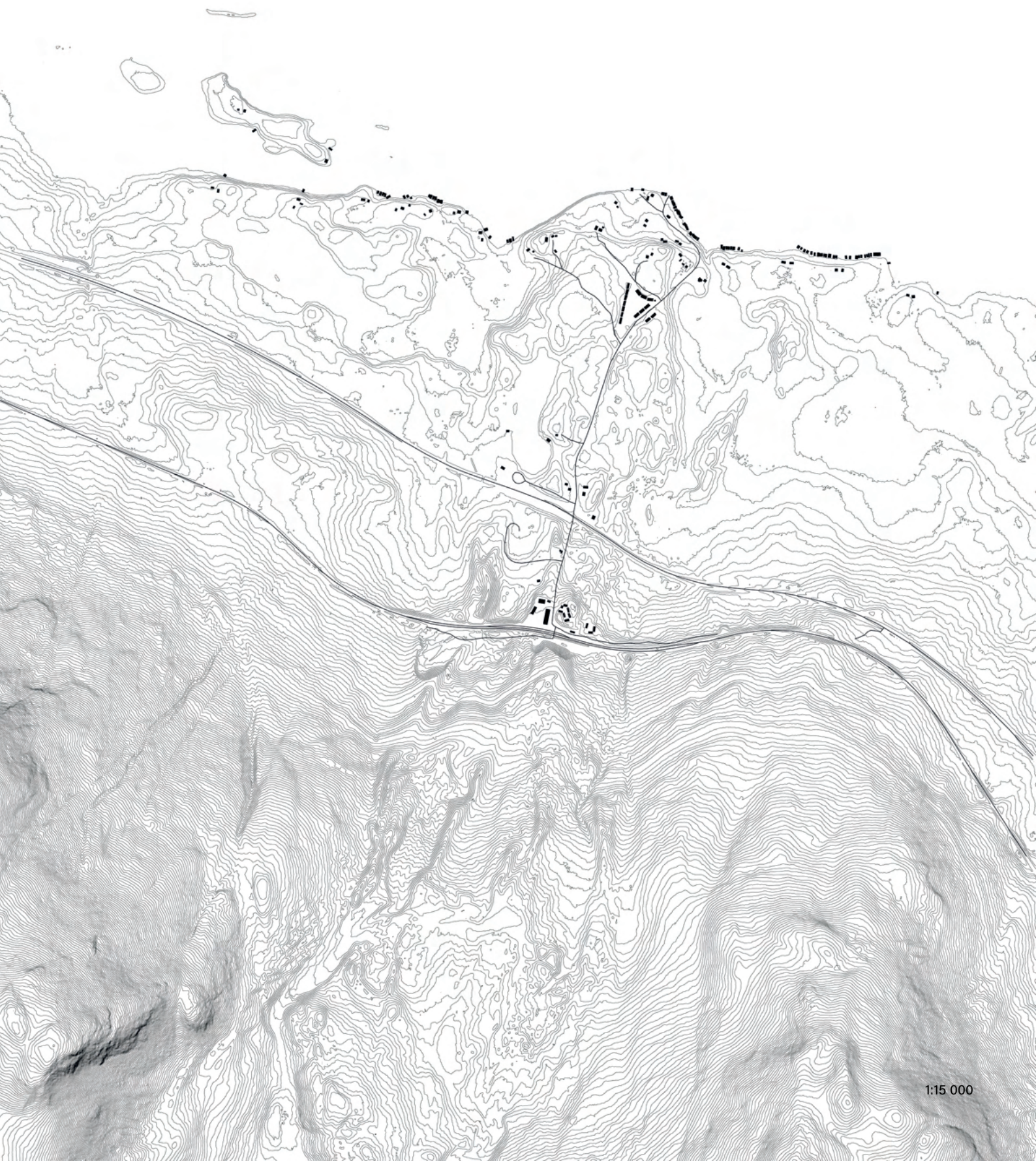


Figure 6: Vassijaure station house and transformer, 1915



Figure 7: Abisko station house and transformer, 1914

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Railway

Accommodation

Substation

E10 Highway





Thesis Question

- I. How can the architectural revitalization of an abandoned industrial building, such as Torneträsk substation along the historic Malmbanan railway, effectively portray and safeguard its cultural, architectural and industrial heritage?

- II. How can Torneträsk substation be reimaged as a valuable architectural resource and address contemporary sustainability objectives through the means of adaptive reuse?

Purpose

The primary objective is to cultivate a comprehensive spatial understanding of the building. This process serves as the foundation for grasping the building's historical narrative, unraveling its layers of significance and contextualizing it within the broader heritage of the region. The resulting outcome is a speculative transformation of the building with an embodiment of identity and heritage. It also aims to contribute to a broader discussion of adaptive reuse, and shine light on the built heritage in the periphery of Norrbotten.

Delimitations

The project does not try to solve the complexities tied to Northern Sweden regarding depopulation and exploitation of natural resources, rather the project uses the Torneträsk substation as a means of raising awareness of this discussion. It focuses on spatial explorations rather than solving technical details, economic viability, or the need to fit a specific audience. The outcome does not take accessibility into account.

Method

The project has been conducted through three phases: Investigation, exploration and transformation.

First a thorough investigation was made through site visits and by studying archive documents. This was done in parallel with historical research connected to the building and its context. By documenting the current state of the building and by studying archive drawings, an overall understanding of how the building once operated was gained. This way of portraying the character of the building resulted in the construction of "as found" drawings which unfolds the essence and identity of the building in its current form. An understanding of the building's spatiality was gained from this process.

In the second phase, the collected understanding of the building was utilized in order to initiate a transformative exploration. By superimposing new spatial scenarios,

a number of interventions were initiated based on the observations gathered from the first phase. The driving force behind these has been to embrace and utilize the character of the building in parallel to the practice of adaptive reuse. This exploration generated a design strategy composed by the notion of subtraction of elements, addition of new matter and care of the existing.

The third phase condensates a transformation proposal. The proposal is represented through a fragment model, showcasing a situation of spatial qualities within the building in relation to new additions. Introducing a new program for the building allowed for a general aim in terms of design. The proposal is presented through collages and a set of before and after drawings, focusing on both the composition of the building components as well its materiality. The result visualizes the buildings as-found state juxtaposed with the proposal.



Torneträsk, stripped "as found" elevation, revealing the building's operation



As found, Palimpsest

Architecture, as articulated by Zumthor, has the opportunity to reveal the layers of history that are stored and accumulated in the landscapes, places, and things around us. These remnants are physical and real, no matter how mute, hidden, or mysterious they might first appear. They lie within everything, and not only tell a narrative of past lives or identity, but also hold a source for creativity (Zumthor, 2019).

In parallel, the concept of palimpsest, discussed by Plevots and Clement metaphorically portrays buildings as manuscripts where new layers of writing are added, overlaying older ones. This perspective views structures as continuous, evolving entities, with successive layers transforming it over time while still revealing traces of the past (Plevots et al., 2019).

The term "as found", as discussed by Pratz, can be used to describe the existing condition of a site or a structure before any interventions that alter its current state are made. "As found" not only considers a building's historical features and unique characteristics but also involves a thorough investigation of how the built fabric of a place reflects the collective remembrance of its past through its patina (Pratz, 2019).

Documenting the building in its as found state is a way to gain a thorough understanding of the building and its components and how it has been affected as a result of the passing of time. The as found state also communicates important indicators of the buildings entity, and is prominent in the way the project is carried out.

The Theatre Installation,
Mo Michelsen Stockholm Krag, 2017



Figure 8: Michelsen Stockholm Krag, M. (2017)

As part of the PhD dissertation "Transformation on abandonment; a new critical practice?"; this project explores the tangible and intangible values embedded in the buildings. It explores the rural parts of Denmark that due to the depopulation are facing abandonment and decay of old buildings. It is a research on radical preservation through actions that embraces architectural qualities to the irreversible process of decay. A way of preserving the reflection of the lives people have lived at a site, dealing with intangible and tangible values embedded within a building. He describes buildings as anchor points in our collective memory, which means that demolition causes loss of identity and local cohesion. Cuts - revealing the intricate layers of a building, its materiality and the narrative behind the structure. Artifacts tells a story about the building's functions, the people who inhabited it etc.

Bryggerhuset,
Kastler Skjeseth Architects, 2018

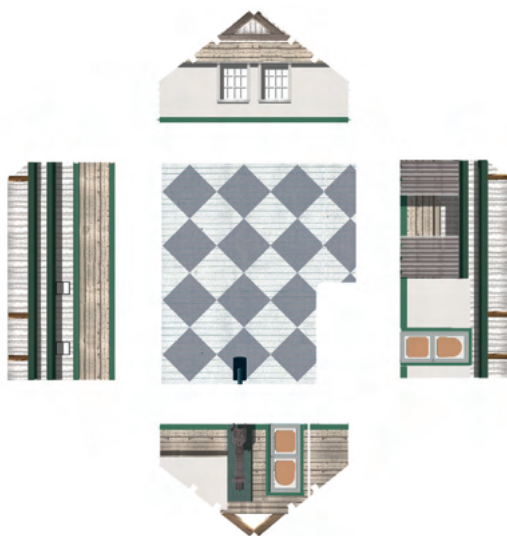


Figure 9: Kastler Skjeseth Architects

During the guest lecture "Transformation in Practice" by architect Amandine Kastler at Chalmers on November 29th, 2023, the critical question of designing new forms in and around existing environments was explained. Kastler Skjeseth Architects uses surgical precision to explore local interventions within a building in order to adapt it for new use. Interventions are rooted in an understanding of its heritage and expanded context. The talk delved into the importance of surveying and listening to the building and the resonance between old and new in their projects.

*Gulf Coast Slab**Clay Ketter , 2007**Figure 10: Ketter, C. (2007)*

A series of photographs, documenting the foundations of homes on the Gulf Coast of Mississippi destroyed by the Hurricane Katrina. Like an architectural plan, Ketter's photographs portrays the rawness of these remnants, reflecting the building's previous life. This method of documenting surfaces is adopted in the investigation phase of the thesis.

*Historja, Embroidery**Britta Marakatt-Labba, 2007**Figure 11: Historja, Marakatt-Labba, B. (2007). Photographer: Wong, C. / KORO*

Britta Marakatt-Labba is a Swedish-Sámi artist working with textile. Her way of story-telling through detailed embroideries captures the human scale within the context of a larger landscape. Her work portrays the local context and culture of Sapmi, touching on important topics regarding usage of land, identity, everyday life and nature. We have been inspired by the expression in her artwork.

Echoes of the Mine

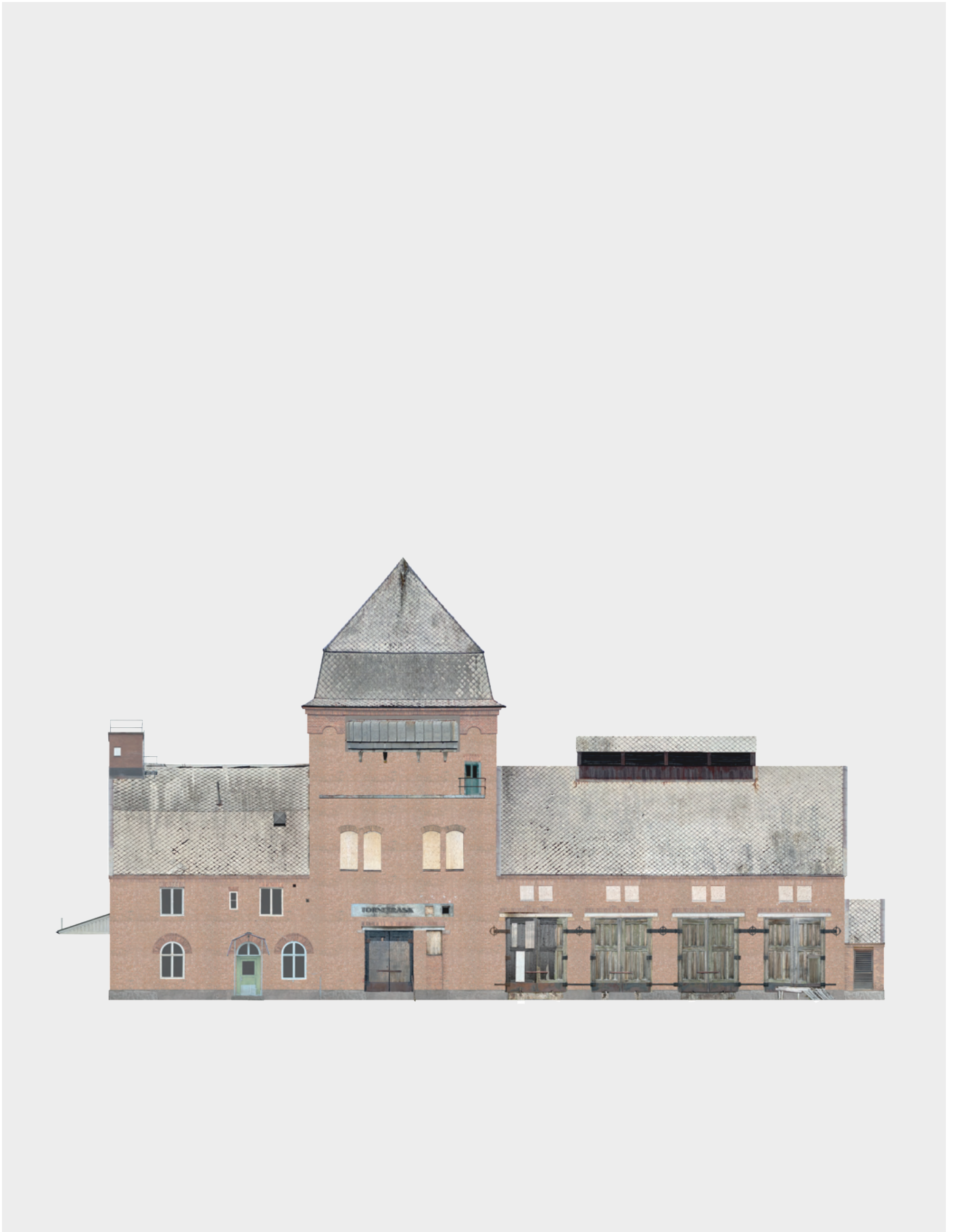
The following text is a reflection from visiting Kiruna on the 10th of October, 2023.

In recent years the transformations in Kiruna are impossible to overlook. The Kirunavaara mine is expanding, causing the demolition or movement of about 3000 properties in the city center of Kiruna (LKAB, 2024). The interplay of heritage, urban development, and the mining industry creates a reckless paradoxical atmosphere that permeates every direction. It's a city built up of memories and historical significance. When approaching the city center, the visitors are greeted by a ghost town with traces of landmarks such as Ortdrivaren by Ralph Erskine. The nature of the old Kiruna now only exists in the memories of its former inhabitants. Clashes between nostalgia for what once was and the reality of the current development can be hard to comprehend. The transformation serves as a tangible reminder of the relentless march of time and progress, with the mining industry's choke hold on the urban development in

Norrbotten. The echoes of the mine are deafening, and the economic interest of the industrial development overplays the motive of treasuring intangible values accumulated over time. The historical development of the mine generated the uprising of the station house in Torneträsk, a deviant proposal in its context. The destruction of parts of the cityscape in Kiruna, is an even more prominent example of the industry's driving force. Time and progress has left its marks in the region and the abandonment of Torneträsk substation can be compared to today's demolition of Ortdrivaren. The abandoned substations are an embodiment of the catch-22 scenario lingering in this narrative. Without a demand or economic profit, the faith of abandonment and decay is inevitable. Without the expansion of the mines, the urban fabrics in this region are forced to concede.



