CARE OF BRUTALISM.

Repair as an
architectural practice

Hornsbruksgatan 4

Inès Romy

Chalmers School of Architecture
Department of Architecture
& Civil Engineering

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Supervisor: Walter Unterrainer

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Thanks to,

Liane, for your guidance
and insights that
challenged the process.

Walter, for your shared knowledges
and for pushing me
to be both *brutally honest* and *brutalist*.

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Repair as an architectural practice

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“May our rough concretes reveal that beneath them our sensibilities are fine.”

Le Corbusier

Beyond its unexcused nature, the brutalist movement is fascinating. Despite their assertive force and radically intimidating, these buildings seem to embody a certain social optimism. For many of us, Brutalism remains associated with a corrupt political vision, its social failures, and a prideful idealism. Even before this architecture anchors themselves in a collective consciousness, several generations saw it neglected, misinterpreted, and often demolished.
Today the construction sector tends to replace rather than repair and unwanted buildings often slip into disuse and decay, weakening an already fragile cultural heritage. In a system where the pressure to dismiss the issue of revaluation is intensifying, it is generating missed opportunities and losses of building. It is our duty to improve our ability to perceive the potential of existing elements, to listen to them, to decipher them and to adapt to the architectural constraints of the site.

This research explores the architectural ethics of Hornsbruksgatan 4, a 1960s reinforced concrete building located in Stockholm. While its future is currently being questioned, with a consideration for demolition the project attempts to discern the expressive capacities of reinforced concrete, its tensions and the pathologies that affect it through a diagnosis of its existing state. The aim is to understand how historical layers can continue to generate curiosity and interest for its potential users. The approach seeks to repair and restore a spatial potential that has been untapped for almost ten years, by reinforcing, redefining, and ennobling its brutalist identity.

The result proposes a subtle rehabilitation of the building: careful surface treatment, a redefinition of a public and cultural program and minimal interventions that strengths its pre-existing link within its urban context. By making visible the tensions between the existing, the transformed and the repaired, this approach demonstrates how minimal interventions can offer a credible alternative to demolition. It argues how attentive and materially grounded interventions can make legible a continuous evolution of Hornsbruksgatan 4 and recognizes a potential living into 1960s existing structures.

KEY WORDS:
Brutalism, Material Survey, Therapy, Interoception, Repair

Fig.01 Photography of Hornsbruksgatan 4.
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The demolition narrative has surrounded post-war modernist and Brutalist buildings still today. Often reinforced by a persistent misunderstanding of their architectural and social intentions, many of these estates, such as Trellick Tower in London or Park Hill in Sheffield[1] have been portrayed an association of social problems that involved failures, isolation and social decline. Result of lack of infrastructure and the political decision of concentrating vulnerable populations declined the social ambitions of these buildings. These problems were projected onto brutalist architecture. Today the turnaround of those shows the example of these unaffordable, listed and highky sought buildings. This contrast emphazises that the issue was not the architecture itself, but rather the way it was perceived and the social issues that had come to inhabit it. The architecture began to be viewed in a positive light.[2]

When we look at our cities today, most of the urban fabric emerges from areas occupied by buildings. Architectural transformation often responds to new functions of a given place; it is buildings liberated from inherited constraints. Associated with the goal of making life spaces faster, cheaper and easier, we lost since a long time the value of existing brutalist buildings which hold beyond stories, spaces and energy from the past potential. This context is shaped by the difficulty of assigning value within economic markets.[3] This misalignment contributes to a systematic undervaluation of brutalist structures, and less attention is given to the architectural potential of decay, constraint and the so-called "unworthy" building (Smith - 2006).[4] There is a necessity to rethink the construction process; not merely by showcasing favourable life cycle assessments or celebrating bio-sourced achievements, but by fundamentally questioning how we intervene in the built environment. This inquiry emerges from a broader societal context marked by ecological urgency, material scarcity and a growing awareness of the environmental costs of brutalist demolition.

The destruction of architecturally significant but unprotected brutalist buildings has become a devaluation of assets considered obsolete for many decades. Result of decades of neglect, non-compliant elements and financial costs influence the fate of these abandoned buildings. Renovation is deemed too expensive and technically unfeasible, compromising structural integrity. The addition of strong stigmatization linked to social problems and a lack of maintenance caused by the pressure of public investments has led to a devaluation of what constitutes heritage. Subjected to real estate pressures and fueled by political rhetoric that accepts demolition as a solution for urban transformation, the city becomes a fragment of heritage deemed obsolete.

08 demolition[5] is a collective mapping which highlights Swedish buildings exposed to the risk of being demolished. It is intended to provide awareness and conscious value of buildings doomed to be not considered or left for dead. #SOSBrutalism[6] has been created in 2015 by the Wüstenrot Stiftung and the Deutsches Architekturmuseum in Germany. Thanks to a collaborative approach with photographers, activists and architects, this platform lists around 2,300 Brutalist buildings doomed for demolition. Through an online campaign and a survey to save them, the aim is to work towards their preservation and to recognize them as part as the culture heritage.

In another scale, HouseEurope![7] is a community which emerged from the citizen participatory across the European countries. It aims to connect and to highlight knowledge, argumentation, raise awareness and advocate for a change in the construction field. Try to understand and shift the meaning of value creation in the city. Tearing down a building means destroying the embodied energy contained in the entity while reproducing it during reconstruction. Demolition itself consumes a huge amount of energy: machines generate additional pollution and energy consumption and trucks that have to move all the debris created air pollution and traffic that will be congested. The attributed problems linked to brutalist buildings are more than architectural, they are societal, political, economical and so reversible.
In this idea, it reinforces the fact that Hornsbruksgatan 4 is not an isolated case, but a symptom of wider debates.

Preservation discourse started long before our existing time. Long before the French Revolution at the end of the eighteenth century, it has been appeared through the period of Italian Renaissance. Classical antiquity and works of art became an ideal model to be learnt from and copied, which could open to future developments. It soon constitutes a dimension of national cultures and a way to develop a differentiate image of themselves. It becomes a timeline where consciousness of humanist values and regard on ancient monuments start to be seen as common heritages. Regarding the 1949 Meeting of Experts on Historical Sites and Ancient Monuments, "Imbued with a message from the past, the historic monuments of generations of people remain to the present day as living witnesses of their age-old traditions" (Lorentz, 1949).[8] The report highlights the need of protecting sites, finding restoration methods and unifying an approach to conserve historical and artistic sites, particularly after destruction of World War II.

Today, this common value of preserving is still part of our legacy and societal duty. But the value of what is worth to preserve and what is not is a main subject put on the table of architects and the society.
Preservation is about reuse. Reuse is more than a practical or ecological choice, it connects past and future, amplifying past and potential narratives for the building.[9] In this sense preservation is more than considering only listed buildings or signing for buildings which become monuments in the look of politicians and decision makers. Reuse is touching more than old walls in our cities today. People, neighborhoods started since years ago to stand up and to rise the importance of silent buildings. Quite buildings that never sought to be iconic yet have become timeless and have been perceived by few people as spaces which have something to teach us.[10] Not so much nostalgia, not a rejection of the present, but a reminder that clarity, honesty, and restraint still matter. In this idea preservation becomes a sensitive tool for architects to rethink the layers of history we have accumulated in our urban fabric. Future needs must stand up over the past in the way of new alternatives. It can emerge through acts of transformation.

The moment something is dismantled, removed or exposed reveal a form of preservation by revealing something new on the surface into something old. In this research, restoration becomes the act of repair. It is a position of aligning preservation and transformation as a frame for ethical and architectural responsibility that can be grounded in the belief that sustainability begins with what surrounds us. It is about cultivating a sense of existing by recognizing potentials within undervalued buildings and allowing an architecture which evolve through care, continuity and minimal interventions. Preservation is about holding stories and spaces from a building. Stories and acknowledgement emerge from value that are collectively created by the city and the people who live in it.

In the case of Hornsbruksgatan 4, preservation is not limited to protecting the physical entity. It also highlights the practices and the emotional connections that have developed around it. Consequence of a collective effort between the city and its inhabitants, the Röda Rosen[11] association has played a decisive role in the building's future. These actions are manifested in various ways, including protests, passive demonstrations, poster campaigns, and on-site cultural events. Through their presence and visibility, they illustrate the power of solidarity and cultural value as an act against demolition. In this sense, Röda Rosen emphasizes a shared heritage and collective responsibility, contributing to a form of care and sustainability. As the demolition debate remains unresolved for Hornsbruksgatan 4, their actions demonstrate that collective engagement continues to influence the building's future.
In the sense preservation involves an orientation to the past but also to the future. It is about embracing expanded forms of reading and safeguarding as many existing matters and conditions as possible by fewer gestures, less concurrent materials but more intentions.

In the city of Stockholm, the second half of the 20th century was marked by the extension of the metro line. This expansion marked the starting point of the city's modernization. Therefore, the planning of the subway appeared as an essential step in the transformation of the Norrmalm district, centralized area of the city.
Thanks to this new transport way, new neighborhoods could be connected to the center and the attractiveness of building started to become essential. In the early 1960s, The Stockholm metro was extended towards Fruängen and Örnsberg. The metro came to Hornstull and was the first stage of the red line, inaugurated in 1964.[12] Hornsbruksgatan 4 bears witness to the origins of the metro. In this idea, it reflects a common legacy of this time, emphasized by its users, passers-by, residents, who alone reveal its historical, cultural and social values.

This building has been designed by the architects Bengt Lindroos and Hans Borgström. This neo brutalist building consisted of two staggered volumes of different heights, connected by a central staircase. This separation reflects the function of each part, occupying the west by the ticket hall of the subway station and the east by operating facilities and a rectifying station.

On the upper floor, a medical practice occupied the western volume while the eastern was used for offices. Finally, a publicly accessible roof terrace was arranged on the roof of the building. Seemed as the element that constitute the extension to the park via multiple stairs, the terrace was intended to be accessible to the public.

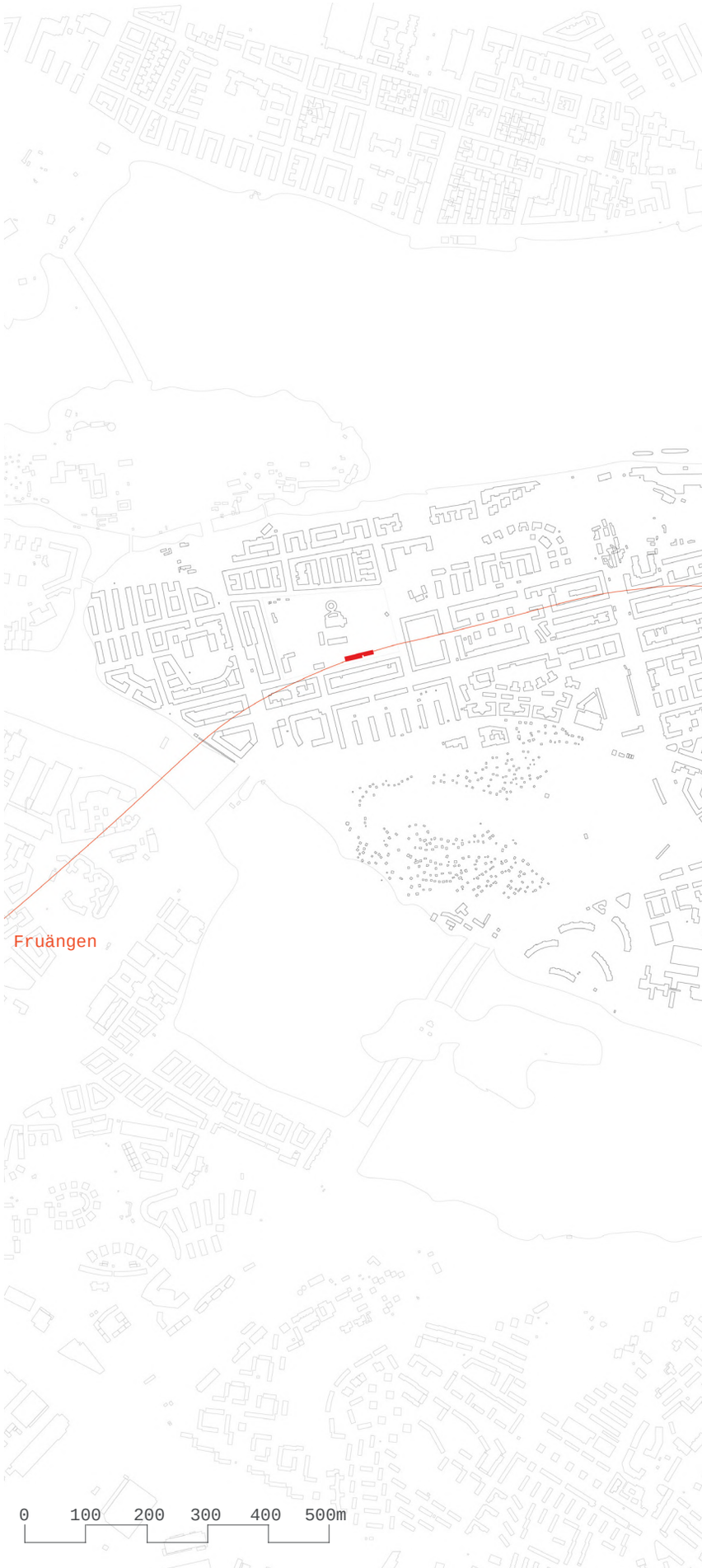
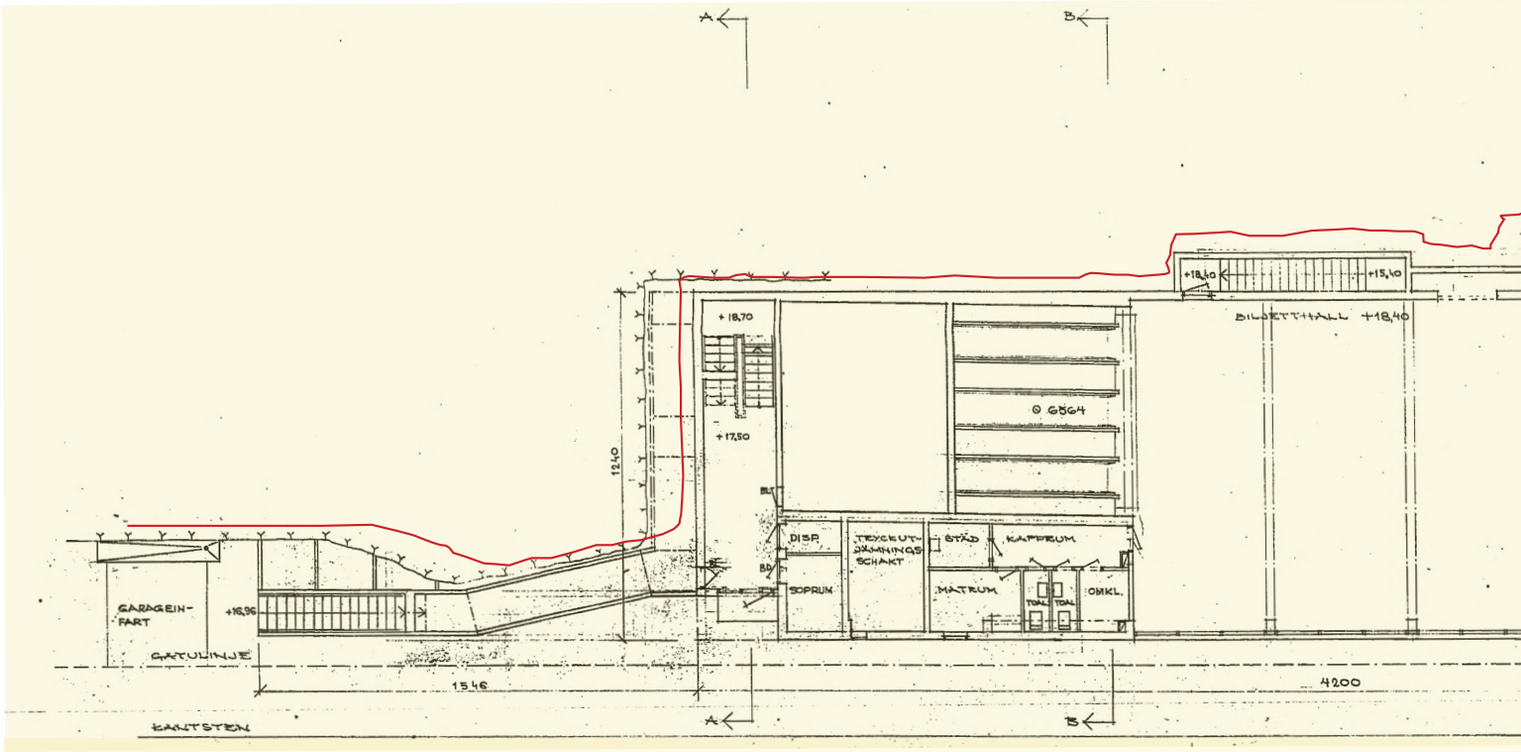


Fig.02 Situation Plan, 1:10000
Stockholm, Södermal

Fig.03 Photography, Hornstull Station.
© Spårvägsmuseet, Okand, 1964


Örnsberg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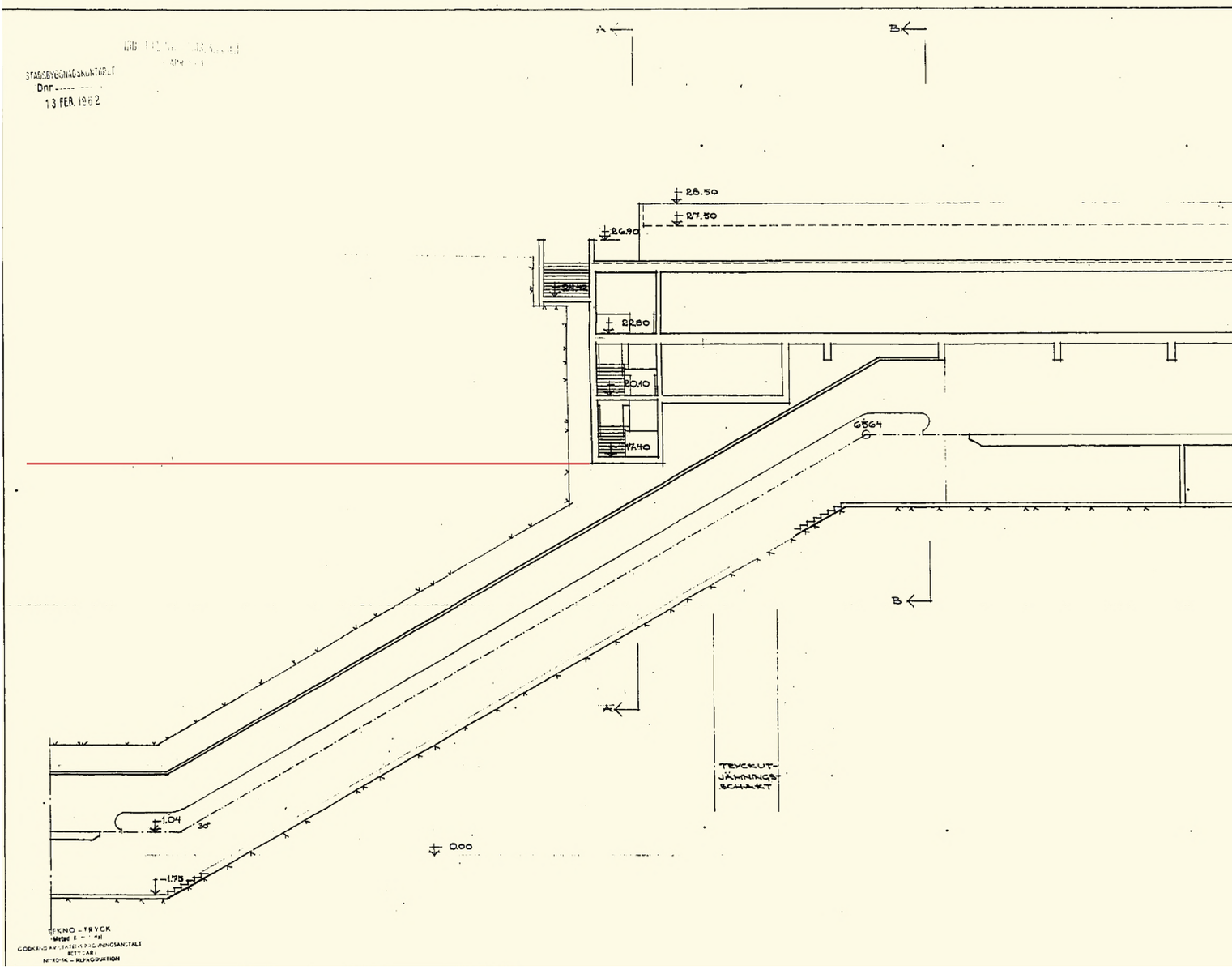
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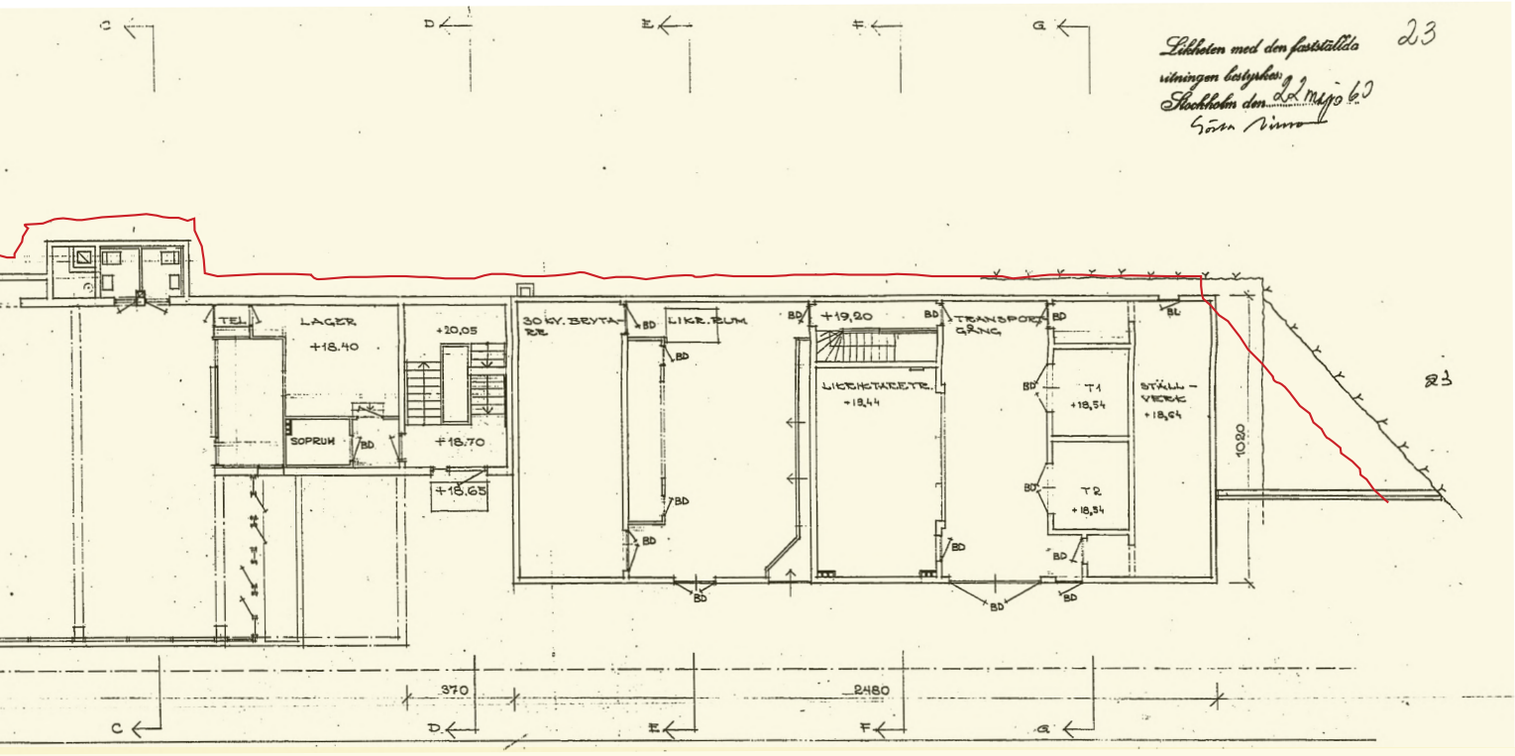

