



Survey Safavid Brick Work Caravanserai Decorations in The Central Plateau of Iran

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Abstract: *Tendency to show beauty and majesty in the human, arises from the beginning of artifact build ornate and beautiful. It covers Islamic architecture and decorative buildings. Decorative Islamic art, is one of the most important and effective component. The aim of this study was to investigate decorative brickwork at a number of sites in the central plateau of Iran's in Safavid period. In this article, we describe the decorative brickwork then dissolution of the decorations in the Safavid caravanserai in the central plateau, such as "Sheikh Ali", "Madarshah", "Moorchekhort" in "Isfahan" "Kenargard" in Tehran, caravanserai of "Ahovan" in "Semnan", caravanserai of "Sadrabad" in "Qom" and the caravanserai of "Shah Abbas" in Karaj will be discussed. This research is descriptive - analytic. Research tools is athletics and library. Finally, by examining the structures and the tables of comparative studies concluded that these structures are a kind of decorative brickwork.*

Keywords: *decorations, brick work, caravanserai, Safavid, Central Plateau*

1. INTRODUCTION

After stone, brick is the oldest building materials used by humans. The history of the clay baking ovens, baking ovens to make bricks and clay pots, to provide clay vessels, has joined together. Baked bricks from the fourth millennium BC by the Babylonians was made. Brick is Babylonian term and bricks on which it commands, charters and laws written data is read as brick (Keiani, 1997). Ovens found in Susa, shows the use of brick as a building material in Iran dating. Ancient Iranians have long been familiar with the brick and use it in different parts of the building, structure, arches, covered roofs, viewing and floor coverings were used. There is also a lack of wood and termites in central Iran that minimizes the possibility of using wood and heat exchange top stone, which made much use in hot and cold climates and given the diversity of climate in Iran, brick place broadly in the open country and spread across the country. After Islam because of its long experience in the use of brick architectural beauty of Iranian architecture and was built in different historical times. (Kiani, 1997).

2. Methodology

This study was analyzed in descriptive-analytical method and relying on a combination of inductive and deductive methods. In fact, this research aimed to investigate the hanging brick work in the Safavid caravanserais in central plateau of Iran's, that utilizes the power of optical components that create spatial dimension, spatial resolution, evokes a sense of movement and orientation, creating a sense of time, hierarchy

and unity used in space. Therefore, in this study we strive to find answers to the topics discussed, the main purpose of this study was to investigate decorative brickwork on the central plateau of Iran's Safavid caravanserais.

3. Literature review:

3.1 The use of brick as the main material in construction works

Residents of the plateau used mud, stone and wood as the main materials in the building 52 major parts of the country, but the main focus has been on the mud. Iranians have always had a special bond with soil and water. Plateau of Iran almost was in dry tropical region with strong winds, so artists mainly from bricks used to build the building. (Bozorgmehri, Pire nia, 2002).

3.2 The main reasons for the use of brick in the plateau:

Restriction of the use of wood in areas of the country, shortage of stones, stone application problems due to heat transfer in tropical regions, abundance of raw materials and easy preparation of bricks, low cost, extensive use of brick demonstrates two important points in it due to the climate of the land:

- Coefficient of expansion and contraction brick frost in a manner that prevents the cracks in the building.
- brick compared to other materials stored thermal energy and as a result of the transfer of thermal fluctuations of the external environment into the brick wall heating and cooling conditions can be severe, and without interference and to provide a more pleasant atmosphere.

Brick as a decorative element to your performance that has all the elements of an architecture intermix or as a single element for the founding effect. But if the extra time is purely decorative elements attached to the main building structure, such as suspended Mogharnas. In other cases the cause of transmitting tensile and compressive forces, while preserving the decorative aspects, which include dome - covering - walls - Columns and arches. In this case, their domes are made with earrings; they transmissions. (Bozorgmehri, Pirnia, 2002).

