World Journal of Environmental Biosciences

Available Online at: **www.environmentaljournals.org**

Volume 6, Supplementary: 24-31

ISSN 2277- 8047

The Restoration and Renovation Plan of Kahak Asarkhaneh

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ABSTRACT

Translator's note: Asarkhaneh is a place for extracting oil from oil seeds such as cotton seed or raisins. The reason choosing Asarkhaneh is important for us, is that it is one of the first oil factories ans has always played a very important role in economy, industry, light, painting and also providing food for people. Asarkhanes are industrial buildings which are not used anymore because of the new technology. Hence, this method of making oil is being forgotten. Kahak Asarkhanehis an industrial building of Safavie. It is located in Chaleh Meyda, a historical neighborhood in KAHAK. Molasadra's historical house, Kahak Asarkhaneh, central mosque and part of the bazaar and Kohneh square are also located in this neighborhood. Renovating the historical city of Kahak is the main reason for its development. This approach also includes renovating the special oiling technology in the Asarkhaneh. So only repairing the building alone is not sufficient. In this project we try to take the necessary and efficient steps to sustain and transfer all the values of this building to the future generations and also to define the active status and position of this building in the modern city. Renovating this place which is located next to Molasadra's house can improve city look and attract tourists.

Keywords: *Asarkhaneh, Kahak, oiling, repair, restoration, historical building.*

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INTRODUCTION

In order to repair and restore historical-cultural buildings and transforming them into a part of the present living environment and also an identity symbol in the city, these buildings should be considered in the national and regional plans. What's more, there should be a sustainable use of the capabilities, comparative and competitive advantages of these places towards national, regional and local development. Kahak Asarkhaneh in Kahak, a town of Ghom, is one of the most valuable historical buildings of KAHAK which dates back to Safavie. Unfortunately, a large part of this building has been injured and is ruining. Asarkhanehs have a special architecture which has been used in Iran since very old times and have had a fundamental role in the people's lives. They helped people in economy, industry, lights, painting and also food. Besides the unique architecture, the operation of these instruments such as Teerlaneh (cpe) and mill rock should also be studies, to prevent it from being forgotten. What's more, with the rapid process of technology these places have changed into inefficient city spaces. They have to be taken back to life cycle with suitable restoration. In addition to all said above, this building belongs to Molasadra house which adds to its historical, cultural and political importance. According to the importance of the subject and the emphasis on renovating cultural heritage, this place could be defined as a "cultural, economic development club" in the neighborhood. This project studies the suitable methods of renovating this place and its possibility to go back to the life cycle in the modern economic and social environment. This approach could be performed by renovating the place. Performing restoration details in Iran is disperse and uncoordinated. In many cases renovating cycle is inefficient. Therefore, restoration experts have a specific look at the architectural space and the structural characteristics of any individual building to mend structural problems and bring them back to life cycle. In this study we research, design and perform suitable actions to gain a useful experience for other students to improve and make use of.

Importance of the study

To sustain and retain historical buildings, they have to be restored and repaired. And these actions should be taken aligned with the modern structure so that both sides (historical places and modern facilities) benefit each other's facilities. The goals of sustaining and renovating the Asarkhaneh could be accomplished by this approach. On one hand this process help protects cultural heritage from the hazards of the modern extreme developments, and on the other hand, it could help cultural and economic development in this region. This Asarkhaneh is important because it dates back to SAFAVIE. It used to be an industrial building and with the technology development and during time, is not used anymore. This building is also a part of Molasadra house, which is of great historical and political importance. Molasadra house consists of a mosque, reservoir, a house to live, and the Asarkhaneh which is located in the west. The architecture and structure of the

Asarkhaneh reveals the life style of our ancestors. According to the reasons above, this building is of great value and should be sustained and restored. So in an attempt to sustain and transfer all these values to the next generation, this study states the theoretical principles of a suitable restoration and renovation plan for this building.
To sustain and conserve this building, we should use modern methods to study and research on it.

