ARCHITECTURE STUDENT CONTEST

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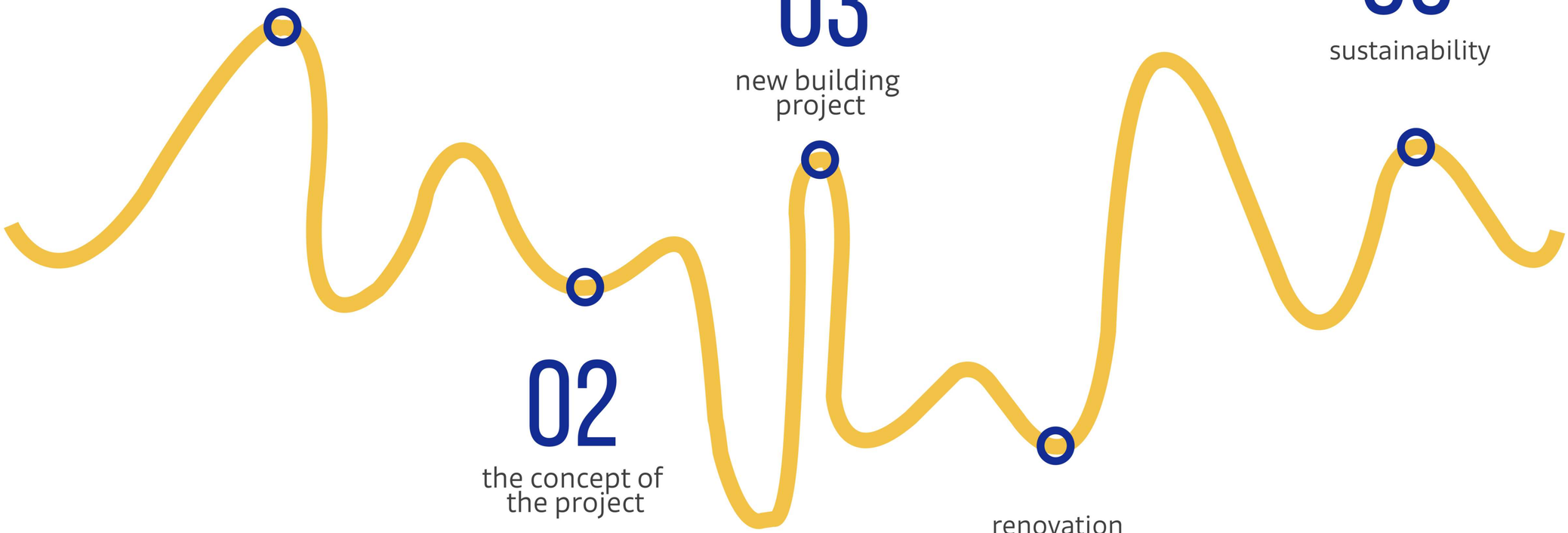

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area analysis
a brief urban analysis of the areas Villefontaine and Chimilin, focusing on their specific local characteristics

02
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an explanation of the concept underlying the projects in the two locations, along with the narrative behind them

03
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a presentation of the architectural solution illustrated through technical documentation, including the site plan, floor plans, sections, and elevations

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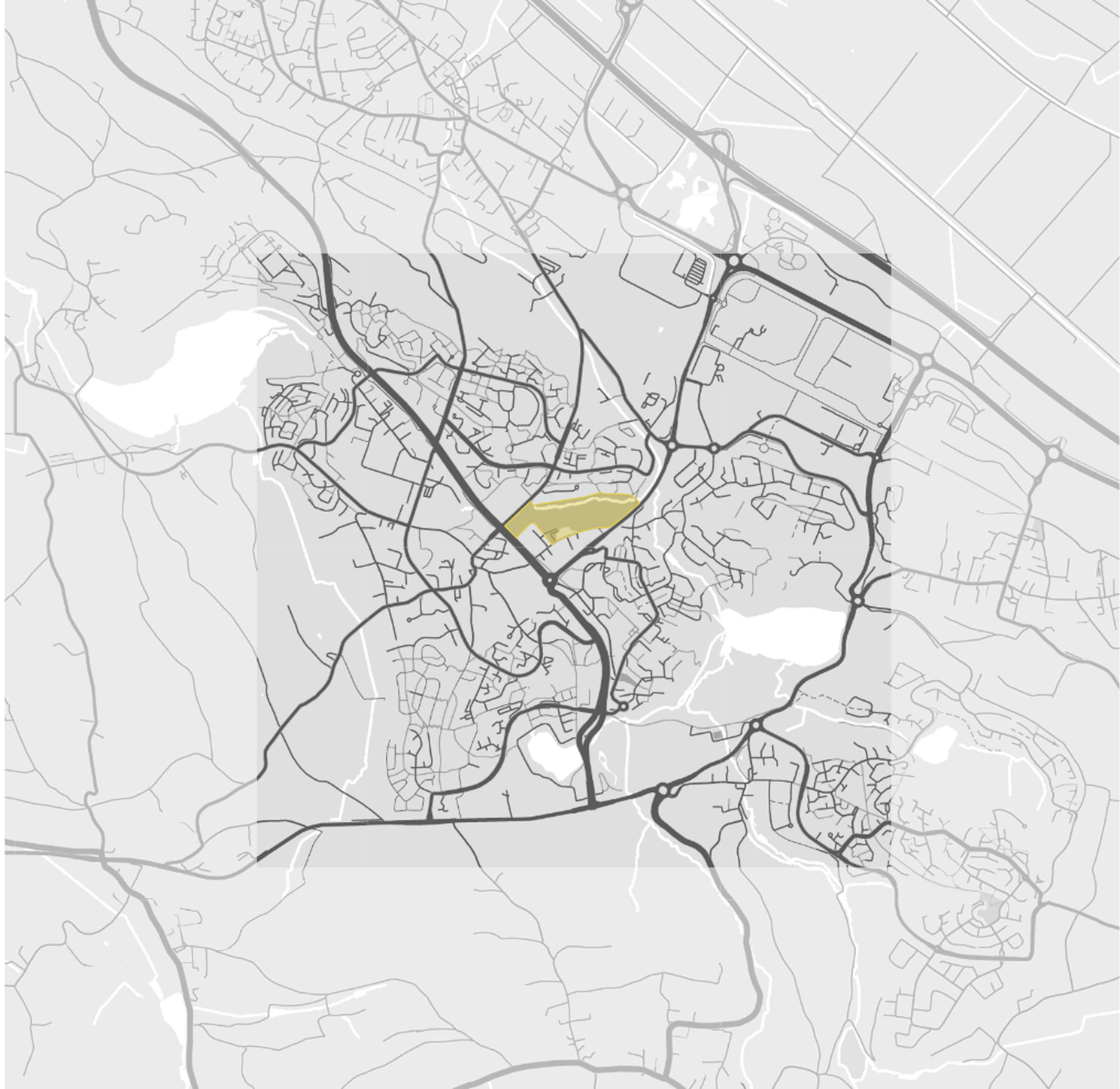
a presentation of the architectural solution illustrated through technical documentation, including the site plan, floor plans, sections, and elevations

05
sustainability
an analysis of the project optimization strategies, including environmental impact assessment (LCA), life cycle considerations (LBC), energy demand calculations, and other relevant details

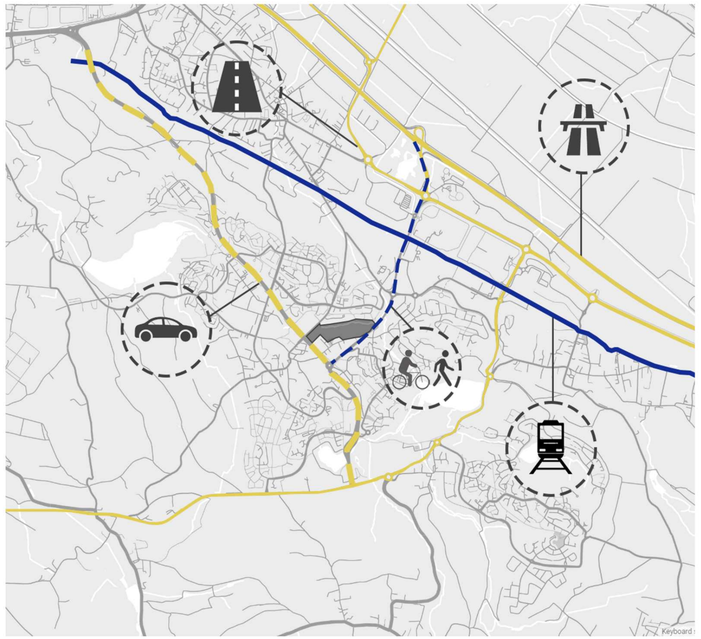
01 area analysis

Villefontaine

Villefontaine, located in the Auvergne-Rhône-Alpes region of France, is a town developed in the 1970s, known for its balanced integration of green spaces into the urban environment. Its neighborhoods are organized with breaks in the built fabric, allowing for natural buffers that enhance biodiversity and improve residents' quality of life. Most single-family homes are set back from the street and surrounded by gardens, while newer housing includes planted borders and shared green areas. Architecturally, Villefontaine features a variety of building types, from individual houses to apartment blocks and contemporary complexes. The town also values its heritage, with landmarks like the 18th-century Pavillon des Quatre Vents, part of the former Monbaly estate. This blend of old and new reflects Villefontaine's vision: a sustainable, livable, and visually coherent urban environment shaped by both nature and culture.



Analysis of the main axes



highway E70 and national road D1006

departmental route D313 for local traffic

railway

pedestrian and bicycle path

project site

Villefontaine is well-connected by major transport routes. The A43 (E70) links Lyon to Chambéry, while D1006 and D313 facilitate local traffic. A nearby railway line supports public transport, and an extensive network of pedestrian paths and bike lanes promotes sustainable mobility.

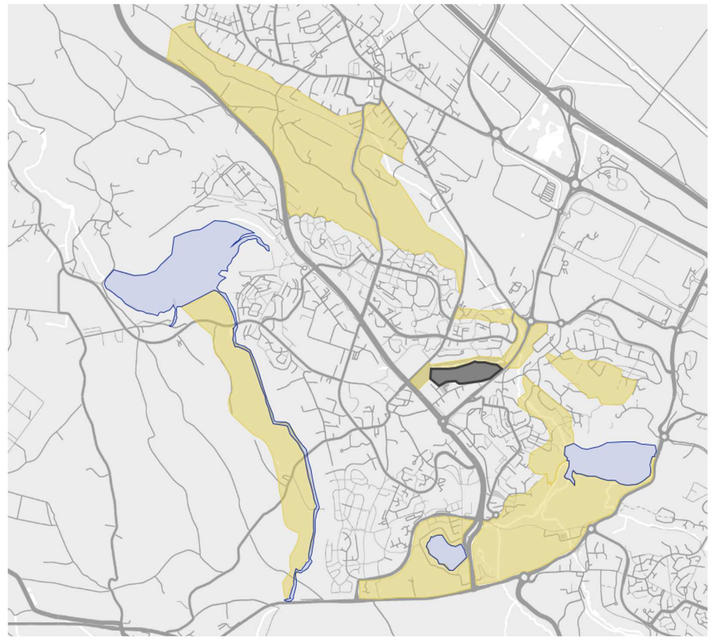
Nolli map

project site

built environment

The area features an organic street network, medium-high density, and a balance between built and open spaces. It includes integrated green areas, defined roadways for efficient traffic flow, and mixed land use (residential, commercial, industrial).

Vegetation map



areas with vegetation

aquatic areas

project site

Villefontaine features a mix of urban greenery and natural landscapes, with numerous parks, tree-lined streets, and green corridors. Surrounding areas include forests, agricultural land, and water bodies, contributing to a balanced natural environment.

Regarding the building height regulations in the Villefontaine area, there is no fixed or unified character. The maximum height limit within a 10 km radius does not exceed P+5E. Single-family houses generally do not go beyond P+1E or P+1E+M.

The single-family homes on the southwestern side are typically set back toward the center of their plot and are, in most cases, lightly fenced, with transparent or semi-transparent boundaries.

Newer apartment buildings near the site reach the maximum height, with ground-floor residents often creating small private courtyards. New apartment buildings have a more individualistic character and are not connected or related to other buildings, often having a green buffer zone between the street and the building itself.

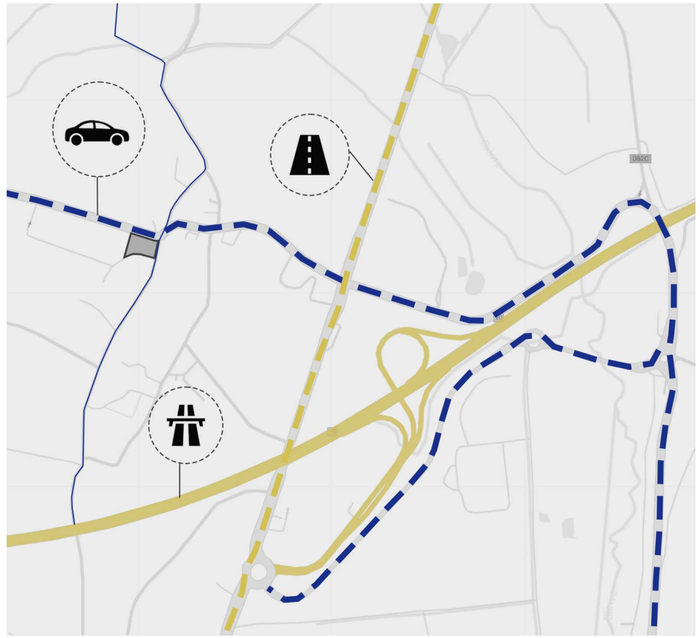
Both individual houses and apartment buildings typically include a green buffer or planted fence. Vegetation is a highly present and defining element in the area.

01 area analysis

Chimilin

Chimilin is a commune in the Isère department of southeastern France, characterized by its rural landscape and dispersed settlements. It is part of the urban area of Les Abrets en Dauphiné, functioning as a suburban municipality within this intercommunal agglomeration. The architectural landscape of Chimilin is modest, featuring structures such as the Saint-Laurent parish church. Notably, Villa Bellen, now serving as the town's médiathèque (media library), has been recognized for its architectural significance, earning a label from the Isère department that highlights its importance within the local heritage. Urban planning in Chimilin emphasizes the integration of green spaces and communal areas. The presence of the médiathèque not only serves as a cultural hub but also contributes to the communal identity. While Chimilin may not boast extensive urban development, its commitment to preserving and highlighting its architectural and natural assets reflects a thoughtful approach to urban planning.

Analysis of the main axes



highway A43 (conected to Villefontaine)

departmental route D592 for local traffic

pedestrian and bicycle path near site

local route D82

renovation site

The road network in Chimilin is connected, with D82 serving local traffic and linking smaller towns nearby. D592 is a more significant route, connecting Chimilin to larger towns like Voiron and Moirans. For faster access to Villefontaine, A43 is the main motorway, offering a direct and efficient connection to regional infrastructure and beyond.

Nolli map

renovation site

built environment

This is a low-density area with an organic layout, featuring mostly detached houses and abundant unplanned green and agricultural spaces. Streets are narrow and low-traffic, with limited infrastructure and access primarily via secondary roads. Land use is mainly residential and agricultural.

