Sava’s Flow

Waves of Heritage & Harmony

ARCHITECTURE STUDENT CONTEST

BELGRADE

ARCHITECTURE CONTEST 2026

- SAVA´S FLOW -

SAINT-GOBAIN

CONTENTS

#22

TEAM FINLAND

ARCHITECTURE STUDENTS FROM THE NORTH°

UNIVERSITY OF OULU

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ABOUT BELGRADE

Belgrade is undergoing **rapid urban transformation**, driven by large investor-led developments and major infrastructure projects, particularly along **its riverfronts**.

While these projects are reshaping the city's skyline and economy, they have also raised concerns regarding **public access, environmental sustainability, and social equity.**

The city faces persistent challenges related to **traffic congestion, air pollution, and a lack of continuous green and cycling networks**.

Despite these pressures, Belgrade holds strong long-term potential due to its **strategic location, cultural heritage**, and role as a **regional hub**. Its future development depends on balancing growth, livability, environmental resilience, and inclusive urban design.

Belgrade's Master Plan materialized a territorial development strategy, guided by several major objectives:

- Host more inhabitants, due to accelerated development of the city
- Attract more companies and jobs
- Boost urban rehabilitation
- Quality the public space
- Return the riverfront to the people
- Promote sustainable mobility
- Encourage environmental efficiency

Basic info:

Population:	over 1 500 000 inhabitants
Total area:	3,222.68 km^2
Population density:	over 3,200 inhabitants/km^2

SITE ANALYSIS

Site Context and Location

The planning area is located in Belgrade, in the immediate vicinity of the Sava River. The plot reserved for the new development is the larger of the two planning areas. It is currently occupied by obsolete industrial buildings, which are intended to be demolished to make room for new construction.

The planning area also extends to a narrow peninsula, where a renovation project is located: the Academic Yachting Club, one of Belgrade's architectural landmarks. The club stands as a testament to the city's rich maritime heritage and represents an important cultural and historical element within the site.
The planning area is indicated on the map in violet.

Existing Cycling Network and Accessibility

The existing bicycle network is marked on the map in red. Based on the current routes, it is evident that accessibility to the planning area is weak. Improving cycling infrastructure is a key challenge in a rapidly developing urban environment such as Belgrade.

A well-functioning bicycle network contributes significantly to sustainable mobility, environmental quality, and overall urban livability.

Planned Cycling Connections

The city-planned new bicycle routes are marked on the map in yellow. Despite these planned improvements, overall accessibility to the area remains limited. In particular, connections to the Academic Yachting Club require further reconsideration and strengthening to ensure safe and continuous access.

Waterfront and Green Structure

The built waterfront areas intended for pedestrian movement are marked in blue. At present, the waterfront development extends to approximately half of the planning area, leaving parts of the shoreline fragmented and incomplete.

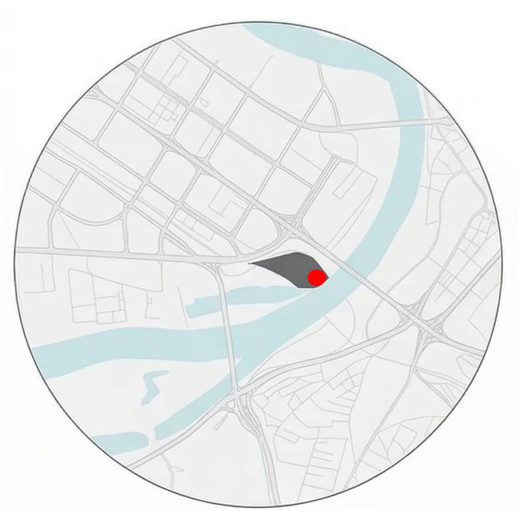
Existing green areas are marked on the map in green. The connections between green spaces show signs of positive development but also reveal gaps in continuity.

Special attention must be given to the rare Pygmy Cormorant, a bird species nesting in the area. This requires careful consideration of nesting zones and their protection in the design process. Supporting biodiversity and ecological balance is therefore one of the key priorities within the planning area.

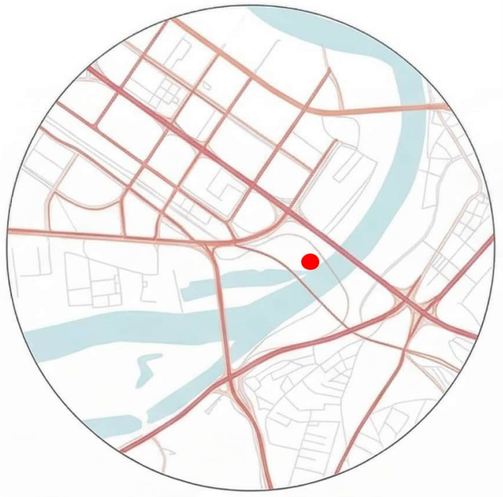
LEGENDS

- DESIGN AREA, total area: 24,314 m^2 + renovation project
- EXISTING BICYCLE ROUTES
- PROPOSED NEW BICYCLE CONNECTIONS BY THE CITY
- EXISTING BUILT SHORELINE ROUTE
- EXISTING GREEN CONNECTIONS

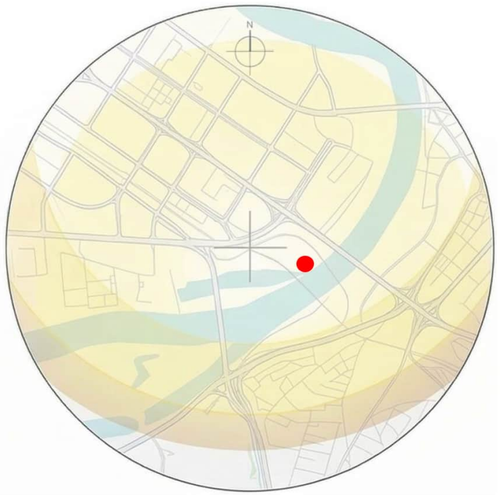
SITE ANALYSIS



Site location

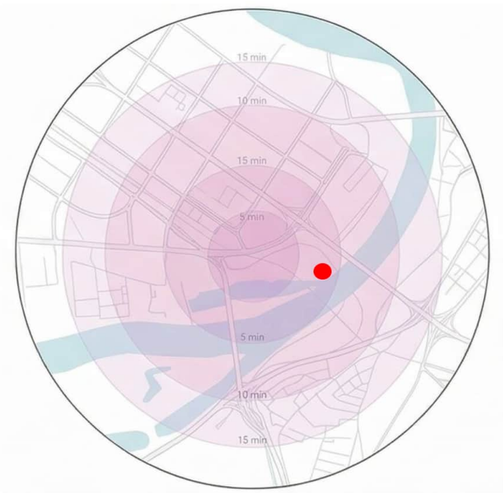


Roads and connectivity

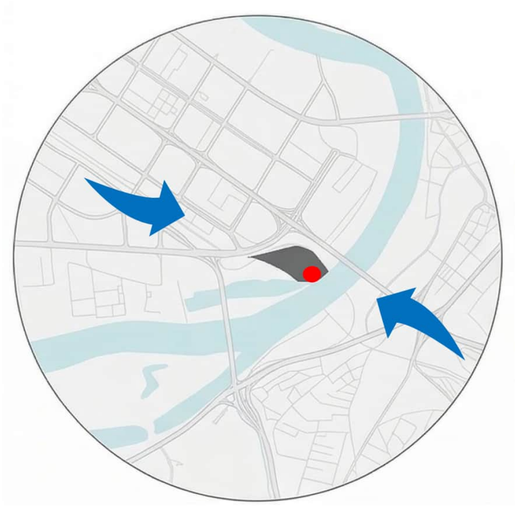


Sun path

Build vs
Unbuild



Walking radius
15 minutes city



Wind directions

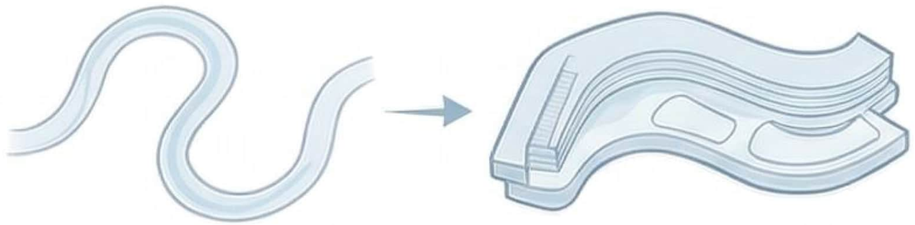
DESIGN QUESTION

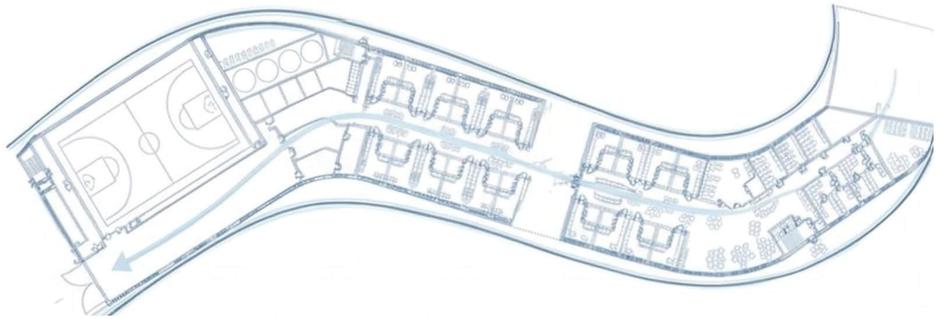
How can athlete housing promote strong green values, sustainable development, and innovative solutions while integrating sports, nature, and context-sensitive architecture?

SKETCHING

DESIGN CONCEPT

The story of form



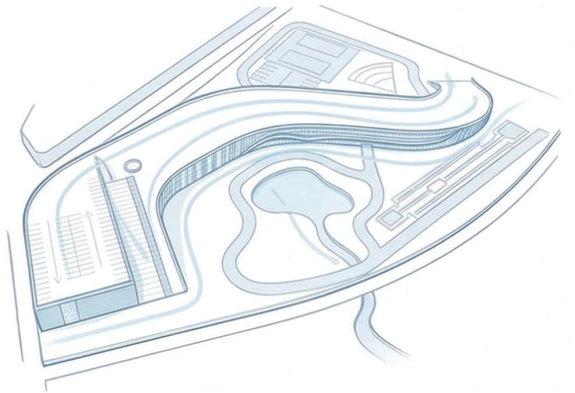


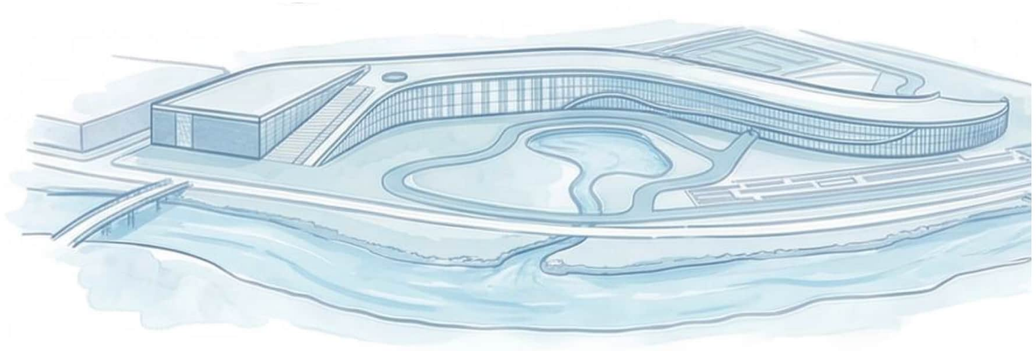
The Sava River does not move in straight lines; it breathes, curves, and adapts. For this athletic dormitory, we replaced rigid geometry with the **organic flow** of the riverbank that defines our site.

Our concept, **Sava's Flow**, translates the river's movement into architectural form. Just as an athlete seeks a "flow state," the building follows a serpentine path. The outward curves open toward the energy of the water, while the inward folds create quiet, sheltered "oxbow" courtyards for recovery.

By embracing these natural meanders, the structure dissolves into the landscape. It is not a barrier to nature, but a continuous gesture of harmony between human performance and the pulse of the Sava.

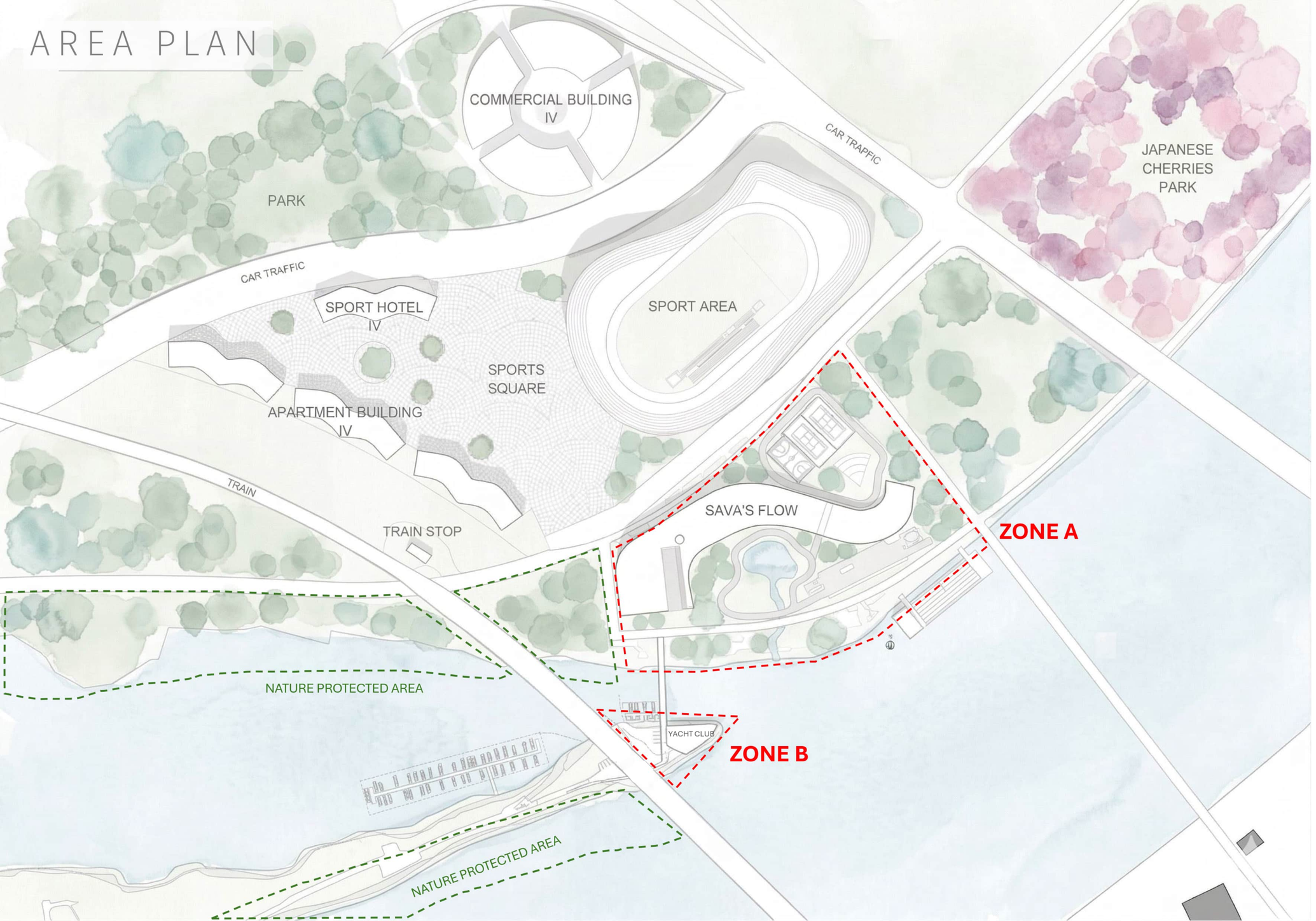
The structure preserves **natural corridors**, with green roofs and landscaped courtyards extending the riverbank's biodiversity. Its organic form **minimizes wind loads** and **optimizes thermal efficiency** through natural ventilation. Furthermore, **rainwater management** is seamlessly integrated into the landscape, mimicking the river's natural ability to filter and direct water.





SCALE MODEL

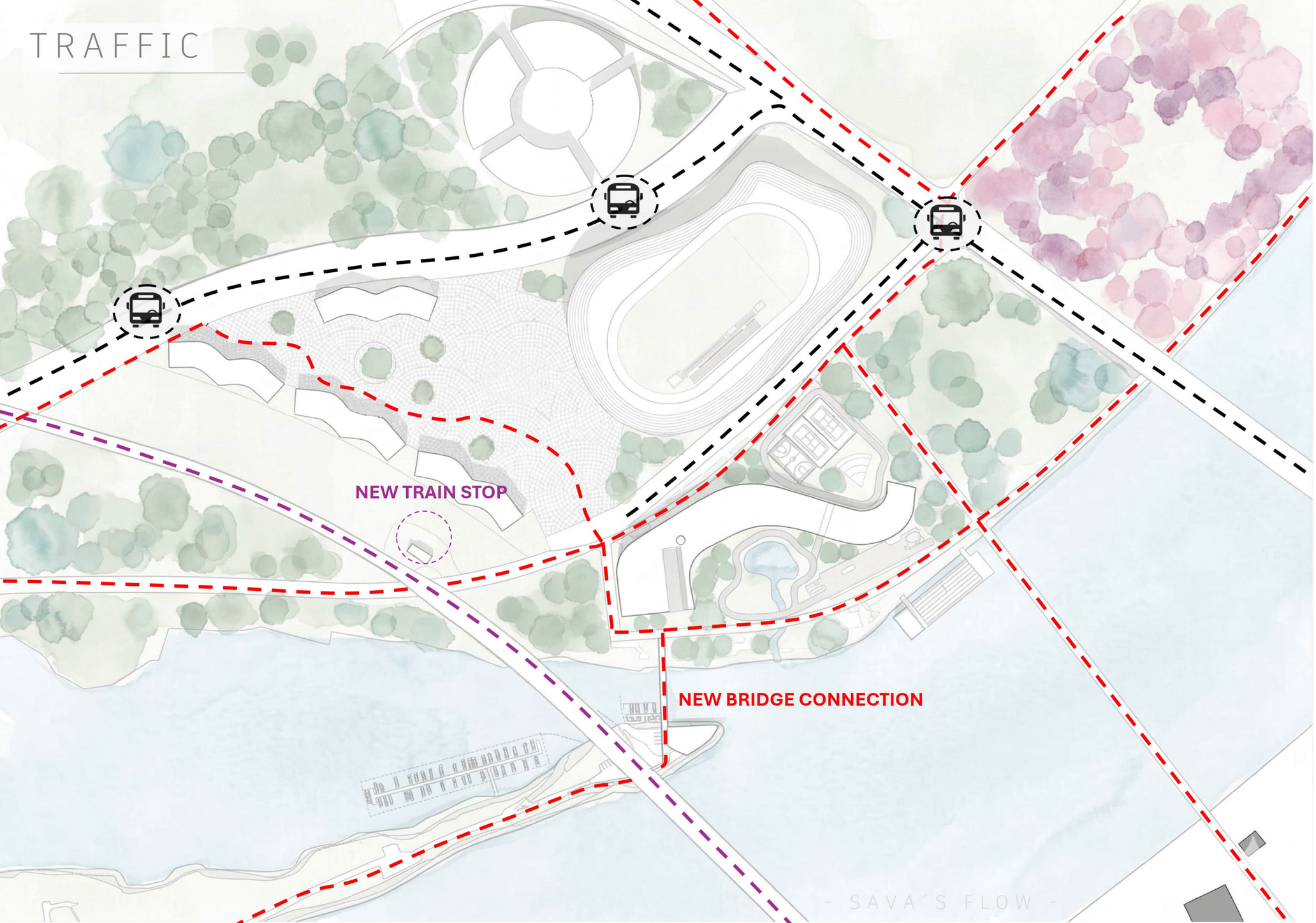
AREA PLAN



Sustainable Site Strategy
The area plan is built upon **ecological continuity** and **low-carbon accessibility**. Building masses are strategically positioned to preserve natural corridors, allowing green spaces and parks to flow uninterrupted toward the protected shoreline. By concentrating key functions in the immediate vicinity of the train stop, **the design promotes sustainable mobility** and reduces reliance on private vehicles.

N

TRAFFIC



NEW BUS STOP

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- SAVA´S FLOW -

GREEN CONNECTIONS

Sustainable Site Strategy
The area plan is built upon **ecological continuity** and **low-carbon accessibility**. Building masses are strategically positioned to preserve natural corridors, allowing green spaces and parks to flow uninterrupted toward the protected shoreline.

By concentrating key functions in the immediate vicinity of the train stop, **the design promotes sustainable mobility** and reduces reliance on private vehicles.