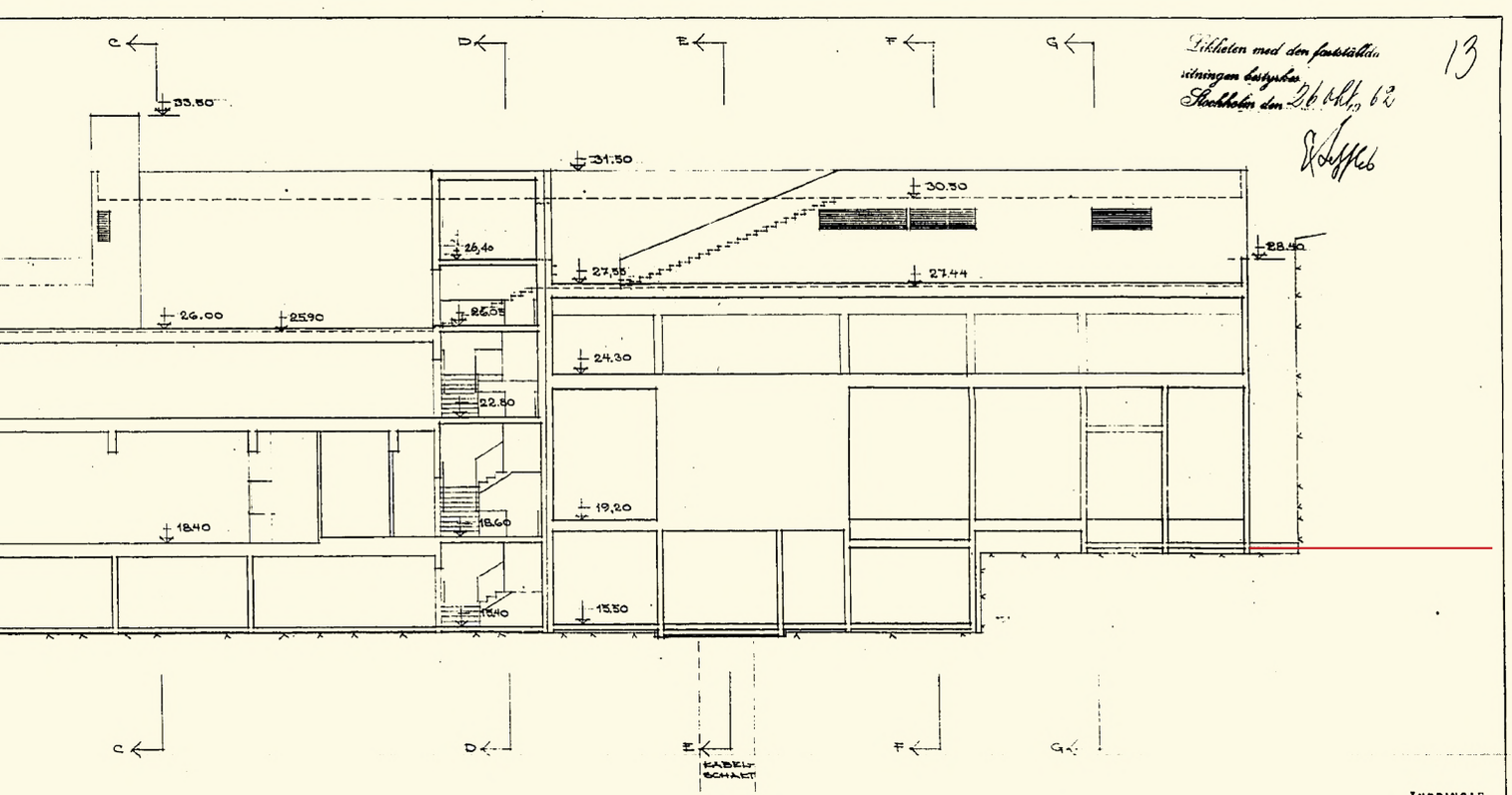

Fig.4 Original ground floor plan, 1963. Borgström, Lindroos-Rosén. 1:100

Fig.5 Original longitudinal section, 1963. Borgström, Lindroos-Rosén. 1:100

Fig.6 Entrance Hornstull Station.
© Spårvägsmuseet, Okand, 1964

Fig.7 Entrance Hornstull Station.
© Spårvägsmuseet, Okand, 1964

Fig.8 Hornstull Station, Flow of passer-by.
© Spårvägsmuseet, Okand, 1964

Fig.9 Modification of the entrance orientation.
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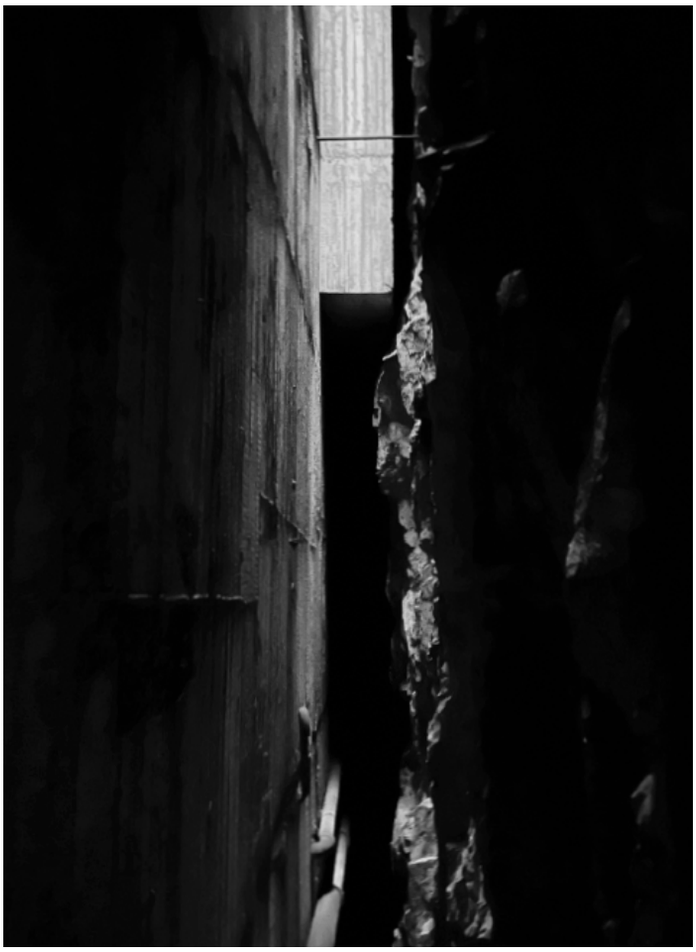

Fig.10 Photography of the inbetween gap.
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It demonstrates a structural tension between mineral materials and confrontates the building with the stone. It welcomes the ventilate circulation of the Metro station, based underneath. Water pipes and technical flow are also integrated.

Fig.11 Surrounding park & Högalidskyrkan
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Fig.12 Photography taken from the park.
© Inès Romy, 2025

All the barriers were added to limit access to the roof after the building was permanently closed 10 years ago.

Fig.13 View from the abandoned roofrop.
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Stockholm stretches across an archipelago landscape where water spaces, fault lines and rock escarpments are distinctive features. At the end of the 19th century, the hilly topography of the city's urban landscape began to be blasted away to let accessible streets and neighborhoods coming.[13] In this time of change, Hornsbruksgatan street remained in its globality, with its steep and rocky edges.
Littered behind the building, overlooking the street, Högalidsparken is an example of a promenade park [14] designed at the turn of the 20th century in the intention of making the city healthier, brighter and airy. It has taken into inspiration the dense and wild nature of its surroundings. Winding paths were laid out across the hilly terrain, as if they were natural trails. At the same time, outcrop rocks and slopes were left in their fundamental state. Today, it is perceived as an urban design feature that dominates Södermalm, as much as the church Högalid that overlooks the surrounding. Thanks to its imposing topography, this area offers a place to contemplate, to stop and to look at the surroundings, while the rest of the dense city continues its movement. In this sense, the park structures the surrounding urban spaces and offers a moment to slow down. Along with the church, they constitute a whole of high social and historical value. Carved out of the bedrock, scattered within its concrete character, lies Hornsbruksgatan 4.

Hornsbruksgatan 4 was shaped to the condition of the site and the architects sought to adapt it to the natural topography. Long looked as a valuable urban element, the entity of the bedrock has been reshaped over time, underscoring the significance of the rock-excavation techniques that made Hornsbruksgatan 4 construction feasible. Facing it, the cuts carved into the rock reveal the scale of the blasting process carried out at the turn of the last century. It offered a perspective on how mechanical process started to be essential to carry out the construction field in Stockholm.

The story of the building began with its construction in 1961 to 1964.[15] It welcomed the new network of the subway lines in the city, Hornstull Station. Going back deeply in the intention of its construction, the creation of it, besides its function, was to recreate a confrontation between the stone which stand up behind, and the massive concrete building welcomed by the existing street. This duality of materiality and massiveness expressed paradoxically a harmony within its contrast urban context. The mineral matter expresses itself.

Some changements appeared in 1991 while Stockholm tramway organisation owned the building and rented it to the Consulting agency for orphanages. They modified partitions wall inside to welcome the office spaces and added an upper floor that has never seen the light of day. These modifications engage additional layers added to the existing structure. They reveal an architecture in tension, caught between what was already there and fragmented additions. In this idea, the building absorbed these transformations, but never managed to find an architectural answer for the entire site.

Fig.14 Photography of the old office, corridor.
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Tags and dirt recover partition walls and the floor, while the fake ceiling present damage due to water infiltrations.

Fig.15 Photography of the old workspaces.
© Nicolas Hinze, 2025

Behind the plastic curtains, damaged by time and exposure to light, lie wooden frames in fairly good condition. They structure the entire first floor.

In 2011, local organisations briefly revived the rooftop by recasting a concrete slab to stop water infiltration and adding a glulam pavilion and a shared urban garden. It was the last moment of collective care before the building was closed again in 2015. Transformed as an ecological hub, the rooftop welcomed during two years experimental collaborations, such as an urban garden and the initiative of developping this place as a meeting point between care, gardering and musical events.

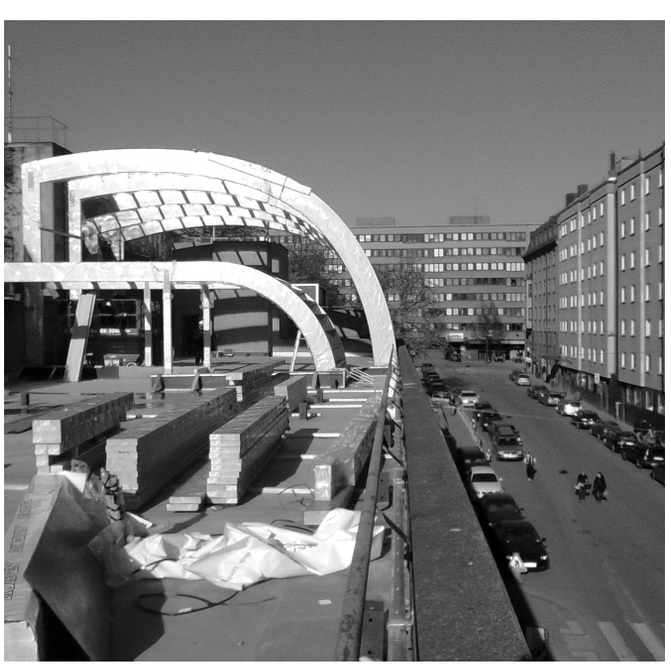


Fig.16 Photography of new concrete slab.
© 100Hus Miljö, 2011

Due to water infiltration.

Fig.17 Photography of the timber structure.
© 100Hus Miljö, 2011

Behind the plastic curtains, damaged by time and exposure to light, lie wooden frames in fairly good condition. They structure the entire first floor.

AIM

The inquiry of my research emerges from a broader societal context marked by ecological urgency, material scarcity and a growing awareness of the environmental and cultural costs of demolition. In the face of replacement culture that weakens our built heritage, this research aims to explore the potential of an existing brutalist building, located in Stockholm, by proposing to listen again, to read its materials and its traces in order to once again re-establish a place of use, care and continuity.
The aim of this master thesis is to promote an attentive architectural approach grounded in listening, understanding and preserving the building conditions in which it currently exists. By analyzing an existing building from the 1960s destined for demolition, the project seeks to reassess and revalue the brutalist heritage by imagining potential future uses anchored in continuity rather than erasure. It demonstrates how a careful reading and reactivation of what has been neglected or underestimated in the brutalist legacy can generate minimalist repairs and open space for potential future uses. I believe that the architect's task is to listen, to learn to make legible the unfathomable cultural and material writing of the places where we live and work.

DELIMITATION

This thesis focuses on architectural preservation through transformation and repair with a single case study, one building and its site. Although the project embraces architectural constraints where preservation is confined to what is found on site. By working with one building and one set of conditions, the thesis aims to generate specific insights rather than universal. It proposes a situated architectural response grounded in the material reality of a brutalist site. It is not about capturing and freezing an outdated architecture, but rather to preserve and to shift value toward a heritage that still forms part of the urban fabric today. In this research, comfort depends not only on the building's performance and a situated condition shaped by the Stockholm climate but also on what users accept and how they adapt their behavior. The standard expectations placed on temperature, acoustics and ventilation of a workspace is not the aim of this building. Instead, it explores what adequate and specific comfort could mean for this particular building, acknowledging that some aspects cannot be forced to meet actual norms. Program and comfort are therefore considered together and need to be align with the future uses of this building.

How can Hornsbruksgatan 4 be reinterpreted and made legible through architectural interventions that reveal its hidden spatial, material, and infrastructural values, allowing it to be recognised as an appreciated example of Brutalism?

What does an attentive architecture to its pre-existing material and conditions look like, and how can repair become an architectural process of collective awareness?

What are the reparative needs of concrete, and what stories do they reveal to guide future narratives?

Fig.18 Hornsbruksgatan 4,

From a nature of non-excuses to its "anti-beauty" character, there is a certain societal optimism that Brutalism contains.[16] It deserves to look beyond the surface to remember its foundations. Based on the belief that architecture might reshape the world, it is a manifestation of an equal post-war era that constitutes a whole outlook on life.[17] In this sense, more than just raw concrete, Brutalism emerged as a social act that improves daily life and transforms the fragile post-war society into a time of public commissions. The obsession and the desire of building a better world have committed to new technologies in service of society. (Banham, 1966)

Historically, Brutalism funds its roots within the Modern movement of the 1930s in what was called "raw concrete" or "béton brut" by Le Corbusier.[18] It is in a divided context of post-war that the architecture of the moment tends to express the needs and values of a society that seeks to improve its human living conditions.[19] It was a period of big commissions[20], with architectural competitions and technical progress. Based on the housing revolution and the industrial revolution, apartment blocks, public services and entertainment spaces such as theaters were rethinking. Peter et Alison Smithson[21] were the first to draw inspiration from people's way of life to build their architectural ethic. "Brutalism attempts to bring forth a raw poetry from the confused and powerful forces at work in a mass production society. [...] Its essence is ethical" (Smithson, 1956).

From a modern legacy, Brutalism conceived form and structure together. It seeks to transcribe, through rudimentary form, an appropriation capacity, highlighting spatial potential. "The rawer the form is, the more this building is able to accommodate daily practices and allow these unfixed spaces to breathe" (Smithson, 1956). In this sense, there was an awareness of the acceleration of lifestyles, which leads to talk about flexibility, adaptability and open structures. As a result, Brutalism became an architectural movement that sought to emancipate itself through writings and theoritical essays. In fact, the 1955's year has been marked by the reflections of Reyner Banham[22] and demonstrates a kind of reappropriation of Modernism. There was a strong rejection of traditions and conventions.
Architecture was not just perceived as an isolated object but became a set of relationships and a practice rooted in materials, techniques, gestures and know-how. In its book, Banham outlined the fundamental characteristics of this movement "1, Memorability as an Image; 2, Clear exhibition of Structure; 3, Valuation of Materials "as found""[23] (Banham, 1955) where a building should be immediately an apprehensible entity.

Gradually it asked the question of "what material can do?" (Banham, 1955). The sensitive reading of the place allowed an appropriation of the knowledges that have been built up by "making, observing and revealing the true nature" and potential of these materials and spaces. In this idea the brutalist architects had an interest in history and historical references. According to our current practice of making architecture, this importance of understanding the previous layers of a site stays still today primary to suppose a right and honest intervention.

Brutalism belonged to an era when architecture was about drawing by hand, inventing every detail and thinking of buildings as unique pieces of art.[24] The 1960s saw the emergence of determined architects, almost obsessed with the idea of societal change which led to and justified an ethic of constructive truth, as a pure form.[25] In this idea, the aspect of aesthetics becomes sociological. The relation between brutalist architecture and the people, highlighted the need that ordinary people require in their daily life. Perceived as a humanist mission, this period revealed new possibilities and a use of technical innovations in reinforced concrete, new formwork methods and the alliance of architects and engineers in their know-how.[26] It expressed a belief that architecture could serve as a social instrument, providing housing, education and public space for everyone.

There was an awareness of the aesthetic effects of Brutalism and its relevance to the urban fabric. Paradoxically, the massiveness of its volumes generates an impression of lightness and structural freedom. Seeking to transcribe the true human condition and assert a moral stance in relation to society, this aesthetic embraced its harshness and the everyday materiality of the human body as reflected in the building. By its assumed physical presence beyond a resistance to artificial, this radical architecture let the material speaking. Architects valorized truth in construction and structure as "a reverence for materials"[27] (Smithson, 1955).

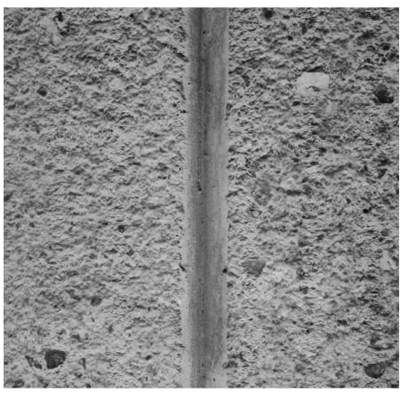
Witnesses to an era of economy of means, this ethos produced an architecture of truth, based on a constructive sincerity and an everyday materiality of infrastructure. For instance, stairwells became functional and autonomous volumes. As a manifesto of truth that highlights a desire to go against the grain of previous currents, sometimes opaque in their composition, the absence of ornamentation let the place to the repetition of modular elements symbolizing permanence and equality. In this idea, the commitment of structural honesty has been also extended to the way the architects conceived the building's internal organization with its technical systems. Rather than forcing the functions to adapt to the usual constraints[28], cheap energy as daylight[29], mechanical ventilation, central heating and cool electric lighting became the components that shaped itself the inside. In this idea, structural and pragmatic expression became a principle of clarity.

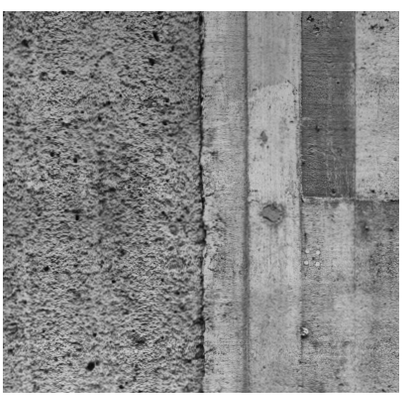
By refusing to conceal technical components as it could be today suspended behind ceilings or claddings, there was a desire to make the building's functioning legible. Rather than being considered as imperfections, this vocabulary of exposed ducts, wiring and neon lighting gave the rhythm of the space and revealed the mechanism of the building, crossed by flows of air, energy and movement. These components, which became centralized and regulated by mechanical controls such as oil power[30], raised the question of thermal comfort of these brutalist entities. This attitude towards energy neglected questions concerning double glazing, solar heat gain or cold bridges; consequences that most brutalist buildings are paying today to justify their transformation or even more, their protection. The architects justified building's architectural intentions as an act of reflection and experimentation. In this sense, architecture welcomed an era doomed by engineering and industrialized its own mechanism. However, this attitude to energy felt no limited to architecture, further seen into the reality of infrastructure and the society.

