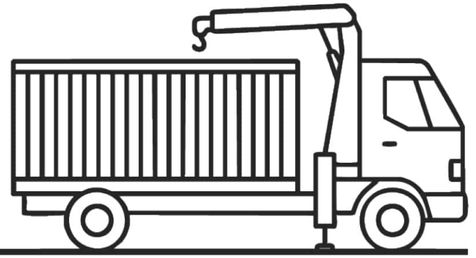
ARCHITECTURE STUDENT CONTEST

20th International Edition, **Nord-Isère 2025**

Team 01 - France

FROM KNOWLEDGE TO MAKING



VILLEFONTAINE - CHIMILIN - TERRITORY

National School of Architecture and Landscape of Bordeaux

Team 01 - **ENSAP Bx / ISA BTP**

Referent teacher : *Lefaivre Dominique*

Lucas SAFAURE
(M1 architecture)

Mathieu MAUPAS
(M1 architecture)

Léo GREBOT
(M1 architecture)

« Learning the senses, learning through the senses »

“Apprendre les sens, apprendre par les sens”[1]

Villefontaine and Chimilin form a unique ecosystem where education and experimentation mutually enrich each other.
Villefontaine, a future exemplary campus, is designed as a living laboratory where each building serves as a learning tool, integrating innovative materials and a bioclimatic approach. More than just a place of learning, it is an open, evolving platform for innovation, deeply rooted in its territory.

40 km away, Chimilin turns theory into action. The renovation of its former school into an experimentation and fabrication hub linked to the campus grounds practice in reality. Here, students and professionals come together to build and reinvent sustainable renovation.

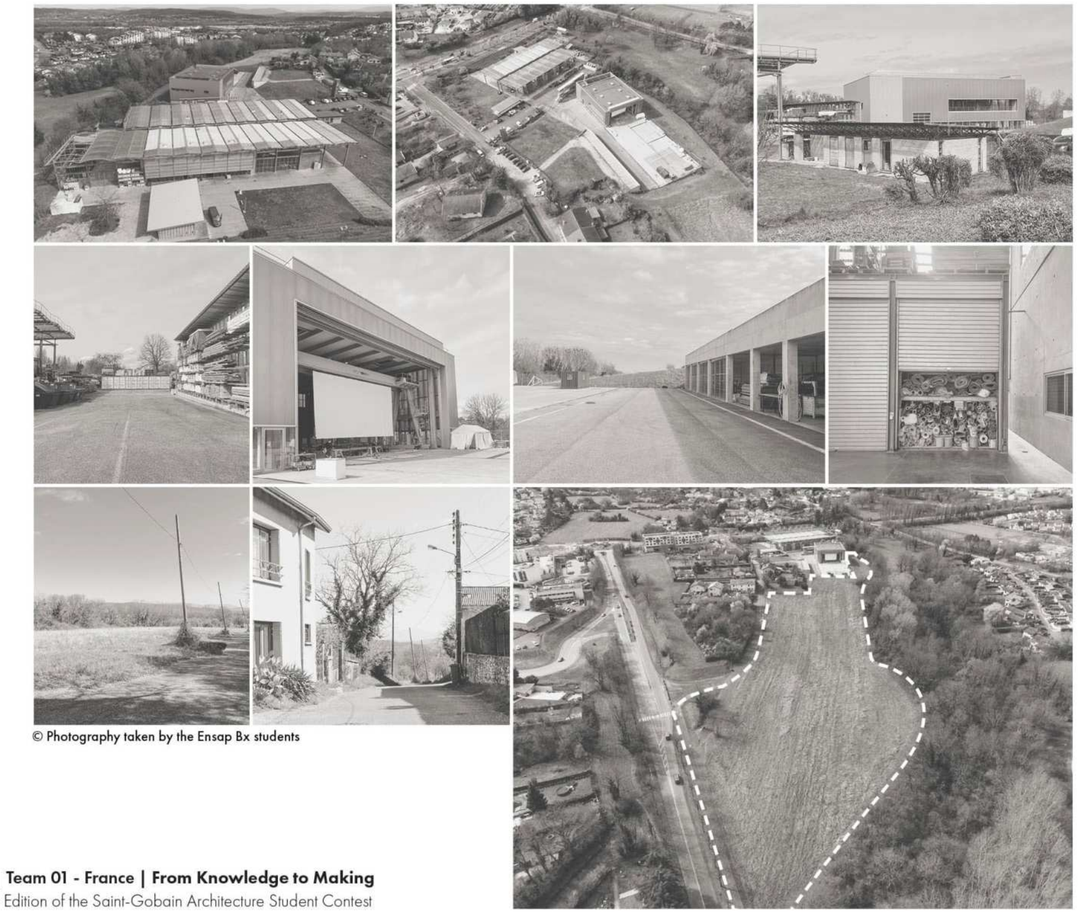
These two sites are not isolated projects but the foundations of a replicable model where knowledge and making unite to shape the future.

1. Title of the book by anthropologists Vincent Battesti and Joël Candau, Editions PETRA (2023)

Understanding the sites

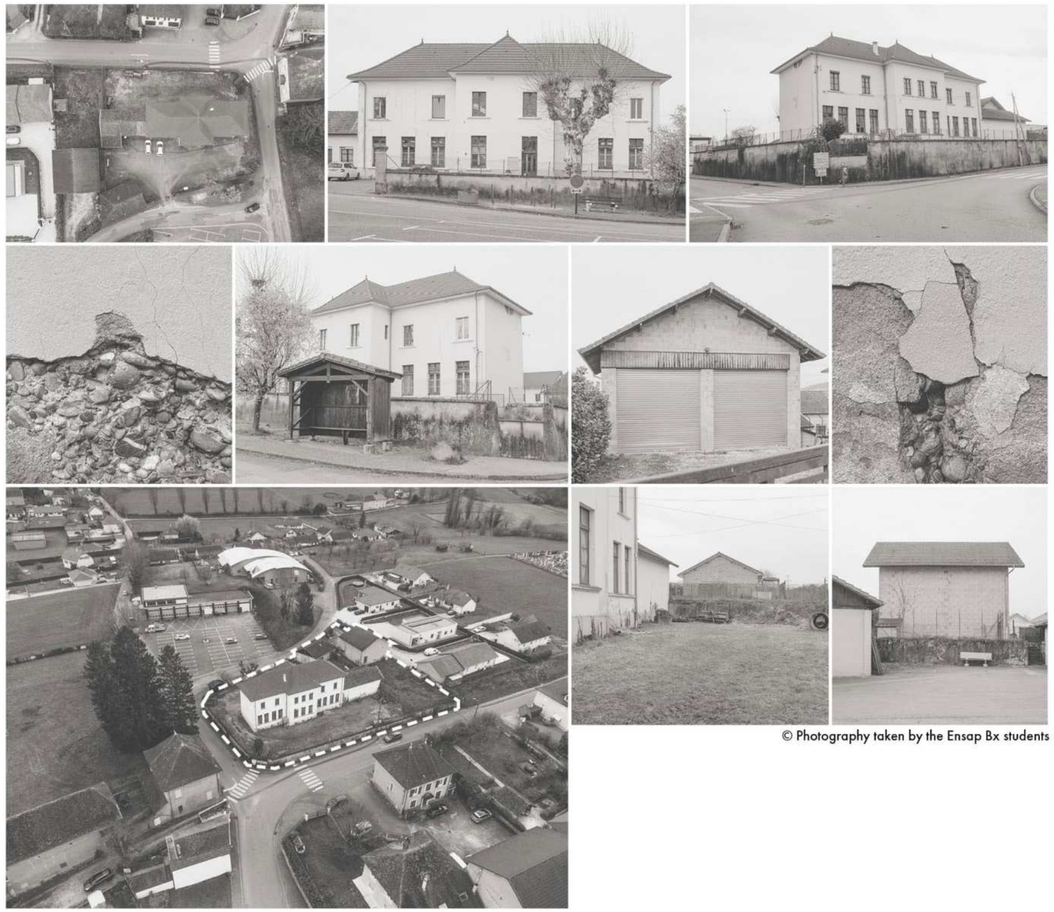
Analysis and objectives

Villefontaine :



© Photography taken by the Ensap Bx students

Chimilin :



© Photography taken by the Ensap Bx students

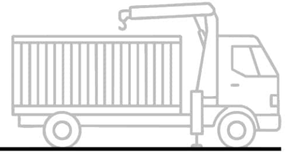
Villefontaine :

When Theory meets Practice

2 sites, Villefontaine and Chimilin, 40 km apart, when Knowledge and Making weave a lasting link

FROM KNOWLEDGE

TO MAKING



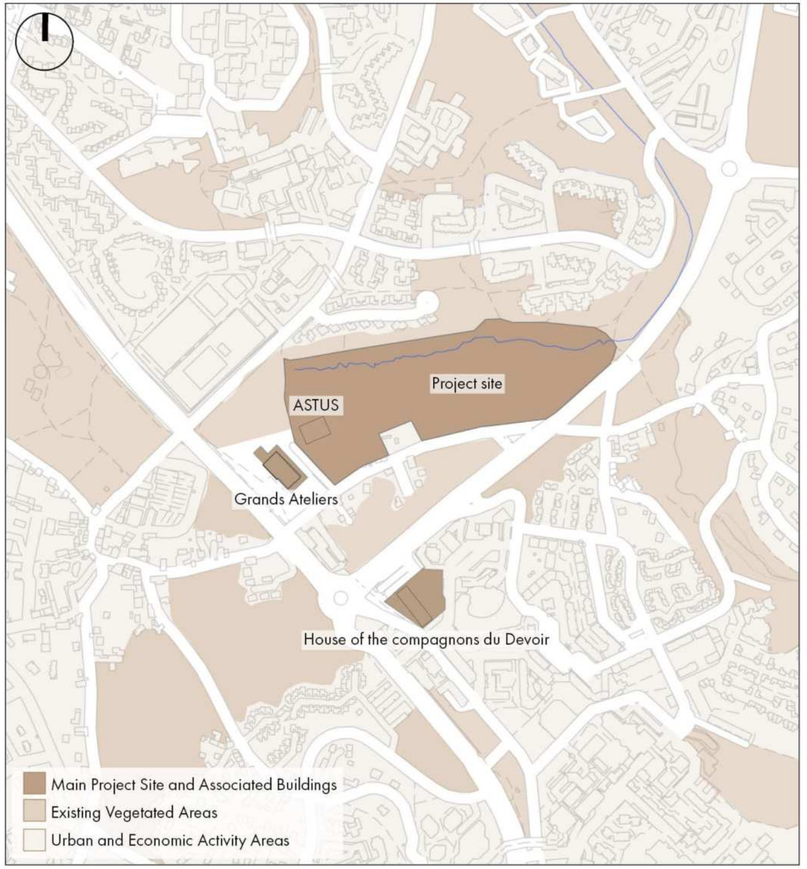
VILLEFONTAINE - CHIMILIN - TERRITORY

07 | Team 01 - France | From Knowledge to Making
20th Edition of the Saint-Gobain Architecture Student Contest

Site analysis

A project rooted in its territory

City center
Project site
Former PLU Delimitation (2023)
Newly Integrated Zone – PLU 2025
Area Outside Current PLU



The 20,000 m² site, located at 270 m elevation with a 20 m gradient, has been officially included in **Villefontaine's Local Urban Plan (PLU)** since February 2025. Identified as a zone with strong potential for activation, the site is surrounded by vegetated, inactive land and sits within a **relatively static context**.

Its integration into the PLU reflects the city's ambition to **extend areas of activity,** reinforce emerging urban centralities, and transform this transitional fringe into a dynamic part of the city. The campus project aims to establish **a new anchor point** within this broader urban movement.

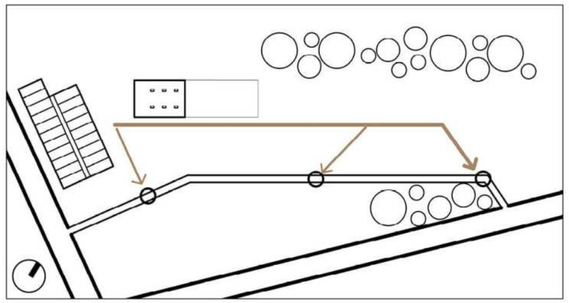
The project supports economic revitalization, **education, and collaboration**, while enhancing **mobility, accessibility,** and ensuring a balance between urban growth, environmental continuity, and spatial quality.

Ultimately, the campus becomes a **vector for urban openness**, fully embedded in the evolution of Villefontaine and in harmony with its **long-term planning vision.**

Implementation strategies

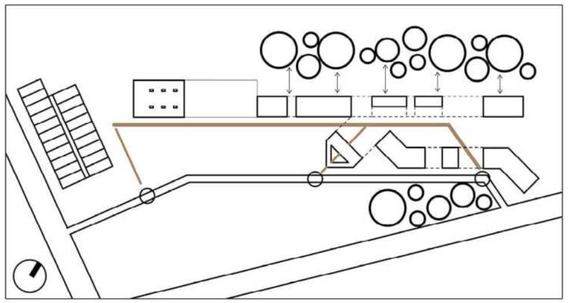
Acces, alignment and connexions

The project layout has been carefully crafted, guided by a harmony of factors : **alignment, solar orientation, respect for the land's natural flow, connections to both the city and nature, permeability and the fluid movement of internal circulations.**



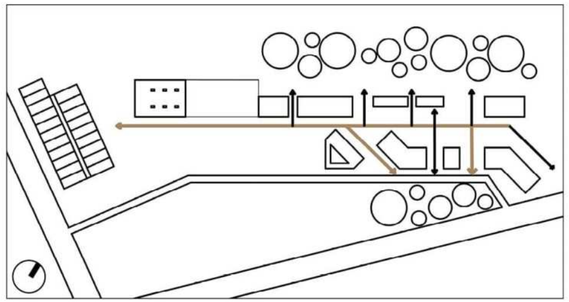
1. Main axis and access

The project connects to **three existing entrances**, with the **main axis** ensuring access **for all vehicles**, supporting **logistical needs**



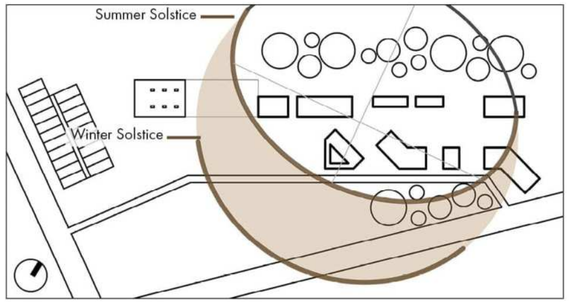
2. Alignment with the axis and existing structures

The **alignment** follows the main circulation route, creating an organized flow across the site and ensuring a **cohesive and functional layout**



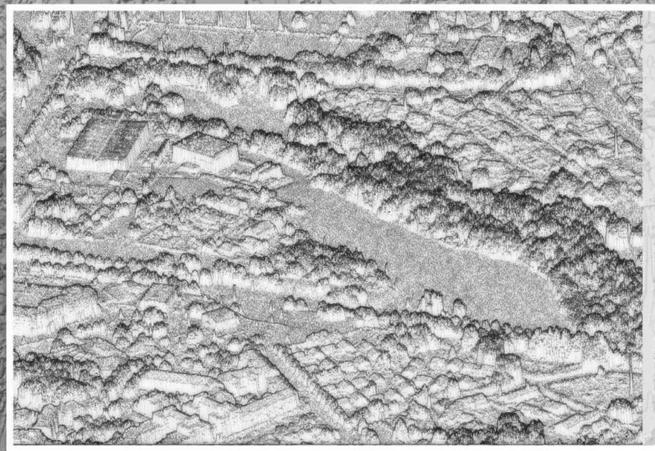
3. Connections and permeability

The project fosters **openness and connectivity**, weaving **circulation flows** throughout the site and strengthening ties with the **vegetation**



4. Solar orientation

The buildings have been carefully **oriented to optimize solar exposure**, maximizing **natural light and energy efficiency**



High-precision site analysis with LiDAR technology

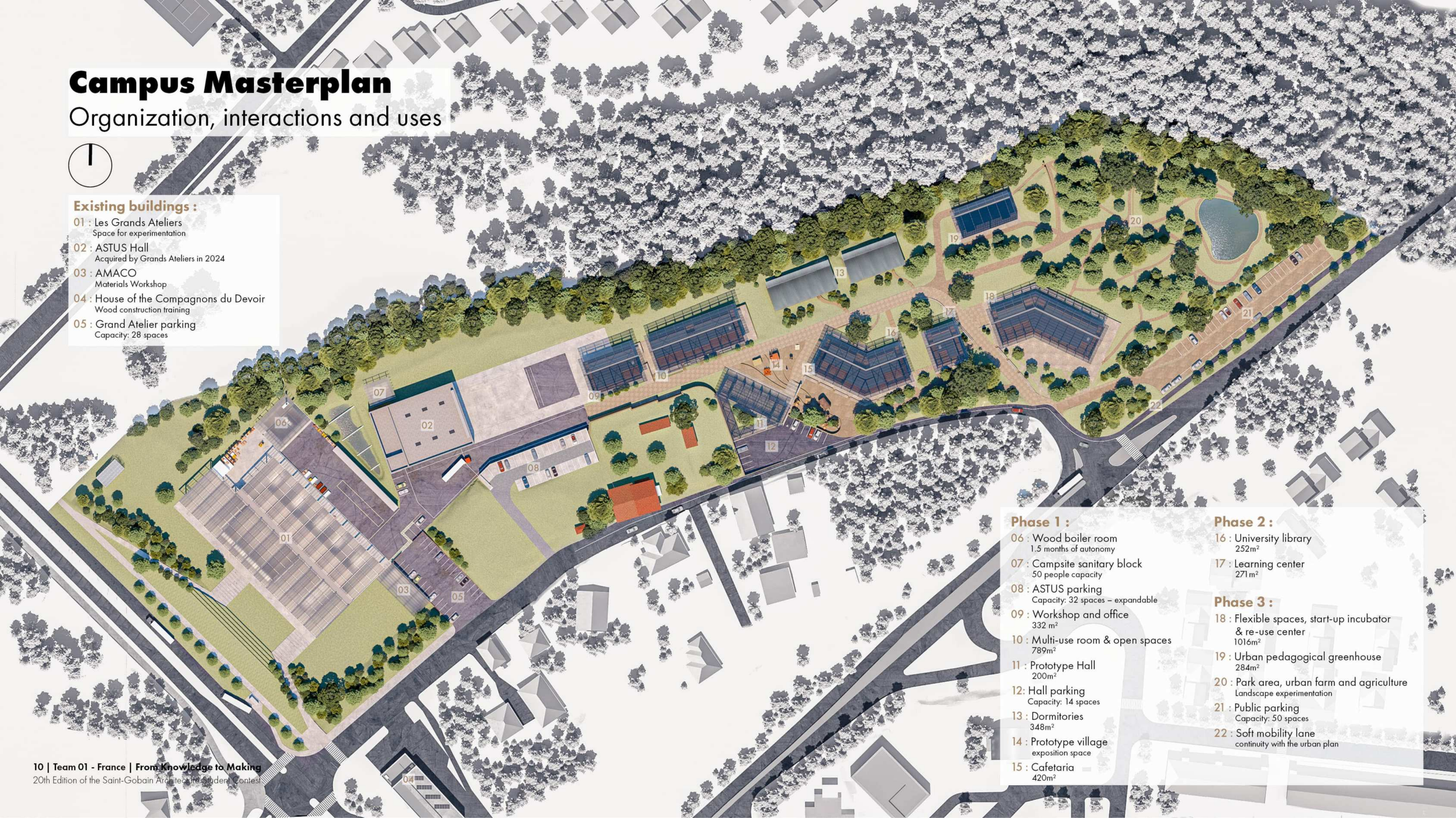
HD LiDAR technology enabled a precise topographic survey of the 20 000m² site, revealing its sloping terrain toward the northeast.

LiDAR (Light Detection and Ranging) is a remote sensing technology that uses laser pulses to measure distances with high accuracy.

The elevation varies significantly, with a 20-meter difference between the highest and lowest points.

Campus Masterplan

Organization, interactions and uses



Existing buildings :

01 : Les Grands Ateliers
Space for experimentation

02 : ASTUS Hall
Acquired by Grands Ateliers in 2024

03 : AMACO
Materials Workshop

04 : House of the Compagnons du Devoir
Wood construction training

05 : Grand Atelier parking
Capacity: 28 spaces

Phase 1 :

06 : Wood boiler room
1.5 months of autonomy

07 : Campsite sanitary block
50 people capacity

08 : ASTUS parking
Capacity: 32 spaces – expandable

09 : Workshop and office
332 m²

10 : Multi-use room & open spaces
789m²

11 : Prototype Hall
200m²

12: Hall parking
Capacity: 14 spaces

13 : Dormitories
348m²

14 : Prototype village
exposition space

15 : Cafetaria
420m²

Phase 2 :

16 : University library
252m²

17 : Learning center
271m²

Phase 3 :

18 : Flexible spaces, start-up incubator & re-use center
1016m²

19 : Urban pedagogical greenhouse
284m²

20 : Park area, urban farm and agriculture
Landscape experimentation

21 : Public parking
Capacity: 50 spaces

22 : Soft mobility lane
continuity with the urban plan

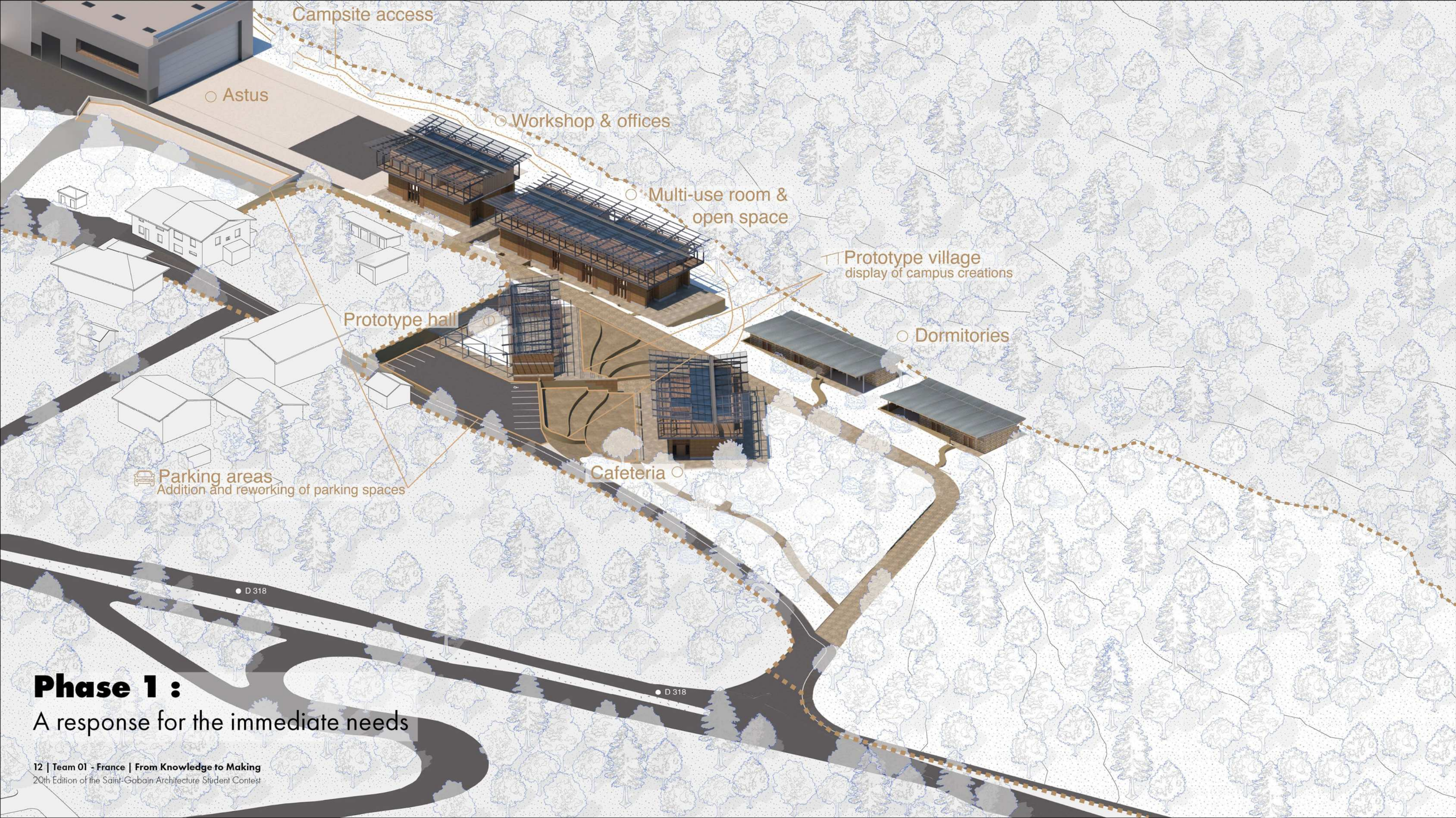
A phased design for an open and sustainable future

Our project in Villefontaine is built on a phased approach that goes far beyond simple time management: it becomes a true design strategy, carrying architectural, territorial, and environmental ambition. By spreading out the construction stages over time, we establish a flexible framework capable of addressing present needs while preparing for future uses. The campus thus becomes a living organism, whose identity is gradually shaped, in tune with its users.

This approach is rooted in the site's strategic location at the intersection of dynamic pathways, between city, nature, and industrial fabric. It allows for a gradual integration, deeply anchored in the realities of the territory. By working hand in hand with local stakeholders, institutions, and residents, each phase becomes an opportunity to strengthen long-term connections and to design the project as an open interface.

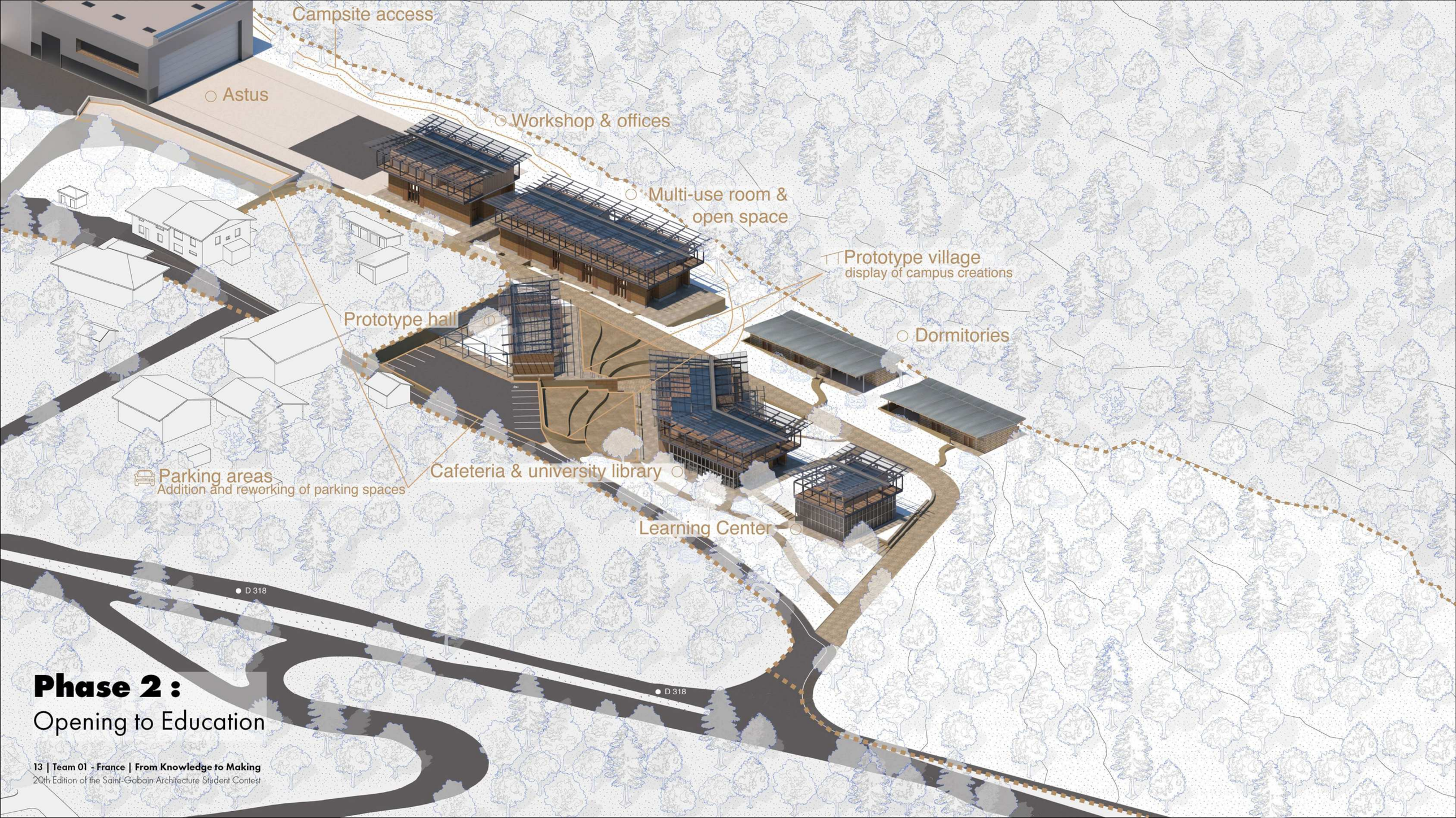
This process also supports a vibrant local economy: reuse of materials, mobilization of artisanal know-how, and the promotion of local entrepreneurship.

Phasing thus becomes the foundation for a resilient architecture one that embraces the unexpected, stimulates innovation, evolves with its context, and anchors the project in a living, collective dynamic.



