



BEATEN CLAY-PAHSA WALL METHOD IN KHOREZM OASIS CONSTRUCTION AND CONSTRUCTION TECHNOLOGY (BASED ON ETHNOGRAPHIC RESEARCH)

Salaev Ikhtiyor Bakhtiyorovich

Basic Doctoral Student (PhD) of Urgench State University, Urgench, Khorezm, Uzbekistan

ABSTRACT

The article is devoted to the architectural study of the basics of beaten clay-pahsa method and construction technology in the construction of the Khorezm oasis and is based on field research. The article analyzes the works of domestic and foreign ethnographers and architects, research work in chronological order.

KEYWORDS: *Architecture, clay-pahsa wall, clay, master, foundation, hashar.*

INTRODUCTION

Housing construction is one of the main objects of folk architecture and is a major part of urban and rural development. The style of building settlements in the Khorezm oasis is a product of many millennia of cultural development. The roots of housing construction in the oasis are very ancient and differ from other regions by its unique aspects such as its stunning majesty, sophistication, luxury and splendor. The natural climate of the region and the customs and traditions formed over thousands of years and preserved from generation to generation form the basis of these aspects. In this article, we would like to briefly tell about the experience and technology of building a house from a beaten clay-pahsa, which has been used in the construction of housing in the oasis for thousands of years.

THE CONTENT OF THE ISSUE

The construction of houses and buildings from beaten clay-pahsa were a traditional method characteristic of the Khorezm oasis, and was considered cheap and convenient for the population. In an oasis, houses with beaten clay-pahsa walls were mostly built in villages. One of the reasons for this is that clay is cheap and there is an opportunity to prepare it sufficiently. Due to the lack of land in the cities and the difficulty of transporting soil around the city, it has become a tradition to build nigirik (using wood) and double nigirik buildings. The structure of the dwellings with the yard was the same both in the village and in the city. They differ from each other only in their materials (In the city there were mudbricks using

wood, in the village there were walls with beaten clay-pahsa), what they contain (village houses also included farm yards), and in the symbolic execution of their architecture (the fortified courtyards had a defensive character and are surrounded by a bare wall with minarets reminiscent of a castle)¹.

As a result of research by archaeologists and historians in places, castles and fortresses related to the long history of Khorezm, it was found that the construction of castles and dwellings from beaten clay-pahsa walls in this oasis dates back to ancient times. One of the ancient fortresses of Khorezm, the walls of the Johnbozkala ruins IV-I centuries. B.C. are two-story, the lower part is made of beaten clay-pahsa 1m 30 cm thick, and the upper part is made of mudbrick 40x40x10 cm with straw crumb between the mud². Another remarkable example of urban planning of this period was that the outer walls of the ancient fortress of Kuykirlgan were also made of mudbrick and beaten clay-pahsa more than 1 meter thick and about 7 meters high.

Despite the fact that snow and rain, sunlight and winds have destroyed for thousands of years, one of the main reasons why high walls are still proudly standing is the selection and preparation of clay, raw materials for construction. For the construction of these castles, clay soil was taken from 2-3 meters below the ground. This soil is

¹ Mankovskaya L. Khiva. - Toshkent: 1982, - p 19.

² Ahmedov M.K. History of Central Asian Architecture. Tashkent: Uzbekistan, 1995. - p 18.



very clean and pure soil and differs greatly from the soil at the top of the earth in terms of its viscosity, density and purity. The builders first identified the location of such soil and selected it as a mud ditch. The following procedure was strictly followed in the process from preparing the clay in the trench to placing it on the wall. While this process may seem very simple, it has its own unique Khorezmian style, responsible and important aspects. First of all, the area selected as a mud ditch was irrigated even for a year, and the soil was saturated, that is, the brine was thoroughly washed. Then the top 2-3 meters of the soil was removed and the reddish clay soil below it (the Khorezmians call it *tondir mud*) was turned upside down. The soil in the ditch itself was repeatedly turned over until it reached the norm of dirt. Finished clay was transported on carts or passing from hand to hand hundreds of people standing in line to the place where the wall was being built. Бу ерда лойга хом тупроқ аралашмаслиги учун қамиш пўстидан ишланган чипта устига лойни ёйиб, бир қанча киши унинг устига чиқиб то лой қип-қизил бўлиб ялтиллаунча қайта-қайта тепкилашган, яъни лойни меъёрига етгунча пиширишган³. After processing, the clay passes a certain test, and beaten clay-pahsa is considered ready for the wall. The ready pahsa was cut with a sharp shovel and transferred to the master. Pahsa can range in height from 60 cm to 1: 1.2 m and in width from 40:50 cm to 3.5: 4 m and higher⁴.

