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STUDIO BRIEF

architect and sustainability expert Carl Elefante: “The greenest building is the one that is already built.”

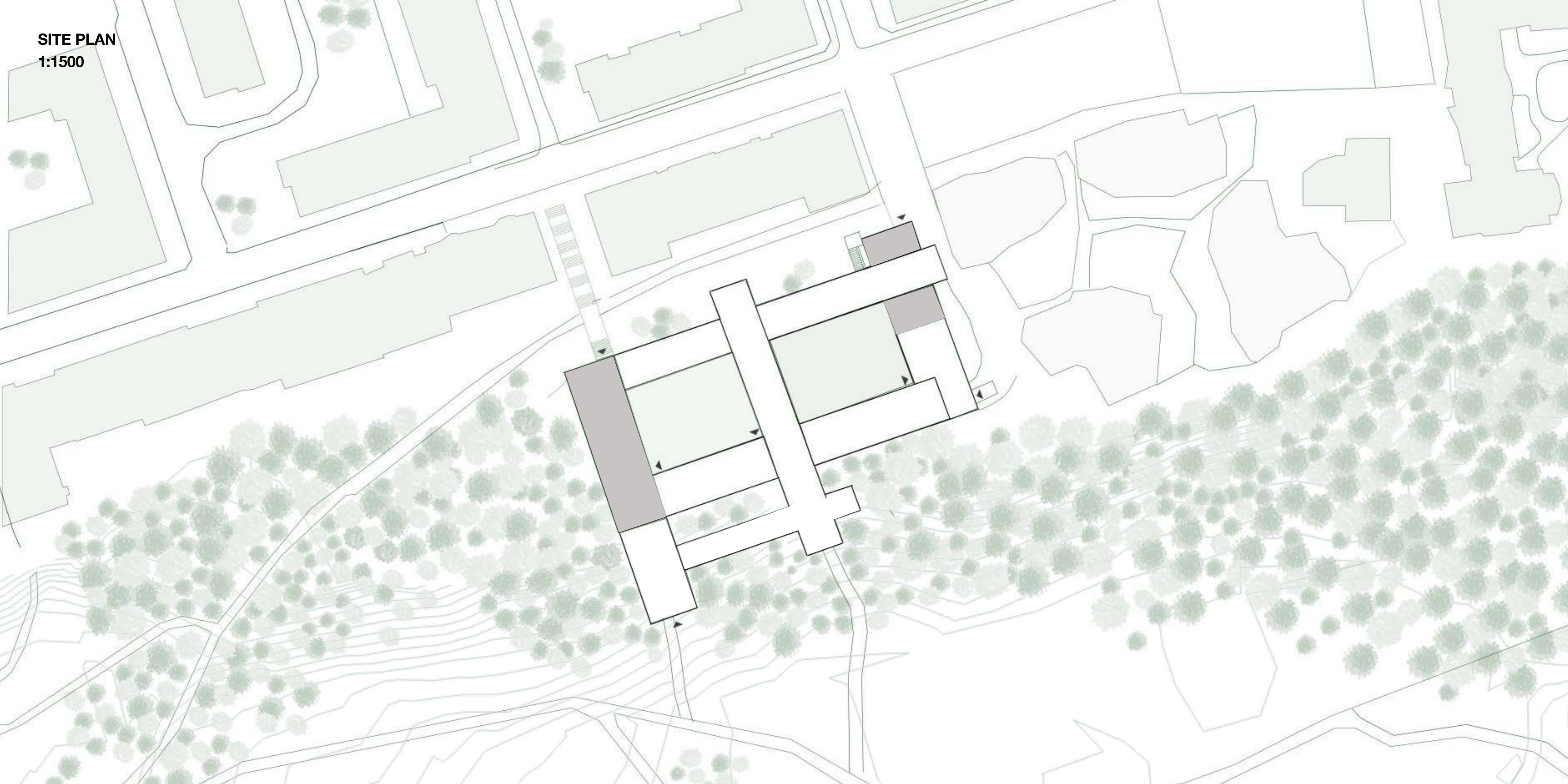
„A long-term empty house is a problem for its locality, it attracts negative social phenomena, deteriorates the quality of living of the neighbours, and also reduces the value of the surrounding properties. New and new areas are being built up, and it is not only in city centres that empty properties are waiting to be used. No one knows how many dilapidated properties there are in cities, because no database of vacant properties has existed until now“
Empty House platform
Each student chose an abandoned building for the project. My chosen site was an abandoned Czechoslovak radio building in Zizkov, Prague.

The aim was to renovate this building and repurpose it into a vibrant educational facility with multiple sports spaces, for both users and neighbors of the area.

The project is thus divided into two parts, For the 3-4 weeks, we analysed the phenomenon of empty houses in Prague We classified buildings into categories, estimated the approximate area occupied by category, where empty houses were located etc. Then we compared the data with examples from other cities in the Czech Republic and abroad. This research will then be used in design phase.



