



Motivation

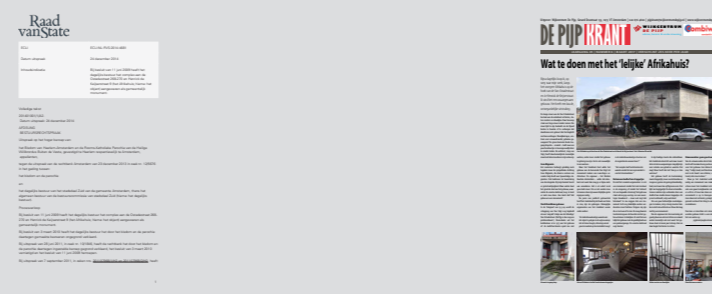
Spatial & Material Quality



Current State



Public Opinion




How can Participatory Design Serve as a Vector for the Sustainable Transformation of de Hoeksteen?

Research for Design



Results valuation

Expert Stakeholder



User



Local Community



Local Community



Result Program Survey

Question	Response 1	Response 2	Response 3	Response 4	Response 5	Response 6	Response 7	Response 8	Response 9	Response 10
1	14	5	21	4	45.0%	16.3%	28.6%	10.1%	1.0%	1.0%
2	14	5	21	4	45.0%	16.3%	28.6%	10.1%	1.0%	1.0%
3	1	4	13	4	14.3%	28.6%	45.0%	10.1%	1.0%	1.0%
4	1	2	8	2	14.3%	28.6%	28.6%	28.6%	1.0%	1.0%
5	4	2	8	2	28.6%	14.3%	28.6%	28.6%	1.0%	1.0%
6	4	2	8	2	28.6%	14.3%	28.6%	28.6%	1.0%	1.0%
7	1	1	1	4	14.3%	14.3%	14.3%	57.1%	1.0%	1.0%
8	1	1	1	2	14.3%	14.3%	14.3%	28.6%	1.0%	1.0%
9	1	1	1	2	14.3%	14.3%	14.3%	28.6%	1.0%	1.0%
10	1	1	1	2	14.3%	14.3%	14.3%	28.6%	1.0%	1.0%
11	1	1	1	2	14.3%	14.3%	14.3%	28.6%	1.0%	1.0%
12	1	1	1	2	14.3%	14.3%	14.3%	28.6%	1.0%	1.0%
13	1	1	1	2	14.3%	14.3%	14.3%	28.6%	1.0%	1.0%
14	1	1	1	2	14.3%	14.3%	14.3%	28.6%	1.0%	1.0%
15	1	1	1	2	14.3%	14.3%	14.3%	28.6%	1.0%	1.0%
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25	1	1	1	2	14.3%	14.3%	14.3%	28.6%	1.0%	1.0%
26	1	1	1	2	14.3%	14.3%	14.3%	28.6%	1.0%	1.0%
27	1	1	1	2	14.3%	14.3%	14.3%	28.6%	1.0%	1.0%
28	1	1	1	2	14.3%	14.3%	14.3%	28.6%	1.0%	1.0%
29	1	1	1	2	14.3%	14.3%	14.3%	28.6%	1.0%	1.0%
30	1	1	1	2	14.3%	14.3%	14.3%	28.6%	1.0%	1.0%

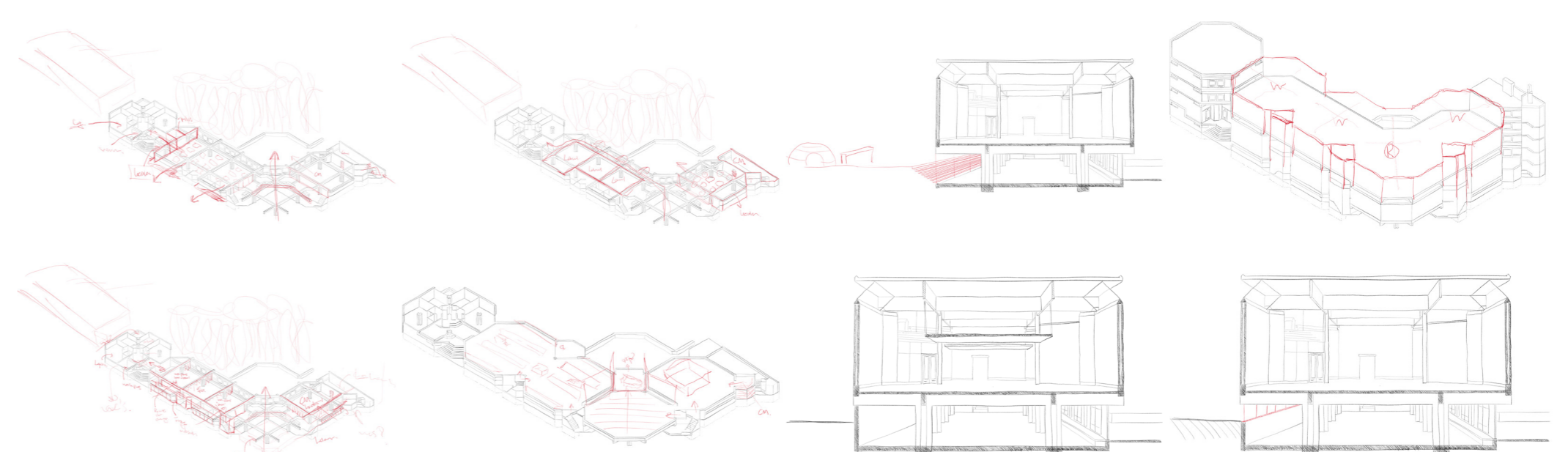
Research by Design



Overview of options: build your own hoeksteen

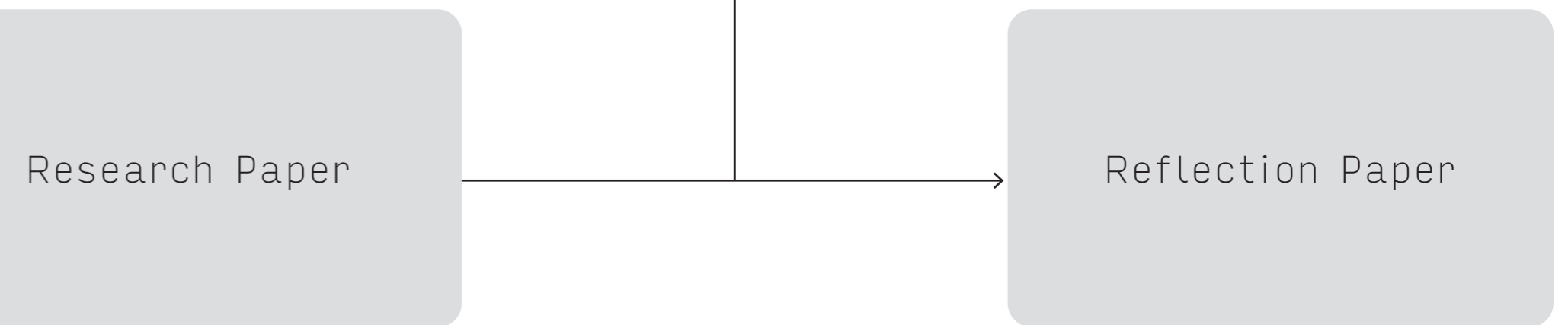
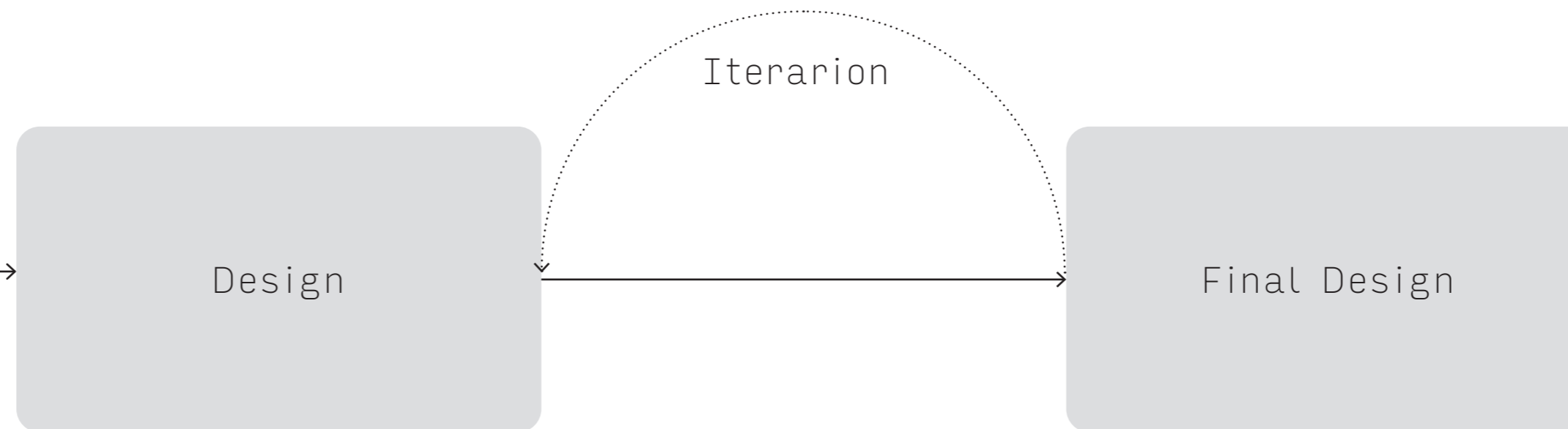
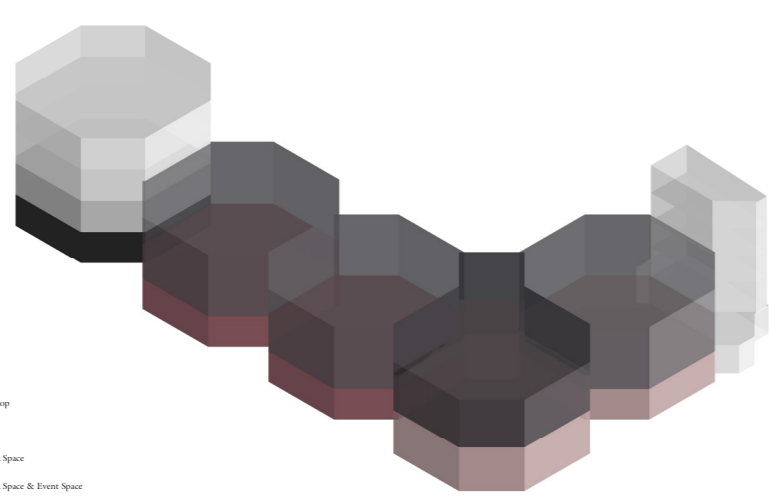


