

Urban Retreat

A place for a full sensory reset where it is needed most.



Calm

Adjective [-er/-est only] /kam, kalm/

Peaceful, quiet, or relaxed; without hurried movement, anxiety, or noise
("Calm," 2026)

Contemplation

Noun /,kɑ:n.təm'pleɪ.ʃən/

Serious and quiet thought for a period of time ("Contemplation," 2026)

Overwhelm

Verb /oʊ·vər'hwelm, -'welm/

To be too much to deal with. OR To cause someone to feel sudden strong emotion. ("Overwhelm," 2026)

Abstract

As cities continue to densify, the opportunity for silence and sensory recovery within the urban environment becomes increasingly urgent. Traditional interior public spaces that historically allowed for quiet, unstructured presence are disappearing, while the constant demand for attention from noise, movement, and digital stimulation continues to grow. This project argues that the contemporary city is missing a typology: a space designed not for program or spectacle, but for the restoration of the body and mind. Urban Retreat proposes a public sensory recovery space as a timber top-up on the roof of Hotel Krasnapolsky on Dam Square in Amsterdam, the busiest location in the country, and therefore the place where the need is greatest. Six spaces across two routes gradually reintroduce the senses after a period of deliberate stillness, moving from a dark acoustically absorbed decompression room through spaces of increasing sensory complexity toward a rooftop garden open to weather and sky. Timber operates as the primary structural and atmospheric material throughout, informed by evidence-based research into the physiological effects of natural materiality, color, sound, and scent on the human nervous system. The project demonstrates that sensory experience should drive architectural and technical decisions from the outset, and that spaces of sensory recovery deserve to be understood as necessary urban infrastructure.

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Problem statement

Densification raises the question of how to build even more within an already dense city. The roof of Hotel Krasnapolski on Dam Square in Amsterdam is a clear example of a location with strong potential for a top-up intervention because of its size, position, and existing structure. At the same time, this is a socially and historically important location, making it a meaningful place to add an impactful public function rather than just a private extension.

Dam Square is one of the busiest locations in Amsterdam and functions as a central node within the city. Densification in such locations will inevitably increase pressure on the city centers, especially as the housing shortage and the continued pull toward living in cities make development necessary. This pressure does not only concern spatial density, but also affects how urban life is experienced on a daily basis.

Walking through the area on and around Dam Square makes the intensity of this urban condition apparent. Large numbers of people move continuously through the streets, including tourists as well as locals. Noise from cars, trams, music, and voices combined with strong visual stimuli from advertisements, shop windows, and illuminated facades. In addition to this, the constant availability of mobile phones adds another layer of an attention pull through entertainment, communication, and information.

As cities continue to densify under these conditions, the opportunity for silence and retreat within the urban environment becomes increasingly relevant. There is an ongoing call from both policymakers and citizens for quiet areas in cities (Bijsterveld & European Sound Studies Association, 2023), alongside a widespread perception that the pace of everyday life has increased (Wajcman, 2016). These conclusions point to a growing tension between constant activity and the need for moments of retreat.

At the same time, traditional interior public spaces that historically allowed for this type of withdrawal, such as libraries, museums, and churches, are becoming less available or are changing in character. These places house increasing levels of consumption, events, and multifunctional use, they offer fewer possibilities for staying without obligation to do, buy or interact. As streets become fuller, the number of interior public spaces that support calm and unstructured presence continues to decrease.

The roof top-up offers an interesting opportunity to address this problem. By creating distance from the street, the roof can act as a buffer while remaining part of the city. This points to an architectural question rather than just a social one: how can space for silence and retreat be reintroduced within dense urban environments through architectural tools of spatial sequencing and thresholds?

Fascination

For years, I've been developing my own relationship with silence and calm in the built environment. I grew up in a smaller, quieter city, but during my studies in Amsterdam I started spending most of my time in much denser urban conditions of Amsterdam. I've always found the difference fascinating. The city can be incredibly exciting, the amount of people, movement, and activity gives a lot of energy. At the same time, it can become overwhelming very quickly.

While living and studying in Amsterdam, I noticed how difficult it actually is to find spaces where you can slow down, be quiet, and think. When actively looking for it, there are surprisingly few places where you can simply sit, think, or be present without being pushed to consume something, participate in an activity, or move on. This made me increasingly aware of how rare non-commercial, interior public spaces have become in dense urban environments. My concern for the densifying city is that these kinds of spaces will continue to disappear.

This graduation project is a direct reaction to something I experience in my own daily life: a constant demand for attention wherever I go. As a reaction, I notice a strong pull towards silence, slowness, and spaces that allow for reflection. I have an active meditation practice, but I keep wondering what role architecture and public interiors could play in this. Could the built environment offer interior spaces for contemplation that are publicly accessible and part of everyday urban life?

In this project, I am designing from a personal need. However, the fact that I experience this need suggests that I am not alone. I would like to explore the possibility of a place I could go that is not my small apartment. A destination where I can retreat into my own thoughts, find inspiration, or simply be, without being overwhelmed by information, noise, or expectation.

Architectural Ambition / Design Goals

This project is about creating a place where people can step back from the intensity of city life without having to leave the city. It looks at how architecture can offer moments of calm within one of the busiest and most overstimulating parts of Amsterdam.

By placing the project on the roof of a hotel on Dam Square, the contrast between the city below and the retreat above becomes extra clear. The location allows the space to stay part of the city, while at the same time creating physical distance from the street. The retreat itself is not a hotel facility, but a new kind of public interior with its own atmosphere and rhythm.

Calm is treated as something that can be shaped through space, light, material, and sequence, rather than through program or activity. Calm is achieved through re-engagement with the senses.

Goals:

- Place for calm and contemplation
- Slow spacial transitioning
- Multiple levels of withdrawal
- Timber shapes structure, space and atmosphere

Relevance (Academic / Societal / Architectural)

This project reflects on how we live within the built environment as a result of bigger societal changes. It investigates how calm can be reintroduced into busy urban conditions, and how these qualities can be brought together in the form of an interior public space. Rather than treating calm as something that exists outside the city, the project explores how architecture itself can create retreat within everyday urban life.

As densification becomes an increasingly central topic in the development of cities, the question how to accommodate calm and withdrawal within dense environments becomes more urgent. While much of the discussion around densification focuses on housing numbers and efficiency, this project argues that spatial quality and human experience should play an equally important role. The research contributes to architectural design knowledge by exploring how timber can be deployed as both a structural and atmospheric material to support calm and contemplation as architectural conditions.

By creating an interior public retreat that allows presence without obligation, the project addresses this principle of dignity and agency, through spatial means. In addition, by building on top of an existing structure, the project contributes to the conversation on reuse and densification, aligning with the Copenhagen lesson that existing built structures should be reused before new ones are constructed.

Research Question & Design Questions

Main question:

How can spatial sequencing and thresholds be deployed as architectural tools to construct an interior retreat for contemplation and calm within a timber top-up on a hotel roof in Amsterdam, addressing a contemporary condition of constant attention pulling?

Sub questions:

- What are architectural qualities that are proven to contribute to a sense of calm in people?
- Which spatial strategies are consistently used in architecture that supports contemplation?
- How can timber architecture operate as a continuous structural and atmospheric system to support sensory reduction and calm?
- How can spatial thresholds filter sound, vision, and movement to guide users gradually from urban intensity toward calm?

Project Scope and Structure

The final design is located on top of the hotel Krasnaposly on Dam square in Amsterdam. It is a sequence of spaces that, through sensory deprivation and step-by-step reintroduction of the senses, prepares visitors to re-enter their life, but with a heightened mindfulness.

The project focuses on the senses of touch, hearing, seeing and smelling. It does not touch taste. Intended maximum occupancy is about 480 visitors per day, as calculated with the following matrix:

	Simultaneous occupancy	Average time	Time slots	Max occupancy per day per space	% of visitors	Occupancy total with current max:
Decompression	4	5	120	480	100%	400
Body quiet	6	10	60	360	50%	200
Resonance	5	10	60	300	50%	200
Body reengagement	8	6	60	480	50%	200
Light	15	10	60	900	50%	200
Garden	8	10	120	960	100%	400
Opening time: 10 am - 10pm						Max. per day
600 minutes per day						400

The building is a new introduction into someone's daily routine, that they would either visit on a routine basis or at specific moments when they are overwhelmed and need a reset in their day.

Research Approach & Methods

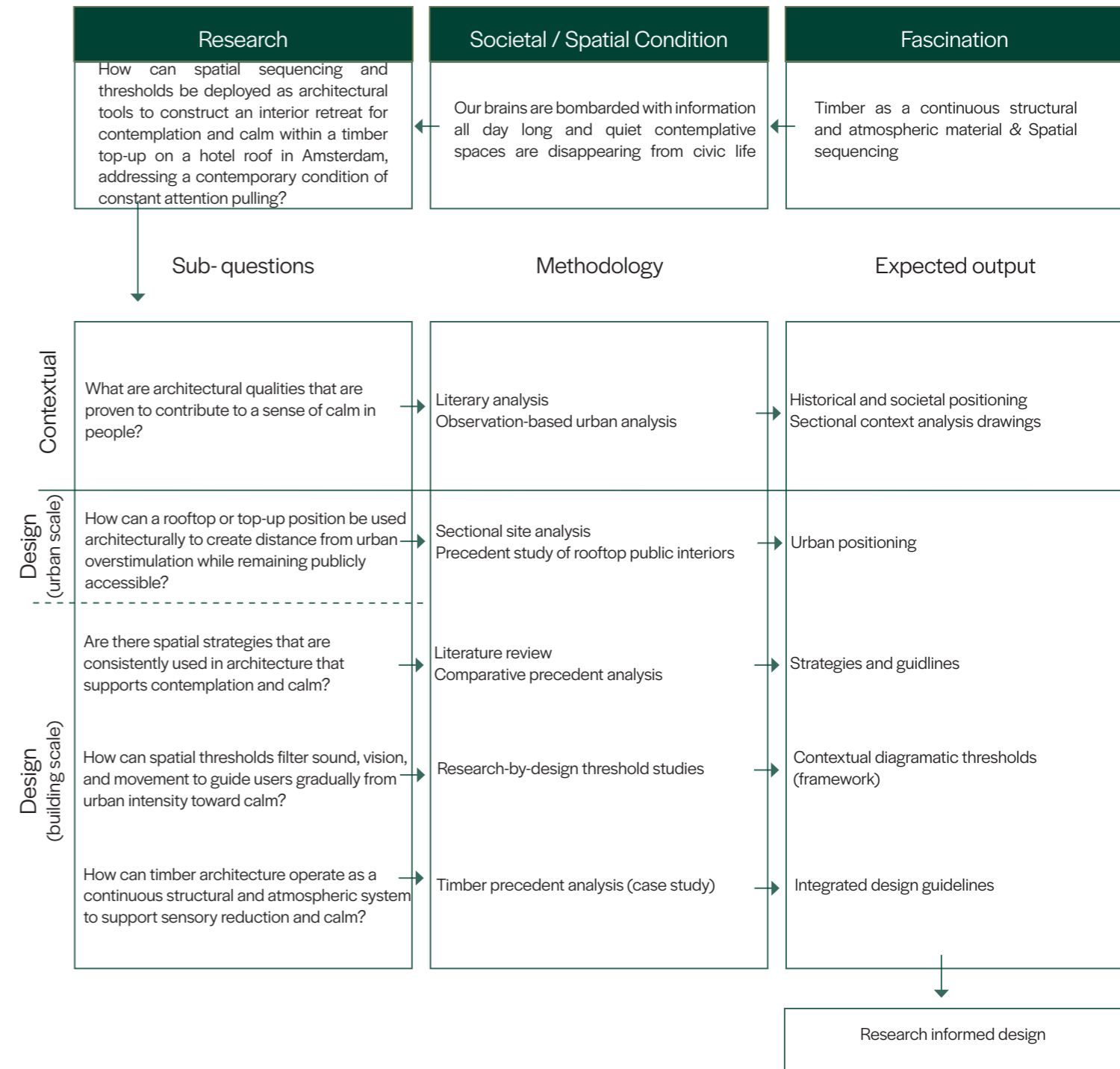
My graduation project is set up as a research by design process. That means the design is not only the final outcome, but also my main research instrument: I used drawings, diagrams, models, and material/atmosphere tests to explore, test, and refine the main question step by step. The full process, including decision making, is visible in the logbook in the appendix.

The research and design question are combined into one. The aim is not to “prove” one final answer, but to build a clear architectural position through iterative testing: each research step produces concrete spatial principles that directly influence the next design iteration. This approach allows architectural qualities such as sequence, enclosure, material continuity, and spatial thresholds to be tested directly through drawing and section instead of pure theory.

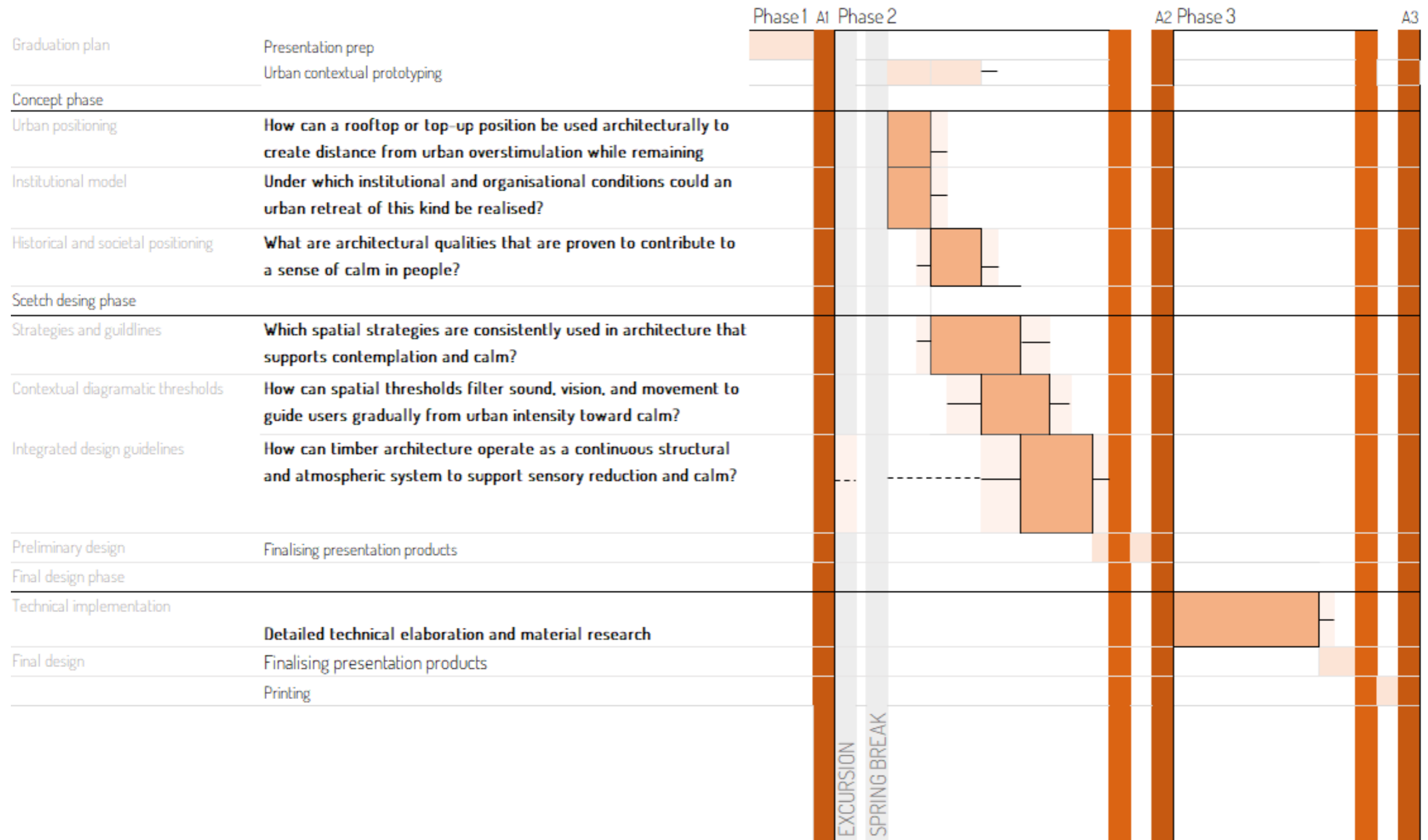
I combined three methods of research

1. Theory. I collect a small number of key texts to frame the topic of calm architecture. This in order to give me a scientific base on which experimentation.
2. Case studies. I select relevant precedents and analyzed them on how they achieved their specific atmospheric condition
3. Contextual prototyping. I tested the extracted principles directly in my own project through sketches, sectional studies and models.

This approach allowed architectural qualities such as sequence, enclosure, material continuity, and spatial thresholds to be tested directly through drawing and section rather than abstract evaluation.



Planning



What does the literature say

Sensory calm is not produced by a single stimulus. It is the cumulative result of an environment in which multiple sensory channels are addressed simultaneously, each targeting a different dimension of human perception, while also reinforcing one another toward a unified effect. This framework draws on five fields of research, nature-based materiality, color psychology, mindfulness meditation, contemplative space-making, and aromatherapy, to establish the theoretical basis for a building designed to support mental and physical calm. These fields are not treated as isolated disciplines but as overlapping lenses that together describe what a restorative environment must do. Some of their effects are constant throughout the building; others are introduced progressively as the visitor moves through the sequence. Together, they form the foundation for every spatial and material decision made in this project.

Before examining these tools, it is worth defining what calm actually means. The Merriam-Webster dictionary describes it as a state of tranquility, free from agitation, excitement, or disturbance (Merriam-Webster, 2026). Crucially, calm implies a contrast with a past or future state of agitation, restlessness, anxiety, or nervous excitement. This means it is measurable across multiple registers: physical indicators such as heart rate, cortisol levels, or blood pressure; physiological markers such as brain activity; and subjective experience. Each of the five fields below engages with one or more of these registers, and their overlap is not incidental, it is the argument.

Nature as a calming material

The most constant layer of the building is its materiality. Wood, biobased materials, and biophilic design form the baseline sensory environment, present throughout, regardless of where in the sequence the visitor is. The literature strongly supports this choice. Hariadi (2025) consolidates findings across multiple studies, reporting that timber in the built environment consistently improves focus, mood, and productivity; that rooms finished in wood have measurable stress-reducing properties; and that multisensory contact with wood, through sight, smell, and touch, induces a physiologically relaxed state. The effect is not purely visual, it is tactile and olfactory as well, which means natural materiality already operates across multiple sensory channels simultaneously.

Tsunetsugu (2006) adds important precision: a visual wood ratio of 45% produces the strongest calming effect compared to 0% and 90%, lowering blood pressure, increasing pulse rate, and scoring highest on subjective feelings of comfort. This finding directly informed the material distribution across spaces in this project. Too little wood and the calming effect is absent; too much and it becomes overwhelming. The 45% threshold is a rare instance of quantified sensory design, and it anchors the material strategy in measurable evidence.

Color psychology

Color operates in close relationship with materiality. Where natural materials establish the base sensory environment, color, in both light and surface, modulates the level of arousal within each space. Yamashita (2012) summarizes the research on colored light, finding that bright tones support relaxation, vivid tones with high saturation increase wakefulness, and dark or deep tones tend to increase anxiety and tension. Wilms (2017) reaches a similar conclusion through testing hue, saturation, and brightness on emotional response, finding that saturated and bright colors are associated with higher arousal, while achromatic colors, neutrals, black, and white, produce a short-term deceleration in heart rate.

These findings interact directly with the nature-based material strategy. A space that uses biobased materiality but introduces highly saturated color risks undermining the calming effect of the wood. Conversely, achromatic tones reinforce and amplify it. Color is therefore not treated as an aesthetic choice in this project but as a calibration tool, one that either supports or disrupts the effects established by materiality.

Mindfulness meditation

Where materiality and color work on the body below the level of conscious attention, mindfulness operates at the level of awareness itself. It is the only field in this framework that asks something of the visitor, a willingness to notice. This makes it both the most powerful tool and the one most dependent on the spatial conditions established by the others.

Research on trait mindfulness has found clear correlations with a range of cognitive and emotional indicators of mental

health and wellbeing (Brown et al., 2007). Creswell (2016) and Sparacio et al. (2024) demonstrate that mindfulness-based interventions deepen the practitioner's awareness of bodily signals, support a relaxed physiological state, and build resilience in managing stress, outcomes with meaningful long-term consequences for physical health. Importantly, many mindfulness and body awareness practices share a common structure: a gradual, deliberate reintroduction of sensory attention, moving from stillness toward full presence one sense at a time. This sequential quality makes mindfulness not only a relevant reference for the atmosphere of individual spaces, but a potential organizational principle for architecture designed to support recovery.

Contemplative space

Contemplative space-making is the field that most directly translates these effects into architectural terms. Contemplative experience has been defined as the physical, psychological, or spiritual experience of an individual that prompts a state of reflection upon and recognition of the profound (Corr, 2018), or more simply, a mode in which a singular object or idea can be studied with full focus. This sits close to the definition of focused attention meditation, making it a direct architectural counterpart to the mindfulness framework above.

According to Pua (2021), the primary architectural drivers of contemplative space are light and sound. Moir (1978) identified three spatial elements that enable contemplation: centers that provide a specific position for the subject; references that direct focus and attention; and frames that physically limit the surrounding space. In practice, chairs and benches function as centers; glass walls, plants, or loose elements as frames; and natural or artificial focal points as references. These are not decorative decisions, they are the spatial grammar of a room designed to hold attention.

Sound is equally structured. Pua (2021) identifies the main sonic effects that can be manipulated to create contemplative space: attraction, cut-out, drone, filtration, imitation, and masking. A fountain produces a drone effect; a forested or sheltered setting provides natural filtration. In this project, these sonic tools are introduced progressively, some spaces are defined primarily by their acoustic character, others by their visual qualities, so that the sequence builds toward increasing degrees of contemplative depth.

Aromatherapy

Scent is the most immediate and least mediated of the sensory channels, it bypasses conscious processing and acts directly on the limbic system, which governs emotion and memory. This makes it both powerful and difficult to control, which is precisely why it deserves serious architectural attention rather than being treated as an afterthought.

Moser (2014) establishes that scent is a significant influence on stress levels. A broader review of the literature confirms that fragrance exerts context-dependent effects on thermal sensation, cognitive function, and emotional state (Gousineyah, 2025), meaning its effects are not fixed but shaped by the environment in which they occur. A scent experienced in a calm, dark, acoustically sheltered space will produce a different response than the same scent in a bright, noisy one. This makes aromatherapy inseparable from the spatial conditions established by the other four fields. Schreiner (2020) found evidence that specific wood odors, among them cedarwood oil, enhance subjective feelings of happiness and contentment. Importantly, this creates a direct overlap with the nature-based material strategy: the smell of wood is not a separate intervention but an extension of the material environment, reinforcing through a different sensory channel what the tactile and visual presence of timber already does.

Synthesis

These five fields are not parallel tracks. They are interconnected layers of a single argument: that sensory calm is an architectural proposition, achievable through the deliberate and evidence-based design of material, light, sound, and scent. Materiality establishes the baseline. Color calibrates arousal. Contemplative space structures attention. Mindfulness provides the cognitive framework within which that attention becomes restorative. And scent deepens and anchors the effect at the most instinctive level. In this project, some of these layers are present throughout; others emerge gradually as the visitor moves through the sequence. Together, they constitute a design methodology in which the nervous system is the primary client.

Results

Formal research outcomes and technical drawings

Read alongside the literature, these four projects confirm Pua's claim that light and sound are the primary architectural drivers of contemplative space. They also give concrete form to Moir's three spatial elements: centers, references, and frames. The altars in the Carmelite room and the Saint Benedict Chapel act as references; the framed valley views at Vals and the framed garden at the Serpentine act as frames; the reclining chairs in Vals and the perimeter seats in the Carmelite room act as centers. What the precedents demonstrate, and the literature does not, is how these tools behave when combined at building scale.

From the Therme Vals, the consistent threshold proportion and the circular, dead-end-free route logic informed the repeating steel threshold detail and the dual-route plan of the retreat. Vals' use of still water under filtered light as soft fascination also returns in the garden room, where the pond becomes the central object of attention.

From the Saint Benedict Chapel, the band of clerestory windows directly shaped the lighting strategy in the resonance and light rooms, and the chapel's vertical proportion is carried into the raised floor and tall section of the light room. Its principle of a single, attention-holding interior focal point is generalized across the whole project: every room has been designed around a defined point of visual rest.

From the Carmelite prayer room, the stepped threshold, the immediate legibility of the whole space on entry, and the perimeter seating informed the spatial organization of the quiet body room. Its frosted, view-less glass returns in the resonance room as textured and milky windows that admit light without admitting the city.

From the Serpentine Pavilion, the centrality of the garden enclosed by a protected walkway became the organizing diagram of the entire top-up: five connected structures arranged around a central rooftop garden. The Pavilion's gesture of rain falling from the overhang directly into the planting is preserved in the retreat's garden, where water from the roof edges falls into the reflecting pond.

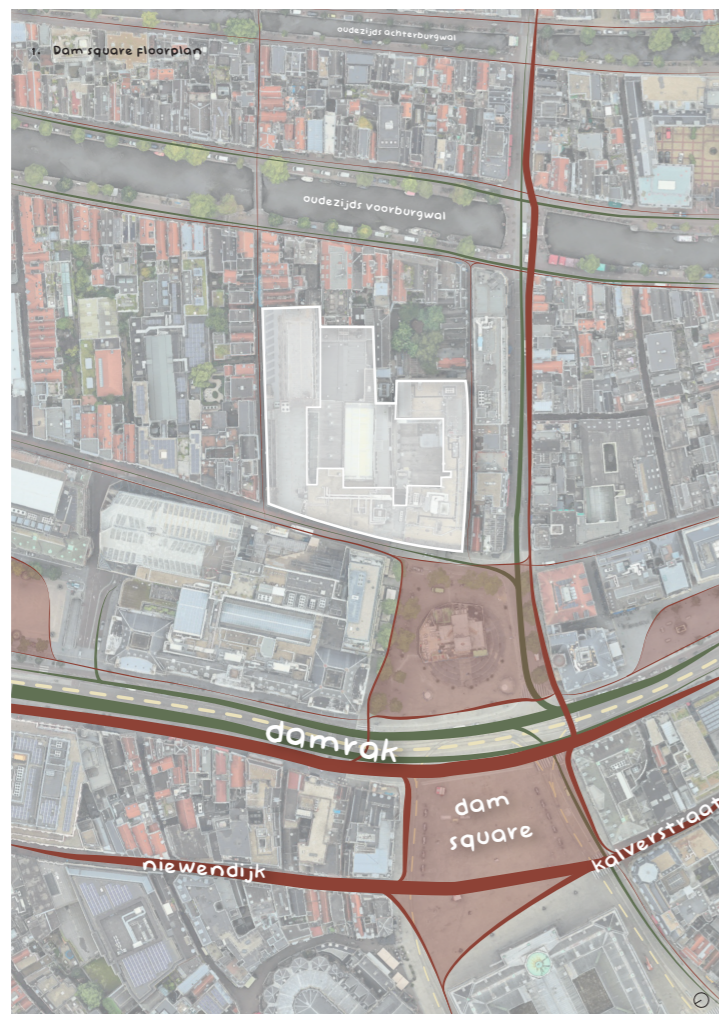
The precedents show what the literature cannot, that calm at building scale comes from the integration of route, threshold, light, focus, and material, never from one in isolation.



Urban embedding

Why this site

The project argues that the city is missing a typology of sensory recovery, and that argument needed a site where the condition is most acute. Dam Square combines extreme density of movement, constant acoustic and visual pressure, and the symbolic centrality of the country itself. The site is not incidental to the argument, it is the argument at urban scale.



Dam Square Urban Analysis, own image

Why the Krasnapolsky roof

Within Dam Square, the Krasnapolsky roof is the only viable host. As the roofscape drawing shows, it is the single flat roof of meaningful size on the square. The available surface is also generous, which let the scale of the retreat be set by what the program required rather than by what the site allowed. The existing building also brings a lobby that already receives the public and a vertical core that can be extended, solving access, footprint, and structural host in one move.



Roofscape Dam Square, own image

Urban embedding

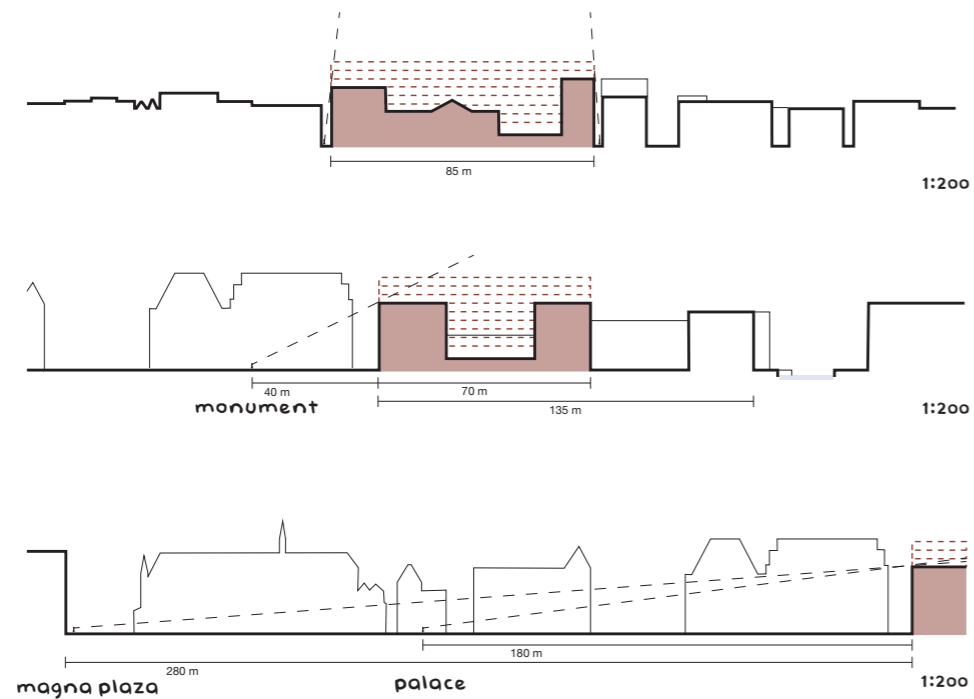
The retreat sits on one of the most exposed roofs in the country, and the design accepts that exposure rather than buffering against it. By being seen from the square, the project draws attention to the typology it proposes, and the weight of the location reinforces the urgency of the problem. The retreat is visible by design.

The external roof is carried on a colonnade that extends the structural grid of the hotel below, giving the top-up a formal order. Beneath it, the five sense boxes sit as quieter, modern volumes, ordered by the same grid but legibly contemporary. The facade gradient is part of this visibility: the move from raw bark to milled boards is readable from the square, so the visitor's interior sequence is partially legible from the city.

Building on top of an existing structure also positions the project within the wider argument for reuse over new construction. The retreat adds public function to the city without consuming new ground, demonstrating that densification in the centre can deliver spatial quality, not just additional floor area.



Site section through Dam Square 1:1000, own image



Site lines from square, own image



Site plan 1:1000 own image

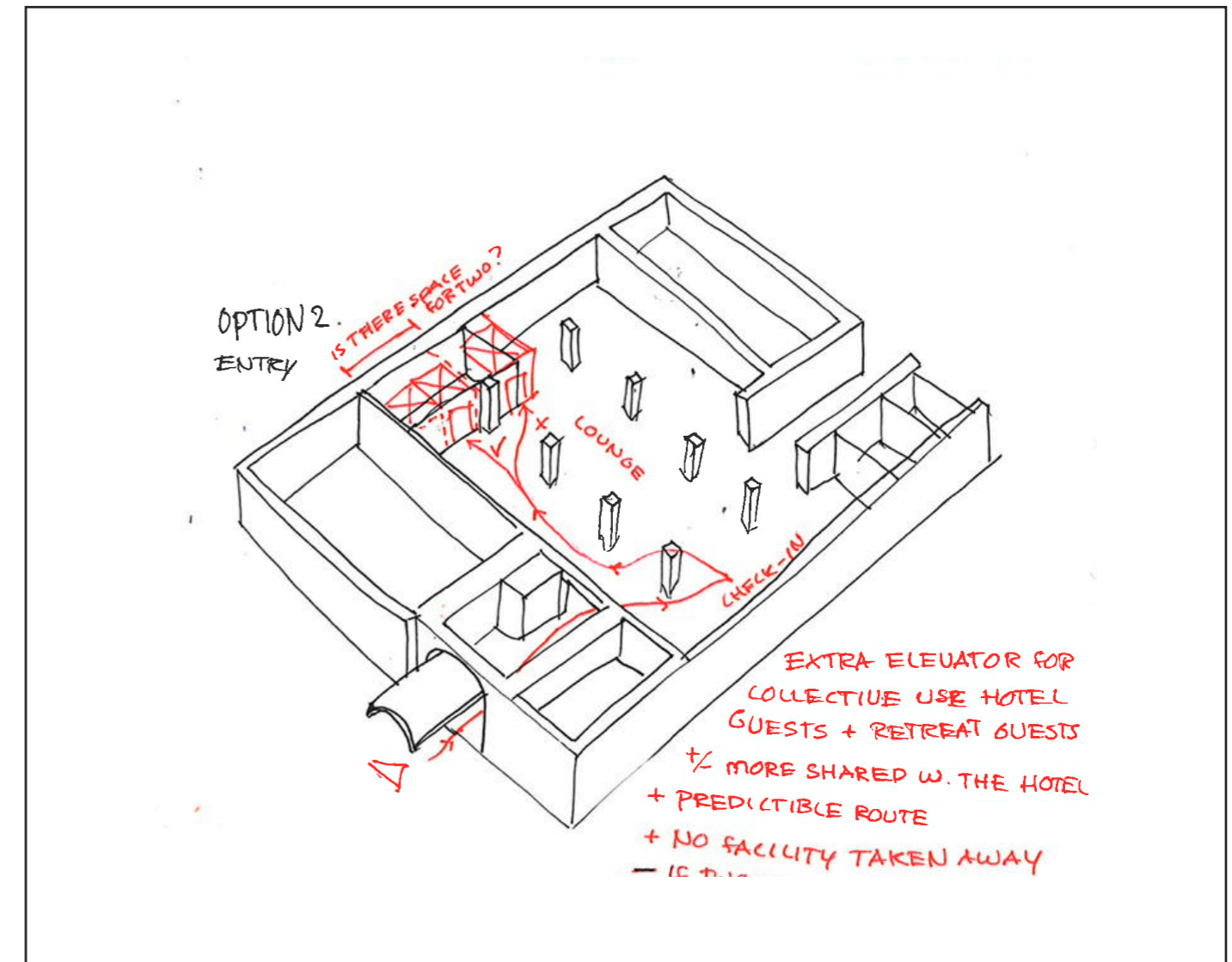
Principles

- Route through building should reflect a meditation practice, by reintroducing one sense at a time.
- Interior gradient should be reflected on the facade
- Wood and biobased materials as primary structural and finishing material if they are in a place where they can be directly perceived by the visitor
- Steel as primary material in thresholds and as contrast material
- Only passive environmental systems
- Every room needs a focus point where the eyes can rest at.
- Sense experience is leading in design decisions
- Spaces should follow following sequence of architectural implementations in order to ensure re-introduction sequence:

	Climate and air		Light and Exterior			Acoustics		Material and body		Space	Time
	Temperature	Air movement perception	% daylight	Light Quality	Connection to outside	Reverberation time	Sound source type	Material tactility	Smell	Spatial Proportion	Time perception
Quiet route											
Decompression room	1	1	1	2	1	1	1	2	1	1	1
Quiet body area	2	2	2	1,5	4	2	1	5	3	2	2
Resonance	3	3	3	1	2	5	3	1	2	3	3
Garden	5	5	5	5	5	N/A	4	5	3	5	5
Re-engagement route											
Decompression room	1	1	1	2	1	1	1	2	1	1	1
Re-engage area	3	3	3	1	4	3	1	4	3	3,5	2
Light/Perception	4	4	3	2	4	4	2	2	1	4	5
Garden	5	5	5	5	5	N/A	4	5	3	5	5

Legend		1	2	3	4	5
Climate	Temperature	Stable				Fluctuates
	Air movement perception	Still	Soft		Noticeable	Dynamic
Light & Outside	Daylight %	0-5%	5-15%	15-40%	40-70%	70-100%
	Light quality	Diffuse	Filtered		Reflected	Direct
Acoustics	Outside connection	None	Indirect		Filtered	Direct
	Reverberation time	Short		Medium		Long
	Absorption level	High		Medium		Low
Material and body	Sound source type	Internal	Architectural		External	Induced
	Material tactility	Smooth	Soft		Textured	Rich
	Smell	Neutral	Subtle	Present		Strong
Space	Spatial proportion	Compressed	Low	Standard	Tall	Expansive
Social / behavior	Degree of social exposure	Private	Semi-private	Quiet share	Open	Social
Time	Time perception	Timeless	Slowed	Cyclical	Sequential	Natural

Entrance sequence



The building shares its main entrance sequence with the hotel below, creating a direct connection between the hotel and the top-up. Guests can reserve an entrance timeslot beforehand online, or when it is not full get a ticket at a service screen next to the hotel check-in desks. The retreat has its own elevator which is accessed via a lift pass that is received when the first time reservation is made. The new elevator is next to the existing guest elevator, leaving routing in the lobby as much intact as possible. The elevator is distinguishable from the normal guest elevator by the cladding on its doors. Once entered into the elevator the lights dim and material palette changes to soft woods, preparing you for the first room in the sequence. The ride itself acts as the first buffer, lifting the visitor away from the noise and visual pressure of the square before the sequence proper begins.