3.3 Brickwork art in Safavid period:

In the course of bricks in many buildings, particularly in the caravanserai and suburban advanced caravanserais in one and two-story designs comprehensive and very basic numerical structure and in cases of designs amazing viewing dioxide mixes a variety of beauty and header coarse – quarry brick- wicker-racking bond – deer foot, silk-flowers - flowers fand many other that attract the world's energy to itself. Very cute vaulted brick ceiling coverings in domes, arches skullcap, ceiling domes, arches of Kate, wearing arches of like foot, foot arches, four-part, four arches pollen, capped four Turkish arches, sun arches geometry of arches and arch and palanquin, vortex ceiling, and many others using a variety of designs and mixes beautiful brick brickwork grandeur of the art in this period is manifested. Decorative arches and decorative creation of times over several buildings of brick and use them in the creation of loft tower brick by brick lattice viewing and philosophy brick attractive designs in a variety of formal and assigned them to three numerical and brick in various forms in buildings with elements such as: Susan, half violet, Haftian, decollete, narrow feet, gable wall, bergamot, samosas and beautiful designs using the above parameters, the brick anthology, especially in the market for works of art presented Iran's wondrous architectural history of the world.

Among the numerous works to bridge this period of very massive brick by brick philosophy as 33 bridges and Allahverdi Khan bridge with hydraulic pressure and river wide with all the issues in the foundations of each

span of the bridge. Bathrooms were very basic building with male and female sections and incubated with the use of assigned teeth very prolific and interesting and deploy them on elegant pillars and fully load-bearing stone.

Following the launch of the pillars of the foundation of the brick and mortar of lime welding. It also forces water bath, under gutters, sealed copper pot of boiling water and set on fire houses in the area treasure, many side issues such as bathrooms bath in the bathroom because the bathroom of Ganjalikhani Khan Kermani and unique gem of a whole brick in Mr. Isfahani's Khosrow bathroom was very worthy of artistic phenomena by not buying the soil. Safavid era brick warehouse in the water with beautiful designs for different climates, especially for areas with hot and dry desert wind, much attention has been playing with art.

3.4 The ways of brick work:

Vessels arrangement: the brick work by combining different blocks of the same color and create a project on a flat surface. Various designs, depending on how the brick arranged on the facade.

Header coarse: The side and lengthwise brick on the facade work.

Header: the head or the width of the brick horizontally or vertically on the facade work.

Height view: Bricks in the long side and vertically on the facade work.

Dream view: to work horizontally on the floor and be seen at all levels.

Racking: brick od mode to show the row of bricks.

Toothing: Brick in and in-between, and works in the head and orders.

Overlapping: common approach in brick work. All brick straight row is used, so that grouting vertical vessel above the vessel bottom bricks are placed right in the middle. Different designs and other celebrities: head straight -Khoftteh Rasteh- Hasiri- wishbone - plaid (Kaiani, 1997).

Racking bond: The bricklayer includes a set of brick with each angle of 90 degrees with a horizontal plane an angle of 45 degrees up, when the bus link wishbone arranged must ensure that all aspects of the plan in a straight line are careful to each plan according to their own situation realistically be vertical or horizontal.

At the time of cutting bricks with a hammer and chisel, wide tails do not try to cut bricks directly on the diagonal line because in this case there is the possibility of breaking it at the acute angle. The first brick from the point of intersection of the line perpendicular to the thickness miles from the edge of the cut bricks then cut along the line of work full tilt. In this way, the bricks will ensure a clean cut.

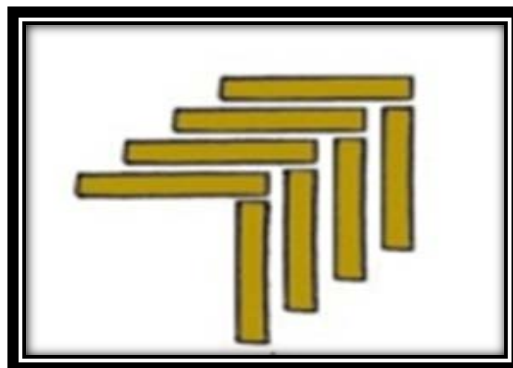


Figure 1: raking bond (Source: authors)

Slate cutting: this style is normally used in wood, but very limited in the decorative brick surfaces also have to deal with it. slates cutting actually one of the ways in which instead of broken cutting brick, the battalion or curved pieces used. It is used mainly in decorative frames building façade before the Qajar era in the form of confetti and breast Quebec and provides a steady plan. Slate cutting was common with a project related to the Qajar period and in early Pahlavi had to continue, and it's still interesting examples can be seen in Shiraz. (Kaiani, 1997).