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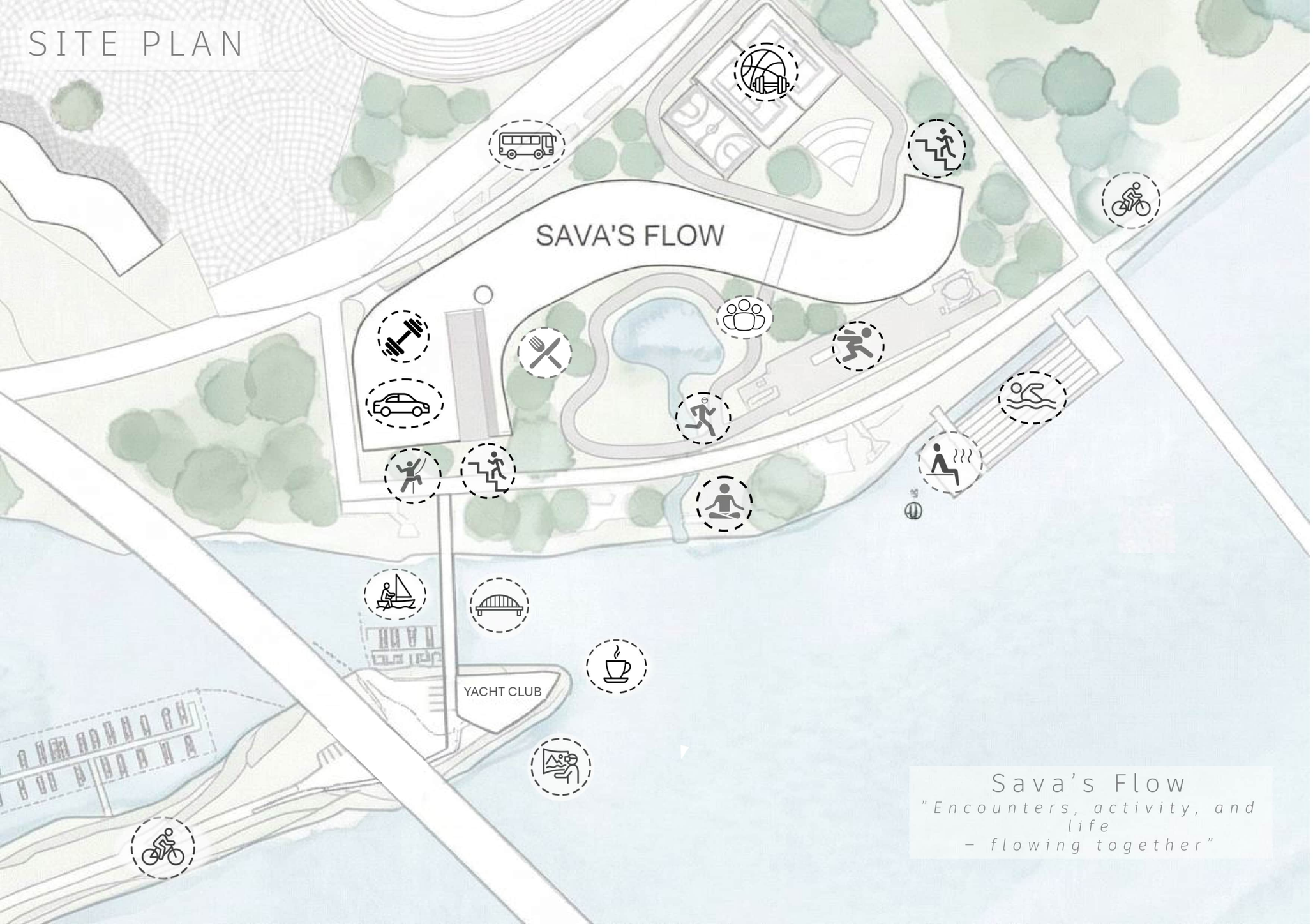
SITE PLAN



The area offers diverse opportunities for **sports, water activities, and social interaction** in a nature-oriented environment.

The design prioritizes **sustainable mobility and public transport links**, reducing emissions and enhancing accessibility for all urban residents.

Sava's Flow

"Encounters, activity, and life – flowing together"

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ROOM PROGRAM (PRELIMINARY)

BUILDING FOR 200 ATHLETES	m^2
Shared apartments 106 person	1 723
Double rooms 82 person	1 632
Accessible rooms 12 single rooms	432
Cafeteria/dining hall	381
Professional kitchen	128
Lounge area	29
Changing rooms and showers /spa	200
Laundry Facilities	51
Entrance hall / hallways	1 054
Gym / sporthall	803
Recovery room	110
Medical / therapic room	66
Storage	70
Social spaces / kitchen	1 194
Sport simulation room	58
Cleaning facilities	57
Study / work areas	341
Parking hall	5 000
TOTAL	13 329 m^2

1st FLOOR

The first floor features a **restaurant, reception, and both accessible and standard rooms**. The common areas are designed for relaxing and socializing.

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2nd FLOOR

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The second floor features **guest rooms and common areas** for socializing.

3rd FLOOR

The third floor features **guest rooms and common areas** for socializing.

4th FLOOR

The roof is accessible from both ends of the building. The rooftop area features **a pollinator-friendly meadow** and **jogging tracks**.

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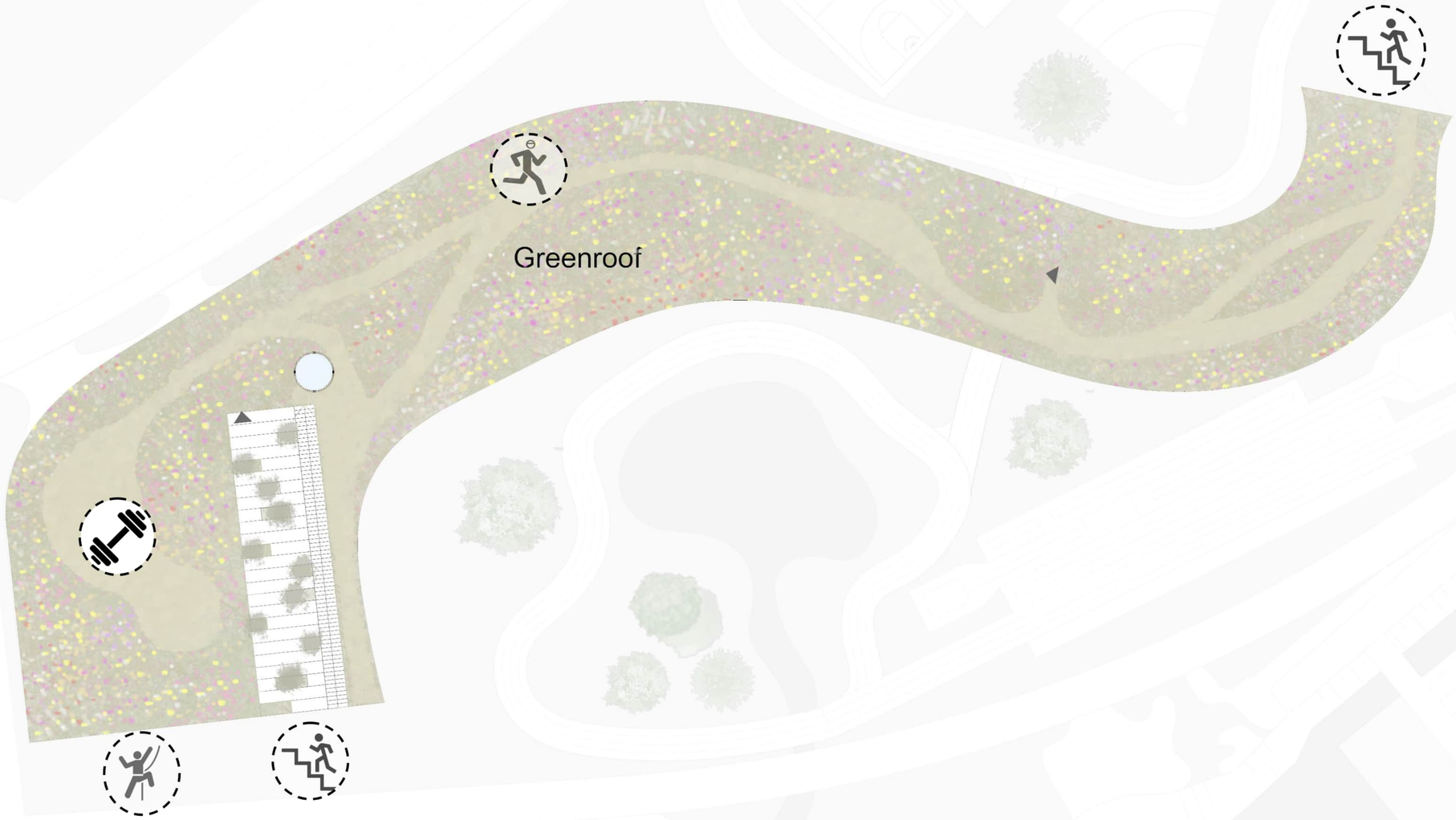
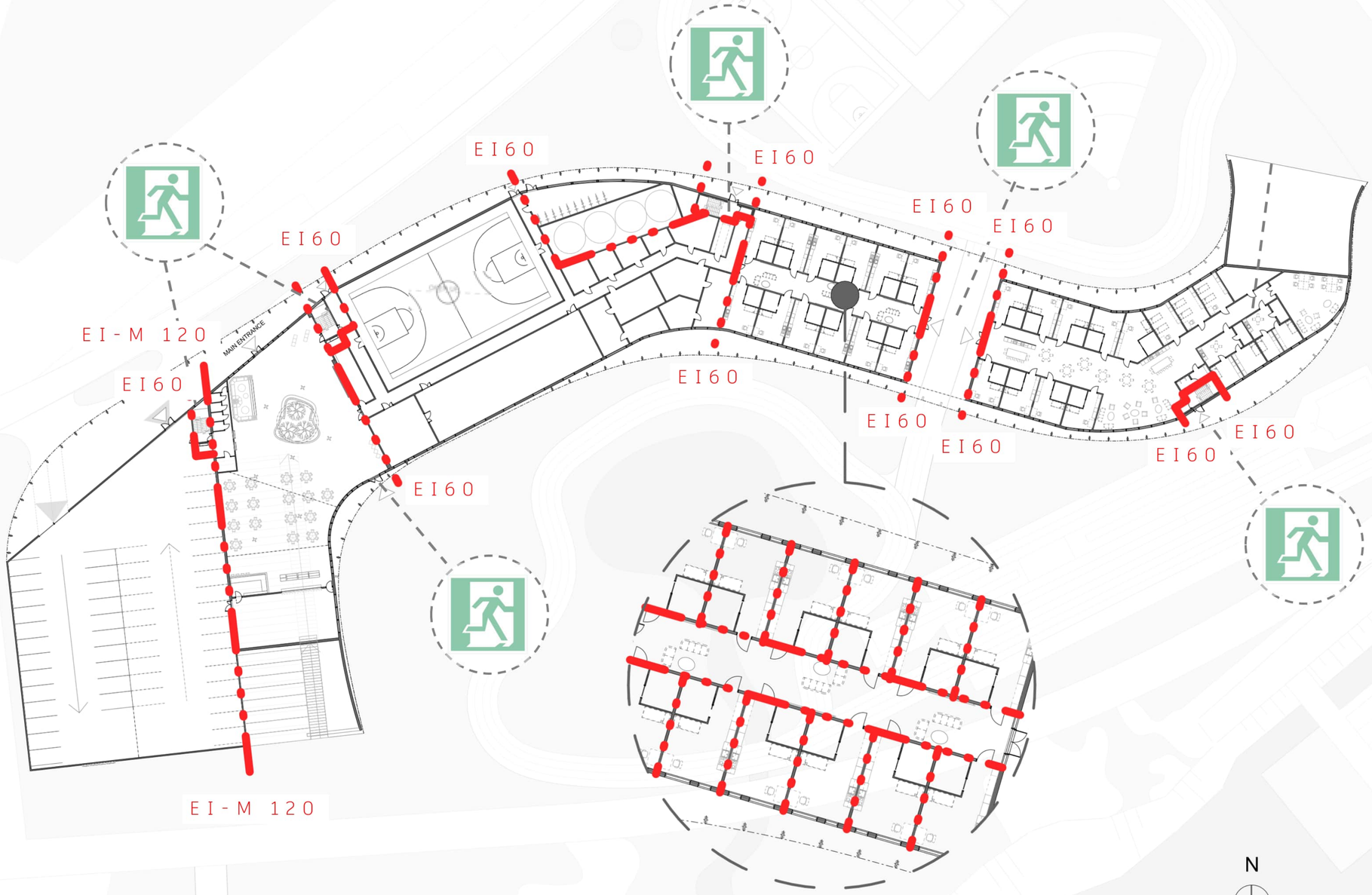
ROOF



The roof is accessible from both ends of the building. The rooftop area features a pollinator-friendly meadow and jogging tracks, while an **outdoor gym** and a **climbing wall** are located on top of the parking garage.

1st FLOOR

Fire safety

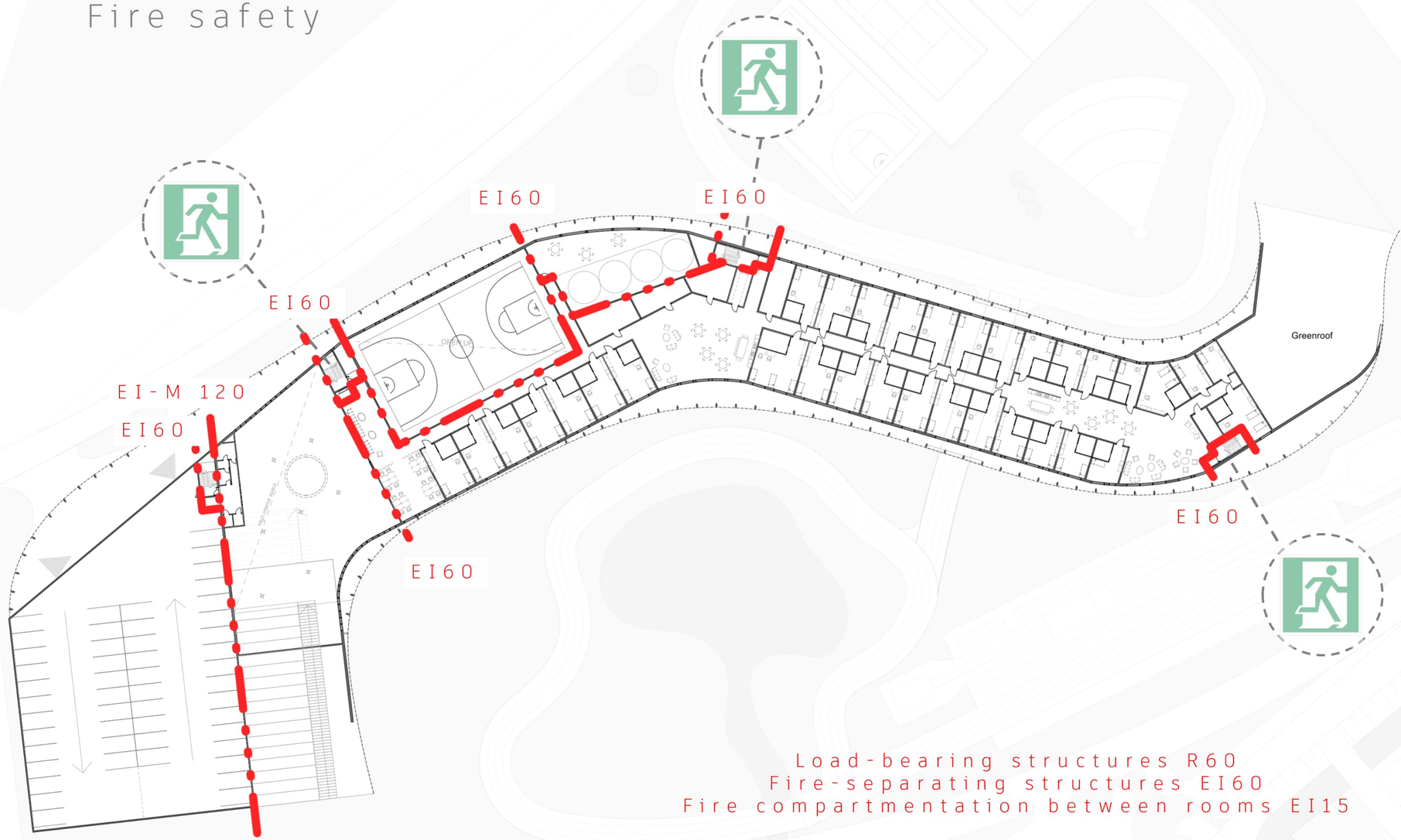


Fire compartmentation between rooms in the building EI15

Fire compartmentation and emergency evacuation routes. Red dashed lines and labels, such as EI15, EI 60 and EI-M 120, indicate the fire resistance ratings of structural elements in minutes. Green exit signs mark the locations of emergency exits to ensure a safe and efficient evacuation from different parts of the building.

2nd FLOOR

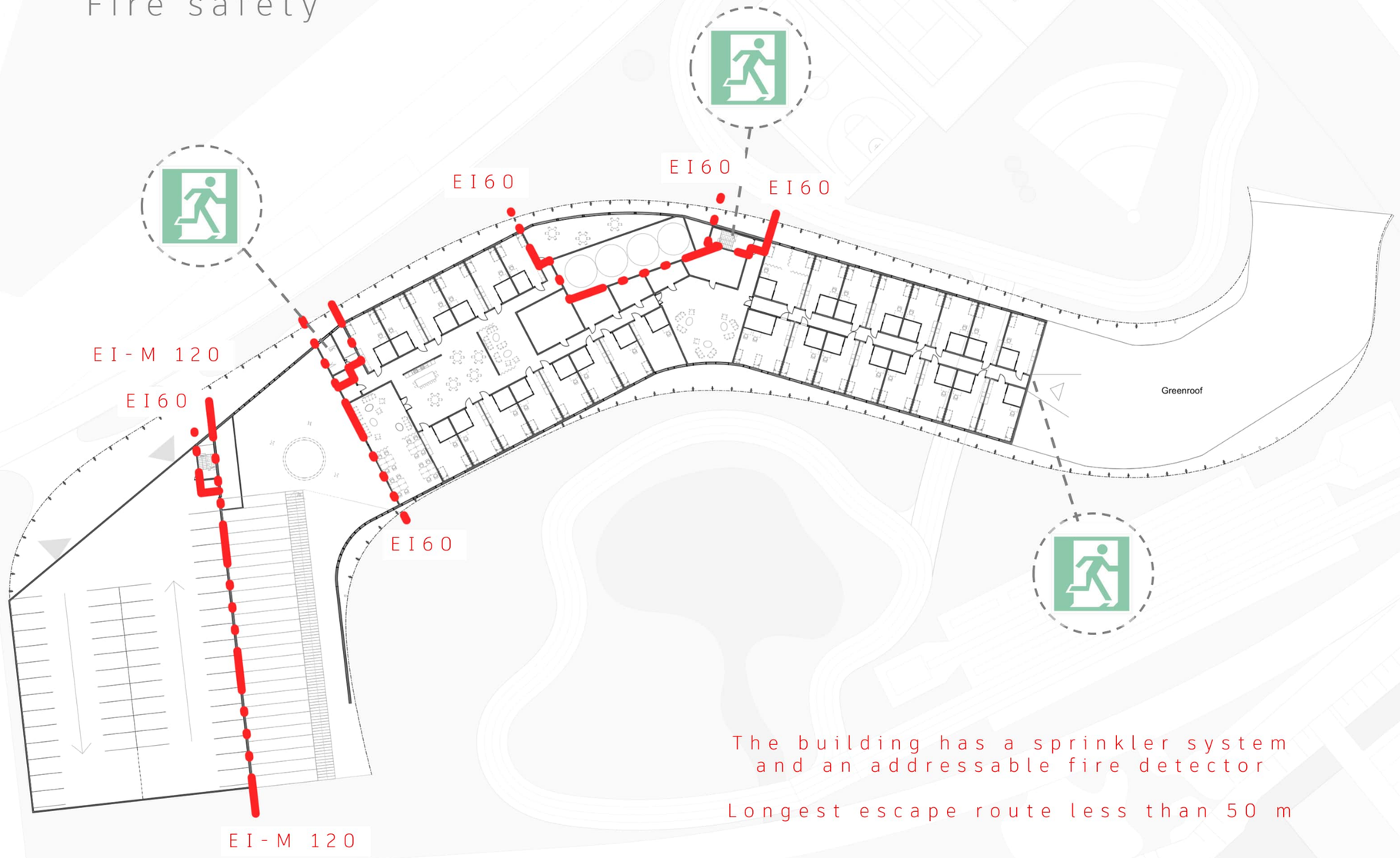
Fire safety



Fire compartmentation and emergency evacuation routes. Red dashed lines and labels, such as EI15, EI 60 and EI-M 120, indicate the fire resistance ratings of structural elements in minutes. Green exit signs mark the locations of emergency exits to ensure a safe and efficient evacuation from different parts of the building.

3rd FLOOR

Fire safety



The building has a sprinkler system and an addressable fire detector

Longest escape route less than 50 m

N

Fire compartmentation and emergency evacuation routes. Red dashed lines and labels, such as EI15, EI 60 and EI-M 120, indicate the fire resistance ratings of structural elements in minutes. Green exit signs mark the locations of emergency exits to ensure a safe and efficient evacuation from different parts of the building.