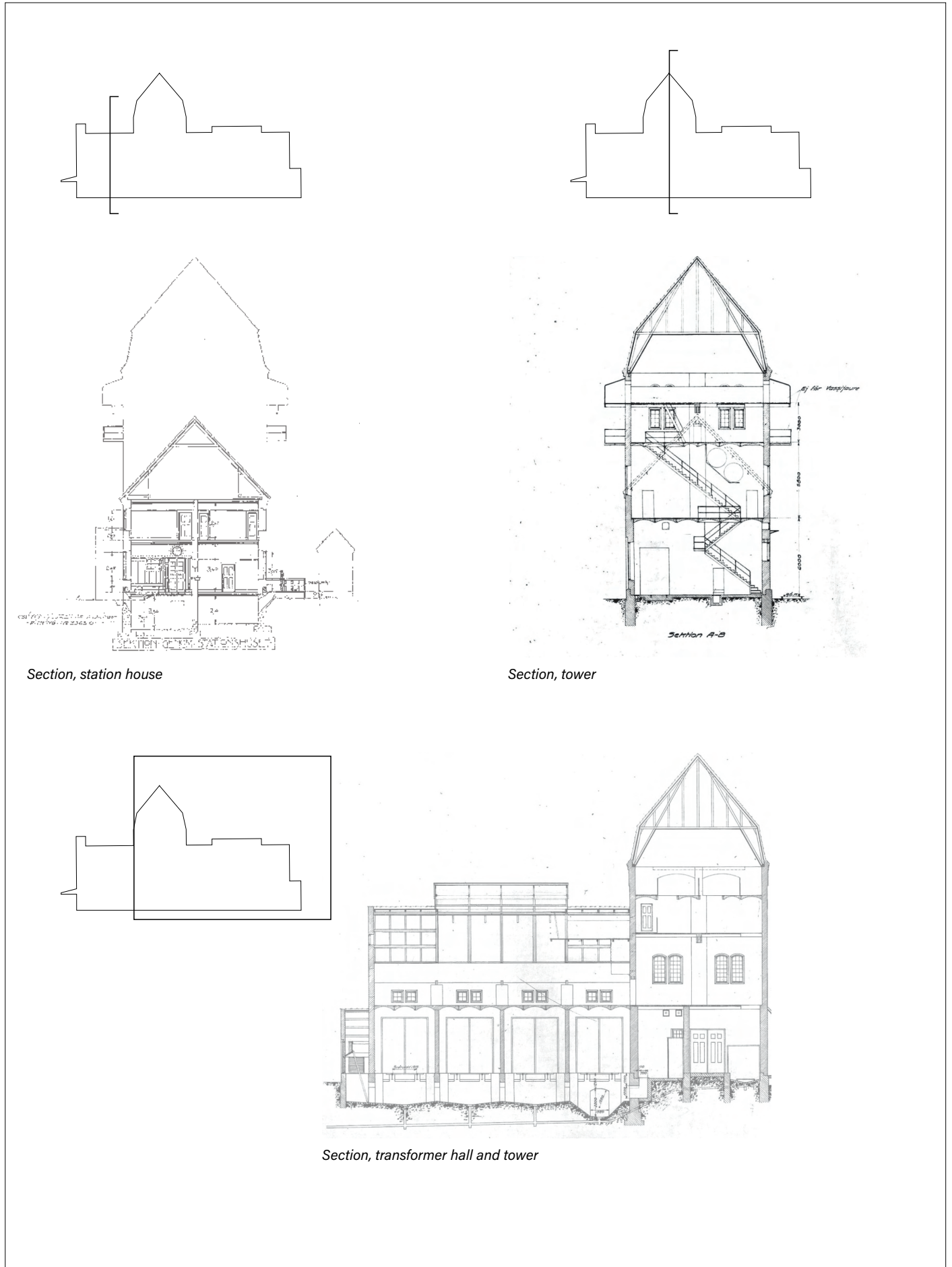
Ordrivaren by Ralph Erskine being demolished in Kiruna



Torneträsk facade elevation, "as found", east

Surveying the Building

Through collages and photographs, the initial approach is to portray the current status of the building. Through site visits the investigation of the building took shape, a fundamental step in order to understand its spatiality, functionality, and historical significance. The process involved a thorough examination of both archive drawings as well as the documentation of its physical structure and interior spaces. A thorough documentation of the as found state can be found in the appendix Building Portrait.



Section, station house

Section, tower

Section, transformer hall and tower

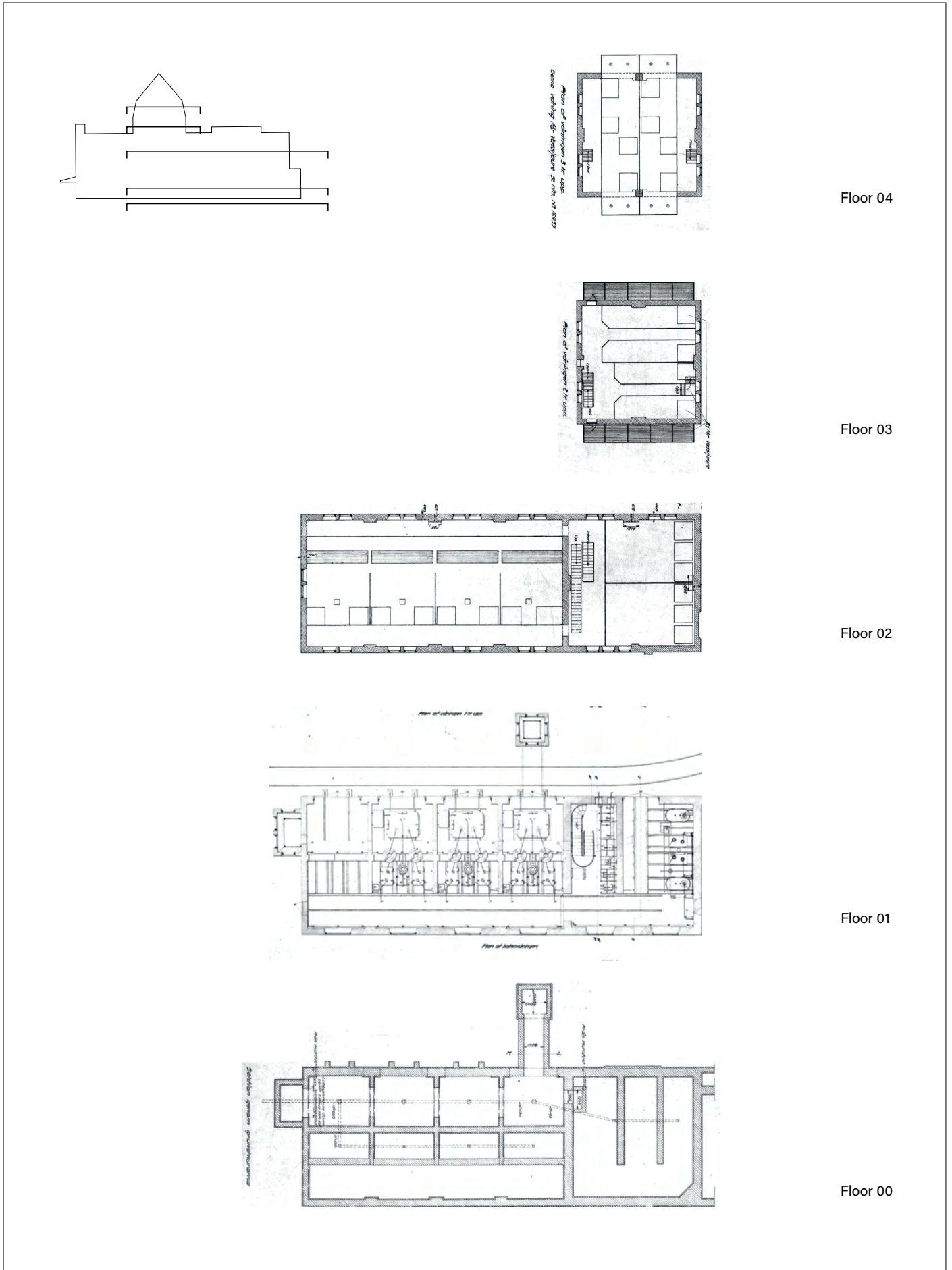
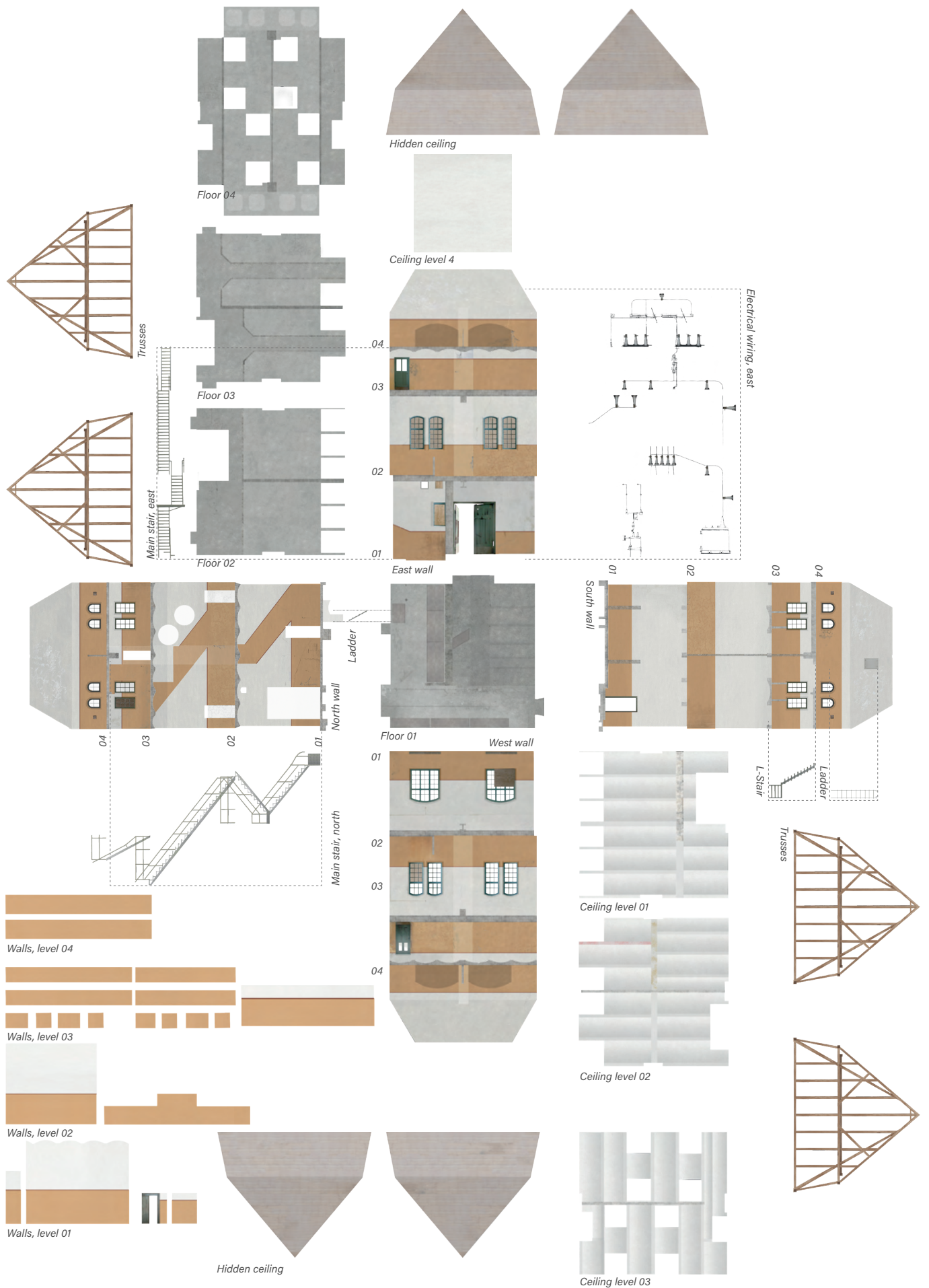
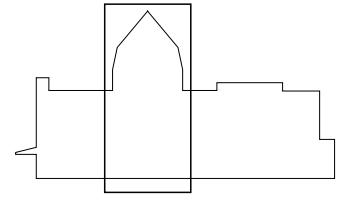


Figure 13: Archive drawings, 1913, Transformer Hall





Buildings as Carrier Bags

The building stands as a bookmark of its time. Entering this abandoned building is like entering a portal, bringing the visitor back to the time when the building was in use. Designed with an industrial character and sophisticated attention to detail the atmosphere feels compelling. It is not shaped for human proportions, but with its rich ornamentation the intersection between human presence and industrial importance is striking. One has to meander when moving through the building. Jump, crouch and lean in order to access all of its intriguing spaces, despite its overall enormous volume and capacity. The building manifests an industrial pride, and arguably its historic importance for Sweden.

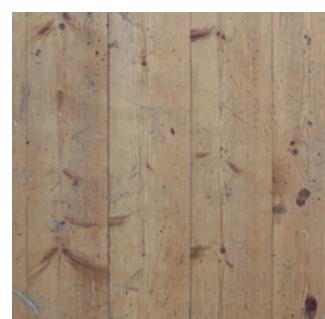
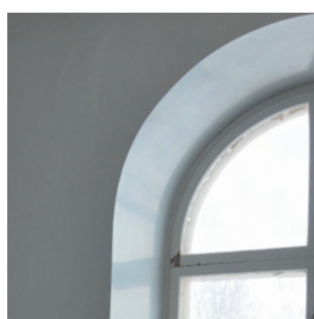
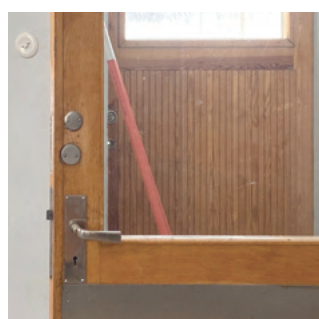
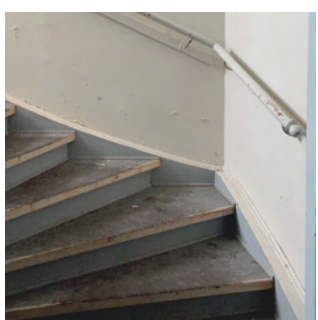
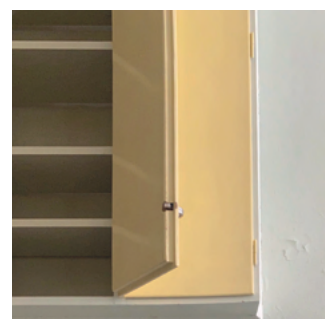
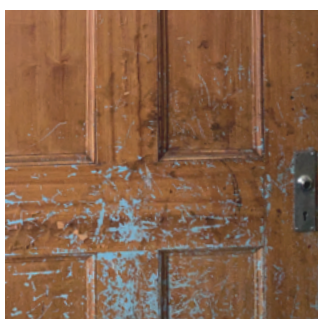
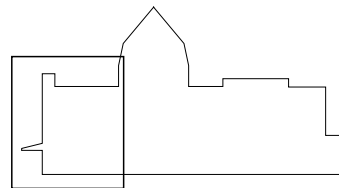
But the building is gradually wearing itself out due to the harsh arctic conditions. Out of sight and out of mind, neglected and uncared for. Meanwhile the remnants of its original components are preserved in their authentic arrangement and bears witness to its history of an interrupted demolition and a small fire. These fragments serve as markers, each telling a story about the events that shaped its structures over time. The "as found" state of the building is the initial starting point, where the transformation embarks. By viewing the building as a reservoir of its intangible values gives the transformation a motive, pushing the proposal in a meaningful direction. In parallel, it raises the question of sustainable development

in terms of the future built environment, suggesting the reuse and awakening of existing buildings.

During the Venice Biennale 2023, titled *The Laboratory of the Future*, the Turkey Pavilion highlighted the diverse array of abandoned buildings to suggest ways in which they have the potential to be transformed. By challenging the way we define architecture, the exhibition asks us to listen to and understand these abandoned structures instead of focusing on new and more heroic examples. The exhibition, resulting in a manifesto, *The Carrier Bag Theory of Architecture*, challenges the way we build. "Erecting or demolishing a building is in the Hero's tale. Transforming them is not. The earth can no longer tolerate heroic tales, but it does need inclusive and hopeful stories about transformation" (IKSV 2023). The reuse of existing abandoned buildings is not only a pragmatic approach to a sustainable built development, but also a historical indicator and storyteller of a specific context and identity.

