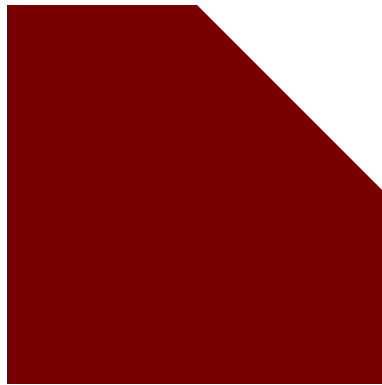


LATENT CAPACITY



Advanced Housing Design - Ecologies of Inclusion
Sven Schuit 5568218

Supervisors:
Robbert Guis
Olv Klijn

LATENT CAPACITY

Activating the Multi-Tenant Office Building as an Urban Resource

FOREWORD

Throughout my studies, many architectural themes have passed, but designing a residential building remained absent. The graduation studio Advanced Housing: Ecologies of Inclusion offered that opportunity. The studio investigates housing as an integrated system in which social, ecological and economic dimensions are fully interconnected, responding to the housing shortage and the changing conditions of the Dutch polder landscape (Klijn and Guis, 2025). The studio was organised around four themes, and it was Building Resources that immediately resonated: the theme departs from the conviction that the existing built environment contains more potential than is commonly recognised.

The masterplan focuses on De SchieKnoop, the gateway area connecting the surrounding villages to the productive landscape of Midden-Delfland. Within this masterplan, my attention was drawn to region 3, the Noord-West business park. Within that region, one building stood out. Its scale, its roof dimensioned for a parking deck, and its structural logic all pointed toward the same conclusion: the latent capacity was there.

What the research added was precision. Framing the building typologically transformed it from an interesting object into a design principle. To work with its logic seriously, the original archive drawings were requested and digitised. Every millimetre had to be verified, because the existing building was not a background condition but the primary design instrument. The resistance of the building was generative.

Working from the perspective of Building Resources pushed me to look further than the obvious, toward what resources truly are within the built environment and beneath it. The ground, the subsoil, the foundation, the structural frame, the floor plan, the envelope. Each layer carries its own history and its own potential, a story that can be continued rather than erased.

I would like to thank my supervisors Robbert Guis and Olv Klijn for their critical engagement throughout this process, and my fellow students with whom the masterplan was developed.

The report is structured in four parts. The Introduction establishes the research context, the problem statement and the research questions. The Approach describes the methods, case studies and theoretical framework that guide the research. The Results present the building analysis and the design. The Conclusion and Discussion reflects on the findings, their implications and the limits of what this project can and cannot claim.

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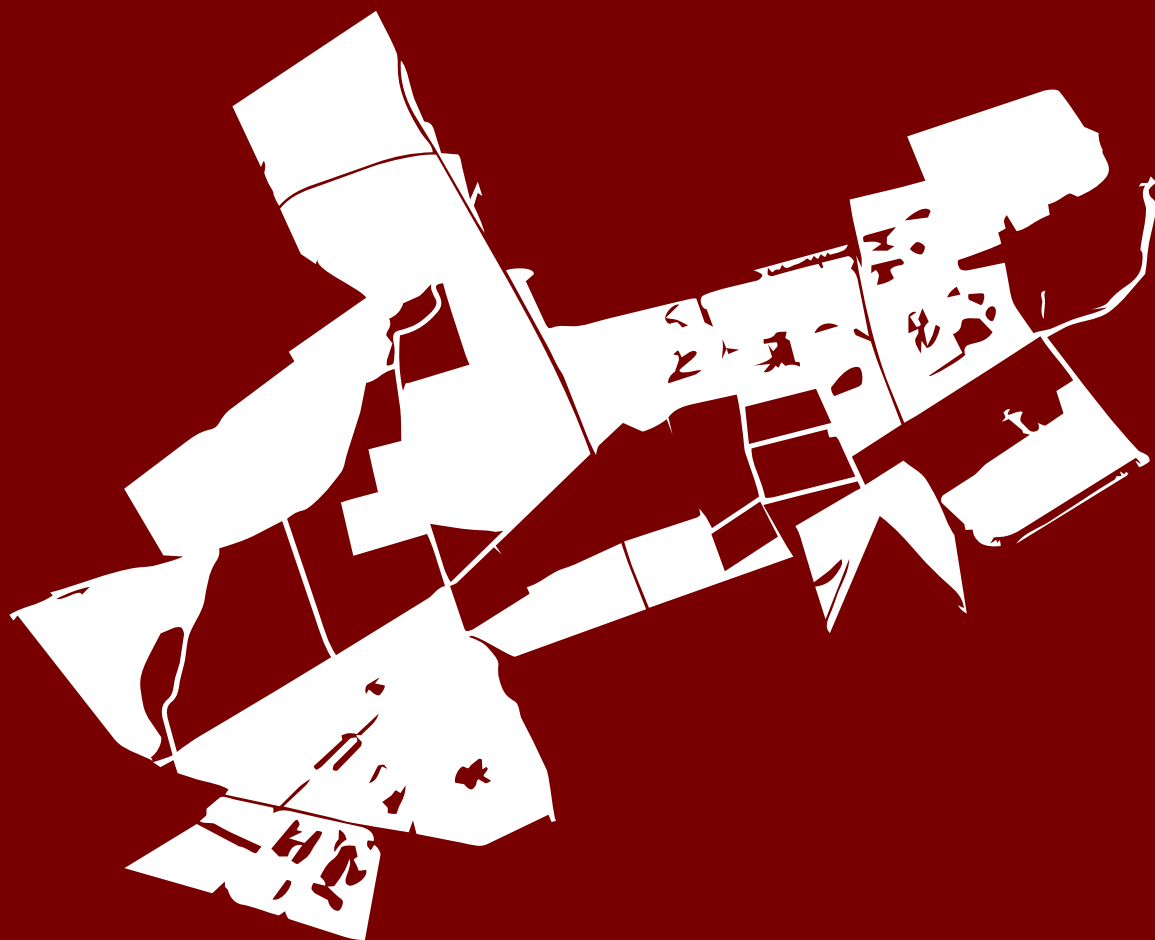
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01

INTRODUCTION

01 INTRODUCTION

1.1 Context and Background

The Netherlands faces a structural housing shortage. According to ABF Research (2024), the country currently has a deficit of approximately 390,000 dwellings, projected to grow further in the coming decades as a result of population growth and changing household formation. The national government has set a target of building 900,000 new homes by 2030, yet the pace of conventional new construction is insufficient to meet this demand (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022). This has intensified the search for alternative spatial strategies that can accelerate housing supply without depending solely on greenfield development. Part of the answer lies in the existing building stock itself: it is estimated that some 70% of structures existing today will still be in existence 50 years from now, making refurbishment and updating for current and future needs a central challenge for the discipline (Fisher-Gewirtzman, 2016).

Research by the Planbureau voor de Leefomgeving demonstrates that in a low-growth scenario, nearly 75% of the demand for additional housing can be accommodated within the existing urban fabric, with under-utilised business parks and industrial sites carrying the greatest potential (PBL, 2016). In the Rotterdam metropolitan area, this potential concentrates in the transitional zones between the dense inner city and the large-scale industrial complexes that have historically defined the city's periphery. Originally designed as monofunctional work areas on the outskirts of the city, these areas are increasingly coming under pressure due to changing economic structures, housing shortages, and ambitions regarding sustainability and circularity

(BRO, 2024). At the same time, they represent a substantial spatial, structural and material stock that offers potential for redevelopment without large-scale new construction.

Within these industrial areas, the multi-tenant office building is a specific typology that occurs widely, including throughout the masterplan area developed during this graduation studio. These buildings were developed to house multiple companies within a single structure, sharing facilities and infrastructure. The result is a building type characterised by a robust and repetitive load-bearing structure with large spans, a generic and flexibly divisible floor plan organised around internal logistics, and a collective infrastructure of shared entrances and facilities. Typically designed with efficiency and logistics in mind, these buildings have an introverted nature and a limited relationship to public space. Yet they possess solid structures, large spans, and a degree of spatial surplus that makes them potentially suitable for transformation into mixed-use programmes including living, working, and public functions. This combination of structural rigidity and programmatic flexibility gives the multi-tenant office building considerable latent potential as a building resource within the urban transition of industrial areas.

High-growth scenario

Low-growth scenario

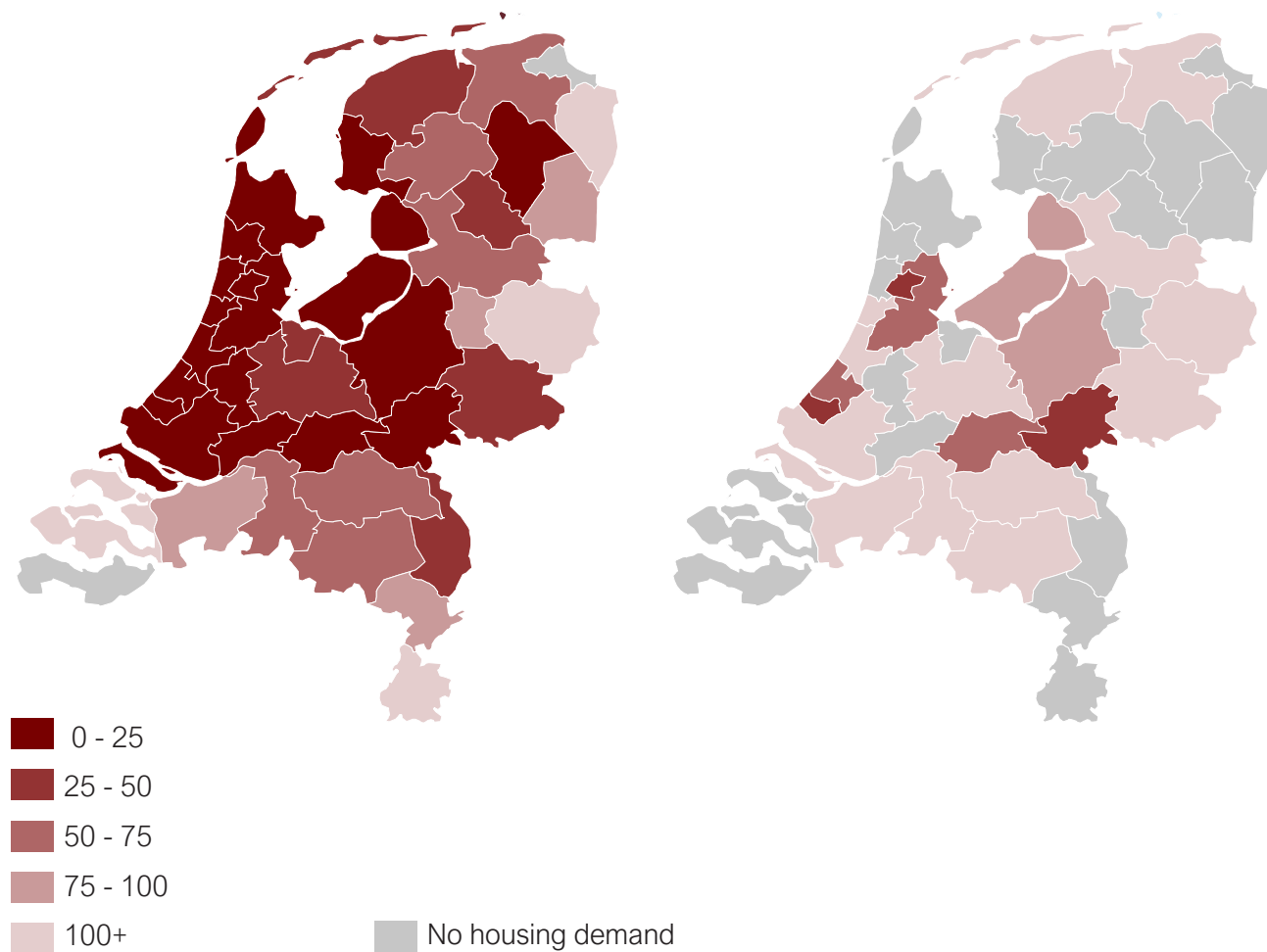


Figure 1.1: Achievable housing development capacity within the existing built-up area. (PBL, 2016)

1.2 Problem Statement

The latent potential described above has not been translated into practice. The masterplan developed within this graduation studio positions the Noord-West business park in Rotterdam as an opportunity for transformation from a monofunctional industrial area into a mixed urban environment with housing, public programme and workspace. Within this transformation, the existing multi-tenant office buildings present a fundamental tension: their monofunctional and introverted character conflicts directly with the ambition for an active, mixed urban environment, yet their robust structures, generic floor plans and overdimensioned foundations constitute a spatial and material resource that remains unused.

The core of this tension is architectural. The buildings possess the structural and spatial qualities required for transformation, but the discipline lacks a design strategy that is specific to this typology: one that takes its particular structural logic, its collective organisation and its relationship to the urban context as the starting point rather than an obstacle. This is not only a question of housing delivery. The Noord-West business park currently generates little life at street level: its closed facades, introverted logistics and monofunctional character produce an area that is spatially present but urbanistically absent. A successful transformation must therefore do more than add dwellings to an existing structure;

it must activate the building as an urban element that contributes to the vitality of its surroundings. Existing adaptive reuse approaches have been developed primarily for other industrial typologies and do not account for the specific characteristics of the multi-tenant office building or its potential as a contributor to urban vitality. This research addresses that gap. It investigates how the latent spatial and structural capacity of a multi-tenant office building can be activated through a design strategy grounded in the typology's own logic, to support urban vitality within a mixed-use environment.



Pressure on Urban Space



Underutilized and Aging Building Assets



Monofunctionality



Urban Disconnection

1.3 Relevance

Adaptive reuse is the established framework for working with existing building stock: by repurposing rather than replacing, the demand for new construction is reduced, embodied energy is preserved, and the spatial identity of an area is maintained (Douglas, 2006; Langston, 2012). The adaptive reuse discourse has, however, focused predominantly on the more visually prominent typologies of harbour warehouses and large industrial halls. The multi-tenant office building occupies an underexplored position within this literature. This research addresses that gap by developing a set of architectural design principles specific to this typology, grounded in its particular structural logic, spatial organisation and collective character.

The societal relevance is directly tied to the scale of the challenge. Rotterdam and other post-war Dutch cities contain a large number of multi-tenant office buildings in transitional business parks comparable to the Noord-West area. The principles developed in this research are therefore not confined to a single case but constitute a transferable framework applicable to a class of buildings that has so far been overlooked in urban transformation strategies. At a moment when the pressure to deliver housing is high and the appetite for greenfield development is low, this typology represents a significant and largely untapped spatial reserve.

1.4 Objective and Motivation

The aim of this research is to gain insight into how an existing multi-tenant office building can activate its latent capacity to enhance urban vitality within a mixed urban environment. The research focuses on identifying and analysing architectural, programmatic, structural and material qualities of this typology that can serve as a basis for reuse and transformation. At the building level, it develops design strategies demonstrating how the multi-tenant office building, despite its original monofunctional and introverted character, can function as a carrier of intensive and diverse use: how its scale, dimensions and structure, combined with programmatic organisation and structural adaptations, can be utilised to strengthen both internal flexibility and external urban relationships.

The motivation for this research stems from the realisation that working with existing buildings immediately frames the design challenge. Instead of a completely free design situation, the architect is challenged to deal creatively with existing structures, dimensions and spatial qualities. These function as resources that can be cleverly reused or reinterpreted. Working within these frameworks stimulates innovative solutions where the design must adapt to what is already there while simultaneously functioning optimally.

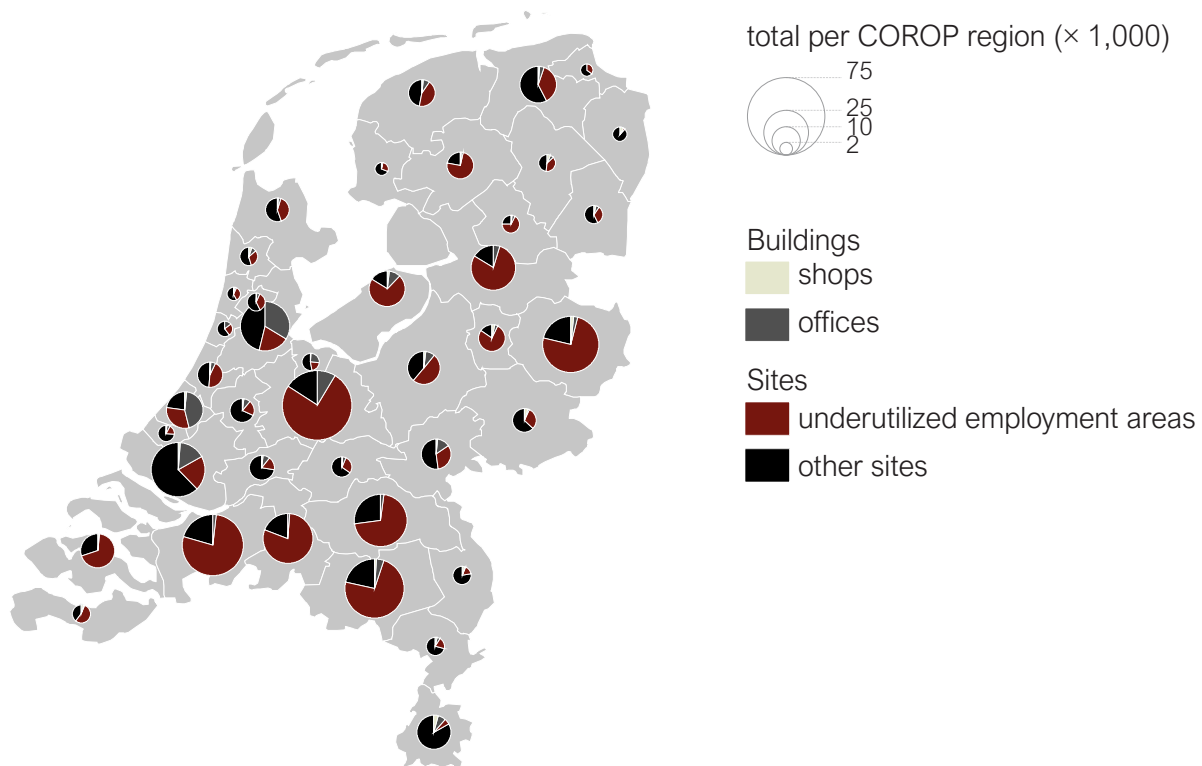
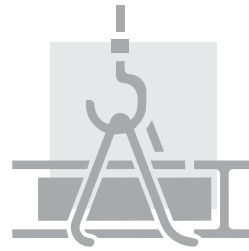


Figure 1.2: Potential number of dwellings realizable within the existing built-up area, by building and site type (PBL, 2016)



Building as a Resource

(The building is conceived as an integrated resource, optimizing material use, energy flows, and spatial efficiency throughout its lifecycle.)



Local Material Intelligence

(Locally sourced materials are employed to strengthen regional identity, reduce environmental impact, and embed the building within its context.)



Urban Vitality Through Integration

(Urban liveliness is enhanced by strengthening the relationship between the building and the surrounding urban fabric.)



Hybrid Performance

(Optimal performance is achieved through a hybrid structural system and a mixed-use program, enabling adaptability and intensified use.)

1.5 Research questions

Based on the described context, problem statement and objective, this research explores how an existing multi-tenant office building, approached as an active resource, can contribute to urban vitality within a mixed urban area.

The central research question is:

“HOW CAN THE **LATENT** SPATIAL AND STRUCTURAL **CAPACITY** OF AN EXISTING **MULTI-TENANT OFFICE BUILDING** BE ACTIVATED TO SUPPORT **URBAN VITALITY** WITHIN A **MIXED-USE ENVIRONMENT**?”

To answer the main question, the following sub-questions have been formulated:

- WHICH ARCHITECTURAL CHARACTERISTICS DEFINE THE ADAPTIVE POTENTIAL OF MULTI-TENANT OFFICE BUILDINGS?
- HOW CAN PROGRAMMATIC ORGANISATION ENABLE DIVERSE AND INTENSIVE USE WITHIN THE SPATIAL AND STRUCTURAL LOGIC OF A MULTI-TENANT OFFICE STRUCTURE?
- HOW CAN THE EXISTING STRUCTURAL SYSTEMS OF A MULTI-TENANT OFFICE BUILDING BE STRATEGICALLY UTILISED OR ADAPTED TO SUPPORT VERTICAL AND PROGRAMMATIC DENSIFICATION?
- WHICH SPATIAL RELATIONSHIPS BETWEEN THE TRANSFORMED BUILDING AND ITS URBAN CONTEXT ARE CRITICAL FOR FOSTERING URBAN VITALITY?

1.6 Scope and Limitations

This study focuses on the transformation of a single existing multi-tenant office building within the Noord-West business park in Rotterdam. The scale level of the study is primarily the building level, with the surrounding masterplan serving as the spatial and urban context.

The masterplan was developed within the graduation theme Building Resources (see figure 1.6), which treats the existing built environment as an active resource rather than an object to be replaced. The masterplan is informed by two complementary analyses (see figure 1.3). ZUS Architects have developed a vision for Midden-Delfland as a productive landscape in which the edge between city and hinterland becomes a territory

to be inhabited and cultivated (ZUS, 2022). The BPL analysis establishes that De SchieKnoop currently fails as an accessible and legible urban gateway into this territory (Bureau BUITEN et al., 2024). Together these two frameworks shape the masterplan's spatial response: an east-west axis that functions as an inhabited spine where existing business buildings are converted into residential and mixed-use spaces, and a cross-axis that connects the productive landscape with the new work-living environment and the southern industrial terrain. A new station repositions the area as an integrated urban gateway (see figure 1.5).

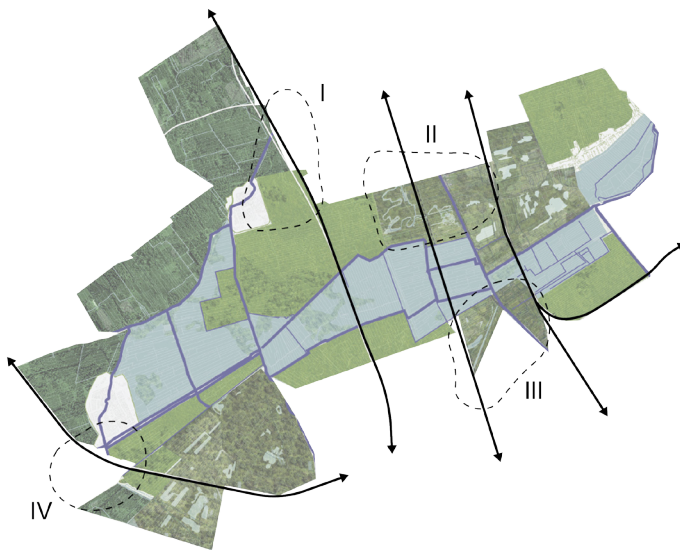


Figure 1.3: Using the ZUS and BPL plan as starting point

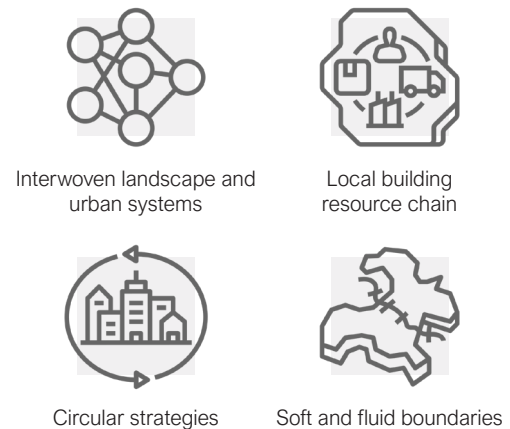


Figure 1.4: Ambitions masterplan



Figure 1.5: The Masterplan

The masterplan organises the Noord-West area into five regions, each with its own spatial identity and material character: the productive landscape, the triangle, the mixed-use industry region, the station area, and the residential island. The mixed-use industry region, where the building at Corkstraat 46 is located, treats the existing buildings themselves as the primary resource (see figure 1.7).

Rather than replacing the built stock, the region activates it from within, transforming a currently monofunctional and introverted industrial environment into a mixed, publicly accessible and vital urban area. This is the region's defining ambition, and the transformation of Corkstraat 46 is its most direct expression. The building is positioned along the axes that connect the surrounding villages and Midden-Delfland to one another, and is assigned the role of active link between the new axes, the residential programme and the public domain.

The building's transformation is intended to serve a diverse mix of target groups, reflecting the inclusive ambitions of the masterplan: young professionals, starters, students, young couples, families and higher-income households are accommodated simultaneously, producing a cross-section of the city within a single structure.

The scope of the research encompasses the analysis and design exploration of architectural features, programmatic organisation, structural and material aspects, and the spatial and functional relationship between the building and its immediate surroundings. Urban vitality is investigated from a spatial and programmatic perspective at building level. Social, economic or quantitative measurements of urban vitality fall outside the scope.

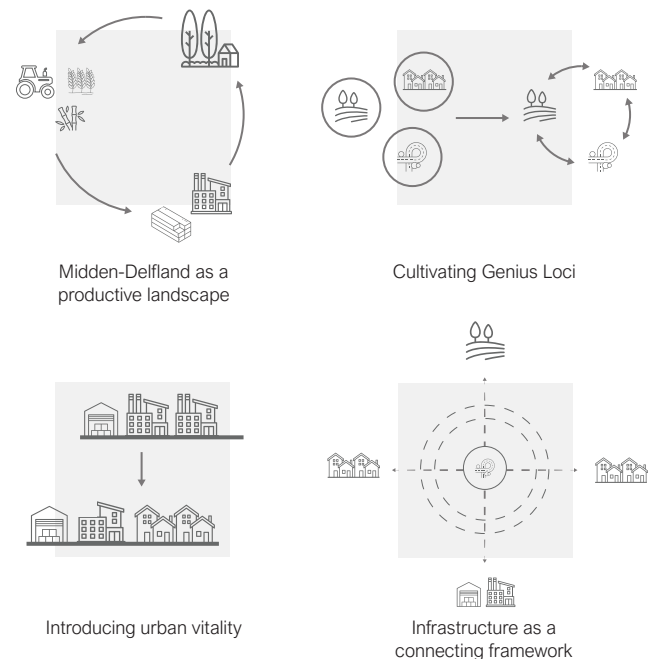
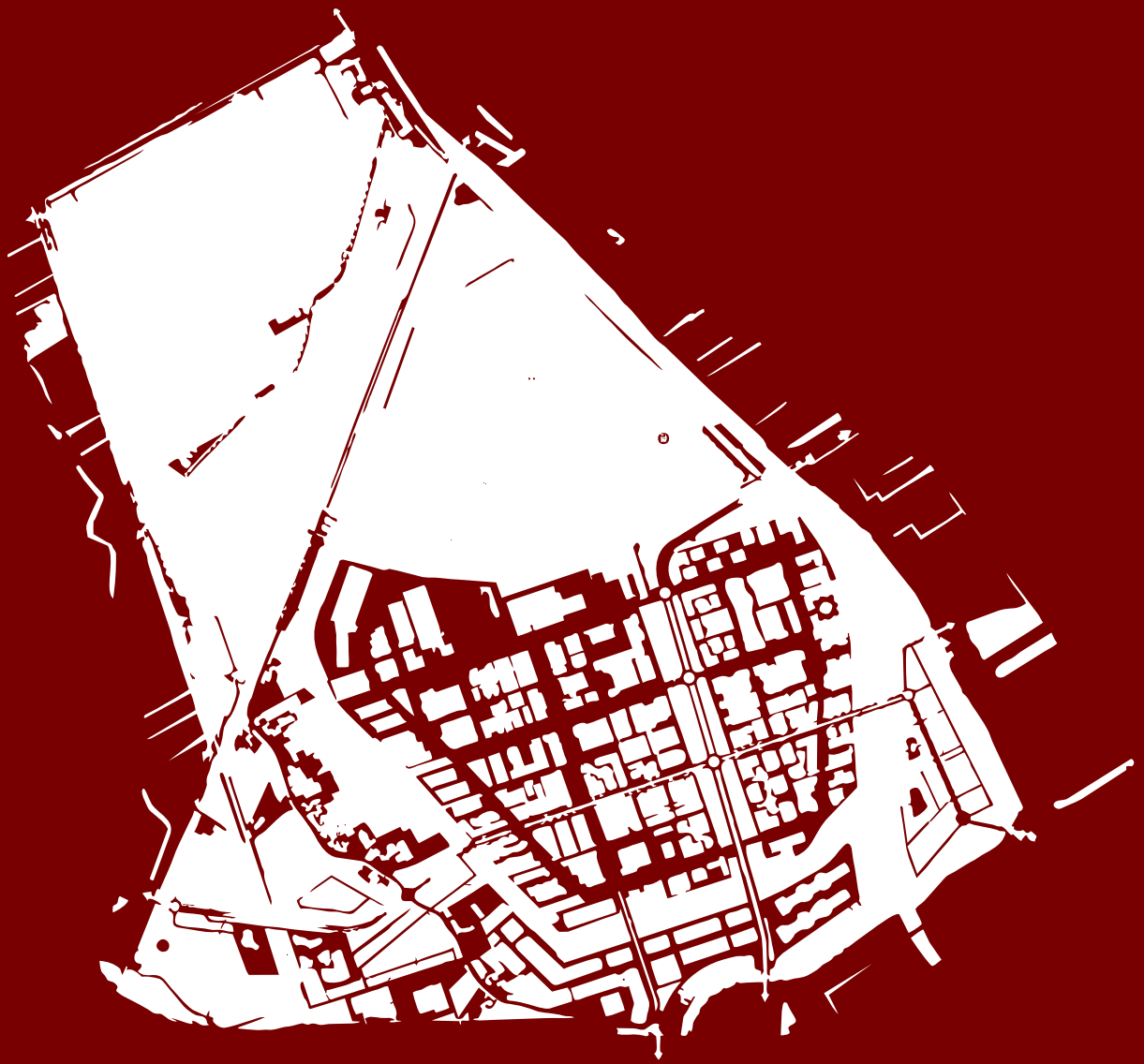


Figure 1.6: Resourcedriven thinking (design principles)



Figure 1.8: Street profile (infrastructure axes)



02

APPROACH

02

APPROACH

2.1.1 Research methods

This research is conducted using literature research, case study analysis, and design research, which iteratively reinforce one another. In this context, the design serves as both a research tool and an assessment instrument. Findings from the literature and practical examples are applied in the design process, while the design itself generates new questions and perspectives that guide further research.

The research begins with formulating a theoretical framework based on relevant literature, in which core terms and concepts are defined and contextualized. Subsequently, relevant case studies are analyzed to gain insight into how these concepts have been applied in practice. The insights obtained are integrated into the design process, allowing the design to serve as an instrument to explore and test theory and practice.

2.1.2 Literature research

The literature review forms the basis for the theoretical framework of this research. Relevant academic publications and design-theoretical sources are studied to define and position core concepts such as building resources, industrial transformation, mixed-use development, and urban vitality. This literature provides conceptual frameworks that guide both the analysis of precedents and the design challenge.

2.1.3 Case study analysis

In addition to the literature review, use is made of a limited selection of case studies of transformed industrial buildings. These case studies provide insight into how spatial, programmatic, and structural principles, as well as the active relationship with the urban context, are applied in practice.

The selected case studies are:

- 01 Fenixloodsen, Katendrecht [The Netherlands]
- 02 De hallen, Amsterdam (The Netherlands)
- 03 The Silo, Copenhagen (Denmark)
- 04 Raugyklos Street Warehouse, Vilnius (Lithuania)
- 05 Chesterton Square, London (England)





Fenixloodsen, Katendrecht
[The Netherlands]

(This case illustrates how robust port warehouses with large structural spans can function as carriers of mixed residential, working, and public programmes while establishing an active relationship with the surrounding urban fabric.)



De hallen, Amsterdam
[The Netherlands]

(This project demonstrates how a large-scale industrial hall structure can be reprogrammed into an intensively mixed building in which work, culture, and public functions collectively generate urban vitality.)

III



The Silo, Copenhagen
[Denmark]

(This transformation shows how a monofunctional industrial storage structure can be adapted to accommodate residential and public functions through the reuse and modification of existing structural systems.)

IV



Raugyklos Street Warehouse, Vilnius
[Lithuania]

(This case demonstrates how a light industrial warehouse with a hall structure can be transformed into a flexible live-work building by explicitly using the original construction and spatial qualities as architectural and programmatic resources.)



The analysis focuses on key aspects, such as spatial design, programmatic organization, interaction with existing structures, and the relationship with the urban environment. The findings are summarized in analytical diagrams and serve as a frame of reference for further research (see Appendix 06B for full case study analysis).

Chesterton Square, London
[England]

(This project demonstrates how an existing industrial structure can carry a residential programme above, with the roof as a collective outdoor space that functions as a raised shared ground, separate from the street yet structurally connected to what carries it.)

2.2 Expected output

The research produces a set of interconnected outputs. The analytical work takes shape through a typological study of the multi-tenant office building and a comparative case study analysis, documented in diagrams, schemas and written argument. These findings feed directly into the design research, which is developed through iterative sketches, structural studies and spatial models. The central output is an architectural design proposal for the transformation of an existing multi-tenant office building into a mixed-use building in which the relationship with the immediate urban environment is explicitly addressed. The design is accompanied by a set of applicable design principles that articulate how multi-tenant office buildings can function as building resources within mixed urban areas.

2.3 Planning

The research and design are carried out in an iterative process running parallel to assessment moments A1, A2, and A3.

In the first phase (A1), the emphasis is on formulating and refining the research brief. This phase includes the literature review, the initial analysis of relevant case studies, and an exploratory analysis of the chosen industrial building and the urban context. The results of this phase form the basis for the theoretical framework and the problem definition.

In the second phase (A2), the analytical findings are further elaborated and applied within the design research. The case studies and building analysis are translated into spatial and programmatic principles, which are investigated via schematic design studies. In this phase, the design proposal is further developed and substantiated with structural and material strategies.