Flowers up: when bricklayer vessels; it thistles so that they combine different seven goals and five vessels and seven vessels and ... can be achieved. Good examples of this approach are seeing in the plinth houses of Yazd. The most famous flower up is "Shirazi six-tie" it is known that by picking five vessels bricks is "six tie" a beautiful role to create geometric motifs. These projects sometimes "got it" or are stacked flat or "eight and stuck" or are prominent and depressed. Sometimes brick and tile ago were mixed together and flowers in the facade brick tile size shone like a jewel. (Kaiani, 1997).

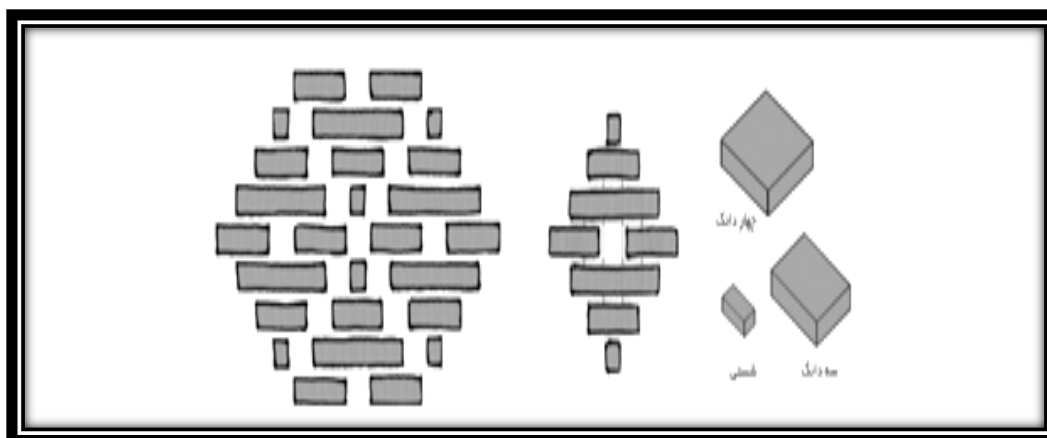


Figure 2: Flower bricklaying (Source: E-Islamic architectural decorations)

Making node: One of the ways is very elegant and prolific brickwork, with the help of various pieces of cut bricks and hatchets have been made in various sizes. It plans node in simple geometric patterns such as diamond triangle rectangle and a trapezoid and combine them together and create multi-sided star shapes and so on. Good examples we can see it during the Samanids and Buwayhid. Goharshad in buildings such as mosques, the building of Gur Emir in Samarkand and the mosque of the patriarch're seeing this type of brick work. Sometimes flowers and knots with combined savings and plan creates beauty. Tomb of Amiresmaili somoni (about the third century architecture is the architecture of pre-Islamic Iran) is an example of this way. (Kaiani, 1997).

