

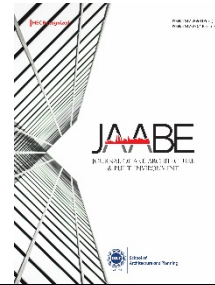
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- Author (s):** Zeshan Ashraf<sup>1</sup>, Saud Kamal<sup>2</sup>, Yasmeen Abid Maan<sup>3</sup>, Sumbal Shahbaz<sup>4</sup>, Muti-ul-Haq<sup>5</sup>
- Affiliation (s):** <sup>1</sup>College of Art and Design, University of the Punjab, Lahore, Pakistan  
<sup>2</sup>Bahauddin Zakariya University, Multan, Pakistan  
<sup>3</sup>Lahore College for Women University, Lahore, Pakistan  
<sup>4</sup>University of the Punjab, Lahore, Pakistan  
<sup>5</sup>Punjab Tianjin University of Technology, Lahore, Pakistan
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# Architectural Conservation Plan of Baha-ul-Halim's Tomb at Uch Sharif

Zeshan Ashraf<sup>1\*</sup>, Saud Kamal<sup>2</sup>, Yasmeen Abid Maan<sup>3</sup>, Sumbal Shahbaz<sup>1</sup>, Muti ul Haq<sup>4</sup>

<sup>1</sup>University of the Punjab, Lahore, Pakistan

<sup>2</sup>Bahauddin Zakariya University Multan, Pakistan

<sup>3</sup>Lahore College for Women University, Lahore, Pakistan

<sup>4</sup>Punjab Tianjin University of Technology, Lahore, Pakistan

## Abstract

It is very important to conserve the built heritage of a country using well integrated sustainable measures. Indeed, all historical monuments should be appropriately and accurately conserved irrespective of their visibility. The ethics of the conservation of any building, monument, or site pertains to their individual conditions and thus conservation measures should be suggested accordingly. In individual cases of conservation, the set of decisions taken may vary from time to time in response to the condition of the site. Therefore, both tangible and intangible sets of remedies to conserve a particular heritage site should be designed to produce an accumulative solution for its conservation. Keeping in view the conservation of Baha-ul-Halim's tomb, a detailed and systematic approach has been adopted and proposed in this paper. Different aspects of its conservation have been discussed and future implications are also stated for the sustainable management of this heritage site.

**Keywords:** Cultural heritage, monument, sustainable management

## Introduction

Cultural heritage is crucial in promoting educational and economic development (Batley, 1934). Uch precedes the establishment (12<sup>th</sup> century) of the continuous Turkic rule (Sultanate period) in the subcontinent. It is assumed that the city dates back to the Harrapan civilization. Historical records indicate that the city of Uch Sharif was established prior to the invasion of Turks. The records mention that it was established as the ancient city of Alexandria on the Indus, built across the banks of the Sutlej River.

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\* Corresponding Author: [zeshan.cad@pu.edu.pk](mailto:zeshan.cad@pu.edu.pk)

Some of the factors which shaped the history of this city are mentioned below.

The first factor is its location, since it is situated at the convergence of the river Indus and its tributaries, that is, the Chenab and the Sutlej. Uch Sharif was unquestionably a significant riverine harbor on the Indus and ought to have had considerable political significance. The second factor is that it is located on the western border of the Delhi based territories and monarchies, therefore, it is termed as a frontline city. The route leading to the plains and central lands of India passes through the city. Moreover, the passing of this route ensured that the city was defenseless against invasions and experienced repeated destruction and reconstruction.

A large number of Muslim scholars settled in Uch during the early days of the advent of Islam in the subcontinent. These Muslim personalities established an educational system in the city.

The remains of the tomb of Bibi Jawandi, with the surrounding structure of Baha-ul-Halim's tomb and the tomb of Ustad Hazrat Nuria, showcase glazed work and are considered as great venues of this type of artwork. A great number of Muslim personalities are associated with these buildings. This complex is more prominent than the neighboring shrine of Jalal-ud-din Bukhari.

The mausoleum has experienced various climatic changes resulting in its deterioration, as well as the improper use of the cemetery which has disturbed the burial strata. A comparison between the existing state of the building and that of a few years back shows that it is deteriorating rapidly in the absence of conservation. The process of acquiring space to bury the deceased is also conducted in an inadequate manner.

The three-dimensional organization of these four structures and their association with the Bukhari compound depicts the magnificence of the larger compound in the past. Furthermore, stoneware sherds and small-sized bricks recovered during various operations or during the investigation of sub-grade water levels are indicative of the layers of history.

Destruction, mainly due to massive floods, appears to have occurred in the early 19<sup>th</sup> century. At that time, the river Sutlej undertook intensive flooding. Resultantly, part of the site was washed away (Allen, 1943). Operational engineers including Dr. Tanvir Wasti and Dr. Mustafa Pultar

studied the site and suggested that deterioration on the side of river was caused due to a catastrophe.

