Architectural care

A public building oriented towards mental wellbeing

Studio

AR3AP100 2024-25 Public Building Graduation Studio "Public Condenser, Copenhagen"

Mentors

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Maria Napieralska · Graduation Report

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Introduction

"Architectural care" is a public building oriented towards the mental wellbeing in Copenhagen. The project stems from the observation and analysis of the new balance between the state, market and society in Denmark, which results in social divisions within the city formerly used as an example of one of the happiest places in the world.

In recent decades, Denmark has shifted from the Nordic welfare model towards a more competitive, neo-liberal approach, challenging the ideal of urban equality and intensifying divisions between socioeconomic groups. In areas such as Nordvest in Copenhagen, where the project site is located, these changes intersect with persistent social stigma and structural discrimination, especially against residents with non-Western backgrounds, amplifying feelings of exclusion and vulnerability. Together, these factors heighten the risk of mental wellbeing issues, which is also evidenced by rising psychiatric admissions and lower mental health scores in the region. In this context, architecture can play a transformative role by promoting inclusivity, reducing stigma, and supporting mental wellbeing through the design that promotes equal opportunities and celebrates diversity.

Conducted analysis has resulted in formulating a research question: How can the architecture of a public building support the mental wellbeing of its users? To develop the answer, I have worked with the subquestions "What are the current findings connecting architecture to mental wellbeing?" and "How can the program and the design of the building can support mental wellbeing?".

Process and methods description

Within the first semester, work was focused on two subjects: site analysis and theoretical research. Site analysis was widely a result of group work, focusing on the aspects of City, Culture and Connection. These topics allowed insight into Copenhagen's history, architectural typologies, transportation networks, as well as local customs and traditions. An important part of the research was a site visit, which allowed us to conduct interviews with locals and sense the genius loci on our own skin. Moreover, meetings and presentations from local architects, city planners and authors gave us an expert insight into the city's challenges.

Theoretical research consisted of various methods: literature review, comparative case studies and an interview with a project leader of Exhale, a mental wellbeing space for TU Delft students. Literature review allowed to understand the concept of mental wellbeing as a complex and fluid term, relatively new to the scientific framework. The investigation has further led towards the neuroarchitecture – a multidisciplinary field that investigates the effects of the built environment on human psychology, physiology and behaviour. This particular part of the research has resulted in the creation of neuropositive architectural guidelines, presented during P2.

Comparative case studies included multi-purpose buildings intended for vulnerable groups, such as cancer patients or residents of migrant neighbourhoods. They were compared regarding buildings' relation to the surroundings and entryways, as well as evaluated based on the prepared neuropositive architectural guidelines. This assessment includes analysis of solutions affecting different human senses in positive ways, as well as environmental enrichment – design strategies for promoting social contact, physical activity and cognitive engagement.

Theoretical research was followed by tests on the project site, mainly with the use of 3D modelling software, sketches and physical models. Those investigations were carried parallel on different scales – regarding urban context, shaping architectural plans and sections and understanding of building detail and how it can be intentionally formed. Those try-outs were discussed with tutors and other students, referencing other projects, and finally touching upon the illustrations that reflect the project's concepts in the best possible manner.

Reflection on the process and methods

The variety of methods used allowed me to notice what keeps me motivated and engaged, and what I find hard to relate to. Working on the theoretical side of the project has been a journey between fascination and absolute dedication and moments of doubt. I felt that my professional experience has influenced my design process profoundly, and therefore creating a work that is strongly based on academic research and exploring concepts felt sometimes naïve or unjustified; while at others, it gave me the absolute motivation and dedication and feeling of exploring something new and meaningful. Discovering a passion for a particular aspect of architecture – the crossover between health and buildings - has been extremely inspiring at this level of education. Finding other students and researchers fascinated by how architecture can impact our brains has opened my perspective towards further education and looking at my thesis as the beginning of a new journey, instead of the end of university.

Something that has helped me greatly during the project evolution was the provided support of experts, professionals, tutors and fellow students. To begin with, lectures by Martin Søberg and Deane Simpson, which explored the intersections of urban politics and city evolution, raised my awareness of the complex processes that have shaped Copenhagen into the city it is today. At the same time, it has disenchanted the vision of the idyllic place as it is often portrayed and encouraged to engage more critically with the contemporary issues it faces.

Mental wellbeing is more than health; it is caring about people's welfare in everyday life. When provided with tools, places and activities, people can cope with the challenges they face in their personal, professional or academic lives. Discussion with Ailisha Shannon, the project leader of Exhale – a social living room for the TU Delft students, is hard to put into tangible design results. It was rather an exploration of what people might have lost due to the fast-paced living environments, and how, as designers, we might give them the conditions to flourish again. This conversation has helped me shape the aspects that support my project, such as place ownership or social contact and are further translated into architectural solutions.

I have also talked with Rutger Spoelstra as a part of research for urban gardening, Sofia Souvatzo-glou as a Public Building PhD researcher investigating the influence of architecture on depression, tutors – Paul Kuitenbrouwer, Stefano Corbo, and Elina Karanastasi, as well as students in the studio. The exchange of ideas and references, sharing materials and methods, has been an important part of the work on the project, reminding us that collaboration is a way to achieve more insightful results.

Design outcomes evaluation (answering research questions, fulfilling the design ambitions)

As I was used to working on a ready-made brief in architectural competitions, I encountered challenges when it came to locking in the building programme. Although the variety of activities was justified by the mental wellbeing research, and the gradation of programme supported the idea of creating more inward-looking environments, I have felt that design decisions could have been bolder. At the same time, when I think about situating a more daring building in the given context, it is hard to justify its existence within the urban tissue and trends in Nordic architecture. Therefore, the result can be seen as quite conservative, perhaps not taking a full advantage of a possibilities a student design can have – but at the same time, it reflects that mental wellbeing architecture can be done with modest means, if only we, as architects, will prioritise care in our future projects.

While working on the research questions, it has been noted that the current findings connecting architecture to mental wellbeing mostly refer to the healthcare buildings, such as hospitals and clinics. Some studies indirectly referred to the investigated topics, relating the architecture of kindergartens or classrooms to early children's development and consequences of architectural spaces on kids' curiosity, focus, and teaching results. Those findings indicate that buildings influence people's reco-

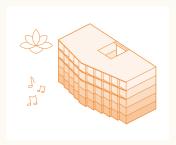
Final reflection

very, learning, and emotional state, but exploration of these matters was limited. Therefore, as future architects, we should strive to take into account those discoveries and incorporate them into more types of projects, such as housing or public buildings.

When it comes to the program and design of the building, scientists note that it is important to consider spaces as systems, which consist not only of the architectural solutions but also human dynamics that take place within them.¹ Therefore, the proposed idea of enriched environments offers a possibility of physical activity, cognitive stimuli and social interaction.² Those affordances are not happening individually, but have to be considered as a holistic and balanced approach, depending on the context and users.

Relation between the graduation project and studio topic

Architectural care is not just a project; it is an approach that prioritises human wellbeing on different scales and stages of the project. As the studio topic was a Public Condenser, this design attempts to answer the various aspects of a public building with mental wellbeing as a core concept.



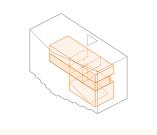
Hybridity is understood as a combination of different atmospheres one building can provide, to answer different human needs: from the open and social environments to quiet spaces promoting looking inwards. The programme has been organised vertically in a way that those areas can coexist in one volume, allowing people to use them in parallel.



The main focus of the *sustainability* aspect has been put on creating a new green area for the district, which can benefit the neighbourhood independently of the building itself through the public space activation, enhancing biodiversity and multisensory stimulation in a dense urban fabric.



The *multiplicity* in the project is understood through ensuring that spaces are not only functional or aesthetic, but also beneficial for visitors through the application of neuroarchitectural findings.



Through providing a variety of spaces, programme, natural environment and evidence-based design, this project represents *resilience* to changing conditions that can affect mental wellbeing of the local community. Although the stressors might change, the design offers a complex environment that creates beneficial conditions for human wellbeing.



All of those solutions are concluded in the promotion of *healthiness* of the built human environments, with a focus on mental wellbeing, which is often overlooked, despite the profound impact of the architecture on our mental welfare.

Relation to Master track (Architecture) and Master programme (Master's Programme Architecture, Urbanism and Building Sciences)

The project responds to the challenges of growing urban populations and their consequences through the means of the architectural profession. Rapid growth of contemporary cities results in a variety of challenges that negatively impact human mental wellbeing. Issues of societal divisions, losing personal space, lack of access to green spaces, and feeling alienated are some of the universal problems that the project touches upon. The proposed holistic approach indicates the importance of addressing those issues through architectural solutions, ranging from the city scale to the details. In the urban context, it underlines the importance of a natural environment to promote outdoor activity and contribute to more balanced city growth. Through formulating the programme, it promotes a range of activities instead of monofunctional spaces, and offers a high degree of ownership to the building's users. Finally, in detail, it considers the structure's environmental impact, and uses materials and visual connections to shape spaces beneficial for people's mental wellbeing.

Relevance in a larger social, professional and scientific framework

The project addresses pressing social issues such as urban inequality, mental health challenges, and the stigmatisation of marginalised communities. By focusing on the design of inclusive public spaces, it contributes to the creation of cities that emphasise equality and support social cohesion.

From a professional standpoint, it challenges practitioners to move beyond traditional, regulatory planning methods and adopt holistic design practices. It translates scientific findings from different disciplines to architecture, therefore promoting multidisciplinary cooperation with professionals from the fields of neuroscience and psychology. It contributes to the growing field of evidence-based design, offering an opportunity to test and refine the idea of architecture oriented towards mental wellbeing.

The project contributes to the ongoing discussion about the connections between the architectural form, social dynamics and mental health. By developing and applying guidelines that can help evaluate the impacts of design interventions, it seeks to refine design methods and bring new insights to the field. Ultimately, I hope my research will advance our understanding of how thoughtful, inclusive architecture can support mental wellbeing and foster resilient, equitable communities.



The 'welfare state' describes the institutions and policies of states that are devoted to the delivery of human and social services, poverty amelioration, and enhancement of human well-being.

L. Staeheli, in International Encyclopedia of the Social & Behavioral Sciences, 2001

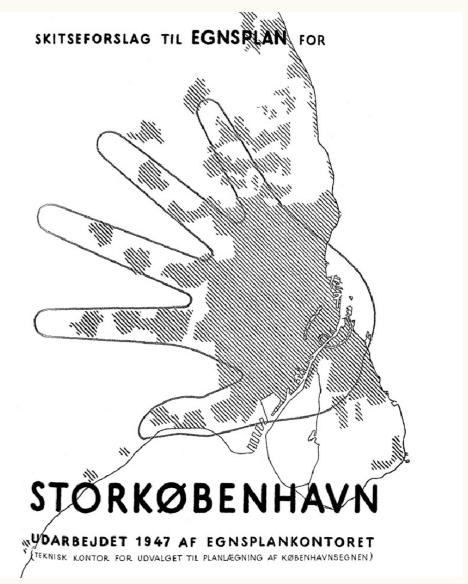


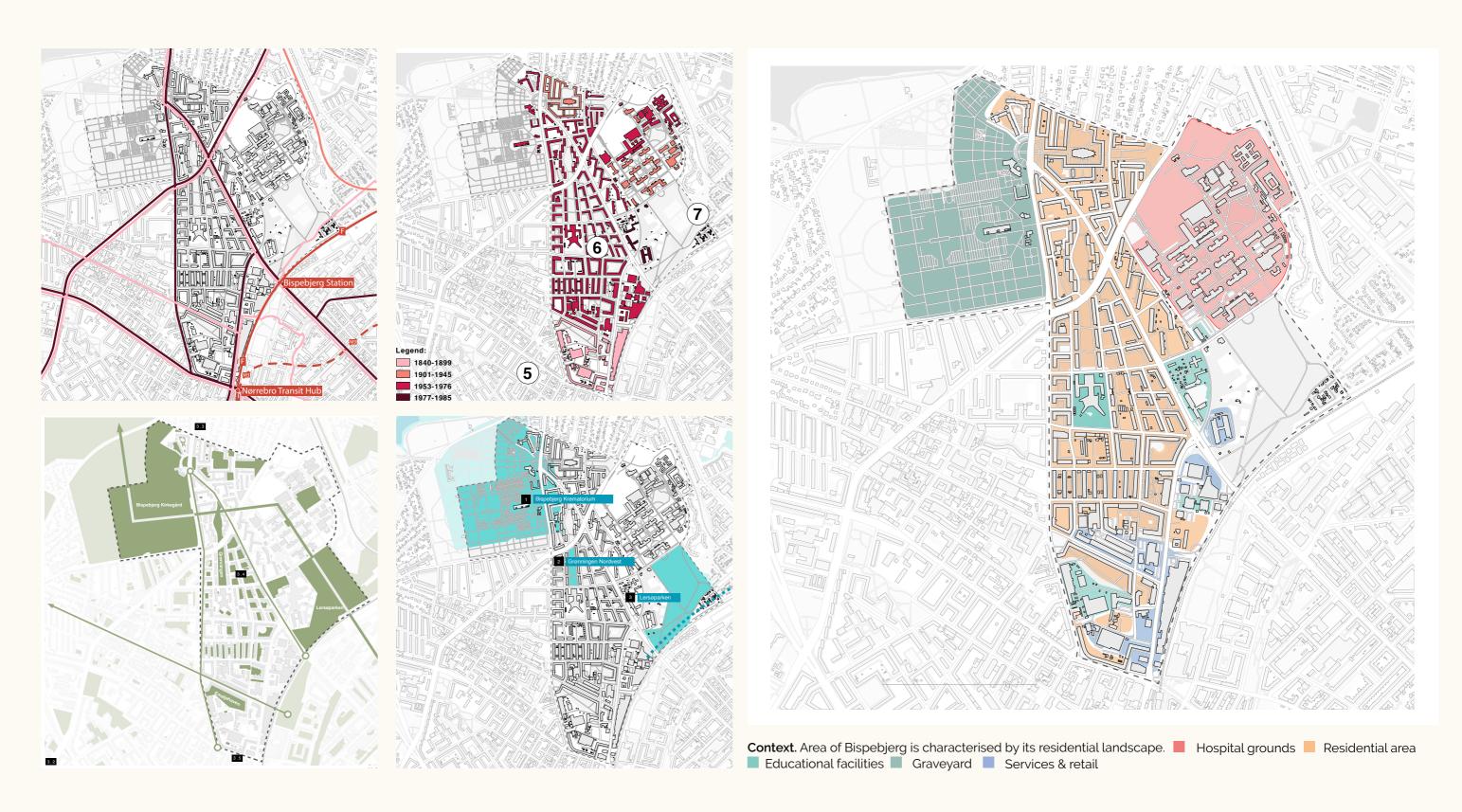




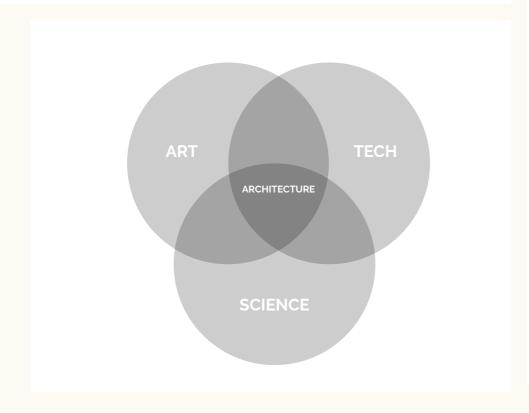




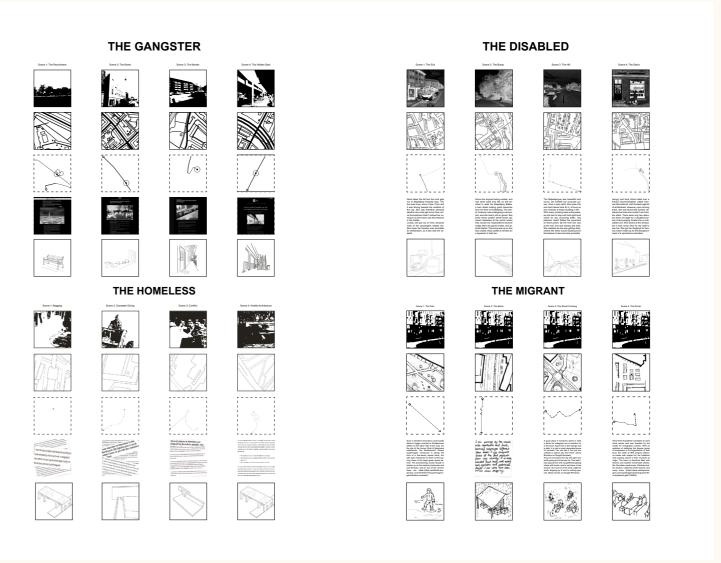


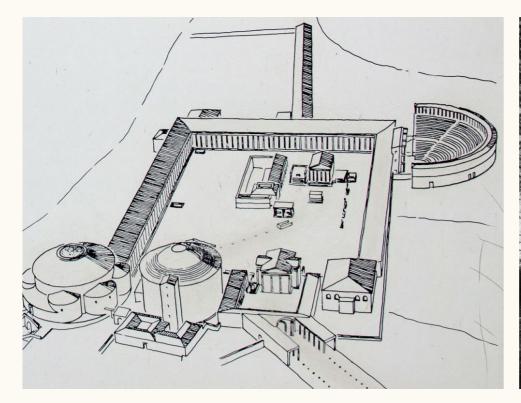


"How might we **design public buildings** for the local community in order to improve mental wellbeing in the area of Nordvest in Copenhagen?"



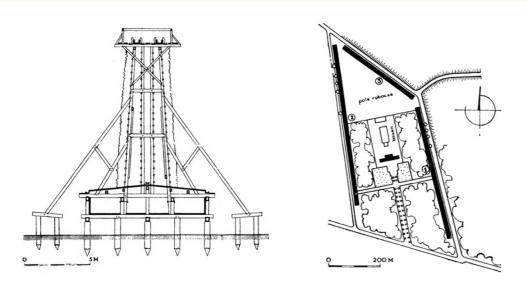




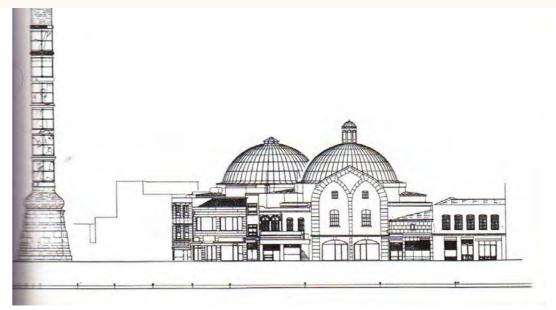




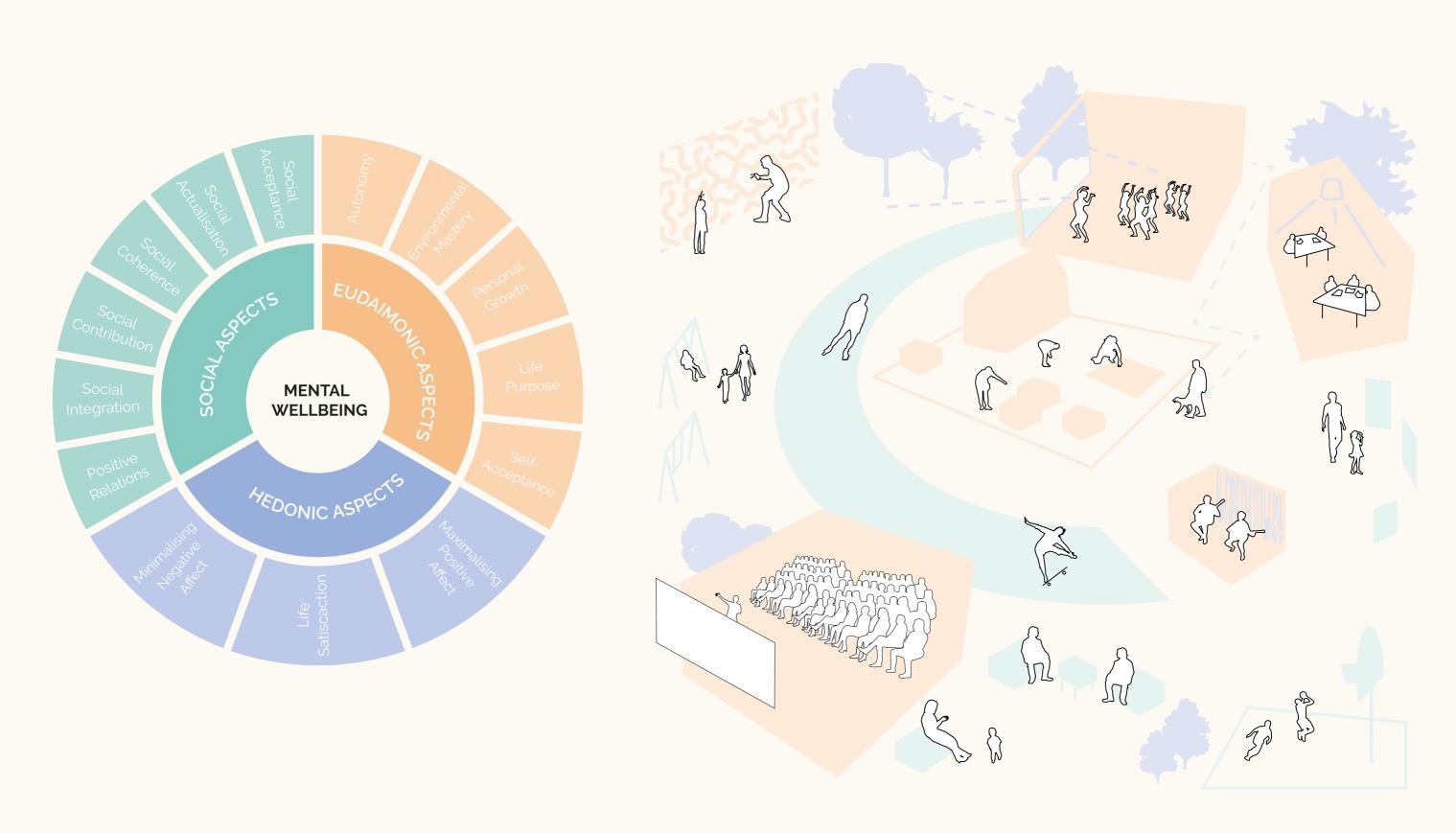




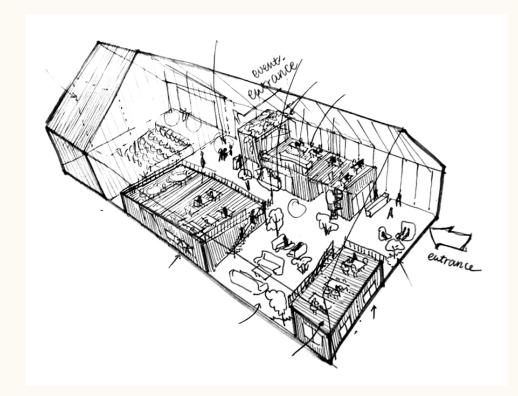




Görsel 5. Çemberlitaş Hamamı/İstanbul -Y. Mimar H. Onur (Aktaran: Yaman, 2010: 51).



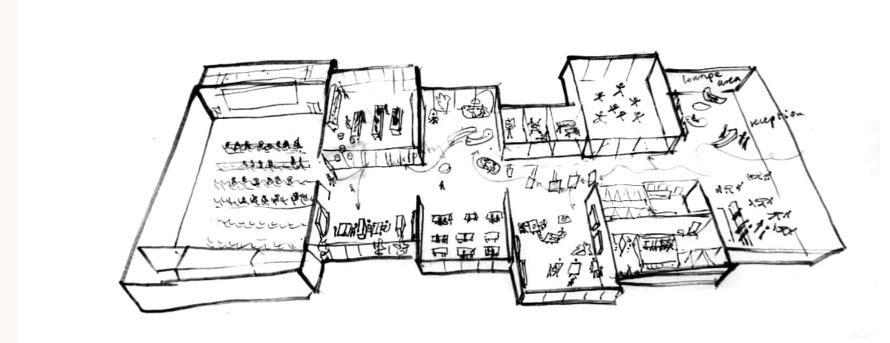
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environmental enrichment	Provide novelty within the overall system.	0		\circ		\circ	
	Design spaces for play.	0	\circ	\circ	\bigcirc		
	Promote physical activity.	•	\circ	\circ	\bigcirc		
	Provide various stimuli to each of the senses.	0	•	\circ			\circ
	Encourage social contact.	•	•	\circ			
	Provide visual contact with sunlight	•	•				
	Use curved shapes to boost focus, relaxation, and emotional levels.	0	\circ	\circ	\circ		\circ
	Prioritize simplicity over complexity to benefit rest and concentration.	•	•		\circ		
	Apply wooden materials.	0	•				
	Use expressions of nature.		•				\circ
	Develop a colour scheme for the building.	0	•	\circ			\circ
	Avoid enclosed spaces.	0	•				
	Do not use extreme proportions of spaces.	•					
	For focus, apply lower ceilings.	0					
	Avoid sunlight glare.	\circ					
	Design adjustable light system.	\circ	\bigcirc	\circ			
	For creativity, provide higher ceilings and a spacious feeling.	\circ	\bigcirc	\circ	\circ		\bigcirc
	For relaxation use warm, ambient lights.	\circ	\bigcirc	\circ			\bigcirc
touch	Provide spaces for outdoor sunlight exposure.	•	•				
	Provide temperature adjustment systems.	•			•		
	Apply natural wood materials with tactile textures.	\circ			•		
smell	Provide fresh air flow and air exchange.	•	•	•	•	•	•
	Provide olfactory stimulation according to the functions.	\circ	\circ	\circ	•	•	\circ
sound	Provide a barrier from the urban noise.	•	•		•		\bigcirc
	For focus or relaxation, avoid carrying noise inside the building.	0				0	•



