We will Keep Learning

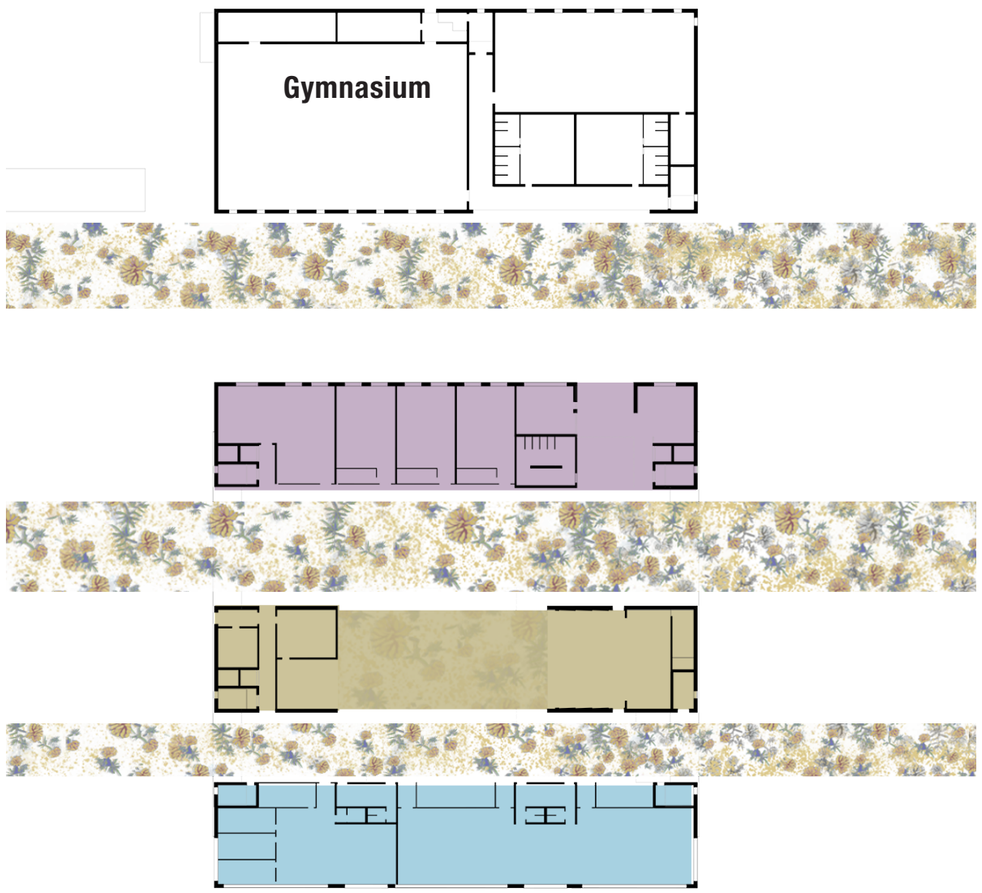
Future school for Ukraine

Senior school and junior school can be closed

The theme of adaptive reuse and design

The theme of adaptive reuse and design
This proposal is as much a strategy to empower the local schools, their children, and communities as a design of good, useable spaces that are safe for children and allow for a variety of classes and activities.
The adaptive reuse design strategy has been interpreted as follows. Each level allows for a different form of engagement of the community and children with the school.

Level One is a fixed structure of a column grid with stabilising cores, prefabricated by timber companies and assembled on site, determining the main shape of the school building.
Level two consists of the walls and facades made of local materials. The school designers can determine the dimensions and opening sizes and placement to make different class sizes and the general lay out of the school.
Three is site-specific, encouraging community participation with landscaping, garden walls, and furniture made from recycled or locally found materials. This level can be adapted and designed on site. The proposal in presented here is of one of the many scenarios.
The school fosters unity through open public spaces and individuality through smaller learning pods. Green roofs and gardens ensure children see green spaces from wherever they are in the building.
The spaces are available for both the community and schoolchildren year-round, with flexible walls allowing for adaptable class sizes.



Shared facilities

Senior school

Junior school and medical centre

The roads that link the school to the community

Concept

The proposal includes three 58 by 12-meter buildings (the same as traditional Ukrainian housing block dimensions) connected by two atriums and a central dining area underneath the middle one. The atriums and public spaces form the design concept, linking the school to its surroundings and creating three axes of social activity. All atriums are paved with patterns, semi green, extending to link the school to the neighbourhood, using an embroidery and fabric metaphor. The marigold-inspired pavement symbolises commu-nity unity, creating a fun and safe space. The atriums allow views through the school and into the community, enhancing accessibility. The four-story block flanking the atrium houses the senior school, while the lower block under the grass roof contains the junior school. The central four-story block has shared facilities on the lower two floors and classrooms on the top two. The senior school entrance is perpendicular to the atrium. There is a service entrance near the cafeteria. The junior school entrance is through a smaller lobby on the opposite side.

The gymnasium, a separate building with gym halls on the lower floors and a dormitory on top, that looks out over a grass roof. The football pitch is behind the sports building. This configuration is consistent across all sites, with the landscape adapted to the dif-ferent situations.

The lobby and road between the gymnasium and main school building connect the atriums to the community, forming the school's access. Atrium paving extends into the community, emphasising the role of the school. The atriums provide access to classes, the sports hall, and vertical circulation. The structural grid system allows flexible wall placement. The integrated shelter serves as a lounge and media centre. Parts of the school can be closed off on weekends for theatre use, with classes and schools opening independently.

Access

Site A: The main car entrance leads directly to parking, with quiet roads for pedestrians, cyclists, and emergency traffic paved with porous gravel. Bicycle storage is next to the sports fields, with glass houses and allotments around the junior school.

Site B: The junior school faces south, with a marigold-paved road linking it to the nursery school. Sports fields are separated from the road by hedges and trees, with glass houses and vegetable

Чорнобривців

Чорнобривців насіяла мати
У своїм світанковім краю
Та й навчила веснянки співати
Про квітучу надію свою.

Приспів:
Як на ті чорнобривці погляну,
Бачу матір стареньку,
Бачу руки твої, моя мамо,
Твою ласку я чую, рідненька. (весь куплет – 2)

Я розлуки та зустрічі знаю,
Бачив я у чужій стороні.
Чорнобривці із рідного краю,
Що насіяла ти навесні.

Прилітають до нашого поля
Із далеких країв журавлі.
Розквітають і квіти, і доля
На моїй українській землі.

Marigolds

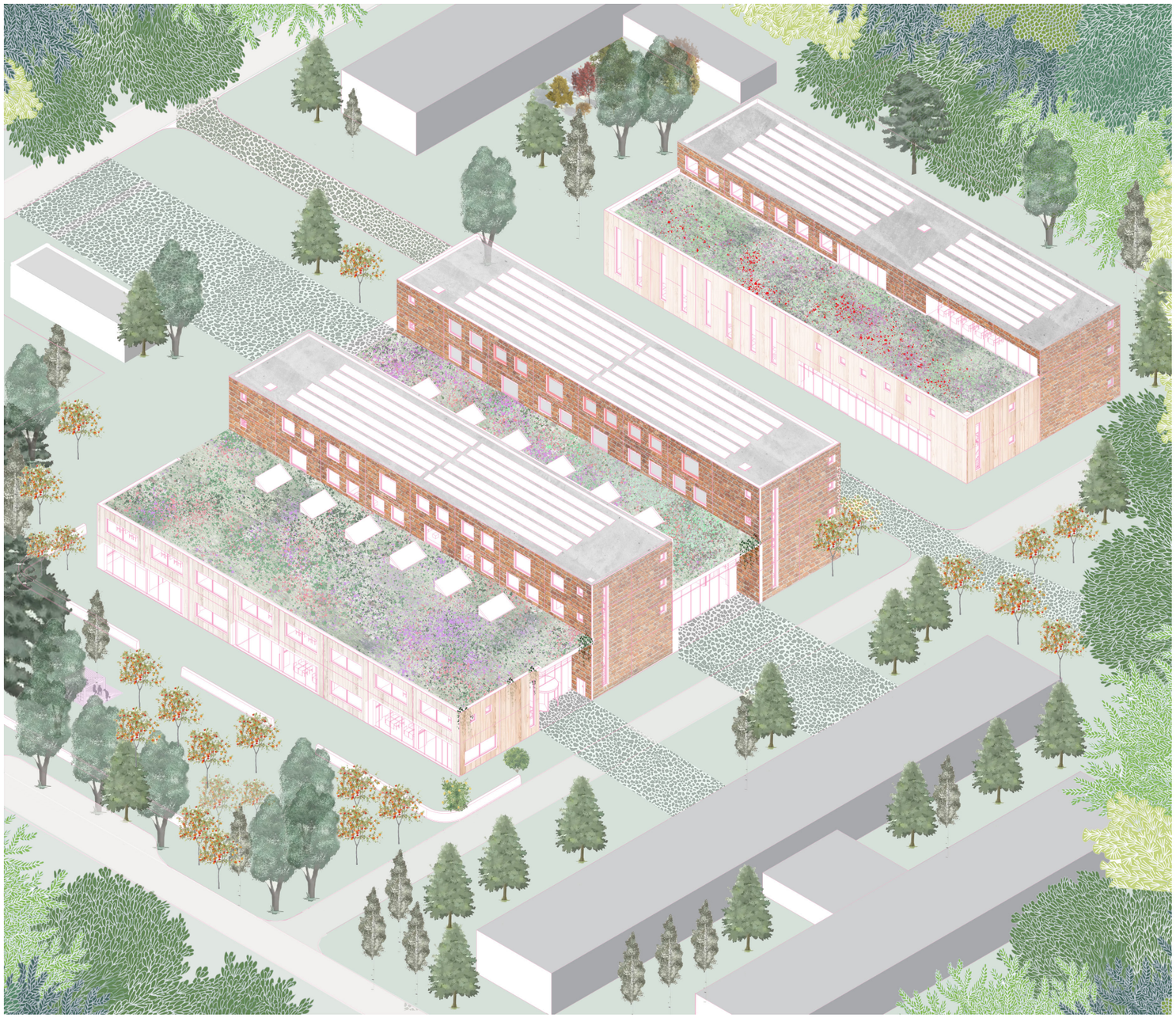
Marigolds, my mother she has planted
In the early daybreak of her years
And did teach me to sing the songs of spring
About the blossoming of her own hopes.