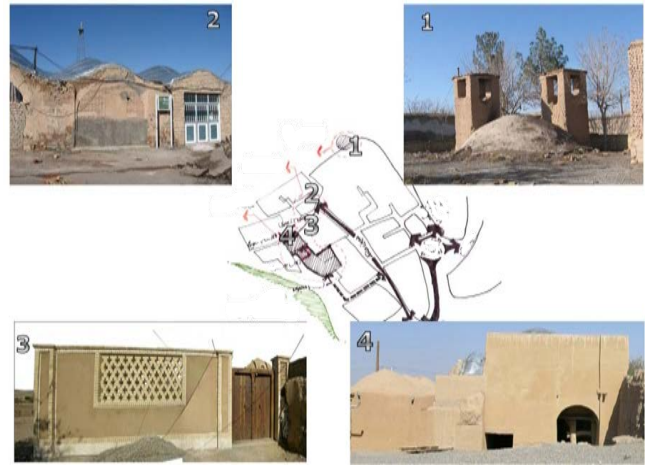
Study location
KAHAK is a small town, 40 meters from Ghom. To reach it, you have to go on Ghom-Kashan road. It is located in a distance of 20 kilometers from it. The southern part of the town is the most historical. it is not easy to reach this place. The shrine of 'Zeinab Khatoun' and Molasadra house in the northern part of the town attracts many visitors there.

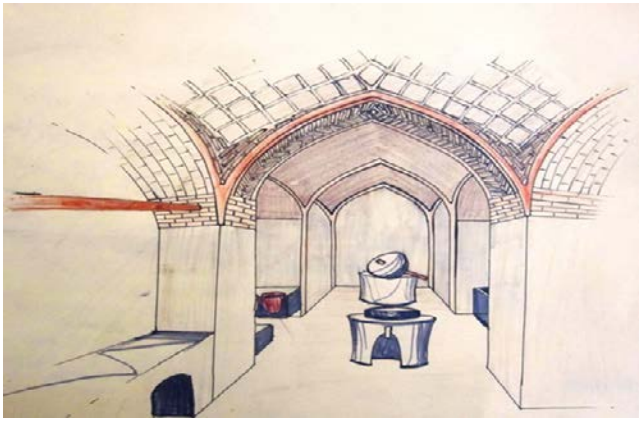
Map (1) locating Nofel Loshato (kohak) section in Ghom County, state government of Ghom county

History of the town
Kahak, before actually being named "kahak", used to be a village in the southern margins of the city, 500 years ago. It used to be next to the Kheir-abad and Omran-abad aqueduct. During time, population increased and people dispersed to have a better access to water. Hence the northern parts of the city are more disperse outspread. Some of the historical symbols of the city are as follows:

1. Mollasadra's house in south-west (in the oldest area). He was exiled to Kahak at the time of SAFAVIE.
2. Old thumb stones in south-west and the Northern part of the city which prove that this town goes back to a hundred years ago.
3. Huge plane trees in city center

Picture (1) valuable elements of Chal Hamam locality of Kohak





An overall look at the town:
The Asarkhaneh (oil pipeline factory), has always been an illustration for the economic, industrial and agricultural characteristics of its time. Its architecture for instance is very unique. Its structural quality, the types of rock and shafts and also the way they are applied, influence any visitor.

Picture (2) access paths

Photographs (1&2) Oil extraction house of Kohak

The building principles of ASARKHANEHs date back to pre-SAFAVIE times. The grand kings of SAFAVIE built some buildings in Isfahan and other cities, with an imitation of these ASARKHANEHS; the King ASARKHANEH next to Charsou and Kahak Asarkhanehin Ghom are some of these.
light has been an essential need since ancient times. There were many different ways to provide light, like using oil seeds. Candles used to be very important though, but they were mainly used by the wealthy people. For common people, oil seeds were the best way to provide light.