Until the 1980s, the monuments presented the natural drainage of rainwater and the resulting patterns of erosion. A deep rainwater-eroded gully between the mausoleum of Bibi Jawandi and Baha-ul-Halim was a principal geographical feature of the site, inclined to the level of the fields on its western and south-western sides. In late 1989 and early 1990, when the absorbent wall defining the western edge of the site was constructed, this ravine was occupied with the earth brought to the site. Its position is now marked by a sequence of small toe walls demonstrating the westward fall of the gradient. The gradients to the south were, however, not the subjects of intervention. In the early 20<sup>th</sup> century, the three main mausoleums on the site were taken into the custody of the Department of Archaeology and Museums as "protected monuments" under the Antiquities Act 1894 (as modified by the Antiquities Act 1975). Since the monuments are located in a cemetery which is still in use, there is some contradiction concerning the jurisdiction and control of this site, as to whether the administrative custody of the monuments is with D.O.A.M or with the Bukhari peers, who are considered to be the traditional custodians of the cemetery (Arnold, 1983).

### **Architectural Description of Baha-ul-Halim's Tomb**

Baha-ul-Halim's tomb is a three-tiered structure constructed on an octagonal plane. It has a dome and its walls are protected with conical corners, while pointed corners support the structure's base along with an eight-sided transition area. The structure is made of rough fire bricks, fixed with mud mortar and covered with timber, similar to the tomb of Bibi Jawandi. Both the exterior and interior of the shrine has a layer of cladded bricks. Apart from this, tiles and shiny bricks are used together at the exterior. Climatic conditions have deteriorated the tomb structure and deterioration can be noticed on both the exterior and interior of the tomb. The dome of the tomb has deteriorated completely and only some of its base portion is available to the southeast face. The drum of the shrine is present with two partial and two complete faces, as shown in Plate 2.

Similarly, the border covering the four sides is ornate, with flat glazed tiles bonded with gypsum, as shown in Plate 3. The material and architectural elements reveal that this tomb was constructed after other tombs at Uch.

The shrine of Bibi Jawandi at Uch faces southeast; however, the openings at the northern and western sides are not visible, although these sides most likely comprise the *sirhana* and the *mihrab* portion of the tomb.

### **Significance of the Study**

Little research work was conducted previously on the tomb of Baha-ul-Halim at Uch. Organizations involved in the conservation of this tomb include American Express and World Monument Watch.

The current research work on this tomb is a significant achievement for the Department of Archaeology, since it constitutes a comprehensive study of the historic site complemented with the photographic information of its exterior and interior. The structure needs to be conserved in order to stop its further deterioration and to prevent further damages. Henceforth, the remedial and conservation work of this tomb is proposed in this paper. Moreover, comprehensive documentation of the tomb in consultation with the relevant offices has been carried out. It is categorically important that the drawings are archived for future research and studies.

### **Objectives**

- Documentation of the current condition of the tomb.
- Classification of the main causes of deterioration and proposing curative procedures to prevent them.
- Recuperation of the missing details of architectural elements.
- Conservation and preservation of the tomb according to the ethics and international charters for conservation.

### **Methodology**

The research methodology used in this study predominantly involves field surveys and photography. Correlative data collection (through primary and secondary sources) and analysis was used to explain the physical condition of the structure, extend the scope of the research, and improve the research methods used. Diverse research tools were applied, such as ancient photographs, documents, maps, meeting minutes, field reports, and reviews

in visitor books. Interviews were also conducted with the local community elders and intellectuals to identify the cultural heritage and its significance. The current research work also includes a cultural framework and social values to create awareness among the local population. Architectural information was collected by surveying the covered style, construction techniques, as well as the material and craftsmanship of the heritage site. Furthermore, accurate measurements were conducted, while drawings and photographs were also made during the survey. This research creates awareness and helps to understand the value of cultural heritage.

Accuracy in the restitution of internal facades, both decorative and architectural, is considered as the first part of baseline data for research. The form and shape of the remains of the dome do not indicate it to be a tall collar. Different exercises in CAD software made it clear that the collar of the tomb was similar to the tomb of Bibi Jawandi. It seems that the shrine's dome was shallower than its surrounding structures. The tomb of Musa Pak Shaheed, which was a part of the comparative study, gave a clue about the architecture of the dome.

## Documentation

The ornamentation of the shrines in Uch Sharif has remained intact for many centuries. The city remained a very important route for trade, as it is located near the confluence of the Indus, Sutlej and Chenab rivers. Hence, various dedicated professionals have tried to save its culture and buildings. The monuments of Uch Sharif comprise the mausoleums of various sufi saints including Ustad Nuria, Bibi Jawandi and Hazrat Baha-ul-Halim (Alchin & Raymond, 1982).

## Existing Site

Within the three-sided structure, the remains of a *hujra* and walls are found in the complex. To the western side are found the remains of the bricks and walls, this detail affirms the settlement layer of the city. The site covers an area of 0.9789h and the eastern edges of the site are defined by a road track. There is a row of houses on the eastern edge of the road. There is a low brick wall structure separating the site area from the road. It can be accessed from a pillared opening in the wall. There are several houses on the other end of this track. On the western side, there is a retaining wall, approximately six meters high, with steel blockade. Along the wall, there is a water sewerage line that runs inside it. This drain leads to two channels at

the southwestern and northwestern corners. The highest reading of the site is 15.54 meters from the agricultural fields. The western edge is about 6.1 meters from the agricultural fields.