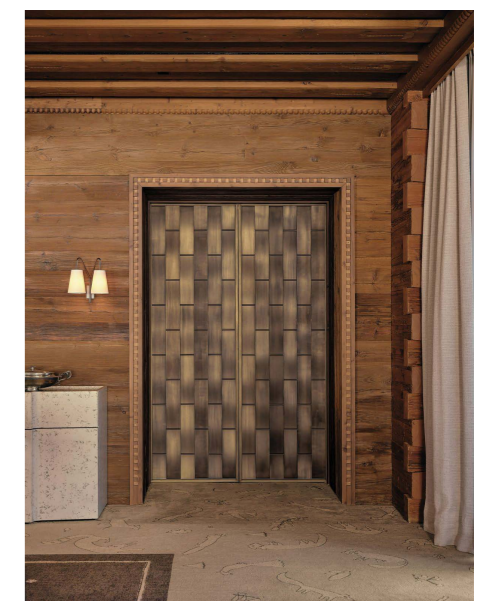


Image 1. Reference elevator door

Spatial sequence

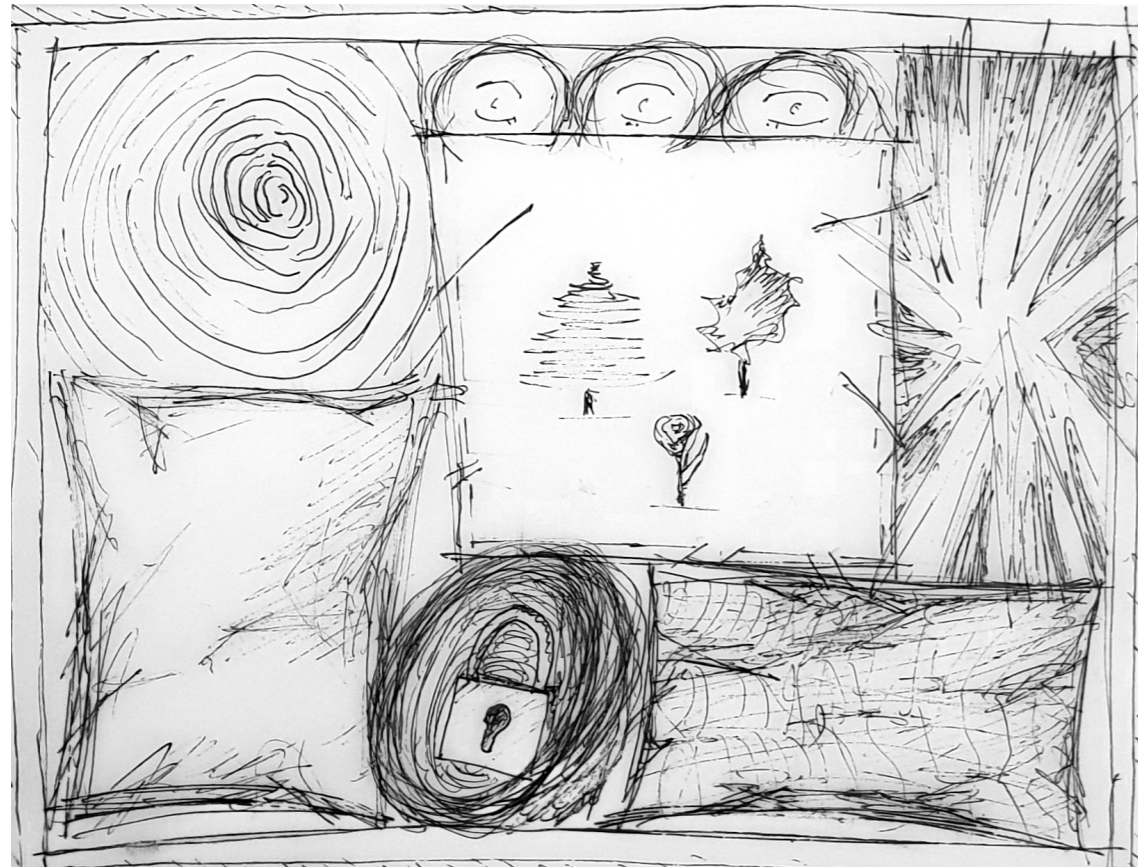


Diagram senses, own image

The retreat is organized around the senses. The building begins by removing them and slowly reintroduces them, across six spaces and two routes that share a decompression entry and a garden exit — a quiet route focused on inward experience, and a re-engagement route focused on impulses from outside the body.

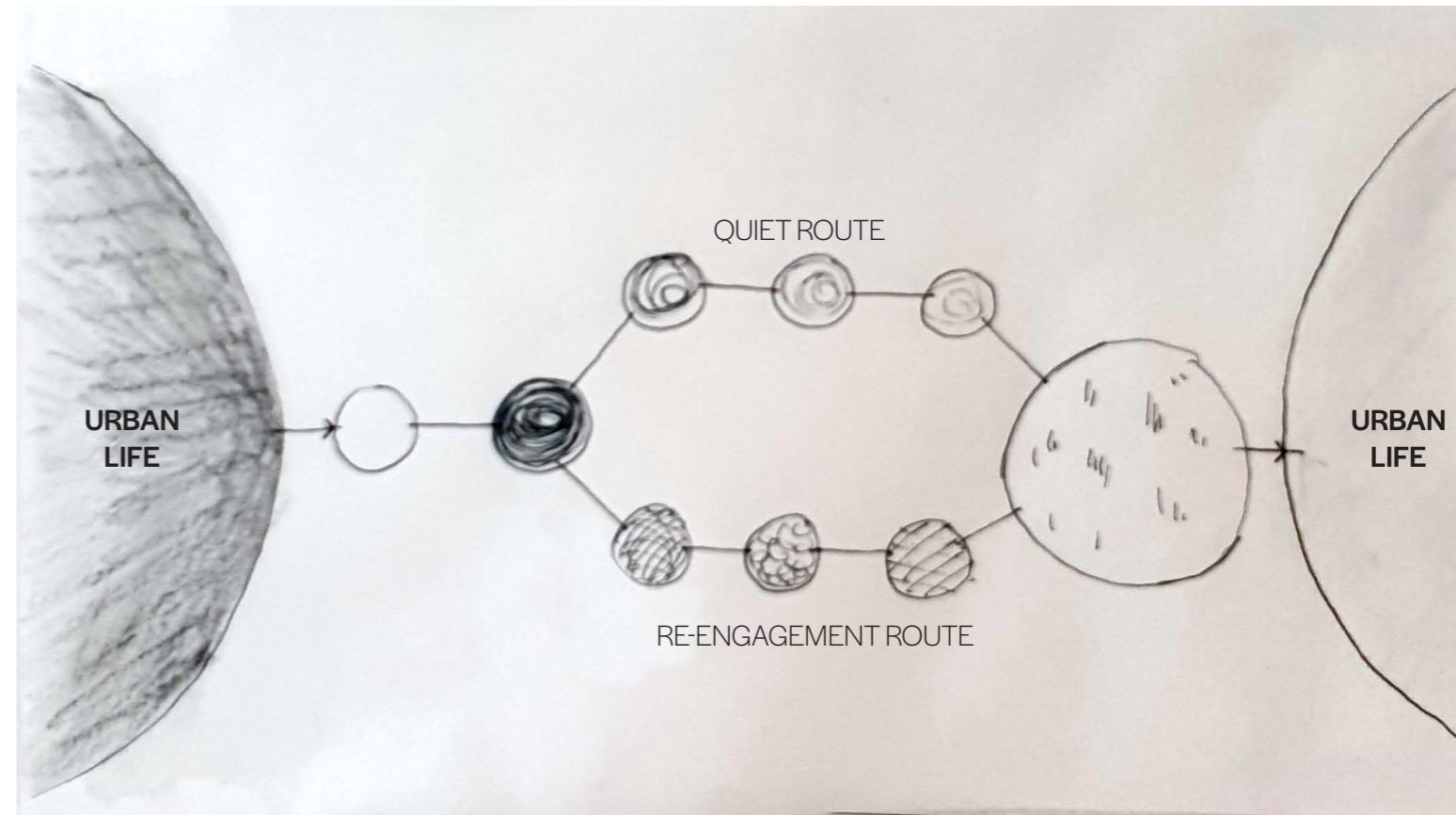
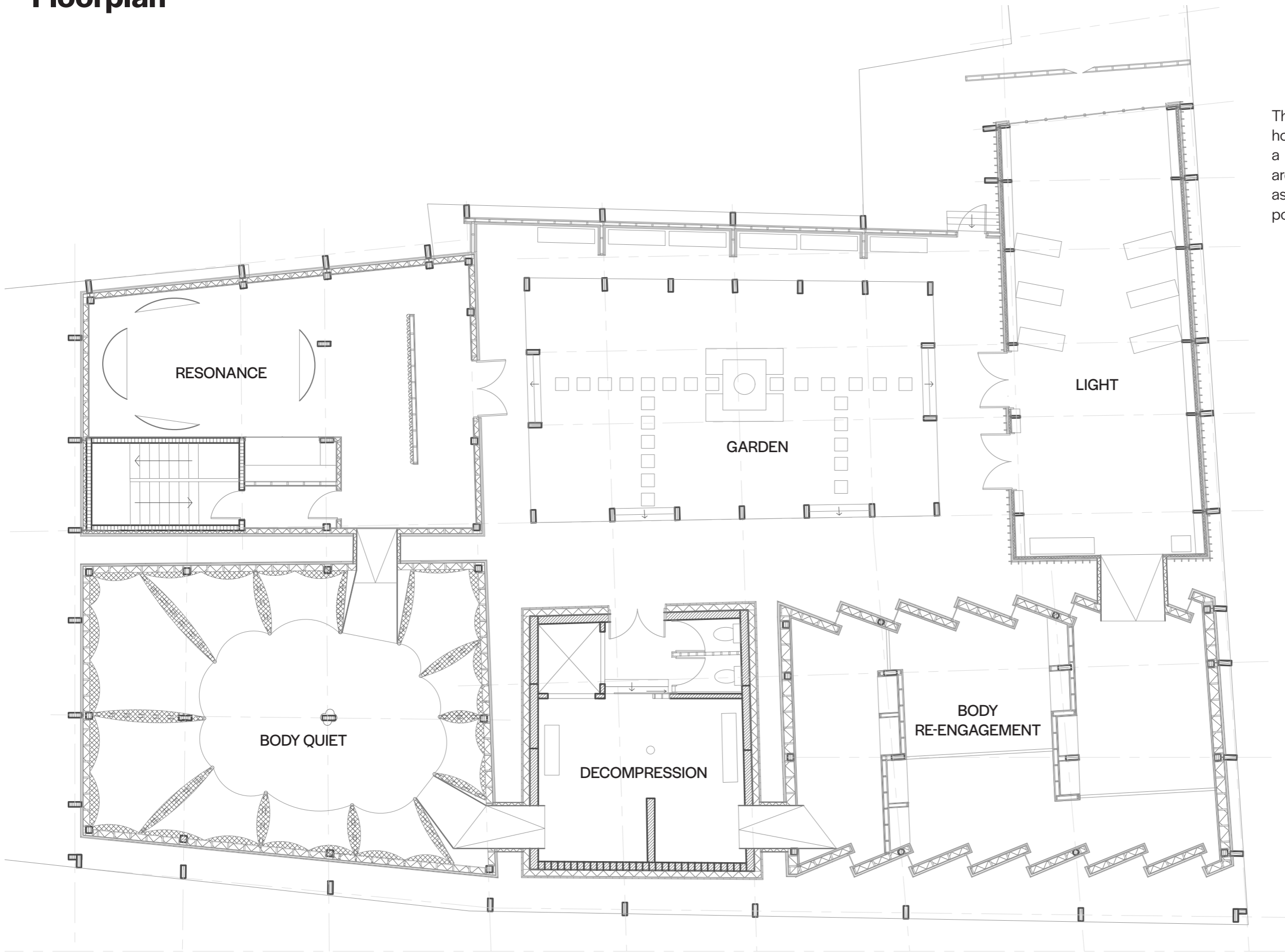


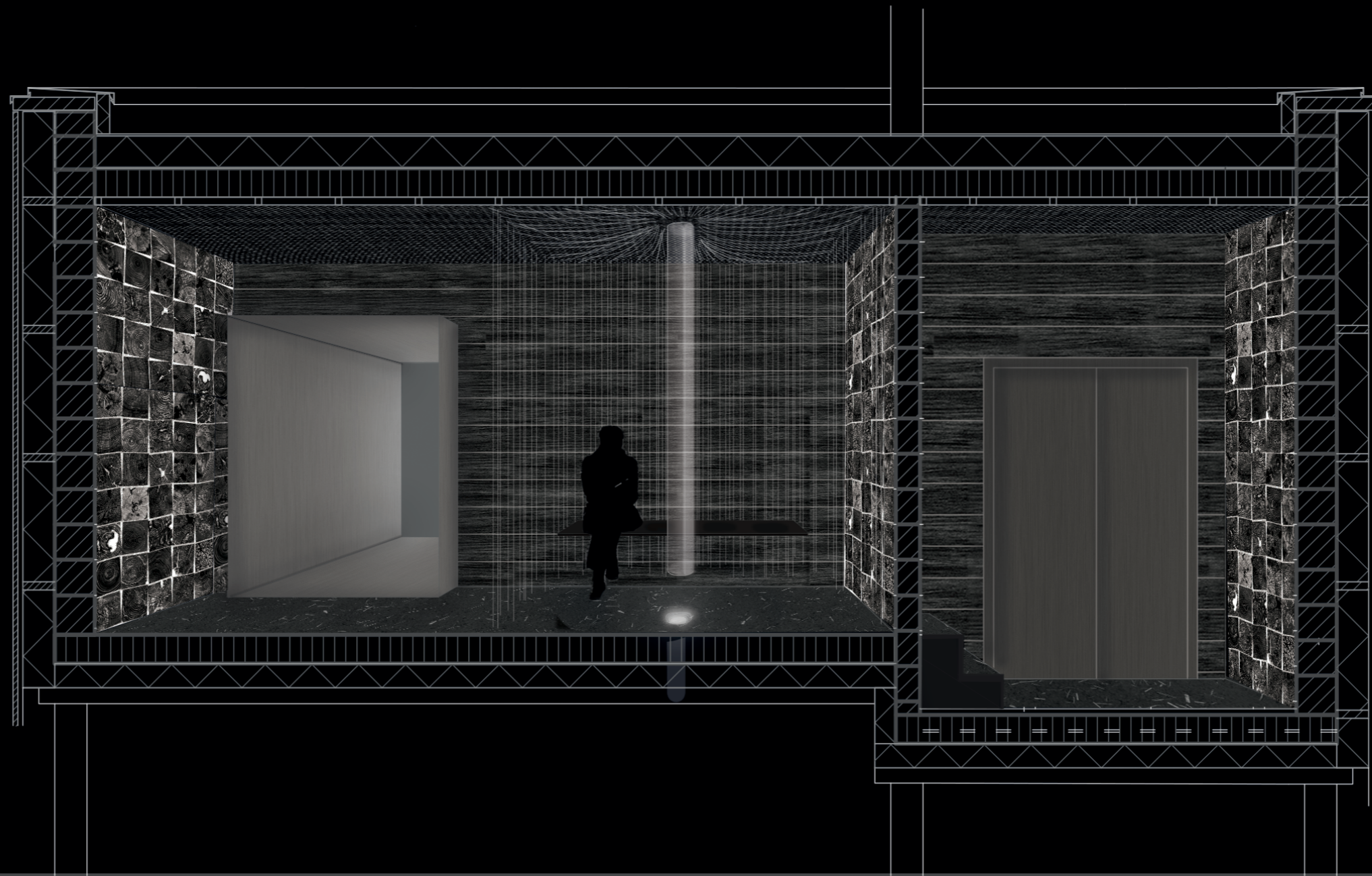
Diagram routing, own image

Floorplan



The top-up follows the structural grid of the hotel below. Five built volumes sit beneath a detached roof and arrange themselves around a central rooftop garden, which acts as both the sixth space and the shared end point of both routes.

Step 1. Decompression

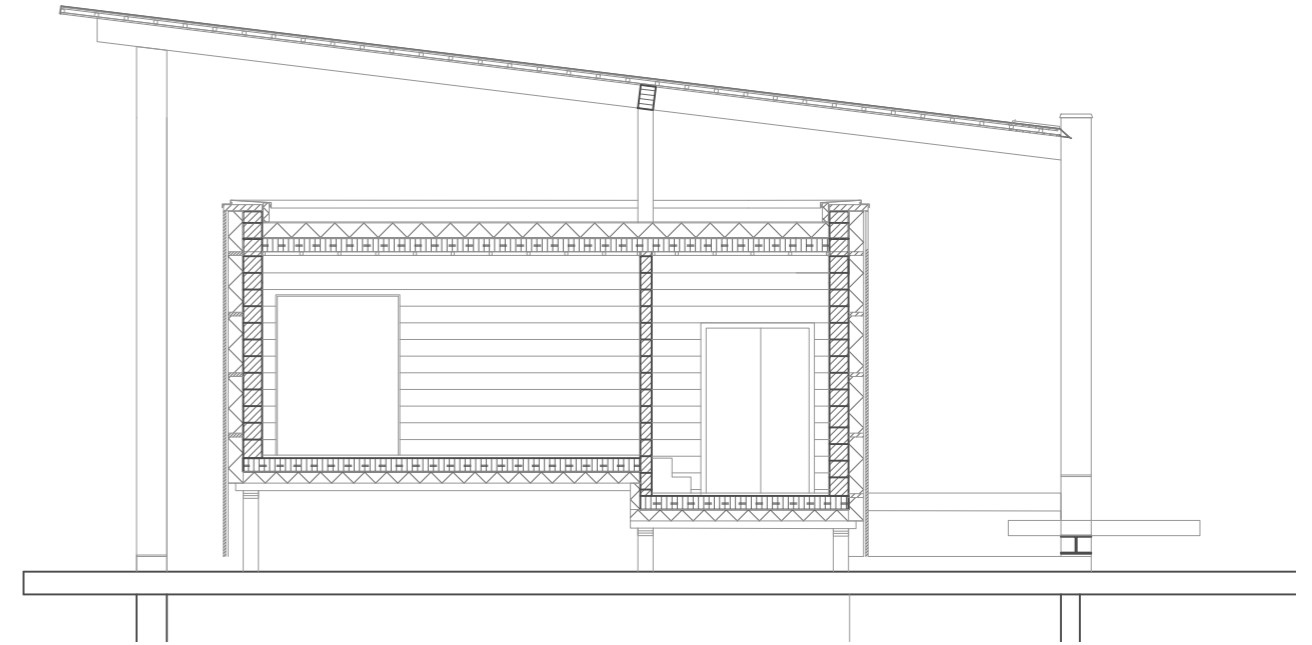


Sense rooms

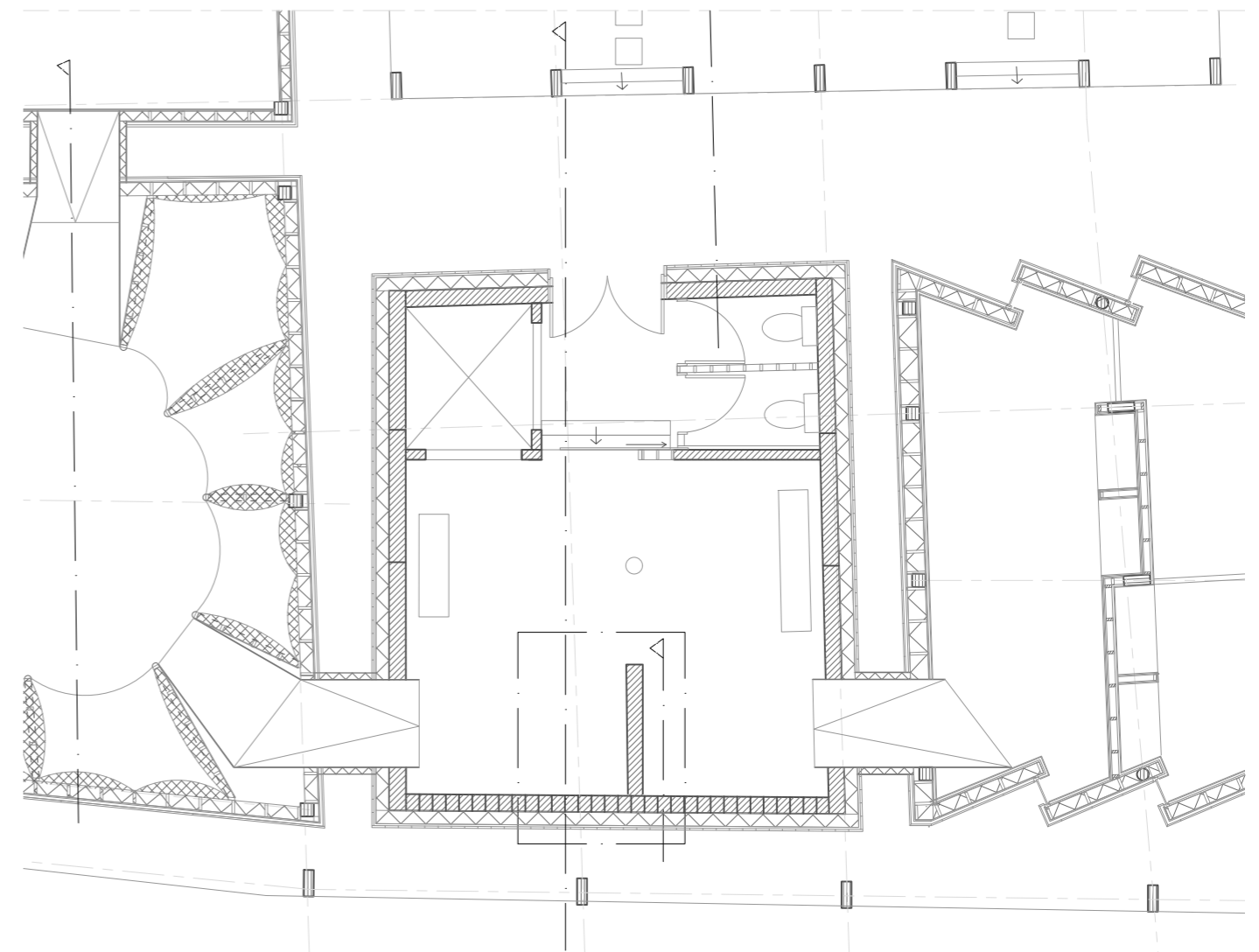
Decompression

Decompression is the first stage in which one enters the retreat. This room takes all senses away in order for the body and brain to quiet down and get used to this new place outside of the stresses of normal life. Here, shoes are to be taken off and placed in a small locker after which the visitor can take place on one of the benches. Ventilation air here is preheated and insulation is thickest, giving the space a comfortable climate. Construction is heavy and layered, letting in little to none outdoor noise. No direct outdoor light enters here except for a glass rod, lighting a small bowl in the middle of the room, giving the eyes a point to focus on and keeping the rest of the space dark to the eyes. Acoustic panels, hidden above a textile ceiling, together with the high texture of the charred construction absorb any echo from the space. The compressed proportions of the space creates sense of protection and turning inward. This room takes all sense of time away.

Via two steel compressed transition thresholds the next rooms can be accessed. These are differentiated by the different handrails. First time visitors are free here to explore what they need in the moment by experiencing the spaces. Return visitors will have a more precise purpose for each visit and will know which route to take based on their current need.

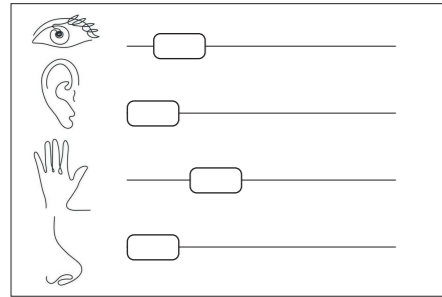


1:50 section Decompression , scaled to 1:100, own image



1:50 floorplan Decompression , scaled to 1:100, own image

Decompression materialisation



Each material was evaluated on the sensory and acoustic properties most critical to this space, the slider position shows where the material sits between two opposing qualities, and the body diagram indicates which senses are most active here: primarily touch and hearing, with sight deliberately reduced.

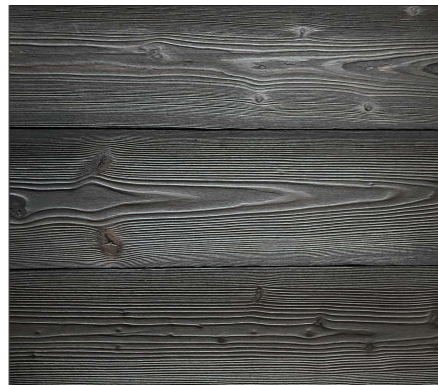
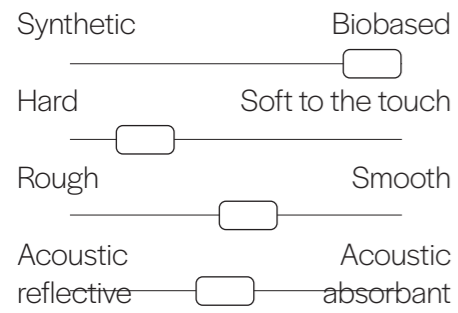
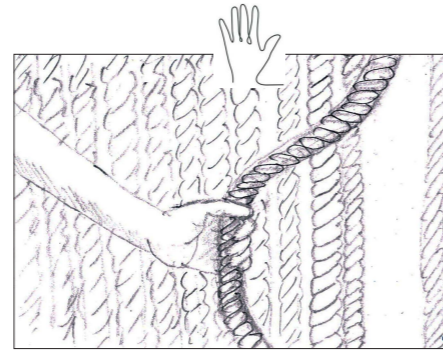
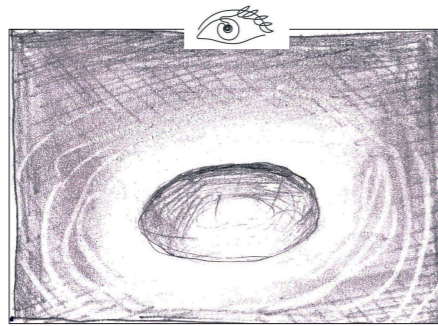
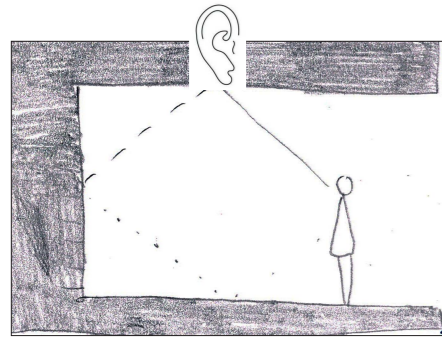


Image 2.

Structural trunk slice, 210 x 210, Douglas fir, plain sawn, charred, brushed and stained



Image 3.

Wood Fiber insulation, RC 5,5 m2 K/W

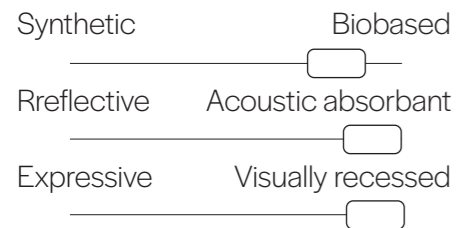


Image 4.

Wood fiber Acoustic panels, dark colored 60mm

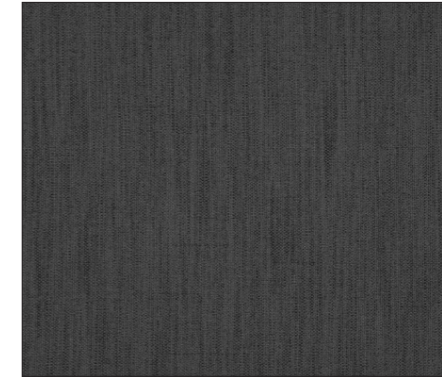
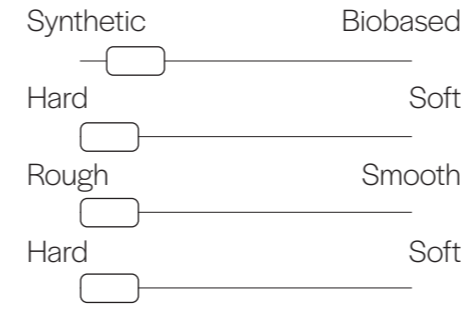


Image 5.

Stretched flame retardant textile, linen like texture, warm dark gray

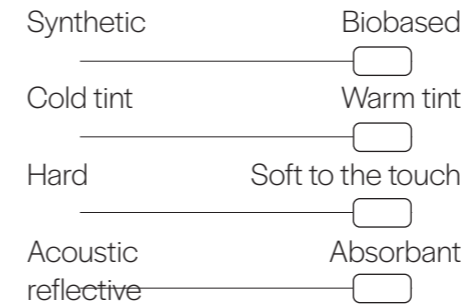


Image 6.

Dense hot pressed sheep wool between joints (borlea, 2020)

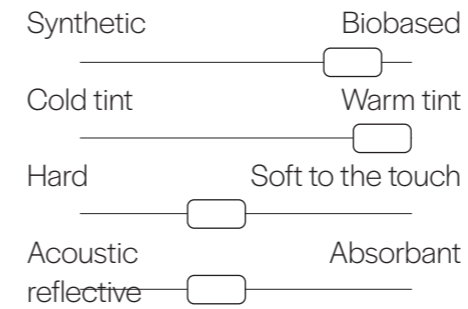


Image 7.

Clay-lime screed

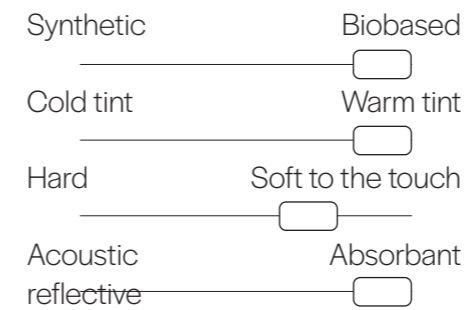


Image 8.