Following Paolozzi[31] and the New Brutalism movement[32], Banham insists that architectural composition is not an ideal design but "an act of thinking, a process for bringing form to the surface from materials"[33] (Banham, 1966). It is a composition that is created, as concrete poured in place. It is about making things raw, as experimenting the place in its globality, heated or not heated, cooled or not. Always with the intention that embraces materiality, roughness, and directness it never seemed to conceal anything.[34] In consequence, a repertory of sacred brutalist materials appeared describing concrete blocks laid and joined like hewn stone masonry[35] as the pure matter of its time. Brutalism became real, it showed honesty in a society of hope and reconstruction.

Beyond a conscious style of its massiveness, there is a determined truth of showing raw materials as their primitive functions are. The emergence and the effervescence of the raw brick, the raw block, the raw steel and paint showed the interest of identifying its capacities and what they truly are. It is about rejecting the artifice of a society satured with images and standardized products and the arrival of post-war mass consumption.[36] It becomes an ethic dimension with the desire of showing concrete as it is. Whether on site or in a factory, concrete components made from a chemical composition of gravels, sand and limestone, are created using formwork or shuttering.
Poured concrete is massive and permanent. It is paradoxically rigid and inflexible material, with its reinforced concrete cast in place.[37] Unlike wood or stone, concrete has no fixed form and retains the imprint of the material that molds its.[38] But under its raw aspect symbolized by the traces of the framework and assemblages, Brutalism tends to extract a poetic way of its society.

Being rough, streaked by rain and dirt, forming punchy, raw concrete need to be doctored to avoid serious cracking and deflecting. Synonym of the celebration of free creativity[39], with its infinite variations, but also synonym of the most consumed resource on this planet after water[40], this much-maligned material needs to be caring. The goal is not to make more of it, but to take care and be attentive to its actual needs.[41]
Moreover, Brutalism continues to suffer. Celebrated for its radicalism and its ethic of truth, it has become a cultural and theoretical object that is both admired and criticized. But above all, it represents a combination of opposition, a failure of many projects justifided to th reason of the progres, embracing handcraft work and machine-buit.
everyday living spaces that are inhabited, traversed, and experienced. and which do not necessarily leave behind the promise of a memorable lived experience.[42] Considered in its dual aesthetic nature and its social and lived reality, Brutalism remains controversial today and requires particular attention to meet our current needs and prevent its demolition.





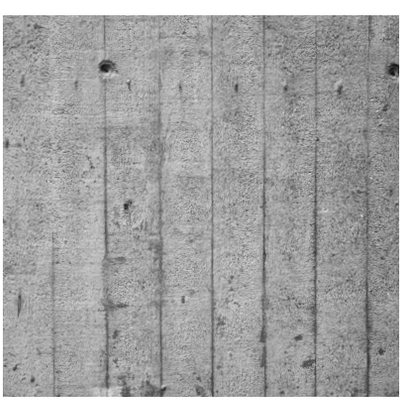


Fig.19 Concrete patterns from the metro station building.
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Fig.20 Concrete walls added later in 1991.
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Dirt creates a resistance to the surface of the building. These sticky substances, such as mold, algae, and smoke create heterogeneity in the building but also contribute to its deterioration.


T
VARNING
UTÅTGÅENDE DÖRR
VID RAMPENS BÖRJAN

Our architectural practice requires to broaden the ways of reading spaces.[43] As a human body who let its visible wrinkles, as bodies or metabolisms, we need an attentive architecture which build upon what have already brought into the city, taking in consideration these existing traces and dealing with it. While acknowledging that resources are limited and subject to controversial debate for today's architects in order to allow for continuous transformations, there is a necessity of taking a closer look to the existing components themselves, their capacities and properties to guide our methodology of intervention[44], to read and identify through cracked concrete the resistances still alive and the weaknesses which scream and wait for a reparation gesture. It is about looking and finding the properties of materials that are there and paying attention to them.

After that comes the identification of the sensitive qualities that we must maintain. It supposes listening to the body which composes the building and revealing layers and time accumulate there over time. In consequence, understanding how the space acts with us, us who is interacting with this environment, means that this act can be perceived as an interoception methodology[45] which governs the perception of a body's internal signals. It is a situated method which articulates our bodies, our architectural perceptions with materiality and spatiality. Applied in physiology it includes respiration, heart rate, tension, heat, balance. It is about identifying the micro reactions of the structure and architectural elements, the frictions and comfort zones, the continuities or breaks in the matter. The method completes the analysis of an existing building by its living dimension, helpful to determine a reprogrammation of the space. It means designing based on the actual physical needs of the building, paying attention to the vulnerabilities of the building's existing conditions.

The aim is to reveal what generally remains unseen but can nevertheless lead to imperceptible internal damage. This is why the protocol involves tracing and identifying all visible materials, both inside and on the surface of the building. This compels us to observe and understand how things are done, not just how they have been done.
Architectural action is a series of situated actions, and we must understand their properties to know how to intervene. The fragility and resistance of the raw materials we encounter on site must be considered as part of the building's transformation process. This means we must be honest about the extent of the repairs they require. This allows for careful attention to guide us in the building's creative transformation. This methodology invites us to emphasize questions of process, how structure and procedure of care give rise of shape and future spaces.
Therefore, creating a material statement also allows me to approach the building as a living entity, marked and stratified by the accumulation of repairs and adaptations. By exploring the facades, circulation areas, and roofs, observation and touch made it possible to identify how material react to time. It can be perceived particularly in its chromatic variations, areas of runoff, micro-cracks, old repairs that have become indistinguishable, and traces of tools and formwork that are still legible.
Listening to the building, here, means recognizing these physical clues[46]: the weakened areas, the successive repairs, the differential patinas. The idea is to recover as many materials as possible from the transformation process in order to be reconfigured for a new use and treated as a resource.
This involves tracing all the visible construction materials inside and around Hornsbruksgatan 4. It means taking stock of the potential of these available elements. It is examining materials as one would examine the body. Rather than treating treaties as disposable waste, it demands a careful and continuous approach.

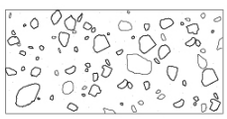
MATERIAL SURVEY

Concrete

Concrete

Floor, Rooftop Rehabilitation

Aggregated Concrete



Wall Finitions / Pattern

Reinforced Concrete

Load-bearing Walls

Concrete / Stone

Wall Finitions / Pattern

Shuttered Concrete
Formwork Concrete

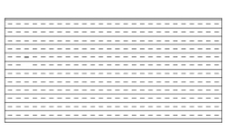
Wall Finitions / Pattern

Honeycomb Concrete Block

Original Partition Walls

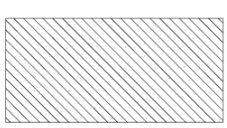
Ceramic Materials

Porcelain



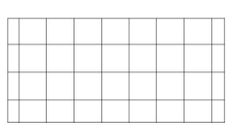
Sink / Toilet

Earthenware



Interior Metrro Station walls
W: 126 mm / H: 59mm / L: 263 mm

Tiles



Toilet Wall / Office Room

Glazed Tiles

Metro Columns / Metro Wall

Stones

Granite Stone

Stone / Entrance Metro Floor
W: 450 mm / L: 850 mm

Concrete / Stone

Bedrock Base

Plaster

Cement Plaster

Existing Reparations

Mortar

Between Bricks

Caulking Mortar

Original Prefabricated Wall Joins

Paint

Plastic paint Secondary Door / Technical Door / Office Door / Toilet Door / Concrete Ceiling

Fig.21 Material surveys made on site.
Inspired by the concept of *Build of Site*. S. Pihlmann.
Biennale of Venice, 2025.

This concept is based on a method of observation through identification, record, and map of materials found on site. It was used during the process of rehabilitation of the Danish pavilion at the Venice Biennale. In the theory, the architect S. Pihlmann considers materials as existing resources, capable of new potential in their uses. "To treat raw materials as partners, rather than as disposable waste giving way to the imposition of conventional components [...] open to subtle signals from the body of the site."[47] (Dickinson, 2025)
Based on what already exists on site, this method provides a design foundation for revealing the building's construction logic, detecting its defects, and understanding its successive historical layers. However, this concept does not include a complete technical diagnosis but can be seen as a sensitive and creative approach that allows for a deeper understanding of the building. In the case of Hornsbruksgatan 4, this method makes the exposed materials readable and their potential for repair and transformation strategy.

Fig.22 Material survey, Aluminium & Aggregated Concrete. © Inès Romy

Fig.23 Material survey, Hot-Dip Galvanised Steel © Inès Romy

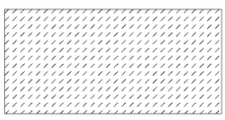
To perceive the building structure is to perceive its concrete material as an inherent logic. In this sense, the interoceptive method extends to the very substance of the building. Looking on the theory, concrete was defined by Louis Kahn as a strong and timeless building material.[48] As a material whose expresses clarity, his approach defines that every material carries an intrinsic voice of inherent properties that should guide architecture. It requires a moment of listening to what material wants and to honor their functions "You say to brick, "What do you want, brick?" Brick says to you, "I like an arch." if you say to brick, "arches are expensive and I can use a concrete lintel over an opening. What do you think of that, brick?" Brick says: "I like an arch." (Kahn, 1970)

Coming back to the early stage of history, concrete was already developed by the ancient Romans. Defined as pozzolanic concrete, the chemical properties of concrete was a mix of volcanic ash with cement that improved water resistance and long-term durability. He sought to explore the expressive and structural qualities of it. By erasing the decorative aspects of raw concrete, Kahn sought to reveal the chemical and structural truth of it, in its project of Salk Institute.[49] This example is the proof that after fifty years of exposure concrete, only little maintenance is necessary. The principle of pozzolanic concrete demonstrates that concrete, when observed and understood can become a long-lasting substance.

MATERIAL SURVEY

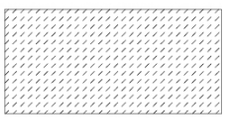
Glass

Window Glass



Windows

Door Glass



Metro Ticket Door

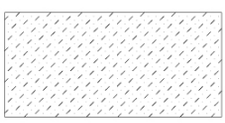
Froosted Glass

Skylights

Asphalt

Original Prefabricated Wall Joins

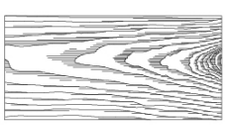
Roofing Felt



Roof, Extenstion Curve Roof

Wood

Pinewood / Larch



Oil treated or painted
Window Frameworks /
Secondary Doors /
Extension Block

Laminated Pinewood

Oil treated or white paint
Timber Roof Structure

Plywood

Untreated or Painted Pannels
Hole Openings / Rooftop Shelter / Desk

Plastic

Opaque Polycarbonate

Extension Roof

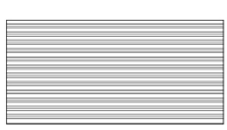
Neutral Silicon

Waterproofing, filling existing cracks

Vacuum-Sealed Plastic

Skylight / Ventilation System

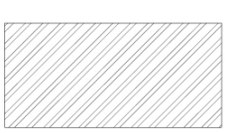
Plastic



Curtains / "T" sign / Outdoor Wall Lighting /
Interior Lamps / Electric Sockets &Cabinet /
Protection Board / Cables / Electrical Lock

Metals

Aluminium

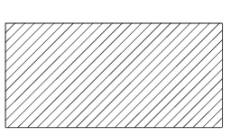


Door Handles / Window Profiles /
Lighting Rail / Electric Panel

Iron

Zinc-Coated Security Door /
Grates / Screw /
Rebar in Reinforced Concrete

Stainless Steel



Door Handles / Leaf
Collector / Outside Electric
Collector / Screws / Hinges

Hot-Dip Galvanised Steel

Safety Grates / Grates / Skylight Grates /
Ventilation Grates / Cable Canal / Security
Door / Guardrail / Railing

Fig.24 Material surveys made on site.
Inspired by the concept of *Build of Site*. S. Pihlmann.
Biennale of Venice, 2025.

While interoception embraces sensitive and bodily listening, factual observations involve evaluation and measurement. Confronting feelings with constructive reality, it is a moment of methodical attention where I assess what resists, what deteriorates and what requires repair. It transforms listening into knowledge, and knowledge into an intervention strategy, in order to position the focus where it is needed. The diagnosis of existing serves as a base to understand the potentials of the building. By going on site and measuring, it is about confronting the drawing to the massiveness of the building.

The surveying process begins with almost nothing, a pencil, crumpled plans, a laser, a tape measure and a chalk. But it is almost about an immersive gesture, the hands plunged into the dust and spots of the building. We cross what already exists, we bend down and we climb.
The measurements record the deviations, the cracks and spalling of the concrete. It forms the basis of a future therapy and ensure that the project is based on accurate data rather than assumptions. It gives to the project the necessary rigor to intervene without compromising the existing structure.
It is about a feeling of course. Feeling the material tensions and identifying traces and alterations that are only possible by going physically on-site, and which constitute a diagnosis of the existing situation.
It allows an understanding on what the building is telling us, to identify disorders and malfunctions related to use, security or structure, and therefore its pathologies. Regarding the theorist Hélène Frichot[50] "([the theorist] follows materials, tracks them, observing from where it came and the direction that it takes". (Frichot, 2025) It is about thinking of architecture as a situated and material practice. It is about understanding the extraction and processing chains. It is about accepting to get your hands dirty to trace the trajectories of matter, to observe where it comes and to understand its transformation, its alterations that compose and decompose the building.[51]

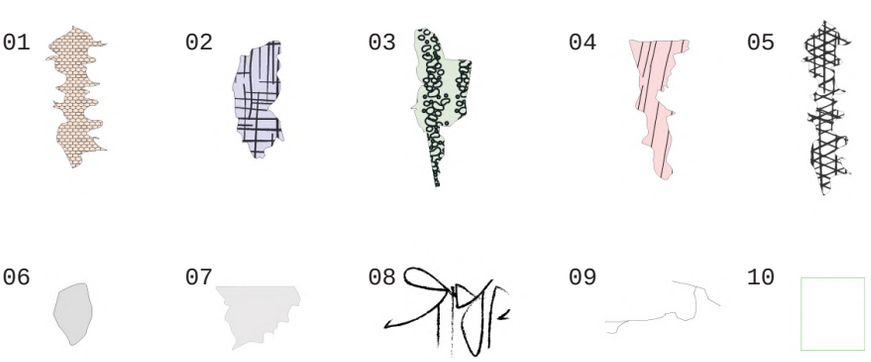
Into the situation of Hornsbruksgatan 4, even after ten years of decay, the building communicates through the materials it exposes. People pass by without noticing, but its cracks, patches, and traces of aging tell a story and ask for a certain help to achieve a continuity.
Part of the therapy work was carried out by going directly on site and using drawing, photography and measurement to complete the survey and the understanding of the building.

Fig.25 Concrete surface deteriorations, Hornsbruksgatan 4.
© Inès Romy

Fig.26 Example of an analytical drawing showing damage and defects on the exterior of the Metro entrance.

Inspired by the measured survey method of existing buildings and heritage conservation, it allows an accurate representation of the building conditions. It shows the presence of algae and mold formation, some damage to woodenframe and broken glazing, but also some settlement and concrete damage on the surface. The survey also shows the presence of tags which disrupt the building legibility. It requires micro-abrasion cleaning to not damage the substrate.

01 Superficial material losses
02 Cracking of concrete
03 Cracking of concrete
04 Carbonation of concrete
05 Detachment of coating
06 Holes file with cement
07 Moisture/Humidity
08 Deposits, Graffiti, Urban pollution
09 Water infiltrations & Cracks
10 Metal damages



By approaching the building, we can observe faint traces; a gray veil of urban deposits, including dust and pollution mixed with spontaneous vegetation clinging to its rough edges. Dirt creates a resistance to the surface of the building. This pollution and moisture as a sticky substance that holds architecture together and causes it at the same time to fall apart.[52] The facades also bear the marks of the city, graffiti, tags, anonymous interventions that tell a story of another era in the building's history. As if the concrete had shrunk, it seems to have lost thin layers in certain areas, revealing slight alterations, irregularities, and increased porosity due to the concrete's prolonged exposure to moisture and weathering. In this idea, the diagnosis reveals the intern mechanic of concrete. It is about its areas of tiredness its breaking points and its surfaces eroded by the years.

Upon closer inspection, sharper cracks appear across the surface, along with chips where material has detached, revealing the oxidized metal reinforcement of the reinforced concrete. A sign of silent aging, concrete experiences an increase in carbonation, a process that affects not only the concrete itself but also the metal reinforcement, leading to corrosion of the iron and a decrease in the concrete's pH. Their internal swelling creates stress, causing visible chips, cracks, and other damage. In places, crumbling edges and crevices reveal saltpeter rising to the surface, creating white marks visible from the street, a reminder of the city's damp past. The wooden window frames bear the marks of time. The fibers are cracked and warped, and the protective varnish is peeling. Single-pane windows let in the cold, causing temperature fluctuations and sometimes condensation, creating a breeding ground for mold.

Despite this accumulation of signs, the building stands. This collection of disarray, however, tells a story: that of a building exposed, used, sometimes neglected, but which remains structurally intact. This building, evidence of the eras it has lived through, nevertheless demands to be listened to, understood, and cared for. By tracking dirt and materials, it gives to us an understanding of the interconnections of the building.

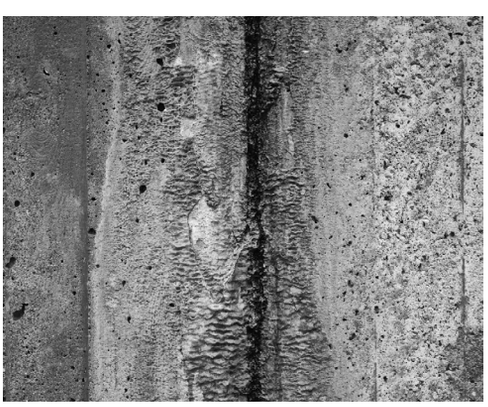
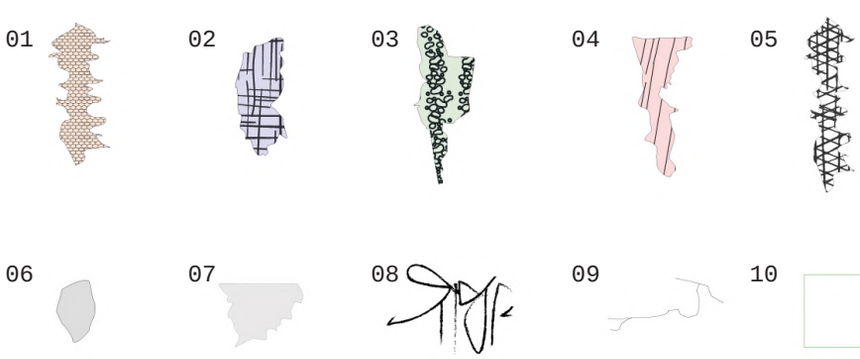


Fig.27 Concrete surface deteriorations, West Facade, Hornsbruksgatan 4. © Inès Romy

Fig.28 Example of an analytical drawing showing damage and defects on the exterior of the public stairs and old offices.

Areas where the concrete has material gaps or spalling must be filled to restore the surface, while the original coating has cracked or detached, the intervention requires the application of a new coating compatible with the substrate. Some surfaces soiled or damaged by atmospheric deposits can be treated by sandblasting or gentle cleaning to restore their original texture. Other areas require targeted repairs: filling fine cracks, caulking open joints, and localized reshaping of blunted edges.

01 Superficial material losses
02 Cracking of concrete
03 Cracking of concrete
04 Carbonation of concrete
05 Detachment of coating
06 Holes file with cement
07 Moisture/Humidity
08 Deposits, Graffiti, Urban pollution
09 Water infiltrations & Cracks
10 Metal damages



The process of making a reinforced concrete model provided an extension of the existing structure assessment. This method aims to represent the design proposal which answers the therapy and care of the building. Working directly with the material, plunging hands into the sediment and sand, feeling the roughness allowed a physical understanding of the mechanical and structural properties of concrete.
By manipulating concrete, we understand its density, weight, its reduced elasticity and strength, but also the quantity of matter required to achieve the shape dictated by the molding process. Producing a mold at the scale of the model involves a process similar to the poured-in-place concrete: preparing the material, assembling the formwork, inserting the reinforcement, and then allowing the concrete to take its shape. At this scale, the model reproduces the construction logic of poured concrete, where the material does not expand but is imposed according to the shape of the mold.

Working directly with the raw aims to situate the project within its mineral context. Through this process, it is a key to communicate the confrontation of the cast building into the mass of its surrounding rock.

