



ARCH AND ROOF TYPOLOGY OF HAKIM MOSQUE IN ISFAHAN

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ABSTRACT

Iranian art of architecture, has given the best possible answer to architecture needs of inhabitants of this land centuries before Islam, while ensuring compliance with all requirements and climatic characteristics and geographical conditions. This was amazing harmony between man, nature and the compatibility of thousands of years of human artifacts and masters of precious natural heritage and indigenous artist and patriotic border that entrusted to us the stewardship task. One of the artists was David Hakim who was physician of Shah Abbas II that for some reason he had gone to India and with the wealth had acquired, he had built a mosque called Hakim Mosque in Isfahan.

A variety of techniques was used in the mosque architecture, especially in the implementation of the arch and roof in after years. 1. Arch including the tent arch, four arch roof, skullcap and the so-called Cymatium, known as Row of Stars and the arch of short dome covering the yard in winter 2. Materials of multiplicative arch pool house 3- narrow roof arch in the northwest side before reaching the entrance to the Jerjir 4. Vaulting in a short distance that the infrastructure of roof arch and fountain which is called the arch and vault arch known as the northwest, southwest, northeast, and southeast we see. 5. Ivan Eastern Roman arch 7- skullcap (Cymatium) south porch 8- Akhtarchin cruciform plan in the southern dome and roof arch, the variation in the performance of a religious monument Sample is invaluable. The Safavid era is an architectural masterpiece.

Keywords: Hakim Mosque, Arch, Akhtar China square, narrow arch

INTRODUCTION

Hakim Mosque is one of the masterpieces of architecture in the Islamic period, it is a mosque of four porches with very diverse brick work and it can be said that it is one of the best examples of the architecture of the Safavid era, the mosque has numerous and diverse altars that each was made according to its seraglio. It has winter seraglio and nave porches and with beautiful views of the long and high and arch decorations is great. The mosque is made of brick and a little tiles are used in it, the mosque has four doors, two doors are to the north and one to the west, and the other is to the east. Appellation of the mosque that is known as mosque of HakinDawood who was the physician of Shah Abbas II, between 1067 -1073, however, in the book named half of the World is remembered as the third largest mosque in Isfahan after the Grand Mosque of Isfahan and Masjid of Shah. (Mahralnaqsh, 1997, p. 5)

Literature

About arch and roof and how to use them in buildings, many books have been published. And with the help of the books, we can learn how to draw and implement

various arch and roof, however, specifications and implementation examples of Hakim Mosque in Isfahan by identifying the characteristics and explain the plan and view it separately and we cannot find something quite special with this type of arch and we are trying to explain about the arch and roof of this valuable mosque.

Methodology

Data was collected via library and interviewing the professionals such as waiting engineers and a number of rest orators of cultural heritage and the professionals who were working in this regard from generation to generation and we examined this through a qualitative analysis.

Analysis

History of the arch and roof commonly used in construction before the Achaemenid period that an example of the works of the third millennium BC, the city burned after that period, has remained around the country. (Zomrashedi, 2010, p. 11).

Source: Author

Properties	Names of the famous arches and domes	Monument (s) name	Era
Lacking sharp and has great fertility	Called contributor or lean	ChoghaZanbil called ziggurats And buildings in Susa	Elamites
Generally porch with arched vaulted porches and the foundations of buildings, especially after Islam.		Nesa Palace, the Palace and the Temple Mount Khwaja, Temple and Temple, the famous palace Hytra (Alhazr) and Parthian palace	Parthian
Methods and techniques are very	Called Holuchinkand,	Firoozabad House, Gore Girls,	Sassanid

