ARCHITECTURE OF MONUMENTS OF SHAHRISABZ CITY
(TIMURID PERIOD)

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Annotation: The article discusses the physical and mechanical characteristics of building materials and foundation soils, determines the assessment of the technical condition as a result of an integrated approach to the engineering problems of the Oksaroy Palace in the city of Shakhrisabz.

Key words: Oqsaroy, engineering analysis, damage, technical condition, building structures, emergency roof, deflection, sinking.

Introduction. Uzbekistan, with its rich historical and cultural heritage, as well as its richness in architectural monuments, occupies a significant place among the countries of the world. These architectural monuments, their blue domes, elegant roofs, colorful tiles, magnificent towers are great works created by human hands and make each of us proud. It is the sacred duty of each of us to pass them on to future generations.

Amir Temur built one of such architectural monuments, the palace known to the world as the Oqsaroy, in his native Kesh. The Oqsaroy building is the largest and rare monument among the architectural monuments of the XIV-XV centuries.

Since the construction of the Oqsaroy, many tourists have mentioned this magnificent building in their diaries.

Rui Gonzalez de Clavijo, the ambassador of King Charles III of Spain to the palace of Amir Temur, gives interesting information about the first appearance of the Oqsaroy: “The next day, Friday (August 1404), the ambassadors were taken to a large palace built by order of the king. It is said that they have been working here every day for twenty years. Even now there are many masters working. The entrance to the palace is very long and the gate is very high. At the entrance, on the right and left sides, there are brick arches decorated with tiles and various patterns. At the bottom of the arches are small rooms without doors, and their floors are covered with tiles. This covering was made so that people would sit here when the king came to the palace. After the big gates, there is another gate. Then there is a courtyard lined with white stones and richly decorated timbers. Through the courtyard passes the largest building of the palace. At the entrance to this building is a very large and high door, which is richly decorated with gold, lavender and tiles. This is the entrance to the rectangular-shaped lobby through the door. The walls of the lobby are decorated with gold, lapis lazuli and tiles, and gold water is poured on them. From here the ambassadors are taken upstairs. There

are so many rooms here that it is impossible to describe them all at once. All the decorations here are made of gold, lapis lazuli and precious stones, which even the masters of Paris can admire. ” [4].

The architectural monument is designed in the style of a palace and was used in the conduct of state affairs during the visit of Amir Temur to Shahrisabz.

Relevance. According to the results of archeological research on the architectural monument, its real appearance consisted of a complex of residential and public facilities. Today, the main entrance roofs of the architectural monument have been preserved (Figure 1).

Figure 1. Architectural monument to Shahrisabz.

The construction of the Oqsaroy was carried out in 1380-1404 on the initiative of Amir Temur. According to initial sources, its height was 74 m. Today, only two separate roofs, 35 m to the east and 38 m to the west, have survived from this majestic structure. For the construction of the monument, an area with a flat relief, with a primitive surface, was selected. The foundation of the building is ribbon-shaped, and the choice of its shape was based on the distribution of the mass of the building to the ground. In historical monuments, a trapezoidal, curved surface was used to increase the surface area of the foundation. The depth of the foundation is 3-3.5 meters, and the material is rock.

It is mainly made of natural stones. The lower part of the foundation is made of large and small stones in a ribbed mixture (na kyrovom rastvore). The upper part of the foundation is made of baked brick in a gypsum mixture (na ganchkhakovom rastvore). According to historical sources, baked bricks have been widely used in monuments of Uzbekistan since the IX-X centuries. According to the sources, before the construction of the Oqsaroy arch began, humdon was built to make ganch, baked bricks. The preparation of building materials required a certain amount of hard work. Prolonged processing of the soil (freezing, washing, re-mixing with a hoe) dramatically improves the quality of raw materials.

Materials with the same or similar physical and mechanical properties were used to ensure equal strength in the construction of the monument. The main building material is baked bricks, which are assembled in a special mixture - gypsum. The bricks used in the construction of the monument are square in shape, the sides - from 24 to 28

cm, the thickness varies from 3 cm to 5 cm. According to the studies conducted on the samples, the coefficient of adhesion of the brick and the mixture is 50-150 KPa, the brick mark is 75-100, and the mix mark is on average 50. According to the current normative documents (QMQ 2.01.03-96), this corresponds to the calculated resistance (120-180 KPa) for category II brick harvest [2]. The eastern roof has been preserved to a height of 35 m above ground level. The Oqsaroy arch is built of a simple square-shaped brick mixture of gypsum. The brick walls of the roof are in good condition, but the brickwork of the small arch is preserved in an unsatisfactory condition.

The components of the complex are housed around a large conference hall with a roof covered by a dome. The base of the dome is circular in shape, but it is designed to cover the top of a rectangular, square, or polygonal surface area. The polygon, which is the base of the dome, was solved by combining several visible structures to round the surface (Fig. 2).

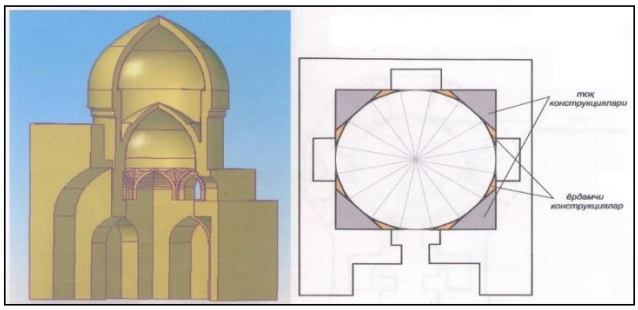

Figure 2. The base of the dome is a circular view.

Conclusion. The advantage of dome and arch constructions is that they give a beautiful appearance due to the artistic demand placed on the building. The surface of the dome is covered with ceramic tiles and shines blue. Based on the climatological considerations of the building, the construction of the dome served to control the movement of air inside the building (ventilation) and to maintain a moderate temperature [1]. Arch constructions have been widely used to alleviate the mass of the building. This allowed the use of materials with low strength but good compression performance as mentioned above. The strength, seismicity and longevity of historical monuments are the result of quality construction and installation work and the size of the structures.

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