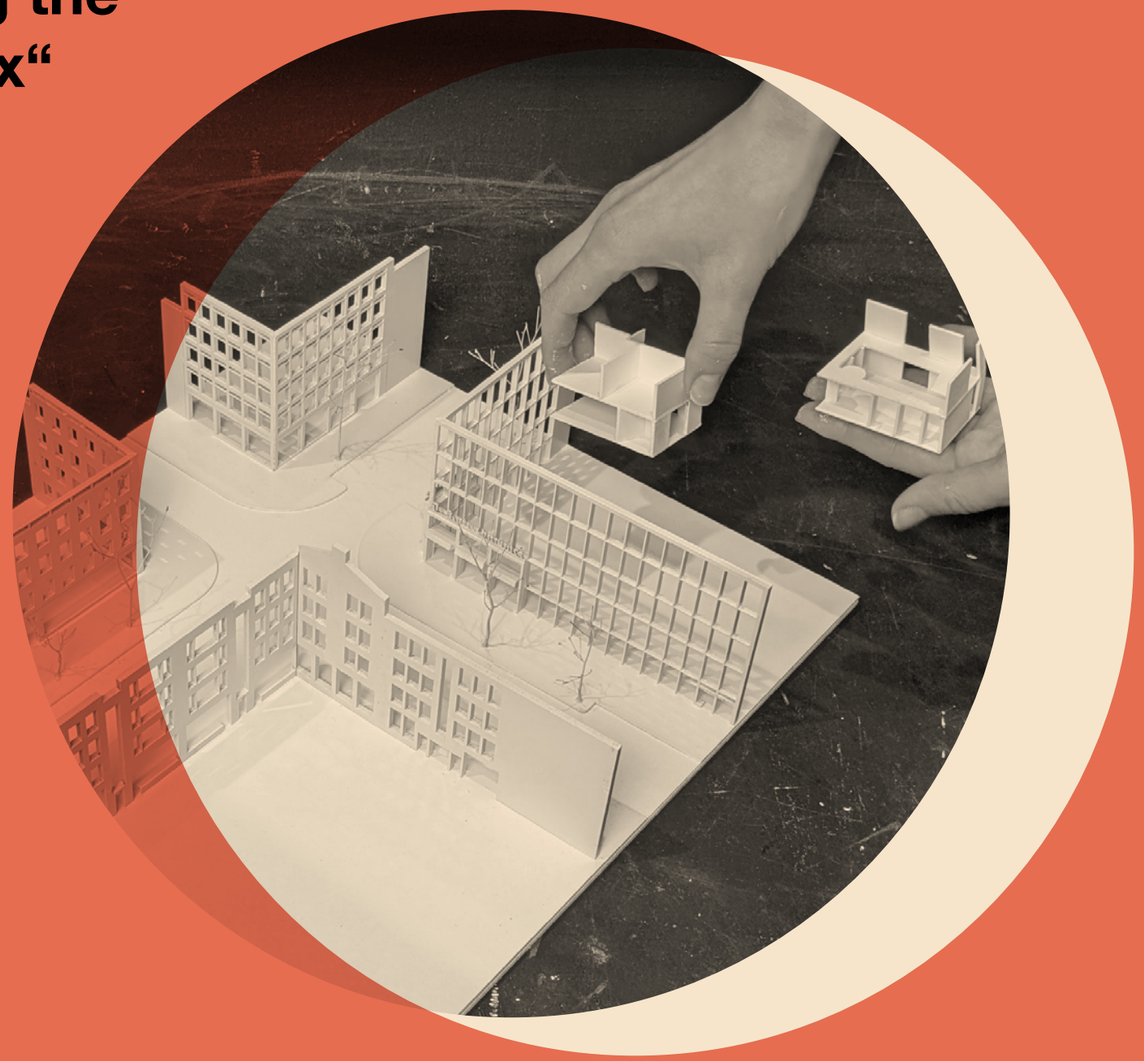
RESEARCH & DESIGN

Activating the “glass box“



2021-2022
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Adapting 20th Century Heritage
Heritage & Architecture | TU Delft

Project:

Activating the “glass box“

The post-war International style office building’s contribution to the future densification challenges of the city centre of Rotterdam

Keywords: post-war reconstruction, authenticity, open plan, densification, adaptability for future uses, active plinth, urban agriculture, Open Building.

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Collective Research Line Group: Spatial Building Typology (SBT)

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Activating the “glass box“

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Project Summary

The project “*Activating the glass box*” aims to find out how the existing built heritage can be not an obstacle, but the key to the comprehensive dense city of the near future.
It showcases the contextual design approach and opportunities for the unlisted 50’s-60’s international style office buildings - “glass boxes”- whose potential is not yet widely seen today, especially in the context of densification.
The project puts a focus on a building’s adaptability for different future uses as a resilient solution to urban densification.

The vacant former police office building at Witte de Withstraat 25 in Rotterdam has become a testing ground to find guidelines for dealing with an existing building and reviving it for as long as possible.

This project is a part of the Adapting 20th century heritage studio that deals with **vacant police buildings** in the Netherlands. The police want to adapt their real estate to the new organization and the changed structure of the services, with larger teams, in fewer places, and more digital presence. This **reorientation to denser locations** is also taking place outside of police institutions on a larger scale, both nationally and globally.
Today, over 50% of the world’s population lives in urban areas. By 2050, with the urban population more than doubling its current size, nearly 7 out of 10 people in the world will live in cities.[1]

Rotterdam city is joining the movement of densification. It has already begun to take shape in high-rise buildings since the 1980s. Denser construction reduces transit emissions by adding more stories and provides more livable and usable area in the same amount of space.

With my research, I was looking for ways this site could contribute to the future challenges of densification in central Rotterdam. From the study of a fairly wide range of topics and methods, I have eventually distilled **4 scales of impact** this building could have: **urban**, **architectural/heritage**, **social**, and **technical**. The strategy of each scale developed for this building is an outcome of the research.

On the **urban scale**, the building is to become a landmark for the street and have an active and inviting plinth. Regarding the **architectural/heritage scale**, the majority of the original building is reused, recreating the original double-height entrance space, and a new extension on top is introduced. New functions - restaurant, cooking school, shop (two plinth floors), urban farm (6-10th floors), co-living (2-5th, 11-12th floors, parking basement) and roof terrace with rentable bar for celebrations - will have a positive **socio-cultural impact**, providing locals with fresh food, education, job opportunities and making the neighbourhood more inclusive. Adaptability for different uses over time will be introduced on the **technical scale** of the building by implementing Open Building principles: the long-lasting structure called “shell” with easily adjustable “infill” – the things that can change with every new user, introducing new, more spacious vertical circulation cores in the same places as the existing ones, and raised floors that guarantee easier adaptability of installations for the future functions.

Implementing the Open Building principles in the adaptive reuse project was not ***a piece of cake***, hence the project’s **flexibility limits were tested**. For this reason, four subjects were looked at in more depth: program, storey height & installations, raised floor and the facade, yielding interesting findings.

The **architectural expression** of the existing building is defined by the original facade grid that will gain depth and outside space by the recessed new glazing on the 2nd–4th floors. The original entrance will be recreated to make the plinth more approachable.
The **architectural idea** for the new façades renders the existing building as a pedestal for the **“precious stone”**, which becomes a **landmark** for the Witte de Withstraat. The “stone” tries to blend in with the street of pitched roofs, therefore it is broken and the different “extrovert” inside is exposed. The stone-like “introvert” façade reflects the serious modern city centre and the “extrovert” one - the playful street of bars and restaurants. The 5th floor, a transition between the old and new building parts, is expressed by a more open façade with the wooden diagonal structure seen through. **The new façades continue the existing building’s idea with today’s tools** by using modular façade elements, visible structure, and flexibility.

To conlcude, this adaptive reuse project introduces the abovementioned solutions as a strategy that addresses impact on the urban, architectural/heritage, social, and technical scales. The design’s goal is to activate the building, guaranteeing its long lifespan by re-connecting it with the street, introducing environmentally and socially impactful program, establishing an architectural landmark, all while implementing adaptability for different future uses.

1 - https://www.worldbank.org/en/topic/urbandevelopment/overview

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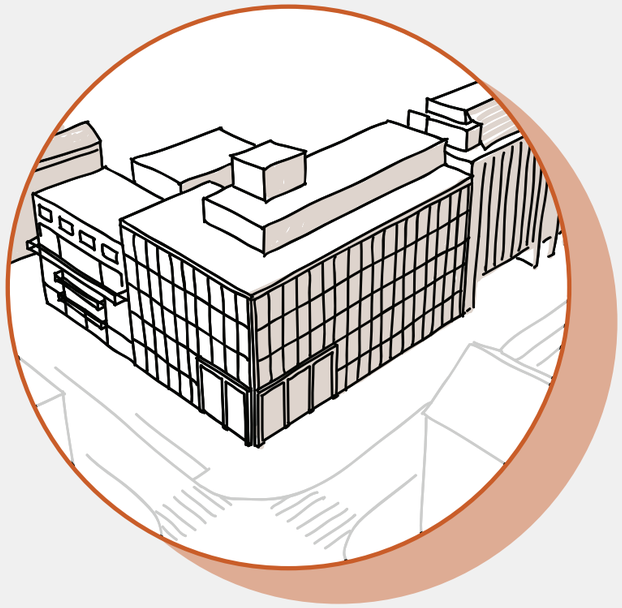


Figure: Sketch of the existing building from the bird's eye view
Source: Own work

RELATED DEFINITIONS:

International Style - an architectural style that was developed in the 1920s-30s and was closely related to modernism. It is defined by the Getty Research Institute as “the style of architecture that emerged in Holland, France, and Germany after World War I and spread throughout the world, becoming the dominant architectural style until the 1970s. The style is characterized by an emphasis on volume over mass, the use of lightweight, mass-produced, industrial materials, rejection of all ornament and colour, repetitive modular forms, and the use of flat surfaces, typically alternating with areas of glass.”

Authenticity - in the context of the building’s architectural design, the uniqueness of a building, what makes that building distinctive and recognizable among others. A heritage object can be judged authentic based on credible historical sources.

Monument / listed building - a type of building that was explicitly built to commemorate a person or event, or which has become relevant to a social group as a part of their remembrance of historic times or cultural heritage, due to its artistic, historical, political, technical or architectural importance. The monument designation allows the protection from demolition and is a base for the regulation of subsidy for restoring the monument.

1_Reflection

In this section, I am going to reflect on how and why the chosen approach for my graduation project did or did not work and to what extent.

I want to thank my mentors for their valuable feedback that, from time to time, shook my thoughts up and led me to unexplored fields. After the second presentation (P2) feedback on how realistic the proposed mix of functions is, I realized that I need more argumentation on the program for the building because it is in a very fortunate and expensive location. The feedback also guided me to pay attention to the project's impact on social, urban, and architectural/heritage scales.

After each piece of feedback I received from my tutors, I studied the case and tried to translate it into my work. Moreover, I really value the discussions with my fellow students that inspired me and helped me find answers. It is as interesting to learn from my own work, seeing how my graduation project and approach have shifted from the beginning.

HOW I ARRIVED TO THIS GRADUATION PROJECT

The studios in the program MSc Architecture, Urbanism and Building Sciences concentrate on contemporary issues that are relevant now and in the future. I have chosen to specialize in the architecture track because I find that my personal interests and characteristics are well-suited for it. According to Pritzker award winner Thom Mayne, architecture is a way of seeing, thinking, and questioning (Mayne, 2005), confirming my belief that it is a compound of aesthetics, psychology, and technicalities. I am keen on the conceptual level where those features come together and result in a functional object of a building—be it in transformation or newly built. It was not hard to decide which track of the master's degree to choose because I like that in the scale of one building or an ensemble aesthetic part can be thoroughly explored. This scale has a closer bond to people's everyday lives. The components and layout of the building, as well as facades that become part of the region's identity, make a building an interesting field of work.

Moreover, I want to create innovative and sustainable design solutions that are beneficial not only for human users but also for the environment. With the AIA (American Institute of Architects) president's Carl Elefante's slogan, "The greenest building is... one that is already built," (Elefante, 2018) I chose the Vacant Heritage studio for my graduation year to explore the reuse of existing building stock as a means to catalyze positive change in the uncertain and complex challenges of the future.

The office space (like in the police stations) is constantly being reconsidered or abandoned, especially after the pandemic that changed the nature of our work environment. New ideas need to unleash the potential of vacant offices and I am keen to find out what the outcome of the graduation project will bring.

1_Reflection

The research consists of **collective** - Spatial Building Typology (SBT) (Zijlstra, 2021) and **individual research**.

The **collective investigation** was not only a great practice of working in a group of colleagues, but also provided useful information and insights while comparing different building typologies.

To reflect on the **individual research**, even though it was challenging to have the design and the research as parallel interwoven practices, this journey led me to fruitful and exciting conlusions and results.

The point where I got stuck in the design field was the moment I forgot to reflect on my previous findings and follow the idea I had already distilled as my project direction. It was about the two different identities of the location. Instead of looking for a separate concept for the façade, I only had to follow what I had already discovered as my narrative. I realized this when I shifted from designing only on the computer to paper modelling, as my design mentor suggested.

The chosen research methodology was adjusted when new research directions or uncertainties emerged. This was directly connected to **my journey through the research topics**.
At the beginning, I was interested in **how to ethically deal** with the international style as a designer. Therefore, I was hoping to apply different approaches to dealing with the building from the perspectives of eight philosophers on ethics. However, I managed to collect the answers I needed on the topic of ethics from the existing literature. The research question I had still lacked specificity.

My second approach was about the fact that the building was **not listed as a monument**. This means that it could be completely demolished. I was keen to find out how could these buildings be adaptively reused and appreciated again. This time for the graduation project, I wanted to set the toolbox for other non-listed international style office buildings. Until I realized that each case is unique and contains numerous nuances, one case study could not be used as a universal rule.

Finally, after I had already done some substantial research into the context of the site and created a few future scenarios for the urban block, my final research question emerged. The silver lining for me was that the main topic in the city center of Rotterdam is **densification** (Tillie et al., 2012), and existing buildings should not be seen as an obstacle, but rather a context-based starting point in helping to tackle the future challenges. So, my final main research question has untangled itself into: how can the building at Witte de Withstraat 25 contribute to the future challenges of the city center of Rotterdam (in the context of densification)?

While designing, the main goal was to use Open Building principles. Using these innovative ideas in a new project was already a challenge. However, while implementing them in the adaptive reuse building and in order to achieve an expressive facade of the building, one faces some limits. Therefore, at one point, **testing the limits of flexibility** in the project became the main design task.

ETHICAL ISSUES & DILEMMAS

In the beginning, all the members of the Vacant Heritage studio signed a **confidentiality agreement** with the police as an institution. I believe this was the most obvious ethical principle that emerged in this graduation project.
But more ethical principles followed me on my way...
I chose the building in Witte de With, Rotterdam, among other police real estate, for my graduation project purely because it was **the one that I disliked the most**. To me, from the first encounter, it was connected with ethics. For instance, if you don't like something, you can avoid it, but if you are allowed to change something in the building that doesn't appeal to you, **what is it that you should change to objectively improve it** (objectivity issue)? **Who are you** to change somebody's design (respect for intellectual property issue)? What is **the limit of your impact** and what should be saved for the future if it depends on your decisions? What are the **heritage values** of this building and what elements should be **preserved**?
I started to address all these questions and delved into the research to find out the answers.

The main dilemma related to ethics presented itself during the elaboration of the design. **Demolishing the existing building** would solve structural problems of building a tower extension on top of it, but at the same time this would overlap with environmental concern of not reusing the embodied energy of the existing structure. Moreover, during the design process, I have faced the issue of **how to deal with architect C. Elffers's design without destroying the main idea and respecting his legacy** while "blowing some fresh air" into the site.
Regarding the potential applications of the results in practice, I would be concerned how **the neighborhood** will react on the tower in this area, because some residents might get less sunlight than before.

2. Research Plan

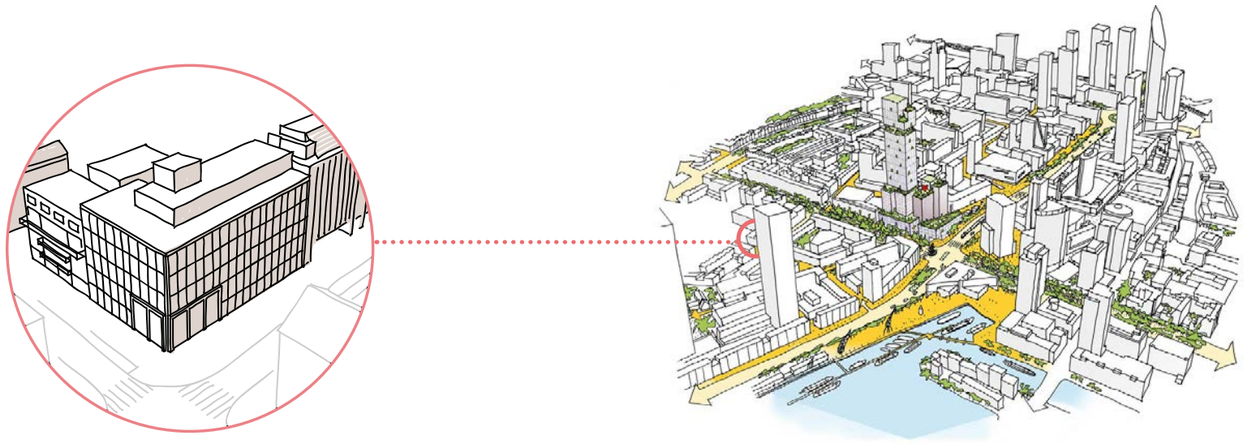
2.1 Problem statement

With the growing challenges posed by climate change, the decision to stop suburbanization and inevitably densify big cities seems the most natural and economical[1]. As a result, the population of metropolitan areas is already growing rapidly today, and cities, especially in the Netherlands, are facing serious housing shortages. If we want to improve the climate and ensure a quality life for a growing population in the future, metropolitan areas like Rotterdam will have to adapt to various challenges and appear completely different than today.
This adaptation must begin by improving the available building stock.
Existing unused buildings must be adapted to current and future needs. For example, 30% of the real estate owned by the Dutch police needs to be redeveloped. Among the buildings owned by the police are 20th-century buildings (including 50s-60s office buildings). These do not meet modern principles of intelligent energy use and storage, nor do they help to deal with other environmental or social issues of the future. Therefore, my ambition with this research is to find out what are the opportunities and limits for dealing with a non-listed potential heritage building from the 50s-60s and how to make it future-proof in the context of densification in Rotterdam.

1 – Daniel Safarik, A Country of Cities: A Manifesto for an Urban America. (New York: Metropolis Books, 2014)

Figure: collage - Vacant “glass boxes“. Own work.

2.2 Research Question



heritage component

longevity
adaptability

How can the **building at Witte de Withstraat 25** contribute to the **future** challenges of the city centre of Rotterdam (in the context of **densification**)?

different problems
than now

Main research question:
How can the building at Witte de Withstraat 25 contribute to the future challenges of the city centre of Rotterdam (in the context of densification)?

sub-questions:
Using the example of the former police station building in Witte de Withstraat 25, Rotterdam I am asking:

• What were the conditions under which the building was built? Was it about longevity?

• Design: What defines the authenticity of this building? What are the main architectural expression elements that represent the original design of the building? How can it be used in the redesign?

• Design: How can the building be adapted to different future uses?

• What are the future challenges for the city centre of Rotterdam?

• (SBT) What are the spatial characteristics of the former Police station building and its urban block in Witte de With street 25, Rotterdam?

Source of the images: 1) own sketch 2) https://www.mecanoo.nl/Projects/project/287/Hart-010-Masterplan?d=0&t=0

Research Plan structure

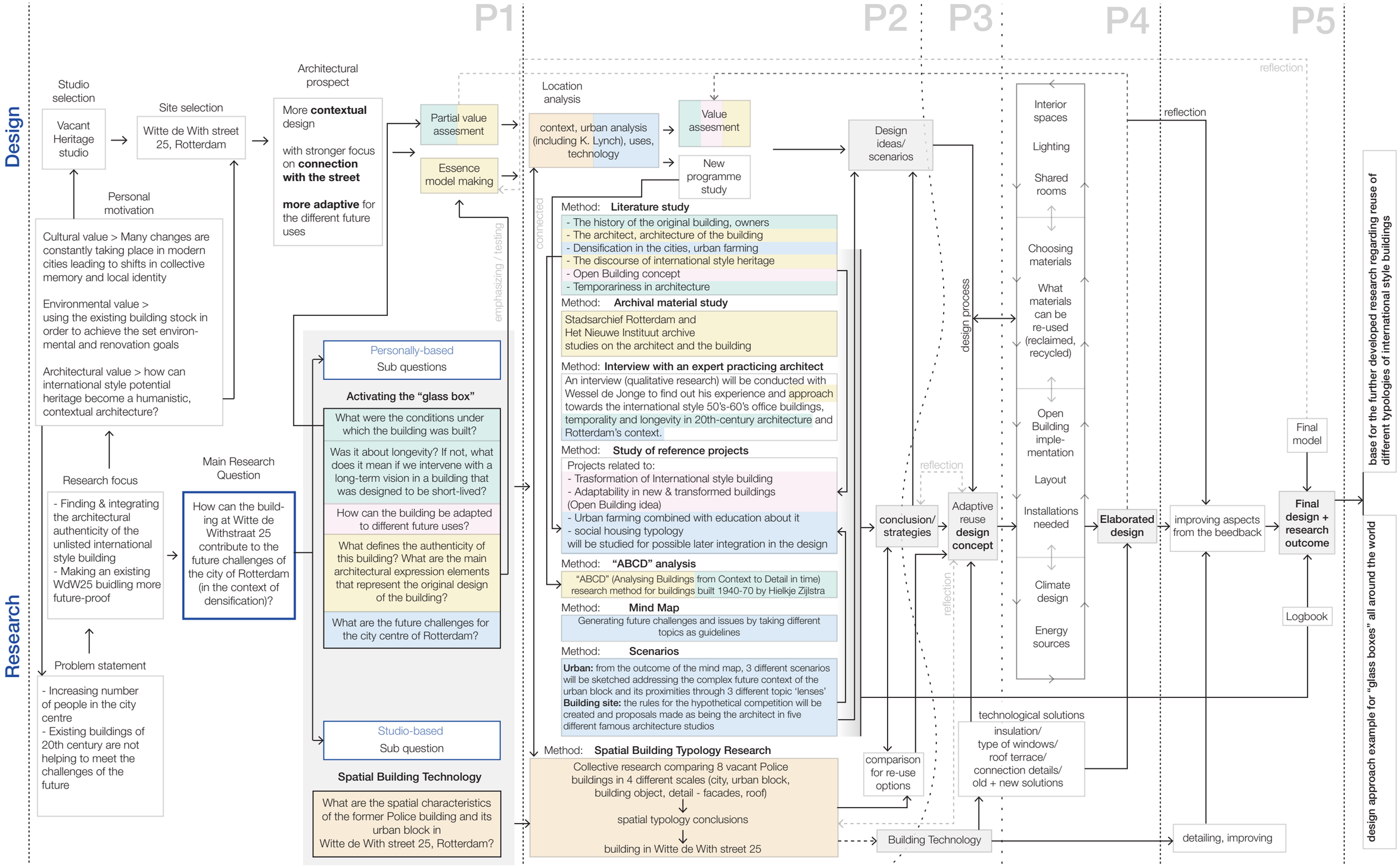


Figure 1: The research plan structure diagram
Source: Own work

2.3 Methodology

RELATIONSHIP BETWEEN RESEARCH AND DESIGN

The structure of the process is not linear because research influences design, and sometimes that happens the other way around. In my project, design and research are interwoven like a cloth. Each adds to the other in order to form a whole. Research consists of collective SBT investigation resulting in the second volume of the SBT book series and individual investigations resulting in the design project.

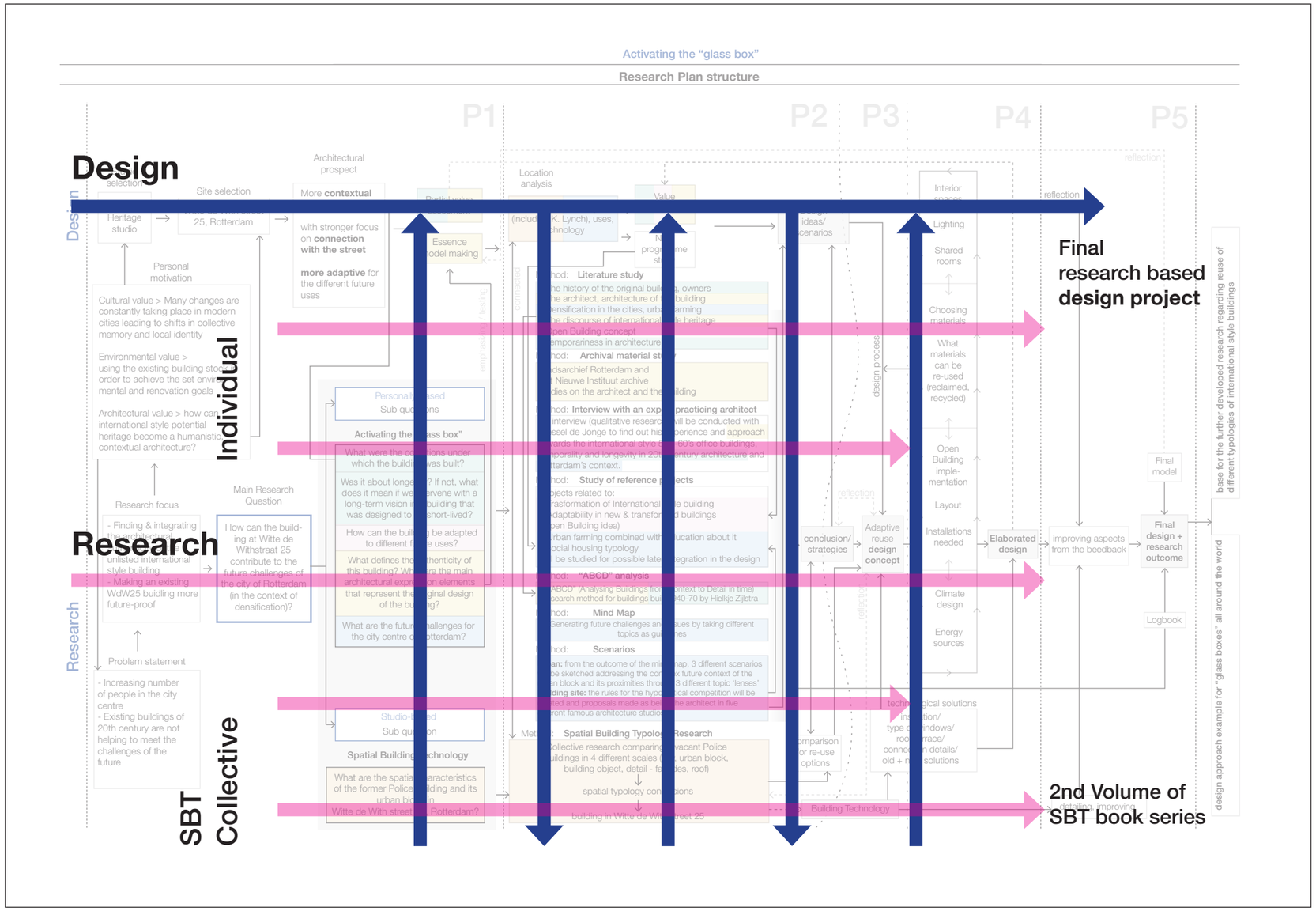


Figure 2: The connection between Design and Research shown on the research plan structure diagram
Source: Own work

2.3 Methodology

RESEARCH METHODS & APPROACH

The research methodology consists of **collective** - Spatial Building Typology (SBT) (Zijlstra, 2021) and **individual research** with the close involvement of the design medium.

SBT research is initiated by the Vacant Heritage graduation studio and it is a simultaneous process with individual research and design research. By **comparing various spatial aspects on four different scales** (city, urban block, building object, and detail - facades, roof), the eight police buildings were examined and afterwards conclusions drawn. This displayed the chosen case study in the context of a very wide typology of edifices.

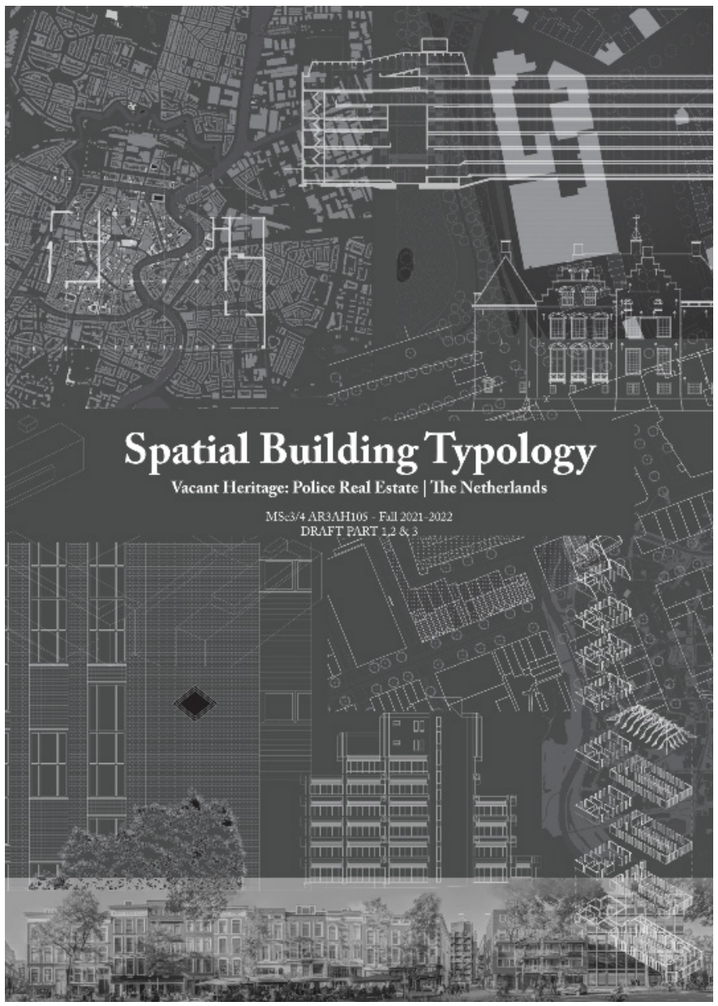


Figure 3: The cover of SBT collective research book
Source: https://books.open.tudelft.nl/home/catalog/book/29

In favor of individual research, SBT studies defined the spatial characteristics of the former police station building in Witte de Withstraat 25, Rotterdam. The results were compared with the individual research-based case studies for the possible reuse options.

Individual research consists of **7 main methods** (see figure 1) - literature study, archival material study, interview with an expert practicing architect, case study of relevant projects followed by "ABCD" research method ("Analysing buildings from context to detail in time: ABCD research method", Zijlstra, 2009), and mind mapping followed by creation of the future scenarios for the urban block and the building - that are aiming to answer the individual sub-questions of the research.

The **literature** readings laid the theoretical base on the discourse of international style heritage and its transformation, the Open Building concept and temporariness in architecture (historical research). An **interview** (qualitative research) was conducted with Wessel de Jonge, the co-founder of DOCOMOMO International and a well-known practising architect running his architecture company WDJArchitecten with particular expertise in the field of adaptive re-use of 20th-century heritage, to find out his experience and approach towards the international style 50's-60's office buildings, temporality and longevity in 20th-century architecture and Rotterdam's context.

By **visiting Stadsarchief Rotterdam and Het Nieuwe Instituut archives** and reading magazines, newspaper articles and investigating the original drawings, information about the original and previous renovations', original ideas behind the design, architect's background was gathered (historical research). **Partial value assessment** (based on Heritage Value Matrix, developed by N.Clarke & M.Kuipers in the book "Designing from Heritage: Strategies for Conservation and Conversion", (Kuipers & De Jonge, 2017) was done followed by the **essence model** (see figure 5) which helped to define the main architectural characteristics.

After the first research presentation (P1), the location and context analysis of the building were carried out together with a program workshop that defined the suitable function for adaptive-reuse.

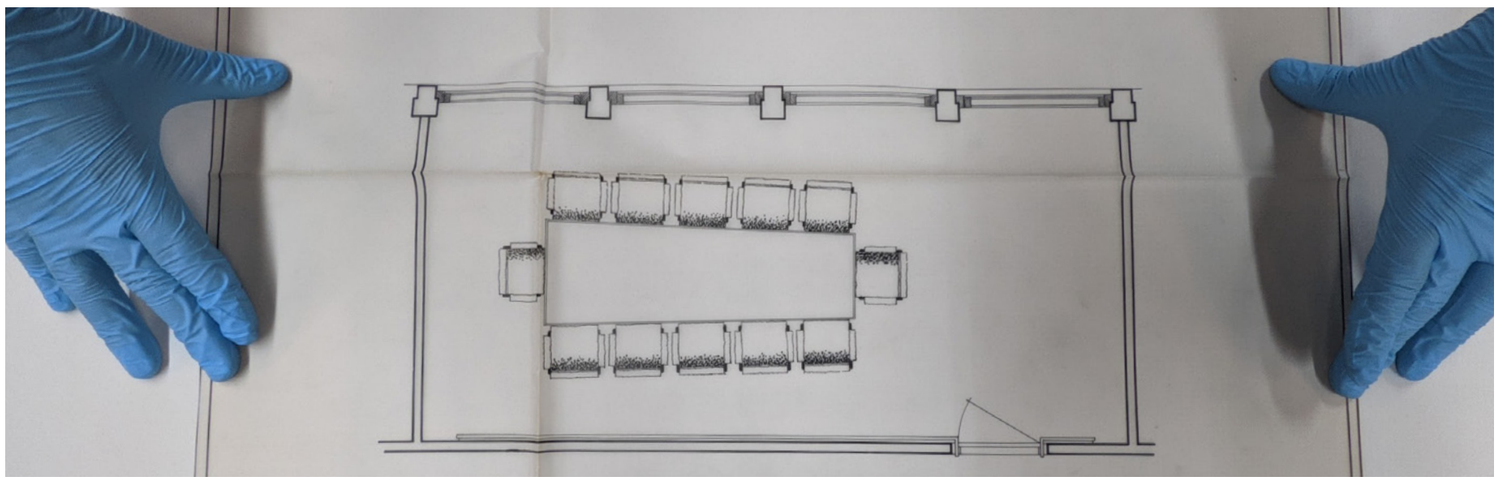


Figure 4: Original plan of the conference room in Witte de Withstraat 25
Source: Own photo taken in Het Nieuwe Instituut archives

2.3 Methodology

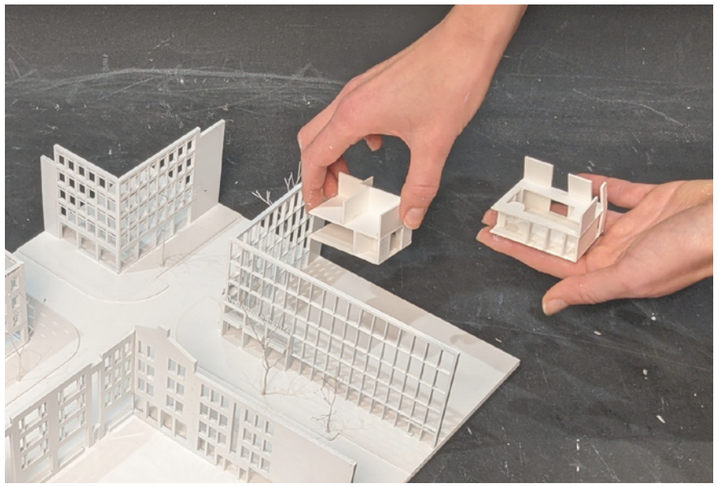


Figure 5: The essence model with existing and original entrance spaces
Source: Own photo taken in 2021, BK City, Delft, The Netherlands

In the meantime, **design development** began with envisioning the architectural scenario based on the research questions and creating an **essence model** of the Witte de Withstraat 25, Rotterdam building. **Location analysis** was conducted with the help of SBT, but additional aspects appeared to be handy to know and explore. Because the police buildings in the SBT research were so different in size, architectural style, and location, the research did not reveal the approach for me - the answers I was looking for I mostly found out during individual research. Furthermore, the "ABCD" research method and the Heritage Value Matrix were applied to assess the building's values.
The aforementioned steps were taken in order to identify the main architectural expression elements that represent the original design of the building.

To determine what the future challenges for Rotterdam's city centre will be, I have implemented the **mind mapping** method to generate potential issues in future cities by using various topics as guidelines. Based on the outcome of the mind map, **3 different scenarios** were sketched (simulation research), addressing the future context of the urban block and its proximities through 3 selected topic "lenses" – "Green + most accommodated", "Green + most economically viable" and "Green + most resilient. These urban scenarios determined the functions and appearance of the Witte de Withstraat 25 building. In addition to this, the rules for the **hypothetical competition** were devised and proposals were made as being the architect in each of the five famous architecture studios (suggested by my design mentor). Trying out different approaches within the set of rules created helped me to better understand the qualities of the site and argue for its further design development.

Additionally, **case study projects** chosen based on the 4 topics were studied in order to understand and use knowledge of these different spheres. Those were: (1) International style office transformation, (2) adaptability over time, (3) urban indoor farming, and (4) a tower built on top of the existing building. Instead of comparing the case studies, the key design solution taken from each project studied was used as a theoretical reference for the redesign of Witte de Withstraat 25.

Hypothetical competinion for the site:

results as being an architect in one of the 5 architecture studios

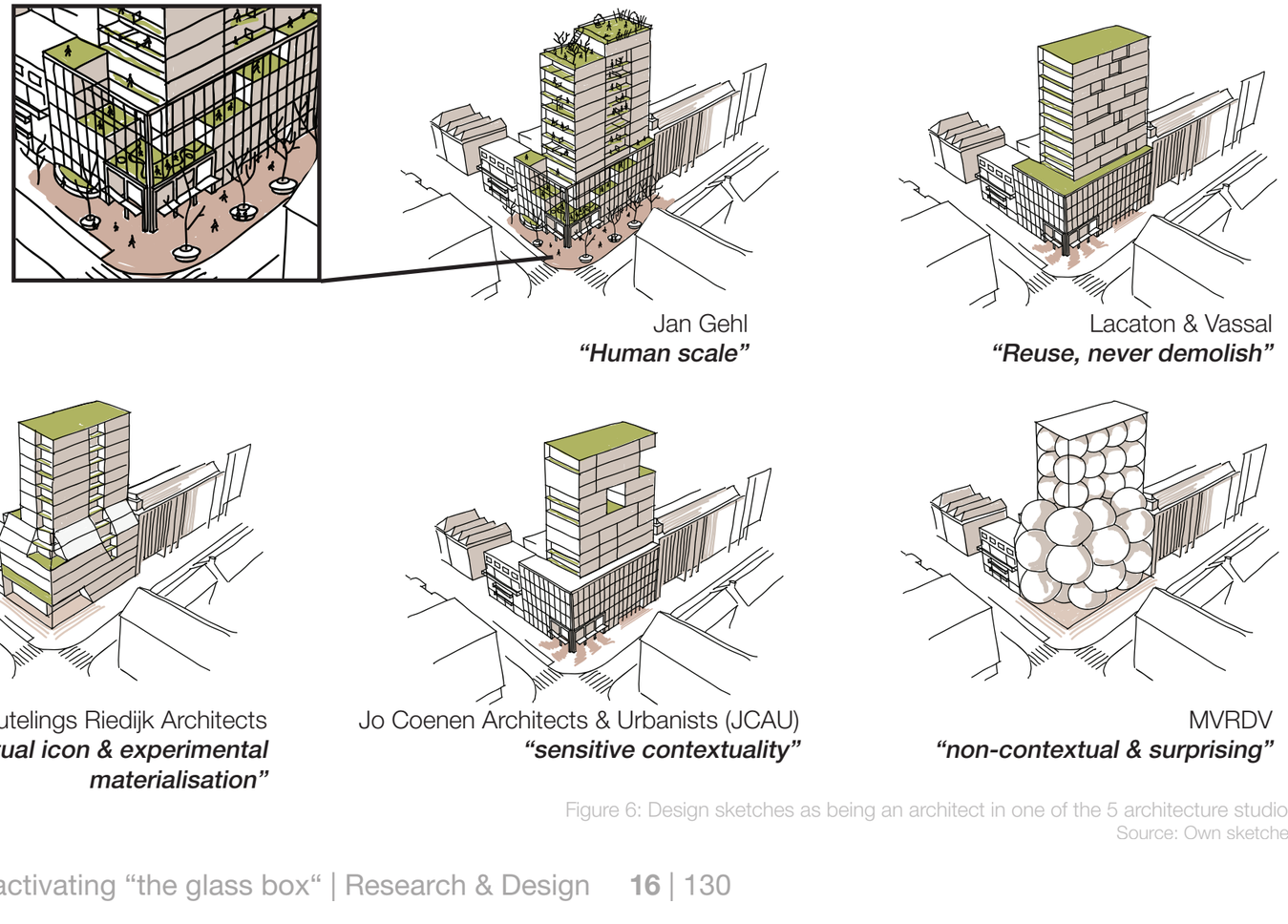


Figure 6: Design sketches as being an architect in one of the 5 architecture studios
Source: Own sketches

Figure 7: Escursion in Amsterdam North visiting the buildings built based on the Open Building principles
Source: Own photo taken in November 2021, Amsterdam, The Netherlands

The **design scenarios**, in combination with the **new program study** and the findings of historical and qualitative research, resulted in the preliminary adaptive reuse design concept presented in the second presentation (P2).
After that, the design was elaborated by incorporating **building technology research** and delving into the concept creation for the **facades**.

Implementing the Open Building principles in the adaptive reuse project was not an easy task, hence the project's **flexibility limits were tested**. For this reason, four subjects were looked at in more depth: program, storey height & installations, raised floor and the facade, yielding interesting findings.

Further design and technical solutions, together with detailing, resulted in the final adaptive reuse design.

The chosen methodology was adjusted when new research directions or uncertainties emerged.

2.3 Methodology

Figure 8: Readings on the relevant topics for the project
Source: Own photo taken in 2021, Rotterdam, The Netherlands

LIST OF REFERENCES:

Elefante, C. (2018). Existing Buildings: The Elephant in the Room. Retrieved from: https://www.architectmagazine.com/aia-architect/aiaperspective/existing-buildings-the-elephant-in-the-room_o

Kuipers, M., & De Jonge, W. (2017). Designing from heritage. Delft: TU Delft, p.86-89.

Mayne, T. (2005). Acceptance Speech. Retrieved from: https://www.pritzkerprize.com/sites/default/files/inline-files/2005_Acceptance_Speech.pdf

Tillie, N. M. J. D., M. Aarts, M. Marijnissen, L. Stenhuijs, J. Borsboom, E. Rietveld, J. Visschers, & S. Lap.
Rotterdam people make the inner city, densification plus greenification=sustainable city. (2012).

Zijlstra, H. (2021). Spatial Building Typology: Vacant Heritage: Department Stores| V&D's.

Zijlstra, H. (2009). Analysing buildings from context to detail in time: ABCD research method. Ios Press.

2.4 Literature

With regard to the research themes and aims, each of the theoretical framework parts consists of literature that is relevant in understanding the theory.
The theory I will rely on is focused on international style but not Police station buildings because the building chosen was not originally designed for the Police station (it was and served the Police as an office building) and has no distinctive police station features apart from a few glazed rooms to shortly hold detainees.
It goes without saying that due to the time limit of the study, not all information may be objective or much detailed, as this also is limited by the selection of literature.

Ideas and conditions behind the International style, functionalism:
• H.F. Mallgrave's view in a book "Modern architectural theory: A historical survey, 1673– 1968" (2009)
• Kenneth Frampton's discourse in the book "Modern Architecture A Critical History" Fith edition (2020)
• W.J.R. Curtis's view in his book "Modern architecture since 1900" (1996)

Adaptive reuse and preservation of the International/modern style heritage:
• Theodore H.M. Prudon's discourse in the book "Preservation of Modern Architecture" (2008); Written by the president of an organization committed to the documentation and preservation of modern architecture, this book outlines best practices for undertaking such efforts and addresses the latest technological advances in the field.
• S. Macdonald, K.C. Normandin and B. Kindred's discourse in the book "Conservation of modern architecture" (2015); This book addresses many philosophical and practical issues surrounding the conservation of modern buildings as well as raises the question of indifference and in some cases hostility towards post-war buildings.
• A. Cunningham's discourse in the book "Modern Movement Heritage" (1998); the preface and introduction of the book by R.Maxwell and A.Cunningham set an insightful overview of the Modern Movement, its significance and academic debate. In the second part of the book, related issues in strategies and policies are explained.
• Post 65: The Cultural Heritage Agency (RCE) has conducted exploratory research into heritage in the Netherlands from the period from 1965 to 1990 - the 'Post 65' period. The approach of this exploration was threefold: knowledge development and knowledge sharing, dealing with this heritage in relation to current spatial assignments and broadening support.

Authenticity (articles):
• Schmidt, Freek "Genuine architecture: On authenticity and adaptive reuse." Bulletin KNOB: Koninklijke Nederlandse Oudheidkundige Bond 119, no. 4 (2020).
• Mens, Noor. "Form and Context: On the Role of Authenticity in the Evaluation of Modern Heritage." Bulletin KNOB: Koninklijke Nederlandse Oudheidkundige Bond 119, no. 4 (2020).
• van Thoor, M. T. A. "Authenticity, a credible concept?." Bulletin KNOB: Koninklijke Nederlandse Oudheidkundige Bond 119, no. 4 (2020).

Theory and implementation of the 'Open Building' concept:
• "ZEMCH: Toward the Delivery of Zero Energy Mass Custom Homes"edited by Masa, 2016. Noguchi. - Book about the zero-energy mass custom home (ZEMCH).
• Leibbrandt, E. Amy & Barker, Arthur. OPEN BUILDING FOR RESILIENT CITIES (2018). - This document describes the achieved milestones, the goals and the challenges for Open Building and is composed by The Council on Open Building for the Open Building for Resilient Cities Conference.

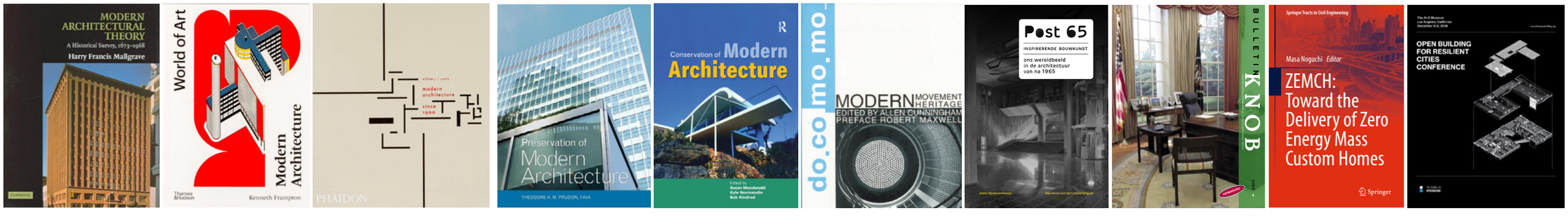


Figure 8: The covers of the readings

2.4 Literature

Temporariness in architecture as a strategy for the building:

• van Boxel, Elma, Kristian Koreman, and ZUS Zones Urbaines Sensibles. City of Permanent Temporality: incomplete & unfinished. Joelho Revista de Cultura Arquitectonica 9, 2018. – This book describes the impressive process of 15 years of work in the urban laboratory that is Rotterdam. Authors propose a radically new way of making a city - this strategy is formed around an urban reality of values, material and people.

• How Buildings Learn: What happens after they're built by Stewart Brand, 1995. - The book proposes that buildings adapt best when constantly refined and reshaped by their occupants and that architects can mature from being artists of space to becoming artists of time.

• Christiaanse, Kees. Textbook: Collected Texts on the Built Environment 1990–2018. nai010 uitgevers, 2018. - Book's chapters that were usefull: "Fuck the Programme?" and "Traces of the city as a loft".

Densification in the city centre:

• Safarik, Daniel. A Country of Cities: A Manifesto for an Urban America, 2014. In the book, which focuses on the United States, the author argues that hyperdensity is a solution to a lot of problems. A Country of Cities stands out among other books in offering a clear call for a city-based solution to the nation's most pressing challenges and in presenting a comprehensive policy agenda to meet those challenges.

