



Earth Architecture in Çatalhöyük, Konya, Türkiye

Selin Duran^(✉) and Yesim Kamile Aktuglu

Faculty of Architecture, Department of Architecture, Dokuz Eylül University, İzmir, Türkiye
selin.duran@ogr.deu.edu.tr, yesim.aktuglu@deu.edu.tr

Abstract. Çatalhöyük is one of the oldest and important city in the world because of the use of earth in construction of buildings. It is located at Konya. Çatalhöyük was a very large Neolithic and Chalcolithic protocity settlement in southern Anatolia. It was existed from approximately 9000 years ago. It was inscribed as a UNESCO World Heritage Site. All of the ruins of the buildings are constructed with adobe that earth is stabilized with straw. There are two archeological areas here. They have lots of layers that constructed with adobe. The houses that non-used were filled with raw earth and then new ones were constructed on old ones' wall. In this paper, all of the ruins will be examined through the photos of today, in 2021 and their construction styles, socioeconomic situations for in the city. The adobe ruins (walls and buildings) will be disgussed through past's and today's situations.

Keywords: Adobe · Çatalhöyük · Earth buildings · Raw earth · World Heritage Site

1 Introduction

Earth; is one of the most important building materials that have been used since ancient times. The factors that using this building material a lot are that soil and water (including additives used) can be easily obtained from or near the construction area and can be prepared practically in the construction area (Naumann 2007).

In the Early Neolithic Age in Anatolia (after 7000 BC), the first settlements in Çatalhöyük show the use of adobe. The adobe used were prepared with clay soil mixed with chopped straw or with ungroomed sandy and clay soil (Naumann 2007).

In this study, the usage of adobe as a building material will be examined with examples from history and adobe settlements in Çatalhöyük will be documented with 2021 photographs.

2 What is Adobe? How It Was Used in Anatolia?

In The Encyclopedia Americana (1829), “adobe is sun-dried bricks made of natural clays, especially made in the arid southwestern regions of America and Mexico. Clay

mixed with grass or straw is molded to the desired shapes and sizes and dried under the sun for a week or two. It is used in the construction of a mortar consisting of the same material. Adobe, which was used as an early construction material in Assyria and Egypt, is still used in Japan and China.”

Adobe is a building material obtained by pouring the soil containing clay in appropriate proportions into molds (Fig. 1) which are blended with water and additives and kneaded and soaked and dried in dry and open air (Duran 2016).



Fig. 1. Molding of adobe in Konya (Duran 2016).

In Troy (layer 1), clay soil mixed with crushed straw was used in adobe bricks, and a similar, finer-grained soil was used as mortar connecting adobes. In Boğazköy, clay soil was kneaded with chopped animal feed and tiny stones. The adobe bricks were soaked with some kind of slime milk before they were placed and placed without mortar. The main characteristics of the excavations in Hacilar are the presence of rectangular adobe structures with red plastered floors (Mellart 2002; Naumann 2007).

3 Çatalhöyük

In the Early Neolithic Age in Anatolia (after 7000 BC), the first settlements in Çatalhöyük show the use of adobe (Fig. 2). The adobes used were prepared with clay soil mixed with chopped straw or with ungrouted sandy and clay soil (Naumann 2007).

With Eriha in Jordan, Çatalhöyük takes its place among the first attempts of urban development of mankind. The mound was discovered in 1958 by the appearance of adobe walls, broken bones, etc., marked by southwest winds, although most of them were covered with grass on a carcass side consisting of J.Mellart, A.Hall and D.French. It was noticed that it continued to a height of 15 m (Mellart 2002).

Vertical stratification is observed in the settlement (Fig. 3).



Fig. 2. Northern excavation area, Çatalhöyük, Konya (Duran 2021).



Fig. 3. Vertical stratification, Southern excavation area, Çatalhöyük, Konya (Duran 2021).

Surrounding each structure with its own walls as well as the walls of other structures makes these structures more durable than a single structure (Fig. 4). Continuous plastering of the walls from inside and outside has also provided the structures to have a long life against abrasion. The walls, floors and ceilings are plastered with white, thin and sticky clay, known as white earth. Thirty to sixty plaster layers were found in the buildings. It was understood that structures with more layers were used for longer periods. The worn and dangerous structures were demolished by first taking wooden beams carrying flat roofs and roofs and then wooden posts. The average life of a building is determined as 100–120 years (Mellart 2002).

After 5600 BC this settlement was abandoned for an unknown reason and a new settlement was established in the West. It has been lived here for at least 700 years and it was abandoned for an unknown reason without any sign of destruction or attack (Mellart 2002).



Fig. 4. Side by side units, Southern excavation area, Çatalhöyük, Konya (Duran 2021).

In Çatalhöyük, all buildings were built with sun-dried rectangular adobes, reeds and plasters. Since there were no stones, six rows of adobe were used below the base level. Straw-dipped adobe (good condition adobe with unswept sand dipped in layer III) and a black mortar with ash and bone debris were used as mortar (Mellart 2002).

The area of the buildings varies between 11,25 m²–48 m² depending on the need. Mostly (6 m * 4.5 m) they have usable area. As the old walls are used as a base and new structures are constructed in this way, a similar settlement plan emerges in different building levels. Depending on the needs, as a result of activities such as merging and separation in new buildings, building floor plans may differ (Mellart 2002).

The flat roofs are formed by laying straw bundles and laying a thick layer of mud on the two main beams on the walls. The entrance to the house is one of the characteristic features of Çatalhöyük architecture possible from the staircase to the roof. It is thought that the defense requirement may have played an active role in the development of this architecture (Mellart 2002).

4 Conclusions

Adobe is a building material that has been used since the first settled life. In addition, it is possible to see living adobe houses that have users in many of the rural settlements in Central Anatolia. There are traces of adobe settlement dating back to 9000 years in Çatalhöyük. Today in Konya, covered with steel systems are protected and functioned as an open air museum. The transportation to the region is done by a private vehicle and is located in a remote area away from the city settlements. In the prototype of the researched houses, experimental houses were built and exhibited reflecting the socio-cultural structure of the period. In a closed museum, Çatalhöyük history and research findings are exhibited. The excavations at Çatalhöyük are still continuing today. A new settlement is unearthed next to the northern excavation area.

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