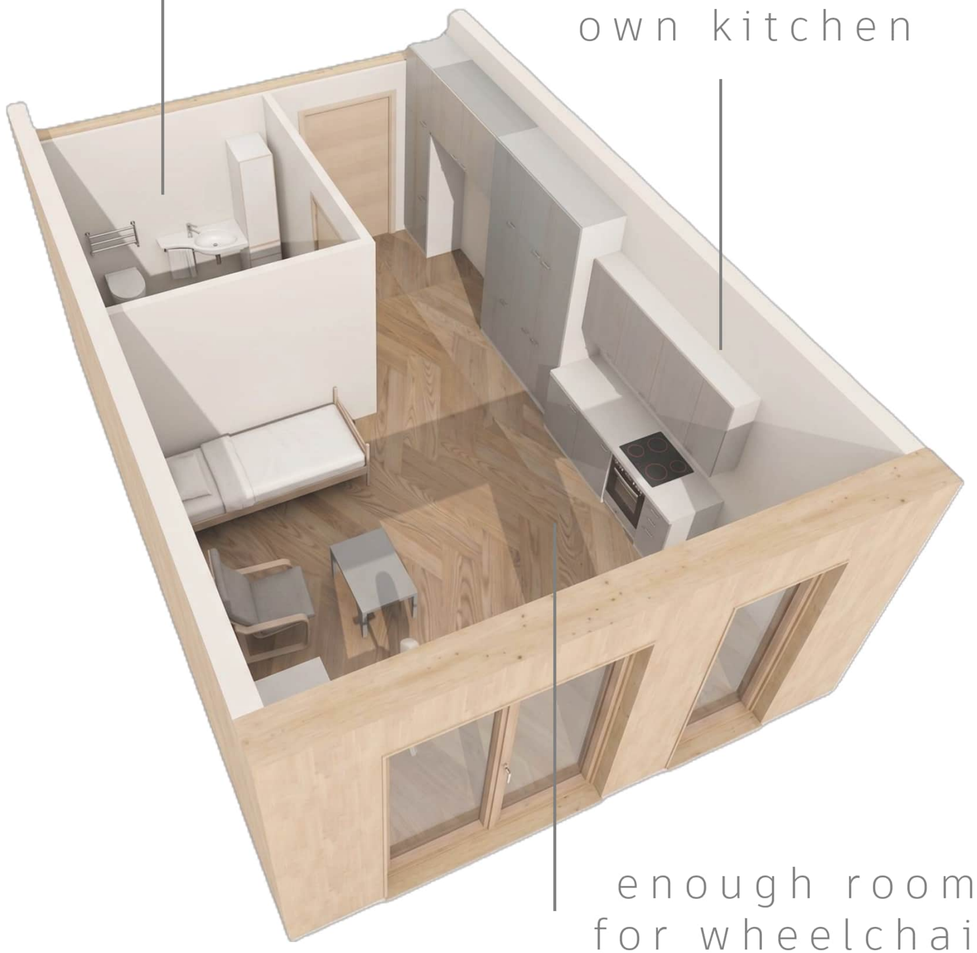
SPORTHALL

ROOM TYPES

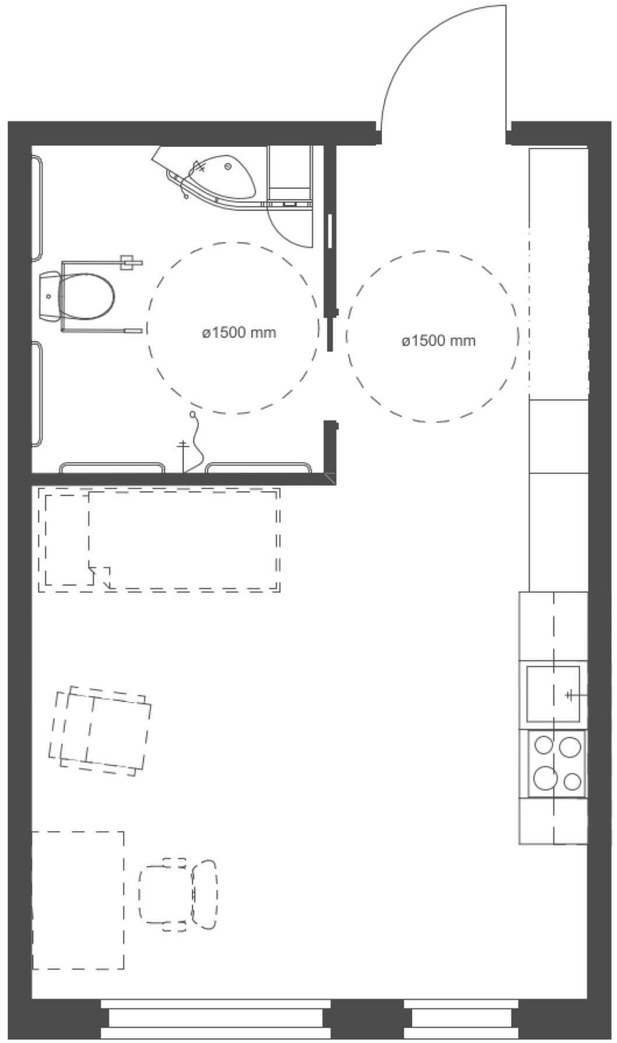
Accessible room

accessible bathroom

accessible
own kitchen

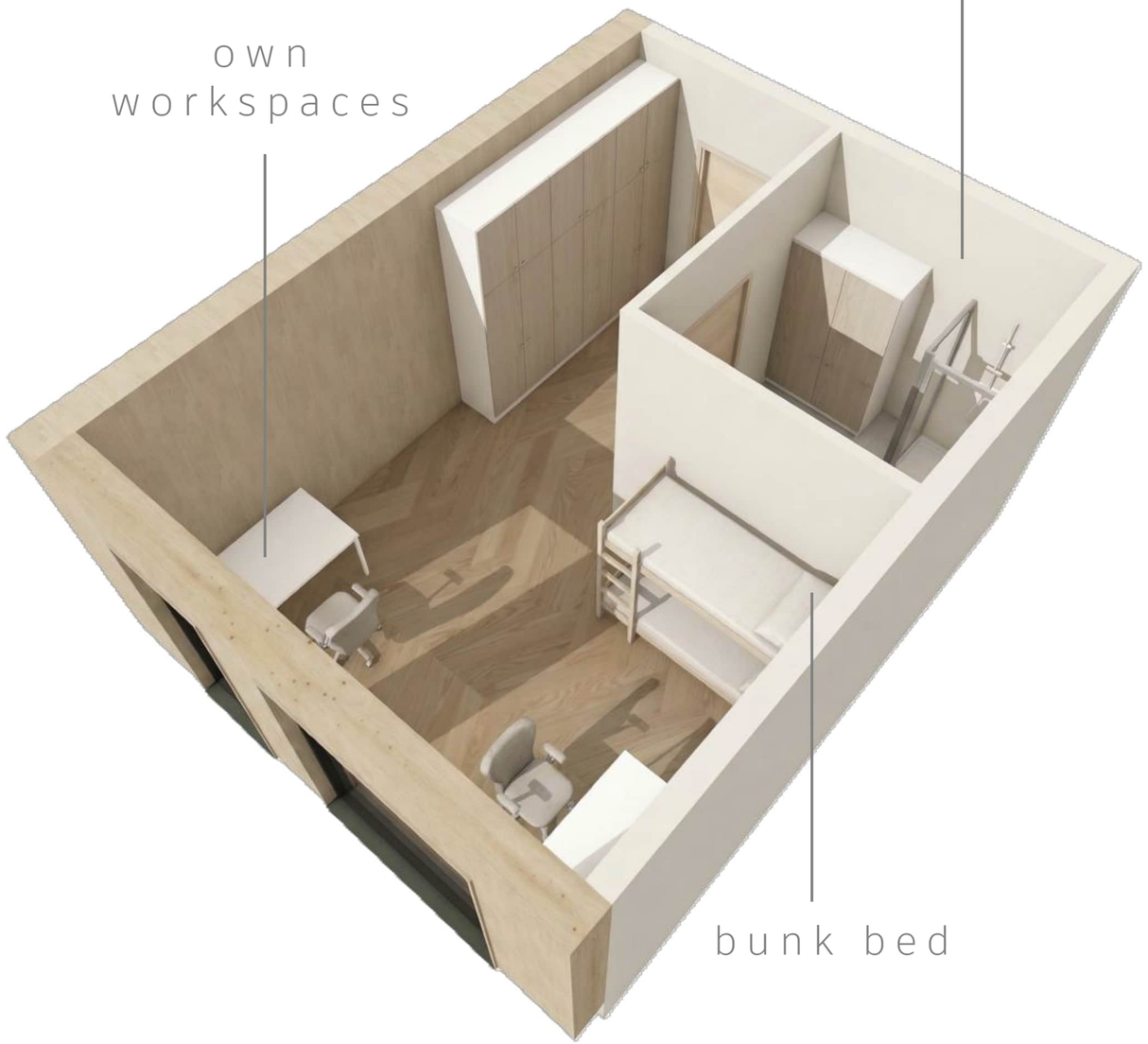


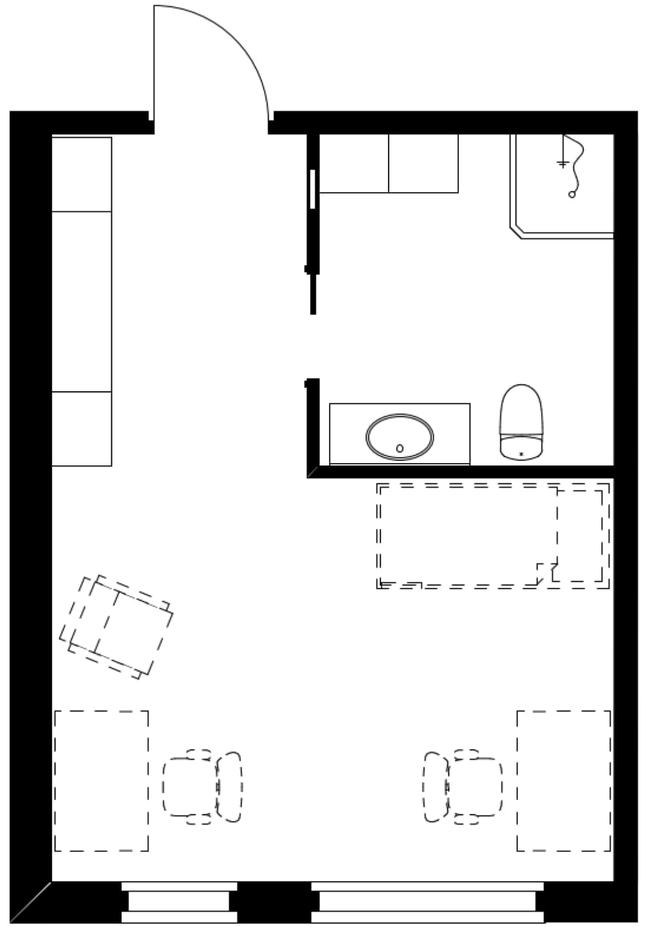
enough room
for wheelchair



ROOM TYPES

Douple room





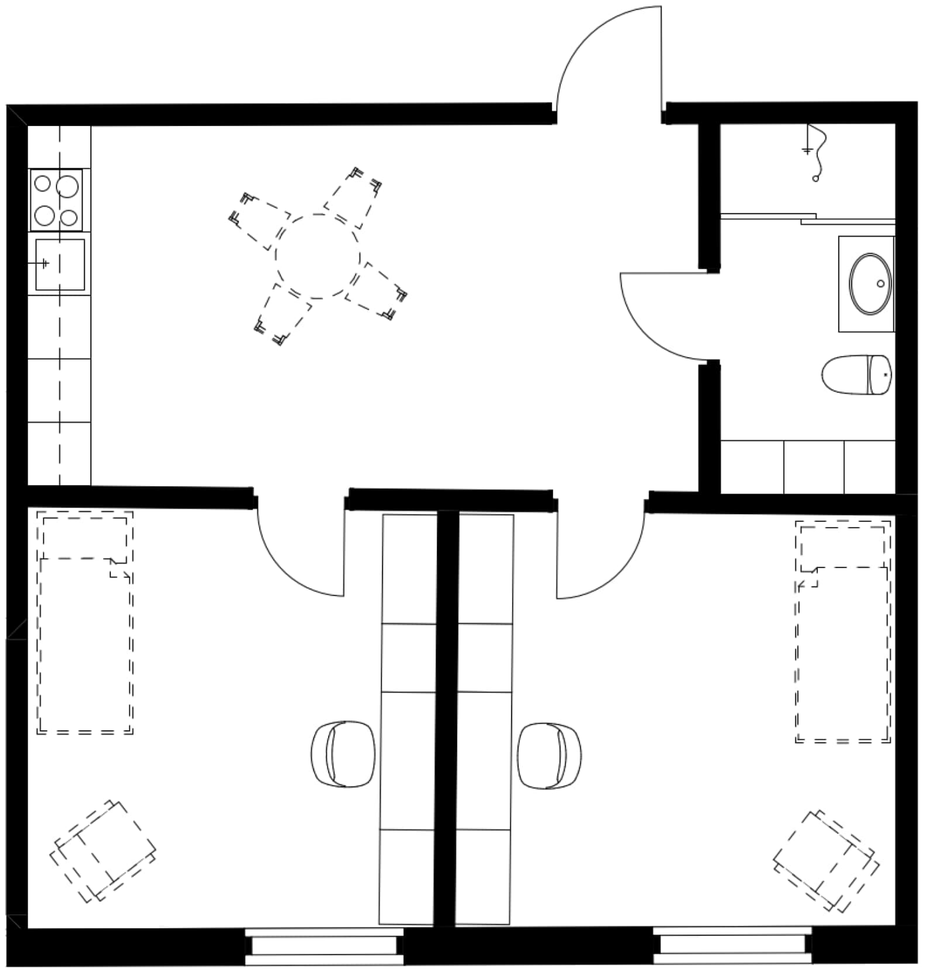
ROOM TYPES

Group room

shared bathroom

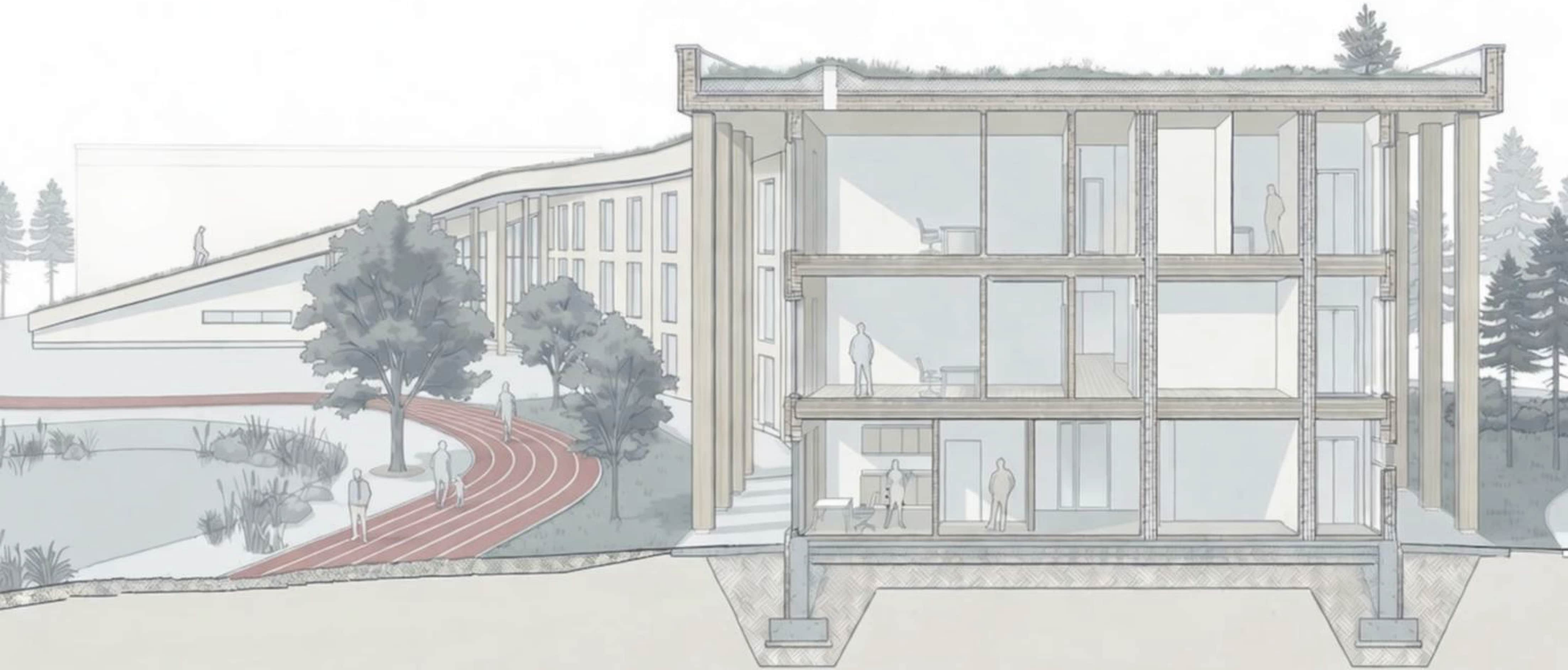
shared kitchen

own rooms



SOCIAL SPACE

SECTION

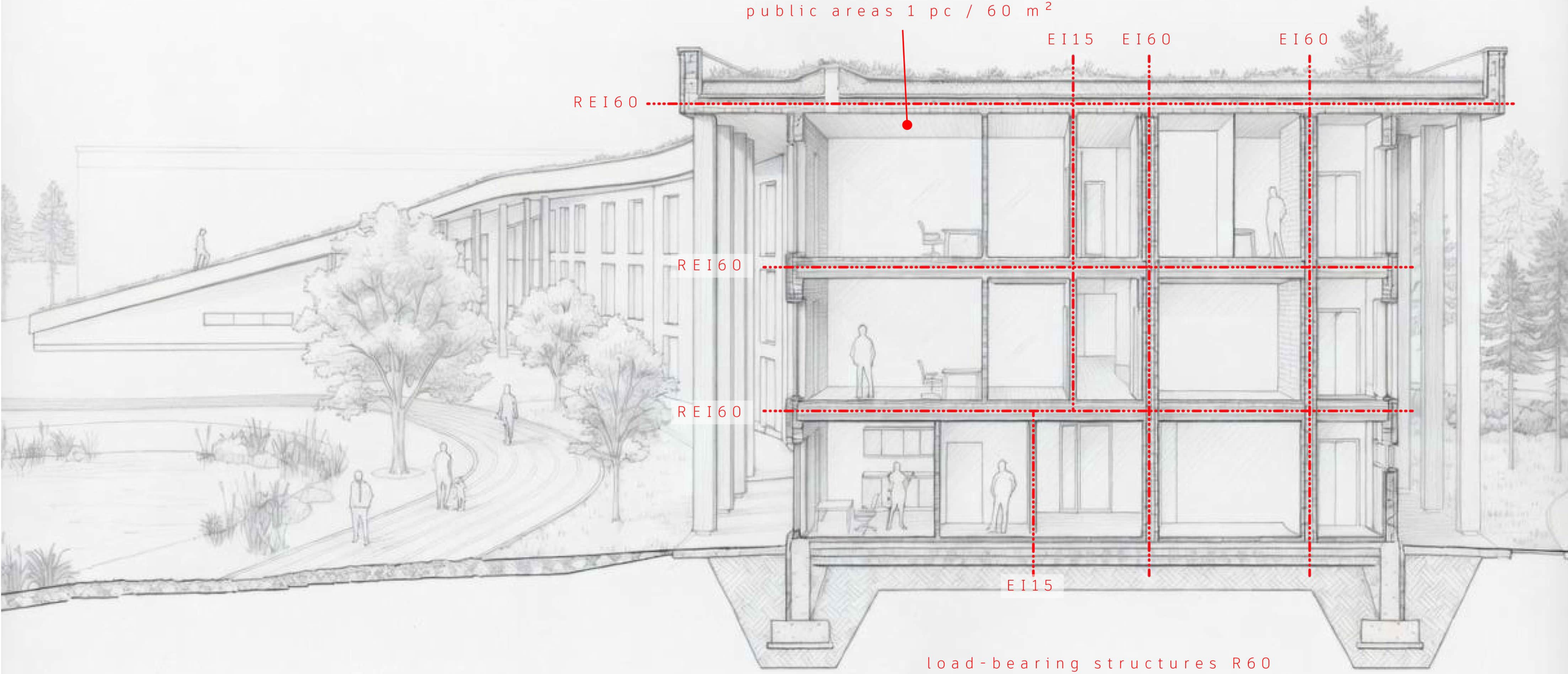


SECTION

Fire safety

The building has a sprinkler system
and an addressable fire detector

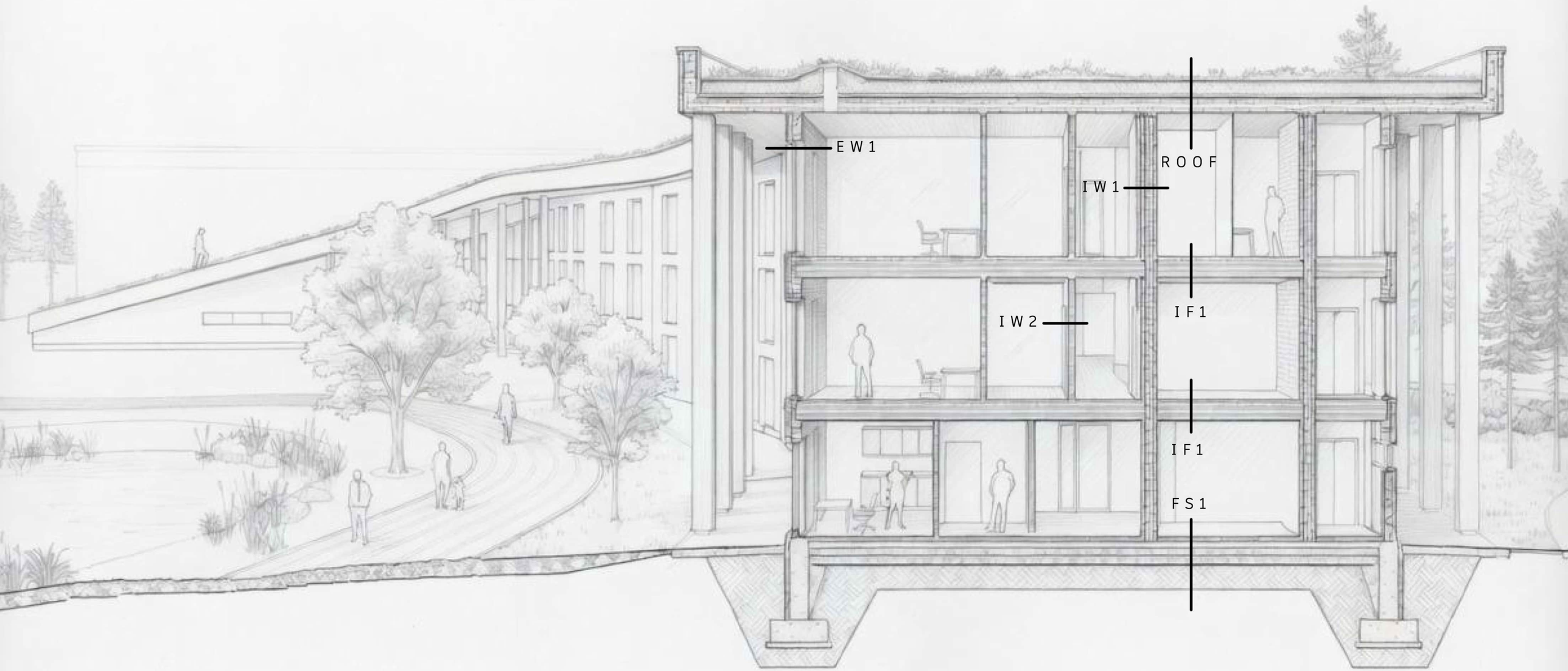
Fire detectors in each bedroom and
public areas 1 pc / 60 m²



load-bearing structures R60
fire-separating structures EI60
fire compartmentation between apartments EI15