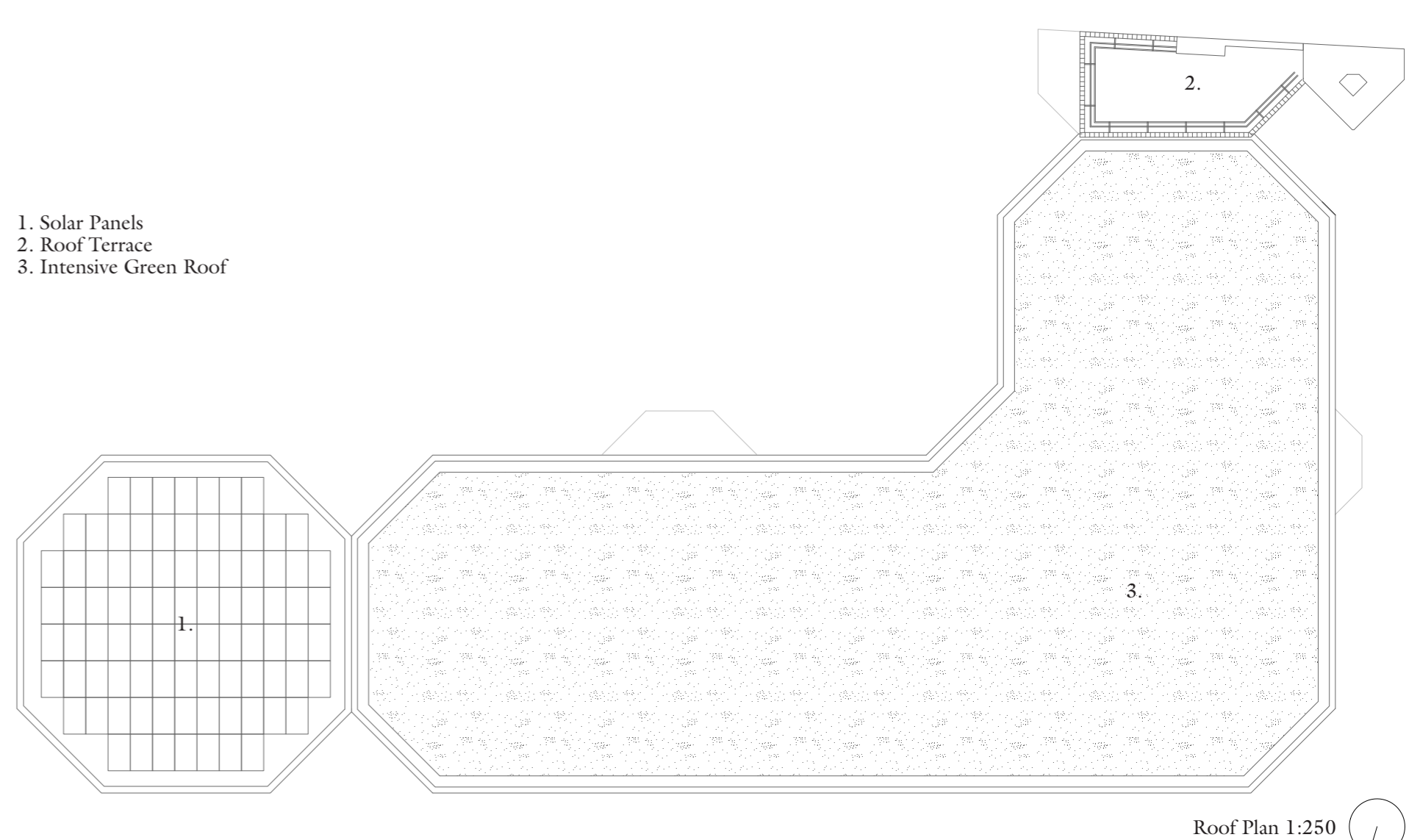
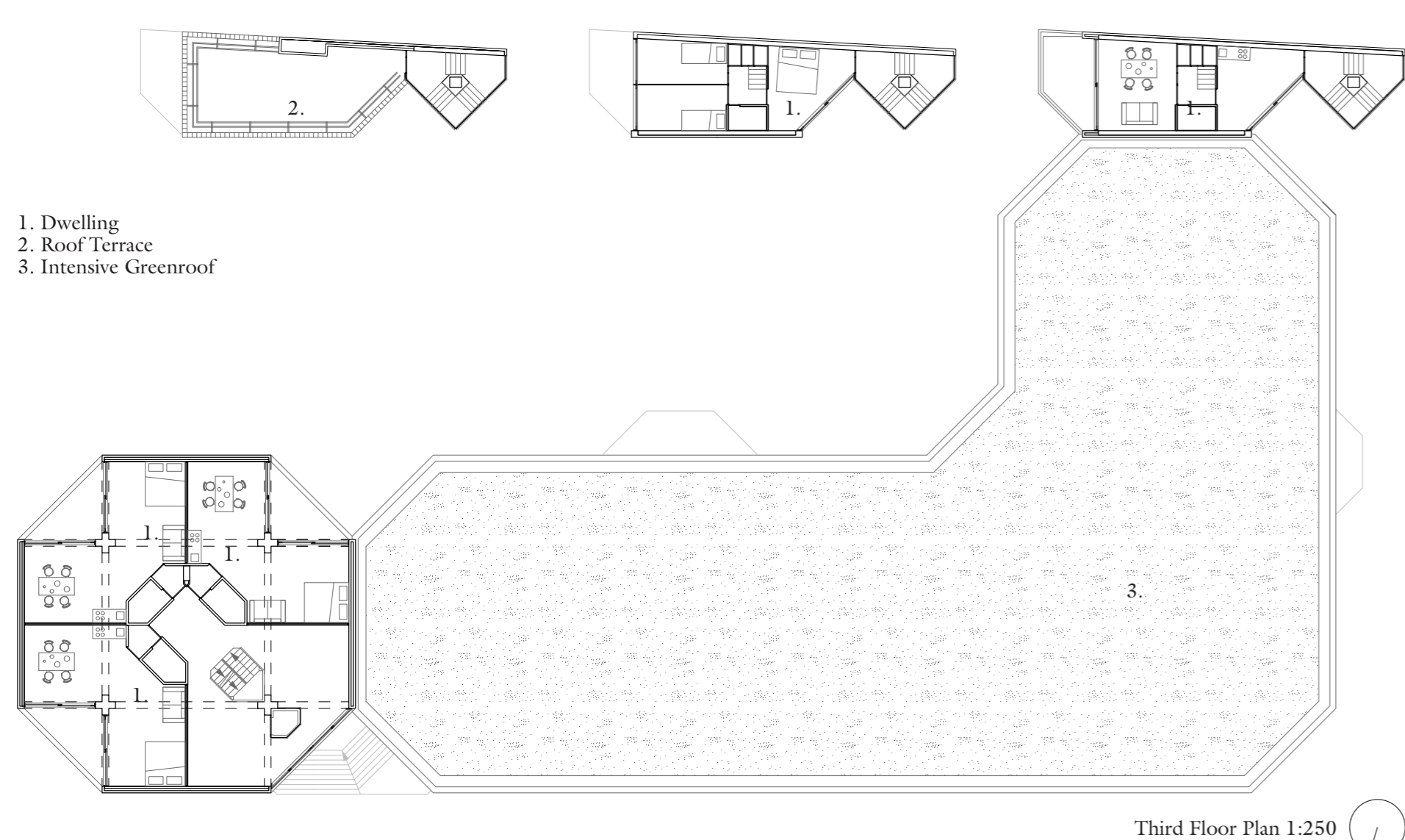
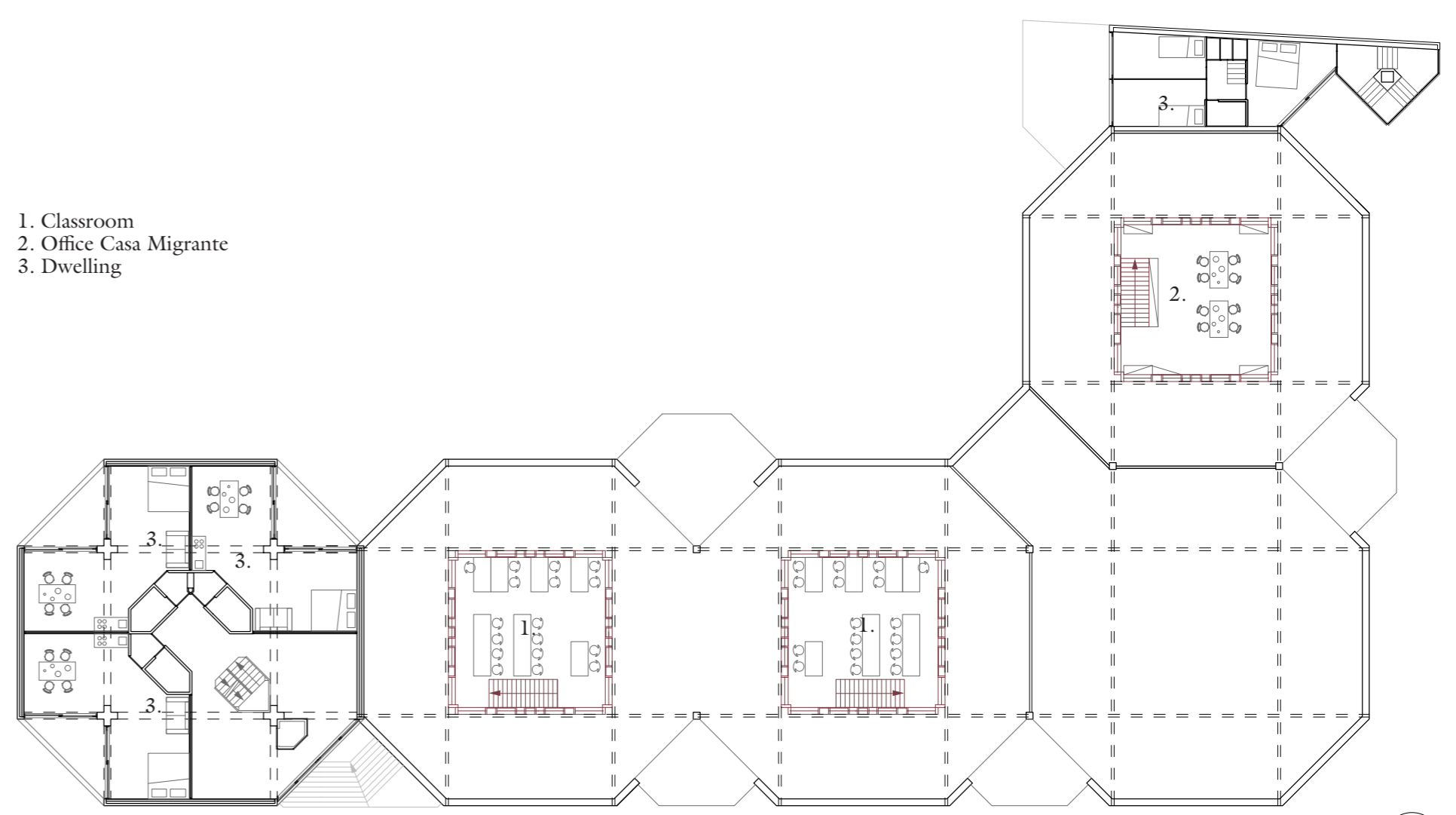