## Exterior

The exterior of the tomb structure at the ground level is divided into two types. One type is with entrance and the other has no entrance. The entrance of the tomb is articulated by a central arch, enclosed by a rectangular border. The original entrance is not present to the southern side of the tomb. It can be speculated that it was similar to the entrance at the front. The entrance on the eastern side has a larger arch framed in a rectangle. It has an entrance spanned with a timber beam and surmounting bricks. The southern facade indicates the existence of tympanum and the remains of a timber lintel. The upper level of the façade is similar, having a central arched window framed by projecting rectangles, as shown in plates 2 and 3.

**Figure 1 (a)**

*Interior of the Shrine Baha-ul-Halim*



**Figure 1 (b)**

*Damaged Area of the Shrine*



The decorative elements of revolving bands interrupted by projecting rectangles are also present in monuments such as Ustad Nuria, Bibi Jawandi and others. A shield of fine bricks and glazed walls was built to protect the monuments from climatic conditions. In the seventh revolving band there are bird's nests, as shown in Plate 3.

## Figure 2

### *Damaged Dome of the Shrine*



It is tough to recommend a form for the dome of the structure. However, it is possible that the dome had four centered profiles. It also had lime plaster and a ring of glazed tiles. Small remnants of these details are still visible.

### **Interior**

The interior of the structure is divided into three levels that gradually step inwards. The architectural design of all four elevations is the same. It has curves creating niches on the northwest and southeast sides. The use of timber lintel reduces the height of the east vault passage and the spaces in arches are filled by dense brick tympanum.

## Figure 3

### *Exterior of the Shrine has Glazed Elements*



A small part of the southern wall shows remains with a recessed arched passage. The ornamentation of the interior base is done with three-way projecting bands, which frame arched lower niches. These niches are deep and rise almost to the height of the wall.



## Figure 4

*Interior of the Upper Part of Shrine*

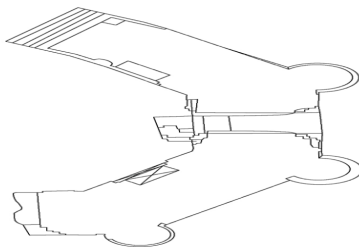


The octagonal base is negotiated by the circular dome and has three transitional zones. The first transition is towards the turquoise dentils used to decorate the 16-sided drum comprising a round clerestory window. Projecting brick panels along with glazed architectural elements are attached to the surface of the wall dividing the arched niches, as shown in Plate 5. A wooden lintel is used to support the bracket at the corner of the drum that negotiates the transitions from the drum to the dome's base.