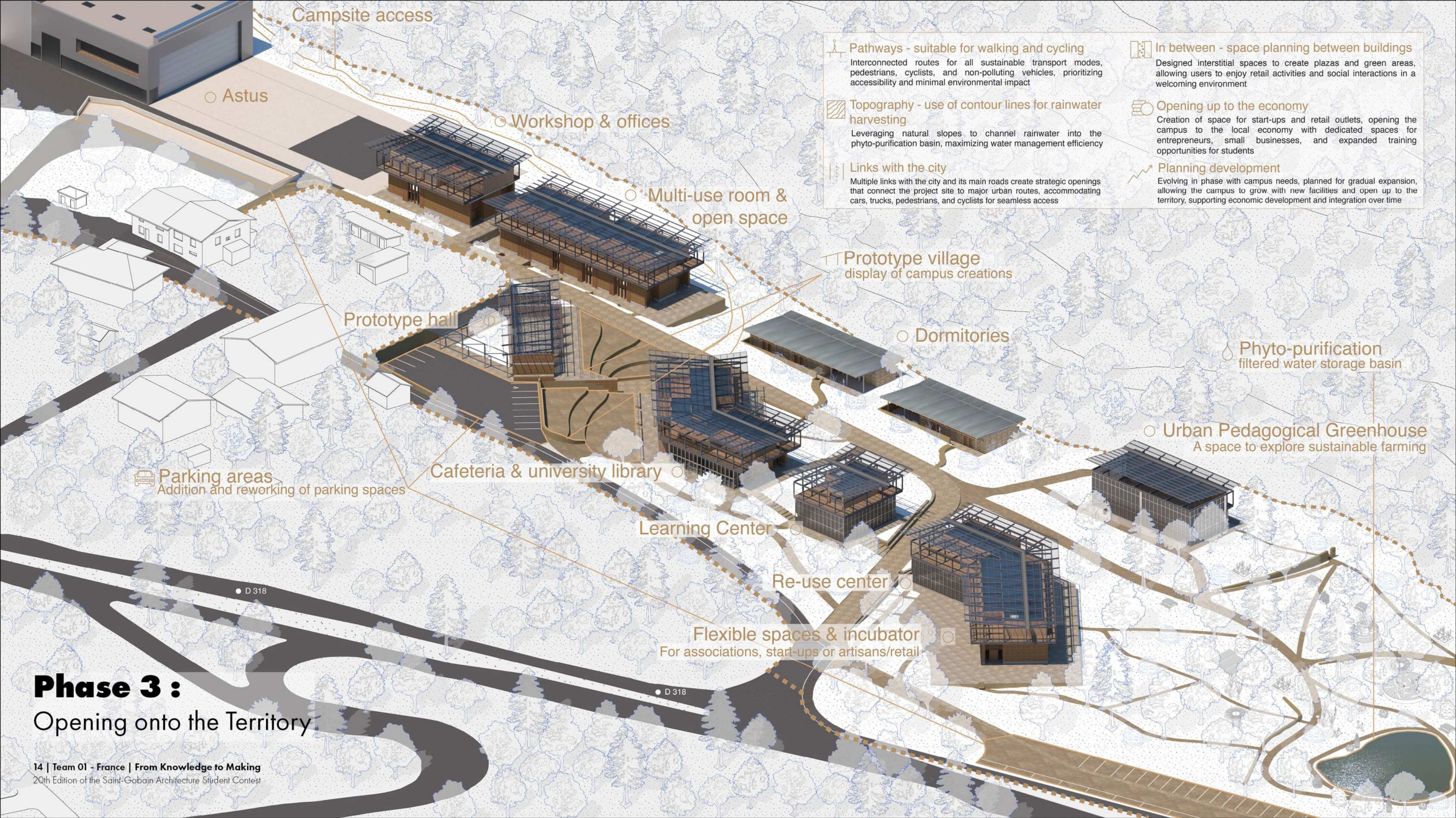
Phase 1 :

A response for the immediate needs



Phase 2 :

Opening to Education

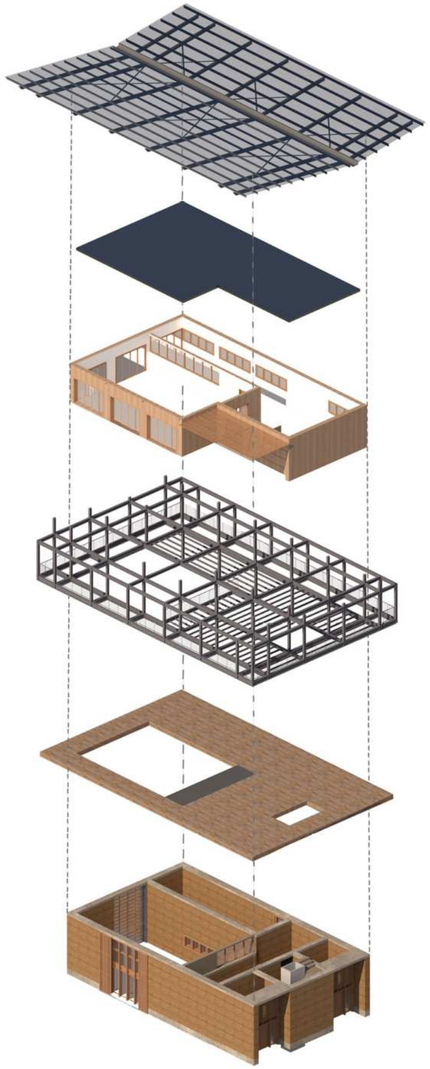


Phase 3 :

Opening onto the Territory

Conception strategies :

Building with the territory



Butterfly glass roof

Inspired by Les Grands Ateliers, the glass roof features an innovative system combining double waterproofing and **optimized natural ventilation.** Its **butterfly** design ensures efficient **rainwater management** while enhancing thermal performance.

Timber-framed walls

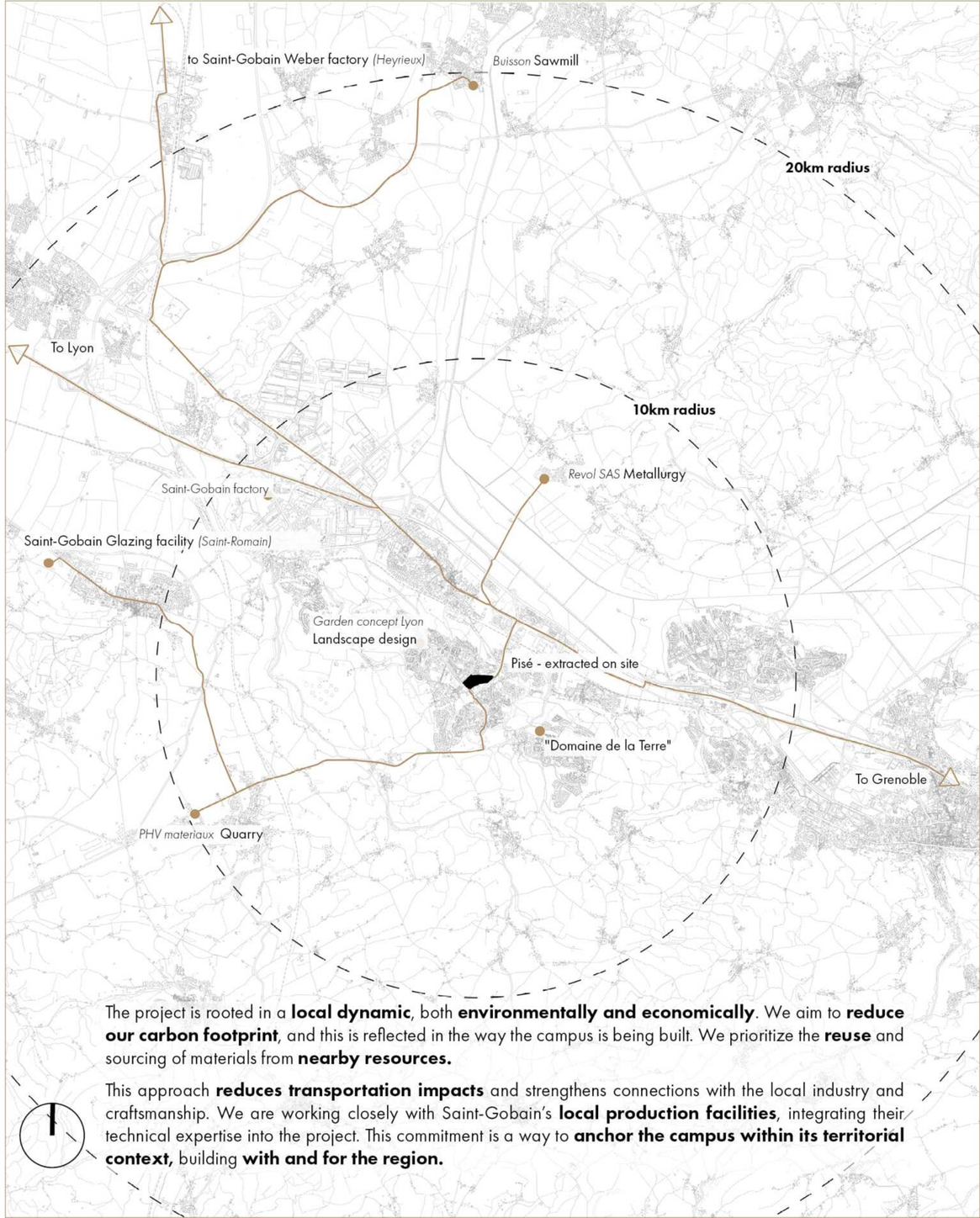
Our timber-framed walls, incorporating the **Terlian** solution, create a dialogue between metal, wood, and earth. This **hybrid system** combines efficiency, adaptability, and local integration.

Metal structure

Also inspired by Les Grands Ateliers, the metal structure ensures durability through modularity, flexibility, and optimized assembly. **40%** of the steel used in the project is **recycled**, reinforcing the choice of steel as a durable and **long-lasting material.**

Load-bearing Pisé wall

Pisé *(Rammed earth)* lies at the heart of our project, shaping both its structure and its connection to the land. **Sourced from the site itself**, it honors local materials while **reducing environmental impact.** Deeply rooted in the Rhône-Alpes tradition, it fosters collaboration with students from Les Grands Ateliers, weaving innovation with heritage.

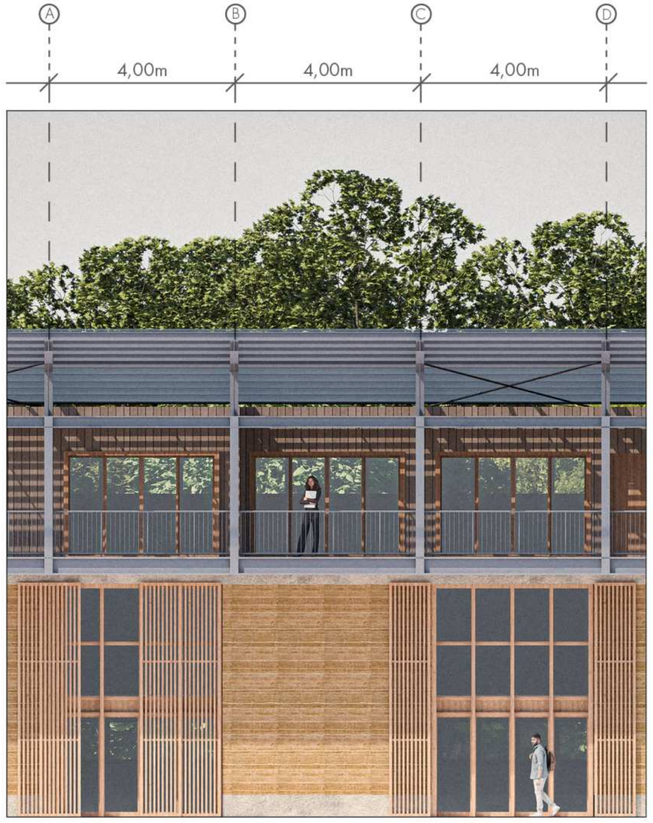


The project is rooted in a **local dynamic**, both **environmentally and economically**. We aim to **reduce our carbon footprint**, and this is reflected in the way the campus is being built. We prioritize the **reuse** and sourcing of materials from **nearby resources.**

This approach **reduces transportation impacts** and strengthens connections with the local industry and craftsmanship. We are working closely with Saint-Gobain's **local production facilities**, integrating their technical expertise into the project. This commitment is a way to **anchor the campus within its territorial context,** building **with and for the region.**

Conception strategies

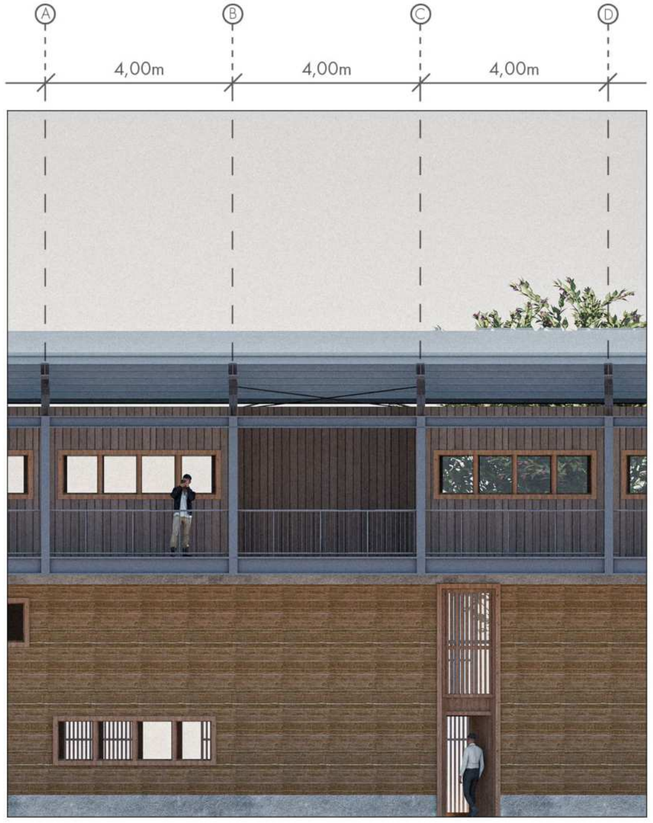
Climate-driven facade design



1. South Facade - Maximize solar gains

Large openings shielded by movable wooden louvers filter the summer sun while maximizing winter daylight. The **COOL-LITE® SKN 176 ORAÉ** glazing ensures thermal comfort without overheating, aligned with daytime activities and space occupancy.

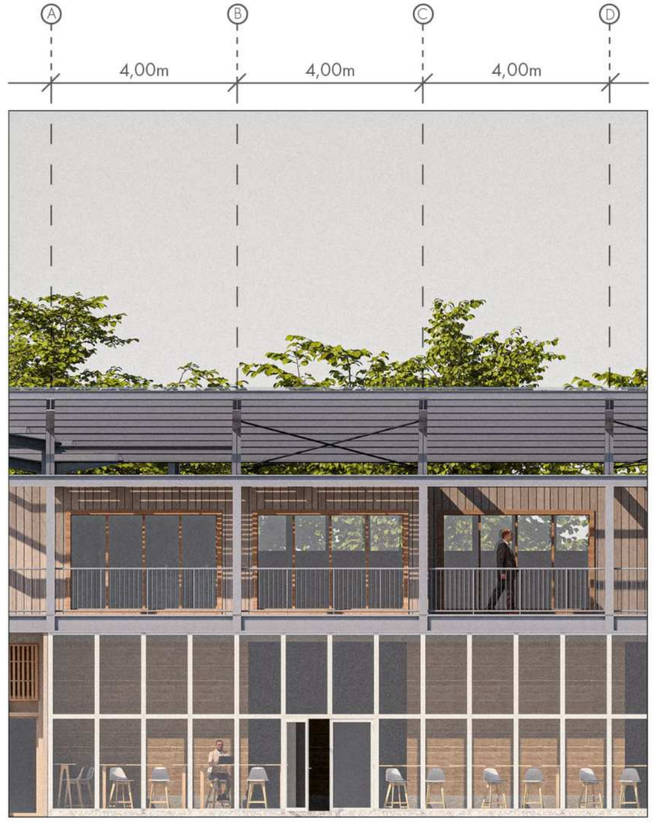
Solar gain reduction **(- 63%)**	Excellent thermal insulation **(Ug = 1.0 W/m²·K)**	High light transmission **(70%)**



2. North Facade – Minimize heat loss

Smaller openings, framed by robust wooden structures supporting the rammed earth, help reduce thermal losses. The **PLANITHERM® XN ORAÉ** glazing enhances this high-performance envelope by preventing condensation and limiting heat loss.

Optimized solar factor **(65%)**	Excellent thermal insulation **(Ug = 1.1 W/m²·K)**	Very high light transmission **(82%)**



3. A curtain wall for multi-confort

A smart curtain wall system using dynamic **SageGlass®** automatically regulates light and heat input. It highlights the thermal mass of the interior rammed earth wall, ensuring consistent comfort and creating an active facade.

Thermal insulation **(Ug = 1.1 W/m²·K)**	blocks solar gain when opacified **Up to 96%**

Phase 1

A response for the immediate needs

The entrance to the new campus is **designed as a natural extension of the Grands Ateliers**, enhancing its connection to the existing infrastructure. The integration with Astus' slab strengthen this functional synergy. Designed for **efficiency**, **the prototyping workshop features direct and open access**, with a large 4x5m entrance ensuring **smooth circulation for machinery and large-scale prototypes**.

The **main circulation axis** of the new campus aligns with the existing layout, ensuring a smooth and coherent connection. Designed as a major thoroughfare, it provides optimal **accessibility for all types of vehicles, facilitating movement and logistical operations**.

Workshop and Offices

Defining a replicable architectural language

Designed as a demonstration building, this building serves as a model for bioclimatic construction across the entire campus

Its diverse program, including workshops, offices, laboratories and open spaces, makes it **an ideal platform to test and showcase a high-performance, sustainable architecture tailored to various needs.** This complexity allowed us to conduct reliable studies on **thermal performance, greenhouse gas emissions, and to ensure consistent comfort across all seasons.**

Conceived as an open-air laboratory, it allows for **testing, demonstrating, and validating architectural and technical choices that will be applied across the entire project.** Each assembly, orientation, and passive strategy becomes **a learning tool**, a tangible proof of concept serving a responsible architectural approach.

This building is not merely functional : it embodies a method, a language, and a commitment, reflecting a campus where construction itself becomes a pedagogical act.

01 : Experimental and storage slab for Astus

02 : Experimentation spaces (workshop and lab)

03 : Theorization spaces (offices)

04 : Multi-purpose room

05 : Open-space and offices

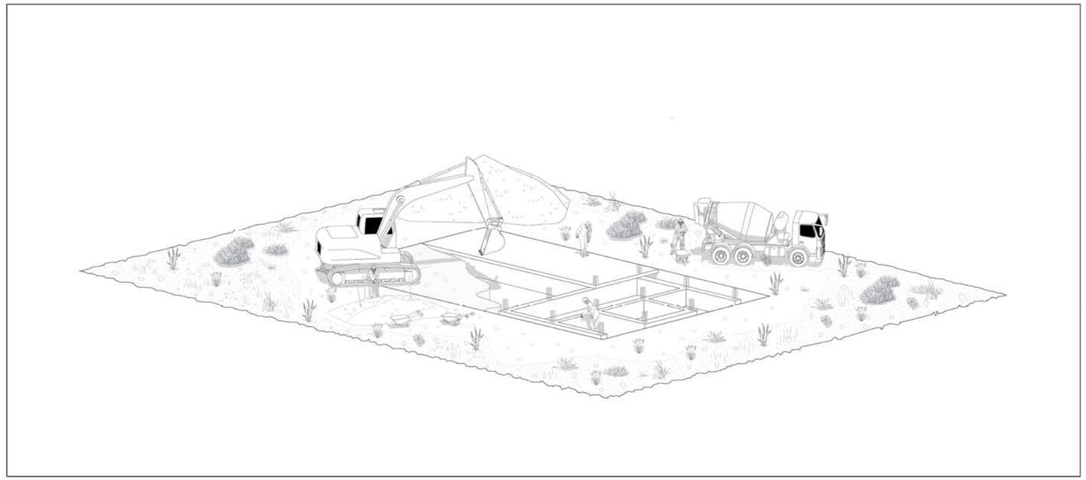
06 : Main open-space

07 : Overlook terrace

08 : Prototypes village

Construction process

Material implementation



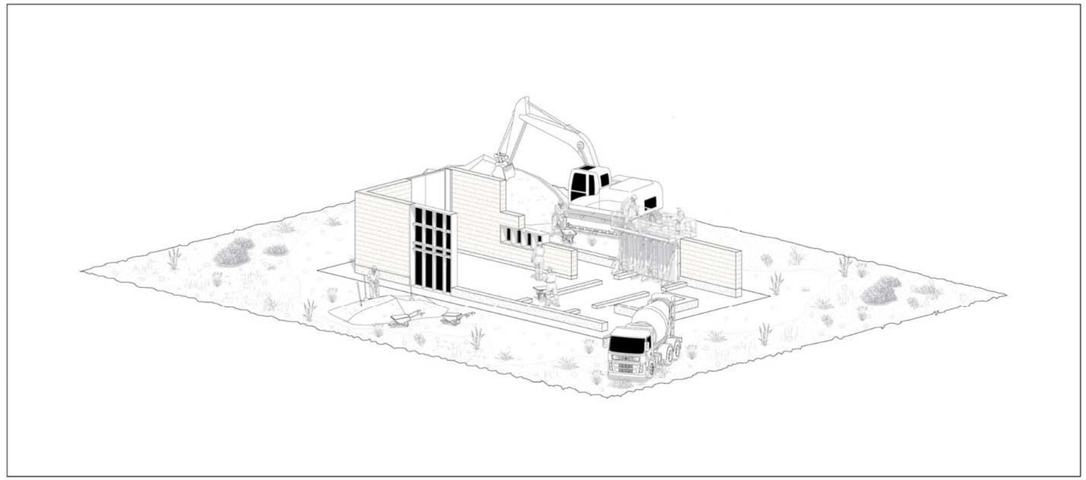
1. Excavation and foundation installation

Concrete is used thoughtfully, limited to areas with high mechanical constraints. With **Chryso® EnviroMix** and **Eco-Activ**, we reduce the carbon footprint by incorporating recycled materials and low-clinker cement, combining performance and environmental respect.

Up to 50%
reduction in CO2 emissions

+ 50%
reductionn with EnviroMix ULC.

Performance and new binders,
a response to the use of new binders.



2. Construction of rammed earth walls using excavated soil

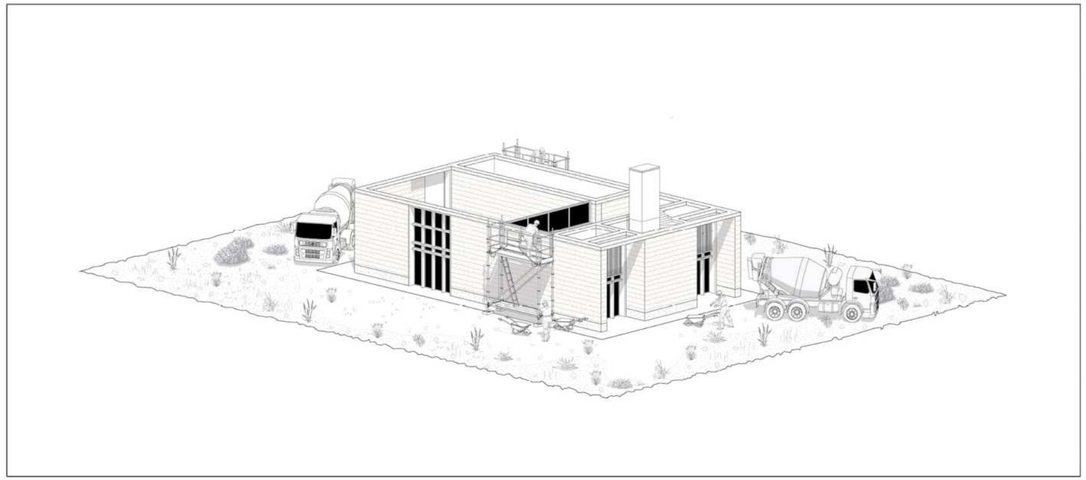
Its implementation, well mastered in the Rhône-Alpes region, facilitates direct collaboration with specialized actors such as **Amàco** and **Craterre**, thereby strengthening the link between innovation and tradition.

100%
of excavated soil reused

1035m3
of excavated earth reused for the wall

Construction process

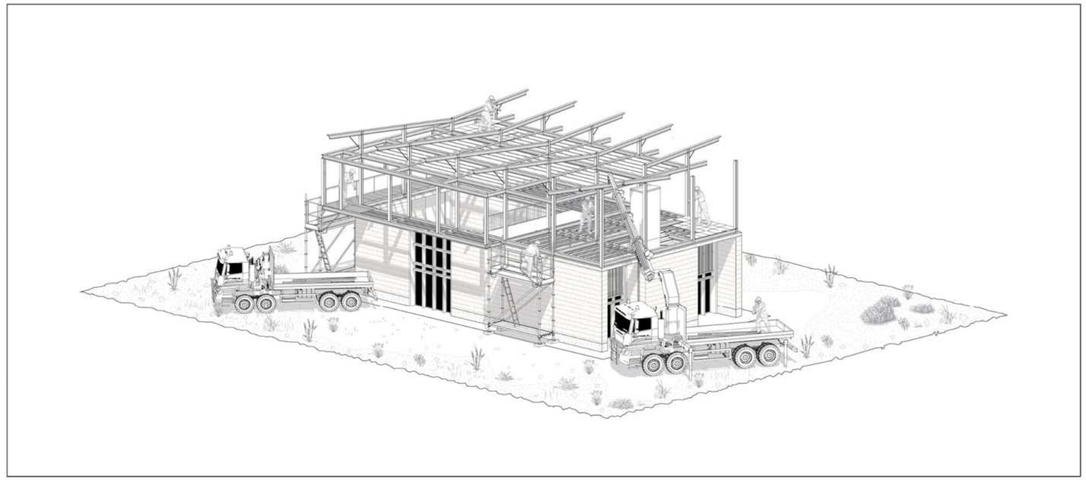
Material implementation



3. Construction of the concrete base

Concrete is used thoughtfully, limited to areas with high mechanical constraints. With **Chryso® EnviroMix** and **Eco-Activ**, we reduce the carbon footprint by incorporating recycled materials and low-clinker cement, combining performance and environmental respect.

Up to 50% reduction in CO2 emissions	**+ 50%** reductionn with EnviroMix ULC.	**Performance and new binders,** a response to the use of new binders.



4. Assembly of the metal structure of the floor

The metal structure of our project, inspired by the Grands Ateliers, **is designed to last**. If needed, the **Webercoat® Intumescent coating, fire-resistant intumescent paint with low VOC content** can be used in our project.

Dimensioning of steel columns

Dead load (structure + glass roof): **36.6 kN**

Estimated live load (building use): **18.3 kN**

Snow point load (estimated): **17.2 kN**

Safety factors applied:

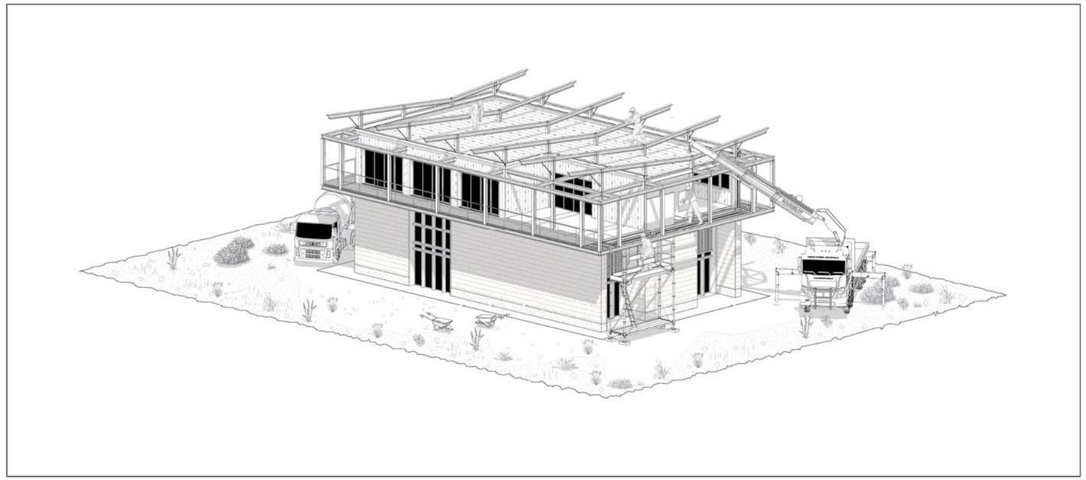
FELU = 1.5 × 36.6 + 1.35 × 18.3 + 1.35 × 0.5 × 17.2 = 91.22 kN

This total design load was used to size the steel columns.

Construction process

Material implementation

ORAE® : the world's first low-carbon glass.



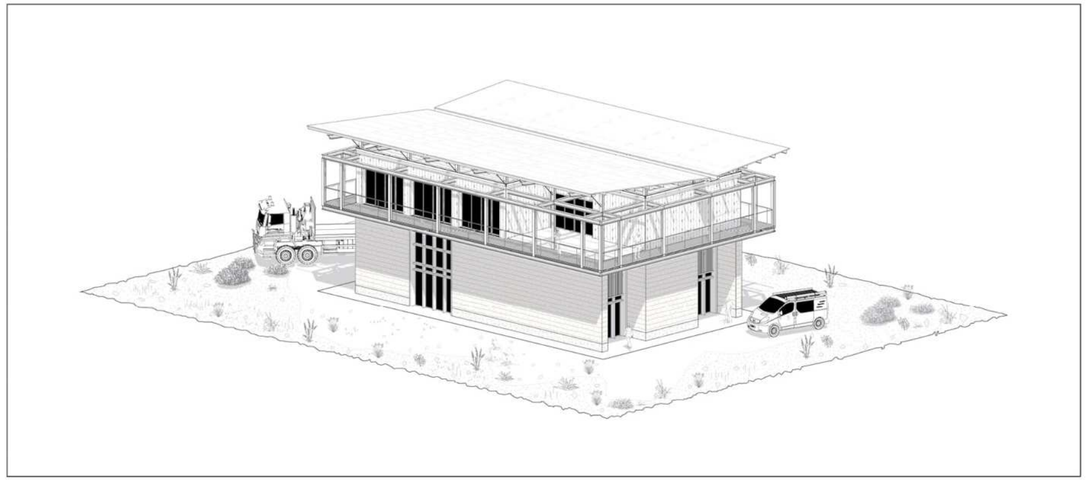
5. Wood frame filling at the first floor, with a Terlian insulation system

Our use of **Terlian®** in Villefontaine combines performance, sustainability, and environmental respect. This hybrid system, at the first level, combines metal structure, wood frame, and lightweight earth, **offering an innovative solution.**

- **Lightweight and rapid installation with the wood frame.**

- **Use of Terlian :** up to 30% compared to traditional solutions.

- **Improved thermal efficiency :** 50% more thermal inertia, reducing heating and cooling needs.



6. Implementation of the recycled glass roof

The glass roof, made with **recycled ORAÉ® glass**, emphasizes an ecological and sustainable approach. This material helps reduce the carbon footprint while **providing a thermal and ventilated solution** that creates a natural buffer for comfort.

- **Chimney Effect :** Hot air rises and exits through high openings; fresh air intake at the bottom.

- **Seasonal Thermal Regulation:**
  Summer: Heat evacuation for thermal comfort.
  Winter: Heat storage and natural redistribution (thermal buffer).

- **Moisture Management and Material Protection:** Prevents condensation and protects wooden elements.