• Schröpfer, Thomas. Dense+ green: innovative building types for sustainable urban architecture. Birkhäuser, 2015. The author explores innovations in architectural typologies that emerge from the integration of green components, such as sky terraces, green facades, and vertical parks, in high-density buildings.

• Sim, David. Soft city: building density for everyday life. Island Press, 2019. - The book's purpose is to use sustainable humanistic planning and architectural concepts to improve urban residents' quality of life. Covers such topics as accommodating density and diversity in the same spatial area, mobility, climate change etc.

• Gehl, Jan. Life between buildings. Vol. 23. New York: Van Nostrand Reinhold, 1987. - Jan Gehl points out the drawbacks of the functionalistic architecture and city planning that flourished in the period.

Urban farming:

• Despommier, Dickson. The vertical farm: feeding the world in the 21st century. Macmillan, 2010. Despommier explains how the vertical farm will have an incredible impact on changing the face of this planet for future generations, transforming our cities into urban landscapes that will provide fresh food grown and harvested just around the corner.

The theories of Research methodology used in my research:

- ABCD (Analysing Buildings from Context to Detail in time) research method (2009) created by Hielkje Zijlstra assessing if a building meets the needs or can be preserved or reused;

- The Heritage Value Matrix, developed by N.Clarke & M.Kuipers and H. Zijlstra (2016) for classification of relevant heritage values at various scales.

Figure 8: The covers of the readings

3. Research

3.1 The building’s past

Emty Witte de Withstraat 25 site during WWII (on the right side), 1942.

Own photo taken in Stadsarchief Rotterdam, 2021.

Research Plan structure

P1 P2 P3 P4 P5

Design

Studio selection

Vacant Heritage studio

Site selection

Witte de With street 25, Rotterdam

Architectural prospect

More **contextual** design

with stronger focus on **connection with the street**

more adaptive for the different future uses

Partial value assesment

Essence model making

Location analysis

context, urban analysis (including K. Lynch), uses, technology

Value assesment

New programme study

Design ideas/ scenarios

reflection

reflection

Interior spaces

Lighting

Shared rooms

Choosing materials

What materials can be re-used (reclaimed, recycled)

Open Building imple-mentation

Layout

Installations needed

Climate design

Energy sources

Final model

base for the further developed research regarding reuse of different typologies of international style buildings

connected

emphasizing / testing

design process

Personal motivation

Cultural value > Many changes are constantly taking place in modern cities leading to shifts in collective memory and local identity

Environmental value > using the existing building stock in order to achieve the set environ-mental and renovation goals

Architectural value > how can international style potential heritage become a humanistic, contextual architecture?

Method: **Literature study**

- The history of the original building, owners
- The architect, architecture of the building
- Densification in the cities, urban farming
- The discourse of international style heritage
- Open Building concept
- Temporariness in architecture

Method: **Archival material study**

Stadsarchief Rotterdam and Het Nieuwe Instituut archive studies on the architect and the building

Method: **Interview with an expert practicing architect**

An interview (qualitative research) will be conducted with Wessel de Jonge to find out his experience and approach towards the international style 50's-60's office buildings, temporality and longevity in 20th-century architecture and Rotterdam's context.

Method: **Study of reference projects**

Projects related to:
- Trasformation of International style building
- Adaptability in new & transformed buildings (Open Building idea)
- Urban farming combined with education about it
- social housing typology

will be studied for possible later integration in the design

Method: **"ABCD" analysis**

"ABCD" (Analysing Buildings from Context to Detail in time) research method for buildings built 1940-70 by Hielkje Zijlstra

Method: **Mind Map**

Generating future challenges and issues by taking different topics as guidelines

Method: **Scenarios**

Urban: from the outcome of the mind map, 3 different scenarios will be sketched addressing the complex future context of the urban block and its proximities through 3 different topic 'lenses'
Building site: the rules for the hypothetical competition will be created and proposals made as being the architect in five different famous architecture studios

Method: **Spatial Building Typology Research**

Collective research comparing 8 vacant Police buildings in 4 different scales (city, urban block, building object, detail - facades, roof)
↓
spatial typology conclusions
↓
building in Witte de With street 25

Research

Research focus

- Finding & integrating the architectural authenticity of the unlisted international style building
- Making an existing WdW25 buidling more future-proof

Main Research Question

How can the build-ing at Witte de Withstraat 25 contribute to the future challenges of the city of Rotterdam (in the context of densification)?

Problem statement

- Increasing number of people in the city centre
- Existing buildings of 20th century are not helping to meet the challenges of the future

Personally-based

Sub questions

Activating the "glass box"

What were the conditions under which the building was built?

Was it about longevity? If not, what does it mean if we intervene with a long-term vision in a building that was designed to be short-lived?

How can the building be adapted to different future uses?

What defines the authenticity of this building? What are the main architectural expression elements that represent the original design of the building?

What are the future challenges for the city centre of Rotterdam?

Studio-based

Sub question

Spatial Building Technology

What are the spatial characteristics of the former Police building and its urban block in Witte de With street 25, Rotterdam?

reflection

conclusion/ strategies

Adaptive reuse **design concept**

reflection

Elaborated design

technological solutions

insulation/ type of windows/ roof terrace/ connection details/ old + new solutions

comparison for re-use options

Building Technology

improving aspects from the beedback

Final design + research outcome

Logbook

detailing, improving

design approach example for "glass boxes" all around the world

The location of the following investigation in the overall Research structure

3.1 The building’s past

Previous owners

(1972)

architect Kees Elffers

built in 1959

Newspaper office
‘De Rotterdammer‘,‘Trouw‘

(1988)

1979-1992

Newspaper office
‘Het Vrije Volk‘

(2021)

1993-2022

Police office

3.1 The building's past

The original design

Originally the building was designed by the achitect Cornelis (Kees) Elffers and built (1959) as a **newspaper office and printing house** for the newspaper companies 'De Rotterdammer' and 'Trouw'.

Article: Representatief, Doeltreffend, Solide, 1959.
In this article the building mentioned to be an admirable host. Furthermore, it goes into the details of the interior of the building and explains in a marvelled tone all the fact and impressions the building gives to the visitor/ user. It speaks of a very modern building with automatic elevator doors and newest model of phone booth in the entrance hall.

Vitrine / Glass display cases

The entrance of the building was accentuated with the use of the show cases in which newspapers weer presented. With the louvres the architect has attempted to create a shelter for those who want to read the newspaper on display. The visitor enters the building through a revolving door that gives way to a double height room with balustrades that provide a connection between the stairwell and the offices on the first floor. IN this hall the krantenleggers were on display. The porter was set in a little nook across of the entrance. The floor was laid with dark natural stone, the ceiling was plastered in black and the walls were sprayed light grey.

Machinekamer / Machineroom

The main stairwell gave access to the machineroom in the basement. There was place for storing paper and bikes. And it was possible to use this space as a hiding shelter. There was a main elevator at the main stairwell. On the Hartmansstraat side of the building the elevator was used as a freight elevator. There were 2 other small elevators for small goods, such as papers and boxes.

Figure: Artist's impression of the building
Source: Figure: "Bouw" magazine, 1959. Photo taken from Het Nieuwe Instituut archives.

Figure: Photo of the building, 1959.
Source:“Bouw” magazine, 1959. Photo taken from Het Nieuwe Instituut archives.

3.1 The building’s past

The original design

Buizenpost / Pneumatic post (in tubes)

The interior was decorated tastefully but simple.; effective, representative, and sound. The editorial department had the ability to send pneumatic posts to the printer in the basement.

Een kwart miljoen zwarte tegels /
A quarter of a million black tiles

The parapet in the façade consisted of small black tiles. In total around 250.000 tiles for the whole of the building. This was done in Italy. The workers here placed these tiles one by one on a sheet of paper. These sheets of paper where then delivered to Schokbeton to be put in the molds for the façade elements.

For the building 110 poles where put in the ground for the foundation. 130 tons of rebar was used in 1131 m3 of concrete. In the construction 8656 m2 of wooden sheets were used when poring the concrete. There was 2000 m2 of bricks used on one side of the building, 120 m2 of natural stones was used for the stairs and another 120 m2 was used for the landings of the stairs. Furthermore, there were 176 tilting windows and 151 panels of Schokbeton. The ceilings were covered in 1600 m2 of acoustic tiles.

Figure: Photo of the building, 1988.
Source: https://images0.persgroep.net/rcs/H-fcZrkwFQzJsMj5mulkDbwOSfE/diocontent/153695987/_fill/729/899/?appId=21791a8992982cd8da851550a453bd7f&quality=0.9

3.1 The building's past

The original design

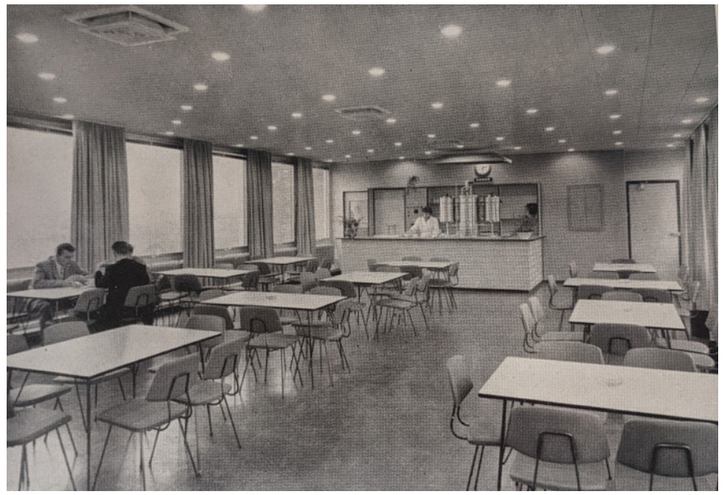
The different departments housed in the newspaper office building:

- Subscriptions
- Propaganda
- Advertisements
- Administration
- Accountancy
- Archive
- Shipping (expeditie)
- Editorial

3.1 The building's past

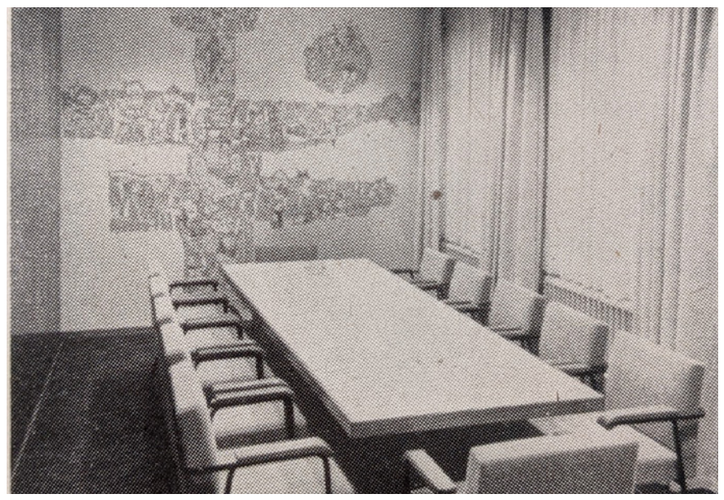
The original interior design

A lot of attention was paid to the interior and its furniture. Many detailed drawings were found in the Het Nieuw Institut that show how architect C.Elffers strived for modernity not only in the exterior architecture of the building but also the interior. For instance, the sinks in the WC rooms were custom made and integrated into the wall, making it look very minimalistic and functional. it's disappointing, but none of the original interior remains in the building.

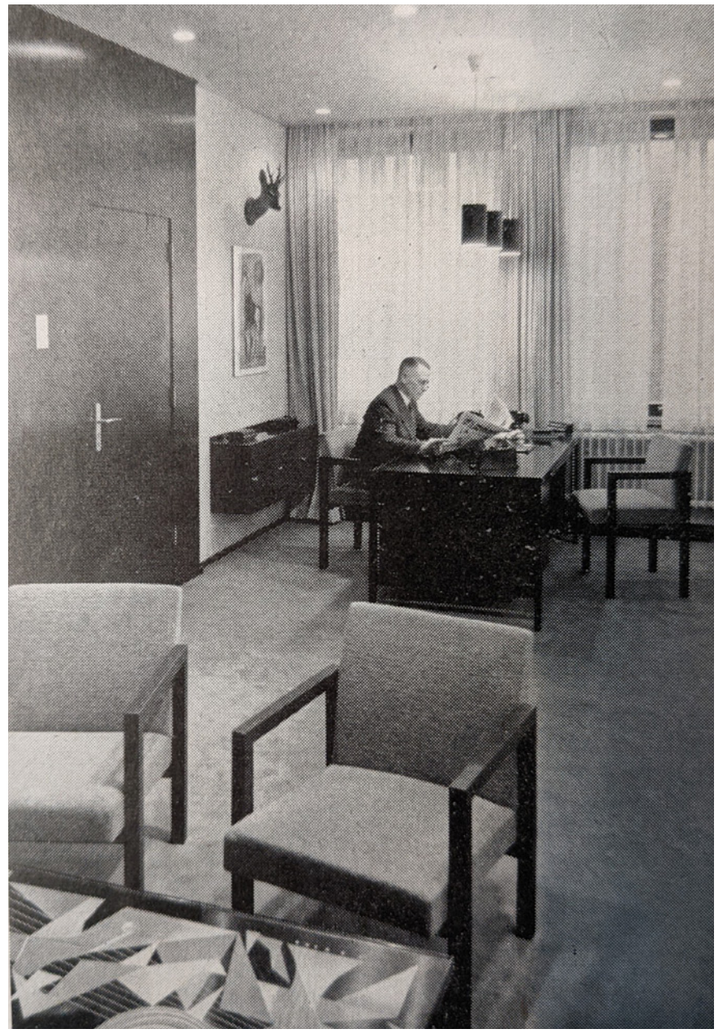


Canteen on the fith floor

Office space



Conference room



Director room

Figures: Interior photos
Source: "Bouw" magazine, 1959. Photos taken from Het Nieuwe Instituut archives.

3.1 The building's past

Architect Cornelis (Kees) Elffers

Architect **Cornelis (Kees) Elffers** (1898-1987) started his professional practice as an independent architect at the age of 25 - in 1923. He gained professional experience quite early and was influenced by famous Dutch architects like **Johan Coenraad Meischke** (1889 - 1966) and **Michiel Brinkman** (1873–1925). In architectural firm **Meischke** and Schmidt he mainly designed housing and churches in the Rotterdam area. Some of his buildings were granted the building the status of a municipal monument because oftheir unique design. **Michiel Brinkman** (1873–1925) is notable for his Justus van Effen housing block complex in Spangen (Cornelis Elffers worked on this project), which is a Rijksmonument, built in 1922.

Pre-war designs

He received his **first major order** in 1927-28 for the construction of a new **factory in Rotterdam**. The **Insulinde office building on the Korte Vijverberg in The Hague** was also an important assignment. In 1938, through a closed competition, he was commissioned to build the **Sikkens' Lacquer factories in Sassenheim**.

Post-war reconstruction of Rotterdam

During and after the war, architect Cornelis Elffers was also closely involved in the reconstruction of Rotterdam. He was a member of the architects' committee that advised on the architectural aspects of the reconstruction. The center of Rotterdam to be rebuilt was divided into 13 districts, each with its own supervisor who had to promote the aesthetic design within its district. **Elffers was included in the highest class of architects**, alongside Granpré Molière, Kraayvanger, JJP Oud , Van Ravensteyn, Van der Steur, Verhagen and De Vries. During the war years, Elffers worked on the **Nationale Levensverzekeringbank** (1942-1949) on the Schiekade, the **Nederlandse Handelmaatschappij** (1942-1949) Blaak 34 and **Emporium** in Rotterdam. In addition, he designed **Three warehouses for Koch's tobacco trade** (1944-1948) **in a historical style** on the Wijnhaven and **the Machinistenschool** (1943-1949), nowadays restaurant De Machinist on the Willem Buytewechstraat.

Sources for the text: https://zoeken.hetnieuweinstituut.nl/nl/personen/detail/db-b5a6ee-920a-5107-b5b7-024147ff59dd
https://nieuws.top010.nl/cornelis-kees-elffers.htm

Shakehand's architecture

The Second World War, as with many other architects, caused a definitive **turnaround in his work**. Until WWII, Elffers mainly worked in the prevailing trend of Art Deco and the style of the Amsterdam School, and his buildings were built in **brick**.

Figure: the Machinistenschool
Source: https://www.hotelbazar.nl/upload/images/restaurant-slider/resto-terras_m6a0134.jpg

After the war, Kees Elffers first opted for *shakehands* architecture, **a combination of modern concrete and traditional brick**. This transitions into a functional style, with a mostly visible concrete skeleton in which sophisticated proportions and straight surfaces played the leading role.

Bazar and Theater Rotterdam

A good example of the ***shakehands* style of Elffers** are the **buildings for the Salvation Army** (1946-1948), nowadays Theater Rotterdam at Willem Boothlaan 8 and the adjacent office building Blikman (1948-1950), nowadays Bazar on the corner of the Witte de Withstraat. It is modern in design due to the use of reinforced concrete for the supporting structure, open floor plan and facade layout. However, the decorative brick infill and the classic main layout are traditional.

Figure: buildings for the Salvation Army
Source: https://www.hotelbazar.nl/upload/images/restaurant-slider/resto-terras_m6a0134.jpg

Functionalist designs

Functionalist designs are the building for the **Imperial Chemical Industries ICI** (1949-1952) on the corner of the Wijnhaven, **Ruteck's Lunchroom** on the Stadhuisplein (1954-1957) and the **Slavenburg's bank** on the Coolsingel (1955-1958). The crown on his work was the **Rotterdam Economics College** in collaboration with A. van der Heijden (1962-1970).

The building in **Witte de Withstraat 25** was also designed during this period in Elffers career.

Figure: Rotterdam Economics College
Source: https://www.eur.nl/en/media/2018-06-student-charter-eur-2018-2019

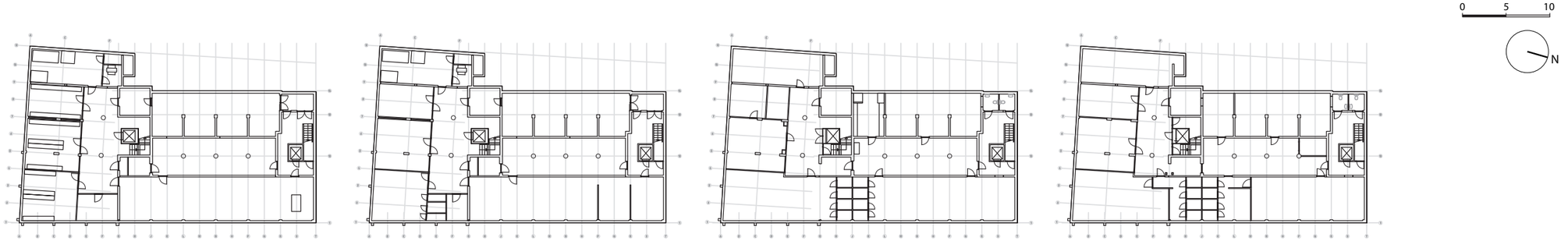
3.1 The building's past
Changes of the plans over time

1956-58 – The original design for "De Rotterdammer" & "Trouw"

1979 – Renovation for "Het Vrije Volk"

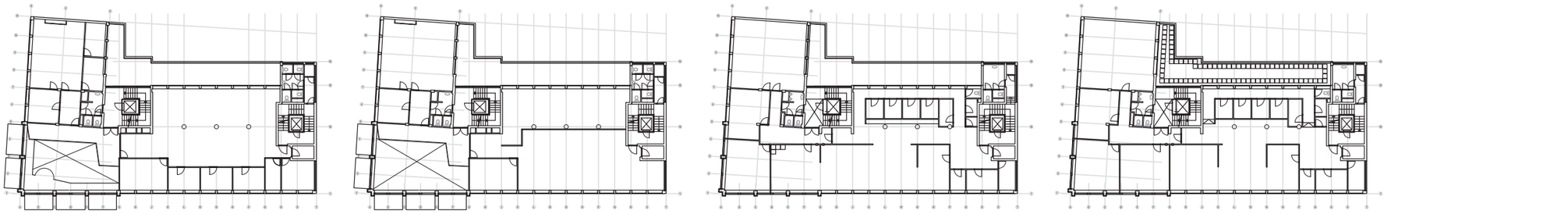
1993 – Renovation for the Police

2005 – Refurbishment for the Police

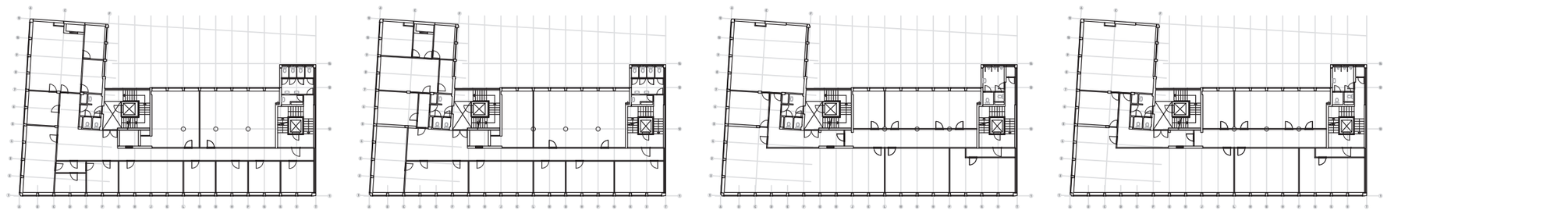


-1_basement

0_ground floor



1 floor



2 floor

3.1 The building's past
Changes of the plans over time

1956-58 – The original design for "De Rotterdammer" & "Trouw"

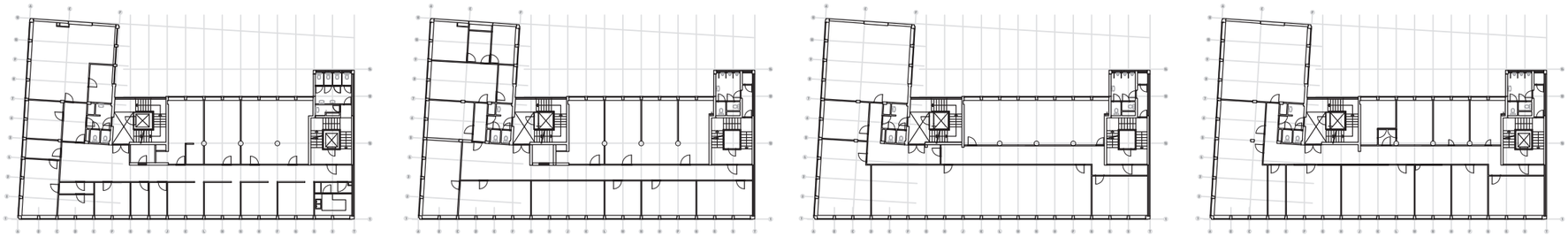
1979 – Renovation for "Het Vrije Volk"

1993 – Renovation for the Police

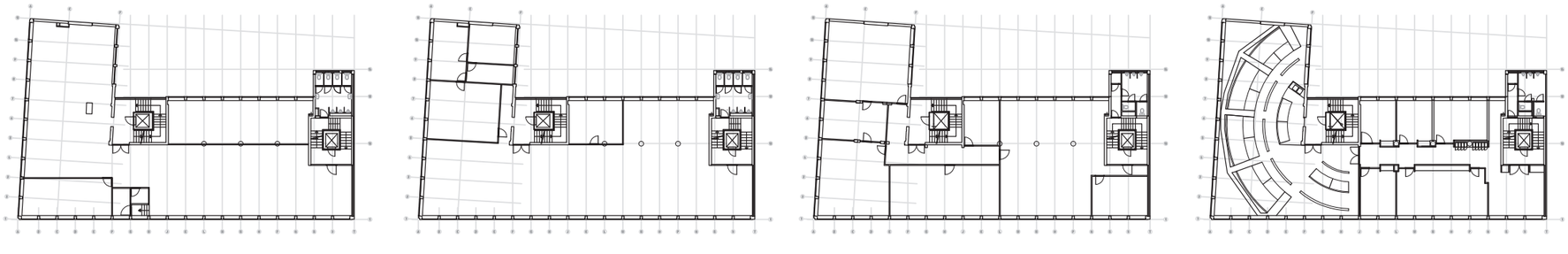
2005 – Refurbishment for the Police

0 5 10

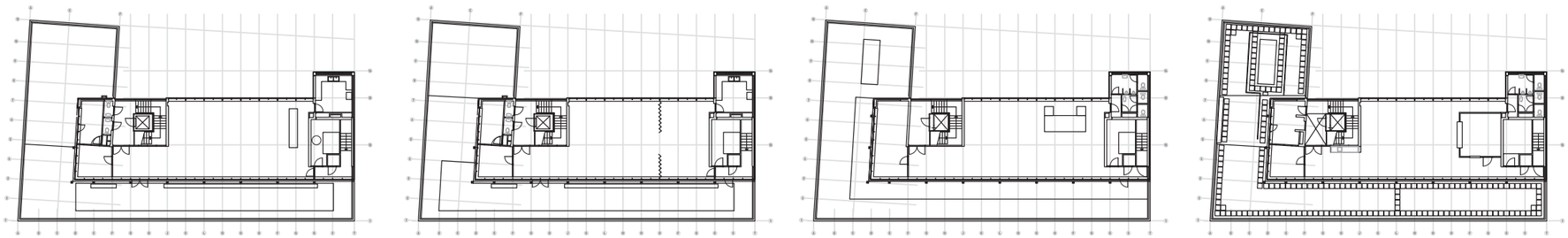
N



3 floor



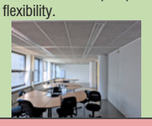
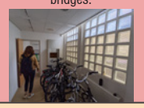
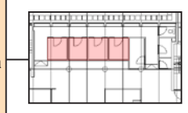
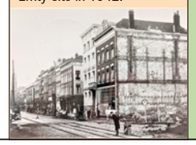
4 floor



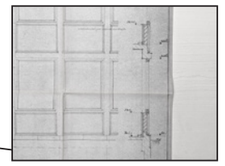
5 floor

3.1 The building's past
Value assesment




Values / Layers	Age	Historical	Intentended com-memorative Value	Not intended commemorative value	Use	New-ness	Art	Rarity	Other
Site	The building is one of the youngest buildings in the street, most of the other buildings are much older, but there are similar age buildings very close to it, therefore it has a medium value in relation to age.	Located closely to historical Rotterdam's triangle and is on the edge of bombed area. 	Building had a quite high intended commemorative value as a newspaper office, but since it became a Police office the value decreased.		Present urban greenery reduces urban heat. Excellent infrastructure makes a building easily accessible. Public flows in both streets gain constant amount of potential visitors. Present use - not efficient, some premises are emty, building lacks interraction with outside public space.	The newness of the building compared to others in the street represents Rotteram's identity where new and old co-exists in union.	>Variety of art museums around (on the route between Museumpark & Maritime museum, Tent, galleries) Theater - Theater Rotterdam Witte de With. >Esthetical / artistic value of surrounding building's facades (K.Elffer's earlier building's facade - 'Bazar' now, other buildings nearby)	When built, it was first among others designed in International style while being surrounded by traditional Dutch architecture, but later the close surroundings made building less different.	Building is situated in quite alive location, can be publicly observed from all sides except the back side facades. This is valuable for the future use & liveliness of the building. The view from the roof top allows exceptional panorama.
Structure					The load-bearing column stucture allows open plan flexibility. 	The construction aged fairly well (because of the renovations done before).			
Skin			The building's look & feel is related to the materiality of the facade. Public percepti on of the building is therfore closely related to its skin.	Because of the closed corner introduced in renovations, the building has been assotiated with issolation rather than invitation. 	The walls do not provide much insullation, have thermal bridges. 	Facade finishes are in good/usable shape, but needs painting.	Facade (as being International style) was not meant to have artistic qualities. It is pragmatic and monotonous.		
Services				Installations take a lot of space on the roof terrace. It also blocks the panoramic view. 	The existing installations could still be reused, but that depends on the potential new uses of the building.				
Space Plan		The organisation of the flow slightly changed each time a new owner came into the building, but mainly circuation is based on the cores and connection between them.			The organization is simple and reasonable, it's quite good to use and easy to fit in new functions.			Several glazed small rooms were made for the short detention of disobedient people in the area (done during the Police era in the building). Is it something worth keeping? 	
Stuff						Interior cladding is not in a bad condition, but outdated. it could be re-used as materials for the transformation.	Architect C. Elffers designed custom made furniture and interior details. They are not in the building anymore. 		
Spirit of Place	Emty site in 1942. 	Memories of workers when the building was used by the newspaper companies 'De Rotterdammer' and 'Trouw'. Building was "the beating heart" of Rotterdam's journalism			 The cafeteria on the roof provided panoramic views to the city (1959-until now).				




High value | Medium value | Low value

3.1 The building's past
Value assesment

OUTCOME:

Positive:
Central historical location
Corner location in the street
Close to museums, galleries and **culture**

Load-bearing **structure** is in **good condition**,
allows flexibility in plan
Facade finish is in good condition

Workers' memories of the building:
>as **"the beating heart"** of Rotterdam's **journalism**
>pleasant **cafeteria** on the roof top
>custom made C.Elffer's interiors & furniture (not there anymore)

Negative:
The **commemorative value**
decreased since it became a **Police office**.

Lack of interraction with the street.
Because of the closed corner introduced in renovations, the building has been assotiated with **isolation rather than invitation**.

The walls **do not provide much insullation**, have **thermal bridges**.

Installations take a lot of space **on the roof** terrace & block the panoramic view.

ABCD Matrix for Witte de Withstraat 25

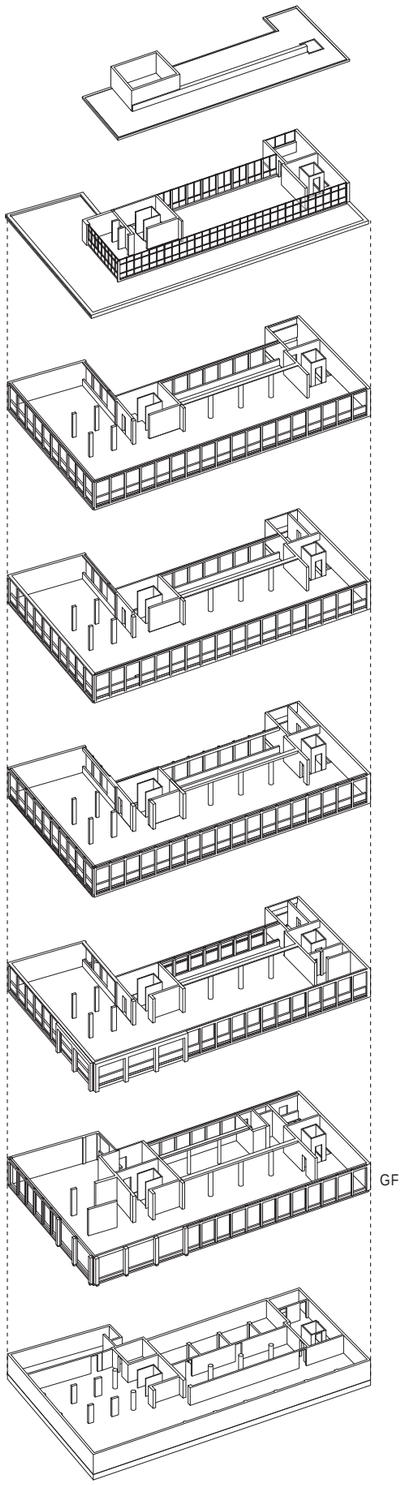
ABCD assessment

ABCD (Analysing Buildings from Context to Detail in time) research method created by Hielkje Zijlstra.

	Meant to be	Has been	To be or not to be
Brief	- The revised design to be built for the office and printing house of the newspaper companies “De Rotterdammer” and “Trouw”.	- The function continued to be the same when the different newspaper company took over the building; when the police station moved in, it was still mainly operating as a police office (with a few glazed rooms to hold detainees) building, but without the newspaper printing function.	- In order to strengthen the identity of Witte de Withstraat as a Horeca street, at least the plinth should host more public function; - The building needs to gain more attractiveness and approachability from both sides as a corner building.
Site	- Very close to the original triangular city centre of Rotterdam; - newly built building emerged on the empty plot because the previous building was bombed during WWII; - The building was designed to form the corner of the urban block;;;	- Being part of the Witte de Withstraat, the building was involved in journalism and cultural life, as it also hosted newspapers; - Since it became a police station in 1993, the location was useful for keeping an eye on the wild and sometimes dangerous events on the street.	- Being part of the Witte de Withstraat, the building should again be more involved in the cultural and Horeca life of the street; - Hartmansstraat will gain more importance in the future since it connects the shopping area on the north side to the newly emerging Blok Schilderstraat on the south. Therefore, the building will be passed by more frequently.
Architect	Cornelis (Kees) Elffers	Cornelis (Kees) Elffers; John Spindler B.V.; Bakker&Partners	Cornelis (Kees) Elffers; John Spindler B.V.; Bakker&Partners; ...?
Typology	It is an L-shaped office building with a double-height entrance lobby on the corner of the ground floor	An L-shaped office building with one-story-high entrance lobby on the corner of the ground floor	It is an L-shaped building with a double-height entrance lobby on the corner of the ground floor
Design process	Not known, but supposedly in a few stages, with a few corrections by the client	The original design provided the basis for the final design	The original design provided the basis for the final design and adhered to implementing the requirements and legislation
Space	- It is an L-shaped building - double-height entrance lobby on the corner of the ground floor; - GF & basement are larger than standard floors - Typical open-plan floors consist of rooms along the facades and the corridor in between; - 5th floor: smaller than others, but has a great panoramic view.	- It remained an L-shaped building within the existing volume; - one-story-high entrance lobby on the corner of the ground floor; - 1st floor was extended above the main lobby; - GF & basement are larger than standard floors; - Typical open-plan floors remain the same; - 5th floor: smaller than others, but has a great panoramic view.	- It will remain an L-shaped building, forming the urban block; - It could be extended by the top floors because it is a good location for a tower; - accomodating new funtions, public function on the ground floor; - GF & basement remain larger than standard floors; - The great panoramic view and roof space on the 5th floor could be used for a roof terrace.
Structure	- The grid of 1,98m at the Witte de Withstraat and 1,85 m at the Hartmansstraat - Square columns on the Witte de Withstraat side of the building and round columns on the Hartmansstraat side.	- structure accommodated changes over time without much trouble; - Sufficient load-bearing capacity; - The interior wall locations and storey height are constrained by a structural facade grid.	- structure accommodated changes over time without much trouble; - Load-bearing capacity is reached or can bear a light-structured additional floor; - Structural facade grid can impose aesthetic difficulties if strengthening is needed;
Materials	- Neutral - Timeless - Durable (tiles made in Italy, naturals stone were used in the original design)	- The original interior materials, together with the furniture, are not in the building anymore; - Neutral tones were accompanied by bright colours such as red and blue; - The existing interiors do not have high aesthetic value.	- Existing interior materials should be reconsidered for repurposing or re-using in a different manner; - Neutral tones and natural materials are timeless; - Windows will need to be changed as the facade has to be better insulated for energy performance.
Services	- Minimal	- During the transformations in order to meet statutory requirements and energy label B; - additional room (on top of the 5th floor) for ventilation equipment was added; - the roof is loaded with various pieces of equipment.	- More has to be done in order to improve the energy use of the building; - the roof should not be loaded with equipment, but dedicated to terrace, greenery, etc.

3.2 Building’s physical & cultural values

Physical values

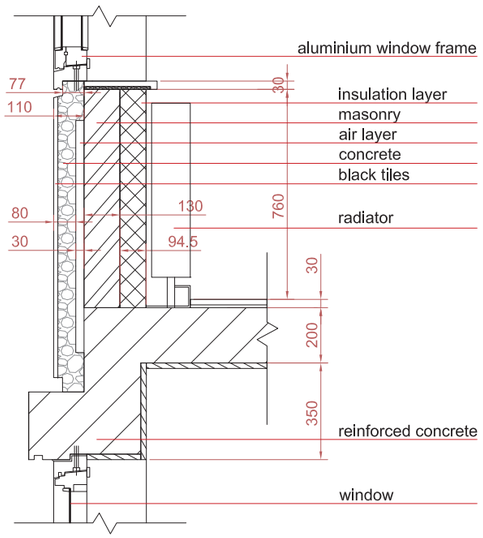


- typical floor height (1st-4th floors, floor to floor) - 3,5 m
- higher ground floor (floor to floor)- 3,675 m
- basement height (floor to GF floor) - 2,975 m

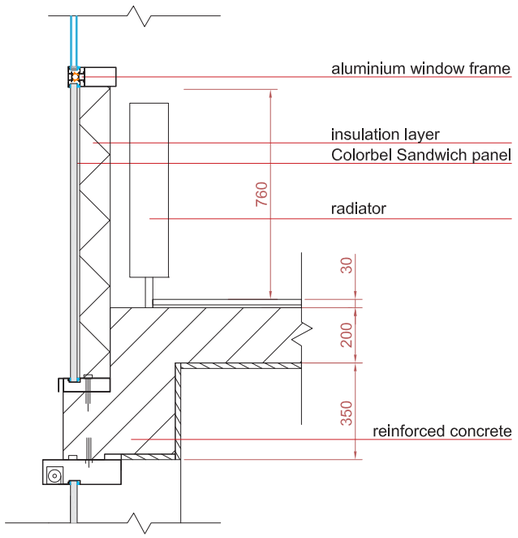
- the load-bearing column stucture allows open plan flexibility

3.2 Building’s physical & cultural values
Physical values

- facade system has been changed from the original one

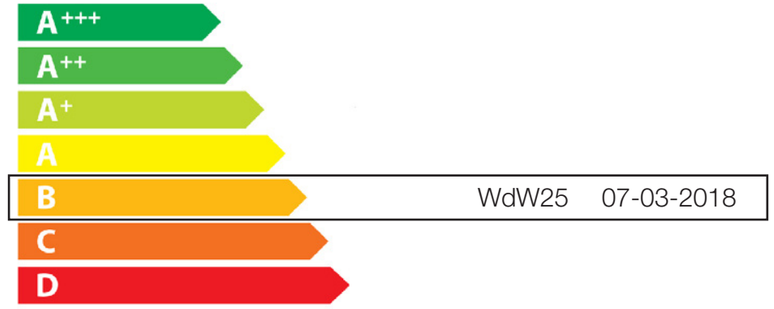


original facade detail



existing facade detail

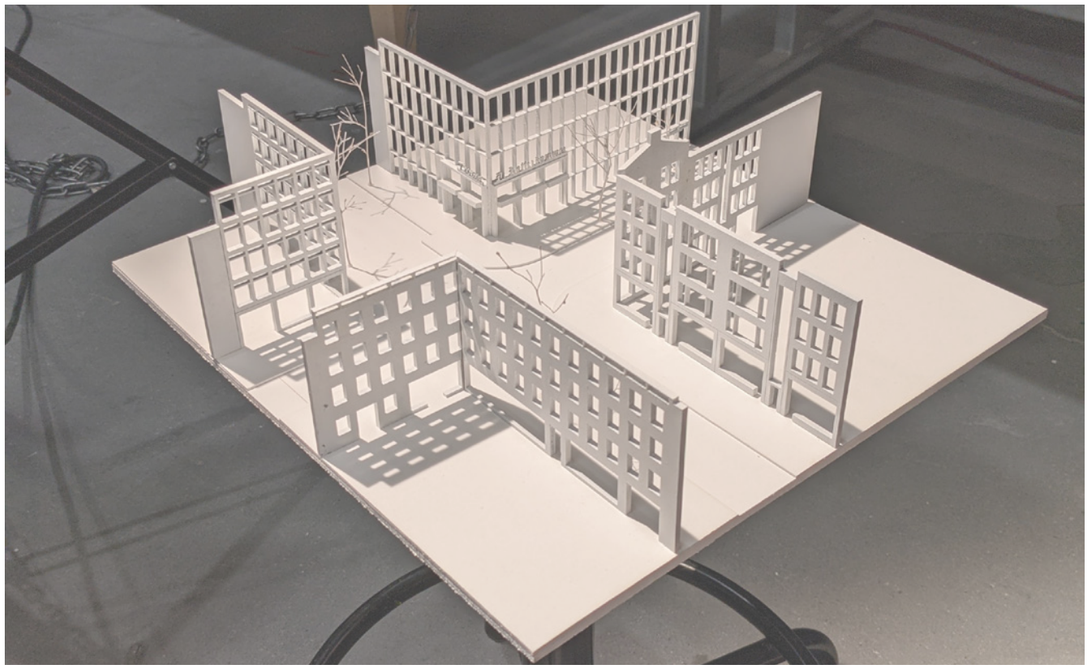
- has energy label B



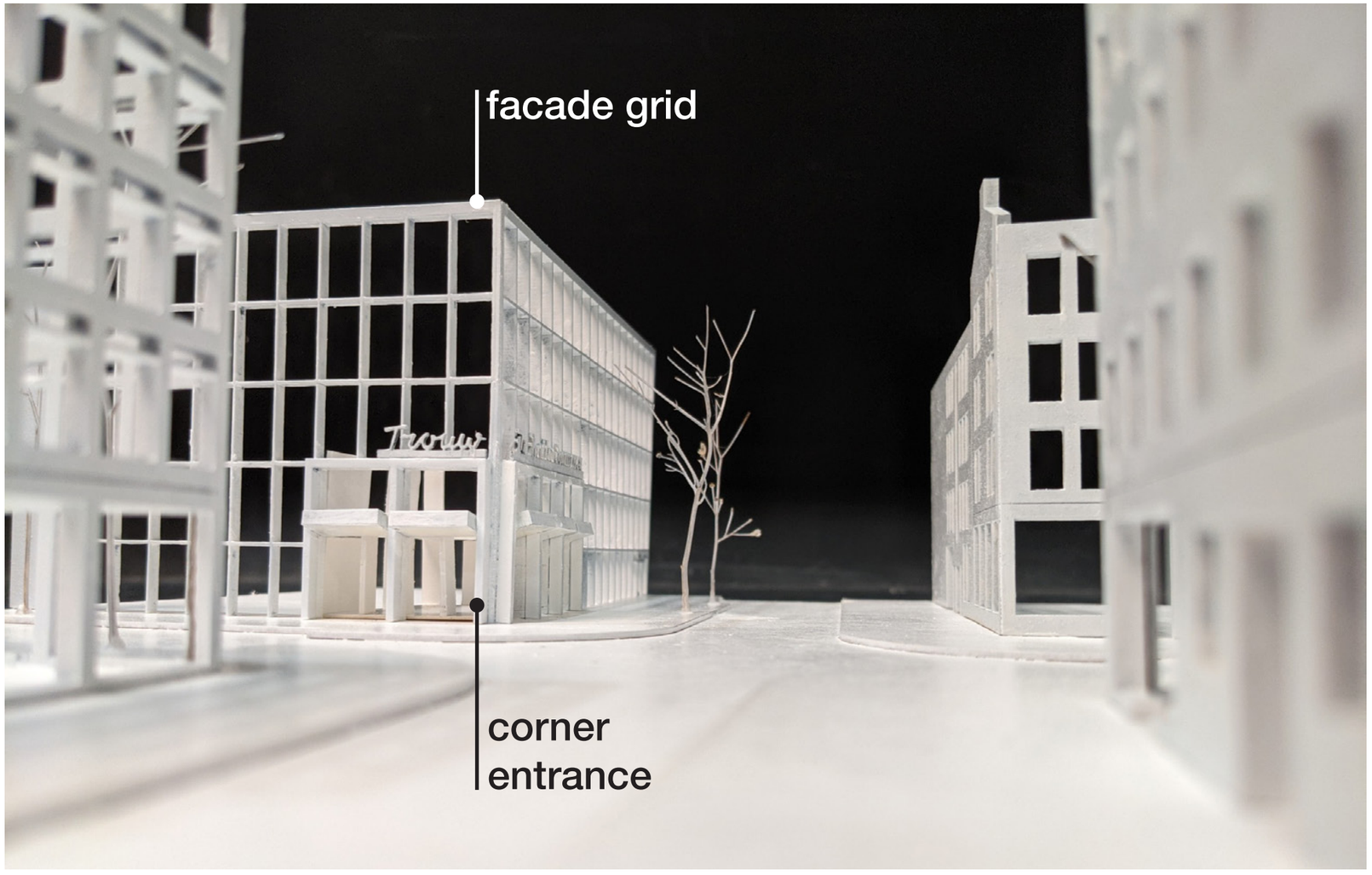
- facades are in good/usable shape
- insufficiently insulated (cold bridges)

3.2 Building’s physical & cultural values

Essence model of the Witte de Withstraat 25 building



3.2 Building’s physical & cultural values
Cultural values



Heritage aspects:

It is not listed as a monument

During the post-war reconstruction period, when the building was erected, It was not designed to last for very long, however modern idea of flexible plan and open facade made it practical and used till today.

important elements to use in the re-design:
- facade grid
- corner entrance

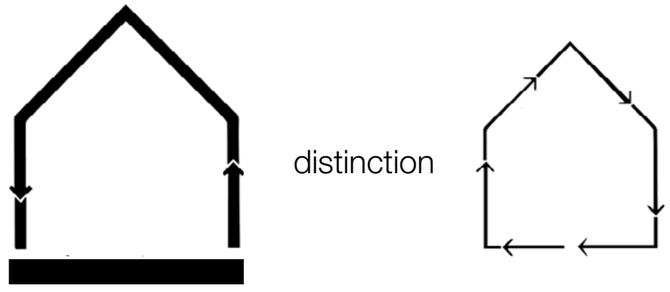
3.3 Authenticity of the building

Each building has its own authenticity (associated with a design concept or a societal value), which indicates the original use and ideals at the time it was built. This study looks at young potential heritage that will not necessarily be listed on monument lists and looks for the authenticity of the architecture even if it hasn't yet been stated by experts in the area. When dealing with post-war modernism architecture, a designer must consider not only preserving it because of the embodied energy it contains, but also allowing for future assessment of this heritage over time[2] (recognizing the temporality of our interpretations of this recent past).

When I was investigating the authenticity of this building, I assumed it was **based on** a theoretical **design conception rather than materials** (characteristics of functionalism). Firstly, this edifice is best identified as **part of a well-known horeca street**. Second, **the facade grid** and the **highlighted corner entry** are elements that contribute to the authenticity of this building. In this case, **the street is just as important as the structure itself**.

1 - Prudon, Theodore HM. Preservation of modern architecture. 2008. 21.

N. John Habraken | 1961:



Supports / Shell

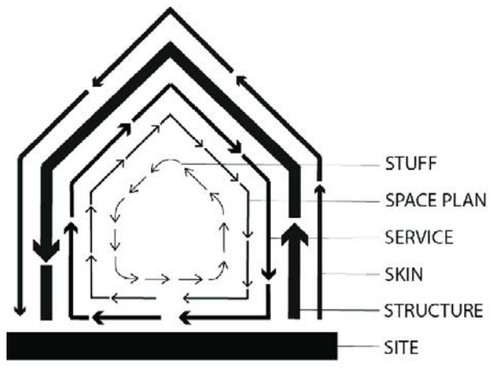
- part of public domain
- permanent

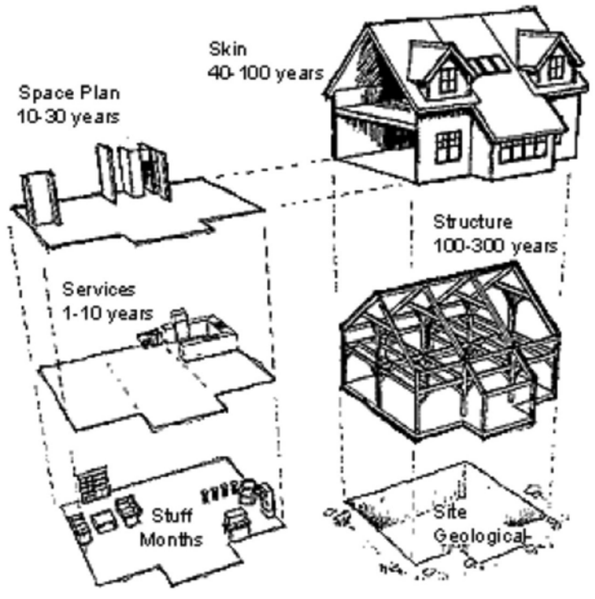
Infill

- personal influence
- changeable

S. Brand | 1994:

6 shearing layers of change





Sourcesmof the images:
https://www.researchgate.net/profile/Ana-Pereira-Roders/publication/228865622/figure/fig1/AS:652971071242247@1532691843827/Shearing-layers-of-Change-Brand-S-1994.png
http://inter-architecture.rietveldacademie.nl/wp-content/uploads/2009/09/schermafbeelding-2009-10-25-om-100153.png

3.4 Adaptability over time

Open Building idea

Theory & principles

Open Building is an architectural design concept that includes the possibility of changing or adapting the building throughout its lifespan in response to societal or technological change. The objective of open building design is to organize input from various related professions, building users, and other local interests.

