O‘ZBEKISTON RESPUBLIKASI OLIY TA’LIM, FAN VA INNOVATSIYALAR VAZIRLIGIABU RAYHON BERUNIY NOMIDAGI URGANCH DAVLAT UNIVERSITETI

“QURILISH VA ARXITEKTURA SOHASIDAGI INNOVATSION G‘OYALAR, INTEGRATSIYA VA TEJAMKORLIK”

УРГЕНЧСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ ИМЕНИ АБУ РАЙХАНА БЕРУНИ

РЕСПУБЛИКАНСКАЯ НАУЧНО-ПРАКТИЧЕСКАЯ КОНФЕРЕНЦИЯ «ИННОВАЦИОННЫЕ ИДЕИ, ИНТЕГРАЦИЯ И ЭКОНОМИКА В ОБЛАСТИ СТРОИТЕЛЬСТВА И АРХИТЕКТУРЫ»

IN THE NAME OF ABU RAYHAN BERUNI URGANCH STATE UNIVERSITY

“INNOVATIVE IDEAS, INTEGRATION, AND ECONOMY IN THE FIELD OF CONSTRUCTION AND ARCHITECTURE”
SCIENTIFIC AND PRACTICAL REPUBLICAN CONFERENCE

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To‘plamga kiritilgan maqolalar mazmuni, ilmiy salohiyati va keltirilgan dalillarning haqqoniyligi uchun mualliflar mas’uldirlar.

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INNOVATIVE TECHNOLOGIES IN THE STUDY OF ARCHITECTURAL AND CONSTRUCTION TRADITIONS OF ENGINEERING ARCHITECTURE OF Khiva

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Annotation

To identify the technical condition of the structures of the madrassah and minaret of Islam Khoja, located in Ichan-Kala, Khiva, an engineering survey of its supporting structures was carried out. The minaret is the highest in Khiva. This article addresses the issue of earthquake resistance of the Islam Hodge minaret. Rather, on the basis of the achievements of modern construction science, the structural solutions of the above object are subjected to engineering analysis. An attempt is made to extract, from the point of view of the seismic stability of the structure, something common from such complex situations of ancient times and building rules that have formed in the present.

Field monitoring studies of the architectural monuments of Khorezm showed that the ancient master architects were familiar with the very diverse destructive effects of earthquakes. Their original techniques and constructions, seismic protection will undoubtedly interest the widest circles of architects, civil engineers and restorers.

Keywords

research, minaret, monument, brick, seismic, technical condition, Ichan Kala, ancient architects, madrassas.

Khiva is 2500 years old the city’s anniversary was celebrated in 1997 on a global scale. Museum reserve "Ichan Kala" in 1990 by decision of UNESCO included in the number of 40 cities in the world whose cultural heritage is the property of world civilization. Therefore, each architectural monument is not only a part of religious architecture, but also a work of art in which the already achieved architectural and construction experience was concentrated and the master's handwriting was manifested in the framework of these works. The Khiva school of architecture was able to successively create an original, original and integral world of local architecture. Khiva architectural monuments mainly belong to the XVI-XX centuries. [1]

The minaret of Islam-Khoja erected in 1908-1910. Its surface is treated with ornamental strips of colored glazed bricks, interspersed with polished brick masonry. Four-arched lamp; lancet openings barred with ceramic panjara. In 1997, this 10-part dome was lowered to the ground, painted with gold paint and repaired in the places where it was pierced by a bullet.

We conducted research on measuring the height of the minaret by Islom Khoji using modern equipment (Fig. 1). For this, all means were used (tape measure, ruler, tablets, etc.) and Theodolite 2T2, a laser distance meter DLE 50 BOSCH. The work on measuring the height of the minaret by Islom Khoji was carried out by the geodetic method in several stages. The dimensions of the minaret: the diameter of the base is 9.5 m., The height is 50.50 m.