technical and that some of Their foundations of arch buildings with dome cover Specific methods have been implemented in the world.	contributor or lean	sarvestan, Bishabor and unique arch porch Ctesiphon and as temples and carvings masonry arch across the mountains	
Beautiful arch with the applicable rules	Called Petkin&Petkaneh	In some parts of the dome of the Mosque of Nizam al-Mulk, Kashan old mosque, mosque Farymood	Seljuks
Significant development in this period		Soltanieh massive dome of Grand Mosque of Varamin	Ilkhanate
Founder of unique Islamic Architecture in Islamic world and the great impact on the Architecture of the World	Shallal dome and Avagun	Timur's mausoleum, Grand Mosque of Goharshad and many tombs tower	Timurid
World's pre-eminent architecture of the period	Dome the in one coat, the coat of continuous and discrete especially two-coat	Abbasi Grand Mosque, building vaulted and domed four leading market market cap of Yazd	Safavid
Iranian family struggles involved in suppressing the rebellion and send it by rare and not for prosperity.		Sun Palace and the Blue Mosque Dome of KalatNaderi	Afsharids
Principles of governing the performance of the arch in the city of Karim Khan Zand		Vakil Bazaar and Vakil Mosque of Shiraz	Zandiyeh
Directly influenced by the architecture of the Safavid dynasty, but sometimes we see something new and mutations in Qajar architecture.	The fixed arch of the CheshmehTaseh and Karbandy	Arch of Vezir Market of Qazvin, Vakil Bazaar of Kerman Beautiful dome of Emamschool of Kashan	Qajar
Integrating the West and Iranian architecture	Abundant species and even the fixed arch and arch	House of Tehran Police Headquarters and today's Setting of Ministry of Foreign Affairs	First Pahlavi
Integrating the West and Iranian architecture	Abundant species and even the fixed arch and arch	Many mosques in the period	Second Pahlavi

Arch

It is a wide arc that will be achieved by extending the length of the arc in the coverage area. Arch thickness is less than the arc in addition to the principles of sustainability and style arch executive of the arch, they can cause structural problems and even final cover art designs and creations and are special and unique. (Zomarshidi, 2010, p. 85).

Materials used in the arch, arch and roof are:

The two major groups of materials are used:

1. heavy materials such as brick
 2. Lightweight materials such as wood
- Heavy materials have high hardness and strength but their flexibility is low, but the traditional style with elastic materials have relatively high tensile strength. Wood because of having a tensile strength is used in vaulted structures as the cause of the problem of landslides.

Mortar

Also plays an important role as a binder material are used like lime mortar, plaster and mortar.

Adhesive plaster mortar for setting up fast

and early strength vaulted structures are used. (Mahralnaqsh, 1997, pp. 34-31)

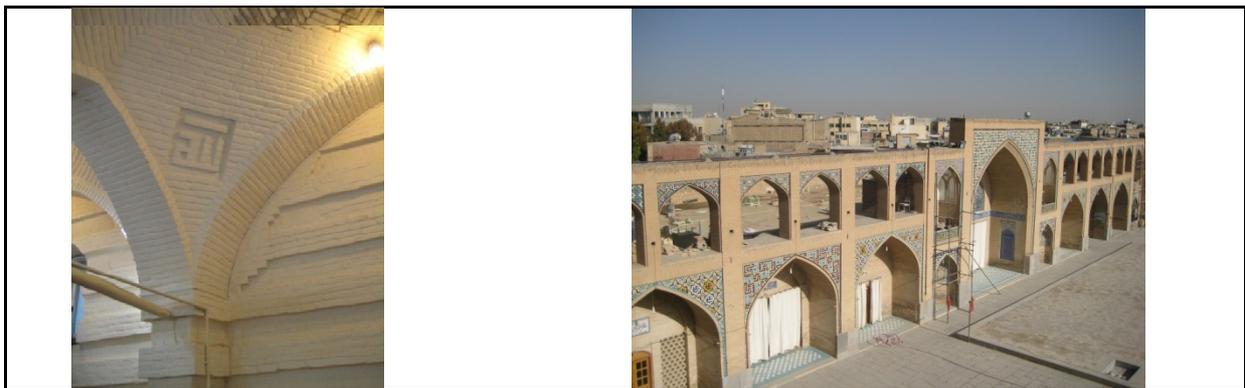
Adding façade in the Safavid period

In the first period of hard work is done or similar cast and then milled the brick façade and palced in front of the building and it is continued up to building the foundation. This figure is below the nave wall the ultimate façade has not done that yet. (Mahralnaqsh, 1997, p. 36)