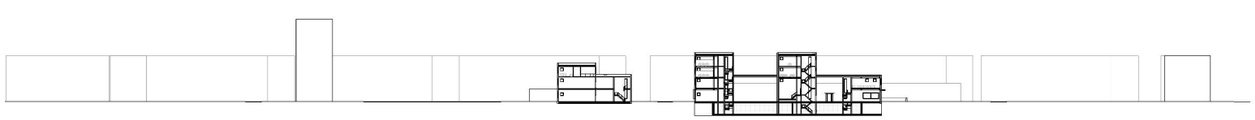
Chorus:
When upon the marigolds I look, there
I see my elderly mother,
I see your hands, my sweetest mother,
Your affection, I do feel, Oh dear heart. (whole chorus 2x)

Our parting and meeting I do know,
I’ve seen them there, in a foreign land.
Marigolds from my native country,
That you’ve had planted in the spring.

Flying out here to our native meadows
From the distant lands are the cranes.
Blossom do the flowers and our fate here
Oh, on my dear Ukrainian land

Ukrainian Folksong





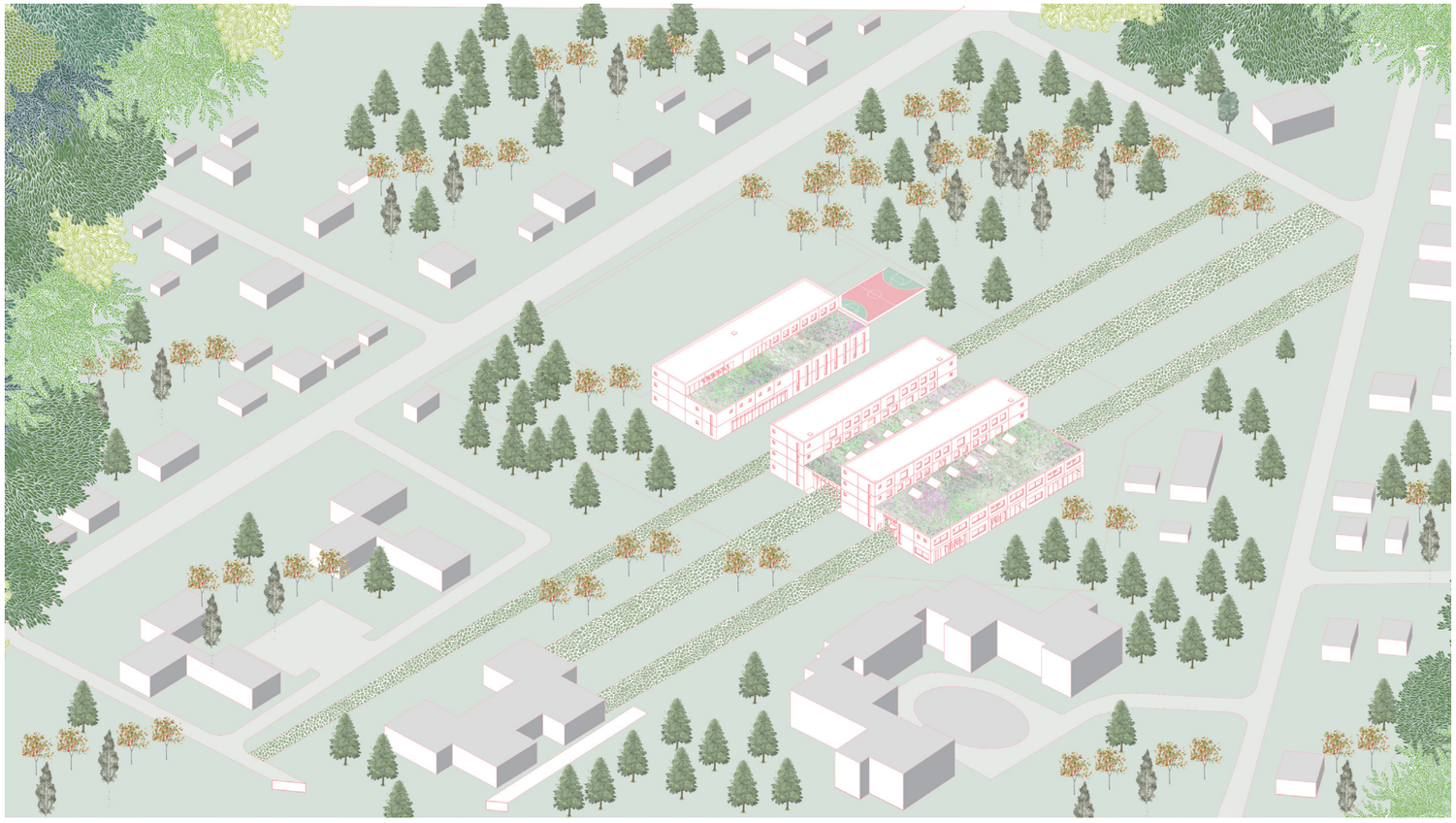
The Different Sites

Site A

gardens between marigold roads.

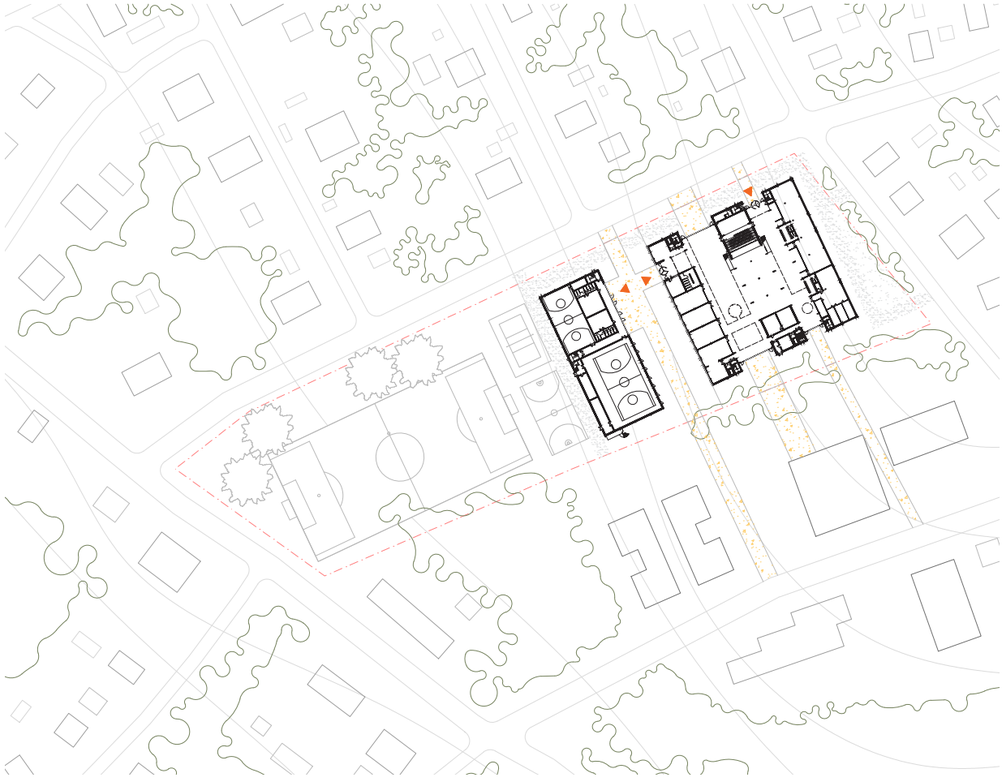
Site C: A long, narrow site just wide enough for the parallel blocks. The surrounding flowers and greenery are therefore concentrated at the end continuing from the surroundings. The

School stadium
Training ground
Training ground
Bicycle shed
Bus shed
Parking
Parking
Marigolds walk
Recreation
Orchard
Marigold walk
Orchard
Marigold walk
Greenhouses
Orchard
Orchard
Recreation



Site B

blocks step down with the landscape slope, with sports fields on the flatter southern part. Bicycle and car access are from the busy road, with the rest of the site pedestrianised with porous paving.
The theatre building's ground floor, shaped by the sloped theatre floor, creates a semi-enclosed café and eating area accessible