- **Bioclimatic Integration:** ORAÉ® glass: lightweight, transparent, low environmental impact, and optimizes light

Bioclimatic design

Integrating comfort

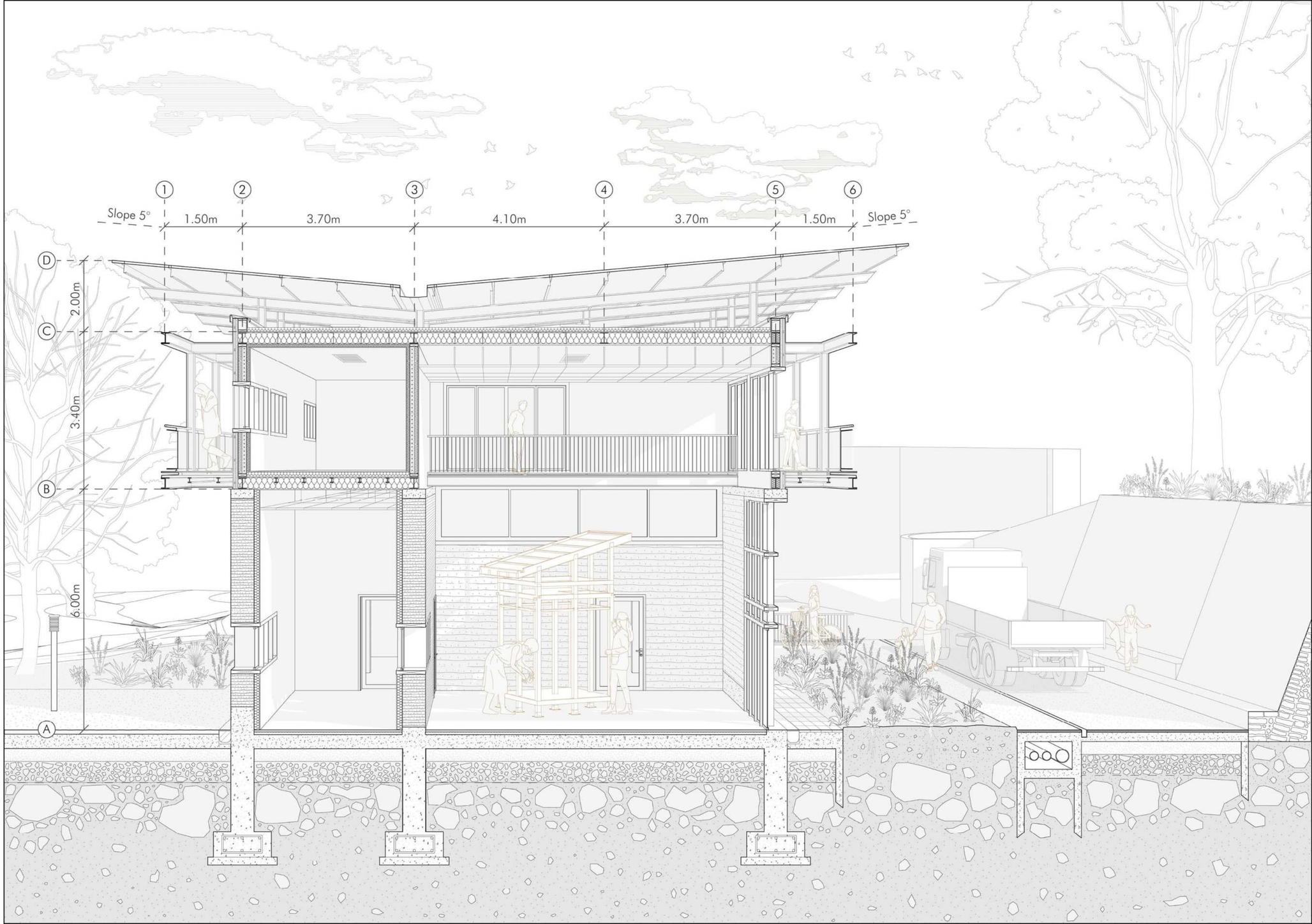
Lighting comfort

Winter comfort

Summer comfort

Acoustic comfort

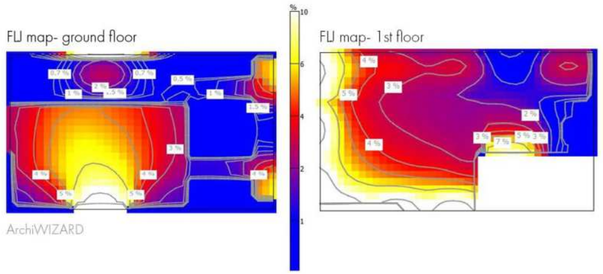
Water management



Solar Gain

Optimized for interior light and "pisé" heating

Lighting comfort



83% of the FLJ building > 1.8%

Average FLJ : **3.9%**

Average received illuminance : **1809 lux**

The southwest orientation of the buildings, combined with generous openings, ensures optimal daylight. In winter, this setup captures solar energy to naturally warm the interiors, with the rammed earth walls' thermal mass storing the heat. In summer, a 1.5-meter cantilevered walkway and sunshades protect the facades, limiting overheating while maintaining consistent visual comfort.

Winter comfort

Summer comfort

Acoustic comfort

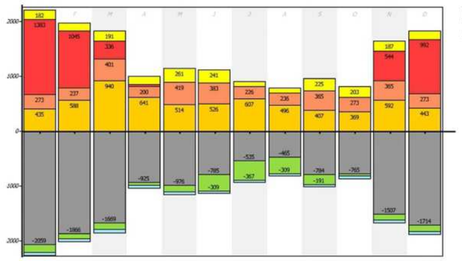
Water management

Passive Heat Gain

Sunlight, thermal buffer and climatic well

Lighting comfort

Winter comfort



Energy balance
ArchiWIZARD

Low heating demand : **4346 kWh**

High solar gain : **6565 kWh**

Solar contribution: 6565 kWh
Internal contributions: 3657 kWh
Envelope transmission: -14056 kWh
Losses by air renewal: -2027 kWh
Radiation towards the sky: -686 kWh
Heating need: 4346 kWh

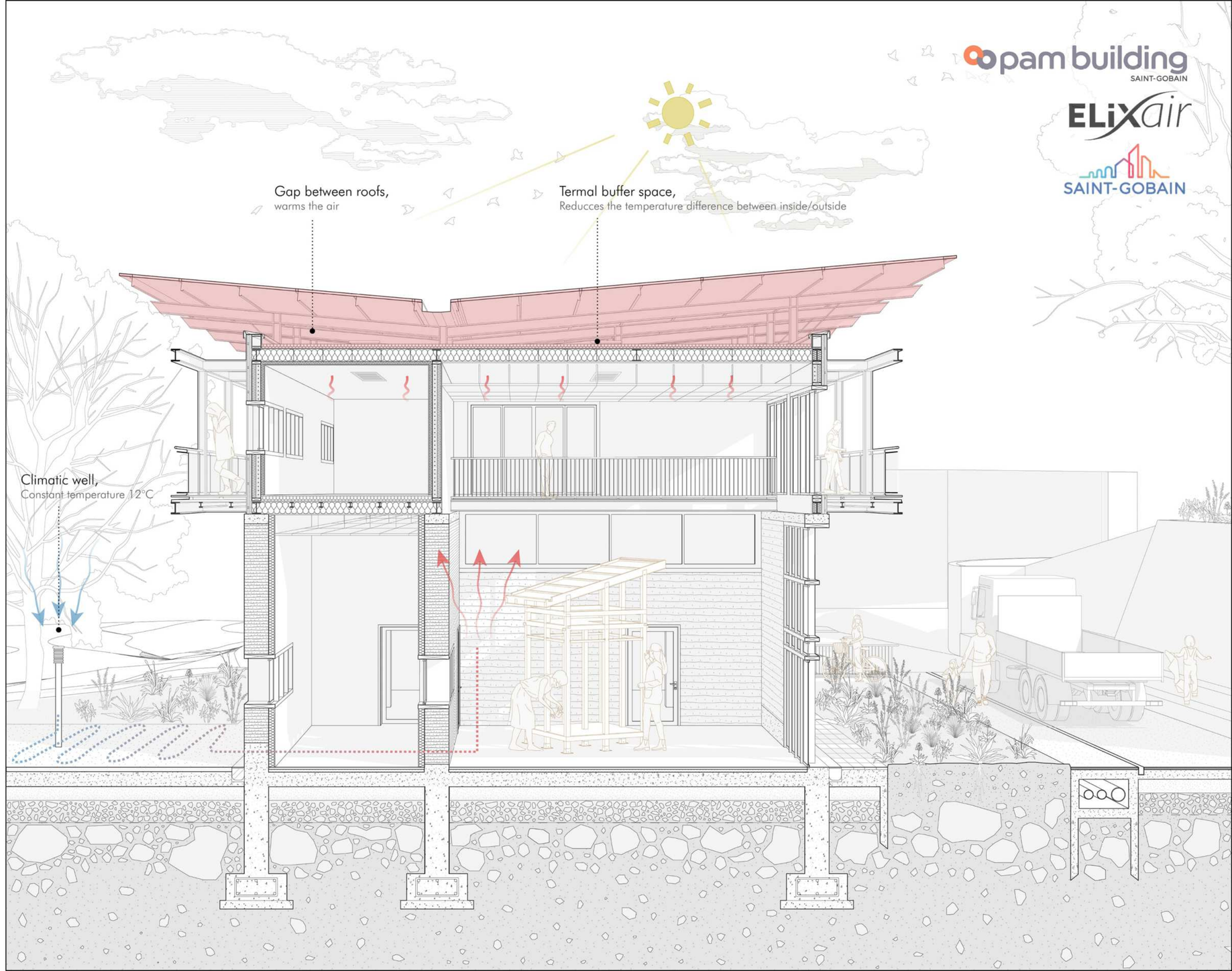
The building adopts a **passive strategy** with maximized solar gains and rammed earth walls providing a thermal delay of 10 hours, ensuring optimal comfort during the winter.

The raised glass roof plays a key role, acting as a **natural thermal buffer by capturing solar heat and limiting the loss of warm air.** Along with the **ELIXAIR® climatic well**, it ensures energy-efficient ventilation, bringing in outside air at a constant temperature all the year. This design maintains a stable temperature and reduces energy consumption.

Summer comfort

Acoustic comfort

Water management



pam building
SAINT-GOBAIN
ELIXair
SAINT-GOBAIN

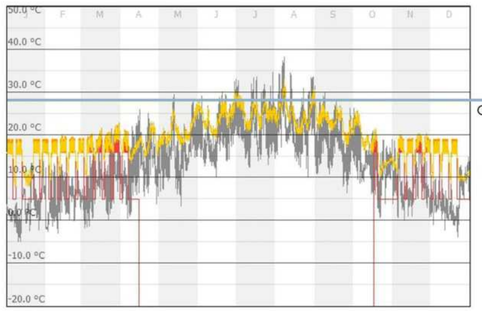
Heat Evacuation

Ventilated buffer, climatic well and night ventilation

Lighting comfort

Winter comfort

Summer comfort



Interior temperature ArchiWIZARD

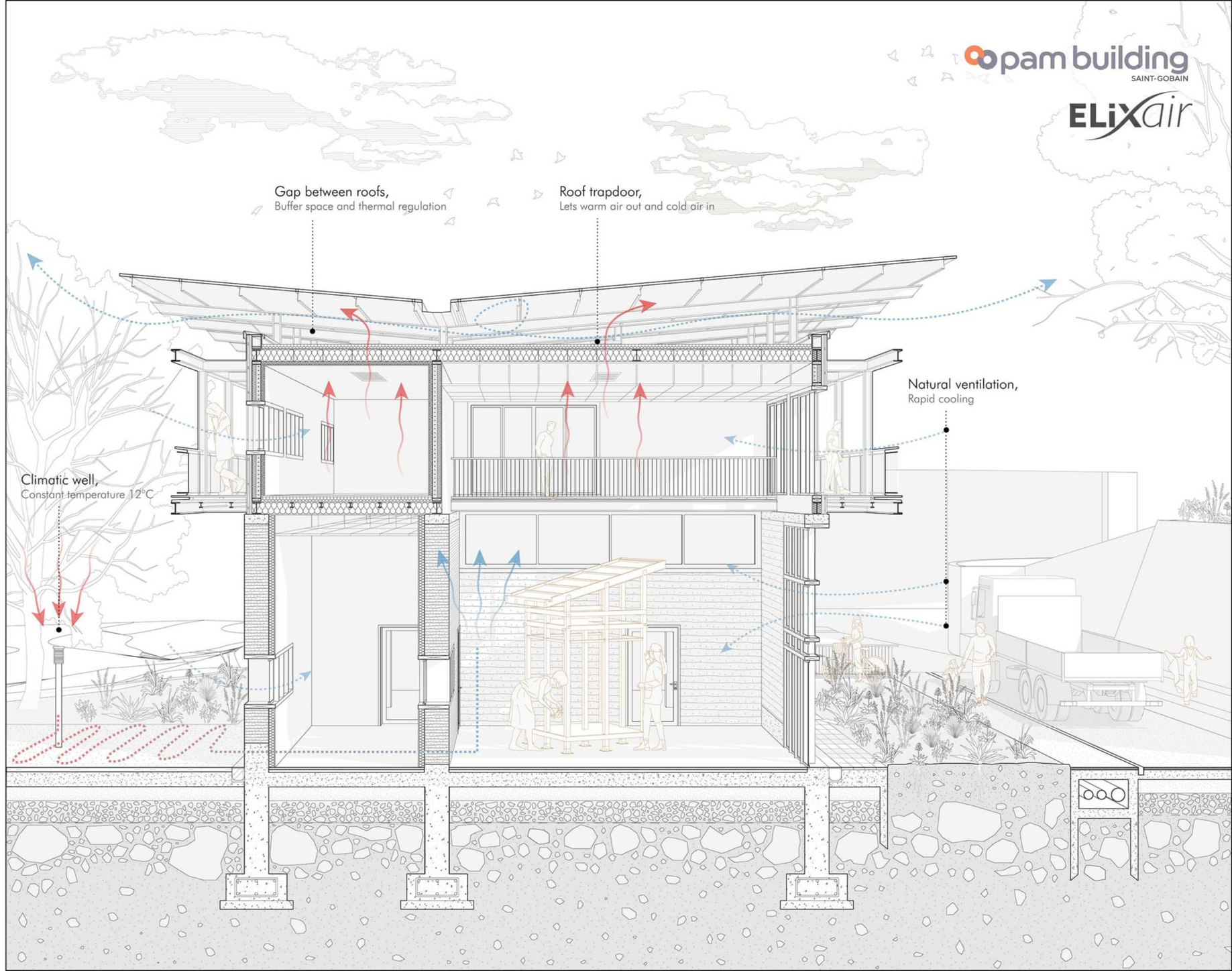
Exterior temperature
Heating temperature set
Internal air temperature

4% discomfort 87h > 28°C

The **ELIXAIR® climatic well**, continuously active, brings in outdoor air at a constant, cooler temperature than the ambient air, ensuring natural and energy-efficient ventilation.
The raised glass roof, equipped with ceiling vents, facilitates the evacuation of hot air through thermal uplift, promoting natural airflow. Finally, solar protections (overhanging walkways, sliding shutters, and extended eaves) reduce direct solar gain while preserving natural light, ensuring indoor comfort even during extreme heat.

Acoustic comfort

Water management



Sound Control

Implementing innovative solutions

Lighting comfort

Winter comfort

Summer comfort

Acoustic comfort

Selection of Use-Specific Acoustic Solutions

ECOPHON® Quadrillo :

- Noise reduction coefficient up to 1,00
- Recycled content up to 50%

ECOPHON® Claro :

- Noise reduction coefficient up to 0,90
- Recycled content up to 57%

PLACO® Phonique :

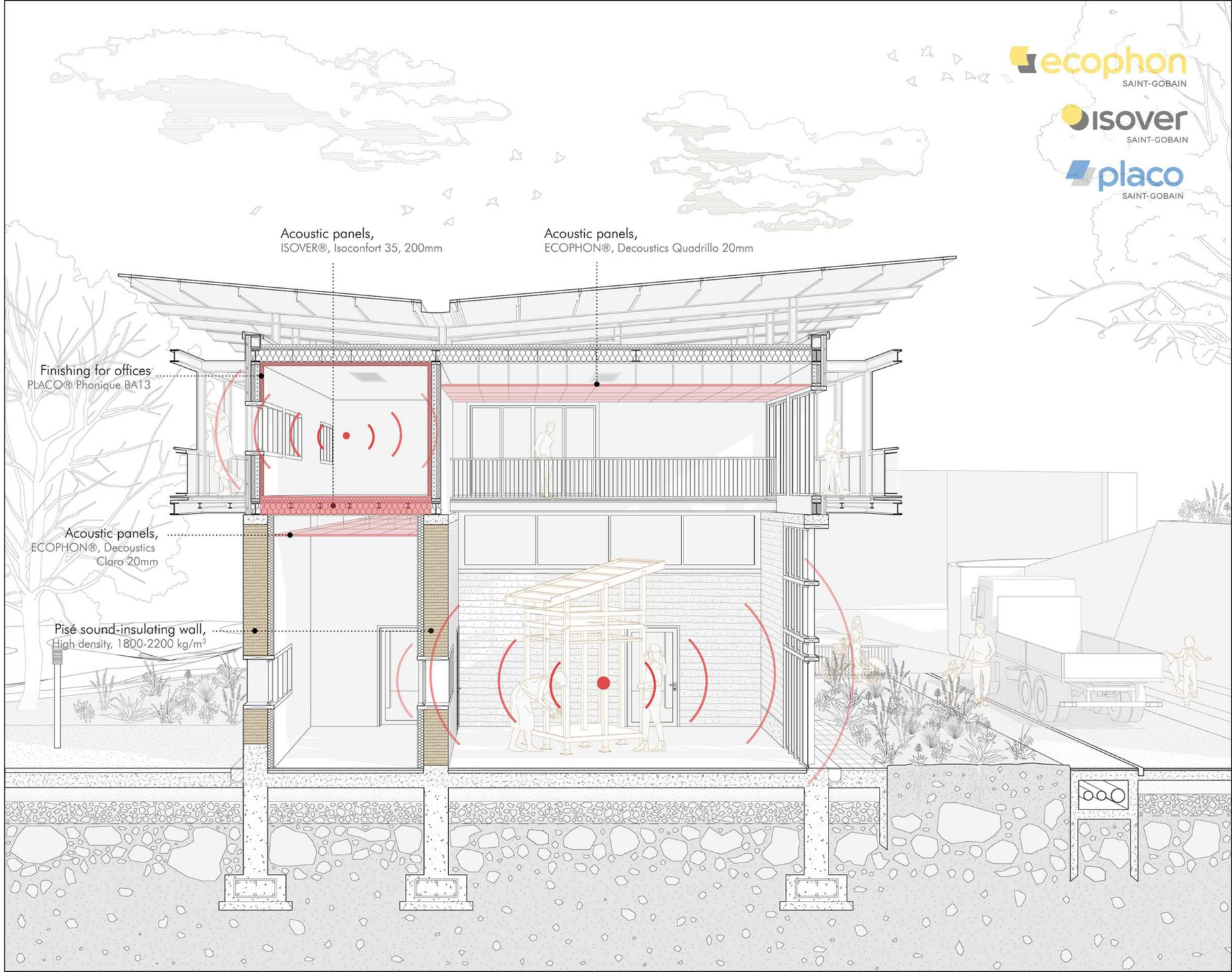
- Noise reduction up to 50%
- 3db acoustic reduction

ISOVER® Isoconfort 35 :

- 4db acoustic reduction
- Reduces of 20db the impact noise

On a university campus, sound comfort is key to supporting focus, interaction, and calm. From the start, the project integrates **acoustic solutions tailored to each space**: reinforced partitions in noisy areas (corridors, workshops) and specific treatments in quieter zones like offices, where **high-density insulation and technical plasterboards** ensure a **peaceful atmosphere**. Here, acoustic design becomes a true driver of **well-being.**

Water management



Managing Rain

Optimized collection, drainage and infiltration

Lighting comfort

Winter comfort

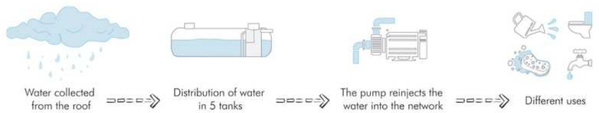
Summer comfort

Acoustic comfort

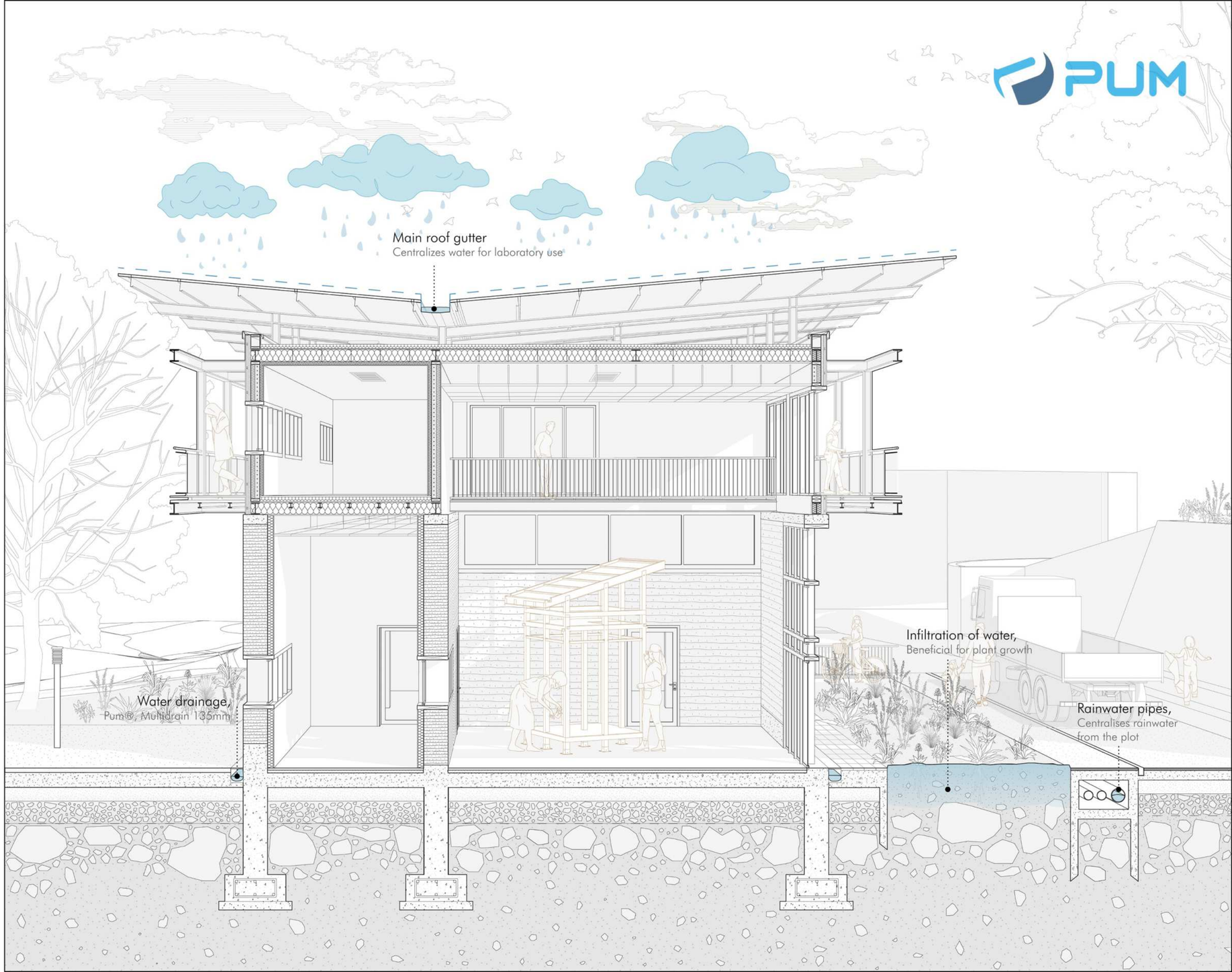
Water management

The **butterfly roof**, combined with its large glazed surfaces, captures **rainwater** and efficiently channels it **toward a unique central drain**, minimizing losses and concentrating the collection.

This water is used for **non-potable needs** such as sanitation, irrigation, and maintenance, enhancing **water autonomy** and reducing reliance on external networks.

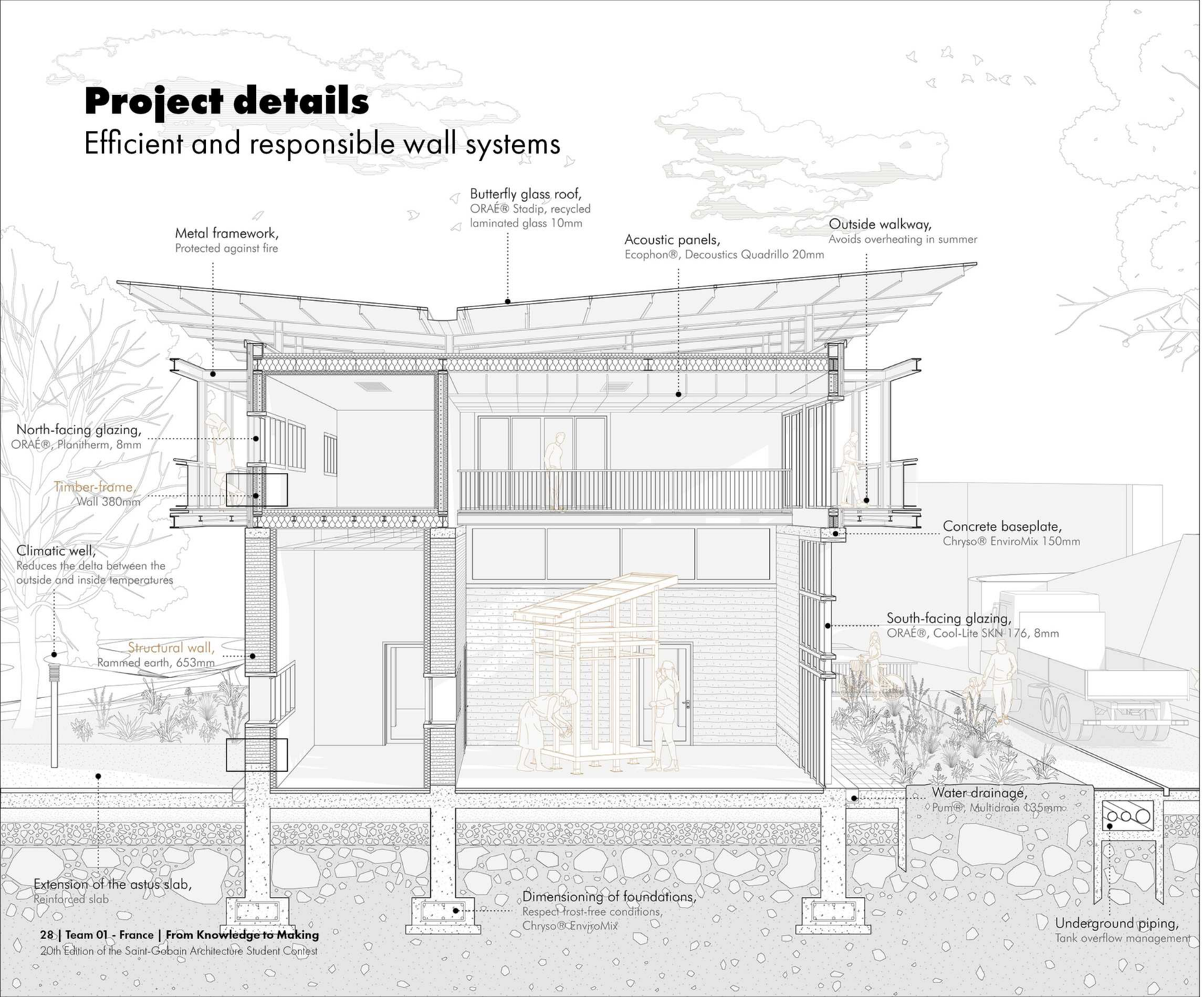


In case of **heavy rainfall**, an overflow system redirects excess water through ducts in the central roadway to a landscaped area, promoting **infiltration** and limiting runoff. The building actively participates in a controlled **local water management cycle.**



Project details

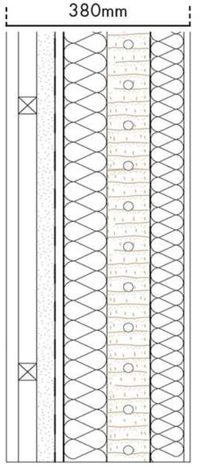
Efficient and responsible wall systems



1st floor - **Timber-frame wall with TerLian® insulation system**

U = 0,09 W/(m²K)

R = 11,11 m²·K/W



INT

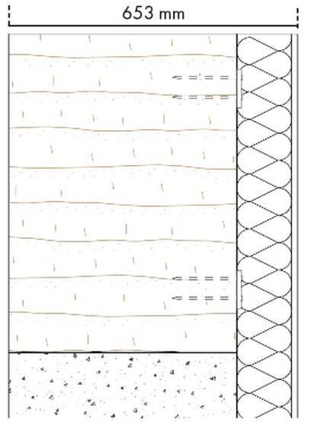
- ISOVER, **Placo®** Activ›Air® BA 13
- ISOVER, Par phonic tech 60mm
- ISOVER, **Vario® Xtra**, hygro-regulating membrane
- **Terlian®**, 80mm
- WEBER, MD 045 Fassade, 100mm
- Working veil, 12mm
- ISONAT, Flex 40, wooden fiber, 40mm
- Rainscreen
- Lathing cladding
- Chestnut cladding, 20mm

EXT

Ground Floor - **Structural rammed earth wall with vapor permeable insulation.**

U = 0,18 W/(m²K)

R = 5,56 m²·K/W



INT

-ISOVER, Placo® Activ'Air® BA 13

-ISOVER, Isocoton, 140mm

-ISOVER, Vario® Xtra, hygro-regulating membrane

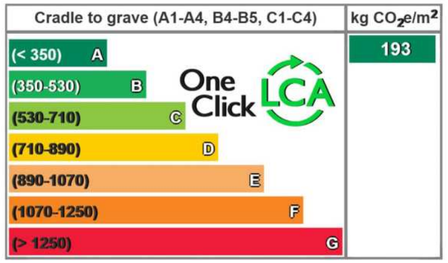
-Rammed earth, 500mm

EXT

Life Cycle Carbon Assessment

Low-impact materials

The use of **recycled glass and steel**, **low carbon** concrete and **Pisé** significantly reduces the **building's carbon footprint.**



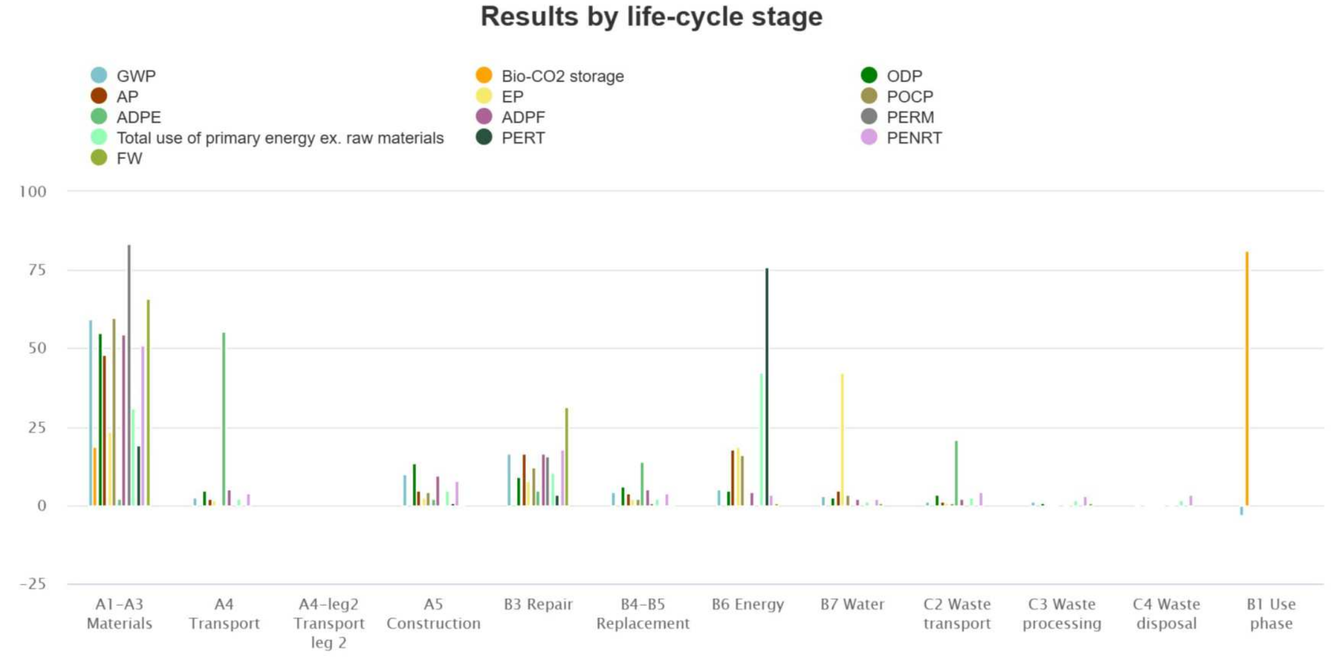
Total emissions : **116 Tonnes CO2e**

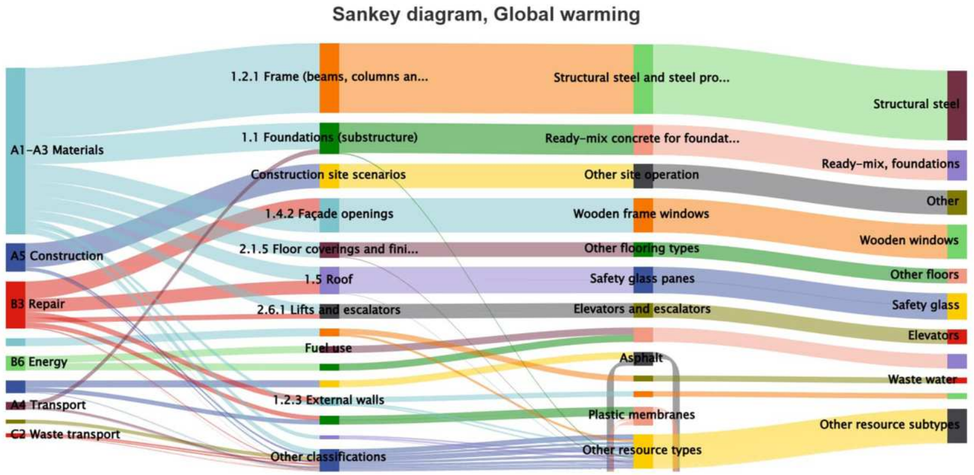
Emissions per m² : **193 kg CO2e/m²**

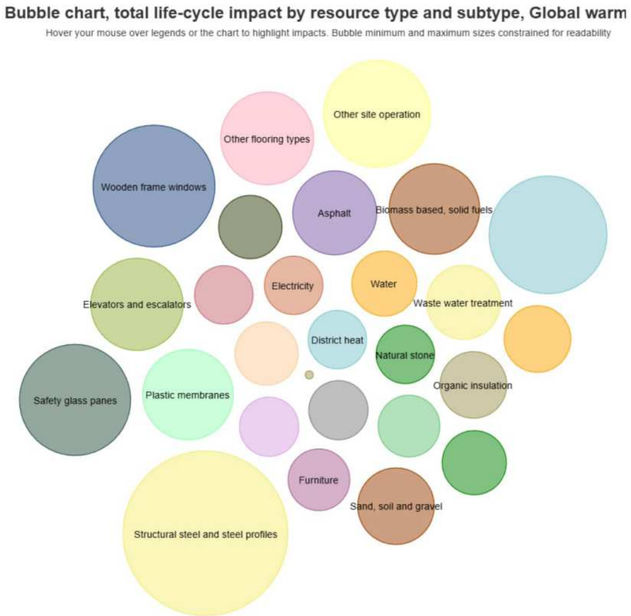
Annual carbon intensity : **5.02 kg CO2e/m²/year**

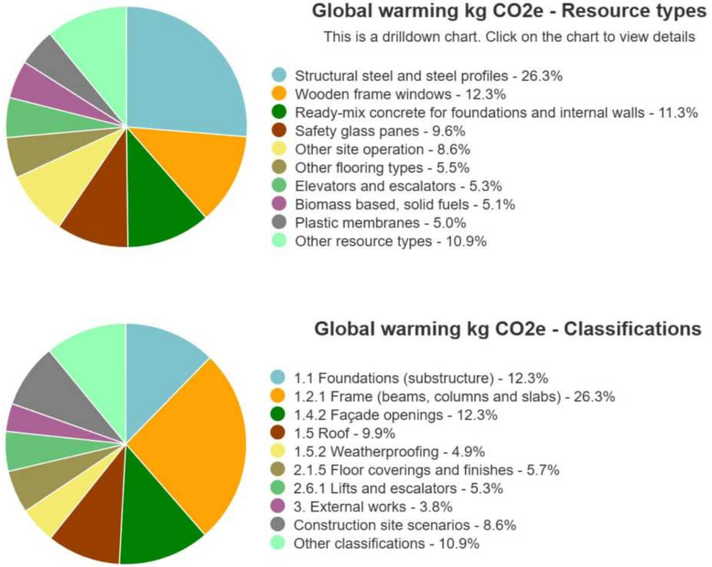
Social cost of carbon : *5,787€*

Level of emissions **well below RE2020 thresholds**





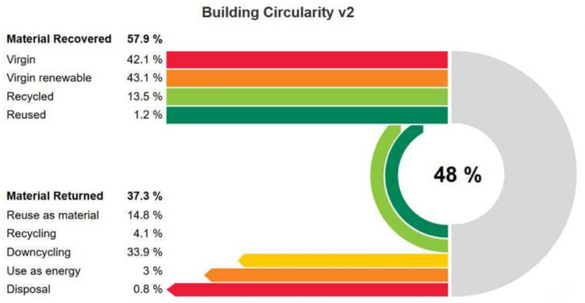




Building Circularity

An eco-responsible approach

The project prioritizes **circular strategies** through the use of **on-site extracted** rammed earth (**fully reusable**), partially recycled steel, and 64% recycled glass.



