O.M. Beketov National University of Urban Economy in Kharkiv
(full name of university)

School of Architecture, Urban Planning and Design
(full name of institure or faculty)
Department of Architecture of Buildings and Constructions
(full name of the department)

Explanatory note

for the diploma project (work)
Bachelor
(educational scientific level)

on the topic of:

«Public community center in Kharkiv»

Completed by: student of the 4th year,
group A 2022-3a
branch of knowledge (specialty)
19 Architecture and construction
(code and name of branch of knowledge, specialty)
191 Architecture and Urban Planning
(code and name of branch of knowledge, specialty)
EP Architecture
(code and name of branch of knowledge, specialty)
Mavicelik Ibrahim
(last name and initials)
Supervisor PhD, assoc. prof. Borysenko A. S.
(last name and initials)

Reviewer PhD, assoc. prof. Veligotska Y. S.
(last name and initials)

Kharkiv — 2026

O.M. BEKETOV NATIONAL UNIVERSITY OF URBAN ECONOMY IN KHARKIV

Educational and scientific institute **School of Architecture, Urban Planning and Design**
Department **Architecture of Buildings and Constructions**
Educational and scientific level **Bachelor**
Educational program **Architecture**
(code and name)
Specialty **191 Architecture and urban planning**
(code and name)

APPROVED
Head of ABaC department
Smirnova O.V.
March 17, 2026

T A S K

FOR THE STUDENT'S DIPLOMA PROJECT (WORK)
Mavicelik Ibrahim

1. Topic of the project **Public community center in Kharkiv**
supervisor(s) of the project (work): **Borysenko A. S.,** Associate Professor, PhD

approved by order of higher educational institution **No. 255-03, issued on March 17, 2026**

2. The deadline for student submission of the project (work) June 18, 2026

3. Initial data for the project: diploma design task, results of the computer pre-diploma practice, topographic maps of territory, analytical studies analysis of analogues of office center, grapho-analytical materials

4. Contents of the explanatory note (list of questions to be developed): CHAPTER 1. «ANALYSIS OF ANALOGUES OF PUBLIC COMMUNITY CENTER», CHAPTER 2. «ARCHITECTURAL PLANNING AND SPATIAL SOLUTION OF PUBLIC COMMUNITY CENTER», CHAPTER 3. «TECHNICAL AND ECONOMIC INDICATORS OF PUBLIC COMMUNITY CENTER», CHAPTER 4. «OCCUPATIONAL HEALTH AND SAFETY»

5. A list of graphic materials (with exact indications of mandatory drawings): Schemes of urban planning analysis of the site for design, reference plan (S 1:1000), master plan (S 1:500), floor plans of the architectural object (S 1:200), elevations S 1:200), section (S 1:200), 3D spatial model of the architectural model, perspective projections of the building.

6. Consultants of chapters of the project (work)

Chapter	Surname, initials and position consultant	Signature, date	
		task published	task accepted
1	Borysenko A. S., PhD, assist. prof. of AbaC department	17.03.2026	04.04.2026
2	Borysenko A. S., PhD, assist. prof. of AbaC department	15.04.2026	30.05.2026
4	Seryogina D.O., Assoc. prof.of the department of EaM	01.05.2026	8.06.2026
5	V.V. Malysheva, Ph.D., Assoc. prof. of OHaLS	01.05.2026	8.06.2026

7. Date of issuance of the task 17 March, 2026

CALENDAR PLAN

№	Name of stages of the diploma project (work)	Term of completion of stages of the project (work)	Note
1	Determining the topic of the diploma project, justifying the choice of the chosen object. Introduction	March 2026	Done
2	Analysis of analogues of the selected design object. Information collection and analysis	March 2026	Done
3	Urban planning analysis of the project area (analytical schemes, reference plan, master plan)	April 2026	Done
4	Architectural and planning solution of the selected design object (graphic design of plans, facades, section)	April 2026	Done
5	Volume-spatial solution of the selected design object (graphic design of perspective projections, 3-D models, perspective angles)	April 2026 May 2026	Done Done
6	Development of an explanatory note (chapter 1)	May 2026	Done
7	Development of an explanatory note (chapter 2)	May 2026	Done
8	Completing the tasks of adjacent chapters of diploma projects (chapters 3-4)	May 2026 June 2026	Done Done
9	Completion of the explanatory note (all chapters of the work) - check for plagiarism	June 2026	Done
9	General exposition of graphic material	June 2026	Done
10	Defense of the qualification work	June 2026	Done

Student Mavicelik Ibrahim

Supervisor of the project (work) Borysenko A. S

CONTENTS:

INTRODUCTION

Public community centers have become an important component of contemporary urban development throughout the world. During the last decades, the role of public buildings has significantly changed. Modern community centers are no longer designed only as places for meetings or cultural events. Today, they function as multifunctional environments that combine education, recreation, communication, creativity, cultural activities, co-working spaces, and public services within a single architectural complex.

The development of community centers reflects modern social and architectural trends aimed at creating inclusive, flexible, and accessible public spaces. In many countries, community centers are considered important urban hubs that strengthen social connections between residents and support local cultural and educational initiatives. Examples from Europe, North America, and Asia demonstrate the growing importance of multifunctional public buildings that can adapt to changing community needs and support various activities throughout the day.

Contemporary architectural practice pays particular attention to the integration of community centers into the urban environment. Modern projects are characterized by openness, transparency, flexibility of planning solutions, and strong connections with surrounding public spaces. Architects increasingly use open layouts, transformable spaces, multifunctional halls, public plazas, landscaped courtyards, and pedestrian-oriented environments. Community centers are often designed as extensions of the urban fabric, creating opportunities for communication and interaction both inside and outside the building.

One of the key tendencies in the design of community centers is the formation of multifunctional public environments where architecture, landscape, and public space operate as a unified system. Modern community centers frequently incorporate libraries, educational facilities, exhibition spaces, conference halls, cafés, workshops, co-working areas, recreational zones, and outdoor event spaces. Such diversity of functions allows the building to remain active throughout the day and to serve different groups of users.

Another important trend is the implementation of sustainable and human-oriented design principles. Natural lighting, energy-efficient technologies, flexible spatial organi-

zation, universal accessibility, and the creation of comfortable public spaces have become essential components of contemporary community center architecture. The use of green spaces, landscaped courtyards, and public plazas contributes to the formation of attractive environments that encourage social interaction and improve the quality of urban life.

For the city of Kharkiv, the development of modern public community centers is particularly important. As one of the largest educational, scientific, and cultural centers of Ukraine, Kharkiv requires contemporary public facilities capable of supporting social activity, educational programs, cultural initiatives, and community development. The city possesses significant potential for the creation of multifunctional public spaces that can become centers of communication and social integration for residents of different ages and interests.

The study of international architectural experience provides an opportunity to identify effective planning, functional, and compositional solutions that can be adapted to the urban conditions of Kharkiv. Analysis of contemporary community centers allows the determination of the most successful approaches to the organization of public spaces, integration of buildings into the urban environment, and creation of flexible multifunctional structures capable of responding to modern social demands.

The aim of this bachelor's project is to develop an architectural proposal for a public community center in Kharkiv based on the analysis of contemporary international experience and current architectural trends. The project seeks to create a multifunctional public environment that promotes communication, education, creativity, recreation, and community interaction while contributing to the development of the urban structure and public life of the city.