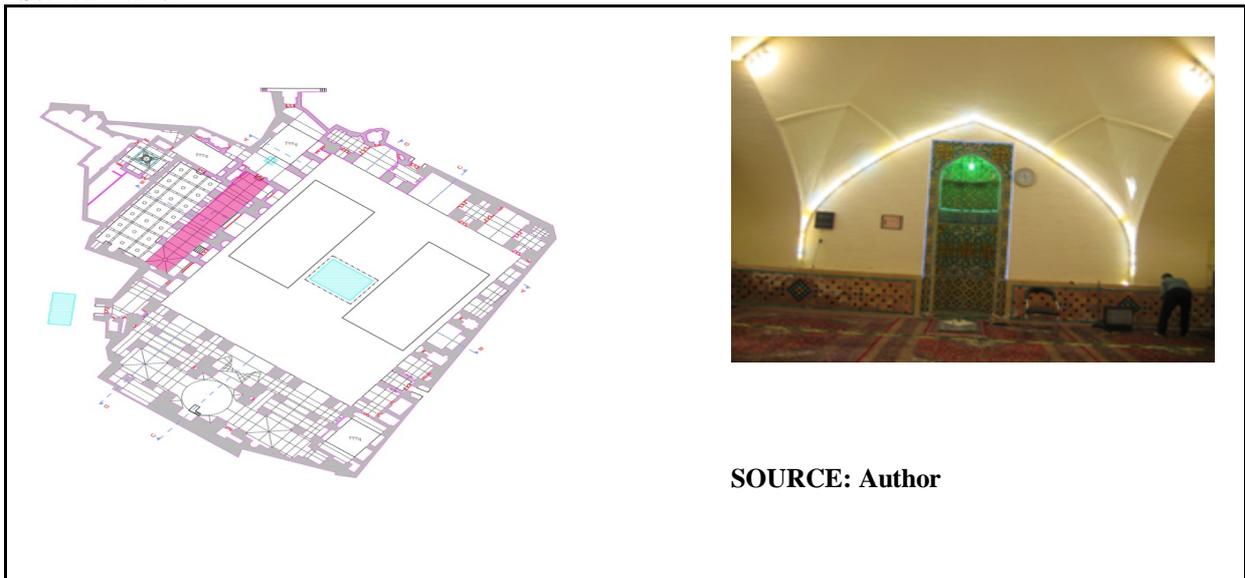
Climate and environmental conditions

Due to the temperate climate of the Isfahan province and its full of four seasons in the

north is open and Cool north wind blows from the direction, and in the south of Isfahan, it ends with the mountains of Seffeh and Lashter, it is very cold in the winter and in the spring and summer regarding the river of Zayandeh rood is indelicacy in the air. (From the book of journey in Iran by EugèneFlandin and Mirana Coast). However, due to the climate of religious practice during the days and the need to have winter is the yard. (Eugene Fland, 1854, p. 54).



Source: Author



SOURCE: Author

Hakim Mosque in the winter yard has the arch like a tent with very few rich and this

is another part of the yard that its age is less than the other part because the other side has the stone pillars.

The yard of the mosque in general has the style of the arch with four arch, and it has brick ceiling in the form of skullcap that is circular, this way of planning can be run in different shapes and structures and shows the taste of the architect.

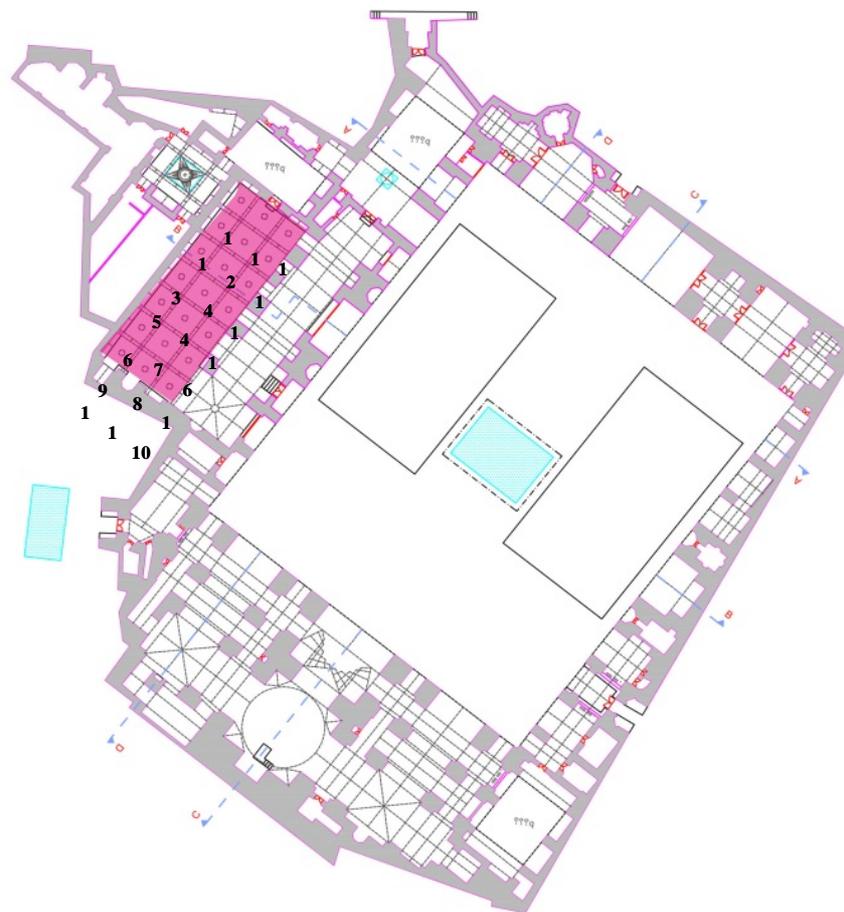
Given that ceiling skullcap is circular, and it is implemented with three corners, more space can be created and this type style is used generally in square spaces are square and rectangular spaces are covered with circular and onion coverage.