Achieved circularity rate : **48%**

Recovered materials : **811,390 kg :**

– 109,924 kg recycled (13.5%)

– 9,880 kg reused (1.2%)

– 349,878 kg virgin renewable materials

Returned materials : 37.3%

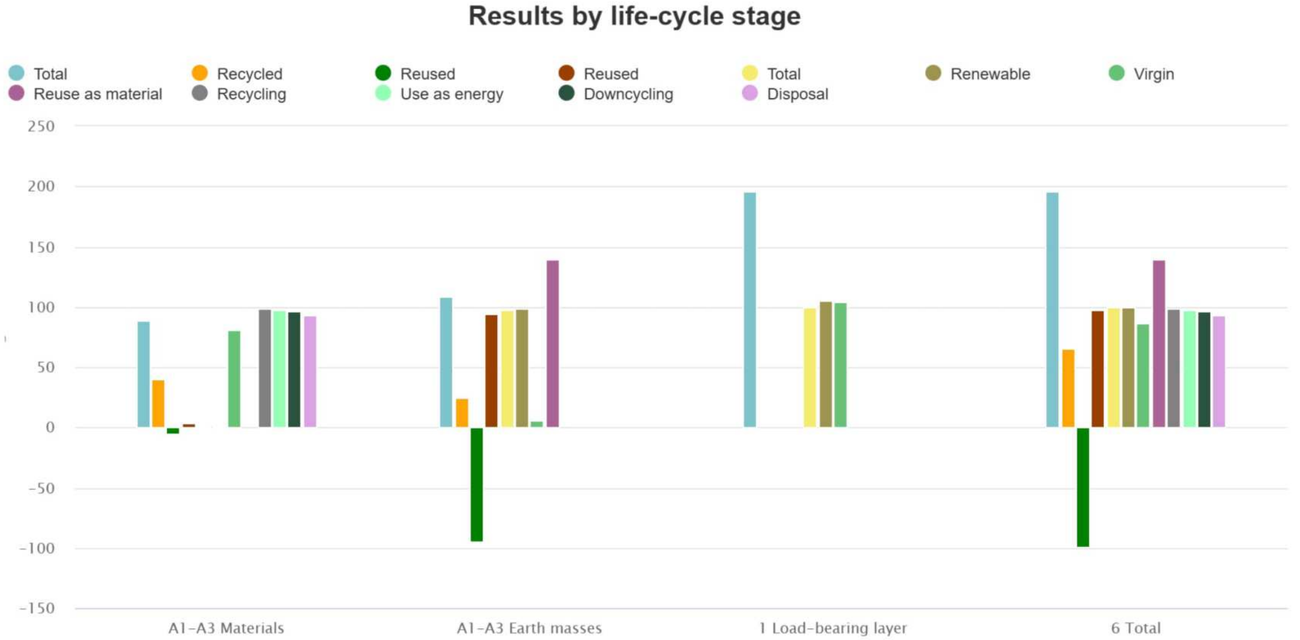
Alliance HQE GBC FRANCE

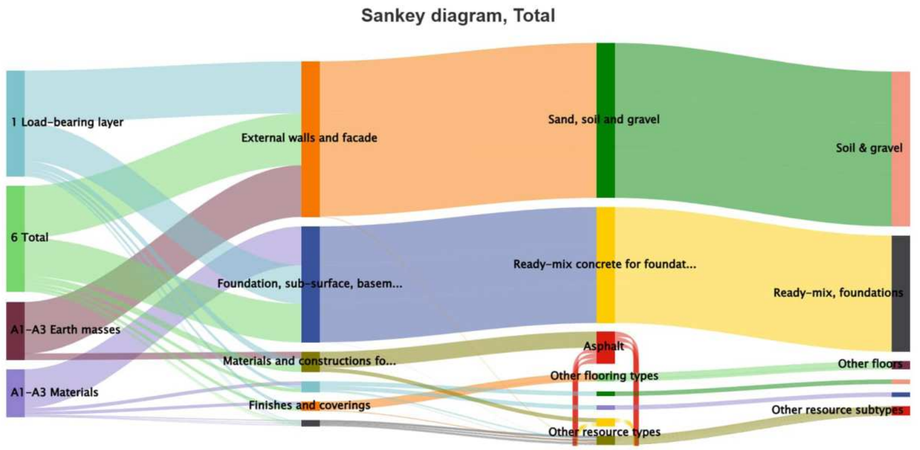
This project is designed to meet HQE certification by combining low-impact construction, resource efficiency, and user well-being.

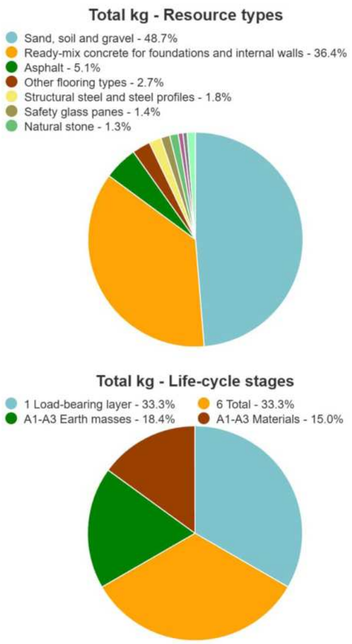
Key strategies include :

– Use of unstabilized rammed earth extracted on-site and **locally sourced materials**
– Bioclimatic design with **low energy needs** : total annual energy demand: 8,628 kWh
– Heating provided by a wood boiler using local offcuts, ensuring a **site-based energy source**
– **Low carbon footprint**: 193 kg CO_2e/m^2, or 116 t CO_2e total
– Biosourced, VOC-free materials ensuring **high indoor air quality**
– **Circular design** with a 48% circularity rate and materials designed for reuse
– **Optimized natural lighting, acoustic comfort, and thermal regulation**
– Realized as a participatory construction site, **hands-on learning in sustainable building practices**

These features fully support the HQE pillars: **eco-construction, eco-management, comfort, and health.**







Meticulous finishes

Focused on well-being and a healthy indoor environment

Our project includes 5 types of glass **[STADIP® ; SageGlass® ; Cool-LITE® ; PLANITHERM®; Priva-LITE®]**, each carefully selected based on specific performance criteria: solar control, thermal insulation, safety, or transparency. Each choice is complemented by tailored finishes, ensuring overall coherence and high performance.

To support this approach, we use **SWISSPACER® warm-edge spacers** in all window frames :
- Reduces heat loss
- Prevents edge condensation
- Improves indoor thermal comfort

Finishes play a key role in indoor air quality and the overall atmosphere of the building. By choosing silicate-based **paints free of solvents and plasticizers**, along with natural materials with **very low VOC emissions**, we create a healthier, more breathable, and sustainable environment. These choices support **natural humidity regulation, reduce indoor polluants**, and contribute to **user comfort.**

Silicate paints – **Bio-based and healthy choice**

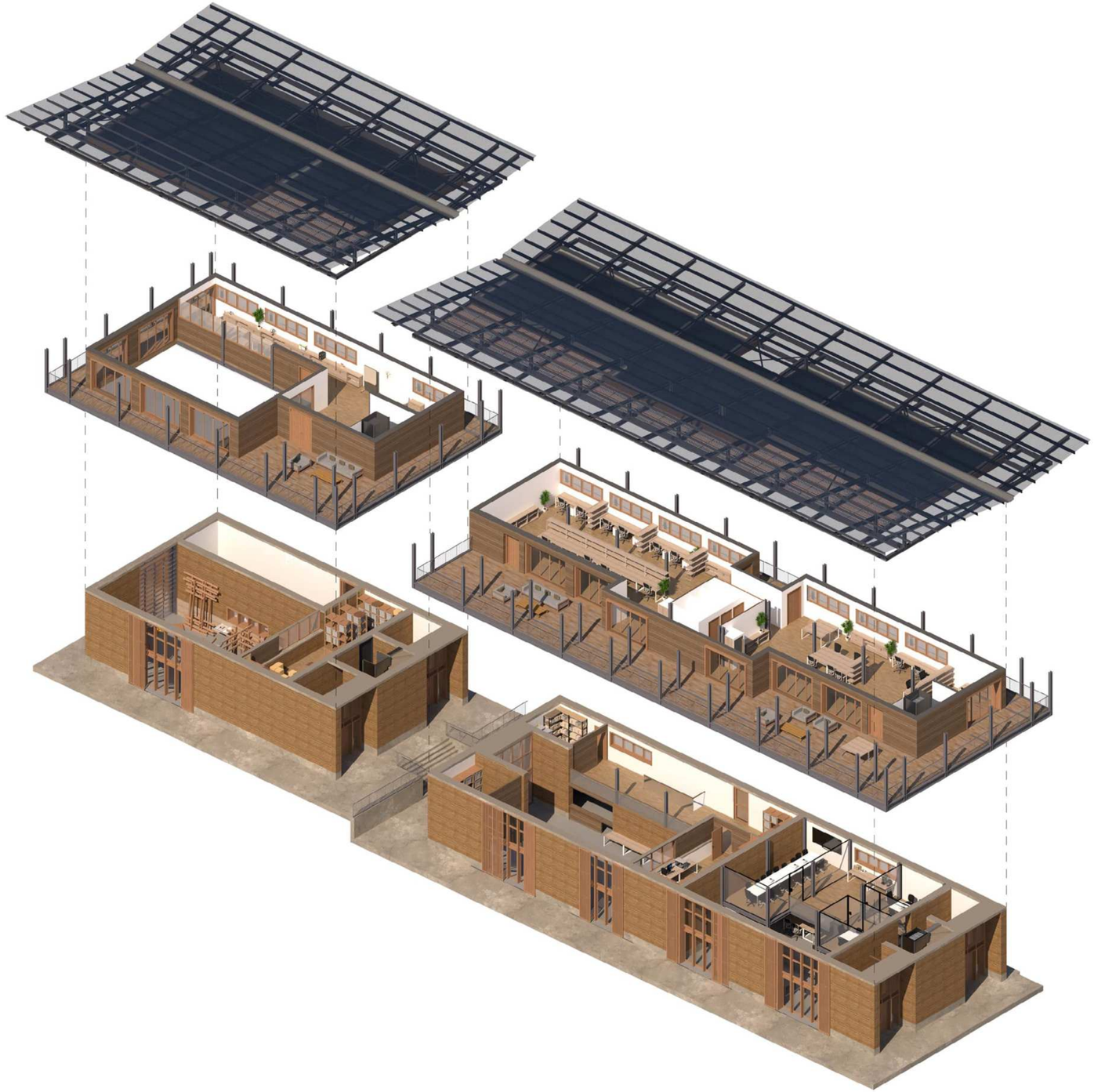
- **Very low VOC emissions** (Class A+ / < 100 µg/m³)
- **Highly vapor-permeable** (sd < 0.01 m)

First floor – **Natural finishes on upper floor**

- **Locally sourced oak flooring with eco-friendly varnish**

Ground floor – **Fast-drying WeberFloor® 4630**

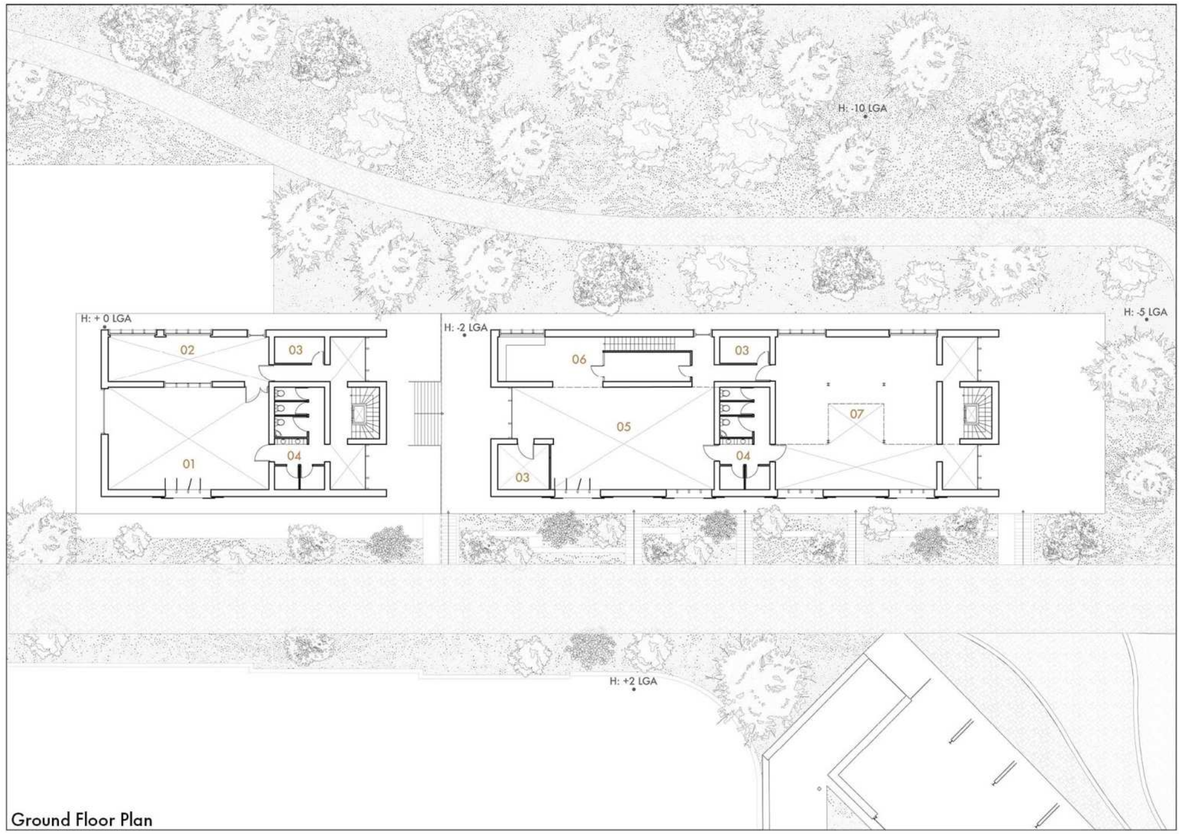
- High mechanical resistance
- Raw finish in harmony with rammed earth
- **VOC emission class A+** (< 250 µg/m³)



Workshop and Offices

Prototype workshop

The prototype workshop is a key space in the project, offering **85 m² of double-height volume** and direct access to a **100 m² outdoor slab**, extending activities outside. Linked to the Astus platform, it ensures **easy access for all types of vehicles**. Uninsulated, it relies on the thermal mass of rammed earth and passive solar gains to provide simple, efficient comfort suited to its workshop function. **A space to make, test, and build.**



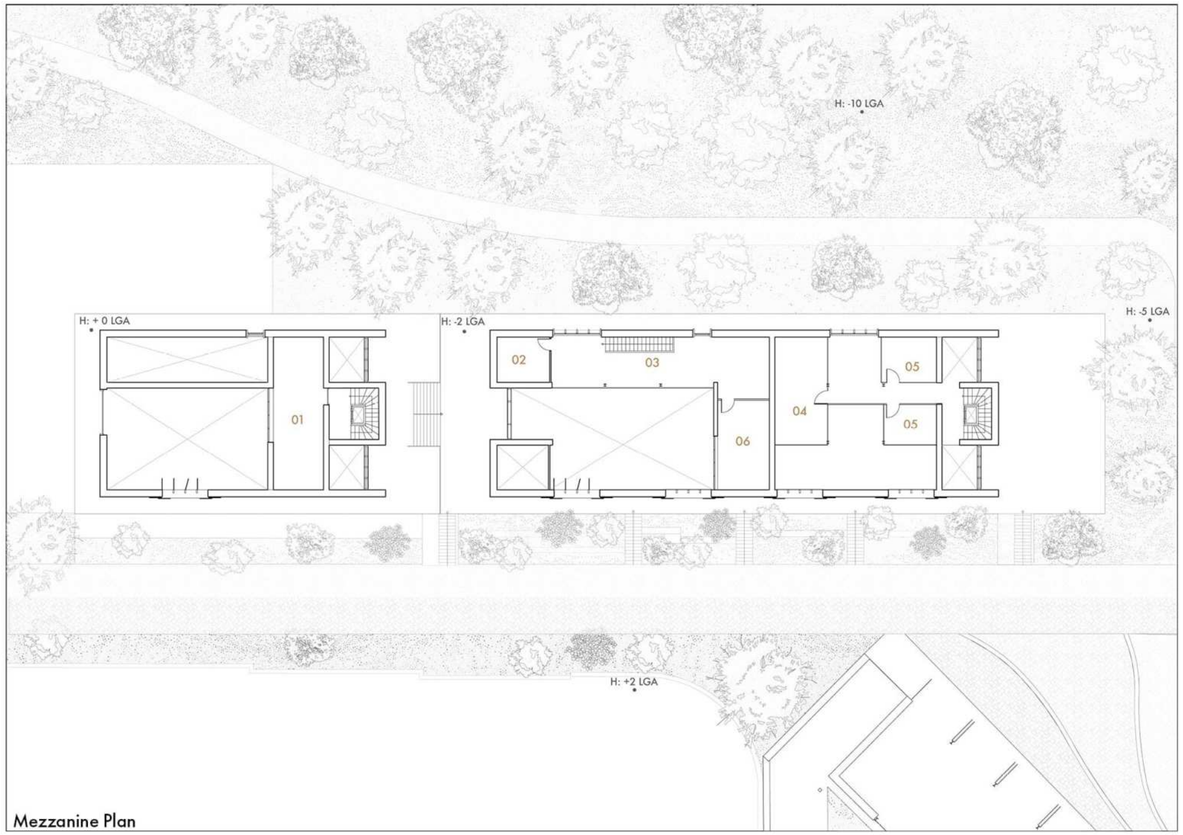
Ground Floor Plan

01 : Prototyping area (85m²)
02 : Laboratory (35m²)
03 : Machine room
04 : Sanitary & cloakroom
05 : Multi-purpose room (115m²)
06 : Kitchen & Storeroom (35m²)
07 : Office spaces (120m²)
LGA : Leveling 'Grands Ateliers' (+270 NGF) in meters

Workshop and Offices

Open-space & Meeting rooms

The open-spaces are designed as **flexible**, **bright, and open volumes**, offering great freedom of use.
Natural light enters through large south-facing openings and double-height ceilings, creating a fluid spatial rhythm. A mezzanine hosts quieter work areas, **connecting the two open-space zones**. Glass partitions with **PRIVATE GLASS®** technology allow adjustable opacity, balancing openness and privacy.



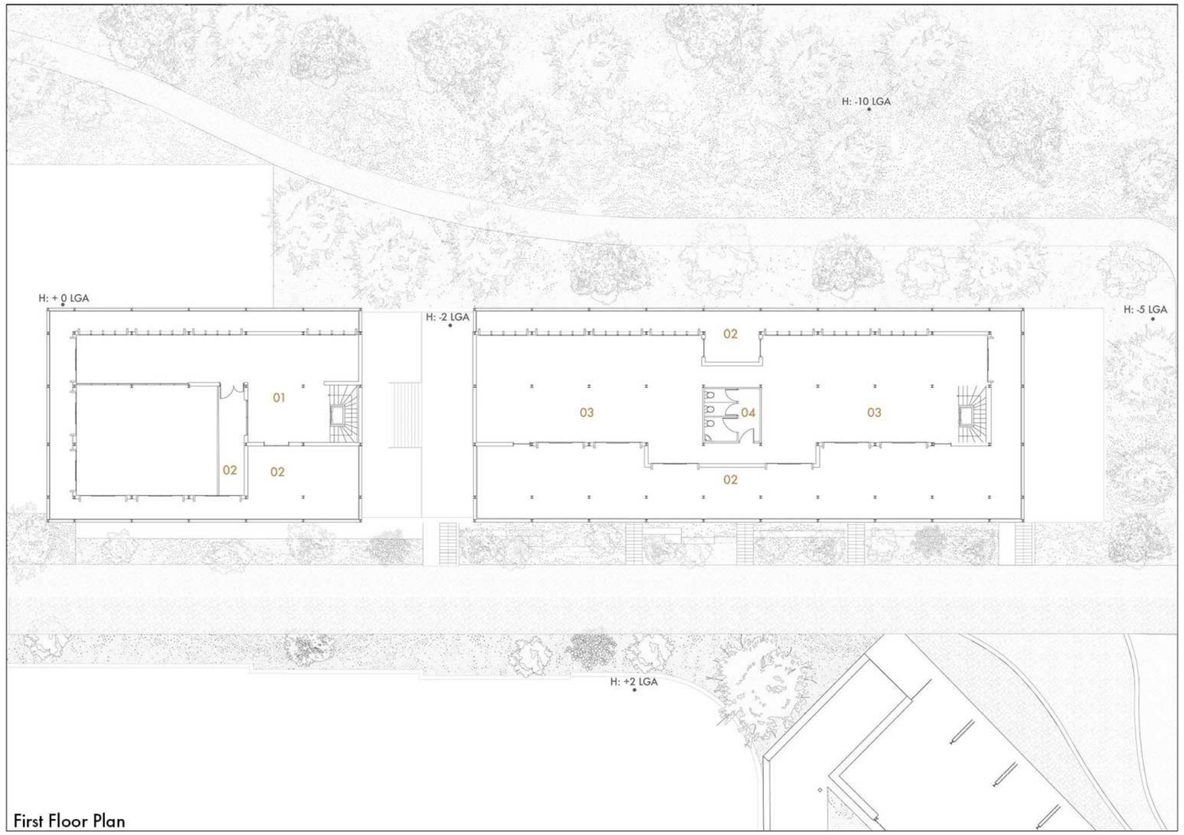
Mezzanine Plan

01 : Prototyping area (85m²)
02 : Machine room
03 : Storage area (80m²)
04 : Meeting room (20m²)
05 : Meeting rooms (20m²)
06 : Audiovisual direction room

Workshop and Offices

Outdoor spaces & accessibility

The project is rooted in the existing topography, enhancing it rather than reshaping it. Exterior landscaping creates **vegetated buffers**, manages **rainwater runoff**, and addresses elevation changes through **steps, seating areas, and terraces** that support various uses.
Special attention is given to accessibility, ensuring continuous connections to the central roadway and access throughout the site.



First Floor Plan

01 : Laboratory offices (90m²)
02 : Covered outdoor areas
03 : Offices spaces (250m²)
04 : Sanitary

Main entrance

Entrance & Exhibition space

This hall serves as the **main entrance to our campus**. It provides organized access for cars, bicycles, and pedestrians, ensuring **smooth and inclusive circulation**. It also functions as an exhibition area, where student-designed prototypes and projects are displayed, highlighting **the creativity and innovation at the heart of the campus**.

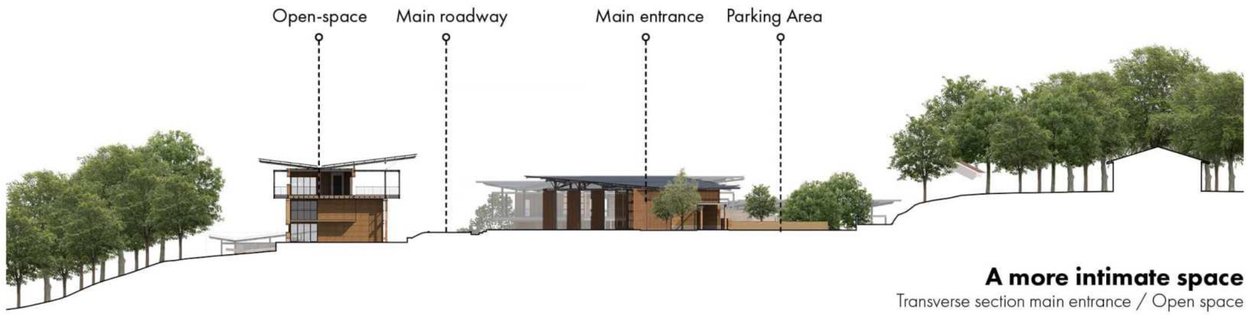
01 : Prototype exhibition area
02 : Main entrance
03 : Bike racks
LGA : Leveling 'Grands Ateliers' (+270 NGF) in meters

Main entrance

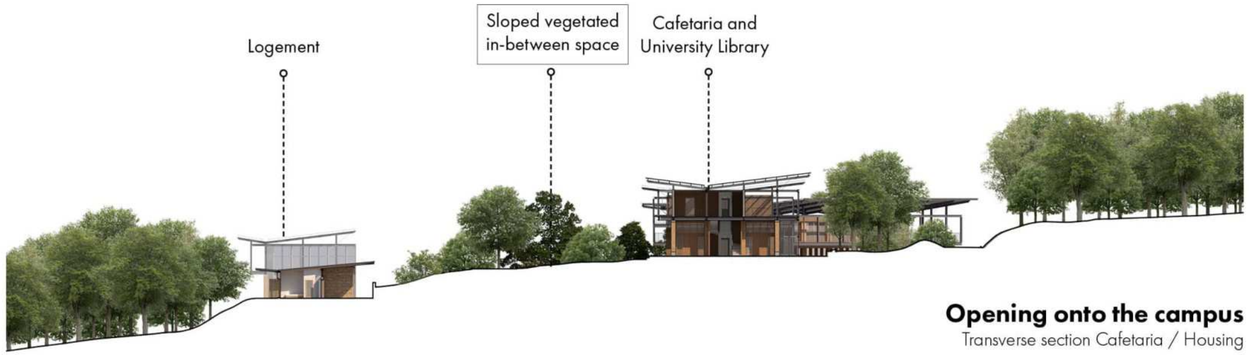
Between openness and intimacy

The walkway runs along a retaining wall carefully integrated into the site, the result of **precise topographical work** aimed at **minimizing the impact of the entrance hall on the neighboring properties**. Discreet and set lower into the landscape, it blends into its surroundings while creating a transitional sequence between the **intimacy of the path and the generous openness offered by the hall.**

Its discreet architecture, built on a subtle interplay between wood and metal and anchored to the limestone retaining wall, interacts with the light to compose a vibrant pathway, animated by shifting shadows.



A more intimate space
Transverse section main entrance / Open space



Opening onto the campus
Transverse section Cafetaria / Housing

Prototypes village

A gateway to the campus

The prototypes village plays a central role in the design of the campus, reflecting our commitment to highlight "making" at the heart of "knowing." Conceived as a visible and dynamic feature, it is organized into three distinct zones, each offering different ways to engage with student-led projects :

- A public-facing village, visible from the outside, symbolizing openness and transparency.

- An elevated village at the heart of the campus, acting as a crossroads in Phase 1, where prototypes intersect with daily flows and student life.

- An exhibition hall, designed to host monitored or sensitive prototypes, protected from weather.

