ARCHITECTURAL OPEN SPACE FOR THE SCHOOL AT 72 MARCINKEVIČIAUS STREET, VILNIUS

EXPLANATORY NOTE

C6H6

EXPLANATORY NOTE

1. MAIN CHARACTERISTICS OF THE SITE AND BUILDINGS

1.1. Type of morphotype:

Free planning build-up. The proposed building is located in a densely developed urban environment, surrounded by natural elements such as forests, city parks, and the banks of the Neries River. The plot is bordered by natural and slightly sloped terrain with slopes steeper than 10°.

Pav. nr. 1. Extract from General plan.

1.2. Development density:

Development density - 23.56

(4979.57x100)/21132=23.56

Built-up area - 4,979.57 m2

Land plot area - 21,132 m2

Maximum development density - 40

1.3. Development intensity;

Development intensity – 0,4

(8510.11/21132)=0,40

Total plotas – 8 510.11 m^2

Land plot area – 21 132 m^2

Maximum development intensity – 0,4

1.4. Area of green spaces, percentage;

Green space area - 10,604.27 m2 - 50.18%.

Minimum amount of green spaces - 50%.

1.5. Total building area;

8510.11 m^2.

1.6. Main building area;

8182,68 m^2.

Auxiliary area:

327,43 m^2 .

1.7. Building volume;

50 026 m^3.

1.8. Number of floors;

3 floors.

1.9. Maximum absolute altitude (m);

167.00 m.

1.10. Number of parking spaces for vehicles (including bicycles);

A total of 25 parking spaces are provided, including 6 parking spaces for electric vehicles with 3 charging stations, and 2 disabled parking spaces (1 type A and 1 type B).

Additionally, there are 24 bicycle parking spaces (12 stands) with a roof.

1.11. Total area of sports grounds in the plot;

2 063,01 m^2.

1.12. Total area of hard surfaces in the plot;

3 590,2 m^2.

1.13. Projected number of classrooms, students;

A total of 35 classrooms (excluding laboratories) and 7 laboratory classrooms are planned.

There are 16 classes in total (four classes for each grade x 4).

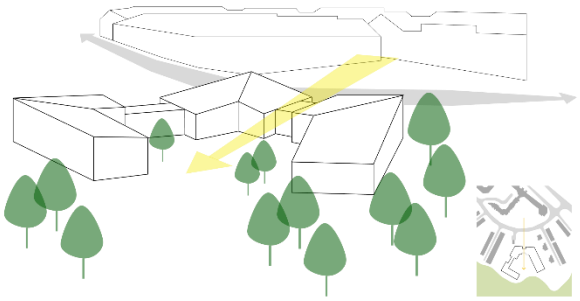
The number of employees is 50.

The total number of people is approximately 540 (480 students and 50 staff members).

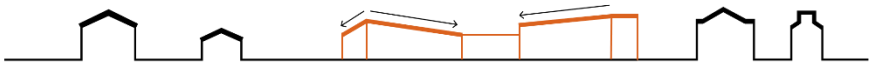
The recommended number of classes in the competition task is 16 classes.

2. DESCRIPTION OF CONCEPT

2.1. Urban idea, landscape architecture;



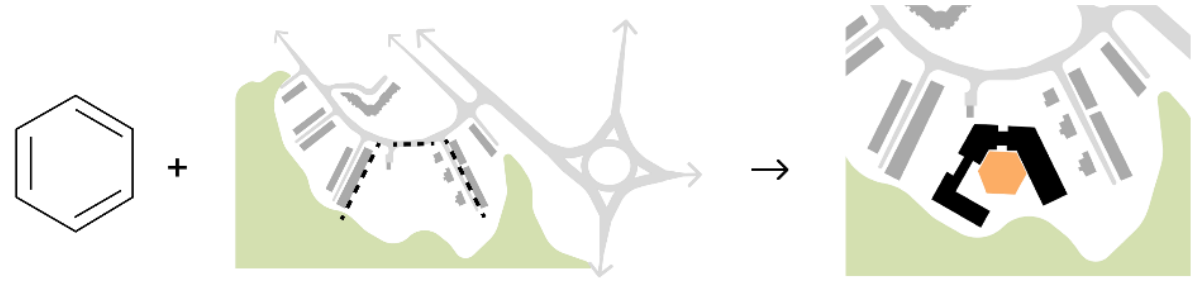
The proposed school is a connection between residential neighborhoods and forest territory. The northern facade follows the direction of the street, and the school's design extends the existing development directions of the neighborhood. Sloping roofs are designed to integrate the school smoothly into the surroundings.