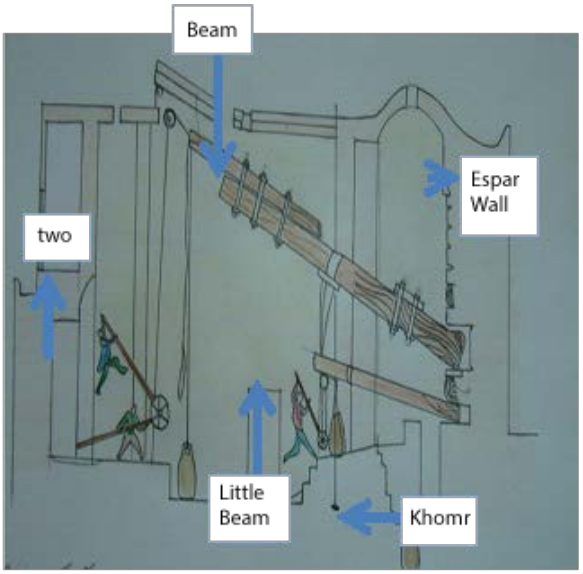
There are many witnesses and oil lights used to be used in Isfahan's central mosque. The existing dedication notes also help us understand that a large amount of money used to be spent on oil for mosques and shrines. One of the primary devices for making oil was probably "JOGHAN GARY". This device consists of two "bigger" and "smaller" rocks, turned by a cow or a camel. It was only used for castor oil. Factories like this still exist in Yazd. There are also abandoned similar factories in Chaharmahal-Bakhtiary. With the pressure of necessities, people made more modern factories and little by little Asarkhanehs were made.

This type of factory was first made in Isfahan and later some were built around Isfahan. There are almost 50 oil factories in that city (Behashtian, 30).

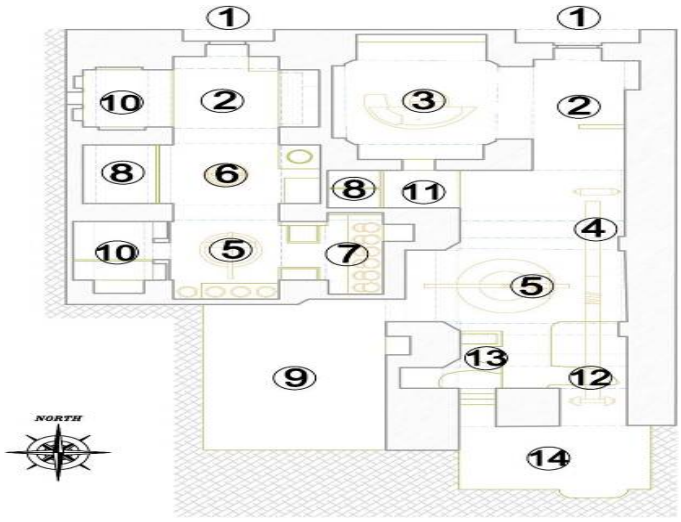
Asarkhaneh is a two story building; the foundations are usually made of lime and rock and the walls and ceilings are mainly made of bricks. The upper floor of this building which is the entrance, includes large stores of crocks and other dishes, some of which are covered by cyan, emerald and azure colors.

There was another device "GARMKHANEH" (warm-house) in this floor, used for toasting oil seeds. The downstairs was used for the oil piping device. It consisted of mill rocks, a round structure made of rock and brick and almost one-meter high. Two round rocks are placed on it (Beheshtian, 35).

Picture (3) oil extraction house segment



Picture (4) oil extraction house of Kohak, source: writers



Map (2) use plan

Repairing plan

Repairing used to have many different definitions but the common meaning today is returning the lost appearance of a building. The lexical meaning repairing and maintenance refer to taking care of the manmade heritage remained from old time. Taking care has a wide meaning including every effort made to improve the presence and connection with our heritage. These efforts include maintenance, cleaning, stabilization, reinforcement, consolidation and repair. The expressions "restoration" and "conservation" could have different meaning in different countries regarding their cultures and values.

- Conservation: Oxford dictionary defines it as the protection of the natural world; or not allowing something to be wasted, damaged or destroyed.
- Restoration: Oxford dictionary defines it as the return of something to its original condition.

