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NEW TENDENCIES OF MODERN ORGANIZATION OF BUSINESS PARKS

НОВЫЕ ТЕНДЕНЦИИ СОВРЕМЕННОЙ ОРГАНИЗАЦИИ БИЗНЕС-ПАРКОВ

Берилген макалада ишке ашырылган мегаполис шаарларынын ортосунда жайгаштырылган чет өлкөлүк долбоорлордун мисалында каралган айлана-чөйрөдөгү экология жактан ыңгайлуу болгон административдик ролду аткарган объекттер, бизнес-парктар караштырылган. Изилдөө негизги тенденциялар менен бирге дүйнөлүк практикада колдонулуп келген заманбап ландшафттык долбоорлоонун үстүнө басым жасоого арналган.

Өзөк сөздөр: бизнес-парк, экология, ыңгайлуу айлана-чөйрө, парк зоналары, ландшафттык дизайн.

В данной статье рассмотрены вопросы формирования экологически комфортной окружающей среды объектов административного назначения, бизнес-парков, расположенных в центральной части мегаполисов на примере ряда реализованных зарубежных проектов. Акцент исследования направлен на основные тенденции и перспективы современного ландшафтного проектирования в мировой практике.

Ключевые слова: бизнес-парк, экология, комфортная пространственная среда, парковые зоны, ландшафтный дизайн.

The paper deals with the formation of an ecologically comfortable environment for administrative purposes, business parks located in the central part of megalopolises on the example of a number of implemented foreign projects. The research focuses on the main trends and designing of modern landscape design in a world practice.

Key words: business park, ecology, comfortable spatial environment, park zones, landscape design.

Architects and designers process and use a huge amount of information related to culture, mentality, religion, all types of art, including relevant engineering solutions when creating an environment for living, spending time, celebrating, resting, and in general for people of all ages and nationalities. Transformations of the surrounding, subject-spatial environment through the synthesis of knowledge from various fields are aimed primarily at the formation of sustainability. In the modern industrial world, the formation of the most environmentally friendly space for people is of particular importance. Modern trends in preserving nature in its original form are one of the main aspects in the creation of compact park areas around architectural objects that are the part of the segment of business spaces. Reducing the coefficient of anthropogenic impact on natural areas, the designers focused on the needs of a modern person in a cozy atmosphere and comfort, helping to get as close to nature as possible, paying respect and admiring the beauty of a landscape. This paper



examines a number of implemented design solutions in the field of landscape design of business parks, an attempt is made to analyze the proposed solutions.

Initially, gardens and parks in the urban environment tended to be more decorative, but now modern solutions of many architectural objects are focused on the current environmental component of project proposals [1]. One of the characteristic features of the modern natural framework of the city is the respect for the existing natural landscape, natural reliefs [1].

Taking into account the conscious transition to the use of environmentally friendly materials for the construction of architectural objects, which makes it possible to create a more comfortable spatial environment, modern trends are focused on a high level of awareness of the population of the whole world and involvement in the preservation of nature in the best possible way. People living in megalopolises are subject to the psychological pressure exerted by the rhythm of life in large cities, the inclusion of natural components significantly reduces the risks of harmful effects.

Considering the main directions in the design of business parks with an ecological component.

Business parks are spaces in which components of various functional purposes (business objects, food zones, elements of social infrastructure, walking fragments of landscape design, etc.) harmoniously interact, creating an atmosphere of comfort and uniting with nature. The organization of the space of such business parks is designed for the active use of both the internal space and the external environment, when the work space is easily replaced by the promenade alley of the park [3]. Considering the history of business parks, thus business parks first appeared in the 1950s in the United States. In the 1980s, they began to take root in England as well. Business complexes became attractive to American IT companies, and in the same way they began to spread among Western companies, in the CIS region they started spreading since the 2000s. Thus, 3 objects were selected for analysis: from Canada, from the USA, and Australia. The selection includes projects that have been implemented and have multifunctional significance. The main selection criteria were the multifunctionality of objects, environmental friendliness of development, as well as the presence of the latest ideas in the concept of the project for the planning of territories and the objects themselves [1].

The functional purpose of business parks is diverse, which may include: enterprises, offices, exhibition halls, educational institutions, lectures, conference centers and others.

