



## **Adobe structures of Tigranakert in Artsakh.**

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## Summary

On the territory of the Armenian Highland the usage of unbaked bricks in buildings goes back to thousands of years. A classic example of building techniques of stone base and brick walls gives Urartu (Tushpa, Erebuni, Teishebaini, Ayanis). In the systems of antique and Hellenistic reinforcement (Armavir, Artashat) the mass usage of unbaked bricks is presented as well.

The goal of the research is the analysis of new founded unbaked brick constructions of Tigranakert in Artsakh, their forms and measurements, their functions as parts of fortification systems and dwellings.

The results obtained enable us to propose that in the case of Tigranakert due to the rich stone quarry, unbaked brick constructions had less prevalence than in simultaneous Hellenistic settlements.

### Context of the research

Numerous Hellenistic fortified settlements of Armenian Highland and its surroundings (4th century BC-3rd century AD) give us many examples of unbaked brick walls on the stone base. The constructive technique of those constructions derived directly from fortifications of Urartu (9th-7th centuries BC). At the same time, thanks to the abundance of stone material, Armenia is also famous for its stone-made powerful defense complexes such as fortress of Garni, Armavir, Artashat, etc. In this context, the unbaked brick structures of Tigranakert in Artsakh are interesting case for a discussion, which are combined with stone base of up to six meters in height.

### Main objectives

The main purpose of the research is to find out the type of constructive technique of unbaked brick walls adjoined to the stone walls of Fortified area of Tigranakert and their relationship with the stone walls.

### Results obtained

At the end of the research we can conclude that although it is likely that brick walls were built as part of the initial construction, still it cannot be excluded that a significant part of excavated brick structures were added or attached to the stone walls in the Sassanid era (3rd-7th centuries AD).

## Introduction

Classical city of Tigranakert is located in the internationally unrecognized republic of NagornoKarabakh, in Askeran region. This city is located in the Inner Valley of the Highlands' second largest river Khachenaget. It occupies approximately 70 hectares area. The city was founded by the Armenian king Tigran II the Great (95-55 BC) at the end of 90s BC. During the excavations the following was uncovered: the upper part of Classical (antique) Fortified area and its Citadel; the 83 meter-long defense wall separating the Citadel; 450 meter-long rock foundations of the southern walls of Fortified area; the part of northern wall having approximately 220 meter length and 5m height; the First antique area; the early Christian Square in the Central area with remains of two churches (Petrosyan, H., Kirakosyan, L., Safaryan, V., Zhamkochyan, A., Vardanyan, R., Karapetyan, I., Vardanesova, T. The Discovery and First Results of Archaeological Investigation of Tigranakert in Artsakh, 2005-2009 (2012), *Archaeology of Armenia in Regional Context*, Yerevan, Gitutyun, pp. 223-235).

The defensive walls of Tigranakert's Fortified area consists of stone inner parts and supposedly unbaked brick upper parts. It's a constructive technique, classical examples of which could be seen in Urartu. However, Tigranakert walls preserved stone-line with up to 5 meter- height. In some places the restoration of not saved stone-lines gives us an opportunity to make the most height of walls up to 6 meter. This fact shows that the stone inner parts of defensive walls were higher than usual. Perhaps it was due to the availability of stone materials, as the stone quadras (hewn rubble masonry) were cut in the spot.

