Recreational Potential, Long-Term Planning and Spatial Organization of the Climatic-Balneological Resort in the Area of the Tersinsky Mineral Water Deposit

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Abstract.
The work carried out a comprehensive analysis of the historical conditions of the formation and development of architecture and the territorial organization of climatic-balneological and ski resorts with a periodization of the stages of development. The role of the regularities of the landscape as a means of forming the spatial environment of the resort is determined in relation to the climatic conditions of the Kemerovo region. The resource potential of the territories was assessed. The main components of landscape design are determined and the principles of the spatial organization of tourist complexes by means of the laws of the natural environment are formulated for the conditions of the West Siberian region. The methods of forming the architectural and artistic image of resort buildings by means of subordination to its landscape components are systematized. An experimental design development was carried out for the long-term planning of resort areas and the zoning of recreation of the Tersinskoye mineral water deposit. The design development of the master plan of the central part of the balneological resort is presented, its general architectural and stylistic concept is determined. The project proposal of a spa resort hotel has been completed.

1. Introduction
The relevance of the work lies in identifying the optimal principles for the formation of the spatial organization of tourist complexes characteristic of the unique natural conditions of the Kemerovo region in order to increase the level of development of the tourist and recreational system and the socio-economic stability of the region [1] within the framework of the strategy for the development of health and wellness tourism of Kuzbass [2].

The aim of the work is to determine the optimal functional, architectural, planning and town-planning methods of forming the spatial organization of the climatic-balneological and ski resort on the example of the health-improving zone of the Tersinsky mineral water deposit.

The object of the research is the architectural and planning structure of climatic, balneological and ski resorts.
The subject of the research is the conditions and factors that determine the quality of the architectural-spatial organization of climatic-balneological and ski resorts.

Research Objectives:
- to study the historical conditions of the formation and development of architecture and the territorial organization of climatic-balneological and ski resorts in the world;
- to identify the landscape and climatic conditions of recreational zones and the peculiarities of their influence on the formation of the spatial organization of resort development;
- to analyze the factors that determine the quality of spatial organization and architectural expressiveness of climatic-balneological and ski resorts of the world and the West Siberian region;
- to determine the optimal functional, architectural-planning and town-building methods for the formation of the spatial organization of the climatic-balneological resort zone on the example of the territory of the Tersinsky mineral water deposit.

2. Theoretical part

The research methodology is based on an integrated approach, system analysis and theoretical synthesis. Analysis of international experience in the construction of climatic-balneological and ski complexes, construction of graphical-analytical tables, schematization and analysis of planning structures of tourist complexes, systematization of research objects at the town-planning, architectural-planning and volume-spatial level.

The general theoretical basis of the research was formed by scientific and theoretical works on the following problems: the definition of recreational potential and the functional organization of recreational zones: N.S. Mironenko, M. Berdus, K.R. Omarov, M. S. Oborin [1], N.V. Manshin [3]; urban planning organization of the landscape in order to organize recreational activities: K.G. Krogius [4], ID Rodichkin, T.V. Nikolaenko, I. T. Tverdokhlebov, R. Legget, V. A. Sosnovsky [5]; approaches to landscape design: E.A. Akhmedova, V.A. Gorokhova, A.E. Gutnov; formation of resort and recreational systems and the architectural environment of the resort: A.V. Borisov [6], A.P. Vergunov, M.G. Barkhin, A.V. Ikonnikov; territorial organization and features of the architectural formation of ski complexes: I.N. Tikunova [7], M.G. Krapivina, L.M. Demyanov [8]; volume-planning organization of objects of the sanatorium-resort complex: M.A. Lebedeva [9], I.L. Feminykh, V.I. Beaver [10], D.S. Shcherbunova; development of ski resorts in the Kemerovo region: G.V. Koblashov.

Scientific novelty is:
- in the obtained results of a comprehensive analysis to identify the role and specific features of the landscape as a means of forming the spa environment in relation to the conditions of the Kemerovo region;
- in determining the basic principles of the spatial organization of climatic and balneological tourist complexes by identifying the compositional laws of the natural environment, as applied to the conditions of the West Siberian region;
- in the development of systematization of methods for the formation of an architectural and artistic image of resort buildings by means of subordination to landscape components.

