The Vertical Campus
as an Interface

Encouraging social interactions between different actors in The Hague

Public Building graduation studio, the Vertical Campus: a Public Hub of the Future in The Hague

Ruben Schonewille, 4594991

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Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences

Personal information	
Name	Ruben Christoph Schonewille
Student number	4594991

Studio		
Name / Theme	Public Building, the Vertical Campus: a Public Hub of the Future in The Hague	
Main mentor	Stefano Corbo	Project Design
Second mentor	Florian Eckardt	Building Technology
Third mentor	Sang Lee	Theory & Delineation
Argumentation of choice of the studio	Throughout my architectural education, I have been interested in how we perceive buildings and the way this makes us interact with the building itself and each other, at different levels of the public realm. This interest grew seeing how this perception changes from person to person and throughout time. Furthermore, the idea of a Vertical Campus amused me and sparked my imagination on how this verticality brings forward different ways of interacting with learning environments. This is why I am motivated to research and develop a Vertical Campus that functions as a hub for the future, accommodating educational trends that are ever-changing.	

Graduation project	
Title of the graduation project	The Vertical Campus as an Interface: encouraging social interactions between different actors in The Hague.
Goal	
Location:	SER Conference Center, The Hague, The Netherlands.
The posed problem,	The vertical campus of the future requires a multitude of different learning environments, corresponding to the variety in how individuals and groups interact with their environment while learning. However, these learning environments run the risk of not properly communicating the ways in which they can be used to the user. Its multiplicity becomes lost in translation. Poor communication is also prevalent among the power clusters in The Hague: the SER offices and surrounding institutions along the Bezuidenhoutseweg seem to work in their own bubbles. Little interaction is present between these institutions and their surroundings: who knows what SER stands for, or what it does? Meanwhile, Gibson's theory of affordances and invariants has seen much development and research. It considers how perceived properties of an object indicate action possibilities, affordances, which communicate how an object can be used. Integrating affordances in the design process of learning environments could benefit the legibility of how they can be used to interact, but there is a gap where affordances are scarcely translated into architecture.

research questions and	Main question: How can affordances be used in the design of the Vertical Campus to accommodate for learning environments that offer different levels of interaction? Sub questions: How do affordances and invariants relate to concrete architectural design moves? How are the affordances of Innovative Learning Environments different to traditional learning environments? How does the design of these environments address multiple ways of interaction between different actors?
design assignment	The goal is to design a Vertical Campus, the multiplicity of which is supported by a rich collection of learning environments encouraging different actors to interact with each other, where they otherwise would have been working in their own bubbles. These environments vary in how they encourage (social) interaction, an important driving factor in the learning process. The action possibilities, relating to interaction, are clearly communicated to its users. This results in the Vertical Campus being a hub that attracts and allows different actors to interface with each other, stimulating growth on individual and collective levels. To achieve this, knowledge and guidelines in relation to social interactions are developed through research by design. The design is to take on a more phenomenological approach that elicits both a physical and emotional reaction, encouraging even the random passerby to take part in the pursuit of knowledge.

Process

Method description

Literature studies have brought forward the importance of social interactions. The aim is to combine interactions and studies into affordances and invariants into architectural elements, leading to a set of guidelines and factors that should take a key role in the design process. Different combinations of these factors result in spaces with different qualities, indicating a level of interaction. Exploring these combinations through design leads to a collection of spaces and a set of guidelines that describe the role of affordances in architectural design. These guidelines address on one hand the requirements needed for learning environments considering interaction, on the other hand how affordances are made apparent to the user.

The objective is to guide the design towards an understandable language of affordances, so that users are stimulated to understand how a space can be used.
The guidelines and consequent designs for learning environments are compared to existing environments in The Hague. The aim is to find out which tools are already applied, or which combinations require more attention, which in turn informs prior research.

Literature and general practical references

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Reflection

1. Relation between my project and studio topics.

What is the **Vertical Campus**? This question has stood central during this year's graduation studio. From early on, social interactions have played a key role in my definition of the Vertical Campus. During the first semester and its collective research phase, we noticed a critical lack of interaction between the different actors present along the Bezuidenhoutseweg in The Hague. A common theme during our interviews was that both young and old, professional and student, local and commuter felt stuck in their own bubble. Furthermore, the many different institutions (governmental, educational, research) present in the area were poorly connected: a power hierarchy is present between these clusters. This was both the result of a disrupted urban fabric and strictly gated communities. Based on these observations (fig. 1), we envisioned the future campus to be a common ground by breaking up these clusters and "weaving" the urban fabric back together in key locations. This common ground stands for more transparency and participation in the decision-making that takes place in The Hague.

In terms of **urban integration and dynamics**, my Vertical Campus is located on a site of overlapping conditions: in between the park (Haagsche Bos), a residential neighbourhood (Bezuidenhout) and many different institutions. The main entrance is centred on a new axis between the park and city, literally continuing the urban fabric up into the tower. The theme of "common ground" takes on a different shape when verticality is introduced: a spring-like continuous space, as if the traditional horizontal campus has been folded onto itself. This forms the "public backbone" of the Vertical Campus (fig. 2).
However, a tall building on this location stands out. It sits on the boundary of the densified city centre, where the average height of surrounding buildings is drastically reduced to 15 – 20 meters. Despite this, it is highly likely that future expansions in The Hague will turn towards this area due to constraints in the already dense city centre.

Multiplicity is, in short, introduced as interactions between different parts of the program. The public backbone itself is a continuous amalgamation of different users and functions, from sports and media to cuisine and research. The spaces that branch off from the backbone take on these properties, injecting them into learning environments (fig. 3). A gym can house a meeting area for group work, while elsewhere a theatre is introduced into a classroom. The aim is to move away from the traditional classroom, which holds a tutor-focused design and lack of interaction.

Lifelong learning is addressed thanks to this hybridity and challenging of the norms. Different people and especially different ages have varying ways in which they interact with each other and their environment. After all, a child explores their environment in much different ways since most of what they see is still new to them, while the behaviour of an adult sometimes needs to be challenged to come to new insights. Hybridity makes elements interact with each other by putting them into a different context, both in terms of program and materialisation, which in turn results in people interacting with each other and their environment in surprising new ways.

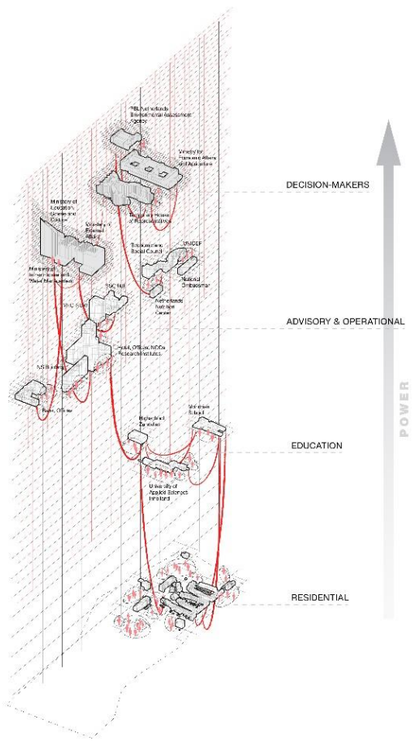


Figure 1: conclusion drawing of P1 collective research, showcasing poorly connected power clusters.

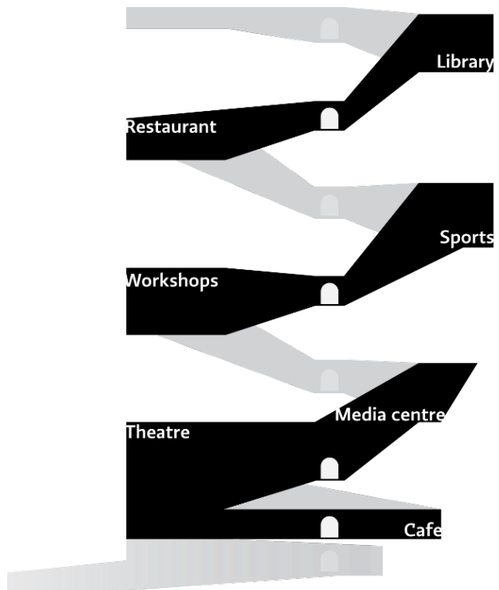


Figure 2: diagram of the public backbone and key elements of the program.

Figure 3: a hybrid of sports and informal learning spaces.

2. Reflection on research and design.

My aim was to develop a Vertical Campus that varies in which degree social interactions are encouraged between different actors. While the different levels of social interactions between multiple actors have been achieved, the "encouragement" part turned out different than expected. In the following reflection I will first reflect on the results and how they address my goals. I will then go over key learning moments during the process, highlighting the relation between research and design.

The design addresses multiple ways of interacting by balancing between different factors, resulting in combinations that suggest different levels of interaction. It balances between individual & collective, accessible & inaccessible and formal & informal. Literature studies and smaller case studies showed that learning environments are moving away from the traditional, towards more innovative spaces that are less formal and generic. However, while this was a good start, I realised that more was needed to make these environments future-proof. This was done by keeping multiplicity in mind, introducing foreign elements into the environments and balancing between generic & specific and rigid & flexible.

This hybridisation of learning environments also established interactions between different actors, ensuring a multi-disciplinary approach to education. Mixing different parts of the program, such as adding sports elements to learning environments and vice versa, creates new and unexpected combinations. Meanwhile, the public backbone not only introduces verticality to the campus, but also works as a collective circulation space where unexpected encounters can happen. On top of this, the generic character of this space allows for different key elements of the program to adapt over time.

Originally, my plan was to find out how implementing affordances into the design process could help to encourage interactions. However, after literature studies, I realised you don't design for affordances: they will be there, planned or not. Trying to force a specific use did not work, therefore I took on a more anti-anthropocentric stance that focused more on which different combinations I could make in terms of program, materialisation and signs, rather suggesting or provoking a certain reaction. Instead of forcing it, I positioned myself to let go of control and simply set the conditions for the unexpected. Not everything needs to be set in stone, allowing room for interpretation and changes over time.

This "letting go of control" applied to several parts of the process. In terms of design, there were many moments where I was getting ahead of myself, designing redundant details and unnecessarily overcomplicating things. This doesn't work in a fast-paced, large-scale project and lost me a substantial amount of time. Only after several tutoring sessions where this was pointed out, it dawned on me that it is important to simplify. This also applied to my research: I had too many ideas that I wanted to apply and investigate, resulting in a confusing P2. After restructuring my work, I felt more confident and motivated about my project.

Initially I approached this studio with a clear distinction between research and design. This can be seen in my original methodology, where I focused on a rather linear process where research informs a final design. During the theory & delineation assignments, especially the psychogeographic map and performative conceptual model, I realised how a framework for the Vertical Campus can be formed through experimentation. Having this framework added more focus to later design explorations. However, because of my initial distinction between research and design, some of the assignments were lost on me and had a minimal impact on my process. Furthermore, the different experiments could have had a larger impact if I had put more effort into documenting them in my research and design journal. I take this as an important learning moment. Better documentation would have helped with the clarity of my project overall, in terms of ambitions, concept and design explorations.

3. Relevance of my project in the larger social, professional and scientific framework.

Initial research into my topic immediately led to flexibility and adaptability of buildings. Cedric Price, for example, who claims that architecture is too slow, designed the Fun Palace – a framework that allows rooms, walkways and stairs to move around and adapt. The larger discourse, when confronted with terms such as flexibility and adaptability, seems to immediately turn towards designs like Cedric Price's Fun Palace: a machine that changes according to what society demands of it. With my project I aim to approach the problem from a different angle: what if the user can more easily adapt within the building by understanding the potential of what's present, instead of the entire building adapting to constant changes in demand?

This project helps to create understanding on a topic that is often implicitly learned through experience, a benefit relevant for young professionals. In general, it creates awareness of the impact our decisions during a design process have on the interpretation of the result. Furthermore, improved knowledge of affordances in architecture helps to understand what a building already offers, allowing architects to understand and work with what is already there and how to anticipate or leave room for future changes in demand.

It is important to note that I often mention the "design of learning environments". The designed spaces are merely the physical part of this environment. Similar to a "church", the physical building that houses the church (a.k.a. the religion that is currently being followed) is just one part of the larger image. In the case of the learning environment, an important aspect beside the physical learning space is the pedagogical background which most of the current studies have investigated. Much research has gone into these educational methods that support interaction, but the physical environment is still lacking behind. My project applies these developments in educational methods, but also looks forward to make room for future developments.

Design Brief: vertical brief

From the studio syllabus:

Lifelong learning is the voluntary, ongoing pursuit of knowledge, skills, and abilities through various forms of education. The building should facilitate the types of programs that support this for people/students of all ages. Lifelong Learning therefore calls for more diversity in the programmatic brief than the strictly educational functions and spaces.

The overlap with other programs in the hybrid building is thought to be beneficial to Lifelong Learning, while at the same time it offers time- and space sharing in order to enhance efficiency in use. The brief is indicative and divided in zones that, as said, can overlap or be rearranged.

Leisure:
2.400

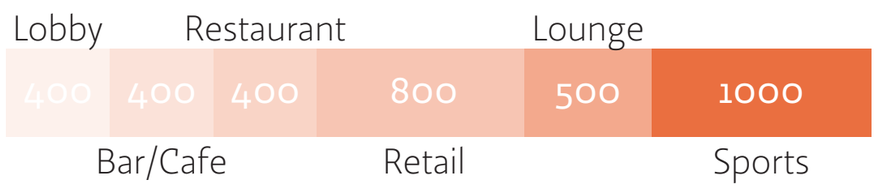
Learning:
10.400

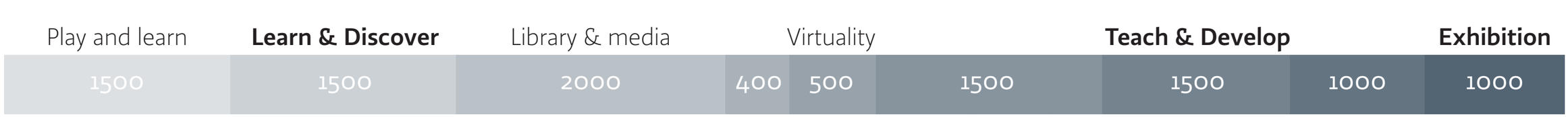
Offices:
10.000

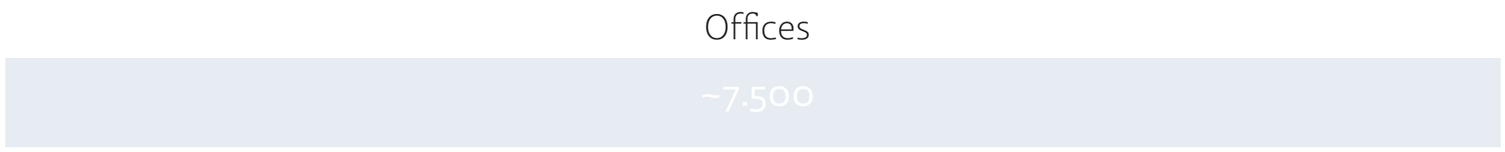
Storage:
10.000

Focus on collaboration & leisure

In order to focus on collaboration between different actors, special attention is given to parts of the program that attract a wider audience.







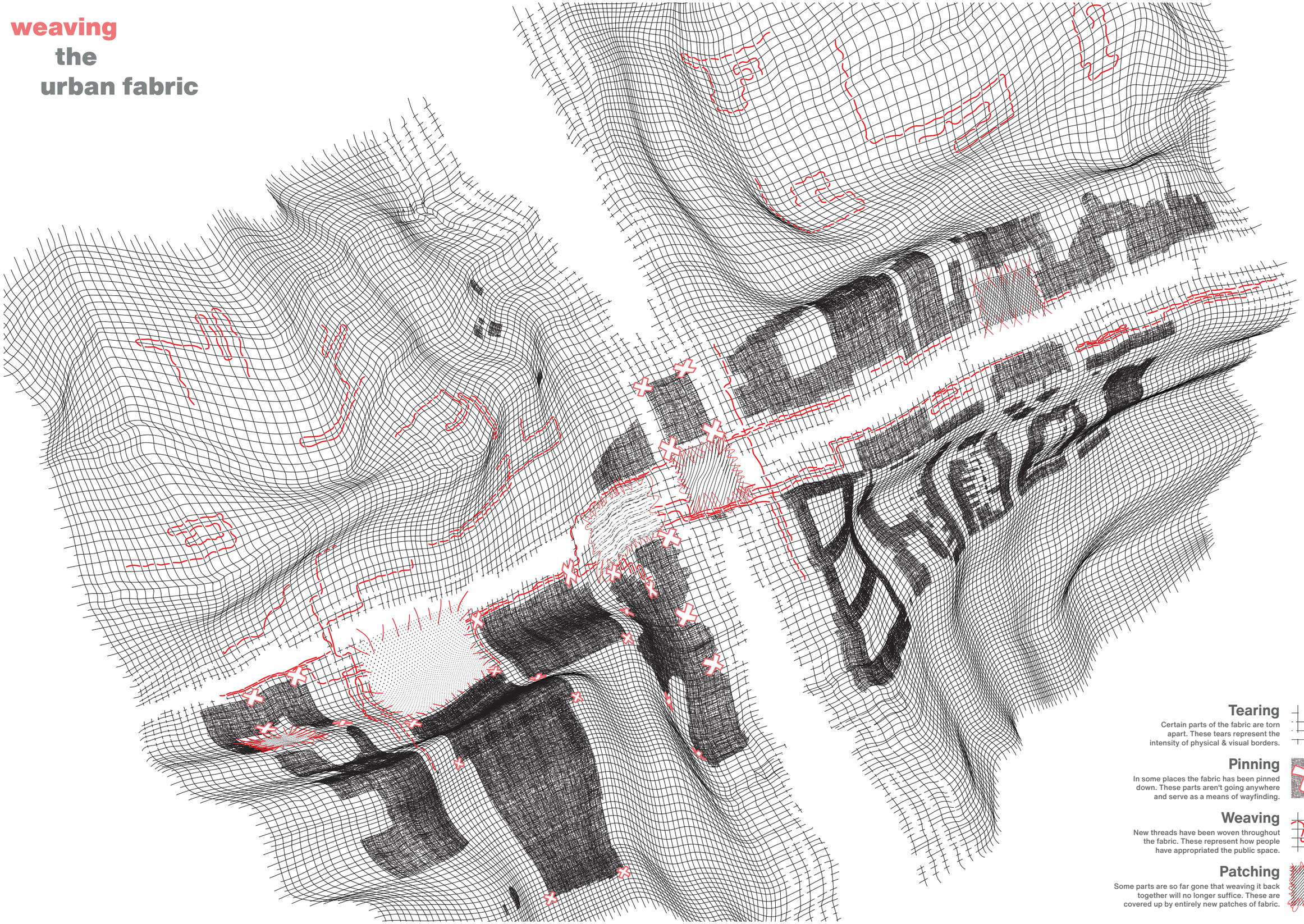
Process Documentation

Psychogeographic map

Our map, “weaving the urban fabric”, focused on four themes that we perceived during our site visit to The Hague: tears in the urban fabric, pins, threads woven into the fabric and patches.

The Bezuidenhoutseweg and Utrechtsebaan which divide the “Green Border” are seen as both physical and mental borders. The heavy traffic and unpleasant atmosphere greatly diminished the continuity of the urban fabric.
Simultaneously, some parts of the fabric were found to be pinned down: these invariants afforded a more vibrant interaction with the surroundings and served as a means of wayfinding in the area, partially based on the flow of people.
Here and there, people had appropriated the public spaces around the Green Border. New threads were woven into the fabric, albeit in a rigid manner along the busy streets or more loosely in the park.
Few parts of the Green Border were deemed so unpleasant, weaving it back together would not suffice. These parts, especially the traffic square where the Utrechtsebaan and Bezuidenhoutseweg meet, or the parking lot at the SER offices, begged for a complete overhaul; to be patched up.

weaving the urban fabric



Tearing

Certain parts of the fabric are torn apart. These tears represent the intensity of physical & visual borders.

Pinning

In some places the fabric has been pinned down. These parts aren't going anywhere and serve as a means of wayfinding.

Weaving

New threads have been woven throughout the fabric. These represent how people have appropriated the public space.

Patching

Some parts are so far gone that weaving it back together will no longer suffice. These are covered up by entirely new patches of fabric.

Process Documentation

Design Thinking

The main takeaway of the Design Thinking assignment was that many stakeholders of the Green Border are stuck inside their own bubbles. Although the different user groups strive for more interaction, they are having difficulties getting out of their “bubble”.

Pain Points

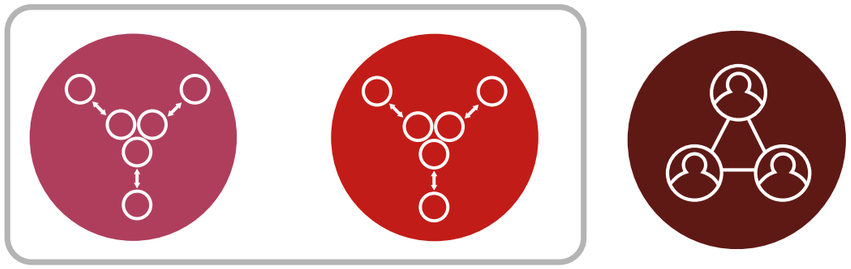
Students | **Senior citizens** | **Employees**

Financial situation

Isolation

Gain Points

Students | **Senior citizens** | **Employees**



Retreat versus collaboration

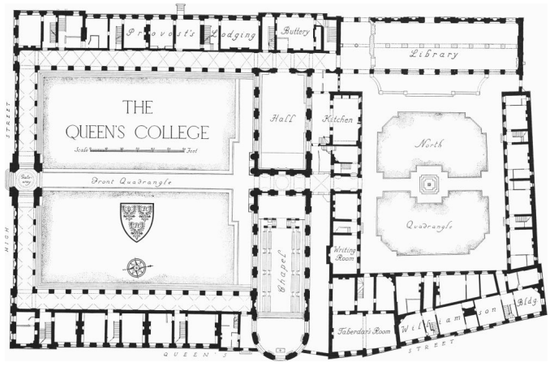
Connection to City & Nature

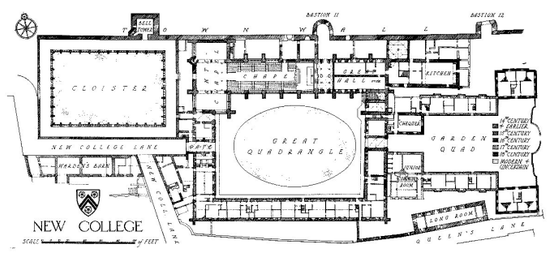
Process Documentation

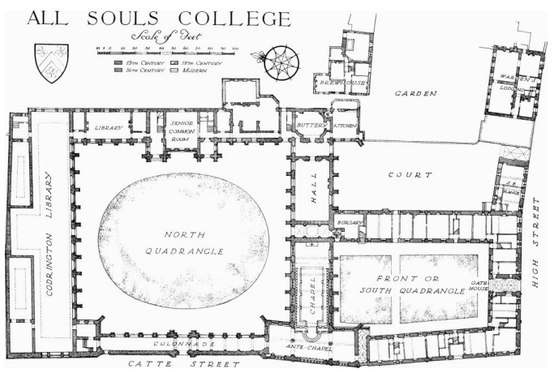
London Excursion

A prominent feature of the colleges in Oxford was that the layout and structure of these buildings made them function as isolated communities within the urban fabric. Much like the people of the Green Border, they seem to be stuck in their own bubbles.
Thanks to their image and thresholds, this idea of gated communities was reinforced. The colleges use tools such as heralrdy and gateways to indicate their territory, apart from the already dominant place they occupy within the surroundings.

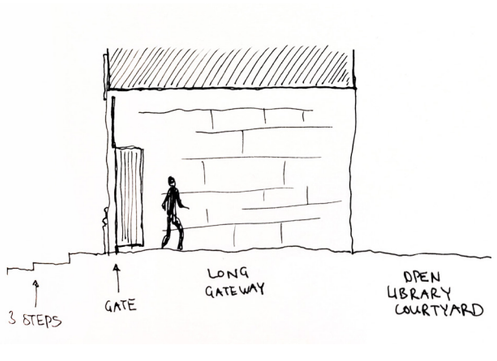
Isolated community cemented by typology

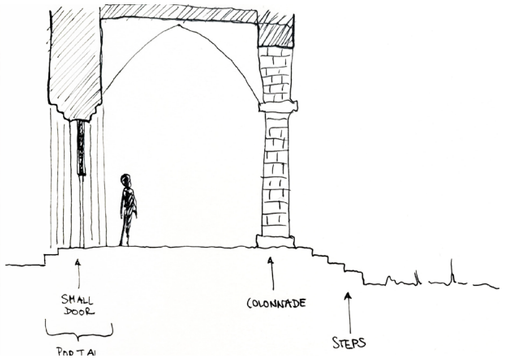






Reduced degree of accessibility due to thresholds





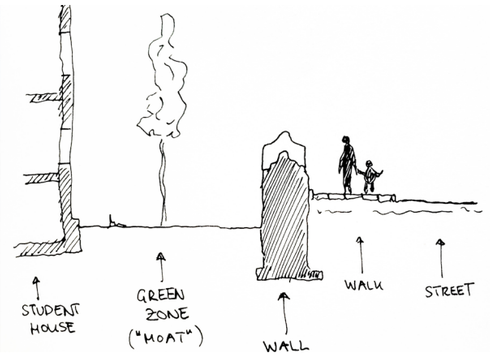
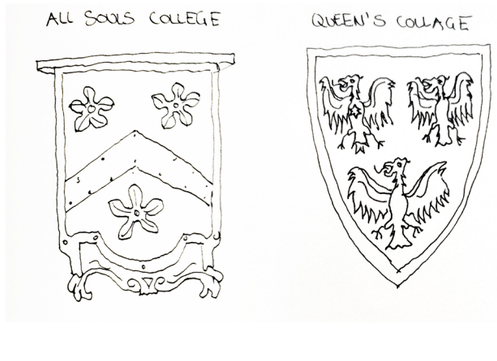


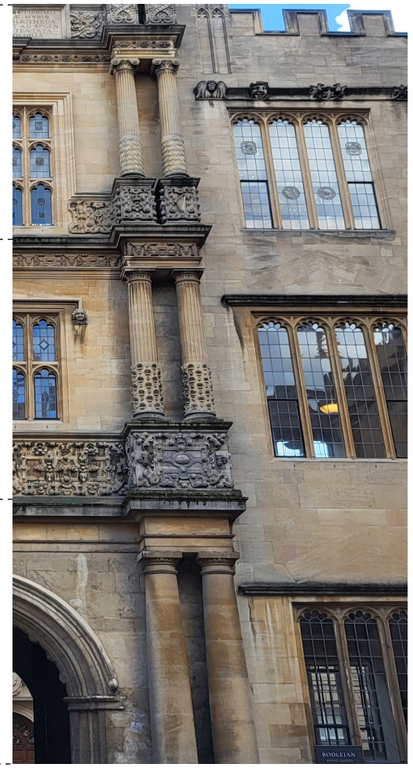
Image of powerful, elite institution due to decorations



Corinthian

Ionian

Dorian

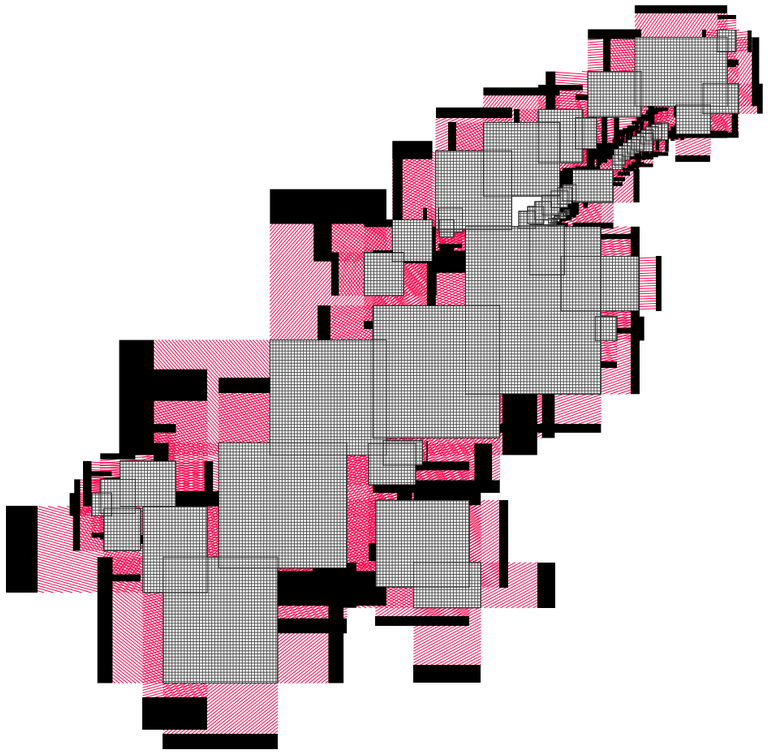


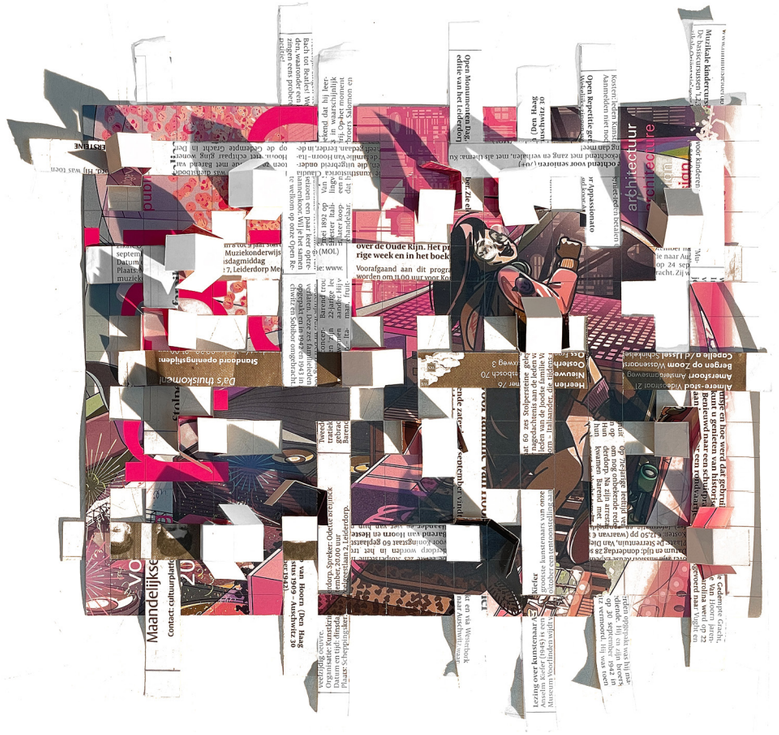
Facade of the Bodleian Library

Process Documentation

Diagrams

With our diagrams, we speculated on how the urban fabric would transform if verticality was introduced to the operations we focused on with our psychogeographic map.
Overlapping facades onto the horizontal urban fabric generated new patterns, where the fabric had been static and repetitive before. In order to fold the fabric, a prior action is required: cutting. Thanks to the operations of cutting and folding, new combinations as well as new open spaces are created. These openings in the fabric allow for more appropriation to happen, a.k.a. the weaving of new threads into the fabric.
This showed us that by incorporating verticaly into the urban realm, not only more public spaces are added but existing spaces are able to gain new qualities.





Volume
Abstracted roof surface of the buildings in the Green Border

Cutting
Projected facade surface of the buildings of the Green Border

Fabric
Public urban spaces in front of the different buildings

Overlapping
New patterns through the overlapping of roof, facade and urban space

Fabric
Abstracted urban space

Cutting & folding
Cutted and folded urban fabric opening up new spaces

Weaving
Open spaces allow for weaving in new appropriations

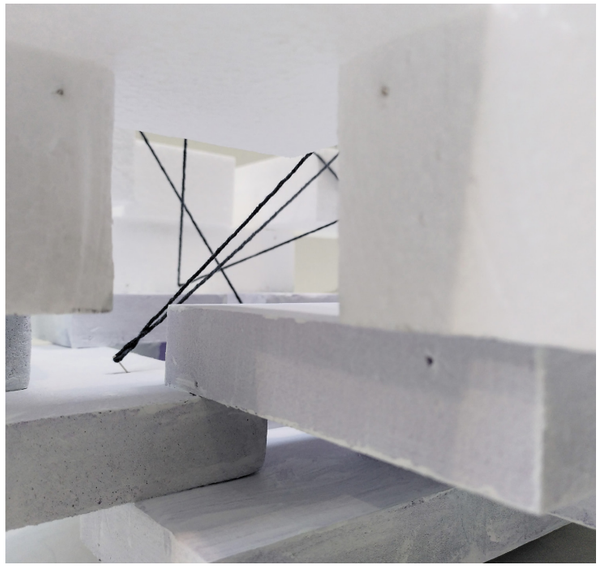
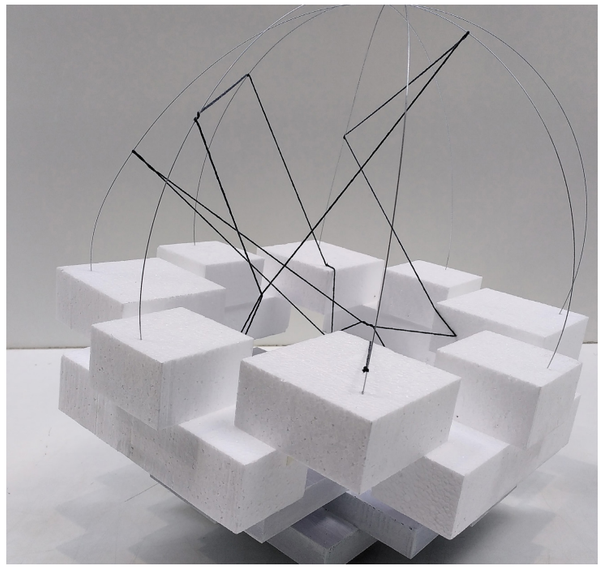
Open spaces
Folding of the existing fabric results in emergence of new spaces

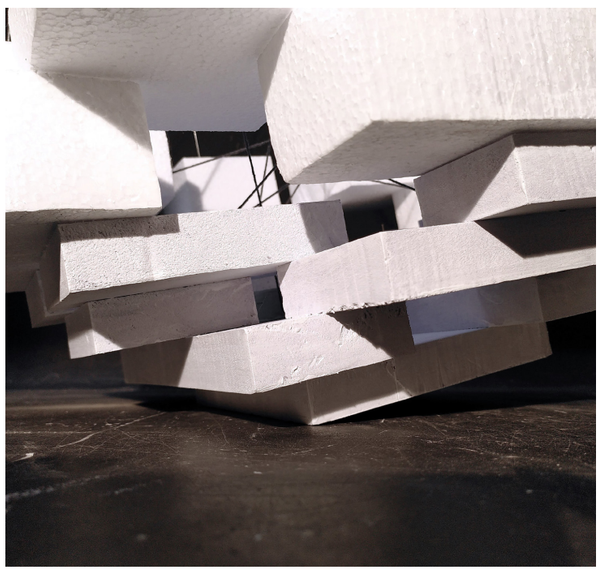
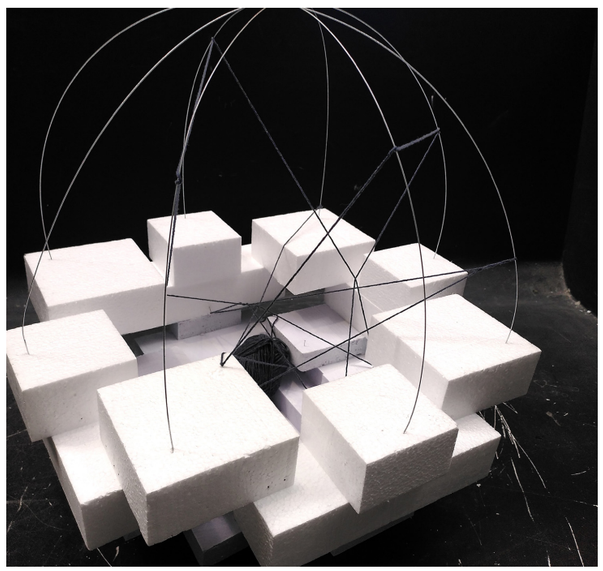
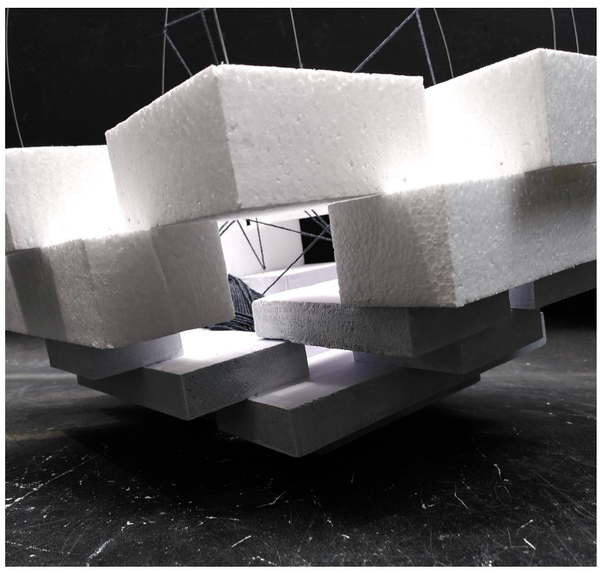
Process Documentation

Performative Conceptual Model

Initially, the focus of this model was on the combination of stereotomics and tectonics and how this related to affordances. The interlocking, stacked blocks create a relatively heavy base compared to the wiring. Combined with the unbalanced position, it was supposed to indicte that the model has rolled around and therefore created an intricate network of pathways on the inside. Translated to a building: what if the building functioned as a framework, indicating a specific use that allows the user to spin their own tale?

Later on, the contrast between open and closed became more important. I was initially disappointed by how hard it was to see inside because of the small openings in between the blocks - after all, the point was to see how the ball of yarn had tumbled around. But this challenge that came with perceiving what was going on, this sense of discovery, lead to a more phenomenological approach of the design of the Vertical Campus - playing into the senses and conventions.

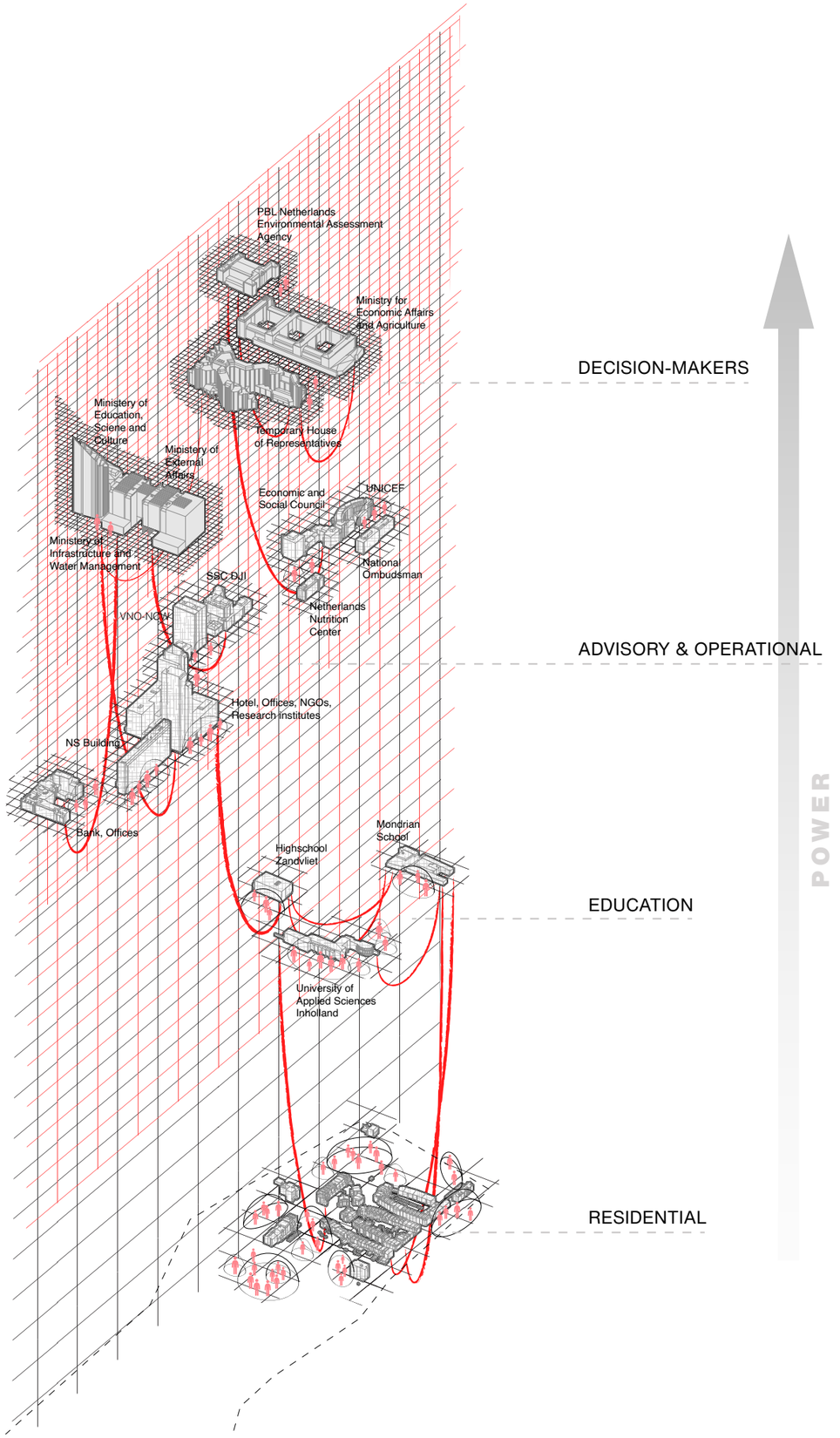



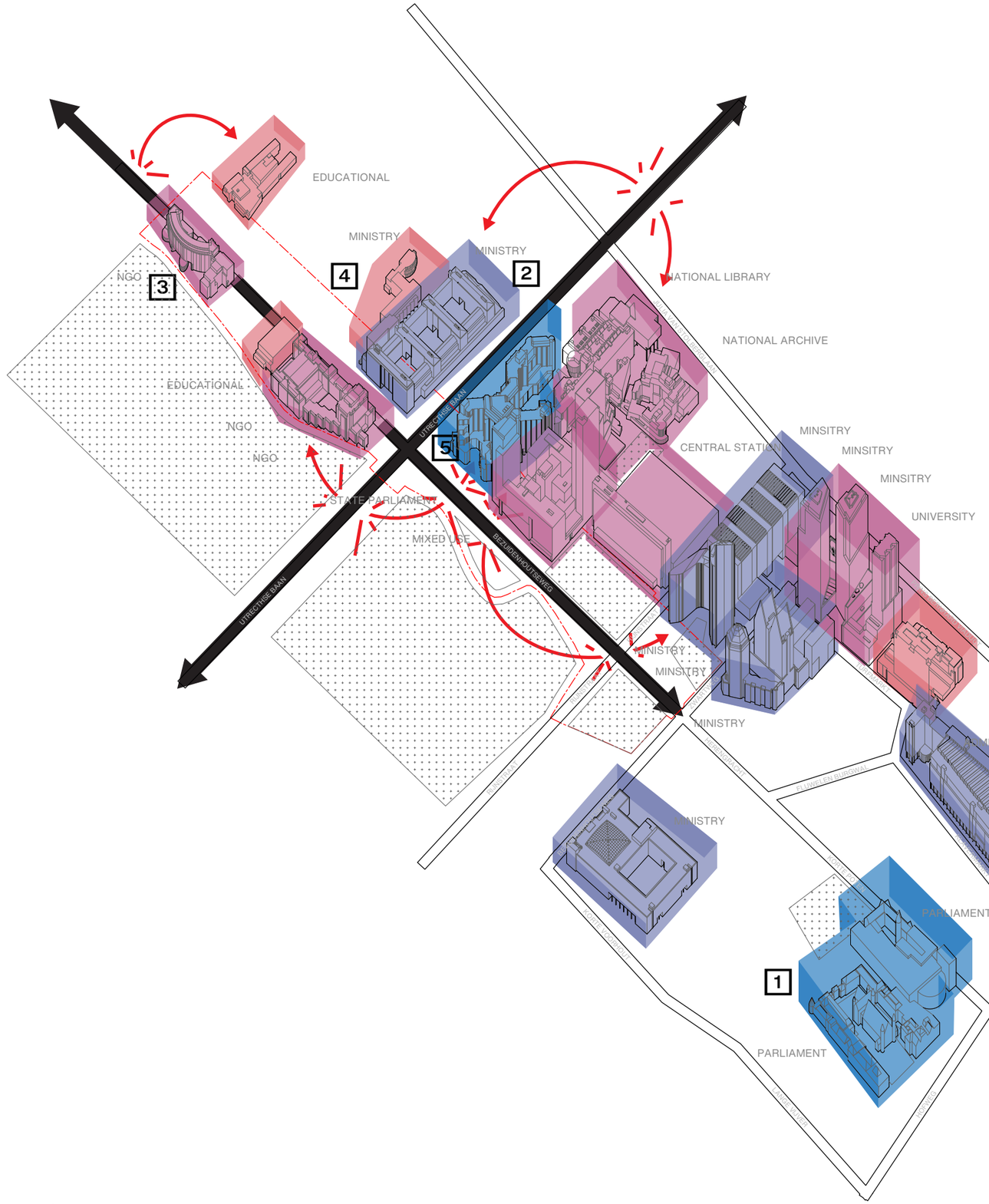




Process Documentation
P1: problem statements

After looking into the theme of power in The Hague as the city of International Peace and Justice, one thing was certain: the Bezuidenhoutsweg was home to a great number of “power clusters”. It is lined by both governmental or non-governmental institutions, several ministerial buildings and relatively renowned organizations such as Unicef, as well as several schools. They are close together, but poorly connected.

