

## A Description of Buildings in Khalifatabad City, Bagerhat.

**Hafizur Rahaman**

Assistant Professor, Architecture Discipline, Khulna University, Khulna – 9208. Tel: +88041-721791, 720171-3(222);  
Fax: 88041-731244. email: hrahaman@gmail.com

**Kh. Mahfuz-ud-Darain**

Assistant Professor, Architecture Discipline, Khulna University, Khulna – 9208. Tel: +88041-721791, 720171-3(222);  
Fax: 88041-731244. email: bitukmd@yahoo.com

### Abstract

The architectural style introduced by 'Ulugh Khan-e-Jahan' in Jessore and Khulna District shows an uncommon blending of the indigenous techniques with imperial Delhi but is still distinct with its own identity. The features like curved cornice, use of stone as DPC, disposal of rain water, uses of terra-cotta as weather proofing etc. proves that builders were well-known with the geo-climate i.e. the hostile warm-humid conditions of the locality. As a result there developed some finest pieces of architecture with distinct architectural characteristics of contextual sensitivity and better survival quality in Khalifatabad City, Bagerhat. The aim of this paper is to appraise the indigenous excellence of buildings of Khan-e-Jahan style.

### Key words

Kahn-e-Jahan style, Khalifatabad, Building components, Indigenous solutions, Context.

### Introduction

During Muslim rule in Bengal (1204-1757 A.D.) a great number of urbanized habitations grew in various regions. The old city of 'Khalifatabad' now known as 'Bagerhat' – south of Khulna is one of those settlements. 'Khalifatabad' was named on one of its ruler 'Ulugh Khan Jahan'. During 15<sup>th</sup> century Khan Jahan was either forced by unknown political circumstances to immigrate, or he was specially commissioned by the court of Delhi to settle a Muslim colony in this distant region (Ahmed. 1984). He ruled over this territory virtually as an independent ruler being very generous to the people.

According to Ahmed (Ahmed. 1984), Khan Jahan adorned his capital city with numerous mosques (traditionally 360 in number), bridges, roads, palaces, mausoleum and other public buildings in an astonishingly short span of time. Large and expansive tanks with regular staircase landings were excavated in various parts of the township to provide salt-free drinking water in this predominantly saline belt. The architectural style, introduced by this saint-general, was limited only to the southern part of Bengal and known as 'Khan-e-Jahan' style (Nazi et al.

2004). The brick construction, stone plinths and supporting systems adorned with terra-cotta ornaments has shown a vital interaction of foreign and local building tradition in an explicit manner. Considering the significant role of the Khalifatabad City in the history of Architecture, it has been included on UNESCO's World Heritage List in 1985.

The aim of this paper is to represent this indigenous building style with reference to their responsive attitude towards climate and context. Collected data from physical survey followed by literature review is the main source of the study. The authors expect the outcome of the study will provide some basis for better understanding of the style and later preservation, restoration or conservation of the buildings of Khan-e-Jahan.

### Natural settings and development of the style

Khan-e-Jahan came to this southern part of Bengal not only as a ruler but also as a 'cultural mediator' the earliest torch bearer of Islam (Ahmed. 1984). In a land of hostility this saint-general came for the salvation of the local peo-

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ple and to bring them into the religious orders of Islam through the process of expanding cultivable land by clearing the deep forests of 'Sundarbans'. For his generosity and public works Khan-e-Jahan gained the status of a spiritual leader among his followers, both the Muslims and the Hindus.

The region where he ruled and his style budded was surrounded by deep forests of Sundarbans. The building materials available were bricks and terracotta - bonded by lime or mud mortars; techniques available were the Hindu construction system of corbelled brick and the bamboo 'Chouchala' construction system (Brown, 1942). Stone was rare and the climatic conditions were hostile in nature (average rainfall of Bagerhat recorded from 1902 to 1961 was 163.83cm during monsoon and a 90% of humidity in June-July) (Bari, 1979). From these conditions and constraints of setting the style came up with a solution which produced the remarkable phase of Bengal Architecture.

Utilitarian character was the key concept of the Khan-e-Jahan style. Buildings here were perceived not as art form but as pieces of architecture where forms are generated by contextual needs and organizational simplicity. Architecture here is not seen as a container of decorative art rather a fully independent discipline collecting its resources from art, aesthetics, technique and philosophical ideals (Naqi et al. 2004).

## Methodology

Even, Khan-e-Jahan has some other works at 'Bakerganj' Jessore, but the study is limited to Khalifatabad as these monuments represent the most matured stage of the style. There were numerous numbers of monuments built in the city of Khalifatabad by Khan-e-Jahan. Traditionally the number of monuments is assumed as 360 (Ahmed 1989). The spectacular remains of these are still visible for miles around the ruined city. Most of the sites of the mosques are identified by the location of tanks and ponds. Among them, 12 monuments in Khalifatabad are in a condition well enough to be studied for any architectural research.

