

THE INTERNATIONAL SCHOOL OF DEBRECEN

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by BORD Architectural Studio

Table of content

- 01 Concept description
- 02 Debrecen - the cultural and educational centre of the region
- 03 The significance of the Nagyerdő forest in the life of the city
- 04 Complex urban development plan for an emerging city
- 05 Focusing on investigative education
- 08 The circle as a symbol of community in architecture
- 10 Rational, yet novel, inspiring interior space experience
- 14 The concept cannot stop at the contour of the building
- 16 Conscious architectural design for a sustainable building
- 19 With responsibility for the future generation
- 21 Interview with the residents of the building
- 24 Project credits
- 25 Plans
- 29 Bioclimatic solutions
- 31 Images



Our concept for the International School of Debrecen was based on the form of a circle. This simple, yet symbolic shape traditionally means protection, union and community, while it softly blends into the neighbouring forest area of the Natura 2000 protected 'Nagyerdő'.

The pathways leading into 'Nagyerdő' creates a virtual embrace of building and forest. Through the educational gardens students are directly connected with nature. As they are trodding the paths they create new ones from time to time, rewriting the relationship between nature and themselves.

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Debrecen

the cultural and
educational centre
of the region

Debrecen, the educational and cultural centre of East Hungary, is the second biggest city in the country. Often it is referred to as the Calvinist Rome. Its role in education is significant: Kossuth Lajos University with its 30000 students is the biggest tertiary educational institution in the country. The city has a thriving economy, blooming tourism and excellent transportation facilities. The high-quality education has been inviting companies who wish to cooperate with the universities in their research and development. In the past couple of years more and more multinational innovation and technology companies have settled down in this dynamically progressing city.

The significance of the Nagyerdő forest in the life of the city

03



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Nagyerdő, which is a more than 1300ha area, has always been the city's own, inner forest property. It was probably named after its grand, 100–120-year-old trees.

This protected natural area is now part of Natura 2000, the aim of which is to save the old oaks for the following generations. The forest provides refuge to a number of flora, fauna and fungi species. Such are the longicorn beetles, Bechstein's bats or the European Oaks to name but a few. The Nagyerdő forest of Debrecen was the first protected forest of Hungary, it has been under special surveillance since 1939. Due to the closeness of the city it is not only important for forestry and nature reserve purposes but is also ideal for recreational functions. Thus, the part of the forest that reaches into the city has been turned into a nature reserve park forest.

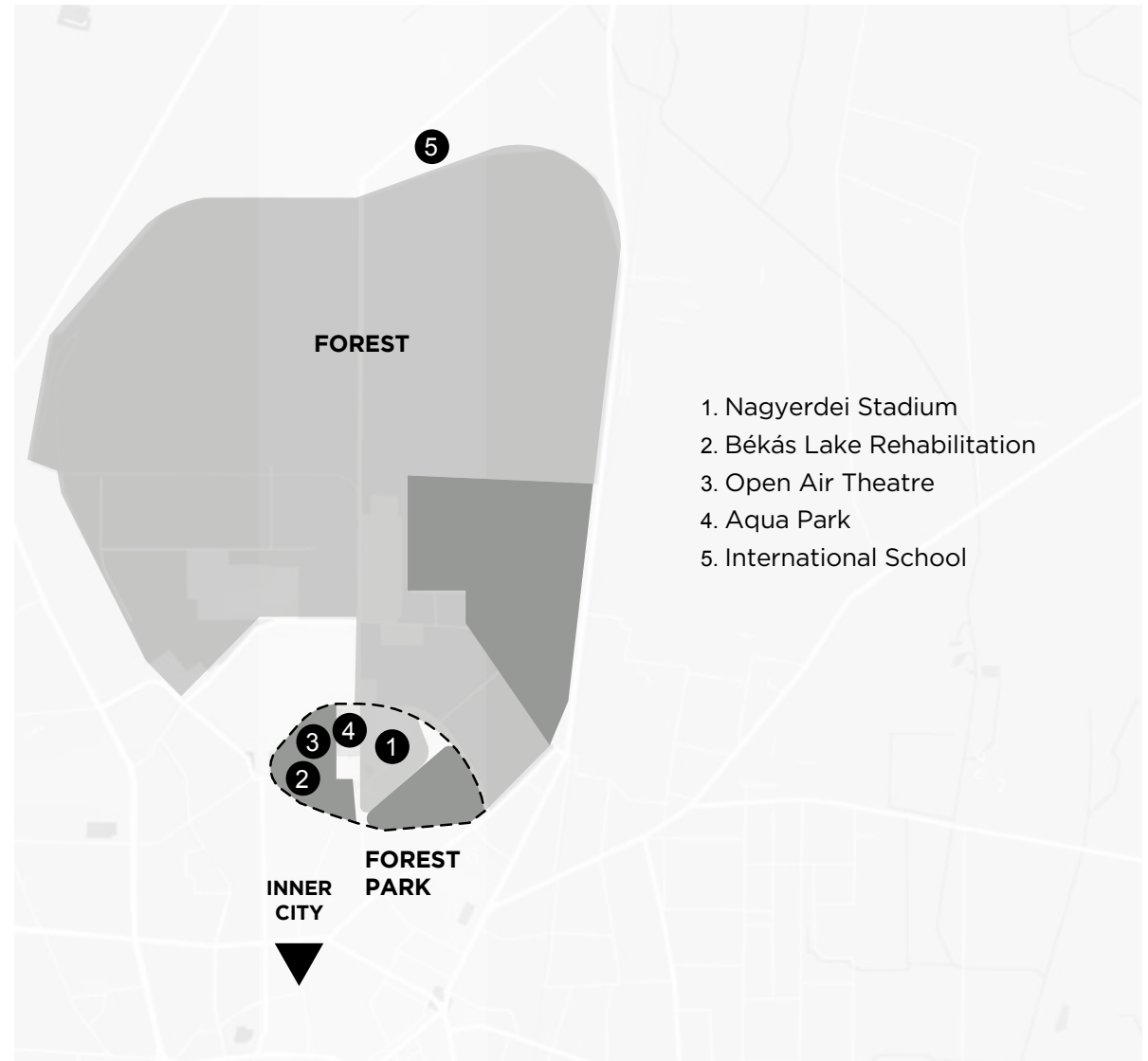
Complex urban development plan for an emerging city