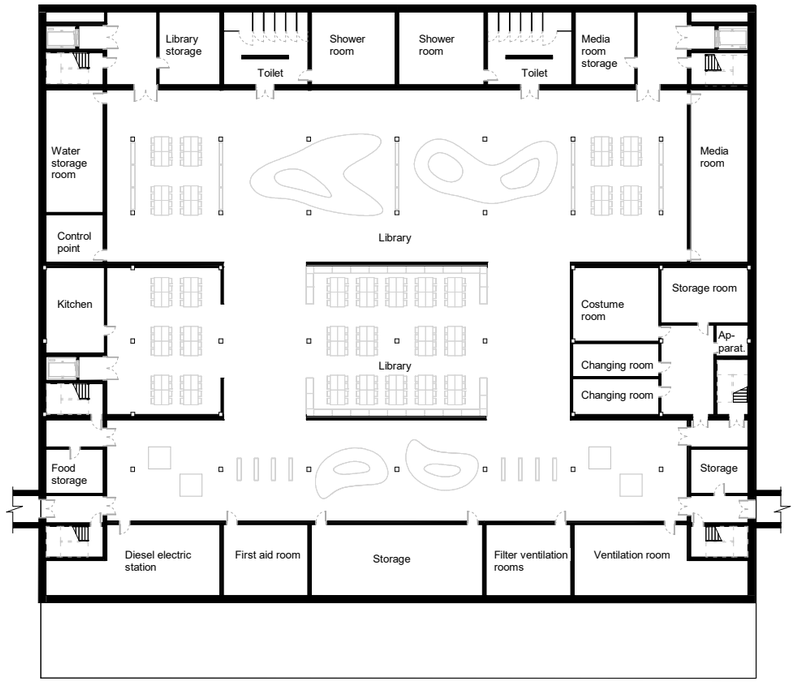


Site C

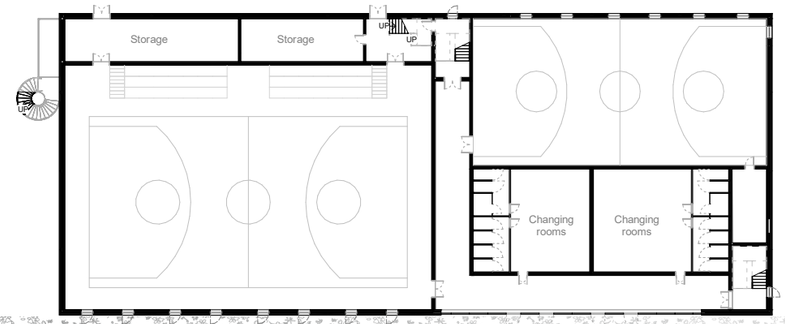
from both sides and different from the adjacent lobbies. Furniture walls and display cabinets regulate the relationship between the social spaces.
The junior school occupies two floors with six flexible classes. Small lobbies for coat space and toilets give access to the classes in different ways. Smaller workspaces for small groups are carved out by the lobbies. A hammock-type netting in the

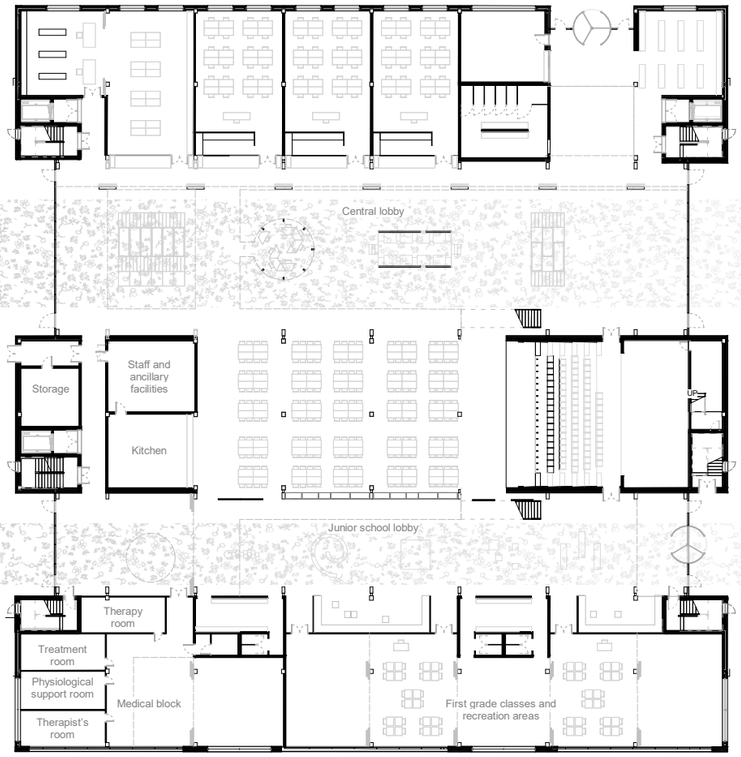
Plans

lobby provides a space for rest and activities. Outdoor play areas are adjacent to classrooms and the lobby. The ground floor also houses a medical centre and an exercise area in the atrium. The middle building's first two floors house the assembly hall, teachers' meeting rooms, café, and kitchen. The top two floors



Basement plan

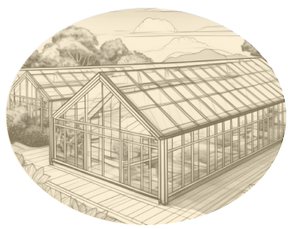


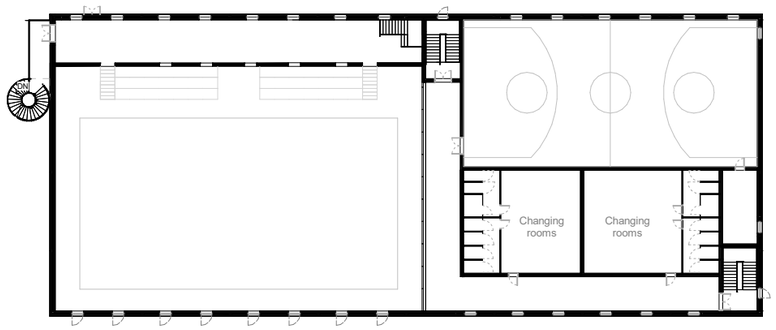


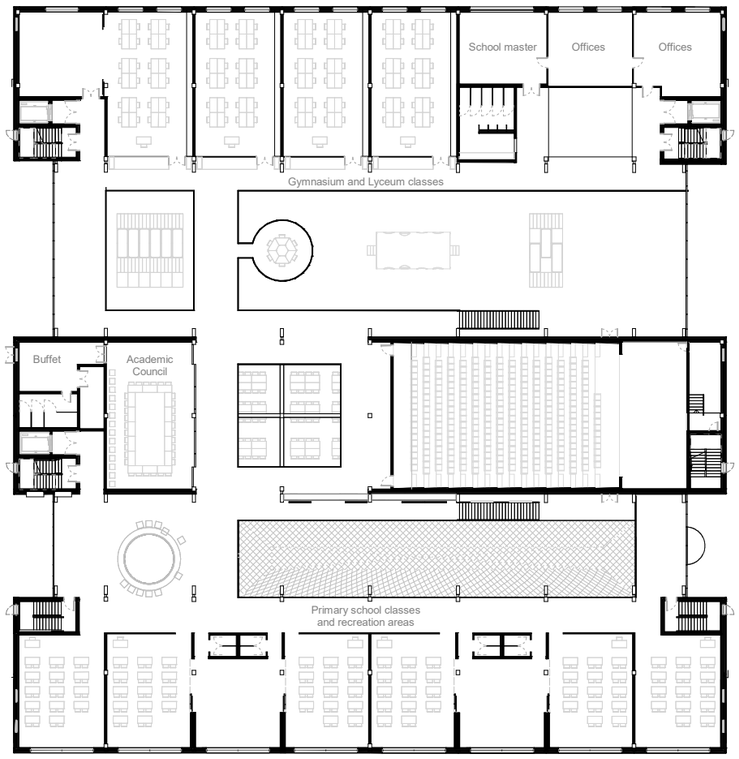
Ground FIlor plan

Junior school

feature senior school classrooms with wide corridors that can be divided into smaller classrooms, work areas, or group work areas using flexible walls and shelves.
In the Senior School, the art and science classes are in the larger classrooms on the first two floors. Both are clustered to share facilities. They are separated from the atrium by a colonnade and balcony forming the boundary between the lobby and the



