Investigation of water installation system in a group of Ottoman Baths

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Abstract

Ottoman baths (hamams) were social institutions that provided the population with communal bathing facilities. Apart from their creative architectural characteristics they included ingenious water installation systems which provided bathing facilities with running water in accordance to Islamic cleanliness rules. It is thought that the technical aspects of these social institutions might be determined through the remaining traces emerging from surveys that will be conducted. The documentation and identification of water installation systems which represent the historical sanitary installation are important as they are in danger of disappearing. The aim of this study is the documentation of the characteristics of water installation systems in a group of baths which represent the Ottoman period cultural inheritance in small settlements of Western Turkey. The water installation system was arranged with a supply of water being brought to the reservoir (water tank) which is a spatial component of the bath, distribution of water to various spaces of the bath and carrying waste water outside.

Keywords

Ottoman baths; water installation; cultural heritage.

1 Introduction

Turkish baths (hamams) are one of the significant building types of the Seljuk and Ottoman periods in Anatolia. During the Ottoman period, except for the main cities baths, a large number were constructed in smaller settlements. Traditional Turkish baths have separate sections for women and men, or have different visiting times or days for women and men. Against the plain and unpretentious appearance of their exterior walls, the Ottoman baths have a dynamic expression with their superstructure consisting of vaults and domes in different numbers and sizes for the general composition of the mass (Figure 1).

Figure 1 - General view of the Düzce Bath

They have plan schemas consisting of row of spaces which are disrobing area (soyunmalik), the warm area (iliklik) and hot area (sicaklik) besides the furnace (külhan) and the water reservoir. Transition elements to the superstructure and their domes and vaults which are pierced by oculi create plastic effects in their spatial perception. Apart from these architectural characteristics, they have cleverly planned water installation systems for their functional requirements. The aim of this study is the documentation and identification of authentic water installation systems in a group of Ottoman baths which have historical and cultural values from the point of the history of building technology in Urla, Seferihisar and their villages near İzmir in Western Anatolia. The studied baths are Double Bath (Çifte Hamam or Hersekzade Ahmet Pasha Hamamı) and Rüstem Pasha Bath in the center of Urla, Kamanlı Bath (Yahsi Bey Bath) in Kamanlı neighborhood of Urla, Özbek Bath in Özbek village of Urla, Great Bath (Büyük Hamam) and Small Bath (Küçük Hamam) in the center of Seferihisar, Citadel Bath (Kaleici Hamamı) in Sigacik neighborhood of Seferihisar, Ulamıs Bath in Ulamıs village of Seferihisar and Düzce (Hereke) Bath in Hereke village of Seferihisar. They are out of use and abandoned because of changes in the life style. According to their architectural features they can be dated to the 15th and 16th centuries. The method of the study is the documentation of the water installation systems in the baths through field surveys and the evaluation of the obtained information. Field studies are based on sketches, measured surveys and photographic documentation.

2 Analysis of water installation system

In the studied baths, the water installation system can be divided into three sections which are supply of water from a water source to reservoir, distribution of water to various spaces from the reservoir and carrying waste water outside. Supply of water, brought into the reservoir and distribution of water to various spaces of the bath constitute the clean water system while discharge of waste water constitutes the waste

water system. Reservoir, pipes, basins, waste water channels and toilet are the essential elements which compose the water system (Figure 2).

