AGA KHAN DEVELOPMENT NETWORK

QUTB SHAHI HERITAGE PARK

An Initiative by AGA KHAN TRUST FOR CULTURE

ANNUAL REPORT 2023-2024

Qutb Shahi Heritage Park:

Conservation & Landscape Restoration

The Qutb Shahi Heritage Park was the necropolis of the Qutb Shahi dynasty, rulers of Golconda. Here stand 86 monuments built over 169 years of Qutb Shahi rule. The site, a tentative UNESCO World Heritage Site, is amongst the world's most significant medieval ensemble in terms of numbers of monuments. In 2013, the Aga Khan Trust for Culture entered into an agreement with the Department of Heritage Telangana and the Quli Qutub Shah Urban Development Authority and signed an MoU enabling conservation and landscape restoration of the necropolis.

Partner Agencies

DEPARTMENT OF HERITAGE TELANGANA

AGA KHAN TRUST FOR CULTURE

QULI QUTUB SHAH URBAN DEVELOPMENT AUTHORITY, HYDERABAD

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Landscape Masterplan

The landscape masterplan for the Qutb Shahi Heritage Park, including the Deccan Park area, was prepared to provide an enhanced setting for the monuments and to improve internal visitor circulation. Based on detailed site surveys and archival references, the plan also aimed to create ecological zones in the northern and southern sections of the Park through the plantation of native species, thereby strengthening both heritage and environmental values.

These works, undertaken by the Aga Khan Trust for Culture in partnership with the Department of Heritage Telangana, ensure long-term preservation while enriching the visitor experience of this site of international significance.

As part of the plan, nearly 15 hectares within the northern and southern areas of the tomb complex are being developed as ecological zones by introducing appropriate tree species and enhancing habitats for birdlife unique to the region. To the east, the Deccan Park has been envisioned as the principal entrance to the necropolis, creating a fitting gateway into the heritage zones framed by both ecological and formal landscapes.


Mosque
Peripheral Walkway
Boulders
Funerary Mosque 2
Tomb 1
Funerary Mosque 15
Boulders
Boulders
Parking
Funerary Mosque 1
Abdullah Qutb Shah
Reign: 1626-1672
Boulders
Funerary Mosque
Mausoleum of Begum Hayat Bakah
Tomb 2
Garden Amphitheatre
Terraced Garden
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Sultan Muhammad Qutb Shah
Reign : 1611-1626
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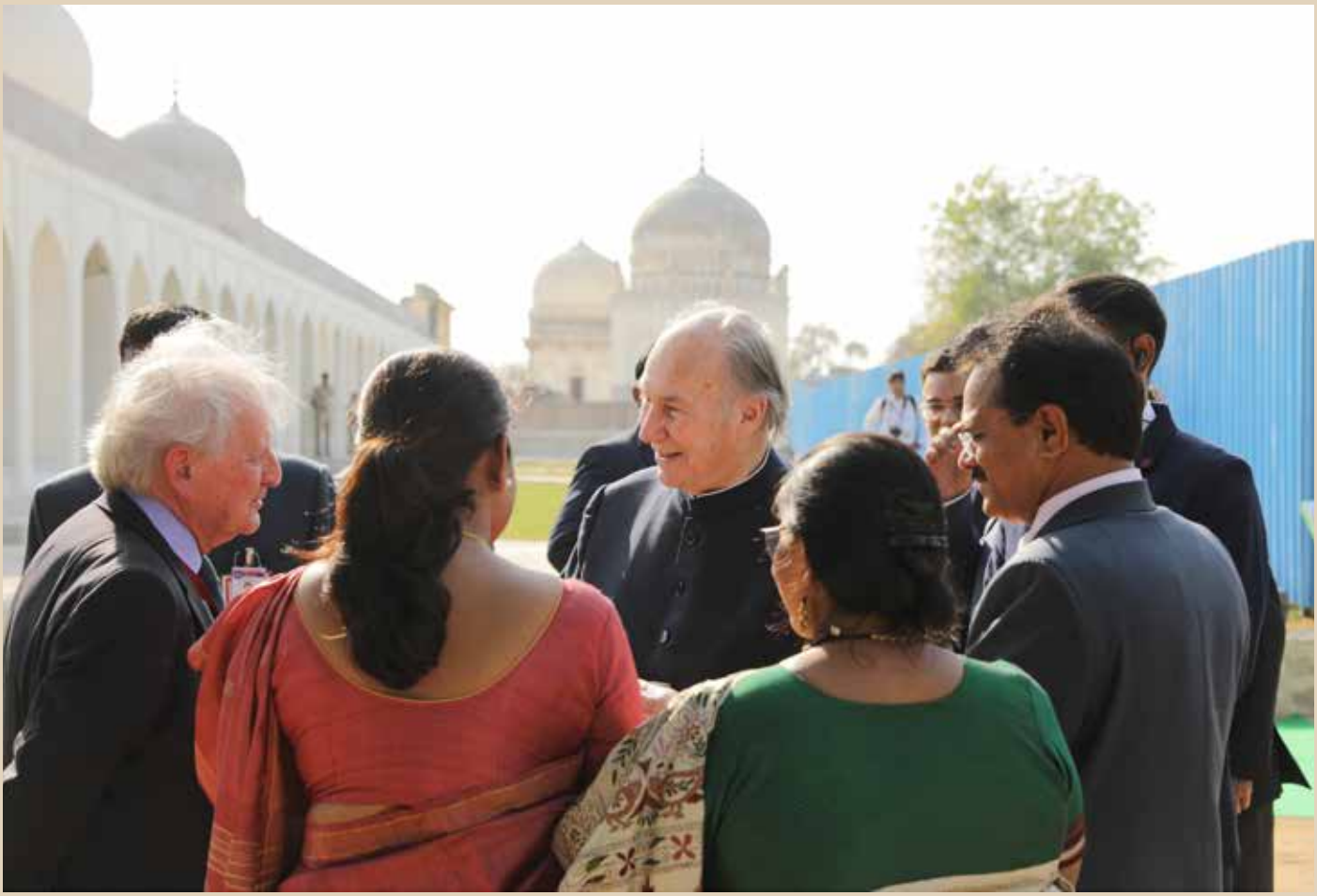
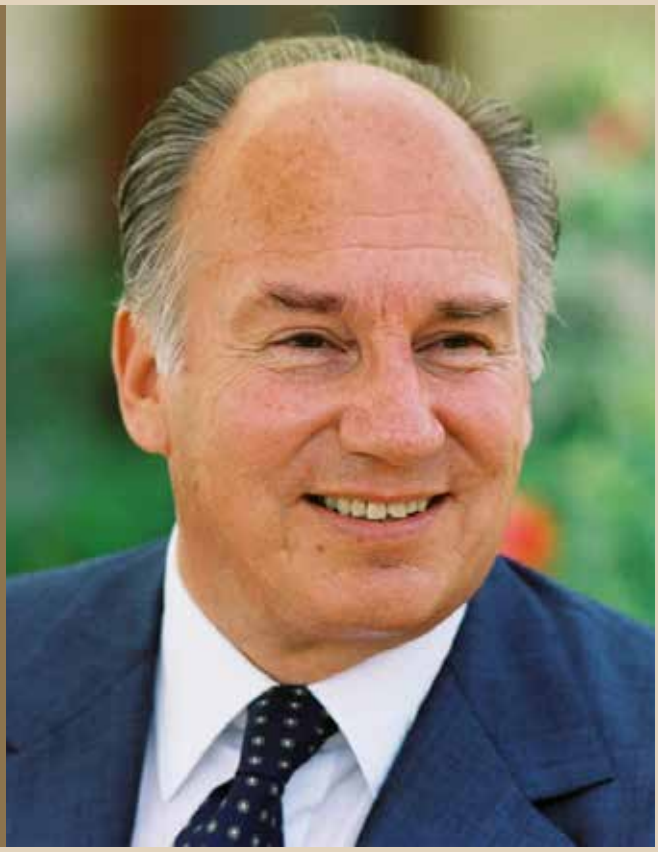


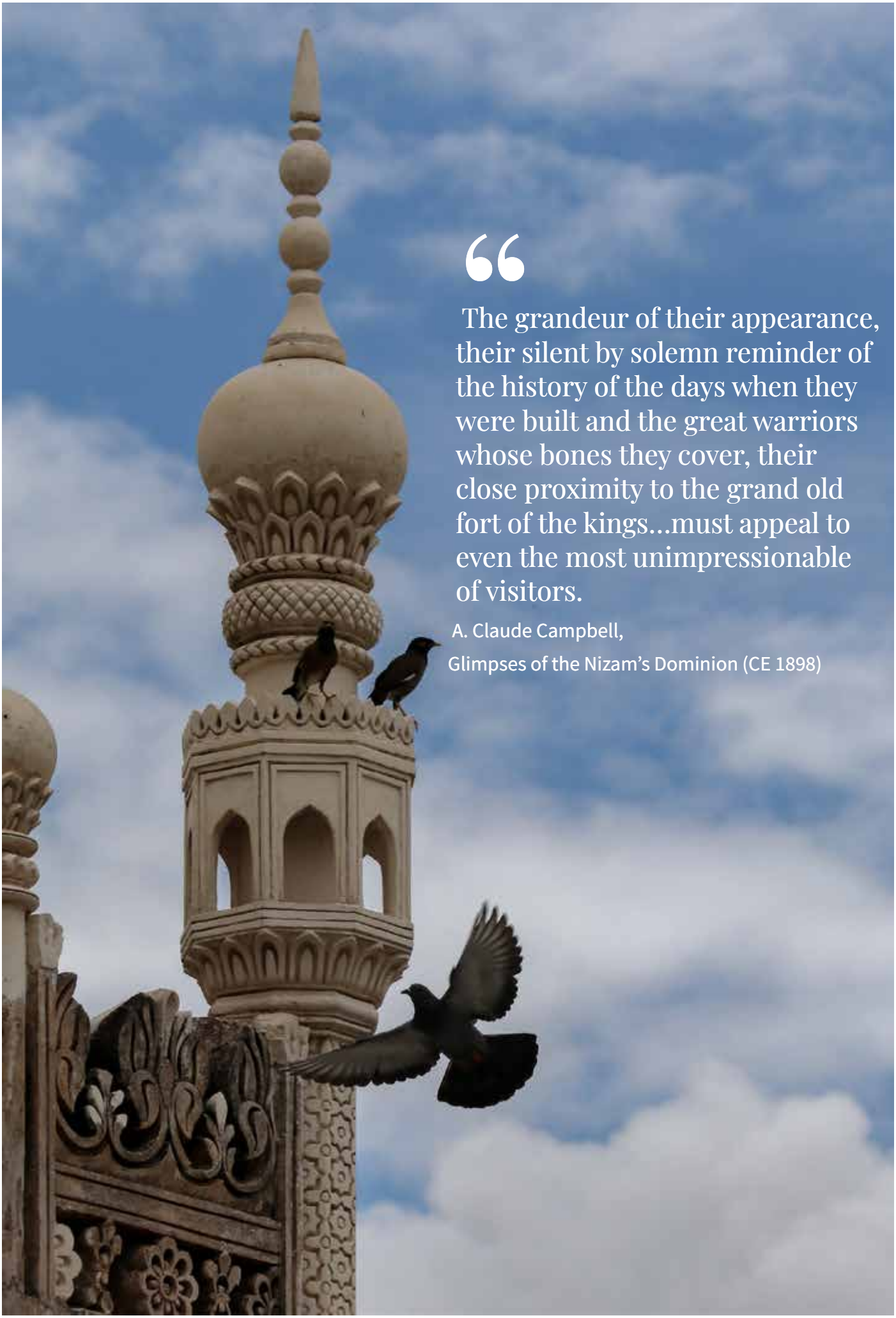
In Memoriam
Late His Highness, the Aga Khan IV (1936 - 2025)

> Everyone's life is a passage, and perhaps the most one can do is to have left something behind during that passage, which contributes and assists the people to look to their future with more confidence, more stability and more hope.
>
> His Highness the Aga Khan IV



His Highness Prince Karim Aga Khan IV passed away peacefully in Lisbon on 4 February 2025, aged 88. His Late Highness was the Founder of the Aga Khan Foundation and Aga Khan Development Network and the 49th hereditary Imam of the Shia Ismaili Muslims. One manifestation of his hereditary responsibilities was a deep engagement with development for more than 60 years.

In honoring His Late Highness' legacy, the Aga Khan Trust for Culture remains committed to building a future where we all thrive together.



> The grandeur of their appearance, their silent by solemn reminder of the history of the days when they were built and the great warriors whose bones they cover, their close proximity to the grand old fort of the kings...must appeal to even the most unimpressionable of visitors.

A. Claude Campbell,
Glimpses of the Nizam's Dominion (CE 1898)

Executive Summary

In January 2013, the MoU between the Department of Heritage, Quli Qutub Shah Urban Development Authority, and the Aga Khan Trust for Culture was inked to mark the official commencement of a major Conservation & Landscape Restoration project that has since led to conservation of 86 individual monuments and over 180 ornamental gravestones. Over 106 acres have been landscaped, including landscape restoration of the core archaeological zone and ecological restoration through creation of urban forests on over 20 acres in the site's periphery where more than 10,000 trees have been planted. The conservation, and even reconstruction, of six 16th century step-wells has allowed for the collection of over 32 million litres of rainwater each year – making the 106 acre necropolis self-sufficient for water.

In July 2024, the Hon'ble Chief Minister of Telangana, Sri Revanth Reddy Garu, Prince Rahim Aga Khan (now His Highness the Aga Khan) along with Janab Asaduddin Owaisi, Hon'ble Member of Parliament from Hyderabad, presided at a ceremony to mark the completion of major conservation works on the numerous monuments that stand within the necropolis. Mausolea, funerary mosques, stepwells, garden structures built in every decade of Qutb Shahi rule from 1518 to 1687 have been scientifically conserved by master craftspeople using traditional materials, tools, and building craft techniques to enhance the significance of this tentative World Heritage Site.

The conservation efforts at Qutb Shahi Heritage Park have involved holistic landscape development too

The conservation effort has required significant effort for each of the 80+ buildings, irrespective of their scale. At each monument, 20th century cement plaster has been painstakingly removed, structural cracks repaired, granite stone flooring provided in lieu of cement flooring, stucco patterns – a significant element – carefully restored, roofs made watertight, amongst other conservation works. This has been the largest ever single site conservation endeavour ever undertaken in India, requiring over 500,000 person-days of work by master-craftspeople.

Some conservation works continue, among them, the restoration of extensive glazed tile patterns discovered on the dome and façade of the mausoleum of Muhammad Qutb Shah, for which over 200,000 individual handmade glazed tiles have been specially crafted.

The extensive conservation effort at the necropolis – comprising garden tombs - has been coupled with similarly extensive landscape restoration works. Meticulous restoration of formal layouts of the garden enclosures including restoration of earth levels and planting patterns, has been carried out. Significantly, creation of urban forests with native tree species, including fruit trees, has been planted on the south, north and western edges of the necropolis. This ecological buffer zone is today a mature urban forest with over 75 tree species now seen here and a significant ecological asset with a capacity of 10 tonnes of carbon sequestration. Regrading earth levels coupled with reconstruction of collapsed stepwells has enabled the necropolis to be net zero for water consumption and a model for other similar sites. Until a few years ago, despite the 30 million litre capacity of the stepwells, water run off was still seen and a lake was created in present day Deccan Park to capture this excess water.

Since the signature of the MoU on 13 January 2013, one lawyer has filed repetitive cases,

A lake was created in the present-day Deccan Park

including almost 100 IAs, for the same set of ill-informed petitioners—and for the most trivial reasons. With almost 20 years of litigation due to the filing of minor additional matters, these items are yet to even come up for hearing at the Wakf Tribunal—a blatant abuse of the Indian judicial system. Though this has resulted in needless day-to-day challenges in implementing the conservation project, it has sadly—for Hyderabad—stalled the construction of the site museum being built with funding raised by AKTC from the Ministry of Tourism, Government of India. It is hoped that with the active engagement of the Government of Telangana in the legal matters, these cases can be brought to a close and the museum building—designed by award-winning architects—can be completed.

In 2023, AKTC partnered with Indian Green Building Council to analyse the environmental impact of the conservation and landscape effort. On account of the traditional materials used in the conservation effort – such as lime mortar – and the reuse of inappropriate past materials removed from the monuments – such as cement concrete used to level pathways – has had a significant impact. 56,000 tonnes of carbon emissions have been reduced on account of use of traditional materials, as compared to if modern materials had been used. The planting of 3621 trees up till 2023 has already resulted in 8.65 tonnes of CO2 sequestered, and over a period of 50 years 207 tonnes of CO2 will be sequestered. An additional 7000 trees have since been planted and will result in an additional 400 tonnes of CO2 by AD 2075!

AKTC has also been pursuing the Government of Telangana to create a Management Trust on the lines of the Government Sunder Nursery Management Trust to manage the combined Deccan Park and Tombs area as a single entity.

In 2022, AKTC commenced the conservation of the intricately built Paigah Tombs with the support of a grant from the US Ambassadors Fund for Cultural Preservation. This work is expected to be completed in December 2025.

Conservation for adaptive reuse of the Telangana Assembly building began in 2024

The Partnership with the Government of Telangana has been enhanced and expanded, with AKTC taking responsibility for three major monuments with funding from HMDA. Amongst these, conservation works on the Saidana Ma Tomb and Baoli was completed in early 2024. While work has largely remained halted through 2024, it is hoped outstanding matters will be resolved and conservation at Badshahi Ashoorkhana and Sheikhpet Serai can recommence in 2025.

A major undertaking commenced in 2024 was the conservation for adaptive reuse of the Telangana Assembly building built in AD 1905 by the Nizam government. This commenced with AKTC being asked to review a Rs 90 Crore estimate for repair works – which included replacement of the Jack Arch vaults with a RCC slab. Conservation works now being undertaken by AKTC at less than 15% of that cost have revealed several significant elements though not all are allowed to being restored on account of the proposed intensive reuse of the building.

01. Completion Ceremony

(Qutb Shahi Heritage Park on 28th July, 2024)

(Above) Prince Rahim Aga Khan addressing the guests at the ceremony to mark the completion of the restoration work.

Speech by Prince Rahim Aga Khan at the completion ceremony of the restoration work at Qutb Shahi Heritage Park.

"May I begin by extending my gratitude to the government and people of India and Telangana for their warm welcome and hospitality.

This magnificent ensemble of pavilions, gardens, stepwells and mausolea within viewing distance of the Golconda Fort is, first of all, a testament to the skill, talent and ingenuity of the people of this city and their forebears. Together with others from near and far, they have demonstrated their commitment to enable the past to inspire the future.

This site is the final resting place of the Qutb Shahi dynasty, which governed Hyderabad for 169 years. As we see when we look around us here, the Qutb Shahis were not only remarkable builders. They were also great patrons of arts and learning.

It is in bringing forth and enhancing that legacy, that the Government of Telangana and the Aga Khan Trust for Culture have worked together to create a unique site, unparalleled in its grandeur, diversity, and completeness. The support, commitment, and dedication of the Telangana government has made this a strong and fulfilling partnership, for which we are deeply grateful.

To our generous donors and partners – the Ministry of Tourism of the Government of India, Tata Trusts, the US Ambassadors Fund for Cultural Preservation, IndiGo Reach, and the German Consulate – are due our warmest appreciation for their support and resolve to preserve and revive this inheritance for the benefit of the whole world. Twelve years of complex restoration and conservation efforts by the Aga Khan Trust for Culture in this joint venture has conserved almost 100 monuments, and revitalised the landscape and ecology across this 106-acre site.

As we pause for a moment to take in the splendour of this achievement, let us reflect on the energy and dedication of the multidisciplinary team that has undertaken the work. Craftspeople, using traditional tools, building materials, and valued craft skills, have strived to match the stucco work from five centuries ago. Landscape architects, ecologists, horticulturists, and gardeners have planted over 10,000 trees, creating an ecological buffer to the heritage zone. Another 5,000 trees are planned.

Six baolis, two of which were discovered recently, were cleared, desilted, reconstructed and restored, and now contribute to a surplus of water to irrigate and maintain the gardens. Since 2022, over 20 million litres of rainwater have been collected annually.

We are honoured to have been instrumental in creating the Qutb Shahi Heritage Park. In doing so, we not only recognise the art, architecture and engineering prowess inscribed in the history of this city, but also address future environmental and climate challenges which are not just cultural or scientific, but concerns of primary urgency.

CM Revanth Reddy unveiled the commemorative plaque in the presence of Prince Rahim Aga Khan, along with esteemed guests, including, Sri Jupally Krishna Rao, Hon'ble Minister of Tourism and Culture, Government of Telangana, Sri Asaduddin Owaisi, Hon'ble Member of Parliament, Smt A. Vani Prasad, Principal Secretary to Government, Tourism and Culture

Beyond the restoration of the built heritage, the strength The Aga Khan Trust for Culture has created or restored ten major parks and gardens around the world following the guidance of His Highness the Aga Khan, concerning our responsibility to protect the natural world, and to respect the power and mystery of nature.

Indeed, one of the ethical principles of the Aga Khan Development Network, a group of agencies that seek to improve the welfare and prospects of people around the world, is to work towards a sustainable environment, in its physical, social, and cultural dimensions.

Today's ceremony does not mark the end of the Aga Khan Trust for Culture's presence in Hyderabad. We are engaged with the Government of Telangana on five other projects in the city, including the Paigah Tombs and the State Assembly. We are also in discussions to establish a management trust for the operations and maintenance of this Heritage Park.

Our work here is part of a multisectoral commitment of the Aga Khan Development Network, and organisations under the direction of the Ismaili Imamat, to the people of Telangana. It remains our hope that our endeavours in education, early childhood development, women's development, climate action, and disaster risk resilience can continue, under a structured framework, to improve the quality of life for all the people of Hyderabad and Telangana.

I therefore greatly look forward to returning to this beautiful city and to its warm and generous people in the future.

A site museum is also planned here, at Qutb Shahi Heritage Park, which will serve both the Park and the Golconda Fort, and which will present the achievements of the Qutb Shahi dynasty.

During the completion ceremony, dignitaries walked through the heritage park, viewing several exhibitions that showcased the restoration efforts

CM Revanth Reddy addressing the gathering at the Qutb Shahi Heritage Park on 28th July 2024.

In his address, the Hon'ble Chief Minister of Telangana Revanth Reddy celebrated the completion of an "extraordinary restoration and renovation project" at the Qutb Shahi Heritage Park.

This project, a collaborative effort between the Department of Culture and Heritage of the Government of Telangana and the Aga Khan Trust for Culture, is considered the largest conservation effort ever undertaken in India. The CM noted that the Qutb Shahi Heritage Park showcase the "architectural brilliance and cultural richness of the Qutb Shahi dynasty".

He also expressed his happiness that the Government of Telangana and the Aga Khan Trust for Culture are discussing a post-project management strategy. This strategy would involve the Aga Khan Trust for Culture in the management of the park for up to 10 years, with the goal of making it financially sustainable.

The Chief Minister also stated that the Qutb Shahi Monuments, which include Golconda Fort, Qutb Shahi Tombs, and Charminar, are on the tentative list of World Heritage Sites. He expressed his confidence that the global community would recognize the "exceptional value" of this historic ensemble and grant them the "prestigious UNESCO World Heritage Site status they richly deserve".

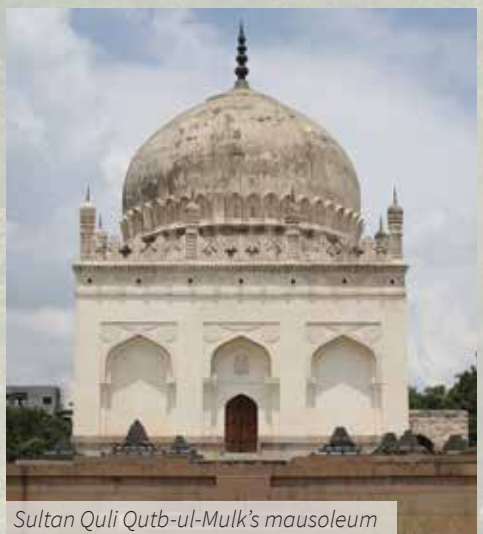
The CM also mentioned that this restoration project is an "exemplary demonstration of international cooperation in preserving shared cultural heritage".

CM Revanth Reddy addressing the gathering at the Qutb Shahi Heritage Park on 28th July 2024.

Member of Parliament Asaduddin Owaisi, while speaking at the completion ceremony of the Qutb Shahi Heritage Park, expressed his deep appreciation for the collaborative efforts of the Aga Khan Trust for Culture (AKTC), the Telangana state government, and other stakeholders in restoring this historic site. Reflecting on his childhood memories associated with the tombs, he emphasized the significance of the restoration work that has revitalized a vital part of Hyderabad's cultural heritage. The MP specifically requested the Chief Minister to review and positively consider the AKTC's proposal for ongoing maintenance and management of the Qutb Shahi Heritage Park, stressing the importance of conserving and preserving the monuments within the complex. He stated, "I would really request the Honorable Chief Minister to examine the proposal made by Aga Khan Trust in maintaining the seven tombs(Qutb Shahi Heritage Park) so that this can be maintained and preserved also."

During the Completion Ceremony, dignitaries marked the occasion by planting trees

Several exhibitions showcased the restoration efforts



Sultan Quli Qutb-ul-Mulk's mausoleum

Jamshed Quli Qutb Shah's mausoleum

Muhammad Quli Qutb Shah's mausoleum

16th–17th century

Qutb Shahi period mausoleums, funerary mosques, baolis, hammam, idgah, garden structures, grave platforms and enclosure walls

Conservation of the monuments at the Qutb Shahi Heritage Park is coupled with holistic landscape restoration

Royal Necropolis

The Qutb Shahi Sultans built magnificent mausoleums and funerary mosques for themselves, family members, nobility, commanders, physicians, and courtesans within the necropolis.

While the original extent of the site was much larger, the surviving structures are awe-inspiring, featuring 40 domed mausolea set amidst formal gardens and decorated with intricate stucco patterns. There is truly no archaeological site like it anywhere in the world. Among these buildings, four structures stand over 40 meters tall, comparable in scale and grandeur to the Mughal mausoleums of North India.

The mausoleums showcase a fusion of Persian and local architectural styles and materials, adorned with ornamental stucco made from incised lime plasterwork. Some even feature glazed tiles.

TILE RESTORATION

02. Muhammad Qutb Shah's Mausoleum

(Above)The dome of Muhammad Qutb Shah's mausoleum has now been restored with glazed tiles, based on original evidence

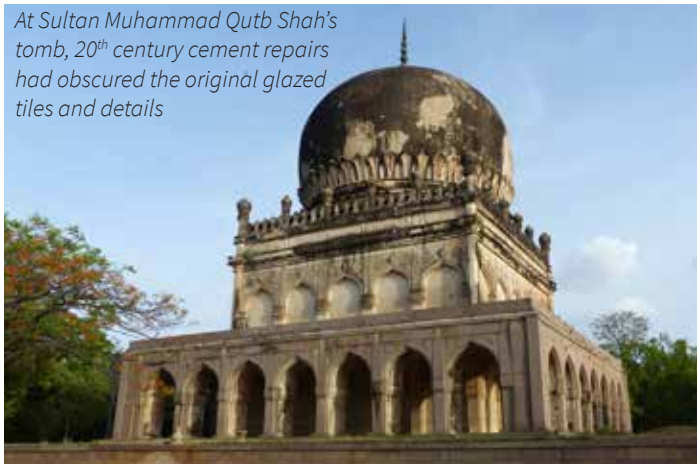
Supported by

INTERGLOBE FOUNDATION

Sultan Muhammad Qutb Shah, the sixth ruler of the dynasty (CE 1612–1626), rests in a garden mausoleum that recently revealed a hidden past. His wife, Hayat Baksh Begum, lies in an equally grand mausoleum beside him, both enclosed within a square garden.

Though many tombs in the necropolis were once adorned with vibrant glazed tiles, it is only in Muhammad Qutb Shah's mausoleum that enough original fragments survived—buried beneath layers of 20th century cement—to guide the careful restoration of these decorative elements. The restored tilework not only restores the tomb's visual splendor but also highlights an important aspect of Qutb Shahi architectural style.

Photograph from 1860s showing remnants of tile impressions on the monument



At Sultan Muhammad Qutb Shah's tomb, 20th century cement repairs had obscured the original glazed tiles and details

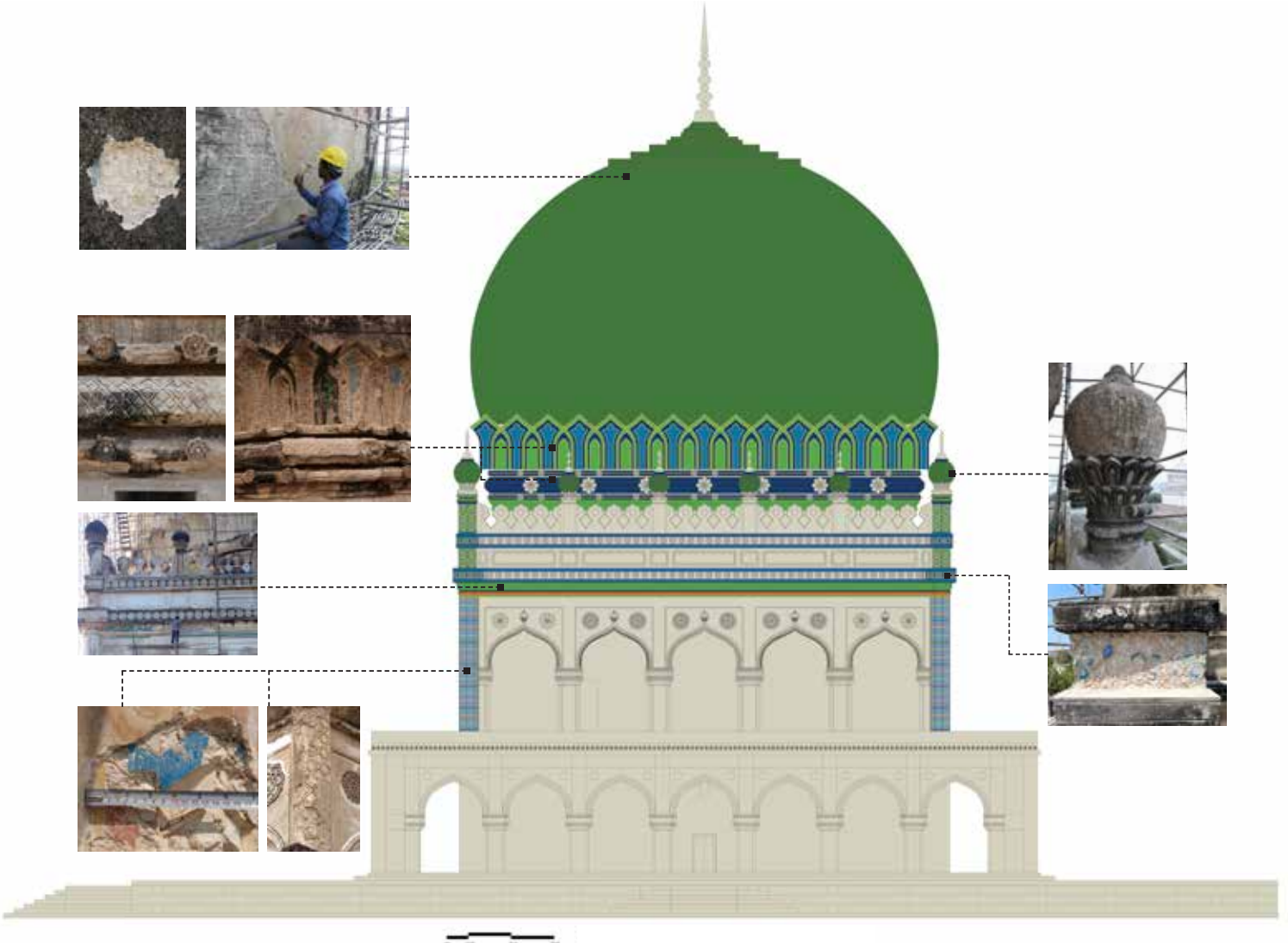
DOCUMENTING THE ORIGINAL GLAZED TILES

Removal of the 20th century cement layers from the walls and dome of Muhammad Qutb Shah's mausoleum based on in-situ evidence and archival research, revealed the remnants of glazed tiles on the dome, minarets, corner columns, and cornice, with original patterns and colours clearly discernible. The bulbus dome was adorned with green glazed tiles, while facades were decorated with multi-coloured glazed tiles in shades of yellow, blue, turquoise, white, orange, and green – in geometric and floral patterns.

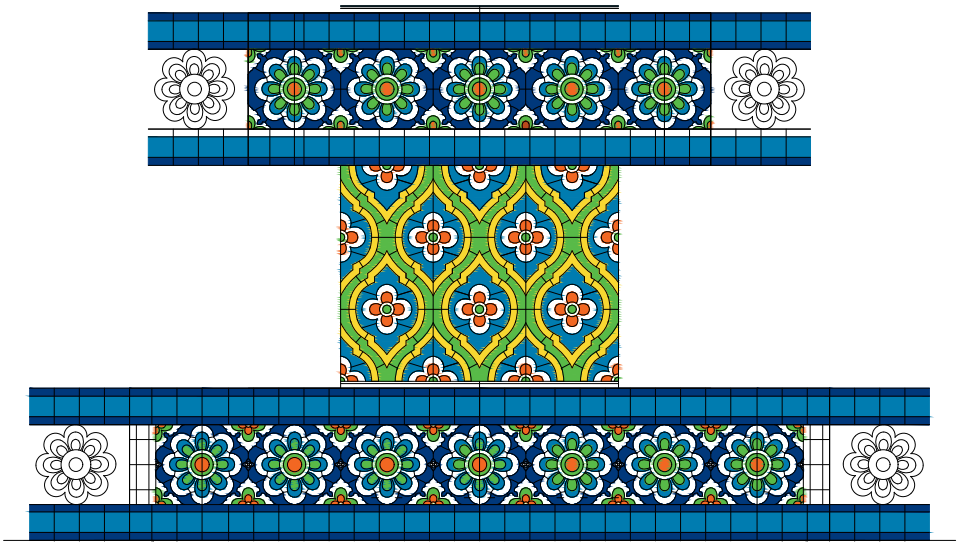
These discoveries were extensively documented with high-resolution photographs using drones and cameras. Precise architectural drawings were prepared for each pattern with original colours based on on-site evidence. The condition and extent of the tiles on the dome and façade were documented, and detailed condition assessment drawings were prepared. This gave a clear understanding of the structure and its tilework, providing a blueprint for restoration.

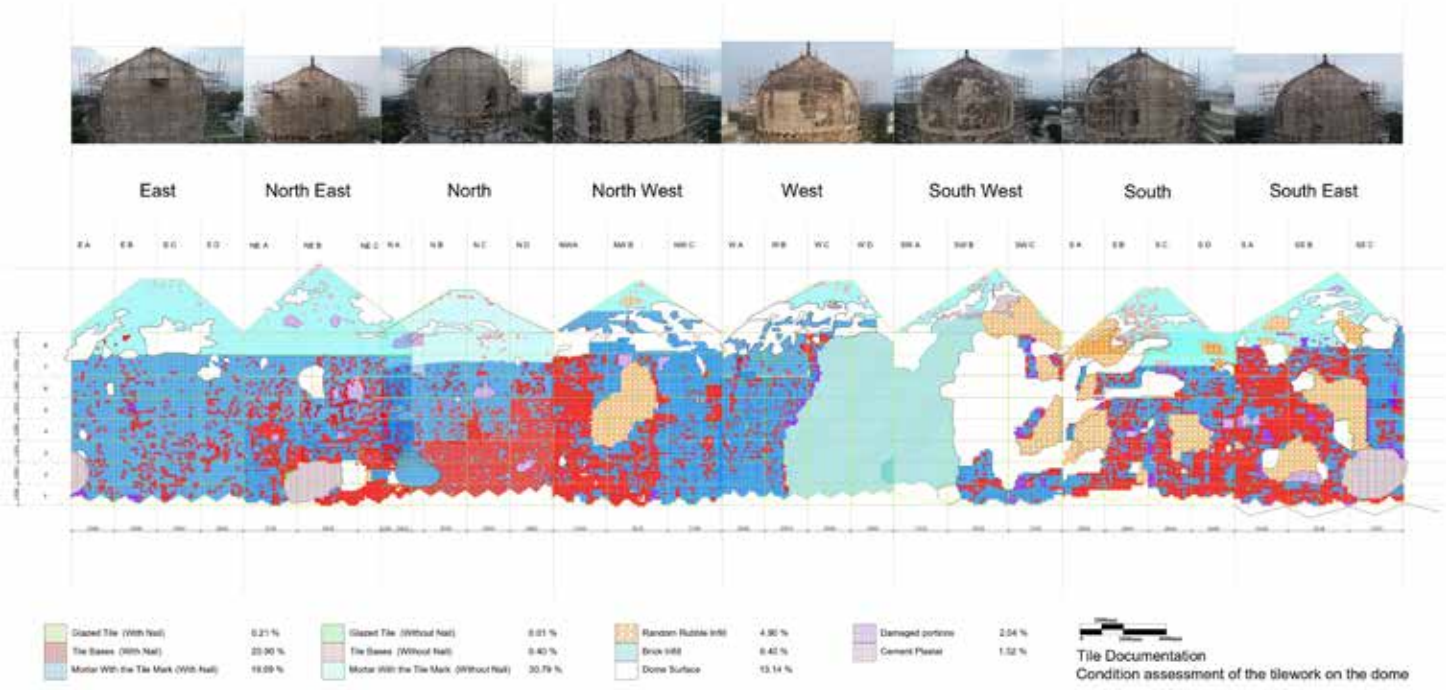
This comprehensive study led by a multidisciplinary team of conservation architects, engineers, photographers, and historians - enabled to accurately determine the original patterns and quantity of handmade glazed tiles for the restoration work.

