EDUCATIONAL BRIDGE

Pathway to sustainable learning

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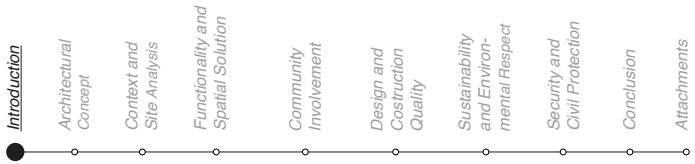
INTRODUCTION



The International Architectural Design Competition for the School of the Future in Ukraine aims to rebuild the education system after the destruction of over 3,000 schools due to the war. Our project emphasizes resilience and innovation, offering adaptable architectural solutions for diverse local contexts. It sets a new standard for educational architecture in Ukraine, showcasing the transformative power of design in times of crisis.
The School of the Future will serve as both an educational center and a community hub, promoting interaction and well-being through multipurpose spaces. The design features dynamic, modular learning environments that foster creativity, active learning, and collaboration. Sustainability is integral, with green technologies like solar power and rainwater harvesting reducing environmental impact and operational costs.
Key objectives include architectural adaptability, sustainability, accessibility, psychological and social support, community integration, educational innovation, safety, and serving as a symbol of hope and recovery. The school will be a safe haven and a model of social sustainability, employing innovative pedagogical approaches to enhance learning and promote equity. It will be a living example of green practices, supporting the emotional and social well-being of the community.

The International Architectural Design Competition for the School of the Future in Ukraine offers a unique opportunity to help rebuild the country's education system. The war caused the destruction of more than 3,000 schools, making the need for innovative and resilient solutions urgent.
The project focuses on resilience and innovation, proposing architectural solutions adaptable to different local contexts.
This project aims to set a new standard for educational architecture in Ukraine, demonstrating how innovative design can address both current needs and future challenges. It will illustrate the power of architecture to bring about positive change in times of crisis. The School of the Future is not just a building, but a beacon of hope and recovery for the entire nation.

PRESENTATION OF THE PROJECT AND THE COMPETITION OBJECTIVE

In addition to being an educational center, the school will serve as a community hub, fostering interaction among students, teachers, parents and residents. Multipurpose spaces for extracurricular activities and community events are crucial in supporting psychological and social well-being, helping to overcome the traumas of war.
A key aspect of this project's vision is the creation of an environment that stimulates creativity and collaboration. Learning spaces are dynamic and modular, capable of evolving with future educational and technological needs. Traditional classrooms are transformed into flexible spaces that foster active learning and teamwork, encouraging students to explore, experiment and innovate.
The School of the Future for us must also aspire to be a model of environmental sustainability. The adoption of green technologies, such as solar power, rainwater harvesting systems and eco-friendly building materials, reduces the school's environmental impact. This approach not only minimizes operational costs, but also educates students and the community about the importance of sustainability, turning the school into a living example of green practices.
In addition to the functional aspect, the overall vision embraces a social and cultural dimension. Through dedicated spaces for extracurricular activities, community events, and psychological support services, the school must support the emotional and social well-being of students and their families, helping to build a more cohesive and critically minded society.
The International Architectural Design Competition for the School of the Future in Ukraine has several key objectives aimed at creating an educational complex that meets immediate needs and is a model for the future. Specific goals of the competition include:

- Architectural adaptability;
- Sustainability and energy efficiency;
- Accessibility and inclusiveness;
- Psychological and social support;
- School environment as a community center;
- Educational innovation;
- Safety;
- Symbol of hope and rebirth.

OVERALL VISION AND EXPECTED IMPACT

Our vision and mission for this project is the creation of a protected and thriving ecosystem within the educational environment.
We aim to transform the school into a sanctuary, a microcosm where students, teachers, and community members can grow, learn, and interact in a safe, nurturing, and sustainable setting. This human ecosystem includes thoughtfully designed spaces that foster socialization, collaboration, and the psychological well-being of all individuals.
We envision the School of the Future as an oasis of safety and tranquility, where every architectural and functional element is meticulously planned to promote social integration and community cohesion.

“ a protected and thriving ecosystem within the educational environment

Common spaces within the school are not only functional but are also conceived as vibrant hubs for building strong, lasting relationships. Classrooms, laboratories, libraries, and recreational areas are designed to be flexible and modular, thereby promoting dynamic learning and teamwork.
Dedicated areas for extracurricular activities, such as gyms, theaters, and multipurpose rooms, provide ample opportunities for students to develop their social skills and actively participate in community life.
These spaces become important gathering spots where students of different ages and backgrounds can share experiences, collaborate on projects, and engage in cultural and sports events.
This interaction strengthens their sense of belonging to the school community and extends their connection to the entire neighborhood and local community.
A fundamental aspect of our vision is to create an environment that stimulates creativity and collaboration. Learning spaces are designed to be dynamic and adaptable, capable of evolving in response to future educational and technological needs.

“ This approach enhances the educational experience and demonstrates how innovation can serve well-being and personal growth

Traditional classrooms are reimagined as flexible spaces that encourage active learning and teamwork, inspiring students to explore, experiment, and innovate.
The School of the Future also aims to be a beacon of social sustainability.
By adopting innovative pedagogical approaches such as experiential learning and inclusive methodologies, we create an educational environment that values each individual and promotes equity.
The concept of a protected ecosystem extends beyond the physical to encompass social and psychological dimensions. In an increasingly hectic and often conflict-ridden world, the school is envisioned as a safe environment where each individual feels valued and supported.
School facilities are designed to provide comprehensive support, encompassing not only academic education but also the emotional well-being of students.
By integrating all these elements, we aim to build a school that is not only a place of learning but also a vibrant, supportive community that nurtures growth, fosters well-being, and prepares individuals to thrive in an ever-changing world.

“ not only a place of learning but also a vibrant, supportive community that nurtures growth, fosters well-being, and prepares individuals to thrive in an ever-changing world

Our vision is to create an enduring legacy of safety, innovation, and community, where every member is empowered to reach their full potential.

South facade _ Board 8

CONTEXT AND SITE ANALYSIS

This project features adaptable architectural solutions for three hypothetical sites, each tailored to different local contexts.

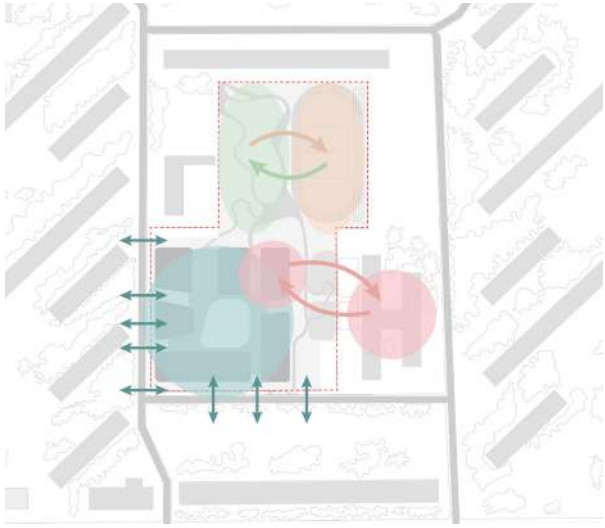
Site A is located in a small town in eastern Ukraine, divided into two functional zones. The southern part, with easy road access, houses the school building, enhancing logistics and community connectivity. The northern part is dedicated to a serene park for outdoor activities, promoting well-being and socialization.

Site B is situated in northern Ukraine, within a residential area enriched by a mature wooded grove and agricultural surroundings. This site blends urban convenience with natural beauty, offering unique educational opportunities focused on sustainability and environmental stewardship.

Site C is in southern Ukraine, near a major city. The plot features varied topography and natural elements, providing a strategic location for a school that combines urban amenities with a nurturing learning environment.
Each site integrates functionality with aesthetics, ensuring the school serves as both an educational institution and a community hub. The design aims to foster creativity, collaboration, and sustainability, setting a new standard for educational architecture in Ukraine.

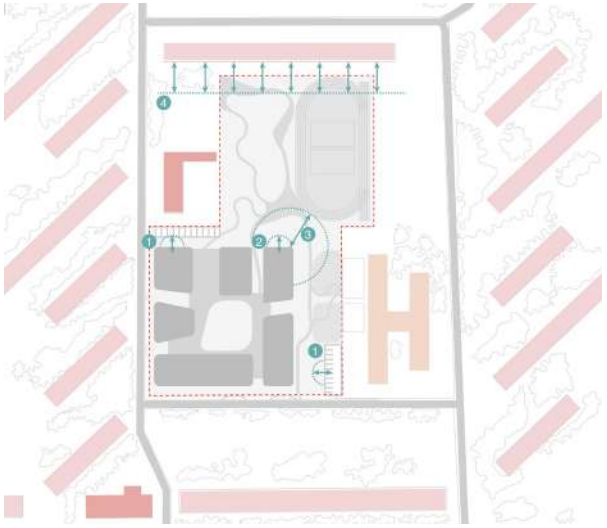
DESCRIPTION OF THE HYPOTHETICAL SITE A

The chosen hypothetical site, called "Lot A," is located in the eastern part of Ukraine, in a small town that serves as a district center, where industries are under active development. Our project ideally divided the lot into two different parts: the southern part, in direct contact with the road and easier to access, and the northern part, more intimate and suitable for park development.
This subdivision made it possible to optimize the use of space, ensuring both functionality and comfort for users.
In the southern part, where accessibility is easier, the building was placed. This choice facilitates the entry and exit of students, staff and visitors, improving daily logistics and general accessibility. The building, located in this area, also benefits from increased visibility and direct connection to the surrounding urban infrastructure, making it a landmark for the community.
The more intimate and quiet northern part of the lot has been earmarked for the development of a park. This green space was designed to provide a serene and natural environment, ideal for outdoor recreation and learning activities.
The park provides a safe recreation area for students and a meeting place for the community, integrating natural elements and open spaces that



Relations with the context _ board 1

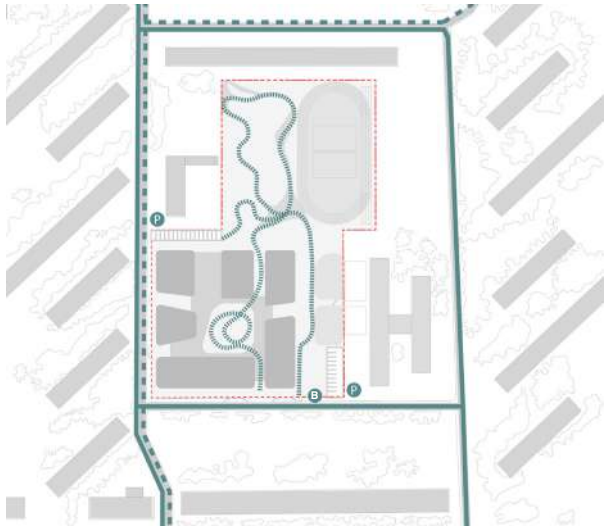
Kindergarten and primary
School complex
Green areas
Sport area



Private and public, distances _ board 1

Private Building
Public Building
Kindergarten
1 10 m from parking
2 10 m from playground
3 25 m from sport area
4 25 m from tall facades

promote well-being and socialization.
Our reflections focused on thinking a lot about the different edges of the lot.
We carefully considered the relationships between the various functional areas and their surroundings, ensuring that each space was optimized for its specific purpose.
The edges of the lot were designed to maximize the use of available spaces while preserving the ecological integrity and aesthetics of the site.
This subdivision of the lot made it possible to create a design that meets functional needs while providing a welcoming and stimulating environment.
The approach taken ensures that the school is not only a place of education, but also a center of community life, capable of integrating harmoniously with the surrounding urban and natural context.



Flows and mobility _ board 1

Cars
Cycle lane
Pedestrian flows

DESCRIPTION OF THE HYPOTHETICAL SITE B

Located in the northern part of Ukraine, this plot is nestled within a small town renowned for its burgeoning agriculture sector. The surrounding area is predominantly residential, with access from the north-northeast side of the main street. To the north, northeast, and south, the plot is bordered by individual residential houses, while several small apartment buildings and a kindergarten line the western side. A mature wooded grove borders the plot on the southeast side, partially adapted for recreational purposes. The terrain of the plot is flat, providing an ideal canvas for development. Surrounding individual houses are lush with fruit trees, fruit bushes, and gardens, while the western part features single trees and natural meadows, and the eastern part boasts an array of mature trees. This location offers a harmonious blend of urban convenience and natural beauty, making it an ideal setting for the design and construction of a school. With its close proximity to residential areas and recreational spaces, the site provides a conducive environment for learning and community engagement.
The rich agricultural heritage of the town also offers unique opportunities for educational programs centered around sustainability and environmental stewardship. In summary, this plot presents an ideal foundation for creating a vibrant educational institution that serves both the academic and social needs of the surrounding community.

DESCRIPTION OF THE HYPOTHETICAL SITE C

Nestled in the southern region of Ukraine, this plot is strategically situated in close proximity to a major city, offering convenient access to urban amenities and resources.
The surrounding area is predominantly characterized by individual residential houses, with the administrative and service center located towards the southeast.
Access to the plot is facilitated from three sides of the surrounding street, ensuring smooth ingress and egress for students, faculty, and visitors alike. The western segment of the plot features a flat terrain, providing an optimal foundation for construction and development endeavors.
As one moves eastward, the elevation gradually ascends by approximately 6 meters, presenting potential design opportunities.
To the south, the plot is bordered by a quaint massif of trees and bushes, imbuing the landscape with a natural charm. Furthermore, a perimeter tree belt adorns the street and demarcates the eastern boundary of the plot, enhancing both privacy and visual allure.
The adjacent area is adorned with verdant gardens and orchards belonging to individual residences, creating an idyllic ambiance conducive to serenity and harmony with nature.
With its strategic location, diverse topography, and scenic beauty, this plot offers an ideal canvas for the development of a school that not only delivers high-quality education but also fosters a nurturing and inspiring learning environment for future generations to thrive in.

ARCHITECTURAL & ADAPTABILITY CONCEPT

The Educational Bridge project was conceived as a visual and cultural landmark for the community, featuring a distinctive architectural form that integrates harmoniously with the urban and natural context, creating innovative and flexible spaces for school and extracurricular life.

This project was born out of a desire to provide a concrete and visionary response to contemporary educational needs by placing five fundamental pillars at the center of the design process: the interior-exterior relationship, container design before content, unique design creation, sustainability and recycling, and prefabrication.

The project represents an innovative approach to school architecture with three main dimensions: volumetric, pedagogical, and landscape.

In response to the current situation in Ukraine, where much educational infrastructure has been damaged or destroyed, the project aims to provide a resilient and adaptable solution capable of rebuilding the social and educational fabric of the country.

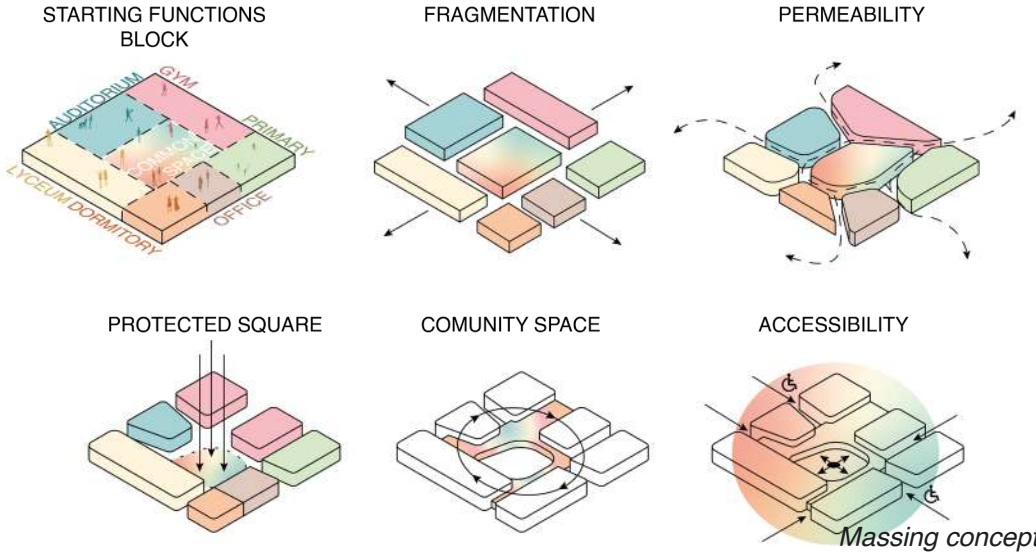
At the center of the project is the bridge-plate, which not only physically connects the various functional pavilions, but also creates a powerful symbol of connection and continuity. This central element symbolizes the integration of education and community life, stimulating imagination and creating a sense of belonging and continuity.