Function map

another function (religious, educational, public)

housing

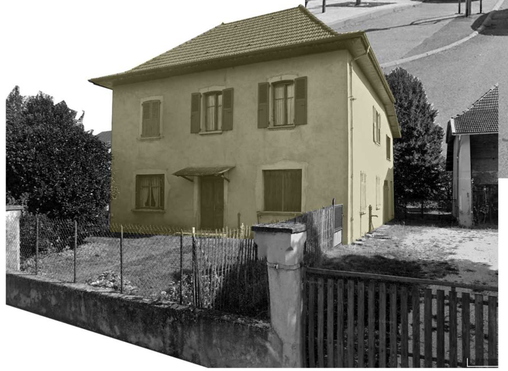
renovation site

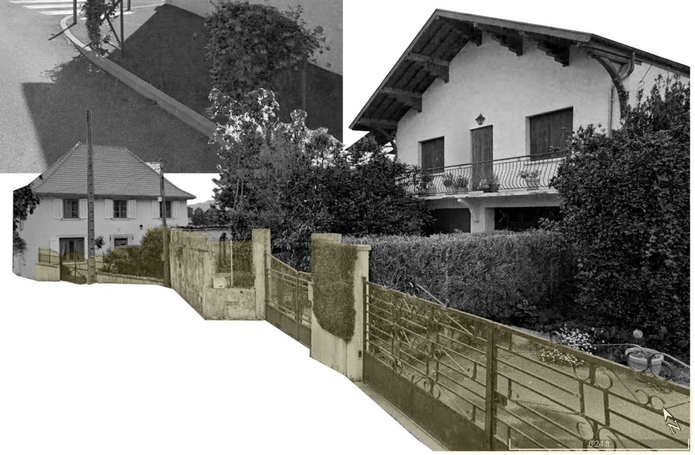
Chiliin has two building styles: street-front buildings without fences on main roads, and set-back houses with low fences inside plots. Churches and public buildings are prominent and open, contrasting with the general layout.

The height regulation in Chiliin village is generally uniform, with variations mainly due to buildings with functions other than residential (church, hospital, school). The maximum height is typically ground floor + 1st floor + attic for dwellings and ground floor + 2 or 3 floors for public buildings.

Public buildings, especially churches, stand out by their distinct, less crowded positioning and orientation, creating a sense of openness and functional hierarchy.

Along main roads, buildings typically front the street without fences. Moving inwards, houses are set back within their plots, often featuring low, semi-transparent fences.





Being a village with such a strong traditional identity, the buildings are predominantly rectangular in shape, resembling old house types with hipped roofs.

NEW
PROPOSAL

02 the concept of the project

Future connection

VILLEFONTAINE

CHIMILIN

Lyon-Turin-Europe

Potential Benefits:

YELLOW transforms the connection between Villefontaine and Chimilin into a strategic landscape shaped by the future Lyon-Turin railway line. The route's theme becomes the primary actant - an architectural gesture that materializes European opportunities for both localities: **increased tourism, improved business connectivity, and an enhanced labor market**.

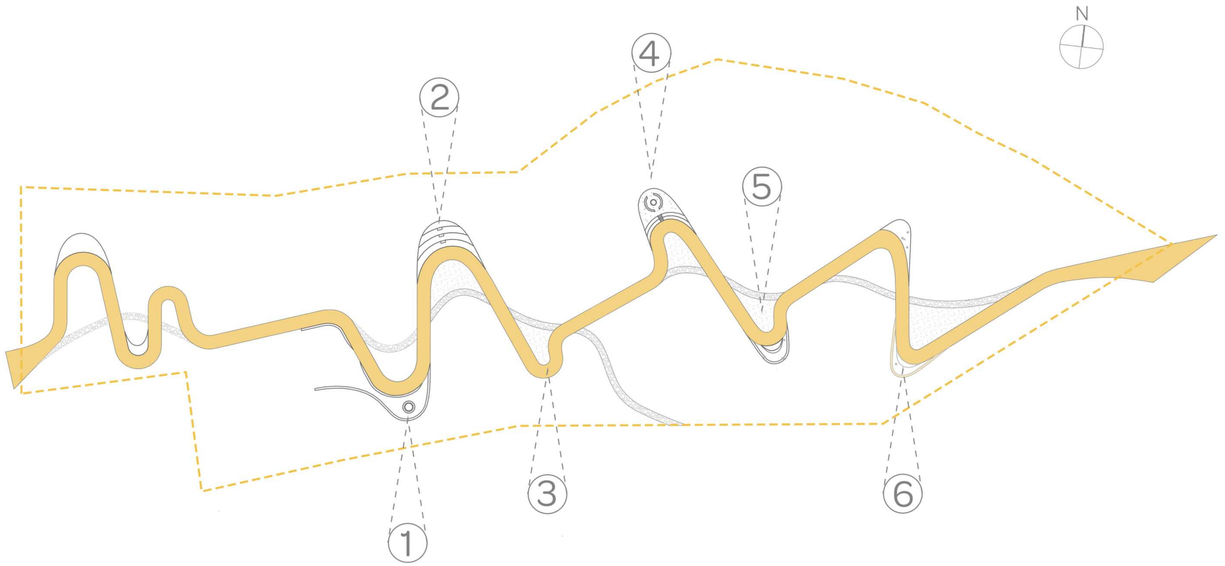
Each spatial intervention, from transport hubs to urban reconversions, expresses this latent potential, transmuting technical connectivity into social and economic cohesion.

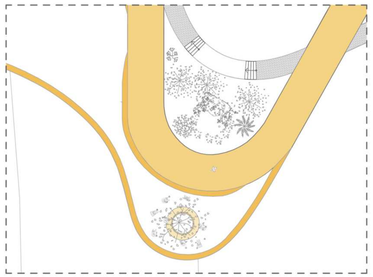
02 the concept of the project

Landscaping

Just as Villefontaine and Chimilin will be connected through the European project of the Lyon-Turin railway line, "Yellow" aims to **link the buildings** on the site. It integrates into the landscape and **connects the community**. The pathway becomes an essential element that provides coherence to the project.

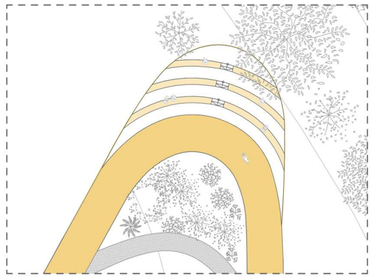
The pathway generates a series of spaces along its length to activate the community. It connects to the prototyping area for various work activities, creates **relaxation zones and social hubs**, all integrated within a carefully designed landscape framework **connected to the adjacent forest**.





1

Landscaping connecting with prototyping area platforms



2

Landscaping of terraced seatings allowing views to the forest

3

Landscaping around the vegetation that was already existing

4

Landscaping of camping area allowing views to the forest

5

Landscaping of green chilling areas and reacreation activities

6

Landscaping of green chilling areas and reacreation activities

02 the concept of the project

Connection

Chimilin is characterized by a **rural architectural language**, with pitched roofs that define a context of local sensitivity and **vernacular continuity**.

Villefontaine, by contrast, has an **industrial background** shaped by contemporary dynamics, yet retains a **similar roof configuration for "Les Grands Ateliers"**, reflecting a common formal language.

Chimilin

RURAL

Exterior perspectives within the rural context of Chimilin

Villefontaine

INDUSTRIAL

Exterior perspectives within the industrial context of Villefontaine

02 the concept of the project

Buildings

B1

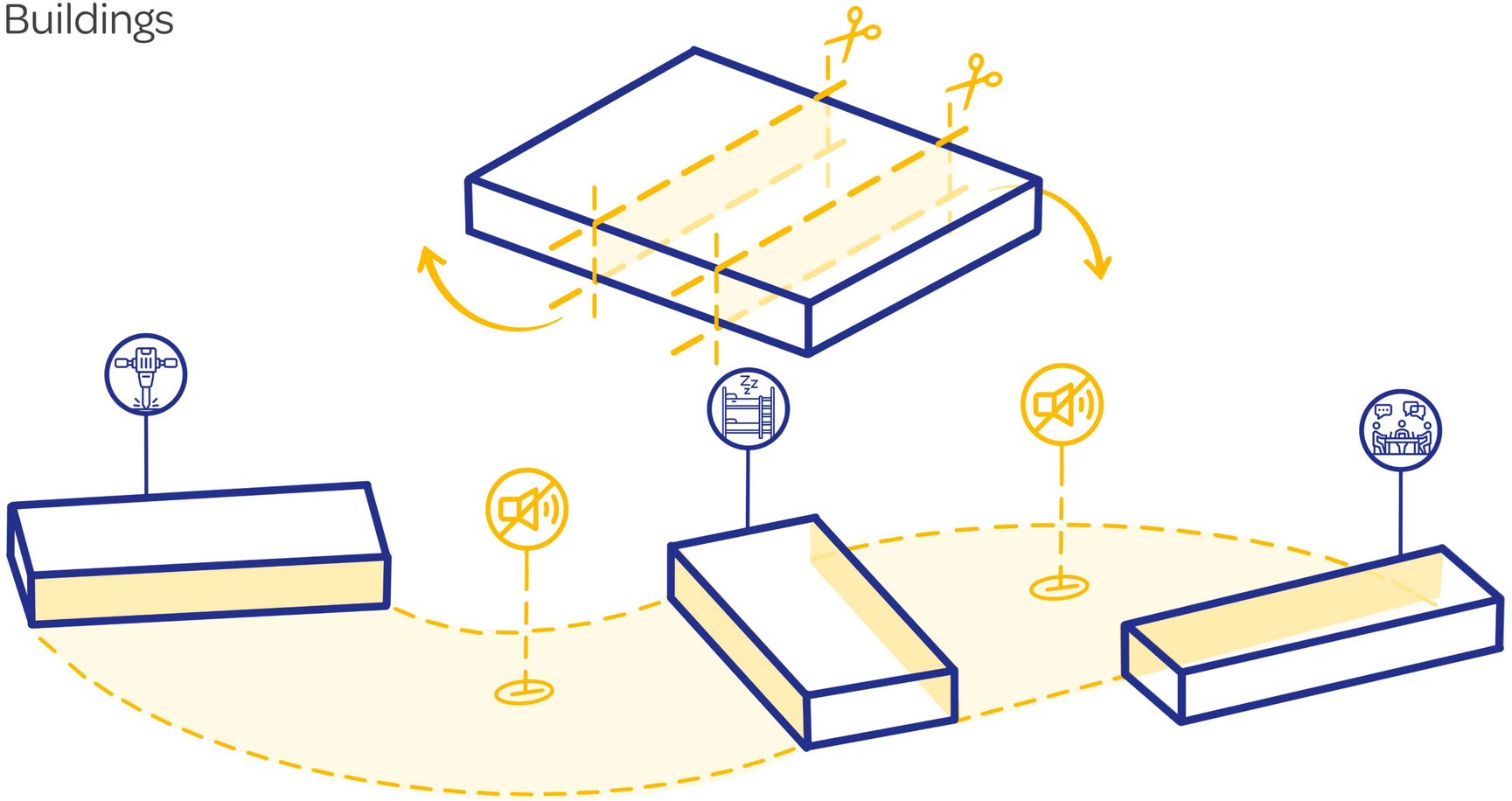
The first building is directly connected both to the Astus platform and to its own dedicated outdoor platform for the ‘Prototype Village’, seamlessly integrated into the overall landscape composition. It is intended for prototyping activities, creative workshops, and hands-on fabrication sessions.

B2

The second building is conceived as as student housing. Positioned at the heart of the site, it emerges as a focal point within the overall composition. Its modular structure extends to incorporate a greenhouse, supporting both ecological biodiversity and the social fabric of the project.

B3

The third building accommodates office spaces and meeting rooms, alongside a café that functions as a public attractor for the community. It opens toward the natural landscape and establishes a visual and spatial dialogue with the greenhouse adjoining the second building.



YELLOW PATH

GEOMETRY

VILLEFONTAINE

SUMMER

VILLEFONTAINE

WINTER

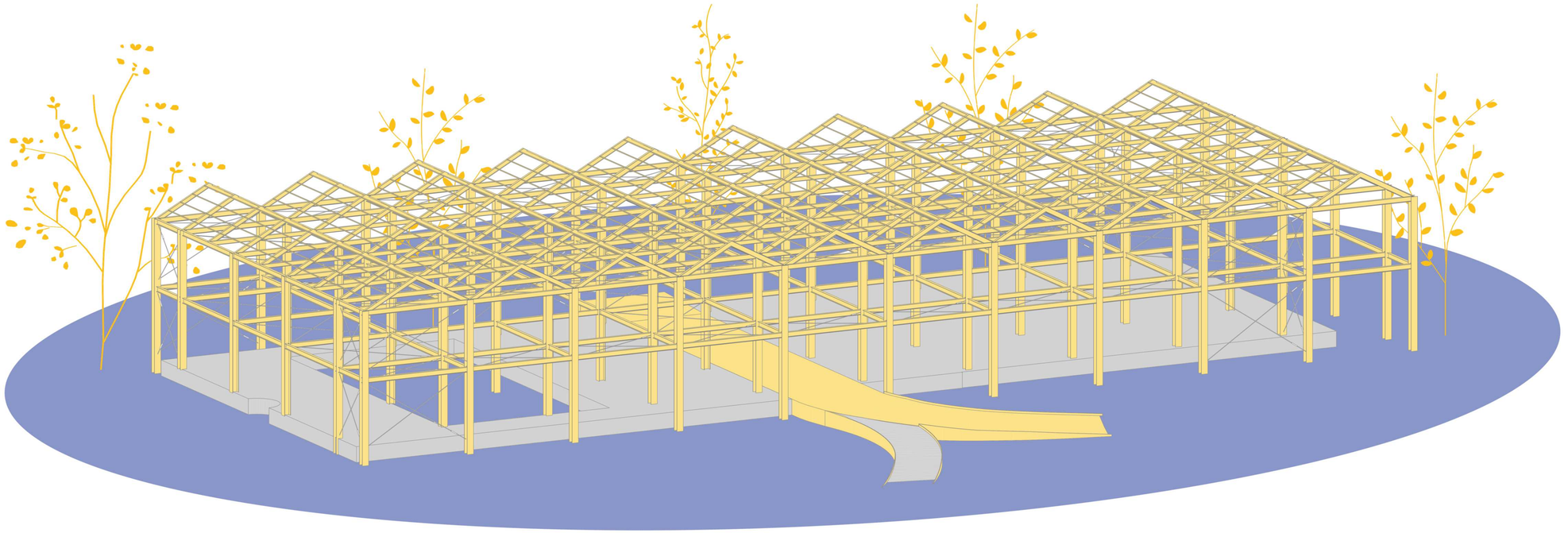
03 master plan 1:500

Villefontaine

B1. LABORATORY FOR CO-CREATION 482 m²
E1. EXHIBITION AREA (future)