SITE PLAN
1:1500



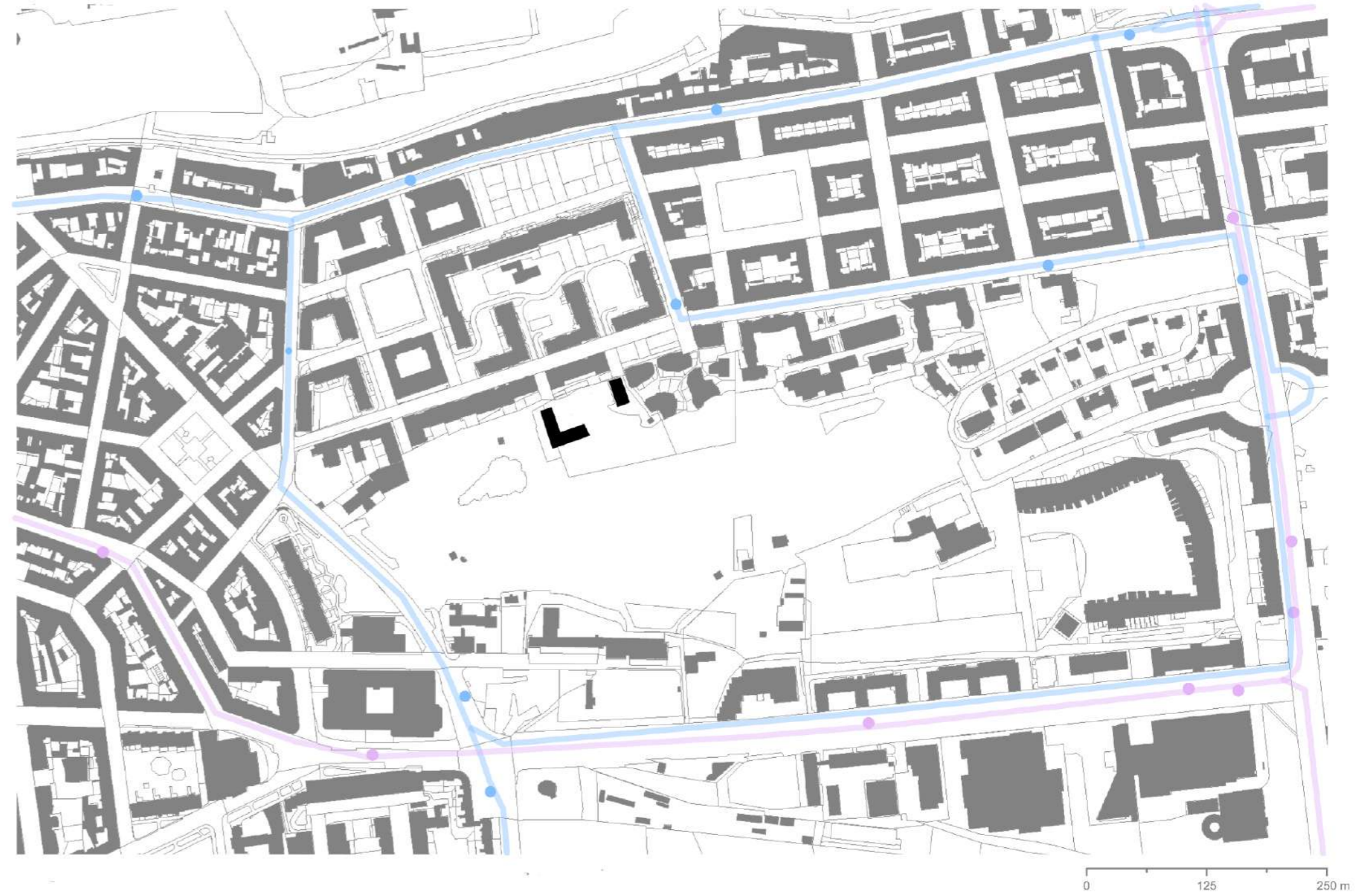
SWARTZPLAN



EDUCATIONAL FACILITIES



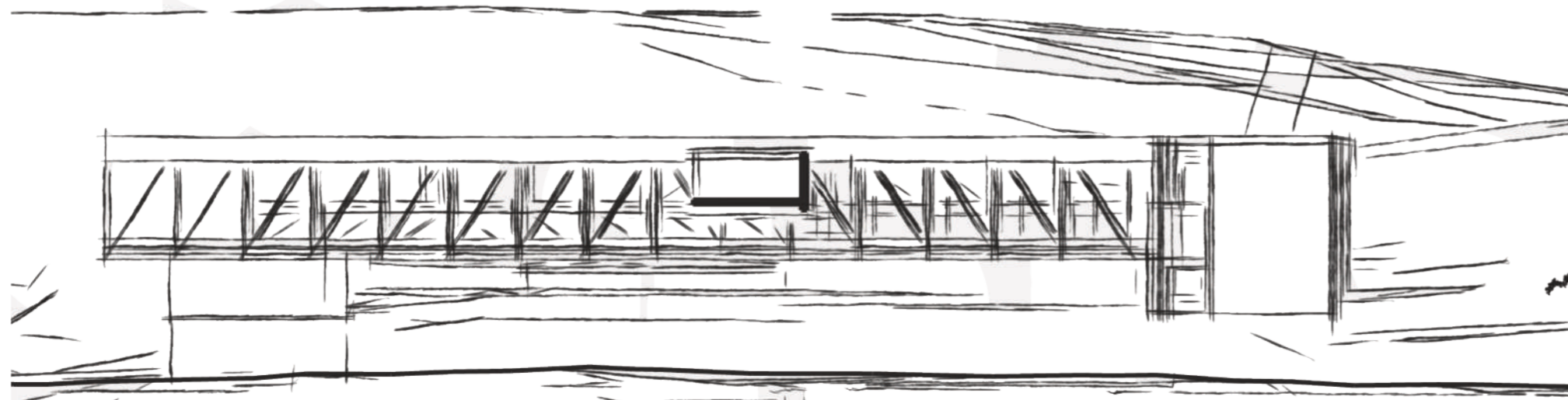
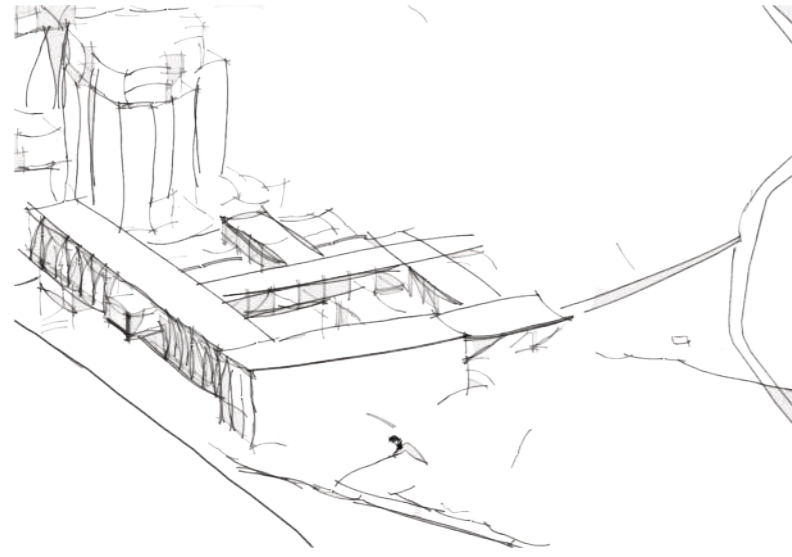
PUBLIC TRANSPORT MAP