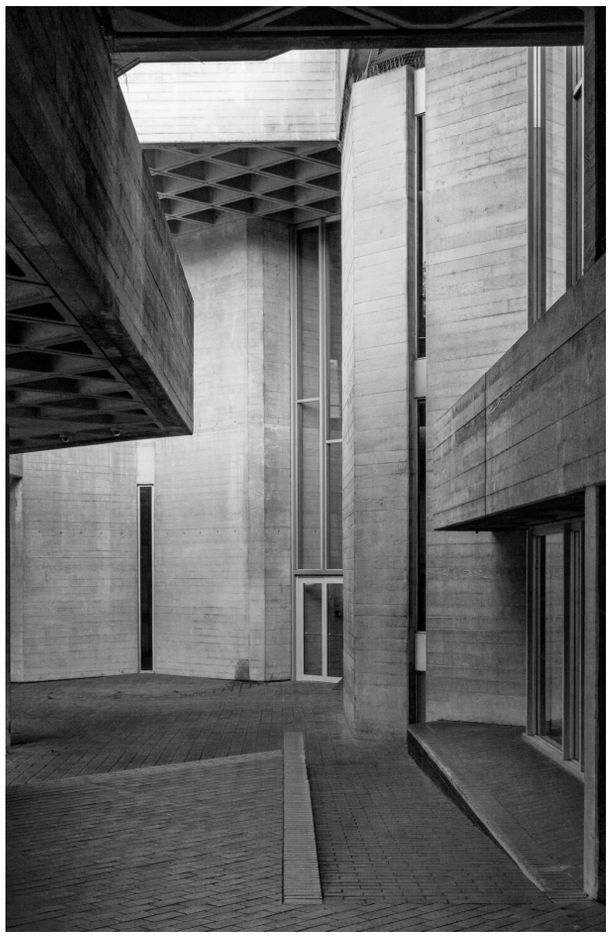
Fig.29 Model process: assembly of the foam and wooden molds, preparation of the pre-mixed concrete.
© Inès Romy

Fig.30 Model process: drying of the reinforced concrete.
© Inès Romy

Fig.31 South Facade, Staircase, Hornsbruksgatan 4
© Inès Romy

REFERENCES

Thinking about the restoration process of a building requires an intention to return the structure to its original state. This involves recreating its original appearance, its structural composition and sometimes even the construction process specific to a particular era or architectural movement. In the case of reinforced concrete, this means working with a material that ages naturally, that is fixed and has no compromises[53], while also bearing the memory of a revolutionary period marked by its apparent construction techniques, the shuttered concrete.
The development of a restoration process for Hornbruksgatan 4 relied on the study of several emblematic projects that had undergone interventions on their reinforced concrete structures: the National Theatre of London[54], the Perret Tower[55] in Grenoble and the Tourette Monastery by Le Corbusier. Their analysis allowed a deeper understanding of the material, its pathologies and restoration techniques, enabling the creation of a repair and care process tailored to the specific situation of Hornbruksgatan 4.



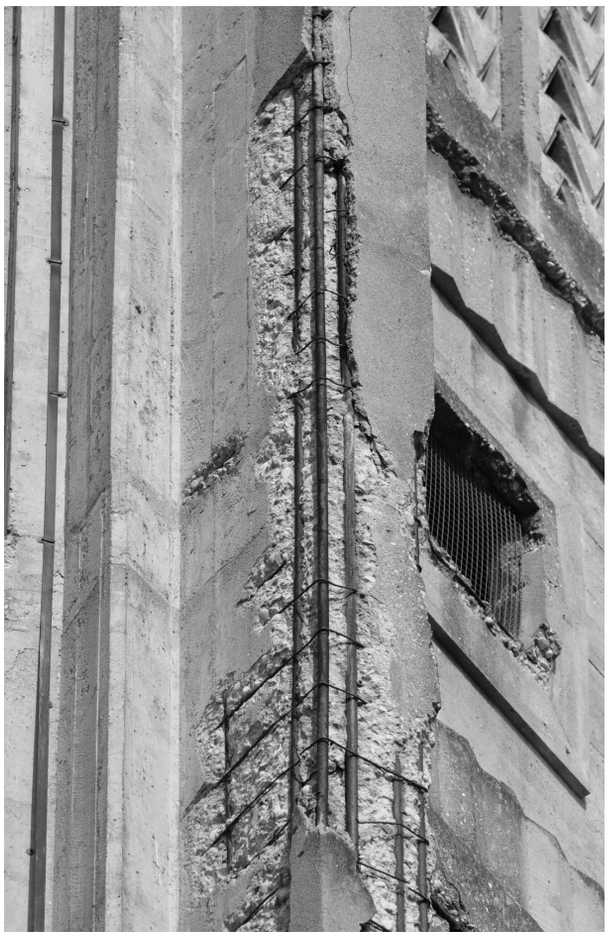
National Theater, D. Lasdun
London, 1976

Begun in 2007, the restoration process aimed to adapt the original building to the contemporary uses and programs of the theater. Consequently, the work necessitated the renovation of the foyers, the entrance, and the original central axis, as well as the creation of new public spaces providing access to the river.
The project allowed localized steam cleaning, the filling of cracks with mortar, and the repair of the board-marked concrete on the facade.[56] Cleaning process involving steam cleaning followed by application of a thin wash of fresh calcium bicarbonate solution, left to dry slowly, precipitating calcium carbonate into the pores of the concrete. This recaptured the character of the concrete beams as they appeared after removal of the original formwork.
By first testing the wall materials to find a suitable filler, they decided to use a combination of calcium carbonate, sand, and pigments. Seen as a practical solution, it is easy to remove and allows the color to remain intact.[57]

Fig.32 Entrance of the National Theater, London.
© Architecture today

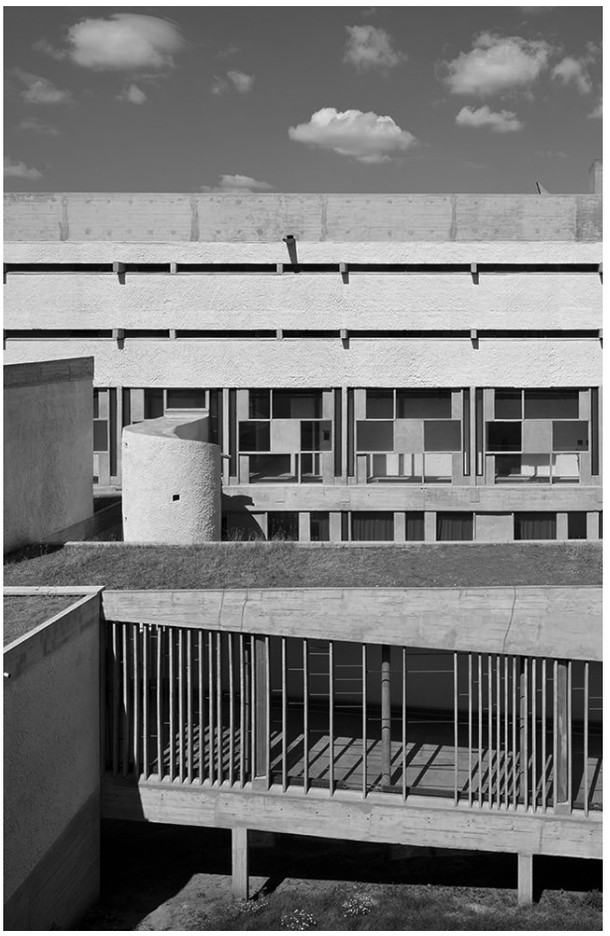
Fig.33 Perret Tower, inside staircase, Grenoble.
© Auriane Poillet - Ville de Grenoble

Fig.34 Tourette Monastery, Évreux.
© Olivier Martin Gambier



Perret Tower, A. Perret, Grenoble, 1924

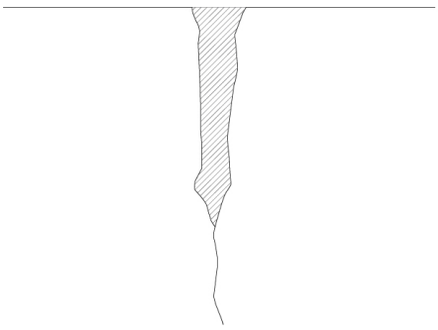
The on-site investigations conducted by the *Architectes des Bâtiments de France* aim to stabilize the structure while respecting its original characteristics. The restoration therefore required treating areas exposed to moisture using waterproofing techniques[58], as well as protecting the metal reinforcement against corrosion.
As a result, the architects identified various conservation methods. Through measurements of the concrete cover and observation of the corrosion level of the rebar, several restoration strategies proved relevant. It includes the increase of the concrete cover layer, the reposition of the reinforcements, and the creation of repair concrete compatible with the original material.[59]
Consequently, the implementation techniques involve both the use of poured concrete in wooden formwork to faithfully reproduce the facing pattern, and the use of sprayed concrete, which offers better surface adhesion.



Tourette Monastery, Le Corbusier, Évreux, 1953

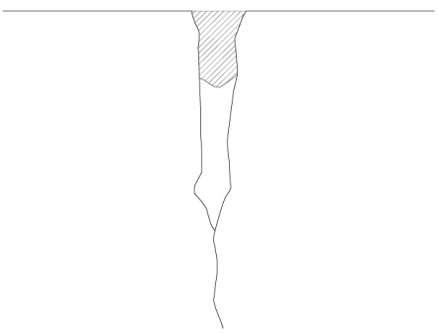
The intervention consisted of probing the concrete, injecting resins into weakened areas, cleaning, treating and protecting the reinforcements in localized areas.
The idea was to repair the cracks by injection, treat the surfaces with different process, depending on the level of deterioration: high pressure water jetting, micro-abrasive blasting and cryogenic systems.
The surfaces were then protected with water-repellent solutions, and some areas were smoothed with lime. It was also a time when the restoration of the waterproofing of the rooftop became evident, as much as the replacement of the glazing with more insulating and resistant materials.

CRACK REPAIR TECHNIQUES



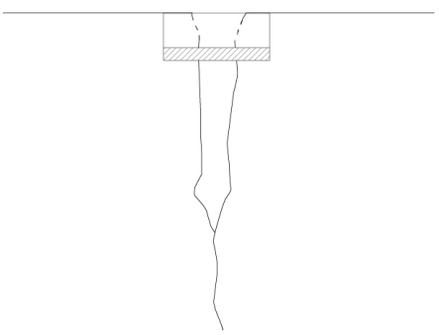
Injection method

The principle is to repair a crack deep within the structure and restore the structural continuity of the concrete.
By injecting a fluid product such as epoxy resin, polyurethane resin, or cementitious grout under pressure, the crack is then completely filled.



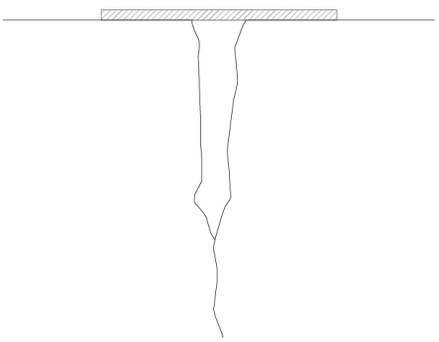
Clogging method

It protects against carbonation and humidity and allows superficial cracks to be closed to prevent water, air or salts from penetrating.
The principle is to slightly open the crack, clean it, then fill it with a repair mortar, sealant or compatible mineral product.



Caulking method

It allows concrete to move without cracking again.
The principle involves filling the crack with an elastic sealant such as polyurethane, silicone, or MS polymer, which accommodates the material's movements. This technique is suitable for areas of active cracking, subject to expansion or vibration, and exposed to thermal variations.



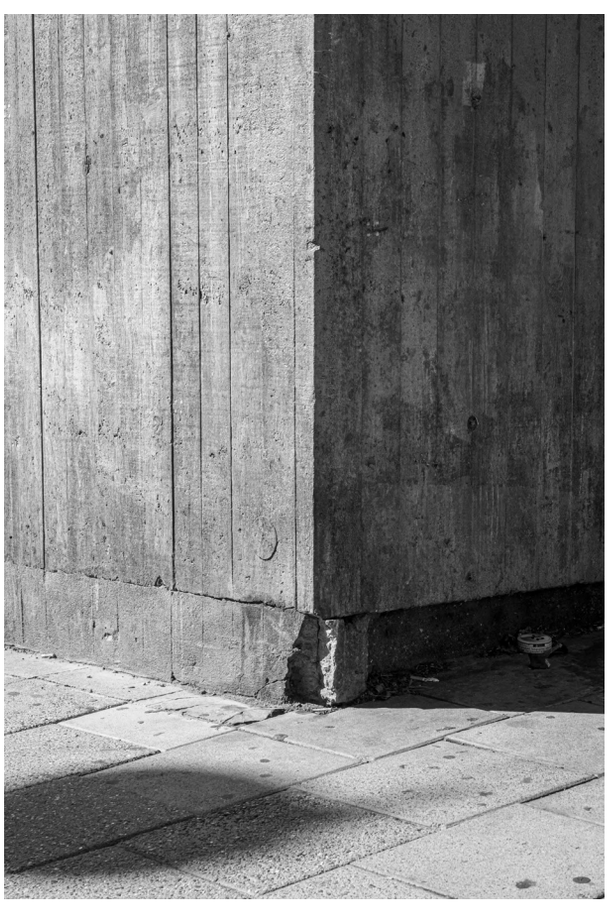
Bridging method

It involves creating a bond on the surface of the wall to conceal and stabilize the crack.
The principle relies on applying an elastic coating, such as resin, fiber-reinforced plaster, or a flexible membrane to the crack. This forms a film capable of accommodating the micro-deformations of the substrate.

For instance, classified as a historical monument in 1979[60], the Tourette Monastery has required many periods of care since its construction. “If we wish to continue using these premises, how can we reconcile bringing it up to code without altering the spirit of the place and the artwork?”[61] Constructed with limited resources and using techniques that were still poorly mastered, such as poured in place reinforced concrete and overly thin glazing set directly into the concrete rebate, the project highlighted the complexity of working on the surface of poured concrete.

It raises the question of the aging of its surfaces and demonstrates that each treatment and repair have an effect on the substrate. This leads to question about whether to return the concrete to its original state. In the case of Hornsbruksgatan 4, the aim is not to freeze it in its brutalist era, but to accept the treatment process and its visual changes between the gray concrete and its white-coated patterns in an assumed and honest continuity.

The aim is to define a baseline and an approach to its materiality. This involves respecting its structural logic, taking into account its pathologies, and making the necessary interventions according to the level of severity, which present only surfaced deteriorations.



The resulting restoration method is therefore inspired by the principles observed on La Tourette: precise diagnosis, graduated interventions, attention to surfaces, and a commitment to preserving, as much as possible the honest and raw identity while ensuring its long-term viability and future use.

Fig.35 Trace of ageing, concrete crack.
© Inès Romy

Fig.36 Superficial material loss
© Röda Rosen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Repair supposes first of listening the body which composes the building. It is about understanding and revealing curiosity about the cultural and material layers which accumulate Hornsbruksgatan 4 over time. Only by understanding these successive deposits, we can then consider a mindful intervention into it.

Hornsbruksgatan 4 is not only a masterpiece of brutalist infrastructure but represents a stratified entity shaped by blasting works, metro vibrations, pollution, water infiltration and some years ago minimal maintenance and modifications. It shows a superposition of conditions: carbonated concrete on façade, recurrent spalling on the south-west corner, exposed reinforcement bars along the slab edges, black crusts and moisture where the structure is exposed to temperature variations. These layers are the example of physical record of an exposure of fifty years due to an insufficient maintenance.
Only by reading these conditions we can define a repair strategy grounded on its material reality and a gesture that respects its architectural expression.

Fig.37 Main entrance of the Metro Station.
© Inès Romy

Architecture is frequently assumed to be solid, associated with distinction and strength. It is also revelatory of tension and fragility.
On this example, part of the concrete tends to fall off soon. As steel oxidizes, it expands, creating internal cracks and causing spalling. The signal already internal of the structure came to the surface, as an internal infection that erupts on the skin layer. The task is to safeguard as many as possible the existing structure and its concrete ethos from destruction. The journey of materials must continue. In this sense, this photography can say more than words. It shows the urgency of care and continuity for Hornsbruksgatan 4. Zooming into the scale of twenty centimetres allowed an understanding of this cast-in-place concrete damage. Due to its porous properties, humidity comes and accelerates the chemical reaction of CO_2, allowing air and moisture to pass through, exposing the reinforcements to corrosion, phenomenon that we call carbonatation of concrete. There is a need to clean the area and rebuild the coating.

Fig.38 Photography of a concrete damage found on the metro station facade.
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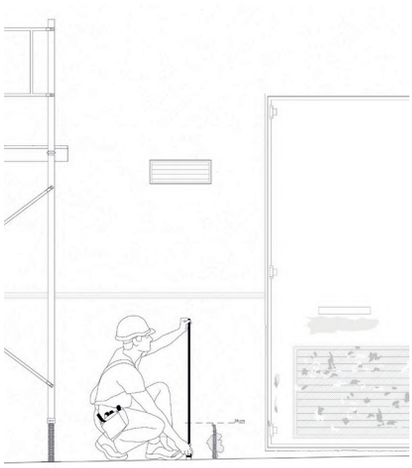
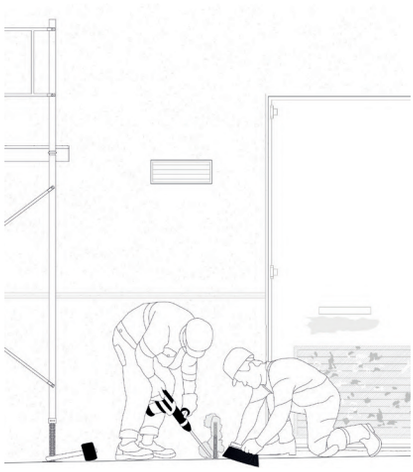
CONCRETE CARBONATATION REPAIR



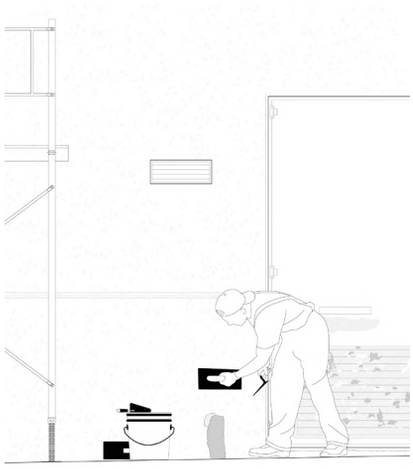
Step 1.

Measurements and diagnostic of the pathologies.



Step 2.

Opening and draining the cracked area. Cleaning and stripping the frame. Passivating the steel.



Step 3.

Reconstituting the missing coating. Ensuring the watertight cladding, applying a surface water-repellent treatment.

Fig.39 Damage of the reinforced bars and material surface.

Repair supposes first of listening the body which composes the building. It is about understanding and revealing curiosity about the cultural and material layers which accumulate Hornsbruksgatan 4 over time. Only by understanding these successive deposits, we can then consider a mindful intervention into it.

Hornsbruksgatan 4 is not only a masterpiece of brutalist infrastructure but represents a stratified entity shaped by blasting works, metro vibrations, pollution, water infiltration and some years ago minimal maintenance and modifications. It shows a superposition of conditions: carbonated concrete on façade, recurrent spalling on the south-west corner, exposed reinforcement bars along the slab edges, black crusts and moisture where the structure is exposed to temperature variations. These layers are the example of physical record of an exposure of fifty years due to an insufficient maintenance.

To become an active and tangible architectural practice, repair means understanding the behavior of the 1960s cast-in-place concrete, its porosity, its carbonatation depth measured on site, the corrosion mechanism and the nature of soiling that obscures the board-formed texture. The verification of our assumptions needs to be measured with analytical procedures without risking irreversible damage: carbonation depth tests, chloride sampling, petrographic analysis, moisture mapping.[62] In the case of Hornsbruksgatan 4, the observed defects do not appear to be very deep but are sufficient to contaminate the inner surface of the concrete. Around one to two centimeters of material loss can be observed on the surface as well as cracks of about ten centimeters in the areas most exposed to moisture.

Fig.40 Damage of the reinforced bars, the concrete coating and deterioration of doors.

In addition to the deteriorated state of the concrete coating, the ventilation grilles of the metal door also require attention due to peeling paint and traces of corrosion around the hinges. The treatment consists of cleaning to remove rust and paint residue, applying rust protection and paint. Its conservation reflects a gesture of care on minimal invasive interventions.

In a case where the concrete finish is part of the architectural expression, the methodology of cleaning becomes essential to restore the expressive board-formed of concrete and ensure the security and the accessibility for future users. It reserves the black and dusty effects of pollution and restores the legibility of the board texture.
The intervention consists of removing harmful deposits without erasing the patina of the building and altering the tone, the color or the surface uniformity. By using preservation technics, the goal is to slow down the environmental process, such as rain, water, and temperature change but also preserving the concrete authenticity.

Different cleaning systems exist and have specific implications for the substrate. It can rely on water and steam, whitewash, micro-abrasive methods or laser cleaning. Given the building's exposure to both urban pollution and humidity, the chosen method needs to balance efficiency with minimal abrasion. By treating the concrete, the goal is to rectify defects, recapture its early appearance of uniformity.[63]

Regarding the improvement of thermal comfort, the addition of ten centimeters of calcium carbonate insulation has been chosen. Without altering the exterior appearance of the board-formed concrete, this strategy offers durability of the reinforced concrete. It strengthens the building by stabilising the internal environment from constant metro vibrations and time. As a natural occurring material found from limestone or chalk, its chemical properties increase strength and resistance to corrosion and damage, acting as a binding agent.

Although this approach preserves the identity of the building, it needs to accept the presence of certain thermal bridges inside while preserving the architectural integrity of the façade. Nevertheless, the calcium carbonate has the capacity to isolate acoustically and thermically, which is particularly relevant in the case of constant vibrations from the metro line passing underneath the building. For a large-scale project, the calcium carbonate seems to be also a pragmatic choice in a way of affordable and available repair.

The gesture of doing a patch repair also raises the question of how visible the repair interventions should be. In the urban context of Hornsbruksgatan 4, where the façade is read both from the street and from the park above, the act of repair asks the question of visibility or erasure. Indeed, the size of a five centimeters piece of cement patch is not perceived in the same way when we stand up at fifty centimeters from the wall than looking from a distance of one hundred meters.
In the last case, it will completely disappear from the façade. In this project, the intention is not to erase all traces of intervention but assume them within a pragmatic and transparent ethic. In this sense, repair echoes with the principle of constructive honesty of brutalism. By showing how it is made, it also shows the maintenance process, the acknowledgment of historical layers and the necessity of maintenance.