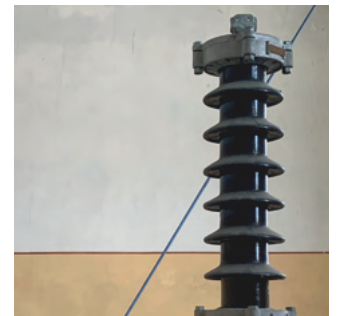
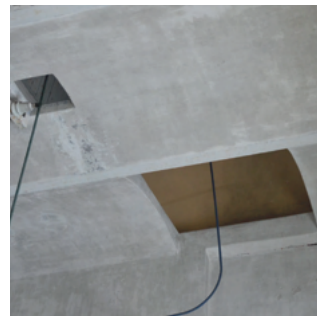
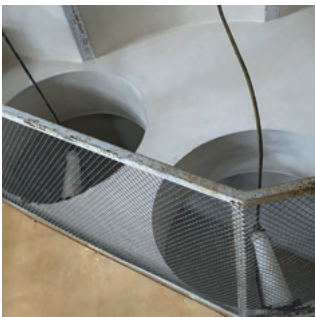
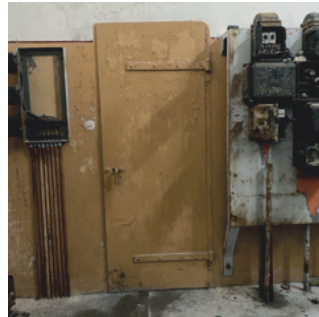
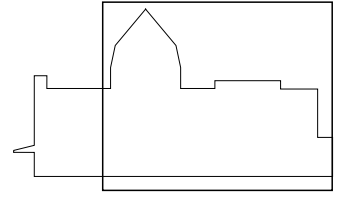
The substation's along Malmbanan can be described as Norrbotten's only castles. They were never built for the local inhabitants, but for the arctic industry supporting the export and exploitation of natural resources. Today their original purpose has faded into obscurity, and the Torneträsk substation's abandoned state acts as an initiator for a transformation.

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Material palette of Torneträsk station house

A mixture of floral patterns, worn wood and painted surfaces, relating to the human scale.



Material palette of Torneträsk transformer hall

A mixture of electrical fixtures, cracked plaster and steel surfaces, relating to the industrial scale.



Rebirth

Architecture is frequently characterized as something invested with life. A living entity with bones, skin and attributes, and even a spirit with memories. Only occasionally does architectural discourse acknowledge the potential threats to this “life”, when a building becomes neglected, wounded, or in pain. While decay and abandonment may be a harsh fate for a building, this can potentially serve as an initiator for its rebirth: a transformative threshold into a new existence (Cairns et al., 2014).

The notion of adaptive reuse comes from the words adaptation and reuse. The practice implies a shift in function and the physical form of a building. The degree of alterations can vary from subtle interventions to more radical changes (Plevoets et al., 2019). Working with existing buildings often deals with three parallel approaches: restoration, preservation and transformation.

In this case, transformation in relation to preservation of the building is a way of adapting it to a new function and form, while safeguarding its character. Restoration on the other hand, strives to return a building to a distant past. The result may be nostalgic, but will also result in the loss of intangible values accumulated from the passing of time, which would be considered as a potential loss in this case.

Preservation deals with its current state in a respectful and timid way. It is about polishing, refining, and preserving the traces of the past without altering them. This may be efficient, but if the life and the purpose of the building have already come to an end, then what is the point of preserving it in such a state? In this case, the

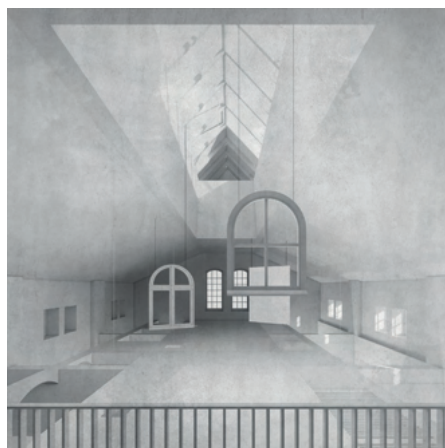
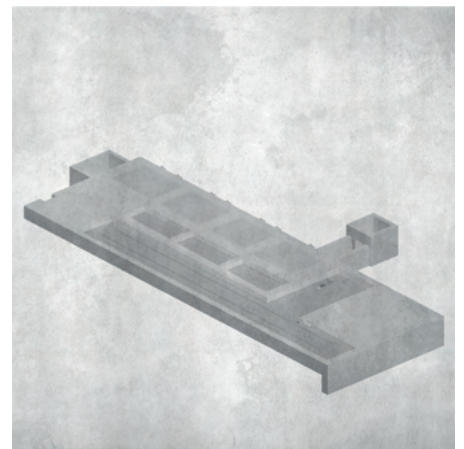
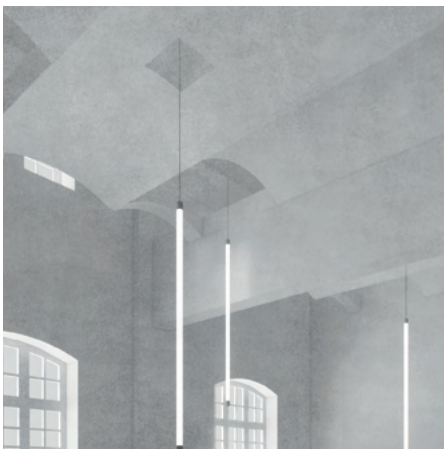
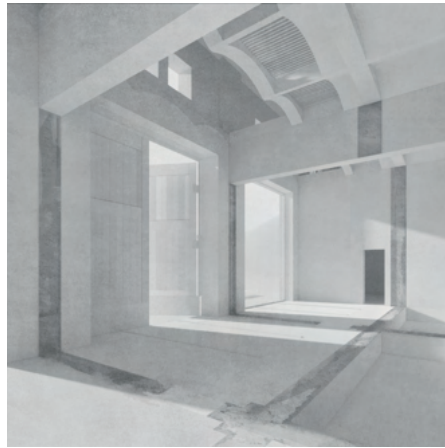
preservation can therefore be applied to scenarios such as spatiality, movement, rhythm, and overall character of the building - to preserve the atmosphere accumulated from the building's patchwork.

Transformation aims to encompass the entirety of the building's previous life, enhancing what may be mute or forgotten, but yet remains of significance, while simultaneously generating new values. This process can manifest in subtle, pragmatic, or even radical ways. This involves discarding past alterations that aren't working, while also generating new functions and attributes that leverage its existing architectural qualities. Viewing the building as a palimpsest that is still evolving while honoring its genius loci and accumulated layers of the past.

Now the building lingers between its life and death, and the objection serves as the initiator for its rebirth. In this case, the notion of restoration lacks a distinct motive, since the building has already died and its former use has fallen into obscurity. The objective for this proposal is to transform the building while still honoring its identity. A transformation of the building can therefore not take place without simultaneously dealing with its preservation.

Working through an exploration phase of testing and superimposing scenarios of preservation and transformation on the building, a strategy was developed to reach its rebirth. The strategy accumulates into three approaches and will be introduced later in the booklet.

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A series of visualizations as an initial exploration of new spatial scenarios

Transformative Exploration

The proposed program is a restaurant, and the strategy regarding placement and spatial organization will follow the needs of this program. In parallel, the second part of the building will endure to be a dwelling, and the design strategy regarding its spatial organization will follow that theme. This does not entail a static transformation of the building, and the need for the program to be permanent. It is rather considered as a point of departure in terms of precision and logic. The proposed program helps to motivate the interventions and relates the original industrial space to a human scale. This resonates with the original dual typology of the building, with a work space in relation to a dwelling.

These interventions are driven by the urge of utilizing the existing as an architectural asset. They are all happening in parallel to each other and are often a result of one another. The use of visualizations was a way of testing different spatial scenarios and superimposing them on the building.

The composition of these interventions was a monumental step in the progression of the proposal, and generated a strategy regarding the refinement of the final interventions. Each scenario was analyzed and categorized based on procedure and outcome. A transformation of the building can not take place without simultaneously dealing with its preservation.

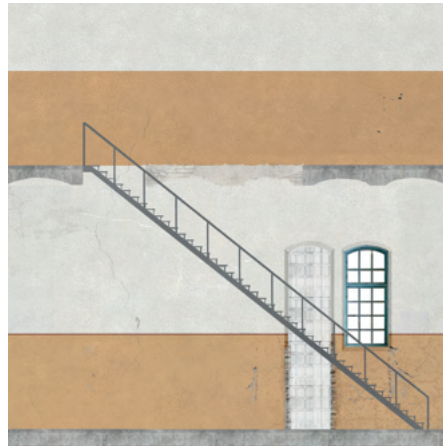
The process accumulates into three main objectives: *subtraction* of elements, *addition* of new matter, and dealing with *existing* scenarios in its current state. The strategies are often applied in parallel to each other and are operating simultaneously. The strategies are presented on the following page, followed by a depiction of every intervention and how the strategy is used to conduct them.

STATIONSHUSET

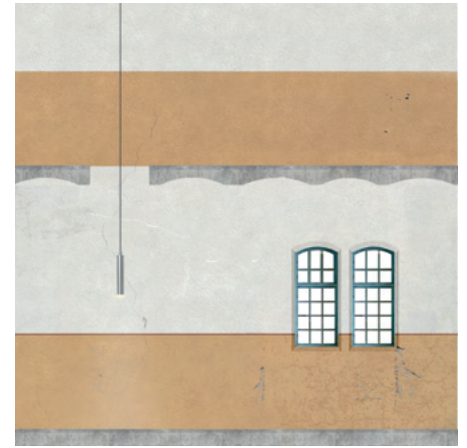
Design Strategy



Subtraction



Addition



Existing

Existing Material



Brick



Painted Wood



Worn Steel



Plaster

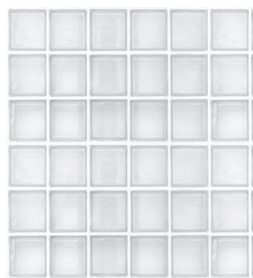


Glass

Added Material



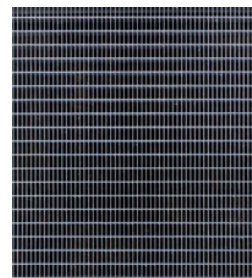
Corrugated Metal



Glass Concrete



Stainless Steel



Steel Grid



Burnt Wood

Subtraction

Subtraction of whole components or parts of elements (driven by instinctive knowledge). An action resulting in traces of the past. Often generating an opening.

Trace

Visible in materiality, acting as a marker of what once was.

Embracing the trace

Suggesting the previous configuration, being honest with the alteration and revealing the layers underneath. This applies to surfaces.

Filling the trace

If the subtraction generates an opening, there is the possibility to fill the trace/opening with a new element. This infill suggests the past opening, revealing a trace in itself. The infill can generate a new function such as light or accessibility.

Reconfiguring subtraction

If the subtraction generates leftover materials they may be reconfigured. The reuse is motivated by re-purposing already extracted elements. However, subtraction is not driven by the notion of collecting materials.

Addition

Superimposing a new element on the building. These are elements from new matter, that are foreign to the building.

Materiality can vary from previous materials, but still have a similar expression that refers to the character of the building. New matter acts as a translation of the old.

The addition is often a following step to an subtraction, but may also happen on its own (driven by instinctive knowledge).

Providing a new function

E.g. a new vertical movement, a new railing

Filling a gap caused by an extraction

This is a way to create a trace, preserve an opening, and introduce new functions. The gap is often filled with a permeable material that deviates from the adjacent material. In some cases, solid material is introduced.

Introducing non-static elements

E.g. light sources, furniture etc. The implementation of non-static elements are driven by the urge to portray/emphasize an existing feature.

Existing

Some scenarios and elements are kept in its as found state. In order for this to happen, some subtraction and additions might take place.

This relates to the urge of preserving a scenario as it is currently configured.