2.1. Practical significance

The theoretical conclusions and results obtained in the study make it possible to optimally solve urban planning and architectural planning problems of organizing the spatial environment of the resort complexes of the Kemerovo region. The results of the research can be introduced into the practice of designing tourist complexes in other regions of the Russian Federation in conditions of similar landscape and climatic characteristics, and can also be adapted into educational programs in the direction of study "Architecture" in higher educational institutions.
3. Suggestions and research results

3.1. Historical conditions for the formation and development of the architecture of climatic-balneological and ski resorts

The rapid development of resort architecture begins at the turn of the 19th and 20th centuries and leads to the emergence of various recreational institutions: sanatoriums, hospitals, as well as the use of resorts not only for treatment, but also for pastime [11], [12]. When comparing the features of the development of domestic and foreign resort architecture, it was found that in Russia, basically, there was a focus on meeting the needs of the broad masses of workers, and abroad - the development of elite tourism and tourism for the intelligentsia [13], [14]. In general, both domestic and foreign architecture of resorts developed in the direction of gradual enlargement of resort town-planning complexes, the introduction of unique cultural and entertainment facilities [7]. In the spatial organization of the environment, landscape features and relief of territories began to be used [4].

The conducted studies of modern trends in the development of resort areas make it possible to single out the following most important aspects: the formation and development of resort complexes have a significant impact on the socio-economic level of the country; the unique appearance of recreational areas is formed by monuments of history and culture, landscape monuments and other significant spa resources; for the effective formation of the tourism sector of the state, it is necessary to analyze the landscape and climatic features, the formation of economic models for the use of the recreational potential of the area, the study of modern trends in the architecture of tourist facilities.

3.2. Conditions and factors that determine the quality of the spatial organization of urban planning structures of climatic and balneological and ski resorts

Urban planning of resorts in areas with high recreational potential should use the rational landscape processes and components to improve the environment and use the ecological principles of architecture.

As a result of a comprehensive study of the conditions and factors that determine the quality of the spatial organization of urban planning structures of the largest climatic, balneological and ski resorts, it has been established that the nature and uniqueness of the spatial structure of resort education depends, first of all, on the recreational potential and a natural set of environmental characteristics: 1) balneological resources and the profitability of their use; 2) favorable natural and climatic conditions in different seasons (warm, hot summers and long winters, an altitude of 1500 - 1800 m above sea level, moderately low temperatures (average January temperature minus 5 - 6 ° C), prolonged sunlight (1900 - 2000 hours per year), an abundance of dense snow cover (up to 3 m), no avalanche danger); 3) the aesthetic characteristics and uniqueness of the territorial landscape pattern (vegetation, nature, density and depth of relief dissection, the presence of high-elevation mountainous terrain, the pattern and thickness of river network objects, the presence of water areas, etc.).

The planning structure of developed resort areas, as a rule, meets the following requirements: 1) the general urban planning composition of the development is formed on the basis of the relief situation, taking into account the landscape analysis [15]; 2) the choice of the type of planning structure of the resort (compact, radial, linear, branched or group) is carried out taking into account the direction of the spatial axes, the system of compositional nodes and places of concentration of medicinal natural resources; 3) in mountainous terrain, the dynamic change in the type of planning structures of building in the process of development is taken into account, from compact to radial and linear [4], [5].

Climatic and balneological resorts in Western Siberia in Russia are inextricably linked with ski tourism. Therefore, it is impossible to consider the development of large balneological tourist centers without the placement of ski slopes and corresponding infrastructures. Today, on the territory of Siberia, there are about 20 climatic and balneological resorts, unique in their therapeutic factors, such as: Goryachinsk, Belokurikha, Che-mal, Lake Karachi, etc. In addition, there are 12 ski resort areas in the Kemerovo region, including: Sheregesh (Tashtagol district), "Gornaya Salanga" (Tisulsky District), Mount Yugus (Mezhdurechensk), Mountains Tumannaya and Bulange (Tashtagol), "Mras-
Su" (Myski), Eco-complex "Taezhny" (Novokuznetsk), "Forest Republic" (Novokuznetsk), etc. However, not all of the listed resort areas meet modern requirements for comfort and quality of the environment. In the course of the analysis of the architectural and urban planning structures of the resort complexes of the Kemerovo region, the main shortcomings were identified, which are the reason for the low attractiveness of regional tourism in the Siberian region: 1) weak compositional and functional connection between the centers of the territories; 2) lack of integrity of the architectural appearance of the building; 3) low architectural expressiveness of individual objects; 4) poorly organized infrastructure and insufficient technical equipment of ski resorts; 5) meager landscaping; 6) low level of comfort in buildings in need of reconstruction.

Based on the analysis, it was revealed that today the only most developed climatic-balneological resort in Siberia is Belokurikha, and the largest ski resort is Sheregesh [16]. Most of the other resort areas need not only detailed architectural and planning revision, but also, first of all, to expand the range of tourist services, including sanatorium treatment [17].

Despite the listed disadvantages, most of the resorts of the Siberian region remain in demand, primarily due to valuable natural healing resources. So, for example, on the territory of the Kemerovo region there are areas promising for the creation of large recreational and health-improving complexes. One of them is the zone of the Tersinsky mineral water deposit.