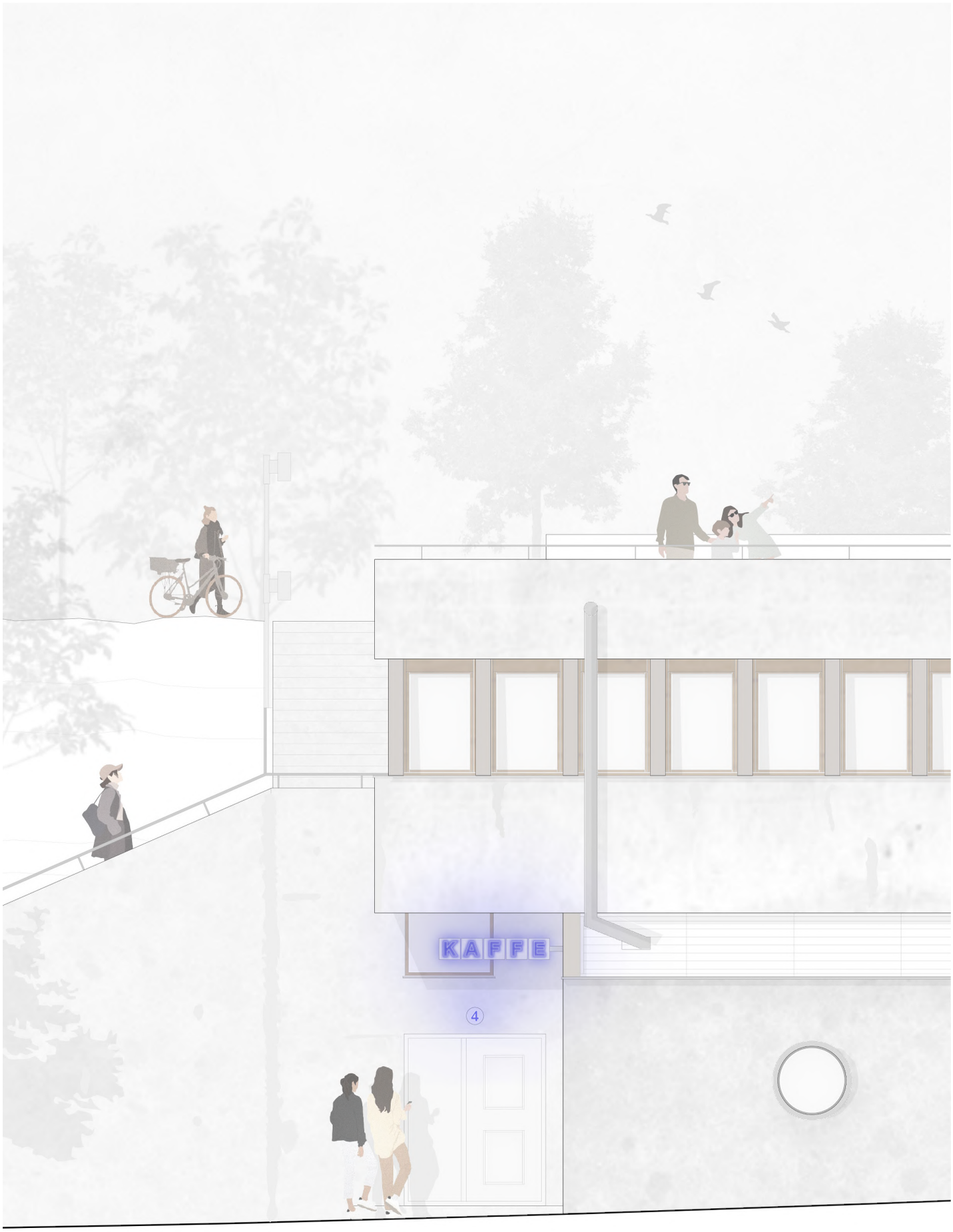


Fig.41 Restoration of Hornsbruksgatan 4.
A place to meet, share resources
and interact with people.

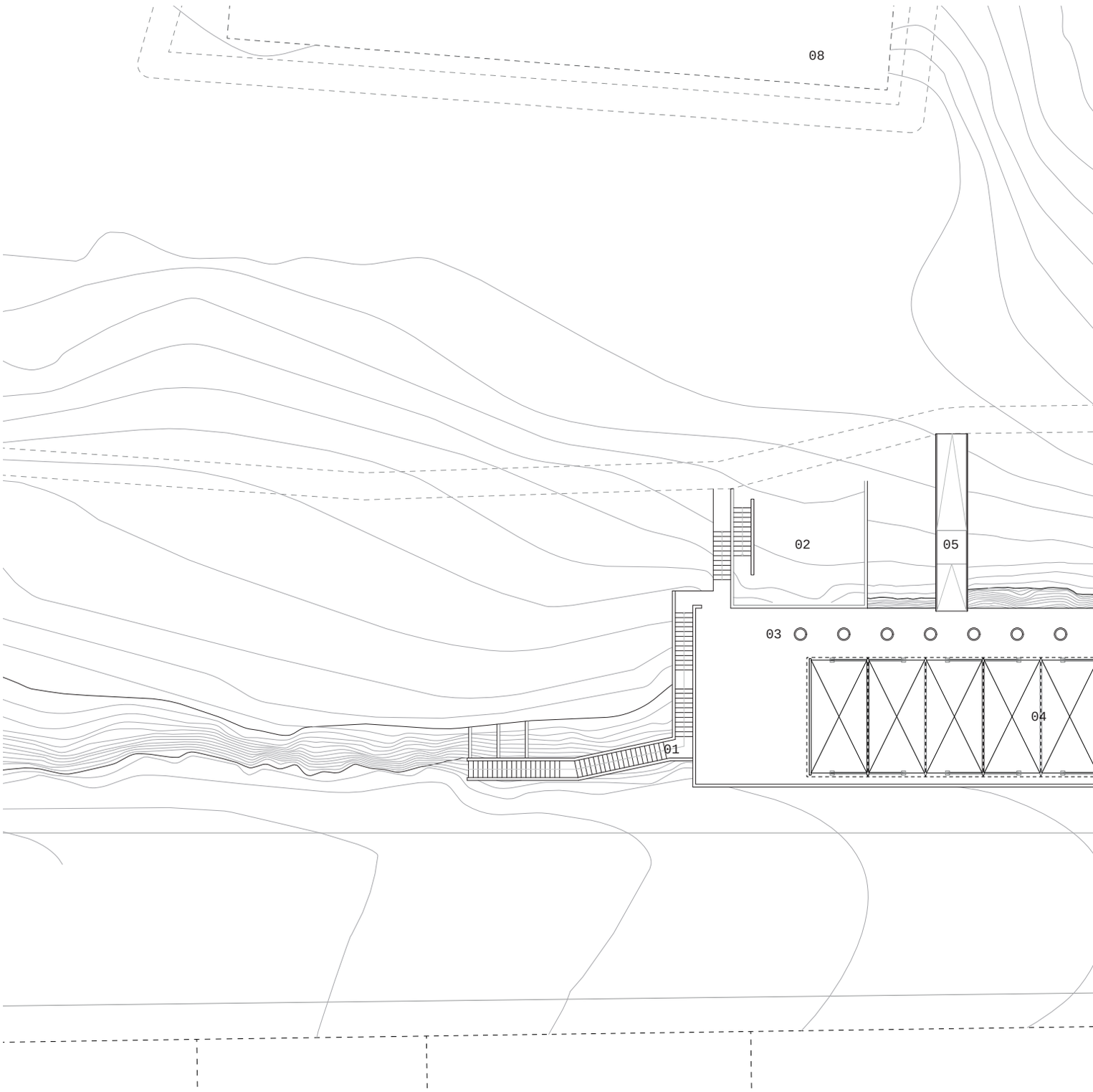
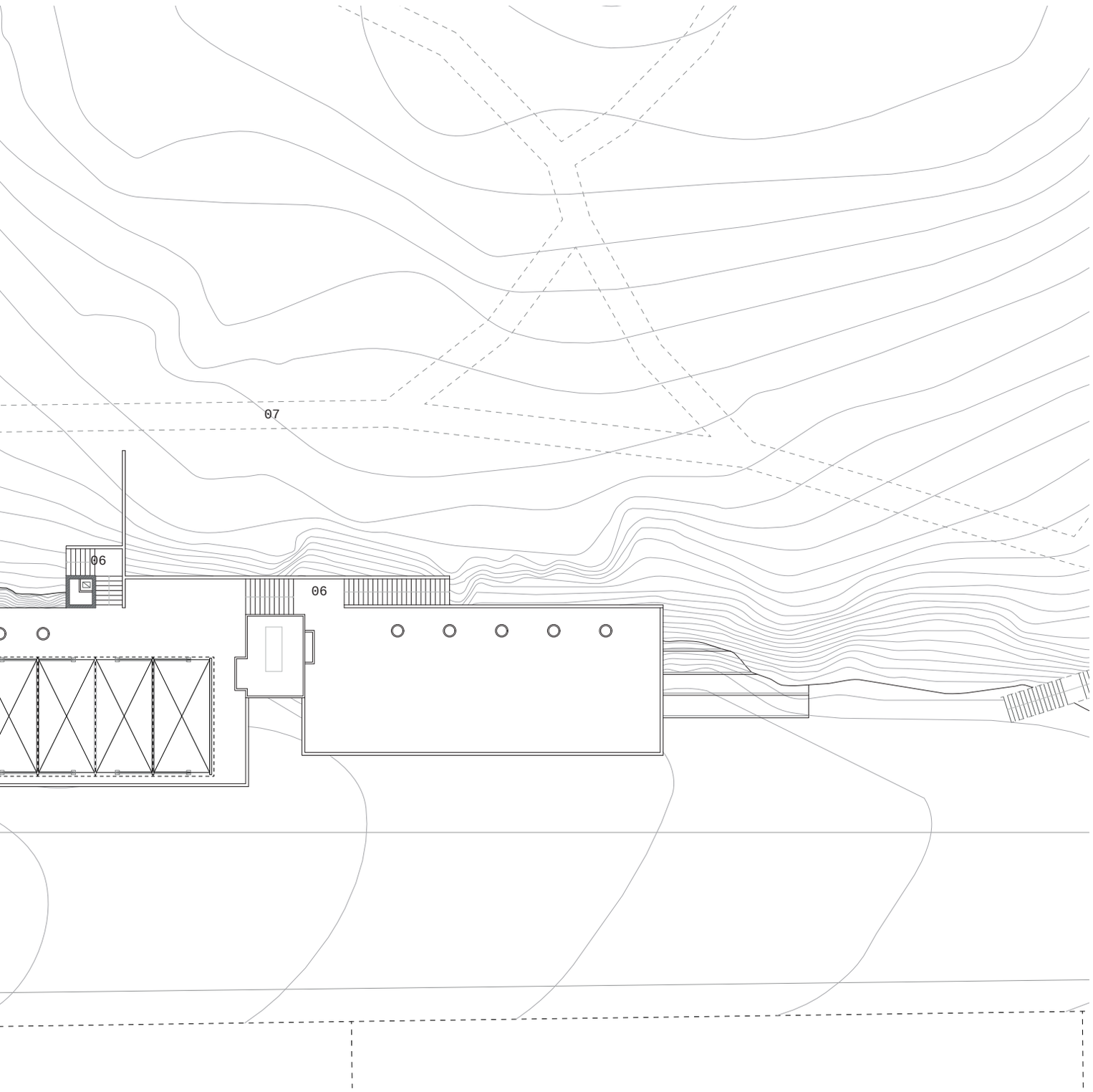


Fig.42 Roof plan, 1:500

01 Existing public stairs, access to the park
02 Contemplation platform
03 Conservation of the existing skylights
04 Addition of the *Membrane* structure
05 Addition of a ramp, facilitating accessibility
06 Conservation of existing stairs
07 Pathway of the park
08 Högalikyrkan

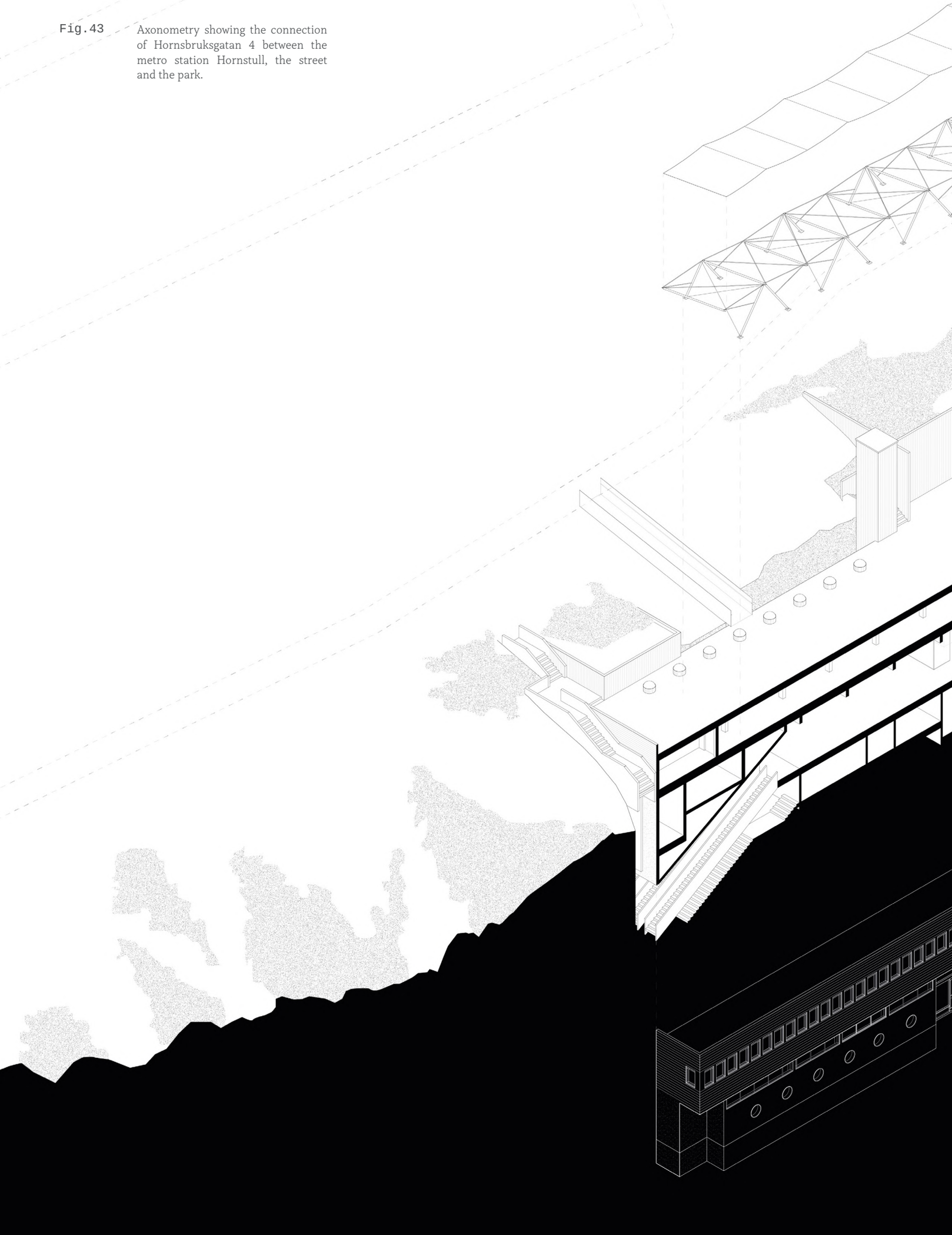


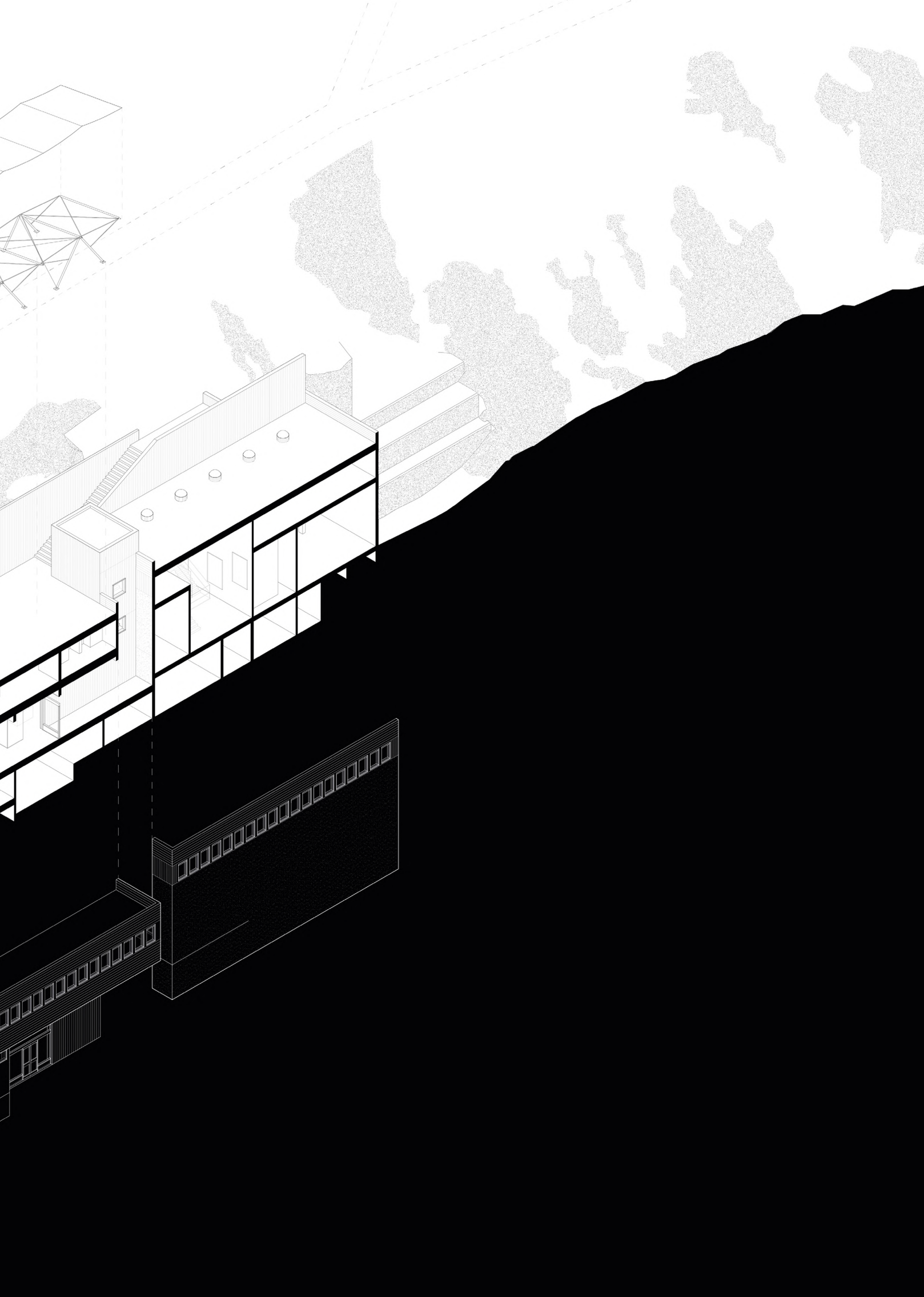
The reprogramming project adopts a repair rather than a replacement approach. Working with its constraints, embracing its existing qualities and potential aims to bring a form of continuity to the building. As the architect C. Norberg-Schulz theorizes in his concept of "genius loci" (Norberg-Schulz, 1979), this architectural gesture seeks to reveal, respect, and enhance the raw spirit of the place.

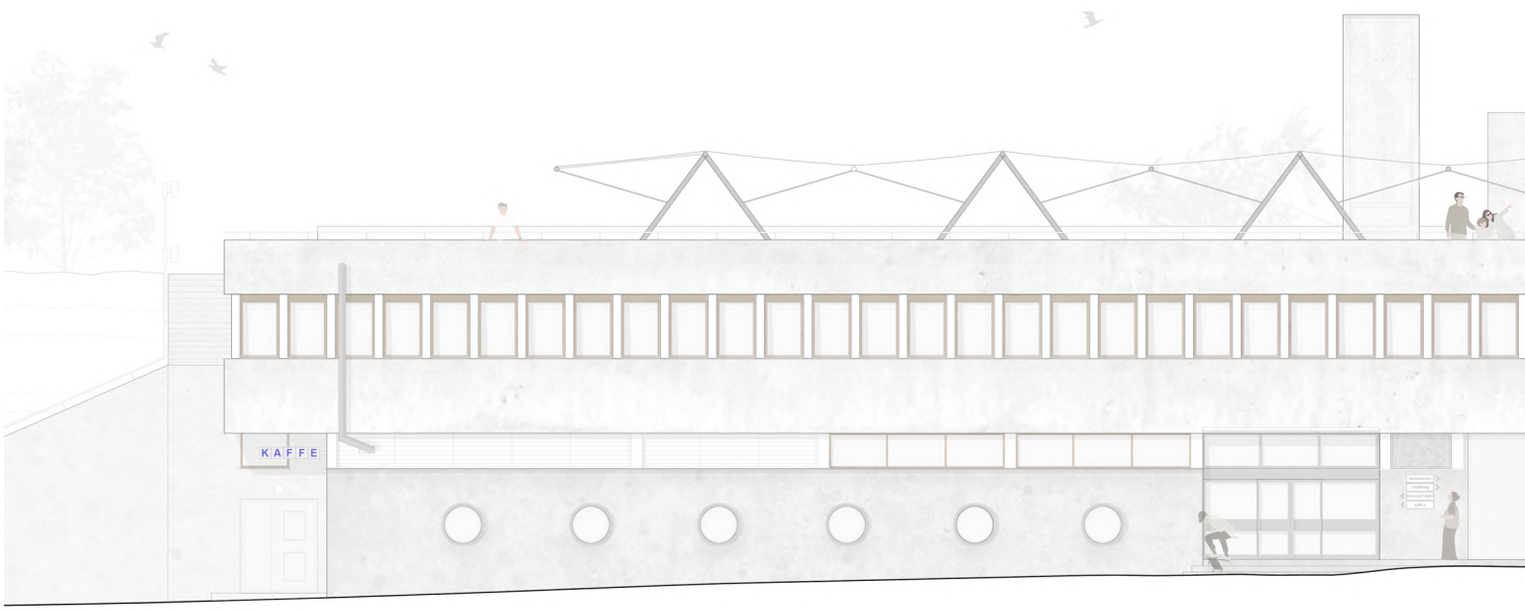
Through an ethic of localized interventions, this approach encourages minimal alteration, the reuse of what can be revealed as new functions, and the acceptance that the building must reprogramming itself, starting from its existing structural and spatial form. In this sense, the design proposal responds to the evolving functions of the building.