The first illustration shows how these clusters are seperated by a power hierarchy: the decision-makers are all the way at the top, while residents are on the other side. These clusters seem to be working in their own bubbles, they are poorly connected. This is partially due to the heavy traffic, but just as much by these clusters functioning as gated communities.




EDUCATIONAL
MINISTRY
MINISTRY
NATIONAL LIBRARY
NATIONAL ARCHIVE
NGO
3
4
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EDUCATIONAL
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CENTRAL STATION
MINISTRY
MINISTRY
MINISTRY
UNIVERSITY
STATE PARLIAMENT
MIXED USE
UTRECHTSE BAAN
BEZUIDENHOUTSEWEG
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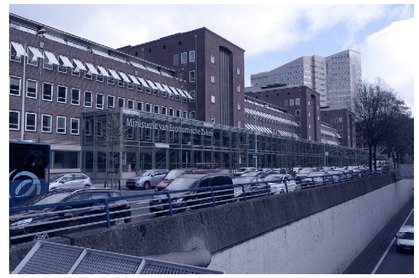
PARLIAMENT

1



2

3

4

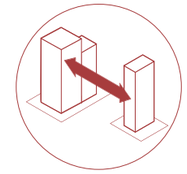
5

POWER

Process Documentation
P1: capacity plan

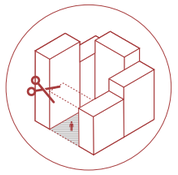
Our capacity plan, “common ground for the open city”, focused on breaking open the power clusters. Our vision was to develop an open and transparent city in which the the public has the opportunity to actively participate in the decision-making process and influence the solutions which are developed to tackle the current and future challenges faced by the city of The Hague.

Five strategies were part of this vision: breaking open and connecting the power clusters. This is achieved by opening part of the ground floor to the public, creating/improving urban courtyards, enhancing accessibility by establishing new axes and improving the spaces in-between these courtyards and axes.

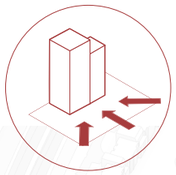


Opening up and connecting existing power clusters

Activating the ground floors for public

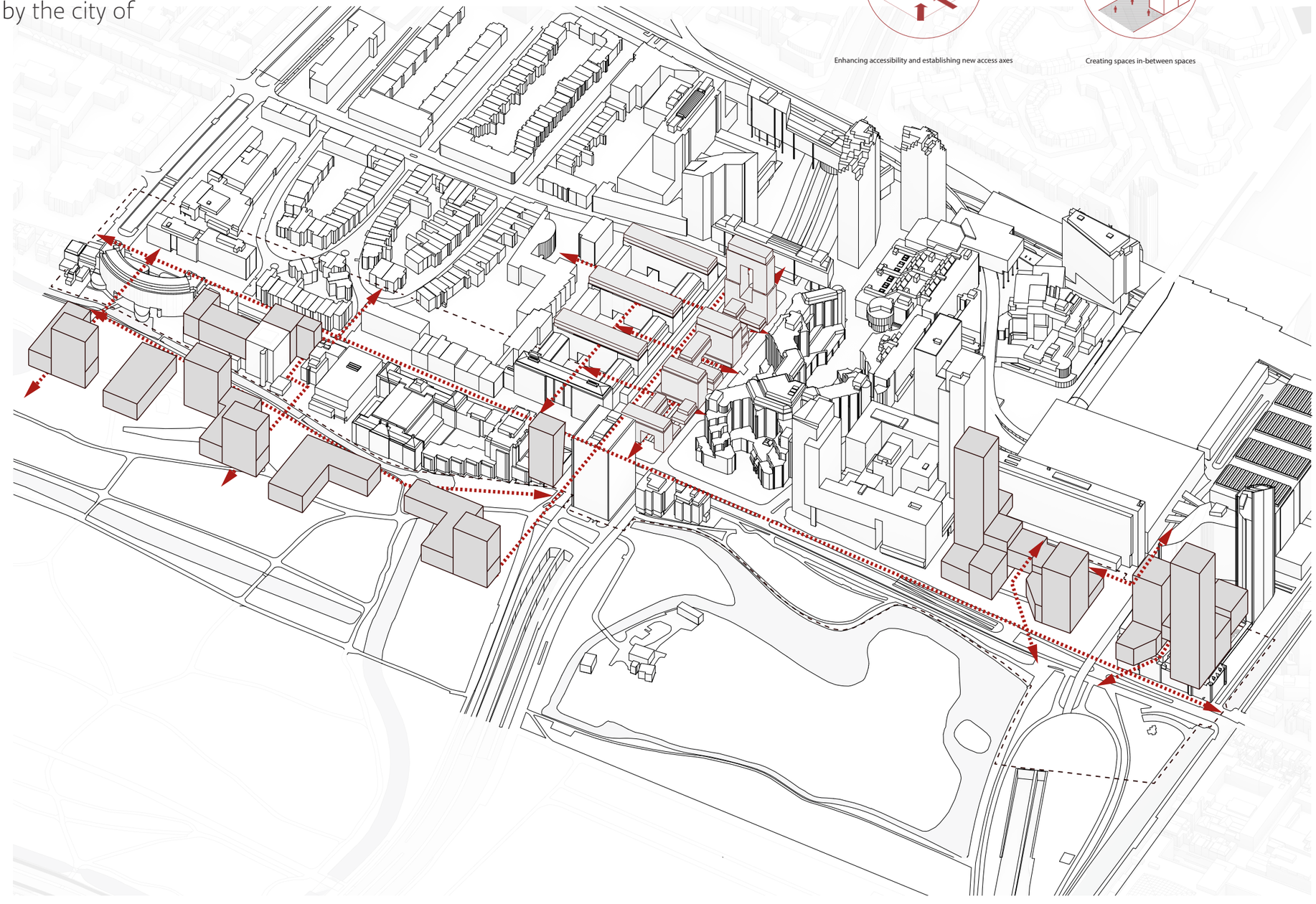


Creating new urban courtyards



Enhancing accessibility and establishing new access axes

Creating spaces in-between spaces



Process Documentation
Obsessions

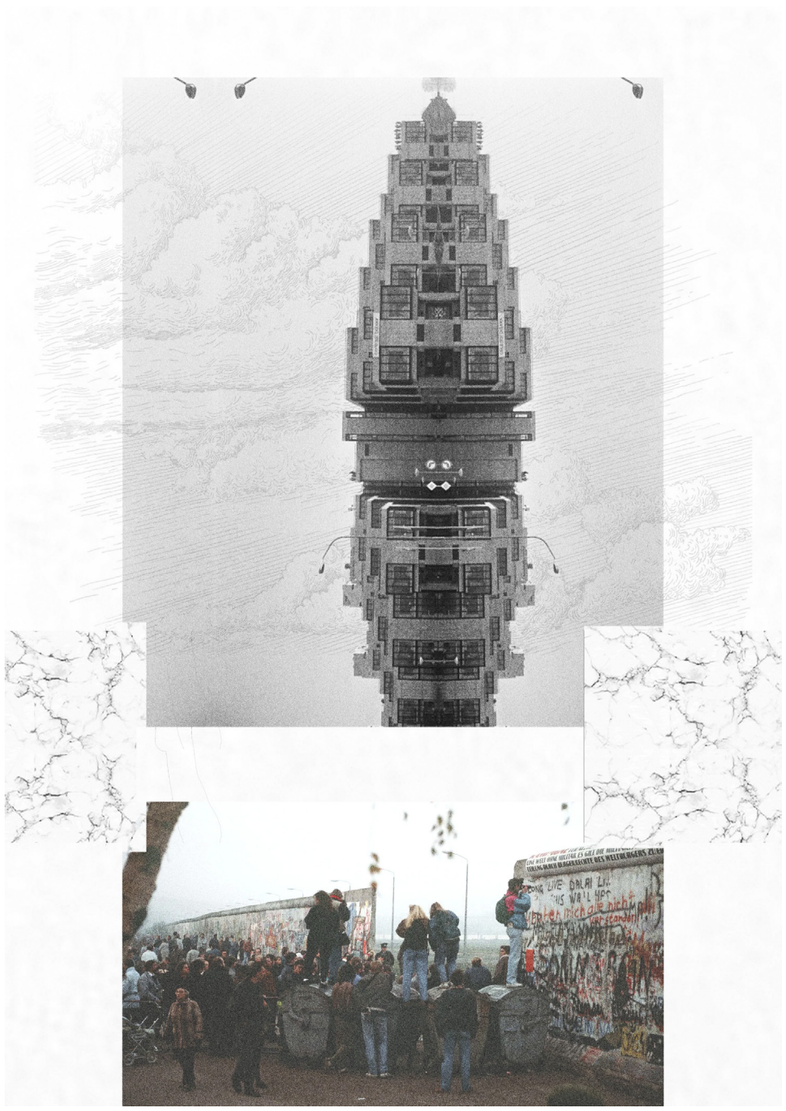
After P1, in between assignments, I focused on my own interests in relation to my research topic, location and my idea of the Vertical Campus.
This quickly led to flexibility and a human-centered aproach. Our capacity plan of promoting social interactions and my research topic of affordances created the idea of a campus for the future that allows the user to use the campus as they see fit.

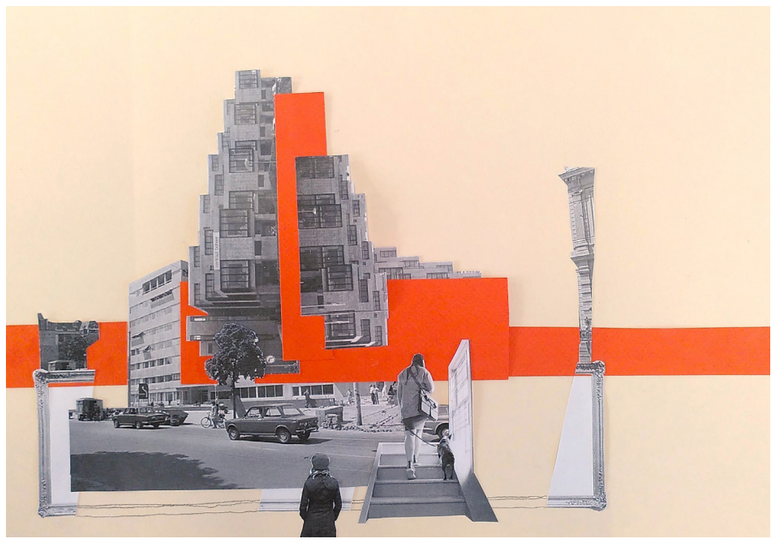
"the end of sitting", RAAAF

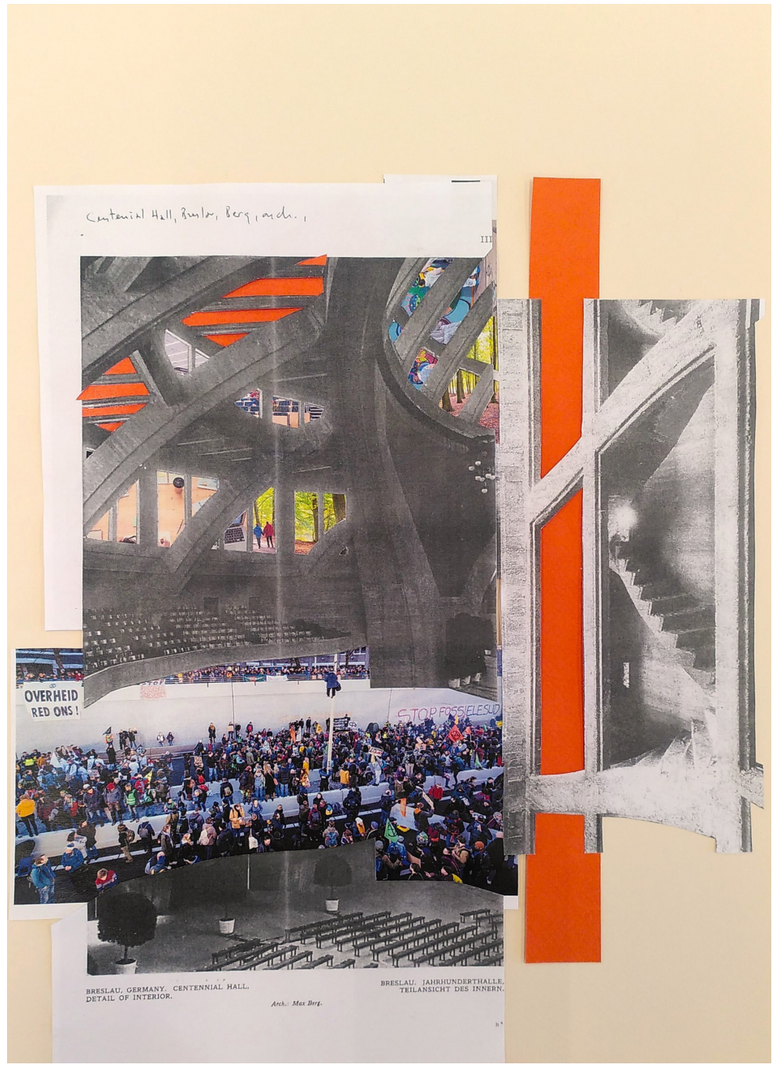
Process Documentation
Collage & Montage

This exercise focused on my idea of the Vertical Campus and how it is connected to the city.
By placing the Vertical Campus on the “edge conditions” of the Green Border, where different clusters overlap as well as where the city and park meet, the Vertical Campus can act as a medium between these different actors: an Interface.

Since it deals with these various groups, the campus can afford different things - but remains invariant in the sense of promoting the pursuit of knowledge and lifelong learning. Because of its function as an Interface, it is situated in the Green Border as a connecting element of different actors and power clusters - students, residents, teachers, business owners and decision-makers.

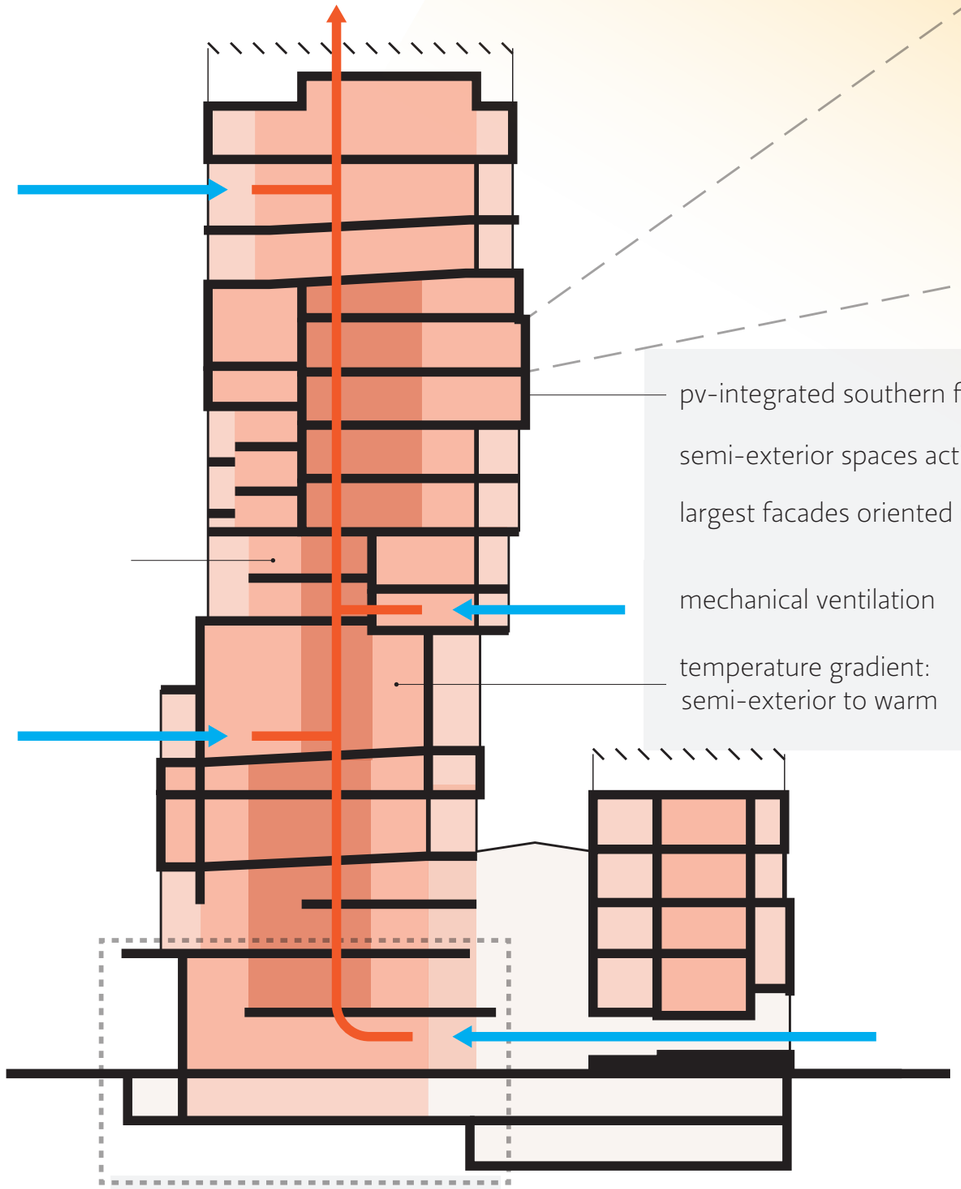






Process Documentation
Sustainability Diagram

With the sustainability diagram, first steps were taken to consolidate the shape & orientation of the campus, it's structure, layout of spaces and facade system.



pv-integrated southern facade

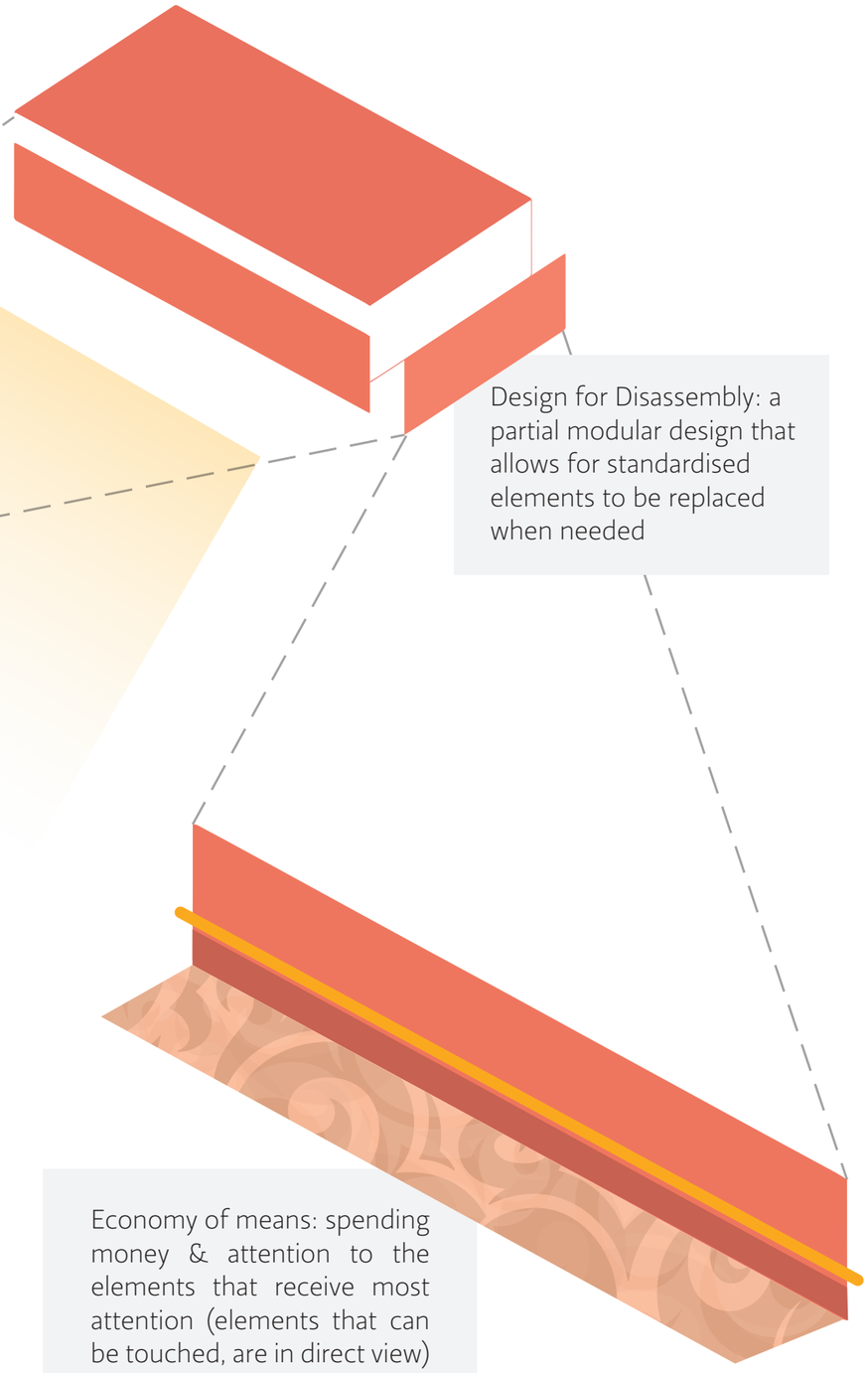
semi-exterior spaces acting as a buffer

largest facades oriented north-south

mechanical ventilation

temperature gradient:
semi-exterior to warm

Conservation of what's already there: making use of (and building upon) the qualitites present on the site



Design for Disassembly: a partial modular design that allows for standardised elements to be replaced when needed

Economy of means: spending money & attention to the elements that receive most attention (elements that can be touched, are in direct view) as opposed to elements out of reach of the user

Integrated Design Proposal
What & Why

The Vertical Campus encourages social interactions, allowing actors to interface with each other by offering learning environments that vary in which degree they encourage collaboration.

The Vertical Campus as an Interface addresses three problems: the need for collaboration in Innovatie Learning Environments, the knowledge gap of affordances and invariants in architecture and the poorly connected power clusters along the Bezuidenhoutseweg.
Together, they result in the main research question:

How can affordances be used in the design of the Vertical Campus to accommodate for learning environments that offer different levels of interaction?

The goal is to design a Vertical Campus, the multiplicity of which is supported by a rich collection of learning environments encouraging different actors to interact with each other, where they otherwise would have been working in their own bubbles. These environments vary in how they encourage (social) interaction, an important driving factor in the learning process. The action possibilities, relating to interaction, are clearly communicated to its users. This results in the Vertical Campus being a hub that attracts and allows different actors to interface with each other, stimulating growth on individual and collective levels.

The Vertical Campus as an Interface

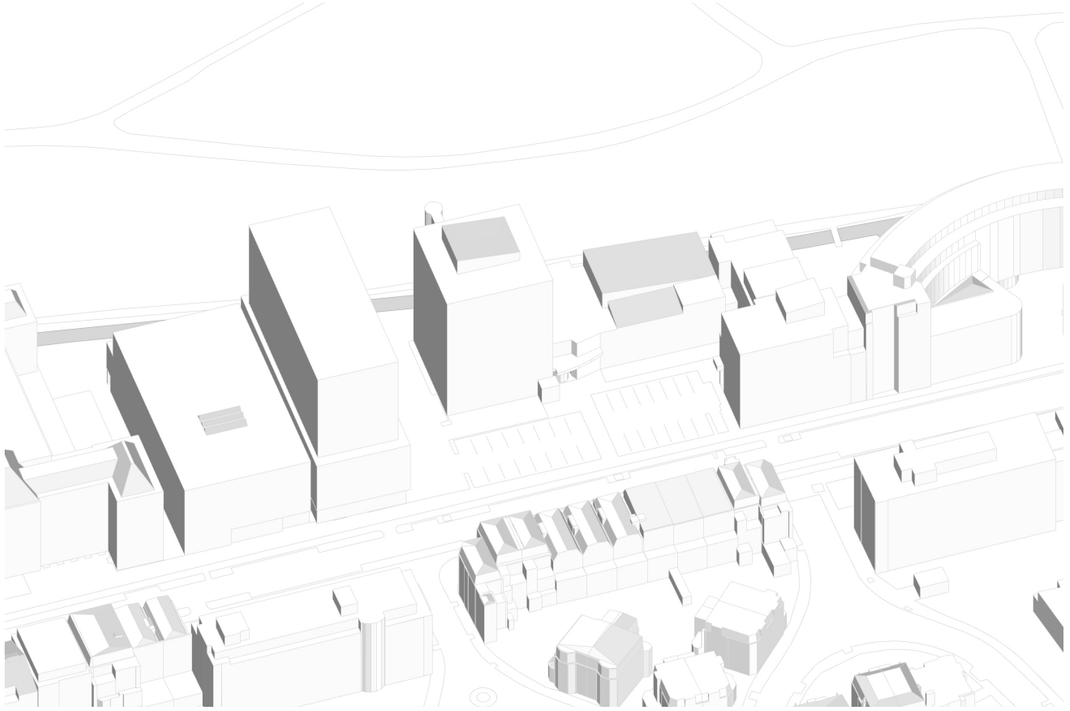
Encouraging social interactions
between different actors in The Hague

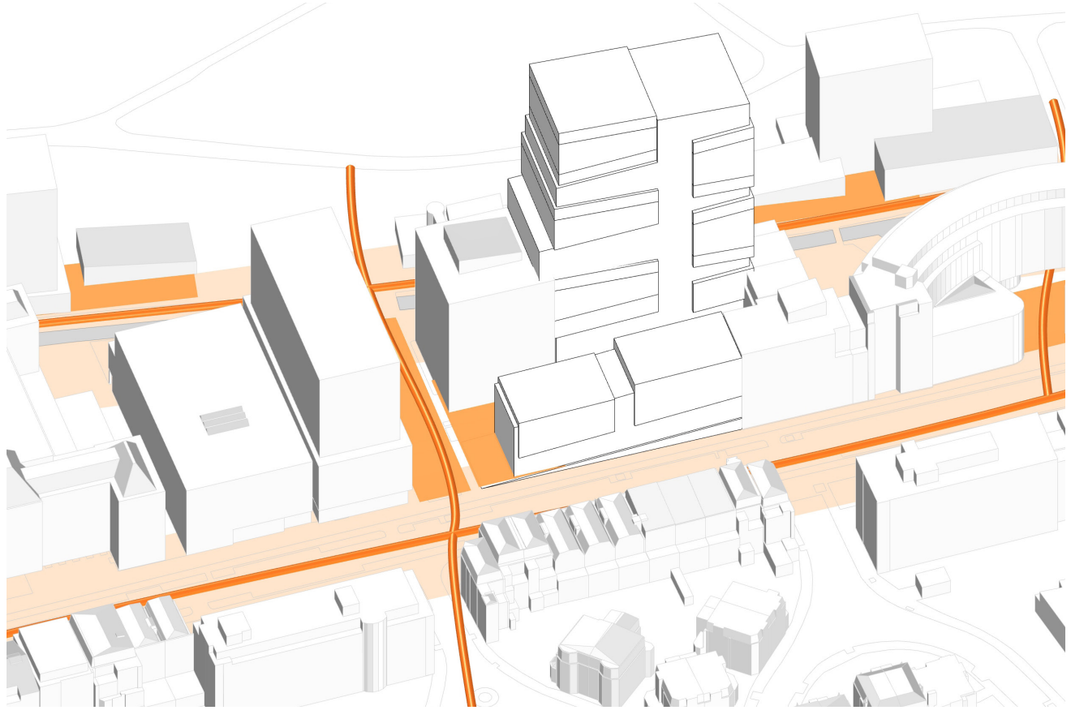
Main question:
How can affordances be used in the design of the Vertical Campus to accommodate for learning environments that offer different levels of interaction?

1. How do affordances and invariants relate to concrete architectural design moves?

2. How are the affordances of Innovative Learning Environments different to traditional learning environments?

3. How does the design of these environments address multiple ways of interaction between different actors?





Park

Public

Collective

Industry

City

Private

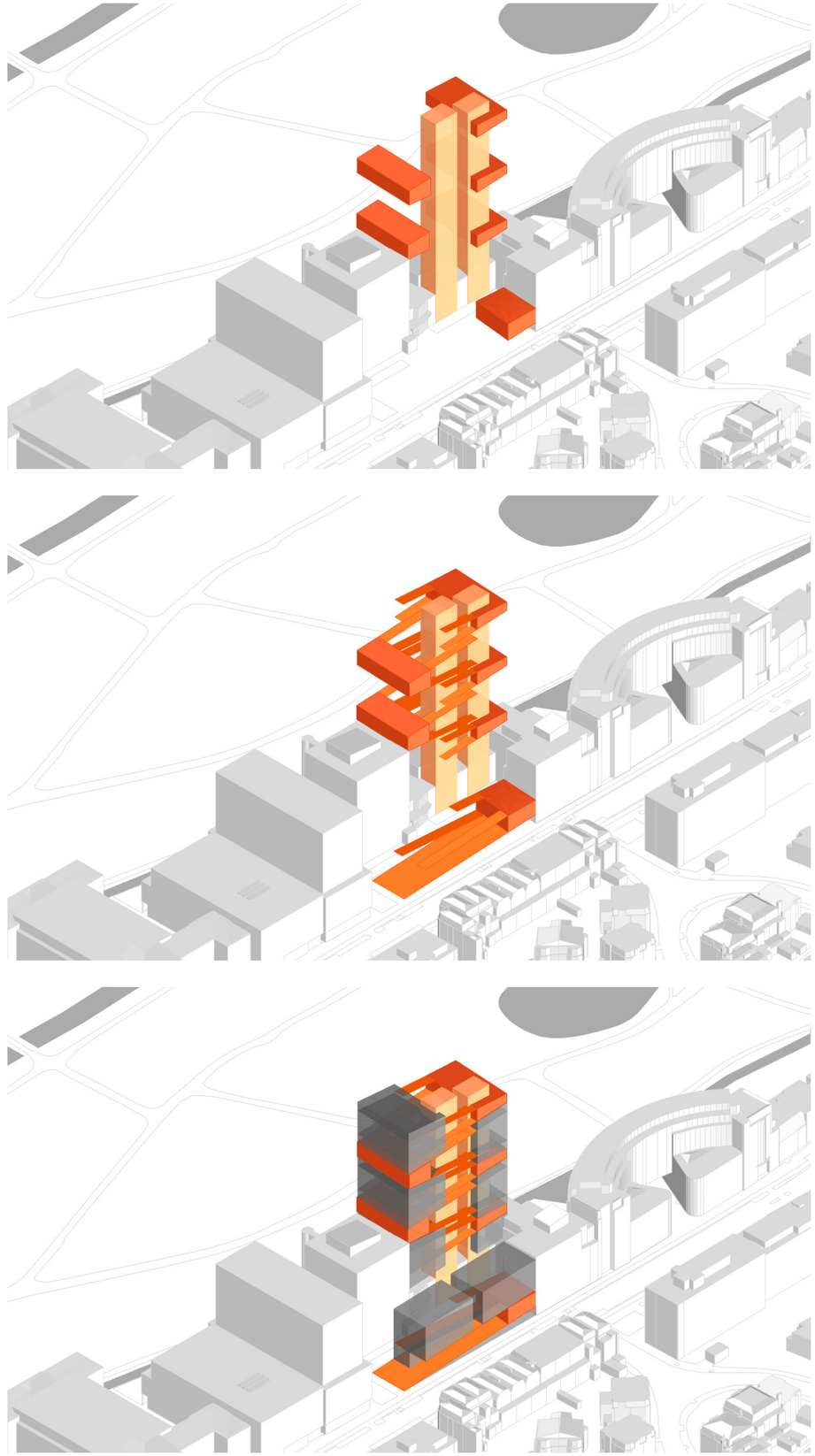
Individual

Student

the Vertical Campus works as an **interface on different levels,** starting from a large scale (between park & city), all the way to the different users of the Vertical Campus.

Integrated Design Proposal
What & Why

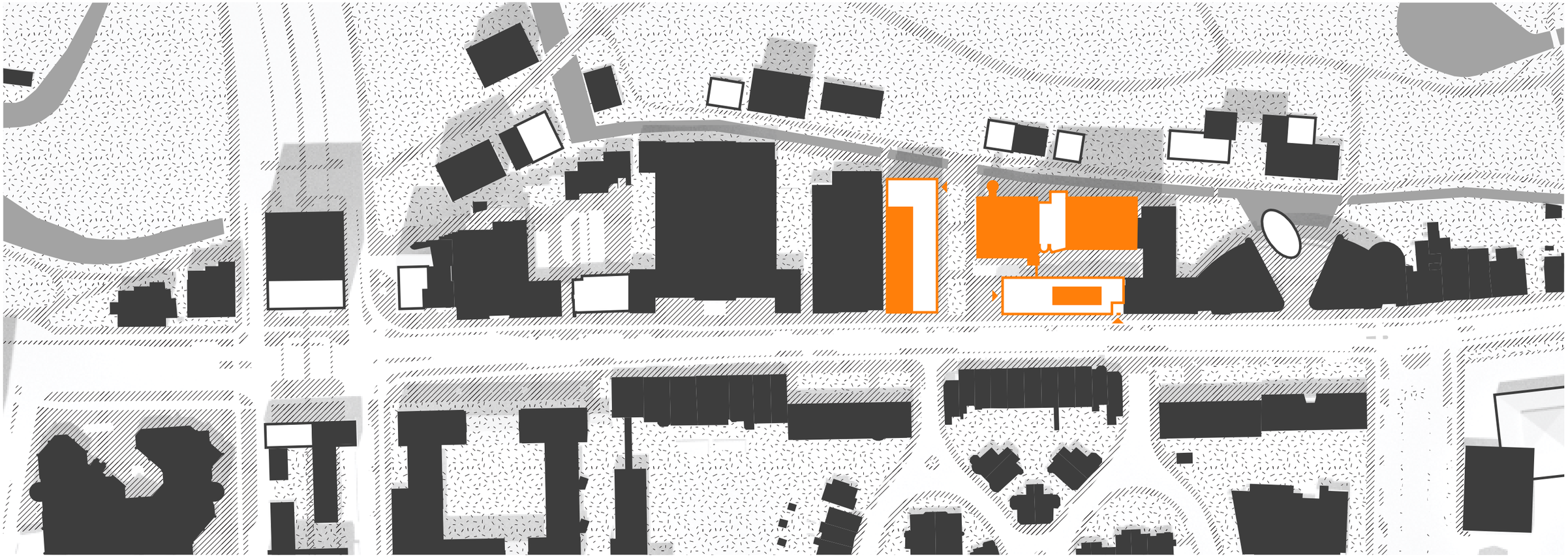
The leisure elements of the program that attract a wider audience are spread throughout the campus. These form the focal points from where ramps and other circulation elements connect to other parts of the campus. Different clusters are created around these key moments, each addressing the context and newly added program in different ways: from the most public learn & discover towards the ground floor towards the more secluded and focused teach & develop on the upper floors.

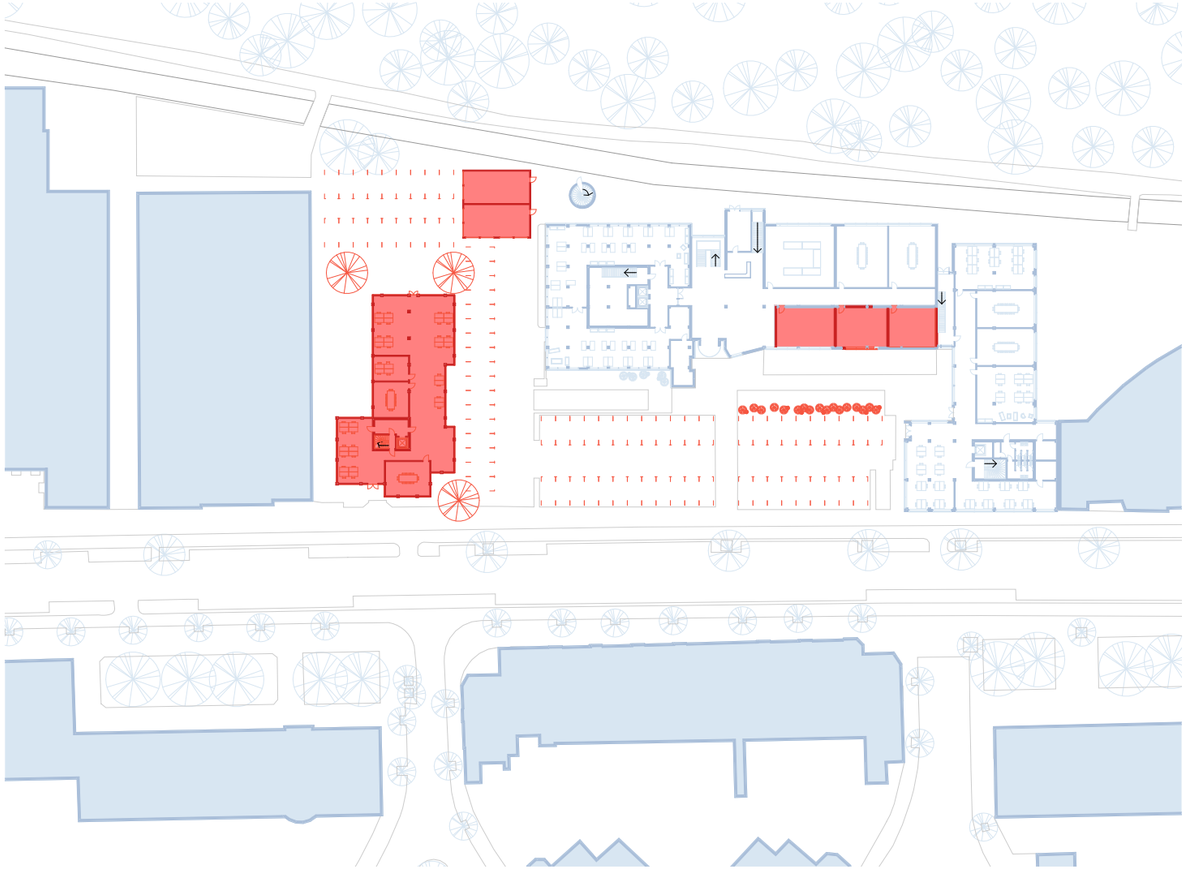


Integrated Design Proposal
What & Why

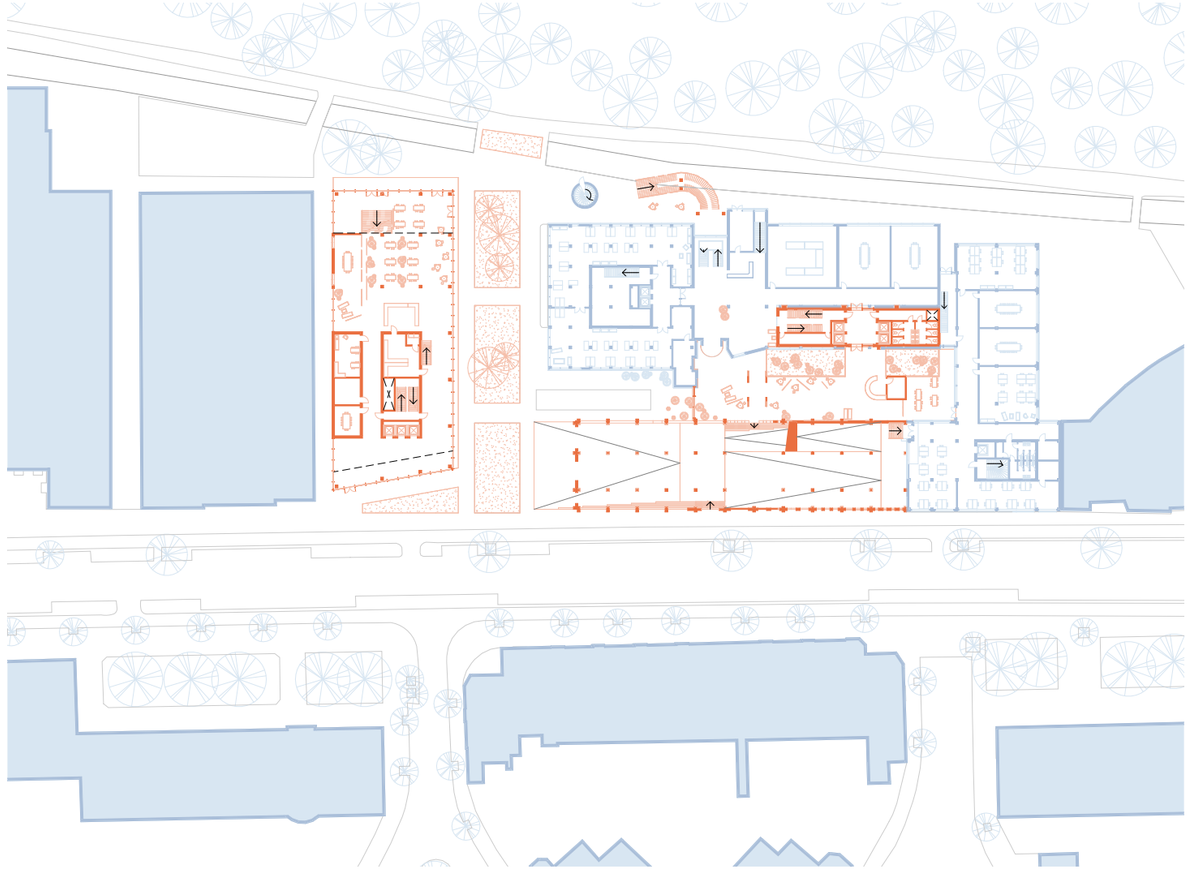
The conference center of SER is partially transformed. The existing reception area is extended into the new urban courtyard where there is currently a parking lot. Part of the building needs to be demolished in order to make way for the structural core of the Vertical Campus.