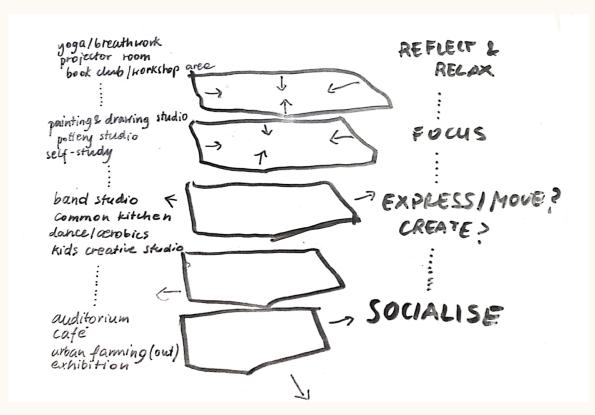




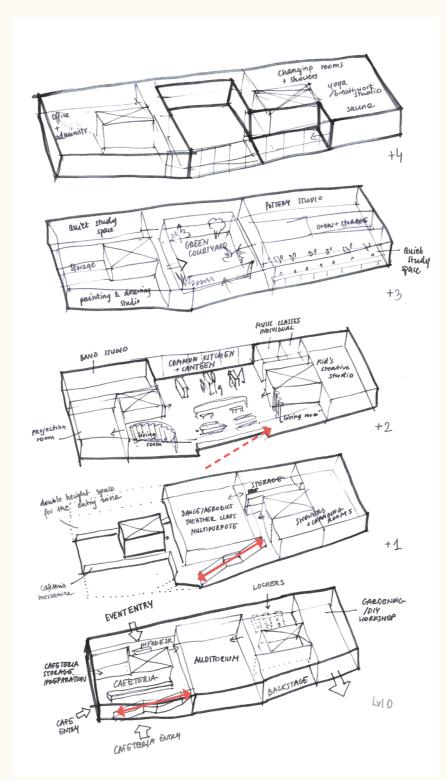


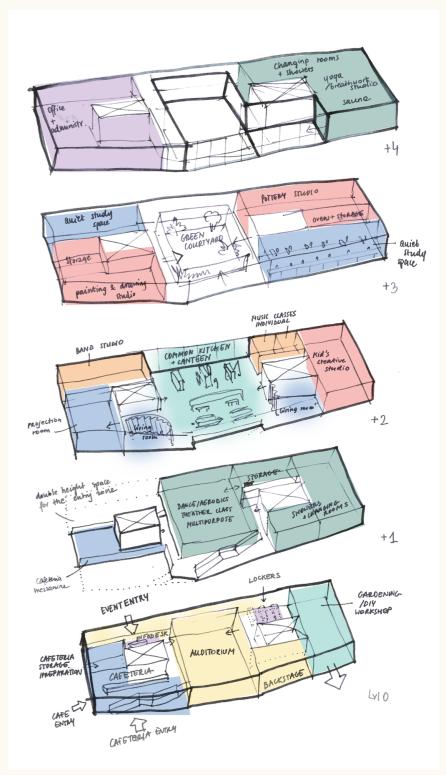


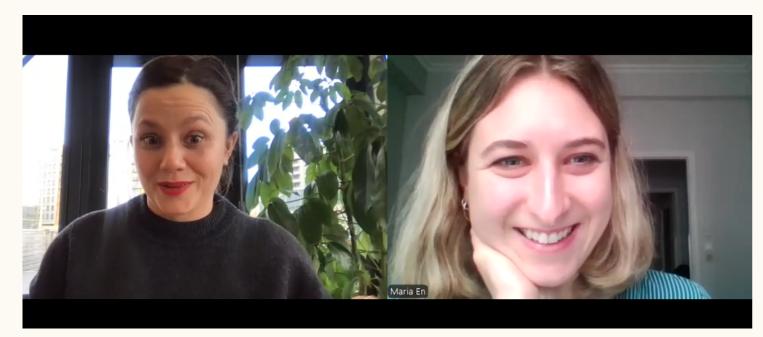






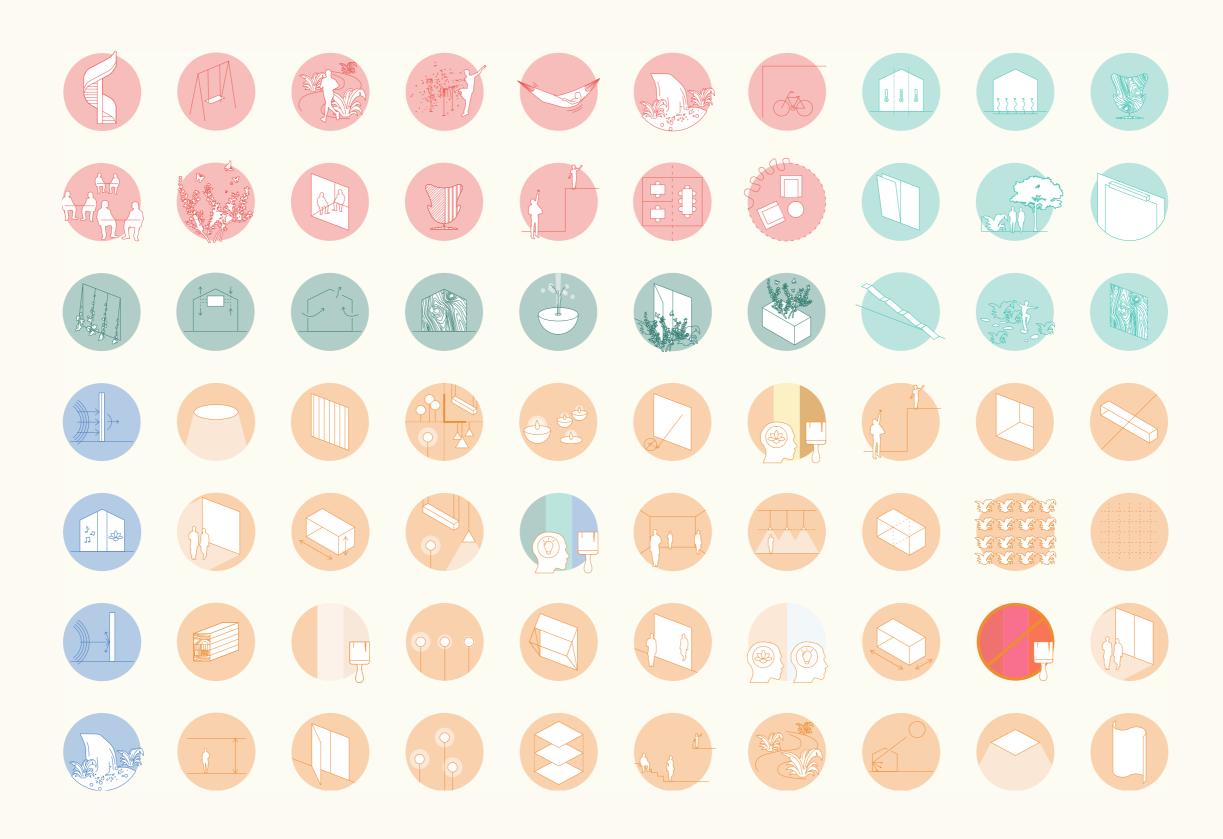




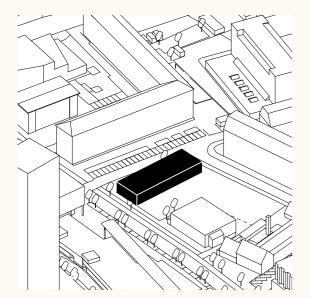




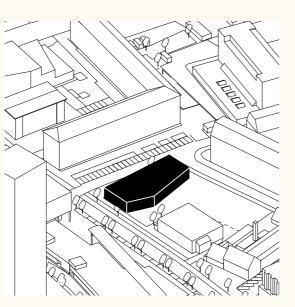




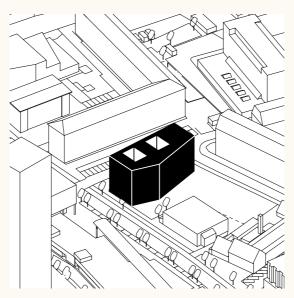
P2 Volume



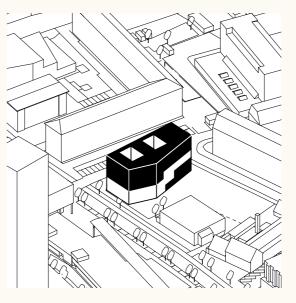
Volume is placed to enclose the square on the plot.



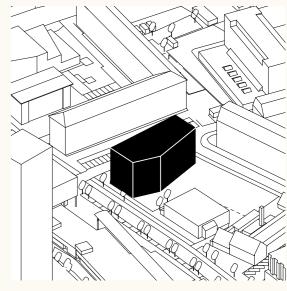
Shape is adjusted to direct people towards the square.



Introducing green courtyards as a relaxation spaces and light wells.



Opening the buildings facade towards the surroundings.



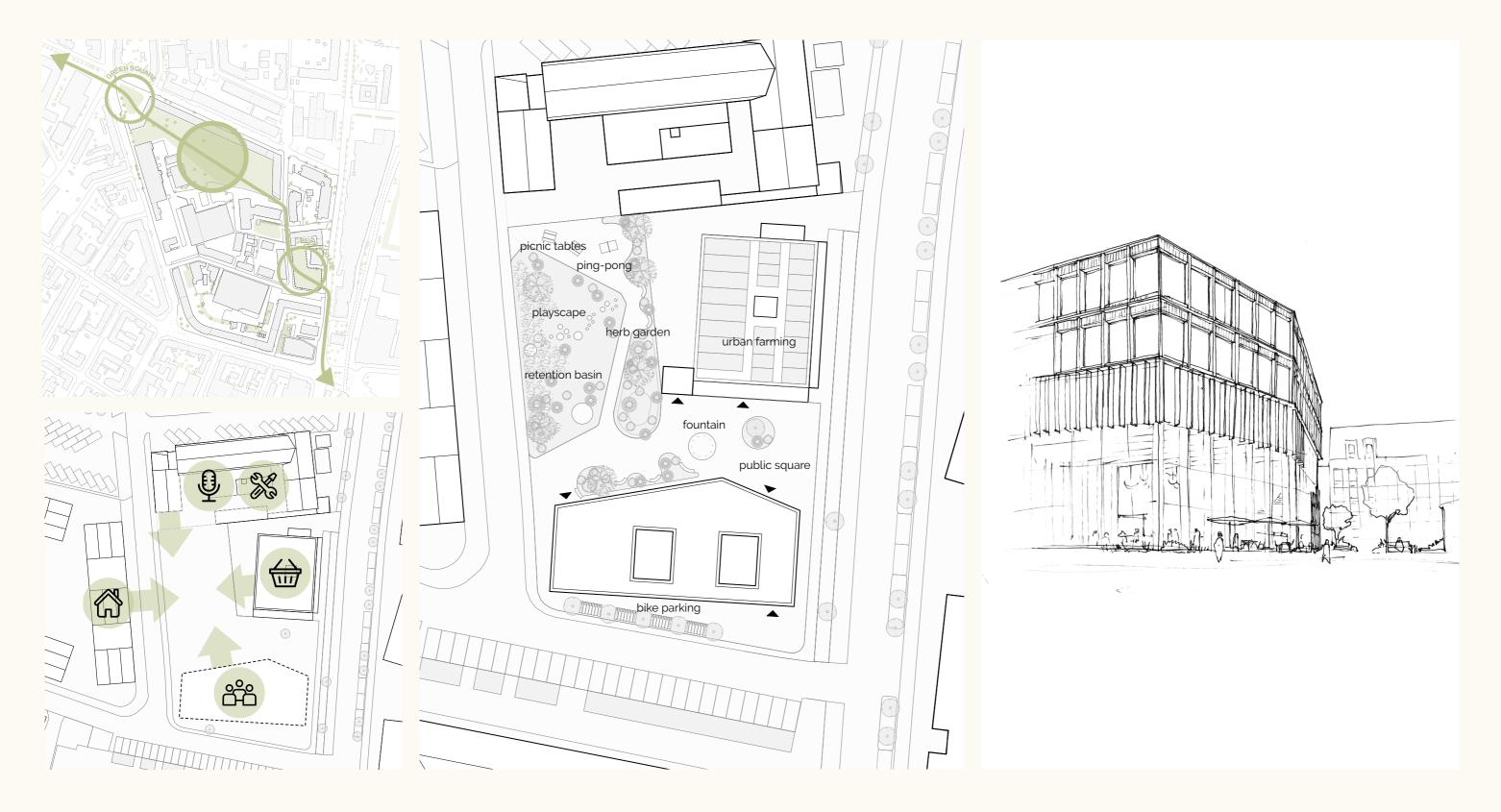
Adjusting height to the neighbouring buildings and programme requirements.





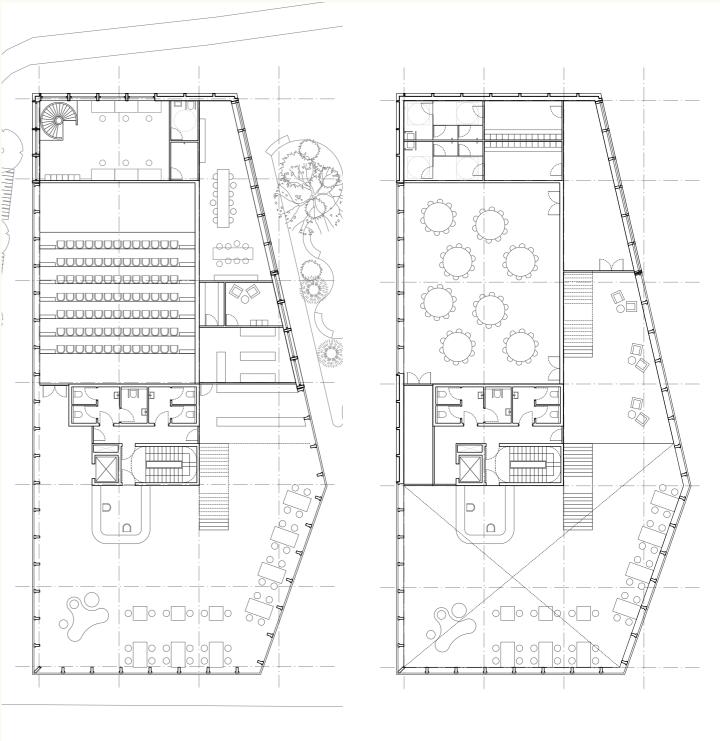


P2 Urban strategy

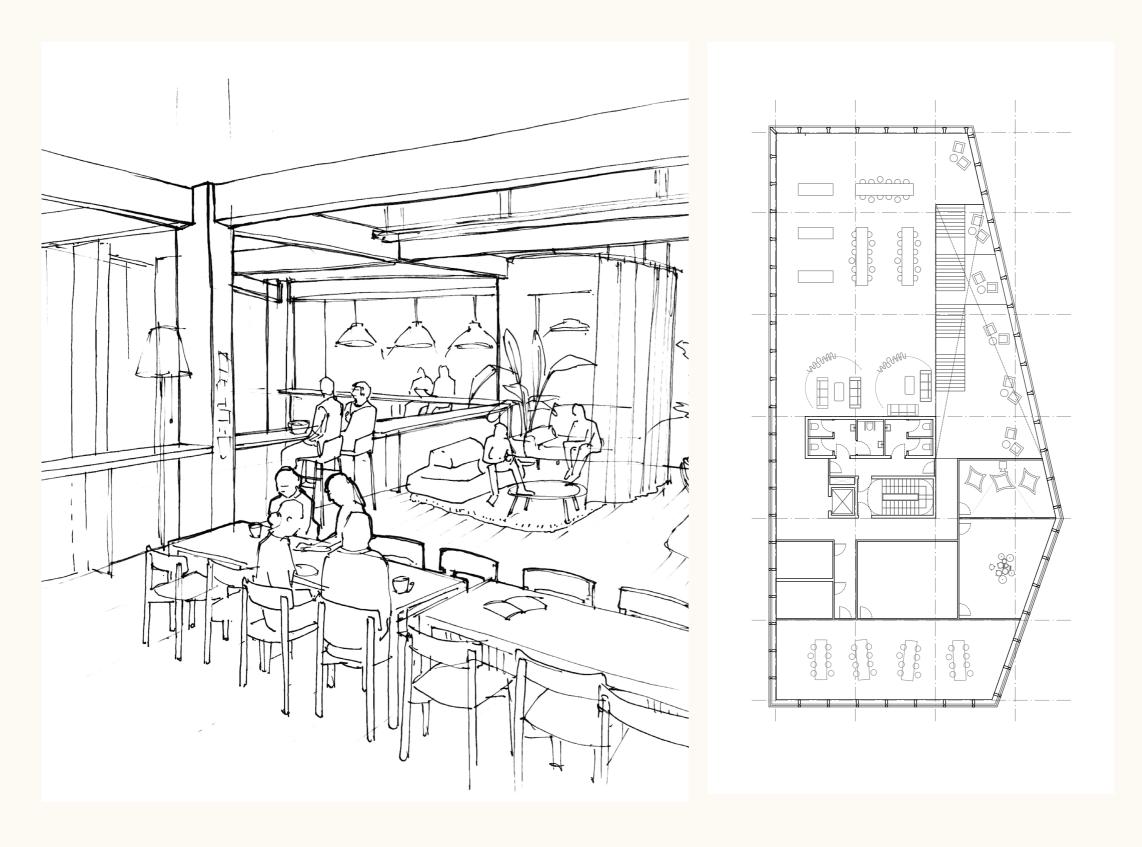


P2 Connectivity between the 1st and 2nd floor

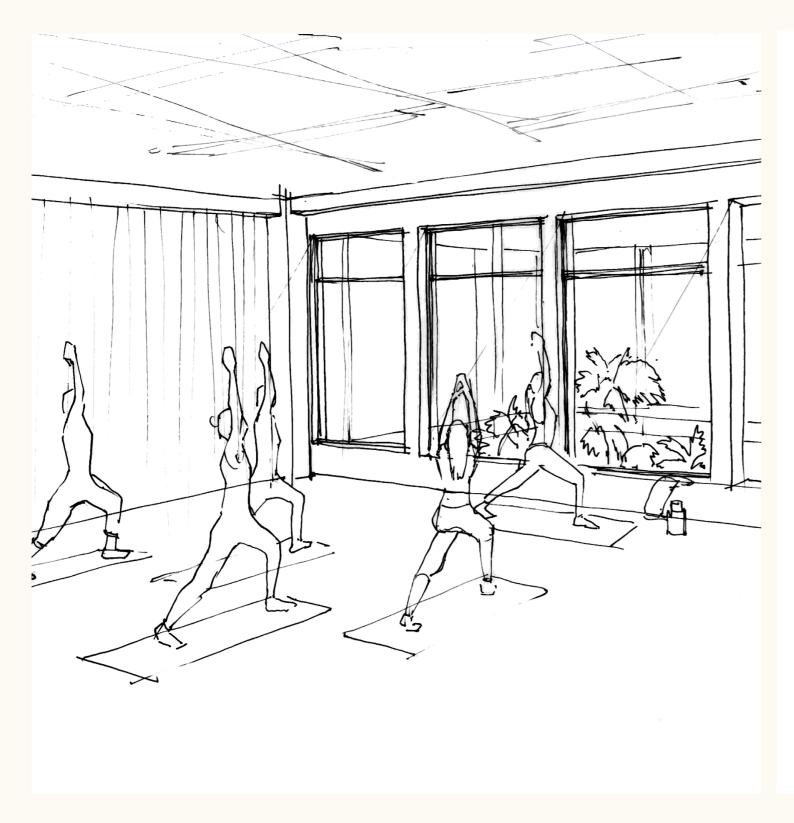


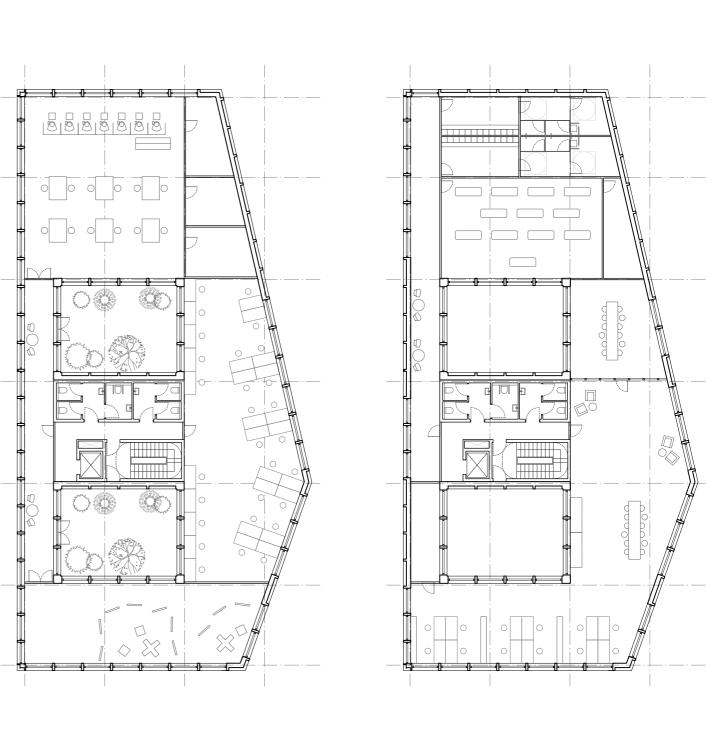


P2 Social space on the 2nd floor



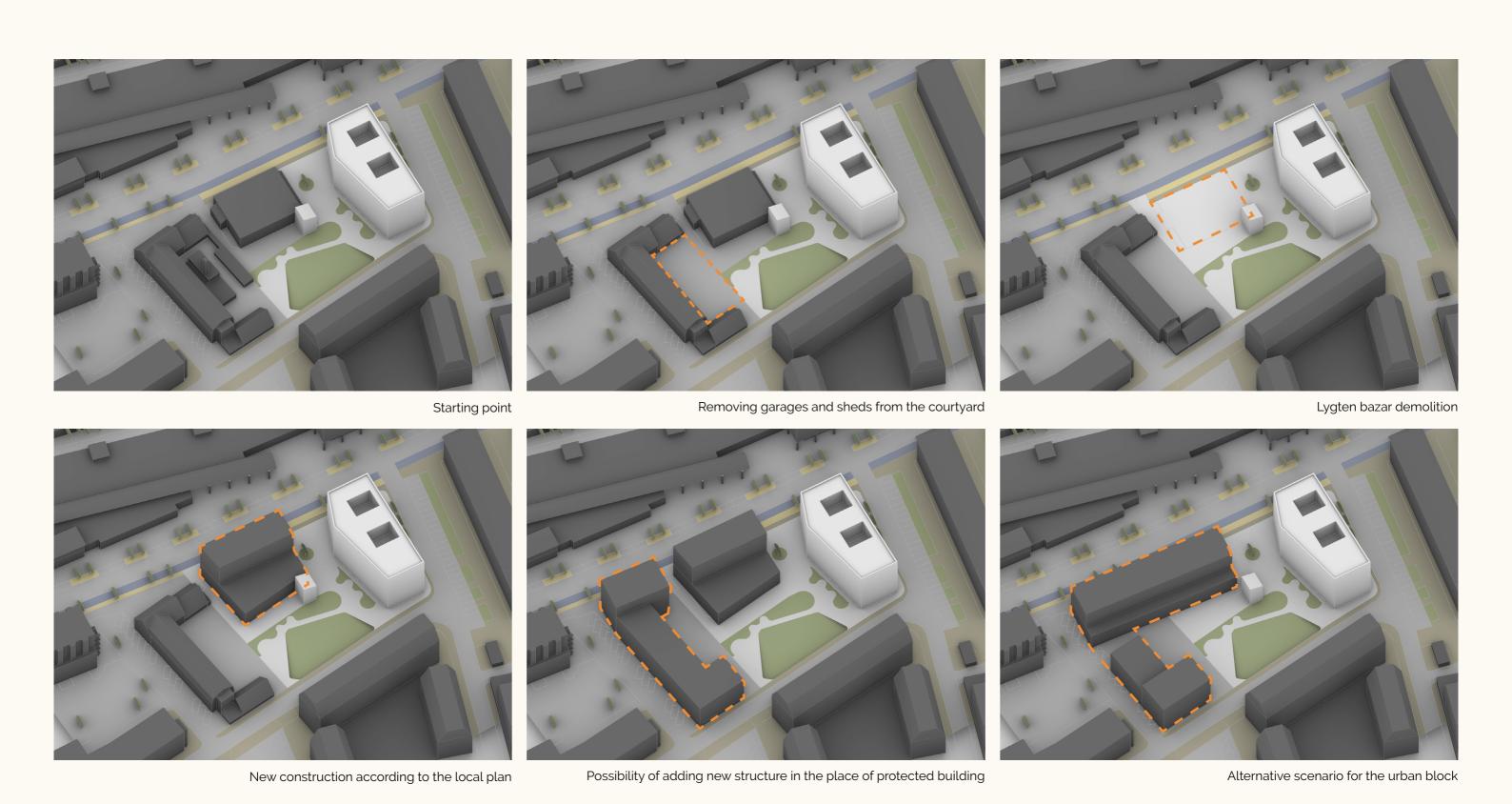
P2 Enclosed spaces on upper floors.

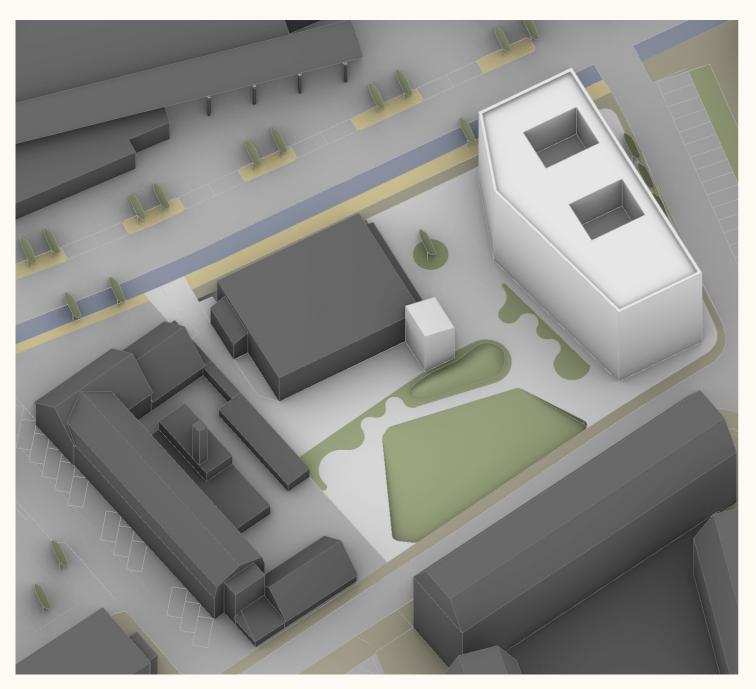


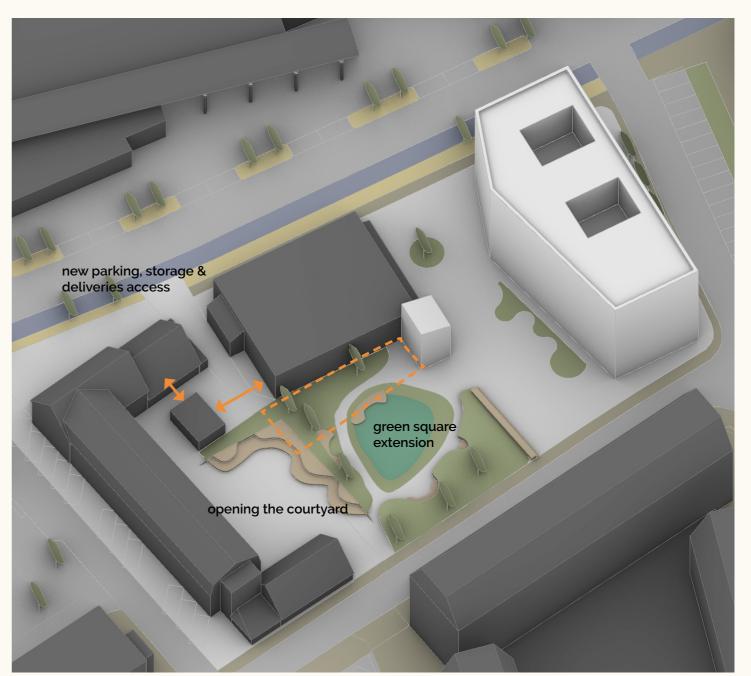




Site evolution scenarios



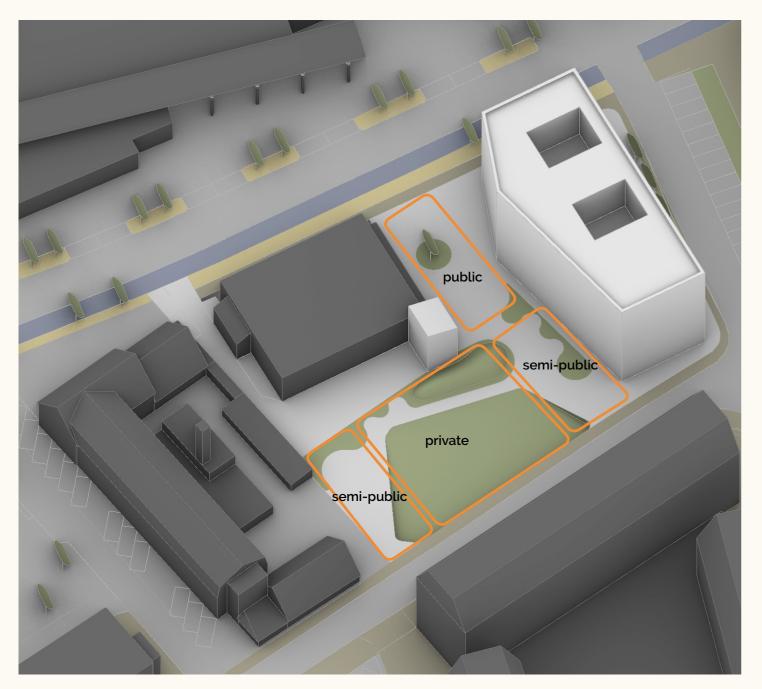


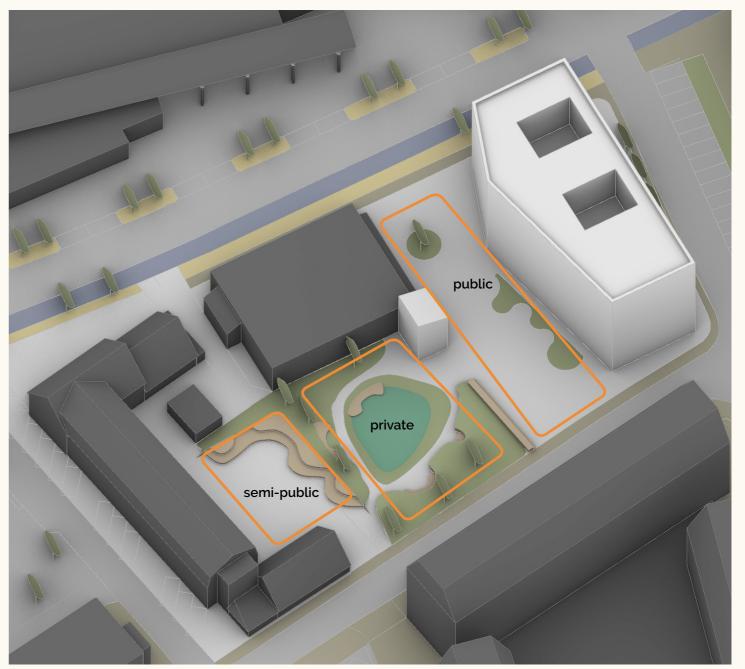


Starting point

Removing garages and sheds from the courtyard

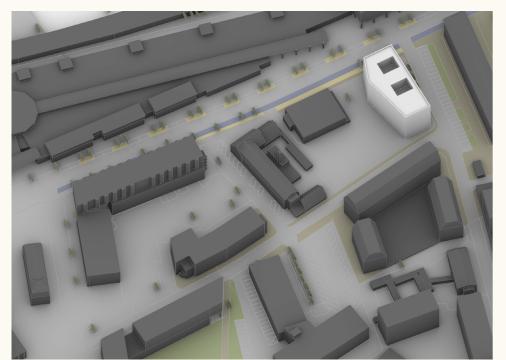
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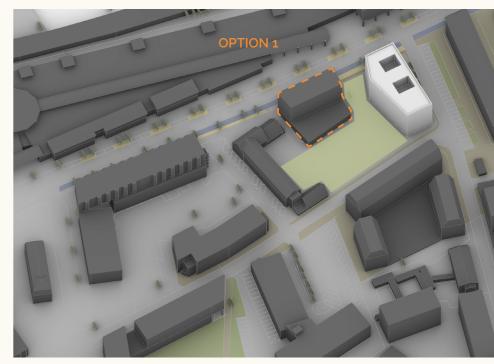