The concept is based on the work of Professor N. John Habraken, who proposed Open Building in the 1960s as a radical shift in decision-making for mass customizable housing and a new approach to harness the force of industrial production.
Habraken was decades ahead of the profession in his book ‘De Dragers en de Mensen’ (1961) - eng. ‘The Supports and the People.’

Habraken advocates for a living architecture that defines daily life and allows for change. He draws a clear **separation between support and infill**, highlighting that such a distinction is not simply a technical one but also oriented on the potential of human influence. **Supports are part of the public domain** and are permanent, whereas **infill is personal** and changing. The primary goal is user’s participation and decision-making freedom.

Shearing layers is a principle coined by architect Frank Duffy (who identified 4 layers) that was further elaborated by Stewart Brand in his book, How Buildings Learn: What Happens After They’re Built (1994), and refers to buildings as being made up of 6 layers of change. The notion of shearing layers leads to the pace-layering architectural design philosophy, which organizes the layers to allow for maximum flexibility.

Source:
https://www.openbuilding.co/manifesto, https://www.openbuilding.co/legacy

3.4 Adaptability over time

Excursion to Amsterdam North

curated by prof.Thijs Asselbergs (TU Delft)

Visited buildings are built according to Open Building principles.

BSH20A 'Stories' building
by Olaf Gipser Architects, 2021.

The project is a mixed-use residential building in Amsterdam's post-industrial Buiksloterham, with 35 apartments and commercial units and an underground parking garage. Stories currently has 29 apartments ranging in size from 43 to 185 m2, several of which are integrated with office spaces, allowing for living/working combinations, forming 10 urban household types and consisting of single and double-height apartments. The ceiling height is 2.87 m, while the floor height is 6.12 m.
Plasterboard that is both fire resistant and soundproof is used to cover the walls. The floors are also built of CLT-plate, which is exposed as timber ceilings on the level below and coupled with an acoustic foam concrete mass layer.

TOP-UP building
by Lemniskade Projects, 2020.

At Top-Up the owner finishes the apartment himself (own designer, contractor, installer). User's own layout and individual finish. However it is limited what one can do in the balcony space, as it belongs to the city and the architect was responsible for the identity and the look of the building.

The ground floor of Top-Up is the old concrete PTT cable reel. The shape of the original structure was maintained to keep the memory of what was there before. This floor will host a commercial space.

The piping that is entering the apartment is:
1× metering/supply water
1× household water
1× district heating
1× electricity
1× CAI/internet
1× ventilation box with connection point for drainage channels above the front door.

Figure: 'Stories' building
Source of the images: own photos taken on the site.

Figure: 'TOP-UP' building
Source of the images: own photos taken on the site.

3.4 Adaptability over time

References for different raised floor approach

Patch22 building

by Lemniskade Project, 2016, Amsterdam, The Netherlands

Patch22's core and shell are constructed out of glue-laminated (glulam) and cross-laminated timber (CLT). floors are hollow with a removable top, meaning that each unit is entirely customizable.

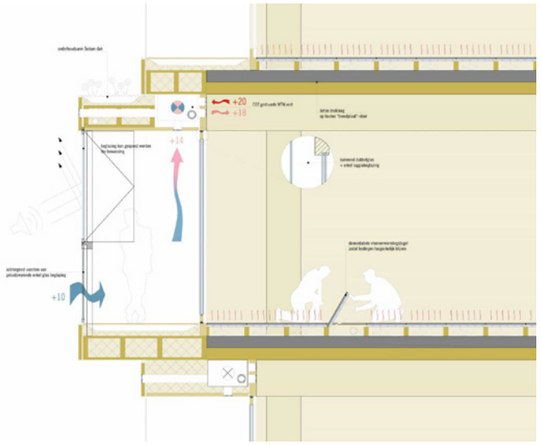


Figure: Section of the storey.

Figure: Hollow Slimline floor system with free positioning of drains and wiring.

Figure: Exterior.

Sources of the images: https://aasarchitecture.com/wp-content/uploads/Breaking-Ground-for-PATCH22-by-FRANTZEN-et-al-architects-09-474x383.jpg
https://images.squarespace-cdn.com/content/v1/5aec971696d455c0ddbf67e5/1597094104959-NLYDXBHGTXJUP02BZ87P/Picture1.png
https://cdnassets.hw.net/88/84/4e3396064e77992da49a104cad40/patch22-frantzen-et-al-architecten-exterior2.jpg

Key Open Building Strategies:

- Hollow floors
- Open plan
- Central service core
- High storey height
- High floor load

SAWA building

by Mei architects and planners, start of construction 2022, Rotterdam, The Netherlands

SAWA's main load-bearing structure consists of more than 90% wood (CLT), only the cores are from prefabricated conrete. Instead of concrete (no casting), floors are made of CLT capped with dry ballast. This makes the floor components circular as the materials may be detached and reused in the future (urban mining).

Figure: Section detail of the storey showinf floor layers.

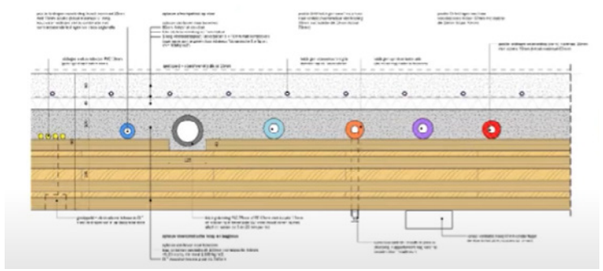


Figure: Floor detail where installations are in the dry balast layer allowing for dry disassemble.

Figure: Artist's impression of the exterior.

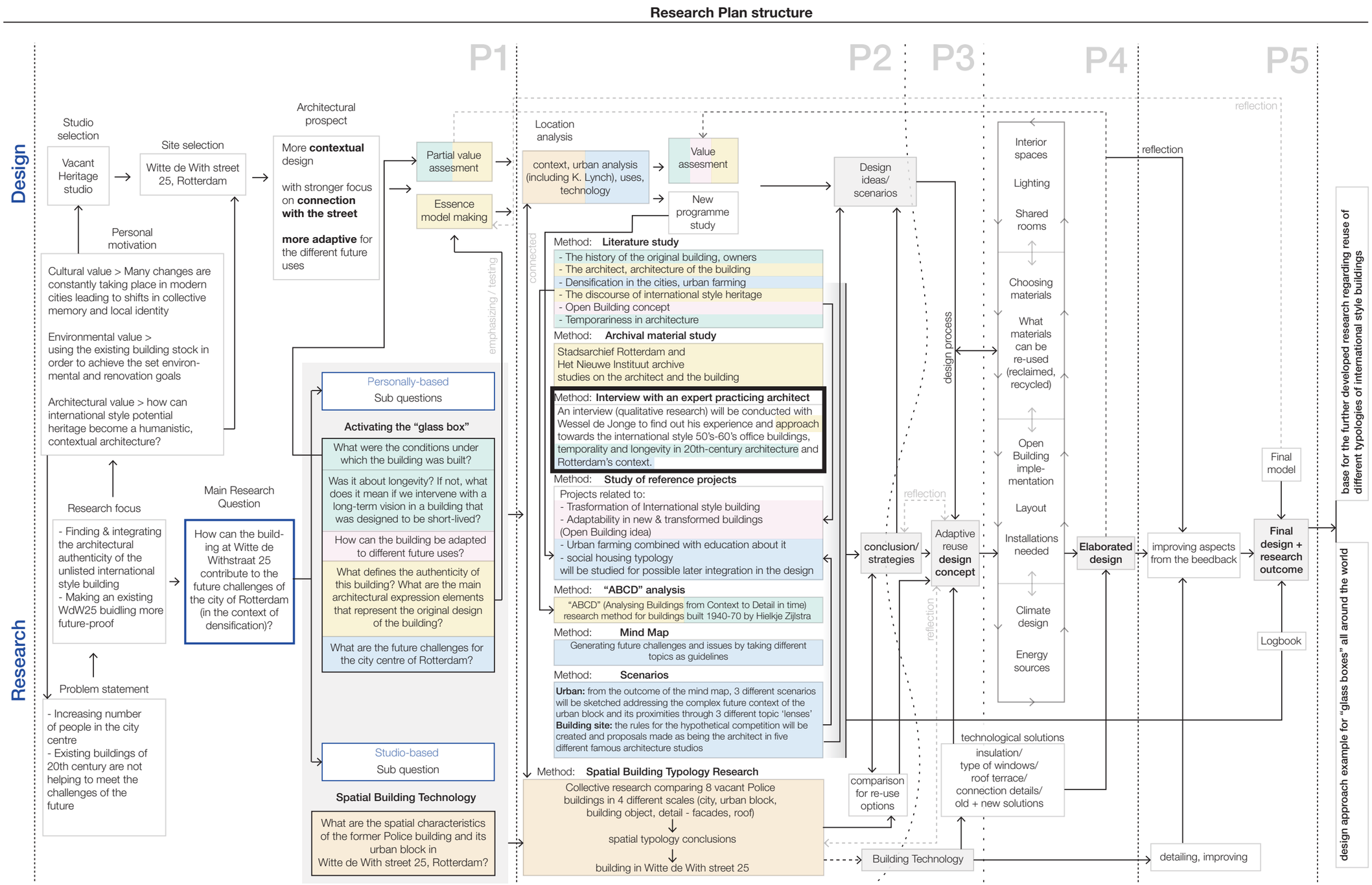
Key Open Building Strategies:

- Raised floors for later disassebly
- Open plan
- Central service core
- High storey height

Sources of the images: https://mei-arch.eu/en/projects/sawa/
https://www.youtube.com/watch?v=-mvMIS44Vwc&t=1560s

3.5 International style office transformation

3.5.1 Interview with an expert practicing architect



The location of the following investigation in the overall Research structure

25-11-2021

Interview
with Wessel de Jonge

W - Wessel de Jonge
A - Aistė Mankutė

A (1): International style 50's-60's buildings received their criticism concerning the austerity, formality, and lack of variety that resulted in the postmodernism movement.
-While transforming such buildings, especially unlisted ones, should the criticized features be seen as something to get rid of or as characteristics of the building to keep for the future?

W: To me, it doesn't make that much of a difference whether the building is listed or not. You know, if it's listed, you have to go through more formal procedures and talk to more people, and there is usually more documentation available, and if not, you have to organize that yourself). For instance, the GAK building (figure 4) – there was no historic report, so we had to go by our own intuition. The client was also not going to pay for such research, so you could do it, but then you have to pay for it yourself. You then try to do it in another way.

The main point I'd like to make is this: when a building is listed, the heritage authorities make a value assessment (which is mostly based on historical research – factual and objective) and you must comply with that for legal reasons. **We, as designers, are not historians** – it's not our work to do the documentation and figure out the facts; **our work is the interpretation of those facts and taking/showing what we feel is important**. As a designer, I take the historical documentation as it is, as the facts, as it is. But I mostly try to create a vision of my own, which I call the **transformation framework**, in which I try to figure out where I feel there is room for change. So actually, you reverse it – the historic documentation with the listing mostly goes with the policy of what you cannot do, and I am trying to figure out what you could do. And in doing so, I try to create a platform with my client and other stakeholders, because you mostly have to make changes (particularly when the use of the building changes) in those areas of the building where it does not matter so much.

I try to be more positive, and that has a lot to do with my clients, because they are usually very scared of listed buildings. They think in terms of investment and income, and they want to avoid anything that creates risks. That is the job of the property developer or real estate manager – to reduce risks. Instead of ignoring that the building is listed or is of historic value, I try to come to grips with the risk – make sure the risk is understood by the client, and then I can take him/her with me in a design process of making changes. Of course, they have to rely on my expertise.

With the help of the transformation framework, I try to **open the discussion with the heritage authorities** about the building's view **from the beginning**, stating which areas I consider valuable for various reasons and which areas I consider less valuable.Then you start to do something that a historian would never do – that is **prioritizing**.

Looking at the Witte de Withstraat 25 building, as a designer, before starting my design, I would really try to identify those elements that I find most significant. **Significance** is the keyword. It's not only **value** (value is more or less factual) but also **significance, which is your interpretation of the value**. Significance is in your head; it is a personal interpretation. Professor dr. A.R. Pereira Roders designed a matrix of colored squares with 9 values that you can use as a checklist to develop your own point of view. That's your **statement of significance** (which is also used in all kinds of heritage documents in ICOMOS or UNESCO). You, as an architect, are involved in creating it and that creates a basis.

In terms of the former police station building, when I found out that it was a former newspaper building, I can understand it better.
Why was the newspaper office located on that street? The whole WestBlaak was **a street of newspaper offices. I think there were five or six of them.** The cafes in Witte de Withstraat were the cafes where the journalists went after work. **It's really a cultural area of its own, of news gathering and journalism**. It was quite different from the rest of the city centre cafes. After that, the street went down a lot for a number of years. And now it is reviving again with a lot of restaurants.

So, I think the story of the newspaper building on that street is really something nice that would make people understand where they actually are and what kind of neighborhood it is, why that building is there and why it looks like it does.

It reminded me of the **Slaakhuys building** (figure 1), a former newspaper building with a higher ground floor. There they had a bookstore and a shop. In the back there was a print house. On the upper floors were the offices for the journalists and directors. So it is one little plot, and it has the whole story of making the newspaper in it.

The newspaper's use, though, is only one story of the building. It's how you value the building and what kind of significance you attach to things.

The **transformation frameworks** I make are extensive and elaborative, explaining, from a larger to a smaller scale, what I value and why. What I like to preserve and what can change. In that case, I am talking mostly about the **transformation potential** – if I feel that the area has a high transformation potential, it can change if there is a good reason for it. So you can even map that with the colour code.

Figure 1: Slaakhuys building after the transformation by Mei architects, Rotterdam, NL. https://www.rotterdamarchitectuurprijs.nl/media/images/thumb_constrain_1136_1136/schermafbeelding-2019-10-03-om-083301.jpg

I simply put tracing paper on top of this coloured historic map and from my evaluation, I start to design and fit the new program. And when you suddenly start to draw on top of the high-significance colour, you instantly see it and try to make changes in other areas instead.
In the end, sometimes it does not fit, and then you need to prioritize again or, for instance, compromise on the use of the space.
In one building, we had a problem with stairs to reach the upper floor. It was difficult to improve them to today's standards. **We can make use of that room through technical solutions, or we can change the behavior of the building's use** and say that this room is only accessible for a maximum of 30 people, and then the original stairs were wide enough - the client was not against this solution.

We talk a lot about **behaviour** when it comes to sustainability issues (when improving the thermal performance of heritage buildings). [Then Wessel de Jonge mentions the example of the exhibition pavilion designed by architect G. Rietvield] – 18 degrees is actually enough in the gallery when people are visiting with their coats anyway.
People have started to rethink the temperature inside in the context of sustainability and energy resources. When I was 25 years old, everyone would put the heating on 23 degrees and didn't give it a thought at all, and the new generation is questioning that. I think that is right; it should be questioned.

A (2): Modernist-functionalist buildings were mostly designed for a particular function without thinking about the longevity and future uses of the building.
-What does it mean to intervene in such „short-term“ buildings with a long-term vision?
-What is important when thinking about the flexibility of uses in the future?

W: What I personally find interesting in the modern movement is the introduced **factor of time**.
Before that, with the budget you had, you could build it as durable as possible to make it last as long as possible. In the 20th century, some architects started to question that. They looked at buildings more like they looked at cars or airplanes – they would be machines that served a purpose, and if they fell apart after 20 years, that was fine.
Before that, people never thought of buildings like that unless they would be short of money and have to accept the short life-span. That's by necessity, not by conceptual starting point. We can see **two different approaches** here.

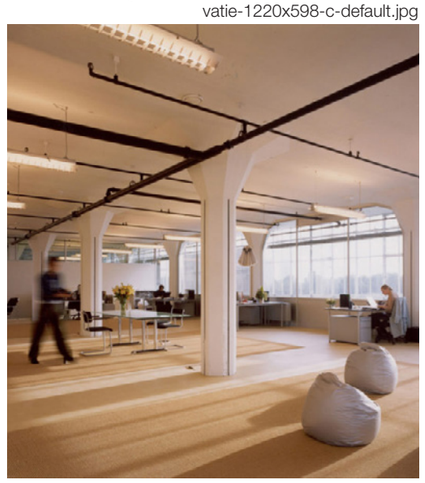
One example is **Sanatorium Zonnestraal** (figure 2), where the architect had to deal with the very small budget and the conviction that tuberculosis would be exterminated in 30 years. So he started to attune the building exactly to the purpose that was required at that time for that money, accepting that after 30 years the building would be demolished or not last – he **accepted a short life expectancy**. The Sanatorium was deliberately built with simpler materials of lower quality. The steel windows that were used were not galvanised, so they were cheaper.

Figure 2: Sanatorium Zonnestraal after transformation by WDJArchitecten, Hilversum, NL.
https://i.pinimg.com/originals/8f/b0/a5/8fb0a5bddfd856aaa230626b4e621ec8.jpg

The other way can be seen in the **Van Nelle factory** (figure 3), where they created the **generic space with high technical quality** – the building still stands perfectly. Making very generic space, **anything was possible,** and that was because it was a factory and the production lines had to change constantly, so they wanted neutral space where you could do anything. That also has to do with change over time.

Those two lines of thought are still topics today. You can still see in present day buildings a philosophy of constructing buildings as generically as possible so they can have another use in the future.
Then you can invest a lot in the technical quality because the building will probably **last for a hundred years** with different function programs.
And another philosophy is to create buildings that are **dismountable** so that you can take them apart again, use the parts or recycle the materials, and **accept the short life**. So actually, that is **a way of thinking** which is still relevant today, **originated in the 20's** without them [architects] knowing it, and was redeveloped today.

Figure 3: Interior of Van Nelle factory after transformation by WDJArchitecten, Rotterdam, NL.
https://www.wdjarchitecten.nl/app/assets/311-05-06-van-nelle-fabriek-rotterdam-wesseldejongearchitecten-sv-herbestemming-renovatie-1220x598-c-default.jpg



A: I see that the Witte de Withstraat 25 building has similar characteristics to the Van Nelle factory out of these two approaches, because it has a quite flexible open plan. However, it is not so flexible in terms of the floor height. Therefore, I am wondering to what extent the existing building can really be adapted in the future.

W: Well, it also depends on the type of intervention—whether it is reversible or not.
So you could think of a sort of pop-up use or even longer than that. There are examples, for instance, of the vacant office buildings that are used for students' and young people's housing, where they developed an **all-in-one box** consisting of a kitchen, a bathroom, and etc. You can **assemble** this box easily on the floor or even load it in as a complete set.
Then a few walls are put in between these units, and that is it!

It is done with the understanding that all that can be taken out again after ten years or so if the housing situation improves again and people can get more permanent places to live.
So, I think if the building is **flexible** like that, you could even think of a strategy where the function you propose now will perhaps last only 10-15 years and you foresee that another type of use may come up in the future. And it happens a lot.

Figure 4: GAK building transformation by WDJArchitecten, Amsterdam.
https://www.wdjarchitecten.nl/projecten/woningen-gak-gebouw/

For example, making the projects for larger buildings for more permanent use often takes so much time–some of the projects we have done in our office took 12–16 years. So you could easily **convert the building into housing for 10 years**, hire me to **make a project**, and we could **implement that after 12 years**. Why not? You make some money and you make people happy, because they can live there for a while. It is not a bad idea.
But it is the conflict that you put on the table – if you know that the building was built for a temporary use or a short period of time, then it **goes against the seminal concept** to convert it now into something much more permanent. Still, you can decide to do so.

A (3): Although the building is not a heritage site today, in the future, people may look at the buildings of this period in a completely different way and may want to restore them to their original condition.
-How important is it to physically preserve an international style 50's or 60's building? Or would it be enough to document it in photos and leave it in the archive?

W: In FARO convention of 2015, there was a statement that **heritage should not be something, let's say, for the elite, but should have a meaning for the general public and everyday life.**
So in that sense, whether the building is listed or not, I don't care (apart from the procedures that come with listed buildings).
As an architect, my approach would be the same, so I would be interested in what the meaning of this place is and what the story that it tells about the Rotterdammers and the area is. And whether people feel emotionally attached to the building or the particular area.

But I think it's really up to you how to make up your mind about it. Using the theoretical guidelines is not dictating what you should do, but rather a checklist to think about various aspects to come up with the vision for the building.
At the former GAK building (transformed into apartments „De Studio“ and a hotel „Cityden“ in Amsterdam, see figure 4), we were asked to develop a residential use for the building, but at the same time to preserve its outer look.
And it was sort of reluctant, because the building really looked like the office; it still does. The façade was not technically OK anymore, and we

Figure 5: tender project Politiecentrum De Ligne by WDJArchitecten, Brussels. Left - situation before, right - proposal.
https://www.wdjarchitecten.nl/projecten/politiecentrum-de-ligne/

had to make a new one.
Because heritage people asked to design it in such a way that façade would look the same as it was, and eventually they were planning to keep it without operable windows. And I refused to do that, I really thought it was ridiculous to make **housing without an openable window in the flats**. Even if it was on the highway side (because it is). So, we designed a double façade to block out the noise and all that, but you can still open the window.
Anyway, the idea was that after the conversion was completed (which was only done last year; it took us 13 years), it would be listed as a monument, but now everybody seems to have forgotten about it.

I feel, if it is a residential building nowadays, you may have decided to **alter the façade and give it another type of expression**, like you can see in the Brussels example (2nd prize in the tender project Politiecentrum De Ligne transformation, done by Sander Nelissen, co-partner of WDJArchitecten, see figure 5).
Here we **value** this very particular triangular shape and the internal structure of the building, but because it will get a residential use, **we felt that it required another type of architectural expression to underline that it was inhabited**. Again, this is a value assessment discussion, and as an architect, you take a position.

A (4): Defining the authenticity of a „glass box“ (international style) building can be a hard task for an architect.
-What helps you define the elements of the building that characterize its design idea (especially if the building is not listed)?
Using the Politiecentrum De Ligne transformation project in Brussels as an example (figure 5)*

W: With buildings like the one in Brussels (figure 5), there are things like **rhythm** and **proportion.** I believe the proportion in the grid of the façade is similar to the original one, so **it's not necessarily the material expression, the form, or the way it looks** – it can also be more conceptual parts of the architectural vocabulary that you retain. Or maybe it looks different, but the materials are similar, or there is a colour reference… It can appear in all kinds of things.

A (5): You know the centre of Rotterdam from the many projects designed there. The city is actively changing and rising in height.
What new features and challenges, in your opinion, can we expect from Rotterdam in the future?

I think it would be interesting to talk to the main city planner. There is a lot of discussion about the whole idea because the contribution of towers to the public realm on the ground floor is usually rather poor. That is because everything is full of technical equipment that you need to cater for all the space upstairs.
So, in the plinth, there is **usually very little room for public or semi-public program**. This is the reason why at the Forum Rotterdam (figure 6), which we initially did together with Rem Kolhaas, he literally took one of the towers from the model and broke it into six pieces and started stacking it up into a sort of a cube. You take **the same volume**, with the same amount of space, but if you **arrange it in a different way, you have a lot more interaction with the public realm and a lot more opportunities to improve the quality of the city for the passers-by**, not only for the people who live or rent an office there.

In the end, the financial structure and the program were redefined and more buildings were retained. For instance, the office tower we converted into housing was initially supposed to be demolished and replaced.
Eventually, our office's role [joined the OMA team because of the expertise in existing buildings' transformation] in the project increased.

A: What was the design strategy for the tower in the Forum Rotterdam urban block?

W: It is very related to the discussion we just had about the Politiecentrum De Ligne building (figure 5) in Brussels and the GAK building (figure 4) in Amsterdam. They were both office buildings converted into housing.
And the tower in Forum Rotterdam really looked like an old office - with the cut-off corners in the plan and brownish reflective glass curtain walls.
We did not want the apartment building to look like an office tower. So instead of adding rectangular boxes for balconies, we decided to reshape the tower with the help of the balconies without paying attention anymore to what is inside the plan. The balconies were the only tool we had available to change something, the rest was more or less fixed. Technically, they were hung on each floor.

[…] We did the whole city block, which is rather unusual. We **connected the city block to the city on the plinth level** and developed different heritage strategies for each building in the block – from reconstruction to renovation to restoration.

In comparison with Witte de Withstraat, even though those two urban blocks are in the city centre, they are in totally contrasting urban landscapes.

In terms of changes, now the WestBlaak is really a barrier; it is difficult to cross it, but the street width is planned to be reduced and a long park has been designed for this street.
The Hartmansstraat, with the former police station building, could be a stepping stone for the connection of two parts of the city centre. Your analysis of the building as a sort of **anchor point that may connect the Witte de Withstraat with the area across the WestBlaak** actually makes sense.
And you could also check, maybe there is something happening further in the south. There is this round-shaped square [Schiedamsesingel]. It may be an interesting area. Right now, there is an eye hospital there, and it is known that they will leave, so the building will eventually become available. **Repurposing of such a large building could make quite a change in the neighbourhood**.

Figure 6: Forum Rotterdam transformation by WDJArchitecten+OMA, Rotterdam.
https://www.woneninrotterdam.nl/wp-content/uploads/2020/09/2000-huren-in-FORUM-Wonen-in-Rotterdam.jpg

3.5.2 Precedents

Proposal of a new Police centre in former modernist ‘De Ligne’ bank building
(Bold architectural approach)

The volume complements the surrounding buildings through the comparability in color and use of materials. The zig-zag movement of the alternating open and closed parts creates a spatial view from the interior spaces towards the adjacent streets on the one hand, on the other hand direct view from street level is minimized while the appearance of the building remains transparent.
by WDJA
2020, 2nd prize in the competition, Brussels, Belgium

https://www.wdjarchitecten.nl/projecten/politiecentrum-de-ligne/

Schieblock (Life back to the building)

The vitality of the neighbourhood and the block was constantly in creation and done by introducing the protruding yellow bridge (which directly connects to the other side of the wide street), different unctions and public space (including an urban farm on the rooftop). Nothing has been implemented to solve the thermal bridge problems because it was a temporary renewal that turned into the place making for the area.

by CODUM and ZUS
2019 | Rotterdam, The Netherlands

https://www.officebooking.com/wp-content/uploads/2020/12/Schieblok-1605x900-1.jpg
https://esn-rotterdam.nl/wp-content/uploads/2018/07/google-biergarten-1024x684.jpg

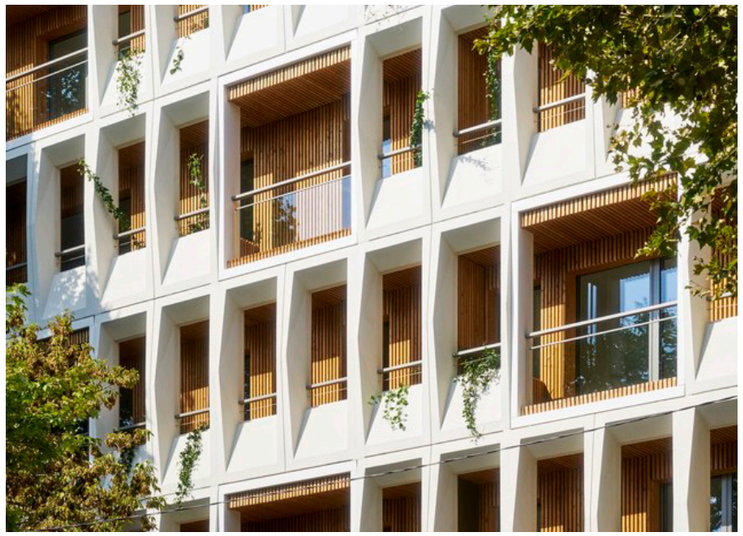
Granida residential building (similar C.Elffer’s building)

The building was adaptively reused from GGD (Municipal Health Services) and municipal office to luxury rental apartments. The size of the houses is mainly determined by the structure of the building. Business space has been added on the ground floor and in the basement to make the project feasible and to give the plinth more lively character. The apartments were designed as insulated boxes - they could be slid into the existing structure as the drawers.

by Architectenbureau Ton Kandelaars
2005 | Eindhoven, The Netherlands

https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcRNFWD2hZ6CzPZ78OYi-kCbIMHB-TrzBH_PVTYIOM_VOtkfSF2gMpU1V5WSGDi04RP0Sklo&usqp=CAU
https://knaapen.nl/wp-content/uploads/2014/08/Granida.jpg

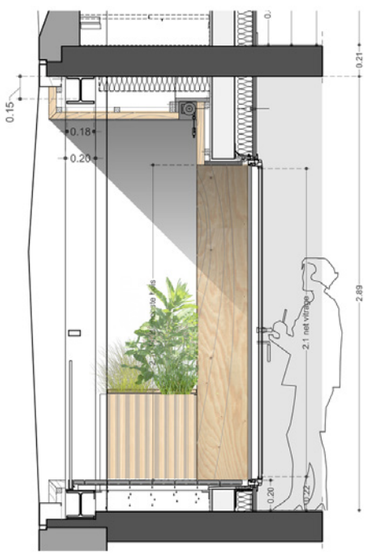
3.5.2 Precedents



Aparment building (introducing the balconies)

Transformation of Office Building To 90 Apartments.
In this project architects were solving the question how to make the building habitable - from the monumental to the intimate. Offering each inhabitant individuality - this was one of the tasks they solved with the design.

by MOATTI-RIVIERE
2016 | Charenton-Le-Pont, France



https://www.archdaily.com/800178/transformation-of-office-building-to-90-apartments-moatti-riviere

Slaakhuys (approach to preserve the ambience of original)

A former editor and printer office of the daily newspaper Het Vrije Volk (built in 1950s) coverted into boutique hotel and supermarket. Original finishes have been carefully uncovered or brought back. Various messy superstructures and ventilation ducts that were installed later have been removed and make way for roof terraces. The original double-high space on the ground floor and mezzanine now serves as a festive lobby for the hotel with reception, bar, restaurant and meeting places.

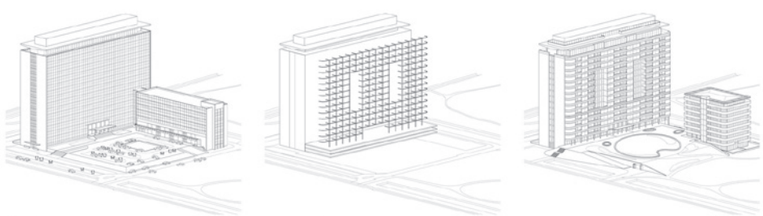
by Mei architects and planners
2019 | Rotterdam, The Netherlands

https://www.rotterdamarchitectuurprijs.nl/media/images/thumb_constrain_1136_1136/schermafbeelding-2019-10-03-om-083301.jpg

Park Hoog Oostduin Apartments (additional facade structure)

The project is a transformation of the former Shell office.
The limestone end façades of the building have been preserved. The longitudinal façades have been completely renovated according to current building physics standards. With high strips of glass and strips of white emalit, they respect the modernist character of the existing building, but at the same time give the image of a residential building with allure.

by cepezed
2019 | The Hague, The Netherlands



https://www.archdaily.com/942469/park-hoog-oostduin-apartments-cepezed

3.5.3 Hypothetical competition for the site

Jan Gehl

Jan Gehl's 5 Rules for Designing Great Cities:

1. Stop Building 'Architecture for Cheap Gasoline' - suburbs.
Promotes **dense cities**.
2. Make Public Life the Driver for Urban Design.
three main components:
walking more,
spending more **time in public spaces** and
getting out of "private cocoons" more.
3. Design for Multisensory Experiences
building around the **body and senses of human beings** to take advantage of our capabilities, so that people can enjoy their cities to their fullest potential.
4. Make Public Transportation More Equitable
5. **Ban Cars**
Even when in a dense city it's possible to get everywhere much faster either on foot or by bicycle.
Source: https://www.archdaily.com/801431/jan-gehl-5-rules-for-designing-great-cities

https://thehumanscale.dk/wp-content/uploads/2012/10/gehl-projects02.jpg

'New Road' in Brighton,UK
https://landezine.com/new-road-by-landscape-projects-and-gehl-architects/

Lacaton & Vassal

Studio's approach is encapsulated by an exclamation:
"**Never demolish**, never remove or replace, always add, transform, and reuse!"

"Cheap is more" - using **cheap materials** such as corrugated metal and plywood. Their goal is "to use economy in order to do the maximum—to increase freedom and living possibilities for families that don't necessarily have much money."

above: FRAC Nord-Pas de Calais, 2013, Dunkirk, France.
below: Latapie House, 1993, Floirac, France.
https://www.dezeen.com/2021/03/17/key-projects-anne-lacaton-jean-philippe-vassal-pritzker-prize/

What? Why?

In this exercise I am a supervisor of the competition for the site Witte de Withstraat 25.

Firstly,
I will research the main ideas and approaches behind 5 offices proposed by design tutor Lidy Meijers.

Secondly,
I will sketch the design for the site as being the architect in one of the 5 architecture studios:
> Jan Gehl
> Lacaton & Vassal
> Neutelings Riedijk Architects
> Jo Coenen Architects & Urbanists (JCAU)
> MVRDV
Trying out different approaches will help me in better understanding the qualities of the site itself.

Then,
I am going to propose the set of rules for 3 different conditions -
> when the building has to be preserved
> when only the facade has to be kept
> when the building can be demolished

Finally, the set of rules created will be my base argumentation and architectural conditions for the later design developement.

3.5.3 Hypothetical competition for the site

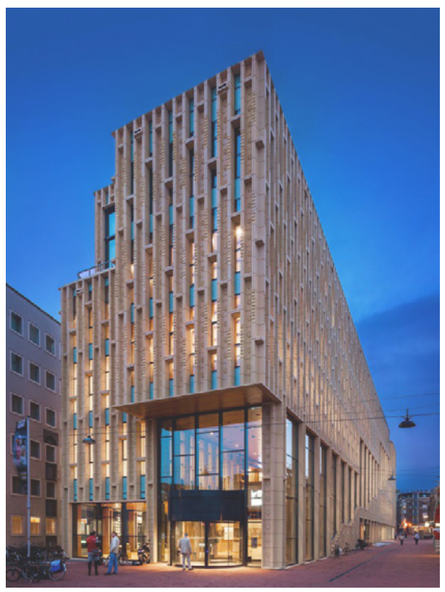
Neutelings Riedijk Architects

> “The work of Neutelings Riedijk Architects has been characterized as having a **sculptural**, often anthropomorphic *(having human characteristics)* quality and a **playfulness of form** while following a clear rationality in programming and context.”
Source: Aaron Betsky and Adam Eeuwens, *False Flat: Why Dutch Design Is so Good*, (New York: Phaidon, 2004)

> “Their **use of familiar forms and materials** grounds the **strangeness** and **baroque** involutions that give the works a **distinct identity** and power.”
Source: Aaron Betsky, ‘Plain weirdness: The Architecture of Neutelings Riedijk’ in Volume. Amsterdam: Archis Foundation, 2014

> “Because of the **public** nature of most of their work, Neutelings Riedijk see the **sculptural quality as a way to communicate** the building’s role within its urban or social context.”
Source: Kieran Long, “Neutelings Riedijk,” Icon Jan. 2006, retrieved 3 May 2007

> Showing past or the inside through the artworks on the facade - **contemporary ornamentation**



Culturehouse in Arnhem, The Netehrlands
https://neutelings-riedijk.com/cultural-center-rozet

City History Museum MAS in Antwerpen, Belgium
https://neutelings-riedijk.com/city-history-museum-mas/

Jo Coenen Architects & Urbanists (JCAU)

> Quality
> **Durability**
“A leading concept within our design is an inherent respect for the ‘Genius Loci’“

“To us a project is successful when **‘Genius Loci’** and **‘Zeitgeist’** meet in fine harmony and balance in material and detail.”
Source: https://www.jcau.nl/studio/

> Flexibility -> **Open Building** (John Habraken’s ideas)
> Structure + infill
> 4,5m ground floor

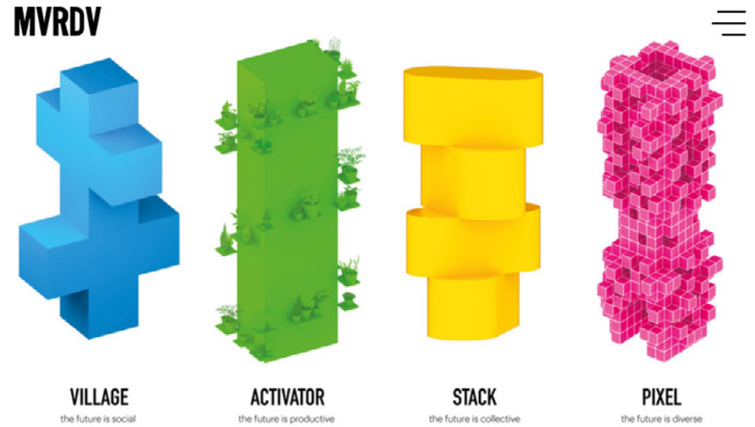
Stibbe Law Firm Headquarters in Amsterdam, The Netehrlands
https://www.jcau.nl/portfolio/stibbe/

OBA - Openbare Bibliotheek Amsterdam, The Netehrlands
https://divisare.com/projects/395620-jo-coenen-giulio-marzullo-oba-openbare-bibliotheek-amsterdam

Amare in The Hague, The Netehrlands
https://www.jcau.nl/portfolio/occ/

MVRDV

> “Projects are treated as collaborative efforts and the **architect becomes a catalyst**.”
> In the exhibition “Architecture speaks” – The Language of MVRDV, the office presents **four of the words used in the language that describes their work**. Picture and themes in the picture below.
(By Nathalie de Vries, Miruna Dunu, and Christine Sohar)
“stack”: This refers to the ever growing demand in space as well as the approach to stack and connect functions vertically, to create a three-dimensional space.
“pixel”: The term “pixel” deals with the boundaries of space and provides the smallest unit in an agglomeration of units.
“village”: They use the “village” to be an example for ideal homes and neighbourhoods that can work as a basis for “healthy community-making”.
“activator”: Spaces that engage social interaction are referred to as “activators”.



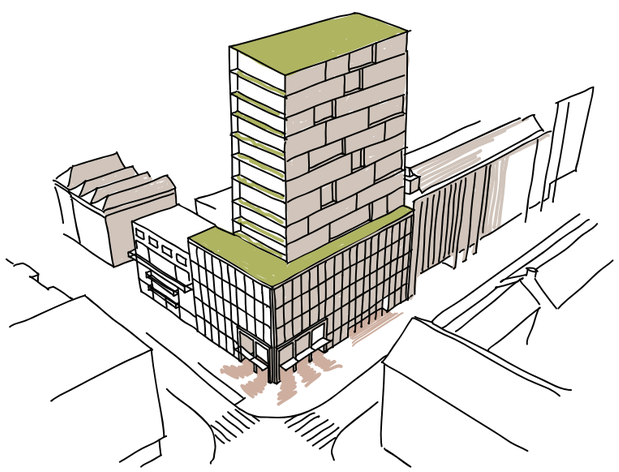
“Green Villa“ in Sint-Michielsgestel, NL and “KoolKiel“ in Kiel, Germany. https://www.mvrdv.nl/projects

3.5.3 Hypothetical competition for the site

results as being an architect in one of the 5 architecture studios

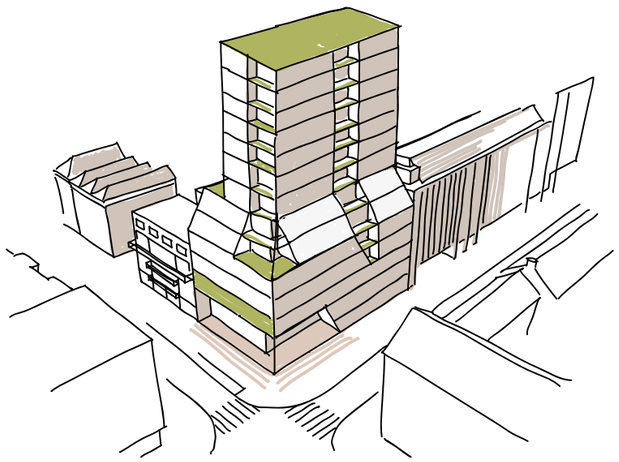
Jan Gehl

"Human scale"



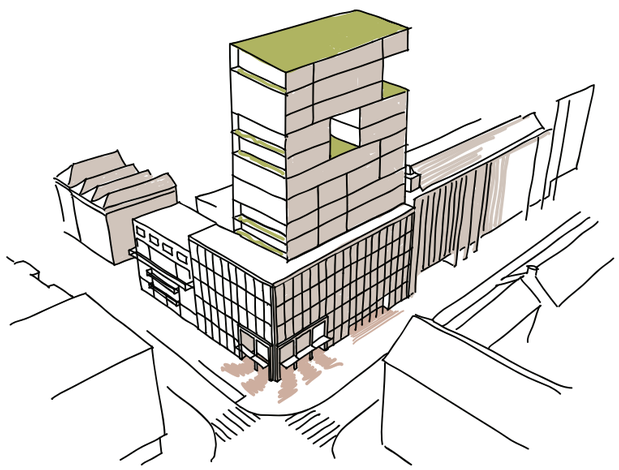
Lacaton & Vassal

"Reuse, never demolish"



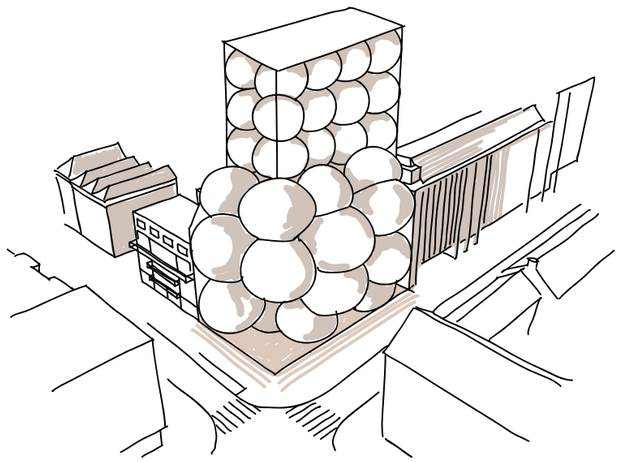
Neutelings Riedijk Architects

"Contextual icon & experimental materialisation"



Jo Coenen Architects & Urbanists (JCAU)

"sensitive contextuality"

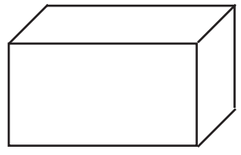


MVRDV

"non-contextual & surprising"

3.5.3 Hypothetical competition for the site

Set of Rules



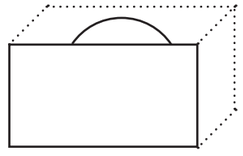
Keeping/ preserving the building

PLINTH
1. The corner entrance (indicated by arching frames on both streets) has to have a setback of at least 1,2 m from the outer gridline until the facade starts.
2. Plinth has to host a public function.

FACADE
3. From the ground floor to the 4th floor (incl.) materialisation and the concrete shaped framing grid of the facade has to be preserved.

UPPER PART
4. The 5th and upper floors have to remain in the footprint of the existing walls of the 5th floor.

Note: Building's plinth - meaning the 2 first floors (ground floor and 1st floor) of the existing building.



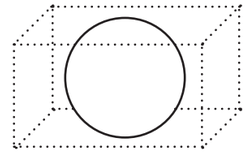
Keeping only the facade

PLINTH
1. The corner entrance (indicated by arching frames on both streets) has to have a setback of at least 1,2 m from the outer gridline until the facade starts.
2. The walls of the plinth can only be extended in order to insulate the building to a maximum of 0,3 m.
3. Plinth has to host a public function.

FACADE
4. From the ground floor to the 4th floor (incl.) the facade has to be preserved in its shape.
5. From the ground floor to the 4th floor (incl.) the volume of the building can be extended to the Witte de Withstraat and Hartmansstraat sides up to a maximum of 0,5 m.

UPPER PART
6. The 5th and upper floors have to be setback from the original facade by at least 1,5 m.

Note: Building's plinth - meaning the 2 first floors (ground floor and 1st floor) of the existing building.



Demolishing & building new

PLINTH
1. The ground floor (minimum 4,5 m height) has to have at least one setback of at least 1 m depth on both of the main facades (towards the Witte de Withstraat and Hartmansstraat).
2. Plinth has to host a public function.

FACADE
3. From the top of the plinth to the 4th floor (incl.) the volume of the building can be extended to the Witte de Withstraat and Hartmansstraat sides up to a maximum of 0,5 m.

UPPER PART
5. The 5th and upper floors have to be setback from the outside line of the original facade by at least 1,5 m.

3.6 What are the 2 crossing streets about?

Hartmansstraat

existing legacy

Witte de With

important soon

3.6.1 Lynch map

Site in relation to the Rotterdam city: Lynch mapping

K. Lynch claims in his book “The Image of the City” (1964) that people in urban environments orient themselves using mental maps.
Lynch argues that these mental maps contain five components: (1) paths - routes along which people move throughout the city; (2) edges - boundaries and breaks in continuity; (3) districts - areas characterized by common characteristics; (4) nodes - strategic focus points for orientation such as squares and junctions; and (5) landmarks - external points of orientation, usually a physically distinguishable object in the urban landscape. According to the author, paths serve as the most fundamental of these five attributes since they organize urban mobility.

Legend:
- Path
- Edge
- Node
- District
- Landmark
- Greenery

100m

Figure: Witte de Withstraat with its cafes and bars
Source: https://www.tinbergen.nl/media/contentpage/image/2584-rotterdam-partners-editorial.jpg

Museumpark

Witte de Withstraat

Maritime museum

Image sources: https://static.frieze.com/files/inline-images/editorial-articles-inline-web23-douglas-coupland-the-living-internet.jpeg
http://dutchculturekorea.com/wp-content/uploads/2018/02/2584-Rotterdam-Partners-Editorial-1140x760.jpg
https://images.squarespace-cdn.com/content/v1/551c1c47e4b04787f61fdb48/1534454563940-8N4QD2UETEVNBMCW8COI/DSC02132.JPG?format=1000w

3.6.2 Witte de Withstraat

Existing legacy

CULTURAL ROUTE

Witte de Withstraat is already known for its nature of liveliness with the bars, cultural venues, cafes and galleries. Moreover, the street is a connector of two cultural areas of the city centre - Museumpark and Maritime museum of Rotterdam.
In the near future, this street is intended to be developed into pedestrian alley - without the passage of the cars.
In the zoning plans this street is intended for Horeca (Hotel/Restaurant/Café) cluster.

3.6.3 Hartmansstraat

Important soon

Among the seven attractive future urban projects that Rotterdam is going to realize is **Blaakpark**. The Westblaak (the intense street in the northern side of the building's urban block), Blaak and Burgemeester van Walsumweg (Eendrachtsplein to Oostplein) will be transformed into a green oasis in the middle of the city. Blaakpark, also known as Groene Long, is to become the longest city center park in the Netherlands. This is perfect for public and private future uses of the building because it will provide quality outdoor space for meeting and recreation and bring people to Witte de Withstraat.

Blok Schilderstraat already has huge Cool tower development comming up soon and the plans for this block and its premises is promising the complete transformation of the area.