The existing offices with (non) governmental institutions influence the program of the newly added volumes.

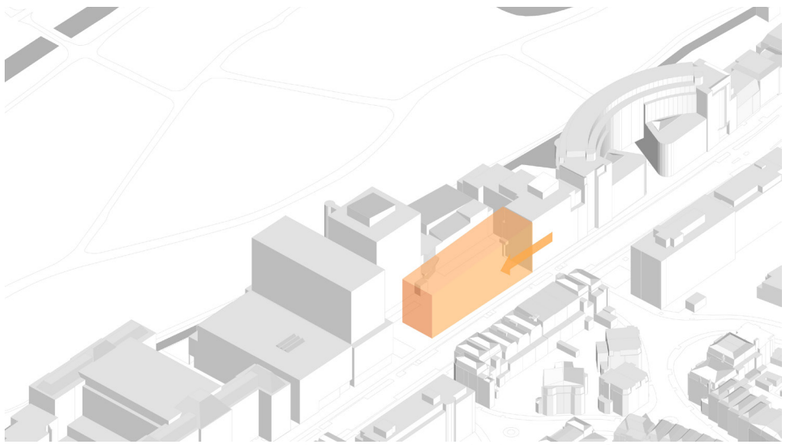




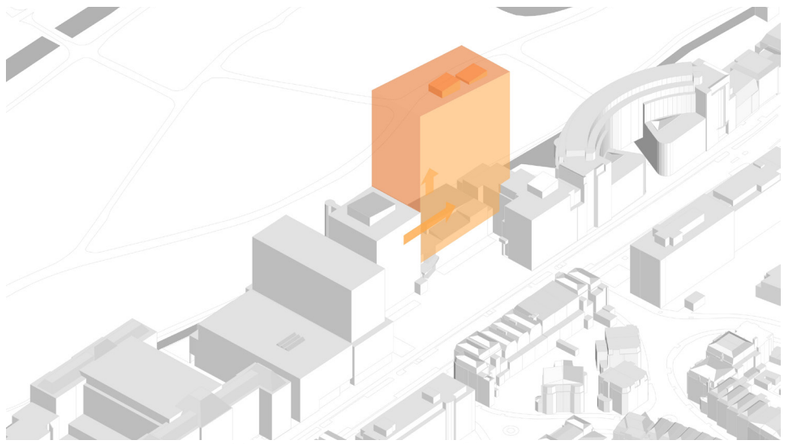
Neighbouring office building & storage unit are demolished, incorporating existing redevelopment plans for a mixed-use building.



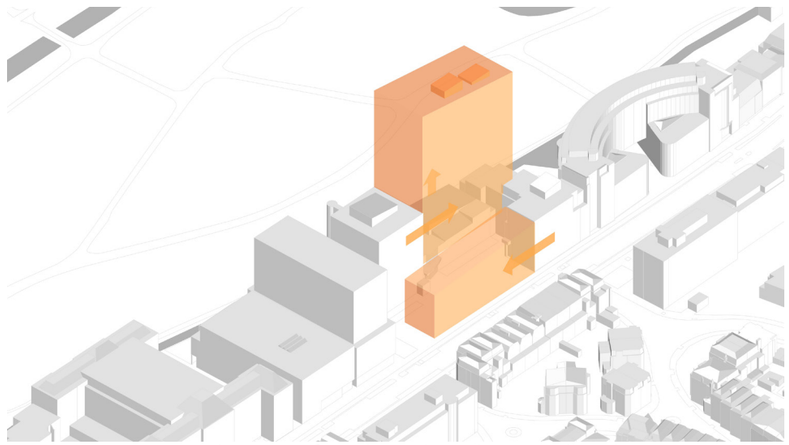
Adjacent offices and conference center are incorporated, transforming the current reception into a ground floor lobby.



Horizontal volume continuing the language of the surrounding buildings

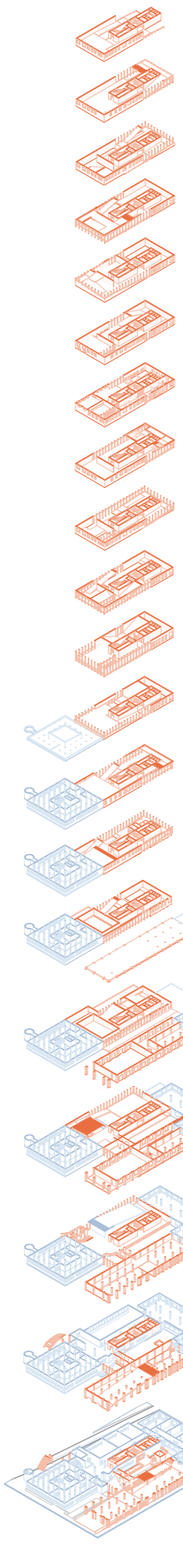


Vertical volume on top of low-rise, enabling densification

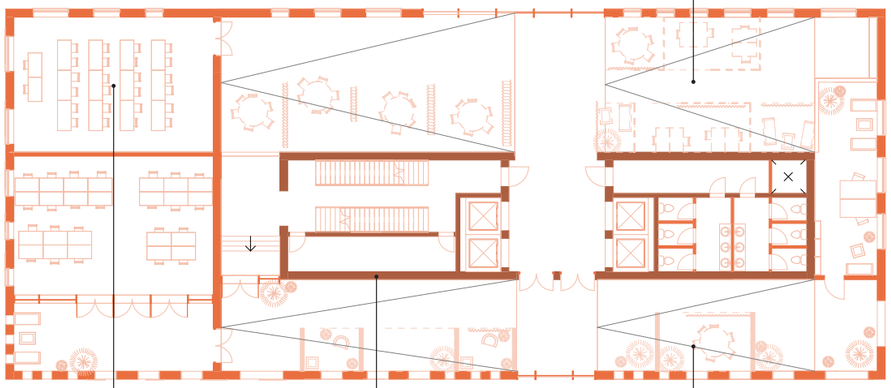


Combination of a pulic podium (horizontal) and the Vertical Campus

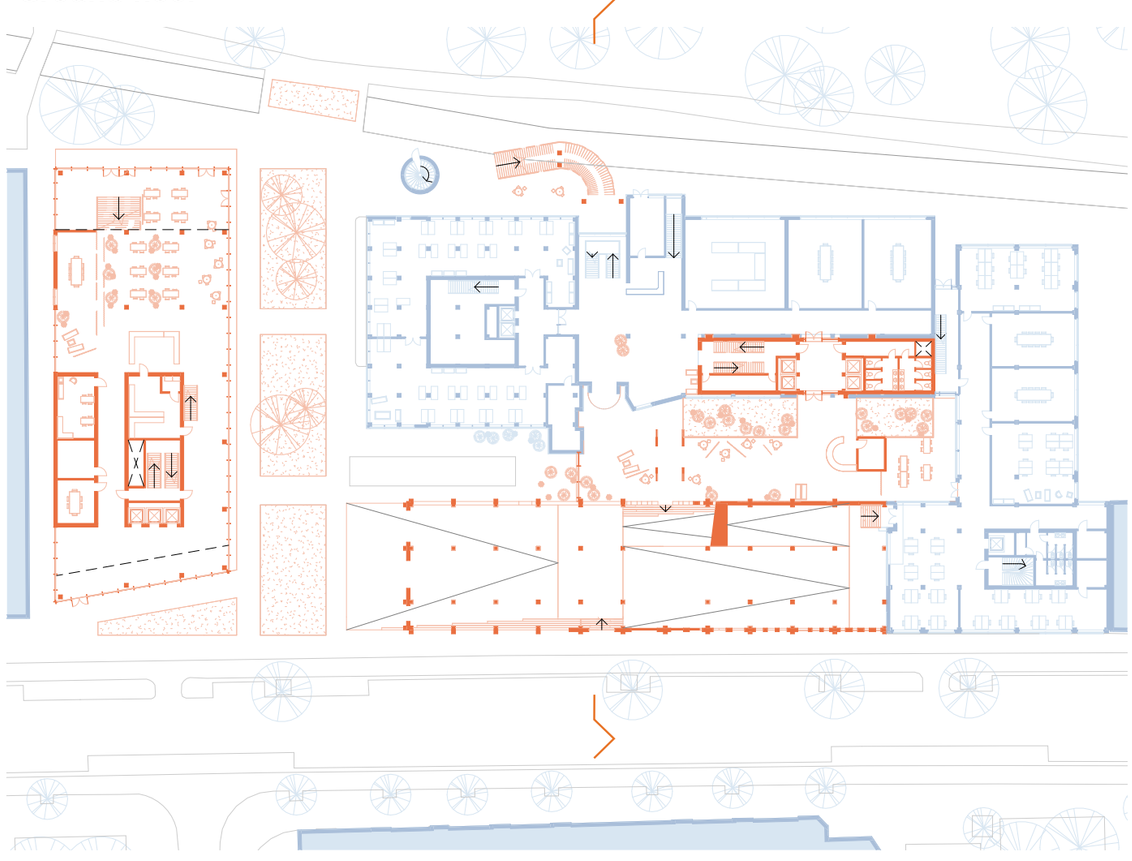
Integrated Design Proposal
What & Why

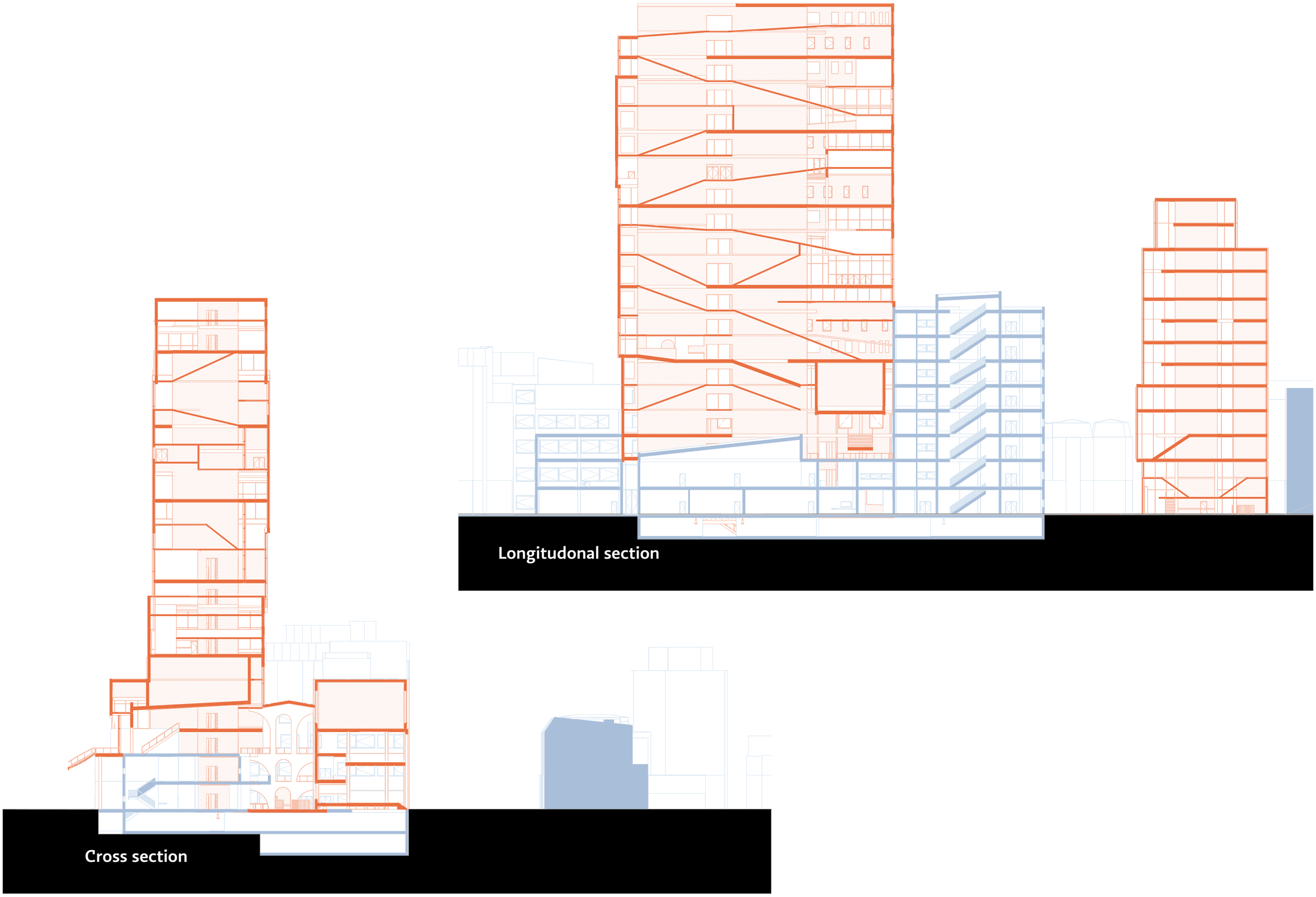


Typical plan
(13th floor)



Ground floor

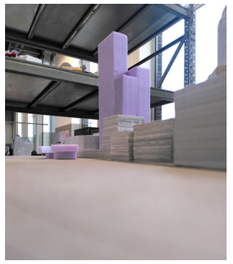



Longitudonal section
Cross section

Massing

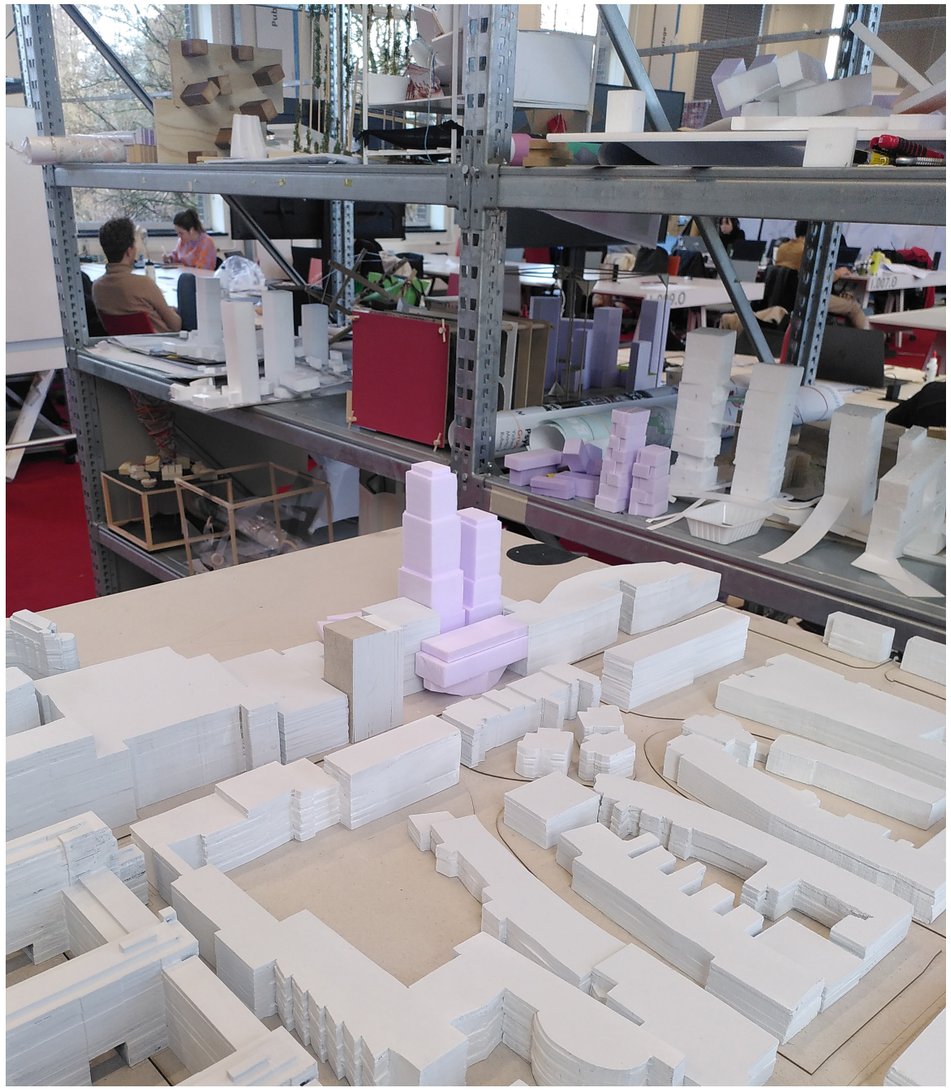
1: that's a high tower

A collection of massing studies done prior to P2.

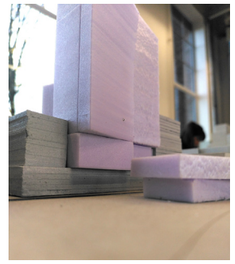
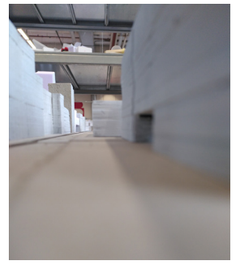


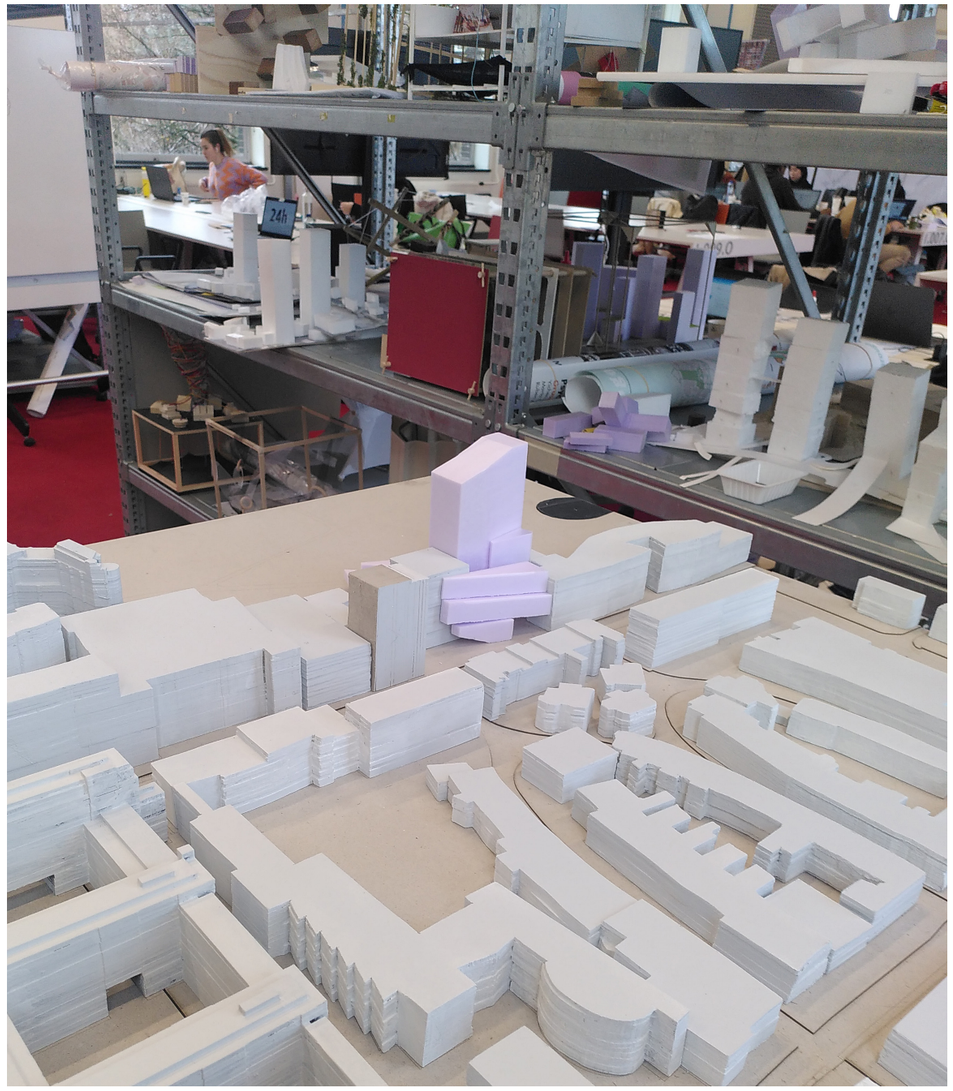
2: blokkendoos

3: the two towers

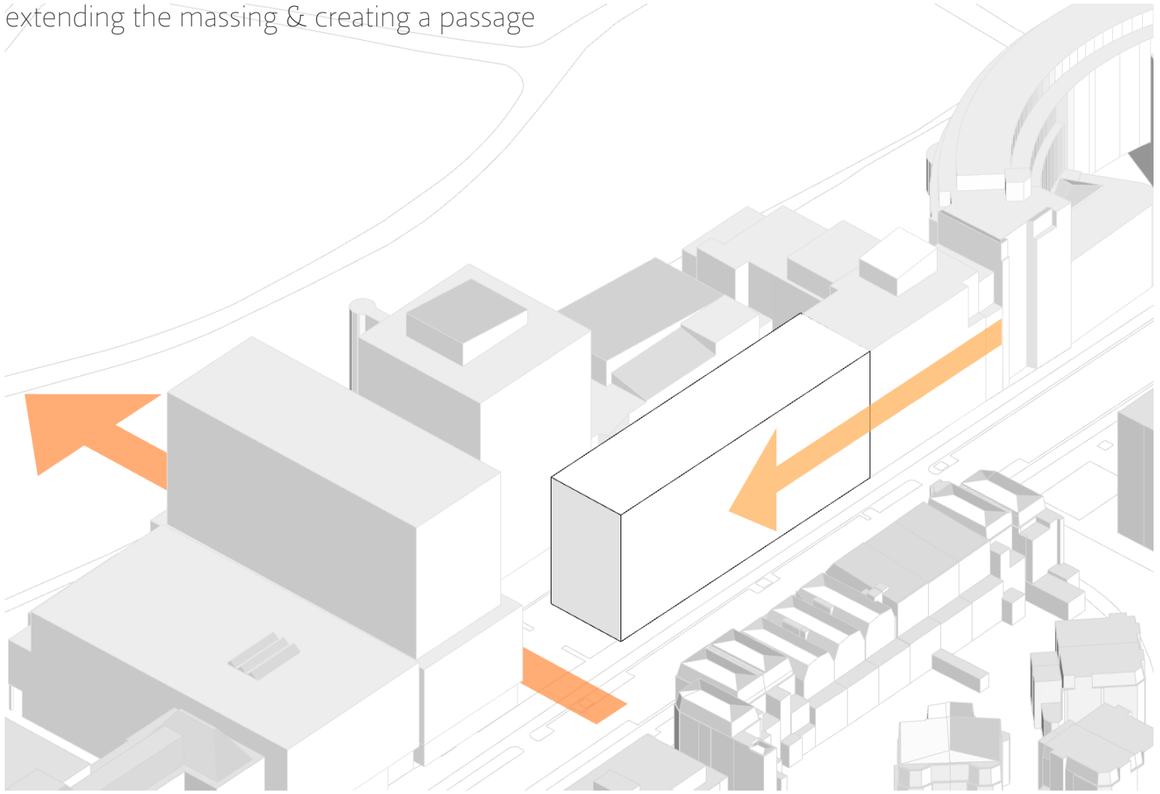


4: SER, but more

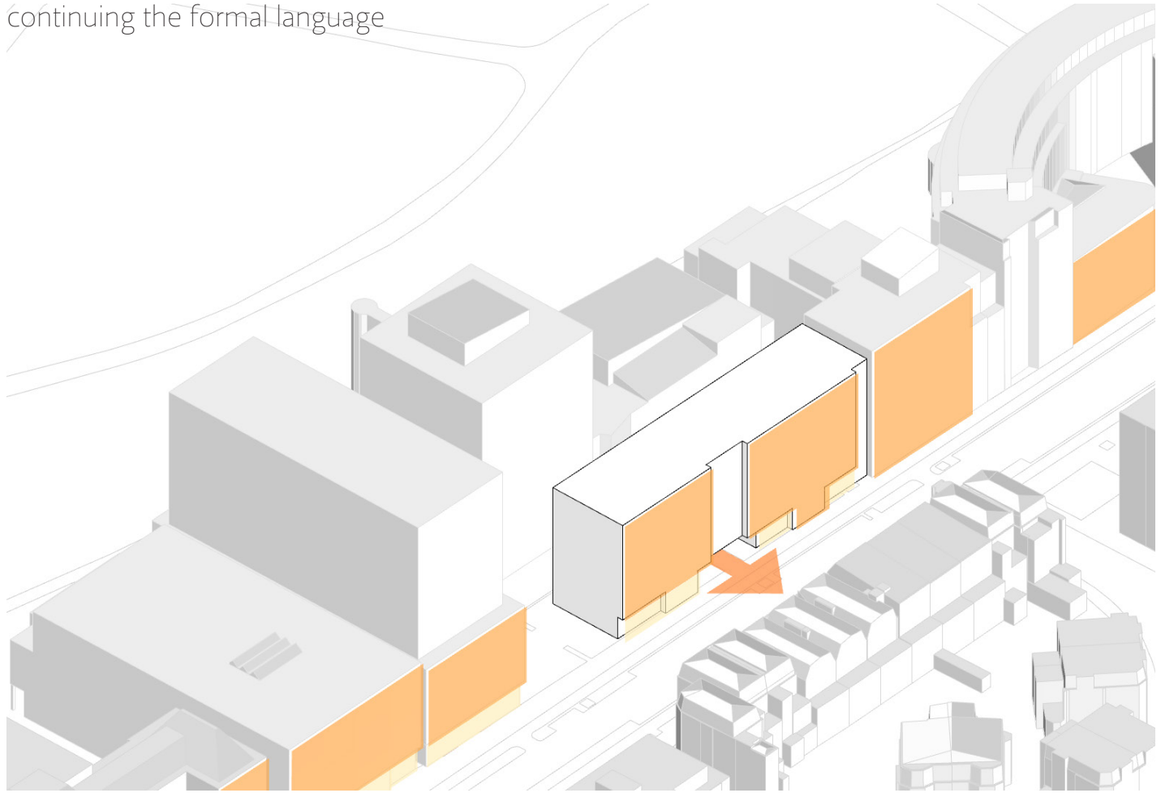





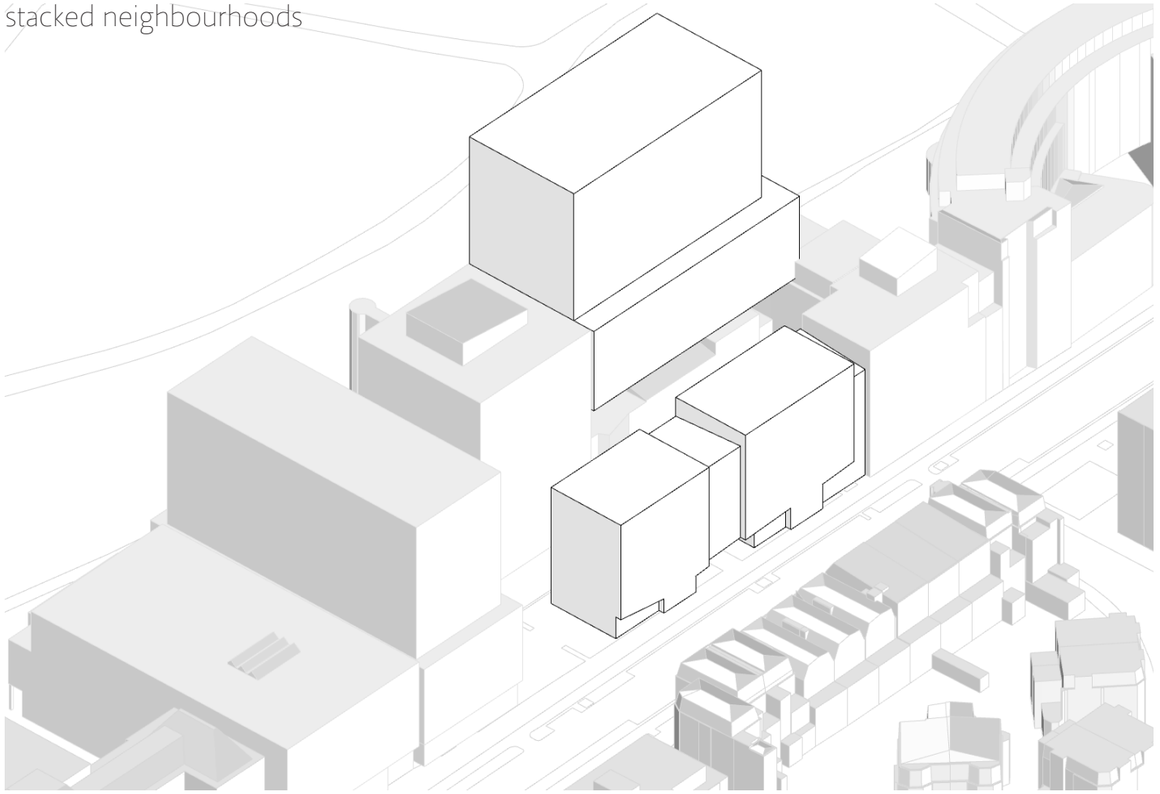
extending the massing & creating a passage

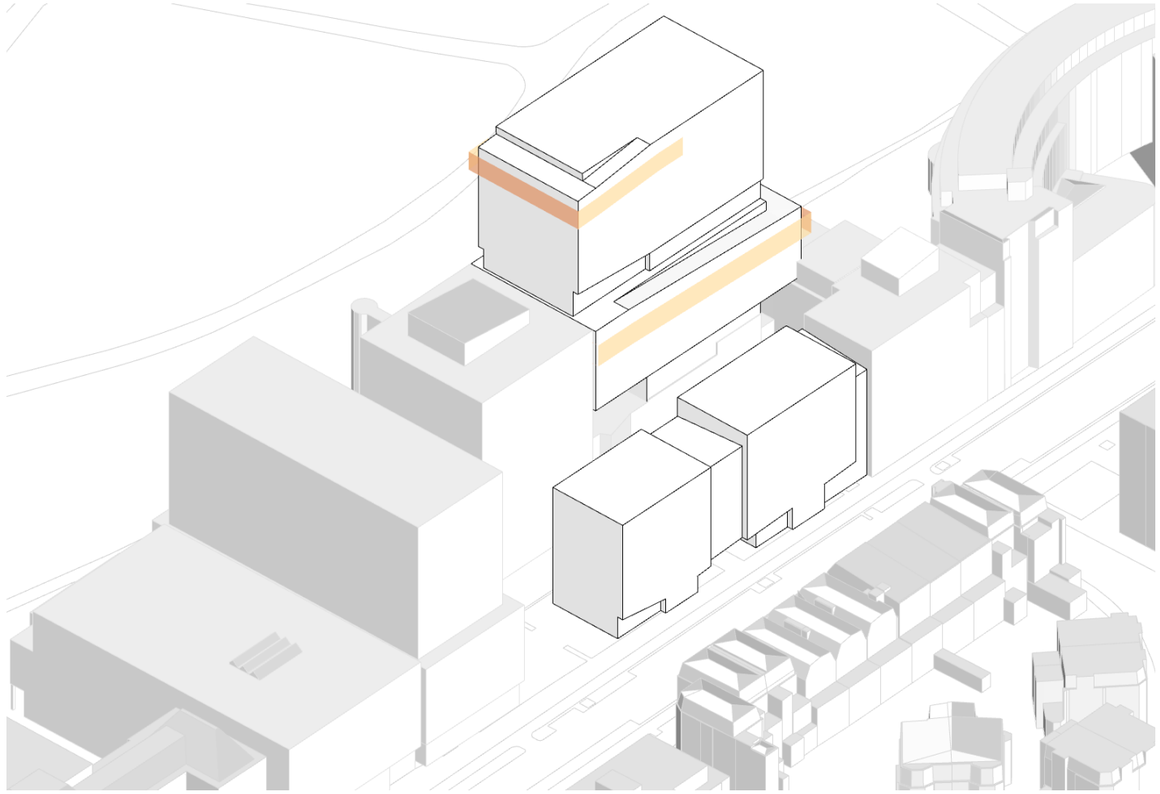


continuing the formal language



stacked neighbourhoods

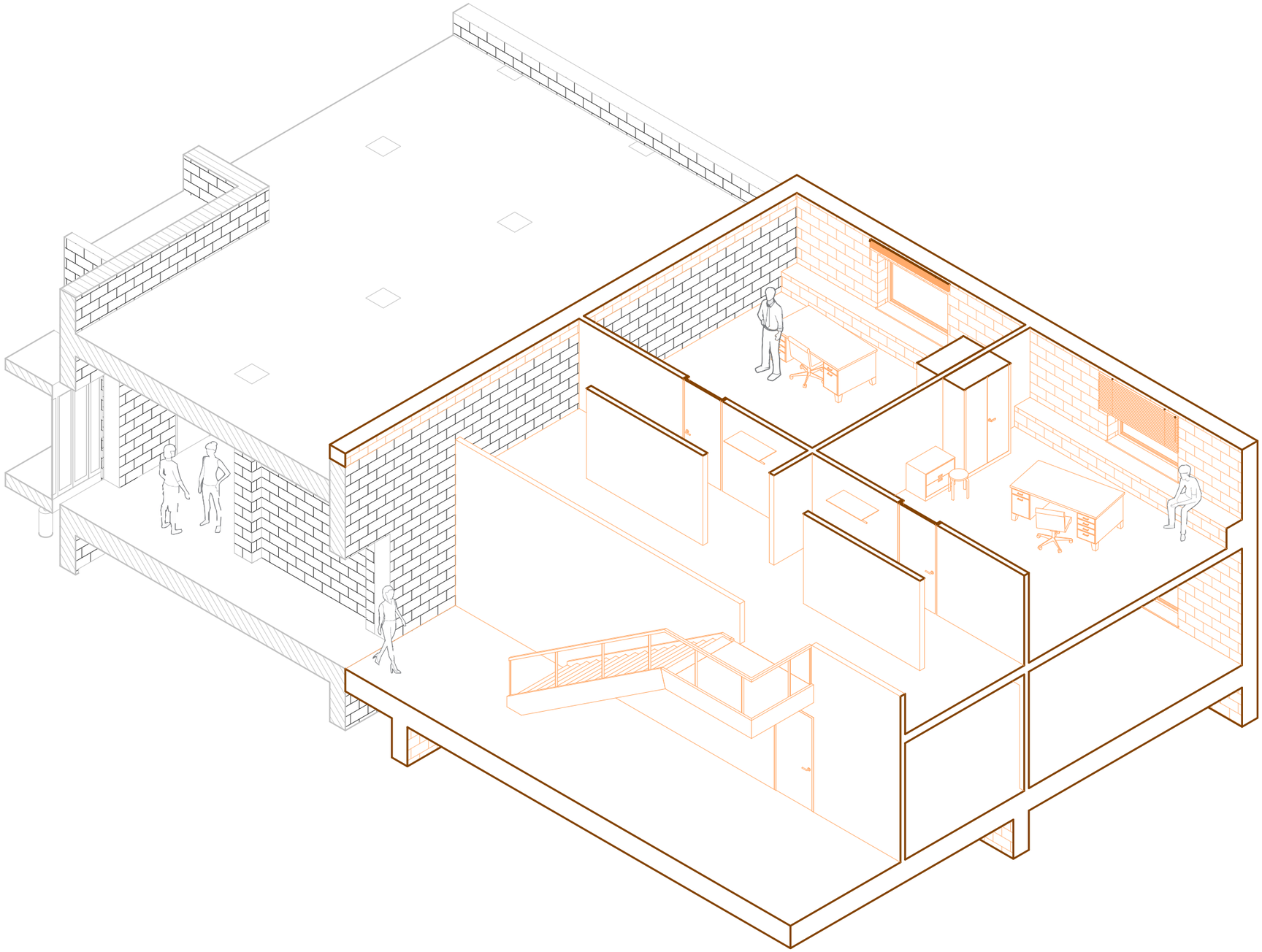




Integrated Design Proposal
What & Why

Different spaces within the Vertical Campus cater to different levels of interaction. There is a need for collaboration in learning environments, but to what degree differs from person to person and the goal in mind.

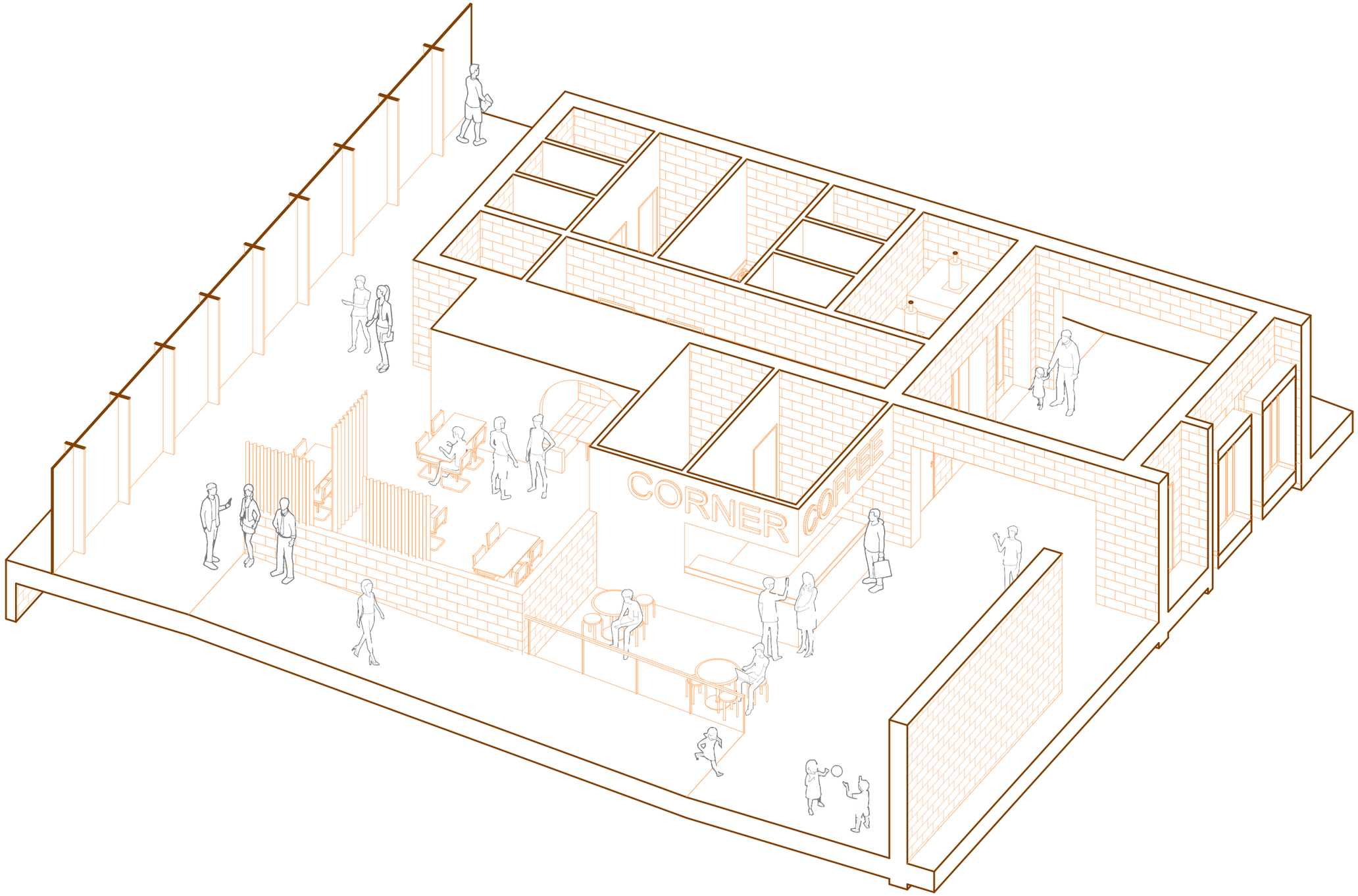
On one side of the spectrum are the secluded research labs/studios. These spaces are meant for a focused, deep study with as little distractions as possible. On the other side are the co-working spaces, situated in the vicinity of entrances and along main circulation routes. These places are optimal for random encounters or planned meetings, for those who prefer a more vibrant learning environment.



smaller, secluded, closed off space; static

less accessible; “hidden” entrance

one opening in the facade, focus on the outside; few distractions



large, open space; vibrant

accessible; part of the circulation

clear orientation, connected with surroundings; many distractions

Integrated Design Proposal
What & Why

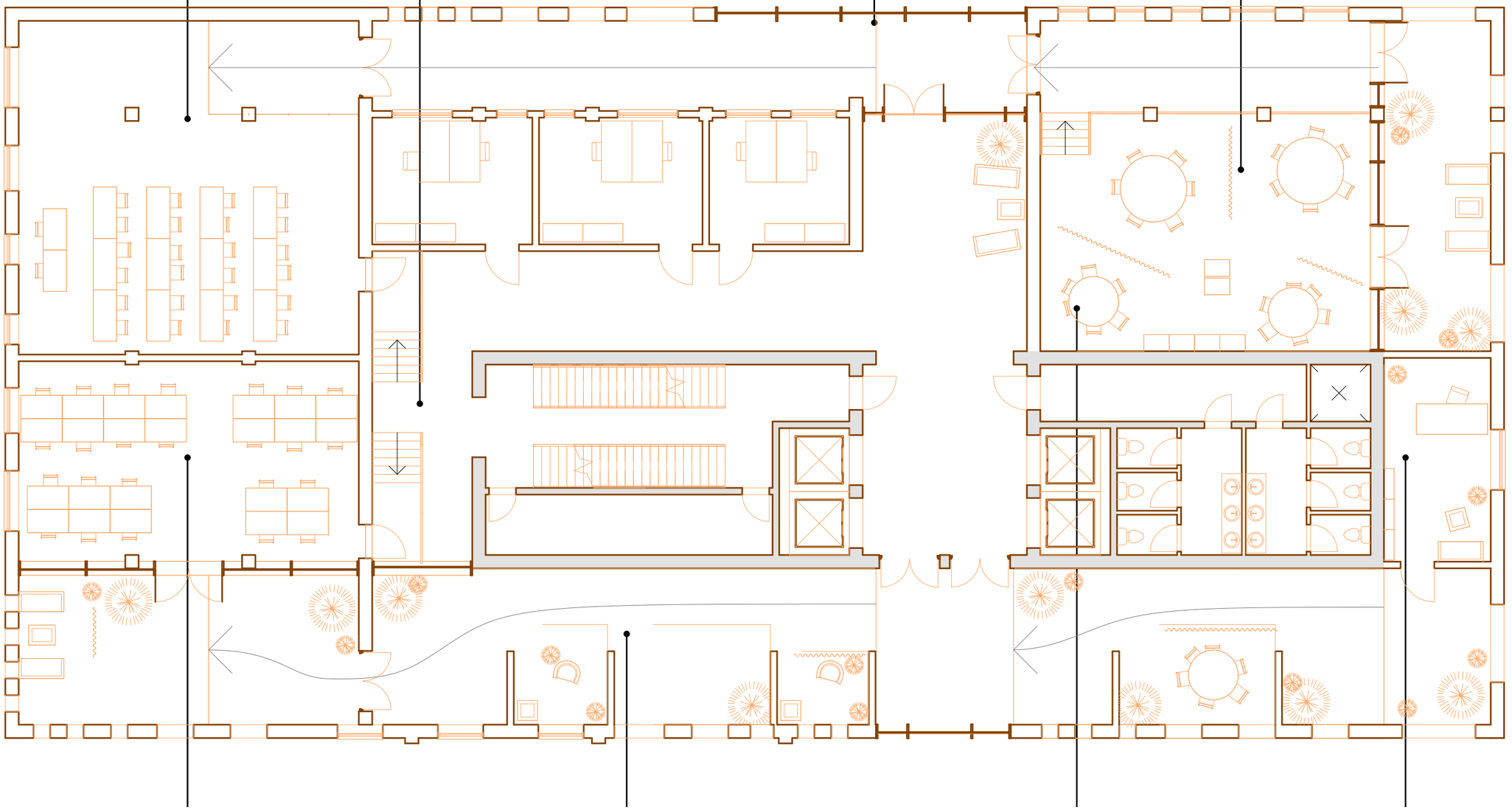
An initial test was made to visualise the facade. The degree in interaction relates to the facade as well. Apart from the open(able) facades around the semi-exterior spaces, the ramps distinguish themselves from the clusters by having a more transparent facade. The size of openings in the facade relate to the level of publicness of the adjacent program.

