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Methodical recommendations
for practical classes, organization of independent work and implementation
of the course project
"MULTIFUNCTIONAL PARK OF DISTRICT IMPORTANCE"
on the subject

"ARCHITECTURAL DESIGN OF BUILDINGS AND STRUCTURES: A MULTIFUNCTIONAL PARK OF DISTRICT IMPORTANCE"

(for students of the 3-rd-year of full-time education in the specialty 191 – Architecture and Urban Planning)

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Methodical recommendations for practical classes, organization of independent work and implementation of the course project “Multifunctional park of district significance” on the subject “Architectural design of buildings and structures: multifunctional park of district significance” (for students of the 3rd year of full-time study specialty 191 – Architecture and Urban Planning) / O. M. Beketov National University of Urban Economy in Kharkiv ; compilers : O. V. Smirnova, B. I. Bozhynskyi. – Kharkiv : O. M. Beketov NUUE, 2021. – 47 p.

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CONTENTS

INTRODUCTION

A special role in the formation of a full-fledged living environment of the city belongs to the landscaping system. In urban planning practice, a stepped system of public landscaping has become widespread. This system includes the following components: city parks, parks of residential areas, gardens of neighborhoods, housing groups and inter-quarter gardens, squares, boulevards.

The main element in the system of landscaping of the city are large green areas of city parks. These parks are distributed throughout the city depending on their purpose and are used for recreation of the urban population. Architects from many countries around the world strive to combine areas for different forms of leisure. Architects strive to combine these territories into single large complexes. This desire of architects led to the spread of multifunctional parks in cities. The creation of multifunctional parks involves the even distribution of various types of recreation, development and entertainment.

The methodical recommendations provide the material needed to perform practical tasks, develop a course project and organize independent work of students. This work is performed by students studying the discipline “Architectural design of buildings and structures: a multifunctional park of district importance”. Students study this discipline according to the educational module № 6 “Multifunctional park of district importance” (Content module 1 Pre-project analysis and variants of functional-planning solution of the park territory; Content module 2 Compositional solution and development of the master plan of the multifunctional park; Content module 3. Detailing of the park center with the development of a monofunctional building).

These guidelines are intended for third-year students who must complete a multifunctional park planning project of district importance. In this project it is necessary to solve a complex of architectural-planning, engineering-technical, ecological and aesthetic questions. This project also needs to develop in detail the center of the park with a monofunctional building. This project is the first design experience in the field of landscape architecture.

The purpose of these guidelines is to acquaint students with the peculiarities of the formation of multifunctional parks of district importance as modern architectural and urban and landscape objects. Such landscape formations are the main objects of recreational design. City parks play a huge role in organizing the free time of the city's population.

When developing a multifunctional park project, it is necessary to solve a set of the following tasks:

1. Development of a conceptual solution of the park taking into account the ecological approach to the design of the object.

2. Organization of rational functional zoning of the park, which meets the diverse needs of the city population in recreation.

3. Students should choose the techniques of forming a park landscape in conjunction with architectural objects.

4. Students also need to organize traffic and walking in the park.

5. Students-designers must create a distinct individual architectural and artistic image of the multifunctional park environment.

6. It is important to analyze the current state and current trends in the design of multifunctional parks.

7. Students must also take into account the impact of urban, social, technical, economic and natural factors.

1 PURPOSE AND TASKS OF THE COURSE PROJECT

The main goal of the project is to consolidate the knowledge gained by students in lectures on the course “Fundamentals of Urban Planning”. Students must consolidate this knowledge in the process of independent work on the project. The following tasks must be solved during project development:

1. Students should take into account and use the natural conditions of the area as much as possible. Because this area is an important factor in creating the best working and recreation conditions for the population. Students must also consider these conditions in order to give the park individual qualities.

2. Proper functional zoning of the territory and rational mutual location of the main areas of the park.

3. Clear architectural and planning organization of the park, taking into account the rational system of cultural and household services, recreation and physical development of the population.

4. Rational organization of the system of transport and pedestrian paths.

5. Students must create a distinct architectural and artistic image of the park as a whole. Students must also make separate functional areas of the park.

6. Students must solve architectural and planning tasks and take into account engineering, sanitary, environmental and economic requirements.

2 PROJECT COMPOSITION

1. Situational plan (Appendix A)

2. Schemes:

2.1 Scheme of analysis of the landscape situation of the territory for the park, Scale 1 : 5 000.

2.2 Scheme of functional zoning and cultural and household services, Scale 1 : 5 000.

2.3 Scheme of transport and pedestrian paths, Scale 1 : 5 000.

2.4 Scheme of longitudinal scans and transverse profiles of park alleys and embankments, Scale 1 : 100, Scale 1 : 200.

2.5 Master plan of the park (with exposition of adjacent urban areas, explication, symbols and technical and economic indicators), Scale 1 : 2 000 (1 : 1 000)

3. Main Technical and economic indicators:

3.1 The territory of the park (with the balance of the main elements and zones) – ha / (%).

3.2 The length of alleys and embankments with hard surfaces – m.

3.3 Hard surface area – m^2.

3.4 Capacity of parking lots – parking spaces.

3.5 The maximum attendance of the park (per day) – is calculated in thousands of visitors.

3.6 Load on the territory of the main zone – visitors / ha.

4. Detailed fragment of the park (master plan of the functional core part) with explication of small forms and development of landscaping elements, as well as with the development of a monofunctional building, Scale 1 : 500

5. Perspective sketches, visualizations and panoramas of the park, which characterize the solution of the main compositional units. In addition, these visualizations should show scenarios of visual perception of recreational routes and areas. In addition, it is necessary to show on visualizations the visual perception of a monofunctional structure.

6. Brief explanatory note to the project.

3 FEATURES AND SEQUENCE OF THE PROJECT IMPLEMENTATION

The course project is performed on the basis of the task issued by the project manager. Students perform tasks based on the initial typological situation issued by the teacher. The following types of citywide multifunctional parks are offered for development:

1. The central park of culture and rest which is created in the cities where several parks operate at the same time. In such park all complex of cultural-educational and recreational and improving activity is carried out.

2. Park of culture and rest of the resort city. In such a park, the complex of cultural and educational work is carried out on an expanded scale. For such a park, the calculation of attendance is made (the number of vacationers is added to the number of the city's permanent population). A feature of such a park is the increased share of functions and facilities of cultural and entertainment nature.

3. Individual students can be given an individual task, based on the task of developing a real landscape project of park themes. In this case, the manager or customer of the real project clarifies and determines the composition of the source data.

First of all, it is necessary to determine the location of the park in the natural complex of urban areas. It is also necessary to determine the connections of the park with other components of the city master plan (city highways, centers, residential areas).

The next step is to implement an analytical scheme of comprehensive assessment of the territory of landscape development. This assessment of areas should be done in relation to the peculiarities of the construction of the park landscape, planning constraints and visual perception of the recreational environment. At the same time, it is necessary to highlight the unique properties of the urban situation.

The formation of the idea-concept of the project is embodied in the following two areas:

1. Creating a functional concept of the park structure. This concept includes defining the boundaries of the main recreational areas. These are quiet recreation areas and mass entertainment areas (attractions).

2. Creating a compositional concept of landscape organization of the park. Determining the balance of regular and free parts of the planning and spatial construction of the park. Defining the boundaries of the composite core of the park. Determining scenarios of landscape construction of a walking area.

Execution of sketch versions of the functional-planning solution of the park is performed on the basis of the results of the developed *clausura*s (architectural sketching exercises). The implementation of these sketch options should end with a conscious choice of a particular solution in terms of ensuring the benefits of free organization of recreational functions and walking routes. Execution of these sketch options should be consistent with the idea of scenario-landscape organization of the park. The result of this stage of the project should be schemes of functional and landscape zoning of the territory. Also, the result of this stage should be schemes of the planning framework of the park and its compositional organization.

At the stage of sketchy detailed development of the master plan, students carry out a creative search for solutions to individual compositional nodes of the park structure. Functional areas need to be filled with certain structures and facilities.

Students outline the composition and boundaries of the functional core of the park. The planning structure of the park should have a complete detailed view. Alleys must have appropriate profiles and sections. Regarding the alleys, the grouping of greenery should be marked. Students must improve the perception of the landscape composition of the park. At the same time, students must ensure the movement of the main walking streams of visitors and walking to buildings and structures. Students must clarify the list and composition of the main types of greenery and elements of the water system of the park. In the regular parts of the park should be placed bosquets, parterre garden lawns, flowerbeds, *Rabatte* flowerbeds, green fences, mazes. Solitaires and picturesque plant communities, groves, gardens, green areas, meadows should be placed in landscape parts.

The recommended ratio of open and closed spaces of the park for natural and climatic conditions of Ukraine is 20–30 % of open spaces and up to 70–80 % of closed spaces.

The following are the main recommended elements of the park's water system:

– in the regular part of the park it is recommended to place geometrically regular fountains, cascades, pools, «mirrors», canals;

– in the landscape part of the park it is recommended to place picturesque waterfalls, streams, springs, ponds, lakes.

Special attention should be paid to the thematic nature of the compositions of greenery in the park. It is also necessary to pay attention to the conformity of green plantations to the systems of ethnic and exotic landscape symbols. Such ethnic systems of green plantations are, for example, Ukrainian gardens, Japanese or Chinese gardens, gardens from different eras and garden and park styles.

Project implementation sequence:

1. Students should be familiar with the text part of the task. Students should also be acquainted with the topographic basis of the area. It is also necessary to study the guidelines and literature on this issue.

2. Execution of an abstract on the topic of the project.

3. Students must perform a pre-project landscape analysis of the area (Scale 1 : 5 000).

4. Students must calculate the basic elements of the park. Students must determine the size of functional areas and objects of cultural and household services. Students must also conclude a settlement balance of the park area.

5. Formation of the idea-concept of the project. Students must complete the sketch functional and planning options for solving the composition of the park with the choice of the optimal solution.

6. Development of the scheme of functional zoning of the park territory (Scale 1 : 5 000).

7. Development of the scheme of transport and pedestrian organization of the park territory (Scale 1 : 5 000).

8. Development of a sketch of the master plan of the park. Development of architectural, artistic and spatial organization of the park (Scale 1 : 2 000). Sketch approval.

9. Execution of drawings according to the approved sketch of the general plan of the park. Students must make sketches cleanly and use certain computer programs.

10. Development of a detailed landscape-architectural complex of the functional zone of the park with all the elements of landscaping (Scale 1 : 500).

11. Students must complete a perspective from a bird's eye view. Students must also sketch perspectives on the functional areas and in the center of the park. Students must complete a sweep drawing along the main alley of the park (Scale 1 : 500).

12. Calculation of the project balance of the park territory.

13. Design of the project exposition and a brief explanatory note. If desired, the student can make a video presentation of his project.

16. Course project defense.

3.1 Contents of the abstract and methods of its implementation

The main purpose of writing an abstract is to acquaint the student with literary sources and regulations on the design of parks. Students perform an abstract according to the following plan:

1. Types of parks and their functional zoning.
2. Functional areas of the park and their main elements.
3. Techniques of architectural and planning organization of the park territory.
4. Architectural and planning organization of the center of the park.
5. Technical and economic indicators for the park.
6. References.

Each section of the abstract should have illustrations.

3.2 Analysis of the landscape situation of the park territory

When starting work, students must first analyze the state and composition of the natural landscape of the territory (Appendix B).

Within the territory chosen for the park, students perform a compositional analysis of this area. This analysis of the territory is needed to develop the architectural and planning composition of the park. The purpose of this analysis is to achieve an organic combination of park planning and natural features of the area.

In the process of analyzing the natural situation, students establish the presence and quality of natural and artificial factors. These factors are forests, waters, ravines, hills. It is also necessary to establish the presence of external roads. Students also determine the main spatial compositional axes, slopes of territories, areas that are favorable for the placement of recreation zones.

This scheme should contain the main axes and nodes of the natural and urban landscape with the designation of the directions of their spatial disclosure; spatial pools of visual perception; the main fronts of the spatial perception of the landscape with the designation of the directions of spatial disclosure; characteristic points of visual perception of the landscape; landscape and urban dominants.

Designers choose a place for the center of the park, usually at the intersection of the main compositional axes of the landscape. These intersections of the axes are composite nodes. Designers also place the center of the park in high areas.

Designers also determine the conditions for perception and review of individual sections of the park (range of perception, viewpoints, panoramic disclosure).

The location of the architectural dominants of the park should reflect its natural and landscape basis. The most significant dominants of the park are located on high terrains and ridges. In the future, these dominants of the park form the main compositional axes of the park.