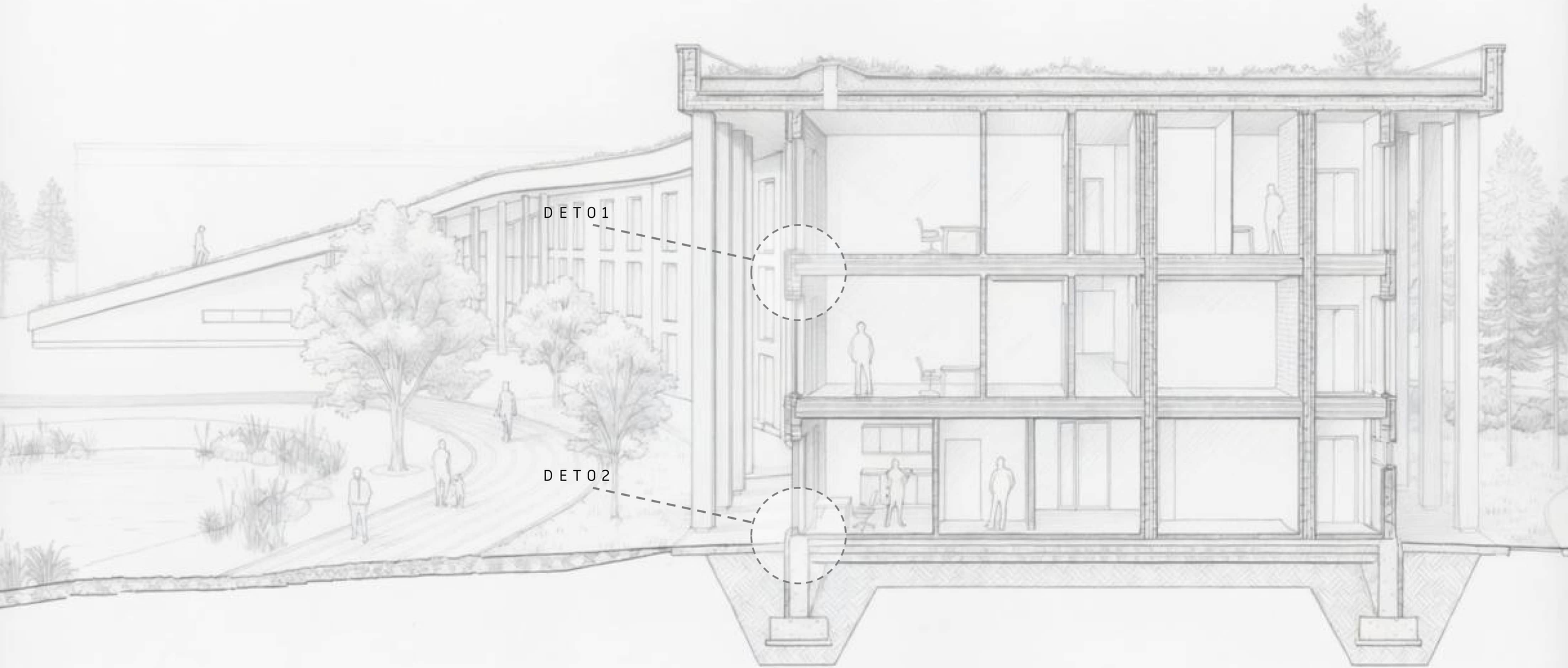
SECTION

Structures



SECTION

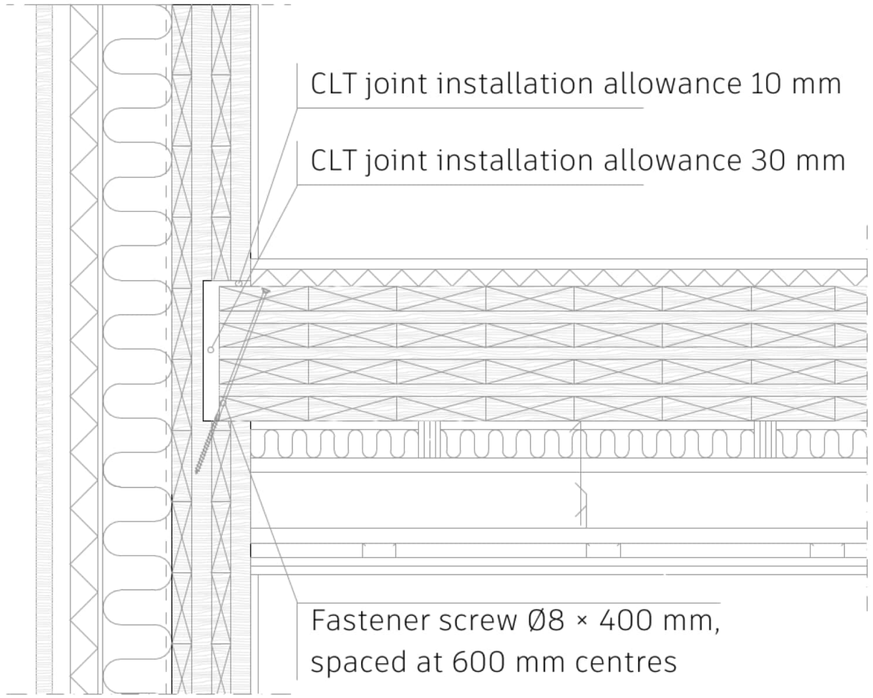
Structures



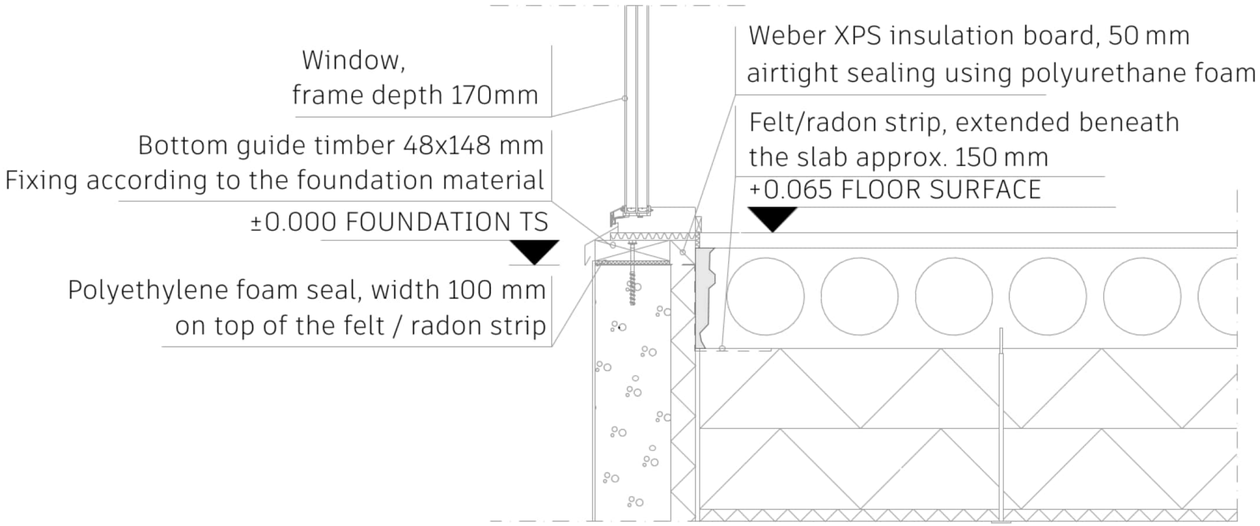
SECTION

Detail 01 - 02

DET01



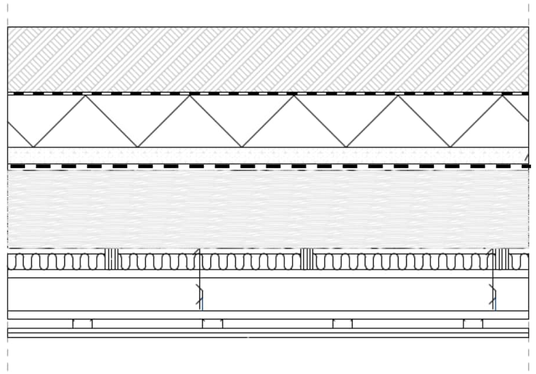
DET02



SECTION

Structures

ROOF



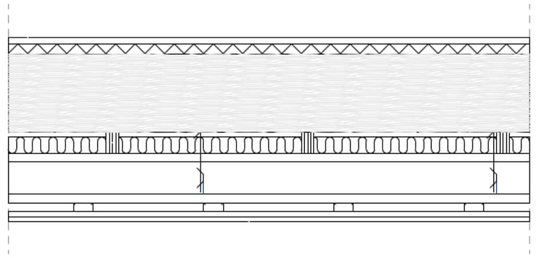
CLT GREEN ROOF SYSTEM

1. 200 mm Growing medium / substrate
   + Filter fabric (non woven)
2. 30 mm Drainage and protection layer
   (profiling mat) + Root protection
3. 2-3 mm Weberdry TPO – Root resistant
   waterproofing membrane (Weber)
4. 160 mm ISOVER XPS high load insulation
5. 50 mm Slope layer (1-2 %) +waterproofing
6. 240 mm CLT element
7. 66 mm LVL stud 39x66 c/c 600
   + Isover Acoustic 50 mm
8. 25 mm Horizontal battens 25x100 c/c 400
9. 100 mm Installation space
   + Gyproc GK 26-01 hanger + suspension wire
10. 27 mm Gypsteel GK 1 c/c 850
11. 27 mm Gypsteel GK 1 c/c 400
12. 15 mm x 2 Gyproc GF15 Protect

CLASSIFICATIONS

U-Value	0.09 W/m²K
Fire class	REI60
GWP, production	39.00 kg CO_2e/m²
GWP, carbon storage	-188.00 kg CO_2e/m²
Sound reduction index	Rw+Ctr 55 dB
Roof thickness	960 mm

IF1



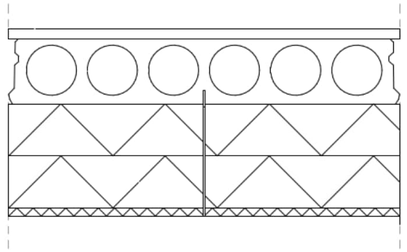
1108 D (CLT200+A50+GF15+GF15)

1. Surface material
2. 20 mm Weber 120 Reno Renovation Plan
   + weberfloor 4945 Fiberglass Mesh
3. 30 mm Impact sound insulation Isover FLO
4. 200 mm CLT element
5. 66 mm LVL stud 39x66 c/c 600
   + Isover Acoustic 50 mm
6. 25 mm Horizontal battens 25x100 c/c 400
7. 100 mm Installation space
   + Gyproc GK 26-01 hanger + suspension wire
8. 27 mm Gypsteel GK 1 c/c 850
9. 27 mm Gypsteel GK 1 c/c 400
10. 15 mm x 2 Gyproc GF15 Protect

CLASSIFICATIONS

Fire class	REI60
GWP, production	43.33 kg CO_2e/m²
GWP, carbon storage	-158.72 kg CO_2e/m²
Sound reduction index	DnT,w 62 dB
	DnT,W+C 60 dB
	L'nT,W+C 53 dB
Thickness	525 mm

FS1



2601F (HC200+160+160+25)

1. Surface material
2. 30 mm Weber 130 Core Comfort Plaano
3. 200 mm Hollow-core slab 020
4. 160 mm Isover Baseboard
   + installation adhesive
5. 160 mm Isover Baseboard
6. 25 mm Isover Garage EJ

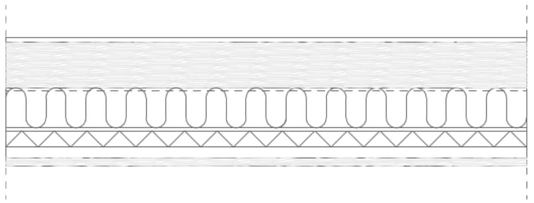
CLASSIFICATIONS

U-Value	0.09 W/m²K
Fire class	REI60
GWP, production	43.33 kg CO_2e/m²
GWP, carbon storage	-158.72 kg CO_2e/m²
Sound reduction index	Rw 74 dB
	Rw+Ctr 63 dB
	Rw+C 73 dB
Thickness	575 mm

SECTION

Structures

EW1



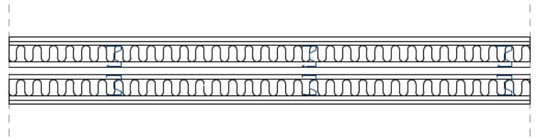
US8101 50-9-123(33)-140-GEK13

1. 28 mm Exterior cladding
2. 32 mm Ventilation gap
3. 50 mm ISOVER Facade, seams taped
   + Termofix spacers
4. 9 mm Gyproc GTS 9
5. 123 mm Load-bearing frame: C24 48×123 mm
   + thermal ins. ISOVER PREMIUM 33, 125 mm
6. 0.20 mm ISOVER Vario® Xtra
7. 140 mm CLT element/panel 140 mm
8. 13 mm Gyproc GEK 13 (extra hard)

CLASSIFICATIONS

U-Value	0.15 W/m²K
Fire class	REI60
GWP, production	23.92 kg CO_2e/m²
GWP, carbon storage	−137.04 kg CO_2e/m²
Sound reduction index	Rw 52 dB
	Rw+Ctr 47 dB
	RW+C 50 dB
Wall thickness	335 mm

IW1



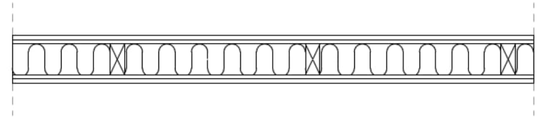
Gyproc XR 66/66x2 (600) RN-NR A100

1. 12.5 mm Gyproc GR 13 Extra Hard Klima
2. 12.5 mm Gyproc GN 13 Standard Klima
3. 66 mm Stud: Gyproc XR 66 CarbonLow
   + Bottom edge profile: Gyproc AC 66/60 ACOUnomic
   + Top edge profile: Gyproc AC 66/60 ACOUnomic
   + Isover Acoustic Carbon Low 2×50 mm
4. 12.5 mm Gyproc GN 13 Standard Klima
5. 12.5 mm Gyproc GR 13 Extra Hard Klima

CLASSIFICATIONS

Maximum wall height	3 200 mm
Fire class	EI60
Sound reduction index	57 dB GWP
Manufacturing	7.16 kg CO_2e/m²
Wall thickness	205 mm

IW2



Gyproc GT 95/95 (600) RR-RR U100

1. 12.5 mm Gyproc GR 13 Extra Hard Klima
2. 12.5 mm Gyproc GR 13 Extra Hard Klima
3. 95 mm Timber 95/45 c600
   + Bottom rail timber 95/45
   + Top rail timber 95/45
   + Isover U-Frame Protect 36 100 mm
4. 12.5 mm Gyproc GR 13 Extra Hard Klima
5. 12.5 mm Gyproc GR 13 Extra Hard Klima

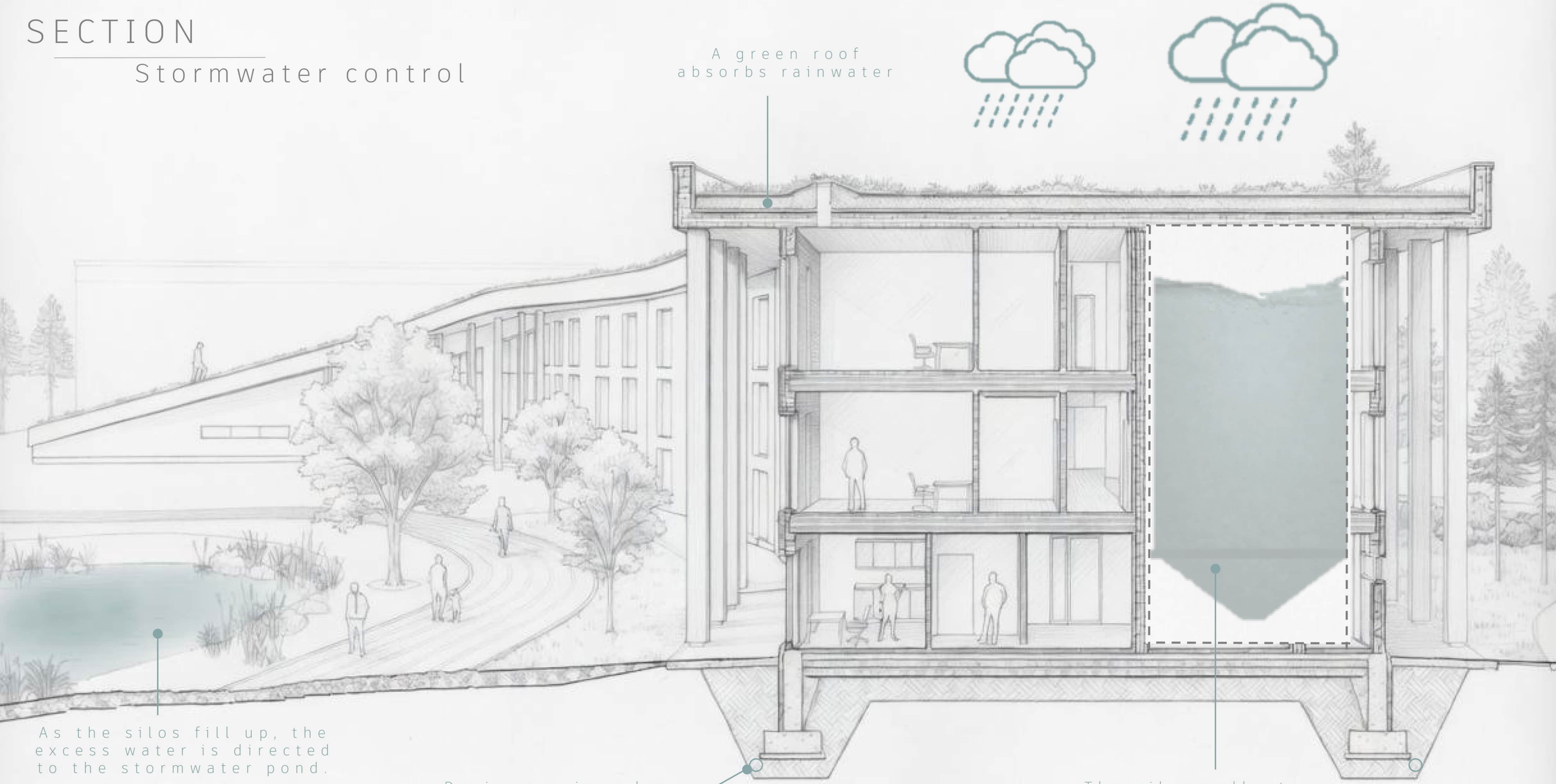
CLASSIFICATIONS

Maximum wall height	4 000 mm
Fire class	REI60
Sound reduction index	45 dB GWP
Manufacturing	−7.57 kg CO_2e/m²
carbon storage	−8.55 kg CO_2e/m²
Wall thickness	145 mm

SECTION

Stormwater control

A green roof
absorbs rainwater



As the silos fill up, the excess water is directed to the stormwater pond.

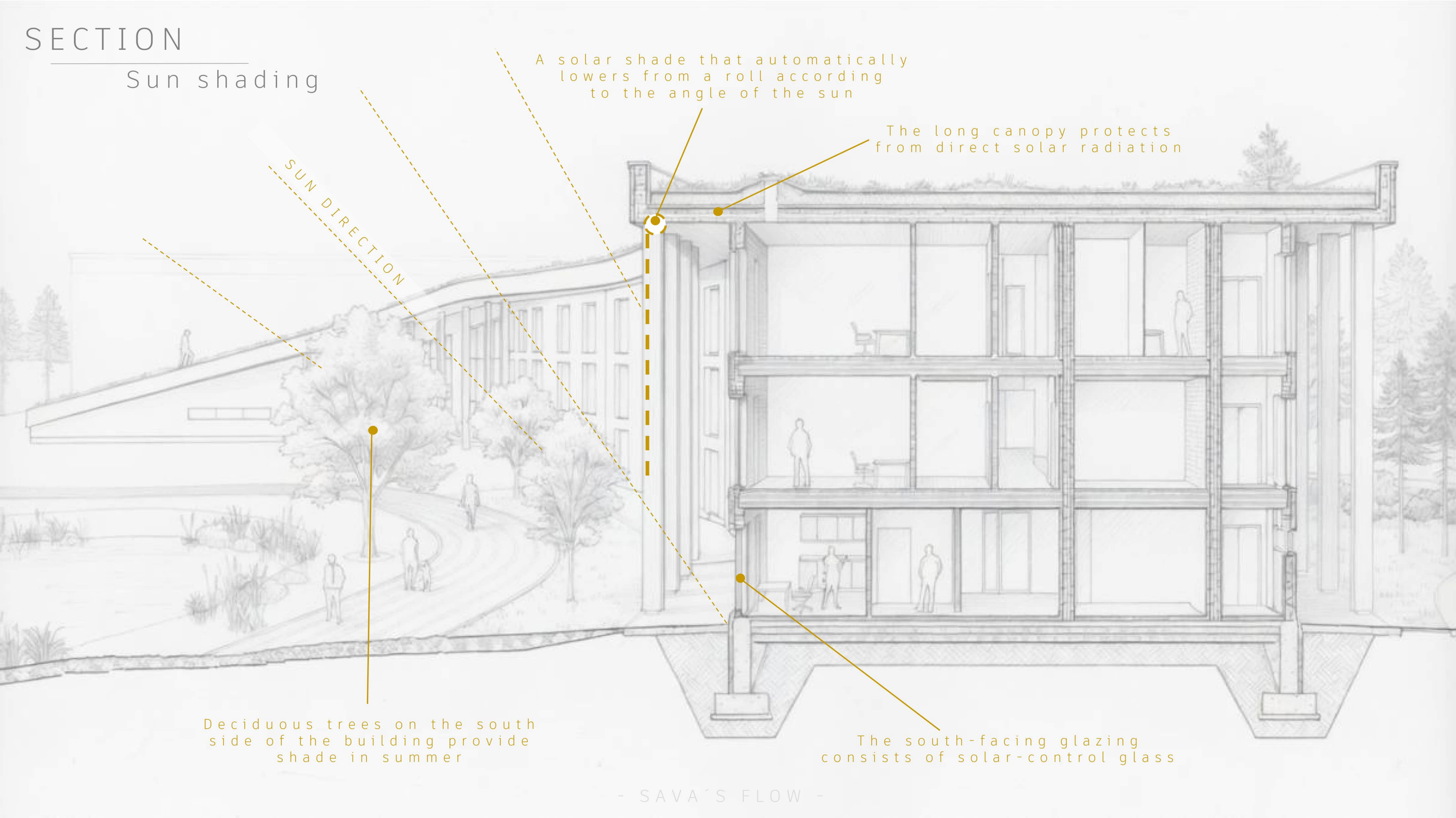
The stormwater pond prevents the Sava River from flooding

Drainage pipes keep the foundations dry

The silos collect rainwater for reuse

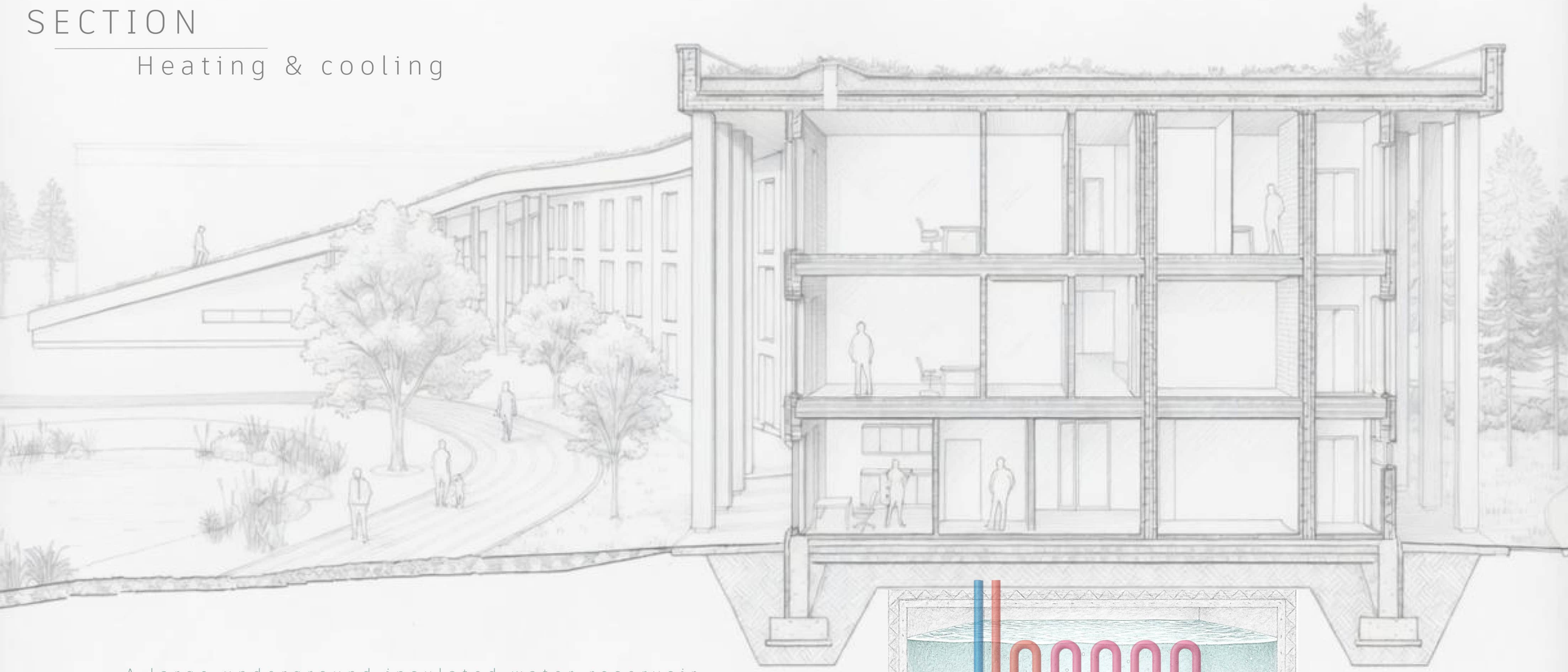
SECTION

Sun shading



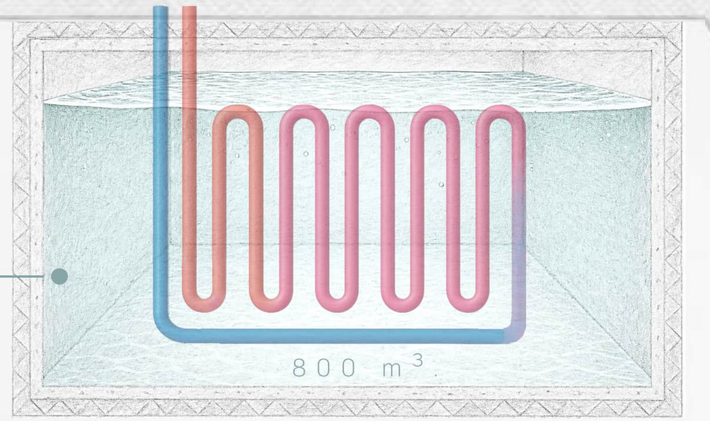
SECTION

Heating & cooling



A large underground insulated water reservoir is placed beneath the building to provide cooling in summer and heating in winter.