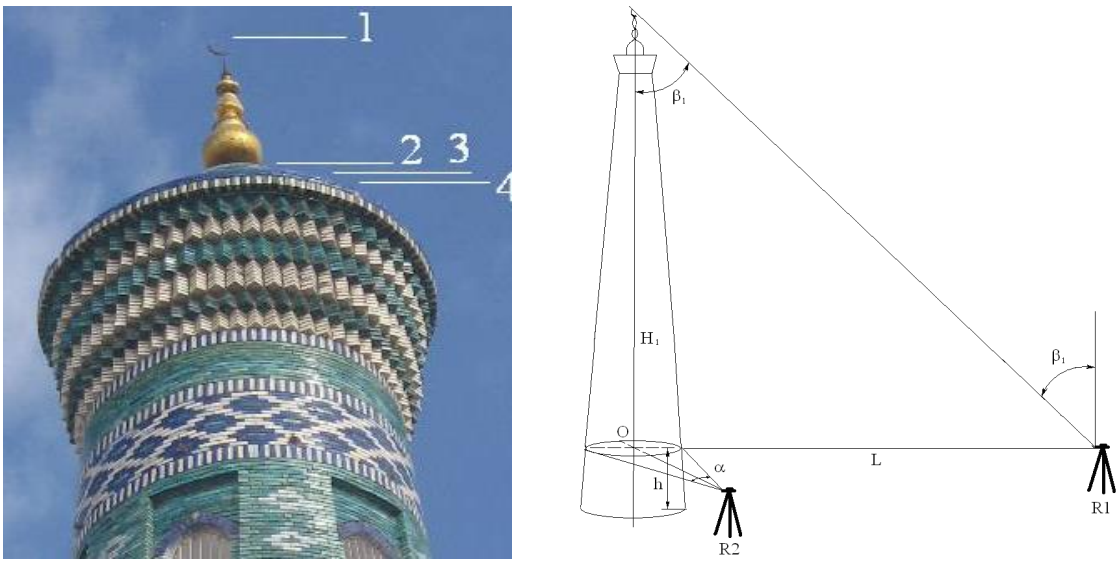


Figure 1. Methods of geodetic measurement

A comprehensive study of the rare heritage of ancient masters, seismic resistance methods that were used in construction and architecture, is a requirement of the time. In the process of laying the pit, the foundation of the minaret was completely studied (Fig. 2).

Figure 2. The process of studying the foundation of the minaret by Islom Khoji

Studying the technical condition of the foundation of the minaret, which has not yet been studied, we, scientists, seem to have once again discovered for ourselves ways to build this attractive and magnificent minaret. Since the foundation of this minaret is very complex and durable. The most amazing thing is that from the moment the minaret was built to the present (within 110 years), it has not received any damage from external factors. This foundation is built of burnt (square) brick and

consists of 4 levels. It is set on a special platform in the form of « tapes », bricks laid on ganch and cement mix. In the course of research, we also found that the shape of the platform is built symmetrically in 2 forms, i.e. its northern and southern sides look like a “triangular ribbon”, and the eastern and western sides are made in the form of “four coal ribbons”.