The whole complex of landscape, topographic and hydrogeological factors is reflected in the scheme of analysis of the landscape situation.

3.3 Scheme of functional zoning of the park territory

First, students make a preliminary calculation of the main elements that make up the territory of the park (Appendix C, D). Then students perform the scheme of functional zoning of the park in the form of a *clausura* (sketching exercise) on a scale of 1 : 5 000 (Appendix J). The main task of this *clausura* is to determine the location of the entire park finally. At the same time, it is necessary to take into account the planning constraints that the student received when analyzing the landscape situation. Students must also develop a scheme of functional zoning of the park. At the same time, students must take into account the requirements that exist for each functional area and the requirements for the relative location of these areas (Appendix E).

In the drawing, students must mark the following elements. The volumes and mutual location of all functional zones of the park should be indicated on the drawing. It is also necessary to select the main inputs, buffer, external and internal areas graphically. The main transits of the park connections should be marked on the drawing. The transits of the park connections are the main ones, and the park connections are the planning framework of the park. It is necessary to indicate on the drawing the service radii of the main park buildings and structures.

The territory of the park by functional purpose and nature of use is divided into zones. There should be sites of mass actions at the main entrances on the territory of the park. Also in the park should be exhibition grounds, pavilions, galleries or passages, a dance floor (with a stage). The park should also have pavilions for board games, sports entertainment, playgrounds, attractions, etc. All functional areas of the park have a certain filling of various objects and structures (Appendix F).

If the park is located near a river or reservoir, these reservoirs should be actively included in its planning structure. Thus it is expedient to use a coastal strip for a landscape and recreational zone.

By means of graphics on the scheme of functional zoning of the park it is necessary to reveal the basic planning idea. On this scheme it is necessary to allocate separate elements of structure of park, to mark an external highway. These elements should be distinguished by generalized spots.

3.4 Scheme of transport and pedestrian organization of the park territory

Students must complete the scheme of transport and pedestrian organization of the park on a scale of 1 : 5 000 (*clausura*). On the scheme of transport it is necessary to mark traces and axes of the main transit alleys (main alleys) and walking routes. Also on the transport scheme it is necessary to mark the schematic boundaries of the main park regular nodes and landscapes (sequence of the scenario of visual perception of the park landscape). Also on the scheme of transport it is necessary to mark the main fronts of visual perception of park territory and characteristic fixed points of visual perception (Appendix G, I, J).

3.5 Scheme of longitudinal profiles and cross sections of park alleys and embankments

The schemes are made to indicate the main and most typical normative parameters and compositional landscape solution of the main connecting elements of park planning:

– main (transit) alleys;

– walking (route) alleys;

– cascades;

– embankments.

At the intersections of these elements of park planning should be marked: the main linear dimensions; lining of alleys with greenery; elements of artificial lighting; slopes of paving and hard surfaces in the directions of sections of alleys.

The park may contain elements of the landscape with significant slopes and

differences in relief. In this case, longitudinal profiles in places of characteristic landscapes are added to the sections of alleys. For example, longitudinal sections of cascades or profiles of terraced landforms are added to the sections of alleys.

3.6 Development of the design sketch of the general plan of the park

Basically, the composition of the master plan of the park can be compact or dispersed. The composition of the master plan of the park can also be elongated. According to the planning technique, the composition of the master plan of the park can be regular-geometric, landscape (free) or mixed. The mixed composition of the park has signs of regular and landscape planning (Appendix G). With a compact composition, the park area is grouped around the main center. The elongated shape of the plan will be in the case when the park is located along the coastal strip of the river or along the main street highway.

The sketch of the master plan of the park is performed on an enlarged to 1 : 2 000 topographic basis of the territory selected for design (Appendix L).

The main tasks of this stage:

1. Students must develop the internal planning and spatial structure of each zone of the park.

2. Students must clarify and supplement the park's pedestrian and road network.

3. Students should analyze the appropriateness of the decisions made. At the same time, the level of solving social, functional-planning, architectural-spatial, artistic, engineering-technical, transport, ecological and economic requirements must be taken into account.

The master plan of the multifunctional park should clearly reflect the functional and conceptual-compositional landscape solution. The master plan of the park should also reflect the urban situation in which the park is inscribed.

For this purpose it is necessary to mark all transport constructions external to park and external territories of environmental formation:

– city and district highways that define the outer boundaries of the park;
– exits and entrances directly to the park;

– intra-quarter esplanades leading directly to the park entrances;

– Planning of places of the greatest concentration of pedestrian traffic and public activity in the city territories adjacent to the park. First of all, planning on the territory of community centers.

– adjacent to the park outdoor natural waters with waterfront.

On the master plan of park, it is necessary to expose features of structure of a natural and artificial landscape. These features in the master plan should be shown clearly and distinctly, using regulatory graphics. The cross section of the terrain horizontals at a scale of 1 : 2 000 or 1 : 1 000 takes 1 meter.

In the master plan, as the main drawing of the project, it is necessary to reproduce clearly the planning and functional structure of the complex of recreational areas. You must use graphics tools. It is also necessary to recreate the compositional landscape solution of the recreation areas of the park. Also on the master plan, it is necessary to recreate arrays of tree and bush park plantings and their separate groups, parterres, flowerbeds (Appendix K).

If the park is designed in a residential area, then for such a park the following ratios of areas of functional zones are accepted: the area of the quiet recreation zone should be not less than 50 %, the area of the sports zone – 20–35 %, the area of the children's zone – 10–20 %, the area of the utility zone –1–2 %.

It is recommended to provide a quiet recreation area in the park at least 70 %, because this is the area most suitable for the formation of landscape views.

The sports area should be placed on the area with the most flat terrain. It is necessary to minimize the amount of earthworks in the process of planning the surface of the park. The same should be done in the process of building park areas.

3.7 Architectural-planning organization of the main part of the functional core of the park

The master plan of the main part of the functional core should contain a planned solution of the functional zones. These functional areas must be selected in advance. The main part of the functional core is a detailed fragment of the park. These functional zones form the compositional and planning core of the park. The list of these zones is

as follows: zones of mass entertainment, spectacles and attractions, special zones, museum-exposition and cognitive zones. The master plan of the park should indicate the landscape equipment of the main alleys and platforms (benches, pergolas, gazebos, elements of artificial lighting, etc.). Also on the master plan, it is necessary to mark explication of small architectural forms and constructions (Appendix M, N). Students on a scale of 1 : 500 make the sketch of the master plan of the main part of the functional core of the park. Students make this sketch based on a previously developed master plan of the park at a scale of 1 : 2 000.

The main tasks of this stage:

1. Students must clarify the approved planning and spatial structure of the main part of the functional core of the park and develop a monofunctional structure.

2. Students must create a distinct architectural and artistic image of the main part of the functional core of the park.

3. Students must develop a detailed improvement of the main part of the functional core of the park.

The organization of the spatial environment of a multifunctional park should be aimed at creating a system of interconnected and penetrating spaces. Students must also create a panoramic structure of the central part of the park, an enclosed space and an «island» solution of certain functional areas of the park.

The architectural and planning solution of the multifunctional park presupposes the presence in its structure of various buildings and objects, small architectural forms, etc. One of the tasks when working on the project is the construction of a monofunctional building in the park. This is a small building (pavilion, cafe, greenhouse, etc.) in the structure of the park. This building can be located in one of the most picturesque corners of the park. This building can be placed near a reservoir, a green massif. Also, this building can be directly adjacent to the central area of the park. In the architectural and planning structure of the park, a monofunctional building, as a rule, closes the perspective of one of the streets. Most often, this building closes the perspective of the main alley of the park.

To give the central part of the park the role of the main space, the designers

introduce active vertical elements into this space. These elements are single-section tower objects or engineering structures, attractions. These buildings become spatial landmarks. These facilities also provide a visual connection of the center with other functional areas of the park. These objects provide a visual connection with the surrounding landscape and buildings. It is also common in the design of parks to highlight the main element of the ensemble with a developed silhouette.

The central part of the park and its main functional areas should be distinguished by a variety of perspectives. The effect of “surprise”, the change of landscape perspectives are also the means that accompany the architectural composition of the park. But these tools can be used in cases where this effect is a consequence of the natural construction of the composition of the park.

When placing small architectural forms in the park, the functional division of the park into zones should be taken into account. These functional areas of the park are: entrance areas, buffer areas, quiet recreation areas (walking area), active recreation areas, administrative and economic area, area for mass spectacles and entertainment, attraction area (area of mechanical, water, landscape attractions), children's and teen areas, exhibition areas, sports area, special areas.

The area for ceremonial mass events should be an open area with a decorative coating. Sculptural compositions, monuments, etc. can be placed on this area. Such a sculptural composition can be a central or asymmetrical element relative to the entire space of the area. It is recommended to create this sculptural composition in combination with elements of gardening and flower design. Such design elements can be ground lawns, flowerbeds or decorative small architectural forms. The decorative covering of an area for mass solemn celebrations and actions can be made of decorative concrete plates of various form and color. In addition, this coating can be made of stone, clinker brick and the like.

In the park, it is necessary to provide areas for short-term rest. These areas should have a parterre lawn with footpaths and shrub groups. It is also necessary to design areas in front of the entrances to park buildings. Information elements can be installed on these platforms in the central places of pedestrian communications of the park,

providing convenient access to them. Areas for short-term recreation in front of the entrances to the park should be separated from the places of accumulation and the main flow of visitors. These park areas should be separated by a hedge or parterre lawn. These hedges and lawns should have shrub groups or flower arrangements. To protect recreation areas from excessive insolation and strong winds, such sites are equipped with pergolas, trellises and decorative walls with twisted plants. Park areas are also equipped with this decoration to create cozy seating areas. Decorative concrete tiles, stone slabs, breccia, and brick crumbs are used to cover recreation areas.

The main central alley of the park should be designed in the form of a boulevard. Small recreation areas should be located along this boulevard. These recreation areas should be equipped with lamps, benches, urns. At the entrance to the multifunctional park, students must design an outdoor ecological parking lot with asphalt pavement. There must be markings for cars in the parking lot. Parking spaces for special vehicles should be designed in utility yards and near the administration building.

4 GRAPHIC DESIGN OF THE PROJECT

The computer graphic design of the project should help to reveal more clearly the architectural-planning and artistic idea of the park organization. To better disclose the idea, you should consider the means of graphic presentation of the project, so that the finished exhibition was performed at a high level. In the master plan of the park, it is necessary to show the wind rose, horizontals (isohyps), a network of streets and passages. All these elements of the master plan must be shown within the red building lines. Also on the master plan, it is necessary to depict a carriageway, placement of park constructions, green plantings. Moreover, on the general plan, it is essential to show borders of park. Also on the master plan, it is necessary to display borders of park. On the sheet of the general plan of the park, it is needed to place an explication of buildings and territories. Also on this sheet, you need to show the estimated and design balances of the territory and technical and economic indicators of the master plan. In general, the final design of the exposition of the park project can be made in monochrome or polychrome (Appendix O).

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GLOSSARIES

Greenery

Alley – a transport or pedestrian road, lined on both sides with trees, shrubs, curly plants.

Alpine garden (Rock garden) – a group of alpine plants cultivated in conditions close to natural. Rock gardens first appeared in English landscape gardens in the 18th century.

Arabesque – a flower garden of the same name or its component, made of geometric shapes used in parterres and flower beds.

Assortment – a collection of different types of trees, shrubs and flowers that are used for landscaping a particular area or object.

Berceau is a vaulted alley formed by semicircular knitted frames. Tree crowns (linden, hornbeam) close on these knitted frames. Berceau is also a part of the garden surrounded by vaulted alleys. This type of alley was used in gardens and parks of the Baroque era.

Bosquet – a dense array of trees or shrubs surrounded by a hedge. In the parks of the Baroque era, the enclosed spaces inside the bosquets were called cabinets, or green halls.

Bouquet plantings – a method of forming landscape fragments by planting several seedlings in one nest. The bouquet group can also be formed by planting on the stump of a young tree to provide conditions for the development of lateral shoots.

Boulevard – a wide green strip, which stands out on one side or on both sides of the street or promenade. The boulevard is designed for pedestrian traffic and short-term recreation. The boulevards were originally called the shafts of fortifications. Then the places for walks of citizens, created on the site of the former fortifications, began to be called boulevards.

Vase, flowerpot – a composition of plants, placed in a container.

Vertical Gardening – gardening of facades of buildings, parks and special devices (domes, trellises). Gardening is performed with the help of tree vines and other curly plants.

Lawn – artificial turf cover of perennial grasses. Depending on the purpose, lawns are divided into sports lawns, special purpose lawns and decorative lawns (ground, ordinary and meadow lawns).