## Architectural Documentation

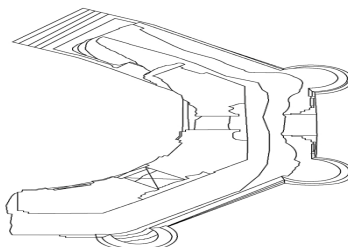
### Figure 5

*Ground Floor Plan of Baha-ul-Halim's Tomb*



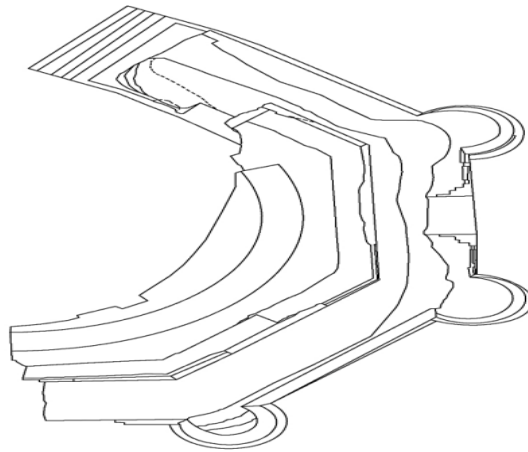
### Figure 6

*First Floor Plan of Baha-ul-Halim's Tomb*



**Figure 7**

*Second Floor Plan of Baha-ul-Halim's Tomb*



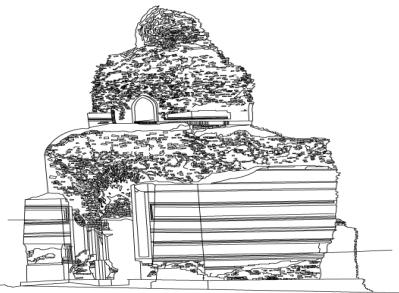
**Figure 8**

*East Elevation*



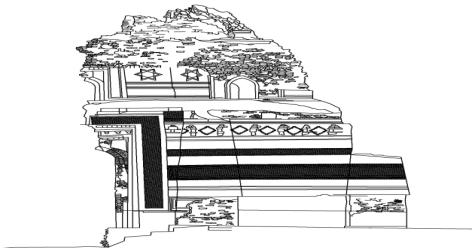
**Figure 9**

*Northeast Elevation*



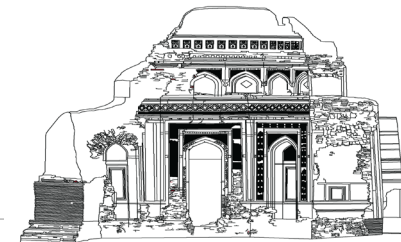
**Figure 10**

*South Elevation*

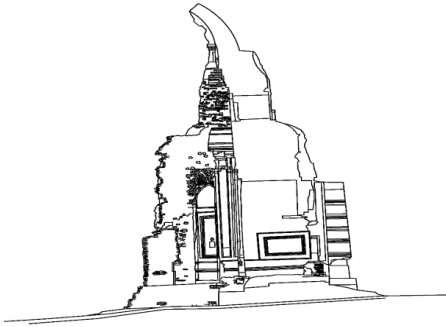


**Figure 11**

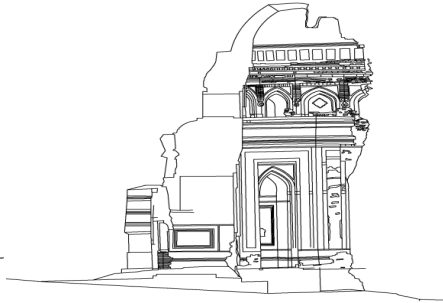
*Sectional Elevation*



**Figure 12**  
*Section AA*



**Figure 13**  
*Section BB*



**Figure 14**  
*Section CC*



## Analysis

### Transition of Building – Form Original to Present

#### Physical Changes

The shrine of Baha-ul-Halim is at risk and decaying day by day. The loss can be observed in architectural elements as well the structure.

#### Removals

Three sides of the tomb facing the north, west and northwest have eroded due to environmental conditions. Damages to the exterior of the structure have been caused mostly by weather conditions.

## Exterior

The lower part of the ornate layer (about 2 meters) has been destroyed. Structural core is visible at about 2.7 meters from the ground level to the top.

Architectural elements on the top of the structure along with the protective wall have been destroyed. The southern facade of the building is well preserved. Indeed, there are traces of the wall decorative elements. Bird's nest is no longer present on the eastern façade, as shown in figures 4 and 5. The upper and lower portions of the frames with the arched raised niches have been destroyed. Holes in different portions of the structure indicate the loss of timber.

## Interior

Most frames and niches in the base level still exist. The brick cladding of the northern façade has been damaged. To the south end at the squinches, timber beam and three courses of brick as well as parallel ring beams with round brackets, are missing from several places. The entire surface of the sheath has gone from the northern end, as shown in figures 7 and 10.

## Accompaniments

The Department of Archaeology and Museums applied cement mortar for bonding the bricks. It also applied a layer of cement on the surface creating a roof for the base.

## Exterior

The southern façade bears traces of the original decorative element used for the lower base. The arches recesses have missing decoration, only its traces are visible on the eastern façade. At the dome, there is plaster's fraction with embedded tiles and it shows the decorative outline. The inner wall of the south entrance has a line of lime that specifies the original floor level. There are two holes located at the same height as the beam of the eastern faced depicting the elimination of timber element, as shown in Figure 4.

## Interior

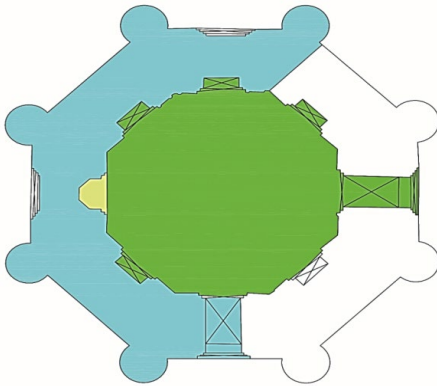
A furrow at the height of the lime line to the entrance indicates the floor level. The existing architectural ornamentation of the dome, base and

transitional zones provides adequate details for the restoration of the decorative element to its present height, as shown in Figure 7.