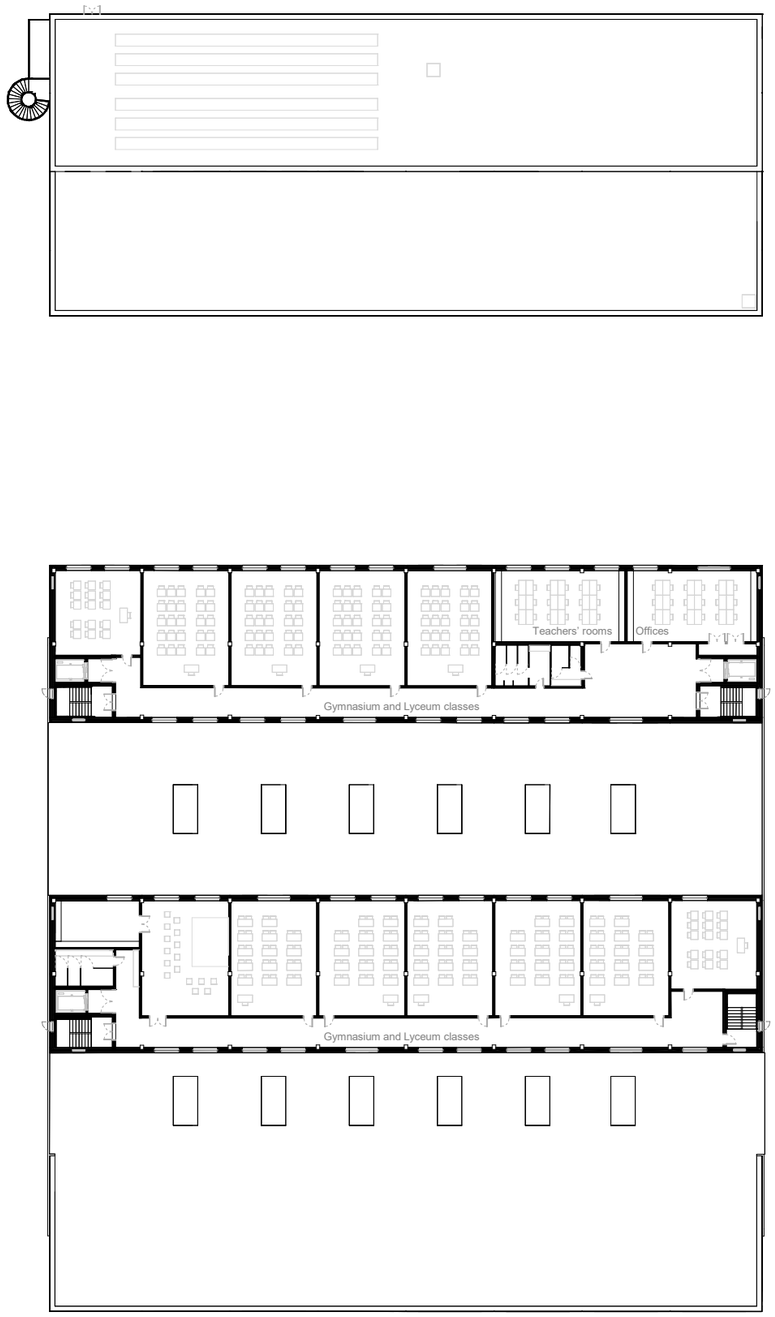




First floor plan

Middle building

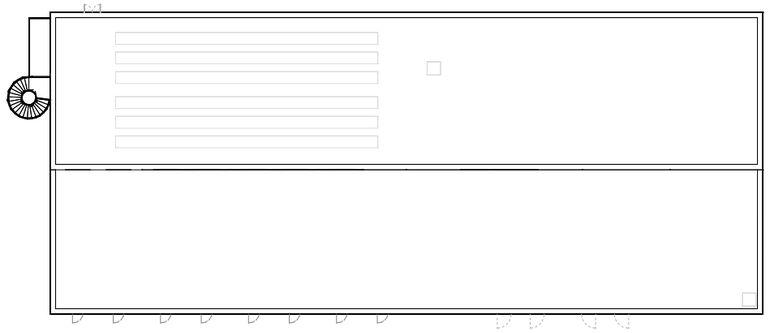
classroom. The teachers' rooms and reception are next to the entrance and run over several floors. The classes on the top two floors are the same as in the middle building. Stairs and toilets are at the ends of the block. In the lobby or atrium, work pods provide flexible spaces for students to sit, use as a temporary

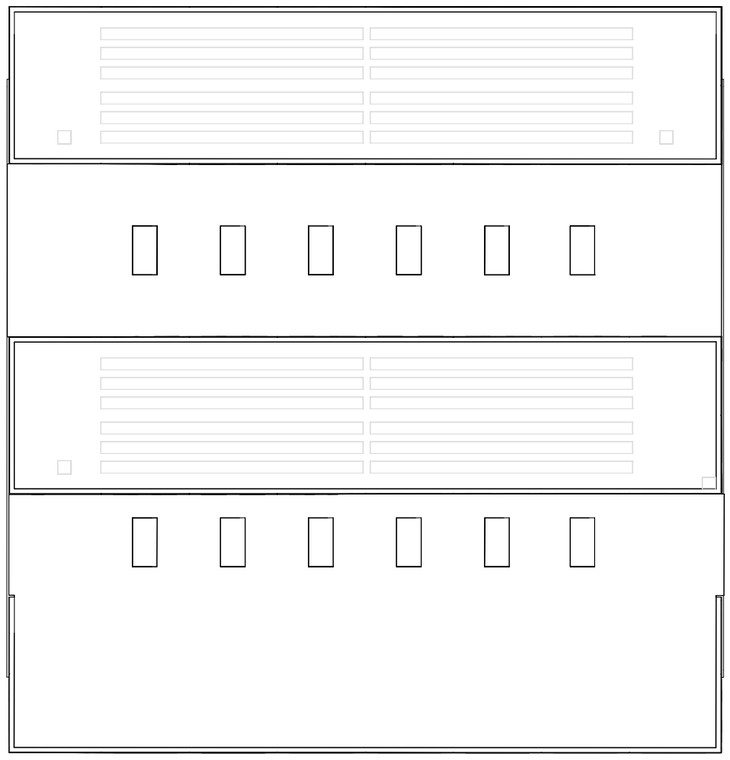


Second floor plan

Senior school

stage, or for other activities.
The gymnasium has a central corridor accessing gym halls and the spectator area. The large gym hall includes spectator seats and a 3-meter-wide balcony overlooking the football field. The top-floor dormitory has teacher and student areas, with views of the fields or green roof. A kitchenette and common room have roof access.
The three marigold roads run through the building and organise the blocks and gardens between them. The atriums are light and airy and feel like outside spaces, linking the classes with the



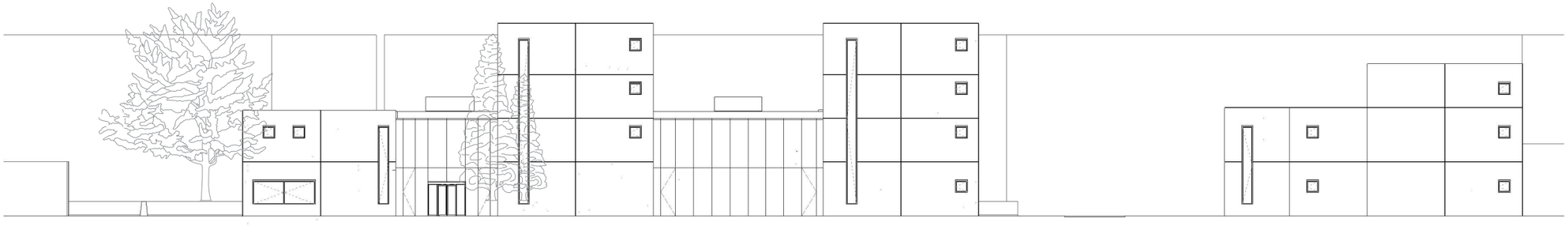


Roof plan

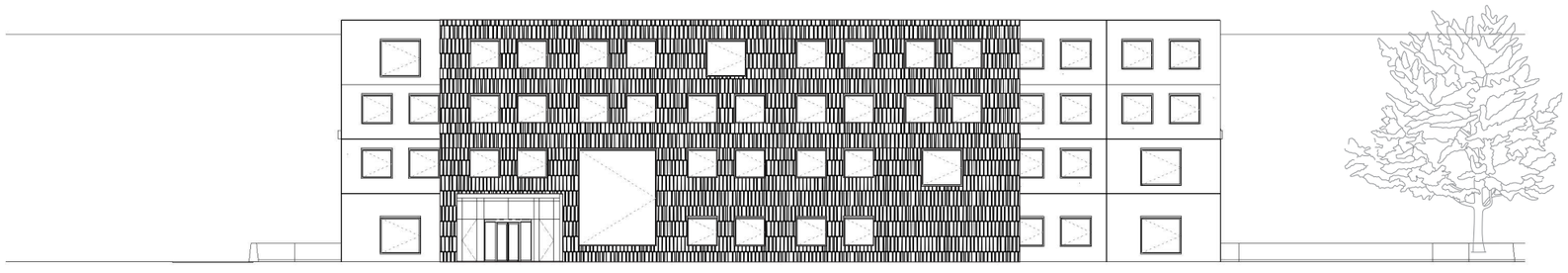
Gymnasium and gardens

outside.
Atriums are covered by green roofs planted with indigenous flowers, herbs, and edible plants, reducing building height and severity, providing greenery views, and aiding insulation and CO2 absorption.
The gardens are dotted around the buildings. As the sports fields are on all sites behind the gymnasium, the whole site is green and can be used for planting vegetables or flowers or herbs by the children and the community.

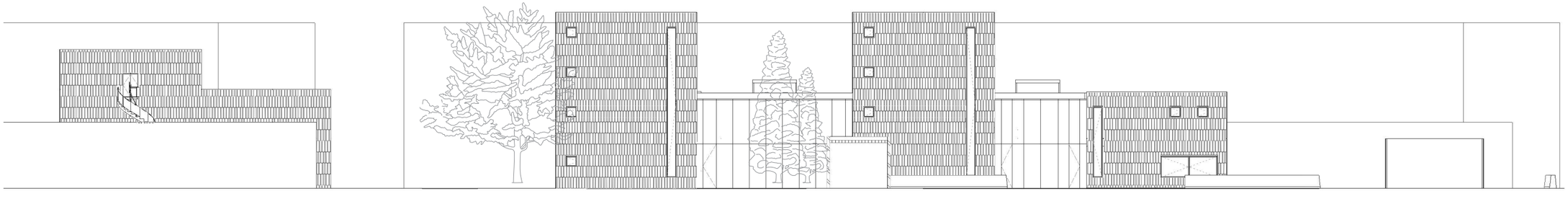
All stairs and elevators from the building lead to the shelter. The lifts are safety lifts. In the basement there is a dual-use media room, library, and shelter. The space is organized with library shelves around work and computer areas and organically shaped room-sized sofas that create areas for study, reading, sleeping, and breaking up the room. Alongside this space is a second row of rooms with toilets, showers, and other facilities that form a buffer. The shelter offers a safe environment, with hydroponic plants, a small kitchen, and shower-equipped toilet blocks mak-