04

In recent years, more urbanistically significant projects have been implemented as part of the new Főnix programme. Such community areas are for example the Swimming Centre or Kölcsey Cultural Centre. In the main focus of the complex urban rehabilitation programme lied the reconstruction of Nagyerdő forest, that kicked off with the renovation of Nagyerdei Stadium, originally built in 1934.

The new, multifunctional centre with its wide range of park-level services became the catalyst of a renewing park. The pedestrian area surrounding the stadium created a brand-new recreational area right next to the university. Throughout the reconstruction of the park forest the Mist Theatre and Open Air Theatre were built, Békás lake was renewed and in May 2020 a new Water Park will also be completed. Today Nagyerdő, this cultural and recreational centre is a true gem of the city.

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Nagyerdő - the cultural and recreational centre is a true gem of the city

Focusing on investigative education

05

The growing number of international companies created a need for an educational institution that matches the standards of international systems.

Thus, the local government of Debrecen decided to establish an international IB system school complex. This project was also considered as one of the key economic developments of the region.

The leadership of the city appointed the location of the new school north of the city centre. Pallag is one of the most popular suburbs of Debrecen with excellent transportation facilities. The site is next to Nagyerdő, on the border of a family house residential area and nature. In 2017 the local government of Debrecen invited entries for an open architectural competition for the design of a new international school with the following program.



Visualisation, architectural design competition

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06



Visualisation, architectural design competition

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In the focus of the philosophy of ISD are the students.

It aims to educate intelligent, inventive young people who are emphatic with each other and are motivated to enhance their own and their environment's success.

Apart from high quality education and healthy psychological balance it also considers investigative education as its core goals.

The institution can take 500 students on three educational levels: kindergarten, primary school and secondary school. Usability, the connection of spaces and their transparency, the optional separation of the age groups were first and foremost in the competition description.

The quality of communal areas, individual and group learning facilities inside and outside were also highlighted criteria.

07

The curriculum of the school puts a great emphasis on outside educational possibilities and sports as well.



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The final goal was to create a sustainable building that reflects the architecture of our era, is well recognised and blends in with its environment.

The circle a symbol of community in architecture

Perhaps the biggest advantage of the location is being far from the noisy city, on the edge of Nagyerdő forest. This part of the protected natural park is a wild, coherent forest area. It was a great challenge to design a modern building that blends in perfectly with its unusual environment but at the same time is also unique and worthy of representing the standards of the school. When drawing up the architectural concept we wanted to create a spatial form that is able to assimilate its environment but at the same time it goes beyond its own built boundaries.

BORD Architectural Studio won first prize of the architectural design competition with its circle concept which symbolises community.

08



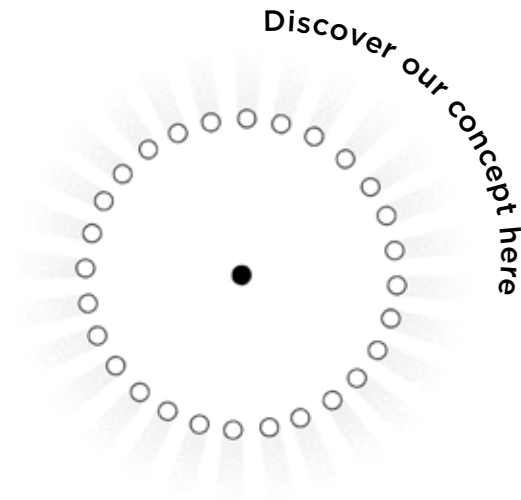
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The circle in its simplicity

is the spontaneous form of human community.

It is space without division or differentiation, a symbol of groups. It is such a form that is created when a lot of people pay attention to somebody or when people are sharing ideas in mutual understanding. It can connect different groups and mould parts together.



The circle represents artificial boundaries, in other words:

the world.



Rational, yet novel, inspiring interior space experience

10

According to the program the institution was designed to be suitable for three different generations with different needs.

These spaces were placed along an arc of a circle, string-like, next to each other, yet separated.