Timber structure
as infill

Leisurely stroll
or quick shortcut

Variety in openings;
open/closed

Flexible dividers



"traditional"
classrooms

semi-exterior
co-working spaces

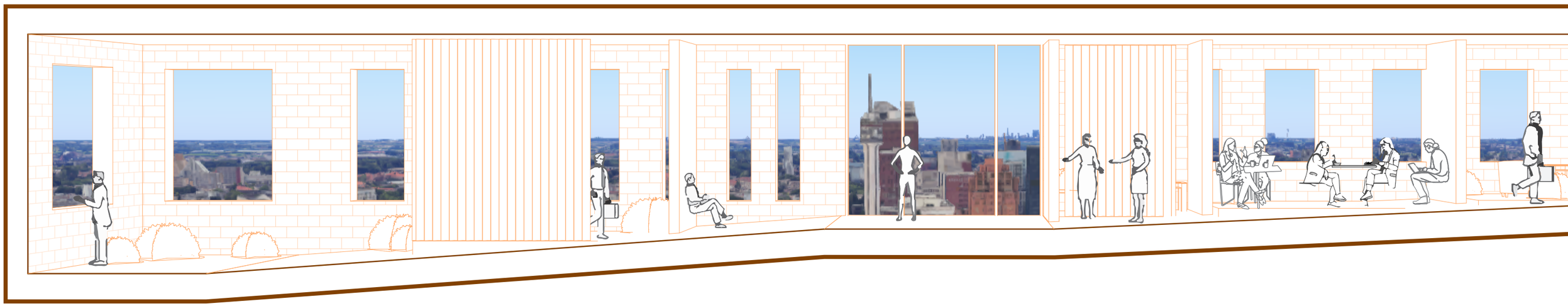
Innovative learning
environments

Secluded
research lab

Integrated Design Proposal
How

The project relates to multiplicity and hybridity by playing into the different degrees of interaction required for learning environments. They should afford different ways to interact with both the environment itself as well as other users, which can change from person to person and throughout time; educational trends are bound to change and therefore more knowledge and awareness is required on how the affordances of learning environments become apparent to the user.

Another way the proposal addresses resilience and sustainability is by means of its structure and sustainability concept. The Vertical Campus is achieved by vertically stacking clusters, making use of a steel superstructure with a timber infill. Furthermore, the flexibility of certain elements such as dividers allows for the campus to adapt to different needs.

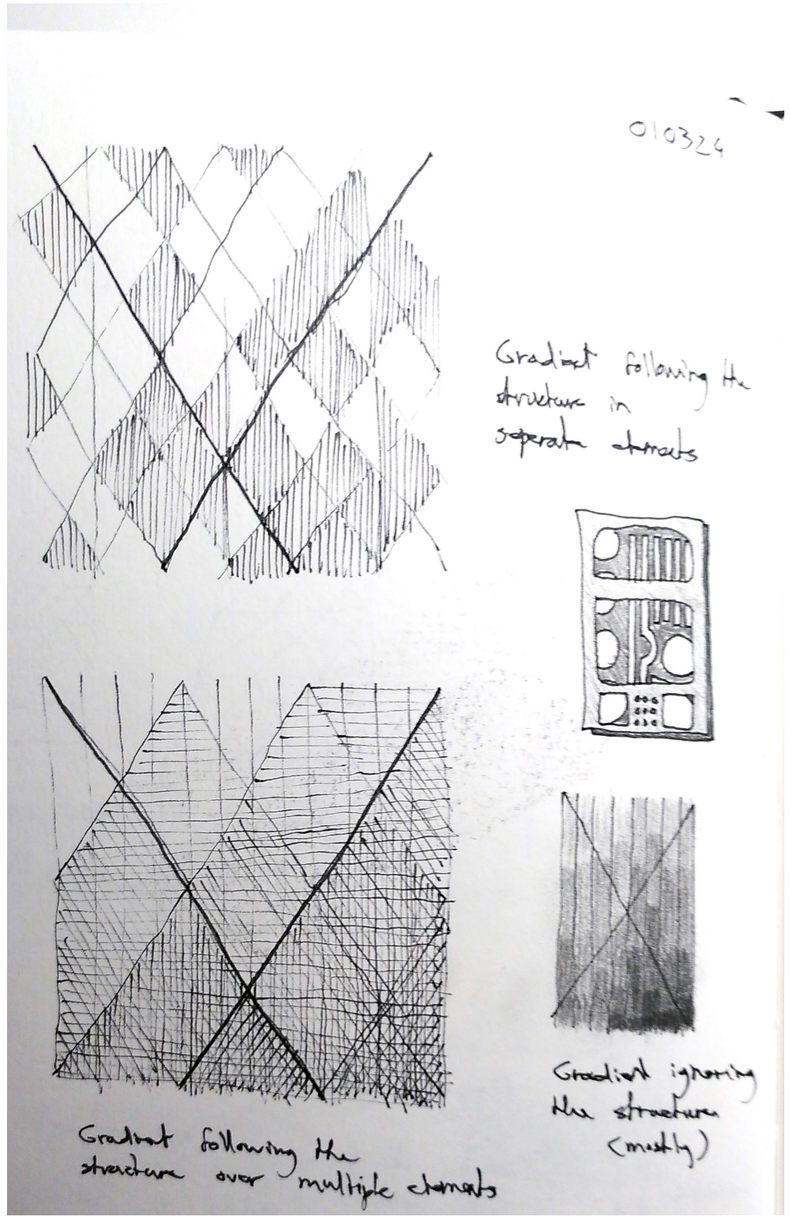


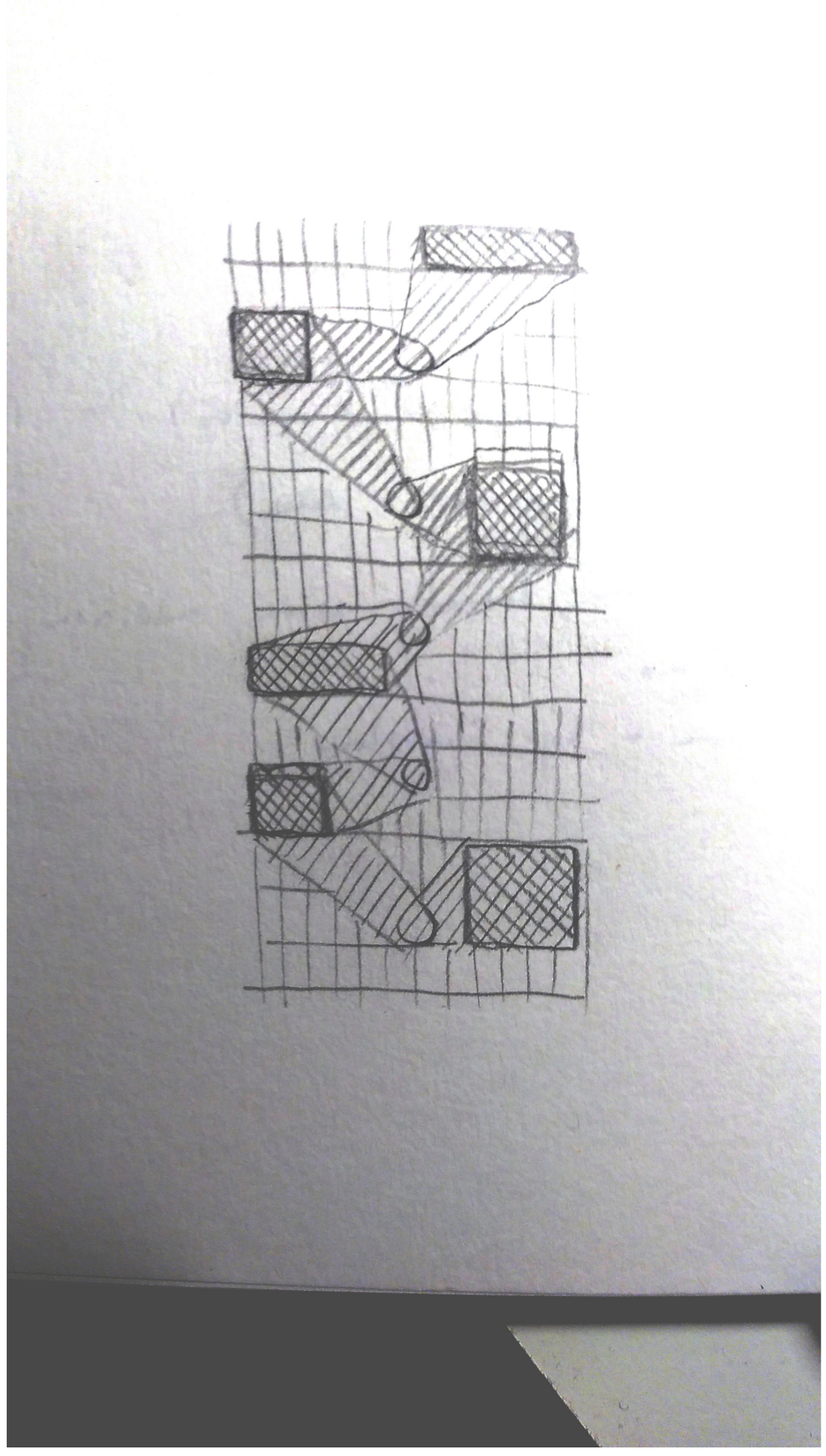
Post-P2 developments
Restructured strategies

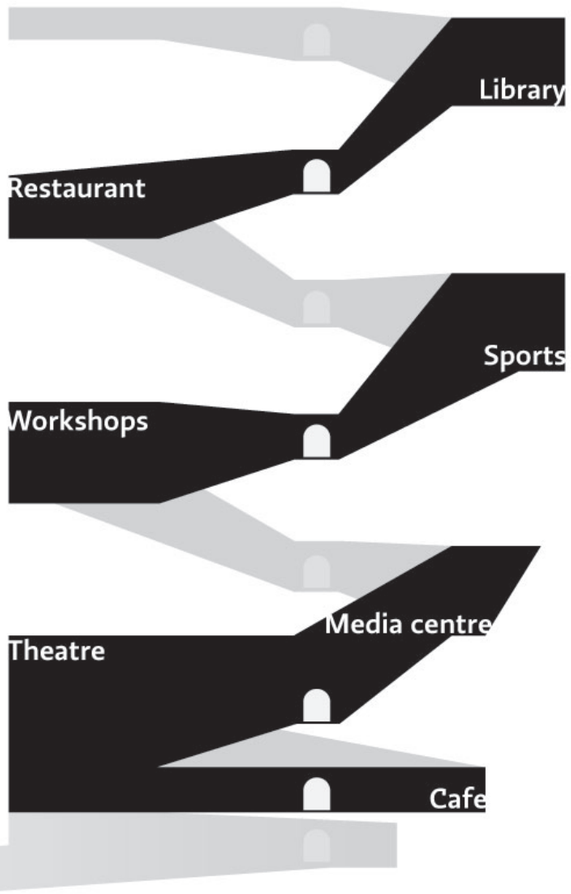
Apart from the retake in which the drawings were restructured, I focused on making my strategies more clear. The previous diagrams that showed the formal evolution worked, but the distribution of the program and circulation diagram were too confusing.

The result is a public backbone that clearly connects the different elements of leisure within the vertical campus.

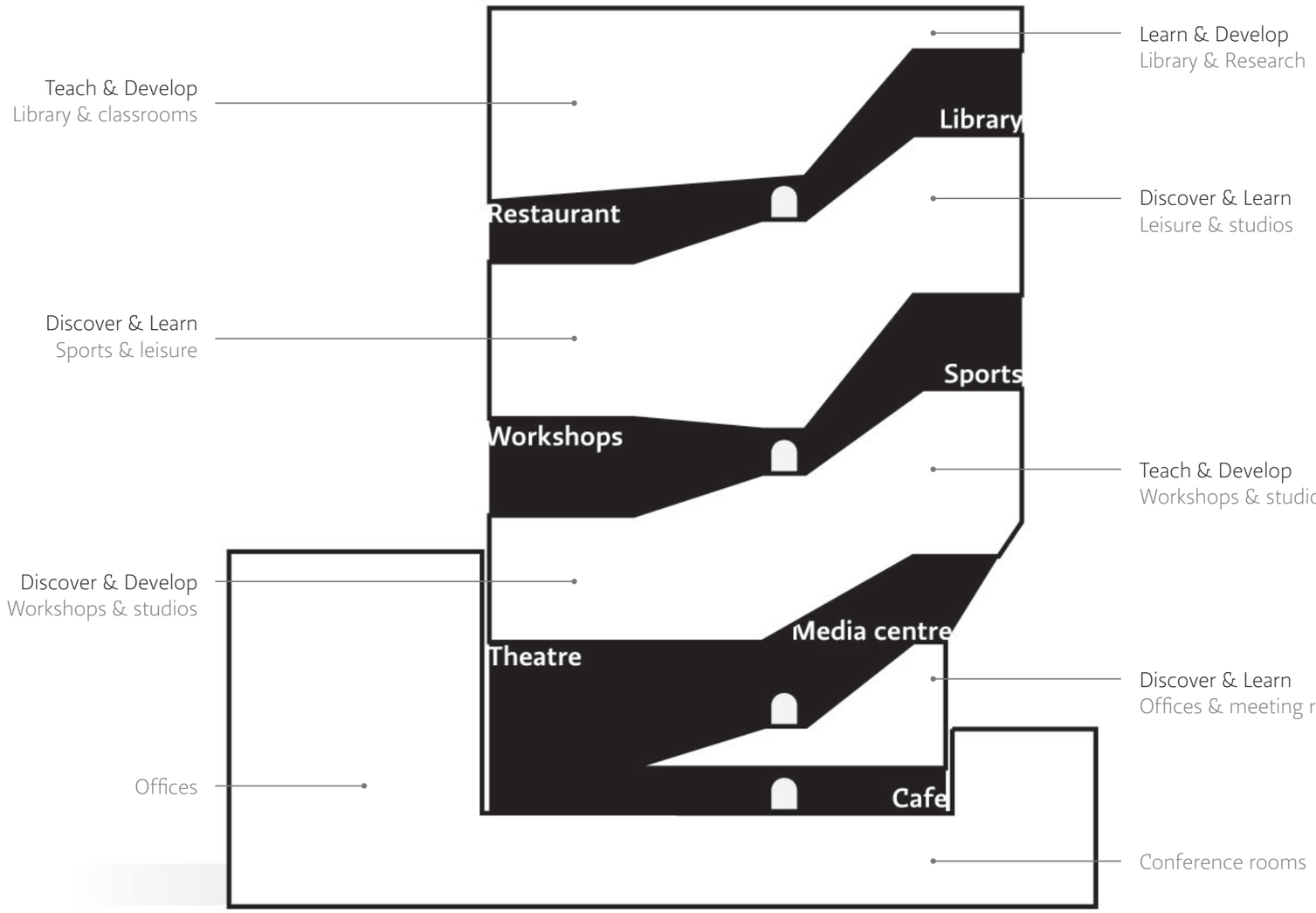
This backbone serves as a collective circulation space, connecting the public parts of the leisure program by means of squares, ramps, stairs, terraces and streets. This starts from the new axis connecting the city and park, from the ground floor all the way through the Vertical Campus.
The spaces in between the public backbone form different clusters referring to different educational parts of the program.







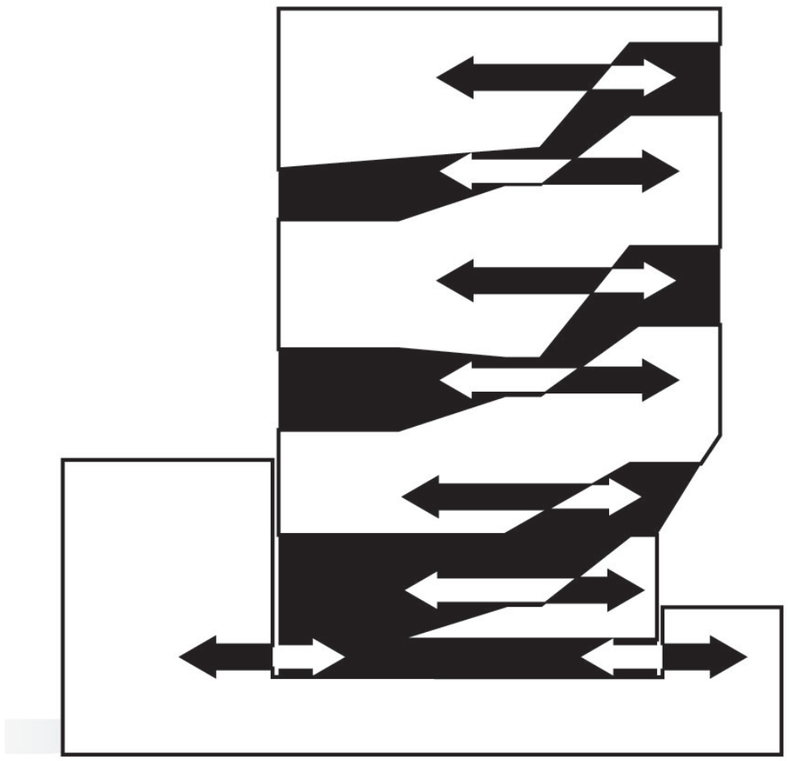
Connecting the different elements of the program by means of a common circulation space with a flexible infill

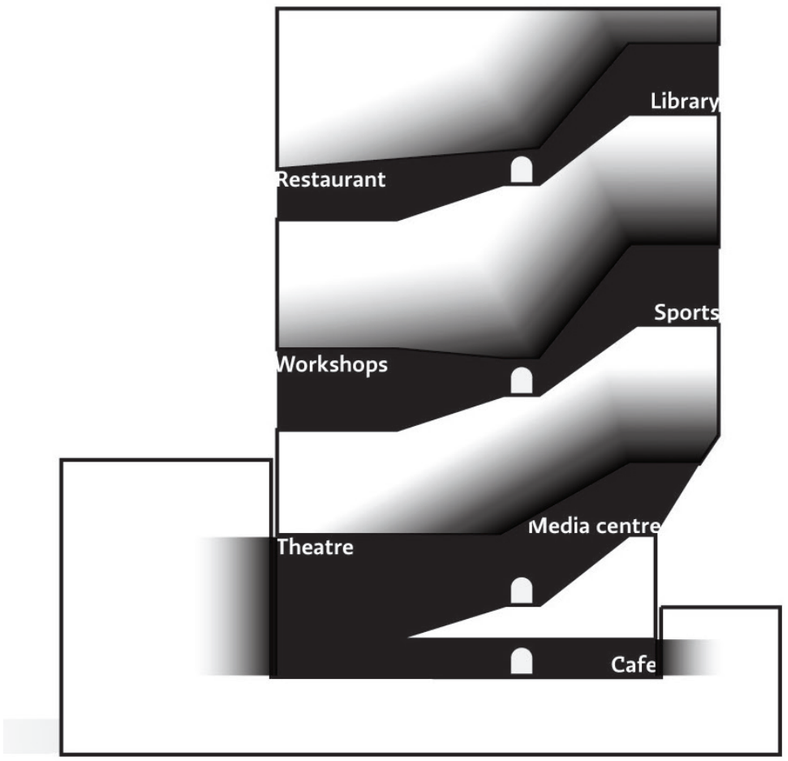


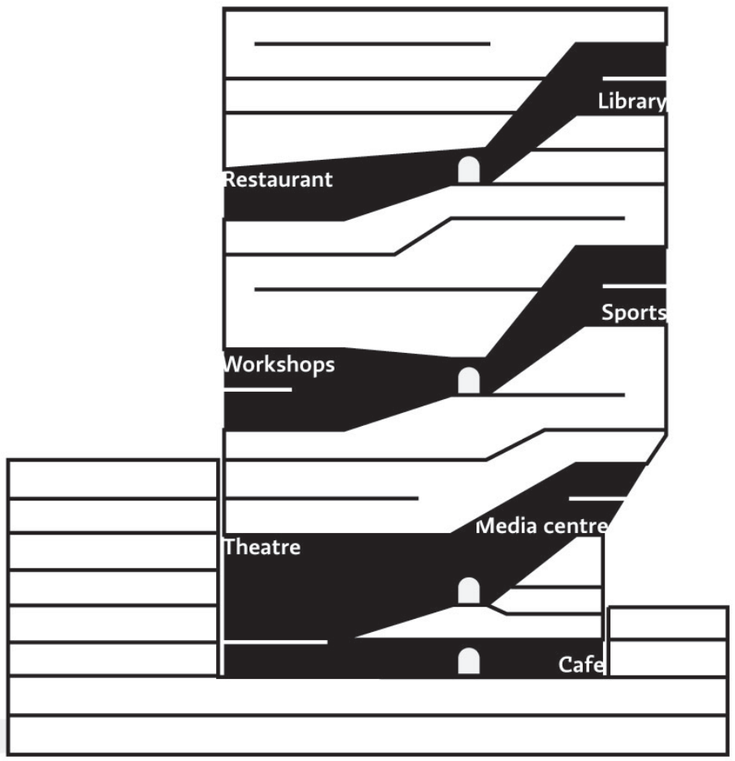
Program: use of the clusters is influenced by the functions of the adjacent public space (and vice versa).

Public/private: spaces closer to the public backbone are more accessible, further away = more private.

Floor height: varying from regular (3,6m), medium (5,5m) and large (7,5m).



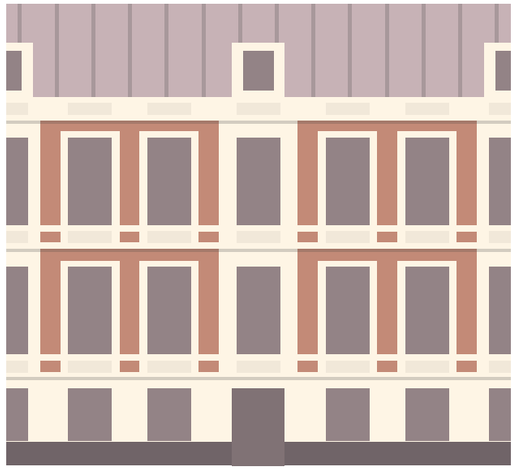


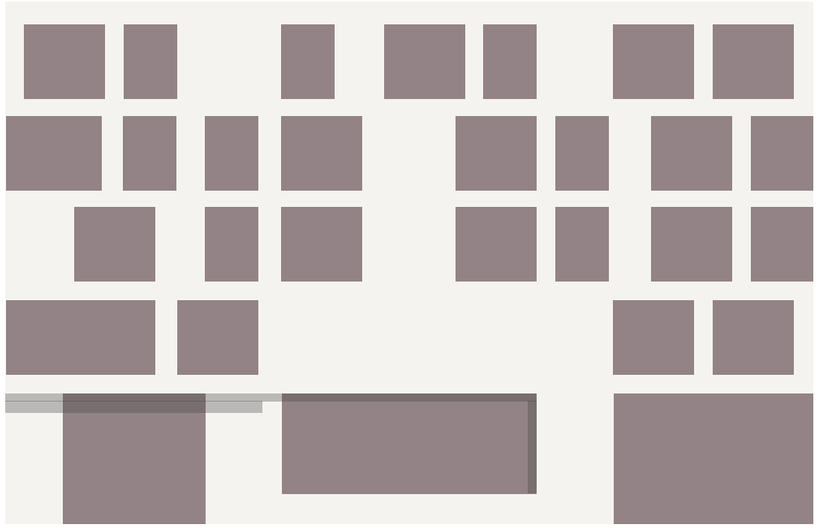


Facade studies

Surrounding facades were compared and an attempt was made to abstract these facades to two types: traditional and contemporary. However, the surrounding facades have a degree of diversity that makes it hard to draw a clear line.

The Vertical campus is to be an addition that stands out in this patchwork, displaying the continuation of the urban fabric within the public backbone.





PBL, Bezuidenhoutseweg 30

Office buildings, Bezuidenhoutseweg 151 & 131

Offices & dwellings, Bezuidenhoutseweg 117-125

Highschool, Bezuidenhoutseweg 40

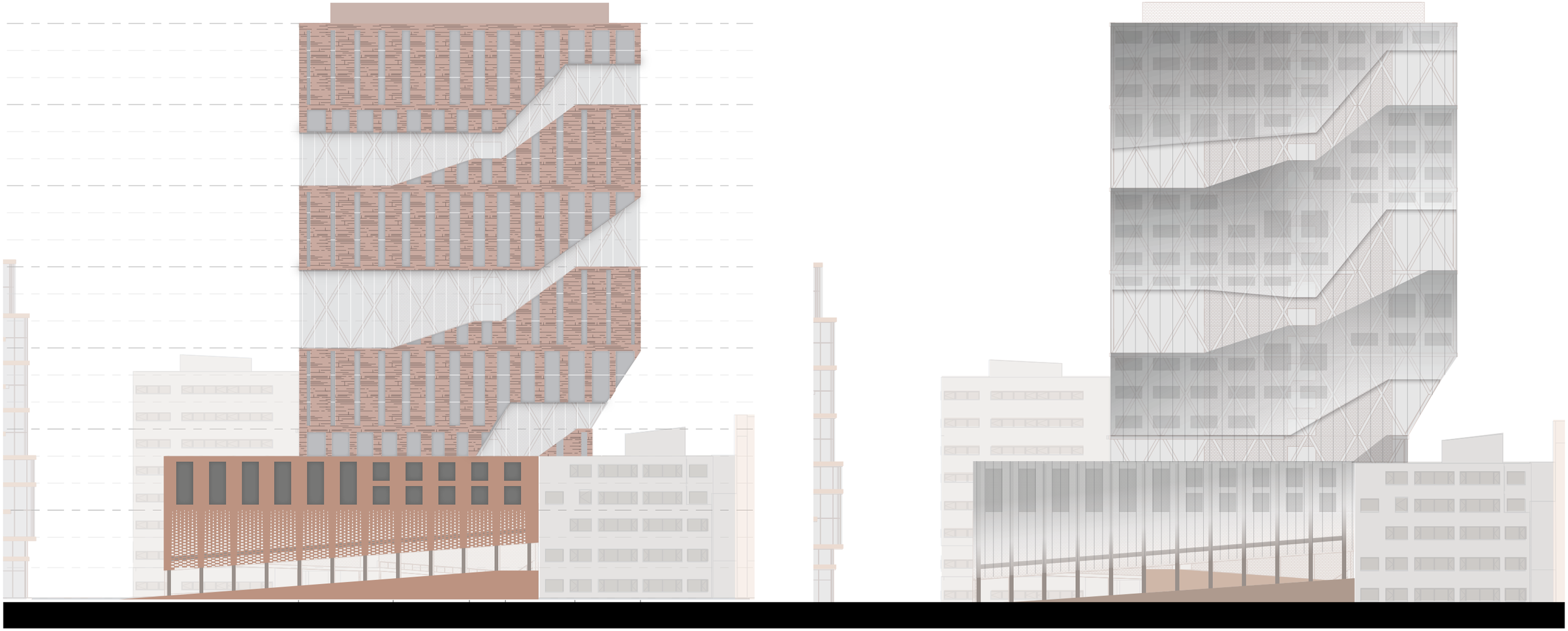
Office building, Bezuidenhoutseweg 105

Office building, Bezuidenhoutseweg 62

Initial tests of the south facade.

Visibility of the public backbone (open/transparent) turning around the Vertical Campus and how it relates to the clusters (opaque). Working towards a gradient within the clusters that shows the level of publicness (the further away from the backbone, the more private).

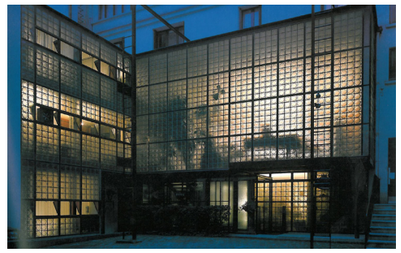
Simultaneously testing the dynamic between horizontal & vertical: a stereotomic base with a tectonic tower. The backbone is carved out of the podium, integrating with the existing urban fabric, while the tower is an assembly that clearly shows the movement of the backbone.

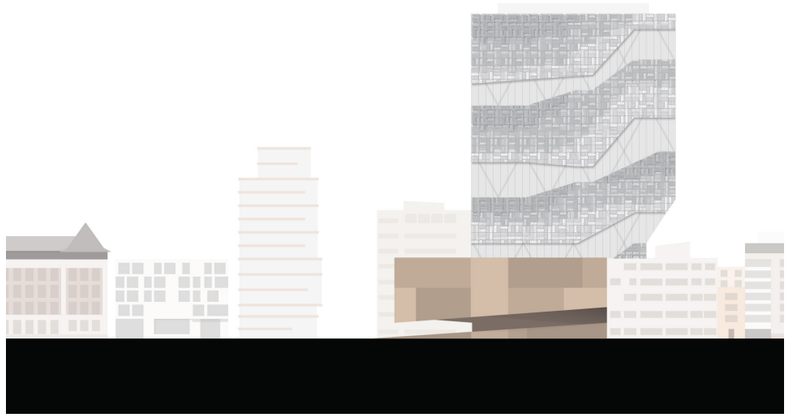


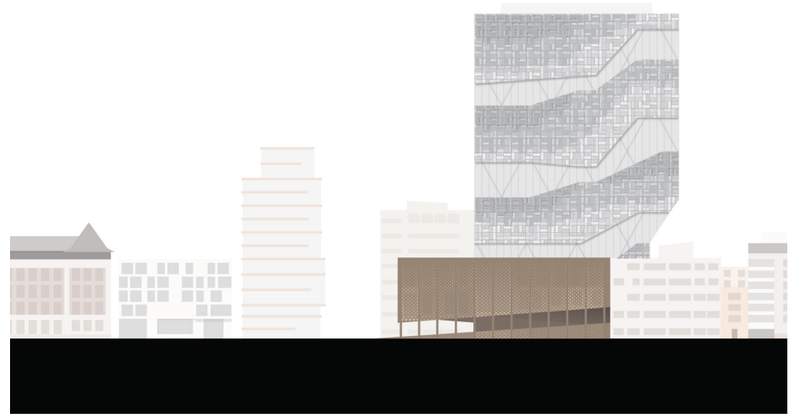
Further experimentation focused on the specific materials used in the facades. The main material are reused contour panels, a waste product from local manufacturing industries found on Harvestmap.

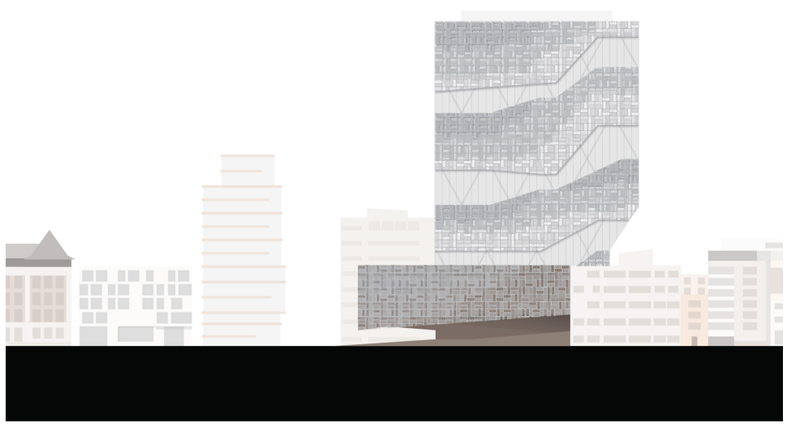
While the previous option (polycarbonate panels) did achieve aesthetic goals, it did not fit into the sustainability framework of "making use of what's already there". Despite several claims that these panels can be recycled, the panels are not durable enough since they will eventually turn yellow due to exposure to the sun.

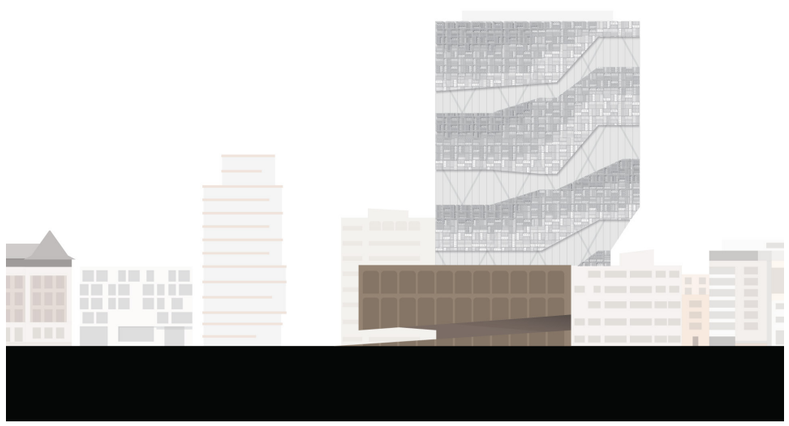
The focus for the horizontal podium was on stonelike materials, referring to the use of brick, the solid base for the tower and reinforcing the idea of the backbone ruthlessly cutting through.

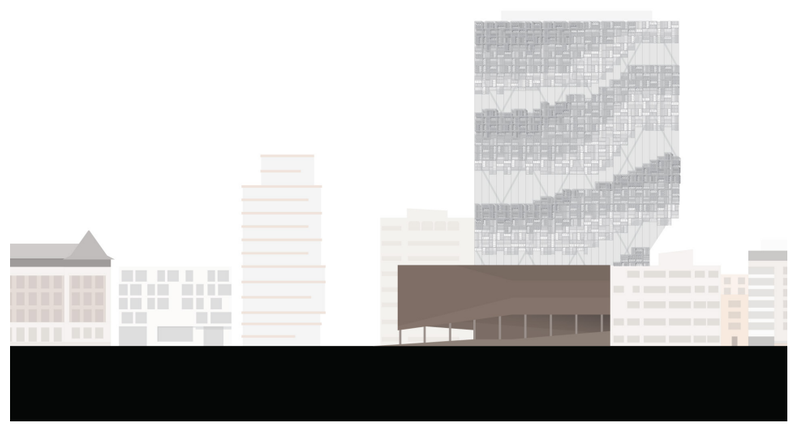






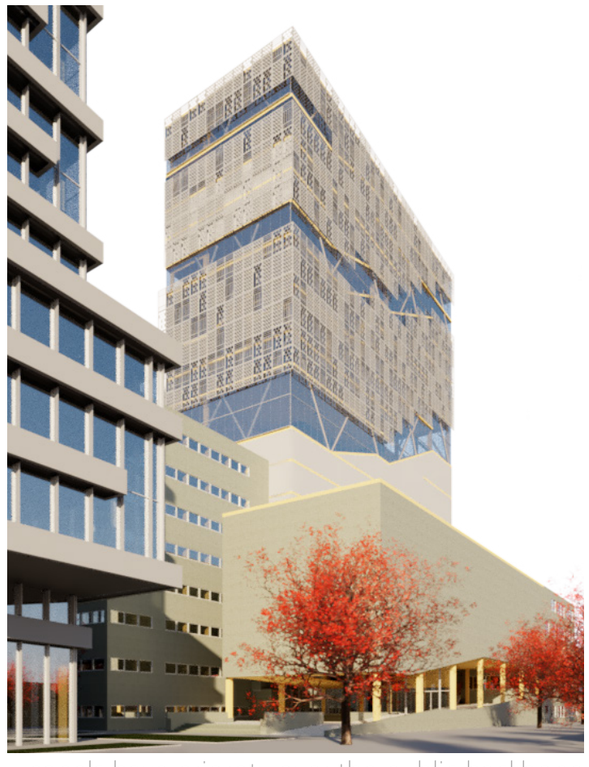






stereotomic vs tectonic

continuous shell



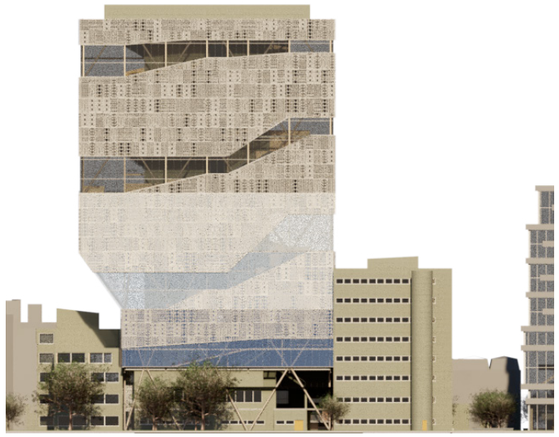
panels have prioroty over the public backbone

polycarbonate panels

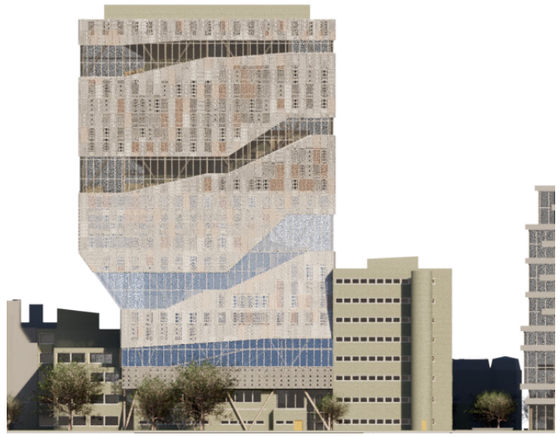
Further studies looked into the north facade. With the vertical campus as an interface, there is a difference with how the facades communicate with their surroundings. In general, the south facade facing the city (and the majority of sunlight) is more closed while still offering views of the cityscape. The north facade opens up to the park, bringin in the peace & quiet as well as more solar radiation throughout the day.

Evidently, these arguments are made from an interior perspective. The activities going on inside the VC relate differently to their surroundings, refering to how the exterior communicates towards the interior. On the outside, the VC communicates merely the different levels of publicness.

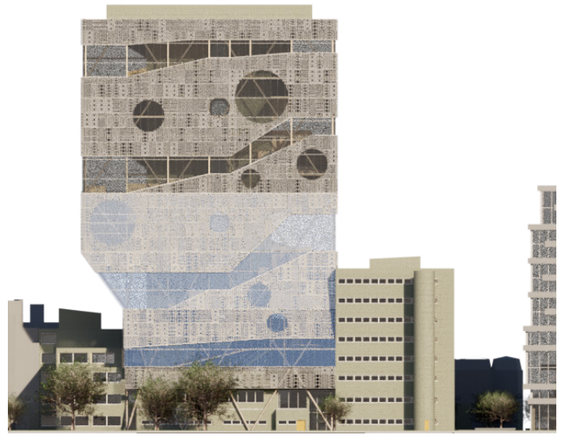
As a whole, the VC works as an interface between park and city by being an invariant element within the urban fabric: the facades are similar and clearly display how the urban fabric is extended vertically.