A group of trees and shrubs is the most important element of a picturesque park landscape. This is usually a combination of an odd number (up to 11 units of plants) of woody, shrubby or flowering plants.

Arboretum – a green array of different species of trees and shrubs. The arboretum is usually used for scientific work on acclimatization and introduction of woody plants.

Condensed planting – a method of forming a landscape by planting trees at a distance of 1–1,5 m from each other. This type of planting is used to create compact greenery as soon as possible (in two or three years). Such green plantations at the stage of trunk formation are more stable and well developed. Further thinning of plants is carried out.

Flowerbed – a group of trees and shrubs on an open lawn in a landscape park. The flowerbed is shaped in the form of a circle and an oval. Since the middle of the XIX century, the flower garden with a geometric form of the plan is called a flowerbed. This type of flower garden is usually located at the intersection of paths in front of the main entrance to the building. A flowerbed can also be planted near a monument or statue. The flowerbed has a much smaller area than the parterre. Flowerbeds are created from annual and biennial flowering plants.

Curtain – a group of trees or bushes that limits the view of the open space of a landscape object or the surrounding landscape.

Modular garden – a flower arrangement created from elements of geometrically correct configuration.

Parterre – an open part of space, located on a flat terrain. Parterre has a geometrically correct shape with a ratio of 1:3 or 1:7. There are three types of parterres:

lawn, flower and mixed. In the 17th and 18th centuries, parterre was an integral part of the palace ensemble.

Meadow – a part of the landscape free of trees and shrubs.

Rabatte (border) is a narrow strip of flowers on the parterre along paths and alleys from 1 m to 7–9 m long. The width of the rabatte depends on the plants used and ranges from 0,5 m to 2 m.

Rosary – a part of the park, garden or separate area intended for planting different varieties of roses.

Rockery is a landscape composition where ornamental plants are combined with stones.

Solitaire (a solitary plant) – a single specimen of a plant placed on an open area of lawn, which is distinguished by its texture, crown, etc.

Topiary art – the art of figured pruning of trees and shrubs.

Flower group – a composition consisting of ornamental plants of one variety. The flower group forms regular circles, rectangles, and irregular geometric shapes.

Small architectural forms

Arbor (gazebo) – a structure of light, openwork construction, lined with vines. The gazebo is designed for relaxation and protection from the sun or rain. The origins of the use of gazebos date back to the parks of the Baroque era.

Amphitheater – in ancient Roman architecture, a spectacular building that had the shape of an ellipse. In the XVII–XVIII centuries, amphitheaters began to be built in parks in the form of decorative structures. Amphitheaters in those days were built for spectacular events. The semicircular end of the square opposite the palace was called the amphitheater in the parks of the Baroque era.

Balustrade – a through fence of balconies, galleries, stairs, terraces. The balustrade is mostly made in the form of low figured columns – balusters.

Buvette (a pump room, a drinking hall, also known as a fountain hall, the name comes from the French word *buvette* – stand) – a structure above the source of mineral water. Sometimes the building itself, which is equipped with a water supply from a

mineral source, experts call a *buvette.* From this mineral source people directly take drinking water.

Viaduct – a bridge-like structure built to build a road through a gorge, deep ravine, land, or to build a path over a crossroad. The viaduct was installed on high supports. Unlike the overpass, in which all spans are the same, the large span of the viaduct corresponds to its highest part.

Grotto – an artificial park structure for recreation in the shade. This structure is similar to a natural grotto in the rocks or piles of artificial stone.

Decorative wall – a decorative structure in landscaping. The decorative wall is used to delimit the space and to orient the movement of pedestrians in the right direction. In addition, a decorative wall is used for isolation of places of rest and for camouflage of utility sites. The decorative wall is made of a variety of materials: stone, precast concrete elements, panels, ceramics, fiberglass and more.

Obelisk – a stone rectangular, monolithic pillar with a pyramidal pointed top. This pillar tapers to the top. In the 18th century, the obelisk was used as a decorative element of the park composition.

Orangery or Greenhouse – a park building with one or more halls. These halls are designed for growing citrus and other exotic plants. The greenhouse serves as a winter garden. In the XVIII century, orangeries were built in parks near palaces and used for entertainment.

Pavilion – a light, free-standing park structure.

Pergola – garden and park structure. The pergola consists of one or two rows of columns and racks. The pergola racks support a horizontal lattice structure wrapped in vines.

Rotunda – an open or closed round building on columns, often covered with a dome.

Ruin – an element of the landscape of romantic parks of the XVIII century. The park ruin is an artificially created ruin of ancient temples, tombs and other buildings.

Stella – a vertical stone slab with images or inscriptions.

Trellis – a light wooden lattice or openwork structure made of other materials used as a framework for winding plants.

Geoplastics and water devices

Aqueduct – a water supply system for water supply from remote sources. The aqueduct became a decorative element of landscaping in romantic gardens in the second half of the XVIII century.

Rubble stone, rubble – big pieces of different stones of irregular shape (granite, dolomite, limestone, and sandstone). These pieces of stone are extracted during the grinding of overlying rocks.

Bowling green, Boulingrin – a method of plastic design of the territory. Bowling green is nothing more than a part or piece of lawn, separated or deepened in front of another place. This method is characterized by the reduction of smooth surfaces of parterres, platforms. This technique was used in parks and gardens of the Baroque era.

Vertugadin – a method of plastic design of the territory, characterized by elevation the smooth surfaces of the sites. Terraced park elevation with semicircular steps and a wall of clipped greenery

Reservoir – a natural or artificial element of the landscape. The inclusion of the reservoir to the landscape facility significantly enhances the aesthetic impact of the facility. A larger reservoir is a landscape element that changes the plant landscape; the enlarged reservoir influences a microclimate and soil.

Waterfall – a water device that uses the effect of the dynamic state of water. The height of the waterfall in artificial structures should be at least 1,5–2 m.

Geoplastics – plastic processing of the earth's surface using vertical planning techniques. Geoplastics are used to solve utilitarian and architectural problems. Means of geoplastics – artificial and natural forms of relief: hills and mountains, earth mounds and embankments, slopes and retaining walls, stairs and ramps, craters and canyons, etc.

Decorative pool – a small artificial water device. This device mainly uses the effect of static water. Pool area – from 2 m^2 to 5 m^2. The pool can be combined with a rockery, a stream, a decorative sculpture, as well as a fountain.

Decorative pond – an artificial water device of fairly large size.

Spring – a small water device that gives the impression of the movement of a stream of water. This device has a variety of architectural and sculptural design.

Cascade – an architecturally designed waterfall. The water mass of the cascade falls from a high terrace or from a series of smaller terraces. The cascade was one of the main elements of the terrace parks of Italy and France during the Renaissance. From the XVIII century the so-called rusted cascades of natural stone are used.

Slope – a surface that unites the area located at different altitude levels.

Ramp – a slightly inclined plane that replaces the stairs. Ramps were first created in terrace parks of the XVII–XVIII centuries. The slope of the ramp is from 1/6 to 1/8.

Parapet – a low wall used as a fence for terraces of embankments, stairs, steep slopes, roads.

Pond – an artificial reservoir for water retention and storage. The pond is preferably a reservoir of surface runoff.

Stream – a small water device that uses the effect of a dynamic state of water. The width of the stream is small: from 0,3 m to 1,5 m.

Terrace – a horizontal or slightly sloping area that forms a ledge on a slope of natural or artificial origin.

Fountain – an artificial water device. The fountain uses the effect of a dynamic state of water. This effect in the fountain is achieved due to the rapid rise of the water jet up. The fountain consists of a reservoir and one or several tubes. Water escapes from the tubes of the fountain under pressure. Sometimes the fountain is decorated with sculpture, colored illumination.