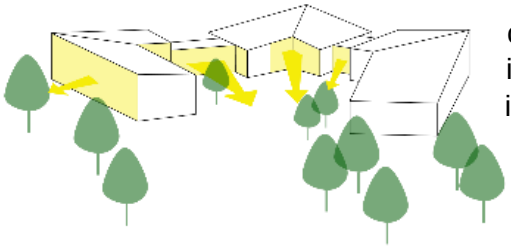


Landscape architectural solutions for the plot: Green spaces cover 50% of the entire plot area. The plot and building solutions are partly shaped considering the existing natural situation. Certain groups of pine trees in the southwestern, southeastern, and northern parts of the plot are preserved, as well as nearby groups of deciduous trees and individual trees. Trees in the built-up area of the school are cut, and tree groups in the southwestern and

southeastern parts of the plot are relocated to the plot boundary. The characteristic sloping terrain is preserved in the southern part of the plot along the plot boundary, in the school's courtyard, and in the square in the northern part.

2.2. Architectural and interior idea





The shape of the science school was inspired by the chemical element benzene molecule. The shape of the inner courtyard was inspired by existing groups of trees, intending to preserve as much of the natural framework as possible. The school's volume embraces the trees, giving them special significance.

2.3. Fulfillment of the identity and needs of the science building;

To further substantiate and emphasize the identity of the science-oriented school, the symbol of the benzene molecule is used in the facade finishes and the shape of the inner courtyard square as well as in the interior. High-quality science laboratories are also designed in the school. Various spaces are provided for the comprehensive development of individuals in the school, such as halls for ceremonies, sports, dances, and training. Different functional zones are planned on the plot.

3. OTHER INFORMATION

3.1. The ratio and calculations of the projected number of students and the total building area.

A/B=C

8719/480=18,16

Projected number of students – 480 students;

Total building area – 8510,11 m^2.

3.2. Universal design solutions;

The building and its accesses are designed following the principles of universal design.

Accessibility - the entire site and all interior spaces are adapted for easy access and movement for people with disabilities. Ramps are designed in the forest side of the site. The building is equipped with an elevator, sports equipment, halls, rooms, and changing rooms are also adapted

for people with disabilities. Each floor has accessible toilets for people with disabilities. Corridors and outdoor pathways are easily accessible for people with strollers. The ground floor of the building is accessible from ground level. Wide corridors inside ensure safe and clear usage for people with limited mobility or vision.

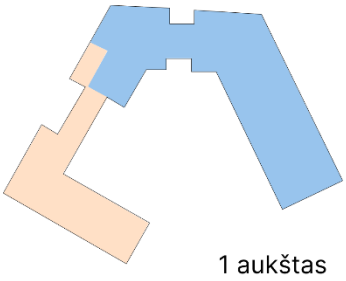
Flexibility - Employees can adjust engineering solutions, such as lighting intensity, glare from the outside, indoor air temperature, water temperature in sanitary nodes and showers.

Intuitiveness - Access to the main building is clearly expressed through architectural means, clearly visible from the entrances. A second entrance is provided near the parking lot to provide closer access to specific rooms for staff and students.