3.3. Optimal functional, architectural, planning and urban planning techniques for the spatial organization of the climatic-balneological resort zone on the territory of the Tersinsky mineral water deposit

The resort area of the Tersinskoye field is established by the Methodological Instructions of the Ministry of Health of the Russian Federation dated December 22, 1999 No. 99/228 "List of Russian resorts with substantiation of their uniqueness by natural climatic factors" and Resolution of the Council of Ministers of the RSFSR dated January 6, 1971 No. 11 "On approval of the list of RSFSR resorts having republican significance "(currently - federal significance) [18], [19].

This zone possesses a number of valuable recreational resources: deposits of medicinal mineral waters, hydrocarbonate, calcium-sodium; mountainous terrain with a stable snow cover; rich water resources - the clear mountain river Verkhnyaya Ters, which originates from the unique Kuznetsk Alatau reserve; high-mountain pine-deciduous forests, mid-mountain black taiga and high-mountain fir-cedar taiga [20]. In accordance with the General Plan of the Tersinsky rural settlement in the field of protection of specially protected natural areas, the organization of the Tersinsky health resort zone is envisaged in this territory.

In order to form a general concept of zoning of the territory of the Tersinsky mineral waters resort, a landscape analysis of the territory was carried out during the research. Based on the study of the location of the reference contours of the site, natural dominants, the drawing of the objects of the river network, the most suitable territory for the location of resort buildings, bounded by landscape boundaries, was determined. Taking into account the revealed patterns of the landscape of the selected territory, the most expedient is the formation of the core of the resort with a compact planning structure (Figure 1, b), the core of which is the balneological complex (stage 1 of the formation of the resort development).

For the formation of a ski center, the possibility of placing ski slopes has been determined. The places of the planned placement of the slopes are selected in accordance with the location of natural dominants (Figure 1, c). As a result, of calculating the slopes of the slopes, it was established that in this area, at the first stage of the formation of the resort, it is possible to create seven main ski slopes. As a result, of the development of the tourist center near the ski slopes, the compact planning structure of the resort is gradually transformed into a linear one along the natural axes, connecting the resort centers with communication channels - stage 2 of the resort formation (Figure 1, b). In the future, the joining of the third resort center, the town-planning structure will acquire a ramified character - stage 3 of the resort's formation. Each center will require the presence of the necessary functional areas, the growth of which creates a network of resort infrastructure. The zones adjacent to the resort center must be united into a single cluster, thereby dividing the territorial unit into three sectors, roughly equal in
area. This will make it possible to create the necessary range of services on the basis of each center, to ensure the rational development of resort education and the integrity of the composition (Figure 1, a). Thus, the planning structure of the resort is transformed from compact to linear, from linear to divided, and creates a large resort formation, which has three main centers - balneological and two ski centers.

**Figure 1.** The concept of the spatial organization of the climatic-balneological resort zone on the territory of the Tersinskoye mineral water deposit: a - a diagram of the main resort sectors; b - the stages of the formation of the planning structure of the complex (compact, linear, branched); c - functional zoning of the territory and ski slopes; d - space-planning concept of the center of the water resort.

The most important element of the functional organization of resort areas is the road network. Here it is formed by roads of general resort significance and regional ones. Bridge structures across the Verkhnyaya Ters and Malyshtka rivers focus the tracing of the street-road network. The entrance to the territory of the resort area is provided with the existing road of regional intermunicipal importance across the bridge.

The following zones are distinguished on the territory of the resort (Figure 1, c): entrance (includes a multi-level indoor parking for personal vehicles of vacationers); all-season sports and entertainment area; residential area (includes hotel and sanatorium complexes, five-star hotels and the private sector with cottages and townhouses); health-improving area (with a medical and bathing complex, a resort clinic, a hydropathic establishment, a spa, a fitness center); recreational area (park, skating rink). The
interposition of functional zones on the compositional structure of the plan determines the grid-lane transport structure, which will provide convenient transport accessibility to all resort buildings.

4. Conclusion
In the course of the study, the analysis of factors determining the quality of the spatial organization and architectural expressiveness of climatic-balneological and ski resorts was carried out. The high importance of the landscape relief and natural and climatic factors in the organization of the spatial environment of tourist complexes has been determined.

The optimal functional, architectural-planning and town-planning methods of spatial organization of climatic-balneological and mountain-skiing resort are revealed. The results were tested on the example of the formation of the concept for the development of the health resort of the Tersinsky mineral water deposit.

The results obtained make it possible to optimally solve urban planning and architectural-planning tasks of organizing the spatial environment of resort complexes in the Kemerovo region and can be introduced into the practice of designing tourist complexes in other regions of the Russian Federation in conditions of similar landscape and climatic characteristics.

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