In summer, excess heat from the building is pumped Into the reservoir, which simultaneously cools the indoor spaces. In winter, the heat stored in the reservoir is pumped back into the building and used for heating.

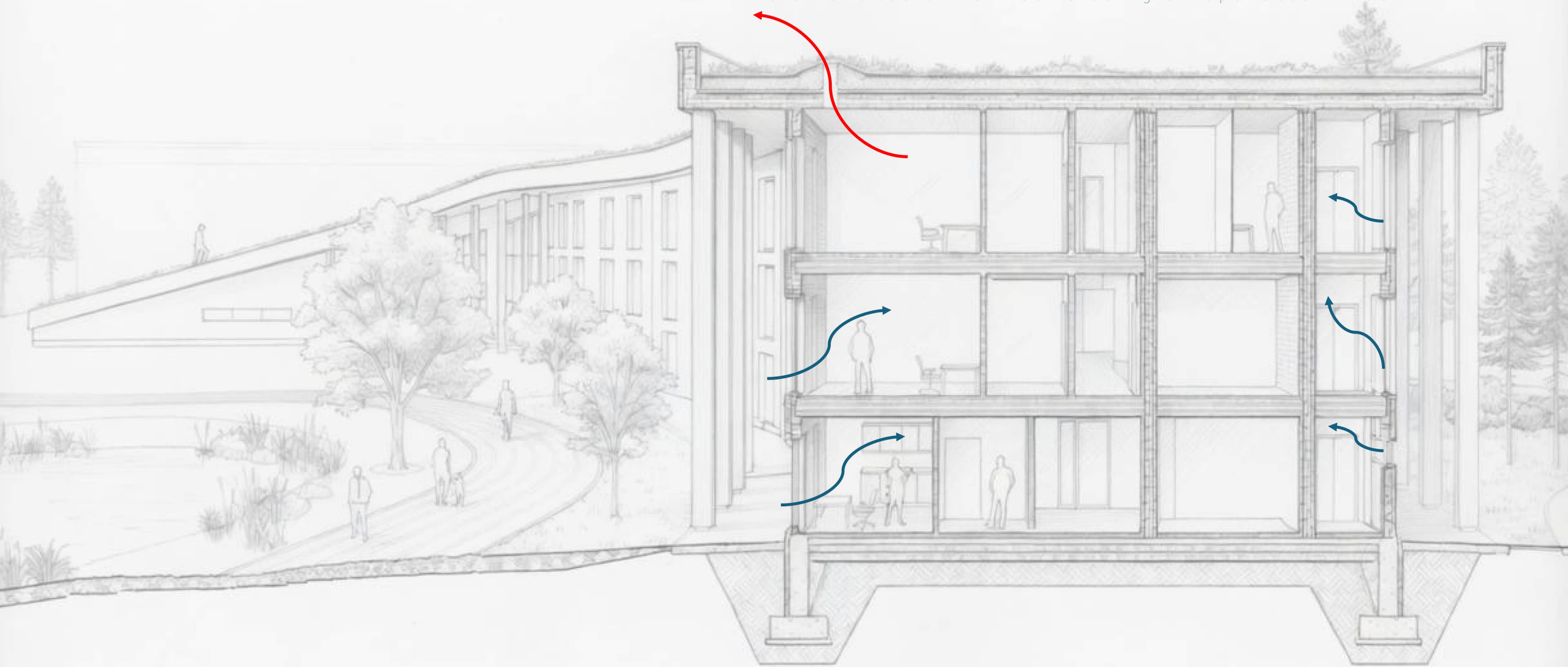


SECTION

Air ventilation

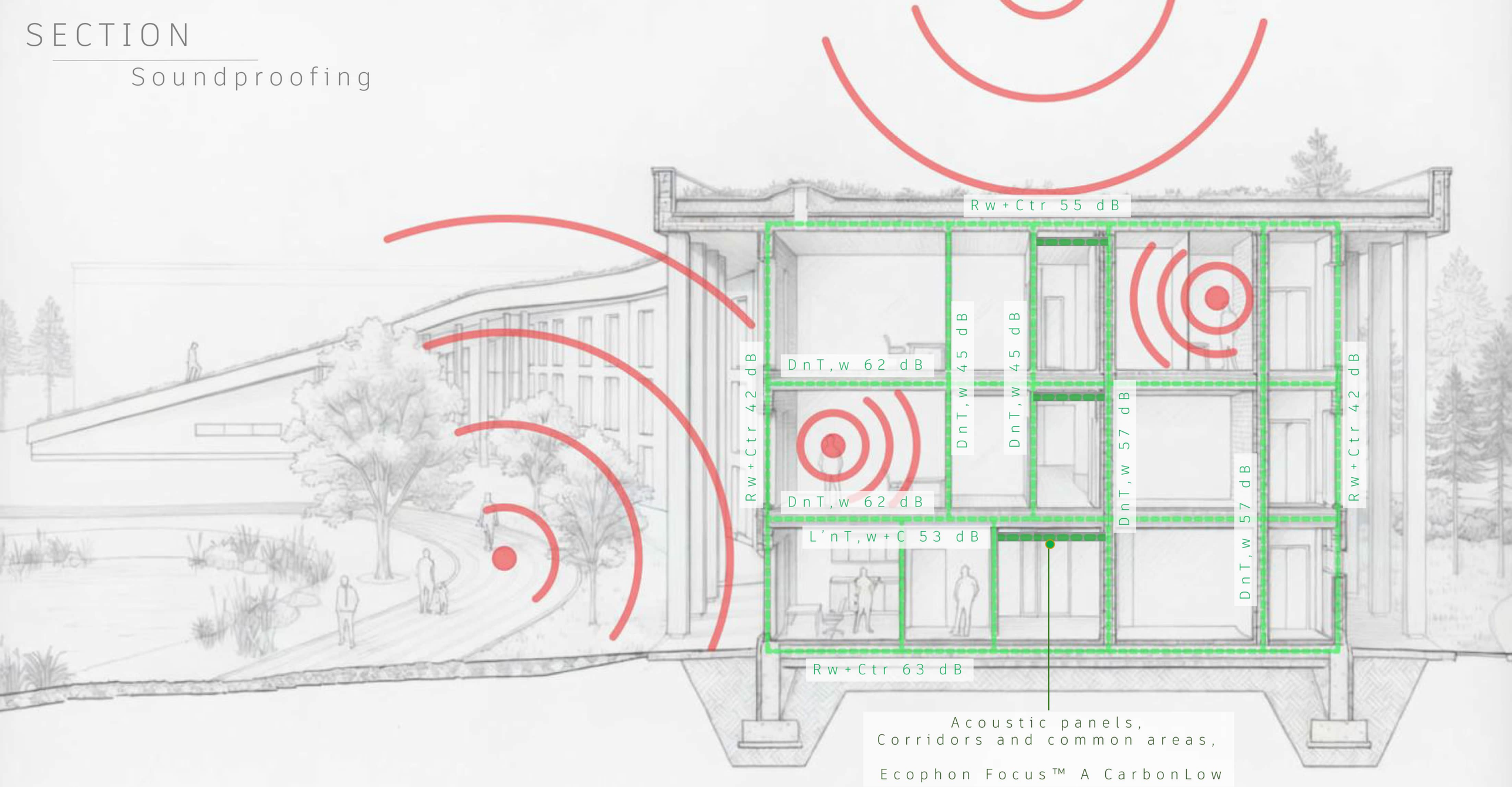
The building has gravity-based natural ventilation. Air is exchanged through temperature differences. Replacement air is taken in through the ventilation hatches in the windows. Ventilation can be boosted with exhaust air fans.

Extra ventilation for rooms using an openable window



SECTION

Soundproofing

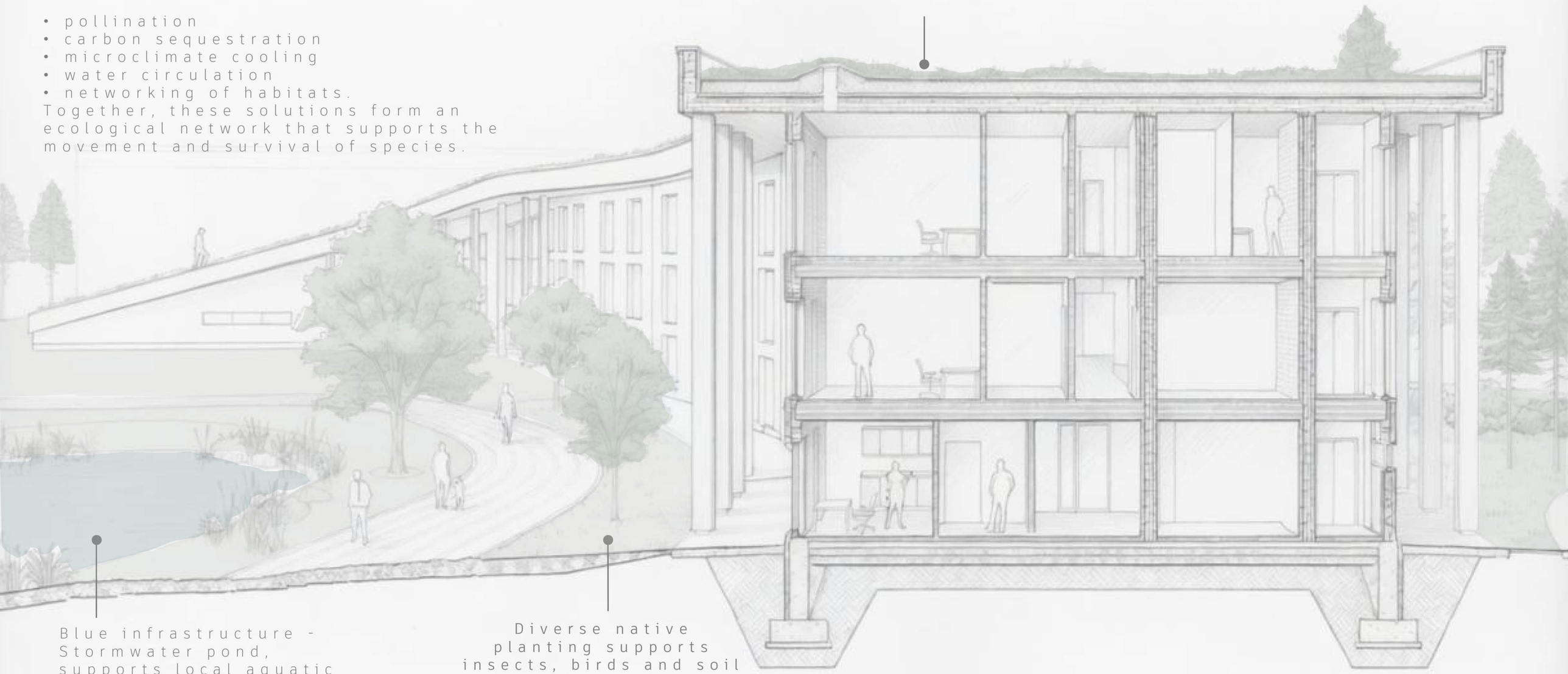


SECTION

Biodiversity

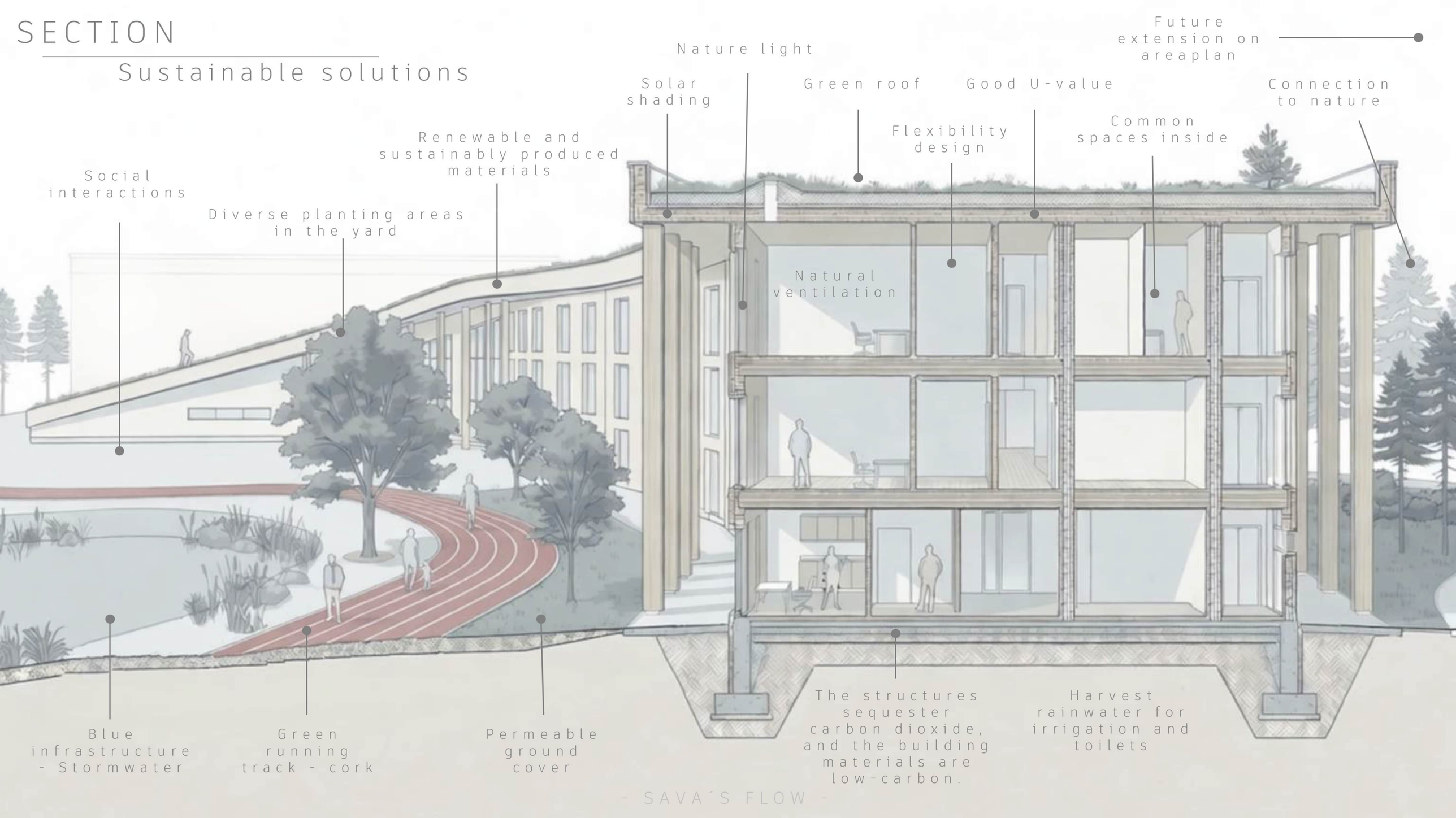
- pollination
- carbon sequestration
- microclimate cooling
- water circulation
- networking of habitats.

Together, these solutions form an ecological network that supports the movement and survival of species.



SECTION

Sustainable solutions



Carbon and Sustainability Summary

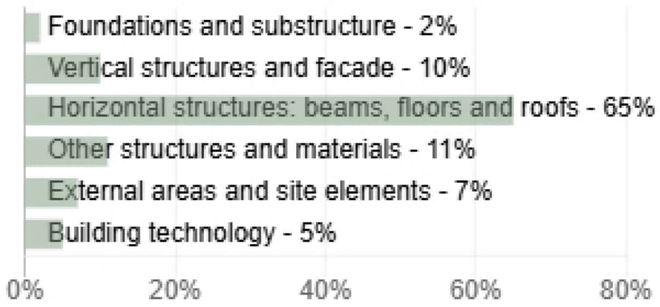
Calculations: Zone A

Life-cycle overview of Global Warming Potential total

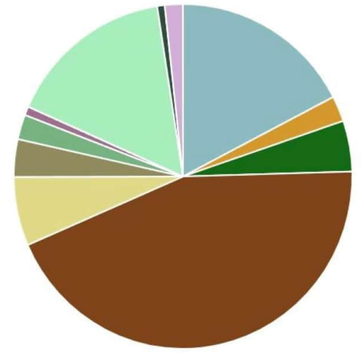
=

The building's full climate impact from material production to demolition (A1–C4), how much CO_2e the building generates over its lifespan.

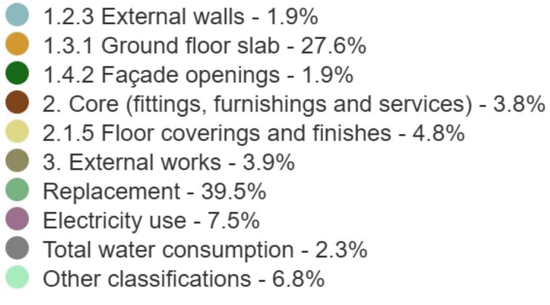
Cradle to grave (A1-A4, B4-B5, C1-C4)	kg CO_2e/m^2
(< 420) A (420-485) B (485-550) C (550-615) D (615-680) E (680-745) F (> 745) G	382

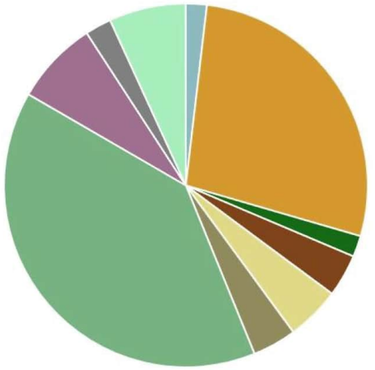


Global warming t CO2e - Life-cycle stages

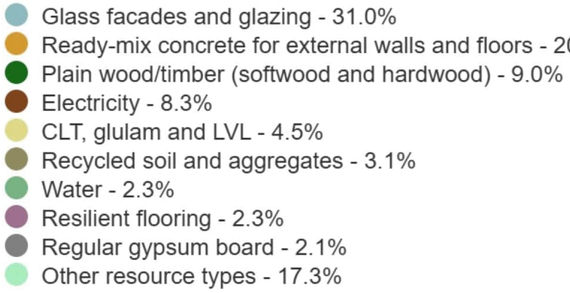


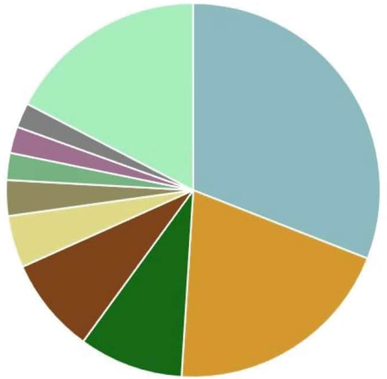
Global warming t CO2e - Classifications





Global warming t CO2e - Resource types



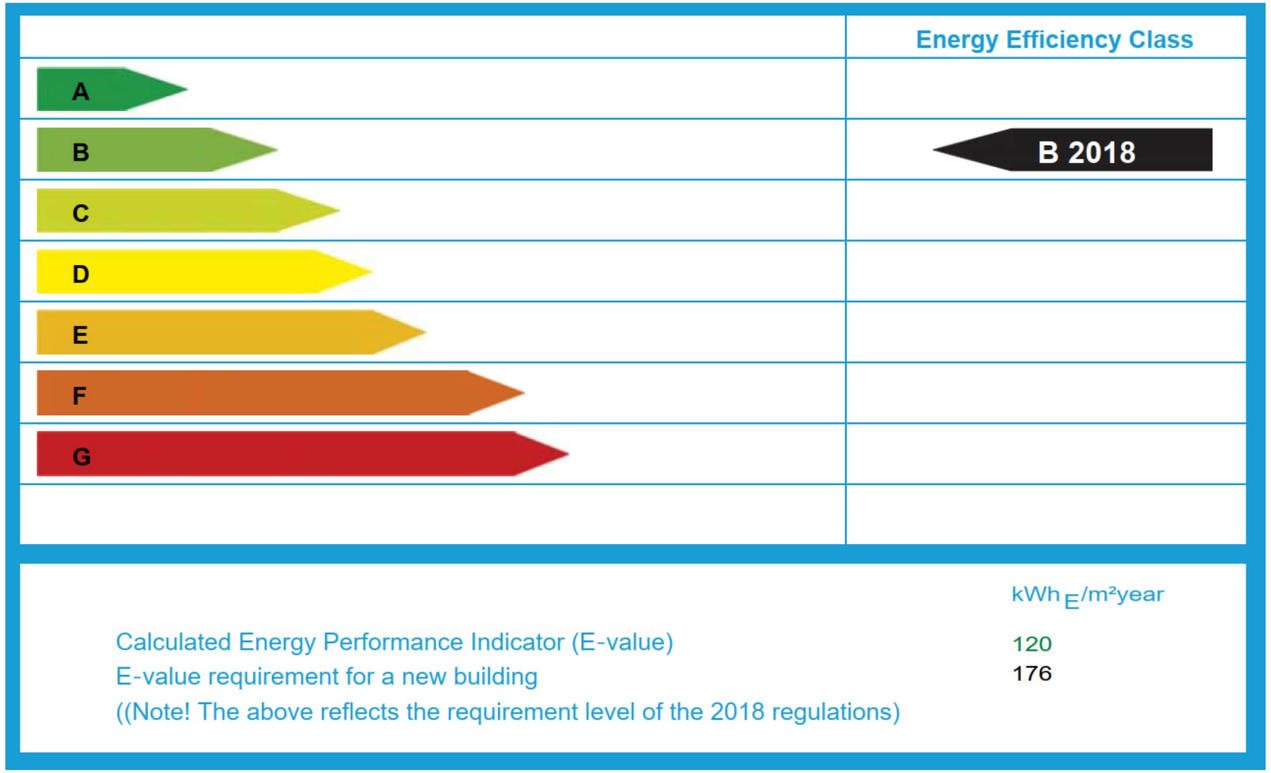


Energy efficiency Summary

Calculations: Zone A

Target: **Sava's Flow**

Address: **Bežanijski zimovnik 35**
11000, Beograd, Serbia



Energy Performance

The building's energy performance has been evaluated in accordance with the Finnish Energy Performance Regulations (2018). The calculated Energy Performance Indicator (E-value) is 120 kWhE/m^2·year, significantly lower than the regulatory maximum requirement of 176 kWhE/m^2·year.