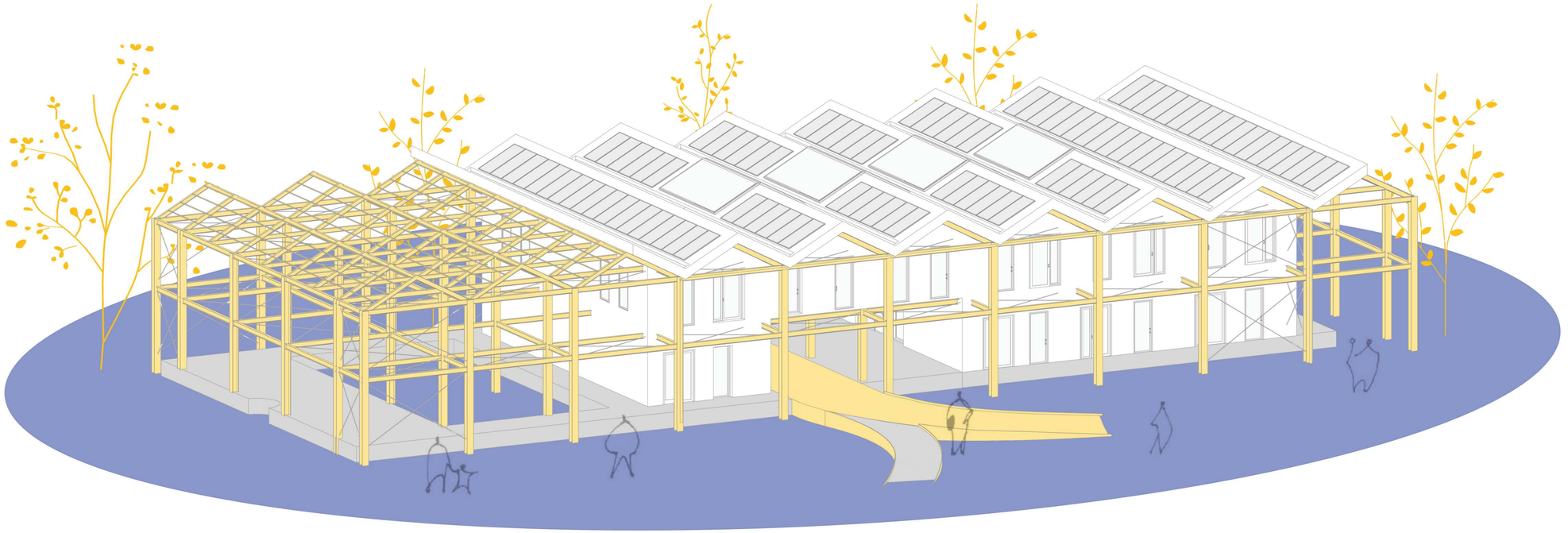
B2. ACOMODATION BUILDING 493 m²
E2. INFIRMARY + BATHROOM & SHOWERS FOR CAMPING (future)

B3. OFFICE BUILDING 544 m²
E3. RESTAURANT (future)



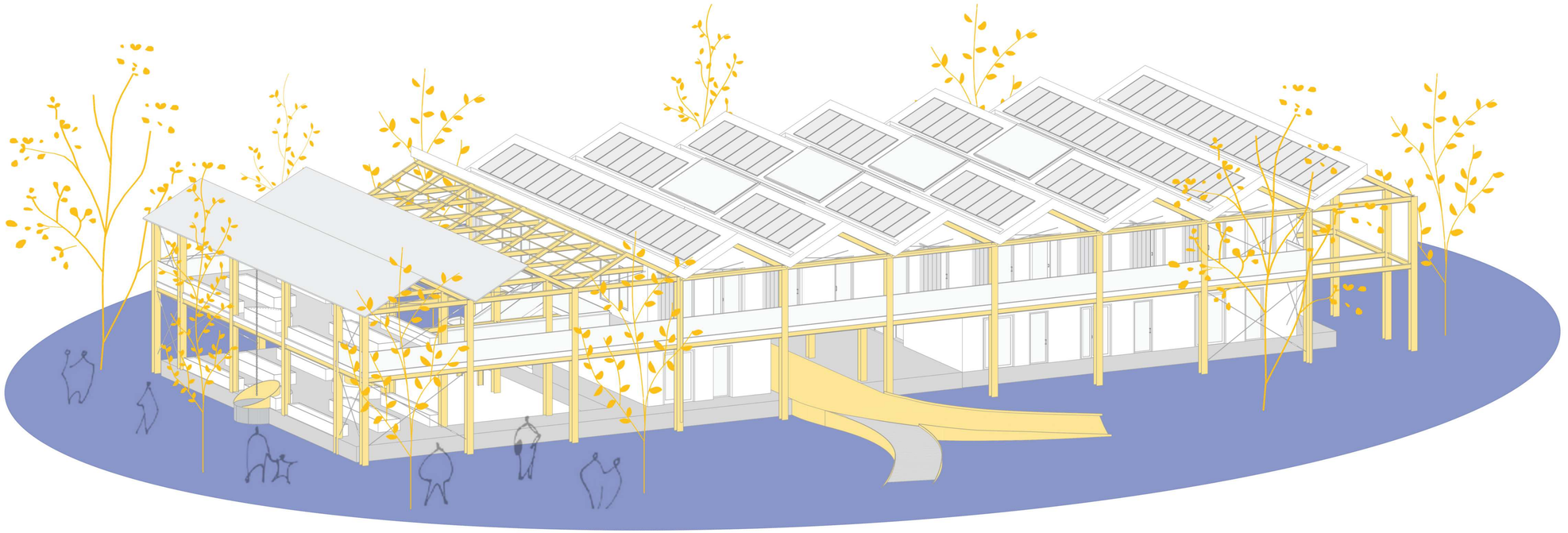
THE METALLIC STRUCTURE

Based on a 5x5 meter modular grid, the system offers high adaptability. Each of the three structures can be rearranged or extended, ensuring long-term versatility and diverse usage scenarios.The system ensures that each unit can evolve over time responding to future needs



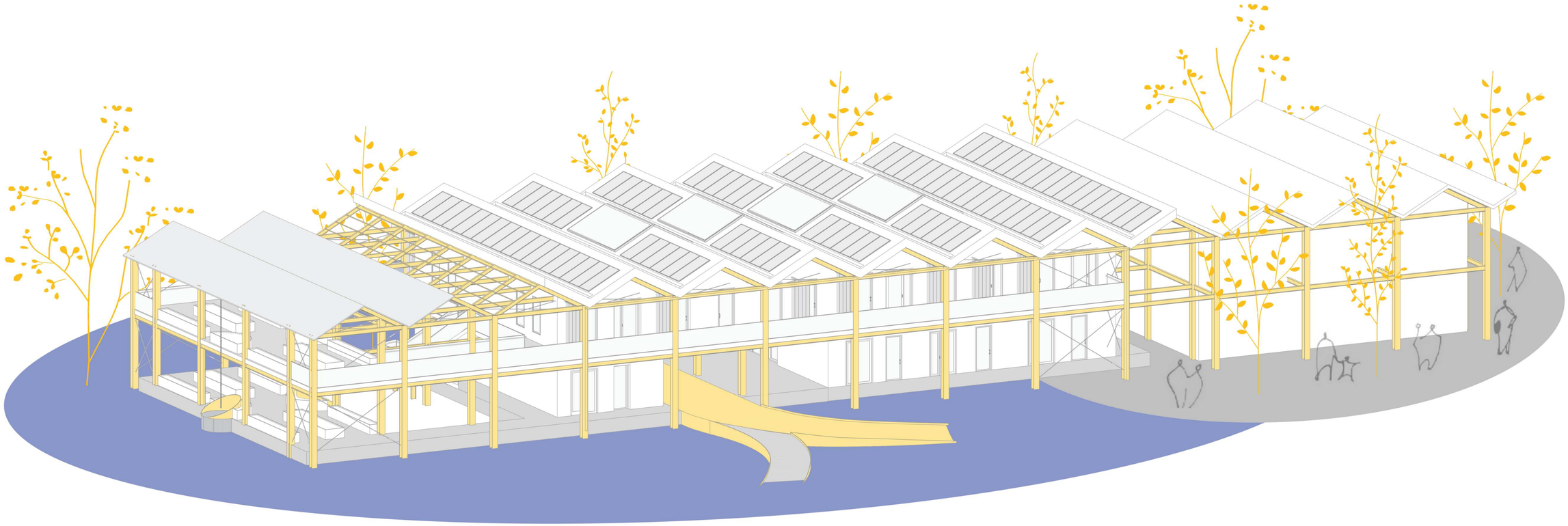
THE OFFSET

Pulling back the building’s perimeter from its structural limits gave rise to semi-exterior zones—calm, shaded, and functional. At the same time, this move reduces overheating from direct sun exposure.



THE GREENHOUSE

Among the covered outdoor areas, the greenhouse stands out as a key space meant to bring the community together. It is conceived as both a place of relaxation and a setting for small-scale agriculture, adaptable to individual needs.



THE EXTENSION

Each building can grow organically, guided by the community’s decisions. The adaptable metallic framework makes it possible to expand as needed, in the directions and configurations that make the most sense. This allows a dynamic response to changing needs and helps determine the optimal spatial arrangements.

B1
first building
1:200

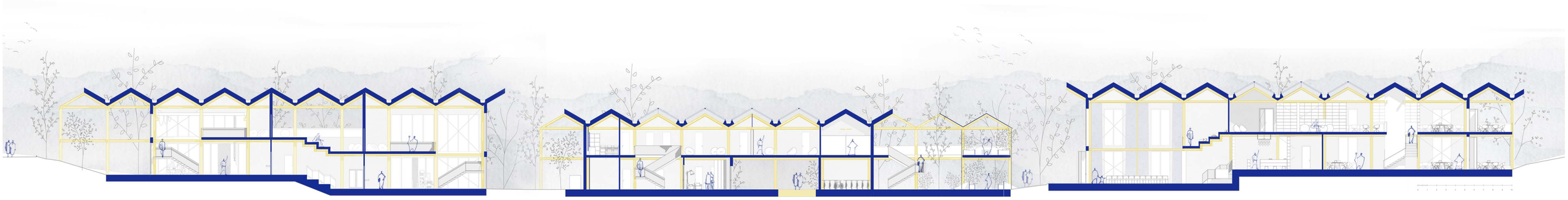
B2
second building
1:200

B3
third building
1:200

South facade

West facade

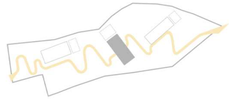
South facade



Section AA'

Section AA2'

Section AA3'



LABORATORY USE

CO-CREATION

B1

RESIDENTIAL USE

CO-LIVING

B2

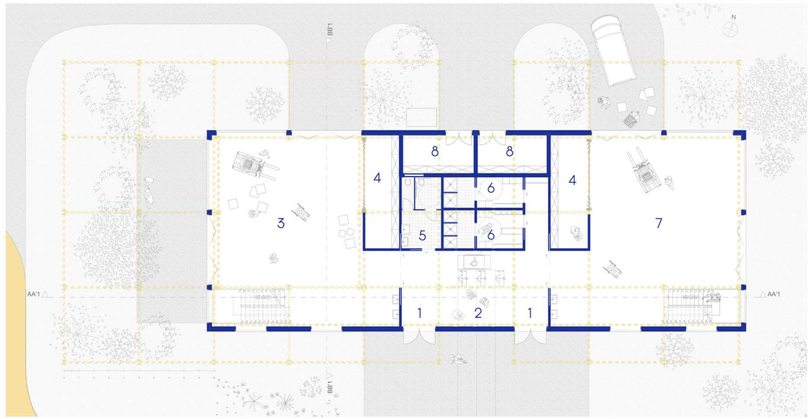
OFFICE USE

CO-WORKING

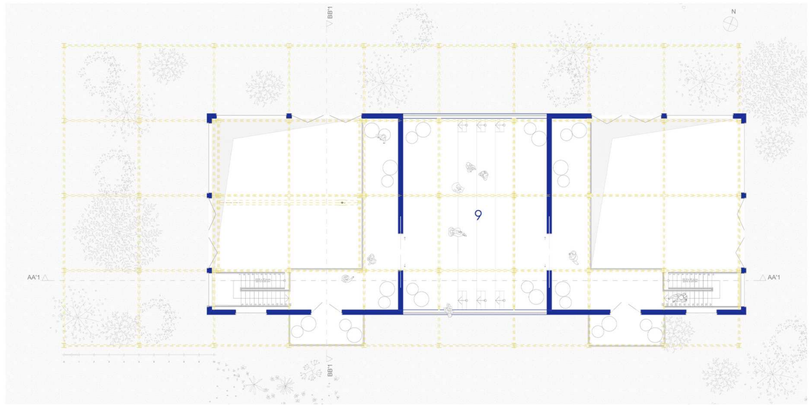
B3

B1 first building 1:200

Ground floor



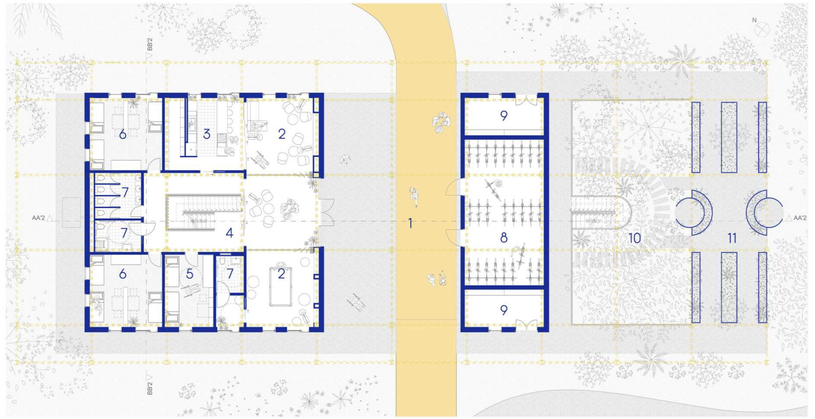
First floor



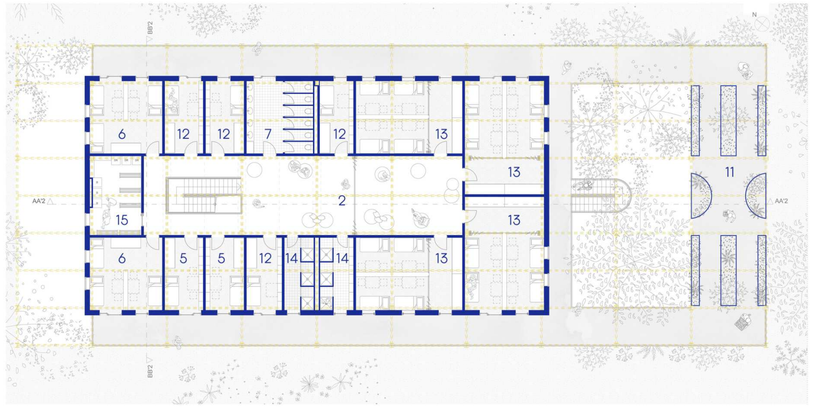
1. access
2. gathering space
3. laboratory
4. storage
5. sanitary
6. cloakroom M/F
7. prototyping area
8. machine rooms
9. terrace