Sources:https://www.rotterdam.nl/bestuur-organisatie/stadsprojecten/, https://www.planviewer.nl/imro/files/NL.IMRO.0599.BP0647Cool-oh01/t_NL.IMRO.0599.BP0647Cool-oh01.pdf

Intense WestBlaak street to become the longest city centre park in the NL

Blok Schilderstraat - transforming the neighbourhood

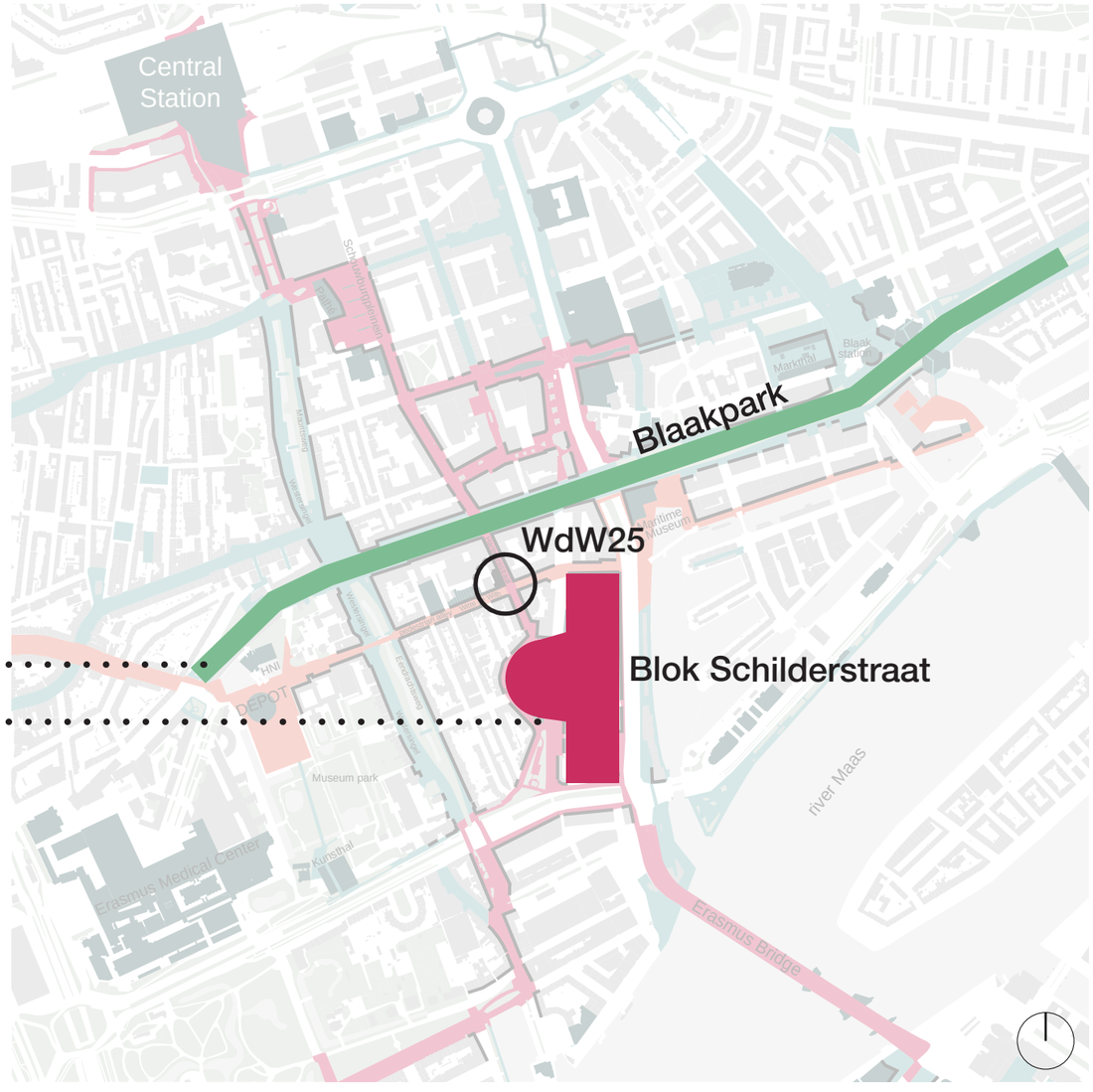


Image sources: https://images0.persgroep.net/rcs/amJsBlzUHp-Gxew0l-FFxpRN6C4/diocontent/172066467/_fill/675/900/?appId=21791a8992982cd8da851550a453bd7f&quality=0.9
https://www.planviewer.nl/imro/files/NL.IMRO.0599.BP0647Cool-oh01/t_NL.IMRO.0599.BP0647Cool-oh01.pdf

3.6.3 Hartmansstraat

Inner city extending to the south

The centre of Rotterdam will be expanding to Witte de Withstraat with the DEPOT - new atraction point in the Museum park and the appearance of the Blaakpark - the new green arthery of the city.

The shopping district in the center of Rotterdam covers quite a lot of space - it is a major center of attraction in the city, where residents spend their free time. One of its main streets leads to the Witte de With exactly via Hartmanstraat, where the WdW25 building is located.

The urban block with Witte de Withstraat 25 building will be in between two parallel west-east oriented vibrant routes with the shopping district flow of people coming from the northern side.

Legend:

- The main inner city route from the Central station towards the centre incuding shopping district
- Cultural route connecting Museumpark, Witte de Withstraat and Maritime museum
- Witte de Withstraat 25 building

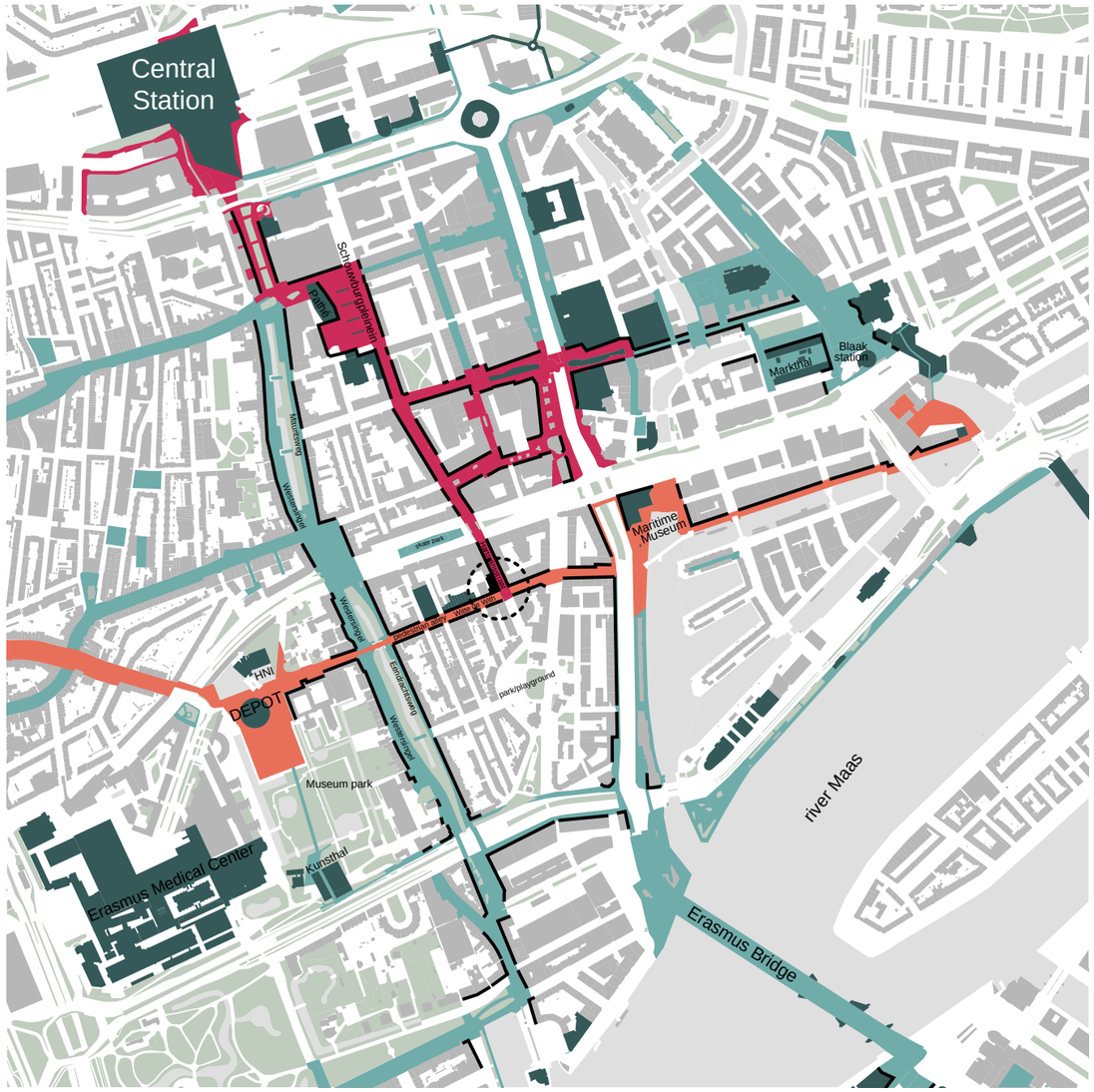


Figure: **existing** routing in the city centre

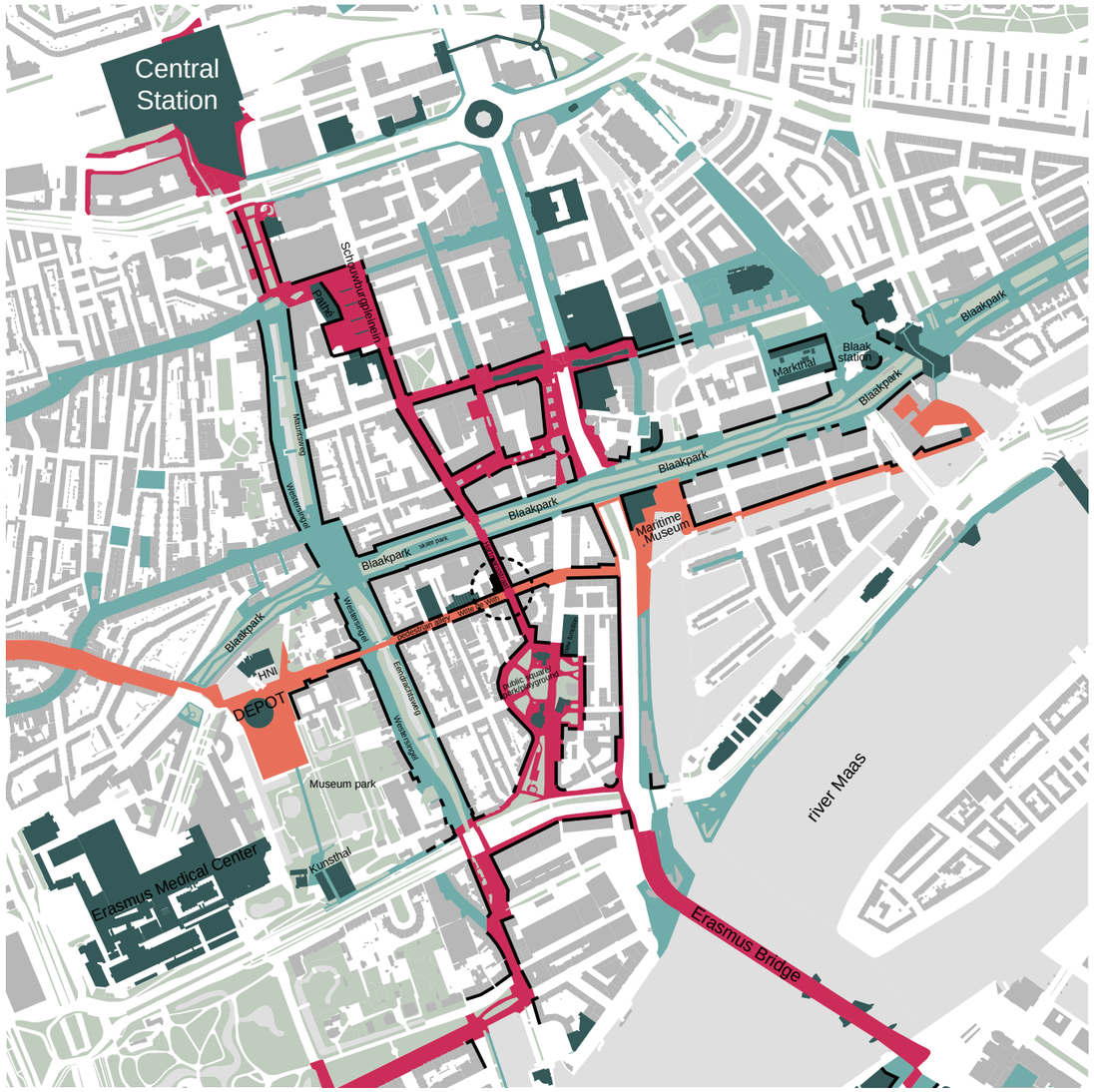


Figure: **prospective** routing in the city centre

Source of the images: own drawings

3.6.3 Hartmansstraat

Inner city extending to the south

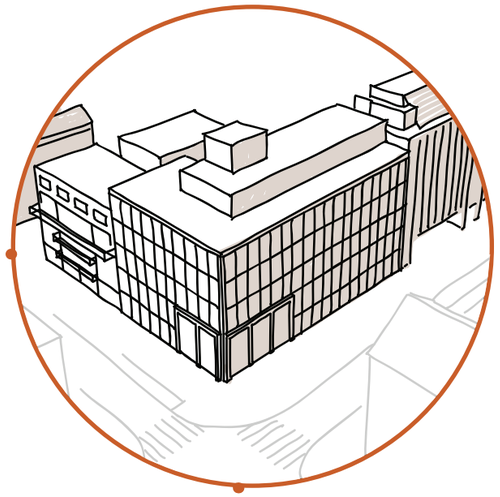
Legend:

- The main inner city route from the Central station towards the centre incuding shopping district
- Cultural route connecting Museumpark, Witte de Withstraat and Maritime museum
- Witte de Withstraat 25 building

Figure: **existing** routing in the city centre

Figure: **prospective** routing in the city centre

Source of the images: own drawings

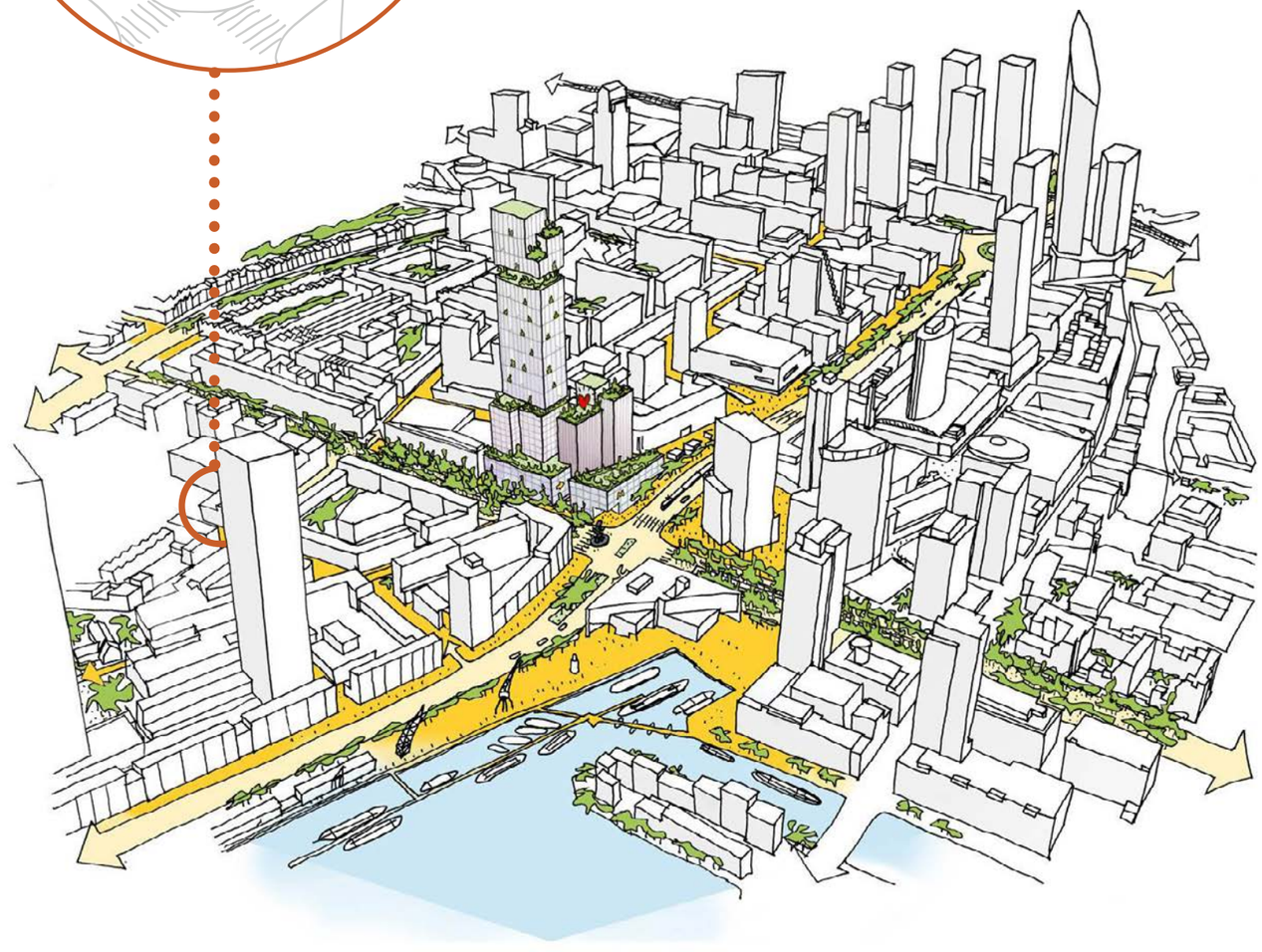


3.6.3 Hartmansstraat

soon: high-rise buildings around

The city centre of Rotterdam is extending not only 2D, but 3D as well. The city is well-known for its distinctive skyline and has international reputation for innovative architecture. It is included in the European SkylineTop along with Frankfurt, Milan, London, Madrid, Paris, Warsaw, and Moscow. In the early 2020s, more than 30 new high-rise projects were erected.

Sources: https://www.emporis.com/city/100760/rotterdam-netherlands/type/3/18, https://en.wikipedia.org/wiki/List_of_tallest_buildings_in_Rotterdam#cite_note-emporis1-1



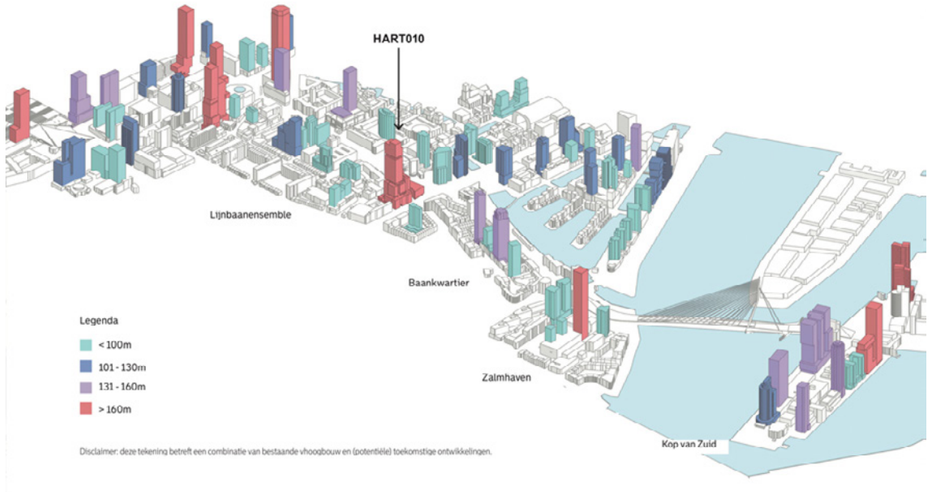
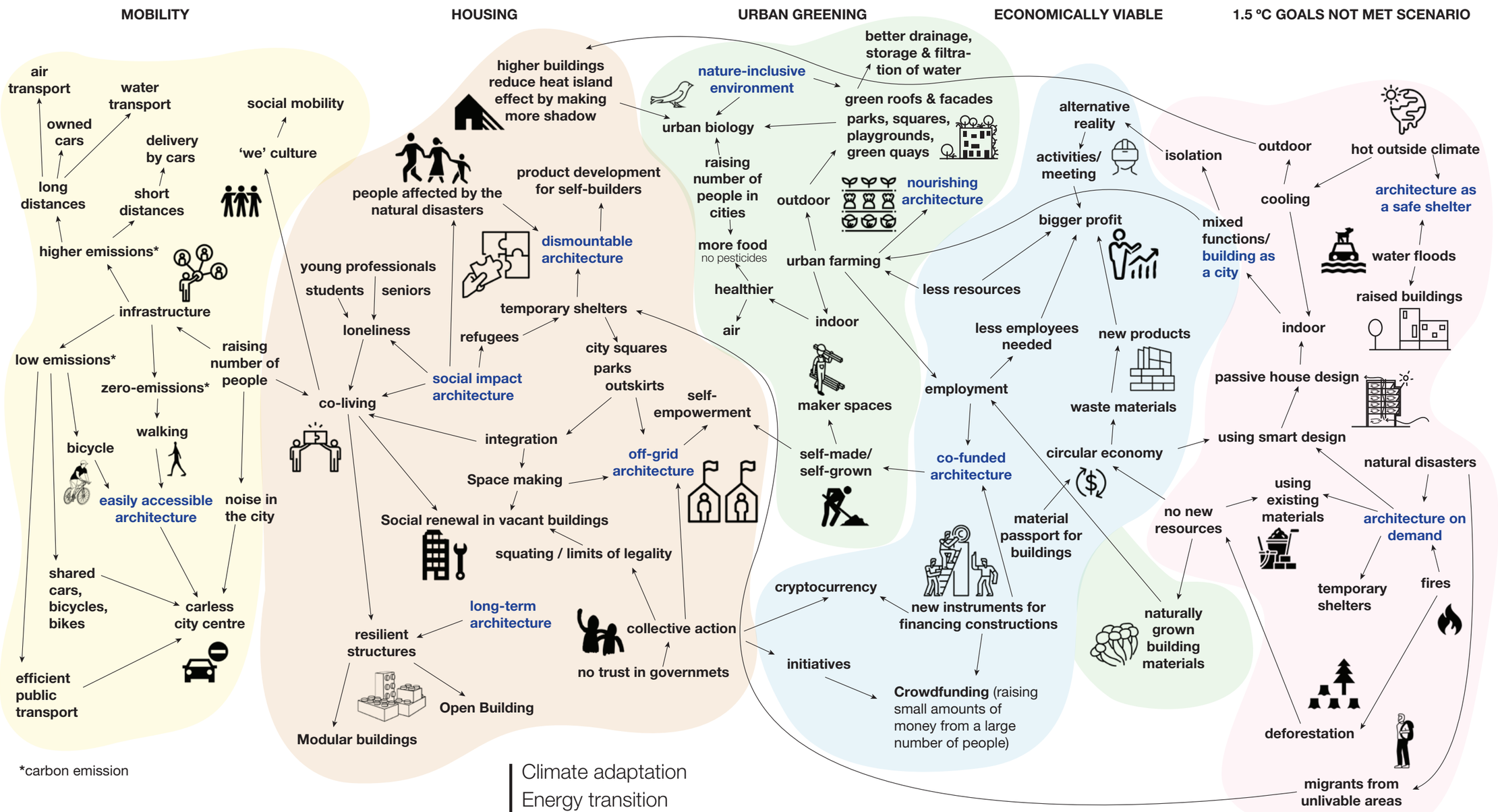


Image sources: https://www.mecanoo.nl/Projects/project/287/Hart-010-Masterplan?d=0&t=0

3.7 Future challenges

Mind Map: Densification in the central Rotterdam



Urban challenges

- Climate adaptation
- Energy transition
- Quality of life in the city
- Growth of the city
- Inclusive & diverse city
- Social & active city

Source of the image: own drawing

3.7 Future challenges

Directions for scenarios from the Mind Map

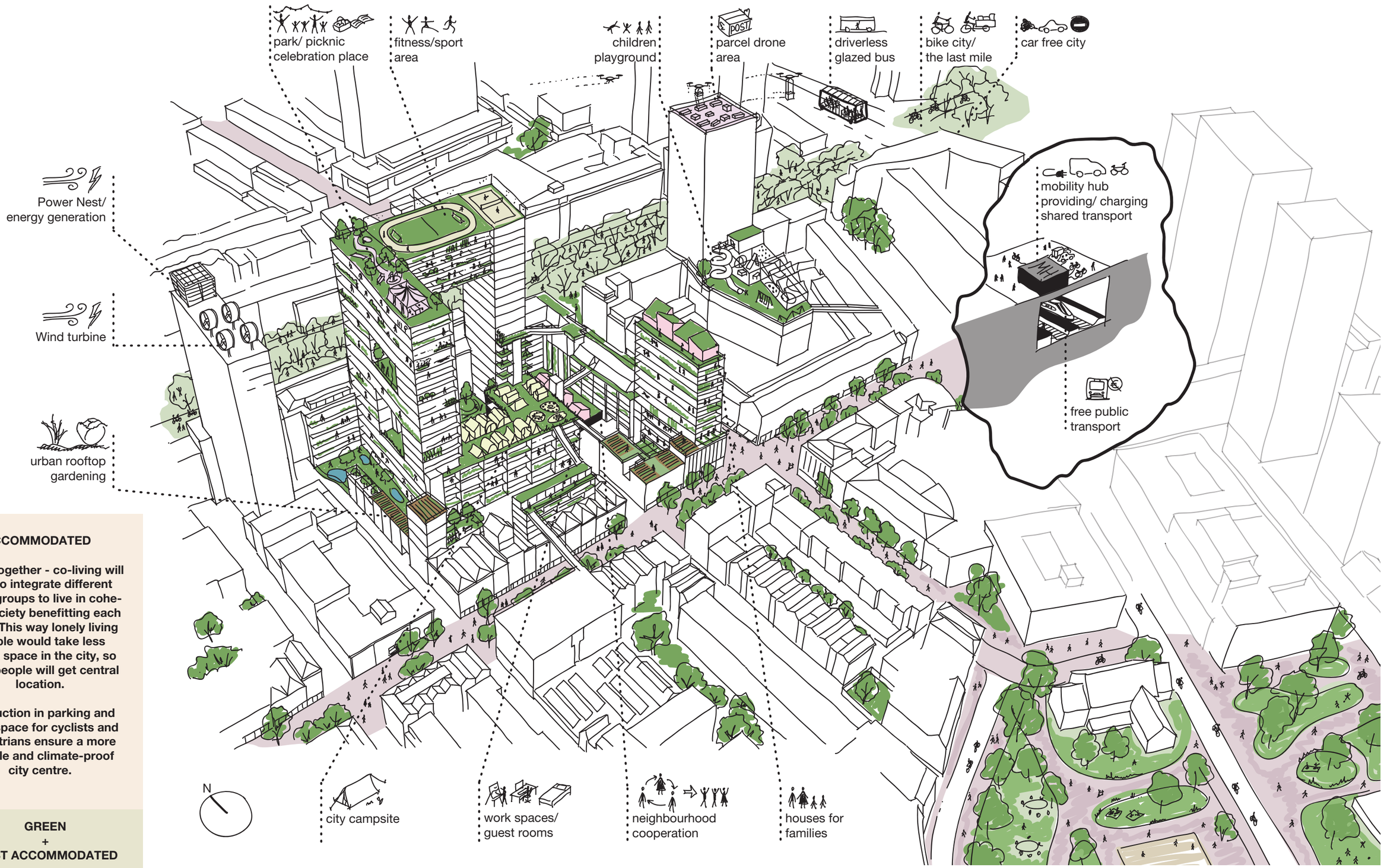
URBAN BLOCK
IN ROTTERDAM

GREEN	ACCOMMODATED	RESILIENT	ECONOMICALLY VIABLE
local plants, shrubs and grass wherever possible cools the surroundings and improves air quality, creating green parks, public spaces for the city centre. Greenery is home for birds and insects, and will result in better drainage, storage, and filtration of water. Feeding large numbers of people with the least amount of energy will be ensured by the urban farms.	Living together - co-living will help to integrate different social groups to live in cohesive society benefitting each other. This way lonely living people would take less livable space in the city, so more people will get central location. A reduction in parking and more space for cyclists and pedestrians ensure a more liveable and climate-proof city centre.	New structures must be either long-lasting and flexible, or they can be assembled and dismantled - temporary. Long-term structures have to be able to adapt to changing social and natural conditions. Short-term structures will be used for people affected by the natural disasters, refugees, migrants from unlivable areas. Inlcusive city - value all people, their needs and contributions equally.	The city will be a productive one. Regarding the food cultivation, individual production as well as urban agriculture farms will be the key elements in the city. Luxury real estate will conquer the best locations in the city center. New ways of financing constructions will lead to various urban initiatives. Alternative reality will be part of the real environment.
SCENARIOS:	**GREEN + MOST ACCOMMODATED**	**GREEN + MOST RESILIENT**	**GREEN + MOST ECONOMICALLY VIABLE**

Source of the image: own drawing

Densification in the central Rotterdam

Future scenario 1: GREEN + MOST ACCOMMODATED



ACCOMMODATED

Living together - co-living will help to integrate different social groups to live in cohesive society benefitting each other. This way lonely living people would take less livable space in the city, so more people will get central location.

A reduction in parking and more space for cyclists and pedestrians ensure a more liveable and climate-proof city centre.

GREEN
+
MOST ACCOMMODATED

Densification in the central Rotterdam

Future scenario 2: GREEN + MOST ECONOMICALLY VIABLE

City streets:
a mix of retail and workspace

Maker Space:
access to machines for creative production

Career opportunities for start-ups, grown-ups and scale-ups: appropriate space for emerging companies in different phases

parcel drone area

driverless glazed bus

bike city/ the last mile

car free city

Meeting places for knowledge workers places where you can meet by chance

VR shopping

mobility hub providing/ charging shared transport

various private urban initiatives

free public transport

Power Nest/ energy generation

Wind turbine

Lifelong learning and working are intertwined, also spatially

Luxurious apartments

urban rooftop gardening

Energy distribution, transformation & storage: **Heat hub** absorbs heat distribution peaks and troughs.

N

manufacturing industry in the city

Affordable workspaces in the neighbourhood for small and start-up companies

Sport and movement accessible space for organized and disorganized sports

Alternative reality in the streets

ECONOMICALLY VIABLE

The city will be a productive one. Regarding the food cultivation, individual production as well as urban agriculture farms will be the key elements in the city.

Luxury real estate will conquer the best locations in the city center.

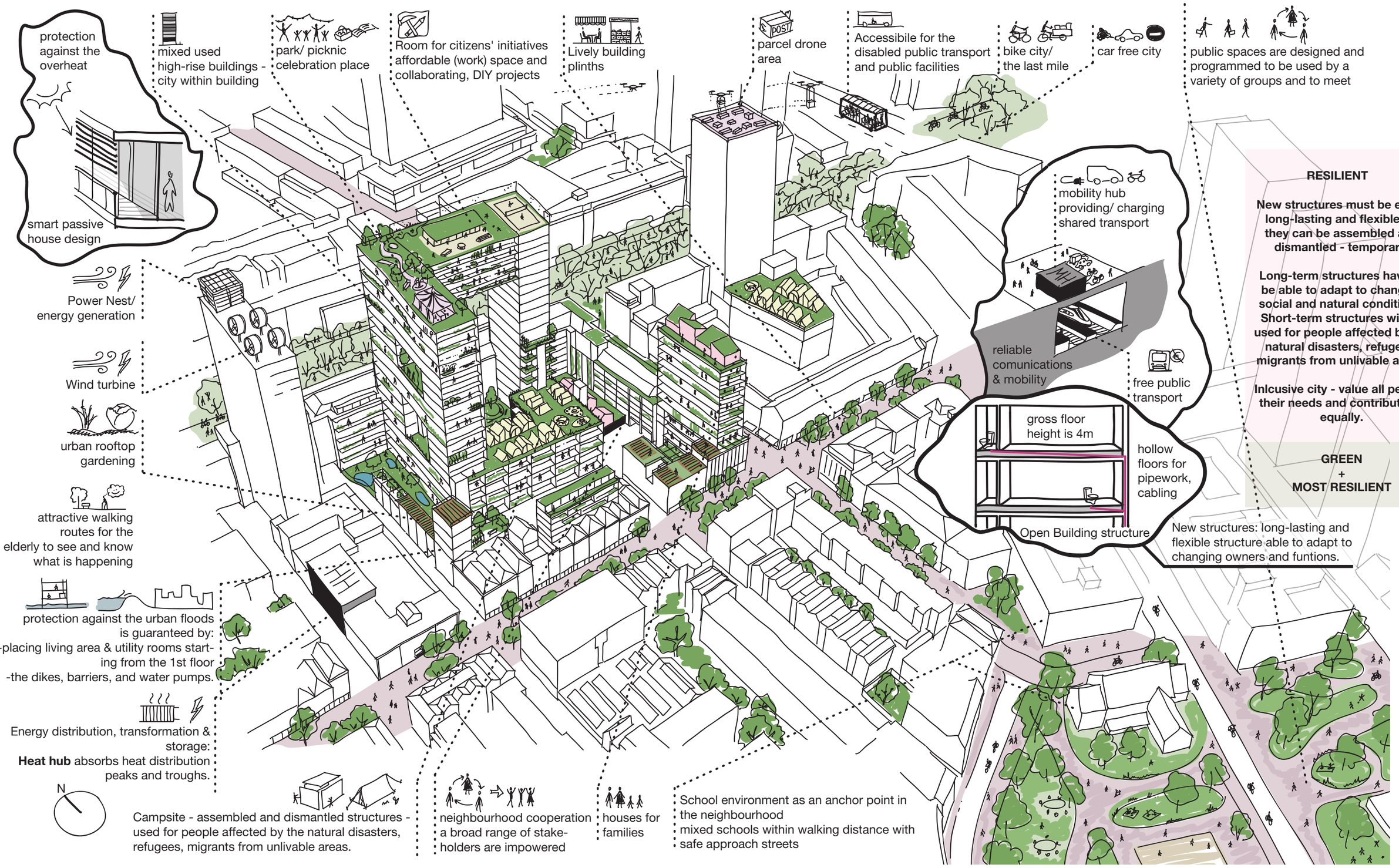
New ways of financing constructions will lead to various urban initiatives.

Alternative reality will be part of the real environment.

GREEN + MOST ECONOMICALLY VIABLE

Densification in the central Rotterdam

Future scenario 2: GREEN + MOST RESILIENT



RESILIENT

New structures must be either long-lasting and flexible, or they can be assembled and dismantled - temporary.

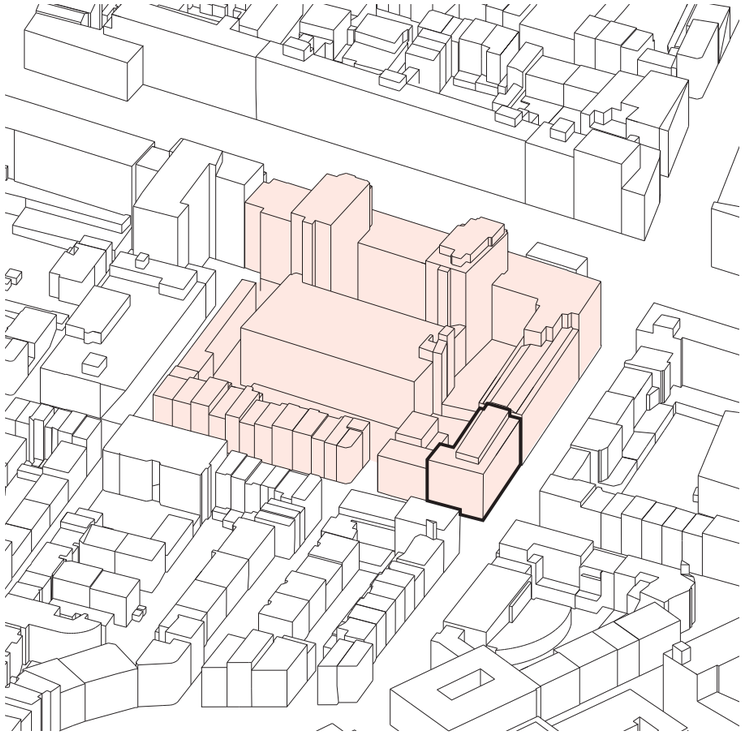
Long-term structures have to be able to adapt to changing social and natural conditions. Short-term structures will be used for people affected by the natural disasters, refugees, migrants from unlivable areas.

Inlcusive city - value all people, their needs and contributions equally.

GREEN + MOST RESILIENT

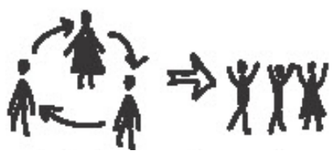
Densification in the central Rotterdam

Future scenarios: outcome directions



Urban block:

Urban farm, urban gardens
> producing food locally for the urban block/ horeca street

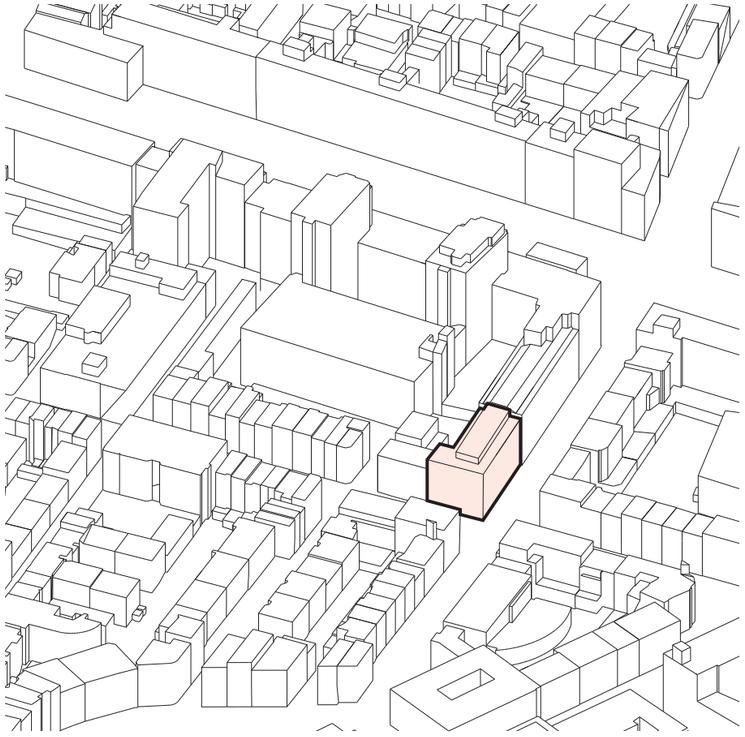


Green/ public roofs where possible
> meeting places for the community
> nature inclusivity

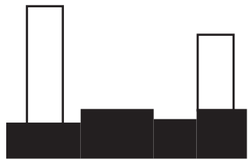
More space for people rather than cars
> less noise
> accessible by foot, bike, efficient public transport

Densification in the central Rotterdam

Future scenarios: outcome directions

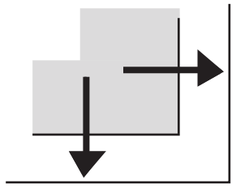


The WdW25 building:



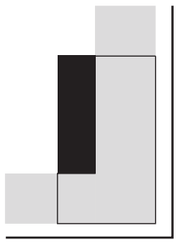
Extension

> good location for a tower in the urban block
> adaptable structure for various future uses



Public plinth on both streets

> re-connecting with lively Witte de With
> contributing to the activation of Hartmansstraat



Back of the building

> access for service, staff, more private area

3.8 Urban indoor farming

Inspiration
New kind of culture in the cultural route of Rotterdam: **Urban Farming**

Playing with the viewer's visual perception, **Magritte** creates an illusory piece. Three male figures stand in a forest thick with tall, green trees. These top-hatted men, a common subject in Magritte's works, appear as if conferring in the depths of the forest.
The two men to the left stand with their backs turned to the viewer while the one to the right stands in profile clutching a large rock.
The viewer cannot quite discern what these men are doing in the forest, a **seemingly unlikely location for three well-dressed individuals**. However, the most striking element of this work is the way in which **the trees, the men, and the background foliage appear at once both divided and united**.
Magritte overlaps these elements in such a way that the three men appear both hidden and revealed, simultaneously standing in front of and behind the tree trunks. The viewer's eye jumps around the piece in an attempt to situate the three men in a stabile location. While the focus is on the three individual subjects, Magritte creates a sense of animation and energy throughout the work as the viewer's eyes are constantly denied a concrete grasp on reality.

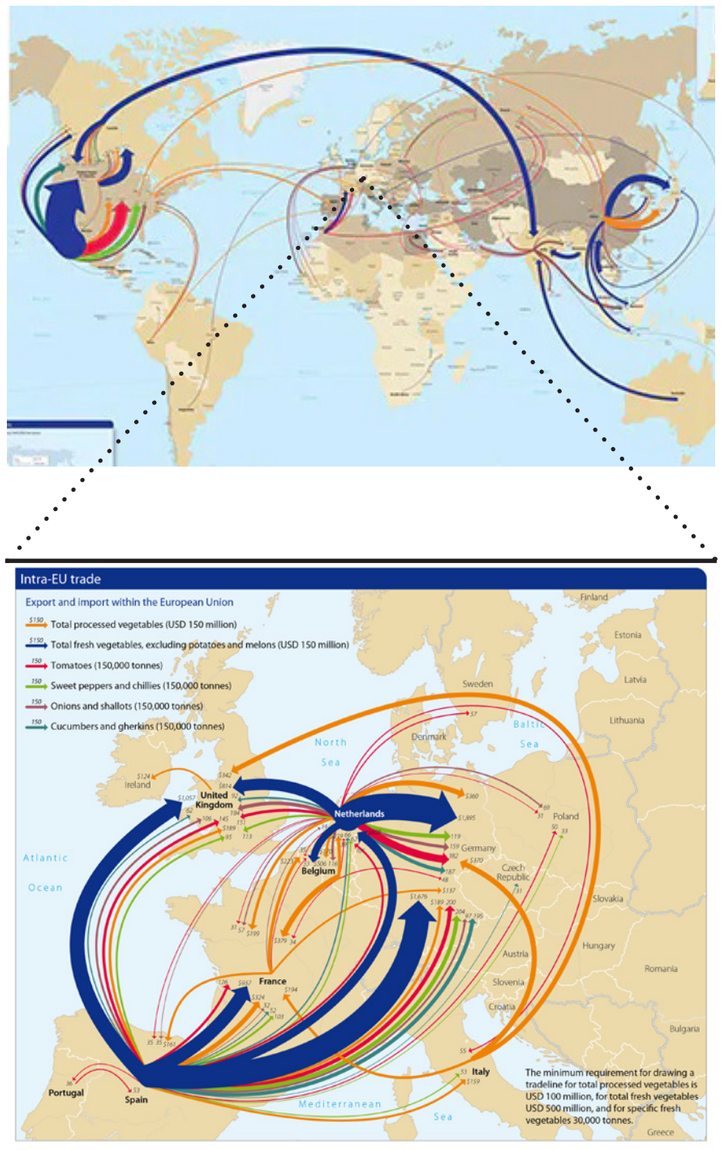
Created in 1968, this work is the first of 12 lithographs included in the portfolio Les Enfants Trouvés.

https://www.masterworksfineart.com/artists/rene-magritte/lithograph/les-enfants-trouveacutes/id/w-3091

3.8 Urban indoor farming

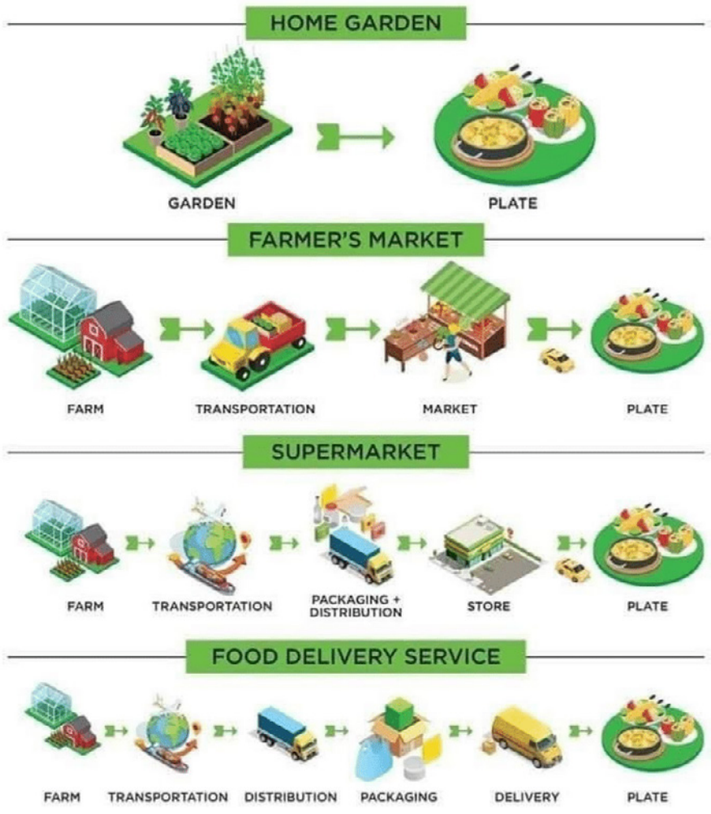
Food production and travel distance

The food miles
It is the distance food travels from where it is grown to where it is ultimately purchased or consumed by the end user.



long way = heavy carbon footprint

The food supply chain
It is all the stages that food products go through, from production to consumption, known as “farm to fork”.



long food supply chain = heavy carbon footprint

Because the street is densely packed with restaurants, bars and cafés, addressing environmental issues entails reconsidering food miles, food supply chains, and food waste.
Producing items locally in a vertical indoor farm that shares resources with neighbours would immensely contribute to the circular urban economy of the near future.

Sources of the images: https://research.rabobank.com/far/en/images/Intra-EU%20trade.png
https://www.researchgate.net/publication/343838504/figure/fig5/AS:963471835422723@1606720994589/Food-supply-chain-infographic-Source-Sandia-Seed-Company.png

3.8 Urban indoor farming

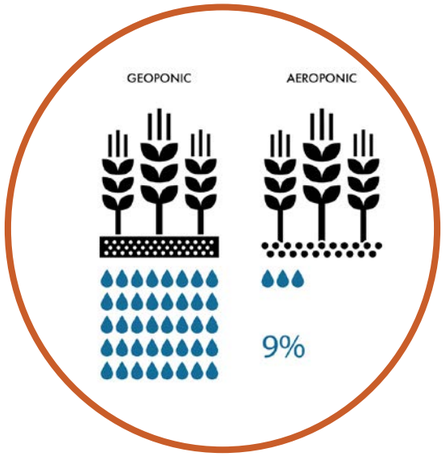
Benefits of food production in the urban indoor farm

reduces food miles and food supply chain for the restaurants

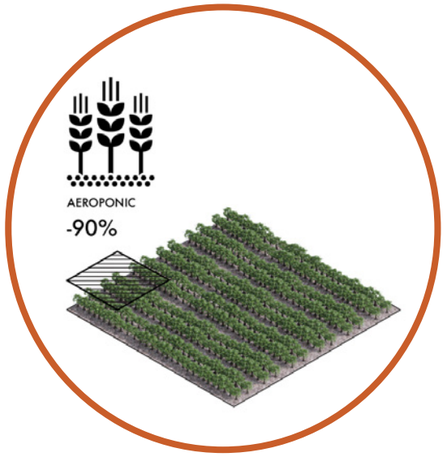
year-round crop production

wheatherproof, perfect crops
not exposed to extreme weather

eliminate the use of chemical pesticides



water conservation
aerophonic system uses 90% less water than traditional agriculture practices



significantly higher yield
about 90 percent less land to grow the same amount of crops

3.8 Urban indoor farming

case studies: urban indoor farms

The Youth Village Farm LAB and Milan Expo Horizontal Farm Competition

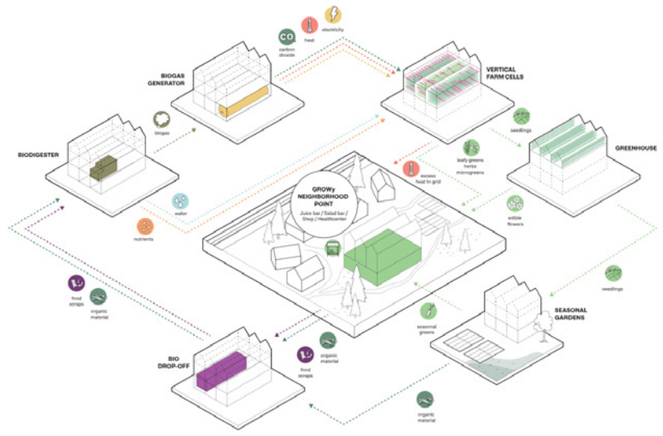
by DDS & Partners
2021 | unbuilt project

https://aasarchitecture.com/2016/06/youth-village-farm-labmilan-expo-horizontal-farm-competition-dds-parteners/

Urban Food Hub

by Space&Matter and Growy
2021 | project in search for location

https://www.spaceandmatter.nl/work/urban-food-hub



The Green House

by cepezed
2021 | Utrecht, NL

https://inhabitat.com/an-urban-farm-and-restaurant-flourishes-in-utrechts-circular-pavilion/

3.8 Urban indoor farming

Agritecture in Rotterdam

Urban agriculture in the old *Tropicana* swimming pool

"*RotterZwam* mushroom growers believe in a society where cycles are closed, raw materials are exploited to produced food locally. Therefore, we grow super fresh oyster mushrooms in Rotterdam wasted coffee grounds and sell them to restaurants and supermarkets in the nearby area."

https://archief.nederlandwordtanders.nl/nieuws/van-zwem-naar-zwamparadijs/herbestemming/

The largest aquaponic system in Europe

From shunting yard to vegetable garden

"The advantage of aquaponics is that the fish are constantly making nutrients for the plants, and the plants purify the water for the fish.
UJES works with two systems side by side: they breed tilapia in one and catfish in the other. Both have their own breeding pond, which now mainly grows lettuce and bok choy. They are also experimenting with mint."

https://www.oneworld.nl/lezen/klimaat/het-grootste-aquaponicssysteem-van-europa-staat-rotterdam/
https://stadstuinieren.nl/inspiratie/de-kok-en-zijn-moestuin-uit-je-eigen-stad/

The World's First Floating Farm

https://www.agritecture.com/blog/2021/8/24/building-the-worlds-first-floating-farm-in-the-netherlands

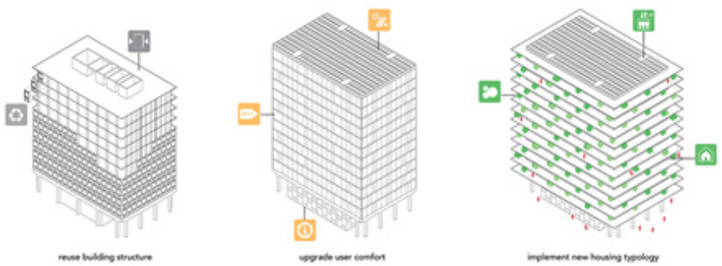
3.9 Tower built on top of the existing building
case studies

Extension on top of the existing building
Urban densification inevitably requires upward expansion. Building on the existing building is not an easy task, so it was useful to investigate reference projects.