The final phase (A3) focuses on the integration and refinement of the research and the design. The design proposal is developed into a coherent whole in which the relationship between building, program, structure, and urban context is made explicit. At the same time, the research results are reflected upon and summarized in conclusions.

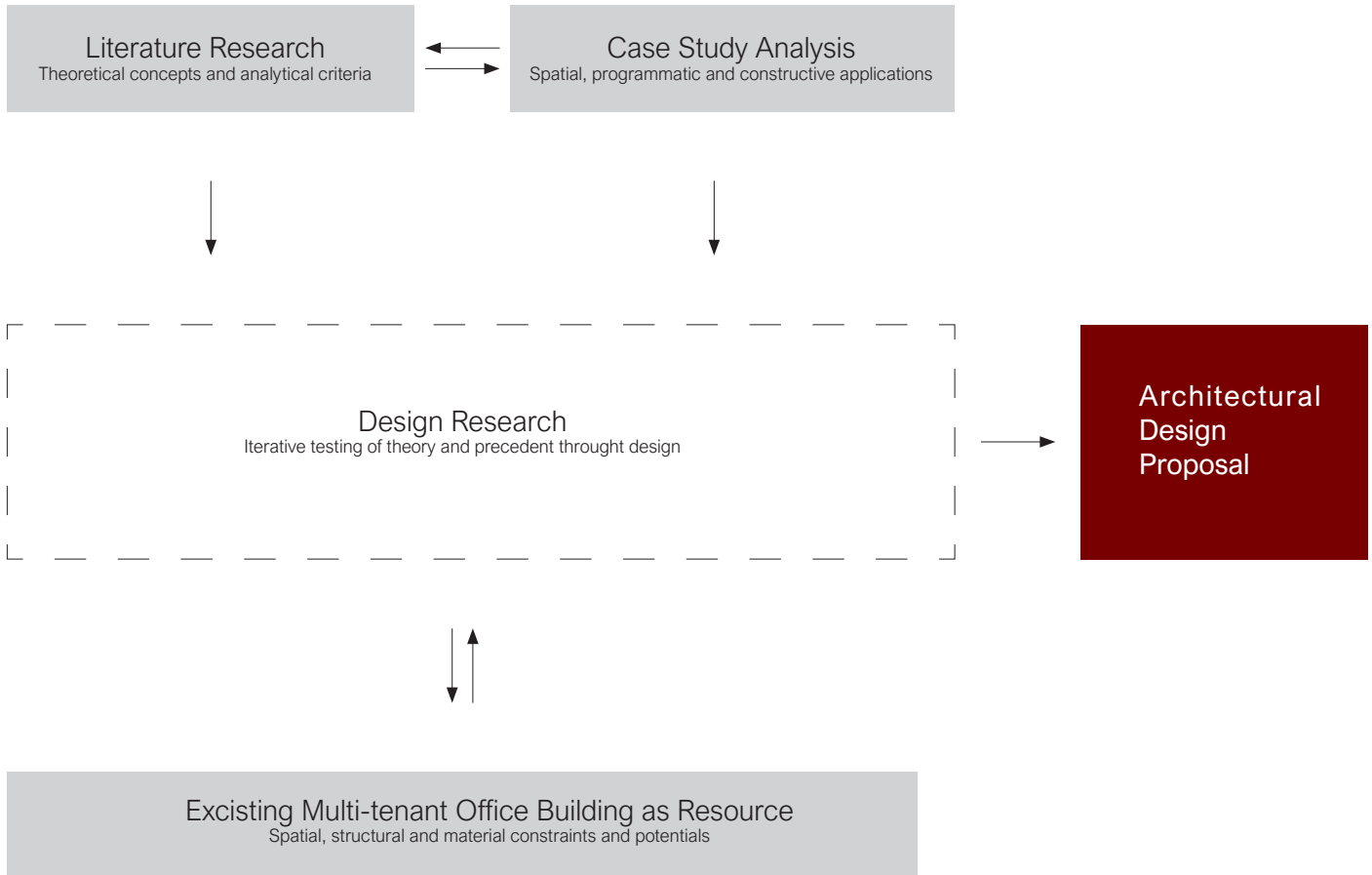


Figure 2.1: Method

2.5 Theoretical framework

Urban vitality forms the central evaluative concept in this research. Gehl (2011) defines it as the extent to which the built environment continuously supports human use and social interaction. This quality is produced by specific spatial conditions: the scale of buildings, the rhythm of facades, the permeability of the ground floor, and the frequency of entrances all determine whether a building invites or repels activity at street level. A building height of two to four storeys maintains the visual proximity between user and building that is necessary for spontaneous interaction (see figure 2.4). Active plinths and finely articulated facades are the instruments through which architecture participates in urban life. In this study, urban vitality serves as the primary criterion against which design decisions are tested.

To understand how existing buildings can be made to support this vitality, it is necessary to read them as systems that change over time rather than as fixed objects. Brand (1994) provides this framework with his concept of the shearing layers: buildings are structured as a series of layers, from the structural frame to the shell, services, floor plan and interior, each changing at a different rate (see figure 2.2). The structural layer is the most permanent; the interior is the most transient. This temporal hierarchy has a direct implication for transformation: the most durable and defining component of a building is its load-bearing structure, and any intervention strategy should depart from and respect this fact.

Brand's layering describes the temporal logic of buildings as a physical system, but does not prescribe how those layers should relate formally when new elements are added. Brooker and Stone (2004) address this gap with their classification of adaptive reuse strategies into three categories: installation, insertion and intervention (see figure 2.3). Installation places new elements within the existing structure without physical integration; insertion fits new elements precisely within the existing envelope, creating mutual dependency between old and new; intervention transforms the existing structure so fundamentally that old and new become inseparable. These categories map directly onto Brand's layers: each strategy implies a different degree of engagement with the structural layer, the most permanent and defining layer of the building. The choice between them is therefore not only formal but structural, carrying consequences for the legibility and identity of the resulting building.

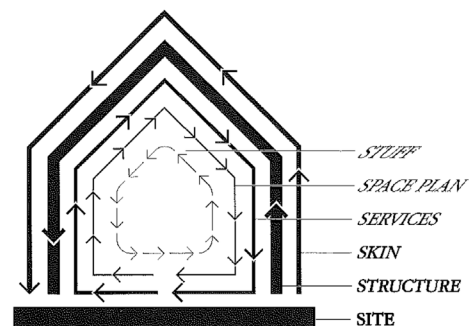


Figure 2.2: Shearing layers of Brand (1994)

Brand's layering also extends beyond the physical fabric. Sennett (2018) applies the same temporal logic to the social dimension of buildings and cities. In his concept of the open city, vital urban environments are not those optimised for a single function or user group, but those that accumulate richness and resilience through the co-presence of different activities, people and rhythms over time. Where Brand describes a building that gains adaptability through its layered physical structure, Sennett describes a city that gains vitality through its layered social life. The two frameworks are complementary: one describes the physical precondition for transformation, the other describes the social aim that transformation should serve.

Within this theoretical framework, buildings are viewed as layered, adaptable systems with an inherent potential for change. Brand's layering provides the analytical lens through which the existing building is read; Brooker and Stone's strategies determine how new elements relate to that layering. Together they form the basis for adaptive transformation. The goal of that transformation is to strengthen urban vitality through the relationship between building and city: through scale, plinth, interaction and programmatic diversity, as defined by Gehl (2011) and Sennett (2018). The multi-tenant office building is approached not as an obstacle to urban renewal but as one of its most capable instruments.

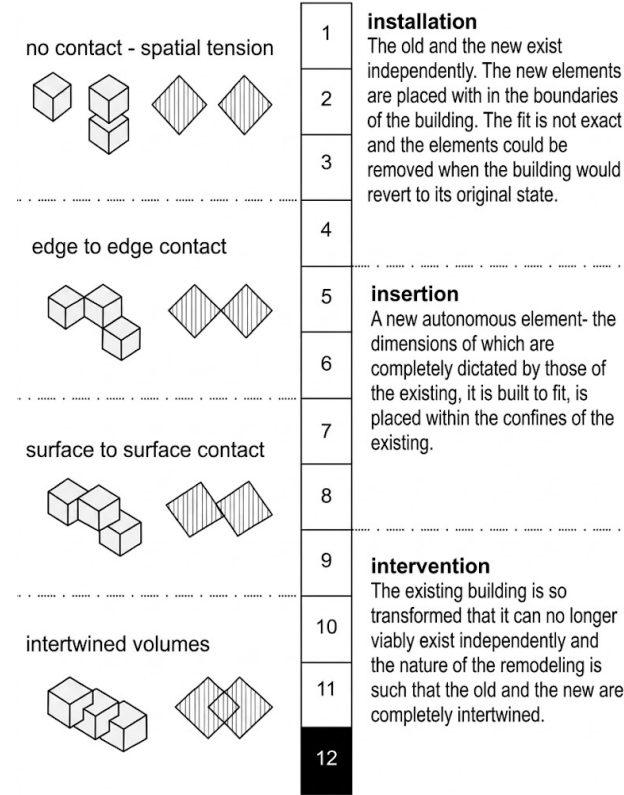


Figure 2.3: Adaptive reuse strategies, Brooker and Stone (2004)

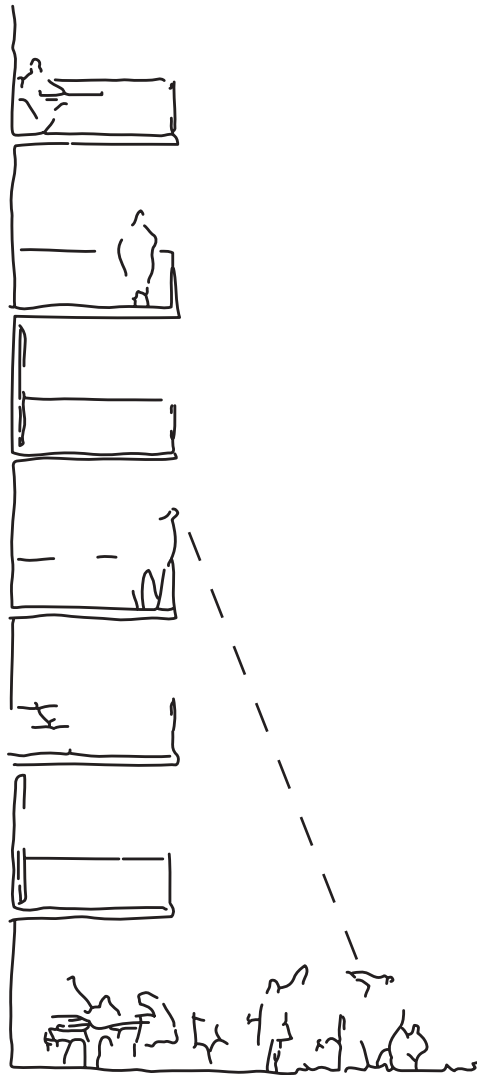
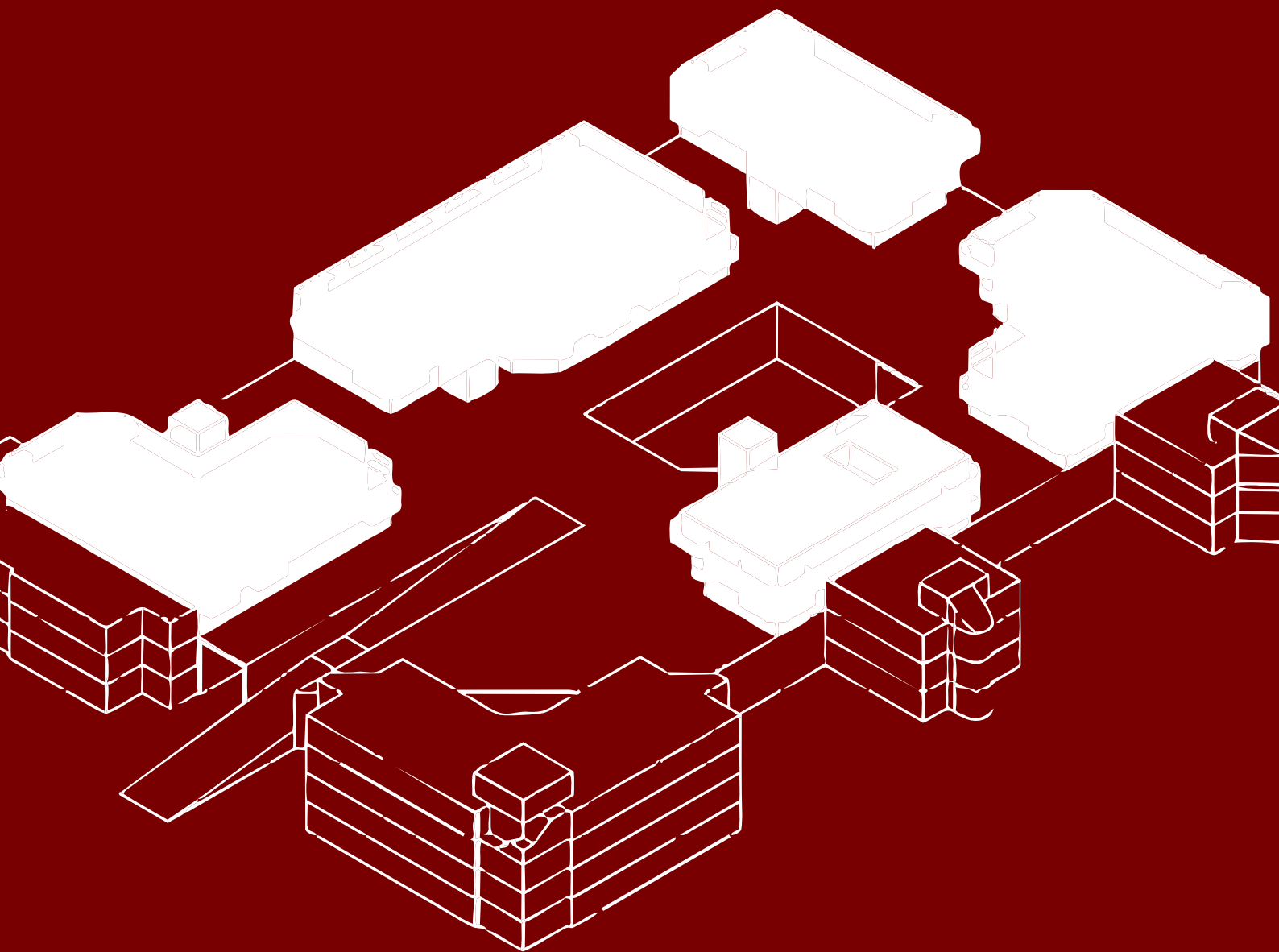


Figure 2.4: Gehl's interaction



03

RESULTS

03 RESULTS

3.1 Building Analysis and Design Strategy

The design starts from the existing multi-tenant office building at Corkstraat 46 in Rotterdam. The building consists of a central hall with five individual office blocks connected to it, each of four to five storeys. In the current situation the hall functions primarily as internal distribution space, while the roof serves as a parking deck (see figure 3.1).

Despite its scale and presence within the business park, the building currently produces little urban vitality in Gehl's (2011) sense. Its facades are closed and logistically organised, with no active ground-floor functions facing the street. Its entrances are few, functionally internal and separated from public life. Its programme operates within a narrow time window and generates activity for a single user group. By this measure the existing building is spatially present but urbanistically absent. The transformation described in the following sections addresses this condition directly.

The building comprises two structurally distinct conditions. The five office blocks have load-bearing brick facades: the exterior walls are structural, carrying the floors and roof of each block. Their floor plans are generic and modular, set up according to a grid of 3.6 by 3.6 metres, and organised around the external vertical circulation. The central hall, by contrast, is structured as a concrete skeletal frame on a repetitive grid of 7.2 by 14.4 metres. The facade of the hall is not load-bearing: it is placed against the concrete columns and can be modified independently of the structural system (see figure 3.2).

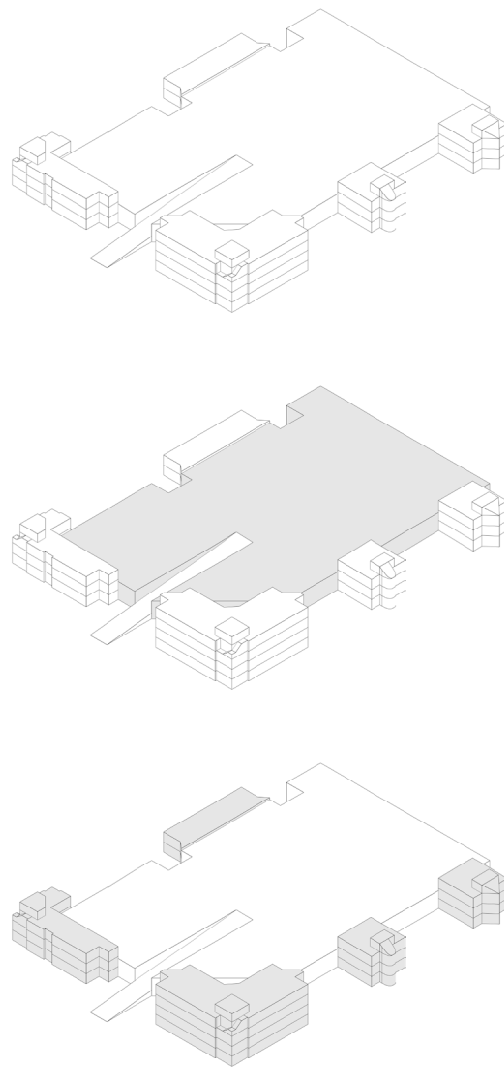


Figure 3.1 The existing building (Corkstraat 46)

Reading the building through Brand's (1994) framework of shearing layers clarifies where change is possible and where it is not. The load-bearing brick facades of the office blocks are the structural layer: permanent and defining. The concrete frame of the hall is equally permanent, but its non-load-bearing envelope belongs to the shell layer, which is durable but replaceable. The floor plans of the office blocks and the programme of the hall occupy more transient layers that this project transforms. What makes this building particularly well-suited as a transformation object is that its structural layer was designed with deliberate overcapacity: the foundation was calculated for a roof parking deck, the spans were sized for maximum flexibility, and the structural system was separated from the enclosure to allow internal reorganisation.

This overdimensioning is not a legacy of industrial excess but a typological characteristic of the multi-tenant office building, and it is the physical precondition for everything that follows. The clear height and large spans of the central hall constitute a spatial surplus suited to public programme, and the overdimensioned foundation provides structural reserve for vertical densification, as confirmed in the structural analysis in the appendix (see Appendix 06C). Together these qualities support 89 newly built dwellings above the hall, 46 transformation dwellings within the office blocks, and a mixed public programme in the hall itself.

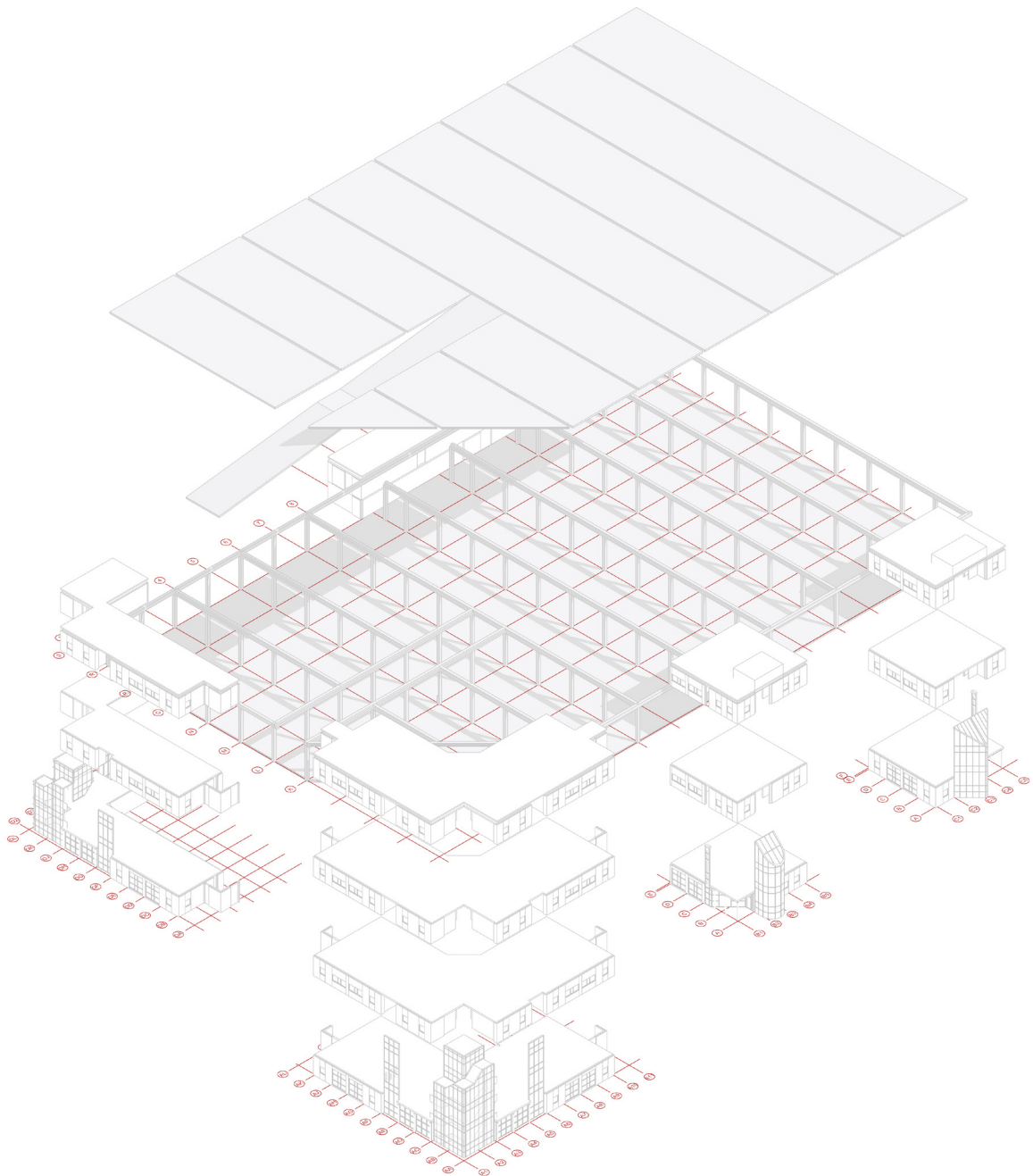


Figure 3.2: Axonometric drawing of the existing structural systems

These two structural conditions call for different approaches, and the classification of Brooker and Stone (2004) provides the framework. Their three strategies, installation, insertion and intervention, describe different degrees of engagement between existing and new. This project combines insertion and intervention, applied as a gradient across the different building conditions.

The transformation of the office blocks operates primarily through insertion. While the internal layout and programme are fundamentally reconfigured, the load-bearing brick façades and external circulation remain intact as the defining structural framework. The new residential programme is accommodated within the existing envelope, maintaining a clear and legible distinction between the permanent structure and the new inhabitation it contains.

The hall operates through a combined insertion and intervention strategy. A new programme is introduced within the existing structural frame, allowing the spatial capacity of the hall to be redefined without erasing its constructive logic. At the same time, targeted structural and spatial modifications, including the replacement of the non-load-bearing façade and the reorganisation of ground level access, establish a more direct relationship between interior and public realm. The hall therefore becomes an active framework in which new use, spatial reconfiguration and structural extension are interdependent.

Above this, the residential addition is conceived as an intervention. New dwellings are constructed on top of the existing concrete structure, extending the building beyond its original volume. Although the new structural walls align precisely with the existing column grid, creating a strong continuity between old and new, the addition introduces a new architectural layer that transforms the building as a whole (see Figure 3.3). The existing structural logic of the hall is not only preserved but used as the generative system for the new addition.

In both cases the existing structure is not viewed as a constraint but as an organising principle. Rather than being erased or concealed, it provides the framework through which new programmes are introduced and architectural change is negotiated.

The sections that follow describe how this principle unfolds from the street inward and upward: from the plinth and the passage, through the hall as an active infrastructural field, to the collective rooftop above.

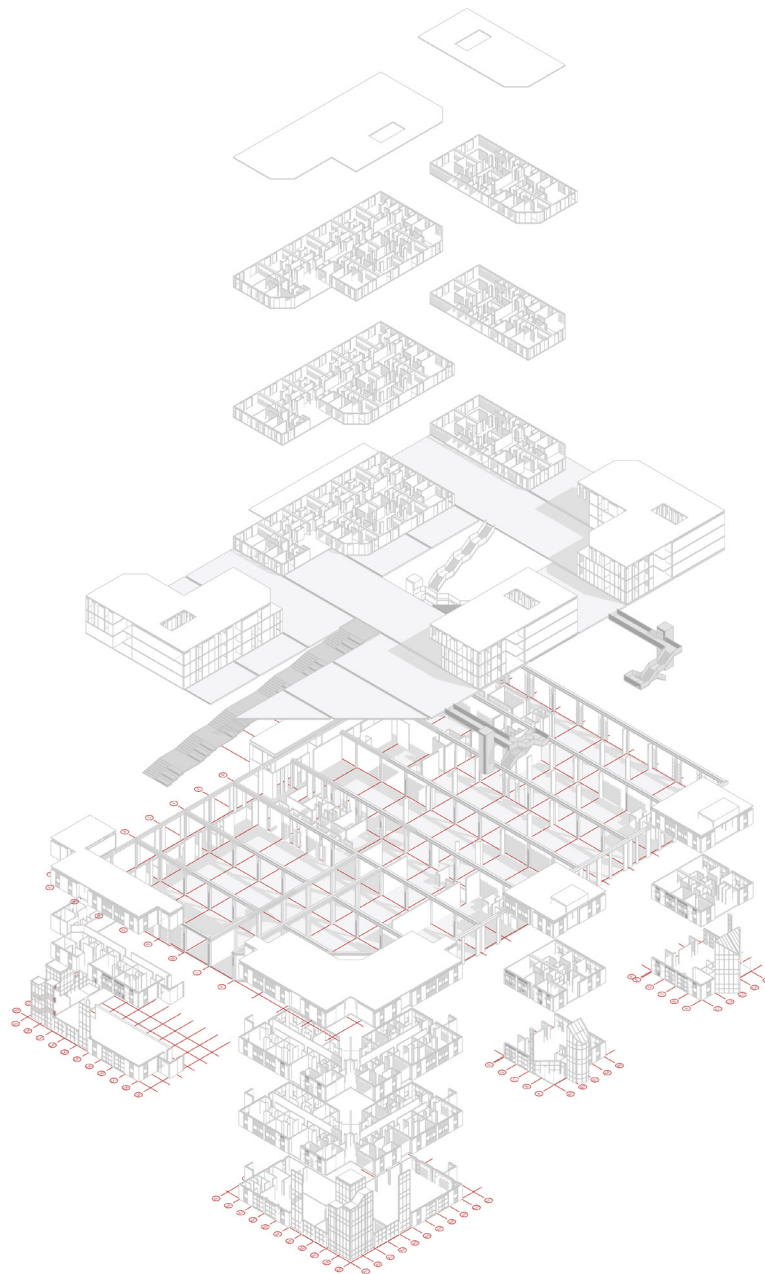


Figure 3.3: Activating the structural grid

3.2 Activating the Plinth

The first encounter with the building is at its plinth. In the existing situation the facades are closed, the entrances are oriented inward and the ground floor offers nothing to the street. The transformation addresses this by redesigning the plinth as an active urban interface, working with the interstitial spaces between the office blocks and the non-load-bearing envelope of the hall to create a building that opens itself to the city at every scale.

The interstitial spaces between the existing office blocks are designed as soft edges: niches that form a gradual transition between the street and the building interior (see figure 3.4). Rather than a hard boundary between public and private, these spaces dissolve that distinction. Gehl (2011) argues that the quality of edge conditions is one of the most decisive factors in urban space: a hard edge produces movement past a building, while a soft edge produces occupation of the space in front of it. The soft edges function as informal extensions of the ground-floor programme, where outdoor work and informal occupation are encouraged.

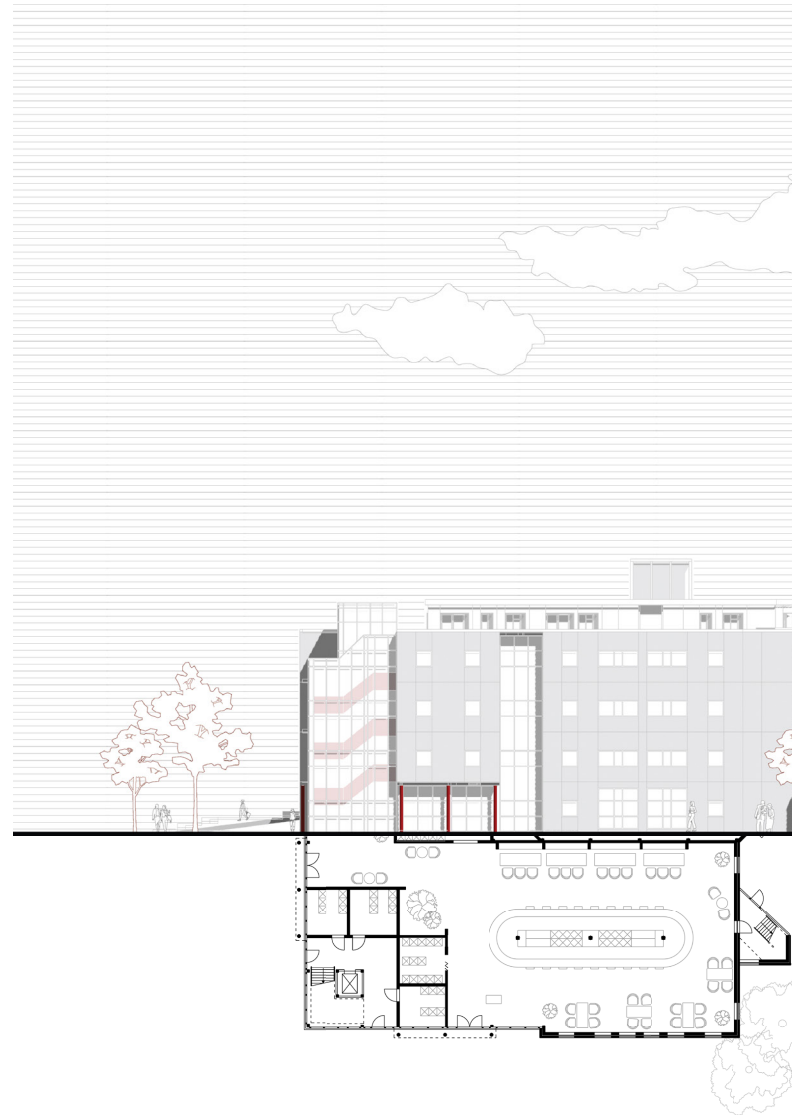
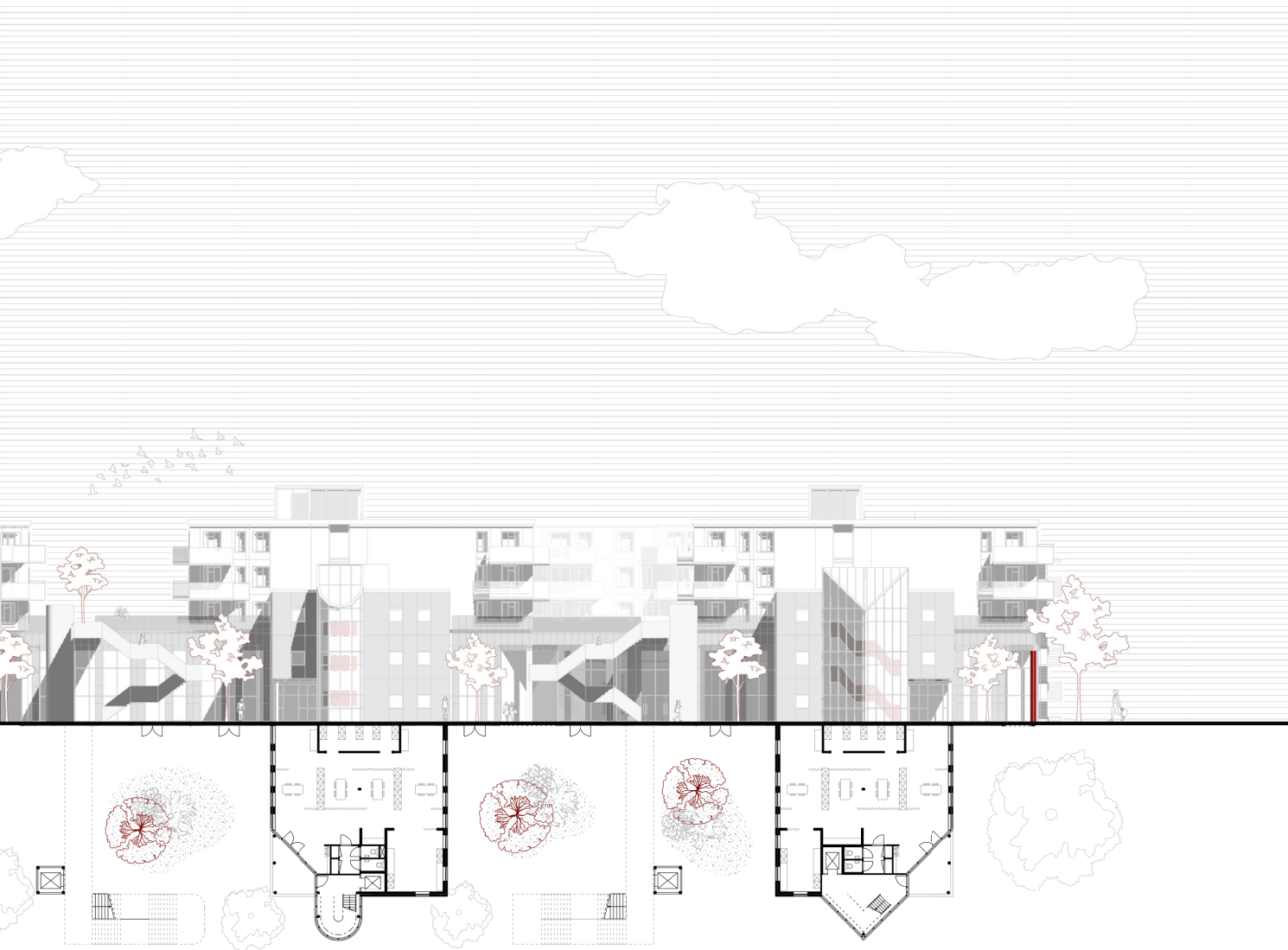


Figure 3.4: Elevation and plan soft edges



Within these niches, a new staircase provides access to the rooftop park (see figure 3.5). The staircase is deliberately aligned with the existing staircases of the office blocks, extending the organisational logic described in section 3.1: the new circulation does not impose a foreign system but continues the one already present. The Raugyklos Street Warehouse in Vilnius (DO Architects, 2018; Ott, 2024) demonstrates how adding external vertical circulation to an existing building allows it to be used across different levels without altering its internal spatial logic (see Appendix 06B.IV for full case study analysis). At Corkstraat 46 the same principle applies: a footbridge from the staircase crosses over the soft edge to reach the rooftop, covering the niche below and providing shelter. The staircase structure and the railing of the footbridge are fabricated from steel profiles and perforated steel plates sourced from within the industrial area itself, carrying the material identity of the business park directly into the new vertical circulation.