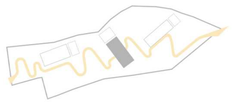
B2 second building 1:200

Ground floor



First floor



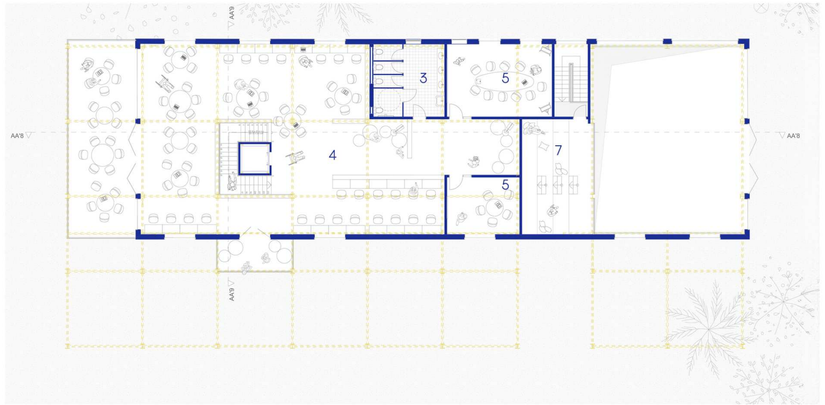


1. gang
2. gathering space
3. kitchen
4. hallway
5. 2 person dorm
6. 6 person dorm
7. sanitary area
8. bike parking
9. machine rooms
10. inner yard
11. greenhouse
12. 1 person dorm
13. 8 person dorm
14. showers M/F
15. washing room

B3 third building 1:200

Ground floor

First floor

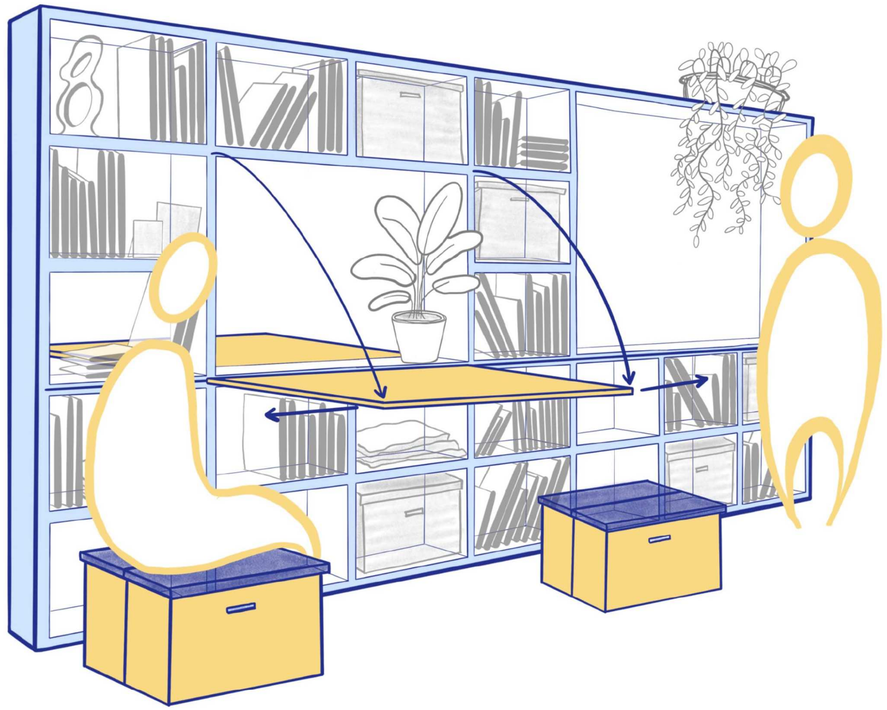


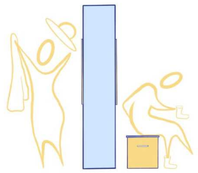
1. reception
2. caffe
3. sanitary
4. office spaces
5. meeting rooms
6. gathering space
7. multi-purpose room
8. storage
9. machine rooms

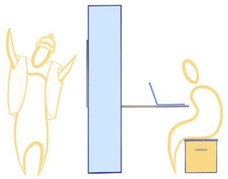
COMMON SPACE

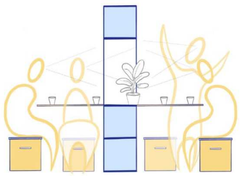
COFFEE SHOP

INTERIOR
FLEXIBLE DESIGN









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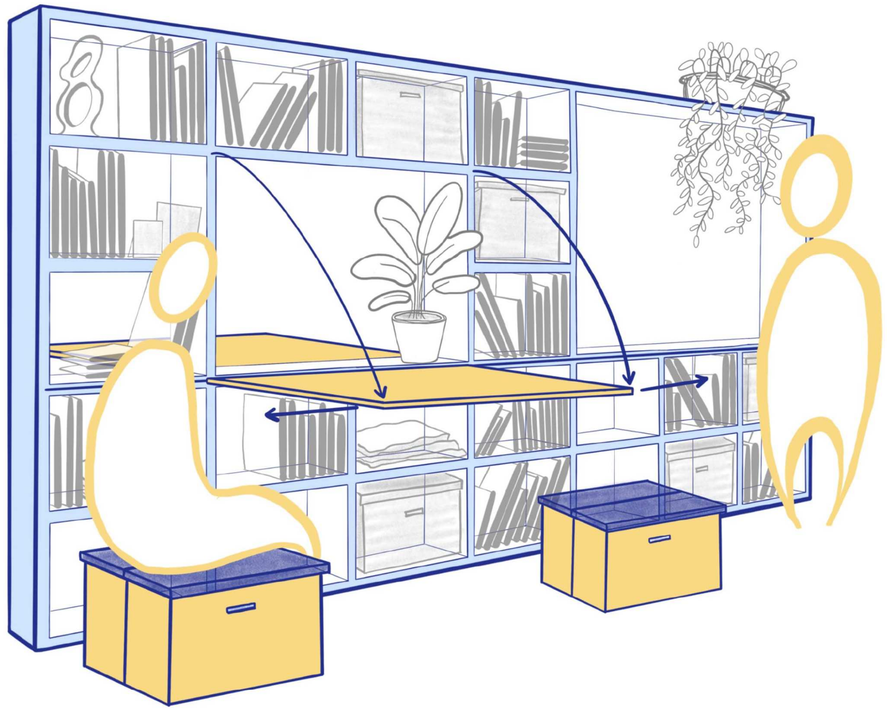
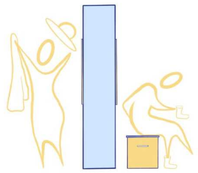
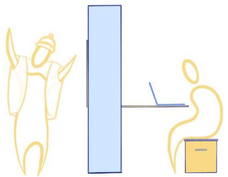
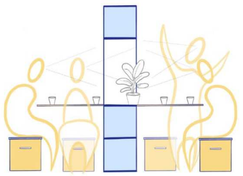
INTERIOR
FLEXIBLE DESIGN









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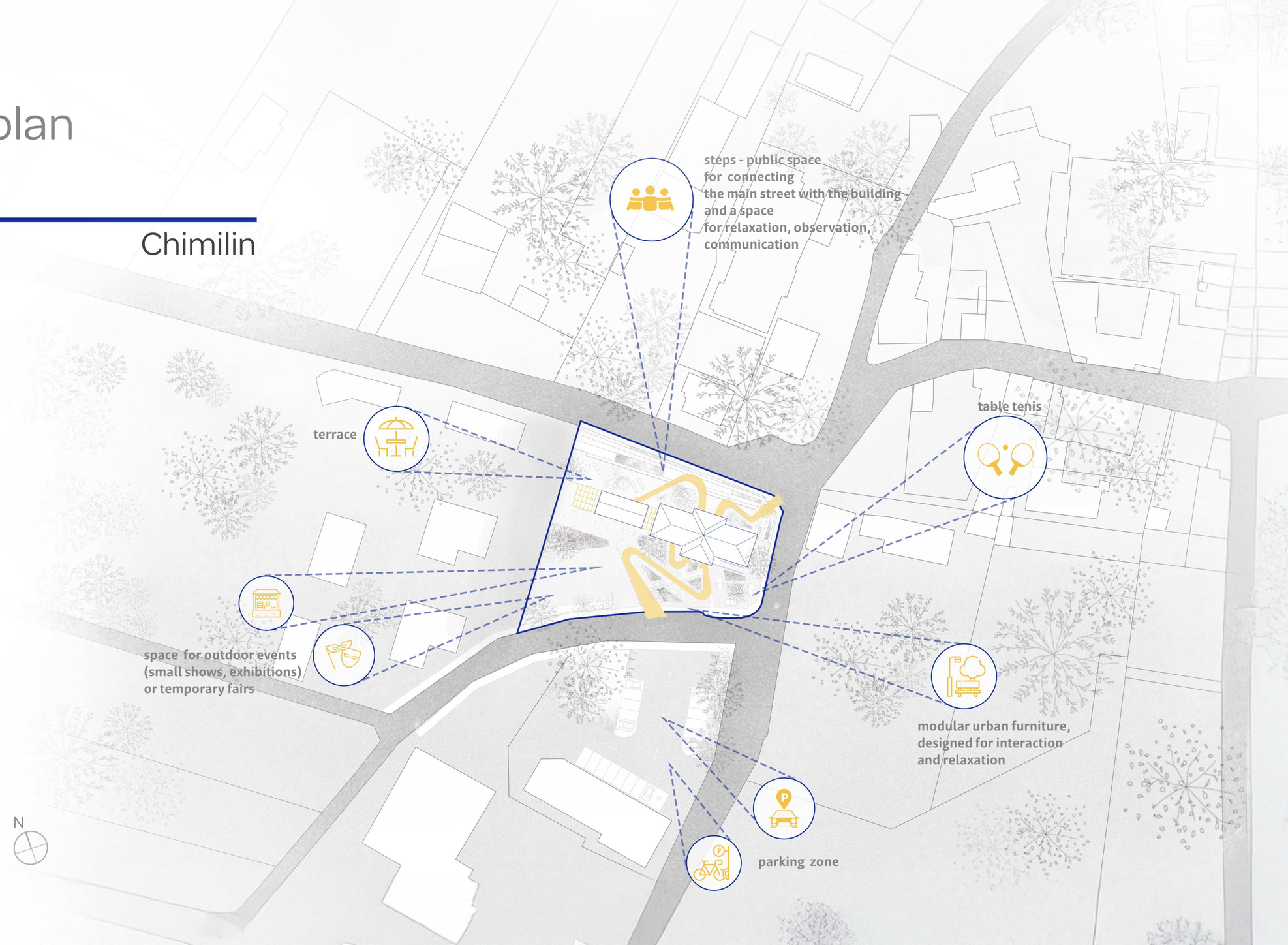
RENOVATION
PROPOSAL

04 master plan 1:500

Chimilin



04 sections and facades 1:200

Chimilin

Section AA

West Facade

Section CC

North Facade

COFFEE SHOP

CHIMILIN

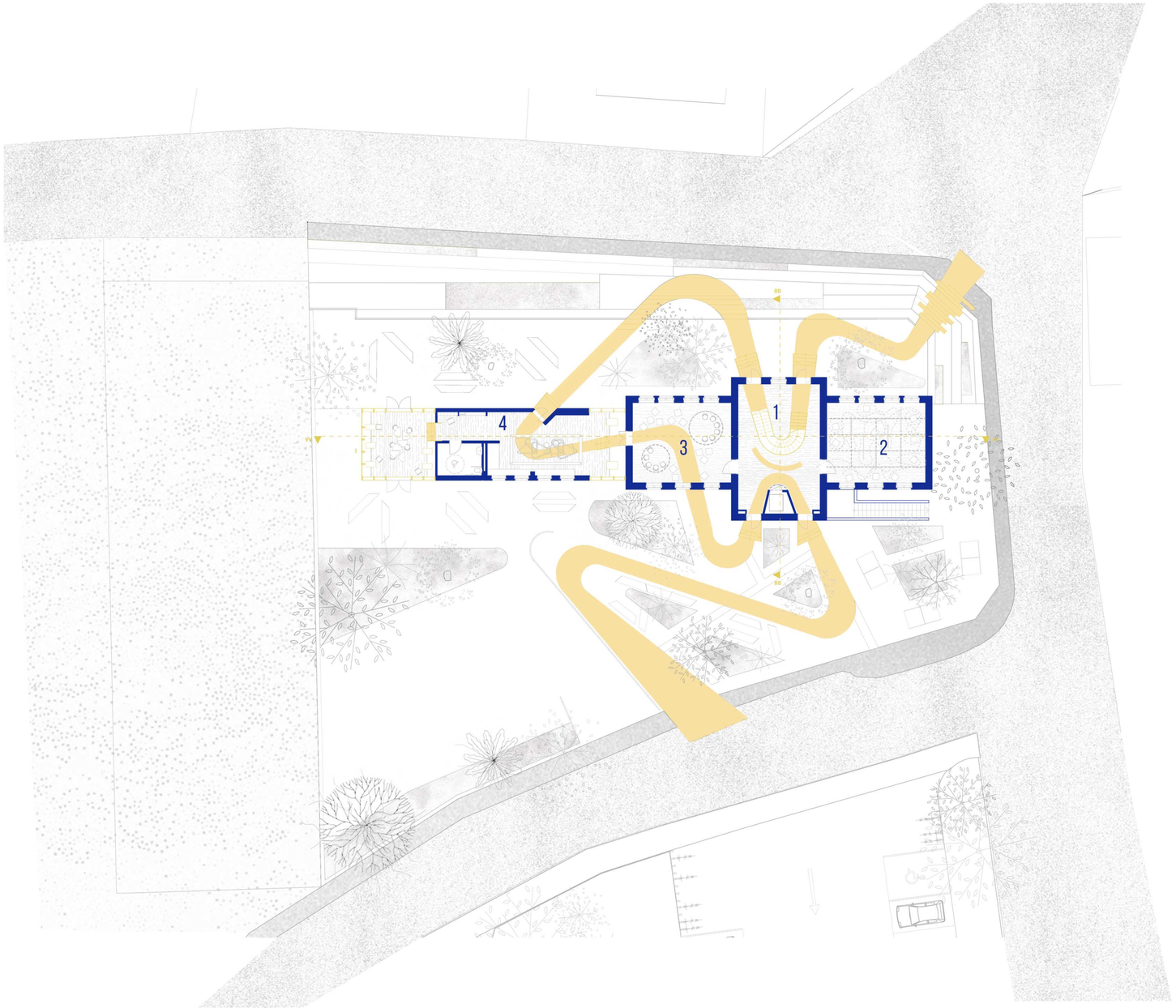
04 ground floor plan 1:200

Chimilin

The project reimagines the Chimilin school by blending its industrial past with sustainable, reversible design. Flexible spaces, movable elements, and a vibrant yellow pathway create a strong identity while promoting interaction. Public areas like terraces and modular furniture foster community engagement and transform the building into a dynamic social and cultural hub.