### Restitution Drawings

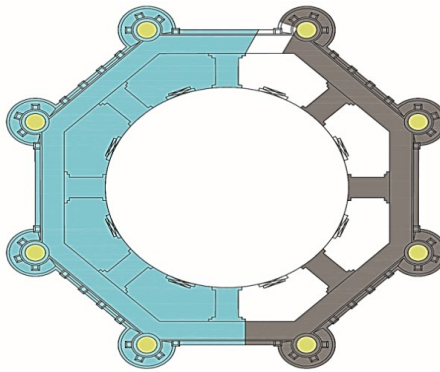
**Figure 15**

*Restitution Drawing Plan (Ground Floor)*



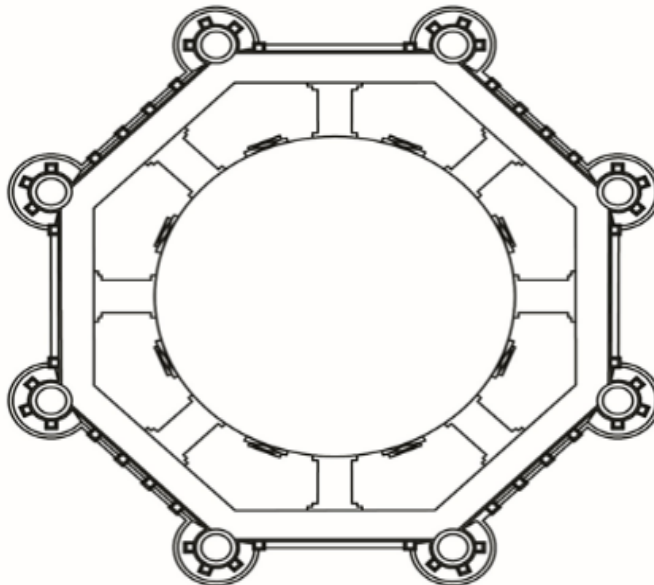
**Figure 16**

*Restitution Drawing Plan (First Floor)*



**Figure 17**

*Restituted Drawing (Second Floor)*



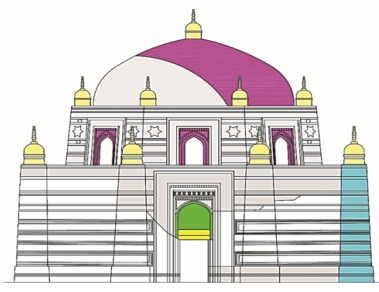
**Figure 18**

*Restitution Drawing (South Elevation)*



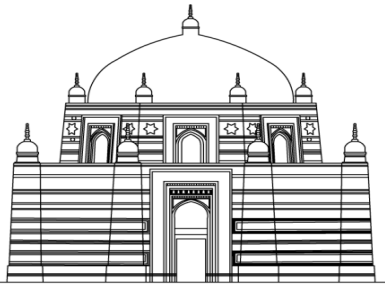
**Figure 19**

*Restitution Drawing (East Elevation)*



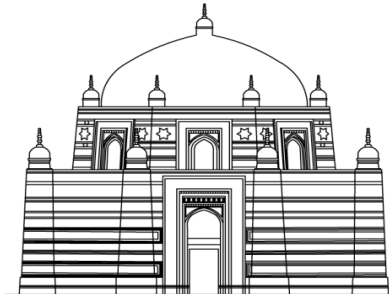
**Figure 20**

*Restituted Drawing (East Elevation)*



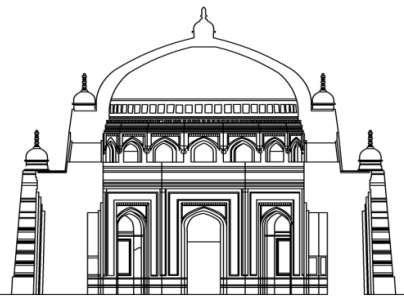
**Figure 21**

*Restituted Drawing (South Elevation)*



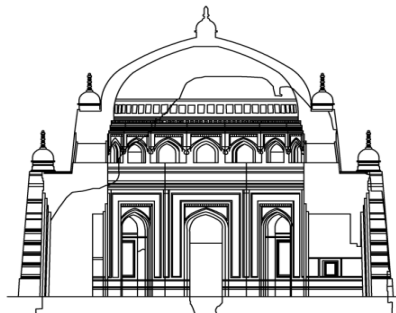
**Figure 22**

*Restituted Drawing (Section BB)*



**Figure 23**

*Restituted Drawing (Section DD)*



## **Authenticity in Restoration**

### **Architectural Design and Structural Details**

There is more detail needed about the eastern and southern facades to complete the missing decorative elements of the base, with its rectangular bordered arched niches and revolving bands. The eastern façade yields information regarding the blind tympanum and rectangular opening. Traces of timber have been found, suggesting a similar rectangular opening at the southern façade. The restitution of this element does not follow the same criterion of accuracy. The missing revolving band and some portions of the missing frame are to be placed in the first category of accuracy. The traces of architectural elements were confirmed after a comparative study about the tomb and other structures having similar elements in the region.

The missing buttress and the lower base façade's architectural elements are ranked as the fourth degree of precision. The missing ornamentation is not in equal size and its restoration would not be accurate. The upper portion of the eastern entrance is placed in the fifth category of precision, as its position, form and material are acknowledged but its decorative elements and their dimensions are unknown. This part of entrance is not present on both the facades and needs to be restored through a qualified study.

The missing facades of the shrine need to be restored through this process. Therefore, they do not depend on the exact floor proportions. The analysis of some old photographs revealed the ground level. Moreover, it recommends that the excavation of the area cannot provide any evidence of missing parts. However, the validity of this restoration is placed in the seventh category (Bakirer, [1983](#)). The elements that make up the weight of the structure including towers, buttresses, and dome have been derived from a comparative study and placed in the ninth and last category.

### ***Intervention***

A step by step table has been organized to articulate the intervention scheme as an integral component of this research. Futuristic approaches have been postulated so as to check and balance the suggested intervention plan at all steps.

**Table 1***Details of Intervention Scheme*

No.	Intervention	Application Method	Purpose
1	Use of lime plaster for water proofing	It acts as sealant if applied on the outer layer of cement mortar. The tiles of the dome must be treated with lime. It needs to be applied on the top of the roof forming a suitable slope, so that rainwater slips down easily in order to prevent further damage. The gaps between the core structural layer and the decorative layer should be treated as well.	A sacrificial layer is important to prevent rainwater absorption and evaporation, as well as to crystallize the salt of the rainwater.
2	Removal of cement filling	Detached cement from the rooftop should be removed with careful chiselling	The salt does not mix with the cement.
3	Drainage of the rooftop	After the cleaning of the fragments, original drainage system should be located. If suitable, it should be used. If the drainage system cannot be used, then the installation of a new line leading to the ground gutter is necessary.	A proper drainage system at the roof is needed to prevent water absorption into the foundation of the structure during rain.
4	Lead gilded copper edge	A lead gilded copper edge is required to be placed (about a 10 cm layer of gypsum filling covering 10 cm lime plaster) to repair the damage end.	Disposal of rain water and stopping an inadequate washing of walls.