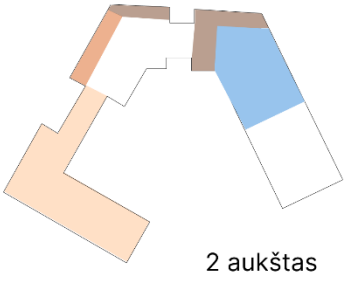
Efficiency - Energy-efficient measures are applied (heating, ventilation, lighting, high energy class). Efficient best practice design principles are applied, including short corridors andcompact layout.

3.3. Description of the interior spaces and/or premises providing formal and informal education for students.

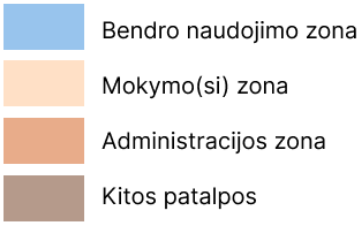
The science-oriented building includes separate classrooms for grades nine to twelve - a separate building for classes and seven laboratories (which can also be used for informal, extracurricular education purposes). Another building includes the psychologist's, speech therapist's, and social worker's offices. Besides formal education, informal school spaces are also designed - relaxation areas in the corridors, quiet rooms on the first and second floors, a versatile 600 sq m cafeteria with learning areas and dining tables, and this space can also be transformed into an event area.

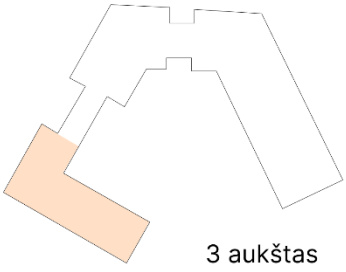


To ensure active movement for students, a versatile sports hall, gym, and dance hall with universal changing rooms are designed. These sports spaces can be used not only by students during class and extracurricular activities but also by local residents in the evenings.



For school events, conferences, and commemorations, there is an assembly hall on the second floor of the building..





3.4. Indications and calculations supporting the purpose of other buildings (sports grounds, parking and bicycle spaces, etc.);

In the plot, a universal sports ground is arranged for various sports (basketball, football, volleyball, tennis, etc.). Next to it, there is a running track with a 100m straight track, having bicycle lanes in the middle. In the western part of the plot, a parking area with 25 spaces is arranged. According to STR 2.02.02:2004 "Public buildings" Table 9.3 of Chapter XIII, the minimum number of car parking spaces in general education schools is 1 space per 30 students (480/30=16 spaces, provided 25 spaces). According to STR 2.03.01:2019 "Accessibility of buildings," when the number of parking spaces is 21-50, the minimum total number of disabled parking spaces is 2. Two Type A and Type B parking spaces are planned. Additionally, at the main entrance of the building in the northern part of the plot, the number of bicycle parking spaces is calculated according to STR 2.02.02:2004 "Public buildings," Section 42, where 1 space per 20 students (480/20=24 spaces) is determined, hence 24 covered bicycle parking spaces with 12 stands.

3.5. Description of fire safety solutions (fire extinguishing and rescue vehicle access, planned structural solutions);

Access for fire vehicles is provided from the northern side, M. Marcinkevičiaus street. In the western part of the plot, next to the entrance to the building, a 12x12 m fire truck turning area is designed.

The building is equipped with four evacuation staircases (two on each side of the school building, two in shared rooms), creating a short evacuation route of up to 60m, as specified in STR 2.02.02:2004 "Public buildings," Section VI, "Requirements for building use. Layout of main rooms," point 255.

3.6. Building structural solutions, materiality, sustainability, and innovation.

- Foundation structure: reinforced concrete poles with footings.
- Load-bearing structure: reinforced concrete columns with beams and steel girders. Prefabricated reinforced concrete slabs are used for the floors.
- Roof structure above the sports hall: trusses with a lightweight roof structure, while the rest of the building has a flat roof with prefabricated roofing panels.

