

# **A Study of Understanding the Architectural Landscape and Construction Technology in a Complex of Historical Tombs from the Thirteenth Century**

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## **Abstract**

Architecture structural Knowledge had a logical process during the time, that beside its sustainable and repeatable nature it also experienced many innovative features. Certainly, lots of factors had effected this innovative process including economical, Geographical (Climatic), technical knowledge, cultural, aesthetic and in some cases even the most famous and successful constructions from a certain time. Regarding to this issue there are also some constructions that despite all their similarities in contemporaneously, material, function, and climate, they shaped out in many different methods of design, architecture, and decorations.

With considering these similarities and all other common factors in buildings, here the point is that what is the source of these concepts, construction, and decoration differences in inside and outside of the buildings? This question was studied in an adobe architectural construction so called a complex of historical tombs from thirteenth century located in city of Jalq, Saravan County from Baluchestan region in Iran.

What can be pointed out as an acceptable respond to this issue is that former architects noticing concepts like perspective, understanding material and building structural behaviors, in addition to their high-level knowledge in landscape design and environment, had used structural and constructional technologies to develop design progress.

**Key words:** Landscape and Environmental Design, Perspective, Structural Behavior, Adobe construction.

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## **Introduction**

Analyzing and evaluation of architectural constructions is a very complicated process. Whereas it is always flowing between art, engineering, and humanism, changing priority of these factors in construction purposes, could have different effects on sustainability and balance of built works.

Although, landscape architecture as a modern concept in architectural aspects is known as a naturalistic, functional, and people-oriented comprehension, but on the other hand, historical studies show, attention to public's taste in architectural design, has a very deep root in past. Thereupon, former architects attempted to create and design buildings in human settlements aiming to increase visual and environmental qualities and make a complete comprehension of nature. Likewise, Pierre Von Meiss mention: Architecture field consists three different concepts: The Place, The relationship between form and subject, and design as an instrument to gain more consciousness. Incidentally should mention that former people used to have more common and harmony with their surrounding nature. (Generally, based on an unwritten rule modern

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human is seeking to create definitions for concepts that he is too far from them or gradually is going to miss them. Such as natural environment and the issue of naturalism itself. Whereas former human was so deeply connected with his surrounding nature that there was no need to define an especial definition for such phrases). The only one issue that probably consist some differences between past and modern architecture is functional factors.

To create and understand such concepts, understanding common aesthetics – what is accepted as the public preference – have a very important role, and can be considered in many different aspects which needs to be covered in a separate research. Some of these aspects includes but not limited to: rulers and governors, environmental and resources availability, cultural communications and exchanges, and climatic limitations. Majority of these factors contribute on outer space's designing and indeed contain all aesthetic, cultural, identity, and social aspects, connecting with especial humanism characteristics such as history, customs, ethical, personality and social psychology. Of course, economical factor should be mentioned as an individual and very effective parameter that sometimes can affect all other factors behavior.

Generally in public spaces design comprehension studies, concentrating on cultural-identity and aesthetic factors could be more important than functional factors. Popularity and importance of public spaces, beside local interests and its familiar images, can also perform all especial characteristics of entire environment, and be a symbol of the entire city.

Environmental design, based on modern architecture definitions is a part of landscape design, but in its classic view include a vast area from objects and industrial design to buildings, urban areas, roads and many other concepts. This concept from 19th century, gradually divided to different parts and many other concepts such as urbanism was created to describe architectural design in accordance with urban areas.

The subject of this study, can be considered in same view; indeed the integrity of architectural concepts and structures can be evaluated and studied, as a sign of continuity of concepts through the time. Especially in Persian traditional architecture there is a phrase so called “Niyareh,” that specifically display the meaning of structural science of architecture, building, and material techniques, and applied materials in constructional issues. Niyareh has been always one of the biggest concerns for former architects that had never become separated from aesthetic factors. In order that, in some historic periods same as Seljuq era, attention to structural integrity led architects to use decorative elements as a part of structure. Or in another way, the change of domes design in different periods, has the same cause. For example, changing the form of short hemispherical domes in Samanid era to the higher double shells domes of Seljuq and Mongol eras, and very high domes of Ilkhanate and Safavid eras. Many of former architects, had found some standard measures for vaults, spans, and walls that all were based on Niyareh (static and construction of Persian traditional structures). Attention to this fact will bring less wonders for researchers who are studying a very simple building in far distances and find many similarities in design, structural techniques, and decorations with very famous and even governmental buildings.

This won't be too far from the mind if in Iranian architecture studies, some issues like the use and attention to the even hidden geometrical principles and rules is considered as a concept of Niyareh. It could be said that these geometrical rules, have been used in two different functions; First: In design and creation purposes like the form, volume, dimensions, and size of built works. Second: In connecting and organizing of the architectural elements and the links and accesses between them. Although basically these subjects generally should be considered as design aspects but regarding to the overall definition of Niyareh in Persian traditional architecture and the relationship of structural methods and materials, we can look at this concept in such a big picture. Because, in traditional architecture, the knowledge of the forces and weight of the building, transformation elements, from the top to the ground (from roof to walls and ultimately to the ground) all structural and design aspects in attention to the materials and decorations are shaped in a unique opinion and idea.

Of course analyzing and study of architecture in one part consists of the form and framework, and structure or in a general word the hardware part of the building and on the other hand, the attitude, which

make the links between the idea and technology. With this explanation, we should remind, that in applying of these principles, there is a default of this fact that in this communication there is a same understanding between the creator and the creature. Otherwise, there is no need to uphold the structural and constructional principles. Also we should keep in mind that there are new understandings and ways of communication with built works, that naturally come to the mind of different generations of users.

In introducing of this project, which is a complex of tombs, the design and construction of these monument, clearly shows that the form selection and dimensions the constructional methods in accordance with forms are based on a conscious decision and in some cases the designer also tried to use other none-vernacular methods. Many different interpretation and results can be regarded to this issue. But regarding to many other available samples in the same region or other cities that indicate different constructional methods, refer us to a more clear and variable causes such as the idea of design in harmony with the environment, people’s opinion and a deep understanding of structural behaviors for this diversity.

**General overview of the area**

Saravan county, with 9220 mi<sup>2</sup> (23,880 Km<sup>2</sup>) area (27°22'15"N, 62°20'03"E), is located at Baluchestan region from Sistan and Baluchestan province in Iran. This county, from North, east, and south-east is surrounded by Iran and Pakistan borders. Saravan is considered to have a desert climate.

The city of Saravan (capital city of Saravan county), was known as a small village named Shastoon, before 1928; this name have been found in Qajar historical documents such as tax bills and council rules. In former documents, like Nasekh al-Tavarikh, it is named as, Sara-Bostan.