This result places the project in Energy Efficiency Class B (2018), demonstrating a high level of energy efficiency and exceeding statutory minimum standards by a wide margin. The performance is achieved through an integrated low-energy design strategy that combines a ground-source heat pump system, water-based low-temperature floor heating, good airtightness, and substantial structural thermal mass.

The Finnish energy classification system ranges from A (highest efficiency) to G (lowest efficiency). With an E-value of 120, the project performs close to the threshold of Class A, ensuring low operational energy demand and long-term sustainability.

This summary is an informational English translation prepared for competition presentation purposes. The official energy performance certificate is issued in Finnish.


SPORT CENTER
RECEPTION

REUSED BUILDINGS

Silo 5

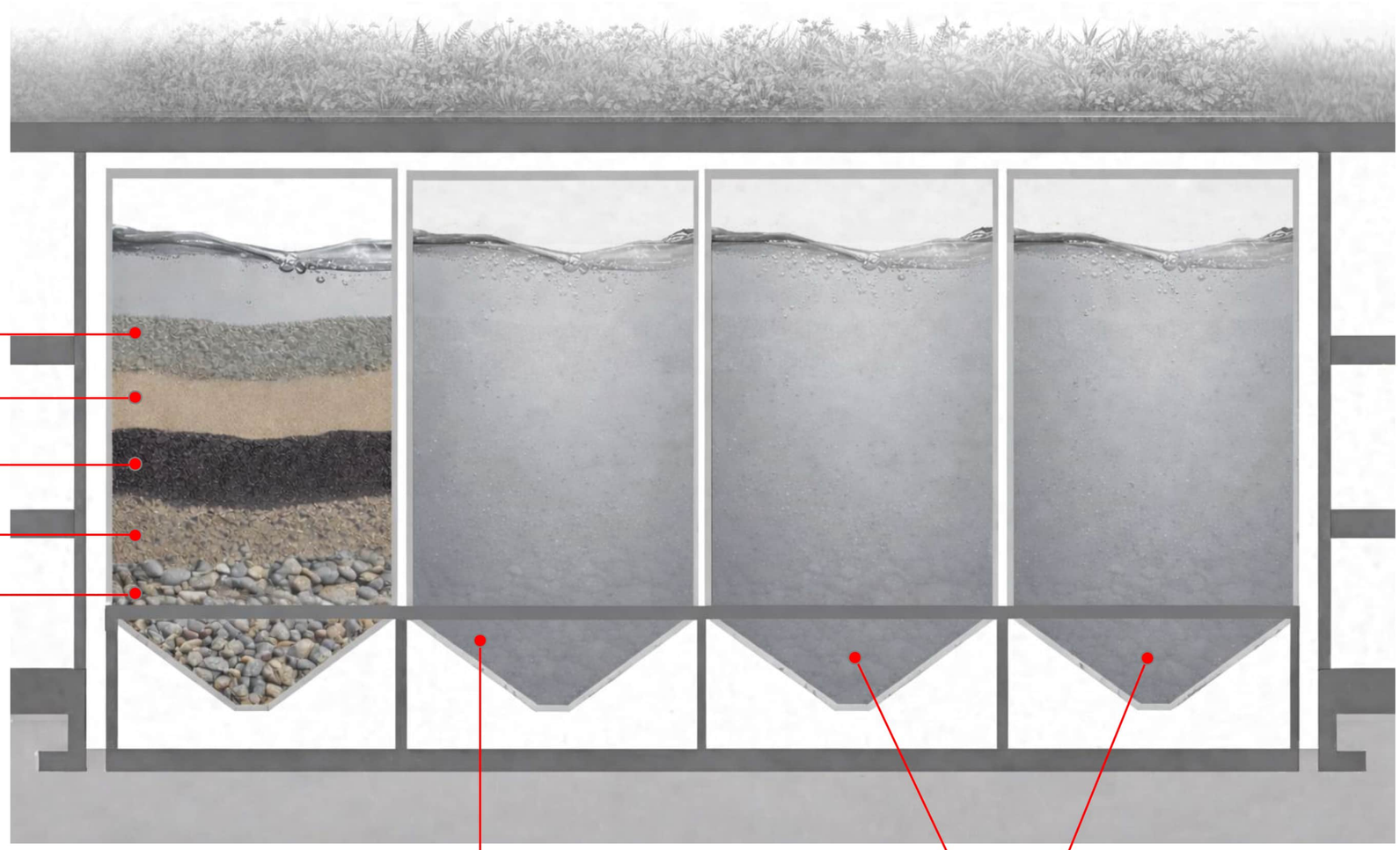
Silos 1-4

Silos 6-8

SAVA'S FLOW

REUSED BUILDINGS

Silos 1-4



Silo 1 and 2 -
Natural water filtering – system

Silo 1 contains a natural filtration system composed of multiple layers. The filtered water is reused within the building for flushing toilets, cleaning terraces, and other utility purposes.

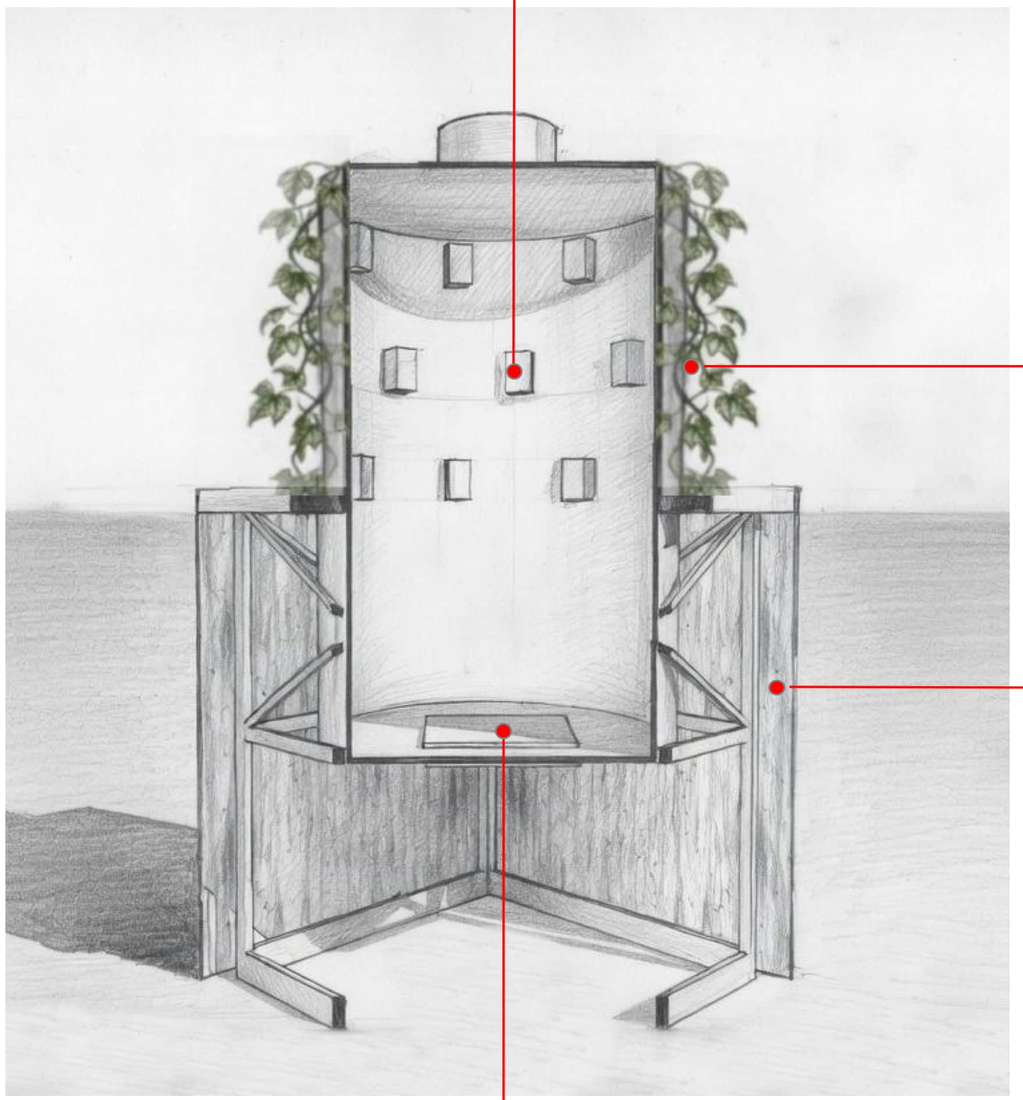
The irrigation system activates automatically as the temperature rises. Water evaporating from the green roof helps cool the building

REUSED BUILDINGS

Silo 5

Silo 5

Silo 5 is reused as a bird nesting structure. Birdhouses with openings of various sizes are installed in the silo. The structure is concealed with Accoya panels and hanging vegetation.



REUSED BUILDINGS

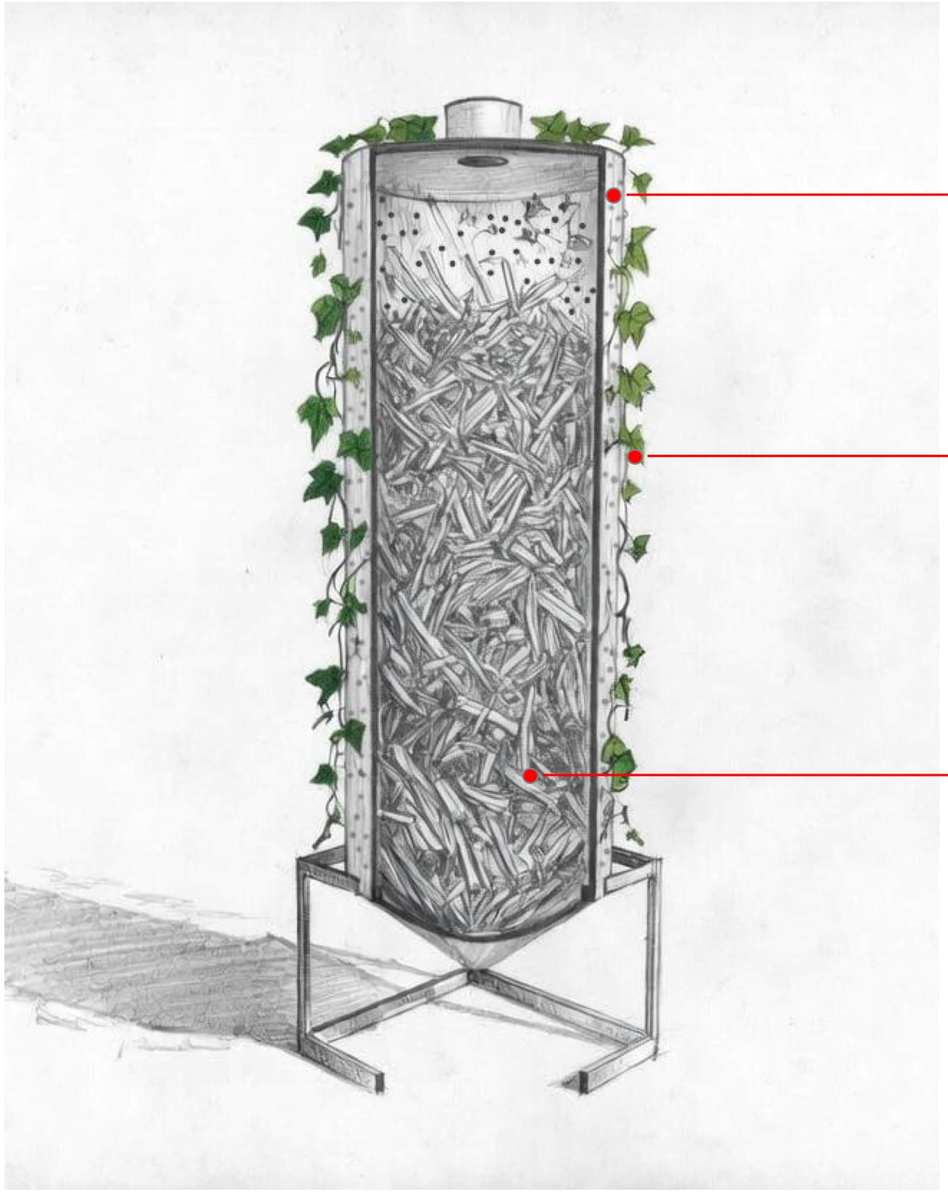
Silos 6-8

Silo 6-8

Silos 6–8 are reused as insect hotels to support biodiversity. The insect hotels provide overwintering sites for insects and nesting sites during the summer.

Holes are drilled into the silos for insects, and the silos are filled with wood chips and logs.

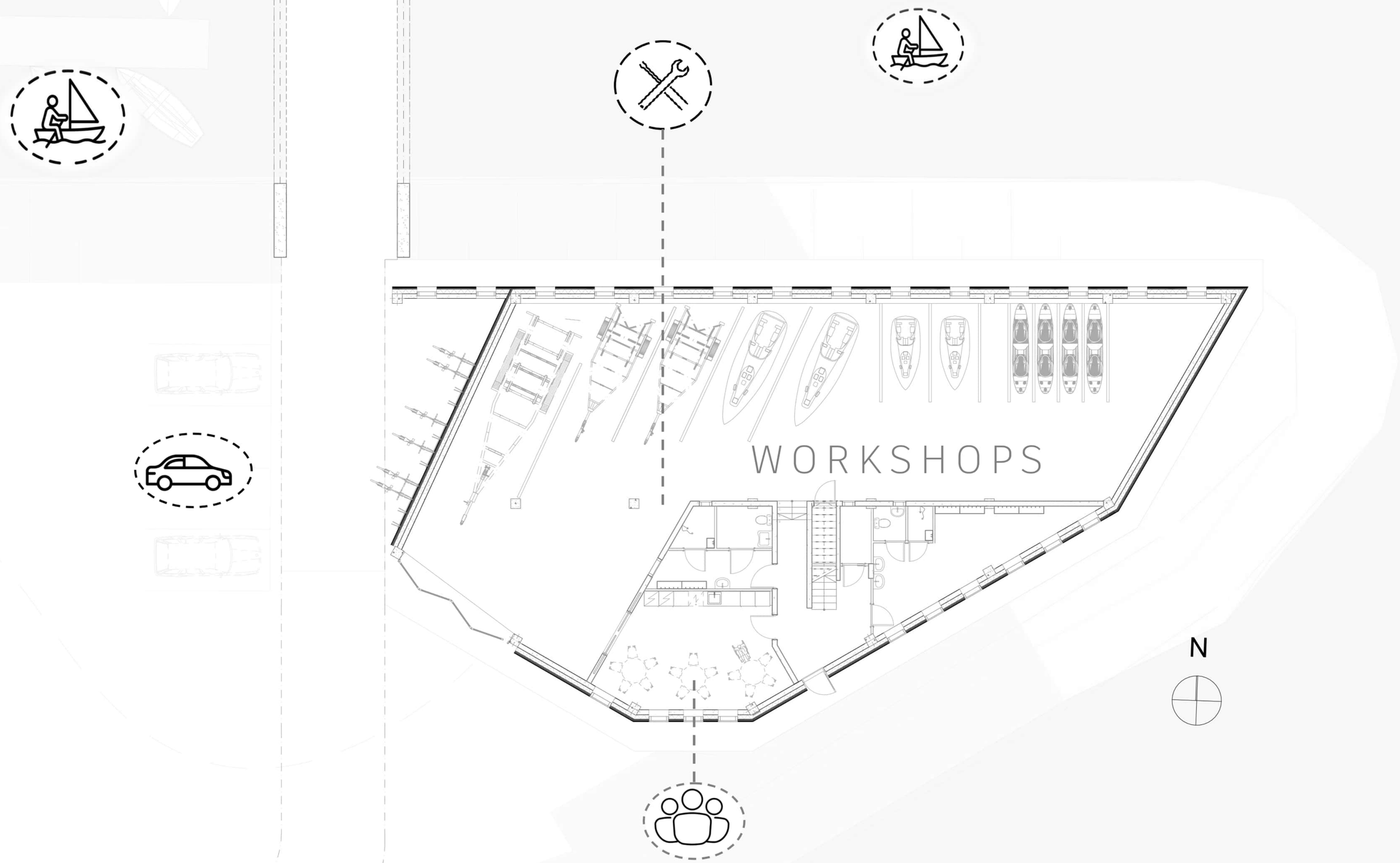
The silos are covered with hanging vegetation.



ZONE B

YACHT CLUB

GROUND FLOOR



Ground Floor

The ground floor accommodates flexible storage spaces that are designed to transform during the off-season into workshops supporting light maintenance and repair activities.

Above, the mezzanine level provides staff and user facilities, including break areas for dining as well as social and sanitary spaces for washing and changing.

Together, these levels form a functional and adaptable service core that supports the building's year-round use.

1st FLOOR

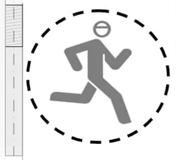
1st Floor

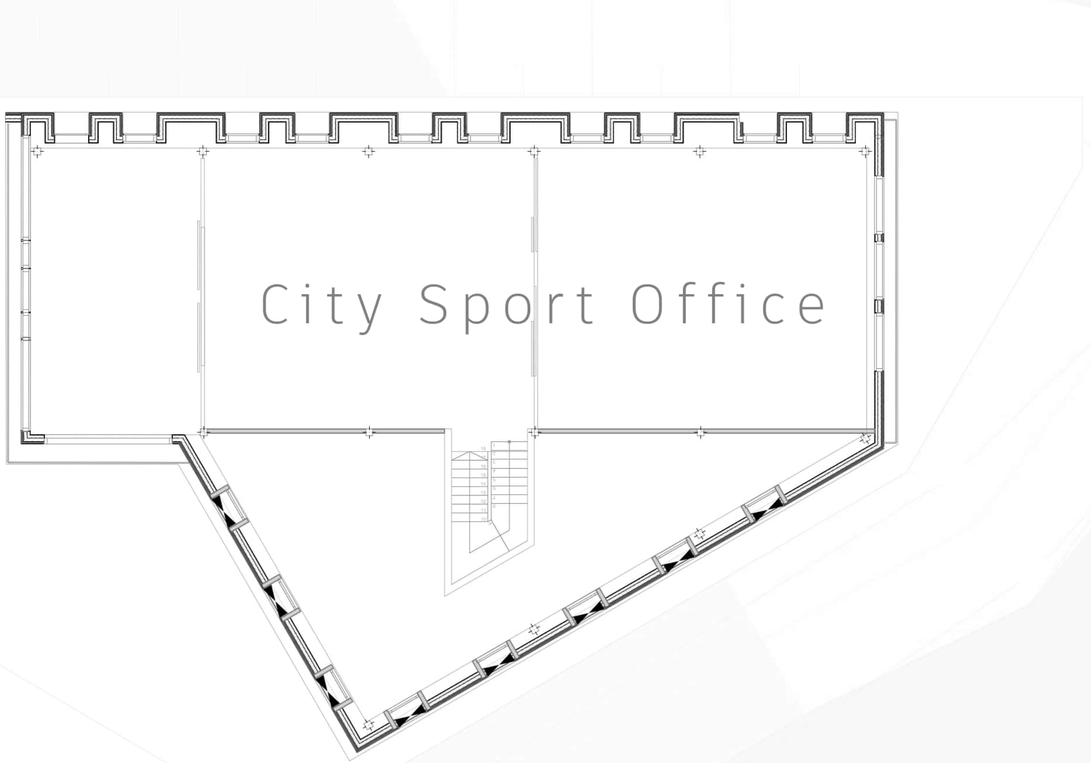
This floor accommodates a dedicated athletes' lounge complemented by e-sailing simulators and billiard tables, creating a social and recreational hub for users.

At one end of the building, a warm and atmospheric café is paired with a small pro store offering sailing-related equipment and accessories.

Wrap-around terraces extend the café spaces outdoors, providing generous seating areas and offering panoramic views over the surrounding waterscape, strengthening the connection between the interior spaces and the maritime environment.