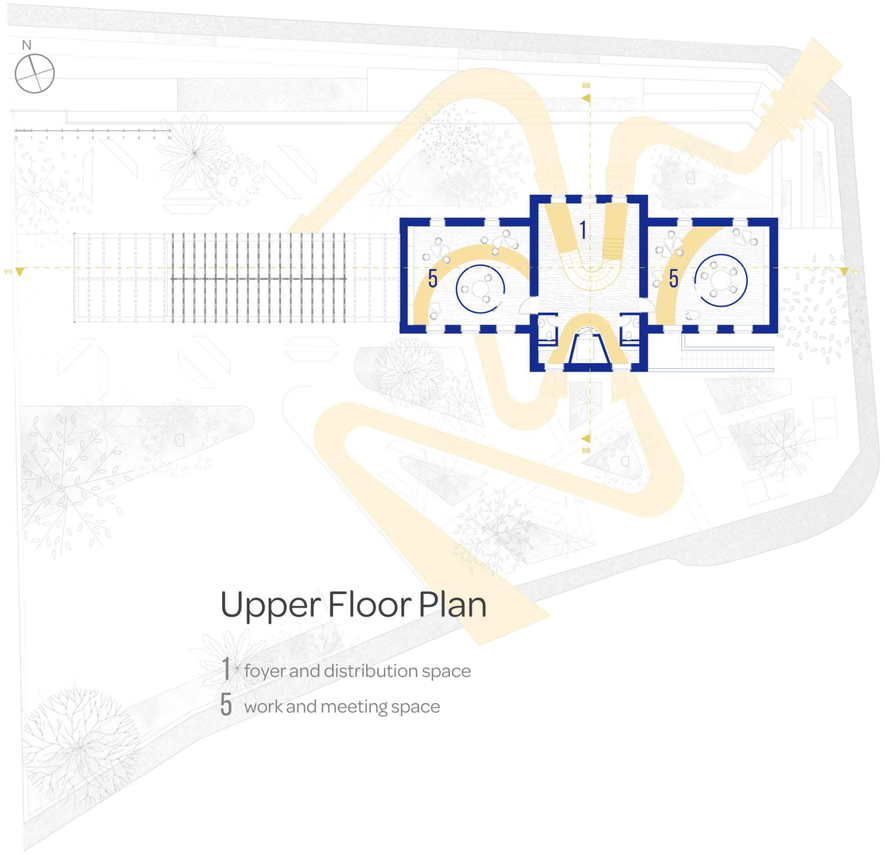
N

1. foyer and distribution space
2. exhibition space
3. space for games and small ac-
4. cafe



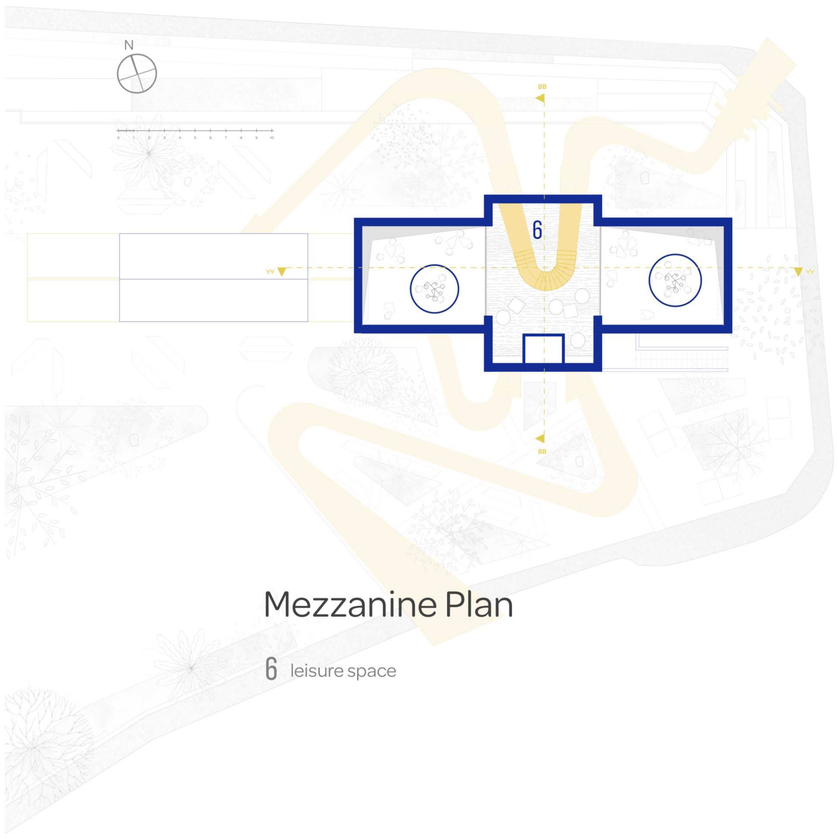
04 floor plans 1:200

Chimilin



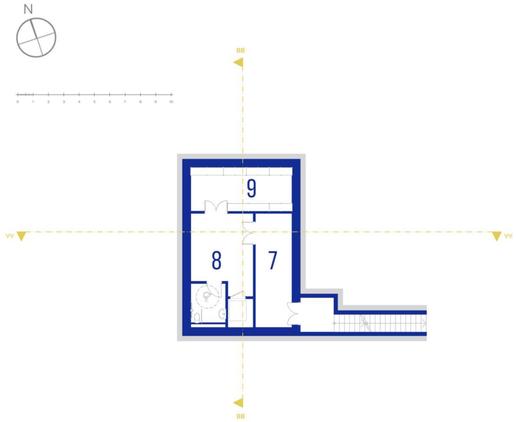
Upper Floor Plan

1 foyer and distribution space
5 work and meeting space



Mezzanine Plan

6 leisure space

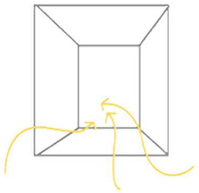


Basement Plan

7 technical space
8 distribution zone
9 storage

COFFEE SHOP

CHIMILIN



funnel effect

protected access

STEEL DETAIL ENTRANCE

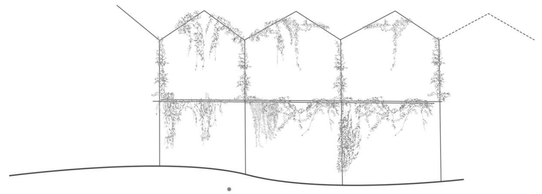
PUBLIC SPACE

INTERACTIVE

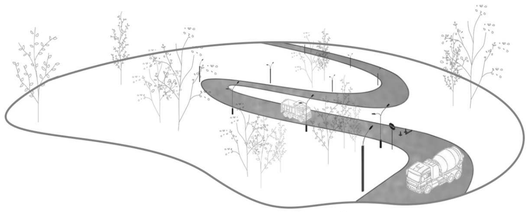
05 LBC diagram of the project

Villefontaine

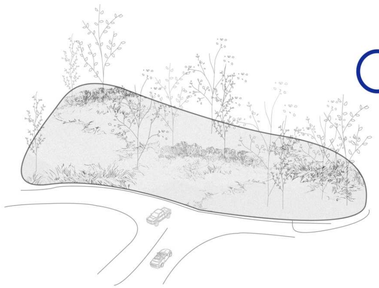
The integration of vegetation into the building's structural elements, along with the creation of greenhouses, encourages biodiversity, reduces energy consumption, and promotes local food production, in alignment with the Ecology Petal of the Living Building Challenge.

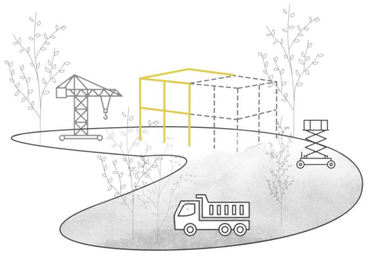


The use of building materials sourced near Lyon allows us to minimize transportation distances while supporting the international market, in line with the Materials Petal of the Living Building Challenge, which emphasizes regional sourcing and low-impact construction.



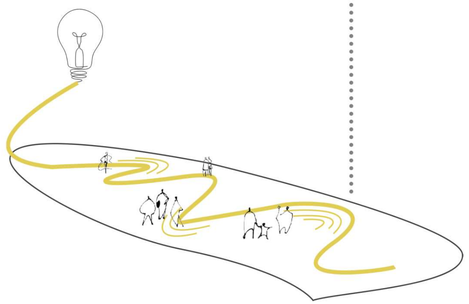
A total of 456 solar panels over 912 m² produce 186,960 kWh/year, powering labs, multifunctional, and residential areas—supporting the Energy Petal of the Living Building Challenge.



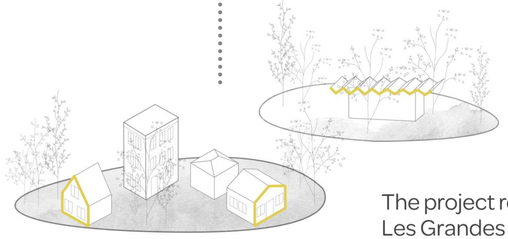


Initial site, undeveloped land covered with vegetation, with no traces of previous constructions.

The pathway serves as both circulation and playful landmark, rich in sensory experiences. Its vibrant design fosters community interaction and ensures safe, inclusive access for all, in line with the LBC Equity Petal.



The matrix created by the metal structure allows for future expansions or reductions of the building, as well as changes in configuration and functions. The metal used can be recycled and reused, thus extending the lifespan of the entire complex.

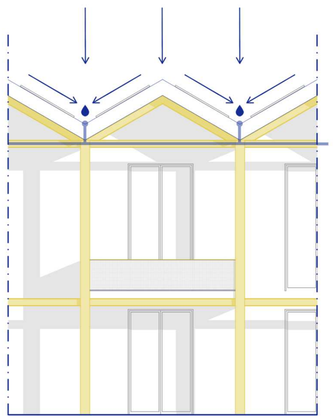


The project reflects Villefontaine's rural-urban identity through a zig-zag roof inspired by traditional houses and Les Grandes Ateliers. It highlights Place, Beauty, and sustainable Materials using reclaimed and local resources.

sustenable strategy

Rainwater Harversting

Villefontaine



REDUCE - 50%
municipal water

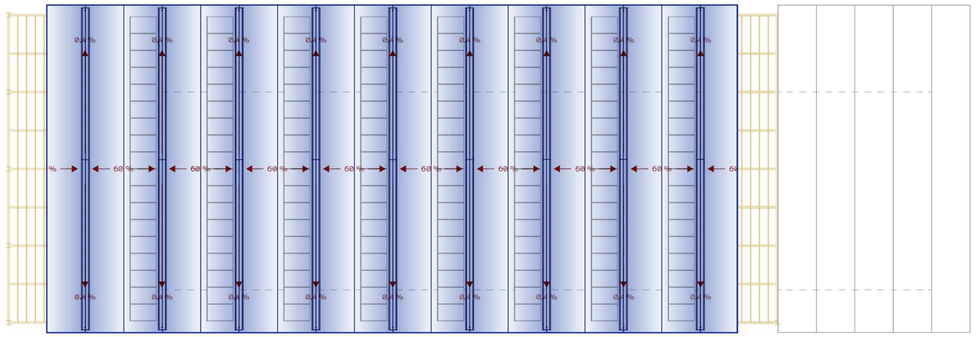
REUSE -> Underground rainwater storage

The **zig-zag** roof is a key sustainable architectural feature, designed to **optimize rainwater collection** and management. Its angled surfaces efficiently direct water toward integrated collection systems, minimizing uncontrolled runoff and maximizing water retention. This **passive strategy** not only enhances the building's environmental performance but also contributes to resource efficiency by reducing evaporation losses and promoting **controlled water reuse**.

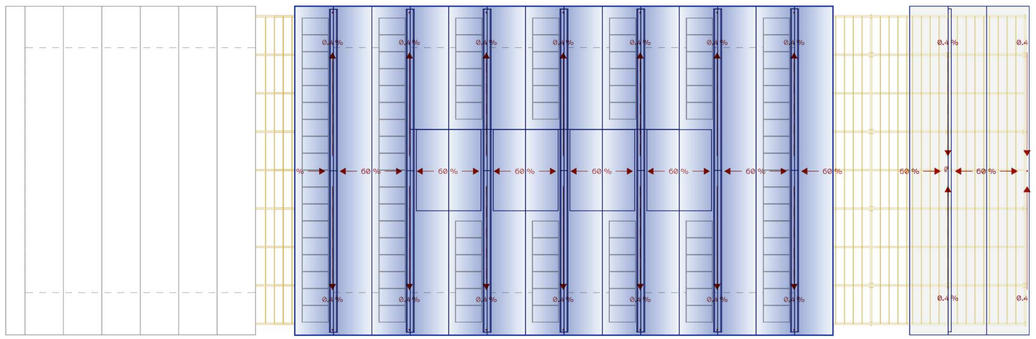
Sustainability:
50% reduction in potable water consumption.

Cost Efficiency: Lowers utility bills by reducing dependence on municipal water supplies.

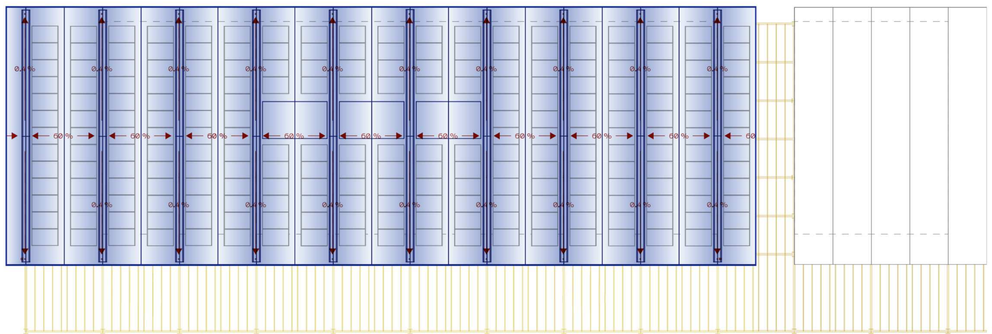
Climate Resilience: Mitigates urban flooding risks by managing stormwater runoff effectively.



B1



B2



B3

ACTIVE
sustenable strategy

Solar Panels

Villefontaine

certainteed
SAINT-GOBAIN

PRODUCE
25 years

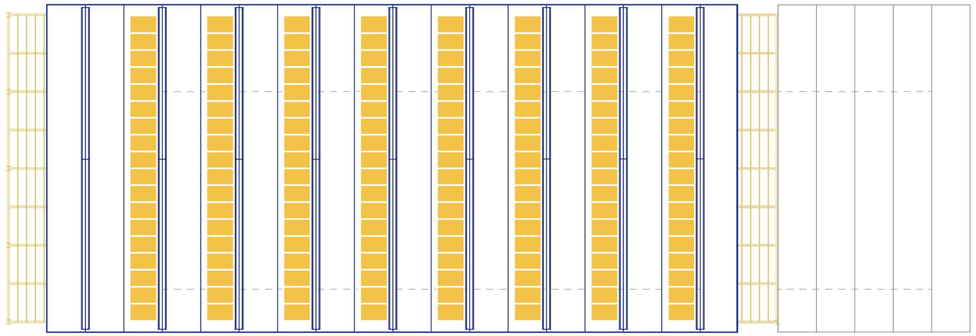
30°

The project incorporates a total of **456** photovoltaic panels, distributed as follows: **144** panels on Building 1, **78** panels on the residential building, and **234** panels on Building 3. These panels are **optimally oriented** according to the sun's trajectory, maximizing energy capture and reducing energy losses.

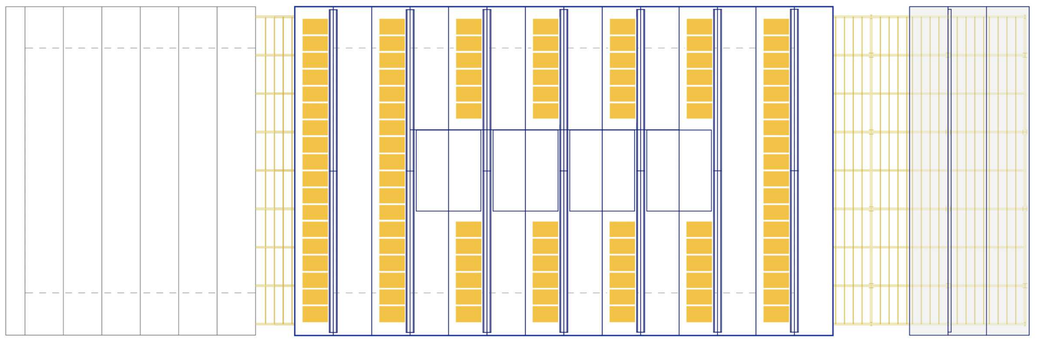
Optimization:
Panels are oriented to maximize sun exposure, minimizing energy losses.