Even before conservation, evidence of 16th century tiles was visible under the cement covering the mausoleum



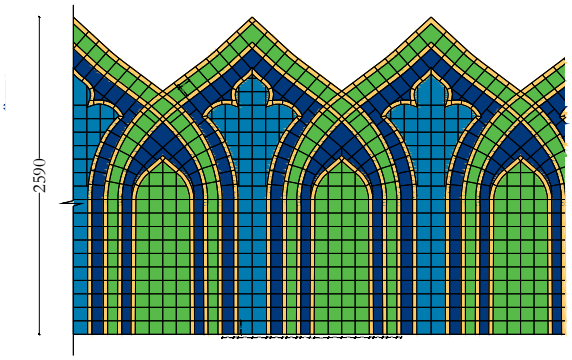
Techniques like 3D laser scanning and photogrammetry were employed to create precise architectural and condition assessment drawings, providing a comprehensive understanding of the structure and the intricate tilework that was revealed during conservation

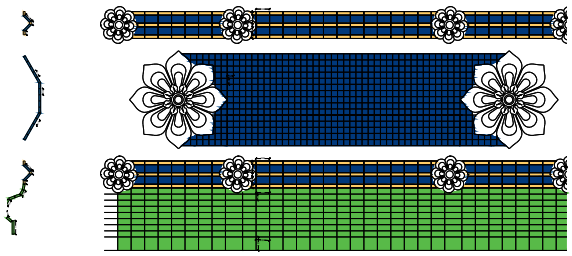


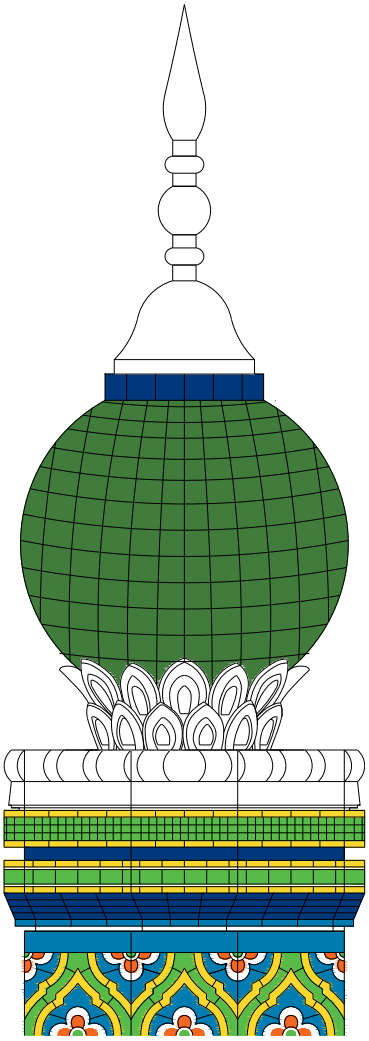


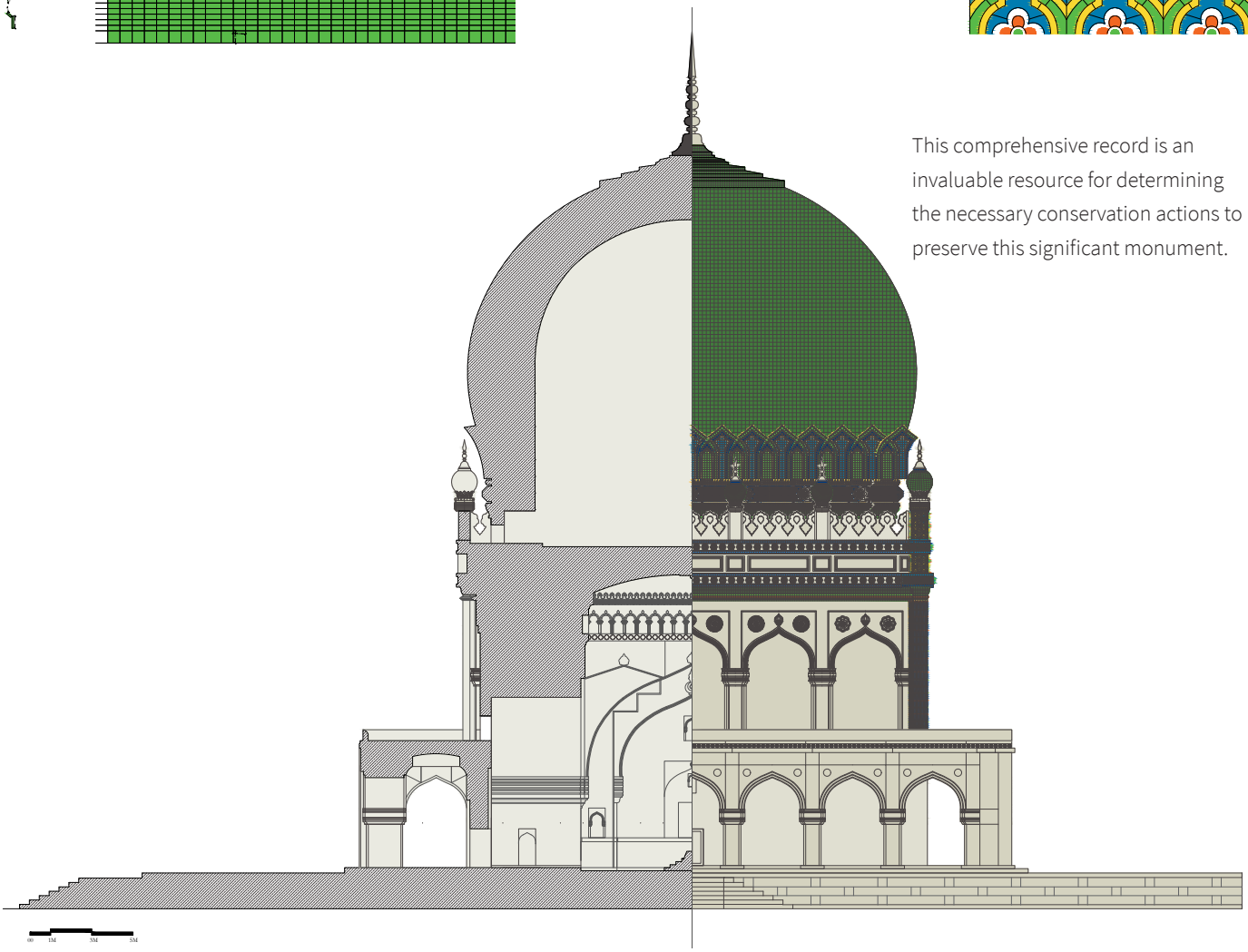
Tile Documentation
Condition assessment of the tilework on the dome

Over 1000 high-resolution photographs of the structure were taken to document each element with a focus on intricate stucco details and glazed tile patterns.





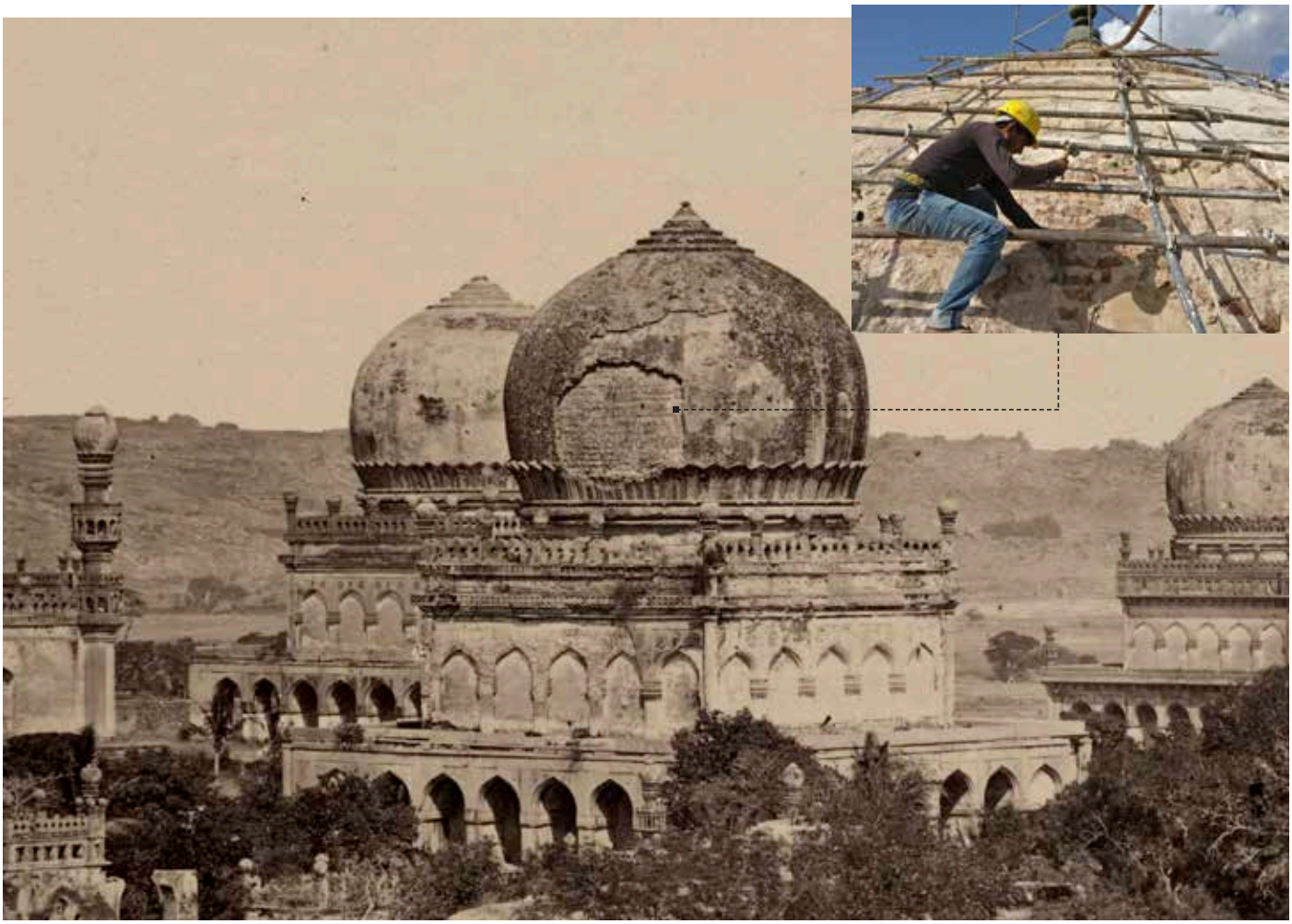




This comprehensive record is an invaluable resource for determining the necessary conservation actions to preserve this significant monument.

DOME

Careful removal of the 20th century cement plaster revealed the full extent of the green glazed tiles that originally covered the complete dome surface. These tiles also served as a protective layer for the dome masonry. Historically, 2.5-inch iron nails were fixed at centre of each green tile, securing them on the dome's surface, possibly to prevent them from falling due to gravity and maintain the curvature of the dome. While tiles near the apex were fixed only with lime mortar, without nails. However, over time, iron nails corroded, cracking the green glaze and allowing wind and rain to further erode the tiles.



Damaged portion of the southwest side of the dome, as seen in 1860 image (Courtesy: Alkazi Foundation). During 20th century repairs, this portion had been filled it with brick masonry

ACTION TAKEN:

- Techniques like 3D laser scanning and photogrammetry created precise architectural and condition assessment drawings of the dome. This provided comprehensive understanding of the condition of the tiles and their extent at the dome surface.
- To assess the condition of the tilework on the dome, the entire dome was divided into grids using scaffolding, which reached the significant height – 40 m - of the dome .
- The dome surface conditions were then classified into categories: glazed tile with nails, tile bases with nails, mortar with tile marks with nails, glazed tiles without nails, tile bases without nails, mortar with tile marks without nails, random rubble infill, brick infill, plain plaster dome surface, damaged portions, and cement plaster infill.
- Calculations confirmed that the dome was originally covered with approximately 80,000 tiles of size 110 x 110 mm; about 8,000 tiles survived, including both glazed tiles and the tile with lost glaze. Most surviving tiles were found on the South-East and North-West sides of the dome.
- The dome had suffered significant damage and undergone patchwork repairs using cement plaster during 19th and 20th century. Archival images from the Alkazi Foundation, dated 1860 show that a large portion on the southwest side of the dome was severely damaged and had collapsed. This same section was found to be filled in with 9-inch-thick brick masonry during the repairs.
- After the documentation and condition assessment, the loose and decayed plaster layer was carefully dismantled. This exercise confirmed that only 10% of the historic glazed tiles still survived on the dome.

FACADE

Careful removal of 20th century cement plaster revealed that the façades were adorned with multi-coloured glazed tiles in blue, yellow, white, turquoise, orange, and green, arranged in intricate geometric and floral patterns.

Remnants of original glazed tiles and tile patterns revealed on various portions of the mausoleum, including the facade and corner columns

ACTION TAKEN:

- Detailed architectural drawings were made based on in-situ evidence of the distinct patterns and colour schemes in each design.
- The minaret bulbs were originally covered with trapezoidal green glazed tiles in a radial grid pattern, with remnants showing lost glaze and tile impressions.
- Dome neck was adorned with yellow border tiles, with geometric patterns in blue, turquoise, and green. While the bands below them featured geometric patterns in yellow, turquoise, blue, and green.
- Corner columns had two distinct floral patterns at the top, while octagonal columns below were adorned with chevron pattern in orange, green, yellow, blue, turquoise, and white tiles.
- At the façade, bands adjacent to floral motifs, and the cornice band also featured glazed tiles in linear patterns.
- This study confirmed that over 2 lakh tiles were required to restore the tiles on the dome and façade, in various sizes and six colours, matching the original colours, sizes, and composition.

MATERIAL TESTING AND INVESTIGATIONS

Original tile samples of 6 colours – green, turquoise, blue, yellow, orange and white were tested at scientific laboratories at University of Turin, Italy and University of Oxford- to understand the tile composition (glaze and base) and the tile making process.

ACTION TAKEN:

- Non-invasive tests were carried out using an Optical microscope to detect the colour space of the tile (CIE L*a*b) and X-ray fluorescence (XRF) spectrometry to determine the chemical composition of the tiles. Invasive tests were carried out by examining the cross-section of the tile under an optical microscope to determine the thickness of the glaze, its bonding agent, and the tile base. Scanning electron microscopy (SEM - EDS) - Energy Dispersive X-ray Spectroscopy helped determine the inner particle bond, the firing temperature of the kilns and the process for making the tiles.
- The tests indicated that the tiles were primarily made from crushed quartz (90 - 95%) with a glaze layer composed of lead-alkali glass or feldspathic sand. Coloration came from various metallic oxides like copper, cobalt, and iron.

Tile samples were tested and replicated to match the original in composition and colour

TILE MANUFACTURING

ACTION TAKEN:

- Based on scientific material testing of the original tiles, tile manufacturing was undertaken using traditional ingredients to match the colours and composition of the original tiles. Thousands of samples in the six different colours were manufactured at various temperatures and environmental settings. The compositions, environmental conditions, and temperatures were finalized based on the selected sample.
- Tile manufacturing required a highly controlled environment to achieve the exact colours as the original tiles found on the dome of the monument. Frequent weather changes often have detrimental effects on the kilning process, leading to failed batches of tiles during glazing. Therefore, utmost attention was required during the manufacturing process, especially while glazing the tiles.
- With the high level of supervision and specialized skill of the tile makers, around 2,00,000 tiles matching the original colour and the sizes were manufactured for the tile restoration at Muhammad Qutb Shah's mausoleum.
- Following extensive testing and refinement, over 80,000 green glazed tiles, each measuring 110 x 110 mm, and another 92,000 – multicoloured – measuring 110 X100 and 140 X140 mm - were meticulously crafted in Delhi by the skilled tile makers.
- These tiles were then transported to Hyderabad for installation on the dome and façade of Muhammad Qutb Shah's mausoleum.
- Tiles manufactured in batches over the period of two years - to meet specific requirements of installation, ensuring continuity of the work This helped in maintaining financial discipline and optimizing resource allocation.

RESTORATION OF TILES ON DOME

ACTION TAKEN:

- To facilitate the intricate tile work at the considerable height of dome, extensive scaffolding was erected reaching up to 40 meters, along with a movable platform that covered a maximum circumference of 63 meters around the dome. This platform enabled masons to efficiently access various parts of the structure, ensuring both worker safety and precision in the restoration.
- Loose plaster and tile layers were carefully dismantled under meticulous supervision and dome surface was consolidated by filling gaps and holes in the original dome masonry. The surface was then roughened to improve adhesion.
- A base plaster layer of lime mortar in 1:2 composition was applied. Once the base layer had set, tiles were installed on the uniform surface using fine lime mortar.
- Skilled craftspeople meticulously sorted, cured, and installed over 80,000 tiles, covering 850 square meters (approximately 9,000 sq ft) of the dome surface in a horizontal band pattern. Their expertise ensured precise positioning of each tile, contributing to the careful restoration of the tilework.
- Approximately 3% of the original tiles surviving on the dome surface were carefully preserved. These weathered fragments hold immense historical value as these are the original architectural elements
- The restoration of glazed tiles at the dome was carried out between January and May 2024. Following the completion of the work, the tiles and lime mortar were given sufficient time to set and cure properly.
- During this time, a small portion, roughly 120 square feet, or 1% or surface area, of the tiles fell off from the lower part of the dome on the south side on September 8th, 2024, due to heavy rains during the first week of September. These tiles were restored immediately.

Dismantling of 20th century cement from the dome revealed remnants of tiles underneath

Original tile fragments even those without glaze, were preserved for their historic value

Skilled craftspeople installed over 80,000 tiles, covering 850 square meters of the dome surface

HISTORICAL USE OF NAILS

ACTION TAKEN:

- Historically, 2.5-inch iron nails were used to hold the tiles in place on the dome, from the spring point to the centre. These nails helped secure the tiles in place while maintaining the curvature of dome. But rust from these nails caused cracks and glaze loss on the original tiles.
- To address this, stainless-steel screws were considered as replacements for iron nails for improved durability and to prevent rusting in the future. These screws were used to replicate the historical system of tile installation ensuring the tiles remain securely in place on the curved dome surface.
- After the tiles were set properly and cured around in November – December 2024, 70,000 stainless-steel screws were installed carefully to hold the tiles on the dome surface as a precaution for better bonding.

20th century cement layers were carefully removed, revealing original tiles held in place with iron nails. Iron nails were historically used to secure tiles along the dome's curve

FILLING THE MORTAR JOINTS

ACTION TAKEN:

- During the investigation following the heavy rainfall in September 2024, gaps in the mortar joints were observed at some locations. To address this, these gaps were filled with traditional lime mortar and lime slurry to improve bonding, prevent water from getting behind the tile layer, and reduce the risk of water seepage and tile detachment.
- After the restoration of tiles in the third quarter, the lime mortar was allowed sufficient time to set and cure properly. Stainless-steel screws were then installed to secure the tiles. After the installation was complete, the entire dome surface was thoroughly cleaned to remove any residual lime mortar marks, ensuring a smooth and polished finish that enhanced the green-glazed tiled dome.

Gaps in mortar joints were filled with lime mortar and slurry to prevent seepage and strengthen tile bonding after heavy rains in 2024. Following tile restoration and screw installation, the dome was thoroughly cleaned to remove lime marks

RESTORATION OF TILES ON THE FACADE

Since June 2024, a comprehensive restoration effort is being undertaken to reinstate the missing or damaged glazed tilework on the façades. This involved intricate reinstating tilework on the minarets at the parapet, as well as at the decorative floral bands, revealing the original design intent and employing traditional materials and techniques.

Tiles were installed by master craftspeople after consolidating the minaret bulbs with traditional lime mortar

Minarets at Parapet

ACTION TAKEN:

- Scaffolding was installed to provide access to the minarets at the upper terrace level for the restoration of tiles on the minaret bulbs.
- Upon removing the 20th century cement plaster, it was revealed that the minaret bulbs were originally covered with green-glazed tiles. Remnants of these tiles showed significant loss of glaze. At many places, tile imprints in the base plaster were observed.
- The larger minarets featured 100 mm x 100 mm tiles, with 354 tiles on each, while the smaller minaret bulbs were adorned with 50 mm x 50 mm tiles, 940 tiles per bulb. These tiles were arranged in a radial grid pattern, each tile shaped as a trapezoid. Additionally, the minarets had blue rectangular tiles (90 mm x 100 mm) at the base of the finials.
- The damaged and loose base plaster was carefully dismantled, and the minaret bulbs were consolidated using traditional lime mortar to create a uniform base for tile installation, ensuring it matched the original shape.
- A custom formwork (farma) replicating the original tile. Each tile was precisely cut to the required shape and size to restore the specific radial grid pattern on the minaret bulbs.
- Restoration work on the tiles on two large and eight small minaret bulbs at the south and west side was completed.
- Eight finials each measuring 1100 mm in height on the smaller minarets and 2 finials measuring 1300 mm in height on the corner large minarets, were reconstructed for on north and west side. These were crafted using traditional lime mortar matching the original finial at southside.
- The lime stucco details at the neck of the minaret bulb, including the leaf details, bands, mouldings, and the base column on which the minaret bulb sits, were cleaned of algae deposits and black crust using a wire brush. The damaged and missing lime stucco details among these, were meticulously restored with traditional lime mortar and finished with 1 mm thin layer of lime punning.

DECORATIVE FLORAL BANDS

ACTION TAKEN:

- The decorative bands, each 22 meters in length 0.16 m (160 mm) in width, located above and below the floral motif bands beneath the parapet battlements on all four façades, were found to be adorned with glazed blue and turquoise tiles arranged in linear patterns.
- After carefully dismantling the 20th century cement and damaged lime plaster from these bands, they were consolidated with traditional lime mortar to create a uniform base for tile installation.
- The tile restoration was completed on western and southern façade with the installation of a total of 6360 tiles, consisting of one band of turquoise tiles sized 110 x 90 mm and two bands of blue tiles measuring 30 x 110 mm.
- Along with the tile restoration, the damaged portions of floral motifs and the bands at the same level were repaired with traditional lime plaster and finished with a layer of lime punning.

Blue and turquoise glazed tiles were reinstated on the decorative bands using traditional lime mortar, restoring the original detailing beneath the parapet battlements

FLORAL AND GEOMETRIC PATTERNS ON CORNER MINARETS

ACTION TAKEN:

- Based on on-site investigations and thorough documentation, master craftspeople meticulously crafted samples of two distinct floral motifs for the columns of the minaret, as well as a geometric pattern at the corner minaret , ensuring they closely match the original designs. These motifs feature a vibrant combination of blue, turquoise, yellow, orange, white, and green colours.
- To facilitate this intricate work, a formwork was created to ensure precision. Each tile was then carefully cut into different shapes and sizes to fit perfectly in place, accurately replicating the original pattern.

Upon removing the 20th-century cement plaster, two distinct original multi-colored tiles were discovered on the corner minarets

Scaled drawing of the two motifs were created using identified colors and patterns based on on-site evidence

Master craftspeople carefully cut each tile to shape and size, creating samples of the motifs based on the formwork and scaled drawing, ensuring they match the original details revealed

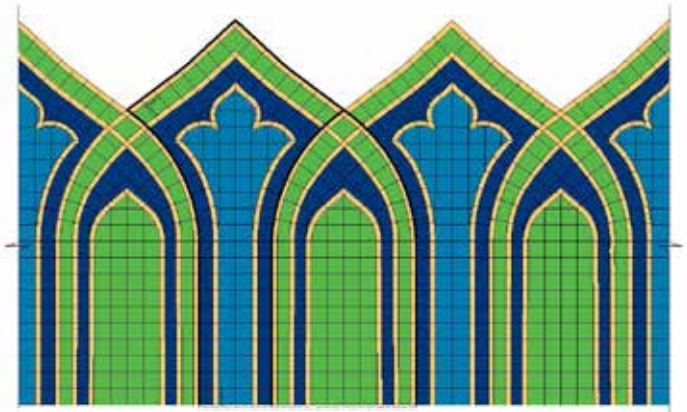
TILE WORK PATTERN AT THE NECK OF THE DOME

ACTION TAKEN:

- Based on on-site investigation and thorough documentation, master craftspeople crafted tile samples for the petals at the neck of the dome, arranged in a geometric pattern, matching the original design.
- This sample was essential for testing the accuracy of colours, shapes, and patterns before starting the tile installation at all the petals. This approach ensures that the restored tiles align perfectly with the historical design, minimizing errors.
- To facilitate this intricate work, a formwork was created to ensure precision. Each tile was then carefully cut into required shapes and sizes to fit perfectly, restoring the original pattern with accuracy. Restoration, based on the approved sample, is currently ongoing at the monument.
- The restoration ensures retaining the original tiles, even those with weathered or lost glaze. These fragments are original and thus hold immense historical value, providing a direct connection to the Qutb Shahi period.

Before Conservation

Original tiles revealed on removal of 20th century cement

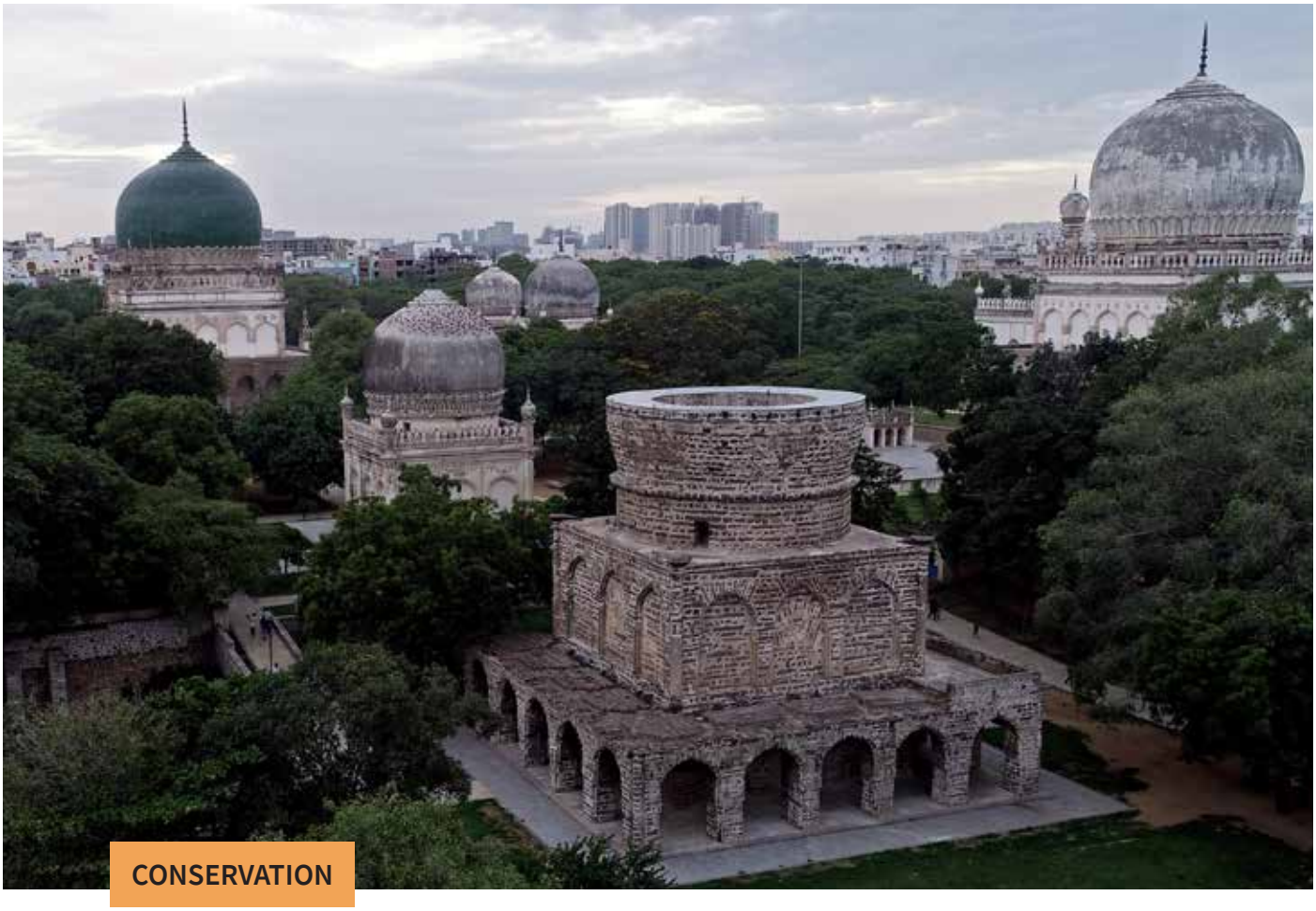


Detailed drawing of the petal with pattern and colour scheme

Customized formwork was created, and each tile was precisely cut and installed in a geometric pattern matching the original

NEXT STEPS:

- The restoration of the tile work on the petals, the triple band at the neck of the dome, the cornice band, the corner columns, and the minarets will continue. Each of these features is being restored using traditional materials and techniques, with careful attention to preserving original fragments and reinstating lost patterns based on archival references and on-site investigations.
- The stone parapet wall at the lower terrace have misaligned over the years with plant growth. This will be corrected after removal of vegetation growth.
- Adequate waterspouts shall be provided to ensure rain water from terraces discharge away from the wall surfaces and appropriate lime terracing shall be undertaken at the lower terrace to arrest water ingress in the corridor of the main cenotaph.



CONSERVATION

03. Mirza Nizamuddin Ahmed's Mausoleum

(Above)The mausoleum of Mirza Nizamuddin Ahmed, the last royal tomb among the Qutb Shahi tombs, remains unfinished

This unfinished mausoleum stands on a 28-meter-wide rubble masonry plinth. Exposed masonry structure features five arches on each side of the arched corridor at ground level. Internal chamber is surrounded by arched corridor and have entrances on the south and east sides. The lower portion of the internal chamber is cladded with dressed stone. The octagonal base above the arches and squinches has two horizontal projecting bands and a series of blind arches supporting the unfinished dome. Exterior façade has three blind arches on each side with octagonal corner columns. There are no traces of a parapet.

The open-to-sky mausoleum contains two black basalt graves. Inscription on the gravestone suggest that Mirza Nizamuddin Ahmed, the son-in-law of Abdullah Qutb Shah, is buried here. The black basalt gravestone bears inscriptions in the Thuluth style. The translations revealed that the top layer reads: "Mirza Nizamuddin Ahmed. May his tomb be illuminated and joined to Divine mercy on 26th Safar, Saturday, in the year 1085, at 4 o'clock after noon." The remaining inscriptions feature Quranic verses and the Nad-e-Ali.

The unfinished structure suffered from water seepage, 20th century repair works with cement, and severe vegetational growth. The external plaster layer is missing, while the interior was covered with 20th century cement plaster. Water seepage has decayed masonry mortar joints. There is no covering at the top of the monument as the dome is incomplete.

DOME

ACTION TAKEN:

- Large trees, vegetation, and roots penetrating the masonry of the incomplete dome were manually cleared using trowels from both the internal and external surfaces of the incomplete dome masonry. Roots embedded in the masonry were treated with lime and chemicals to prevent further growth and damage to the structure.
- 20th century cement pointing was carefully removed from external and internal surfaces.
- The masonry of the dome was consolidated by filling gaps with stones matching the original and was then repointed with traditional lime mortar.
- The damaged and loose masonry at the incomplete dome level, affected by water seepage and vegetation growth, was carefully repaired. The last two courses of damaged and missing stone masonry were rebuilt using stone masonry matching the original, by skilled stone masons, to achieve a uniform level. A layer of 150 mm thick traditional lime concrete was then re-laid, and 20 mm polished grey granite stone slabs were installed as coping to prevent water ingress and vegetation growth.
- Minor repairs to the broken edges of the lime concrete at the drum of the dome level (2nd terrace level) was carried out using traditional lime concrete.

Finishing of the incomplete dome masonry with 20 mm thick granite stone slabs as coping to prevent water ingress and vegetation growth

The dome's masonry was consolidated by filling gaps with matching stones and repointing with traditional lime mortar

EXTERNAL AND INTERNAL SURFACES

ACTION TAKEN:

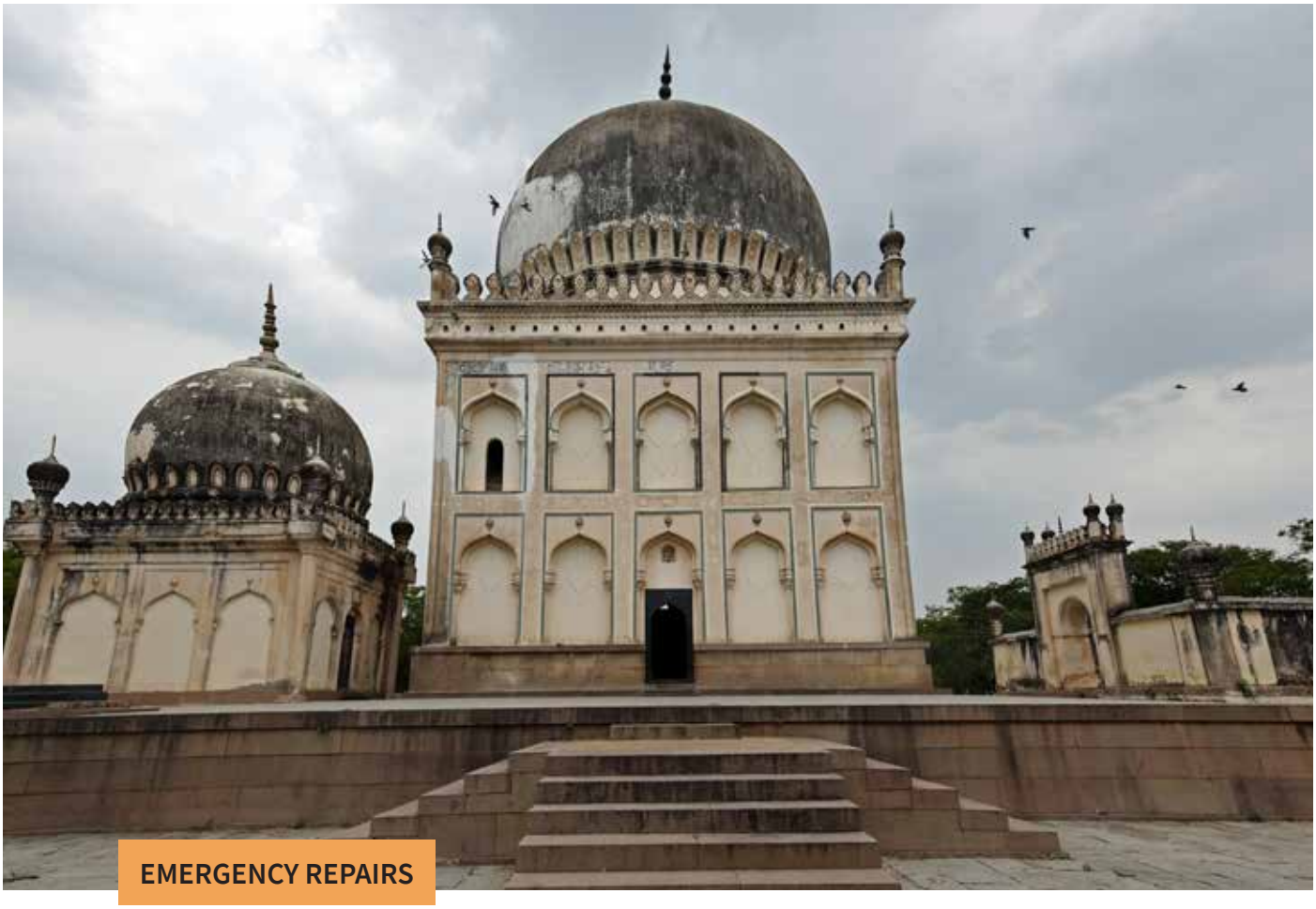
- Large trees, vegetation, and roots penetrating the masonry walls were manually cleared using trowels to prevent further damage.
- 20th century cement pointing repairs from the external façades were carefully dismantled. The facades were re-pointed with traditional lime mortar, and large gaps in the masonry walls were filled with stones matching the original masonry.
- 4-5 inches of 20th century cement plaster covering internal walls was carefully dismantled. The masonry walls on all four sides
- The masonry walls were consolidated by fixing missing stones and re-pointing with traditional lime mortar.
- Damaged and loose lime concrete of the flooring, affected by rainwater and dogs, was carefully dismantled. A 150 mm thick layer of traditional lime concrete was re-laid, topped with 20 mm thick polished gray granite stone, as per the approved design and appropriate slopes to drain rainwater away from the structure and prevent further seepage.
- Repairs to the damaged black basalt gravestones, matching the original, were carried out by skilled stone craftspeople, who restored the missing and damaged portions with precision.