Jutte Ropes

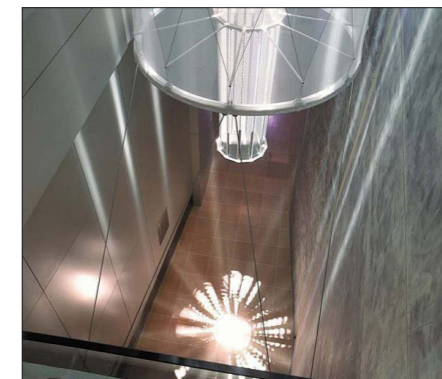
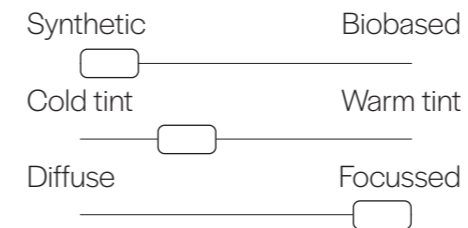
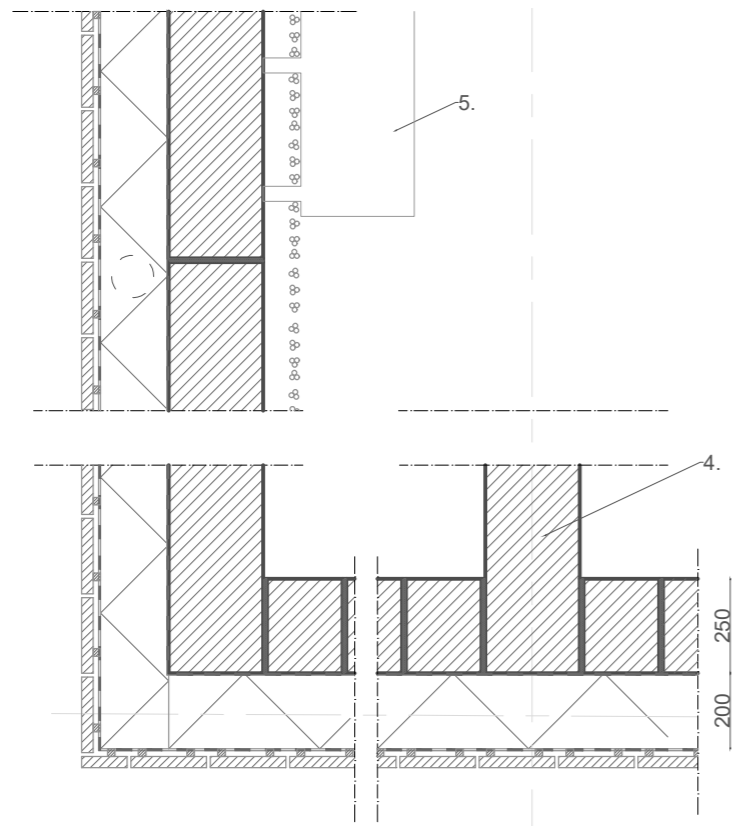
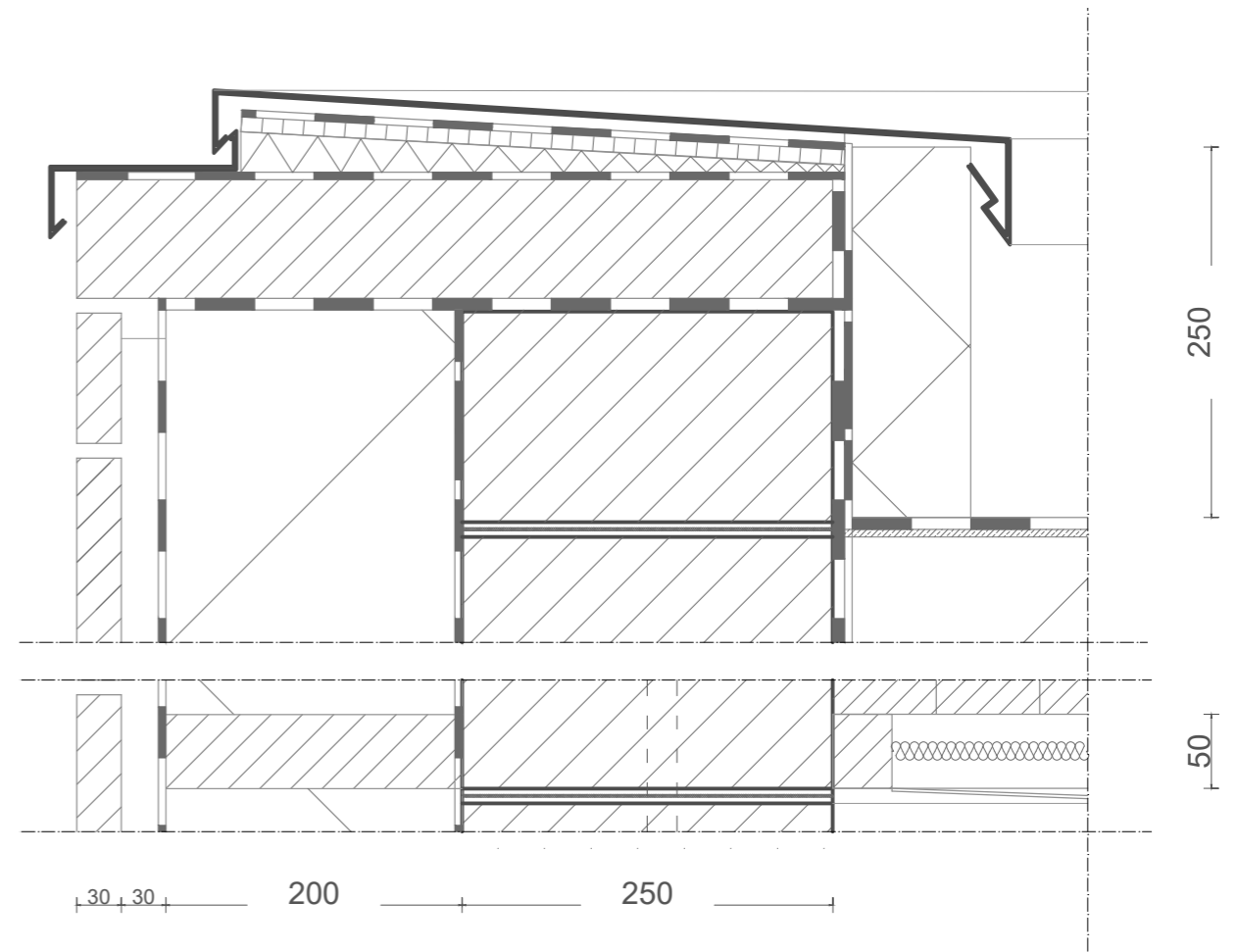
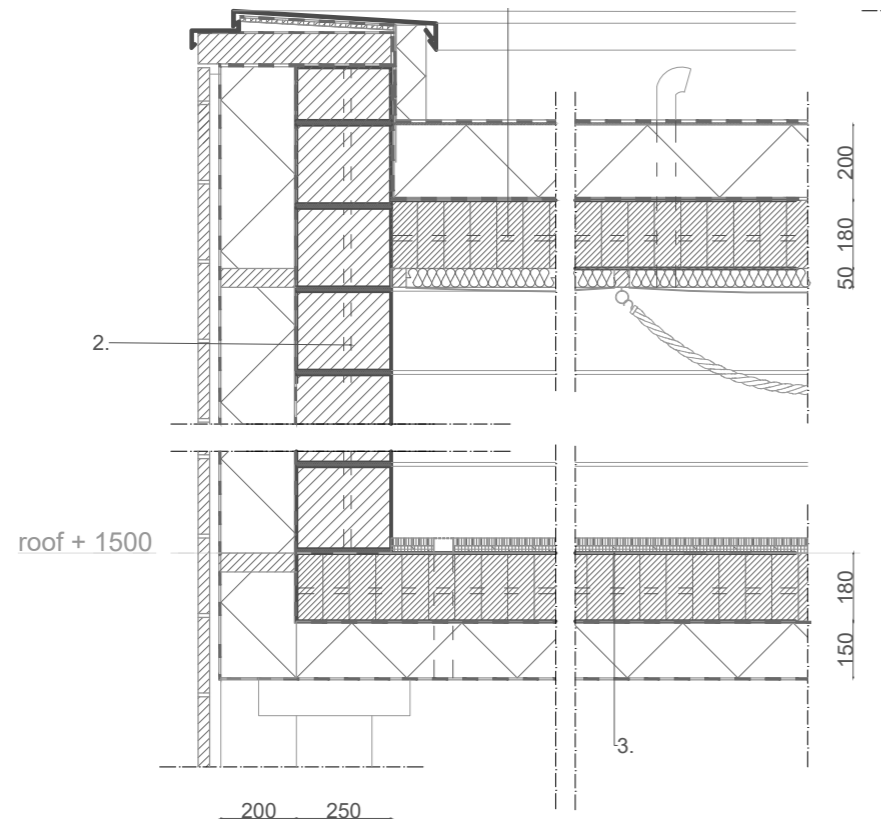


Image 9.

Glass Rod



1 Roof construction:

- 1 mm EPDM roofing membrane, Black
- 5 mm Protection fleece
- 200mm Tapered High density wood fiber insulation (1.5% slope), RC 5,0 m² K/W
- 1 mm Airtight smart vapor retarder
- 180mm DLT floor slab RC 1,3 m² K/W
- 60 mm Wood fiber Acoustic panels
- 1 mm Stretched flame retardant textile, linen like texture, dark gray

2 External wall construction:

- 30mm Bark slices, Thermally modified poplar
- 30mm Air cavity and battens
- 1 mm Vapor-open membrane
- 200 mm Wood fiber insulation, RC 5,5 m² K/W
- 1 mm Airtight smart vapor retarder
- 250mm Structural trunk slice, 210 x 210, Douglas fir, plain sawn, charred, brushed and stained, RC 2,1 m² K/W
- 10mm Dense sheep wool between joints.
- 20mm Stainless steel threaded tie rods, Recycled, recessed within timber assembly

3 Floor construction:

- 20 mm Clay-lime screed
- 20 mm Clay-based dry screed
- 180mm DLT floor slab, RC 1,3 m² K/W
- 1 mm Airtight smart vapor retarder
- 150 mm Wood fiber insulation/ support frame, RC 4,2 m² K/W
- 1 mm Vapor-open membrane

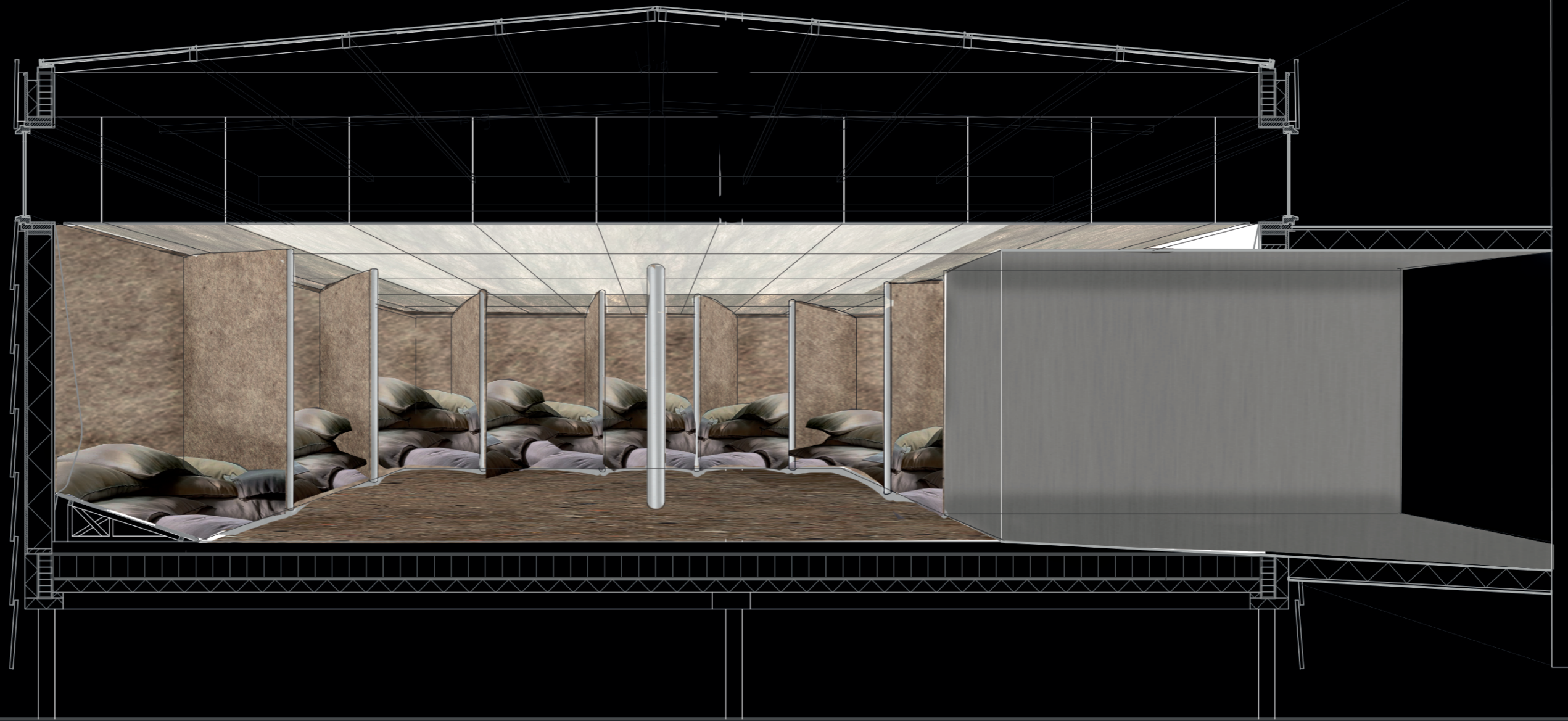
4 Internal wall construction

- 240mm Trunk slices, beveled edge 2000 x 210, Douglas fir, plain sawn, charred, brushed and stained.
- 10mm Dense sheep wool between joints.

5.

Cantilevered bench, Douglas fir solid timber, oil finished steel bracket fixed, hand carved seat location

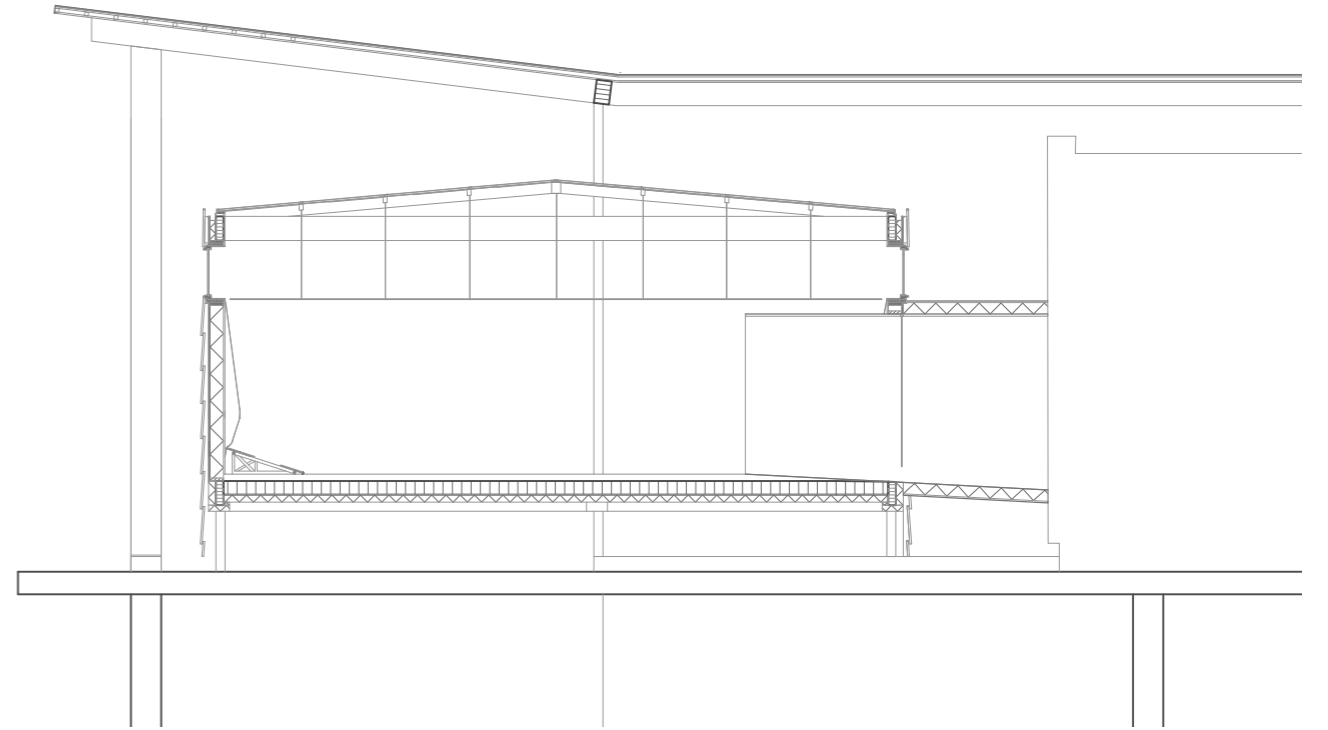
Quiet route, room 1. Body



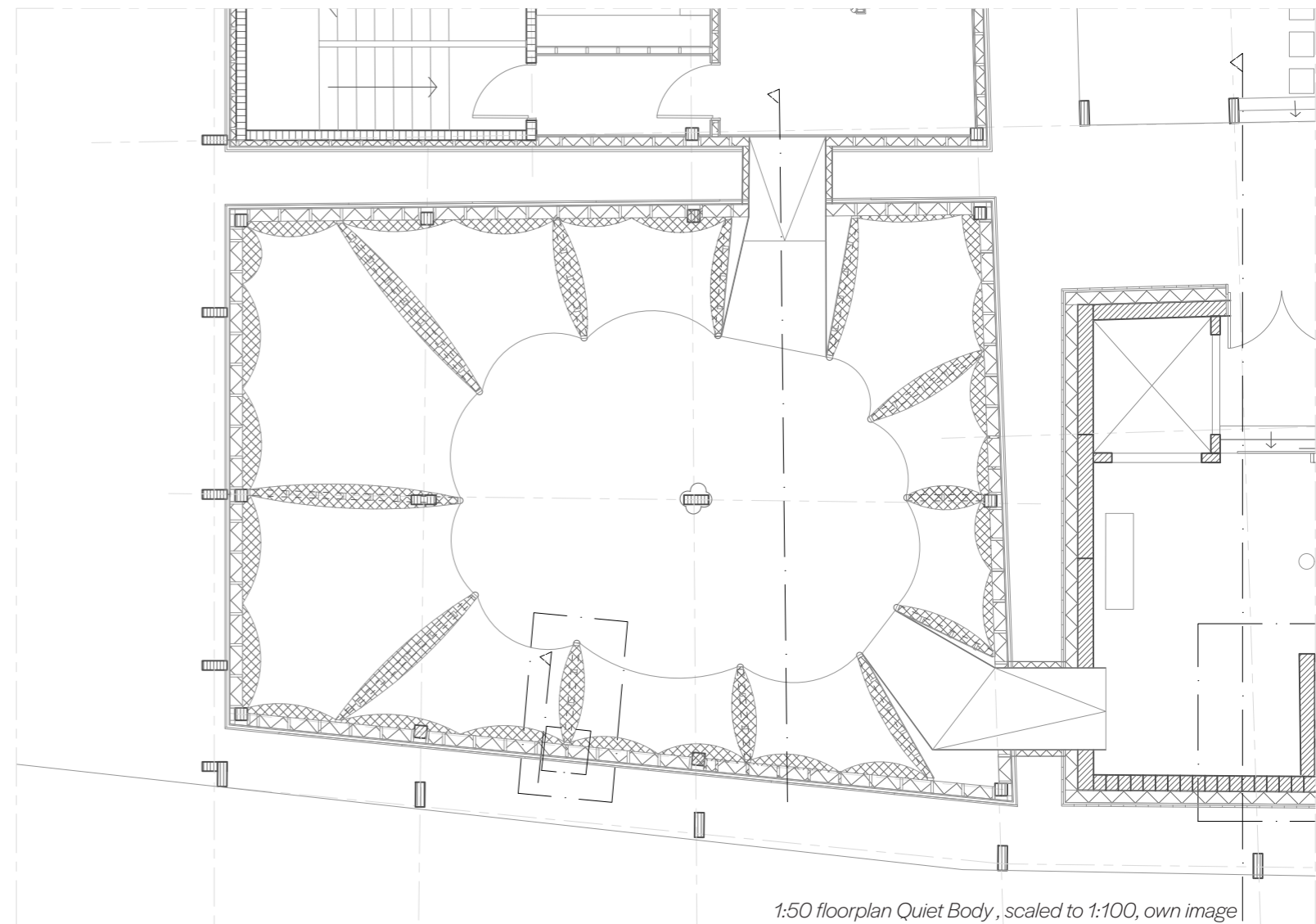
Quiet body

Following the smooth handrail one arrives in the first space of the interior focused route. This room functions as a big pillow, giving more space for a bodily rest, while the sense of touch is stimulated by the natural soft textures of the floor, as well as the walls and body sized pillows int the space. The space is stretched compared to the last space, but lower than wide, keeping the interior focus. Ventilation air is also still preheated here, but slightly less as the decompression space, creating a warmer interaction with the pillows as a comfortable place to sink into. Daylight enters here indirectly through a glowing ceiling. Giving a warm glow to the whole space and making the shadows soft. Over the recessed seating areas around the perimeter the ceiling let's trough less light, making these spaces a safe place to retreat into. All the frames are made from Western Red Cedar, giving the room a natural and slightly sweet wood scent.

A similar steel transition, but this time with soft wool curtains, brings you to the next space.

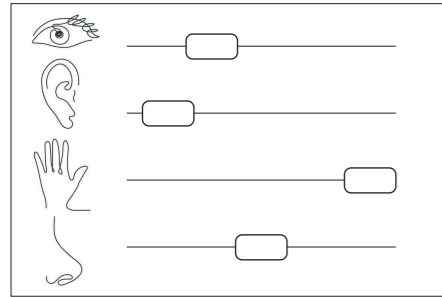


1:50 section Quiet Body , scaled to 1:100, own image



1:50 floorplan Quiet Body , scaled to 1:100, own image

Quiet body, materialisation



Materials here were selected for their tactile softness, acoustic absorption, and warmth of tone, the sliders show where each material falls between opposing qualities, and the body diagram reflects the primary senses engaged: touch above all, followed by smell through the cedar, and a soft diffused light for the eyes.

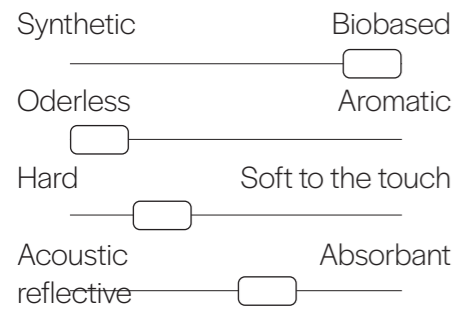
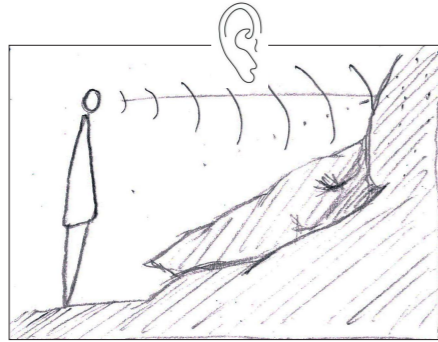
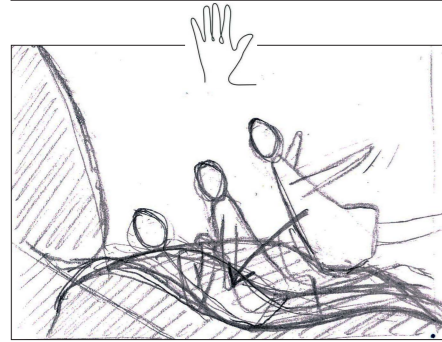


Image 10.

Rammed earth, rough grain

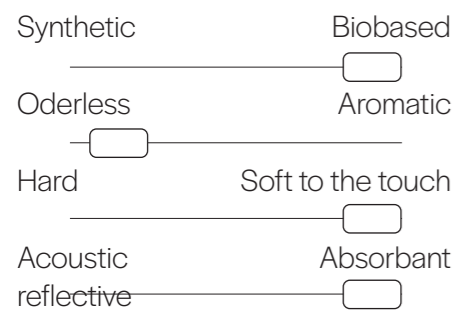


Image 11.

Tensioned flame-retardant natural wool strips, 1600 mm wide

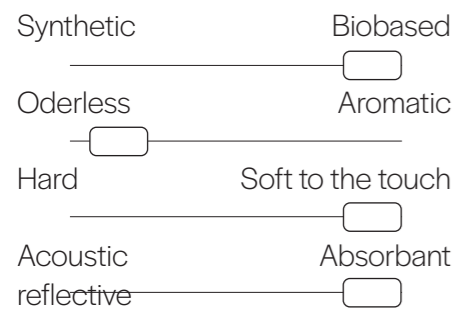


Image 12.

Layered Wool felt panels

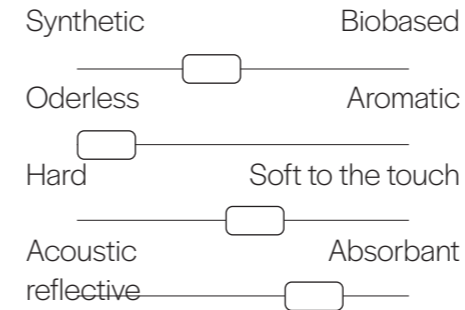


Image 13.

Light diffusing stretched 'drop paper' (88 g/m²), warm beige

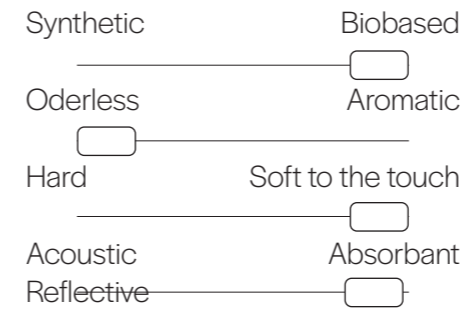


Image 14.

Wool pillow with Natural wool batting 1000 g/m² filling 1500 x 1500 mm

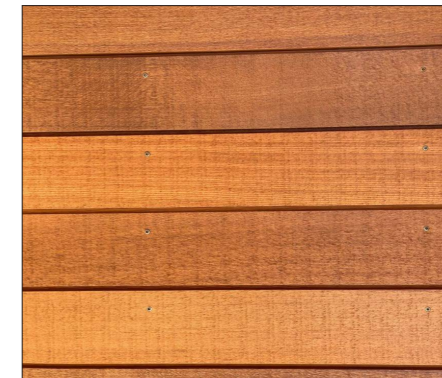
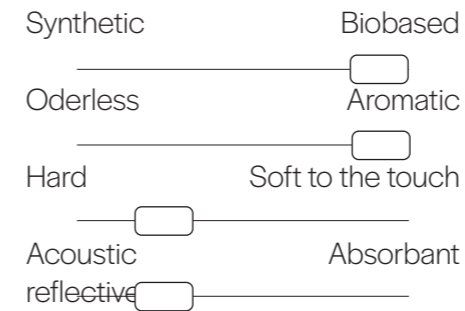


Image 15.

Wood frame, western red cedar, rough sawn, unfinished, self-stable

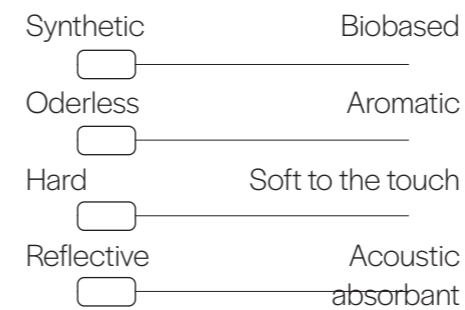


Image 16.

Steel edge strip, brushed in length

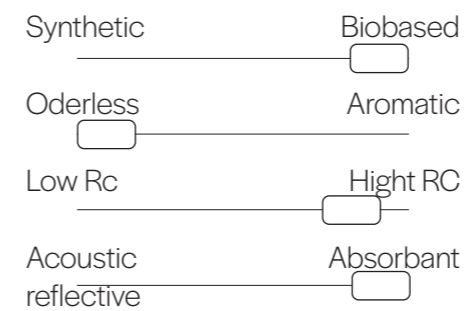
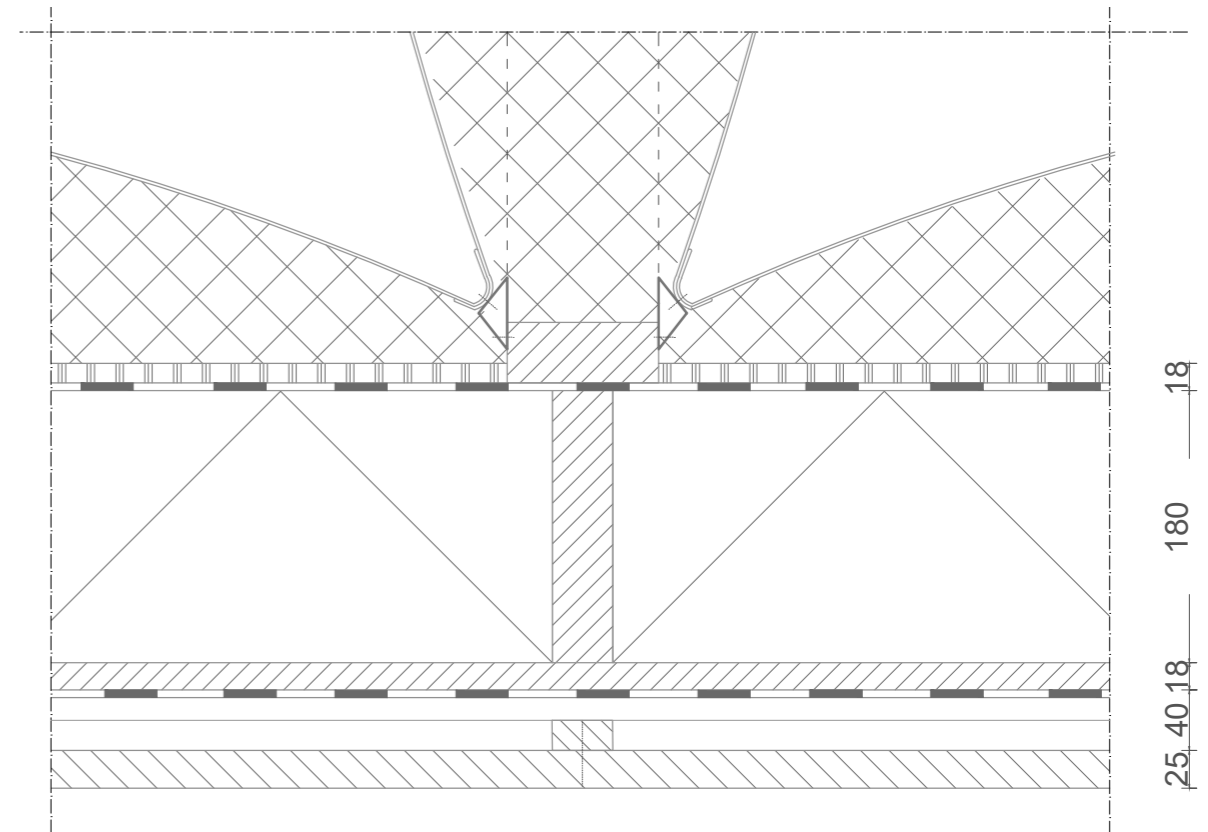
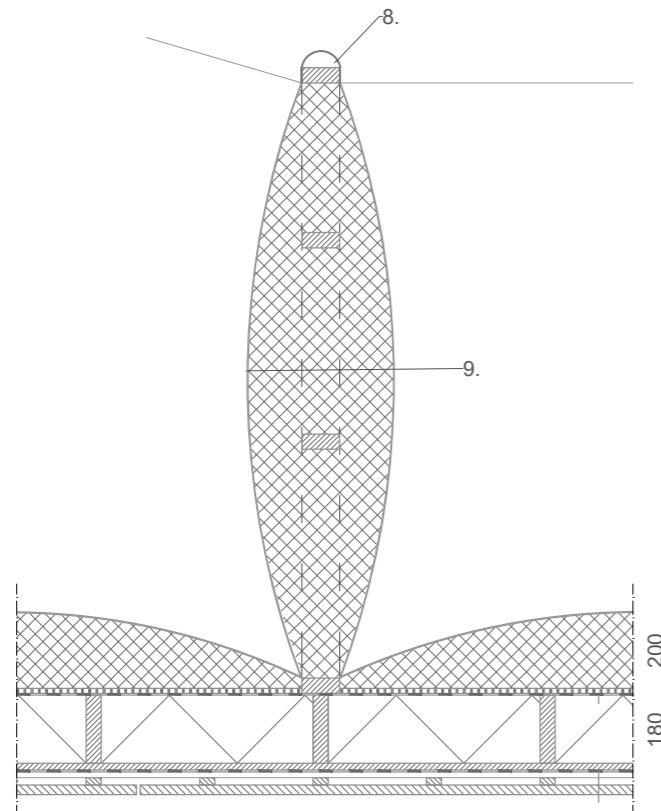
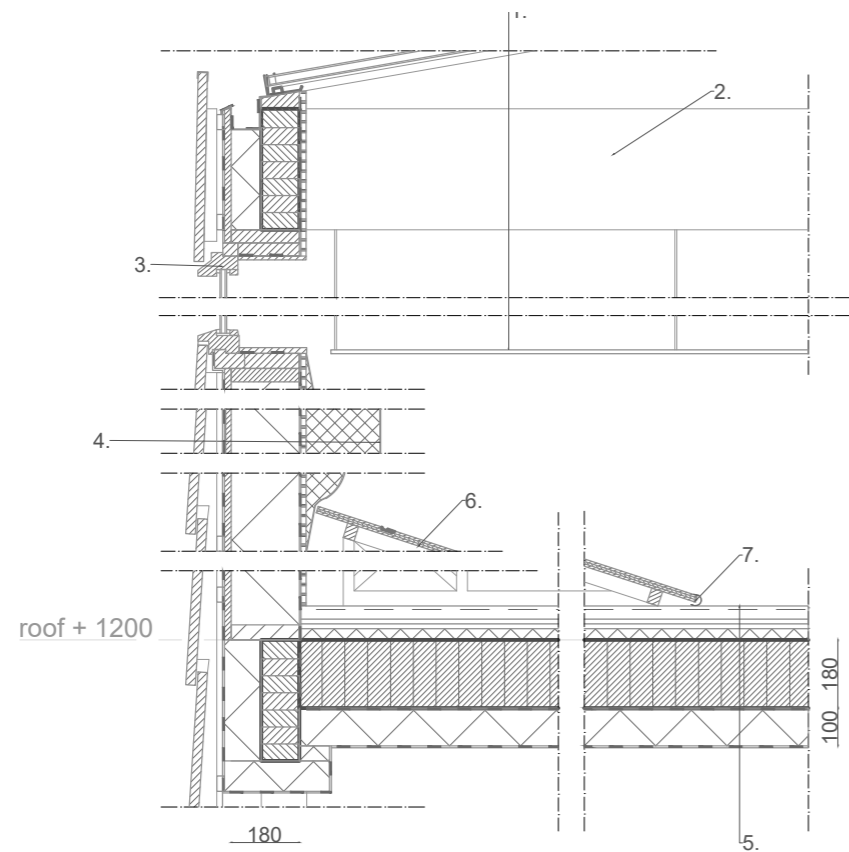


Image 17.