SPORTS FACILITIES

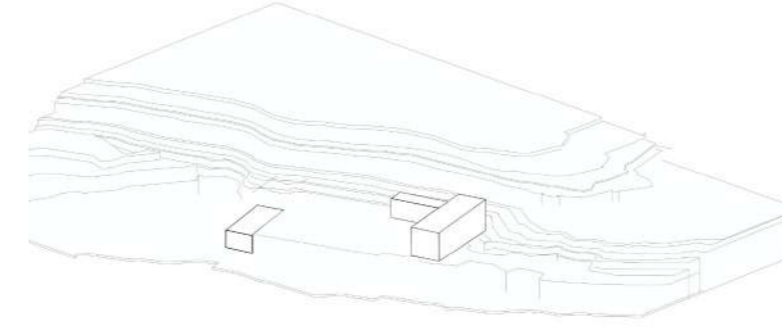


FORMING OF THE PROJECT

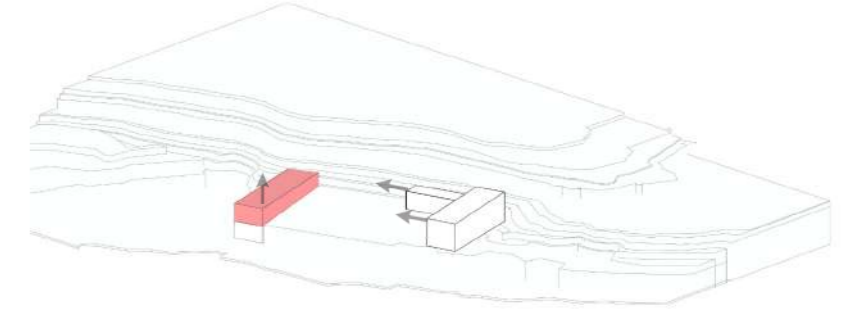


CONCEPT DEVELOPMENT

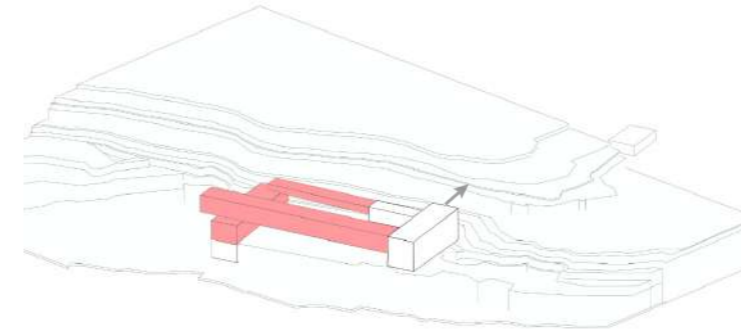
BUILDINGS ARE FAR FROM EACH OTHER



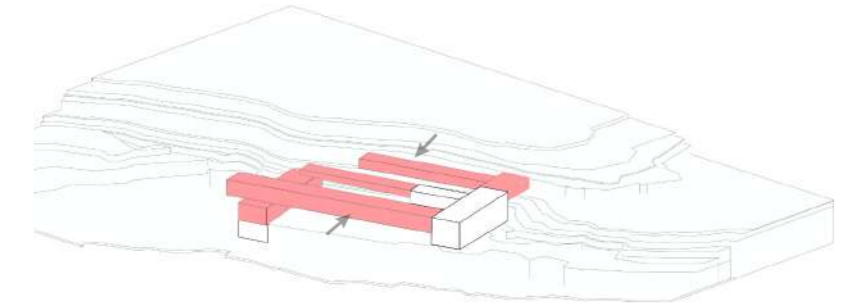