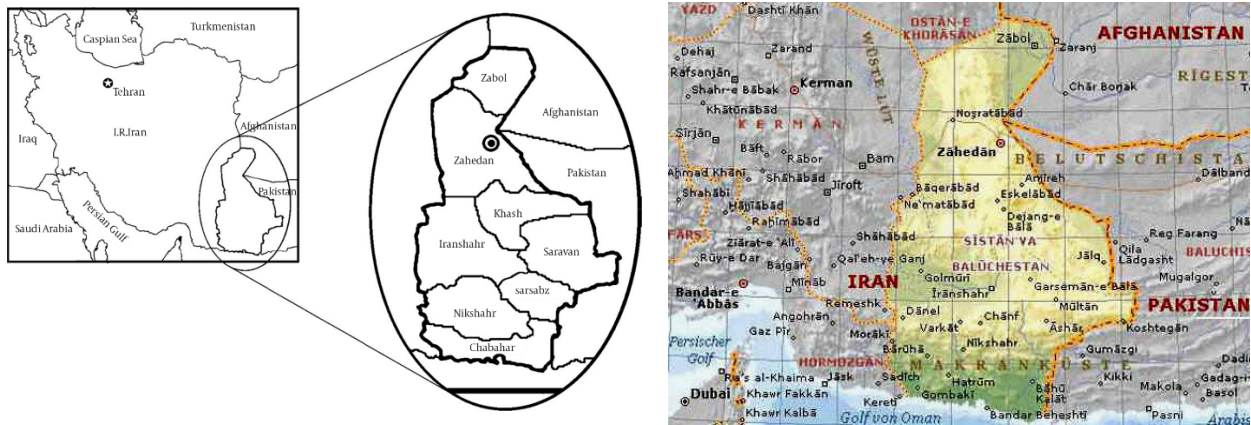


Figure 1. Map of Iran and Sistan and Baluchestan province      Figure 2. Map of Sistan and Baluchestan province and city of Jajq

There are some evidences of prehistoric human settlements in this area. For example prehistoric petroglyphs in Negaran Valley, or primitive life styles and constructions which continuously have been saved in people’s daily life, over centuries.

Kalpourgan pottery and its decorations is very famous and known as a live pottery museum, because of its primitive manufacturing methods that goes back to the time of before the invention of pottery wheels and its motifs have been saved over thousands of years.



Figure 3. Negaran Valley, Near Saravan region, prehistoric petroglyphs.( Documentation center of Sistan and Baluchestan



Figure 4. Negaran Valley, prehistoric petroglyphs. (Documentation center of Sistan and Baluchestan cultural

Several historic sites have been identified and recorded around Saravan area, that archeologists believe they belong to Parthians era. Also there are several Islamic and Contemporary sites, that all these historic evidences confirm the importance of this area in human settlements history.



Figure 5. A Balouch woman decorating Kalpourgan pottery in primitive methods, (Documentation center of Sistan and Baluchestan cultural heritage organization).

Saravan was considered as a county by 1947 and includes of five cities, six districts, fourteen rural, and 708 villages. At 2003 census, its population was 213086. One of the areas in Saravan region is city of Jalq. This city is located near borders of Iran and Pakistan and is at 47 miles (75 Km) northeast of Saravan city. An asphalt road connect these two cities together and continues to the borders of Iran and Pakistan.



Figure 6. Satellite image of Jalq city, (photo: google Earth)



Figure 7. A general view of Jalq city and its villages: - Shisheh-Riz – Suru – Kuhkan, (photo: google Earth)

Some local documents had mentioned this city under the name of Golshan and pointed out that the city was completely devastated during Mongol invasion. And when all Qanats of this city became dried, the city was named Jalq, which means something that has been crushed and crumpled. Basically the modern city of Jalq, has been shaped over centuries of rural life. Indeed small villages over centuries grew up and joined together and shaped this city. The most important villages of this city include: Shisheh-riz, souro,

kouhkan, and some other individual houses. Based on the latest census the population of this city is around 25,000.

City of Jalq, is famous for its agricultural products specially dates products. There are many different types of date palms in this city.

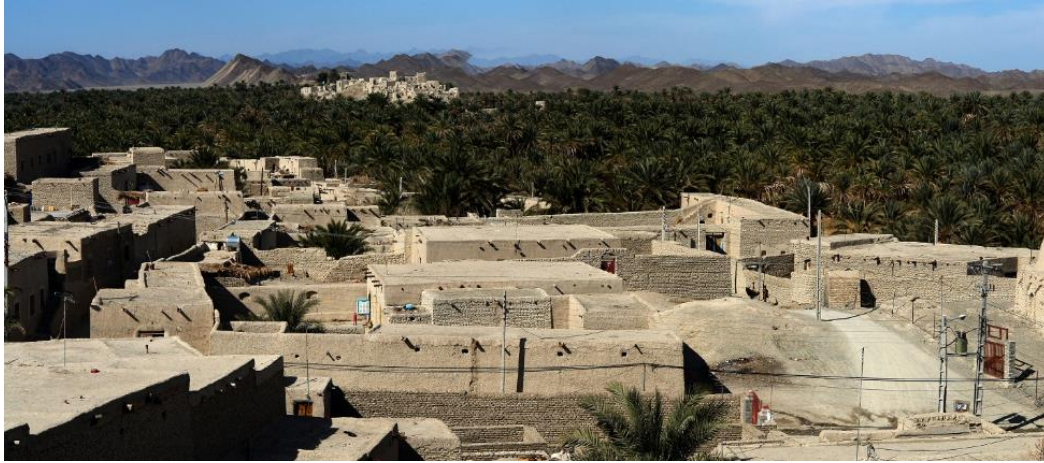


Figure 8. General view of Jalq city and its Palms groves, from Kuhkan looking at Shisheh-Riz (2010), (photo:M. Keyhanpoor)

Majority of buildings and houses of this city are surrounded with prosperous palm groves, and in this way, literally, we can consider this city as a Garden City, especially in more historical parts where all passages and lanes are directly connected with natural environment. Water sources in this area include of seasonal river of Mashkid, 9 series of Qanats, and some wells.



Figure 9. The Jalq garden city and its new constructions





Figure 10 , 8. Jalq city, Shisheh-Riz Entrance, All roads and passages are completely organic and in harmony with nature, (2010), (photo:M. Keyhanpoor)



Figure 12, 13 Organic lane and passages of Shisheh-Riz Through Palm's Groves, (2011),(photo:M. Keyhanpoor)

### **Tombs of Jalq**

In city of Jalq there are many historical tombs in each three parts of this city: Shisheh-Riz, souro, and Kuhkan; but here in this paper we will concentrate on study of tombs at Shisheh-Riz part.

The conservation and restoration project of Jalq tombs started at 2006 and it's still under the process. The conservation of tombs of Kouhkan and Souro was the first phase of this project. The author, as a member of the conservation team have been working in this project from 2006, and very closely studied all these tombs in their architectural and constructional characteristics, and their relationship with other similar buildings in their neighborhood. Therefore what is coming in the next is a more critical view to the whole concept of an issue that fore sure needs to be continued with more researches to obtain more reliable results.