No.	Intervention	Application Method	Purpose
5	Burnt bricks fixed with mud filling	Burnt bricks fixed with a cement filling should be replaced with mud mortar. It should be applied on the north eastern façade with the damaged edge to the lower base.	It will control the salt and prevent it from mixing into the cement, as well as structural distortion and corrosion of the original work.
6	Restoration of the lost timber	The restoration of the absent element is compulsory. A similar replica of timber should replace the lost one.	It will add strength to the structure via the restoration process.
7	Brick tiles	Cleaning of the soil and providing a brick layer will protect the floor level.	It will protect from moisture.
8	Drainage system of the surface	Construction of a deep drainage system around the east, northwest and northeast sides will protect the pavement.	It will remove rainwater from the surface in order to prevent any damage to the building fabric.
9	Removal of the soil and its replacement with burnt bricks and mud mortar (if necessary).	It is important to know the condition of stonework after the removal of soil to the eastern side. If stonework is not in a good condition then it should be protected with a layer of burnt bricks and mud filling.	It will consolidate the original stonework.

No.	Intervention	Application Method	Purpose
10	Removal of mud and soil deposits.	Dust and mud accumulating into the glass revetment needs to be cleaned. Damaged areas should be treated with a paper soaked in alcohol. This process will clean the salt particles.	It will clean dirt and salt from the glassy revetment to stop any further damage.
11	Repairing of joints with 20% lime and mud.	Pointing of the joints in the brick masonry will be done. The material needs to be tested before being applied onto the structure and examined for about a year (Brown, <u>2013</u> ).	It will prevent the suspension of mud filling as well as the presence of mud deposit and mobilization of clay elements.
12	Grout of mud with lime plaster layer	The cracks found in the building were filled by applying 1.5'' brick aggregate and by carefully pouring mortar made of mud into the material. It can be applied on multiple areas. The cracks need to be treated with a lime plaster layer. Moreover, the cracks of the interior need to be filled with mud and bricks. These cracks should be examined for two years.	It will seal the cracks and stop the absorption of rainwater.
13	Injection of lime filling	This injection will treat the tiles and the remaining plaster. However, it should be tested before the application of the material. The applied solution has to be examined for two years.	Amalgamation of damaged plaster.
14	Application of lime with brick color on the surface of the exposed burnt bricks.	Lime mixed with brick color needs to be applied in the form of a thin layer on the horizontal surface of the damaged parts of the bricks. Similarly, it can be applied as a repointing filling of	It will protect the intact stonework by forming a layer of evaporation. It is needed prevent leakage and the

No.	Intervention	Application Method	Purpose
	Repointing of mud joints with lime.	visible joints. Primarily, a small part of the building should be treated with this mixture and tested for a year. Lime water spray can be applied and has to be tested before it is applied onto the surface.	dissolution of mortar made of mud.
15	Interior's new floor	Burnt bricks with a mixture of lime water can be applied onto the slope to drain the water.	It will prevent water damage to the building and surface material.
16	Signs of lost decorative elements	Red tiles need to be applied on the surface of the floor after the indication of its location.	It comprises renovative treatment.
17	Consolidation of tiles with the injection of gypsum and lime	Dislocated glazed tiles can be restored with any one of the two procedures. Both procedures need to be monitored carefully.	It will consolidate dislocated tiles and prevent the loss of the whole building Buron, (n.d.).

## Problems and Solutions

### Weather Conditions

#### *Humidity*

The Bahu ul Halim shrine has experienced a lot of destruction caused by water. Water affects the fabric and seeps into the base, causing decay to the monument building. The moisture has damaged the decorative revetment and the inner surface of the tomb is exposed.

#### *Mud Mortar*

Water has caused severe complications to the mud mortar within the tomb. The disillusioning of the mud mortar has stained the glassy revetment. Moreover, there are serious issues caused by water including the loss of masonry.

### ***Glazed Elements***

Natural settlement and salt crystallization has caused cracks to appear in glazed tiles, which has also caused the loss of the entire glazed element. In different places, water leakage has caused dirt to appear on the surface of glazed tiles (Cole, 1849).

### ***Timber***

It was found that the decay in timber was caused by moisture, while shrinking is due to wetting and drying after a long-term exposure to the natural cycle. In the entire building, the amount of timber has deteriorated.

### ***Plaster***

Once, the dome of the shrine was covered by plaster, which has left behind some remnants. The loss of plaster was caused by rainwater penetration after the collapse of the dome's portion. Its further fragmentation and dislocation from the surface of the dome may have damaged glazed tiles.

### ***Brick***

Corrosion in the bricks of the tomb is similar to Bibi Jawandi and Ustad Nuria's tombs. Notching and rounding of the burnt bricks can be seen throughout the masonry. The fine brick revetment of the exterior and interior has been lost. Dislocation of core bricks has been caused by salt crystallization, shrinkage and swelling of clay elements.