This way the institution has two different entrances: one for the kindergarteners and another one for the primary and secondary school children. The latter one is also the main entrance of the building. We created an isolated world within the school for the kindergarteners and the younger students.

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11

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The bigger community spaces such as the auditorium, the canteen and the service stations of these, together with facility rooms are positioned on the ground floor while the first floor is designed for small group learning. On the first floor the classrooms look like pavilions, creating lengthy, dynamically growing spaces between them.

12

Due to the fragmentation of the volume the whole building is completely permeated by natural light and the inner aisles provide a sense of freedom.

The boundary of inside and outside is blurred. Our aim is to create a novel and exciting space experience that inspires new ideas and enhance the creativity of its users.



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13

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The concept cannot stop at the contour of the building

The inner, pulsating aisle of the building carries on towards the forest as an outside space, following the conceptual line of the circle, providing the location for the educational gardens. These are the transitions between the artificial and the natural wildlife of the forest.

14

The volume of the building embraces protectively the outer community areas and the sport fields.

From the classrooms' floor we can enter the basketball court, which is levitating above field level, through bridges. From here there is a beautiful panorama on the football pitch and the forest. Under the inwrought reinforced concrete slab, half sank into the ground is the gymnasium. On the ground level there is a park-like, shaded inner courtyard awaiting the students.



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We considered the forest on the edge of the plot as an educational device of nature and natural sciences. In our concept the forest is indispensable part of the school therefore it was essential to harmonise the two. This did not demand any changes of the forest as it is part of nature and as such it changes from time to time organically - for example there are paths appearing and disappearing in it every now and then.

The area of Nagyerdő forest is virtually connected with the school through pathways, creating a full circle.

15

Through the educational gardens nature is available for children and the paths they create as they are trodding them rewrite the connection between children and nature from time to time.



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Conscious architectural design for a sustainable building

We start all our conceptual projects with brainstorming ideas with our building services engineers in order to create efficient, environmentally conscious and sustainable buildings.

Alongside planning alternative mechanical engineering systems, we also try to take advantage of the local natural facilities and position the individual functions optimally.

We support the efficiency of mechanical engineering by using natural methods.

The classrooms of ISD are cooled and heated by a structural cooling and heating system. This means that the roof slab is heated or cooled based on the actual season. The structure with its thermal inertia supports the efficient function of mechanical engineering even in volatile weather conditions.

We support the cooling of the building with a gravitational ventilation system too. During the summer we used the lower temperature night air to cool down the aisle way areas with the use of gravitation. The floor vents let in cool air, the skylight window surfaces let out warm air and the whole system works automatically.



In order to utilise geothermal energy, we sank the spacious gymnasium under the ground. During the summer period the cool ground that envelops the section provides a passive cooling for the gym. During the winter time, the even temperature of the ground protects the structure from freezing cold. The nearby forest provides other useful techniques too: the cool air arriving from the direction of the woods is blasted on the floor level and sets the temperature naturally. We installed glass surfaces all along the long sides of the gym so the volume above the ground can provide plenty of natural light. The roof structure of the gym overreaches the walls of the building so as to provide the shading of the glass surfaces.

In order to protect the natural water cycle of Nagyerdő, rain-water is collected from the green roofs and instead of directing it in the drain system, it is gathered in infiltration basins to be released into the soil.



With responsibility for the future generation



„Poetic experience is not always ecstatic, very often it is more traumatic but poets can transform and elaborate negative things, making them easier to go through with their poetry. Perhaps this is why poetry is taught at schools, so children can prepare for the difficulties of life. A well-designed school is similar in a way: it carries a message with its perfect measures and orientation, giving the right guidelines for the future generation.”

Tibor Weiner Sennyey, poet and writer



BORD Studio believes that the harmony of man and nature brings tranquillity in our lives which is a strong basis for an accepting, peaceful society.

It was our pleasure to have an opportunity to implement this idea through building the International School. We are very proud of the success of the project which wouldn't have been able to manifest without a fantastic team, the general contractor: Hunép and the local government of Debrecen.

20

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Interview with the residents of the building

The International School of Debrecen was completed in September 2019. The users of the building were interviewed about the experiences of recent months:

21

How do the variety and dynamics of the spaces influence education?

ISD: The educational spaces are a great deal helpful in implementing the educational goals and obtaining the curriculum. The quality of the space is in direct connection with the quality of life and learning. Education does not stop in the classrooms, it happens all over the building: in the hubs hiding in the wave-like architecture of the aisles, or sitting on top of the pyramid facing the entrance, outside in the yard and all the way towards the forest. We can create space treasures from the given facilities that provide opportunities for small group or individual sessions, middle size group activities and large group work as well.

