



2016 On Site Review Report

by *Nondita Correa Mehrotra*

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Bait Ur Rouf Mosque

Dhaka, Bangladesh



Architect
Marina Tabassum Architects

Client
Sufia Khatun

Design
2005-2006

Completed
2012

Bait ur Rouf Mosque

Dhaka, Bangladesh

I. Introduction

The Bait ur Rouf Mosque is laudable for the process that it exemplifies – a small-scale participatory project for a community building, built within a modest budget, one that was raised through charitable contributions. Yet it is the architectural expression that is admirable – the quintessential mosque, elegant yet elemental, with spaces that are direct, simple and robust, allowing the congregation to gather in prayer as equals.

This terracotta brick building is exquisitely scaled, holding the corner in what is a fragmented, chaotic urban landscape. From within the prayer hall is reflective space, with no views out, but all light is from above, that comes down and bathes the brick walls. The construction and craftsmanship of brick is exceptional. The building is a wonderfully contemporary expression of a timeless programme, taking every element of a mosque and finding its contemporary voice.

The budget is the disciplining criterion – its constraint has forced the design to be simple in every way, thereby compelling the architect to search for what is essential to a mosque.

II. Contextual Information

A. *Brief historical background*

In 1947, at independence from British rule, the Indian subcontinent was partitioned along religious lines into India and Pakistan. This division displaced around 14 million people, leading to the largest mass migration in history as Hindus and Muslims had to relocate across the fresh borders and make new lives for their families.

At this time, architect Marina Tabassum's maternal grandmother's family was among those Muslim families that came from eastern Bihar and, in order to help them settle, her family was given 20 acres of land on the outskirts of Dhaka, northeast of the city. The family rented the land to farmers and lived on this income for many years. But over the decades the city spread and by the year 2000, urban development was all around what used to be farmland.

Then in 2002, Marina's mother died very suddenly, and a year later, her mother's sister. Marina's grandmother, having lost two daughters, decided to give back to the community by making a *waqf*¹ and building a mosque on part of the land. And she asked Marina to design it.

Dhaka, historically situated on the east bank of the Buriganga River, is the capital of Bangladesh and its largest city, with a population of over 18 million people in the greater metropolitan area. It is one of the fastest growing cities in the world, and very densely populated.

Urban settlement in the area dates back to the 1st century, but Dhaka really came to prominence when it was conquered by the Mughals in the late-16th century, and soon became the capital of Mughal Bengal. It then

¹ In Islamic terms, *waqf* refers to a religious endowment, which is a voluntary and irrevocable dedication of one's wealth in cash or kind (as in property), to build a mosque or religious school.

prospered with the muslin and silk trade and became one of the wealthiest cities in the world, generating 50% of Mughal India's GDP.

The Mughals laid out the city with gardens, mosques and palaces. Dhaka became known as the "City of Mosques" in Bengal.

B. *Local architectural character*

The high plinth, negotiated by generous steps, both responds to the threat of flooding and bestows the authority of a public building, especially a place of worship.

The most prominent building material in Bangladesh, in fact in all of Bengal, is terracotta. Crafts are often in terracotta, as the clay in the delta is exceptional. Also, there is very little stone available in the region, and so all construction of low-rise structures is in brick, usually load-bearing, or reinforced concrete frame with brick infill. There are thousands of brick kilns dotted across the country, as this is a large part of the informal economy.

A majority of the built structures are brick, which are then plastered, though buildings designed by modern architects are often in exposed concrete or exposed brick.

The legacy of architects who built here in the 1960s – such as Louis Kahn (who designed Sher-e-Bangla Nagar, the capital complex, in the 1960s), and Bangladesh's own Mazharul Islam – created the basis for a profession and intellectual discipline².

The mosques of the Bengal Sultanate (14th to 16th century) also influenced the architecture of the region, and the Bait ur Rouf Mosque in particular. Mainly due to the large number of conversions to Islam during this period, hundreds of mosques were built. Mosques were the new building typology at that time, but they were not imported – they were a combination and adaptation of elements found in traditional architecture³.

The one element that dominates built form in Dhaka is the high plinth; everyone who is building a permanent structure builds a metre-high plinth, to prevent floodwater from entering the structure.

C. *Climatic conditions*

Dhaka is hot and humid for most of the year. Situated on the Tropic of Cancer, the temperatures are around 29°C for about six months, from April through September, and dropping to around 21°C in December – February. The monsoon is long, again almost 6 months of the year, from April through September, with average rainfall in those months around 250 mm.

There is a lot of cyclonic activity in the Bay of Bengal, which brings high winds, and heavy rains. And since the land is at sea level, flooding can be quite common.

D. *Site and surroundings*

The site is just beyond the city limits, northeast of the city and the airport. As a result, many of the buildings surrounding the site are low-cost simple structures. Small apartment blocks predominate in more recent

² Ashraf, Kazi K., "Mazharul Islam, Kahn and Architecture in Bangladesh", *Mimar*, 1989.

³ Hasan, Perween, "Sultanate Mosques and Continuity in Bengal Architecture", *Muqarnas*, Vol 6, 1989, pp. 58-74.

construction (as land values and investments have increased). However, as the site is beyond the present municipal limits there is very little infrastructure, and no civic body to grant building permits, etc.

E. Topography

As in the area around Dhaka, this land is flat, with small ponds, trenches and culverts to drain or hold the large amounts of water in the clayey soil.

III. Programme

A. History of the inception of the project

Architect Marina Tabassum's maternal grandmother's family was among those Muslim families who came during Partition from India; and in order to help them settle, her family was given 20 acres of land on the outskirts of Dhaka, northeast of the city. The family rented the land to farmers and lived on this income for many years. But over the decades the city spread and by the year 2000, urban development was all around what used to be farmland.