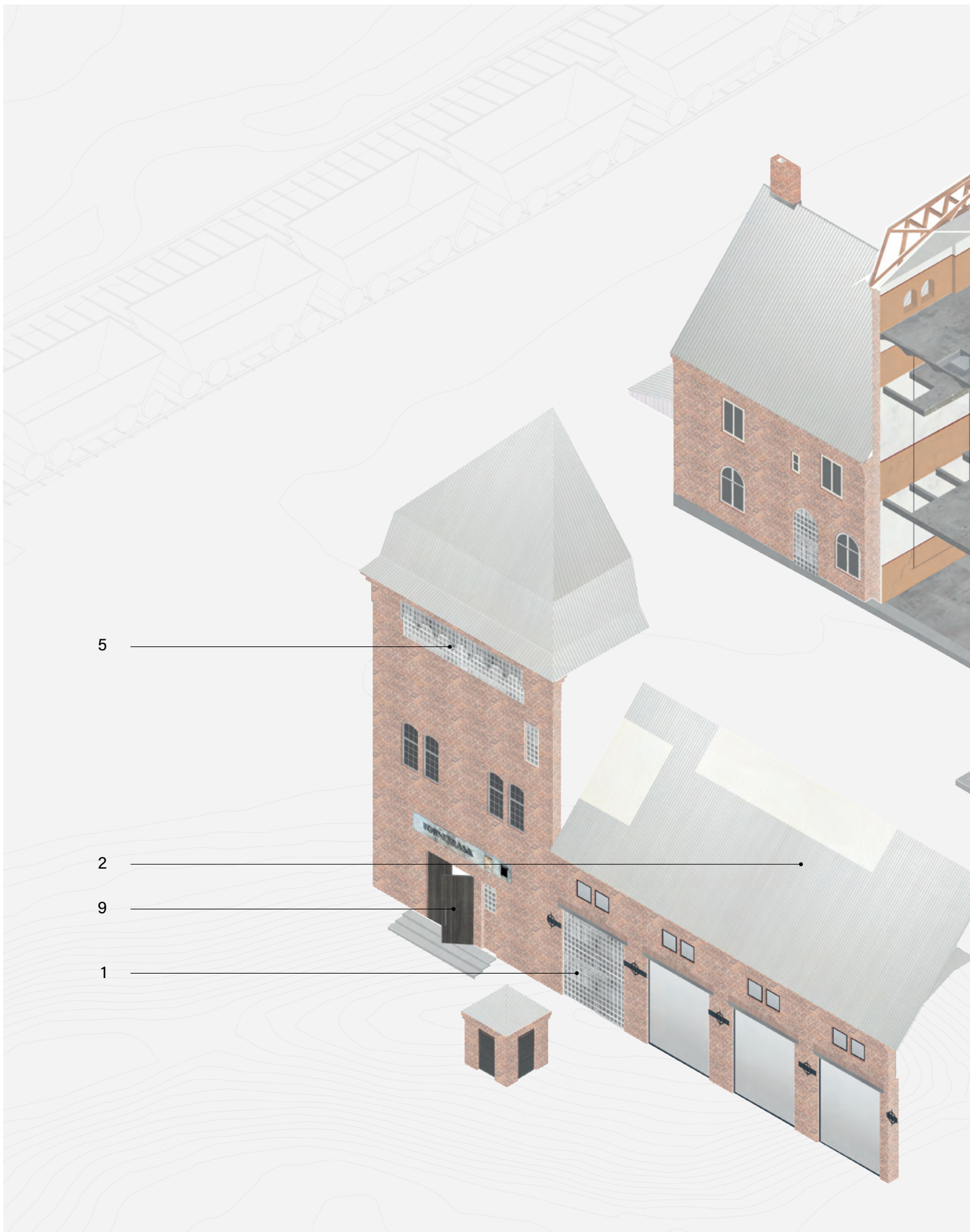
Intensifying

Enhancing existing elements by addition and subtraction

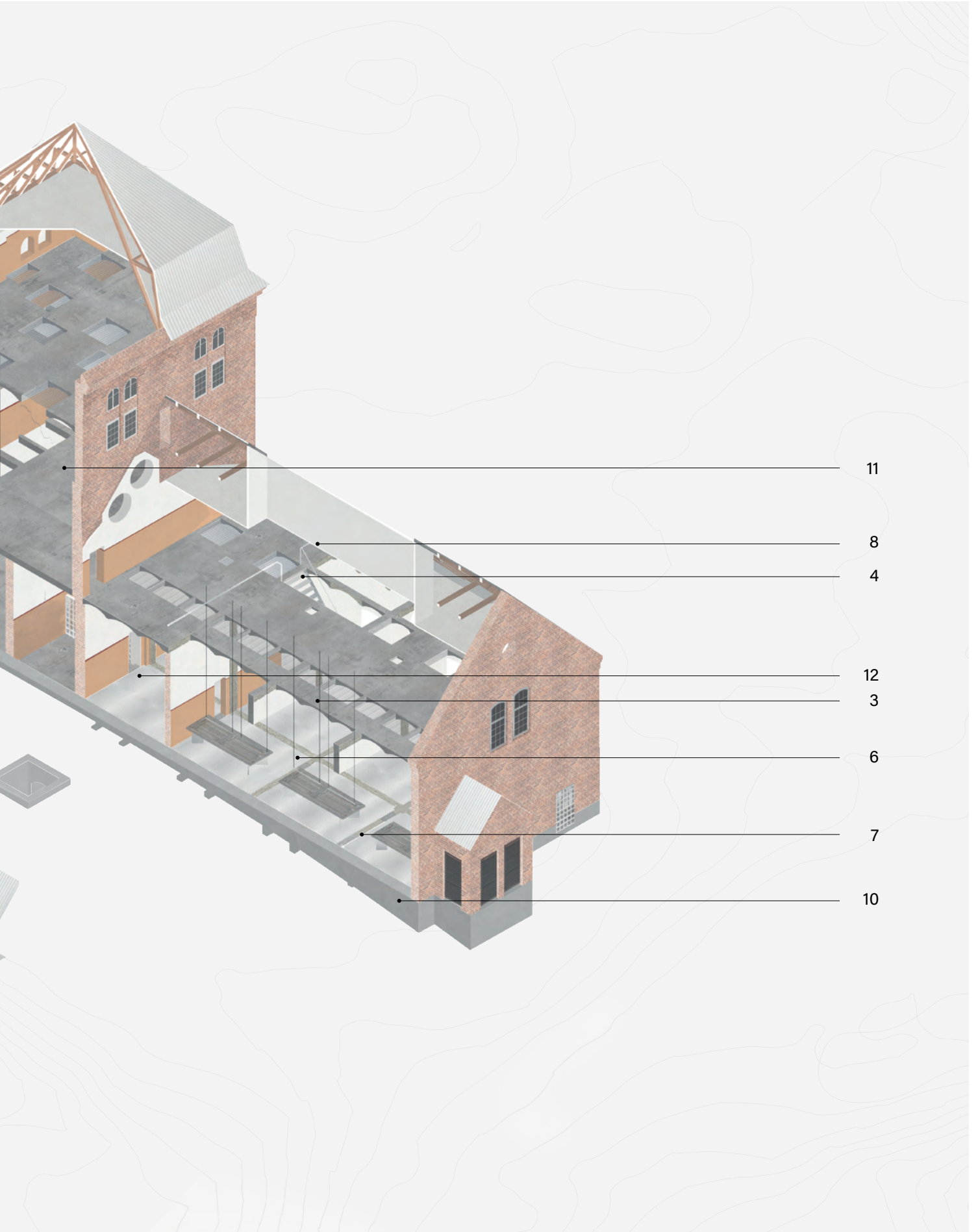
Guarding

Some scenarios in the building are kept as they are, without any notion of subtraction and addition.

Can be seen as a trace, as well as a restriction and guide in terms of spatial management



Collage portraying all interventions situated in the building



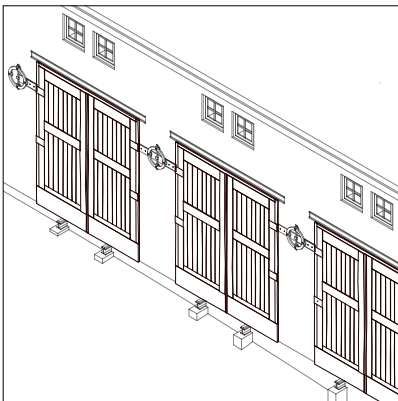
01. Transformer hall door

Objective: Substituting element

Type: Subtraction - Addition

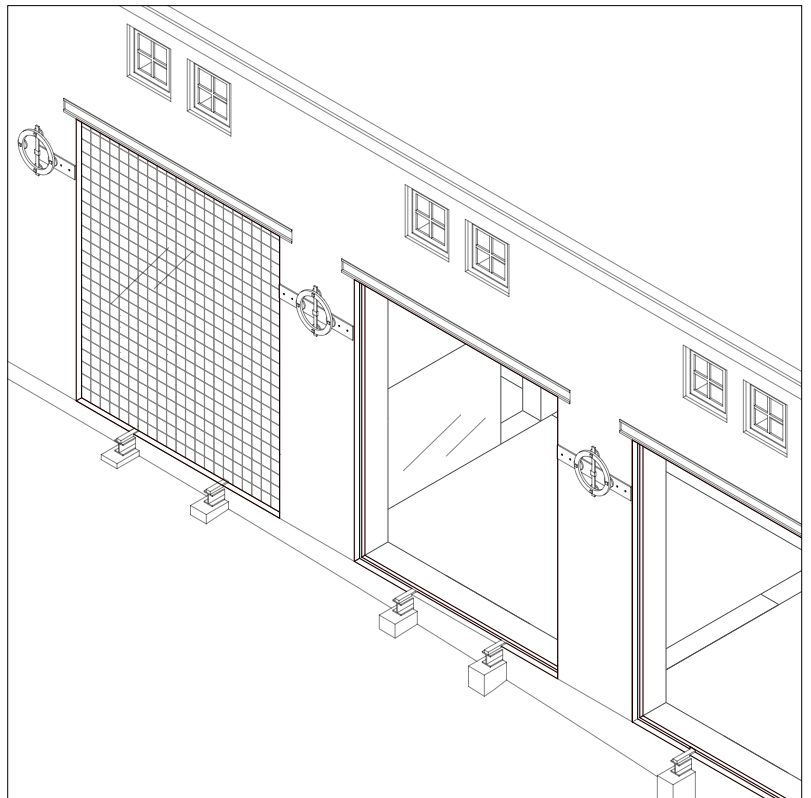
Materiality: Glass

Treating the opening left behind by the door as a trace in the facade. By substituting the worn down transformer hall doors with a permeable surface the rhythm in the facade is preserved and daylight is let into the transformer hall.



Before

1:200



After

1:100

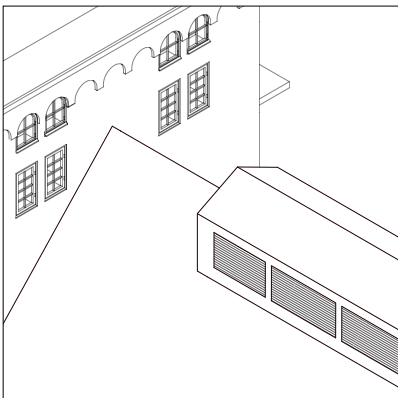
02 . Transformer hall roof

Objective: Removing element to introduce daylight

Type: Subtraction - Addition

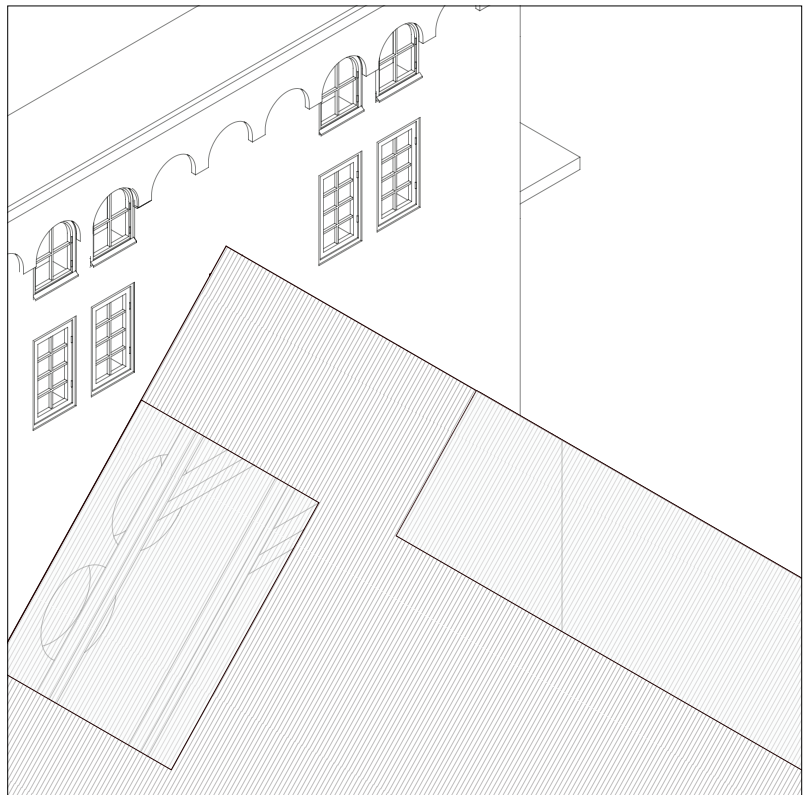
Materiality: Aluminum and corrugated steel

Subtracting extension on roof in order to let light into the building. This generates a cleaner impression and acts as a lantern from the exterior. The opening is filled with a corrugated permeable material.



Before

1:200



After

1:100

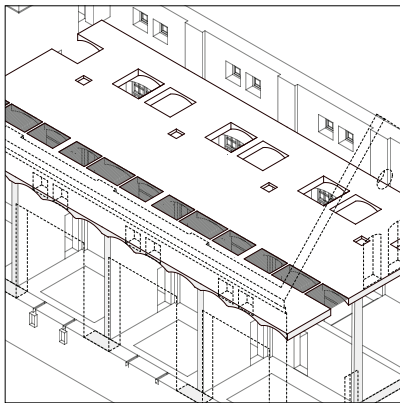
03. Floor slab

Objective: Punctuating floor slab

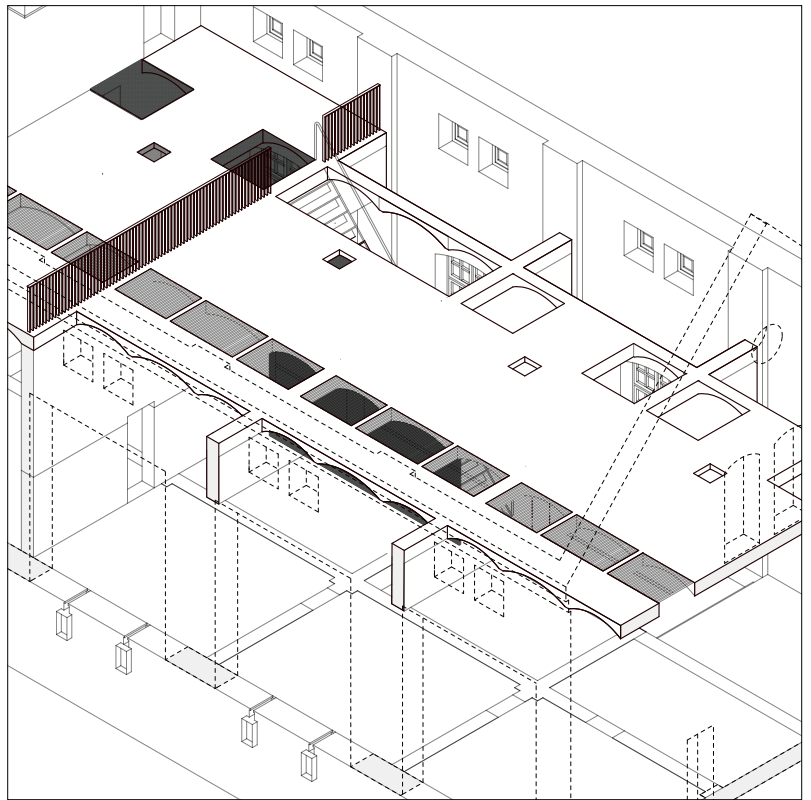
Type: Subtraction

Materiality: Concrete

The floor slab is punctuated in order for daylight to shine through along the edges of the building. The holes in the floor slab are organized in order to preserve the slabs original structure, and allows for armature to penetrate through the building.



Before 1:300



After 1:150

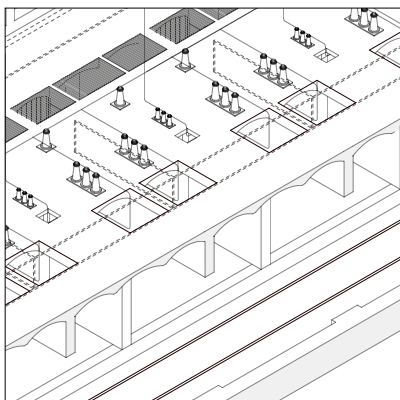
04. Vertical communication

Objective: Introducing a new stair

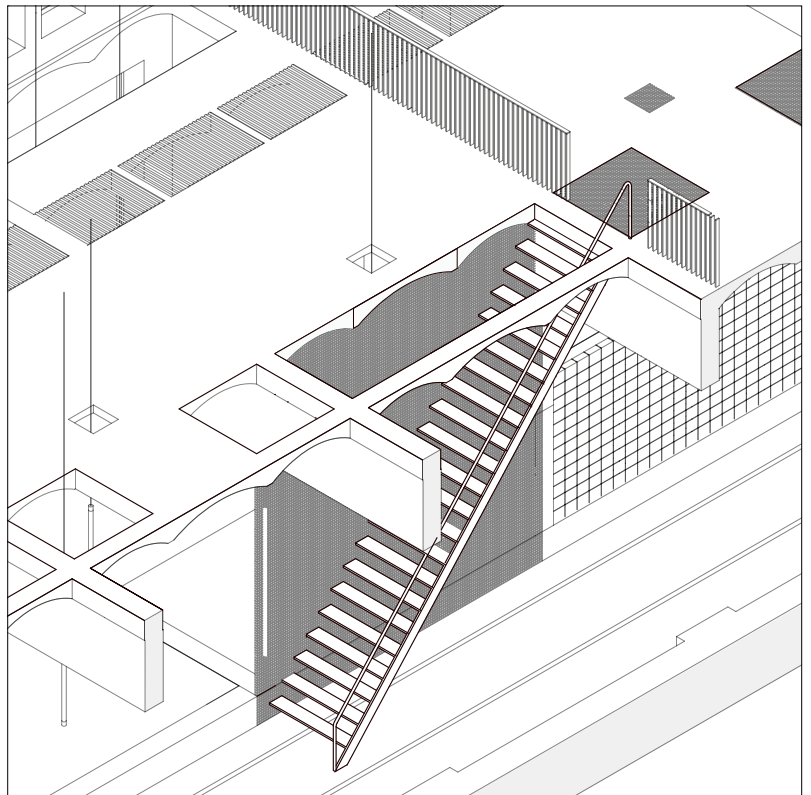
Type: Addition

Materiality: Steel

The punctuated floor slab allows for the introduction of a new vertical communication element. The stair is situated in a transition corridor within the building, following the original flow of movement. It is anchored to a steel grid that aligns with a merged original opening.