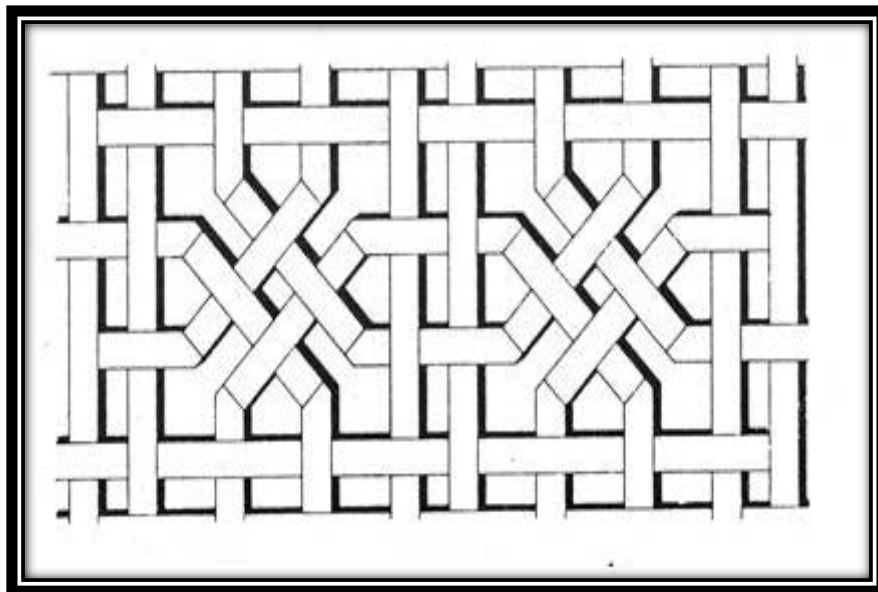


Figure 3: Bricklaying in node way (Source: E-Islamic architectural decorations)

3.5 Brickwork with decorative bricks (stamp)

Decorating business building with brick prominent with stamp shape has history from Ilkhani period. In this way, square and rectangular bricks and other species with different roles leading diamond cross, with tracks like Quater, arches, margins, and the solar roofs on pillars occurred between the two floors of the building with bricks stamp are to create a nice effect. This way the Qajar period in some cities such as Yazd, Kashan, Shiraz and Tehran was widespread. (Keyani, 1997).

3.6- Colored brick work or color nodes

In this way, with bricks of different colors and flat style, creating different designs. The use of colored bricks on the facade of the building, dates back to Ilkhan. Petition of this kind brick work is in the hands of about 120 years ago where the frequency of the tone geometric designs and materials are available online. (Kiani, 1997).

Qoun layer: this way is a certain type of brick work on something that is dormant depressed and knot layer is very common in Shushtar and Dezful. With the help of this method, the possibility of taking advantage of the circles shaded and thus reduce the amount of heat inside the building is provided. Major basis of Qoun layer is on the painting Crux based on different combinations of shape blades petals of Crux around a center has been made. Often the center of one of the most remarkable forms is part of the design, with words like Allah, Ali and Mohammad is decorated in the building line. (Keyani, 1997).

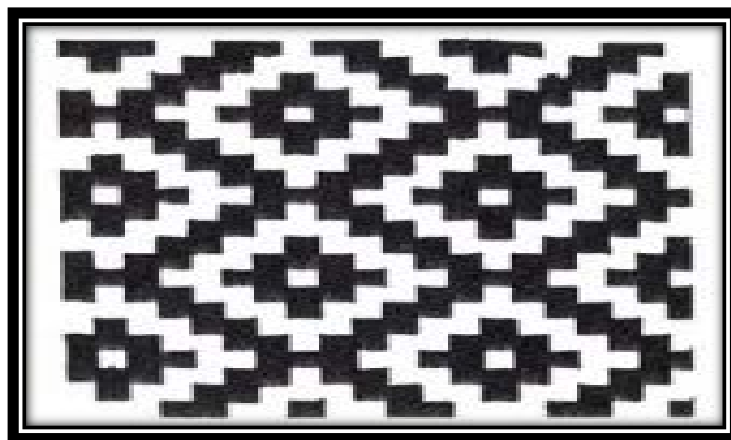


Figure 4: Bricklaying in Qon way (Source: E-Islamic architectural decorations)

Moaqali (a mixture of tile and bricks): a kind of brickwork where a mixture of brick and tile is used, as in the tomb of Khawaja Atabak in Kerman seen. But perhaps the most beautiful and most brick and tile work is exquisite work in Sangam in Khorasan in the way of Jaam is seen as Zouzan. (Zomarshidi, 2011).



Figure 5: The Moaqali brick work (Source: www.beytoote.com)

4. Survey case study:

4.1 decorations in the building of Sheikh Ali Khan caravanserai:

Architecture: Caravanserai of Sheikh Ali Khan (new black hole) that is known as the Great Shah Abbas caravanserai is located in 35 km northwest of Esfahan in the village of Jihad-abad. According to the inscriptions, the founder of the house of Sheikh Ali Zanganeh, was Minister Shah Soleiman Safavid and architect Professor Tahir, son of Reza Isfahani. Caravanserai of Sheikh Ali Khan with an area of about 6400 square meters of the building is relatively large samples. Square Caravanserai is a bed with dimensions of 80 by 80 meters and building materials of stone and brick main building and the period of Naser al-Din Shah Qajar has been repaired. The caravanserai is a member of the royal caravanserais. (Yavari and Doostanand).