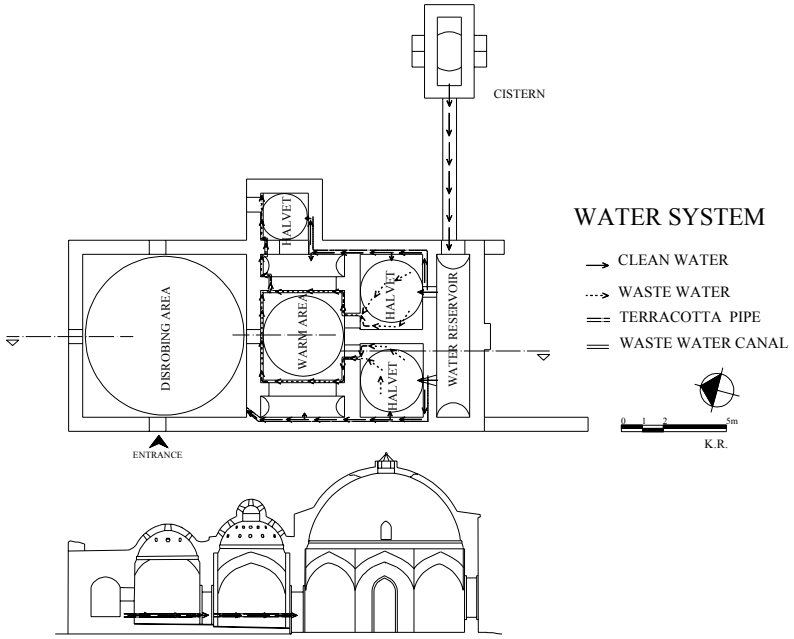


Figure 2 - Düzce (Hereke) Bath, analysis of the water system

2.1 Clean water system

In the studied baths, the needed clean water is supplied from natural water sources like stream, brook, river or well and cistern (Figure 3). In the water system of Turkish baths, it is known that the clean water brought to the bath spaces passing through a distribution section was a stone trough called “maslak” or “maksem”. “Maslak” was usually in the form of a perforated stone coffer which was placed in a niche in the height of a person in the wall of the reservoir. The water which was supplied to the “maslak” has been transmitted to the reservoir through one of the holes at the bottom of the “maslak” and through another hole to the fountain in the disrobing area and warm area [1, 2]. However, this type of arrangement has not been determined in the studied baths. If the reservoir was arranged as two sections for cold and hot water; the cold water was collected in the reservoir, then it was distributed by terracotta pipes to the appropriate spaces (Figure 4). However, if the reservoir was arranged as one section the distribution of cold water was provided directly by terracotta pipes to the spaces. The clean water system which was arranged for hot and cold water exhibits differences. When terracotta pipes which have been placed along the walls are in one line, only the hot water system, if there are two lines, the cold and hot water systems were arranged. In Urla Double Bath, Kamanlı Bath, Düzce Bath and Ulamış Bath, terracotta pipes are placed in two lines for cold and hot water, while in Seferihisar Great and Small Baths, Sıgacık Kaleiçi Bath and Özbek Bath; pipes are placed in one line for only hot water. In Rüstem Pasha Bath, the original water system has not been determined due to the floor level filled with earth.

Figure 3 - Düzce Bath, the cistern and water channel

Figure 4 - Urla Kamanlı Bath, the terracotta water pipes

2.1.1 Cold Water System

This system was analyzed under two headings as distribution of cold water to the bathing spaces collecting in a separate section of the reservoir or distribution of it by terracotta pipes placed along the walls without collecting in the reservoir.

Distribution of cold water collecting in the separate section in the reservoir: After collection of clean water, which is brought to the bath, in the separate section arranged for cold water in the reservoir, sufficient quantity is transmitted to the hot water section, and a quantity is distributed to the bathing spaces by terracotta pipes. This arrangement was illustrated in Urla Double Bath.

Distribution of cold water, which is drawn from the well or cistern at the outside, directly to the bathing spaces without collecting in the reservoir: Clean water was brought to the reservoir from the cistern or well either by stone channels or terracotta pipes at the upper level of the reservoir. In this arrangement, cold water supplies of both the reservoir and is directly transmitted to the taps running in the basins at the bathing spaces and to the fountain in the disrobing area. Ulamış, Düzce, Kamanlı Baths illustrate this arrangement. The traces of terracotta pipes in the southwest corner of the disrobing area in Düzce Bath, and in the east part of the floor level in Kamanlı Bath point out the fountain which supplied water. In the east wall of the warm area in Kamanlı Bath, there is an opening in a rectangular profile which is in the dimensions of 20 cm. in width and 60 cm. in height and the traces of terracotta pipes are seen inside. It may be thought that this opening was arranged for a distribution element which was in the form of perforated stone trough that is generally arranged on the wall of the reservoir.

2.1.2 Hot Water System

Distribution of hot water is done directly from the hot water section of the reservoir. It is sent to the taps running in the basins through terracotta pipes in the walls. When terracotta pipes are placed in one line, the clean water is distributed as hot water.

Hot water section of the reservoir is right above the furnace (külhan) which is located below the regular floor level. The fire in the furnace, which is the heat generating space, heats the water with a concave copper boiler.

2.2 Waste water system

The open channels arranged on the floors of the hot and warm areas for waste water, taking it outside from the warm area or toilet constitute the waste water system. The discharge of waste water from the private rooms of the hot area is provided by inclined floors towards their entrances, from the main space of the hot area and warm area is provided by open waste water channels arranged on their floors (Figure 5). Open waste water channels are arranged along the walls and the bottom edges of stone seats by placing cut stone floor coverings above masonry walls which constitute hypocaust (cehennemlik) to form a stepped channel. Waste water channels are approximately 10-12 cm. in width, 7-8 cm. in depth (Figure 6). Waste water coming from private rooms, pass into the open channels arranged along the bottom edges of the stone seats in the main space of the hot area. They become a single channel in the entrance of the warm area and then either in the toilet in the warm area or from the corner of the one wall outside. In Ulamış Bath, Seferihisar Small Bath, Sıgacık Kaleiçi Bath and Özbek Bath, waste water coming from private rooms was separately transmitted to the channels lying along the bottom edges of the stone seats in the main space of the hot area and sent outside from the corner of one wall. In Düzce Bath, waste water coming from the southern private rooms was transmitted to the channels in the main space of the hot area and discharged from the northeast corner of the third private room outside. In Seferihisar Great Bath, waste water coming from private rooms transmitted to the channels arranged along the bottom edges of the stone seats and then it was conducted to the single channel in the warm area and in the end the toilet (Figure 7). In Double