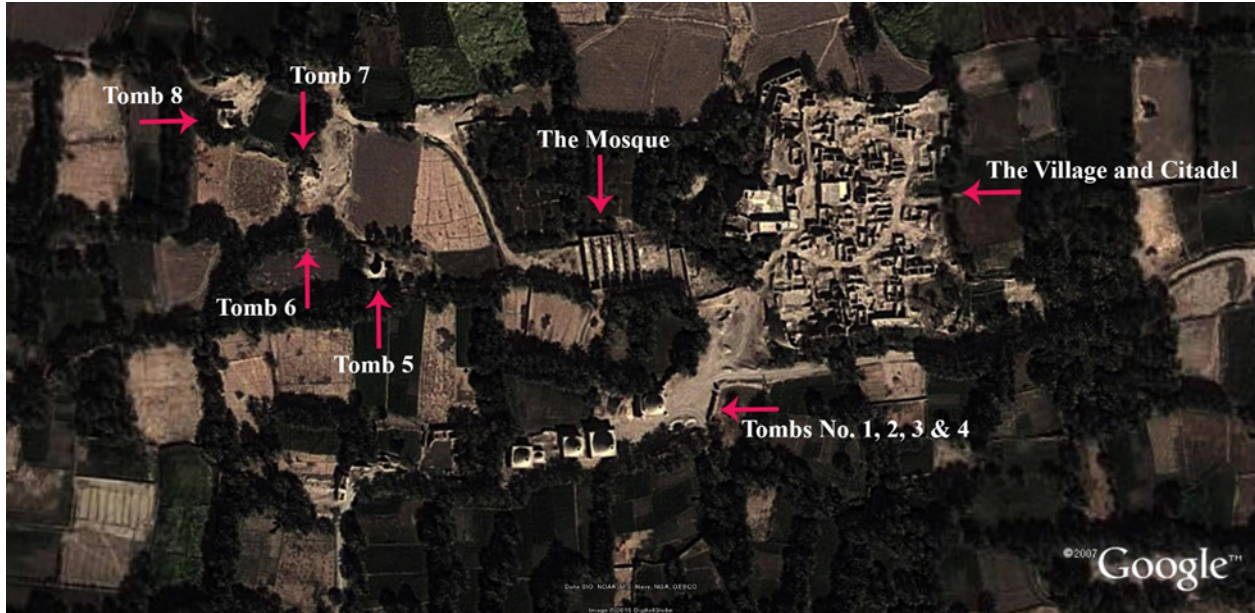


Figure 9. a general view of all Shisheh-Riz historic monuments, (photo: google earth)

In a general view, Shisheh-Riz consists of many historical buildings that each one could be studied in an individual project; the village and Citadel of Shisheh-Riz, the historical mosque of shisheh-Riz and the tombs complex.

The complex of village and citadel include a manor and over 70 cottages forming in a rectangular shape from north to south and surrounded with a relatively high bulwark. The building of manor is the best preserved and highest building of this complex.



Figure 11. General view of Shisheh-Riz village and ruined of historic houses, (2010), (photo:M. Keyhanpoor)

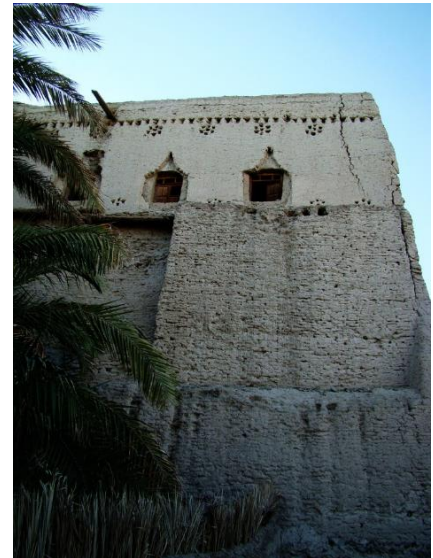


Figure 10, Manor, (2011), (photo:M. Keyhanpoor)

The mosque is located out of village and is very close to it. It has a length of 98.5 ft. (30 m) and the width of approximately 49 ft. (15 m). This mosque is divided into almost two equal parts, courtyard, and Shabestan. Shabestan has five rows of columns in every 6.5 ft. (2m) that are extended to the west, and regarding to historical evidences it used to have a flat roof made of palm's trunk and leaves. It also has a very simple and non-decorated Mihrab. The studies show that this mosque can not be older than 300 years.

Tombs of Shisheh-riz include a complex of 8 separate buildings which are located in different places and in distance from each other. Architectural and archeological studies indicate that tombs were built very long ago before the construction of mosque and the current buildings of village. Similarities in forms and decorations, discovered potteries in surfaces and archeological excavations all confirm this issue. Although these tombs belong to different historical periods – from Ilkhanate to Safavid- but because the first constructions refer to Ilkhanate period, this complex is named as a 700 years old complex.



Figure 12, The mosque of Shisheh-Riz, (2011), (photo:M. Keyhanpoor)



Figure 13. A general view of tombs No. 1, 2, and 3, (2011), (photo:M. Keyhanpoor)



Figure 19 A general view of the old mosque of Shisheh-Riz and tombs No. 5, 6, 7, and 8 in its background, (2011), (photo:M. Keyhanpoor)

### **Brief introduction of tombs of Jalq**

For an easier way to define and recognize the tombs in this complex, we put them in a numeric system from one to eight. Tomb number one is the closest tomb to village and number eight is the most far tomb. It should be remembered that this numbers do not refer to construction period of these tombs.



1. Tomb number 1: This building is the most complete building in comparison with other tombs, and consists several parts. There is a designed open space beside the manor and this tomb entrance that connects to the first two tombs (number 1 & 2) and the entrance of both is facing to this space. This tomb has a square plan with dimensions of 37.7 \* 37.7 ft. (11.5 \* 11.5m) and the height of 39.4 ft. (12m). The height of walls is 18ft. (5.5m) and the height of dome is 21.3 ft. (6.5m). Walls are constructed on top of a short base course with a height of 50 cm, which is located on a simple foundation. The entrance is located at southern side of building and is formed with a pointed arch. The studies show that in a later time, a structure like a small Iwan was added to this entrance which now is devastated. Due to the lack of architectural evidences, in restoration activities the remains of ruined Iwan, were preserved in their place and we avoided of rebuilding it. At all four outer corners of this building there are four polygonal towers that in addition of making more pleasant form, also increase its stability. All four outer sides of tomb are covered with arcades. The inside walls were covered with plaster coatings that many parts of it are missing. The inside arcades demonstrate a more beautiful view of this tomb. The dome is formed by using a very simple shape of Squinches in arcade forms. Almost in all eight buildings the timbers of palm's trunk have a key role in forming Squinches. The octagonal drum of dome consist of some decorative windows that also are used as the light sources for inside area. This building was repaired and preserved at 2009. Although during the studies and conservation activities we couldn't find any grave, but local people believe, this place is



Figure 20. Tomb No. 1 After restoration, outside view, (2010-11), (photo:M. Keyhanpoor)



Figure 21. Inside of tomb no.1 Before restoration (Arcades and Squinch), (2010), (photo:M. Keyhanpoor)

definitely a tomb.