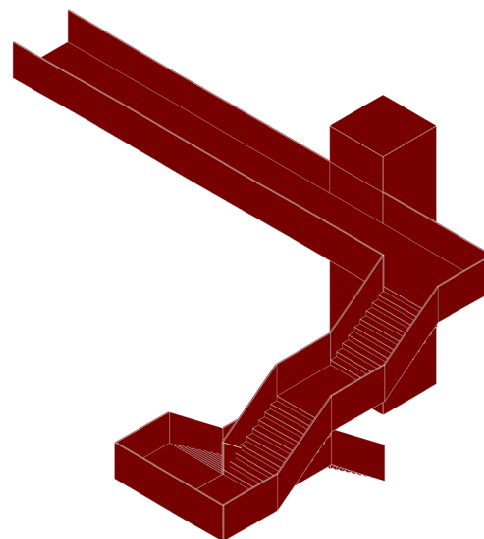


Figure 3.5: External staircases to collective roof

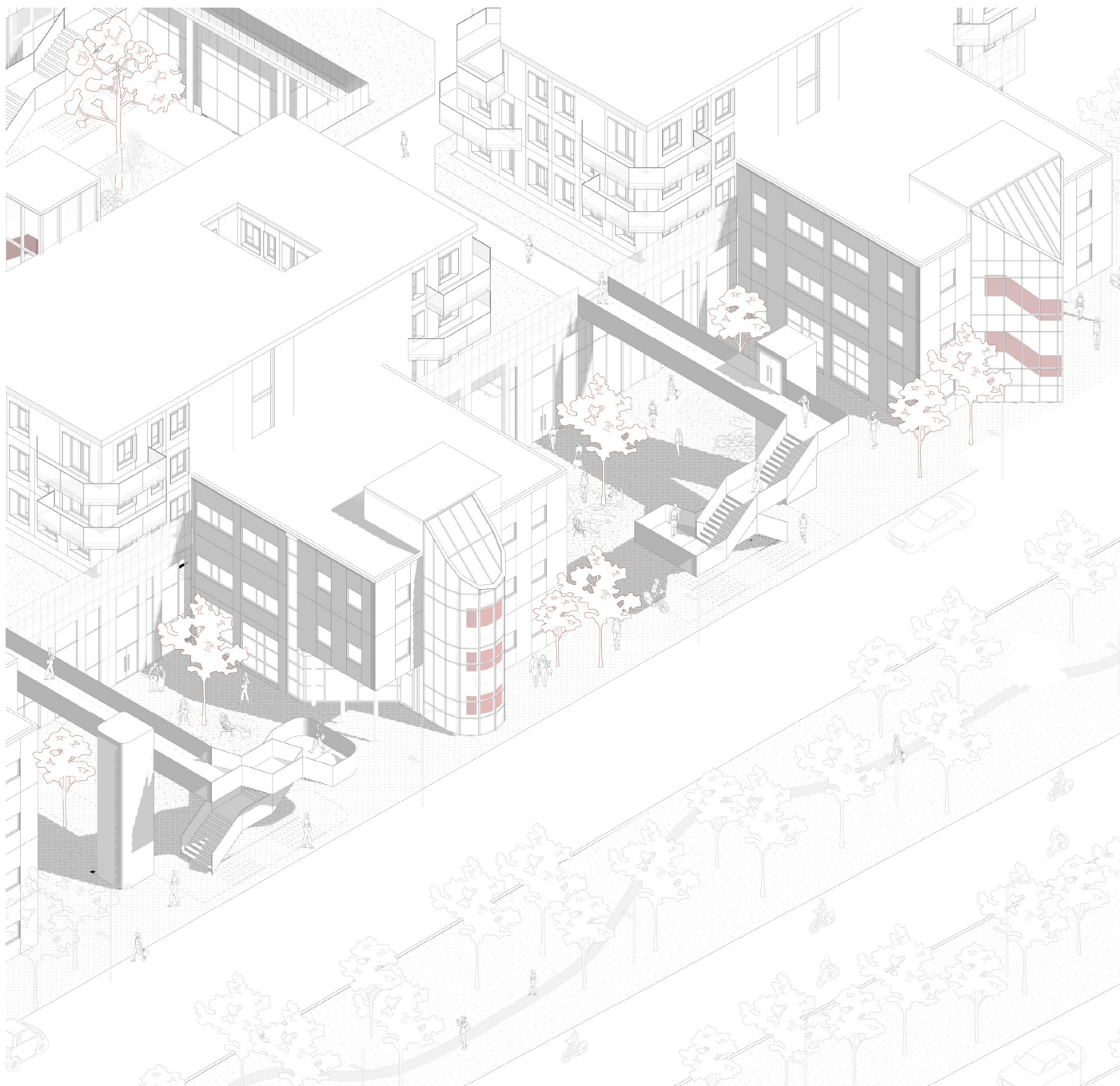


Figure 3.6: Soft edges axonometric

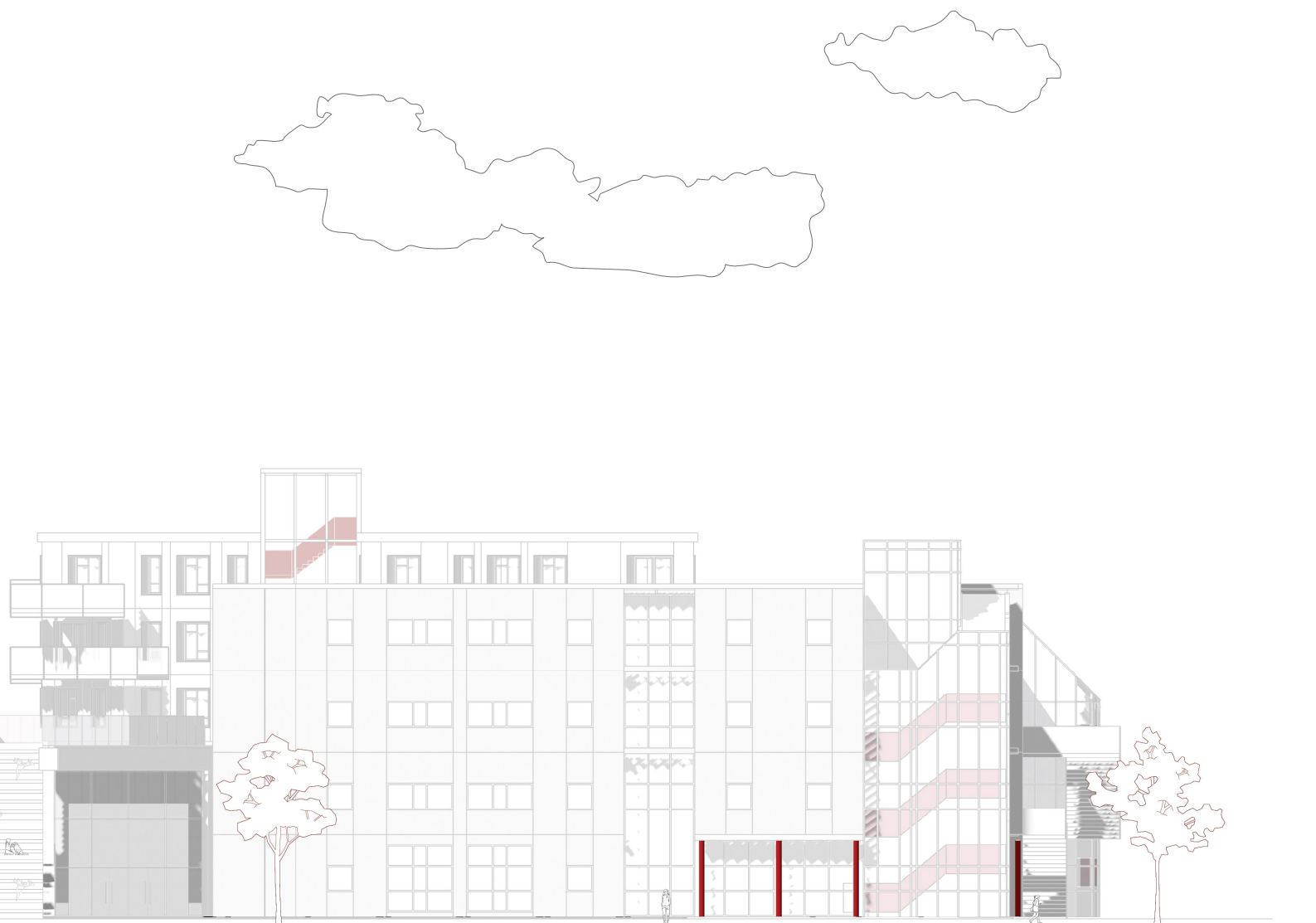
The vertical articulation that results from this new circulation element, combined with the rhythm of the enlarged facade openings of the hall, restores the human scale within the larger industrial mass. Gehl (2011) argues that facade rhythm directly influences the pace and experience of the person at street level: a varied, articulated facade slows movement and invites engagement, while a uniform surface accelerates it. The Silo in Copenhagen (COBE, n.d.) demonstrates how the envelope of an existing industrial structure can be redesigned to give a building an entirely new character and urban relationship without modifying the load-bearing system (see Appendix 06B.III for full case study analysis). The rhythm of the hall facade is created using

perforated steel panels that simultaneously function as solar shading, filtering daylight into the hall while animating the facade with a material that is sourced from the industrial area surrounding the building.

The ground floor of each office block accommodates public functions on the street-facing side: ateliers, creative studios, workshops and exhibition spaces. These make the interior visible and legible from the street. Residents of the office blocks enter through a separate entrance on each block, distinct from the public entrance to the ground-floor functions, keeping private and public flows clearly separate.



Figure 3.7: Entrance passage and collective roof via ramp



3.3 The Passage and the Hall

Entering the building from the street, the visitor meets the passage: a semi-public route that runs through the building at ground level, connecting the street entrance on the north facade to the hall and continuing to the south. The passage is the spatial backbone of the building's collective life (see figure 3.8). It is not a corridor in the functional sense but an internal street: a space that belongs equally to residents, workers and visitors drawn into the hall programme. Both of the project's key precedents for the collective interior demonstrate this principle. At the Fenixloodsen in Rotterdam, the ground level of the existing hall functions as a shared interior landscape through which all circulation and programme is organised (see Appendix 06B.I for full case study analysis). At De Hallen in Amsterdam, the former traverse passageway was transformed into De Passage, a public route that activates the building from within and connects it to both surrounding streets (Editio, n.d.; see Appendix 06B.II for full case study analysis). In this project the passage follows the same logic: it is the element that makes the building a system rather than a collection of separate parts.

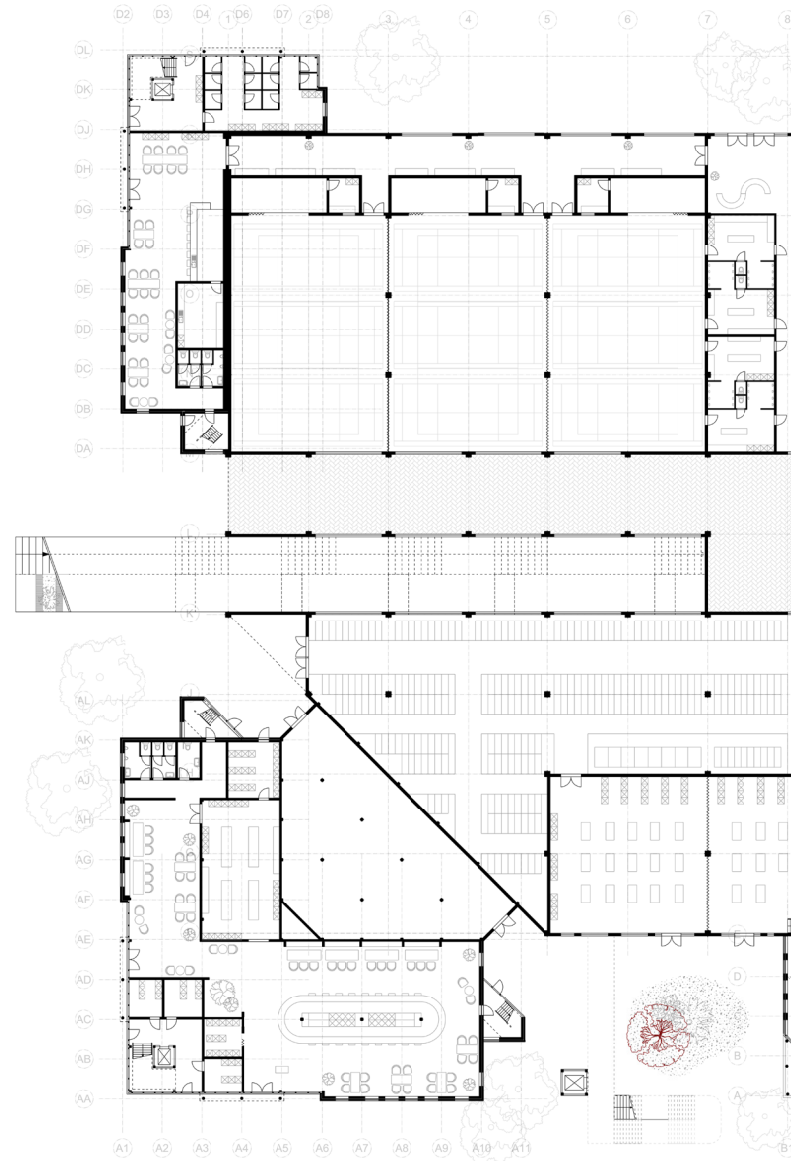
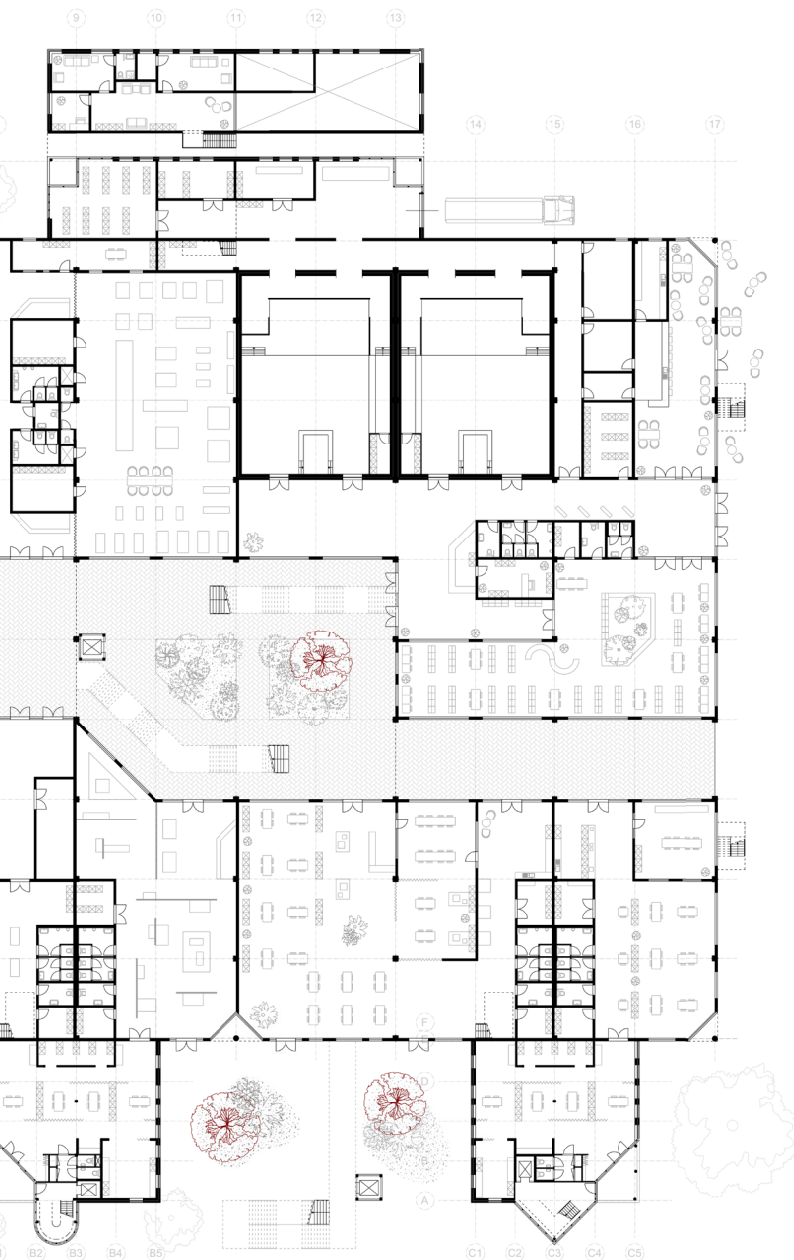


Figure 3.8: The hall



The central hall is reprogrammed as a mixed public space organised into four clusters: sports, culture, creative and culinary. The large spans and repetitive grid of the existing concrete frame allow these functions to expand, contract or shift without major structural modification. This flexibility is not incidental but is a direct consequence of the structural logic described in section 3.1: the generic frame was designed to accommodate change. In Brand's (1994) terms, the programme of the hall occupies the most transient layer of the building, the one that changes most rapidly over time. A sports hall becomes an exhibition venue; a culinary market expands into the creative cluster during a weekend event. The building does not fix what happens within it but provides the structural and spatial conditions for it.

The co-presence of four programme clusters within a single space enacts Sennett's (2018) argument for the open city at the scale of a single building. Sennett argues that urban vitality is not produced by programming each space for maximum efficiency but by creating conditions in which different uses, users and rhythms can overlap and generate unexpected encounters, what he calls productive friction. The hall accommodates this friction. A sports session takes place while a culinary market is being set up; a creative workshop spills into the passage while a cultural event draws an evening audience. It is this simultaneous overlap, not merely the fact of continuous occupation across the day, that produces the vitality Sennett describes.

For residents of the dwellings above the hall, the passage is also the starting point of the route to the collective rooftop. The vertical movement from passage to rooftop passes through the atrium: the spatial hinge between the public world of the hall below and the residential world above (see figure 3.9). The atrium brings daylight deep into the hall, illuminating the interior from above and making the spatial relationship between the two levels continuously present. It is the point where the building's two collective levels are made legible as parts of a single system. The rooftop is reached not by retreating from the building's shared life but by moving through it, from the passage, past the clusters of the hall, upward through the atrium, to the dwellings and the collective green space above.

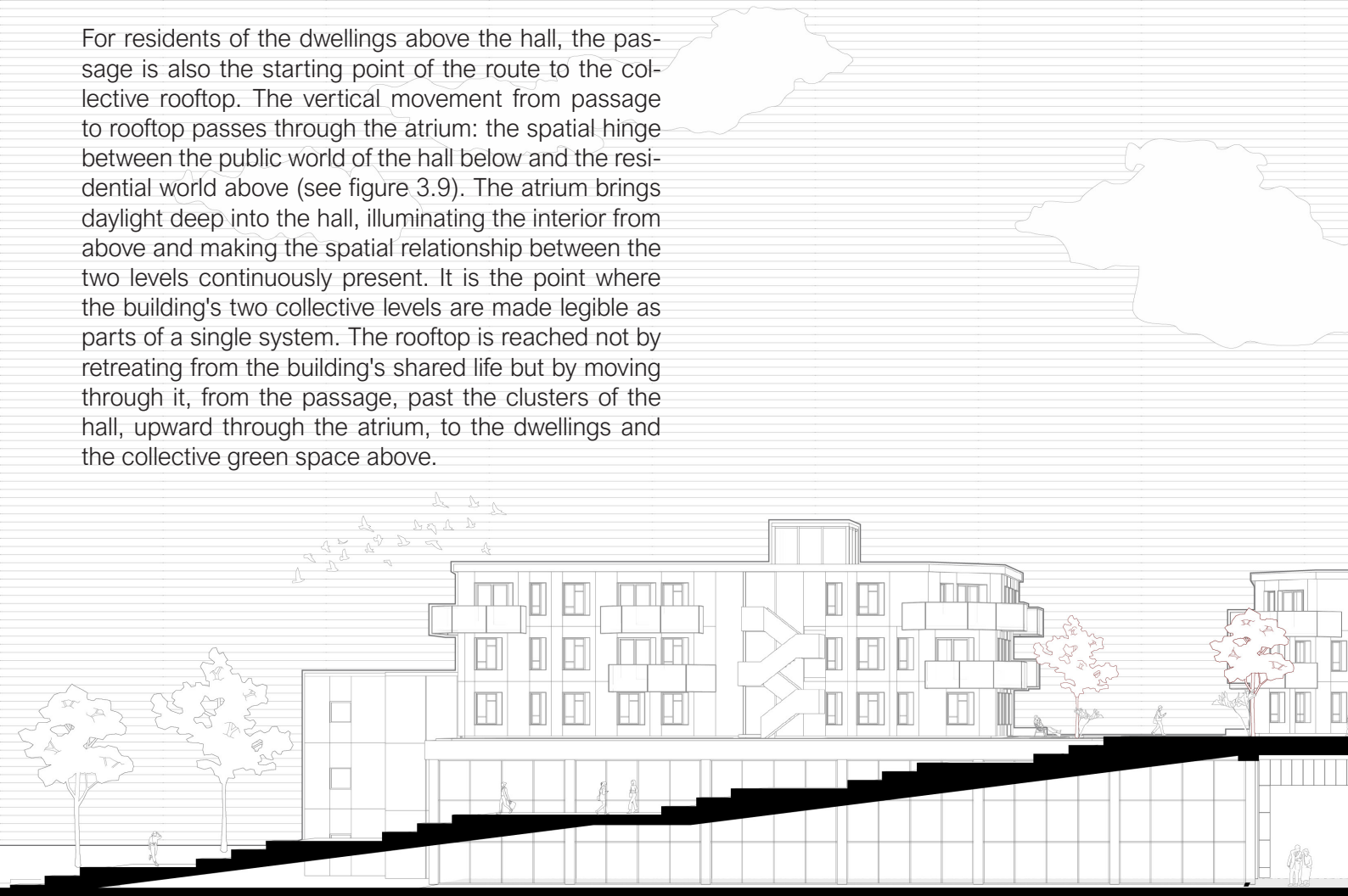
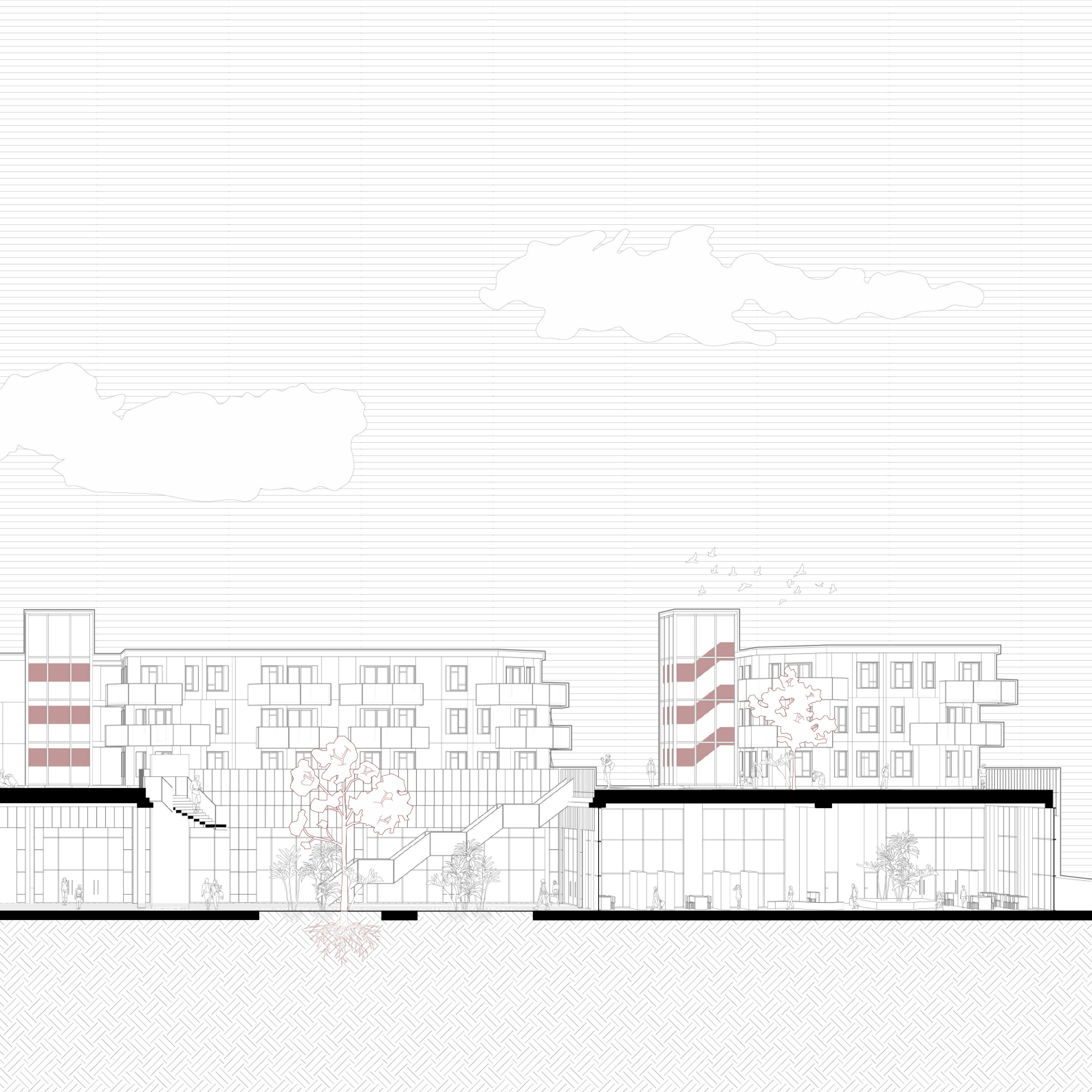


Figure 3.9 Atrium section



3.4 Residential Addition

Above the hall, the residential volumes are built using cross-laminated timber (CLT) walls that act as a truss structural principle, placed on top of the existing concrete frame (see figure 3.10). The positioning of the new volumes follows directly from the existing grid, allowing the additions to fit within the building's original structural arrangement. The CLT walls span above the hall and transfer their loads directly to the existing concrete columns below, using the same foundation that supports the hall. Because no structural elements are required within the hall itself, the 6.6 metre free height of the central space is preserved entirely.

In Brand's (1994) terms, the CLT volumes form a new shell layer: more permanent than the programme within the hall below, but distinct from and lighter than the concrete frame below. The contrast between new timber and existing concrete makes the temporal layering of the building visible. The building tells its own transformation history through material contrast, which is the insertion strategy made spatially legible: the new does not erase the old but sits upon it, and the relationship between them remains readable. The choice of CLT is not only structural and architectural but also territorial: the timber is sourced from the productive forest of Midden-Delfland, the biobased facade panels and flax insulation likewise derived from the productive landscape that the masterplan seeks to activate. The building is not merely positioned within that vision but constructed from it. This choice also has a structural consequence that extends into the future: as a dry-assembly timber system, the CLT volumes are fully demountable. Should the urban conditions of the area change fundamentally over a longer time horizon, the residential addition can be removed without damaging the concrete frame below. The hall would remain intact, capable of receiving a different programme. In Brand's terms this means the shell layer does not lock in the structural layer: the most permanent element of the building retains its adaptability across multiple cycles of use.

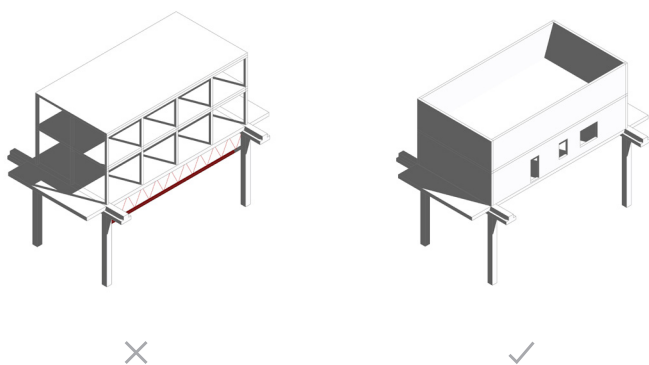


Figure 3.10 CLT truss principle

The height of the residential volumes is deliberately limited to three storeys (see figure 3.11). This aligns with Gehl's (2011) principle of human scale, which states that social interaction depends on visual proximity and that lower building heights contribute to greater social engagement, and is consistent with the structural calculation confirming a maximum of three to four storeys within the load-bearing capacity of the existing foundation.

The Fenixloodsen in Rotterdam offers a relevant comparison (see Appendix 06B.I for full case study analysis). There too, new residential units are placed above an existing warehouse hall with a reinforced concrete frame, while a mixed public programme is clustered at ground level and the existing hall structure remains the organising spatial system. The key difference lies in the structural approach: at the Fenixloodsen, the residential addition is carried by an independent interstitial steel space-frame structure built through the original building, whereas at Corkstraat 46 the new CLT walls load directly onto the existing concrete columns, activating the latent structural capacity of the existing foundation rather than introducing a separate one. Both projects demonstrate that the hall structure can function simultaneously as the carrier of a new public interior and as the base from which new housing rises above (Fenix I, Mei Architects and Planners, 2023).

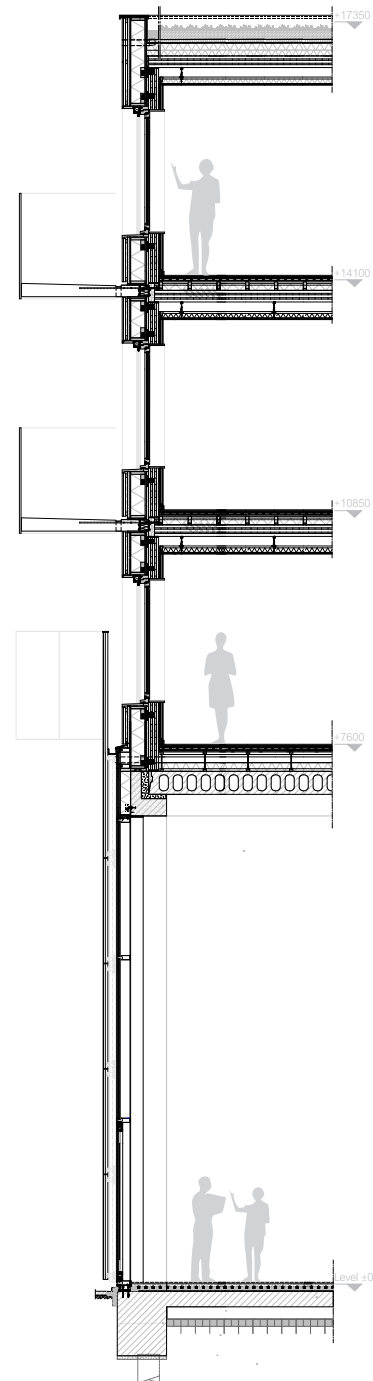


Figure 3.11 Facade fragment

3.5 Dwelling and Collective Life

At the top of the building, the residential volumes open onto the collective rooftop: the roof of the central hall transformed into a green shared space that all dwellings look out onto and connect to directly (see figure 3.12). The rooftop is the spatial centre of the residential world, just as the hall is the spatial centre of the public world below. A comparable precedent is found in Chesterton Square in London (see Appendix 06B.V for full case study analysis), where a rooftop park above an existing building programme functions as a raised shared ground, separate from the street. The key distinction from Chesterton Square is that in this project the rooftop does not operate as an autonomous elevated landscape: it is spatially connected to the public world below through the atrium, making the relationship between the collective levels of the building continuously present and legible.