1. ANALYSIS OF ANALOGUES OF PUBLIC COMMUNITY CENTERS

1.1. The Shed Community Center, New York, USA

The Shed is a contemporary multifunctional community and cultural center located in the Hudson Yards district of New York (Fig. 1.1). The project was designed by Diller Scofidio + Renfro in collaboration with Rockwell Group and opened in 2019. The center serves as a public platform for exhibitions, performances, educational activities, community events, and social interaction. The main architectural idea of the project is adaptability and flexibility, allowing spaces to transform according to different user needs.

The building is situated at the intersection of several important pedestrian routes adjacent to the High Line Park and the Hudson Yards mixed-use development. The site occupies a strategic corner position and acts as a link between public open spaces and newly developed urban districts [1].

Figure 1.1. The Shed Community Center, New York

The master plan is organized around a public plaza that functions as an extension of the city space. One of the most important planning elements is the movable shell

structure that can slide over the plaza, transforming an outdoor public space into a covered event hall. When the shell is retracted, the plaza remains fully accessible and functions as an urban gathering area for community activities. This approach allows the territory to remain active throughout the year.

Pedestrian accessibility is prioritized through direct connections with surrounding streets, public transport stations, and the High Line promenade. The building contributes to the formation of an active public environment and supports continuous urban activity.

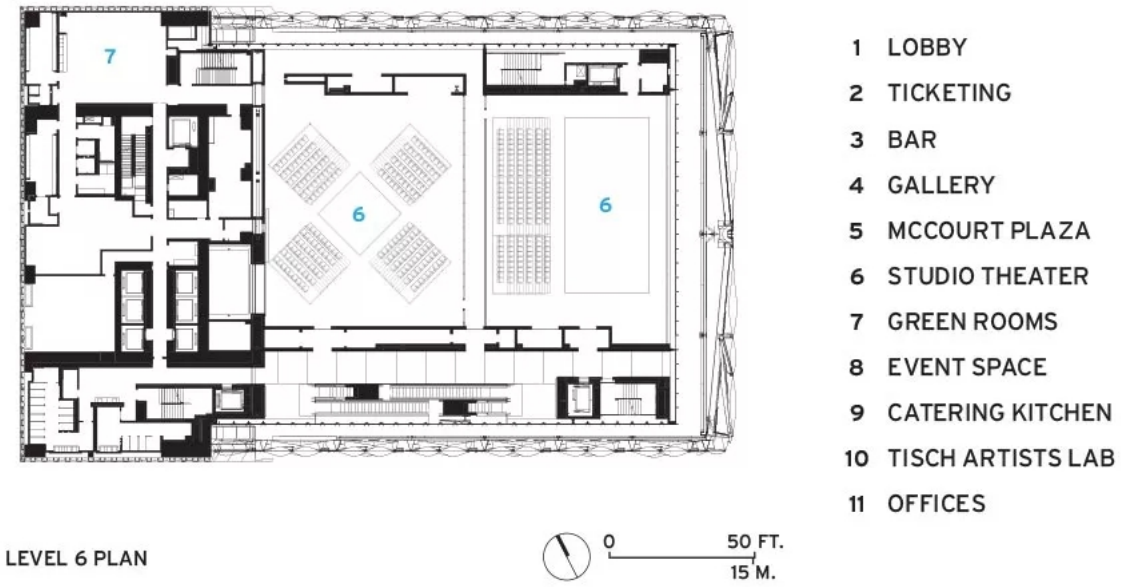

Figure 1.2. Plan of The Shed Community Center, New York

The composition consists of a permanent four-storey building volume and a large movable steel shell covered with ETFE panels. The transparent and lightweight appearance creates a contemporary architectural image while emphasizing technological innovation.The movable shell is the dominant element of the composition. It can extend over the adjacent plaza and create a large enclosed hall for events accommodating thousands of visitors. This solution significantly increases the flexibility of the building and allows adaptation to changing functional requirement [2].

The internal structure includes exhibition galleries, performance spaces, rehearsal rooms, educational facilities, public gathering zones, administration offices, and technical premises. Vertical circulation is organized through elevators and staircases concen-

trated within the permanent building volume.

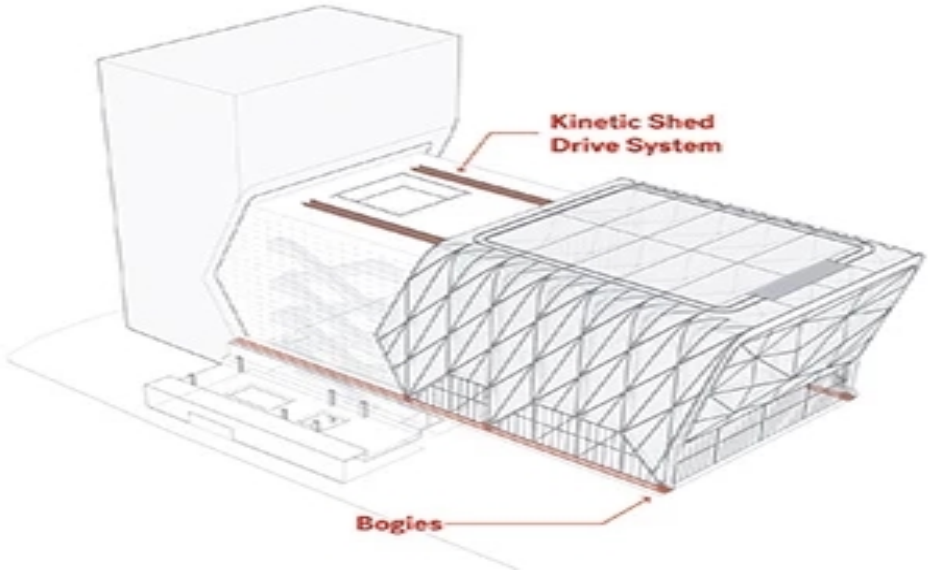

Figure 1.3. 3D of The Shed Community Center, New York

The planning solution is based on multifunctionality and transformability. Large open spaces can be reconfigured for different events, which increases the efficiency of building use.

1.2. Idea Store Whitechapel, London, United Kingdom

Idea Store Whitechapel is a public community center that combines the functions of a library, educational center, cultural venue, and social meeting place (Fig. 1.4). The building was designed by David Adjaye Architects and completed in 2005. The project was created to strengthen social interaction and improve access to education and cultural services within the local community.

The building is located on Whitechapel Road, one of the busiest streets in East London. The site is surrounded by markets, shops, residential areas, and public transport infrastructure. The location was intentionally selected to maximize accessibility and encourage community participation [3].

The master plan strategy focuses on integration into the existing urban environment rather than creating an isolated public facility. The building aligns with the street frontage and reinforces the existing urban fabric. Public entrances are positioned di-

rectly along pedestrian routes, encouraging spontaneous visits and social interaction.

The compact site required a vertical organization of functions. Consequently, the project utilizes a multi-storey solution while maintaining strong visual connections with the street. Public activity extends from the exterior market environment into the building, creating continuity between indoor and outdoor spaces.

Figure 1.4. Idea Store Whitechapel

The building consists of a simple rectangular volume with extensive glazing. The transparent façade creates visual openness and symbolizes accessibility. The architectural image avoids monumentality and instead emphasizes community orientation and inclusiveness.