After a rainy day/season, the stain of humidity can be seen on the base of the building. Brick sample was collected from the eastern façade. Salt was found to be present in each sample. The deterioration of bricks seems to intensify as moving upward towards the wall. Salt was found in bricks collected from the lower level. Nitrate was found throughout the building in various concentrations, leaking outing from cement intervention. Similarly, a higher concentration of sulphate was also found in gypsum mortar, including that from the soil. High concentrations of chloride and nitrates were noticed in the sample collected from 7m above the ground. Another sample from 2.5m height was found to have a high concentration of sulphates, effecting the gypsum mortar and tiles (Eldridge, 1976).

***Non-humidity Related Forms***

This condition of the tomb is related to bird leftovers. Furthermore, the details of vandalism are also stated below.

**Vandalism**

***Glazed Elements***

The glazed architectural elements of other shrines in Uch Sharif indicate that the tomb of Baha-ul-Halim may have had these elements as well, which have been vandalized.

***Timber***

There is no timber remaining at the base of the building, although there is no evidence of vandalism. However, empty beams of the building indicate the willful removal of this element at different places.

***Bird Droppings***

Bird leftover on tiles and other elements in the shrine poses problems for conservation. Aluminum salts are present in the leftover of birds and these can be used to treat bacteria, although they are harmful for glazed tiles. This is indicative of the damages caused by birds to the material of the tomb.

**Figure 24 (a)**

*Colour Legend*

DETERMINATION OF MATERIALS

	GLAZED BIRD HOUSES
	GLAZED MOSIAC
	GLAZED TILE WITH PATTERN
	MODERN FIRED BRICK
	ORIGINAL FINE FIRED BRICK
	ORIGINAL ROUGH FIRED BRICK
	MUD MORTAR
	CEMENT MORTAR
	GLAZED MOULDED BRICKS
	GLAZED END PLUGS
	GLAZED BRICK
	GLAZED MOLDED TILES
	TIMBER
	GYPSUM
	PLASTER

**Figure 24 (b)***Material Drawing (East Elevation)***Figure 25***Material Drawing (Section AA)***Figure 26***Material Drawing (Section BB)***Figure 27***Material Drawing (Section CC)*

### Structural Deformation

Structural breakdown in Bibi Jawandi and Ustad Nuria's tombs depicts a washed-out and weak portion with sustained damage in the form of cracks and missing materials. A first rotation has been recognized in the building of Baha ul Halim. It is the result of natural conditions, such as the use of cement complicates the conservation work of the tomb.

### Classification of Damage

The concentration of damages caused by the weather has been plotted on the structure. It was described above in Table 1.

## A. Severe Damage

### Exterior

The Baha-ul-Halim shrine is suffering due to approximately 23 weather conditions, out of which 17 conditions are accountable for the level of corrosion. These damages clearly impact both the exterior and interior portions of the shrine.

### Exterior/Interior

The area of the base is about 1-2 meters in height. The upper portion, which is about 4 meters to the top, has sustained severe damages. Most of the damages are caused by humidity, resulting in the decay of the protective sheath. The unclad surface of the tomb creates many problems, such as the ones stated below.

- i. Gaps trap moisture in decorative layers.
- ii. Disillusioning of the mud mortar reduces its strength and disturbs the nearby elements.

Biological activities and salts have damaged the glaze of the tomb. This matter needs to be resolved to prevent further damages. The timber from the structural core of the shrine is extremely fragile, it even falls down if touched (Fitch, 1992).

The damage to the glazed element is a severe issue and has been discussed in this paper in detail. Cement was used in the hollowed part of the masonry to the south, southwestern and southeastern walls. However, its use can affect the original brickwork.

### Exterior

Plaster and glazed elements of the tombs are placed in this category. Proper conservation of the building can save it from further deterioration.

### Interior

Detachment of the revetment and loss of timber is placed in this category. Timber is easy to be replaced with a new element in order to retain the strength of the tomb. Dislocated glazed revetment can also be replaced.

## B. Moderate Damage

### Exterior

Proper measures are necessary to prevent the loss of the original masonry and stonework at the exterior of the building.

### Interior

The masonry has slight cracks which are assumed as causing moderate damage. These cracks need to be covered with filling.

### Figure 28 (a)

*Colour Legend*

	INTERVENTION
	REMOVAL
	INDICATIVE TRACES

### Figure 28 (b)

*Changes In Building Over its Life Span (East Elevation)*



### Figure 29

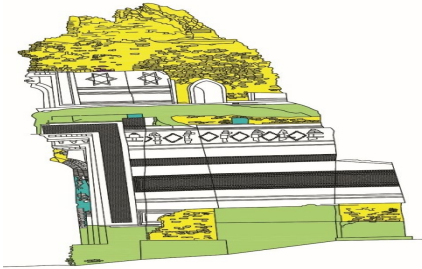
*Changes in Building Over its Life Span (Northeast Elevation)*





**Figure 30**

*Changes in Building over its Life Span (South Elevation)*



**Figure 31**

*Changes in Building over its Life Span (Section AA)*



**Figure 32**

*Changes in Building over its Life Span (Section CC)*



## **Limitations**

### **Current Use of Site**

The site is an active cemetery. Its value is associated with the sainthood ascribed to the burial of the sufi saint Jalal-ud-din Bukhari. The fact that the remains of Bukhari were re-interred at their present location in the 18<sup>th</sup> century, only after two previous burials at Sonak Bela (3 miles north of Uch) and elsewhere, is documented. This succession of burials, however, does not explain the prior presence of the mausoleums of Bibi Jawandi and Baha-ul-Halim nearby, both of whom have associations with the Bukhari lineage of Suhrawardy sufis. The intensity of the sepulchral use of the site is the result of the high spiritual respect accorded to this family.