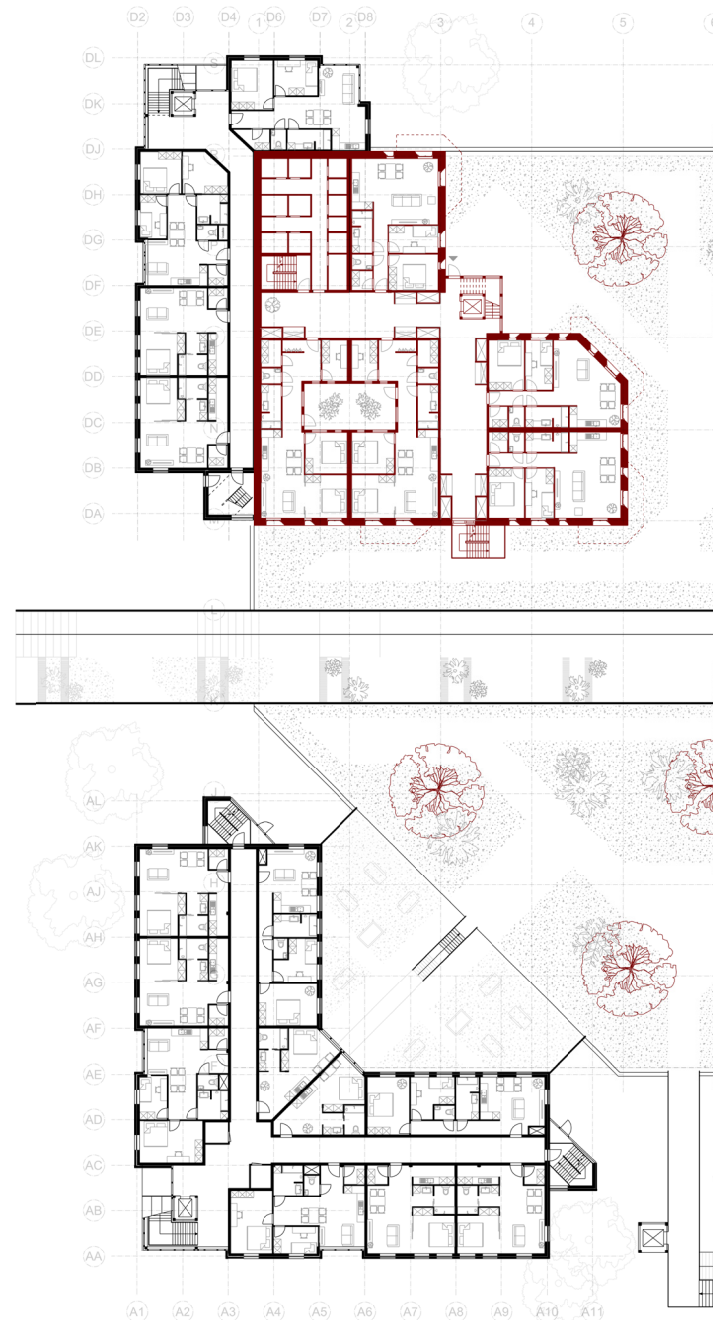
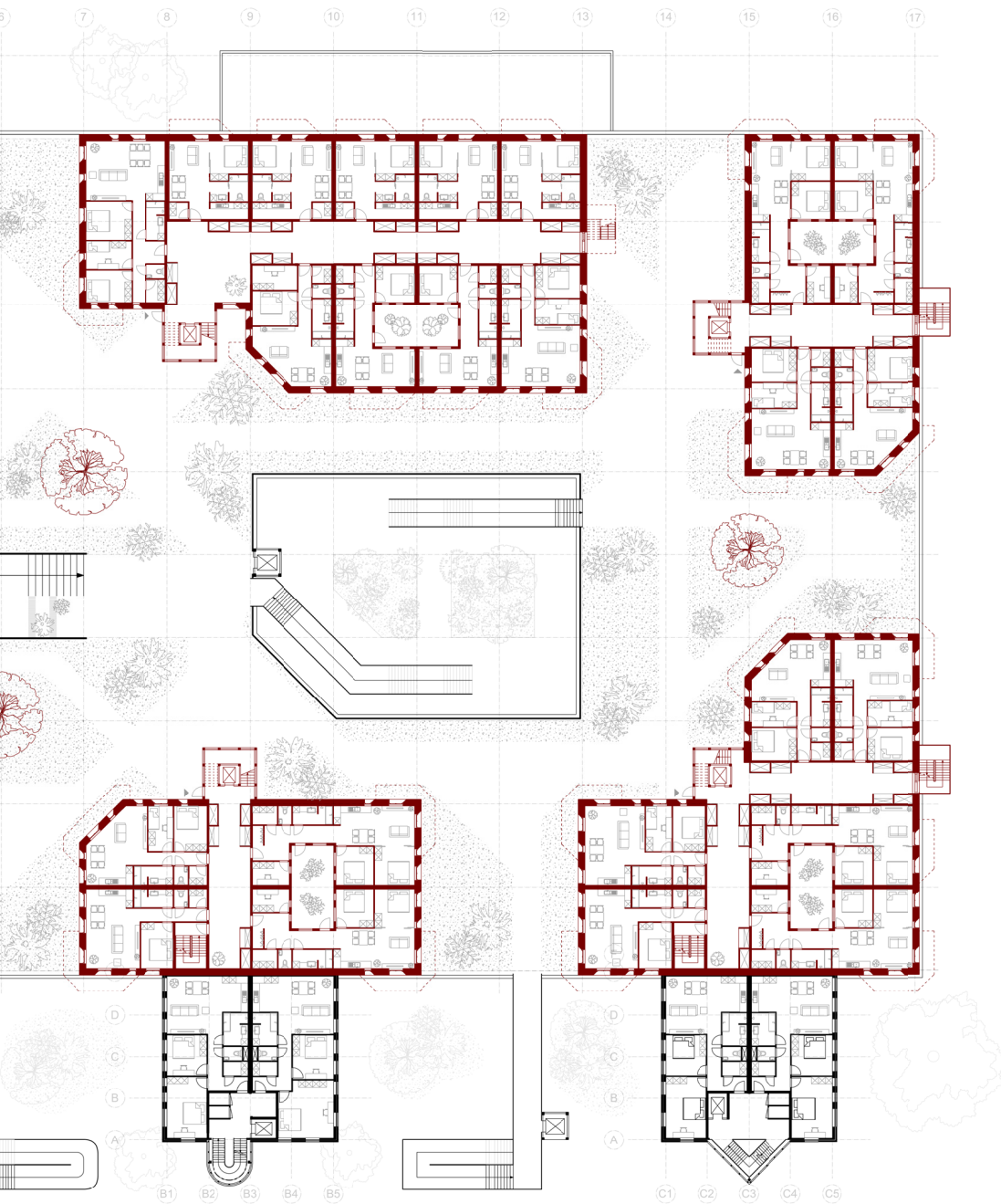


Figure 3.12 Collective roof



The residential volumes are connected to the rooftop via spacious balconies that function as transition zones between the dwelling and the collective domain. These balconies reinforce the visual relationship between residents and the shared space, stimulating social interaction not only horizontally but also vertically. The dwellings are accessed via internal circulation spaces designed as collective zones. Instead of minimal corridors, widened spaces with niches and gathering places are created (see figure 3.13). Gehl (2011) describes such transitional spaces as essential to urban social life: they allow what he calls the choice of interaction, in which people can participate in social contact on their own terms. Every shared threshold between a dwelling and the collective space is designed as an opportunity rather than an obligation.

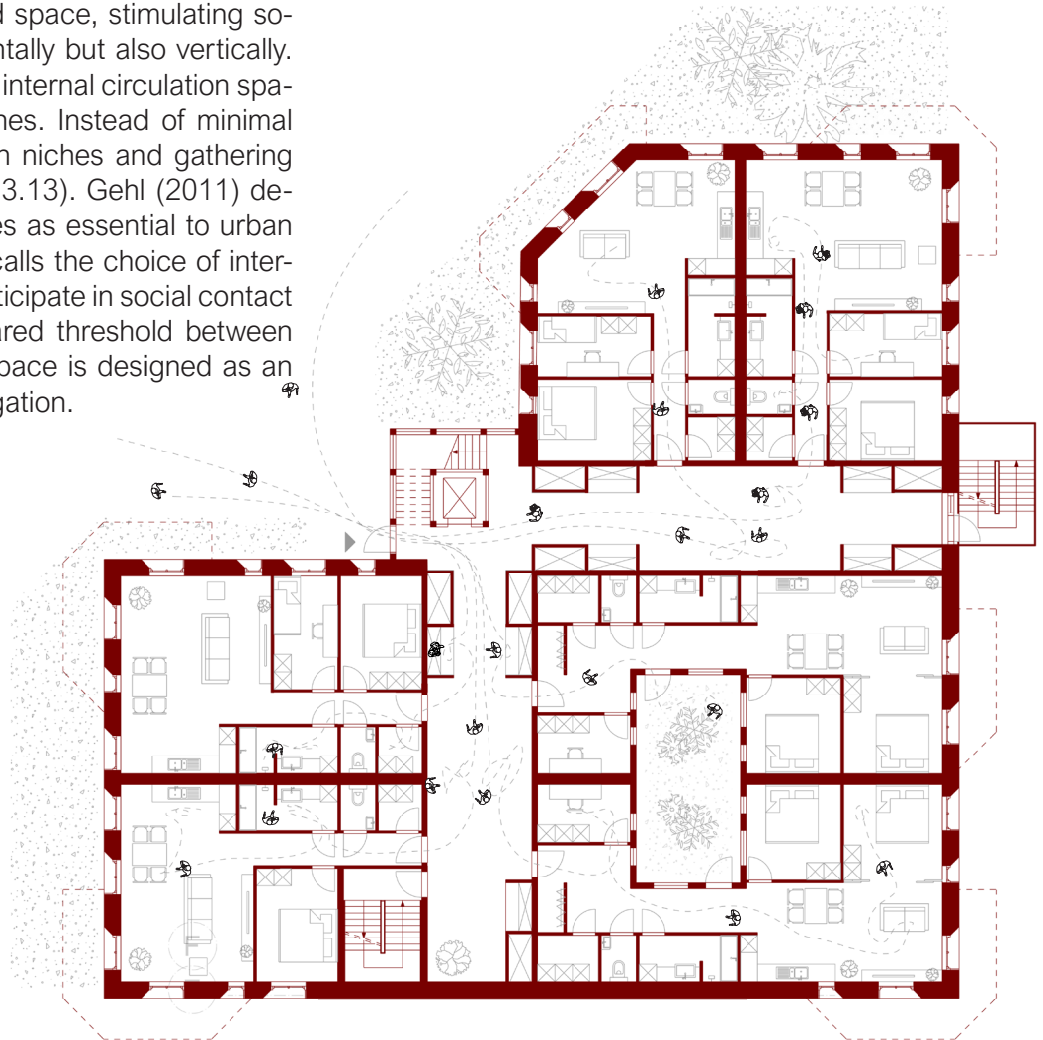


Figure 3.13: Collective zones



Figure 3.14: Dwelling typologies (new volumes)

In Sennett's (2018) terms, the multi-tenant office building in its current state is a *ville* without a *cité*: physically substantial but socially static, occupied by a single user group within a narrow time window. The six housing typologies are the spatial instrument through which a *cité* becomes possible (see figure 3.14). A building that houses residents with fundamentally different rhythms, needs and life stages cannot be optimised for any one of them. It must remain open.

Sennett argues that the relationship between the built environment and the social life it contains cannot be prescribed: the *ville* can establish spatial conditions but cannot determine what the *cité* will become. The diversity of typologies is therefore not a market strategy but a social argument: it produces the conditions under which a genuine urban social life can form, one that the architect can enable but not determine.

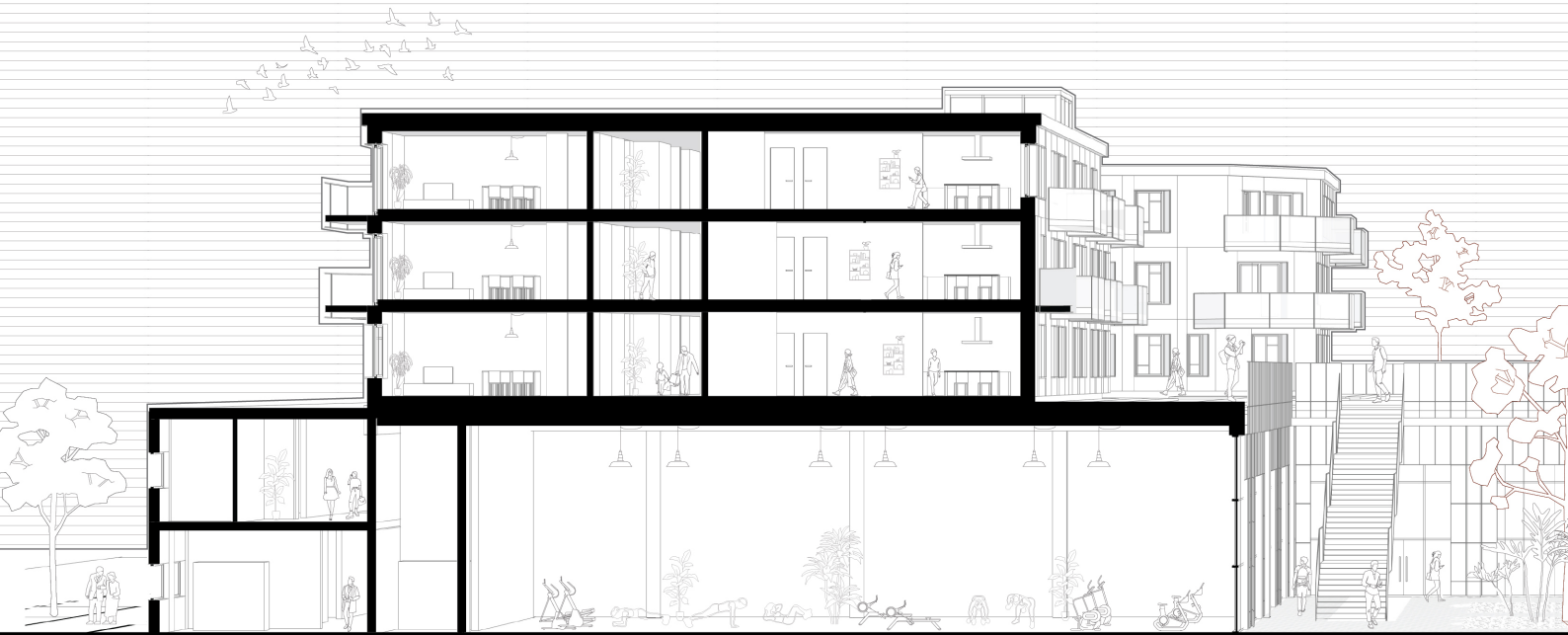
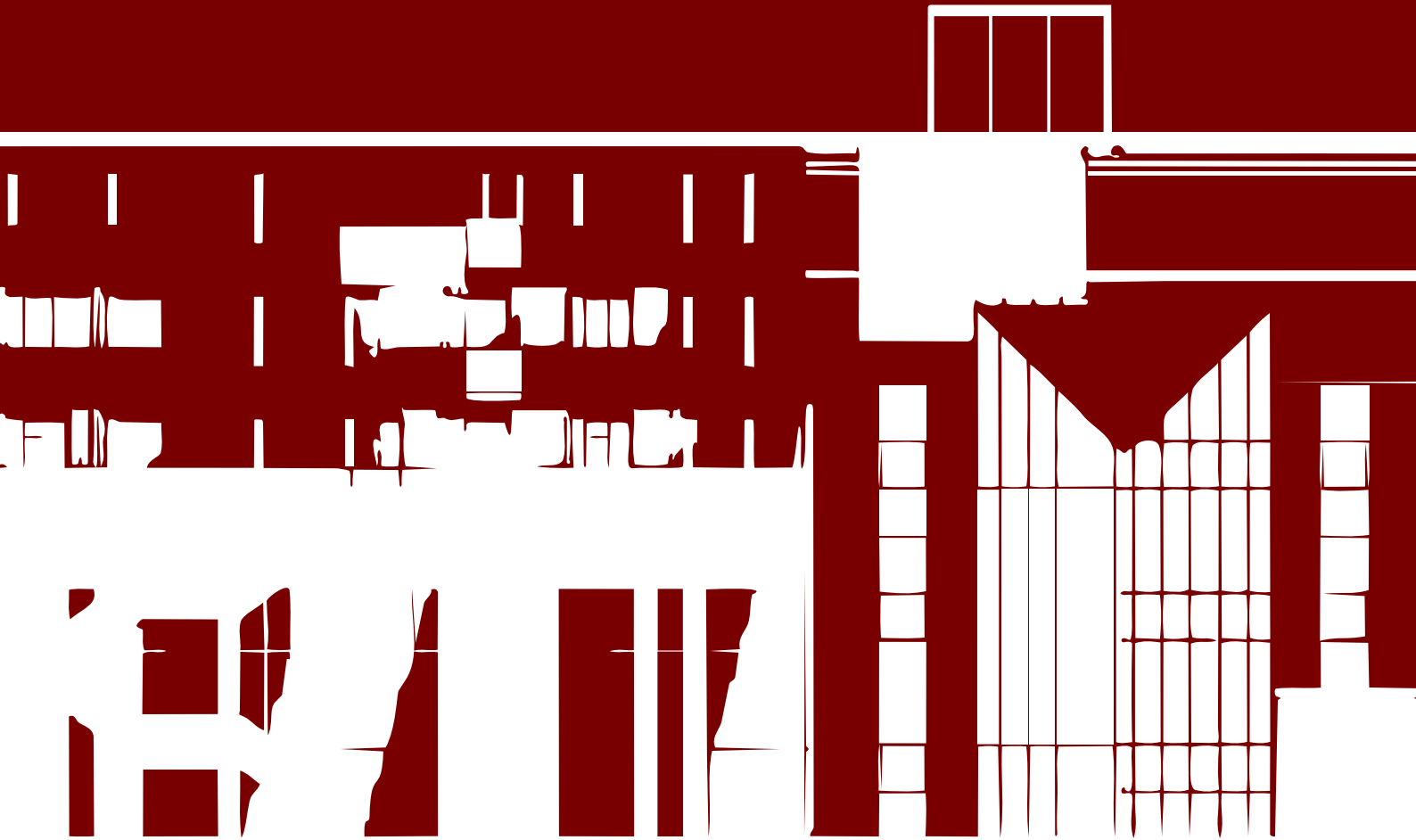


Figure 3.15 Apartments section

The transformation described across sections 3.1 to 3.6 can be read as a direct inversion of the diagnosis with which the analysis began. The building that Gehl's framework identified as urbanistically absent, closed facades, inactive ground floor, monofunctional programme, single user group within a narrow time window, has been transformed into one that fulfils each of those criteria structurally and programmatically. Active edges have replaced closed facades. A continuous public ground floor has replaced internal distribution space.

A diverse and temporally layered programme has replaced monofunctional logistics. A cross-section of the city inhabits what was once a single-purpose workspace. The building now addresses the city not from a single point of contact but along its entire section, from the soft edge at street level through the passage and the hall to the collective rooftop above. In Sennett's (2018) terms, the ville has been designed to allow a cité to form.





04

CONCLUSION AND DISCUSSION

04

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4.1 Conclusion

This research asked how the latent spatial and structural capacity of a multi-tenant office building can be activated to support urban vitality within a mixed-use environment. The answer is affirmative, but conditional: the transformation is possible precisely because of the typology's specific structural and spatial qualities, and it requires a strategy that departs from those qualities rather than overriding them. The existing building is not a neutral container awaiting a new programme; it is a spatial and structural argument that the design must learn to read.

The first sub-question asked which architectural characteristics define the adaptive potential of multi-tenant office buildings. The answer emerges from the typological analysis and is grounded in four constant principles that recur across comparable buildings throughout the Netherlands. First, the overdimensioned structure: large spans, generous floor-to-floor heights and structural overcapacity by design mean the building carries more than its current programme requires, making it capable of supporting new uses without structural modification. Second, the generic and modular floor plan: flexible, divisible layouts organised around internal logistics are directly convertible to residential or mixed-use programme without altering the load-bearing system. Third, external vertical circulation: staircases positioned at the perimeter keep the plan centre free and structurally unobstructed, providing access that can be extended to serve new uses above without consuming internal space. Fourth, collective infrastructure: shared entrances, facilities and internal streets connecting the whole enable diverse occupancy within a single structure,

a collective logic that is directly transferable to mixed residential and public programme. These four characteristics are not incidental features of a single building but typological constants. They are the precondition for everything the design achieves.

The second sub-question asked how existing structural systems can support vertical and programmatic densification. The answer lies in treating structural overcapacity as a design resource. Brand's (1994) framework of shearing layers reveals that the structural layer of this typology is not only permanent but generous, capable of carrying new uses without modification. This overcapacity is not incidental but typological. Activating it rather than replacing it is the foundational design move: it enables the addition of new housing above the hall, the transformation of the office blocks from within, and the introduction of a public programme in the hall, all without touching the load-bearing structure.

The third sub-question asked how programmatic organisation can enable diverse and intensive use within the structural logic of the building. Three principles respond to this question. First, the insertion strategy is calibrated to what each structural condition allows: the hall admits insertion from above, with new CLT volumes placed on the existing concrete frame; the office blocks admit insertion from within, with new programme placed inside the existing load-bearing envelope. Brooker and Stone's (2004) classification is applied consistently as two forms of insertion, maintaining the legibility of the existing buildings as the primary structural system throughout. Second, the existing organi-

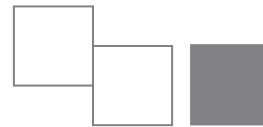
sational logic functions as the spatial generator: the column grid defines the programme clusters, the external vertical circulation becomes the access structure for the housing, and a new atrium inserted within the existing frame connects the public world below to the residential world above. Programme does not override structure; it is derived from it. Third, programmatic diversity is the engine of temporal vitality. Sennett (2018) argues that urban vitality is produced not by continuous occupation but by the simultaneous co-presence of different users, activities and rhythms. Six housing typologies and four public programme clusters create the conditions for this productive friction, making the building continuously inhabited and socially open.

The fourth sub-question asked which spatial relationships between the transformed building and its urban context are critical for fostering urban vitality. The answer points to two: the plinth and the passage. The soft edges of the plinth dissolve the hard boundary between building and street, transforming edge conditions that previously repelled activity into spaces that invite occupation (Gehl, 2011). The passage connects street, hall and rooftop in a single continuous movement, making the building penetrable in both directions and turning it from a closed object into an active urban threshold.

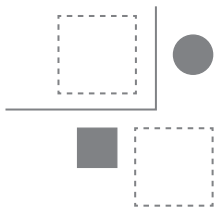
The activation of the building's latent capacity produces urban vitality through a direct chain of consequences. Structural overcapacity enables vertical densification and the preservation of the hall as a public interior. The existing organisational logic generates a continuous movement system that connects street, hall and rooftop, making the building inhabited at every level. Programmatic diversity and housing mix produce the temporal overlap and social friction that sustain urban vitality across the full span of the day and week. And the soft edges of the plinth restore the active edge conditions essential for life at street level. Urban vitality is not added to the building from the outside; it emerges from the activation of what was latent within it. The latent capacity of the multi-tenant office building is activated not by overriding its existing logic but by reading it precisely and extending it. The structural overcapacity, the organisational logic, the spatial surplus of the hall and the collective potential of the passage are all qualities the building already possessed. The design makes them work.



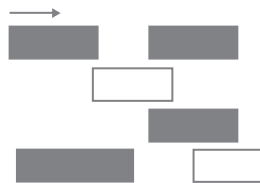
Structural **overcapacity** as
design resource



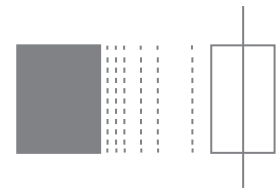
Differential **strategy** per
structural condition



Existing **organisational** logic
as spatial generator



Programmatic **diversity** as
temporal vitality



Plinth and passage as
urban interface

Figure 4.1 The Five Principles

4.2 Implications / Recommendations

The most direct implication of this research concerns the scale at which its principles could be applied. The multi-tenant office building is the dominant typology within Dutch post-war business parks, and research by PBL Netherlands Environmental Assessment Agency (2016) demonstrates that these areas carry significant transformation potential within the existing urban fabric. The principles developed here are not specific to Corkstraat 46 but are grounded in typological characteristics that recur across a broader class of buildings. A systematic inventory of comparable buildings across Dutch cities, mapping their structural capacity, grid dimensions and foundation specifications, would allow these principles to be tested and refined at a scale that corresponds to the magnitude of the housing challenge they could help address.

A second implication concerns the management of programmatic interdependence. This project is designed around the co-presence of different uses and users. The programme must therefore be managed as a whole rather than as a collection of independent tenancies. Such an approach requires ownership and management structures that extend beyond conventional commercial leasing models, potentially involving a building cooperative or a cultural institution with a curatorial role that actively maintains the programmatic mix over time. Without such structures, the relationships between housing, workspaces, cultural production and public amenities may gradually weaken.

A third implication concerns governance and affordability. The housing mix and accessible ground floor are

deliberate responses to the risk of displacement, but their effectiveness over time depends on pricing policies, ownership structures and management decisions. Future projects applying these principles should establish governance frameworks that safeguard affordability and accessibility before transformation is completed rather than as a corrective measure afterwards. Such frameworks should be developed from the outset in collaboration with housing corporations, municipalities and existing users of the area.

A fourth implication concerns the environmental dimension of transformation. This project argues for activating the latent capacity of an existing building rather than replacing it, preserving the embodied energy contained within its concrete frame, foundations and structural system. While this argument is embedded throughout the research, it has not been quantified. A comparative CO2 assessment between the proposed transformation strategy and an equivalent new-build scenario would strengthen the argument considerably. Such an assessment would make explicit what the design implies but does not demonstrate: that reusing an over-dimensioned concrete structure rather than demolishing and rebuilding can result in substantial reductions in carbon expenditure. This is particularly relevant for the foundation, which represents a significant share of embodied carbon in new construction and is reused entirely within this proposal. Incorporating such calculations into future projects would provide the sustainability argument with the same level of precision as the structural and spatial analyses.

4.3 Reflection

Working simultaneously with an existing building, a body of literature and a set of case studies was a new approach for me. In previous projects these elements often operated separately. Here the three developed in parallel, and that changed the nature of the design process fundamentally. Literature functioned as an active design instrument rather than retrospective justification. Case studies provided verification rather than inspiration: proof that the principles being developed had been built and inhabited. This created a more direct relationship between research and design than I had previously experienced.

Framing the research was itself a significant challenge. The selected building appeared to possess latent capacity, but determining precisely what that consisted of required a conceptual argument before it could become a design argument. The typological framing of the multi-tenant office building proved decisive here. By positioning the building within a recognisable class of structures, latent capacity became legible as a typological condition rather than a unique attribute of a single case.

The greatest design challenge was scale. The dimensions of the hall and the existing office blocks made the transition from industrial scale to human scale the central architectural problem of the project. Soft edges, facade rhythm and vertical circulation became the primary instruments through which this transition was achieved, but their development came at the expense of other aspects, particularly the immediate surroundings of the building. Although the relationship between the building and its urban

context plays an important role within the design argument, it received less elaboration than the building itself. That remains a limitation worth acknowledging.

Working with an existing structure presented both opportunities and constraints. The grid, dimensions and structural logic provided a clear framework that prevented arbitrary decisions, but every intervention had to be negotiated against measurements that could not be changed. The design is also built around programmatic interdependence, and that interdependence is a fragility: if one programme cluster changes or disappears, the others become vulnerable. When the negotiation with the existing structure succeeds, however, the result carries a conviction that is difficult to achieve when designing from nothing. A project that works through what already exists demonstrates something new construction cannot: that reading the built environment precisely is itself a form of invention.



Figure 3.17: Birds-eye view

5.1 Articles and Reports

ABF Research. (2024). Prognose woningbehoefte. ABF Research.

BRO. (2024, 9 september). Toekomstbestendig en duurzaam bedrijventerrein. <https://www.bro.nl/publicaties/toekomstbestendig-en-duurzaam-bedrijventerrein>

Bureau BUITEN, Urban Synergy, & Feddes/Olthof Landschapsarchitecten. (2024). Entreegebieden van BPL Midden-Delfland: analyse en nadere uitwerking recreatie-opgave. Einddocument.

Ensie. (2020, 2 januari). Het groothandelsgebouw in Rotterdam. Monumenten in Nederland: Zuid-Holland. <https://www.ensie.nl/monumenten-in-nederland-zuid-holland/het-groothandelsgebouw-in-rotterdam>

Groothandelsgebouw. (n.d.). Platform Wederopbouw Rotterdam. <https://wederopbouwrotterdam.nl/artikelen/groothandelsgebouw>

Kantoorgebouw Katshoek. (n.d.). Platform Wederopbouw Rotterdam. <https://wederopbouwrotterdam.nl/artikelen/kantoorgebouw-katshoek>

Klijn, O., & Guis, R. (2025). Advanced Housing Design: Ecologies of Inclusion. TU Delft Faculty of Architecture and the Built Environment.

Ministerie van Binnenlandse Zaken en Koninkrijksrelaties. (2022). Nationale Woon- en Bouwagenda. Rijksoverheid.

PBL. (2016). Transformatiepotentie: woningbouwmogelijkheden in de bestaande stad. Planbureau voor de Leefomgeving.

Verzamelgebouw Zuid. (n.d.). Platform Wederopbouw Rotterdam. <https://wederopbouwrotterdam.nl/artikelen/verzamelgebouw-zuid>

5.2 Books and Academic Sources

Brand, S. (1994). How buildings learn: What happens after they're built. Viking.

Brooker, G., & Stone, S. (2004). Rereadings: Interior architecture and the design principles of remodelling existing buildings. RIBA Enterprises.

Crimson Architectural Historians. (2017). Industriegebouw Goudsesingel.

Douglas, J. (2006). Building adaptation (2nd ed.). Butterworth-Heinemann.

Fisher-Gewirtzman, D. (2016). Adaptive reuse architecture documentation and analysis. *Journal of Architectural Engineering Technology*, 5(3). <https://doi.org/10.4172/2168-9717.1000172>

Gehl, J. (2011). Cities for people. Island Press.

Langston, C. (2012). Validation of the adaptive reuse potential (ARP) model using iconCUR. *Facilities*, 30(3/4), 105-123.

Sennett, R. (2018). Building and dwelling: Ethics for the city. Farrar, Straus and Giroux.

ZUS (Zones Urbaines Sensibles). (2022). Team Midden-Delfland. IABR Rotterdam.

5.3 Case Study Sources

Alizadeh, T., University of Sydney, Gutnov, A. E., Gurkan Saul, L., Alsaadi, R., Jacobs, J., Krassenberg, H., Hollis, F., Novy, J., University of Sydney, Eburon Uitgeverij BV, Stroyizdat, & DASH, Delft Architecture Studies of Housing. (2022). Case study analysis [Book].

COBE. (n.d.). The Silo, Copenhagen. <https://cobe.dk/projects/the-silo>

Editio. (n.d.). De Hallen Amsterdam. EUMies Awards. <https://eumiesawards.com/heritageobject/de-halls-amsterdam/>

Fenix I - Mei Architects and Planners. (2023, 12 januari). <https://mei-arch.eu/en/projects/fenix-1/>

Ott, C. (2024, 26 juni). Warehouse conversion in Raugyklos Street / DO ARCHITECTS. ArchDaily. <https://www.archdaily.com/977607/warehouse-conversion-in-raugyklos-street-do-architects>

The Edwardes Estate: Warwick Road (North) and West Cromwell Road. (n.d.). British History Online. <https://www.british-history.ac.uk/survey-london/vol42/pp282-288>

5.3 Figures

Figure 1.1 Achievable housing development capacity within the existing built-up area. PBL, 2017

Figure 1.2 Potential number of dwellings realizable within the existing built-up area, by building and site type. PBL, 2017

Figure 1.3 Using the ZUS and Bureau BUITEN plan as starting point. Author / studio

Figure 1.4 Ambitions masterplan. Author / studio

Figure 1.5 The masterplan. Author / studio

Figure 1.6 Resource-driven thinking (design principles). Author / studio

Figure 1.7 Region III Mixed-use Industry. Author / studio

Figure 1.8 Street profile (infrastructure axes). Author

Figure 2.1 Method diagram. Author

Figure 2.2 Shearing layers of Brand (1994). Brand, 1994

Figure 2.3 Adaptive reuse strategies - Brooker and Stone (2004). Brooker & Stone, 2004

Figure 2.4 Gehl's interaction diagram. Gehl, 2011 / Author

Figure 3.1 The existing building (Corkstraat 46). Author

Figure 3.2 Axonometric drawing of the existing structural systems. Author

Figure 3.3 Activating the structural grid. Author

Figure 3.4 Elevation and plan (soft edges). Author

Figure 3.5 External staircases to collective roof. Author

Figure 3.6 Soft edges axonometric. Author

Figure 3.7 Entrance passage and collective roof via ramp. Author

Figure 3.8 The hall. Author

Figure 3.9 Atrium section. Author

Figure 3.10 CLT truss principle. Author

Figure 3.11 Facade fragment. Author

Figure 3.12 Collective roof. Author

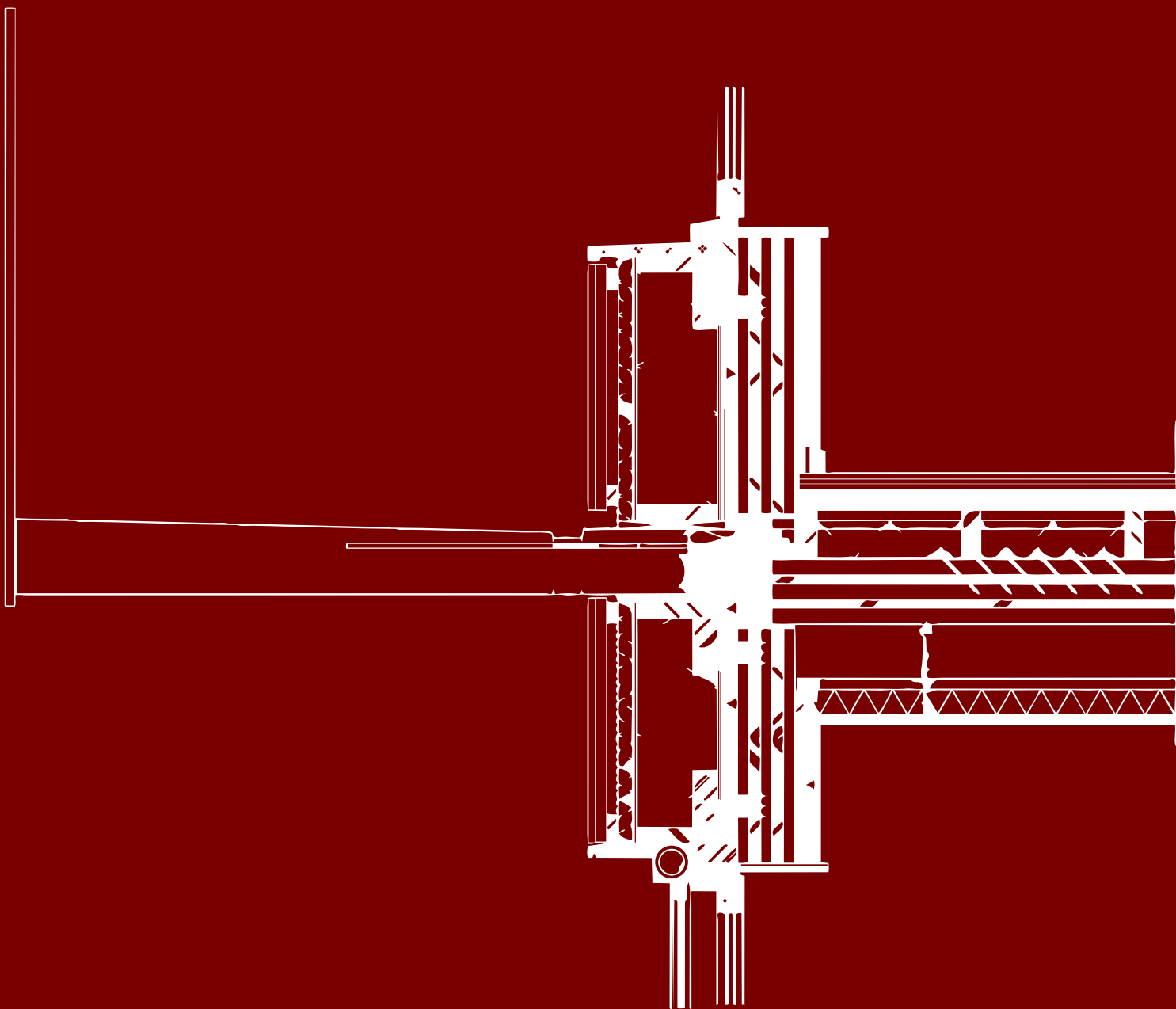
Figure 3.13 Collective zones. Author

Figure 3.14 Dwelling typologies (new volumes). Author

Figure 3.15 Apartments section. Author

Figure 3.16 Birds-eye view. Author

Figure 4.1 The Five Principles. Author



06A

TYPOLOGICAL EXPLORATION

06A.1 The Multi-Tenant Office Building

The multi-tenant office building forms a characteristic typology within Rotterdam's post-war reconstruction architecture, in which efficient use of space, collectivity, and flexibility are central. These buildings were developed based on the need to house multiple companies within a single building, where facilities and infrastructure are shared. This was due to the fact that constructing their own building was unaffordable for many entrepreneurs. This led to a building type in which economic efficiency and spatial rationality converge (Groothandelsgebouw, n.d.).