Brushed Steel threshold

THRESHOLD



1 Roof construction

- 40 mm Aluminium roof window frame HR++ glass, black frame
- 700 mm Air cavity with black tensioned steel rod dropped ceiling hangers at 900 mm grid
- 40 mm Aluminum frame with light diffusing stretched 'drop paper' (88 g/m²), warm beige

- 2** Exposed glulam beam 300 x 100 mm, natural oiled finish

- 3** Oak window frame, dark oiled, HR++ glass

4 External wall construction

- 25mm Horizontal wood slabs natural barked edge, Douglas fir, 500 wide
- 40 mm Ventilated Air cavity with vertical timber battens and fixings that allow movement
- 1 mm Vapor open membrane
- 18mm Wood fiber sheathing board
- 180 mm Wood fiber insulation, RC 5,0 m² K/W
- 1 mm Airtight smart vapor retarder
- 18 mm Gypsum board
- 200 mm Layered Wool felt panels
- 3 mm Tensioned flame-retardant natural wool strips, 1600 mm wide

5 Floor construction

- 60 mm Rammed earth, rough grain
- 30 mm Wood fiber screed board
- 180 mm DLT floor slab, RC 1,5 m² K/W

- 1 mm Airtight smart vapor retarder
- 100mm Wood fiber insulation/ support frame RC 2,7 m² K/W
- 1 mm Vapor-open membrane

6 Tilted spatial floor object

- 400 mm Natural wool batting 1000 g/m²g 1500 x 1500 mm
- 18 mm Wooden multiplex panels with integrated steel hooks
- 40 mm Wood frame, western red cedar, rough sawn, unfinished, self-stable

7 Tilted spatial floor object floor edge

Steel rounded wall edge, recycled steel, brushed in length

8 Interior wall edge

Steel edge strip, brushed in length

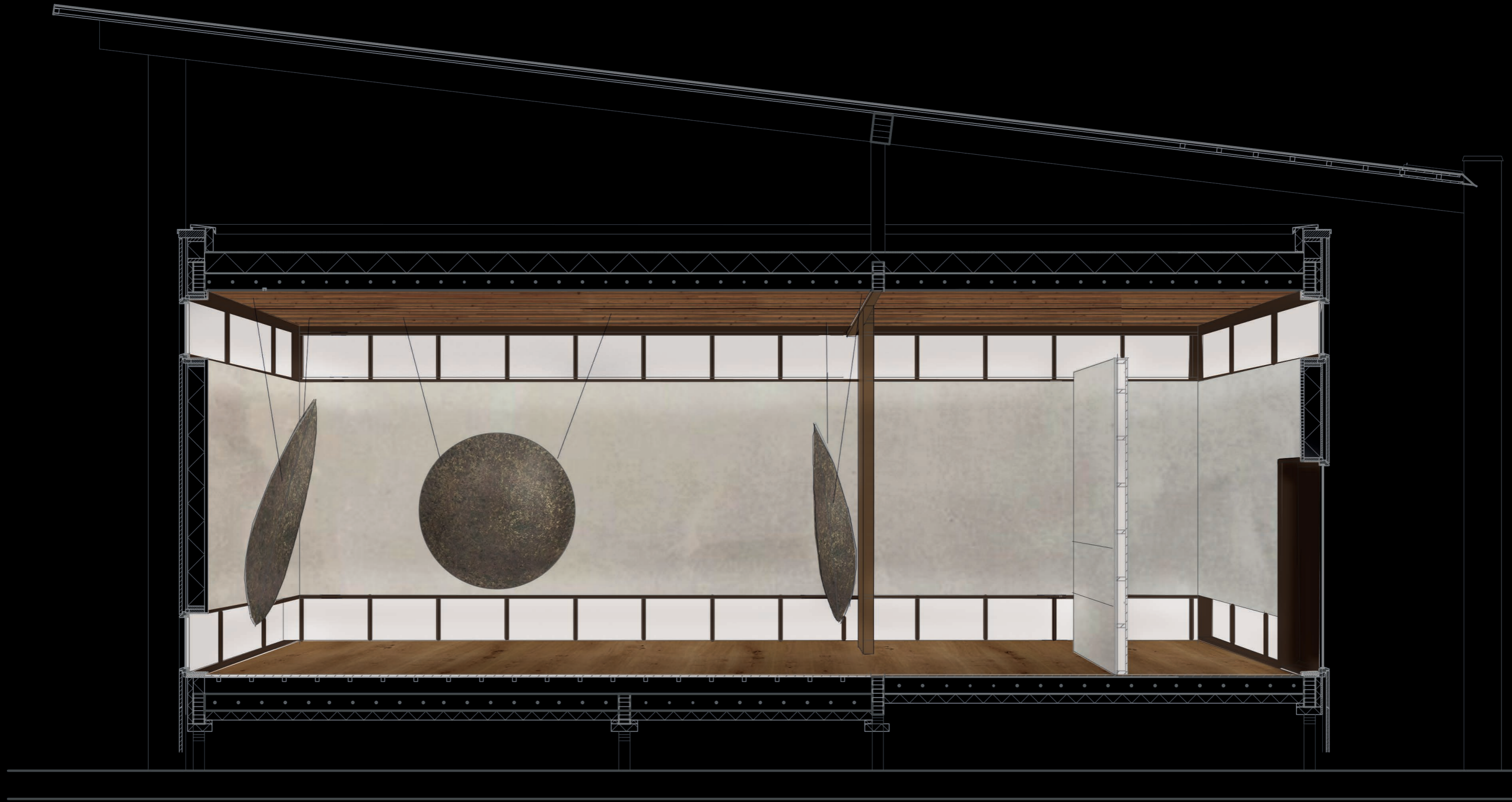
9 Interior wall construction

- 3 mm Tensioned flame-retardant natural wool strips, 1600 mm wide
- 200 mm Layered Wool felt panels
- 100 mm Timber frame interior wall with wood fiber insulation
- 200 mm Layered Wool felt panels
- 3 mm Tensioned flame-retardant natural wool strips, 1600 mm wide

10

Glulam column 200x200

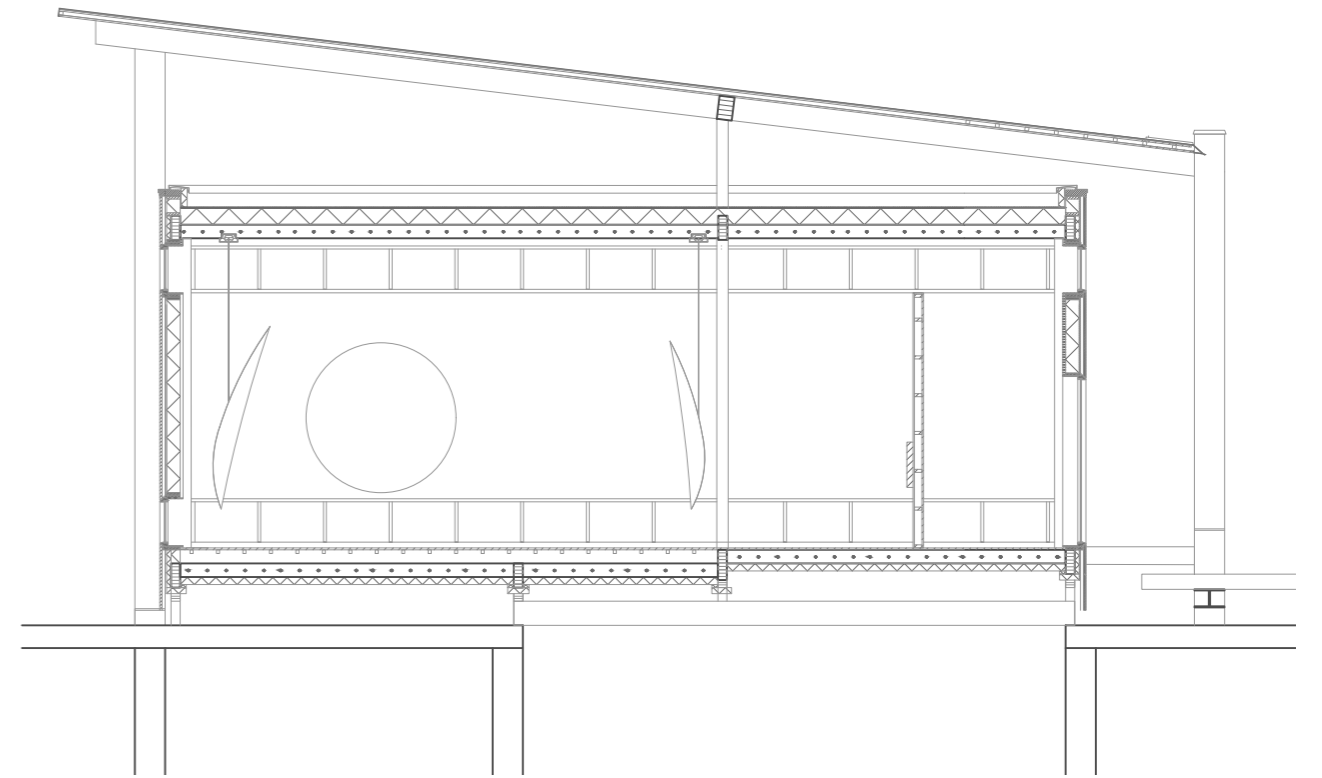
Quiet route, room 2. Resonance



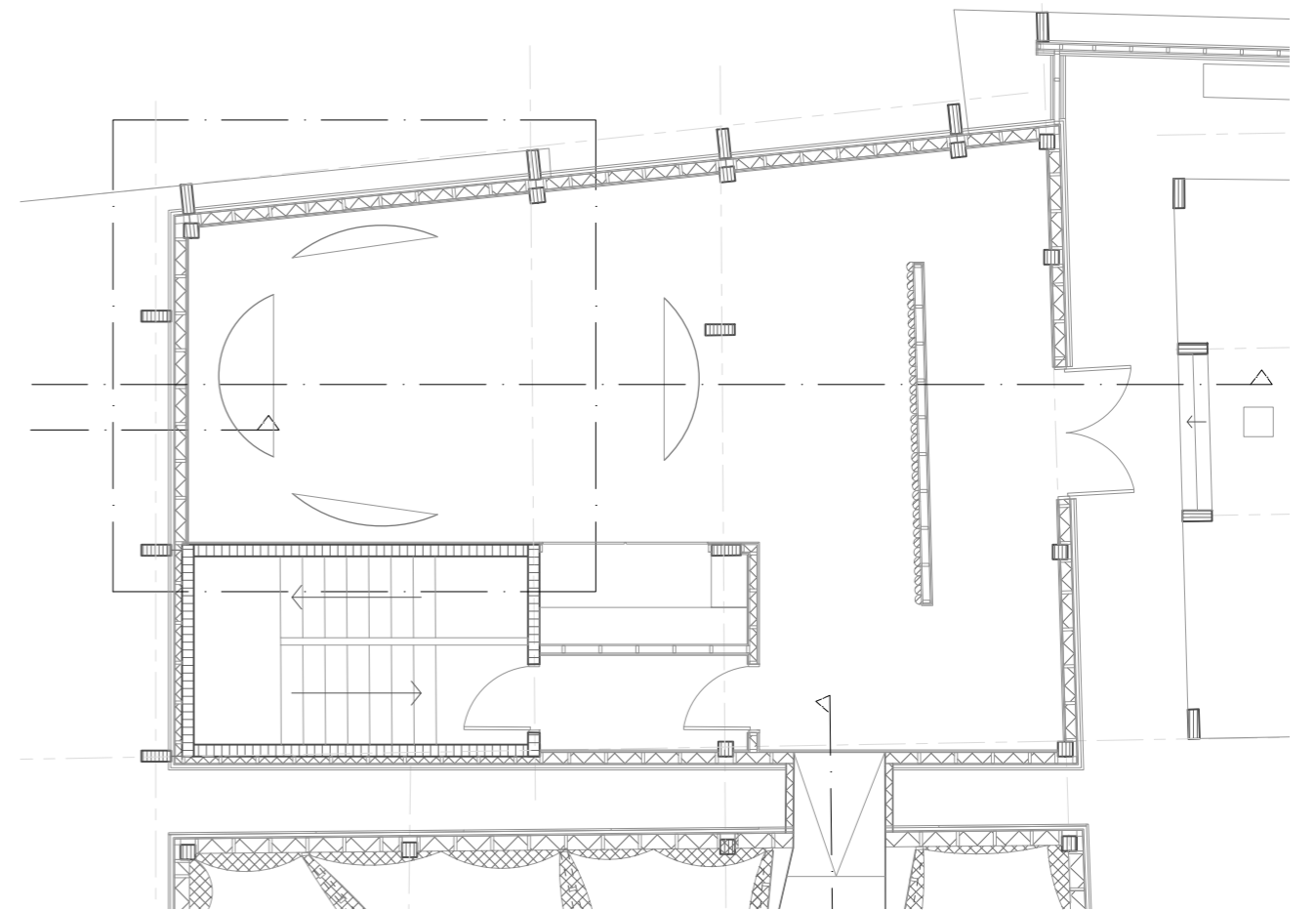
Resonance

The resonance room is fully focused on the auditory experience. Visitors are made aware of the sense of hearing through and exaggeration of sound in this space. The space is higher and more vertical in proportion than the previous rooms to let in awareness outside of just one's own body. The materiality here has harder finishes to increase the reverberance in the space. Large steel elements are a visual reminder of the goal of this space, while also give interaction with the space and sound. When rubbed over or softly tapped with knuckles they will start to give a low natural vibration that is both auditory as well as physically perceivable. Visitors will be reminded here of their own presence in space by their own footsteps. And when everything else is quiet, soft noises from outside will enter the room, re-introducing the visitor to the fact of where they are. The space is acoustically detached from the previous room as well as the existing building construction in order to contain the vibrations in the space and prevent the steel elements from being influenced by any possible vibration from trams on the square. The light in this space is more direct but direct views are still distorted, with windows from either textured or milked glass on the top and bottom periphery of the space. Ventilation air is less preheated and mirrors more of the situation outside. Time is also softly reintroduced here through this soft connection to the outside world.

A heavy swing door, around the corner leads directly into the garden.

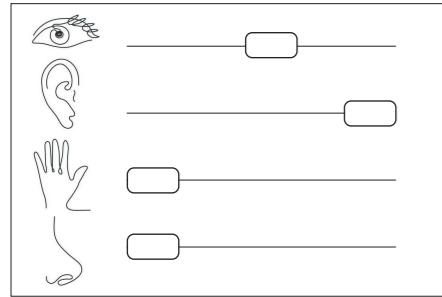


1:50 section Resonance , scaled to 1:100, own image



1:50 floorplan Resonance , scaled to 1:100, own image

Resonance materialisation



In this space material choices are driven by acoustic behavior and physical responsiveness, the sliders show where each material falls between two opposing qualities, and the body diagram reflects the primary senses at work: hearing and touch, with sight playing a secondary, orienting role.

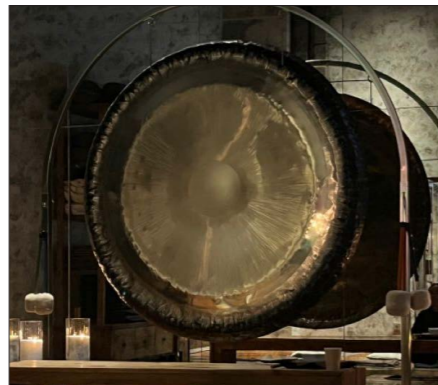
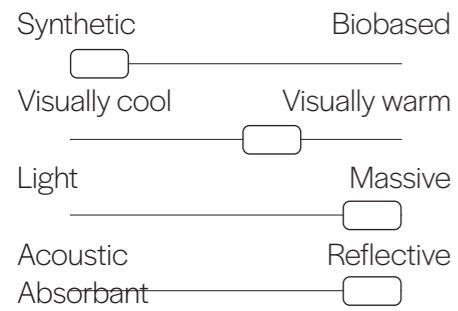
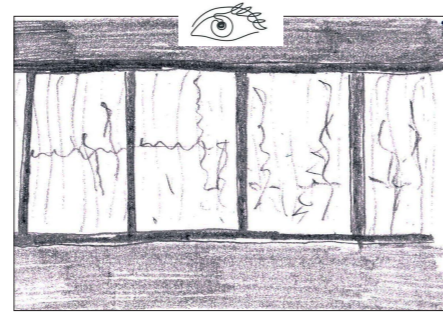
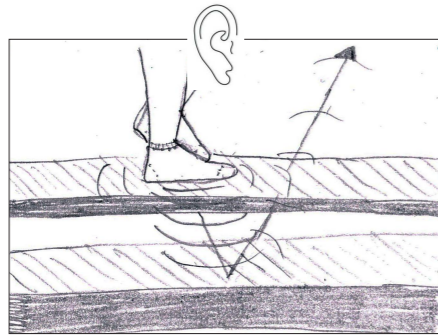
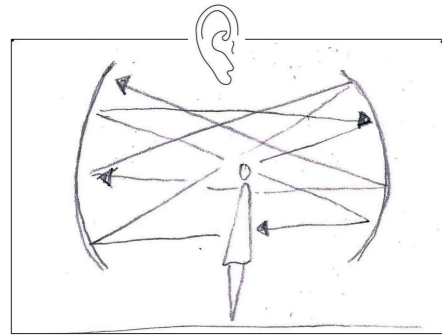


Image 18.

Suspended hammered elongated carbon steel shell, matte-dark silver, Ø2200 (300 mm depth across the diameter) Tilted 15 degrees forward, center height at 1500 mm from floor

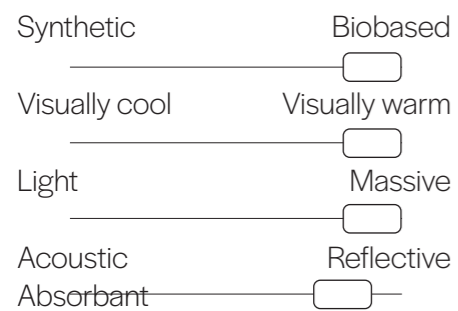


Image 19.

DLT floor slab, planed, oiled

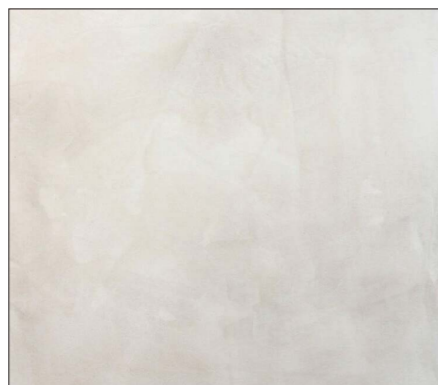
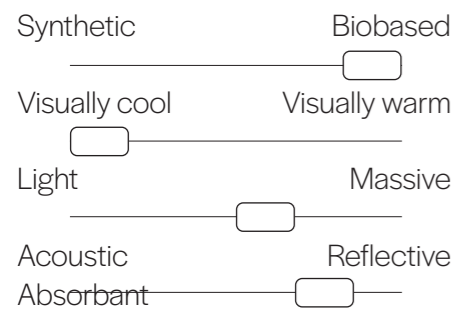


Image 20.

Lime plaster, hard finish coat

The slight angle in the wall prevents standing waves and hard parallel echoes, breaking up the reflection pattern so the room resonates without becoming acoustically aggressive.

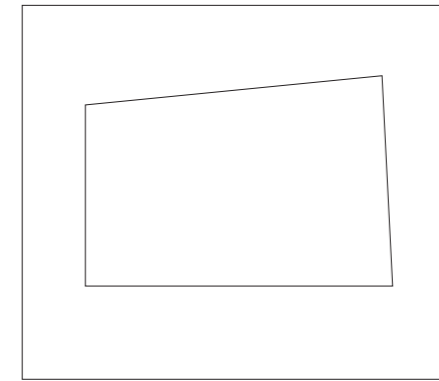


Image 21.

Room shape

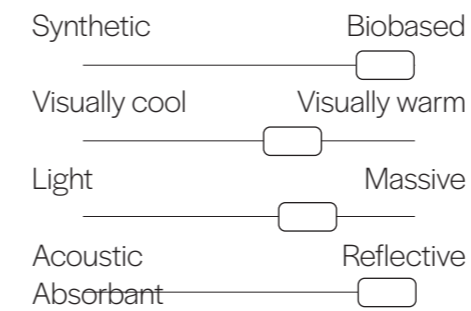


Image 22.

Solid hardwood oak floor, wide plank, oil matte finish, suspended over air cavity for acoustic resonance.

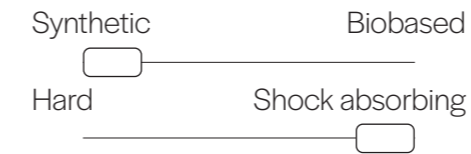


Image 23.

Acoustic decoupling with Spring Elements

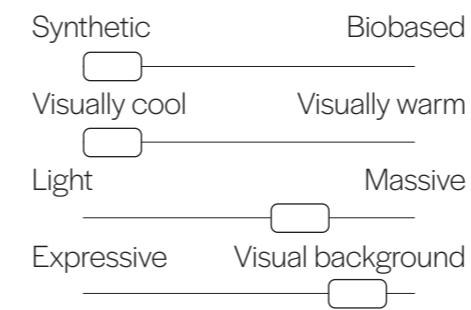


Image 24.

Black steel tension cable

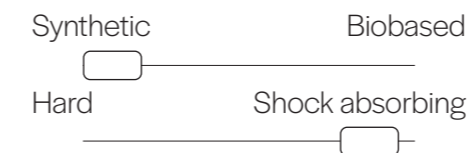
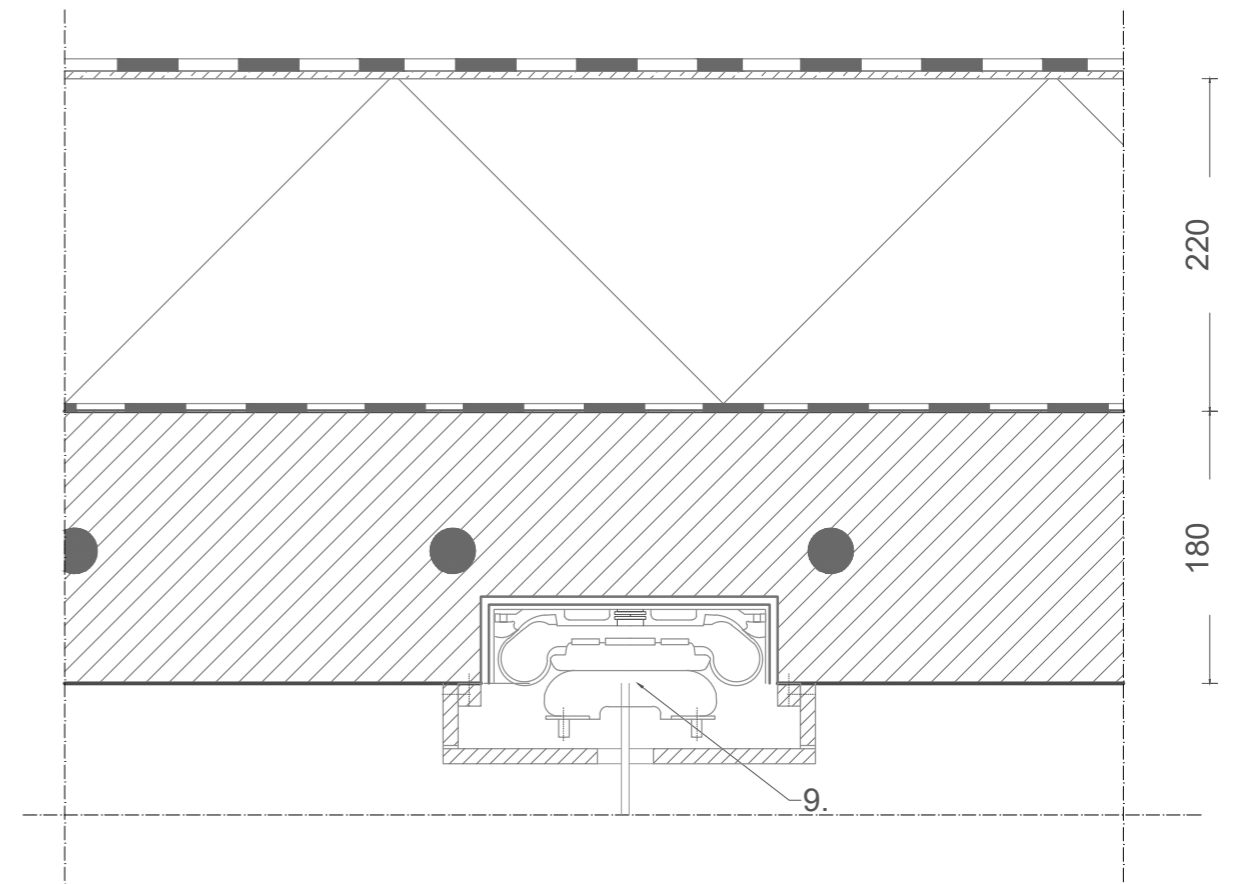
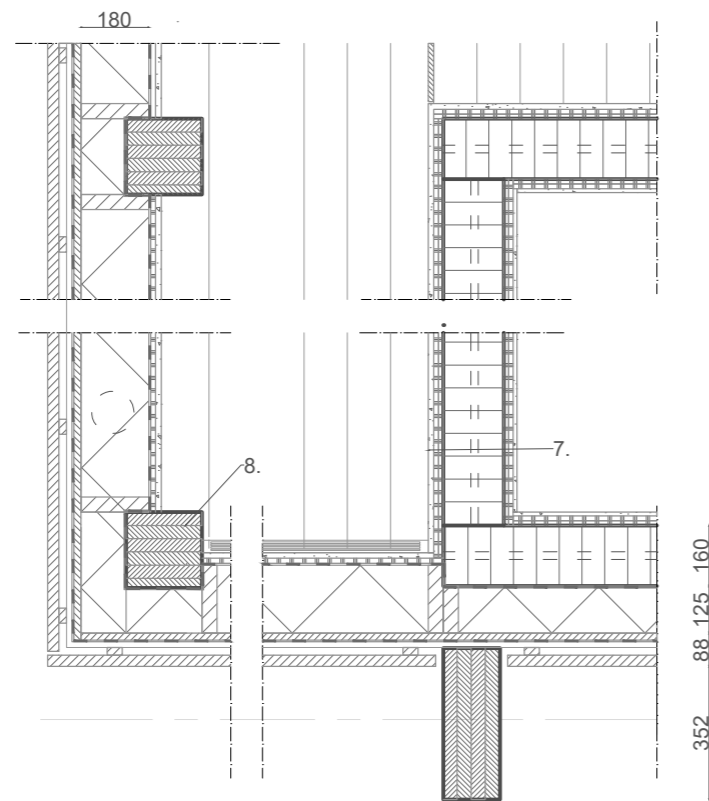
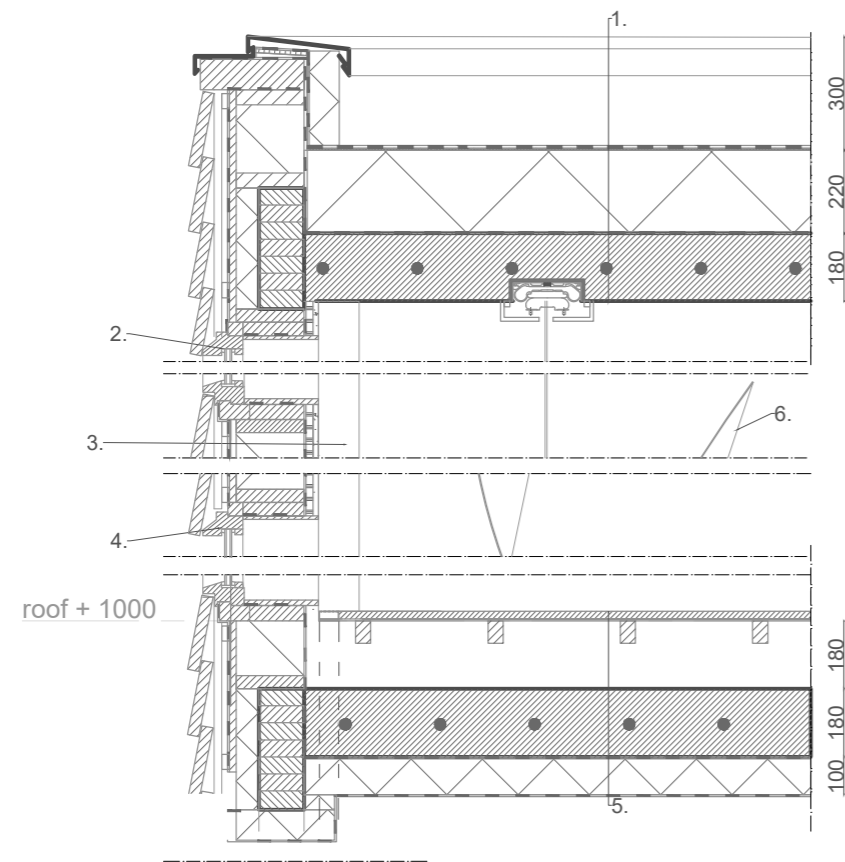


Image 25.

Neoprene Anti-Vibration Airspring Mount (Low Vertical Frequencies)



1 Roof construction:

- 1 mm EPDM roofing membrane, Black
- 5 mm Protection fleece
- 180 mm Tapered High density wood fiber insulation (1.5% slope) RC 5,0 m2 K/W
- 1 mm Airtight smart vapor retarder
- 180 mm DLT floor slab, planed, oiled, RC 1,5 m2 K/W,

- 2** Oak window frame, dark oiled, Milked acoustic double glazing

3 External wall construction

- 30 mm Exterior Douglas fir thermally modified boards (Shape)
- 40 mm Ventilated Air cavity with vertical and horizontal timber battens
- 1 mm Vapor open membrane
- 18mm Wood fiber sheathing board
- 180 mm Wood fiber insulation RC 5,0 m2 K/W
- 1 mm Airtight smart vapor retarder
- 18 mm Gypsum board
- 15 mm Lime plaster, hard finish coat

- 4** Oak window frame, dark oiled, textured acoustic double glazing

5 Floor construction

- 20 mm Solid hardwood floor, wide plank, oil matte finish
- 18 mm Multiplex plate
- 180 mm Air cavity with timber joists
- 180 mm DLT floor slab, RC 1,5 m2 K/W
- 1 mm Airtight smart vapor retarder
- 100mm Wood fiber insulation/ support frame RC 2,7 m2 K/W

- 1 mm Vapor-open membrane
- Structure acoustically decoupled from columns underneath through anti vibration mounts

- 6** 2 mm Suspended hammered elongated carbon steel shell, matte-dark silver, Ø2200 (300 mm depth across the diameter) Tilted 15 degrees forward, center height at 1500 mm from floor
- Black steel tension cable (Ceiling anchor)
- Black steel stabilizing cable (Rear wall anchor)

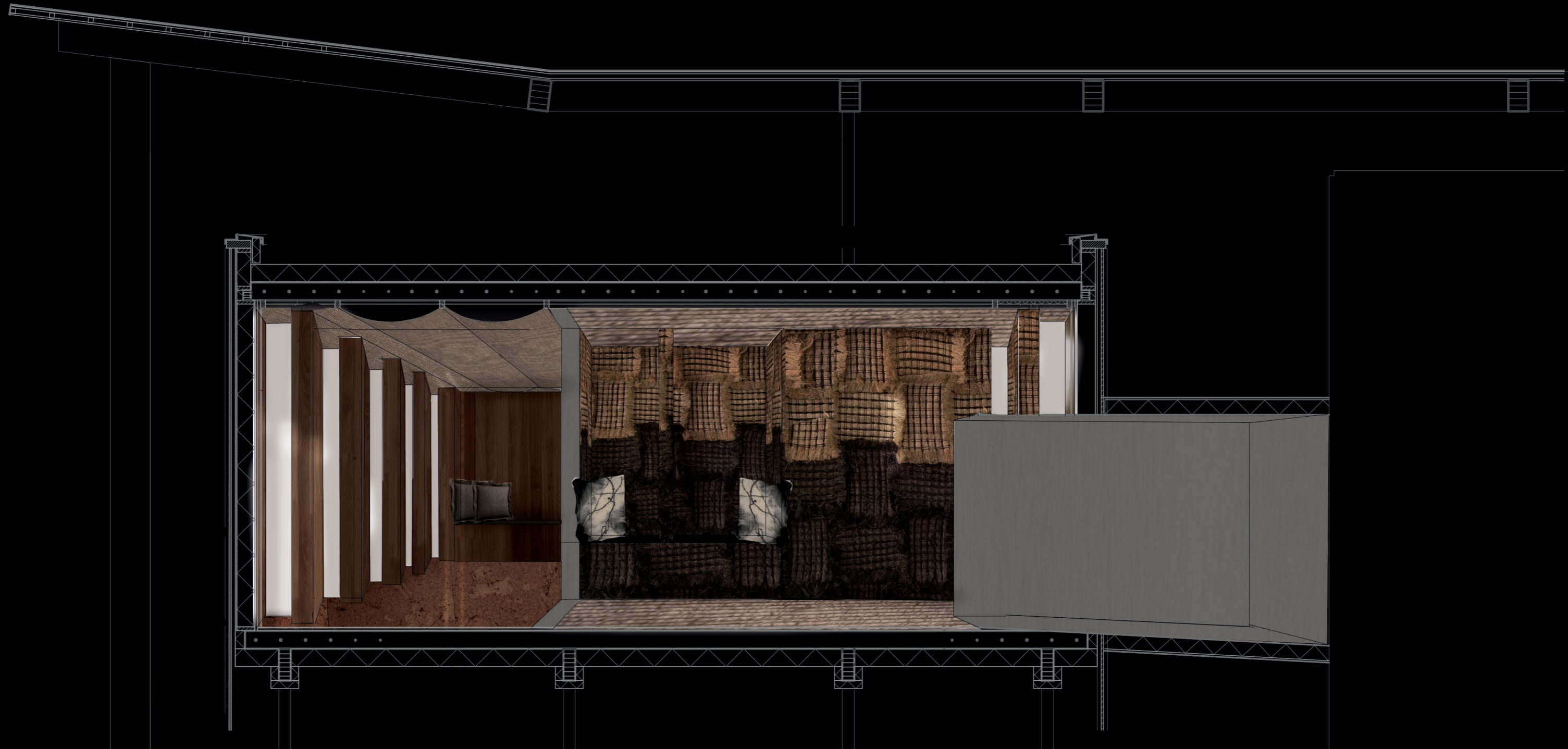
7 Emergency route separation wall

- 15 mm Lime plaster, hard finish coat
- 30 mm Battens
- 12,5mm Gypsum board
- 12,5mm Gypsum board
- 160mm CLT wall
- 12,5mm Gypsum board
- 12,5mm Gypsum board
- 15 mm Lime plaster, course grain