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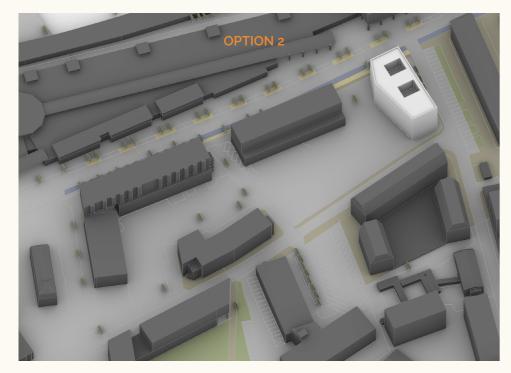




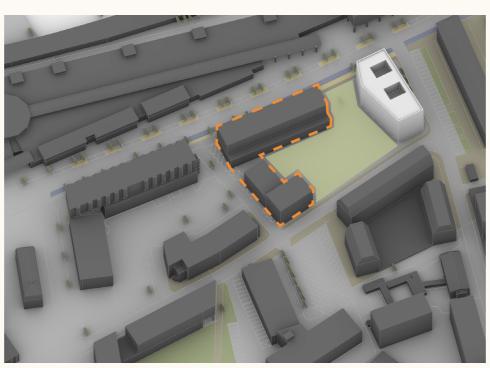
Starting point

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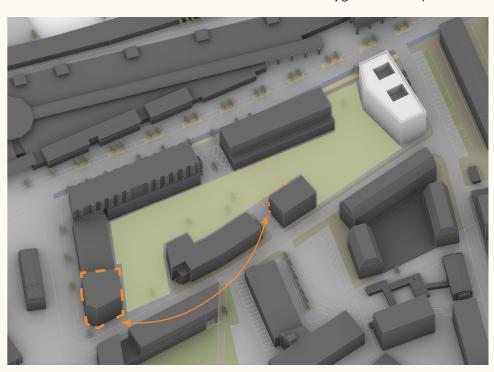
Lygten bazar replacement



Demolishion of the protected building and joining sites through the streetfront

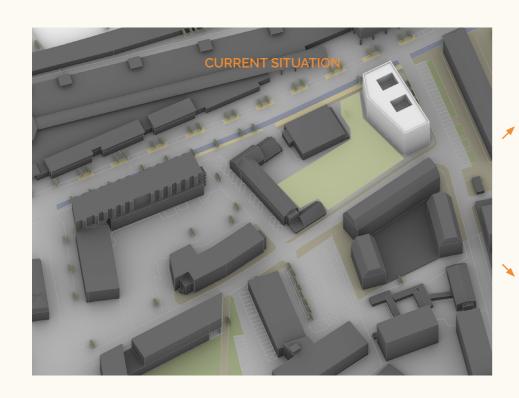


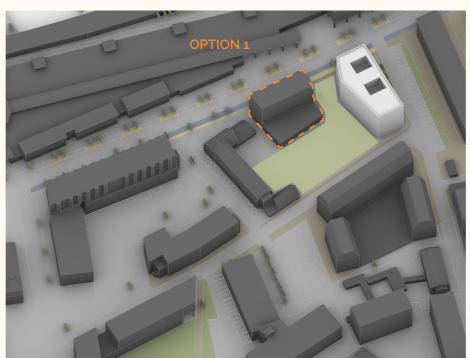
Enclosure of the site

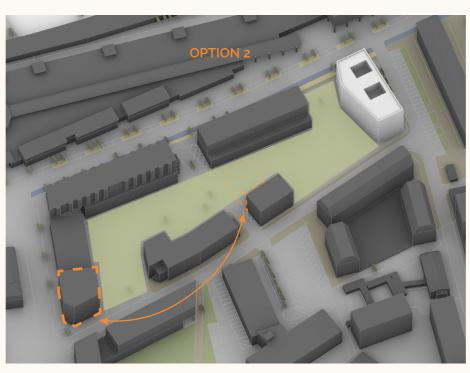


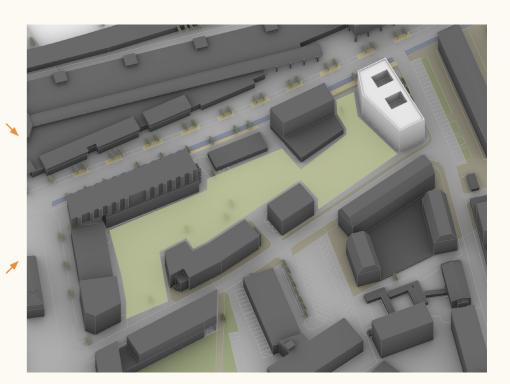
Opening the building block through transfering the new volume

Could it be one continuous evolution?



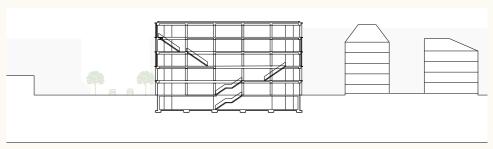




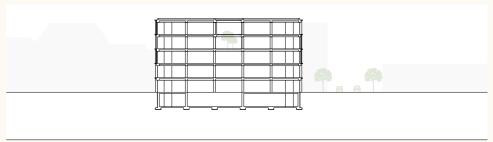


P3 proposal





Urban section, scale 1:500. (rescaled) From the side of the square, spaces are interconnected through the openings in the slabs.



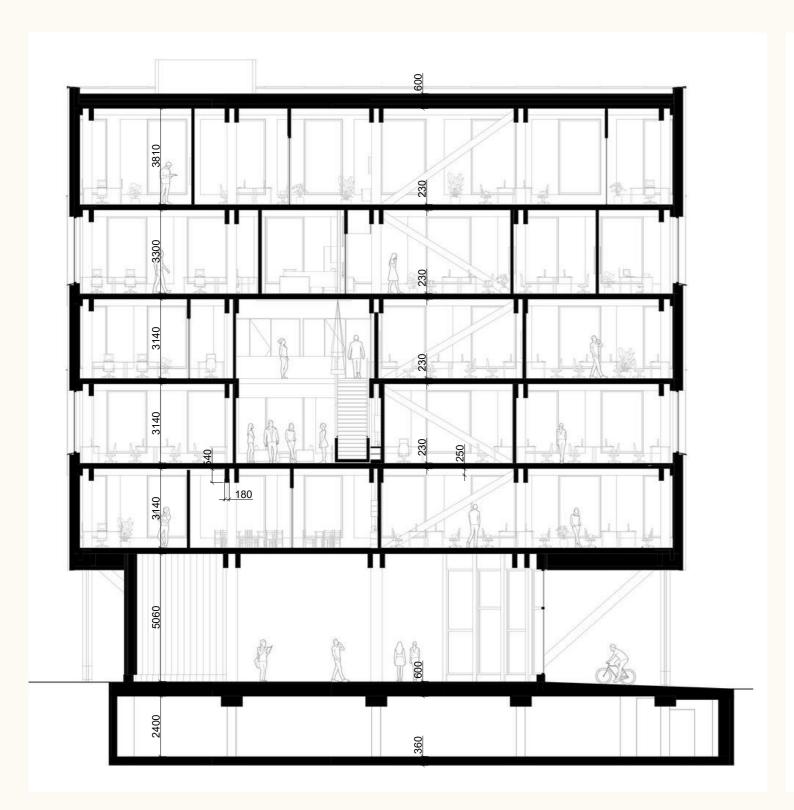
Urban section, scale 1:500. Most of the programme is placed by the south wall to take advantage of the sunlight. As this side is mroe urban, an internal courtyard is created within the volume to provide building's users contact with nature.

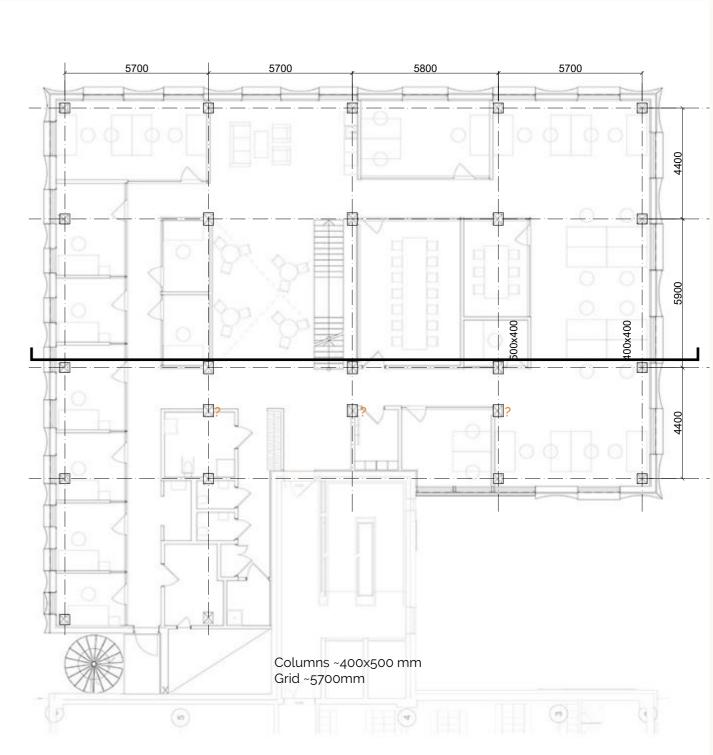
Site plan, scale 1:500 (rescaled).

- 1 inner courtyard for the local businesses, 2 hill separating park from the road, 3 water pond, 4 playscape, 5 urban gardening, 6 outdoor cafeteria space, 7 public square for markets and events, 8 bike parking

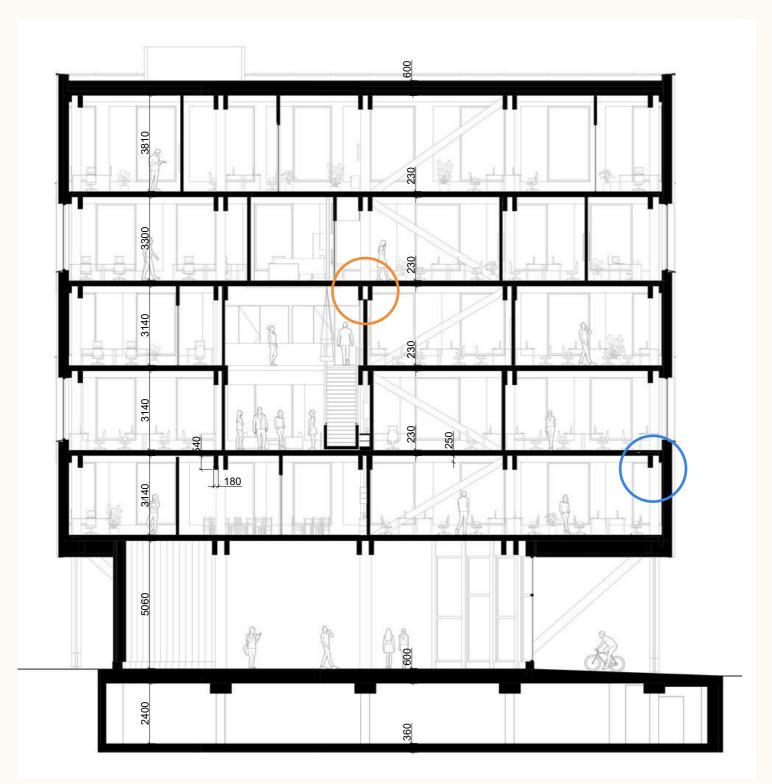
Structure evolution

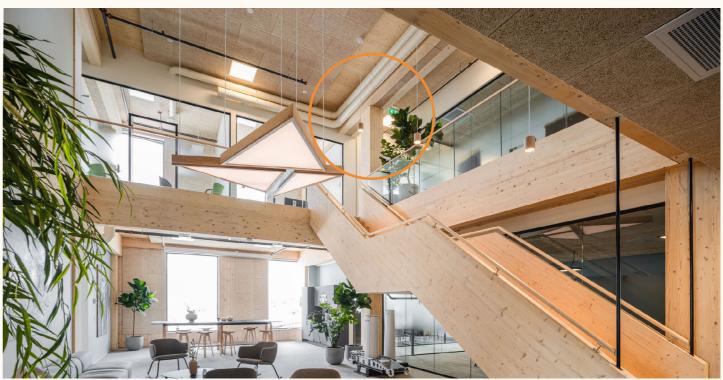
Lumber is a commercial and office building, 6 floors. The recessed first floor is retail space and the five floors above are devoted to offices. The building benefits from the existing communication core from the previous construction stage for bracing and access to the office floors. Columns and beams are in glulam, decks are a cooperative construction of CLT and concrete. Between the third and fourth floor there is an opening to an atrium with an internal staircase in CLT. The facade consists of prefabricated curved elements that are treated with green tar, reisin protection from rot, mildew, UV rays and drying-out.

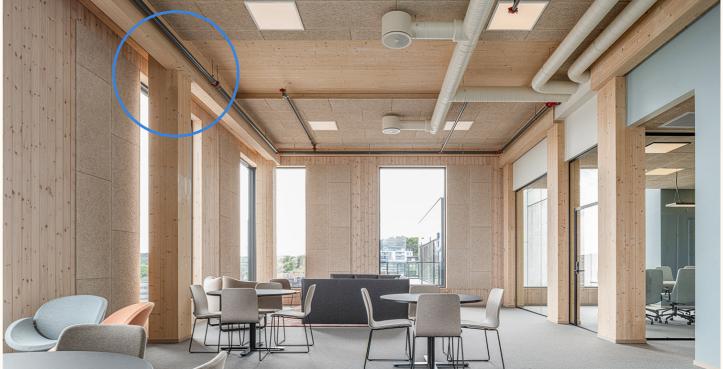




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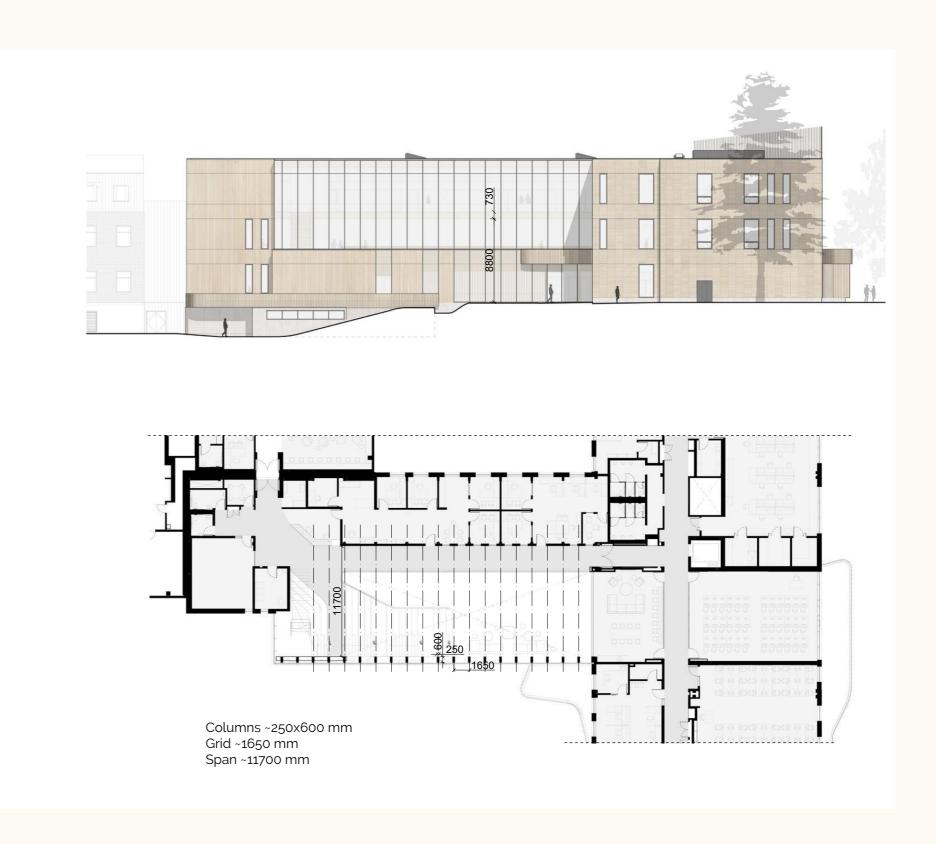






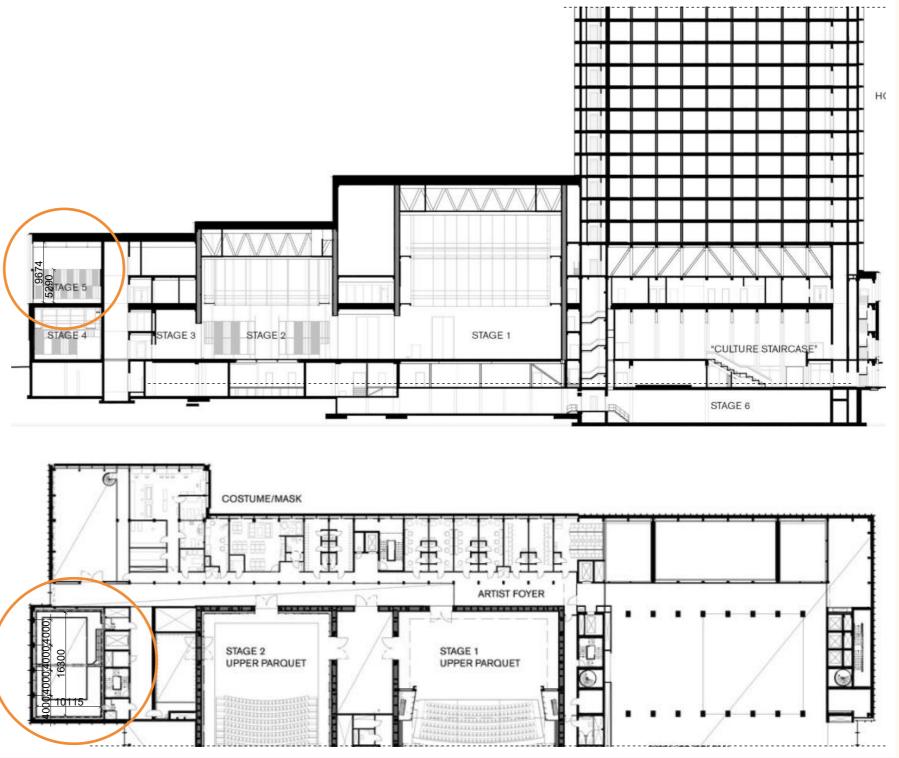
The cultural center, which takes up the lower four levels of the building, is built with **columns and beams made of glued laminated timber** and, thanks to the innovative planning of the architects, without the use of concrete.



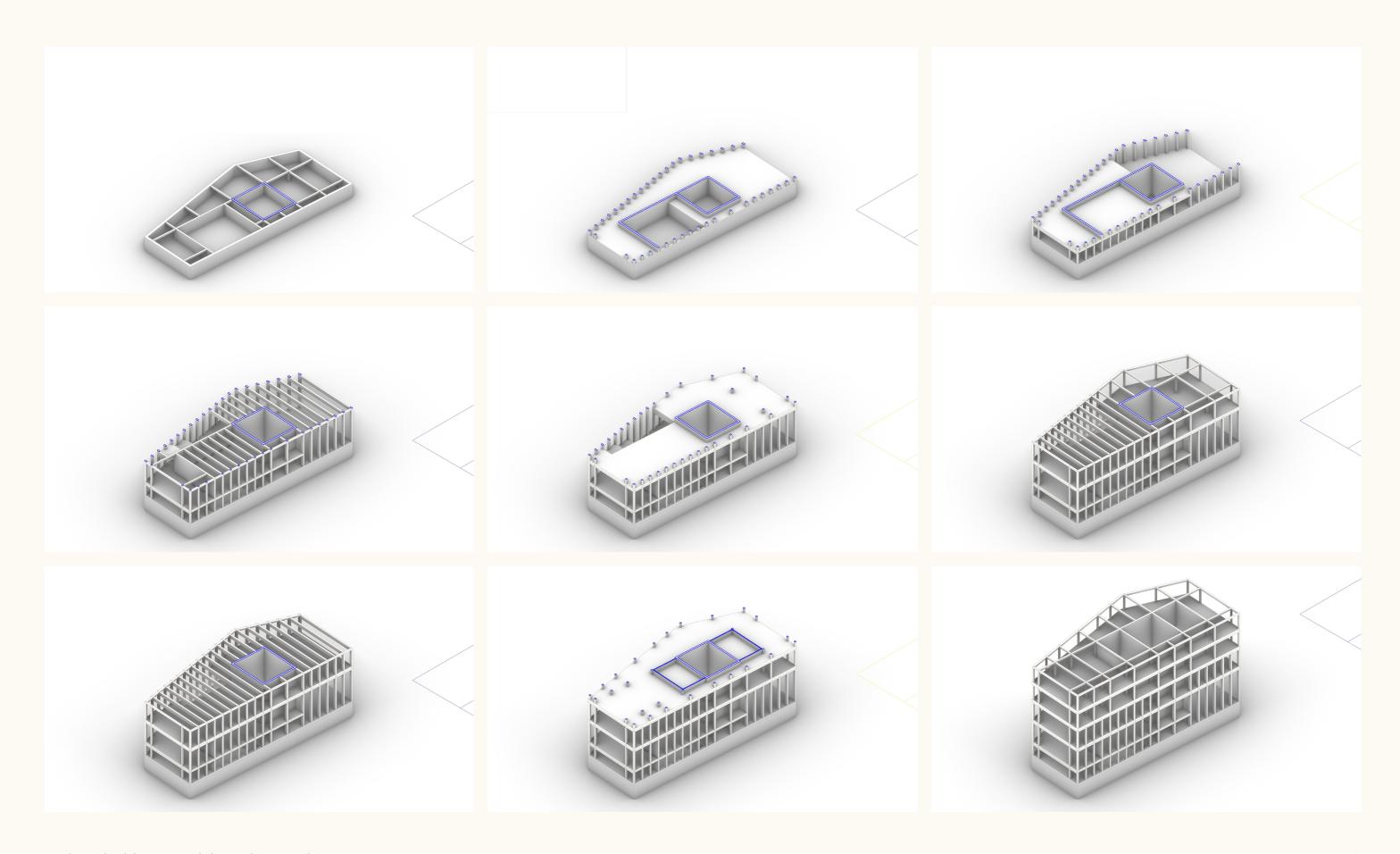


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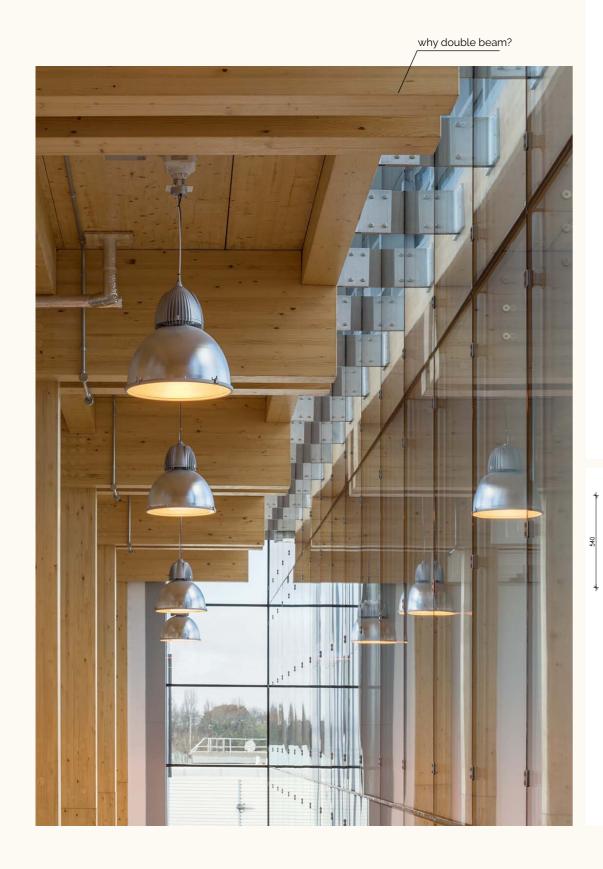