Figure 06A.1: Groothandelsgebouw



A fundamental principle within this typology is the sharing of facilities and collective organization. In multi-tenant buildings such as the Groothandelsgebouw (see Figure 06A.1), it is explicitly described that companies benefit from shared entrances, elevators, meeting rooms, and canteens, leading to lower costs and higher spatial efficiency (Groothandelsgebouw, n.d.). This principle is also visible in the Verzamelgebouw Zuid, where, in addition to business spaces, shops, a central hall, and a shared canteen are part of the design (Verzamelgebouw Zuid, n.d.).

Spatially, this collectivity translates into a clear internal organization centered on logistics and access. Characteristic features include the presence of internal streets and dispatch systems (see Figure 06A.2). In both the Groothandelsgebouw and Verzamelgebouw Zuid, the building is literally bisected by a dispatch street, which functions as the logistical backbone for transport and distribution (Verzamelgebouw Zuid, n.d.).

This logistical structure has direct consequences for the floor plan typology. The floor plans are typically generic and modular, allowing business spaces to be flexibly organized around the access structure. In the Groothandelsgebouw, this results in a large building block with multiple courtyards, which provide natural light and orientation within the deep floor plan (Ensie, 2020). The combination of deep building blocks, courtyards, and internal infrastructure makes it possible to combine large scale with functional legibility.

Another essential feature is the application of a concrete frame and repetitive construction. The buildings are designed as robust load-bearing structures with large spans, in which the facade is separate from the load-bearing structure. In the Groothandelsgebouw, the architecture is even largely determined by the repetition of prefabricated concrete elements, resulting in both structural efficiency and a neutral facade expression (Groothandelsgebouw, n.d.). This structural excess makes it possible to adapt the layout over time.



Figure 06A.3: External vertical circulation

In more atypical variants, such as the Kantoorgebouw Katshoek, the principle of the concrete frame is retained, but the architectural expression is adapted. Here, the structural design results in a more closed and flat facade (Kantoorgebouw Katshoek, n.d.). Additionally, multi-tenant office buildings are often situated along traffic arteries and are linked to the urban fabric (Crims-on Architectural Historians, 2017). Figure 06A.4 shows how a parking garage is situated directly adjacent to the building due to the importance of car access. This demonstrates that variation is possible within the typology without losing the underlying structural logic.

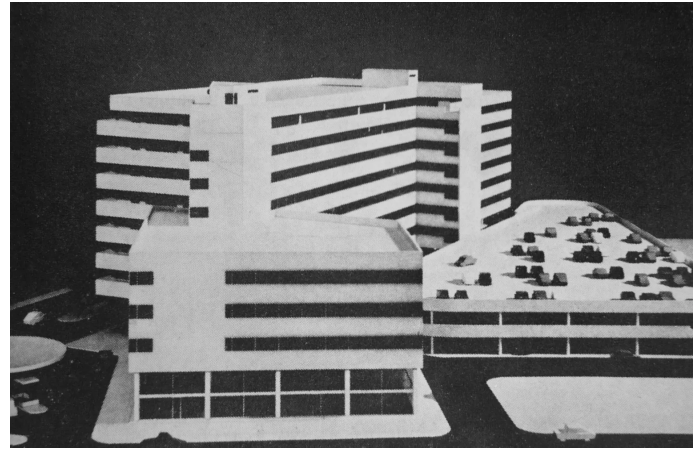
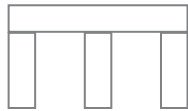


Figure 06A.4: Parking deck



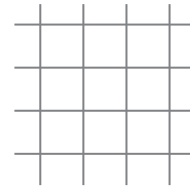
Figure 06A.5: Gallery principle

The multi-tenant office building can be understood as a spatial-organizational system in which construction, logistics, and collectivity are closely interconnected. Despite differences in architectural execution, the buildings share a number of constant principles: a robust and repeatable load-bearing structure, a generic and flexibly divisible floor plan, well-thought-out internal logistics, and collective facilities that connect the whole. Thanks to these principles, the multi-tenant office building forms a sustainable and adaptable typology that lends itself well to changing economic and urban contexts.



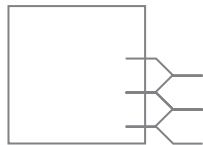
Overdimensioned structure

(Large spans, generous floor-to-floor heights, structural overcapacity by design)



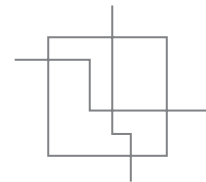
Generic and modular floorplan

(Flexible, divisible layouts organised around internal logistics and access)



External vertical circulation

(Staircases positioned at the perimeter, keeping the plan centre free and structurally unobstructed)



Collective infrastructure

(Shared entrances, facilities and internal streets connecting the whole, enabling diverse occupancy within a single structure)

Figure 06A.5: Latent Capacity Principles

06B

CASESTUDY ANALYSIS

06B.1.1 Introduction

The following case studies are analysed through four parameters, applied consistently across each project. Together they capture the spatial, structural, programmatic, and urban dimensions of each transformation.

06B.1.2 Transformation Strategy

This parameter looks at how the intervention shapes the relationship between the existing building and the new additions. A distinction is made between installation, insertion, and intervention or a combination of these. Building on Brooker and Stone (2004) and Gewirtzman (2016), each approach carries its own spatial logic: from a light, reversible addition that leaves the existing fabric intact, to a strategy that programmatically weaves old and new together, to one where the building is actively opened up and rewritten.

06B.1.3 Structural Capacity

This parameter considers the load-bearing structure of the existing building. Its grid, spans, carrying capacity, and any overdimensioning, not as a technical constraint but as a spatial opportunity. The analysis explores to what extent the construction allows for adaptation, intensification, or extension.

06B.1.4 Spatial Reconfiguration

This parameter focuses on how the original spatial layout is adapted to accommodate a new programme. It looks at circulation, sectional logic, the relationship between collective and private spaces, and the way light shapes the new interior. The central question is to what extent is the building's spatial identity preserved or fundamentally transformed.

06B.1.5 Urban Activation

Drawing on Gehl's (2011) thinking on urban vitality, this parameter examines how the transformed building relates to its surroundings. Key aspects include the plinth strategy, the permeability of the building, the transition between private and public space, and the role the building plays as a programmatic driver within the neighbourhood.

CASES:

I

Fenixloodsen, Katendrecht
[The Netherlands]

II

De hallen, Amsterdam
[The Netherlands]

III

The Silo, Copenhagen
[Denmark]

IV

Raugyklos Street Warehouse, Vilnius
[Lithuania]

V

Chesterton Square, London
[England]

I Fenixloodsen

Project Information

Location: Katendrecht, Rotterdam [The Netherlands]
Architect: Mei Architects and Planners
Client: Heijmans Vastgoed/ Propers-stok
Year of completion: 2019

Building Information

Original function: Warehouse and cargo storage
Year of construction: 1922-1923
Heritage status: Listed monument
Construction system: Reinforced concrete frame

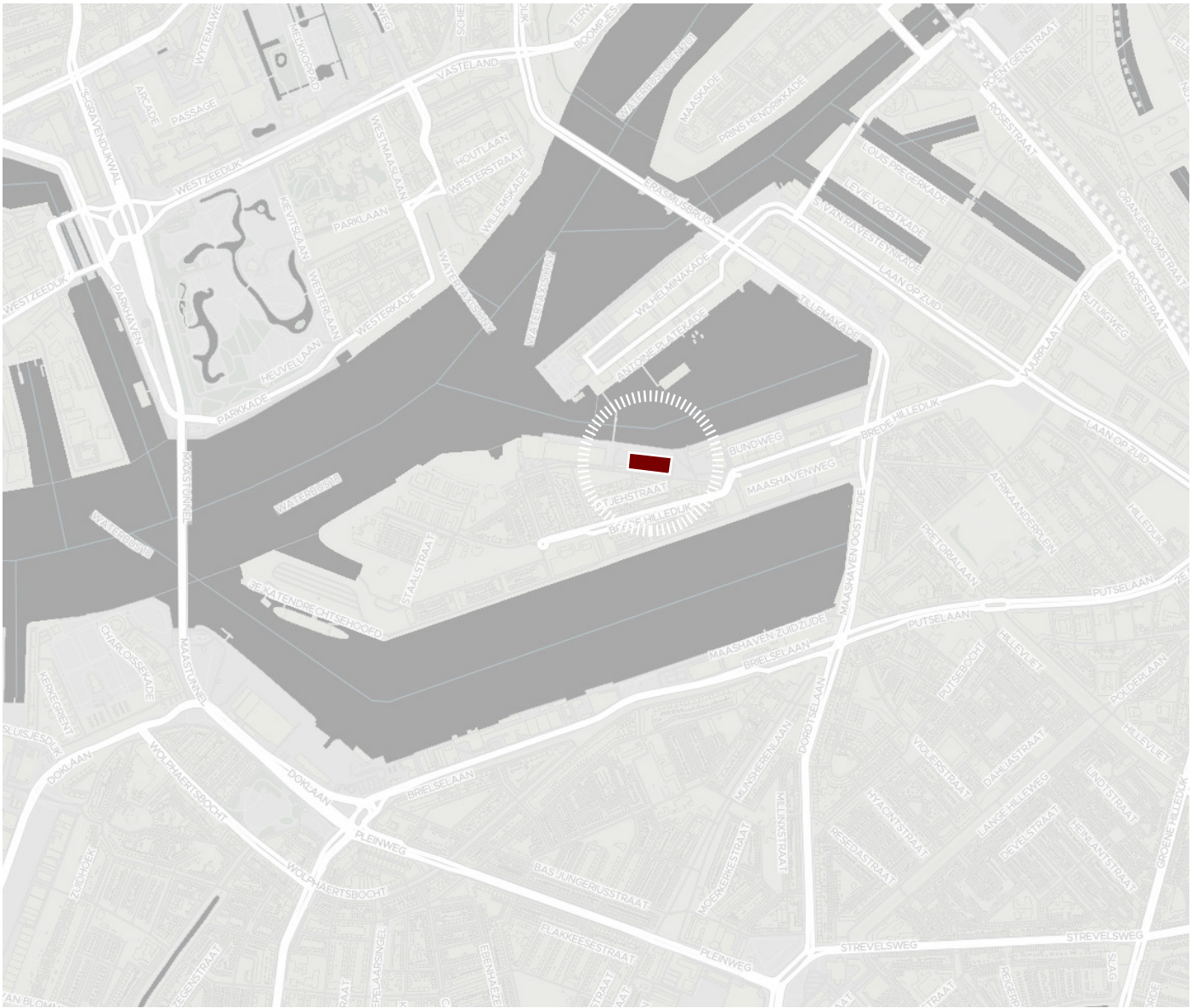
Intervention

Program: Housing, cultural facilities, parking, culinary, commercial programm
GFA: $\pm 45.000 \text{ m}^2$
Type of intervention: Renovation of existing warehouse + new construction on top
Public/private: Mixed: public plinth, semi-public cultural cluster, private residential

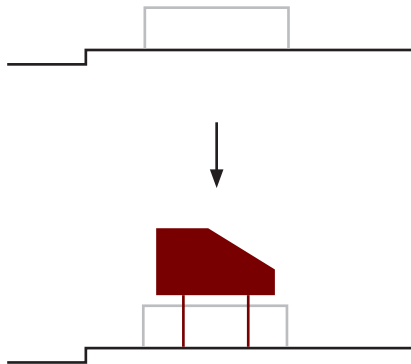


The Fenix warehouse was built in 1922 for the Holland America Line and has been redeveloped by Mei Architects into a mixed-use building combining housing, culture, and a culinary programme. The project is organised into three main parts: the existing warehouse, an interstitial steel space-frame structure built through the original building, and a newly completed residential volume above containing 212 loft apartments on nine floors. The design principle was to merge old and new rather than create contrast, with the building's height stepping down from ten layers on the Rijnhaven side to six on the Katendrecht side to respond to the surrounding urban fabric (Fenix I - Mei Architects And Planners, 2023).

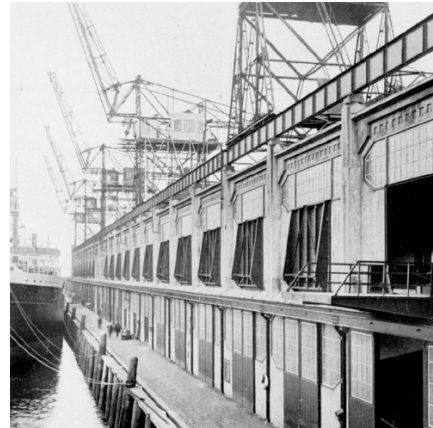
Situation



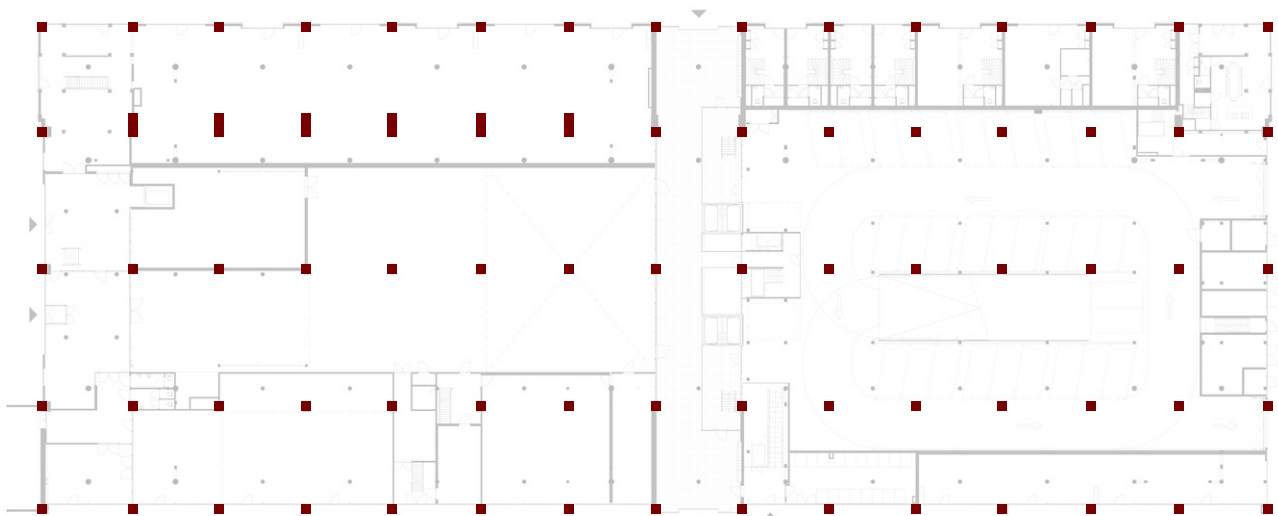
■ Intervention type



The Fenix warehouse



■ Structural grid



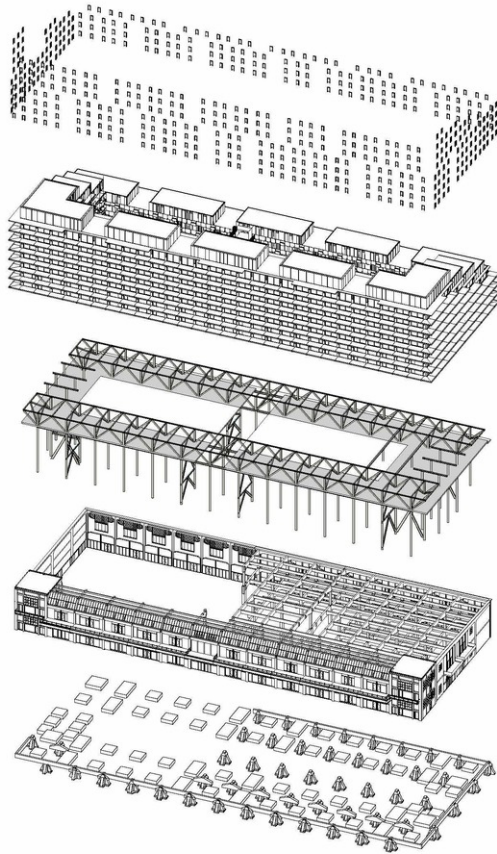
■ Mixed use program



■ Connection passage - optopping



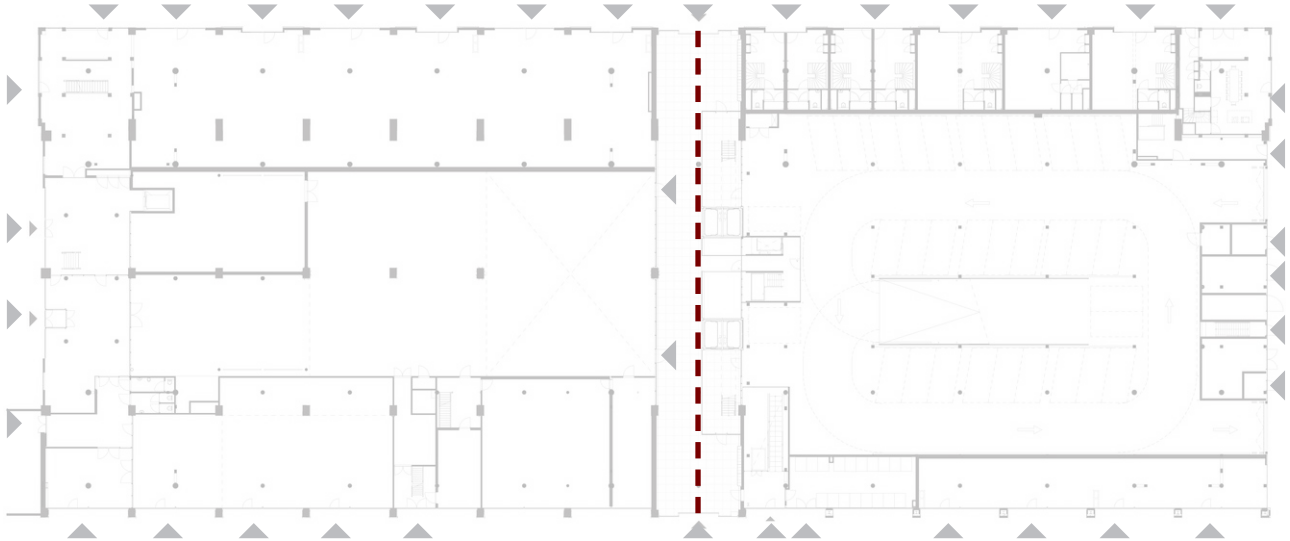
Construction principle



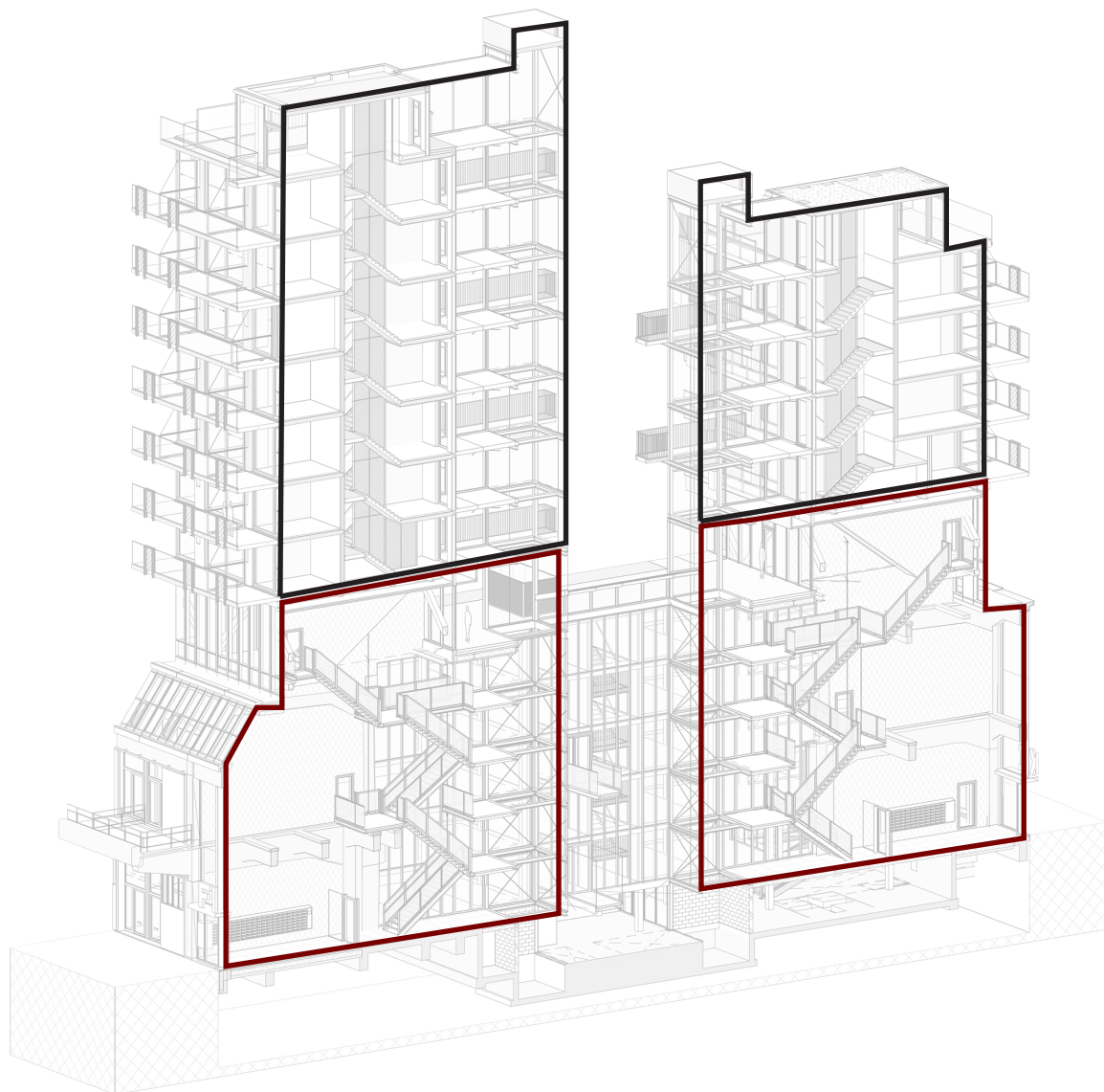
Passage / Public space



■ Circulation / Plinth strategy



■ ■ Public / private



Construction of Fenixloodsen



II De hallen

Project Information

Location: Amsterdam West [The Netherlands]
Architect: Architectenbureau J. van Stigt bv
Client: Stichting TROM
Year of completion: 2015

Building Information

Original function: Tram depot (GVB)
Year of construction: 1901-1928
Heritage status: National monument
Construction system: Brick walls, steel roof structure

Intervention

Program: Cinema, TV studios, library, hotel, food market, restaurant, craft centre, day care, gallery, retail
GFA: $\pm 22.000 \text{ m}^2$
Type of intervention: Renovation and restoration
Public/private: Predominantly public

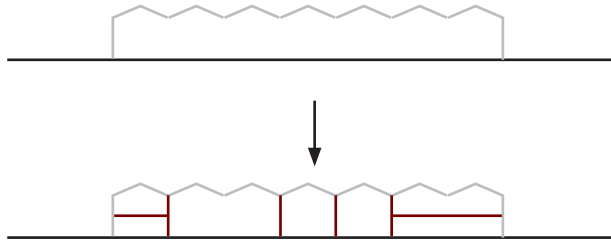


De Hallen represents the transformation of a tram depot, over a hundred years old, into a centre for culture, media and crafts. The complex was the domain of the Amsterdam municipal transport company GVB until 1996, where trams and buses were maintained and repaired. When architect Van Stigt encountered the building, he immediately recognised its potential: robust and industrial, historic and striking, with beautiful details. With the neighbourhood as a sounding board, a centre for media, culture, fashion and crafts was developed. The former traverse passageway was transformed into De Passage, a public route connecting the streets on both sides of the complex (Edittio, z.d.).

Situation



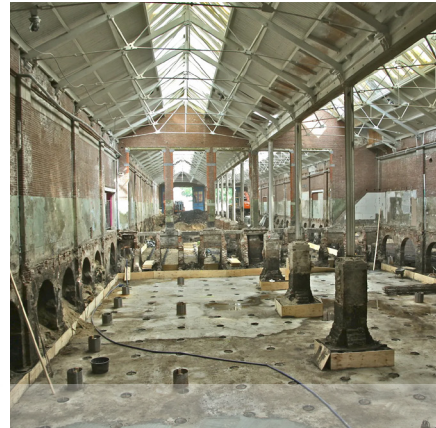
■ Intervention type



■ Structural grid



Using existing construction



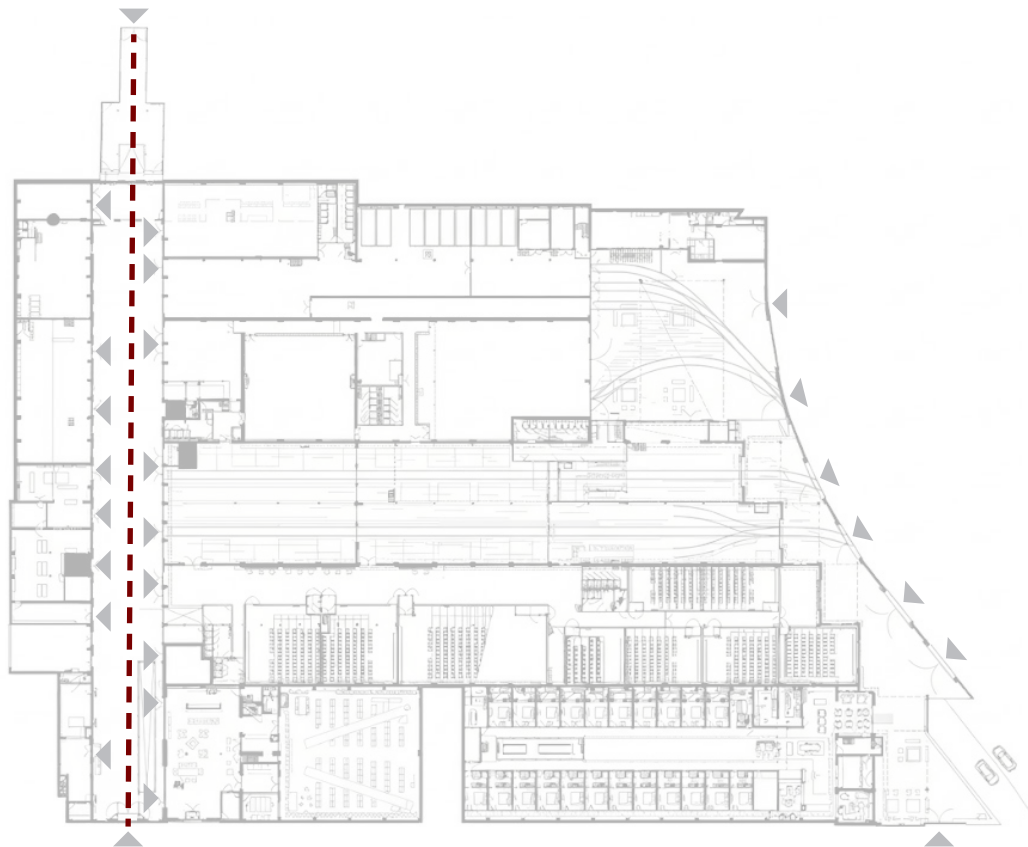
■ Mixed use program



■ Mixed use program



■ Circulation / Passage



■ Circulation / Passage



Library



Passage



Cinema



III The Silo

Project Information

Location: Nordhavn, Copenhagen [Denmark]
Architect: COBE
Client: Klaus Kastbjerg and NRE Denmark
Year of completion: 2017

Building Information

Original function: Grain silo (DLG)
Year of construction: c. 1963
Heritage status: -
Construction system: Concrete structure

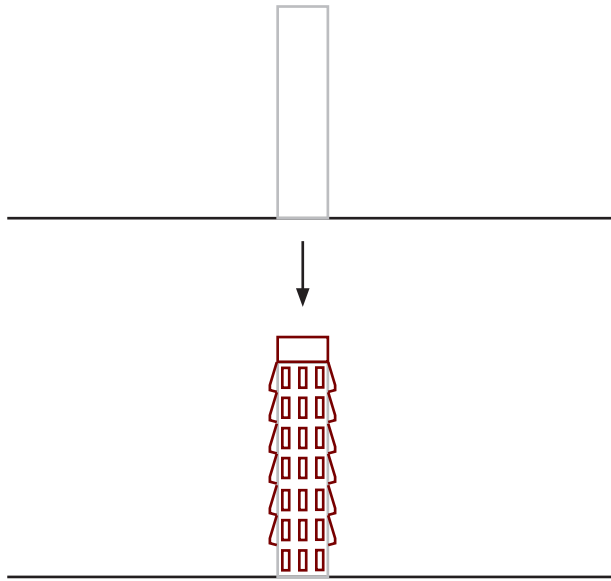
Intervention

Program: Residential apartments, rooftop restaurant, public event space
GFA: $\pm 10.000 \text{ m}^2$
Type of intervention: Renovation with new facade
Public/private: Mixed: private residential, public top and ground floor



For 50 years, the DLG Silo in Copenhagen's Nordhavn was used as an industrial storage container for grain. After the building was decommissioned, it was gradually taken over by birds, mice and graffiti artists before COBE established a collaboration with a developer who recognised its unique potential. The concrete facade was reclad in galvanized steel to maintain the structure's shape, while the interior was preserved as raw and untouched as possible. The concrete spaces were transformed into 38 unique apartments ranging from 106 m^2 to 401 m^2 , with ceiling heights up to 7 metres. The top of the building is designed as a generous public restaurant and viewing platform (The Silo – Cobe, z.d.).