Before 1:200



After 1:100

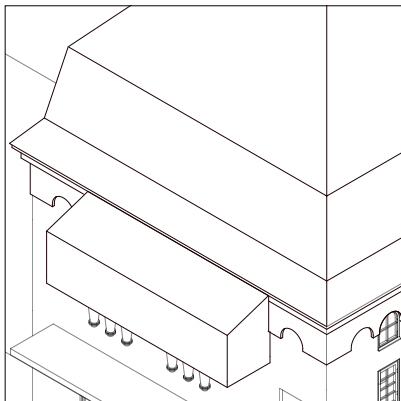
05. Tower facade

Objective: Remove abundant building element

Type: Subtraction - Addition

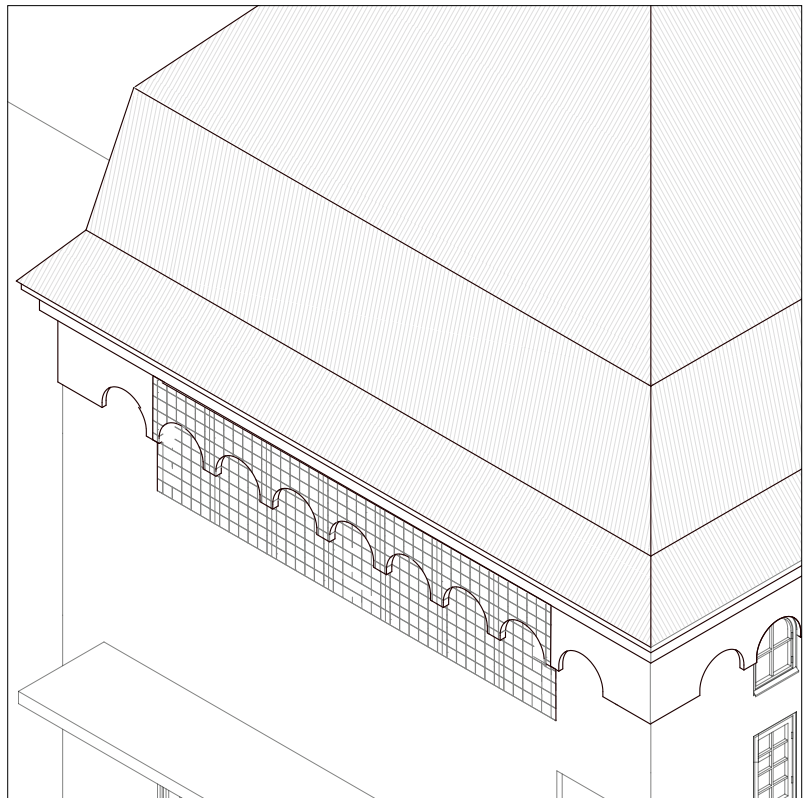
Materiality: Glass concrete

An extension in the facade related to the former function of the building is removed and replaced by glass concrete to let light in and out of the building. The arrangement of the glass concrete mimics and aligns with the original cornice, extending it around the tower.



Before

1:200



After

1:100

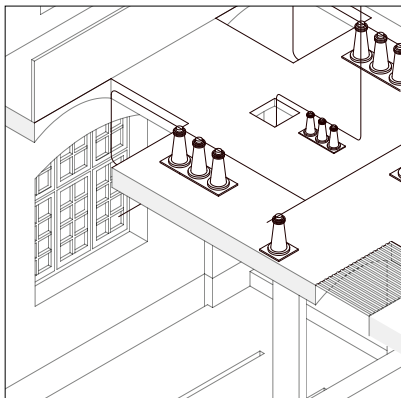
06. Electrical wiring

Objective: Enhancing holes from electrical wiring

Type: Existing - Addition

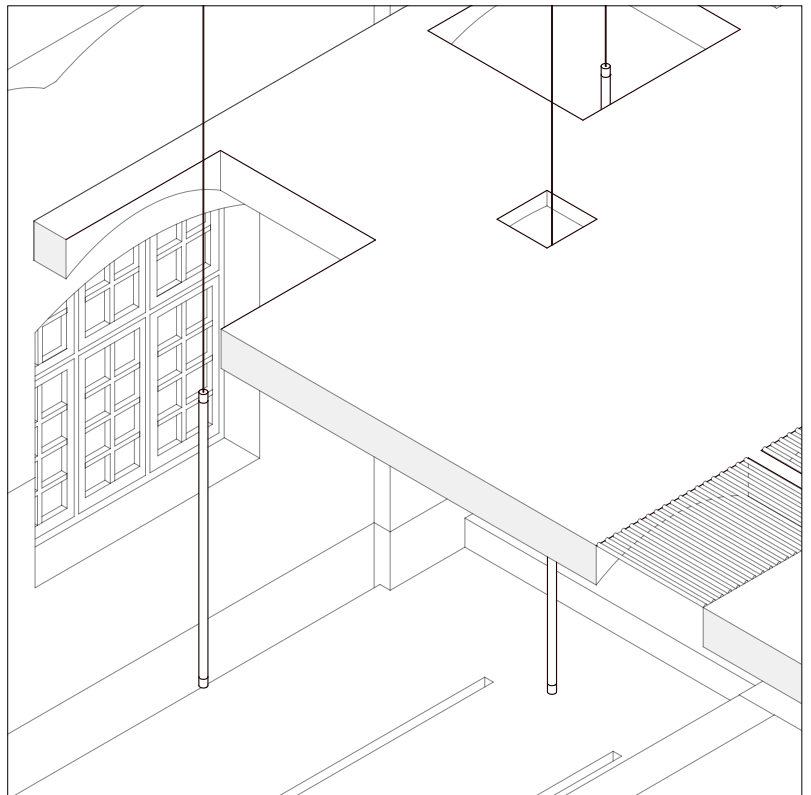
Materiality: Steel light fixtures

Existing holes in the concrete slabs are activated by introducing light fixtures. This also accentuates the verticality and floor heights through the building. In the entrance hall a coat rack is hanged trough the holes, following the same principle.



Before

1:100



After

1:50

07. Spatial rhythm

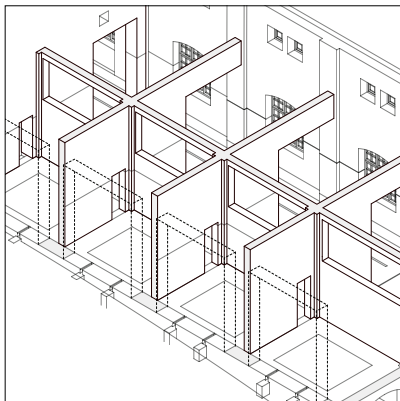
1:300

Objective: Utilize the spacious transformer hall

Type: Subtraction

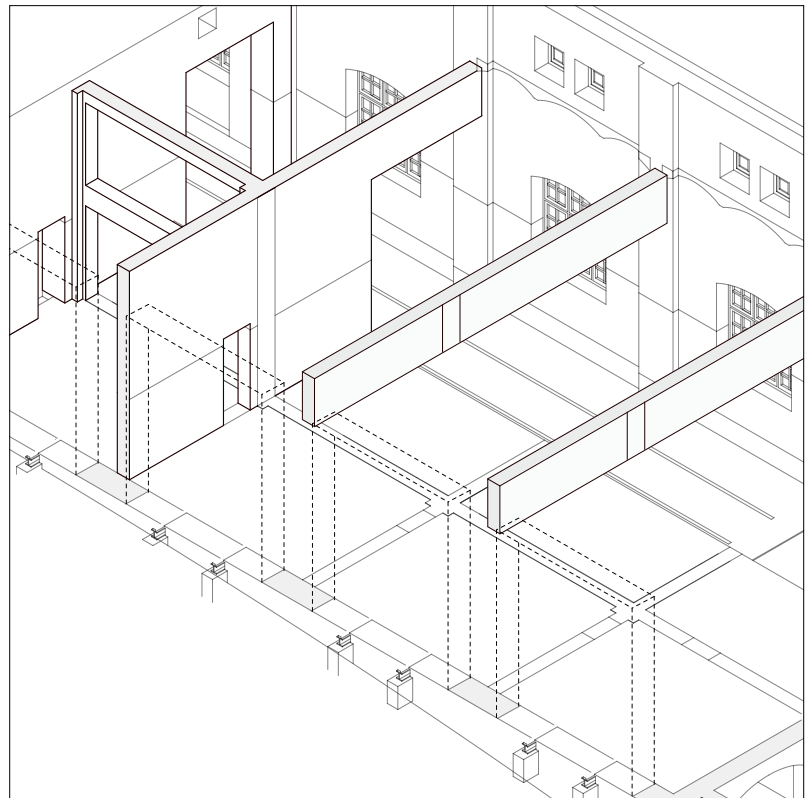
Materiality: Brick and concrete

Opening up the transformer hall by subtracting wall elements. The spatial rhythm is preserved by exposing the trace left behind by the walls. This allows the visitor to read the original spatiality of the transformer hall, and comprehend its former purpose and function.



Before

1:300



After

1:150

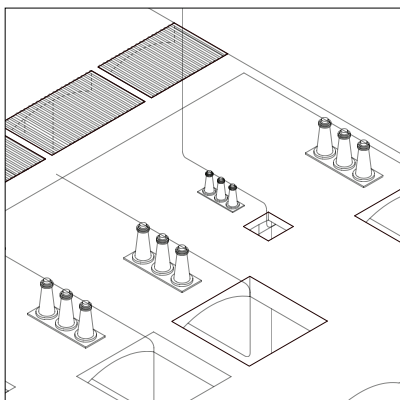
08. Defining space

Objective: Allowing for accessibility

Type: Addition

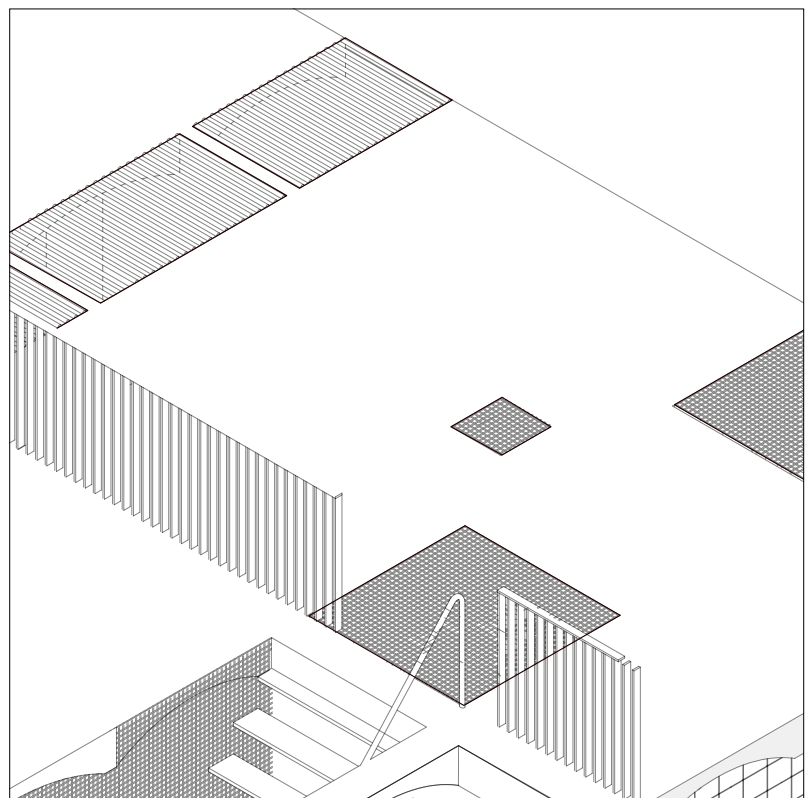
Materiality: Steel

Closing some of the holes with a steel mesh in the floor slab to make the second floor inhabitable. The rest of the floor slab is sealed off with a steel railing to allow for the preservation of the original punctuation in the slab.



Before

1:100



After

1:50

09. Entrance

Objective: Renovating the entrance

Type: Existing - Addition

Materiality: Burnt wood, concrete

The current state of the entrance door is unsatisfactory in terms of insulation and usage. The original entrance door will be removed and substituted by a wooden door with same proportions. In parallel, a small concrete stair is superimposed on the entrance to make it accessible.



Before

1:200



After

1:100

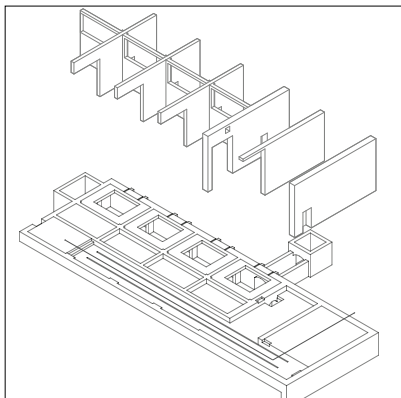
10. Foundation

Objective: Preserving floor heights in foundation slab

Type: Existing

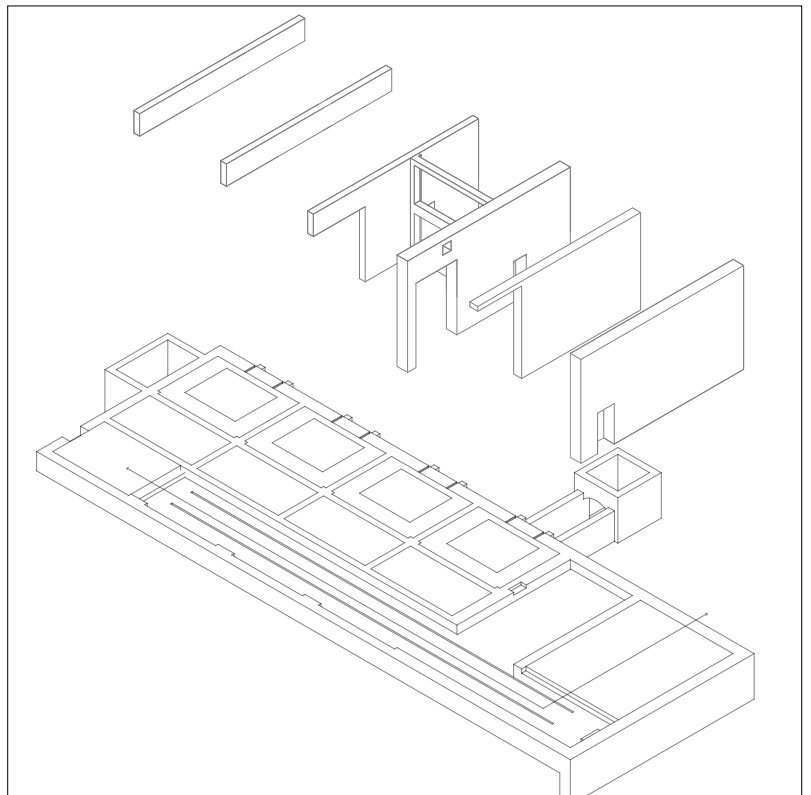
Materiality: Concrete

By preserving the foundation slab, the original spatial organization of the transformer hall is kept. The various floor heights in the foundation suggests a movement and transitional flow that fits the shape and purpose of the building.