Long-Term Impact:
Promotes energy autonomy and climate resilience.
Integrates eco-friendly technology into modern architecture.

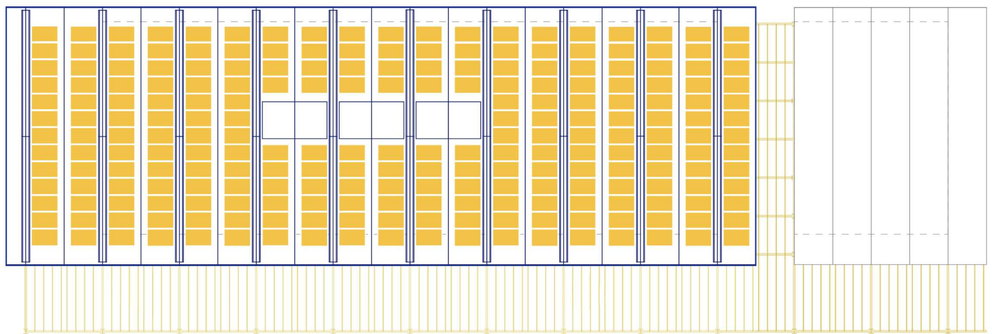
Sustainability Benefits:
Reduces reliance on traditional energy, lowering carbon footprint.
Enhances energy efficiency and operational cost savings.
Supports green building certifications (e.g., LEED, BREEAM).



B1



B2

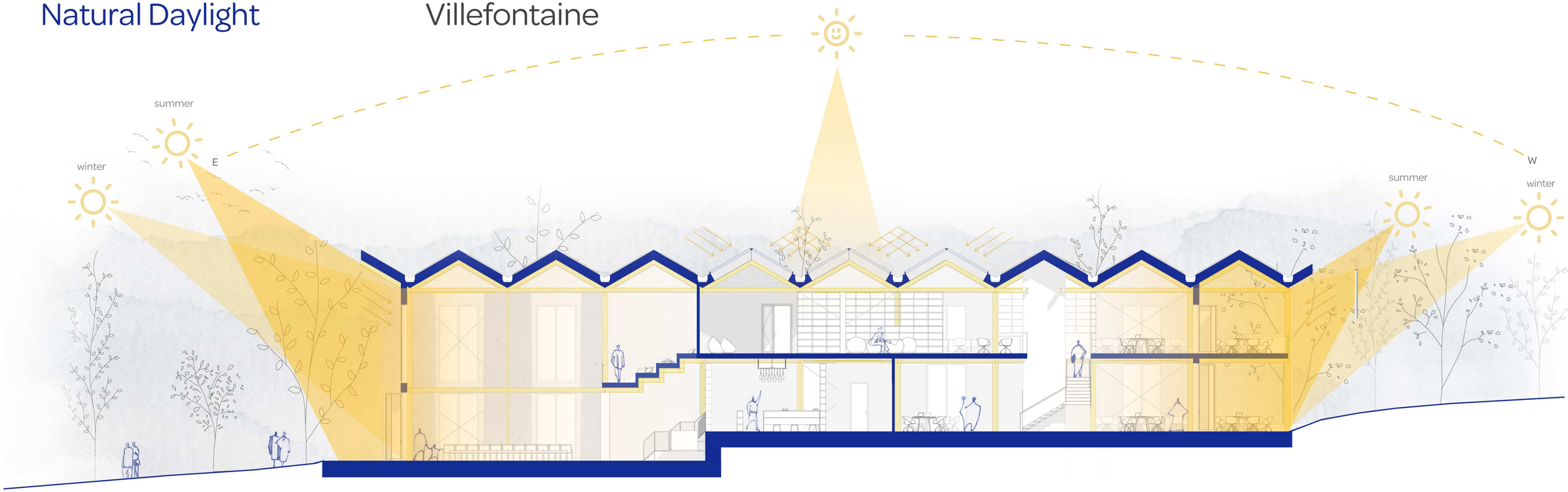


B3

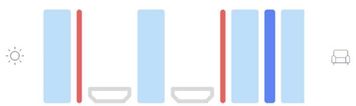
PASSIVE
sustenable strategy

Natural Daylight

Villefontaine



Calumen®



Glazing 1:	ORAÉ (6mm) - Annealed | COOL-LITE XTREME 61-29
Cavity 1:	Argon 90% 16 mm | Swisspacer Ultimate Pro
Glazing 2:	ORAÉ (4mm) - Annealed
Cavity 2:	Argon 90% 16 mm | Swisspacer Ultimate Pro
Glazing 3:	ECLAZ LUMI | ORAÉ (4mm) - Annealed | PVB SILENCE (0.76mm) | ORAÉ (4mm) - Annealed

Luminous Factors	**CIE015:2018**
Light Transmittance (TL)	56%
Outdoor Reflectance (RLe)	13%
Indoor Reflectance (RLi)	16%

Energy Factors	**EN410:2011**
Transmittance (TE)	23%
Outdoor Reflectance (Ree)	38%
Indoor Reflectance (Rei)	32%
Absorptance A1 (AE1)	36%
Absorptance A2 (AE2)	1%
Absorptance A3 (AE3)	3%

Solar Factors	**EN410:2011**
Solar Factor (g)	0.27
Shading Coefficient (SC)	0.31

Thermal Transmission	**EN673:2011**
Ug	0.5 W/(m2.K)
Angle relative to the vertical	0°

sustenable strategy

Natural Ventilation
Acoustic Comfort

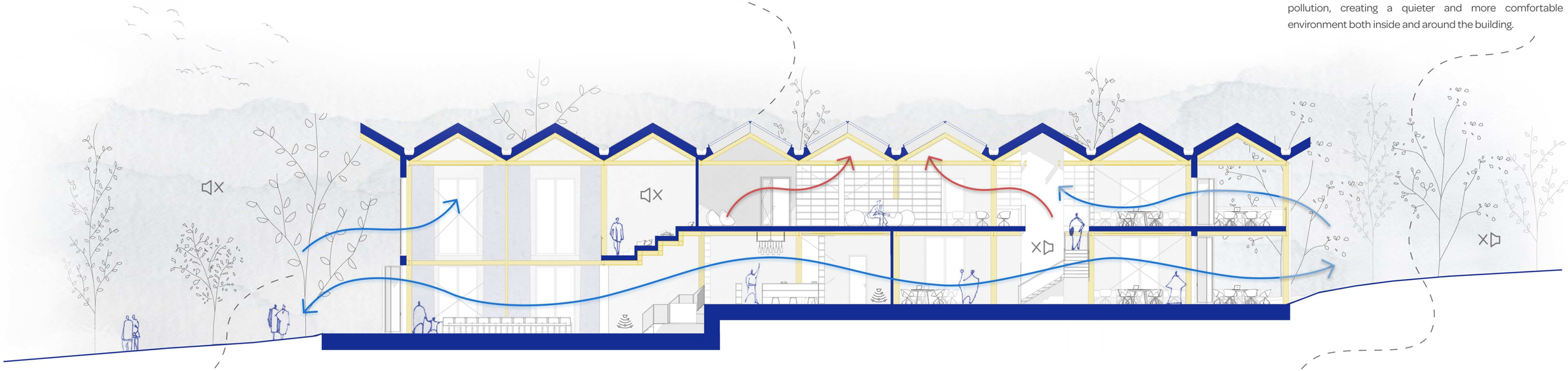
Villefontaine

REDUCE

The roof integrates velux windows to allow abundant natural daylight into the interior spaces. This reduces the need for artificial lighting, improves visual comfort, and supports energy efficiency in a sustainable way.

REDUCE

Vegetation acts as a natural sound barrier, absorbing and diffusing noise from the surroundings. This reduces acoustic pollution, creating a quieter and more comfortable environment both inside and around the building.



REDUCE

Natural ventilation enhances the building's sustainability by reducing energy consumption for cooling and ensuring fresh air circulation through passive design strategies. This approach improves indoor comfort while minimizing environmental impact.

REDUCE

The integration of Ecophon acoustic solutions contributes to the optimization of indoor auditory comfort, the reduction of reverberation, and the support of high standards of sustainability and spatial quality.

ecophon
SAINT-GOBAIN

REDUCE

The use of vegetation and trees helps lower the building's carbon footprint by absorbing CO_2, providing shade, and regulating microclimate. This contributes to thermal comfort, reduced energy use, and a healthier urban environment.

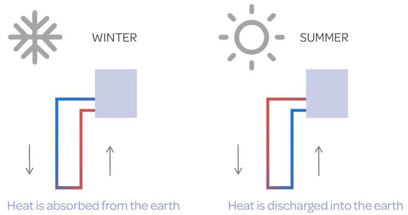
sustenable strategy

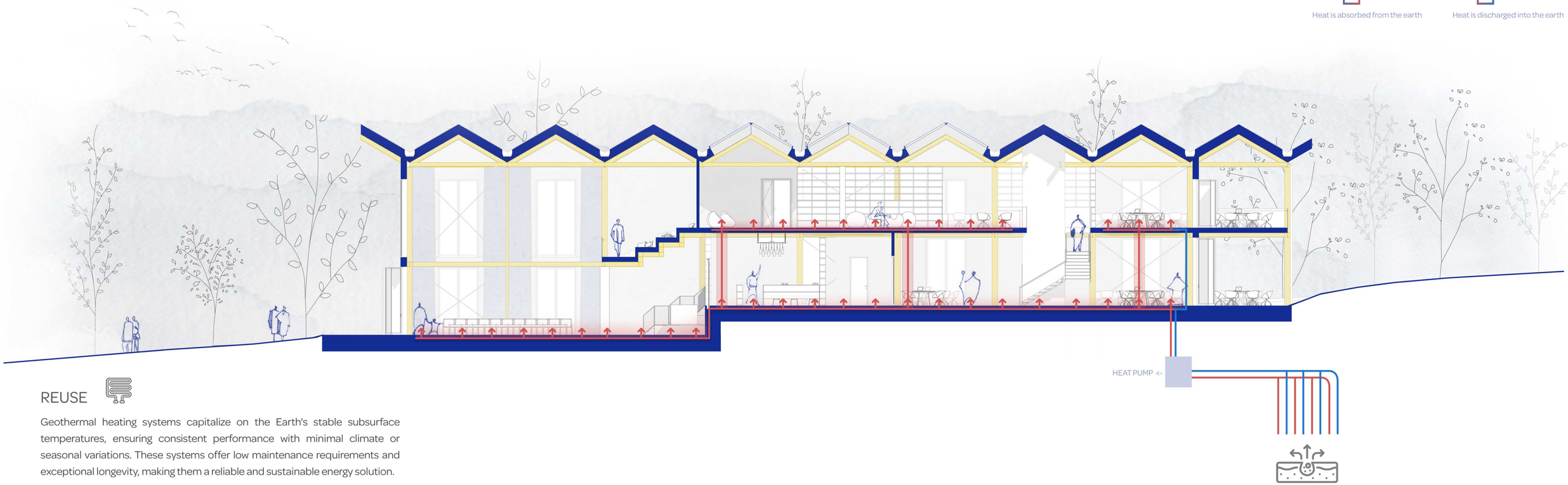
Geothermal Heating | Cooling

Villefontaine

HEAT PUMP

The ground serves as a thermal battery in winter, providing steady heat, and transforms into a natural heat sink during summer, absorbing excess energy.





REUSE

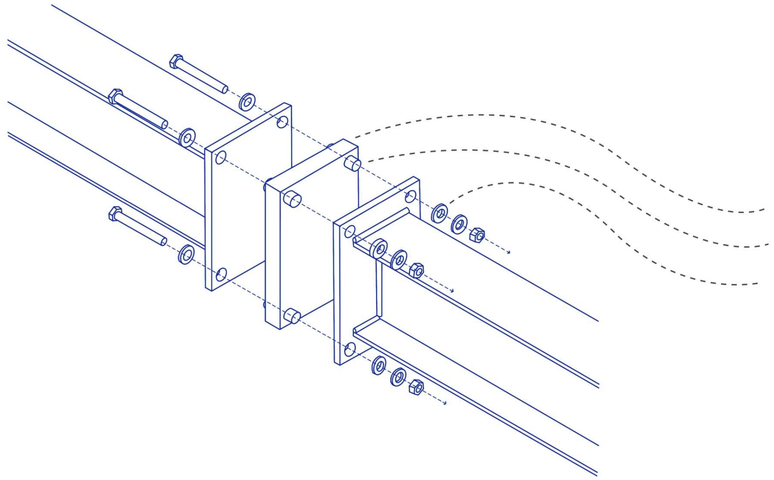
Geothermal heating systems capitalize on the Earth's stable subsurface temperatures, ensuring consistent performance with minimal climate or seasonal variations. These systems offer low maintenance requirements and exceptional longevity, making them a reliable and sustainable energy solution.