In the scientific works of researchers from the Korea Institute of Garden Design, the following typology of business parks was presented:

1. **Industrial.** Premises in which companies belonging to the secondary or tertiary sector are located and which are predominantly are factories or industrial plants. This class includes objects of industrial zones, industrial parks and business parks;

2. **Logistic.** Spaces with a high percentage of companies involved in transport and logistics activities in the broadest view, as well as businesses that for the most part integrate value-added services to carry out their activities. This includes transport centers or hubs, logistics centers, logistics activity areas, and logistics platforms;

3. **Shopping and entertainment type.** Spaces occupied primarily by large shops or entertainment venues. This includes shopping centers, entertainment complexes, recreation and cultural areas;

4. **Science and Technology Park.** A business space associated with a project that maintains formal and communicative relationships with universities, research centers and other higher education institutions. Designed to facilitate the formation and growth of the educational segment. Represented by a stable governance structure that encourages technology transfer and promotes innovation in business partnerships;

5. **Service segment.** Premises that are mainly occupied by hotel management and catering, information and communication activities, financial and insurance activities, real estate operations, etc;



6. **Mixed type.** Complex functional object [3].

In addition to the development of the general plan, the project itself, and communications and engineering parts of business parks, the following points should be attributed to the characteristic design requirements:

1. General plan:

- adaptation to the natural landscape;
- protection of ridges, slopes, and tree lines;
- taking into account the requirements for energy saving and the use of alternative energy;
- coverage of no more than 60% of the territory of any development in accordance with the zoning ordinance.
- providing access for pedestrians and cyclists to the adjacent road lane [3];

2. Building design:

- an integrated design and arrangement of structures;
- the clear marking of entrances, roof lines and window / door openings;
- landscaping and the use of environmentally friendly building materials;
- the building height must not exceed the limits set in the zoning ordinance.
- the use of solar heat as electricity;
- taking into account the orientation of the building and surface materials;
- protection of the view and access to solar energy [3];

3. Building materials:

- external surfaces include brick, stone, wood, concrete, glass or decorative architectural metals, cut stone;
- textured or colored metal panels and finishes;
- slightly tinted glass.
- prohibited: wood siding, reflective glass, corrugated metal panels and synthetic materials [3];

4. Landscape design:

- site plans should be consistent with the natural landscape and include existing landscape features;
- unification of adjacent construction sites and public areas;
- consolidation of "auxiliary" types of activities: parking, loading, maintenance and storage;
- creation of an attractive transition between "built-up" and natural landscape features of the site;
- the use of groups of trees and shrubs for framing the main elements of the facade: entrances, pedestrian zones, for screening blank walls, parking and loading areas;
- a combination of natural landscape materials that provide variation in height, type and color;
- the use of plants for their resistance to a particular climate;
- use of irrigation of the territory [3];



5. Communications and engineering:

- the location of all communications underground;
- all visible accessories of the building, including attachments, must be hidden from the eyes of visitors;
- shielding of ground equipment with dense landscaping, opaque fences or walls and canopies [3];

6. Parking.

- splitting parking spaces into smaller areas;
- division by use: employee or visitor;
- design of visitor parking lots in small areas and location next to the front or sides of the main building;
- design of parking lots for employees closer to the back of the building;
- greening of all parking areas along the perimeter;
- compliance of the plantings with the size requirements specified in the zoning decree, and be planted with tree crowns for shade [3];

Thus, the typology presented above will serve as the basis for conducting an express analysis of the characteristic common features and differences in the features of the selected projects from Canada, the United States and Australia. Considering the organization of a business park using the example of the VanDusen Botanical Gardens Visitor Center by Fast, which is located in Vancouver, Canada. The VanDusen Visitor Center was created as an entrance and educational space. The project includes administrative premises, exhibition areas, cafes and lecture halls. In terms of its functional component, it belongs partly to the scientific and technological type and partly to the service segment. The architectural and planning solution of the business park is inspired by the leaf shape of a local orchid.

The main purpose of the project is the uniqueness of the relationship between the architectural volume, landscape organization and environmental standards. In fact, this object passes into the category of urban planning dominant. The VanDusen Botanical Gardens Visitor Center creates a harmonious balance between architecture and landscape.

The semantic image of the building with a wavy green "petal" roof is inspired by the organic forms of the local orchid [5].

A characteristic feature of this project is the use of the principles of the geo-plastic organization of the park zone, organically complemented by the architectural plasticity of the object. The smooth transition from the surface of an artificial hill to the space of the park is consonant with the plasticity of the natural relief, which shows a unique approach to the inviolability of the area. In the design of public areas, a variety of modules are used, developed on the basis of the latest trends in the design of public areas.

Nowadays there are more than thirty "green" building standards in the world, the most successful and dominant of which are the international systems BREEM, LEED, and DGNB:

1. BREEM - Building Research Establishment Environmental Assessment Method, the UK;
2. LEED - The Leadership in Energy & Environmental Design, the USA;
3. DGNB - Deutsche Gesellschaft fuer nachhaltiges Bauen, Germany [2].