The entire ensemble is seamlessly integrated into the site's topography through a series of **stepped terraces, offering accessible and open exhibition spaces, and lending the village a theatrical dimension.**

01 : Access for Heavy Vehicles

02 : Main Forecourt and Parking Area
Capacity : 14 spaces

03 : First Prototype Village

04 : Walkways Leading to the Main Entrance

05 : Exhibition Hall for Prototypes & Workshop

06 : Cafeteria and Outdoor Terraces
420m²

07 : Second Prototype Village

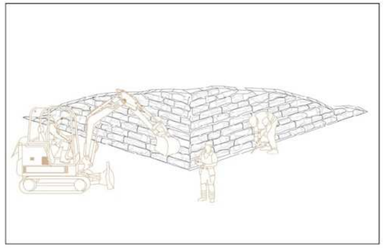
08 : Multi-use room & open spaces
789m²

Focus on Housing

Reclaimed stone used for on-site housing

01 : 8-person dormitory (31m²)
02 : 6-person dormitory (31m²)
03 : Single room (18m²)
04 : Double room (18m²)
05 : Machine room
06 : Disabled access

LGA : Leveling 'Grands Ateliers' (+270 NGF) in meters

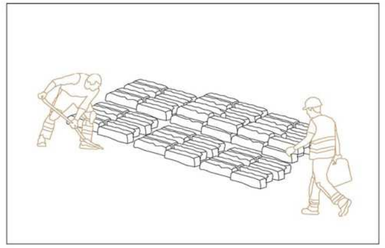


1. Collection

- **Local reuse** (Stone offcuts, dismantled structures, reclaimed from our own gradins)

- **Proximity sourcing** (Materials gathered from nearby sites and local quarries)

- **Circular economy** (No new extraction, existing resources reactivated)

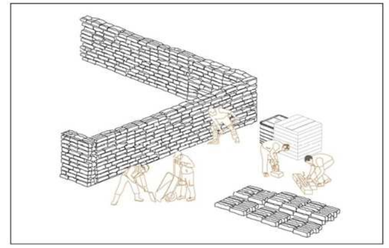


2. Logistics

- **Low-carbon transport** (Short distances between collection sites and construction area)

- **Controlled environmental impact** (Minimized emissions and simplified supply chain)

- **On-site storage** (Minimized emissions and simplified supply chain)

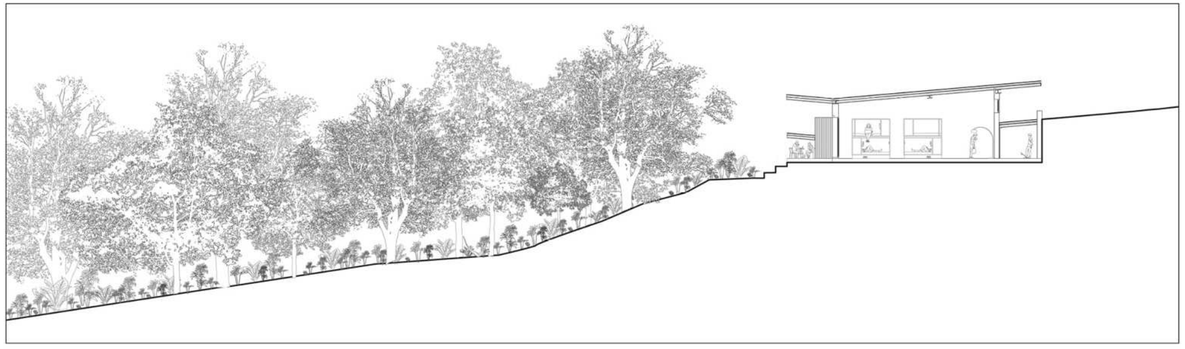


3. Implementation

- **Adaptive assembly** (Stones are re-cut on site to fit the housing design)

- **Imperfection as identity** (Stones are re-cut on site to fit the housing design)

- **Efficient installation**



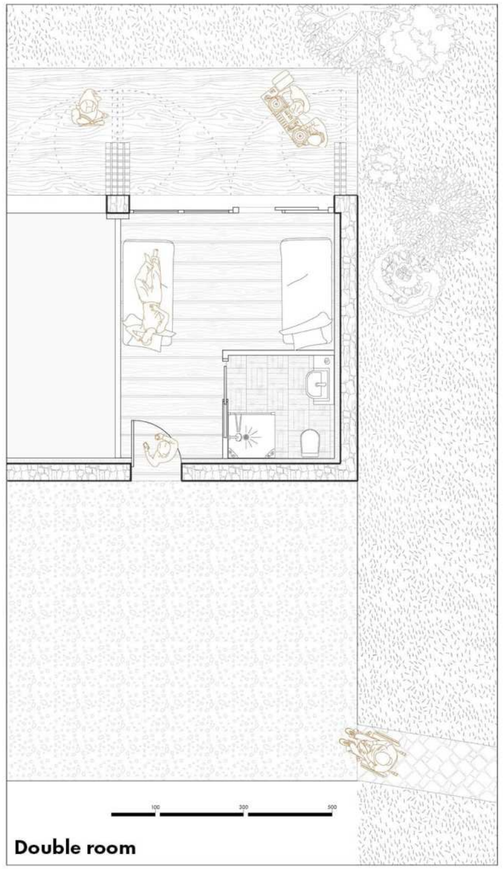
Transverse section Housing

Housing, Dormitories

Connection with nature

The housing units are designed with **through-floor plans**, **promoting natural ventilation and direct openings onto the surrounding landscape.** Each unit includes a private bathroom and an outdoor space, extending living areas into nature.
Special attention is given to these outdoor extensions : a system of **adjustable swing shutters** creates subtle separations between units, **ensuring privacy without blocking movement or light.** A discreet architecture, crafted for daily comfort and a strong connection to the natural environment.

6-bed dormitory

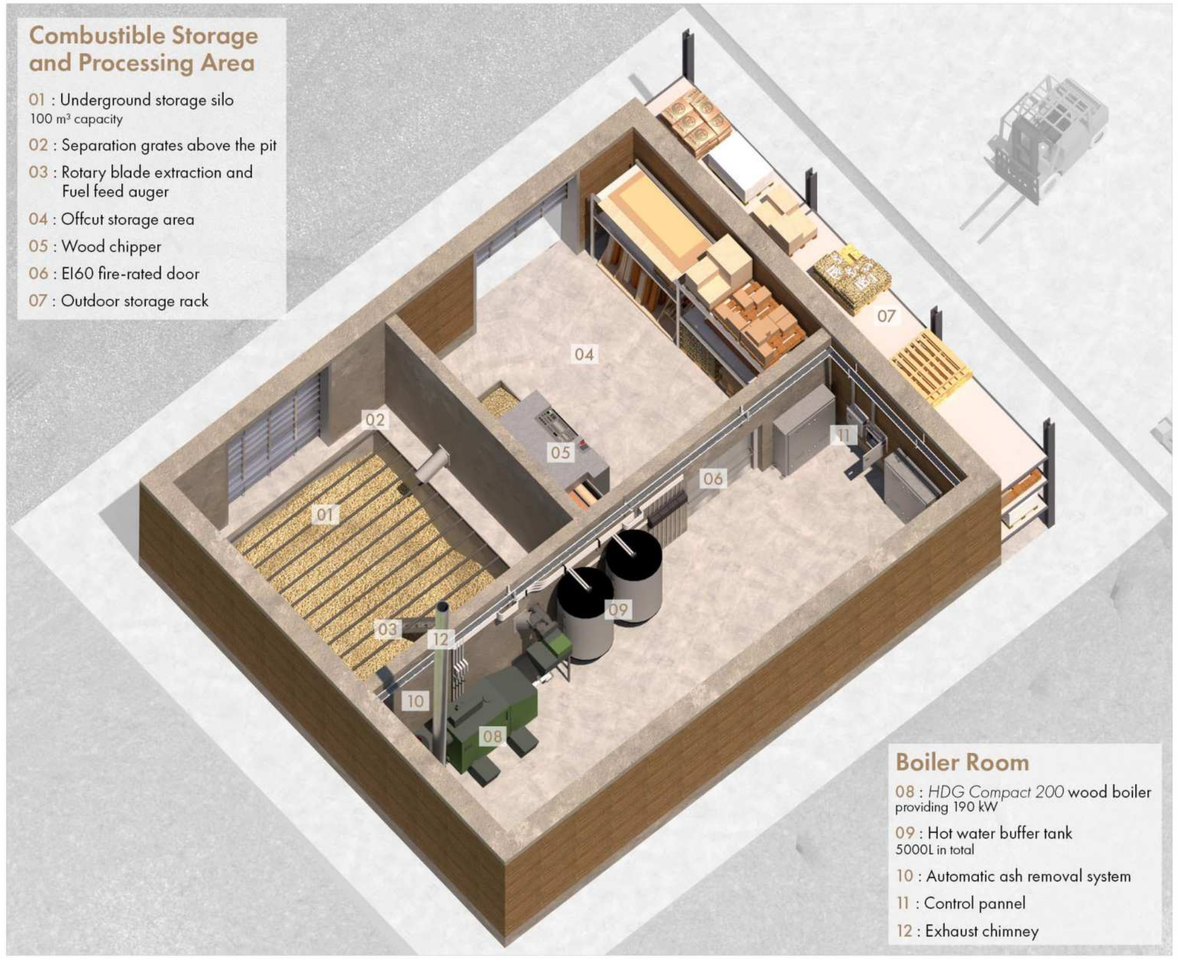


Double room

Wood-fired boiler plant

Energy autonomy through reclaimed wood waste

The wood-fired boiler plant uses **wood offcuts** through a **chipper**, while also being designed to accommodate **regular wood deliveries** via truck access to the **100 m³ storage pit**. It is equipped with a **190 kW boiler** and **two 2500-liter buffer tanks,** ensuring optimal heat production management. This installation provides heating for the Grands Ateliers, ASTUS, and Phase 1 of the project, with an **autonomy** of approximately **one and a half months.**



Temporary Camping area

Flexible accommodation for temporary peaks

To accommodate students during **high-attendance periods** such as workshops or events a **dedicated camping zone** is located just behind ASTUS. This flexible outdoor space provides a **simple, low-tech solution** for **short-term stays** on site.

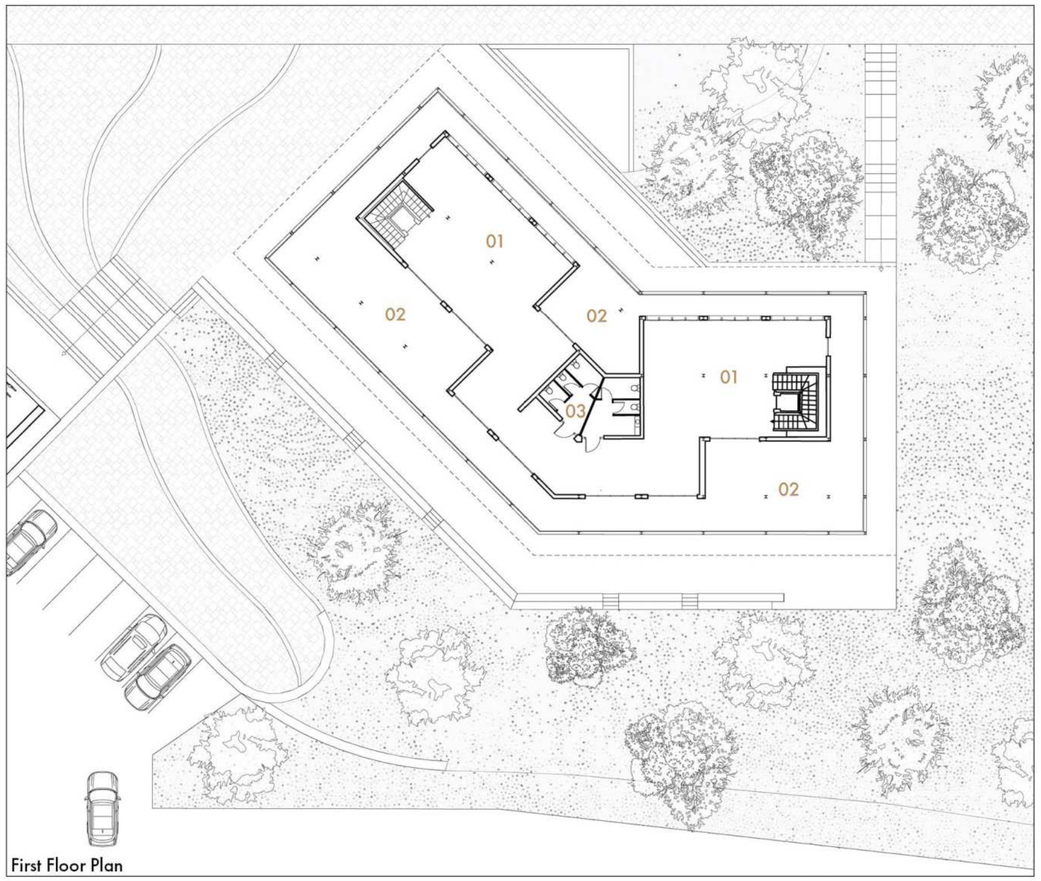
Equipped with **essential sanitary facilities** (showers, toilets, washbasins), it ensures basic comfort while staying aligned with ecological values. Slightly set back from main paths, it offers both **accessibility and discretion.**

01 : ASTUS hall
02 : Sanitary block
03 : Access path
04 : Tent areas

Cafetaria

A central and dynamic space

The cafeteria becomes a **true point of convergence at the heart of the campus.** Reimagined within the program, it stands as **a vibrant building** : calm, and open to the landscape. Its central location naturally connects all campus zones, fostering daily interactions between people.
As a social hub, it reflects the ambition to make the campus a dynamic and collaborative environment.



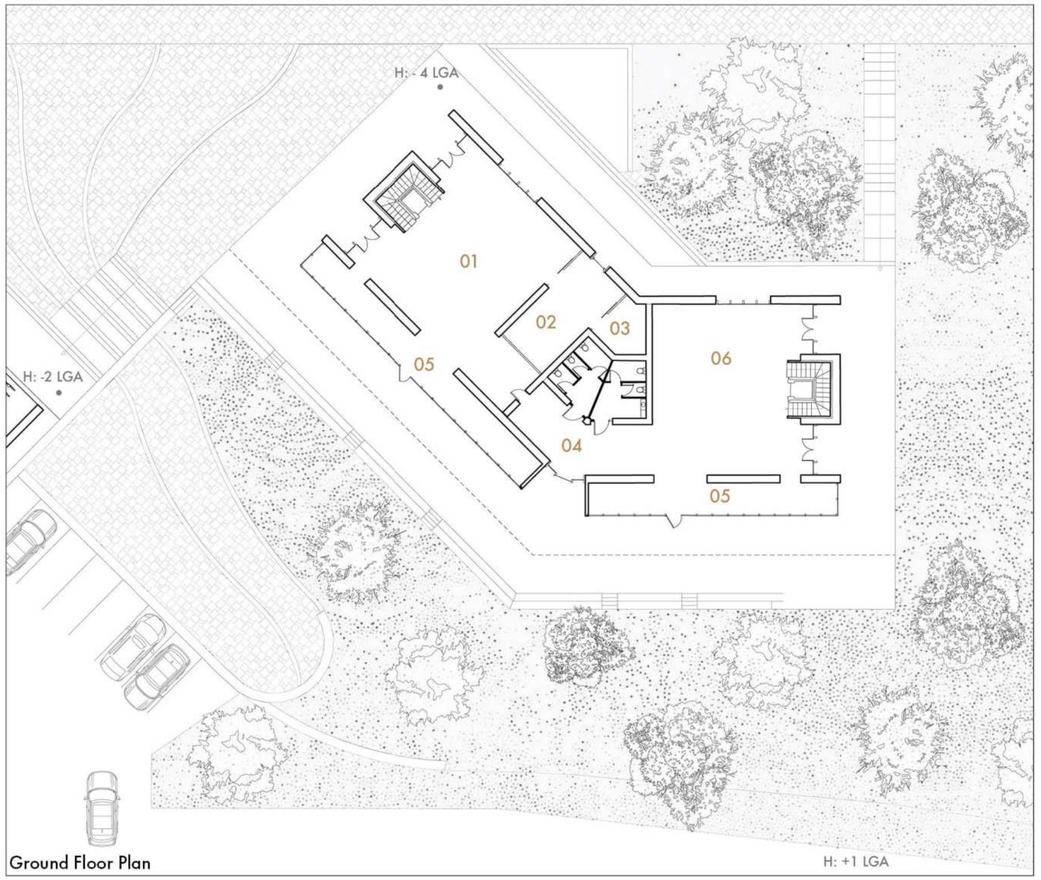
First Floor Plan

01 : Study area
02 : Covered outdoor areas
03 : Sanitary

Cafetaria

A central gathering hub

The wide glazed facades and generously sized terraces blur the boundary between inside and outside, **allowing the landscape to flow into the architecture.**
This openness strengthens the cafeteria's role as a **space for exchange and pause**, an inhabited threshold between nature and built form, where views, light, and uses intersect to enrich daily life on campus.



Ground Floor Plan

01 : Self-service cafetaria	04 : Sanitary
02 : Professional kitchen	05 : Indoor-outdoor area
03 : Storage & Cold room	06 : Study area

LGA : Leveling 'Grands Ateliers' (+270 NGF) in meters

Phase 2

Opening to Education

This evolution towards learning and training is essential for anchoring the campus in a knowledge-sharing dynamic. By integrating a university library and additional training spaces, this phase creates an environment conducive to research, innovation, and exchange. It meets the need for flexibility in new teaching methods and strengthens the campus's role as a place for knowledge transfer, collaboration, and professional development. It also enables a smooth progression towards opening the campus to the public.

Knowledge meets Making

An expanded pedagogy

01 **Cafetaria**

Included in **Phase 1,** the cafeteria acts as **a catalyst for collective life** at the heart of the campus. Its strategic position creates a point of convergence for users and initiates the transition toward **Phase 2,** focused on training and the campus's broader opening.

02 **University library**

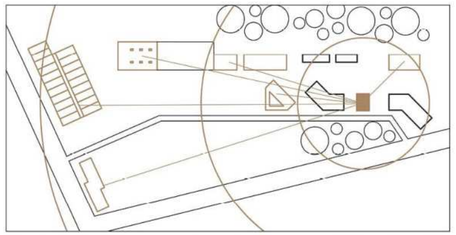
Conceived as a natural **extension of the cafeteria**, the university library continues the flow of uses and informal interactions. Located in **Phase 2** of the project, it extends this space of conviviality into a place of focus. As a **central hub of knowledge**, the library reflects the architectural language of the campus, emphasizing the role of vegetation as **a support for concentration**, alongside controlled transparency and calm spatial rhythms.

It represents a transition toward more theoretical education, without breaking away from the spirit of experimentation and openness that defines the entire project.

03 **Learning center**

The Learning Center holds a strategic position in the campus narrative. It symbolizes **the opening to new theoretical programs, designed to complement the existing hands-on, experimental pedagogy.** By offering a space for these new forms of learning, the building expands the educational scope and creates new connections between institutions, disciplines, and surrounding territories.

The Learning Center stands at the intersection of thought and action, a place where thinking precedes doing without replacing it, where theory and practice coexist and enrich one another.



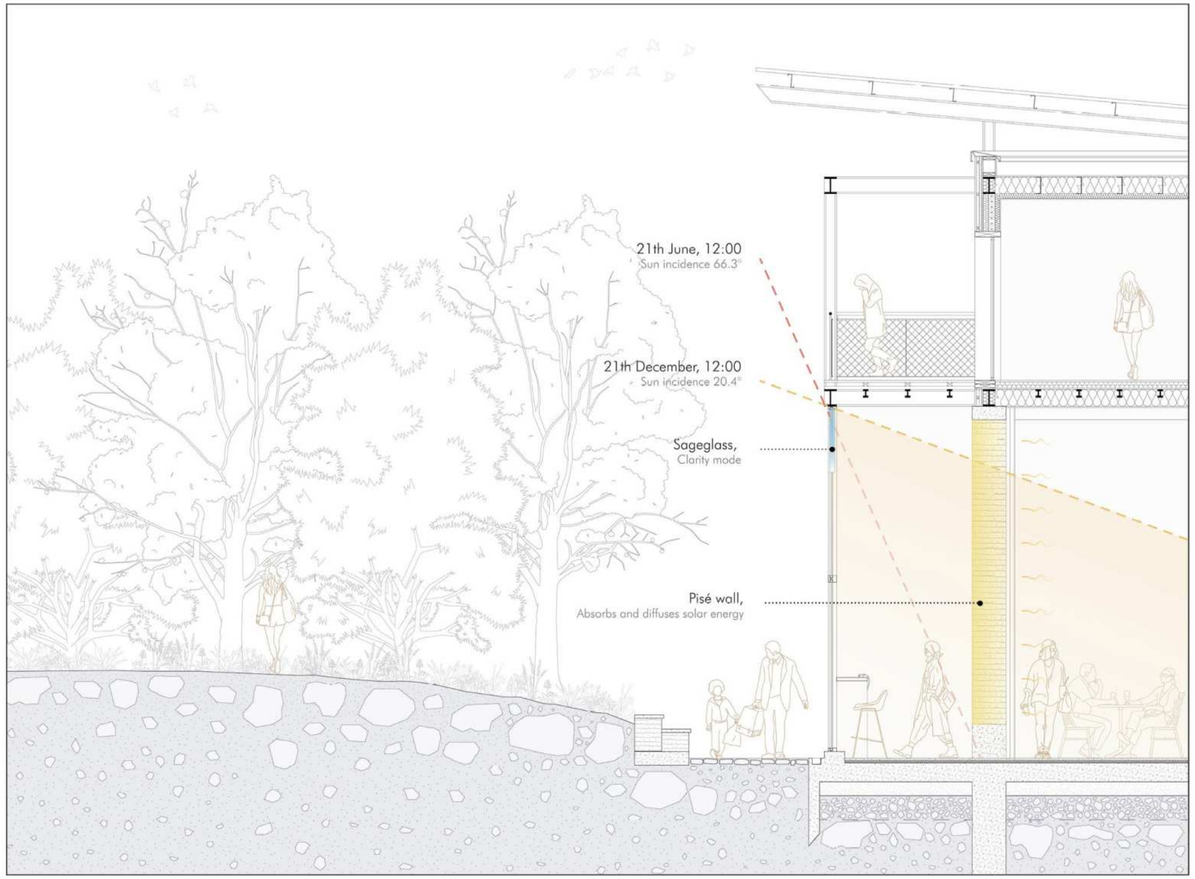
The Learning Center anchors the campus within a broader network, enhancing its reach and ability to host diverse educational formats.

Cafetaria and University library

Light and nature as design tools

The university offices **are designed as spaces of well-being**, where architecture supports focus and everyday comfort. Thanks to large north and south-facing openings, diffuse natural light gently fills the spaces, **fostering calm and concentration.**

Directly connected to a green environment, these offices offer a peaceful atmosphere, ideal for a serene and stimulating work experience.



Cafetaria and University library

A curtain wall for multi-comfort

Winter period (1,6 kWh/m²/jour)

Summer period (6,39 kWh/m²/jour)

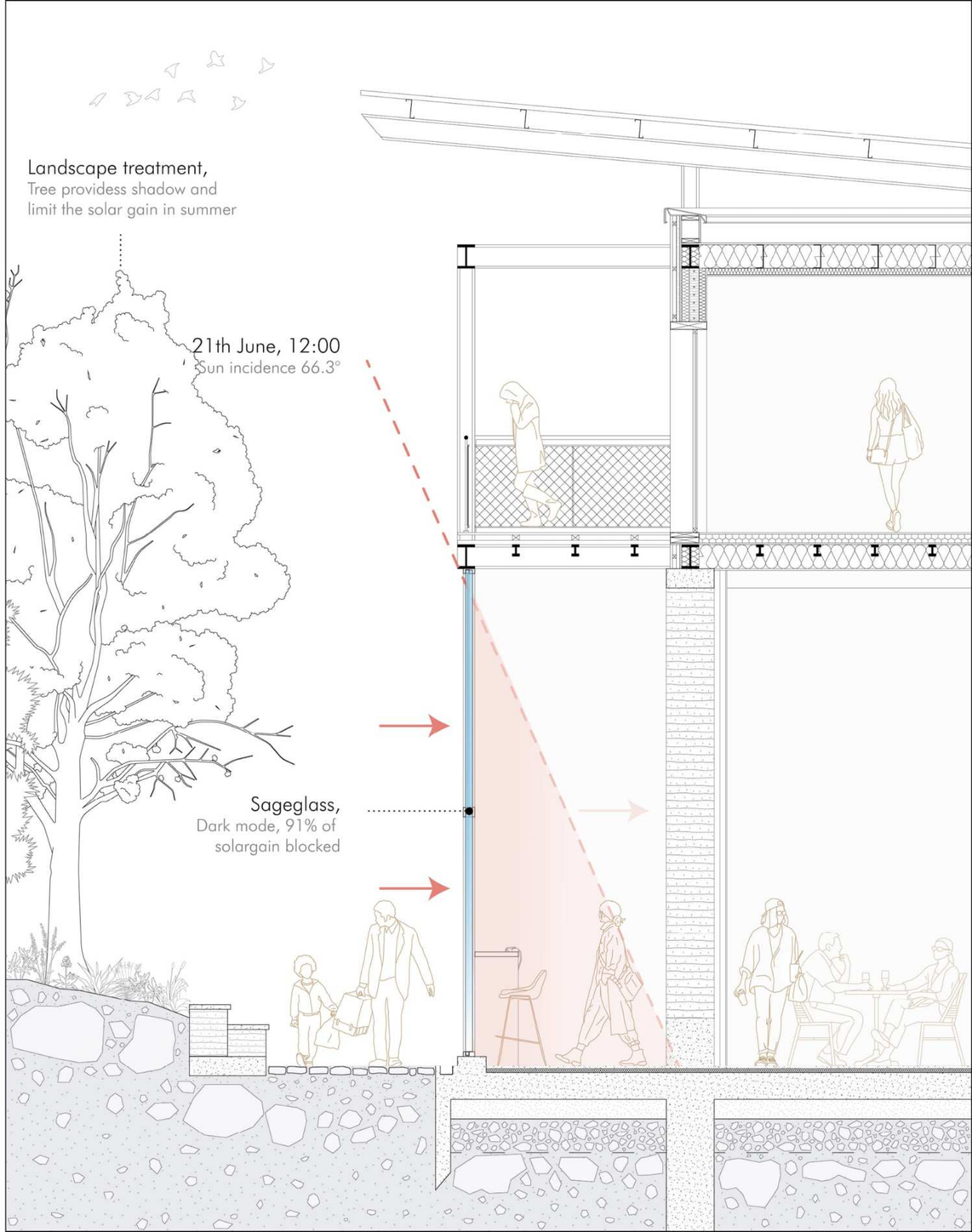
SageGlass® – Adaptive solar curtain wall

3 automatic regulation scenarios (3 tints based on solar irradiation)

91% of solar heat blocked in summer	Prevents overheating without blinds
62% of daylight transmitted in winter	Visual comfort and passive heat gain
Rammed earth wall's inertia enhanced	Natural thermal storage
Up to **30%** energy savings (heating + cooling)	
Real-time automatic adjustment	Steady comfort without user input

SageGlass SAINT-GOBAIN

SAINT-GOBAIN



Passive cooling strategies for summer comfort

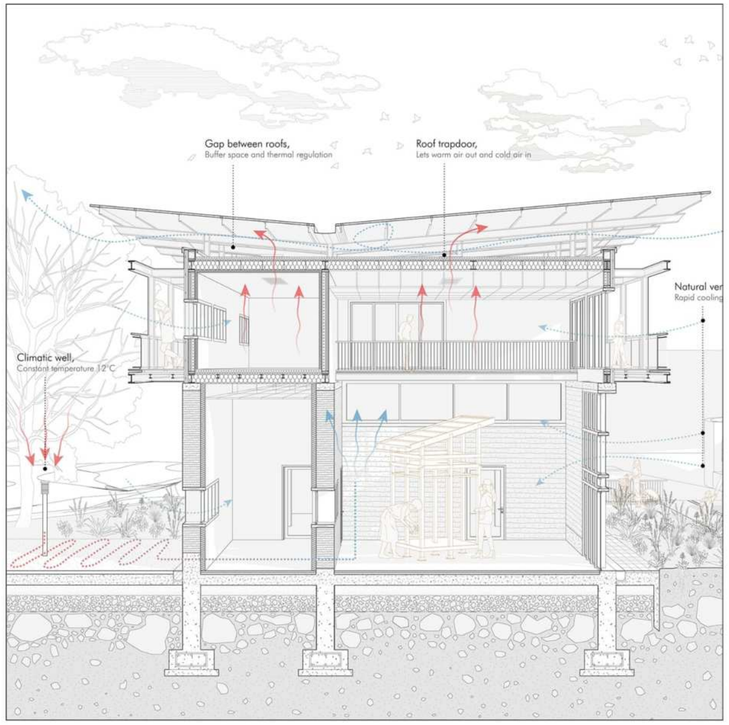
Three climate-responsive layers for thermal efficiency

Seasonal vegetation

Dense summer foliage protects the building from **direct sunlight**, while bare branches in winter maximize passive solar gains. The **thoughtful work of vegetation** underlignes the work of architecture , both **energetically and aesthetically.**

High-performance glazing strategy

A meticulous selection of glass ensures optimal comfort and energy efficiency: **SageGlass** for the **south**-facing curtain wall, **COOL-LITE SKN 176 ORAÉ** on the **south** façade, and **PLANITHERM XN ORAÉ** on the **north** façade.



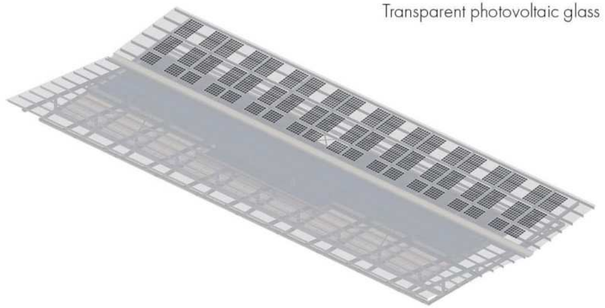
Naturally ventilated glass roof with canadian well

The raised glass roof allows **hot air to escape** through top vents during summer, ensuring continuous and **natural ventilation.** This system is complemented by a **Canadian well**, which **pre-cools incoming air** through **underground ducts** before it enters the building.

Photovoltaic glazing

Potential integration

Transparent photovoltaic glass



The south-facing glass roof of the project could represent a major opportunity for **integrating photovoltaic technology.** By equipping its **1,592 m²** of **transparent** surface with **semi-transparent photovoltaic glass**, the building roof would become productive.

Beyond **energy production**, this integration would support key architectural and environmental ambitions:

- **Daylight preservation** thanks to the **semi-transparent** nature of the glass

- **Solar heat control**, as the photovoltaic cells naturally filter part of the sun's radiation

- **Visual integration**, enabling an elegant energy solution without compromising the architectural quality of the roof

Photovoltaic glass could become a cornerstone of the project's environmental intelligence, demonstrating how transparent surfaces can actively contribute to

A productive roof that could generate clean energy

- **7 roof sections** could be equipped with semi-transparent PV glass
- Total surface : **1,592 m²**, effective area could reach **1,300 m²**
- South-facing with a **7° slope**, offering favorable solar conditions

Estimated Energy Output :
- **Installed capacity could reach 189 kWp (based on 140 Wp/m²)**
- Annual generation could exceed **170,000 kWh.**

Potential Benefits :
- Could **reduce summer solar gains** while producing electricity
- Would complement **passive cooling strategies**
- Could enhance the site's role as a **demonstrator** for integrated solar design

1 Roof surface: 175m²
Installed capacity: 23.67 kWp

2 Roof surface: 289m²
Installed capacity: 39.02 kWp

3 Roof surface: 77m²
Installed capacity: 10.37 kWp

4 Roof surface: 355m²
Installed capacity: 48.01 kWp

5 Roof surface: 243m²
Installed capacity: 32.87 kWp

6 Roof surface: 102m²
Installed capacity: 13.80 kWp

7 Roof surface: 350m²
Installed capacity: 47.25 kWp

Phase 3

Opening onto the Territory

This phase focuses on connecting the campus to its local environment by integrating economic and ecological initiatives. The creation of a recycling center, a business incubator, and community spaces supports sustainable innovation and entrepreneurship. The educational greenhouse and urban farm promotes self-sufficiency and environmental education, strengthening ties with the territory and local economic dynamics.

Symbol of economic openness

Incubator, re-use center, and flexible spaces

At the heart of this building, a **re-use center** actively **supports local initiatives** by providing a place for **recycling materials and objects.**

The design of the building is based on **flexibility**, with adaptable volumes capable of accommodating a **wide variety of activities** such as commerce, exhibitions, or associations.