BIODIVERSITY

PRODUCTION

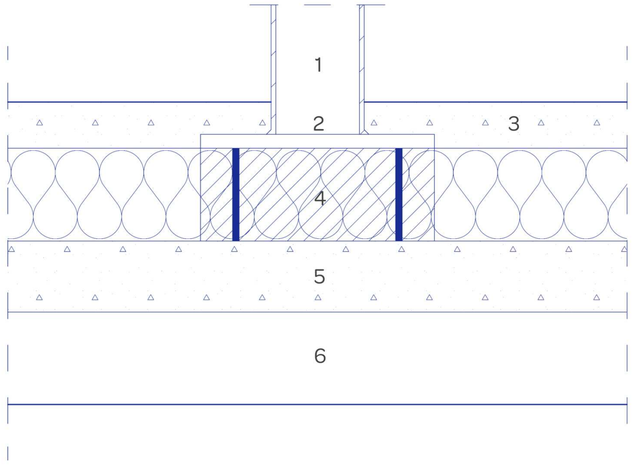
05 details

Villefontaine



THERMAL BRIDGE PROTECTION

1. Thermal Insulation Material
2. Thermal Insulation Bushing
3. Thermal Insulation Washer

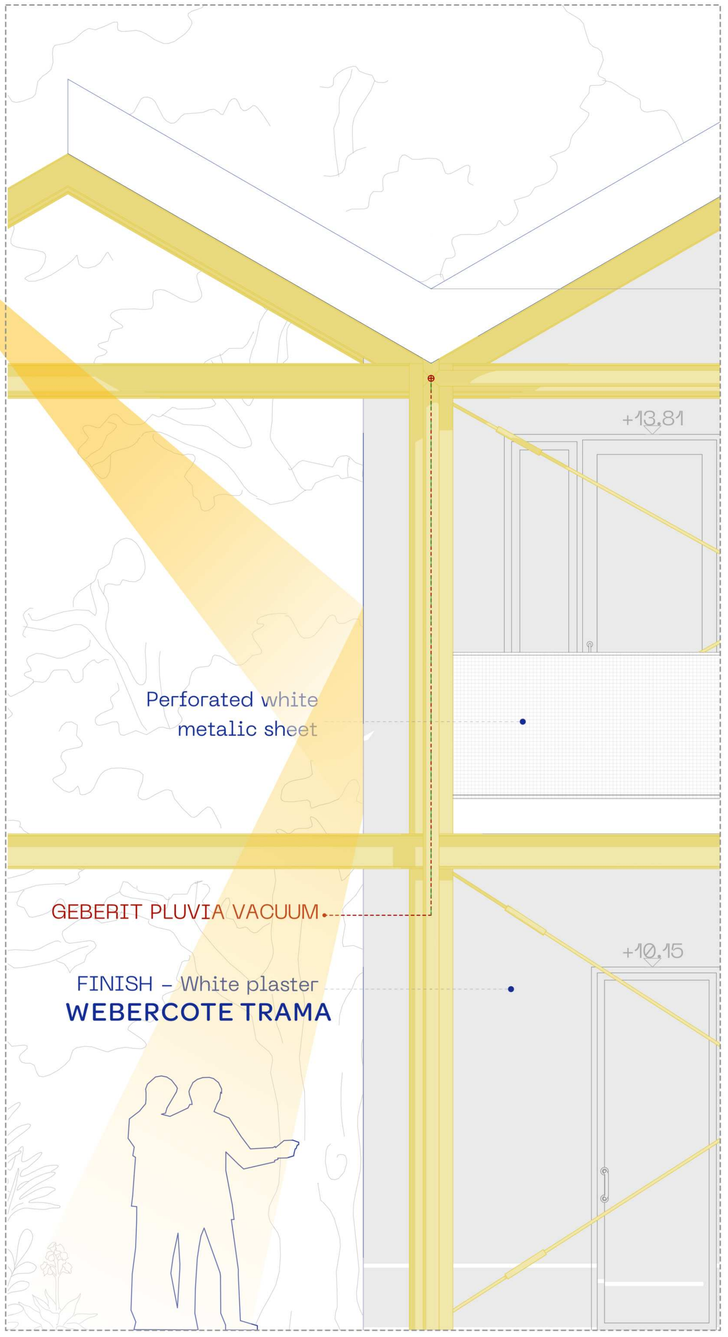


THERMAL BRIDGE PROTECTION

1. Column
2. Base plate
3. Concrete
4. Armatherm Thermal Break Pad
5. Concrete
6. Compact Grade

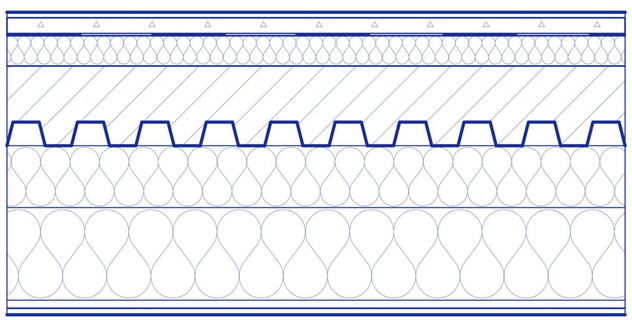
PASSIVE SUSTAINABLE STRATEGY

WEBERCOTE TRAMA - ***White plaster*** - allows sun to reflect instead of heating the building. Together with the extended roof beyond the actual building, they create a ***passive strategy*** to keep the building cool and to reduce the need of heat regulating systems.



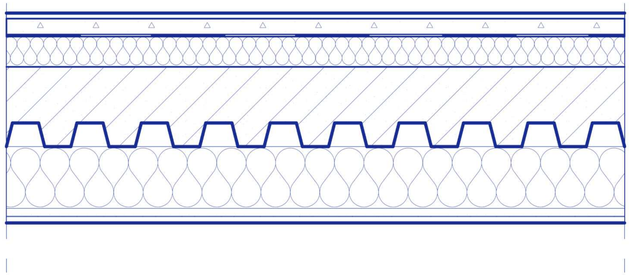
05 details

Villefontaine



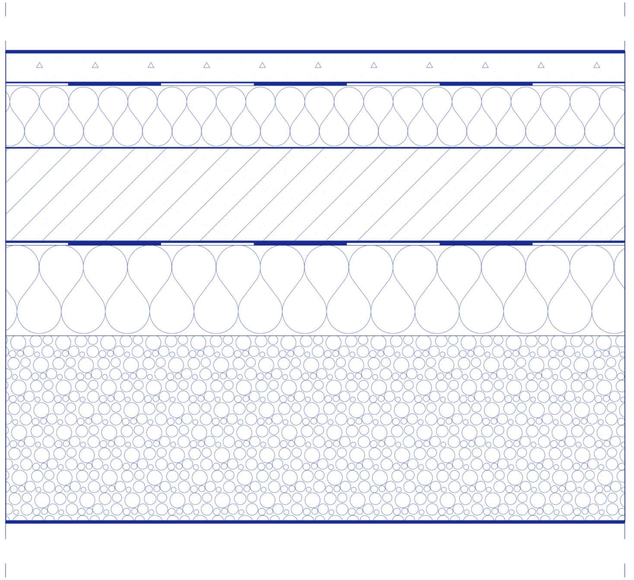
FLOOR SLAB over the passage trough the building

1. FINISH – Carpet – 10 mm
2. LEVELLING – Concrete floor screed – 30 mm
3. WATERPROOFING – Weber.tec Superflex D2 – 1.5 mm
4. ACOUSTIC INSULATION – Isover FLO 40 mineral wool insulation – 50 mm
5. STRUCTURE – Reinforced concrete slab – 130 mm
6. SUPPORT – Steel corrugated sheet – 1 mm
7. THERMAL INSULATION – Isover FLO 40 mineral wool – 100 mm
8. ADDITIONAL THERMAL INSULATION – Isover FLO 40 – 50 mm + 100 mm
9. CEILING BOARD 1 – Placo VAP Placoplatre BA13 – 12.5 mm
10. CEILING BOARD 2 – Placo Impact Activ'Air BA13 – 12.5 mm
11. FINISHING COAT – Placo Joint Finish Premium – 3 mm
12. FINISH - PLACO® Washable Paint - LAMPO



FLOOR SLAB

1. FINISH – Carpet – 10 mm
2. LEVELLING – Concrete floor screed – 30 mm
3. WATERPROOFING – Weber.tec Superflex D2 – 1.5 mm
4. ACOUSTIC INSULATION – Isover FLO 40 mineral wool insulation – 50 mm
5. STRUCTURE – Reinforced concrete – 130 mm
6. SUPPORT – Steel corrugated sheet – 1 mm
7. THERMAL INSULATION – Isover FLO 40 mineral wool – 100 mm
8. CEILING BOARD 1 – Placo VAP Placoplatre BA13 – 12.5 mm
9. CEILING BOARD 2 – Placo Impact Activ'Air BA13 – 12.5 mm
10. FINISHING COAT – Placo Joint Finish Premium – 3 mm
11. FINISH - PLACO® Washable Paint - LAMPO

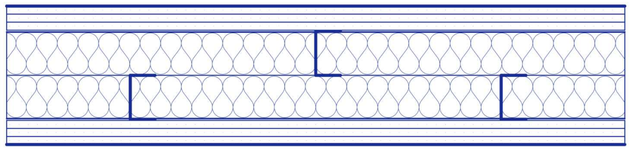


SLAB ON GRADE

1. SELF-LEVELING FINISH – Weber Design Floor – 5 mm
2. LEVELLING – Concrete floor screed – 50 mm
3. WATERPROOFING – Weber.tec Superflex D2 – 1.5 mm
4. THERMAL INSULATION – Isover FLO 40 mineral wool insulation – 100 mm
5. STRUCTURE – Reinforced concrete – 150 mm
6. WATERPROOFING – Weber.tec 822 – 1 mm
7. THERMAL INSULATION – Isover FLO 40 mineral wool insulation – 50 mm + 100 mm
8. PROTECTION – ADFORS Geotextile GlasGrid – 1.5 mm
9. DRAINAGE – Sorted gravel 16–32 mm – 300 mm

05 details

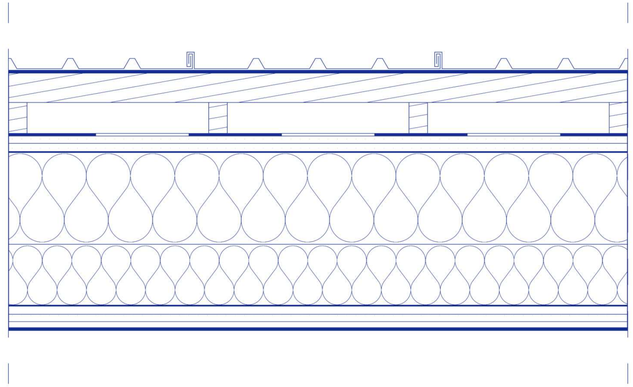
Villefontaine



EI60 67dB 120J

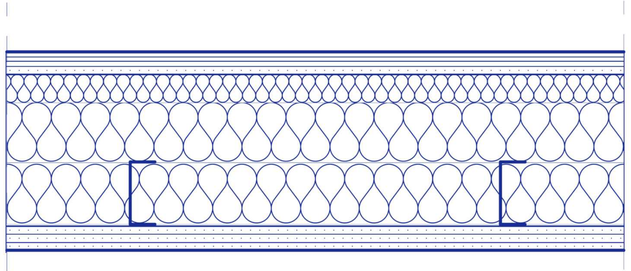
PLACOSTIL SAA 220 PARTITION WALL

1. FINISH - PLACO® Washable Paint - LAMPO
2. FINISHING COAT – Placo Joint Finish Premium – 3 mm
3. BOARD – Placo Activ'Air BA13 plasterboard – 12.5 mm
4. BOARD – Placoplatre BA13 plasterboard – 12.5 mm
5. BOARD – Placoplatre BA13 plasterboard – 12.5 mm
6. INSULATION – Isover mineral wool – 70 mm
7. STRUCTURE – Metal studs Stil® M90 and CR2 channels
8. INSULATION – Isover mineral wool – 70 mm
9. BOARD – Placoplatre BA13 plasterboard – 12.5 mm
10. BOARD – Placoplatre BA13 plasterboard – 12.5 mm
11. BOARD – Placo Activ'Air BA13 plasterboard – 12.5 mm
12. FINISHING COAT – Placo Joint Finish Premium – 3 mm
13. FINISH - PLACO® Washable Paint - LAMPO



ROOF DETAIL

1. FINISH – Standing seam metal roofing – 0.7 mm
2. SUPPORT – Longitudinal wood laths – 30 x 50 mm
3. VENTILATION – Transverse wood laths – 30 x 50 mm
4. WATERPROOFING – Weber.tec Superflex D2 – 1.5 mm
5. SUPPORT – Placo Impact Activ'Air BA13 – 12.5 mm
6. SUPPORT – Placo Impact Activ'Air BA13 – 12.5 mm
7. THERMAL INSULATION – Isover Multimax 30 mineral wool – 150 mm
8. THERMAL INSULATION – Isover Multimax 30 mineral wool – 100 mm
9. SUPPORT – Placo Impact Activ'Air BA13 – 12.5 mm
10. SUPPORT – Placo Impact Activ'Air BA13 – 12.5 mm
11. FINISHING COAT – Placo Joint Finish Premium – 3 mm
12. FINISH - PLACO® Washable Paint - LAMPO



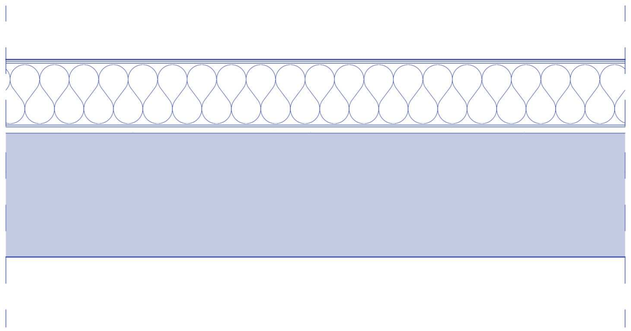
EI60 67dB 120J

PLACOSTIL SAA 220 (MODIFIED) EXTERIOR WALL

1. FINISH – Weber.ton 204 thin-coat decorative render – 3 mm
2. BASECOAT – Webertherm 305 reinforced render with Weber Therm mesh 160 – 7 mm
3. PRIMER – Weber.prim univers primer – 1 mm
4. SHEATHING – Placo Glasroc X exterior gypsum board – 12.5 mm
5. EXTERNAL INSULATION – Isover Multimax 30 mineral wool board – 150 mm
6. STRUCTURE – Metal studs Stil M100 and CR2 channels – 100 mm
7. INSULATION – Isover GR32 mineral wool – 100 mm
8. VAPOR CONTROL – Isover Vario XtraSafe smart membrane – 1 mm
9. BOARD – Placoplatre BA13 plasterboard – 12.5 mm
10. BOARD – Placoplatre BA13 plasterboard – 12.5 mm
11. BOARD – Placo Activ'Air BA13 plasterboard – 12.5 mm
12. FINISHING COAT – Placo Joint Finish Premium – 3 mm
13. FINISH – PLACO® Washable Paint – LAMPO – 1 mm

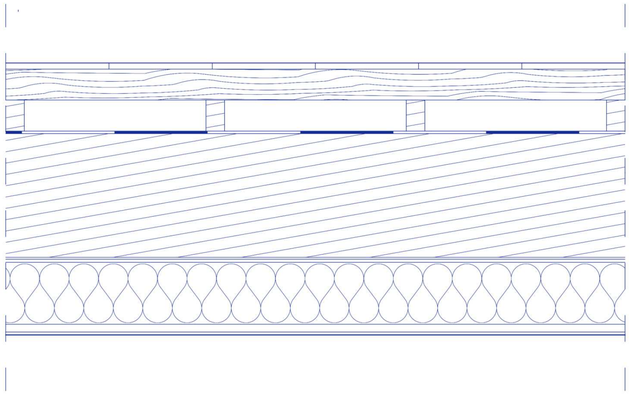
05 details

Chimilin



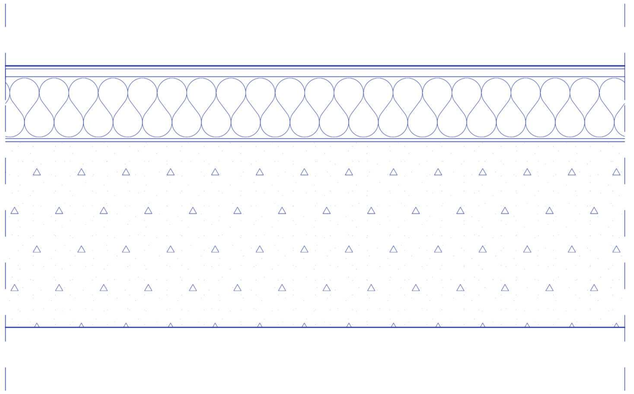
REINFORCEMENT DETAIL - WALL

1. EXISTING – Existing masonry wall
2. CRACK FILLING – Weber.rep rapide F – 5–10 mm
3. BONDING PRIMER – Weber.prim contact – 1 mm
4. THERMAL AND ACOUSTIC INSULATION – Isover Multimax 30 mineral wool – 100 mm
5. SUPPORT – Weber Therm mesh 160 – 3 mm
6. FINISH – Weber.pas classic G (grain fin) acrylic render – 1.5 mm