De Voortuin
Former ING office becomes residential tower.

by TANK Architecture & Interior Design
2021 | Amsterdam, NL

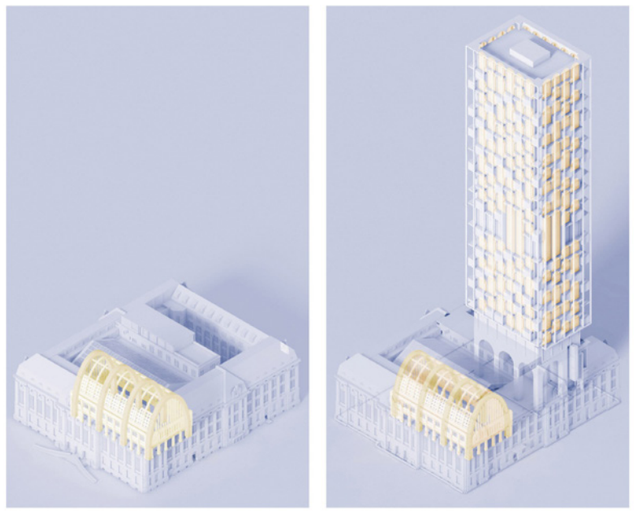
https://architectenweb.nl/nieuws/artikel.aspx?ID=41886



POST Rotterdam - The redevelopment and renovation of the former post office on Coolsingel in Rotterdam including new tower.

by ODA New York and Braaksma & Roos
2021 | Rotterdam, NL

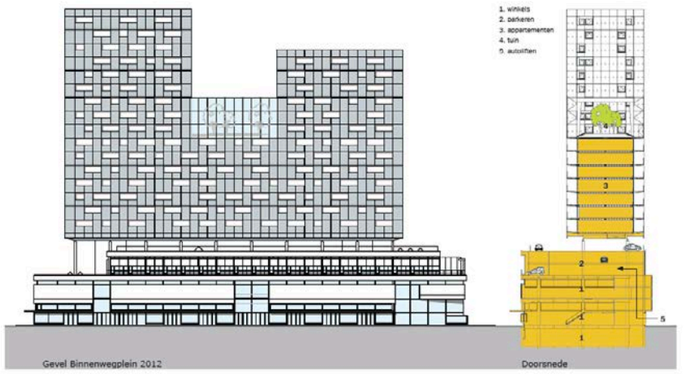
https://architectenweb.nl/nieuws/artikel.aspx?ID=45557



De Karel Doorman
Tower built on top of existing modernist building.

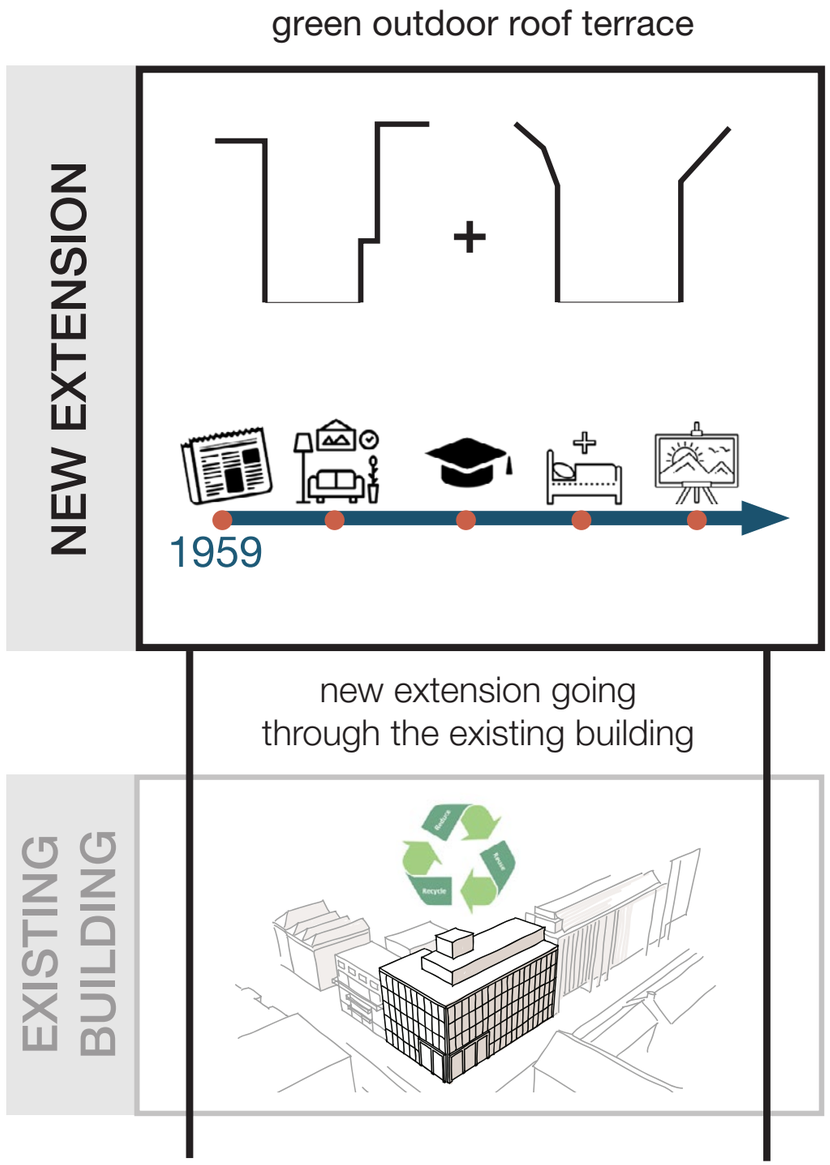
by Ibelings van Tilburg Architecten
2012 | Rotterdam, NL

https://www.archdaily.com/331477/de-karel-doorman-ibelings-van-tilburg-architecten



4. Design

4. Design
Starting points



2 identities (traditional & modern city centre) reflected in the facade

New facade is continuing existing building's ideas with today's tools (regular facade system, generating solar energy, sustainable & recoverable materials)

Adaptability for different future uses
(Open Building principles, prefabricated modular elements)

Functions: indoor urban farm, co-living,
roof terrace with rentable bar for celebrations

Intermediate floor is different

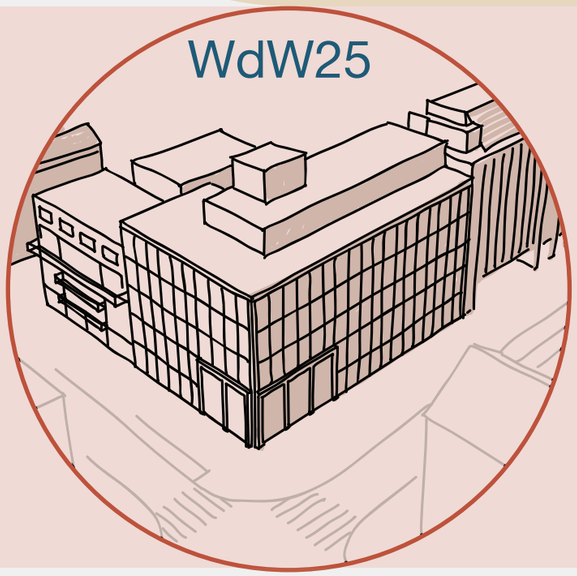
Introducing outdoor space
in 2-4 floors, roof terraces on 5 & 13 floor

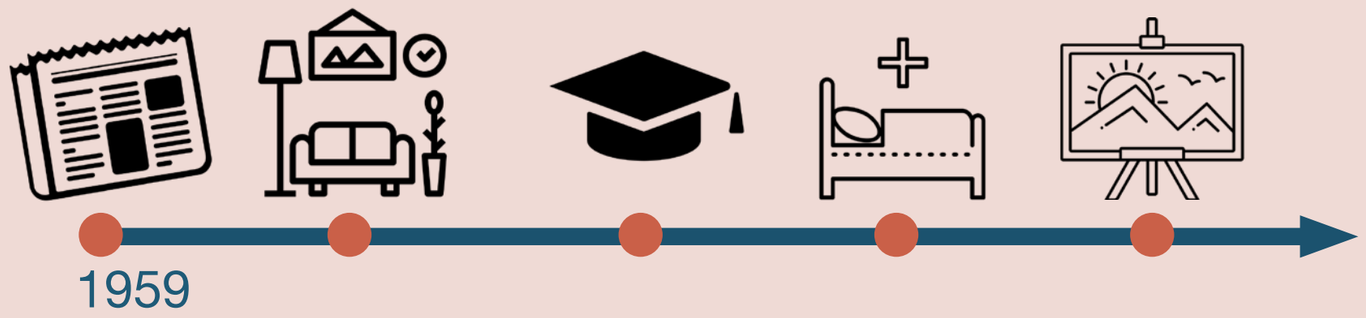
Reconnect the plinth with the street
Public functions on the ground floor & 1st floor

Functions: cooking school, restaurant, shop

Testing the limits of flexibility:

How can the building be more **adaptable for the different future uses?**





4.1 Testing the limits of flexibility

Testing the limits of flexibility:

-> 4.1.1 **Program**

-> 4.1.2 **Storey height & Installations**

-> 4.1.3 **Floor**

-> 4.1.4 **Facade**

4.1.1 Program
portrait of the building

portrait of the building explained

Today, pedestrians experience this former police station as an austere and disengaged building in Witte de Withstraat, a famous street for its restaurants, bars, galleries and shops.
In the portrait of the building, I have portrayed it as this mysterious man in the cultural and vibrant surroundings.
The portrait of the building raised a question - **how to activate this “glass box“?**

Building Witte de Withstraat 25 resembles the painting “The Son of Man” by Belgian surrealist artist Rene Magritte (1946)
Author’s words: “Well, so you have the apparent face, the apple, hiding the visible but hidden, the face of the person. It’s something that happens constantly. Everything we see hides another thing, we always want to see what is hidden by what we see. **There is an interest in that which is hidden and which the visible does not show us**. This interest can take the form of a quite intense feeling, a sort of conflict, one might say, between the visible that is hidden and the visible that is present.”
The building is - visible, but at the same time hiding under its austere appearance and the hustle and bustle of the Witte de Withstraat. There is an interest to unveil the hidden.

In the fresco “The School of Athens” by the Italian Renaissance artist Raphael (1509-1511) nearly every great ancient Greek philosopher can be found, moreover, this masterpiece is a perfect embodiment of the classical spirit of the Renaissance.
Witte de Withstraat with its with galleries and exhibition spaces (TENT, Catalogue, MAMA, Cobra Art Rotterdam, WORM, Kunstinstituut Melly, V2_ Lab for the Unstable Media, Picfee etc.) is the route beteween two cultural museum areas – Museum park and Maritime museum. The boiling cultural life in this street gathers the art lovers and avant-garde people as well as the visitors of the city. In the 50’s-60’s, when the building was built, this street was known as being the heart of Rotterdam’s journalism and the cafes served as a platform for news gathering.

Dutch Post-Impressionist Vincent van Gogh’s paintings “Café terrace at night” (1888) and “The Starry Night” (1889) helped me in illustrating the street’s vibrant atmosphere in the evening.

The street’s architectural character is defined by the traditional row-houses like in the painting “Wintertaferelen” by Dutch painter O. Romkes de Jongh.

On the right hand Spanish surrealist artist Salvador Dali’s painting “Les éléphants spaciaux”(eng. Space elephants) (1965) provided me with the picture depicting Rotterdam’s high-rise center where the Hartmannstraat leads to. The photorealistic painting “Rain in New York City”(2018) by Alexander Volkov adds up to the modern city’s image that one can feel walking further this street.

Neither at daytime nor nighttime the building remains visible and is not indulging in cultural and vibrant life of the surroundings.

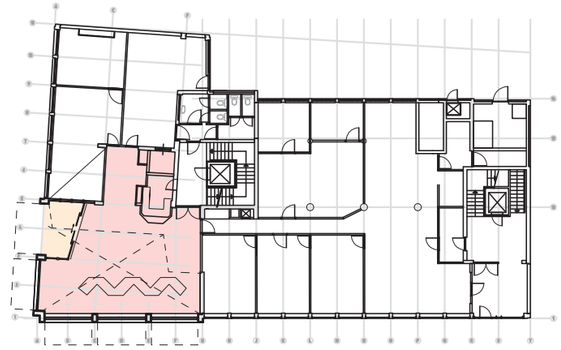
Was WdW25 “active” before?

According to architect and urbanist Jan Gehl, in order to engage with street life, the ground floor of the buildings must have a physical connection to the public space[1]. One of my aims is to activate the building on the ground level – re-connect it to the street, which will eventually be car-free, by making the ground floor facade more open, approachable and introducing public functions.

1 - Gehl, Jan, Lotte J.Kaefer, Solvejg Reigstad. “Close encounters with buildings.” Urban design international 11, no. 1 (2006): 29-47.

1959 – The original design as newspaper office of “De Rotterdammer” & “Trouw”

1979 – Renovation for new owner - newspaper “Het Vrije Volk”



1993 – Renovation for the Police

2005 – Refurbishment for the Police

Lobby space

Outside space

Figure: Ground floor physical connection with the street during different ownership of the building
Source: “Bouw” magazine, 1959. Photo taken from Het Nieuwe Instituut archives.

Sustainable Developments Goals & Values

1.	space for additional greenery quiet spaces in a busy city space for children to play sports	environmental value social value
2.	**reducing energy consumption** (by **using existing buildings & insulating them**) rooftop space for generating renewable energy in the city energy saving by water collection (drainage of rainwater for irrigation, reusing as ‘grey‘ water)	environmental value aesthetic value economic value
3.	full and productive employment in urban farm and public functions at the plinth	economic value
4.	space for **social community functions** making **neighbourhood more inclusive by** adding a **new type of program, provided education**, more **inclusive living program** better quality public space	social value environmental value cultural value aesthetic value
5.	**urban farming** and allotment gardens shortening food supply chains, healthier fresh food densification by means of **sustainable construction methods** (e.g. long lasting, circular construction, use of sustainable materials)	environmental / health value
6.	adaptation to climate climate mitigation making building stock more sustainable	environmental value
7.	more space for greenery place for animals such as birds and insects increasing biodiversity	environmental value

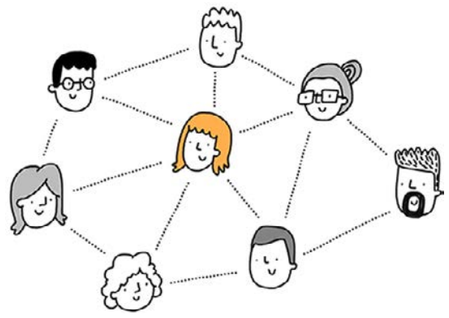
17 goals: https://www.undp.org/sustainable-development-goals

4.1.1 Program
3 activation measures

Activating the “glass box“:

1. Activating by public plinth
Re-connecting with the street life

2. Activating by food production
urban farm catering for the Horeca sector



3. Activating by accommodating
Co-living

4.1.1 Program
1 | Activating by public plinth

Architect and urbanist Jan Gehl stated, “First life, then spaces, then buildings - the other way around never works.”
One of my aims was to activate the building on the ground level – re-connect it to the street, which will eventually be car-free. Plinth is going to be activated by making the facades of the ground floor and the 1st floor more open, approachable and introducing public functions - restaurant, grocery store and cooking school.

Figure: sketch of the inviting and open ground floor
Source: Own drawing

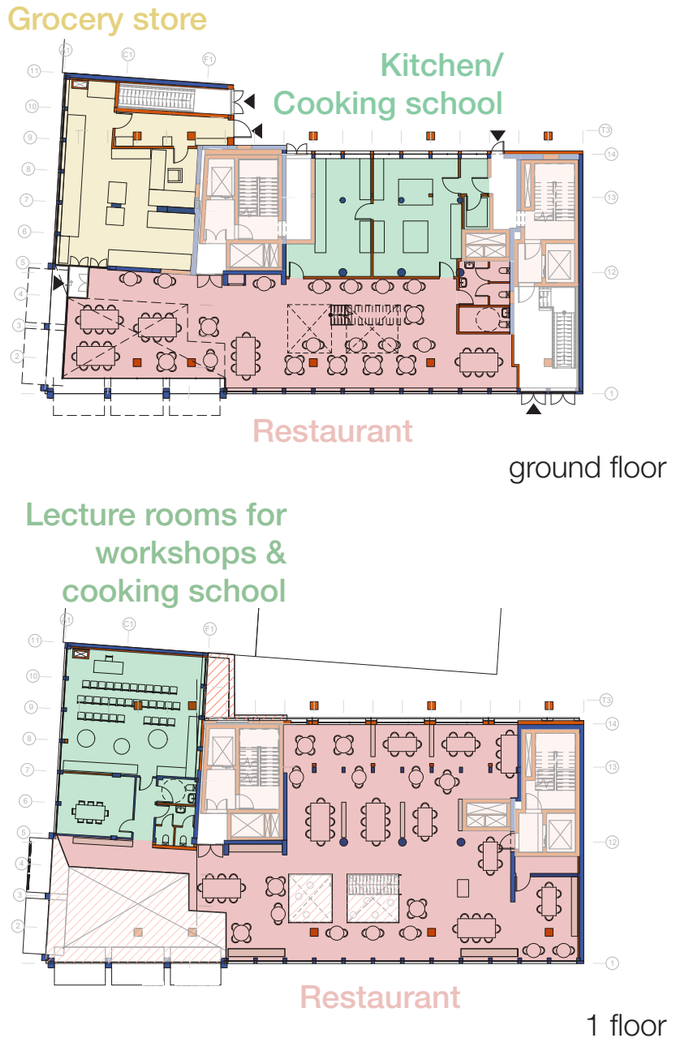


Figure: functions proposed for the plinth floors shown in plans
Source: Own drawing

1 | Activating by public plinth

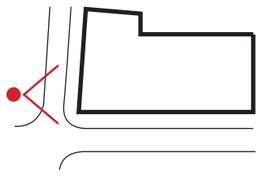


Figure: The original idea of the set-back corner entrance is brought back making a physical invitation for passers-by to come in.

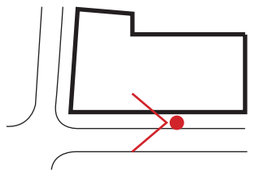


Figure: The pavements are provided with new benches around the trees. The open façade showcases and visually connects to the restaurant inside.

Image sources: Own renders

1 | Activating by public plinth

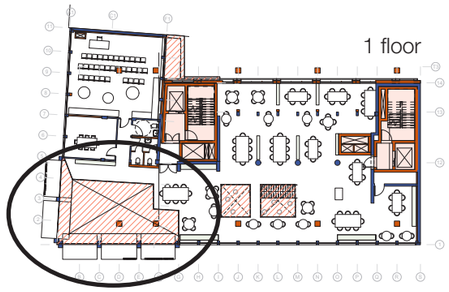


Figure: Bringing back the spacious feeling of the Newspaper office lobby by removing the floor infill construction added in previous renovation.

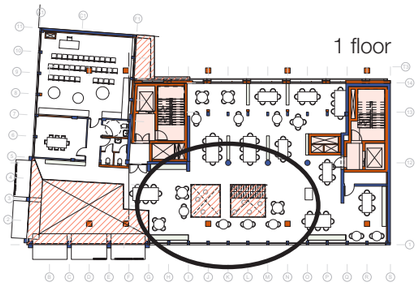
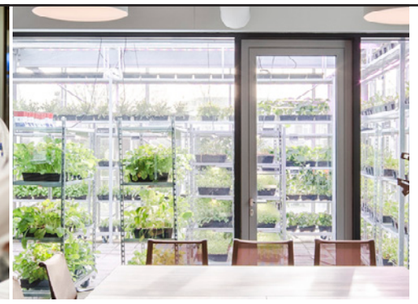


Figure: New voids with staircase are introduced in the restaurant space. Providing both of the restaurant stroreys with physical and visual vertical connection.

Image sources: Own renders

4.1.1 Program

2 | Activating by food production

for education

showcasing the technology
for lectures, workshops
shool for cooks


private use

for residents

vertical farming


production

for Horeca street,
restaurant & shop on the GF

https://www.ice.edu/sites/default/files/content/program/header-video-image/Sauces-030-72dpi_1440x850.jpg
https://waldenlabs.com/nutritower-indoor-vertical-farm/
https://images.adsttc.com/media/images/5cc0/0f66/284d/d1ee/9200/004a/slideshow/cepezed_-_The_Green_House_-_Lucas_van_der_Wee_(13).jpg?1556090705
https://services.urbankisaan.com/UploadDocuments/blogs/34.jpg
https://www.researchgate.net/profile/Cherryline-Villarino/publication/331639279/figure/fig11/AS:735248253984773@1552308252439/Panasonic-Indoor-Vertical-Farming-using-LED-AVA-2017.pnghttps://i1.wp.com/starfarm.co.id/wp-content/uploads/2021/01/teknik-vertikultur.jpg?resize=1051%2C699&ssl=1

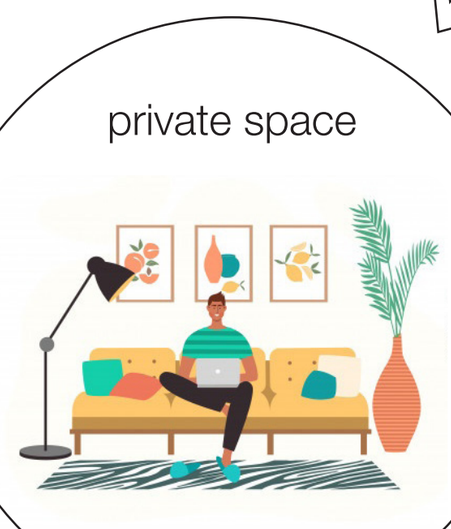
4.1.1 Program

3 | Activating by accommodating

more inclusive living

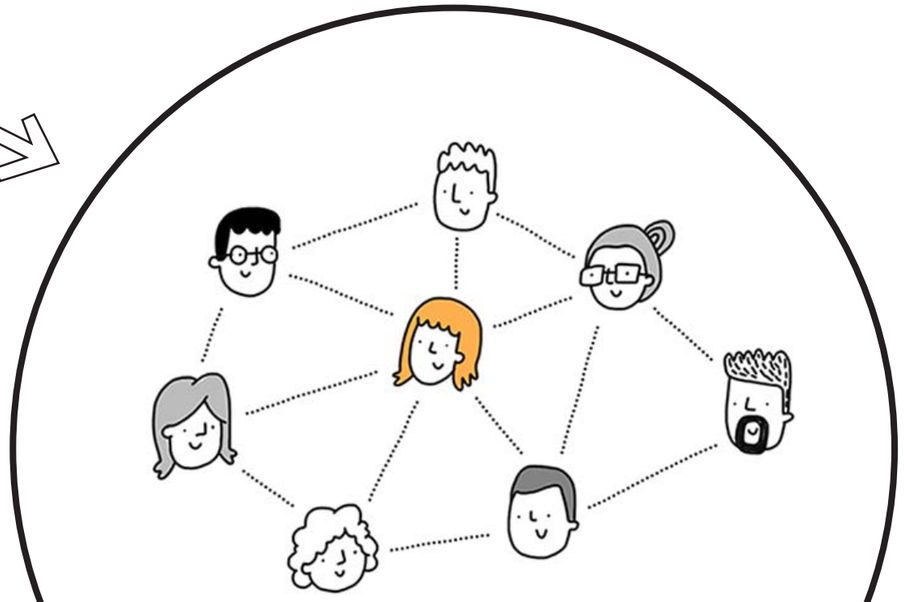
Co - living

private space



job in the
urban farm,
restaurant, shop

job oportunity



communal kitchen/
vertical gardening room

spaces for social community functions

https://img.freepik.com/free-vector/remote-work_106612-86.jpg?w=2000
https://dlot.eu/mod/glossary/view.php?id=89
https://cdn.dribbble.com/users/491349/screenshots/11110623/urban_framing-03_4x.jpg

4.1.1 Program
Co-living layout

Plan: 12 floor
SC 1:100
Image source: Own work

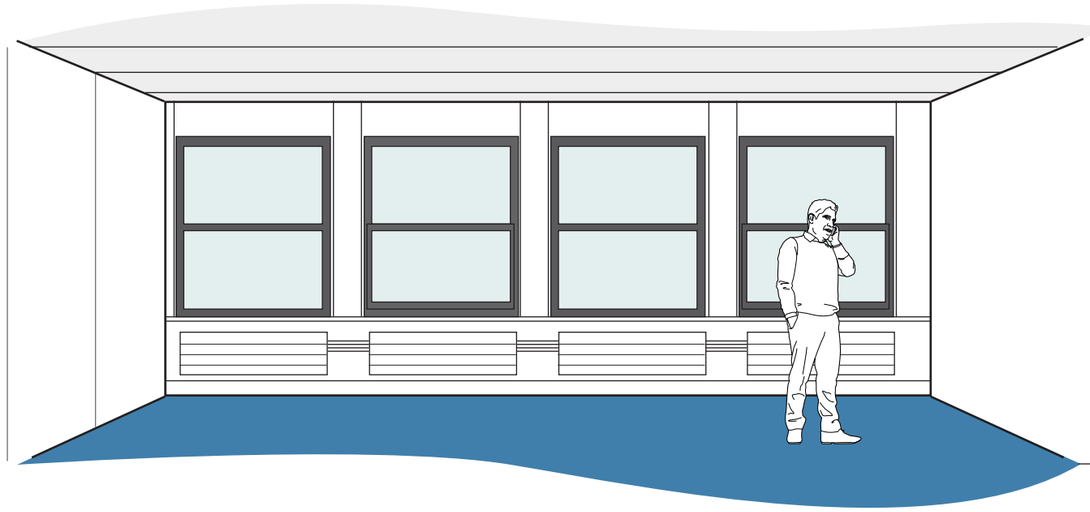
Communal kitchen/ indoor gardening space

Image source: Own work

Interior
existing building

relation between spaces

regularity



existing

new existing

extension

Roof terrace

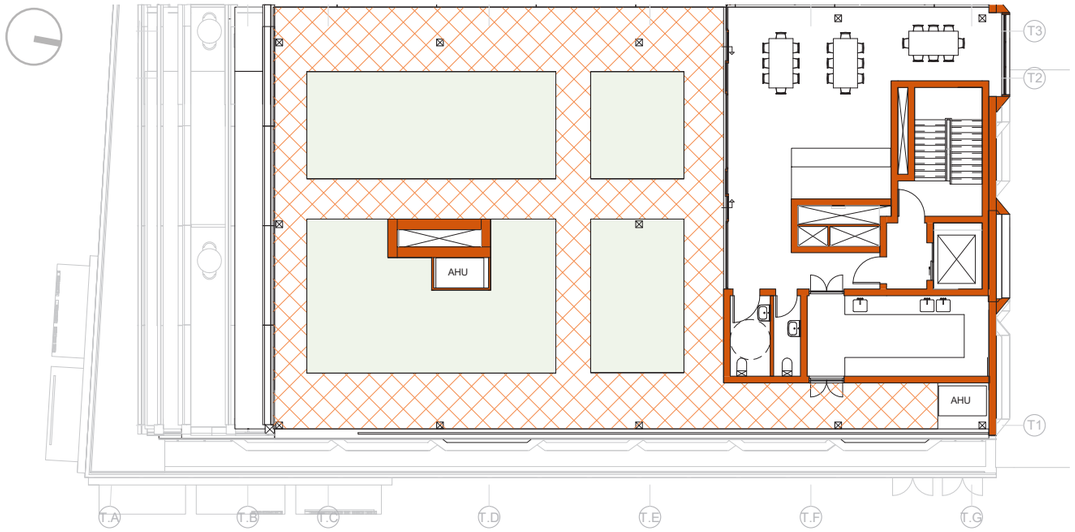


Image sources: Own drawing and render

Green outdoor space

Usually, new towers in the city center mean gentrification and the loss of scarce green space, whereas this adaptive reuse project introduces a more inclusive way of living with plenty of green outdoor spaces, which are designed for relaxation (reading a book or dining), doing passive sports like yoga, socialising (celebrating on the roof terrace or dinning togehter in the balcony) and gardening (active hobby for residents).

private balconies

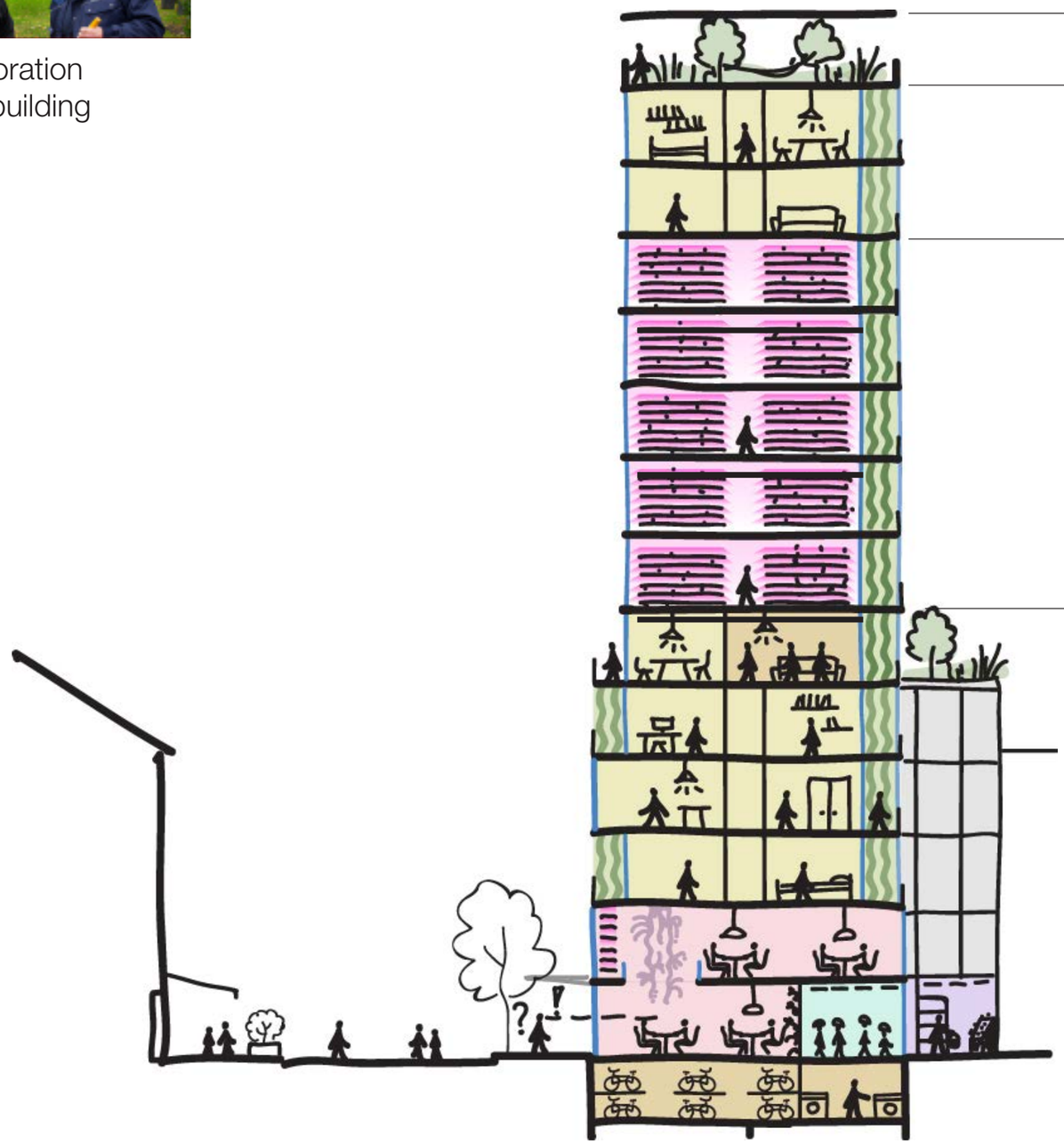
roof terrace on the 5th floor

roof terrace on the 13th floor

Image sources: Own renders

4.1.1 Program
program in section

Housing Corporation
manages the building



Roof terrace with rentable bar for celebrations

Co-living

Indoor vertical farm

Leisure time/ work spaces, installation rooms

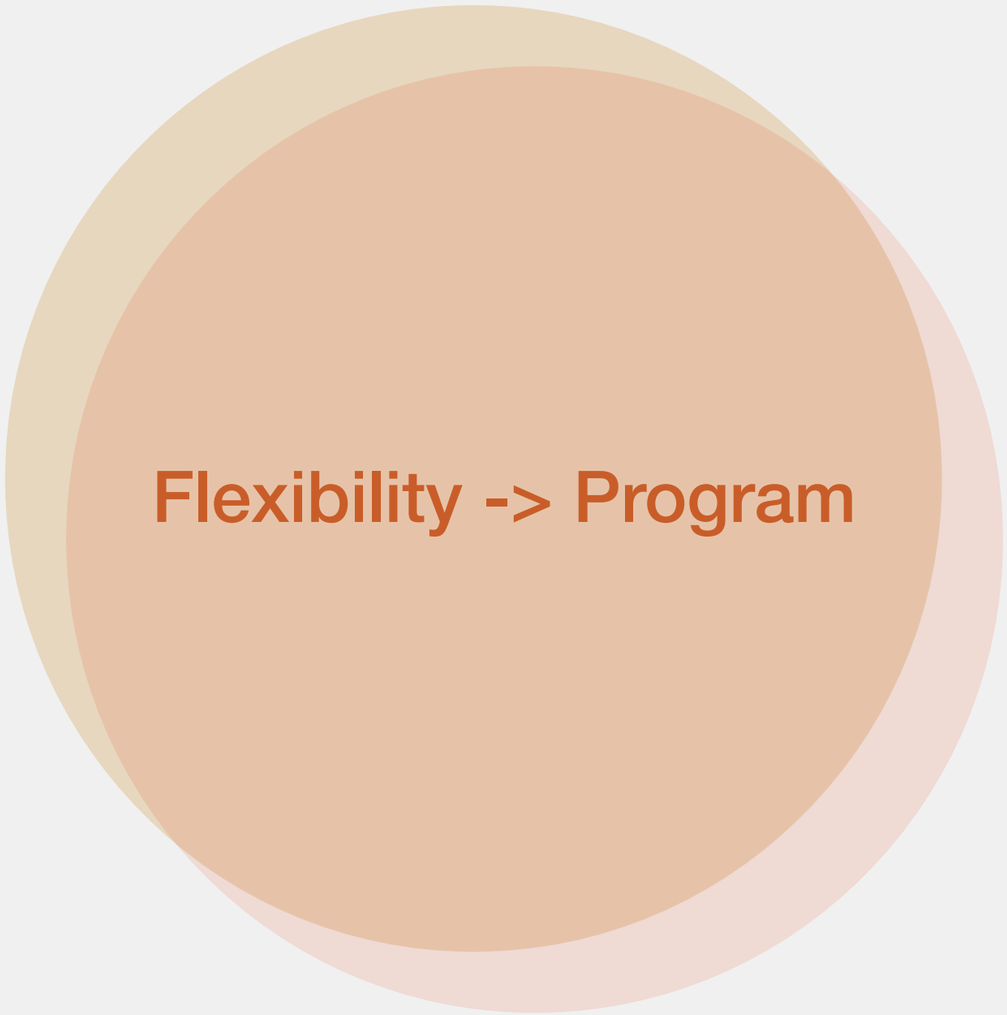
Co-living

Restaurant, Cooking school lecture rooms

Restaurant, Cooking school, Shop

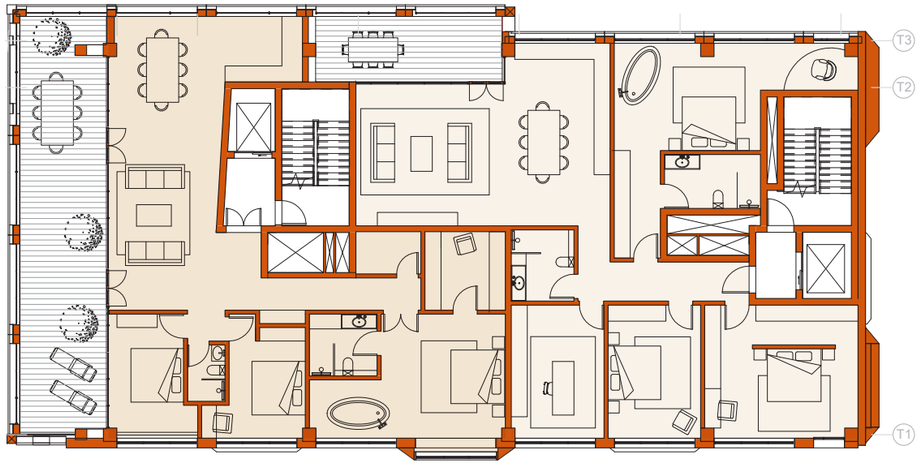
Bike parking, laundary, installation rooms

Image on the left: https://static.bedrijvenopdekaart.nl/image/web-191821-medium.png
Image on the right: own drawing

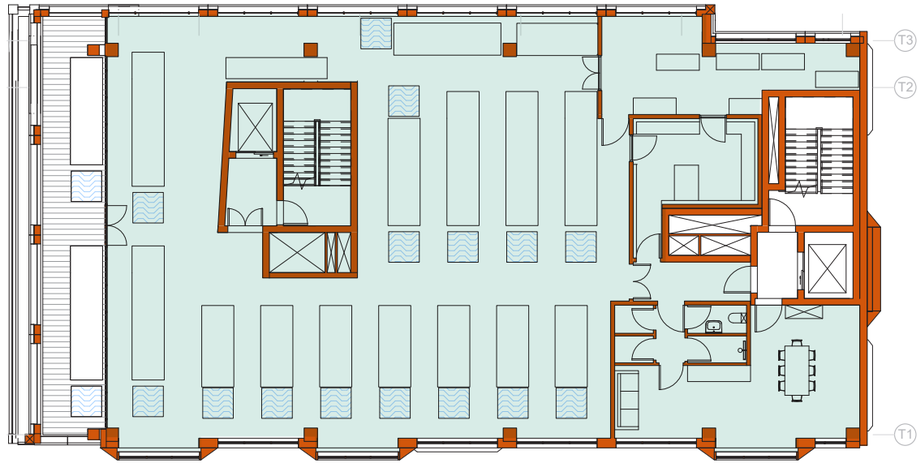

Flexibility -> Program

Adaptability for different functions

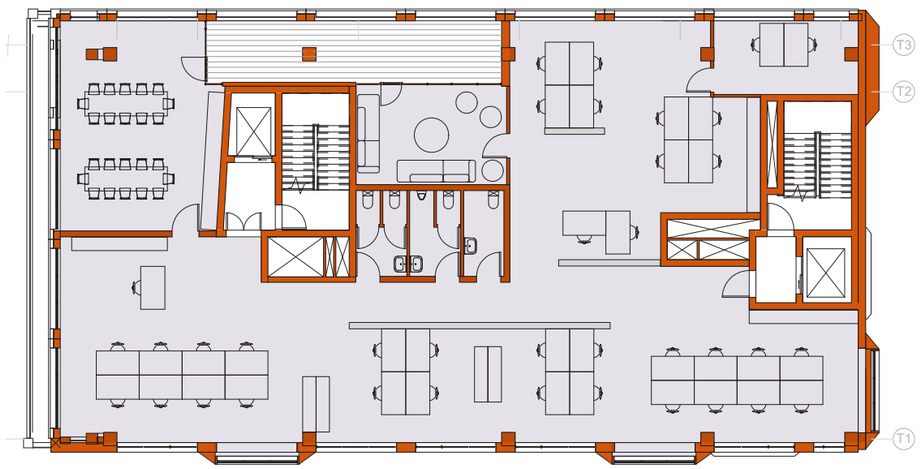
2 luxurious apartments (aprox.170 m^2) 9



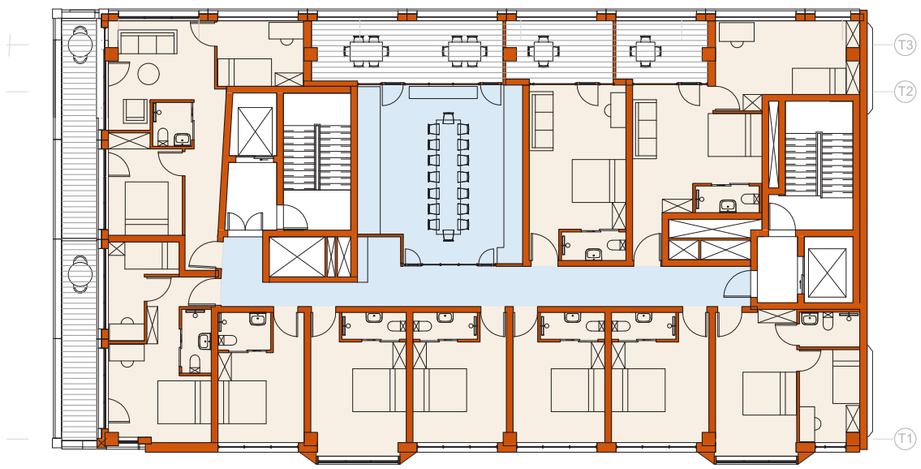
Indoor farm 10



Office space 11



Co-living apartments 12



! **the limit :** the building cannot host special equipment-intensive functions as laboratory, hospital, industrial production, big scale cultural... (because of special equipment or a lot of installation needed)

allowance for change: it can host functions like residential, office, education, horeca, small production, small scale cultural, farming...

Image sources: Own drawings

4.1.2 Storey height & Installations

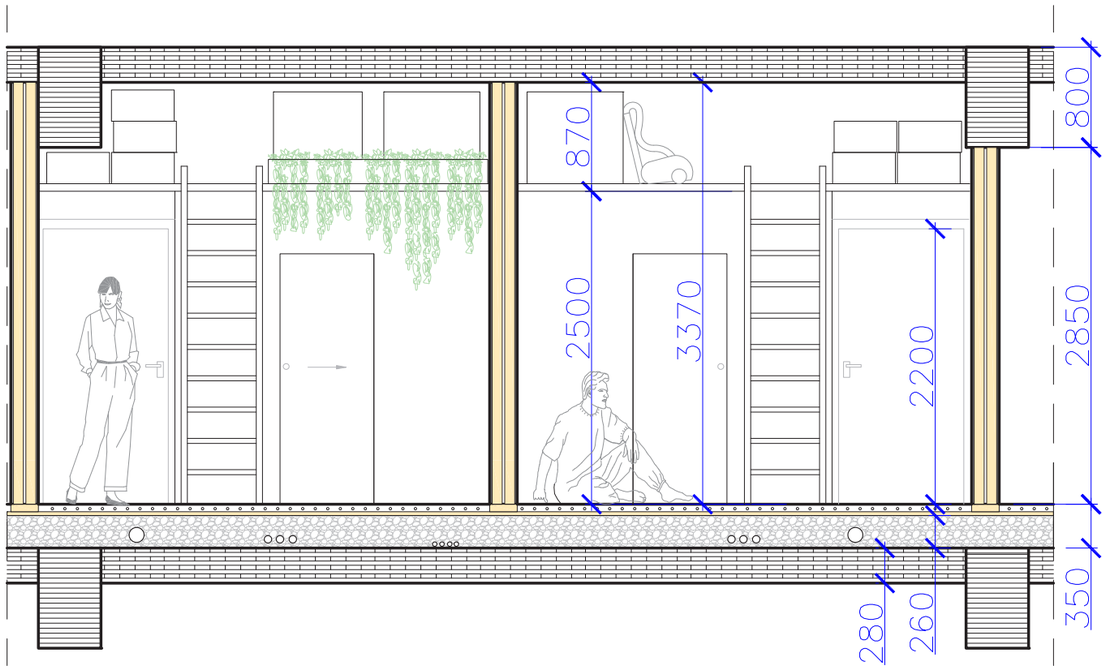


Figure: section through the apartment layout of one storey

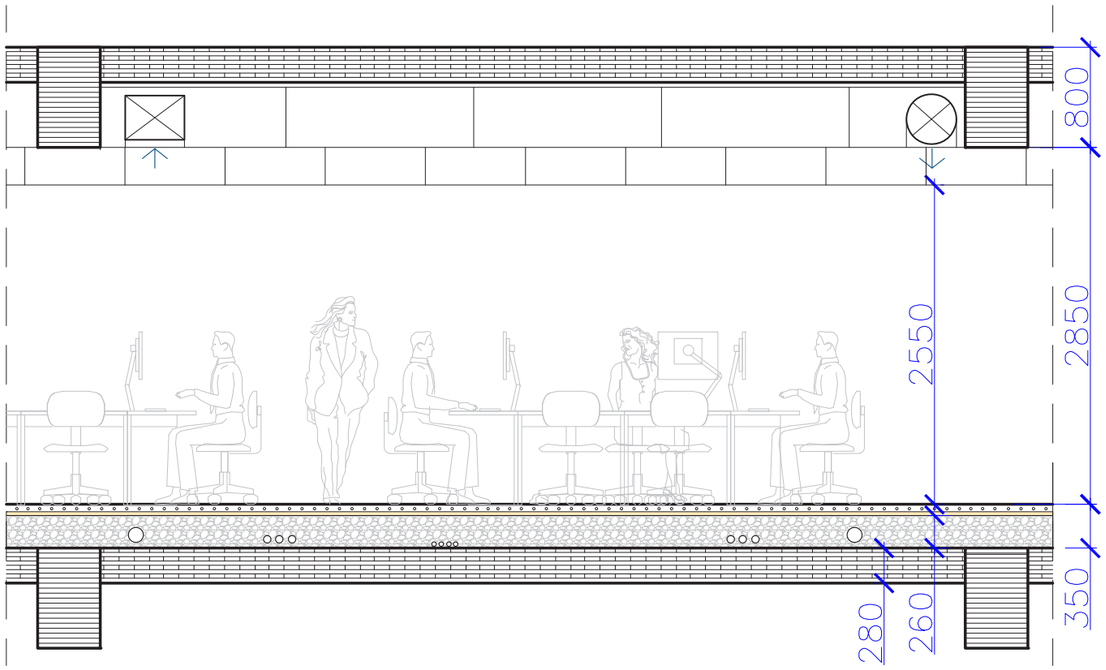


Figure: section through the office layout of one storey

Storey height & Installations are important topics in testing the limits of flexibility.
Storey height allows to place more installations (e.g. ventilation ducts) in the ceiling or the floor (cabling and pipework), therefore the function of the space can be altered to a one that requires bigger capacity of installations.
In the proposed design the ceiling to floor height of 3.3 m (floor to floor height - 4 m) allows an extra space for the mezzanine storage in the apartment layout and a decent height to fit the ventilations ducts for other function like office (see figures above).
The 80 cm height glulam beams are used in order to maximize free layout of the floors and have open plan. However these beams are thicker than the floor slabs, therefore takes up an extra 52 cm in floor height.