The volume is organized vertically, with large internal voids and open circulation spaces creating visual relationships between floors. This approach improves orientation and encourages interaction among users [4].

The center includes library facilities, classrooms, computer learning spaces, meeting rooms, children's areas, cultural activity spaces, cafes, and administrative facilities. Approximately ninety percent of the building is dedicated to educational and community functions.

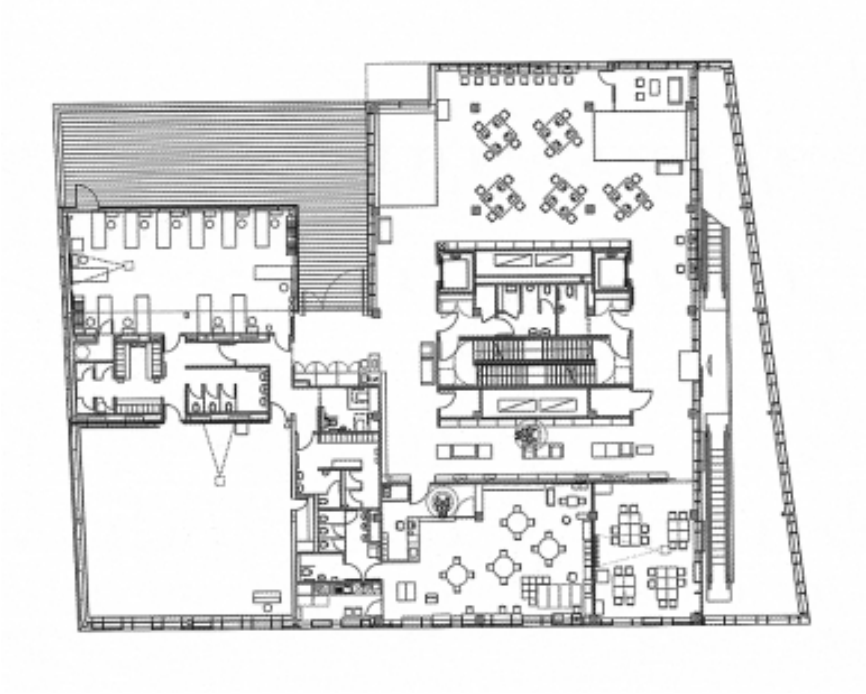

Figure 1.5. Plan of Idea Store Whitechapel

The internal organization follows an open-plan concept that supports flexibility and efficient use of space. Educational and cultural functions are distributed across several floors while remaining interconnected through central circulation areas.

Idea Store Whitechapel represents a socially oriented model of a community center. The project demonstrates how a public building can become a community hub by integrating educational, cultural, and social functions within a compact urban structure.

1.3. Longgang Cultural and Community Center, Shenzhen, China

Longgang Cultural and Community Center was designed by Mecanoo Architects and completed in 2019 (Fig. 1.6). The project functions as a major public destination that combines cultural, educational, recreational, and community facilities. The center aims to strengthen social cohesion and create a recognizable civic landmark within the rapidly developing urban district of Shenzhen.

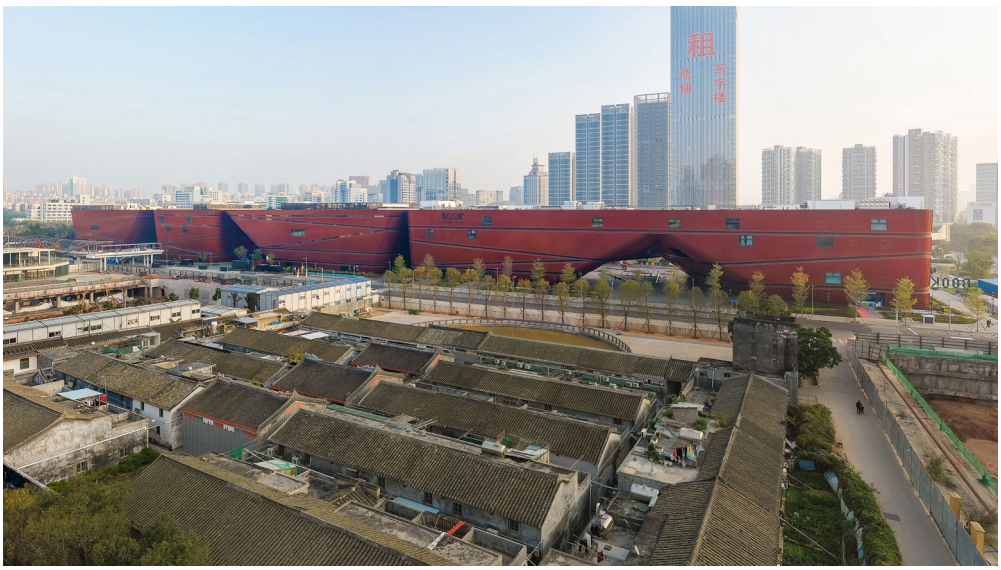

Figure 1.6. Longgang Cultural and Community Center

The complex is located on a long and narrow site within Longgang District. The master plan responds directly to these site constraints by organizing the program as a sequence of interconnected volumes along a linear public axis. This strategy improves accessibility and establishes strong connections with surrounding neighborhoods [5].

Public squares and pedestrian spaces are integrated throughout the site. Entrances are positioned around covered plazas, allowing indoor activities to extend into outdoor areas. The project creates a continuous public realm that supports community events and everyday social interaction.

The landscape design reinforces pedestrian movement and creates a sequence of gathering spaces. The complex functions not only as a building but also as an urban connector linking different parts of the district.

The building extends approximately 400 meters in length and consists of four interconnected volumes. Each volume houses a specific function while maintaining architectural unity through consistent materials, color, and formal language.

The composition is characterized by dynamic forms, inclined façades, and large overhangs. The red façade treatment creates a strong visual identity and allows the complex to function as a landmark within the urban landscape [6].