REACHING THE COYRTYARD LEVEL



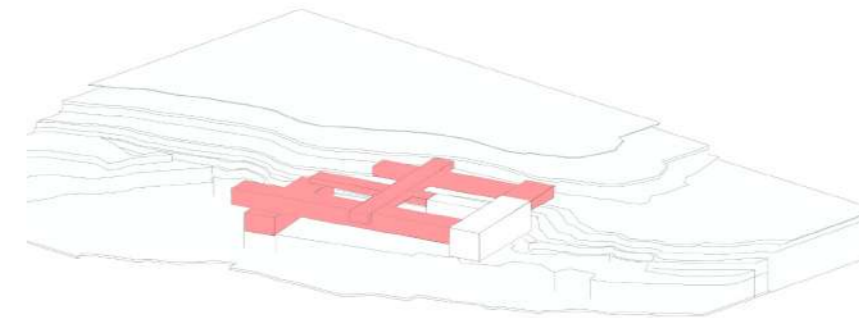
CONNECTING BUILDINGS



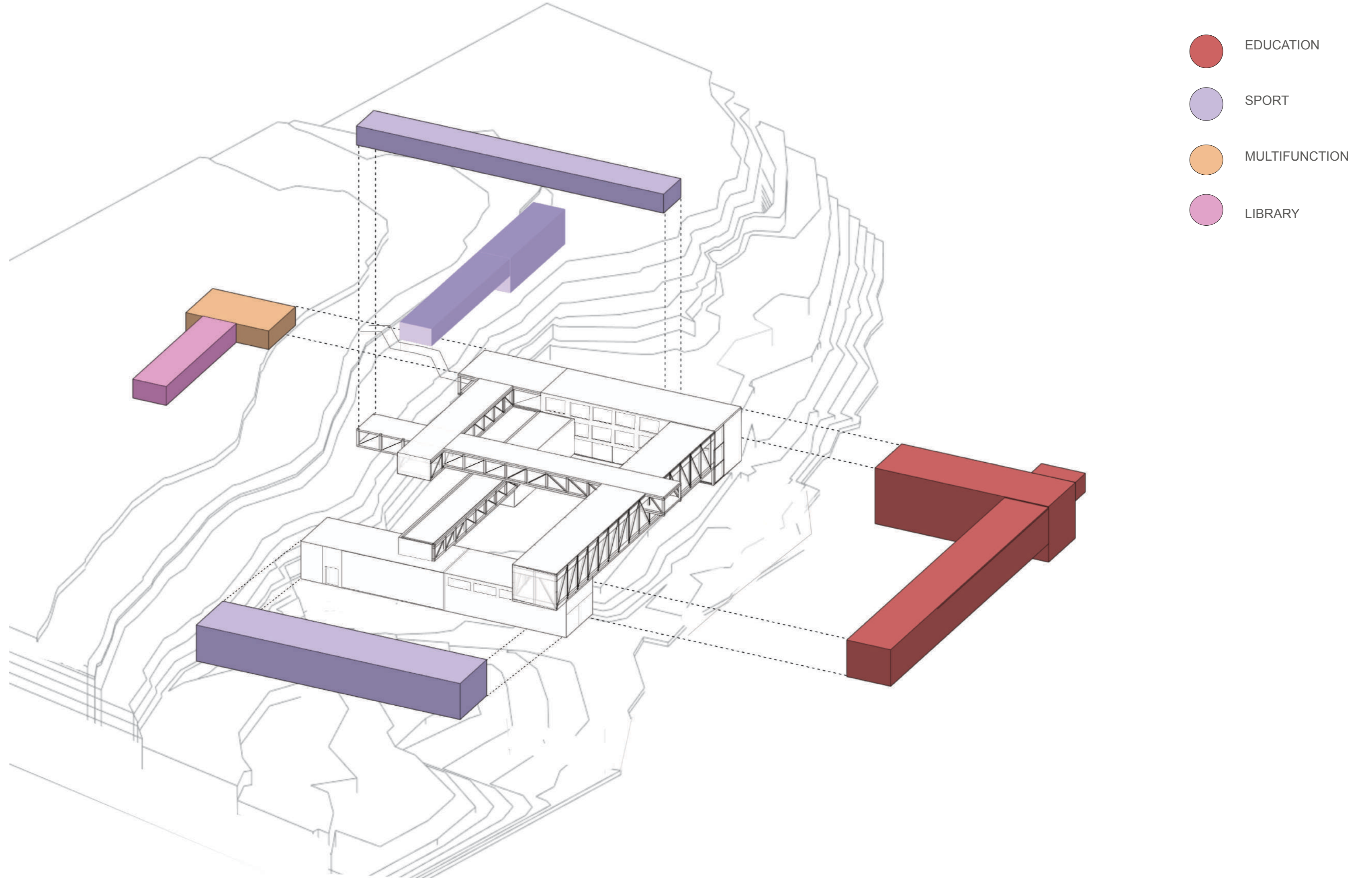
CONNECT TO THE PARK



MIDDLE CONNECTION



PROGRAM DISTRIBUTION

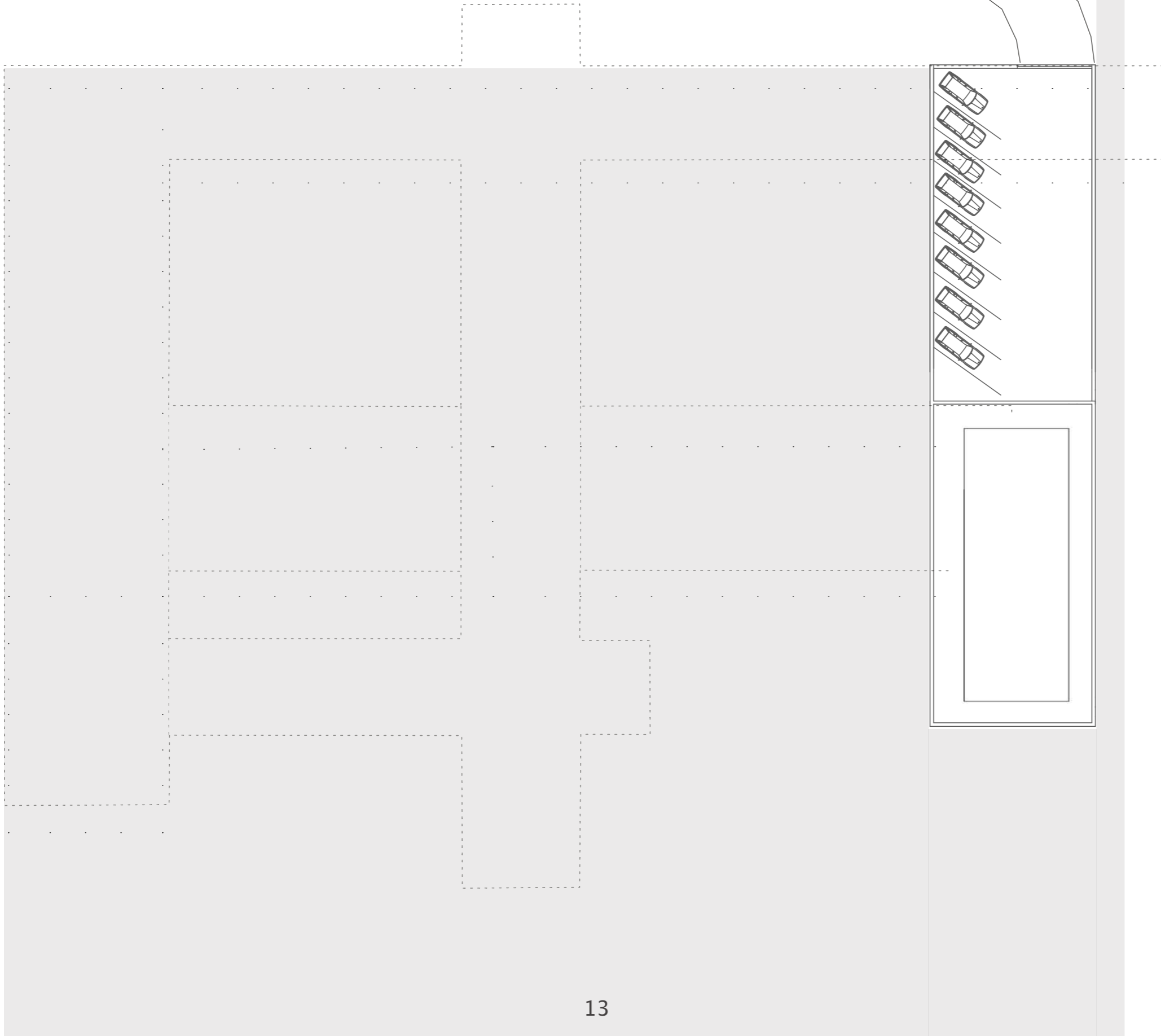