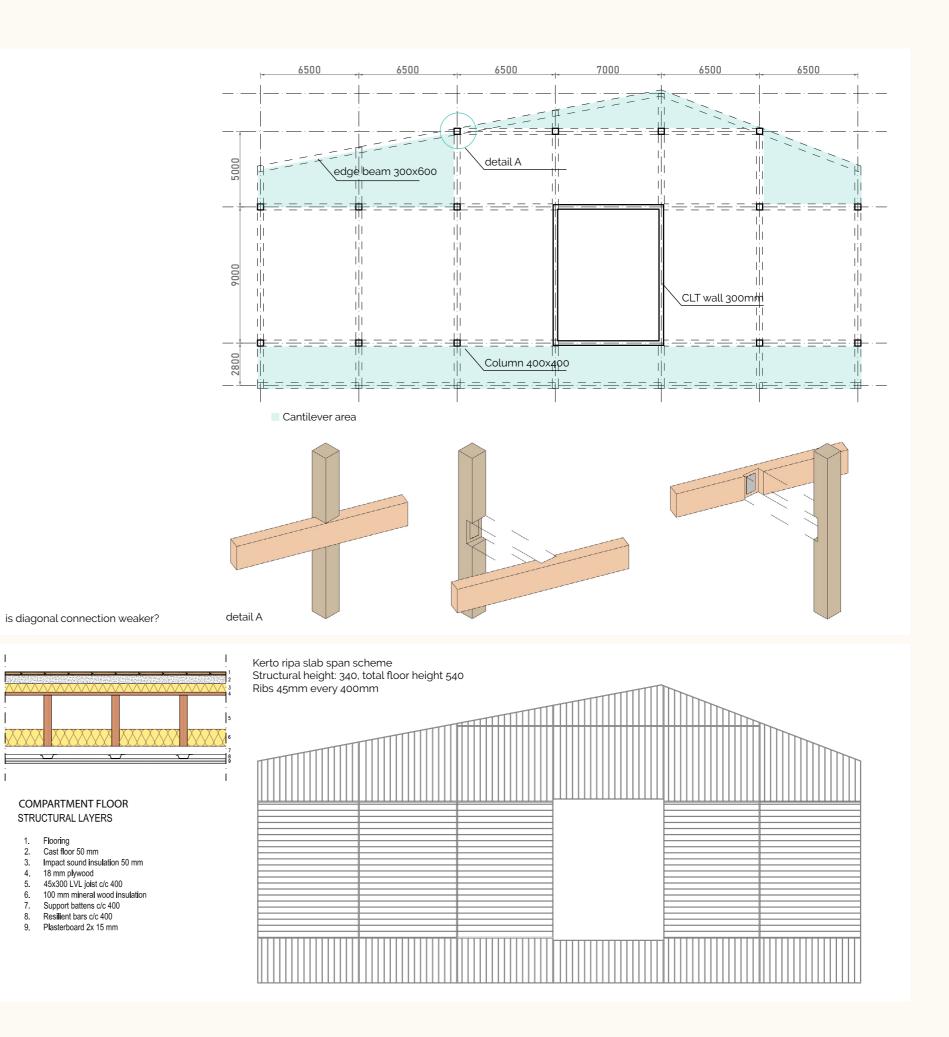


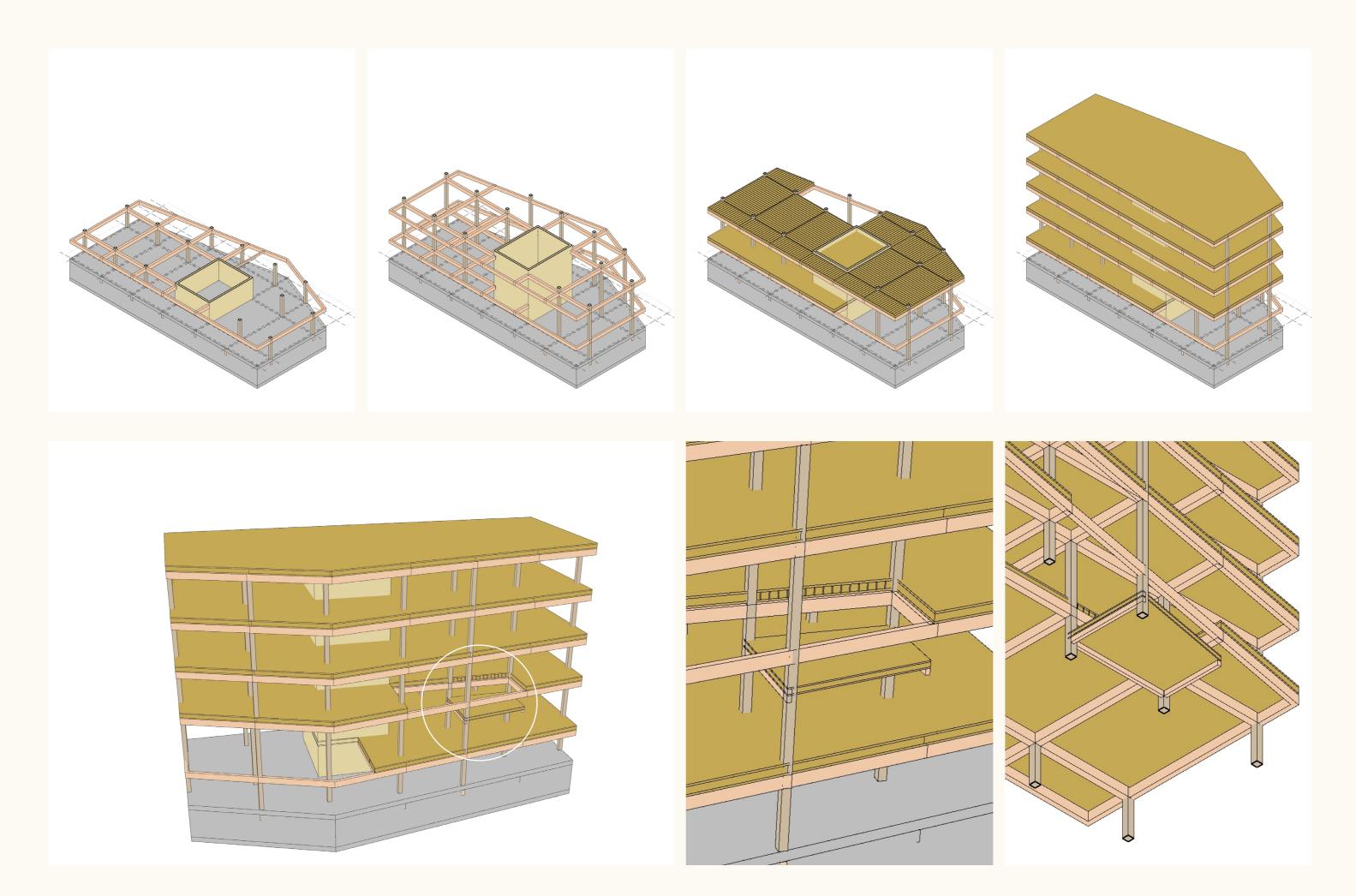
Structure proposal



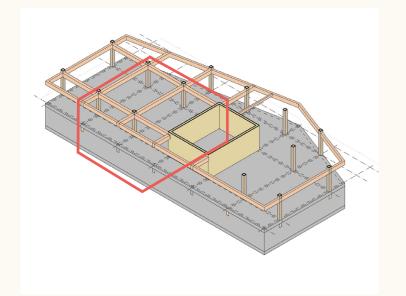
New option with cantilevers

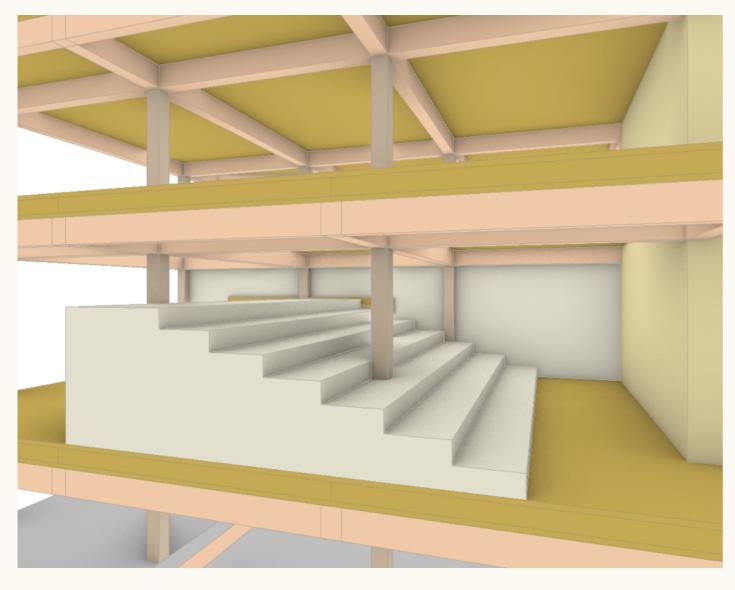


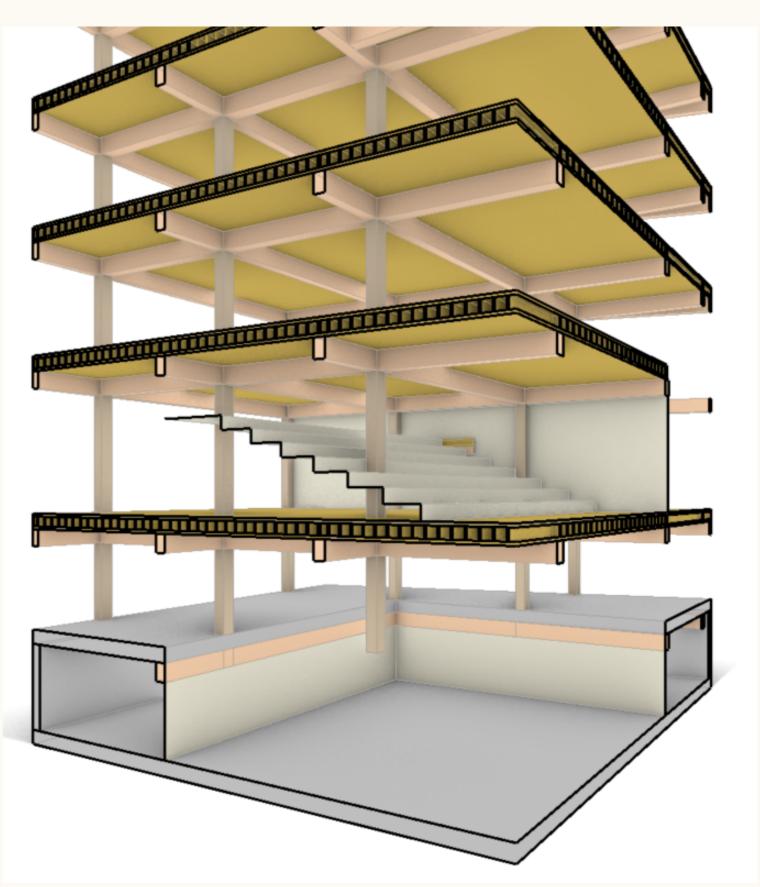




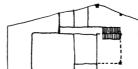
Is it possible to have different structure so the column is not necessary in this point?



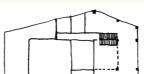




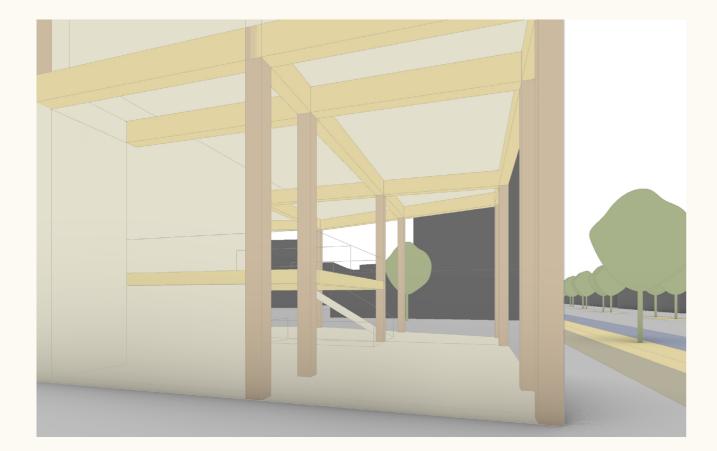
Groundfloor adjustments

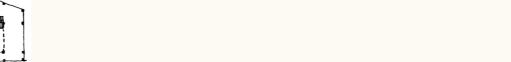


Staircases next to each other





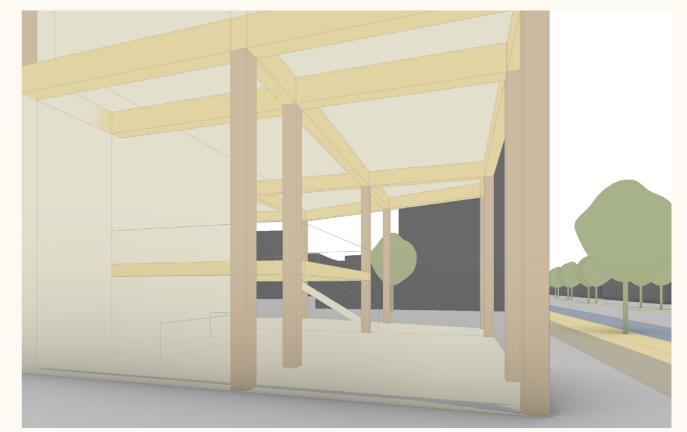






Staircase by the core

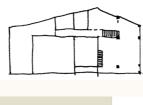




Groundfloor adjustments

Staircase by the core, no mezzanine





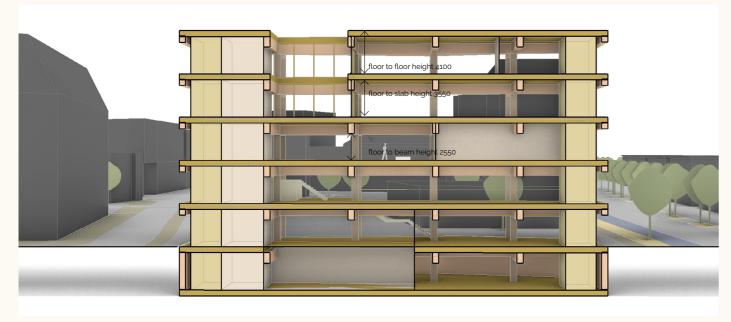


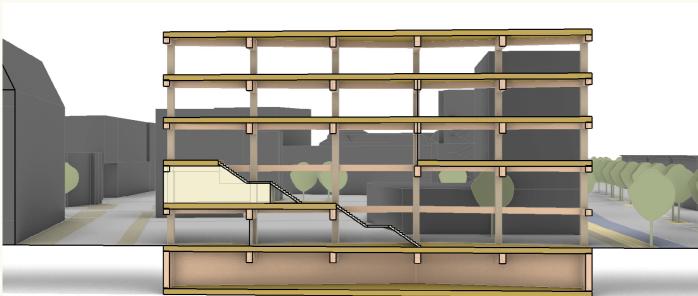


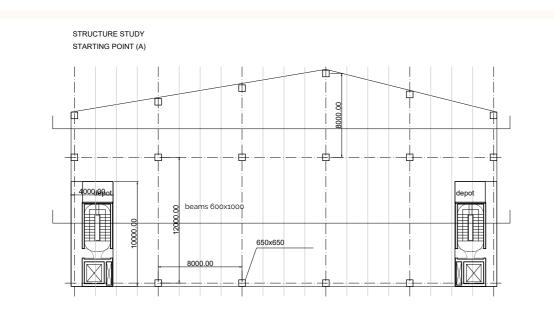


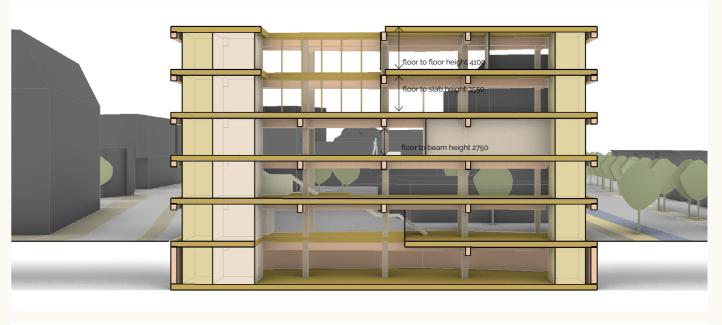


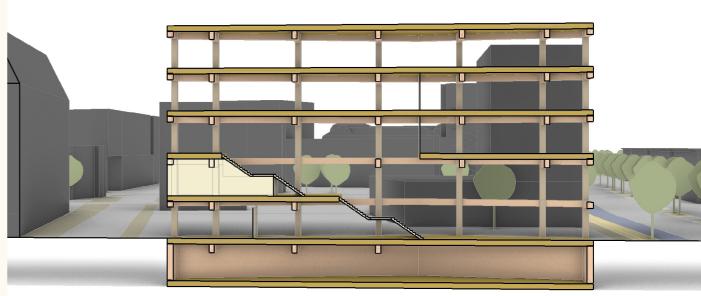


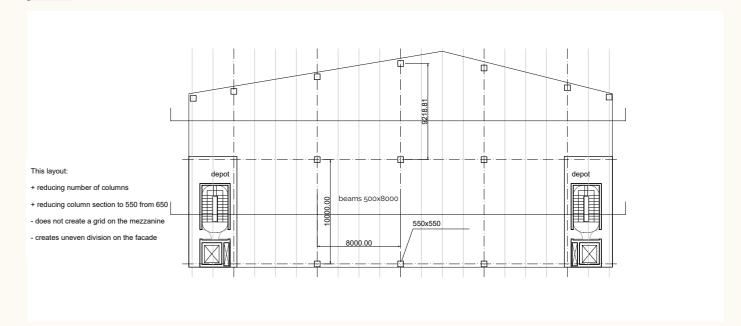












Two structures comparison



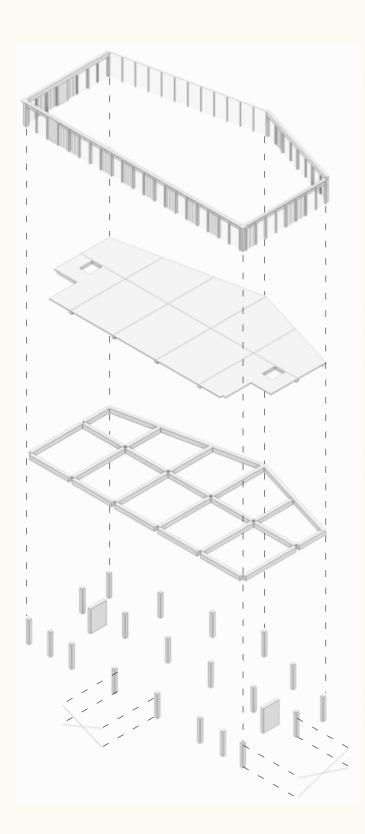












elevation with timber finishing

Kerto Ripa slabs h with finishing = 550

glulam beams max grid span 8000 x 10 000 b x d = 500 x 800

glulam columns 550x550

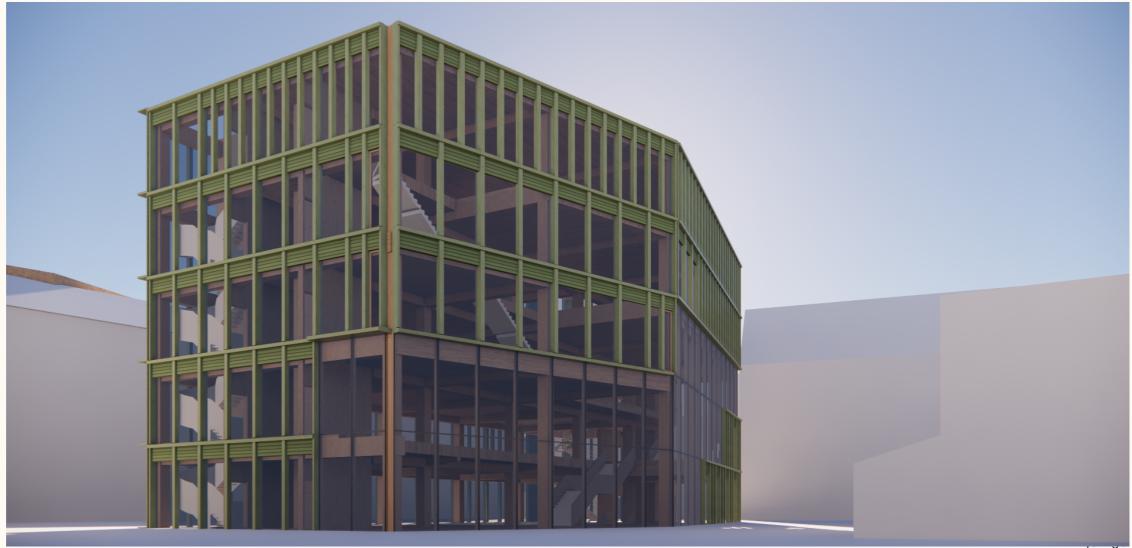


Facade studies



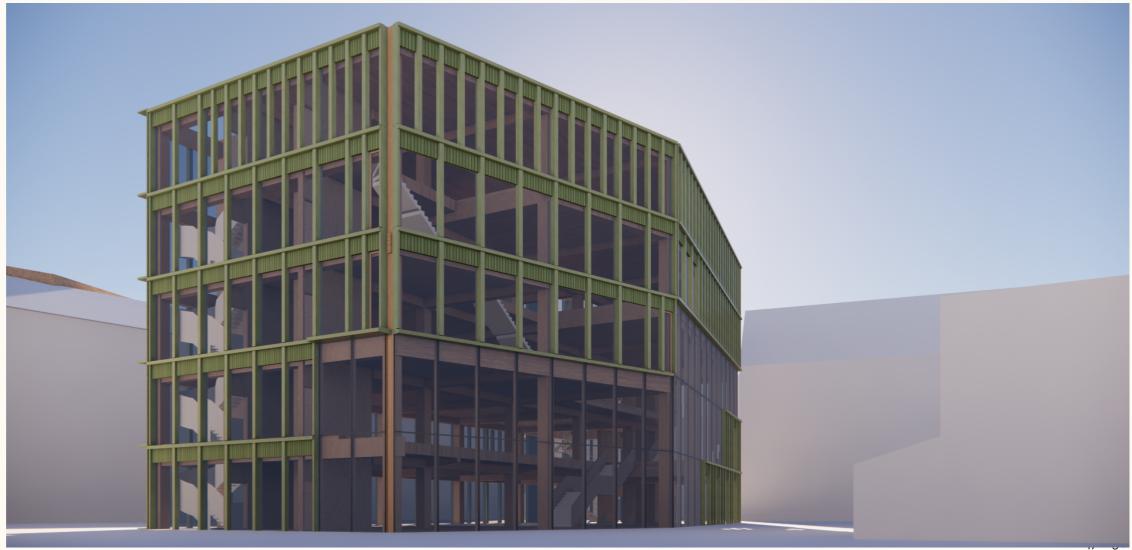
























P3 impressions





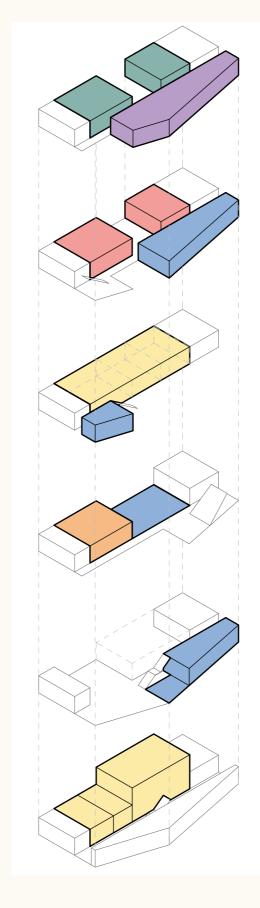




P3 impressions







Level +4. Yoga studio and administration.

Level +3. Pottery and art studio, community room: quiet reading and study space

Level +2. Multipurpose room: workshops for children, mindfulness, projection room; community room: board games space

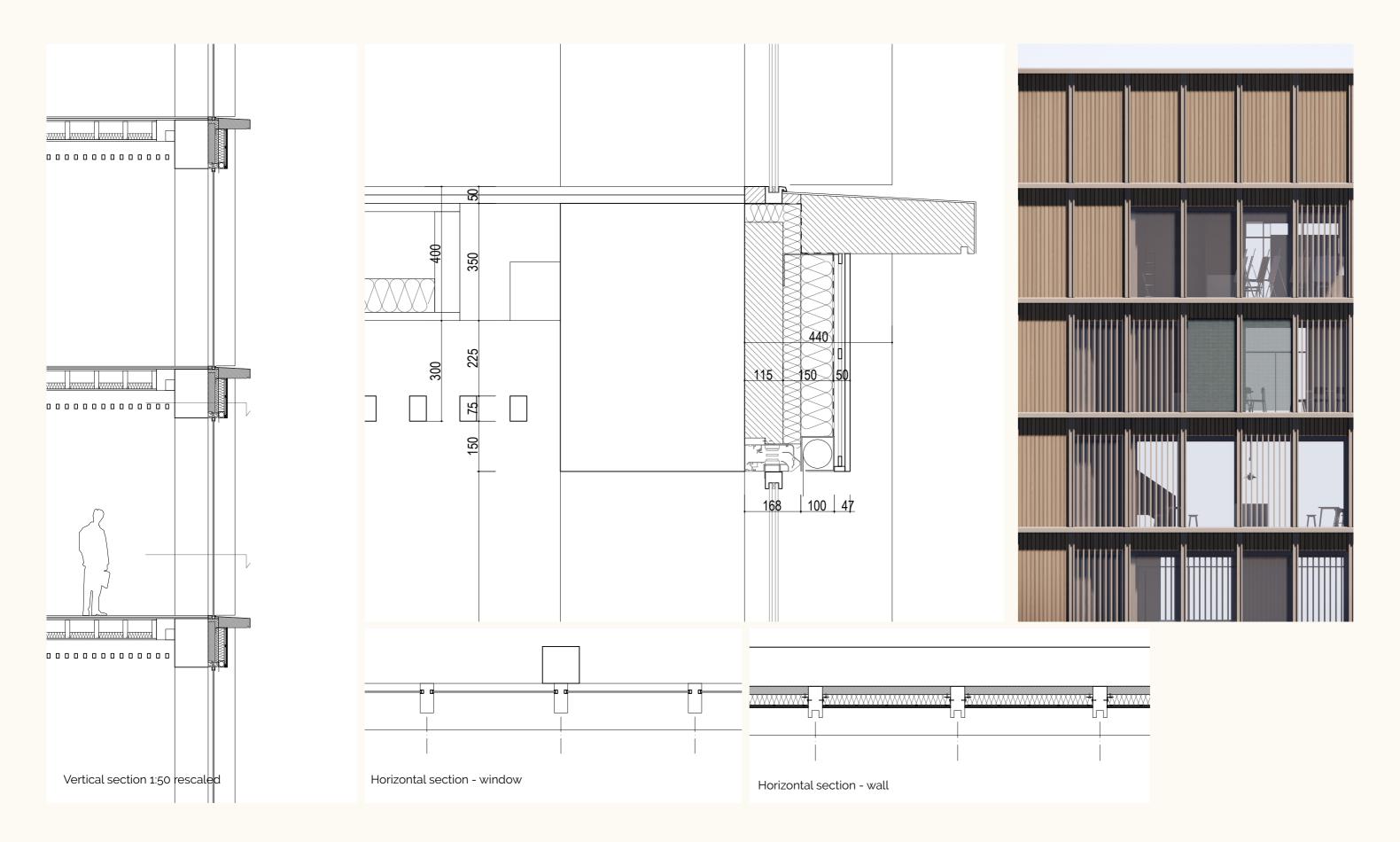
Level +1. Band studio, individual music practice, social living room and community kitchen

Level o. Cafeteria

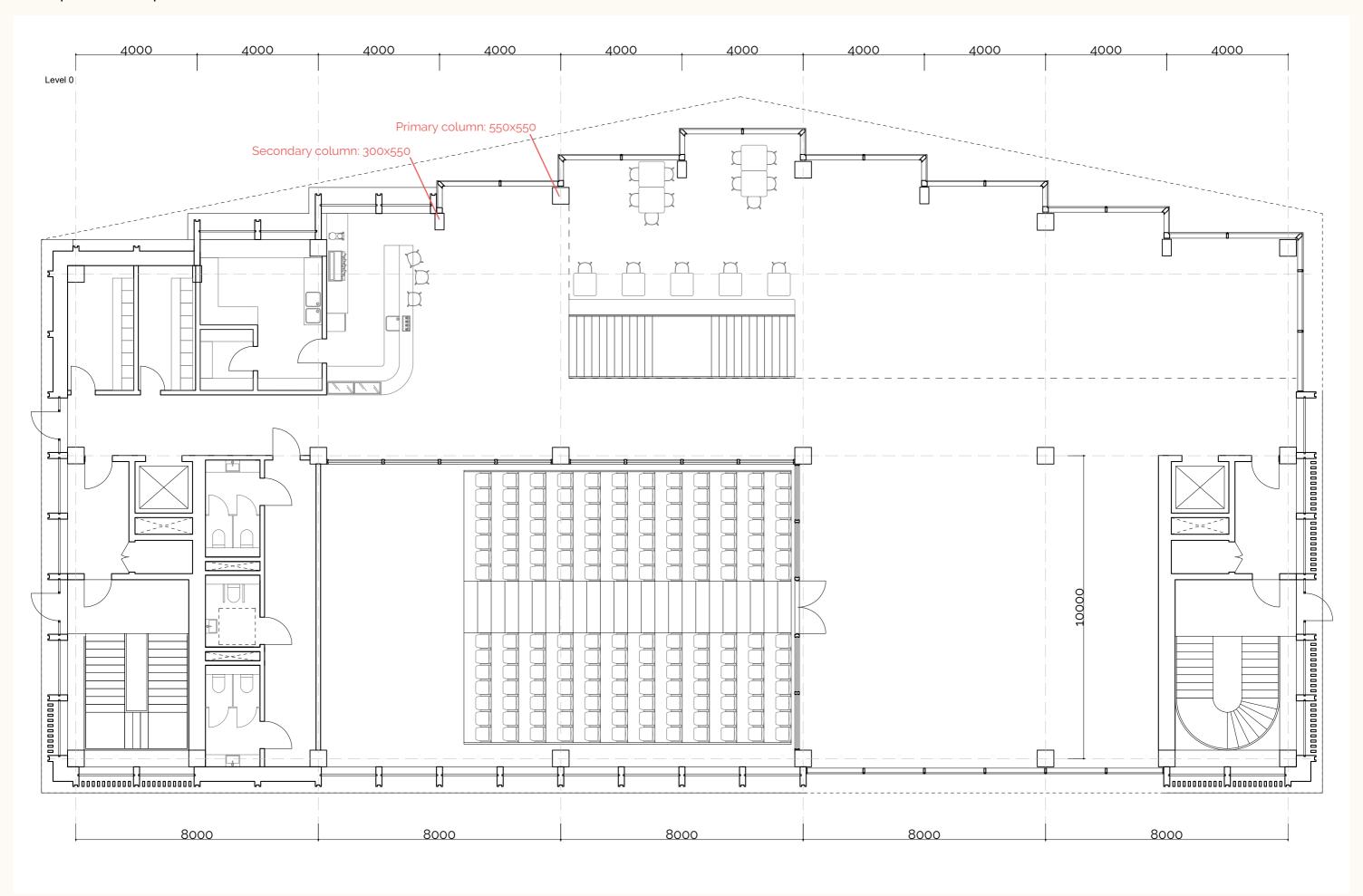
Level -1. Multipurpose room: auditorium / sport activities