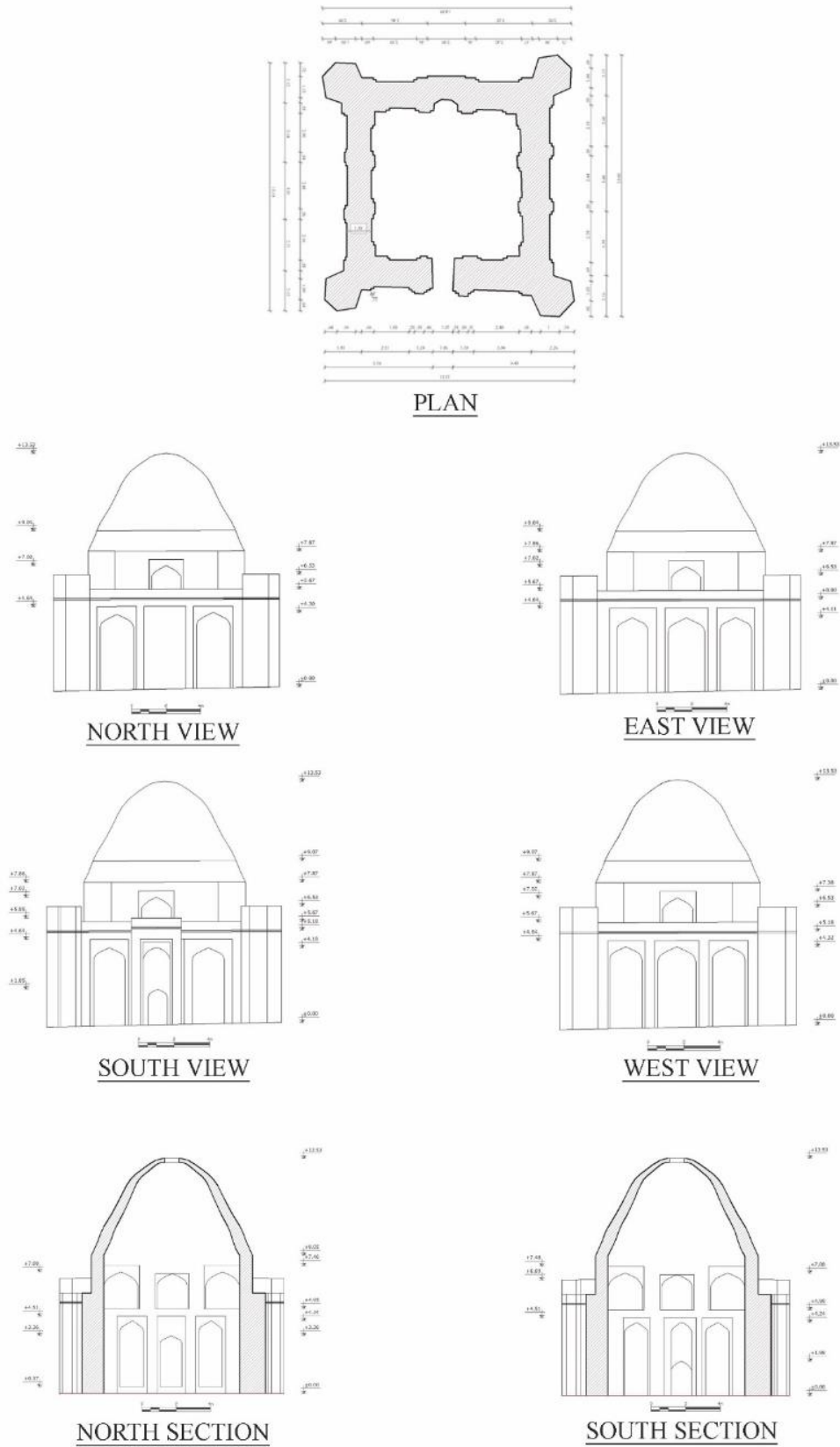


Figure 14. Tomb No. 1, (Documentation center of Sistan and Baluchestan cultural heritage organization).

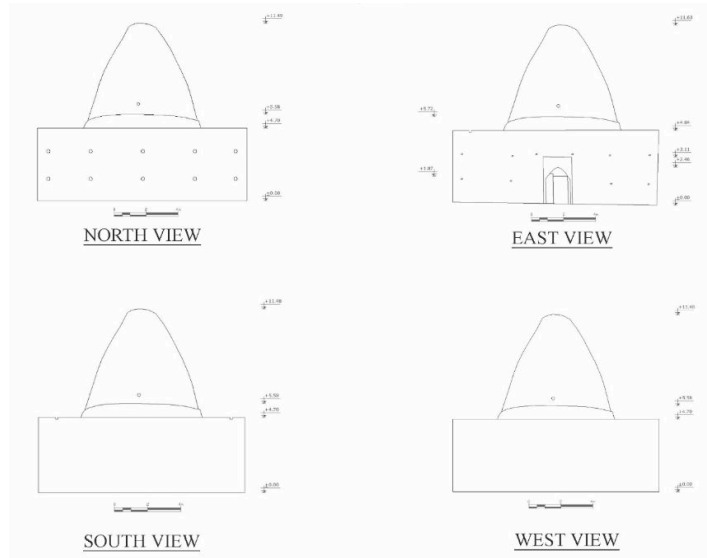
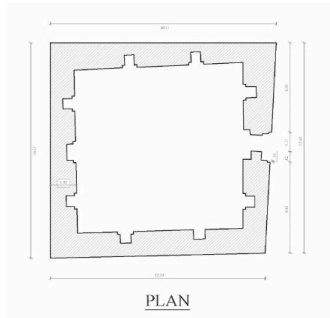
2. This building is located near the tomb number one. This tomb has also a square plan with dimensions of 41 \* 41 ft. (12.5 \* 12.5 m) and the height of 44 ft. (13.5 m) that makes it the highest building of this complex. In outer side it forms as a complete square. The height of outer walls is 14.7 ft. (4.5m) and the outer height of dome is 29.5 ft. (9m). However, inner part of dome forms in a different way. The process of changing square plan to circle plan of dome, start at level of 3.9 ft. (1.2m). At this level, walls gradually start to become thicker through the inner side. This thickness, increase the strength of load-bearing of walls and also help to build up the high-rise parabolic arch of dome. This high-rise arch cause a large amount of thrust forcing on lower level structures, which are supported by inside thick walls. These kind of arches and domes could be found in many of historical Yakhchals (Ice houses) and Ab-Anbars (Cisterns).