The partition walls between flats can be readily built or removed, with a modest gap for acoustic purposes. This means that flats can be subdivided or merged, and partition walls can be removed obtaining open plan.

In Open Building principles installations fall into sytems or services category. This theme outlines the usage of components, systems, and materials and investigates how they are manufactured, detailed, and installed. Not only it is useful for defining closed life cycles of materials, it also supports the implementation and usage of renewable resources.
Because of the fixed nature of the floor system, installations in the floor are less flexible to change or adjust than those on the ceiling.

! **the limit :** the open plan is achieved by sacrificing the 52 cm height that is taken up by the glulam beams
the limit : Installations in the floor are less adaptable than those on the ceiling

Image sources: Own drawings

4.1.3 Floor

Another important element in flexibility of the building is the raised floor.
It is used for installations providing heating and domestic water, grey water, sewage, electricity. Pipes and cables in the floor system go horizontally to a shaft in the core.
The users are able to adjust and install new pipework and cabling layout thanks to the access floor with removable top layer in the corridor and dry dissassembly flooring.
The most flexible solution would be to install the access floor everywhere, but the limits I ran into was that access floor has poor impact sound insulation, requires extra materials (e.g. for the floor heating) and is quite expensive to implement in reality. Therefore these kind of floors are introduced only in the corridor.

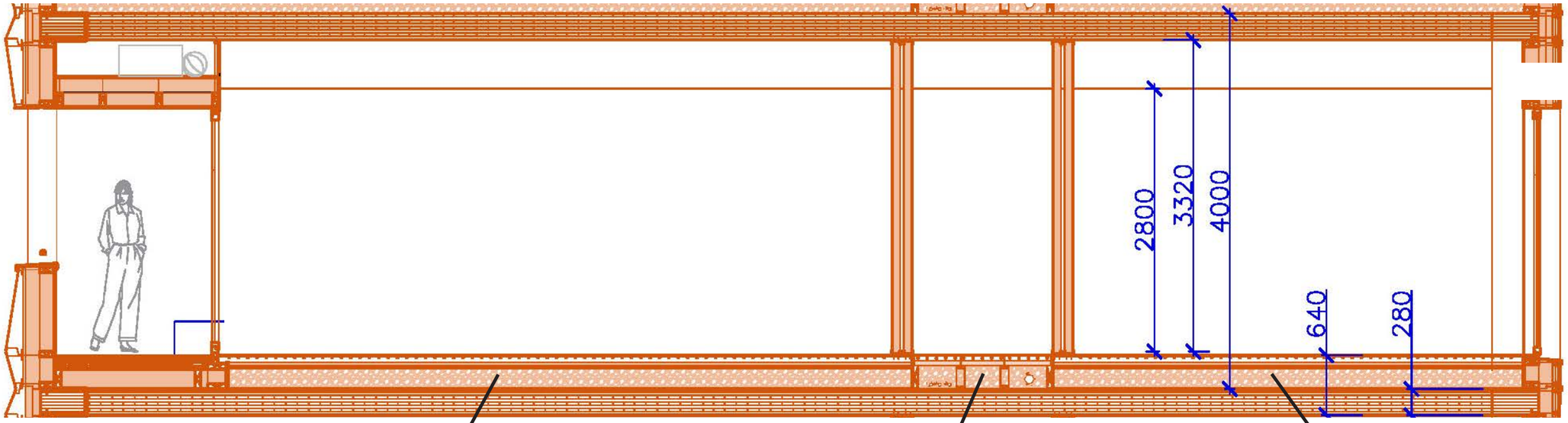
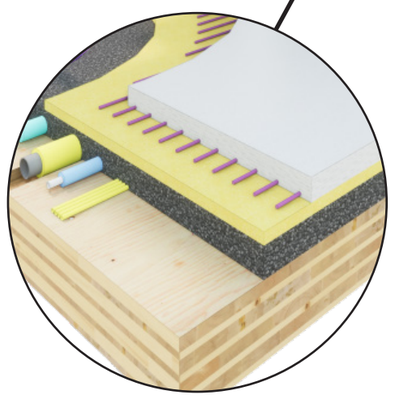
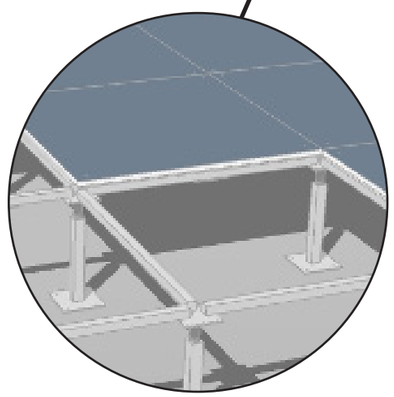


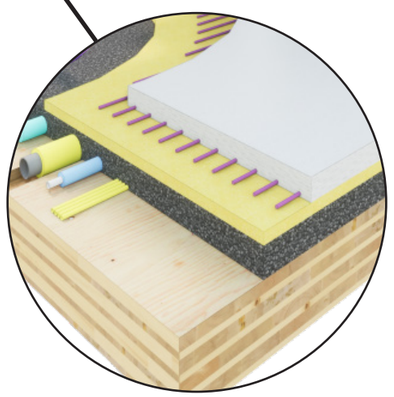
Figure: section cutting one storey



raised floor for dry disassembly of installations



access floor for adjustment of installations



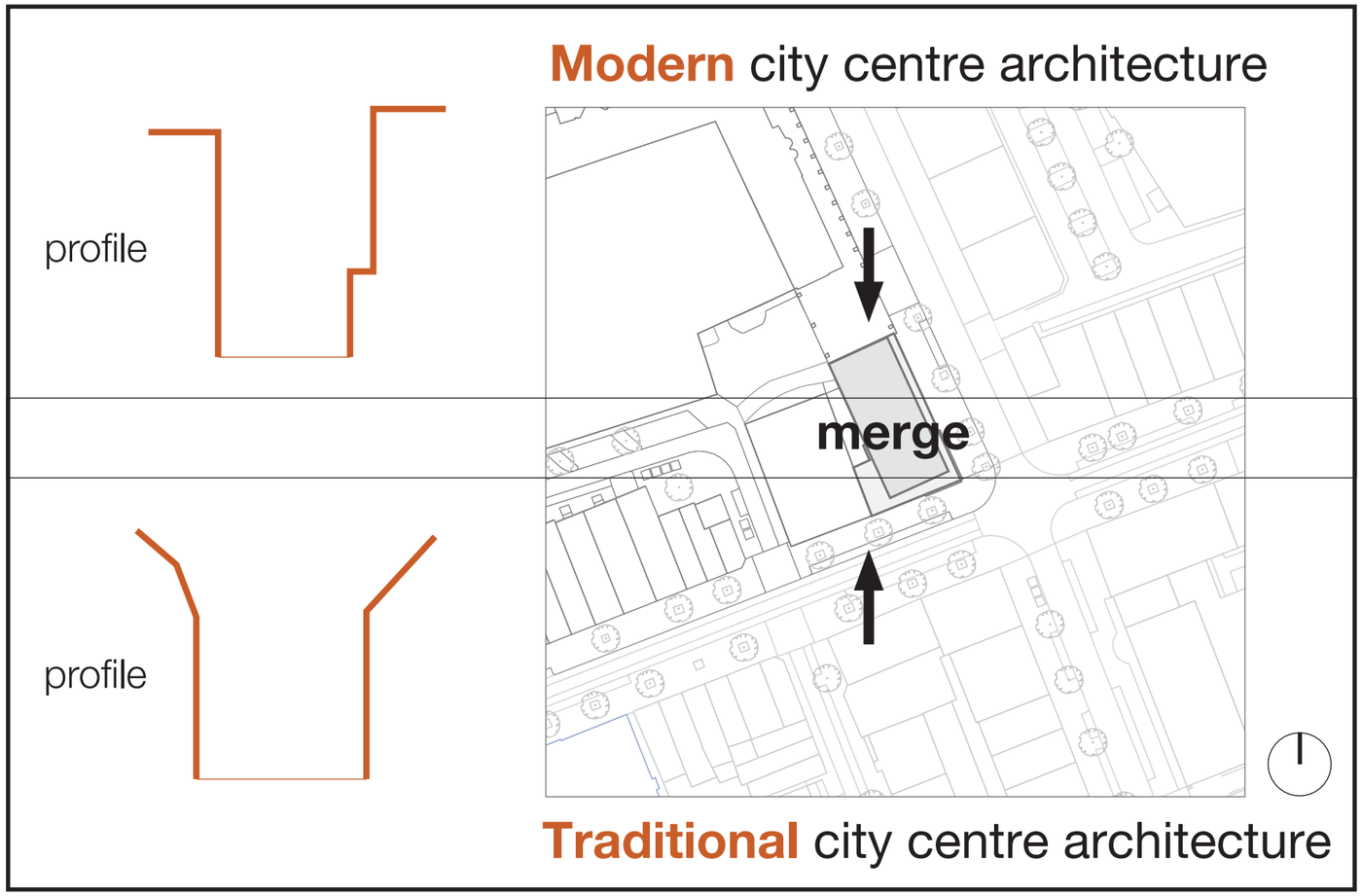
raised floor for dry disassembly of installations

! **the limit :** ventilation should not go into floor - it can take a lot of space
the limit : access floor has poor impact sound insulation, difficult with floor heating, expensive
allowance for change: access floor is introduced only in the corridor

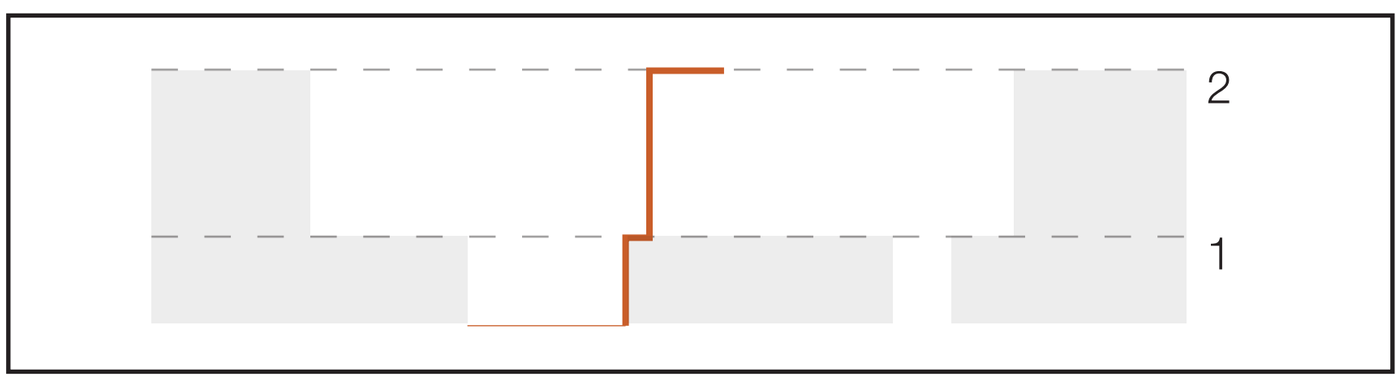
Image sources: Section - own drawing, https://mei-arch.eu/en/wp-content/uploads/sites/2/2022/01/19010_SAWA_openbouwen_open-trans-vk-Large.png?image-crop-positioner-ts=1642693130
https://www.archtoolbox.com/wp-content/uploads/access-flooring-components.png

4.1.4 Facade

Starting points: urban scale



2 identities merging

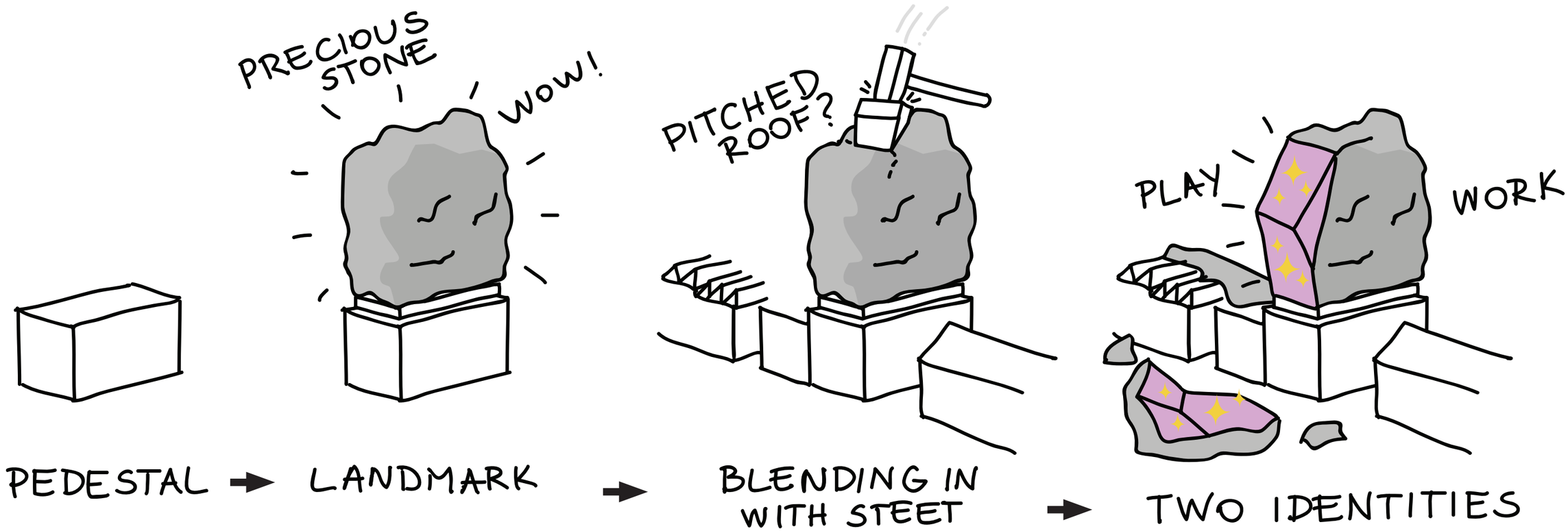


Tower set-back from the street

keeping the lowest Rotterdam's urban layer

4.1.4 Facade
methaphor / concept

The architectural idea for the new facades renders the existing building as a pedestal for the precious stone which becomes a landmark for the Witte de Withstraat. The stone tries to blend in with the street of pitched roofs therefore it is broken and suddenly we see how the different inside is exposed. Robust stone-like “introvert” facade reflects the serious modern city centre and the “extrovert” one - the playful street of bars and restaurants.



4.1.4 Facade
visual impression

Figure: view from the crossroad

Figure: view from the Hartmansstraat

4.1.4 Facade

existing building

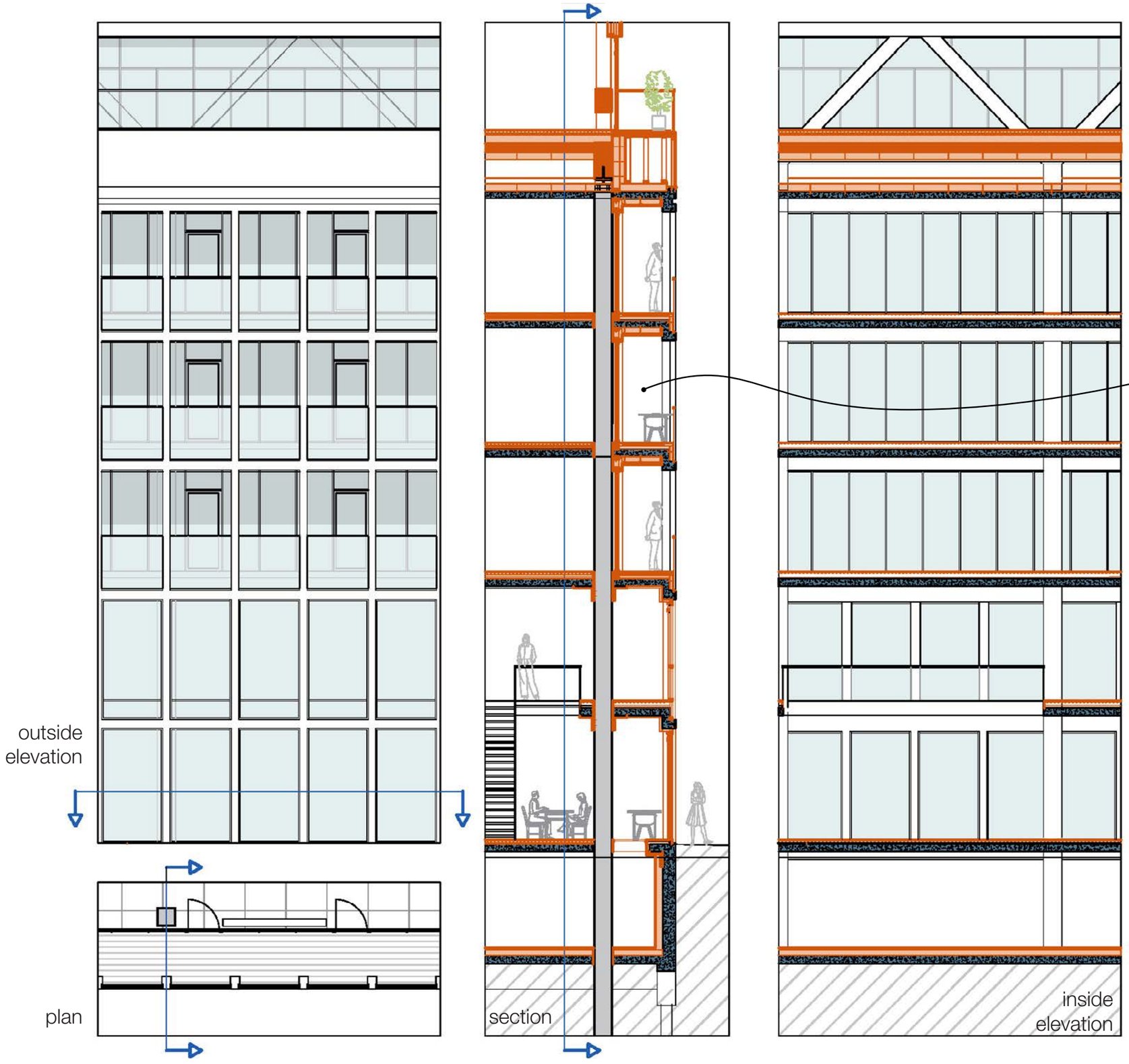
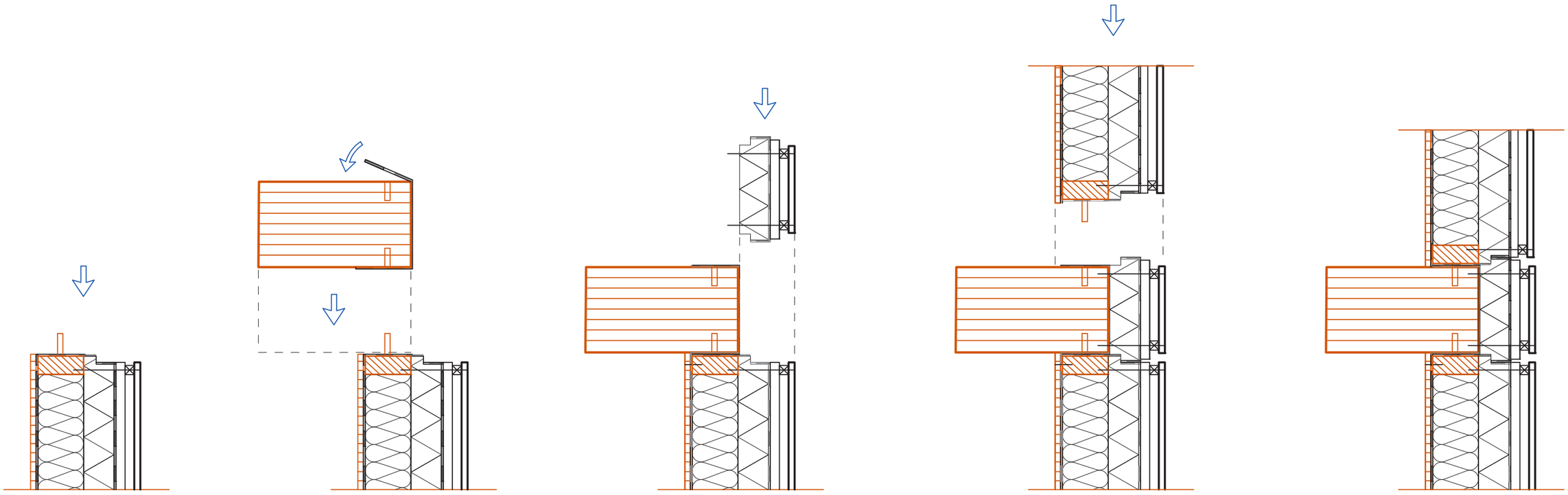


Figure: new outdoor space created by recessed curtain wall

the limit : when raising the floor, the height of the floor decreases, stairs and doors need to be adjusted accordingly

4.1.4 Facade
new extension

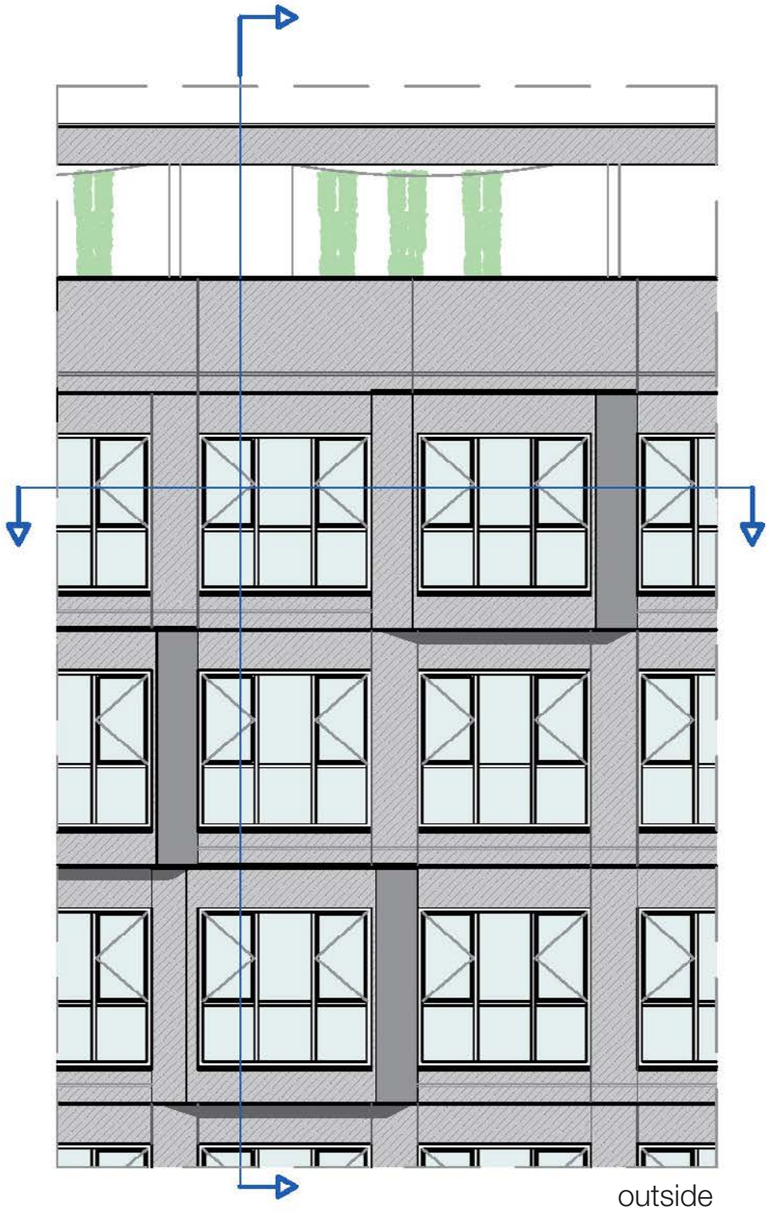
assembling of the modules in section



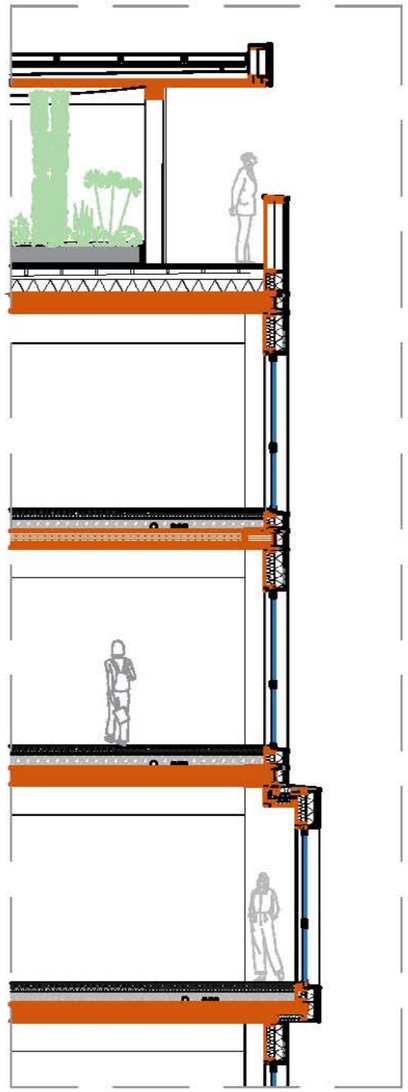
1 2 3 4 5

! **the limit :** replacing the whole facade module - was decided that the user will not change the “support“
allowance for change: cladding can be replaced