Nearly 1400 graves exist within the perimeters of the site, occupying roughly 33 percent of the site area. It is interesting to note that there are no graves to be found west (or rather in the direction of Mecca) of any of the major mausoleums.

The tomb is a major object of national and regional tourism. This may take the form of visits to a historic place by well-educated people from large urban centers, such as Lahore, Multan or Karachi. It may also be the object of serious cultural tourism on the part of the diplomatic community in Islamabad. Moreover, a very large segment of visitors arriving at the site visit it for spiritual reasons. Every day, a large number of people visit the Jalal-ud-din Bukhari mausoleum complex. On Thursdays and Fridays, this number increases by an order of magnitude. Moreover, a small trickle of international visitors turns up at the site from time to time. The number of the latter kind of tourists increases sizably in the winter months.

Due to the unregulated access and its largely unprotected status, a number of unsuitable or undesired activities take place at the site. It is used by many children from adjoining neighborhoods as a play area for a variety of outdoor games. Furthermore, it is also a haunt for drug addicts and pushers, who like to take shelter behind the monuments or the retaining wall to light small fires over which heroin is inhaled or cannabis is smoked.

Uncontrolled access to the site and the sheer number of people visiting it increases the rate of depletion of these fragile monuments. This depletion is aggravated due to vandalism, which occurs on a regular basis. Many of the small graves have pieces of glazed tiles procured from the monuments, adorning the small earthen mounds that mark them.

### **Access**

The site is accessed either by traversing the city from the eastern side. It is also accessible from the north and the west via National Highway

Accessing the site through the city is popular these days. The site can be traced from the eastern side of Uch Sharif to its west. One way to the site is the northern sideroad. A second track is the pedestrian path through the old market to the old Bukhari kot, heading south to the Bukhari cemetery. The third track skirts the southern side of Uch Bukhari, traversing alongside the fields directly to the southern entrance of the Bukhari shrine.

### **Soil Condition**

Laboratory results showed the composition of the soil as containing 86% fine particles. A high concentration of these particles was also noted in the samples collected from the shrine of Bibi Jawandi. Further analysis manifested that these contain calcite and quartz as major components, as

well as mite, albite and kaolinite. The presence of minerals and calcite indicates workability and strength (Holmstrom, 1981).

## **Drainage, Infrastructure, and Service**

### ***Drainage***

The drainage system is not adequate for the site. There is only one drain heading towards the retaining wall. Hence, the rainwater follows the natural drainage pattern of the site. So far, there exists no paved surface around the building which may protect it from water damage. Most of the soil at the lower level is not compact (Marshall, 1923). It absorbs the rain water and allows it to move through the tubes and vessels of the building. The monument has the stains of water and experiences the loss of plaster due to the increasing moisture (Massari, (n.d.)).

### ***Electricity and Water Supply***

Although the surrounding tomb of Jalal-ud-din Bukhari has electricity, the tomb of Bibi Jawandi still lacks it. Similarly, the shrine complex has its own water supply except the researched site.

### ***Parking***

There is no proper area available for the general public to park their cars on the site, although 2-3 cars can be parked with difficulty on the road to the eastern wall. However, private agricultural land is located nearby the site. Hence, it is possible to acquire it to make space for public car parking.

### ***Amenities***

The site has neither toilets nor a dedicated rest area. It lacks basic facilities including refreshments, although there is a tea stall at the entrance of Jalal-ud-din Bukhari's tomb working on the temporary basis.

## **Conclusion**

The tomb of Baha-ul-Halim is an important historic site and needs proper conservational measures. It is the responsibility of general public as well as the department of archaeology to carry out the required conservation and maintenance work at the site. Currently, the structure is in a bad condition and requires immediate attention and actions to save it from further damage. Architectural documentation, formalization of the materials of construction, and conservation procedures must all be aligned to the

findings of the research conducted by field experts in architecture, history, culture, geography, and civil engineering. The analysis and observation of the heritage site suggest that the monument need repairs and upkeeps, instead of face lifting. It is necessary to restore the tomb and provide it with daily maintenance. The current condition of the structure shows that it has been abandoned by all relevant authorities. The protection and preservation of the shrine is a regular process. Even newly built structures need regular maintenance; otherwise, their condition deteriorates (Teutonico, 1988).

The worsened condition of the shrine shows that the Department of Archaeology does not have a management system for this cultural heritage. In order to develop awareness, it is absolutely essential to create a sense of ownership in the local community. Moreover, research and development in the conservation process must encompass all disciplines and authorities. For this purpose, a detailed strategic plan for the conservation process of the tomb of Baha-ul-Halim has been put forth in this study.

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