Our concept was conceived as a visual and cultural landmark for the community, with a distinctive architectural form that harmoniously integrates with the urban and natural context, creating innovative and flexible spaces for both school and extracurricular life.
This project stems from the desire to provide a concrete and visionary response to contemporary educational needs, placing five fundamental pillars at the heart of the design process: the internal-external relationship, designing the container before the content, creating a unique design, sustainability and recycling, and prefabrication.
The design of the container before the content represents an architectural approach that prioritizes the definition of the structure, ensuring it is flexible and capable of adapting to different educational needs over time.
This means that the layout of the internal spaces can be easily modified to respond to new teaching methodologies or functional requirements, thus guaranteeing a long useful life for the building and great versatility in the use of spaces.

MAIN ARCHITECTURAL CONCEPT

The project represents an innovative approach to school architecture with three main dimensions: volumetric, pedagogical and landscaping.
In response to the current situation in Ukraine, where much educational infrastructure has been damaged or destroyed, the project aims to provide a resilient and adaptable solution capable of rebuilding the social and educational fabric of the country.
Central to the project is the bridge-plate, which not only physically connects the various functional pavilions, but also creates a powerful symbol of connection and continuity.
This central element symbolizes the integration of education and community life, stimulating imagination and creating a sense of belonging and continuity.
The bridge-plate is designed to be a visual and cultural landmark within the urban fabric, inspiring a sense of progress and community.
From this suggestion of connection and educational/didactic continuity, the name of the project was born: Educational Bridge.

Massing concept
Volumetrically, the project is articulated through the creation of several pavilions dedicated to specific functions, all reconnected by the central plate. Each pavilion is independent and autonomous, both energetically and functionally, but together they form a cohesive complex thanks to the plate that connects them. This system allows great flexibility in the arrangement of pavilions on different lots, adapting to the specifics of the site without losing architectural coherence and integrity.
The plate is not just a passageway, but a real living space, active and vibrant, hosting collective functions and stimulating social interactions. The modularity of the pavilions allows the complex to be expanded or reduced as needed, always ensuring optimal management of space and resources.



Massing concept_ Board 1

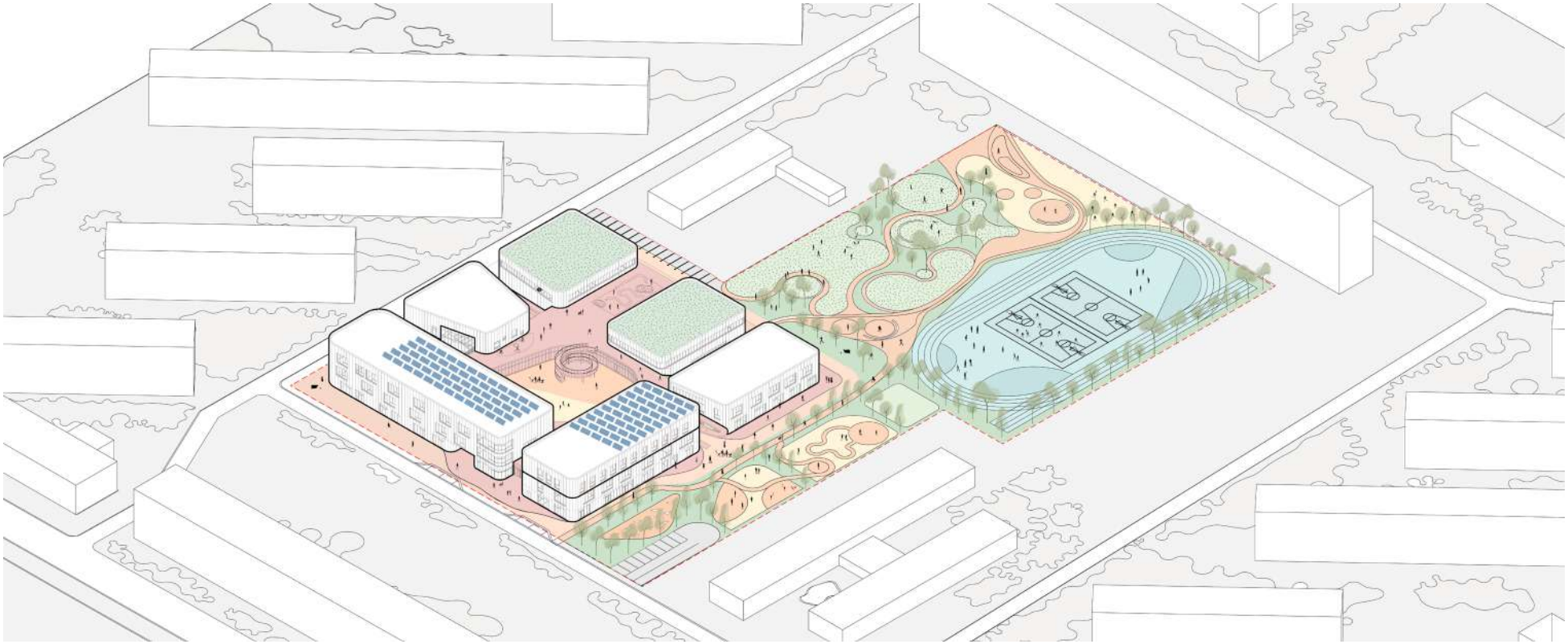
Pedagogical concept

The pedagogical concept of the Educational Bridge is based on the idea of an educational environment that extends beyond traditional school hours, offering spaces that remain active and alive outside of class hours. The bridge-plate becomes the hub of extracurricular activities, a place where students, teachers and community members can meet, collaborate and participate in various activities.

The flexibility of the spaces allows them to be adapted to a variety of activities, from creative workshops to community events, transforming the school into a true center of innovation and collaboration.

Landscape concept

The design carefully considers integration with the urban and natural context, developing a concept of outdoor space that serves as an educational park. The layout of the pavilions and central plate is designed to respect the specificities of the site, ensuring maximum harmony with the surrounding



Site project strategies_ Board 1

environment. The outdoor spaces, designed with fluid and organic forms, create a continuous dialogue between interior and exterior, transforming the school environment into a dynamic and interactive learning space.

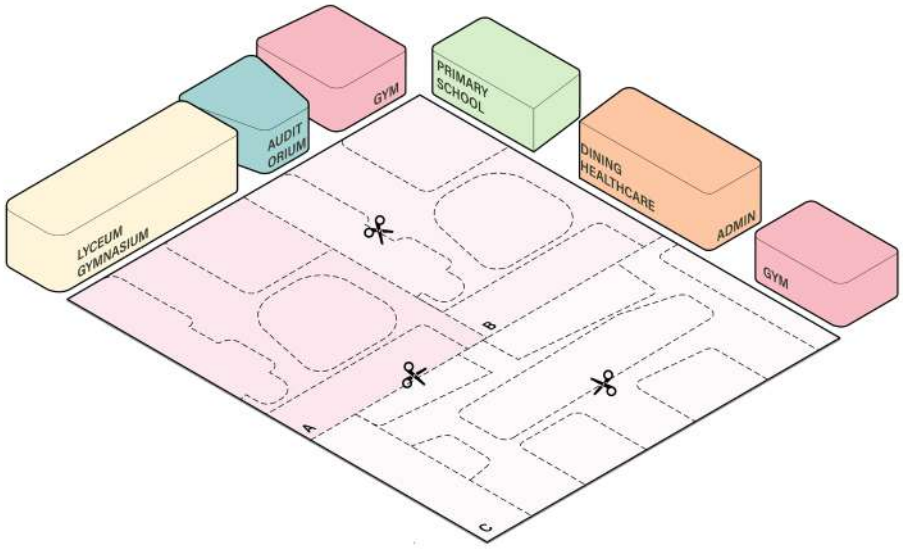
"a continuous dialogue between interior and exterior, transforming the school environment into a dynamic and interactive learning space

Functionally, relationships and access have been carefully planned, ensuring a logical and smooth flow between the various areas of the complex, thus facilitating interaction and accessibility for all users.

In conclusion, the Educational Bridge project represents an architectural innovation that combines volumetric functionality and modern pedagogy.

At the core of our proposal is the concept of the bridge, which symbolizes connection and continuity. It not only meets current educational needs, but also stands as a symbol of rebirth and progress for the community.

We offer a space where education, sustainability and social inclusion meet harmoniously, creating an environment that inspires and supports personal and collective growth.



Adaptability concept_ Board 2

DESIGN ADAPTABILITY AND FLEXIBILITY

The school complex system is structured with pavilions, each connected to the others through a central plate that hosts collective functions and acts as a catalyst for **social interactions**.

"beating heart of the complex, promoting interaction among students, teachers, and the community, creating an environment that fosters cultural exchange and a sense of belonging

This plate serves as the beating heart of the complex, promoting interaction among students, teachers, and the community, creating an environment that fosters cultural exchange and a sense of belonging.

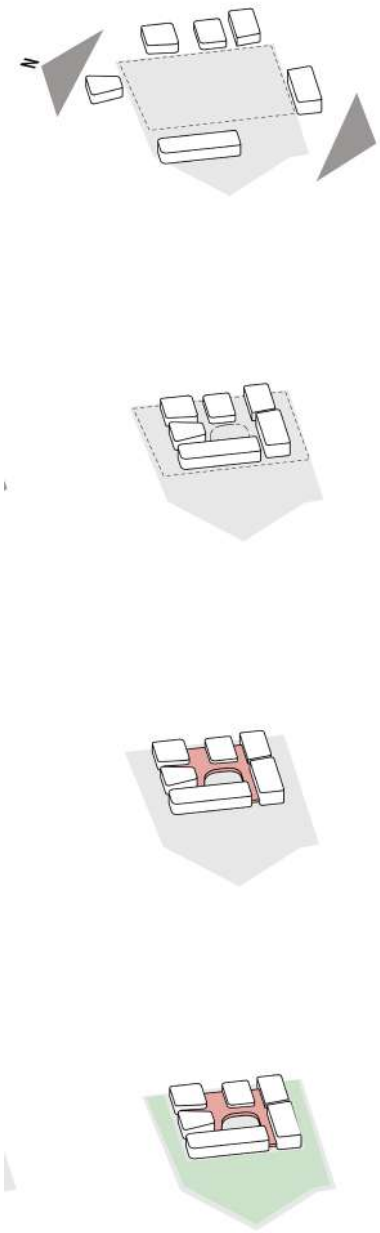
The design idea is that the pavilions remain standardized, allowing for easy replicability, but can be positioned differently on each plot, **adapting to the specific characteristics** of the site without altering their functional attributes.

The shape of the plate can be modified to fit various contexts, maintaining the same relationships between the pavilions, ensuring a **flexible and versatile approach** that meets local needs.

"beoptimal lighting and sunlight exposure, always respecting the minimum distances required from the surrounding context and sports areas

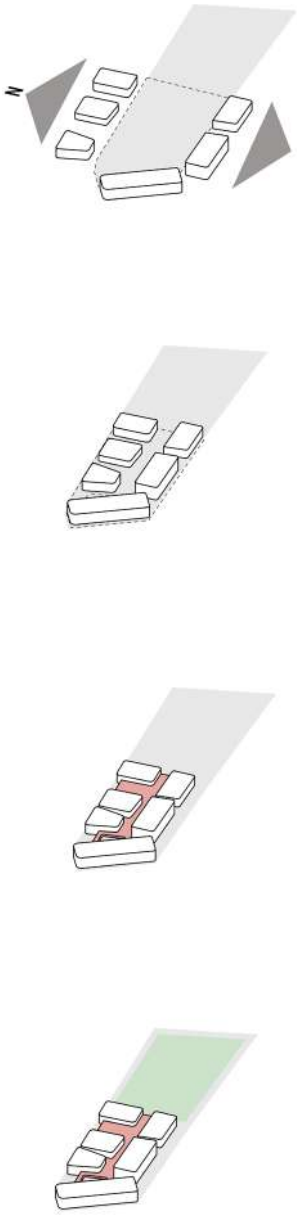
Each pavilion is designed to ensure **maximum comfort**, complying with all Ukrainian building and educational regulations.

The pavilions are arranged to guarantee optimal lighting and sunlight exposure, always respecting

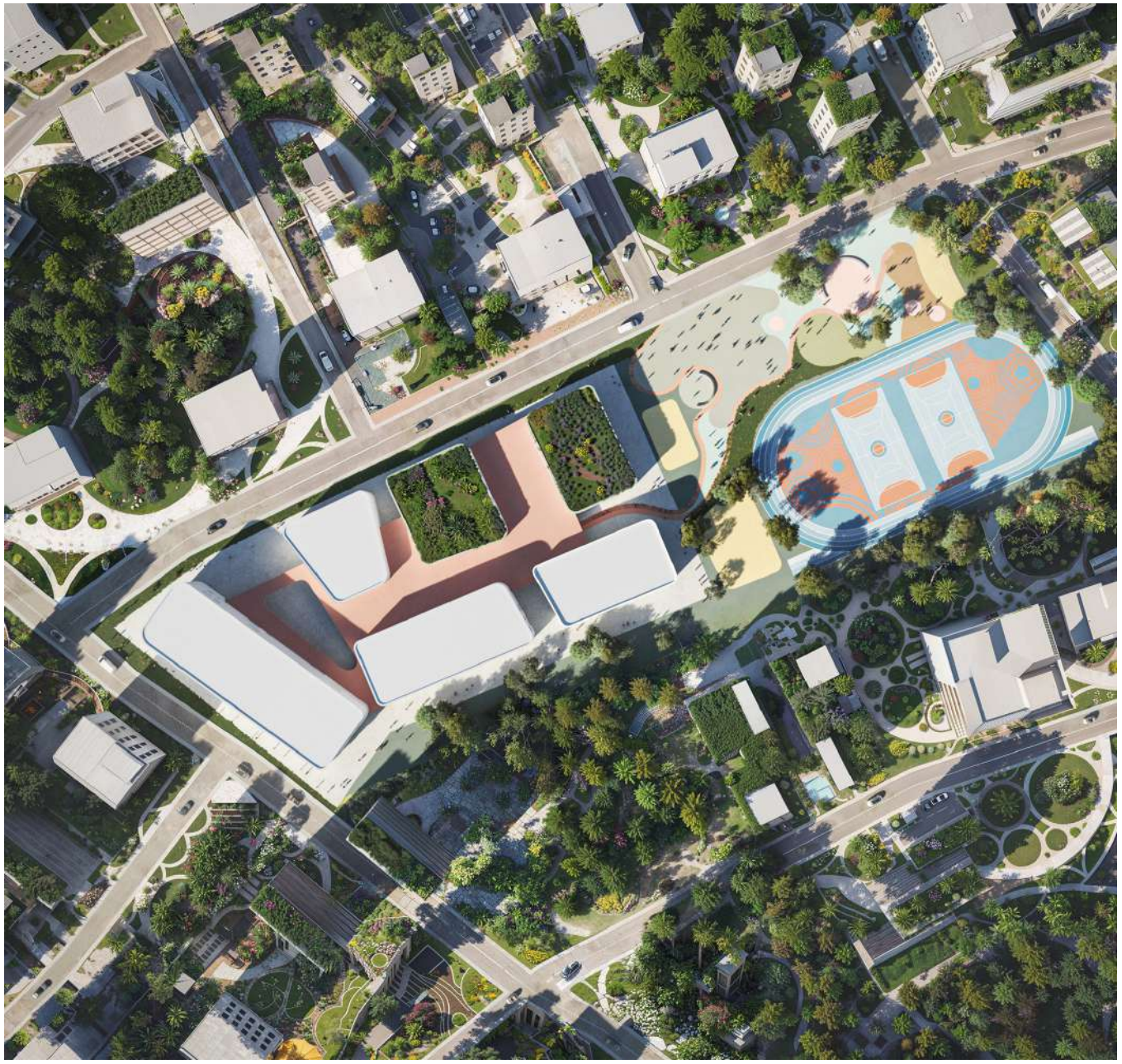


Adaptability strategy Situation B_ Board 2

Render view hypothetical situation B_Board 2



Adaptability strategy Situation C_ Board 2



Render view hypothetical situation C_Board 2

the minimum distances required from the surrounding context and sports areas.
The arrangement of the pavilions is carefully studied to maximize energy efficiency and user well-being, integrating principles of sustainability and bioclimatic design.
Additionally, the pavilions are designed to be energetically and functionally autonomous, equipped with independent systems for energy and resource management, ensuring greater **resilience and self-sufficiency**.
This energy autonomy allows the school to operate efficiently even in emergencies, contributing to the **safety and continuity of educational activities**.
The external spaces are designed with fluid and sinuous shapes, allowing for easy replication on any plot, maintaining the dynamism and spatial relationships between the various elements of the complex. This flexibility allows the project to adapt to different local conditions **without losing the coherence** of the overall design.