- 8** 150x400 mm Gluelam column, Douglas fir
- Steel stability attachment

- 9** Steel U profile, 2900 length
- Neoprene Anti-Vibration Mount

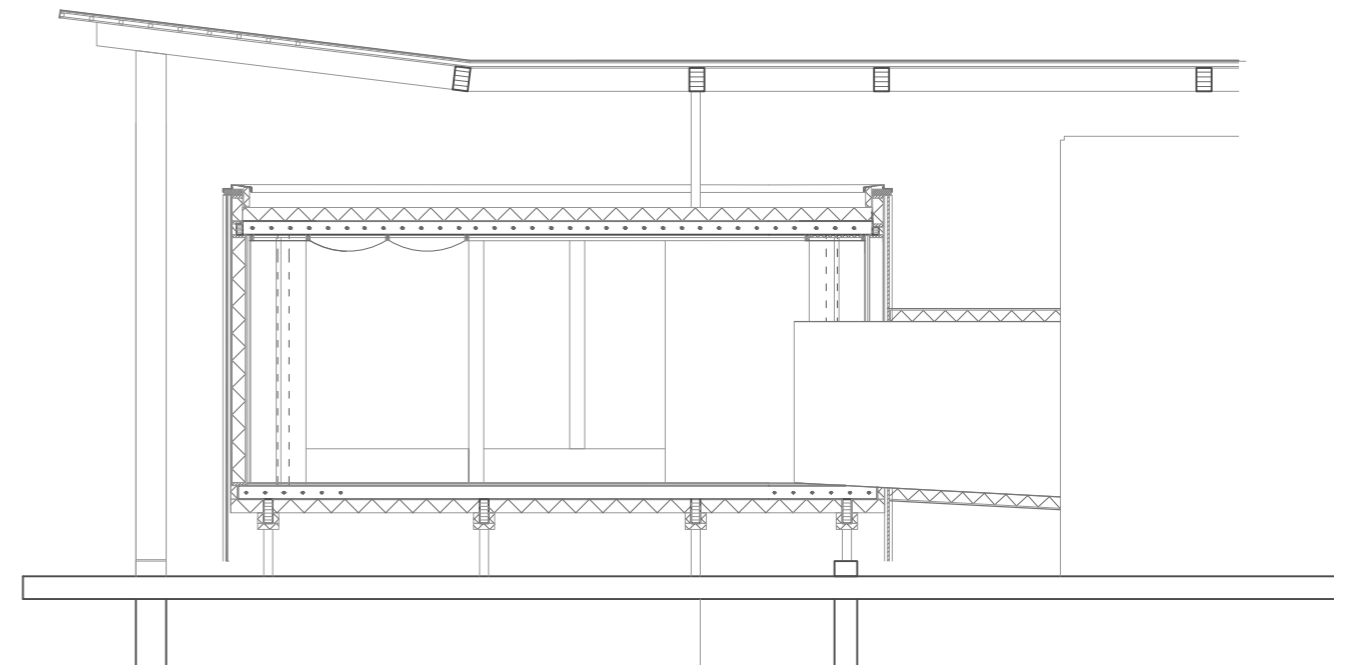
Re-engagement room 1. Body



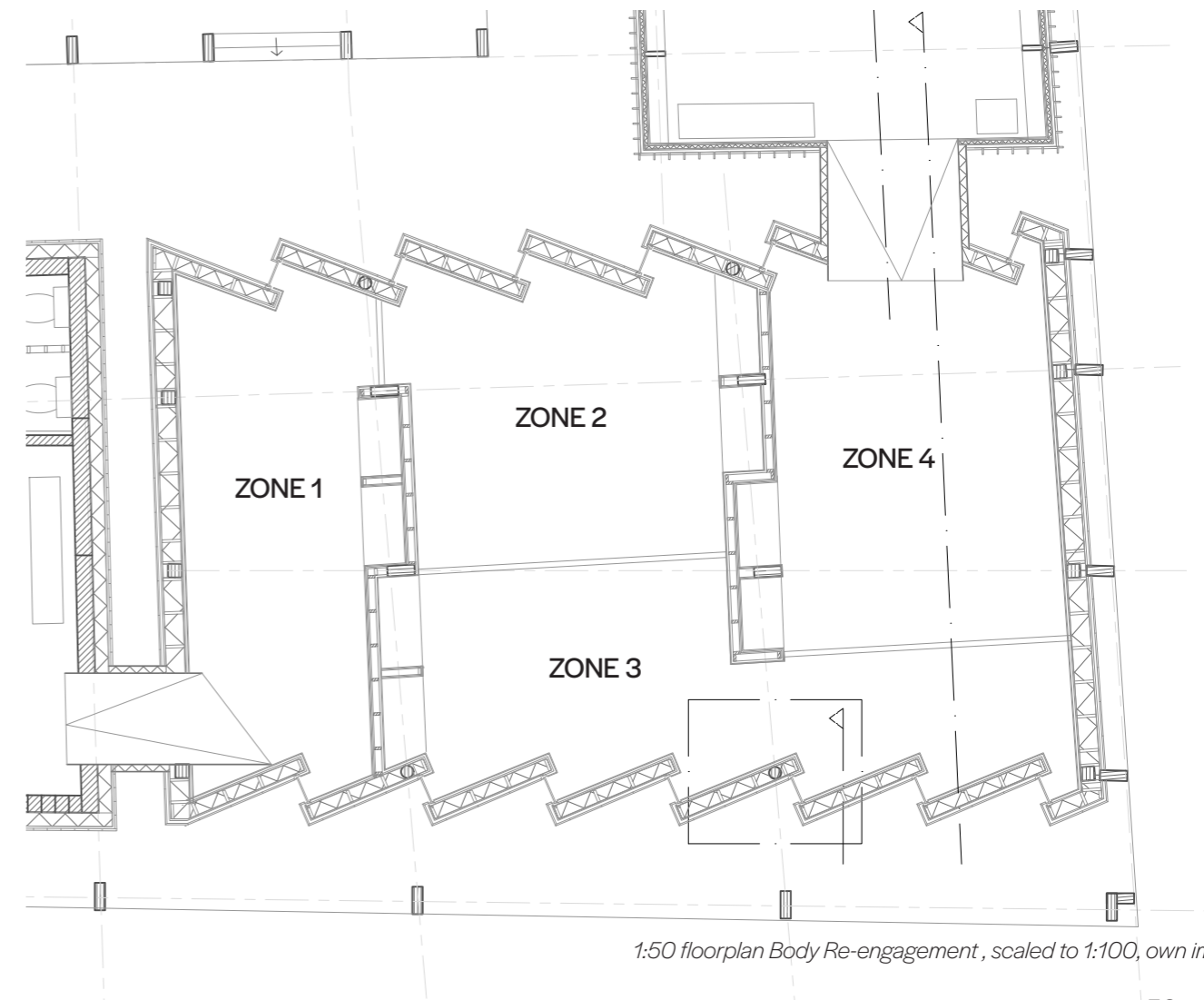
Body Re-engagement

Following the textured handrail from the decompression space, the visitor arrives in the body reengagement room. This space is vertical in perceptual proportion and is setup as a small route within the space that the visitor moves through to experience a gradient of material finishes, from hard to soft materials. The space has 4 material stages and each stage has a small seating area reflecting the materiality of that zone. Ventilation is fresh from the outside, keeping a stronger connection to the season outside. The walls are grazed with side lighting, by a staggered wall pattern with integrated windows, pointing you in the direction of movement. Acoustics here change slightly throughout the space, but are kept from extremes by an acoustic panel on the ceiling hidden behind the different ceiling claddings. Exploration and reengagement are central to this space making this space the only one with views to the exterior, but only around a corner instead of as a primary focus.

The same repeating steel threshold brings you to the next space in the sequence.

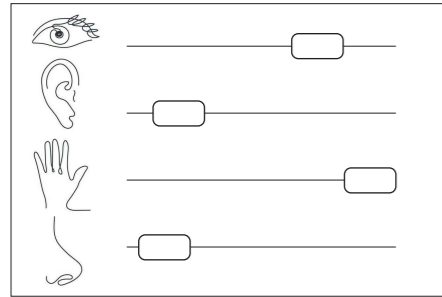


1:50 section Body Re-engagement, scaled to 1:100, own image

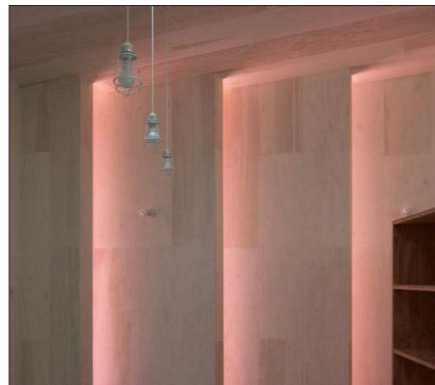
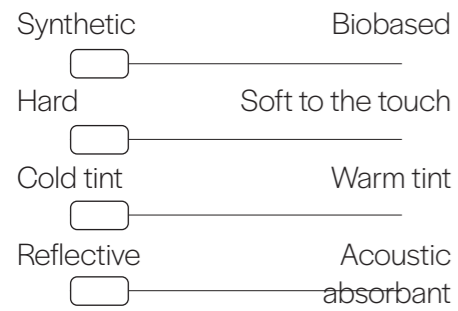
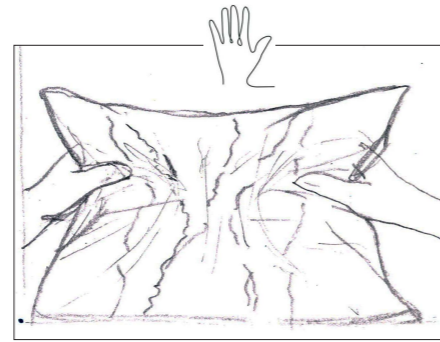
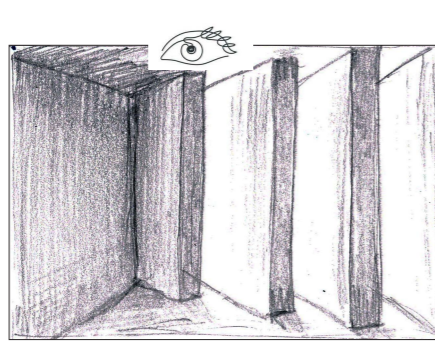
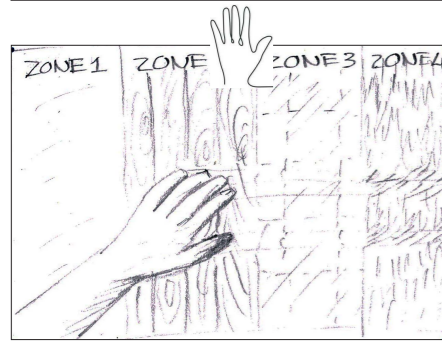


1:50 floorplan Body Re-engagement, scaled to 1:100, own image

Body re-engagement materialisation

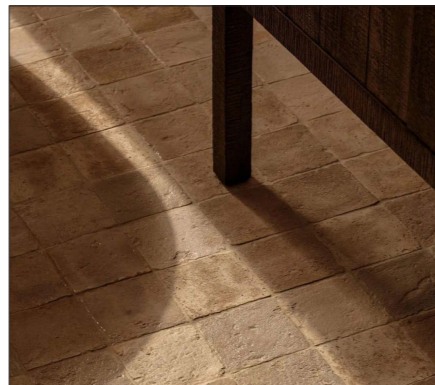
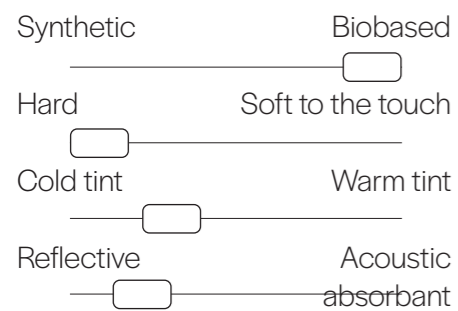


Materials were chosen to guide the body through a gradient of sensory stimulation, the sliders show where each material sits between opposing qualities, and the body diagram reflects which senses are re-awakened here: touch, sight, and a returning awareness of the body moving through space.



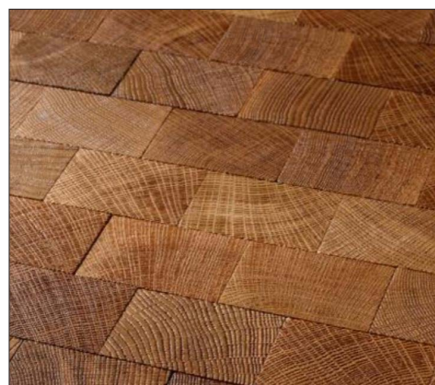
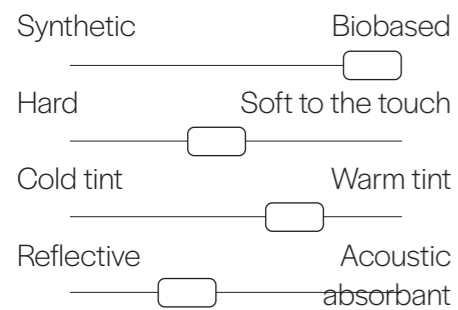
Staggered window frame

Image 26.



Stone floor

Image 27.

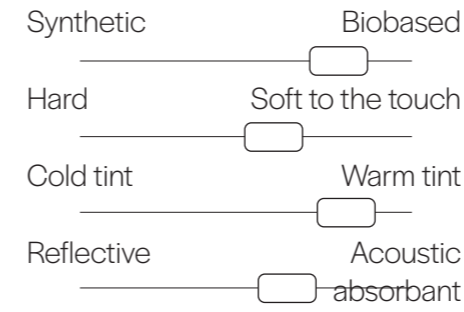


End-grain wood floor

Image 28.

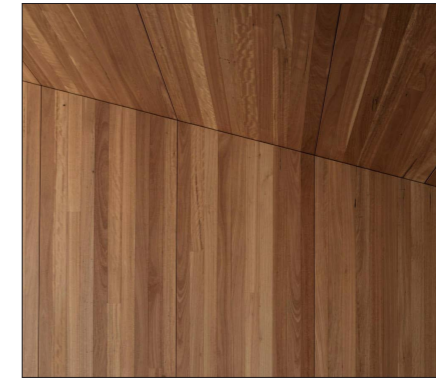
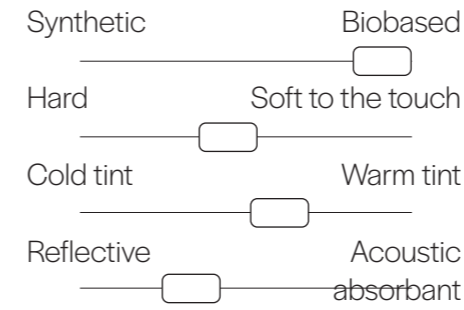
ZONE 1

ZONE 2



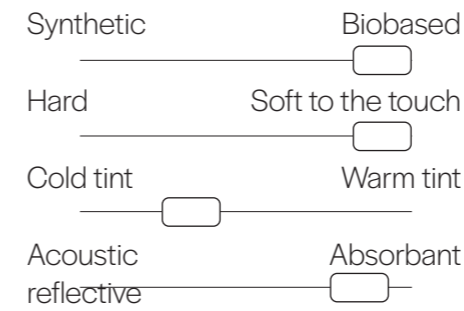
Agglomerated cork floor tile, matte sealed, dark tone

Image 29.



Interior Laminated Douglas fir wall panels, brushed and oil stained finish, concealed fixing system, flush joint alignment 700 mm width (tongue and groove connected)

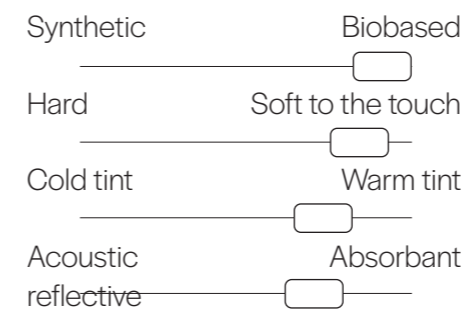
Image 30.



Dense wool floor with soft underlay

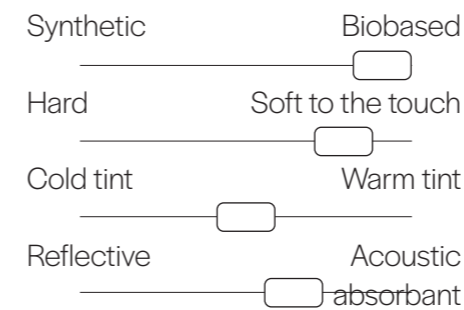
Image 31.

ZONE 4



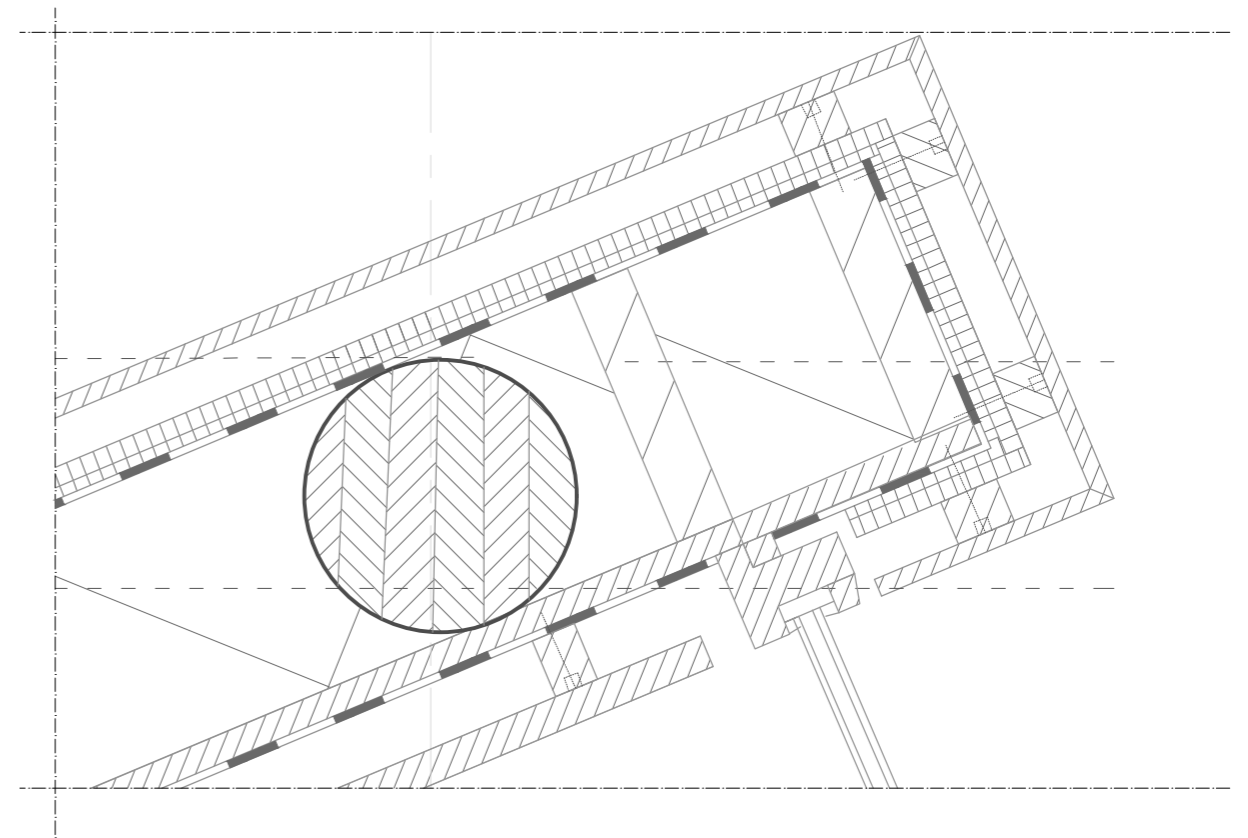
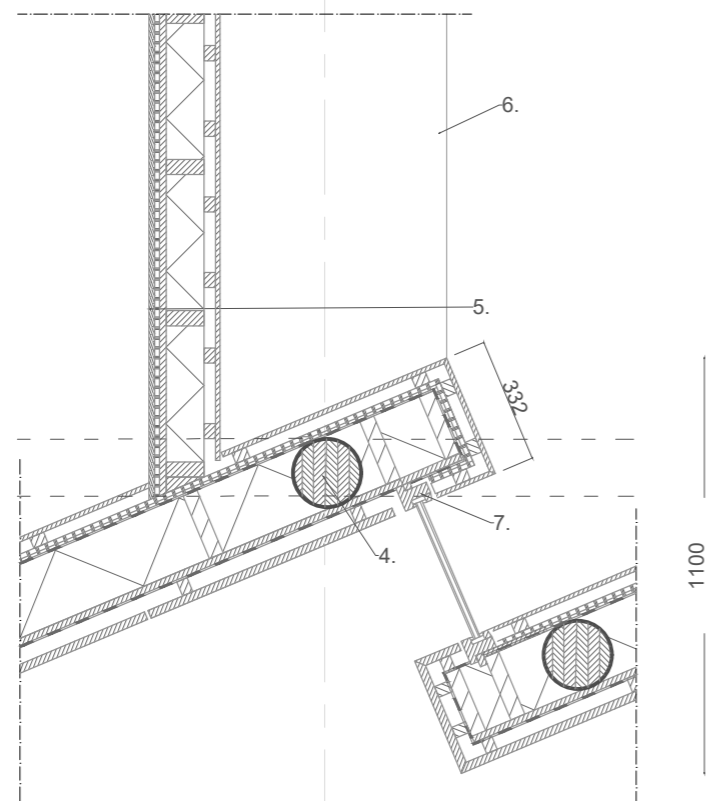
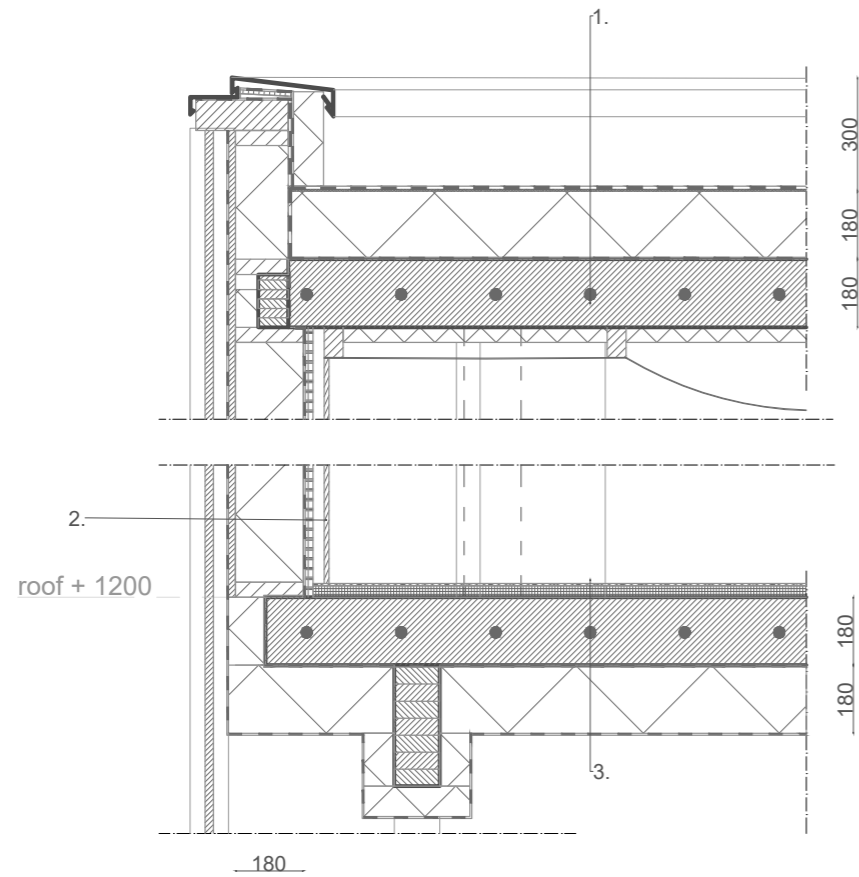
Textile wall finish

Image 32.



Loose pillow thick wool felted cover

Image 33.



1. Roof construction:

- 1 mm EPDM roofing membrane, Black
- 5 mm Protection fleece
- 180 mm Tapered High density wood fiber insulation (1.5% slope) RC 5,0 m2 K/W
- 1 mm Airtight smart vapor retarder
- 180 mm DLT floor slab, RC 1,5 m2 K/W
- 40 mm Wood fiber Acoustic panels
Variable Air cavity
- 20 mm Textile ceiling, loose weave, beige, suspended between Douglas fir support battens, 40x20 mm, oiled finish, at 600 mm distance

2. External wall construction:

- 22 mm Exterior Douglas fir thermally modified boards, 700 mm width
- 40 mm Ventilated Air cavity with vertical timber battens
- 1 mm Vapor open membrane
- 18mm Wood fiber sheathing board
- 180 mm Wood fiber insulation, RC 5,0 m2 K/W
- 1 mm Airtight smart vapor retarder
- 18 mm Gypsum board
- 30 mm Battens
- 12 mm Interior Laminated Douglas fir wall panels, brushed and oil stained finish, concealed fixing system, flush joint alignment 700 mm width (tongue and groove connected)

3. Floor construction:

- 6 mm Agglomerated cork floor tile, matte sealed, dark tone

- 30 mm Rubber-cork composite
- 180 mm DLT floor slab RC 1,5 m2 K/W
- 1 mm Airtight smart vapor retarder
- 100mm Wood fiber insulation/ support frame RC 2,7 m2 K/W
- 1 mm Vapor-open membrane

- 4.** 180 mm Ø Round glulam column

- 5**
- 15 mm Large-grain Lime plaster
- 18 mm Gypsum board
- 18 mm Wood fiber board
- 100 mm Timber frame interior wall with wood fiber insulation
- 30 mm Wooden Battens
- 12 mm Laminated Douglas fir wall panels, brushed and oil stained finish, concealed fixing system, flush joint alignment 700 mm width (tongue and groove connected)

- 6**
- Textured built in back and seat pillow, thick wool felted cover, undyed 400g/m2 fabric thickness. Natural wool batting 1000 g/m2.
- 5x Mixed density loose pillows, 600x400; 500x500; 400x400mm heavy woven wool boucle, undyed, varied density 600 – 900g/m2

- 7** Oak window frame, dark oiled, HR++ glass

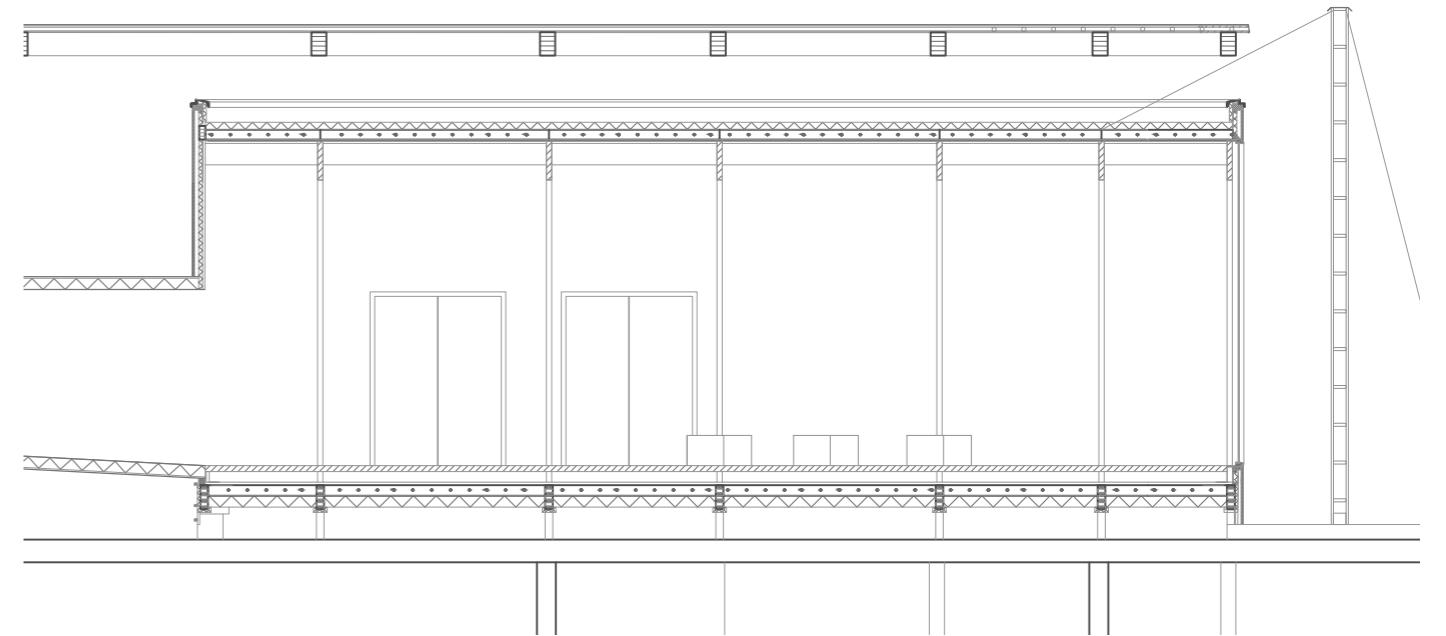
Re-engagement route, room 2. Light



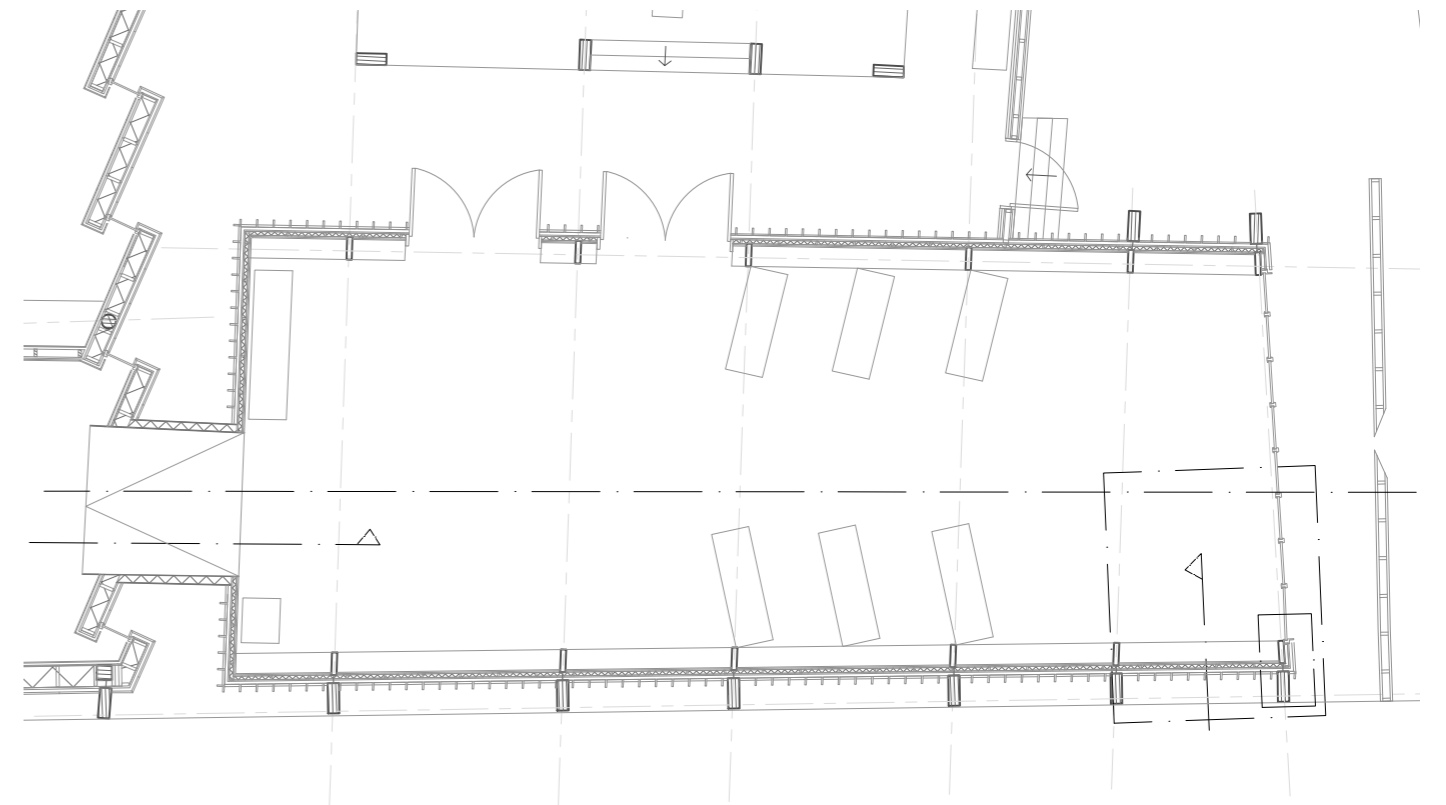
Light

The light room has one primary visual focus. The wall at the end of the space. The proportion is more linear and tall than the previous spaces, referring to a more sacred type of architecture. Visible interior construction highlights the rhythm of the space as well as framing the back wall. Time is central in this space, being central in the morning when a vertical bright stripe slowly moves over the back wall, in the afternoon time perception disappears as the wall becomes one shining object of focus. Ventilation here is more perceivable as well as the exterior temperature as this space is only thinly insulated in order to keep this connection to the exterior situation. Sounds from the exterior are also introduced here again as a soft reintroduction of the location. Lebanon Cedar ceiling boards give a refreshing wood smell.

Heavy doors open towards the garden, shifting the focus of the space to the next place to go.

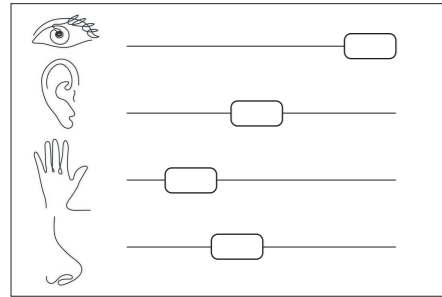


1:50 section Light, scaled to 1:100, own image



1:50 floorplan Light, scaled to 1:100, own image

Light materialisation



All material decisions here serve a single spatial intention: the behavior of light on surfaces over time, the sliders show where each material falls between opposing qualities, and the body diagram reflects the dominant senses: sight as primary, with smell through the cedar ceiling and a growing awareness of exterior temperature and sound.