Then in 2002, Tabassum's mother died very suddenly, and a year later, her mother's sister as well. Tabassum's grandmother, having lost two daughters, decided to give back to the community by making a *waqf* and building a mosque on part of the land. And she asked her granddaughter Marina Tabassum to design it.

The design stage lasted 14 months, from June 2005 through August 2006, and after the design was completed, in September 2006, the land was officially handed over to the community, and a simple bamboo structure with corrugated galvanised-iron sheets was erected on the site. This new, temporary structure was consecrated and would serve as a place of worship, the prayer hall, until 2012 when the Mosque was ready.

Marina Tabassum's grandmother, Sufia Khatun died a few months after the land was transferred in the waqf, and from then on, during the entire construction process, Marina and members of the Mosque Committee (which included people from the community, donors and other family members), acted as client and spearheaded the project.

B. How were the architects and specialists chosen?

Tabassum's grandmother had asked her to design the mosque, and Marina Tabassum then selected Daud Khalil Sarwar, the structural engineer, and later Shariful Islam, the brick mason, to work with her. These people made the core team in implementing the project.

C. General program objectives

The objective was to build a mosque for the neighbouring community, funded by modest means – through the contributions of family members and other donors. Developing the most frugal programme, adhering to just what was essential, was crucial in formulating the objectives. The design and construction of the building developed from this requirement of keeping the Mosque design simple and minimal.

The present-day practice of building mosques in Bangladesh in general is through raising funds within a neighbourhood community. The land is acquired either through the contribution of someone's personal property, as the architect's grandmother did in this instance; or by encroaching on government property.

Building-construction funding is always a challenge for most mosques, so generally they grow incrementally without any planning or strategy, raising funds from different sources. Also, the government has no regulation over mosques, so you can see these numerous unplanned, ill-conceived edifices all around the city. Quite often, to generate funds, they rent out spaces for shops, etc.

The quality of space that is essential for prayer – a large volume with natural light – is clearly not present in many of these mosques. The rich tradition of building mosques that was once prevalent is lost. Rarely is an architect hired or involved in the design or planning process.

Mosques are at full capacity during Friday prayers, and, at the Bait Ur Rouf Mosque, the Committee felt this would be around 500 worshippers. During Ramadan the numbers would be larger, but they felt that most of the congregation would spill onto the street irrespective of its capacity. And the architect and the Mosque Committee felt that to design solely for these occasions would put too much of a burden on the budget. On average, just 10% of the prayer space is in use throughout the year – i.e., around 50 men come in to perform *namaz* (ritual prayers). (I attended the evening *namaz* which comprised a little less than two rows of men). So, for Bait ur Rouf mosque, they decided not to use their budget on building several floors but instead created a single large volume to accommodate the people from the local community.

The Committee had to raise funds from different sources – families, friends, community, etc. – and therefore everybody making a donation became a voice in the decision-making process and in justifying the programmatic and architectural decisions. Marina says that, “quite often I had to explain why I did not consider a dome or a minaret or at least another floor to accommodate more people, etc. Or at times explain the delay in construction as site activity stopped due to lack of funds and materials. At times it became quite a stressful affair: raising funds, paying bills to contractors...” She seems to have worn many hats in trying to attain the objectives in building the Mosque.

D. *Functional requirements*

The brief did not give any specific requirements except that of building a mosque for the neighbourhood community in the Faidabad area.

The architect prepared the programme and later discussed it with all concerned in order to develop a brief of the project for approval.

The prepared brief was as follows:

- Prayer hall for 500 people
- Ablution area
- Toilet facilities
- Facility to hold funeral prayer
- Imam's office

IV. Description

A. *Building data*

This is what was provided, after considering requirements, site and funding:

- Prayer hall for 500 people: 280 m² (16.75 m x 16.75 m). On Fridays it extends to the outdoor plinth area of the mosque.

The architect was requested by the community to consider multiple floors or keep provision for expansion. Multi-storey mosques are common practice in Bangladesh in recent times. The mosques keep expanding their floor areas with no quality of space to evoke any sense of spirituality. Marina's explanation for deciding against providing the additional space was that, "every mosque with multiple floors remains inactive and empty throughout the year except a few special occasions. It is unwise to invest a good part of the budget to build underutilised spaces".

- Ablution area for 12 people and toilets: 23.25 m²
- Library (upper floor): 51 m²
- Corner Vestibules:
 - Southeast corner (Entrance with stair): 12 m²
 - Southwest corner: 14.85 m²
 - Northeast corner (Ventilation court for toilets, ablution): 10.65 m²
 - Northwest corner (Entry vestibule and Imam's office): 8 m²
- There is a water tap where the mosque supplies drinking water to the poor living in the community who have no access to tap water. The water bill is shared by the people of the community.

B. *Evolution of design concepts*

Response to physical constraints

The design itself takes care of the physical constraints – the Mosque is a perfect square that sits on an irregular shaped site. The additional area of the site is used as a high plinth, which is quite ingenious for many reasons – it takes care of the flooding, allows people to sit and talk while they wait for prayers, but most importantly, it separates this sacred site from the hustle and bustle of the crowded street.

The second physical constraint is that the *qibla* wall is the west wall, which faces a busy street. Again, the design solution is very elegant: Tabassum allows a gap in the brick wall to denote the direction of the *qibla*, and then splays it so that, during worship, people don't get distracted by the sight lines onto the street, so what you see instead is the sunlight bouncing off the wall beyond.

In other words, both the physical constraints were made into very positive attributes through design.

Response to user requirements

The users were part of the process, and their requirements have been incorporated into the design in a very seamless way. Even today, three years after completion, you don't see anything added on or changed – it seems to yet work well for the users.