Decorations: The decorations of the building is brick work. The brickwork is comparable to fired brick caravanserai of Mahyar and some old houses of Julfa in Isfahan, and the characteristics of the late Safavid period.



Figure 6: The caravanserai of Shah Abbasi Sheikh Ali Khan in Isfahan (source: authors)

According to tile parts of the Lachaki arch at the entrance it seems that this episode has been Moaqali tiling.

Inscription: inscriptions on the inside of the entrance, and they were written in hieroglyphics and that the construction of the caravanserai on the orders of Sheikh Ali Khan Zanganeh in the Safavid Shah Suleiman was in 1098 AH.

According to the inscription, the documents maker was professor Tahir, son Reza Esfahani. This building is one of the best examples of caravan trade. (Yavari and Doostan).



Figure 7: The inscription of Shah Abbasi Sheikh Ali Khan Isfahani caravanserai (source: Authors)

4.2. Madarshah(King of mother) caravanserai in Isfahan

Caravanserai of mother of King is located in the right side of the highway of Isfahan and Tehran and between Isfahan and Moorchehkhurt. The caravanserai is a member of the royal caravanserai. The caravanserai has been seen by many tourists and have left many descriptions about it. There is no inscription on the monument for dating. Siro attributed it to Shah Abbas Safavi II or King Solomon. Most tourists know the building of caravansaries made by order of Shah Abbas mother, but did not specify it attribute to the first Shah Abbas or the second. (Yavari and Doostan). Architectural building has 75 dimensions of 86 meters and its construction brick and stone are the main materials, according to the structural properties of the glory and the glory of the house, barn yard as special sections, banquet hall, convenient amenities such as bathrooms and cisterns, caravanserai mother king was of royal caravanserai and like Sheikh Ali Khan caravanserai official welcome from the king and foreign ambassadors in that case had been before arriving in Isfahan. It also shows the position of royal formality and it is, so that is located between in less than an hour, Gaz caravanserai and Murchehkhurt. (Hajighasem, 2004, 28)

Decoration: The four corner where four circular towers in the middle of North and South sides there are two towers pentagon. In the external walls and towers around the upper edge of parapet walls is decorated with beautiful turret and decorative brickwork Congress. This turret in addition to the decorative aspect was a factor to avoid falling in the warm nights of summer travelers at night so that the travelers came from the roof of the entrance to the two chamfered corners. In the middle of covered space, which is the main port of entry is located. Now decoration of the facade of the building include brickwork parapet wall, but in the past there has also been tiled. The materials include brick and stone. (Yavari and Doostan)

Inscription: There is no inscription on the monument dating.



Figure 8: The inscription of Shah Abbasi Mother of King (source: Authors)

4.3: Isfahan Moorchehkhurt Caravanserai

The caravanserai is located in the left of Isfahan-Tehran road in the village of Moorchehkhurt. Moorchehkhurt are located in distance of 54 kilometers northwest of Isfahan. Although none of the travelers directly not referred to this caravanserai but things which indicates the importance of communication as a settlement of Moorchehkhurt caravanserai. In the early Qajar period because of the importance of the road it was repaired but at the end of this period the caravanserai is dilapidated condition and fewer passengers resident in it, and more of Chaparkhaneh was used Moorchehkhurt. In general features of the Safavid planned to show it. By

comparing the form, shape and plans for its construction with some caravan can be attributed to the reign of Shah Abbas. (Yavari and Doostan).

Architecture: The building has a size of 73.50 in 73.50 meters. Four circular towers located at each corner. Two towers that are on either side of the entrance are hollow space used them as toilets. Entrance into corners with two ice is ongoing. In the middle is the main indoor space, which is Located in the doorway. Doorway through a doorway with three openings include short hallway, vestibule and large veranda eastern end of the caravanseraier courtyard. In this section there are two chambers and the upper room used by caravanserai keeper and guards. (Hajighasem, 2004, 34).