REINFORCEMENT DETAIL - ROOF

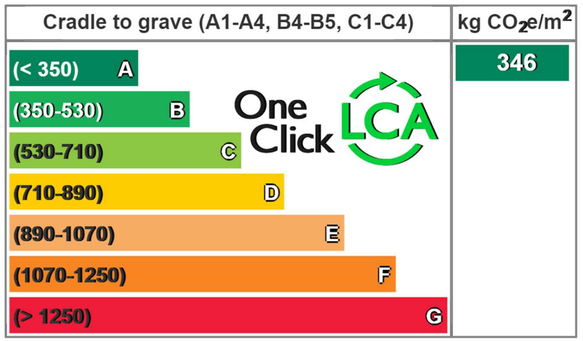
1. EXISTING – Wooden rafter with wood laths
2. WOOD TREATMENT – Durieu Xylophène Bois extérieurs insecticide/fungicide – 1–2 mm
3. CONSOLIDATION – ADFORS Fibatape® Standard mesh embedded in Weber.rep surface mortar – 3–5 mm
4. THERMAL AND ACOUSTIC INSULATION – Isover Isoconfort 35 mineral wool – 100 mm
5. SUPPORT – Placo® Habito® 13 – 12.5 mm
6. FINISH – PLACO® Peinture Technique – Lacquered paint – 0.3 mm

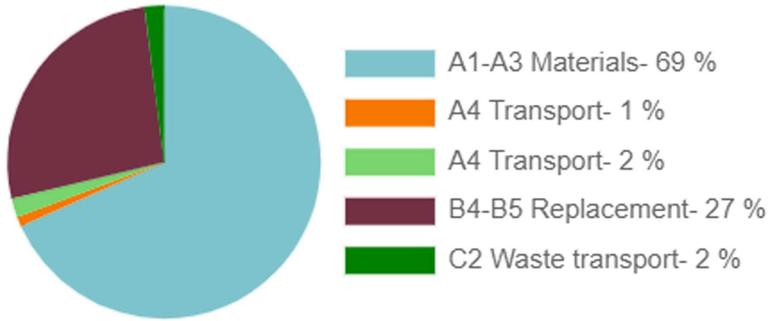


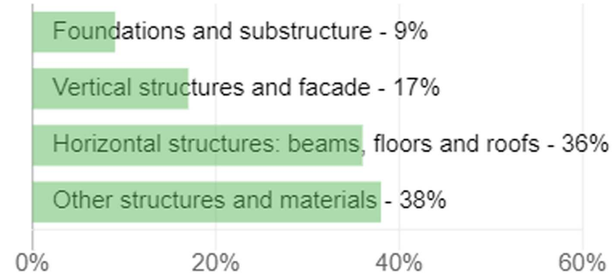
REINFORCEMENT DETAIL - SLAB

1. EXISTING – Concrete slab
2. CONSOLIDATION – ADFORS Fibatape® High Strength glass mesh bonded with Weber.rep surface mortar – 3–5 mm
3. THERMAL AND ACOUSTIC INSULATION – Isover Multimax 30 mineral wool – 100 mm
4. SUPPORT – Placo® Habito® 13 – 12.5 mm
5. FINISH – PLACO® Peinture Technique – White matte paint – 0.3 mm

05 one click LCA







This Embodied Carbon Benchmark evaluates a building's total emissions from material extraction to disposal (cradle to grave) in kg CO_2e/m^2. The green arrow indicates the building's score of 346 kg CO_2e/m^2, placing it in Grade A (below 350 kg CO_2e/m^2), representing a very low embodied carbon footprint compared to the French average for all building types in Q3 2023.

This pie chart shows the percentage breakdown of environmental impact across different life cycle stages. The largest portion (69%) is attributed to materials (A1-A3), followed by replacements (B4-B5) at 27%, transport (A4) at 1% and 2%, and waste transport (C2) at 2%.

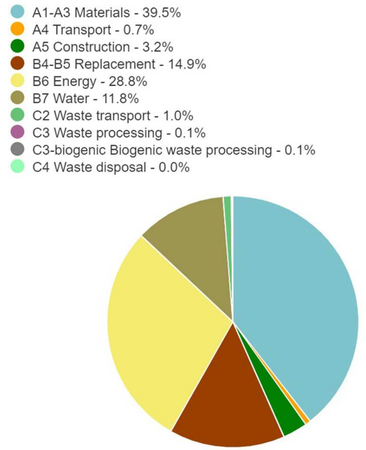
This bar chart shows the percentage breakdown of a building's structural components and materials. "Other structures and materials" (38%) and "Horizontal structures" (36%) make up the largest portions, while "Foundations and substructure" represent the smallest share (9%).

05 one click LCA

The environmental impact analysis confirms the sustainable and energy-efficient direction of the building design. PVC-framed windows (30.1%) and structural steel (22.8%) are the main contributors to Global Warming Potential (GWP), suggesting opportunities for reducing the carbon footprint through better material choices. Most emissions occur during the product stage (A1–A3), contributing 39.5% of total GWP, followed by energy consumption in the use phase (28.8%). This highlights the importance of combining low-impact materials with strategies to reduce operational energy demand.

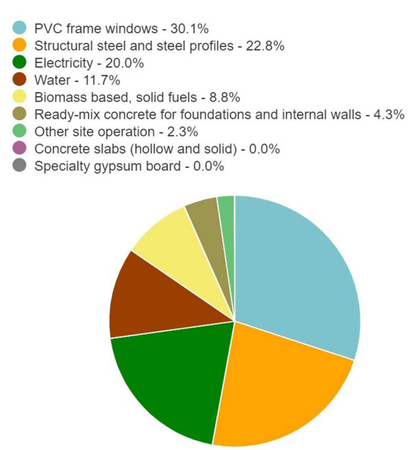
From a structural perspective, the foundation accounts for 60.3% of the building's mass, while façade openings—although lighter—contribute significantly to GWP (30.1%), largely due to the type of glazing used. Electricity consumption further adds 20% to the total GWP, reinforcing the need for high-efficiency systems and passive design solutions. Overall, the data supports a building concept that integrates sustainability at both material and operational levels, aligning with contemporary goals for carbon reduction and long-term environmental responsibility.

Global Warming Potential total kg CO2e - Life-cycle stages

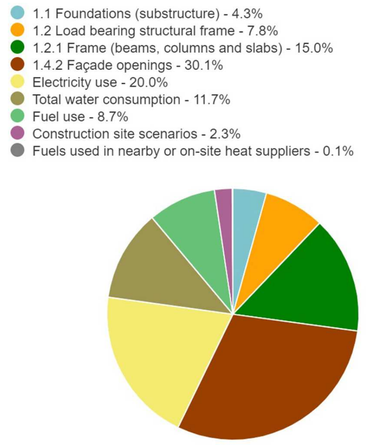


Global Warming Potential total kg CO2e - Resource types

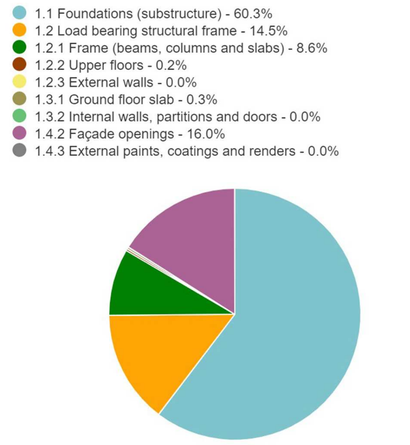
This is a drilldown chart. Click on the chart to view details



Global Warming Potential total kg CO2e - Classifications

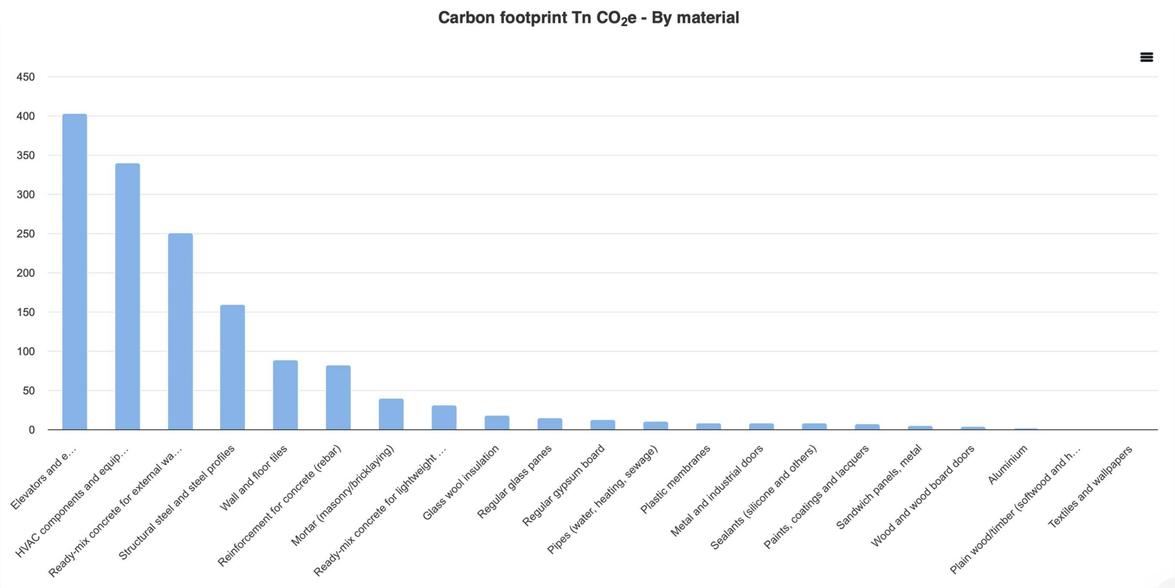


Mass kg - Classifications

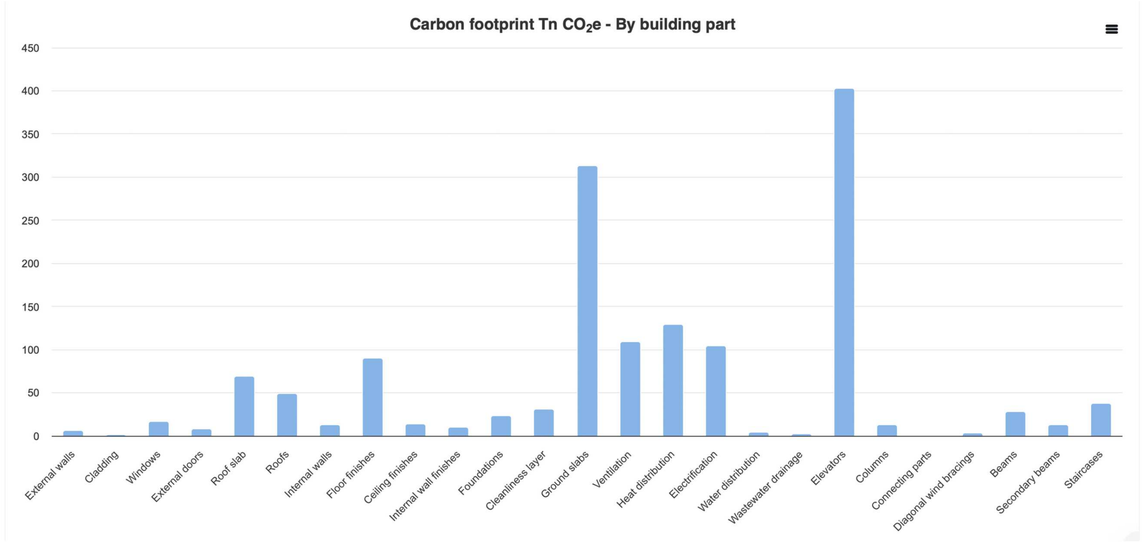


05 one click LCA

Carbon design



This chart shows the carbon footprint (kg CO_2e/m^2 GFA) of materials for our Villefontaine project. High-impact materials include structural concrete, steel, and MEP systems. Lower-impact choices are finishes and insulation. This analysis guides our material selection for a lower overall carbon footprint, crucial for project sustainability.

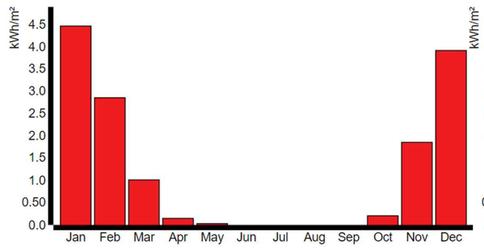


This chart shows the carbon footprint (kg CO_2e/m^2 GFA) of different building parts in our Villefontaine project. Elevators, columns, and ground slabs have the highest impact. This breakdown helps us focus on reducing emissions from the most carbon-intensive elements for a more sustainable design.

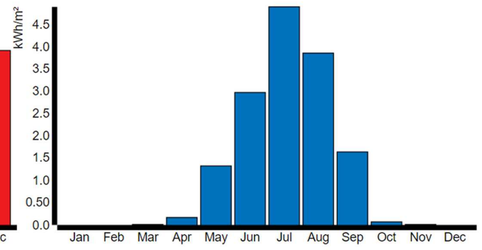
05 energy needs verification

OpenStudio

Heating needs



Cooling needs



Heating needs (kWh/m²)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Heating	4,47	2,86	1,01	0,15	0,02	—	—	—	—	0,2	1,86	3,93	14,50
Total	4,47	2,86	1,01	0,15	0,02	—	—	—	—	0,20	1,86	3,93	14,50

Cooling needs (kWh/m²)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Cooling	—	—	0,01	0,16	1,32	2,98	4,9	3,87	1,64	0,06	0,01	—	14,95
Total	—	—	0,01	0,16	1,32	2,98	4,90	3,87	1,64	0,06	0,01	—	14,95

Compliance

Indicator	Building [kWh/m²]	Limit value [kWh/m²]	Comply
Heating needs	14,5	15,0	Yes
Cooling needs	15,0	15,0	Yes

Lighting autonomy 300 Lux	Autonomy [%]	Required [%]	Comply
TZ: SPACE 10 DAYLIGHTINGCONTROLS	60,3	60.0 %	Yes
TZ: SPACE 11 DAYLIGHTINGCONTROLS	60,5	60.0 %	Yes
TZ: SPACE 12 DAYLIGHTINGCONTROLS	61,0	60.0 %	Yes
TZ: SPACE 13 DAYLIGHTINGCONTROLS	60,7	60.0 %	Yes
TZ: SPACE 15 DAYLIGHTINGCONTROLS	61,0	60.0 %	Yes
TZ: SPACE 2 DAYLIGHTINGCONTROLS	60,7	60.0 %	Yes
TZ: SPACE 3 DAYLIGHTINGCONTROLS	61,0	60.0 %	Yes
TZ: SPACE 4 DAYLIGHTINGCONTROLS	60,2	60.0 %	Yes
TZ: SPACE 5 DAYLIGHTINGCONTROLS	76,1	60.0 %	Yes
TZ: SPACE 6 DAYLIGHTINGCONTROLS	61,0	60.0 %	Yes
TZ: SPACE 7 DAYLIGHTINGCONTROLS	60,2	60.0 %	Yes
TZ: SPACE 8 DAYLIGHTINGCONTROLS	62,0	60.0 %	Yes
TZ: SPACE 9 DAYLIGHTINGCONTROLS	61,3	60.0 %	Yes

Summer comfort (overheating % of season)	Overheating [%]	Required [%]	target [%]	Comply
TZ: SPACE 10	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 11	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 6	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 7	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 12	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 13	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 15	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 2	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 3	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 4	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 5	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 8	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 9	0,0	10.0 %	5.0 %	Yes