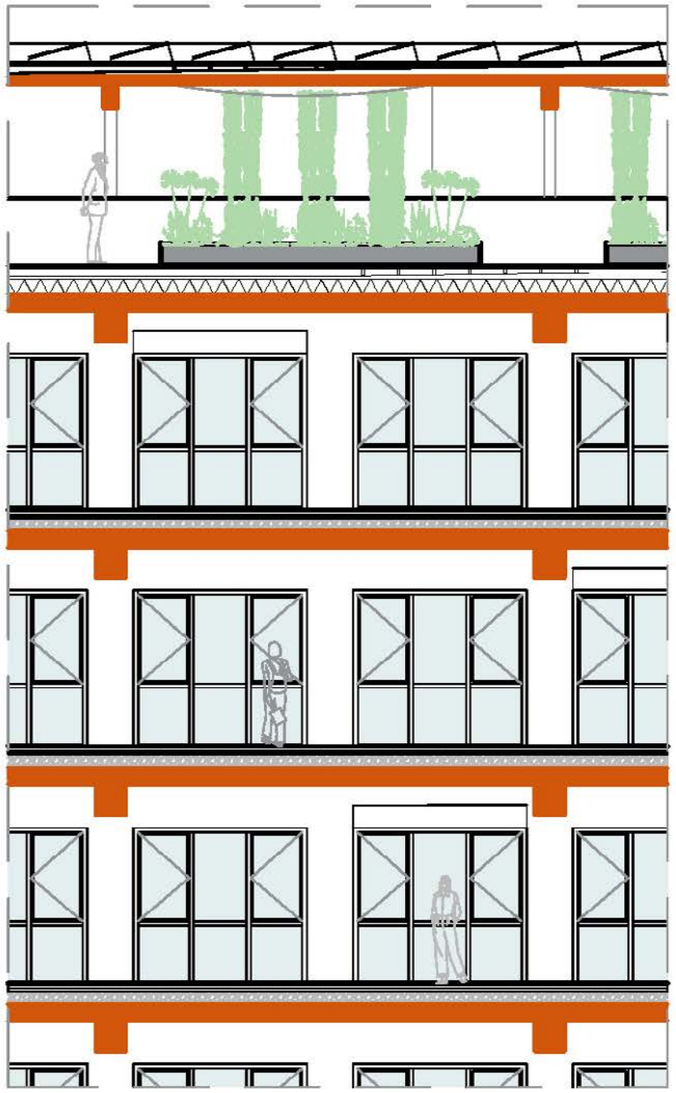
new extension
“rock” facade



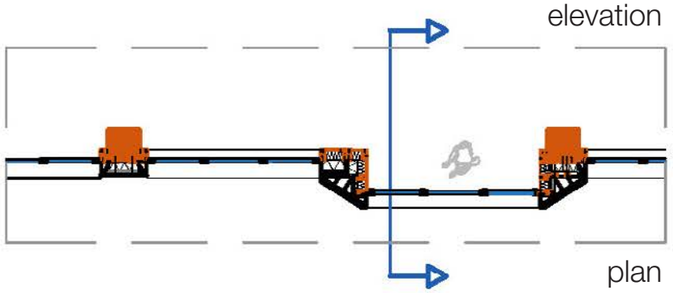
outside
elevation



section

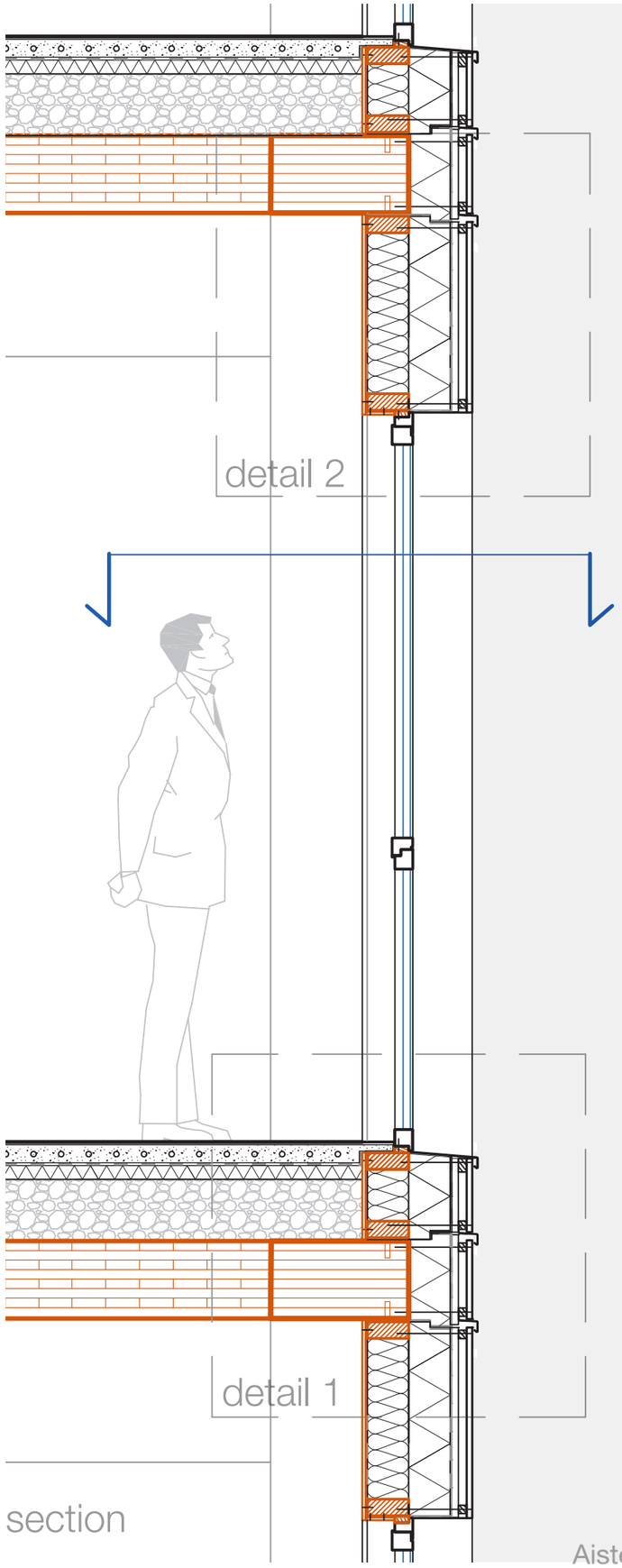


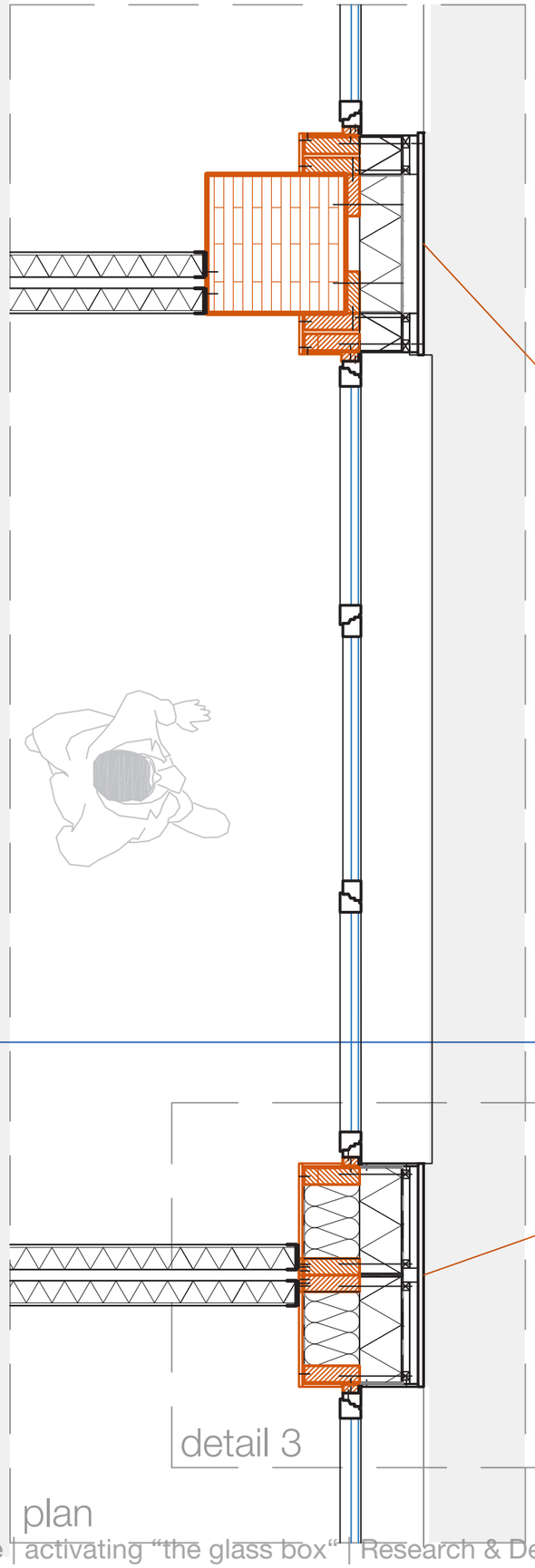
inside
elevation

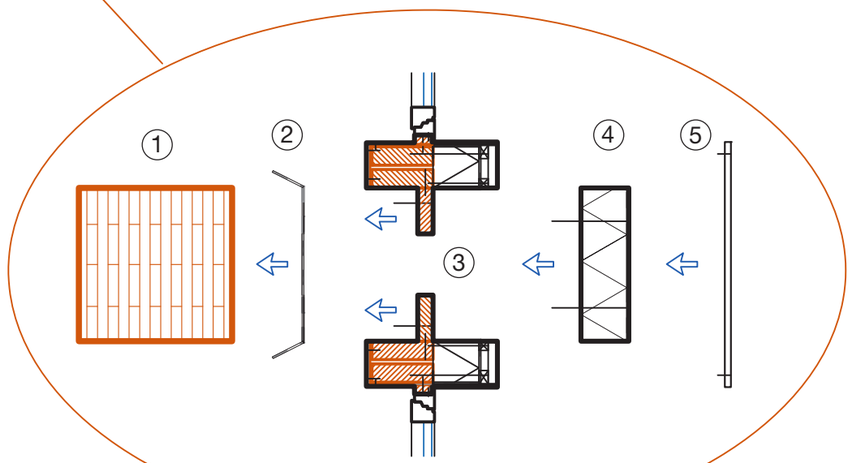


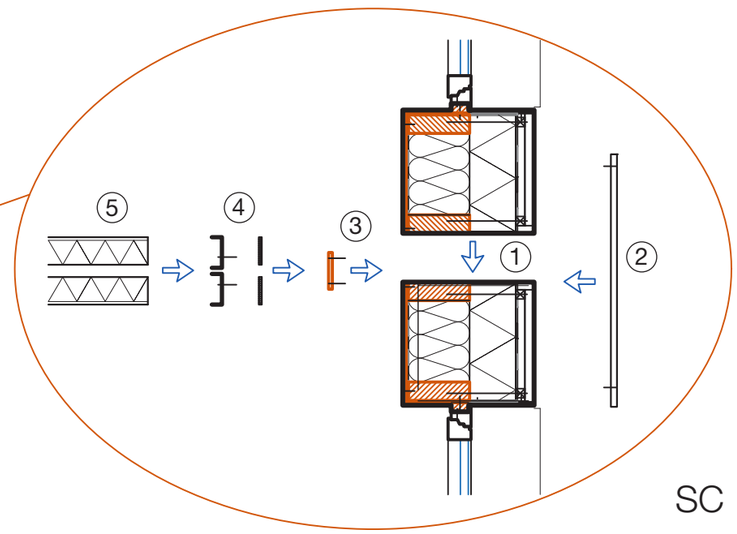
plan

“rock” facade
fragment 1



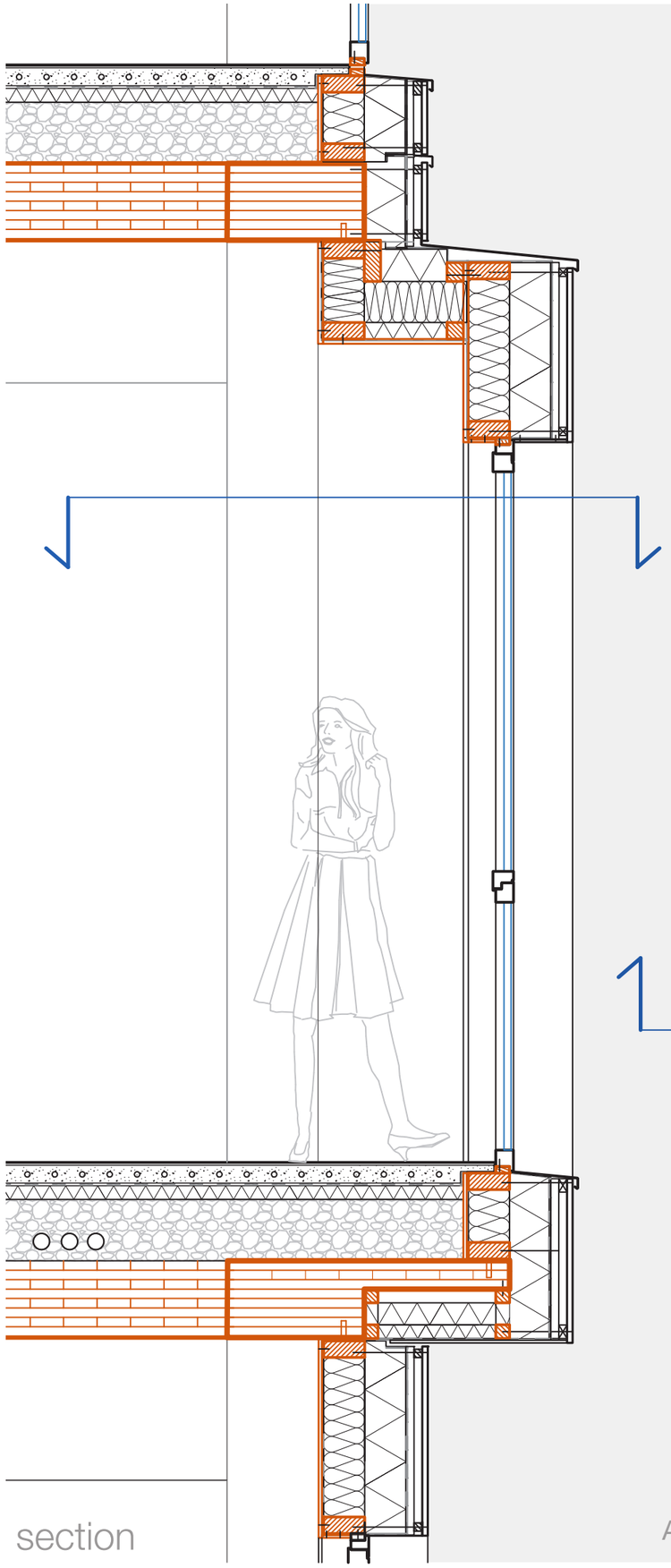




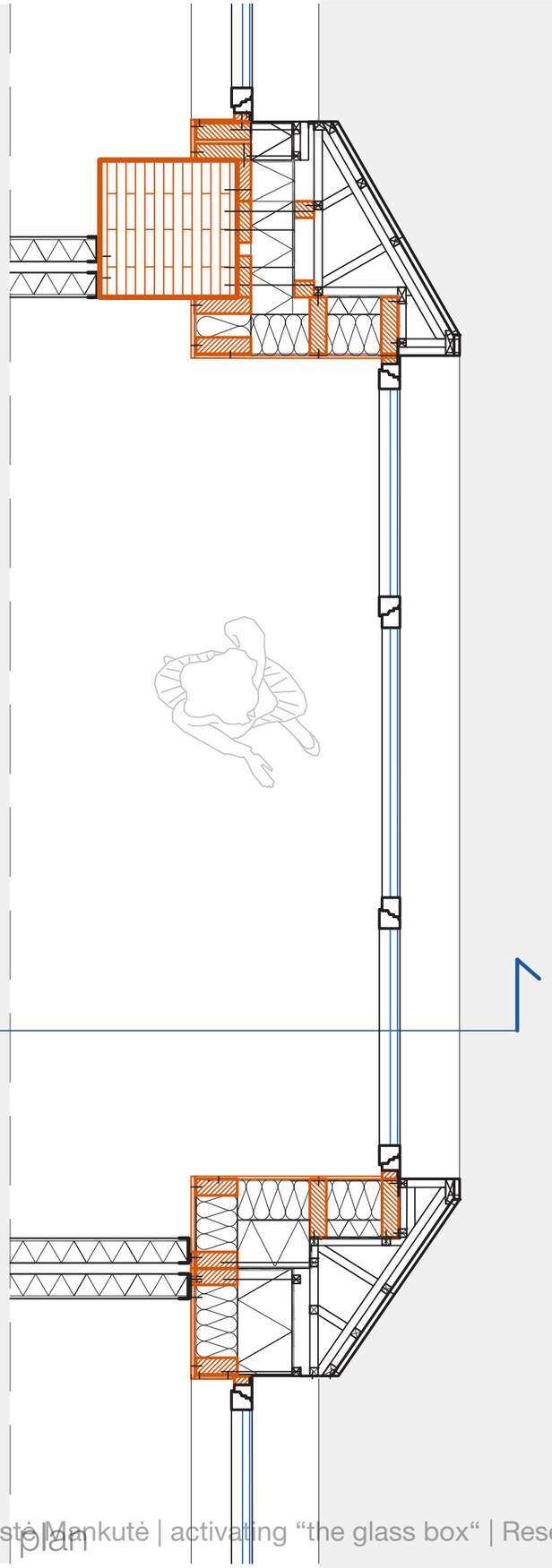


SC 1:20

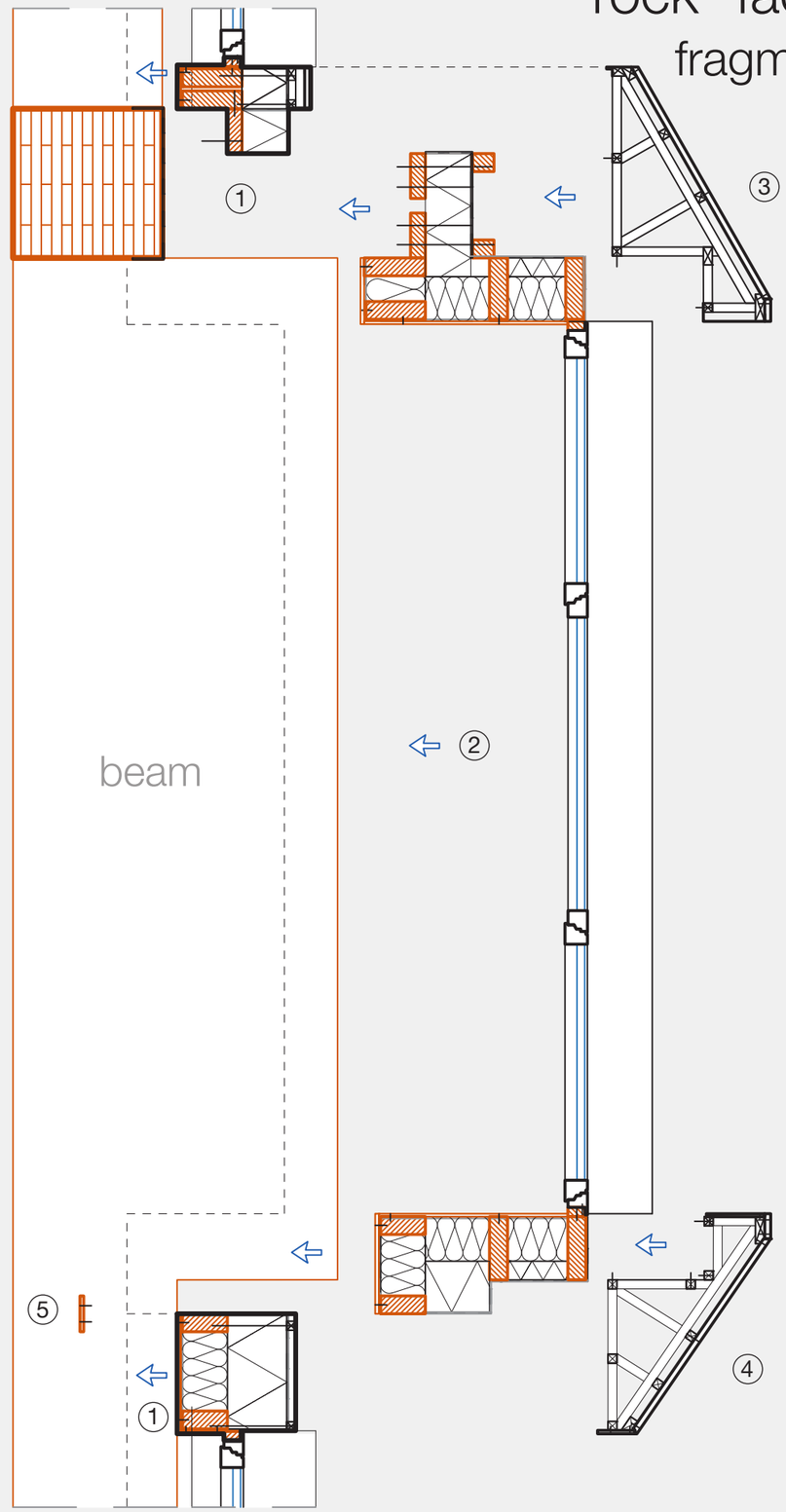
“rock” facade
fragment 2



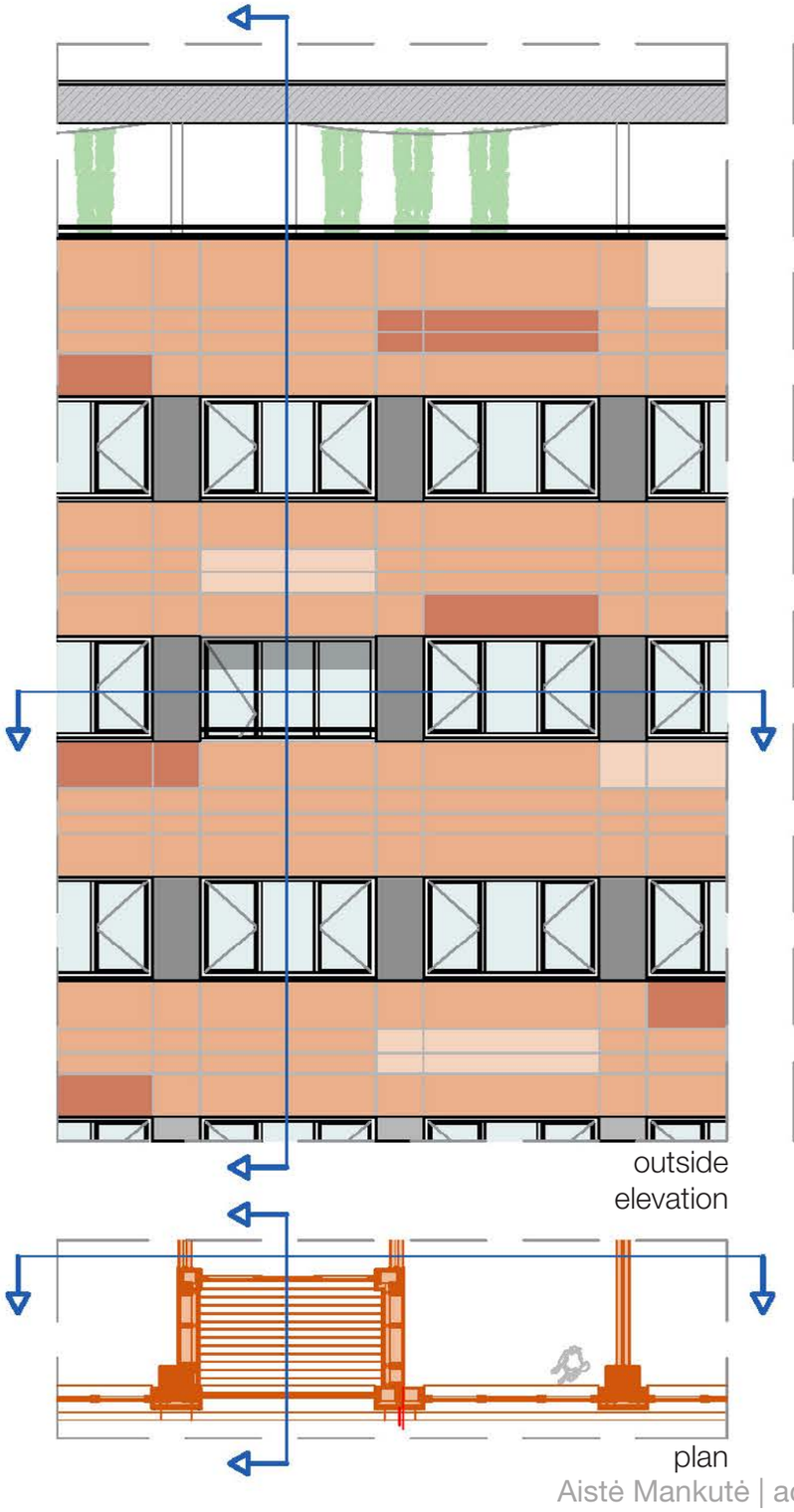
section



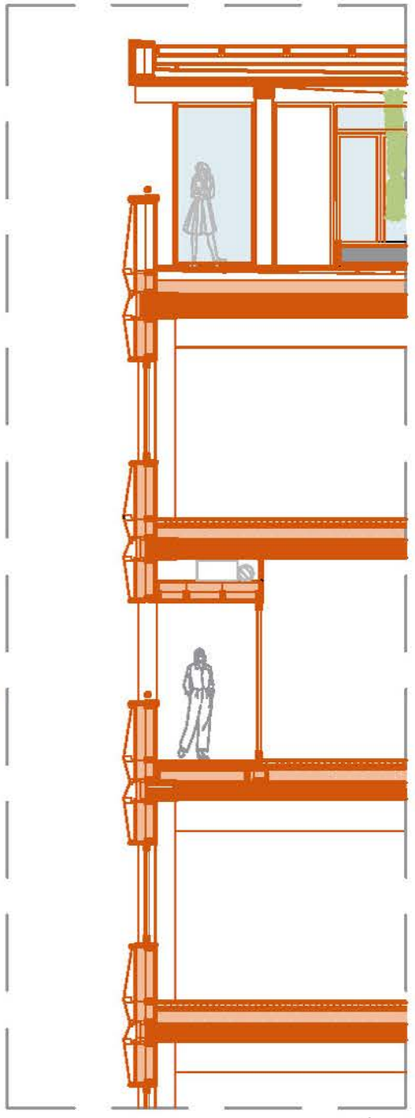
plan



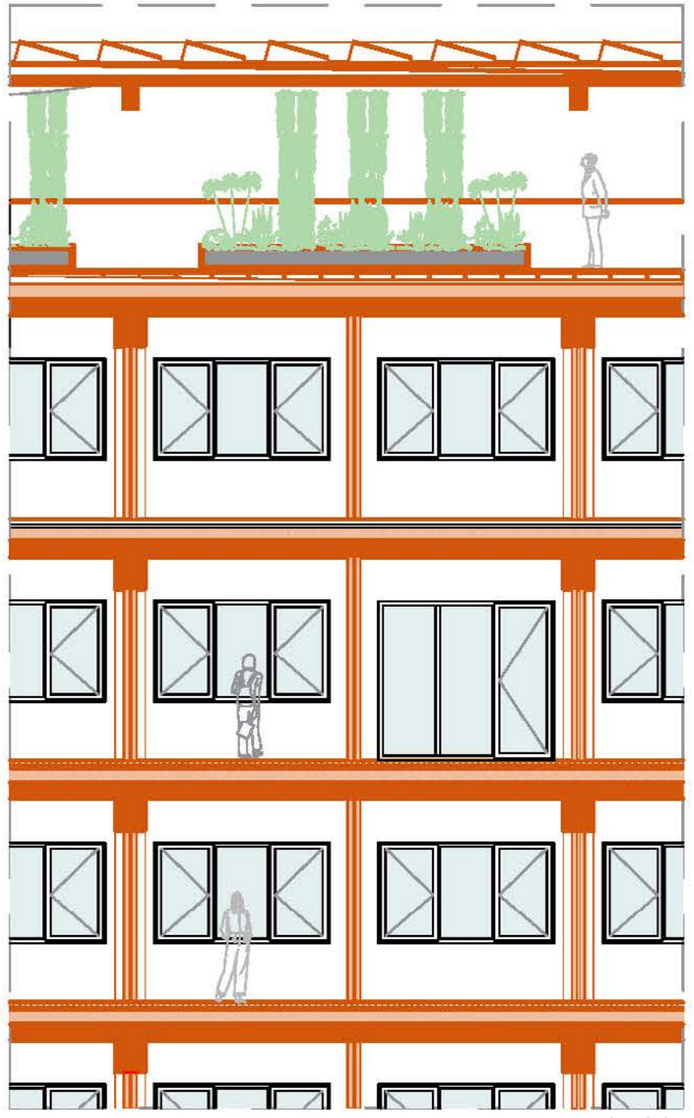
new extension
“rock” facade



outside
elevation



section

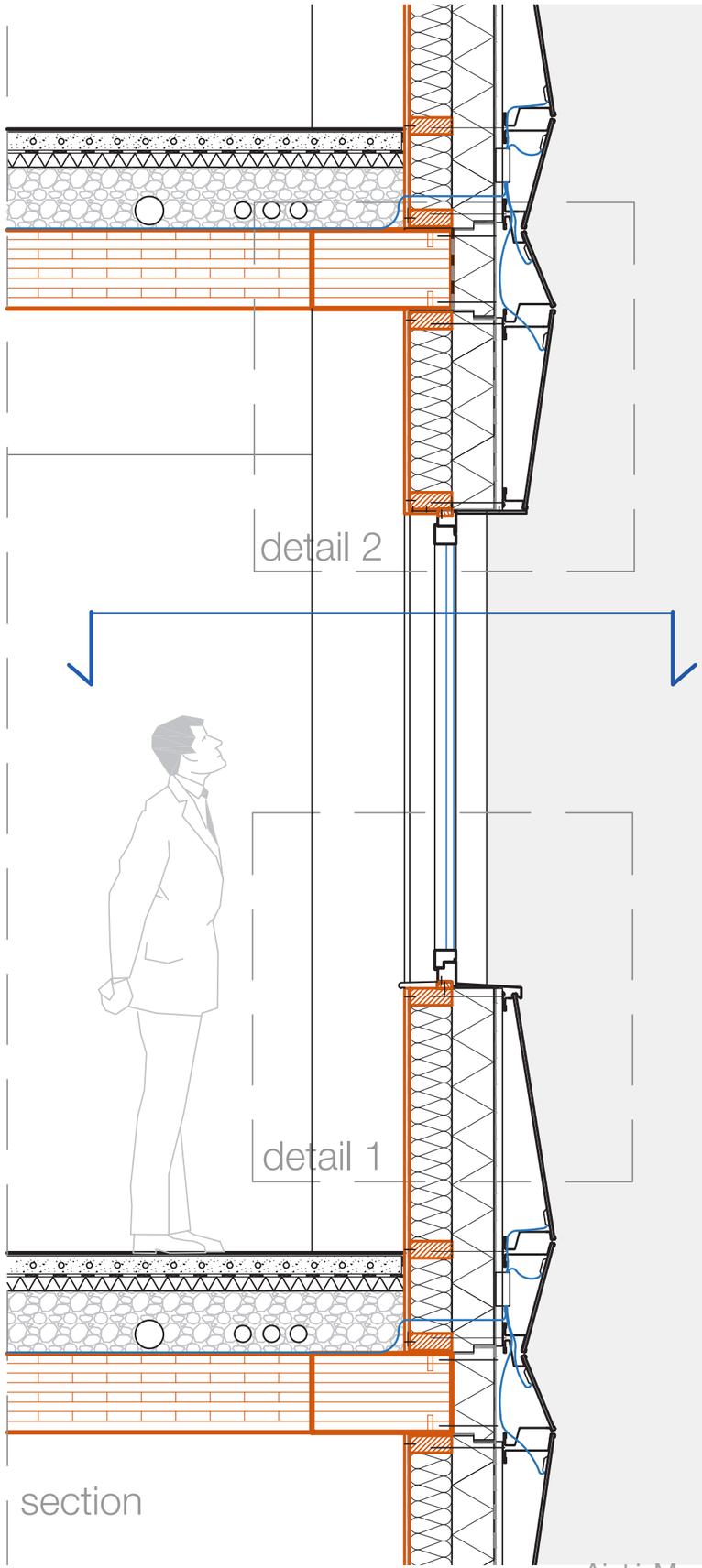


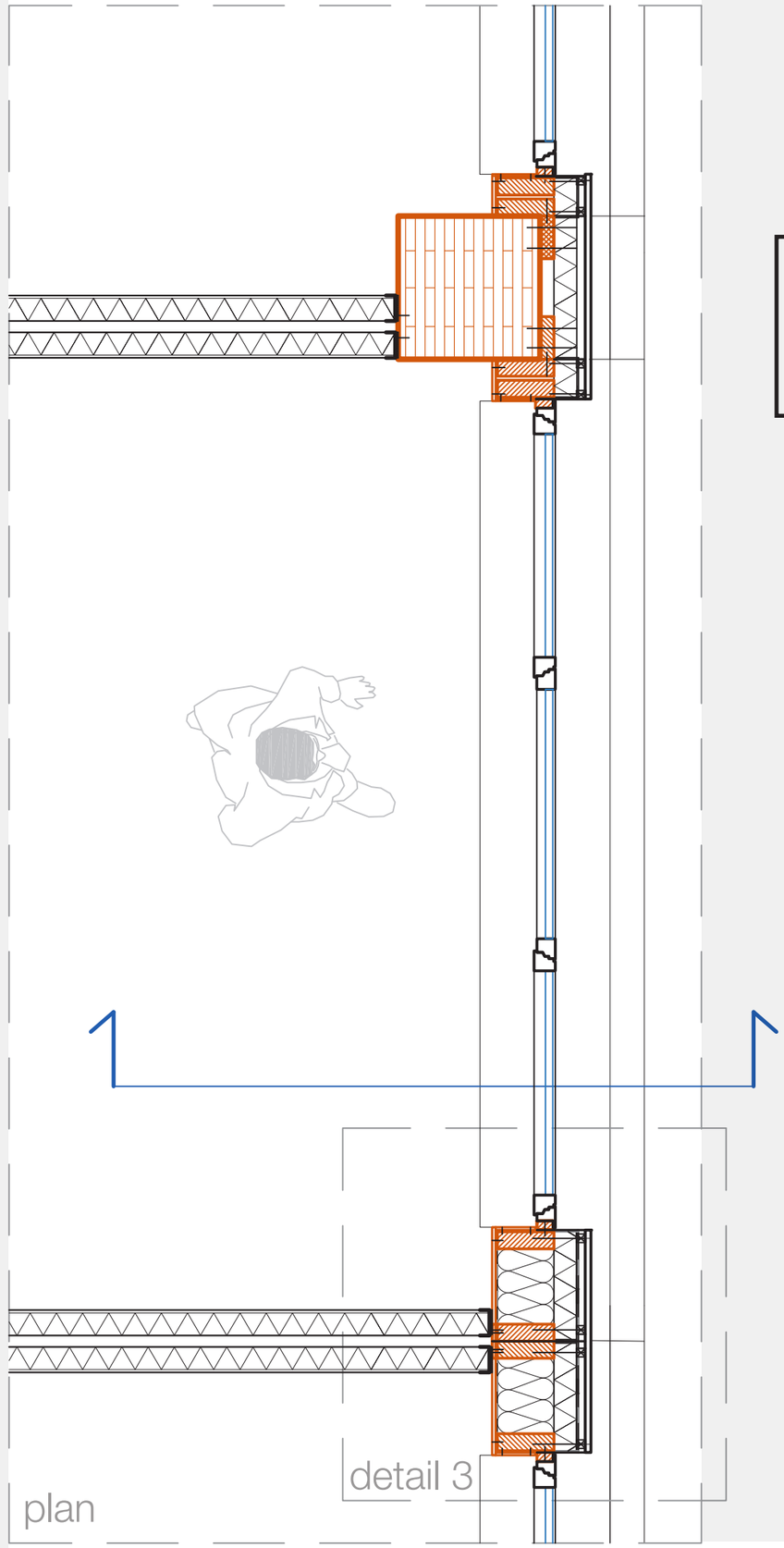
inside
elevation

plan

“extrovert” facade fragment 1

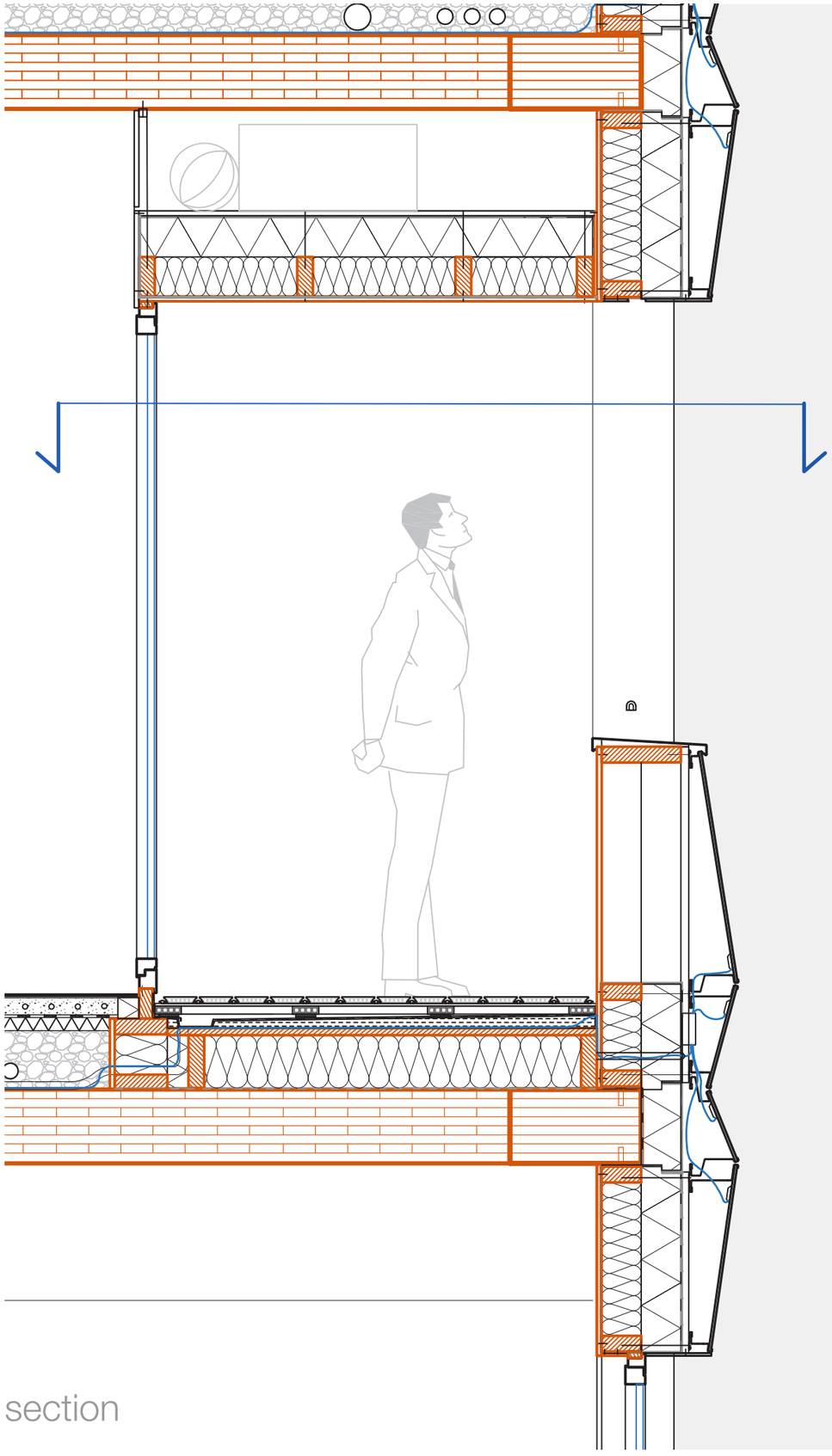
the limit : inside wall position is dependent on the facade modules



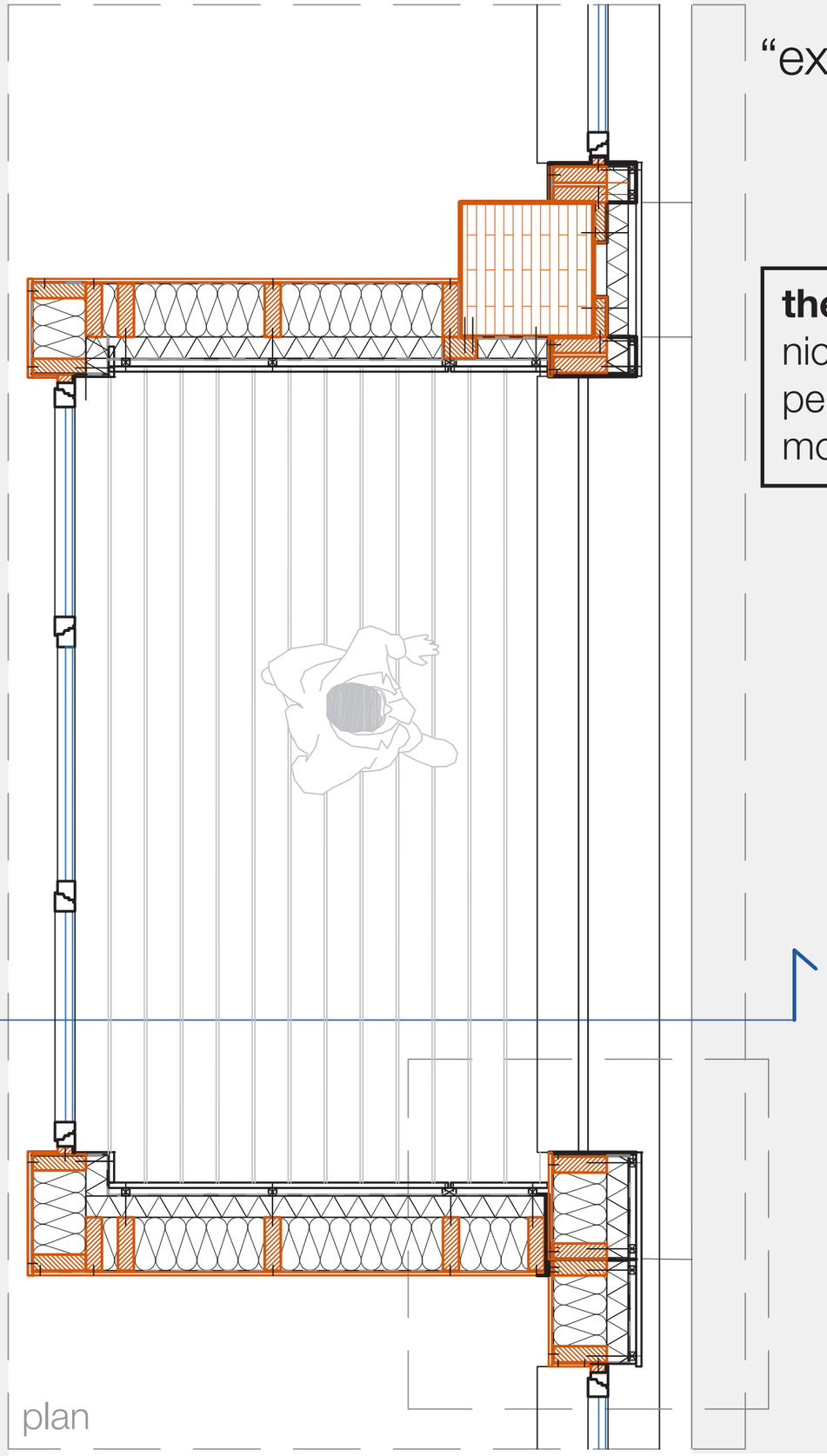


“extrovert” facade fragment 2

the limit : balcony niche position is dependent on the facade modules

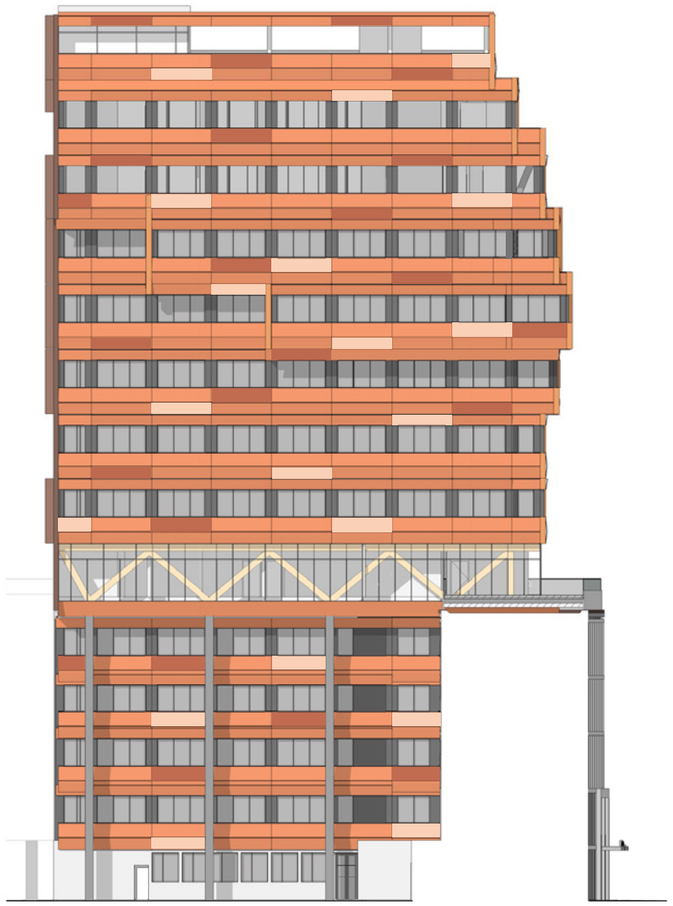


section

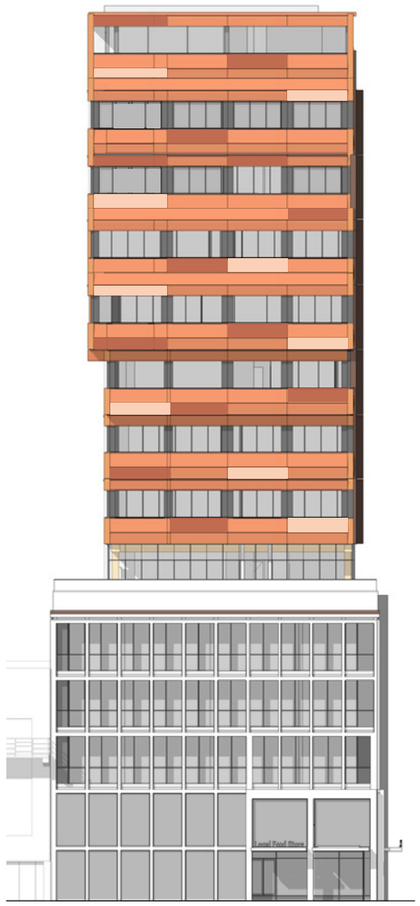


plan

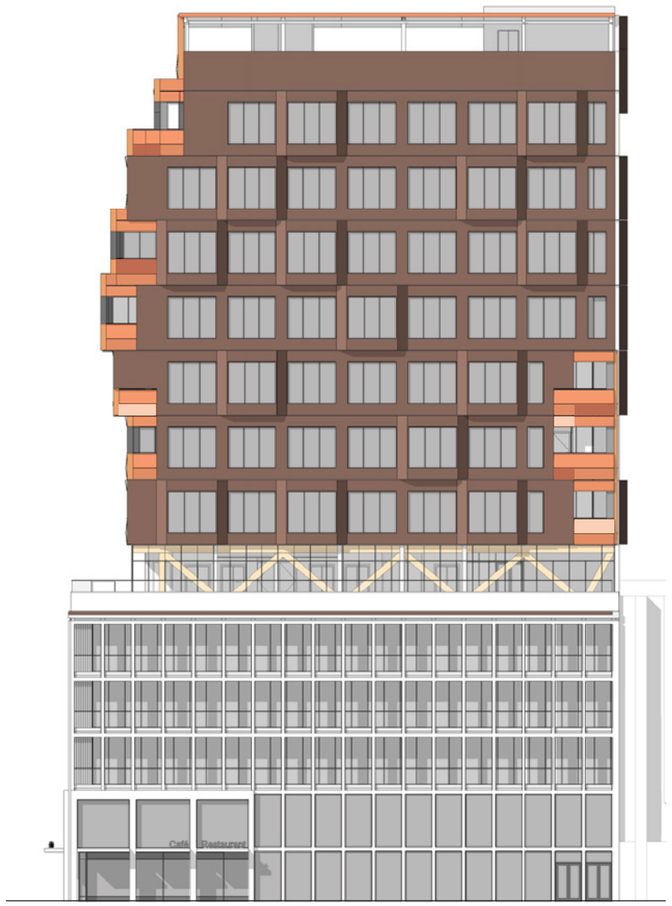
facades



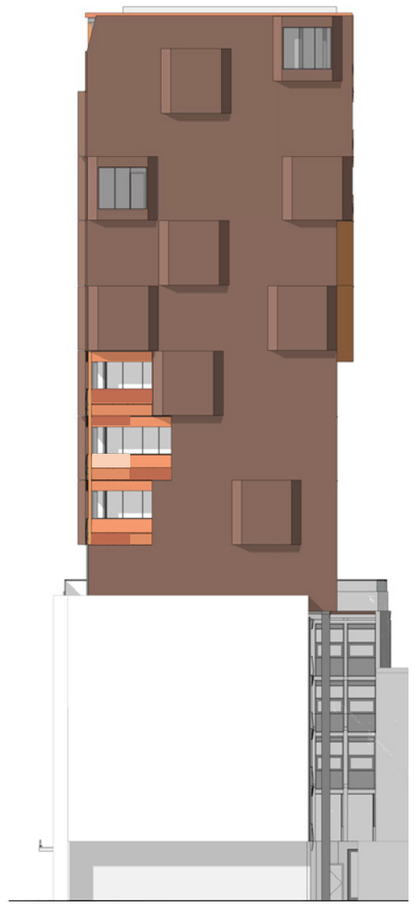
west



south



east



north

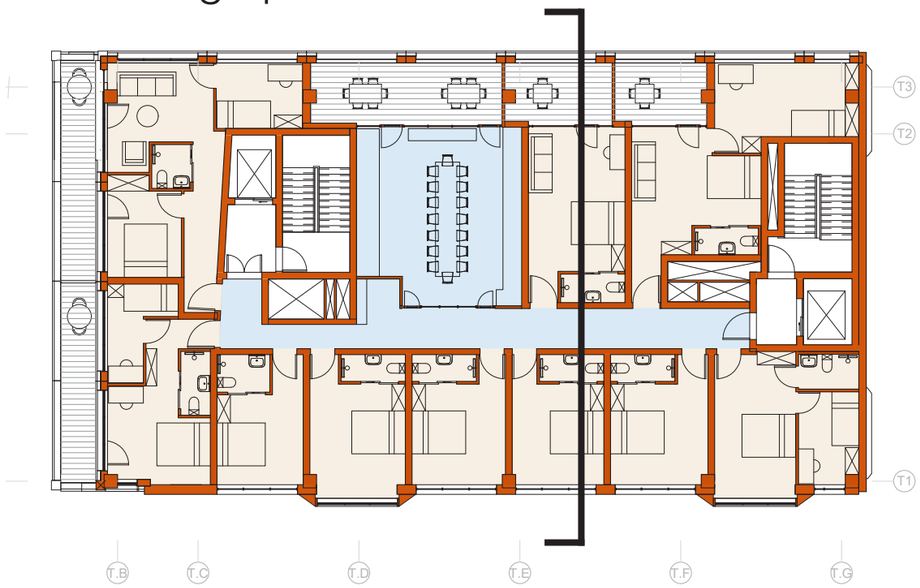
4.2 How is it implemented?

Flexibility ->

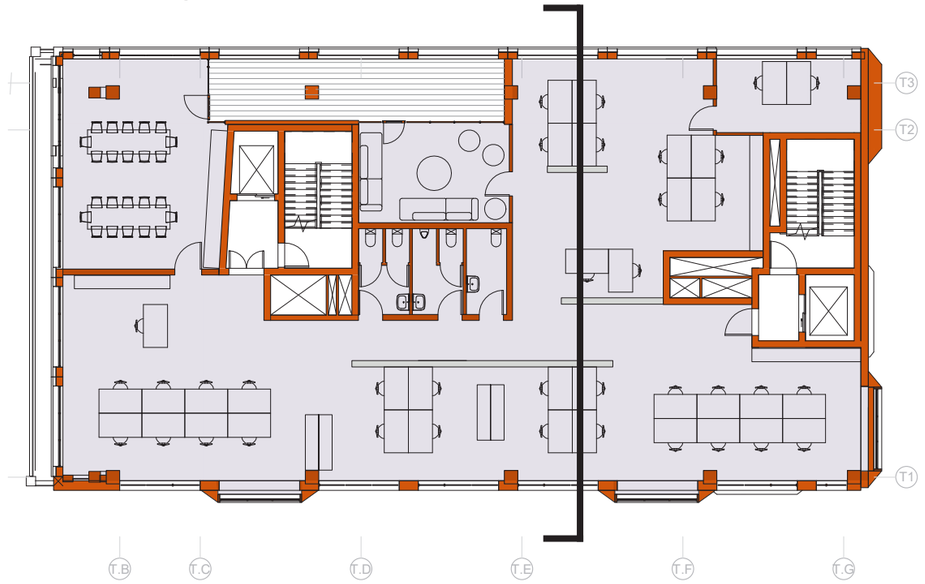
How to change the function?

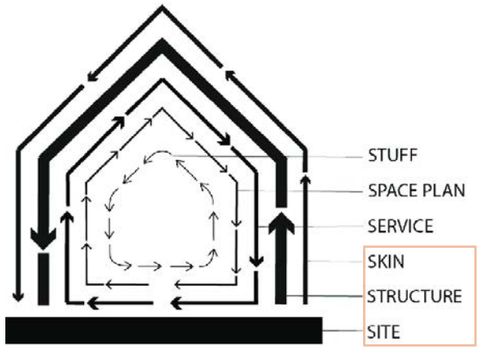
Changing the function of a storey
residential to office

Co-living apartments



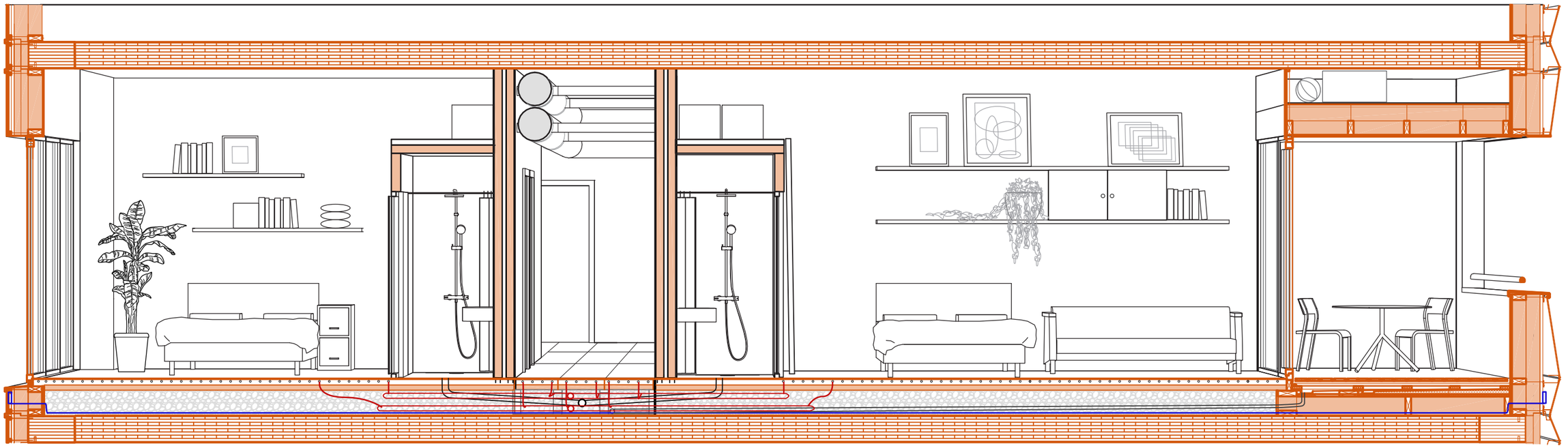
Office space

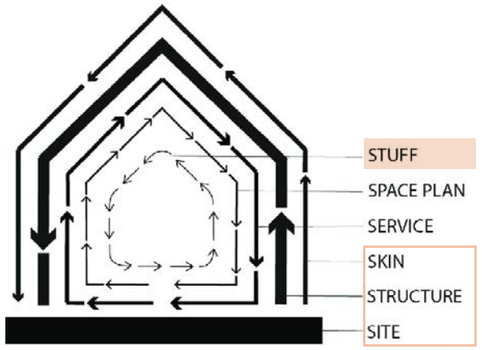




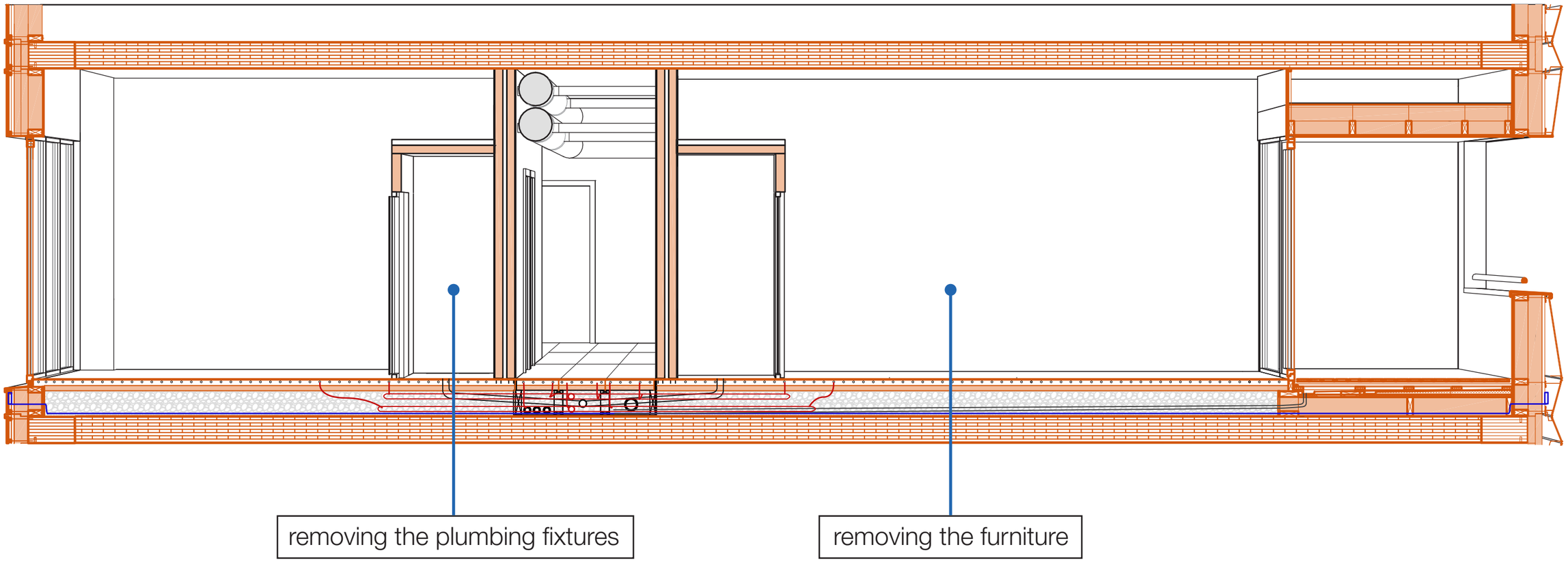
Changing the function of a storey

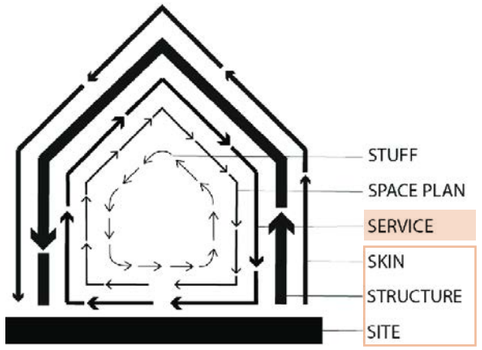
Co-living apartments



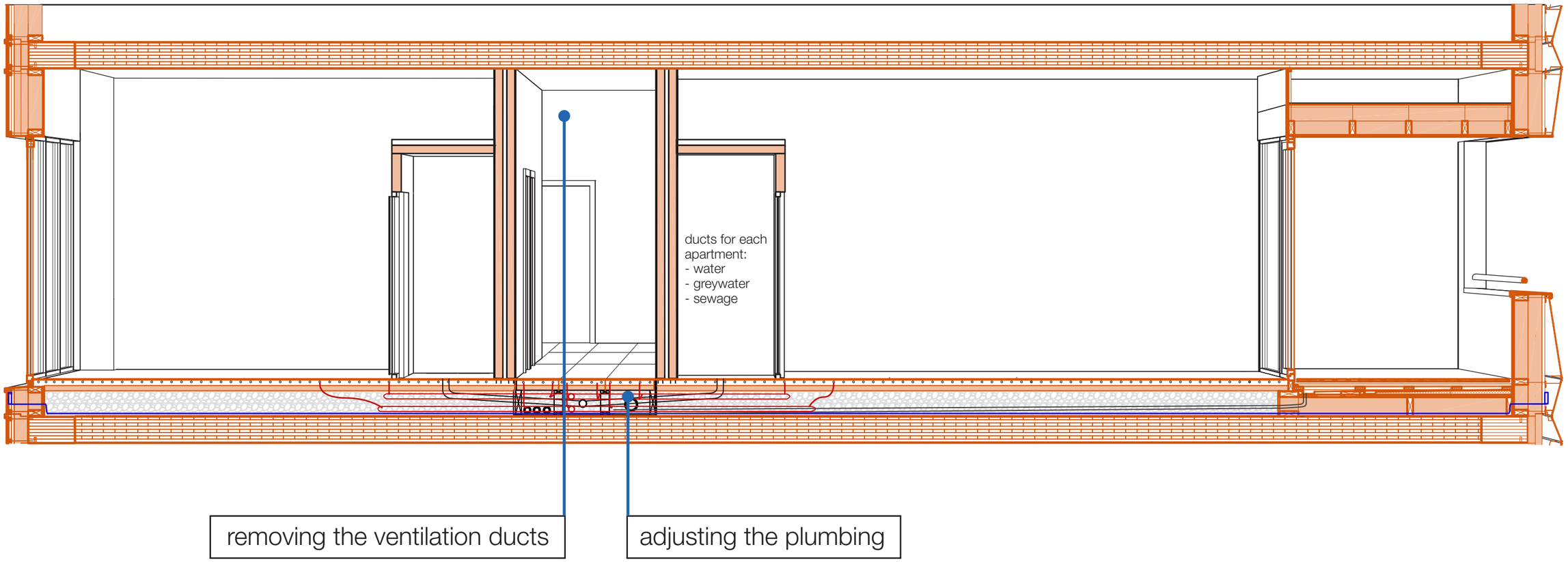


Step 1: removing the STUFF layer



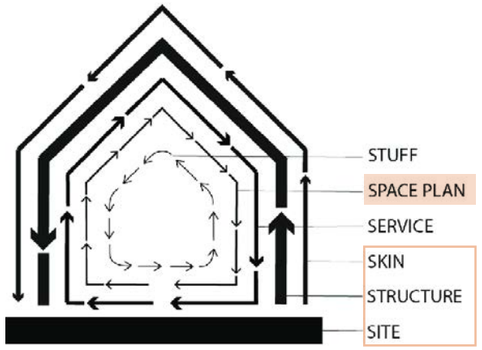


Step 2: removing the SERVICES layer

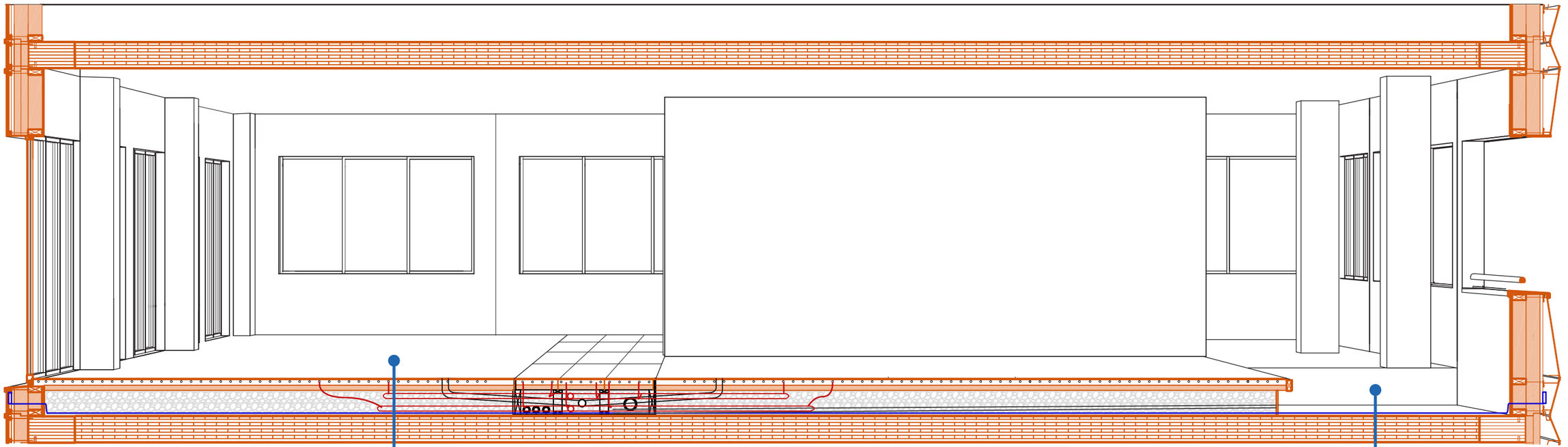


! **the limit :** the installations in the raised floor are difficult to dismantle, for drastic change of function can require partial re-flooring

allowance for change: the floor under the top layer is made for dry disassembly, ceiling installation are quite easily dismantled



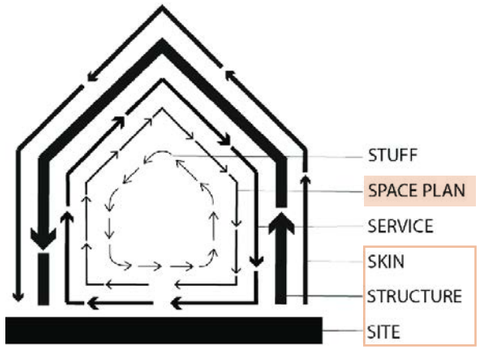
Step 3: removing the SPACE PLAN layer



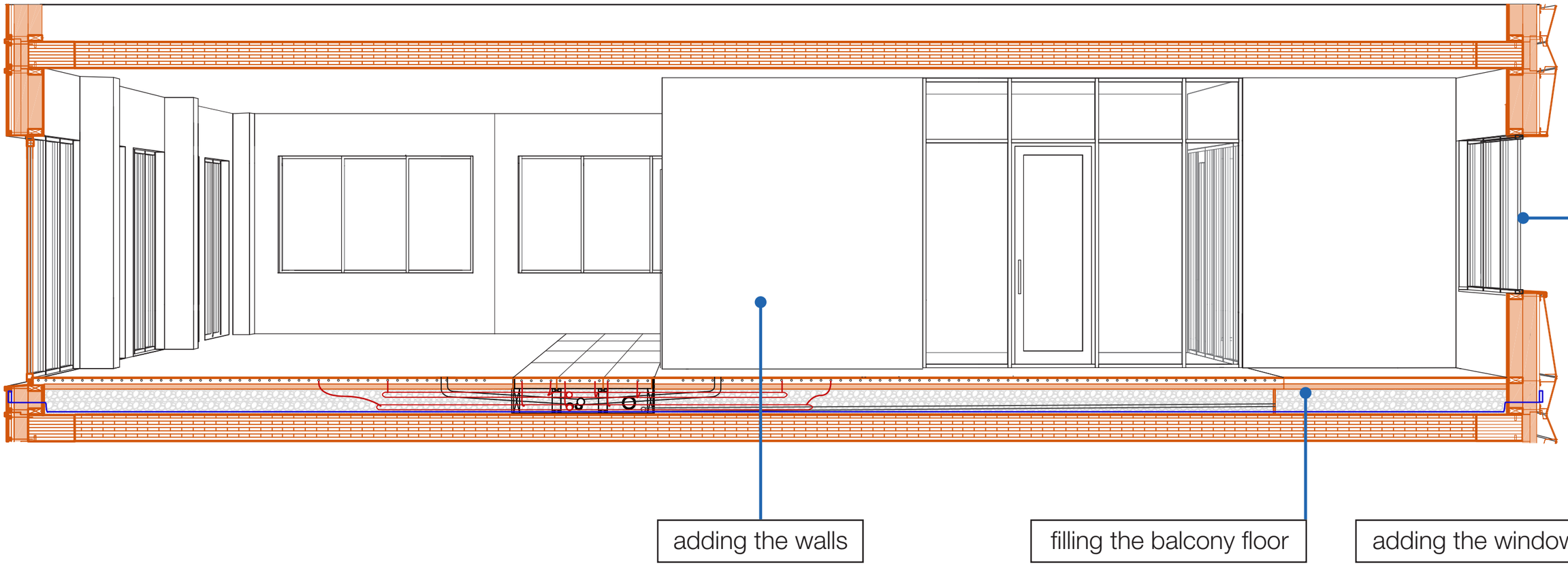
removing the walls

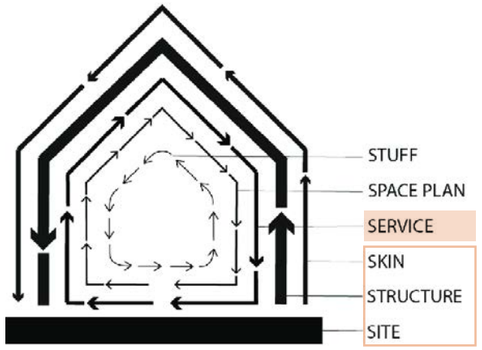
removing the balcony floor

unnecessary walls & other materials can be reused in other part of the building or in other project