APPENDIX A

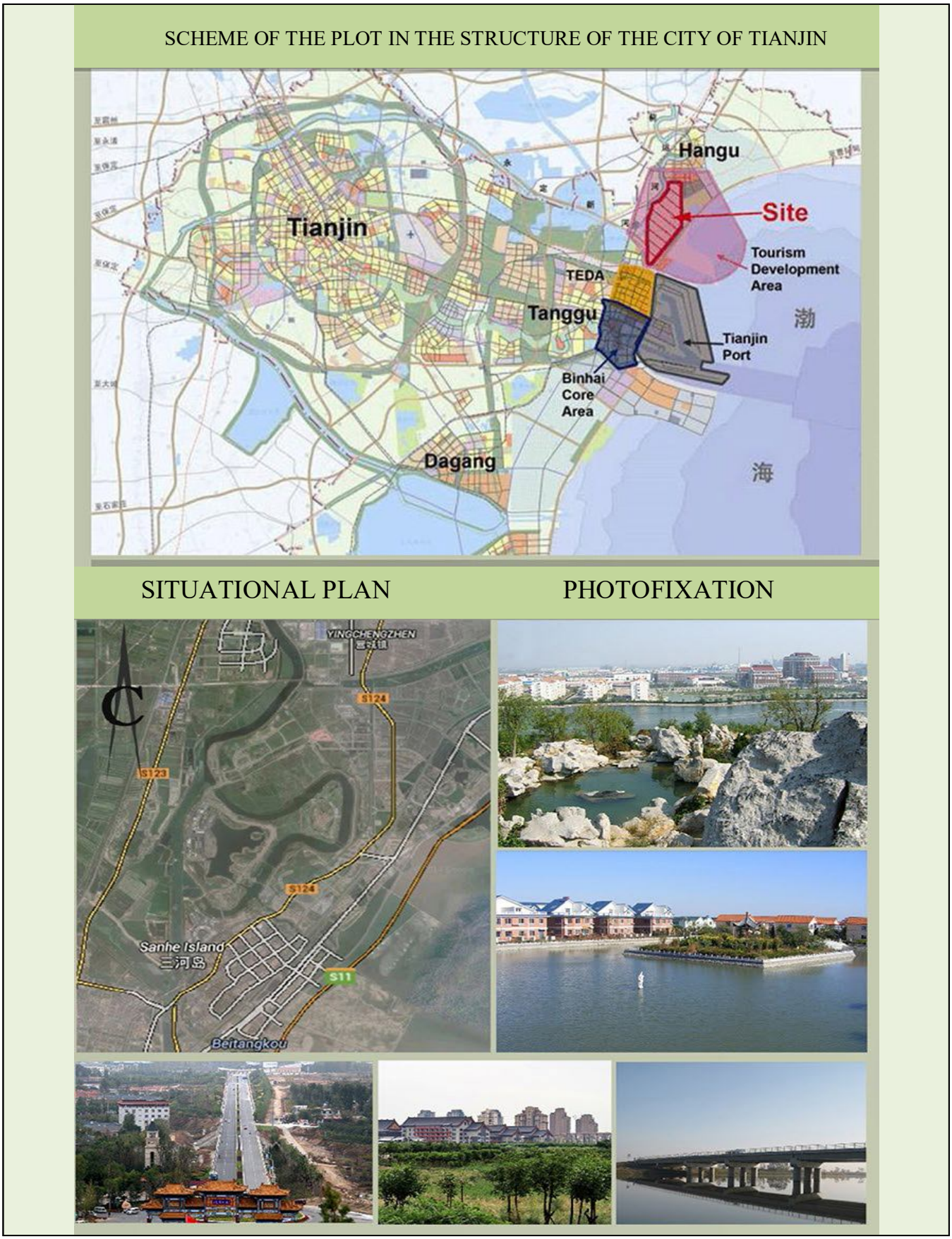


Figure A.1 – Example of drawing up a situational plan of the park

APPENDIX B

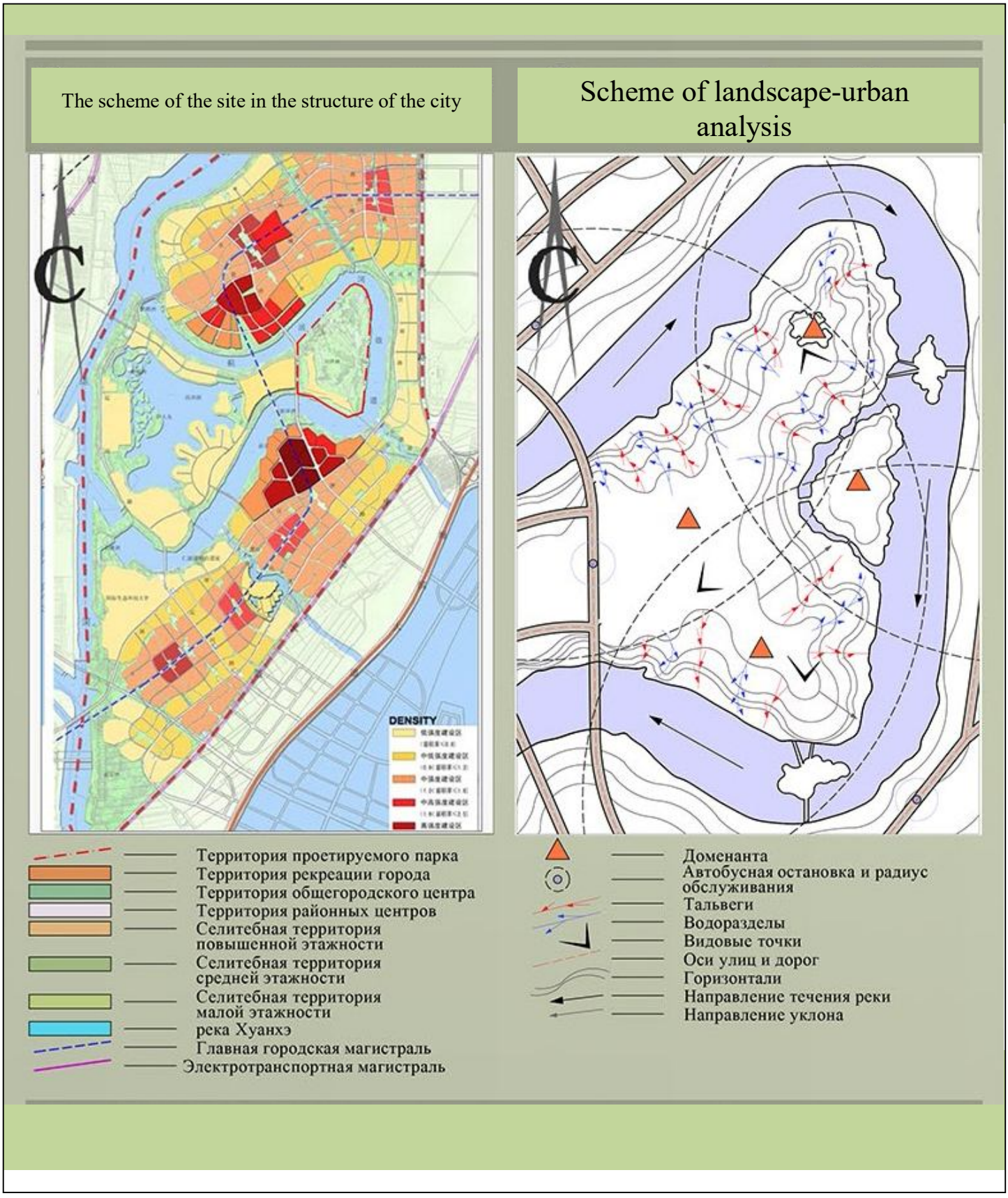


Figure B.1 – Example of the scheme of analysis of the landscape situation of the park

APPENDIX C

Calculation of the number of visitors to the park

The total simultaneous attendance of the park ($\mathbf{A}_{total}$) is calculated according to the following formula:

$$\mathbf{A}_{total} = \mathbf{C} \times \mathbf{P},$$

where **C** is the coefficient of simultaneous attendance, equal to 0,1 – 0,15; **P** – the prospective population of the city (for resort towns – taking into account the number of vacationers);

Attendance at the park is checked for the allowable simultaneous recreational load per 1 ha of territory according to the formula:

$$L = A_{total} / S \leq 100 \text{ visitors / ha},$$

where **S** – area of the park.

APPENDIX D

Estimated balance of the park territory

Table D.1 – Example of calculating the balance of the park

	Elements of the used territory	Area (ha)	Percentage of the total area of the park
1	Elements used for the construction of park buildings		
2	Ways, passages, alleys, platforms with a firm and combined covering, including:		
	sports and entertainment teens and youth playgrounds (skateboarding towns and so on)		
	playgrounds and small towns		
3	playgrounds for short-term recreation		
4	Plantings, including:		
	trees and shrubs		
	lawns, clearings, flower beds		
5	Reservoirs and water devices		
6	Beaches		
7	Other territories		
Total			100

Approximate (preliminary) balance of the park territory

Table D.2 – Example of approximate (preliminary) distribution of the park

	Functional use of the territory	Territorial distribution (%)	
		In case of high visitor density (over 60–100 visitors / ha)	In case of low visitor density (less than 60–100 visitors / ha)
1	Plantings and reservoirs	65–75	75–80
2	Alleys, esplanades, promenades, embankments and paths	10–15	8–12
3	Playgrounds	8–12	4–8
4	Buildings and structures	5–7	2–4

Note. The estimated density of anthropogenic load is determined by the natural conditions of the site and the possibilities of its improvement and engineering preparation.

APPENDIX E

The recommended set of functional areas of the park

Table D.1 – Recommended set of functional areas of the park

	Names of zones	Dominant functions	The percentage of the zone in the balance of the park	Notes
			visitor density per hectare	
1	2	3	4	5
1.	Entrance zones	Distributive, informational, trade function	3–5	These zones are organized in places of the greatest concentration of pedestrian and traffic flows
			up to 250	

Continuation of table D.1

1	2	3	4	5
2	Buffer zones	Protective function; ecological function; function of short-term recreation	10–15 up to 150	Semi-underground parking and toilets are recommended
3	Quiet area (walking area)	Long-term recreation function	50–60 / 10	This area is arranged with the organization of routes
4	Children's areas	Game, cognitive function	7–12	3-4 zones in the park are recommended. These zones are separated from adjacent zones by plant buffers.
4a	Adolescent zones	Game, entertaining, physical culture and sports function	up to 150	
5	Economic zone	Warehouse function	1–2 / 1	This area is located near the city highway
6	Administrative area	The function of management and organization of recreation and entertainment	up to 1 / 10	It is recommended to bring this zone closer to the entrance zone
7	Zone of mass spectacles and entertainment	Spectacular, entertaining functions	6–15 up to 250	These zones are separated from adjacent zones by buffers
8	Amusement zone (mechanical, water, landscape attractions)	Entertainment function	8–12 up to 250	
9	Exhibition areas	Exposure function	up to 5	It is recommended to bring these areas closer to the quiet rest area
10	Sports area	Function of physical culture and sports	–	It is recommended to take this area to a specialized park
11	Special areas	Cognitive, museum-ethnographic and other functions	Students specify the composition and area of this zone with a consultant - supervisor	

APPENDIX F

List and characteristics of park objects and structures

Table E.1 – List and characteristics of park objects and structures

	Names of objects and structures	Capacity of visitors or spectators per element or object	Building area of one element or object (m^2)
1	2	3	4
1	Areas of mass action at the central entrance and main entrances to the park	1 000	3 000
2	Exhibition sites	200	600
3	Exhibition pavilions, galleries or passages	100	400
4	Open theater or stage (summer or «green» theater or stage)	500	650
5	Concert orchestral symphony stage	50	75
6	Square in front of the stage	1 000	1 100
7	Dance floor (with stage)	200 (20)	400 (30)
8	Pavilions for board games	100	250
9	Reading pavilions with temporary bookstores	40	120
10	Pavilions for sports and athletic entertainment	150	300-450
11	Skateboarding playgrounds	50	250
12	Sports grounds		
13	Volleyball court	12	360
14	Basketball court	10	600
15	Tennis court	4	800
16	Badminton court	4	400
17	playground for playing *Poppi* (townlets)	10	450
18	table tennis court (up to 10 courts)	20	400
19	Children's car-bike town	30	100
20	Children's playground area	100	500
21	Playground of a small attraction	30	90
22	Mechanical attraction site (site of centric geometric shape)	10–50	400–900
23	Cafes, bars, buffets, etc.	50	100
24	Administration building with utility yard		300–500

APPENDIX G

Types of park layouts.
Classic regular park layout

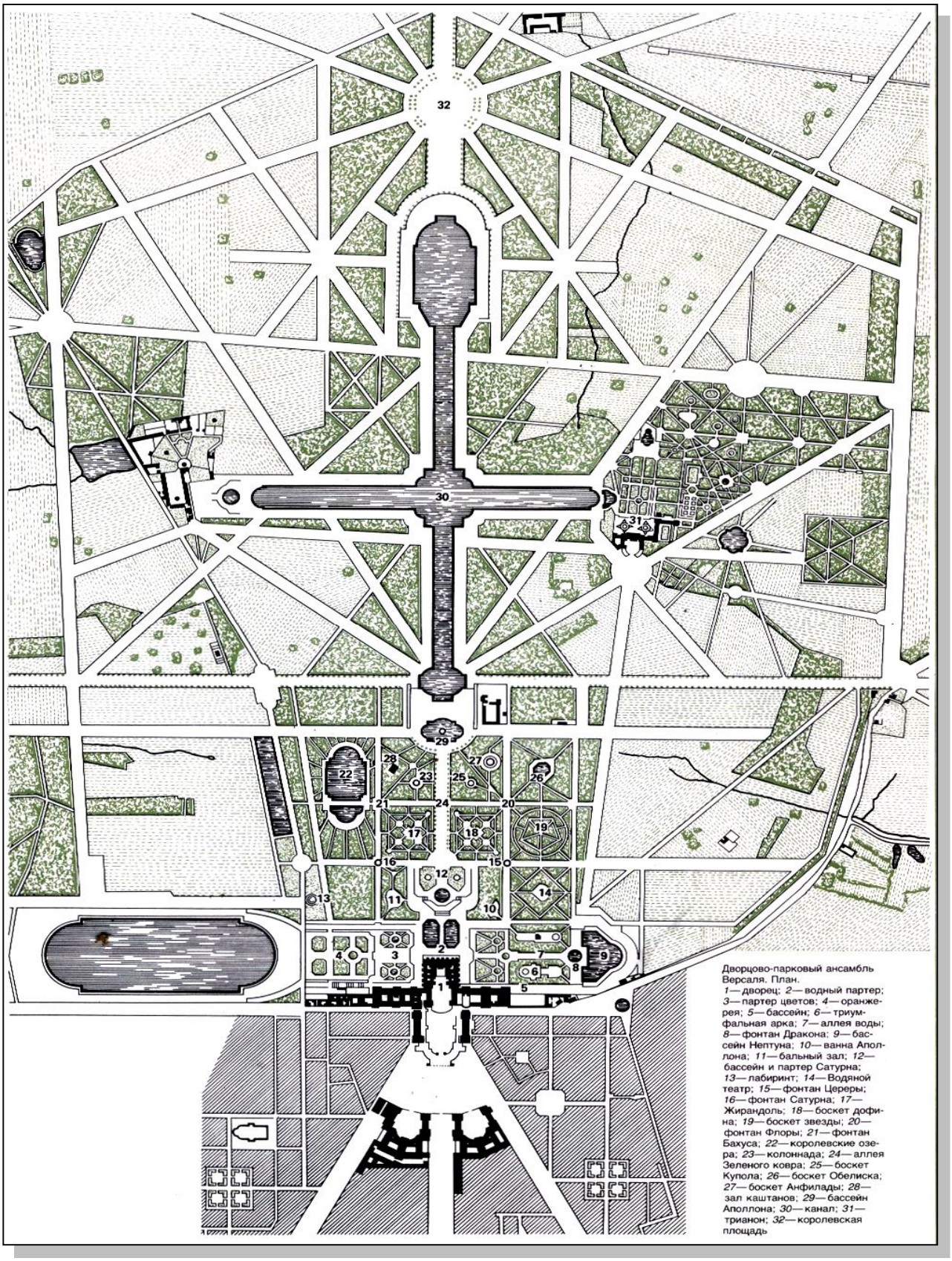


Figure G.1 – Example of a regular method of park planning

Types of park layouts.
Classic free park layout (landscape layout)