Damaged flooring was dismantled and replaced with a 150 mm layer of traditional lime concrete, topped with 20 mm polished granite stone laid with proper slopes for drainage

NEXT STEPS:

- Repairs to the existing lime concrete on the northern side of the first terrace level will be carried out to stop water seepage.
- Repairs to the parapet on the northern side will be carried out.
- Remove the stone slabs placed on the verandah and other similar changes in 20th century.

Internal walls of the mausoleum: the 20th century cement plaster was carefully dismantled to reveal and consolidate the original masonry with lime mortar. The damaged flooring was replaced with a traditional lime concrete base, finished with polished granite stone to ensure durability and proper drainage.



EMERGENCY REPAIRS

04. Ibrahim Quli Qutb Shah's Mausoleum

(Above) The eastern façade of Ibrahim Quli Qutb Shah's mausoleum, with the mausoleums of Muhammad Ameen and Neknaam Khan standing on its plinth.

On July 24, 2023, lightning strike caused some damage to the finial base at the dome of Ibrahim Quli Qutb Shah's mausoleum on the northwest portion.

The force of the impact dislodged architectural elements, most notably at the first arch bay on the eastern façade. Here, approximately 600 mm of historic tile and a 6-meter-long section of the black basalt frame collapsed, exposing the underlying stone masonry and structural layers. A detailed assessment revealed that iron nails embedded within the stonework and plaster—originally intended to anchor the tilework—had corroded over time. The rusting of these nails not only weakened the plaster but also compromised a surrounding radius of approximately 300 mm, leading to further detachment and vulnerability in adjacent areas.

Additionally, the surviving historic tilework next to the damaged section was found to be precariously seated in a bed of loose mud and lime mortar, leaving parts of it hollow and unstable. These findings pointed to a broader structural vulnerability, prompting immediate conservation action. Skilled teams were deployed to stabilize the affected zones, carefully document the extent of loss, and initiate repairs using traditional materials and techniques. This swift and sensitive intervention was essential not only to mitigate further deterioration but also to uphold the architectural integrity and heritage value of the mausoleum.

IMPACT:

The damage caused by natural distress was thoroughly recorded and immediately addressed. The repairs successfully restored the architectural integrity of the mausoleum and safeguarded from the further deterioration and damage.

ACTION TAKEN:

- Scaffolding was installed to assess and document the damage.
- The damaged and loose lime plaster at the rings on the northwest side at the base of the finials was repaired using traditional lime plaster and finished with lime punning.
- Tile work portions at risk of falling were carefully removed and stored carefully.
- At the first arch bay at the top arch level on the eastern façade, the hollow portions behind the existing tile work patch—which were at risk of falling—were carefully filled and consolidated with stone and lime mortar.
- The surrounding area of the tile work, where plain plaster at the southeast corner and the arch bay was loose or had fallen off, was repaired using traditional lime plaster to match the original.
- Mouldings were reinstated to match the original design.
- The damaged and fallen black basalt stone border surrounding the arch bay was restored to its original size and shape by skilled stone craftspeople.
- Rusted iron nails were carefully removed to prevent further damage to the stone and plain plaster.

Damaged portion of the facade, the black basalt edging had fallen and there was a risk of tilework falling

Plaster from the rings on the dome at the finial's base had come loose

Hollow portions behind the tilework had to be consolidated

Conservation of the smaller tombs follows the same meticulous approach as the grand mausoleums.

Cluster of Tombs

Within the expansive Qutb Shahi Heritage Park, beyond the grand royal mausoleums, lie 21 smaller tombs, each a testament to the rich history and artistry of the Qutb Shahi dynasty's 169-year reign. These one-storeyed structures, believed to house the unmarked graves of nobles, ministers, and royal family members, are more modest in scale, yet no less significant or intricate. The conservation of these smaller tombs follows the same meticulous processes applied to the major monuments. This includes the removal of modern cement and plaster, restoration of deteriorated surfaces due to dampness and water seepage, reconstruction of ornamental lime patterns and profiles, crack stitching with traditional lime mortar and additives, masonry reconstruction, earth grading, and plinth and surrounding paving. The majority of these 21 tombs are located in the southwestern corner of the necropolis.

CONSERVATION

2021

05. Mausoleum

(North of Abdullah Qutb Shah's mausoleum)

The mausoleum, located north of the Mausoleum of Abdullah Qutb Shah, has a square plan with octagonal chamfered columns at the corners. It has a raised plinth, but the access steps to which are missing.

The outer corridor leads to an inner sanctum that would have been open on all four sides, but is currently only accessible from the east and south. The parapet is highly decorated with merlons and floral bands atop rectangular voids, and the facade has two smaller arches, with arch crown and medallions, on each side of a lintelled opening. The central opening has distinctive ornamentation in the form of corn details and false column capitals. On-site evidence testify that the building was never completed, hence, the stone masonry in the interior is left exposed along with the exterior facade at south. The grave in black basalt bears Quranic inscriptions in the Tughra style.

The adjacent Subabul trees posed a threat to the monument, leading to vegetation growth and deeply penetrating roots on the terrace. These roots had disfigured the parapet at the southeast corner, causing missing details. Water seepage in the internal chamber and damaged plaster on the external facades were also observed. Additionally, earth filling in the internal chamber and corridor area was constantly disturbed.

Much of the conservation works on this building were completed in 2022, and in 2023-2024 the works continued on the flooring and plinth protection.

2024

FLOORING

ACTION TAKEN:

- Earth filling in the internal chamber and corridor area, disturbed by dogs, resulted in an uneven surface. Excess earth was removed to reveal the original levels and prepare the surface for flooring.
- During this process, the edging of the dressed stone of the gravestone platform was exposed.
- The consolidation of the gravestone and platform carried out with fixing 100 mm thick and 250 mm wide dressed granite stone blocks around the gravestone. The area between the edging stones and gravestone was filled with 30 mm thick granite stone flooring to ensure level consistency.
- The remaining earth was levelled to create a suitable surface for flooring.
- A 100 mm thick layer of traditional lime concrete was laid, followed by the installation of 30 mm thick granite stone flooring according to the approved design. This arrangement preserved the visibility of the dressed stone platform. It also helps to protect the monument from future vandalism.
- Similarly, the corridor flooring was completed following the removal of excess earth filling. It was finished with 150 mm thick traditional lime concrete and 30 mm thick gray granite stone, installed according to the approved pattern.

Granite edging was provided to the gravestone

Stone flooring laid around the grave chamber

PLINTH

ACTION TAKEN:

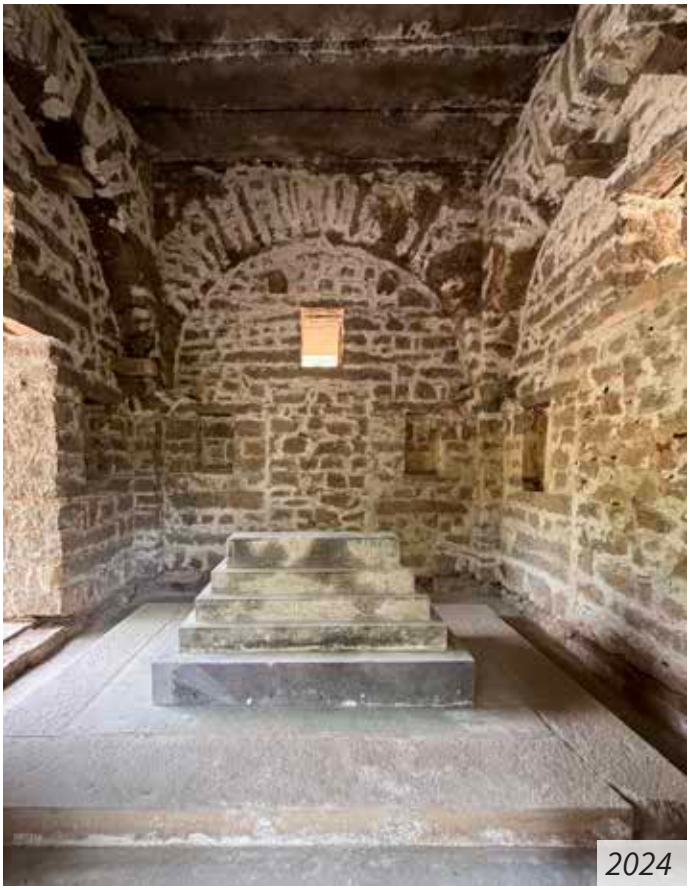
- After removing excess earth surrounding the monument the original plinth levels were unearthed
- With reference to the original levels , base work for plinth protection carried out , including brick masonry retaining walls .
- A 900 mm wide plinth protection layer was installed, consisting of 100 mm thick PCC topped with 100 mm thick, rough gray granite and 200 mm wide granite edging on all four sides of the monument, as per the approved details.

Base work for the laying of plinth protection around the monument

IMPACT:

- The conservation work has significantly enhanced the mausoleum's structural integrity and visual appeal. By addressing the damage due to water seepage, repairing the roof, removing invasive vegetation along with repairing deteriorated plaster and ornamental details, the project has restored the monument's architectural significance as envisioned by its original builders.
- Additionally, comprehensive repairs to the flooring and plinth using traditional lime concrete and granite stones have improved both the longevity and functionality of the structure. These efforts have effectively protected the monument from future damage, preserving its historical and cultural significance for future generations.

2021



2024

2021

2024

(Top) A rare instance of Kufic calligraphy in India can be seen on a square panel on the grave of Mirza Muhammad Amin; (Bottom) One of the graves at the necropolis is inscribed with the word 'Ali' eight times in Nastaliq style of calligraphy

Decorative Gravestones

Within the gardens, and the large granite platforms of the mausoleums, as well as in the courtyards of funerary masques, are found 193 graves - some of the most exquisite ones standing outside the mausoleums.

Each of these gravestones, the earliest of which are in granite and others mostly crafted from black basalt, are of great architectural value and historical significance. The inscriptions on these graves which are carved in scripts such as Thuluth, Naskh, Nastalig, and Kufic serves as valuable records of the Qutb Shahi dynasty.

Conservation works have included removing raised earth levels to reveal platforms of these gravestones as well as repairs to damaged gravestones.

CONSERVATION

2022

06. Graves cluster

(Northeast of Tomb 19)

Within the necropolis there are 133 graves located in the open, for many of which funerary mosques were built adjacent to the burial site so that families could pay for and honor the person buried.

Before the conservation works, common conditions observed included excess vegetation, accumulated earth, altered original levels of the grave platforms, and missing stones from the gravestones and their platforms.

One example of a grave cluster is located northeast of Unknown Tomb 19, consisting of four granite stone gravestones and one basalt stone gravestone.

ACTION TAKEN:

- A group of six graves is located northeast of Unknown Tomb 19, consisting of four granite stone gravestones and one basalt stone gravestone were repaired.
- Excess vegetation and earth accumulation surrounding the grave cluster were carefully removed.
- Grading and levelling of the earth were carried out, adhering to the original ground levels of the gravestones.
- Consolidation of the gravestones was completed, and plinth protection was provided with a 200 mm wide and 100 mm thick, rough gray granite stone slab around all four sides.

IMPACT:

By determining the original levels of the grave platforms and carrying out necessary repairs and consolidation, the historic open-to-sky grave clusters within the necropolis have been restored to their former glory. This has highlighted the significance of these graves and the importance of preserving them as a cultural monument in their own right.

The funerary mosques feature highly intricate lime stucco details and decorative minarets

Funerary Mosques

In orthodox Islamic belief, it is preferred to be buried in the open. Thus, within this necropolis, in addition to the 40 domed mausoleums, are found 133 graves located in the open – for many of which funerary mosques were built adjacent to the burial for the families to pray for and honour the person buried.

The funerary mosques have a similar design, being rectangular structures with arcaded eastern walls. Inside, they are typically divided into three bays, each with a shallow/flat dome adorned with arched niches and lime stucco motifs. The facade of these mosques are characterized by ornate parapets, and multi-tiered corner parapet minarets. These minarets are occasionally topped by smaller domes with stucco decorations at the shaft.

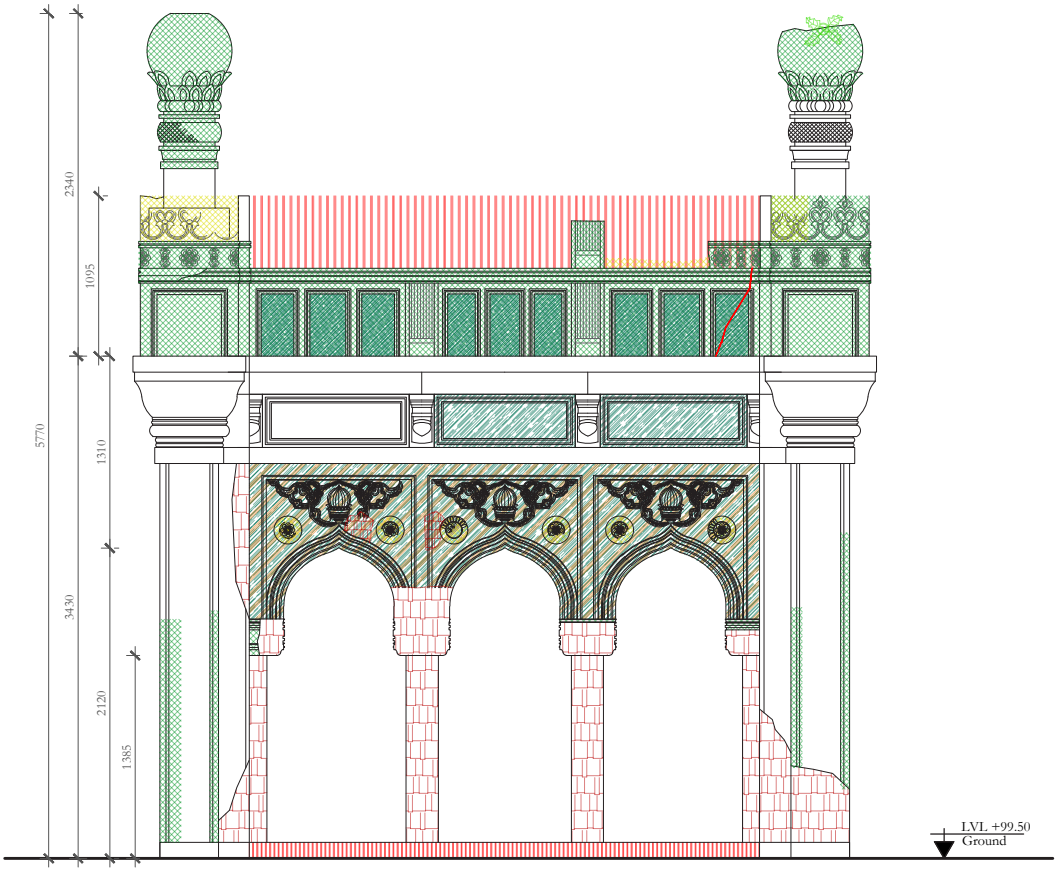
CONSERVATION

07. Funerary Mosque

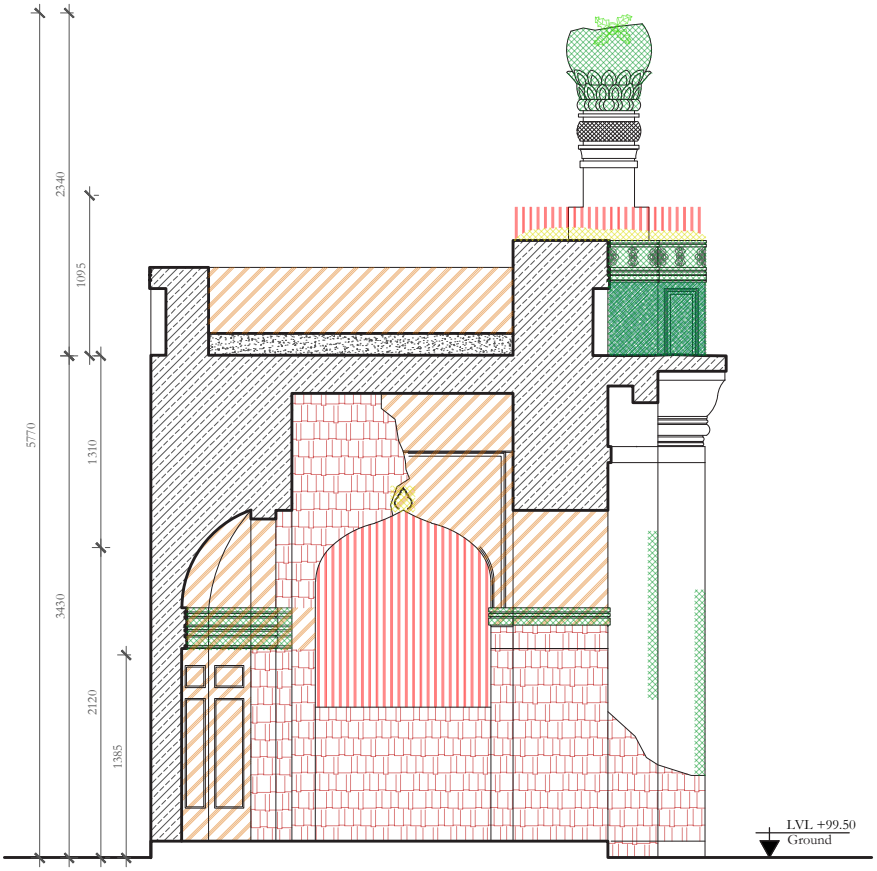
(west of Abdullah Qutb Shah's mausoleum)

The funerary mosque measuring 4.5x3.8 m is situated to the west of Abdullah Qutb Shah's mausoleum. The eastern facade of the mosque has three arched openings adorned with intricate spiral mouldings, arch crowns and medallions. A rectilinear band surrounds each arched bay. The projected eave is supported by stone brackets and beams. The parapet has rectangular niches on all sides and floral band and the battlements on the eastern side. Two corner minarets on eastern side meet the parapet wall on a rectangular box that has rectangular niches and flower bands and battlements. The internal chamber of the mosque consists of three arched bays. The arches have floral arch-crowns. Each of the three bays is covered by a flat roof. The central projected mihrab is five-sided with a horizontal band of ornamentation.

Most of the original plaster work had decayed. Plain plaster has been lost, exposing the underlying masonry. Northern wall of the structure has a major void in the masonry. Battlements and the floral band at the parapet and corner minaret were lost and damaged. The domes of the corner minaret were also damaged.



Condition Assessment
East Elevation



Condition Assessment
Section AA

LEGEND:

DEFECTS IN BUILDING / PLASTERED SURFACES
- CRACKS IN THE PLASTER
- DECAYED PLASTER
- FLAKING OF FINISHING LAYER
- INTERVENTION
- MISSING MASONRY
- NEW PLASTER
- EXPOSED MASONRY
- CEMENT PLASTER

DECORATIVE PLASTERWORK
- DECAYED PROFILES
- MISSING PATTERNS

WATER PROBLEMS
- WATER SEEPAGE
- WATER RISE

SURFACE DEPOSITS
- ALGAE
- BLACK CRUST
- GRAFFITI
- LIME WASH
- DEPOSITS
- VEGETATION

Funerary Mosque 10

0 1000mm
500mm 2000mm

(Left) The grave located close to the monument was repaired and consolidated; (Right) 900 mm wide plinth protection installed around the monument with appropriate slopes to ensure drainage of rainwater away from the monument

PLINTH PROTECTION

ACTION TAKEN:

- 900 mm wide plinth protection was installed on all sides of the monument. The base work consisted of 230 mm thick and 600 mm high brick masonry retaining walls, with a 100 mm thick layer of plain cement concrete (PCC) finished with 100 mm thick rough gray granite stone slabs. These slabs were arranged with appropriate slopes to ensure effective drainage of rainwater away from the monument. Additionally, a 200 x 200 mm rough gray granite edging stone was placed around all sides.
- Retaining wall was constructed on the east side of the monument, positioned 1.5 meters from the trees in that area. The top of the retaining wall was aligned with the plinth protection level. This wall was necessary due to the sudden drop in the terrain and serves to retain the soil and prevent it from washing away.
- Earth grading was carried out beyond the retaining wall, extending up to the wall adjacent to the grave cluster located further east of the monument.

NEXT STEPS:

- Damaged and loose lime concrete from the roof will be carefully removed, and traditional lime concrete will be re-laid with appropriate slopes to ensure effective rainwater drainage from the roof.
- 30 mm thick granite stone flooring will be installed to prevent damage to the monument from dogs and other potential sources of wear.

The northern arched wall of the structure was in a state of disrepair with missing portion of masonry. The wall was carefully examined to assess the extent of damage and deterioration. The damaged portion was consolidated, and missing portion was reconstructed matching the historic masonry using rich lime mortar to achieve the structural integrity of the structure. Following which the lime stucco details in the internal side and the plain plaster on the external façade were reinstated as per on site evidence

CONSERVATION

08. Funerary Mosque

(northwest of Sultan Quli Qutb-ul-Mulk's mausoleum)

The eastern facade of this funerary mosque consists of three arched bays with ornamental arch mouldings, bud-shaped arch-crowns, and medallions. A rectilinear band surrounds each arched bay. The funerary mosque's corners are marked by minaret-like structures that have undergone significant alterations.

The mosque's internal chamber consists of three arched bays, each covered by a shallow dome with a central ornamental medallion. The arches and squinches supporting the dome have floral arch crowns. The central mihrab is five-sided, with a horizontal band of geometric details, beneath which each side has ornamental stucco work.

Condition before conservation works: A modern platform with tandoor stone flooring extended around the mosque, particularly on the eastern side. This platform also includes four gravestones, three of which are made of black basalt.

The structure had undergone significant alterations, particularly in the 20th century, which impacted its original appearance. Modern materials, including cement, had been used extensively, resulting in substantial changes. All external facades were plastered with cement, while the parapet on all four sides was constructed with brick masonry and cement mortar. The corner minarets were 20th century additions, built using cement, and the roof was covered with reinforced cement concrete.

ROOF REPAIRS

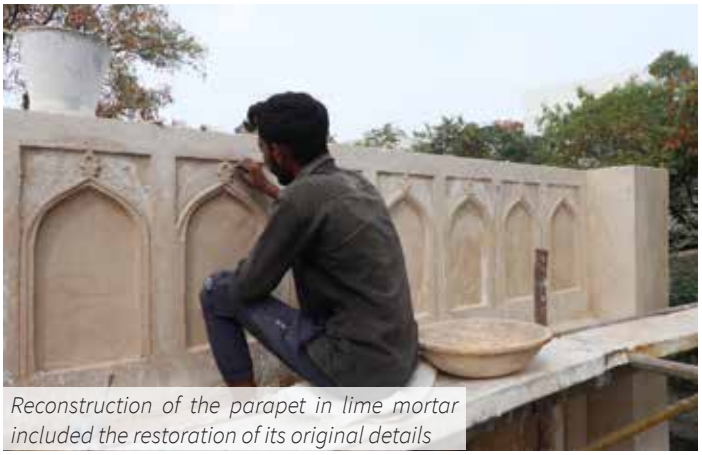
ACTION TAKEN:

- 20th century reinforced cement concrete from the terrace was carefully dismantled.
- Levels for the 150 mm thick lime concrete was marked considering adequate slopes
- Traditional rich lime concrete mixed with natural additives was re-laid with appropriate slopes to ensure effective rainwater drainage from the roof. After laying, the concrete was rammed with wooden thappies over a period of 3–4 days to ensure proper setting, removal of excess moisture, and to produce the characteristic clear metal sound, indicating proper compaction.
- During the ramming process, a mixture of gur and bel fruit pulp or juice, combined with water, was sprinkled over the surface to ensure proper sealing of the joints and adequate slope. Minor cracks were also repaired during this process. The lime concrete was then cured with water for 10 days.
- Additionally, missing stone waterspouts were reinstated on the western side to match the original design, facilitating proper drainage and protecting the monument from water damage.

Traditional lime concrete laid on terrace replacing the 20th century cement

Later added cement and brick parapet was dismantled carefully

Parapet walls repaired and finished with a thin layer of lime punning

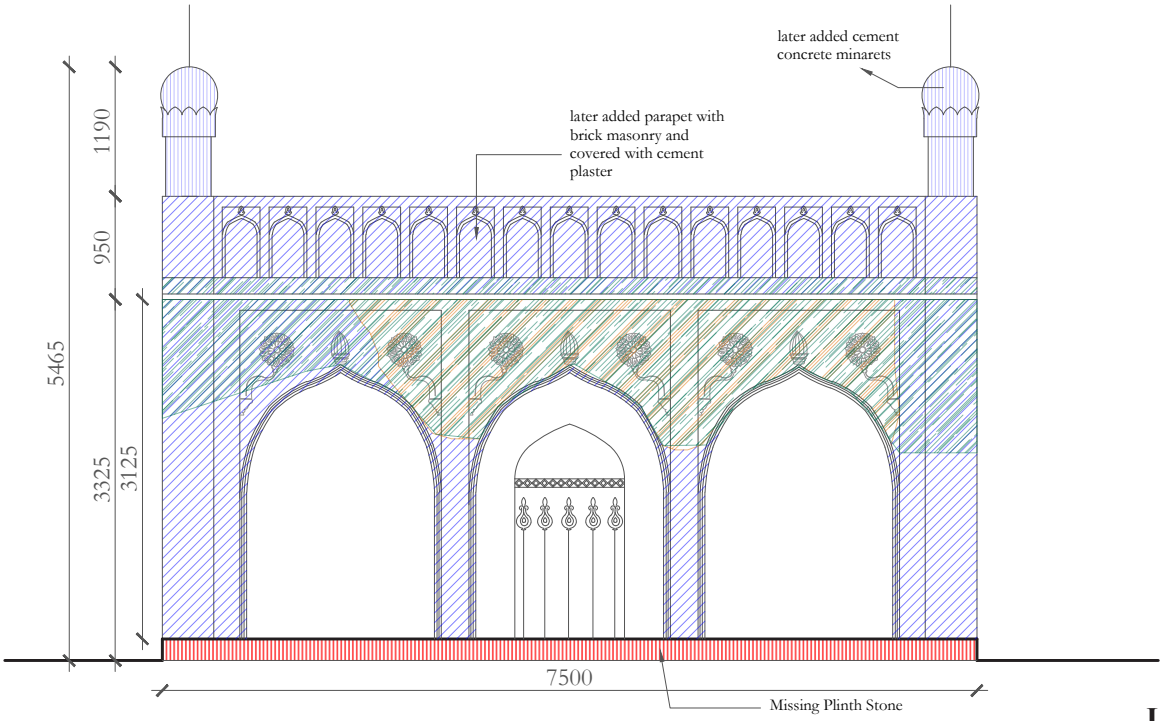


Reconstruction of the parapet in lime mortar included the restoration of its original details

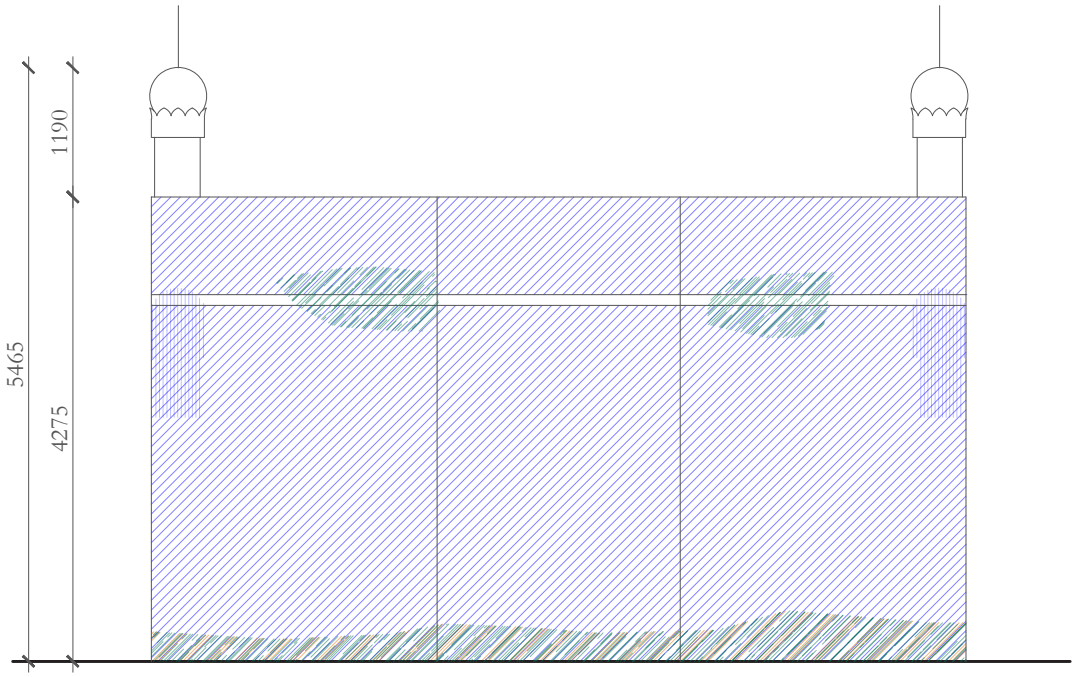
PARAPET

ACTION TAKEN:

- The 20th century cement plaster was carefully dismantled, revealing that the entire parapet was a later addition and had been built with brick masonry.
- The minaret-like structures, made with cement mortar, were dismantled from all four corners.
- The later-added brick masonry parapet, which had been constructed with cement mortar, was carefully dismantled from all sides. It was then rebuilt using stone masonry and traditional lime mortar to maintain material authenticity, as would have been used by the original builders.
- The new parapet was finished with plain lime plaster and featured a projected band on the north, south, and west sides, along with lime punning made from lime putty and natural additives.
- The eastern parapet was restored to replicate the details of the later-added parapet, as that was the only surviving evidence of the motifs. Plain lime plaster and stucco ornamentation, including 15 arched niches, arch crowns, and mouldings, were meticulously reinstated by skilled craftspeople. All stucco ornamentation was completed with lime punning.
- The minarets were not reconstructed due to a lack of evidence on site regarding their original appearance.
- The missing water spout on western façade was reinstated, matching the original that was surviving on site.



Condition Assessment - East Side Elevation



Condition Assessment - West Side Elevation

LEGEND:

DEFECTS IN BUILDING / PLASTERED SURFACES

- CRACKS IN THE PLASTER
- DECAYED PLASTER
- FLAKING OF FINISHING LAYER
- INTERVENTION
- MISSING MASONRY
- NEW PLASTER
- EXPOSED MASONRY
- CEMENT PLASTER

DECORATIVE PLASTERWORK

- DECAYED PROFILES
- MISSING PATTERNS

WATER PROBLEMS

- WATER SEEPAGE
- WATER RISE

SURFACE DEPOSITS

- ALGAE
- BLACK CRUST
- GRAFFITI
- LIME WASH
- DEPOSITS
- VEGETATION

Funerary Mosque 16

EXTERNAL & INTERNAL SURFACES

ACTION TAKEN:

- The 20th-century plain cement plaster was removed from the external surfaces on the north, south, and west sides. The walls were then replastered with traditional lime mortar and finished with lime punning made using lime putty and natural additives.
- Cement plaster was also carefully dismantled from both ornamental and plain sections of the eastern external façade. The medallions and arch mouldings were restored according to in-situ evidence using traditional lime plaster and finished with lime punning, replicating the techniques used by the original builders and matching the surviving evidence.
- The internal surfaces were found to be in better condition. Cleaning of black crust and algae deposition was carried out, along with minor repairs to the arch mouldings and floral medallions using lime mortar.
- Cement plaster was removed from the central mihrab, and the original patterns were restored with traditional lime mortar.
- The missing plinth stone on the eastern façade was reinstated with hand-chiselled granite blocks along the length of the façade to match the existing floor levels.

(Top) Removal of inappropriate 20th century cement plaster from the facade;

(Bottom) The facades, including the surface ornamentation, was repaired using traditional lime mortar

PLINTH PROTECTION & CONSOLIDATION OF GRAVES

ACTION TAKEN:

- The modern plinth platform on the eastern side of the monument, constructed with stone masonry walls and cement mortar, finished with tandoor stone flooring and filled with earth, was carefully dismantled.
- Excess earth infill from the platform was removed, and the original plinth levels of the monument were determined.
- After removing the excess earth, the ground was levelled and graded to reveal the original levels of the grave cluster on the eastern side of the funerary mosque.
- The gravestones were consolidated by repairing the stone masonry wall at their base. A rough gray granite slab, 200 mm wide and 100 mm thick, was added on all four sides for plinth protection.

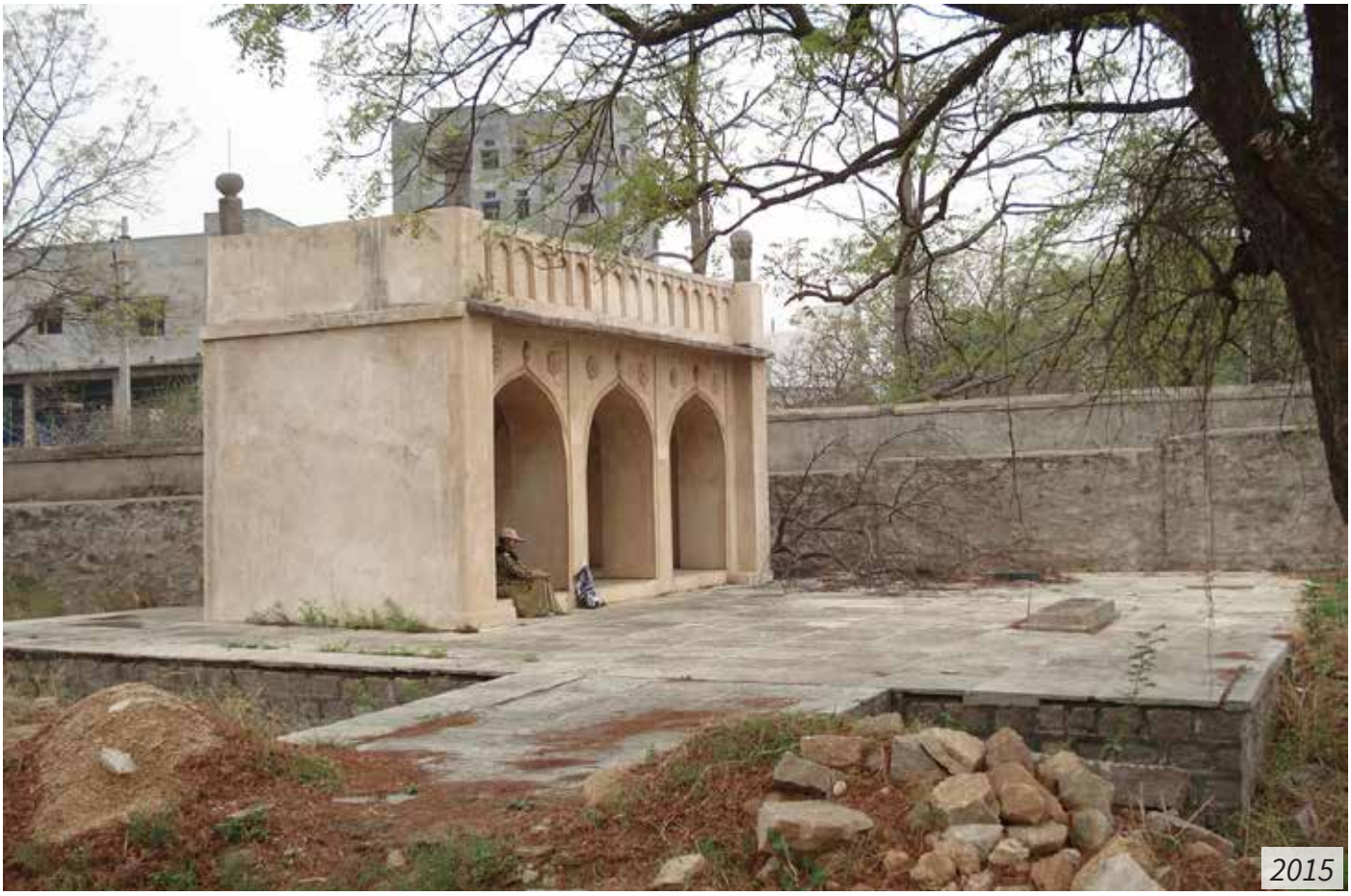
Plinth protection, adhering to the original levels of the monument, was installed 900 mm wide on the west, south, and east sides. On the north side, the plinth protection extended up to the boundary wall.

