

**CHARACTERISTICS OF THE INFLUENCE OF CLIMATE CONDITIONS IN THE DESIGN OF BUILDINGS AND CONSTRUCTIONS**

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Abstract

The article examines the features of the influence of climatic conditions on the design of buildings and structures. The author comes to the conclusion that, knowing the characteristics of the state of the environment of the future area or structure and having various recommendations for its improvement, architects can more objectively and professionally fulfill their tasks, taking into account possible contradictions, due to spatial solutions using modern technical means, which will lead to the emergence of new architectural forms, original planning techniques. The methods of architectural design, applied taking into account natural and climatic conditions, will enhance the focus of the search for optimal design solutions, as well as enrich the possibilities of architectural creativity.

Keywords: climatic conditions, architectural design, buildings and structures.

Introduction

In the design of buildings and constructions, while studying the macro-, meso- and microclimate of the area where the object will be built, the structure of the soil and other factors, careful study from the point of view of the design engineer is one of today's requirements.

Prediction of all factors affecting buildings and structures, their modeling, adverse effects in the operation process of the object helps to prevent situations, as a result of which they rise as a safe, convenient and functional object [1].

Many domestic and foreign researchers deal with and study the problems of considering natural climatic conditions and various factors in the design of residential buildings. In particular, such problems are discussed in the works of authors M.M. Ataeva, A.M. Beregovoy, K.A. Birkoy, N.P. Bylinkina, B.I. Giasova, B.M. Davidson, S.P. Dyakova, A.V. Ershova, Ya.T. Kravchuka, E.A. Leonteva, M.S. Tupoleva, S.V. Ushakova, S.M. Shafransky and others have reflected [2]. The design quality of buildings and structures is affected by various factors, such as natural climatic conditions, the location of architectural and engineering communications. One of the main tasks of the design and construction of residential buildings is that they should be strong, superior, convenient for the population and safe for the environment.

One of the important factors affecting the quality of the construction process is the influence of natural and climatic conditions. Typological recommendations developed for the construction area of the planned building, to assess the climatic conditions of the construction area, it is necessary for the designer, architect, constructor to get acquainted with and analyze the existing normative documents and technical requirements [3].



The impact of climatic conditions on the object can be assessed in three ways: MACROCLIMATIC (territorial) assessment is understood as an assessment of meteorological conditions in a large area of the territory separated by general climate characteristics (region, district, territory).

Our climate is included in climatic zone IV, which is a hot dry climate. In this, a cold dry person differs from a hot summer. Sudden changes in air temperature and humidity during the day are characteristic.

MICROCLIMATE The soil layer has a great influence on the change of climate characteristics. These include: local terrain (eastern, sun-warmed hills, foothills, etc.), vegetation, woodland, desert landscape, sea level, lakes, and wetlands. It is observed that the microclimate is different in the urban area. The fact that the surface of the earth is covered with various coverings, such as lawn, asphalt, various concrete slabs, etc., affects the microclimate. These coatings absorb sunlight differently and are assigned an albedo number accordingly. In the direction of urban planning, a new direction - separation of buildings according to microclimate types - separation into CLIMATOPES (Table 1) [5] is envisaged.

For example, in Germany, based on the classification of climate zones, the number of albedo is determined and divided into different areas: dense and high-density buildings, low-density buildings "garden-city", climate zones of industrial zones, transport highways, etc. Climatops divide the urban area into different climatic zones and assess different microclimates.

The analysis of climatic conditions in the design of objects is carried out on the basis of the principles of "general to specific", that is, the general regional climatic conditions are taken into account, and then specific data for the local construction site are analyzed. General (complex) and local factor effects are taken into account when assessing natural climatic conditions. The complex effects of natural climatic conditions include climatic zoning, weather conditions (thermal background), heat-humidity regime, sunny days, snow drift, air pollution level, rainfall indicators. Local climatic factors include the duration of exposure to sunlight, air temperature, wind speed, precipitation, and humidity.

Due to the fact that the natural climatic conditions are important in the design of buildings and structures, air temperature, dust level and humidity are considered as decisive factors for the building or structure being designed. Depending on the climatic zones, the objects being designed should have significant differences: in the desert, in the tropical regions, in the central regions of the countries. Universal houses, taking into account any factors, can fulfill their functional requirements well in different conditions, but these houses are expensive from the economic and engineering point of view, so the project needs to be developed after studying the specific climatic conditions of a certain region [6]. The most important factors are: wind direction and



1-жадвал

Climatological zone of the city (climatope)	Visual appearance (scheme)	Aspect ratio (W/Sh)*	Artificial coating density %**
High-density construction, high-rise buildings Business centers		>2	>90
High-density construction, medium and low-rise buildings		1.0-2.5	>85
Medium-density construction, low-rise private residential buildings		0.5-1.5	65-85
High-density construction, medium and low-rise industrial, communal, commercial complexes (garages, warehouses, supermarkets, etc.)		0.05-0.2	75-95
Low-density construction, cottage-type villages		0.2-0.6	35-65
Mixed-density construction with high greening index (institute, hospital, sports complexes)		0.1-0.5	<40
Outskirts of the city, with separate buildings		>0.05	<10

* aspect ratio - the height ratio of the building and structure (in some cases the height of the tree is also taken into account) compared to the street width
 ** the ratio of the surface of the building project and the ratio of the waterproof layer surface to the total plot surface

indicators describing the intensity, humidity, amount of precipitation (rain, snow), amount of solar radiation. These indicators can affect every building element and population.

Cyclic temperature changes not only during the seasons (for example months), but also during the day can have a great impact on the object. The temperature is lower at night than during the day. Therefore, it is necessary to protect buildings from sudden changes in temperature.

In areas with a cold climate, several measures are used: reducing the perimeter of external walls, placing internal living spaces and utility rooms as compactly as possible, designing residential buildings with closed warm corridors, building special vestibules at the entrances, using energy-efficient materials and technologies. used (multi-layer thermal insulation layer and other types of heat-retaining layers are used). Since our country has a dry-hot natural climate, facilities are designed with the use of energy-efficient materials and natural ventilation.



Conclusion

The direction and intensity of the wind has a great influence on the design of buildings, therefore, the information about the "wind flower" is necessarily stored in the projects. With this information, effective methods of natural ventilation of the room are designed to reduce the negative impact of the wind on the structural elements. Due to the two types of pressure, it allows natural ventilation. Air circulation plays an important role in the operation of living rooms, kitchens, utility rooms. Knowing the information about the "wind flower", the designer can design the dimensions of windows (windows).

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