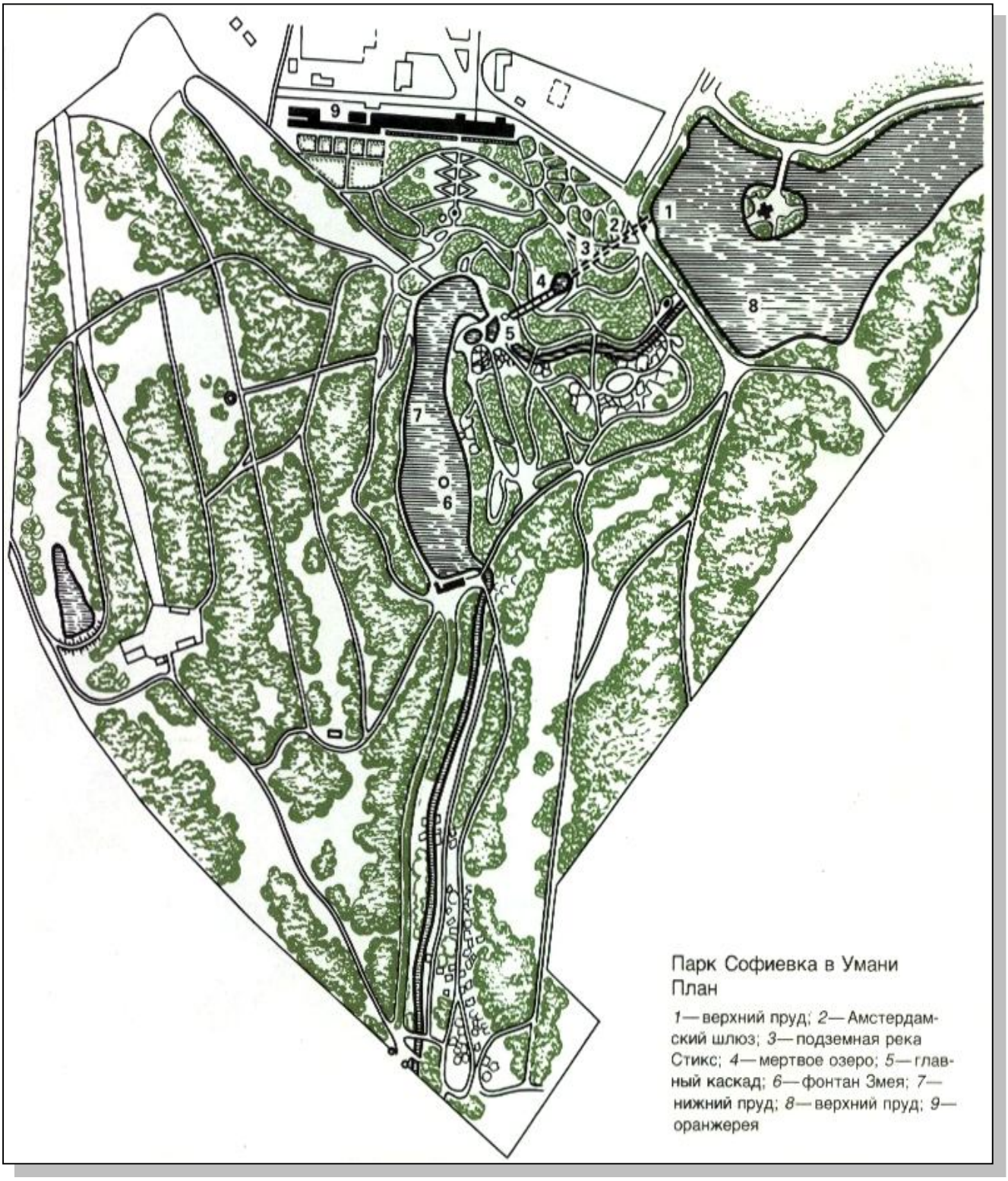


Figure G.2 – Example of a free (landscape) method of park planning

APPENDIX H

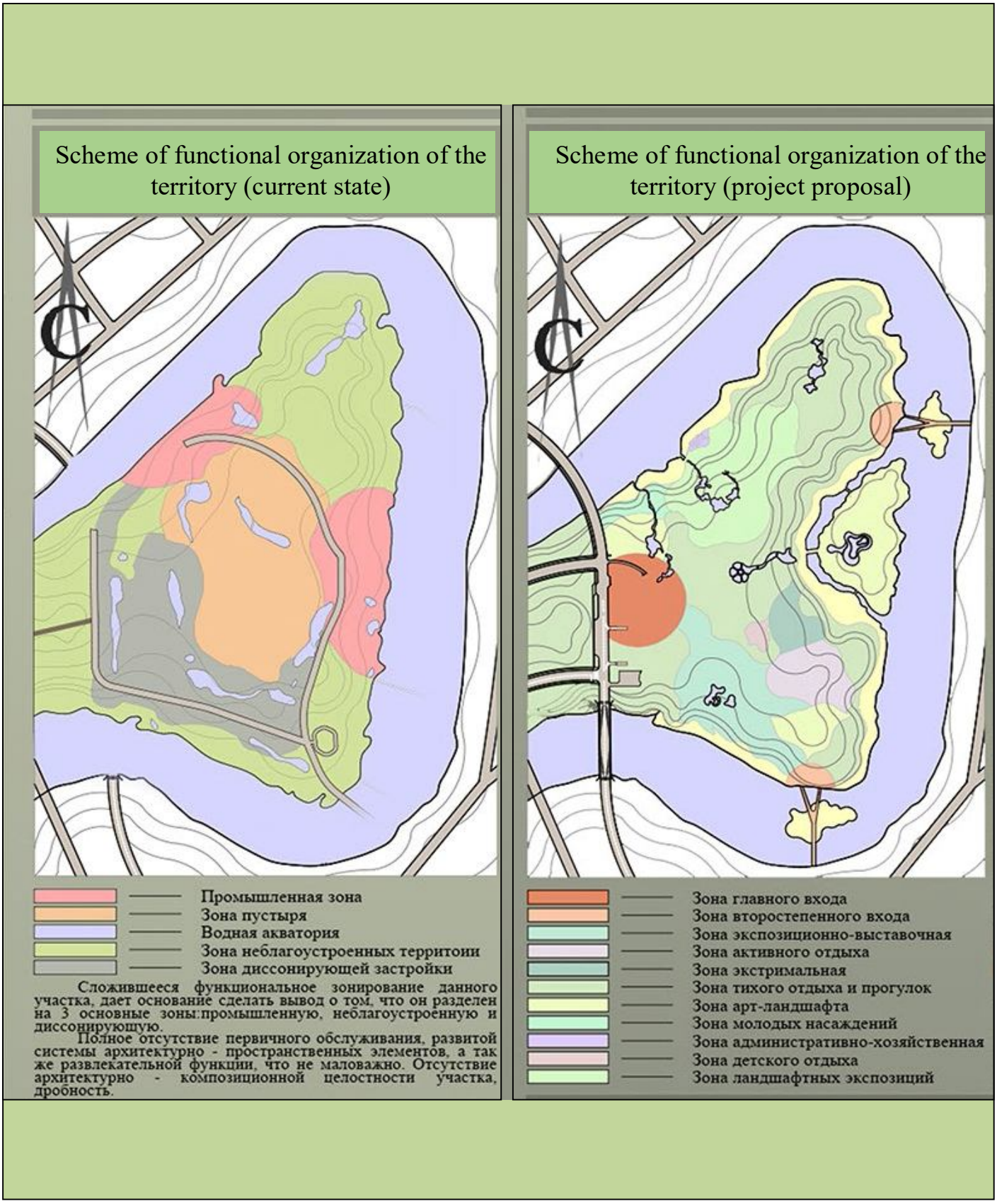
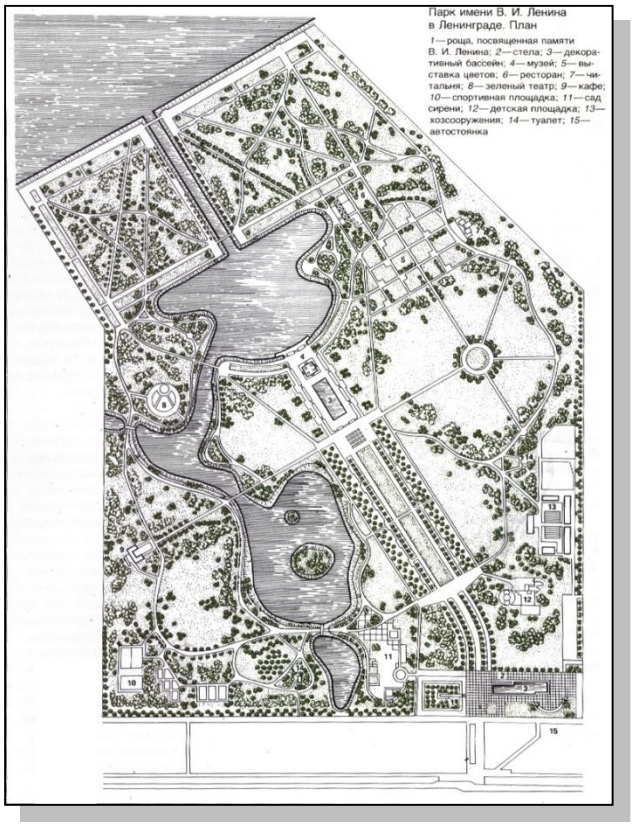


Figure H.1 – Example of the scheme of functional zoning of the park

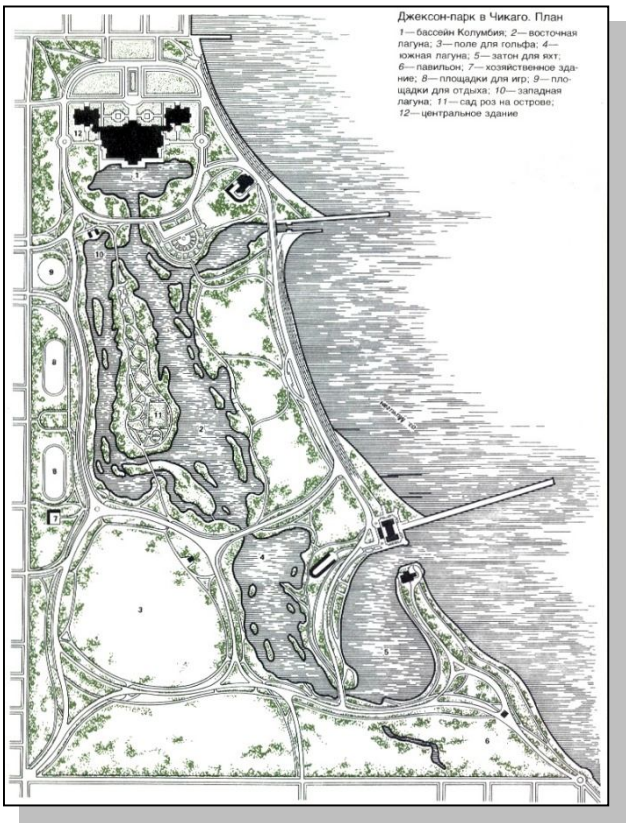
APPENDIX I

Types of tracing of walking trails

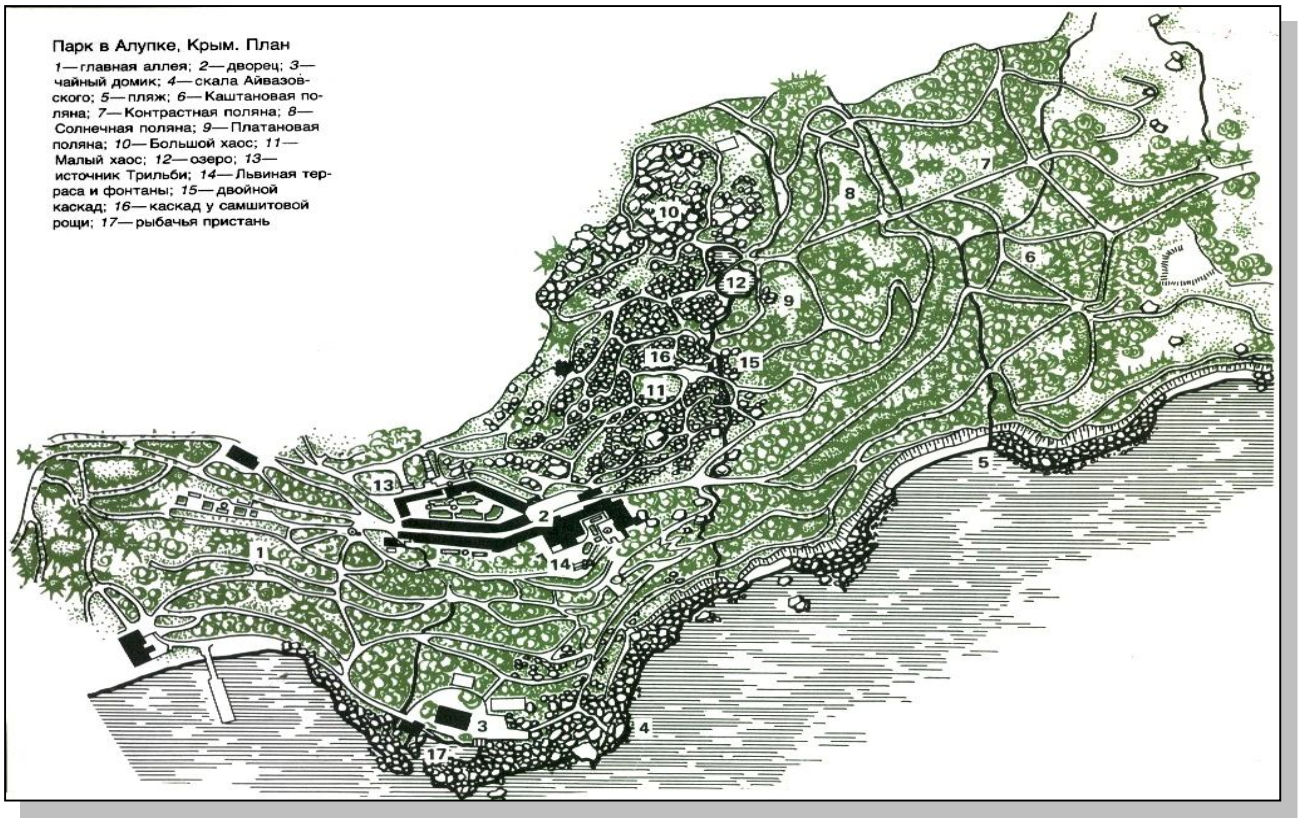
Ring tracing
In addition to the regular layout