- The plinth protection was finished with a 450 mm thick stone masonry retaining wall. Above this, a 100 mm thick layer of plain cement concrete (PCC) was applied. The top layer consisted of 100 mm thick, rough gray granite stone slabs, arranged with appropriate slopes to ensure effective rainwater drainage away from the monument. Additionally, a 200 x 200 mm rough gray granite edging stone was placed on all sides.
- Imli plantation work was carried out on the east side of the mosque, where the earth was levelled and graded.

Basework using stone masonry for plinth protection

Missing plinth stones were reinstated

The base masonry of the grave platform was consolidated by determining the original levels and regrading the surrounding earth accordingly



2015

2024

The 20th century wall, measuring 50 meters in length and 2.4 meters in height, located to the north of the funerary mosque was carefully dismantled. This intervention aligned the earth levels and visually integrated the Core Heritage Zone with the archaeology area to its north.

IMPACT:

The highly altered monument, which had undergone extensive 20th century cement repairs, was meticulously repaired using traditional materials and techniques, restoring both the material authenticity and architectural integrity of the structure. Imli plantation work was carried out on the east side of the mosque, where the earth was levelled and graded.

CONSERVATION

09. Funerary Mosque

(north of Hammam Baoli)

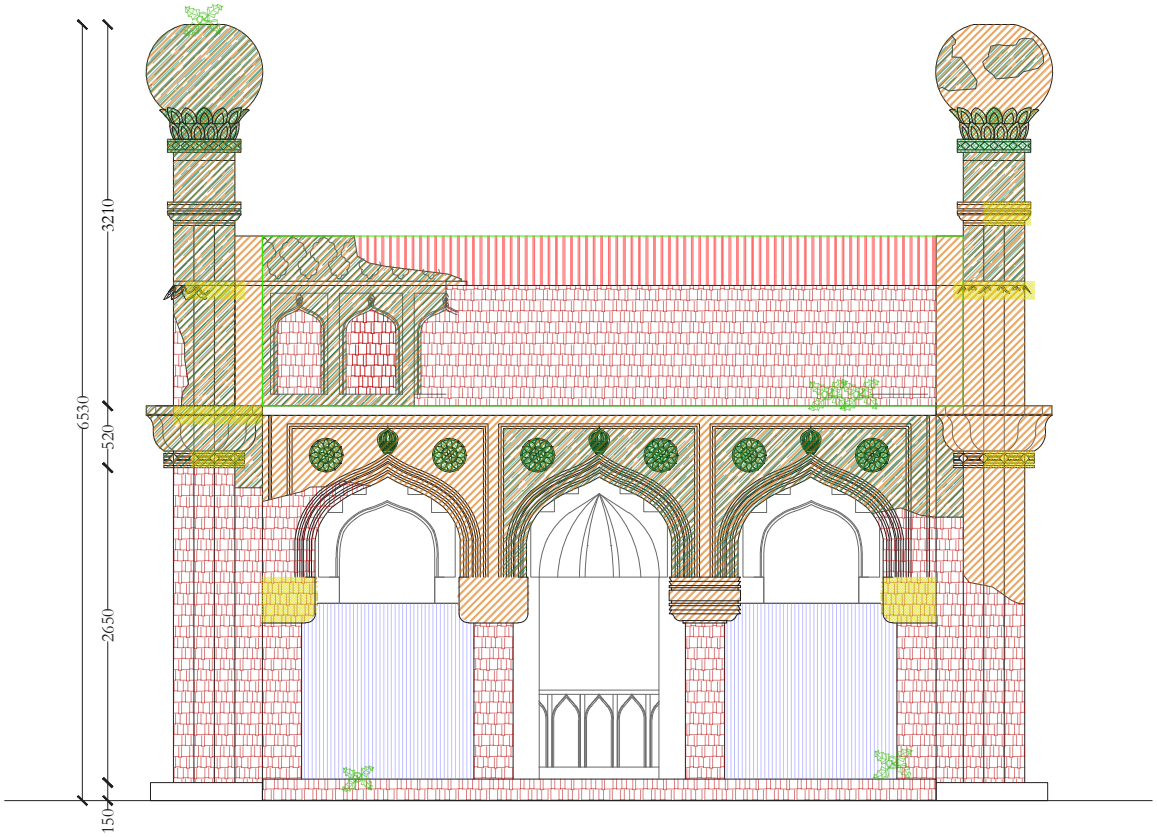
The eastern facade of this funerary mosque has three arched openings. The arches have intricate mouldings, with ornamental arch crowns and medallions. A rectilinear band surrounds each arched bay.

The projected eave at the parapet is supported by stone brackets and beams with lime stucco work in between. The parapet has rectangular openings, horizontal floral bands and battlements on all four sides. Four smaller minarets are present on the eastern facade, and at each corner of the monument.

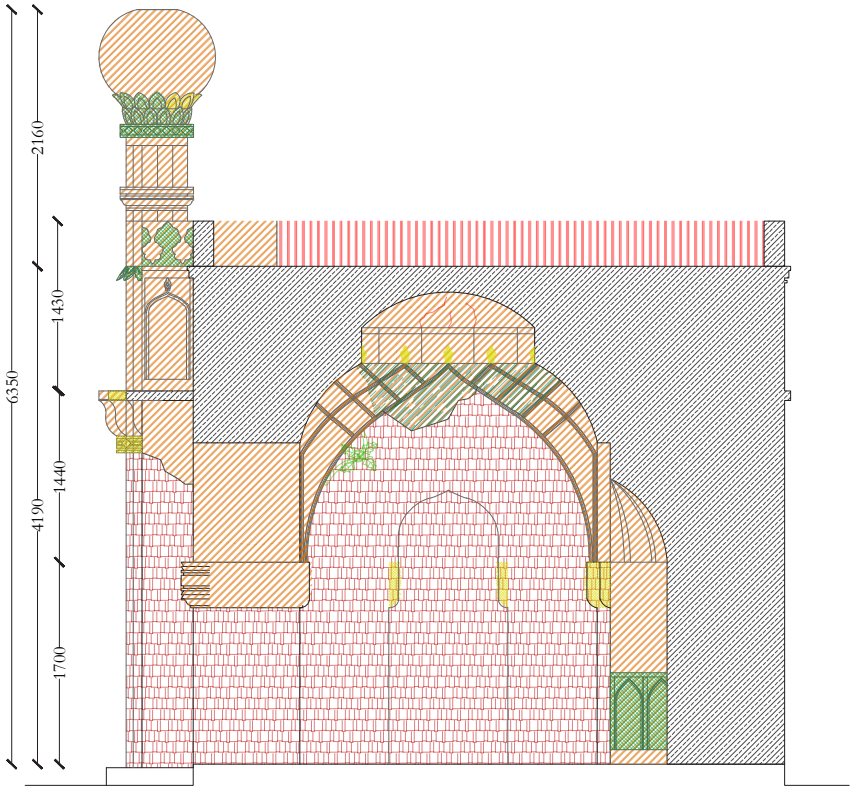
The corner minarets have a rectangular pavilion-like ornamentation having smaller arched openings. These minarets meet the parapet wall at a rectangular box like capital that has a lattice and flower bands. The domes of these minars also have spires on top.

The internal chamber of the funerary mosque consists of three arched bays. The arches and squinches are devoid of any arch-crowns. The central projected mihrab is in the shape of a half-decagon below a horizontal band of floral details and merlon band.

The condition assessment before conservation observed the algae deposits on the external surfaces, damaged minarets, dilapidated details on the parapets in various portions and flaking of plaster layer on external and internal surfaces.



Condition Assessment
East Elevation



Condition Assessment
Section CC

LEGEND:

DEFECTS IN BUILDING / PLASTERED SURFACES

- CRACKS IN THE PLASTER
- DECAYED PLASTER
- FLAKING OF FINISHING LAYER
- INTERVENTION
- MISSING MASONRY
- NEW PLASTER
- EXPOSED MASONRY
- CEMENT PLASTER

DECORATIVE PLASTERWORK

- DECAYED PROFILES
- MISSING PATTERNS

WATER PROBLEMS

- WATER SEEPAGE
- WATER RISE

SURFACE DEPOSITS

- ALGAE
- BLACK CRUST
- GRAFFITI
- LIME WASH
- DEPOSITS
- VEGETATION

Funerary Mosque 17 - Condition Assessment

500mm 2000mm
0 1000mm

ROOF REPAIRS

ACTION TAKEN:

- Missing parapet walls on the south, north and west sides were raised up to 2 feet in stone masonry to their original extent.
- Following the careful removal of vegetation, reconstruction of fallen southwest portion, and repairs to the external façade - the damaged lime concrete on the terrace, which had suffered from water ingress and sagging, was carefully dismantled. Levels for the 150 mm thick lime concrete was marked considering adequate slopes.
- Traditional lime concrete mixed with natural additives was relaid with appropriate slopes to ensure effective rainwater drainage from the roof. After laying, the concrete was rammed with wooden thappies over a period of 3–4 days to ensure proper setting, removal of excess moisture, and to produce the characteristic clear metal sound, indicating proper compaction.
- During the ramming process, a mixture of gur and bel fruit pulp or juice, combined with water, was sprinkled over the surface to ensure proper sealing of the joints and adequate slope. Minor cracks were also repaired during this process. The lime concrete was then cured with water for 10 days.
- Additionally, missing stone waterspouts were reinstated on the western side to match the original design, facilitating proper drainage and protecting the monument from water damage.

Compaction of traditional lime concrete laid on the repaired terrace

The internal wall surfaces were restored using traditional lime mortar

INTERNAL

ACTION TAKEN:

- Black crust and algae deposits on the internal wall surfaces, caused by water seepage, were cleaned using wire brush and sandpaper.
- Shoring was set up to support the roof over the southwest corner, where major cracks had caused the separation of the masonry walls extending up to the roof.
- The damaged and loose plain plaster layers on the internal surfaces were carefully dismantled, and the existing plaster was consolidated.
- Exposed masonry surfaces, where the original plaster was damaged or missing, were repointed with traditional lime mortar.
- Damaged and missing lime stucco details were restored based on in-situ evidence, including the four arch crowns, arch mouldings, and capital band mouldings.
- Repaired lime plaster details and reinstated elements were finished with a 1.5 mm thick lime punning layer.
- The exposed ceiling, due to damaged plaster, was finished with traditional lime plaster, and the ceiling medallion was reinstated according to on-site evidence and finished with lime punning.

2021

2024

NEXT STEPS:

- Excess earth surrounding the monument will be removed to achieve the original plinth level. A 900 mm wide plinth protection with 100 mm rough gray granite and 200 mm wide granite edging, will be carried out as per approved details.
- The internal flooring will be finished using lime concrete.

CONSERVATION

10. Funerary Mosque

(archaeological area west of Hammam Baoli)

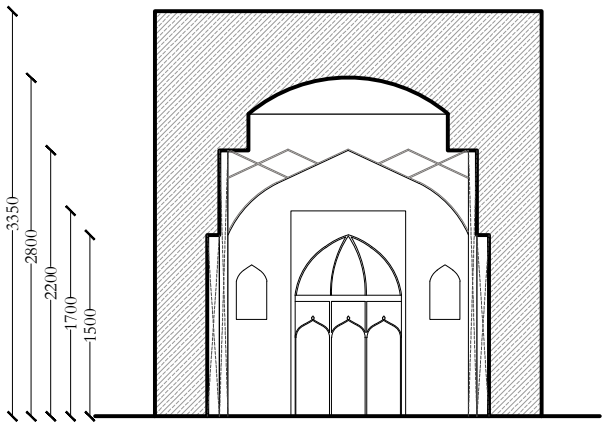
The ruinous structure is situated further west of Hamam Baoli in the archaeological area. The structure consists of a shallow dome resting on the arches on three sides - north, south and west side - with a lime concrete platform measuring 6000 x1850 mm on the eastern side.

The eastern part of the dome is in a dilapidated condition. The north and south side arches are also dilapidated and have been further supported by the masonry walls on the eastern side. The internal chamber, measuring 2000 x 1730mm, consists of a central recessed three-sided mihrab with arch moulding stucco detail.

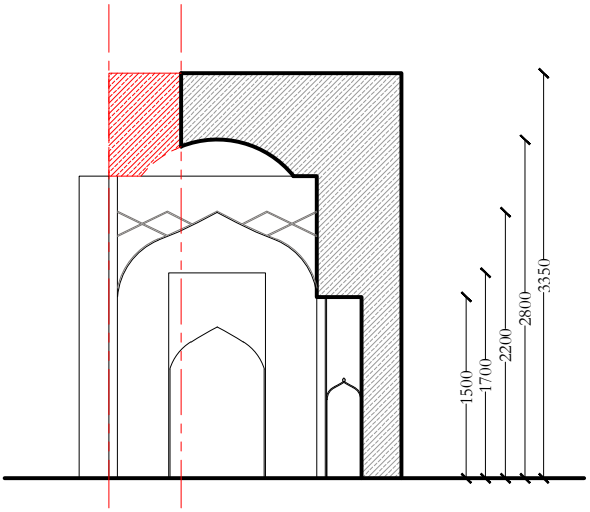
ROOF REPAIRS

ACTION TAKEN:

- Deteriorated lime concrete from the half surviving dome was carefully dismantled
- Traditional rich lime concrete, mixed with natural additives was re-laid with appropriate slopes to ensure effective rainwater drainage from the roof. After laying, the concrete was rammed with wooden thappies over a period of 3-4 days to ensure thorough consolidation. This systematic lengthwise movement continued until the mix was nearly set, and the wooden thappies rebounded from the surface, producing a clear ringing sound when struck.
- During the ramming process, a mixture of gur and bel fruit pulp or juice, combined with water, was sprinkled over the surface to ensure proper sealing of the joints and adequate slope. Minor cracks were also repaired during this process. The lime concrete was then cured with water for 10 days.
- Additionally, missing stone waterspouts were reinstated on the western side to match the original design, facilitating proper drainage and protecting the monument from water damage.

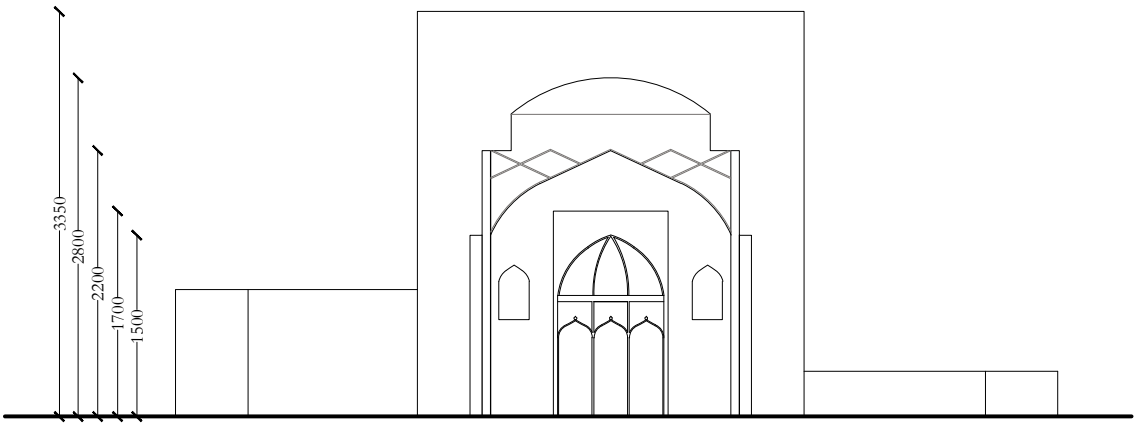


Section A-A

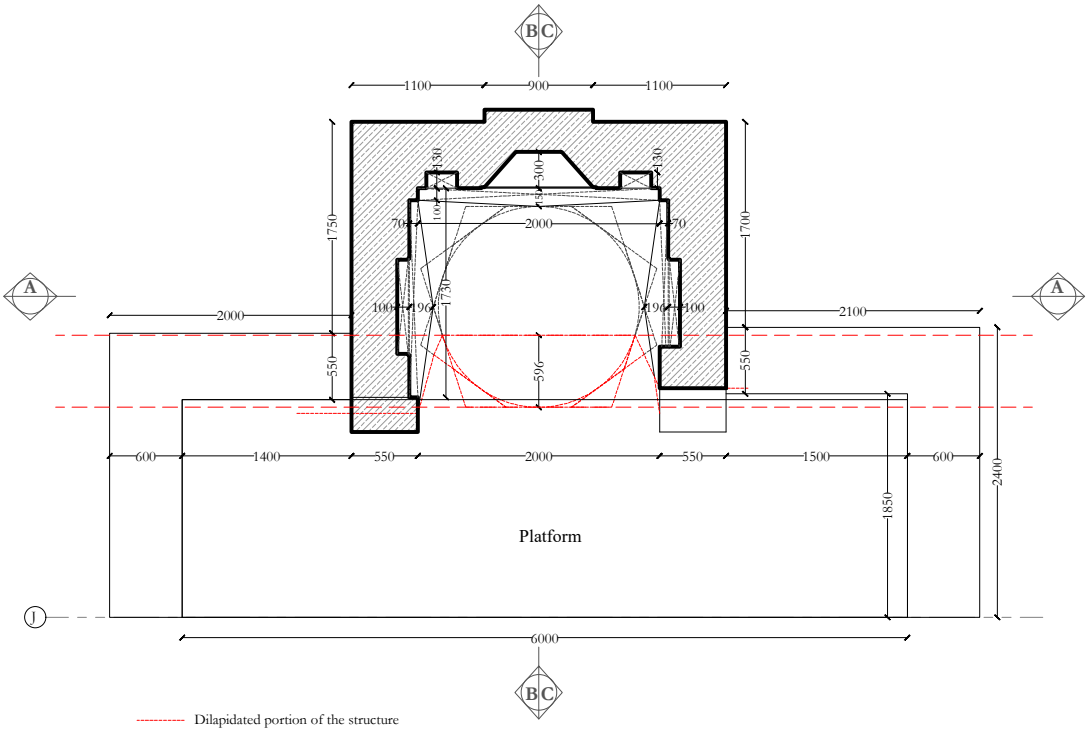


Dilapidated portion of the structure

Section B-B



East Elevation



Dilapidated portion of the structure

Scale :

500 mm 1000 mm 2000 mm

N

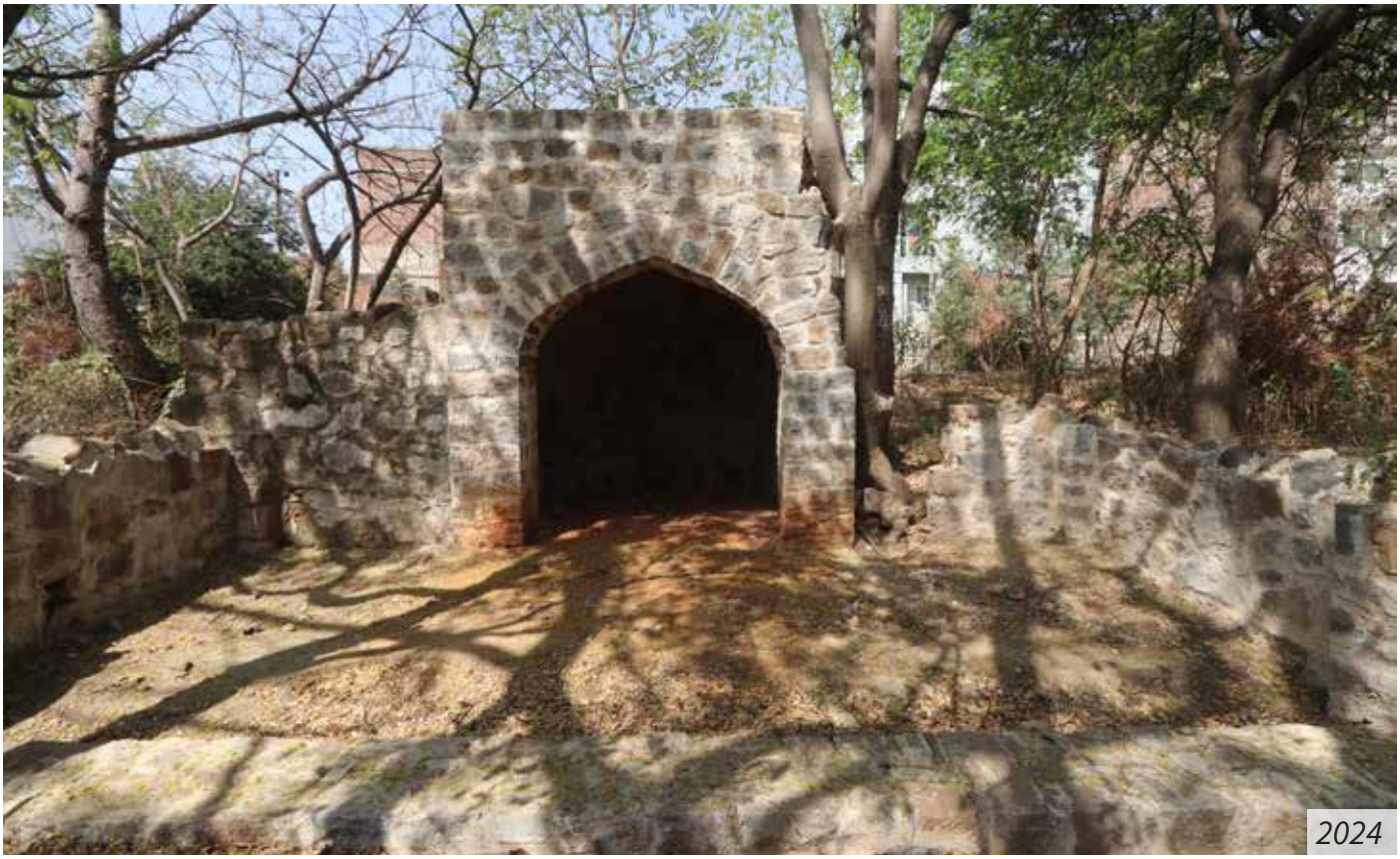
RECONSTRUCTING THE DOME

ACTION TAKEN:

- Following the scientific clearance and removal of overgrown vegetation, the damaged half-dome over the main niche was reconstructed using on-site evidence, with the existing structure serving as a key reference.
- The missing and dilapidated arch and squinches on the eastern side, which provide crucial support, were rebuilt by highly skilled masons using stone masonry to match the original design. Brick formwork was provided for the reconstruction of arch.
- After completing the arch masonry, brick formwork was set up to build the missing portion of the dome. The stone masonry dome was then reconstructed by highly skilled stone masons to replicate the original, maintaining the correct levels and courses of masonry.
- The two existing walls supporting the central surviving portion of the monument on either side were raised to a height of 1.2 meters. These walls feature the typical arch niches observed in small-scale funerary mosques at the Qutb Shahi Heritage Park.
- The dilapidated stone masonry walls of the extended plinth were consolidated, and missing sections, measuring 600 mm in height and 450 mm in width, were rebuilt.
- After six months, once the new masonry of the dome and arch had fully cured and set, the formwork was carefully dismantled.
- Damaged plaster, including the arch mouldings and squinches, was reinstated to match the original using traditional lime mortar. The surfaces were then finished with lime punning made from lime putty and natural additives.

Highly skilled masons reconstructed the stone masonry arch and dome of the mosque using brick formwork and traditional techniques, guided by in-situ evidence

2015



2024

IMPACT:

Conservation efforts have stabilized a severely deteriorated and partially collapsed structure, ensuring it no longer faces the risk of collapse. By using traditional materials and rebuilding the missing dome and arches, the architectural integrity of this small funerary monument has been restored, preserving its place in the historic landscape of the Qutb Shahi Heritage Park.

NORTHERN ARCHAEOLOGICAL ZONE

11. Earth Clearance

This area was earlier excavated by the Department of Archaeology and Museums, Government of Andhra Pradesh, in the 1970s. However, lack of maintenance in the later years eventually turned this area into a dumping yard with overgrown vegetation.

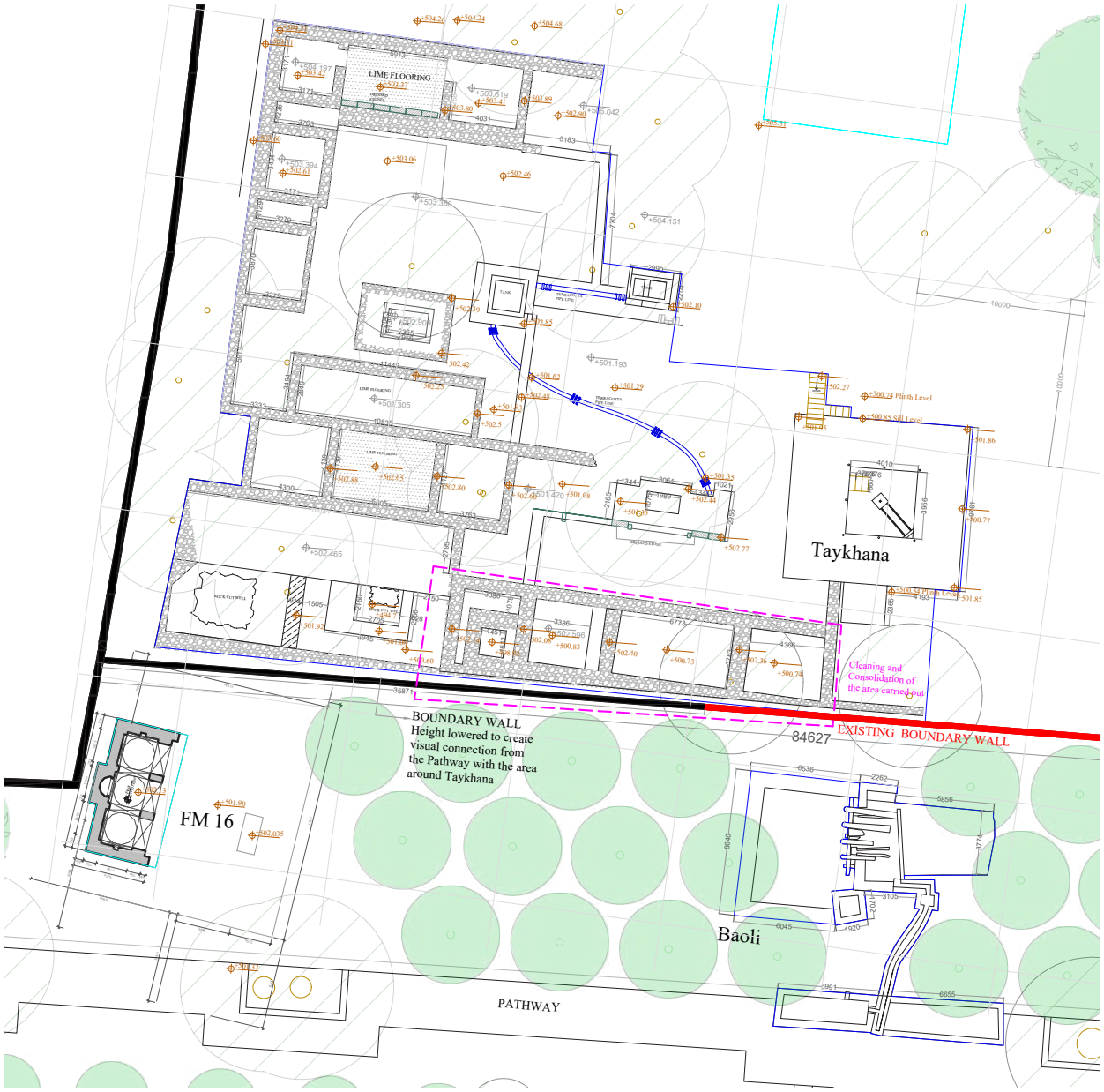
Scientific clearance of the area to the west of Taykhana revealed that they have remains of a housing complex with 14 rooms, a veranda on the southern side and an open quadrangle with four water tanks. All the water tanks are interconnected with terracotta water pipes, suggesting that the site was a part of a water pavilion. This complex was also connected with Taykhana - an underground water pavilion, provided with fountains and sitting chambers. The entire area was supplied with water by a small Baoli south of the complex.

ACTION TAKEN:

- Scientific cleaning of the area was carried out, including the removal of excess vegetation and accumulated earth.
- Careful dismantling of the later-added boundary wall was undertaken.
- To create a visual connection from the Qutb Shahi Heritage Park and to understand and interpret the relationship between the baoli and the Taykhana, as well as the expanse of the archaeology area, the wall (50 meters in length, 2.4 meters in height) dividing the QSHP and the area north of hammam was dismantled to match the existing earth levels.
- Four bays (rooms) and the two smaller wells west of Taykhana, adjacent to the wall dividing the Qutb Shahi Heritage Park (QSHP) and the area north of hammam, were conserved.
- Broken and loose masonry walls were carefully consolidated pointing and rebuilding of broken portions with traditional lime mortar to match the original structure.

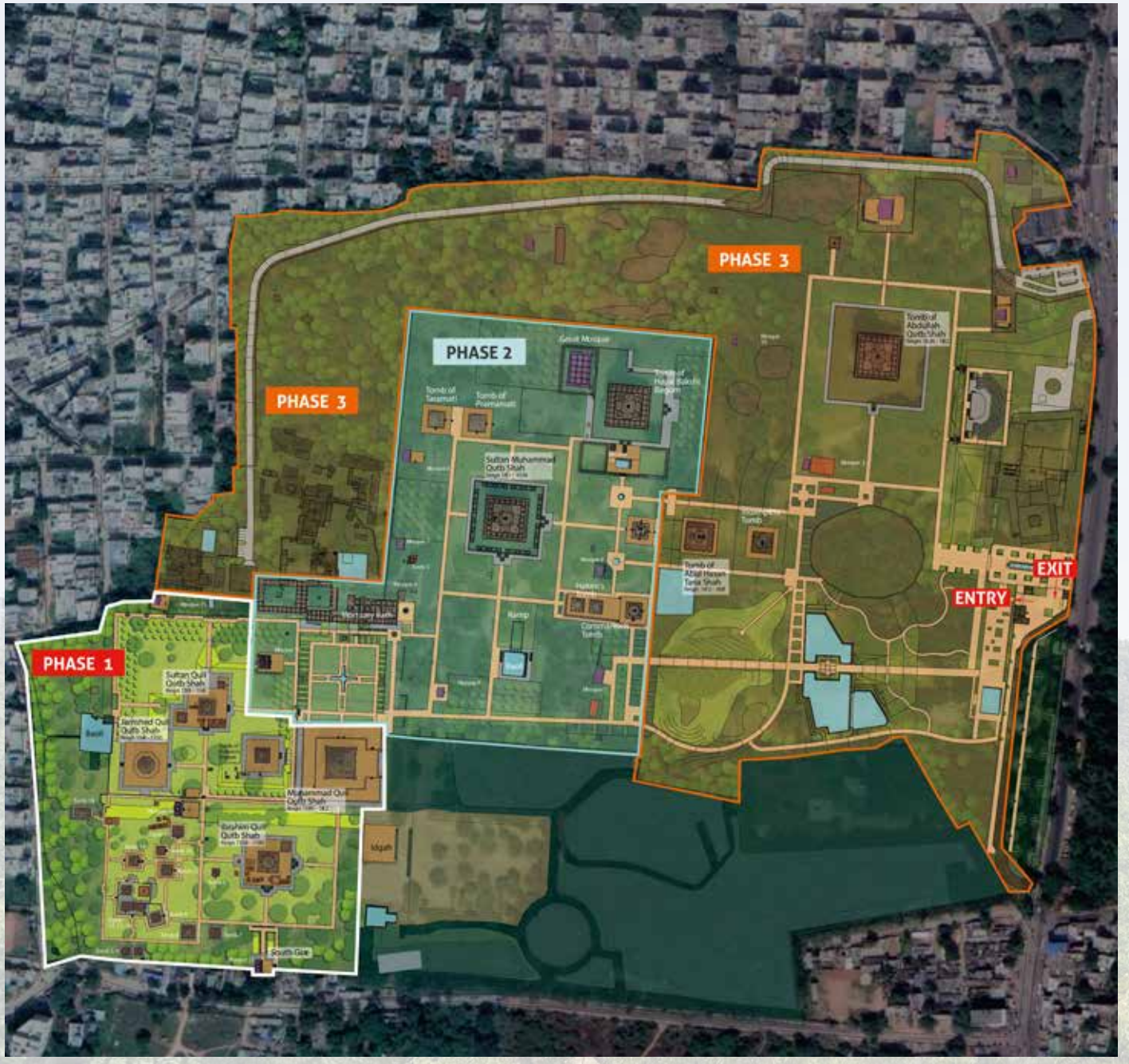
Tykhana in the archaeology area

20th century wall was dismantled to align with existing earth levels, reconnecting the baoli, taykhana, and archaeology area



NEXT STEPS

- Earth and debris will be removed to facilitate further conservation efforts.
- Tanks, rooms, and terracotta pipe cones will be consolidated and conserved.
- All essential conservation efforts will be carried out for the Taykhana structure, including cleaning, roof repairs, removal of 20th century plaster repairs, and restoration using traditional lime mortar to match the original.
- Additionally, flooring will be provided, and plinth protection will be implemented to safeguard the structure from further deterioration.



Laying Pathways

Planting orchards and gardens

Visitor amenities like benches

Lake Redevelopment

Landscape Restoration

Holistic landscape development has been carried out at the Qutb Shahi Heritage Park since 2014. The entire site was divided into three phases. Phase 1 included the southwest corner of the complex around the mausoleums of Sultan Quli, Jamshed Quli, and Ibrahim Quli, including the buffer zone in the western part of the site. Phase 2 consists of the remaining core heritage zone, spanning around the mausoleums of Muhammad Quli, Hammam, and the enclosure wall of Muhammad Qutb Shah. Phase 3 primarily includes the area around the mausoleum of Abdullah Qutb Shah, and the entrance zone - the Deccan Park region.

Significant landscape development activities have been carried out, including the development of pathways, appropriate grading of the earth, and the restoration of gardens around the monuments. While the development works in Phase 1 are completed, work in Phase 2 is nearing completion, with small pockets of work left out on south and east of Muhammad Qutb Shah's mausoleum, to allow conservation works on the monument. Similarly, over two-thirds of the work in Phase 3 is complete. The portions remaining in Phase 3 mainly include the construction of the Interpretation Centre and its associated works, such as fire tender pathways, and the development of an entrance plaza. These works are being undertaken by the Telangana State Tourism Development Corporation (TSTDC) according to approved designs provided by AKTC.

ENVIRONMENTAL STUDIES

12. Impact Assessment

As part of AKTC's commitment to sustainable conservation, a research study was undertaken in collaboration with the Indian Green Building Council (IGBC) to assess the carbon footprint of conservation activities carried out at the Qutb Shahi Heritage Park between 2015 and 2022.

The collaboration primarily focuses on the carbon footprint of the project. The objective was to compare the environmental impact of conventional conservation methods with the environment-conscious practices adopted by the AKTC. The collective efforts of AKTC and IGBC aims to analyse and further develop an environmentally responsible and sustainable model at the Qutb Shahi Heritage Park.

ACTION TAKEN:

- The IGBC team mapped the accomplishments and worked on quantification of impact based on the activities carried out during the conservation process.
- The key focus was to quantify the reduction in carbon emissions achieved by adopting environment conscious conservation practices.
- The team collected quantitative data of the process to establish the impact of conservation activities carried out between 2013 – 2022.
- Monuments were categorized based on size as 'large'(approx. 40m), 'medium'(approx. 20m), and 'small' (below 20m) along with stepwells/baolis.
- The emissions were quantified based on the materials removed from the structures that were used during the previous conservation efforts, and carbon emissions on account of the conservation practices followed by AKTC were established. These were estimated based on the quantity of waste materials reused within the structure, low carbon materials used for the conservation and carbon sequestration achieved through the

plantation efforts.

- To reduce use of virgin materials, the AKTC team reused the previously collected construction waste in large quantities. This strategically planned effort for mitigation of carbon pollution resulted in an enormous reduction of embodied carbon emissions.
- Data collection and analysis of the conservation activities provided a clear picture of the embodied carbon of the materials used for all the monuments on site.

The edging of benches is installed reusing stone waste

Across the site, trench drains were laid to collect rainwater in the conserved stepwells

Since their restoration, the six stepwells across the necropolis now collectively harvest over 20 million litres of rainwater every monsoon

OUTCOME:

- Through reuse of construction waste material project team has potentially reduced 29,052 Tonnes of CO2.
- Total emission due to conservation activities between 2015 to 2023 – 55,932 Tonnes of CO2.
- Carbon sequestrated through new plantation by AKTC since 2015 to 2022 is 8.65 Tonnes.
- The plantation has a potential to sequestrate 207.55 tonnes of CO2 for next 50 years (2023-2073).
- AKTC team has potentially reduced 34.19% of carbon emissions generated through the conservation activities.
- The study demonstrates that sustainable heritage conservation is achievable by combining traditional materials, local practices, and environmental awareness.