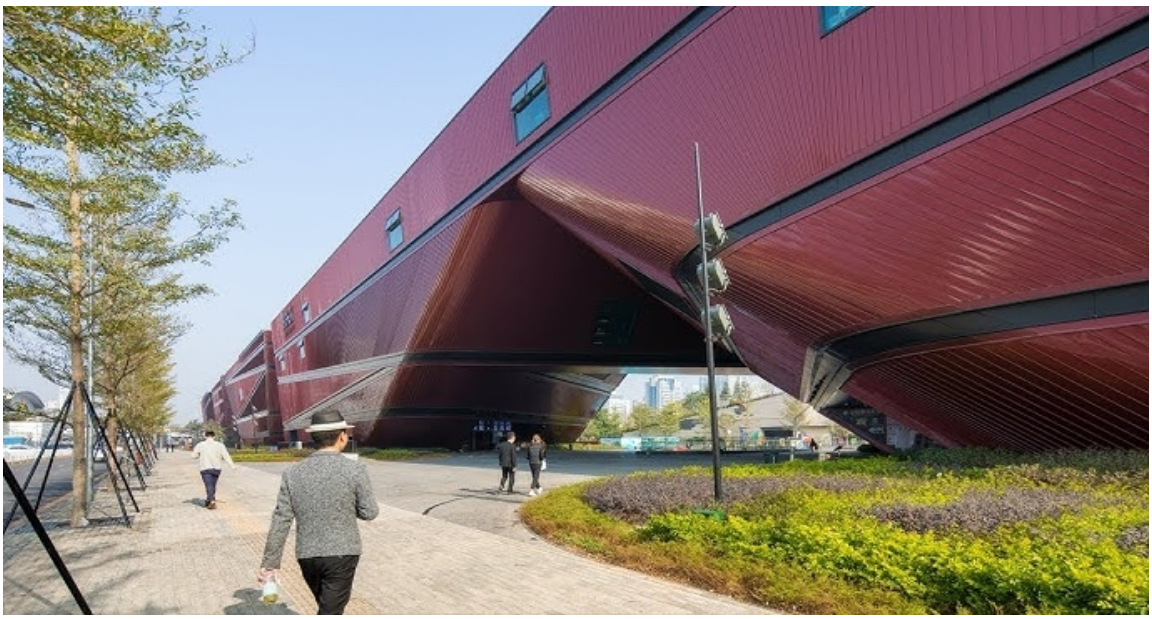

Figure 1.7. Longgang Cultural and Community Center

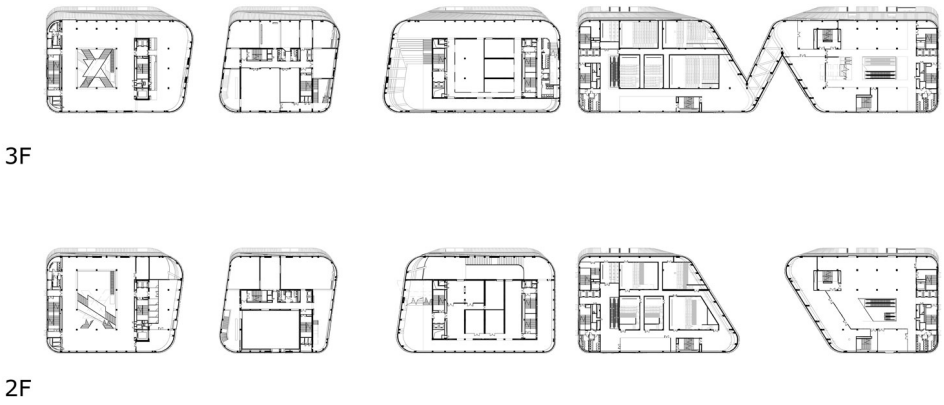

Figure 1.8. Longgang Cultural and Community Center

The center contains an art museum, science center, youth center, library and book mall, educational facilities, conference areas, cafés, restaurants, and public gathering spaces. The functional organization follows a linear circulation system that connects all major facilities.

This arrangement allows each component to operate independently while remaining integrated into the overall community complex.

2. ARCHITECTURAL PLANNING AND SPATIAL SOLUTION OF B OF PUBLIC COMMUNITY CENTER IN KHARKIV

2.1. Urban analysis of the territory of public community center

The proposed public community center is located in the northern part of Kharkiv within the Saltivskyi District, on the southern shore of the Zhuravliv Reservoir. The site occupies a favorable position between educational facilities and recreational landscapes, creating opportunities for the formation of a multifunctional public environment that combines educational, cultural, social, and recreational activities.

The project area is bounded by Valentynivska Street to the east, the territory of Kharkiv National Pedagogical University to the south and west, and the rowing canal with auxiliary structures to the north. Such a location provides direct access to existing educational institutions while maintaining visual and functional connections with the waterfront area.

The urban structure surrounding the site is characterized by a combination of educational, public, and service functions. Nearby are the buildings of Kharkiv National Pedagogical University, educational facilities of the National Pharmaceutical University, cafés, service establishments, and public amenities. This concentration of educational and public functions creates favorable conditions for the placement of a community center that can serve students, young people, local residents, and visitors.

The territory currently occupied by the garage cooperative was selected as the primary area for redevelopment. The existing garages occupy a significant portion of the site but have limited functional value in the contemporary urban structure. Furthermore, these buildings create visual barriers between the educational facilities and the waterfront, reducing the quality of the urban environment and limiting public access to the recreational potential of the reservoir.

One of the most valuable characteristics of the site is its proximity to the Zhuravliv Reservoir. The waterfront creates attractive conditions for outdoor recreation, public activities, and landscape development. The location provides an opportunity to establish direct connections between the future community center and recreational spa-

ces along the water, creating a unified public environment for learning, communication, cultural events, and leisure activities.