" the pavillons needs to be energetically intependent

The use of prefabrication techniques in wood is a key element of the project, enabling faster construction, greater precision and construction quality, and facilitating the replication and **relocation of functional blocks**.
Prefabrication in wood also offers significant advantages in terms of sustainability, reducing the environmental impact and improving the overall energy efficiency of the school complex.
This sustainable approach also educates students on the importance of responsible resource management, integrating environmental education into the school curriculum.
The central plate, while maintaining its function of connecting the pavilions, is designed to be customized in each context, thus avoiding the monotony of serial replication.
Each plate can be adapted to the specific characteristics of the site, integrating unique elements that reflect the local identity and the **specific needs of the community**. This ensures a high level of architectural quality and variety, guaranteeing that each school complex is unique and recognizable.

" educational spaces tailored for every unique context

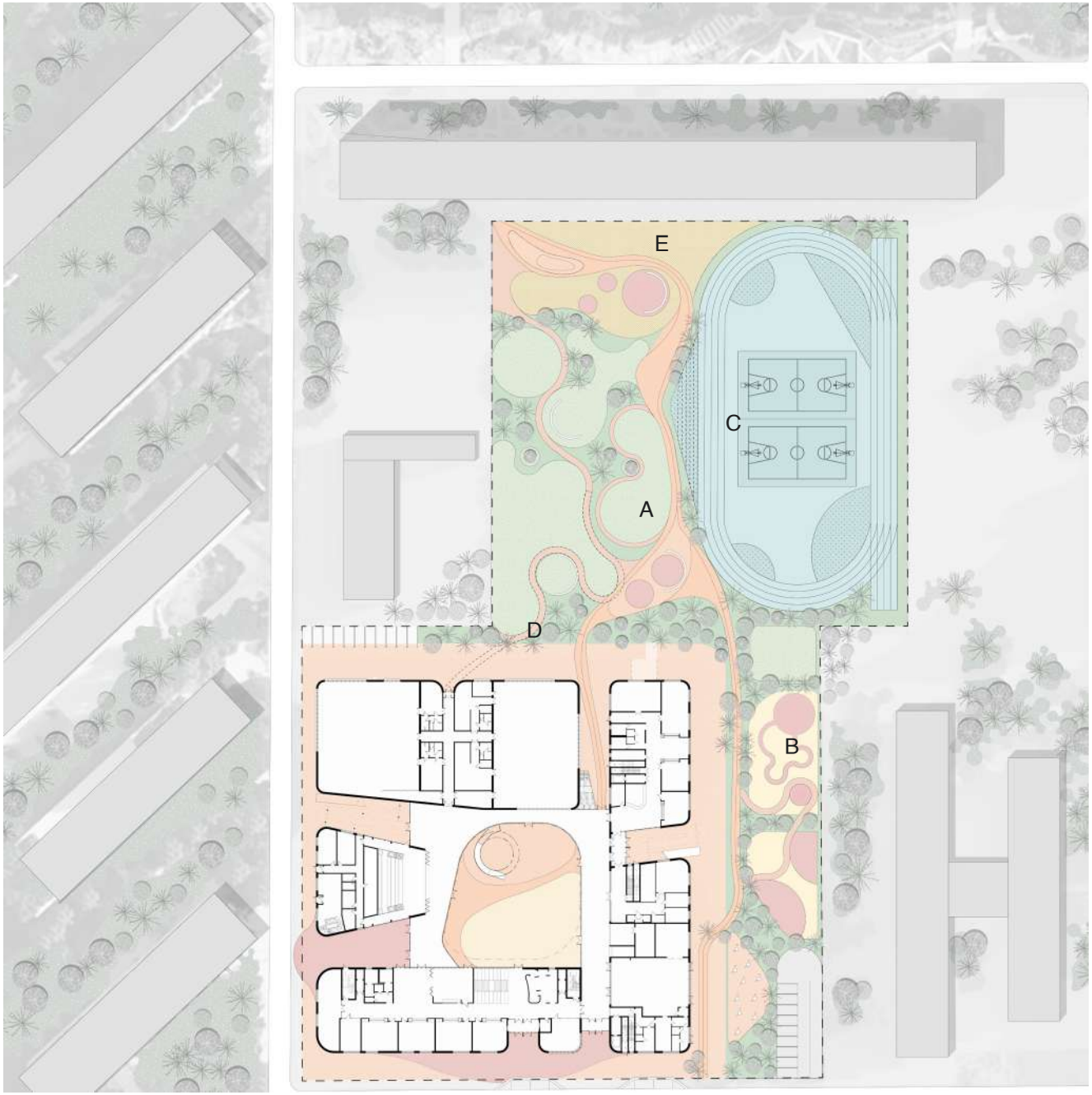
The plate thus becomes not only a functional element but also a symbol of identity and innovation, **capable of responding creatively and flexibly to the challenges of the urban and natural context** in which it is set.
The Educational Bridge is not just an architectural innovation but also represents a practical and versatile **solution to contemporary educational challenges**.

" ability to adapt to various plots and urban or natural contexts without compromising the space quality

Its ability to adapt to various plots and urban or natural contexts without compromising the quality of educational spaces and interpersonal relationships demonstrates how the project can effectively respond to the needs expressed in the brief.
Our approach ensures that each school built according to this model can become a **local landmark**, promoting learning, sustainability, and community integration throughout Ukraine.

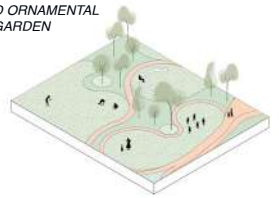
Siteplan hypothetical situation B_Board 2

Siteplan hypothetical situation C_Board 2



A_ ORCHARD, FLOWER AND ORNAMENTAL NURSERY, VEGETABLE GARDEN

- preservation of existing trees
- accessible full-daily



B_ PLAYGROUND FOR ACTIVE GAMES FOR PUPILS

- adjacent to Primary
- area equipped with gazebos

C_ SCHOOL STADIUM WITH 250 M RUNNING TRACK

In addition to the Gym Pavilion, an outdoor sports area accessible by the entire community has been planned.

D_ RECREATION AND RELAXING AREA

- ramp provides connection from the plate floor to the park
- permeable and draining pavements
- safe and secure space

E_ OUTDOOR TRAINING GROUNDS WITH EQUIPMENT

- different flooring to allow different sports and activities to be practiced
- confluence of park flows

Siteplan hypothetical situation A_Board 3

FUNCTIONALITY AND SPATIAL SOLUTIONS

The project offers an integrated and innovative approach to school architecture, organizing functional spaces to meet diverse user needs and promote social interaction, learning, and community well-being. This design carefully considers user flows, access points, and space usage patterns, strategically positioning each function within the plot to optimize accessibility and efficiency. The project divides the site into a southern part for the school building and a northern part for a park. This layout ensures easy access to the school from the road, enhancing daily logistics and visibility, while the park provides a serene environment for recreation and outdoor learning.

Primary Education: The primary school, located in a tranquil area, features flexible interior spaces and nearby outdoor play areas, fostering a safe and stimulating environment for children.

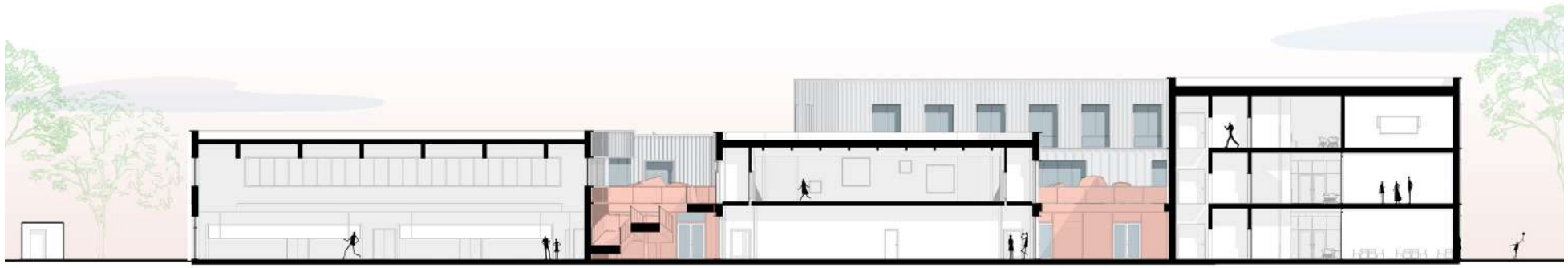
Gymnasium and Lyceum: These levels are housed in a single building, facilitating seamless transitions between school levels. A multifunctional staircase serves as a social hub, enhancing student interaction.

Accommodation: The dormitory, situated on the third floor with independent access, offers comfortable living spaces and common areas, promoting socialization among students and teachers.

Common Spaces: Centralized spaces such as the library, cafeteria, and multifunctional rooms serve as social interaction nodes. The auditorium and gyms are designed for both school and community use, supporting cultural and recreational activities.

Outdoor Areas: The outdoor spaces are designed for versatility, including gardens, playgrounds, sports fields, and relaxation zones. These areas are easily accessible and safe, promoting an inclusive school environment that encourages interaction and shared use.

In summary, the functional structure of the "Educational Bridge" complex maximizes efficiency, safety, and social interaction, creating a flexible and integrated educational environment that meets the diverse needs of its users.



Section BB'

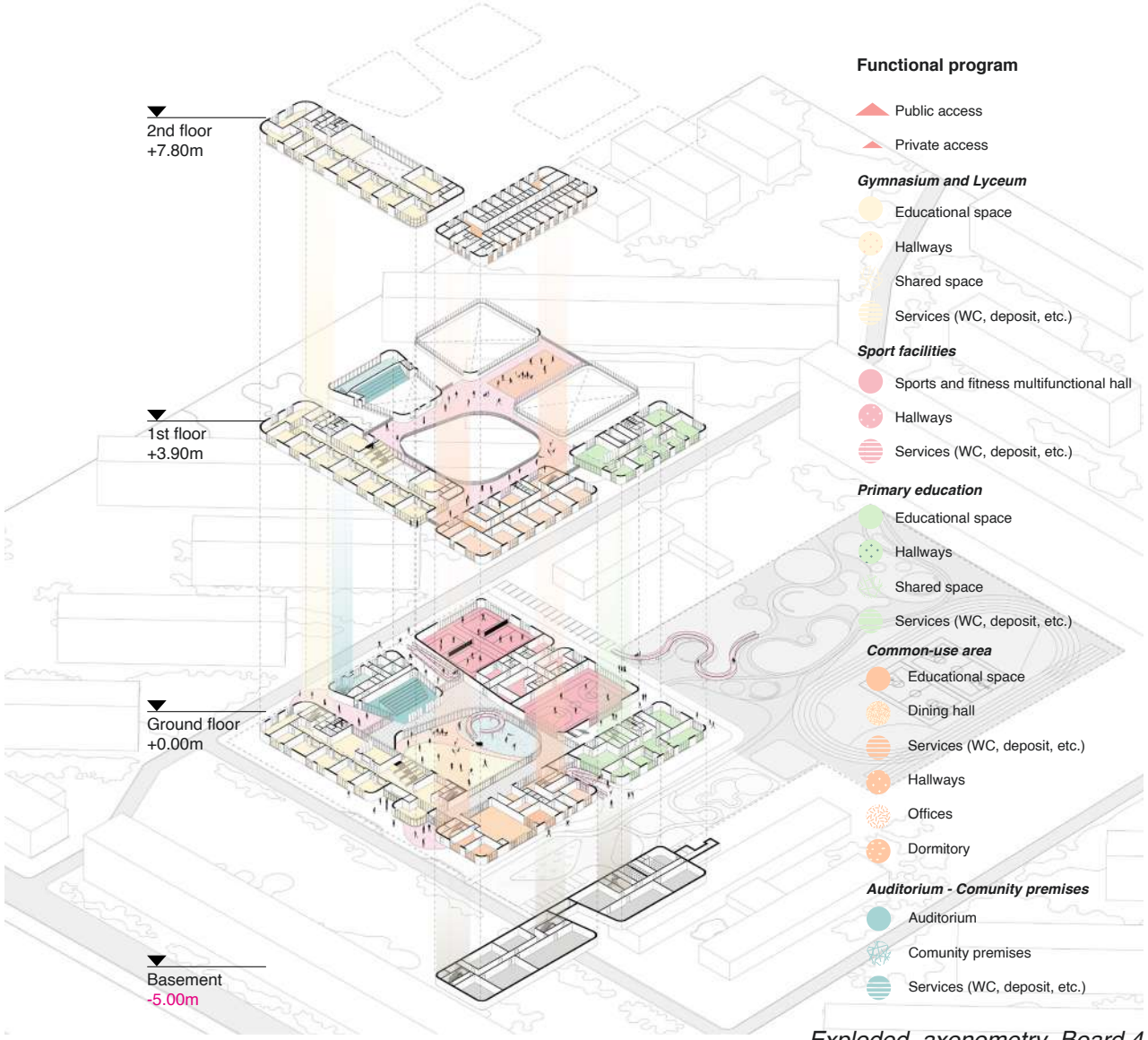
FUNCTIONAL STRUCTURE OF THE COMPLEX

The "Educational Bridge" project represents an integrated and innovative approach to school architecture, where the functional subdivision of spaces is carefully studied to **meet the diverse needs** of users and promote social interaction, learning, and community well-being. Before defining the volumes of each building, we carefully considered the relationships between the various functions, seeking to find the optimal way to strategically place them within the plot.