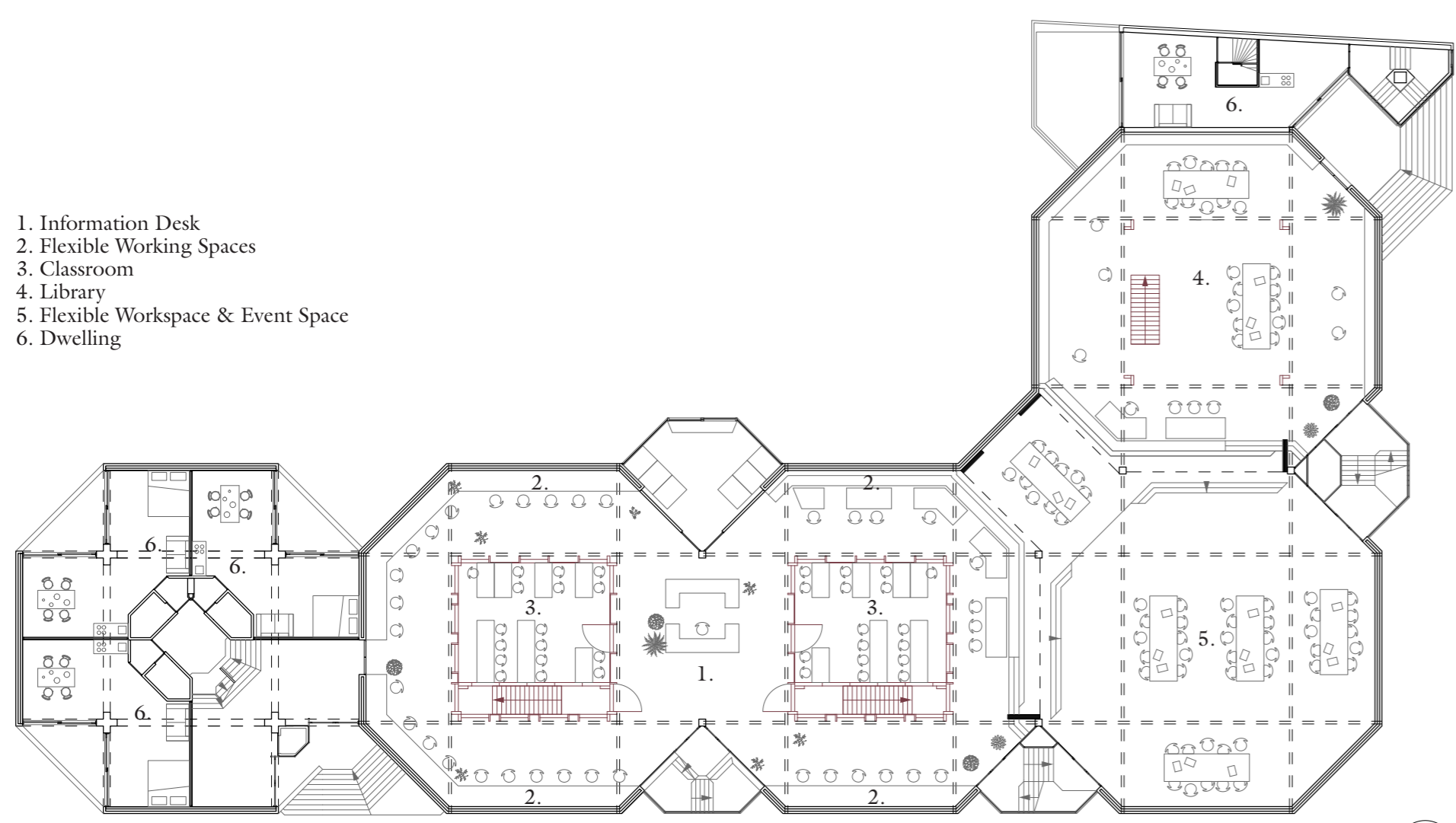
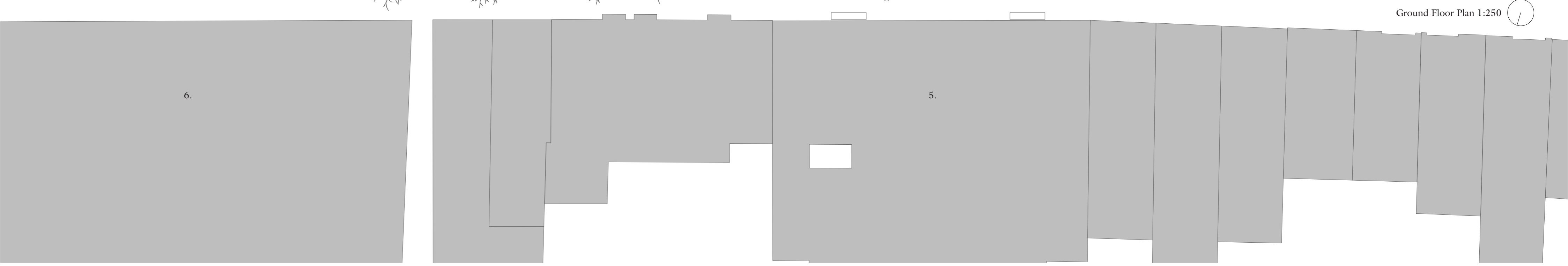
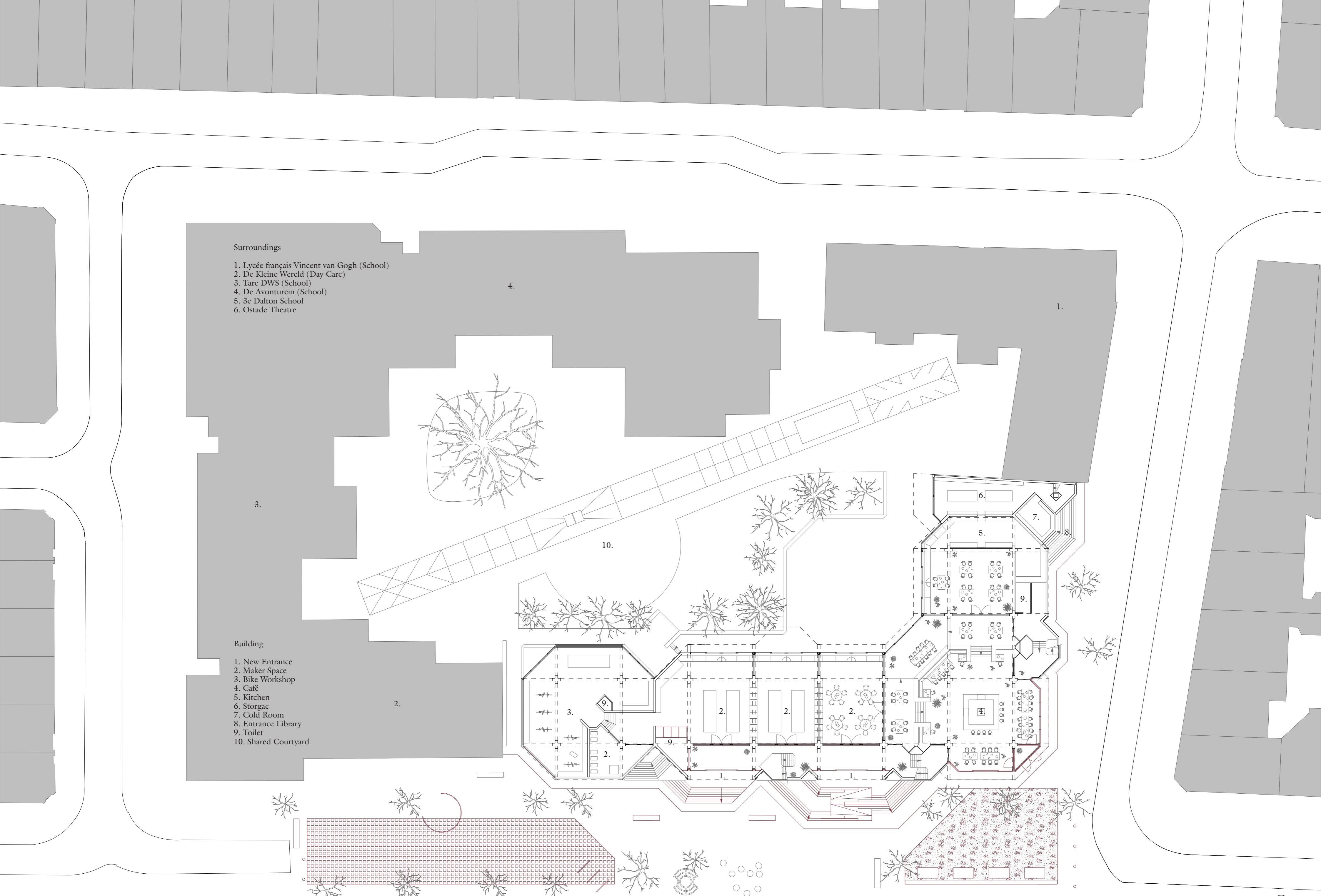
Results Sketch Session