AXOVIEW



PARKING PLAN

1:750



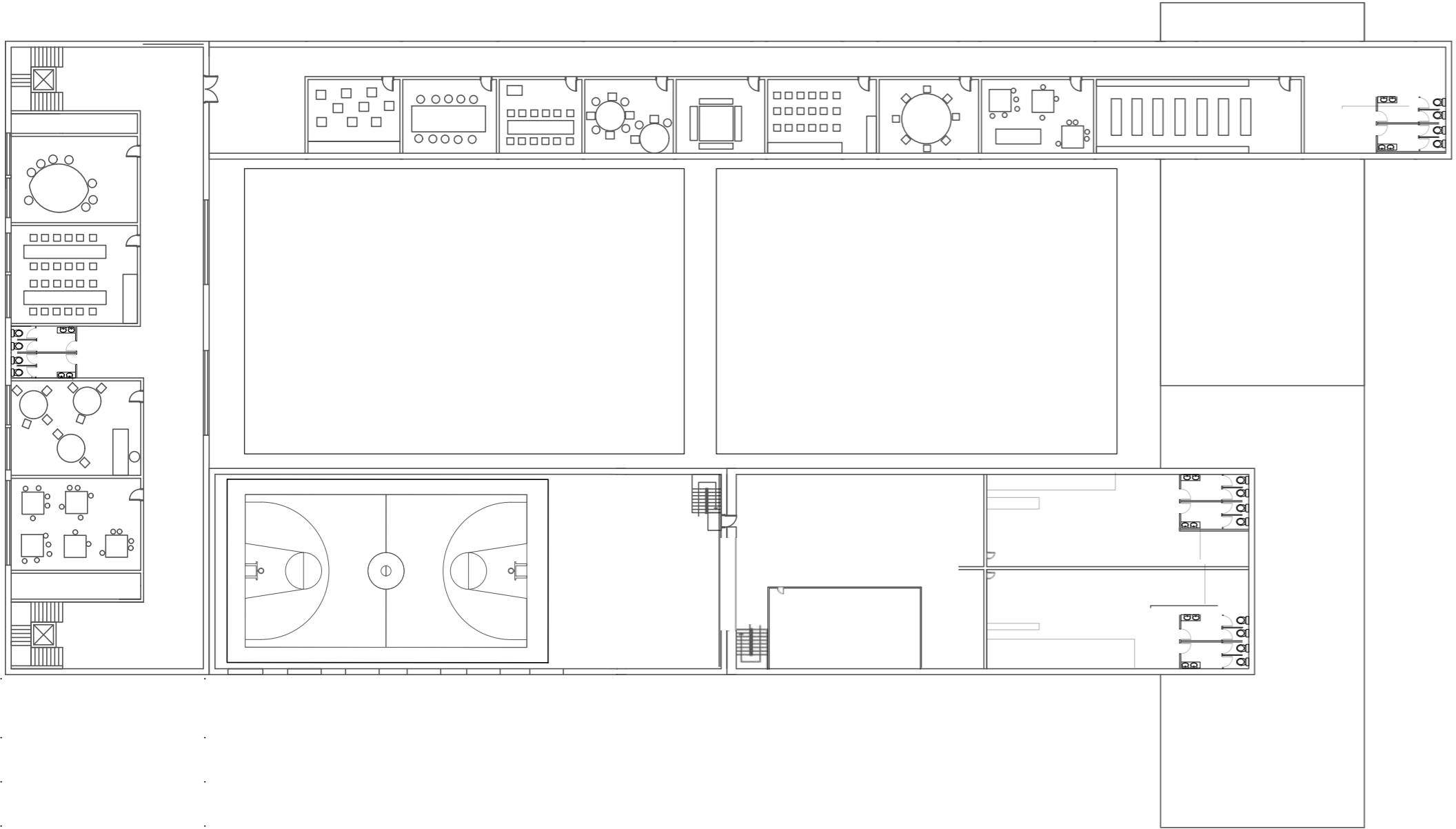
GROUND FLOOR

1:750



SECOND FLOOR

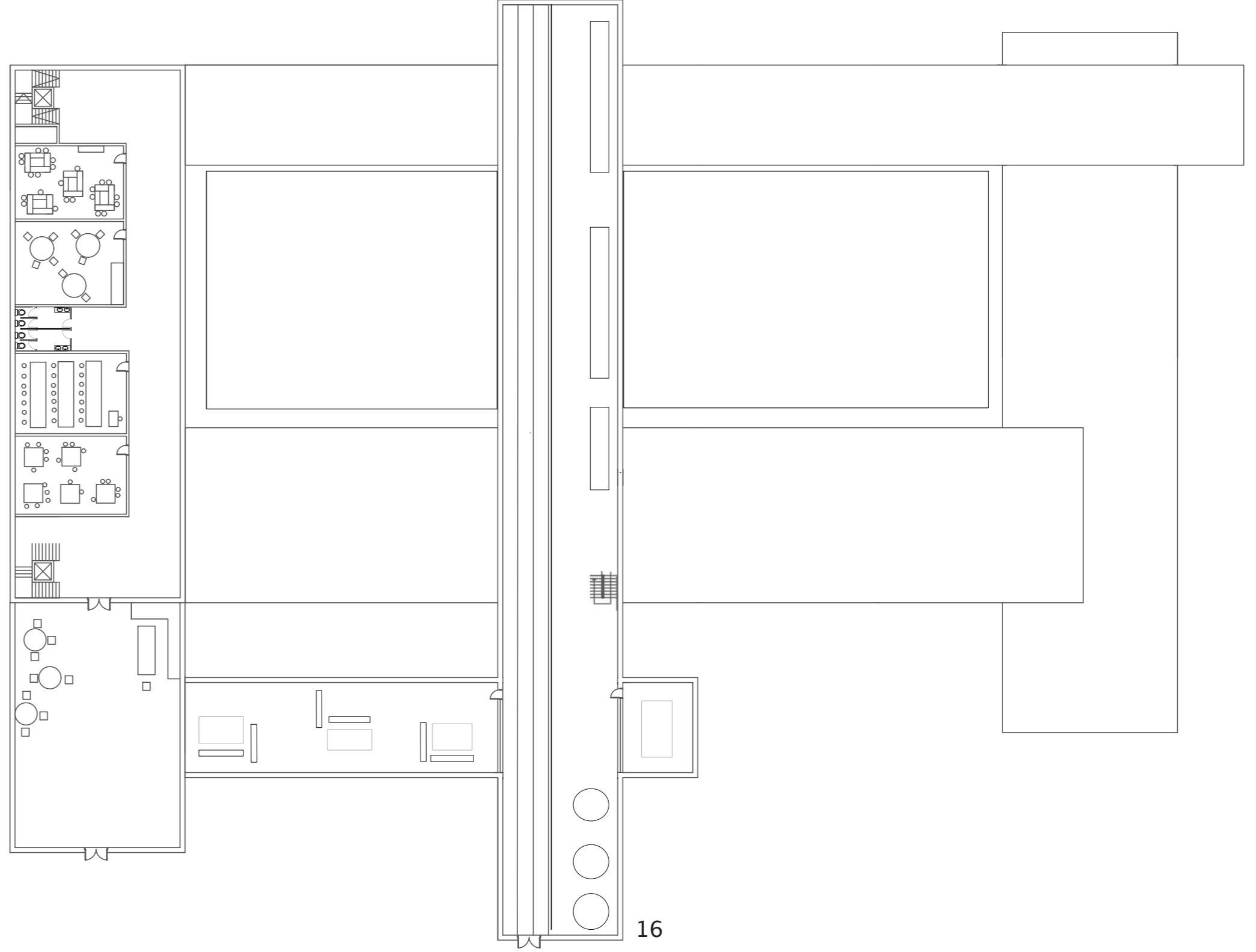
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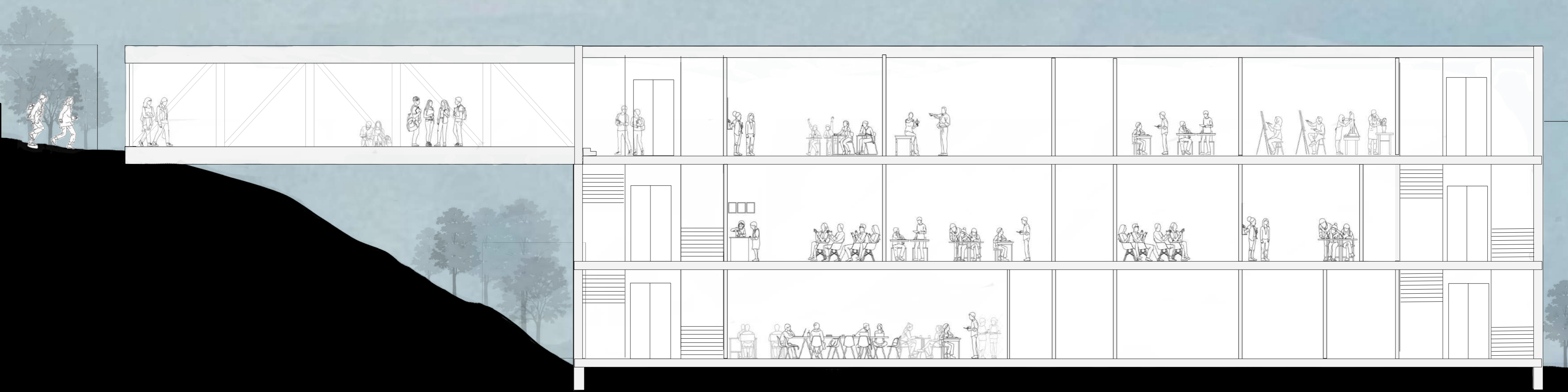
THIRD FLOOR