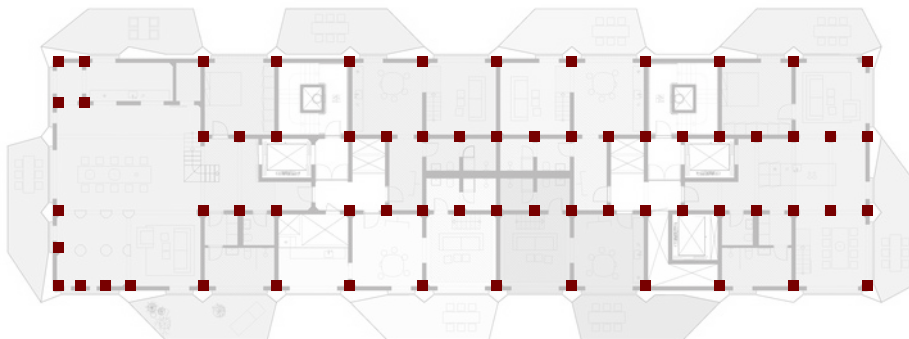
■ Intervention type



Concrete structure of DLG Silo

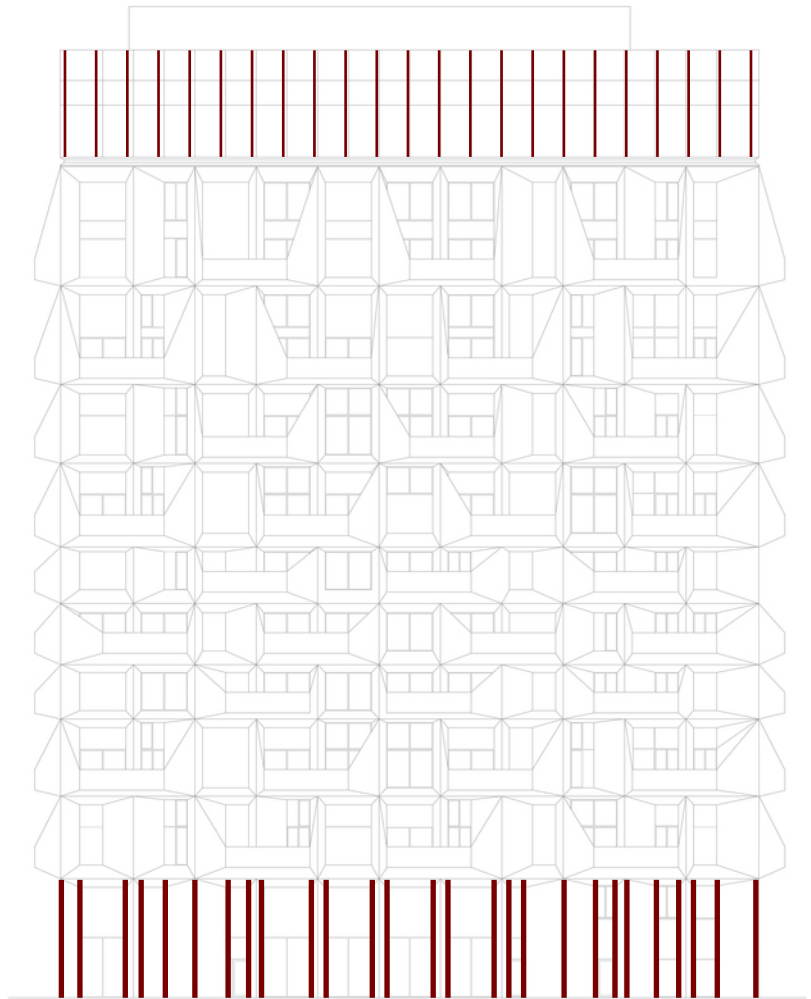
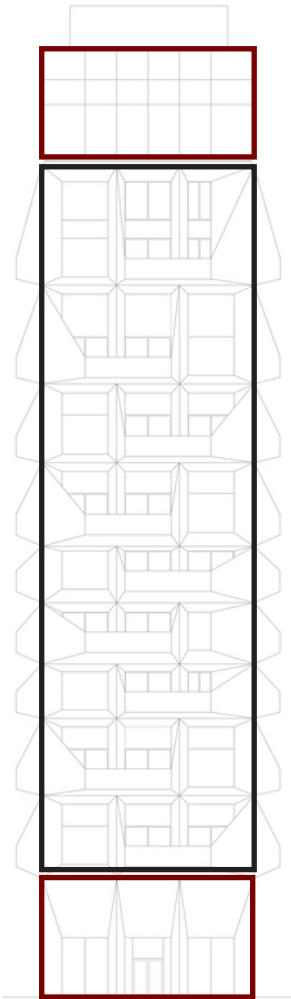


■ Structural grid

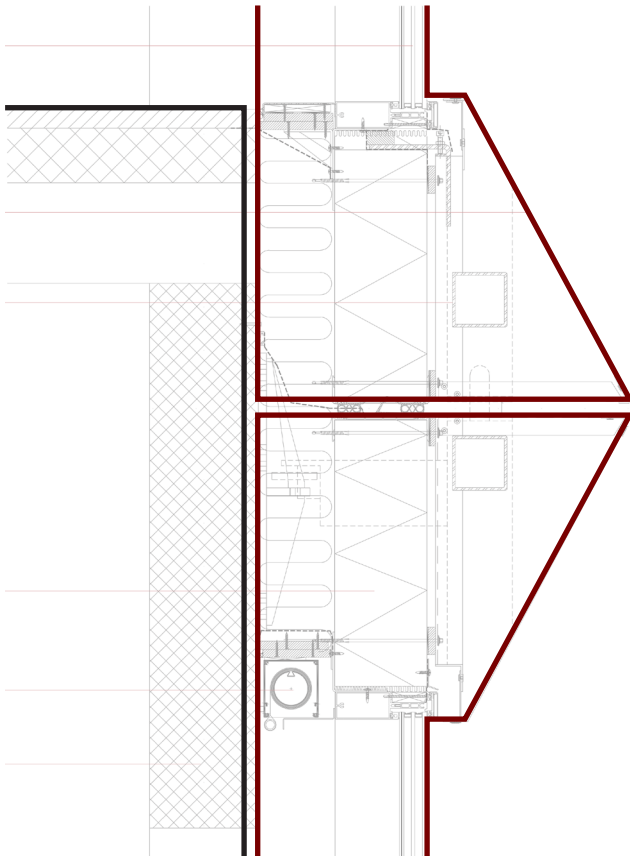


■ ■ Public / private

■ Plinth system (rythm)



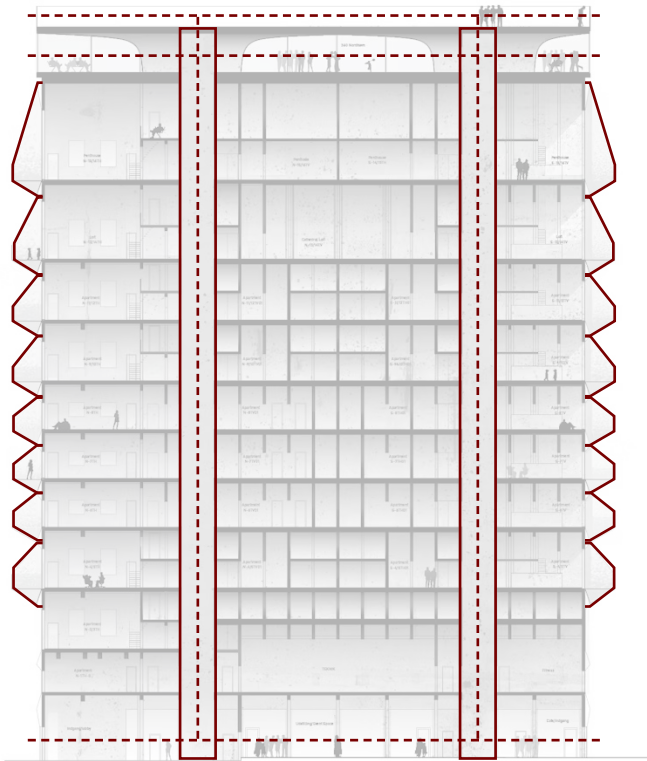
■ Facade system



Modular facade elements



■ Vertical circulation / interaction



Public space on roof next to project



IV Raugyklos Street Warehouse

Project Information

Location: Raugyklos, Vilnius [Lithuania]

Architect: DO Architects

Client: -

Year of completion: 2018

Building Information

Original function: Warehouse

Year of construction: -

Heritage status: -

Construction system: Brick walls with steel beams and concrete floors

Intervention

Program: Residential apartments, architects' studio

GFA: $\pm 2.400 \text{ m}^2$

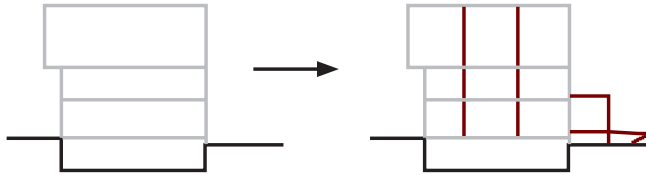
Type of intervention: Renovation and conversion

Public/private: Mixed: private residential, semi-public ground floor



In the Station neighbourhood of Vilnius, a former deprived warehouse was transformed into an apartment building with an architects' studio on the ground floor. The project became an example of how low-value architecture can be transformed and inspire the revitalisation of a street. The existing load-bearing structures were restored, while wood and glass were used for the new facades. The conversion preserved large steel beams, concrete ceilings and exposed ductwork in the interiors, creating an industrial character that honours the building's history (Ott, 2024).

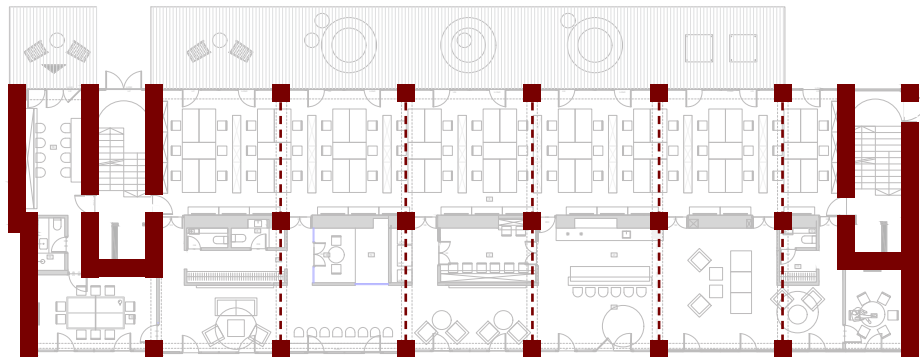
■ Intervention type



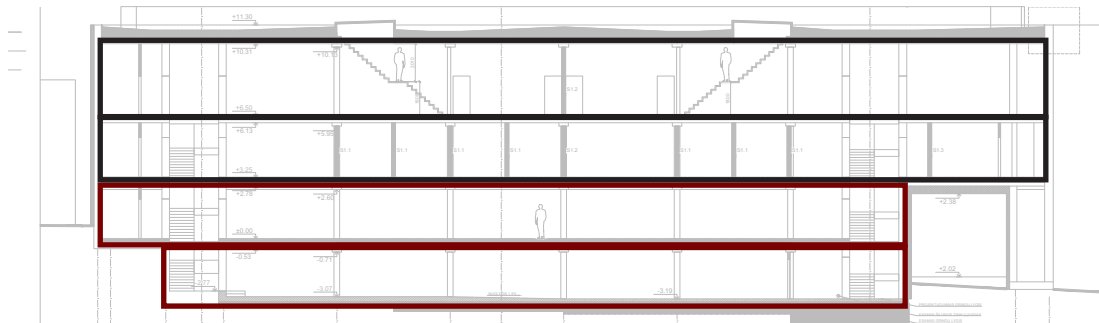
Existing warehouse



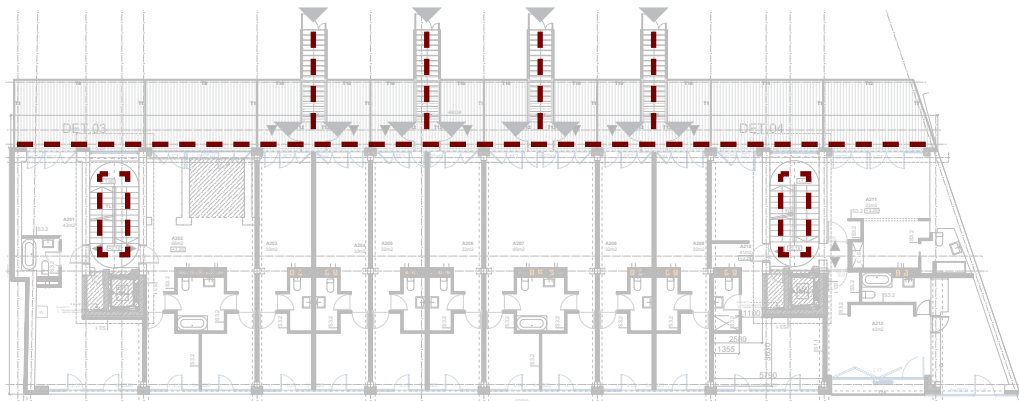
■ Structural grid



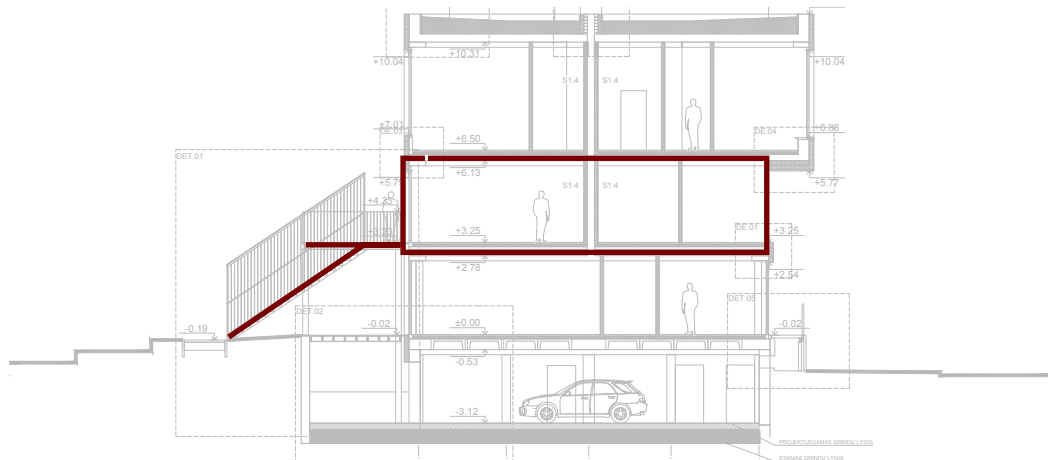
■ ■ Public / private



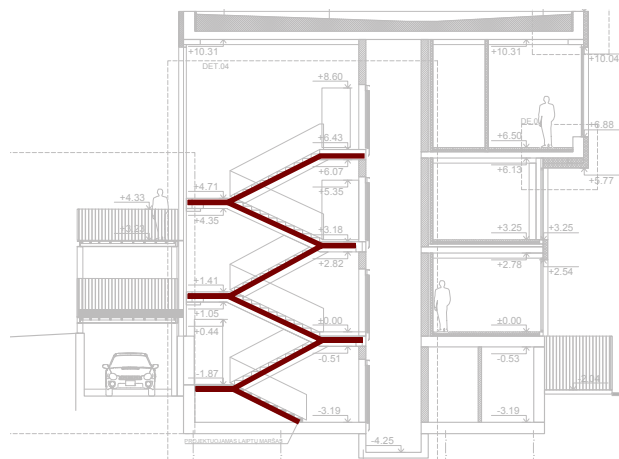
■ Circulation / interaction



■ Added external circulation



■ Existing internal circulation



External circulation as separation of public and private



V Chesterton Square

Project Information

Location: Pembroke Road, London [United Kingdom]
Architect: Arup Associates
Client: Royal Borough of Kensington and Chelsea
Year of completion: 1976

Building Information

Original function: Municipal council depot
Year of construction: early 20th century
Heritage status: -
Construction system: Reinforced concrete frame

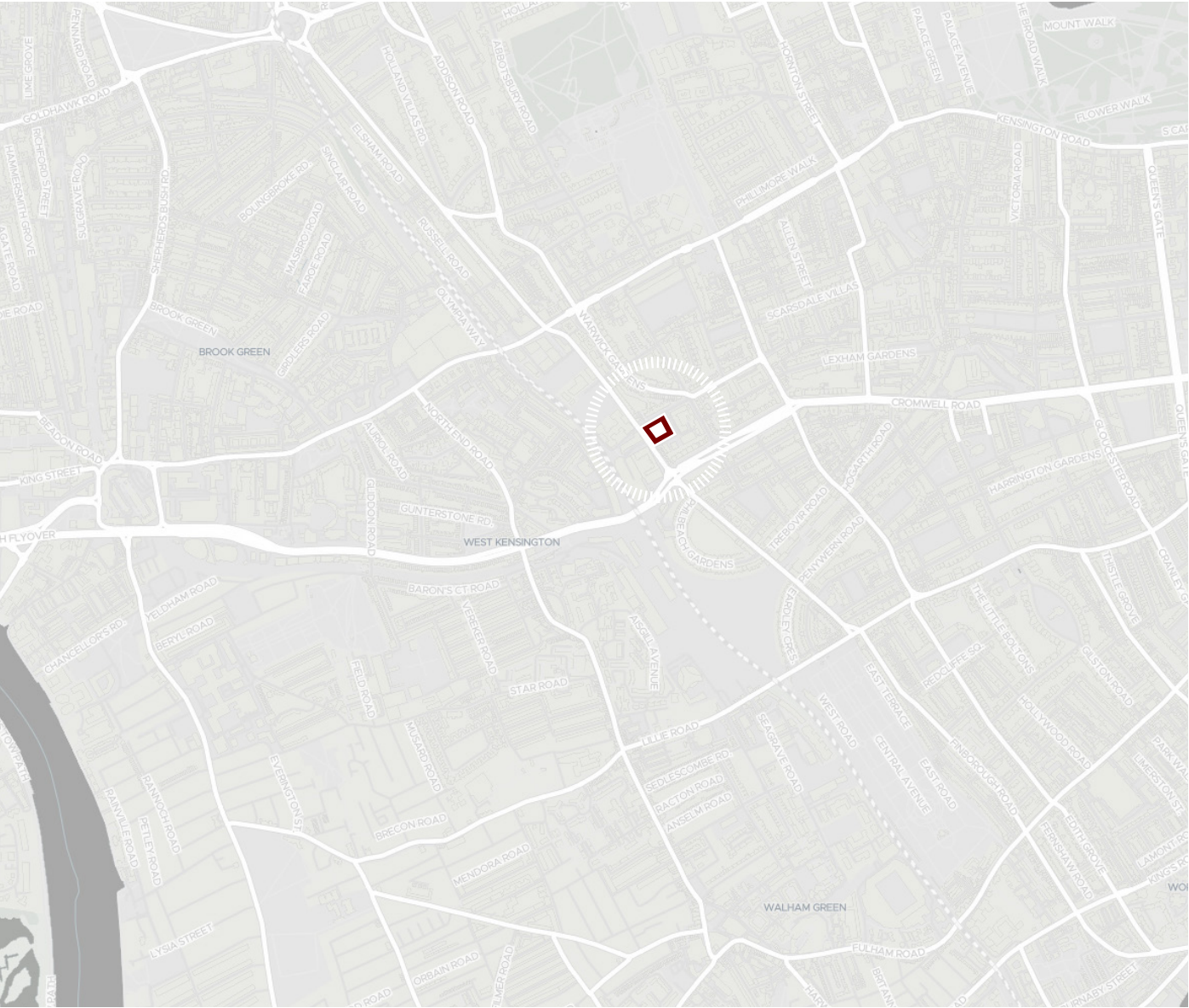
Intervention

Program: Social housing, landscaped garden square
GFA: $\pm 16.000 \text{ m}^2$
Type of intervention: Optopping
Public/private: Mixed: operational depot below, social housing above

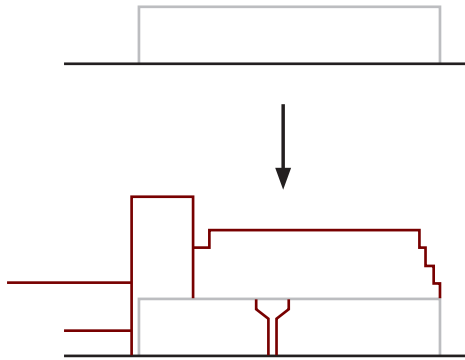


Arup Associates were appointed to prepare a scheme that would combine the borough's new central depot with housing accommodation. The depot was completed in 1975 and the associated housing in the following year. The southern block contains a vast transport workshop, its roof supported by a massive central column and sixteen radiating beams, this roof in turn forms the base of a paved and landscaped garden square, named Chesterton Square. The two-part complex on the north and south sides of Pembroke Road carries terraced housing blocks on top, joined by a walkway over the road, and were sometimes referred to as "gardens in the sky" (The Edwardes Estate: Warwick Road (North) And West Cromwell Road | British History Online, z.d.).

Situation



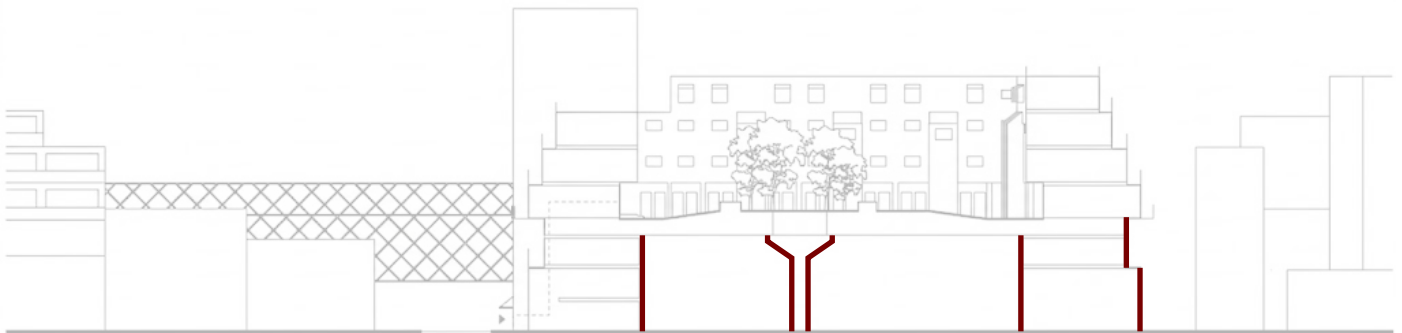
■ Intervention type



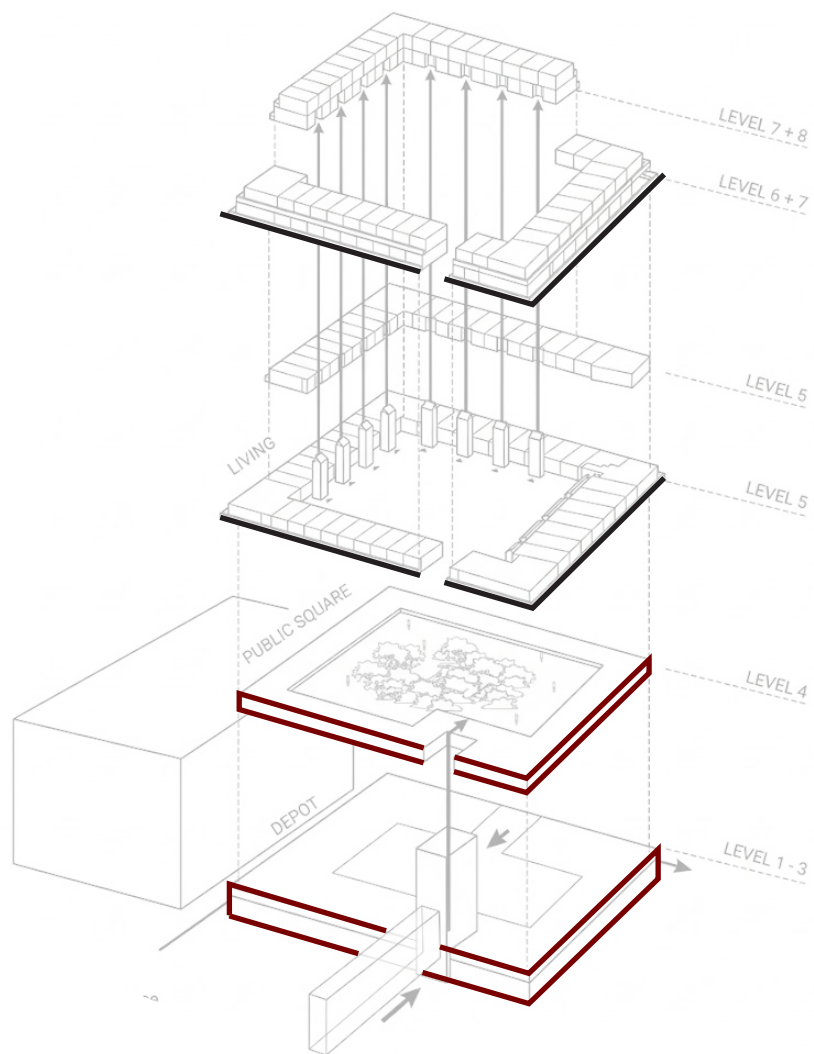
Housing units



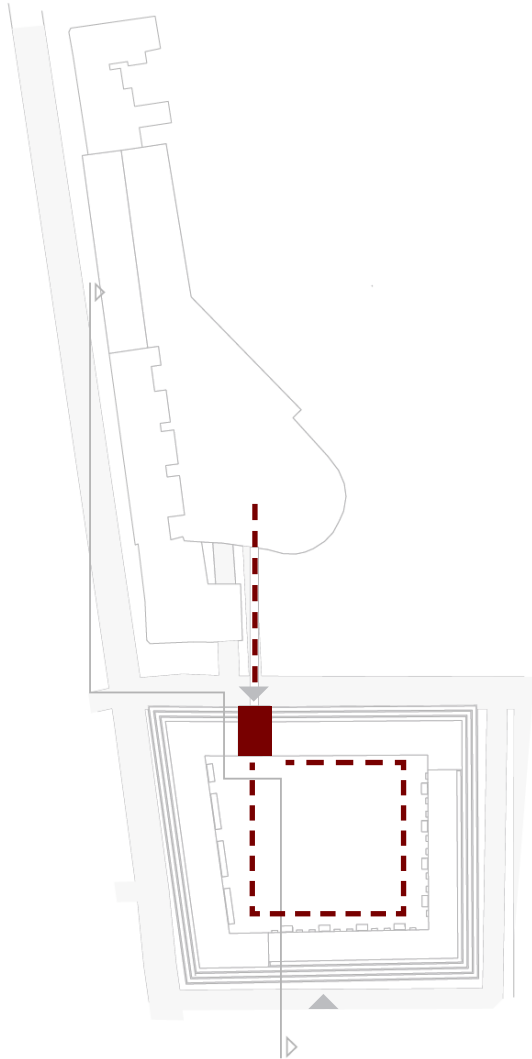
■ Structural system



■ ■ Public / private



■ Circulation



Walk bridge



1/2 entrances from street



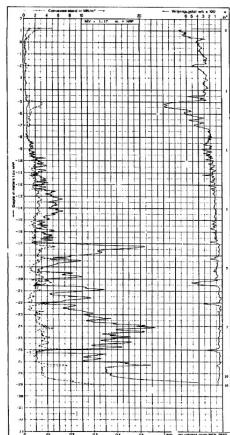
Landscaped public square on roof



Constructieve gegevens (op basis van verkregen archieftekeningen)

- Gebouwjaar: 1989
- Kolomgrid: **$7,2 \times 14,4$ m**
- Invloedsoppervlak per kolom: $7,2 \times 14,4 = 103,68 \text{ m}^2$
- 4 prefab voorgespannen betonpalen per kolom
- Paalafmeting: **320×320 mm**
- Paallengte: **25 m**
- Oorspronkelijke ontwerpbelasting: **400 kN per paal**
- Poerbalk: **1400×800 mm**
- Funderingsbalk tussen kolommen: **400×700 mm**

Bodemopbouw (op basis sonderingsgrafiek)



Figuur 1: Sonderingsgrafiek (CPT)

Diepte (m -NAP)	qc (MPa)	Interpretatie
0 – 8 m	0–2 MPa	zeer slap (klei/veen)
8 – 16 m	2–5 MPa	matig zand / overgangen
16 – 21 m	5–10 MPa	matig tot goed zand
21 – 26 m	10–18 MPa	dicht zand
> 26 m	15–20 MPa	zeer dicht zand

Duidelijke draagkrachtige zandlaag vanaf ca. 21 m.

Puntweerstand $R_{b,k}$

Invloedzone volgens NL-methode:
1D boven punt + 4D onder punt

Gemiddelde conusweerstand uit CPT: $q_{c,avg} = 16 \text{ MPa}$

Puntoppervlak: $A_b = 0,32 \times 0,32 = 0,1024 \text{ m}^2$

Reductiefactor prefab paal in zand:

$$\begin{aligned}\alpha_b &= 0,7 \\ R_{b,k} &= A_b \cdot \alpha_b \cdot q_{c,avg} \\ R_{b,k} &= 0,1024 \times 0,7 \times 16.000 \\ R_{b,k} &= 1.147 \text{ kN}\end{aligned}$$

Schachtweerstand $R_{s,k}$

Effectieve zandlaag: 16 – 25 m $\rightarrow$ 9 m

Omtrek paal: $u = 4 \times 0,32 = 1,28 \text{ m}$

Gemiddelde qc in zandzone: $q_{c,avg} = 10 \text{ MPa}$

Schachtfactor:

$$\begin{aligned}\alpha_s &= 0,02 \\ R_{s,k} &= u \cdot L \cdot \alpha_s \cdot q_c \\ R_{s,k} &= 1,28 \times 9 \times 0,02 \times 10.000 \\ R_{s,k} &= 2.304 \text{ kN}\end{aligned}$$

Conservatieve reductie 35% (groepseffect / installatieschade):

$$R_{s,k,eff} = 1.500 \text{ kN}$$

Totale karakteristieke paalweerstand

$$\begin{aligned}R_k &= R_{b,k} + R_{s,k,eff} \\ R_k &= 1.147 + 1.500 \\ R_k &\approx 2.650 \text{ kN}\end{aligned}$$

Geotechnische UGT-toets (NEN-EN 1997)

Voor paalcapaciteit geldt: $R_d = \frac{R_k}{\gamma_R}$

Met typisch: $\gamma_R = 1,4$

$$R_k = 2650 \text{ kN}$$

$$R_d = 2650 / 1,4 = 1.890 \text{ kN}$$

Bestaande funderingsbelasting

- Kolomlast oorspronkelijk: $4 \times 400 = 1600 \text{ kN}$
- Equivalent vloerbelasting: $1600 / 103,68 = 15,4 \text{ kN/m}^2$

De fundering is dus ontworpen voor een equivalente belasting van ca. **15 kN/m²**

Nieuwe optopping (belastingaannames)

Component	Belasting
Eigen gewicht (Gk,1)	3,5 kN/m ²
Scheidingswanden/installaties (Gk,2)	1,0 kN/m ²
Veranderlijk wonen (Qk)	2,0 kN/m ²
Totaal per laag	6,5 kN/m²

Permanent per laag: $G_k = 4,5 \text{ kN/m}^2$

Variabel: $Q_k = 2,0 \text{ kN/m}^2$

UGT-combinatie (NEN-EN 1990)

Fundamentele combinatie: $\gamma_G G_k + \gamma_Q Q_k$

Met: $\gamma_G = 1,35$ en $\gamma_Q = 1,5$

UGT-belasting per laag $1,35 \times 4,5 + 1,5 \times 2,0 = 6,075 + 3,0 = 9,075 \text{ kN/m}^2$

Ontwerpwaarde per laag = **9,1 kN/m²**

UGT-belasting optopping

Scenario A (3 lagen)

Totale toevoeging: $3 \times 9,075 = 27,225 \text{ kN/m}^2$

Kolombelasting: $27,225 \times 103,68 = 2.822 \text{ kN}$

Per paal: $2.822/4 = 705 \text{ kN}$

Totale ontwerpbelasting paal: $400 + 705 = \mathbf{1.105 \text{ kN}}$

Scenario B (4 lagen)

Totale toevoeging: $4 \times 9,075 = 36,3 \text{ kN/m}^2$

Kolombelasting: $36,3 \times 103,68 = 3.765 \text{ kN}$

Per paal: $3.765/4 = 941 \text{ kN}$

Totale ontwerpbelasting paal: $400 + 941 = \mathbf{1.341 \text{ kN}}$

Vergelijking UGT

Scenario	N_Ed	R_d	Resultaat
3 lagen	1.105 kN	1.890 kN	Ruim veilig
4 lagen	1.341 kN	1.890 kN	Technisch haalbaar

Negatieve kleeftoevoegen

Negatieve kleeftoevoeging is extra neerwaartse belasting door zetting van bovenlagen.

Stel: **150 kN**

3 lagen: $1.105 + 150 = 1.255 \text{ kN}$

$1.255 < 1.890 \rightarrow \mathbf{Voldoet}$

4 lagen: $1.341 + 150 = 1.491 \text{ kN}$

$1.491 < 1.890 \rightarrow \mathbf{Voldoet}$

06D

SKETCHES

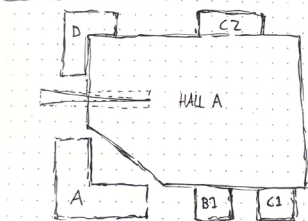
A1 - Individual project - Design phase - San Schuit - 95/0218

GRID

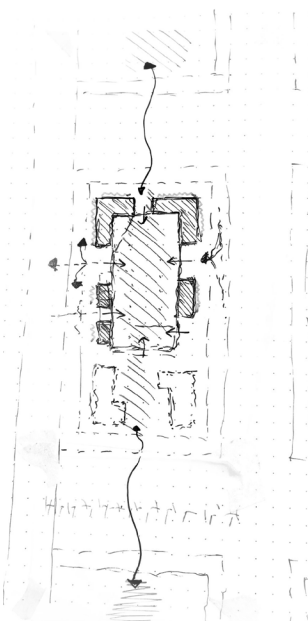
17 x 7200

16 x 7200

SCHEMATIC PLAN



SECTION



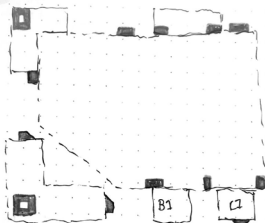
PARKING AND LEVEL.



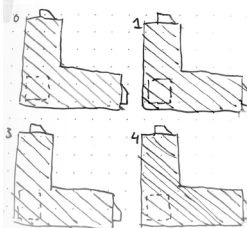
- Parkeren van +1 naar begane grond.
- HAL A gebruikt voor voorzieningen en parkeren.
- platte grond gebouwen D, B1, C1 en C2 voor voorzieningen.