Physical survey followed by literature survey was the main basis of the study. A brief literature survey has been conducted on concepts and theories on Khan-e-Jahan style. A physical survey along with photographic documentation of selected buildings with 35mm film accompanied the fieldwork. Then collected factual data and drawings were prepared for final study.

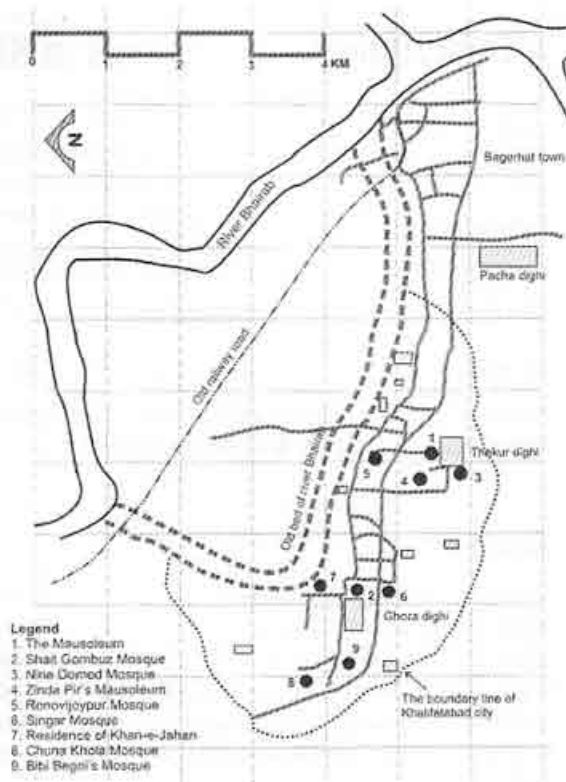
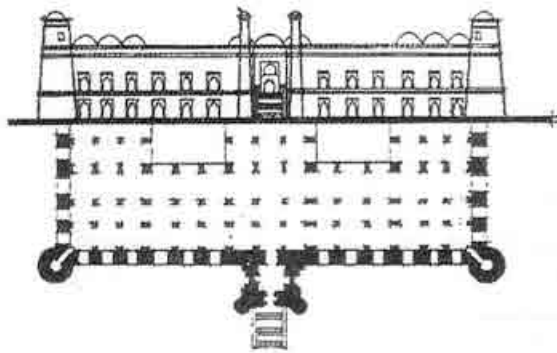


Fig. 01. Location of different monuments in Khalifatabad city. (Source: adopted from Ahmed, 1984)

## Building Components of Khan-e-Jahan style

The architectural style introduced here by Khan-e-Jahan poses an uncommon blending of indigenous techniques with the Tughlaq style of Delhi (Hasan, 1979). The buildings of Khan-e-Jahan is distinct from the rest of the contemporary architecture of the country, but bears affinity to a style of architecture created a century earlier around Delhi by Mohammad Tughlaq, bearing a particular resemblance to the Kalan and Khirki mosque (Fig. 02) (Mowla et al. 1993). Moreover, some other buildings like Mosque of Mollah Simla at Hugli (1377 AD), Eklakhi tomb at Hazrat Pandua (early 15<sup>th</sup> century), Mosque of Binet bibi at Dhaka (1457 AD) have similarities with Khan-e-Jahan style (Michell, 1984).

But, according to Percy Brown (Brown, 1942), the style was mainly conditioned by extreme humidity and the climate of Bengal. The experimental changes in this style, starting from monumental grand pavilion structures to individualistic small one shows the desire of establishing self 'identity' by conceiving the spirit of the context. The individual distinguishing characters of this particular style



Khirki Mosque, Delhi (1375 AD)

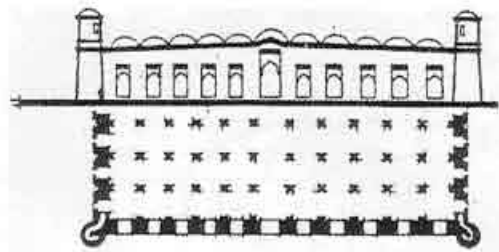
Saith Gumbad Mosque, Bagerhat (5<sup>th</sup> Century AD)

Fig. 02. Resemblance in Plan and Elevation between Khirki mosque and Saith Gumbad Mosque.

is the austere and dwarf looking facade with smaller openings of two centered pointed arch, the circular turrets, the Chouchala roofing system, the perceptual corrections and compact proportions in 'form' generation. In Bangladesh, the style is dubbed as Khan-e-Jahan style (Mowla et al. 1992) and influenced many other buildings (Dani, 1961) outside Khalifatabad region - they are six-domed Masjidkur Mosque at Chandkhali, Masjid Bari Mosque at Patuakhali and one domed Hammad's Mosque near Kumira.