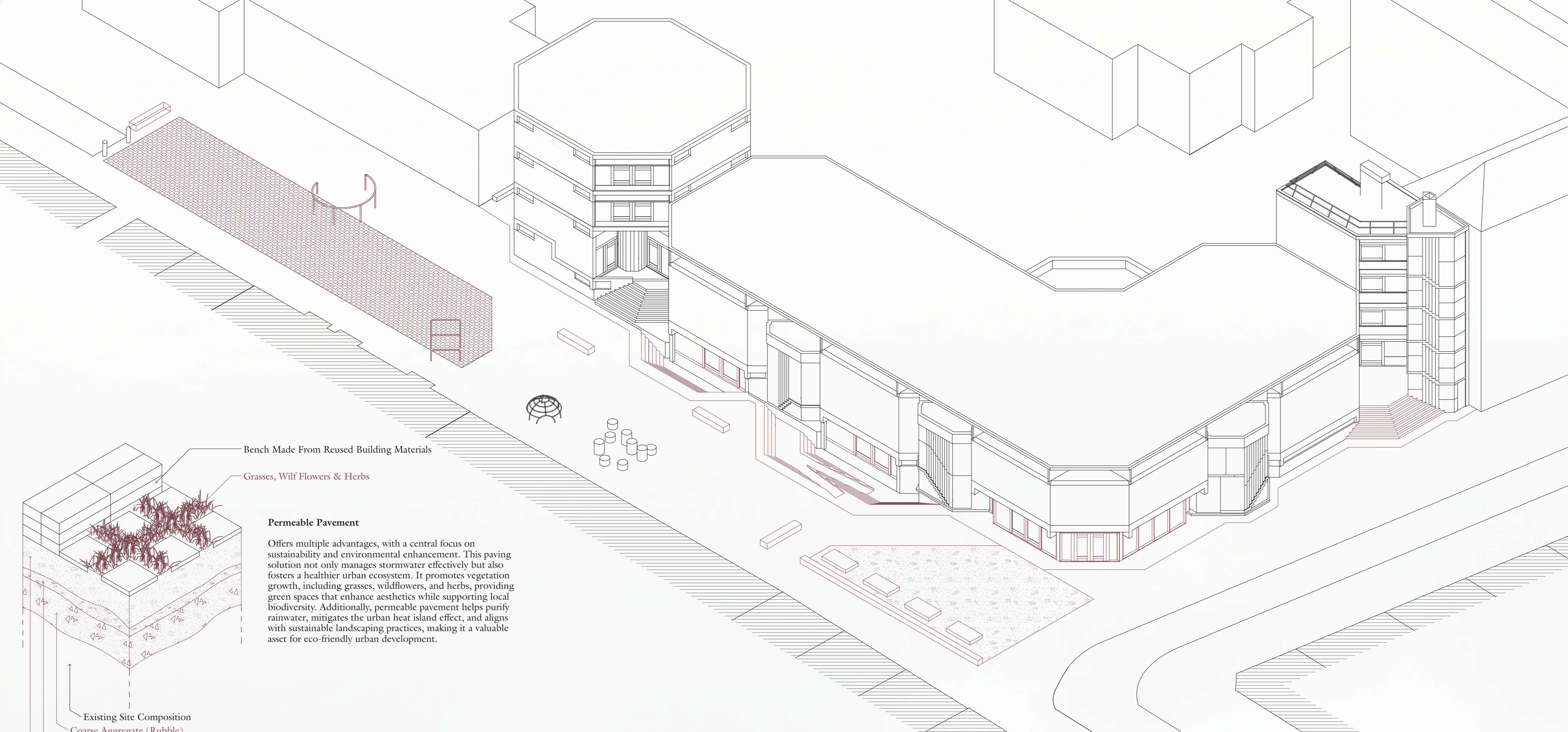


Results & Reflection

Resulting Final Program







Phase 1: The Roof.

In the initial phase of the construction project, the decision was made to remove the old roof due to several significant issues. Firstly, the existing roof panels were too thin to support the installation of a green roof, which is a critical element of the sustainability plan. Additionally, the aging roof had developed numerous leaks, posing a threat to the building's structural integrity.

However, an inventive solution was found in the spirit of sustainability and resource-conscious design. While the original roof panels were unsuitable for their initial purpose, they were repurposed effectively within the building's interior. These salvaged panels now serve various functions, including use in classrooms and flexible workspaces. By incorporating these reclaimed materials, a sense of history and sustainability is woven into the interior spaces.

Phase 2: The Interior.

In the second phase, the reuse of these salvaged roof panels remains integral. They will be repurposed in the creation of interior spaces. Meanwhile, attention turns to the church facade, where we address thermal concerns by insulating and replacing part of its cladding with chalk stucco, effectively mitigating thermal bridging. Additionally, the removal of the roof simplifies the task of replacing the top windows in the church, aligning our design with modern standards while preserving its character. Preparations are also underway to accommodate the construction of the new main entrance, further bridging the past with the contemporary needs of today's inhabitants.

Phase 3: The Ground.

In Phase Three, sustainability remains central to our project. We're repurposing excavated earth from Phase Two, with sand going back under the pavement. The clay-sand mix, combined with compost, ensures its suitability for the green roof, promoting eco-friendliness and efficiency in our construction approach.

Furthermore, during this phase, work on the facade includes expanding the existing holes to accommodate the construction of a new entrance.

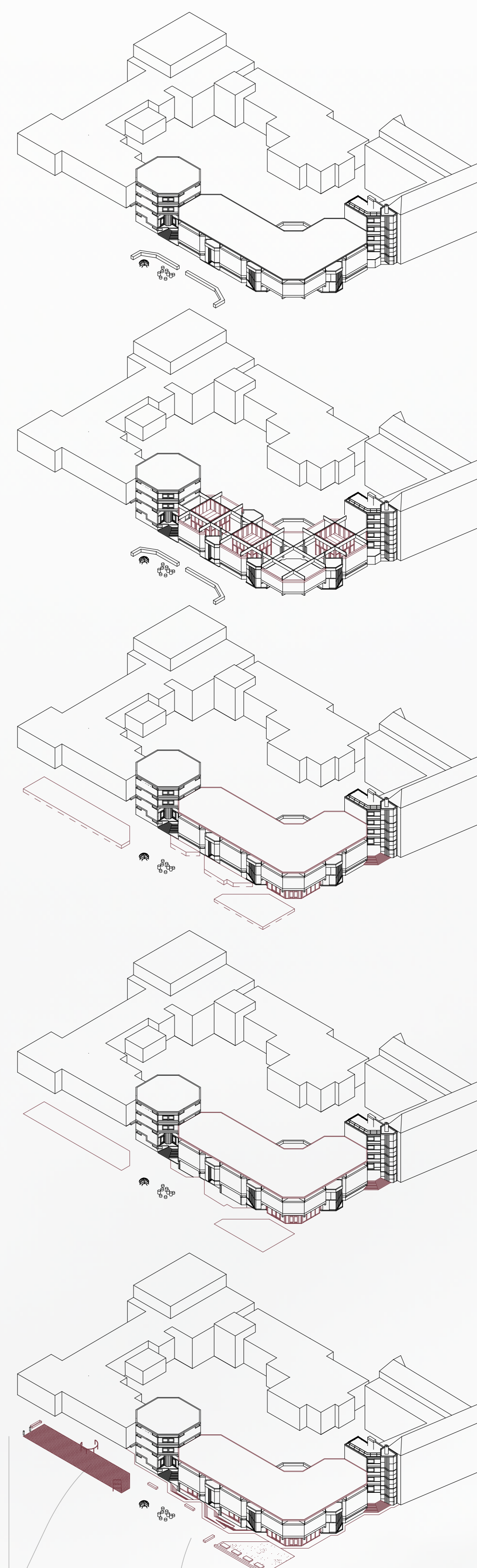
Phase 4: The Site.

In the concluding phase, the exterior space undergoes a remarkable transformation, emerging as a vibrant public area that embodies sustainability and community values.

During this ultimate stage, the outdoor space is redesigned to feature loose and semi-pavement, a deliberate choice aimed at slowing down fast-moving traffic while aiding rainwater infiltration and fostering increased biodiversity. Simultaneously, the playground expands, ensuring a safe and enjoyable haven for families and children.

The commitment to zero waste extends to the construction of furniture, ingeniously crafted from surplus tiles, sections of the facade, and other reclaimed building materials. This sustainable approach not only minimizes waste but also lends a unique character to the environment.

Accessibility and historical resonance take center stage with the installation of a new entrance. In a nod to the past, old mooring posts are repurposed into stairs, enhancing both accessibility and the area's sense of heritage.



Bench Made From Reused Building Materials

Grasses, Wild Flowers & Herbs

Permeable Pavement

Offers multiple advantages, with a central focus on sustainability and environmental enhancement. This paving solution not only manages stormwater effectively but also fosters a healthier urban ecosystem. It promotes vegetation growth, including grasses, wildflowers, and herbs, providing green spaces that enhance aesthetics while supporting local biodiversity. Additionally, permeable pavement helps purify rainwater, mitigates the urban heat island effect, and aligns with sustainable landscaping practices, making it a valuable asset for eco-friendly urban development.