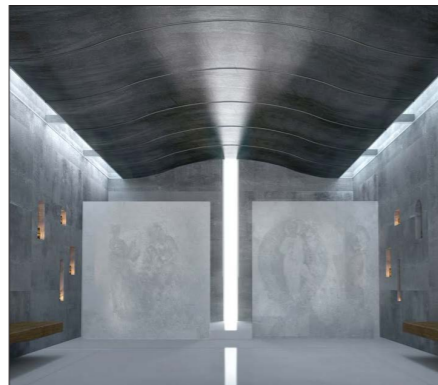
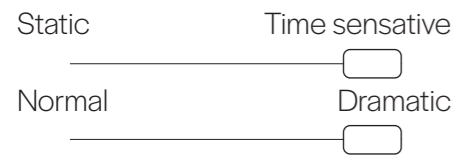
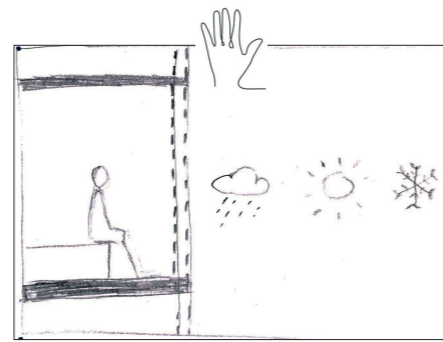
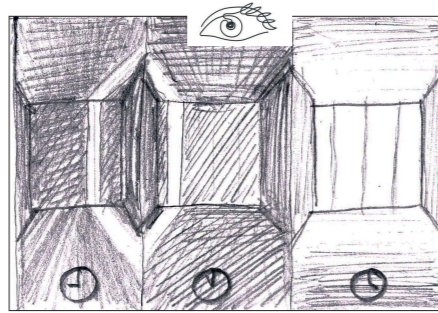
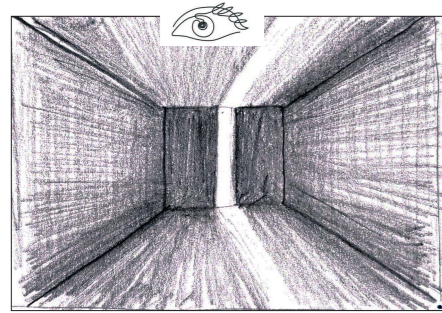


Image 34.

Slit

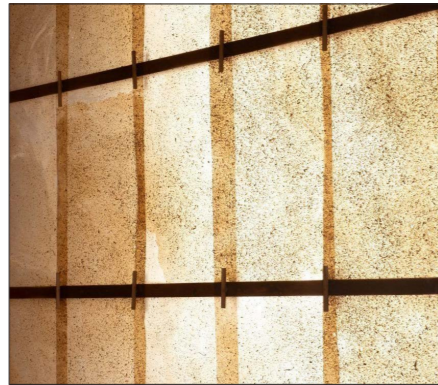
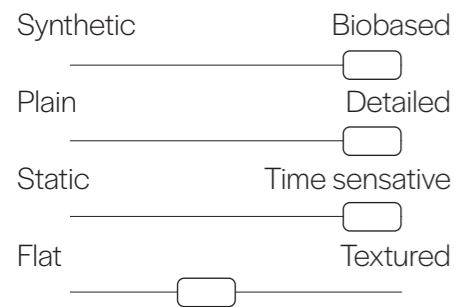


Image 35.

Biofilm, translucent wood composite tensioned (finely sifted wood plaster and planer shavings. cast into sheets)

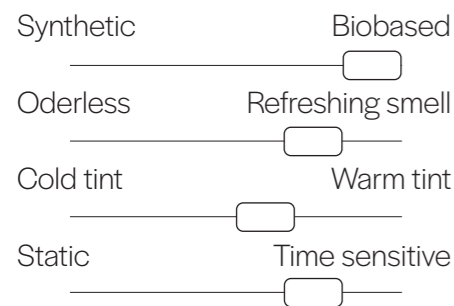


Image 36.

Lebanon cedar ceiling boards, Reused wood, resanded, brushed and oiled

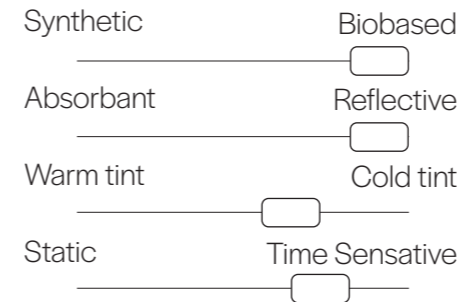


Image 37.

Lime plaster, hard finish coat

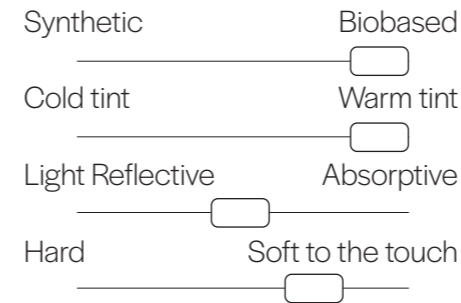


Image 38.

Solid oak hardwood floor, wide plank, oil matte finish

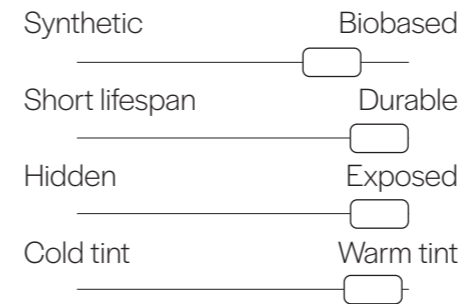


Image 39.

Glulam beam, Douglas fir, oiled finish

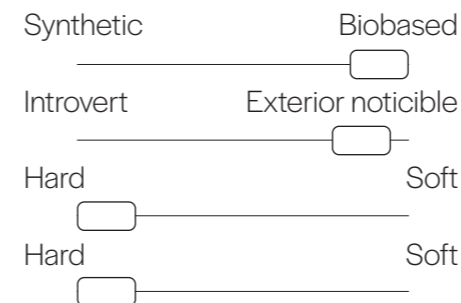


Image 40.

Wall assembly with Wood fiber insulation, RC 1,3 m2 K/W

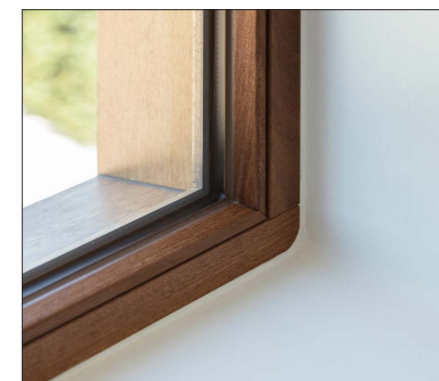
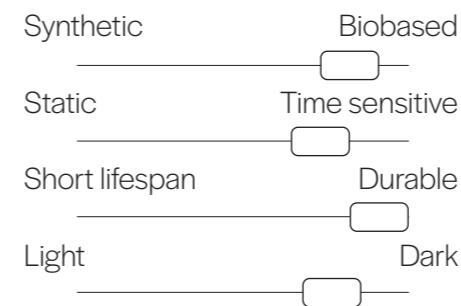
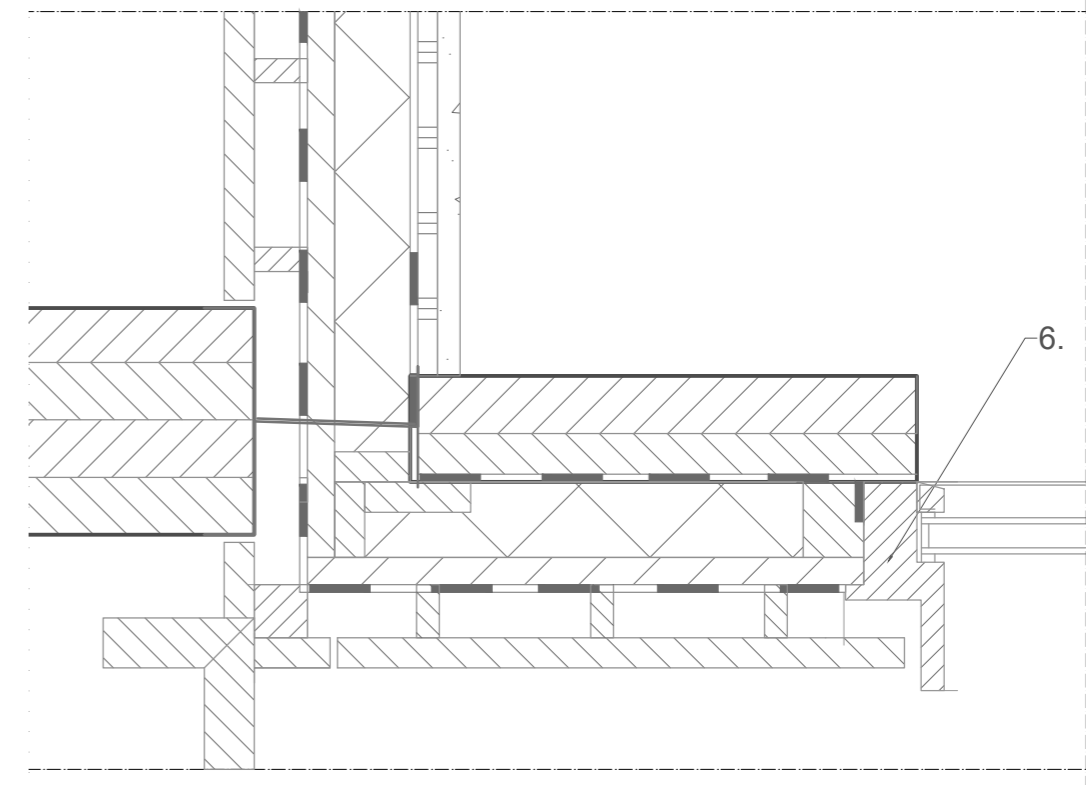
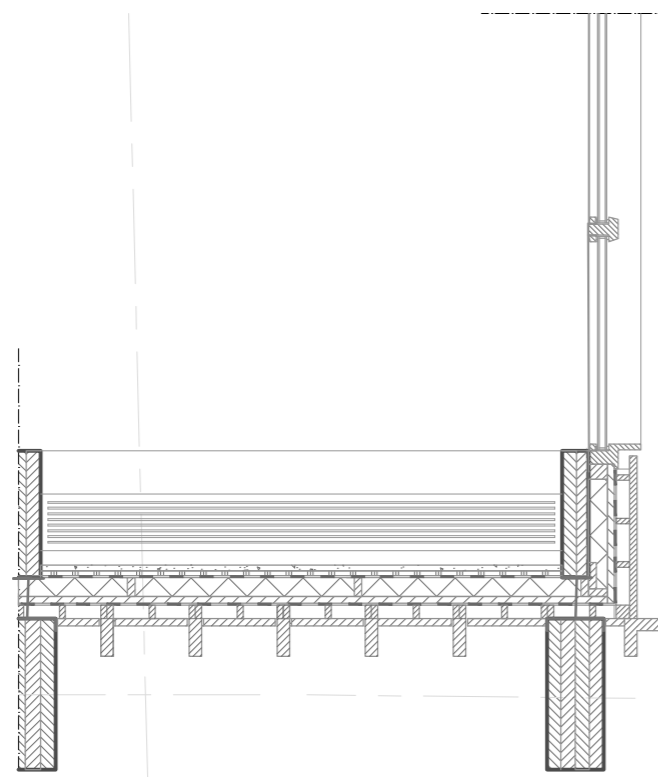
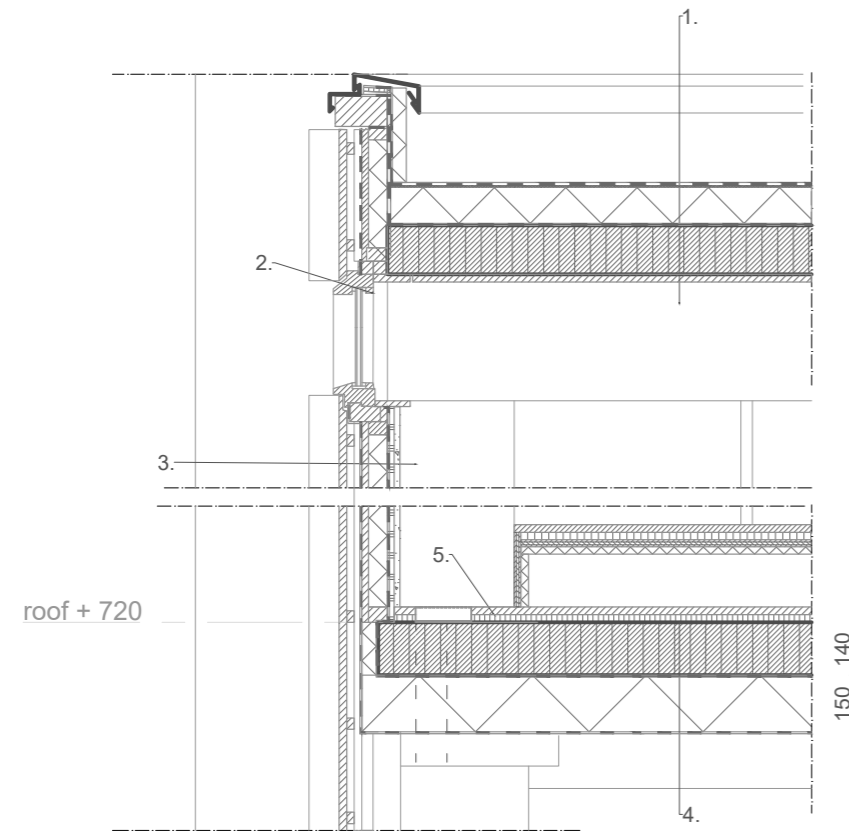


Image 41.

Oak window frame, dark oiled, HR++ glazing



1 Roof construction

- 1 mm EPDM roofing membrane, Black
- 5 mm Protection fleece
- 100 mm Tapered High density wood fiber insulation (1.5% slope) RC 2,7 m² K/W
- 1 mm Airtight smart vapor retarder
- 180 mm DLT floor slab
- 20 mm Lebanon cedar ceiling boards, brushed and oiled
- 300mm Glulam beam, Douglas fir, oiled finish

- 2** Oak window frame, dark oiled, HR++ glazing

3 Exterior wall construction

- 30 mm Exterior Douglas fir thermally modified vertical boards
- 40 mm Ventilated Air cavity with vertical timber battens
- 1 mm Vapor open membrane
- 18mm Wood fiber sheathing board
- 50 mm Wood fiber insulation, RC 1,3 m² K/W
- 1 mm Airtight smart vapor retarder
- 18 mm Gypsum board
- 15 mm Lime plaster, hard finish coat

4 Floor construction, raised floor zone

- 20 mm Solid oak hardwood floor, wide plank, oil matte finish
- 20 mm Wood fiber underfloor
- 18 mm Multiplex structural deck

- 200mm Timber platform frame, multiplex closed sides, lined with 20 mm dense wool felt

5 Base floor zone

- 20 mm Solid oak hardwood floor, wide plank, oil matte finish
- 20 mm Wood fiber underfloor
- 180 mm DLT floor slab RC 1,5 m² K/W
- 1 mm Airtight smart vapor retarder
- 100mm Wood fiber insulation/ support frame RC 2,7 m²K/W
- 1 mm Vapor open membrane

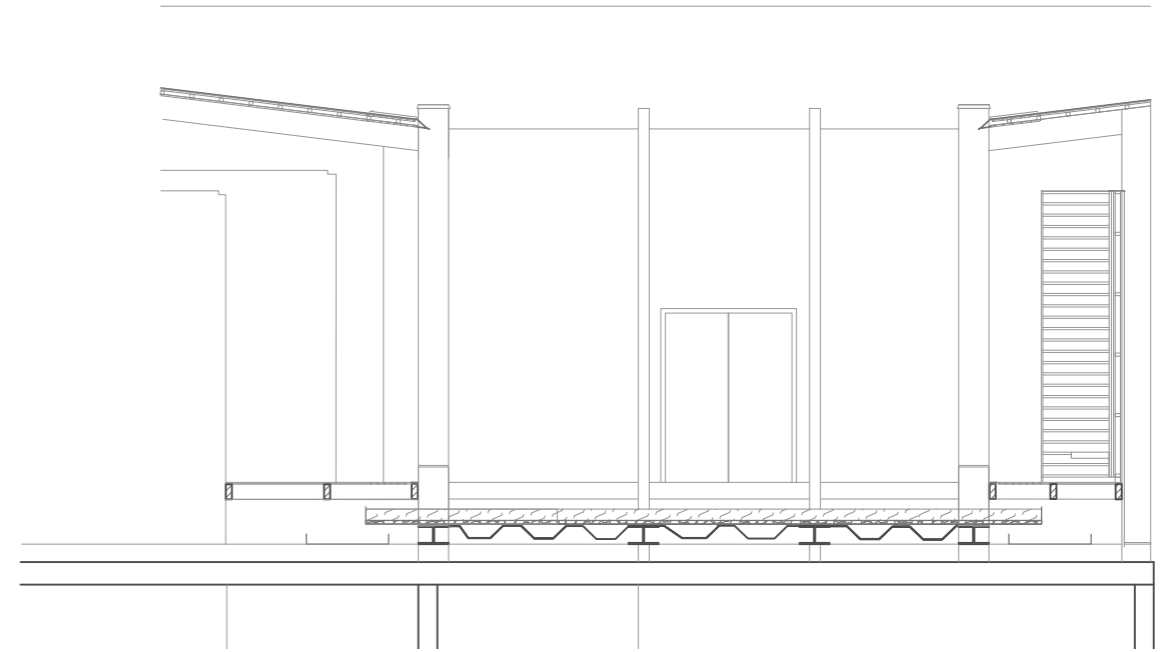
- 6** Biofilm, translucent wood composite tensioned over dark oiled oak window frame with HR++ glass

Garden

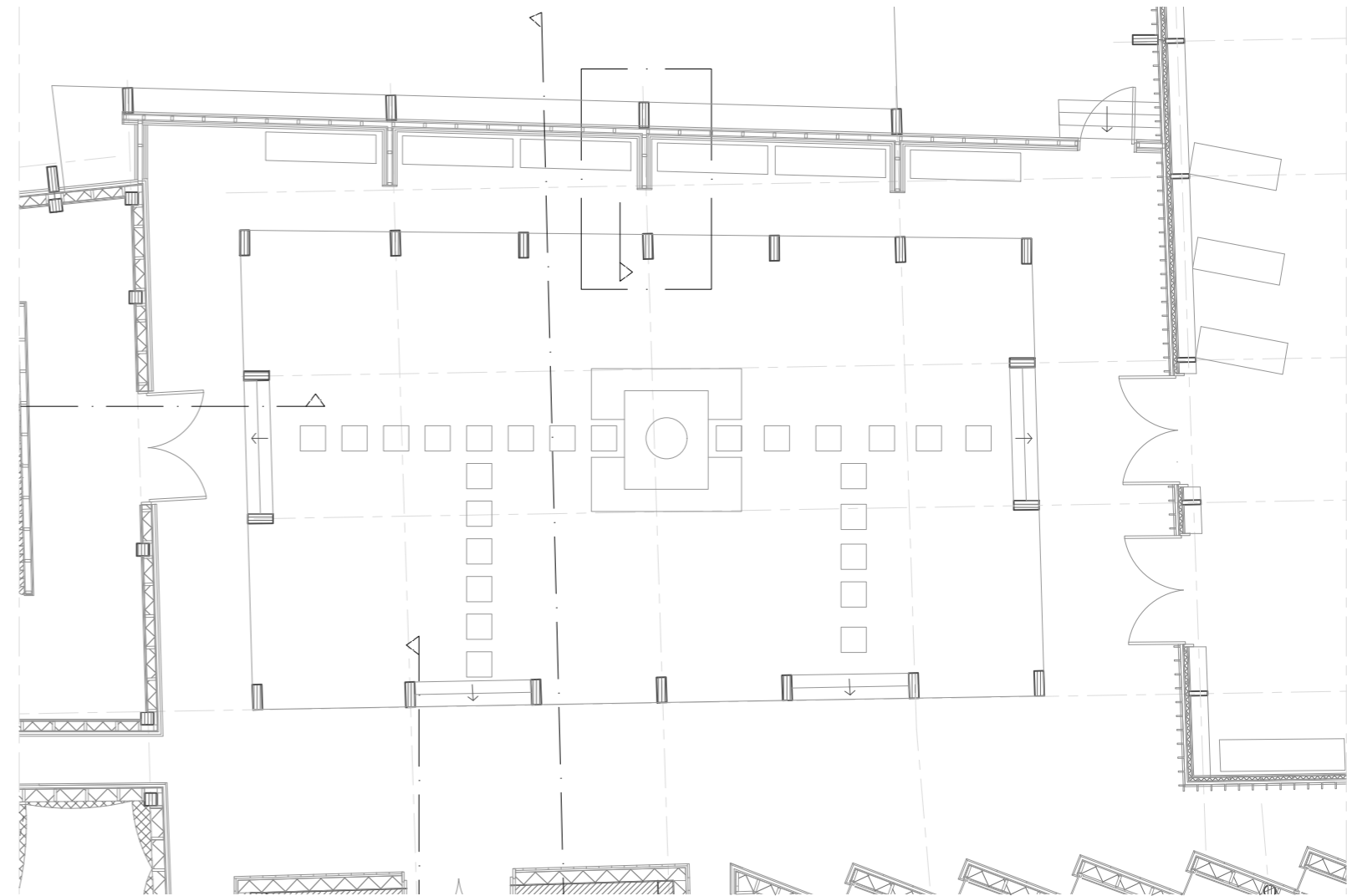


Garden

The last room in the sequence is the garden, here all the outdoor impressions come back rushing in, but are still contained within the space. A colonnade pointing to the sky surrounds a shallow reflecting pond, connecting the building to the sky. The pond reacts to the weather, changing drastically how this garden feels. In sunshine the sun reflects of the water, creating shimmering, in wind waves will appear and in rain intricate patterns as well as falling water from the roofs edges take the focus. The waterbody can be interacted with trough sitting on the edge of the surrounding walkway or walking the stepping stones that cross the water and meet a cluster of waving water plants in the middle of its path. After their stay in the garden one can pick up their shoes and take the elevator back down. Or choose to re-enter the decompression room to follow another route.

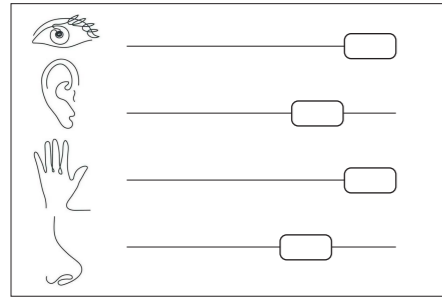


1:50 section Garden , scaled to 1:100, own image

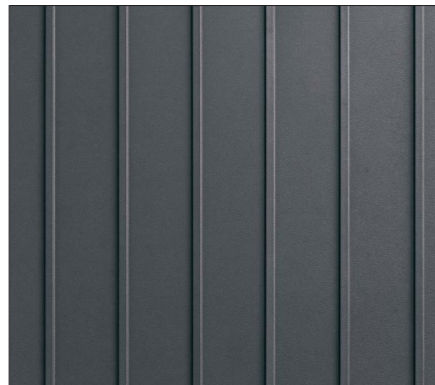
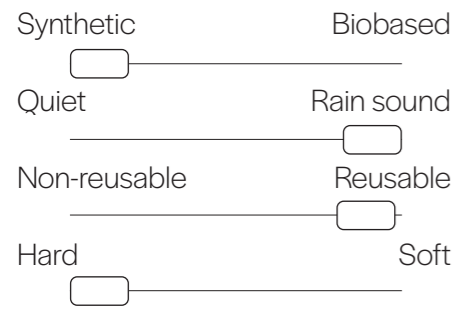
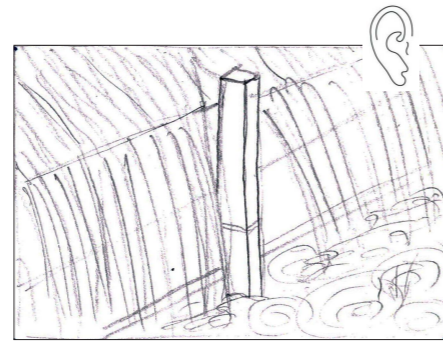
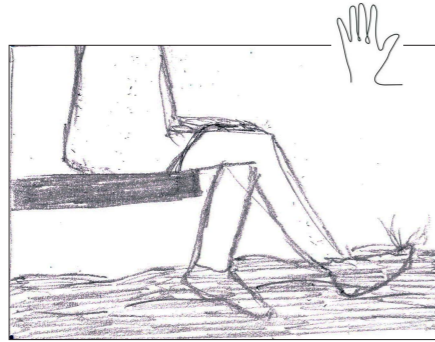
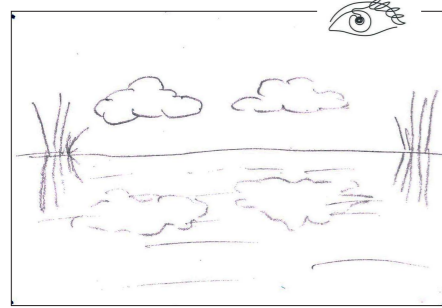


1:50 floorplan Garden , scaled to 1:100, own image

Garden materialisation

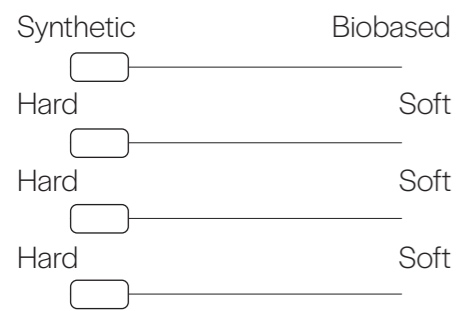


Materials were selected for their responsiveness to weather, season, and interaction — the sliders show where each material sits between opposing qualities, and the body diagram reflects the full re-engagement of the senses: sight, hearing, touch, and the physical presence of water and wind.



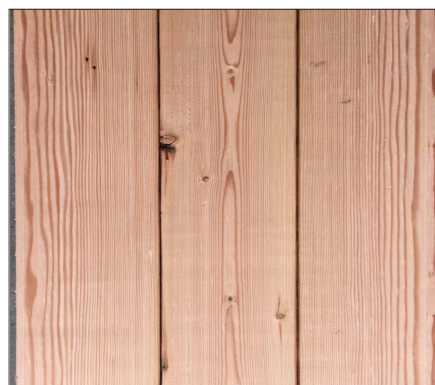
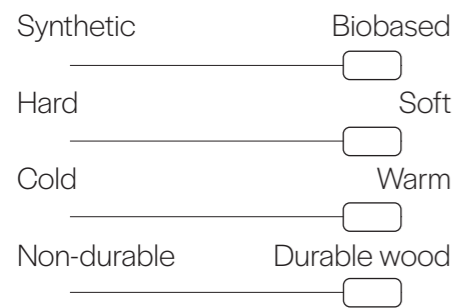
Aluminium standing seam roof

Image 42.



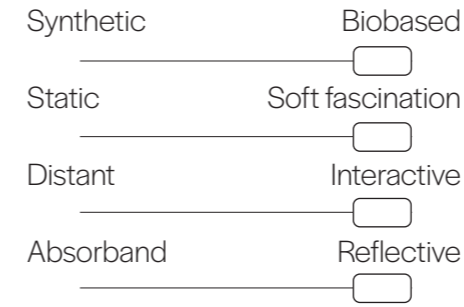
Recycled textile mat (rain noise softening)

Image 43.



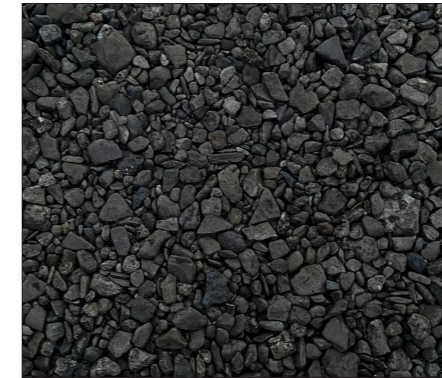
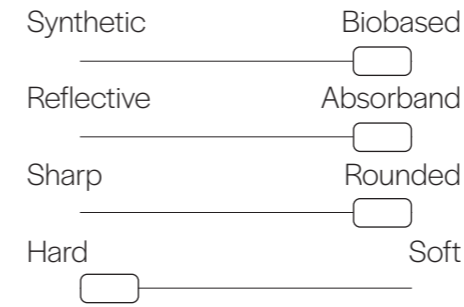
Planks 220 mm width, Thermally modified, Douglas Fir, stain oil treated, 7mm gap

Image 44.



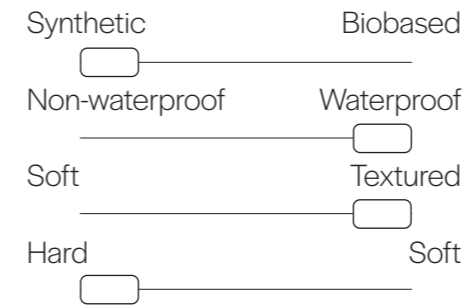
Rain water

Image 45.



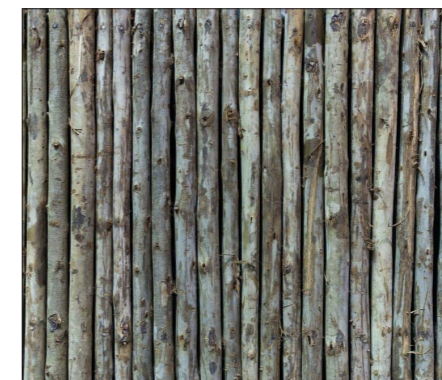
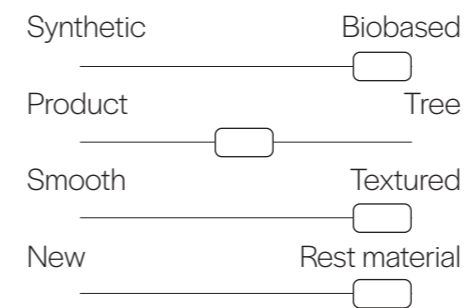
Dark basalt gravel, rounded stones 20-40 mm diameter

Image 46.



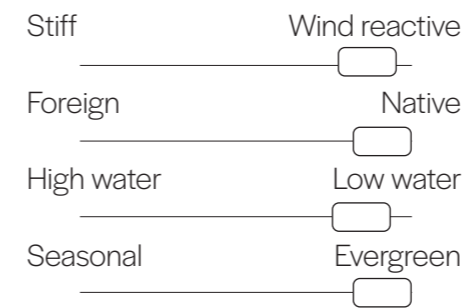
Concrete column foot, bush hammered, with integrated steel concrete to wood connector 10 mm clearance to wood top dimensions:150 x 400mm

Image 47.



Douglas fir debarked branch

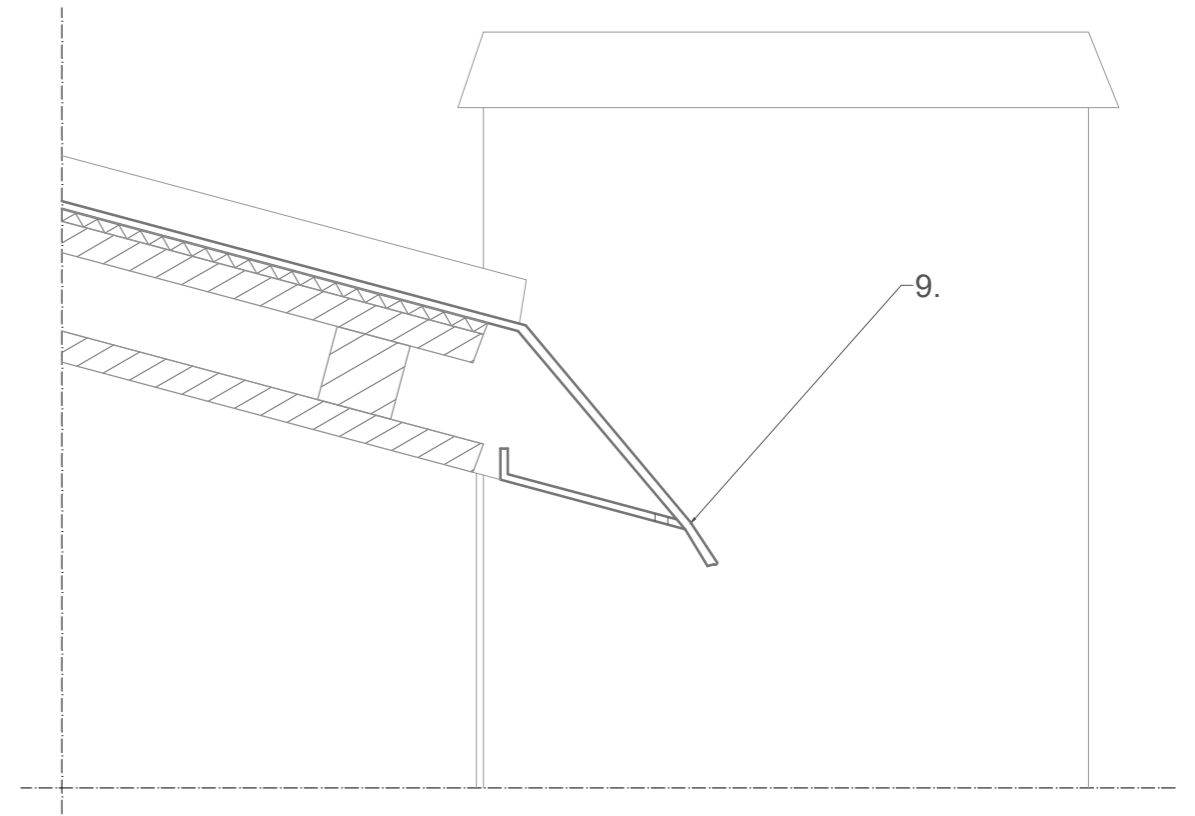
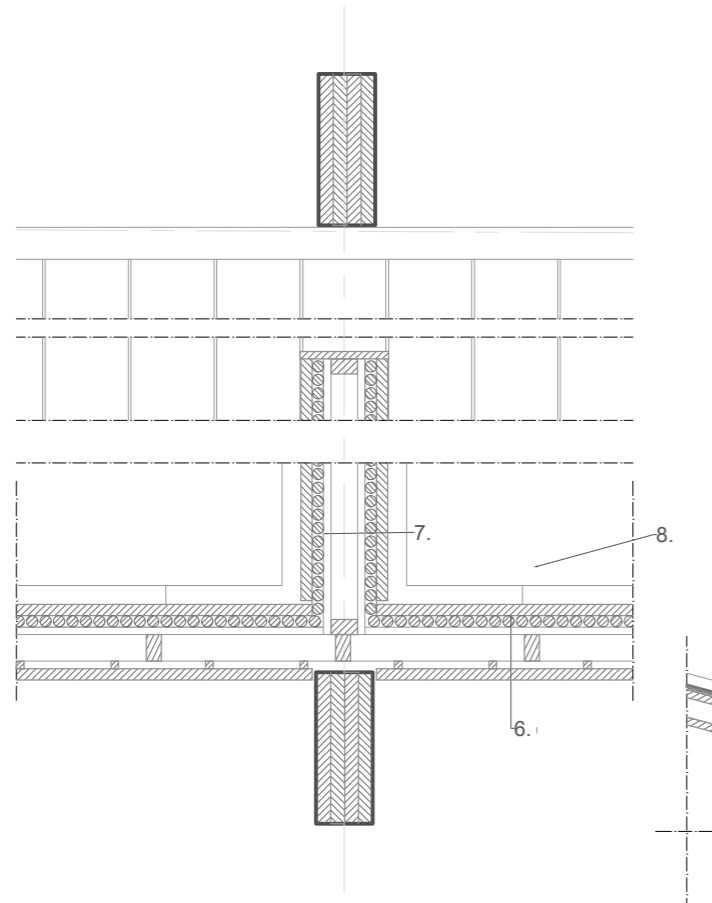
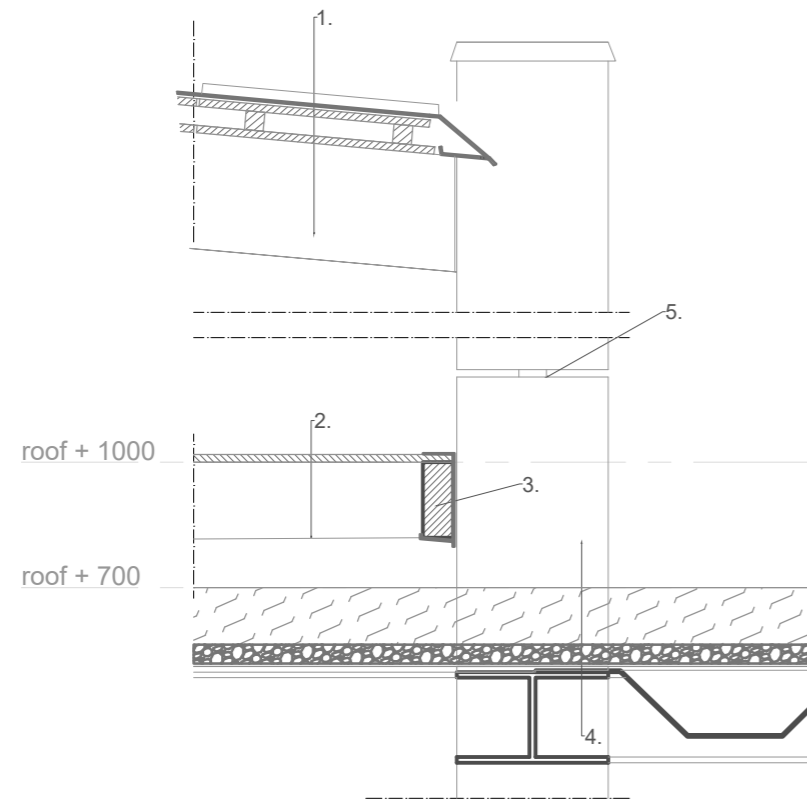
Image 48.