BREEAM focuses on the use of renewable energy sources and site location. LEED focuses on the efficiency of using existing energy sources as well as the ecological sustainability of the materials used. As far as DGNB is concerned, it focuses on maximizing the longevity of a building, its economy and ecological sustainability.

The project site, building and roof of Van Dusen are designed in accordance with the LEED Platinum requirements of the Cascadia Green Building Council, which aims to define the highest level of sustainable design, focusing on: characteristics of regional design, the ability of a building to generate its own energy, capture and purify water, use resources efficiently [2]. All design details, materials and specifications have been carefully researched and developed with all criteria for a more efficient and sustainable way of building and designing. Thus, the VanDusen is an excellent example of a business park with an environmentally friendly focus and a straightforward project idea that meets all the requirements for the construction of business parks.

The second site to look out for, the Brooklyn Botanical Gardens with a business center for visitors, designed by the architecture firm Weiss / Manfredi, located in New York, USA, was created as a threshold space between the garden and the city. This business park also continues the idea of creating a new landscape design for the environment. Created as a kind of inhabited landform, the project was executed as a smooth continuation of the landscape, which was nested in the existing terrain [6]. The Visitor Center is a type of business park for business and services. The building often hosts various exhibitions, conferences, and screenings.

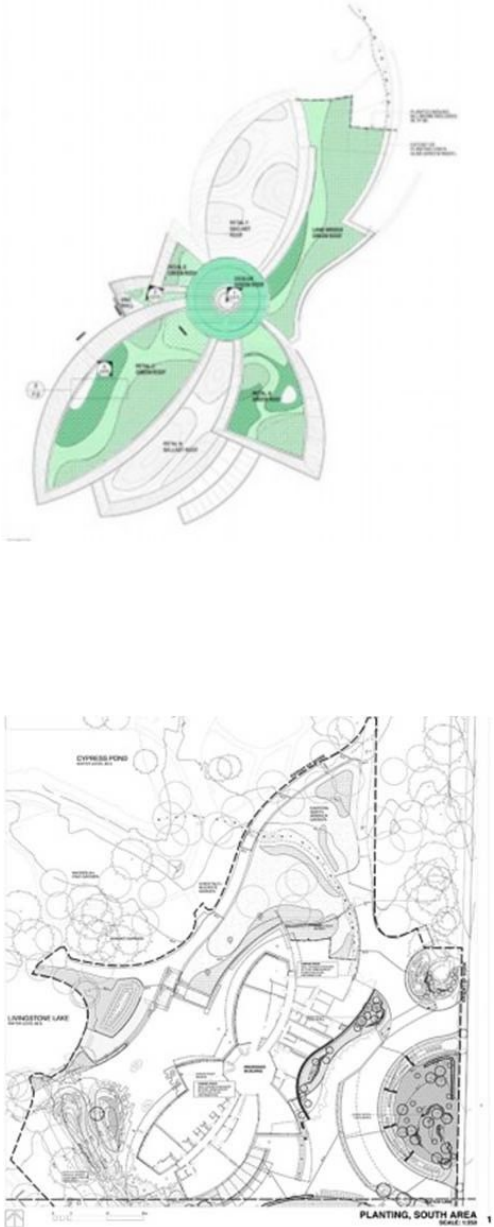
The building also meets all the requirements for the construction of business parks and at the same time conceptually combines modern engineering technologies with environmentally friendly space solutions. Thus, this building demonstrates its involvement in environmental issues by offering a new model of highly efficient landscape design. The roof of the building organically fits into the existing landscape, since in this project the architectural bureau proposes to completely preserve the existing naturalness of the curves and terrain. The scheme of movement on the site by nature meets the requirements of zoning. Departure from strict orthogonality contributes to the beauty of the roads, and the smooth curves create interesting perspectives of the garden from different angles.

As for the landscape structure of the project, it is also worth noting the respect for the connection between urbanized and natural areas. The object is located between the garden and the city and the entire development area is surrounded by green areas that perform protective and recreational functions.

To compare the organization of spaces in business parks, consider the following example of solving a new concept of creating a landscape environment in the city of Cairns in Australia [7]. The Cairns Botanical Gardens Visitor Center is a unique building that blends harmoniously with the tropical landscape, which is also a significant climatic difference from the previous two facilities. The project was conceived by the authors as "a public space under a canopy in the bosom of nature" and is part of a mixed type of business centers where all sorts of events are held from business conferences to cultural exhibitions of art objects. The object is an integral part of the landscape of this environment. Having interesting curved lines of the building design, it not only personifies the future of architecture, but also, having a completely mirrored facade, gives a feeling of invisibility of the building, thereby reflecting the very nature of the fauna and the landscape, thereby creating a picture of true abstractionism. Since the building is located inside a botanical garden, it harmoniously fits into the existing landscape. A more detailed analysis is presented below in Table 1.