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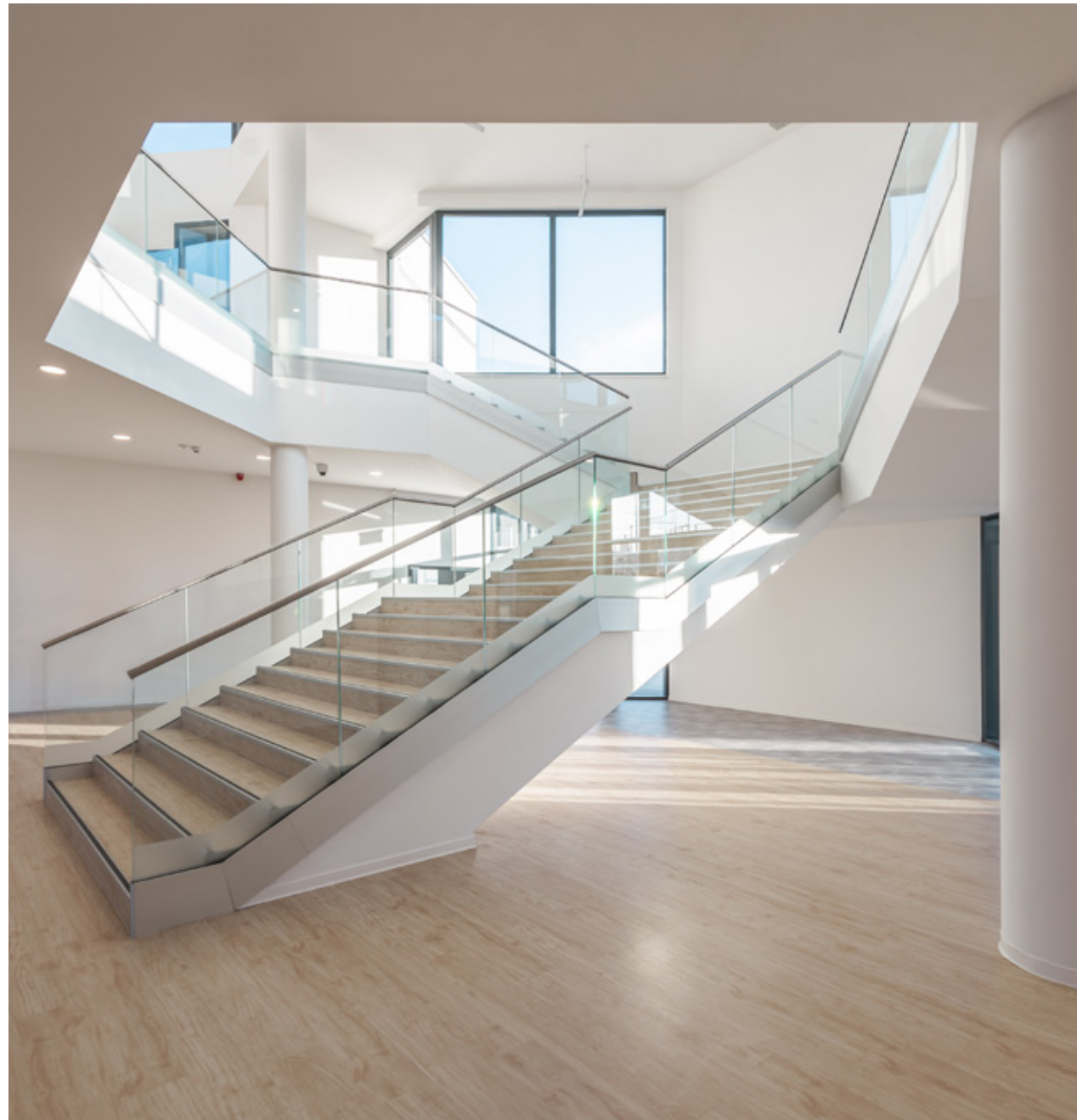
How does the closeness of the forest influence your everyday?

ISD: The primary form of education is based on encountering reality. Accordingly, throughout the learning process we focus on direct experience, observation and studying the world that surrounds us in case of all age groups. We utilise the location and the structure of the school building in such manner. The closeness of nature and Nagyerdő and the modern, full of light building enables teachers to teach in an explicit way. Experimenting and hands on experience also contributes to the overall obtaining of the curriculum as using more sensory organs enable students to immerse deeper into knowledge.

22

Does the building inspire teachers and students?

ISD: In this building everything supports the learning and wellbeing of children. It is a pleasure to be in these ample spaces that are full of natural light. Apart from the community areas the auditorium also provides great opportunities for self-expression and school programmes, or location for non-school public events. With its gestures and appearance, the building already reaches over its own built boundaries as does its educational programme since within its walls enthusiasm, curiosity and smile are boundless.



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23



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Project Name: International School of Debrecen

Location: Debrecen - Pallag, Hungary

Capacity: 500 students

Dimensions: 7 400 m2 (net)

Years of Design: 2017-2018

Completion: 2019

Client: Municipality of Debrecen

General Design: BORD Architectural Studio

24

Head Architect: Peter Bordas

Coordinating Architect: Gyorgyi Puspoki, Kata Zih

Architect Team: Anna Illes, Robert Gulyas, Andras Keki, Csilla Kracker,
Emese Kulcsar, Tamas Mezey, Balazs Moser, Istvan Ulmann