Because the biggest part of these structures is located underground, they have a very good stability against thrust and compressive forces caused by the high height of massive dome. Also the large space under these kind of domes create a good air circulation and keep the temperature low. We possibly can say, the very simple Squinches in this building are so called Filpoush (A very simple structure at the corners of dome chamber for changing the square plan to circle. The technique is like corbelled domes, as the layers get higher, each is slightly corbelled toward the center and the form of square change to circle.) The entrance of this tomb is facing to east. We couldn't found any clear evidence of grave in this building.

Figure 15. Tomb No.2, outside view before restoration, (2011), (photo:M. Keyhanpoor)

Figure 17. Tomb No. 2, inner view (squinch and dome), (2010), (photo:M. Keyhanpoor)



3. The third tomb is exactly located at the west side of second tomb and has a parabolic arch that forms a dome with an approximately height of 33 ft. (10m). Dome chamber is a square room and smaller than second tomb and has dimensions of 32 \* 32 ft. (9.75 \* 9.75 m) in outer side. The entrance of this tomb has an access to narrow passage at beside of tomb. This passage goes through southern side of these buildings. The Squinches of this tomb is very simple and were made of palm's timbers, that change the square form to an octagonal form and makes it possible to form the circle plan of dome. Construction method of this dome, same as the other tombs in this complex, is corbelled technique. This method is very simple and there is no need to use any kind of templates for construction. It is completely depended on experiences of person who build the dome. The outside walls are covered with a layer of cobb and the inside walls are covered with a layer of white plaster. There is also some decorations like arcade on surface of inside walls that do not look like very same as each other.



Figure 19. Tomb No. 3, General outside view-before restoration, (2011), (photo:M. Keyhanpoor)



Figure 18. tomb No. 3, General inside view-before restoration (Arcades & Squinch), (2011), (photo:M. Keyhanpoor)



Figure 20,29. General view of Tombs No. 1, 2, & 3 After restoration, (2011), (photo:M. Keyhanpoor)



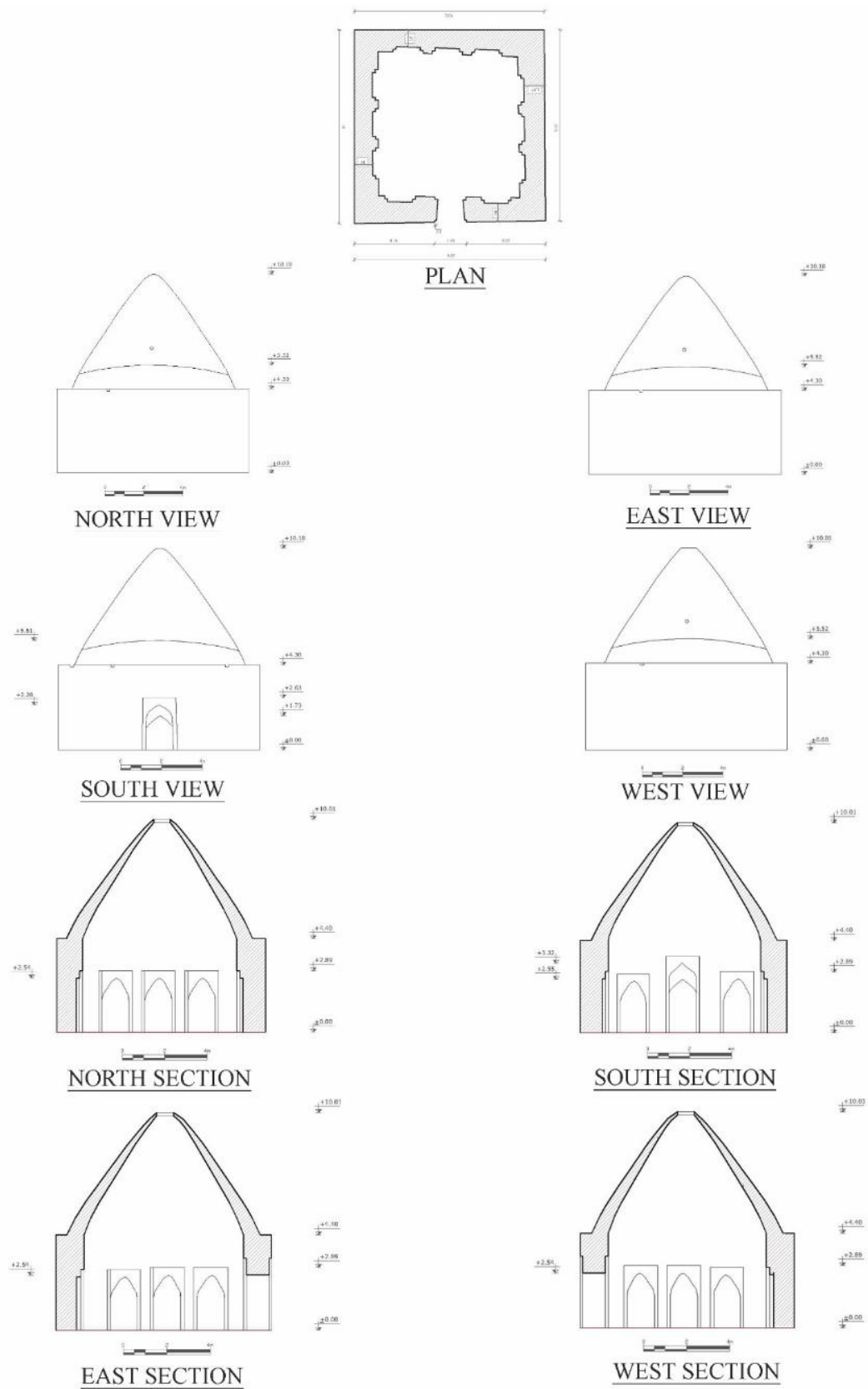


Figure 30. Tomb No. 3, (Documentation center of Sistan and Baluchestan cultural heritage organization).

4. Tomb number four has the same figure and structure, but there are some differences in its plan compared with other tombs. This building is named Mir-Abd-Allah. Tomb of Mir-Abd-allah consist of two distinct part. The entrance is located at eastern side of building and has a very beautiful pointed arch. The first part is a very small entrance, so-called Hashti with a square plan and dimensions of 18.7 \* 18.7 ft. (5.7 \* 5.7 m) which connect with the bigger part ( where the graves are located) through a not very big entrance. Dimensions of this part are 32.8 \* 32.8 ft. (10 \* 10 m). The domes of two parts are formed out of elliptical arches and were made with corbelled techniques, which are shorter in the entrance and rise higher at main part. This tomb in a whole picture is shorter than tombs no. 2 & 3. Outer walls of building are covered with cobb and the inside surfaces have plaster coating. Squinches of this tomb are a kind of Patkin (corbelled squinch). There are some niches at inside walls that beside their decorative purposes have some functional usage to put some stuff on them. There are four graves in main part of this tomb that despite all other damages are



Figure 21. Outside view of tomb No. 4, after restoration, (2010), (photo:M. Keyhanpoor)