Since the skullcap arch are like the dome then they are said short covered dome arch.

(Zomarshidi, 2010, pp, pp. 97-103)



Source: Author

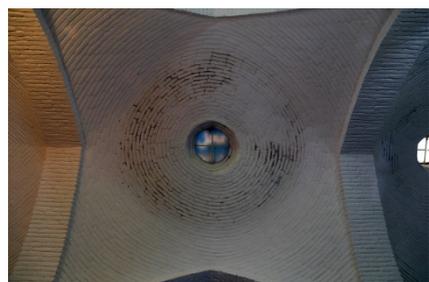




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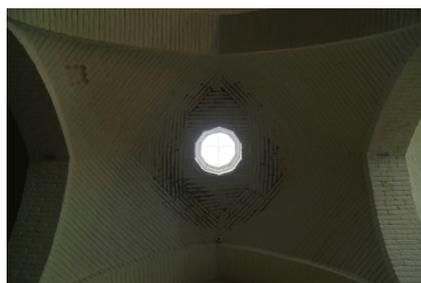
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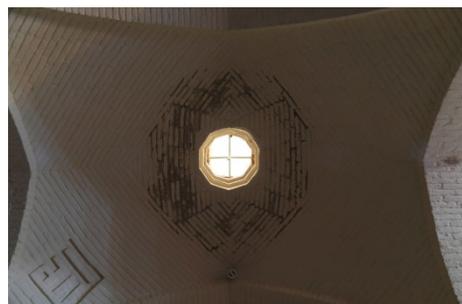
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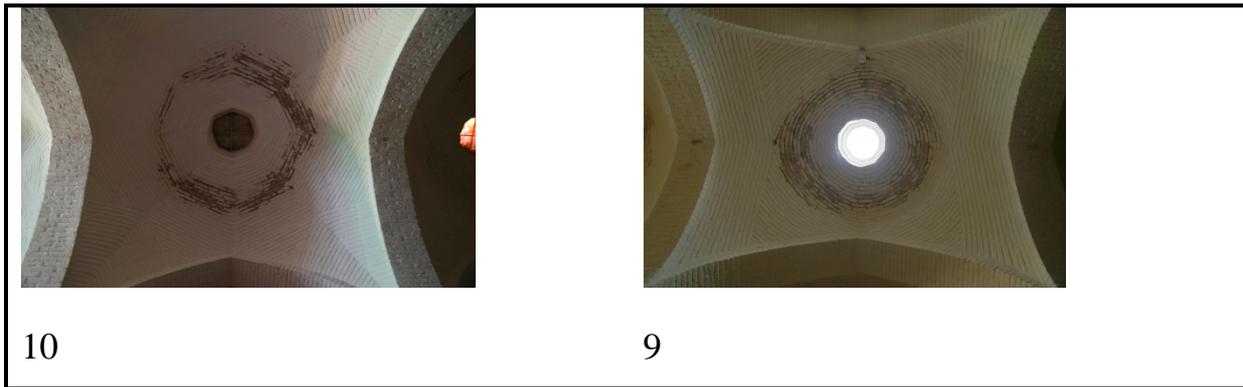
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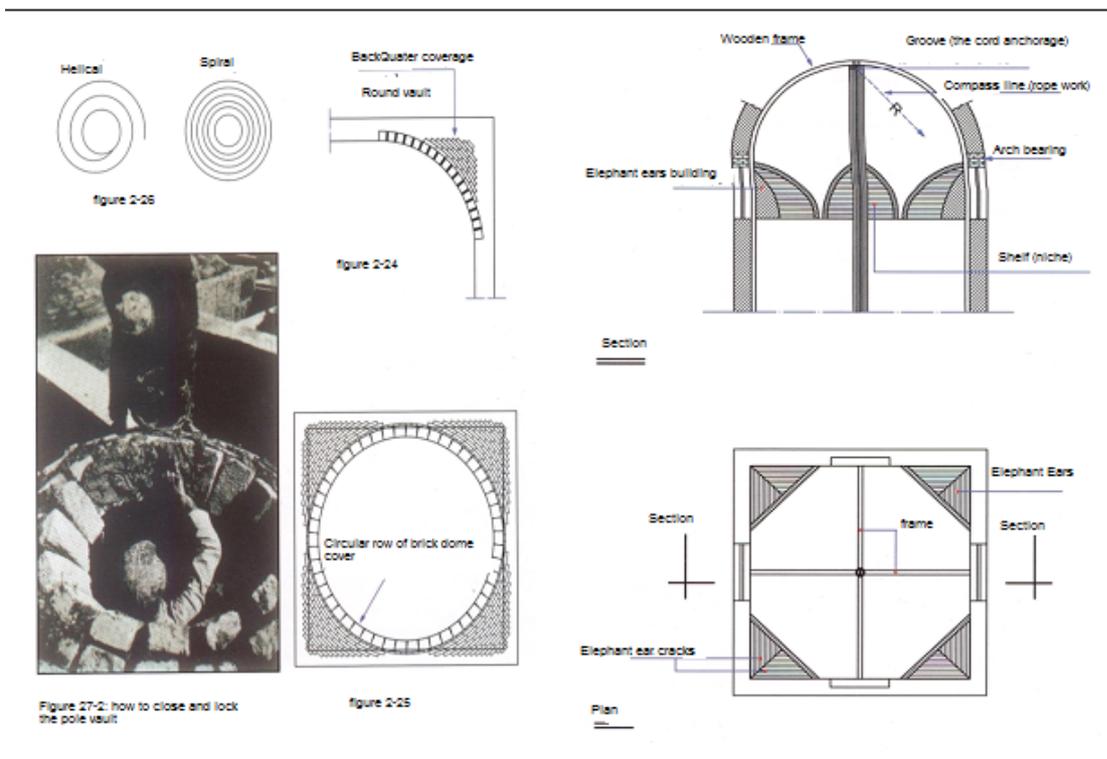