1:750

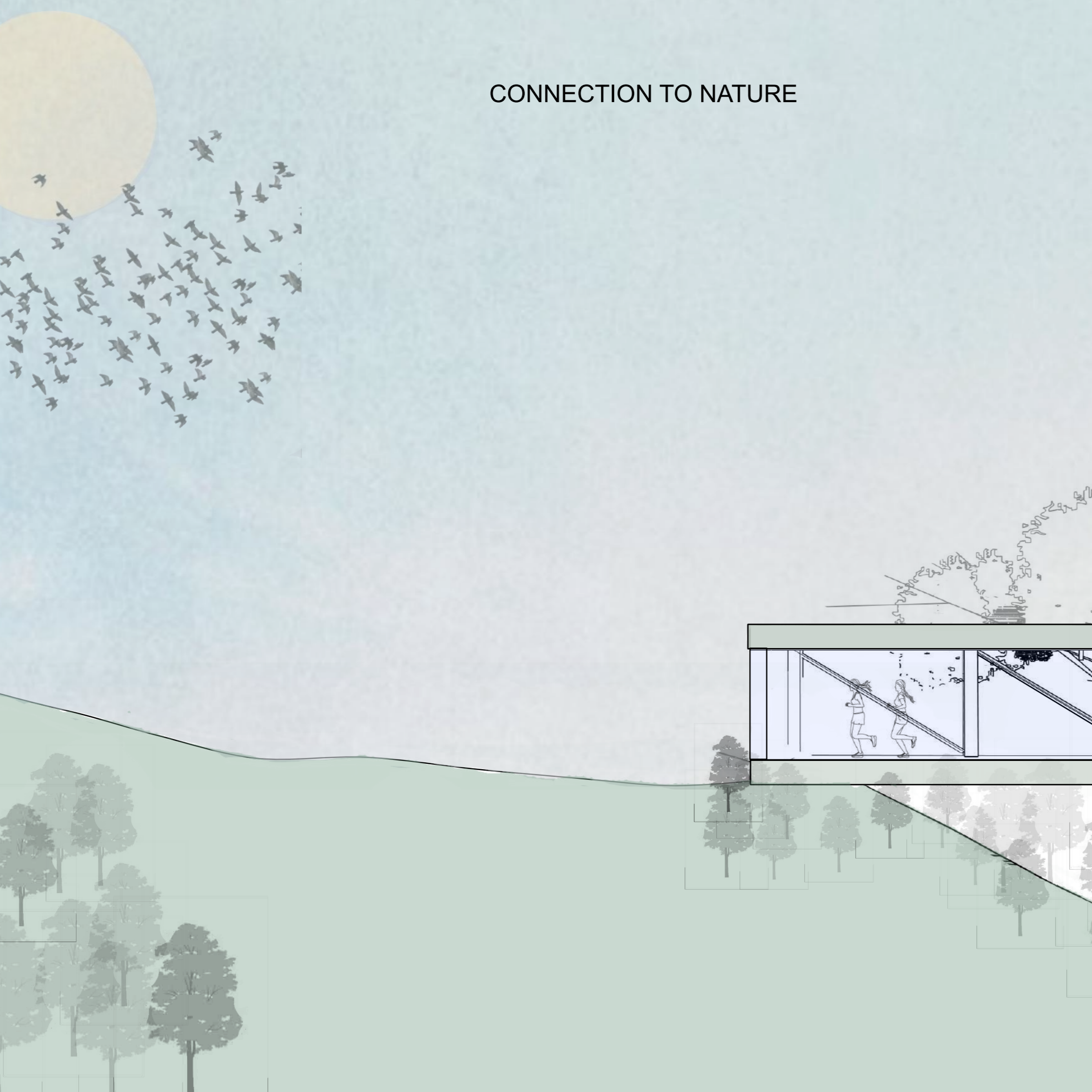


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LONG SECTION
1:250



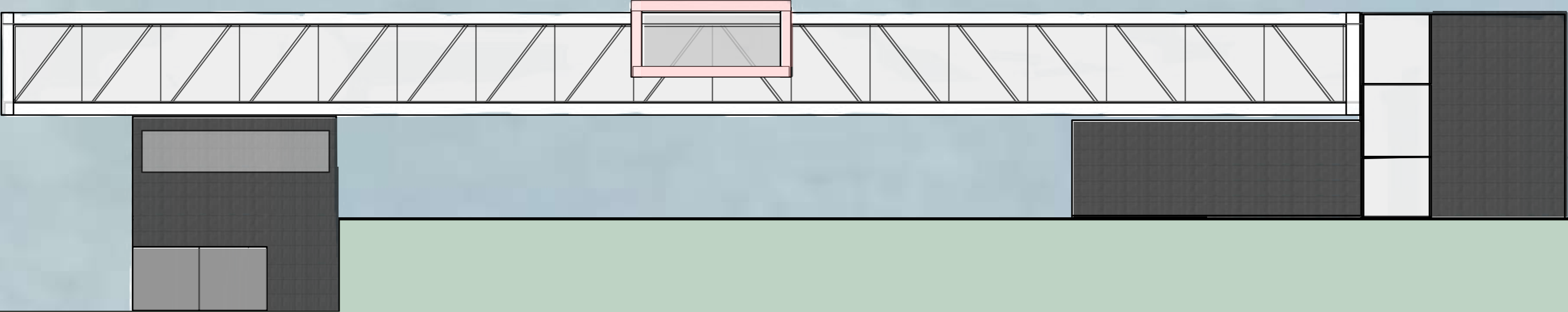
CONNECTION TO NATURE



SHORT SECTION



SOUTH ELEVATION
1:250



TECHNICAL REPORT

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Introductory Data

1.1 project brief

„A long-term empty house is a problem for its locality, it attracts negative social phenomena, deteriorates the quality of living of the neighbors, and also reduces the value of the surrounding properties. New and new areas are being built up, and it is not only in the city centers that empty properties are waiting to be used. No one knows how many dilapidated properties there are in cities, because no database of vacant properties has existed until now“ Empty House platform

The project is thus divided into two parts, For the 3-4 weeks, we analyzed the phenomenon of empty houses in Prague. We classified buildings into categories, estimated the approximate area occupied by category, where empty houses were located etc. Then we compared the data with examples from other cities in the Czech Republic and abroad. This research will then be used in design phase.

Each student chose an abandoned building for the project. My chosen site was an abandoned Czechoslovak radio building in Zizkov, Prague.

The aim was to renovate this building and repurpose it into a vibrant educational facility with multiple sports spaces, for both users and neighbors of the area.

1.2 purpose of the project

Renovate and repurpose abandoned buildings into a vibrant educational facility, with emphasis on sports activities.

1.3 project identification data

1.3.1 Project name

Parukarka School

1.3.2 project Location

Jeseniova street, Zizkov, Prague, Czech republic.

1.3.3 Coordinates

50.0860642N
14.4597792E

1.3.4 Project type

The project primarily has educational and sports space function, additionally there will be cafeteria, library and resting spaces.

1.3.5 Architect

Kristine Mshvidobadze under supervision of Jaroslav Wertig and Jacub Kopecky

1.3.6

Site development area - 4000m²

2. Site

2.1 History

The development of the plot started 1938 and the construction process began, in 1960 radio bought the buildings. Between 1975 and 1989, another building with a suspended facade was built in the courtyard. In recent years the house with the facade to Jeseniova Street and the lower buildings in the yard were removed due to fires.

2.2 Accessibility

Site is very easily accessible by public transport and car. tram and bus stops are located around the site. closest bus stop “ostromecka” is 4 minutes away, other stops around the site are “Olsanske Namesti”, “Biskupcova”, “Rokycanova” and tram stops : “Lipanska” and “Olsanske Namesti” site is also close to “Nakladove Nadrazi Zizkov”. Additionally, a parking garage is integrated in the project.