Unbaked brick additives have not been ratified yet on the walls of Tigranakert fortifications. They would obviously belong to the pre-wall. It is quite possible that the huge part of the brick walls found during the excavations is a result of the restoration. A special layer of flat slabs for the entire length of the basis was created, in order to put the brick lines on the stone base in Urartu fortifications (compare for example with Ayanis, see Harmanşah, Ö. (2009). *Stones of Ayanis: New Urban Foundations and the Architectonic Culture in Urartu during the 7th C. BC. Bautechnikimantiken und vorantikenkleinasien*, Zero Prod., Editor M. Bachmann, Istanbul, p. 191, Fig. 8). Such layers are found also in Tigranakert, but they are verified not on the defensive stone walls, but are adjoined to them. The fact that unbaked brickworks were on the stone walls can be proved by an indicator of a good conservation of stone walls. It can be stated that the remains of the walls found during the excavations in Tigranakert are covered with a thick layer of clay. Such accumulations of clay on slopes of rock hills are impossible to explain without accepting the fact that brickworks on the top of the walls collapsed during the time and "hide" lower stone-made parts. By examining the Sassanian seals found here, the city preserved its defensive and administrative functions in early Middle Ages. It can't be excluded that the bulk of brick segments were made at that time. Anyway, according to nowadays data, the walls had originally unbaked brickworks. The same cannot be said about the structures inside the Citadel. At least, in four sections along the stone walls the excavations ratified the simultaneous significant portions of unbaked brick walls. The letters were put on platforms of small stones and slabs (Fig 1). Taking into account the above-mentioned circumstances, starting the first steps of observations in the Fortified area of Tigranakert the issue of usage of unbaked brick and clay is particularly in the center of the attention. However, we should note that though the remains of unbaked bricks were seen since the beginning of the excavations, only in 2009 we could clearly validate the remains of unbaked brickworks. Later, in parallel to the opening of northern walls the remains of brick walls became almost regular. In addition to many unique manifestations of complete or partial bricks are being ratified in almost every levels of clay layer. Also, it can be stated about the regular and large six layers of unbaked bricks (up to 5 meters high).

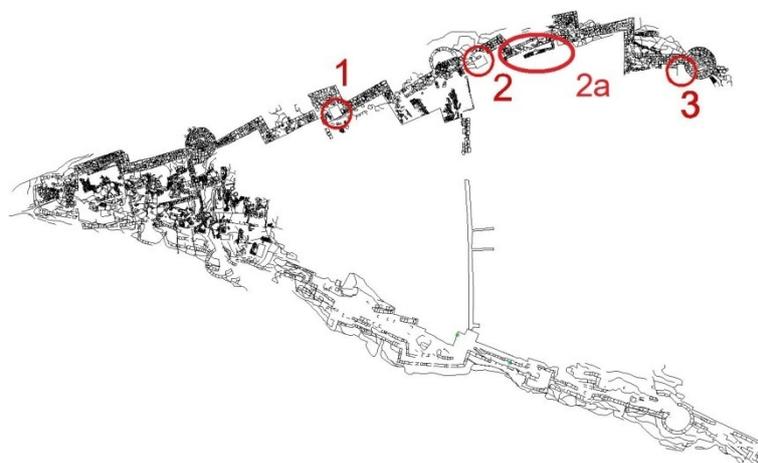


Fig. 1 Brick parts near the northern defensive wall.

First of those was validated in 2009-2010. It is located on the first rectangular tower (Fig.2). We could fix the following measures of the brick wall: in the West, with North-South direction - 4,70m, the height 1m; from West to East - 5,80m with 0,80m height; with 4,5x4,5m<sup>2</sup> surface and 1,0m height mass consisted of unbaked bricks, where the sizes of some bricks are visible (height - 12, 13 cm, length - 42, 43 and width). Six rows of bricks were uncovered in the Western part of the wall. Its horizontal range has 1,8-2 cm length. The vertical range ties - 3 cm. Here we deal with two issues. The first one is related to the height of the first brick wall which is circa 1,5 m. The second one is that the unbaked brickworks go on and off the tower. It doesn't intersect equally with the pitch. Before the additional research is done, it can be verified that its belonging to the initial wall need to be proven.

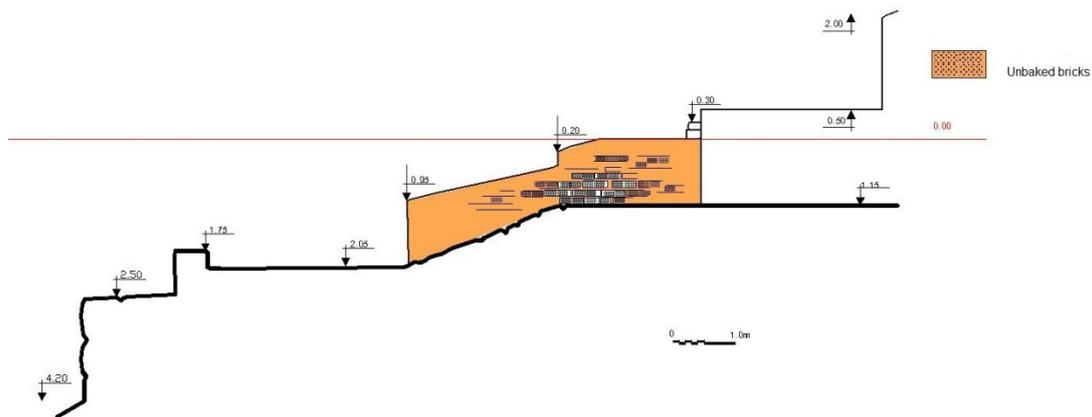


Fig. 2 First rectangular tower, longitudinal section of brick construction.