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Source: Author

This type of arch according to its type of skullcap is known as Akhtar chin.



Source: (Zomarshidi, 2010, pp, pp. 97-103)

The inside circles are called sun like roof that are doing the ventilation and lighting and their diameter is 60 cm, and they will be covered with marble. (Zomarshidi, 2010, p. 104)

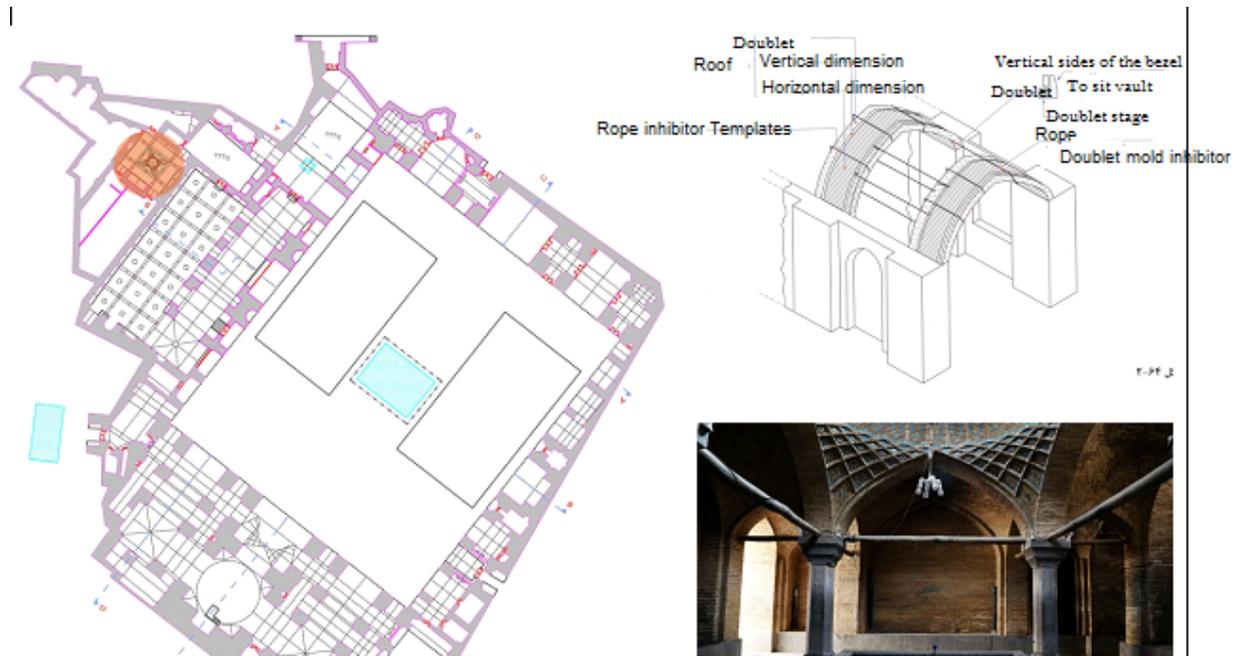
Spring house and wudhukhaneh roof

Hozekhaneh is placed in a rectangle and it is a rectangle-shaped pool with the columns like a square and a four corner space is