Purely formal aspects

The geometry of the plan is very structured, coming from a heritage of the mosques of the Bengal Sultanate period, which had similarly formal brick buildings, and the modernist tradition of Louis Kahn, who of course has been very influential in contemporary Bangladesh.

The outer square is 23 m x 23 m and 7.6 m high. This forms the main facades of the mosque, the two surfaces we see from the approach road. In the square is a cylinder, which, surprisingly, is not situated symmetrically within the square, but instead moves to one corner – to the northwest. By locating the cylinder off centre, the *riwaq*, or colonnade, can use the additional depth on the south-facing side, and the ablution area has similar depth on the east-facing side.

Within the cylinder is another smaller square, a “pavilion” – 16.75 m square, and 10.6 m high, 3.0 m higher than the outer square. This “pavilion”, which is rotated within the cylinder to orient itself with the *qibla*, is the prayer hall, a place for prayer that has a clarity of form, and separates itself from the rest of the structure by open-to-sky light wells between the cylinder and the inner square.

Landscaping

There is no landscaping in this very urban project, where every square metre is covered in hardscape. This is important in that the sharp edges of the hardscape are in contrast to the dirt roads adjacent to the site. It is wonderful to see the taut terracotta plinth abutting the undulating muddy road surface. Also, since the Mosque is open to the elements and “breathes”, it connects to the landscape in an interesting way.

C. Structure, materials, technology

Structural systems

There are two structural systems in place – the load-bearing brick walls which form the outer perimeter of the Mosque, and which house the smaller spaces with short spans, and the reinforced concrete-frame structural system that spans the prayer hall, which is a column-free space of 15.25 m x 15.25 m, supported by eight concrete columns.

The load-bearing brick walls exploit the depth between the outer square and an inner circle (in plan), allowing for buttressing in the interstitial space. This also allows panels between the load-bearing structure to have a *jali* of brick, leaving out alternate bricks and rotating them.

The structure is ingenious in that it is rigorous and disciplined yet providing freedom, allowing the architectural design to dominate.

Materials

Load-bearing brick walls

The brick, used in the paving, the steps, the raised plinth, the load-bearing walls, and the jalis are locally made. Though they are modular, standardised brick, they are made by the informal sector and available within a few kilometres radius of the site.

Infill materials

Concrete block is the infill in the reinforced concrete structure of the inner square “pavilion”.

Rendering and finishes

- Terracotta brick: Paving, steps, raised plinth, load-bearing walls, *jalis*
- In-situ reinforced concrete: Concrete structure of the “pavilion”
- Concrete block: Infill in the “pavilion”
- Terrazzo, white: Prayer hall flooring
- Ceramic tiles, white: Ablution area, toilets
- Glass: Skylights and glass caps sealing pin-holes
- Angle irons, welded: Structure for staircase, door shutters
- Perforated metal panels: Staircase
- Steel cables: Staircase railing

Construction technology

The technology used is appropriate for the environment and the local conditions. It is labour intensive and uses skill sets available locally. The exposed brick was well executed and Shariful Islam is an excellent brick mason.

Building services, site utilities

Not relevant.

D. Origin of

Technology

- Traditional brick masonry used in a modernist idiom.
- Frugal means, appropriate for the budget and community.

Materials

- Locally sourced materials.

Labour force

- Local construction labour.

Professionals

- Client: Sufia Khatun, Marina Tabassum (also the Architect)
- Member, Mosque committee: Zulfiqer Ali Hyder
- Architect: Marina Tabassum
- Structural engineer: Daud Khalil Sarwar
- Site engineer: Bazlur Rahman
- Brick mason: Shariful Islam

V. Construction Schedule and Costs

A. *History of project design and implementation*

- April 2005: Commission
- June 2005 – August 2006: Design
- September 2006: Land transferred to the Mosque
- September 2007 – July 2012: Construction (several delays due to lack of funds)
- September 2012: Occupancy

B. *Total costs*

Total cost of construction: 12'000'000 BDT (133'300 EUR)
Exchange rate: Bangladeshi Taka 90.00 = 1.00 Euro

C. *Comparative costs*

- Total cost of construction: 15'384.60 BDT (170.90 EUR) per m²

D. *Qualitative analysis of costs*

- Compared to India, a similarly finished building would be about 220 EUR per m².

E. *Maintenance costs*

4'000 BDT/month (45.00 EUR)
Inclusive of electric and water bills, paid by the community.

F. *Ongoing costs and “life performance” of building*

Understandably, very low ongoing costs.

VI. Technical Assessment

A. *Functional assessment*

This is a gem of a building – a very elegant design exceptionally well executed, on a very modest budget. It is a people's mosque. For all the incongruous ones being built, the Bait ur Rouf Mosque is the epitome

of sophistication. The idea was to search for the essence of a mosque, one, in Marina Tabassum's words, "devoid of ritualistic and symbolic attributes." As the budget was very frugal, the architect was compelled to find a simple resolution – a place of congregational prayer, as a brotherhood, praying towards the qibla. The space should be contemplative and "evenly lit to enhance the feeling of all as equals." The Mosque does exactly that. Just with the most essential characteristics underlined, the building defines its exterior presence as a small yet imposing building, and is inward looking, as in a place of meditation. The large volume of the interior space and its natural light make the prayer hall a sacred space. Light pours down on the unplastered brick walls, giving it a primordial character. Warm and rich in colour and texture, the light washes the space, which is the essence of sanctity.

B. *Climatic performance*

The mosque is well resolved for the climate. Brick is a good insulator, is cool to the touch, and provides shade. Using the brick jali to allow for air to move through, and rise through the openings between the inner square "pavilion" and the cylinder, is an excellent solution.