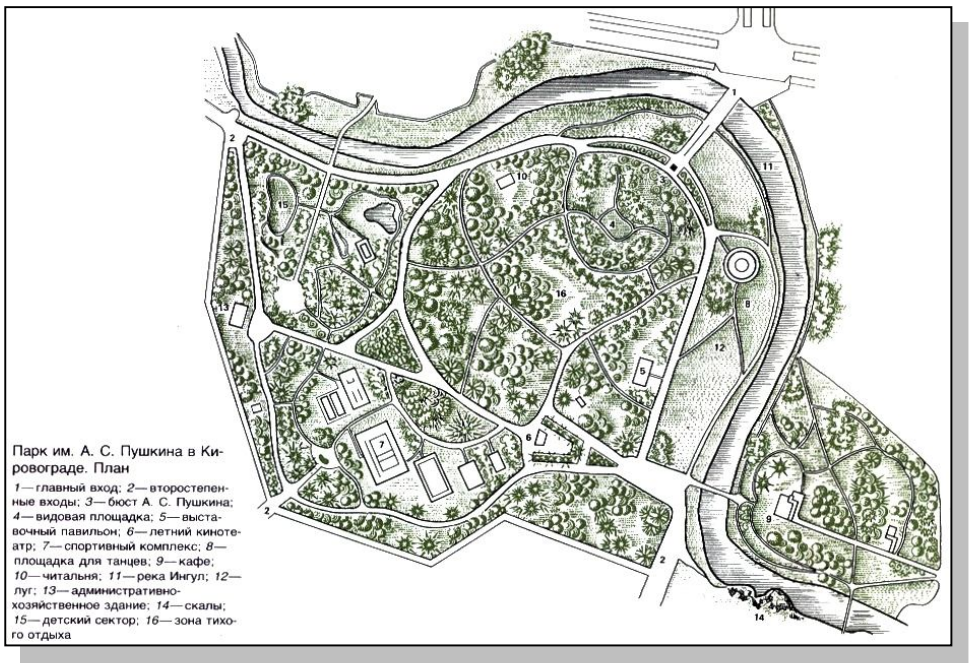
Tracing of walking routes in the conditions of spatial advantage of water areas



Serpentine tracing of walking alleys in conditions of strong relief



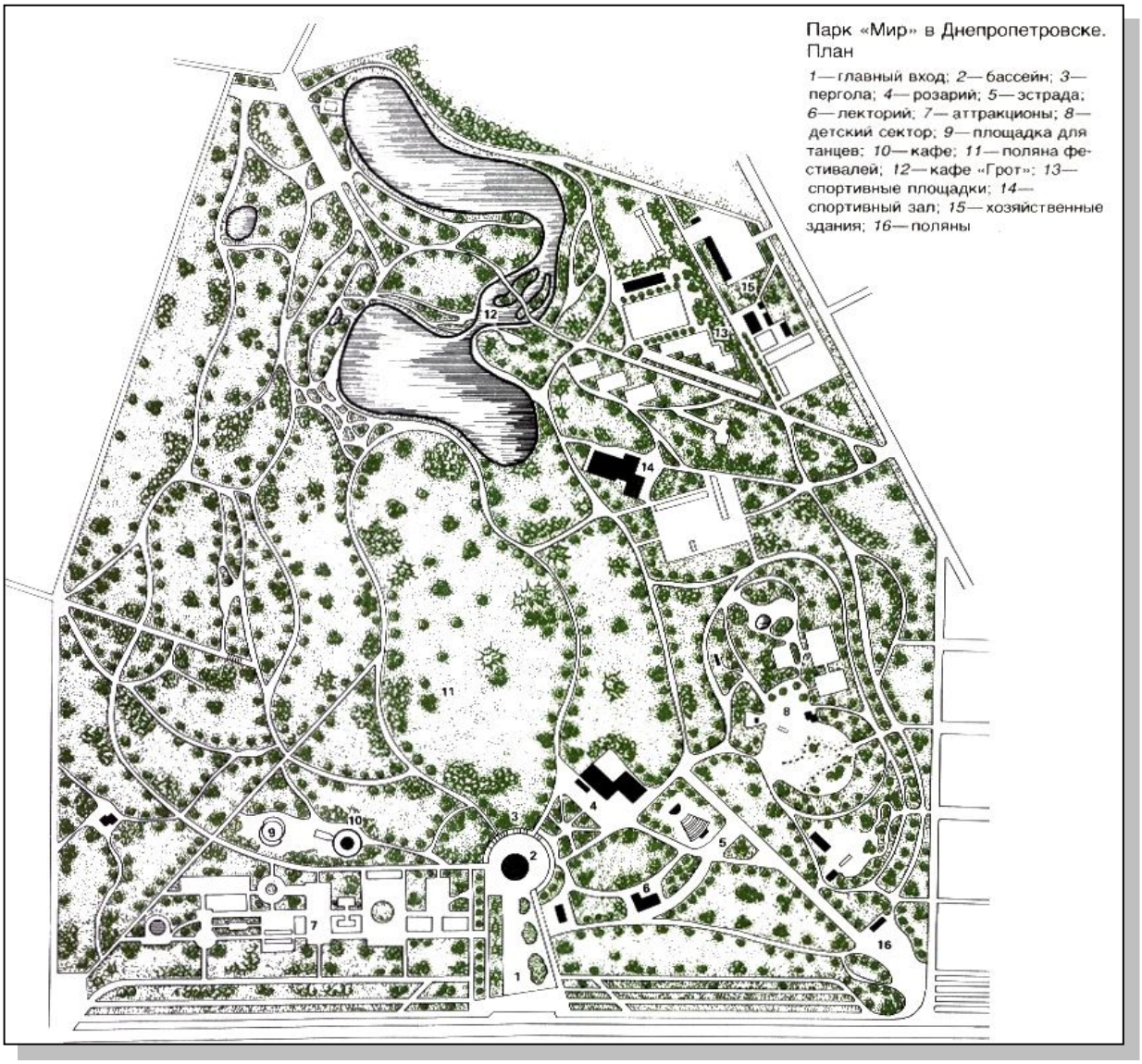
Ring tracing



Парк им. А. С. Пушкина в Кировограде. План

1 — главный вход; *2* — второстепенные входы; *3* — бюст А. С. Пушкина; *4* — видовая площадка; *5* — выставочный павильон; *6* — летний кинотеатр; *7* — спортивный комплекс; *8* — площадка для танцев; *9* — кафе; *10* — читальня; *11* — река Ингул; *12* — луг; *13* — административно-хозяйственное здание; *14* — скалы; *15* — детский сектор; *16* — зона тихого отдыха

Multi-ring tracing of walking routes



Парк «Мир» в Днепропетровске. План

1 — главный вход; *2* — бассейн; *3* — пергола; *4* — розарий; *5* — эстрада; *6* — лекторий; *7* — аттракционы; *8* — детский сектор; *9* — площадка для танцев; *10* — кафе; *11* — поляна фестивалей; *12* — кафе «Грот»; *13* — спортивные площадки; *14* — спортивный зал; *15* — хозяйственные здания; *16* — поляны

APPENDIX J

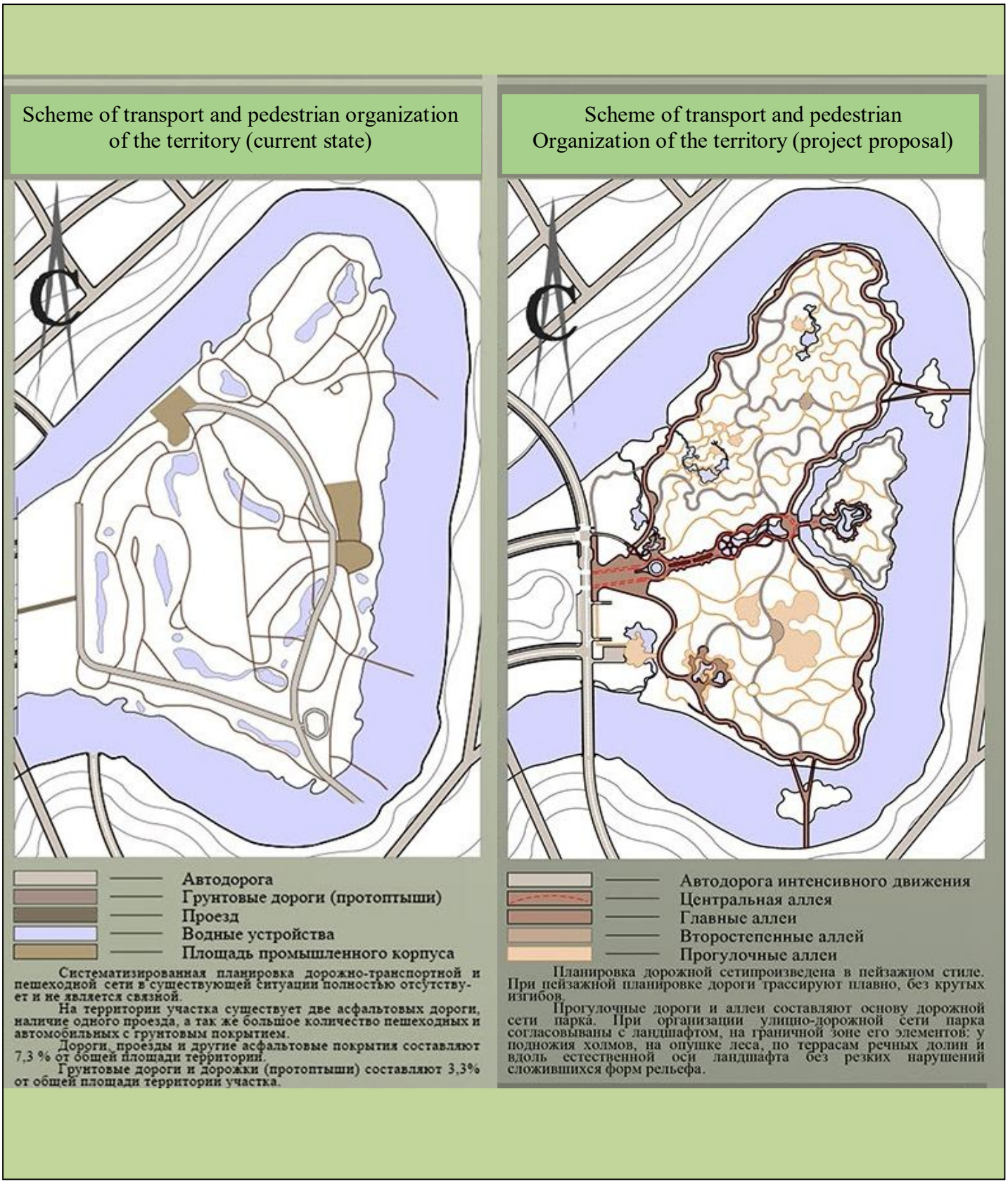
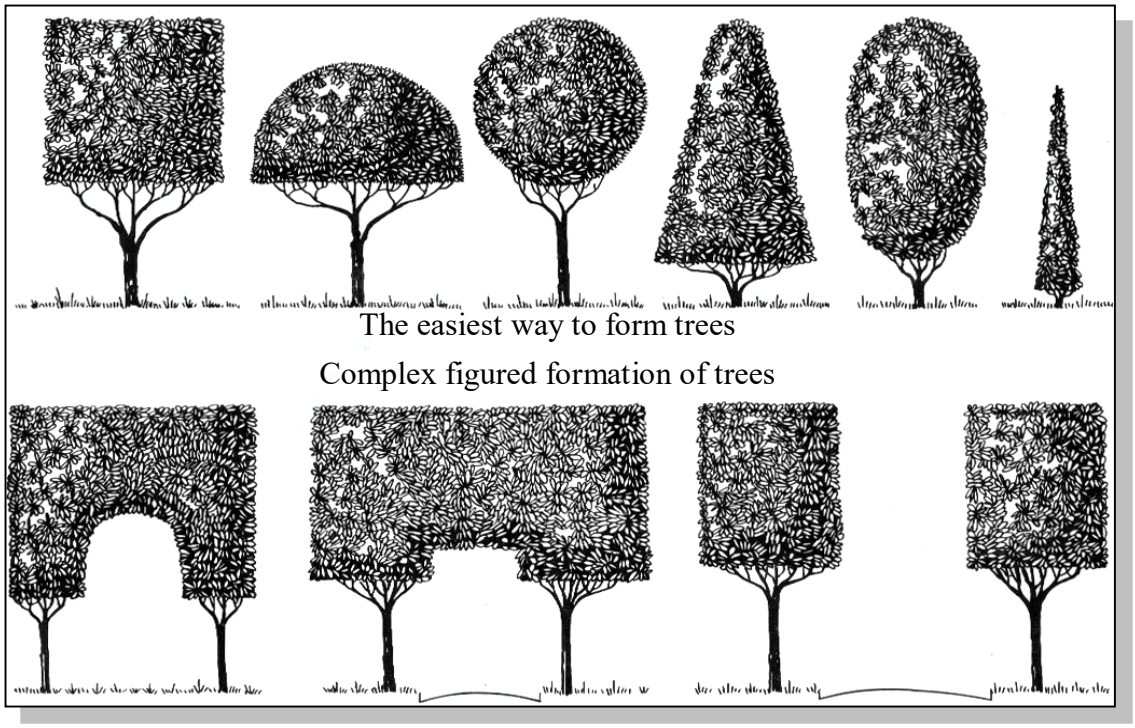