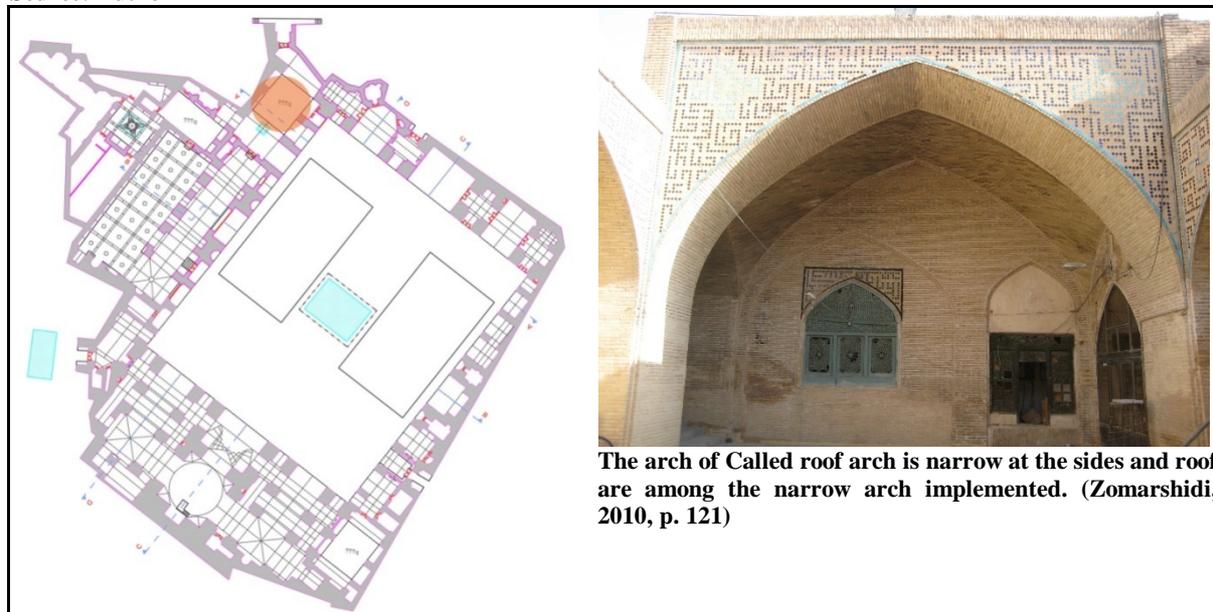
built beautifully that the peak of the columns and the peak of the domes are along in the four sides of the arch, around the middle, the fountains around the bowl are in the square and rectangular shape that both North and South fountains are grouted and bricked as sleeping and buttress and the eastern and western fountains are like

buttress, and are capped with the arch and roof. Arch and roof are coverages that arch fits between two roofs with a compliance in the

middle of the burden on link 1 to 2 or the wishbone is pa to pa as buttress. (Maheralnaqsh, 1997, p. 40)