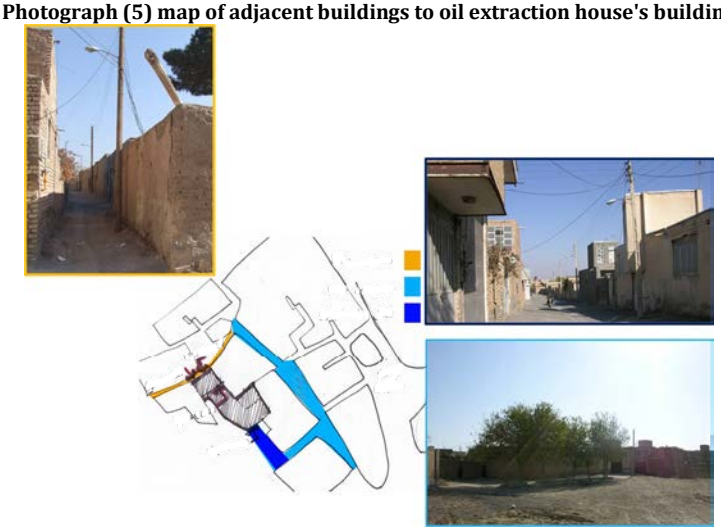
Choosing a study based method for selecting a good restoration method could lead the plan in an efficient and logical path and change the destiny of the building to a good one (Habibi, page 12).

Renovation plan:

Change is the essence of existence. Life necessities also go through change. We inherit a historical building as a document and a work of art; cause the historical building and the natural environment are valuable for their architectural and social characteristics. In such situation, repair, reinforcement, total restoration and returning a new life to this building is vital. Due to the importance of meeting the cultural and social needs, we could meet the needs of the people of the region and also give life to the building by giving it a cultural function and using it efficiently.

Therefore, the best renovation plan for this building could be using it as a mill museum. The importance of renovation of the historical buildings is because it keeps the building alive and more importantly these buildings are a part of the national wealth and also a witness of life style, building, materials, typology, architecture, culture, production, supply, residence and etc. at the same time, by renovating and using these buildings, we could help the economy of the village. Decision makers are freer to select a restoration plan for these buildings; they could keep the general shape and add necessary facilities and then use them to give service (Reza zadeh. Page 41).

Photograph (5) map of adjacent buildings to oil extraction house's building



Photograph (6) plan of adjacent buildings oil extraction house's building

Choosing a renovation method:

Renovation of the historical buildings has special rules. Renovating a building both guaranties long life of the building and makes a balance between the effective existing forces. When the act of renovation finishes, there should be a suitable situation for its function. This type of renovation is only applicable if all the issues of static, coordination and everything related to the history of the building are studied. To renovate we could take a historical-traditional approach or do a temporarily protecting renovation until suitable plans are defined according to studies. Then the best plan is selected and

then performed. Since this involves art, there are different theories for selecting the best plan. The latest technology could be customized and used. When a building is planned to be renovated for its function and some parts are ruined, the lost parts should be studied and designed carefully. With the assumption that the lost parts should be paid attention to in the new renovation plan (the same). In renovating the buildings coordination, cohesion, sequence and the variety of joining methods are more important than individual elements. Hence, the overall method of architecture is more important when renovating.

Social backgrounds of renovation:
Due to its age and the common problems of all historical context like service accessibility and civil problems, little by little KAHAK is being abandoned. When fewer people come to visit this, these valuable buildings will be forgotten. By renovating and defining a new usage for this, we could give it a new life; since the people travelling to this place, it would attract a lot of attention. This improves the local economy which motivates the locals to make an effort to maintain these historical buildings. Moreover, cultural commute improves the overall vibe of the region. In addition to all these, the new life of this building would attract attention and prevents it from being forgotten or abandoned.

The principles of the renovation plan
A variant set of actions will be taken to bring life back to KAHAN. Revitalizing and renovating means actions focused on the framework of a continuous life; an organized research on the elements and components of historical buildings and cities, evaluates different factors and variables, and finds a solution to guarantee a continuous life for these places. Replaces them, reinforces, decreases their mechanical use etc. to make sure all the components of the building or the city will start a continuous and permanent new life. This is a dynamic task to do. Needs scientific-technical evaluation and research; has to rely on quantitative-qualitative analysis for a better recognition; make use of the recognition data in the limited time. Revitalizing: is recognition thought and design which relies on time; revitalizing historical cities relies on time; it has to be according to the life style of the components and elements of the subject.