CONSERVATION

13. Garden Wall

of Muhammad Qutb Shah's Mausoleum

The mausoleum of Muhammad Qutb Shah is enclosed by a wall similar to that of Sultan Quli Qutb-ul-Mulk's garden mausoleum. The enclosure wall runs in the west, north and east spans nearly 802 meters and encompasses multiple mausoleums, funerary mosques, and grave platforms. Conservation works at the west side wall were completed in 2021 and the wall to the north and east side was completed in 2022.

The conservation works on the west side of the wall included clearing excess vegetation and removing accumulated earth up to 3 meters from the structure. Repairs were undertaken on the plain plaster, dilapidated battlements, and damaged arch profiles. Dilapidated arches and moulding details were reconstructed to match the original design. To the north and the east wall – Sections of the exposed stone masonry walls that were dilapidated, missing and or highly altered in the 20th century cement plaster repairs were repaired. The wall was consolidated while maintaining a uniform thickness of 500 mm. Damaged battlements were repaired, and new battlements were reinstated along the entire length of the enclosure wall, matching the original stone masonry and spacing. The 20th century cement plaster was carefully raked out, and the existing random rubble and coursed rubble masonry were re-pointed using traditional lime mortar.

REPAIRS TO THE WESTERN WALL

ACTION TAKEN:

- In 2024, the reconstruction of two missing arch bays on the western enclosure wall was carried out. These had remained unrepaired due to the necessary service access required for the conservation of nearby monuments, particularly those near the Hammam Baoli.
- The restoration work involved reconstructing the masonry walls and arches to match the existing western enclosure wall.
- Formwork was created using brickwork, and the arches were constructed by skilled stone craftspeople. These were then allowed to set and cure for a month.
- After the removal of the formwork, four battlements at the top of these two arch bays were also reconstructed to match the original design.
- The arches and battlements were finished with traditional lime mortar mouldings and completed with a 1-mm thick lime punning—a lime putty prepared with natural additives.

(Clockwise from left-top) Reconstruction(matching the original) of missing masonry walls and arches using formwork; Replastering the masonry walls and arches with traditional lime mortar matching the original details of the enclosure wall; Plinth protection using stone masonry walls along the northern enclosure wall; Finishing of the plinth protection with laying of 30 mm tandoor stone along a portion of the western enclosure wall

PLINTH PROTECTION

ACTION TAKEN:

- Following the conservation of the northern and eastern sides of the enclosure wall of Muhammad Qutb Shah's mausoleum, plinth protection was installed on the internal side of the northern enclosure wall.
- The original height and levels of the wall were identified during the conservation works by removing excess soil and overgrown vegetation, and the plinth protection was installed accordingly to match these original levels.
- The 900 mm wide plinth was designed to prevent rainwater damage and control the growth of unwanted vegetation along the wall. A 450 mm thick stone masonry retaining wall, 600 mm high, was built in a stepped manner to follow the natural slope of existing ground adjacent to the wall, covering the entire length of 232 meters of northern enclosure wall.
- Large trees along the wall were preserved and protected with a provision of stone masonry planters.

Repairing the wall and developing landscape

Orchard plantation

Lime repairs on the arcaded wall

Discovery of battlements on the historic wall

NEXT STEPS:

- The 900 mm wide plinth will be provided to the eastern wall to prevent rainwater damage and control the growth of unwanted vegetation along the wall.
- A 450 mm thick stone masonry retaining wall, 600 mm high, will be built in a stepped manner to follow the natural slope of existing ground adjacent to the wall.

IMPACT:

The restoration and reconstruction of missing portions of the Muhammad Qutb Shah's enclosure wall have ensured its structural stability and helped define the uniform architectural character of the historic wall. The addition of plinth protection has safeguarded the historic wall from further damage caused by unwanted vegetation growth.

LANDSCAPE RESTORATION

14. Entrance Zone

Supported by:

SWADESH DARSHAN

The network of stone pathways laid out as part of the landscape masterplan had been majorly completed in the previous years. Few pockets left for ease of vehicular access for conservation and horticultural works inside the park have also now been laid with the standard tandur stone pathways and granite kerb stones. The Entrance Plaza and the pathways between mounds in Deccan Park, around the Site Exhibit space and the one leading to Muhammad Quli Qutb Shah's tomb from Badi Baoli have been completed.

Levelling of earth at a gradual slope for laying of flooring

Laying tandur stones at the ramp was for universal access

ENTRANCE PLAZA

The stretch from the Parking Area to the Bagh Baoli needed the development of a formal entrance plaza, as it was in use by daily visitors to Deccan Park. The plaza was designed using the standard tandur stone covering and granite kerbs, along with benches at equal intervals. A ramp in a gradual slope of 1:12 was also incorporated for wheelchair access.

The existing earth was uneven lacking a cohesive layout, with plantation of modern hedges and irrelevant horticulture elements. An unused metal fabricated cabin also stood in the Park.

ACTION TAKEN:

- The layout of the entrance plaza was marked on ground to identify the extent and removal of hedges and topiaries, if any.
- As the earth had to be levelled at a very gradual slope of 1:20, kerb stones with average length of 2 m and depth of 10” – 12” were placed at the edges for support.
- After levelling, a layer of PCC followed by the final layer of Tandur slabs measuring 850 x 580 mm, were laid maintaining the gradual slope.
- The above platform is accessed by a ramp in a 1:12 slope for wheelchair access with adjacent steps in granite stones at the Parking.

DECCAN PARK WALL

A stone masonry wall had been serving as the demarcation between Qutb Shahi Tombs complex and Deccan Park area, running north-south and abutting the Eastern Baoli. Since the masterplan emphasises merging the Core Heritage Zone with the recreation zone (Deccan Park), the wall had to be repurposed for better visual integrity and its utilitarian purpose of retaining high earth levels.

ACTION TAKEN:

- The 100 meter long wall was dropped by 300 mm at every 5 meter interval, maintaining an average height of 900-1000 mm from the ground level. This staggered reduction created an unhindered visual connection for visitors to both the Qutb Shahi Tombs and Deccan Park.
- To ensure transparency and visual connectivity of the two sites, stone masonry wall with iron grills was constructed demarcating the two sites.
- The alterations done were matched with the existing stone size, shape and masonry style to blend with the original 450 mm thick wall in cement.
- The earth at either side of the wall was levelled to a proper slope based on the site conditions.
- The wall now culminates in a pivoted gate installed as an access between the Tombs and Deccan Park. At this junction, a brick planter has also been created to accommodate the existing Jamun tree.

Stone wall with iron grills ensures transparency between the sites

Installation of gate between the core heritage zone and Deccan Park

OFFICE PLAZA

The landscape masterplan proposes the development of a visitor's plaza to replace the current project office space. This would, however, be undertaken at a much later stage following the completion of construction and commissioning of the Site Museum, since the current office also houses a temporary exhibit that aids in enhanced understanding of the necropolis for visitors. Thus, a plaza has been developed around the existing project office.

ACTION TAKEN:

- The existing landscaping with planters and iron railing had to be removed along with the modern cement concrete fountains.
- The earth was levelled according to the natural contours of the ground, making sure that the roots of the existing trees at site are not exposed.
- Following the levelling of the ground, a toe wall was constructed to the north-west corner to retain the levels of the terraced garden. The toe wall was constructed in 450 mm thick random rubble stone masonry.
- The plaza houses trees like Karanj, copper-pod, and hence, adequate planters were to safeguard them.
- Tandur stones were laid on the levelled ground on a 3" thick layer of PCC.

The pathways were laid without damaging the tree roots

The pathways were laid without damaging the tree roots

It is proposed to demolish the present site exhibition building once the site museum is constructed

VISITOR PATHWAYS

Visitor pathways are a vital component of the landscape restoration at the Qutb Shahi Heritage Park. While a significant portion of these pathways had been laid in previous phases of work, certain stretches—particularly within Muhammad Qutb Shah's garden enclosure—remained incomplete. These areas were intentionally left open to allow for the movement of materials during the ongoing conservation efforts. These remaining stretches have now been laid to ensure a seamless and uninterrupted visitor experience across the necropolis.

ACTION TAKEN:

- The layout of the pathways was first marked on-site using lime powder, aligning precisely with the edges of the existing paths from start to end points.
- A foundation of 9 inch thick fly ash brick masonry was laid along both edges of the pathway over a 100 mm bed of PCC, following an excavation of about 300mm - 450 mm, depending on site conditions.
- Cement concrete, filled upto 4" below the brick masonry level, was manually levelled, followed by filling and levelling of another layer of PCC flushed up to the masonry.
- Uniformly cut Thandur stones were then laid by skilled masons, maintaining consistency with the existing joint patterns.
- To finish, the pathway edges were lined with 8x8 inch thick granite kerb stones, approximately 1 metre in length, set flush with the Thandur stone surface.

Pathways were laid from Badi Baoli to the tiled tomb of Muhammad Qutb Shah(top), west of Hakims' Tombs and east of Chickoo Orchard(bottom)

Sensitive design and location of pathways has meant that the 86 monuments are now easily accessible to the visitors.

LANDSCAPE RESTORATION

15. Earth Mounds

Constructed in the early 21st century, the mound was formed from the accumulation of excavated earth from the adjacent modern lake and debris dumped from nearby areas. This mound created a barrier to viewing the monuments from the lake and the entrance zone. It was initially proposed to remove the mound completely; however, since that would have required landfilling in another part of the city, it was consciously decided instead to lower the top level by over 2 metres and cut through the mound to create access to the core heritage zone.

Supported by:

SWADESH DARSHAN

ACTION TAKEN:

- The earth on the mounds was manually levelled and dressed using hand-held rollers to even out the earth with defined slope and profile.
- A 4”-thick-rich layer of fertile red soil was then spread over the mounds.
- A team of 10 horticulture workers then manually rammed the spread red soil tio break down larger lumps of earth to a more workable texture and size.
- Fine sand and compost were then added to the soil to increase fertility.
- The prepared good earth was once again manually levelled to maintain the slope and profile of the mounds.
- Finally, grass was manually laid overthe 50,000 sq.m area by the horticulture team, following the watering of leveled red soil.
- A 6 metre wide pathway connecting the western plaza of the lake to the southern plaza of Commander's mausoleum was built across, with adequate slopes.
- The pathway was finished with 50 mm thick Tandur stones built over cement concrete supported by brick walls on the sides.

The Deccan Park area comes alive with people gathering on the earth mounds

CENTRAL PATHWAY

To provide a formal visitor access to the archaeological zone from the Deccan Park, the mound was bifurcated into two with a gradual slope, and a pathway was laid between them.

ACTION TAKEN:

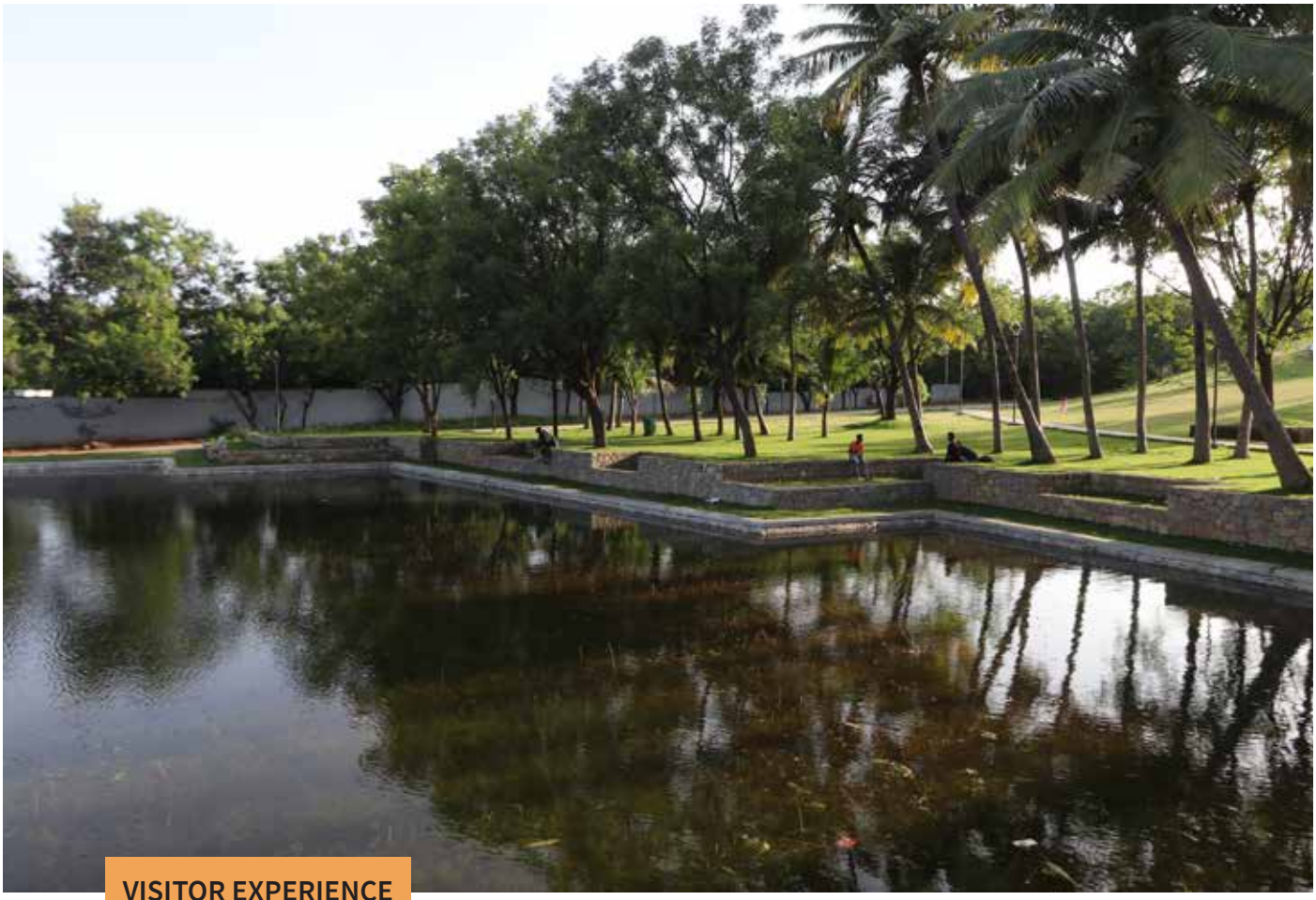
- Multiple truckloads of earth were removed from the mound at the proposed location of the central pathway continuously for a week.
- A gradual slope was marked on site, according to the proposed ground levels, to ascertain excavation for foundation works.
- The standard pathways in the Thandur stone and 1 m long granite kerb stones were laid after setting a 100 mm thick layer of PCC.
- A 3 m wide area on either side of the pathway was levelled for surface runoff from the mounds during monsoon.
- A curved Pathway was also added in similar thandur stones and granite kerbs from Lake Plaza to the cement concrete road abutting the Southern edge of the park.

Manual laying of grass

Curved pathway connecting the western edge of the core zone with lake plaza

IMPACT:

The reshaped mounds have provided a suitable access to the archaeological zone from the Deccan Park area.



VISITOR EXPERIENCE

16. Lake

Supported by:

SWADESH DARSHAN

The lake created here in the early 21st century went through a major upgrade, including significantly reducing its depth and introducing water cascades.

The water-body in the Deccan Park was in the deteriorated condition. The outline profile of the water body was retained and a shallow lake was created in the region.

As part of the broader landscape plan, the existing design was improvised by providing a fixed geometry to the retaining walls, enhancing both form and funcion. A bridge was also incorporated in the design to access and cross over to the Core Heritage Zone. Additionally, stone railings and lamp posts were also installed along the western edge and the bridge.

ACTION TAKEN:

- The retaining walls along the edges were completed in random rubble masonry up to the height of 500 mm. 100 mm stones in rough grey granite were used to add coping on the top.
- Stone railing have been provided along the visitor pathways for secure and comfortable views of the lake. The remaining height of retaining wall has been clad with 150 mm stone slabs upto the pathway level.
- Red granite stones measuring 300 mm wide and 150 mm thick were laid flat on ground. Then, 100 mm thick vertical balusters were cut and placed on the flat bed through mortis and tenon joints.
- The red granite balusters were kept in place by laying a stone railing measuring 200 mm wide and 125 mm thick in similar mortise and tenon joints as the base.
- The lamp posts are provided for evening visiting hours at regular intervals of stone railing. These lamp posts are designed in similar red granite to be 2 meters high and 600 mm wide with lighting fixtures mounted at top.

Installation of stone railing

Installation of lamp posts made in granite

Laying pathway on the bridge deck

Bridge at the lake connecting to enhance connectivity

BRIDGE

The Central Pathway runs from the entrance plaza at the Parking area leading the visitors to the Core Heritage zone of Qutb Shahi monuments. A bridge was constructed as part of the Central Pathway, to traverse the lake constructed at in the Deccan Park and move to the core heritage zone.

ACTION TAKEN:

- The construction works started with building a central plaza located in middle of the lake passage.
- The central plaza features a red granite railing and lamp posts, consistent with the design language established along the lake edge. Additionally, four planters hosting Sita Ashok trees have been incorporated, along with monolith granite benches beside them, offering a serene seating for visitors.
- To enhance accessibility, the central pathway is connected to the eastern and western sections via concrete arched bridges. The bridges are built in cement concrete, spanning approximately six meters.
- The north and south facia of the bridge are cladded thick red granite as rest of the retaining wall of the lake to maintain uniformity in appearance and design.
- The bridge decks have been paved with the locally sourced Tandur stones, similar to the paving used along visitor pathways, ensuring continuity and durability.

Central plaza with connecting bridge from the entrance zone

Plaza on the western part of the lake

Plan of the re-purposed lake with pathways, central plaza and connecting bridges.

WATER CASCADE OR CHADAR

A water cascade was designed as a prominent feature. A set of three water cascades were carved by hand in granite.

ACTION TAKEN:

- The overflow from the upper lake was channelized to the southeast corner of the lake into a lower lake of capacity 5 lakh litres.
- The cascade/chadar was introduced in three sets of stones slabs to enhance the architectural character of the lake. The stones are laid an incline to assure a smooth and uniform flow. This detailed craftsmanship was executed by master stone craftspeople.

IMPACT:

The cascade channelizes water from the upper part to the lower part of the lake forming a significant part of the lake adding to the pleasant setting of the space.
This enhanced lake offers a serene experience for visitors heading to the archaeological zone.

LANDSCAPE RESTORATION

17. Horticulture

(Above) Pomegranate orchard developed north of Commander's mausoleum

Supported by:

SWADESH DARSHAN

The horticultural activities at the Qutb Shahi Heritage Park during the year 2023-2024 aimed to enhance the necropolis' ecological and aesthetic value through systematic maintenance, plantation and soil health improvement initiatives.

The necropolis is segmented into three primary zones: manicured lawns, functional areas requiring low maintenance, and ecological zones designed to support native biodiversity and natural bird habitats. The goal of these activities was to maintain the integrity of these zones while addressing specific challenges such as soil fertility, pest management, and plant health.

SOIL TESTING

In July 2023, a comprehensive soil testing program was conducted across different areas of the Heritage Park to assess the fertility and composition of the soil.

The analysis focused on key indicators such as micro and macro minerals, organic matter (humus), electrical conductivity (E.C.), and pH levels of the soil. Soil samples were collected from a depth of 6-12 inches, mixed according to a specific pattern, and sent to a laboratory for analysis.

The results revealed certain deficiencies in mineral content and organic matter, which could affect the long-term health of the plantations.

To address these issues, soil amendments were made gradually over the course of the year, ensuring that the natural microbial ecology was not disrupted. These amendments are being applied seasonally, in alignment with the park's ecological principles.

These include: Bio-agent use for soil enrichment, broadcasting organic matter in soil , aeration of soil, and mulching.

1. Bio-agent Use for Soil Enrichment

To improve the physical and chemical properties of the soil, bio-agents were introduced to the various plantation areas. Bio-agents are natural organisms used to enhance soil health and also act as organic pest control agents. Based on the results of the soil tests, specific bio-agents were selected to address identified deficiencies and improve plant growth.

The bio-agents used include:

- Trichoderma viride: A fungus that promotes the breakdown of heavy soils and enhances plant resistance to soil-borne diseases.
- Azospirillum: A bacterium that fixes nitrogen, improving soil fertility.
- Baveria bassiana: A fungus that acts as a natural pest control agent, reducing pest populations without the need for chemical pesticides.
- Pseudomonas fluorescens: A bacterium that improves nutrient uptake and protects plants from pathogens.
- Phosphate Solubilizing Agents: These agents aid in the release of phosphate from insoluble compounds, making it available to plants.

These bio-agents have not only helped improve the soil's texture and nutrient content but have also provided temporary control over pest populations, contributing to the overall health of the park's plants.

Bio-agent drench at basins of plants

2. Broadcasting Organic Matter in Soil

To improve soil health at the Qutb Shahi Heritage Park, organic matter was broadcasted across various plantation areas, enriching the soil with essential nutrients and enhancing its microbial activity. This practice involved the seasonal application of compost and decomposed plant material to restore soil fertility, as identified through comprehensive soil testing. Broadcasting organic matter helps improve soil structure, increasing its ability to retain moisture while promoting aeration.

Broadcasting organic compost

3. Aeration of Soil

Aeration is particularly crucial in the park, especially in lawn areas that are prone to trampling. Continuous foot traffic compacts the soil underneath the lawn, leading to root thinning and restricting the grass from spreading its runners. As a result, the soil needs to be aerated once every six months to maintain dense and healthy grass cover. By loosening compacted soil and incorporating organic amendments, aeration allows air, water, and nutrients to reach plant roots more effectively. This process supports the growth of beneficial microorganisms, which, in turn, enhance nutrient availability and overall plant health. By integrating organic matter broadcasting with proper aeration techniques, the park ensures long-term soil sustainability, fostering a thriving and resilient landscape.

Aeration of compacted lawn

4. Mulching

Mulching is an essential practice at QSHP, particularly during the winter and summer months. It involves placing a layer of plant material, such as leaves, grass, twigs, crop residues, or straw, on the surface of the soil. Dried leaf litter is used as a cost-effective and environmentally friendly mulching material. The mulch acts as a protective barrier for plant roots, insulating them from extreme temperatures and helping to maintain consistent moisture levels in the soil. Additionally, the mulch helps suppress weed growth around plant basins.

The leaf mulch used is carefully selected to ensure it is disease-free and clean, maximizing its effectiveness as a protective layer.

Mulching with leaf litter

GENERAL SITE MAINTENANCE ACTIVITIES FOR HORTICULTURE WORKS

To ensure the long-term health and sustainability of the landscape at the Qutb Shahi Heritage Park, a series of site maintenance activities are carried out regularly. These efforts focus on enhancing soil health, protecting plantations from pests and diseases, and maintaining the overall aesthetic and ecological balance of the park. Key activities include the removal of invasive species, termite control, soil enrichment techniques, and routine horticultural practices such as pruning, lawn mowing, and hedge trimming. By implementing these measures systematically, the park preserves its rich biodiversity while creating a well-maintained and thriving green environment.

In-Situ Vermicomposting

To support sustainable horticultural practices, an in-situ vermicomposting program has been implemented, which converts organic waste into nutrient-rich compost using earthworms. The process involves the collection of carbonic waste such as leaf litter, grass clippings collected from around the site.

The collected material is sorted and chopped, if necessary, before being piled in floored beds. Earthworms are then introduced after 15 days of partial decomposition, and a jaggery solution is used to aid the composting process. The compost is carefully monitored for temperature and moisture content, with regular checks to ensure optimal conditions.

After 45-50 days, the compost is harvested, sieved to remove large particles, and packed into 25 kg bags for use in the plantation across the necropolis. The vermicompost is rich in essential nutrients such as Nitrogen, Phosphorus, Potassium, and humus, providing a sustainable source of soil enrichment.

(Top) Dry leaves and twig litter are collected from across the necropolis;
(Bottom) The collected material is piled in floored beds as compost

Subabul Tree Clearance

Subabul (Leucaena leucocephala) trees are invasive species in the ecological zones of Qutb Shahi Heritage Park. These trees have a high germination rate and rapid growth, which can out-compete native plant species for soil nutrients and space. In 2023-2024, subabul stumps were manually uprooted twice a year to prevent overgrowth, as it can lead to the decline of other plants.

The removal of subabul trees was carefully timed before they could seed, ensuring that new seedlings do not propagate. The cut branches and stumps were left to decompose on-site, providing habitat for microfauna and enriching the soil in a natural manner. This activity will continue across the site.

Termite Control in Infested Areas

In certain areas at site, termite infestations were identified as a major threat to the health of the plantation, particularly in the Guava plantation west of Jamshed Quli Qutb Shah's tomb. It was noticed that termites were causing significant damage to the roots of the plants, leading to their gradual decline.

To mitigate this, targeted termite control measures were implemented in the heavily infested areas. The treatment was designed to reduce the termite population without harming the plants or surrounding ecosystem. This intervention has helped safeguard the health of the guava plants and other vulnerable species in the area.

Double Ring Method for Basin Preparation

To reduce the vulnerability of plants to pests and diseases, the double ring method for preparing plant basins was adopted at site. Earlier a saucer-shaped basin was made around the new plants, however, it was observed that this allowed moisture to frequently interact with the plant collar. The double ring design being used currently helps keep the collar dry and reduces the risk of fungal and pest infestations. This method has been particularly beneficial for fruit trees and moisture-sensitive plants, contributing to improved plant health over the year.

Bordeaux paste application on tree trunks

Fruit trees like mango have been treated with Bordeaux paste on the trunk to prevent fungal infestations such as gummosis and phytophthora, protecting the tree from the collar to the trunk.

Fertilization and Pest Management

As part of integrated nutrient management (INM) and integrated pest management (IPM) practices, seasonal applications of organic and mineral-based fertilizers are carried out to enhance soil fertility and plant health. These practices help maintain nutrient balance while minimizing the risk of pest infestations.

Regular Horticultural Maintenance

Scheduled horticultural maintenance activities include lawn mowing, brush cutting of overgrown vegetation, and systematic hedge pruning. Additionally, trees are trained and pruned at regular intervals to promote healthy growth and maintain the park's landscape integrity. These ongoing efforts ensure that the park remains visually appealing while supporting a resilient and diverse plant ecosystem.

Regular maintenance of the lawns

Termite regulation treatment

Double ring method of irrigation

Selective weeding of the lawns by the horticulture team

NEXT STEPS:

- Continuous monitoring of the results of the horticultural interventions and make necessary adjustments. Plans for the upcoming year include expanding the bio-agent program, increasing the scale of vermicomposting efforts, and introducing new plant species that align with the ecological and aesthetic goals. Regular monitoring and updates will ensure that Qutb Shahi Heritage Park remains a thriving and sustainable green space for years to come.

IMPACT:

- The soil testing and subsequent amendments have resulted in improved soil health and fertility, which is expected to yield better growth and resilience in the park's plants. The bio-agent interventions have successfully addressed deficiencies and provided natural pest control, enhancing plant vitality.
- The removal of invasive subabul trees has helped restore the integrity of the ecological zones, ensuring that native species have the resources they need to thrive.
- The in-situ vermicomposting program has also contributed to the sustainability goals by reducing waste and providing a natural, nutrient-rich source of soil enhancement.
- The ongoing maintenance of lawns and green spaces, along with thoughtful landscaping, ensures a pleasant and relaxing environment for all who visit.

LANDSCAPE RESTORATION

18. Rainwater Harvesting

The herculean task of maintaining the lush vegetation across the Qutb Shahi Heritage Park is met by harvesting and managing annual rainfall collected in the six baolis/stepwells at the necropolis. Efficient mechanisms of both feeding these water bodies and drawing water from them have been laid out to optimize the rainfall received annually.

DRAINAGE LINE AT WEST OF ABDULLAH QUTB SHAH'S TOMB

A large volume of rainwater used to drain from the west of Abdullah Qutb Shah's tomb and flood the surrounding garden. A new drainage system was hence implemented to effectively redirect this excess water to the lake at Deccan Park.

ACTION TAKEN:

- A detailed contour survey was carried out to ascertain the slope of earth and flow of water towards the Deccan Park lake. Once the contour was found suitable, water collection chambers were constructed using fly ash bricks at every 5 meter interval.
- These chambers were then connected by perforated pipes, wrapped in geotextile membrane to allow water percolation from the surface. These 300mm dia pipes were laid in a slope for effective drainage.
- The pipeline was laid with an adequate slope, terminating at the north retaining wall of the lake. A 300 mm wide granite spout was installed to channel the collected water into the lake.

LANDSCAPE RESTORATION

19. Plantation

Supported by:

SWADESH DARSHAN

Throughout 2023-2024, several new plantation initiatives were carried out to enhance the Qutb Shahi Heritage Park's landscape and biodiversity. These efforts aimed at adding color and variety to the gardens by introducing flowering creepers, shrubs, and ground covers. These new plants have been strategically placed to fill gaps and creating a more vibrant and welcoming atmosphere for visitors. Additionally, the new plantations contribute to the ecological goals of the Heritage Park, supporting native bird species and improving overall biodiversity.

During 2023-2024, a total of 4890 plants were planted across various zones throughout the site, including 1611 shrubs and 2680 ground cover plants.

Rose Plantation Gap Filling

In October, after Neem trees shed their diseased leaves affected by 'Die back' disease caused by Phytophthora, it was observed that the same fungal attack had also affected the rose plantation beneath them. Laboratory analyses of the diseased samples at the Forest College and Research Institute,Mulugu, confirmed the presence of same fungal pathogen affecting both neem and rose plants. The disease caused 40% mortality in the rose plantation. After implementing control measures, 60 percent of the existing rose plants were saved, and . gap-filling of rose plantation was carried out to restore the plantation.

'Gap-filling' with healthy rose plants

Shrubbery along CC Road

Shrub plants were introduced along the CC road to create visually appealing colour contrasts with flowering varieties. The selected plants include Ficus panda, Dracena reflexa green, Acalypha wilkesiana, Taberna montana, Calliandra haematocephala, Rademachera, Jtropha integerrima, and Clerodendron inerme.

Plantation along the central access pathway

Considering the soil conditions, hardy plant species were selected, ensuring flowering occurs in alternating seasons. The selected plants include white and pink rain lillies, Leucophyllum fruitescens (dwarf variety) and tree plantation of Lagestromea indica (Pride of India).

Plantation along the central access pathway

Screening along the enclosure wall at tomb 19

To create a natural green barrier along enclosure wall, linear growing plants such as Polyalthia longifolia trees were planted. Additionally, the low lying area at tomb 19 was graded and filled with earth before manually preparing planting pits. The soil in this area is loamy but had large boulders and stones, which were removed to facilitate plantation. Native fruit-bearing and flowering trees were selected include Tabubea rosea, Mulberry, Jamun, Neem, Terminalia catappa, Mimusops elengi, Polyalthia longifolia, Manilkara hexandra, China badam, Pomegranate, Karanj, Sapindus/reetha, Terminalia arjuna.

Plantation of shrubbery along the CC road

Replacing Hibiscus west of Mirza Nizamuddin's Tomb

The area west of the incomplete mausoleum of Mirza Nizamuddin was earlier planted with white flowered Hibiscus. However, they gradually succumbed to severe root rot infestation. To address this issue, a hardier alternative from a different plant family was selected – Plumeria pudica – which also produces white flowers, while offering has better disease resistance.

Plantation west of Mirza Nizamuddin's tomb

Orchard development

Mixed Plantation

A mixed plantation approach was adopted in various zones, native plantation was carried out in a mixed pattern while ensuring 5 metres or larger spacing between the trees to allow ample canopy growth. The planting pits measuring 3x 3 feet were prepared and left for so-larization for about a month. The pits were then filled with a 3:1:1 soil, and termicide spary was applied a day prior to plantation.

Mixed plantation was carried out in the following areas:

- North of Abdullah's tomb
- East of Muhammad Qutb Shah's tomb
- North of Hayat Baksh Begum's tomb
- North of Taramati's tomb
- Southwest of the cluster of smaller tombs
- Idgah area.

Trap cropping at perimeters of root system

Trap crop plantation at forecourt of Muhammad Quli's tomb:

To protect plants from nematode infestation, a biological control approach was implemented at the forecourt. Instead of using chemical treatments, lemon plants were introduced as a trap crop around the root zones, helping to mitigate nematode impact naturally.

NURSERY DEVELOPMENT

On east of rose garden, a plants stock area has been designated as a buffer zone to safeguard the supplementary plants. This stock serves as a reserve, ensuring the availability of replacement plants in case of mortalities at the Heritage Park.

In addition to the supplement trees, the area also supports the in-house development of herbal plants, flowering shrubs, creepers, indoor plants, and seasonal varieties.

Propagation practices such as cuttings, layers, and seed sowing in bags are actively carried out to increase the count of existing plant species. Additionally, seeds of various trees are also collected and stored for broadcasting them in ecological zone during rainy season, promoting natural plant regeneration.

Maintenance of plants in the nursery

DOCUMENTATION OF GROUND COVER FLORA

From July 2024, the horticulture team initiated the documentation of diverse ground cover at the Qutb Shahi Heritage Park. This effort stemmed from a growing recognition of vital role these often-overlooked plants in ecosystem health, biodiversity, and potential human uses. So far, over 60 species have been recorded, offering valuable insights into the Heritage Park's evolving ecology.

The Importance of Ground Cover Documentation

Biodiversity Assessment: Ground cover plants contribute significantly to local biodiversity. Understanding their distribution and abundance is crucial for conservation efforts.

- Ethnobotanical Potential: Many ground cover species possess medicinal, nutritional, or other practical uses. Documenting these uses, as seen with plants like Tribulus terrestris (managing blood sugar) and Boerhavia diffusa (leafy vegetable), can preserve traditional knowledge and unlock potential benefits.
- Ecological Role: Ground cover plays a vital role in soil health, erosion control, and supporting wildlife. Species like Indigofera spicata (nitrogen fixation) and Malvastrum coromandalianum (soil conservation) highlight these ecological functions.
- Baseline Data: This documentation establishes a baseline dataset that can be used to monitor changes in plant communities over time, particularly in response to environmental factors like climate change or habitat alteration.
- Educational Resource: The information gathered will serve as a valuable educational resource for researchers, students, and the general public, fostering a greater appreciation for local flora.

Photographic Documentation Across Seasons

- The ground cover is photographed across seasons, capturing variations in flowering, fruiting, and foliage.
- Close-up images highlight leaf structures, flowers, and seeds to aid in identification.
- Observations on habitat, uses, and interactions with pollinators are being recorded.
- This ensures a comprehensive visual record that complements the written documentation. High quality images are taken to clearly show the identifying features of each plant. Each image is then documented with the date, time, location, and any other relevant information.
- The project employs digital photography and utilizes standardized protocols for image capture and storage. This ensures consistency and facilitates data analysis. The goal is to create a comprehensive, accessible, and visually compelling record of the necropolises ground cover flora.