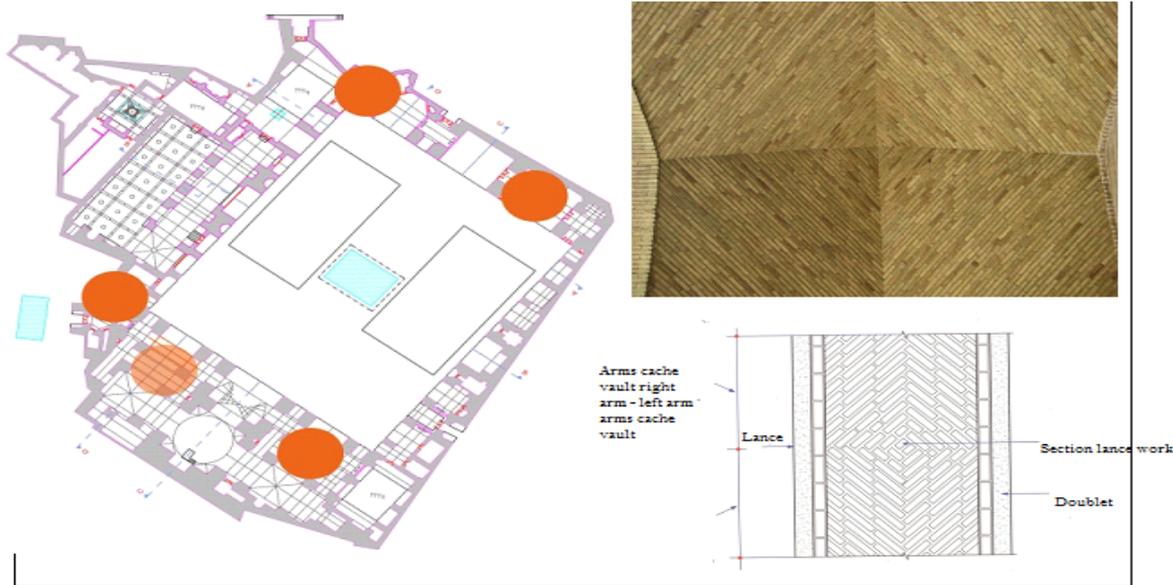
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Arch and fountain

Making the fixed arch is the foundation of the roof arch and fountain in a close proximity that is known as the arch and the

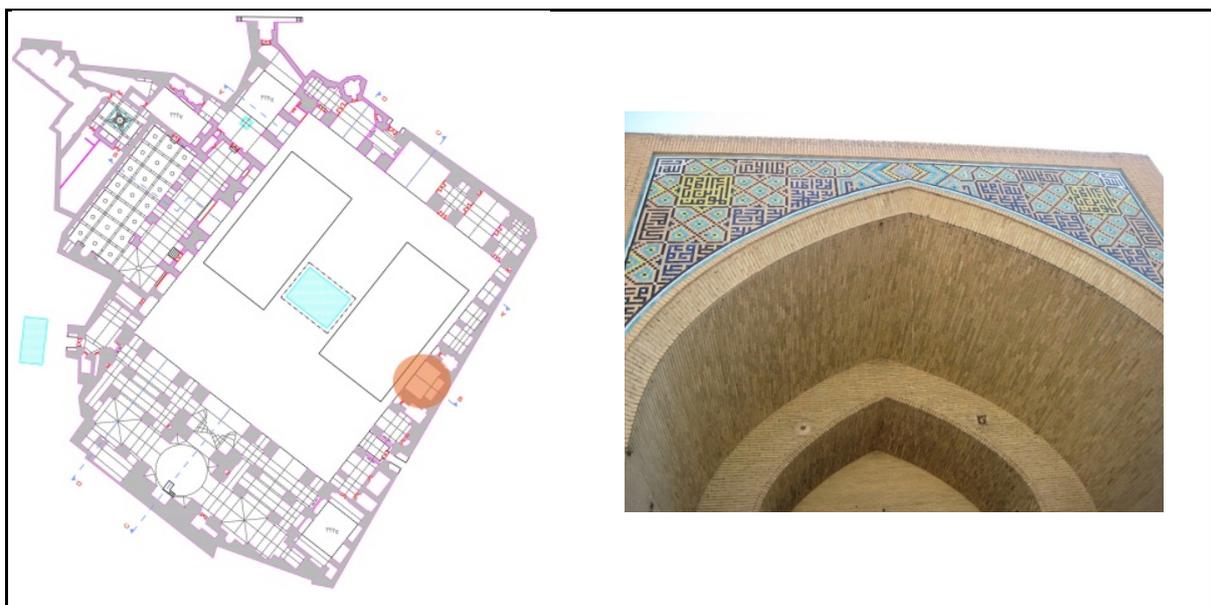
roof, and thus, this the effect of pressure on the shoulders of the roof arch, under the thick walls or columns can be considered. (Zomarshidi, 2010, p. 131)