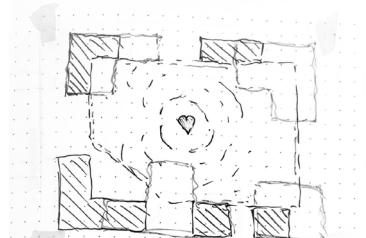
STAIRCASES



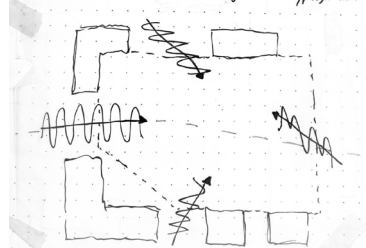
- Trappenhuisen zijn bij C1 en B1 in veelzijdige vormen en uitgewerkt in glas.
- Alle trappenhuisen zijn aan de buitenrand gericht.
- Noordzijde heeft twee buiten trappen.



- Gebouw laat zien hoe de functie gedeeltes zijn over de verdiepingen.

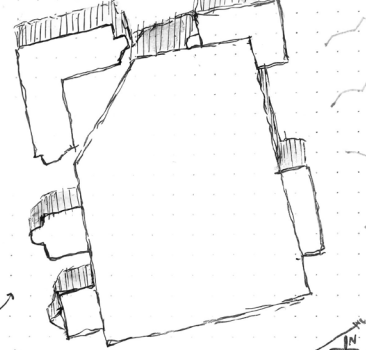


- Toegang gebouwen op 11 niveau. Stappen naar noordtoren.
- Gebruik van functies als maat voor de verschillende functies.
- Samen vormen: (platen lopen voor een meer schuifing.)
- Bestaande constructie zal als basis fungeren voor typologie en rit.



SSSSSS

- Geluidsbarrière van + Rotterdam The Hague.

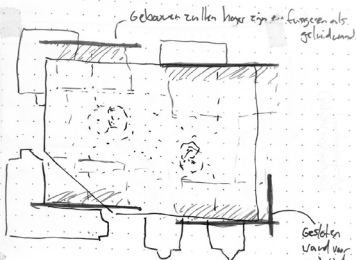


Stichting heeft een meer gebied voorzien.



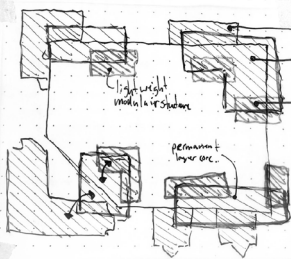
• Huid windrichting = Zuid Vesten.

- Adjusting to climate

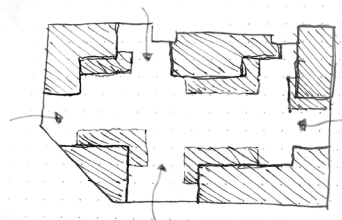


- Gestolen van de voor
Winkel
- eventueel
op een voor
verf. lichte.
- original gesloten
7200 x 7200
- probably the
same reasons.
(existing
building and
- new material
of 2nd.

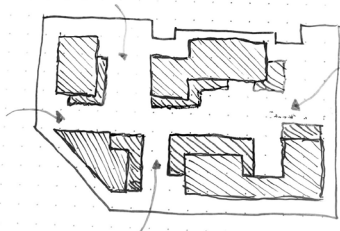
- Core building + Modular (light weight)



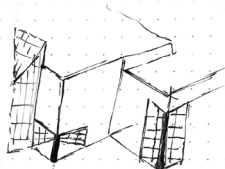
Concept 2: Ingebunden



Concept 3: lossband.

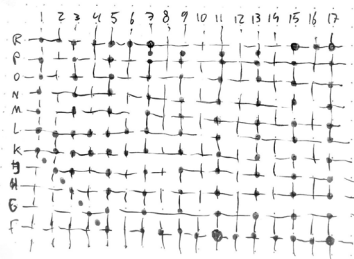


- Construction

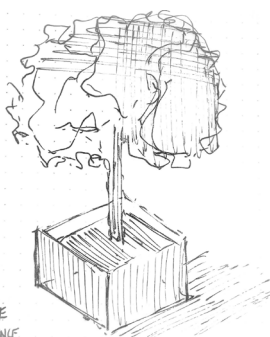


- Architectural (Construction visible)

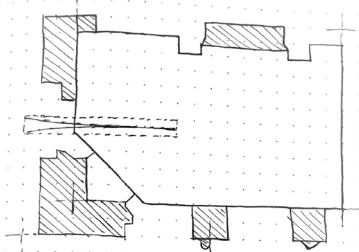
- constriction HAL A



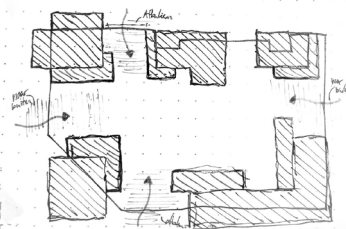
ADAPTABLE
PERMANENCE



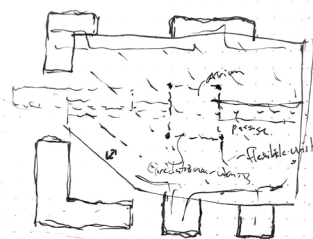
• Massenstudie



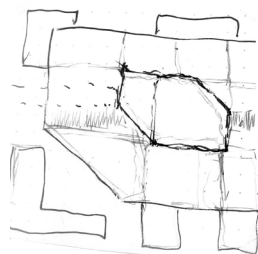
Concept 1: Quasistatic.



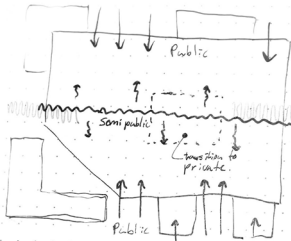
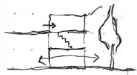
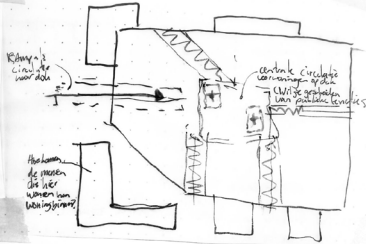
- CENTRALE PASSAGE (Atrium maakt verbinding met LH)



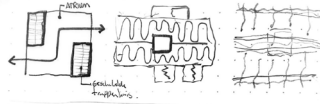
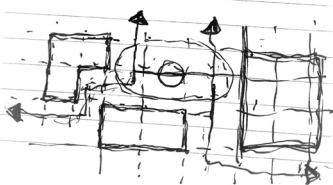
- o ~~probleem~~ CIRCULATIE naar
Lippen moet gescheiden
liggen van publieke functies
zoals Fenixlaarsen.



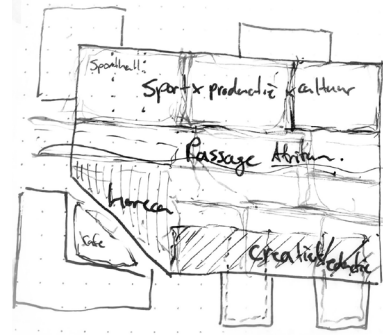
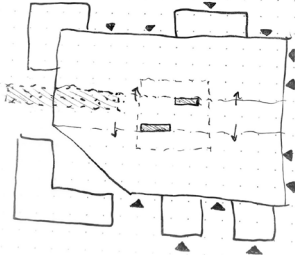
• Circulation



• Circulation

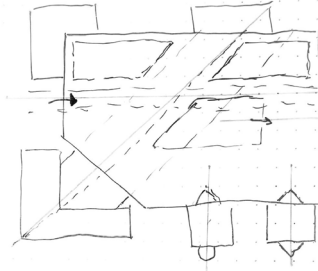
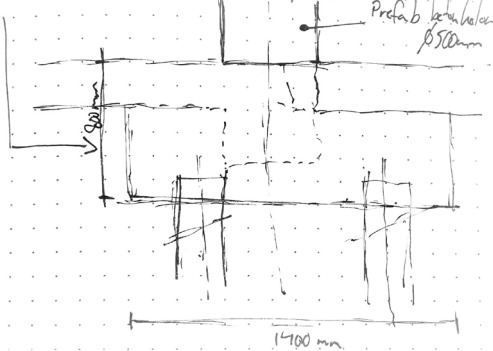


• Public → Semi public → private
 Passage for functions plus buffer en entree zone uit het semi publieke straat.



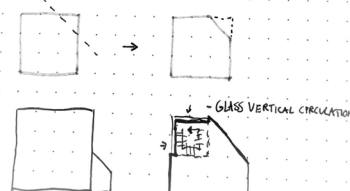
• brug / Kruisgang

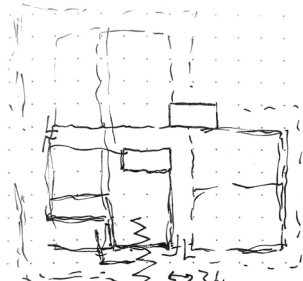
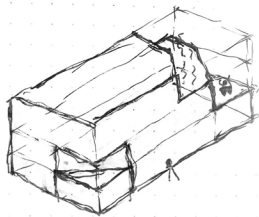
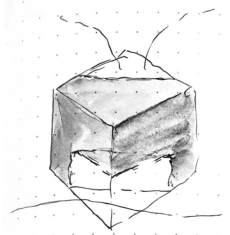
poesbalk : 1400 mm x 800 mm boven vloer



• Circulatie als hal / dorp

• Trappenhuis





↔ 30m
case study: zoeken naar dit is prima
werk met niet meer versterkingen
configuratie kan de hoeken creëren voor daglicht



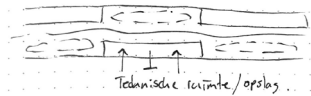
= voldoende



= niet voldoende



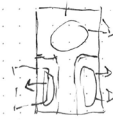
= voldoende



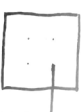
Technische ruimte/opslag



DECELLING principle



• Verticala circulatie

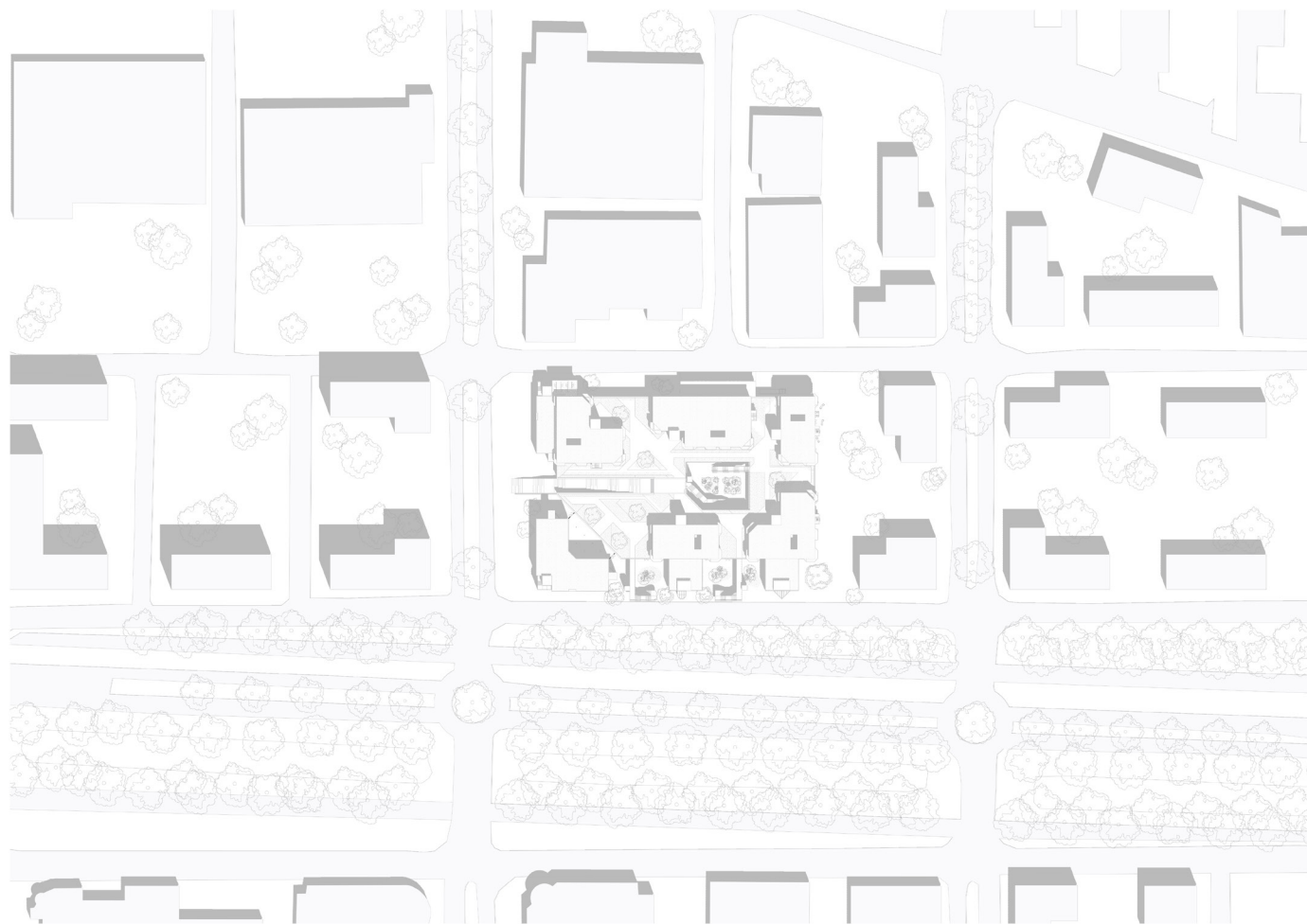


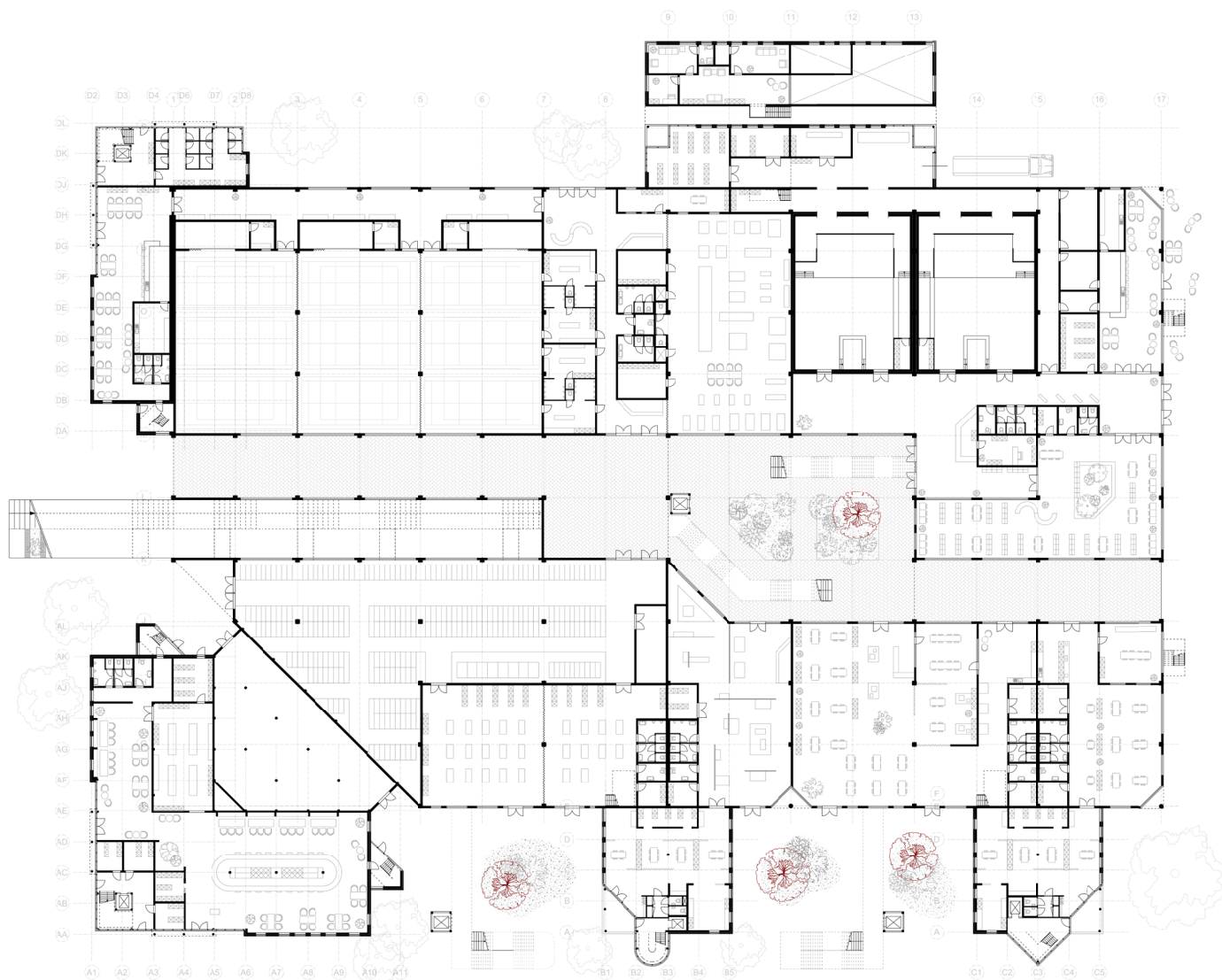
]- krijgen naar de punt last
misschien is een ander grid wel beter
voor het verdeken van de lasten

= optimaal, maar 7200mm is 400, groot grid.

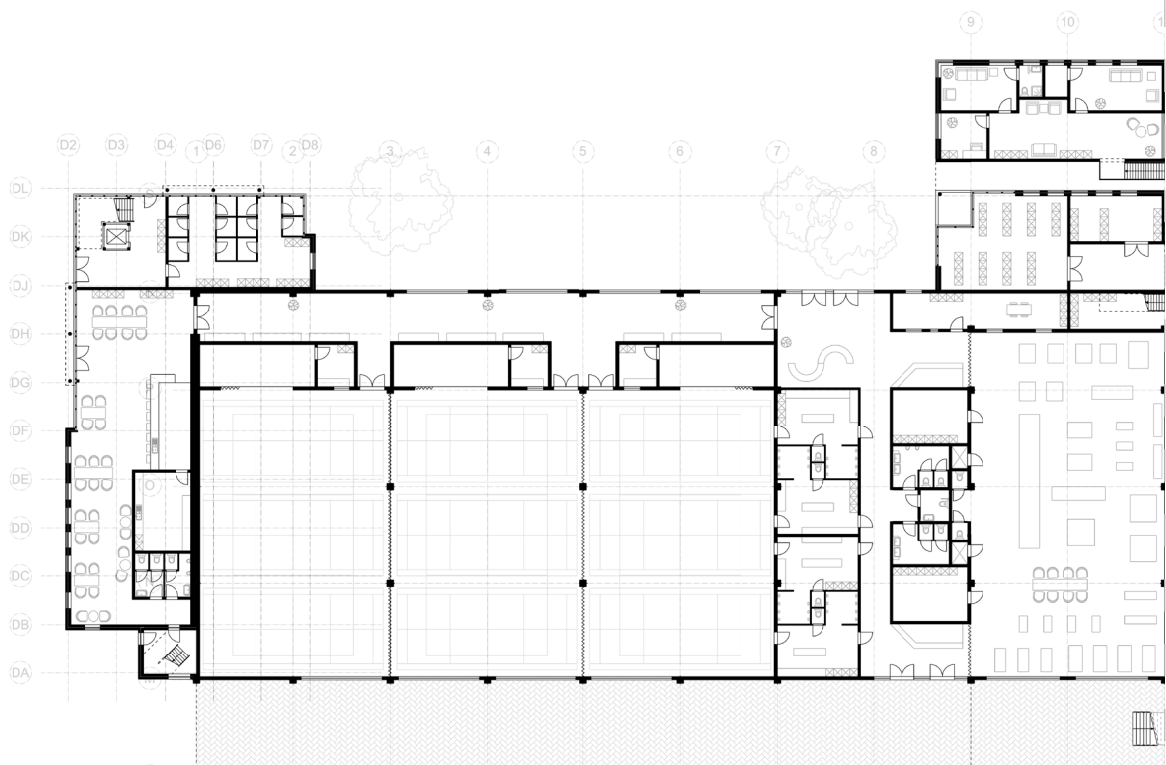
06E

DESIGN DRAWINGS

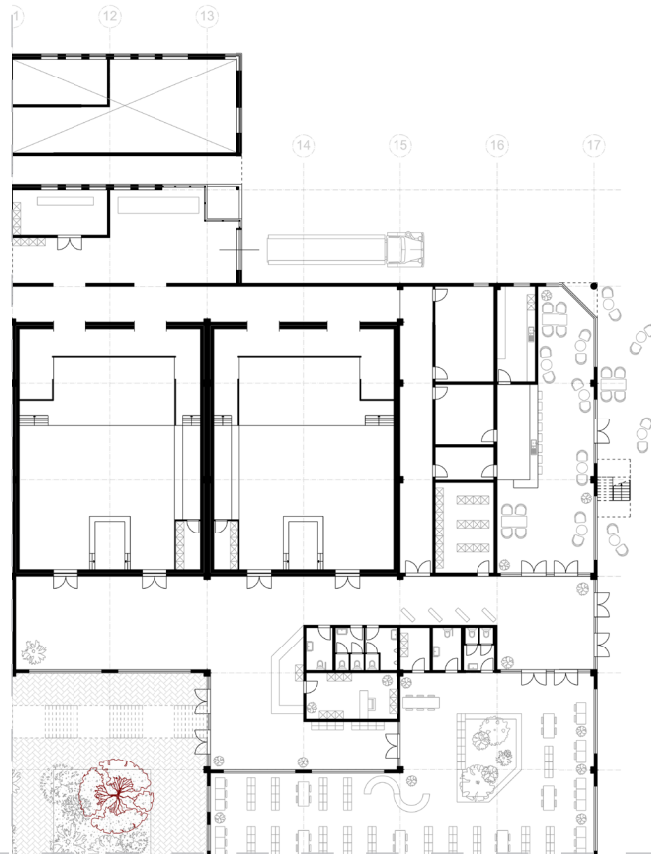




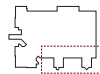
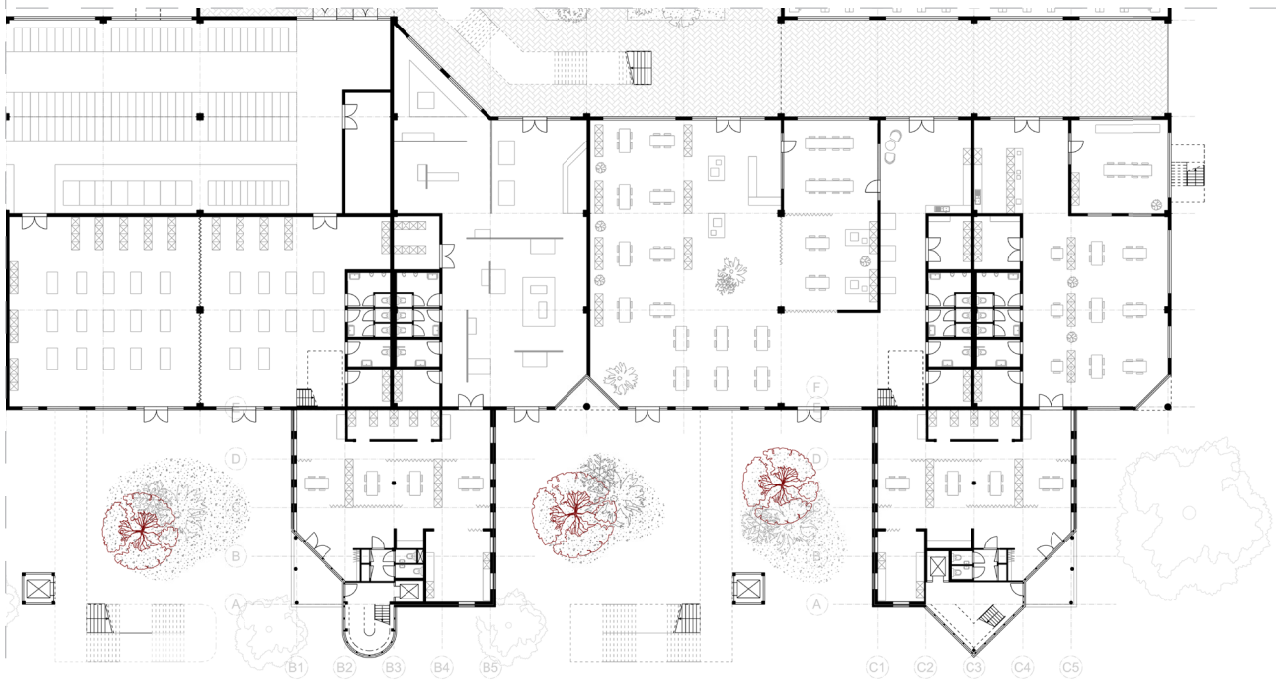
Program hall floorplan 1:200 (scaled)



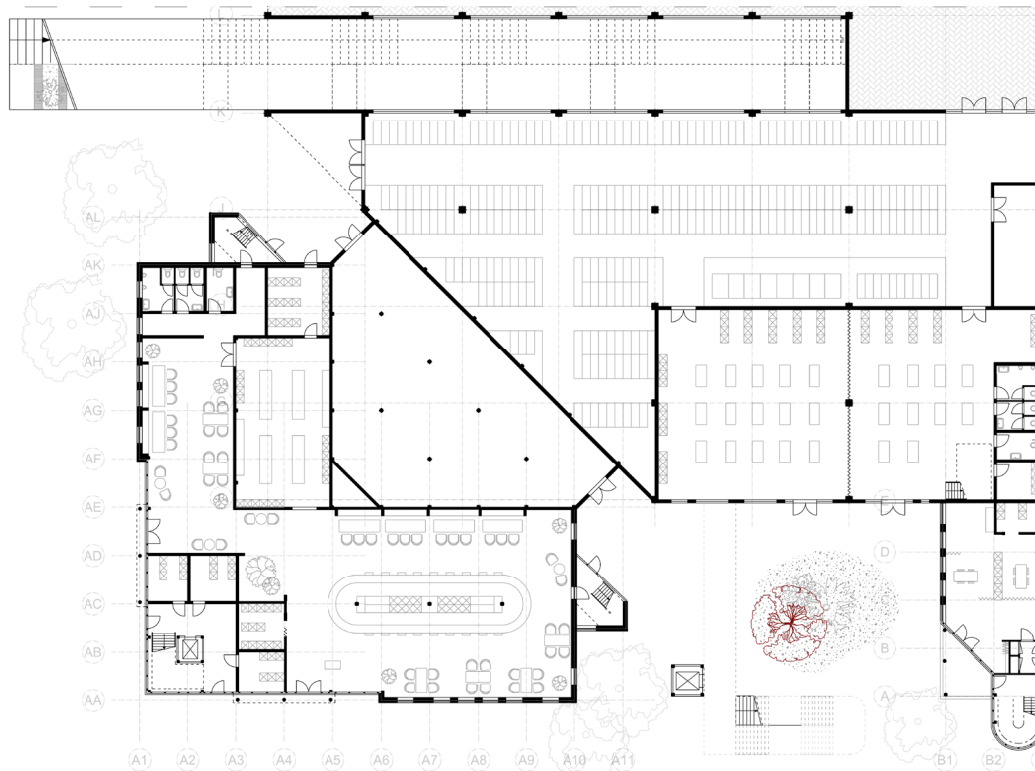
Sports Cluster floorplan 1:100 (scaled)



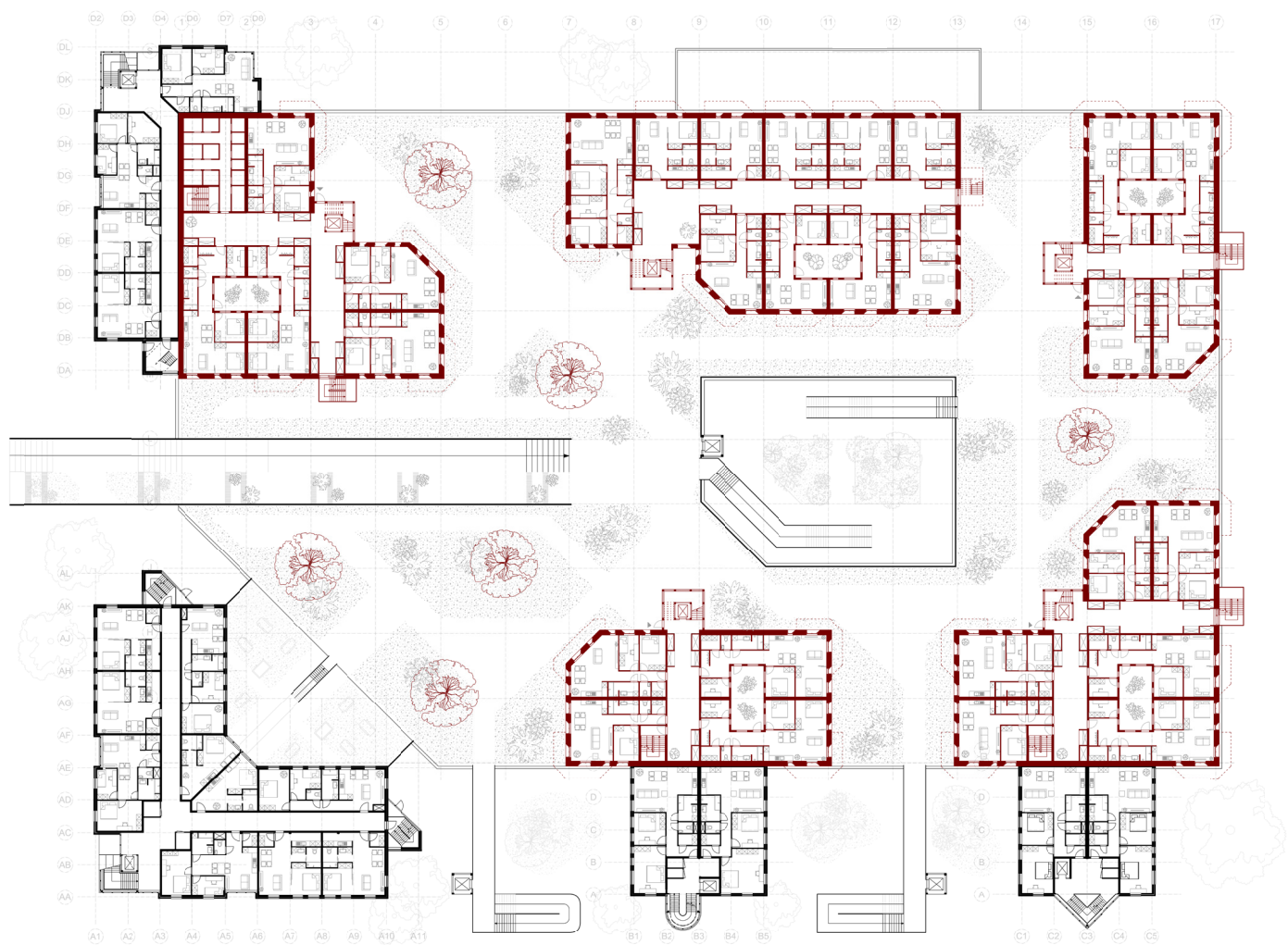
Culture Cluster floorplan 1:100 (scaled)



Creative Cluster floorplan 1:100 (scaled)



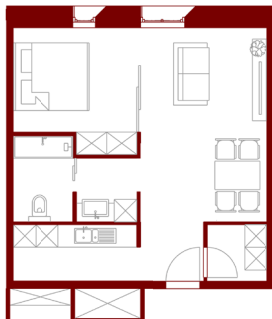
Culinary Cluster floorplan 1:100 (scaled)





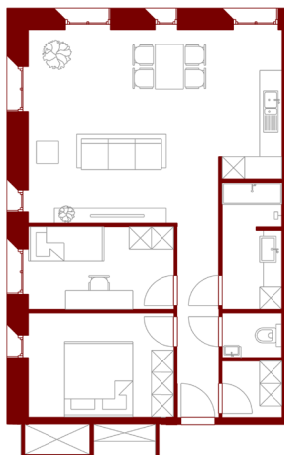
Apartment block floorplan 1:100 (scaled)

15X



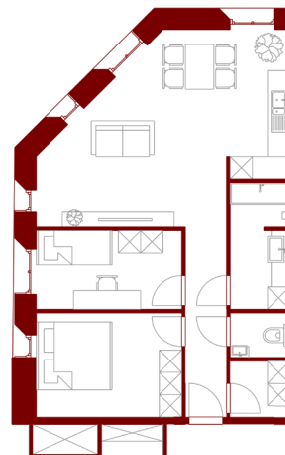
Compact Urban Studio 45m2

15X



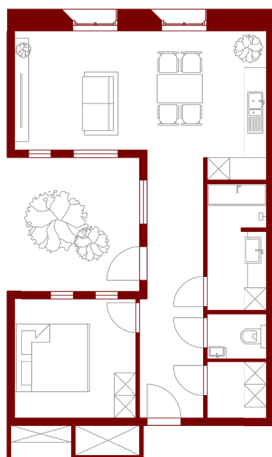
Standard City Apartment 70m2

15X



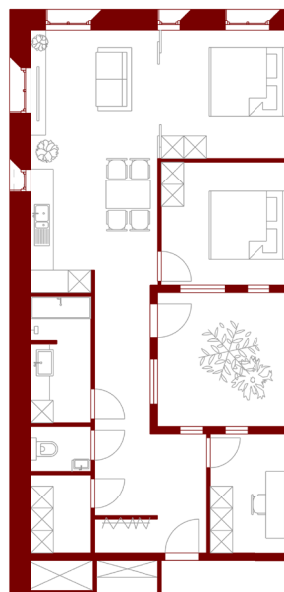
Corner Cut Apartment 65m2

15X



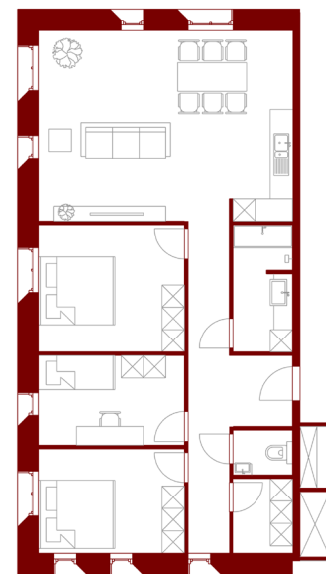
Patio Apartment 55m2

15X



Patio Family Apartment 80m2

15X



Spacious Family Apartment 95m2







Elevation North 1:200 (scaled)