Before

1:600



After

1:300

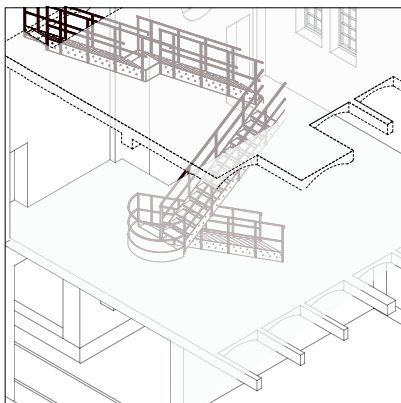
11. Translation of vertical communication

Objective: Introducing a refined vertical movement

Type: Existing - Subtraction - Addition

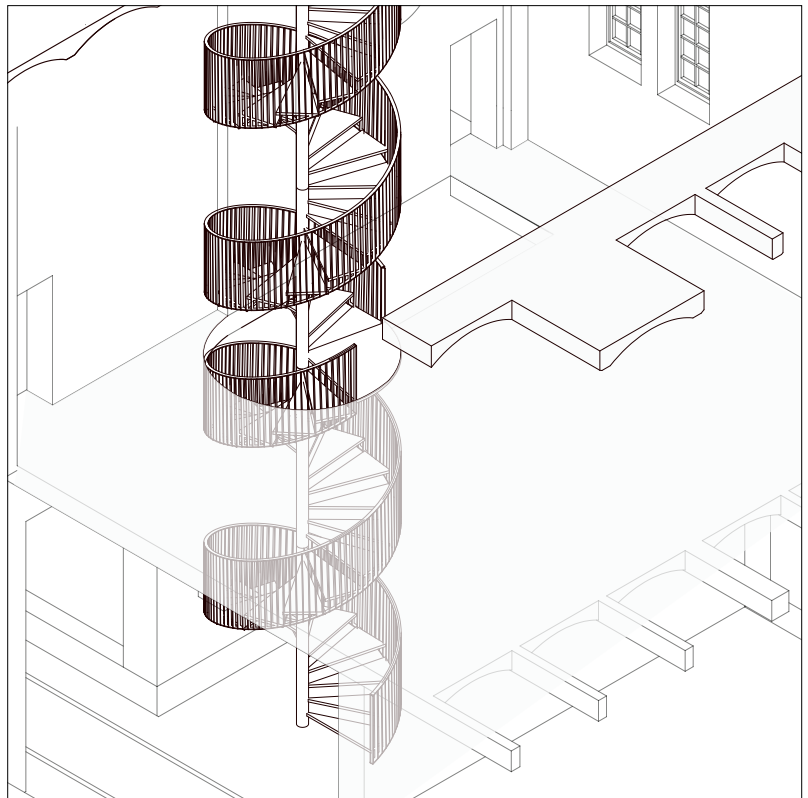
Materiality: Steel

The current state of this stair is worn out and unsatisfactory for common use. By substituting it with a new spiral stair creates a more space efficient vertical movement and also preserves the current function and placement of the stair. Metal mesh patches up the flooring from the openings of the former stair.



Before

1:200



After

1:100

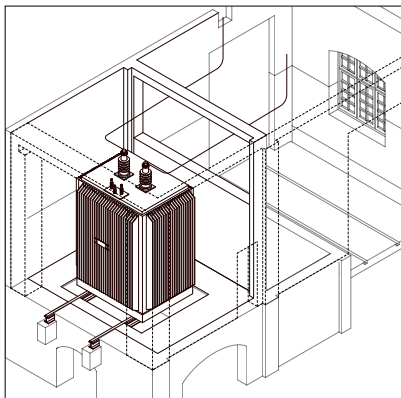
12. Exchange of function

Objective: Applying the engine

Type: Addition

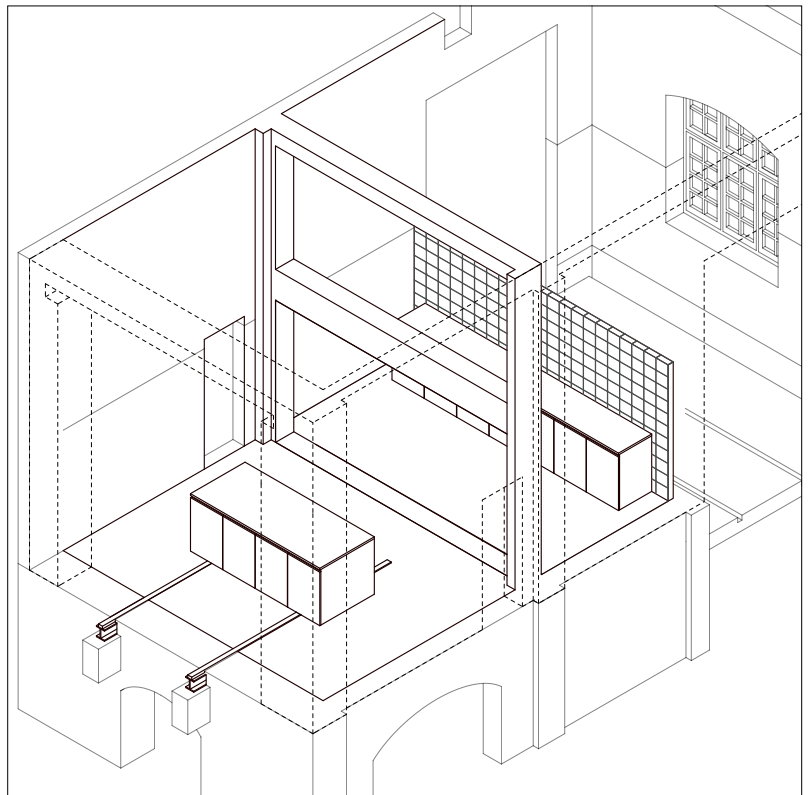
Materiality: Stainless steel

A kitchen is inserted where the former transformer used to be placed. This is substituting the function of the building and adding the proposed program in the same manner as the previous program used to be situated.



Before

1:200



After

1:100

Materiality in architecture serves as a palette of the building's history - tactile traces of wear and tear that have accumulated over time. These physical remnants, whether subtly embedded or prominently displayed, help tell the stories of its past life. Within the proposal, materiality can be categorized into three parts: original surfaces, tactility generated by the subtraction of elements and new added material. Together they form an entity that reconfigures the outcome and accumulates new intersections and values. The reconfiguration of parts can elevate otherwise worn out or disposed material, allowing old elements to unfold as something new. Architectural revitalization occurs in the intersection of preserved value and introduced elements, pushing the proposal forward. These visualizations are a few examples of tactility in the interventions.



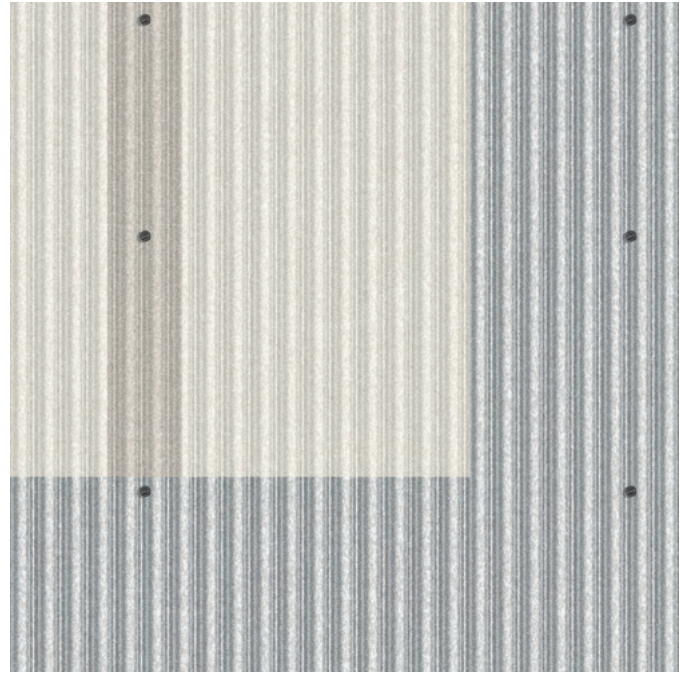
Trace of subtracted joist in relation to an added stair



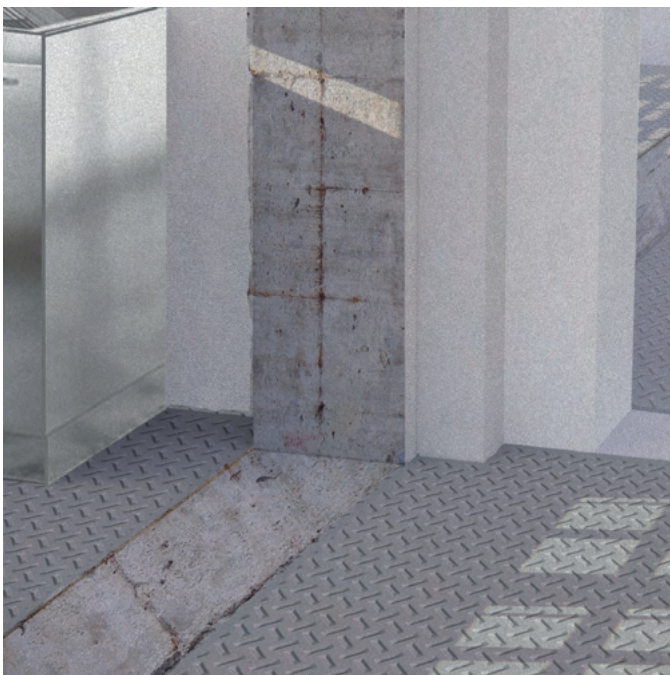
Trace as a raw cut, exposing building structure



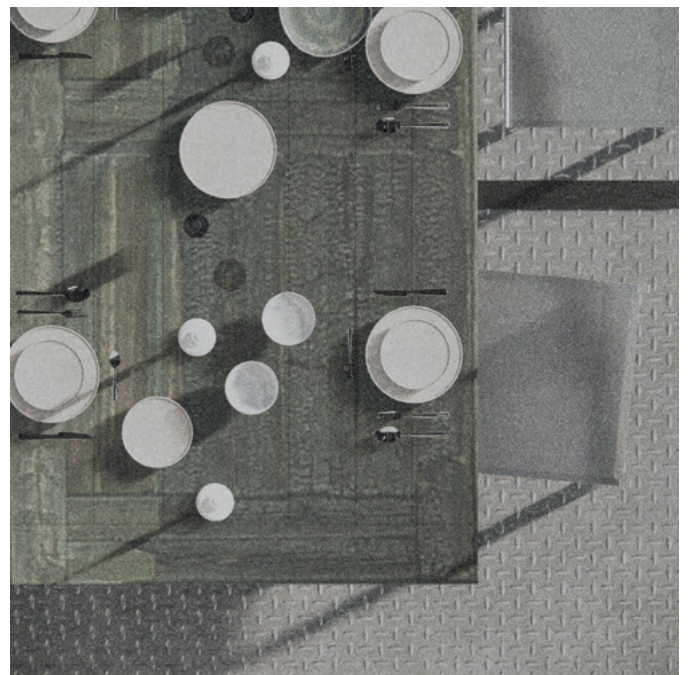
New glass concrete meets original brickwork



New roof with permeable and non-permeable surfaces



Trace in relation to added flooring



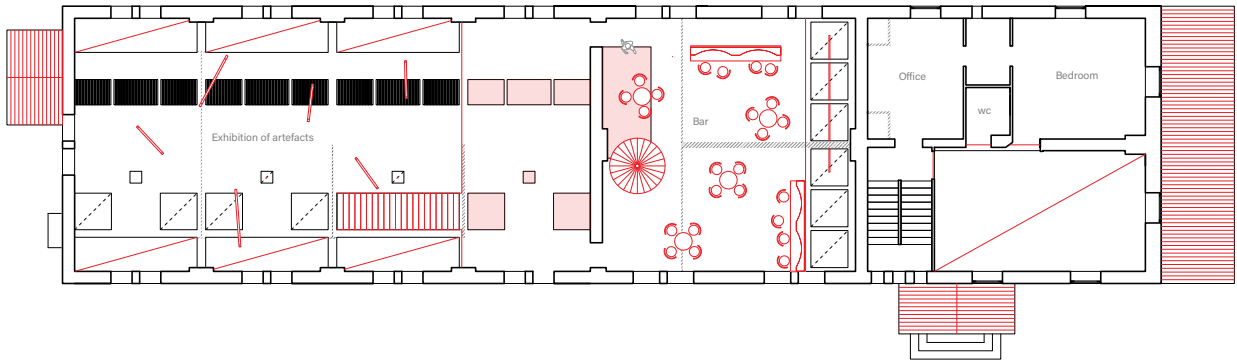
Repurposed transformer door as a table top