In an area dominated by housing and passenger flow of the metro station, the concept shifts the building toward a community-oriented program, aspiring to foster social connection and to become a local network. This collective program would be structured as a place where people work, meet, and share resources.

Fig.43 Axonometry showing the connection of Hornsbruksgatan 4 between the metro station Hornstull, the street and the park.







Today, the main façade of the building, oriented towards the South has been thought through a gesture of rehabilitation. Hornsbruksgatan 4 feels completely closed, with no interest and almost no openings. Passers-by walk along this wall, use the Hornstull metro station but feel disconnected from this neglected entity. There is a need to bring life back. My proposal adheres to the existing building through scales. The first transformation involves opening and activating this façade.

Revealing a pragmatic choice guided by the structural constraints of the load-bearing concrete, the selection of circular windows set within the concrete, establishes a facade order, thus engaging in a dialogue with the ribbon windows located on the upper floor. This choice avoids the creation of weakened corners and allows for simpler cutting within the reinforced concrete. Positioned at eye level, each porthole reveals scenes of daily life specific to each moment of the day, thereby fostering a closer connection between the street and the building's users.

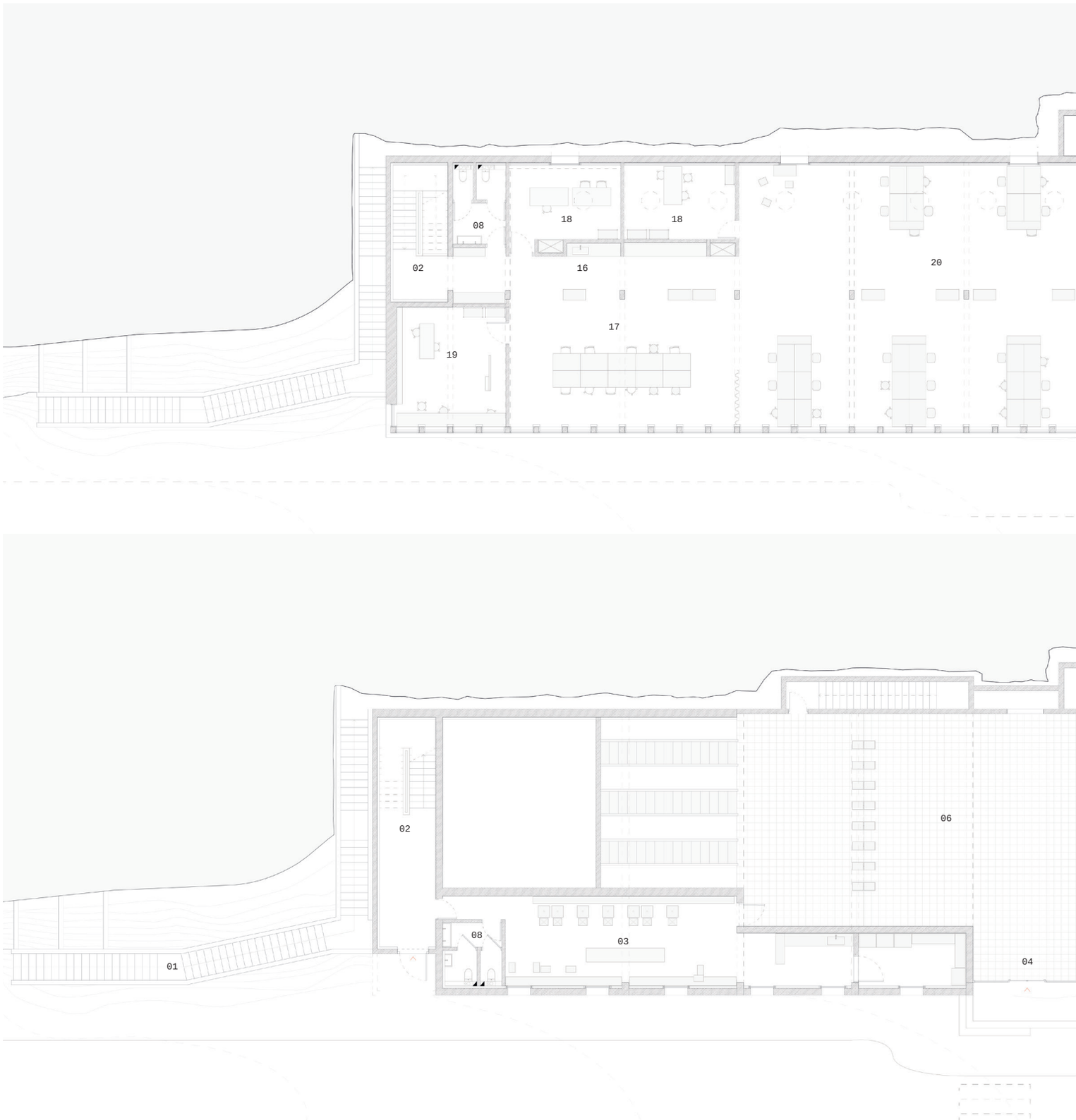
0 2 4 6 8 10m

Fig.44 Elevation South, 1:200

The transformation seeks to enhance the original 1960s spirit of Hornsbruksgatan 4. The distinction of the three entities which compose the building is then, exposed.

Behind the glass there are announcements; activities around the coffee place, conversations and then, encounters. These openings attract the eye, awake curiosity, and reveal a new urban scale of the building. These announcements are also made possible by existing signage, such as the T-Bahn and street numbers, as well as by the addition of new light boxes. These illuminated signs pique curiosity, encourage pauses for contemplation, and guide visitors to events announced and organized in the area. This creates a new dynamic on the street.

In the direction of the cultural ethic, removing the timber structure on the rooftop appears essential to not blurs again the original building. The addition of a light and open structure provides a contemporary gesture on top of the existing matter. It offers a public space to sit, contemplate and protect people from rain. Perceived as a membrane, it is defined by a clear tectonic and allows the building's mass to express itself.



01 Existing public stairs, access to the park
02 Existing access, workspaces first floor
03 Kaffe 4, Shared kitchen
04 Existing Metro entrance
05 New doors inspired by the 1964's plan
06 Metro accessibility
07 Ventilation shaft
08 Washrooms
09 Introductory museum gallery
10 Existing access, exhibition first floor
11 Gallery of culture
12 Exhibition space, Metro building
13 Addition of staircase
14 Auditorium, Public lecture space
15 Preservation of the original doors
16 Shared kitchen
17 Meeting area
18 Project room
19 Workshop room
20 Open space seating
21 Meeting room
22 Gallery of Brutalism

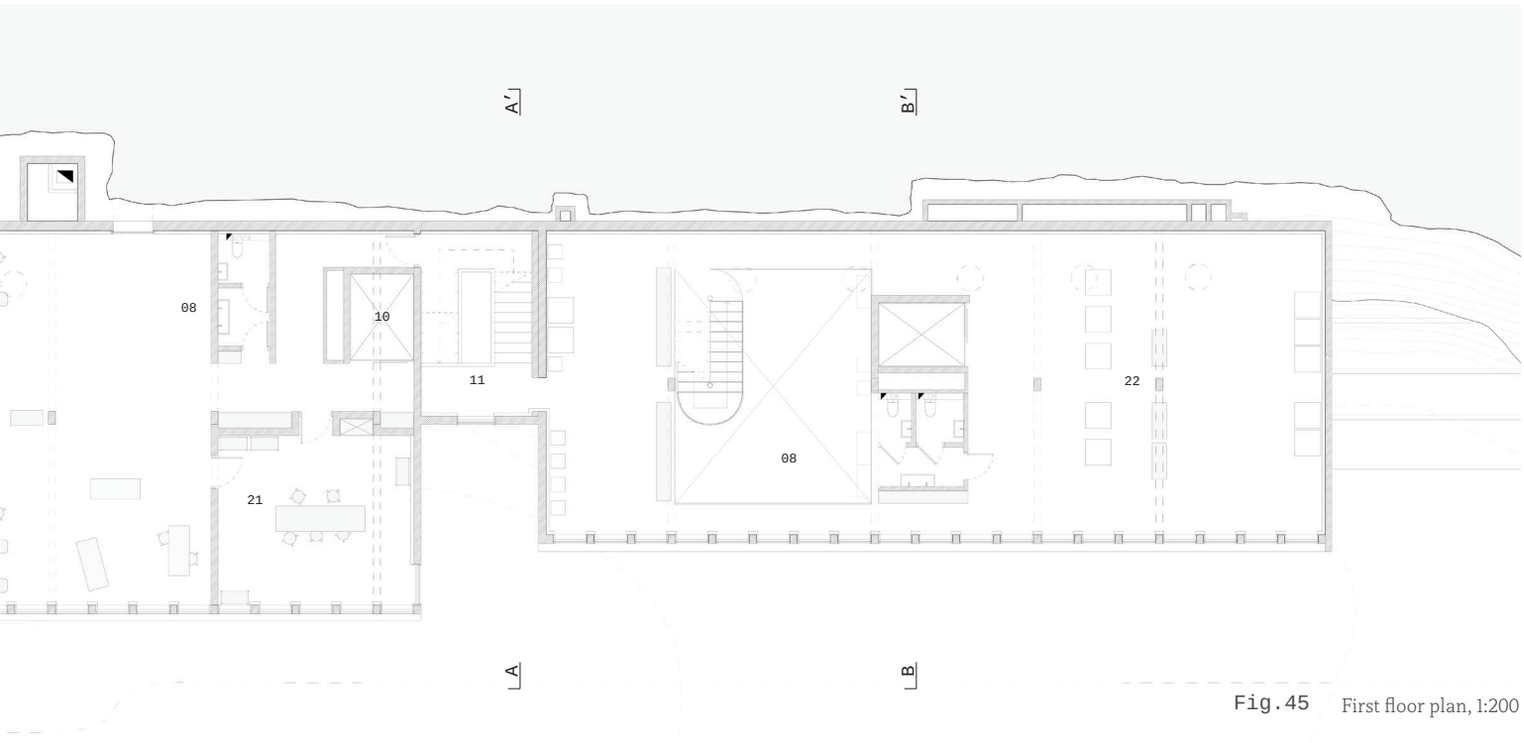
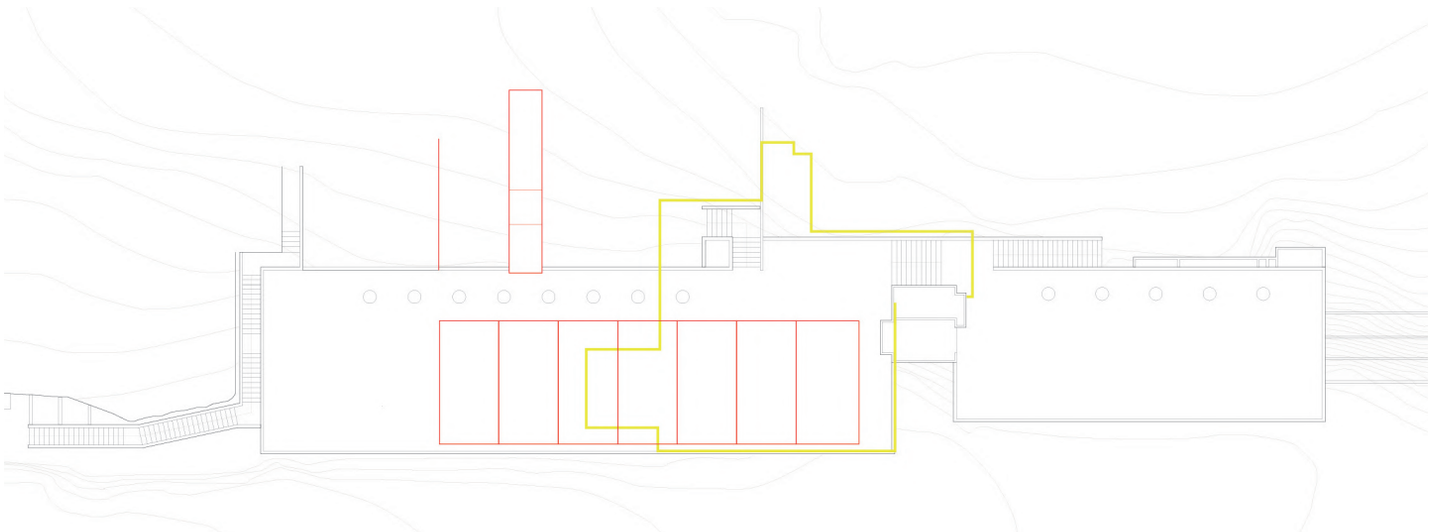


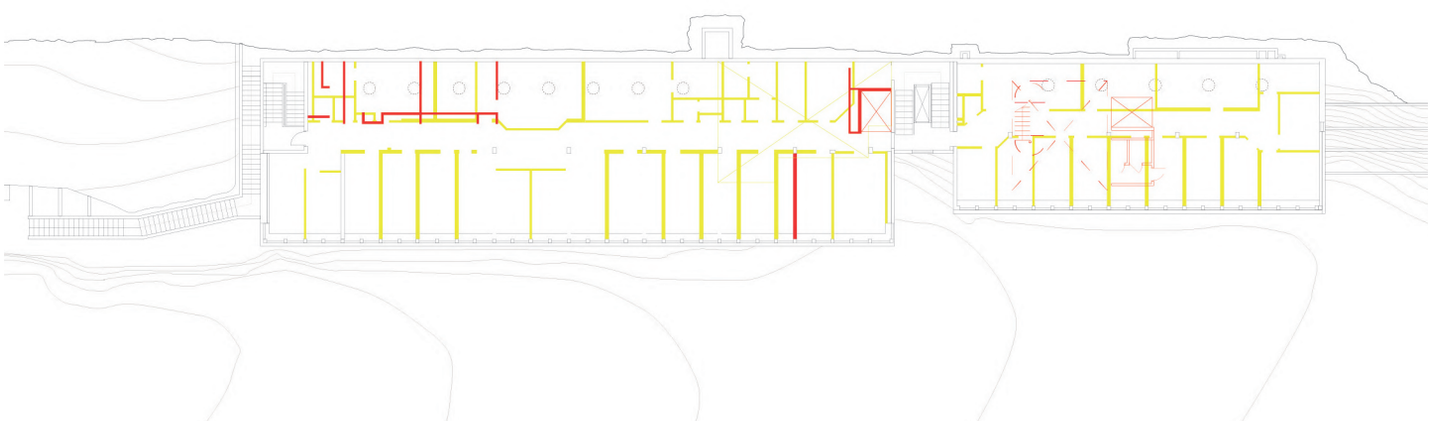
Fig.45 First floor plan, 1:200

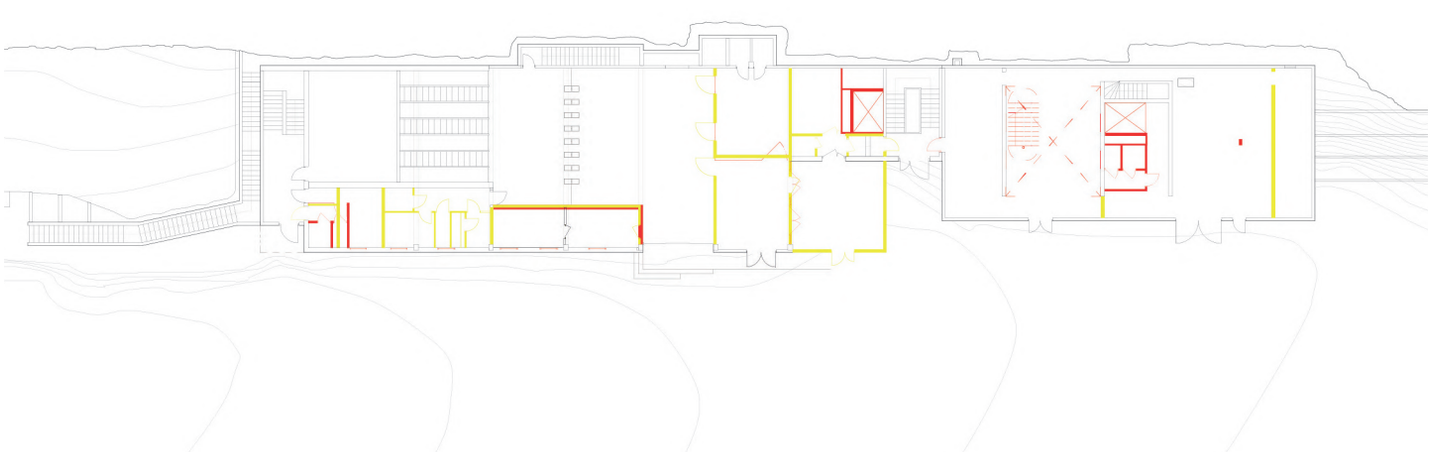
Fig.46 Ground floor plan, 1:200

Once neglected and locked away, the ground floor needed to be activated as a public threshold between the street and the metro. Perceived as a place of exchange where urban flows intersect, the existing metro entrance was reinforced by the addition of a second opening facing the street. A legacy of numerous alterations, it seemed necessary to demolish the corner to return to the original ethos of the 1960s building. This space, punctuated by its uses in the metro, reinforces the desire for a porous and welcoming environment.

Therefore, revitalizing the building's corners, as exemplified by Kaffe 4, became the challenge. It is seen as a place for interaction and respite where passersby, workers, and visitors can recharge together. In the evening, it transforms into a dynamic space, open for building's occupants, neighbors or passers-by.







Furthermore, the right-hand side of the ground floor also invites shared and creative thinking. Think as as a cultural exhibition space, it allows a place to contemplate, to share ideas on several society subjects and thoughts about the demolition discourse in our cities. Situated on two floors, this space welcomes a Brutalist exhibition, historical facts of the metro station and its building, its mechanical components and multiple temporary art exhibitions. The demolition of part of the concrete slabs and the presence of a new staircase thus makes it possible to connect the two floors. The creation of a seminar room, in connection to the exhibition space allows conferences, public lectures and music events. It opens the debate for people with the desire to share knowledges, beliefs and projects based on community-driven.

While historically, the first-floor housed offices, the design proposal exposes a huge open space, revealing only the structural columns. In this idea, this area opens the potential to a flexible workspace, where the division is only made by furniture, meeting rooms and functional blocs as washrooms. This interior pedestrian openspace will allow a much more porous relationship between the entity and the city. A more direct and open relationship between users and citizens. The initiative behind the community aperies from a belief that bringing people and organizations together can foster new perspectives and knowledge to co-create solutions across disciplines and interests. Reprogramming the building aims to create creative workplaces based on art, media, architecture and more. It is not only to reuse the existing building but also to ensure a continuous life to this cultural reference in the city. In this sense, people and organizations come together across different disciplines and create a network at the scale of Hornsbruksgatan 4 to the city of Stockholm.