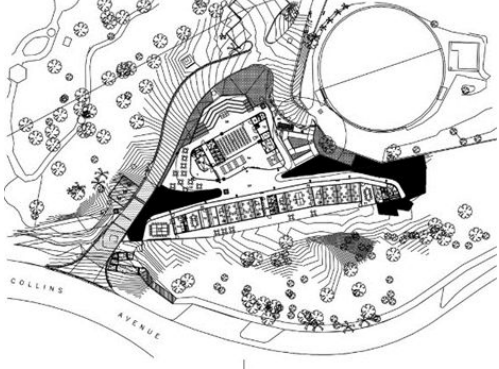




Table 1. Comparative analysis of selected projects of a business park in terms of the presence of common characteristics and distinctive features of planning solutions.

№	The name of the project/ The Authors of the project	Graphic Illustrations / 3D visualization of buildings	Common characteristics	Distinctive features
1	<p>VanDusen Botanical Garden,</p> <p>Vancouver, Canada.</p> <p>Perkins and Will [5]</p>		<ul style="list-style-type: none"> - The architectural and planning solution of the business park is inspired by the leaf shape of the local orchid; - competent implementation of the basic principles of the geo-plastic organization of the territory of the park, organically supplemented by the architectural plasticity of the object; - wide range of zoning; - all building materials have been used in accordance with the green building requirements. - has many species of plant fauna; - using microrelief. 	<ul style="list-style-type: none"> -The building is capable of generating its own energy, capturing and purifying water; - the object has a unique layout form; - the roof of the object is in contact with the landscape, at the same time does not violate the bends of nature; - is the center and dominant of the business park; -all communications have been completed according to the requirements; - built according to the requirements of a moderately warm climate.

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<p>2</p>	<p>Brooklyn Botanic Garden New-York, the USA; Weiss Manfredi [6]</p>		<ul style="list-style-type: none"> - The project as a seamless continuation of the landscape, intelligently embedded in the existing landscape; - commitment to environmental protection; - includes the multifunctionality of zoning; - the site uses materials that meet environmental standards; - use of microrelief; 	<ul style="list-style-type: none"> - Object as a threshold between the garden and the city; - the roof of the project is also a continuation of the local landscape; -built for moderately cold climates.
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<p>3</p>	<p>Cairns Botanic Gardens, Cairns, Australia.</p> <p>Charles Wright, Richard Blight, Justine Wright, Katja Tsyckkova</p> <p>JNP Pawsey & Prowse [7], [8].</p>	  	<ul style="list-style-type: none"> - the materials were used in accordance with the requirements for environmental preservation; - the object also has a wide zoning functionality; - the use of microrelief as one of the main parts of the object makes it possible for people with special health needs to feel as comfortable as possible in this environment. 	<ul style="list-style-type: none"> - a building harmoniously built in the tropical landscape of the area; - the building facade differs significantly from the previous objects by using a mirror as the main facade material.

Thus, on the example of the objects under the study it can be concluded that the main trend in the design of business parks is the focus on the sustainable development of natural components in the improvement of the park territory. The presented environmental approach to the formation of business park spaces combines the following components:

- architectural and planning organization and functional zoning;
- landscape coloring;
- tiered landscaping, including flower decoration;
- vertical gardening;
- geoplastics;
- small architectural forms;
- lighting systems;



- outdoor furniture and complex landscape gardening equipment;
- specialized complexes, sites;
- methods of planning and landscape solutions;
- an organization without a barrier environment;
- formation of an environment for people with special health needs [3].

Thus, an integrated approach to the design of these architectural spaces is focused on the principle of the unity of design solutions and structural shaping.

In the course of research, the use of various types of blocking has been noted. A characteristic feature of all the projects under study is the careful attitude of the designers to the introduction of an artificial anthropological object into the natural environment. The natural component of the territory of business parks is a protective buffer zone from the urban environment. The main concept for the development of business parks is to ensure sustainable development in the context of ecological "green construction" of territories and its relevance in this direction. Innovative organizations of urban environment fragments should ensure the sustainable development of the territory for a long time, using a modern architectural and design approach, the substantive specifics of the culture of education: culture of the way of thinking, culture of perception, culture of relations. Modern trends in the development of architecture and building technologies focus on environmental assessment and standardization of the materials used, which undoubtedly increases the sustainability of the designed facilities.

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