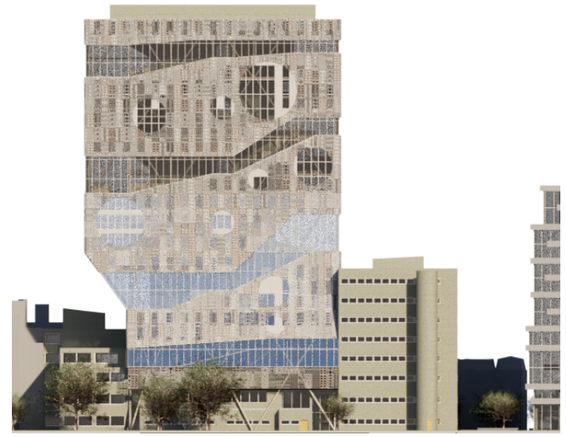
Continuous shell + glass curtain wall



Continuous shell + regular openings



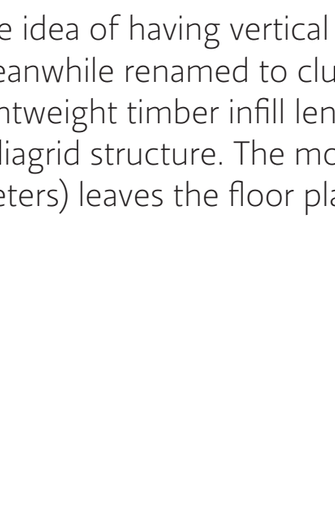
Openings in shell + glass curtain wall

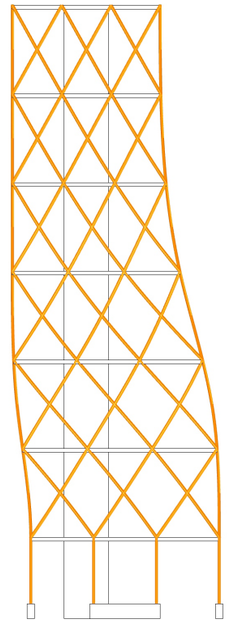


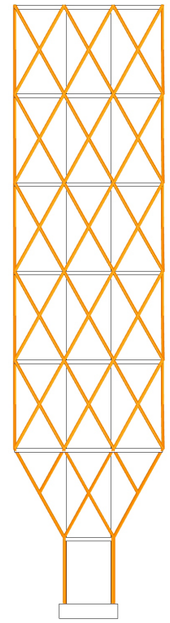
Openings in shell + regular openings

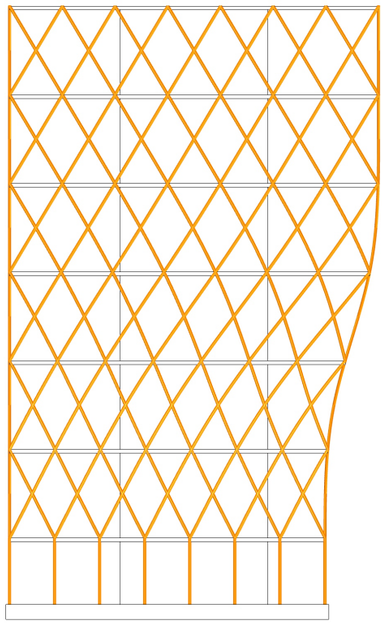
Structure

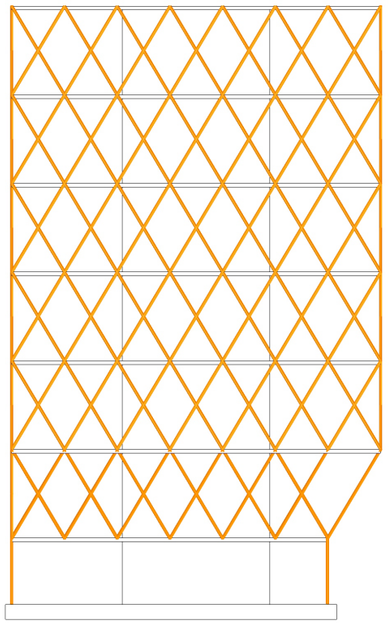
The idea of having vertical neighbourhoods, meanwhile renamed to clusters, as well as a lightweight timber infill lends itself well for the use of a diagrid structure. The modules of three stories (12 meters) leaves the floor plan open.



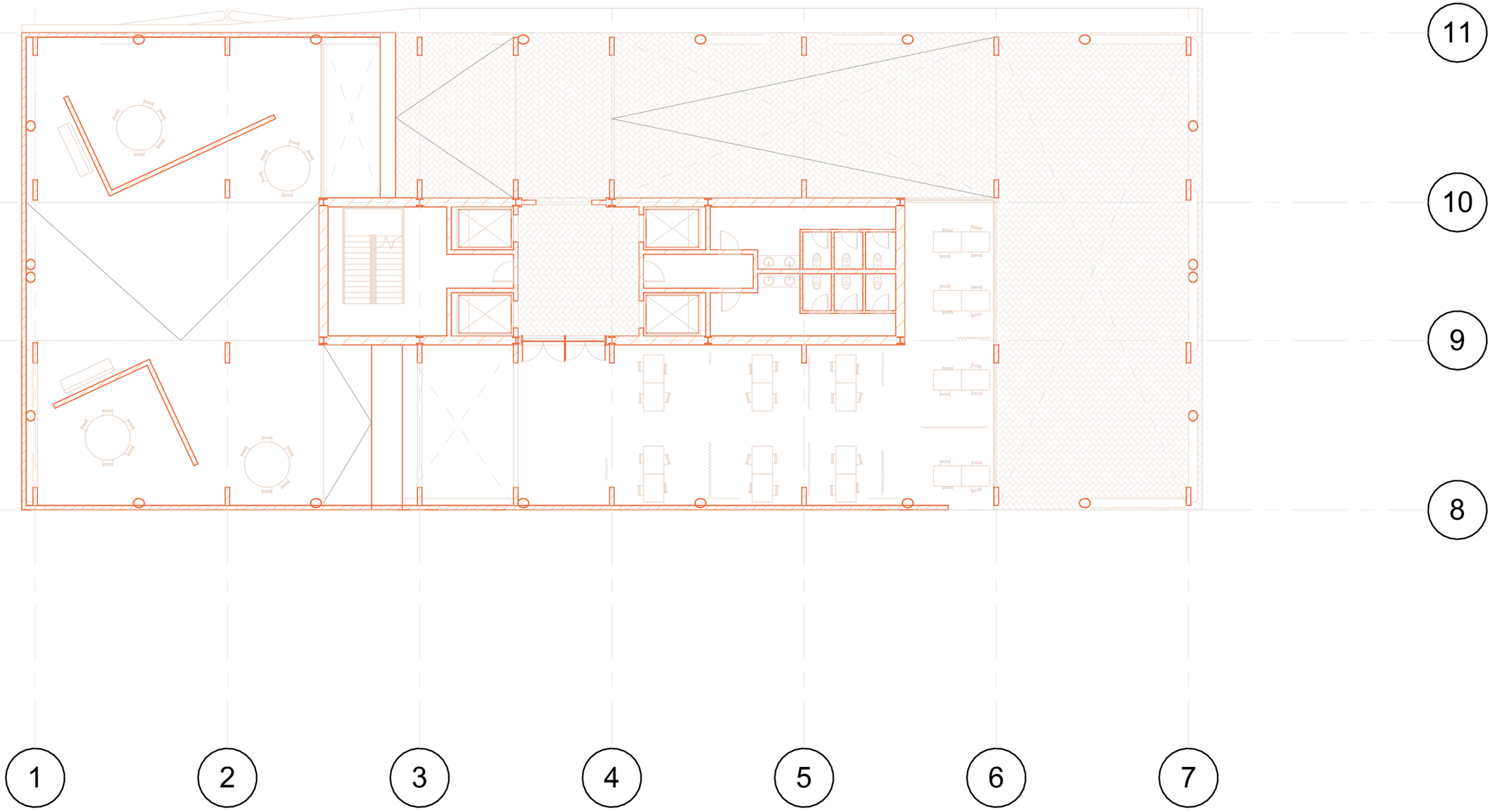








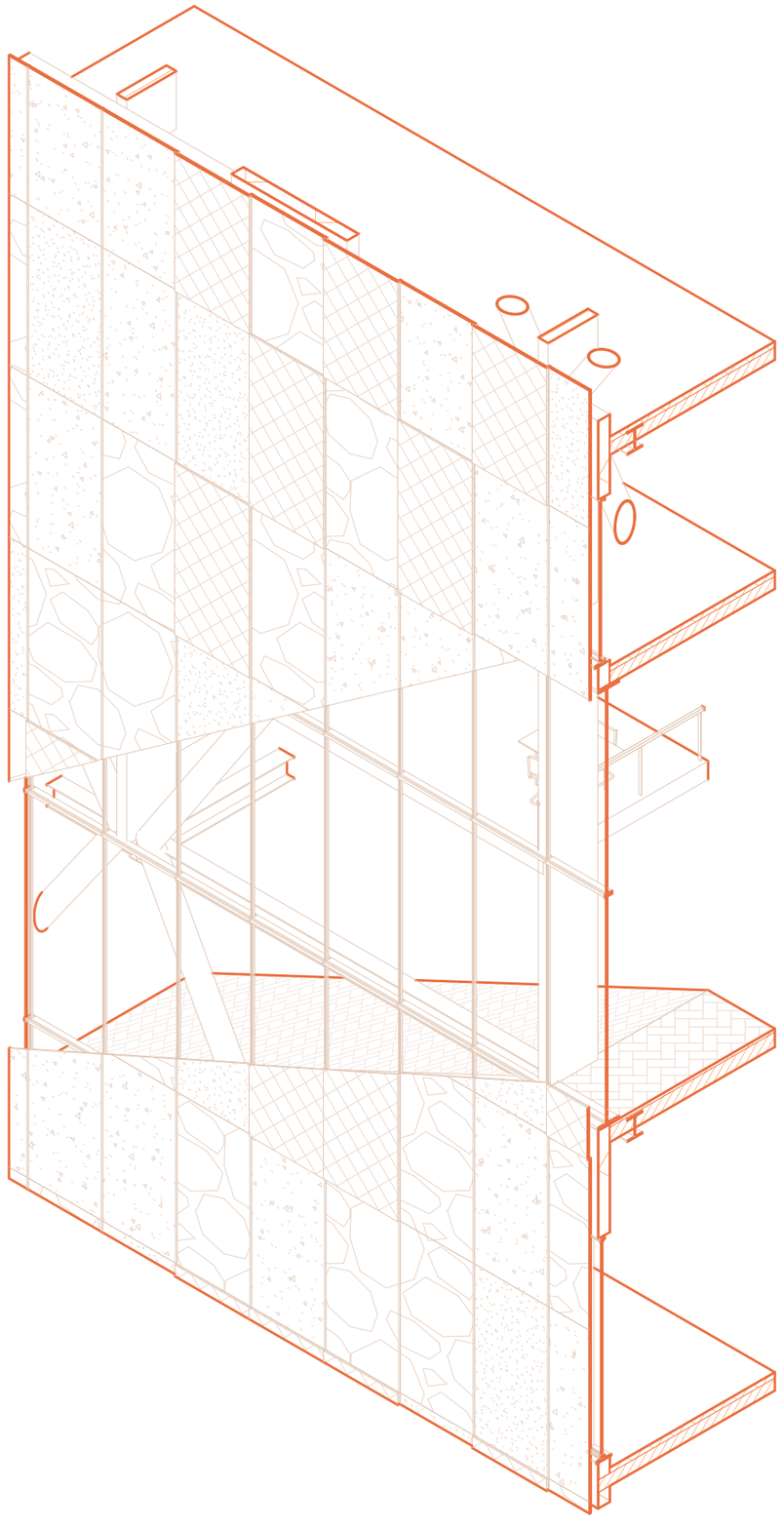
Typical floorplan (13th floor) with the diagrid along the facade, a loadbearing core and a lightweight interior structure of timber.



Sustainability

Apart from a timber infill, the different modules house reused materials from demolition projects. This doesn't apply to the main structure, only finishes and furniture.

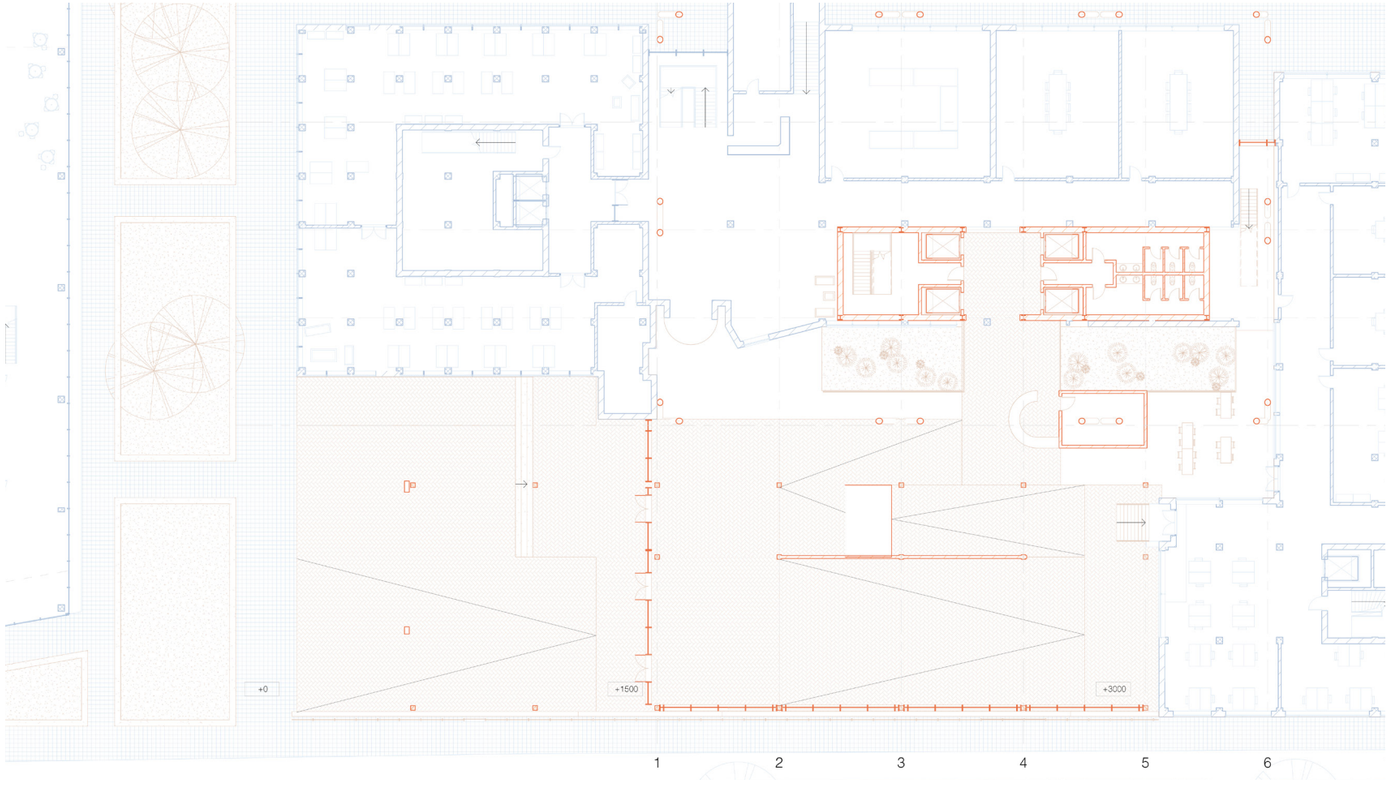
The roof of the lower volume is used as a garden, improving the view from within the tower as well as the water retention potential of the site. The northern facade differs from the souther facade by having a larger percentage of openings, while all facades are partially protected from thanks to the metal panels. This improves the indoor climate by allowing for openable windows.

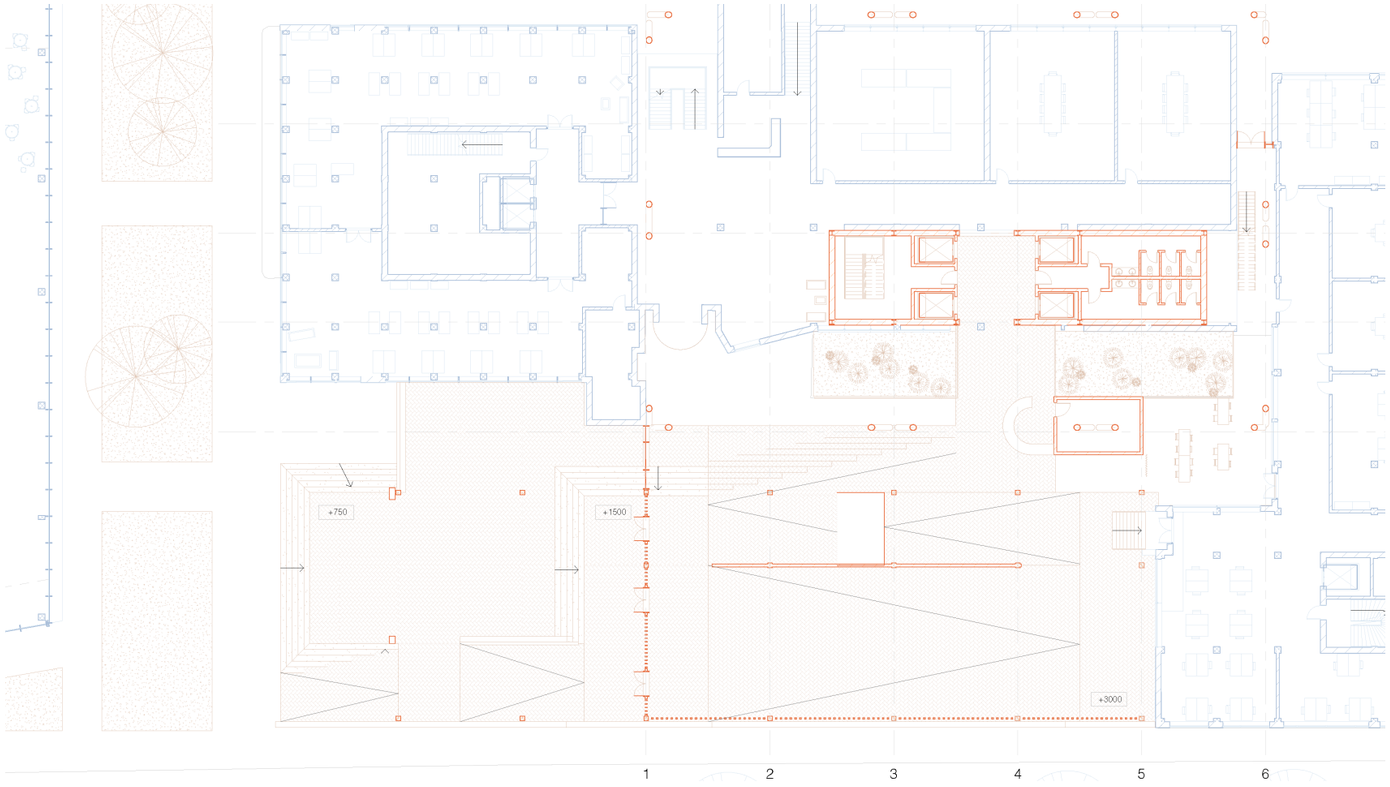


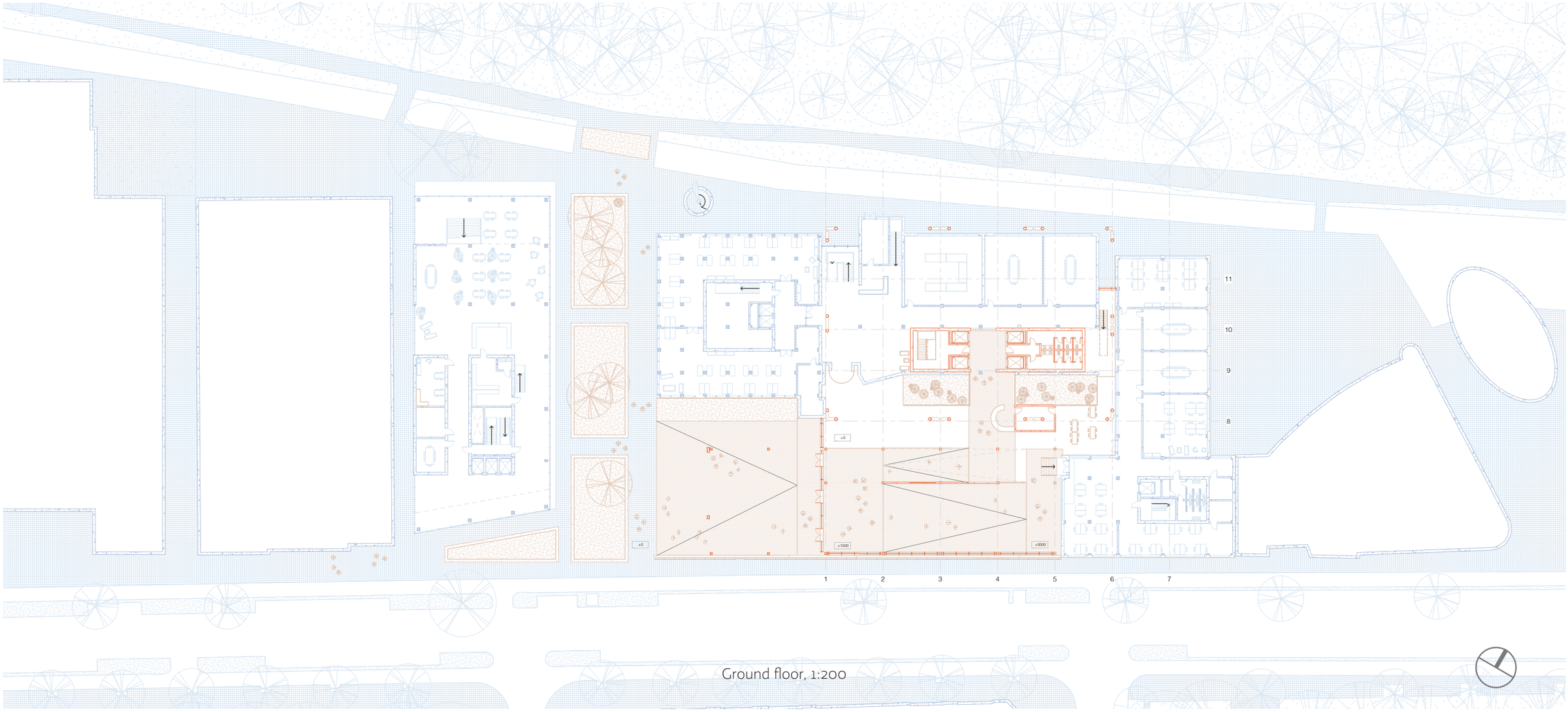
Ground floor

Several considerations were made regarding the ground floor, especially considering the routing and main entrance.
Initially, a bridge was added to the parkside of the campus. This improved accessibility, but decreased the potential of the main entrance. Having no parkside entrance puts more focus on the new axis and ramp as the main entrance and continuation of the urban fabric.

The layout of the main entrance changed several times, experimenting with the sequence and hierarcy of ramps, stairs and squares.





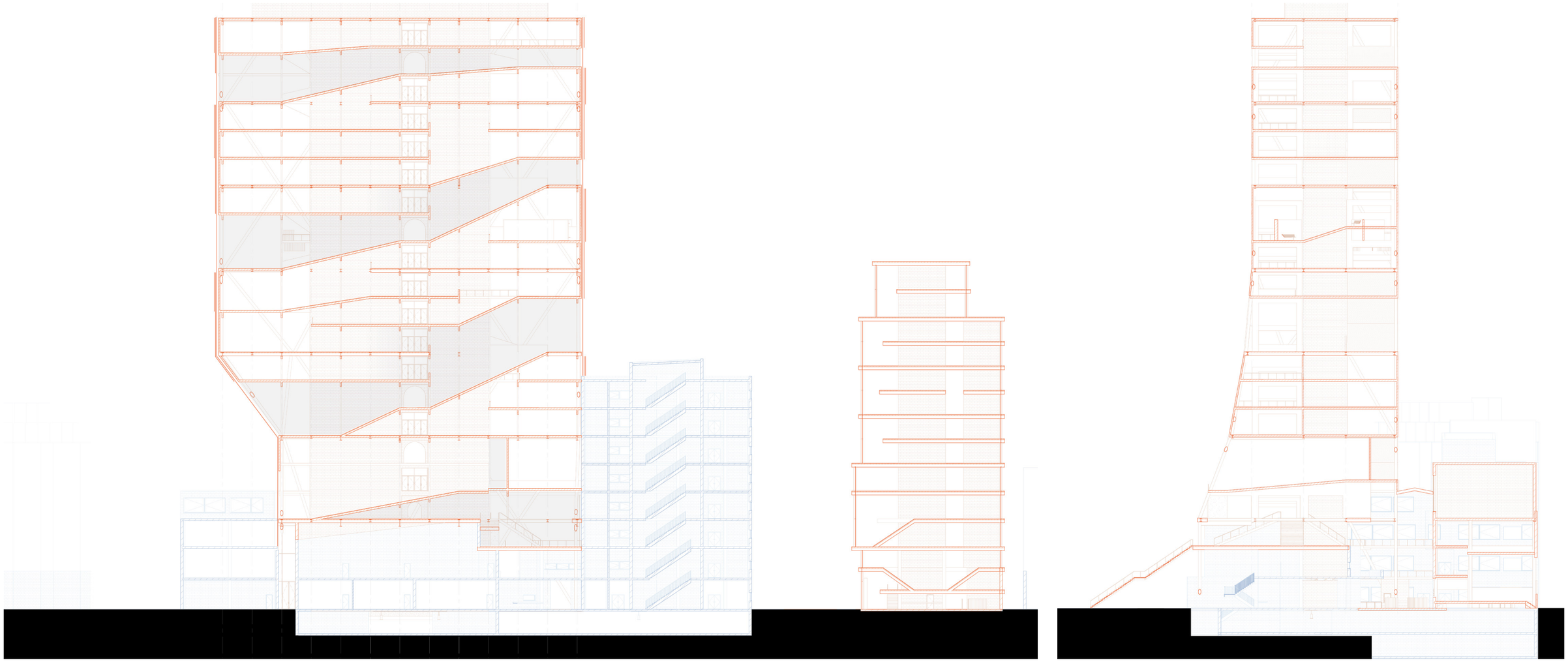


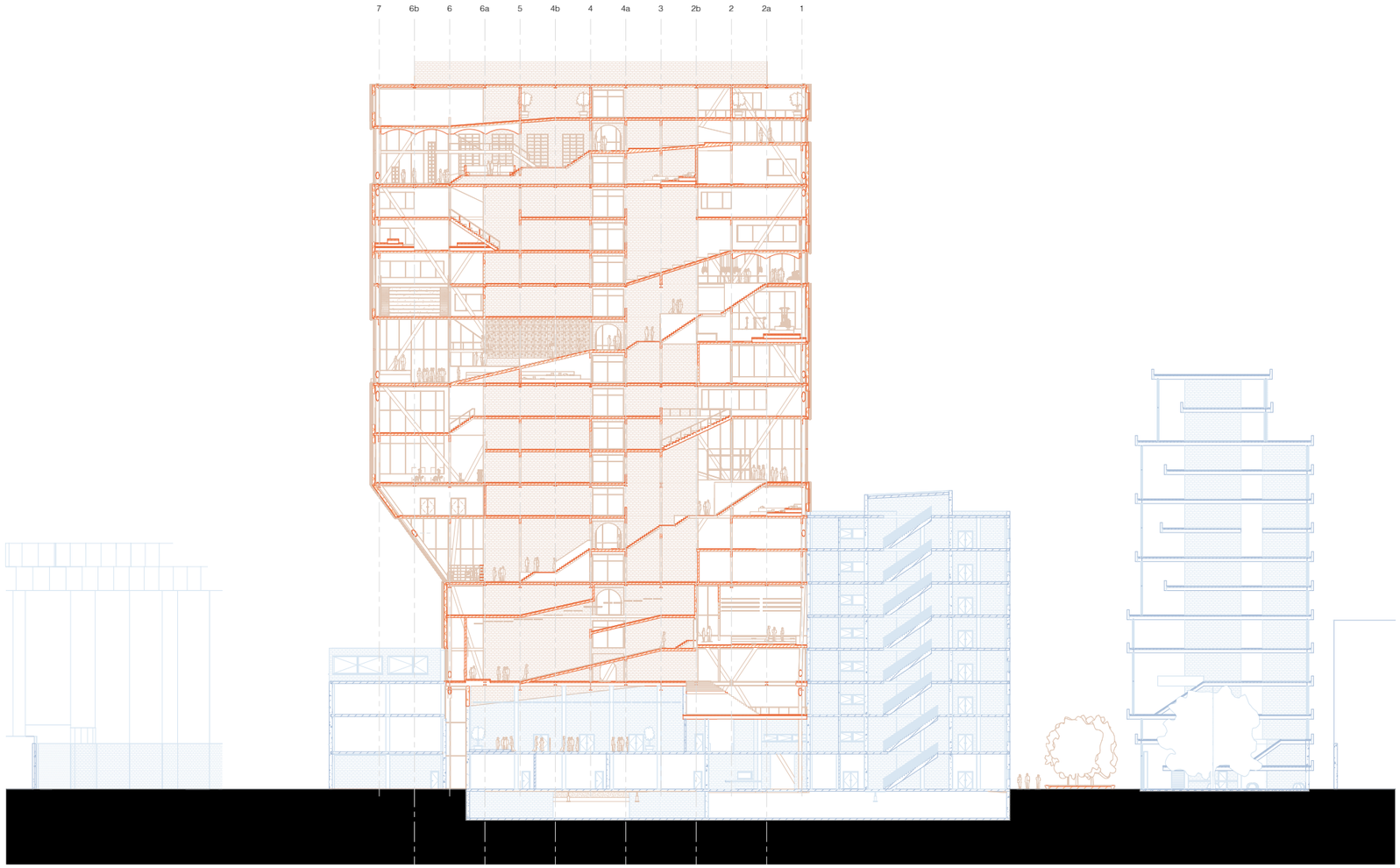
Ground floor, 1:200

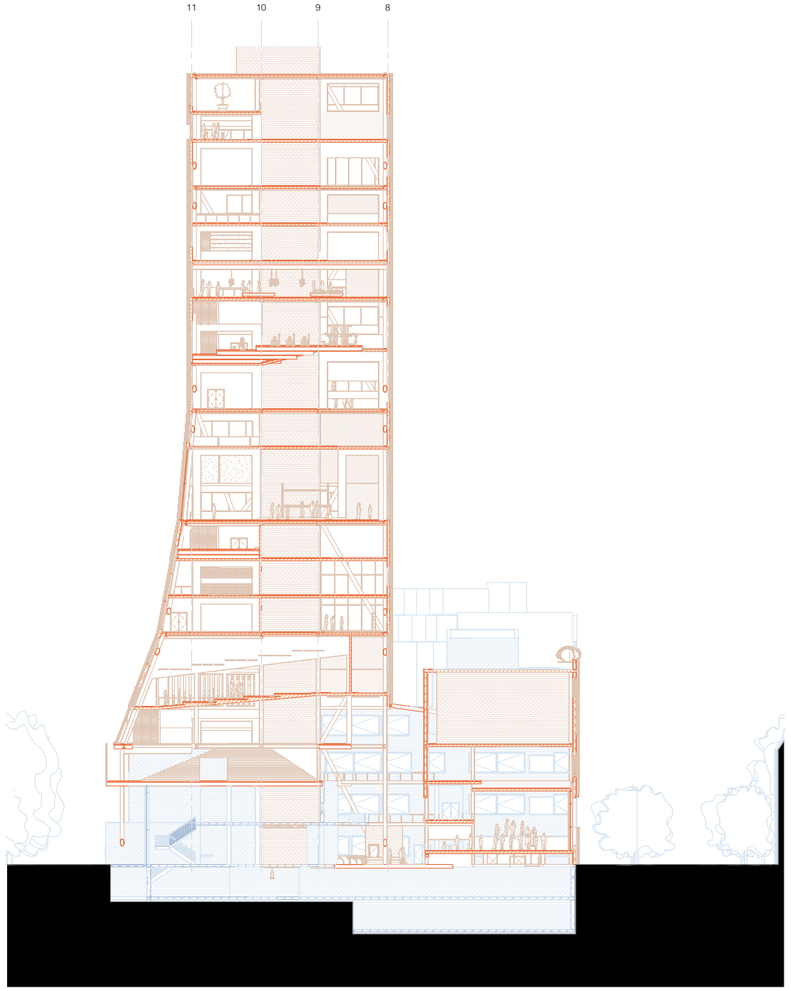
Section

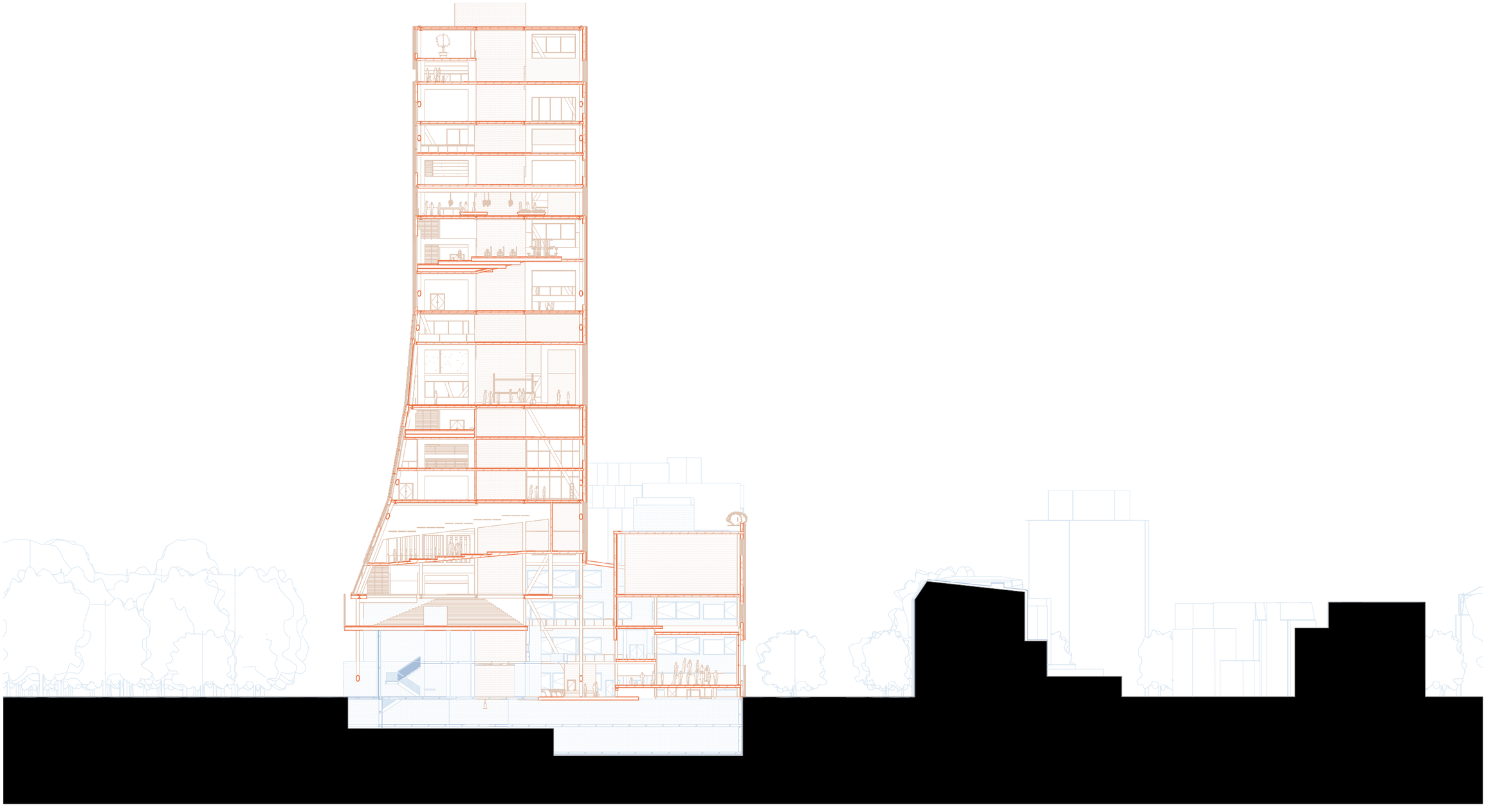
The dynamics of the section drastically changed. Building upon the new strategies, the first step was to display the different elements of leisure and how the public backbone is visible in the section.

Further steps made the backbone more specific, adding stairs, terraces and punctures where necessary.

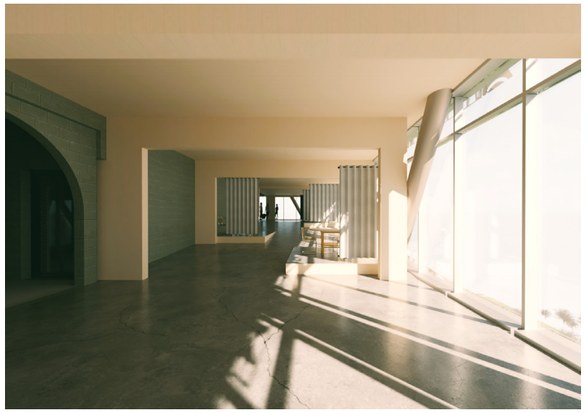


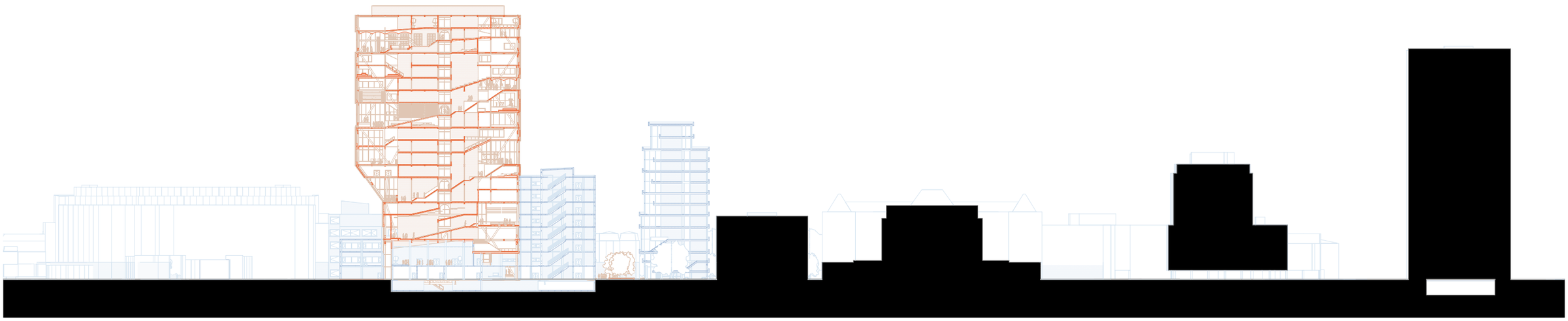

7
6b
6
6a
5
4b
4
4a
3
2b
2
2a
1


11
10
9
8

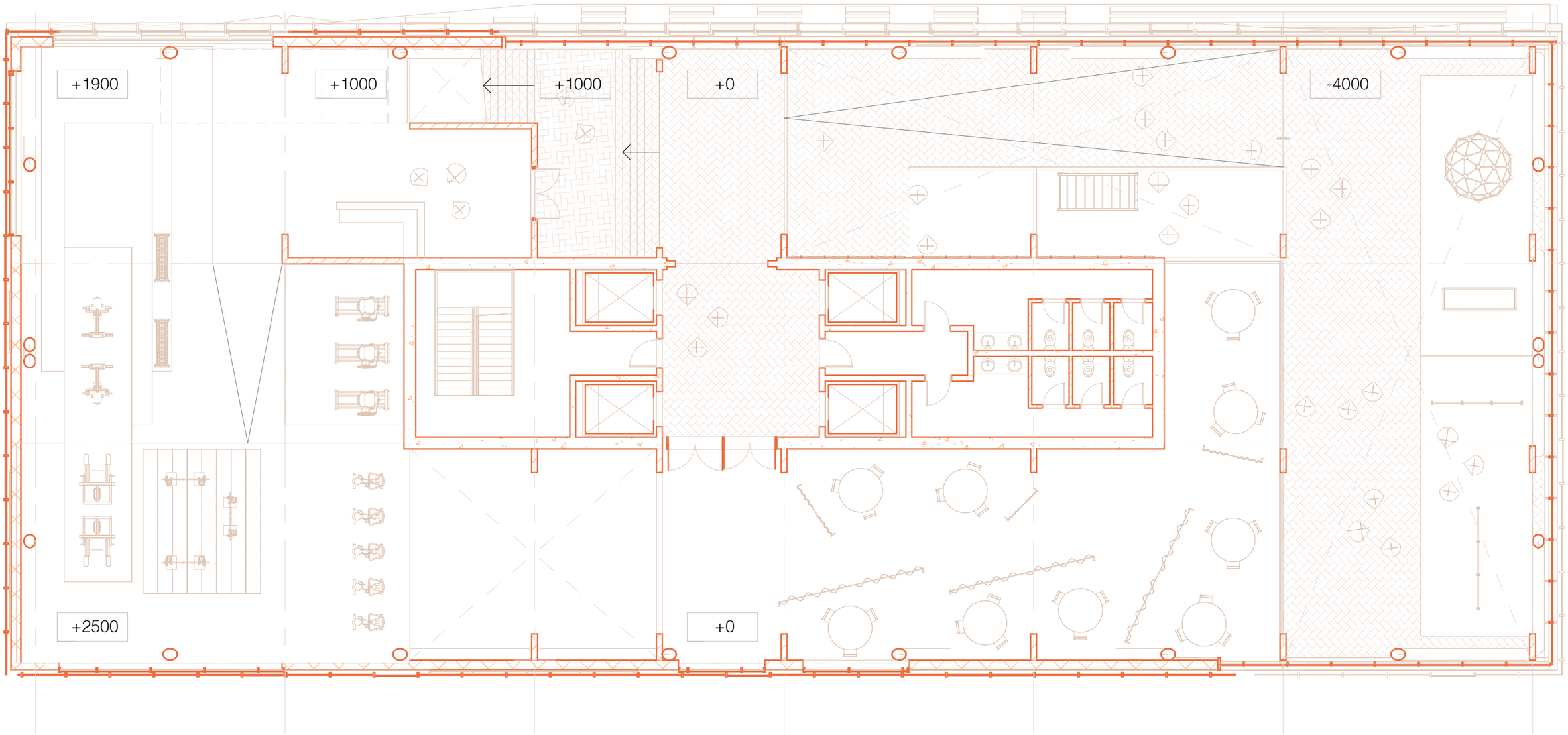


Urban cross section, 1:500



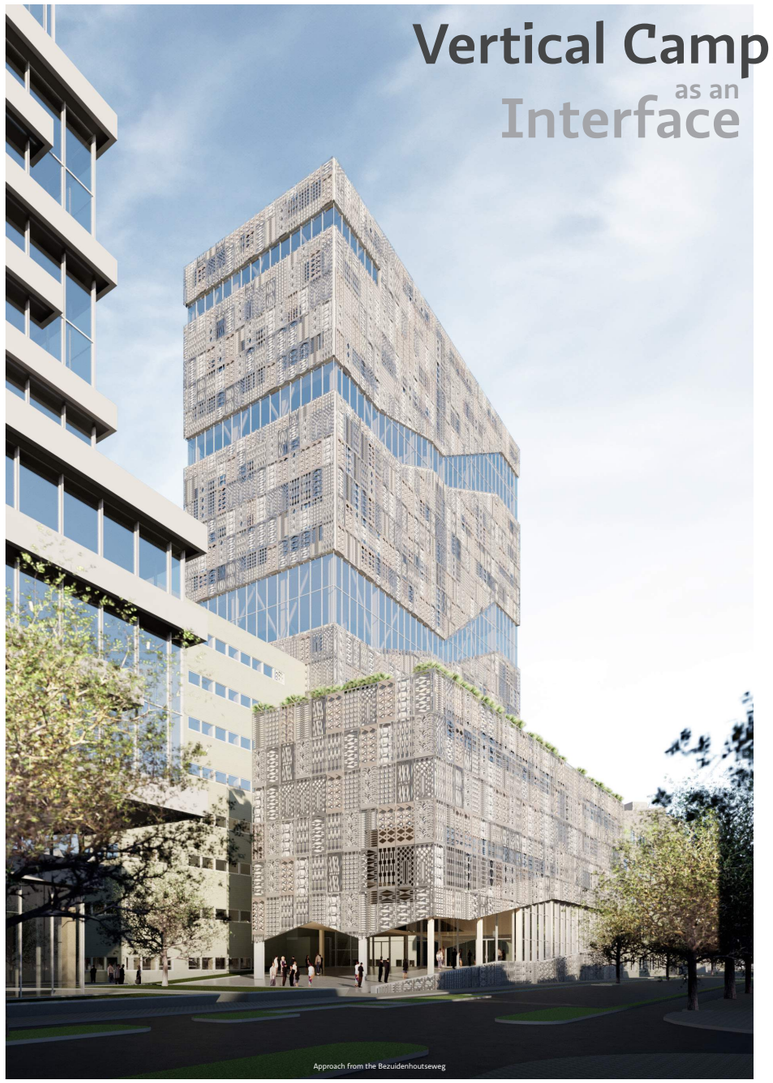


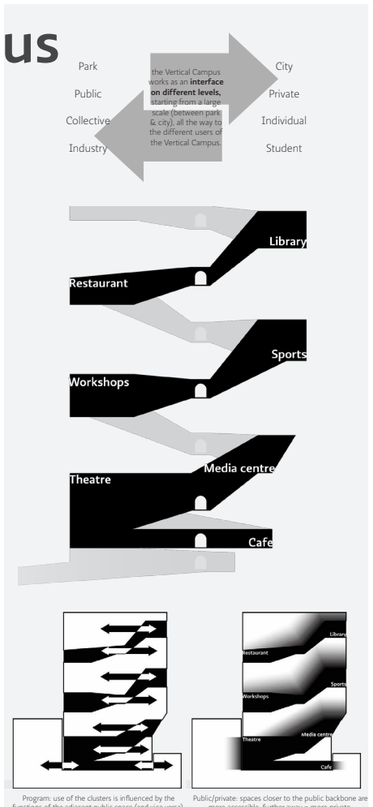
Urban longitudonal section, 1:500



Typical floorplan (13th floor), 1:200

Vertical Campus
as an Interface


Approach from the Bezuidenhoutseweg



Program: use of the clusters is influenced by the functions of the adjacent public space (and vice versa).