Bath and Kamanlı Bath, waste water coming from private rooms was channeled through the channels in the main space of the hot area and was carried from the corner of one wall of the warm area outside.

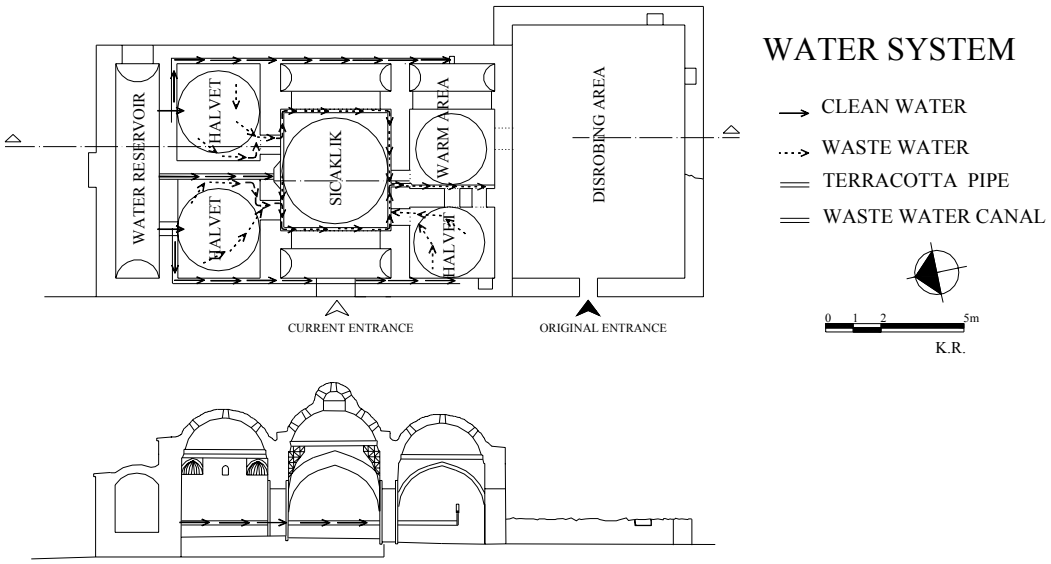


Figure 5 - Urla Kamanlı Bath, analysis of the water system

Figure 6 - Urla Özbek Bath, waste water channel in the warm area

Figure 7 - Seferihisar Great Bath, the toilet in the warm area

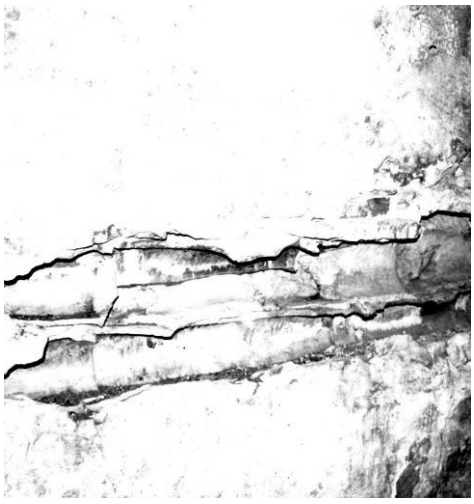
2.3 The elements constitute the water system

The water reservoir, terracotta pipes and basins are the elements of the clean water system, waste water channels and toilet outlets are elements of the waste water system. The clean water system is the distribution of the water through terracotta pipes placed in the walls, from the reservoir to the bathing spaces and sending it to the taps running in the basins (kurna). The reservoir was located adjacent to the hot area after the sequence of bath spaces which are the disrobing area, warm area and hot area. It was arranged as two sections for cold and hot water or one section for only hot water. The rectangular planned reservoir is covered with a barrel vault. It is in similar construction technique and material of the walls and superstructure of the bath. The floor and interior walls of the reservoir are covered with horasan plaster and the thickness of it is 3 - 4 cm. to the water level.