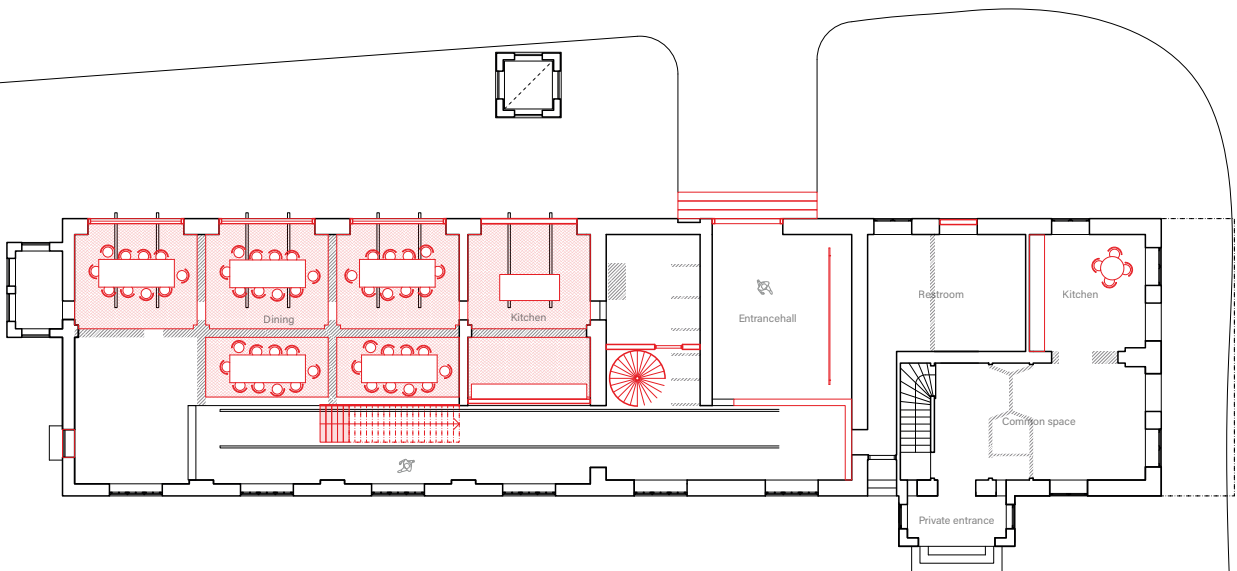
Proposed facade elevation, east



Floor 02

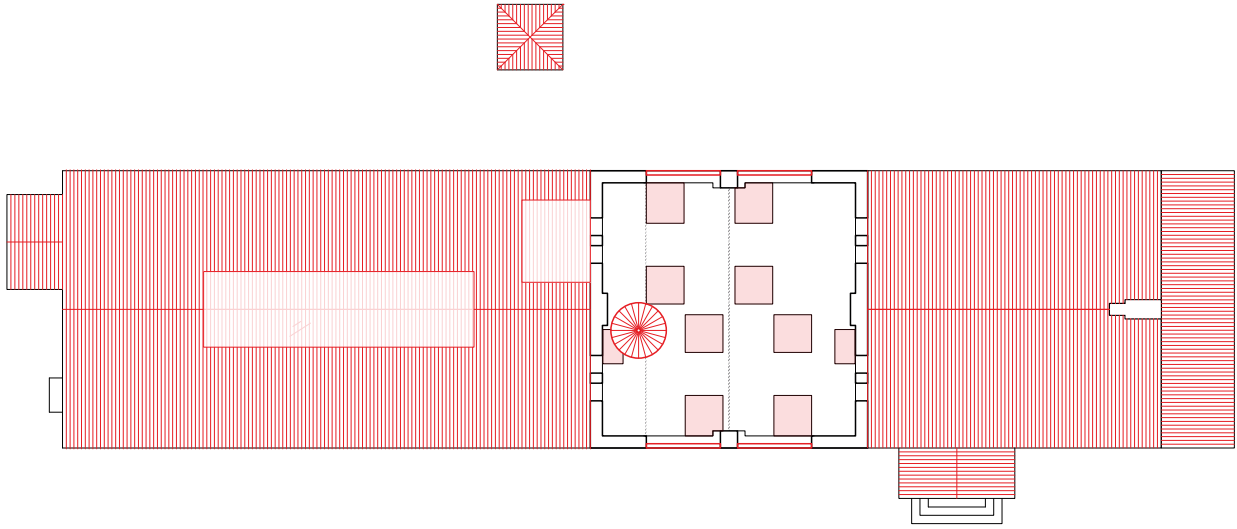


Floor 01

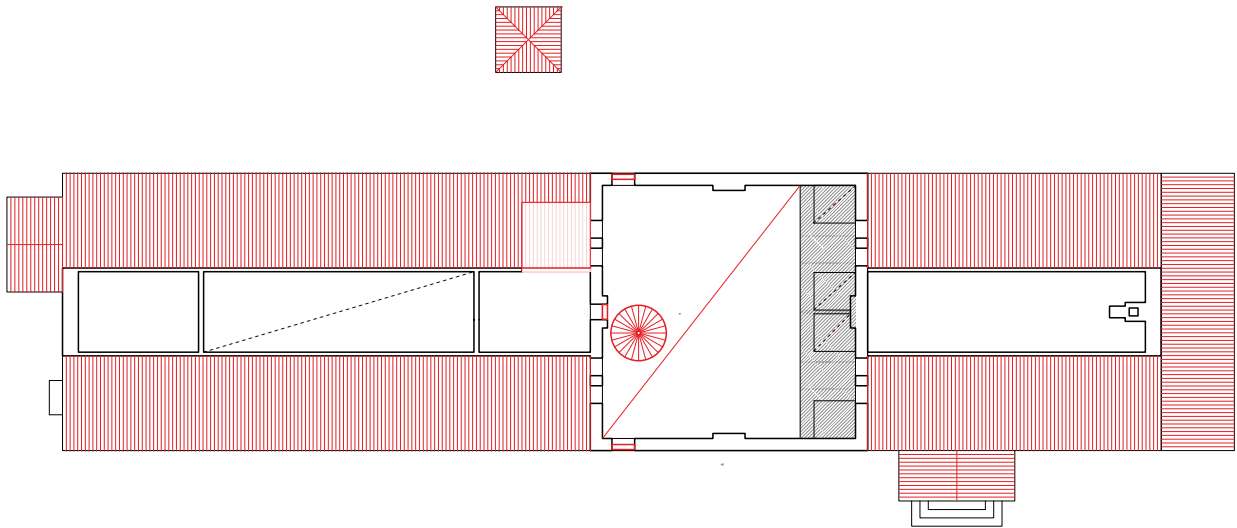


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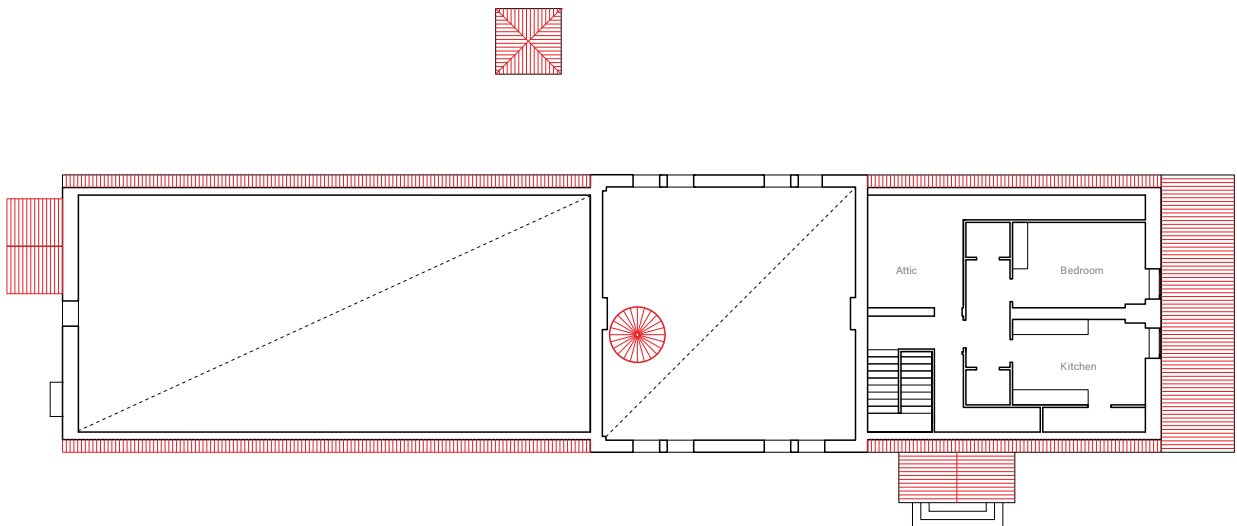
Floor 04

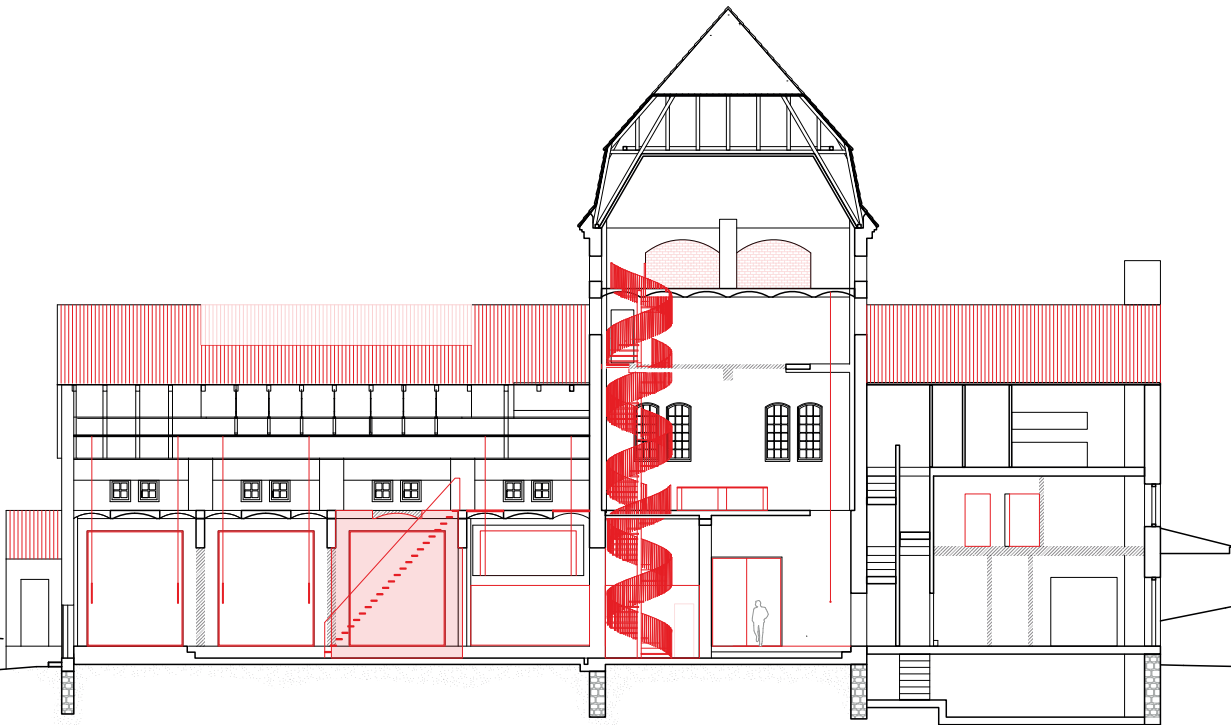


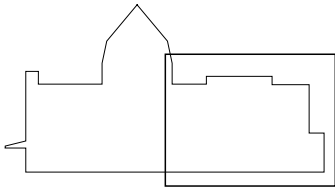
Floor 03



Floor 2.5







Interior view of transformer hall

In this post-transformation image, the subtle interplay between new and existing surfaces tells a story of evolution and adaptation of the building's original spatial boundaries. The opened facade seamlessly integrates the interior space with its surroundings while the disassembled wooden doors, waiting to be re-purposed, serve as tangible reminders of the building's previous life, evoking nostalgia and continuity. Non-static light fixtures utilize old and new openings of the ceiling, resonating with the former pathways of electrical wiring. Additionally, concrete cutouts from the vaulted joist suggest potential future functions, perhaps as components of a bar or a spatial divider. The raw section cuts reflect the visible traces left in the ceiling, walls and floors, embracing the narrative of transformation.

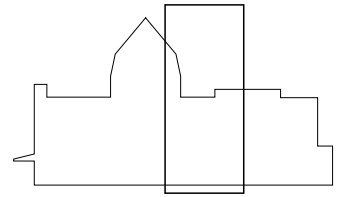


Current state of the space





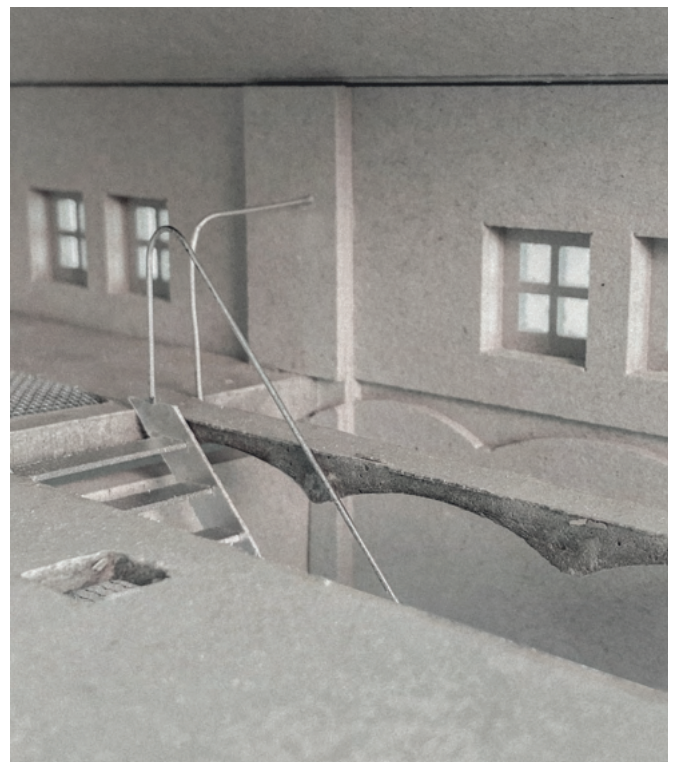
Fragment model 1:40



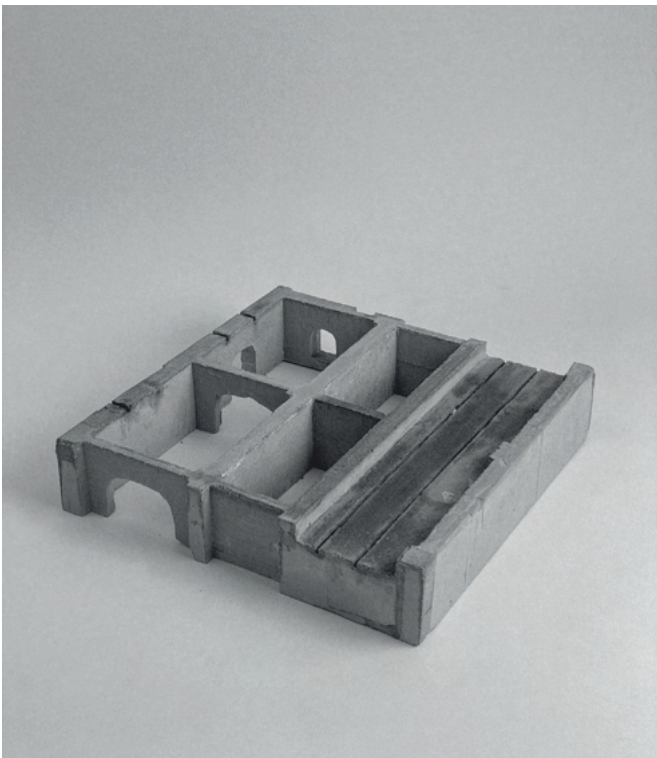
Drawing inspiration from the work of Kastler Skjeseth Architects and their way of constructing fragment models based on the survey of a building, this model is used as a means of representation. It serves as a tool to delve deeper into the tactility of materiality and architectural expression of the building, bringing principles of the speculative transformation into the physical realm. It contains examples of all the strategies used to develop the proposal. The existing components are represented in cardboard, acrylic, and concrete, portraying the bricked facade, joist, and foundation. New interventions are represented in a steel-like material, as well as engraved and clear acrylic.



Replaced doors creating a permeable facade



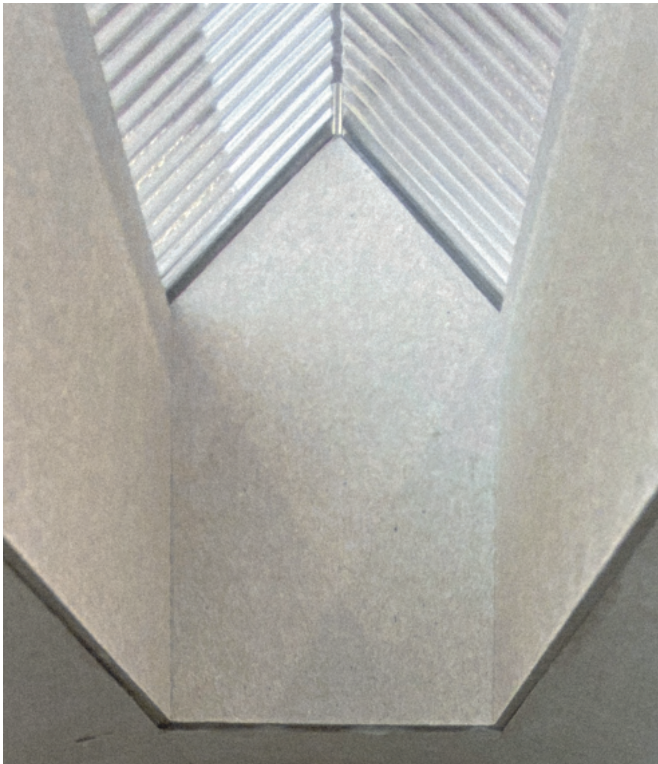
Traces from subtracted parts of the joist are left visible in the walls



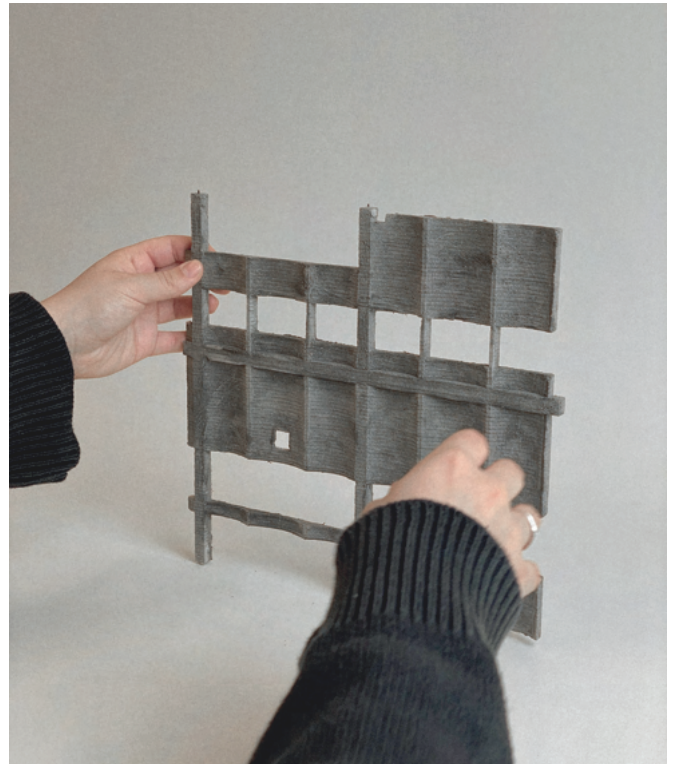
Existing foundation guiding the spatial division



New vertical connection rising from transition corridor



Former ventilation shaft, utilized as a skylight



Cast of the vaulted joist with additional punctures



Non-human proportions prominent in openings



Existing wall punctures, highlighted by the added roof opening



A transformer chamber is utilized as a kitchen, preserving the compact space that once housed the main purpose of the building. To connect the two smaller spaces on the raised foundation without compromising on the chamber's spatial integrity, only the lower portion of the dividing wall is punctured, enhancing the original opening. A new glass concrete wall encloses the space, leveraging the newly created connection to the distant window.

Described in line drawing 12, page 50.