Fig.47 Roof plan, Demolition Construction plan, 1:500

Fig.48 First floor, Demolition Construction plan, 1:500

Fig.49 Ground floor, Demolition Construction plan, 1:500

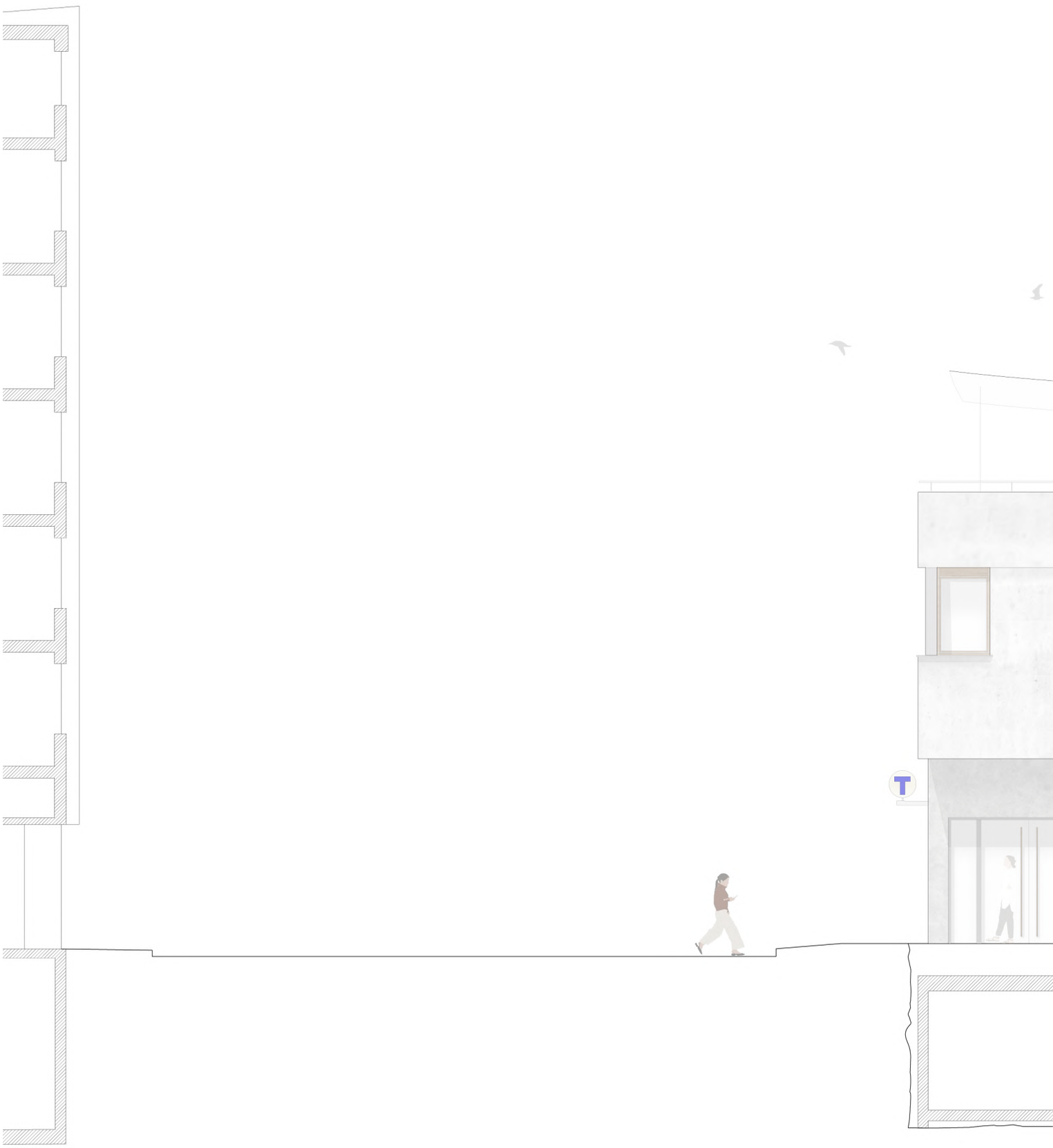
Existing

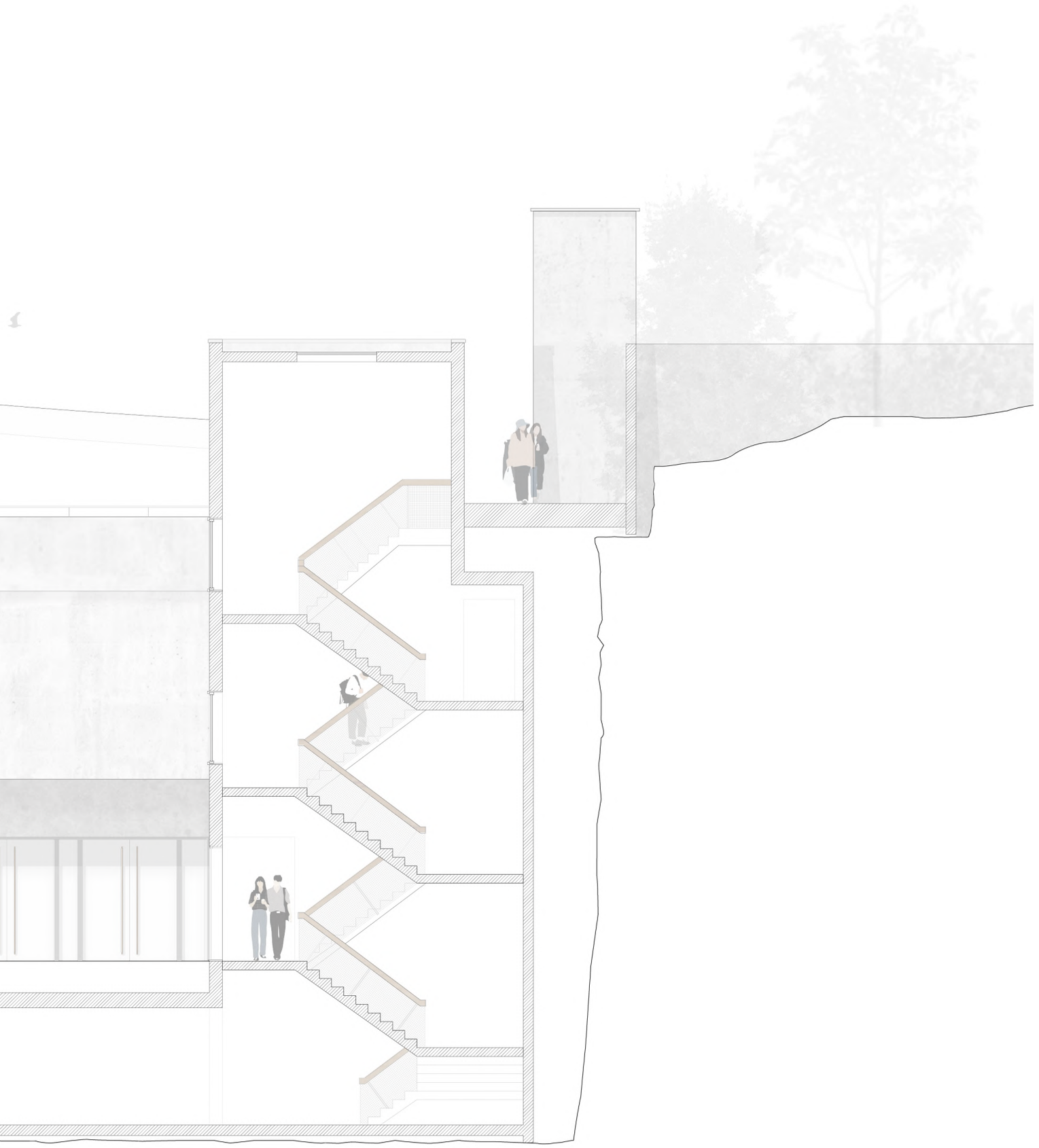
New construction

Demolition

Reprogramming Hornsbruksgatan 4 is also based on the principle that the building should reused itself. In this sense, the spatial logic of vertical circulations, such as the staircases has been preserved and refreshed with new metal mesh railings and new coat on the wooden handrail. Moreover, through its functional dimension, staircase is both support and conduit. As a body organism, it connects and distributes the movements of the building. In fact, while connecting and deserving people into it, this element allows the building to breathe and ensures flows. Its verticality organizes both the air and the light. Converting this block into a more connected space between floors, full of light and the possibility of opening and ventilating the area, it leaves the natural intensity of the climate from the cover enter inside.

Fig.50 Section AA', 1:100
Circulation organizing both air and light flows, while connecting space between floors. →





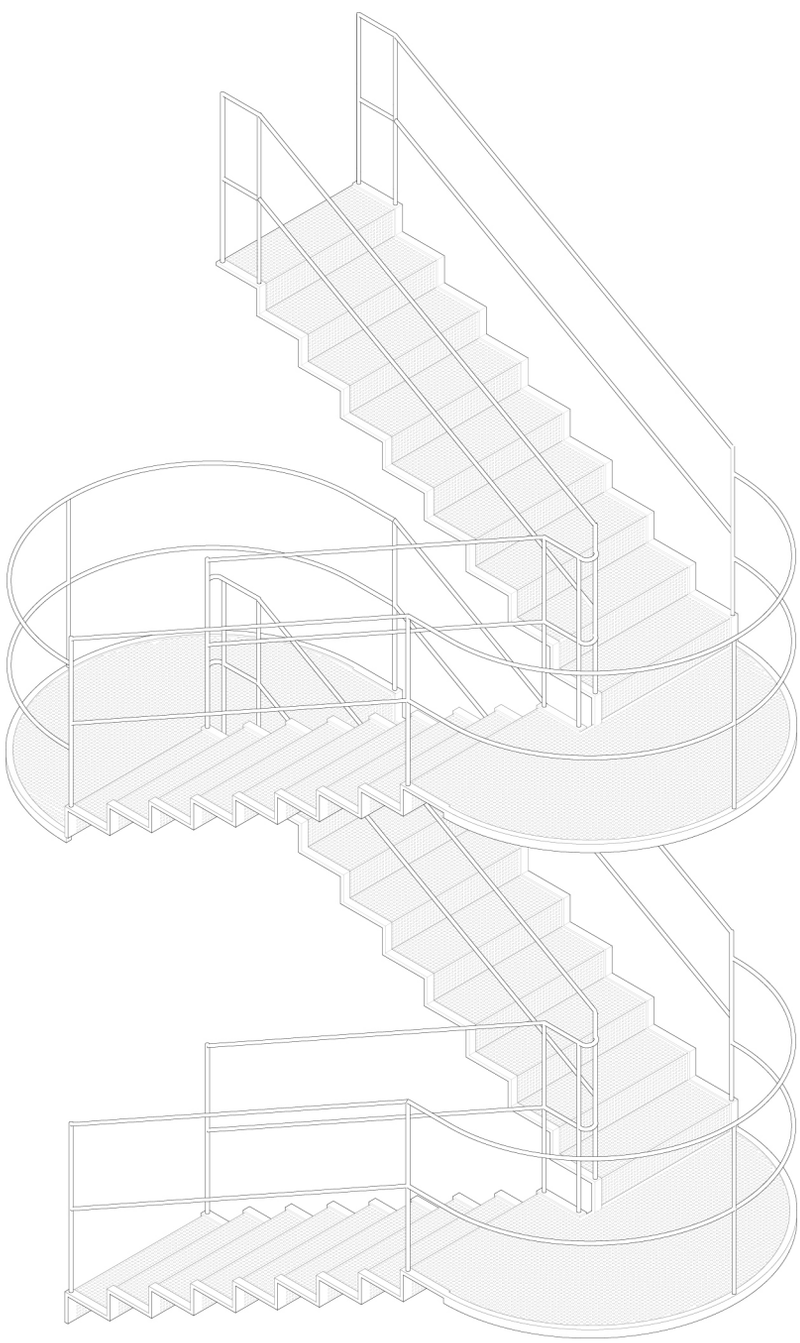


Fig.51 Axonometry illustrating the new metal sheet stairs.
Every functional element becomes an architectural component to rethink.

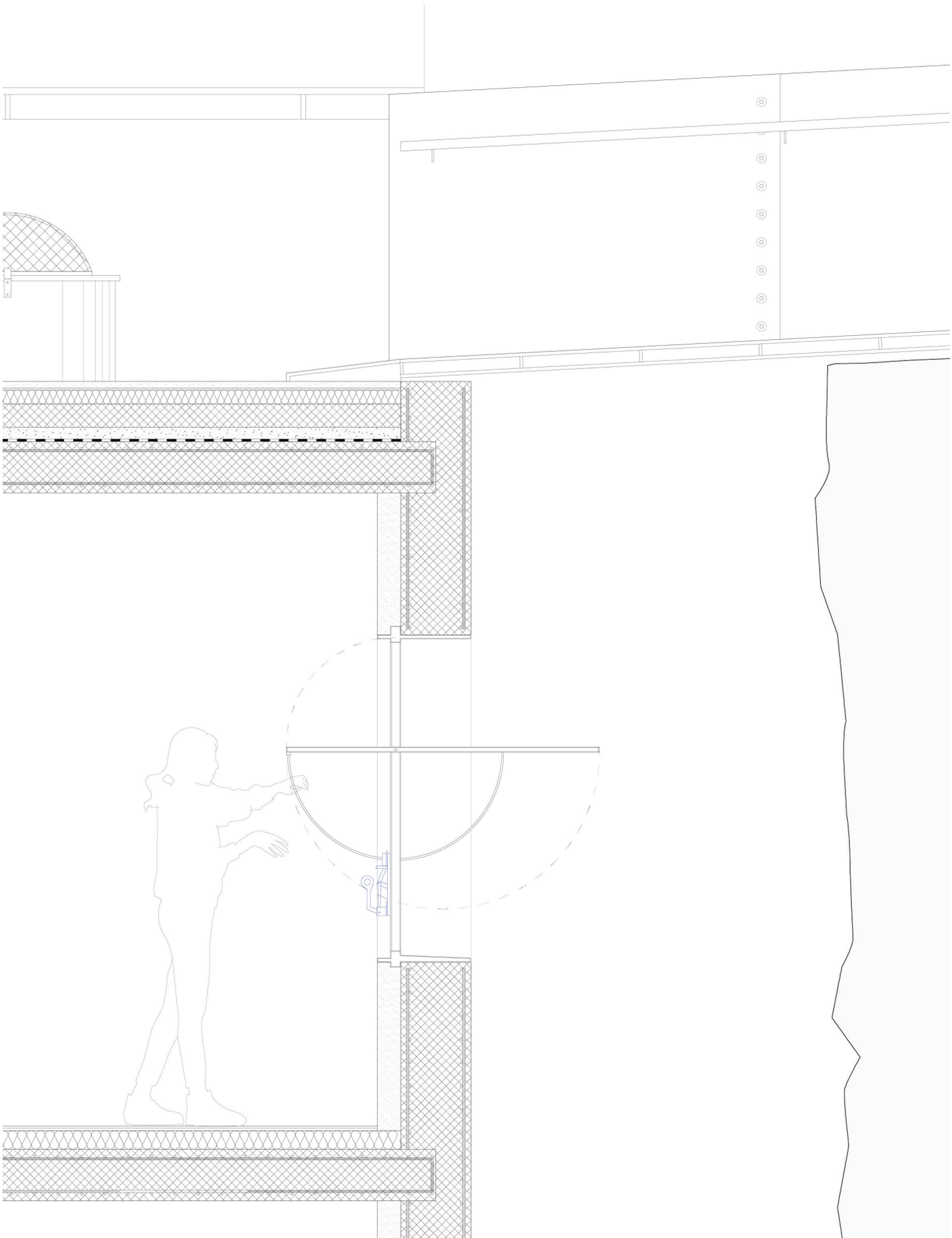
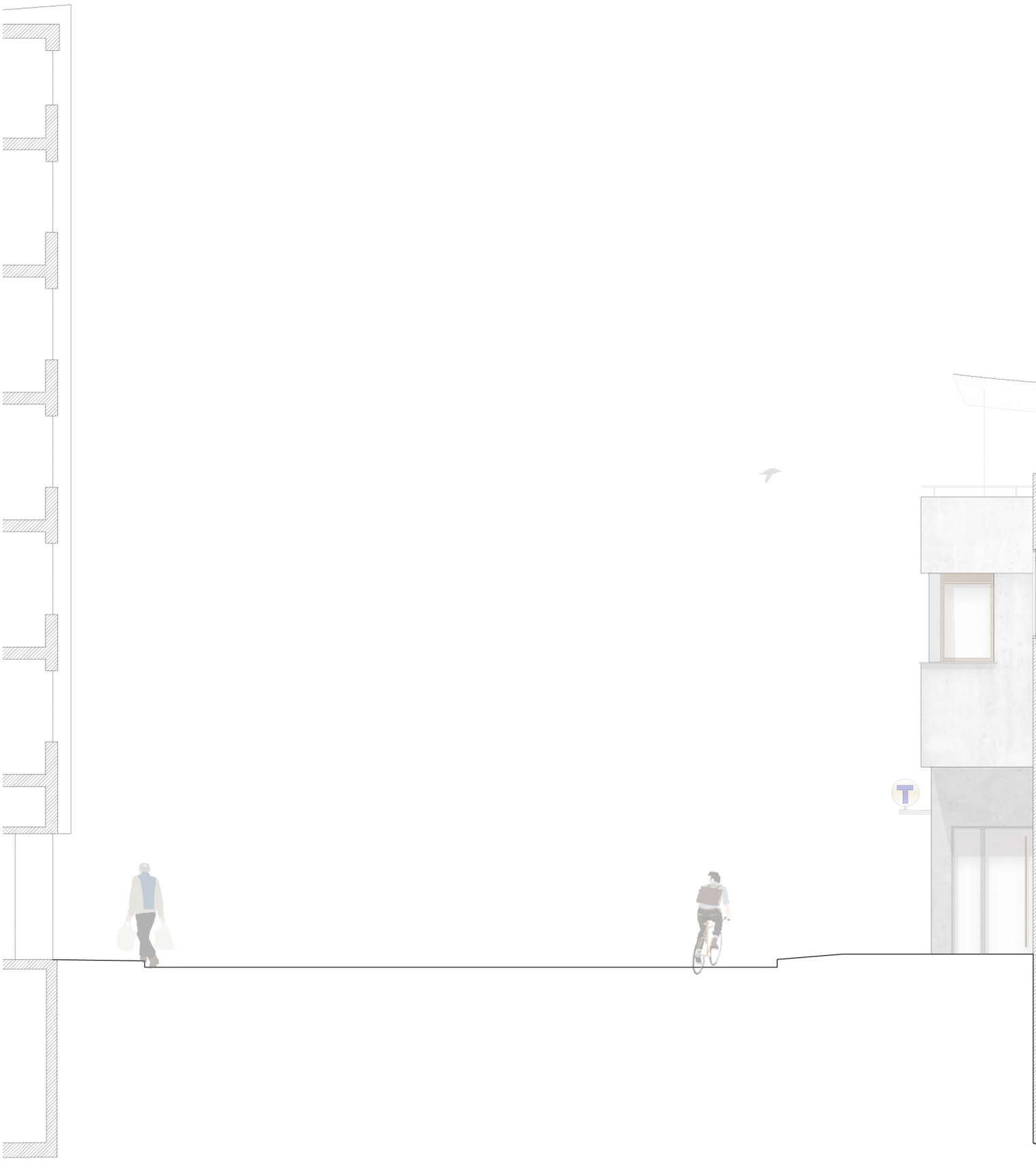


Fig.52 Detailed Section of the new circular window. Inspired by the detail of the architect Paulo Mendes Da Rocha in his project Gerassi House.

On the façade facing the rock wall, a new circular window inspired by Paulo Mendes da Rocha has been added. It operates as new natural ventilation element for the office spaces. Through a vertical lever handle, the opening are manually controlled and let warm air escale and new fresh enter. Its geometry and mechanism echo Mendes da Rocha's approach to expressive functional details.
Moreover, all other existing windows have been replaced with double-glazed units, improving both thermal comfort and acoustic protection from the metro line.

The original building is defined by its concrete structures, brick inside walls. Taking advantage of a generous ceiling height, the electric system has been thinked to align with the needs of the building. On the ground floor, for instance, the electric network is organized with cable trays, conduits and ventilation ducts on the top of the existing glazing. Visible from the inside, it aims to deserve the coffee place and to let the architectural expression of the building raw as possible. In a pragmatic way, it allows also a better management in case of maintenance and opens up the view to the circular windows.

Fig.53 Perspective section
Illustrating the addition of circular windows on the main facade and the network of the inside electric system of the coffee place.



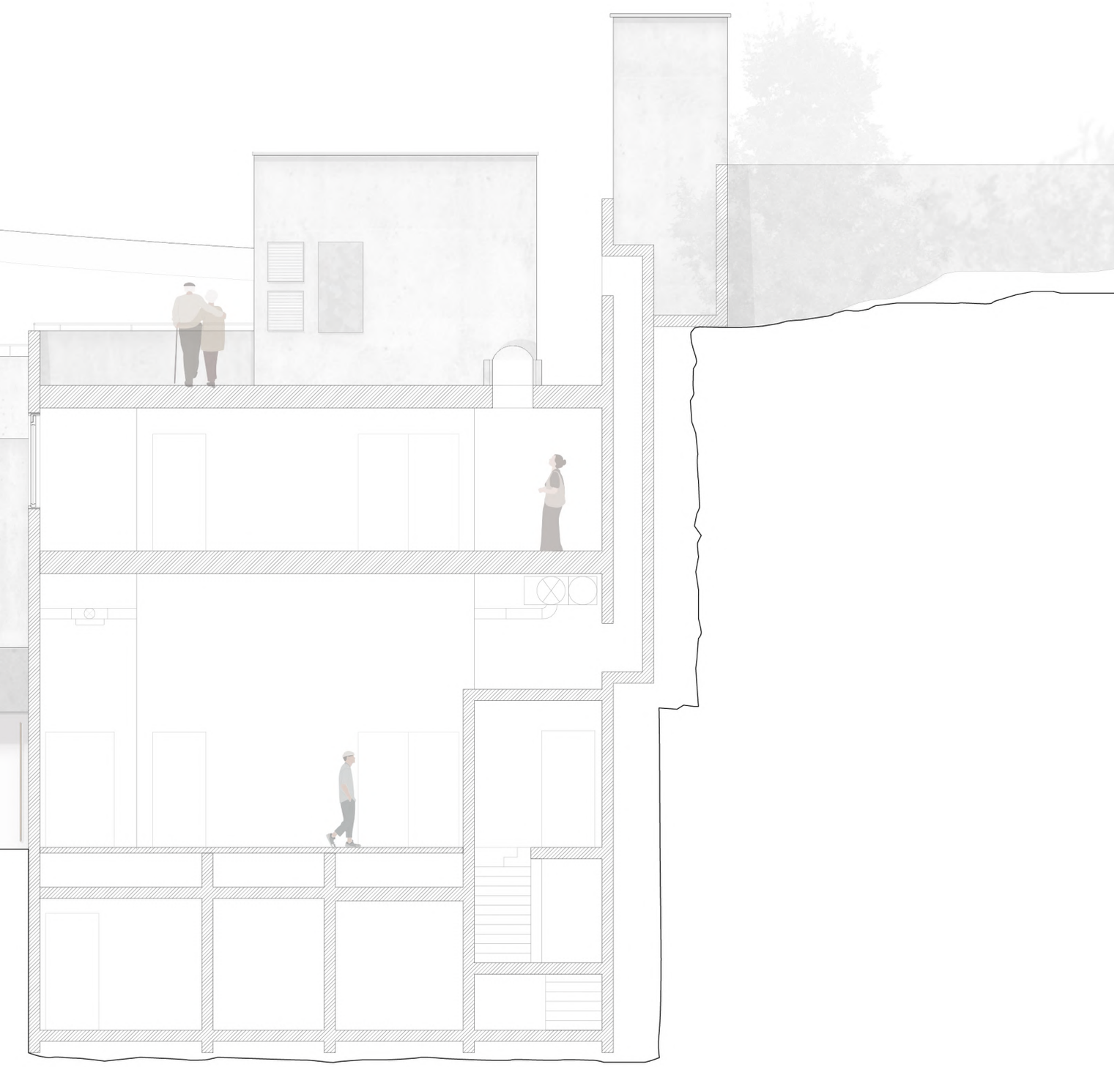


Fig.54 Section BB' 1:100
Illustrating the complexity of the ventilation system inside the building. It connects floors together and improve a better comfort for its users.

