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SOME DISADVANTAGES OF THE ARCHITECTURAL DESIGN OF RESIDENTIAL BUILDINGS AND THEIR SOLUTIONS

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ABSTRACT

Currently, creativity is developing rapidly. But, unfortunately, there are drawbacks in the construction industry:Climatic conditions, underground geology and wind direction must be taken into account when designing medium and high-rise residential buildings, especially in the construction of residential buildings. Also, residential buildings are built without the use of external enclosing structures, entrances and other elements that protect them from excessive sunlight. On improving the design of residential buildings, taking into account the above factors.

KEYWORDS: *Orientation, Temperature, Operation, Dew Point, Hygroscopic Humidity, Condensation*

INTRODUCTION

5-storey houses built in 2018 on Bukhara Avenue, Kagan District, Bukhara Region.

When designing protective devices for buildings in the climatic conditions of the Bukhara region, it is necessary to take into account the environment and humidity of the device. The reasons for the formation of moisture, the moisture content of external barrier structures are inextricably linked with the physical properties of heat. For this reason, the moisture content of external barriers is also included in the topic “Special architectural issues”. Moisture is measured in two different units: g/m3.

Since water is in a gaseous state, it will have pressure. Therefore, in the block pressure: Pa can be expressed in N / m2. Relative humidity is the ratio of the amount of water present in the gaseous state in a volume of 1 m3 to the maximum possible amount at a given temperature. Relative humidity is expressed in%:

 = E e 100% e- amount of water in 1 m3. E is the maximum ability of air to trap water vapor.

Relative humidity determines how much water vapor is in the air at a given temperature. Air's ability to trap water vapor to its maximum depends on temperature. Condensing temperature is defined as the temperature at which condensation forms during the subsequent cooling process.The body of building materials and external barrier structures are naturally and to a certain extent influenced by the bulk density, thermophysical and other properties of this building material. It is known that the higher the moisture content of the building material, the greater its thermal conductivity.Therefore, when designing external enclosing structures, it is necessary to take measures to protect them from the effects of natural external moisture, as well as to use building materials with low humidity, that is, with low moisture absorption, not only thermal, but also physical and moist.taken into account. need to get. Building materials with high humidity are also considered sanitary. First of all, this material, along with an increase in the humidity of the air in the room, creates wet spots and mold on the surface of the two roofs of the walls. This leads to spoilage of food, the spread of various diseases.Secondly, the strength of these building materials is low, they are not resistant to external influences and are not durable for a long time. To carry out an engineering calculation of the moisture content of external enclosing structures and in the process of using these building materials to ensure moderate climatic conditions, it is necessary to determine the reasons for the state of moisture in them.

The reasons for the appearance of moisture in the building material:

1. Technological moisture in construction is moisture generated during the preparation of building materials and the restoration of a building or equipment.

2. Moisture passes through the floor. This moisture passes through the soil through the capillary draft into the walls. This humidity can rise 2-2.5 m above ground level in the wall. An example of this is the architectural monuments built in Samarkand in the IV century, including the Rukhabod mosque. If the walls and foundation are well covered with a moisture-proof layer, the moisture in the soil will not affect the moisture in the walls.

3. Moisture passing through the atmosphere. This moisture, along with exposure to wind from blindness and rain, affects the outer barrier structures. To prevent this effect of moisture, it is

necessary to build a protective layer of low-permeability or moisture-insulating material on the outer surface of the external barrier structures.

4. Humidity due to environmental influences. This moisture is generated during the operation of the building and mainly affects the walls and floors in the case of steam and water in workshops of industrial buildings, domestic utility buildings. To prevent exposure to this moisture, the surface of the walls and floor is protected with a layer of ceramic and glass tiles.

5. Hygroscopic humidity. The process of formation of condensing moisture is inextricably linked with the thermo physical state of external barriers. Condensation moisture often causes an increase in the moisture content of the outer barrier and the building materials in it. One of the conditions for the formation of condensing moisture is that, as is observed in nature, the actual elasticity of water vapor in the body and surfaces of the structure changes with changes in the outside air temperature. As a result of these abrupt changes, the true elasticity of water vapor is equal to the maximum elasticity of water vapor at a given temperature point, and dew drops appear in this short period of time. hose water droplets increase the moisture content of the structure. The temperature during the period of time during which water droplets form is called the dew point temperature. If the surface temperature of any building material drops sharply and the surface temperature is below the dew point temperature without changing the air humidity, water droplets similar to dew will form on the surface of that material. This condition is called the condensation humidity condition. Condensing moisture from building material surfaces and external barriers is slowly absorbed by the building material body over time, increasing the relative humidity of the structure. Moisture condensation can be observed with a sharp decrease in the temperature of the surfaces of external barrier structures. This condition is observed in the corners of the outer walls, in the section of the cornice, at the junction of the walls with the plinth and at the junctions of the panel walls with each other, as well as at the junction of the walls with the window. The process of formation of condensation moisture on the surface of external barrier structures depends on the following factors: 1) titsh> tb - if condensation moisture forms only in the corner of the external barrier; 3) ti>tsh>tmin - from time to time condensing moisture forms when the temperature of the inner surface of heat-resistant structures decreases. In winter, condensation moisture can often be observed to form on the outer surface of external barrier structures. The main reason for this is that after a strong cold, the air heats up sharply or the warm air cools down sharply. This situation can be observed on the outer surface of unheated building structures, on the surface of columns, bridge structures and sculptures. The temperature of the inner surface of the barrier, taken into account in the engineering calculation of the moisture state of the outer barrier structures, should not be lower than the dew point temperature. To prevent the formation of condensation on the inner surface of external barriers, it is necessary to dramatically increase air exchange in the room and reduce air humidity. In addition, the temperature of the inner surface of the barriers must be above the dew point temperature. This is achieved by increasing the thermal conductivity of the outer barrier or decreasing the thermal conductivity of its inner surface. If the air humidity in the room is high and approaches 90-100%, it is difficult to prevent the formation of moisture condensation on the inner surface of the outer barrier, etc.) layer.