Landscape Architecture: BORD Architectural Studio - Andrea Waldmann

Mechanical Engineering: BORD Architectural Studio - Zoltan Hollokovi

Structural Engineering: Hydrastat Mernoki Iroda - Zsigmond Dezso

Building Constructions: Arkkitehti Llc - Gergely Sipos

Electrical Design Engineering: Artrea Consulting Llc - Zoltan Uveges

Visualization: Homologue - Zoltan Olbey

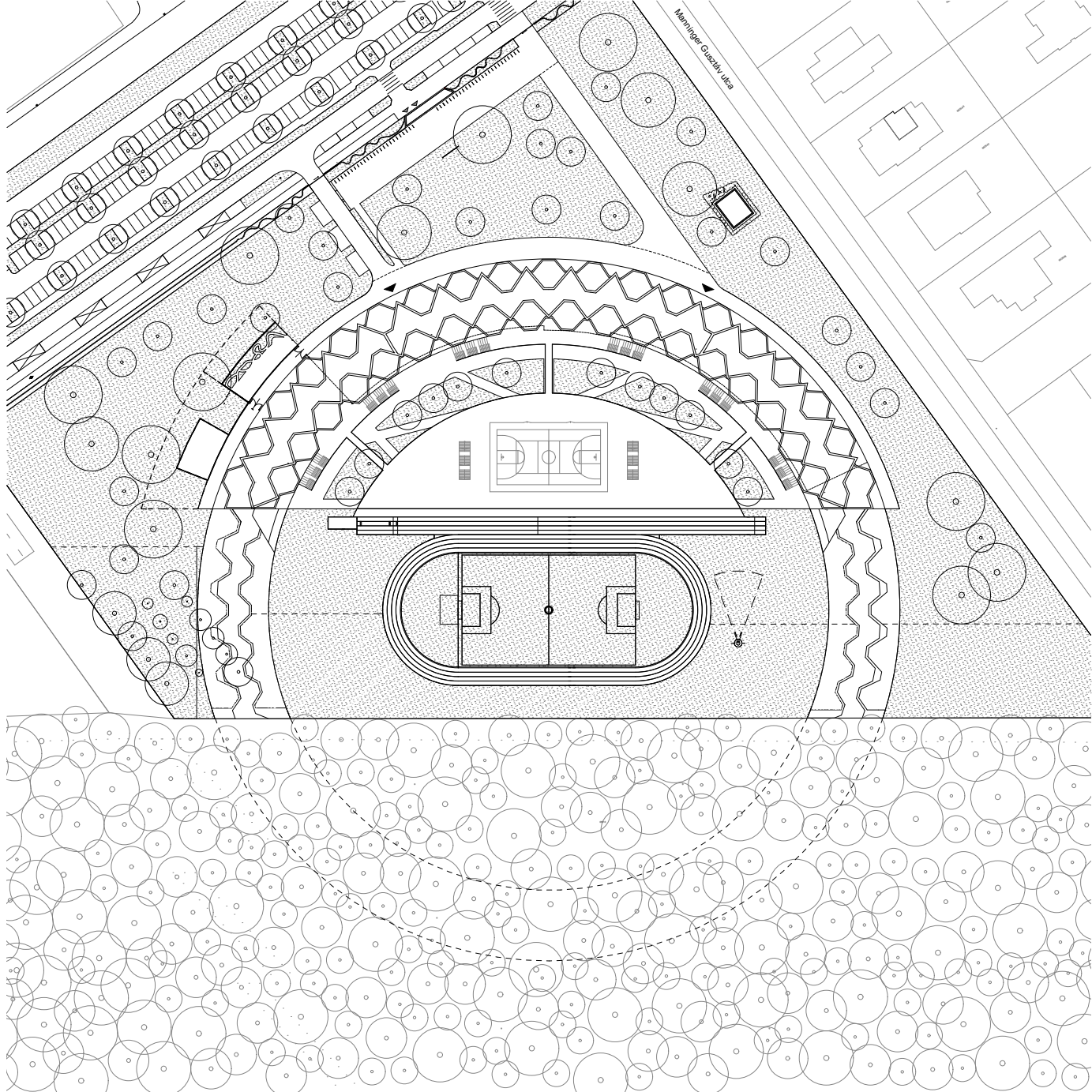
Mock-up: Limes Model - Geza Csizmazia

Photo and video: Anna Illes, Gyorgy Palko, Janos Marozsan

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Site plan

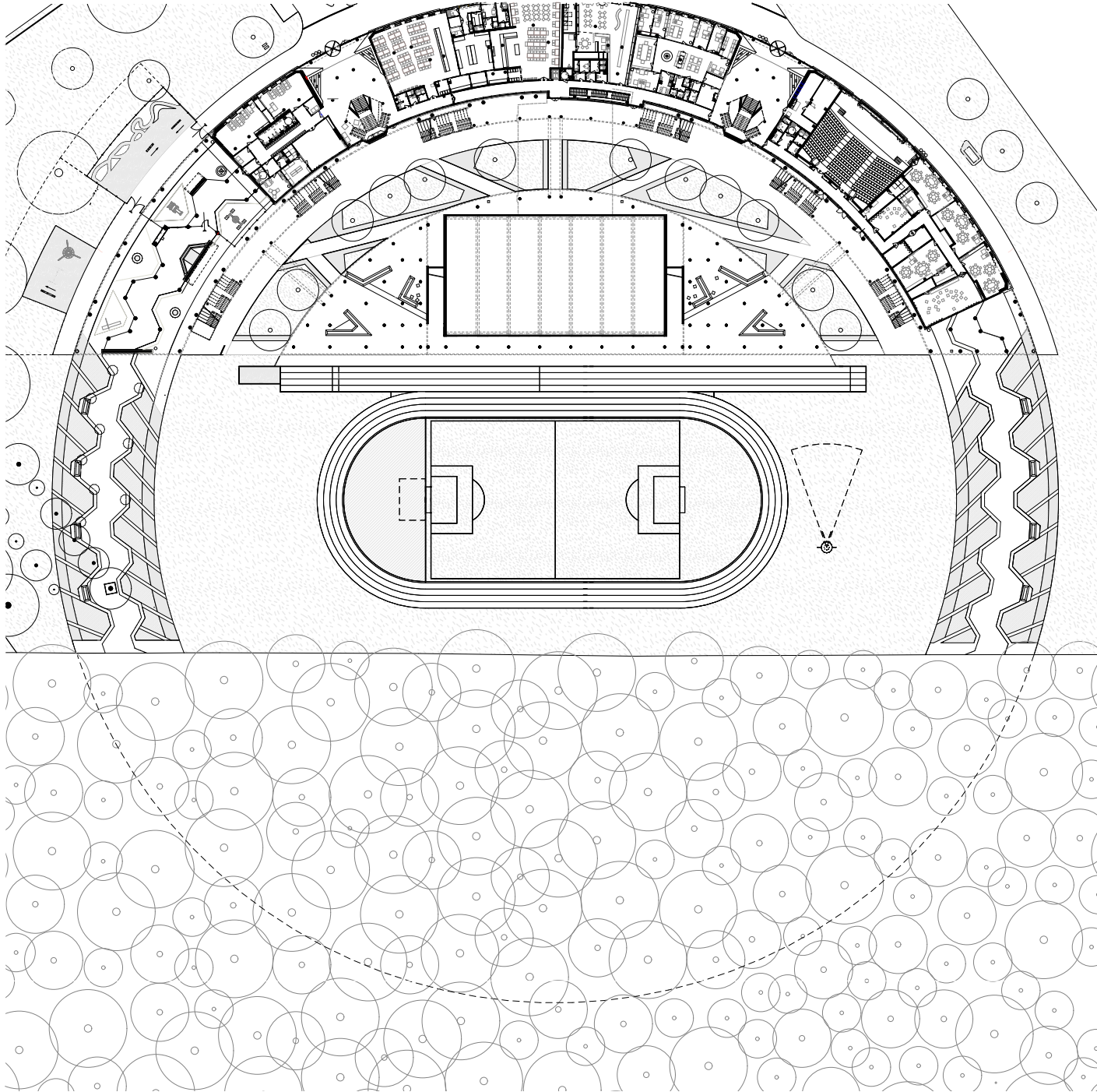


25

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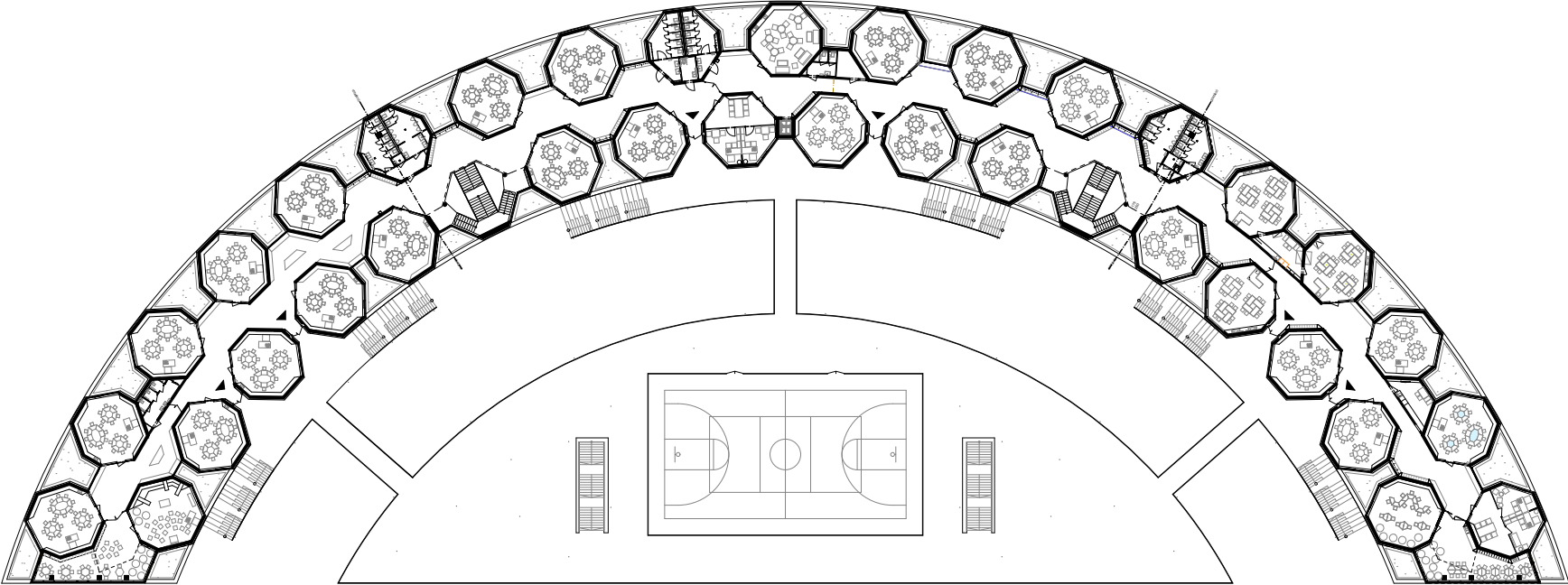