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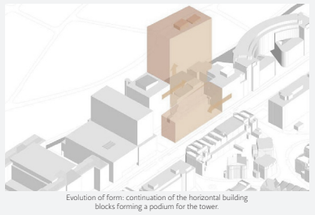
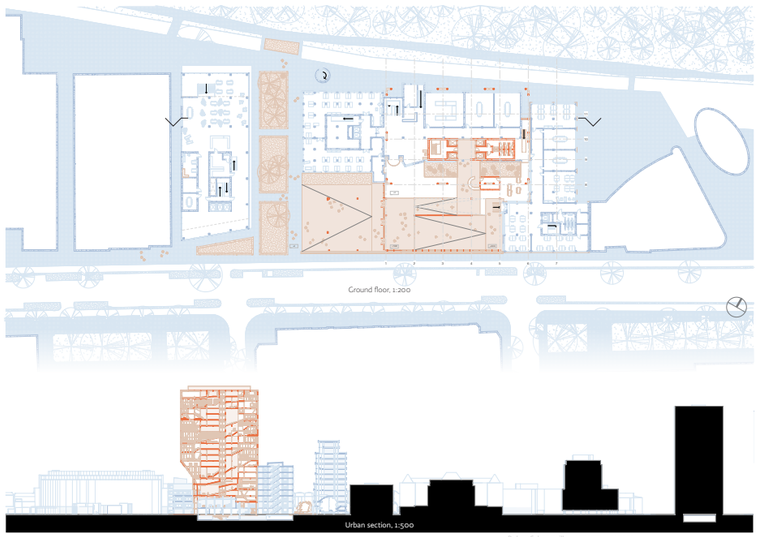
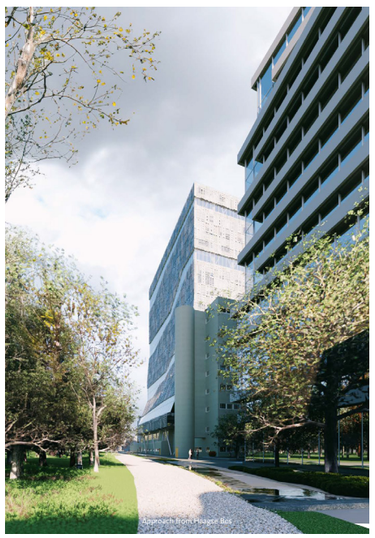
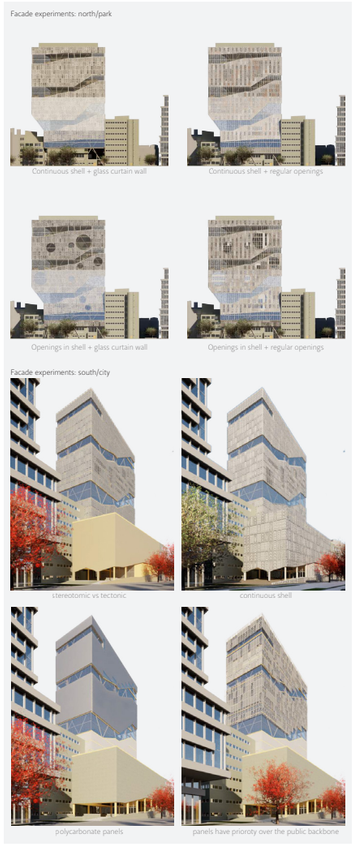
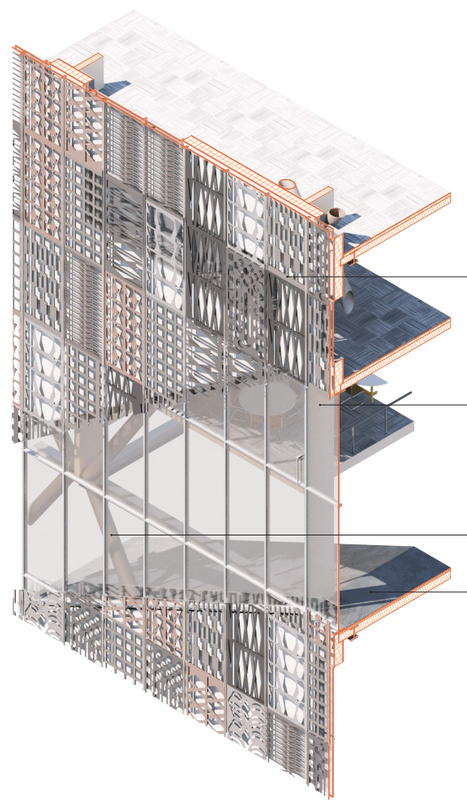
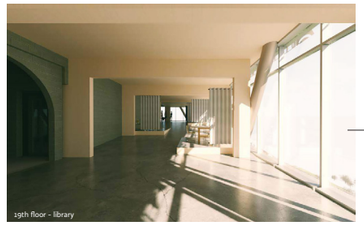

Evolution of form: continuation of the horizontal building blocks forming a podium for the tower.



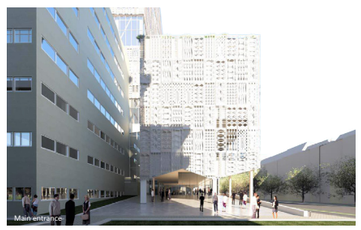

Approach from Plaatje Bos

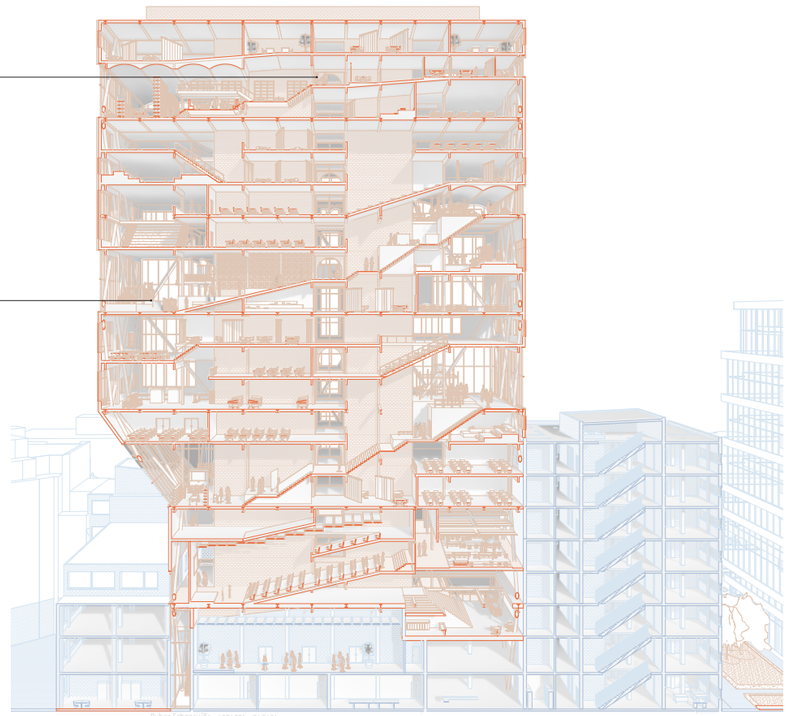





13th floor - library

12th floor - sports


Main entrance



P4 Developments

The process after P3 focused on clarifying several aspects of the design: the urban level, sustainability and climate, as well as how my design relates to the notion of interface.

Other aspects such as materialisation of both the public backbone as well as the different learning environments were further improved based on feedback from P3. Furthermore, building engineering aspects were developed in more detail.

An important step was the specific characterization and hybridization of learning environments, finally deciding which characteristics play key roles as a result of prior research & design.

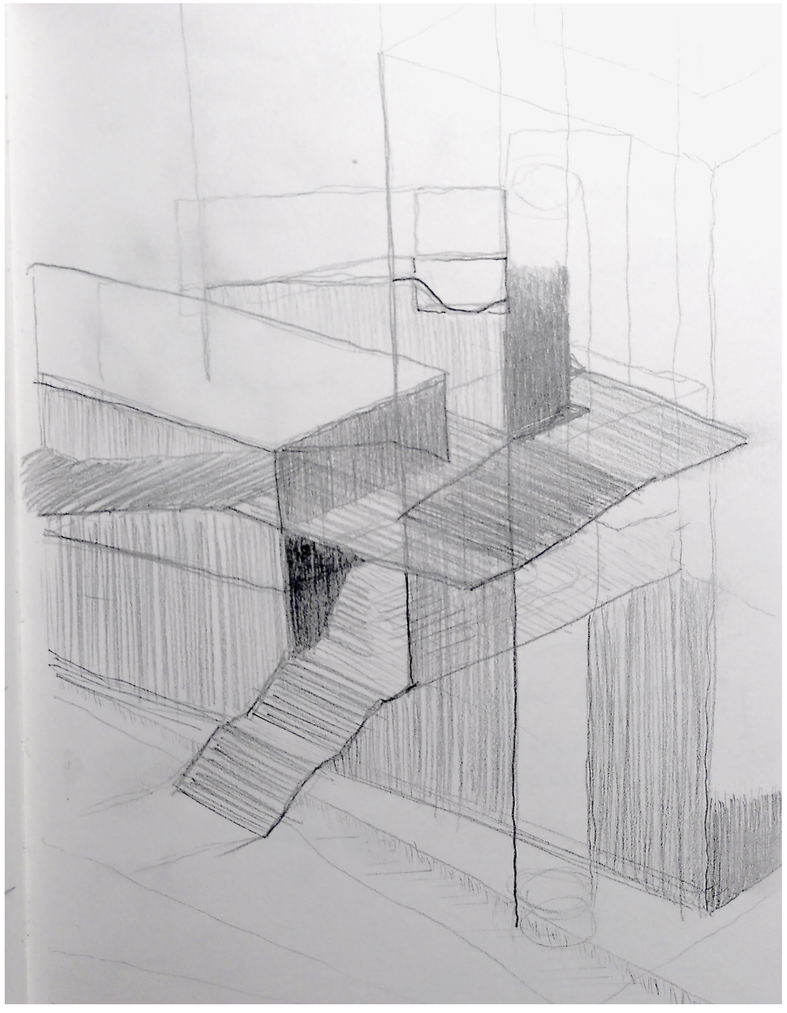
“Learning depends on interacting with others, though there will always be an important place for personal study.”

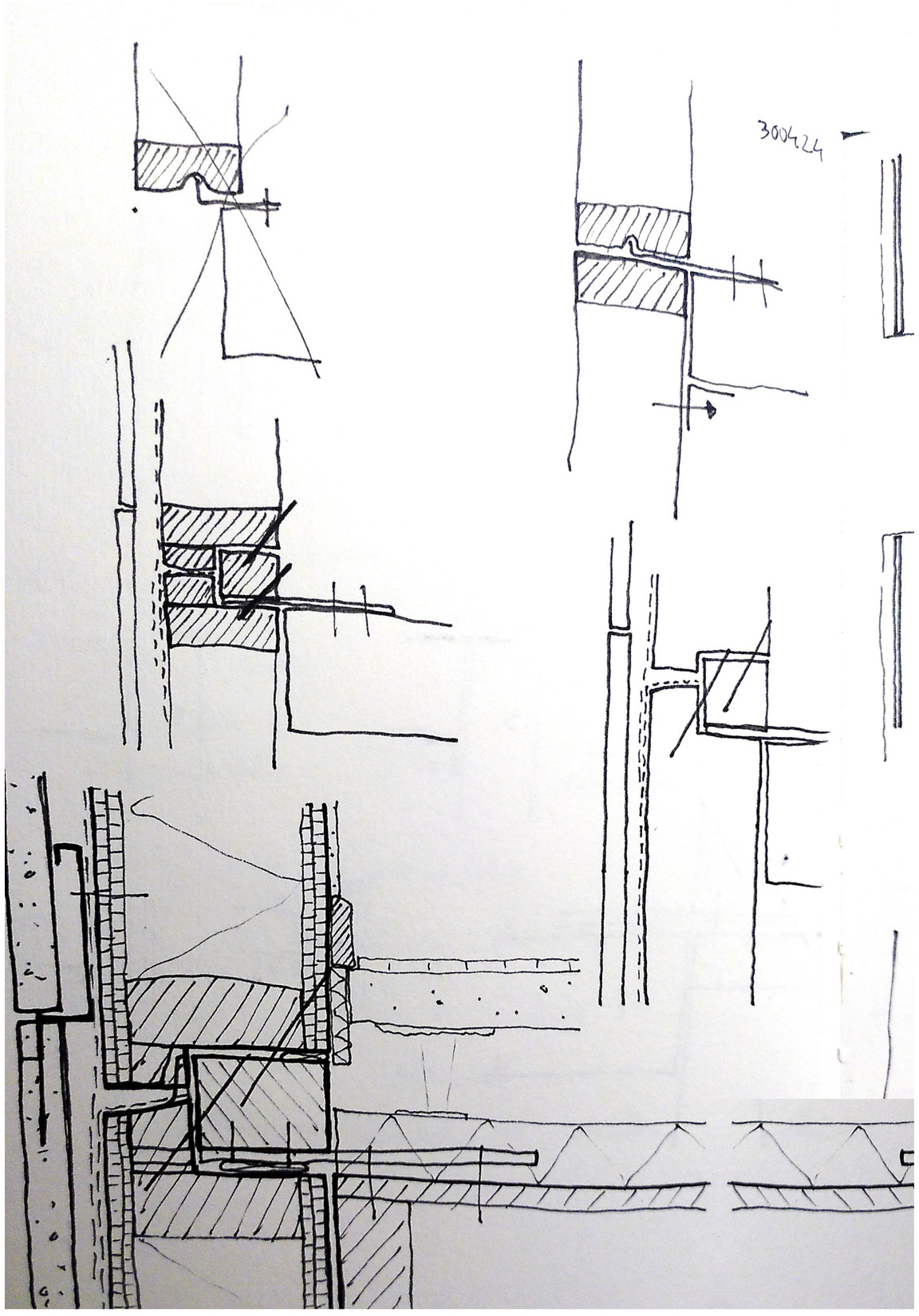
OECD handbook for
Innovative Learning Environments, 2017

Interface
1: A system of interaction or communication between different entities.

2: A point at which independent systems or diverse groups interact.

The educational environments found throughout the Vertical Campus are based on combinations of the following aspects:




300424

"Between 1924 and 1997, over **168 studies** were conducted comparing the relative efficacy of cooperative, competitive, and individualistic learning [...]. The results of these studies indicated that **cooperative learning promoted higher individual achievement** than did competitive (effect size=0.49) or individualistic (effect size=0.53) learning. These are significant and substantial increases in achievement."

David W. Johnson, Roger T. Johnson, and Karl Smith, 'The State of Cooperative Learning in Postsecondary and Professional Settings', Educational Psychology Review 19, no. 1 (1 March 2007): 15–29, https://doi.org/10.1007/s10648-006-9038-8.

	Absolute frequency of data points			% of variables			
	Students[a]	Effect sizes	Variables	No effect	Small effect	Medium effect	Large effect
Overall	1,920,239	3,330	105	12	36	36	15
Instruction variables	208,711	1,595	42	5	26	45	24
Social interaction	26,860	123	5	0	0	40	60
Stimulating meaningful learning	49,272	229	9	0	22	56	22
Assessment	41,493	316	8	0	25	50	25
Presentation	46,157	354	9	0	33	33	33
Technology	29,022	401	6	17	33	50	0
Extracurricular training programs	15,907	172	5	20	40	40	0

Michael Schneider and Franzis Preckel, 'Variables Associated with Achievement in Higher Education: A Systematic Review of Meta-Analyses.', Psychological Bulletin 143, no. 6 (2017): 565–600, https://doi.org/10.1037/bul0000098.

SER

SER-Thema
Leven Lang Ontwikkelen
Hoe kun je jezelf ontwikkelen? De SER werkt aan een actie-agenda om initiatieven voor leven lang ontwikkelen aan te moedigen en te helpen. In deze tijd blijkt des te meer hoe belangrijk dit is.

Density

High density

Low density

Flows

Heavy traffic

Light traffic

New access

Zoning

Offices

Governmental offices

Mixed

Residential

Educational

Monkeyrock (left) & Malietoren

PBL, Bezuidenhoutseweg 30

Highschool, Bezuidenhoutseweg 40

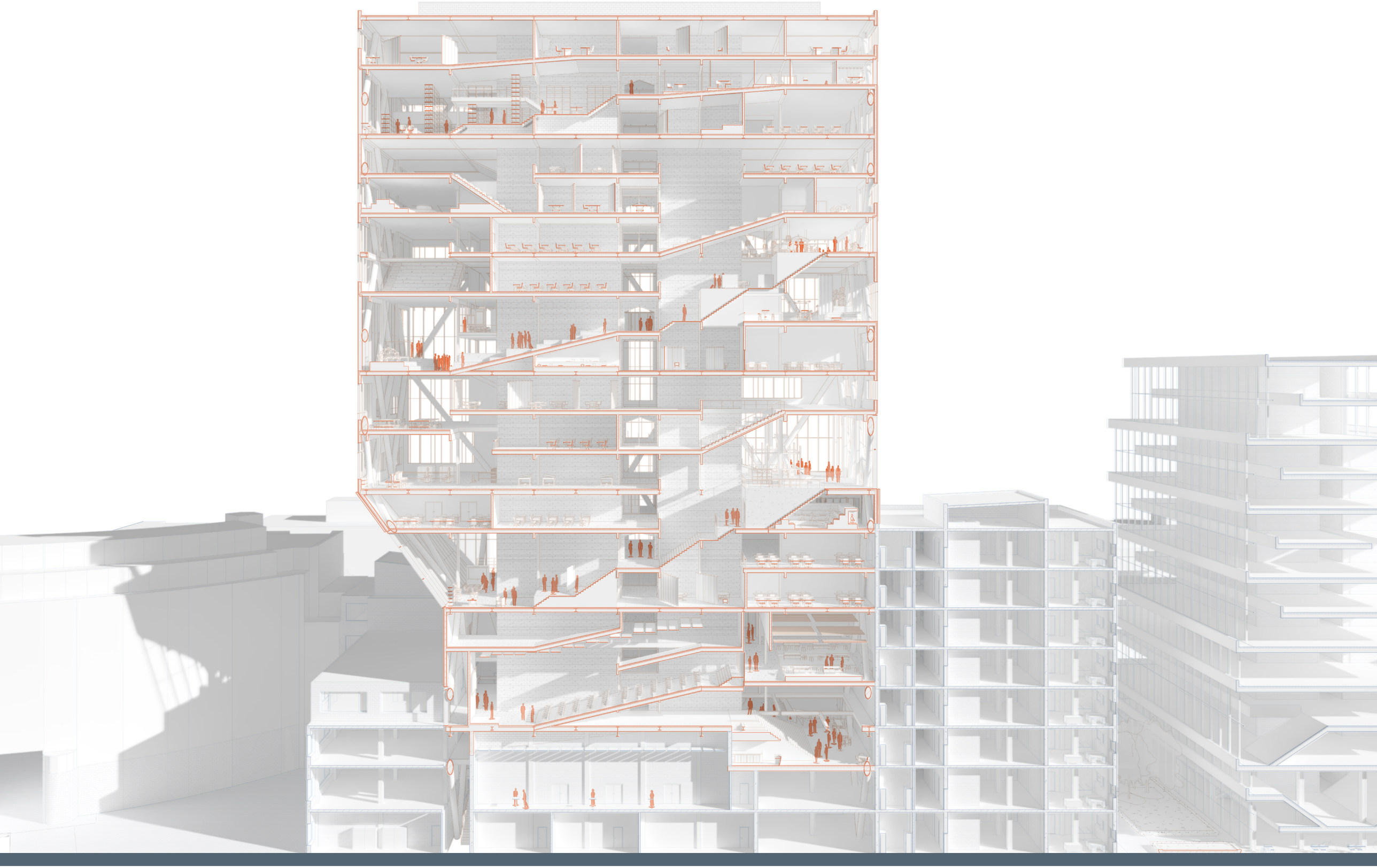
New SER offices after completion in the 1970's

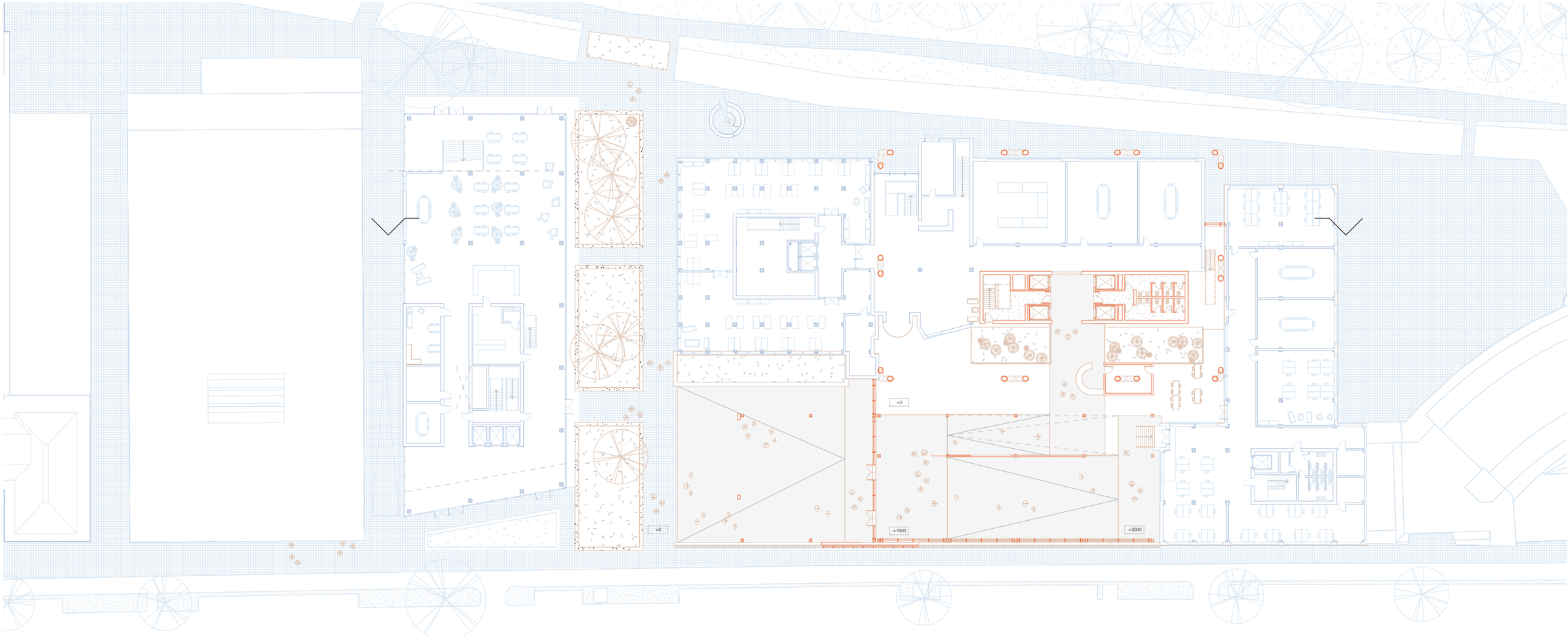
Ministry of Economics & Climate

Office building, Bezuidenhoutseweg 105

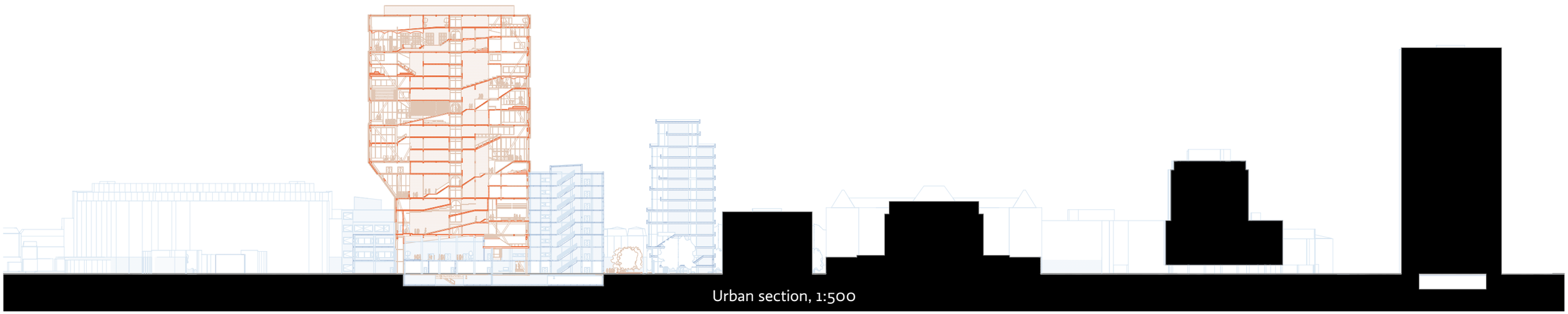
Office buildings, Bezuidenhoutseweg 151 & 131