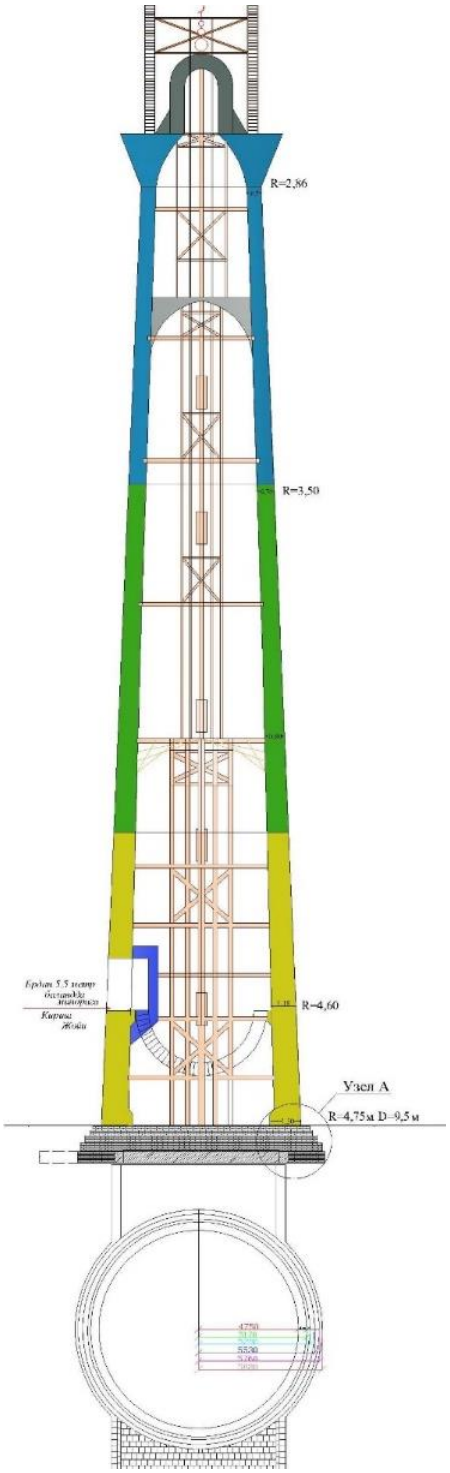
The soil of the minaret, Islom Khoji, after leveling (circle diameter - 18 meters) was covered with special clay plaster. This, firstly, ensured the protection of the foundation from the aggressive effects of groundwater, and secondly, due to the highly plastic properties of this clay layer, a reduction in seismic effects was achieved. Analyzing the constructive solution of the minaret, you can see that at a height of 1.0 meters from the ground level a waterproofing and seismic insulation layer of marble blocks 18-19 cm thick is laid. This is a reasonable solution, i.e. marble blocks used in the reconstruction of the minaret acted as a seismic insulating sliding layer during earthquakes.

It is currently unknown the exact method by which ancient architects calculated strengths and the peak of theoretical knowledge that they achieved. But during construction they paid special attention to the interaction of the base and the foundation, on which the arising seismic loads on buildings or structures during earthquakes depend. In order to strengthen the foundation soil, the builders, before building the foundation of the building, reached the maximum precipitation and compaction of the soil using the method of multiple fillings of the foundation pit with water. This prevents uneven subsidence of the base and uneven distribution of seismic forces along the length of the foundation from the side of the base. [2]

During the construction of the Islam Khoja minaret, masonry was applied in horizontal and vertical rows. Conventional masonry in horizontal rows, in which the brick works mainly on bending, ensures the transfer of concentrated force to a platform with a width not exceeding the height of the masonry layer. In masonry "on the edge", the brick mainly works on compression. In this case, the strength of the material is used to the maximum, the working conditions of the masonry are

improved. In addition, the masonry "on the edge" has a high antiseismicity. Vertical joints between the bricks, in this case, were made using mortar. Such walls have more high elasticity, which is important in ensuring the antiseismic properties of the object.

The obtained results as an innovation play an important role in construction and architecture. All drawings of the minaret in all necessary sections are carried out and put into circulation when preparing projects using ICT (Figure 3).