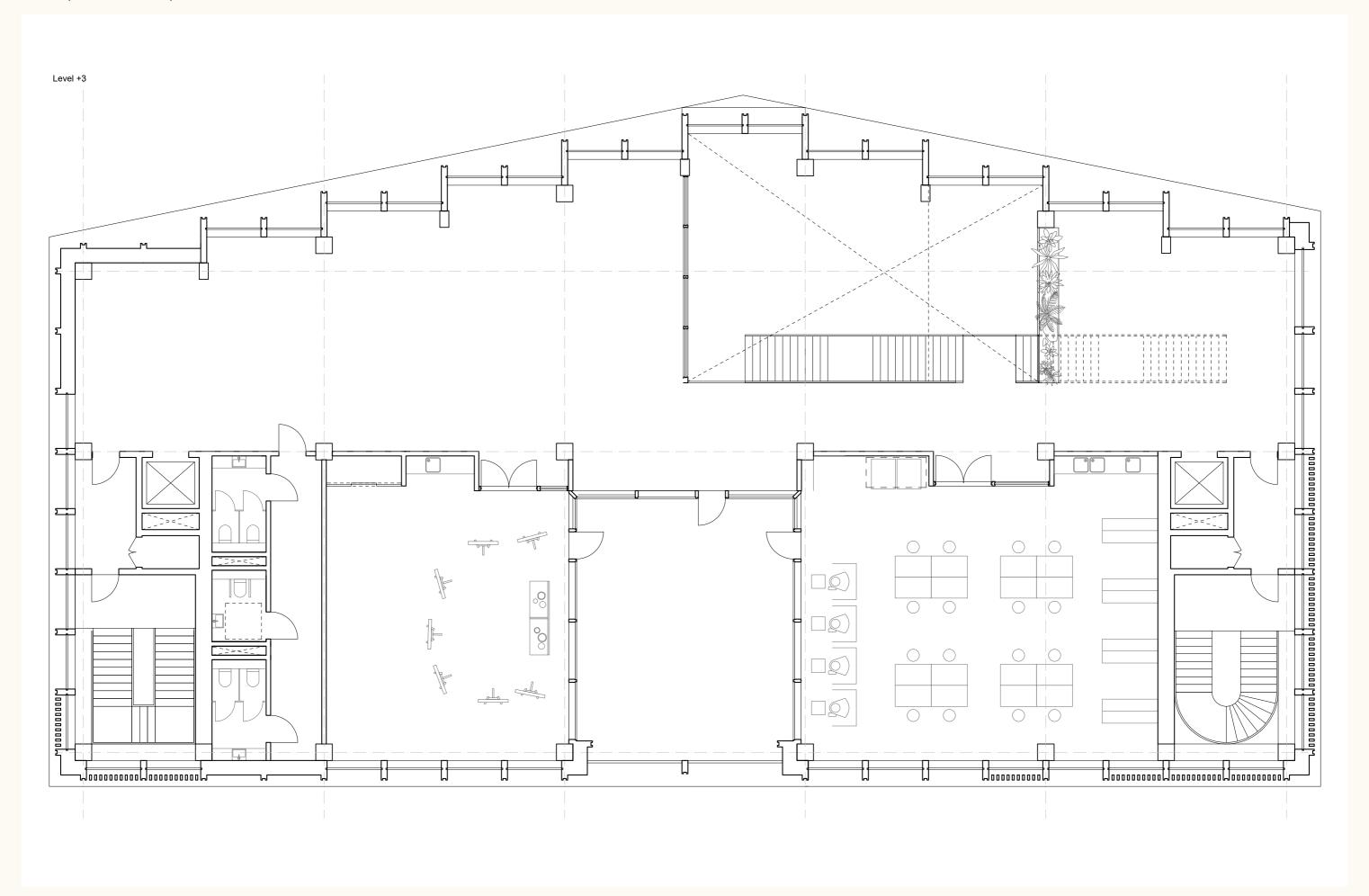
Detail development

Initial intention

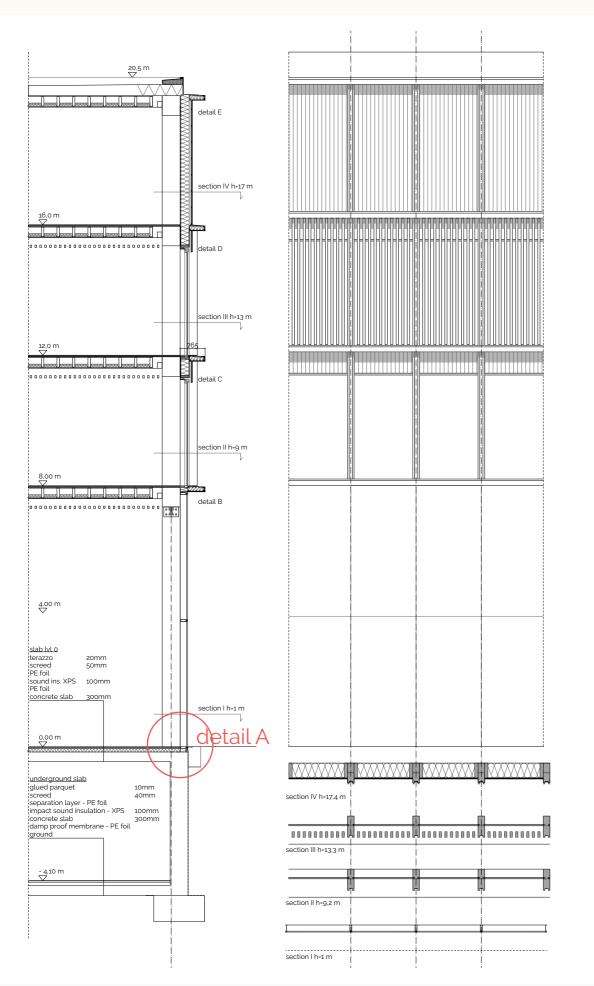


Floorplan example: level 0

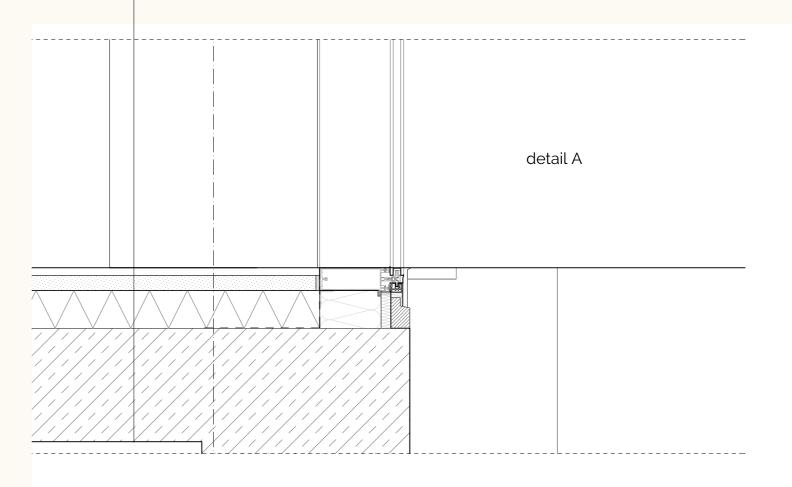




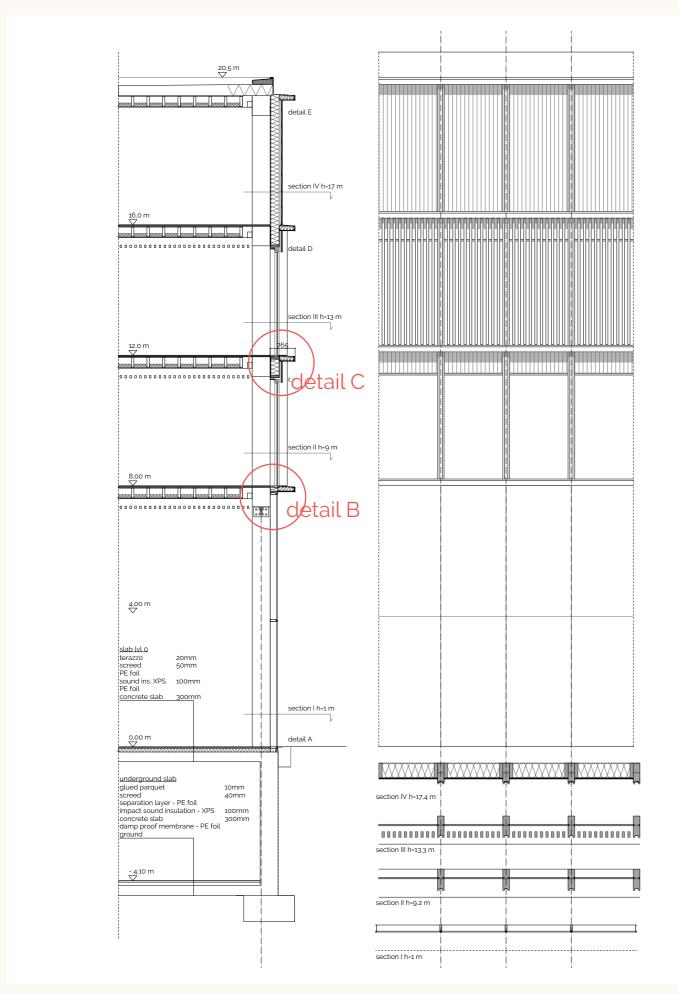
Detail A: slab on the ground

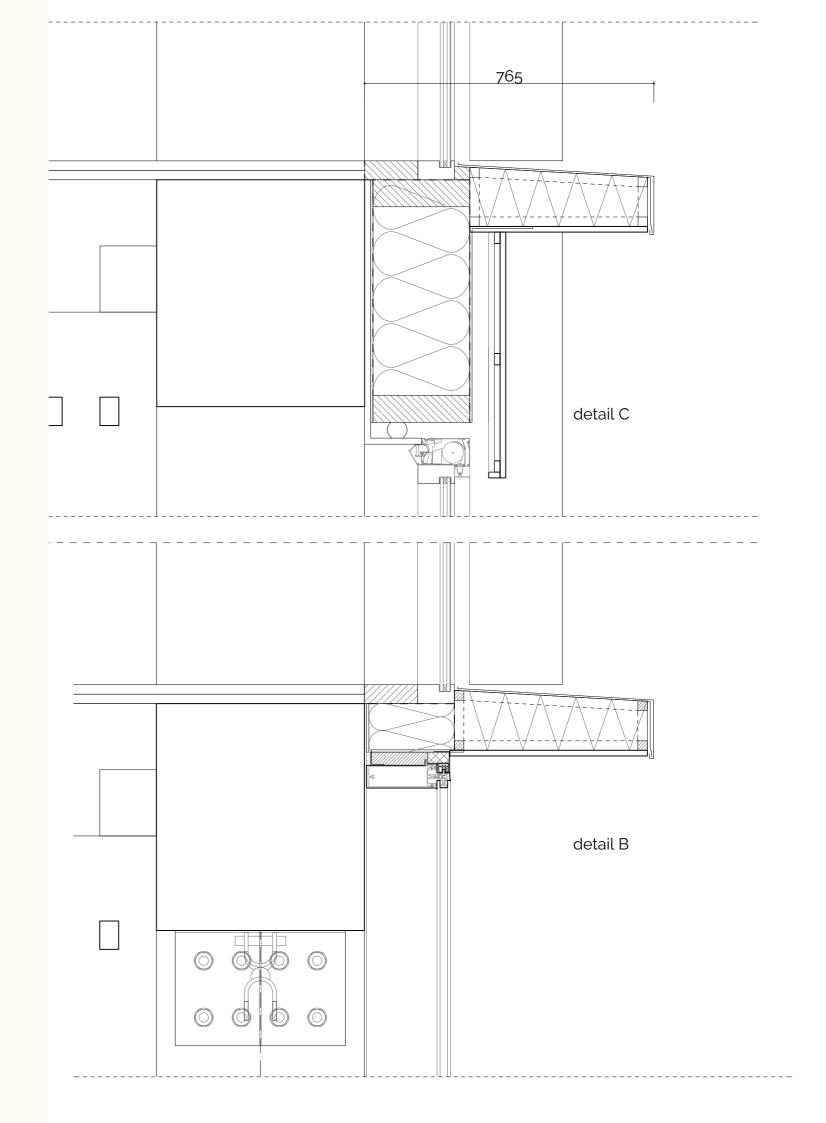


terazzo 20mm screed 50mm PE foil sound ins. XPS 100mm PE foil reniforced concrete slab 300mm

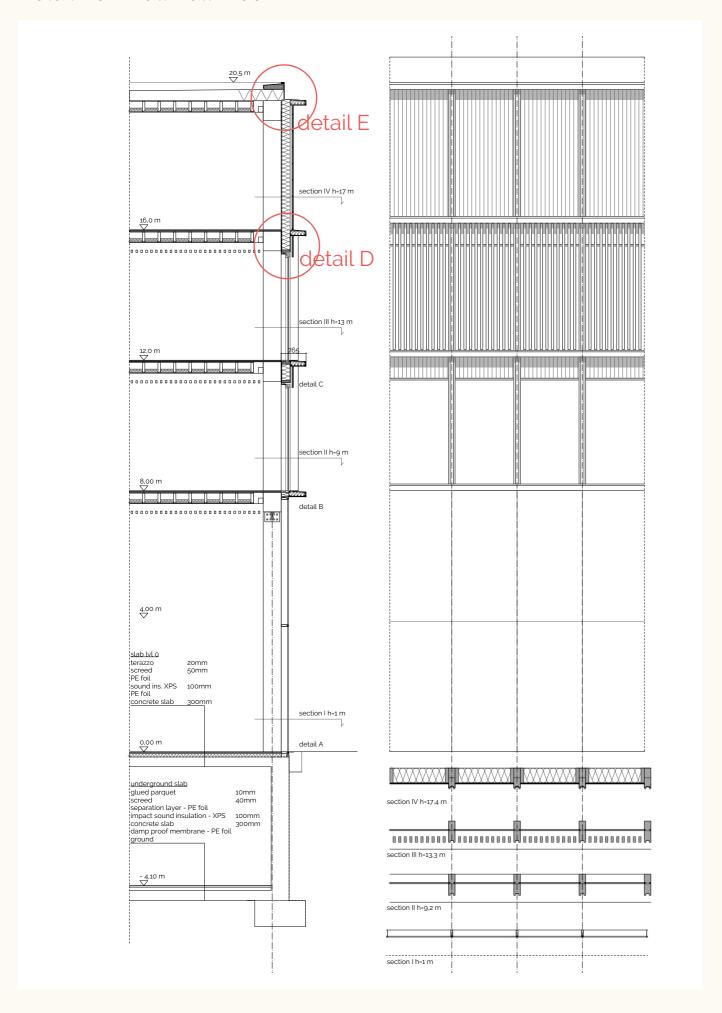


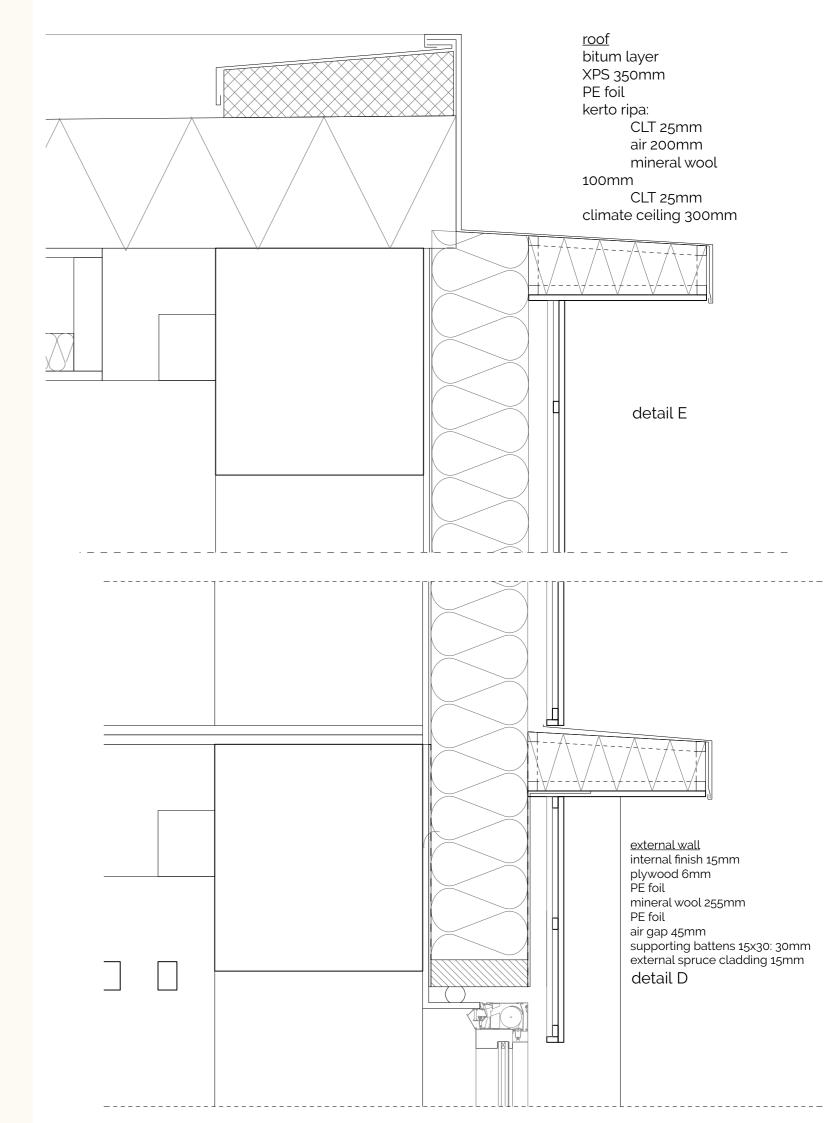
Detail B&C: curtain wall meets typical facade module



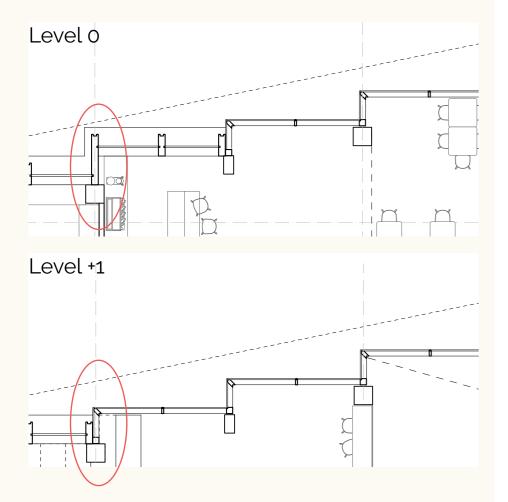


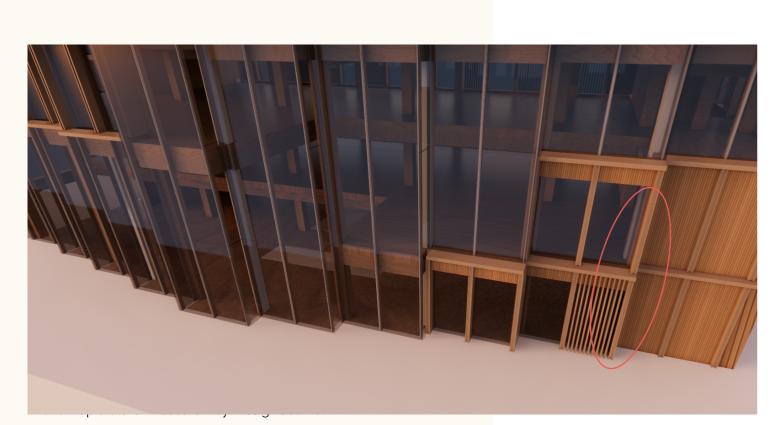
Detail D&E: Full wall + roof



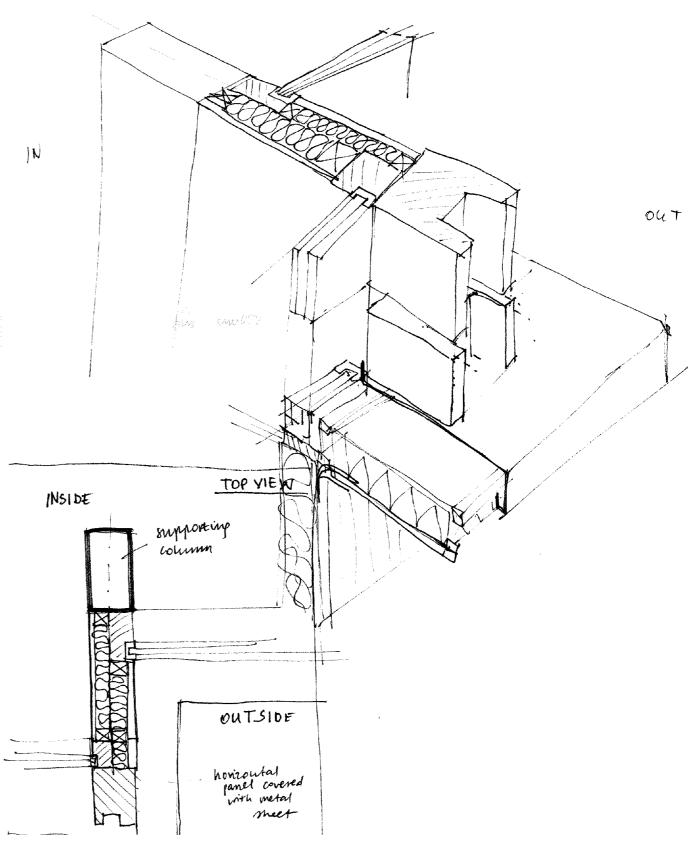


Connection between the windows

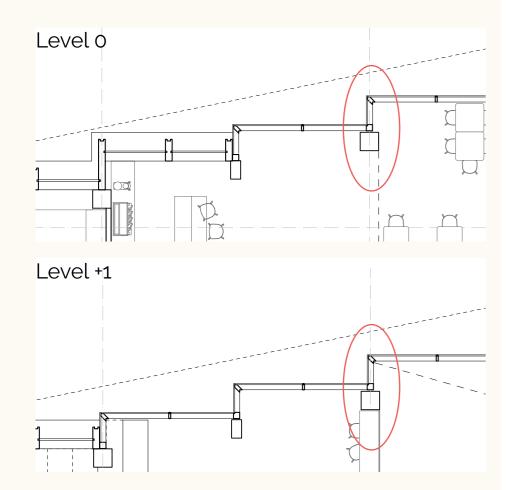


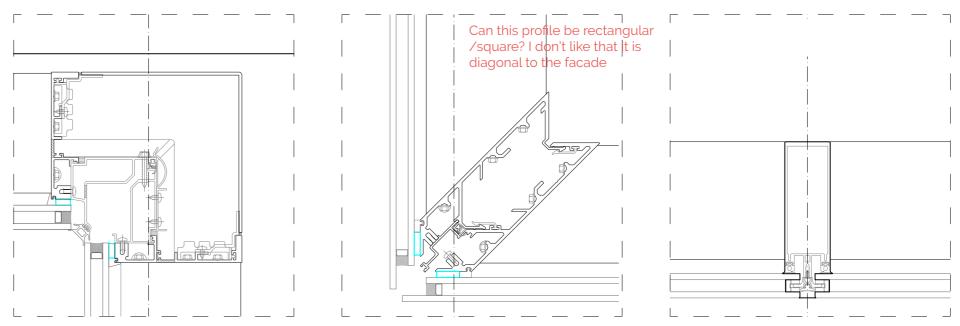


CORNER HINDOW TO WINDOW

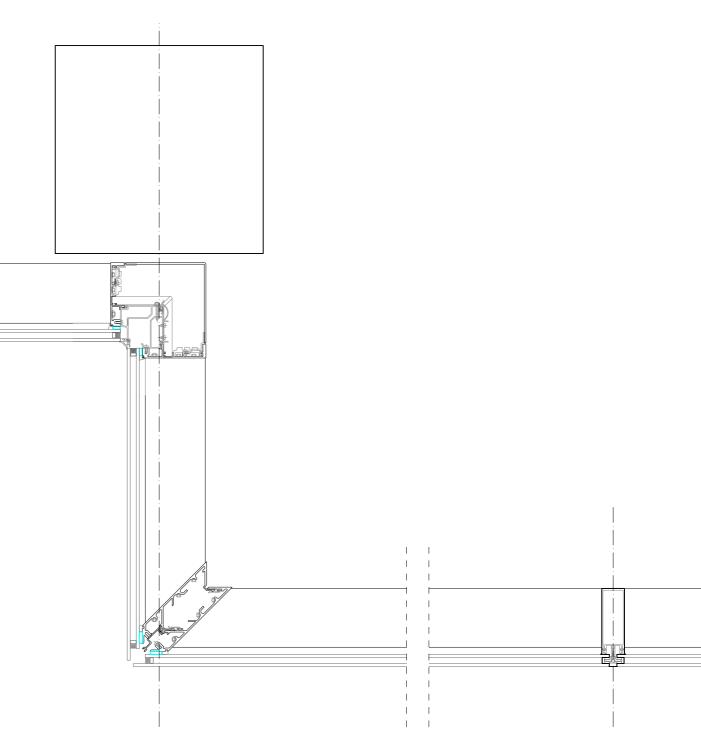


Curtain wall corners

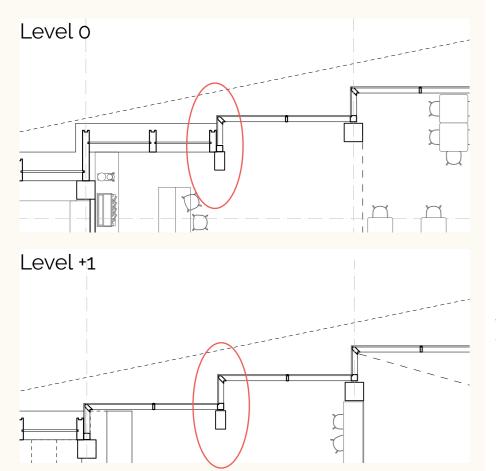


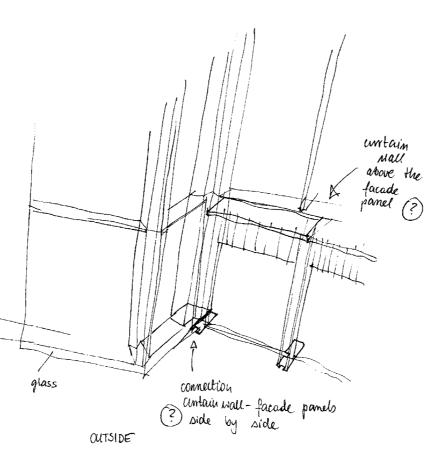


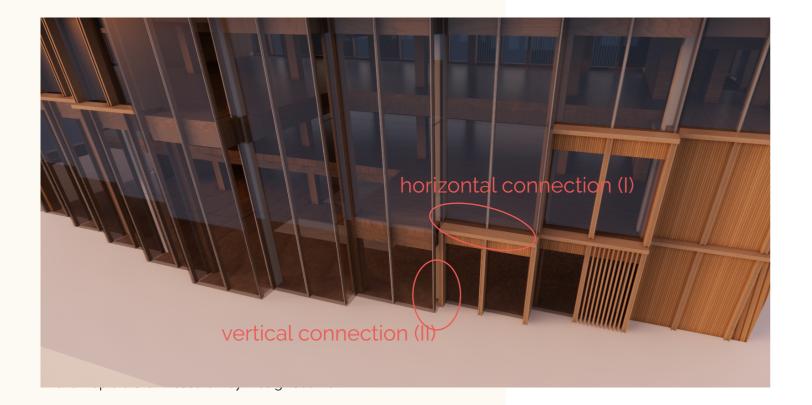


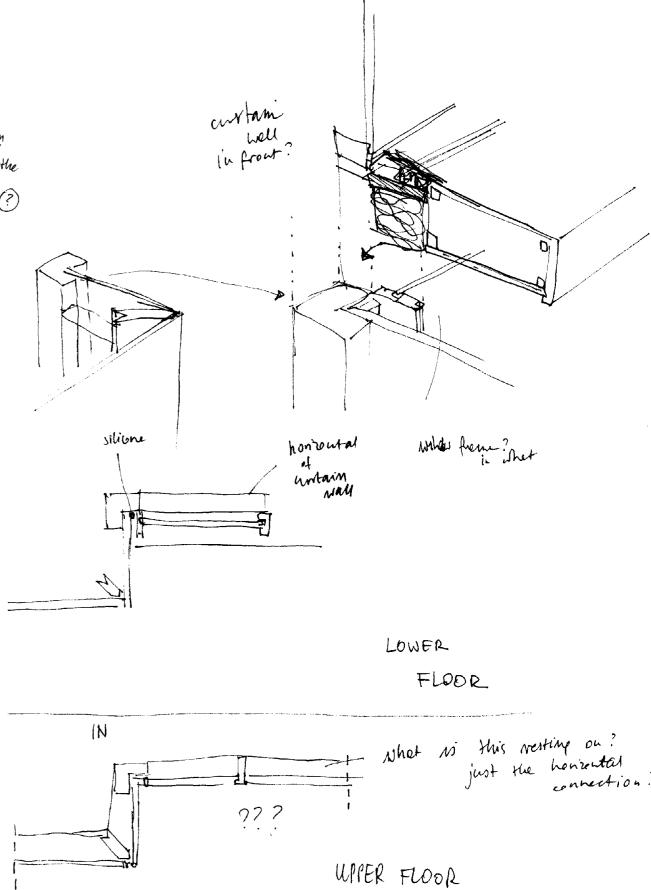


Connection: facade panel connection with curtain wall, both horizontally(I) and vertically(II)