Suggestions

Primitive application: each old building is built in reply to the needs and necessities of its own time. Since human needs have changed during time, the old framework isn't suitable for today's needs; that's why these buildings become abandoned; hence makes people forget the place which is the start of their ruining.

New application: to reuse the old buildings, they should be customized for today's needs. They have to go through some changes which may destroy their value.

Strength	Weakness	Opportunity	Threats
Most residents are native and a relative stability of residence		The historical texture, residence of some old families, maintaining the traditions	The residents may leave and be substituted by non-native people
A high sense of belonging to the place and people's interest to their neighborhood	Low educated residents	The possibility for people to cooperate in the anticipated changes more	
The existing links and relationships of the neighbors	Lack of an existing excitement and happiness		
Preserving the social security due to the density of the city texture	Insecurity and crime in the ruined parts	A high degree of motivation in the residents	Increase of crime and insecurity as a result of unemployment and low income
Locating in the center of the historical town	Semi-desired civil access	The ability to attract non-residents and increase natives' income	Empowering the economic nature of the place
Adjacency to Molasadra house		The ability to attract tourists	The environmental pollution due to cars
Adjacency with the city's dried out water stream	Unbalanced local access (one side to a street and the other side to a narrow ally)	The possibility to give a new life to the river as a tourism site	
Regional access to Seram ancient site	Poor regional paths	The possibility to disperse the visitors throughout the region	Tourists may get lost
Being close to Ashnavieh and ghobad bazn			
Kahak is famous for perfect local bread	Reduction of the bread production in the city	The possibility to empower, introduce and export souvenirs by the visitors	Revealing the formula
		A cultural reproduction atmosphere and a cultural introduction of Kahak	
The building structure is healthy and strong	Incorrect and low quality restorations	The possible stay of the visitor for a long time	A pure economic exploitation of the place and forgetting the building itself

Table (1): SWOT, source: writers

Final plan
The mill museum is the best and the most suitable choice to renovate this valuable building.
Interventions:

The only interventions would be making a channel, implanting electricity wires and lightning, and purchasing the adjacent coral to be used as a library and restroom. That's the highest utilization with the least intervention in the structure of the building.

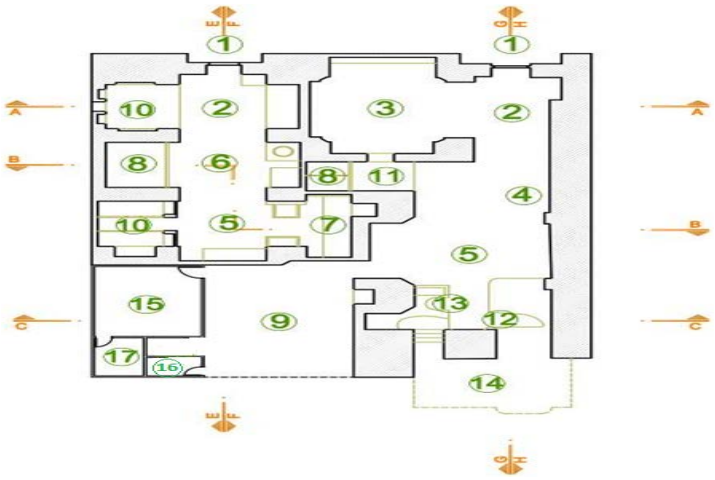
Application suggestions:

Some research was done to gain knowledge of the architecture and history of the building; the limitation and problems were evaluated; then the plan alternative was analyzed and evaluated according to the size of the Asarkhaneh. According to its historical background and the subjects brought in the historical study part, the suggested application would be a live museum. Asarkhanehs are unknown and undefined structures with a

complex and yet interesting working method; so the different processes would be shown in this museum, input and output are introduced, and the method would be explained. As the first part in the east, cotton seed mill is introduced. This introduction is using illustrations of the processes in real size, with human and animal statues. There are some guiding pictures for a deeper illustration of the processes and materials. "Tir-laneh" (CPE) working process is also showed by human statues. They could be kept still for the visitor to understand it easier. In the next part there is a statue of a person sieving cotton seeds. Downstairs you could see huge dishes of the used materials. It is difficult to reach its second floor, so it is used as a storehouse. On the part of milling by animal statue, you could actually see the seeds crush. If there is a spatial limit, the animal statue could be omitted. At the end, in the fixture

animal feed and guiding pictures help the visitor get acquainted with the place. Because of the structure of this building and the need to study it, it is recommended to purchase the بند باره site, which at the moment is being used for keeping herds and assign it to servicing parts. In a way that this place would be divided to three parts: library, copy place and restrooms.

In the west, first sesame mill, used materials and the productions are illustrated using animal statues, guiding pictures and real life oil seeds. Then there is the raisin part, where wine making is illustrated using earthenware and some more guiding pictures. In this part products' storehouses and used materials of different parts are shown.

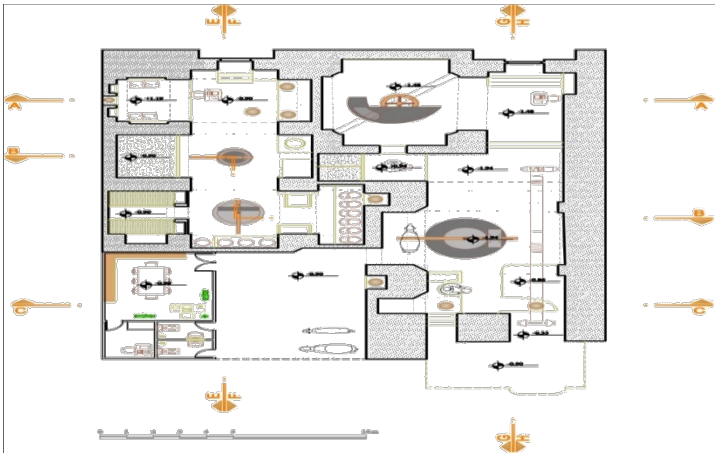


Application plan:

1. Entrance
2. Tour guide
3. Cotton seed mill
4. Tiir-laneh (CPE)
5. Oil seed mill
6. Sesame mill
7. Wine making
8. Used material store house
9. fixture
10. Raisin storehouse
11. Cotton seed separation
12. Oil piping
13. seed separation
14. no application
15. offices
16. restrooms
17. copy machine

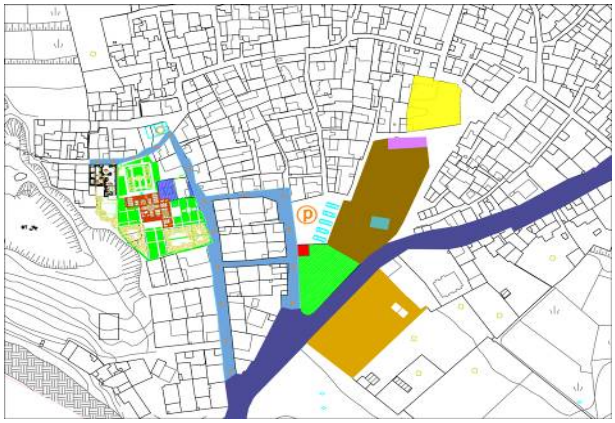
Map (3) historical use of oil extraction house

Furniture plan:



Map (4): collection process, source: writers

Access:



Map (5): access to building, source: writers

Ventilation:

In this project the best way for ventilations is air conditioner. It produces cool and warm air in a large scale. With the air conditioner we could have fresh air with no need to any windows in the room. The light holes in ceiling (hoorno) will be renovated and used as the main ventilation system.