Ipomea hederifolia

Verbena (b)

Evolvulus alsinoides

Leonotis nepetifolia

Euphorbia heterophylla

VISITOR EXPERIENCE

20. Site Illumination

Supported by:

SWADESH DARSHAN

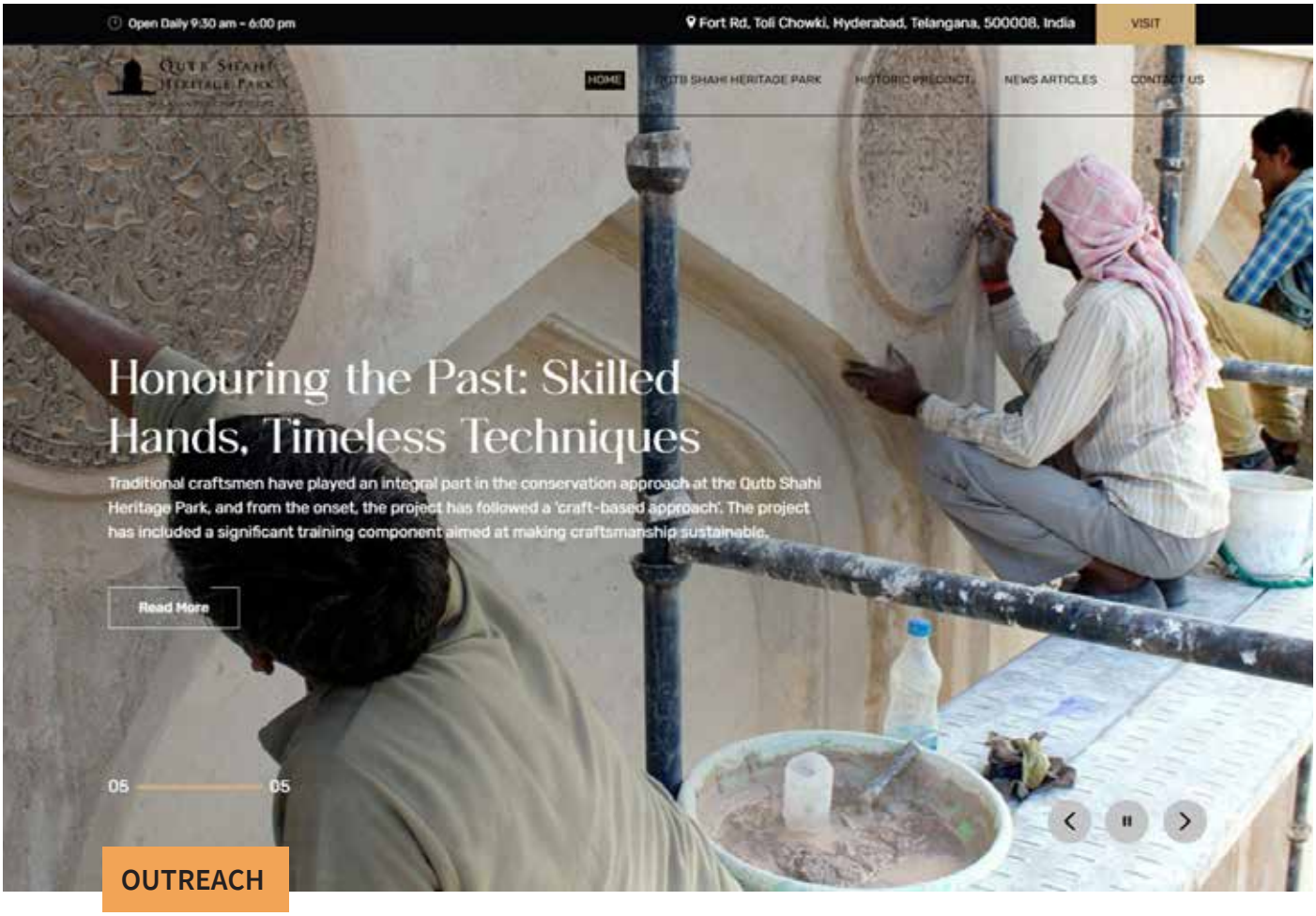
As part of ongoing efforts to enhance visitor experience and improve the overall safety and ambience of the Qutb Shahi Heritage Park, focused work has been undertaken in the past year to illuminate key monuments and pathways across the site.

The lighting scheme—subdued and controlled — is aimed to echo the historical site's sentiment and heritage value. The sensitively designed lighting solution of this historic landscape will mimic moonlight and will showcase the craftsmanship of the conservation works and therefore, help in the awareness about the site and making it central and integral to city's urban fabric. Lights can bring a bit of magic to the tomb-garden's settings and will be used to highlight architectural features and make glorious vistas.

ACTION TAKEN:

- After completing the illumination of the key monuments, focused efforts were made to light the visitor pathways across the Qutb Shahi Heritage Park (including Deccan Park) to ensure both safety and ambience during evening hours.
- The pathways are illuminated with light poles at equal intervals of 12m on the central pathway, vehicular access road, other waiting areas. These poles were chosen to harmonize with the historic character of the site while providing adequate and consistent lighting throughout the landscape.
- A pit of 1m by 1m for a depth of 750 mm was excavated for the foundation of the light pole.
- For each light pole, a foundation with a depth of 750 mm was excavated. A reinforced cement concrete (RCC) foundation column was cast to support the pole. A base plate with four bolts was embedded into the RCC foundation, allowing the light pole to be securely fastened.
- The wiring was done through the corrugated pipe connecting the laid electric line with the light pole emitting warm white light.

Illumination of the visitor facilities like lake, bridge, pathways at the Entrance Zone



OUTREACH

21. Social Media Outreach

The Qutb Shahi Heritage Park maintains an active and dynamic social media presence across multiple platforms, including Instagram, Facebook, and X (formerly Twitter). These platforms, managed by the Aga Khan Trust for Culture (AKTC) team, serve as key communication channels to inform the public and various stakeholders of the conservation efforts, share its rich history, and engage with a global audience. Additionally, the official website for the project was launched in July 2024, further enhancing its online visibility and providing an informative digital space for visitors and stakeholders alike.

ACTION TAKEN:

To ensure a broad and engaging social media presence, the following strategies were implemented:

- **Website Launch:** The official website was inaugurated in July 2024 by the Telangana Chief Minister, Mr. Revanth Reddy, to serve as a central hub for information. It aims to provide regular updates on conservation projects, events, and detailed historical content about the Qutb Shahi Heritage Park. The site is continually updated to provide a rich and dynamic user experience.
- **Project Updates:** Regular updates on ongoing conservation and restoration work at the Qutb Shahi Heritage Park and Paigah Tombs have been shared across all platforms. Detailed posts and visual content, including before-and-after images, showcase the work being done at the site, providing transparency to the public.
- **Historical and Cultural Insights:** The social media pages feature posts highlighting the history of the Qutb Shahi dynasty, the architectural significance of the necropolis, and the evolution of the site over centuries. This helps to educate and engage audiences about the heritage of the Qutb Shahi rulers.
- **Announcements and Events:** The social media channels also serve as the primary source for announcing events, exhibitions, and programs being held regarding the project. These announcements encourage participation and engagement from both local and international visitors.

(Left) A post on X from the Chief Minister's Office regarding the event held at Qutb Shahi Heritage Park, marking a decade of conservation and landscape restoration.
(Centre) A reel posted on Instagram by our project partner, Tata Trusts, about the conservation of Badi Baoli.
(Right) A reel posted by IndiGo at the conclusion of a Heritage Walk held at the Qutb Shahi Heritage Park as part of the initiative 'My City My Heritage'.

NEXT STEPS:

- **Continued Content Diversification:** The social media strategy will continue to evolve by incorporating more diverse content, such as video tours, interviews with conservation experts, and user-generated content from visitors. This will help create a more interactive experience for followers.
- **Enhanced Website Features:** The website will be further developed to include virtual tours, detailed educational resources, and an interactive map of the Heritage Park to improve the visitor experience.
- **Strengthening Partnerships:** Efforts will be made to expand partnerships with influencers, heritage organizations, and cultural institutions.

IMPACT:

The integration of social media and the launch of the website have had several positive outcomes:

- **Increased Awareness:** Social media has played a key role in raising awareness about the historical and cultural significance of the Qutb Shahi Heritage Park. Audiences worldwide have gained valuable insights into the importance of the site, which was previously less known to a global audience.
- **Support for Conservation:** The consistent sharing of conservation progress and challenges has generated increased interest and support for the restoration efforts.
- **Engagement with Stakeholders:** Social media has fostered direct engagement with government officials, heritage experts, and donors, who have used these platforms to express their support for the project and the necropolis. This has further amplified the visibility of the conservation initiatives and increased stakeholder involvement.

www.qutbshahiheritagepark.org/ facebook.com/QutbShahiHeritagePark instagram.com/qutbshahiheritage x.com/qutb_shahi_park

OUTREACH

22. Dissemination of Project Learnings

Every year, the project engages with academic institutions, cultural organizations, civil society groups, opinion leaders, conservation professionals, students, and policy makers who are interested in learning from the project's experiences or replicating its model or elements in their own work areas.

In addition to site visits, exhibitions and lectures are held to educate the public, raise awareness about heritage conservation, and promote understanding of the site's cultural importance.

ACTION TAKEN:

Heritage Walks and Site Visits:

Walk throughs of the Qutb Shahi Heritage Park, Paigah Tombs, and Saidani Ma Tombs were organized for key figures, including the Director of the Archaeological Survey of India (ASI), the Tourism Secretary, ambassadors, and senior officials. These walks provided firsthand experiences of the ongoing conservation work and allowed the team at AKTC to explain the historical and architectural significance of the sites, as well as the progress of restoration efforts.

- Chief Minister Revanth Reddy hosted representatives of 13 countries for a dinner at Qutub Shahi Heritage Park. This was preceded by a heritage walk by the AKTC team for representatives of America, Iran, Turkey, UAE, UK, Japan, Thailand, Germany, Sri Lanka, Bangladesh, Australia, France and Finland.
- A heritage Walk under the 'My City My Heritage' campaign was conducted on January 20, 2024. Organised by IndiGoReach, the CSR arm of IndiGo, and InterGlobe Foundation, the philanthropic arm of InterGlobe Enterprises, the walk was led by Mr. Ratish Nanda, CEO of the Aga Khan Trust for Culture.

(Clockwise from left) Poster for an exhibition showcasing the works in Delhi and Hyderabad; an exhibition held as part of the 'Completion Ceremony' at the Qutb Shahi Heritage Park, where the decade-long conservation efforts were presented to various dignitaries, including the Chief Minister of Telangana and His Highness Prince Rahim Aga Khan V; an exhibition on the restoration of the baolis at the India International Centre, New Delhi; and an exhibition at Sunder Nursery, Delhi, highlighting the conservation works at the necropolis, with a focus on the tiled mausoleum of Muhammad Qutb Shah

Exhibitions and Public Outreach:

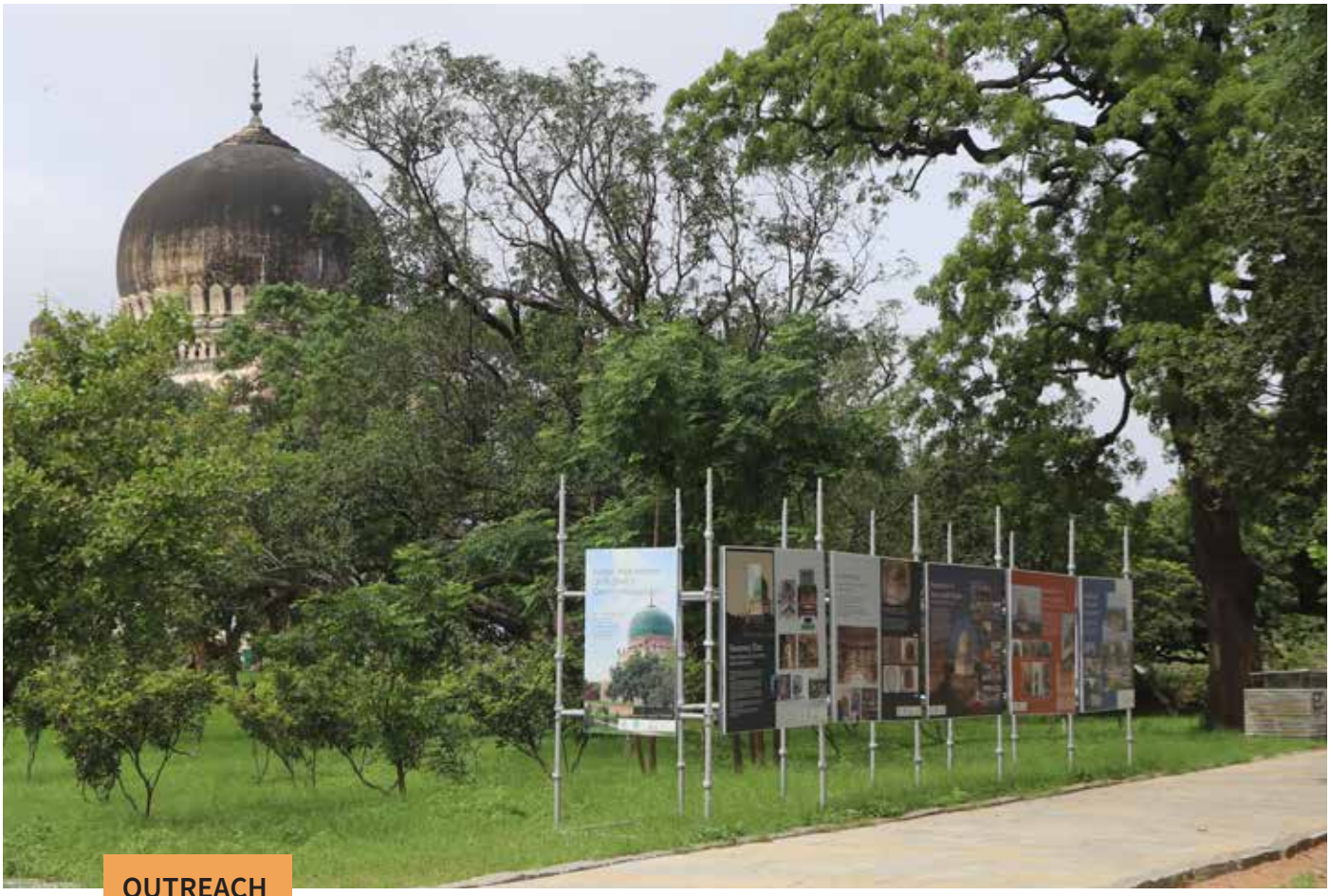
- Travelling Photo Exhibition: In February 2023, a photo exhibition about the restoration of six stepwells/baolis at Qutb Shahi Heritage Park was displayed in a specially-designed bus that travelled around Hyderabad. The bus visited schools, tourist spots, and cultural landmarks, showing the restoration work to local communities, students, and visitors.
- Baolis: Restoring Stepwells, Providing Life: An exhibition showcasing restoration of eight baolis, including the six at the Qutb Shahi Heritage Park, was held from 22nd - 31st July, 2023 at the India International Centre, New Delhi.
- Delhi and Hyderabad: a Green Renaissance: An exhibition and a series of talks on AKTC projects in New Delhi and Hyderabad were held from 18th – 25th November, 2023 at the Ismaili Center in South Kensington, London.
- Completion Ceremony: The culmination of over a decade of conservation and landscape restoration at the Qutb Shahi Heritage Park was celebrated with a closing ceremony on 28th July, 2024. This event included the launch of an on-site exhibition detailing the ten-year project.
- Qutb Shahi Heritage Park- Conserving a Royal Necropolis: An exhibition was held at the India International Centre in October 2024, showcasing the decade-long efforts of the Aga Khan Trust for Culture in conserving and restoring the landscape of the Qutb Shahi Heritage Park. Supported by the InterGlobe Foundation, the event highlighted the intricate tile restoration work at Muhammad Qutb Shah's mausoleum.
- Exhibition at Sunder Nursery: On 13th December 2024, a cultural event and exhibition took place at Sunder Nursery, New Delhi, supported by the InterGlobe Foundation. The exhibition highlighted the conservation effort at the Qutb Shah Heritage Park, with a special focus on the conservation of the tile work at Muhammad Qutb Shah's mausoleum. The exhibition was on display till February 2025.

(Clockwise from left) A talk was held as part of the exhibition 'Qutb Shahi Heritage Park - Conserving a Royal Necropolis' at the India International Centre, New Delhi; A poster for the symposium at Nalanda University was presented, which was held in partnership with the Aga Khan Trust for Culture; A poster for a Sarmaya Talk where a lecture, 'Qutb Shahi Necropolis: Conservation and Landscape Restoration,' was presented; The Dr. VK Bawa Memorial Lecture was held at the Qutb Shahi Heritage Park on April 9, 2023.

Lectures and Symposiums:

The AKTC team actively engaged with various educational institutions both in India and internationally, sharing their expertise on heritage conservation and landscape restoration.

- Notable engagements included a symposium at Nalanda University in Bihar titled ‘Restoring What is Lost: Heritage, Architecture and Culture’, organized by the School of Historical Studies in partnership with the Aga Khan Trust for Culture. During this event, the AKTC team presented the conservation approach at the Qutb Shahi Heritage Park, along with discussions on the cultural heritage of the Qutb Shahi era and screenings of films on conservation.
- Additionally, a talk was held at Center for South Asia at Stanford University, where Ratish Nanda, India CEO of AKTC, spoke on Preserving India’s Monuments – A 25-year Journey. A talk was also held as part of the "Sarmaya Talks" series in Mumbai on 28th July, 2023
- Similar talks were also held at the University of Pennsylvania and for students at Maulana Azad National Urdu University in Hyderabad further contributing to the exchange of knowledge on conservation practices and heritage preservation.
- As part of the exhibition Qutb Shahi Heritage Park – Conserving a Royal Necropolis held at the India International Centre, New Delhi in October 2024, two insightful lectures were presented. Historian, architecture conservator, and columnist Sajjad Shahid delivered a talk on the Cultural Practices of the Qutb Shahis, shedding light on the rich traditions and rituals of the dynasty. This was followed by an illustrated lecture by Ratish Nanda, CEO of the Aga Khan Trust for Culture (AKTC), who shared the conservation journey and ongoing efforts at the Qutb Shahi Heritage Park.
- On April 9, 2023, a Dr. VK Bawa Memorial Lecture took place at the Qutub Shahi necropolis in Hyderabad, focusing on the importance of Deccan discourse centered around people and culture, just a week before World Heritage Day.



OUTREACH

23. Site Signage and Exhibition

Over the years, the Qutb Shahi Heritage Park has developed a comprehensive signage system to enhance the visitor experience and encourage deeper engagement with the site's history.

Interpretive signage has been installed at each of the principal monuments, offering insights into their conservation and also their historical significance. Additionally, a permanent site exhibition near the entrance presents the larger narrative of the necropolis and the ongoing conservation efforts.
Building on this interpretive framework, this year saw the introduction of directional signage across the necropolis. These have been strategically placed to assist visitors in navigating the expansive 106-acre site, creating a more accessible and self-guided experience. Complementing this, an exhibition has been displayed across the site for visitors, showcasing the conservation and landscape restoration work undertaken over the years.

ACTION TAKEN:

- Directional signs were designed, fabricated, and installed at key junctions across the site. The signage system was developed in consultation with the conservation and visitor management teams to ensure optimal placement and consistency in visual language.
- Materials and design of the direction signs and the exhibition were carefully selected to be durable, weather-resistant, and in harmony with the heritage setting.

NEXT STEPS:

Expanding the signage system to include:

- Tree signage, highlighting native and historically significant species.
- Warning signs near water bodies, sensitive structures, and areas under conservation.
- Periodic review and maintenance to ensure legibility and structural integrity over time.

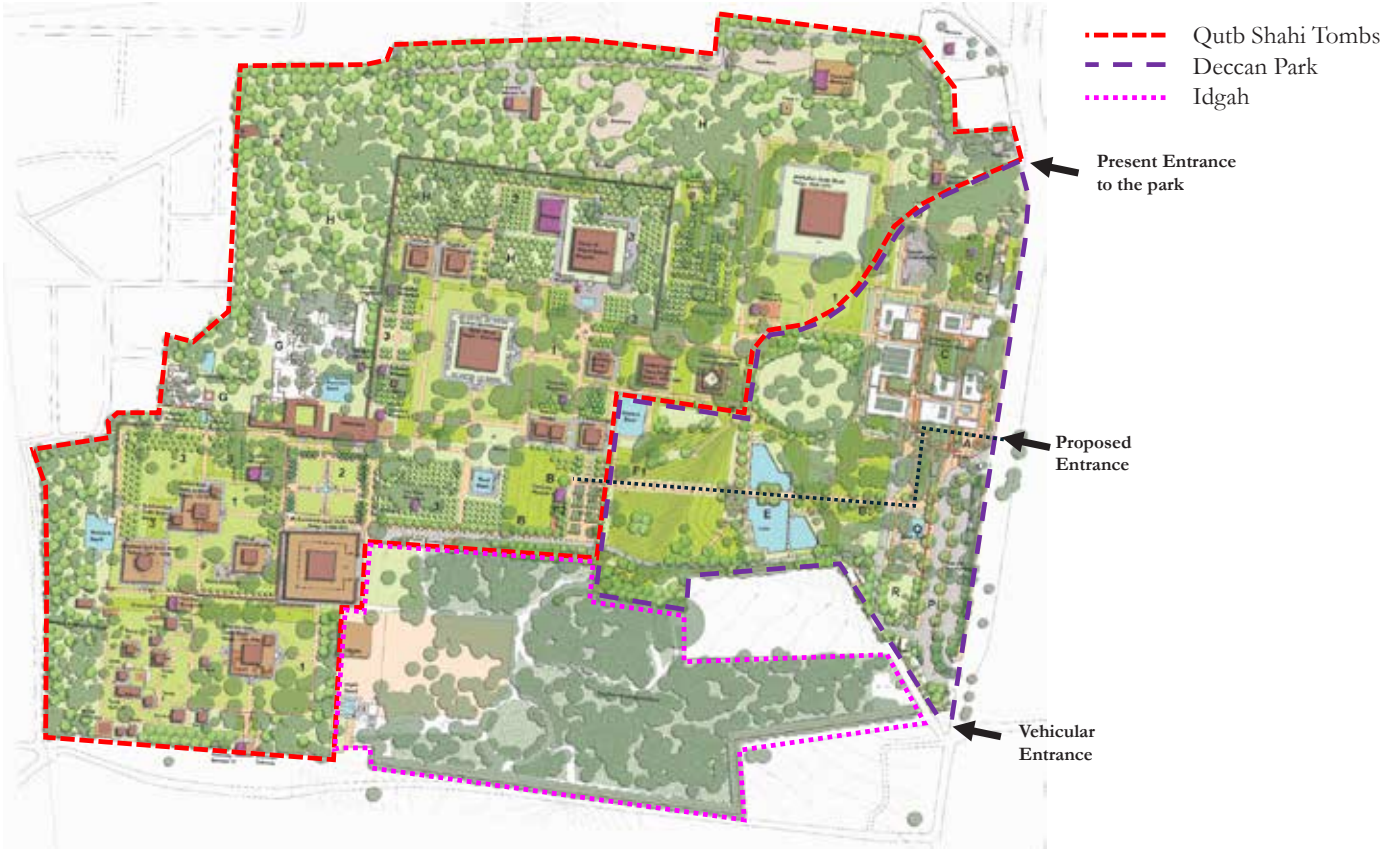
MANAGEMENT

24. Post-Project Management

As an effort to ensure world class management and long-term sustainability of the Qutb Shahi Heritage Park, a management trust is proposed to be established. To achieve this, the present-day Deccan Park and the Qutb Shahi Tombs will need to be integrated into a single complex and managed as one entity. This proposal is modelled on the Sunder Nursery Management Trust, formed between the Central Public Works Department, Archaeological Survey of India and the Aga Khan Trust for Culture, at the Government Sunder Nursery in New Delhi, which serves as a successful model of post-project management.

ACTION TAKEN:

- It was agreed in principle by the Government of Telangana, Department of Youth Advancement, Tourism and Culture for the establishment of Management Trust at QSHP, with the Sectretary, YAT&C acting as the Chairman of the Trust.
- The Department of Heritage Telangana(DHT), Quli Qutub Shah Urban Development Authority(QQSUDA), Telangana Tourism Development Corporation(TGTDC), and the Aga Khan Trust for Culture(AKTC) will serve as the Trustees.
- AKTC will act as the Managing Trustee, responsible for the day-to-day operations and management of the complex in a professional and sustainable manner.
- Detailed discussions were held among the relevant agencies of the Government of Telangana to determine an effective working model for the site following the establishment of the Trust.
- AKTC, in coordination with the Department of Heritage (DHT), QQSUDA, TGTDC, Municipal Administration and Urban Development Department (MAUD), and the National Institute of Urban Management (NIUM), has prepared a comprehensive proposal for the government's approval.
- The proposal includes the integrated management of the Deccan Park and the Qutb Shahi Tombs as a single entity. Public amenities developed under the Swadesh Darshan grant at the Deccan Park, such as parking facilities and the lake area, will serve as the entrance zone for the visitors leading up to the Core Heritage Zone.
- The various responsibilities of the Trust include site security,

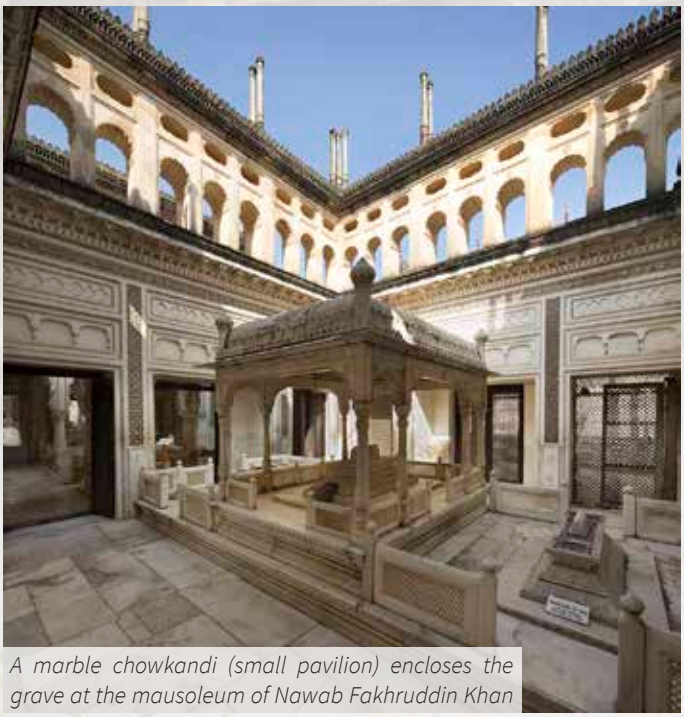


maintenance of horticulture works, housekeeping, waste management, management of utilities (including electricity and water grids), maintenance of monuments, upkeep of roads and pathways, lighting systems, and building services such as pumps, water bodies, drinking water facilities, and CCTV surveillance, among others.

- The Trust will also collaborate with various tour operators, educational institutions, colleges, senior citizen clubs, nature clubs, and others to promote public engagement and attract visitors from all sections of the society.
- A draft Trust Deed has been prepared by AKTC and shared with the Department of Heritage Telangana for further review and approvals.

NEXT STEPS:

The working model of the Management Trust and the draft Trust Deed has been submitted to the Government of Telangana by the Department of Heritage Telangana, for approval. Upon receiving the approval, the Trust will be formally established to ensure the effective management of the Qutb Shahi Heritage Park and to serve as a model for post-project management.



A marble chowkandi (small pavilion) encloses the grave at the mausoleum of Nawab Fakhruddin Khan

Mausoleum of Rashiduddin Khan

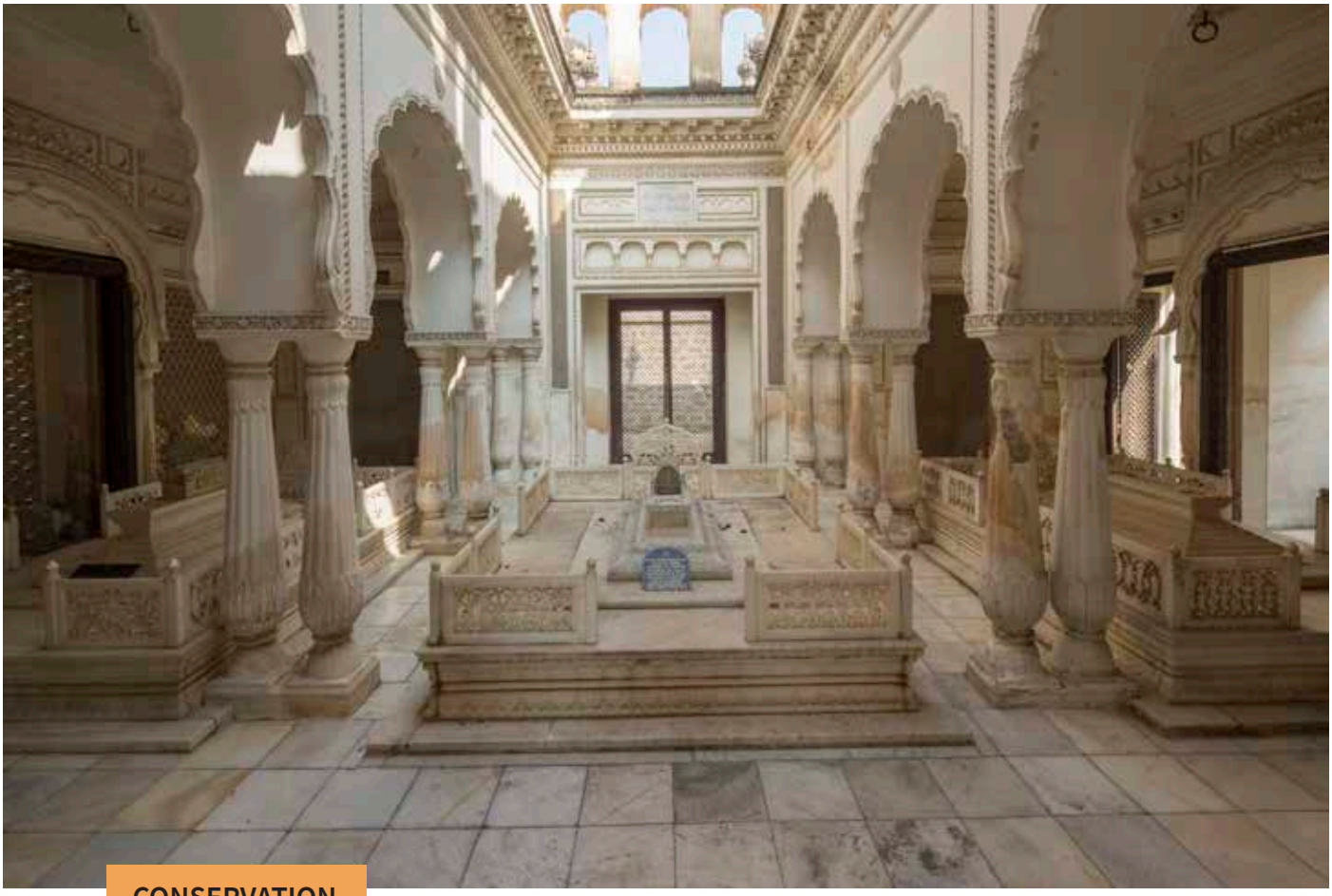
The Paigah Tombs are renowned for their fine latticed panels, and the intricate lime stucco work with geometrical and floral designs adorning all the monuments

Paigah Tombs

The Paigah Tombs are a magnificent collection of mausoleums serving as the final resting place for several generations of the nobility of Paigah family. The monuments are celebrated for their extraordinary architectural style. They are particularly renowned for their intricate lattice work, detailed stucco ornamentation and the marble graves, which showcase a high level of craftsmanship and artistic skill.

The necropolis consists of 11 tomb structures, grave enclosures, samakhana, an arched gateway, mosque and multiple ancillary structures built during the 200-year reign of Paigah dynasty.

The principal objective of the project is to enhance the visitor experience by conserving all structures within the complex.



CONSERVATION

25. Paigah Tombs

Built in the 18th century, the small complex of the Paigah tombs is a unique ensemble of intricately carved mausoleums with no comparative site anywhere in the world. The Paigah tombs are the resting place of the Paigah family of Hyderabad. The Paigah's were one of the most influential and powerful nobles of the time.

Since 2019, the Aga Khan Trust for Culture (AKTC) has been engaged in comprehensive landscape development at the Paigah Tombs, facilitated by the Swadesh Darshan grant. Subsequently, at the request of the Department of Heritage Telangana, AKTC extended its scope to encompass conservation works. In 2023, AKTC was awarded a grant from the US Ambassadors Fund for Cultural Preservation (USAFCP) for conservation of six of the most historically significant monuments within the Paigah Tombs complex, ornate with intricate incised plaster work.

Supported by

US Ambassadors Fund for Cultural Preservation

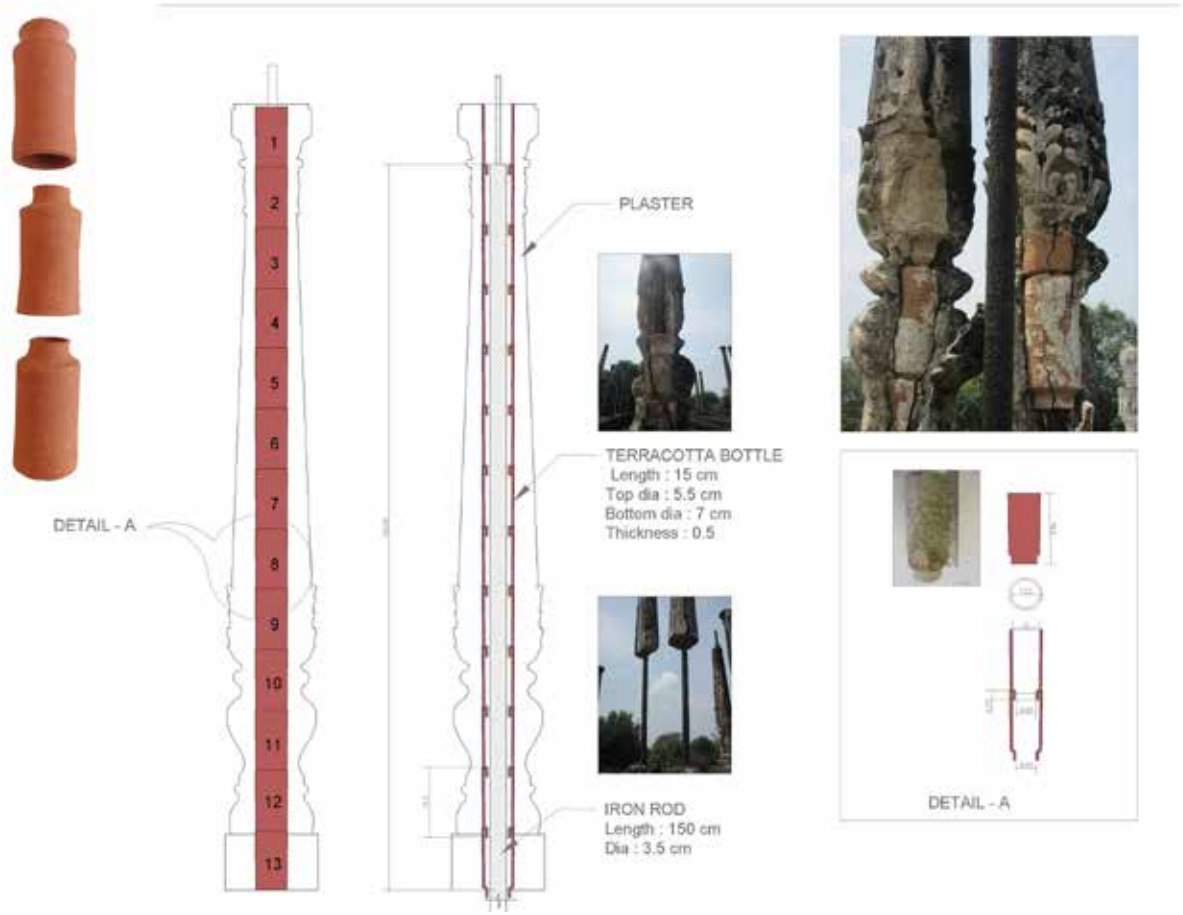
Monuments funded by US AFCP

1. Tomb of Nawab Abul Khan,
2. Tomb of Bashir-ud-Daulah,
3. Tomb of Nawab Fakhruddin Khan,
4. Tomb of Ladli Begum,
5. Tomb of Nawab Rashiuddin Khan
6. Tomb of Latif-un-nisa

The six 18th century mausoleums - Tomb of Nawab Abul Khan, Tomb of Bashir-ud-Daulah, Tomb of Nawab Fakhruddin Khan, Tomb of Ladli Begum, Tomb of Nawab Rashiuddin Khan and Tomb of Latif-un-nisa – for which funding has been received by US AFCP grant have an identical architectural layout, and are adorned with similar ornamental stucco details. The mausoleums have a square plan, characterized by a central, open to sky grave enclosure. These monuments are embellished with elaborate terracotta lattice screens, finished with lime mortar. Surrounding the grave chamber is an arcade, adorned with decorative pillars and ceiling medallions. The terrace level is defined by intricate lattice screen parapets and highly ornate minarets. Conservation approach for the six monuments are consistent as they share a similar architectural vocabulary.

By 2024 conservation works has been completed on - Tomb of Nawab Abul Khan, Tomb of Ladli Begum, Tomb of Nawab Rashiuddin Khan and Tomb of Latif-un-nisa and is ongoing on Tomb of Bashir-ud-Daulah, Tomb of Nawab Fakhruddin Khan.

Before commencement of the conservation works, detailed architectural documentation and condition assessment drawings have been prepared for each monuments to understand the layout and ornamental patters as well as to gauge the extent of damage.



(Above) Documentation of traditional construction techniques of the minarets - stacking of terracotta pipes on the iron rod, plastered with lime mortar; (Below) Local potters were engaged to customize the terracotta pipes for restoring the minarets

TERRACE

Following three years of significant effort to prevent any rainwater seepage, repairs were commenced on the minarets, battlements and lattice screen at the roof level.