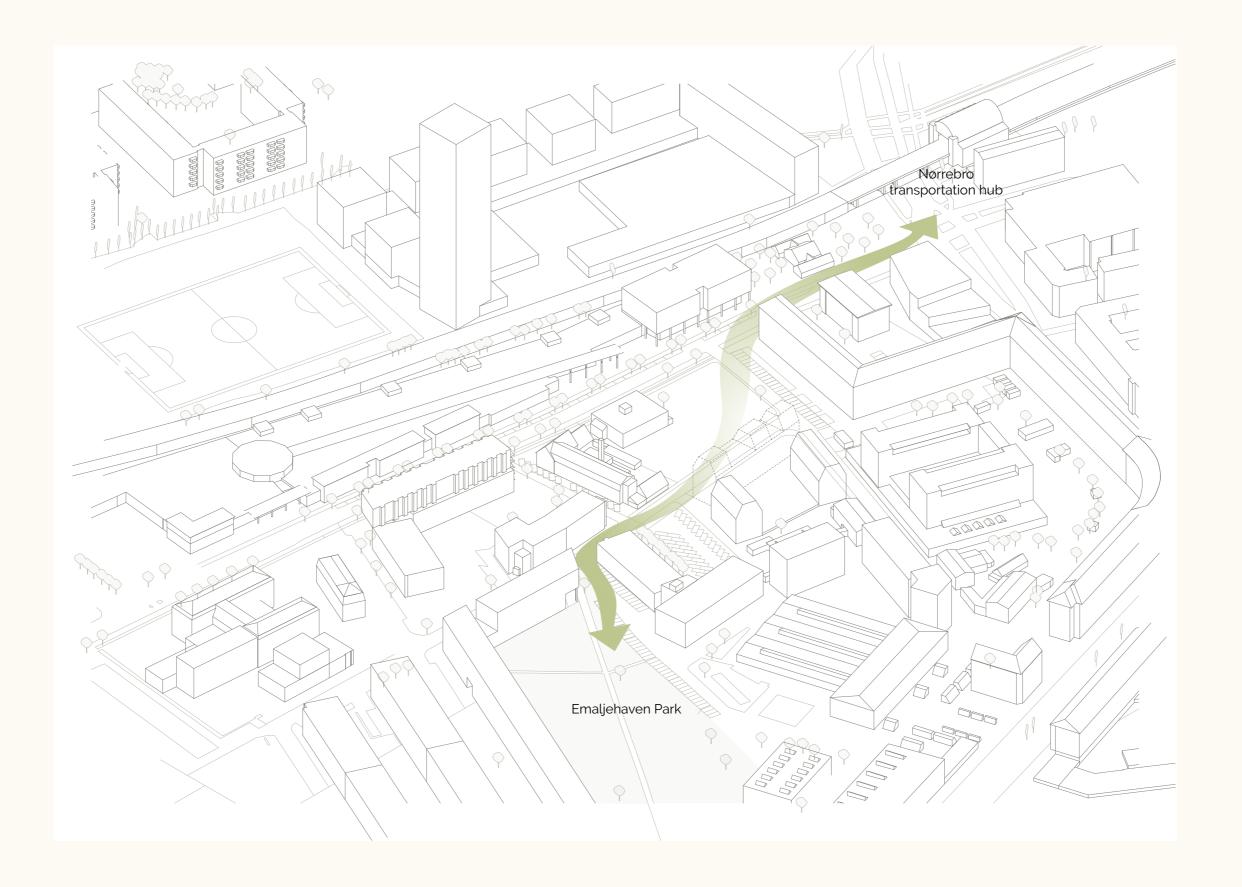
OUT

WINDOW - CULTAIN

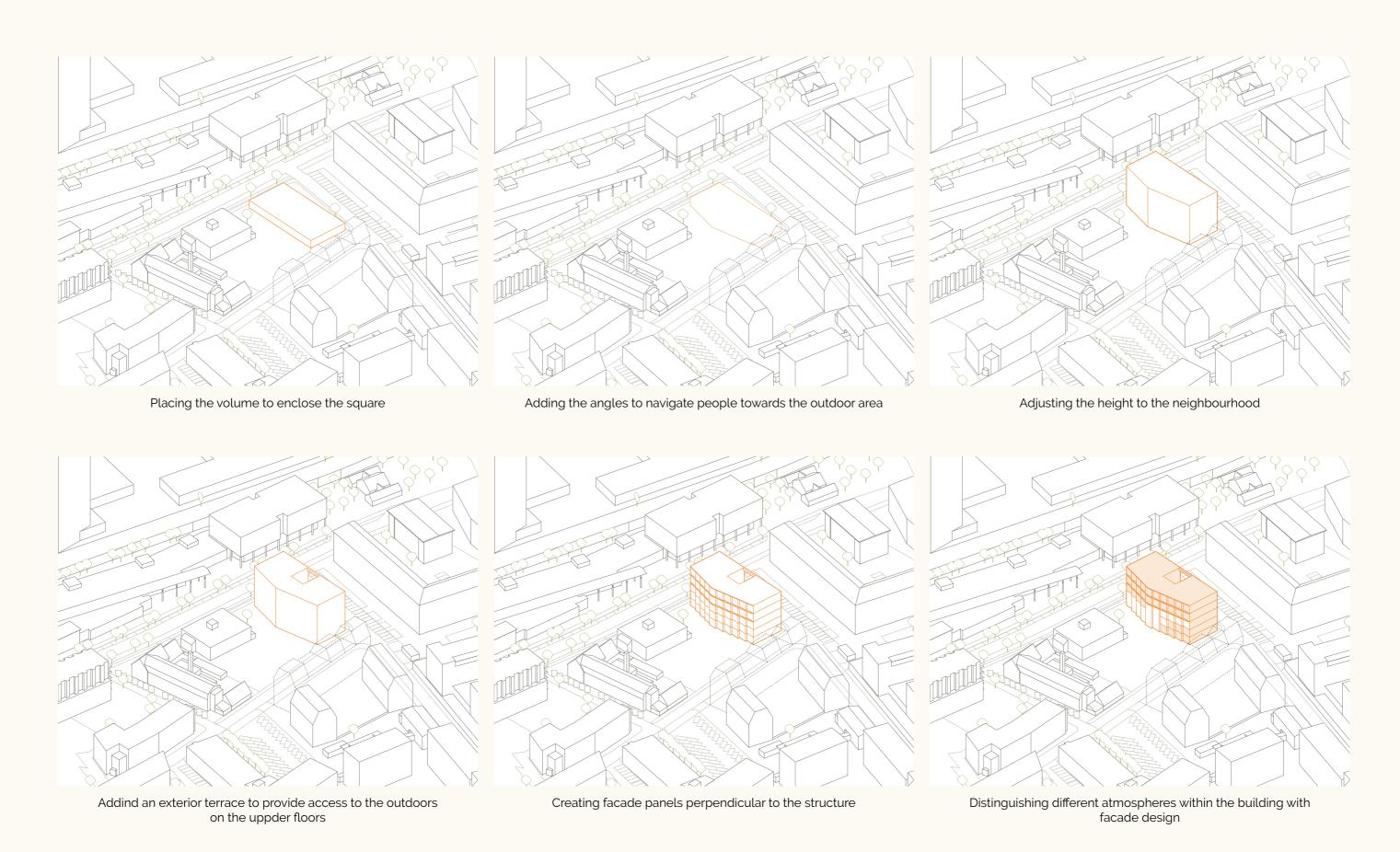
CORNER

WALL.



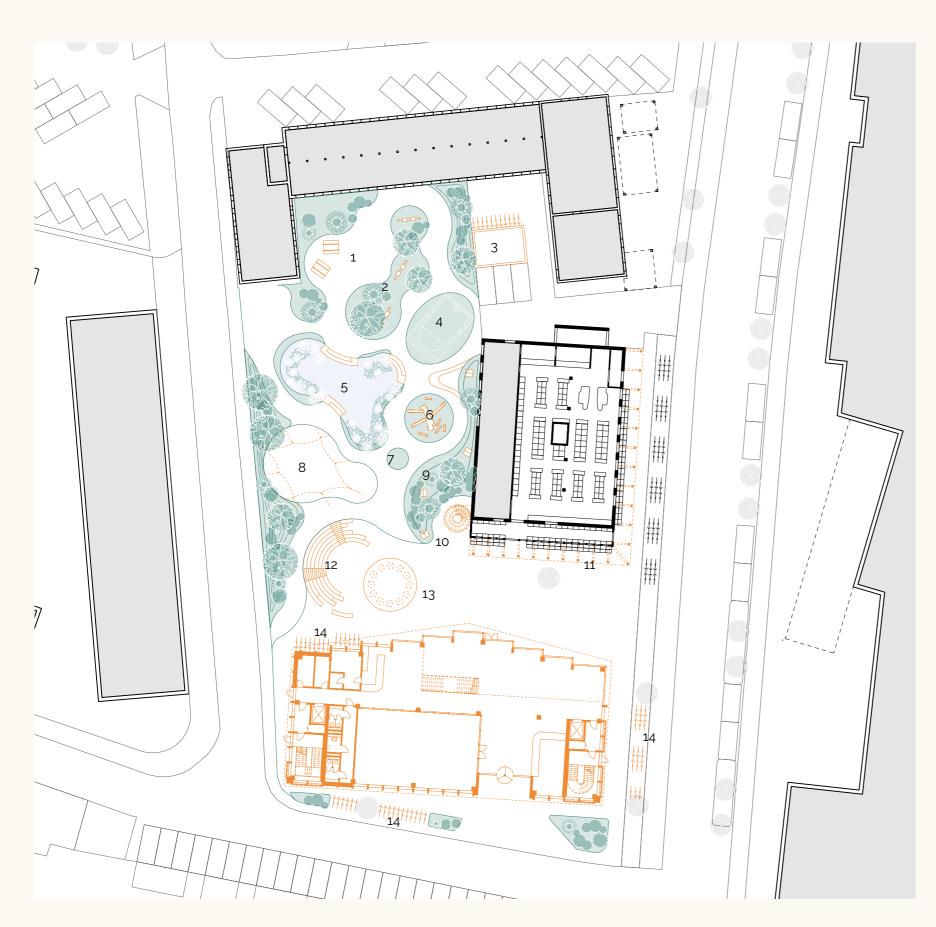


Shaping the volume





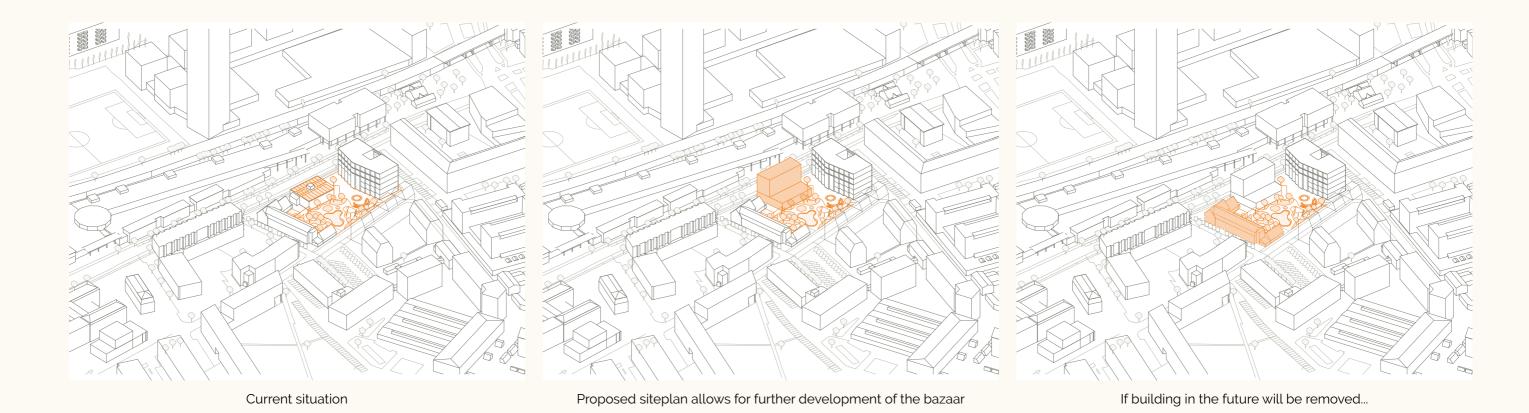
Site plan

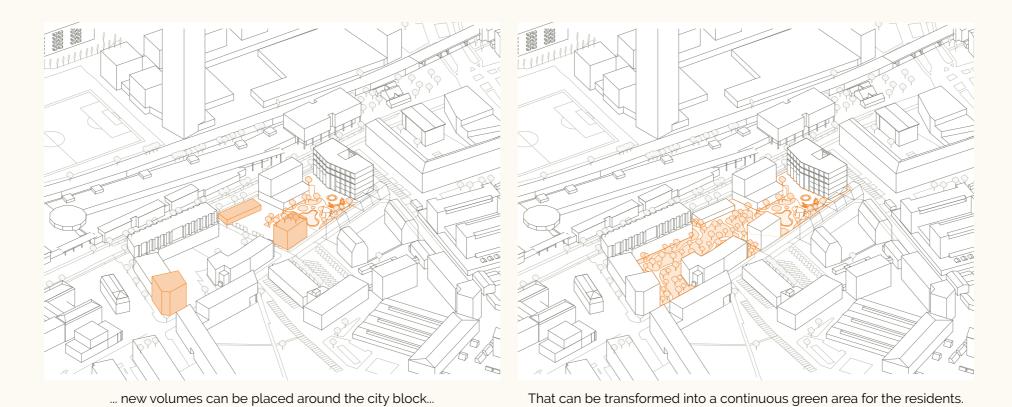


Siteplan, scale 1:500.

- 1 Outdoor picnic area for local business owners
- 2 Swings
- 3 New parking and storage area for local bussiness owners
- 4 Basketball court
- 5 Water pond
- 6 Natural playscape
- 7 Olfactory island herbal garden
- 8 Area for outdoor activities with a canopy
- 9 Meadow with insect houses
- 10 Entryway to the rooftop urban farming
- 11 Lygten Bazaar extension
- 12 Seating area
- 13 Fountain
- 14 Bike parking

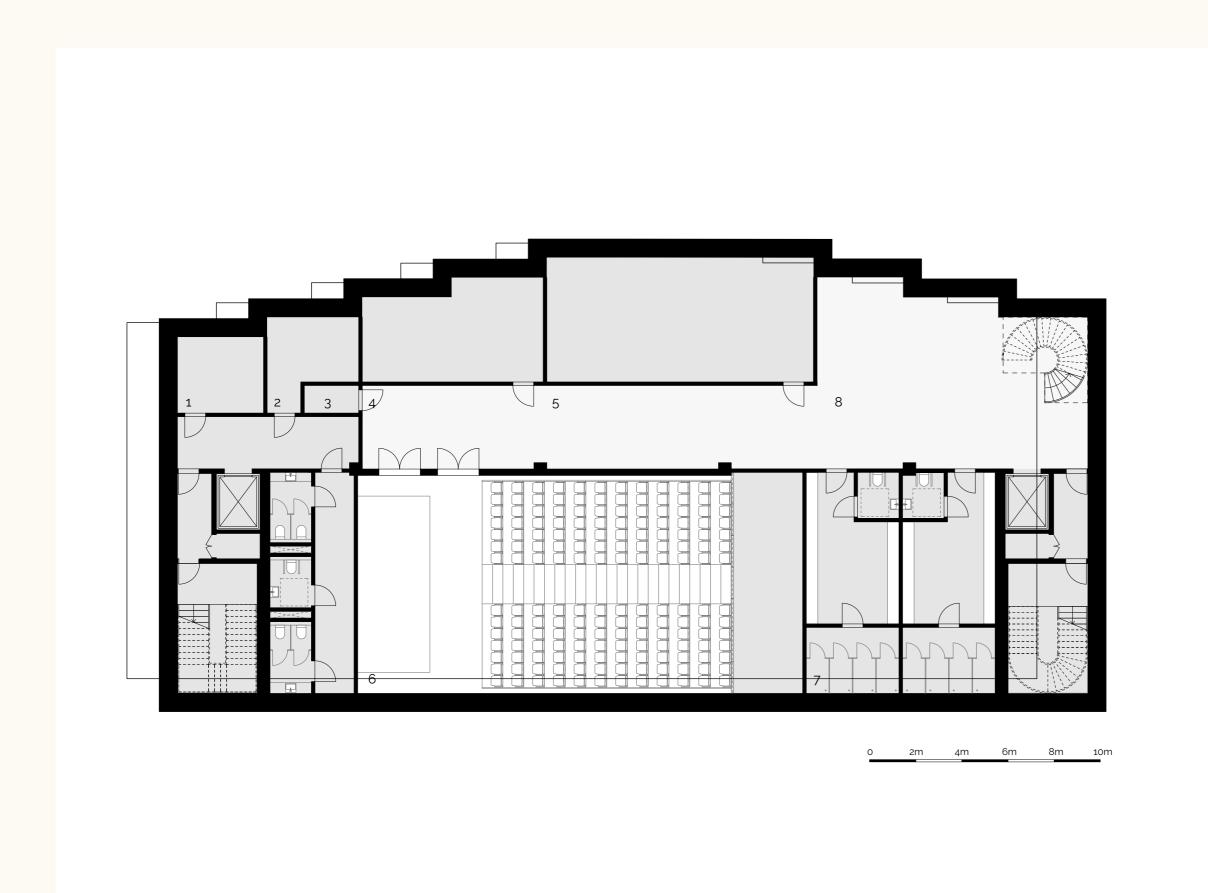
Possible site evolution in the future





Impression of the building from the the courtyard





Level -1, scale 1:100 (rescaled)

1 water supply connection

2 electrotechnical room

3 teletechnical room

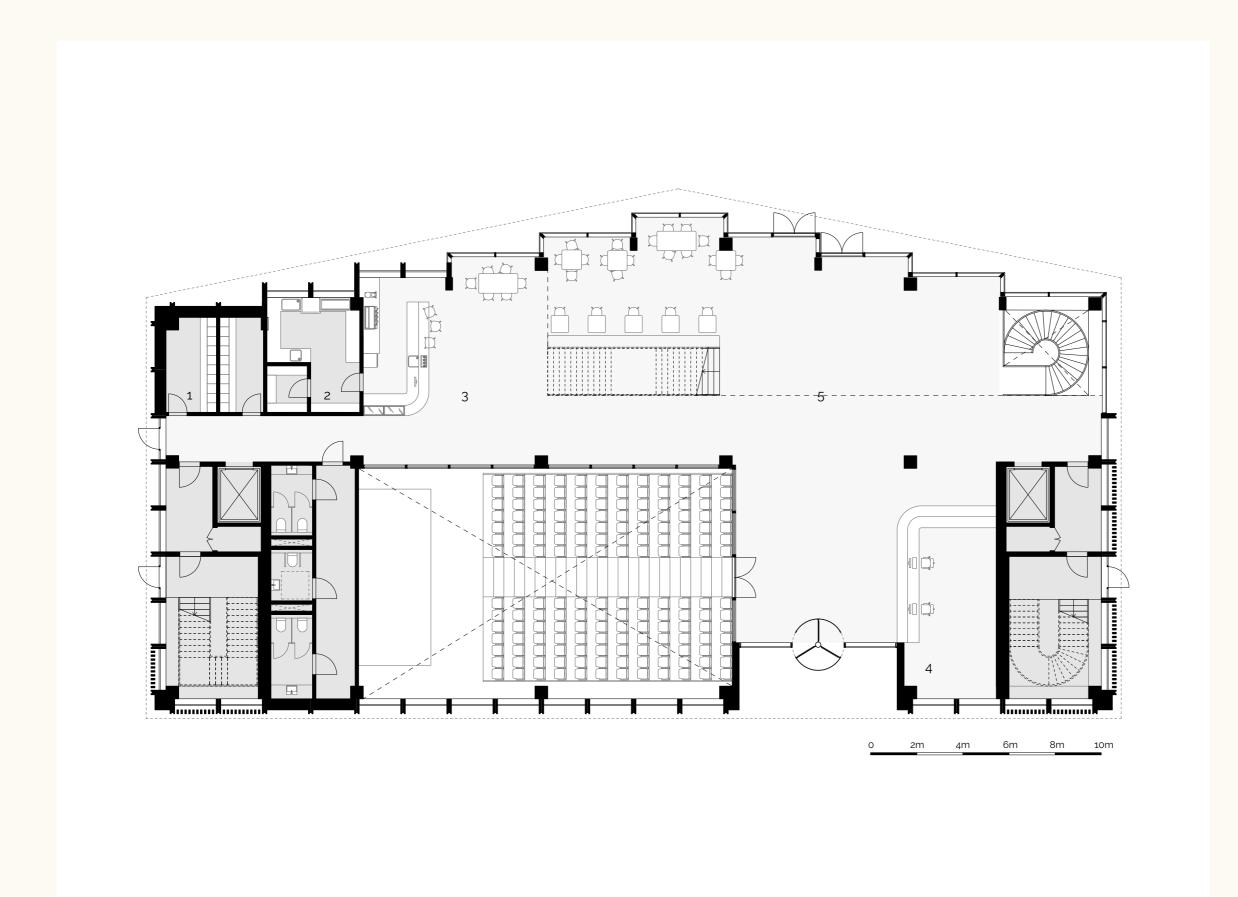
4 rainwater storage

5 heat exchange station

6 multipurpose room, auditorium setup

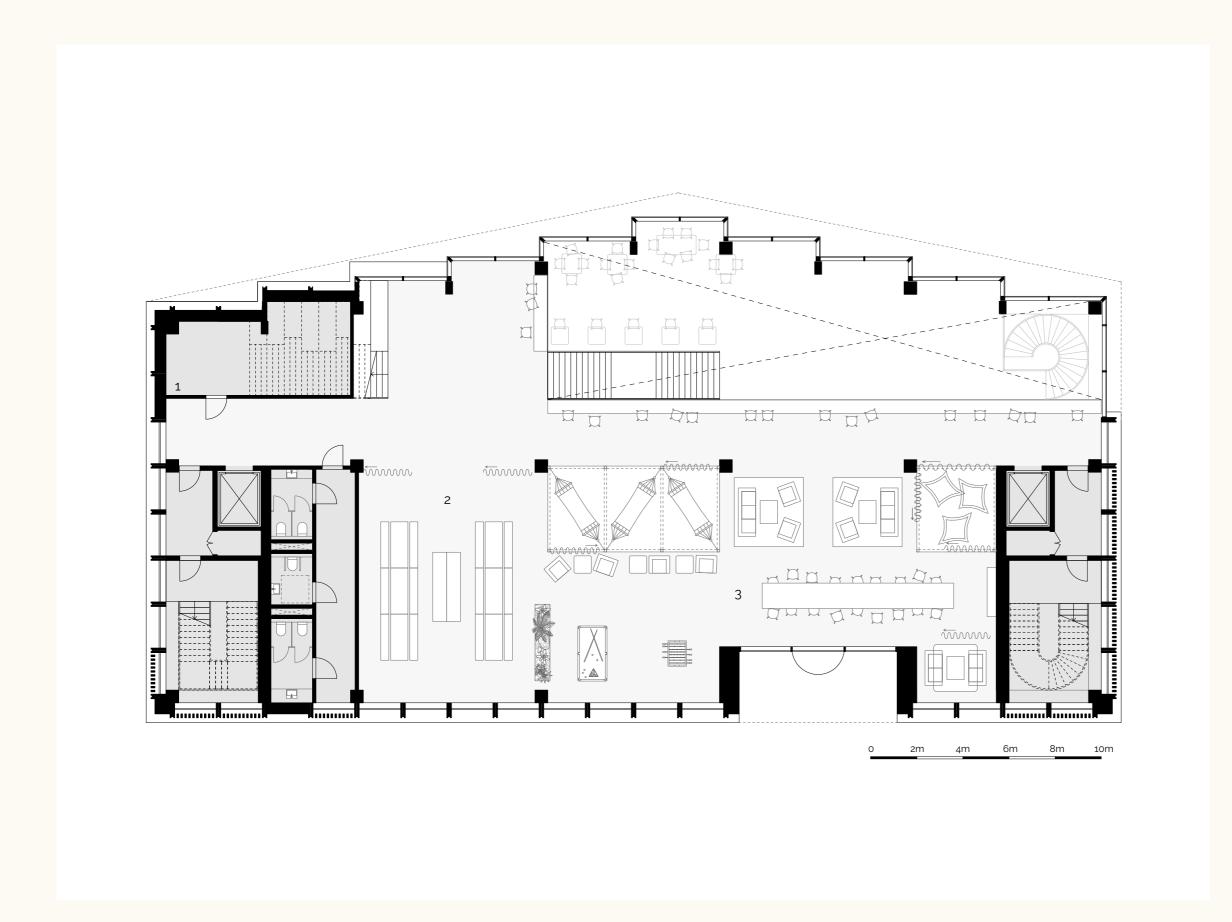
7 changing rooms and showers

8 foyer



Level 0, scale 1:100 (rescaled)

- 1 personel changing rooms
- 2 cafeteria preparation
- 3 cafeteria
- 4 reception desk
- 5 foyer

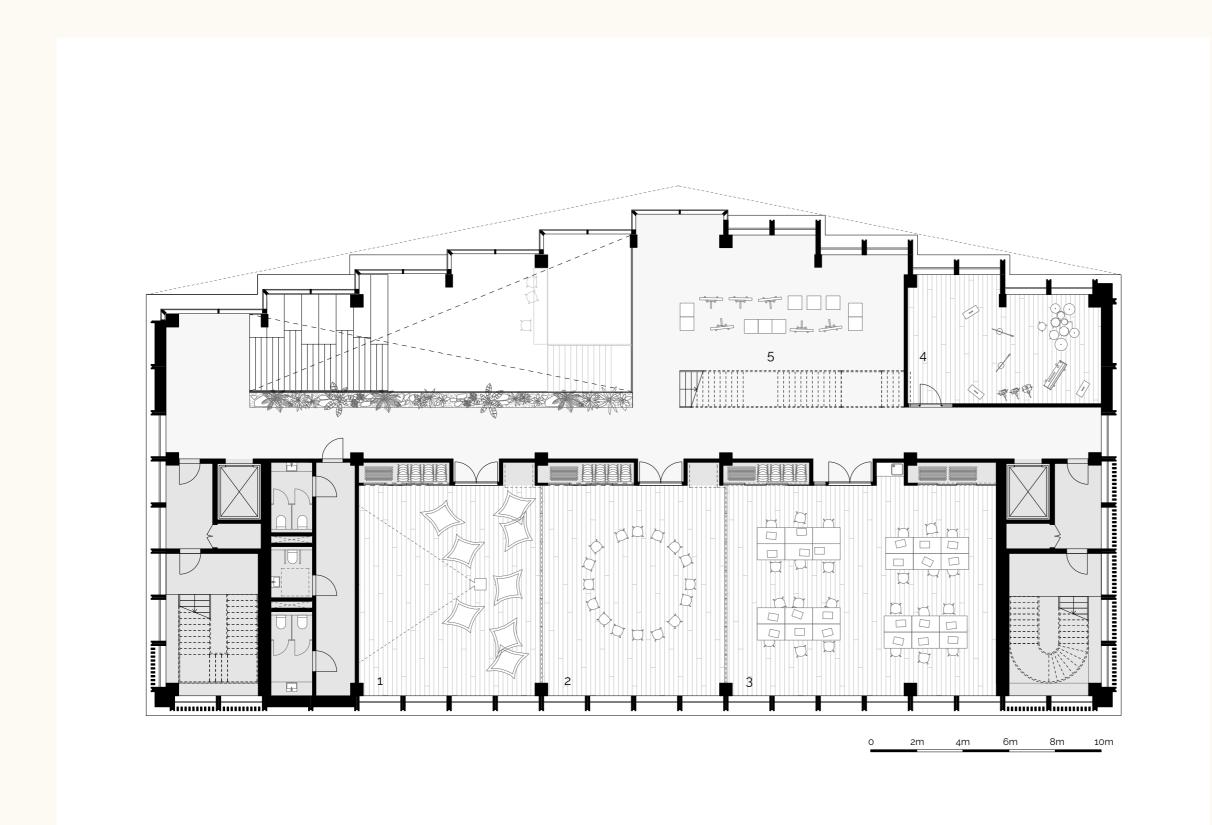


Level +1, scale 1:100 (rescaled)