The part near the second round tower was excavated in 2012 (Fig. 3). It is perpendicular to the defensive wall and almost touching it. It is also noteworthy the foundation stone: broken stones, piled on the basis of a relatively standard set in an array of sizes 3,4 x2,7 x2,5 m. Here it was possible to specify the latitude of some bricks. This founded sector shows that there have been many rectangular bricks (44 x 32 x 12, 44 x 32 x 15, 43 x 32 x 12, 41 x 32 x 12, 35 x 33 x 12 cm) and square (32 x 32 x 12 cm) bricks. It is also noteworthy the usage of vertical logs. The traces of one vertical log have been preserved. Hardly this wall could lean on the defensive wall, because the brick wall would block the movement along the defensive wall. Possibly it was attached later.



Fig. 3 Brick section near the second round tower.

The part attached to the second rectangular tower is also very remarkable (Fig. 4). In this case we can confidently state about a building and not a single wall. Only East-West stretched wall with 7m length and the Northern-Western corner is preserved. By the way, the stone foundation is smoothed approximately. One part of it is put on the clay base, and the other part is just on the rock. This corner of the wall is worthy of attention, because it has 4 rows of stone in front of the other one row of the wall. We have the similar picture also for the forth case. In other words, the stone corners of brick building are higher, which obviously strengthened the structure. One wall of this building was stretching parallel to the defensive wall, while the other part of the building was increasing in the interior of the fortress.



*Fig. 4 Brick section near the second rectangular tower.*

This section was founded in 2013 between the second round and rectangular towers. First of all, it is worth noting the regularity of stone foundation, the usage of longitudinal hewn stones and considerable height (1.30 m).

Brick wall on the stone base near the third round tower was unearthed in 2015 (Fig 5). Comparing with the defensive wall, the base is made by smaller stones. The top row of the base was made by smoother stones. It was covered with the clay layer and added brick upper wall. In the front of the brick wall toward the defensive wall, it can be clearly seen five rows of bricks. The brick wall is put here with 1.3 m height limestone (up to 1.1 long and 0.5 m height). Those limestones are put canonically on the three-layered base. Only the length and the height of bricks could be validated. The lengths are: 42, 43, 50cm, heights are: 11, 13 cm. Attached to this there is another brick wall which was put directly on the rock. As a result, the lines of the rows were curved.



*Fig. 5 Brick section near the third round tower.*

Collected data indicate the fact that the unbaked bricks didn't have standard sizes. Therefore, we can state about more common sizes such as height 12cm, length 41-43cm, width 20-32cm. In Artashat the blocks are also different in their sizes. Frequently met heights are 15cm and 18cm, width in the range of 40-70 cm. Preliminary comparisons of Urartu unbaked bricks give the following picture: prevailing height is 14cm, length 51.8cm, and the width 35cm.

## Conclusion

This research shows that in contrast to the defensive walls, rocks were not worked out for unbaked brick walls. They could have clay and stone bases. As a rule, they are made sloppy. Special efforts were not made also for creating smooth surfaces for the first row of the bricks. The bricks of the same row have different sizes. They are cubes, squares combined with rectangular and flat bricks. Comparing with the regularity and high technique of defensive walls and its stone rows, the brick rows are irregular and ragged. They could hardly carry defensive functions.

The preliminary conclusion is that the excavated brick rows are not closely related to the constructive technique of the originally stone defensive walls. It's more likely that they belong to the early medieval period. This is a thesis, which still needs collecting new data and analysis on the basis of the testing results.

## Bibliographical references:

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## Biographical notices

Hamlet L. Petrosyan is a specialist on Armenian archaeology, monuments and iconography. He is a head of Archaeological mission of Tigranakert in NagornoKarabakh, teaches courses on Armenian medieval archaeology and culture and cultural heritage at Yerevan State University. He has more than 10 books and more than 120 publications on above mentioned topics.

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