Supporting innovation and local entrepreneurship, **a startup incubator** on the upper level provide essential resources and promote the **growth of local initiatives.**

In this way, the building becomes a **dynamic space** that actively encourages **innovation and sustainability.**

1. Clothing boutique

2. Community space /Storage

3. Art studio

01 : Public parking entrance
50 spaces

02 : Main public access from the central axis

03 : Designed public square

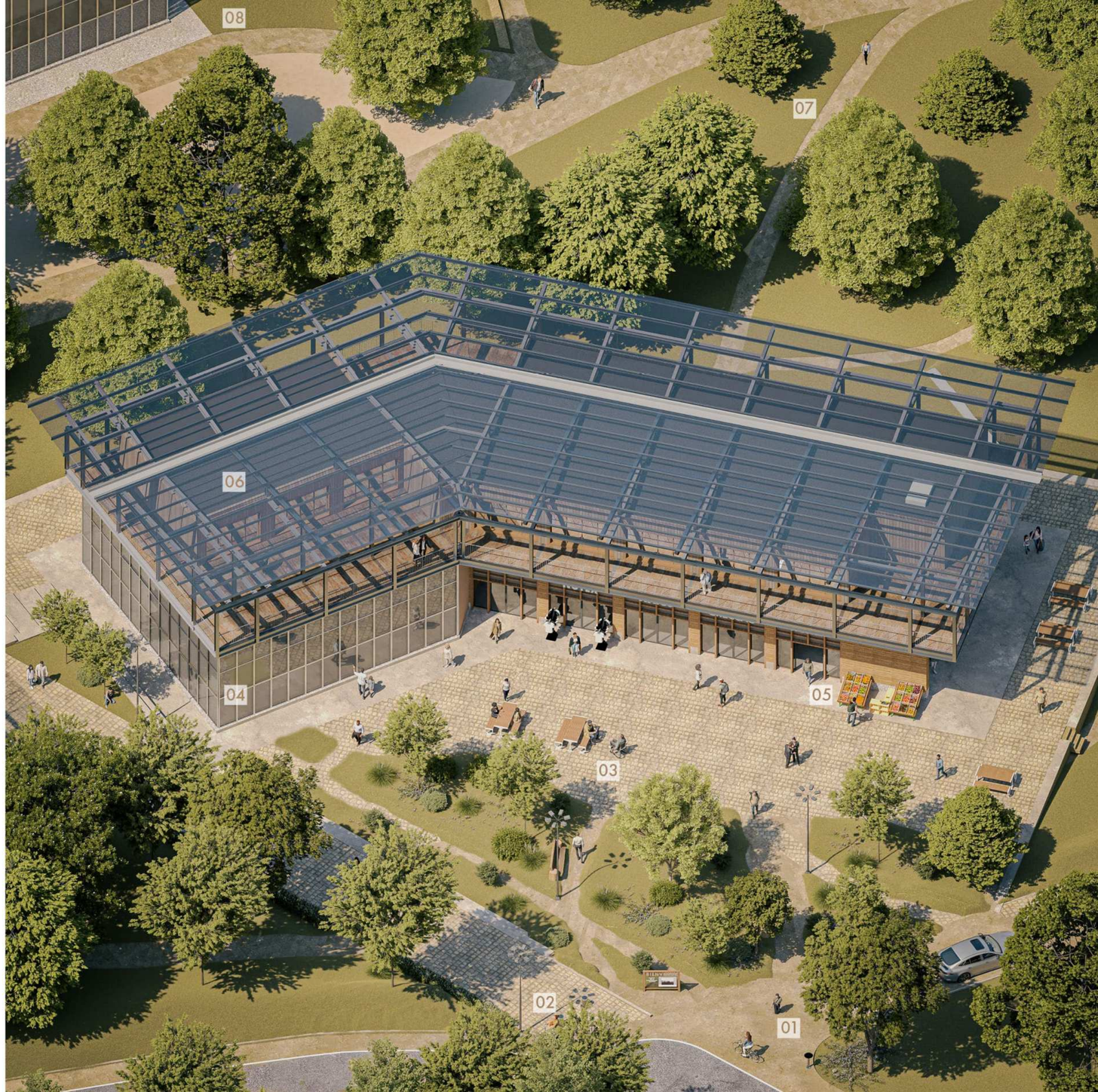
04 : Re-use center, materials library

05 : Shops, modular and cross-ventilated volumes
5 units of 60m²

06 : Business incubator for young start-ups
420m² on the first floor

07 : Landscaped park

08 : Urban pedagogical greenhouse



A landmark site for the Territory

A space for research, experimentation, and well-being

The park, open to the public and **accessible** via a large parking area, is designed as a seamless extension of the campus philosophy. This integration fosters **interaction** between the campus and the **wider public**, promoting transparency and **engagement.**

Urban agriculture

Wellness path

Walking paths

The **Wellness path** offers a shaded path for walking, resting, and light exercise, featuring scattered seating areas and discreet fitness equipment.

The **Agro-educational landscape** combines gardens, greenhouses, and small-scale livestock care to support hands-on learning and experimentation in sustainable urban agriculture.

The **Walking path** winds through the park's natural landscape, creating a calm and accessible route for everyday strolls, discovery, and connection with the outdoors.

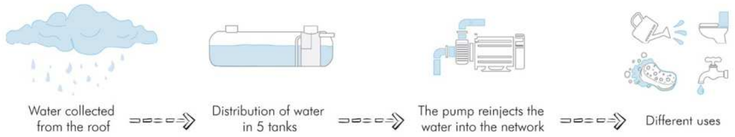
Rainwater management

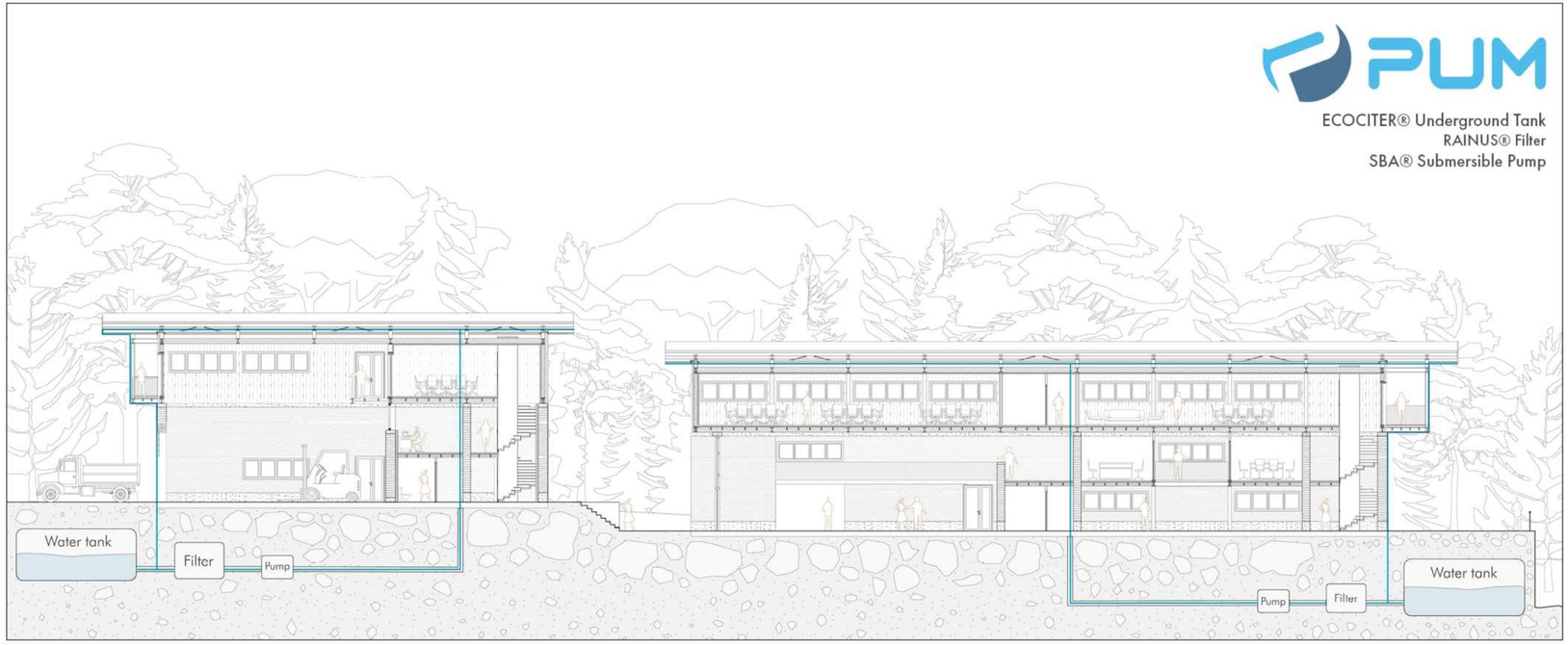
Storage and reuse for building needs

The rainwater collected from the roofs is directed through a chain system to underground tanks, sized according to the specific needs of the building.

Example : for the laboratory, workshop, and offices, possible uses include:

- **irrigation of green spaces**
- **maintenance of spaces, cleaning of floors and equipment**
- **feeding of toilet flush systems,**
- **outdoor taps**





Rainwater harvesting for building needs

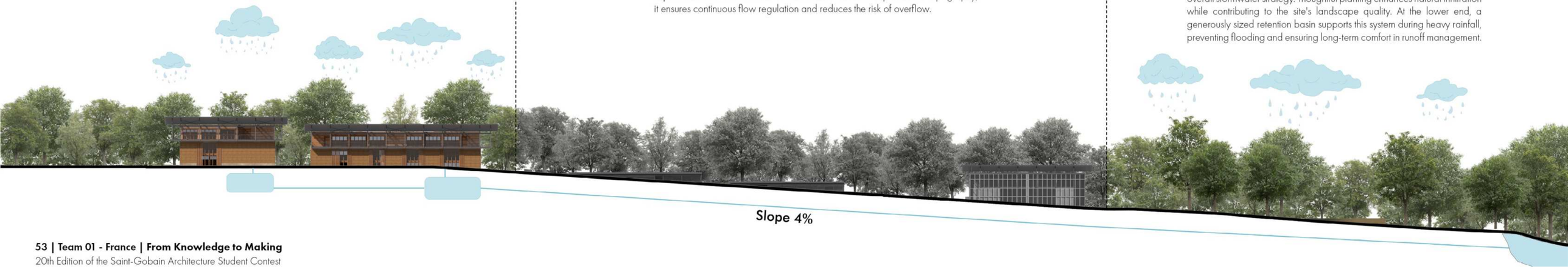
Each roof is equipped with a collection system connected to storage tanks, sized according to surface area and non-potable water needs (sanitary use, irrigation, maintenance). This setup makes it possible to valorize rainwater while limiting initial runoff. Any overflow is directed toward the site's broader water management system.

Gravity-based stormwater management

A gravity-fed stormwater system is integrated beneath the main roadway. Leveraging the site's 4% slope, it channels excess water from rooftops and impermeable surfaces toward lower retention areas. Adapted to the topography, it ensures continuous flow regulation and reduces the risk of overflow.

Landscape-based stormwater management

The campus's large vegetated plain acts as a key permeable surface in the overall stormwater strategy. Thoughtful planting enhances natural infiltration while contributing to the site's landscape quality. At the lower end, a generously sized retention basin supports this system during heavy rainfall, preventing flooding and ensuring long-term comfort in runoff management.



Rainwater management

At the scale of the campus

Storage Strategy for Rainwater Autonomy

Cumulative Annual Needs.
- Toilets (150–200 people) : **1,150 m³/year ≈ 3.2 m³/day**
- Workshop/studio taps : **90 m³/year ≈ 0.25 m³/day**
- Greenhouse (300 m², watered year-round) : **120 m³/year ≈ 0.33 m³/day**
- Landscape areas (3,000 m² partially irrigated in summer only) :
120 m³/year ≈ 1.2 m³/day (over 100 days)

For optimized rainwater autonomy across the entire site:
Required storage (3 months of cumulative needs **+** summer irrigation **x** fill coefficient)
355 m³ + 120 m³ x 0,8 = 380 m³ stored

Distribution : **5 underground tanks** ECOCITER®,
which will collect the 4462 m³/year of water provided by our roofs.

A resilient site designed for extreme rainfall events

Last Decennial Storm :
- intensity : decennial rainfall over 2hours ..... volume to manage: **≈ 311 m³**

Site Infiltration Capacity :
- **7 mm/m² over 2 hours**
- Based on soil permeability of 1.0 × 10 m/s **(≈ 3.6 mm/h)**

On-site Management Strategy :
- 5 swales distributed across the site ..... total capacity **≈ 369 m³**
- Each swale sized to handle runoff from its **specific catchment area**
- Retention capacity **exceeds** estimated runoff volume

Landscape Basin :
- Collects runoff from the public parking area
- **Connected to the overflow** of the rainwater harvesting tanks
- Provides **additional backup** for extreme weather events

1 Roof surface: 481m²
Water volume: 415m3

2 Roof surface: 759m²
Water volume: 656m3

3 Roof surface: 352m²
Water volume: 304m3

4 Roof surface: 324m²
Water volume: 280m3

5 Roof surface: 334m²
Water volume: 288m3

6 Roof surface: 484m²
Water volume: 418m3

7 Roof surface: 757m²
Water volume: 654m3

8 Roof surface: 280m²
Water volume: 242m3

9 Roof surface: 876m²
Water volume: 757m3

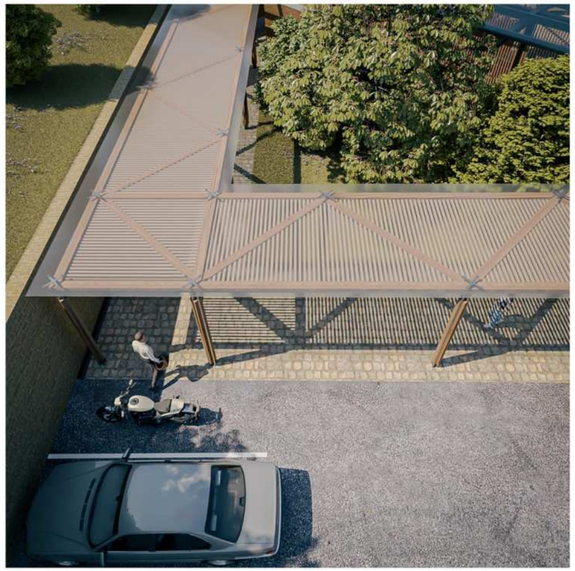
A Path surface: 1080m²

B Parking surface: 1937m²

4648m² : Roof surface of the campus
: Built Area of the Project
: Absorbtion area thanks landscape
: swales, retention areas
: Rainwater Drainage Towards Swales
: Overflow water drainage
: Location of our water tanks

Landscaping

A journey through the site



1. Discreet transition walkways

The entrance hall's walkways creates a subtle transition between the outside and the campus. Discreet, they are integrated below the neighboring plot with a stone retaining wall, offering both privacy and openness.

2. Modular seating steps system

Harmoniously integrated into the topography, they foster a convivial and functional atmosphere. By creating open and versatile spaces, they allow for flexible use of the site. These areas host various activities such as seating, prototype exhibitions, and gardening work.

3. Central and integrated technical access

The public vehicle access, with permeable paving, is designed for emergencies, deliveries, and technical vehicles. This central pathway connects the various areas of the campus while discreetly integrating into the landscape. It provides a functional transition to all buildings, minimizing its visual impact.

4. Disconnecting path in the forest

The earth paths, integrated into a wooded landscape, wind through the back of the plot. This area hosts the educational farm, crops, and phytoremediation facilities. Open to the public, it serves as a space for relaxation, walking, and connection with nature.

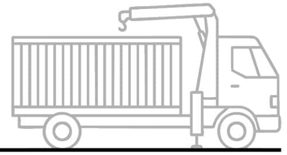
Chimilin :

The Epicenter of Making

2 sites, Villefontaine and Chimilin, 40 km apart, when knowledge and making weave a lasting link

FROM KNOWLEDGE

TO MAKING



VILLEFONTAINE - CHIMILIN - TERRITORY

« Sustainable construction also means meeting occupant's expectations and reflecting their ways of life. »[1]

After exploring the dimension of Knowledge in Villefontaine, where the campus serves as an exemplary model, our intervention in Chimilin embodies the other side of pedagogy: learning through Making.

The renovation of the old school presents a unique opportunity to establish a permanent and exemplary experimental site for the surrounding region.

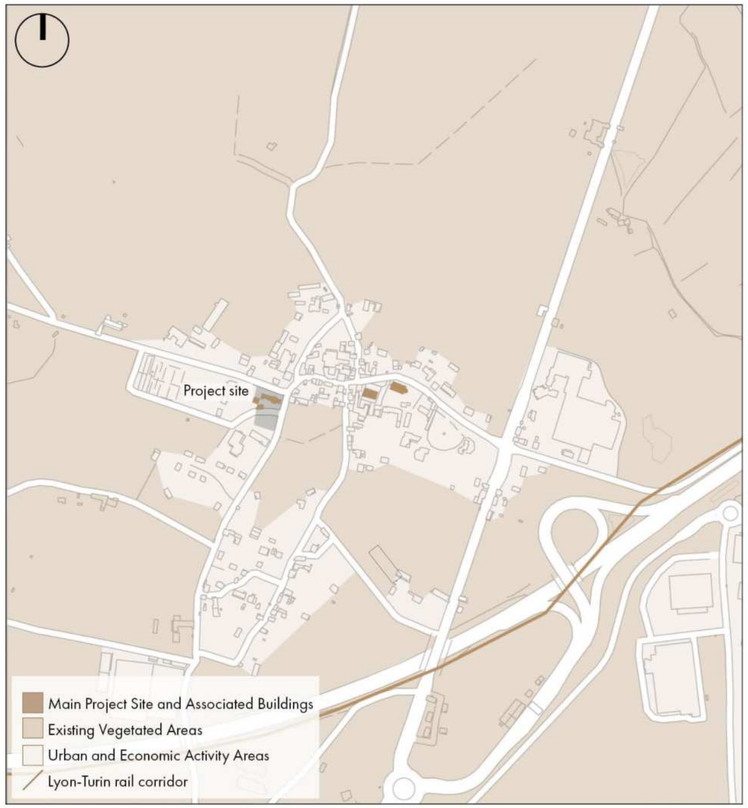
By integrating a branch of the Grands Ateliers, we create a hands-on learning environment where building rehabilitation becomes a platform for innovation, experimentation, and the transmission of expertise.

1. Saint-Gobain website

Site analysis

A project rooted in its territory

City center
Project site
Urban area
Vegetated area
Lyon-Turin rail corridor



Chimilin, a regional node

Chimilin is strategically located between Lyon, Chambéry and Grenoble, near the **motorway** and along the future **Lyon-Turin rail corridor.** Known for its Pisé heritage, the material is still widely present in the village's architecture.

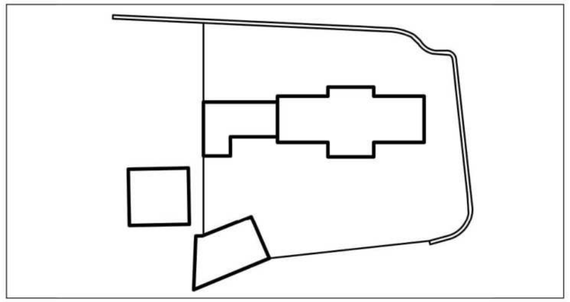
The **2,320 m² project site** lies at the western entrance of the village, at a **visible intersection** and slightly **elevated** from the road. This topographic condition gives the site a **strong presence**, but also a degree of physical separation from its surroundings.

The parcel itself is tiered into several sub-levels, creating a **fragmented landscape** that invites a project grounded in terrain adaptation and site-specific design. Its positioning makes it a prime location to connect **local heritage** with **regional dynamics in transformation.**

Intervention strategies

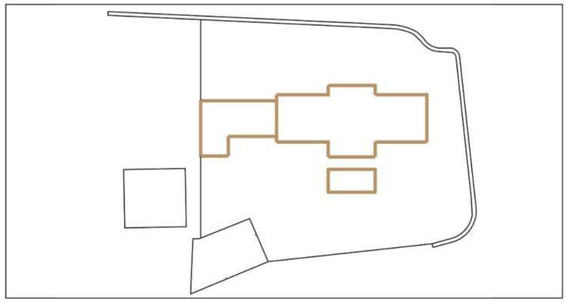
Circulation, openness, and territorial connection

The project layout has been shaped by a set of intentions: **reactivation of a previously isolated plot,** improved vertical circulation, integration of **bioclimatic strategies**, and the **creation of open, shared outdoor spaces**. Through the transformation of physical **boundaries** and spatial flows, the architecture **reconnects** with both its **immediate environment** and the **wider urban context.**



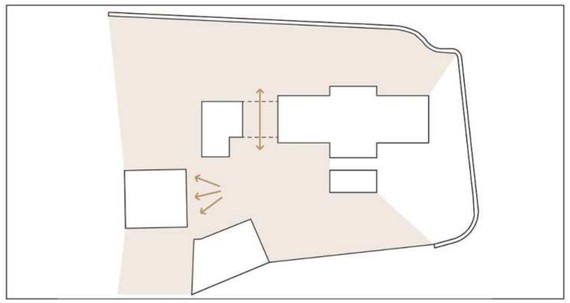
1. Isolation and circulation challenges

The site is **spatially disconnected**, the plot is **fragmented**, both horizontally and vertically.



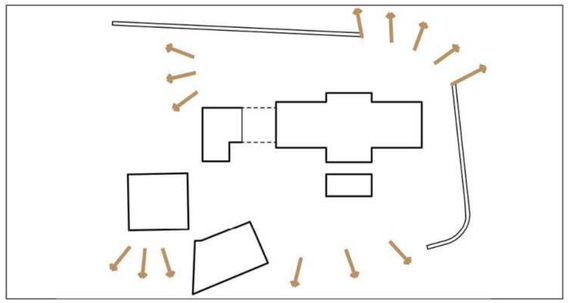
2. Spatial reconnection and energetic upgrade

A new extension **improves vertical circulation**. The renovation includes external insulation and new openings, reinforcing comfort and environmental efficiency.



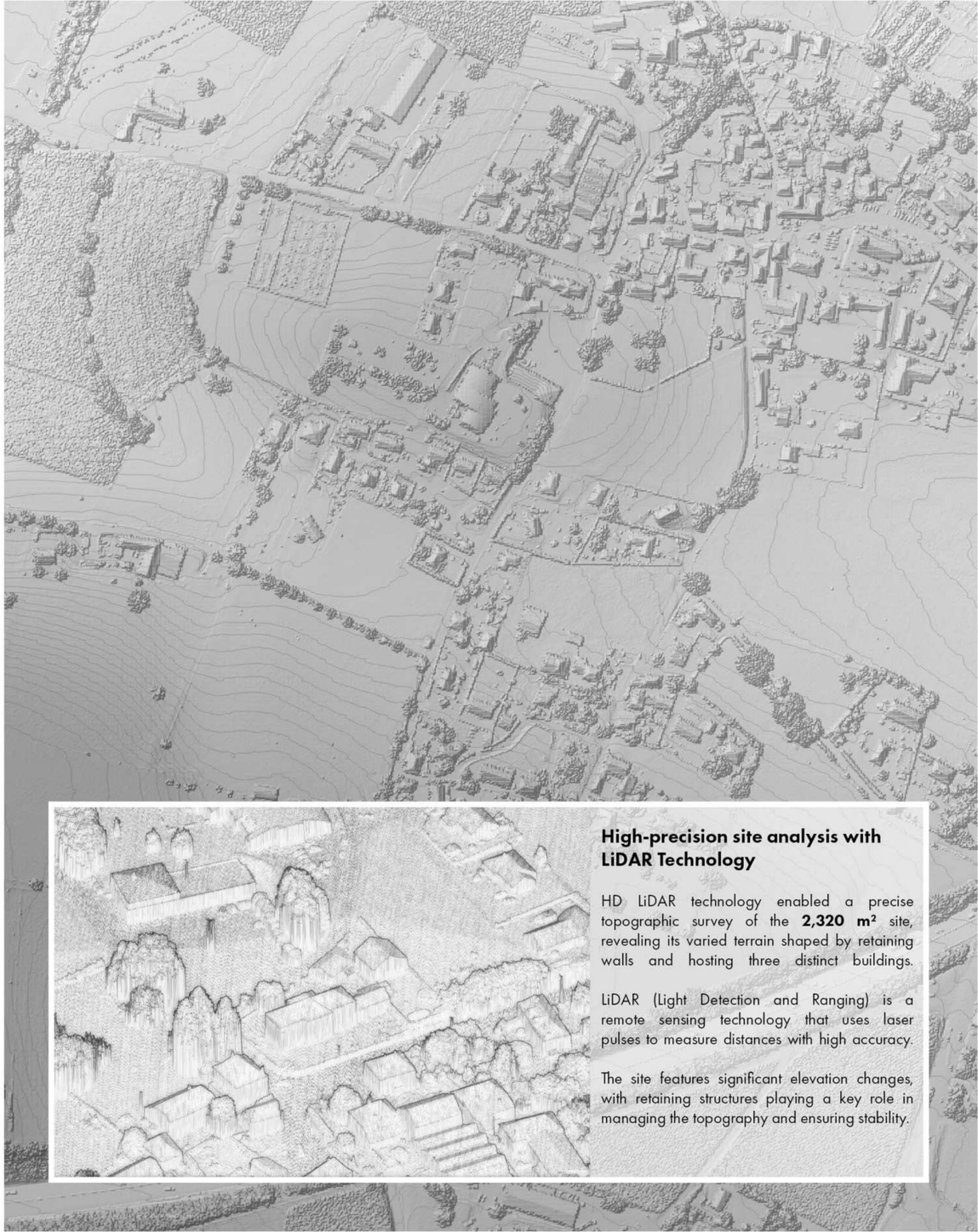
3. Opening thesite and creating outdoor continuity

A new **outdoor area** strengthens the project's relationship with its plot. An opening in the gathering space **links north and south** zones, improving **flow** and **spatial continuity** across the site.



4. Reworking boundaries to open toward the city

Removing fences and rethinking retaining walls enhances **openness** and **accessibility**, allowing **stronger connections** with the **urban surroundings.**



High-precision site analysis with LiDAR Technology

HD LiDAR technology enabled a precise topographic survey of the **2,320 m²** site, revealing its varied terrain shaped by retaining walls and hosting three distinct buildings.

LiDAR (Light Detection and Ranging) is a remote sensing technology that uses laser pulses to measure distances with high accuracy.

The site features significant elevation changes, with retaining structures playing a key role in managing the topography and ensuring stability.

Masterplan

A global design perspective

01 : Cultural and Association Center
447 m²

02 : Vertical circulation extension
34 m²

03 : Dining and reception hall
70.5 m²

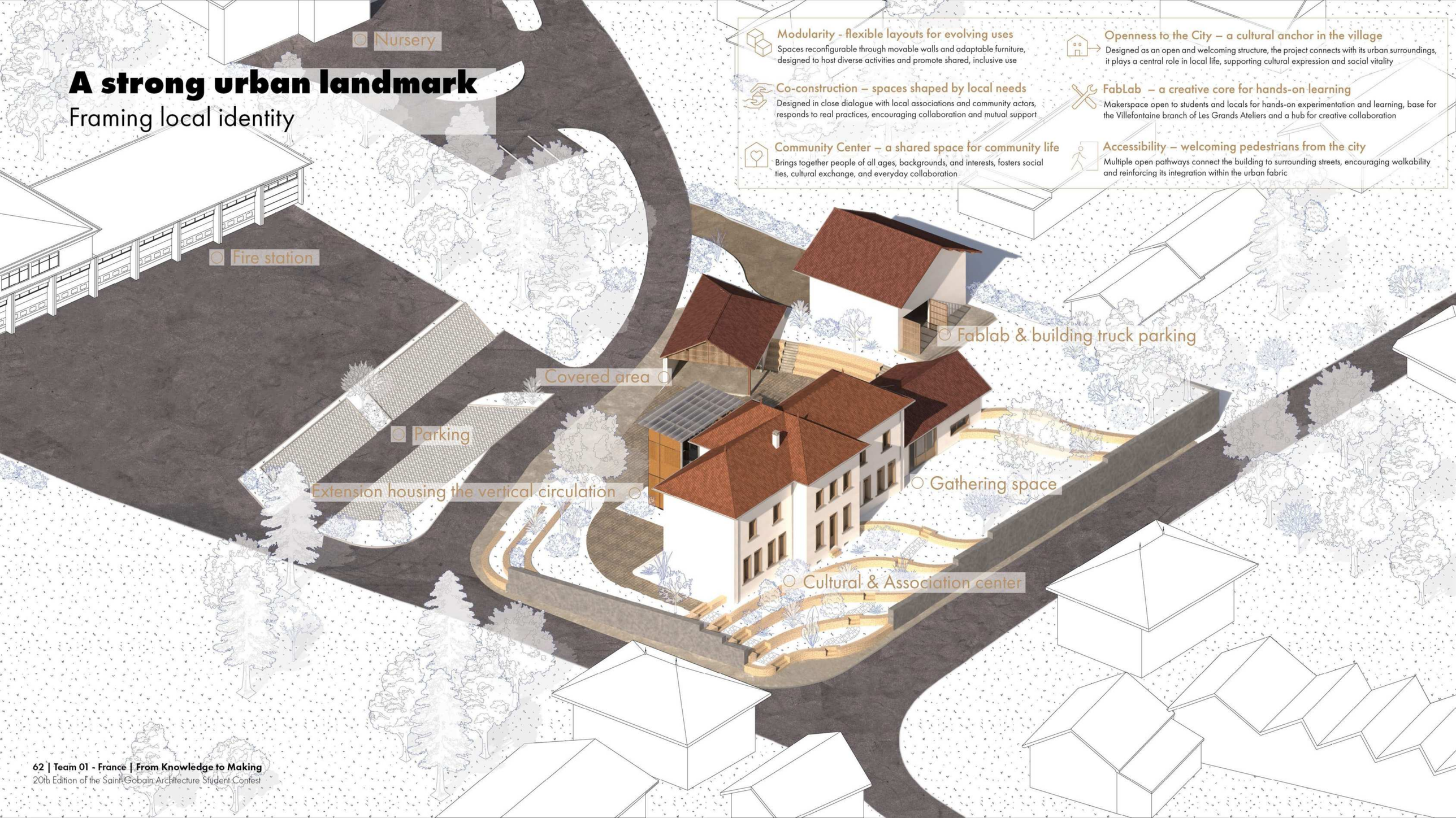
04 : Covered Outdoor Area
90.5m²

05 : Fablab
134 m²

06 : Parking
Capacity: 20 spaces

A strong urban landmark

Framing local identity



Modularity - flexible layouts for evolving uses
Spaces reconfigurable through movable walls and adaptable furniture, designed to host diverse activities and promote shared, inclusive use

Openness to the City – a cultural anchor in the village
Designed as an open and welcoming structure, the project connects with its urban surroundings, it plays a central role in local life, supporting cultural expression and social vitality

Co-construction – spaces shaped by local needs
Designed in close dialogue with local associations and community actors, responds to real practices, encouraging collaboration and mutual support

FabLab – a creative core for hands-on learning
Makerspace open to students and locals for hands-on experimentation and learning, base for the Villefontaine branch of Les Grands Ateliers and a hub for creative collaboration

Community Center – a shared space for community life
Brings together people of all ages, backgrounds, and interests, fosters social ties, cultural exchange, and everyday collaboration

Accessibility – welcoming pedestrians from the city
Multiple open pathways connect the building to surrounding streets, encouraging walkability and reinforcing its integration within the urban fabric

Urban relations

Openness and neighborhood

Chimilin is facing a gradual demographic decline, with a noticeable outflow of young working-age residents

Each year, approximately 8% of young adults leave the town

With around 34% of residents under 30, young people are vital to Chimilin's future

Investing in sports and community facilities can help them stay, connect, and thrive

On average, two new associations are created in Chimilin each year

This growing dynamic highlight increasing need for dedicated spaces to accommodate local clubs and community activities

Neighborhood relationship (south)

To the south, the design of the parking area and its surroundings clearly separates professional, public, and associative uses, while blending harmoniously with the environment and avoiding any ambiguity with the shared spaces of the firefighters. This parking area thus becomes a transitional point between the center and its surroundings.

A visible and inclusive community center

To the south, the vertical extension integrates into a redeveloped open space, free of barriers, with seating and planted areas. To the north, the seating marks the connection to the city. The design makes the center's use visible from the outside, symbolizing its accessibility and inclusive purpose.