Perhaps the top of the north tower brickwork house decorations unique to other towers in principle that such decorations are gone by the next repair.

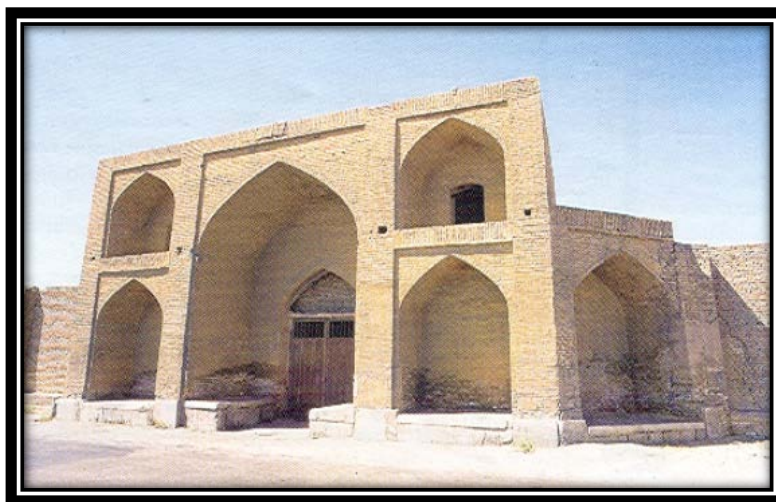


Figure 9: The head of the Shah Abbasi Moorchehort caravanserai (Source: Ganjnameh)

4.4 caravanserai of Kenargard in Tehran

Kenargard caravanserai is one of the resting places of the Safavid period in Feshafuoye Rey is located and the building on 4 Persian date Bahman 1356 with registration number 1342 has been registered as a national heritage of Iran. The reason for naming this place to Kenargard is for location in the neighborhood. (Hajighasemi, 2004, 44).



Figure 10: Shah Abbasi Kenargard caravanserai (Source: Ganjnameh)

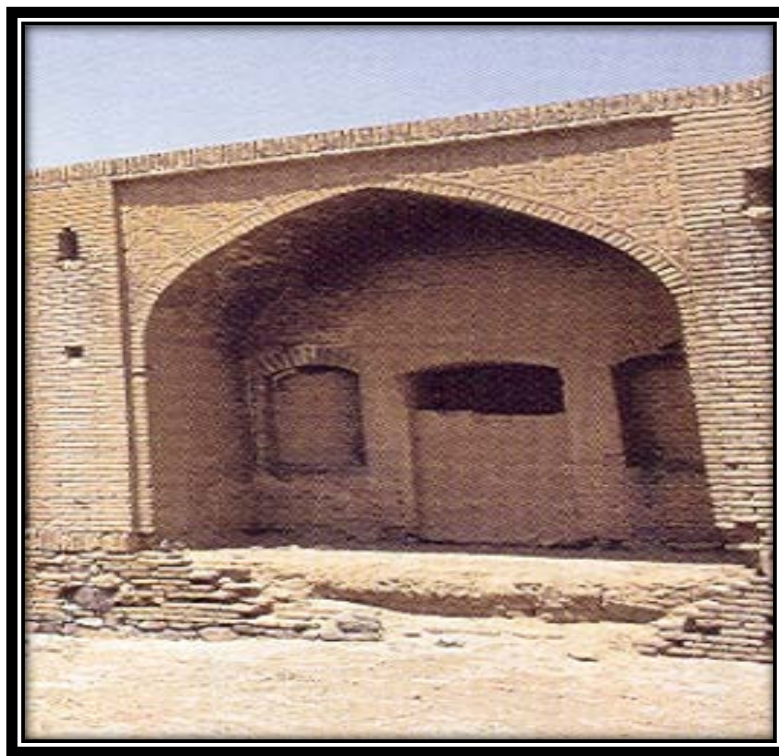


Figure 11: brickwork at the caravanserai (Photo credit: Ganjnameh)

.5.4: Ahovan caravanserai Semnan:

The caravanserai in the village of Ahovan is Located in 42 km East of Semnan and in 1907 AH of Shah Soleiman Safavid for the rest of the pilgrims of Imam Reza (AS) is made, the building on 5 May 1977 with registration number 1373 has been registered as a national heritage of Iran. (Hajighasemi, 2004, 68).