Schoenoplectus lacustris (Water plant)

Image 49.

Garden



1 Roof construction

- 1 mm Aluminium standing seam roof
- 5 mm Recycled textile mat (acoustic decoupling)
- 20 mm Multiplex sheet, external grade
- 50 mm Glulam beam, Thermally modified, Douglas fir, oil treated
- 325 mm Glulam beam, Thermally modified, Douglas fir, oil treated

2

- Planks 220 mm width, Thermally modified, Douglas Fir, stain oil treated (Color), 7mm gap
- 200 mm Sawn timber beam, 80 mm wide, Douglas fir, thermally modified

3

- Aluminium edge

4 Water basing construction

- 150 mm Rain water
- 50 mm Dark basalt, 20–40 mm diameter
- Geotextile protecting fleece
- EPDM pond liner
- Geotextile protecting fleece
- Exterior grade multiplex sheet
- Corrugated steel sheet
- 240 mm Steel I beam

5

- Concrete column foot, bush hammered, with integrated steel concrete to wood connector

6 Outdoor wall construction

- 30 mm Horizontal Douglas fir, debarked branch lines every 150 mm

- 30 mm Vertical Douglas fir debarked branch between horizontal lines
- 20 mm Horizontal battens
- 70 mm Timber ventilated frame
- 20 mm Vertical battens
- 30 mm Horizontal Douglas fir cladding, debarked branch

7 Outdoor separation wall construction

- 30 mm Horizontal Douglas fir, debarked branch
- 30 mm Vertical Douglas fir debarked branch
- 20 mm Horizontal battens
- 70 mm Timber frame
- 20 mm Horizontal battens
- 30 mm Vertical Douglas fir debarked branch
- 30 mm Horizontal Douglas fir, debarked branch

8

- Bench

9

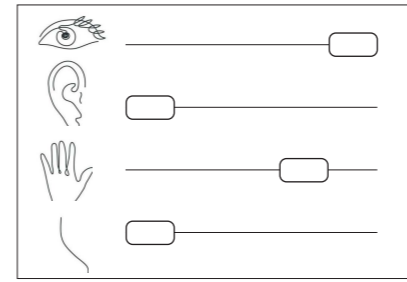
- 1 mm Aluminium standing seam roof
- 5 mm Recycled textile mat (acoustic decoupling)
- 3 mm Heavy acoustic damping membrane
- 20 mm Multiplex sheet
- 50 mm Glulam beam, Thermally modified, Douglas fir, oil treated
- 325 mm Glulam beam, Thermally modified, Douglas fir, oil treated
- Aluminium gutter
- Aluminium hat

Exterior

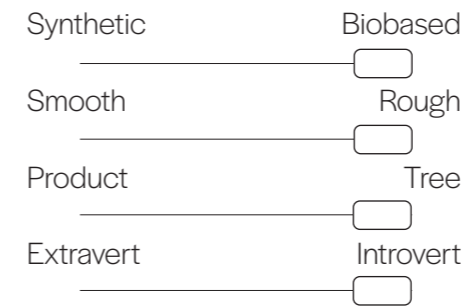


The exterior of the spaces mimics the rooms that are inside as well as the gradient they follow in their façade claddings. The claddings follow a gradient from natural to more processed, representing the process of the visitor, reintroducing themselves to all the senses in order to reenter normal life. The materials move from natural bark, to rough slices to milled linear elements all executed in the same wood type, keeping coloring similar over the buildings. The two routes follow the same progression, but in different orientation. The quiet introverted route being horizontal elements and the reengagement route having only vertical elements. The whole shape is connected by a roof that hangs over the whole structure, visually connecting the whole building as well as giving it a more formal posture. Other than that the roof is incredibly important for the climate of the buildings underneath, creating shadows, natural ventilation and a way to collect water for the pond in the garden.

Exterior materialisation

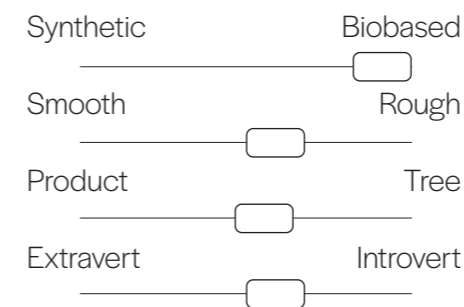


The façade materials follow the same gradient logic as the interior sequence, moving from raw and natural to more refined and processed, the sliders show where each material falls between opposing qualities, reflecting how the exterior signals the visitor's journey from withdrawal back toward the world.



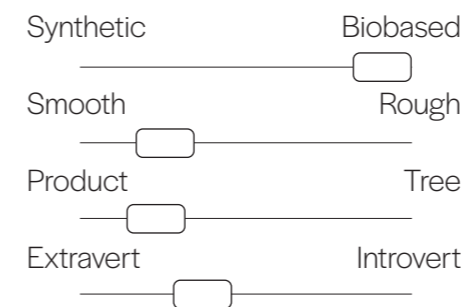
Bark slices 200x 200, Thermally modified poplar

Image 50.



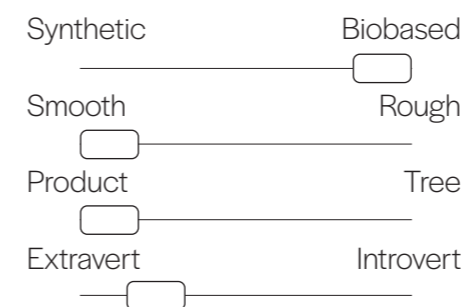
Horizontal wood slabs natural barked edge, Douglas fir, 500 wide

Image 51.



Exterior Douglas fir thermally modified horizontal boards

Image 52.

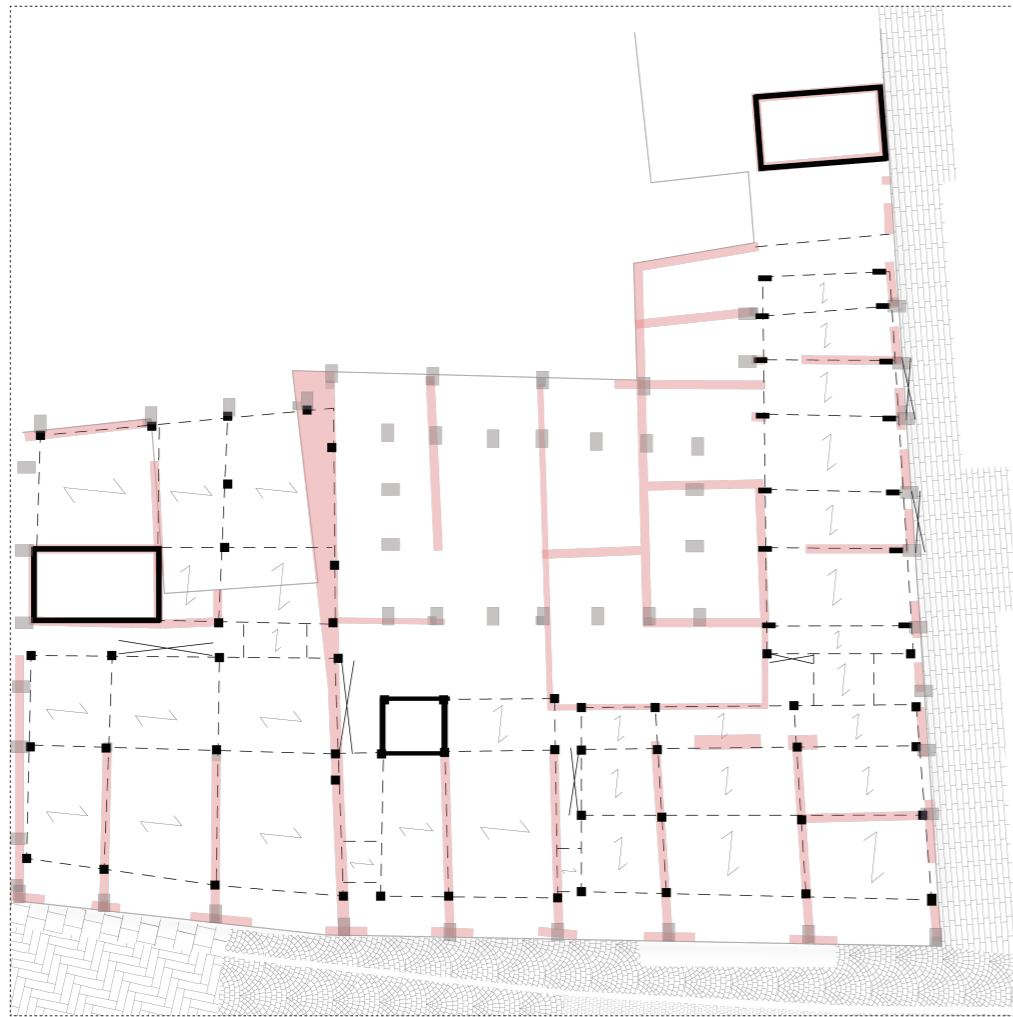


Exterior Douglas fir thermally modified vertical boards

Image 53.

Structure

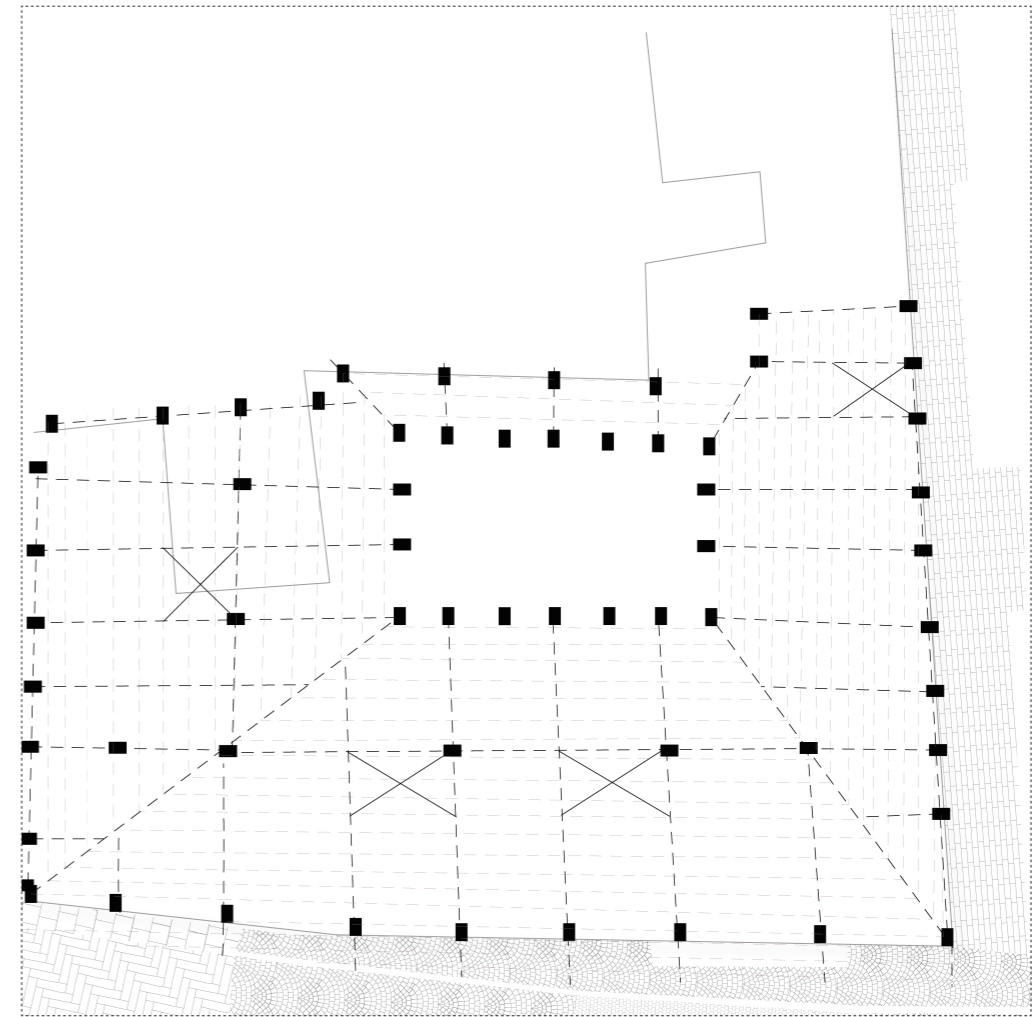
Ground floor



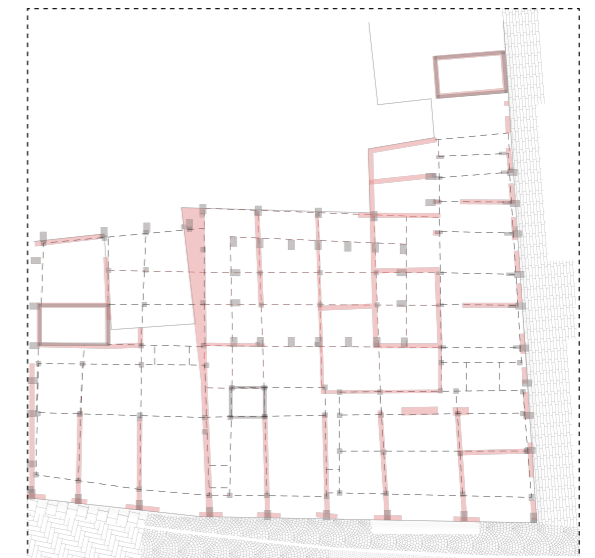
The building is made up out of a glulam post and beam construction method. The columns start above a construction line from the building below and stand on top of a concrete foot in order to keep the water away from the wooden construction. The main construction is made from German Douglas fir glulam. This is a local material that is commonly used for glulam structural applications as well as façade claddings. It visually warm, is durable and has a natural resistance to rot and insects, making

it suitable for outdoor and visible use cases. (Buckland Timber, 2025) The floors and roofs are Dowel layered timber, to introduce mass and reduce metal fasteners. The mail wall construction is a timber frame with wood fiber insulation. Safety routes are lined in DLT walls. The stability is ensured trough a mix of DLT walls and Steel tension crosses

Roof

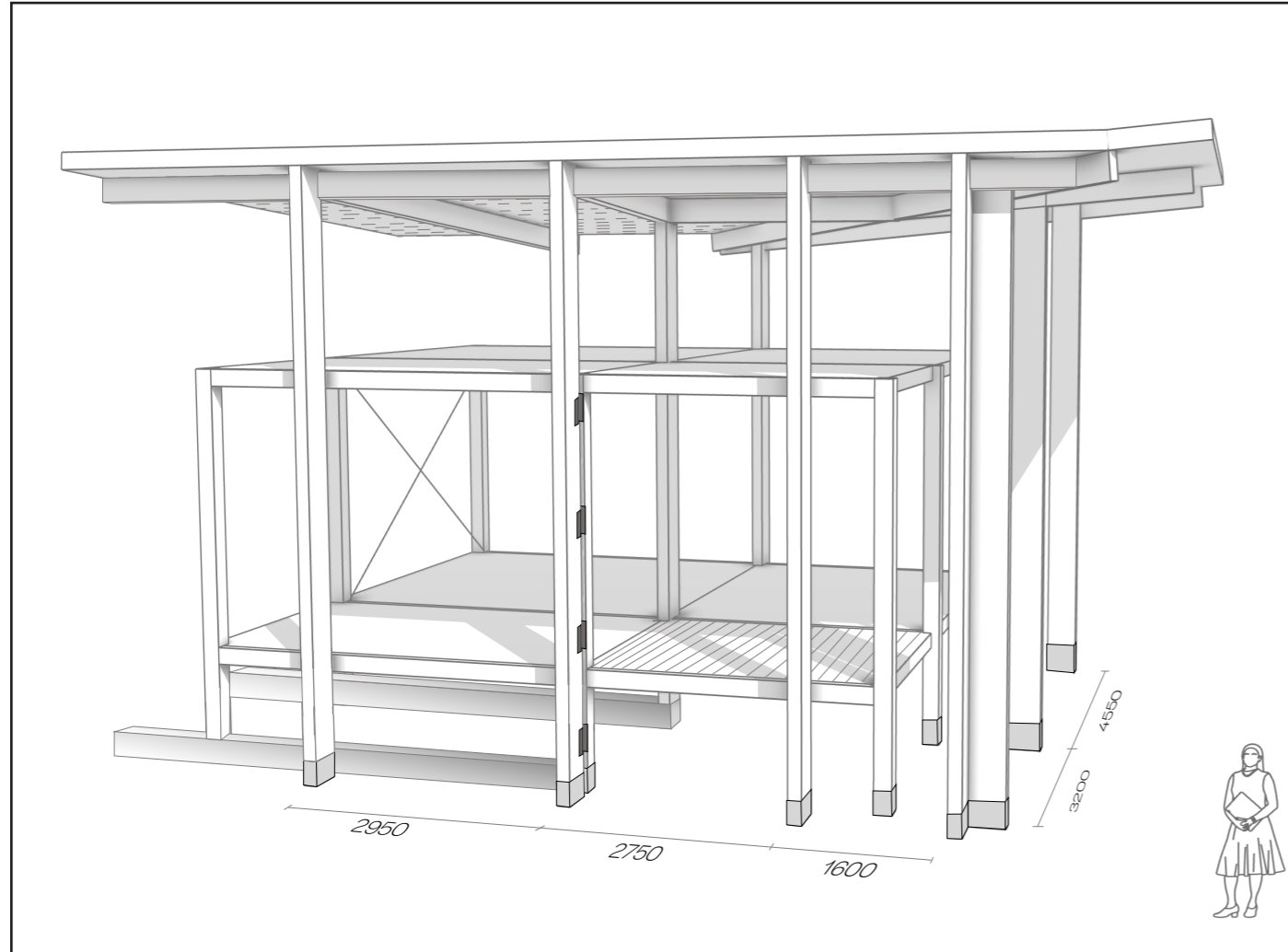


The roof is constructed out of Douglas fir glulam columns and beams. The maximum span is 7 meter and the minimum span is 2 meter. For its stability it relies on the connection to the rooms below it. In the horizontal plane some steel tension crosses are placed under the roof surface to ensure stability in this direction too.



Substructure directly on roof below floor

AXO structural connections



- The Beams are connected to the columns through a steel connector (image 54.)
- The DLT floors are put on top of a small support beam attached to the main beam in order to lay between these main beams.
- The roof is connected to the box structure through steel connector elements.

Building sequence:

1. Implementation new elevator shaft and opening roof to continue emergency staircase
2. Concrete footers and substructure on roof
3. Pond steel (sub)structure
4. DLT walls and roof for emergency exits
5. Gluelam columns
6. Floor and roof beams
7. DLT floors and roofs
8. Timber frame walls
9. Exterior cladding
10. Interior cladding



Image 54.

Fire Safety



The building totals 450 square meters and is classified as a *bijeenkomstfunctie* under the *Bouwbesluit 2012*. Maximum simultaneous occupancy across all spaces is around 50 people. The building is served by two emergency staircases, extensions of the existing hotel staircases below, with a maximum escape route length of 30 meters to a protected staircase or outside area.

Exterior walls, floors, and ceilings carry a fire rating of 60 minutes, achieved through two distinct systems. Floors and ceilings are constructed in DLT, which achieves its fire resistance through controlled charring, as the outer layer burns it forms a protective carbon layer that insulates the structural timber beneath and slows further combustion. Walls are timber frame construction, with fire resistance provided by gypsum board lining, which insulates the structural elements from heat and inhibits flame spread. Emergency staircases are additionally lined in DLT rather than CLT, as the high heat generated by fire has the greatest impact on the adhesive layers present in CLT; DLT, which contains no such adhesives, is the safer structural choice in these conditions (Wisner, 2022). Fire-resistant fabrics are used throughout.

Climate strategy

Climate Core Principles

- Passive first system
- Climate and sensory gradient from concealed and protected to exposed

Air and Ventilation

- Natural cross ventilation
- Air is preheated using the existing pipes under the building from the HVAC system of Krasnapolsky for the decompression and body rooms, light and resonance get un-preheated air.
- Natural intake from south/west façade (dominant wind direction)
- Roof shape and chimneys ensure natural draft for air exhaust

Acoustic climate

- Wall finishes and space proportions gradient create acoustic gradient

Decompression

- Medium absorption in walls through texture
- High absorption in ceiling
- Column vibration dampers keep tram vibrations out.

Quiet

- Sound absorbing fabric and acoustic decoupling in threshold to dampen sounds
- Soft materiality absorbs sound, glass roof adds lively quality back in

Re-engagement

- Changing acoustic quality throughout the space, based on material gradient

Resonance

- Hard sound reflective quality
- Vibrating, low frequency elements in space adding physically noticeable acoustic quality
- Floating floor with air cavity for footsteps to be reflected.
- Slightly angled wall breaks hard echo's
- Column vibration dampers keep tram vibrations out
- Some exterior sound still let in

Light

- Soft sound reflective quality in high and relatively hard room
- Thin walls let in city sounds.

Garden

- Preview of noise from city, but with buffer from surrounding walls
- Metal roof acts as a drum in heavy rain
- Water falling from roof into pond works as waterfall creating drone noise

Thermal strategy

- CLT provides thermal mass at the beginning of the route
- Insulation varies along the gradient, thick at the start and decreasing to connect visitors to exterior climate

Water and humidity

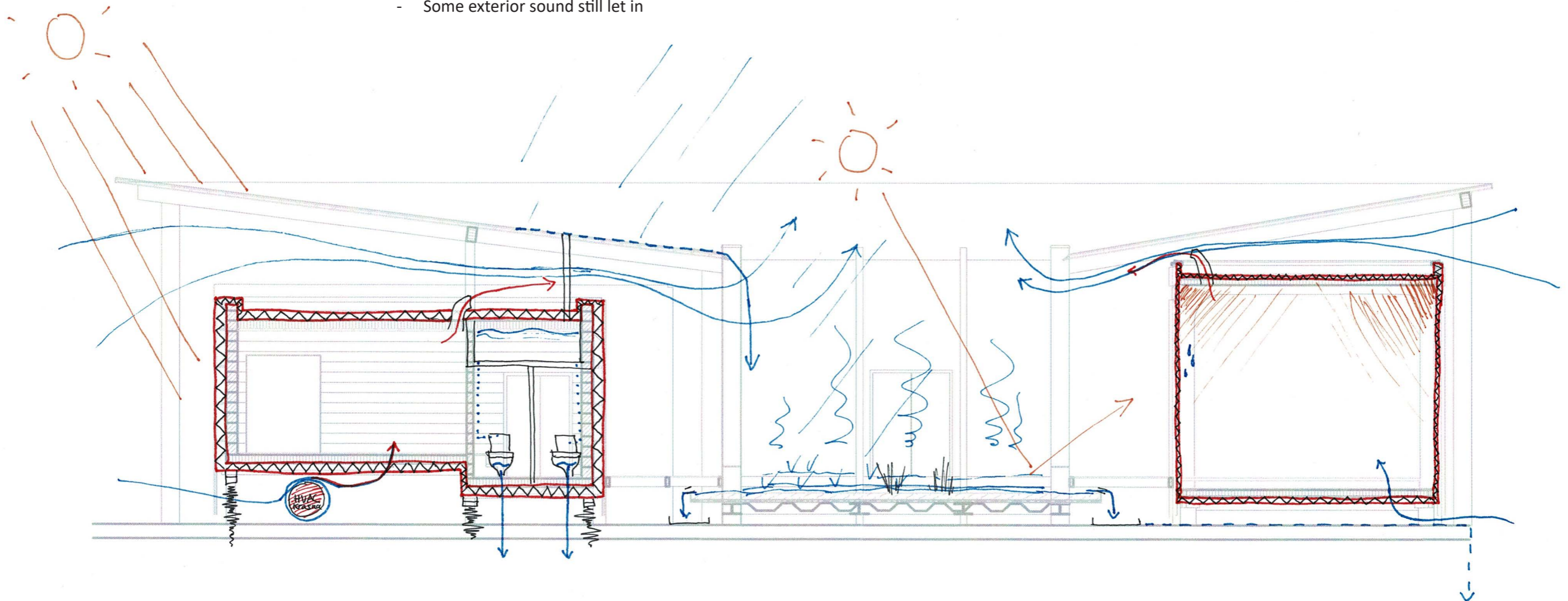
- Rain water collection for toilets (above toilets)
- Rain water directly fills the pond (overflow system connected to hotel drainage)
- Interior, oiled wood helps regulate humidity
- Pond evaporation in summer cools area directly around it

Sun and Daylight

- Indirect lighting keeps harsh lighting out
- External roof with overhang shades rooms below from sun
- Pond reflects sunlight, creating visual effects on surrounding walls

Scent

- Oiled, rough sawn, *Western Red Cedar* used in Quiet route (sweet scent)
- Oiled, rough sawn, *Lebanon Cedar* used in Re-engagement route (fresh scent)



Conclusions

Outcomes and personal reflection



Conclusion

This project makes a claim: that the city has a missing typology. Spaces of sensory recovery, designed not for program or spectacle but for the restoration of the body and mind, are absent from our urban fabric, and their absence has consequences. The urban retreat proposed here is one answer to that gap: an interior retreat for contemplation and calm, constructed as a timber top-up on the roof of Hotel Krasnapolsky on Dam Square in Amsterdam, where spatial sequencing and thresholds become the primary architectural tools.

By centering design for the senses in both methodology and building function, theory could be applied in a more extreme and experimental fashion. That theory offered a wide array of tools to actively support mental and physical calm: natural materiality, color psychology, mindfulness meditation, contemplative space-making, and aromatherapy. Each of these fields informed the project, and this work is the result of combining them.

The building can be read as a physical representation of the steps in a body awareness meditation exercise, the entire experience becoming one large threshold that filters sound, vision, and movement. As spaces move from dark to light, tension is slowly released. To achieve contemplation within the sequence, I give people cover and always something to rest their eyes on. Biobased materiality relaxes the body, while an intentional contrast with steel thresholds reinforces that natural quality mentally.

An urban retreat is an addition to the daily schedule in which we take physical distance from urban intensity to focus on our mental and physical state. Whether you visit for the first time or return regularly, you should always leave feeling more in tune with your own body and senses. That is the measure of the building's success, not its form, not its technical resolution, but whether the person walking out is different from the person who walked in.

A project like this requires funding. As a one-off, a collaboration with a local contemporary art museum combined with government support is one viable model. But the longer argument is institutional: as this typology grows, it could be taken up by large companies as employee facilities, or funded by cities through a mix of subsidies and crowdfunding. The urban retreat does not need to remain exceptional. It should become expected.

Implications and recommendation

This project is an exploration into a new typology and therefore has few direct predecessors. It argues, not only to architects, but to urban planners and municipalities, that spaces of sensory recovery should be understood as urban infrastructure, as necessary to public health as parks, libraries, or public transport. We have long accepted that the city must provide space for physical rest and cultural nourishment. This project makes the case that it must also provide space for sensory recovery, and that the absence of such spaces is not a minor gap but a systemic one.

An interesting continuation would be to investigate how this concept could work across different scales. The urban retreat need not always be a standalone building, it could be a room, a sequence, or a threshold embedded within something larger: a corridor in a hospital, a decompression space within an office, a quiet interval inside a transport hub. The typology is scalable, and that scalability is part of its potential. The larger question is at what scale the effect becomes architecturally meaningful, and that is worth investigating through further design research.

For architectural practice as a whole, this project demonstrates that sensory design should be a primary driver of technical design decisions, not a finish applied at the end. Here, the nervous system is the client.

Reflection

This has been an amazingly rich project, one in which I was able to dive into a side of architectural practice that I had little experience with but felt a high urgency to deepen my knowledge of. Beyond the new theory, I learned a lot about how to develop a concept that can be applied from the biggest to the smallest scale. I spent a large part of my time fully developing my concept, but once it was set, it allowed me to make technical decisions quickly and with confidence.

I also learned what research by design means in practice: just start trying, and follow every new implication you find. Don't give in to half solutions, make hard pivots in order to carry everything you've learned from the previous iteration into the next one.

This project would not have turned out the way it did without those pivots. I started with the idea of designing the biggest theater in the country and ended up designing an urban retreat. But without that starting point, I would never have arrived here, it made me analyze the location as a transportation hub that moves thousands of goods and people every day, and helped me see both its cultural significance and its needs. That is how I arrived at my final topic.

Even within that topic, it feels like I designed three whole buildings, as I kept learning as I went, driven by the need to have the building actually do something.

I also discovered how hard it is to evaluate design choices made on the basis of senses during the design process. I ended up developing a sensory matrix for every single space, which gave me a framework for making those decisions.

The site itself was another demanding factor, since I chose it precisely for its extreme character. This brought implications that only became clear as the project progressed, particularly around acoustic isolation, the structural connection to the existing building, and the relationship between urban noise and the resonance room. These tensions meant embracing certain unknowns, which complicated the project. I would have loved to do more in-depth calculations, but ran out of time, which points to another lesson learned.

Throughout the process I was advised to focus on a single sense, but I disagreed, and I stand by that. Sensory experience is not divisible. A space that is acoustically calm but visually chaotic does not produce calm. The senses are a system, and designing for one while ignoring the others produces a partial architecture. Taking that broad approach also taught me a great deal about materials and their influence on the senses, an area I wasn't deeply familiar with yet. It took considerable research to find suitable materials, and it genuinely changed how I think about design. At this level of detail, you can meaningfully shape experience, which is the part I find most compelling.

Looking back, the complexity I added made the project deeply interesting, but also made it difficult to resolve every problem and represent every implication in the report, each room is almost a project in itself, with its own goal. But more than the complexity, what this project gave me was a shift in how I understand what architecture is actually for. Before, I approached design with human experience as an important consideration. Now I understand it as the only valid starting point. The question is not what the building looks like, or even how it performs technically, it is what it does to the person inside it, at the level of the body and the nervous system. That is a different way of practicing, and it is the one I want to take forward.

Bibliography

To trace back the information



Bibliography

Alexander T. Duda, Adam R. Clarke, Robert J. Barry, (2024) Mindfulness meditation alters neural oscillations independently of arousal, International Journal of Psychophysiology, Volume 205, 1124-39, ISSN 0167-8760, <https://doi.org/10.1016/j.ijpsycho.2024.112439>.