Ground floor



First floor

27

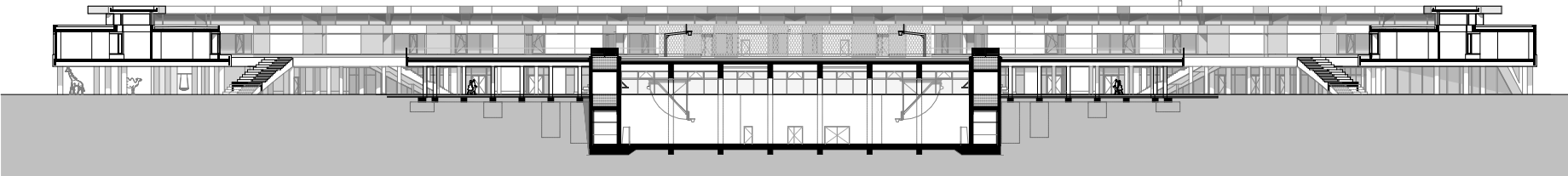


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Section

28

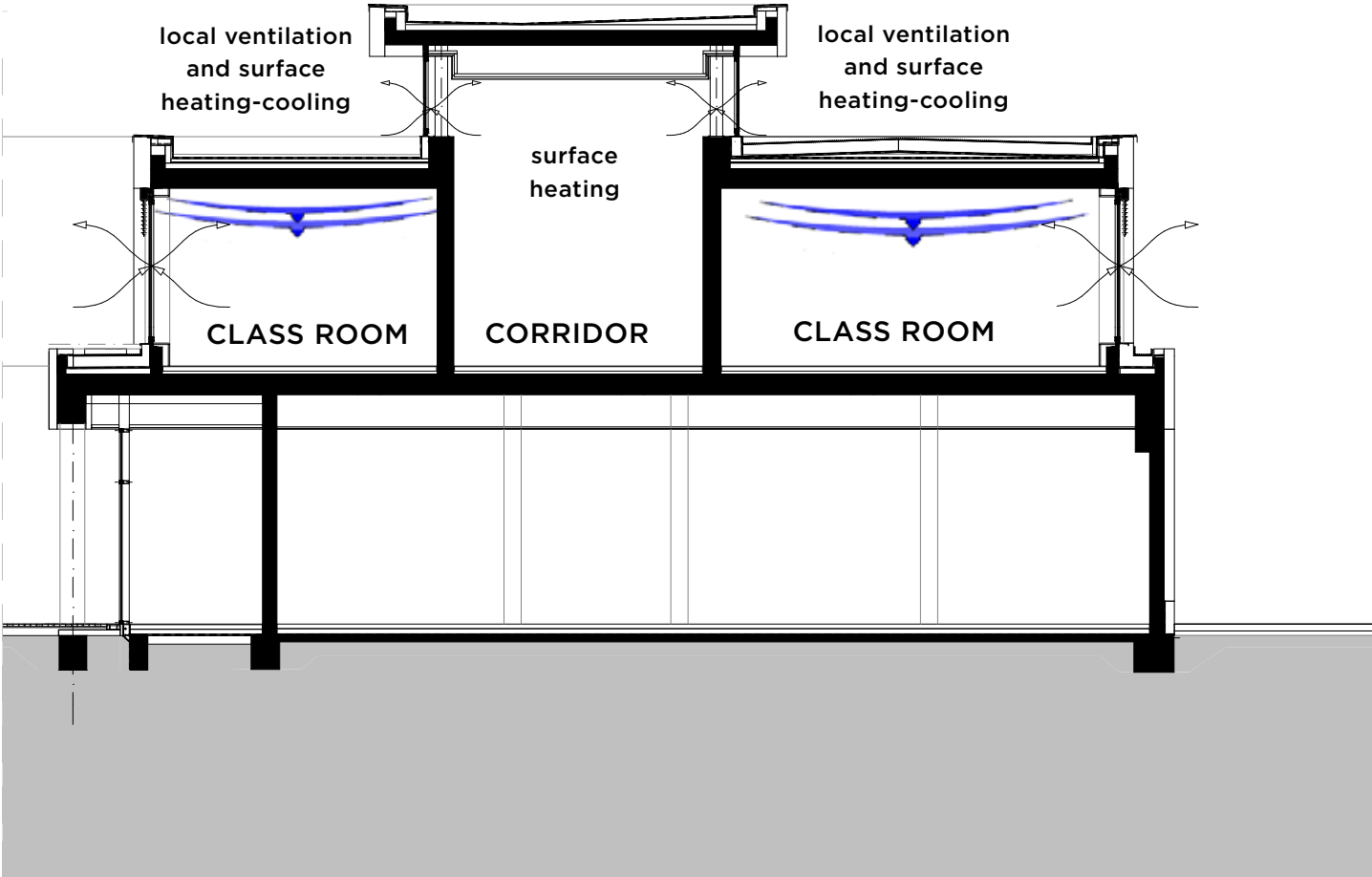


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**Bioclimatic
solutions**

29

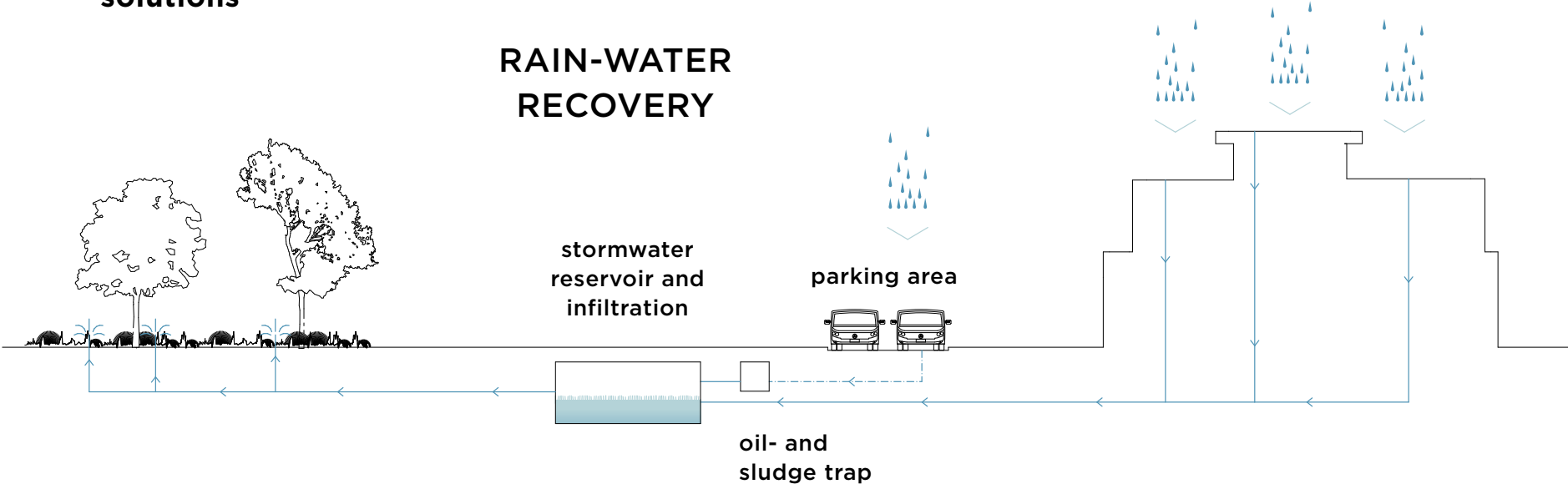


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Bioclimatic solutions

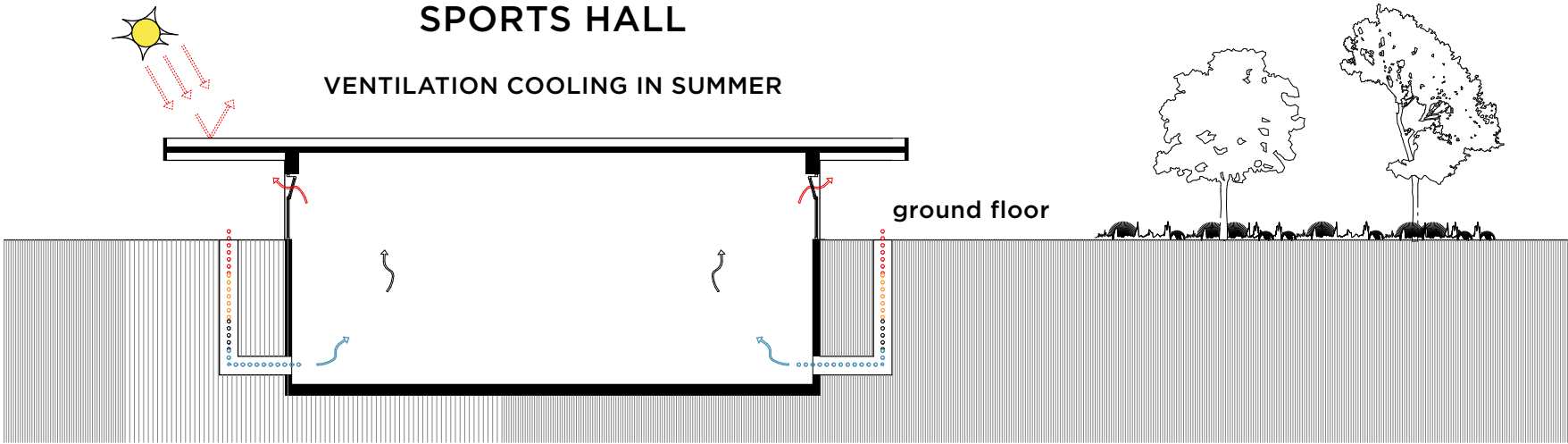
RAIN-WATER RECOVERY



30

SPORTS HALL

VENTILATION COOLING IN SUMMER



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Images

31



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32



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33



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34



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35



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