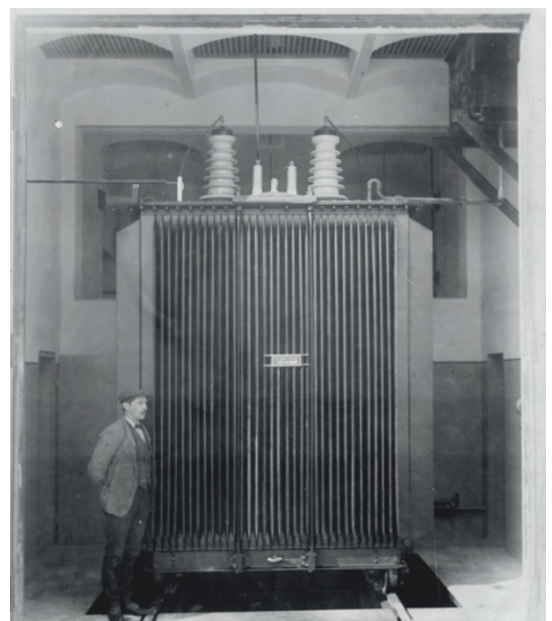


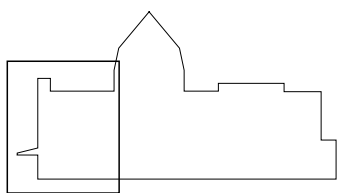
Figure 14: Original transformer in relation to a person



By integrating windows into the openings once occupied by wooden doors, natural daylight flow into the transformer hall. A cut through the joist is made along the wall, preserving as much of the vaulted ceiling as possible along with the original openings for ventilation and electrical wirings. This enhances the height within the structure and allows for light to filter through from the upper floor, connecting the two spaces. Walls are subtracted to reconfigure the previous spatial divisions, while traces are intentionally left in the walls, ceiling and floor to preserve the original rhythm. A new flooring is installed within the boundaries of the previous surfaces, providing a contrast to the rough textures left behind. The new stair is supported by a metal grating structure, serving as a spatial divider while allowing light to permeate through.



Described in line drawing 04 and 07, page 46 and 48.

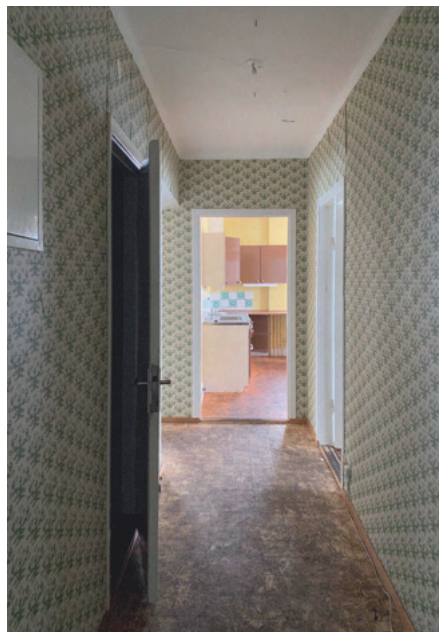


Interior view of dwelling

In the original configuration of the southern part of the building, the space holds a stark contrast to the rest, meeting human needs and proportions. This part of the building used to consist of a waiting hall on the entrance floors, and two separated apartments on the second and third floor. In this proposal, the former waiting hall is vertically connected to the second floor apartment, creating an open and inclusive space when entering through its main entrance.

Learning from Mo Krag's ways of radical preservation, the previous worker's residence is displayed by taking the preservation to the extreme. All original surfaces, openings and spatial divisions are kept, with raw and honest edges left exposed, articulating the structural

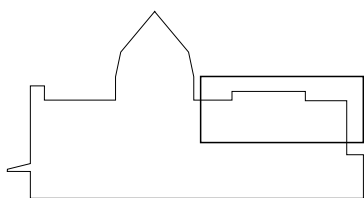
integrity of the building. Former door openings are integrated with corrugated glass, and the traces from walls on the entrance floor are sealed with new wood. The linoleum covering the floor is removed, exposing a wooden floor underneath. Juxtaposing the sprawling entity of the dwelling's old configuration with the open and inclusive gathering space generates a valuable setting where new meets the old in all its honesty. It highlights the dynamic interplay between preservation and adaptation, where the past and present coexist, enriching the narrative of the space with layers of meaning and significance. The results of this approach deviates from the rest of the building, as the former human presence has left its marks.



Current state of the space



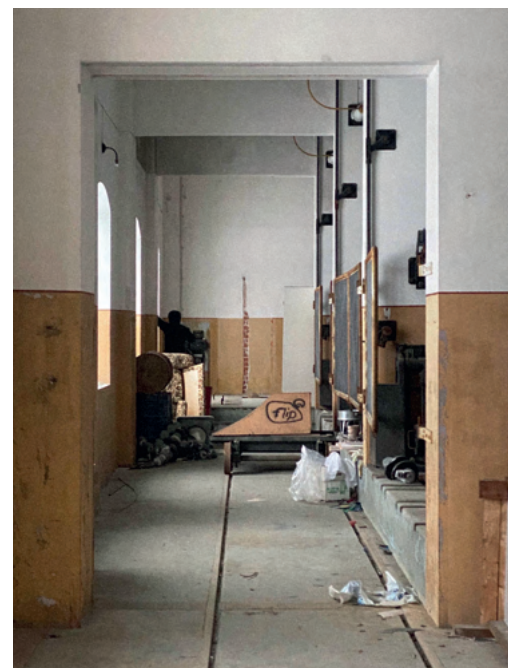
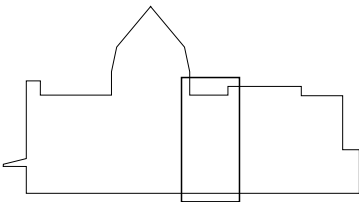
Interior view of second floor



Current state of the space



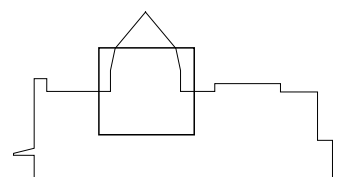
Interior view of first floor



Current state of the space

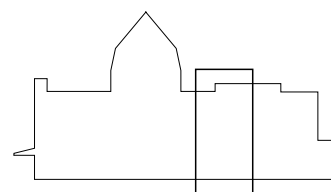


Interior view of tower, showing the traces of subtracted walls and slabs and how the slabs are re-posed.





Interior view of the transformer hall, showing traces of subtracted walls and fragments of slabs. The tables are showing how the former transformer doors are re-purposed into a table setting.



Discussion

The thesis manifests an exploration on how to revitalize Torneträsk substation, while safeguarding its identity and traces of the past accumulated in its entity. By initiating its rebirth, we have explored various approaches to this transformation, focusing on preserving the building's heritage, elevating its significance with honesty and transparency.

The proposal reflects an approach on how to transform buildings of historical significance by letting the building's past guide the interventions. It highlights the importance of acknowledging and honoring the stories that old buildings carry. By identifying and activating these inherent qualities, we not only safeguard the physical structures but also breathe new life into them, ensuring that their legacy continues to resonate with significance for generations to come. As portrayed during the Venice Biennale, old buildings act as carrier bags of memory. Learning from the buildings helps initiate transformative actions. The transformation then moves the building into a contemporary state while layers and information of the past is unraveled. The strategy of addition, subtraction, and dealing with the existing resonates with the desired outcome of the project, generating the notion of rebirth.

The project also questions the notion of value and beauty and how value can be lost if beauty is not reconsidered. Viewing and enhancing the notion of unconventional beauty is a sustainable way of developing architecture and

revitalizing old buildings. The proposed transformation does not necessarily need to be considered as beautiful, but rather as a way of revitalizing its intangible values, which in this case is how beauty is defined. Value, in this case lies in the history of the building and its identity connected to the context. Spatial value is gained from restoring the origin of its purpose, or by showcasing previous constellations in the form of the trace. The correlation between new and old has also been a central aspect in the process, and how to carefully add new elements that resonate with the old. Hierarchy between elements should not feel prominent, and the original and added building material is always found to occur in symbiosis. The addition of new elements happens on the building's premises, which means the variation of new material is small.

As mentioned, previous constellations are showcased in the form of the trace - an important aspect to the project. Traces from subtracted elements and patina on surfaces act as reminders of past events, markers of old configurations, and the result of abandonment and the passing of time. In this proposal, traces from subtracted components are left visible and valued equal to the already existing marks and imperfections on surfaces. In relation to new added matter, new intersections occur in resonance with the notion of rebirth. Visualizations showing the result of the transformation have been carefully manipulated in order to communicate this

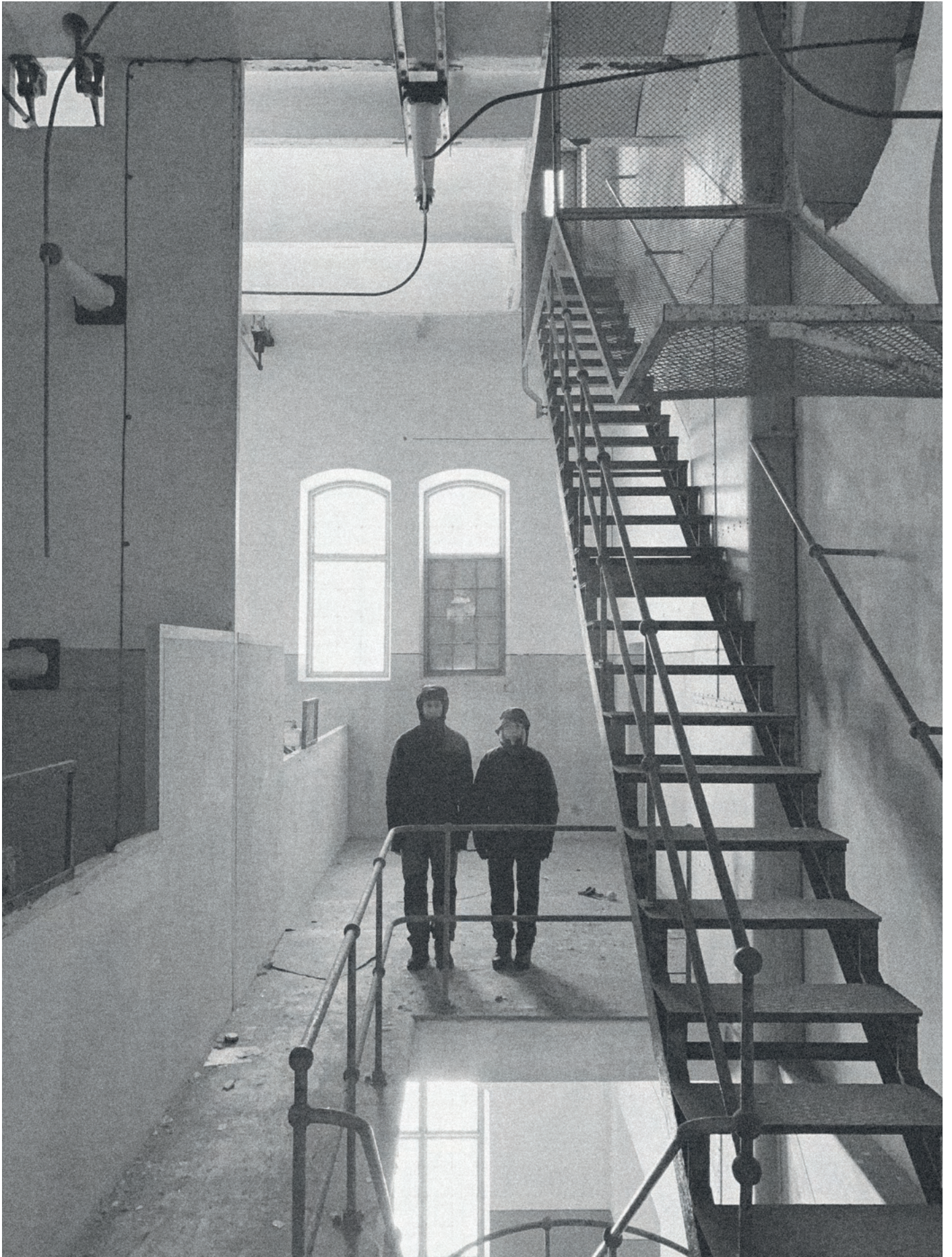
notion of deterioration and the as-found state of the building. Cracks, dirt, and fading pigmentation have been added to the otherwise polished outcome of the digital visualizations to underline the facts that the proposal is not seeking to renovate the aspect of degeneration, rather to generate new value in the intersection of the existing and new material.

The attributes that are kept in the proposal are carefully selected, such as the vibrant pigment on the walls or the existing spatial arrangement in terms of movement. Some attributes are highlighted to emphasize their integrity, such as the existing punctuation in the floor slabs. Some subtracted elements are also re-purposed and reassembled into new constellations. The former transformer doors are an example of this, where they are repurposed as table tops. One might consider this as vulgar or an obvious procedure, but as the transformer door is an integral element in the history of the building, both in its industrial scale, significant color and traces of fire, it serves as an artifact and carrier bag of significance.

This proposal never seeks to be revolutionary in terms of transformation. Instead, what makes this project compelling is the transformation of the building in relation to its geographic location. Simply by considering it as a subject for speculative design the narrative about the substation and its context begins to unfold. Transforming a building is not only about understanding its physical

structure, but also learning about its previous history and context. If this building were situated in a different setting, for example in an urban context in the south of Sweden, the likelihood of finding it in this abandoned state is low. It would probably be considered as a monument of cultural and historical significance, and managed thereby - perhaps functioning as a museum, a music venue or a cult brewery. It would certainly not be abandoned. This realization underscores the importance of acknowledging and honoring the stories embedded within old buildings, enriching our understanding of the places they occupy and the communities they once served. Through such critical practices, we not only safeguard these architectural relics but also ensure that their legacy continues to resonate with significance for generations to come.

In essence, the project shows the potential of using adaptive reuse as a form of storytelling, where architecture is redefined from static objects to dynamic narratives intertwined with the fabric of our history. Working through this process has altered our attitude and widened our perception on what architectural sophistication means, both in terms of allure as well as treasuring sustainable values. By redefining architecture as dynamic narratives intertwined with our history, stories embedded within these structures can be portrayed.



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Images

Figure 1: Unknown. (1913). *Torneträsk Station* [Photograph]. Järnvägmuseet.

<https://digitaltmuseum.se/021018165477/tornetrask-station>

Figure 2: Unknown. (1926). *Torneträsk* [Photograph]. Järnvägmuseet.

<https://digitaltmuseum.org/021018137843/statens-jarnvagar-sj-393-meter-over-havet-1464-km-fran-stockholm-obs-pagaende>

Figure 3: Unknown. (1932). *Folke Zettervall* [Photograph]. Järnvägmuseet

<https://digitaltmuseum.se/021017858271/arkitekt-folke-zettervall>

Figure 4: Statens Järnvägar. (1912). *Torneträsk Stationshus Samanställning* [Archive drawings]. Järnvägmuseet

Figure 5: Mesch, B. (1914). *Torneträsk station* [Photograph]. Järnvägmuseet.

<https://digitaltmuseum.se/021018153519/tornetrask-station>

Figure 6: Unknown. (1915). *Vassijaure station* [Photograph]. Järnvägmuseet.

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Figure 7: Unknown. (1914). *Abisko station* [Photograph]. Järnvägmuseet

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Figure 8: Michelsen Stoccholm Krag, M. (2017). *The theatre installation* [Photograph].

Figure 9: Kastler Skjeseth Architects. (2018). *Bryggerhuset* [Drawing].

Figure 10: Ketter, C. (2007). *Gulf coast slab* [Photograph].

Figure 11: Marakatt-Labba, B. (2007) *Historja* [Textile wall hanging]. Photographed by Wang, K. KORO

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Figure 12: Statens Järnvägar. (1911). *Torneträsk Stationshus Samanställning* [Archive drawings]. Järnvägmuseet

Figure 13: Statens Järnvägar. (1913). *Torneträsk Stationshus Samanställning* [Archive drawings]. Järnvägmuseet

Figure 14: Unknown. (1915). *Transformator i transformatorstation på malmbanan* [Photograph]. Järnvägmuseet

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