This involved a thorough analysis of user flows, access points, and the usage patterns of the spaces throughout the day, dividing the functions between public and private areas and managing the flows and accesses based on **the times of use of the complex**. Proximity relationships between the different functions were a crucial point of the project, as were internal and external mobility, parking, and the use of outdoor spaces. Each function was placed in the most strategic position within the plot, paying particular attention to user flows and access points, dividing functions between **public and private areas**, and separating flows and accesses based on the times the complex is used.

proximity relationships enhance connectivity and seamless interaction

Proximity relationships have been designed to optimize interaction and accessibility between the different functional areas of the complex. For example, the proximity between the primary school and the outdoor recreational spaces allows children to



Exploded axonometry_Board 4

easily access playgrounds and green areas, fostering a safe and stimulating environment.
The gym, centrally located, is **easily accessible** from all school and community areas, facilitating its use for school, extracurricular, and community activities.
The gymnasium and the lyceum are strategically positioned to facilitate the transition of students between different school levels and to ensure direct access to advanced educational resources and laboratories.
Common spaces, such as the library, cafeteria, and multifunctional rooms, are located at the center of the complex, serving as **social interaction nodes** that are easily accessible from all school areas.
Accommodations for students and staff are situated in a secluded area, ensuring privacy and tranquility, but are still well-connected to the educational and common areas.
The dual-use shelter is integrated into the complex's design to provide a safe and accessible solution in case of emergencies, also functioning as a multipurpose area during normal periods.
Regarding mobility, the project includes dedicated pathways for students, staff, and visitors, reducing conflicts and improving safety.
Parking areas are strategically positioned to facilitate access without interfering with pedestrian zones and are divided among staff, students, and visitors, with **clearly marked access** routes.
The outdoor spaces are designed to be versatile, offering areas for recreational, educational, and social activities. The fluid layout of the outdoor spaces encourages interaction and shared use, promoting an open and inclusive school environment.

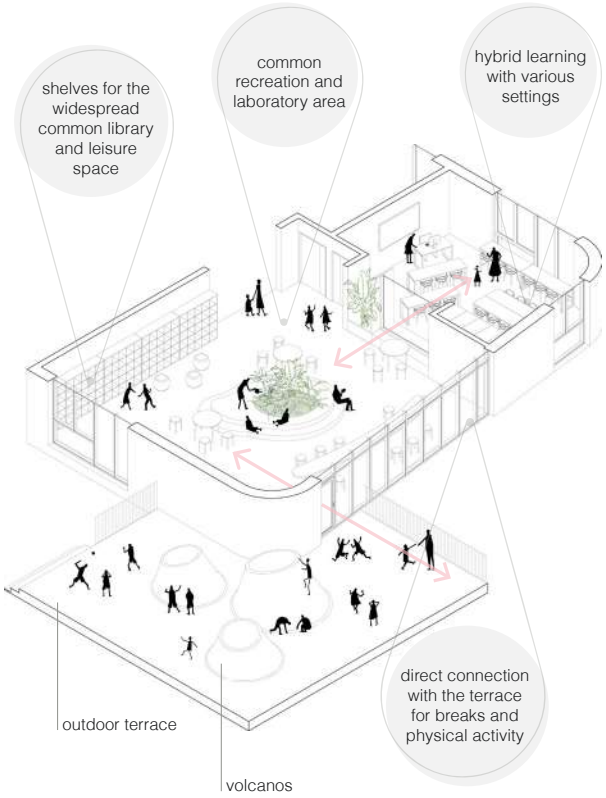
In summary, the functional subdivision of the "Educational Bridge" complex has been designed to maximize efficiency, safety, and social interaction, creating a **flexible and integrated educational environment** that meets the diverse needs of users.

Primary education

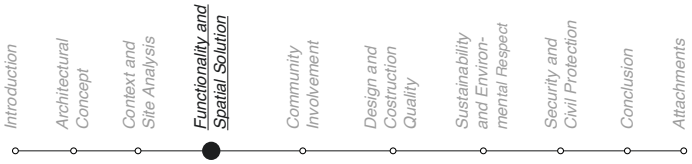
The primary school is developed over two levels and is strategically located away from the main road, ensuring a **safe and tranquil environment for the children**.
The building is accessible via safe pedestrian pathways that allow students to reach the entrance in a controlled manner from the drop-off area.

Dining hall view _ Board 7

The primary school students have an independent access designed to ensure maximum safety and autonomy. The location of the building facilitates easy access to key communal spaces, such as the cafeteria and the gymnasium, specifically intended for their use.
The interior spaces of the primary school are designed with a **high degree of flexibility**, allowing



Primary school axonometry _ Board 7



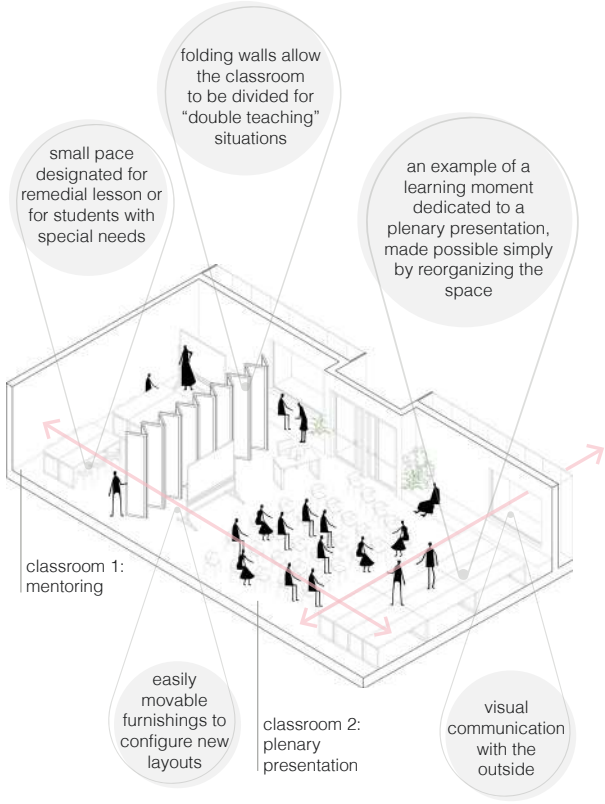
modifications over time according to the needs and growth of the students.
The outdoor spaces dedicated to the primary school are situated in close proximity to the building, ensuring constant supervision and a protected environment. These spaces include well-equipped play areas designed to **stimulate learning and socialization**. In the central courtyard of the platform, there are dedicated areas that can be used both as recreational zones and for **outdoor learning**.
The orientation of the building and the placement of the windows are carefully considered to **maximize natural light**, enhancing the well-being of the students and **creating a positive learning environment**.
The materials used for construction are selected for their **durability and safety**, ensuring a welcoming and stimulating school environment.

Gymnasium and Lyceum
The Gymansium and Lyceum are developed within the same building, creating a seamless **educational continuity** between the two school levels. This design choice facilitates the transition of students from middle school to high school, promoting an uninterrupted educational pathway and fostering a sense of community among students of different ages.
The prominent feature of the building is a large staircase that serves not only as a vertical connector between floors but also as a **multifunctional common space**. This staircase is designed to be a place for meeting, socializing, and relaxing, providing students with a welcoming environment where they can interact, study, and unwind.

Render view Lyceum and Gymnasium_Board 8

The building is organized to ensure **easy access to key communal spaces** such as the gymnasium, auditorium, laboratories, and specialized classrooms. This setup promotes the efficient use of resources and encourages interaction among students of different school levels.

The laboratories are equipped with state-of-the-art facilities designed to support a wide range of **educational and experimental activities**.
The specialized classrooms are configured to provide optimal learning environments, featuring natural lighting, adequate ventilation, and sound-absorbing materials to enhance acoustic comfort.



Lyceum Axonometry_Board 8

Accomodation
The dormitory in the project is located on the third floor of the school complex and has an autonomous and **independent access**, ensuring privacy and tranquility for the occupants while maintaining an efficient connection with the educational and common areas. This arrangement facilitates the

daily movements of students and staff.
The dormitory consists of **single and double rooms**, each equipped with a private bathroom to ensure maximum comfort and privacy. The living spaces are designed to be functional and welcoming, providing an environment suitable for both study and rest. The dormitory is intended for both students and teachers, fostering an **integrated and cohesive environment**.
In addition to the living spaces, the dormitory includes several common areas designed to promote socialization and the well-being of the occupants. These areas include recreation rooms, study rooms, common kitchens, and relaxation spaces. These common areas are designed to create a stimulating and pleasant environment where students and teachers can interact, study together, or relax after a day of classes.

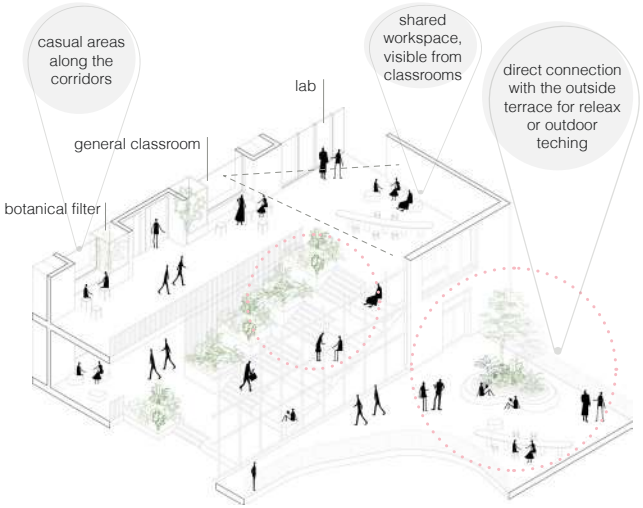
Common-use education and community spaces
Common-use educational and community spaces have been designed with particular attention to create an integrated and multifunctional environment that meets the needs of both the school community and the external public. The **central connective space**, with its combination of educational and cultural areas, represents **the beating heart of the Educational Bridge project**. In addition to hosting temporary exhibitions and a dispersed library, the connective space includes flexible areas that can be adapted for various activities, facilitating the creation of a lively and interactive environment.

Amphitheater
The auditorium is designed to host a wide range of events, from school presentations to conferences and performances open to the public. This accessibility makes it easier for the **local community** to use the auditorium, making it a focal point for cultural and social activities. The gyms, also located within the connective space, are designed for both school and **extracurricular use**. During school hours, the gyms are used for physical education classes and other sports activities. Outside of school hours, the gyms are open to the public, providing a space for sports and recreational activities for the community.

Dining Hall
The dining hall is designed to be a welcoming and functional environment, serving not only students but also, at specific times, external users. Centrally located within the school complex, it allows easy access from all educational areas. The dining hall features a spacious interior with comfortable tables and chairs, accommodating a large number of students during meals. Adjacent to the indoor space, the dining hall also includes a well-equipped outdoor area.

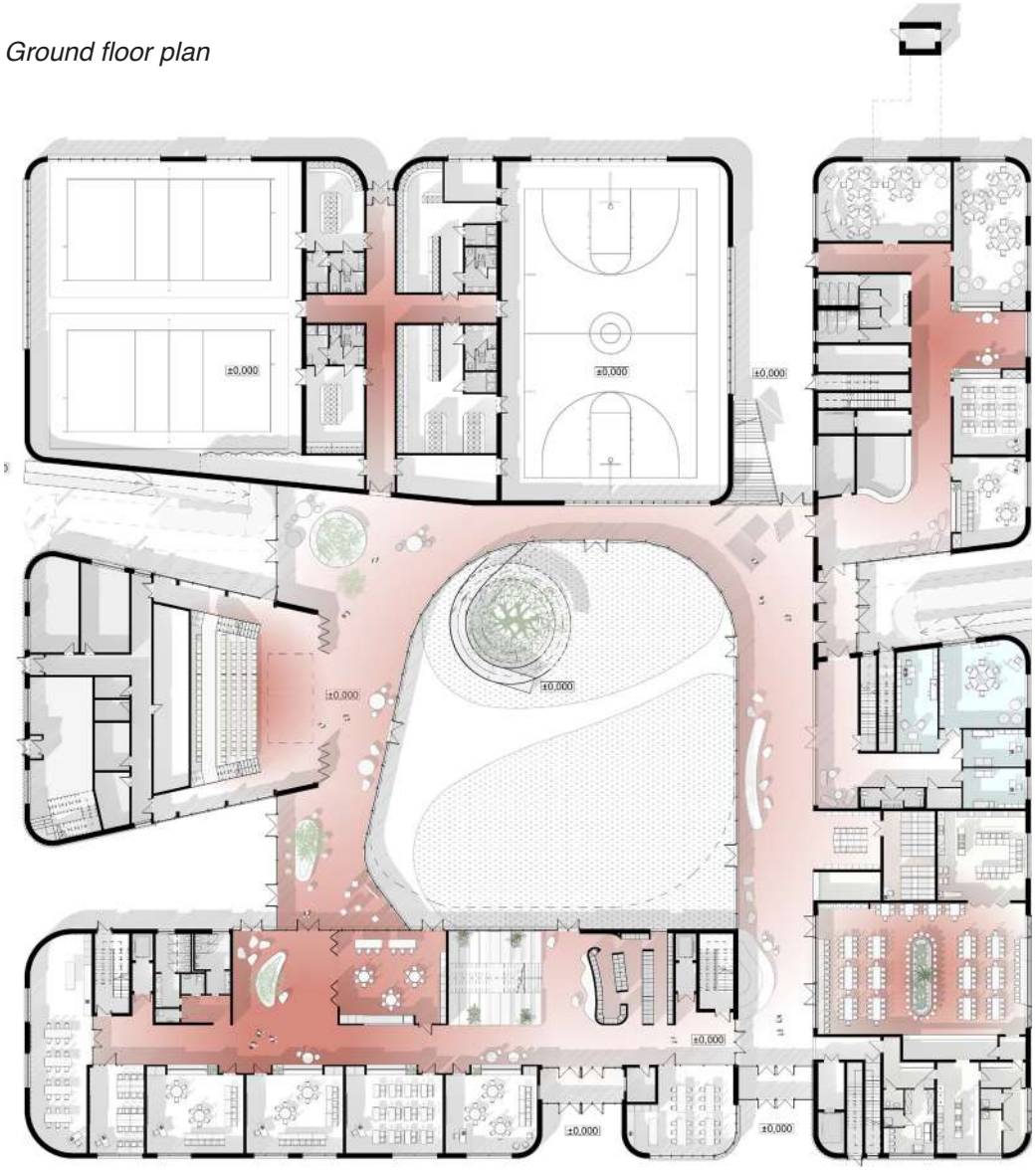
Outdoor area
The outdoor spaces feature fluid and organic forms that facilitate a **continuous dialogue between indoor and outdoor areas**. These areas include gardens, playgrounds, sports fields, and relaxation zones, all designed to be easily accessible and safe. The outdoor spaces dedicated to the pri-

Render view Social Straircase_Board 7

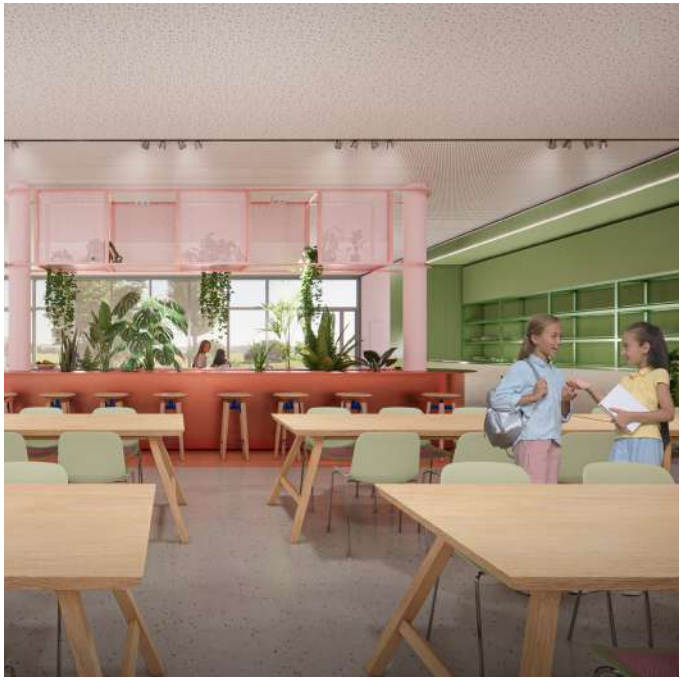


Social Staircase Axonometry_Board 7

Ground floor plan



mary school are located in close proximity to the building, ensuring constant supervision and safety. These spaces include well-equipped playgrounds designed to **stimulate learning and socialization**. The outdoor spaces are designed to improve the microclimate and include gardens and green areas. **Permeable materials** and **native vegetation** are implemented.