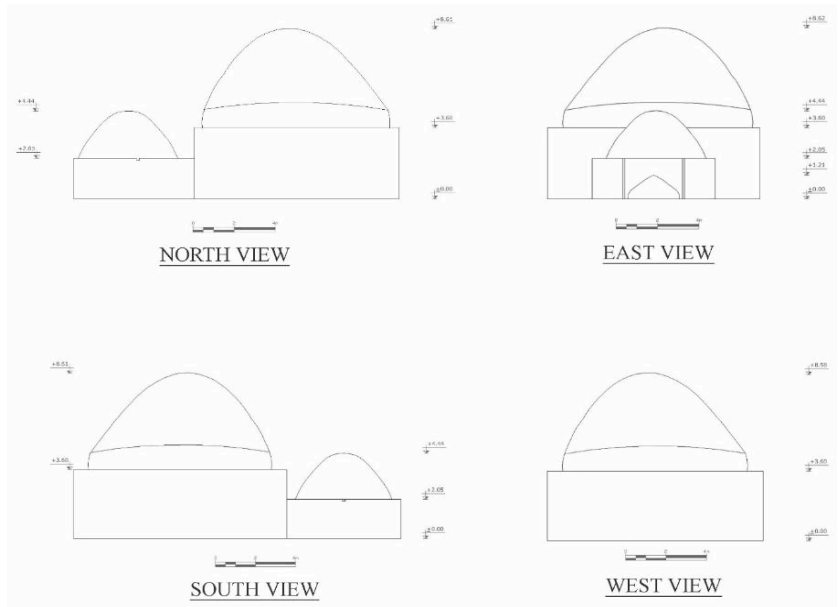
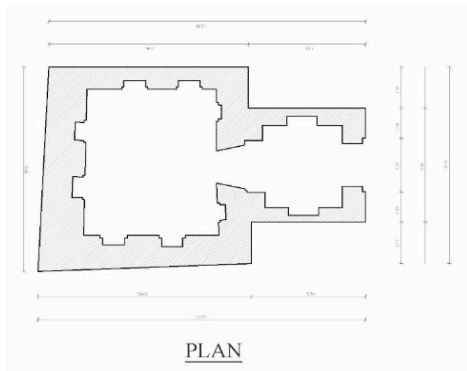


Figure 32. Inner view of tomb No. 4, (2010), (photo:M. Keyhanpoor)

clearly visible.

Figure 33. Tomb No. 4, (Documentation center of Sistan and Baluchestan cultural heritage organization).





- Tomb number 5 lies a bit further from the first four tombs and is a square plan building with dimensions of 29.5 \* 29.5 ft. (9 \* 9 m). Outer walls of this tomb, instead of cobb coverings, demonstrate some decorative (Khesht) adobe works. Arcades and some holes in form of Chalipa (Persian crosses) are visible on remaining walls of this building. It also, same as tomb number one has a designed entrance in form of an Iwan that was built at the same time of erection of main building. There are two graves in this tomb.

Surprisingly although this building depicts a square plan at its outside, but there is almost no recognizable corner at inside of it. Dome starts forming from the very bottom of walls, and walls start becoming thicker of around 3.2 ft. (1m) at inner side. Form transition elements of this tomb include designed arcades which step by step change the square plan to a circle plan. The only attentive corners in this dome chamber are decorative small Squinches in form of Patkaneh (a super imposed projected tiers of niches) inside the arcades. This dome is also a corbelled dome and all its inside surface is



Figure 23. Tomb No. 5, outside view, (2011), (photo:M. Keyhanpoor)



Figure 35. Tomb No. 5, inner view, (2011), (photo:M. Keyhanpoor)

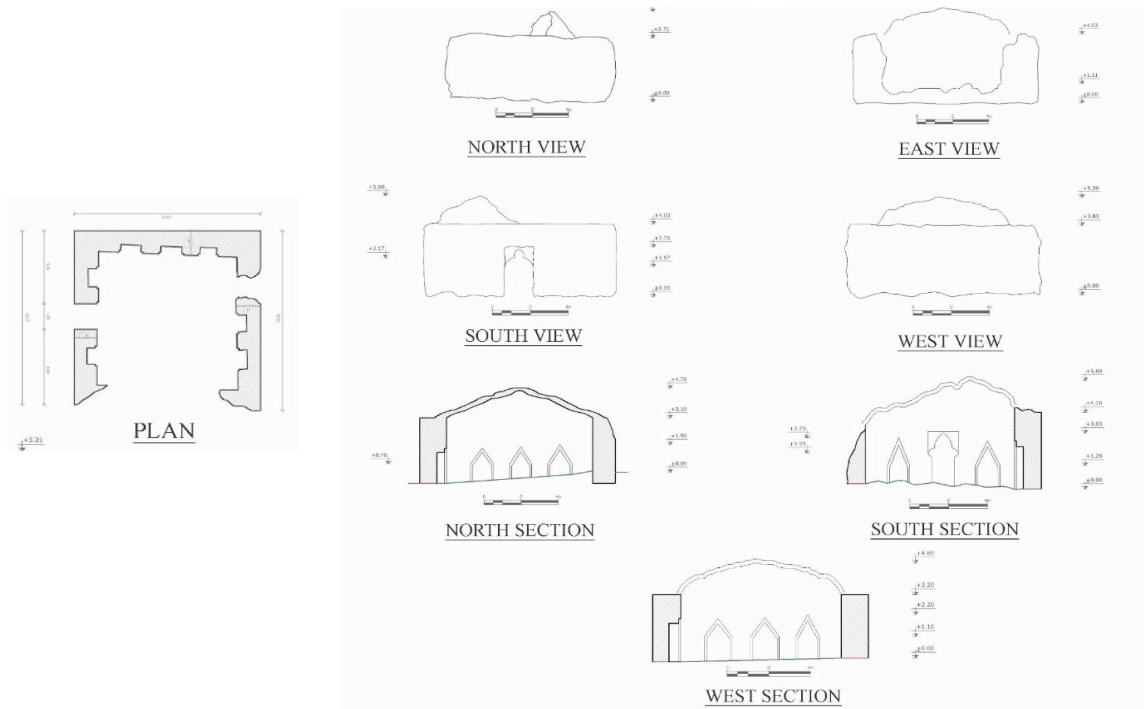


Figure 22. Tomb No. 5, (Documentation center of Sistan and Baluchestan cultural heritage organization).

covered with plaster coatings.

6. The sixth tomb is the most damaged one and is located at a higher level among other tombs. This tomb is built on an approximate level of 10 ft. (3m) higher than its surrounding lands. Except the remains of its foundation and a part of the wall with dimensions of 34.5 \* 35.4 ft. (10.5 \* 10.8 m), all other parts were destroyed. This tomb is the only building of this complex that contain brick materials in its construction and regarding to this fact, it is probably true to consider it as a more valuable building rather than other ones. In addition to environmental damage causes, this tomb is effected with some more impact factors. Considering that brick is an imported material to this area which doesn't have any production sources in entire region, and due to the lack of using of such material in repairing activities in this area, beside some other factors, such as reusing of available materials for new construction purposes, the chance of survival for this tomb became near zero percent and finally it was completely ruined. Up to present time, we couldn't find any evidence about constructional methods and possible shapes of dome and Squinches of this tomb.