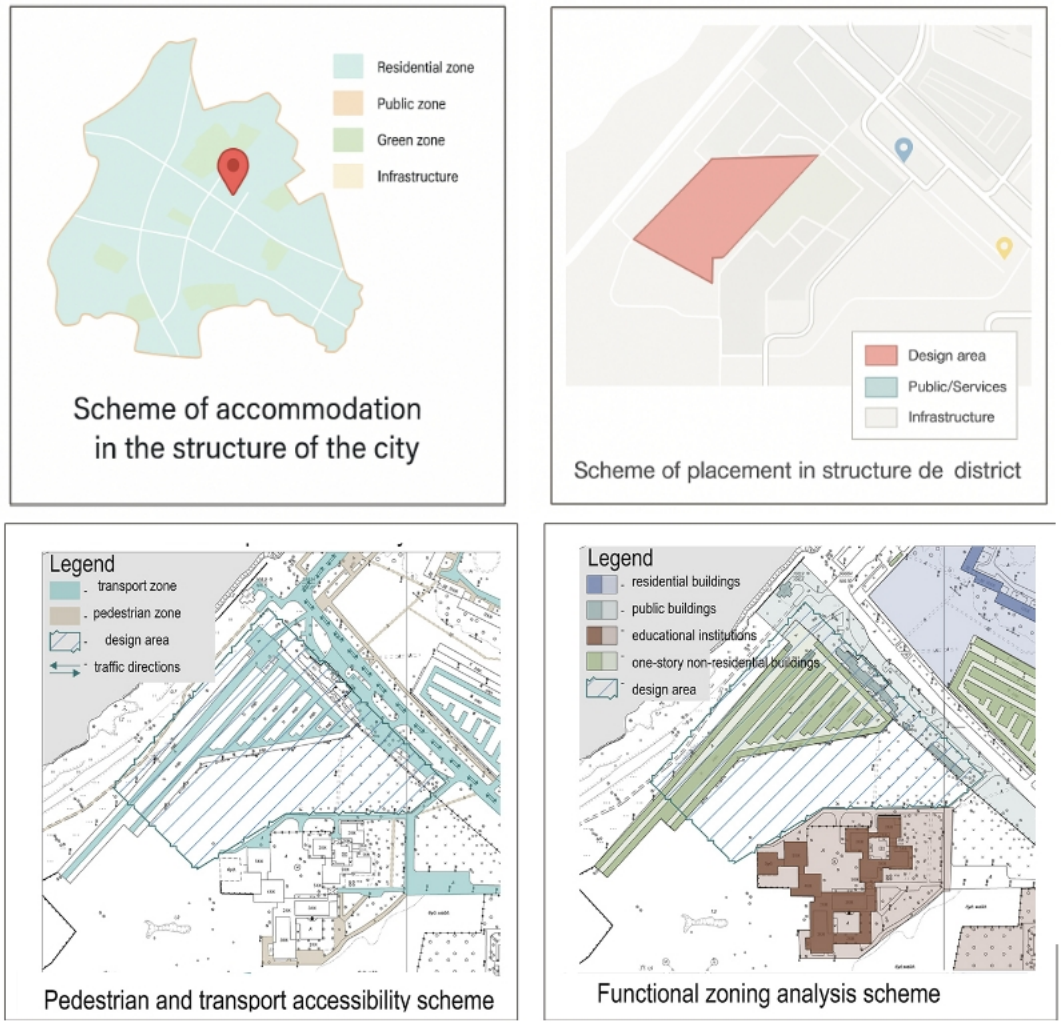

Figure 2.1. Urban analysis

The existing green areas occupy a considerable portion of the territory. However, the landscape is currently fragmented and lacks a clear spatial organization. Unstructured vegetation, abandoned areas, and the absence of a coherent pedestrian system reduce the usability of open spaces. The redevelopment of the site allows for the creation of a comprehensive landscape concept that integrates public plazas, recreational areas, educational outdoor spaces, and pedestrian routes into a unified green framework.

The location of the community center within an educational cluster is one of the major advantages of the site. The presence of universities and educational institutions nearby creates a stable user base and supports the development of various educational,

cultural, and social programs. The proposed community center can become a place for communication, collaboration, creative activities, workshops, exhibitions, lectures, and community events.

Overall, the urban planning analysis demonstrates that the selected territory has significant potential for transformation into an active public space that combines educational, social, cultural, and recreational functions. The redevelopment of the existing garage area would improve the quality of the urban environment, strengthen connections between the city and the waterfront, and contribute to the formation of a new community-oriented center within the Saltivskyi District.

The functional structure of the surrounding area is diverse and includes educational, recreational, public, commercial, and service functions. Educational facilities represent the dominant land use within the study area, with the buildings of Kharkiv National Pedagogical University forming the core of the local urban structure.

Public and commercial functions are concentrated primarily along Valentynivska Street, where cafés, retail facilities, and service establishments provide daily activities and attract pedestrian movement. Recreational resources are represented by the Zhuravliv Reservoir, green spaces, and the rowing canal, which create opportunities for outdoor activities and leisure.

Despite the presence of these valuable functional components, connections between them remain weak. The existing garage cooperative acts as a barrier that separates educational buildings from the waterfront and limits the development of public space. As a result, the territory lacks a clear functional organization and does not fully utilize its potential.

The proposed community center can become a connecting element between the educational cluster and recreational areas. The project aims to create a multifunctional environment that integrates learning, communication, recreation, culture, and social activities. Such an approach corresponds to contemporary international trends in the design of community centers, where buildings operate not only as individual facilities but also as catalysts for urban development.

The functional concept of the project includes the creation of public gathering

spaces, educational facilities, co-working areas, exhibition and event spaces, recreational zones, and outdoor community areas. The integration of these functions will contribute to the formation of an active public destination capable of serving different user groups throughout the day.

The transport structure of the area is defined primarily by Valentynivska Street, which serves as one of the main local transport corridors within the district. The street provides convenient access to the site and connects it with surrounding residential neighborhoods, educational institutions, and public facilities.

Public transport accessibility is one of the strengths of the selected location. Existing bus and trolleybus stops are situated within walking distance of the site, ensuring convenient access for students, residents, and visitors. The proximity of public transport infrastructure increases the attractiveness of the future community center and supports sustainable mobility principles.

At present, pedestrian movement is concentrated mainly along the perimeter streets. Internal pedestrian routes within the block are poorly developed, and direct connections between educational buildings and the waterfront are limited. The absence of comfortable pedestrian infrastructure reduces accessibility and weakens spatial integration within the area.

The proposed project aims to establish a new network of pedestrian connections linking the university campus, public transport stops, recreational areas, and the waterfront. Particular attention is given to creating safe and accessible pedestrian routes, public plazas, and landscape corridors. These elements will improve walkability and encourage greater use of public space.

The project also proposes the integration of bicycle paths and micromobility routes to support sustainable transportation. Service and emergency access roads are planned separately from primary pedestrian areas to ensure safety and comfort for users.

As a result, the transport and pedestrian analysis indicates that the site possesses favorable accessibility conditions and significant potential for the development of a pedestrian-oriented public environment. The implementation of the proposed community center will strengthen connectivity within the district and create a more accessible

and attractive urban space.

2.2. Master plan solution and landscape design of public community center

The master plan of the public community center is developed with the aim of creating a multifunctional environment that combines educational, cultural, recreational, and social activities within a unified architectural and landscape composition. The planning solution is based on the principles of accessibility, functionality, safety, and integration with the surrounding natural environment.

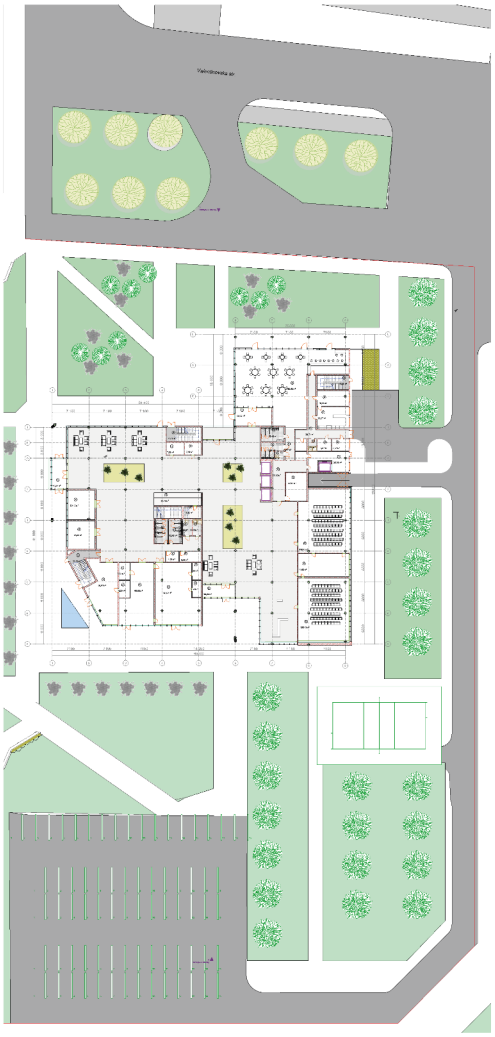

Figure 2.2. Master plan solution

The building is located in the central part of the site, allowing the formation of public spaces and landscaped areas around it while ensuring convenient access from all sides of the territory. Such placement creates a clear spatial organization and establishes

the community center as the dominant element of the composition.

The main pedestrian entrance is oriented toward Valentynivska Street, which serves as the primary transport corridor of the district. A forecourt plaza is formed in front of the entrance, creating a welcoming public space for meetings, outdoor events, and everyday social interaction. This area acts as a transition zone between the urban environment and the interior spaces of the building.

The transport scheme provides separate access for visitors, service vehicles, and emergency transportation. A surface parking area is located in the southern part of the site, ensuring convenient access while minimizing conflicts between pedestrian and vehicular movement. The parking area is connected to the main entrance by pedestrian walkways and landscaped routes.