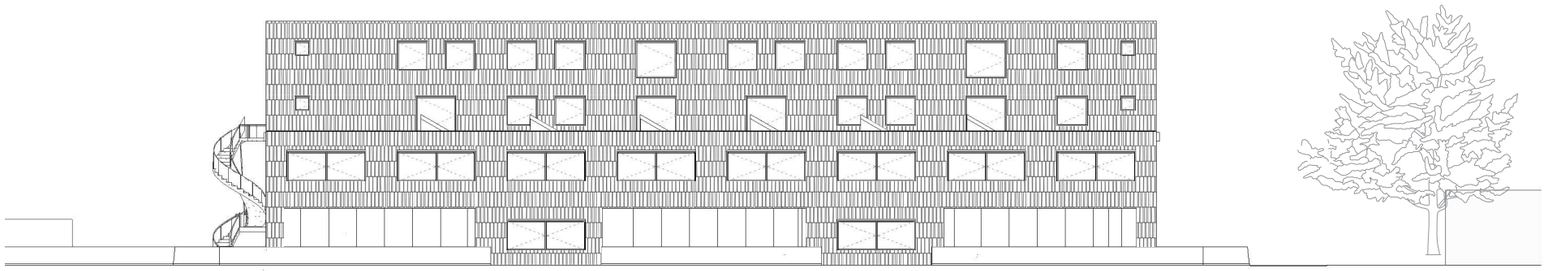
East Facade



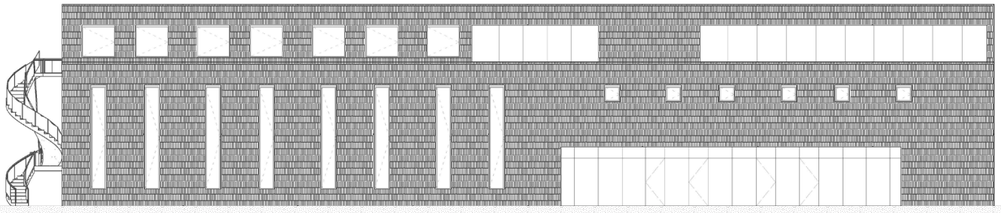
North Facade



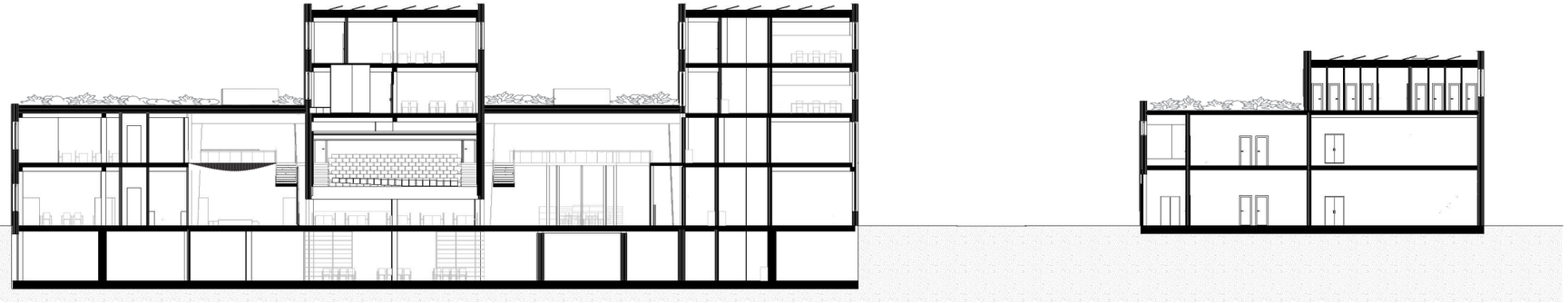
West Facade



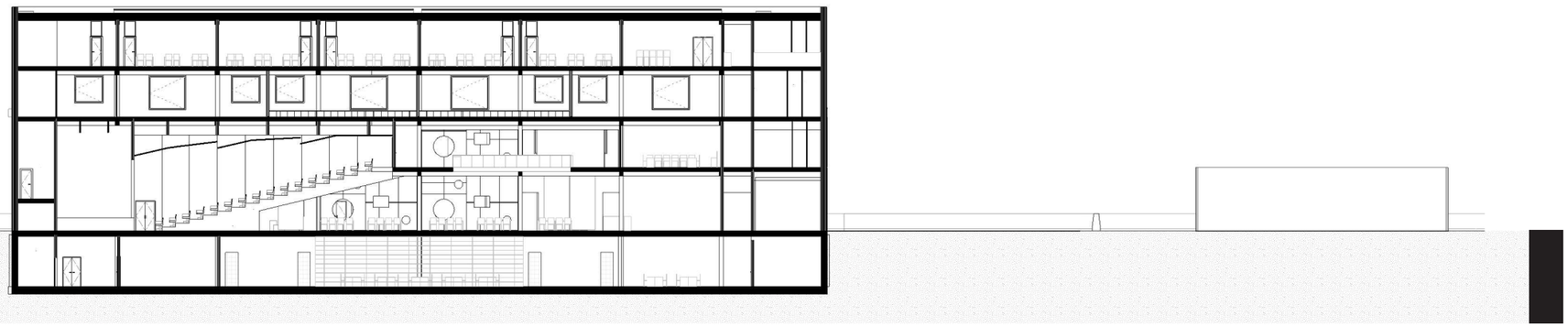
South Facade



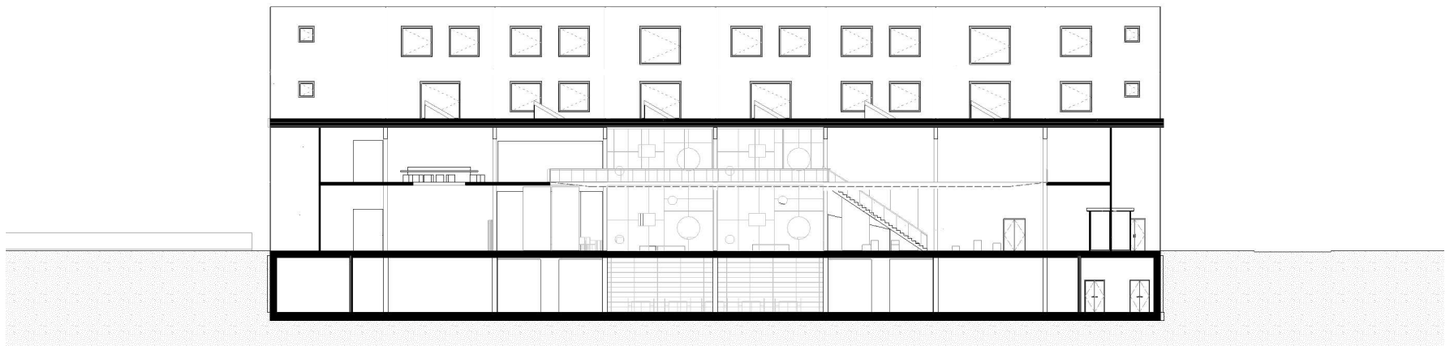
Facade of gymnasium



Cross section



Section through the middle building



Section through junior school

Section through senior school

0 2 5 10

Circulation

ing it suitable for dual use.

Circulation is centred around lobbies and the outside plaza, providing access to surrounding classrooms without long corridors. Upper-level corridors in the high buildings are extra wide, suitable for work units, smaller classes, brain-storm sessions, or self-study areas. In the gymnasium, central stairs access sports halls, the spectators' balcony, and the dormitory

Developed with local experts, the concrete shelter and media room will be built to the proper safety standards, including a water tank, filters, generator, and waste collection.

The anti-radiation shelter is designed with reinforced walls and inter-floor ceilings to withstand blast waves. The outer door is reinforced and should be installed in both doorways of the vestibule. The anti-radiation shelter includes mandatory premises: a sanitary station, a changing room, a stor-

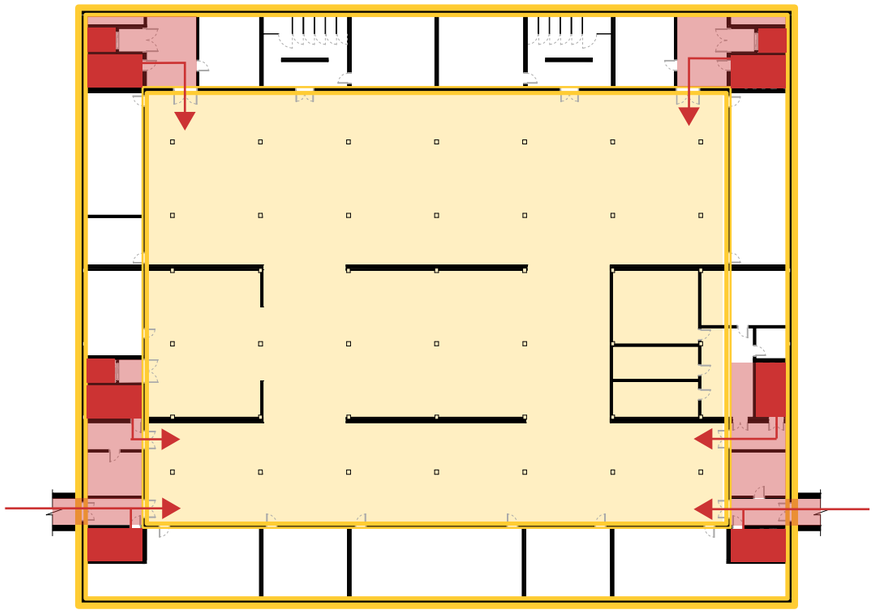


Illustration of double wall and facilities as buffer.

Dual use Shelter

age room for clothes contaminated by radiation, and a bathroom with a shower. Required engineering premises, such as ventilation and DES rooms, are located near the external walls for street access. Facilities for food and water storage are also included. The shelter is located across from the exterior walls to provide maximum protection.

All premises adhere to regulatory area standards. The main room for shelter should be divided into separate rooms or blocks within protective structures. The anti-radiation shelter must ensure the standard level of radiation attenuation, taking into account the structure's class as determined by table A.1 of appendix A of the regulatory document DBN V.2.2-5:2023, confirmed by calculations in Appendix H.

The proposal aims to reduce dependency on centralized electricity and energy and therefore includes solar panels, a ground source heat pump, a sewage treatment plant, and rainwater harvesting for greywater in a reedbed-like pond. Soil stacks are placed away from exterior walls per Ukrainian regulations, with all wet areas clustered and routed to the sewage plant. Water from the roof is filtered by green roofs and collected. Rainwater runoff from hard

Basement plan with devision of spaces and a buffer zone with showers and toilets around the main space. All stairs and lifts go directly to the basement and students enter through the buffer zone.