Figure 24. General view of tomb No. 6, (2011), (photo:M. Keyhanpoor)

7. Tomb number seven has the same square plan with dimensions of 32.8 \* 32.8 ft. (10\*10m) and as can be observed from its remains, its height is probably around 32.8ft (10m). Construction materials are all adobe brick, but relatively are more characteristic comparing with other tombs of this complex. Although this building was seriously damaged under the effect of natural and human causes, but there is still enough evidences to find out an overall picture from the whole body of this tomb. At exterior walls of this tomb there are some decorative courses made of adobe brick. These decorations are in diamond shapes inside margins and at the top of these margins, we can see a combination of small diamonds and arcades forms. All interior walls are covered with plaster. This tomb also used to have an entrance section so called Hashti, which a large part of it, is missing. Squinches of this building are in form of Patkaneh (a super imposed projected tiers of niches) and same as other tombs, palm trunk were used for thrust forces transition process. The corbelled dome of tomb is a kind of ribbed vault (Tarkin) and its outer shell is covered with cobb.



Figure 26. General view of Tomb No. 7 and its Tarkin dome, (2011), (photo:M. Keyhanpoor)



Figure 25. Inner side of Tomb No. 7 and the Patkaneh (squinch), (2011), (photo:M. Keyhanpoor)



Figure 40. General view of tombs number 5, 6, & 7 , (2011), (photo:M. Keyhanpoor)

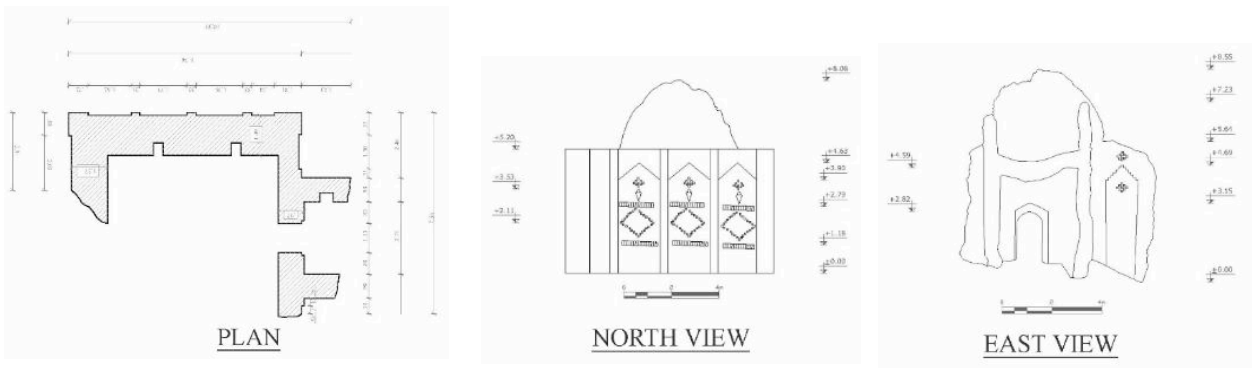


Figure 41. Tomb No. 7, (Documentation center of Sistan and Baluchestan cultural heritage organization).

8. The last existing tomb of this complex, number 8, is known as “Pir-Barahoo tomb”, and has the same square plan with dimensions of 28.5 \* 29.2 ft. (8.7 \* 8.9 m) which is covered with a dome. The entrance is located at south side. Its corbelled dome is a semi elliptical dome which is constructed on massive walls with 4 ft. (1.2m) width. The decorations of Pir-Barahoo tomb include of Patkin (corbelled Squinches) and some niches and cornices. All these ornaments are applied very simply and primitively. It is speculated that this tomb have a special place among local people, because not only its name has been saved over centuries, but also it contains the highest number of premature and stillborn babies burials, that caused many structural damages due to elimination of adobe bricks from walls. This burial method is based on a local belief, and when a baby is born premature or dead, the dead body should be wrapped in a white cloth, and after removing one or two pieces of adobe bricks from the wall of these tombs, it should be placed inside it and will be covered again. People believe that in this way, they can protect their family of such bad fortunes and hazards. In many tombs of this area and generally in Blouchestan region, we found many samples of this kind buried bodies.



Figure 27. Inner view of tomb No. 8, (2011), (photo:M. Keyhanpoor)



Figure 43,44. Buried stillborn babies in walls of tomb no. 8, (2011), (photo:M. Keyhanpoor)