C. *Response to treatment of water and rainfall*

The high plinth protects the building from floodwaters.

The monsoon rain may pose a problem as the openings for the hot air to escape also allow in rain. However, it is important to keep cross-ventilation even when it is raining, and the rain seems to have good drainage in the spaces where it enters.

D. *Environmental response*

As the mosque is an unpretentious building in what is already a very fast-growing, urban landscape, the environmental response is clear. It uses natural materials, in keeping with its simple quality.

E. *Choice of materials, level of technology*

The choice of materials and the technology selected for the project is very appropriate. The technology used is suitable for the environment and the local conditions. It is labour intensive and uses skill sets available locally.

F. *Response to, and planning for, emergency situations*

There are three exits from the prayer hall, the largest congregational space. One exit is at the northwest corner and opens right on to the street, the other two are in the southwest and southeast corners, and both lead to the riwaq, or arcade, and then onto the steps and the south-facing street.

G. *Ageing and maintenance problems*

The selection of 'timeless' materials was well considered and there should not be a problem with ageing or maintenance, except that exposed brick over time, especially in a humid climate, tends to discolour. Of course, exposed brick is both an aesthetic and economic decision, and though there is a cost savings now, at a later stage it may be necessary to paint or plaster the walls.

H. *Design features*

These have been discussed before, and the external as well as internal design features have been carefully considered.

I. *Impact of the project on the site*

The area of Faidabad, which has been until quite recently farmland, is now on the cusp of turning into urban land. So we can assume that this land too would have been converted in to urban land relatively soon.

J. *Durability and long-time viability of the project*

The mosque is well constructed, and we see no reason why it shouldn't last without any major problems for many years.

K. *Interior design finishing*

The interior finishes are simple and resilient, and relate well to the users.

VII. Users

A. *Description of those who use or benefit from the project*

The community of Muslims who live around the Mosque are really quite poor, with little or no infrastructure, living on the outskirts of the city. Many do not even have access to running water. In the vicinity of the Mosque there are dirt roads, informal settlements and small sheds. More recently, in the last couple of years (and since the completion of the Mosque), a few three-to-four storey, walk-up apartment buildings have appeared

We visited the Mosque at various times, and on each occasion there were a few older men, sitting on the high plinth on the western side of the building. There were several young boys too, especially in the mornings, when there were classes being held. A few of the boys recited verses from the Qur'an for us. We realised that this was a community centre for the residents, a place to gather, a place that was orderly, clean, and filled with light and good ventilation, apart from being the spiritual centre of their lives.

B. *Response to project by clients, users, community, etc.*

What do architectural professionals and the cultured "intelligentsia" think about the project?

The mosque has not been published, and when we discussed this with Marina Tabassum, she said that she has not even had it photographed professionally. However, she had sent a few images, drawings and a write-up to Kenneth Frampton, who has been quite enamoured of the project and is including it in the new edition of *Modern Architecture: A Critical History*.

What is the popular reaction to the project?

A week before I left for Dhaka, I went to hear Marina speak at the South Asia Institute at Harvard, and she presented the Bait ur Rouf Mosque. Here too she got very positive feedback, as it is a beautiful building.

However, because of its siting, and the ways light bounces within the space, it is a building that needs to be seen in person.

On arriving in Dhaka, many architects I met had high praise for the building, and most of them had visited it in person.

What do neighbours and those in the immediate vicinity think about the project?

The community, whom I met and spoke to, were very captivated by the Mosque. Many lived and worked in the neighbourhood and said they now made it a point to come and pray there.

I stood at the back of the prayer hall during namaz to witness how people used the spaces and it gave me an opportunity to speak to them afterwards. A few people gathered around me to tell me the difference it has made in their lives, and how proud they are to belong to this Mosque. Then they asked me if I would like to see the roof from above, and took me to the terrace of the apartment building next door. Needless to say, they were very enthusiastic, and I sensed that they each know in some way, that they have a very special place to worship.

VIII. Persons Involved

The client: Initially, the client was Sufia Khatun, but when she passed away, her granddaughter, the architect Marina Tabassum, took over. She involved the Mosque Committee, which consisted of leaders from the neighbouring community (the users), donors and other family members. Professor Mohammad Abdul Hai headed the Committee.

The architect: Marina Tabassum, who started her practice, MTA, in 2005. She is the sole principal. Earlier, from 1995 – 2005 she was a partner in Urbana, a practice also based in Dhaka.

The structural engineer: Daud Khalil Sarwar.

The mason: Shariful Islam

Design team (in Italics are people I met and spoke to)

Architect: *Marina Tabassum*

Junior architects (in different phases from 2005 to 2013):

- Asaduzzaman Chowdhury Tomal
- Chowdhury Hysum Mohammad Neville
- Sabrina Aftab
- Hosna Ara Tithi
- Shawly Samira
- Sadia Afroze
- *Hassan Mohammad Rakib*

Structural engineer: Daud Khalil Sarwar (he was not in the country when I was there).

Electrical engineer: Mohammad Rafiqul Islam

Construction team

Site engineer: *Bazlur Rahman* (he played an important role in creating a connection with the locals, managing construction, procuring materials etc.)

Brick and concrete work: *Shariful Islam*, brick mason

Terrazzo, tile and floor: *Mohammad Esharul*

Client:

- Mrs. Sufia Khatun (donated the land and 2'500'000 BDT to initiate the project)
- Professor Mohammad Abdul Hai (Head of the Mosque Committee and treasurer)
- *Zulfiqer Ali Hyder* (Member of the Mosque Committee. He was responsible for arranging funds from different sources. He keeps in good communication with the locals and takes active interest in uplifting the condition of the community)
- Sabina Naser (She helped in raising fund from families and friends, and is also actively involved with the lower-income families in the locality helping them with their livelihood).