Beneath the reservoir, there is a furnace (külhan) that heats the water and bath. In this part, there is an arched opening in the form of a fireplace which opens outside for lighting the fire. Just over the fireplace, in the middle there is a concave copper boiler for heating the water in the reservoir by the fire in the furnace. It is known that copper boilers were continuously maintained due to their poor material durability. Copper boilers have the diameter varying between 90-240 cm. according to the size of the water reservoir. In the studied baths, Özbek Bath is the only one in which the entire copper boiler that has survived up to today (Figure 8). Taps running in the basins of the hot area spaces were connected to the reservoir by terracotta pipes placed along the walls. When they are left open, heated water had been running in the basins without pressure. Amount of water in the reservoir was regularly controlled via the observation window on the wall between the reservoir and the private rooms and water was added when the necessity arose. An arched opening was arranged on the short side of the reservoir where the water entered.

Figure 8 - Urla Özbek Bath, the copper boiler in the water reservoir

Terracotta pipes, which were also called “merbah” or “pöhrenk” [2], were made of baked clay and were placed along the walls to provide distribution of cold and hot water from the reservoir to the hot area. They are in the cylindrical form and one end is larger than the other to be connected to each other. One end is approximately 10.5 cm. the other is 12.5 cm. in diameter, 1.5 cm. in thickness and 37.5 cm. in length (Figure 9). They were embedded with a waterproof mortar called “lökün” along the walls [2]. These pipes in the walls are arranged in one or two lines for cold and hot water according to the necessity or the size of the bath. They were divided into two lines from the wall of the reservoir and placed along the internal surfaces of the walls.



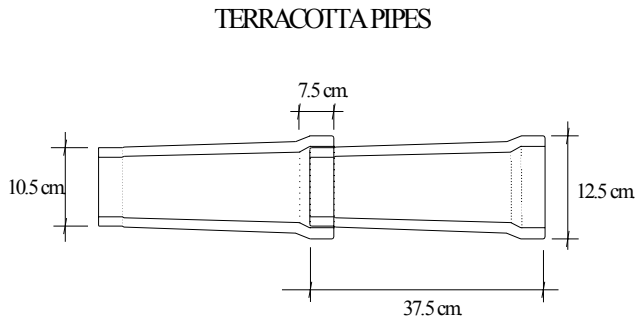


Figure 9 - Urla Kamanlı Bath, terracotta pipes in two rows in the northwest halvet

Most of the basins belonging to the clean water system, which were placed on the floors of the spaces of hot water, were made of stone. However, in the women's section of Urla Double Bath and Seferihisar Small Bath, some basins were made of reused material (Figure 10). Basins are in the circular, semicircular, semi octagonal or semi decagonal form. In the west private room of Seferihisar Small Bath and in the women's section of Urla Double Bath, the basins have geometrical or muqarnas decorations. Stone seats on each side of the basins were arranged rising approximately 20 cm. from the floor level using brick material and covered with cut stone. Muqarnas decorations were arranged along the upper edge of the stone seat in front of the east wall of the west private room in Seferihisar Küçük Bath. On the walls above the basins tap panels were placed and outlets for taps were fitted on the panels (Figure 11).

Figure 10 - Urla Double Bath, reused marble basin in the main hot area of women's section

Figure 11 - Urla Double Bath, tap panel in the main hot area of men's section

One can either bath himself by sitting on the stone seat near the basin and filling it with hot water, then dipping the “tas” which is a bowl, traditionally of copper or brass having grooves and ornamentation, and pouring it over himself, or he may request the attendant to scrub him with a “kese” which is normally a coarse mitt made of natural fibers. This process results in deep skin cleaning and a feeling of refreshment after the bath.

3 Conclusions

In the Ottoman period, every neighborhood contained a bath. The bath was a part of community life. In contrast to the Roman and Byzantine baths where bathing was in the pools, in Ottoman baths bathing was performed by sitting on the stone seat near the basin and pouring water. In this study, the water installation system in a group of Ottoman baths in small settlements of Western Turkey was investigated from the point of planning and construction techniques. The studied bath buildings were built near a water source like a stream or a well that was built near the baths. Water was drawn to reservoirs through cisterns or channels. The reservoir was generally a rectangular vaulted space which had a window opening to the hot area of the bath to control the level of water. The clean water system was the distribution of the water through terracotta pipes placed in the walls, from the reservoir to the bathing spaces and sending it to the taps running in the basins. Terracotta pipes are in the cylindrical form and one end is larger than the other to be connected to each other. The waste water system is the discharge of waste water from bathing spaces through the channels arranged on the floors. Waste water channels coming from each bathing space, lying along the bottom edges of the stone seats, become a single channel in the entrance of the warm area and then end in the toilet in the warm area or from the corner of one wall outside.

The importance of this study is clarifying the water installation system of Ottoman baths which depend on the tradition of bathing with running water even in the baths in small settlements that were ingeniously solved.

4 References

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5 Presentations of Authors

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