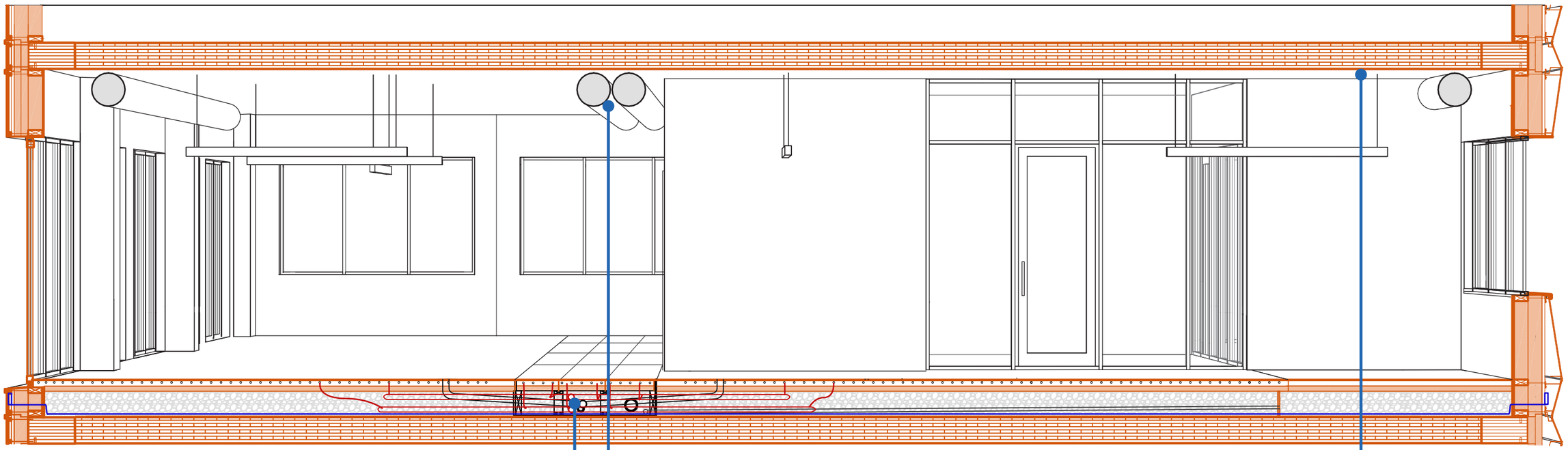


Step 4: adding the SPACE PLAN layer





Step 5: adding the SERVICE layer



adjusting the plumbing

adding ventilation ducts, connecting them to other shaft

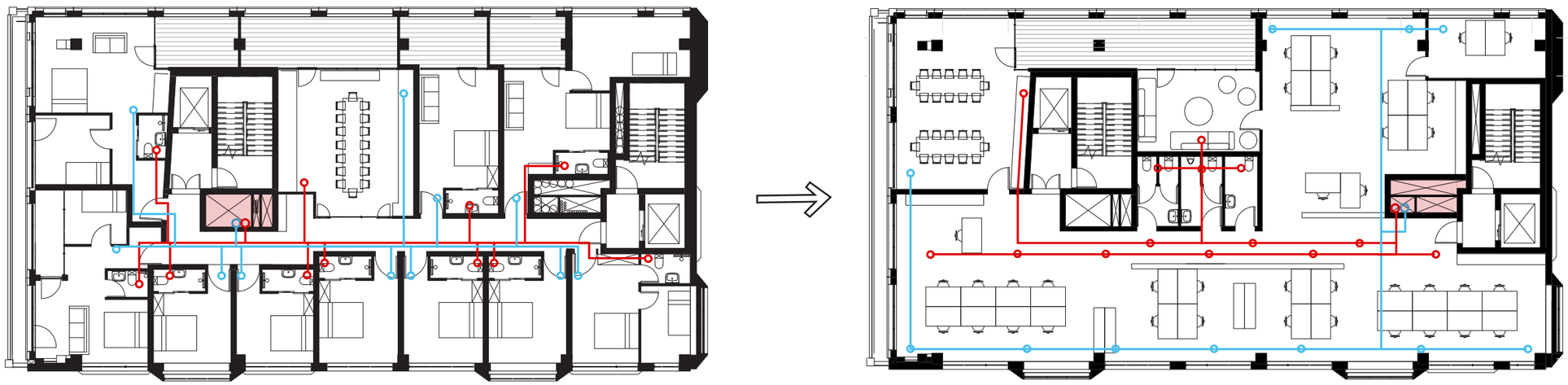
adjusting electricity wiring, adding lighting fixtures

SERVICE layer

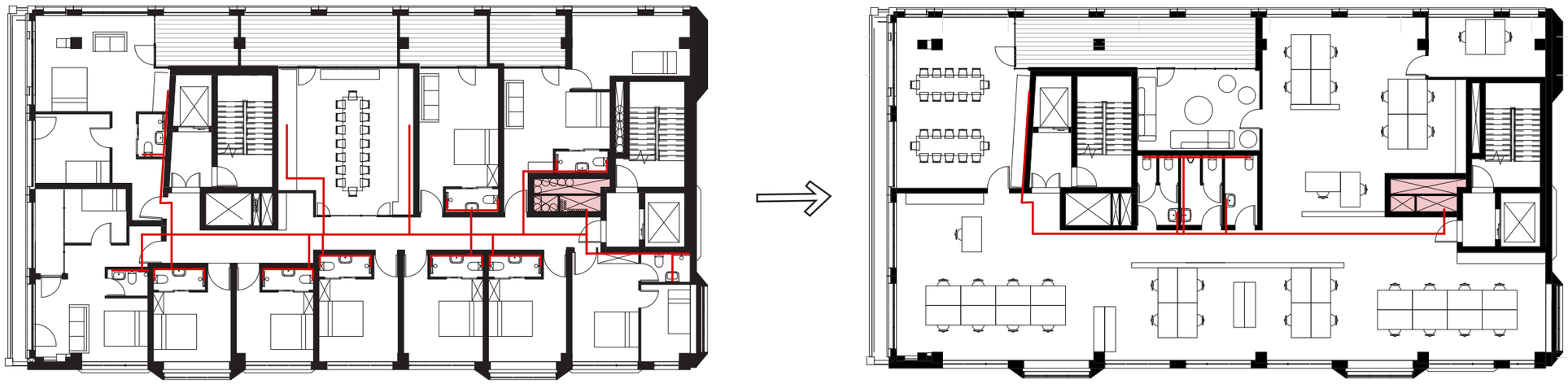
Co-living apartments

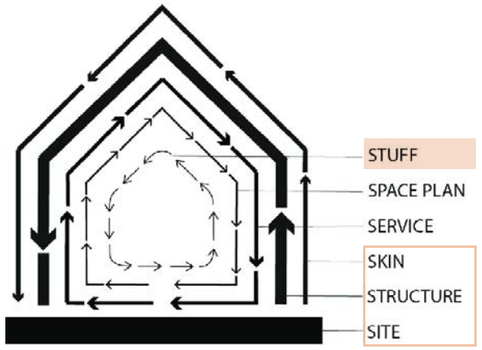
Office space

Ventilation

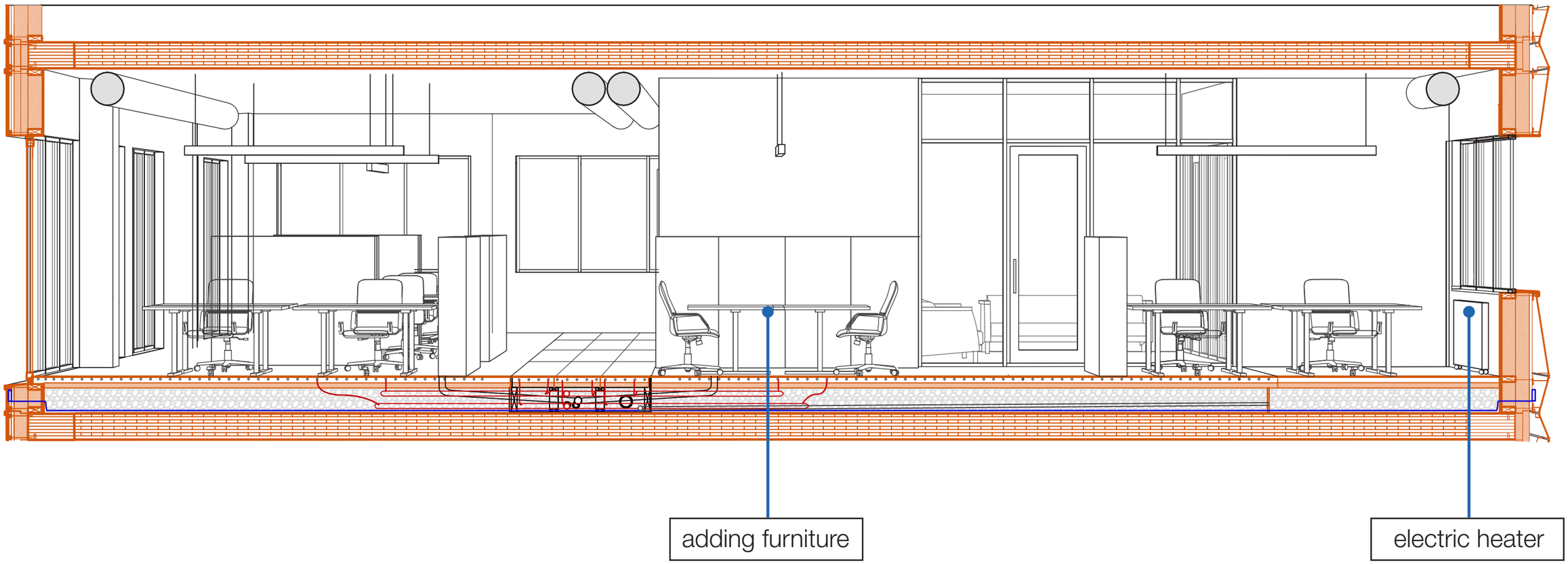


Plumbing ducts





Step 6: adding the STUFF layer



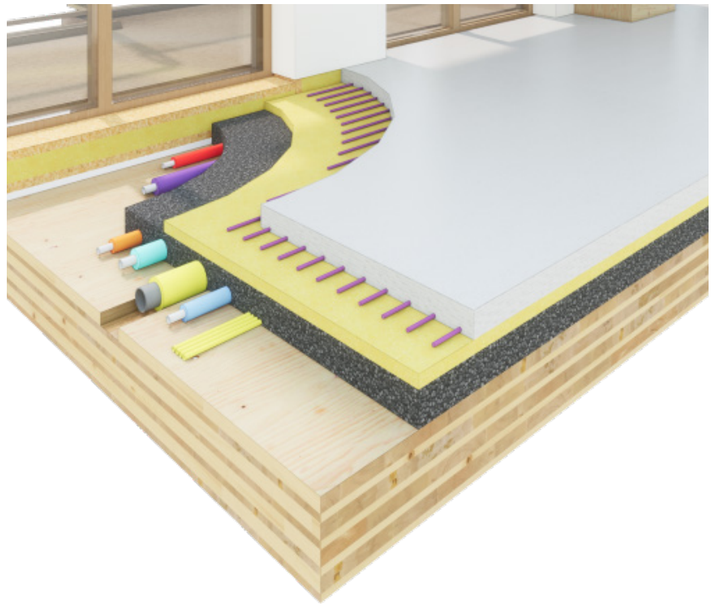
! **the limit :** electric heater might be needed in the former balcony place to avoid condensation on the windows
allowance for change: the floor can be re-done in that area to implement the floor heating

4.4 Materials

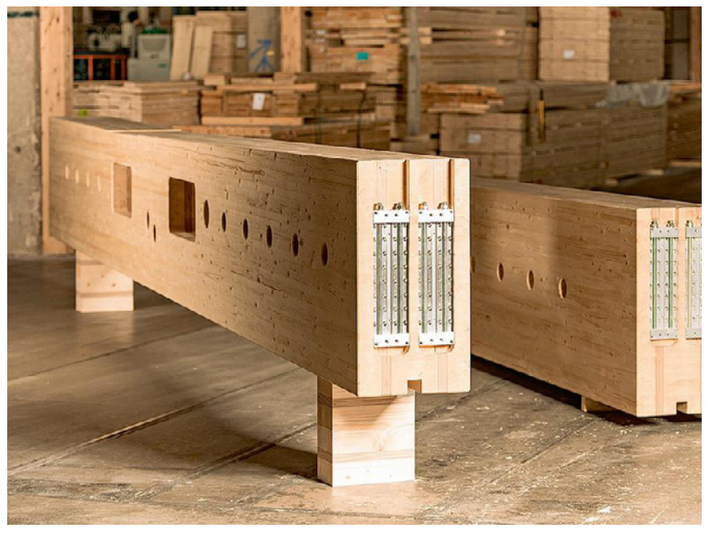
Designing for material recovery

demountable prefab concrete elements for cores

adaptable and reusible partitioning systems

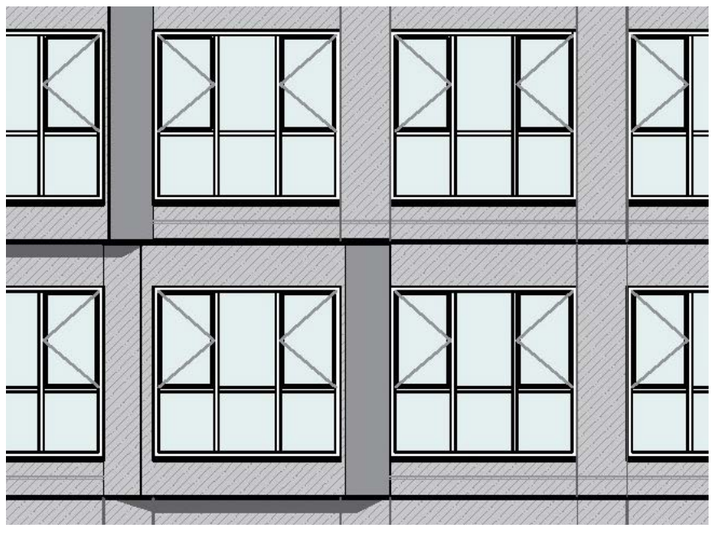


raised floor for dry disassembly of installations



demountable prefab CLT elements

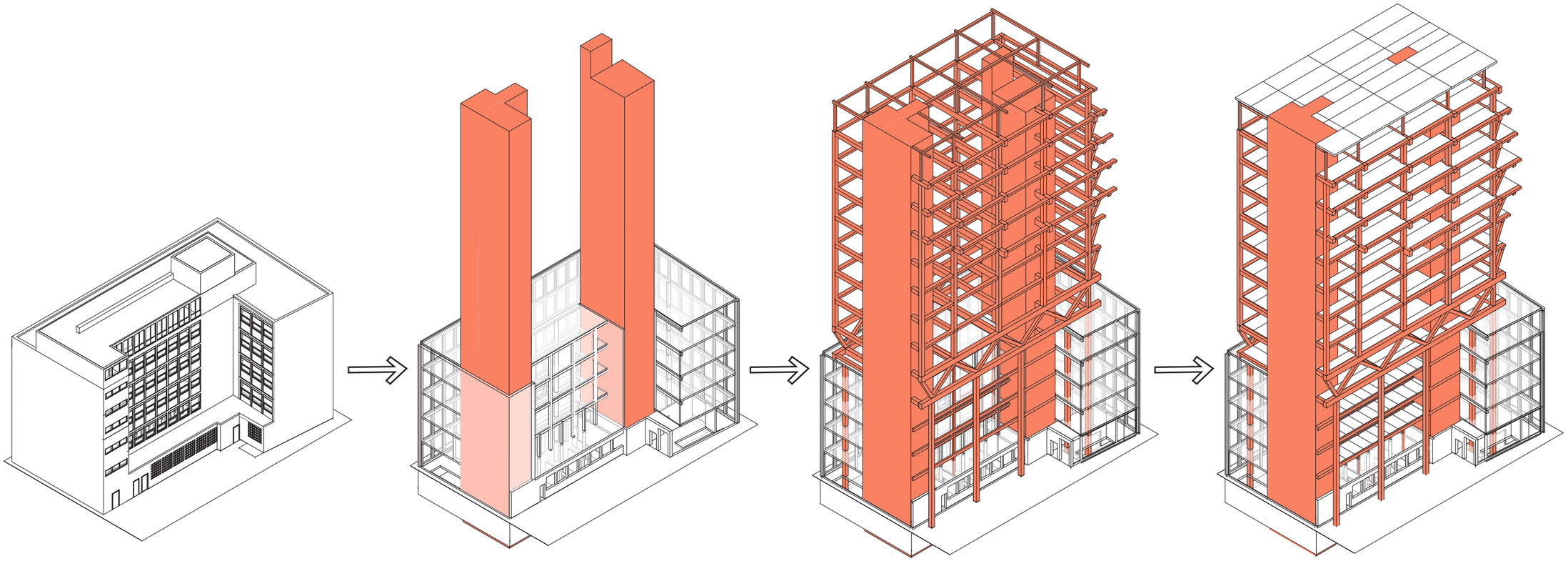
Recycled plastic boards can be recycled again



modular facade elements
(as it was in the existing building)

https://www.concrete-international.nl/wp-content/uploads/2016/03/BETONELEMENTEN.jpg
https://www.juunoo.com/waarom-juunoo/, https://mei-arch.eu/wp-content/uploads/2021/11/19010_SAWA_openbouwen_open-trans-vk-Large.png?image-crop-positioner-ts=1642759479,
https://www.hess-timber.com/fileadmin/_processed_/csm_20160612_00054_HessSydney__c_RenstephThompson_6609760a2c.jpg, https://www.s-polytec.com/plastic-sheets/abs-sheets.html

4.5 Interventions in the building



existing building

new cores introduced inside the existing ones

the limit : the new cores cannot exceed the existing cores' boundaries as they carry the loads

new post & beam structure

the limit : the new structure and facade modules has to follow the rules of the existing foundation

floor slabs

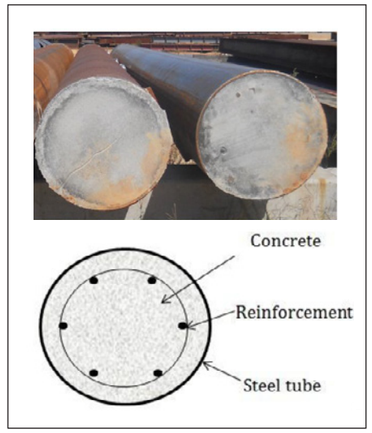
4.5 Interventions in the building

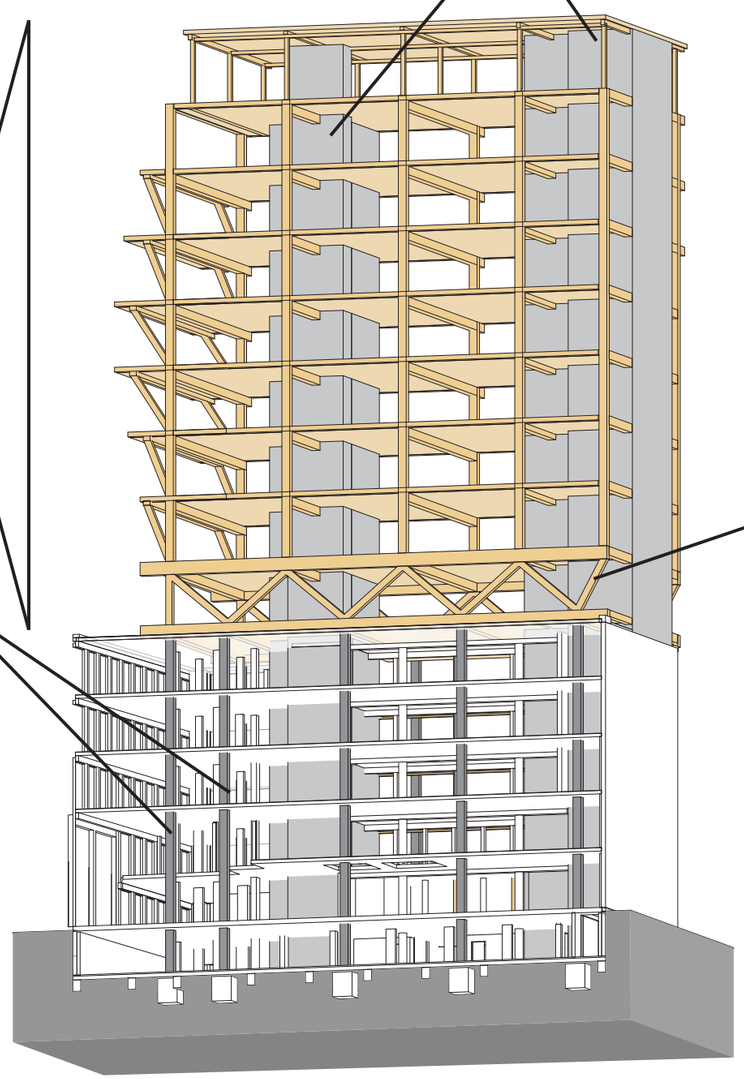
structure in 3D sections

Concrete cores

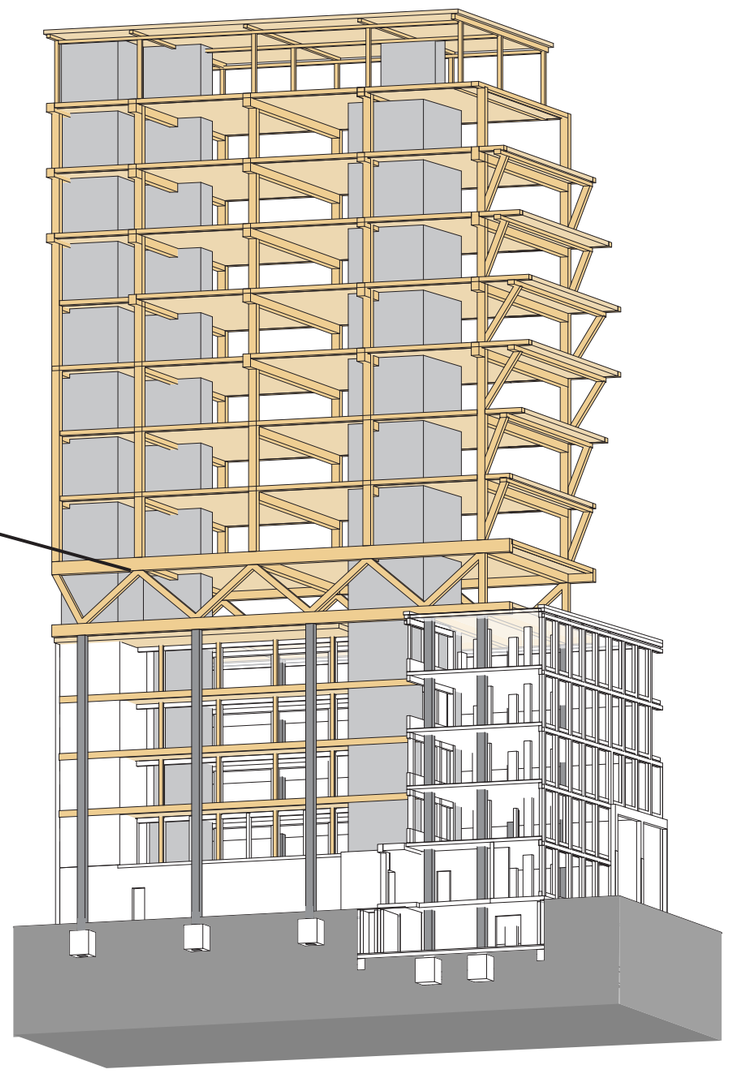
CLT + Glulam structure

Steel + conrete tube columns

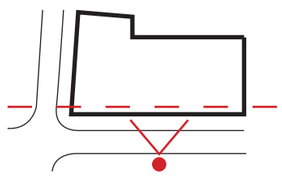


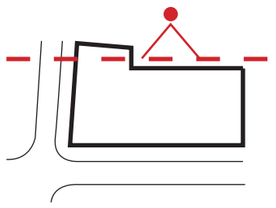


Plane Truss



the limit : thick CLT collumns would take up too much plan area



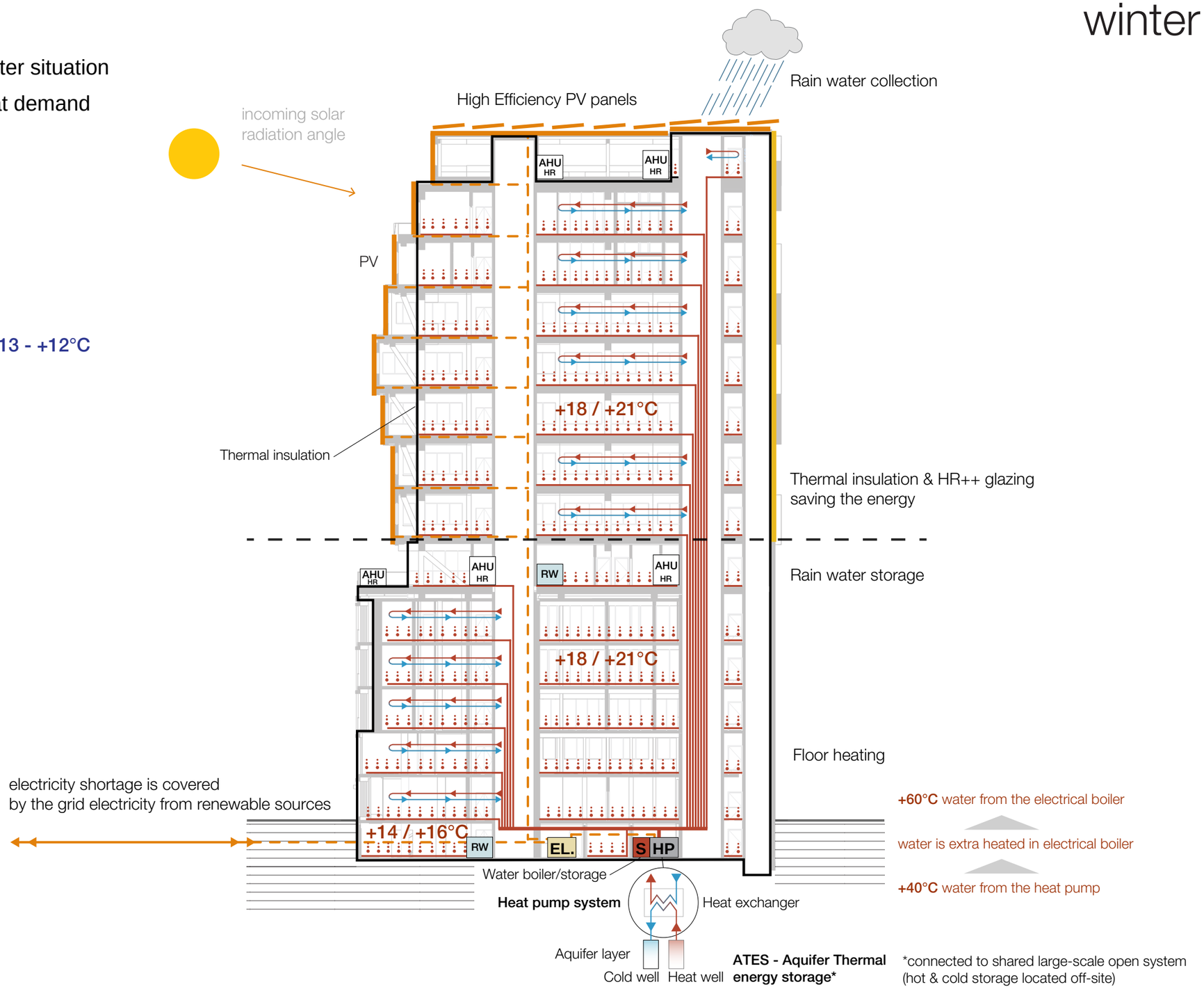


4.6 Climate Design
winter situation

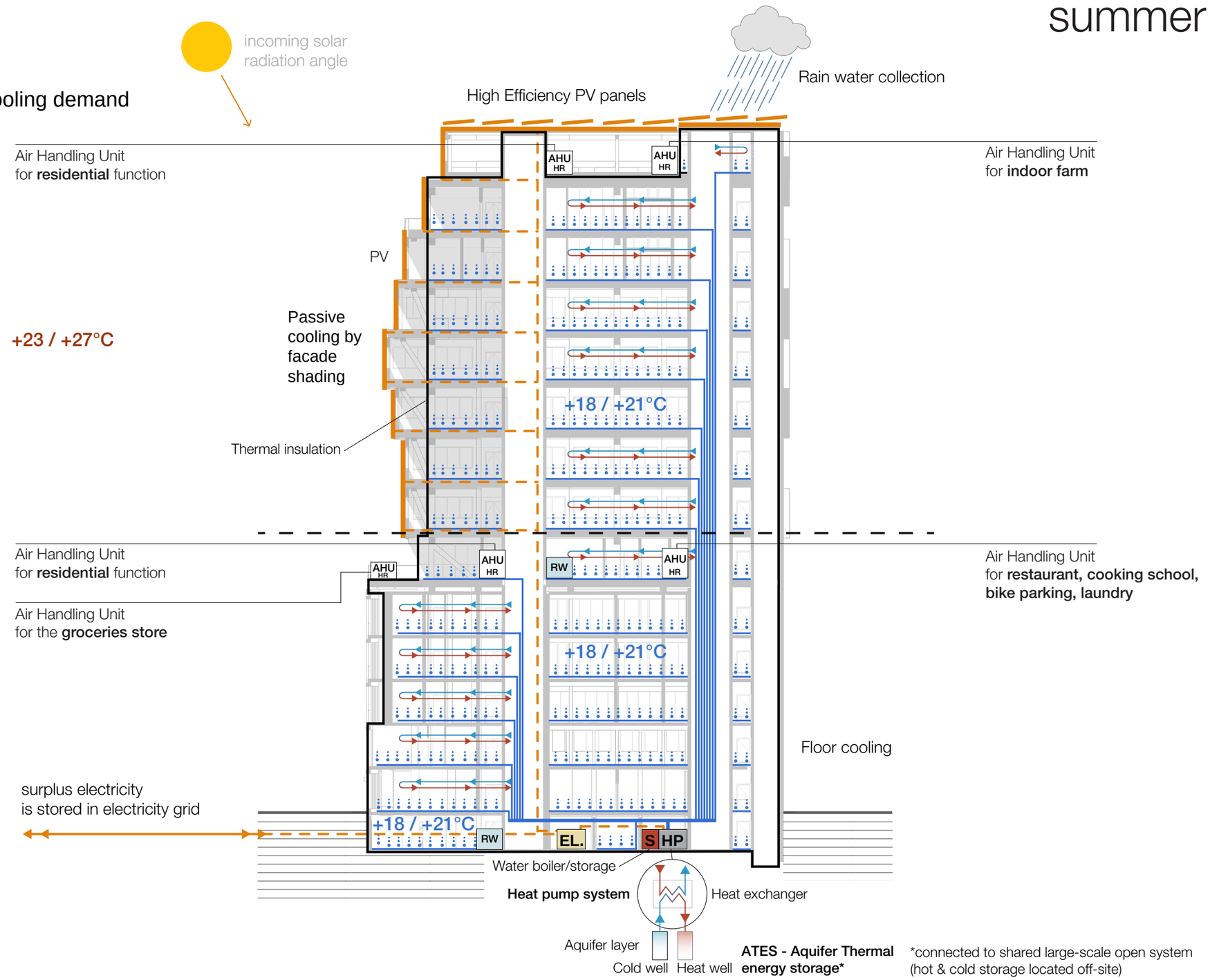
Winter situation

Heat demand

-13 - +12°C



4.6 Climate Design
summer situation



4.6 What isn't flexible

In theory, the principles of flexible building seem to be easily implementable, but using them in the adaptive reuse project and delving into building technology to make things work resulted in facing some limits.
The project's **flexibility limits were tested**. For this reason, four subjects were looked at in more depth: **program**, **storey height & installations**, raised **floor** and the **facade**, yielding interesting findings.

Program

Based on research, the program is designed to meet the demands of tomorrow's sustainable and resilient cities. Nevertheless, the city centre is continually evolving to meet numerous new societal needs, and we cannot assume that the planned concept of the program would be successful. What the architect can foresee and have an impact on is the easier future adaptation of the building. The original building's open plan flexibility and reasonable floor height allowed more design alternatives for adaptive reuse and tower extension.

As the design proposes, the building would be able to host functions like residential, office, education, horeca, small production, small-scale cultural, farming, etc. However, it could not accommodate special equipment-intensive functions such as laboratories, hospitals, industrial production or large-scale cultural programs. This is primarily due to the necessity for specialized equipment or a high number of installations. Some functions require more convenient car access to the building, more parking space, or a less central location in the city.

Storey height & installations

Storey height
The existing building's typical storey height of 3,5 m (1st–4th floors, floor to floor) and a bit higher ground floor of 3,7 m (floor to floor) is already flexible and can be adapted to host the co-living apartments, the office, or restaurant. Yet, this has to be done by **raising the floor as little as possible** (to only add the impact sound insulation and the top layer with the floor heating) and carefully estimating ventilation ducting measurements. The height of **the basement** (3 m from floor to GF floor) is **the least adaptable** of all the storeys, but is still suitable for functions like parking, service, laundry rooms, indoor farming, etc.
In the extension, the ceiling to floor height of 3.3 m (floor to floor height - 4 m) allows an extra space for the mezzanine storage in the apartment layout and a decent height to fit the ventilations ducts for other function like office.
The open plan is achieved by **sacrificing the 52 cm height** that is taken up **by** the **glulam beams**. The 80 cm height glulam beams are used in order to maximize free layout of the floors. However these beams are thicker than the floor slabs, therefore takes up an extra 52 cm in floor height.

Installations
In general, because of the fixed nature of the floor system, especially the heated floor, installations in the floor are less flexible to change or adjust than those on the ceiling.

Floor

In terms of the issues I have faced regarding the existing building, when raising the floor (in order to add better impact sound insulation and make the floor heated), the height of the floor decreases, stairs and doors need to be adjusted accordingly.
The raised floor in the new tower extension is used for installations providing heating and domestic water, grey water, sewage, and electricity.
The most flexible solution would be to install the access floor everywhere, but the limits I ran into were that the access floor has poor impact sound insulation, requires extra materials (e.g. for the floor heating), and is quite expensive to implement in reality. Therefore, these kinds of floors are introduced only in the corridor.

Facade

In the existing building, the facade modules have to be adjusted to the current heights and minor irregularities. The facade of the new extension belongs to the long-lasting "shell" or "support" of the building. To ensure the complete insulation of the building and prevent water ingress, it was decided that the user would not be able to change the whole facade module. Only the cladding could be removed and replaced with a new one. This was also decided by the assembly of the modular facade on site - modules are mounted vertically on pins. The alternative to making the modules more changeable is to attach them to the floors/beams horizontally.

Making the modular facade has a lot of benefits as it saves construction time, has lower labor costs, lowers waste, and can be reused more easily. Nonetheless, in order to maintain the expressive architecture and in accordance with the structure dictated by the existing building, smaller modules must eventually arise in the building's corners. This makes the modular facade method less ergonomic as there are a few different custom-made modules.
Another limitation that I have noticed is that the inside wall position or the niche of the balcony is dependent on the size and opening place of the facade modules.

4.6 What isn't flexible

conclusion / reflection

Should every building be flexible, or should there be separate buildings for each function?

Even if there seem to be many issues limiting the full theoretical flexibility of the building, I conclude and argue that **the ambition should be to aim for adaptive buildings, particularly in the city centre,** because reuse is more beneficial for society than vacant, useless buildings - less new construction is needed and a denser city reduces transit emissions.
Single-function buildings should be designed for large scale or special equipment-intensive programs such as laboratories, hospitals, or theatres. These buildings are easier to adapt to a different function as they usually have a high storey height from the start (e.g., factories converted into lofts or offices).

Is building for flexibility an answer to densification?

Because of the original building's **open plan** flexibility and relatively **high floor heights**, more design options for adaptive reuse were possible, and the plan is not cluttered with bearing walls that would complicate the new layout. Buildings with oversized storey heights are essentially **easier to reuse** for various functions.

Concious and circular construction and design choices for **material recovery** is something that is not yet widely used by architects but should already be practiced today to reduce waste in future renovation and restoration. **Material passports**, which contain information about the quality and origins of materials, as well as the disassembly options for various products and their current location, have only recently begun to be used in pilot projects in the Netherlands and a few other European Union countries[1].

Regardless of all the possitive aspects, flexible building is an oversized one and all the extra space that is intended for the changes in the future, still has to be funded today. Without the external financial support, developers will not likely be widely interested in such kind of construction.

In my opinion, it can be an answer to densification challenges, but it is also a quite expensive way of building, therefore the wider scope strategy needs to be developed for higher quality and more sustainable architecture of the dense cities of tomorrow.

1 - https://en.wikipedia.org/wiki/Material_passport

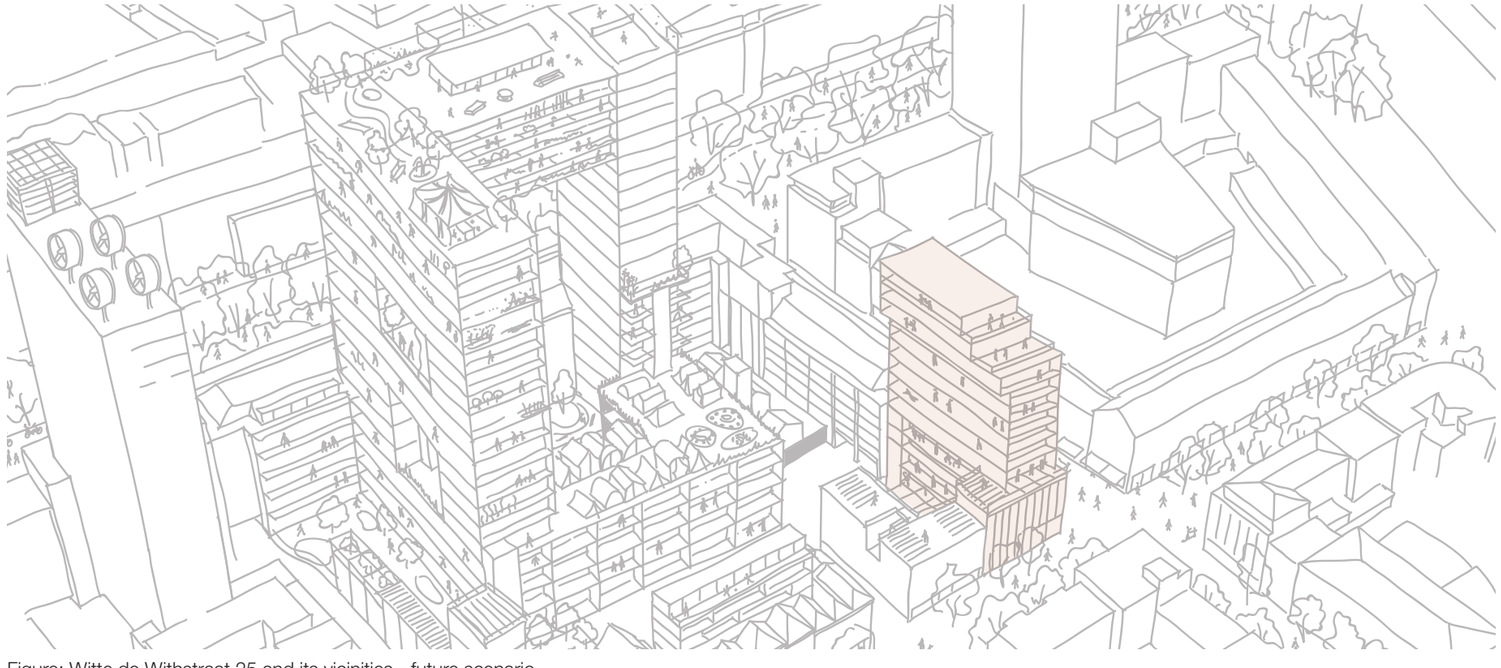


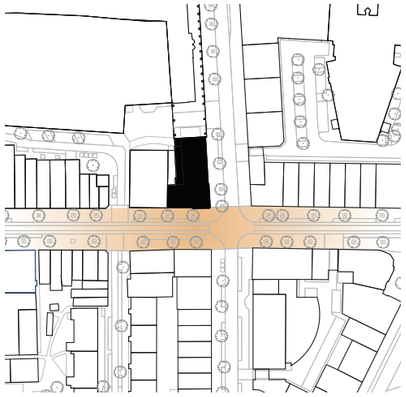
Figure: Witte de Withstraat 25 and its vicinities - future scenario
Source: own drawing

5. Conclusion: Research question

5. Conclusion: Research question

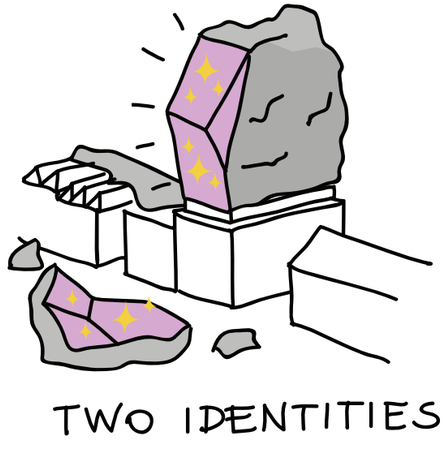
How can the **building at Witte de Withstraat 25** contribute to the **future** challenges of the city centre of Rotterdam (in the context of **densification**)?

2 directions



addition to:

	existing legacy
architectural/ heritage	**Active plinth** Building is reused (**pedestal** in composition), recreating the original entrance space, keeping the collective **memory**
urban	**Urban farm** for the street **Architectural landmark**



addition to:

	future
social	**Co-living** **Education** **Jobs** **Local source of food**
technical	**Open Building based construction** **Modular facade elements** **new extension on top**

Number of inhabitants: minimal space + location + social qualities = more people in the same area

5. Conclusion: Research question

part of a bigger change

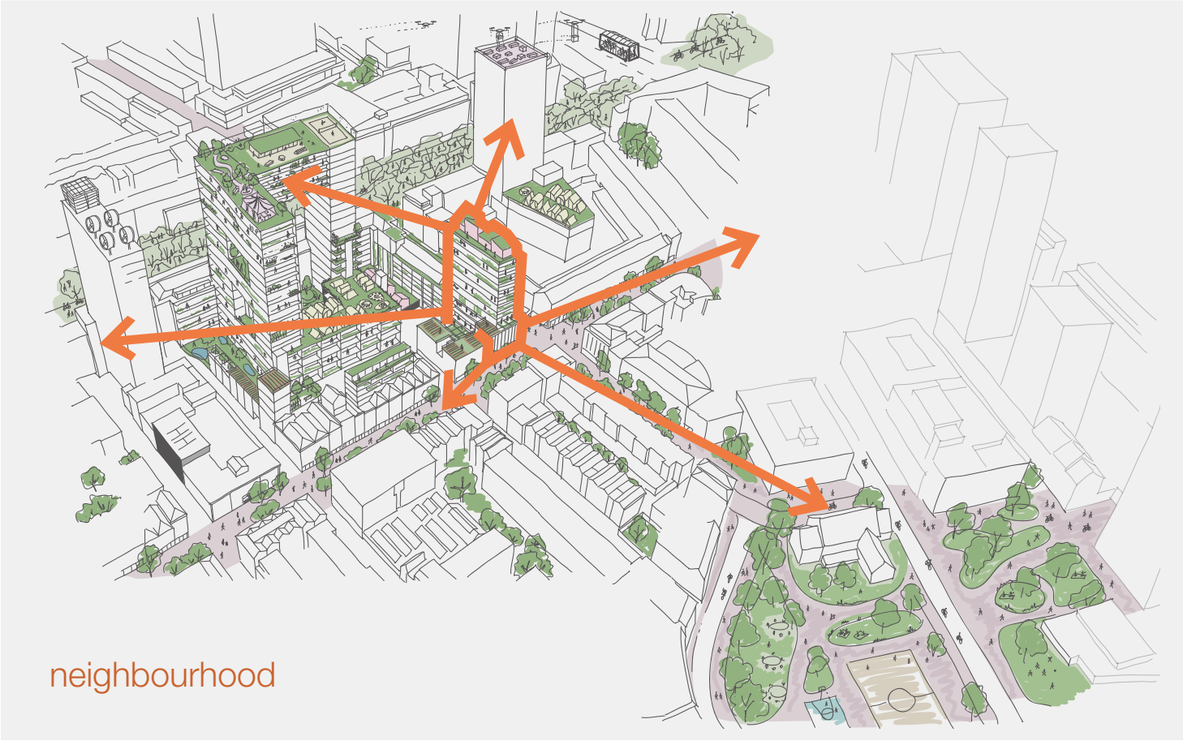


Figure: This adaptive reuse project can catalyse other initiatives in the neighbourhood to bring it to more responsible future.

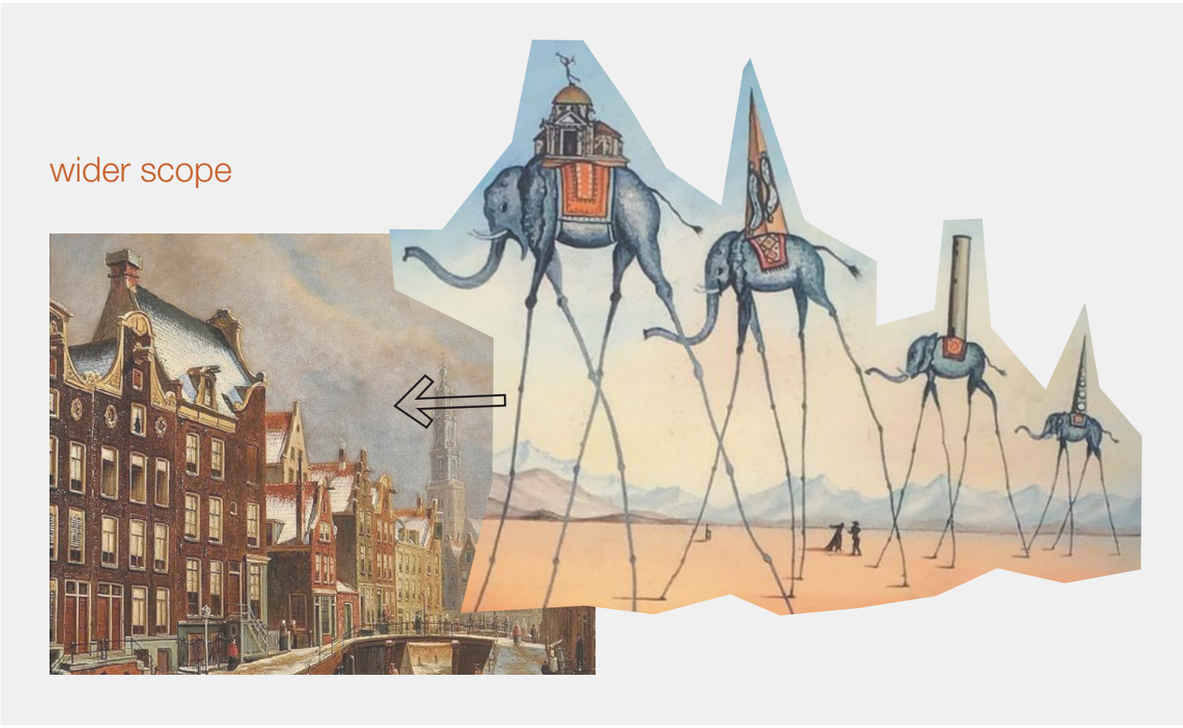


Figure: This project can be an example for cities all around the world that are eventually going to experience densification. Densification of the city without demolishing what is currently on the site. Not only is genius loci - the spirit of the place - preserved and enhanced in this manner, but the city can also accommodate more people in the same amount of area.

1 - own drawing, 2 - https://i.pinimg.com/236x/9c/38/3f/9c383fa0d3ba4108fcf13748f0b769dd--dutch-painters-cityscapes.jpg
3 - https://assets.catawiki.nl/assets/2019/12/23/6/9/8/69899af2-e068-45aa-a73c-f1b38ba138d4.jpg

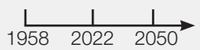
6. What can be learned/used from this project?

Guidelines: extension on top of existing building

GENERAL

Use from this project:

New structure (timber structure on the steel&concrete tube colums)



Adaptability over time (access floors, regular facade system, material recovery)

Climate design (water collection, energy generation, sharing)

Green outdoor spaces (roof terraces, balconies)

SPECIFIC

Take care of:

Analysis (site, history of the building, future plans)

Existing load bearing structure (possible or not to hold an extension)

Contextual facade cladding (reflect / contrast the surroundings)

If no source is provided, the image is the author's own work or photograph.

Image sources that were not mentioned before:

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