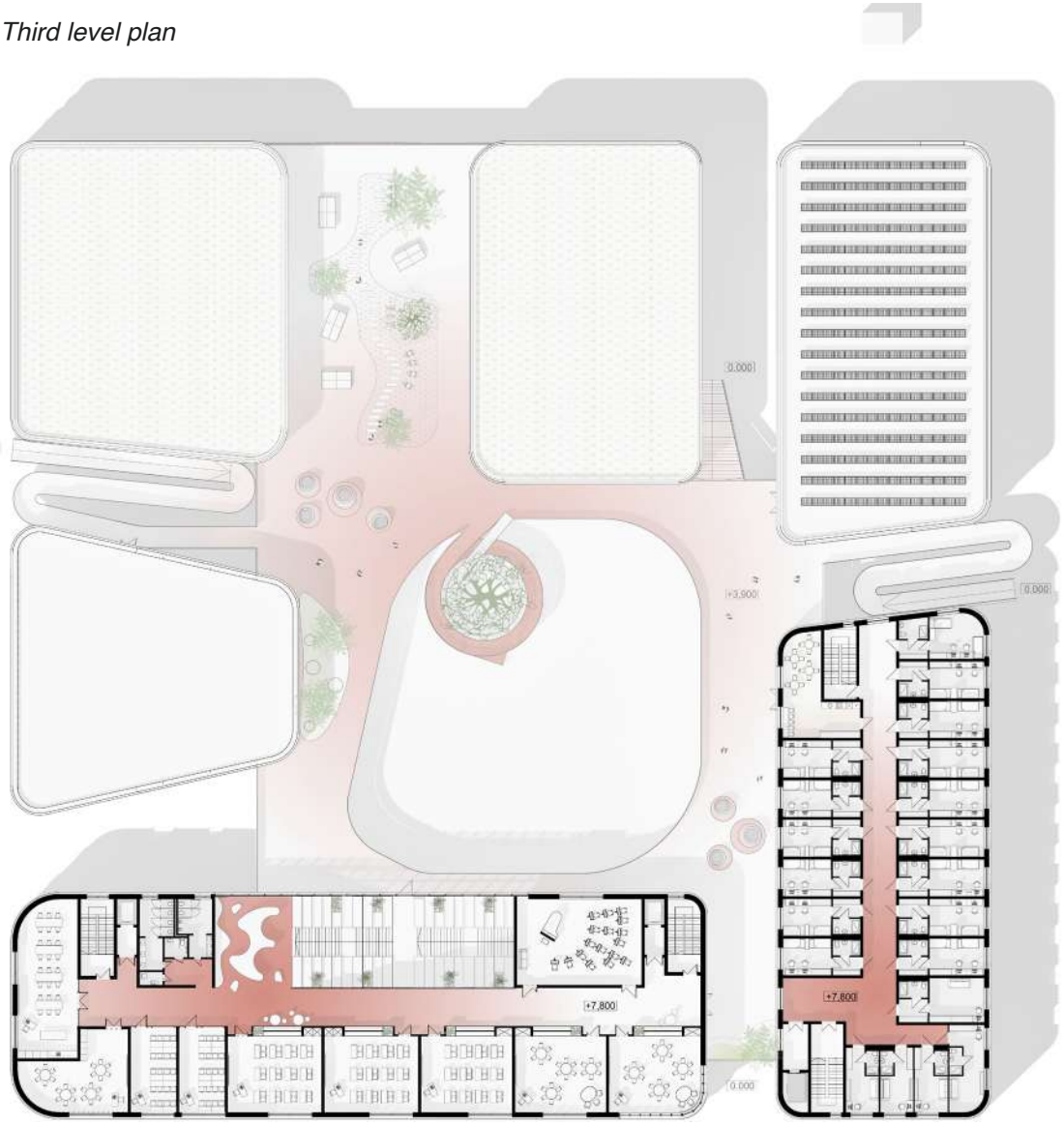


Dining Hall view_Board 6

Second level plan

Classroom view_Board 7

Third level plan



Dormitory view_Board 8

FULL-DAY SCHOOL PRINCIPLE AND PEDAGOGICAL ASPECTS

" promote a sense of community within the school

The buildings constituting the campus have been carefully designed to meet the pedagogical and functional needs of the school. The placement of the various functional areas has been studied to enhance the usability of the spaces and facilitate the flow of students and staff.

The design vision for this campus goes beyond the mere concept of an educational building. The aim is to create a place that not only excels in its educational function but also becomes **a landmark within the social and urban fabric**.
The functionality of spaces is a crucial aspect of the **School of the Future**. Thanks to the use of a modular and flexible architectural system, the classrooms in the school buildings are not static environments solely for lessons, but are conceived as real learning laboratories, extendable and transformable to adapt to various needs and teaching methodologies, fostering interaction between students and teachers. Spaces for teaching and administrative staff are designed to encourage collaboration and co-design. The furniture is **mobile and adaptable**, designed to meet changing educational needs and ensure comfort and functionality in every context.

" simple and clear hierarchy of flows and access

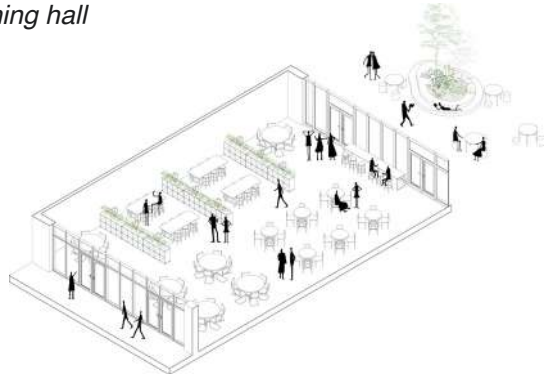
The flexibility of spaces is therefore fundamental, as is the presence of areas dedicated to specific activities, such as scientific laboratories, multimedia spaces, and rooms for IT and language activities.
The organization of outdoor spaces is as important as the interior: recreational areas are conceived as places of leisure and as extensions of the educational environments, where **students can explore, experiment, and learn outdoors**.

" uplaces designed to foster collaboration and co-design

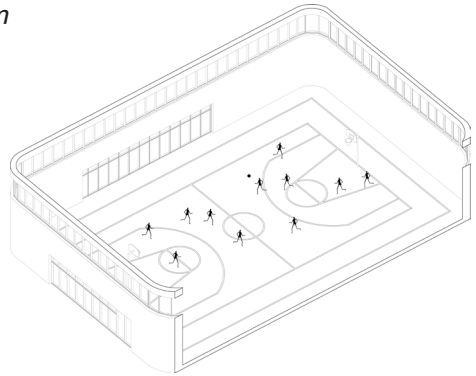
The internal organization of the school buildings has been studied to promote **connectivity and accessibility** between the different functional areas. Pathways have been designed to be welcoming and safe, encouraging students to move within the spaces easily and pleasantly, thanks also to wayfinding strategies. Additionally, multifunctional spaces have been provided, serving as places for meeting and socialization, promoting a sense of community within the school.

The classrooms are flexible spaces that, in addition

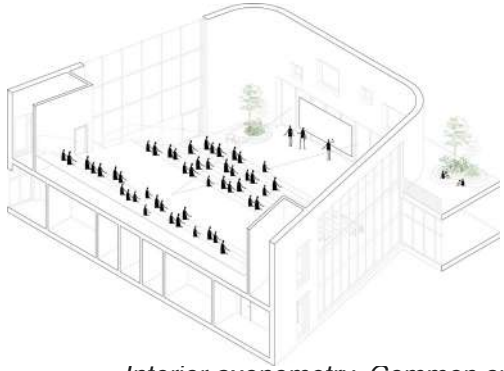
Dining hall



Gym



Auditorium

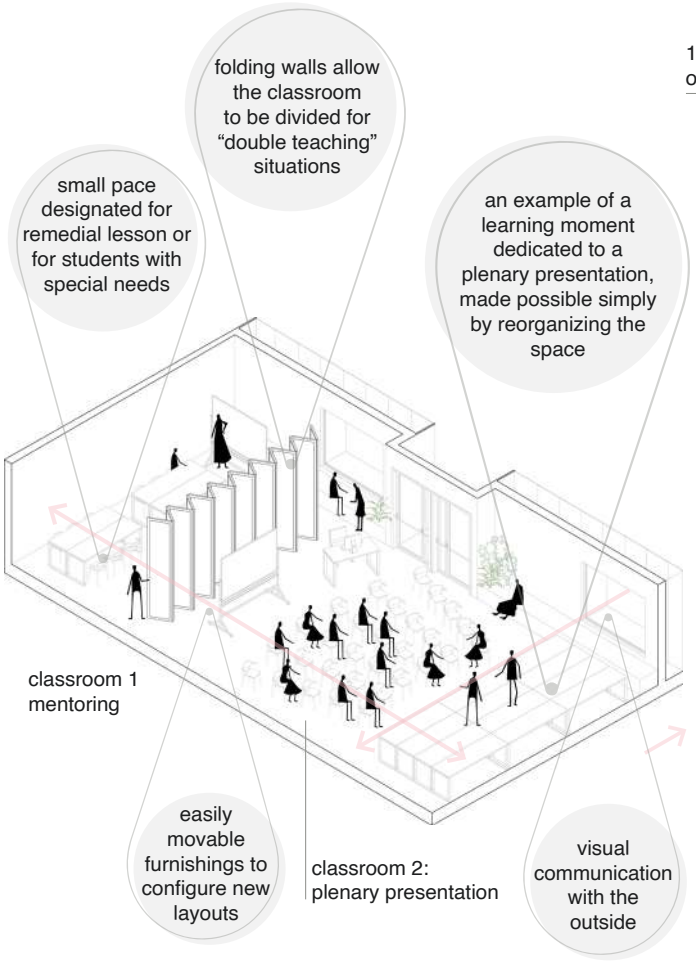


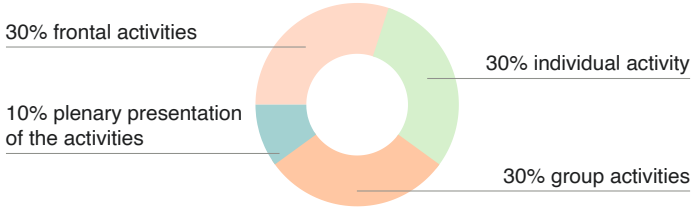
Interior axonometry_Common spaces

"school becomes not only a learning environment, but the new civic center

to learning, **encourage collaboration and creativity**, with innovative solutions such as co-teaching lessons, equipped walls, and visual relationships with the connective space. Most of them can be connected two by two with sliding walls and are equipped with flexible and reconfigurable furniture.
In terms of orientation, they have been positioned along the East, West, and South fronts to ensure efficient solar exposure and optimal internal lighting and well-being conditions.

The **Social Staircase** within the Lyceum and Gymnasium building, which connects the spaces on each floor and is lined with classrooms and laboratories, is a connective space that becomes a place for meeting and informal learning, creating relationships between students through visually appealing design.
The **connective space acts as an extension of the educational spaces**, providing students and teachers with a place to support educational activities.
The approach to designing educational spaces also aims to promote the emotional and social well-being of students.
Bright, airy, and well-ventilated environments, along with green spaces and relaxation areas, contribute to creating a school environment that supports the **mental health and overall well-being of students**.





GYMNASIUM AND LYCEUM - FLEXIBLE CLASSROOMS, PERSONAL LEARNING

Given the inevitable gradual abandonment of frontal teaching in favor of a more tailored knowledge transmission to individual learners, we have envisioned a flexible scenario where each classroom has been structured to accommodate multiple learning modalities within the same space.

To promote this approach, expandable classrooms are paired and connected, allowing them to be easily combined or divided according to each lesson situation.
The theme of transparency and visual communication is strongly emphasized, fostering a sense of community among students and promoting their autonomy by teachers.

* MANY WAYS TO LEARN

Several studies demonstrate that learning is more effective when organized in dynamic modes, as follows:

INTERCONNECTION BETWEEN BUILDINGS

The Educational Bridge project envisions an integrated system of connection and synergy among the various buildings in the school complex, with the goal of creating a cohesive and functional environment.
The design of an integrated system is not limited to the mere physical proximity of the buildings, but extends to the creation of a fluid network of pathways, common spaces and functional areas that promote interaction, safety and efficiency.

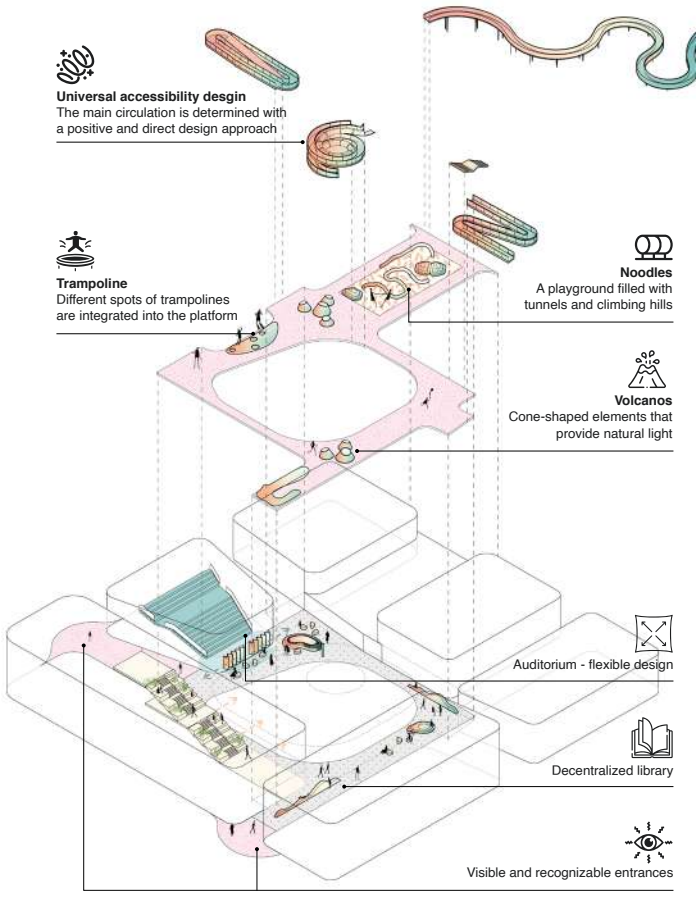
"Accessible ramps and pathways ensure that everyone, regardless of their physical abilities, can move freely and safely

At the heart of the complex is the plate, a custom and pop element that dynamically adapts to the different functional and social needs of the project.
This plate not only physically connects the various main buildings, but also represents the core of our innovative vision, responding to accessibility needs, creating educational continuity and spaces for socialization.