Decorations: Odd views of rivalries around the yard of the caravanserai, all in a horseshoe, and struck them with a specific Lachaki is a bricklayer. All rooms are dome-shaped roof. The exterior of the caravanserai four without any props or decorations. The caravanserai is one of the Qajar period monument.

The inscription on the marble facade of the building installed on one of them بسم الله الرحمن الرحيم (in the name of God) and on the other with a poem carved which contains information of the time and aims to build the caravanserai.



Figure 12: A view of the yard and porch at the Ahovan caravanserai (Source: authors)

4.6 Shah Abbas caravanserai in Karaj

Shah Abbas caravanserai in Karaj is belong to Safavid-era caravanserai was built between 1078 to 1109 by Shah Suleiman is ...caravanserai of Shah Abbas Safavid in Karaj can be one of the most valuable works in the Abrisham highway. The caravanserai at the beginning of construction as resting places for caravans and in the early of Qajar era fortress was transformed into barracks or as well as a school in the late Qajar period (known as Falahat) have been used. The total area is 3 thousand square meters and yard area of 900 square meters. In the building of stone, brick, wood and thatch is used. (Hajighasemi 2004, 100).



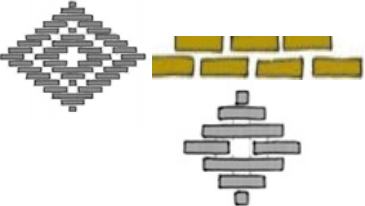


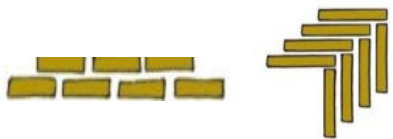


Figure 13: Shah Abbasi caravanserai in Karaj (Source: authors)

Table 1: Comparison of style, fashion and decorative materials in several caravanserai

Decorating materials		Fashion design and pattern			Decorative style architecture approach				Place decorations on building	user	City	Building name
mixed	brick	mixed	Non Iranian	Persian	Modern	Western classical	Ancient Persian	Islamic Persian				
*				*				*	All facade with are bricklayer racking bond manner	Caravanserai	Isfahan	Sheikh Ali Khan
	*			*				*	Around the upper edge of the outer wall and parapet towers	Caravanserai	Isfahan	Mother of King
	*			*				*	The upper part of the northeast tower	Caravanserai	Isfahan	Moorchekhort
	*			*				*	All facades are with bricklaying racking bond and straight manner	Caravanserai	Tehran	Kenargard
	*			*				*	Arc around the yard	Caravanserai	Semnan	Ahovan
	*			*				*	All facades with racking bond and header coarse bricklaying manner	Caravanserai	Karaj	Karaj

Table 2: Comparison of brick work practices in several caravanserai

Image of brick work style	brick work Style	caravanserai
	Racking bond	Sheikh Ali Khan
	Flowers up-header coarse	Mother of King
	Flowers up-header coarse	Moorchekhort
	Racking bond - header coarse	Kenargard
	header coarse - full facade	Ahovan
	Racking bond - header coarse	Karaj

Conclusion

Certainly the art of brickwork in Iranian architecture, is the oldest and most widely used decorative art in its historical process. This original art review in the Safavid period, especially in the central plateau of Iran is the subject to many studies. This article by focusing on the history and utilizes existing multiple images, while explicating this decorative art during this period that quickly turn toward modern architecture. A comparative study of the architecture for the Safavid period (see Table 1) were used, it would be an obvious indicator, and the results interpreted. During this period, due to the importance of paying too much attention to tile brick is reduced but the dominant form of decoration was working in buildings is studied Chinese orders. The art was created last brickwork, so flat and two-dimensional art and rarely been used as reliefs of decorative brickwork. In the course of the years and approach to modern architecture and the presence of other materials such as

stone, cement, architectural style and brickwork art was less popular. Although this decorative art to date has not flourished.

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