3.7. Building engineering solutions, measures to reduce energy resource needs and losses;

- Heating: The plan includes connecting to the city's district heating system, with heat supply connection points. Underfloor heating is planned for the sports halls, and heating is supplemented through the air ventilation system with additional radiators. Air-water heat pumps are also considered as a secondary heat source.
- Ventilation: A forced ventilation system with heat recovery units, zinc-coated steel ducts, and textile ducts.
- Cooling: Room cooling (adjustable parameters) is planned for workrooms, classrooms, sports, and other halls. A technical room is provided on the ground floor for the chiller (1.7) with a separate outdoor entrance.

To achieve greater energy efficiency and sustainability, a self-cooling system (freecooling) is used. During the warm season, cool outside air (during the night) can be used to cool the desired premises.

- Water supply: Planned connection to the city's municipal water supply network.
- Domestic sewage: Planned connection to the city's municipal sewage network.
- Power supply: Planned connection to the city's municipal electricity network. Approximately 470 sq.m. of solar panels are planned on the roof, generating energy that can be used for the building's needs and any excess energy can be fed back into the electrical grid (sold or stored). The 470 sq.m. solar panels can generate about 90 kW of electrical energy. Energy-efficient appliances are installed, with programmable operation using timers, LED indoor and outdoor lighting, and programmed scenarios based on user needs.

3.8. Solutions for communication and engineering network development or reconstruction. Solutions related to the development and integration of related public infrastructure.

The site's accesses and communication roads are connected to M. Marcinkevičiaus street on the northern side.

Also, based on the results and conclusions of creative workshops, pedestrian access to the planned building is proposed in the southeastern part of the plot, near the running track. The pathway network within the plot would continue to the city's general pedestrian and bicycle path near Žaliųjų ežerų station, located at the roundabout connecting Mokslininkų, Jeruzalės, Žaliųjų ežerų, and Santariškių streets.

The active areas planned in the plot (running track, universal sports ground) are open and public spaces for the leisure needs of local residents and for sports activities (basketball, football, tennis, athletics, dance) training.

3.9. Construction duration, cost estimate for construction, including all environmental improvement and other expenses related to the construction object.

Contstruction duration:

Based on similar scope and nature works performed in the Republic of Lithuania, the overall construction duration is estimated to be up to 22 months.

However, the construction period may vary depending on the Contractor's and Subcontractor's agreement or any other additional arrangements.

Cost estimate for construction:

The maximum construction cost estimate is – 20 259 209 EUR

The cost estimate is calculated based on "SISTELOS" Building Construction Calculated Cost Comparative Economic Indicators XXXIX, according to the April 2023 building construction calculated costs.

- New construction of a science-oriented building, with a building volume of >5000 m^3, 1 m^3 has a construction cost of 257,89 EUR.

The planned building volume is 50 026,40 m^3 .

Thus, the construction cost based on these indicators is:

50 026,40 x 257,89 = 12 901 308,3 EUR.

- Other communication infrastructure buildings

The cost of new construction per 1000 m2 is calculated as follows:

Asphalt pavement for the parking area - 109,4 thousand EUR:

Area – 714,1 m^2.

109 400 x 0,714 = 78 111,6 EUR

Asphalt pavement for the access road– 83,59 thousand EUR:

Area – 436,56 m^2.

83 590 x 0,437 = 36 528,83 EUR.

Concrete pavement for pedestrian paths – 110,58 thousand EUR:

Area – 2439,54 m^2

110 580 x 2.440 = 269 815,2 EUR

Greenery (lawns, trees, shrubs) – 16,68 thousand EUR.

Area – 10604,27 m^2

16 680 x 10,604 = 176 874,72 EUR.

The total sum is: 12 901 308,3 + 78 111,16 + 36 528,83 + 269 815,2 + 176 874,72 = =13 462 638.2 EUR.

The remaining amount, not included in the calculations, is allocated to installation costs for engineering networks.