2nd FLOOR





2nd Floor

The top floor is owned by the city and is designed to accommodate the municipal office responsible for sports and recreational services.

CAFÉ AT 1st FLOOR

SECTION

Fire safety

Fire Safety and Protection Measures

The section outlines a robust fire-safety strategy integrated into the building structure.

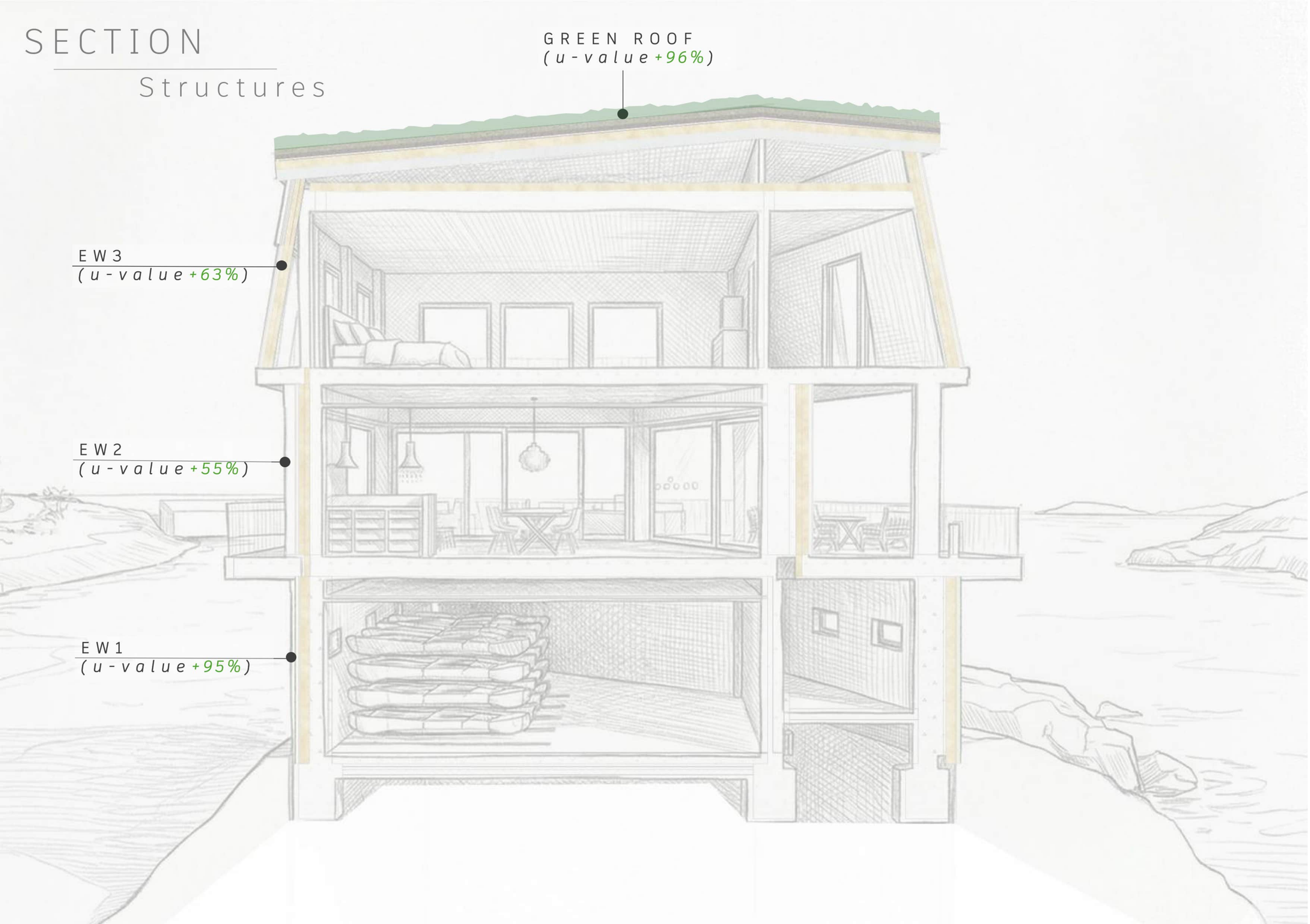
All floor assemblies are designed to achieve an REI 60 fire resistance rating, ensuring structural integrity and compartmentalization in the event of fire.

The building is equipped with an addressable fire detection system, allowing for precise identification of fire locations.

Smoke detectors are installed at a rate of one unit per 60 m², providing early detection and enhancing occupant safety throughout the building.

SECTION

Structures



The building envelope was improved with new insulation across all key structures.

The green roof achieves a 96% improvement in U-value, greatly reducing heat loss.

Enhanced external wall assemblies also show significant gains, with EW1 improving by 95%, EW2 by 55%, and EW3 by 63%, resulting in a more energy-efficient and thermally consistent structure..

SECTION

Structures

The building envelope was improved with new insulation across all key structures.

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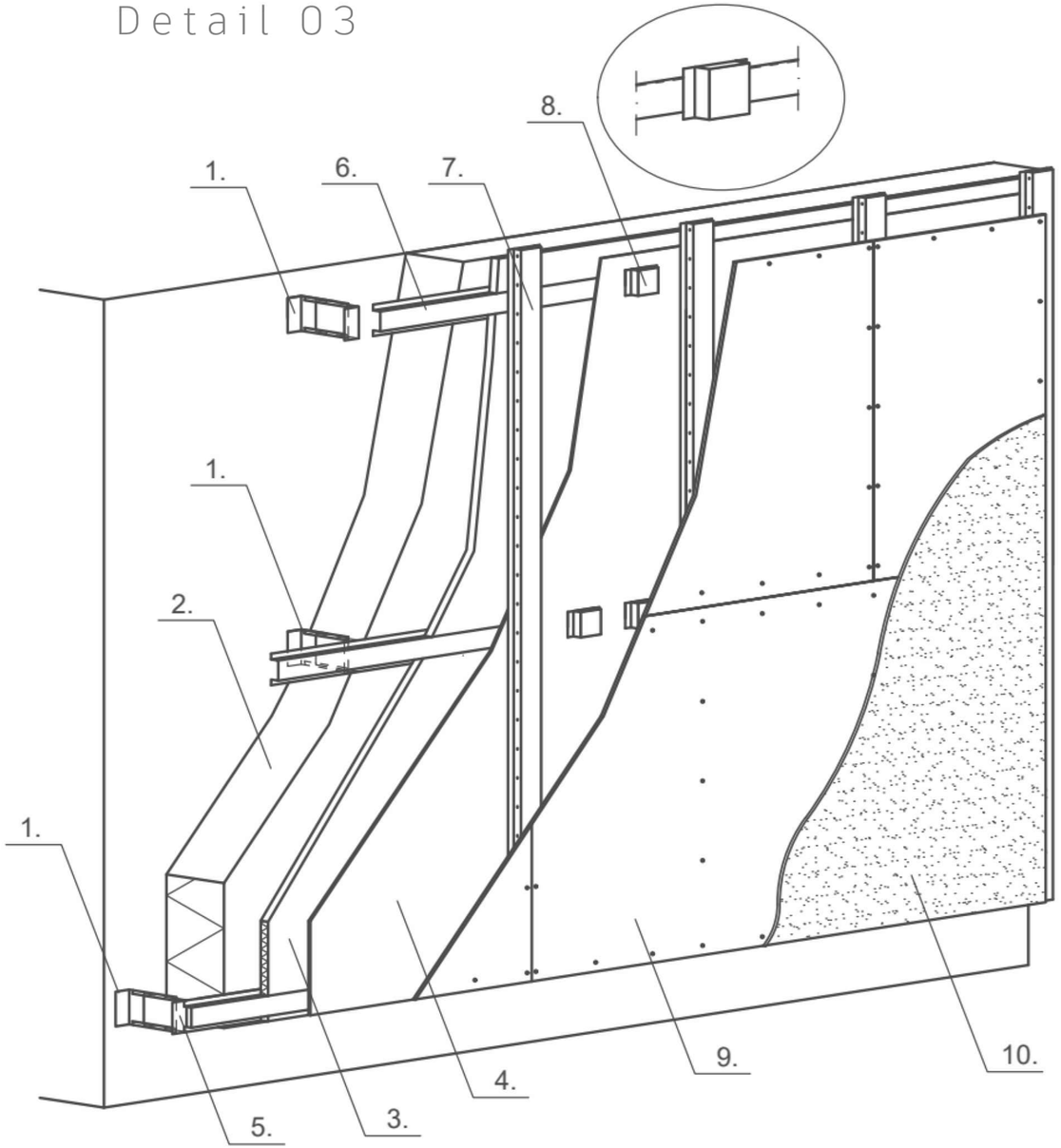
Enhanced external wall assemblies also show significant gains, with EW1 improving by 95%, EW2 by 55%, and EW3 by 63%, resulting in a more energy-efficient and thermally consistent structure..

SECTION

Detail 03



DET 03

1. weber SerpoVent Wall Bracket, part A
2. Thermal insulation, e.g. ISOVER PREMIUM 33 / EXTREME 31
3. Additional insulation, e.g. ISOVER SKL 25 mm
4. Wind barrier board, e.g. Gyproc GTS or Cembrit Windstopper Basic/Extreme.
   Fixing to be carried out in accordance with the board manufacturer's instructions.
5. weber SerpoVent Wall Bracket, part B
6. weber SerpoVent Top Profile
7. weber SerpoVent Top Profile + weber Mesh Tape
8. Support piece for lower and upper edges of the board (L = 100 mm)
9. Permabase cement board, 12.5 × 900 × 1800 mm
10. weber SerpoVent Double-Layer Render System or other façade finishing material

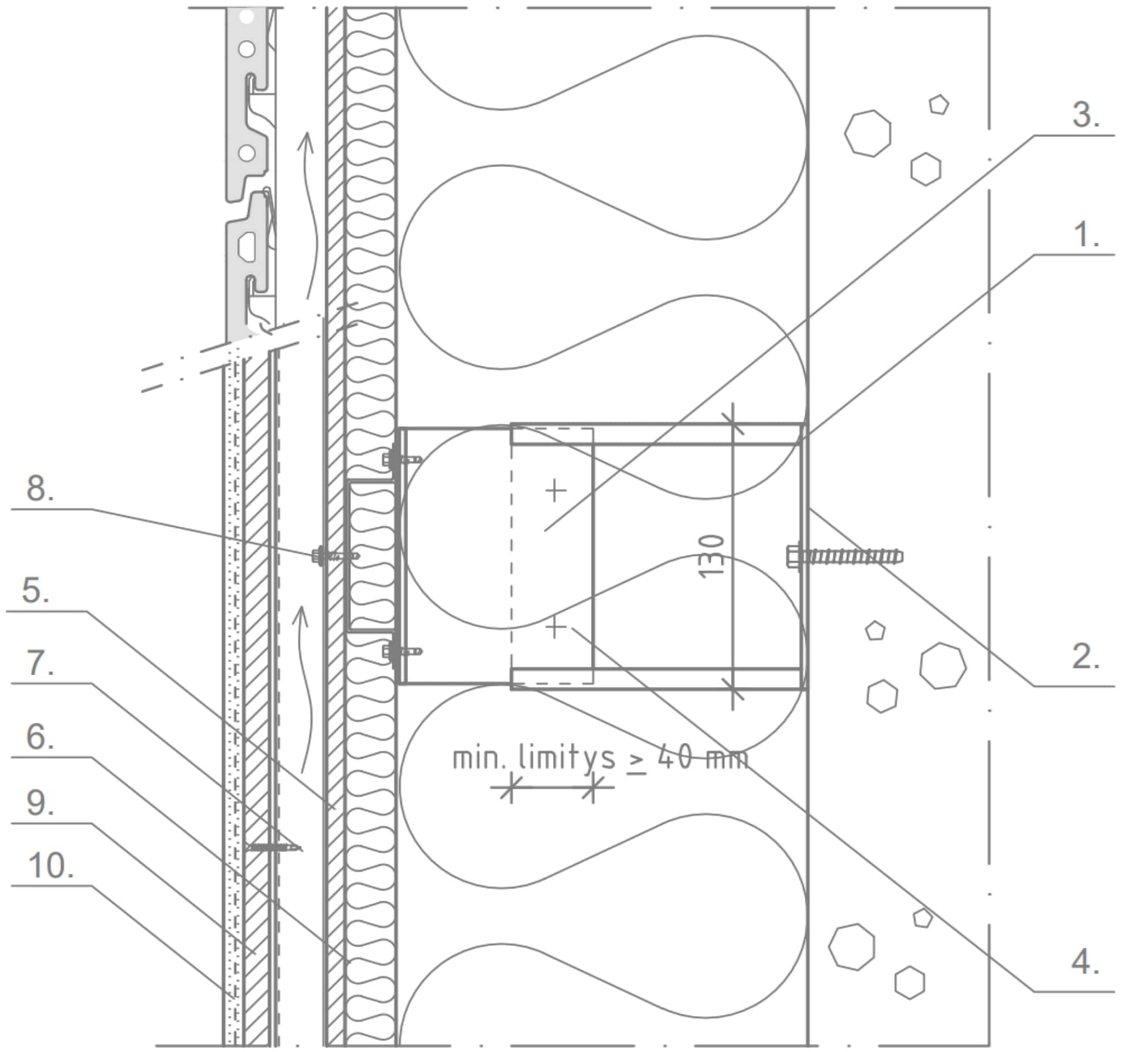
Acoustic Performance of the System:

Rw = 65 / 67 / 70 dB
Rw + C = 63 / 64 / 67 dB
Rw + Ctr = 59 / 59 / 62 dB

The rendered façade system is installed on top of a concrete shell with a thickness of 70 / 110 / 150 mm.

SECTION

Detail 03



The substrate shall be levelled and aligned as required using weber REP repair mortars.

1. weber SerpoVent Wall Bracket, part A
   thermal insulation, e.g. ISOVER PREMIUM 33 / EXTREME 31
2. weber Concrete Screw / weber Screw System, selected according to the substrate
3. weber SerpoVent Wall Bracket, part B
4. weber Self-Drilling Screw 5.5, 2 pcs per connection
5. Wind barrier board, e.g. Gyproc GTS or Cembrit Windstopper Basic/Extreme.
   Fixing to be carried out in accordance with the wind barrier board manufacturer's instructions.
6. weber SerpoVent Top Profile or weber SerpoVent Z-Stud, fixed with weber Self-Drilling Screws 5.5, 2 pcs per bracket, one to each flange.
   Thermal insulation, e.g. ISOVER SKL 25 mm,
   and at the profile location ISOVER KH strip 30 mm.
7. weber SerpoVent Top Profile + weber Mesh Tape
8. weber Self-Drilling Screw 5.5, 2 pcs per connection, one to each flange
9. Permabase cement render board
10. SerpoVent Double-Layer Render System or other façade cladding material

Acoustic performance of the system:

Rw = 65 / 67 / 70 dB
Rw + C = 63 / 64 / 67 dB
Rw + Ctr = 59 / 59 / 62 dB

The rendered board system is installed on top of a concrete shell with a thickness of 70 / 110 / 150 mm.

STRUCTURES

EW1

STRUCTURE FROM OUTSIDE TO INSIDE:

1.	10 mm	Two coat render
2.	12.5 mm	Permabase render board
3.	50 mm	SerpoVent hat profile 70 mm
4.	30 mm	ISOVER Facade HH3 wind barrier insulation
5.	175 mm	ISOVER Premium 33 insulation + Supporting wall brackets @ 1200/900 mm
6.	**250 mm**	**Existing Reinforced concrete** structural wall + Interior finish as per room schedule

CLASSIFICATIONS

U-value	0.15 W/m^{2}K **(+95%)**
Fire class	REI 60 (fire from the outside) REI 60 (fire from the inside)
GWP, manufacturing	100,82 kg CO_2e/m^2 (A1-A3)
GWP, carbon storage	-137.04 kg CO_2e/m^2 (D4)
Airborne sound insulation	Rw 72 dB, Rw+Ctr 67 dB, Rw+C 70 dB

EW2

STRUCTURE FROM OUTSIDE TO INSIDE:

1.	28 mm	Exterior Cladding Panel, Accoya
2.	50 mm	Ventilation + battens
3.	100 mm	ISOVER Facade HH3 wind barrier insulation
4.	**100 mm**	**Existing insulation** EPS 100 mm
5.	**200 mm**	**Existing reinforced concrete** structural wall + Interior finish as per room schedule

CLASSIFICATIONS

U-value	0.15 W/m^{2}K **(+55%)**
Fire class	REI 60 (fire from the outside) REI 60 (fire from the inside)
GWP, manufacturing	78,00 kg CO_2e/m^2 (A1-A3)
GWP, carbon storage	-34,774 kg CO_2e/m^2 (D4)
Airborne sound insulation	Rw 57 dB, Rw+Ctr45 dB, Rw+C 51 dB

EW3

STRUCTURE FROM OUTSIDE TO INSIDE:

1.	28 mm	Exterior Cladding Panel, Accoya
2.	50 mm	Ventilation + battens
3.	100 mm	ISOVER Facade HH3 wind barrier insulation
4.	(20 mm)	(Erased material, trapezoidal sheet metal)
5.	80 mm	**Existing** insulation EPS mm
6.	13 mm	**Existing** Gyproc GN 13 wall + Interior finish as per room schedule

CLASSIFICATIONS

U-value	0.15 W/m^{2}K **(+63%)**
Fire class	REI 60 (fire from the outside) REI 60 (fire from the inside)
GWP, manufacturing	78,00 kg CO_2e/m^2 (A1-A3)
GWP, carbon storage	-34,774 kg CO_2e/m^2 (D4)
Airborne sound insulation	Rw 57 dB, Rw+Ctr45 dB, Rw+C 51 dB

GREEN ROOF

STRUCTURE FROM OUTSIDE TO INSIDE:

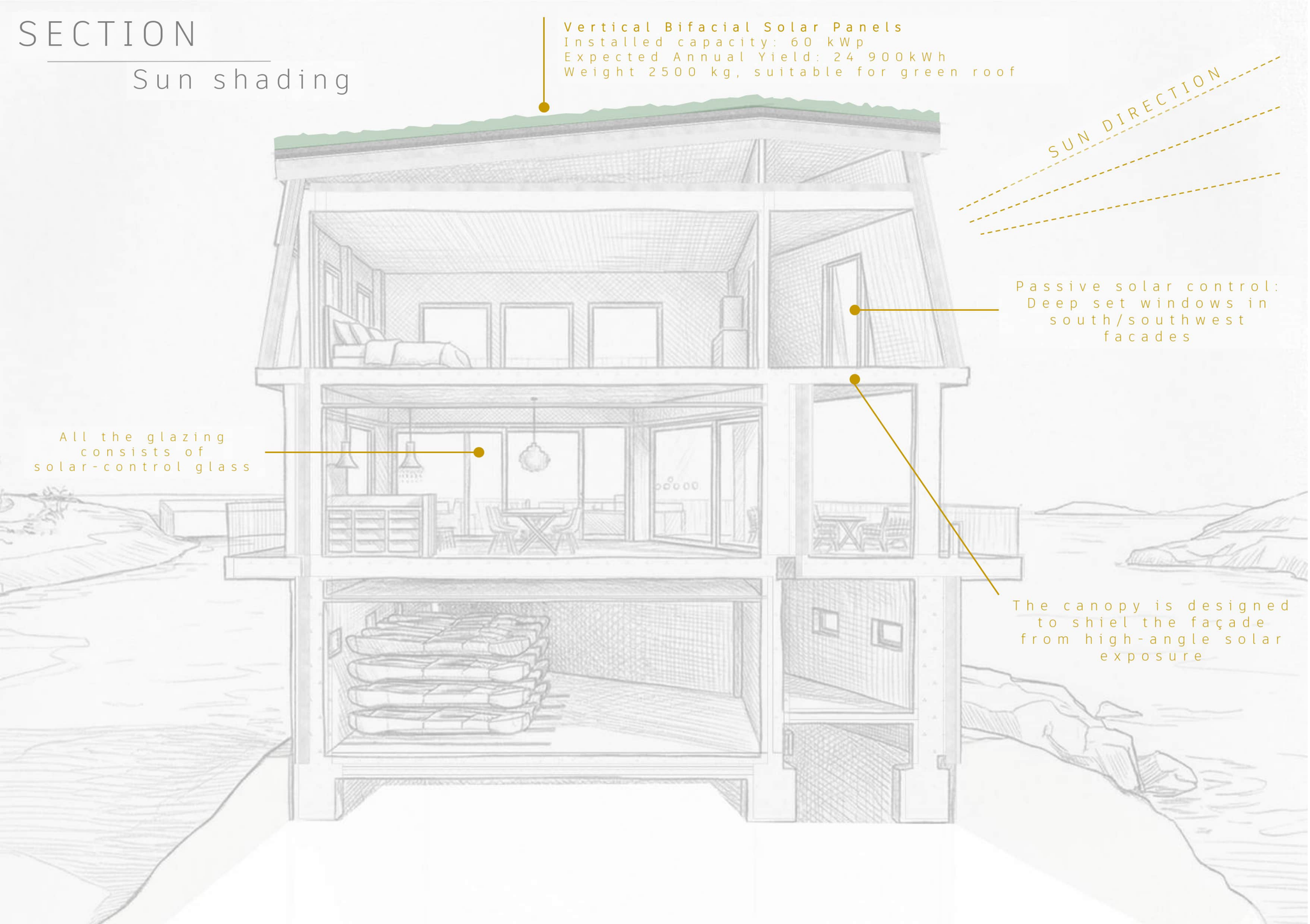
1.	100 mm	Greenery
2.	80 mm	Growing medium + Filter fabric
3.	30 mm	Drainage Layer (profiling mat) + Root protection layer
4.	5 mm	Waterproofing membrane
5.	160 mm	XPS-insulation
6.	200 mm	**Existing concrete roof structure** + Interior finish as per room schedule

CLASSIFICATIONS

U-value	0.19 W/m^{2}K **(+96%)**
Fire class	REI 60 (fire from the outside) REI 60 (fire from the inside)
GWP, manufacturing	24,00 kg CO_2e/m^2 (A1-A3)
GWP, carbon storage	0 kg CO_2e/m^2 (D4)
Airborne sound insulation	DnT,w 55 dB

SECTION

Sun shading



Integrated Sun-Shading and Solar Solutions

The building section illustrates a passive solar design strategy that combines shading, energy production, and daylight control.

