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Introduction

Bricks are one of the oldest construction materials used in building and construction and in decorating buildings. "Brick is a Babylonian word. It was the name of the written clays which commands, charters and other writings are written on them." The openings were without form and shape and were irregular bricks, but the bricks began to wear on a regular basis and were produced as one size. Archaeologists estimate the age of the brick as ten thousand years. In the West of Iran such as "Hasanlu hill," raw moulds are used, and from about the fourth millennium BC in the central plateau of Iran, the region, "Silk Kashan", the remains of brick kilns have been found [1].

In general, the brick industry was evolved in the architecture before the Achaemenid era; As far as in the Achaemenid period, baking painted and glazed enamelled bricks were very common. The Buildings of "Zanbil ziggurat" in Susa, "Arch de cit" in Ctesiphon, the

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Brickwork is one of the ways of decoration in architecture which is done with simple and shapely bricks. In Iranian architecture was used in the Achaemenian period and it flourished and its decorative elements reached its peak in the Islamic period, especially in mosques of the Seljuk period. The mosque has been one of the days of Islam as a center of idea exchanges and a place of refection, so that the prevailing architectural style of its existence, based on the ideas and social views in the Islamic world. At the beginning, the exterior of the mosque was very simple and its exterior was not very distinct from other architectures. But with the passage of

To so on the edges, filling the corners and connect several different levels, or to run the geometric and herbal designs, it was necessary to cut the bricks. The technical requirements with artistic aspect of architecture required that architects and artists to dispel some problems with shaving bricks organize their work. Cutting bricks, the

Photos by Mehdi Akhavian and can be a great plan executed on a couple of bricks. To do this, first bricks lay on a flat surface, as well as the real one together with the thistle, then designed with pencils or other means, and transferred to the brick body. Moving parts are below or next to each piece numbered based on these numbers, we can again put all the pieces together. After Marking, bricks are cut. If the old work, plaster, tiles, etc., you must first empty brick ground level, such as lattice or mosaic tiles to fill the void with (Figure 7).

It is possible for old work to be used from simple building blocks, such as canvas. But sometimes it means that first negative level designs should be carved. If the designs have volume, depressions and protrusions are made with more delicate tools [3]. In areas such as the entrance or gate house, which a variety of cut bricks are used, the different parts such as columns, headers, high train layout, etc. are separately carved and then installed in their place (Figures 8 and 9).

To avoid disorganization of parts, multiple units together would be easier to install with plaster to form fabric (Figures 10 and 11).



Figure 5: Master Akhavian busy scraping bricks. A photo of Mehdi Akhavian.



Figure 6: A sample abstract chicken conducted with bricks, by master Akhavian.



Figure 7: The combination of cutting brick tile mosaic inlay technique, the layout of a house, next to the Lorzadeh mosque in Tehran.



Figure 8: A part of brick cut of the head column, which is painted with ochre.

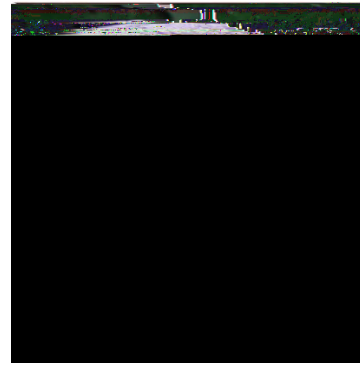


Figure 9: A part of a bricked head column.

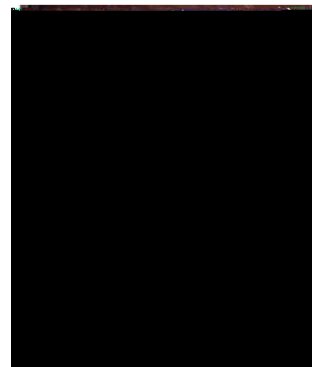


Figure 10: The part of the decorative brickwork facade of a house Qajar, ValiAsr Ave., Tehran.

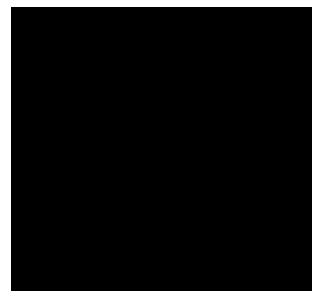


Figure 11: Brick liqueur, the head of the column; the piece is covered with plaster.