The style has a very utilitarian character. Due to responsiveness to the local climate the style had to be molded in some aspects. A brief description of some basic building components of the style will clarify the understanding:

#### (a) Foundation

Authorized excavation was not permitted. The upper portion of the foundation, as seen over the ground level gives us an indication about the construction of its foundation. In general cases it has been found that the topmost layer of the foundation is slightly projected outward at the base of the wall. From observation on the structures in dilapidated condition shows that usually foundation-walls contained two layers. The outer, visible part is a layer of regular shaped brick symmetrically arranged; while the inner concealed part consists of a filling of irregular shaped bricks and rubbles. But exception has been found in the mausoleum structure of Khan-e-Jahan. In the mausoleum the base of the walls stands on layers of stone courses with horizontal mouldings. The stone layer provides the upper brick structure with required strength and protection from damp and salinity.

#### (b) Floor

The floors of the monuments are no more in their original state. They have been reconstructed and renovated from

time to time as local peoples are still using the structures as prayer space. Floor level from the ground level also varies in different structure due to alteration of superstructure and protection from submersion. Only the tomb of the Khan-e-Jahan has still retained some of its original hexagonal multicoloured glazed tiles. Small outlets with corbelled tops are found on the floor level for quick drain out of water from inside.

#### (c) Plinth

These monuments have faced different modification and repair works through times. So, it is difficult to draw any comments on the conditions of the plinth level as the floors of the monuments are not in its original state. However in most cases a 6" raised platform placed in each doorway was found to prevent overflow caused by heavy downpour. It is assumed that this low plinth height was determined in accordance with the surrounding low lying area.

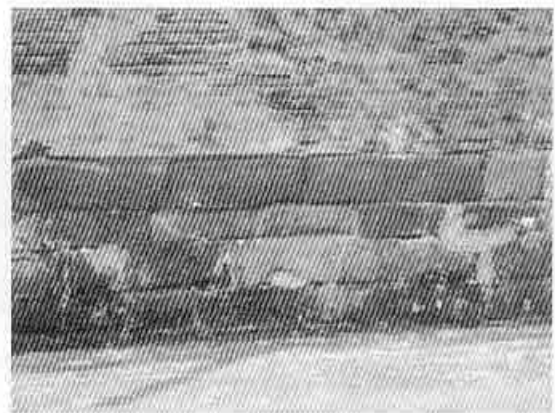


Fig. 03. Brick walls with stone plinth.



Fig. 04. Ruins at Khalifatabad. (photo: Ar. Ali Naqi)

#### (d) Walls

Wall construction of the monuments is quite similar to the construction of the foundations. Usually walls are made of two layers. The outside is furnished with regular sized bricks placed symmetrically one after another and bonded with lime mortar. The inner side that is between of two layers is filled with irregular shaped bricks and rubbles which are bonded by mud masonry. In most cases the inner sides of the finished bricks are rough and irregular.

Walls of these monuments in this region also vary in thickness. It ranges from 4'5" (Zindapir Mausoleum Mosque) to 9'6" (Bibi Begni Mosque). Structures with large single domes have comparatively higher thickness of walls whereas mosques with octagonal turrets have walls of lower thickness.

Use of stones in foundation level up to lintel is quite common in most of the mosque of Gour, but only a few structures in Bagerhat have similar stone treatments in walls because of scarcity of stones in this region. One exception is the mausoleum of Khan-e-Jahan which has stone base and stone lintels. Also stone bracket details at the springer level of the arches of the 'squinsches' has found in mausoleum.



Fig. 05. Water spout in Khan-e-Jahan mausoleum.

#### (e) Bricks

Bricks made with locally available materials of different shapes have been used for different purposes. Usually walls are built with regular rectangular shaped bricks with a dimension of 2"× 5"× 6". Polygonal turrets have been constructed with polygonal shaped bricks. Wedge shaped bricks have been used for circular turrets. The thickness of these bricks varies from 1.5" to 2.5" and length from 5" to 9.5".



Fig. 06. Polygonal shaped bricks in corner turret (photo: Ar. Ali Naqi).