Opening to the city (north)

The main entrance of the community center opens towards the town of Chimilin, establishing a direct connection with the center and its amenities. The replacement of the retaining wall with landscaped seating strengthens this link, providing a space for meeting and exchange facing the city.

Heritage and renewal

A facade that opens up

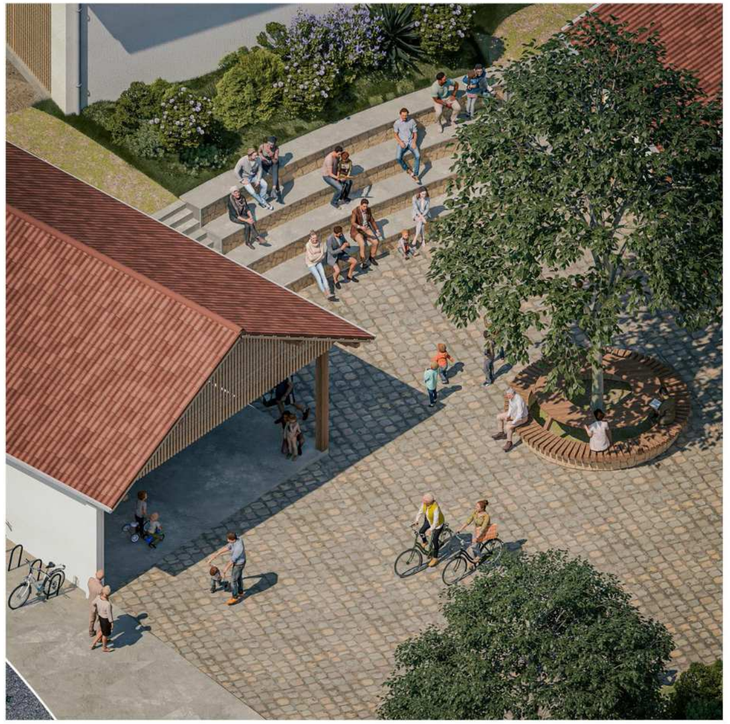
The north facade **preserves the architectural heritage while opening the project up to the city**. Long seen as a barrier, the retaining wall is transformed into a stepped area, changing the habits of local residents and **offering a more accessible space**. This redesign strengthens the link between the past and present, **inviting exchange and interaction**, **while also creating a versatile space**, suitable for various layouts and the placement of furniture for different activities.

Amenagements

A vibrant project open to the city

Stone steps to the city

Carved into the northern edge, the stone seating terraces transform a once-retaining wall into a place of dialogue with the city.



A space for expression

Beneath the covered area, the stairway extends into an amphitheater, offering a natural stage for events, both planned and spontaneous.

A breakthrough to the north

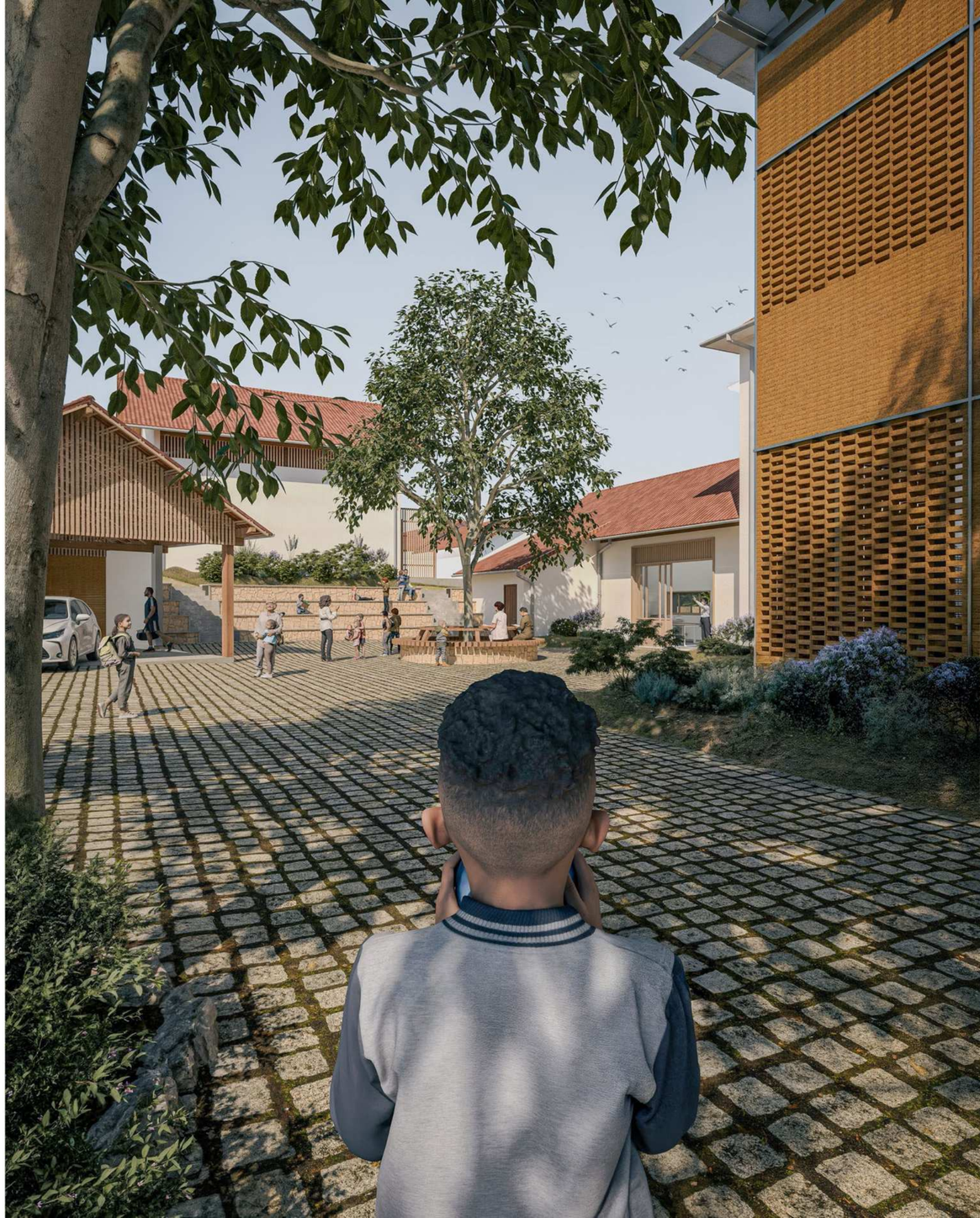
By introducing a breakthrough in the built volume, the northern outdoor area becomes more accessible, reinforcing the connection between interior activity and south vibrant place.

Open to the south

Architecture framing a public heart

The southern opening of the Chimilin project gives rise to a true central plaza, designed as a vibrant and unifying heart of the site. Bathed in sunlight throughout the day thanks to its orientation, this space is open, lively, and welcoming, suitable for both informal use and public gatherings.

At the center of the plaza, the vertical extension stands as a sculptural presence, surrounded by landscaped areas that **help shape and activate the space.**

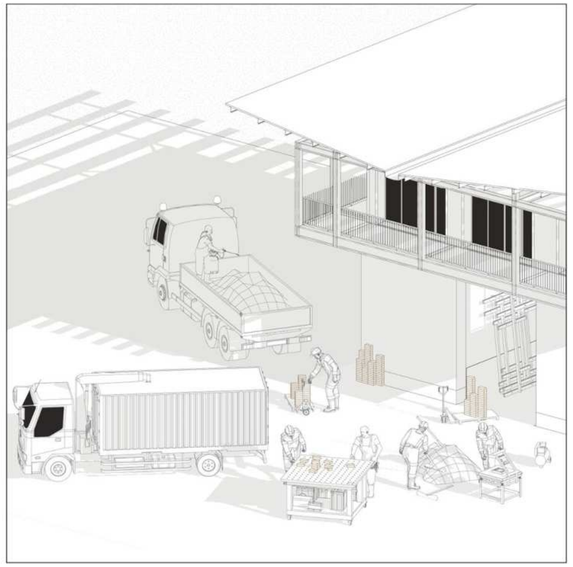


Terracotta brick extension

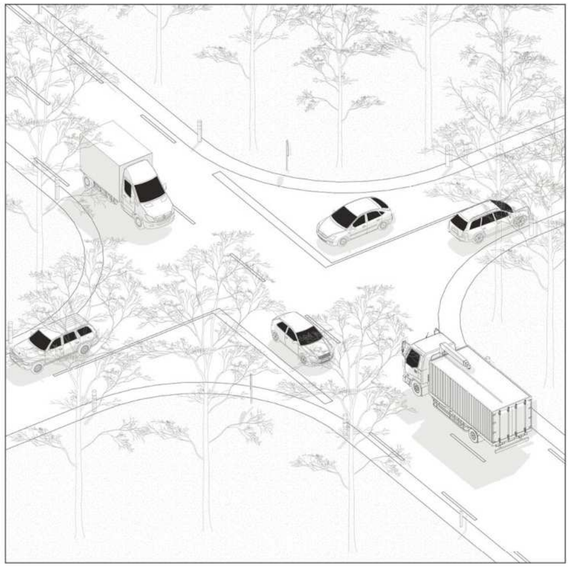
Learning by Doing

A first step toward a concrete link between Knowledge and Practice

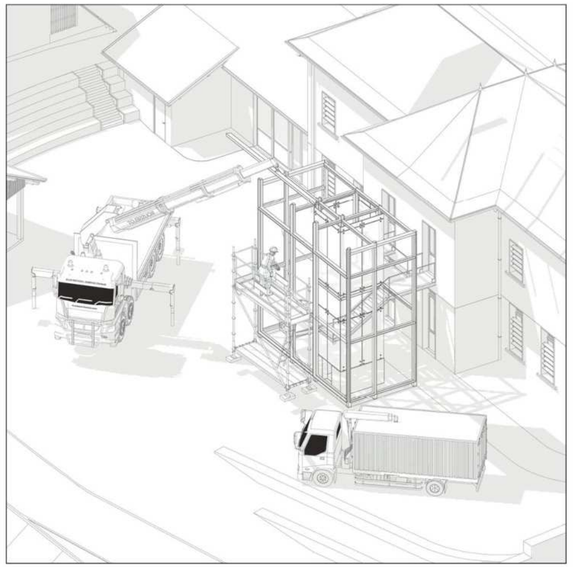
The terracotta brick extension stands as a **manifesto of Making.** Designed as a **hands-on learning site**, it embodies the connection between design and construction. Its realization brings together **students and professionals** in a **concrete, participatory, and replicable process.** Built with bricks made at the Grands Ateliers, it highlights the power of a pedagogy rooted in material, craft, and



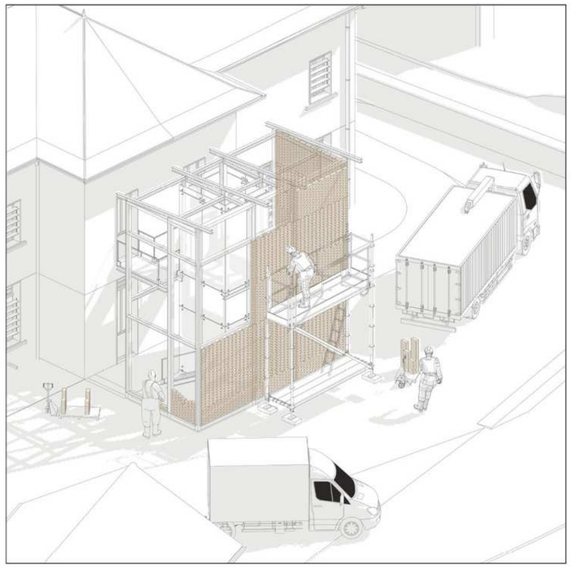
1. In **Villefontaine,** students can use the new sustainable construction campus to **make terracotta bricks.**



2. The **building truck** can easily transport clay bricks from **Villefontaine to Chimilin.**



3. In Chimilin, a team of **professionals** assembles the **metal structure of the extension.**



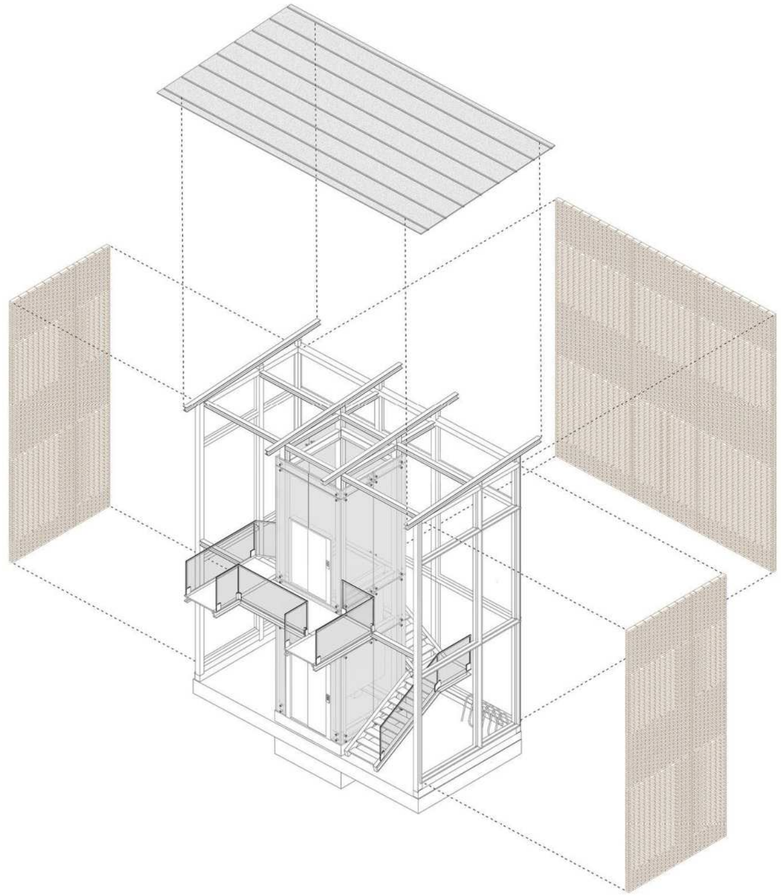
4. Students can come and **try out** filling the framework with **terracotta brick.**

The intervention

Redefining vertical circulation

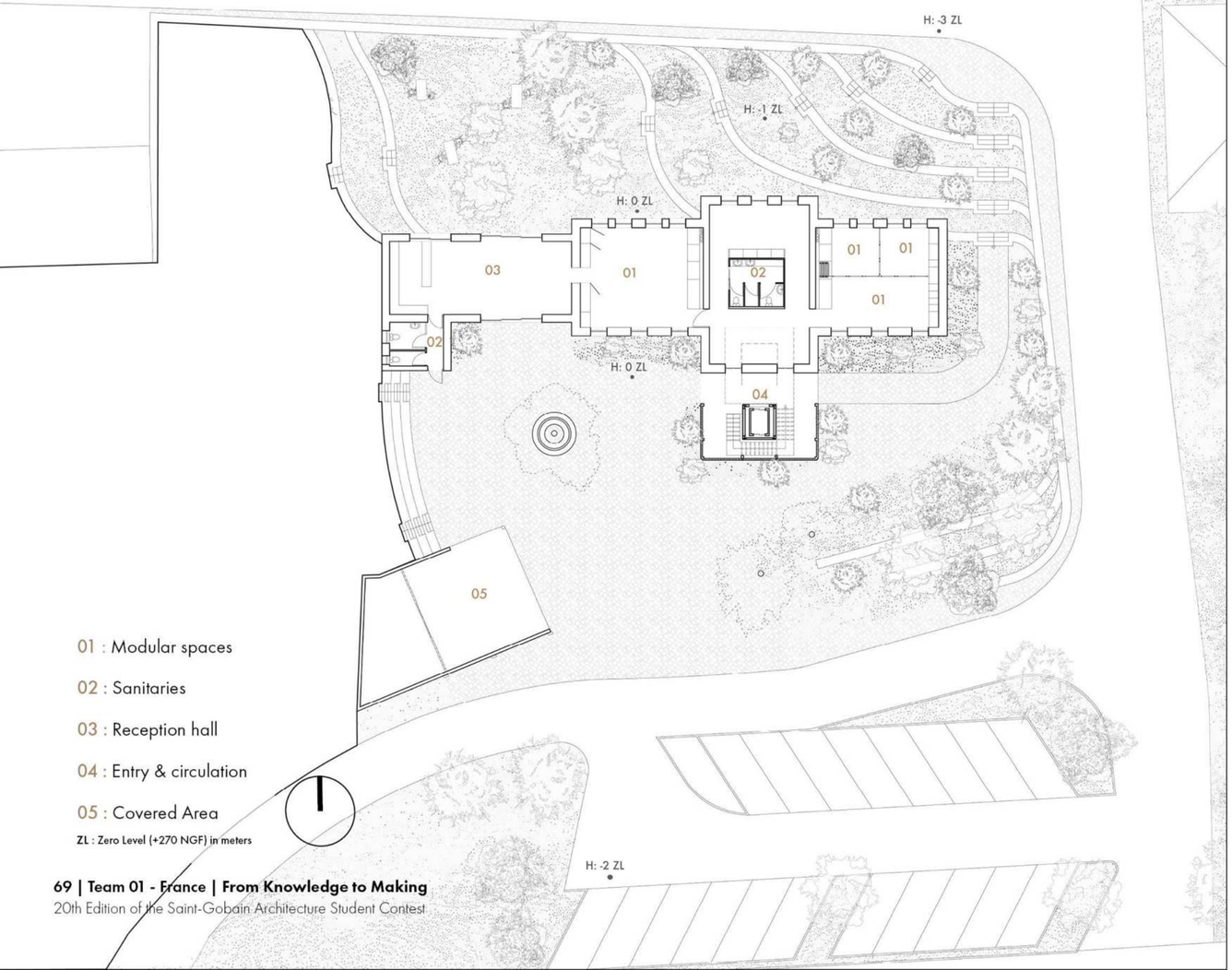
The existing vertical circulations are **narrow, poorly placed, and often block natural light.** To address this, we propose **relocating them outside the building** in a new covered extension.

This external circulation will be **fully accessible to people with reduced mobility and elderly users.** Designed as a light and porous **brick moucharabieh in terracotta**, it **filters light** while preserving visual openness and comfort.



Relationship between new and old

A ground floor connected to the outside



01 : Modular spaces

02 : Sanitaries

03 : Reception hall

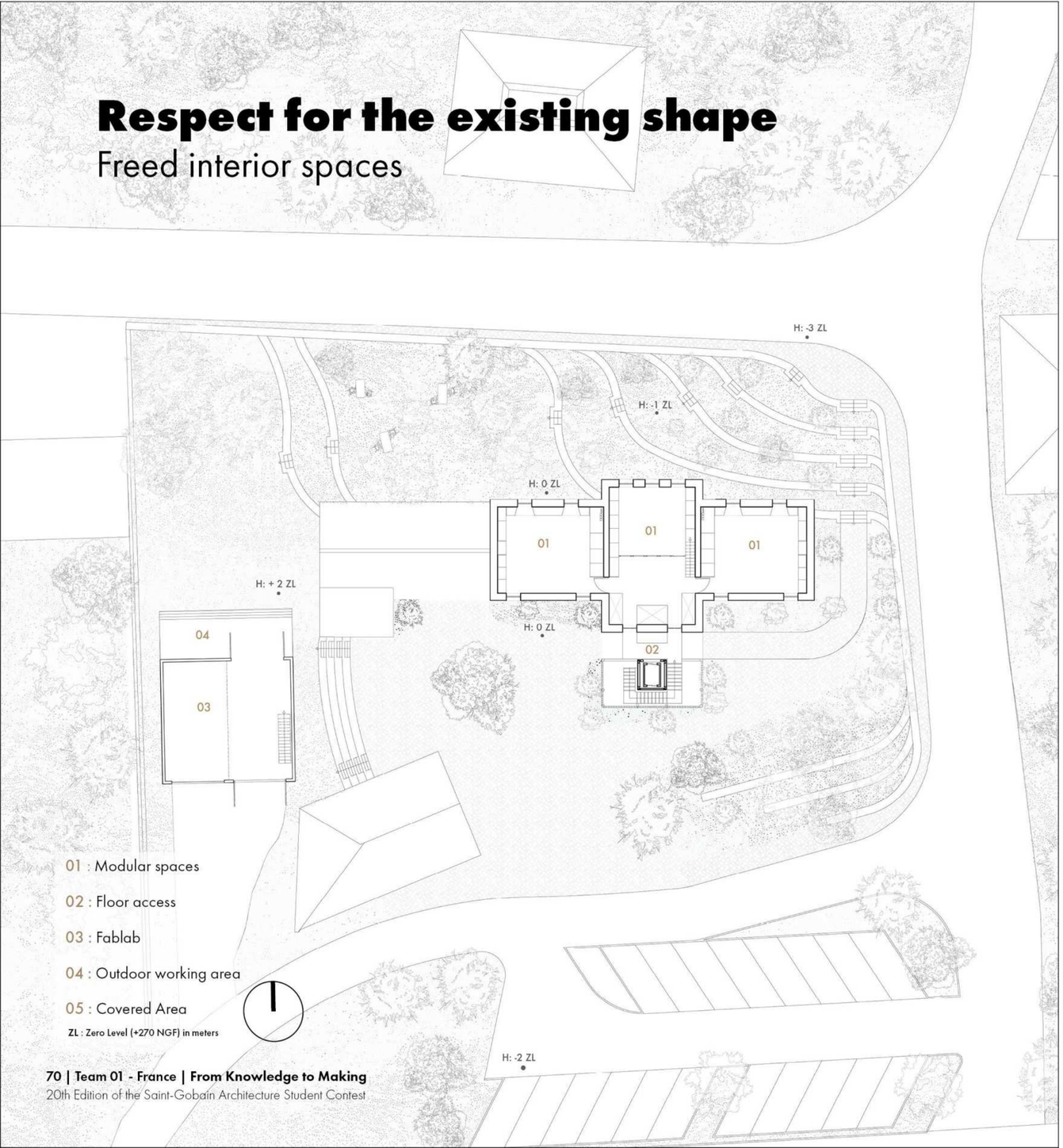
04 : Entry & circulation

05 : Covered Area

ZL : Zero Level (+270 NGF) in meters

Respect for the existing shape

Freed interior spaces



01 : Modular spaces

02 : Floor access

03 : Fablab

04 : Outdoor working area

05 : Covered Area

ZL : Zero Level (+270 NGF) in meters

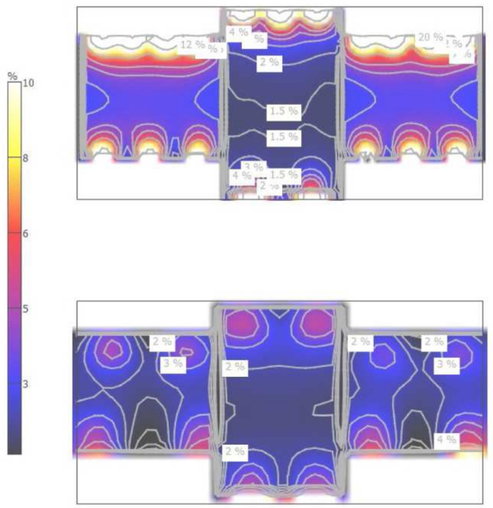
Respect for the existing structure

Technical intervention while preserving the aesthetics

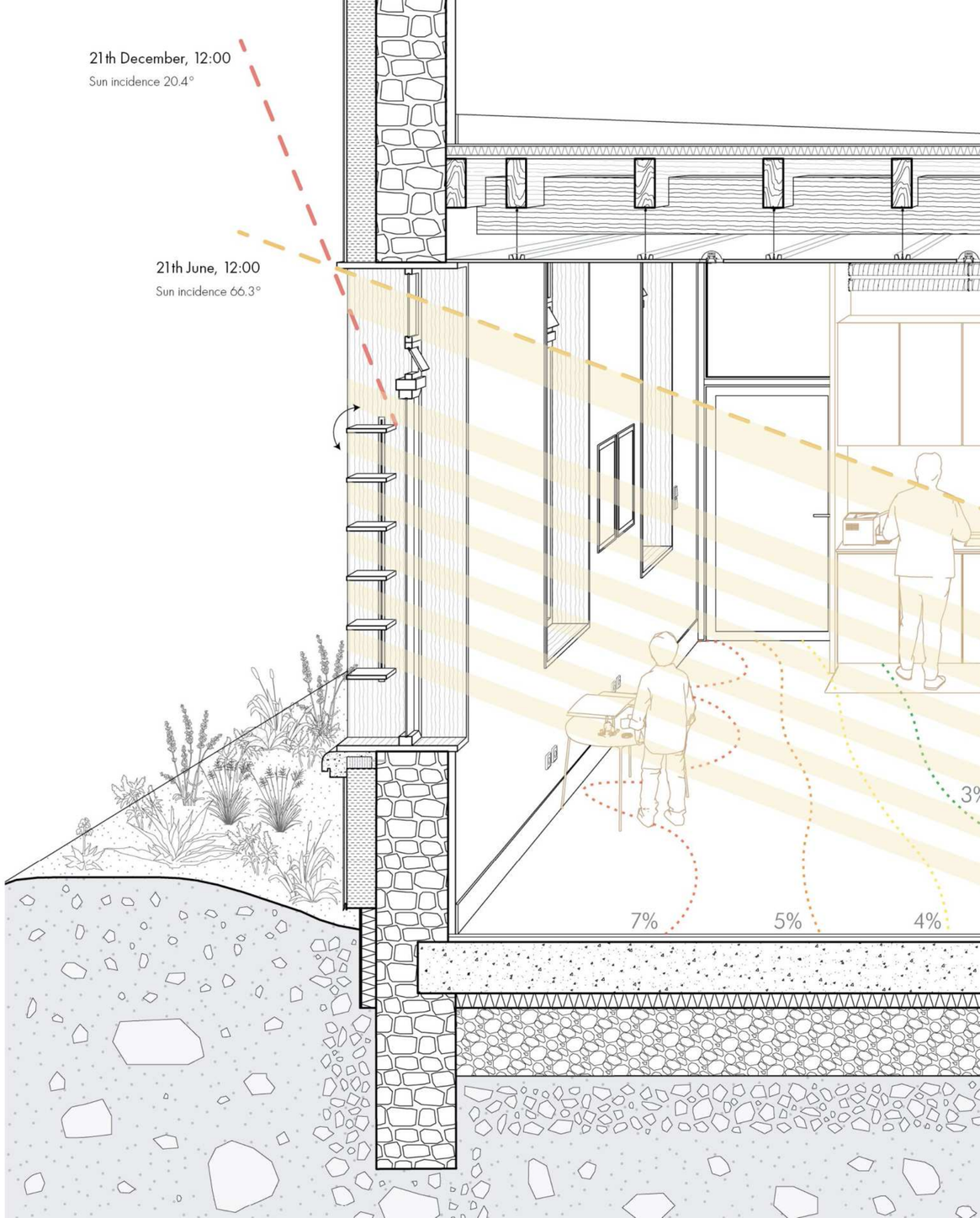
The new joinery embodies an **economical**, **efficient** renovation approach, meeting today's thermal performance standards. The manufacturing process follows a circular economy, **using recycled glass** processed locally in Cessieu, just 20 km from the site.

The new frames, now feature **ORAÉ® recycled double glazing** and an integrated natural ventilation flap. Combined with **the building's strong cross-ventilation** potential, this system ensures effective passive cooling. On the south façades, adjustable **sunshades** regulate solar gain and **prevent overheating**.

The thicker frames, designed to accommodate the **External Thermal Insulation** (ETI), become architectural features, overhangs outside, built-in furniture inside, enhancing both performance and comfort.



The building benefits from **optimal natural light**, with a Daylight Factor above **2% in 75%** of the space (DF/FLJ).



Construction strategies

A modular and resilient approach

Designed to host the many forms of community life, through spatial and functional flexibility.

This building is structured around the theme of modularity, it includes s**ix distinct yet highly flexible rooms**. Each space is equipped with **thick utility bands**, continuous furniture strips along the walls that integrate multiple functions: seating, tables, sinks, worktops, storage, projection surfaces, kitchen elements, and display areas.

These **multifunctional bands** allow the rooms to host a wide range of activities, like discussion areas, meeting and office spaces, or event preparation rooms.

The modularity of these spaces is reinforced by a system of **integrated movable partitions** within the bands, allowing each room to be subdivided or opened depending on the needs.

This approach **avoids assigning a specific room to each association** and enables shared use across all associations. This spatial flexibility supports **temporal modularity** as well : the building remains **relevant over time,** even as associations evolve or change, without requiring architectural transformation.

Anticipating future uses

The building also integrates **long-term adaptability.**

With **four separate entrances**, it can easily shift functions: into housing, professional workspaces, or other programs.
The modular bands and distributed access points ensure that the architecture remains functional and coherent, regardless of future changes.