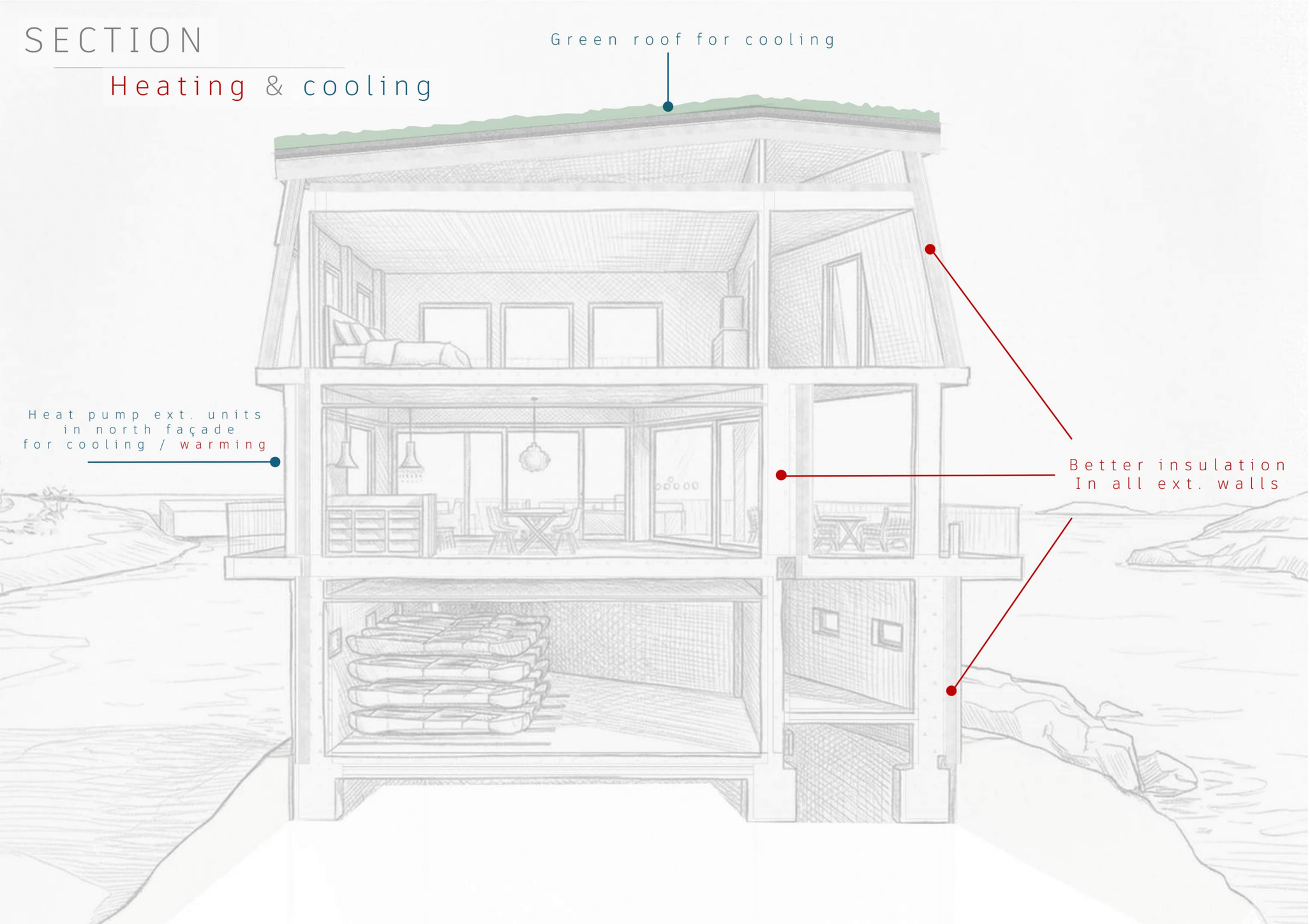
A canopy and deep-set windows protect the façade from high-angle solar exposure, reducing overheating while maintaining natural light.

Vertical bifacial solar panels on the roof provide renewable energy production while also contributing to shading.

Smart-control glazing further regulates solar gain, improving indoor comfort and energy efficiency throughout the year.

SECTION

Heating & cooling



Efficient Heating and Cooling Strategies

The section highlights an integrated approach to thermal comfort using passive and active systems.

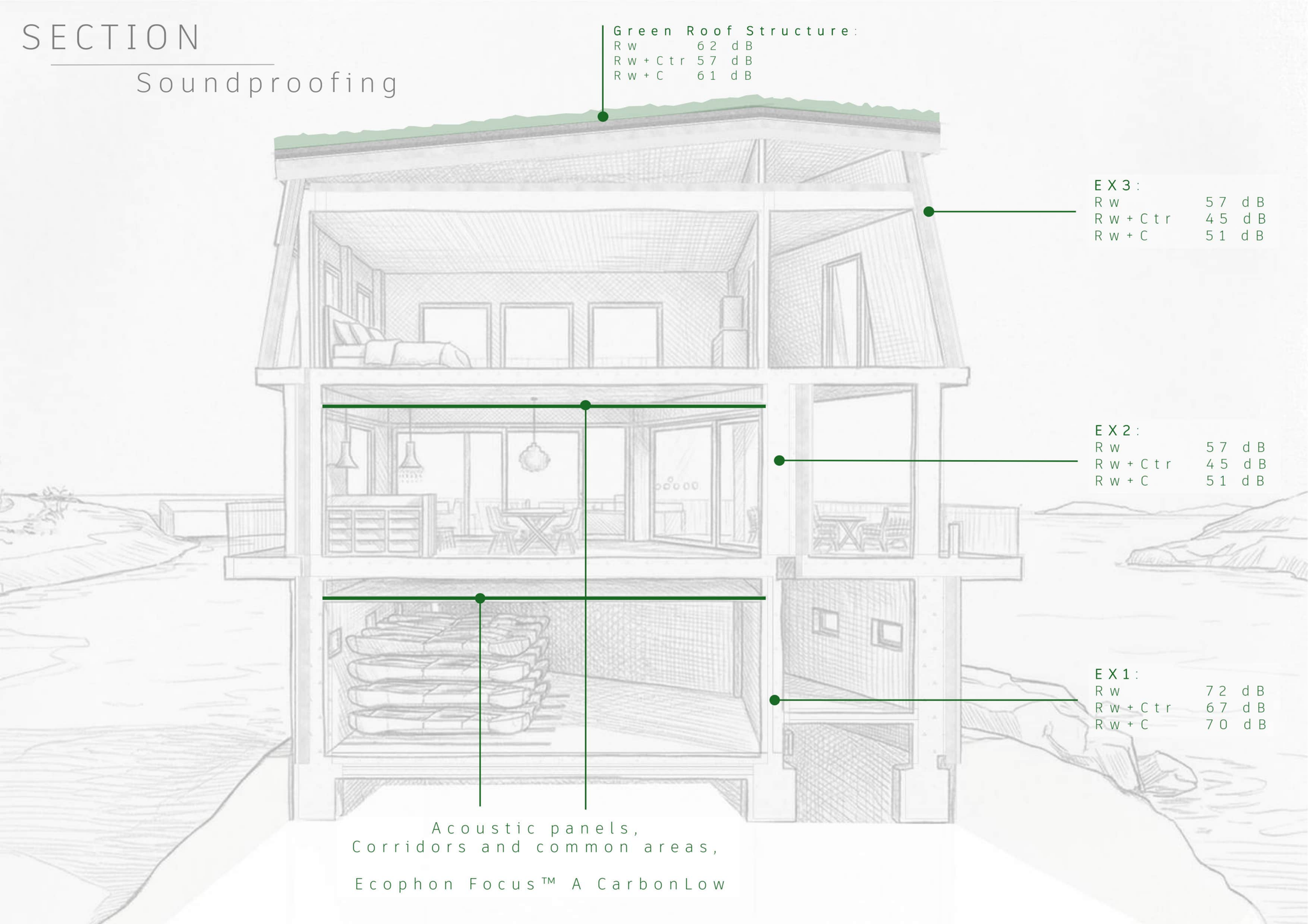
A green roof improves thermal insulation and supports natural cooling by reducing heat gain

High-performance insulation in all exterior walls minimizes heat loss in winter and overheating in summer.

Heat pump external units located on the north façade provide efficient heating and cooling, ensuring stable indoor temperatures with reduced energy demand throughout the year.

SECTION

Soundproofing



Acoustic and Soundproofing Solutions

The section demonstrates a comprehensive soundproofing strategy designed to reduce both airborne and structural noise.

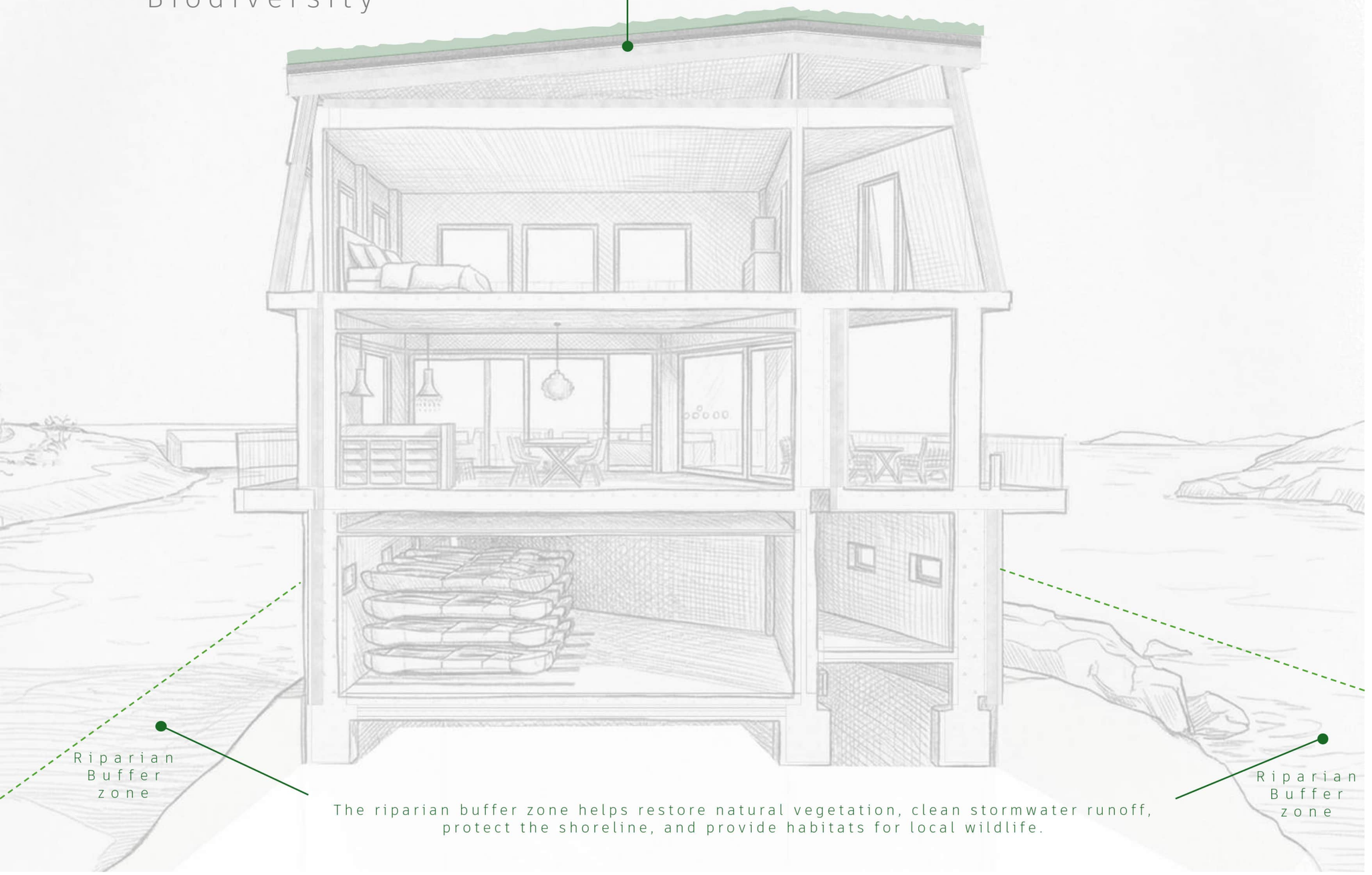
The green roof structure contributes to acoustic mass and dampens external sound transmission, including aircraft noise.

High-performance exterior wall assemblies provide effective airborne sound insulation across all levels.

Internally, acoustic panels installed in corridors and common areas absorb sound and reduce reverberation, ensuring a quiet and comfortable indoor environment throughout the building.

SECTION

Biodiversity



The riparian buffer zone helps restore natural vegetation, clean stormwater runoff, protect the shoreline, and provide habitats for local wildlife.

Biodiversity and Ecological Integration

The section highlights strategies that enhance local biodiversity and strengthen the connection between the building and its natural surroundings.

A green roof supports plant life, promotes insect habitats, and contributes to ecological balance while improving microclimatic conditions.

Riparian buffer zones along the shoreline help restore native vegetation, filter stormwater runoff, protect against erosion, and provide habitats for local wildlife.

Together, these measures support resilient ecosystems and encourage sustainable coexistence between the built and natural environments.

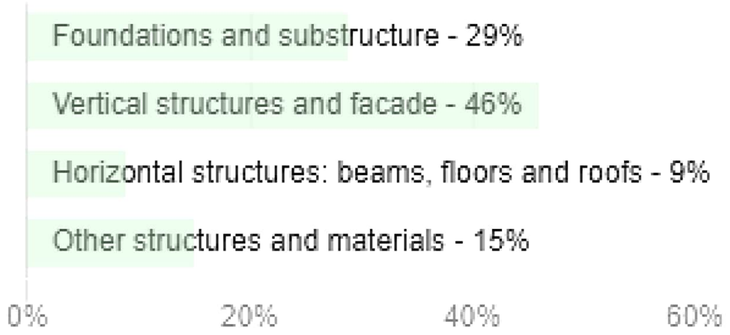
Carbon and Sustainability Summary

Calculations: Zone B

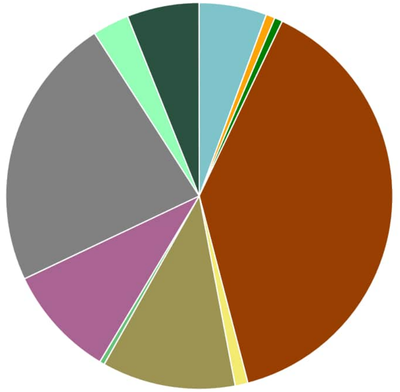
The Yacht Club is renovated rather than rebuilt, using a new high-performance façade, insulation upgrades and a green roof to extend its life with minimal carbon impact.

A new wooden pedestrian bridge provides a warm, low-carbon connection between the Yacht Club and the main complex, enhancing access and strengthening the relationship with the riverfront.

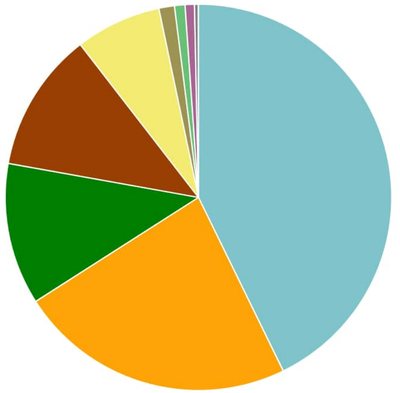
Cradle to gate impacts (A1-A3)	kg CO_2e/m^2
(< 315) A (315-364) B (364-413) C (413-461) D (461-510) E (510-559) F (> 559) G	267



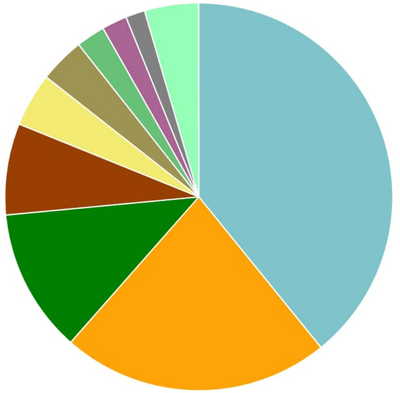
Global warming t CO2e - Life-cycle stages



Global warming t CO2e - Classifications

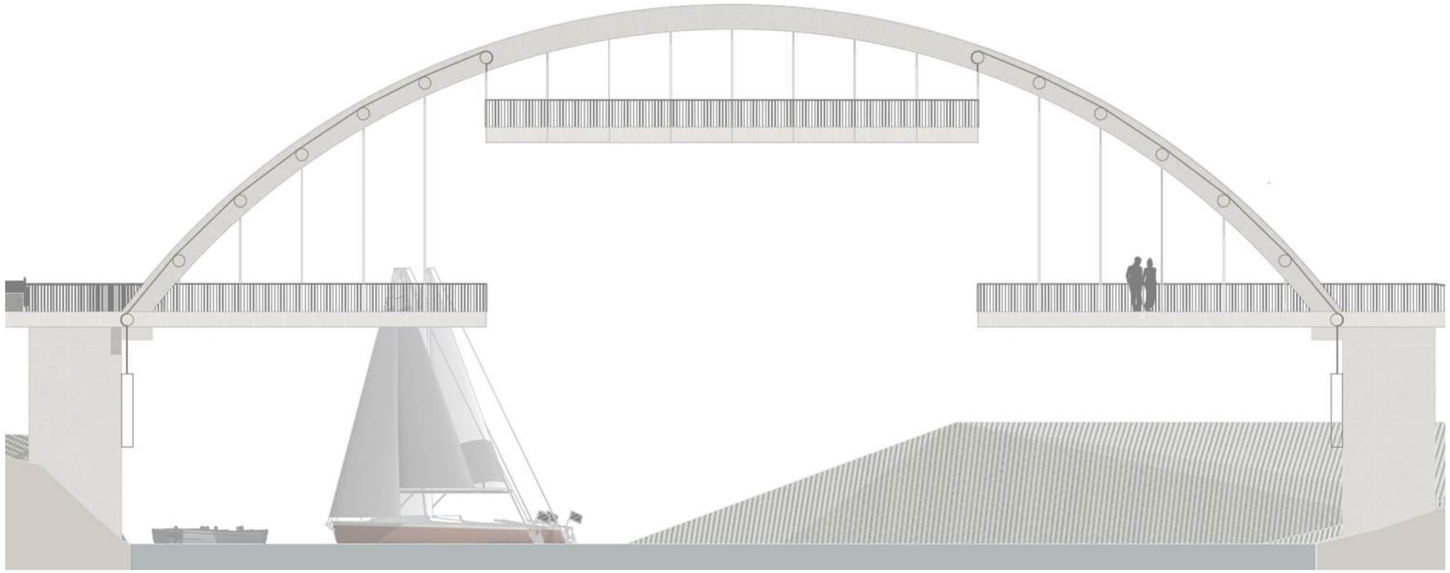


Global warming t CO2e - Resource types



LOUNGE AT 1st FLOOR

PEDESTRIAN BRIDGE



Technical Overview: Arc-Suspension Drawbridge Mechanism

System Components

The bridge utilizes an integrated lift mechanism to provide clearance for maritime traffic. The primary technical elements include:

Steel Wire:
The primary tension member used to hoist the central bridge deck section.

Steel Wheels:
A series of pulleys or sheaves mounted along the curvature of the structural arch. These guide the wire and distribute the mechanical load during operation.

Engine for Pulling the Wire:
A motorized winch system located within the bridge piers that provides the mechanical force required to actuate the lift.

Mechanical Operation

The bridge functions as a specialized drawbridge where the deck is vertically retractable. The process follows these technical steps:

Tension Application:
The engine engages to pull the steel wire through the internal pier housing.

Guided Elevation:
The wire travels over the steel wheels fixed to the arch, converting horizontal or vertical pull into an upward lift on the bridge deck.

Clearance Provision:
As the deck section is raised toward the apex of the arch, it creates a high-clearance opening for vessels, such as the sailboat shown in the diagram.

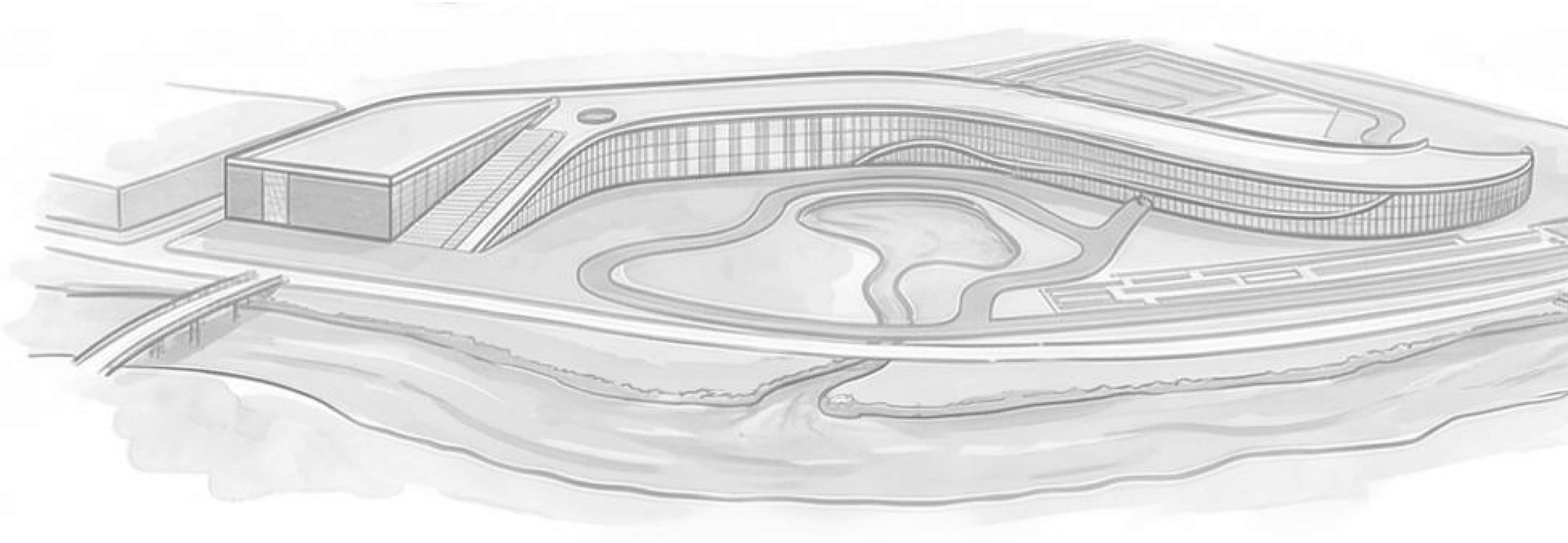
Design Considerations

Load Distribution: The arch serves as the primary load-bearing structure, supporting both the dead weight of the deck and the dynamic forces during the lifting process.

PEDESTRIAN BRIDGE

Sava’s Flow

Waves of Heritage & Harmony



BELGRADE

ARCHITECTURE CONTEST 2026

Artificial intelligence used to help finalize visualization images