Figure J.1 – Example of the scheme of organization of transport and pedestrian connections

APPENDIX K

Examples of formation and grouping of park plants



Techniques for grouping plants

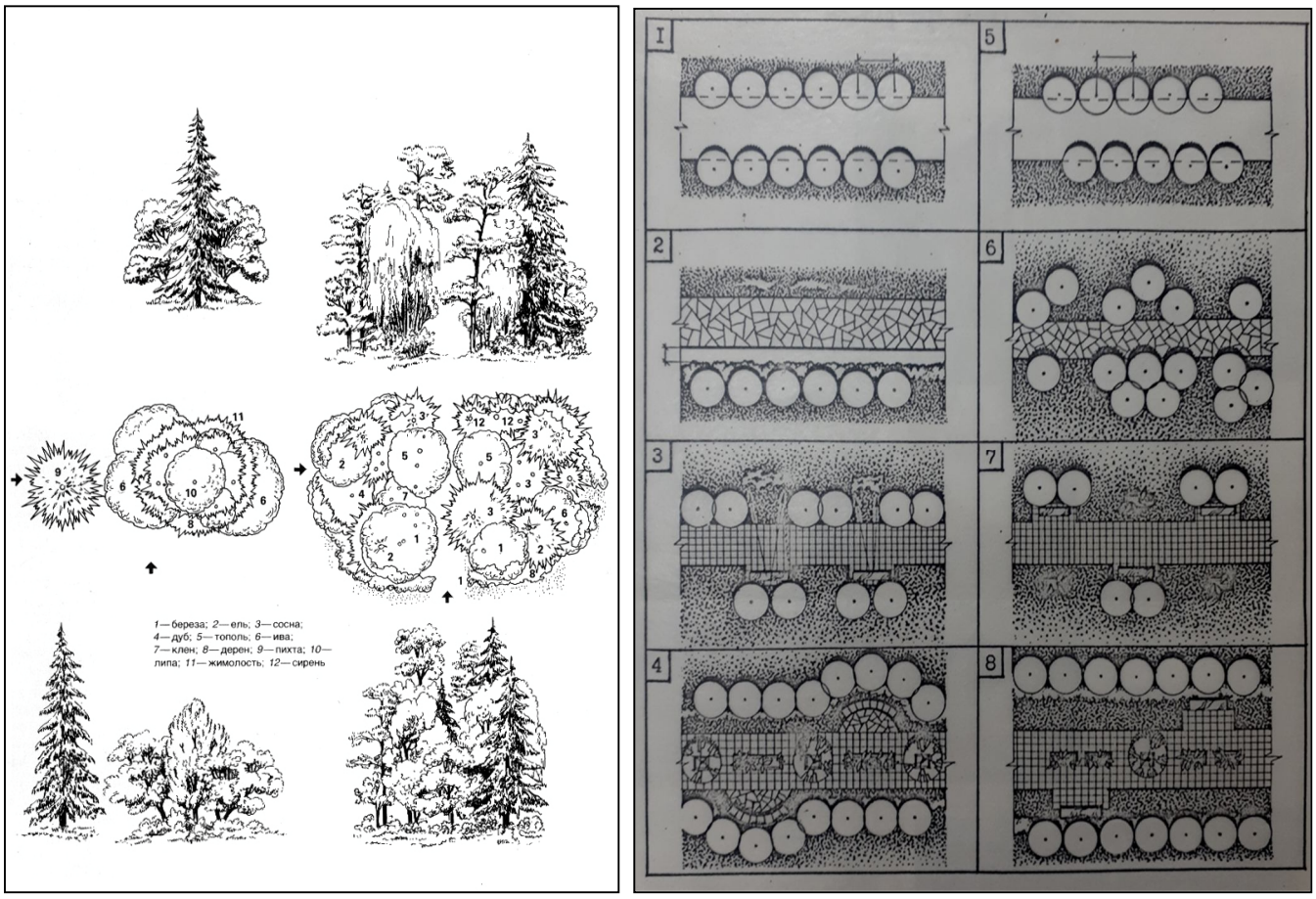


Figure K.1 – Example of formation and grouping of plants

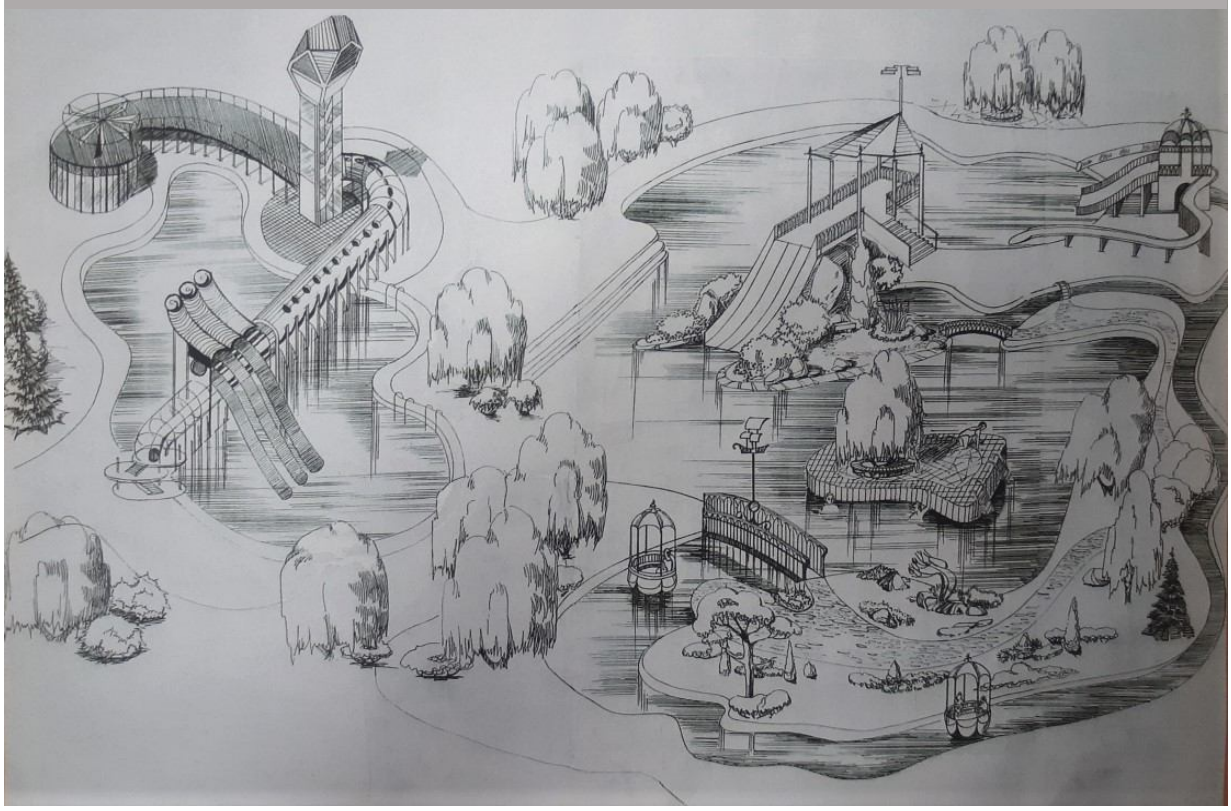
APPENDIX L

Figure L.1 – Example of graphic design of the base plan and master plan of the park