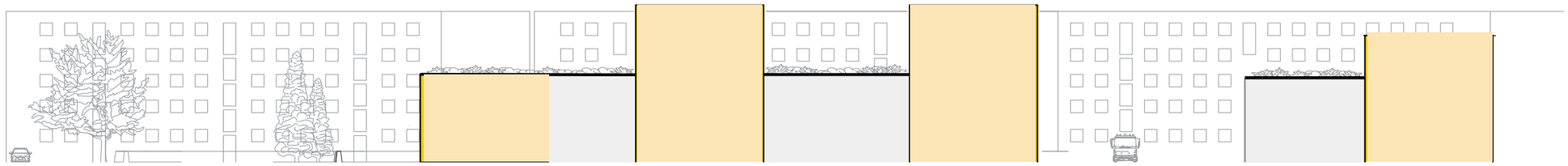
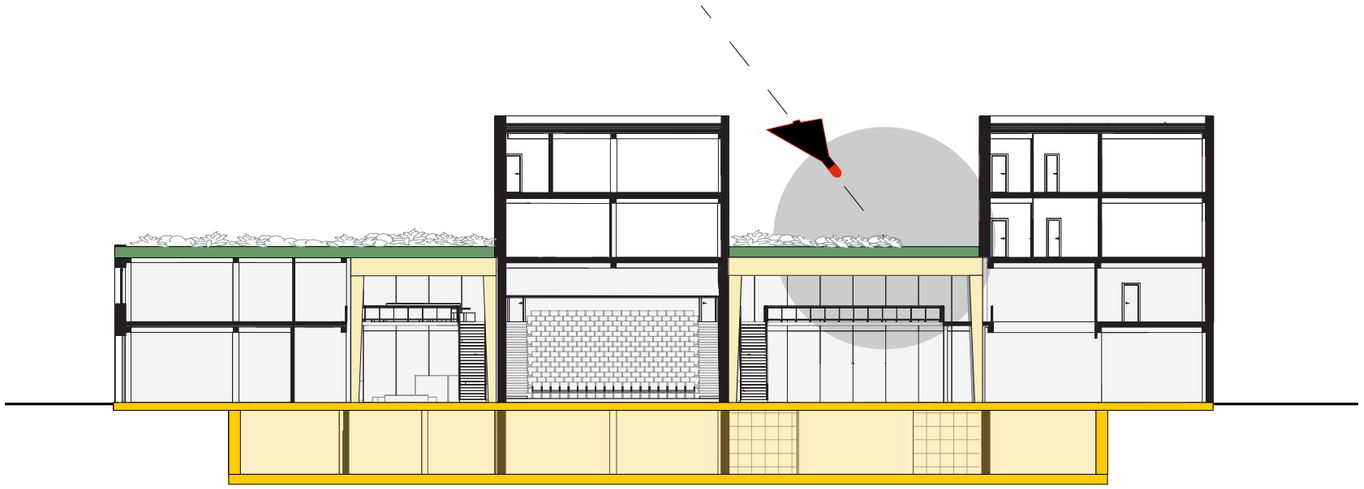


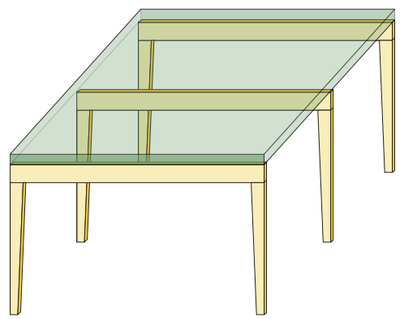
Illustration of housing block- concept

Security

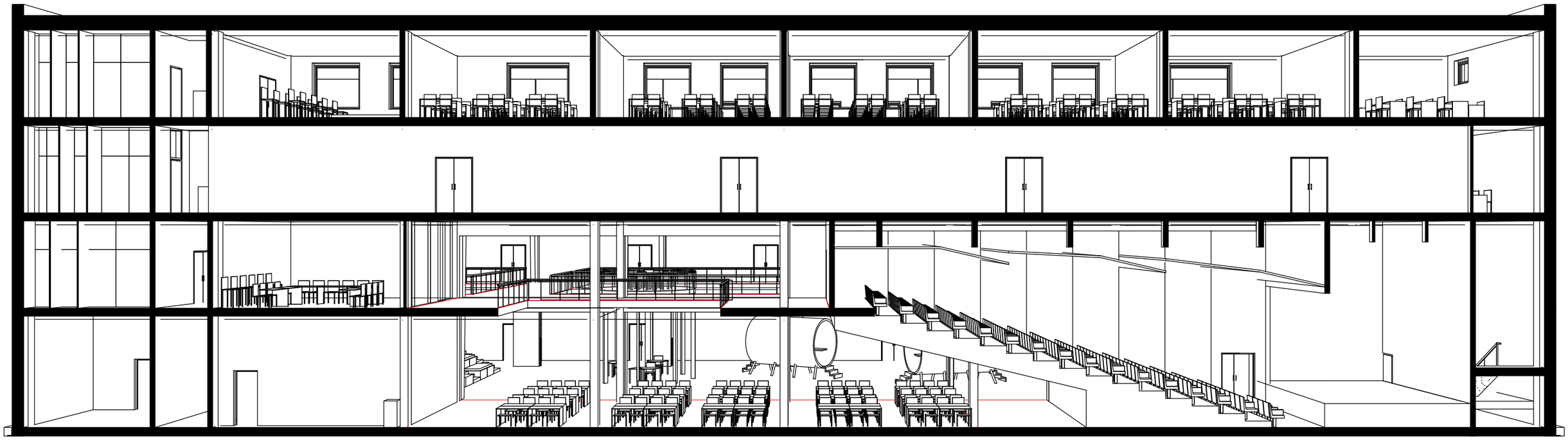
The structural system for the building consists of LVL timber columns and beams and CLT floor slabs and wall panels. A prefabricated superstructure solution has been developed to enable efficient long clear span spaces whilst minimizing the total embodied carbon of the superstructure. Due to the size and footprint of the building, foundations will likely consist of concrete piles and the possibility of using pulverized building rubble for the aggregate will be explored.

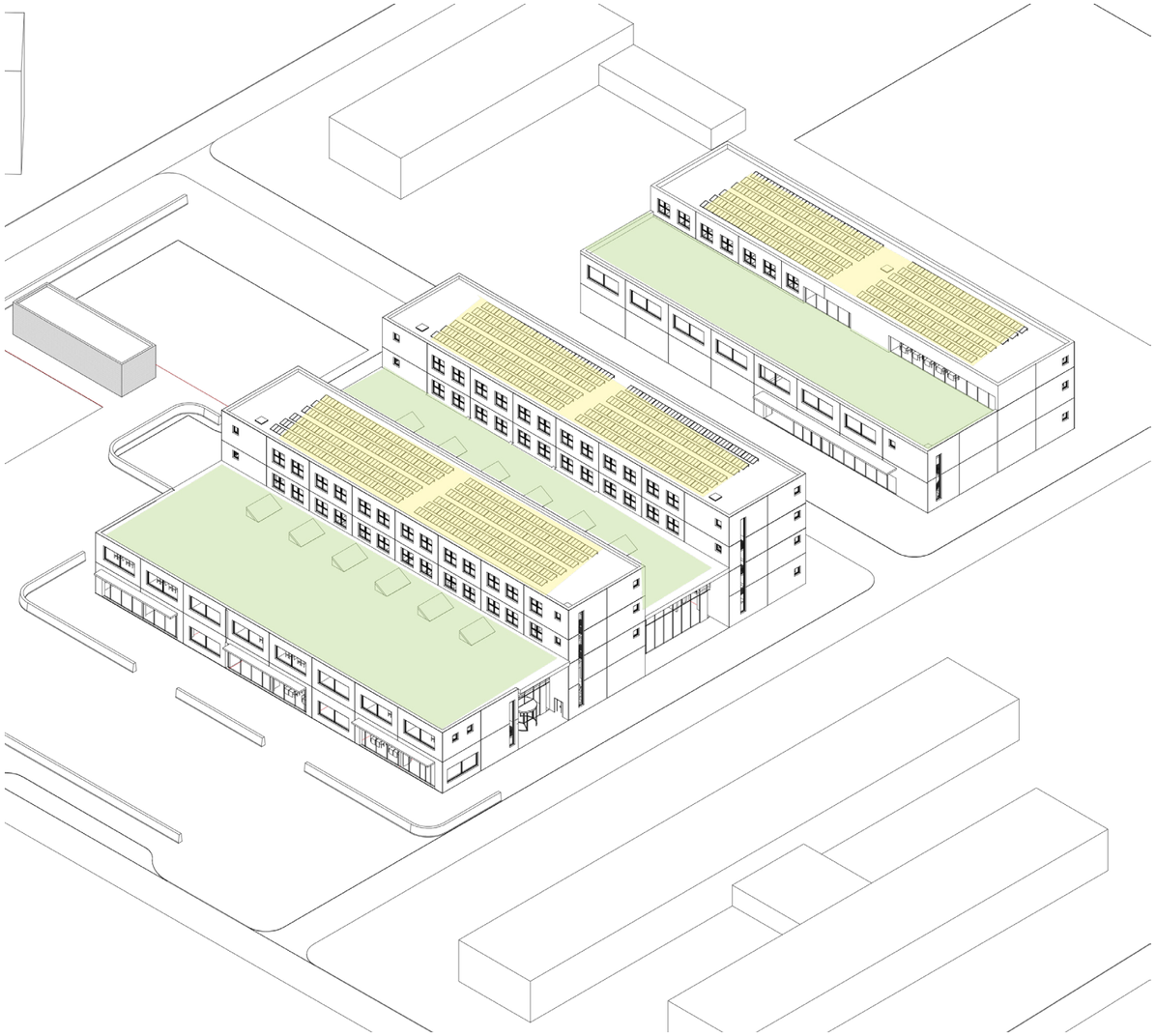


Structure will only be damaged partially, but won't collapse in case of a drone attack.



THe image on the left shows the view from the first floor through to the atrium. Below the sectional perspective.