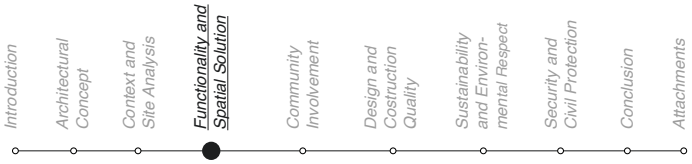
The plate declines and transforms, becoming a ramp to provide access for the disabled, a playground for play and sports activities, and a place for students and staff to meet and socialize.
Its flexibility makes it possible to create dynamic and engaging environments where educational activities merge with recreational ones in a continuous dialogue between indoors and outdoors.
Architecturally, the plate is designed with an attractive and modern aesthetic, with materials that ensure durability and sustainability.
The surfaces are designed to be used in different ways: they can accommodate educational gardens, green areas for relaxation, spaces for temporary events or outdoor exhibitions.
Each plate area is designed to stimulate creativity and interaction, fostering an inclusive and participatory environment.

"Its ability to adapt and transform in response to the needs of the school and local community makes it a crucial element in the success and sustainability of the project

The plate serves as the backbone of the campus, integrating educational and community functions. During school hours, students can easily move between classrooms, laboratories and recreational areas, while during extracurricular hours, the plate becomes a gathering place for the entire community.
Accessible ramps and pathways ensure that everyone, regardless of their physical abilities, can move freely and safely.
In conclusion, the custom plate represents the beating heart of our project, an element of innovation and versatility that makes the school complex unique and state-of-the-art.
Its ability to adapt and transform in response to the needs of the school and local community makes it a crucial element in the success and sustainability of the project.



Connective and platform schemes_Board 5



SITE (IN HYPOTETICAL SITUATION A)

	Unit of measurement	Quantity
Site surface area	sq.m	**22.800**
Site development intensity	%	**0,45**
Site development density	%	**0,29**
Green portion of the site	%	**0,43**

BUILDINGS

Primary education	Unit of measurement	Quantity
Total floor area	sq.m	**1.264,78**
Usable floor area	sq.m	**1.145,01**
Volume	cubic metres	**5.971,10**
Number of floors	n°	**2**
Height of the building / part of the building	m	**8,7**

Gymnasium, Lyceum, Shared education and community spaces	Unit of measurement	Quantity
Total floor area	sq.m	**7.471,28**
Usable floor area	sq.m	**6.874,08**
Volume	cubic metres	**41.655,25**
Number of floors	n°	**1-3 levels**
Height of the building / part of the building	m	**7,8 - 12,7**

BUILDINGS

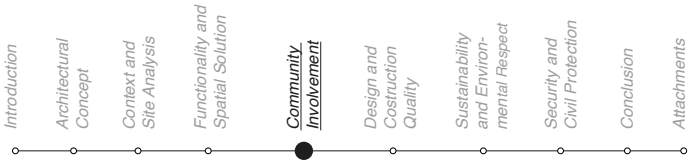
Accomodations. Dormitory	*Unit of measurement*	*Quantity*
Total floor area	*sq.m*	**813,45**
Usable floor area	*sq.m*	**685,82**
Volume	*cubic metres*	**4.175,76**
Number of floors	*n°*	**1**
Height of the building / part of the building	*m*	**4,8**

Civil Protection. Dual-use shelter	*Unit of measurement*	*Quantity*
Total floor area	*sq.m*	**1.598,83**
Usable floor area	*sq.m*	**1.430,37**
Dual-use floor area	*sq.m*	**929,45**
Volume	*cubic metres*	**5.968,60**
Number of floors	*n°*	**1**

GENERAL DATA OF THE PROJECT

	Unit of measurement	*Quantity*
Total floor area	*sq.m*	**10.403,22**
Usable floor area	*sq.m*	**9.498,62**
Dual-use area in the civil protection structure	*sq.m*	**1.598,83**
Volume	*cubic metres*	**55.279,31**
Number of floors	*n°*	**1-3 levels**
Building height	*m*	**12,7**

COMMUNITY INVOLVEMENT



Our school of the future is designed for the community. In times of crisis and war, before rebuilding buildings, it is necessary to start with rebuilding a sense of belonging, solidarity and caring. Educational Bridge wants to be this, a point of restart.

The Educational Bridge project integrates dedicated community spaces, transforming the school into a civic center that promotes social interaction and community involvement. The school offers multifunctional spaces for meetings, cultural events and artistic activities, accessible both during and outside school hours, such as the auditorium and gyms. The cafeteria serves as a meeting point for outside users during specific time slots.

The project emphasizes the importance of post-conflict social inclusion by integrating psychological support and spaces for intergenerational interaction. The use of sustainable materials and green technologies demonstrates how innovation can support community resilience and well-being. In addition, the focus on accessibility ensures that all people, including those with disabilities, can move freely around the school complex, promoting an equitable and inclusive society.

SPACES DEDICATED TO THE COMMUNITY

"The project emphasizes the importance of post-conflict social inclusion by integrating psychological support and spaces for intergenerational interaction

The project strategically integrates spaces dedicated to the community, emphasizing the role of the school as a civic center. The vision is to create a school environment that not only meets educational needs but also becomes a **focal point for the local community**, promoting social interaction and community involvement.

The School as a Civic Center

The school is designed to function as a civic center, offering spaces that can be used by the community for various purposes. These include multifunctional rooms for meetings and events, spaces for cultural and artistic activities, and areas for conferences and seminars. The auditorium and gymnasiums are accessible both during school hours and outside of them, allowing the community to use these facilities for sports, cultural, and recreational activities.

Additionally, the dining hall is designed to be a gathering point for the external public during certain time slots, thus promoting shared use of the spaces and facilitating **interaction between students and local residents**.

Creating Safe Spaces and Introverted Ecosystems

A key aspect of the project is the creation of safe spaces and introverted ecosystems. The plaza serves as a central connective area that houses the main public functions, such as temporary exhibitions and the dispersed library, offering a protected and secure environment for all community activities. This space is designed to be a protected microcosm where students, teachers, and community members can interact and collaborate in a safe and stimulating environment.

Its protected public functions allow for the creation of a communal area where everyone can feel part of a broader, inclusive ecosystem.

Positioning of Public Functions

The public functions are strategically positioned on the outer part of the site, facilitating direct access by the public. This arrangement ensures that areas designated for community use are easily accessible without interfering with daily school activities. Spaces such as the auditorium, exhibition halls, and sports areas are located near the main access points, allowing for simple and immediate use by local residents. This design supports the idea of an open and inclusive school that serves as a **central hub for the community.**

The strategic placement of public functions on the outer part of the site allows for a clear distinction between school areas and those accessible to the public.Separate entrances for public functions allow for effective access control, ensuring that community activities can take place harmoniously and safely.

Protected and Accessible Functions

The design of public spaces within the plaza ensures that all functions are protected and secure, yet easily accessible. Areas dedicated to public

activities are separated from the main educational spaces, reducing the risk of interference and ensuring that both areas can operate effectively and independently.

Integration with the Urban Fabric

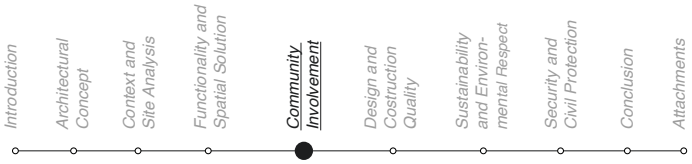
The project envisions a harmonious integration with the existing urban fabric, enhancing accessibility and connectivity with the surrounding neighborhood. Green spaces and pedestrian pathways connect the school with nearby residential and commercial areas, **encouraging community use of school spaces and creating a sense of continuity between the school and the urban environment.**

"the school becomes a vital civic center that promotes social interaction, safety, and well-being for all community members

The integration with the existing urban fabric not only facilitates access to the school but also helps revitalize the surrounding area, creating a more vibrant and cohesive environment. Safe and well-marked pedestrian pathways invite residents to use school spaces for recreational and cultural activities, strengthening the bond between the school and the local community.

In conclusion, the project places strong emphasis on creating spaces for the community and community involvement. Through the integration of protected and easily accessible public functions, the school becomes a vital civic center that promotes social interaction, safety, and well-being for all community members.

Render view Auditorium_Board 7



*ESTHETIC CULTURAL IDENTITY

The aesthetic and cultural identity of the Educational Bridge project is deeply rooted in the local context and reflects Ukraine's rich cultural heritage while integrating with contemporary design elements. The goal is to create a school environment that not only meets functional and educational needs, but also celebrates and promotes local culture, helping to strengthen the sense of belonging and identity among students and the community.
The central bridge-plate of the project, besides serving a practical function of connectivity between the various buildings, is conceived as a symbol of unity and continuity. Its shape and structure evoke the idea of a bridge that is not only physical but also cultural, connecting past and future, tradition and innovation.
This iconic element serves as a visual and cultural landmark for the community, reinforcing the sense of identity and cohesion.
The interior and exterior spaces of the school complex are designed to tell a story, using art installations and information panels that illustrate Ukraine's history, culture, and traditions. These educational elements not only beautify the environment, but also provide informal learning opportunities, stimulating students' curiosity and strengthening their connection to their own cultural heritage.
The mission of our project is to be a part and starting point of the new style of school building in Ukraine. Educational Bridge represents a chance to restart from the creation of a new sense of identity, sadly worn out by war.

*POST-WAR SOCIAL INTEGRATION

"school is the starting point to restore the war-wounded community

The Educational Bridge project was developed with a focus on post-conflict social integration, recognizing the crucial importance of schools as a central element in rebuilding a conflict-affected society. After the devastation of war, the need to create safe, welcoming and inspiring spaces became a priority.
The school is not only a place of learning, but also represents a point of reference for the community, where **education, psychological support and social cohesion are intertwined**.

Psychological and Emotional Support Integrated into the Design
A key component of the design is the inclusion of spaces dedicated to **psychological and emotional support**.
These spaces are integrated into the school's design to provide easily accessible support for students and community members who have experienced war-related trauma.
Counseling rooms and psychological support centers are designed to be discreet and welcoming, with furniture and materials that promote a sense of calm and safety.

Intergenerational Integration Facilitated by Design
The project promotes intergenerational interaction by creating spaces where youth and adults can share experiences and knowledge.

Sustainability and Social and Environmental Revival
The use of sustainable materials and green technologies in the design not only reduces environmental impact, but also serves as an example of sustainable practices for the community.
The school buildings, designed with a focus on energy efficiency and waste reduction, educate students and the community about the importance of environmental sustainability. This approach contributes to an ecological and social renaissance, showing how innovation can support community resilience and well-being.

"This iconic element serves as a visual and cultural landmark for the community, reinforcing the sense of identity and cohesion

Inclusion of People with Disabilities
A key aspect of the project is the focus on the inclusion of people with disabilities.
The design of school and community spaces is conceived to **eliminate architectural barriers** and ensure total accessibility.
Elevators, ramps and obstacle-free paths allow everyone to move freely within the complex.
Furniture and equipment are chosen to be usable by people with different abilities.
This approach is essential to creating an equitable and accessible society for all, meeting the needs of inclusiveness as specified in the competition brief.


03
поверх
02
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DESIGN AND CONSTRUCTION QUALITY

***CONSTRUCTION TECHNOLOGIES AND MATERIAL**

"Ukraine's School of the Future is made of wood

The key concept that our project aims to advance is the innovative use of prefabrication and wood as the primary material for the development of the School of the Future in Ukraine. We aim for **maximum modularity** through the adoption of prefabrication techniques, with the goal of constructing flexible, sustainable, and easily adaptable school buildings to different local contexts.

Prefabrication and Modularity

Prefabrication allows for the production of building components in a controlled environment, reducing construction times and **improving the overall quality of the structures**. Prefabricated elements can be quickly assembled on-site, minimizing disruptions to the local community and accelerating the construction process.

This approach is particularly advantageous in a context like Ukraine, where the reconstruction of school infrastructure needs to be **rapid and efficient**.

The prefabricated modules are designed to be highly versatile and adaptable.

Innovative Use of Wood

Wood is chosen as the primary material for school construction for several reasons:

- **Environmental Sustainability:** Wood is a renewable and low-impact material. Additionally, wood has a natural carbon sequestration capacity, contributing to mitigating the effects of climate change;

- **Energy Efficiency:** Wooden structures offer excellent insulating properties, reducing the energy demand for heating and cooling buildings. This leads to greater energy efficiency and long-term operational cost savings;

- **Resilience and Durability:** When properly treated and maintained, wood is a durable and resilient material;

- **Healthy Indoor Environments:** Wood helps create healthy indoor environments by naturally regulating humidity and improving air quality. School environments built with wood are often perceived as more welcoming and comfortable, promoting the well-being of students and staff;

- **Flexibility and Adaptability:** Prefabricated wooden construction systems are highly flexible, allowing for rapid modifications and expansions of buildings.
  This adaptability is essential for responding to the needs of a growing student population and changes in teaching methodologies.

Advantages of Prefabrication in Wood

- **Reduction in Construction Time:** Prefabrication significantly reduces construction times, as components are produced simultaneously

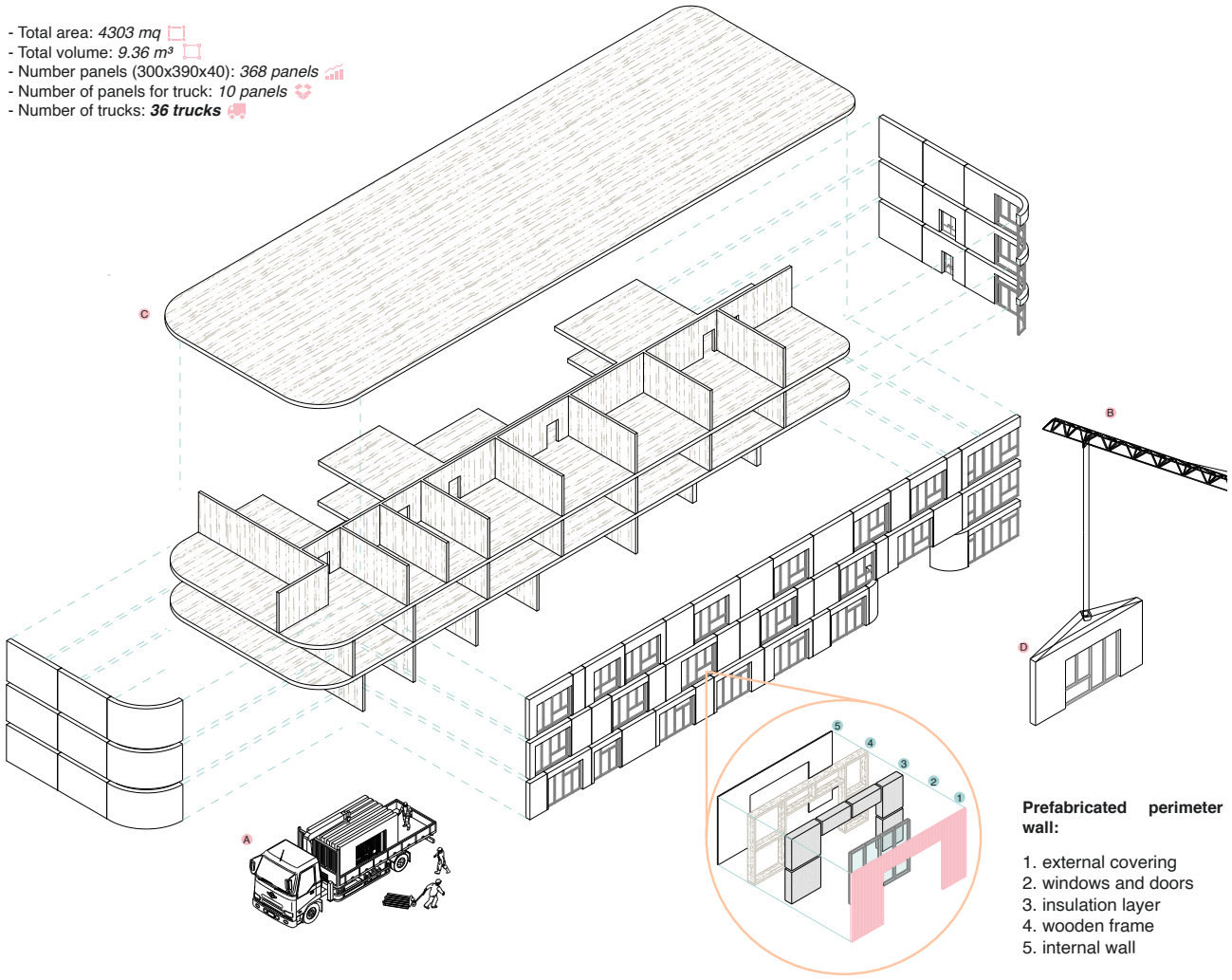
with site preparation work;

- **Controlled Quality:** Factory production ensures consistent quality control, reducing construction errors and enhancing the overall performance of buildings;
- **Minimization of Environmental Impacts**: On-site construction with prefabricated elements reduces the environmental impact on the construction site;
- **Workplace Safety**: Prefabrication improves workplace safety, as most operations take place in a controlled environment;
- **Scalability and Reproducibility**: Prefabricated systems can be easily reproduced in different contexts. This is particularly useful for creating a replicable school model in various regions of Ukraine.