This reflects a **commitment to modularity across both space and time.**


Open room

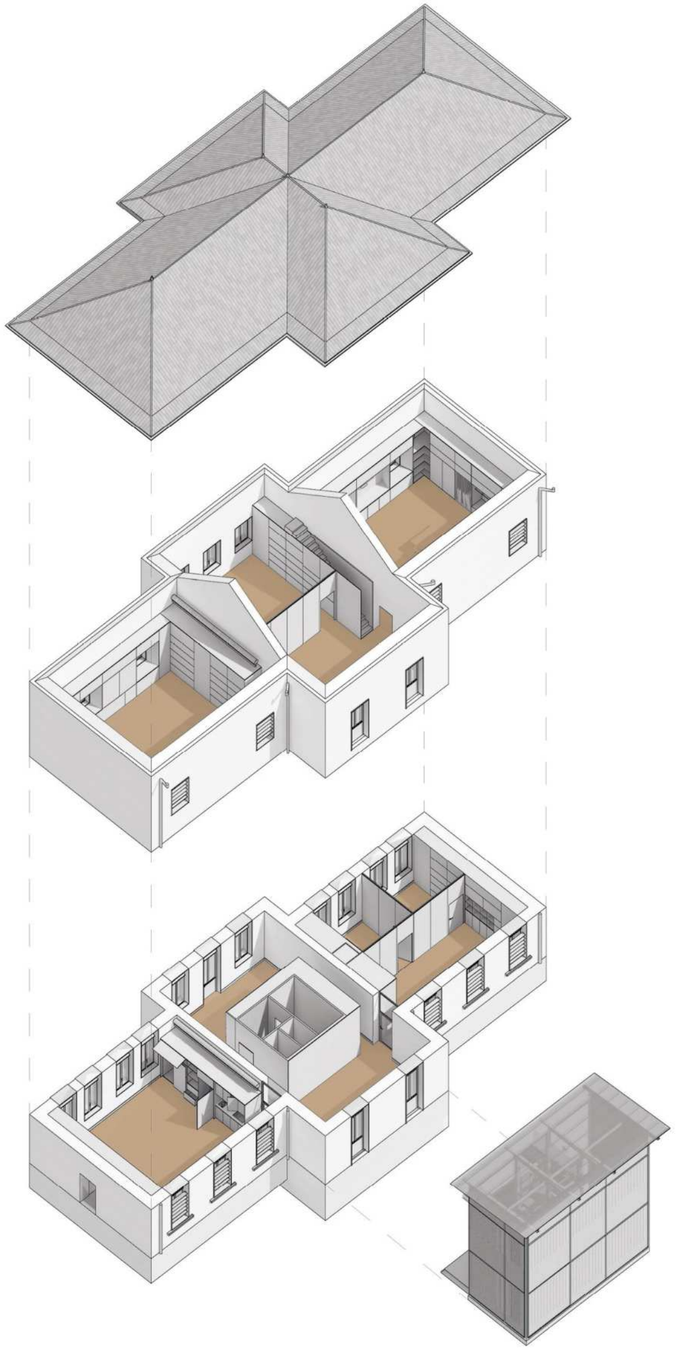

10 m² partition option


10 m² partition option


20 m² partition option


2x10 m² partition option

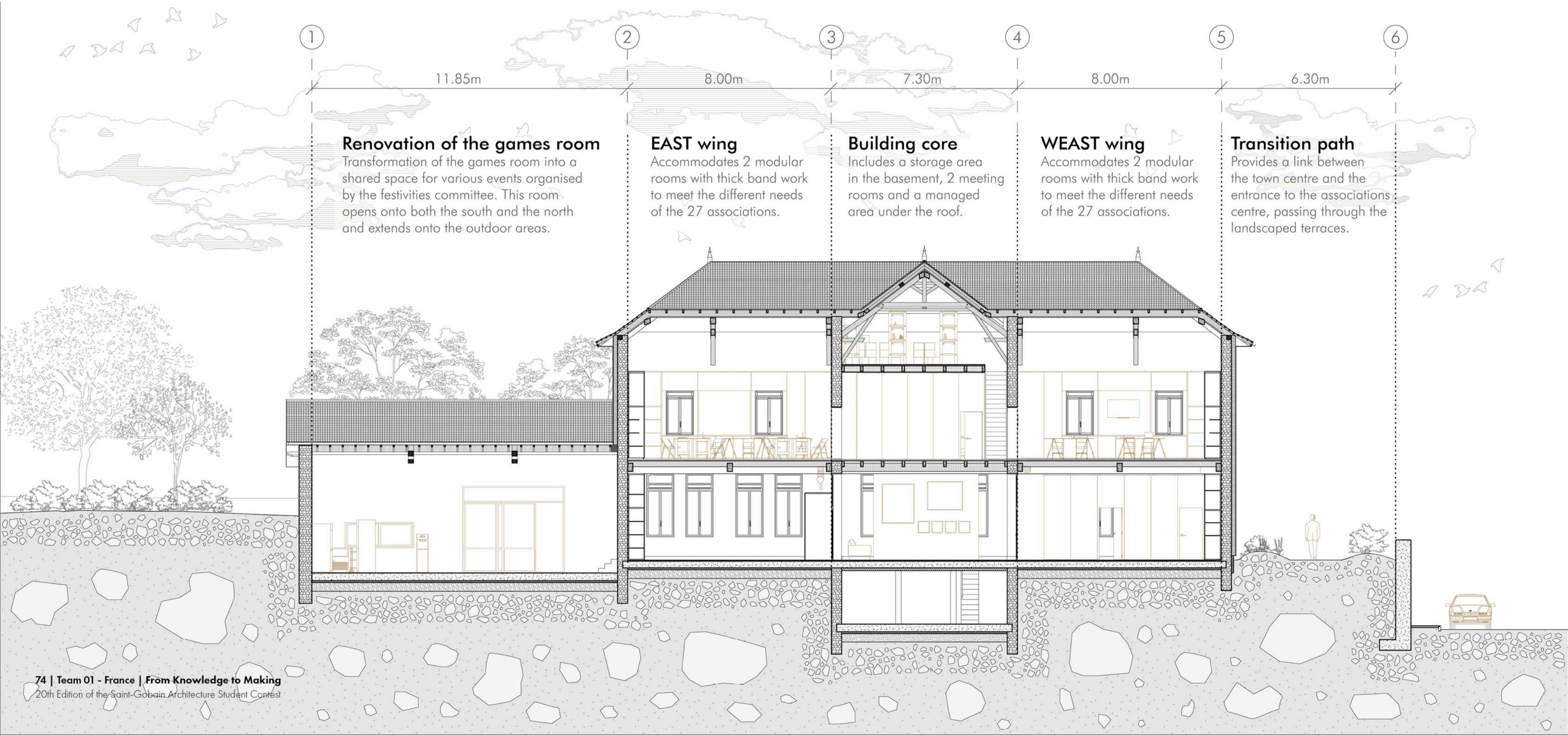

Movable partition storage




Salle 04
Salle 06

A space open to possibilities

A modular and resilient approach



Renovation of the games room

Transformation of the games room into a shared space for various events organised by the festivities committee. This room opens onto both the south and the north and extends onto the outdoor areas.

EAST wing

Accommodates 2 modular rooms with thick band work to meet the different needs of the 27 associations.

Building core

Includes a storage area in the basement, 2 meeting rooms and a managed area under the roof.

WEAST wing

Accommodates 2 modular rooms with thick band work to meet the different needs of the 27 associations.

Transition path

Provides a link between the town centre and the entrance to the associations centre, passing through the landscaped terraces.

Thick Bands

Walls that organize, Spaces that evolve

1. An integrated and optimized technical space
The design of the thick band discreetly integrates all technical networks, including the HRV system, ensuring thermal comfort and air quality with unobstructed efficiency.

2. Ability to integrate lighting
Freedom to add lighting to highlight key elements.

3. Optimized high storage

4. A compact and functional kitchen
Discreetly integrated into the thickness of the band, the kitchen is fully equipped for daily use. It optimizes space without encroaching on the living area, providing comfort and practicality in a seamless and efficient design.

5. Generous and discreet storage
Double-door cabinets provide ample storage while integrating seamlessly into the space. Designed for efficiency, they maximize organization.

6. Open and accessible shelving
Adding a decorative dimension and quick access to items.

7. Flexibility of use with foldable furniture
Foldable tables and chairs are integrated to quickly free up space, offering functional freedom and flexible configurations.

8. Practical drawers
Easily accessible drawers perfect for quick storage of everyday items and documents, keeping clutter at bay.

Multifunctional room

Focused on modularity and ergonomics

The **modularity** of the spaces is enhanced by a system of **retractable partitions integrated into the thick peripheral bands**, allowing each room to be **subdivided** or fully opened according to **changing needs**.

Tuesday 22 april 8:30am.

Friday 08 september 10:00am.

Multifunctional room

Focused on modularity and ergonomics

Tables on trestles and stackable chairs are **stored within the thick bands**, enabling the space to be **reconfigured freely** to suit a **wide variety of uses.**

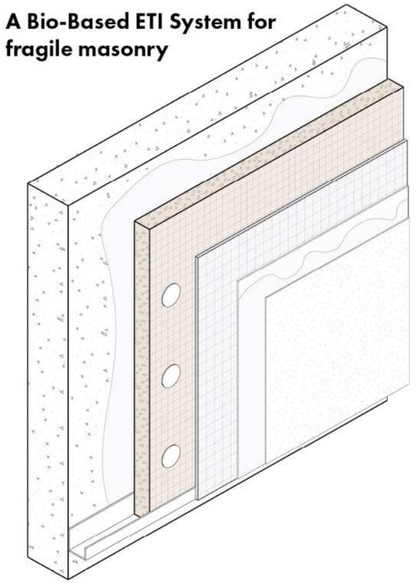
Tuesday 13 february 2:00pm.

Sunday 22 May 6:00pm.

Heritage and renewal

A facade that opens up

A Bio-Based ETI System for fragile masonry



Webertherm XM Natura® cork was chosen for its easy installation, bio-based origin, strong thermal performance **(= 0.040 W/m·K)**, and cost-efficiency. Installed using the bonded-and-fixed method, it minimizes impact on the fragile existing wall while ensuring efficient insulation and respect for the original structure.

Existing cinder concrete

The existing cinder concrete wall is fragile and poorly insulated. External insulation was chosen to preserve the structure, limit thermal bridges, and **enhance performance without impacting interior space.**

Cinder block wall with bio-based cork insulation

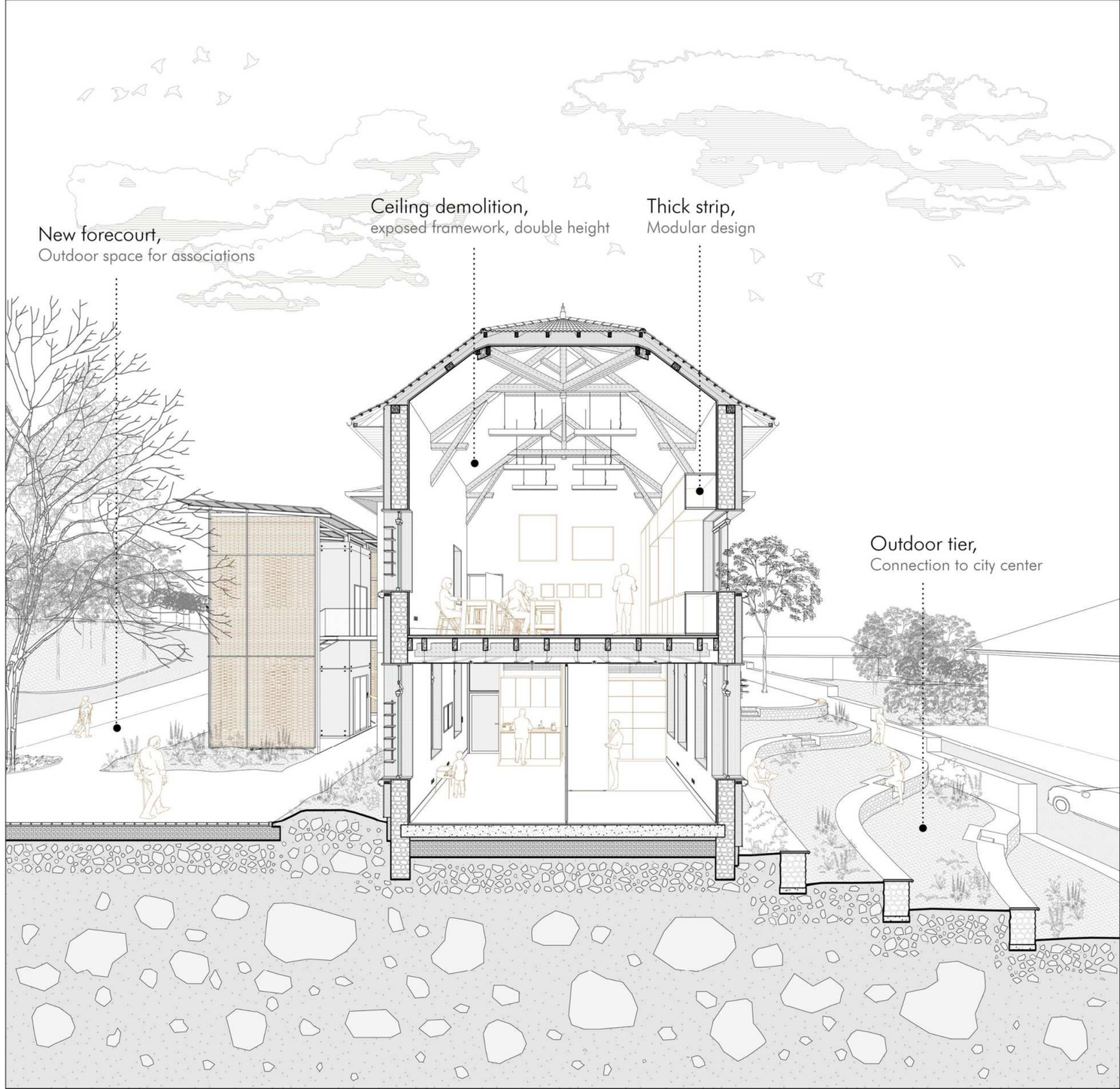
U = 0,22 W/(m²K)

R ≈ 4,55 m²·K/W

INT

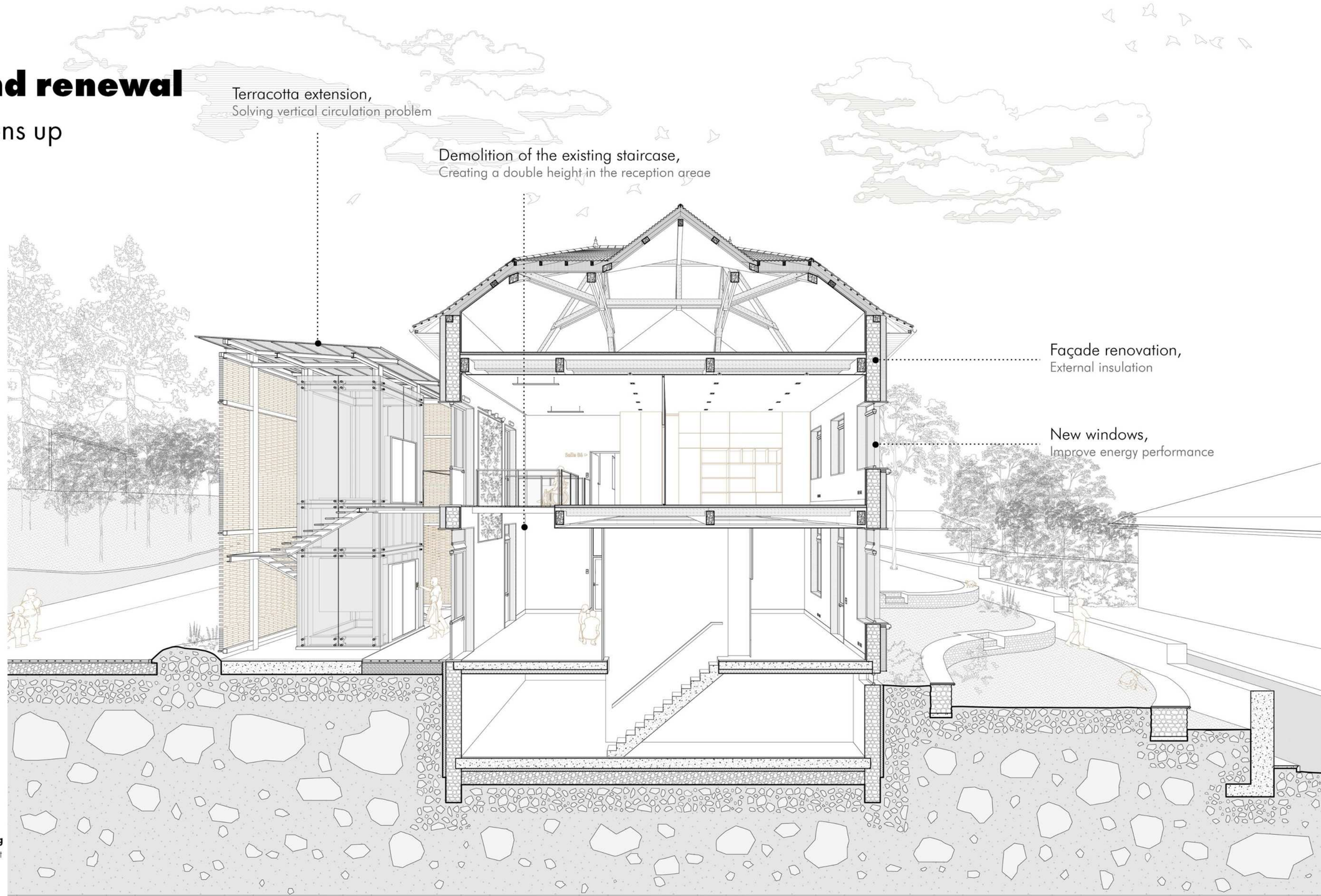
- ISOVER, **Placo®** Activ›Air® BA 13
- Existing Cinder concrete – 400 mm
- **Webertherm XM Natura®** – 140 mm
- Mineral base coat – **Weberdress R®**
- Fiberglass mesh
- Finishing coat – **Weber.Unicor®**

EXT



Heritage and renewal

A facade that opens up

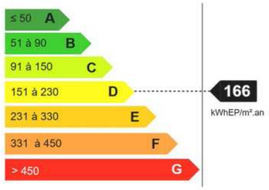


Strategic thermal upgrade

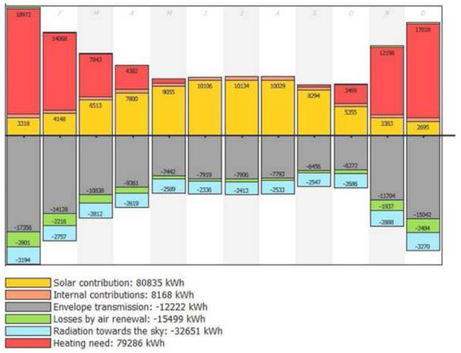
Energy & comfort performance

Before renovation

Total annual energy consumption :
81,388 kWh
166 kWh/m²/year



Energy balance

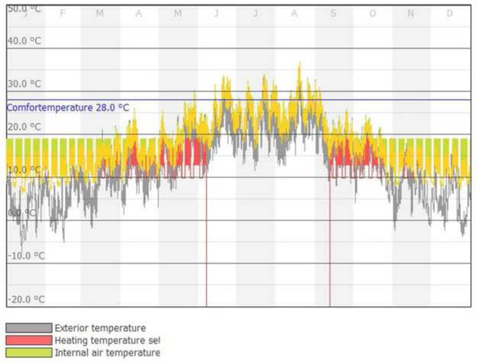


Heating demand : **79,286 kWh/year**

Lighting consumption : **2,102 kWh/year**

This energy balance reflects the building's **poor thermal performance**, with high heating needs despite substantial solar gains.

Summer comfort

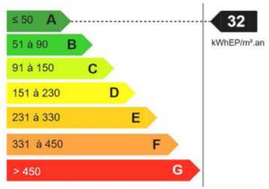


Solar contribution : **80,835 kWh**

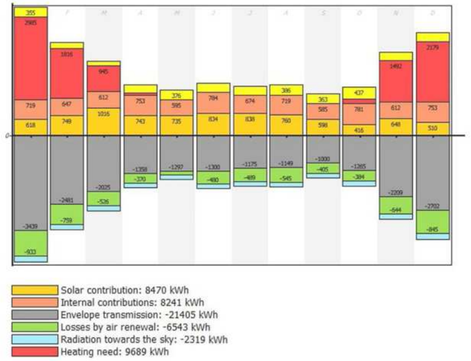
Thermal discomfort is significant, with indoor temperatures **exceeding 28°C** for **14%** of the building's occupied time, amounting to **424 hours per year**.

After renovation

Total annual energy consumption :
15,667 kWh
32 kWh/m²/Wyear



Energy balance



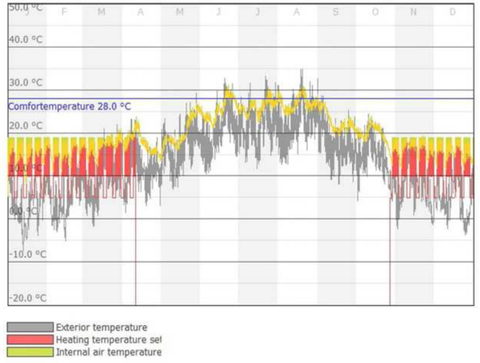
Heating demand : **9,689 kWh/year**

Lighting consumption : **3,934 kWh/year**

Ventilation consumption : **2,044 kWh/year**

Energy balance drastically improved, with heating needs **reduced by nearly 88%**.

Summer comfort



Solar contribution : **8470 kWh**

Thermal discomfort is limited to **8%** of the building's occupied time, with indoor temperatures **exceeding 28°C** for approximately **249 hours per year.**

This performance is made possible by a combination of **insulation**, **ventilation**, and above all, **bioclimatic solar protections** on the windows.

The Model as a design tool

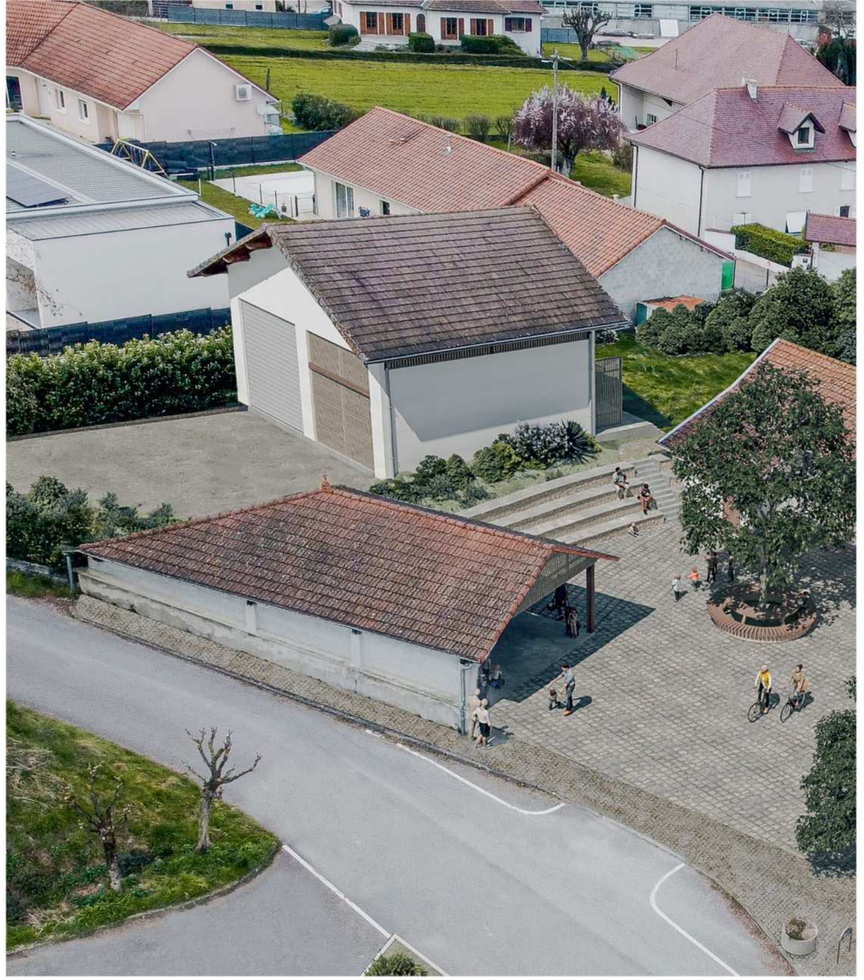
Thinking with our hand

For us, architecture students, working with physical models is a key part of how we explore and develop ideas. It's through making that we test proportions, adjust spaces, and gain a deeper understanding of form and material.
At Chimilin, the small scale of the project encouraged hands-on experimentation. The bleachers, for example, emerged directly from these manual explorations ...

... **To Make is to Think**

Villefontaine

When Theory meets Practice



FROM KNOWLEDGE TO MAKING

VILLEFONTAINE - CHIMILIN - **TERRITORY**

Chimilin

The Epicenter of Making

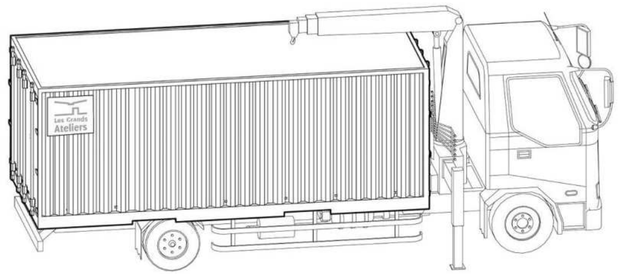
A campus branch
Fablab

The former hangar is being transformed into a FabLab, a dynamic workspace designed to **support the students of the Sustainable Construction Campus.**
Equipped with an **on-site workshop**, this branch of the villefontaine's campus will serve as a hub for research, prototyping, and hands-on experimentation.

More than just a workspace, it will also be the **anchor point** for the **Building Truck**, a mobile workshop designed to **bring innovation beyond the campus.**

Traveling to nearby villages, the Building Truck will allow students to apply and **share the knowledge** developed at the FabLab, fostering practical learning and **community engagement.**

The Building Truck



The Fablab

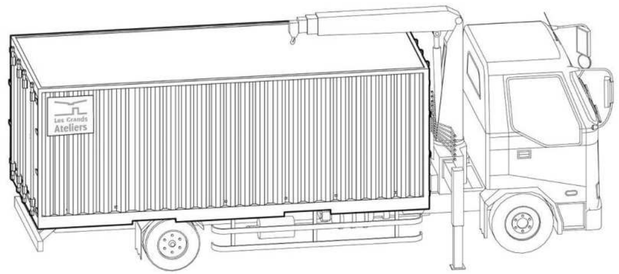
A local anchor

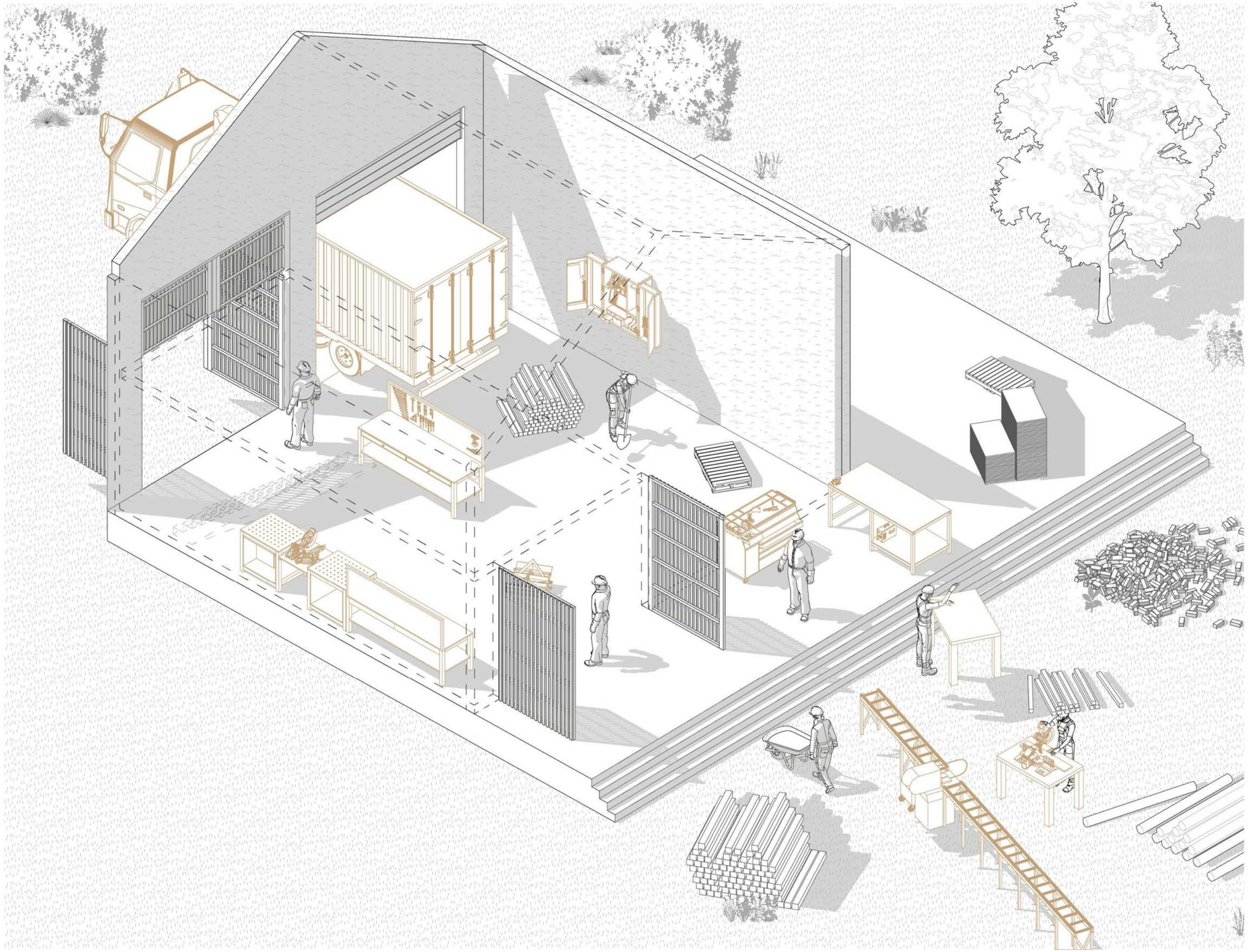
The Building Truck takes the concept of the Grands Ateliers' mobile workshop to the next level by permanently adapting it onto a truck.

This innovative solution allows for the **same hands-on**, portable learning and construction activities that a traditional mobile workshop would offer, but with the added **flexibility and mobility** of being mounted on a truck.

It can **travel to different villages and construction sites**, bringing **sustainable building practices** and knowledge directly to communities, while **giving students the opportunity to work in real-world environments** and apply what they've **learned on campus.**

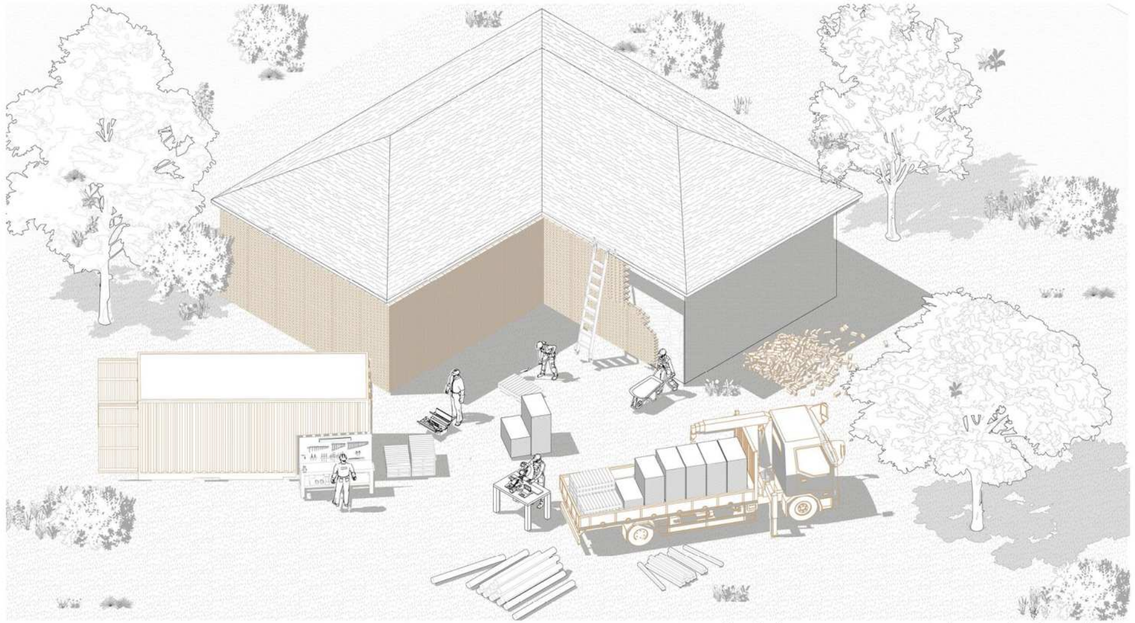
The Building Truck





Opening to the territory

A replicable model at the regional scale



Example of a house renovation in Fitilieu, 5.8km from Chimilin

Example of a house renovation in Granieu , 3.8 km from Chimilin

The Building Truck allows **direct action on real-life situations.** By combining the **useful**, renovating vacant housing, with the enjoyable, hands-on practice and learning through making, this approach **helps revitalize** local areas while addressing a **major issue**: the **high rate of vacant homes in small towns** (an average of 14%).

It offers a concrete response to **local needs,** rebuilding connections between small villages and **linking them back** to larger urban centers, helping to **revitalize the region as a whole.**

This process allows students to practice while bringing knowledge to communities, turning the region itself into a learning ground

"Our work is to rehabilitate the world that already exists, and to ensure that municipalities [...] once again demand facilities so that life can remain there."

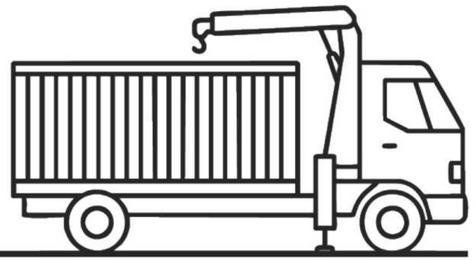
Philippe Madec

Our approach seeks to support the development of small towns and villages by activating vacant spaces and encouraging new forms of local engagement

By making these areas more attractive and functional, we aim to reverse rural decline and promote repopulation. Each intervention contributes to building a more coherent and connected urban fabric

The goal: to build stronger links between cities and villages in order to shape one living, connected, and future-ready region

FROM KNOWLEDGE TO MAKING



VILLEFONTAINE - CHIMILIN - TERRITORY

Team 01 - France

Special thanks to Clément Hanot, Ghislaine Bagdi, Régis Le Normand, Aline Barlet, Pierre Cara