1 storage

2 community kitchen

3 social living room

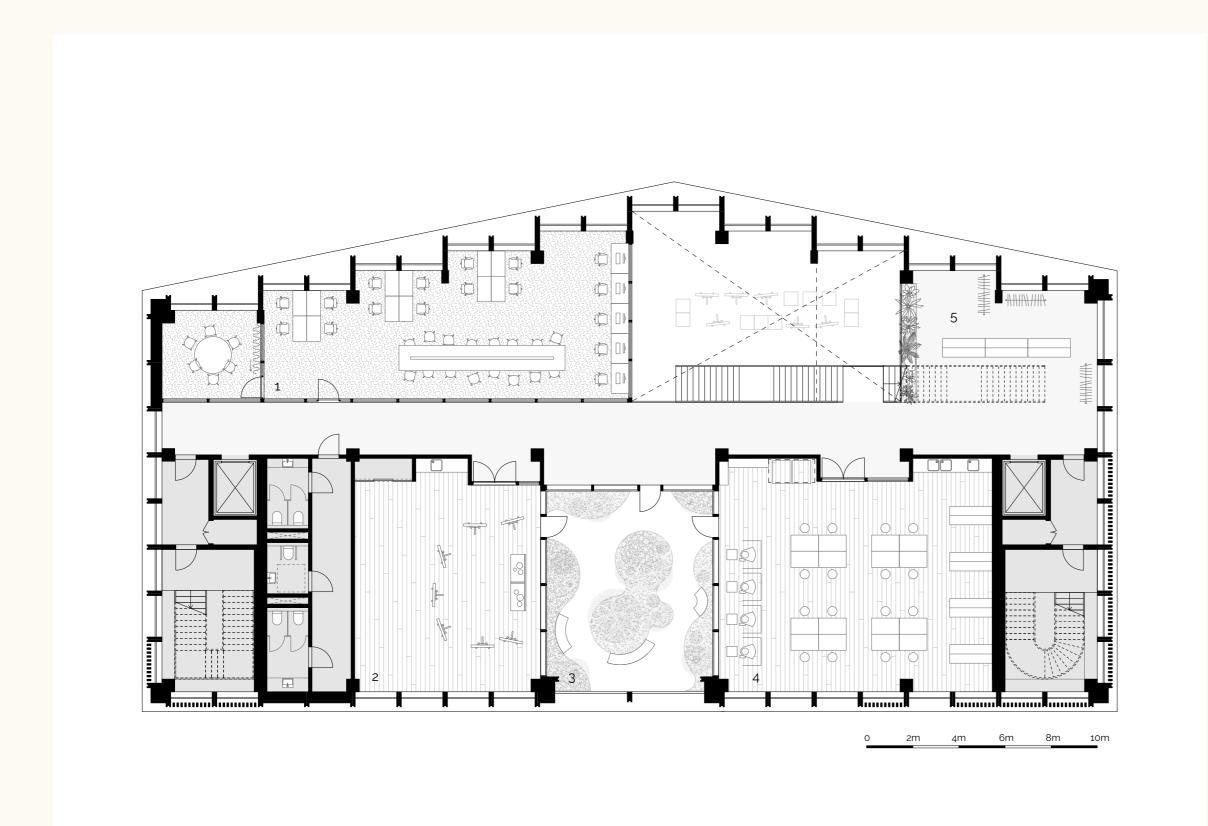


Level +2, scale 1:100 (rescaled)

Multipurpose area, arrangement proposal

- 1 movie screening
- 2 book club meeting
- 3 children workshop
- 4 music practise room
- 5 exhibition area

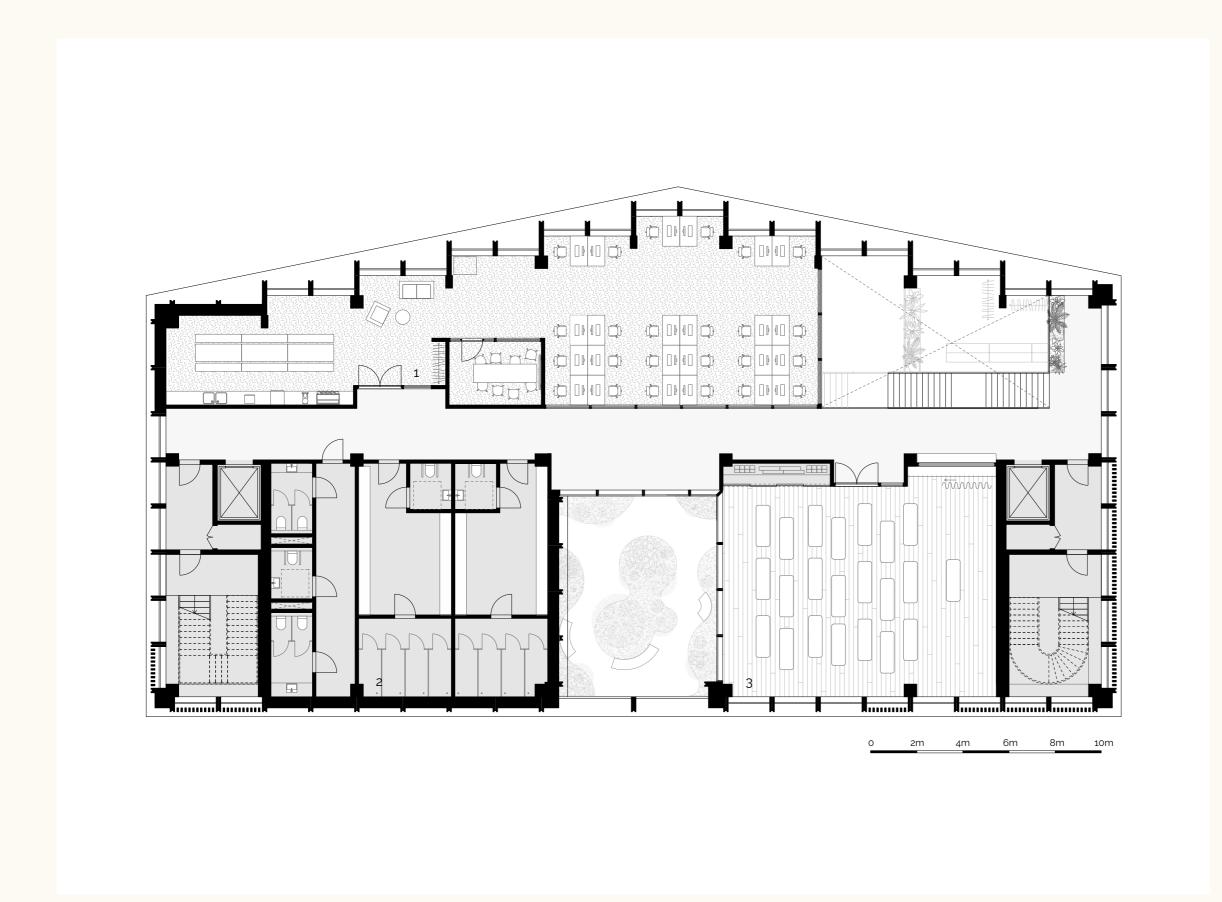
Floorplans



Level +3, scale 1:100 (rescaled)

- 1 quiet reading room
- 2 art studio
- 3 outdoor terrace
- 4 ceramics studio
- 5 swap corner

Floorplans

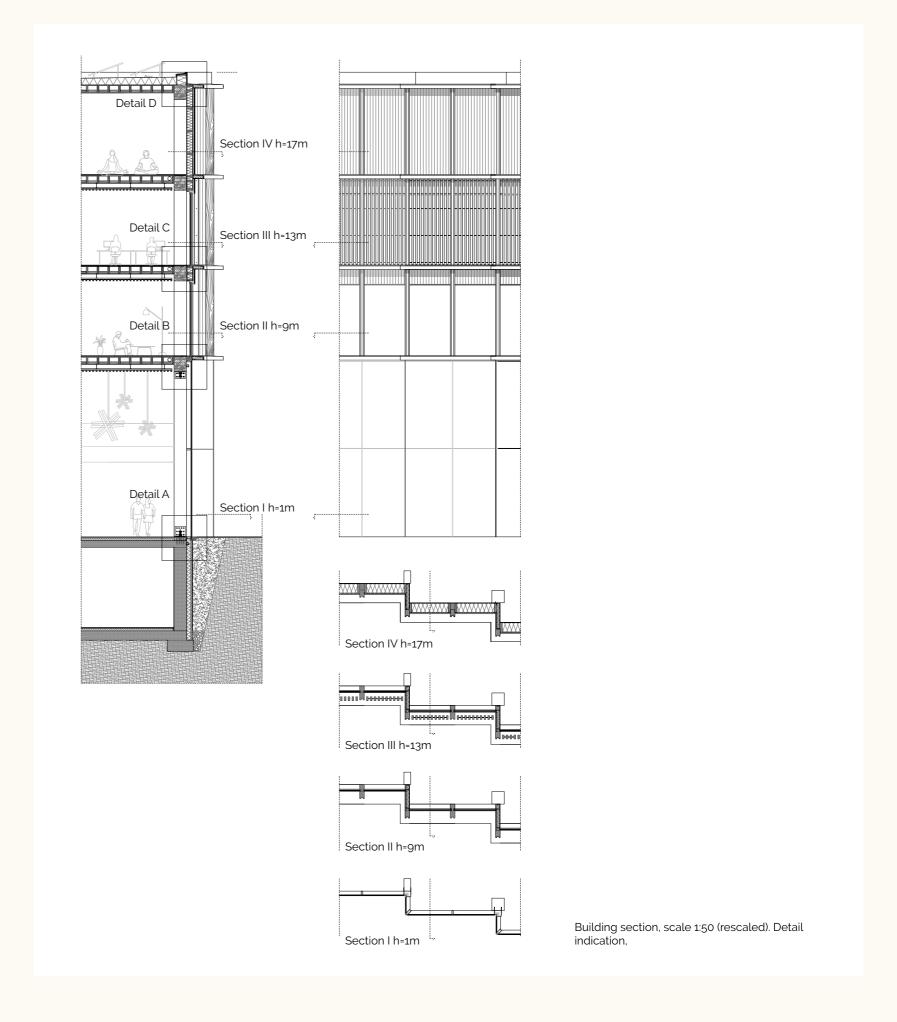


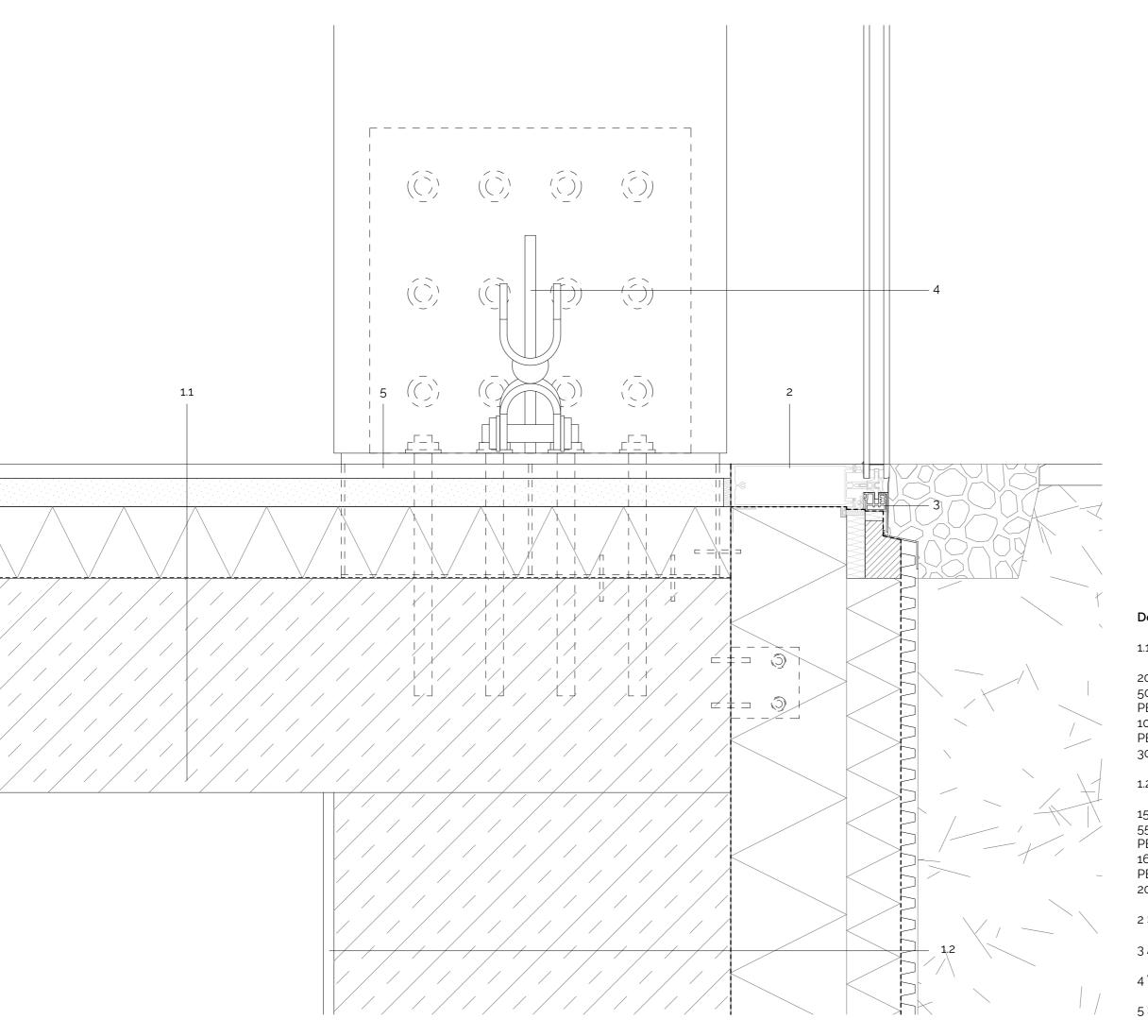
Level +4, scale 1:100 (rescaled)

- 1 admininstration
- 2 changing rooms with showers
- 3 yoga studio



Detail drawings





Detail A, scale 1:5

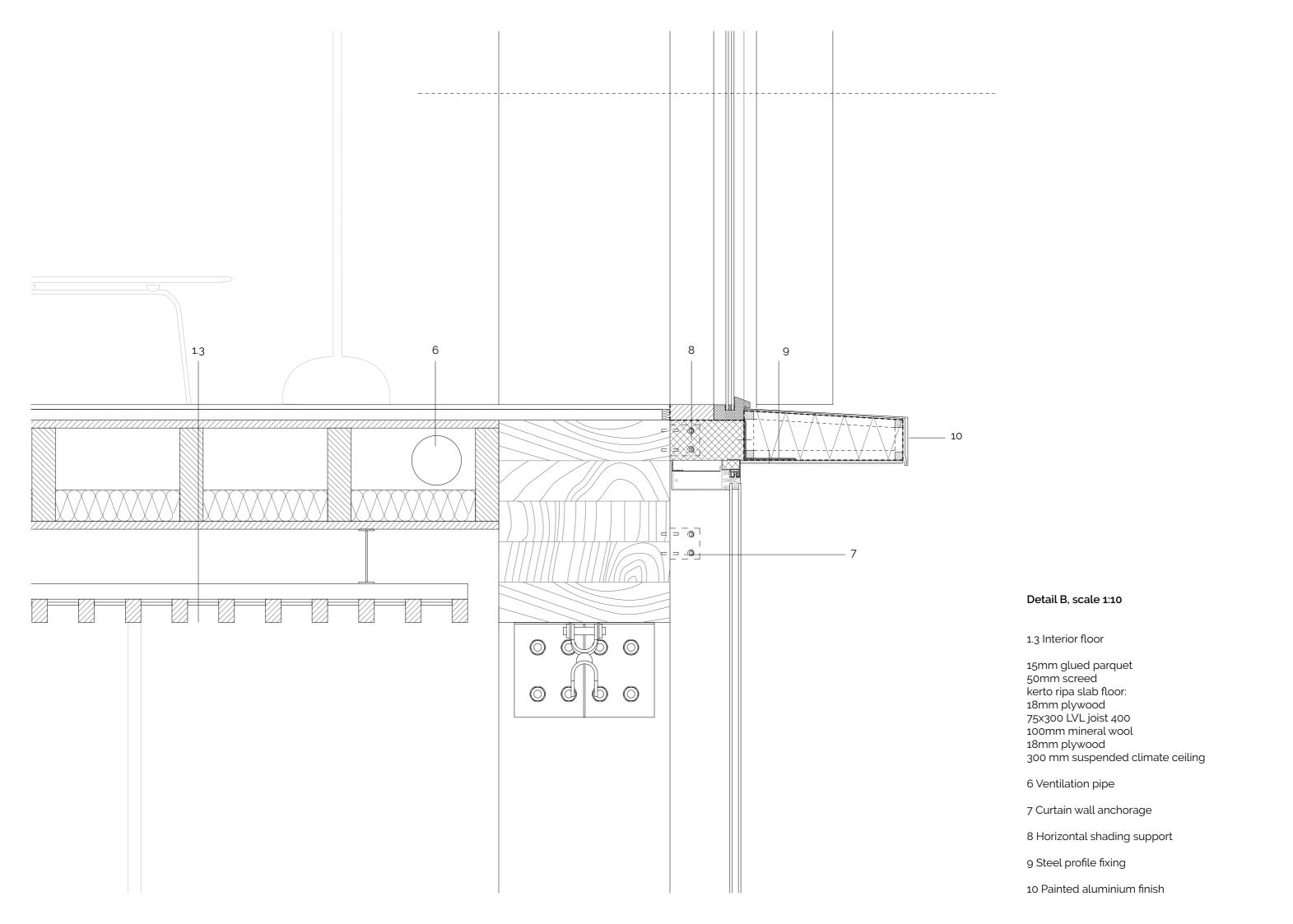
1.1 Floor on the ground level

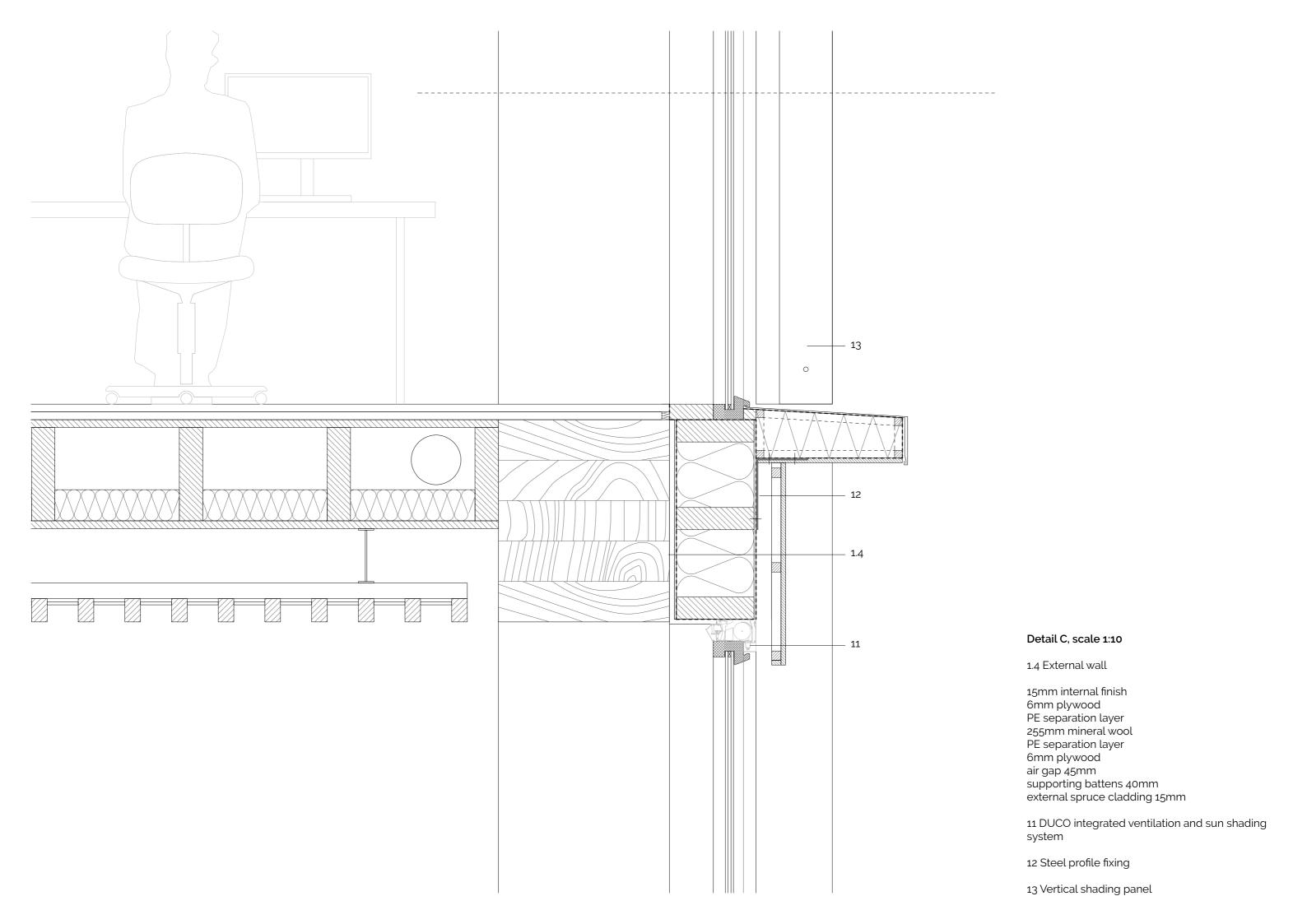
20mm terazzo 50mm screed PE separation layer 100mm XPS insulation PE separation layer 300mm reniforced concrete slab

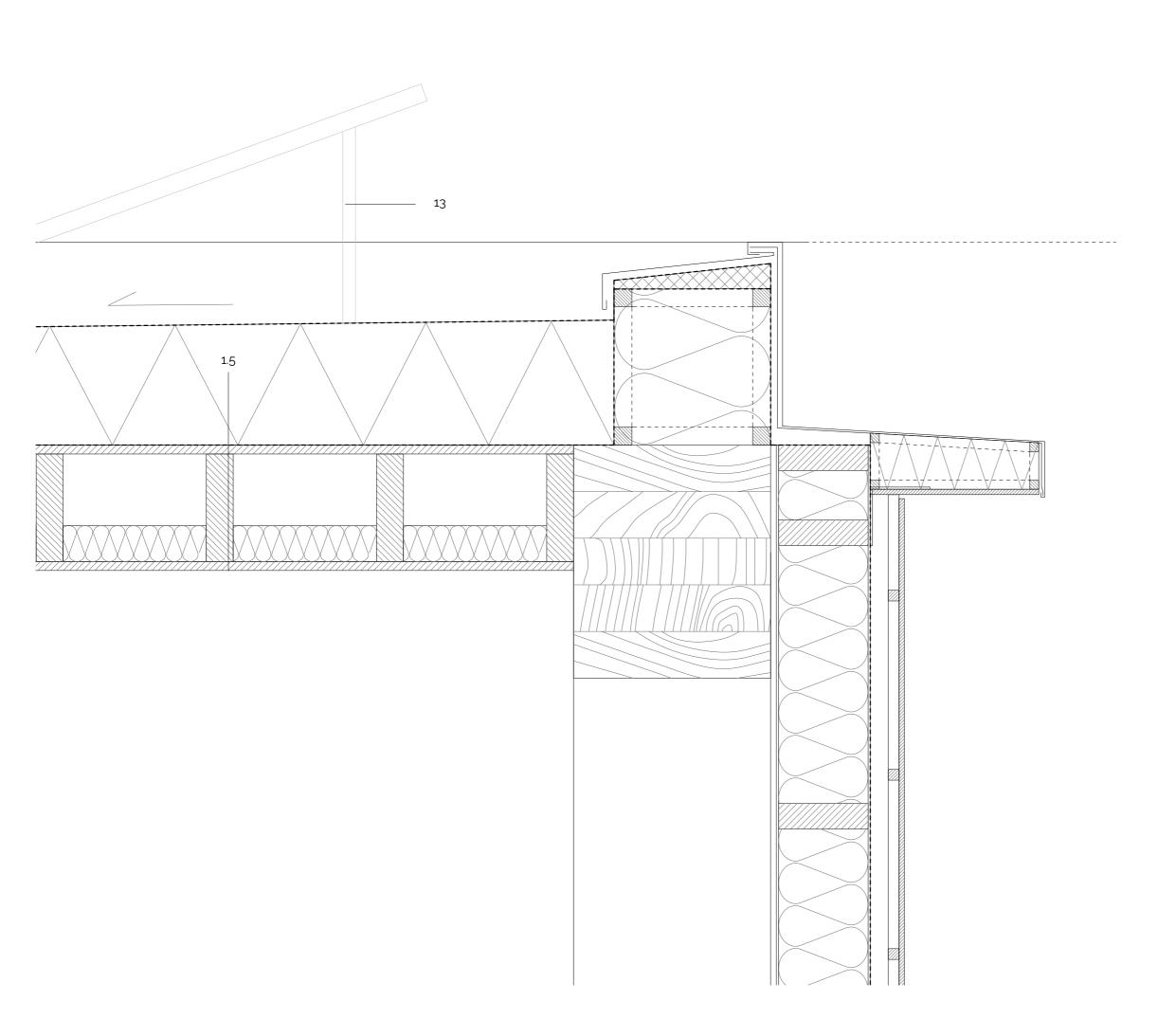
1.2 Foundation wall

15mm interior finish
550mm reinforced concrete wall
PE separation layer
160mm XPS insulation
PE separation layer
20mm anti-capillary foil

- 2 Schüco Facade System profile FWS
- 3 Aluminium cover profile
- 4 Wind bracing cable
- 5 Steel base plate