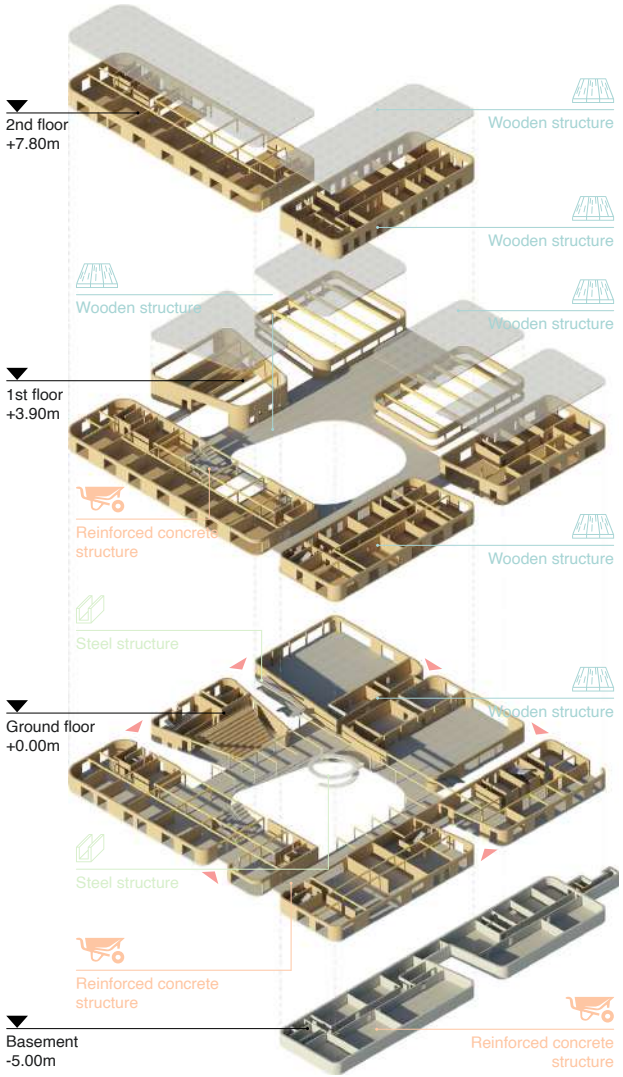
"refabricated wooden construction systems are highly flexible, allowing for rapid modifications and expansions of buildings

In summary, the use of prefabrication and wood as the primary material represents an **innovative and sustainable solution for constructing the schools of the future in Ukraine**.

This approach ensures high-quality and adaptable buildings capable of meeting current and future educational needs and positively contributing to the environmental and social context.



Modularity and effectiveness of construction_Board 10



Structural scheme_Board 5

*QUALITY OF THE BUILT ENVIRONMENT

The choice of materials and construction technologies is made to optimise the exploitation of materials and their characteristics. The load-bearing structure is mainly made of timber. The proposed construction technologies used to build the structures are as follows:

- **The inner walls will be made of CLT (cross laminated timber)** elements. These solid panels have a load-bearing capacity in both directions can also be used as bracing elements for lateral forces;
- The perimetral walls will be **timber-framed**, with vertical timber ribs flanked on both sides by OSB panels providing lateral rigidity;
- We propose **ribbed slabs** to save material (compared to a solid slab), weight and costs**;**
- The roof elements can be a **"multibox" type structure** with wooden ribs and OSB panels on both sides in order to optimise material consumption;
- For the structural parts with a big span, we plan to use **timber framwork beams** as the main structural elements;
- The foundations and ground level slab are proposed with a **reinforced concrete slab** that distributes loads and minimize differential settlements.

*PRINCIPLES FOR THE LONGEVITY OF THE BUILDING ENVELOPE

The longevity of the wooden building envelope of the Educational Bridge project is ensured by a series of technical and constructional measures that ensure its durability over time. One of the key aspects is the choice of wood as the main material for the supporting structure.
Wood, when properly treated and protected, can have an exceptional lifespan, as demonstrated by historic wooden buildings that have remained intact for centuries.

"Perimeter walls are designed with a stratigraphy that ensures breathability, preventing moisture stagnation that could cause rot or pest attacks.

The durability of wood structures depends largely on construction details.
One of the main strategies adopted is to avoid direct contact with water and moisture. This is achieved, for example, by elevating wood walls on concrete foundations, which keep them elevated from damp soil.
Perimeter walls are designed with a stratigraphy that ensures breathability, preventing moisture stagnation that could cause rot or pest attacks.
These measures prevent material degradation and ensure a long life of the building envelope.

SUSTAINABILITY AND ENVIRONMENTAL ASPECT

Our proposal for the Future School for Ukraine focuses on creating a sustainable and highly efficient educational environment through an energetically independent pavilion system. Each pavilion operates autonomously, managed by a Class A Building Management System (BMS) utilizing digital twin technology and BACS and TBM protocols. This system optimizes lighting, temperature, and air supply using sensors.

The design incorporates natural and artificial lighting with dimmable LED fixtures, efficient heating and cooling systems with radiant panels and VMC terminals, and a comprehensive photovoltaic system with a peak power of 250 kWp. A reversible heat pump, supported by geothermal probes, further enhances energy efficiency.

Air treatment is managed by thermodynamic heat recovery units and IAQ probes, with a biodegradable filter for purification. The modular design allows for adaptability and integration of new technologies, ensuring the school meets evolving community needs.

In conclusion, our sustainable design ensures each pavilion is energy-efficient and environmentally friendly, combining advanced technologies and materials to minimize environmental impact and maximize user comfort.

***ENERGY EFFICIENCY MEASURES**

Energetically Independent Pavilion System

Our proposal includes a pavilion system, in which each volume is energy independent. This approach not only optimizes energy management, but also allows for greater flexibility and adaptability to the specific needs of each building. Each pavilion will be equipped with self-contained facilities and systems designed to maximize energy efficiency and minimize carbon emissions. Each volume will be designed to create independent thermal zones, automatically managed by the BMS. This system will allow temperature and humidity to be adjusted according to the specific needs of each area, ensuring optimal comfort for users.

Building Management System

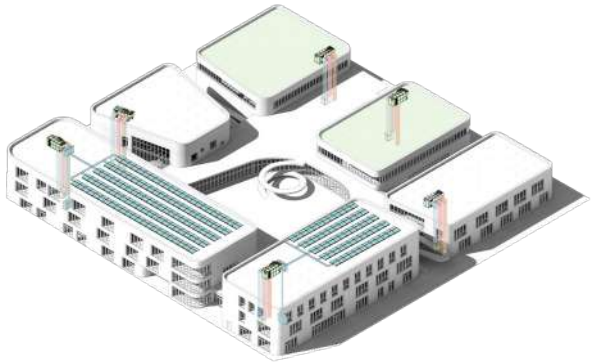
The buildings will be managed through a digital twin and a Class A BMS (Building Management System), using BACS (Building Automation and Control Systems) and TBM (Technical Building Management) protocols. The BMS will use light and occupancy sensors to manage:

- **Turning lights on and off**;
- Dimming of lights based on **natural brightness**;
- Setpoint temperature transition from **comfort** to standby;
- **Primary air supply**, creating independent and flexible thermal zones.

Natural and Artificial Lighting

We conducted a thorough **analysis of the distribution of natural lighting and the solar control system**. Artificial lighting will be provided by dimmable LED fixtures with a lifetime of more than 60,000 hours, managed by the BMS via the DALI

Thermal insulation_Board 5



Energy system scheme_Board 4

protocol.

Heating and Cooling System
For building heating and cooling, we have provided:

- **Classrooms, rooms and offices**: A dry floor radiant panel system combined with an air system to compensate for summer cooling with VMC terminals.
- **Common areas**: An all-air system.

These systems will completely eliminate manual regulation in individual rooms and will be highly efficient.

Photovoltaic
Our project involves the installation of **a photovoltaic system** with a peak power of 250 kWp. This will ensure full coverage of the energy needs of the buildings, exceeding the new European Union guidelines and contributing significantly to the sustainability of the project.

Heat Pump Generator
For the heat generator, we will use a reversible heat pump, also powered through the use of geothermal probes where possible. This system will ensure high energy efficiency and **reduced carbon emissions**.

Air Treatment and Renewal
Air treatment and renewal will rely on thermodynamic heat recovery units, controlled by **IAQ** (Indoor Air Quality) probes.
Air purification will be provided by a **biological and biodegradable filter**.

Community Support
The modular and adaptable design of our proposal responds to the diverse needs of the Ukrainian educational community, allowing **easy integration of new technologies and future solutions**.
This approach ensures that the school can evolve and adapt to the changing needs of the community, providing a sustainable, state-of-the-art learning environment.

Conclusion
Our system, based on **principles of sustainability and energy conservation**, ensures that each pavilion is energy independent and highly efficient. The adoption of advanced technologies and sustainable materials, together with an integrated and intelligent energy management system, will ensure **reduced environmental impact** and high comfort for all building users.

Bioclimatic section_Board 5

*INTEGRATION INTO THE NATURAL CONTEXT

Our architectural solution places a strong emphasis on integrating the built environment with the natural surroundings. This approach not only enhances the aesthetic appeal and ecological value of the project but also promotes the well-being of students, staff, and the wider community.

The design respects and preserves existing natural features such as mature trees, water bodies, and topographical variations. By carefully analyzing the site, we have positioned buildings and outdoor spaces to avoid disrupting these natural elements, thereby maintaining the site's ecological integrity. Where possible, we have enhanced these features to create a harmonious and sustainable environment.

A significant portion of the site is dedicated to green spaces, which account for at least 40% of the total site area. These green spaces include gardens, lawns, and landscaped areas that provide habitats for local flora and fauna, contributing to biodiversity. Green roofs and vertical gardens are incorporated into the building design, further increasing green cover and supporting urban biodiversity.

"The architectural design ensures a strong visual and physical connection between the school and its natural surroundings

The school complex includes various outdoor areas designed for both educational and recreational purposes. These spaces include botanical gardens, orchards, vegetable patches, and meteorological learning stations. Such areas offer hands-on learning opportunities for students, promoting environmental awareness and sustainability education.

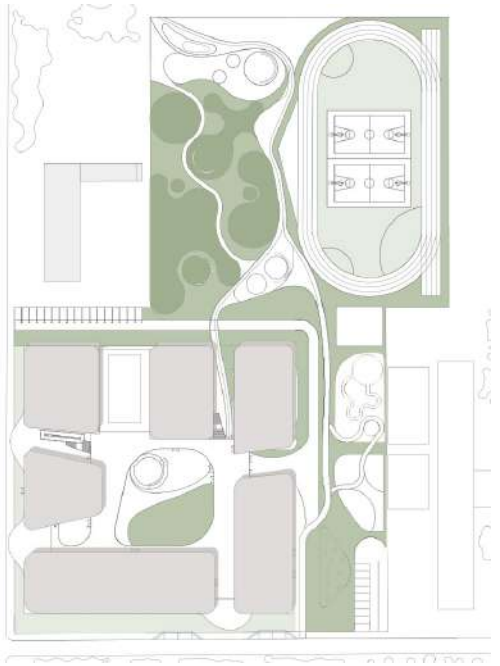
The landscaping design prioritizes the use of native and drought-resistant plant species, which require minimal irrigation and maintenance. Sustainable irrigation systems, such as rainwater harvesting and drip irrigation, are implemented to conserve water. Permeable paving materials are used in outdoor areas to reduce surface runoff and promote groundwater recharge.

Our design maximizes the use of natural light and ventilation, reducing the need for artificial lighting and mechanical cooling. Large windows, skylights, and strategically placed openings allow ample daylight to penetrate indoor spaces, creating a healthy and energy-efficient environment. Natural ventilation systems are integrated to enhance indoor air quality and thermal comfort.

The architectural design ensures a strong visual and physical connection between the school and its natural surroundings. Open courtyards, terraces, and walkways seamlessly blend indoor and outdoor spaces, encouraging interaction with nature. The building layout and orientation are designed to provide unobstructed views of the surrounding landscape, fostering a sense of tranquility and connection with nature.

The selection of building materials and construction practices reflects our commitment to sustainability. We use eco-friendly, locally sourced, and recycled materials that have a low environmental impact. Construction methods are chosen to minimize site disturbance and protect the natural environment.

By integrating natural elements into the school design, we create an environment that serves as a living laboratory for environmental education. Students are encouraged to engage with nature, participate in gardening, and learn about sustainable practices. This hands-on experience fosters a sense of stewardship and responsibility towards the environment.



Green area plan

* ECONOMICAL SUSTAINABILITY

Our proposal for the Future School for Ukraine prioritizes economic sustainability, ensuring that the project is not only environmentally responsible but also financially viable in the long term.

* Cost-Effective Construction Techniques:
We have chosen construction techniques and materials that optimize cost without compromising on quality or sustainability. The use of locally sourced, recycled, and eco-friendly materials reduces transportation costs and supports the local economy. Advanced construction methods such as modular and prefabricated components allow for faster build times and reduced labor costs.

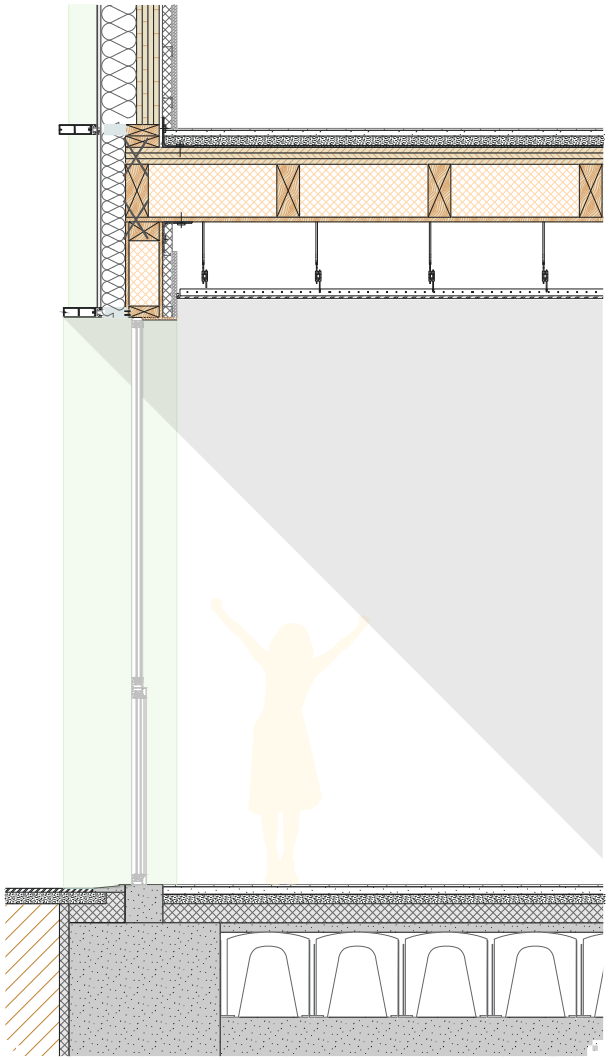
* Energy Efficiency and Reduced Operational Costs:
Our design ensures that each pavilion within the school complex operates independently in terms of energy. By incorporating nearly zero-energy building (nZEB) principles, we significantly reduce the operational costs associated with energy consumption. The use of high-efficiency heat pumps, photovoltaic panels, and geothermal systems minimizes reliance on non-renewable energy sources, leading to substantial savings on utility bills.