Unicef offices





Ground floor, 1:200



Urban section, 1:500

Entrance to the Vertical Campus

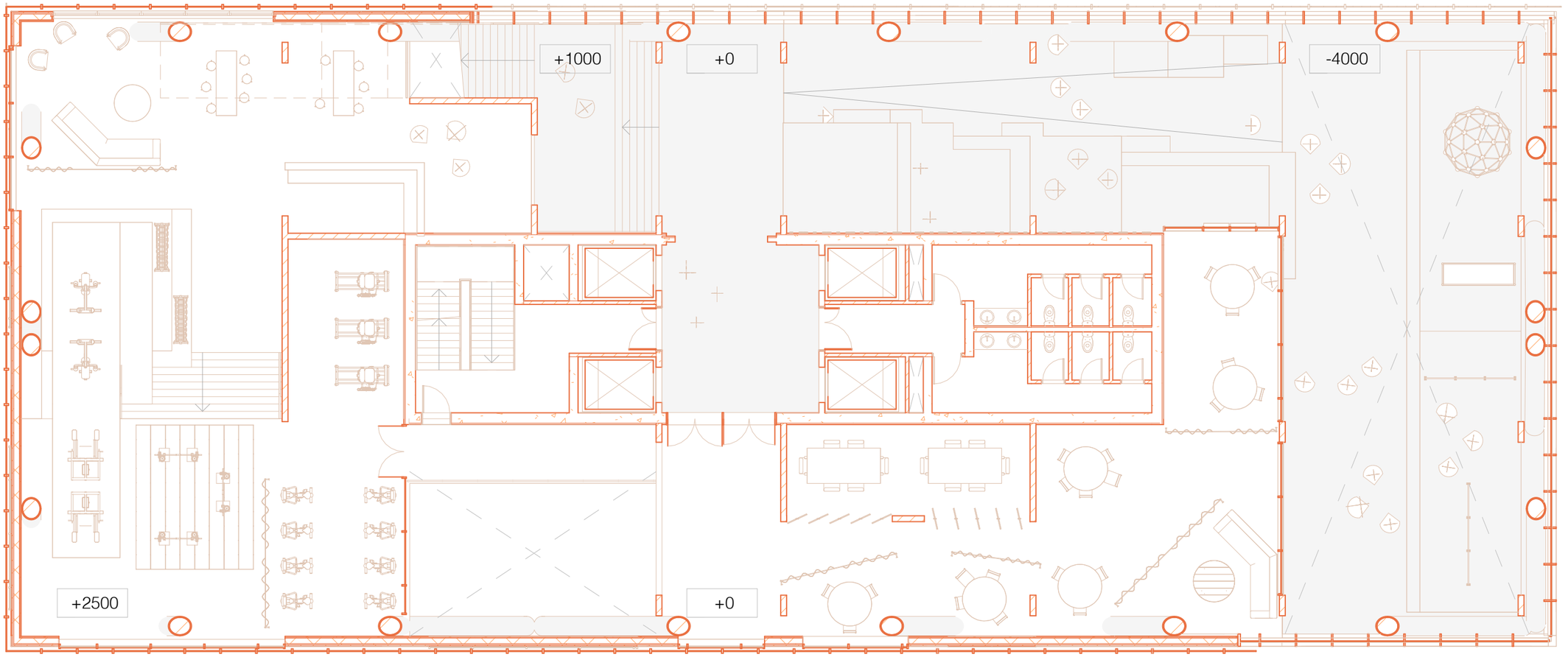
Public Backbone & research, 19th floor

Public Backbone & workshops, 9th floor

Different combinations in the learning landscape

Hybrid of informal learning environment & sports, 13th floor

Public Backbone & sports, 12th floor



Typical floor, 13th

Typical learning environment

8th floor

Academic landscape

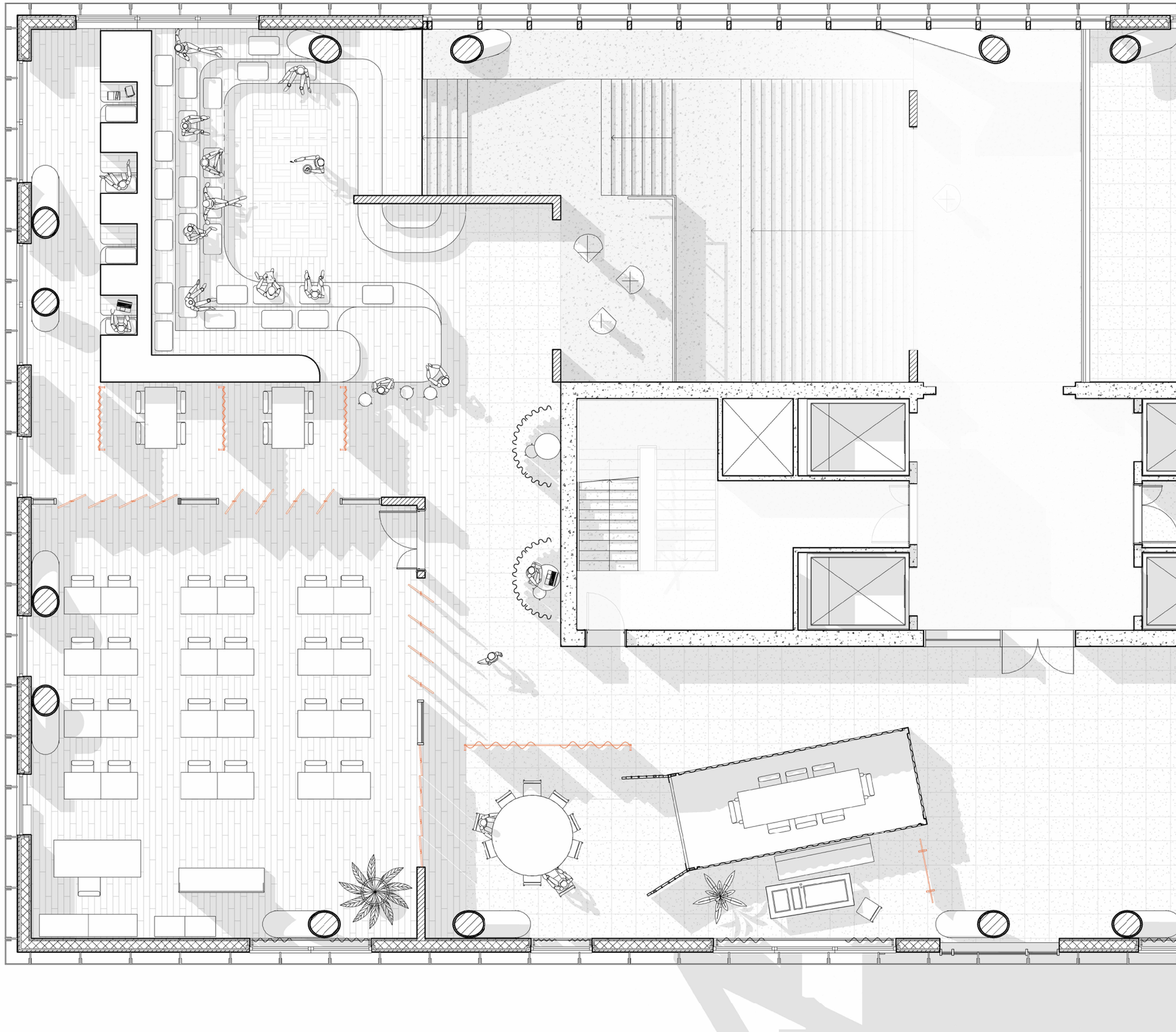
Focus alcove

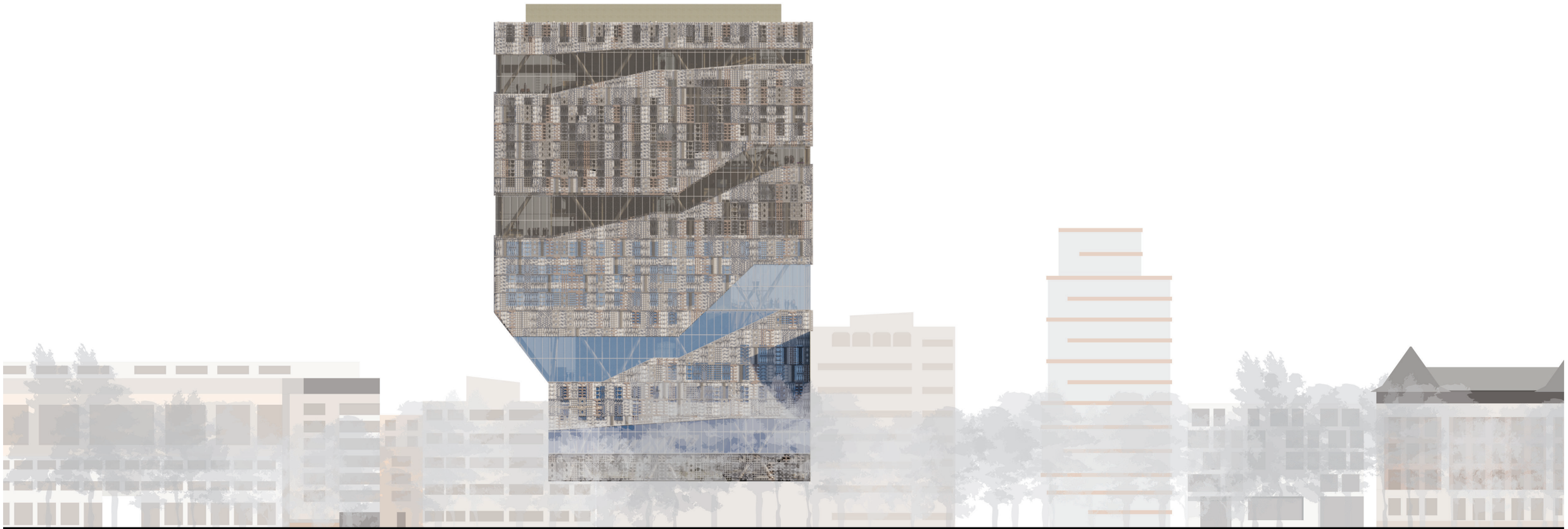
Group study

Phone booths

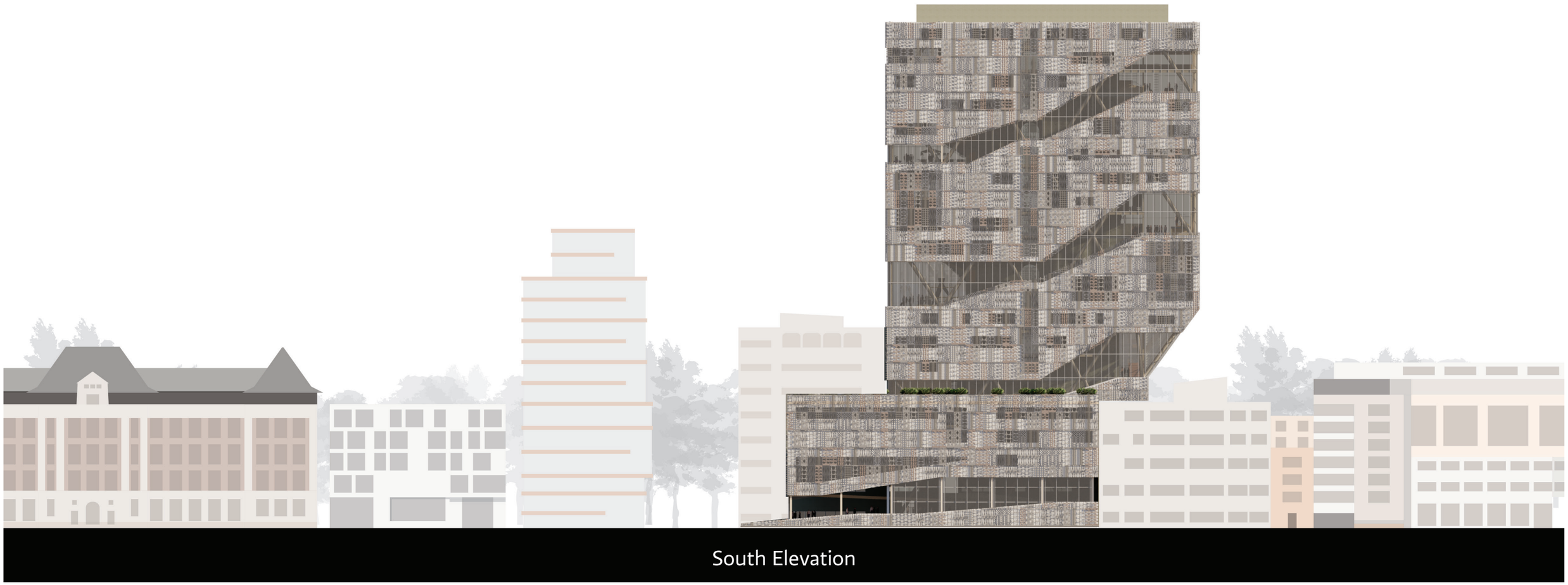
Permeable classroom

Flexible academy

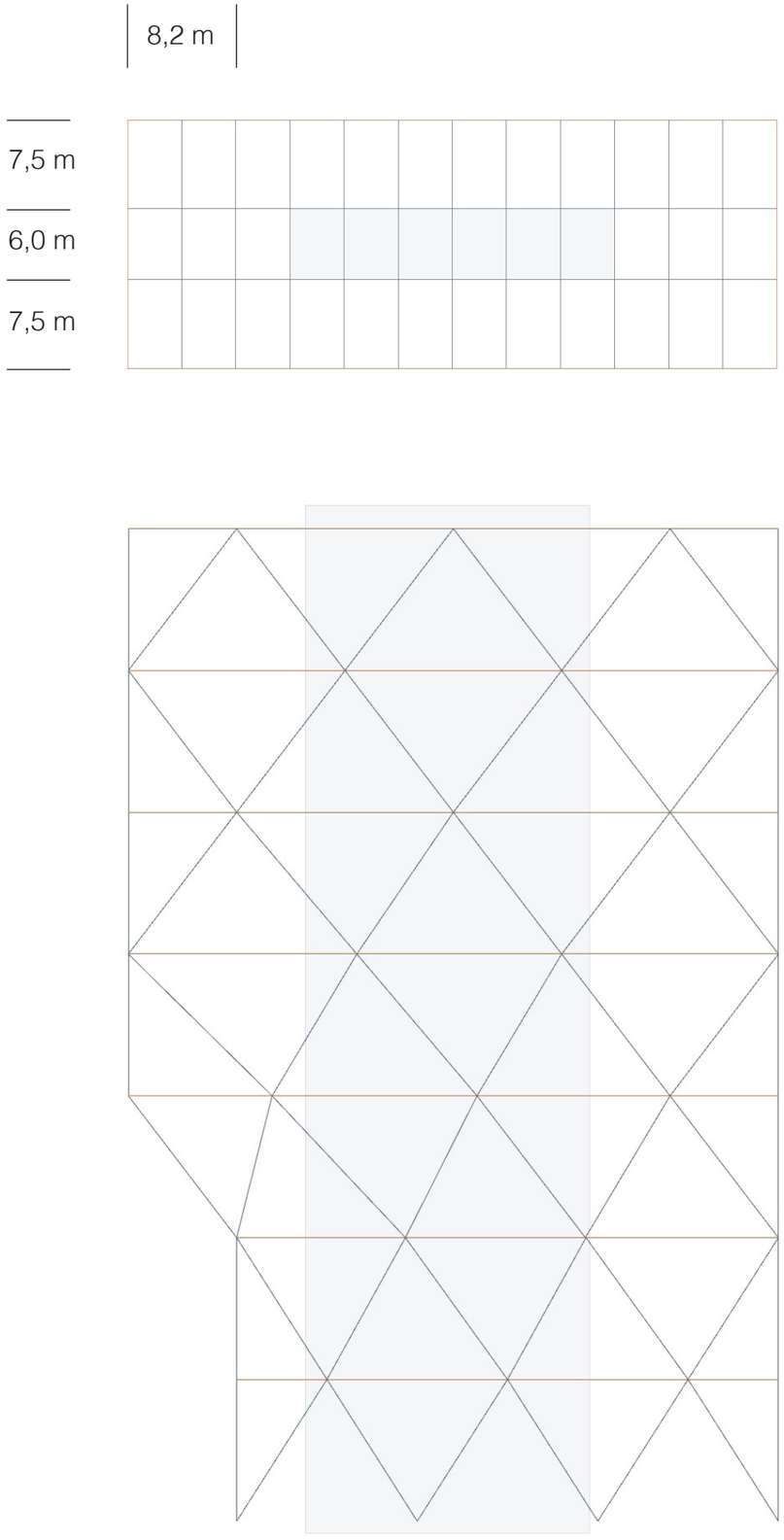


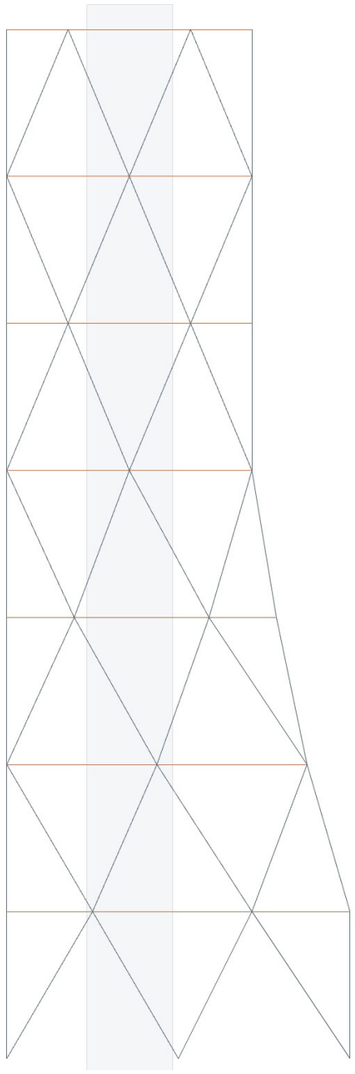


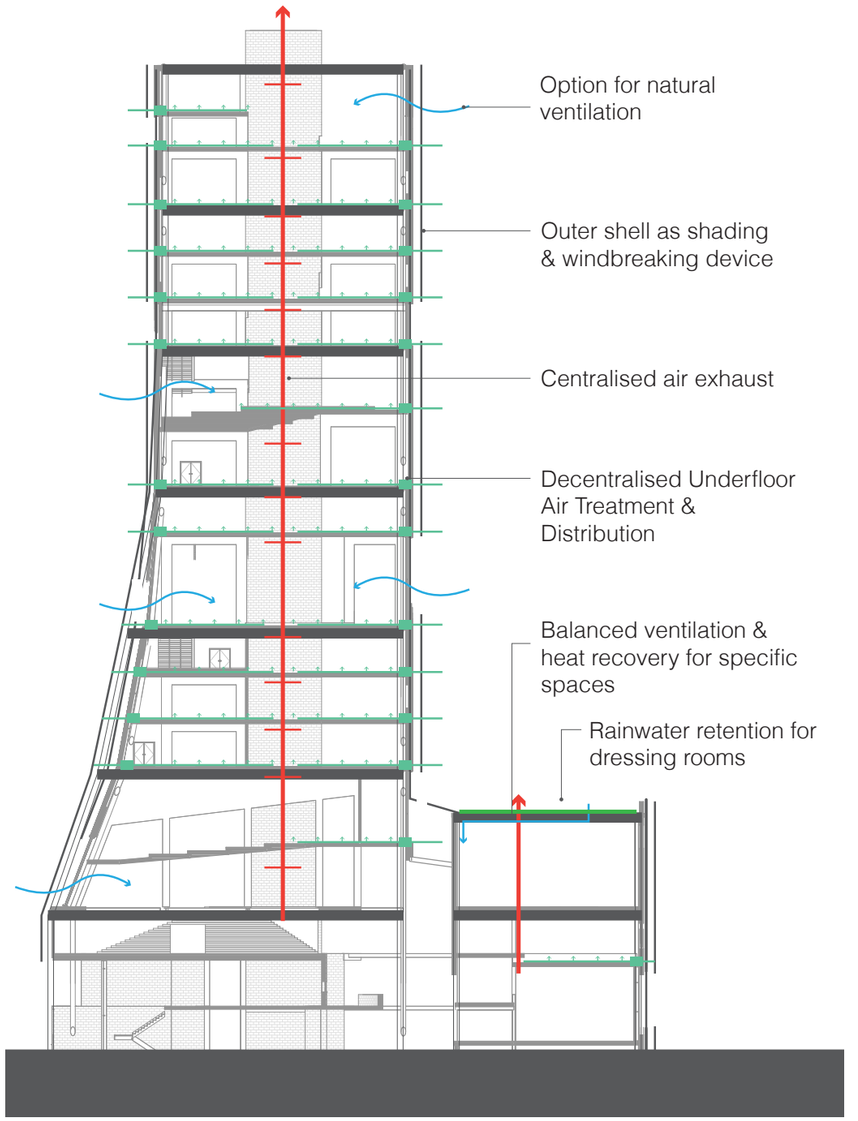
North Elevation

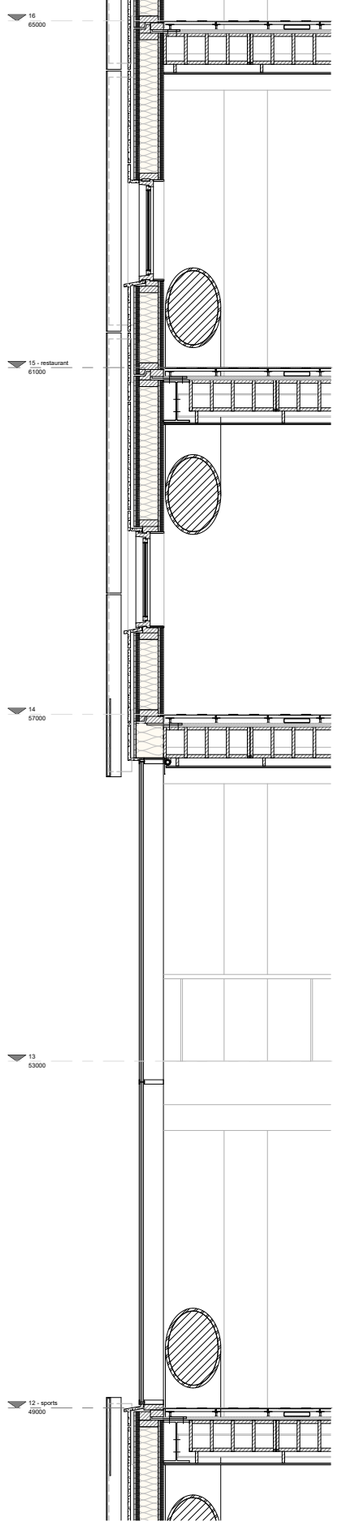


South Elevation

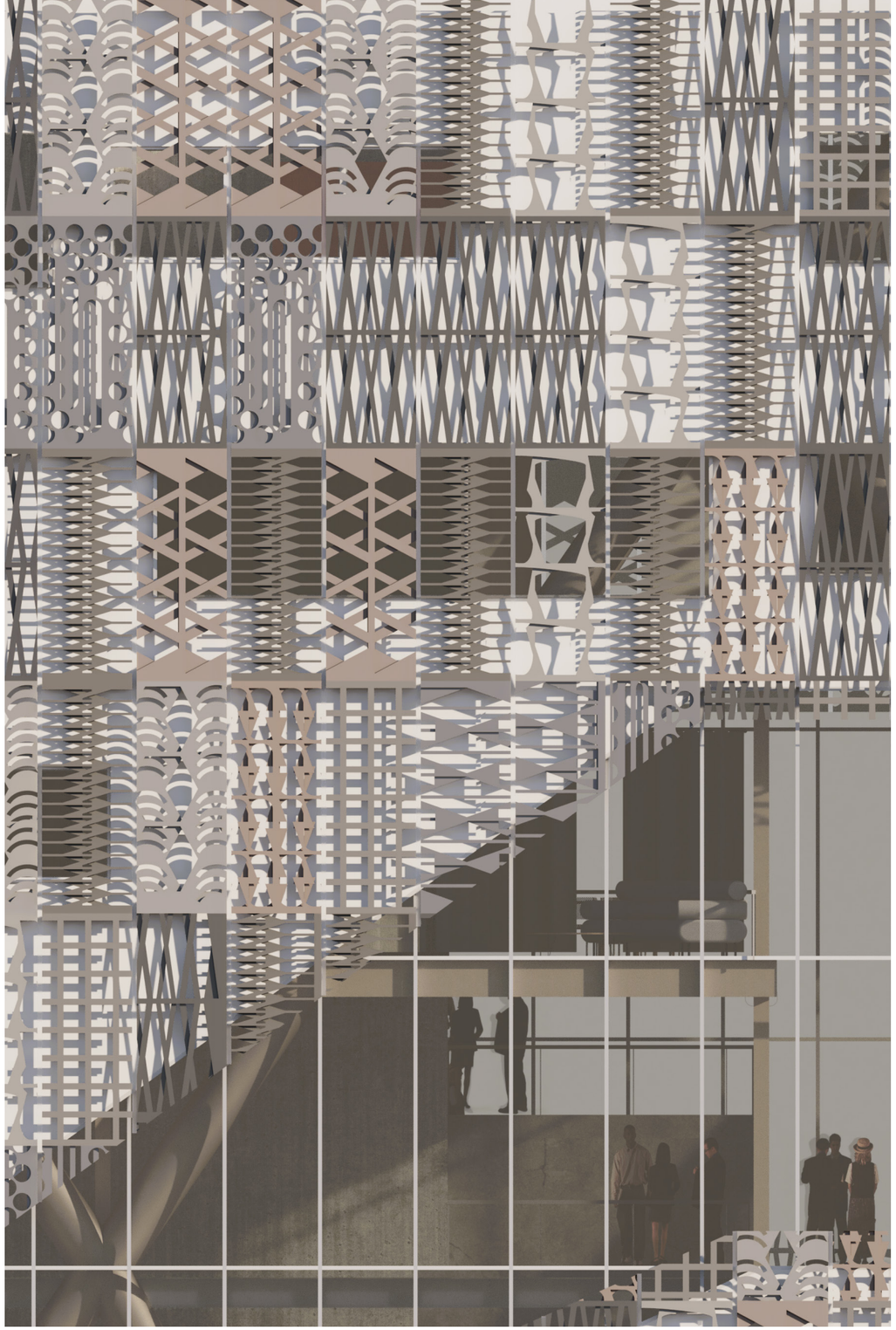

8,2 m
7,5 m
6,0 m
7,5 m

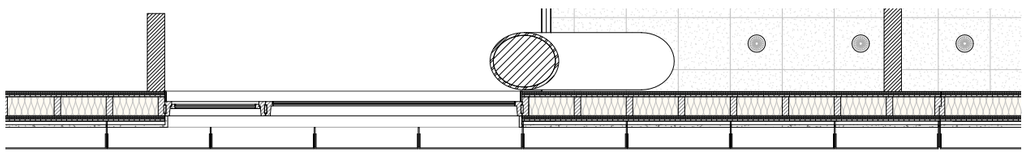



Option for natural ventilation
Outer shell as shading & windbreaking device
Centralised air exhaust
Decentralised Underfloor Air Treatment & Distribution
Balanced ventilation & heat recovery for specific spaces
Rainwater retention for dressing rooms

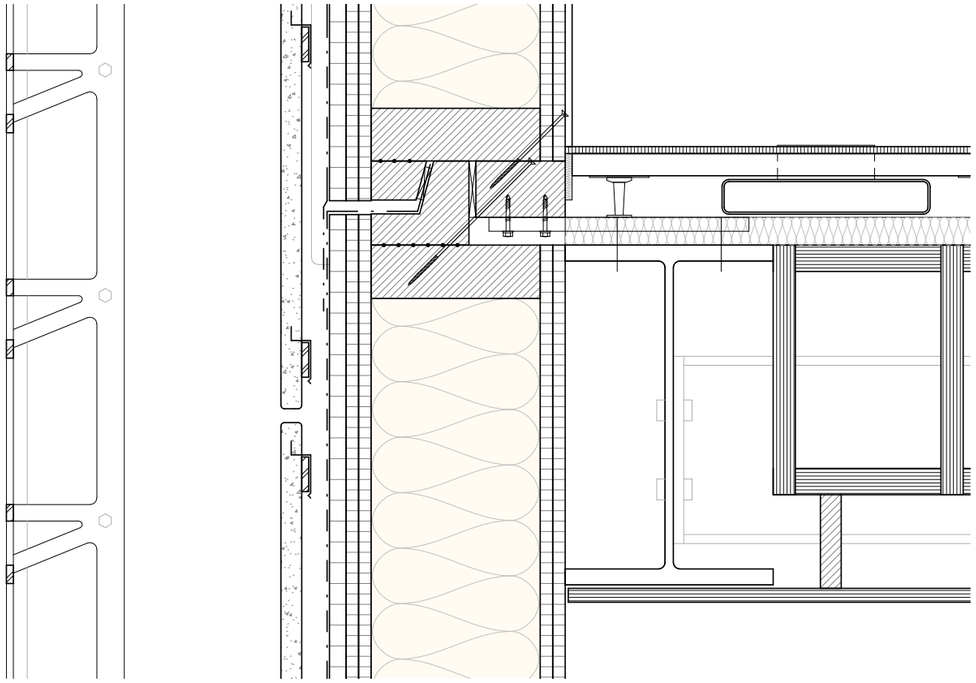


section from 12th to 16th floor, 1:20

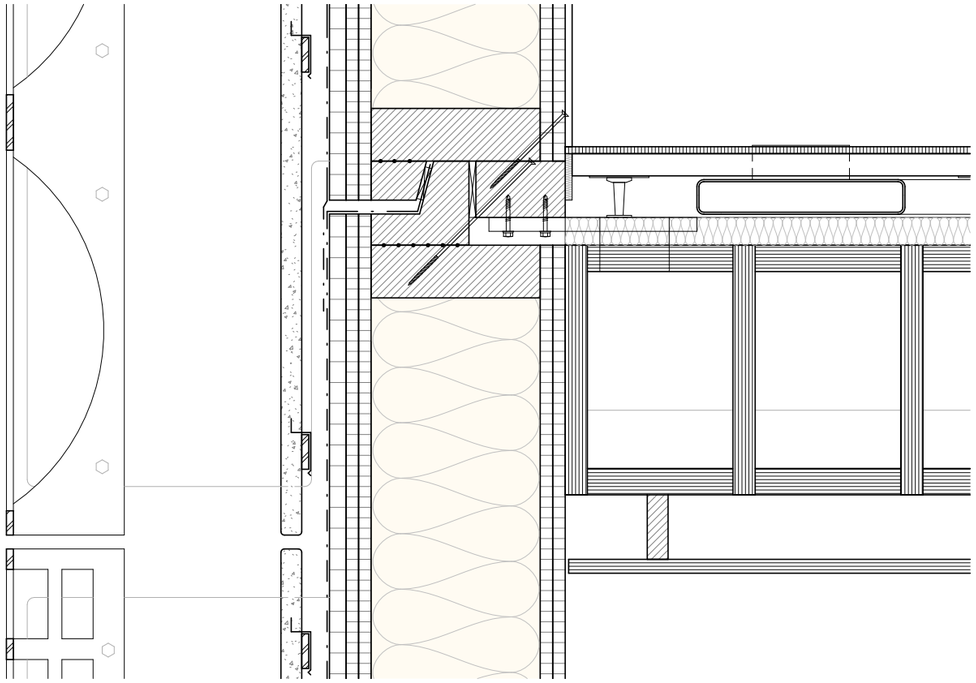




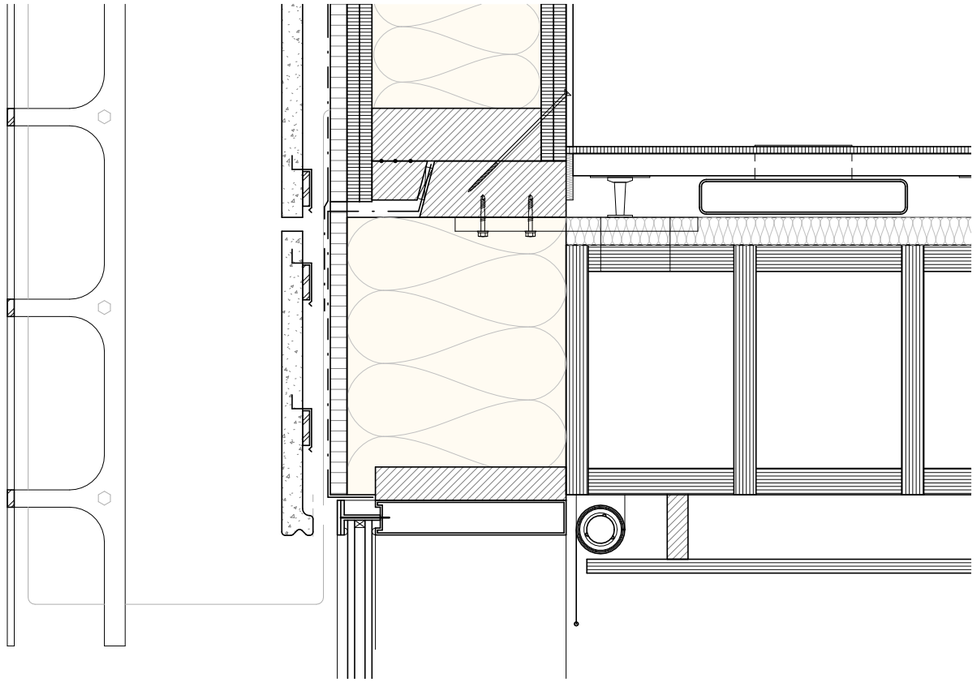
horizontal section, 16th floor, 1:20



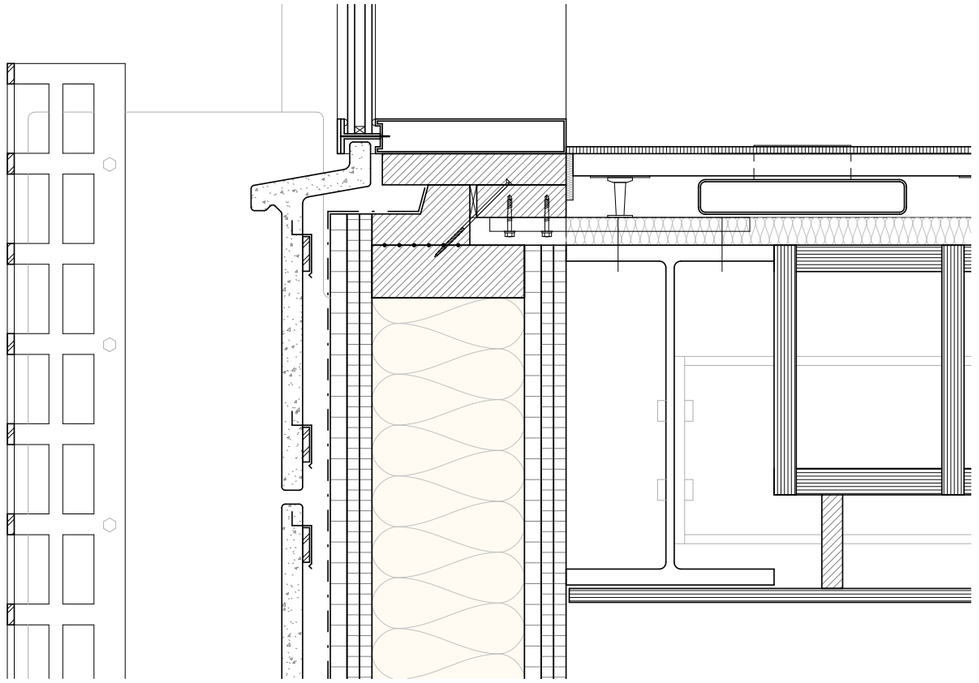
Typical detail: steel structure & prefab panels



Typical detail: timber structure & prefab panels



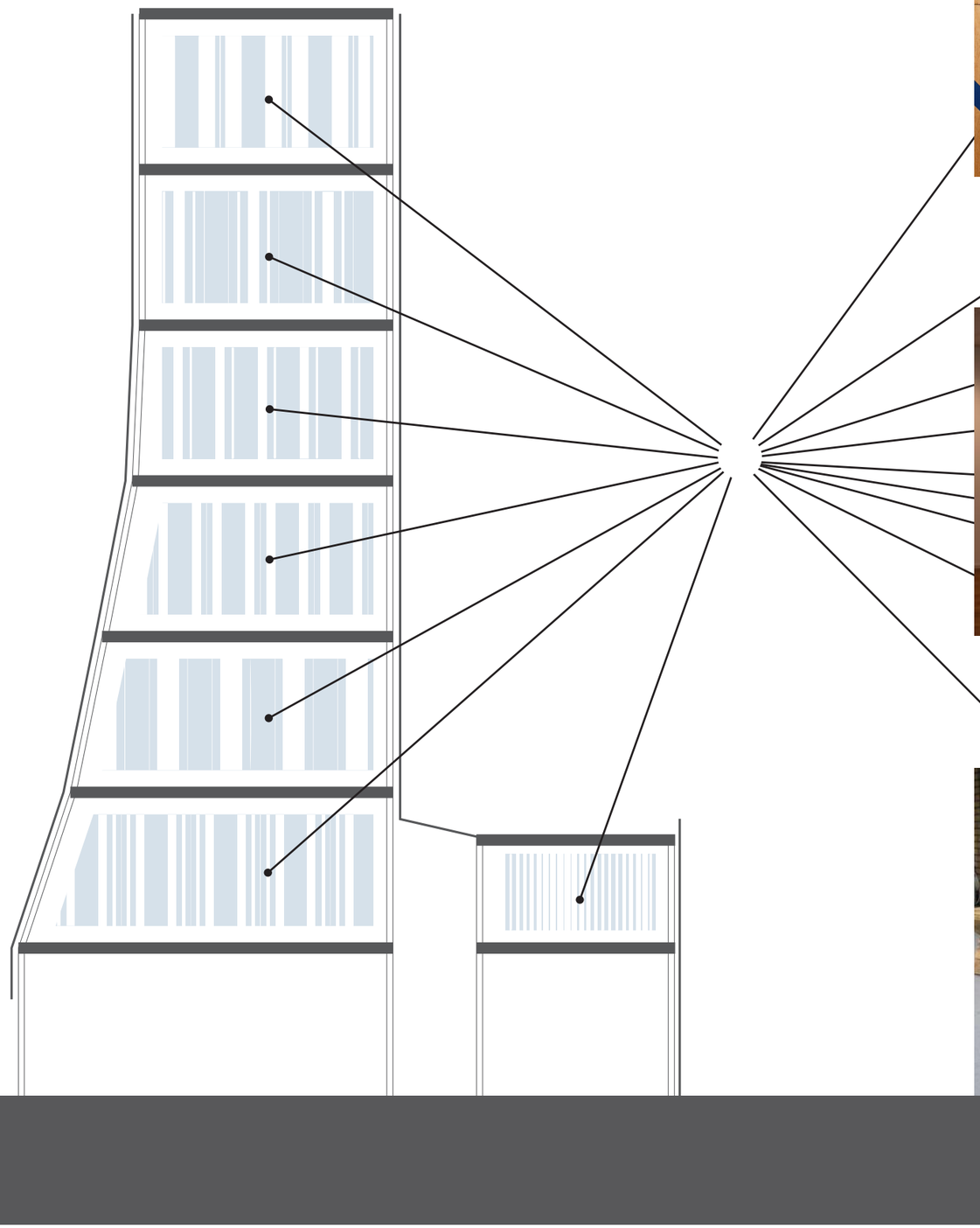
Typical detail: timber structure, prefab panel & curtain wall

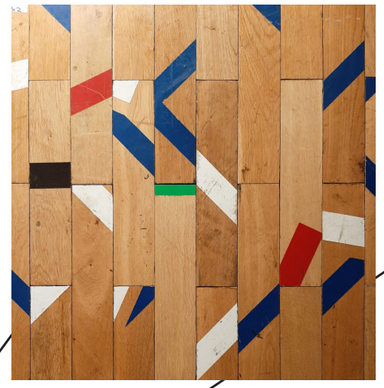


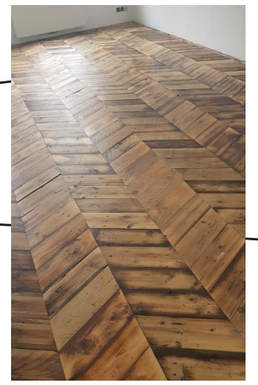
Typical detail: steel structure, curtain wall & prefab panel

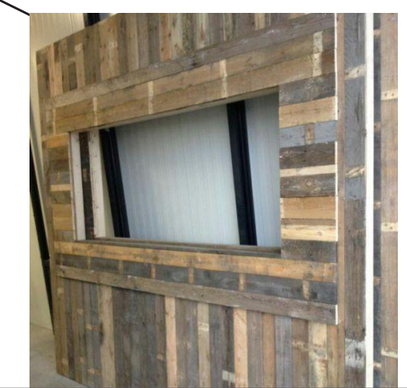
Sustainability

Rigid framework for a reused infill



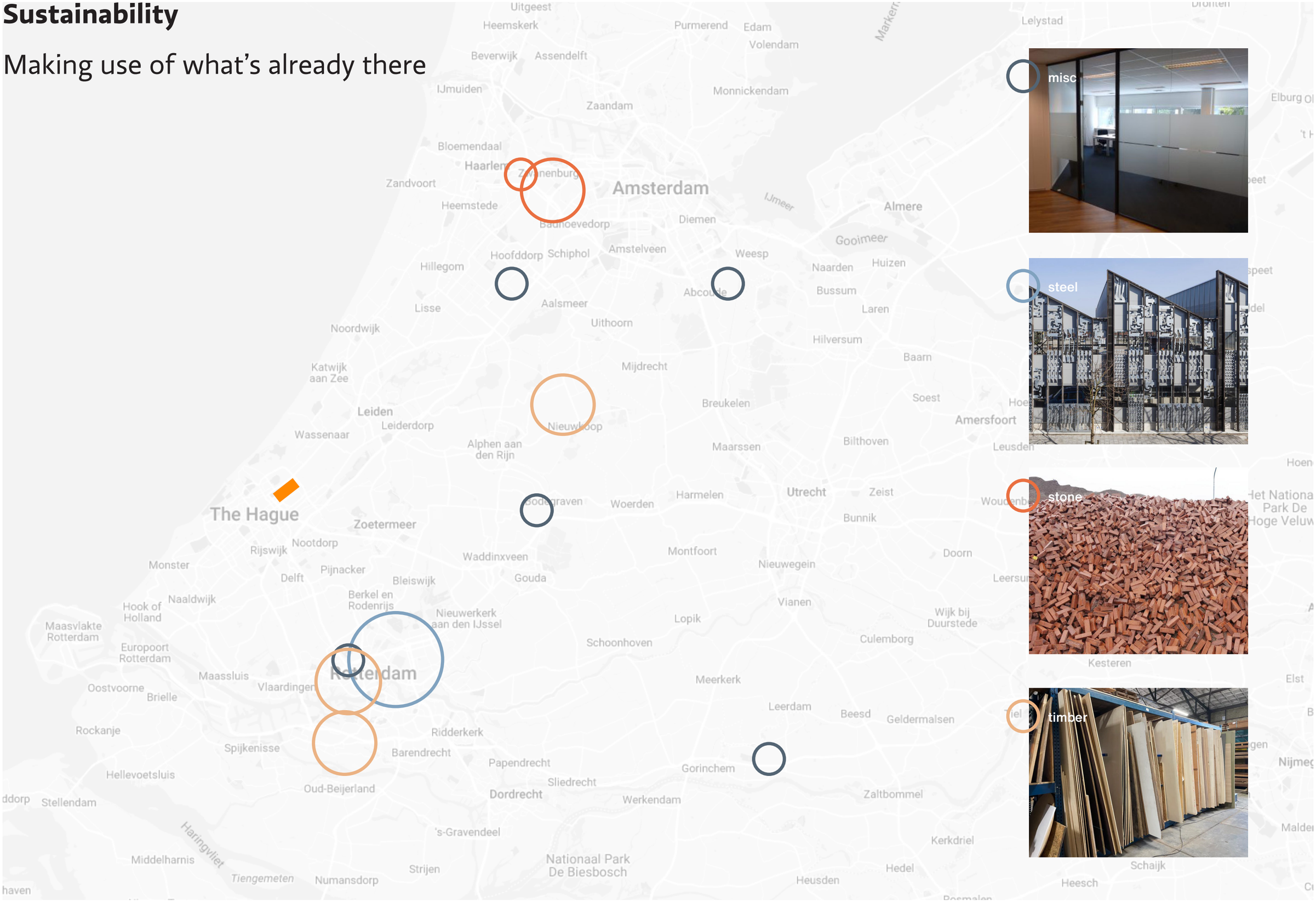


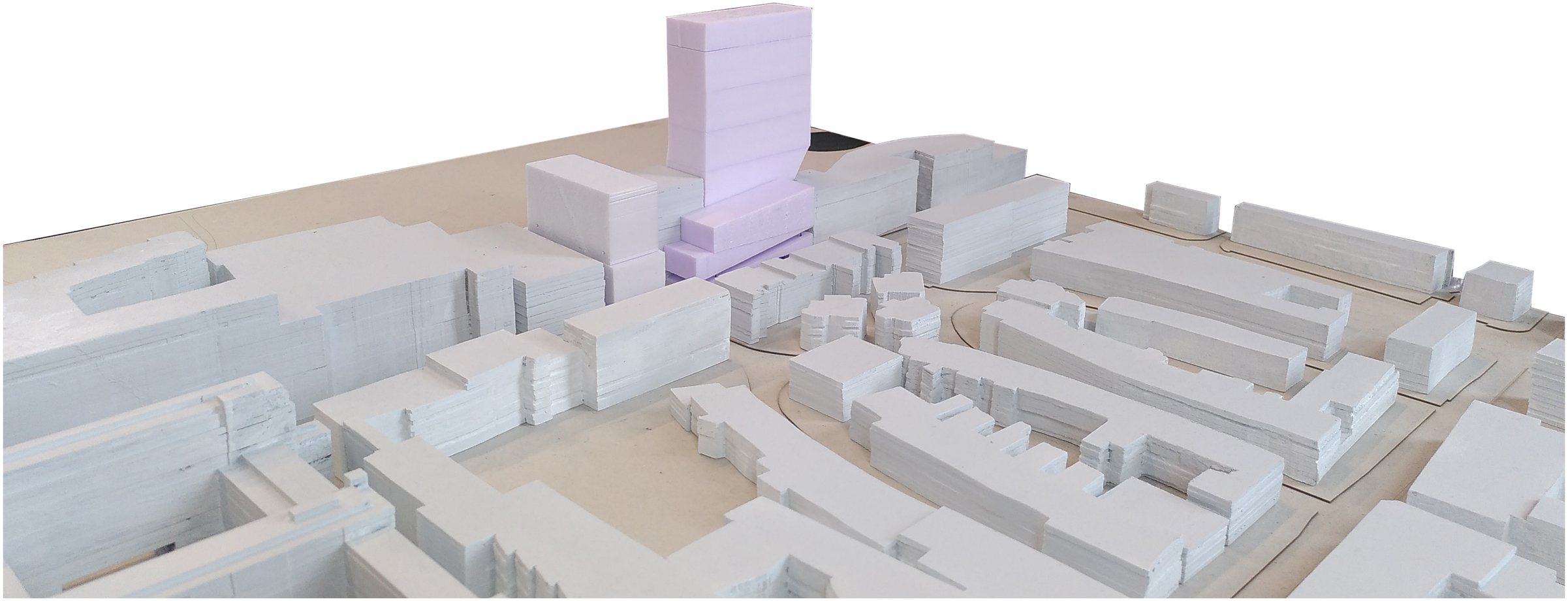


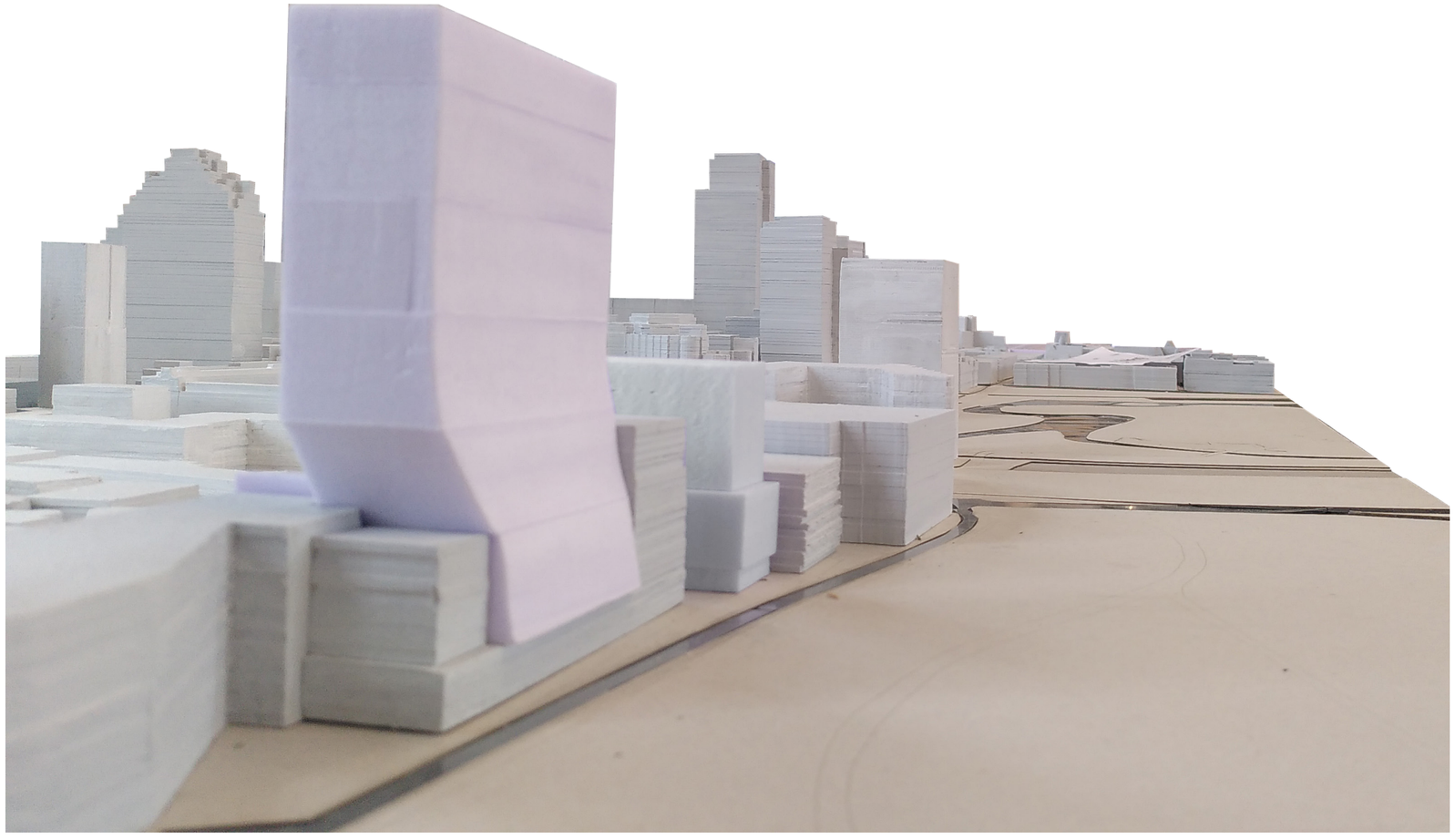


Sustainability

Making use of what's already there

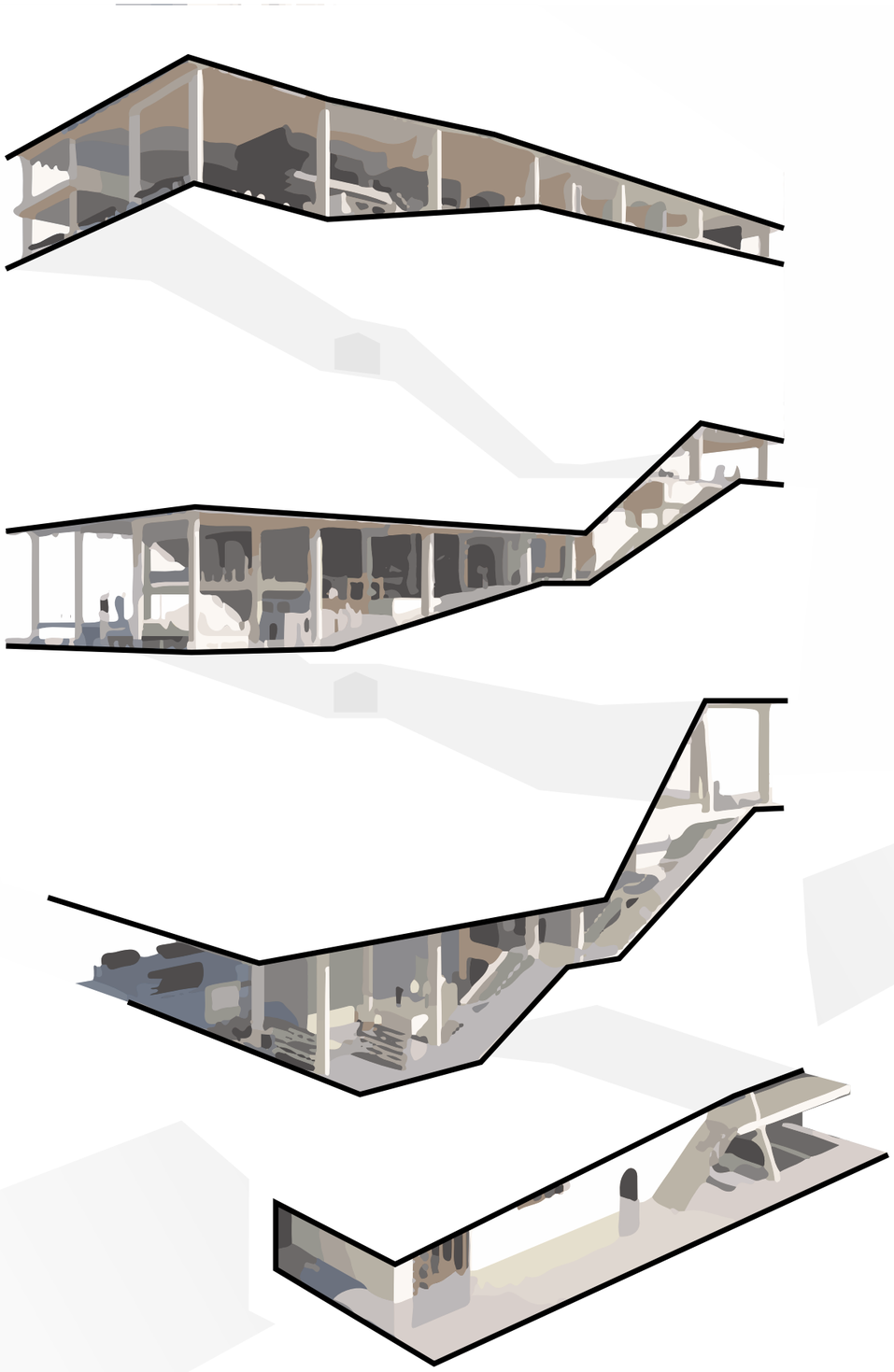






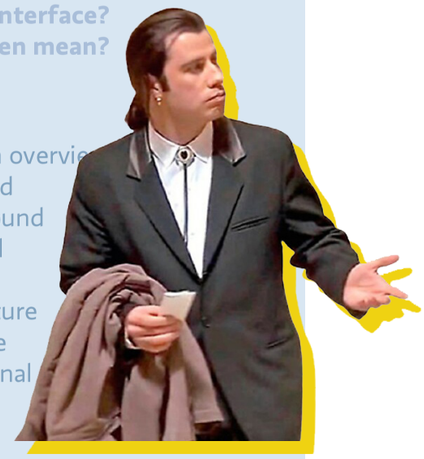
P5 Developments

There were three developments that were most relevant for P5: the role of the public backbone within the Vertical Campus, the role of Interface and how I positioned myself within current theories and further clarification on the role of reused materials.



Interface?
What does it even mean?