The open spaces surrounding the building are organized into several functional zones. The northern and western parts of the site contain landscaped recreation areas designed for informal communication, outdoor learning, and relaxation. These spaces are equipped with pedestrian paths, seating areas, and shaded green zones that enhance user comfort throughout the year.

A sports and activity zone is located on the eastern side of the territory. This area includes a multifunctional outdoor court that can be used for various recreational and sporting activities by young people and local residents. The location of the sports facilities allows them to operate independently from the main building while remaining visually connected to the overall composition.

The landscape concept is based on preserving and enhancing the green character of the site. Existing vegetation is supplemented with new tree and shrub plantings that create green corridors and improve the environmental quality of the territory. Rows of trees are used to define pedestrian routes, create visual structure, and provide shading for outdoor spaces.

The network of pedestrian paths forms a coherent circulation system connecting the main entrance, recreational areas, sports facilities, parking zones, and surrounding urban spaces. The pathways are designed to encourage movement through the site and support interaction between different functional areas. Particular attention is given to

barrier-free accessibility, ensuring comfortable movement for all user groups.

The architectural composition of the master plan is strengthened by the use of landscape elements integrated with the building. Green courtyards and planted islands within the building footprint introduce natural elements into the interior environment and improve visual connections between indoor and outdoor spaces. These landscaped spaces contribute to the creation of a comfortable and human-oriented atmosphere.

An important feature of the project is the large proportion of green open space. The landscaped areas not only improve the visual appearance of the territory but also provide opportunities for outdoor educational activities, cultural events, recreation, and community gatherings. The combination of architecture and landscape creates a multi-functional public environment that remains active throughout the day.

Overall, the proposed master plan transforms the territory into a contemporary community-oriented complex that supports education, communication, recreation, and social interaction. The integration of public spaces, pedestrian routes, sports facilities, and landscaped areas contributes to the formation of a comfortable and attractive environment that serves both the local community and visitors of the center.

2.3. Functional planning solution of public community center

The Public Community Center is designed as a multifunctional educational, cultural, and social complex intended for people of different age groups. The planning concept is based on the principle of functional integration, where educational, cultural, recreational, administrative, and public functions are combined within a single architectural environment. The building consists of five above-ground floors connected by vertical circulation cores and organized around a spacious central atrium that forms the compositional and functional core of the project.

The atrium serves as the main public space of the building, providing visual connections between floors, improving orientation, and creating opportunities for communication and social interaction. Internal landscaping integrated into the atrium contributes to the formation of a comfortable indoor environment and introduces elements of nature into the public interior.

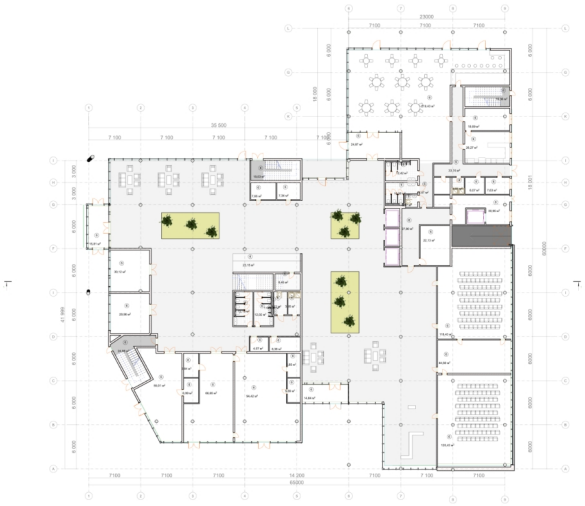

Figure 2.3. Plan of ground floor

The first floor is designed as the most active public level of the building and accommodates the main functions accessible to all visitors. The entrance area consists of several vestibules connected to a large central hall that functions as a multifunctional gathering space. This open area serves as the main distribution zone, connecting all functional blocks of the center.

The western wing contains commercial and service functions, including retail units and community services. These spaces activate the ground floor and create an attractive environment for daily use. Adjacent to the public zone is a large café with seating areas and a kitchen block, allowing visitors to spend extended periods within the center.

The eastern wing contains two conference halls designed for lectures, seminars, presentations, public discussions, and educational events. Their location allows them to function independently from the rest of the building when necessary. Administration, security, technical rooms, storage spaces, sanitary facilities, and accessible toilets are located near the circulation core to ensure efficient operation of the building.

A characteristic feature of the first floor is the large open hall surrounding landscaped islands with greenery. These elements divide the space into smaller activity zones while maintaining visual openness.

Figure 2.4. Plan of 2nd floor

The second floor is primarily dedicated to educational and creative activities. It overlooks the central atrium through open galleries, creating visual continuity with the entrance level. The floor contains public classrooms, study rooms, art workshops, coworking spaces, and private coworking areas intended for individual and group work.

The coworking spaces occupy significant portions of the floor and provide flexible environments for project work, meetings, workshops, and community initiatives. Art studios support creative activities, exhibitions, and practical educational programs. Teacher rooms, administration spaces, and support facilities are also located on this level.The organization of spaces around the atrium creates opportunities for informal communication between users and encourages interaction among different educational groups.

The third floor functions as the intellectual and information center of the complex. The dominant element is a large public library complemented by reading rooms, a media center, study spaces, and book storage facilities.

The library is organized as an open and flexible learning environment that supports both individual and collaborative work. Reading areas are positioned near glazed facades to maximize access to natural daylight. The media center provides facilities for digital learning, multimedia activities, and information technologies.

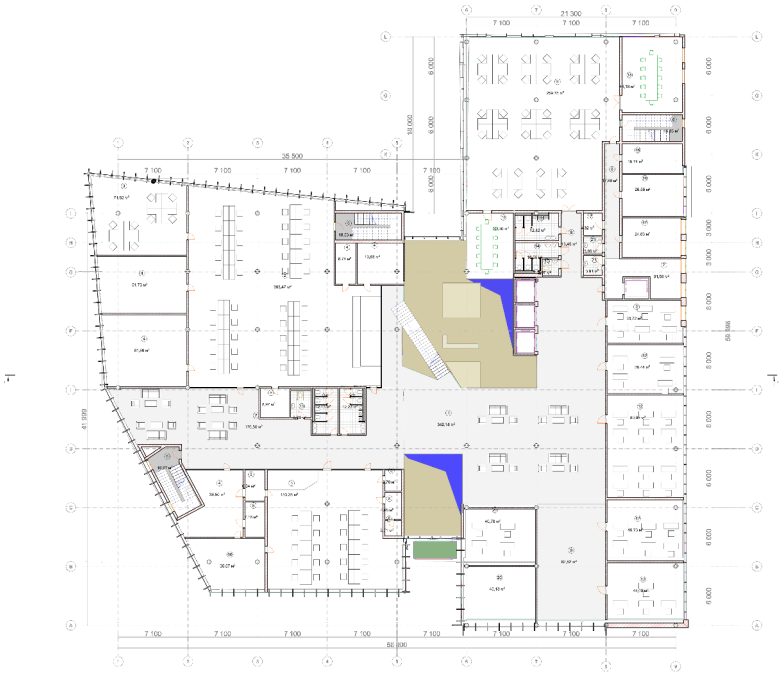

Figure 2.4. Plan of 3rd floor

Study classrooms and meeting rooms support educational programs, while administrative offices and teachers' offices occupy the eastern wing of the building. The floor continues the atrium concept, maintaining strong visual relationships with the lower levels.