Bijsterveld, K. & European Sound Studies Association. (2023). Stolen Silence: Listening to the history of quiet areas in urban and rural environments. In Conference Proceedings: Sound, Language and the Making of Urban Space. Retrieved January 15, 2026, from https://nors.ku.dk/english/research-files/sound-language-and-the-making-of-urban-space/02_bijsterveld_stolen_silence.pdf

- Borlea, S. I., Tiuc, A., Nemeş, O., Vermeşan, H., & Vasile, O. (2020). Innovative Use of Sheep Wool for Obtaining Materials with Improved Sound-Absorbing Properties. *Materials*, 13(3), 694. <https://doi.org/10.3390/ma13030694>
- Brown, K. W., Ryan, R. M., & Creswell, J. D. (2007). Mindfulness: Theoretical Foundations and Evidence for its Salutary Effects. *Psychological Inquiry*, 18(4), 211–237. <https://doi.org/10.1080/10478400701598298>
- Buckland Timber. (2025, March 18). Glulam species; Why use Douglas fir? Buckland Timber. <https://www.bucklandtimber.co.uk/blog/glulam-species-why-use-douglas-fir/>
- Calm. (2026). In Cambridge Dictionary. Retrieved January 12, 2026, from <https://dictionary.cambridge.org/dictionary/english/calm>
- Contemplation. (2026). In Cambridge Dictionary. Retrieved January 12, 2026, from <https://dictionary.cambridge.org/dictionary/english/contemplation>
- Corr, B. (2018). Immersive Experience: Evoking the elements of contemplative space in Japanese architecture. <https://openresearch-repository.anu.edu.au/items/6b8da90c-e632-4ee9-b327-88ca405ab01f>
- Creswell, J. D. (2016). Mindfulness interventions. *Annual Review of Psychology*, 68(1), 491–516. <https://doi.org/10.1146/annurev-psych-042716-051139>
- Felix Wiesner, Rory Hadden, Susan Deeny, Luke Bisby, (2022) Structural fire engineering considerations for cross-laminated timber walls, *Construction and Building Materials*, Volume 323, 126605, ISSN 0950-0618, <https://doi.org/10.1016/j.conbuildmat.2022.126605>. (<https://www.sciencedirect.com/science/article/pii/S0950061822002963>)
- Gousineyah, Sheikh Ahmad Zaki, Manoj Kumar Singh, Hom B. Rijal, (2025) The role of fragrance and physiological responses in enhancing thermal comfort: A review, *Building and Environment*, Volume 289, 114007, <https://doi.org/10.1016/j.buildenv.2025.114007>.
- Hariadi, K. S., Carlisle, S., & Carbon Leadership Forum. (2025). A literature review on the health impacts of wood and mass timber buildings. *Carbon Leadership Forum*. <https://hdl.handle.net/1773/53047>
- Merriam-Webster. (n.d.). Calm. In Merriam-Webster.com dictionary. Retrieved May 21, 2026, from <https://www.merriam-webster.com/dictionary/calm>
- Moir, A. (1978). *Contemplative Place In Cities* (By Wellesley College & Massachusetts Institute Of Technology; C. Sprague, Ed.).
- Moser, M., & Thoma, E. (2014). *Die sanfte Medizin der Baume: Gesund leben mit altem und neuem Wissen* [Book]. Goldmann.
- Overwhelm. (2026). In Cambridge Dictionary. Retrieved January 12, 2026, from <https://dictionary.cambridge.org/dictionary/english/overwhelm>
- Phua, J., Dewi, J., & Wibisono, A. (2021). Urban Contemplative Architecture Design through Light and Sound. *IOP Conference Series Earth and Environmental Science*, 764(1), 012006. <https://doi.org/10.1088/1755-1315/764/1/012006>
- Schreiner, L., Karacan, B., Blankenagel, S., Packhaeuser, K., Freiherr, J., & Loos, H. M. (2020). Out of the woods: psychophysiological investigations on wood odors to estimate their suitability as ambient scents. *Wood Science and Technology*, 54(5), 1385–1400. <https://doi.org/10.1007/s00226-020-01216-y>
- Sparacio, A., IJzerman, H., Ropovik, I., Giorgini, F., Spiessens, C., Uchino, B. N., Landvatter, J., Tacana, T., Diller, S. J., Derrick, J. L., Segundo, J., Pierce, J. D., Ross, R. M., Francis, Z., LaBoucane, A., Ma-Kellams, C., Ford, M. B., Schmidt, K., Wong, C. C., . . . Jiga-Boy, G. M. (2024). Self-administered mindfulness interventions reduce stress in a large, randomized controlled multi-site study. *Nature Human Behaviour*, 8(9), 1716–1725. <https://doi.org/10.1038/s41562-024-01907-7>
- Tsunetsugu, Y., Miyazaki, Y., & Sato, H. (2006b). Physiological effects in humans induced by the visual stimulation of room interiors with different wood quantities. *Journal of Wood Science*, 53(1), 11–16. <https://doi.org/10.1007/s10086-006-0812-5>
- Wajcman, J. (2016, March 12). Pressed for time:: The acceleration of life in digital capitalism. In *Time & Society*.

<https://doi.org/10.1177/0961463x17752601>

- Wilms, L., & Oberfeld, D. (2017). Color and emotion: effects of hue, saturation, and brightness. In *Psychological Research* (Vols. 82–896, pp. 896–914) [Journal-article]. <https://doi.org/10.1007/s00426-017-0880-8>
- Yamashita, M., Yamada, I., & Yasuda, M. (2012). Psychophysiological Effects Of Tones Of Coloured Lights In A Dark Environment. In School of Nursing, Univ. of Shiga Pref., Department of Electronic Systems Engineering School of Engineering, Univ. of Shiga Pref., & Collaborative Research Center, Univ. of Shiga Pref., NES2012 Proceedings.

Images:

- Image 1. Reference elevator door, Bickersteth, R., & Bickersteth, R. (2025, July 14). Jakob Sprenger updates codes of Swiss chalet design in The Alpina Gstaad restaurant. Dezeen. https://www.dezeen.com/2025/07/11/jakob-sprenger-the-alpina-gstaad-monti-restaurant/?li_source=LI&li_medium=rhs_block_2&utm_source=Pinterest&utm_medium=organic
- Image 2. Shou Sugi Ban, PioneerMillWorks. (n.d.). Pioneermillworks. https://pioneermillworks.com/shou-sugi-ban?utm_source=Pinterest&utm_medium=organic
- Image 3. Wood fiber insulation, Jacques, K. (2021, May 17). 2022 is new target for launch of TimberHP Wood-Fiber Insulation - GreenBuildingAdvisor. GreenBuildingAdvisor. https://www.greenbuildingadvisor.com/article/2022-is-new-target-for-launch-of-wood-fiber-insulation?utm_source=Pinterest&utm_medium=organic
- Image 4. Wood fiber panel, Gallery of Wood Wool Acoustic Panels - EnvirocousticTM - 13. (n.d.). ArchDaily. https://www.archdaily.com/catalog/us/products/14019/wood-fiber-acoustic-panels-envirocoustic-acoustical-surfaces/273137?ad_source=neufert&ad_medium=gallery&ad_name=next_image&utm_source=Pinterest&utm_medium=organic
- Image 5. Anti-flame textile (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131334505/>
- Image 6. Hot pressed sheep wool, Borlea, S. I., Tiuc, A., Nemeş, O., Vermeşan, H., & Vasile, O. (2020b). Innovative Use of Sheep Wool for Obtaining Materials with Improved Sound-Absorbing Properties. *Materials*, 13(3), 694. <https://doi.org/10.3390/ma13030694>
- Image 7. Clay lime screed (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131370277/>
- Image 8. Jutte ropes, stock.adobe (n.d.) https://stock.adobe.com/kz/images/detailed-close-up-of-thick-natural-fiber-rope-arranged-in-parallel-rows-creating-textured-background-ideal-for-illustrating-concepts-of-strength-nautical-themes-rustic-designs-natural-textures/1622368223?utmsource=Pinterest&utm_medium=organic&epik=djOyJnU9NkVNbdjZEdfNURzU3pucOxXmNhOVJOdmdTbXZvUI8mcDOWJm49NWoxUF9Dck9YSEdONEdXaXlxcZjUSZOPUFBQUFBR29VcERn
- Image 9. Glass rod (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131368661/>
- Image 10. Rammed earth, BC materials. (2026, April 6). <https://bcmaterials.org/en/products-leem/rammed-earth/rammed-earth-brown>
- Image 11. Wool strips, ATELIER HOLTROP (Design Studio) at the Accademia di architettura di Mendrisio | Espazium. (2019, October 14). Espazium. <https://www.espazium.ch/fr/actualites/atelier-holtrop>
- Image 12. Wool felt (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131378511/>
- Image 13. Drop paper, ShowTex. (2025, October 7). ShowTex. <https://www.showtex.com/nl/producten/vlamwerend-textiel/beurs-decoratietextiel/droppaper>
- Image 14. Wool batting, Organics, H. L. (n.d.). Organic and all natural bedding by Holy Lamb Organics. Holy Lamb Organics. <https://www.holylamborganics.com/>
- Image 15. Cedar wood Condon Scott - Award-Winning Architects - Wanaka & Queenstown. (n.d.). Condon Scott Architects. https://condonscott.nz/?utm_source=Pinterest&utm_medium=organic
- Image 16. Steel edge strip (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131378498/>
- Image 17. Threshold, *Ledvolution*. (n.d.). https://www.ledvolution.com/pantallas-led/?utm_source=pinterest&utm_medium=pantallas_led&utm_campaign=4602115944425315328
- Image 18. Steel shell (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131378331/>
- Image 19. DLT floor, DowelLam. (2025, December 4). KF Aerospace Centre for Excellence | DowelLam. DowelLam | All-Wood Mass Timber Solutions. <https://dowellam.com/project/kf-aerospace-centre-for-excellence/>

- Image 20. Lime plaster Finish options, Clay, lime, and tadelakt. (n.d.). Simple Construct Natural Plasters. <https://www.naturalplastersandiego.com/finishes>
- Image 22. Hardwood oak, MEISTER - hochwertige Böden, Paneele und Leisten. (n.d.). MEISTER - Hochwertige Böden, Paneele Und Leisten. https://www.meister.com/?utm_source=Pinterest&utm_medium=organic
- Image 23. Spring element, Meermann, P. (2024, July 2). Protection of Concert Halls from Disturbing Vibrations. GERB. <https://www.gerb.com/protection-of-concert-halls-from-disturbing-vibrations/>
- Image 24. Steel tension cables (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131378402/>
- Image 25. Anti vibration, anti-vibration-solutions. (n.d.). Rail Airspring - Anti-vibration suspension for trains - Trelleborg Antivibration Solutions. Anti-vibration-solutions. <https://www.trelleborg.com/en/anti-vibration-solutions/products-and-solutions/suspension-products/airspring>
- Image 26. Staggered wall (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131377986/>
- Image 27. Stone floor (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131377992/>
- Image 28. End grain floor, Kubbgolv i stilren ek | Almedalsgolv. (n.d.). https://www.almedalsgolv.se/vara-tragolv/kubbgolv/base/ek-2?utm_source=Pinterest&utm_medium=organic
- Image 29. Cork floor, Easey, L. (2025, December 19). Home Tour | Helsham House by Phoebe Nicol. Est Living | Exceptional Living. <https://estliving.com/helsham-house-phoebe-nicol/?epik=djOyJnU9S2lfdFJYWjBPdOt6RktTMUVoaWhPUjF1Y3VkcG1PdmomcD0wJm49dEZxa3ExTE1meDjpbm5halVvYzZkUSZOPUFBQUFBR29Vb1I0>
- Image 30. Douglas wall, The Local Project (n.d.) https://thelocalproject.com.au/onthelocalmarket/listings/43-union-street-northcote-vic-3070/?utm_source=Pinterest&utm_medium=organic&epik=djOyJnU9NkpYeUIJUONUMmloYzQ0cURDTzBpRjd1YnRoWHk5ZzZmMmD0wJm49NVZ4Z2Z-LbGtTRWp5SkZYTzFqdE5YUSZOPUFBQUFBR29Vb01B
- Image 31. Wool floor (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131378015/>
- Image 32. Textile wall finish, Callahan, A. (2026, January 15). Melbourne Design Week 2025 hit List. Est Living | Exceptional Living. https://estliving.com/melbourne-design-week-2025-hit-list/?utm_source=Pinterest&utm_medium=organic&epik=djOyJnU9NkpYeUIJUONUMmloYzQ0cURDTzBpRjd1YnRoWHk5ZzZmMmD0wJm49NVZ4Z2Z-LbGtTRWp5SkZYTzFqdE5YUSZOPUFBQUFBR29Vb1U4
- Image 33. Felted wool, Ruth Jeyaveeran. (n.d.). RUTH JEYAVEERAN. <https://www.ruthjeyaveeran.com/>
- Image 34. Slit (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131377916/>
- Image 35. Biofilm, Englefield, J., & Englefield, J. (2024, December 19). Natural Material Studio turns wood offcuts into biomaterials to “utilise the whole tree.” Dezeen. https://www.dezeen.com/2024/06/23/natural-material-studio-dinesen-wood-biomaterials/?utm_medium=organic&utm_campaign=Daily+Dezeen&utm_content=Daily+Dezeen+CID_c39af26e6e7974e49689061bece270e0&utm_source=Pinterest&utm_term=Natural+Material+Studio+turns+wood+offcuts+into+biomaterials+to
- Image 36. Cedar ceiling, Lily, & Lily. (2026, March 8). 22 Rustic Ceiling Ideas to Elevate Your Home’s Architectural Charm. Lost at E Minor. https://www.lostateminor.com/rustic-ceiling-ideas/?utm_source=Pinterest&utm_medium=organic
- Image 37. Lime plaster, Finish options, Clay, lime, and tadelakt. (n.d.). Simple Construct Natural Plasters. <https://www.naturalplastersandiego.com/finishes>
- Image 38. Oak floor, MEISTER - hochwertige Böden, Paneele und Leisten. (n.d.). MEISTER - Hochwertige Böden, Paneele Und Leisten. https://www.meister.com/?utm_source=Pinterest&utm_medium=organic
- Image 39. Glulam, Mulkeen, R. M., & Mulkeen, R. M. (2022, December 8). Boise Cascade Douglas Fir GluLam Beams Available from Kuiken Brothers Locations in NJ & NY. Kuiken Brothers. <https://www.kuikenbrothers.com/boise-cascade-douglas-fir-gulam-beams-available-kuiken-brothers-locations-nj-ny/>
- Image 40. Wood fiber insulation 1,3, Jacques, K. (2021, May 17). 2022 is new target for launch of TimberHP Wood-Fiber Insulation - GreenBuildingAdvisor. GreenBuildingAdvisor. https://www.greenbuildingadvisor.com/article/2022-is-new-target-for-launch-of-wood-fiber-insulation?utm_source=Pinterest&utm_medium=organic
- Image 41. Oak frame, Ward de Beule architect. (2022, August 9). Ward De Beule Architect. <https://www.ward-debeule-architect.be/projecten/>
- Image 42. Aluminium roofing (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131377728/>
- Image 43. Textile mat, Amazon.com. (n.d.). <https://www.amazon.com/HJXGQJM-Deadening-Canopies-Reduction-23-6x78-7in/dp/B0G2LY7RZL?th=1>
- Image 44. Planks, Encore Reclamation. (2023, June 18). Re-sawn Douglas fir Floorboards 215mm | Encore Reclamation. Encore Reclamation | Suppliers of Reclaimed Wooden Flooring to the Trade and Public. <https://encorereclamation.co.uk/product/re-sawn-douglas-fir-floorboards-215mm/>
- Image 45. Rain water (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131377780/>
- Image 46. Basalt gravel (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131377789/>
- Image 47. Concrete foot, Norm Architects. (2025, September 16). K House | Norm Architects. <https://normcph.com/project/k-house/>
- Image 48. Debarked branch (n.d.). Stock.adobe. https://stock.adobe.com/nl/images/wooden-sticks/180876681?utm_source=Pinterest&utm_medium=organic&epik=djOyJnU9WkNvVzVkdDE0U084dnVlcUw0Zk03Z05SdUQxQ1V1eWlmcD0wJm49UDJtSnZQR1FDT2lwYVF5TThOZS0wQSZOPUFBQUFBR29Vb1I0
- Image 49. Schoenoplectus lacustris, Bakker. (n.d.). Mattenbies. Bakker.com. <https://nl-nl.bakker.com/products/mattenbies?variant=56200500937082&>
- Image 50. Bark, MaterialDistrict. (2019, December 11). MaterialDistrict. https://materialdistrict.com/material/bark/?utm_source=Materia&utm_campaign=540e90d952-10+Fantastic+Facades&utm_medium=email&utm_term=0_8794d00bd4-540e90d952-302900289
- Image 51. Horizontal wood slabs (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131391146/>
- Image 52. Horizontal planks (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131392868/>
- Image 53. Vertical cladding (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131391152/>
- Image 54. Steel Timber connection. (n.d.). Pinterest. <https://nl.pinterest.com/pin/500251471131367487/>

Appendix

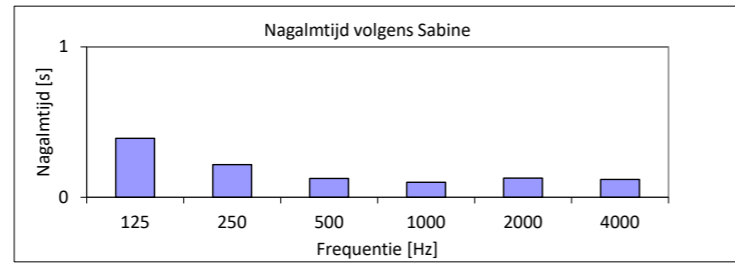
Acoustics

A fast calculation into each rooms acoustic quality



Berekening nagalmtijd

Naam: Grytsje Rozema
 Studentnummer: 5888263
 Project: Urban Retreat
 Ruimte: Decompression
 Variant: 1
 Datum: 9 mei 2026
 Breedte: 6,3 m
 Diepte: 5,0 m
 Hoogte: 2,7 m
 Extra ruimte: 0,0 m³
 Ruimtevolume: 86,0 m³

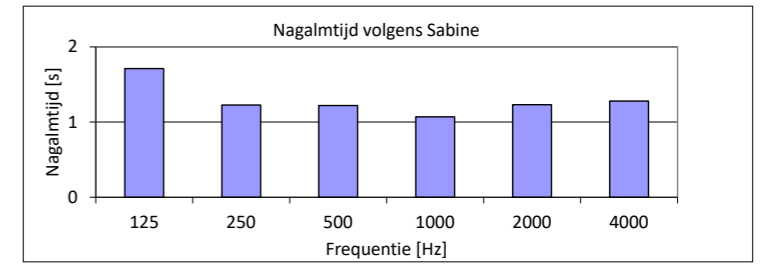


Omschrijving	Type	Oppervlakte [m²] of [aantal]	Absorptiecoëfficiënt per m² of per stuk en totale absorptie per frequentie											
			125 Hz		250 Hz		500 Hz		1.000 Hz		2.000 Hz		4.000 Hz	
			[-/m² a]	[m² Sa]	[-/m² a]	[m² Sa]	[-/m² a]	[m² Sa]	[-/m² a]	[m² Sa]	[-/m² a]	[m² Sa]	[-/m² a]	[m² Sa]
Plafond	Wood fiber acoustic panels	31,5	0,43	13,55	0,80	25,20	1,00	31,50	0,79	24,89	0,80	25,20	0,98	30,9
	Ceiling textile	31,5	0,04	1,26	0,09	2,84	0,37	11,66	0,68	21,42	0,89	28,04	0,72	22,7
Floor	Clay-Lime Screed	31,5	0,03	0,95	0,03	0,95	0,07	2,21	1,13	35,60	0,28	8,82	0,55	17,3
Walls	Charred Wood	73,0	0,19	13,87	0,36	26,29	0,73	53,30	0,50	36,51	0,25	18,26	0,31	22,6
Between joints	Dense Sheep wool	6,8	0,76	5,15	1,00	6,78	0,90	6,10	0,73	4,95	0,94	6,37	0,95	6,4
Windows	Glass	0,0	0,10	0,00	0,04	0,00	0,03	0,00	0,02	0,00	0,02	0,00	0,02	0,0
	Jutte ropes	25,0	0,04	1,00	0,10	2,50	0,31	7,75	0,70	17,50	0,93	23,25	0,74	18,5
People	Visitors	5,0	0,15	0,75	0,30	1,50	0,45	2,25	0,45	2,25	0,45	2,25	0,45	2,3
totale oppervlakte [m²]		204,3												
geluidabsorptie [m² Sabine]			36,53		66,05		114,77		143,11		112,18		120,7	
gemiddelde absorptiecoëfficiënt a			0,1788		0,3233		0,5618		0,7005		0,5491		0,5908	
Nagalmtijd volgens Sabine			0,4 s	0,2 s	0,1 s	0,1 s	0,1 s	0,1 s	0,1 s	0,1 s	0,1 s	0,1 s	0,1 s	
afwijking ten opzichte van 500 Hz				214%		74%		0%		-20%		2%	0,0	
uniformiteitsfactor				0,4		0,8		1,4		1,7		1,4	1,5	
Gemiddelde nagalmtijd volgens Sabine (125 to 4000 Hz)			0,2 s											

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Berekening nagalmtijd

Naam: Grytsje Rozema
 Studentnummer: 5888263
 Project: Urban Retreat
 Ruimte: Decompression
 Variant: 1
 Datum: 9 mei 2026
 Breedte: 39,0 m
 Diepte: 21,0 m
 Hoogte: 7,5 m
 Extra ruimte: 1418,0 m³
 Ruimtevolume: 7560,5 m³



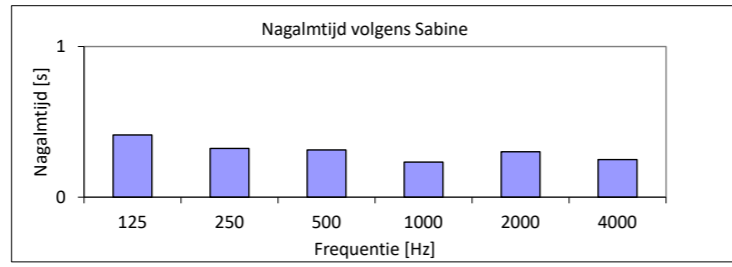
Omschrijving	Type	Oppervlakte [m²] of [aantal]	Absorptiecoëfficiënt per m² of per stuk en totale absorptie per frequentie											
			125 Hz		250 Hz		500 Hz		1.000 Hz		2.000 Hz		4.000 Hz	
			[-/m² a]	[m² Sa]	[-/m² a]	[m² Sa]	[-/m² a]	[m² Sa]	[-/m² a]	[m² Sa]	[-/m² a]	[m² Sa]	[-/m² a]	[m² Sa]
Plafond	Houten latten met minerale wol d=1	1080,0	0,60	648,00	0,85	918,00	0,80	864,00	0,82	885,60	0,70	756,00	0,62	669,6
Vloer	Parket	1280,0	0,04	51,20	0,04	51,20	0,06	76,80	0,12	153,60	0,10	128,00	0,15	192,0
Kolommen	Hout clt	20,0	0,30	6,00	0,85	17,00	0,95	19,00	0,85	17,00	0,90	18,00	1,00	20,0
Wanden	Akoestische platen Ecophon Akusto	200,0	0,15	30,00	0,20	40,00	0,35	70,00	0,60	120,00	0,60	120,00	0,50	100,0
Glas	Glas	0,0	0,10	0,00	0,04	0,00	0,03	0,00	0,02	0,00	0,02	0,00	0,02	0,0
Personen	Bezoekers	5,0	0,15	0,75	0,30	1,50	0,45	2,25	0,45	2,25	0,45	2,25	0,45	2,3
totale oppervlakte [m²]		2585,0												
geluidabsorptie [m² Sabine]			735,95		1027,70		1032,05		1178,45		1024,25		983,9	
gemiddelde absorptiecoëfficiënt a			0,2847		0,3976		0,3992		0,4559		0,3962		0,3806	
Nagalmtijd volgens Sabine			1,7 s	1,2 s	1,2 s	1,1 s	1,2 s	1,1 s	1,2 s	1,2 s	1,3 s	1,3 s	1,0	
afwijking ten opzichte van 500 Hz				40%		0%		0%	-12%		1%		0,0	
uniformiteitsfactor				0,7		1,0		1,0		1,2		1,0	1,0	
Gemiddelde nagalmtijd volgens Sabine (125 to 4000 Hz)			1,3 s											

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Berekening nagalmtijd

Naam: Grytse Rozema
 Studentnummer: 5888263
 Project: Urban Retreat
 Ruimte: Body Quiet
 Variant: 1
 Datum: 9 mei 2026

Breedte: 12,2 m
 Diepte: 9,0 m
 Hoogte: 3,7 m
 Extra ruimte: 0,0 m³
 Ruimtevolume: 404,6 m³



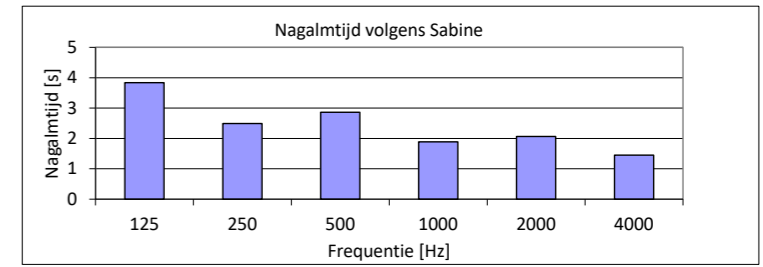
Omschrijving	Type	Oppervlakte [m ²] of [aantal]	Absorptiecoëfficiënt per m ² of per stuk en totale absorbtie per frequentie											
			125 Hz		250 Hz		500 Hz		1.000 Hz		2.000 Hz		4.000 Hz	
			[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]
Floor	Rammed Earth	109,8	0,03	3,29	0,03	3,29	0,07	7,69	1,13	124,07	0,28	30,74	0,55	60,4
	Wool pillow with natural wool													
Pillows	batting	82,4	0,43	35,41	0,80	65,88	1,00	82,35	0,79	65,06	0,80	65,88	0,98	80,7
Column	Steel	3,7	0,01	0,04	0,01	0,04	0,02	0,07	0,02	0,07	0,03	0,11	0,04	0,1
Wanden	Wool strips with wool felt	127,2	0,76	96,67	1,00	127,20	0,90	114,48	0,73	92,86	0,94	119,57	0,95	120,8
Glas	Glas	271,8	0,10	27,18	0,04	10,87	0,03	8,15	0,02	5,44	0,02	5,44	0,02	5,4
People	Visitors	5,0	0,15	0,75	0,30	1,50	0,45	2,25	0,45	2,25	0,45	2,25	0,45	2,3
totale oppervlakte [m ²]		599,9												
geluidabsorptie [m ² Sabine]			163,34	208,78	214,99	289,75	223,99	269,8						
gemiddelde absorptiecoëfficiënt a			0,2723	0,3481	0,3584	0,4830	0,3734	0,4497						
Nagalmtijd volgens Sabine			0,4 s	0,3 s	0,3 s	0,2 s	0,3 s	0,2 s						
afwijking ten opzichte van 500 Hz				32%	3%	0%	-26%	-4%	-0,2					
uniformiteitsfactor				0,7	0,9	0,9	1,3	1,0	1,2					
Gemiddelde nagalmtijd volgens Sabine (125 to 4000 Hz)			0,3 s											

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Berekening nagalmtijd

Naam: Grytse Rozema
 Studentnummer: 5888263
 Project: Urban Retreat
 Ruimte: Resonance
 Variant: 1
 Datum: 9 mei 2026

Breedte: 4,7 m
 Diepte: 11,5 m
 Hoogte: 4,9 m
 Extra ruimte: 10,8 m³
 Ruimtevolume: 275,6 m³



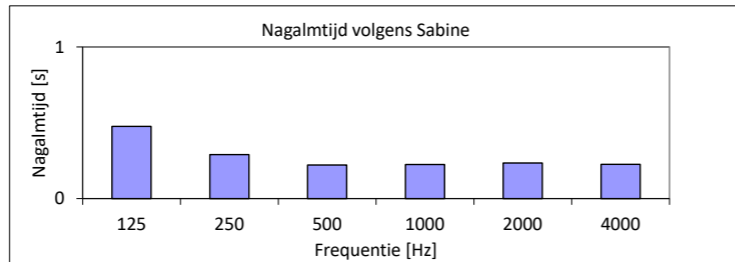
Omschrijving	Type	Oppervlakte [m ²] of [aantal]	Absorptiecoëfficiënt per m ² of per stuk en totale absorbtie per frequentie											
			125 Hz		250 Hz		500 Hz		1.000 Hz		2.000 Hz		4.000 Hz	
			[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]
Plafond	DLT	64,9	0,04	2,59	0,04	2,59	0,06	3,89	0,12	7,78	0,10	6,49	0,15	9,7
Vloer	Hardwood oak floor	64,9	0,04	2,60	0,04	2,60	0,06	3,89	0,12	7,79	0,10	6,49	0,15	9,7
Kolommen	Douglas fir glulam	9,8	0,04	0,39	0,80	7,84	0,12	1,18	0,20	1,96	0,25	2,45	0,30	2,9
Wanden	Lime plaster, hard finish	123,1	0,01	1,23	0,01	1,23	0,02	2,46	0,02	2,46	0,02	2,46	0,04	4,9
Element	Carbon steel	30,0	0,05	1,50	0,05	1,50	0,05	1,50	0,05	1,50	0,05	1,50	0,05	1,5
Glas	Glas	29,2	0,10	2,92	0,04	1,17	0,03	0,87	0,02	0,58	0,02	0,58	0,02	0,6
Personen	Bezoekers	5,0	0,15	0,75	0,30	1,50	0,45	2,25	0,45	2,25	0,45	2,25	0,45	2,3
totale oppervlakte [m ²]		326,8												
geluidabsorptie [m ² Sabine]			11,98	18,43	16,05	24,33	22,22	31,7						
gemiddelde absorptiecoëfficiënt a			0,0367	0,0564	0,0491	0,0744	0,0680	0,0969						
Nagalmtijd volgens Sabine			3,8 s	2,5 s	2,9 s	1,9 s	2,1 s	1,5 s						
afwijking ten opzichte van 500 Hz				34%	-13%	0%	-34%	-28%	-0,5					
uniformiteitsfactor				0,6	0,9	0,8	1,2	1,1	1,6					
Gemiddelde nagalmtijd volgens Sabine (125 to 4000 Hz)			2,4 s											

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Berekening nagalmtijd

Naam: Grytsje Rozema
 Studentnummer: 5888263
 Project: Urban Retreat
 Ruimte: Re-engagement
 Variant: 1
 Datum: 9 mei 2026

Breedte: 12,9 m
 Diepte: 7,4 m
 Hoogte: 3,2 m
 Extra ruimte: 0,0 m³
 Ruimtevolume: 305,5 m³



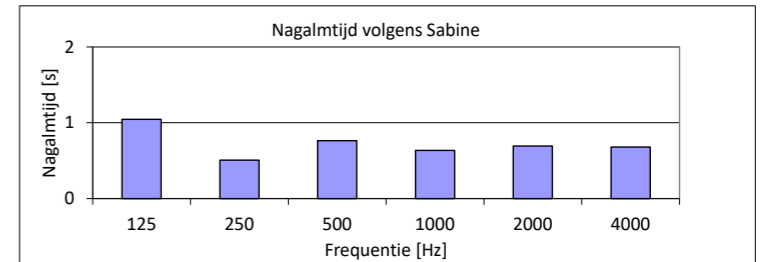
Omschrijving	Type	Oppervlakte [m ²] of [aantal]	Absorptiecoëfficiënt per m ² of per stuk en totale absorptie per frequentie											
			125 Hz		250 Hz		500 Hz		1.000 Hz		2.000 Hz		4.000 Hz	
			[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]
Ceilings	Wood fiber acoustic panels	95,5	0,43	41,05	0,80	76,37	1,00	95,46	0,79	75,41	0,80	76,37	0,98	93,6
Floors	Cork floor tile	21,9	0,08	1,75	0,15	3,28	0,44	9,61	0,54	11,80	0,38	8,30	0,60	13,1
	Stone tiles	19,2	0,01	0,19	0,01	0,19	0,02	0,38	0,02	0,38	0,03	0,58	0,04	0,8
	Carpet	22,6	0,04	0,90	0,10	2,26	0,31	6,99	0,70	15,79	0,93	20,97	0,74	16,7
	End grain wood	18,9	0,60	11,34	0,85	16,07	0,80	15,12	0,82	15,50	0,70	13,23	0,62	11,7
Walls	Douglas fir wall panels	52,2	0,19	9,91	0,36	18,78	0,73	38,08	0,50	26,08	0,25	13,04	0,31	16,2
	Lime plaster	44,8	0,15	6,72	0,20	8,96	0,35	15,68	0,60	26,88	0,60	26,88	0,50	22,4
Window	Glass	16,6	0,10	1,66	0,04	0,67	0,03	0,50	0,02	0,33	0,02	0,33	0,02	0,3
	Rough fabric	46,1	0,00	0,00	0,02	0,92	0,04	1,84	0,15	6,91	0,36	16,59	0,32	14,7
	Wood slats	54,4	0,60	32,64	0,85	46,24	0,80	43,52	0,82	44,61	0,70	38,08	0,62	33,7
People	Visitors	5,0	0,15	0,75	0,30	1,50	0,45	2,25	0,45	2,25	0,45	2,25	0,45	2,3
	totale oppervlakte [m ²]	397,1												
	geluidabsorptie [m ² Sabine]		106,91		175,22		229,44		225,94		216,62		225,5	
	gemiddelde absorptiecoëfficiënt a		0,2693		0,4413		0,5778		0,5690		0,5455		0,5678	
Nagalmtijd volgens Sabine			0,5 s		0,3 s		0,2 s		0,2 s		0,2 s		0,2 s	
	afwijking ten opzichte van 500 Hz		115%		31%		0%		2%		6%		0,0	
	uniformiteitsfactor		0,5		0,9		1,2		1,2		1,1		1,2	
Gemiddelde nagalmtijd volgens Sabine (125 to 4000 Hz)			0,3 s											

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Berekening nagalmtijd

Naam: Grytsje Rozema
 Studentnummer: 5888263
 Project: Urban Retreat
 Ruimte: Light
 Variant: 1
 Datum: 9 mei 2026

Breedte: 13,5 m
 Diepte: 5,7 m
 Hoogte: 4,3 m
 Extra ruimte: 0,0 m³
 Ruimtevolume: 330,9 m³



Omschrijving	Type	Oppervlakte [m ²] of [aantal]	Absorptiecoëfficiënt per m ² of per stuk en totale absorptie per frequentie											
			125 Hz		250 Hz		500 Hz		1.000 Hz		2.000 Hz		4.000 Hz	
			[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]	[-/m ² a]	[m ² Sa]
Ceiling	Cedar Ceiling boards	77,0	0,60	46,17	0,85	65,41	0,80	61,56	0,82	63,10	0,70	53,87	0,62	47,7
Floor	Oak hardwood floor	77,0	0,04	3,08	0,04	3,08	0,06	0,00	0,12	9,24	0,10	7,70	0,15	11,6
Columns	Douglas Fir Glulam	46,4	0,03	1,39	0,80	37,15	0,12	5,57	0,20	9,29	0,25	11,61	0,30	13,9
Walls	Lime plaster, hard finish	140,6	0,01	1,41	0,01	1,41	0,02	2,81	0,02	2,81	0,03	4,22	0,04	5,6
Glas	Glas	0,0	0,10	0,00	0,04	0,00	0,03	0,00	0,02	0,00	0,02	0,00	0,02	0,0
Personen	Bezoekers	5,0	0,15	0,75	0,30	1,50	0,45	2,25	0,45	2,25	0,45	2,25	0,45	2,3
	totale oppervlakte [m ²]	346,0												
	geluidabsorptie [m ² Sabine]		52,80		108,55		72,20		86,69		79,64		81,1	
	gemiddelde absorptiecoëfficiënt a		0,1526		0,3137		0,2087		0,2505		0,2302		0,2343	
Nagalmtijd volgens Sabine			1,0 s		0,5 s		0,8 s		0,6 s		0,7 s		0,7 s	
	afwijking ten opzichte van 500 Hz		37%		-33%		0%		-17%		-9%		-0,1	
	uniformiteitsfactor		0,6		1,4		0,9		1,1		1,0		1,0	
Gemiddelde nagalmtijd volgens Sabine (125 to 4000 Hz)			0,7 s											

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