* Long-Term Maintenance and Durability:
The materials and technologies selected for the project are not only sustainable but also highly durable, reducing the need for frequent repairs and replacements. This longevity translates into lower maintenance costs over the building's lifecycle. Additionally, the integration of a sophisticated Building Management System (BMS) ensures optimal operation and maintenance, preventing costly system failures and extending the lifespan of the building's infrastructure.

* Scalable and Adaptable Design:
Our modular pavilion system allows for scalability and adaptability, ensuring that the school can evolve with changing needs and future growth. This flexibility reduces the need for significant structural changes or new constructions, which can be cost-prohibitive. The ability to easily reconfigure spaces ensures that the school remains functional and relevant, avoiding obsolescence and the associated economic costs.

* Community and Economic Impact:
By designing spaces that can be utilized by the community beyond school hours, we enhance the economic value of the project. These multifunctional spaces can host events, workshops, and other activities that generate revenue, contributing to the school's financial sustainability. Moreover, the school's construction and operation create jobs and stimulate economic activity in the local area.

* Investment in Renewable Energy:
The incorporation of renewable energy sources such as solar and geothermal energy not only reduces environmental impact but also provides economic benefits. The initial investment in renewable energy infrastructure is offset by the long-term savings on energy costs. Furthermore, potential incentives and subsidies for renewable energy projects can further enhance the economic feasibility of the school.



Technical detail of the facade_Board 10

SECURITY AND CIVIL PROTECTION

The School of the Future in Ukraine prioritizes security and civil protection, especially during military conflicts. The design includes shelters capable of accommodating occupants comfortably for up to 48 hours, with features to withstand shock waves and explosive impacts.

Built with reinforced concrete and stone materials, the shelters have multiple emergency exits, high ceilings, and provisions for heating, ventilation, and lighting. They ensure accessibility with elevators and smooth pathways for all population groups.

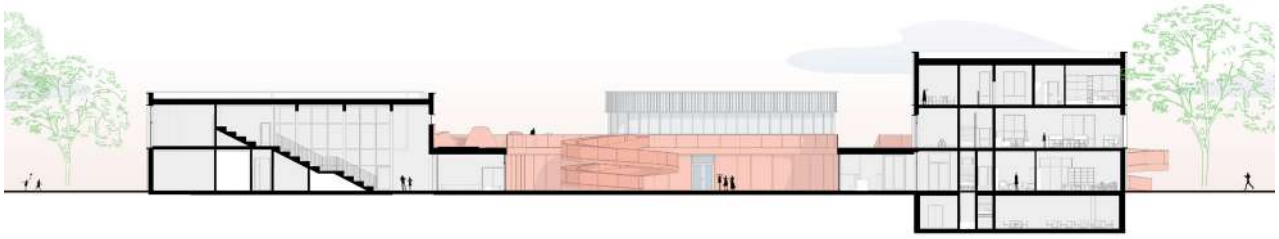
Even during emergencies, the educational process continues in well-equipped shelters, adhering to Ukrainian civil defense standards. These shelters also double as multifunctional spaces during peacetime, enhancing their utility.

Overall, the project combines safety, resilience, and adaptability to create a secure and supportive educational environment.

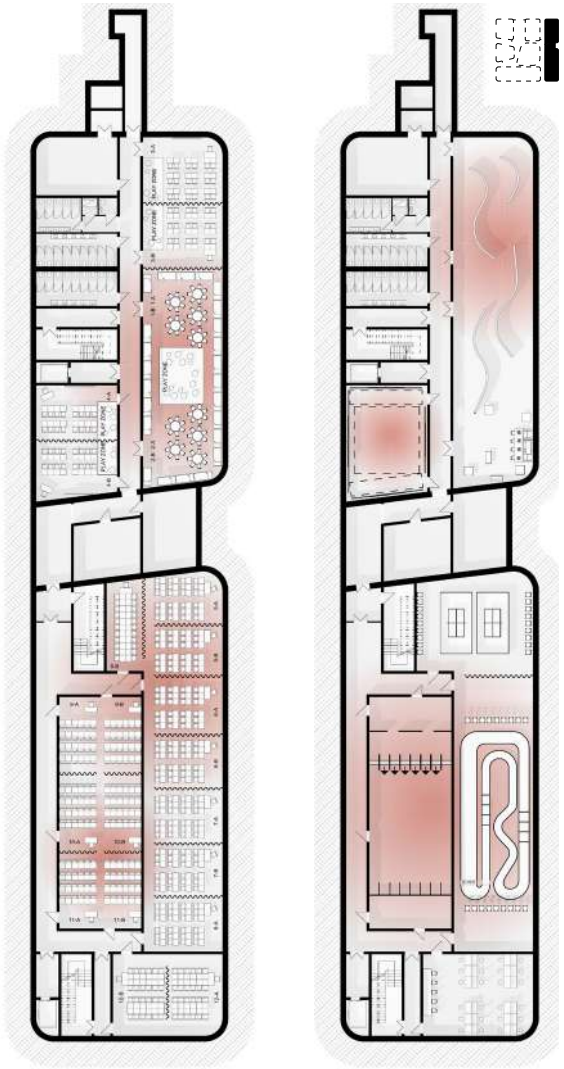
*** SECURITY AND CIVIL PROTECTION**

Civil defense encompasses a wide range of measures aimed at preventing and mitigating the consequences of emergencies and disasters, as well as providing assistance to victims. It is important to have adequately equipped shelters that can ensure the safety and comfort of children and workers during prolonged stays, especially during times of military conflict when this need is constant.
The duration of an air raid warning ranges from 15 minutes to 8 hours, so shelters should be designed to accommodate occupants comfortably and without health risks for extended periods. Shelter accommodations should be suitable for stays of at least 48 hours.
Shelters must meet requirements for external construction and materials: load-bearing and exterior walls and roofs should be made of reinforced concrete, brick, or other stone materials, and be embedded in the ground to withstand loads from shock waves or explosive objects.
Shelters should be of high quality, comfortable, and durable. They should have the necessary number of emergency exits directly to the street, doors and stairs accessible to all population groups, a ceiling height of no less than 2.7 meters, and provisions for heating, ventilation, alternative power sources, and lighting.
Accessibility is the foundation of every solution, without physical or educational barriers. Schools recognize that all children are different, but the respect and opportunities they receive are absolutely equal. Schools are equipped with cargo-passenger elevators that descend to the underground level.
Accessible navigation on adjacent paths, clearly visible entrance markings from a distance, and pathways leading to shelters should have smooth surfaces and be wide enough for a group of children to walk side by side.
Visual, auditory, and tactile information systems about the type and location of services provided, as well as potential dangers, are provided. Duplex (auditory and visual) alarms connected to the alert system notify people of fire or other hazards.
- Sanitary-hygienic facilities are equipped with handrails, bars, suspended trapezes, and other equipment.
- Spaces with regular seating arrangements provide free areas for wheelchair users.
The educational process may be completed in shelters, and after the all-clear signal, participants can return to educational institutions and continue learning with necessary adjustments. The project includes conducting the educational process during air raid warnings, with the possibility of continuing lessons, including in shelters equipped with adequate lighting and seating.
Protection of workers, visitors, and residents from certain hazards arising from emergencies during peacetime and the actions of weapons during special periods are provided in accordance with the requirements of Article 32 of the Civil Defense Code of Ukraine and DBN 2.2.5-23 "Protective Structures of Civil Defense".
The primary method of protecting workers, visitors, and residents from harmful factors of technological emergencies is sheltering in protective structures (PS) of civil defense. According to regulatory documents, the creation of the PS fund is carried out in

advance by adapting basements to serve as PS at an elevation of -3.300 m.
Underground premises serve as civil defense protective structures, providing radiation protection for group P-4. The premises are designed to shelter simultaneously students from the school complex, preschool children, and service personnel, totaling 635 people, including 554 children.
To protect people from hazards arising from emergencies during peacetime and the actions of weapons during special periods, it is necessary to arrange a protective structure - a radiation protection shelter of group P-4 (Kz=200, Pf=100 kPa), which will be located in the basement at an elevation of -3.450 m.
The total area of the radiation protection shelter required to accommodate the population is calculated per person based on the floor area of the main premises: 2 m² per shelter for students in grades 1-2, 1.6 m² for students in grades 3-4, 1.3 m² for students in grades 5-12, and 1 m² for educational institution staff, according to the requirements of Appendix B of DBN 2.2.5-23.
In addition to the main premises for sheltering, auxiliary premises are required for radiation protection. These include storage rooms for contaminated outdoor clothing (0.07 m² per person), food storage rooms (5 m²), with an additional 3 m² for every 150 sheltered individuals beyond 150 people, sanitary and medical facilities, storage and consumption rooms for food and water, and engineering premises. Separate sanitary facilities are provided for boys and girls.
Water Supply
The water supply system must be designed and connected to the building, but in case of external water supply and sewerage network destruction, emergency water reserves are created, providing a minimum drinking water supply of 6 liters per person for the entire planned stay of 48 hours.
Calculation of the amount of emergency water supply: drinking water reserve in containers calculated at 3 liters per person per day.
Filtering Ventilation and Equipment:



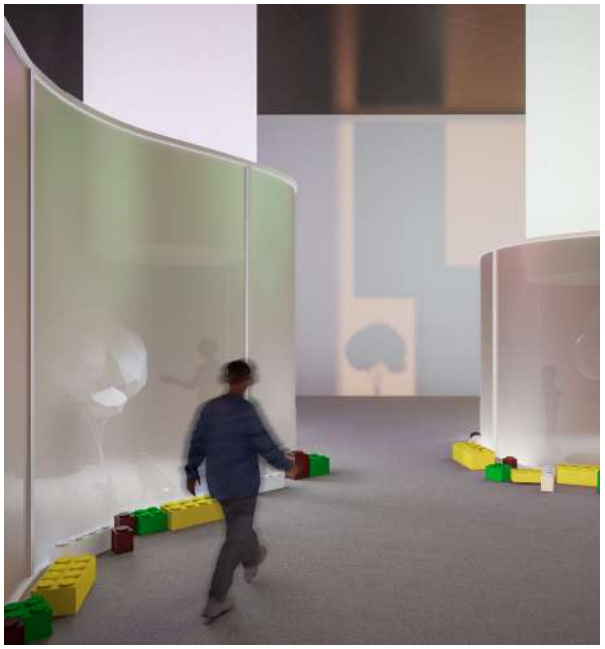
Section DD_Board 9



Shelter configurations_Board 9

Ventilation equipment PRU is equipped with reserve fans (electric motors). Separate mechanical inflow and exhaust ventilation systems are provided for the radiation protection shelter.
Heating:
To maintain a temperature of +10°C in the radiation protection shelter during cold seasons, heating is provided by portable heating devices with IP 54 protection class or equivalent (electric heaters, stoves, thermal guns).
Classification of Radiation Protection Shelters:
Radiation protection shelters are classified into groups based on their location according to Appendix A of DBN V.2.2-5-23.
Radiation protection shelters are designed taking into account the degree of attenuation of external penetrating radiation - protection coefficient K3, which is determined according to Appendix A of DBN V.2.2-5-23.
Underground level - radiation protection shelter group P-4 (PRU), according to Table A2, Appendix A of DBN V.2.2-5-23.
External fencing structures must provide protection for sheltered individuals:
- From exposure to ionizing radiation in the event of radioactive contamination of the area (protection coefficient: K3200);
- From the action of air blast wave with excess pressure in the front ΔPf = 100 kPa;
- From the local and general effects of conventional means of destruction (small arms, hand grenade fragments, artillery ammunition, and aviation bombs).
Door openings of entrances to PRU must be filled with doors resistant to the action of air blast wave with design excess pressure ΔPf = 100 kPa.
The degree of attenuation of external penetrating radiation - protection coefficient K3: K3=200 (according to Table A.2, Appendix A of DBN V.2.2-5-23).
Excess pressure in the front of the air blast wave ΔP kPa (kgf/cm2), for which fencing structures should be designed:
ΔPf = 100 kPa
During peacetime, shelters can be repurposed for general educational needs. They can become functional spaces for various activities that inspire students and allow them to unleash their imagination fully. For example, the premises can be transformed into cinemas, theatrical studios, shooting ranges, modeling areas, and testing tracks for cars, spaces for table tennis, or rooms with 3D printers.
All furniture, decorative elements, and finishing materials must have quality and fire safety certificates and comply with current building standards and state sanitary norms and rules, particularly regarding flammability. This will ensure the safety and health of the premises' users and help create a conducive and productive learning environment.

Multimedia space



Interactive and exposition space

CONCLUSION

The "Educational Bridge" project is a comprehensive and forward-thinking response to the urgent need for rebuilding educational infrastructure in Ukraine. By integrating advanced architectural design with a deep understanding of social, ducational, and environmental needs, the project offers a resilient and adaptable solution for the School of the Future.

Innovative Architectural Design:
The pavilion system ensures each volume is energy independent, promoting flexibility and adaptability.
The central bridge-plate symbolizes connection and continuity, enhancing both functional and symbolic aspects of the school.

Sustainability and Energy Efficiency:
Use of green technologies such as solar power and geothermal
energy ensures minimal environmental impact.
The integration of advanced BMS systems guarantees optimal energy management and sustainability.

Adaptability and Flexibility:
The modular design allows the school to adapt to various contexts and educational needs, ensuring long-term usability and relevance.
Flexible learning spaces support diverse pedagogical approaches, fostering creativity and collaboration.

Community Integration:
The school serves as a community hub, offering spaces for extracurricular activities, cultural events, and psychological support.
The design promotes social inclusion and interaction, vital for post-conflict recovery.

Safety and Resilience:
The dual-use shelter provides safety in emergencies while serving as a multipurpose space during normal times.
Strategic placement of functions and careful consideration of user flows enhance overall safety and accessibility.

Long-Term Impact:
The project aims to set a new standard for educational architecture in Ukraine, demonstrating how innovative design can address both immediate needs and future challenges. It envisions the school as a beacon of hope and recovery, fostering a sense of community, sustainability, and educational excellence.

In conclusion, the "Educational Bridge" project represents a harmonious blend of architectural innovation, environmental
sustainability, and social responsibility. It is designed not only to provide a
state-of-the-art educational environment but also to support the broader
community, ensuring a positive and lasting impact on the future of education in
Ukraine.

Section DD_Board 9

ATTACHMENTS

ECONOMIC EXTIMATION

Roof Slabs	€	**825.000,00**
Windows and frames	€	**1.755.675,00**
Internal Slabs	€	**542.034,00**
Ground floor slab	€	**532.767,00**
Ceilings	€	**608.734,00**
Internal walls and facades	€	**1.821.212,00**
Structures	€	**9.108.245,00**
Electrical System	€	**5.847.660,00**
Mechanical System	€	**5.733.000,00**
External areas	€	**1.735.465,00**
Total	€	***28.509.792,00***

** All indicated costs are derived from current market prices in the European Union and from our past experiences and are purely indicative. A more in-depth analysis will be deferred to the subsequent design phases, if any.*