The fourth floor develops the educational functions introduced on the third level. Large study classrooms, seminar rooms, and additional educational spaces provide facilities for lectures, workshops, training programs, and lifelong learning activities.

Administrative offices and meeting rooms remain concentrated within the eastern section, while the central part of the floor opens toward the atrium. This solution allows daylight penetration into the interior and reinforces the spatial unity of the building.

The arrangement of educational spaces supports both traditional classroom learning and contemporary collaborative educational methods. The flexibility of the layout allows adaptation to different community programs and educational initiatives.

The fifth floor contains the cultural and event facilities of the community center.

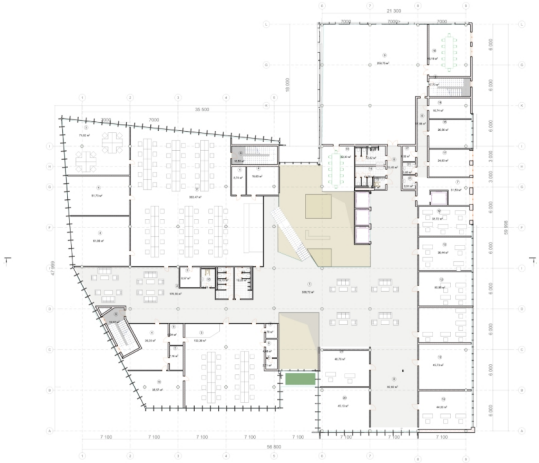

Figure 2.5. Plan of 4th floor

The dominant space is a large auditorium with a stage designed for performances, conferences, concerts, cultural programs, and public events.

The auditorium is positioned within a separate volume and forms one of the most recognizable elements of the building. Its location on the upper level enables large uninterrupted spans and creates a distinctive architectural silhouette.

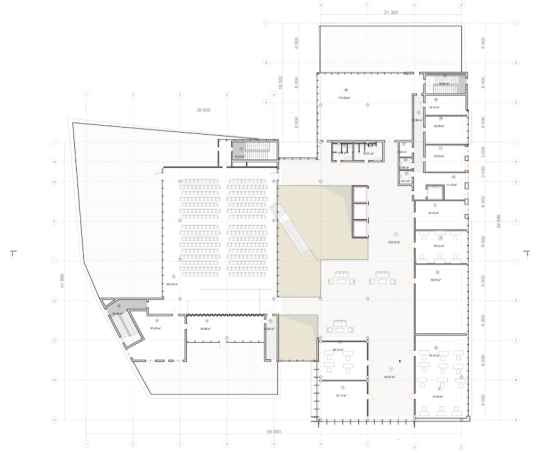

Figure 2.5. Plan of 5th floor

Additional study spaces, support rooms, administration facilities, and a dance hall are also located on this floor. The dance hall provides opportunities for creative education, rehearsals, community activities, and cultural events. The upper level therefore combines educational and cultural functions and serves as the culmination of the vertical functional organization of the building.

2.4. Volume-spatial and architectural-constructive solution of public community center

The architectural concept of the Public Community Center is based on the creation of a contemporary multifunctional public building that combines educational, cultural, social, and recreational functions within a unified architectural composition. The project aims to establish a recognizable community landmark that serves as a center of social interaction, learning, creativity, and public activity.

The volume-spatial composition is formed by several interconnected building volumes of different heights grouped around a central atrium space. The composition is based on the principle of functional differentiation, where individual blocks accommodate specific functions while remaining integrated into a coherent architectural structure. This approach creates a dynamic silhouette and emphasizes the public character of the building.

Figure 2.6. Volume-spatial solution of the public community center

The dominant element of the composition is the projecting volume located above the main entrance. This cantilevered element forms a covered entrance plaza and highlights the principal public entrance to the building. The use of overhanging volumes

creates a sense of openness and visual lightness while providing weather protection for visitors.

The architectural image is characterized by the interaction of horizontal and vertical elements. Horizontal floor slabs emphasize the layered organization of the building, while vertical facade fins create rhythm and visual articulation. The combination of glazed surfaces and solid wall elements contributes to the formation of architectural expression and reflects the multifunctional character of the center.

The building composition consists of several clearly identifiable functional blocks. The western volume accommodates educational and administrative functions, while the eastern volume contains educational, library, and community spaces. The central part of the building forms a large atrium that acts as the main public gathering space and visual core of the project. This internal public zone organizes circulation and establishes connections between all functional areas of the complex.

The architectural design emphasizes transparency and openness. Extensive glazing on the ground floor creates strong visual relationships between the interior and surrounding landscape. The transparent façade allows public activities to be visible from the exterior, encouraging interaction between the building and the community.

A significant feature of the project is the integration of natural light into the interior environment. Large glazed façades and atrium skylights provide daylight penetration deep into the building, reducing dependence on artificial lighting and improving visual comfort. The central atrium functions as a light well that distributes natural light throughout multiple levels.

The façade solution combines glass curtain walls, architectural concrete panels, metal framing systems, and decorative vertical louvers. The use of vertical shading elements enhances the visual appearance of the building while providing protection from excessive solar radiation. This solution improves energy efficiency and contributes to indoor thermal comfort.

The building is designed using a reinforced concrete frame structural system. The primary load-bearing structure consists of reinforced concrete columns, beams, floor slabs, and rigid cores containing elevators and staircases. This structural solution

provides flexibility in the arrangement of internal spaces and allows the creation of large-span multifunctional halls without excessive internal supports.

The foundation system is proposed as a monolithic reinforced concrete foundation designed according to local geological conditions. External walls are constructed using energy-efficient enclosure systems incorporating thermal insulation layers to ensure compliance with modern energy performance requirements.

Floor structures are formed by monolithic reinforced concrete slabs supported by a regular structural grid. This system provides structural stability, flexibility of planning solutions, and efficient load distribution throughout the building.

Vertical circulation is organized through passenger elevators, accessible elevators, open internal staircases within the atrium, and enclosed fire-protected staircases located in the building cores. Such a solution ensures efficient movement between floors and complies with contemporary fire safety and accessibility standards.

Special attention is given to the creation of barrier-free access. The building is fully accessible to people with limited mobility through the provision of ramps, elevators, accessible sanitary facilities, and unobstructed circulation routes. The design follows principles of universal design and inclusiveness.

The roof system consists primarily of flat roofs with internal drainage. The stepped arrangement of roof levels reflects the functional zoning of the building and contributes to the architectural character of the composition. Technical equipment is located within dedicated rooftop zones and screened from public view.

The architectural solution of the Public Community Center reflects contemporary trends in public architecture through the use of transparency, multifunctionality, sustainability, flexibility, and integration with the surrounding landscape. The composition of interconnected volumes, extensive glazing, landscaped public spaces, and the central atrium creates an attractive environment that supports communication, education, creativity, and community engagement.

Overall, the proposed volume-spatial and architectural-constructive solution forms a modern public building that acts as a focal point within the urban environment and responds to the social, educational, and cultural needs of the local community.