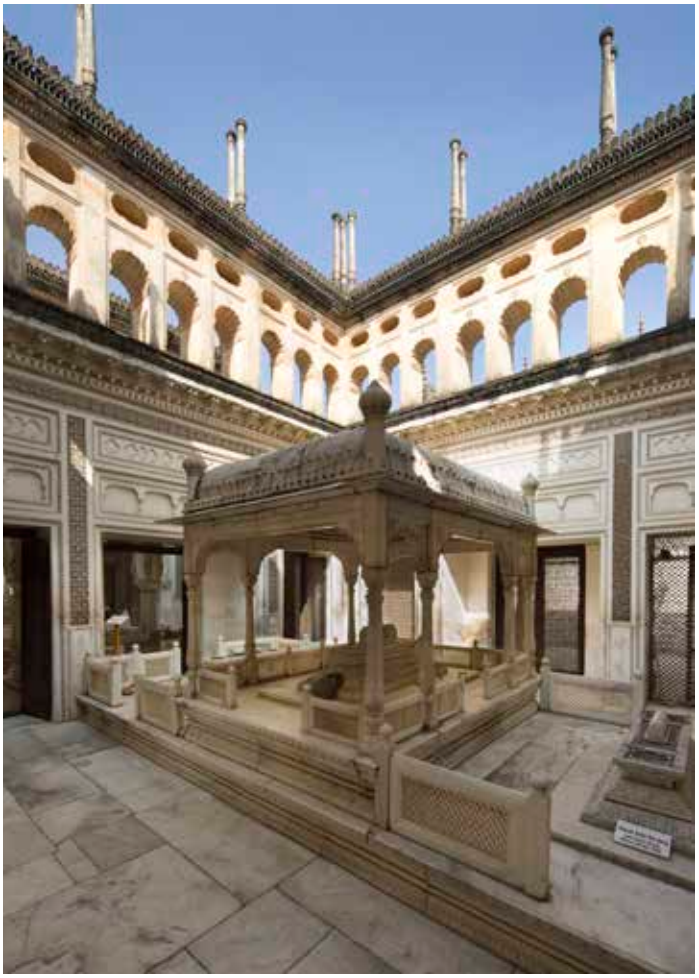
ACTION TAKEN:

- A typical mausoleum's parapet at the Paigah Tombs complex consists of two distinct types of minarets. External parapet is adorned with ornamental, bulbous minarets, with five clustered together to form a unique configuration. In contrast, the internal parapets are adorned with tapering fluted shafts.
- Before commencement of restoration, thorough investigation was carried out to understand the construction technique of minarets. The research revealed that the central core of each minaret comprises of stacked terracotta pipes, measuring between 10 and 12 inches in height around an iron rod. The skeleton is plastered with several layers of traditional lime mortar to achieve the required shape and size by master craftspeople.
- For restoration of the minarets, the terracotta pipes were meticulously hand-crafted by local potters, ensuring they match the historic evidence, leading to generating livelihood for local craftspeople and promoting indigenous crafts.

Reconstruction of missing and damaged minarets as per the traditional construction techniques by master craftspeople

- The minarets were all in an advanced stage of decay, with some missing and others had large damaged portions. Skilled craftspeople using traditional materials and tools, rebuilt several missing minarets on both external and internal parapet and restored intricate stucco plaster patterns.
- It was not possible to replace the iron rod with non-corrosive stainless steel rods at all places, as some original stucco remained on a majority of minarets, so anti-corrosive treatment was provided to iron rods that were exposed.
- Several battlements on the parapet at all monuments were either damaged or missing. Missing battlements were skilfully reinstated in stone masonry, finished with ornamental details in traditional lime mortar and damaged areas carefully restored by master craftspeople.
- The parapets are embellished with ornate stucco panels and intricate lattice screens, which exhibited serious damage with large missing portions, these have been carefully restored by master craftspeople using traditional construction techniques. Owing to the 50 mm depth of lattice screens, multiple layers of fine lime mortar was applied in three stages making it a tedious and time consuming process.
- Reconstruction of finials for all six monuments is currently underway. Traditional construction technique observed on the site - a framework of terracotta pots plastered with traditional lime mortar- is being employed.

Highly intricate lattice screen has been carefully restored by master craftspeople



GRAVE ENCLOSURE

The grave enclosures exhibit significant damage, including large missing portions of intricately carved lattice screens and damaged, decayed ornamental stucco patterns and floral bands. However, compared to the other areas, the enclosures are in a comparatively better state of conservation.

ACTION TAKEN:

- Minute cleaning of all the ornamental and plain plastered surface was carried out to remove algae and other deposits.
- Walls of Latif-un-nisa's mausoleum are adorned with elaborate ornamental stucco in lime mortar, large portions of these were missing and have been painstakingly restored by master craftspeople matching the original design in hand ground fine lime mortar.
- The cornice band, composed of multiple ornamental stucco bands, showcasies floral patterns and pineapple motifs. Large number of missing pineapple motifs have been restored by master craftspeople using hand-tools along with repairs of more than hundred meter of floral band.

More than 500 meters of intricate floral bands have been painstakingly restored by master craftspeople in grave enclosures

Tomb of Latifunnissa consists of elaborate intricately carved panels, large portions of the missing ornamental stucco in these panels have been carefully restored by master craftspeople

- In Ladli Begum's mausoleum, the cornice is supported by highly ornate brackets, several of these brackets were rebuilt matching the original design by master craftspeople using traditional techniques and materials.
- Mausoleum of Rashiuddin has a unique layout where a low height arcade is placed inside the enclosure. Both the arcade and walls of the enclosure are adorned with ornamental stucco bands of varying thickness which were largely damaged. More than 100 meters of ornamental bands were restored by master craftspeople matching original design.
- Extent of deterioration in the Tomb of Bashir-ud-Daulah, Tomb of Nawab Fakhruddin Khan is limited and largely concentrated on the mouldings and linear floral bands. After minute cleaning of plain and decorative surfaces, the damaged mouldings and floral bands were carefully restored in hand ground lime mortar by master craftspeople.
- Patterns of the lattice screen were simplified to understand their geometry and to identify the size of required terracotta tiles. The tiles are less than 2mm thick and are being crafted by local potters, reviving indigenous crafts and construction techniques. More than 20,000 tiles are required to restore 230 square feet of missing lattice screen.

The intricate details at the monuments were minutely cleaned, and the damaged plain and decorative surfaces were carefully restored

Master craftspeople restored the decorative bands at the tombs of Ladli Begum, Latifunnisa and Rashidduin

CORRIDOR

Corridor of all six monuments have similar layout with variation in ornamental details. Prevalent damages in the corridor include damaged ornate pillars and pilasters, missing intricate floral bands, decayed or missing intricate medallions and arch crowns. Also, the original flooring of the corridor has been replaced with later added incompatible cement concrete flooring. The corridors of the tombs of Ladli Begum, Latifunisa and Rashidudin.

ACTION TAKEN:

- Ornamental base of pillars and pilasters in the corridors have been damaged due to water seepage and extensive algae deposits and some have been disfigured by incompatible 20th century repairs. These have been carefully cleaned, following which the damaged and missing portion are being meticulously restored matching the original.
- Several pillars were severely damaged, exposing the stone base.
- The intricately carved pilasters flanking the doorways in all corridors sustained significant damage, exposing the stone masonry

Algae deposits from the plain and decorative surfaces was cleaned

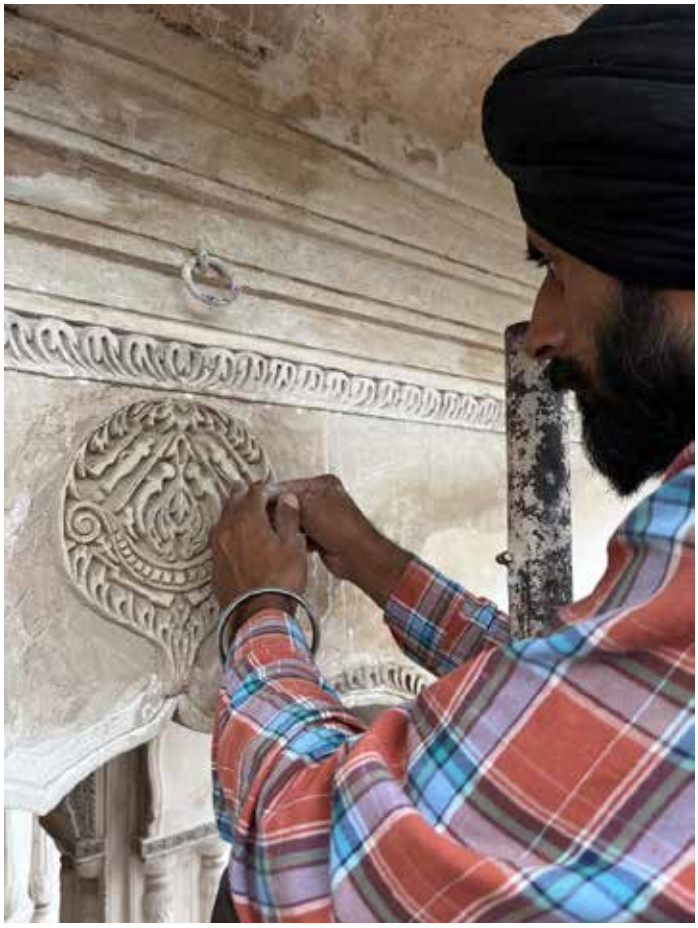
Master craftspeople painstakingly worked for 10 days to rebuild the pillars, matching the original design using traditional material and construction techniques. This was followed by replacing the 20th century cement concrete flooring in the corridors with marble flooring laid in an appropriate slope.

underneath. To address this, master craftspeople meticulously undertook the restoration of all 40 pillars and spent a total of 250 workdays.

- More than 25 missing and damaged ceiling medallion of 300 mm diameter were skilfully restored by master craftspeople matching the original design using hand tools and traditional construction materials. Similarly, several ornate arch crowns have also been restored in the corridors.
- Later added 20th century cement concrete flooring has been carefully dismantled and marble stone flooring has been laid in an appropriate slope in lime mortar in four monuments - Tomb of Nawab Abul Khan, Tomb of Ladli Begum, Tomb of Nawab Rashiuddin Khan and Tomb of Latif-un-nisa.
- Corridors of three mausoleums - Tomb of Bashir-ud-Daulah, Tomb of Nawab Fakhruddin and Tomb of Ladli Begum are adorned with nine different designs of floral pendants suspended from the eaves. For restoring the intricate floral pendants, experimentation with 3D modelling and 3D printing are being undertaken, as well as silicone moulds are made for each flower, after manually cleaning and minute repairs.

2023

2024



Facades of all the mausoleums are adorned with intricate stucco work - missing portions are being meticulously restored by master craftspeople

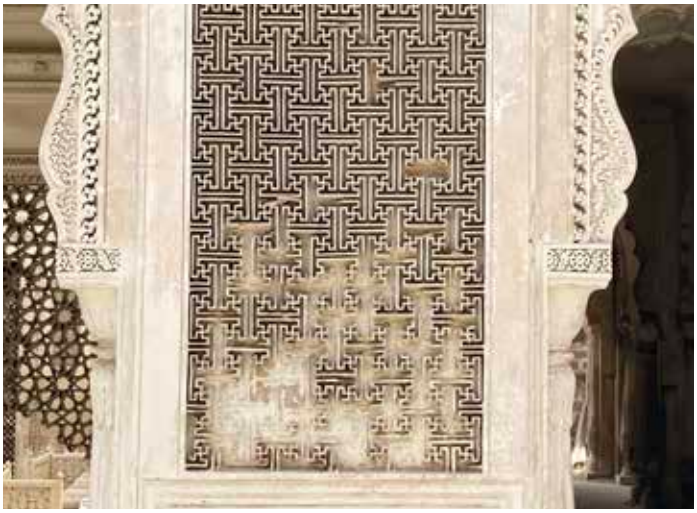
FACADE

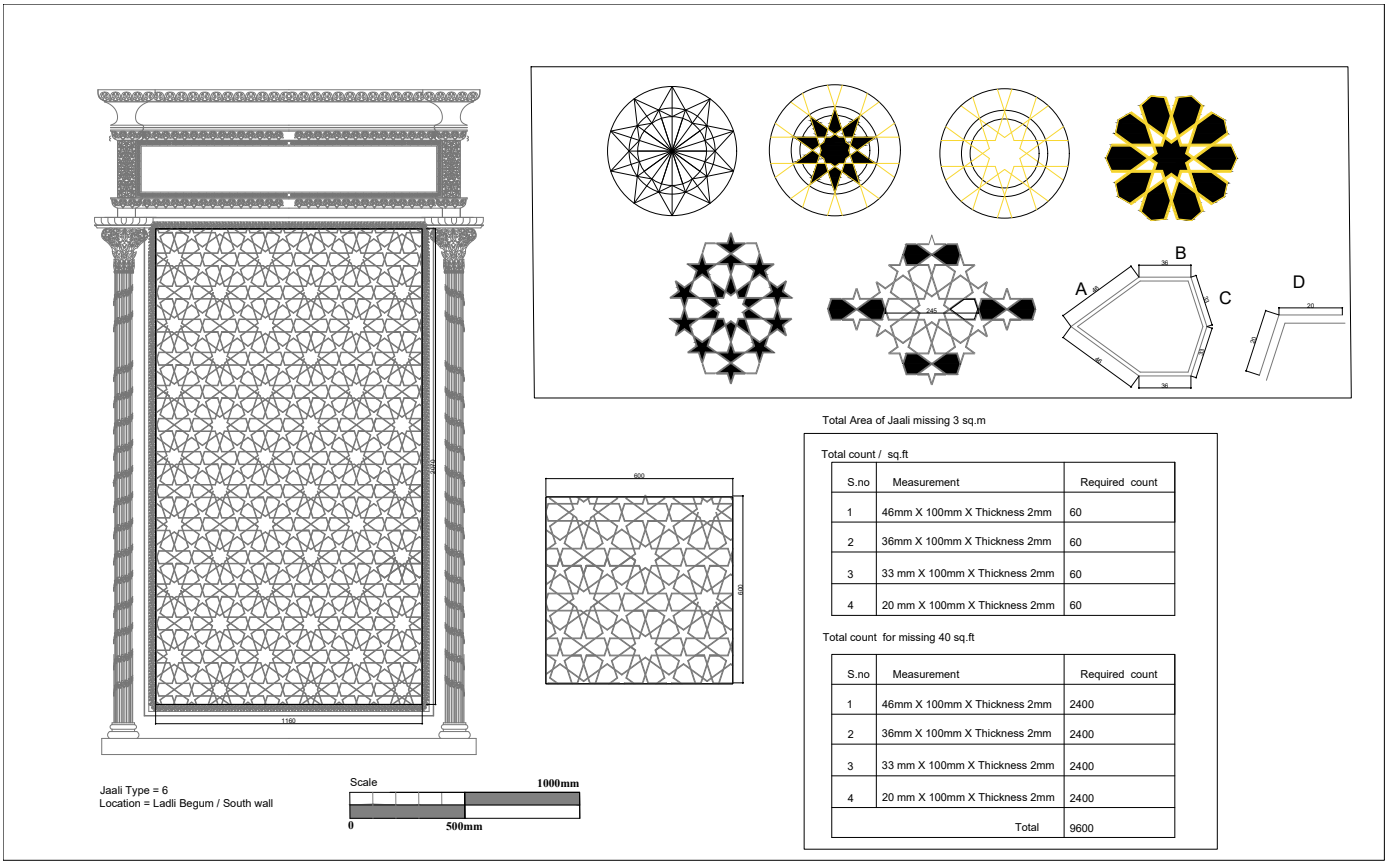
The façade beneath the eaves exhibits significant deterioration, including damage to intricate stucco patterns, missing arch crowns, and widespread deterioration of plain plaster. Additionally, each monument consists of four highly ornate circular pilasters, one at each corner, several of them are completely missing. Presently, the works have been completed at Tomb of Nawab Abul Khan, Tomb of Ladli Begum, Tomb of Nawab Rashiuddin Khan and Tomb of Latif-un-nisa.

ACTION TAKEN:

- Highly skilled craftspeople meticulously restored intricate stucco panels on the facade, with less than 5mm thickness, requiring ten work days to complete one square foot area.
- Arch crowns with varying designs have been carefully restored matching the original design using traditional material and techniques.
- The four ornate circular pilasters in each corner of the mausoleum showcase exceptional craftsmanship and seven of them at the Tomb of Ladli Begum and Tomb of Rashid-ud-din were largely damaged. Master craftspeople painstakingly restored the pillars matching the original design in around 75 days.

The lime stucco panels on the facades were damaged in several areas and were meticulously restored using hand-ground lime mortar



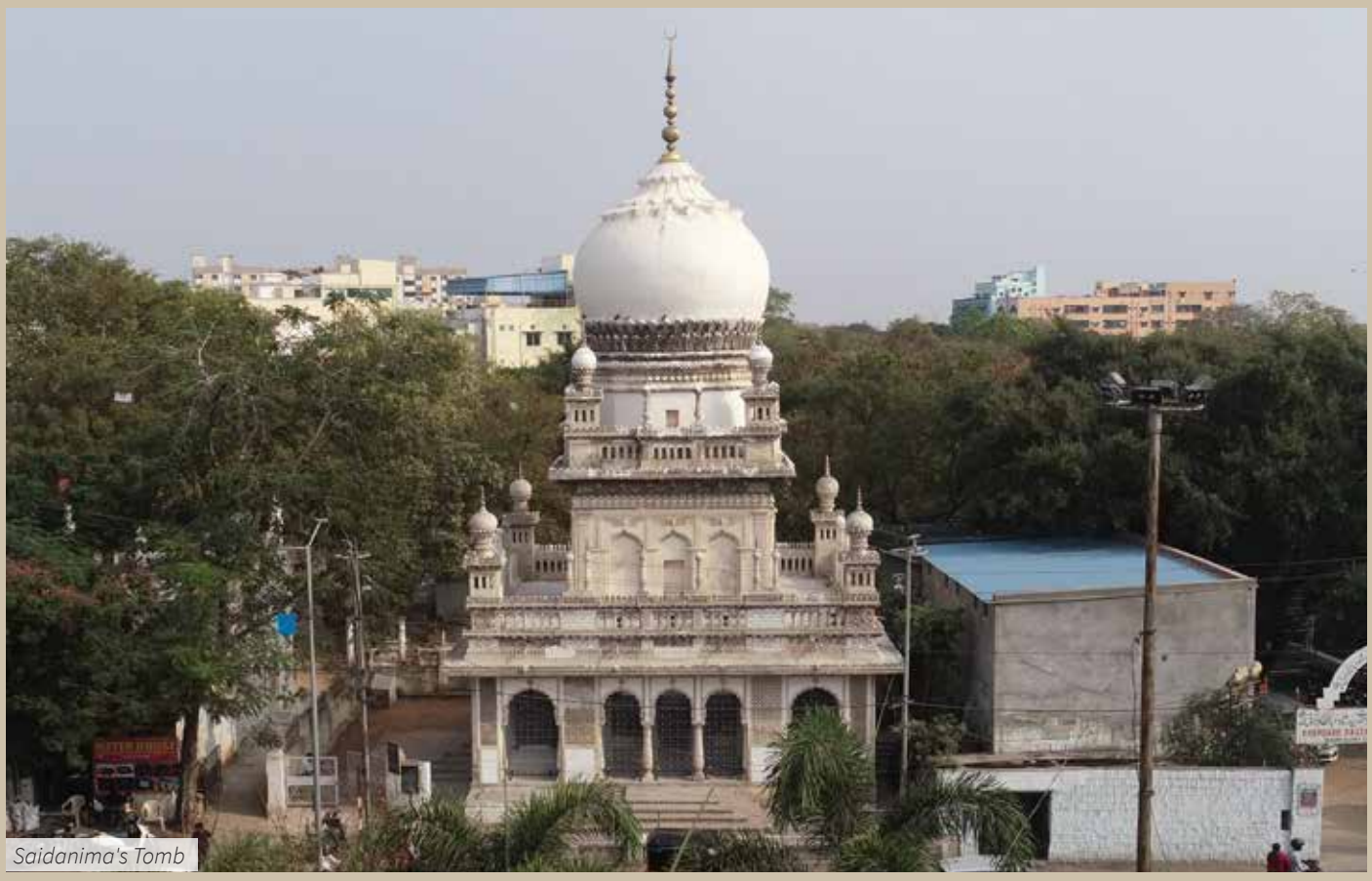


NEXT STEPS:

- The remaining repair works at the tombs of Bashir-ud-Daulah and Nawab Fakhruddin Khan will be completed. A modern waterproofing layer will be applied to the terrace to safeguard the roof, and galvanized iron rainwater spouts with anti-corrosive treatment will be installed at the existing drain holes to ensure efficient drainage.
- Ornamental bands in the grave chambers of Bashir-ud-Daulah and Nawab Fakhruddin Khan will be repaired, and conservation works on their facades are also expected to be completed in the coming year.
- Restoration of the missing and damaged ceiling medallions and arch crowns, along with the installation of marble flooring in the corridor of the Tomb of Bashir-ud-Daulah and Tomb of Nawab Fakhruddin Khan, is also planned. Additionally, intricate suspended floral pendants will be reinstated at the eaves level.
- Restoration of the intricate lattice screens on all six monuments will commence, carried out by a team of specialized craftspeople.
- Missing finials on all the monuments will be carefully reinstated by master craftspeople, matching the original design as per archival image

Sheikhpet Sarai

Naqqarkhana



Saidanima's Tomb

Conservation of

Saidani Ma's tomb and Baoli
Sheikhpet Sarai
Naqqarkhana at Badshahi Ashoorkhana

Since 2023, the Aga Khan Trust for Culture in partnership with the Department of Heritage Telangana and supported by Hyderabad Metropolitan Development Authority (HMDA), has been conserving Saidani Ma's tomb and Baoli, Sheikhpet Sarai and Naqqarkhana at the Badshahi Ashurkhana.

At Saidanima Tomb(1880s) and the adjacent Baoli, works completed in the year 2024 reinstated the lost lime stucco on the facade of the tomb, and revived the adajcent Baoli thereby recharging the ground water table.

At Shaikpet Sarai, a late 17th century rest house for travellers and merchants, conservation efforts focus on the serai, stables, a mosque, and an unidentified tomb, with plans to adaptively reuse the site as a craft and performance hub with exhibitions, cafr supported by landscape development.

The Badshahi Ashurkhana complex encompasses the conservation of two primary structures: the Badshahi Ashurkhana and the Naqqarkhana. Naqqarkhana is in a state of severe disrepair, with large sections of its roof having collapsed. The project's objective is to stabilize and revive this structure by introducing new steel frameworks for essential structural support. Conservation efforts for the Ashurkhana will focus on preserving its historic timber roof, thereby ensuring the building's long-term preservation.

CONSERVATION

26. Saidani ma's Tomb

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Saidani Ma Tomb, the mausoleum of Hazrath Saidani Ma Saheba is situated north east of the Hussain Sagar Lake in Hyderabad. The tomb was built by Nawab Abdul Haq Diler Jung, an officer in the Nizam's Railways in the 1890s for his mother. This state protected monument is one of the most magnificent funerary structures of the Asaf Jahi-era, combining the Asaf Jahi craftsmanship with the building typology of tombs built during Qutb Shahi period.

The environs suggest that it was situated inside a complex with an existing stepped well / baoli, smaller well-crafted stucco graves along with a modest tomb of Nawab Abdul Haq Diler Jung.

1888

Archival image by Lala Deen Dayal
Source: Getty Museum Collection

ARCHIVAL RESEARCH

Conservation efforts at Saidani Ma's Tomb were preceded by a thorough study of archival texts and historical photographs to better understand the original conception of the monument. This research aimed to uncover the historical context, architectural intent, and subsequent alterations that the structure had undergone over time. The objective was to ensure that all conservation actions respected the monument's historical integrity and aligned closely with the intentions of the original builders.

Key archival references included:

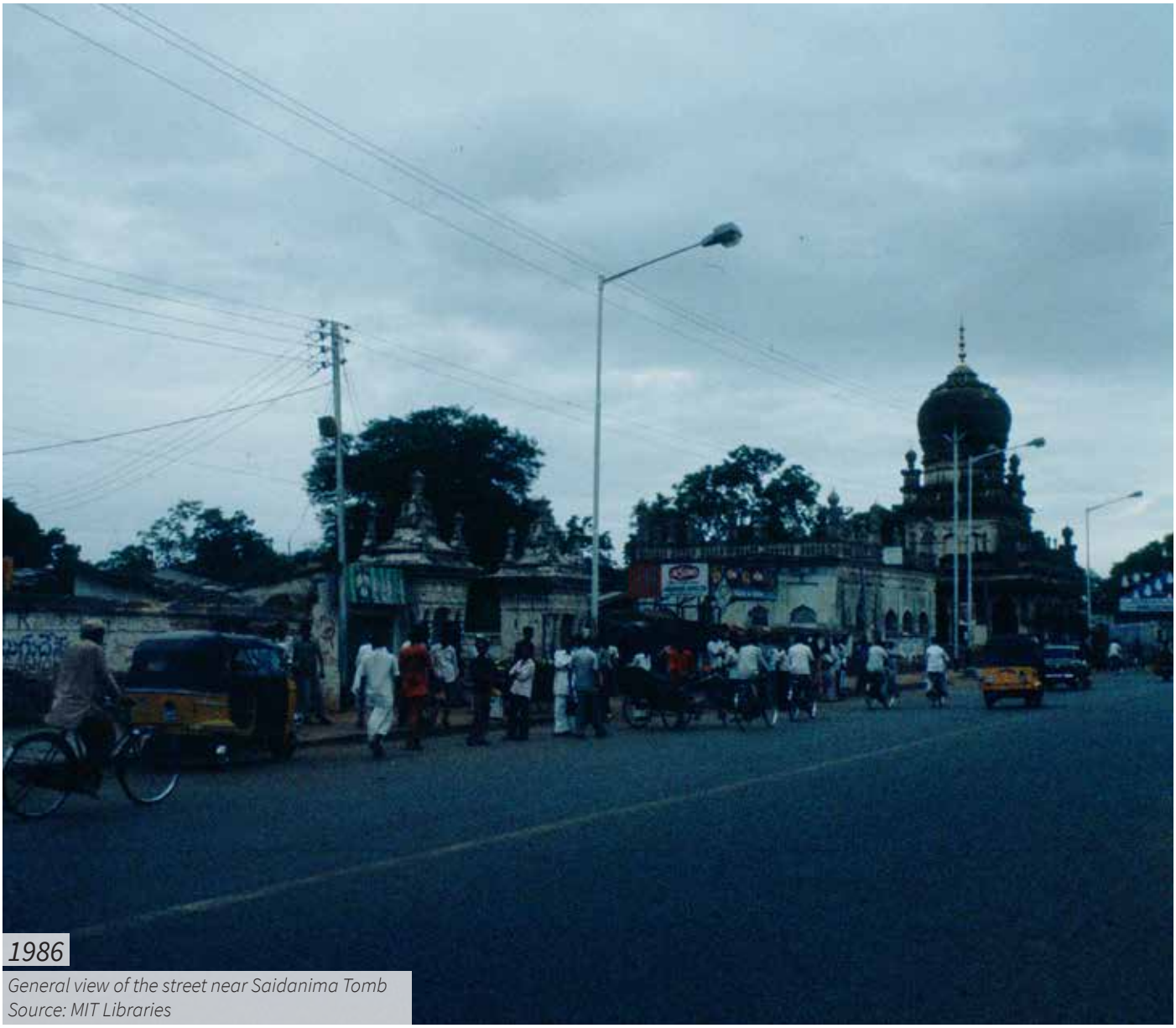
- Dayal, L. D. (1888). Tomb at Secunderabad [Albumen silver print], Getty Museum Collection.
- Khalidi, O. (2009). A Guide to Architecture in Hyderabad, Deccan, India (1st ed.), Aga Khan Program for Islamic Architecture & MIT
- Roxburgh, D. J. (2014a). Envisioning Islamic Art and Architecture (Vol. 2), Brill.

Among these, the 1888 photograph by Lala Deen Dayal proved particularly valuable. It revealed the presence of a stone wall to the west of the tomb, as well as original lime stucco parapet designs that had been lost over time. The study also placed Saidani Ma's Tomb in the broader context of Asaf Jahi-era architectural traditions, showcasing its parallels with the richly ornamented Paigah Tombs.

ACTION TAKEN:

Based on the archival research, several key insights informed the conservation strategy:

- The archival image by Lala Deen Dayal helped identify original parapet details in lime stucco, which had been replaced in later repairs with cement casts of floral templates. These findings guided the reinstatement of original detailing techniques where feasible.
- Roxburgh's essay shed light on the historical circumstances surrounding the tomb's construction by Abdul Haq Diler Jung, providing a cultural and political backdrop to the monument's grandeur.
- Archival comparisons revealed that the western compound wall had undergone significant changes, including the addition of a stone masonry coping and a metal grill. The central entrance, once prominent, had been blocked with brick masonry—details that informed restorative choices.
- With a clearer understanding of the tomb's original features and historical transformations, conservation works were planned to reflect the structure's authentic character while addressing structural and material concerns sensitively.



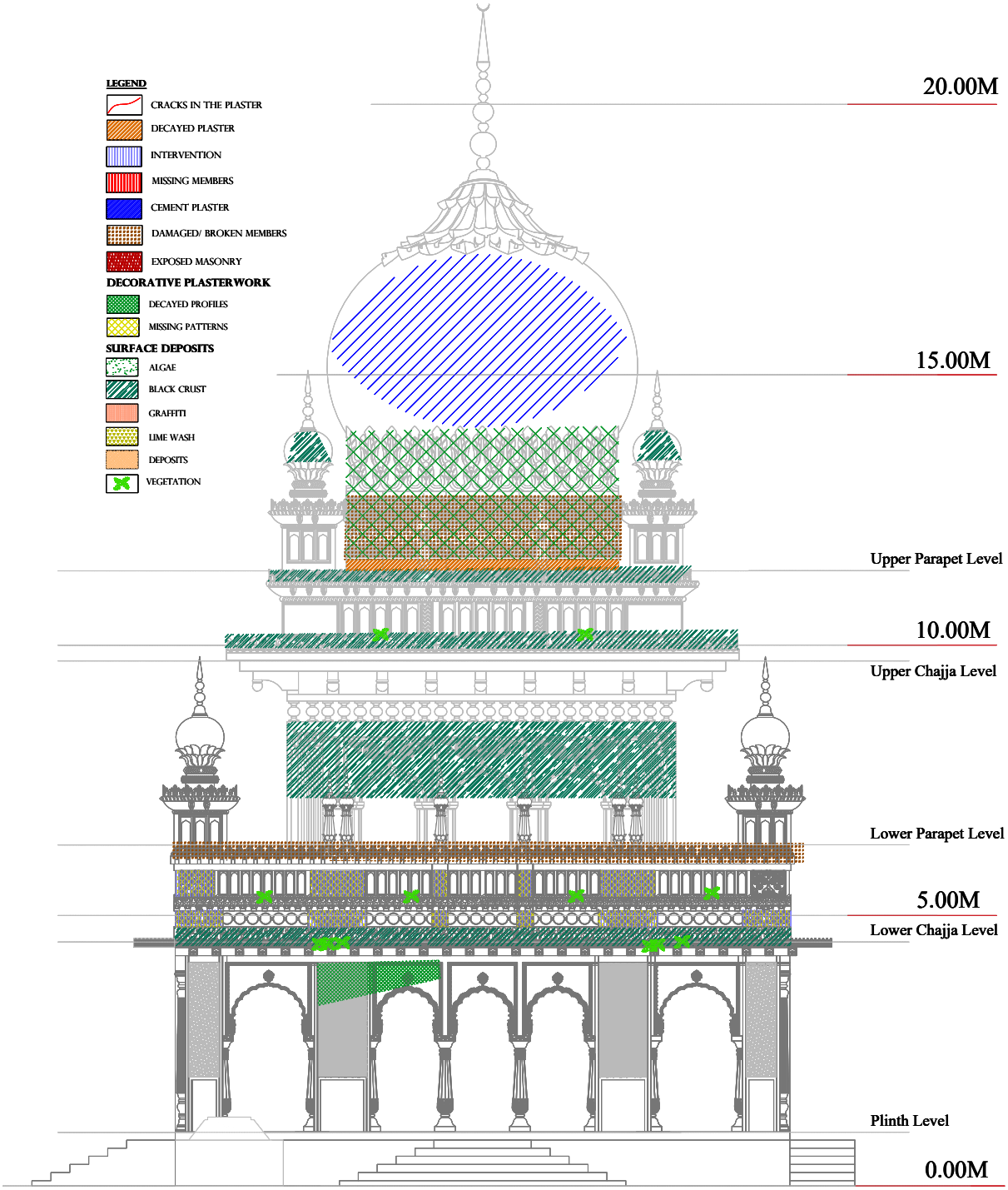
1986

General view of the street near Saidanima Tomb
Source: MIT Libraries

ARCHITECTURAL DOCUMENTATION

As a precursor for the conservation works, an exhaustive recording, documentation and archival research exercises were undertaken. This included the preparation of detailed architectural plans at ground, intermediate, and roof levels, and typical elevations. Additionally, thorough photographic documentation was compiled.

Furthermore, an exhaustive study of the stucco plaster patterns was conducted. This documentation proved invaluable for the restoration process.



S.No.	Description	in Meters

Condition Assessment
Saidani Ma's Tomb

Architectural Documentation

N

Scale

Date: AUG, 2023 | Documented by: AKCSF

Dwg No.: ST/AD/01

2023

2024

Final lime punning of the dome was completed after surface repairs and replastering

EXTERNAL SURFACE OF DOME

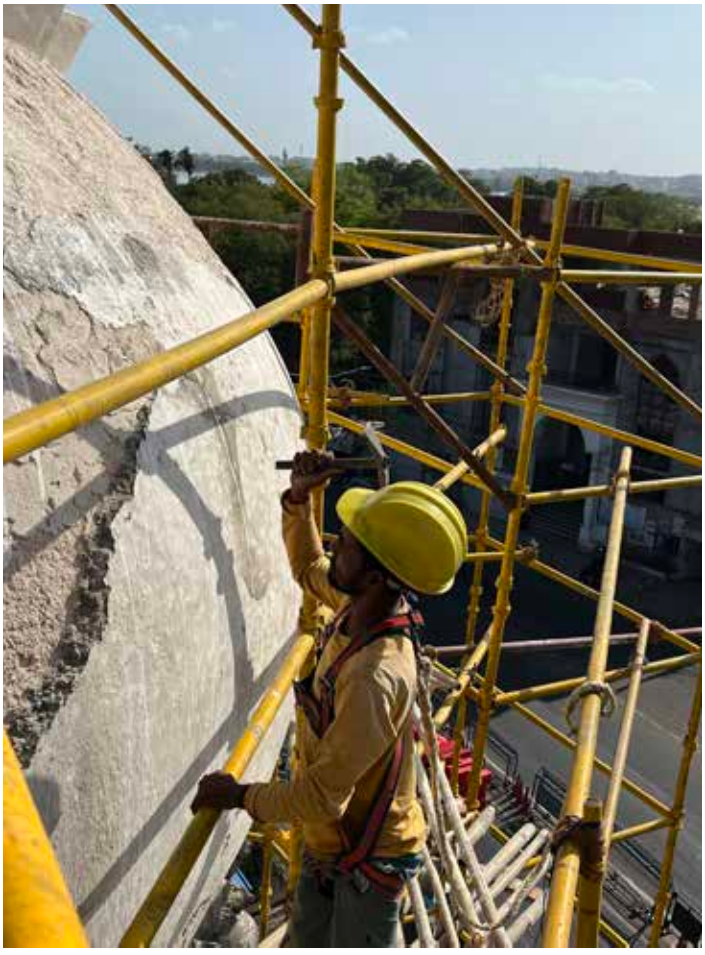
The tomb is crowned by an elegantly proportioned onion dome, a distinctive architectural feature that enhances the monument's visual appeal. The dome sits on a twelve-sided drum and is adorned with 16 petals, arranged in three levels with distinct profiles. A copper finial sits at the apex, completing the composition. The intricate lime stucco bands at the neck of the dome are the its most striking feature, a specimen of the craftsmanship of its era.

Prior to conservation, a detailed condition assessment revealed a critical situation for the historic dome. A thick layer of modern cement plaster (5 inches) that had been applied over the original surface, trapped moisture, causing internal water damage. Moreover, the cement plaster had distorted the original form of the dome. The decorative elements on the dome including the uppermost petals, double-petaled band, and intricate neck bands, all exhibited erosion. Furthermore, closer inspection exposed prior repairs using cement plaster, necessitating their dismantling for proper restoration.

These findings underscored the urgency of the conservation efforts to address water damage, structural issues, and hidden deterioration, ultimately aiming at preserving the monument's integrity.

ACTION TAKEN:

- The repairs works at the dome started with erecting a scaffolding system up to the height of 90 ft all around the dome.
- At the onset, external limewash layer on the petals was cleaned followed by tracing the original profiles on the three bands. The 48 tri-layered petals were cleared of the 20th century cement plaster and restored to their original shape in lime by master craftspeople.
- A comprehensive restoration effort addressed significant damage to the dome. The inappropriate modern cement layer, up to 5 inches thick, was meticulously removed by hand, revealing the original lime plaster beneath.
- A team of twelve craftspeople then applied a base coat of lime mortar to even the surface and retain original profile, followed by multiple layers of traditional lime punning for a smooth and restored finish. This painstaking process not only addressed structural concerns but also ensured the dome's historical integrity was preserved.