In addition to the above information, Nurmetov Husanboy, the master of information from Koshkopir, noted the following.

"First, the normal soil area is limited and watered 3 times (until dry). This soil was taken 1-2 km away from the house under construction. Irrigated soil is loaded onto a tractor (even earlier a horse cart). It was then removed from it. The soil brought home was processed. After that, it was watered again. The prepared clay is thrown by the "otarmon" (special throwing person) with the help of a special shovel - "kapcha" to the master. In each of these processes, the clay was processed and matured. That is why 5-6 processed clays adhere well to each other (do not break). Once the mud on the wall has hardened, the scraper master fills in the gaps with a special device. This device was used when the mud was not completely dry. Then the walls are smoothed and polished with a "Kattikirarkapcha". "Kattikirarkapcha" was used to smooth the wall by scraping the beaten clay-pahsa with water 3-4 days after the mud had solidified. If it is worked in a hurry at this stage, the beaten clay-pahsa wall will not come out flat, leaving a wavy ripple mark. However, another feature of the pahsa-walled house is that such houses were cool in the winter and cool in the summer. Given that the Khorezm oasis is very cold in winter and very hot in summer, the construction of pahsa-walled houses is one of the most

effective methods of housing construction for the population⁵."

The following legends are also spread among the people about the construction of a building from a beaten clay-pahsa wall, which has been used in the construction of housing in the Khorezm oasis for thousands of years. "It is said that when Ibrahim Khalilillah, the best of the masters, started to build a house, he wanted to build it all at once (from floor to ceiling). Then the devil came to Ibrahim Khalilillah to distract him, and said:

- "Build the pahsa-walls of the house piece by piece!

Then Ibrahim said:

- "Go, do not distract!" he expelled the devil and began to build a house from the beginning. He raised the walls from beaten clay-pasha and finished it, and when he looked, the house turned out to be from 4 pahsa. That is why it is said that it was customary to raise the house of 4 pahsa.

When our ancestors built houses from beaten clay-pahsa, they started 1-pahsa wide (70-80 cm) and shortened it to 40-50 cm in 3-4 pahsa. This ensured that the house was strong and earthquake resistant. Pahsa houses consist of a "tirnok" (foundation), 4-5 pahsa and a "pardevor". Let's take a brief look at the "tirnok" and "pardevor".

The "tirnok" is the foundation of the house, and this part of the house is built in a unique way. Our ancestors used reeds for the foundation of the house when there was no cement or roof felt. After drying the foundation made of clay at a height of 20-30 cm, it is lined with reeds until it dries. The height of the reed was 50-60 cm. After laying clay on it, it is pressed to 25-30 cm. The fact that the foundation of the house was made of reed increased the earthquake resistance of the house and did not allow moisture to enter the house. These houses stood for 120-130 years without demolition⁶.

The information provided by Matniozov Otabek, another experienced master from Koshkopir, about the products used for the foundation, that is, about the "tyrnok" part of the house, is also very valuable. "Stairs and birch trees were used for the foundation of our main house, which was built 150-160 years ago". The trees were leveled, laid on the ground and covered with beaten clay-pahsa. There was no need to make a "tirnok" for these trees. The tree itself also served as a "tirnok." The reason is that these trees are very resistant to moisture, do not absorb moisture and do not rot⁷."

The "Pardevor" is the highest part of the house and is built after the last pahsa. The main function of this part is to keep the wood used in covering the roof of the

³ Ismoilov S. Development of construction and architecture in ancient Khorezm. *Journal of Civilization Light*. 2/2015. - p 43..

⁴ Durdieva G. Ancient Khorezm cotton pahsa architectural monuments. Khiva. 2017. - p 13.

⁵ Field Records. Information of the informant from Koshkopir X. Nurmetov (audio recordings).

⁶ Field Records. Information (audio recordings) of the informant from Koshkopir X. Nurmetov.