3. TECHNICAL AND ECONOMIC INDICATORS OF OFFICE CENTER

3.1. AREA OF THE PLOT

№	Names of elements of the territory	Area, m^2	Specific weight,%	Specific indicator, m^2/person	Note
1	2	3	4	5	6
1.	Territory, total:	**12 369**	**100.0**	**15.46**	-
1.1	Building area	**2 403**	**19.4**	**3.00**	-
1.2	Roads, driveways and asphalt coverings	**2 600**	**21.0**	**3.25**	-
1.3	Pedestrian and recreational paved areas	**1400**	**11.3**	**1.75**	-
1.4	Landscaping and green areas	**5200**	**42.0**	**6.50**	-
2.	Servicing areas	**766**	**6.2**	**0.96**	-
	Together within the boundaries of the plot:	**12369**	**100.0**	**15.46**	-

3.2. TECHNICAL AND ECONOMIC INDICATORS

№	Name of indicators	Units of measurement	Quantity
1	2	3	4
1.	Territory of the plot	hectares	**1.237**
2.	Capacity	people	**800**
3.	Pressure on the area	People / hectares	**647**
4.	Building area	$м^2$	**2,403**
5.	Building thickness	%	**19.4**
6.	Planting level	%	**42.0**
7.	Degree of greening	$м^2$/ People	**6.50**
8.	Net weight of road surfaces	%	**21.0**
9.	Value of road surfaces	$м^2$/ People	**3.25**
10.	Area of open car parks	$м^2$	**1,350**
11.	Space of car parks	car place	**54**

3.3. Volume planning indicators on the building

Building area	**2,403 m²**
Capacity of the building	**800 people**
Total area of the building	**11,411.34 m²**
Total area per unit capacity	**14.26 m²/person**
Construction volume of the building	**39,940 m³**
Building volume per unit capacity	**49.93 m³/person**
Usable area	**8,560 m²**
Usable area per unit capacity	**10.70 m²/person**
Normalized area of the building	**7,417 m²**
Normalized area per unit capacity	**9.27 m²/person**
K1 = normalized area / total area	**0.65**
K2 = building volume / total area	**3.50**
K3 = area of external fencing / total area	**0.90**
K4 = perimeter of external walls / building area	**0.11**

4. OCCUPATIONAL HEALTH AND SAFETY

4.1 Regulation of Occupational Health and Safety Issues at the Legislative Level

Occupational health and safety measures are an integral part of the design process for public buildings and are aimed at ensuring safe conditions for employees, visitors, maintenance personnel, and other users of the facility. The Public Community Center is designed in accordance with current requirements for labor protection, fire safety, sanitary conditions, accessibility, and civil protection.

The regulatory basis of the project includes the Labour Protection Law of Ukraine, the Civil Protection Code of Ukraine, fire safety regulations, sanitary standards, and current State Building Codes (DBN) governing the design and operation of public buildings. Particular attention is given to the requirements of DBN V.2.2-40:2018 "Inclusiveness of Buildings and Structures", DBN V.1.1-7:2016 "Fire Safety of Construction Projects", and DBN V.2.2-9:2018 concerning public buildings and facilities.

The project also considers international approaches to occupational safety developed by the International Labour Organization (ILO) and recommendations of the World Health Organization regarding indoor environmental quality, workplace comfort, and health protection.

Since the community center accommodates a large number of users and includes educational spaces, conference halls, coworking areas, library facilities, administrative offices, and public gathering zones, special attention is paid to the organization of safe circulation routes, emergency evacuation systems, accessibility measures, and protection against potential hazards.

4.2. Identification of potential hazards in relation to the thesis object

The operation of a public community center is associated with a number of factors that may affect the safety and comfort of users.

Fire safety risks. The presence of a large number of visitors, electrical equipment, furniture, paper materials, and finishing products creates potential fire hazards. Therefore, the building is equipped with fire alarm systems, evacuation routes, smoke extraction systems, and fire-fighting equipment in accordance with current regulations.

Risks associated with human movement. The building includes public halls, conference spaces, libraries, educational facilities, and coworking zones that generate intensive pedestrian movement. Improper organization of circulation routes may increase the risk of collisions, congestion, slips, and falls, especially during public events.

Electrical safety. The center contains a large amount of electrical equipment including computers, multimedia systems, lighting devices, communication systems, elevators, and engineering equipment. To ensure safety, all electrical installations are designed according to national standards and are subject to regular maintenance.

Indoor environmental factors. The quality of the internal environment directly affects the comfort and productivity of users. Insufficient ventilation, excessive noise levels, inadequate lighting, or inappropriate microclimatic conditions may negatively influence visitors and staff. The project therefore provides efficient ventilation, natural lighting, artificial lighting systems, and acoustic protection measures.

Ergonomic factors. Employees working in offices, libraries, information centers, and administrative spaces may experience physical fatigue due to prolonged sitting and computer work. Ergonomic workplace design and appropriate furniture are therefore incorporated into the project.

Biological and sanitary factors. The concentration of large groups of people in educational and public spaces may contribute to the spread of infectious diseases. Regular cleaning, sanitary maintenance, efficient ventilation, and hygienic measures are necessary to ensure healthy indoor conditions.

4.3 Study of the risk of realization of potential dangers at the thesis object and development of measures for their prevention

To minimize the impact of identified hazards, a comprehensive system of preventive measures is incorporated into the design of the Public Community Center.

The planning solution provides clear separation of pedestrian and service routes, reducing the probability of conflicts between different user groups. The building includes several evacuation exits, protected staircases, elevators, and accessible routes designed for all categories of users.

The project incorporates:

- automatic fire alarm systems;
- emergency lighting systems;
- fire extinguishing equipment;
- smoke protection systems;
- clearly marked evacuation routes;
- barrier-free access solutions;
- non-slip floor finishes in public circulation areas;
- ergonomic furniture and workplace organization;
- mechanical ventilation and air-conditioning systems;
- natural and artificial lighting designed according to current standards.

The atrium space located in the center of the building improves visual orientation and facilitates evacuation during emergency situations. Open galleries and visual connections between floors allow users to navigate the building easily and reduce the likelihood of congestion.

Table 1. Risk Assessment Matrix

Probability / Impact	1	2	3	4	5
5 Very High	5	10	15	20	25
4 High	4	8	12	16	20

3 Medium	3	6	9	12	15
2 Low	2	4	6	8	10
1 Very Low	1	2	3	4	5

According to the assessment, the highest risks are associated with intensive pedestrian movement, evacuation during mass events, and potential fire hazards. These risks are addressed through appropriate architectural planning solutions, engineering systems, and operational safety procedures.

Table 2. Assessment of Potential Hazards

Hazard	**Probability**	**Consequences**	**Risk Value**
Fire hazard	3	5	15
Evacuation difficulties during public events	3	5	15
Slips, trips and falls	4	4	16
Electrical hazards	3	4	12
Insufficient ventilation	2	3	
Ergonomic strain	3	3	9
Biological hazards	2	3	6

Conclusions

The occupational health and safety measures developed for the Public Community Center are aimed at creating a safe, comfortable, and accessible environment for all users of the building.

The analysis identified the primary risk factors related to fire safety, pedestrian circulation, evacuation procedures, electrical systems, indoor environmental quality, and ergonomic conditions. Appropriate architectural, engineering, and organizational measures have been incorporated into the project to reduce these risks.

The proposed solutions comply with current Ukrainian regulations and international recommendations and contribute to the creation of a modern public facility that ensures safety, accessibility, and comfort during everyday operation and public events.

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