Mosque Staff:

The Mosque runs with fund collected on a monthly basis from the local community and families of the client. Every family pays 500 BDT monthly to the Mosque fund. With this fund, staff remuneration and maintenance costs are paid. At times during Ramadan and other religious occasions, some donations are received which help with major maintenance works like fixing the water pump, the annual cleaning of the brick walls, floors after monsoon, etc.

- Imam: *Dwin Islam* (head of the Mosque) Paid from Mosque fund
- Muazzin: *Jahirul Islam* (calls for prayer) Voluntary service
- Teacher: *Hafez Monir Hossain* (instructing the children in lessons from the Qur'an) Paid from Mosque fund
- Khadem: *Abul Kalam* (the cleaner and maintenance staff) Paid by Marina Tabassum Architects.

IX. Bibliography

List of Publications

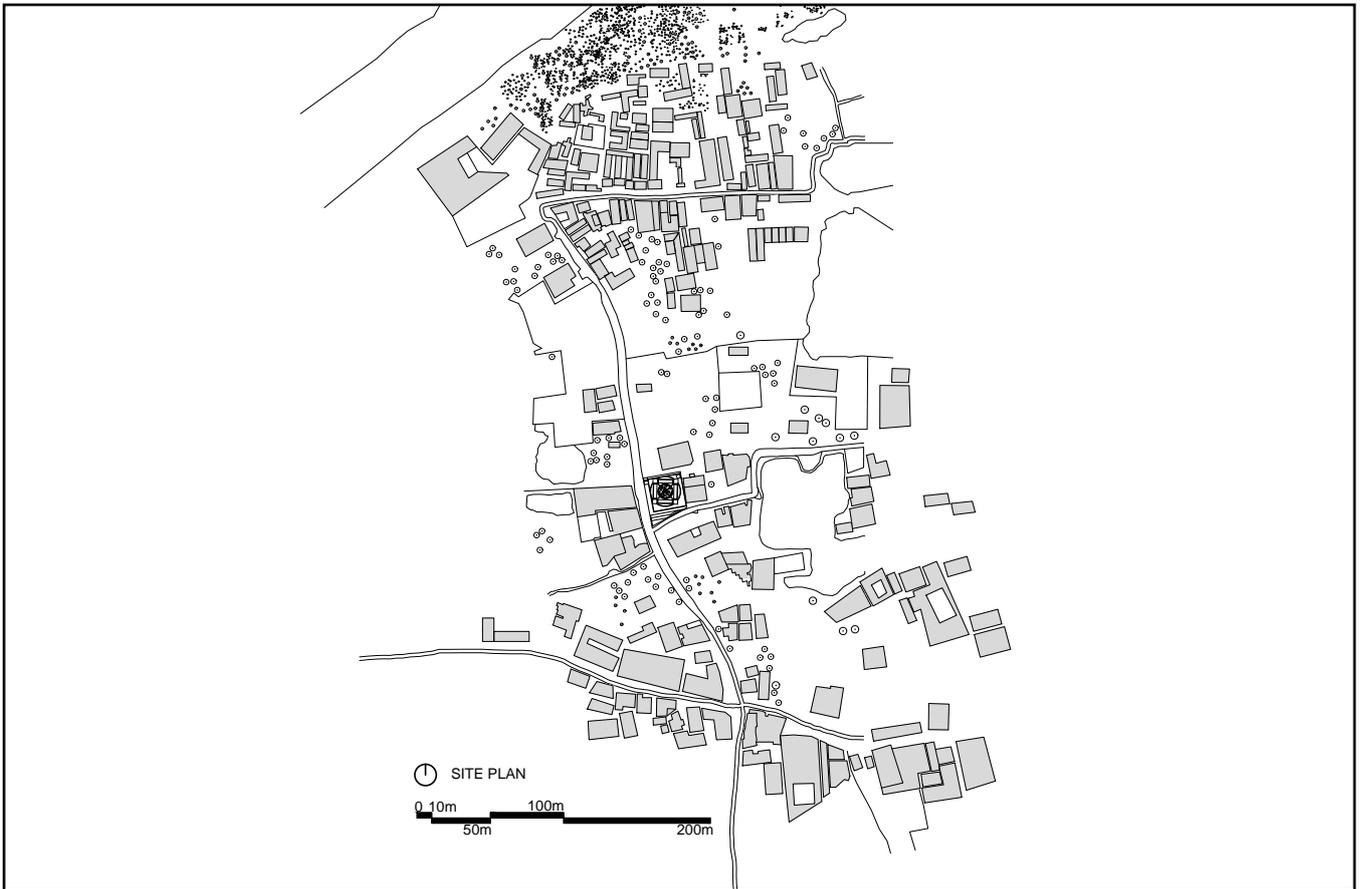
A. *Papers/Publications*

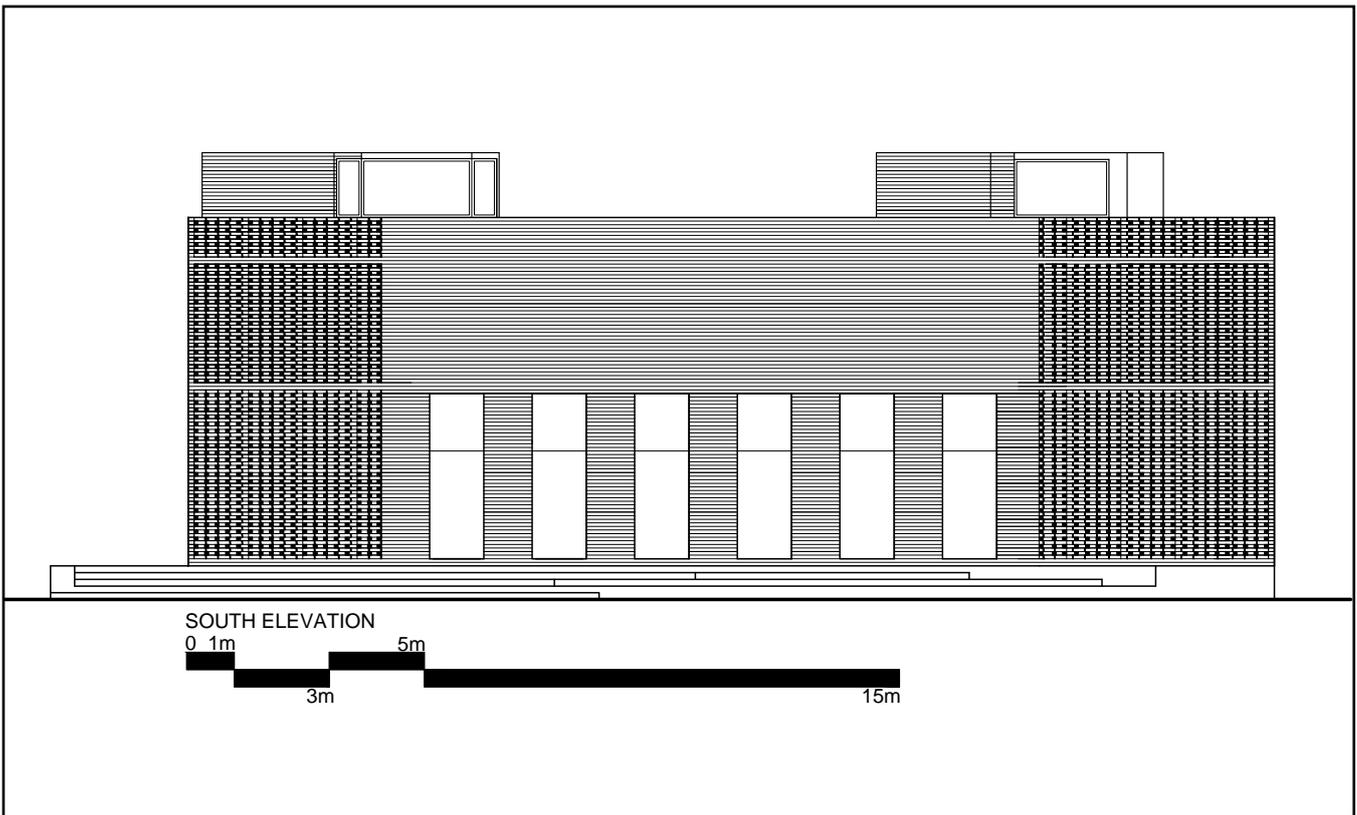
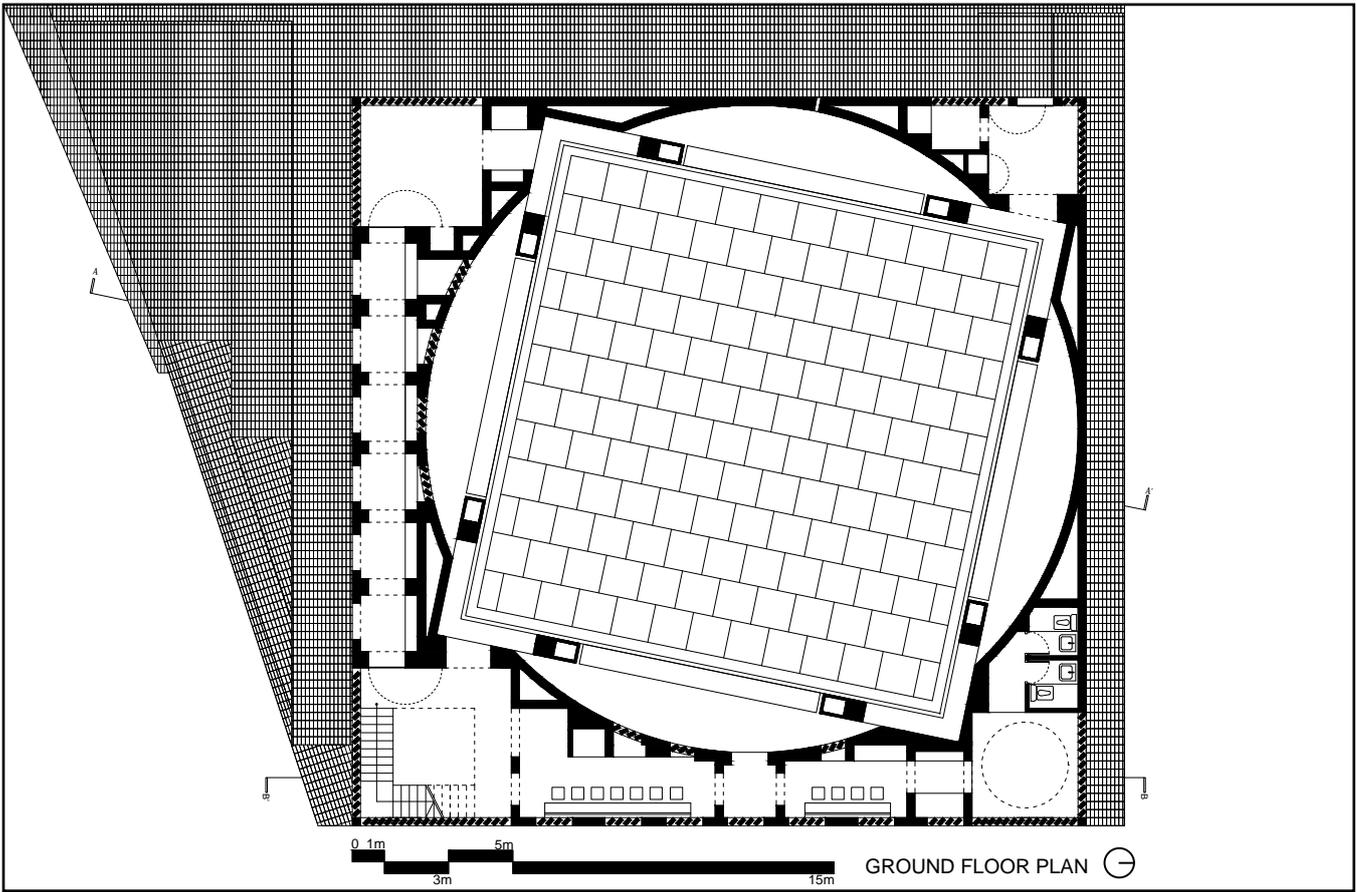
'*Masjid - Selected Mosques from the Islamic World*' by Azim A Aziz, ATSA Architects, Malaysia; First edition, June 2015.