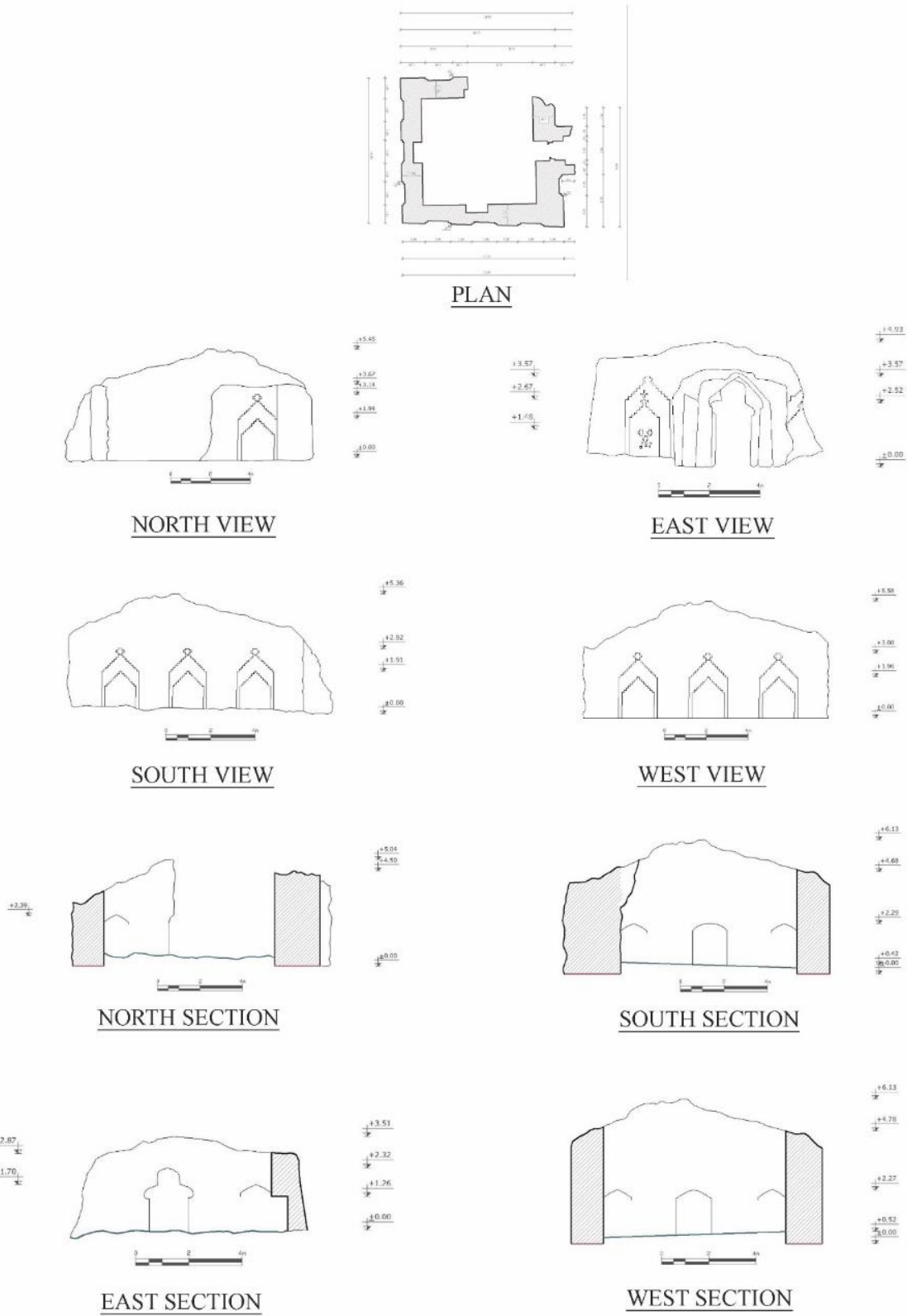


Figure 28. Tomb No. 8, (Documentation center of Sistan and Baluchestan cultural heritage organization).



Beside the conservation and restoration activities in these monuments that include a vast field studies, surveys, and comparative studies, there was also archeological studies in written resources and different onsite excavations, and lab researches using XRD, XRF and thermoluminescence methods that indicates a more clear information on chronology studies. All the results and technical reports of these studies are available at cultural heritage documentation center of Sistan and Baluchestan province, these reports have not been published in any scientific Journal until now. The biggest part of these studies and excavation was done on tombs No. 7 and 8. The results of these studies shows that the erection of tombs No. 7 and 8 goes back to 13th century, the beginning of Hulagu Khan Monarchy.

Regarding to the research's finds and the proximity of tomb No. 1 to citadel and mosque and the small square in front of this tomb, also with attention to the constructional methods of squinches and the dome specially its drum, with some caution we can probably say that this tomb belongs to the 12th or 13th centuries ( late of Seljuk or the beginning of Ilkhanate).

Tomb number one according to dome's constructional method and especially its drum, probably belongs to 12th & 13th centuries (6 & 7 AH.), Seljuq or Ilkhanate era. Tombs number 2, 3, & 4 are presumably from the late Timurid era and early Safavid era. This issue can be find out from the similarities and relatively of forms and construction methods in these three buildings, also the name of famous persons, Mir Abd-Allah, were found in local literatures that goes back to Safavid era. Tomb number 5, also belong to Timurid era. Regarding to dome's construction method used in tombs 2, 3, & 4, we can consider tomb number 5, as the basic model of these three tomb. However The tomb No. 6 is probably from Ilkhanate era and 13th century, because in addition to its close connection with tombs No. 7 and 8, we found brick works in its structure that based on thermoluminescence studies these bricks belong to 14th century (1315 AC.), so if we consider these bricks as the original materials of this building, then the erection date of this tomb goes back to Ilkhanate era. But as it was mentioned above, tombs No. 7 and 8, with a high possibility should be considered as an Ilkhanate and 13th century monument.

What should be mentioned here is that all architecture and landscape design progresses of this area have been fundamentally naturalistic and related to their environment. And this is what, unfortunately, we cannot see in modern constructions at this city. At entire historical town all lanes and passages, have been formed, not based on a predesigned map, but in an organic pattern and naturally follow the curves, hedges and organic lanes between palm groves. These lanes and passages draw many familiar pictures of eastern people memories and indigenous perspectives, which not only we have seen among hundreds of miniatures, but also their footprints can be found beyond oral literatures and folks.

In tombs number 2,3, & 4 what is noticeable is attention to rhythm and transposition in terms of visibility, despite the order of their construction period, the variation of their sizes emphatically express a designed perspective. Even for this reason and because they are so close together, some changes was applied in design of openings and entrances, that different entrance locations at east and south sides emphasis this status. Here also the relationship between these three tomb with tomb number 1 is remarkable. Design of entrance of tombs number 1 & 2, that one's is at south and the other is at eastern side of building, lead both to face the shared small open space in front of them.

The technique of constructing a dome at an octagonal drum and arcade Squinches, can be followed and seen in many monuments from 11th and 12th centuries. However, using different kind of parabolic and elliptical arches in combination with different kinds of Squinches in three building in a same place and from a same time with the same function, clearly refers to a creative and detailed mind designer. To build a dome with a height of 44.3 ft. (13.5m) and a span of 32.8 ft. (10m) with adobe materials and clay mortars, there is just one way to control the thrust forces; using a very thick supporter, however, Here in these domes, architects examined a more simple and approachable way. They brought down the height of the springing line of arches to level of 4 ft. (1.2m), and controled all thrust forces.

On the other hand, when it is not necessary, former architects never tried to sacrifice the original forms of domes and squinches in order to control thrust forces. In these cases we can obviously find the exact form of three type of squinches, filpoush (the simplest type of squinch, so called squinch), patkin (corbelled squinch), and patkaneh (a super imposed projected tiers of niches), that have been applied in tombs number 1, 3, 4, 7, &8.

However the tomb number 5, is exceptionally a unique case of this complex, that despite its complete square plan which clearly is visible at its outer side, the interior space doesn't have any exact corner, except the (patkin) corbelled squinches inside the arcade decorations. This circular form is caused by increasing the width of walls at the interior side, displaying simple lined arcades as transition forms and to bring down the springing line level of arches.

### **Conclusion:**

Niyareh (The static and construction of Persian traditional structures) as a scientific-artistic field and based on long ages of attempting in mathematics, static, technical, and understanding traditional materials in combination with visual and imaginary pictures of familiar vernacular architecture, had led the former architects to a self-conscious selective process of sharing this deep understanding with people. The former architect, except when he is working as a constructor, shares all his life features with other people, he lives in the same way and think in the same way; almost all effective factors on public's life do the same in architect's life. Therefore, whatever he creates is exactly effected by public aesthetic principles and interests, and on the other side, public simply understand this consciousness. Interaction with natural environment and being respectful to it, creating constructions in regard of lofty ideals and in harmony with nature are examples of this ideology. With this intention, designing, and creation of such monuments, not only deserve the harmony of natural images and perspectives, but also completely show the signs of creativity and aesthetic ideas.

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