Program hall section 1:200 (scaled)



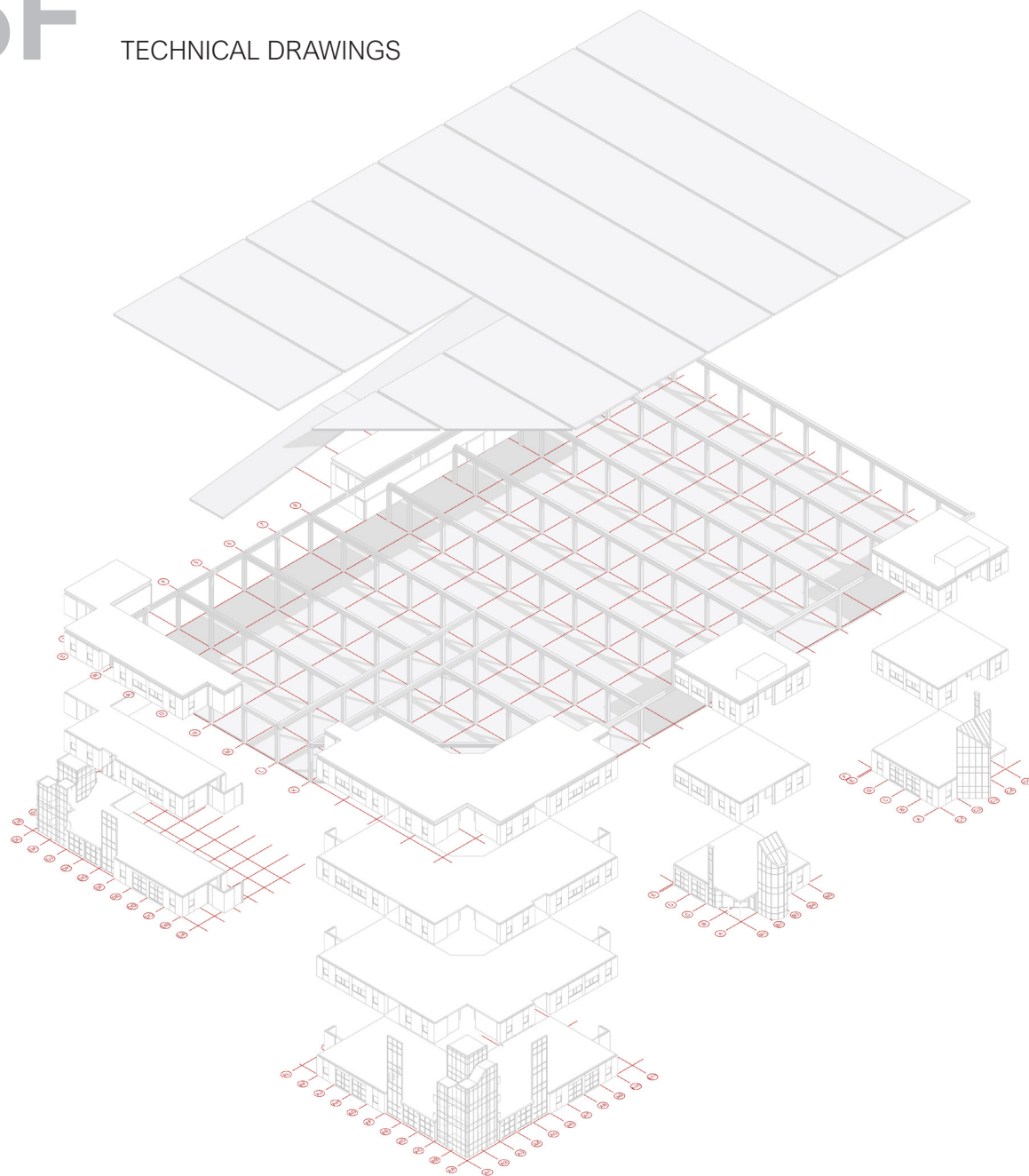


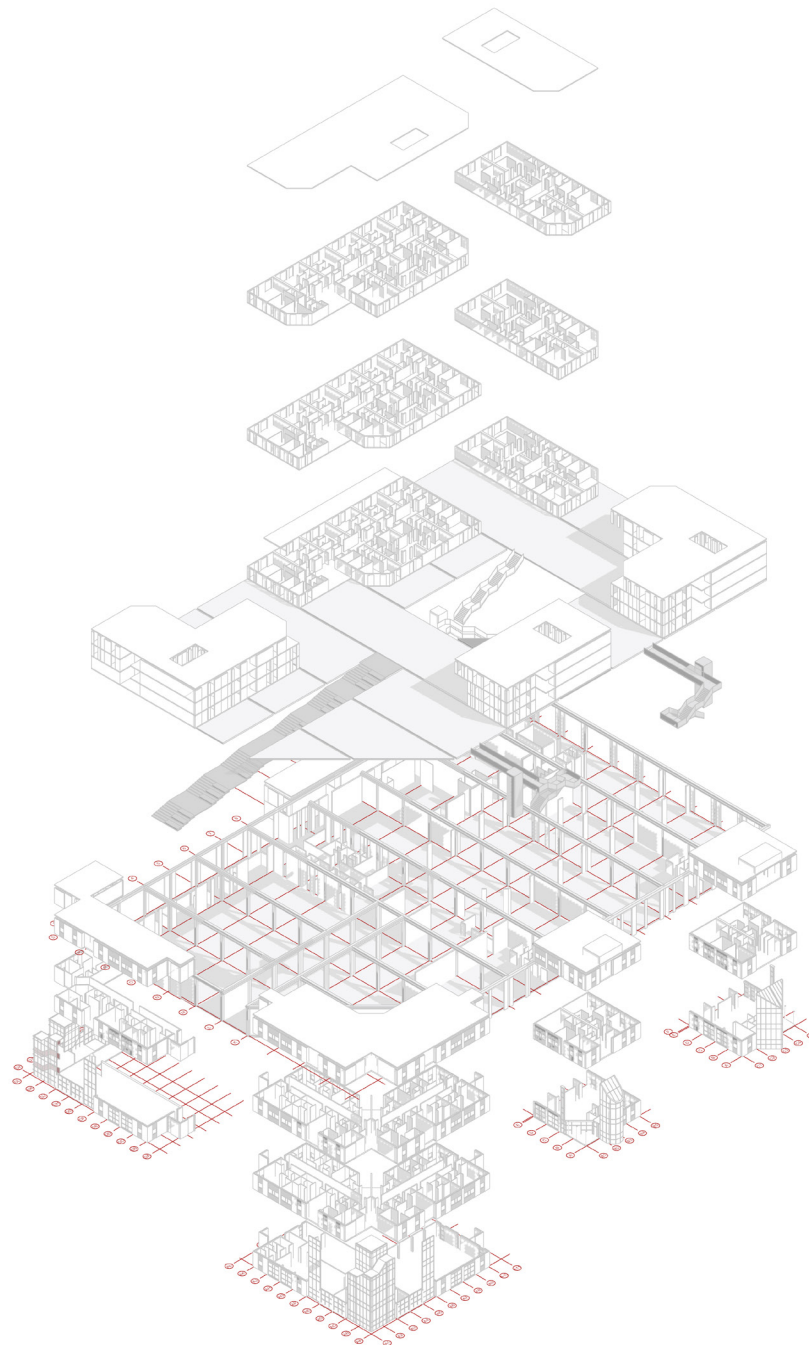
Visualisation Atrium



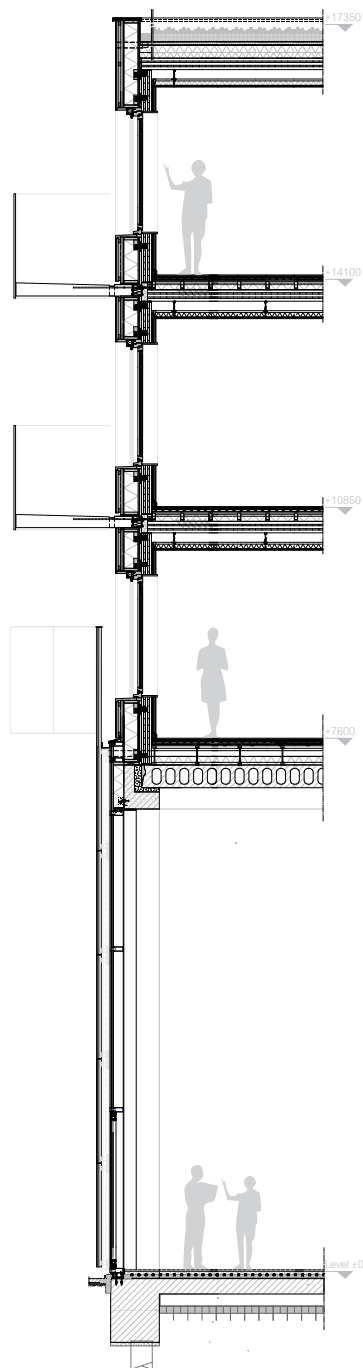


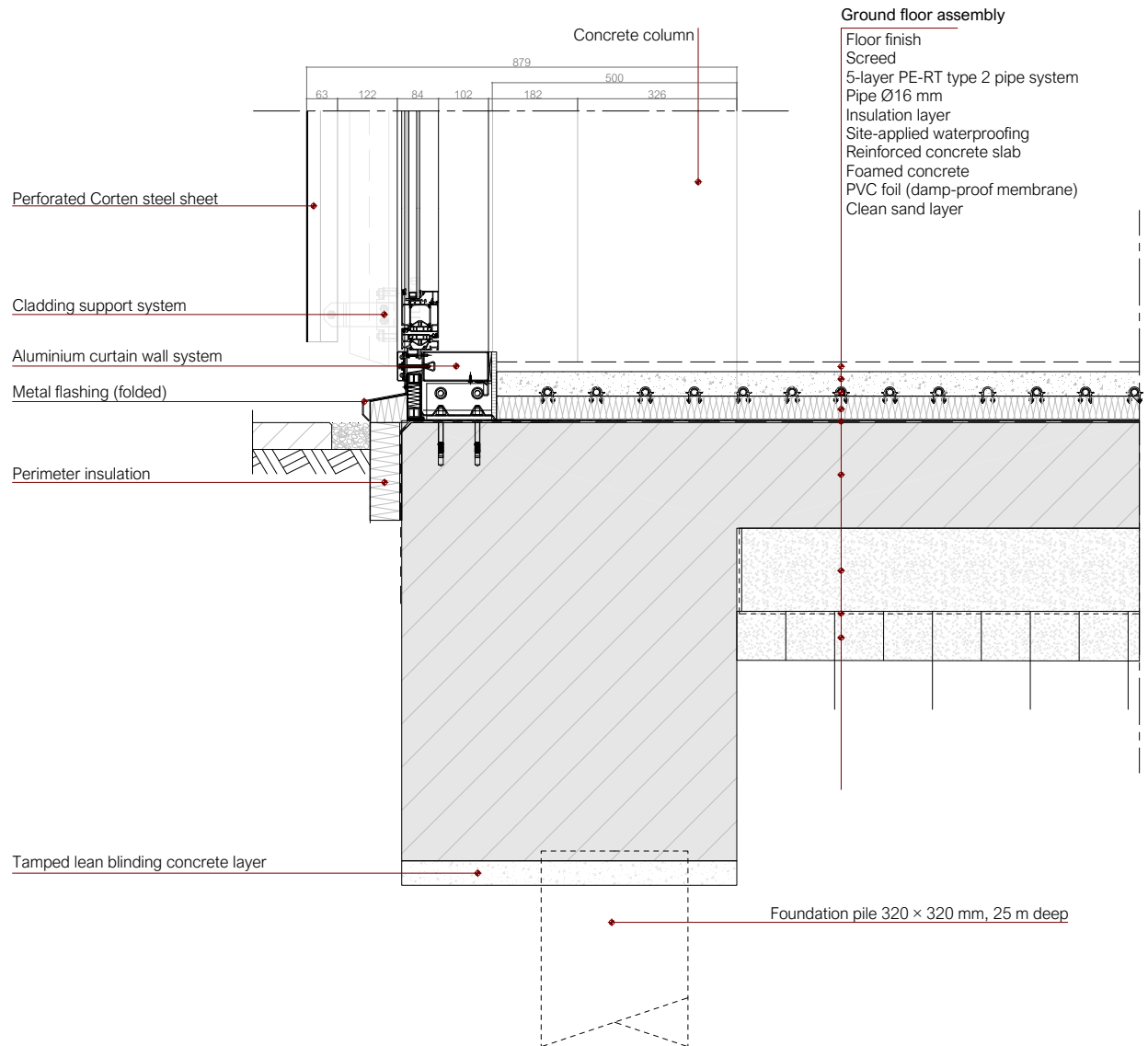
Birds-eye view



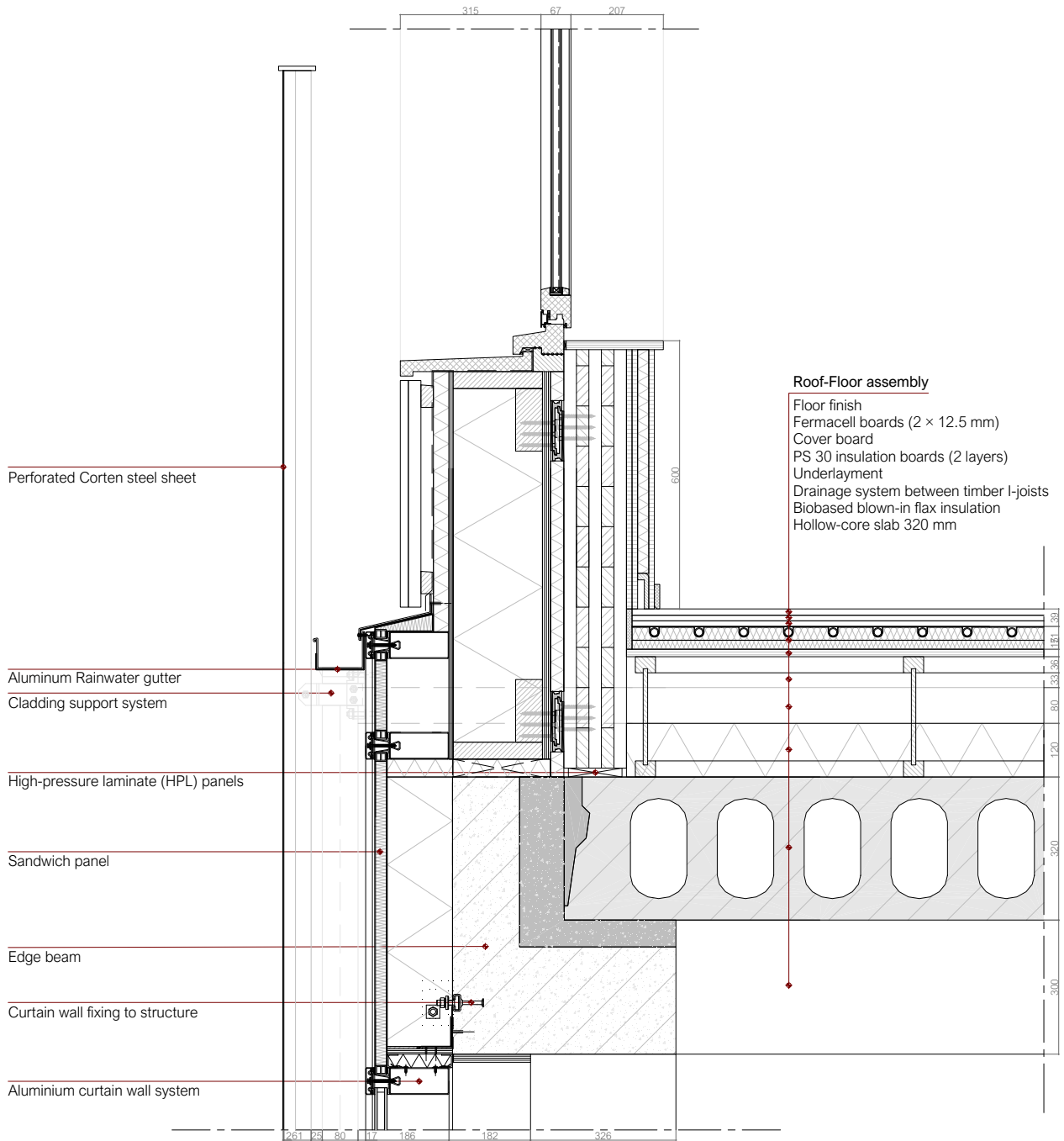


Activated Structure Axonometric drawing

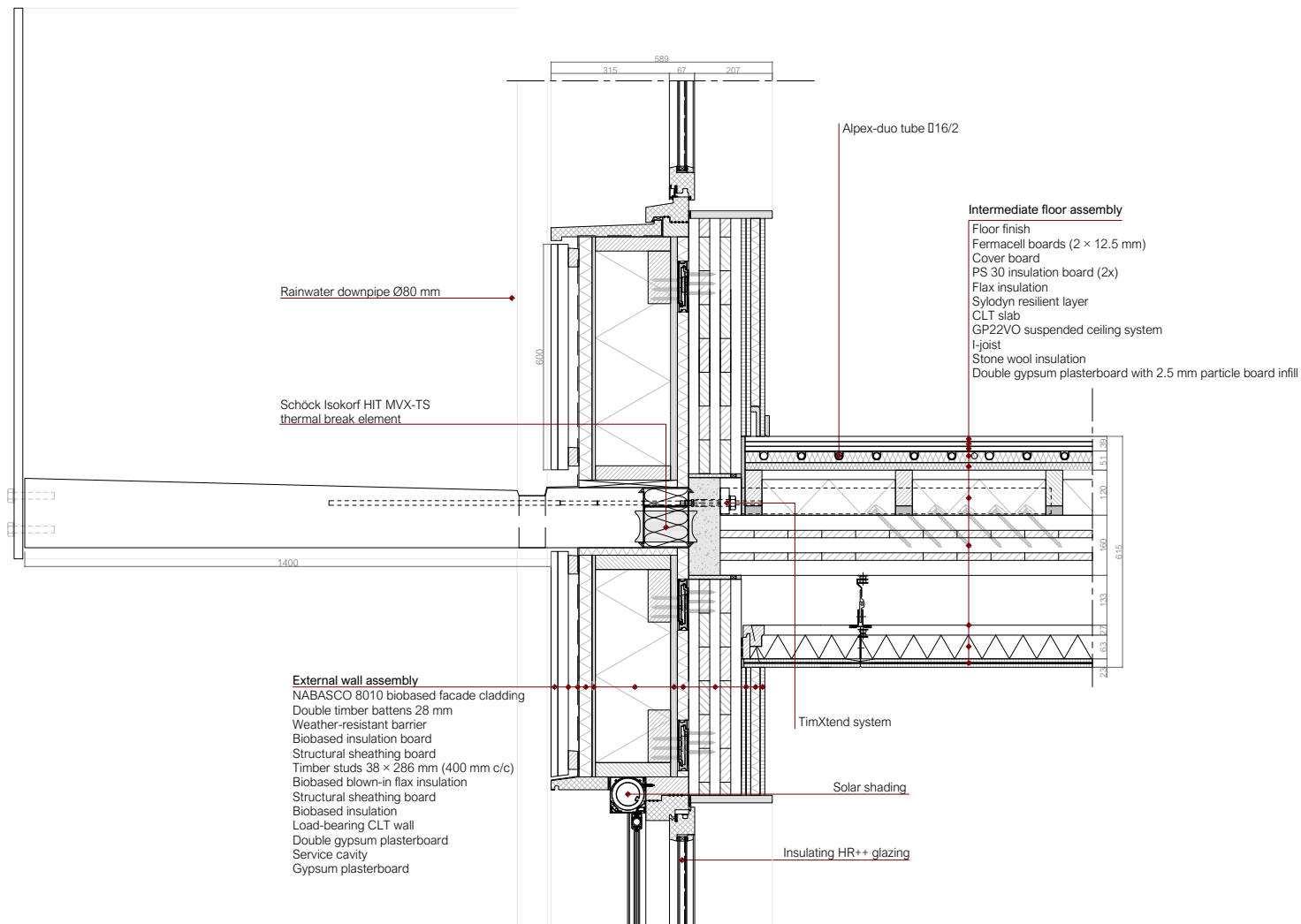




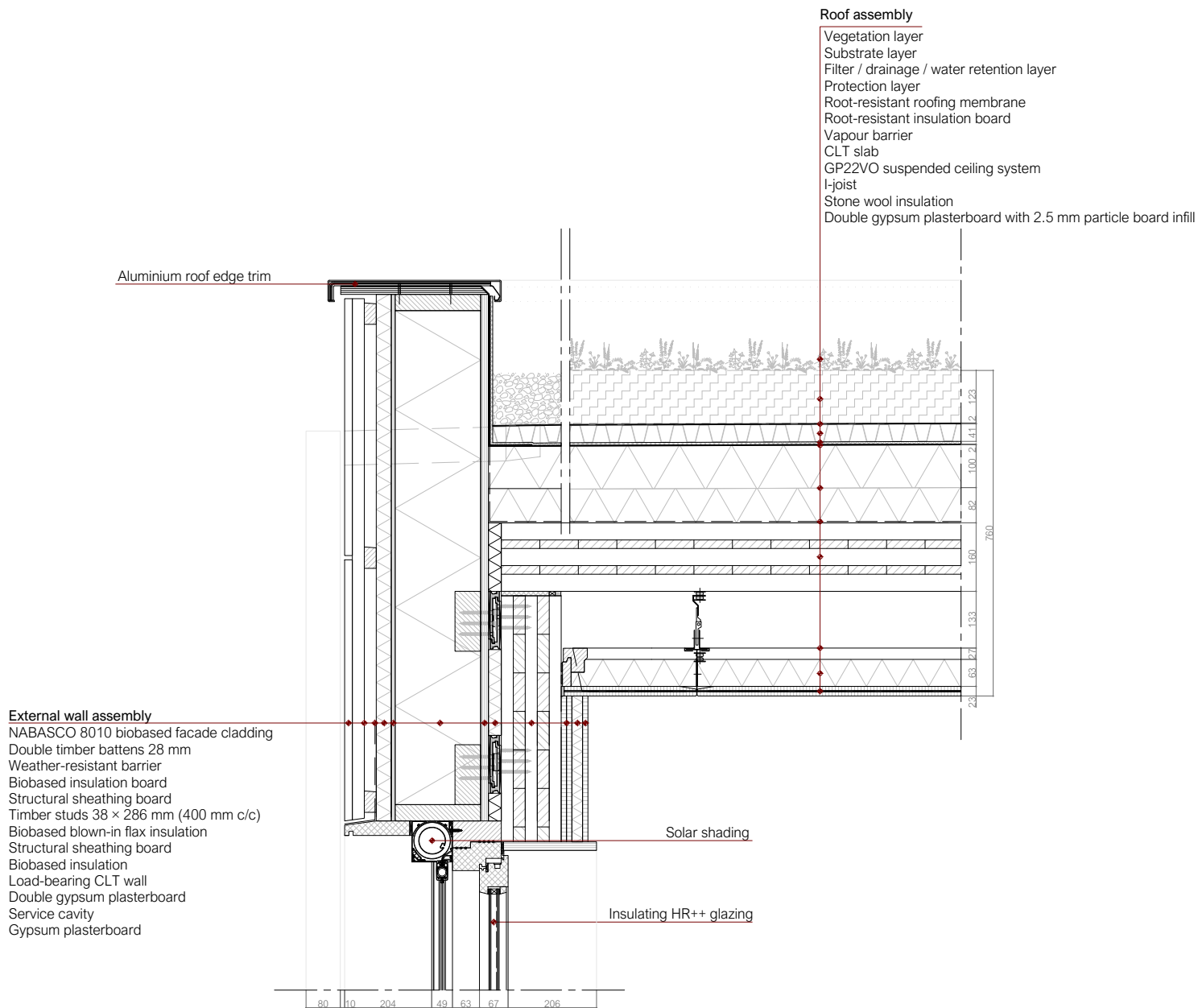
Foundation Detail 1:5 (scaled)

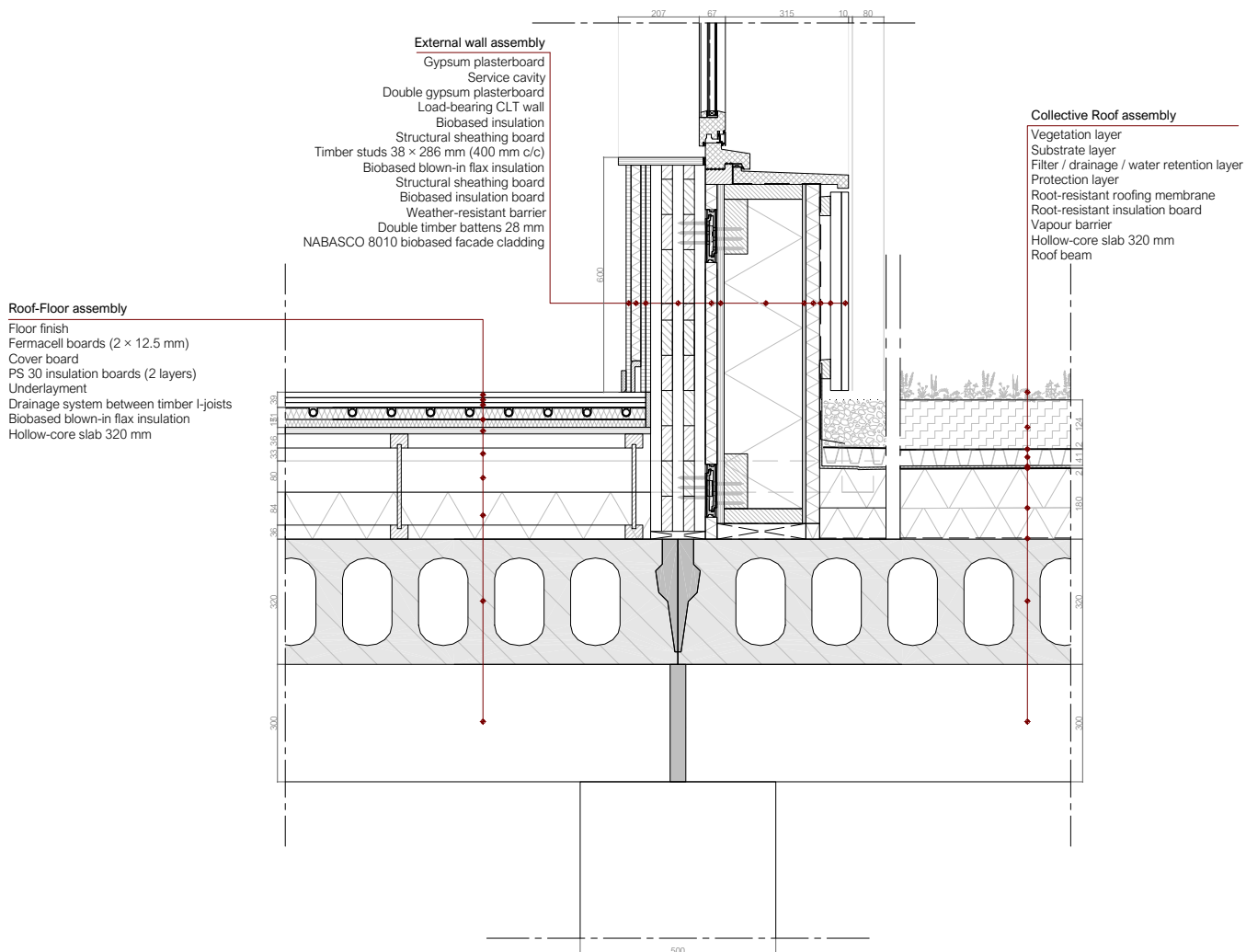


Hall Roof Edge Detail 1:5 (scaled)



Balcony-Floor Detail 1:5 (scaled)





Hall-Collective Roof Detail 1:5 (scaled)

Separating wall assembly

Insulated air cavity
Load-bearing CLT wall
Double gypsum plasterboard
Service cavity
Gypsum plasterboard

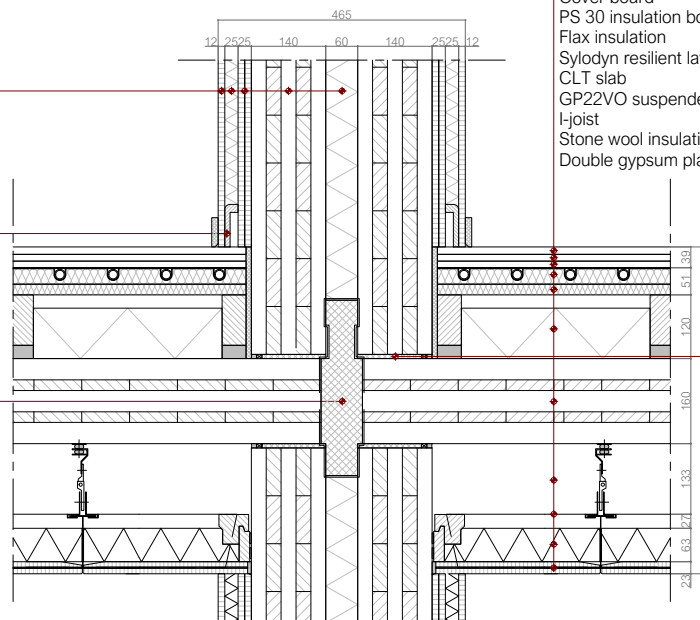
Service and fire-resistant
skirting

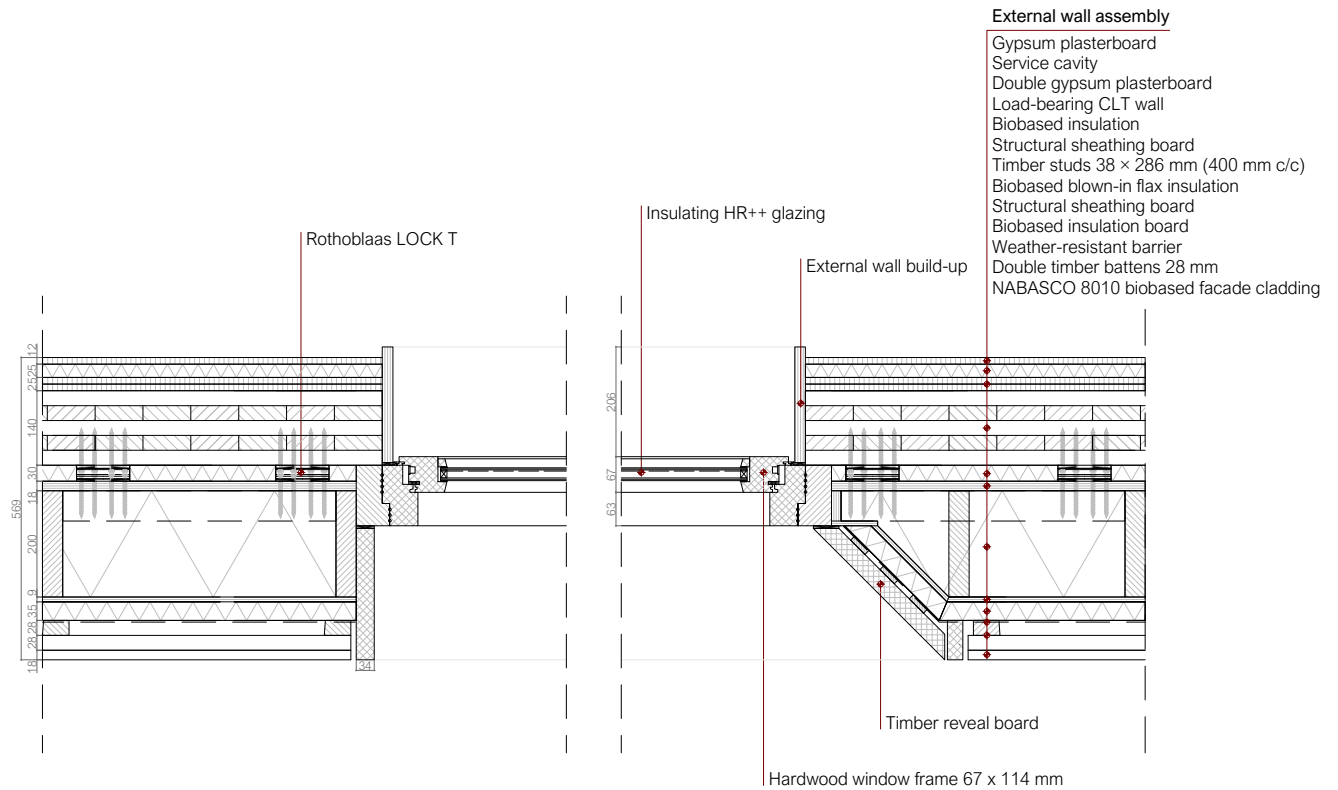
Insulation wrapped in a
water-resistant, vapour-tight
layer to prevent interstitial
condensation (expanded
material)

Intermediate floor assembly

Floor finish
Fermacell boards (2×12.5 mm)
Cover board
PS 30 insulation board (2x)
Flax insulation
Sylodyn resilient layer
CLT slab
GP22VO suspended ceiling system
I-joist
Stone wool insulation
Double gypsum plasterboard with 2.5 mm particle board infill

Acoustic connection





Horizontal Wall Detail 1:5 (scaled)