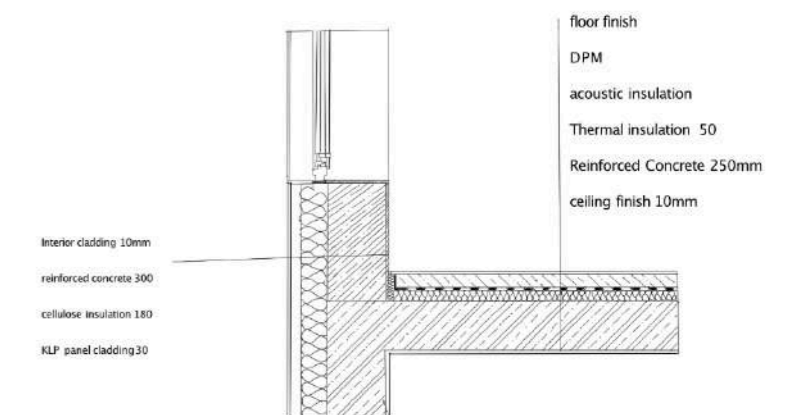
2.3 Green zones

The existing greenery around the site is Parukarka park.

2.4 Landscape

The natural environment around the plot was a key aspect of the concept of the project. Site has quite complex terrain, it goes up from the first building, which is located on the street level, up to the rest of the existing building and eventually goes up to Parukarka park.

wall detail existing building



3. Concept

Site location and program were key elements for developing the concept of the project.

The design development was based around existing geometry of the plot itself, as well as, the surrounding area. The site acts as a divider, separating the street side from the park, effectively creating a physical barrier between the two areas.

Concept was based on connectivity, openness and accessibility of the whole plot.

During the design process it was important to keep the open courtyard in its original shape, yet connect and circulate all the buildings, despite the long distances between buildings. This was the inspiration for elevated bridge-like structures. The elevated bridges are designed as structures that provide a visual connection across the courtyard.

The architectural concept for the Parukarka Park Integration Project is designed to reinforce and renovate the existing urban fabric while promoting a deeper connection with the adjacent natural landscape.

3.1 Programs

Biggest building from the three existing ones is used for educational purposes such as classes and auditoriums on the upper floors, Ground floor is going to be used for staff rooms, and cafeteria. Second existing building attached perpendicular to the other building forming an L shape, is used as an indoor gymnasium with different sport courts. The connecting new structure on the second level will be used as restrooms and locker rooms for both gymnasium and indoor running track building.

As mentioned, a new structure on the third floor crossing the courtyard in the middle also connecting with the park is used for indoor running track.

Additionally there is a swimming pool, library and resting spaces.

4. Structural systems

4.1 The structure

The site I chose to work on is composed of three existing rectangular shaped buildings, the biggest being 1638 m², followed by smaller 364 m² and 420 m² buildings. Because the studio's main aim was to work with the abandoned buildings and give them new purpose, I am keeping all three structures and renovating them. At this stage information about current layout and composition of the buildings was not available. all facades will be removed, insulation layers and KLP recycled plastic panels will be placed. The structural framework of existing buildings are kept and facades are replaced.

Additional structures are composed of three parallel and three perpendicular buildings crossing and connecting existing and new buildings with multiple connections and levels.

Building on the street level will have additional structure attached to it from the southern facade, as well as, additional floor will be built above to reach the level of the courtyard. The old building will be repurposed into a parking garage, and a new addition will be an indoor swimming pool. it is going to be accessed both from the street and from the parking.

The new structures will span without intermediate supports, thus creating a large, open space beneath which can be used for various outdoor activities or additional educational spaces. The structures will be elevated six meters above the ground, providing a clear passageway underneath and linking two existing buildings.

The truss structure will be anchored on concrete columns that are part of the two existing buildings on its edges. These columns will be designed to distribute the loads from the truss evenly and securely into the foundations of the supporting buildings, ensuring structural integrity.

The Pratt truss is characterized by its diagonal members which are under tension under balanced loading, and shorter vertical members which are under compression. This configuration is particularly advantageous for this project because it efficiently handles both the dynamic loads of pedestrian traffic and the static loads of the educational facilities.

The truss will be designed not only for functionality but also to enhance the architectural appeal of the educational campus. The visible parts of the structure will be treated with a finish that complements the façade of the existing buildings, integrating modern and classical elements. The structure specifically connecting the old building and the park, serving as a bridge between park and school, will be fixed into terrain and it has 20 meters of clear span. The structure is designed with truss systems as well. This building is connected with a perpendicular structure which also is fixed into terrain and serves as a library and connection point of indoor running track and school building

4.1.2 Building Dimensions

Existing building dimensions - 1628m², 420m², 364m².

New structures

Additional classrooms and laboratory spaces - 480m²,
260m², - Connecting structure to the park,
swimming pool - 420 m²,
indoor running track - 600m²
Library - 360m²
Storage and locker room space - 210 m².

4.2 Structural elements

Stairs - to allow circulation around the whole site, each building will have multiple stairs. The existing building has two stairs located on both ends of the building, allowing circulation and accessibility to other buildings, as well as, courtyard and park. additional buildings also have stairs allowing vertical connections.

Foundation - Foundation levels are to be kept as original for the existing buildings, However, they will be reinforced to enhance their load-bearing capacity, ensuring they can adequately support the new structures. mat foundations will be used for the swimming pool building.

4.2.1 Load-bearing elements

Load-Bearing elements in existing buildings are existing load-bearing walls, detailed information was not available.

In additional structures main load-bearing elements are steel vertical and diagonal members, which distribute load equally.

4.2. 2 Non-bearing elements

The main non-load bearing elements are curtain walls, partition walls and curtain walls. In the additional structures there are lightweight gypsum walls for dividing interior spaces, as well as curtain walls.

Windows - existing buildings are going to have operable large openings allowing natural ventilation.

4.3 Materiality

Materials used in the project are high grade structural steel, triple glazed windows, and recycled plastic (KLP panels).

5. MEP

5.1 Mechanical elements

a)The project will include HVAC systems for space heating, ventilation, and air conditioning. General air supply system installation. The technical room monitors the general ventilation system and air temperature. Heat pumps will be coupled to the AHUs to deliver conditioned air that is energy-efficient while maintaining appropriate interior air quality and temperature. AHUs will circulate and condition the air in the building to ensure optimum filtration, humidity management, and thermal comfort. Additional structures will feature floor heating that will be delivered from the present building. PV panels will generate the energy required for floor heating. PV panels placed on the roof convert sunlight straight into electricity, considerably reducing the building's energy use.

b) Elevators - The building is equipped with two elevators strategically positioned at both ends to ensure efficient vertical transportation and optimal access throughout the structure.

Placing an elevator at each end of the building ensures comprehensive accessibility, enabling easy and quick access from any entry point. This layout helps in evenly distributing the traffic load and reduces congestion during peak hours.

The strategic placement also enhances fire safety and evacuation protocols, providing multiple options for egress and reducing bottlenecks in emergency situations. The elevators are fully integrated into the building's management system.

5.2 Electrical elements

Along with HVAC installment, natural ventilation is an option here. The structure has large openings which can be kept open for air circulation which also provides the internal sunlight distribution. Shutters can be installed on the facades to avoid overheating during the summer. Additional details concerning ventilation of the structures are aimed to be discussed during the next step of the project design.