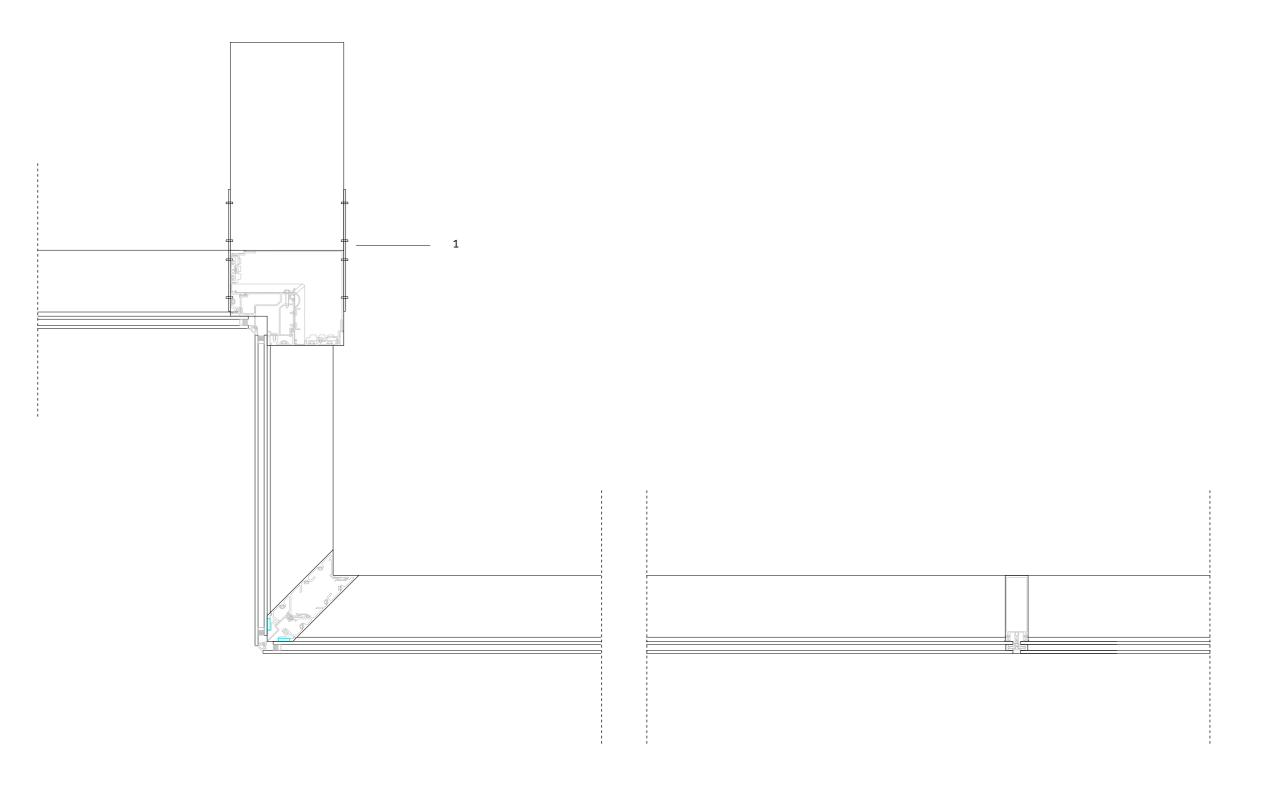


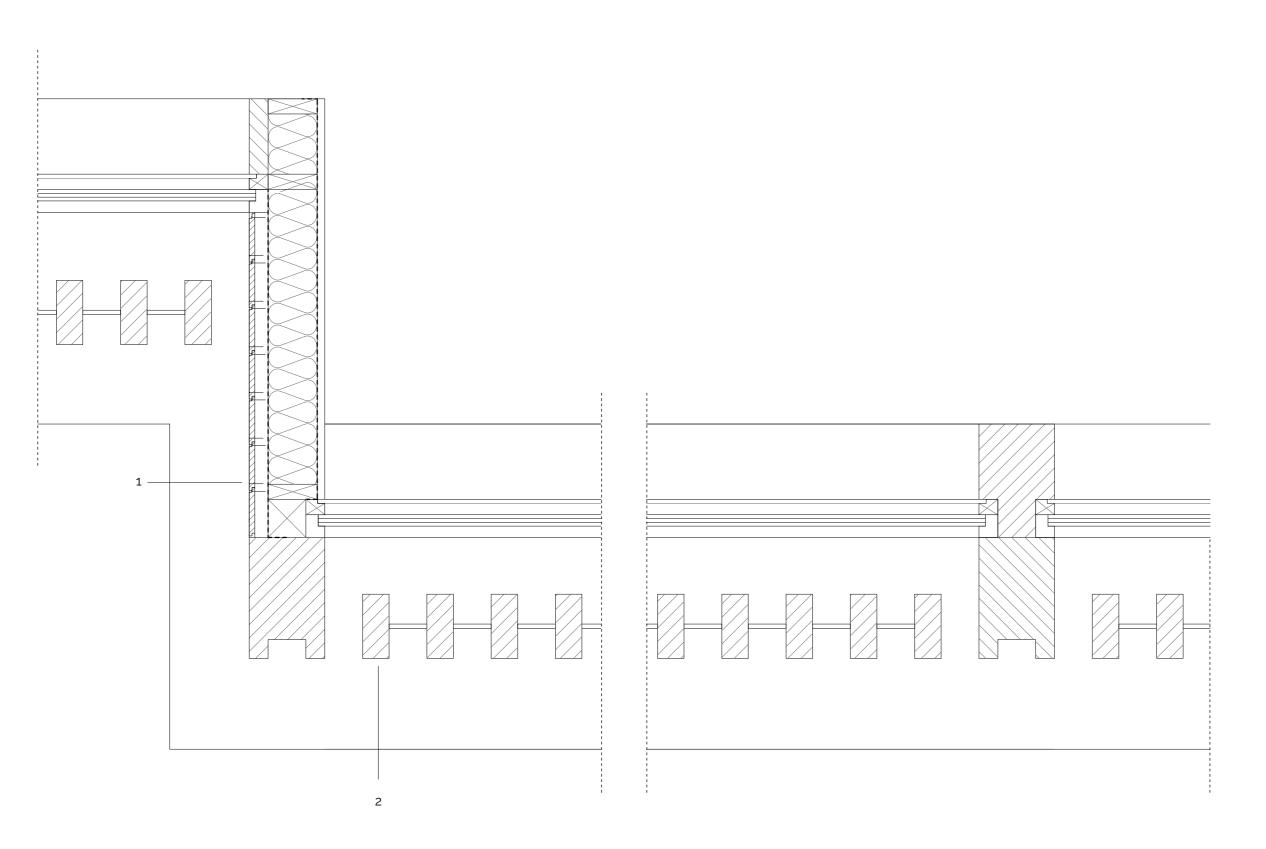
Detail D, scale 1:10

1.5 Roof

bitum layer
XPS 350mm
PE foil
kerto ripa slab floor:
18mm plywood
75x300 LVL joist 400
floor heating
100mm mineral wool
18mm plywood
300 mm suspended climate ceiling

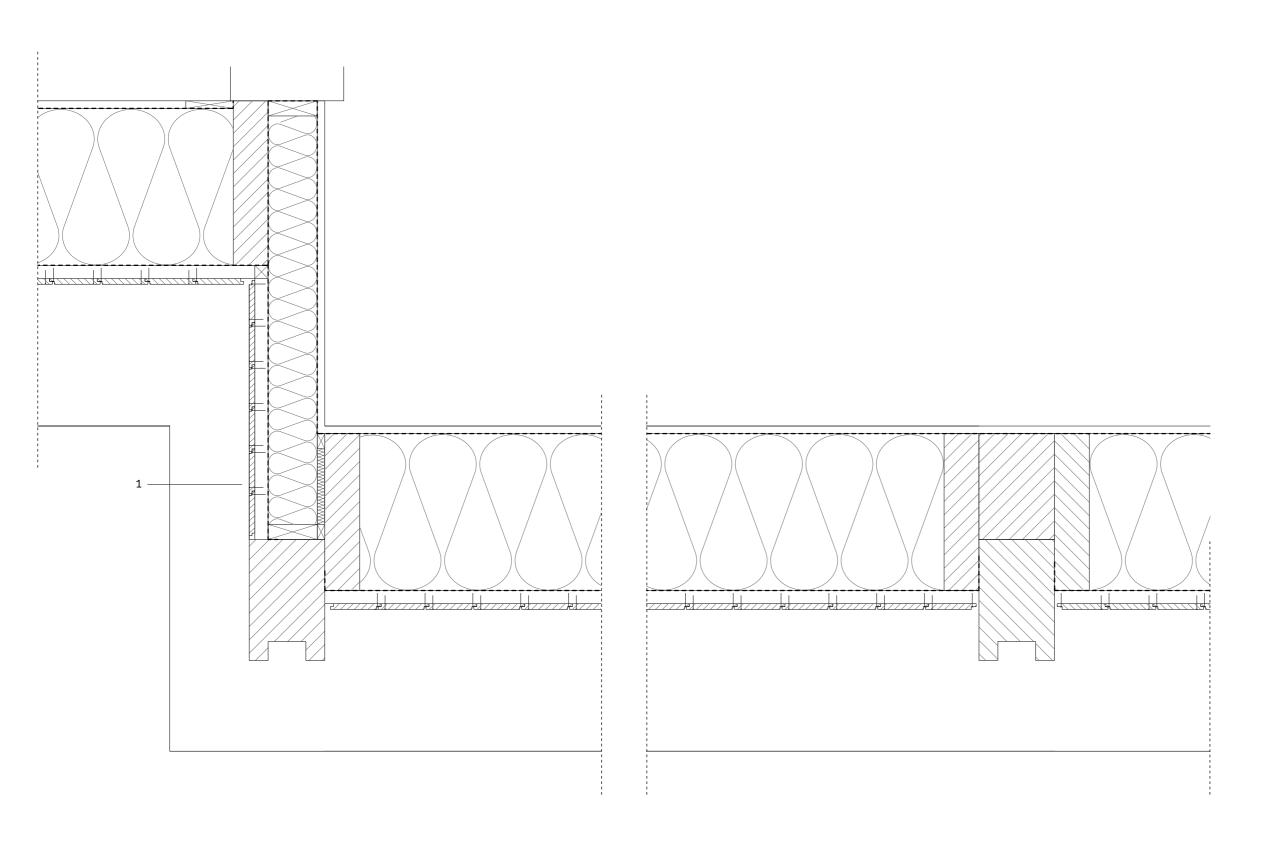
13 Solar panels



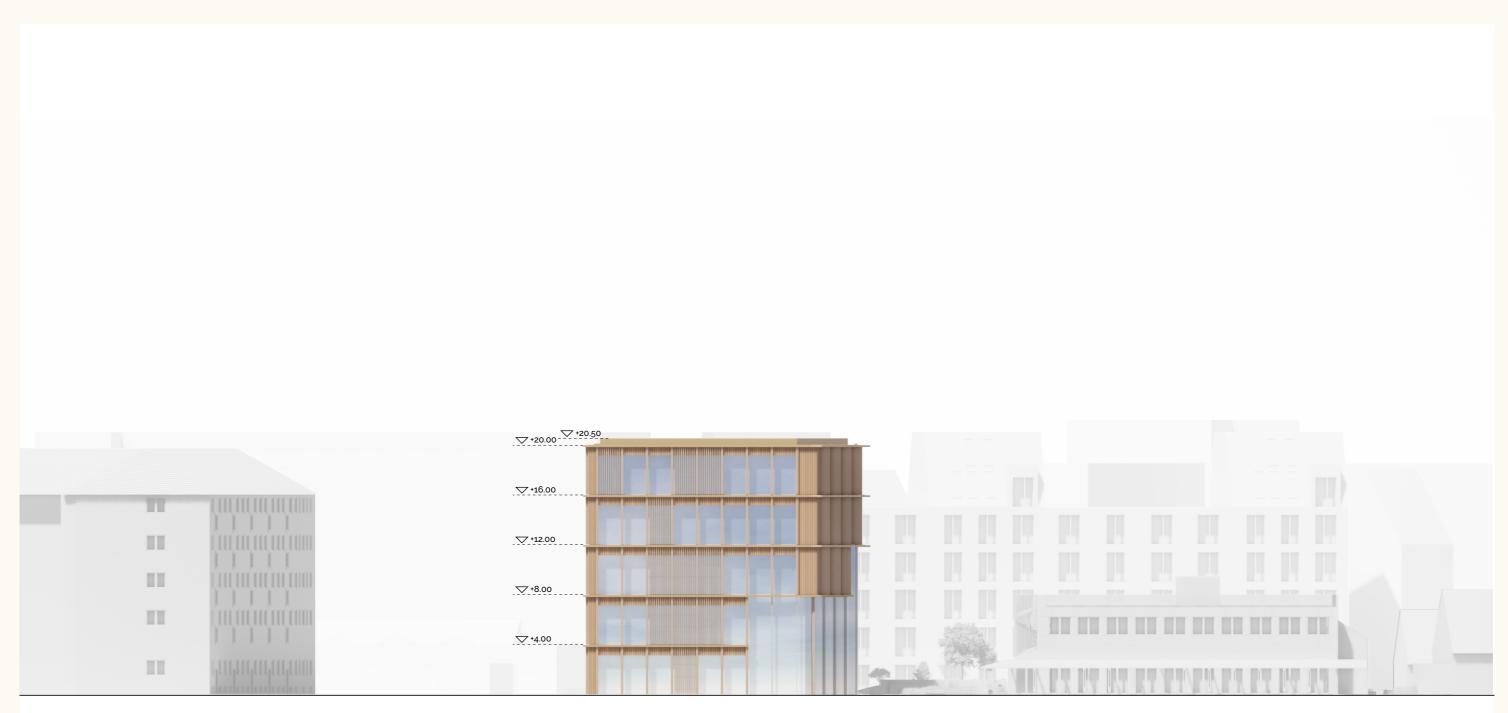


Horizontal section II, scale 1:10

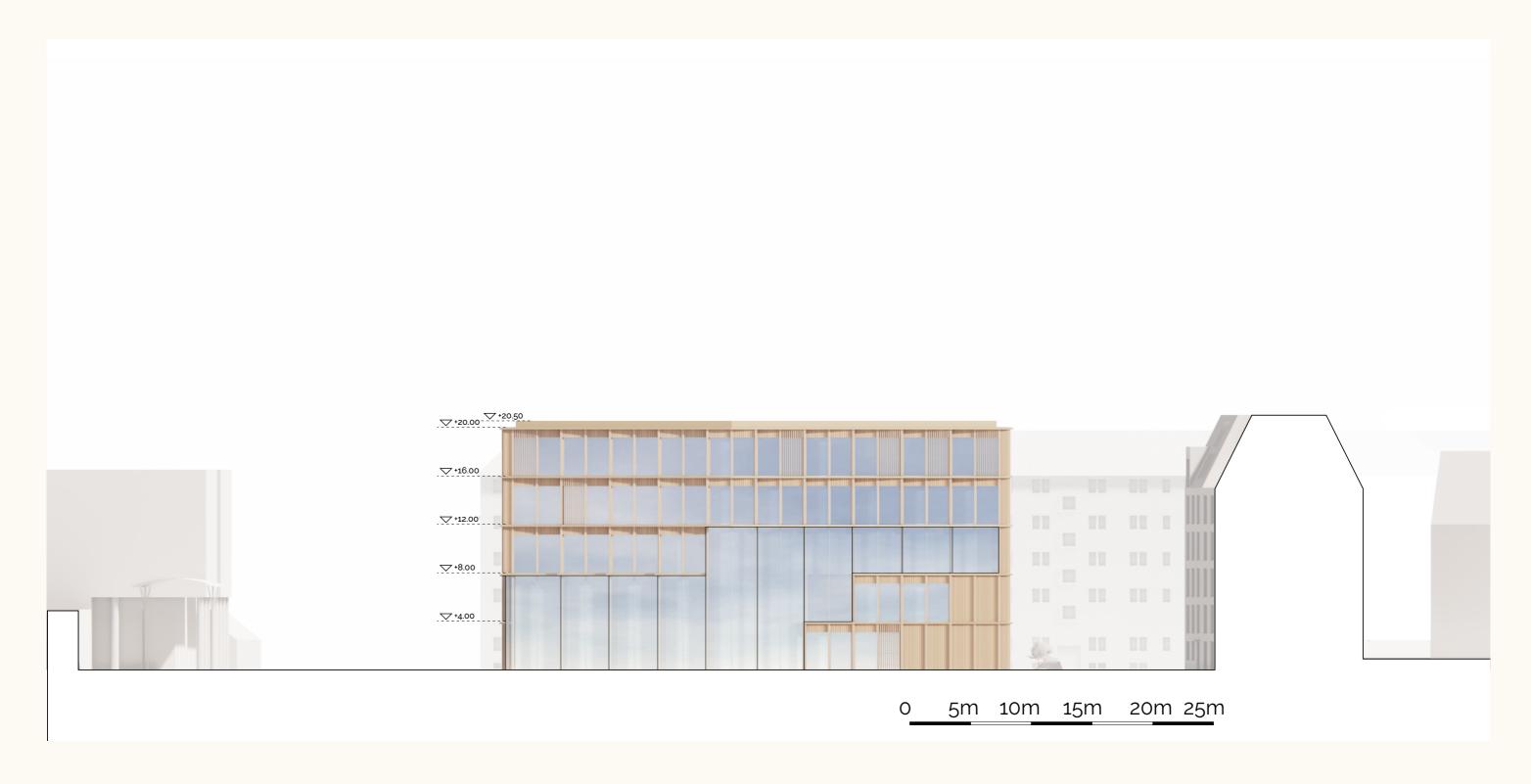
- 1 Norway spruce vertical cladding, 130mm boards with shiplap fixing
- 2 vertical timber lamelas



Horizontal section III, scale 1:10



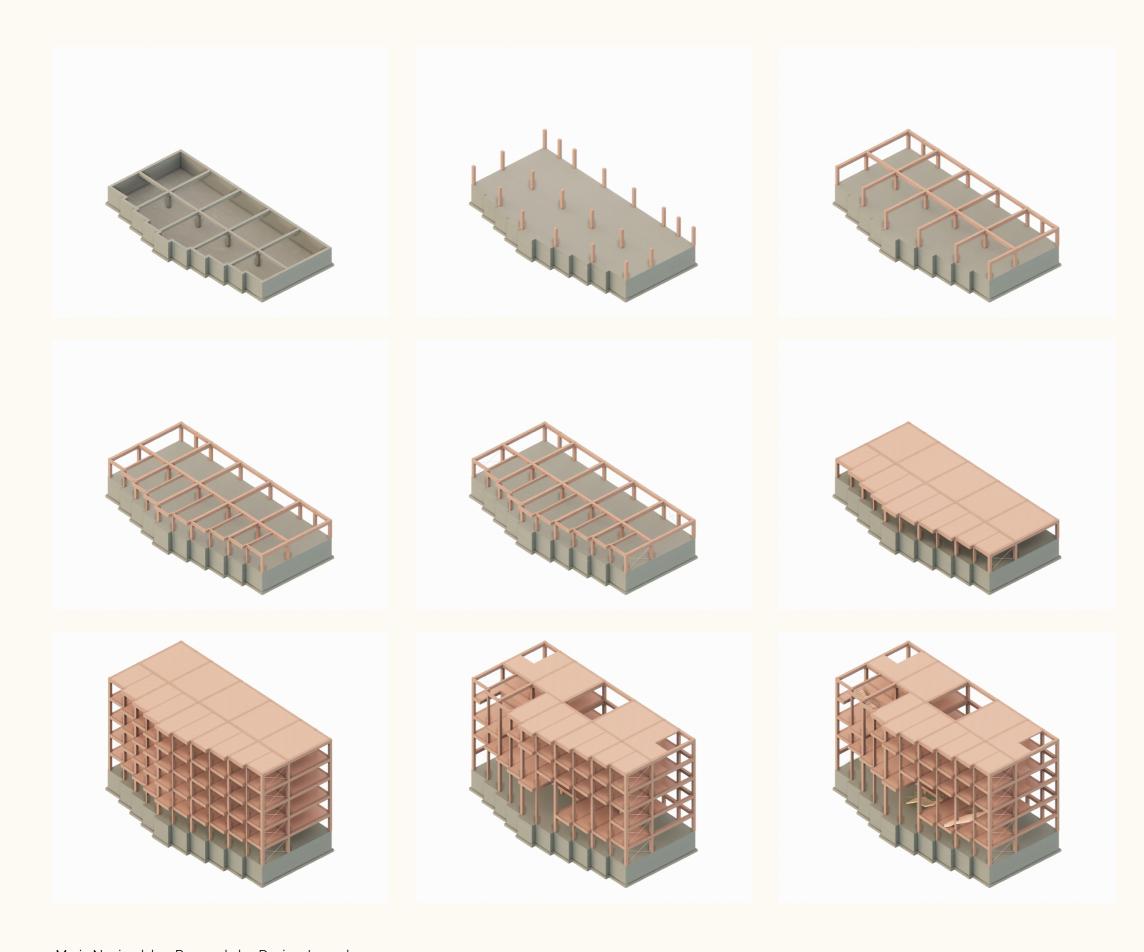
0 5m 10m 15m 20m 25m



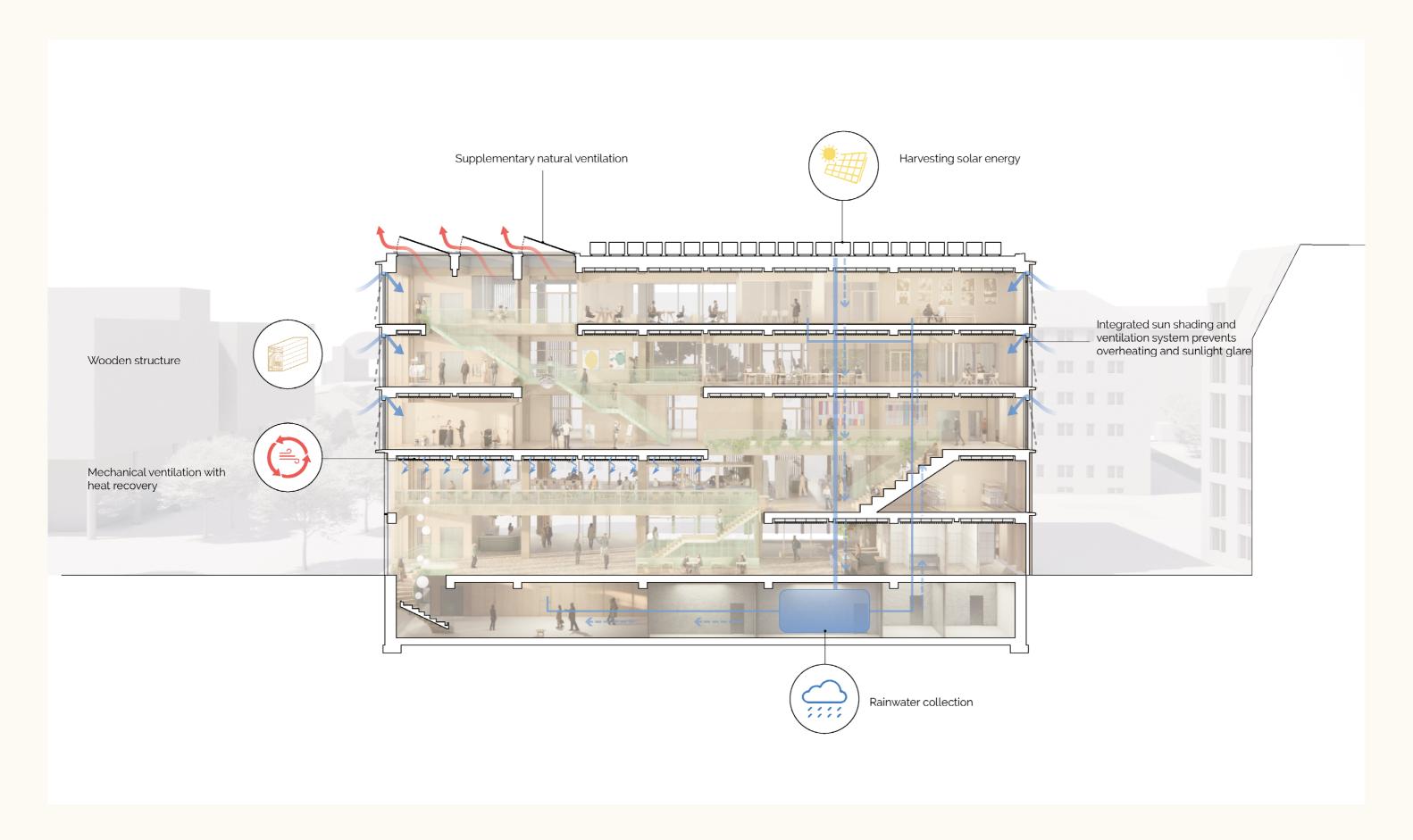




Structure



Sustainability section





Wood wool acoustic panels



Cork



Hempclay board



Carpet with distinctive texture, IKEA.



Sensory stimuli is especially improtant for the youngest, as it supports their comprehensive development. Using velvet as finishing material stimulates imagination and encourages play with the building itself. Photo: Forum Groningen.

Incorporating art



The domestic atmosphere enhances engagement and reduces the distance between the recipient and the work of art. One of the advocated of this thought was Knud W. Jensen, founder of the Louisiana Museum of Modern Art, located in Humlebaek, half an hour form Copenhagen. Before establishing the museum, he organised an initiative that delivered pre-arranged artworks to the workplaces, where they could be enjoyed in more unstrained surroundings. The project quickly turned out to be popular and showed a demand for more art presentations. The association "Art in the Workplace" is active until today, delivering around 400 exhibitions every year.

Incorporating art into the design can bring particular kinds of stimulation, depending on the use of colur, such as cold hues for the concentration areas and warm colours for physical activity. Additionally, it can promote sustainable artists, such as Sandra Junele, who works with textile waste to transform it into decorative wall panels.





< To embrace the natural textures, instead of imitiating nature, project proposes looking for the new ways of working with natural materials. One of the examples is ALPI, which through the process of manufacturing and colouring the wood, brings out its grain, creating interesting finishing materials.</p>

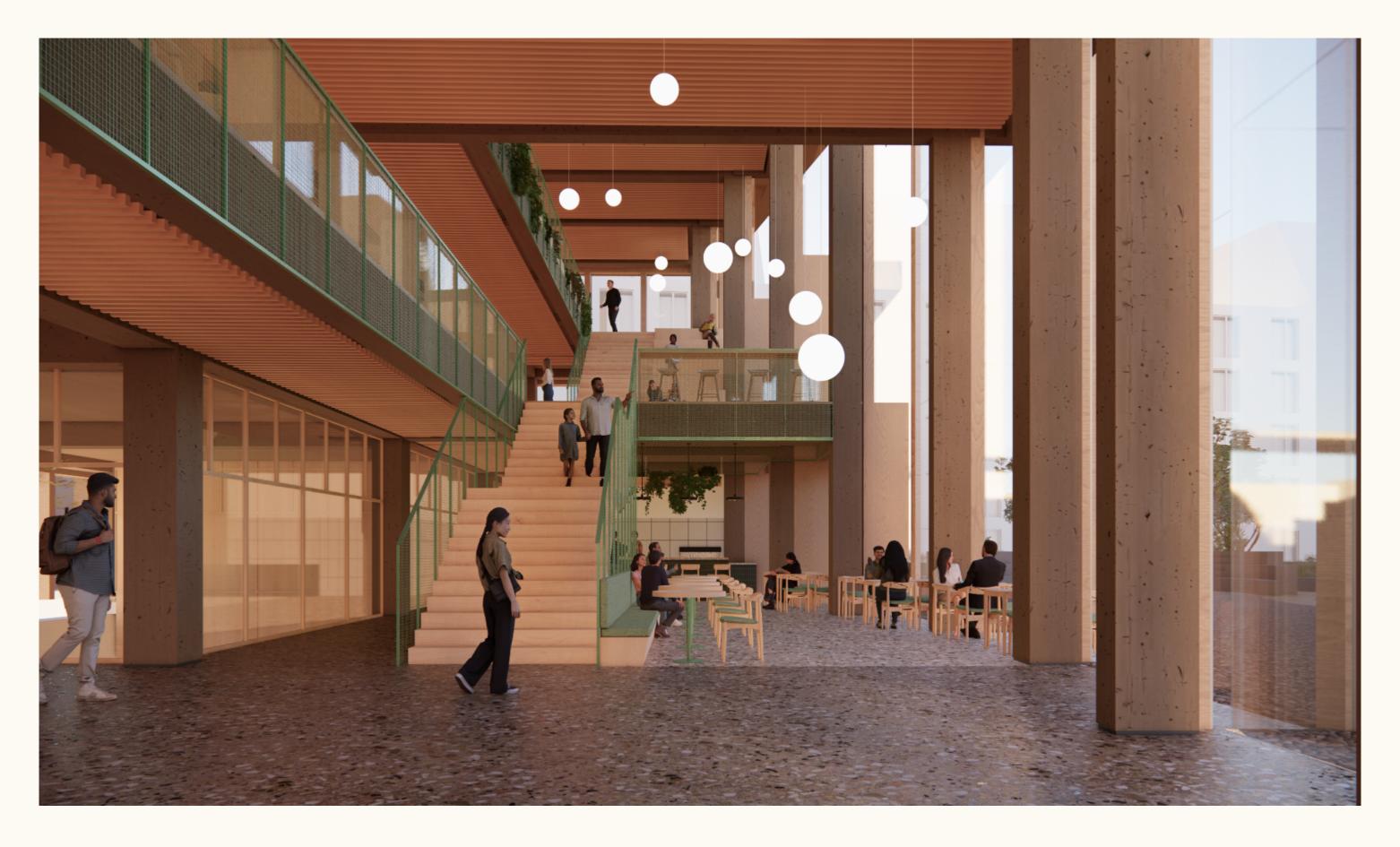
^ Art can also provide olfactory stimulation, such as the Moss Wall created by Olafur Eliasson. "As the lichen dries, it shrinks and fades; when the installation is watered, the moss expands, changes colour again, and fills the space with its fragrance". Renderings Exterior view from the courtyard



Renderings Exterior view from the courtyard



Renderings View from the foyer



Renderings

View from the exhibition space



Renderings

View of the community kitchen and social living room



Renderings View of the yoga studio