B. *Media Reports*

None so far.

Nondita Correa Mehrotra
May 2016







The mosque is built on the northeast limits of the city, and surrounded by low-cost simple structure buildings and small apartment blocks in more recent constructions.

The one element that dominates built form in Dhaka is the high plinth to prevent floodwater from entering the structure.

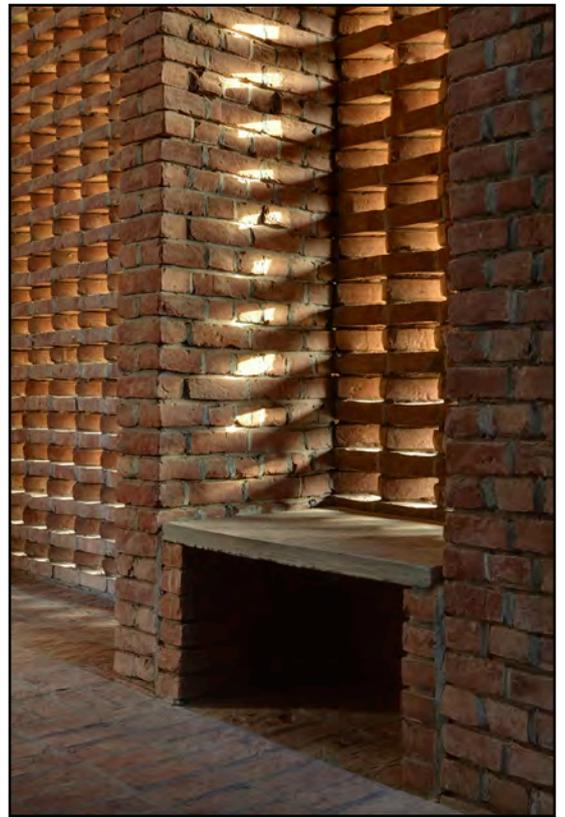




The mosque is a perfect square that sits on a high plinth. It allows people to sit and talk and creates a separation between the sacred site and the busy street.

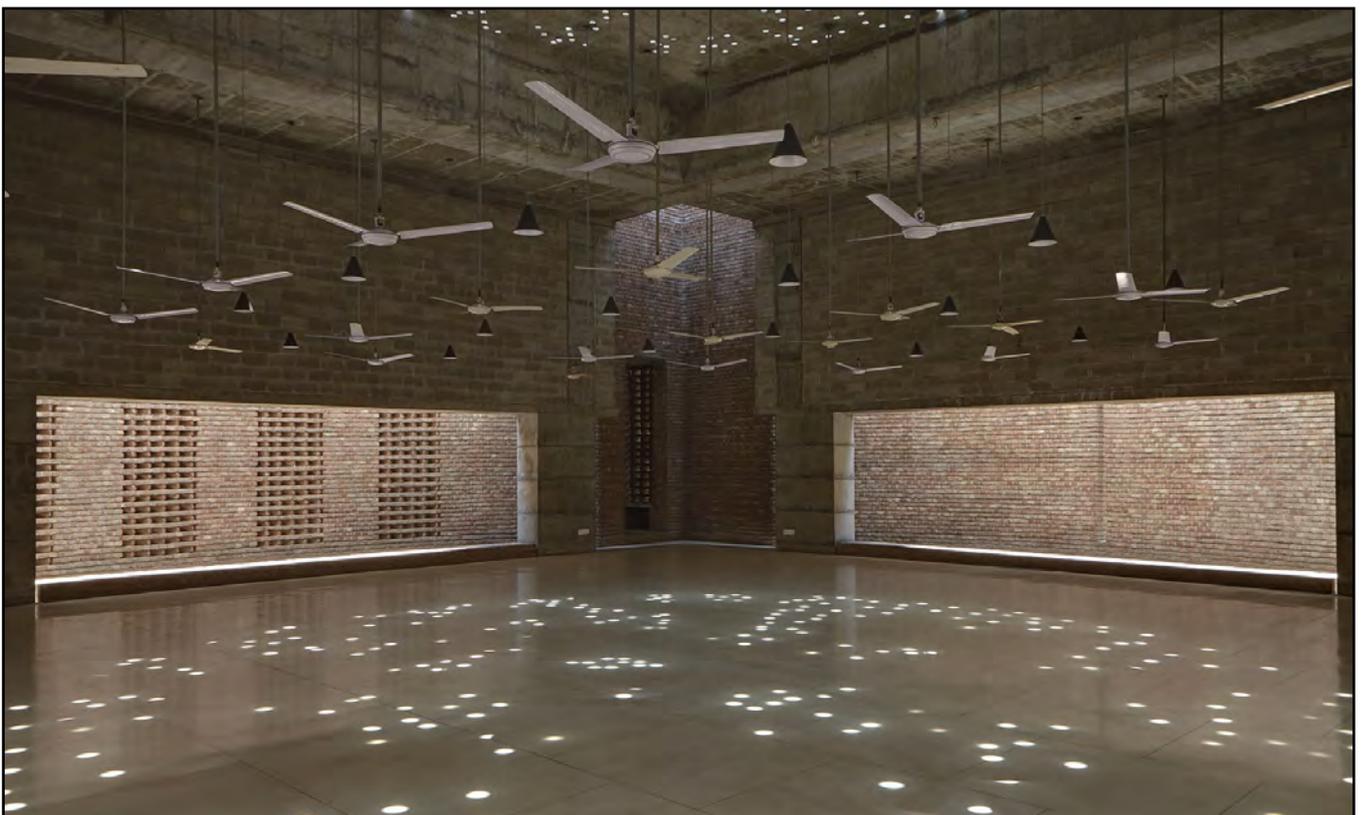
The *riwaq*, or colonnade (left), and the ablution area (right) use the additional depth allocated by the cylinder off-centred on the south and east-facing sides.