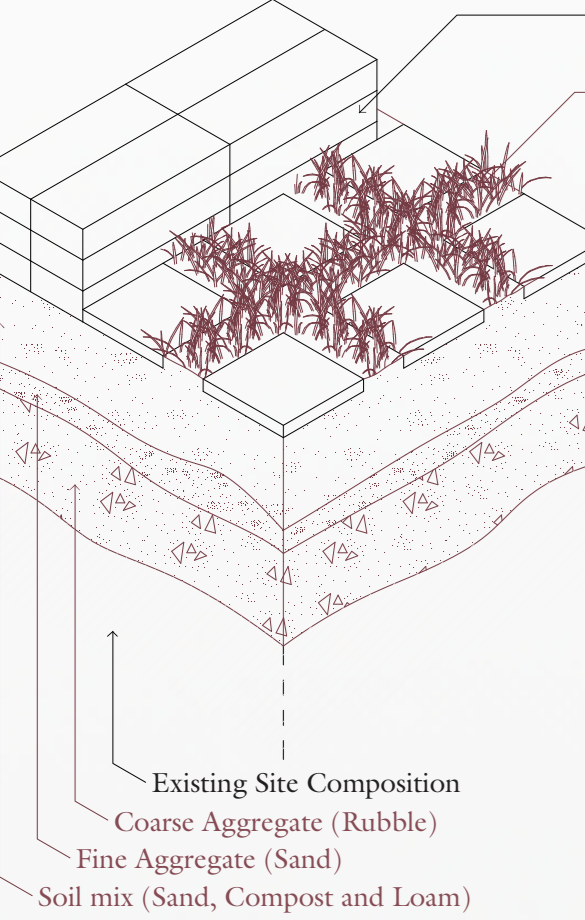
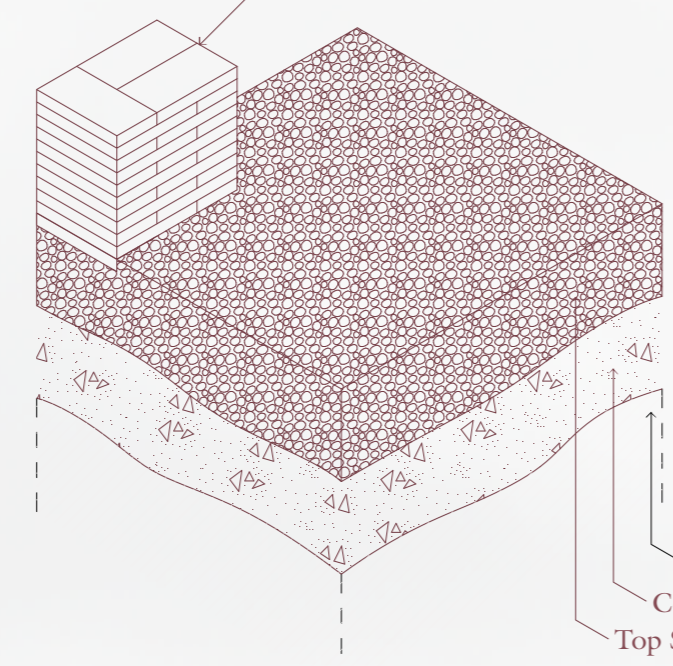


Table Made From Sawn Concrete

Bench Made From Uplifted Tiles

Pebble Pavement

Loose pavements, featuring materials such as pebbles, offer a range of advantages. They are exceptionally permeable, effortlessly allowing rainwater to infiltrate the ground, aiding in effective water management and reducing the risk of flooding. These pavements also provide notable heat mitigation benefits, staying cooler than conventional hard surfaces, enhancing comfort especially during hot weather. Constructed with natural materials, they align with environmental compatibility, promoting sustainability and responsible land use while reducing reliance on resource-intensive construction materials. Moreover, this choice of material echoes the style of the in situ concrete of the building, creating a harmonious connection with the architectural aesthetics. Additionally, the area can also be used as a jeu de boudes area, adding versatility and recreational value to the space. Incorporating loose pavements into outdoor design not only enhances aesthetics but also embraces eco-friendly and sustainable principles, making them an excellent choice for a variety of outdoor settings.



Existing Site Composition

Coarse Aggregate (Rubble)

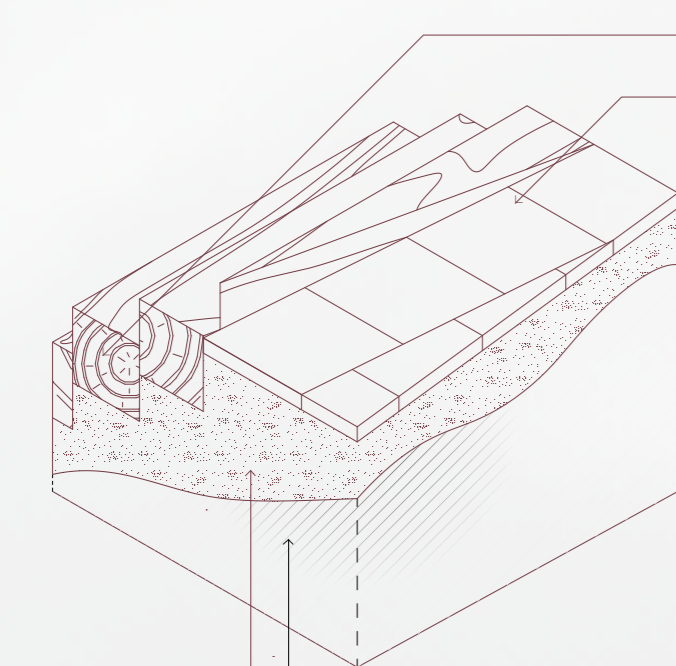
Top Substrate (River Pebbles)

Stairs Made From Reused Mooring Post

Ramp Integrated in Stairs

Ramp Stairs

Ramp stairs, with their gentle slopes and accessibility features, offer a range of advantages. They provide inclusivity and safety by accommodating individuals with mobility challenges, while also ensuring ease of use for people of all ages. Additionally, save room in tight areas, and serve as practical routes for moving heavy objects. They play a crucial role in making spaces more accessible and functional for everyone.



Existing Site Composition

Fine Aggregate (Sand)

Using reclaimed mooring posts as stairs presents a sustainable choice that reduces the demand for new materials, contributing positively to the environment. The use of wood not only softens the palette of the exterior space but also harmoniously connects it to the material scheme of the building. Additionally, the inherent durability of mooring posts, designed to withstand harsh marine conditions, ensures that they can provide long-lasting functionality when repurposed as stairs. Moreover, by repurposing reclaimed materials, you help lower landfill waste and decrease energy consumption associated with manufacturing new products, further benefiting the environment.

While the rooftop remains inaccessible to humans, lush greenery enhances the urban ecosystem and promotes biodiversity. This green oasis supports pollinators, and contributes to a healthier and more sustainable urban environment.

While the courtyard provides a respite from the hustle and bustle of city life, the newly activated entrance area serves as a lively stage for urban life to unfold. This multifunctional space invites people to play, lounge, and relax, offers an inviting terrace, and warmly welcomes visitors inside, transforming our building into a dynamic hub that fosters interaction and community engagement, seamlessly integrating with the vibrant urban surroundings.

By thoughtfully managing the greenery and reconnecting the different parts of the courtyard, it is transformed into a protected playground during recess, providing a safe and enjoyable space for children. During the day, it takes on the role of a hidden city park, inviting the local community to unwind and enjoy a tranquil oasis in the heart of the city.

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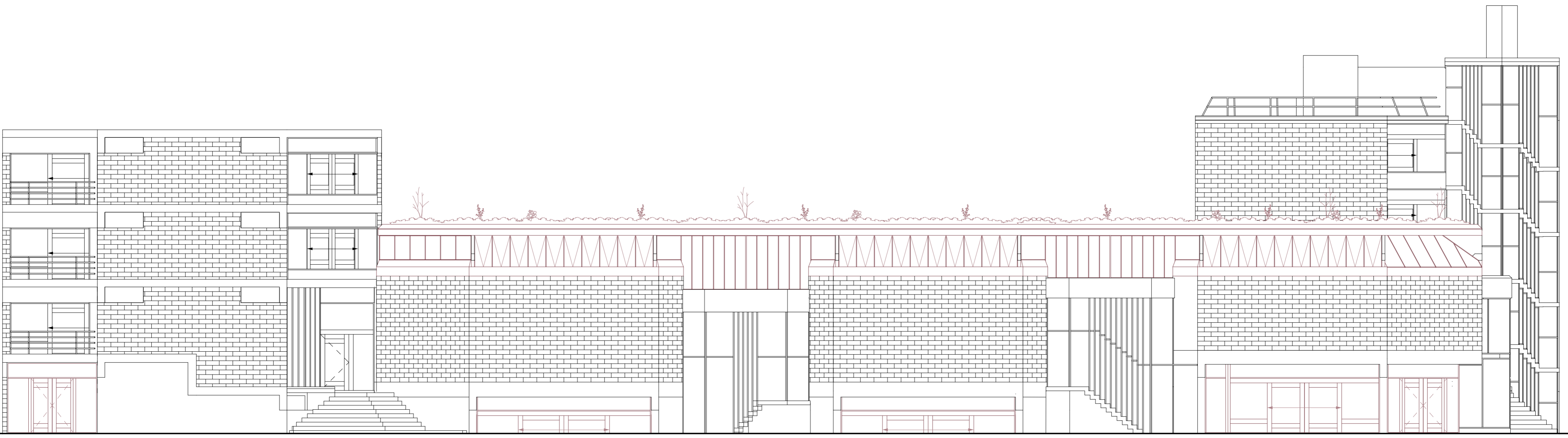
Using rubble underneath pavement enhances water infiltration, promotes sustainability, and reduces building waste. This permeable approach allows rainwater to seep into the ground, replenishing aquifers without relying on energy-intensive plastic storage tanks. By choosing rubble, we reduce plastic waste, making it an environmentally friendly choice.

To enhance accessibility and create a more inviting and public atmosphere for the building, significant excavations and openings were made along its sides. These modifications included the addition of a ramp stair, connecting the street level to the new entrance. This design not only improves accessibility for all individuals but also extends a warm invitation to the public, encouraging people to enter and engage with the building's offerings.