APPENDIX M

Figure M.1 – Examples of planning organization of a fragment of a park

Water attraction area in the multifunctional park



Architectural and landscape solution of a cafe in a multifunctional park

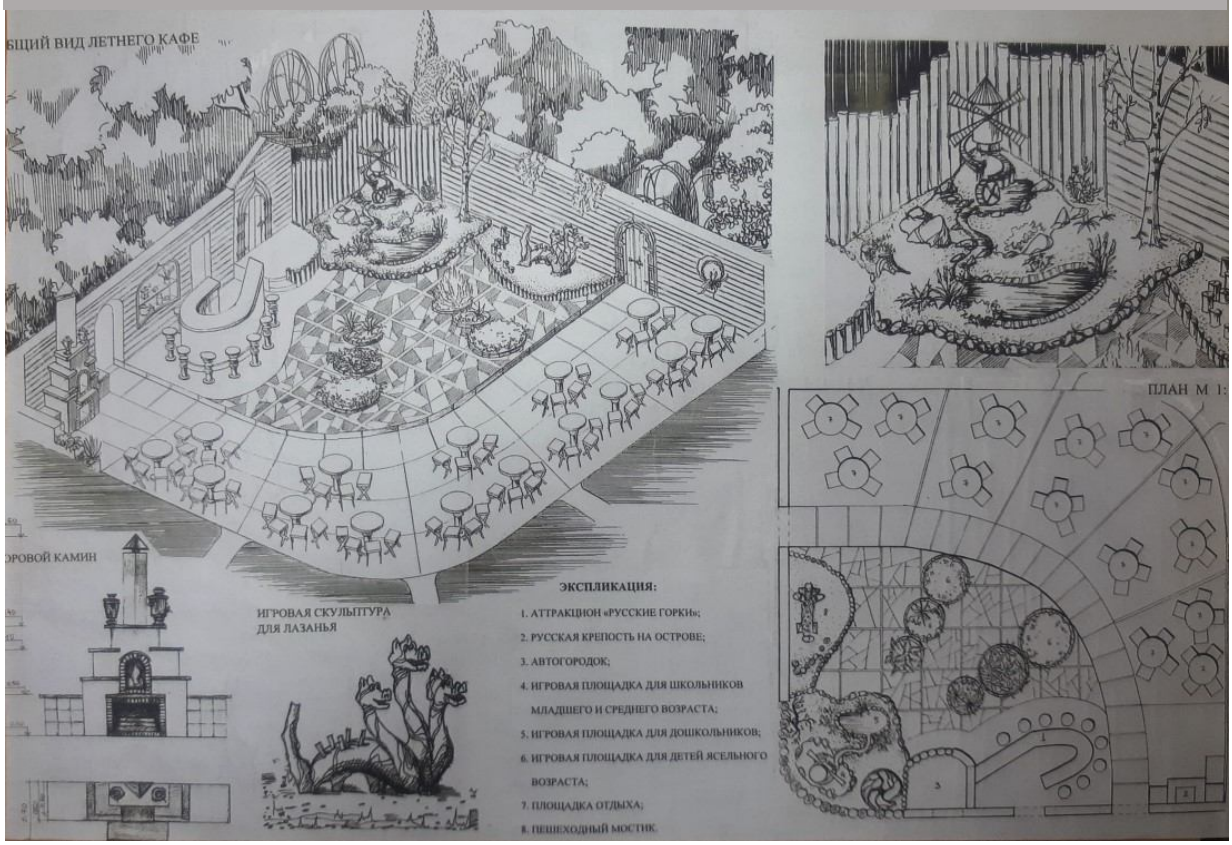


Figure M.2 – Examples of planning organization of a fragment of the park

APPENDIX N

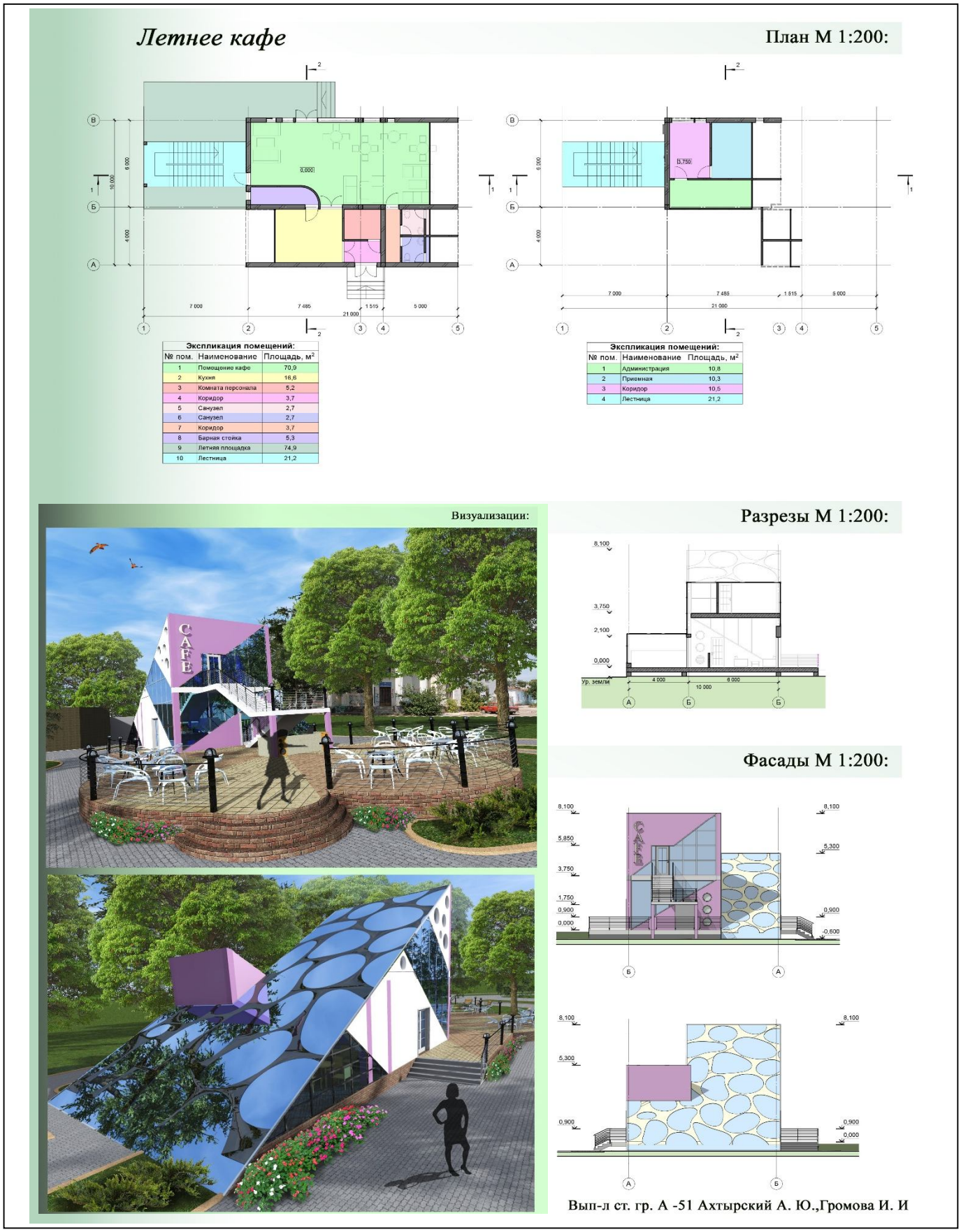
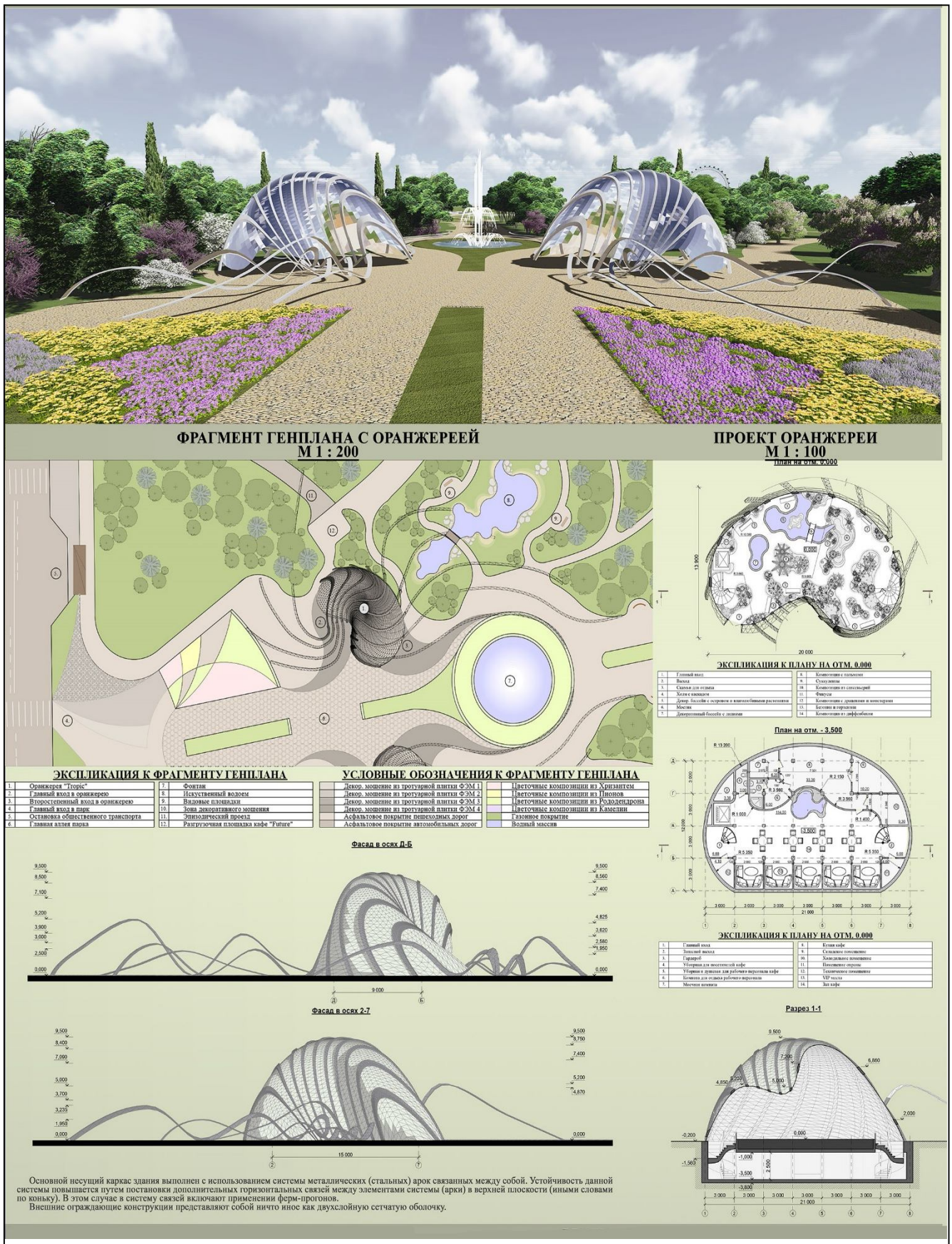


Figure N.1 – Example of a solution of a monofunctional building (cafe) in the structure of the park



Project of student I. Gromova, project manager – Dr.Sc. (Architecture), Prof. N.J. Kryzhanovska

Figure N.2 – Example of a solution of a monofunctional structure (greenhouse) in the structure of the park

APPENDIX O

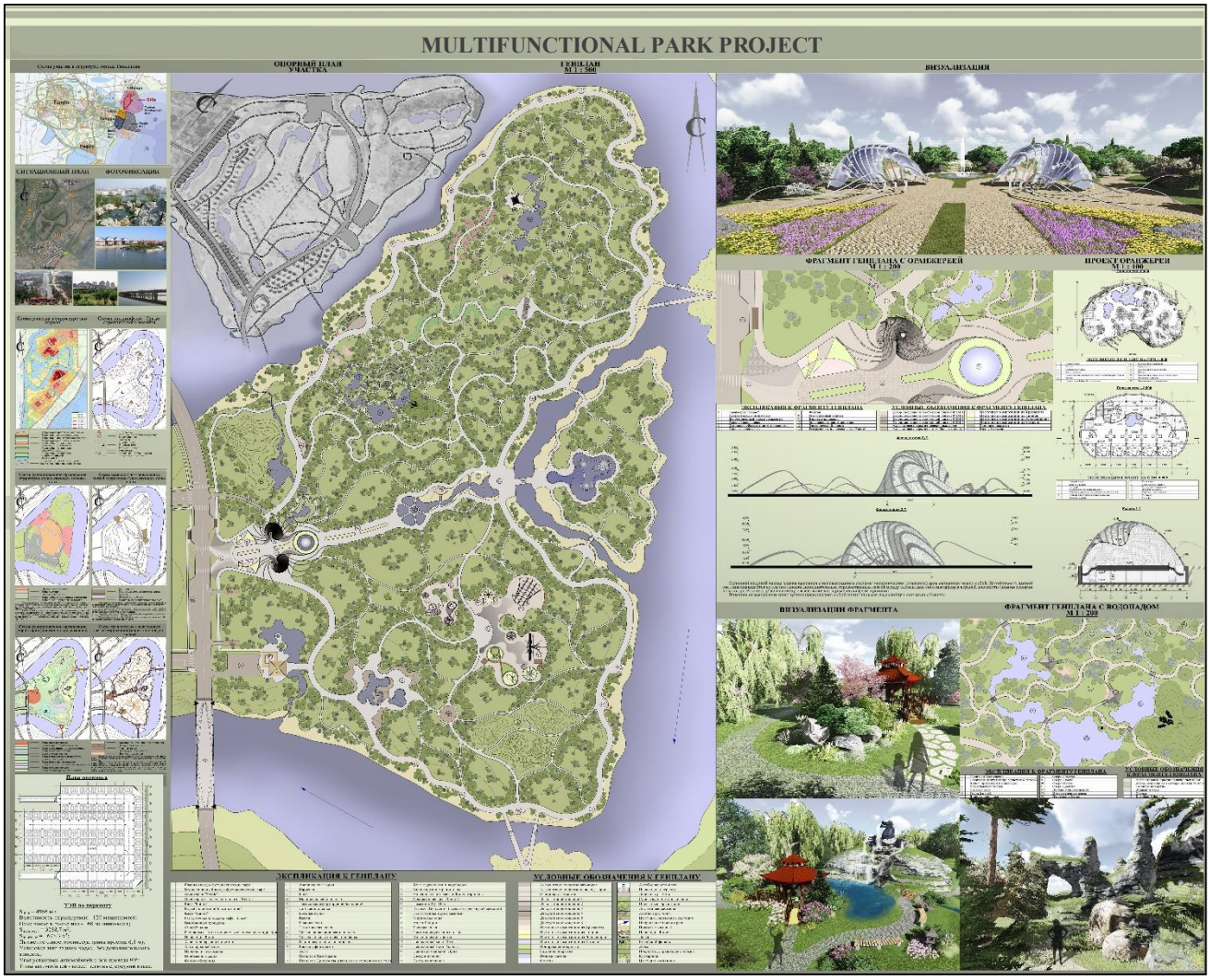


Figure O.1 – Examples of complex design of the exposition of the project "Multifunctional Park of district significance"

Виробничо-практичне видання

Методичні рекомендації
до проведення практичних занять, організації самостійної роботи
та виконання курсового проєкту

«Багатофункціональний парк районного значення»

з навчальної дисципліни

«АРХІТЕКТУРНЕ ПРОЄКТУВАННЯ БУДІВЕЛЬ І СПОРУД: БАГАТОФУНКЦІОНАЛЬНИЙ ПАРК РАЙОННОГО ЗНАЧЕННЯ»

(для студентів 3 курсу денної форми навчання
спеціальності 191 – Архітектура та містобудування)

(англ. мовою)

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