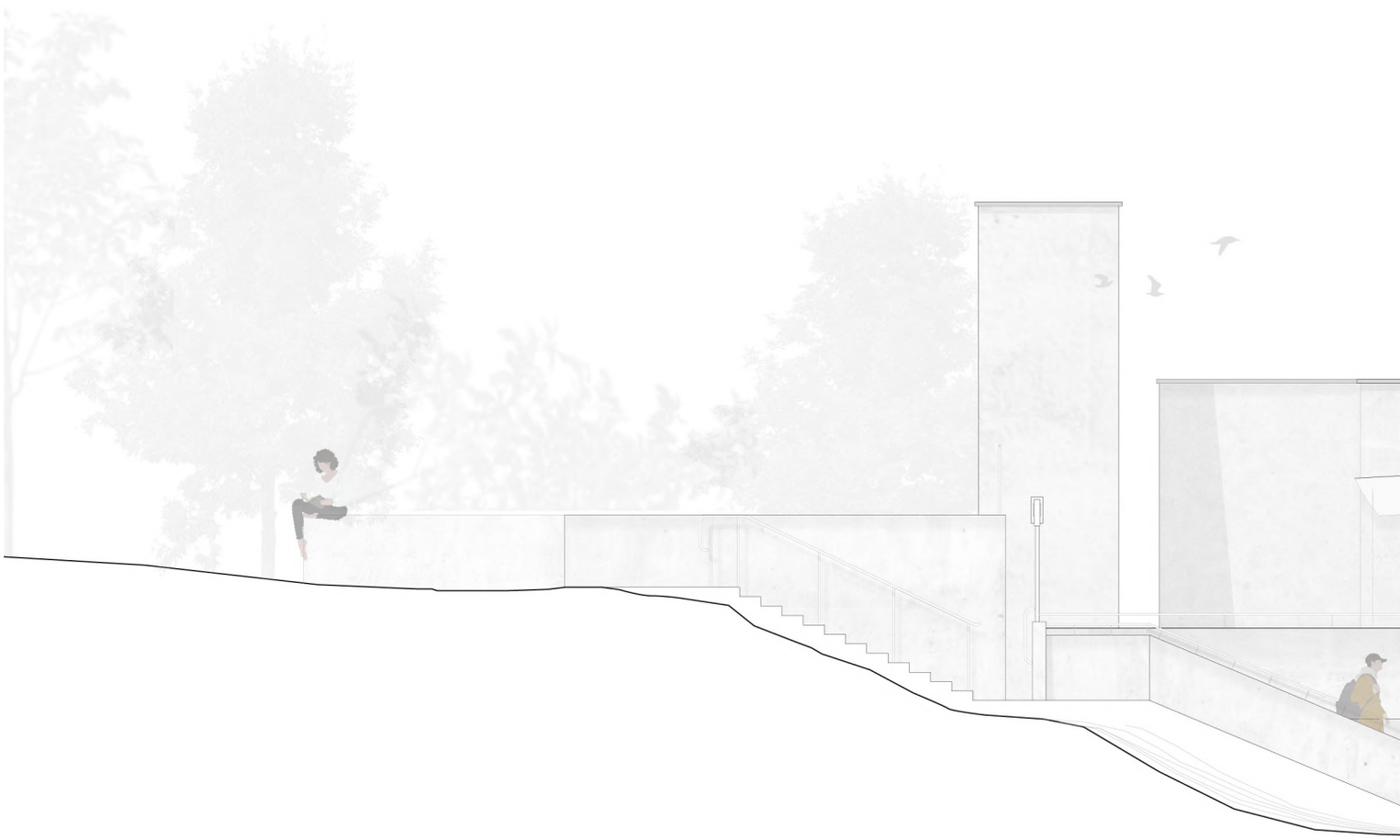
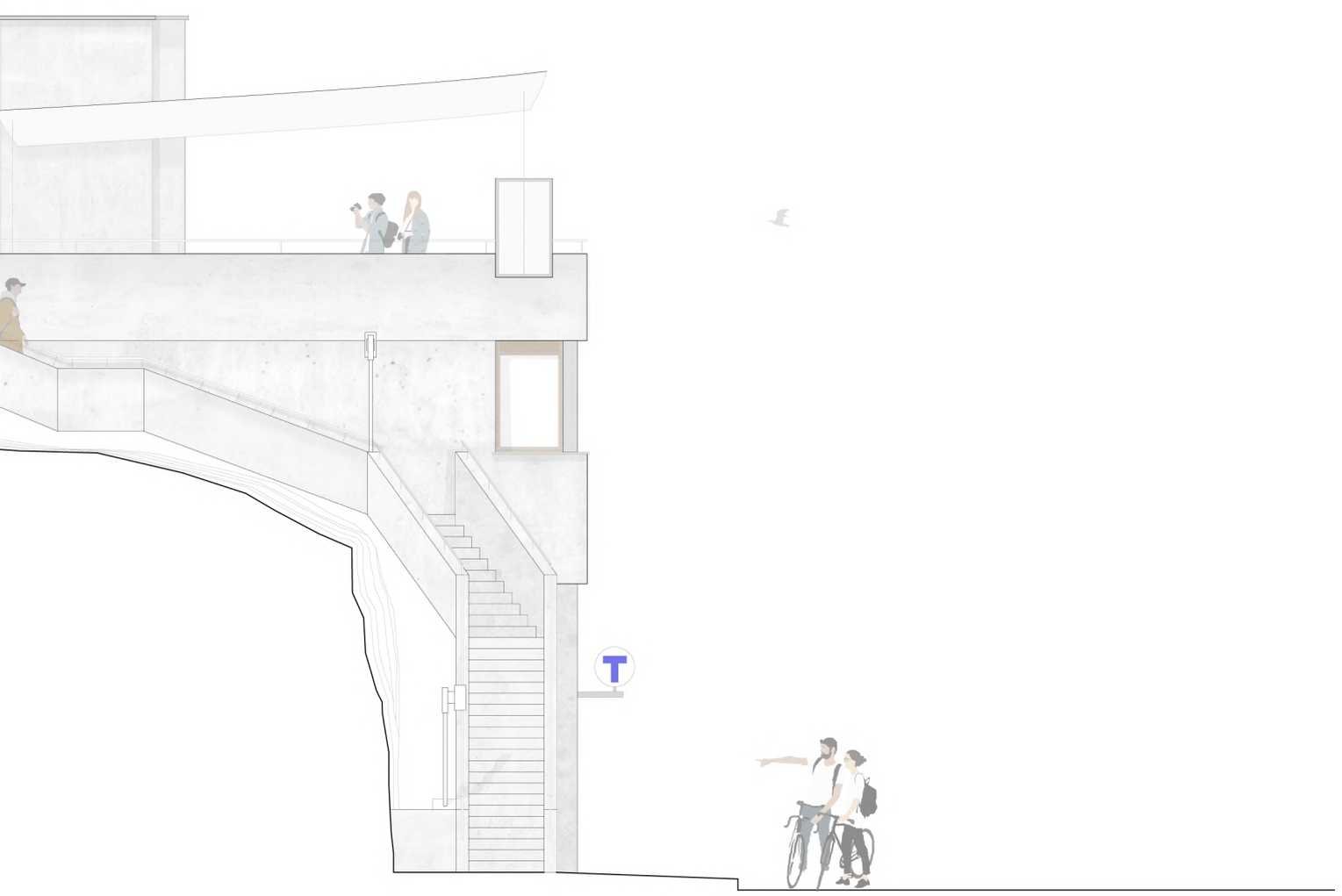


Fig.55 Elevation West, 1:100

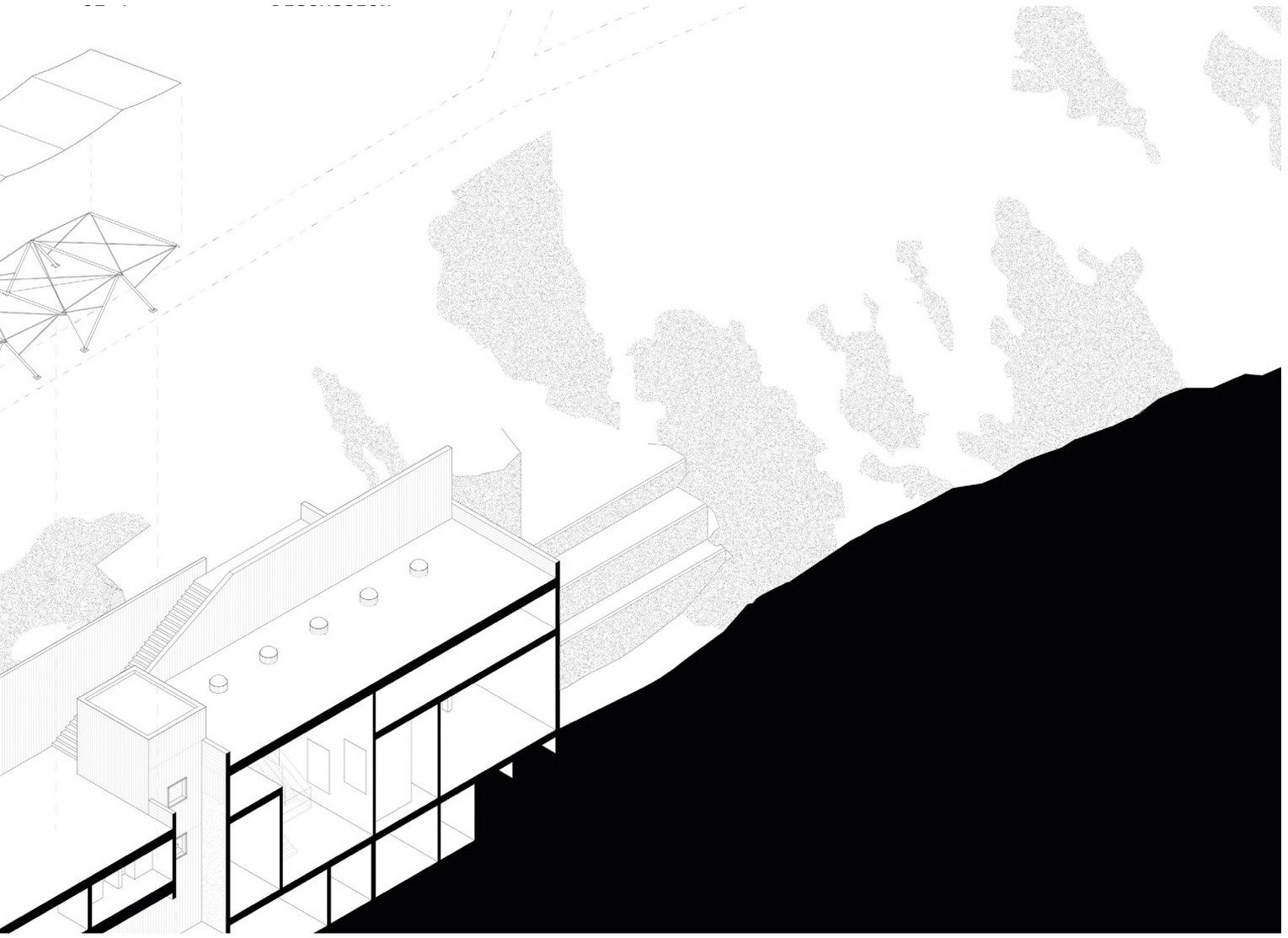
Showing the glazing window replacement, exterior facade repairs and railing replacement of the public stairs.



This research, born from a silent building, as a forgotten body in the heart of the city, Hornsbruksgatan 4, remained in seclusion for almost fifteen years. Through an attentive observation and a close analysis of its traces, this thesis has revealed its neglect, its repairs, but also its resistances. Getting closer to its form, zooming into the scale of a single aggregate, returning to the very technical properties of its structure, reinforced concrete, allowed me to understand its vulnerabilities, its capabilities, as well as its material resources and spatial potential.

This thesis seeks to question us, architects, and civic actors about the way we look our cities in which we found us and our Brutalist legacy. Decades of neglect, insufficient maintenance, and the political priorities focusing on new construction have contributed to the decline of the spatial potentials of Hornsbruksgatan 4. The task of this research was testing a building which is in danger to be tear down. The demolition narrative has surrounded post-war modernist and Brutalist buildings still today. Indeed, the project proposal chosen by Stockholm municipality refers still today to the low economic cost of demolition and the desire to make this place attractive. Rather than exploring subtle care and spatial potentials, tearing down and replacing has become the narrative of this place. In its cultural and heritage ethic, this proposal alters completely its surroundings. Exploring this building required a value understanding and posture on where we are usually working. The encounters along with its survey and the exchanges carried out with different stakeholders have shown its cultural value; a way of reading historical layers, materials, atmosphere and the invisible qualities that make this place feels right. Learning about the techniques of repair means also engaging a discourse with restoration. From crack injection to surface treatments, from passivation of corroded reinforcement to the treatment of the concrete cover, the process of restoration has shown its importance into an architectural gesture of techniques, ethic and culture. Caring of a brutalist building becomes then a form of knowledge. Its intervention techniques cannot be separated from the values we attribute to what we choose to preserve.

Through the design proposal, this research also generated speculative reflections on what Hornsbruksgatan 4 could become. Grounded by the needs that expressed local actors, it offers a credible alternative to demolition and explores its inherent capacities. The project emerges from conversations, observations and shared concerns.



Restoration becomes a reparative discipline which requires a permanent reassessment of its needs, abilities and flexibility. Building with an orientation toward the future requires a comportment toward transformation. We must be aware that other people will come after us with new and different needs. The project is not a final form but an adaptable framework to welcome new narratives, such as the meaning of the exhibition space. Through my survey, I believe in a collaborative place where new ideas of preservation emerge and where the building acts as an open laboratory. I perceive a space engaging its users and Stockholm inhabitants to achieve its continuity rooted from the past and future.

With all its flaws, Brutalism reflected its time. It was designed to endure, to be used, to age. The resurrection of brutalist buildings does not depend only on the implementation of attractiveness but also to the creative reimagining of an architecture that may have fallen out of fashion once but which, with an architectural gesture of attention and care, can appear as radical and new. Recognizing that abandoned buildings, such as Hornsburksgatan 4, still have something to convey means acknowledging their places of share and knowledge.

Ultimately, by demonstrating that sustainability is not only a matter of energy performance or material efficiency, but this research also contributes to broader the discussion and to perceive that technical understanding, gesture of care and architectural responsibility can involve a cultural and sustainable continuity. It shows that working with existing structure can require subtitle transformations and playful interpretation of the brutalist heritage. It allows the capacity to read and transform honestly without erasing.

With many faults, Brutalism demonstrated the architectural potential of remaking a better world, with energy and power, but even more with optimism. In a time of material scarcity, of economic and ecological pressures, the challenge aims to recognize that brutalist architecture can emerge as an expressive and honest force for its inhabitants. By shifting our attention to what lies at the margins such as the overlooked, the residual, I discover resources capable of welcoming future uses. By being functional, honest and pragmatical, Brutalism taught me to come back to the architecture essence; a collaboration between human and matter where care becomes an ethical stance of architecture.

INÈS ROMY

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Because what surrounds us today demands an attentive architectural gesture, both in listening and transforming, we must get closer to materials. Rather than disruptions, it allows clear tectonic languages and a form of continuity.

EDUCATION

Chalmers University of Technology

Master's Science of Architecture
Architecture & Planning Beyond Sustainability
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Diplôme d'études en Architecture
2021-2024

PROFESSIONAL

Ajeance
Sélestat, France
2023 & 2024

Carpenter Intern
Neubois, France
2022

1 Trellick tower has been designed by Goldfinger Ernö and is a controversial but masterpiece of the Brutalist era, seems as a "streets-in-the-sky" failure, isolating inhabitants into these vertical housings.
Heathcote, E. (2016). "From sink to swank—In defence of Britain's brutal estates." Financial Times. https://www.ft.com/content/7ae5d134-bacf-11e5-bf7e-8a339b6f2164?syn-25a6b1a6=1
2 Ibid.
3 Aris Komporozos Athanasiou, director center for Capitalism Studies UCL, observes prevailing market logics inadequately account for architectural qualities that resist quantification, complicating the establishment of meaningful criteria for preservation or reuse. "Power to Renovation, a question of values." (2025, February). [Documentary]. HouseEurope! https://www.youtube.com/watch?v=5ESAAqamex4
4 Uses of Heritage. Drawing on Laurajane Smith's critique of authorized heritage discourse, challenging the dominant ideology that preservation is reserved for buildings deemed aesthetically pleasing. She confronts the dilemma of protecting structures considered "ugly" or "unsavoury".
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AI

AI was used as an inspirational tool for formulating certain sentences. By suggesting variations in tone, structure, or formatting, it supported the writing process without ever imposing the final choices, which remained the property of the author.

Conversation transcript with Sven Olof Ahlberg, 11th March 2026.

Inès - Can you tell me a little bit more about yourself?

Sven - So I'm obviously a Swedish guy. I've been working as a press photographer for 15 years and then I sort of get sick and tired of taking pictures of spore birds. I went to Yugoslavia during the war, early 90s, and it was a little bit too much for me. So I applied for Chalmers Architecture for the heritage course at Gothenburg University and I choose the heritage course because everyone was telling me that you need to know how they built before because in the future you it's going to be concentrated in how to transform and adapt the existing building stock.
I'm dealing with my projects based on very much an image-based analysis because. I have obviously the photograph background and I love to make reports that are based on images. And also my education when I give lectures it's mostly based on images from objects that I've been working with.
I work very very much with Swedish national board of transportation so railway bridges, road bridges, road construction, how to sort of preserve and prolong lifespan in existing bridge structures. That's one of my main things. And I've seen all the Swedish bridges that are older than 1965 because I've done so many surveys in the country. So I traveled thousands of miles just to look at the construction.

Inès - I think sometimes like one picture could say more than an entire just paragraph. And I'm quite interested in the possibilities that you can get help from.
For instance, the building Hornsbruksgatan 4 in Stockholm. So it's the idea of repairing the building. Also maybe thinking about the reprogrammation in it. And I think also there is all of a theory about if you show cracks, if you understand all the historical layers, maybe people could understand it a bit more. The statement right now is that the building is used just for the metro station and it's a long building of 100 meters so it's super long and people don't stop in the street they just pass and have no interest.

Sven - I think we have a huge public opinion problem with concrete. I think especially in the swedish cities we didn't have any war. We had a war, but we managed it in a different way. So it's a dark history but we brought down the city centers beginning in the late 50s 60s and the early 70s. It's like if we have been to war it looks like in Stockholm.
My field, preservation, building conservation, etc., they hate concrete as a material. And that makes it really, really hard to, in a public opinion way, take care of the buildings that obviously you and I are interested in. Because then why should we put that many... Why should we finance this when we can have something nicer instead?
And that is a very, very interesting way of approaching these questions. Because you can't separate the public opinion from our field, so to speak. You have to address it. And then it's a matter of pedagogic sort of argumentation why should we do it? and what is the main reason? And I found out that one way to go is obviously the financial side of things if you have a building that works and you can put in a minor sum to keep it alive for another 60 80 years.
Then it's obviously better for the climate and for the life cycle analysis and everything. So that's one thing. That obviously speaks a lot to the owner of the building. They like the financial discussion, but you still have this sort of opinion that you have to manage. But it's an interesting question that you took up there, repairing the cracks and layers.

Inès - I think it is because when I try with also the theory, the opinion of the public, it's a long way or like a red thread about also cultural heritage and historical layers. I think everything starts with that. And so the cracks. It's also just traces of the time, of course. And I think it's this red thread to also change the opinion of people and that they understand what was before. And if you want also to build in a sustainable way, I'm sure and I really believe that we need to understand also what was before and trying to maybe repurpose it in another way in the future.
So I guess for the health of the building, we need also to repair if we want to use it again after. So we need first to come back to, I would say, the basement of the building, understand maybe why is it sick in a sense.

Sven - What's the reason for the cracks? I guess.
You have to address the natural aging process of reinforced concrete. Because the key is the reinforcement. It's not the concrete itself. It's the combination of steel and concrete and it works beautifully.
It's the pH in the concrete that preserves the iron. And when you have this 50, 60, 70 building, they are going towards the same age, like 60 years, 50 years. Then you hit the natural lifespan of the concrete facades. Because the pH has lowered due to carbon dioxide in the air entering the concrete, pH sinks. And when that carbonatization process hits the surface of the iron, the protective layer disappears. And depending on the amount of cracks, the stiffness of the concrete, the porosity of the concrete, the moisture level, etc., a lot of different parameters, it can go very quick. And you end up with spalling the surface, pieces falling down and exposing the reinforcement. So this process is, you can't stop it. And that is more or less the biggest problem because the concrete structures are so huge.

So if you repair a crack then 10 years later you have another, just a meter away. And then you have to patch this facade forever more or less, until it all comes down. And that happens after let's say 80-90 years something, if you don't refurbish the whole facade.
So I want to recommend you the Sant Antonius Kirche in Basel. they have recasted the whole concrete facade of a 1920s church. You should look into St. Antonius Kirche too. They extended the facades thickness with like 25mm or 30mm and they managed in that way to reproduce the formwork pattern. You cast the concrete towards something and it's often wooden boards and you get a mold sort of.. So they copied the original design of the formwork and cast it.
Then they watered off the carbonization of the concrete with low pH and added new concrete and they extended the lifespan another 100 years. So that's the way to do it if you want to have a uniform concrete surface. But it's quite expensive, it's tricky, you need to have interested owners and builders.

Another case that you should look into is one of my biggest cases and that is the school building in central Stockholm at Kungsholmen, St. Göran's former gymnasium from Giesendorf. She was working in Le Corbusier's office in Paris for some years, and she has a direct connection to the European context.
We found 400 different concrete damaged parts in the facade and we repaired it due to a minimum intervention policy. So we divided the problem into structural problem, aesthetic only and something in the middle. So we had three different levels of interventions and also obviously three different results more or less.
We had an ambition that we should keep the facade in an aged state. But not in a sort of patched state. Because we try to match the repairs to the existing concrete surfaces around, because one of the greatest values in this building is the architectural value of the building that is number one. And then it comes a lot of other values as well. And you have to start the process from how far should you look at the building? What is the normal distance that people can see this building? And when you made that analysis, you end up with 100 meters, 75 meters, 200 meters. It's sticking up in the city roof scape. You can see it from 400 meters. And if you're doing a patch repair, the size of a five, ten centimeter piece, it completely disappears in the facade from these kind of distances. It's a completely different thing when you are standing on the scaffolding and you have the actual piece working on it here. So it was very much a management of not overdoing.

Conclusion

This interview gave me imputs regarding the material of concrete, especially a deeper understanding of its fragilities and needs. It emphasizes the topic of public perception of brutalism, and repair strategies.
The emphasizes the need for education to advocate for concrete conservation and describes diagnostic methodology made on site. The speaker presents two key references (St. Antonius Kirche, Sankt Görans Gymnasium) and the logic behind damage classification.


T

CARE OF BRUTALISM.

Repair as an
architectural practice

Inès Romy

Chalmers School of Architecture