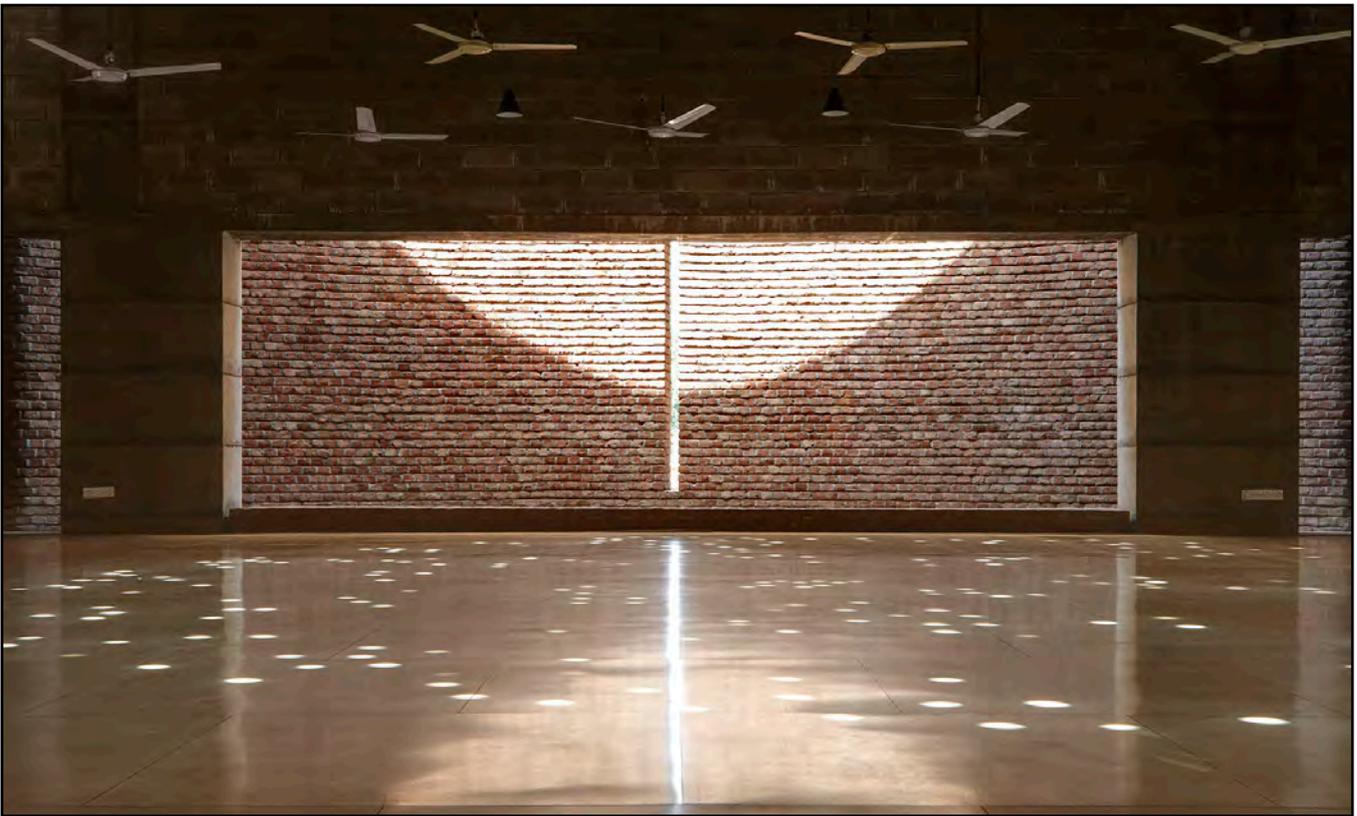




Using the brick jali to allow for air to move through, and rise through the openings between the inner square “pavilion” and the cylinder, is an excellent solution to solve climatic issues.

The prayer hall, a column-free space supported by eight concrete columns, is reflective space. With no views out, all light is from above, that comes down and bathes the brick walls.





A gap in the brick wall denote the direction of the *qibla*, and then splays it so that, during worship, people don't get distracted by the sight lines onto the street, but see instead the sunlight bouncing off the thickness of the wall.



The monsoon rain may pose a problem as the openings for the hot air to escape also allow in rain. However, it is important to keep cross-ventilation even when it is raining, and the rain seems to have good drainage in the spaces where it enters.