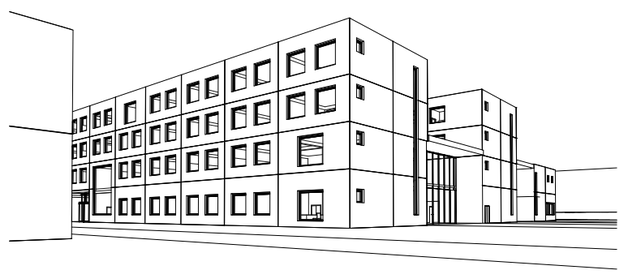


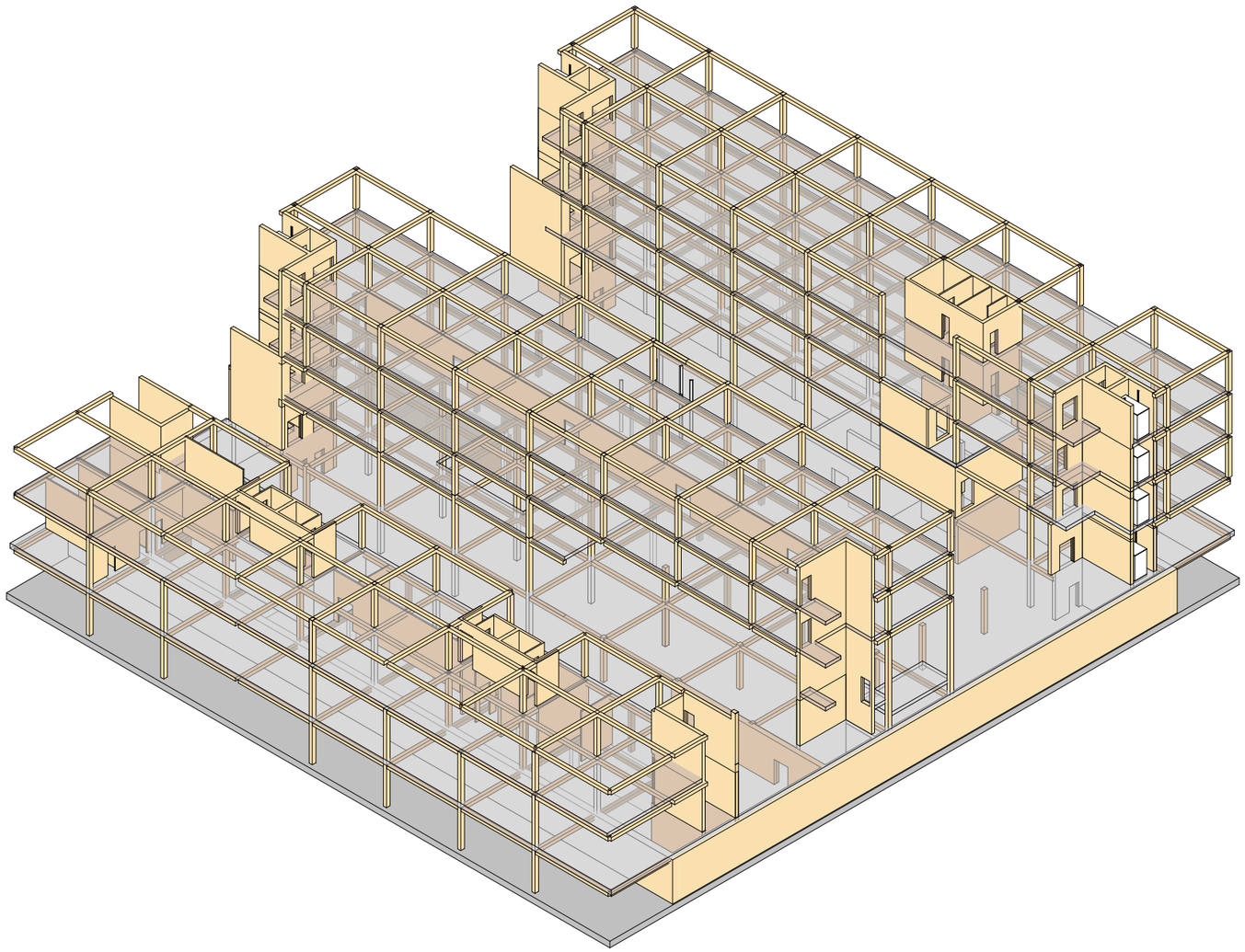
Solar panels and green roofs

Mechanical, Electrical, Engineering

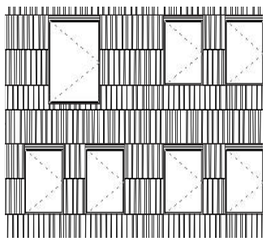
surfaces will be guided to swales for absorption. Waste will be processed locally where possible. The building will meet the highest sustainable standards for airtightness and U-values as per the energy sustainable design guide. Fabric U-values (W/m2. K) Walls 0.13 - 0.15 Floor 0.09 - 0.12 Roof 0.10 - 0.12 Windows 1.0 (triple glazing) Doors 1.2 Fabric efficiency measures Air tightness.

From the air, the school resembles housing blocks in a green area. The grid structure ensures damage to individual rafters or columns does not affect the overall structure. The grass roof helps extinguish fires and mitigates drone attack impact. All the stairs in the building come down to the shelter and the school is a safe home for the community. The marigold pattern and paving, inspired by an old Ukrainian folk song, reinforce this concept.





Structural grid with VLV post and beam structure and CLT cores and floors.



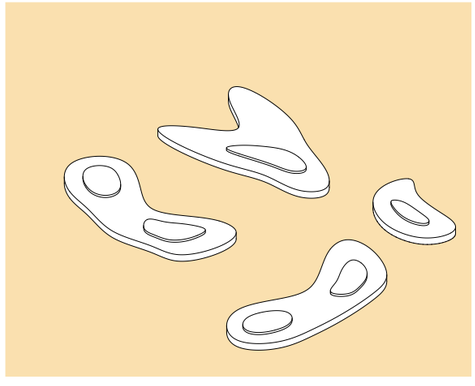
Shingles from recycles materials, corn, straw, and rubble to be used as recycled and waste materials

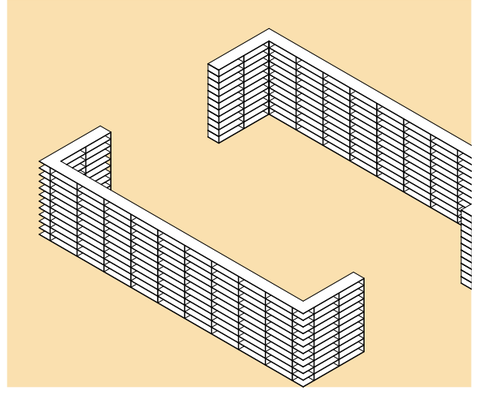
Structure

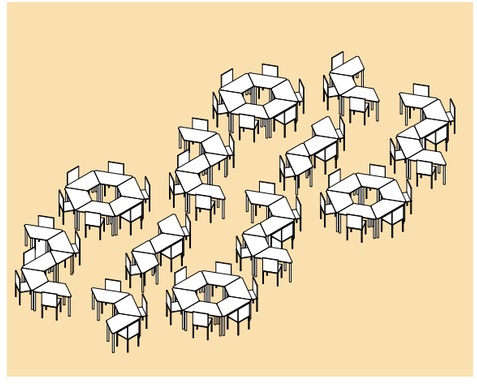
LVL columns and beams have been chosen for this scheme due to its high bending strength and stiffness, allowing sections to be shallower than other types of engineered timber when covering larger spans. CLT is a light material and is quick to install. Floor slabs act as horizontal diaphragms, so these, along with the vertical panels, contribute to the lateral stability of the building. The loading which has been taken into account to determine the preliminary sizes of these members includes permanent loads from partitions, timber floorboards, ceiling, services and the CLT slabs' own weight, along with a typical classroom-imposed loading. CLT cores have been designed to be exposed and to have a minimum fire resistance of 60 minutes.

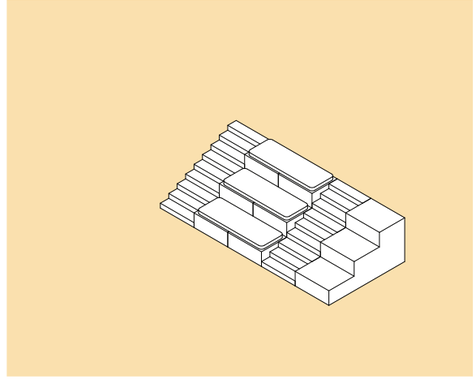
Façade panels and walls will be structural insulated panels made from recycled or waste materials like maize and woodchips, suitable for materials available in Ukraine. This is a rapidly developing area. The panels can be clad with timber, recycled materials, or painted or clad with adobe bricks or shingles made with recycled materials.
Rubble is used as concrete aggregate and to form walls mixed with earth to create green walls to mark the perimeter of the school grounds.

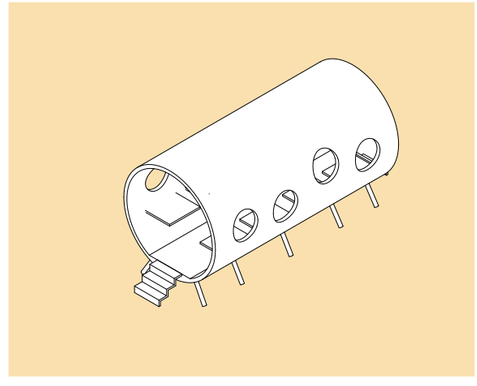
To encourage community participation the building is seen in three levels of engagement, the same levels the structure is organised around. The first level concerns the structure which is the same for all schools and consists of a grid of LVL posts and beams with CLT floor slabs and cores. The second level are the infill panels, windows, and facades, which can be made in local factories closer to the school. The third level is like a series of scripts to make furniture and other objects from reclaimed