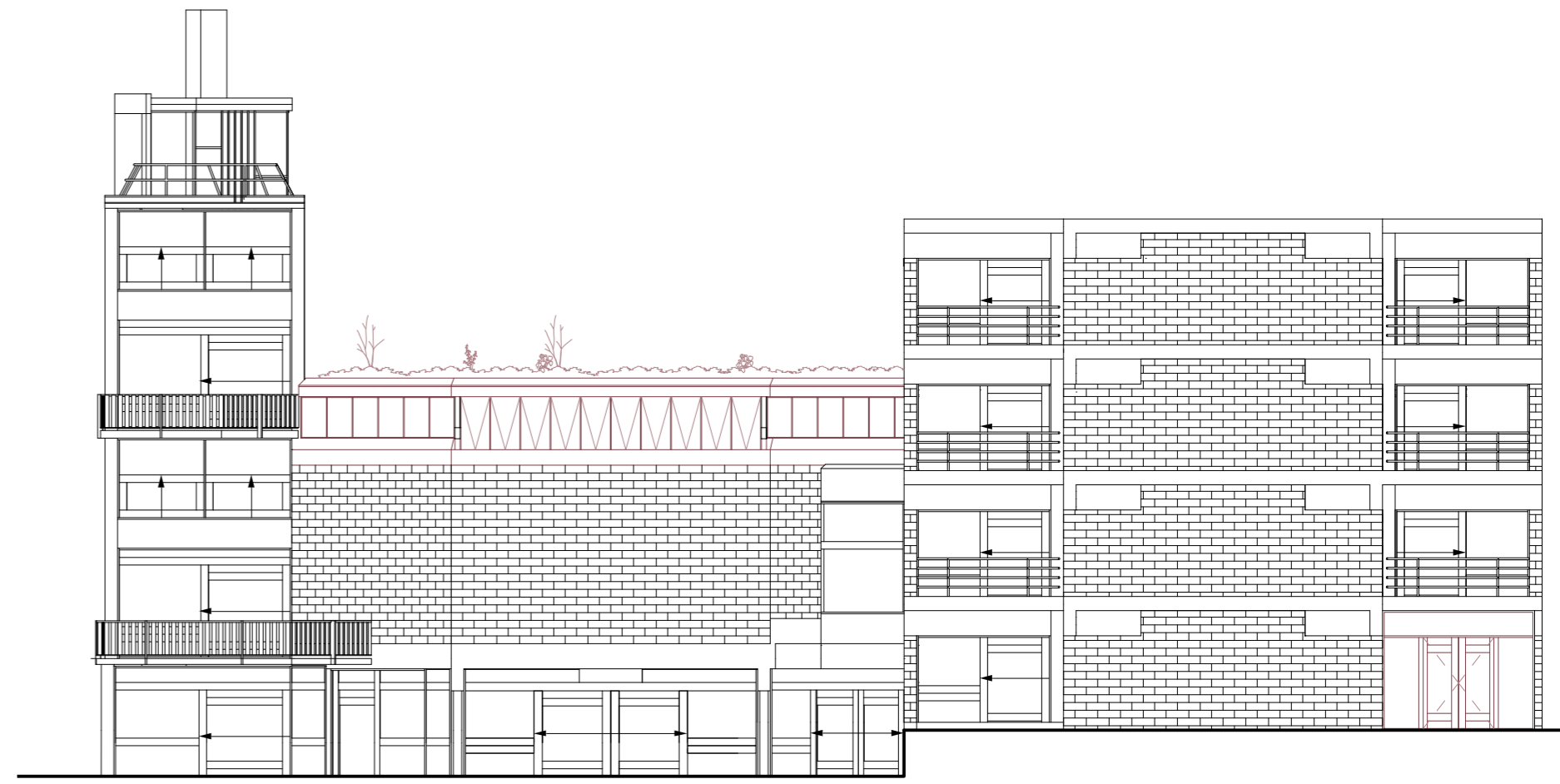
Sand

Sand & Clay

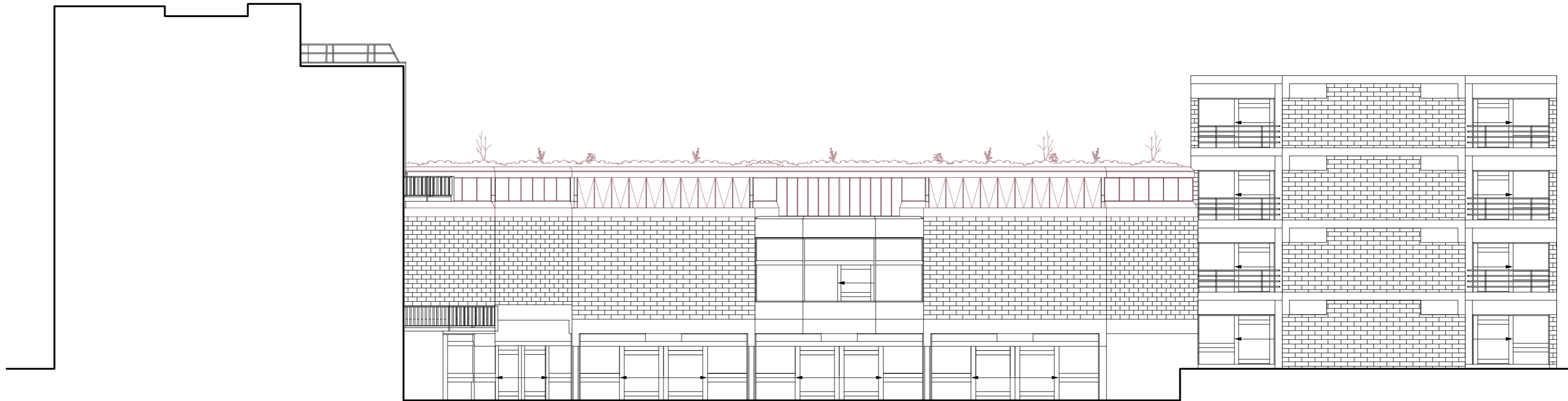
Hobocene



North Elevation 1:100



East Elevation 1:150

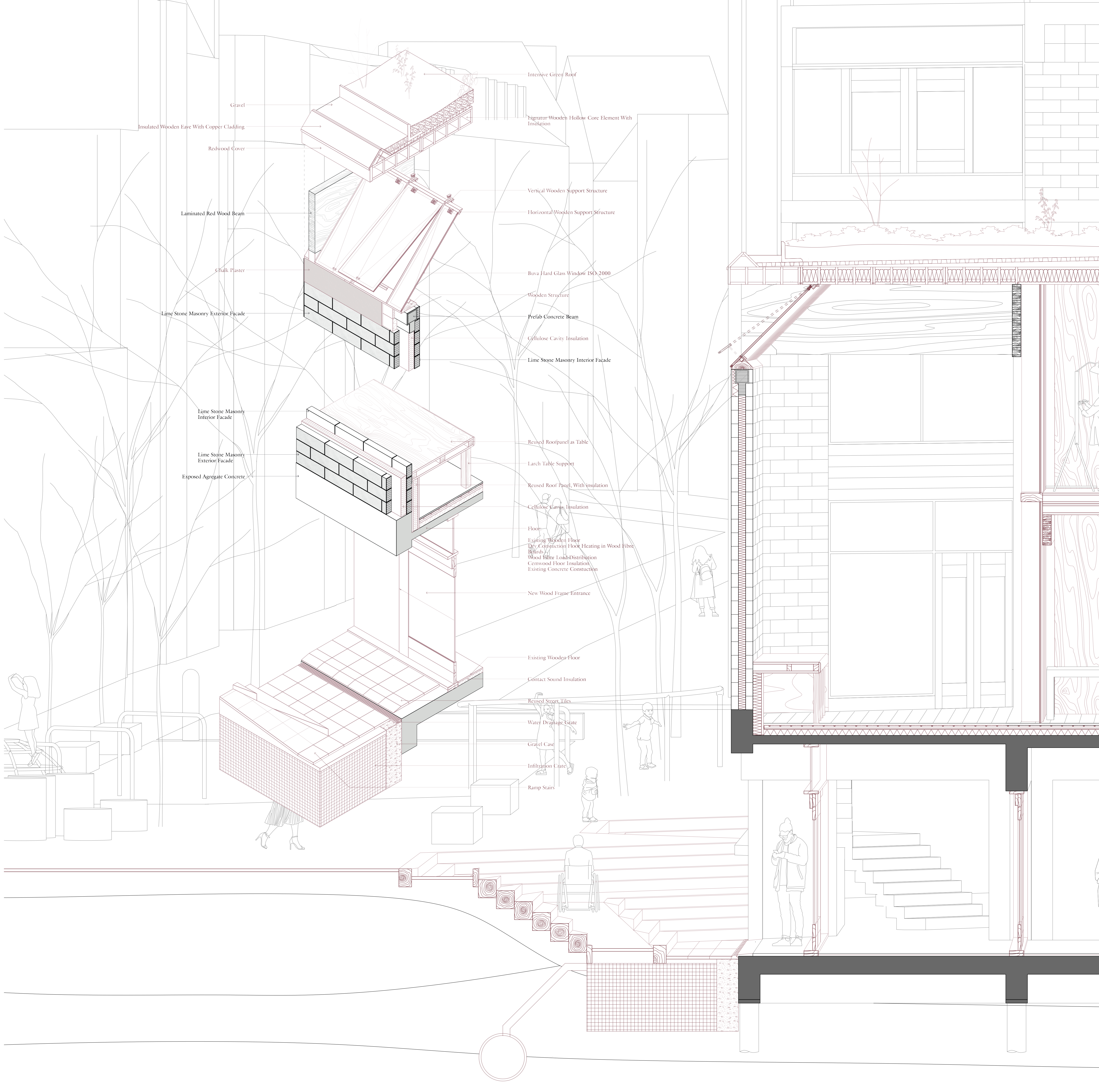
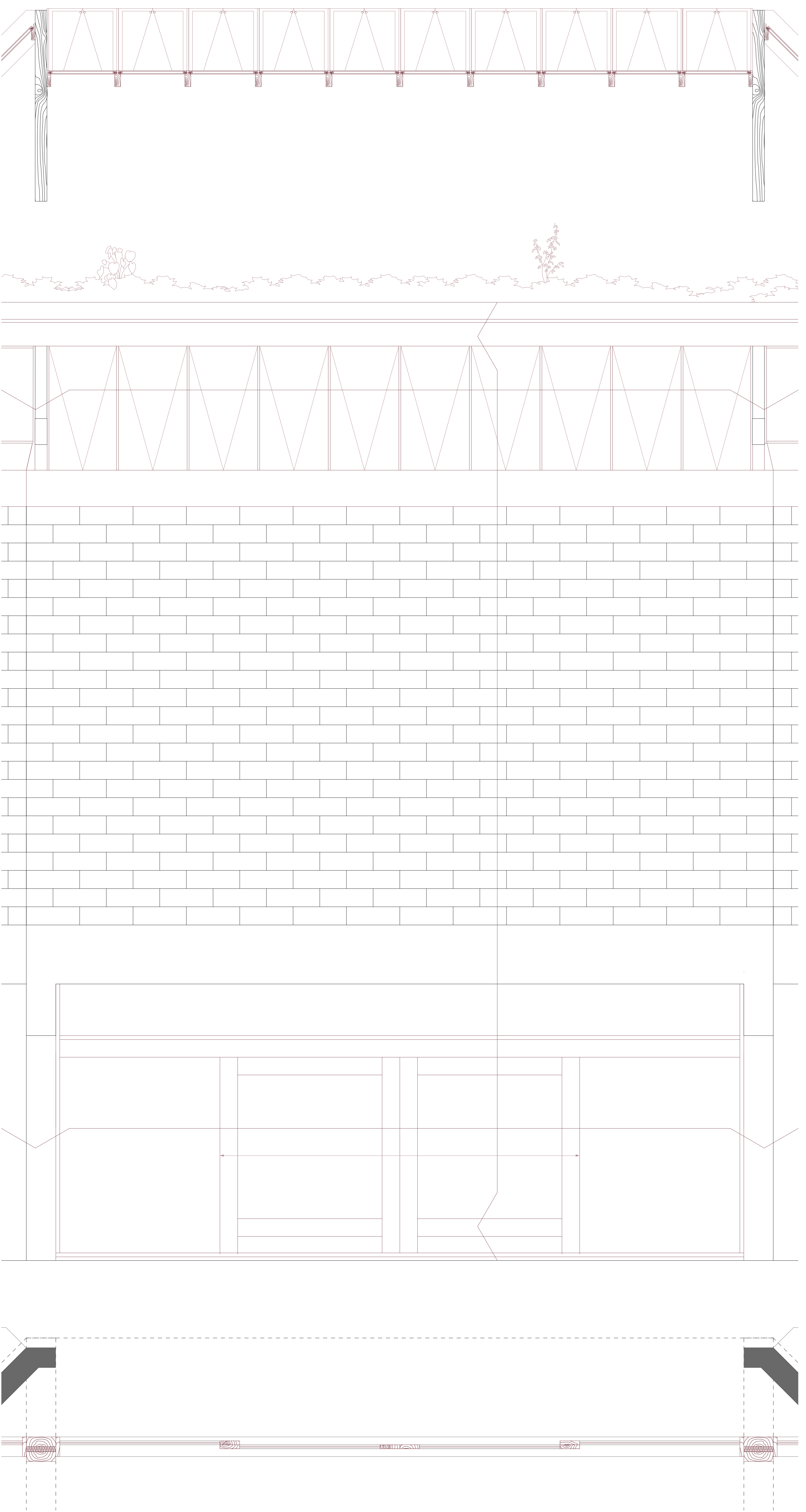