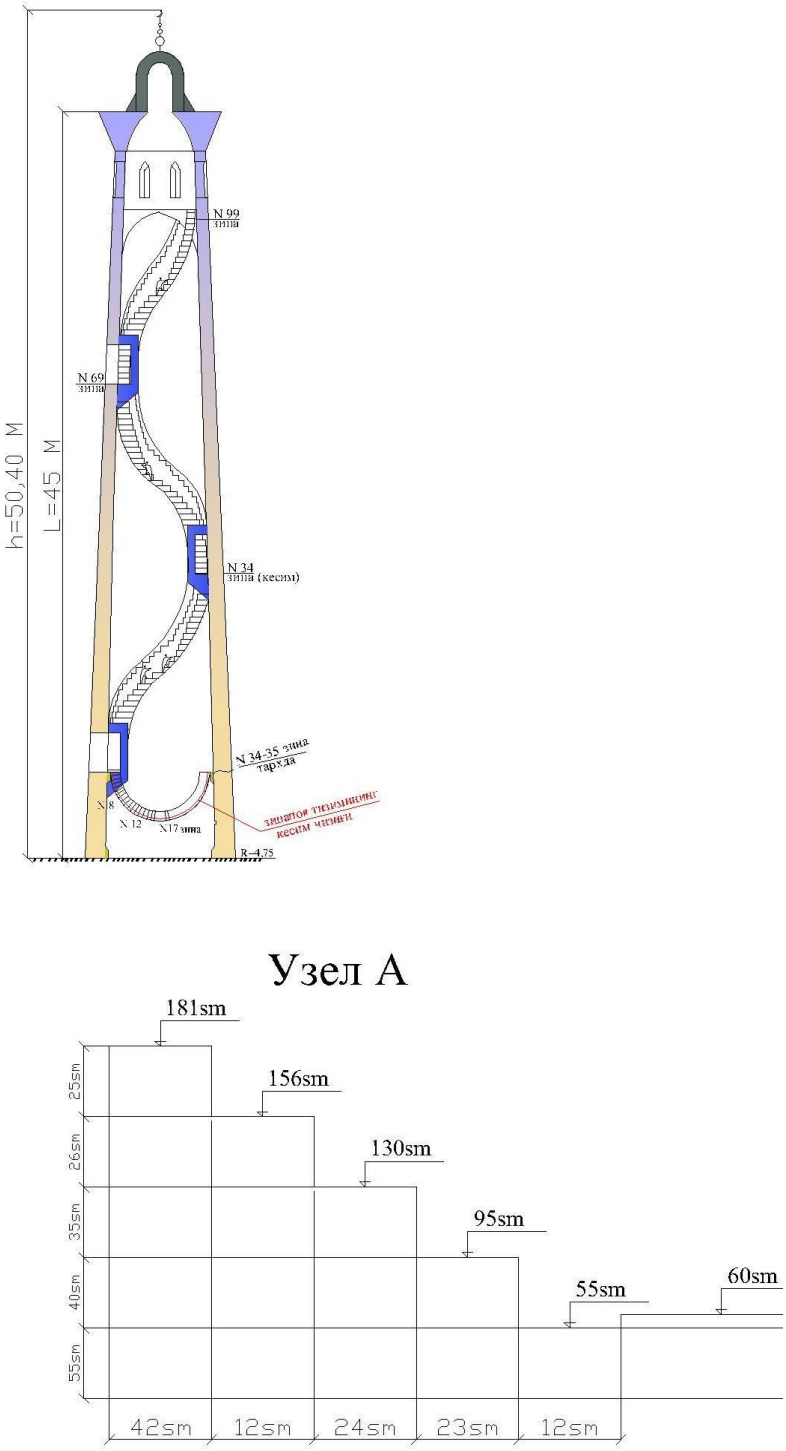


Figure 3. Sectional view of the minaret and foundation by Islom Khoja, drawn up using ITC

In conclusion, it can be said that the minaret Islom Khoji, which is directed upwards in ancient Khiva, called the " open-air museum ", is, in its significance and form, an object of high architectural and construction art and gives a peculiar beauty

to the city. For many centuries now, it has withstood various negative environmental influences.

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XVIII–XX ASRLARDA QORAQALPOG‘ISTON ME’MORCHILIGI VA TIPOLOGIK XUSUSIYATLARI

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Annotatsiya

Mazkur maqolada XVIII–XX asrlarda Qoraqalpog‘iston hududida qurilgan va hozirgacha saqlanib kelayotgan sufiylik maskanlarining tipologik xususiyatlari hamda ularning bugungi kundagi holati tahlil qilinadi. Tadqiqotda mazkur yodgorliklarning tarixiy jarayondagi o‘rni, diniy-ma’naviy hayotdagi funksional vazifalari, arxitektura shakllanishi va tipologik ko‘rinishlari yoritiladi. Shuningdek, ularning zamonaviy ahvoli, mavjud muammolari, ta’mirlash va konservatsiya jarayonlari, arxitektura loyihalarini o‘rganish va tahrirlash masalalari ilmiy jihatdan tahlil etiladi. Ushbu maqola orqali Qoraqalpog‘istonning XVIII–XX asr sufiylik yodgorliklarini keng qamrovli o‘rganish va ularni saqlab qolish muammolariga e’tibor qaratiladi.

Аннотация

В данной статье анализируются типологические особенности суфийских святынь, построенных на территории Каракалпакстана в XVIII-XX веках и сохранившихся до наших дней, а также их современное состояние. В исследовании освещается роль этих памятников в историческом процессе, их