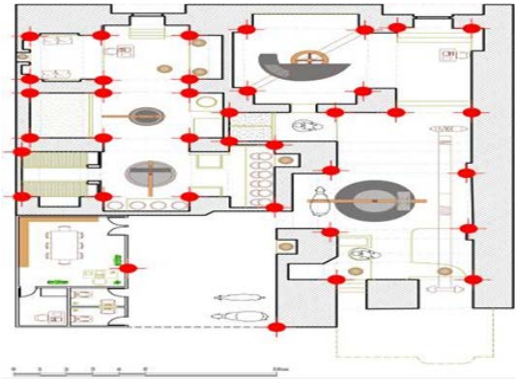
To save the building and the visitors from weather distortions and to let a sufficient amount of light shine through these "hootno"s, it is suggested to give it a glass cover as illustrated.

Facilities:

The restoration facilities are based on the specific application of the building and the climate. Since there is not much humidity in Ghom, the specialized facilities of cold and dry weather are suitable for it. As mentioned in the application section, this building could be used both as a library and a museum. The facilities should be chosen carefully based on the environment population, noise pollution, the amount of energy they use and etc. Installing these facilities should have the least effect on the building.

The chosen cooling and heating system should work with no need to channel and work with pipes. Two-piece splits are the best example. Using a separated system for each individual room allows the user to control the temperature and switch if off, when it is not needed.

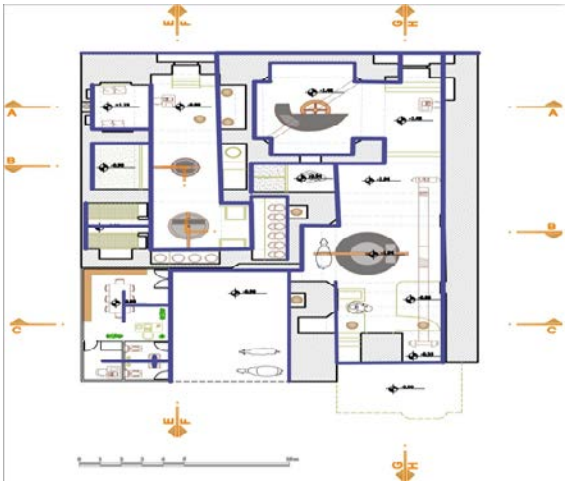
Lightning:
Spotlights and lights are one of the key ways to make historical buildings more attractive. Asarkhanehs have little light by nature, so they need a lot of lights. Yellow upward lights are suggested for the arches and yellow diagonal lights for the tools and instruments. For the exterior view, yellow light projectors shining upwards from bellow are recommended. Since the only needed facilities in this building is electricity, the electricity cables could be easily covered in metal and plastic covers and hid below the floor, with no need to damage the building for installing them. Electricity wires should be put in the brick lines carefully, and then concealed. These lights are the only light resource of the building, so a large number of them are anticipated.



Map (6): locating light resources in plan, source: writers

Building electricity network suggestion:
Electricity network is designed in a way that does not harm the building. The lines between the bricks are emptied for 2 centimeters and electricity wires are placed there, and then concealed. They should be concealed in a way that they are still visible with a little focus.

Map (7): movement path of electric wires in plan, source: writers



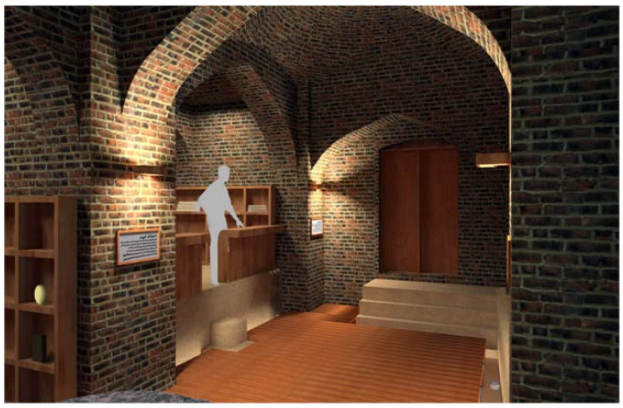
Architectural plans:

Roof plan design:

Map (8): plan, source: writers

Photographs (7&8) interior view after reconstruction

Photographs (9&10) interior view after reconctruction



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