This leaflet gives an overvie
of the definition and
theoretical background
of interface, as well
as how it has been
applied to architecture
and how it could be
applied to educational
environments.



1: A system of interaction or communication between different entities.

2: A point at which independent systems or diverse groups interact.

INTERFACE

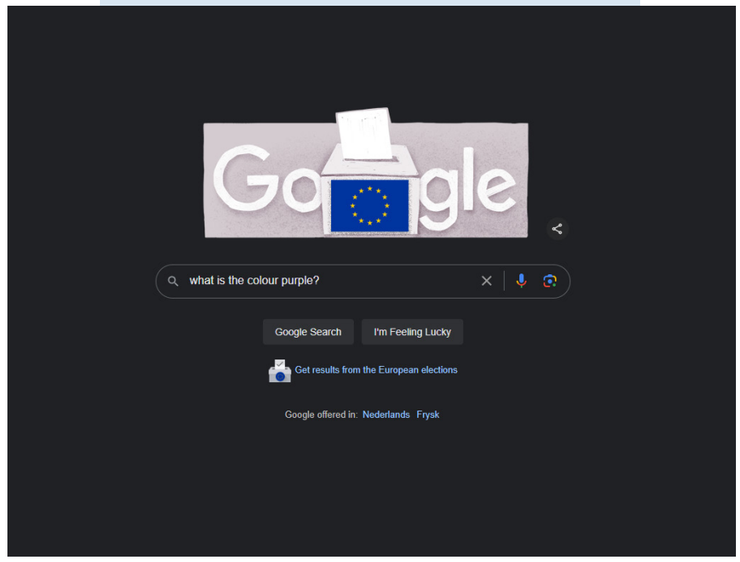
A common interpretation of the interface is digital: the user interface on our screens.

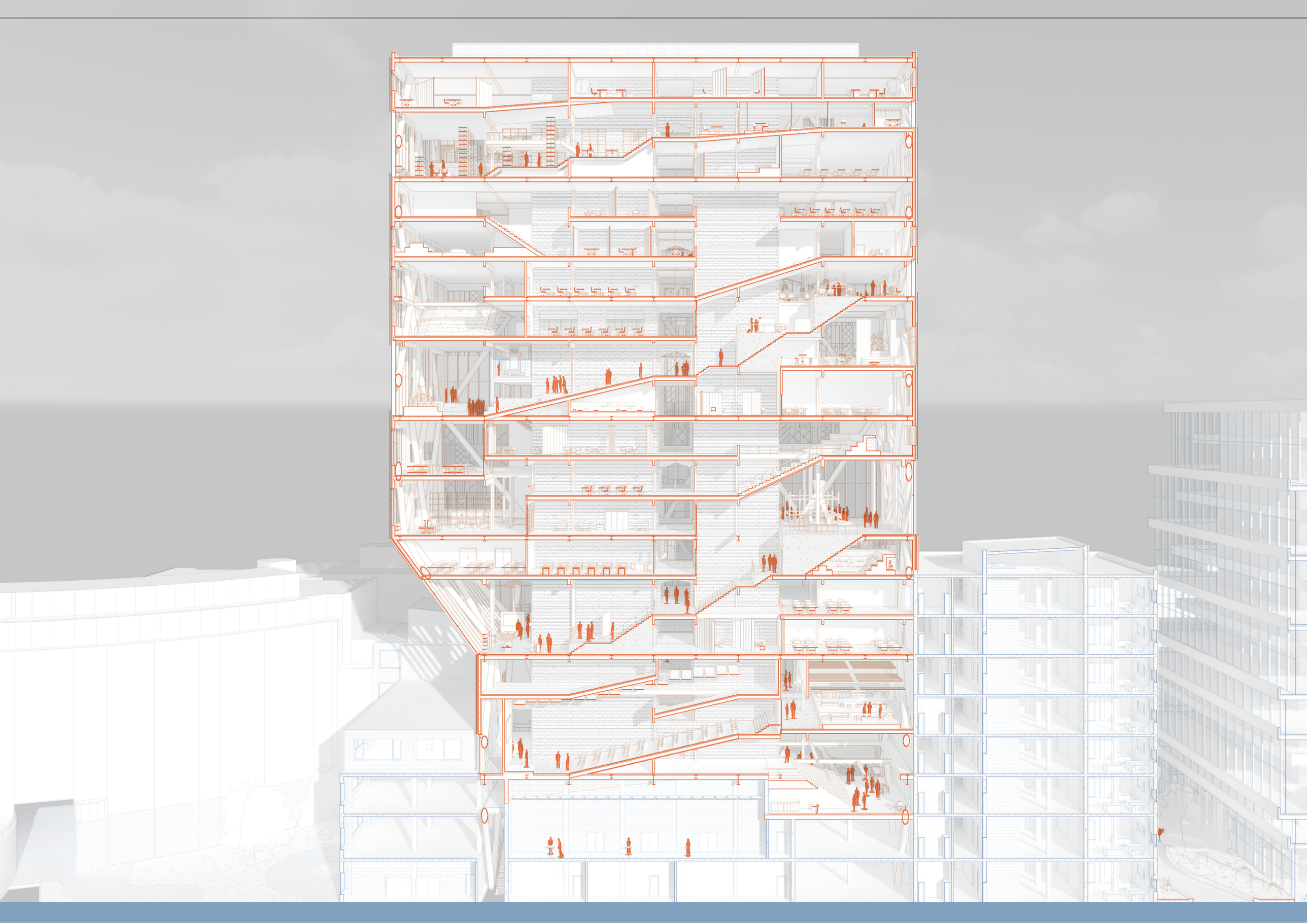
The user interface is a system that allows us to interact with whatever is going on behind the screens, and for the computer to understand our input.

The notion of interface is not new to architecture. Even in ancient times, public spaces were used to accommodate interaction.

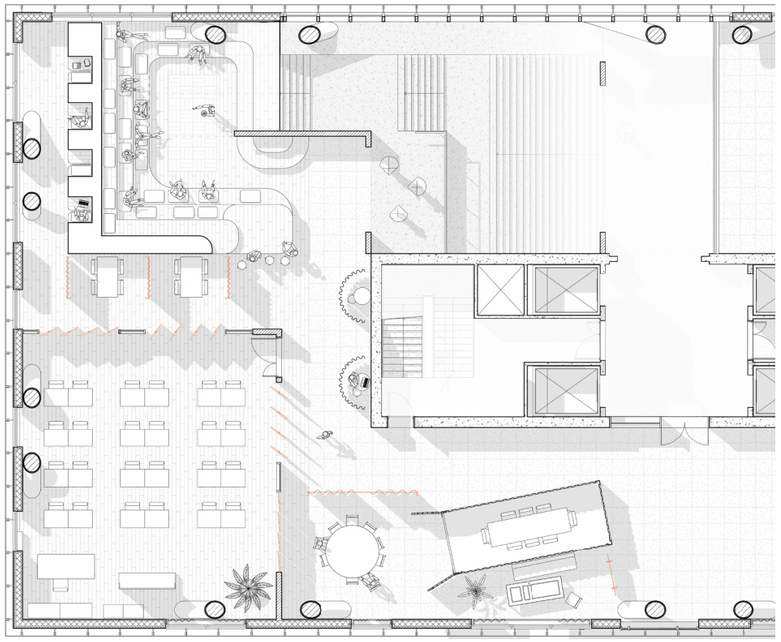
01110110 01100101 01110010 01110100 01101001
01100011 01100001 01101100 00100000 01100011
01100001 01101101 01110000 01110101 01110011

What is the Vertical Campus?

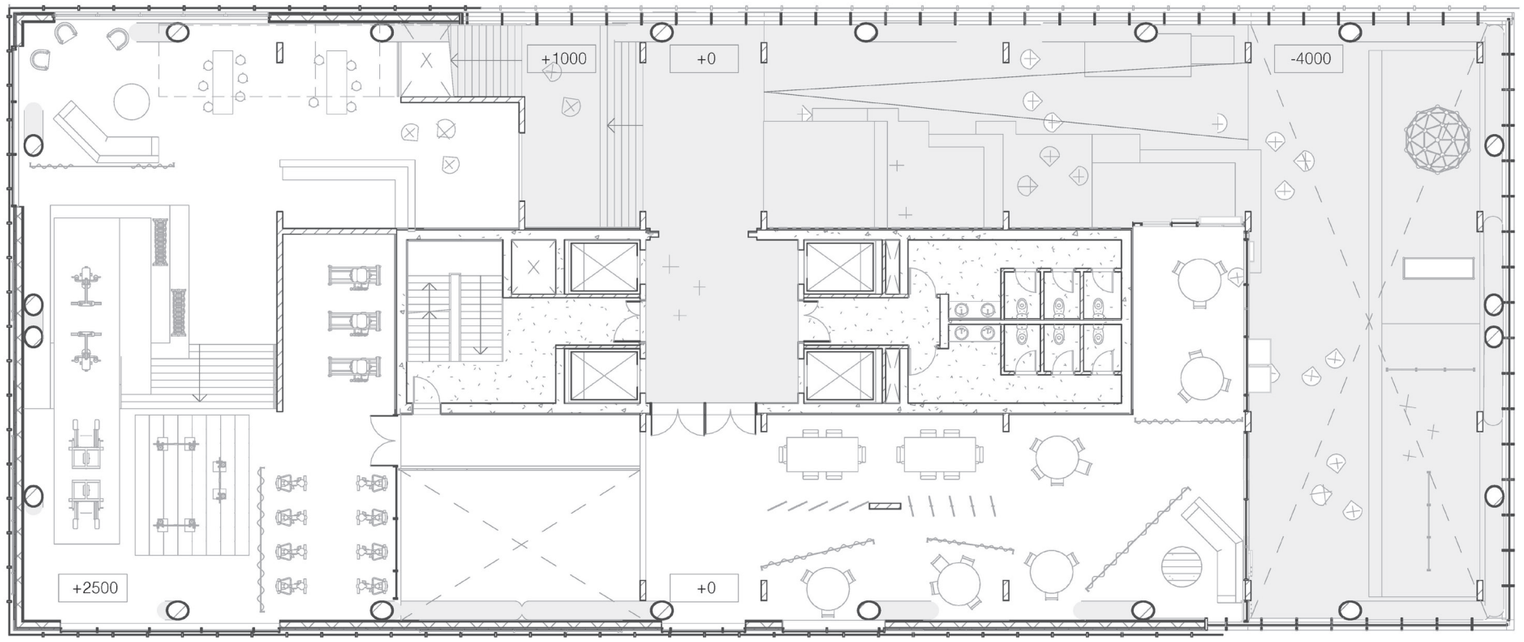




Ground floor, 1:200



Typical learning environment, 8th floor

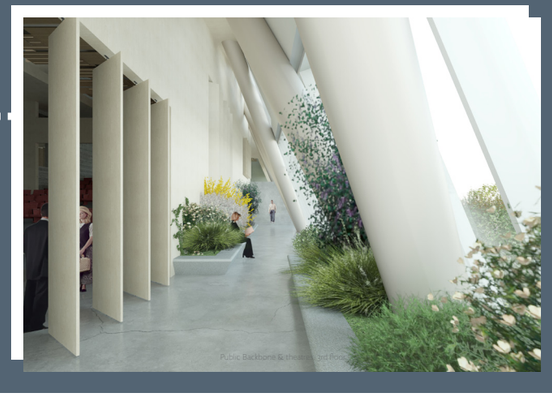


Typical floor, 13th

Approach from Bezuidenhoutseweg

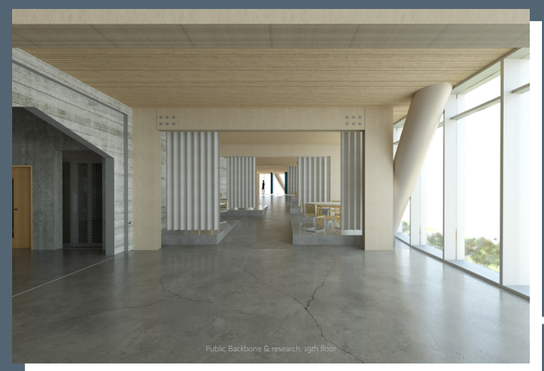
Approach from Prinsegracht

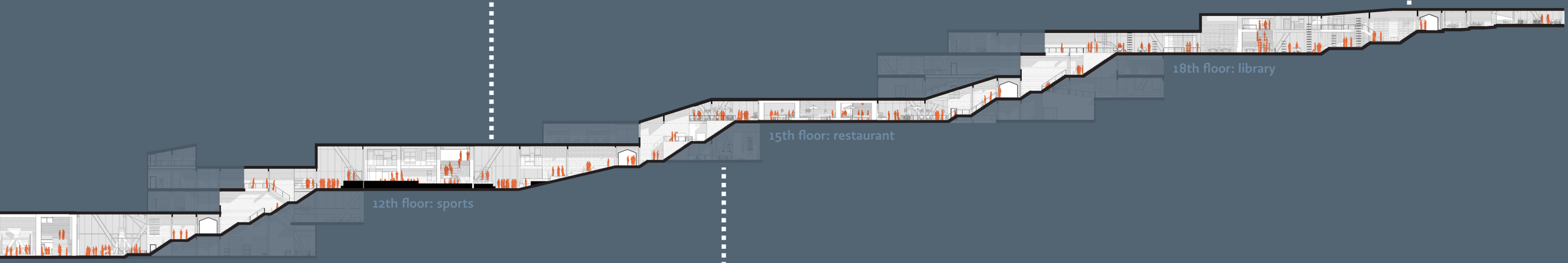
Public Backbone & workshops, 9th floor

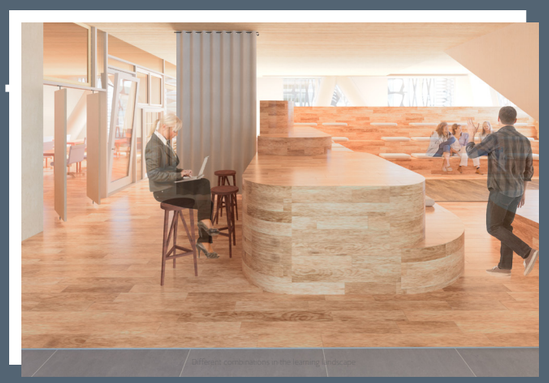

Public Backbone & theatre, 3rd floor

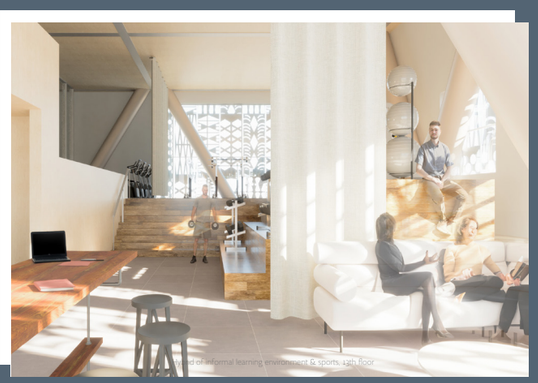
the Vertical Campus as an Interface

Public Backbone & sports, 12th floor


Public Backbone & research, 19th floor


18th floor: library
15th floor: restaurant
12th floor: sports
oor: crafts

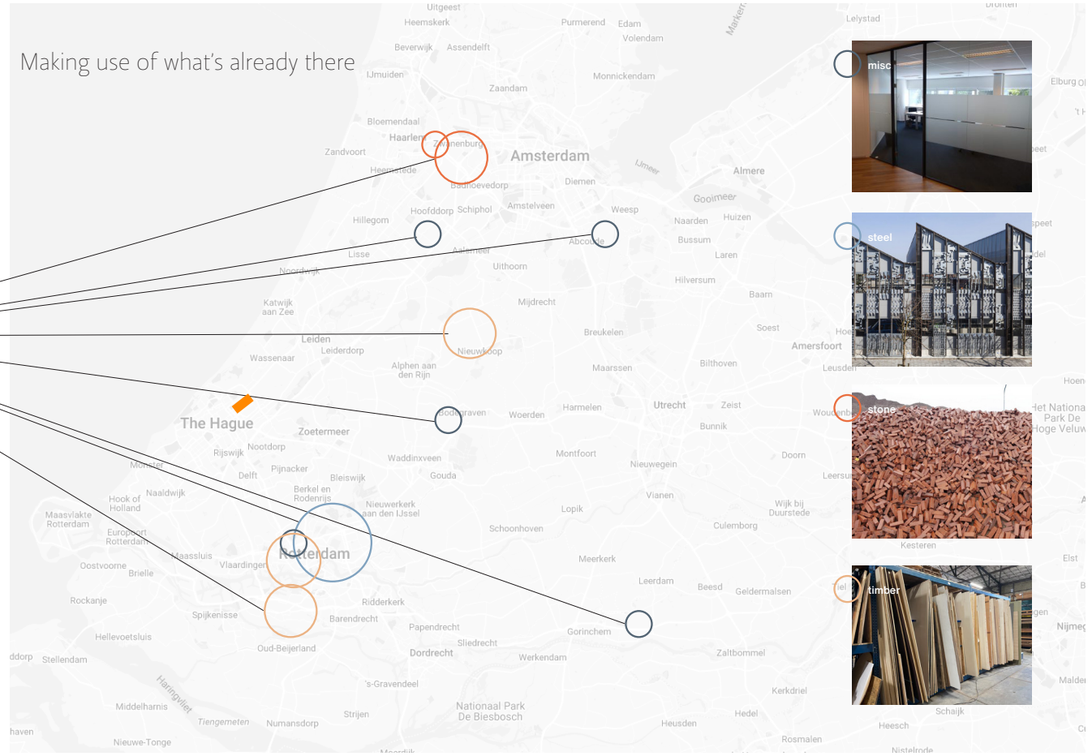




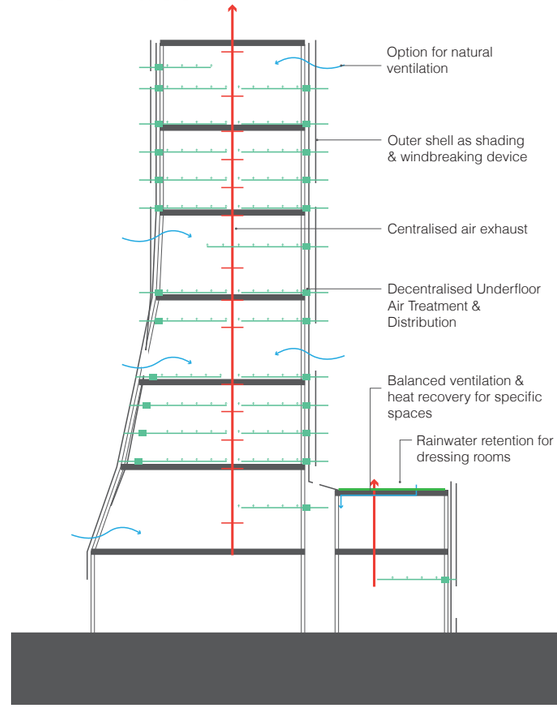
Sustainability

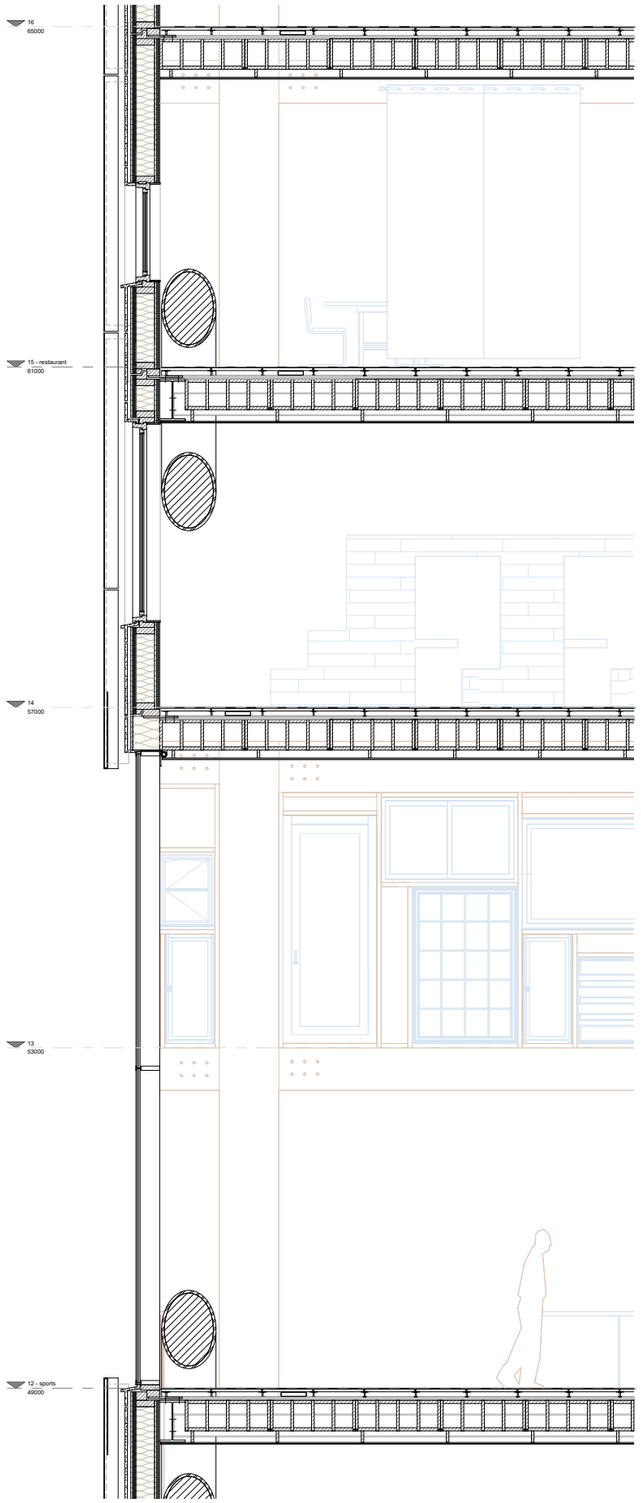
Rigid framework for a reused infill

Making use of what's already there

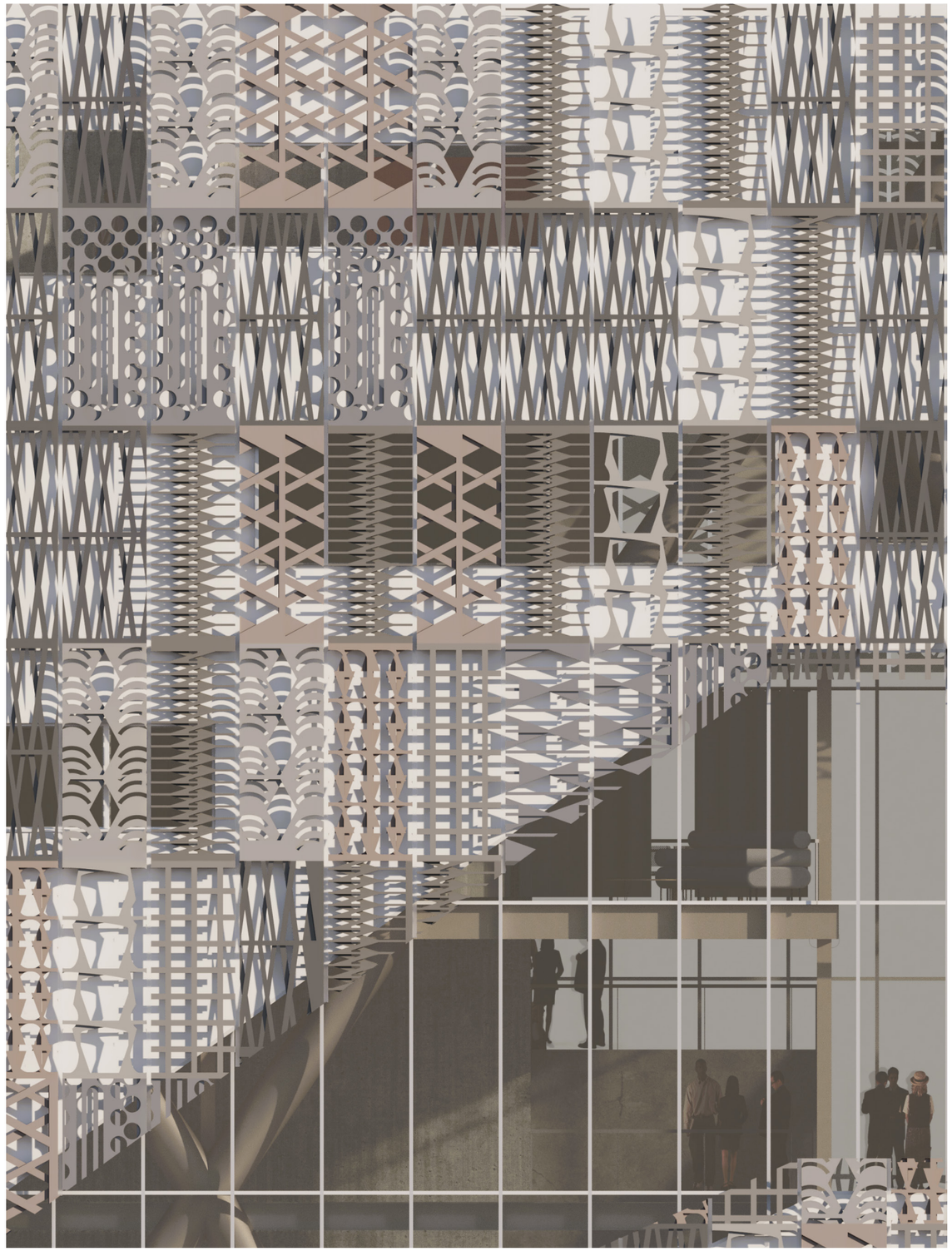


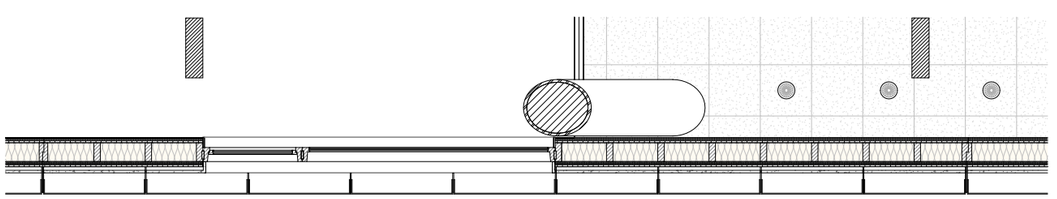
Climate



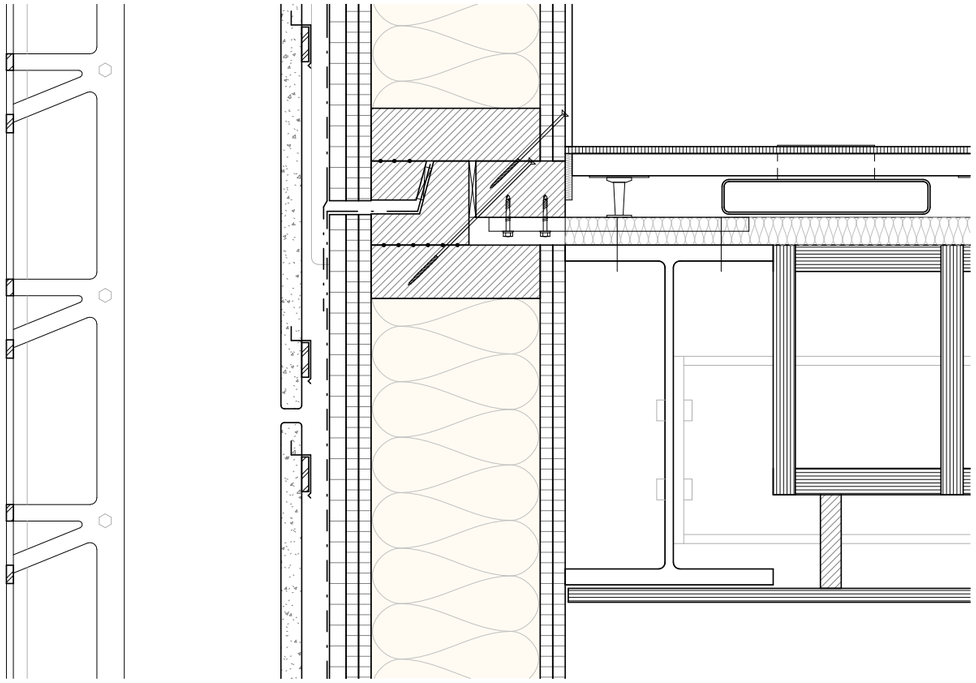


section from 12th to 16th floor, 1:20

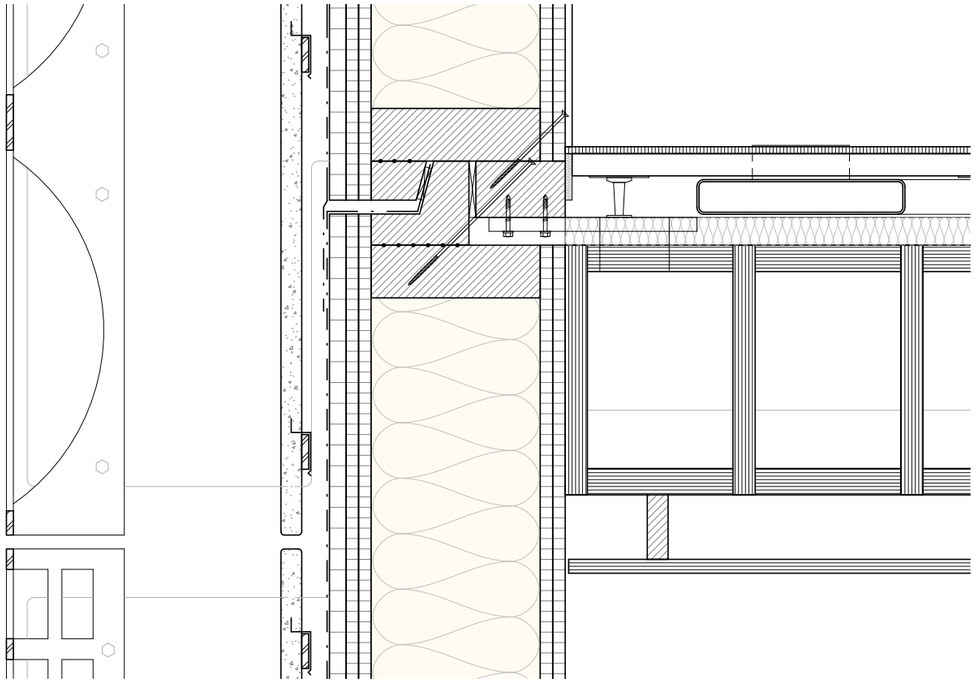




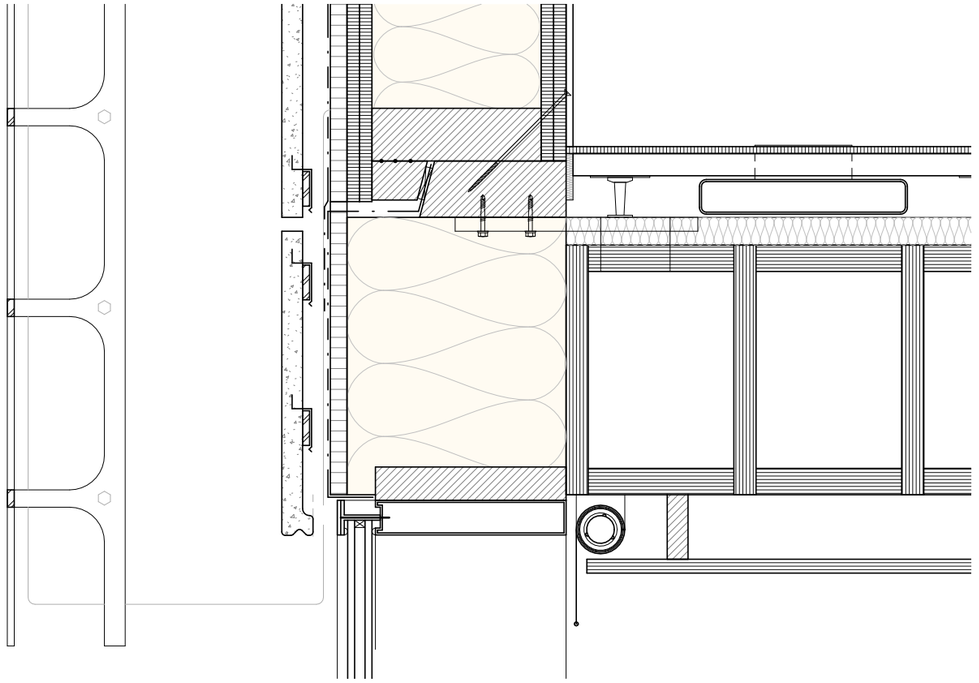
horizontal section, 16th floor, 1:20



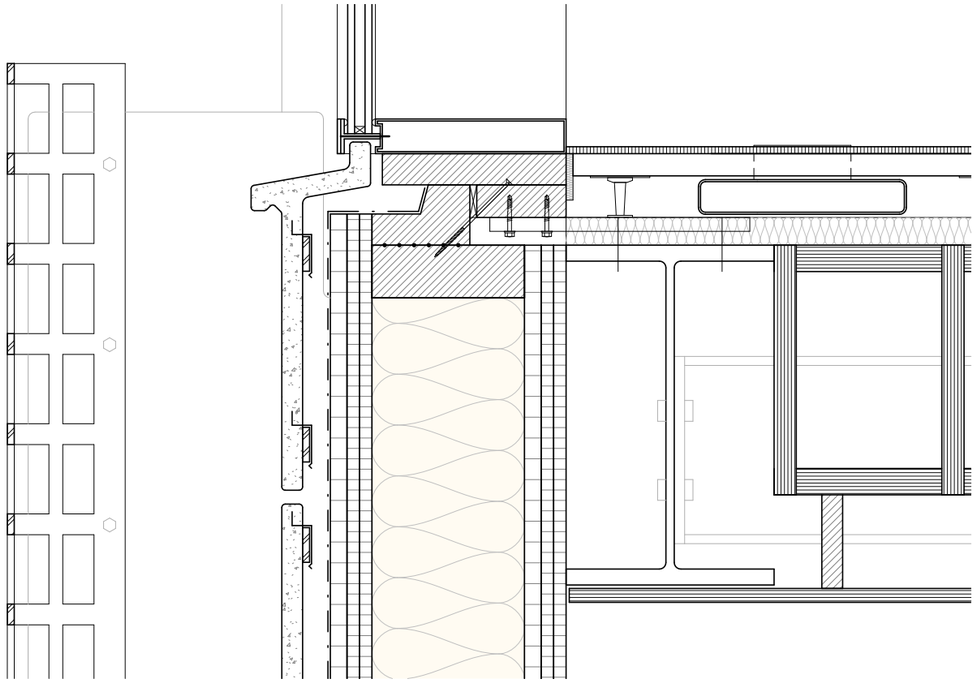
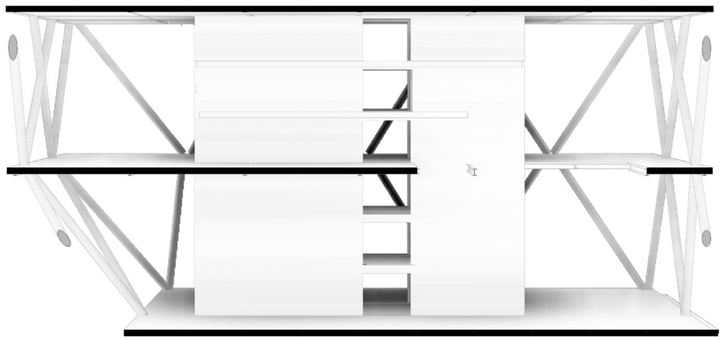
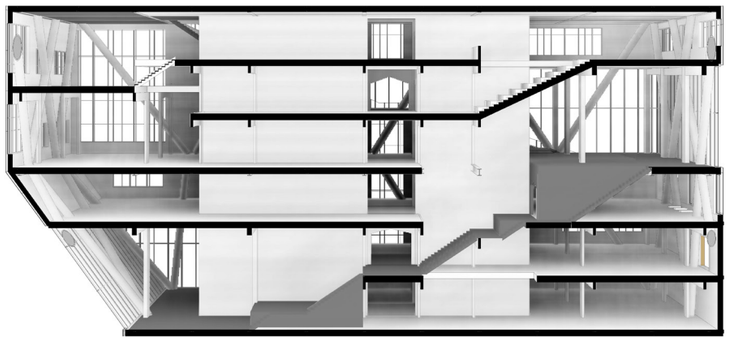
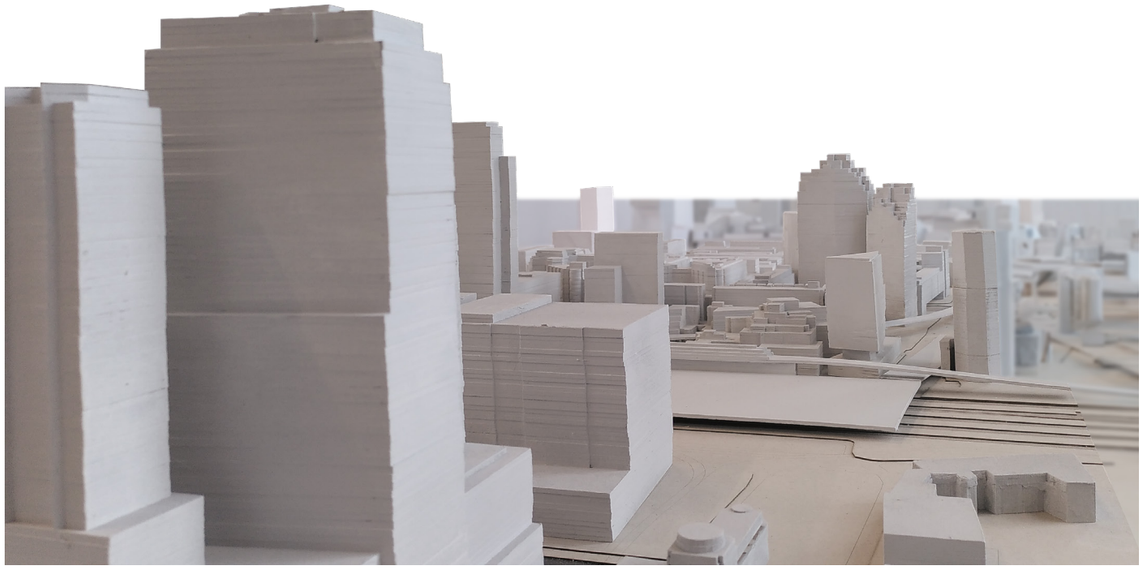
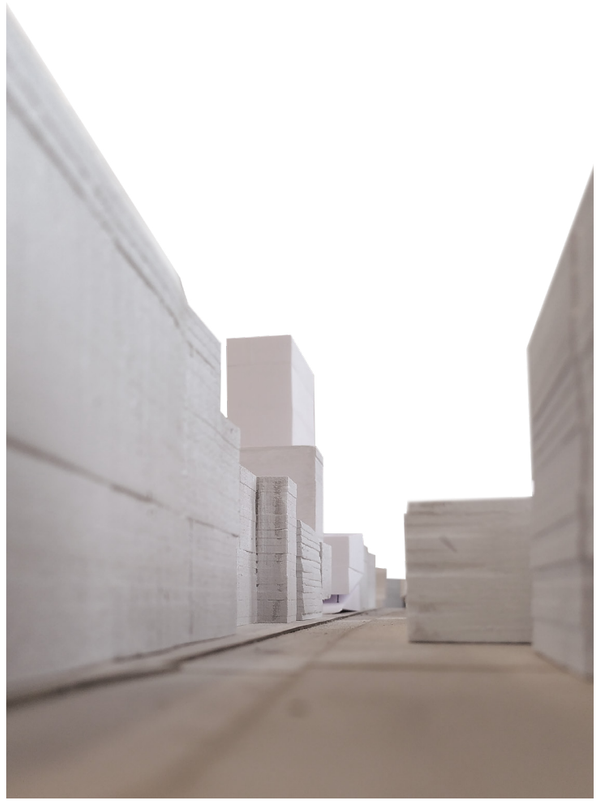
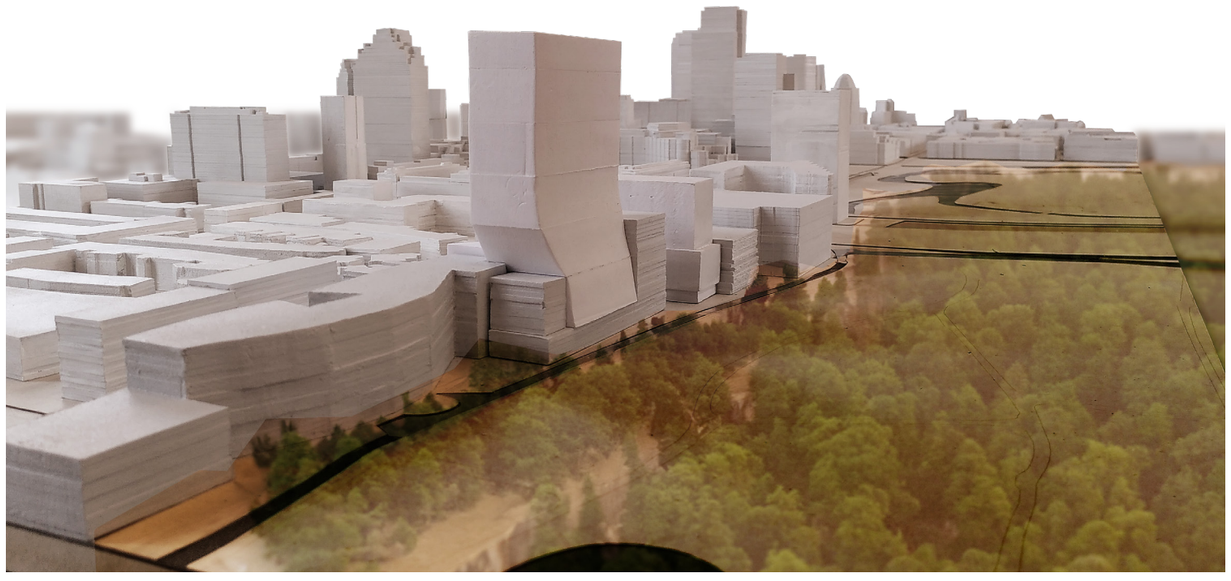
Typical detail: steel structure & prefab panels



Typical detail: timber structure & prefab panels



Typical detail: timber structure, prefab panel & curtain wall



Typical detail: steel structure, curtain wall & prefab panel