⁷ Field Records. Information (audio recordings) of the informant from Koshkopir O. Matniyozov.



house firm without moving. It also ensures that these woods are not visible from the outside.

Hashar is one of the most widespread traditions of the peoples of the East and has long played an important role in the life of the Uzbek people. Hashar is when many people work together for a common goal⁸.

A distinctive feature of hashar is that it is done for free and gratuitously. In towns and villages, houses were built by hashar. Commenting on the ceremony and its peculiarities in the construction of housing in the oasis, the chief architect of Khiva Matchanov Komiljon noted the following.

"We used to have a tradition. In the mahalla, as they called for the wedding, they also called for hashar: "Today, we go to the neighbor to help (hashar) for pahsa 2.". Everyone had to go. It was impossible not to go. If someone couldn't go, he had to send someone instead. People came to the house from the morning to help. The work was distributed by the age of those who came for support. For example, if a person was elderly, he processed clay. If he was younger, he would topple the clay, and if he was full of energy and strength, he would throw the clay up. But there was one main master who built the house. I witnessed such support when I was working as an architect in Bagat district. An elderly grandfather rises to the 4th pahsa of the house, collects clay and builds a wall. Then this grandfather also makes a "gultarosh"⁹ of the wall. Then I asked this man about the reasons for "gultarosh" of the wall, and I received the following answer. "When the sun falls on the wall on both sides, more than half of the shaved hole remains in the shade. Sunlight falls on 25-30 percent of the pit. As a result, the remaining 70 percent of the shade inside the pit keeps the wall cool and helps keep cool air in the house. For example, if we take the width of the house as 20 meters, then 12-14 meters of it will be in the shade. The wall does not heat up when the sun rises. If the wall is cool, cool air will prevail inside the house as well. That's why the outer wall of the house was made "Gultarosh"¹⁰.

There are various legends among the people that during the construction of the pahsa-walls of Ichan Qala, clay soil was taken from Govukkol near Khiva and as a result a small lake appeared there. One of such legends was told by Salaev Omonboy, a master craftsman from Khiva, about the delivery of high-quality mud for a pahsa-wall: "According to the legends, the population was involved in the construction of the pahsa-walls of the fortress through hashar. People brought clay to the castle on their carts. In order to participate in the hashar, a young man built a new cart. News of the young man who went out to carry the mud in the new cart soon reached the khan's ears. Khan orders to find the young man and beat him with 40 punches

as a punishment. The main reason for the young man's punishment was that he went out to transport mud in a new cart. The reasons for this are as follows: "The wooden planks of old carts are covered with mud, which absorbs water from the mud and hardens. This ensures that the loaded mud reaches the destination in a quality manner. As the planks of the new cart are new, it absorbs the water of the mud added to it. As a result, the quality of the mud is damaged and the water escapes and turns into soil until it reaches the destination. It can be seen that a great deal of attention was paid to the strength and durability of the wall¹¹".

In addition, from ancient times, to ensure the strength of the pahsa-wall, mud mixtures were prepared with the addition of natural and artificial chemicals, such as whey, vegetable broth, straw, animal hair, reed flakes and so on. At the same time, the hydrophobic nature of clay, that is, a decrease in water permeability, was known to builders. They well knew that these factors increase the stickiness of the wall structure material and increase the seismic resistance, and various additives keep the clay composition in a strong, sticky state, ensuring the stability of the wall¹².

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, it should be noted that the requirements of life necessitate the consideration of local conditions in the conduct of construction work, especially in the construction of residential buildings. From this point of view, it is always advisable to take into account local conditions and national traditions in housing construction, to use construction methods that are fully formed and have proven their advantages. To date, dozens of architectural patterns that have arisen directly as a result of adaptation to climatic conditions and taking into account folk customs are being unreasonably forgotten.

⁸ Sattor M. Uzbek customs. - Tashkent: Cholpon, 2007. - B 53.

⁹ Gultarosh - cutting of a pahsa wall deep in the form of a crescent, and processing in the form of a flower.

¹⁰ Field records. Information (audio recordings) of the chief architect of Khiva K.Matchanov.

¹¹ Field records. Information (audio recordings) of Khiva master craftsman O.Salaev.

¹² Durdieva G. Ancient Khorezm pahsa-wall architectural monuments. Khiva. 2017. - p 24.