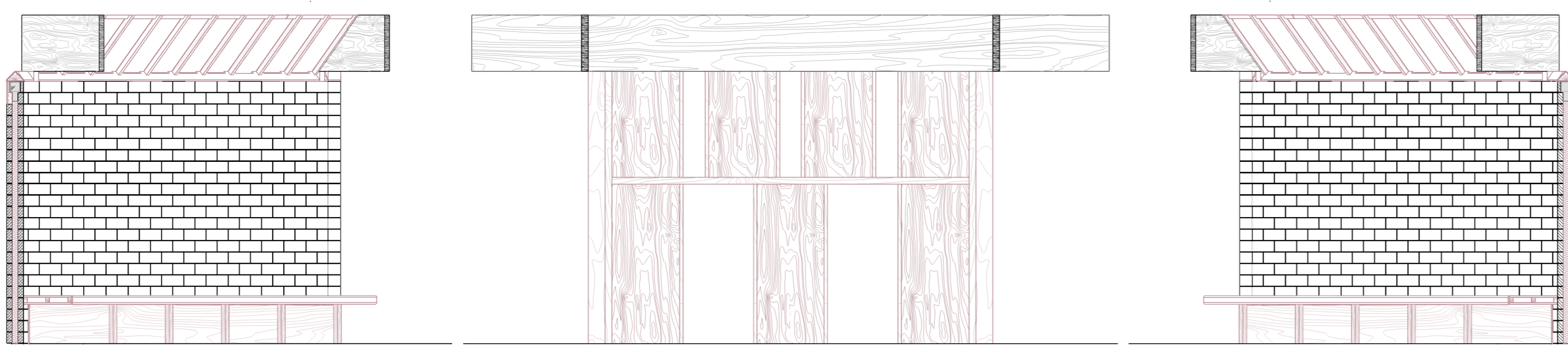
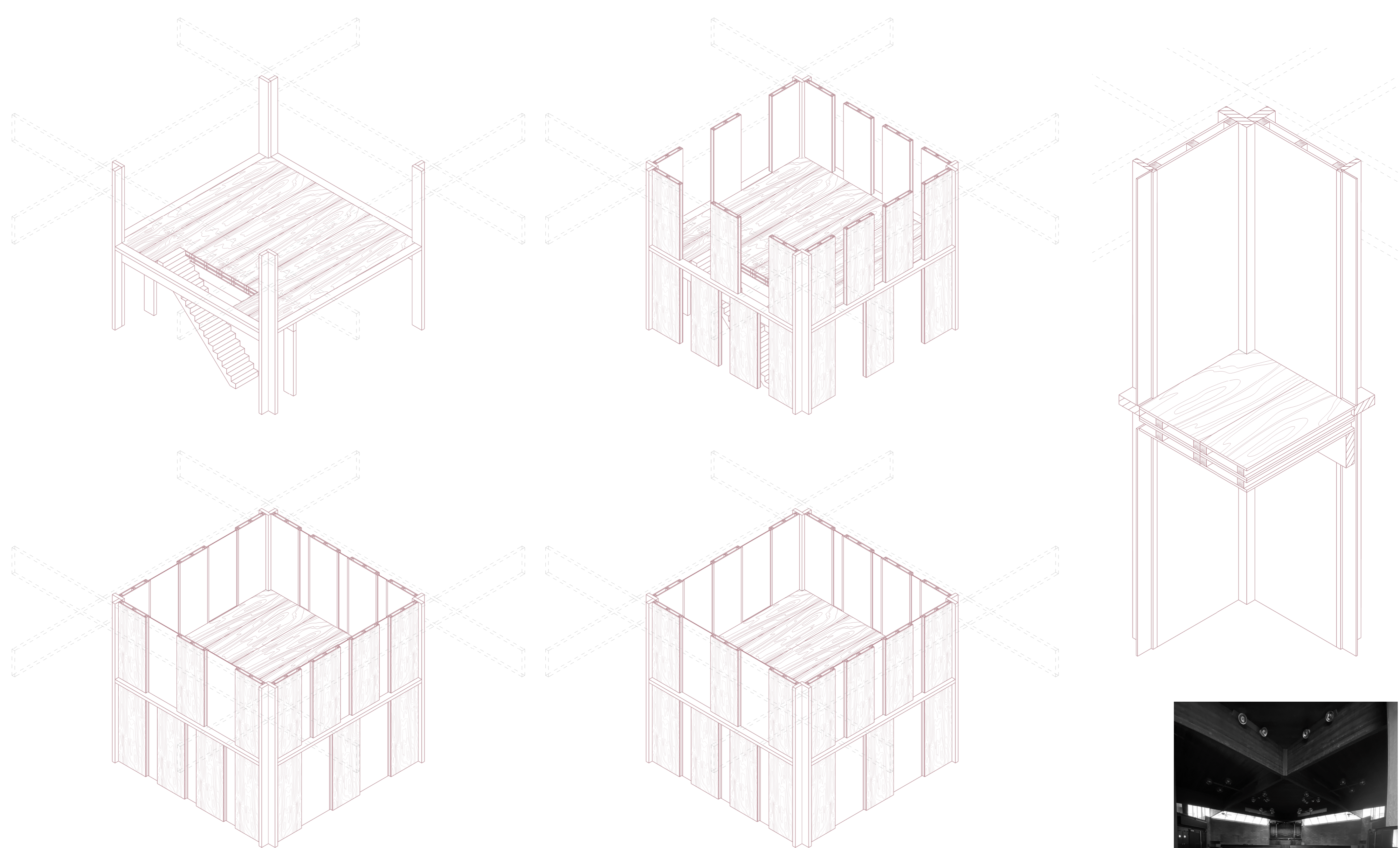
South Elevation 1:150