Name of the Monument	Wall Thickness
The Nine dome Mosque	7'7"
The Mausoleum of Khan-e-Jahan	8'0"
The Mausoleum Mosque of Khan-e-Jahan	7'2"
The Ranvijoypur Mosque	9'3"
The Shait Gombuz Mosque	8'0"
The Singer Mosque	7'0"
The Bibi Begni Mosque	9'6"
The Chunakhola Mosque	7'6"
The Reza Khoda Mosque	5'8"
The Zindapir Mausoleum	5'0"
The Zindapir Mausoleum Mosque	4'3"

Table 01 : Wall thickness of different monuments

**(f) Columns**

The multi-domed mosques are equipped with series of stone columns for supporting the domes. These columns have basically three parts – the base (square in section), the shaft (octagonal in section) and the capital (square in section). Stone was not available in the local region, hence those are assumed to be transported from remote area and for ease of transportation the large stones were cut into pieces. During construction, these pieces of stones were stacked horizontally one upon another and

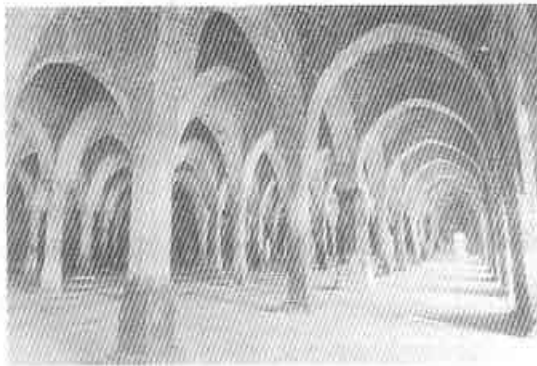


Fig. 07. Columns of The Shait Gombuz Mosque (source: Nazimuddin, 1989).

iron dowels were used to fix and keep them in place. The column texture is rough, unfinished and hardly ornamental unlike most of other monuments in Bengal. On the other hand, the single domed mosques are devoid of any supporting column because the domes rest on the thicker side walls.

**(g) Pilasters**

Brick pilasters are generally used in multi-domed mosques. They are projected from the walls and either rectangular shaped or similar shaped like central free standing stone columns.

**(h) Roof Cornice**

Due to heavy rain and to throw off the excess of water during the heavy rainy season, the solution of curve roofing became most convenient. According to Brown (Brown, 1942), this technique of curving was influenced by local roofing system with bent bamboos covered by thatch. Thus a special form of curved roof was devised for the purpose and became in the course of time a fixed convention for almost all buildings of Kahan-e-Jahan style.



Bibi begni's mosque



Nine dome mosque



Ranvijoypur mosque

Fig. 08. Curved roof and cornice in different mosques (source: Nazimuddin, 1989).

Name of the Monument	Shape	Lifted upward at Center point
The Nine dome Mosque	Curved cornice	6.375"
The Mausoleum of Khan-e-Jahan	Curved cornice	10.62"
The Mausoleum Mosque of Khan-e-Jahan	Curved cornice	12.94"
The Ronvijoypur Mosque	Curved cornice	11.69"
The Shait Gombuz Mosque	Sloped towards the sides	2'-6"
The Singer Mosque	Curved cornice	12"
The Bibi Begni Mosque	Curved cornice	2'-6.94"
The Chunakhola Mosque	Curved cornice	7"
The Reza Khoda Mosque	Roof Destroyed	N/A
The Zindapir Mausoleum	Roof Destroyed	N/A
The Zindapir Mausoleum Mosque	new domed rebuilt with no reference	N/A

Table 03 : Roof Cornice of different monuments

## Conclusion

Khan-e-Jahan was a great builder. Around 360 numbers of monuments were built in Khalifatabad, Bagerhat in his regime. The context where these monuments were built is extremely saline prone low-land with high level of moisture content in the atmosphere. As a result there is always the threat of efflorescence on built structures. But, surprisingly these brick structures have been surviving in this hostile context for more than 450 years.

From the study it has been found that Khalifatabad had experienced the most matured state of construction art of Kahan-e-Jahan. Khan-e-Jahan built his most beautiful monuments with previous experience of Barabazar, Jessore and expressed his significance of architectural response towards climate and nature at Khalifatabad. Building features like D.P.C. of stone as plinth beneath the walls, rainwater disposal through stone spouts from different corners of roof, small outlets in floor level including corbelled tops, curved and sloped cornice, use of terra-cotta etc. proves that the builders were acquainted with the geo-climatic conditions of the context. Certainly this responsive attitude of this style towards climate is the secret of long existence of these monuments.

The style introduced here by Khan-e-Jahan may not be unique and influenced by Imperial Delhi. But there is no doubt that the construction principles of this style were creative, its appearances were ingenious and original and particularly suitable to the climate and purpose for which it was intended.

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