Source: Author

Eastern Balcony

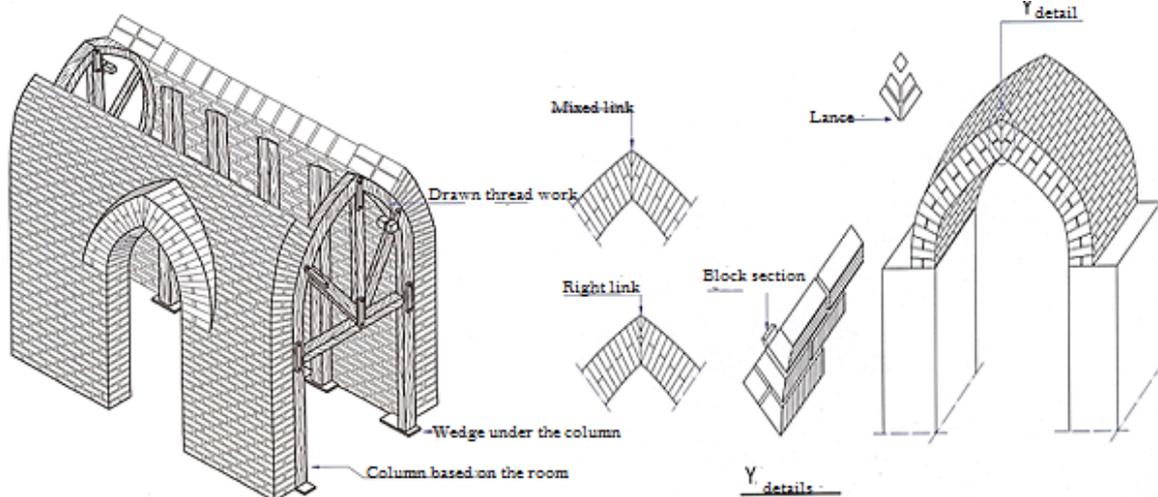
This is known as the Roman arch which is used in residences, mosques and schools. The coverage of the arch is shaped as a row up to the top sharp. The cover is shaped as a row up to the top of the arch. This coverage is like the sharp dome that two solid wooden frame is sealed with complete accessories. The frame is placed on the candles packed into drums on the front and one on each other on the back and are inhibited by forcing the form of columns by left and right barrage are bundled together and the arch is ready. (Zomarshidi, 2010, p. 145).





Source:

Author



South Balcony

This type of arch can be skullcap (circular) that is called sleeping order and its official name is 24 that in Hakim mosque its half-way is named 12. (Zomarshidi, 2010, p. 98)



Source: Author

Dome cruciform plan Akhtar China

Under the vaulted dome, there are four nodes and five foot beam. Squinch corners with the arch of the burden on the shoulders of two squares proportional to the square of the field selected in this way 64 and to the top of the circle and the cover has been ready. (Zomarshidi, 2010, p. 101)

CONCLUSION

In general, the types of arch and roof of the Hakim mosque can be categorized as follows.

- 1 winter yard, the arch tent, four domes, skullcap and the so-called circular row, known as the short coverage dome and skullcap
- 2 Howzkhaneh: Arch springs
3. Before entering of the Jerjir: the narrow roof arch
- 4 north-western and south-eastern: roof arch in a close distance and is the foundation of arch springs that is known as the arch and roof.
- 5 Balcony Eastern: Roman arch
- 6 south porch: skullcap (circular)
- 7 South dome: cruciform star row (akhtarchin)

In general, there are eleven samples of the implementation of the arch in Hakim mosque that some rooms are decorated differently, especially in the winter yard that is one of these differences that make Hakim Mosque in Isfahan during the Safavid era to be a masterpiece. And so we can consider all emulate arch and roof of the mosque as an imitation of magnificent Grand Mosque of Isfahan because all these types of arch and roof with a little difference can be seen in the building of the Grand Mosque of Isfahan.

Next guidelines about this article:

- 1) Examining the altar on the roof of Hakim mosque.

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