The structures will be integrated in the local electrical grid system. Along with getting the power from the general source, the structures have the potential to harvest solar power. Large windows and curtain walls allow sunlight distribution on the structure surfaces. Detailed distribution of electric sockets and supply sources are aimed to be discussed during the next step of the project design.

Building is going to operate on LED lighting controlled by sensors and ballasts to reduce electricity consumption while providing adequate illumination.

Additionally, Photovoltaic panels, heat pump systems and air handling units are going to operate in the building. This arrangement allows for efficient space utilization and direct access to outdoor air.

All systems are to be integrated through a centralized Building Management System

5.3 Plumbing elements

The building has a boiler room which navigates the supply of fresh water to the structure's plumbing fixtures. Sewerage systems may be integrated in the public waste management network. The details of the waste management systems are aimed to be discussed during the next step of the project design.

6. Sustainability Factors

Key sustainability goals included reducing operational energy demand, enhancing the indoor environmental quality for occupants, and using as many sustainable materials as possible.

Installing a solar panel array to cover some of the building's energy needs. Using high-efficiency HVAC systems coupled with smart building technology for optimized energy use. Since old building facades are in a very bad state, I am stripping down old facades and replacing them with KLP Recycled plastic Facade panels onto old buildings. This material is maintenance-free, highly resistant to weather conditions and the sun and most importantly can be recycled again. Adding cellulose insulation to the old buildings due to its excellent thermal performance, ability to fit into existing structures (important for renovating older buildings), and high recycled features. Having triple glazing in both new and old structures, to reduce heat loss during colder months and heat gains during warmer months, significantly lowering heating and cooling demands. Adding extensive green roofs on old buildings.

Buildings have simple rectangular forms, which is the reason for lower form factor and smaller exposed areas. The project also features gray water harvesting.

7. Conclusion

Finally, the Parukarka School project is a strategy for revitalizing an abandoned urban space by converting the abandoned Czechoslovak radio building in Zizkov, Prague, into a multifunctional educational and sports complex.

This effort not only addresses the critical issue of urban deterioration caused by long-term abandoned homes, but it also acts as a model for sustainable urban rehabilitation.

The structural strategy entails maintaining existing buildings while incorporating modern elements such as Pratt truss structures and elevated paths, which improve the site's usefulness and visual appeal.

It not only revitalizes a neglected urban neighborhood but also provides a lively community hub that offers vast educational and recreational options.

8. Bibliography

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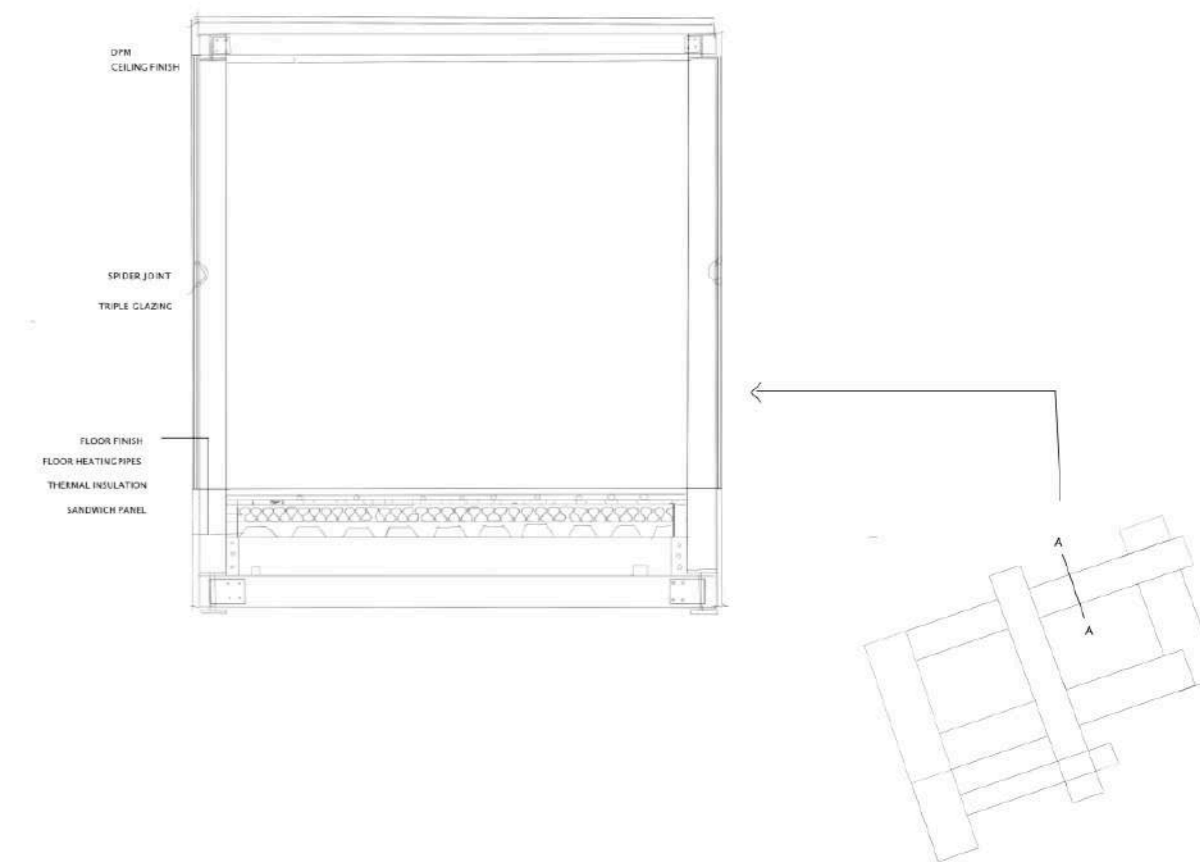
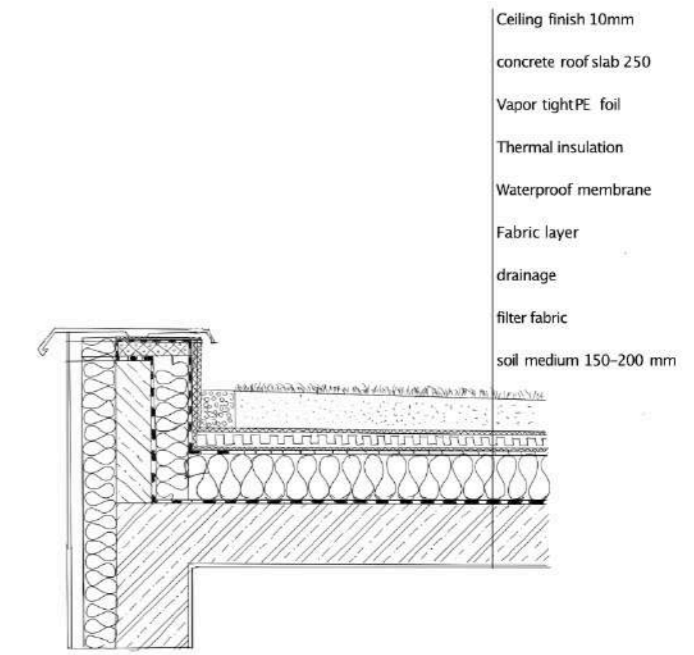
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AD6

WERTIG/KOPECKY

ARCHIP