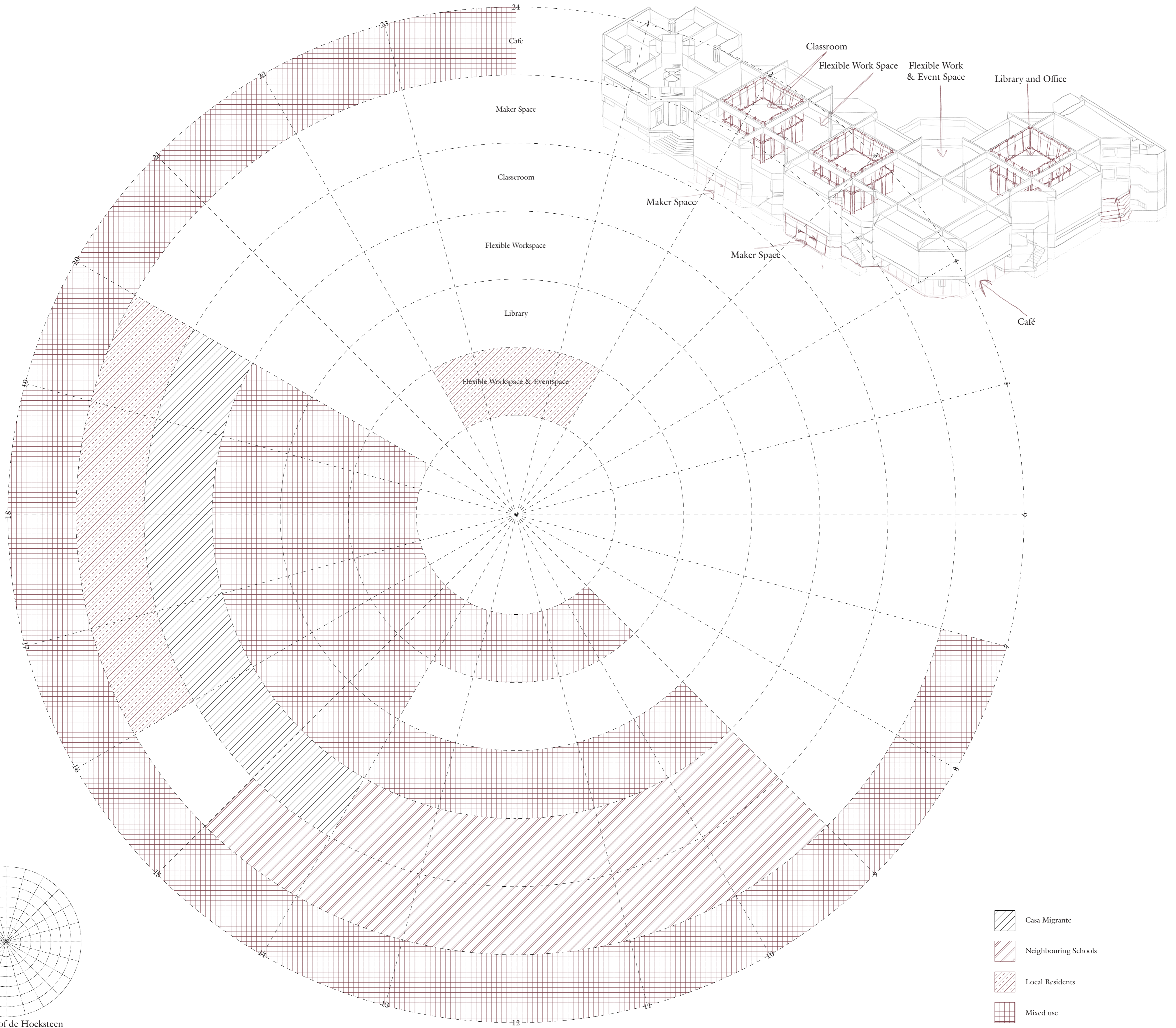






West Elevation 1:100









-  Casa Migrante
-  Neighbouring Schools
-  Local Residents
-  Mixed use

Use: The historical building had seen limited use in the recent history, with only the ground floor being comfortable and leak-free. The transformative design of the new building introduces a wealth of additional usable space, optimizing functionality for its current users and fostering shared functions that ensure the building remains vibrant throughout the day.

The flexible allocation of spaces caters to the needs of various user groups. As local residents pursue their work, school

children actively engage in classroom sessions and utilize flexible workspaces. The dedicated maker space becomes a hub of creativity for their arts and craft projects.

When Casa Migrante is in session, the class rooms are reserved for their educational activities, and the library opens its doors, welcoming everyone during the organization's presence. The heart of the church maintains its adaptable nature, seamlessly transitioning into a versatile event space during the evenings.

Throughout the day, the cafe serves as a relaxed meeting place, fostering connections among diverse individuals. In the evenings, it transforms into a welcoming venue for gatherings and communal events. This thoughtful and multifunctional approach ensures that the building not only respects its historical significance but also thrives as a dynamic center for the community, offering a space that evolves with the changing needs and desires of its users.

Climate Concept: sustainability is at the core of the climate concept. The design embraces the principles of passive design to create a comfortable and eco-friendly environment throughout the year.

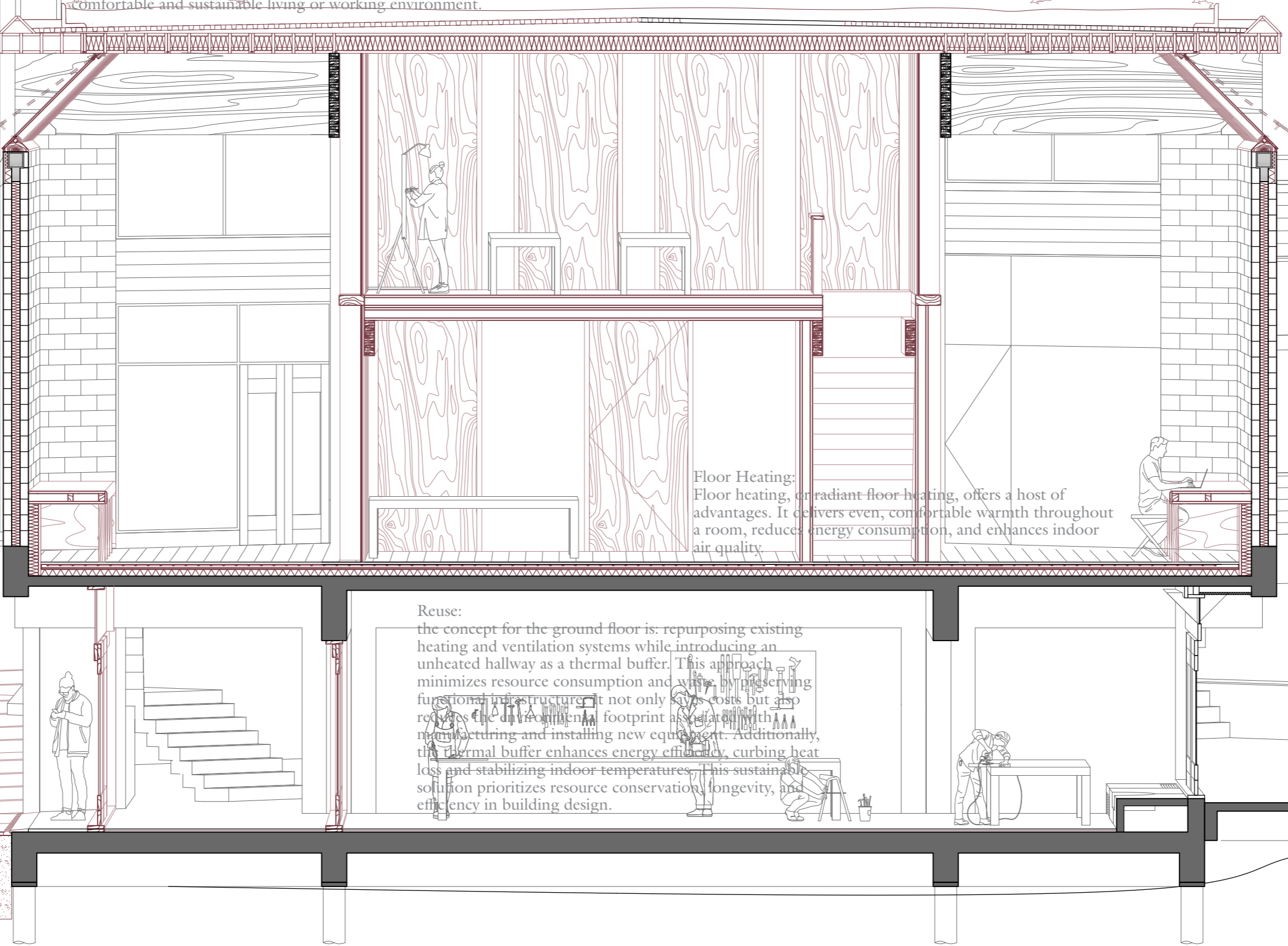
Summer: During the summer, natural ventilation takes center stage. In addition to the old louvers the building is outfitted with operable windows, allowing for better airflow and cooling. The garden rooms maintain their connection to the lush outdoors, while the cafe benefits from a new opening on the street side. Our dwellings are centrally ventilated through bathrooms and kitchens, and for an extra dose of fresh air, residents can open their balcony doors. Additionally, our green roof plays a vital role in keeping the building cool in the summer, reducing the need for actively climatizing the building.

Winter: In the winter months, the alterations ensure warmth and comfort. The church rooms now feature newly installed floor heating, and thanks to new insulation and double glazing, they provide a cozy working space. The garden rooms still utilize existing heating, complemented by a buffered hallway along the new entrance, maintaining a comfortable working environment. The restaurant, like the church halls, boasts floor heating to keep everyone warm and comfortable.

With these thoughtful design choices, De Hoeksteen becomes a building that not only respects its historical roots but also embraces sustainable transformation, ensuring a pleasant experience for all occupants, regardless of the season.

Green Roof: Green roofs, in addition to their environmental benefits, can also offer cooling capabilities. By providing a layer of vegetation and soil, they absorb and dissipate heat through a process called evapotranspiration. This natural cooling effect helps regulate indoor temperatures in buildings, reducing the need for air conditioning during hot weather. Green roofs thus contribute to energy savings and create a more comfortable and sustainable living or working environment.

Insulation: Cavity insulation reduces heat loss through walls, improving energy efficiency, comfort, and condensation control. It enhances indoor temperature consistency and reduces energy bills. Insulation of thermal bridges prevents heat loss at structural points, further boosting energy efficiency, structural durability, and moisture control. Both measures contribute to a more sustainable and comfortable indoor environment, making buildings more energy-efficient and resilient.



Ventilation Type A: Natural ventilation offers several advantages, including improved indoor air quality, energy efficiency, and sustainability. By harnessing natural airflow through openings like windows and vents, it reduces the reliance on mechanical systems, lowers energy costs, and promotes a healthier and more comfortable indoor environment. Additionally, it enhances occupant well-being by providing fresh air and a connection to the outdoors while minimizing the carbon footprint of buildings.

Floor Heating: Floor heating, or radiant floor heating, offers a host of advantages. It delivers even, comfortable warmth throughout a room, reduces energy consumption, and enhances indoor air quality.

Reuse: The concept for the ground floor is: repurposing existing heating and ventilation systems while introducing an unheated hallway as a thermal buffer. This approach minimizes resource consumption and waste by leveraging functional infrastructure. It not only cuts costs but also reduces the environmental footprint associated with manufacturing and installing new equipment. Additionally, the thermal buffer enhances energy efficiency, curbing heat loss and stabilizing indoor temperatures. This sustainable solution prioritizes resource conservation, longevity, and efficiency in building design.