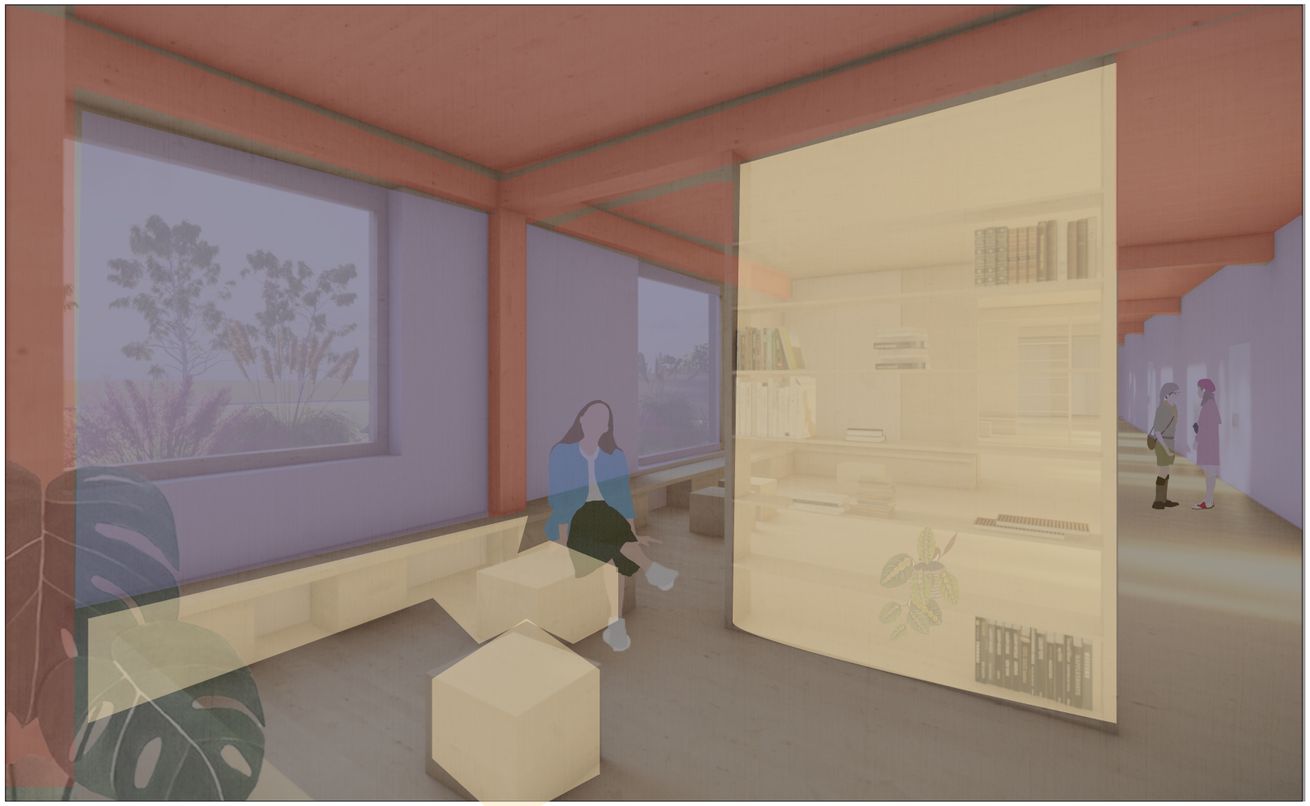




Different layers

In the image on the left shows all the structural layers are visible. The main columns grid, the infill wall panels and the furniture elements..
The image is taken in the corridor/ classrooms on the third and fourth floors of the senior school buildings, where classes can be carved out with furniture elements as and when needed.

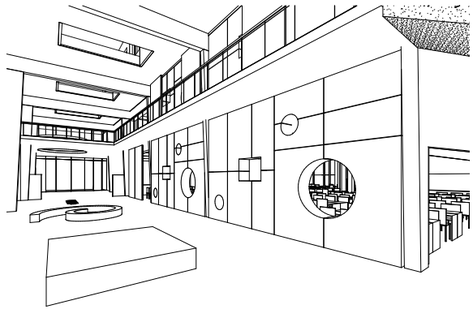
The images in the heading are all suggestions for furniture to be made with salvaged materials. W

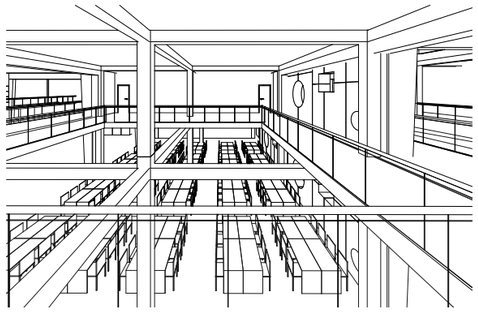


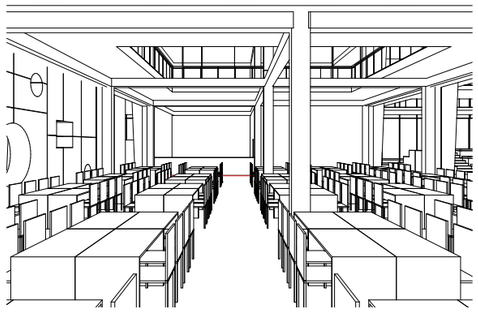
Structural grid

Infill panels

Furniture



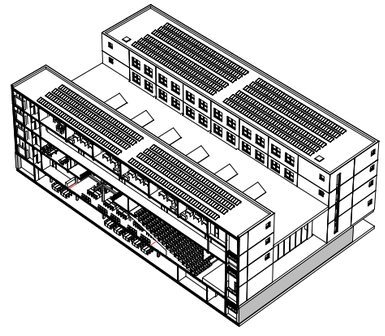


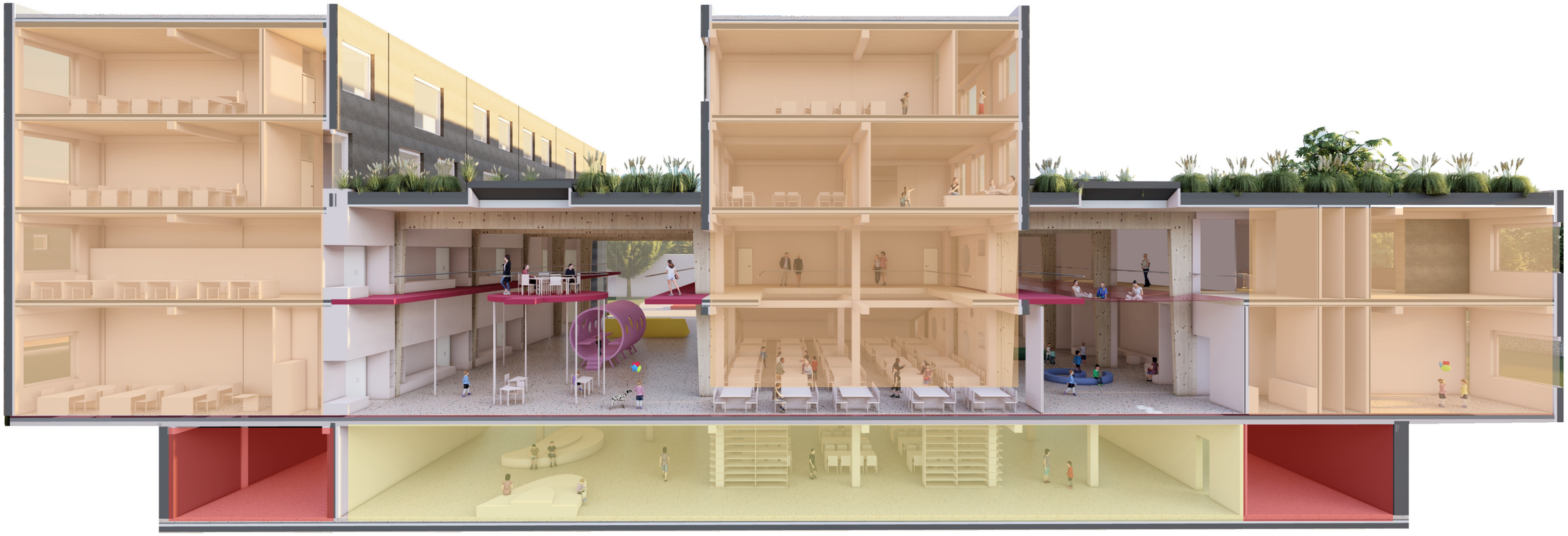


Community

materials by local crafts people.

A “full-day school”
The children can sleep, learn, work and exercise and have their hobbies in the school and can be joined by family members or other members of the community after hours. The large atrium and lobbies act as community hubs so lectures, adult education or theatre performances and concerts can take place after school hours. The different parts of the buildings can be closed off so the classrooms, their contents or other activities are not disturbed when other activities take place.
The theatre for example can function autonomously.





Section through school showing zones

Radiation buffer zone

School buildings closed off after hours

Dual use shelter

Site (in hypothetical situation A)		
	Unit of measurement	Quantity
Site surface area	sq.m.	22,800
Site development intensity	%	22.5
Site development density	%	22.8
Green portion of the site	%	54.7

Building(s) / part of the building(s)		
Primary education		
Total floor area	sq.m.	1140
Usable floor area	sq.m.	842
Volume of the building / part of the building	cubic metres	6460
Number of floors	pcs.	2
Height of the building / part of the building	m	8.7
Gymnasium, Lyceum, Shared education and community spaces		
Total floor area	sq.m.	8173
Usable floor area	sq.m.	5594
Volume of the building / part of the building	cubic metres	45345
Number of floors	pcs.	4
Height of the building / part of the building	m	15.6
Accommodations. Dormitory		
Total floor area	sq.m.	650
Usable floor area	sq.m.	524
Volume of the building / part of the building	cubic metres	2755
Number of floors	pcs.	1
Height of the building / part of the building	m	3.8
Civil Protection. Dual-use shelter		
Total floor area	sq.m.	2436
Usable floor area	sq.m.	2010
Dual-use floor area	sq.m.	1942
Volume of the building / part of the building	cubic metres	11345
Number of floors	pcs.	1
General data of the building(s) / parts of the building(s		
Total floor area	sq.m.	10457
Usable floor area	sq.m.	8970
Dual-use area in the civil protection structure	sq.m.	1942
Volume	cubic metres	65905
Number of floors	pcs.	4
Building height	m	15.6

Area calculations

All areas have been calculated according to Ukrainian regulations and the results comply with the brief.