The mode of implementation of geometric patterns is different: Because usually a unit or a module is repeated, the repeat unit is important and the sizes should be carefully calculated; For a repetitive arrangement of geometric designs in each unit repeats, even if a slight error is present, the amount of error in each iteration doubles, so that, for example, in the tenth iteration, there has been a tenfold error. Geometric designs have been conducted as flat or with volume. To run a geometric design, length and width must be measured, to calculate and determine the desired shape which is repeated several times. After this calculation, the repeating units are separately prepared and finally the work is put together. In primitives, and nodes in corners, you have to run for a second or a quarter; otherwise the form is incomplete [8].

The figure below shows the ability of the brick; Outstanding amounts of light to create shadow, sharp levels of contrast between warm colour and geometric brick half-circles with cyan, has added to its appeal (Figure 12).

Applications

Cutting bricks have diverse applications in architecture. According to the ductility of the brick, it can be used to decorate the inside or outside of these types of bricks. But it is most widely used for cutting brick facades, for columns, half-columns, headers, different levels on walls, siding, framing windows, shelves, brick lattice windows, inscriptions, pots and other parts of the building to be used properly (Figures 13-15).

Different Periods of Brickwork in Pre-Islamic Iran

Due to a shortage of wood and there are termites in central Iran,

which makes it possible to minimize the use of wood, as well as high heat exchanging stones, which are not of much use in hot and cold climates, and due to variations in climate in Iran, Brick opened its place in the country and was widely spread throughout Iran. After Islam, Iran Architecture continues with its previous architecture which grew and flourished, and the long history of brick was the world's most beautiful architectural works of Iranian architecture and created in different historical periods. Doctor Parviz Varjavand in a comprehensive article, "brickwork architecture of the Islamic period", divided brickwork in different historical periods of Islam into approximately five periods.

inscription, sometimes with Kufic and sometimes faced with the return line side, which were adorned with skill and beauty is unspeakable, how bricklayer in Gonbad-e Qabus, Lajim tower and east Western Radekan and Pyrlmdar, the whip and the body is so simple and almost without ornament of great simplicity and elegance. The first map is starlike and the rest of the map is like a circle (Figure 16) [9].

the second period from the beginning of the 11th century to half of the seventh century (the Seljuks and Kharazmshahian)

The second period includes Seljuk era until the Mongol invasion, which art brickwork is widespread across the Iranian plateau. Economic and political conditions would be created at this time, magnificent buildings to be built across Iran, the art of brickwork every day, role and create a new plan, so that in the above article, this period is called the era of expansion and evolution of the art of brickwork and reads:

"It's all power in space, with a hard and lifeless matter and a brick colour, the art of creating art of masonry virtues that we created it in the Seljuk era and the patriarch of this place (Mosque of Isfahan) are viewed. The minarets of the era, whether they are in the land of Khorasan skyrocketed under the azure of completed and whether they are tall, All are worthy of samples brickwork art in this era ". Kharragan towers of Qazvin, Isfahan Mosque, Rabat, Minarets of Isfahan and Khorasan and Red Dome Maragheh are typical buildings of this era [2]. Brick decorations, which in the previous period was limited to only one justify text, in this period is extended, and achieves varied

and beautiful forms. Holy Names like Muhammad Ali, Muhammad repeated and combined, and the upper edge of the building and the roof is transmitted to the body. Decorative brick in this period peaked and diverse projects are created in this period, and it seems that there is no other plan to offer to its fullest extent brickwork is reached (Figure 17) [3].

the third period since the mid-seventh century to the tenth century (Ilkhan and Timurid and al-Muzaffar)

In these periods, Ilkhan, Timurid and al-Muzaffar, bricks absolutely lost their sovereignty. It appeared perhaps for that reason to be no plan and there is a new design to add to the repertoire of Seljuk. Elemental tile and brick composition, and in some cases, stone and brick are used instead. During this period, after the construction of the building, outer coverings are made by bricks. The highlights of this period were the mosque and the tomb of Maulana Zinedine Ababkr in Taybad and dome Mosque of Yazd and Nasir-ul-Haq and Shams Tabarsi in Amol and Darvish Fakhr al-Din in Babol. The combination of brick

and brickwork bricks from the width of the frame around the levels of clay tiles are decreased, and reaches its peak in brick facades for decorative moulding and cutting the bricks, which the bricks are in various shapes and sizes, geometric and non-geometric. Brickwork in residential buildings in the historical texture of our cities, mostly belong to the 19th period. It is interesting to note that, in this era, brick work existed throughout the country, with similar characteristics, but also achieved significant variation in different parts, and although it seems that the era of brick was gone in southern regions of Iran, faced with a phenomenon that will soon amaze us [12].