Housing construction has a long history. From the very beginning of humanity, he built a shelter to protect himself from enemies, predators, cold and heat, and housing was a key factor in a

person's rest and work. Over time, the function of housing has improved and expanded. The architecture of housing has been adapted to the social conditions of society, the spirit of the times and other conditions. From a simple tent or cave to our time, it has turned into a modern dwelling, that is, an object ennobled with modern furniture. From the beginning, it was very difficult to access housing due to the lack of labor and building materials due to the helplessness of the economy. Therefore, then the question arose about the construction of housing and communal services. A special feature of conventional intermediate houses is that this is achieved by placing several families in rooms in the same house. That is, each family is placed in one room through a corridor or corridor. The kitchen, bathroom and toilets were common here. Of course, this type of house is not very comfortable, but these houses partially helped to solve the housing issue during that difficult period. That is, homeless families managed to move into such houses. After the restoration of the national economy, new types of housing were built. That is, ways have been developed to accommodate families not only in rooms, but also in apartments / flats /. At the same time, each family was provided with separate apartments. These houses, unlike the previous ones, had a separate toilet, washbasin and corridors. This has created more amenities for the population than previous common lounges. But here the principle of moving from room to room began to be applied. By 1955, instead of moving apartments from one apartment to another, a separate one-room apartment was created for each family member. Instead of overlapping rooms, structural units of multi-room apartments with separate rooms have been developed. The formation of any housing was greatly influenced by the geographic environment. For example, in northern-built houses, the interior of the apartment was protected from the external environment, because here the main requirement was the opposite - to protect the houses from heat and overheating. It was also necessary to connect the interior of the house with the external environment. Thus, on the basis of conflicting requirements, the structure of the structure of the northern and southern houses arose, which were completely different from each other.

National culture and customs also influence the structure and diversity of housing. Therefore, even if houses in the south with the same climate are similar to each other, they will change in accordance with the history and customs of the locals. Consequently, the Traditional settlements of the Uzbek people were adapted to their climatic conditions, level of culture, customs and artistic traditions.

Housing construction in Uzbekistan has a long tradition.

Basically, these houses are divided into three types: houses built in the style of Bukhara, Fergana and Khiva.

Bukhara houses were very developed during the feudal period and were densely built up, they were built opposite the courtyard. The rooms were one- and two-story. They were built around the courtyard.

The aforementioned national houses have been very well adapted to climatic conditions with simple equipment and methods.

Based on the above factors, we will give an example of the disadvantages and advantages of the orientation of residential buildings.

Figure 1: Direction of solar orientation in summer and winter.

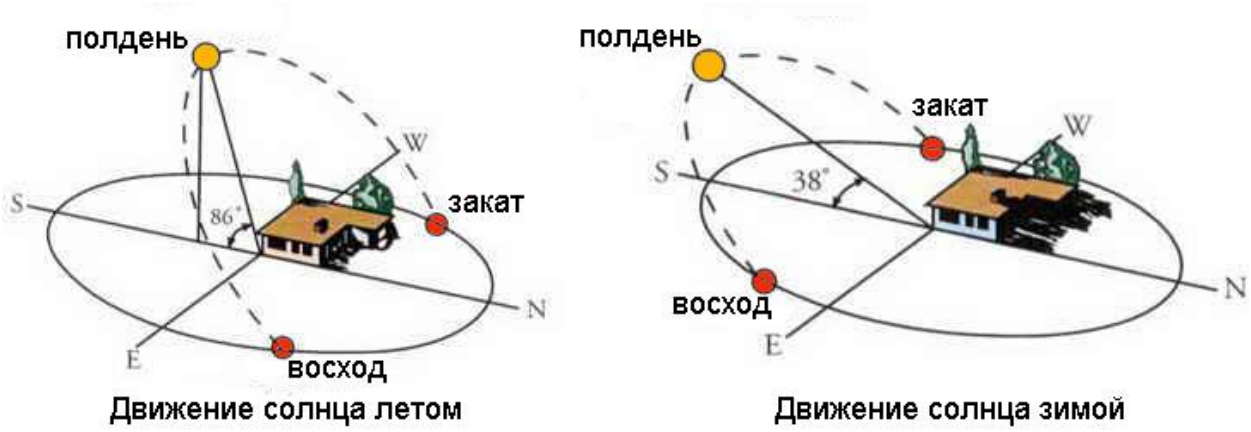

Figure 2: Aerial survey showing the precarious location of residential buildings in their current state.

Figure 3: Aerial survey of residential buildings in standard position versus orientation.

Figure 4: Typical Oriented Enclosure Layout

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