(Clockwise from left)A 5-inch thick layer of cement plaster had been applied to the dome during previous repairs, which led to water seepage. This cement layer was manually removed to expose the original surface; The decorative finial base, was restored using rich lime mortar; Ornamental lime stucco petals at the neck of the dome were restored with high precision by the lime craftspeople

- The dome's restoration extended beyond its surface. Following a meticulous cleaning, the 96 ornamental petals below the dome were repaired and coated with a thin layer of lime punning. This process involved recreating damaged profiles using traditional techniques and materials. Similarly, the surrounding decorative bands—including the rope band, diamond band, and the distinctive pot-shaped band—were conserved in detail. Craftspeople also reinstated the missing floral medallions (150 mm in diameter) along the rope bands.
- The twelve-sided drum of the dome, with each side measuring approximately 1.35 by 1.4 meters, had also been covered with an inappropriate modern cement layer. This was carefully removed and replaced with a traditional lime mortar base and punning. This ensured consistency in both structural integrity and historical authenticity throughout the entire monument.

The dilapidated minarets were restored by repairing broken elements and recreating missing details

PARAPET WALLS

The parapet at upper and lower levels runs along the edge, off-setting outwards in the middle. The parapet wall is joined by 2 m high ornately decorated minarets at the 4 corners on both upper and lower level. Another set of slender parapet minarets with bulbous capitals, measuring up to 1.2 are perched on the decorated wall. The parapet also has a coping of a series of intricate motifs in lime stucco. A similar decoration is observed on the edge of the parapet wall chhajja supported by monolith granite brackets.

It was observed that the parapet wall had algae deposition on the surface. The motifs were also damaged and missing at various instances. The corner and parapet minarets also showed signs of dilapidation in the form of vertical cracks and missing petals at the capital and base. The bulbs on the corner minaret required a fresh layer of lime punning as the original withered over time.

ACTION TAKEN:

- The repair works started with cleaning of the lime surfaces using wire brush to get rid of the algae and other unwanted finishes. Two teams of 3 craftspeople each repaired the minarets and the lime motifs, respectively. The bulb of the northwest corner minaret had to be replastered due to multiple cracks and missing leaf motifs at its base. The laborious task of removing snow-cem finish from the granite brackets was also completed manually.
- One of the most significant conservation work were carried out on the lower parapet of the monument. An 1880s archival image by Deen Dayal, the then official photographer of the Hyderabad State, shows the original design panels on the parapet facia. These design panels were ornately carved in lime stucco and made distinct from the other by master artisans of the state. They also bear testimony to the attention to detail of the built craft and standards of finesse set in the yesteryears.

The 1880s archival image revealed the original decorative details and patterns in lime stucco on the parapet

During previous repairs, the original decorative lime stucco panels were replaced with pre-cast cement motifs

Taking cues from the archival image, master craftspeople skillfully recreated the parapet's original design using traditional materials, replacing the pre-cast cement panels

- The repair works started with cleaning of the lime surfaces using wire brush to get rid of the algae and other unwanted finishes. Two teams of 3 craftspeople each repaired the minarets and the lime motifs, respectively. The bulb of the northwest corner minaret had to be replastered due to multiple cracks and missing leaf motifs at its base. The laborious task of removing snow-cem finish from the granite brackets was also completed manually.
- One of the most significant conservation work were carried out on the lower parapet of the monument. An 1880s archival image by Deen Dayal, the then official photographer of the Hyderabad State, shows the original design panels on the parapet facia. These design panels were ornately carved in lime stucco and made distinct from the other by master artisans of the state. They also bear testimony to the attention to detail of the built craft and standards of finesse set in the yesteryears.
- However, successive repairs in the 20th century resulted in the original panels in lime replaced by pre cast design motifs in cement which were replicated according to the size of the panel. These cement motifs were removed from the parapet to look for any in-situ evidence or remains of the original design panels. The remains of the original designs in lime were completely lost and had to be retraced by conservation architects from the sole surviving evidence of the 1880s' archival image. These original designs found their home back on the monument and significantly contributed to restoring its integrity. Eight master craftspeople worked meticulously in chiselling out the same curves and motifs and finished all 24 panels with a rich layer of lime punning..
- The archival image also showed waterspouts on the wall, which were now either sealed or made dysfunctional due to altered terraced levels. Twelve new waterspouts were installed and carefully designed to avoid discharging water to the chhajja below, and easily drain away from the building.

Broken portions of the parapet were repaired and restored using lime mortar

Damaged capital bands repaired using traditional lime plaster at the middle level facade

MIDDLE FACADE

The façade at the lower level terrace is recessed by 3 arches on all sides. An intricate scroll design decorates the space above the arches. The arched façade is capped by twin stone bands of solid granite with a series of protruding pot shaped details in between. The granite brackets supporting the upper level chhajja rests on the top granite band. The facades are finished in vertical fluted details at the corners.

ACTION TAKEN:

- The recessed arches had no major defects, except for the algae deposition on surface due to rain exposure, and the lime plaster at the corner flutes had come loose from the wall surface which needed repairs. The stone bands, like the brackets, were also painted with modern paint, hiding the rich texture of hand dressed granite.
- Lime craftspeople worked on the dilapidated corner details based on the existing on-site evidence. The repaired flutes were matched to the original in lime and later coated with lime punning. The manual removal of modern paint from the stone surfacesenhanced the appearance of the arched façade and, in turn, restored the monument closer to what was envisaged by the original builders.

Modern paint was manually removed from the stone bands, revealing and restoring their historic appearance

Broken portions of the vertical fluted detail were expertly repaired


2023


2024

LOWER FACADE

Intricate geometrical patterns and multi-foiled arches resting on slender columns adorn the 4.2 m high lower-level façade on all sides of the monument. The geometric patterns are similar to those decorating the exteriors of Paigah Tombs, a contemporary to Saidani Ma's tomb. All five arches on each façade are lined with multiple decorative and plain borders which end in a highly sophisticated pendant– a unique Asaf-Jahi era detail. The arches are finished in complex arch crowns at the apex, each different from the other. The arches stand on well composed half columns attached to the adjacent walls with ornate band of leaf motifs in lime running at the top and bottom with vertical flutes on the tapered body. The façade is joined with the overhanging chhajja of about 770 mm supported by 28 brackets in lime on each side with lime motifs.

The façade had been coated in multiple modern paint layers in earlier repairs, which concealed the intricate details of arch crowns and arch borders. Algae had formed and dried in the dense geometric pattern of the external panels compromising their strength and design in several instances. Continuous water dripping from the overhang chhajja also defaced the lime brackets. The columns also suffered from missing and broken leaf details at the capital and base.

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ACTION TAKEN:

- The primary task was to remove all the modern paint layers so that repair works of the broken or missing details could be estimated. A team of eight highly skilled artisans carefully removed the paint which had penetrated the depressions and curves of intricate details, working on two facades at a time. The dense arrangement of design on the geometric panel was cleaned using specific narrow tools which could reach the depth of 30 mm, effectively removing all the algae deposits.
- The cleaning revealed the damaged portions which needed repairs, such as the panel on the west façade. An area of about 10 sq ft had to be repaired due to completely missing and damaged details. Architects traced the original pattern and aligned it precisely with the missing area.
- The master craftsman then began the repair work, starting with a base plaster layer, followed by a coat of fine plaster. The original pattern was traced onto this surface and the intricate details were carefully carved out.
- Meanwhile, another team of lime craftspeople repaired the arch crowns, arch borders, pendant details, and restored the leaf motifs at base and capital of pillars wherever they were missing.
- The arch borders on the southern facade had come loose on all five arches and had to be restored from scratch, which took approximately 100 manhours to complete.

The missing and damaged portions of the decorative stucco details on the facade were restored by master craftspeople using traditional materials, tools, and techniques

Damaged decorative motifs at the internal dome were restored. Organic red ochre was reapplied to the ornate bands based on in-situ evidence

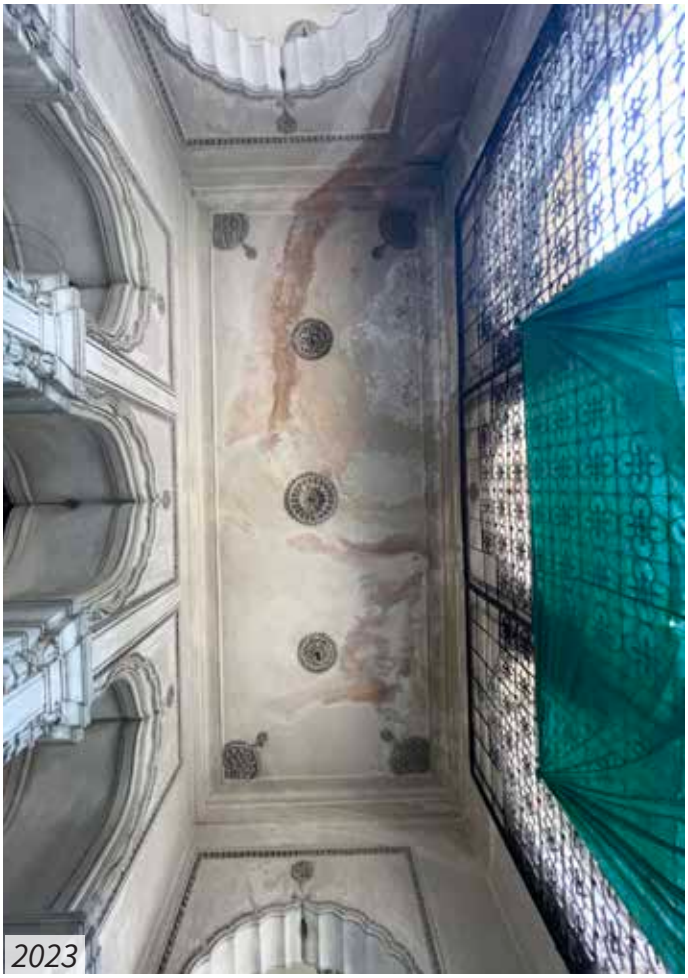
INTERNAL SURFACE OF DOME

The internal surface of the dome is richly embellished with a series of decorative bands at various levels. The central medallion, measuring 1.2 m in diameter,was placed at a height of 16 meters from the floor. While the curved ceiling was plain, the cylindrical drum was decorated with alternating bands of beautiful motifs of large and small. The depressions of the motifs were coloured in organic red ochre, highlighting the details when viewed from the ground. The dome plaster was rigorously tested at IIT Hyderabad materials lab to analyze natural sand additives in the lime mortar, providing insights into historical building technologies.

Like other surfaces on the monument the hemispheric ceiling and design bands were also coated in modern paint layers. The motifs showed broken edges due to birds nesting in them after which iron grills had been installed below at the arches. The organic red ochre was also hidden below the modern paint in various bands.

ACTION TAKEN:

- A scaffolding system was erected to reach the height of 16 meters. Since the dome is placed above an underground sanctum, its roof was first supported with wooden struts to strengthen and bear the load of the scaffolding above.
- Once the scaffolding was in place, artisans manually removed the modern paint layer from the internal surface of the dome. Cleaning the ceiling and medallion revealed water stains on the surface. Upon further inspection, it became clear that the water stains were dry and no water had seeped in after the plastering from the dome from outside.
- The medallion was restored and finished with rich lime punning, along with the ceiling. The series of ornate bands were also meticulously repaired by artisans and craftspeople and finally coated with organic red ochre in the grooves based on the in-situ evidence.


2023


2024

INTERNAL CHAMBER

The internal chamber below the dome is placed on a 400 mm high platform. It is accessed through three decorated arches on each of the four sides. The arch panel has two ornate medallions on either side of the arch. Highly decorated bands run above the arch panels, culminating in a final cornice band which supports projection from the wall. A pattern of intersecting plain arches and squinches transforms the square base into an octagonal one in the middle, on which the drum of the dome rests.

The internal chamber is accessed by a corridor running along all four sides. This corridor has a long passage with three arches on each side and four corner bays, each with two external and two internal arches. The arches, similar to the external ones, are lined with intricate borders and ornate arch crowns supported by half-pillars projecting from the walls. Three ceiling medallions placed in a line can be seen in each of longer passageways, and one in the corner bays. A highly intricate floral band, 100 mm wide, runs along the monument on both external and internal walls at a height of 1.2 m. The flooring had also been repaired earlier with square granite blocks.

The ceiling showed watermarks on the surface, which was majorly due to the dysfunctional water drainage points on the terrace above. The open arches on the external side had been screened with iron grills, which at various instances covered and damaged the decorative details on the arches and walls. Water seepage on the south walls compromised the central arch panel, with the arch crown completely missing. Modern paint layers deposited in the delicate arch borders covered the design too. The bases of the pillars were previously repaired using cement, and hence, had to be dismantled and repaired appropriately using lime.

ACTION TAKEN:

- The internal chamber had a thick layer of modern paint over the original lime base, and damaged details on the decorative bands. This modern layer was carefully scraped off, revealing the original lime surface below.
- Lime repairs were carried out on the medallions and decorative bands by a team of four master craftspeople
- The lower details of the archways, which were damaged due to regular use, were also repaired in lime with detailed craftsmanship. Following this, all the repairs at the chamber were coated with a fine layer of lime punning.
- The raised platform of the internal chamber was subsequently paved with 16 mm granite to ensure no further damage to the lime flooring beneath.

Careful cleaning of intricate details in lime stucco

Restoration of the decorative elements on the column bases

Restored internal surfaces

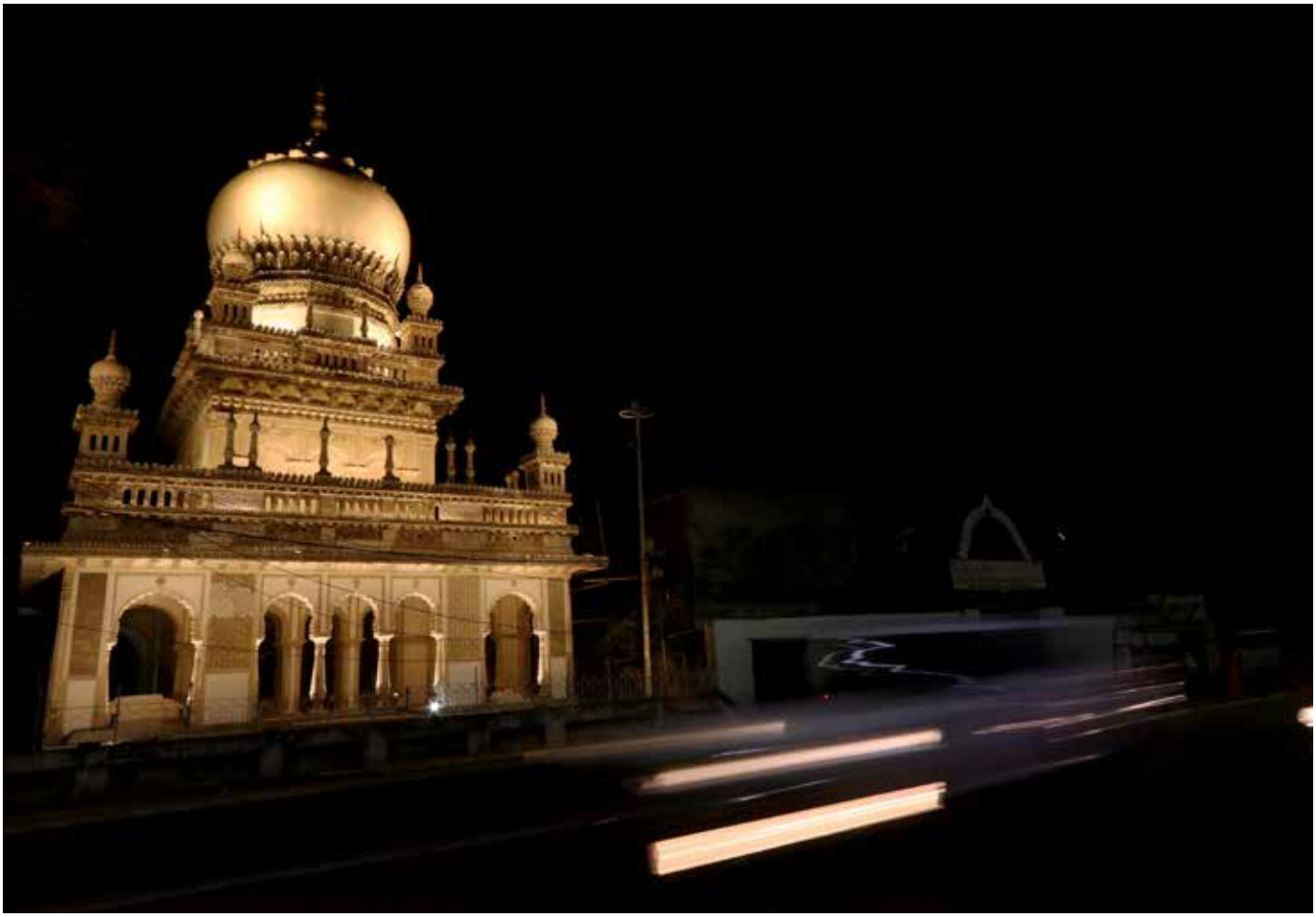
- The iron grills at the corridor were removed to access the external wall and arches. Manual cleaning of all plain and decorative surfaces was a major part in the process of conservation of the monument's corridor.
- Firstly, the plain areas such as the ceiling and vertical wall surfaces were cleaned, which revealed watermarks. This was followed by manual cleaning and scraping of paint from the intricate details of arch borders, arch panels, and the continuous floral band using specialized tools.
- A rich layer of lime base was applied to damaged portions by craftspeople, followed by a fine layer of punning on the ceiling and plain vertical surfaces.
- The damaged and missing portions of arch borders and floral bands were required to be repaired and restored. A team of eight highly skilled craftspeople were engaged for this task. Missing details of the arch crowns on the eastern wall were reconstructed using references from the surviving portions and subsequently restored.
- All the pillar bases in the internal area had to be dismantled to replace the cement repairs with lime-based restoration. The craftspeople first applied a base plaster and chiselled it into the original profile, and later a fine plaster was applied to carve out the details and grooves. All the repairs were finished with 1 mm layer of rich lime punning.
- Finally, the iron grills were manually scraped with sandpaper to get rid of the paint and rust. They were then repainted in a subtle grey tone and reinstalled within the monument, recessed by 2 inches to ensure the decorative details on the walls remained visible and protected.

STEPS AND PLINTH

The monument is approached by a series of large steps in granite on the north, east and west sides, and smaller steps on the south due to the abutting boundary wall. Due to the absence of a plinth protection, water was percolating into the foundation of the monument and eroding the plaster layer.

ACTION TAKEN:

- The earth on the west side was manually excavated to reveal two bottom steps that had been buried in earth.
- A 1100 mm wide plinth protection was laid along the steps and plinth wall of the monument using 100 mm thick rough grey granite with solid edging stones.
- Finally, the earth in the compound was graded to channelize water away from the monument, which resulted in truckloads of earth to be removed from the monument's compound.
- The compound wall on the west, visible in the archival image, was originally constructed in solid granite with a tapered coping stone. An iron railing had later been fixed on the compound wall on the west by adding another course of stone masonry in cement. This stone masonry course was dismantled, and a solid granite stone was inserted in place on top of which the original tapered coping stone was placed.

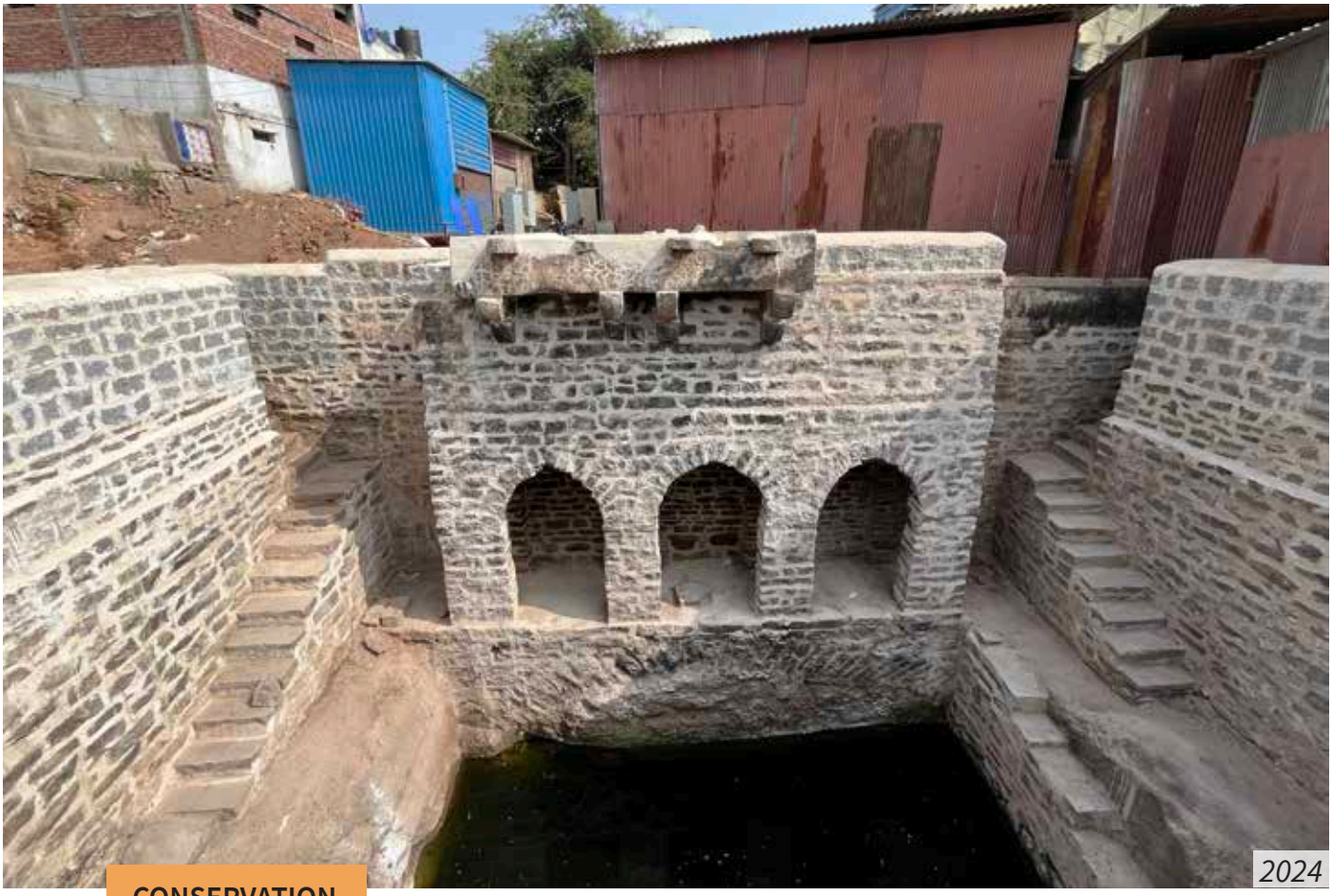


ILLUMINATION

The monument was illuminated to exhibit the highly decorated patterns and craftsmanship of the Asaf-Jahi era. Two poles were erected, on which ranger lights were mounted to highlight the dome and corner minarets on both levels at the west façade. Additional illumination was installed on the drum, middle façade, and lower faced along with uplighters at the external arches on the west façade to accentuate the monument's appearance.

IMPACT:

The conserved and illuminated tomb of Saidani Ma Saheba now stands as a cherished landmark on the busy road leading to Secunderabad. The lime stucco plastered tomb beautifully blends the sophisticated craftsmanship developed during the Asaf Jahi period with the spatial arrangement of the Qutb Shahi era mausoleums. This conservation effort not only revealed the exquisite detailing and built artistry of late 19th century Hyderabad but also ensured the structural stability and longevity of the monument.



2024

CONSERVATION

27. Baoli
(east of Saidani ma's Tomb)

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The baoli, situated to the east of the Saidani ma's Tomb, is built in exposed rubble masonry and is believed to be of the same period as the neighboring tomb, although its exact date of construction remains unknown. The structure comprises retaining walls on the north, west, and south sides, with an elaborate ramp projection, with defined water channels and troughs, supported by a tri-arched opening below. Measuring approximately 55 feet in depth, the baoli is accessed by staircases on either side.

Currently, the baoli stands amidst a group of temporary sheds, some encroaching upon the ramp projection.

DESILTING AND CLEANING

The baoli had remained neglected for several years, leading to the accumulation of unwanted vegetation and garbage, turning it into a dumping ground. A major desilting and cleaning effort was undertaken to restore its original form and reveal its architectural features.

ACTION TAKEN:

- Water was mechanically pumped out continuously over a period of four days, and then a specialized team manually cleared the remaining sludge,requiring 100 man days of effort to remove 17 truckloads of sludge and debris from the baoli.
- The desilting process revealed an arrangement of tanks made through carving out the sheet rock, highlighting the original water management system.
- Access steps on either side of the ramp were cleaned, along with the stone retaining walls, helping determine original extent of the stepwell.
- The ramp was cleared of vegetation, exposing the original water channels and water trough.

About 17 truckloads of sludge was removed from the Baoli before commencing the repair works

2023

2024

The collapsed western wall of the baoli was rebuilt to match the original offsets, and weepholes at intermediate levels were provided to facilitate drainage

RETAINING WALLS

The baoli's retaining walls, built in coursed rubble masonry, are constructed over a over a quarry of natural rock measuring 5 m in height. These walls measure 12.45 m along the west and 7.5 m on the north and south sides.. A series of steps on either side help to access the lower level of the well/baoli.

Over the years, the structure had suffered significant deterioration—most notably, a patch of about 8.9 m of the western wall near the northwest corner had collapsed. The top masonry courses of the shorter length walls were also missing, along with vegetational growth at various instances. The steps on the north were also obstructed by debris.

ACTION TAKEN:

- The walls were surrounded by 2 – 3 meters of vegetational growth, which was manually cleared to commence the repair works.
- A horizontal trench, 1.2 m wide and 750 mm deep, was then dug at the collapsed portion to lay a stable foundation. The western wall was rebuilt following the same offsets of the original wall, and provided with weep holes at intermediate levels to allow proper drainage.
- Debris blocking the steps at the north was cleared.
- Stone masons restored the missing or damaged steps using solid granite stones to the original levels. Similarly, the dilapidated and missing stones of the southern steps were also repaired.
- Due to the higher adjoining earth levels, the parapet walls on all three sides were raised by 900 mm above ground. A 150 mm-thick lime mortar coping was laid, following in-situ evidence from the ramp projection wall.
- A 1100 mm-wide plinth protection of 100 mm-thick, rough grey granite with solid edging stones was laid around the periphery.
- The earth around the baoli was also graded in alignment with the plinth protection levels.

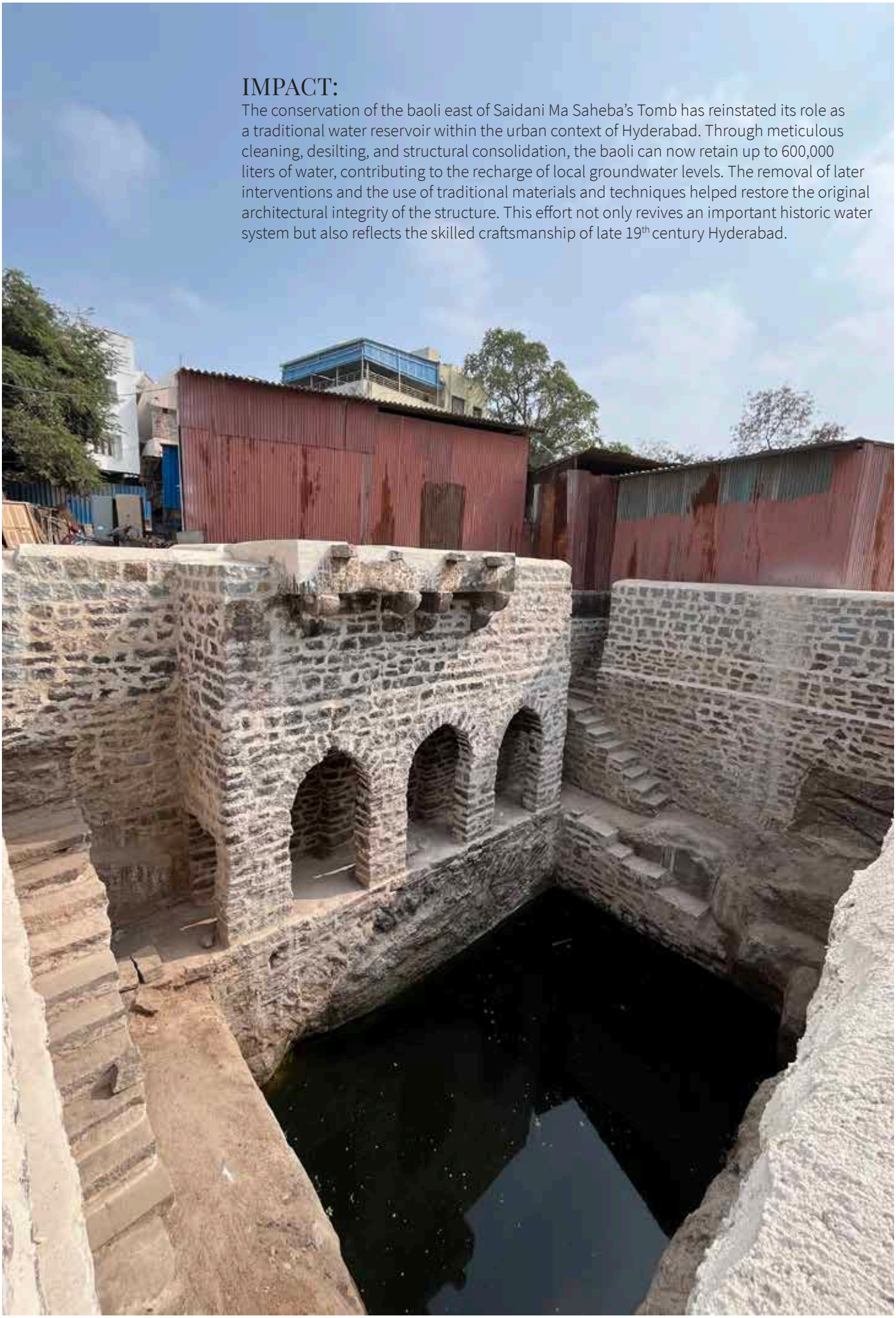
RAMP PROJECTION

The ramp projection of the baoli is elaborately laid out with water channels flowing to storage tanks. Projected stone member line the water channels, efficiently directing the drawn water into the tanks on either side of the projection. These tanks measure 2 meters by 3 meters with a depth of 600 mm. The ramp projection rests on three arches in coursed rubble masonry at the lower level.

During the previous repairs at the baoli, the tanks had been altered by adding brick masonry walls on top of the existing stone masonry.

ACTION TAKEN:

- The brick masonry that had been added during earlier repairs over the original stone tanks was carefully dismantled, and replaced with stone masonry, restoring the tanks to their original character as envisioned by the original builders.
- The façade of the ramp projection was consolidated, pointing with lime mortar by craftspeople.
- The decayed lime was also removed and replaced with rich 1:2 lime concrete, creating smooth finishes at the base of the water channels.



IMPACT:

The conservation of the baoli east of Saidani Ma Saheba's Tomb has reinstated its role as a traditional water reservoir within the urban context of Hyderabad. Through meticulous cleaning, desilting, and structural consolidation, the baoli can now retain up to 600,000 liters of water, contributing to the recharge of local groundwater levels. The removal of later interventions and the use of traditional materials and techniques helped restore the original architectural integrity of the structure. This effort not only revives an important historic water system but also reflects the skilled craftsmanship of late 19th century Hyderabad.

CONSERVATION

28. Sheikhpet Sarai

Spread over 4 acres and located approximately 1 km north of the Qutb Shahi Heritage Park, the Shaikpet Sarai complex falls under the jurisdiction of the Department of Heritage Telangana. Archival research suggests that it is a caravanserai believed to have been built during the rule of the seventh Qutb Shahi ruler, Abdullah Qutb Shah (1626–1672). It historically served as an inn for travellers and merchants passing through Golconda.

The Shaikpet Sarai complex accommodates various structures including a linear Serai, funerary mosques, tombs, and stables, that reflect the late Qutb Shahi architectural style.

With the intent for an adaptive reuse of the complex, the Hyderabad Metropolitan Development Authority (HMDA), National Institute for Urban Management (NIUM)entered into a tripartite agreement with the Department of Heritage Telangana (DHT) and Aga Khan Cultural Services Forum (AKCSF) in May 2023.

The conservation initiative, led jointly by AKCSF, DHT, HMDA, and NIUM aims at transforming the Shaikpet Sarai complex into a vibrant public space. Planned interventions include its use as a craft bazaar, a café, an exhibition space, and a performance zone with appropriate landscape development to enhance visitor experience.

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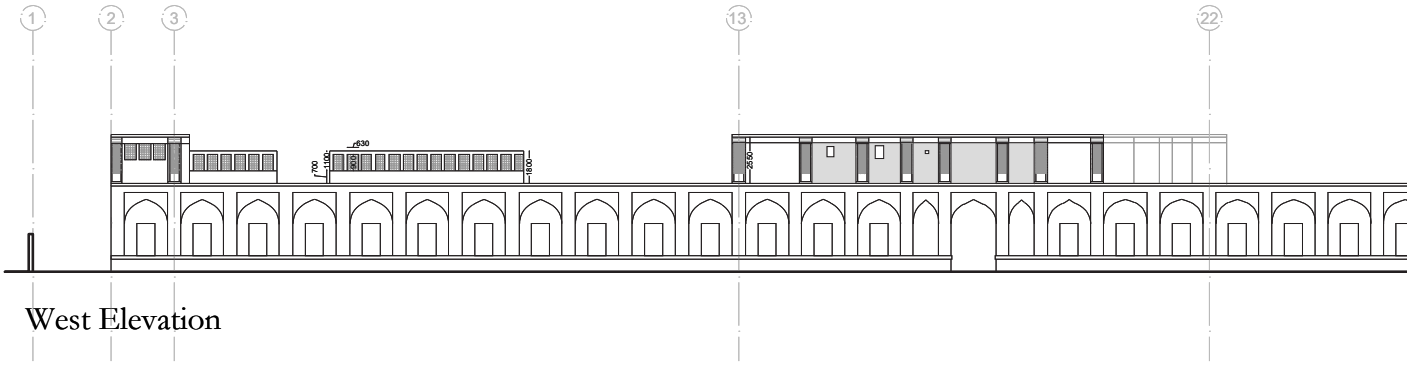
SERAI

The Serai is a linear, approximately 95 meters long, double storeyed structure. , The ground floor has 28 rooms and an arched corridor, while the first floor includes a central hall divided into bays with partition walls, accompanied by two rooms at each end. Ornate lime stucco details embellish the columns, beams, and chajja on the western facade. The roof between the rooms at the either end and the central hall at the first floor is on two levels and enclosed with a parapet wall adorned with lime stucco lattice screens.

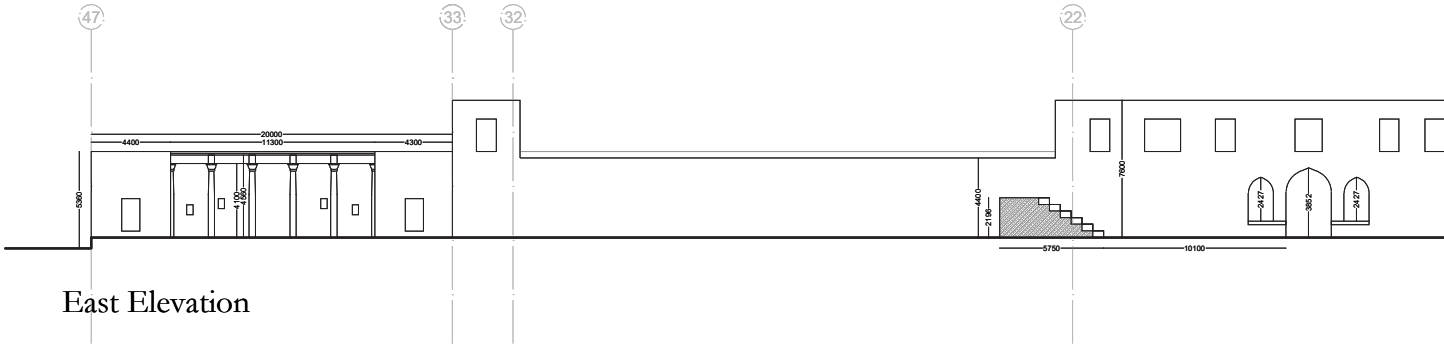
Shaikpet Sarai complex: before conservation

CONDITION BEFORE CONSERVATION

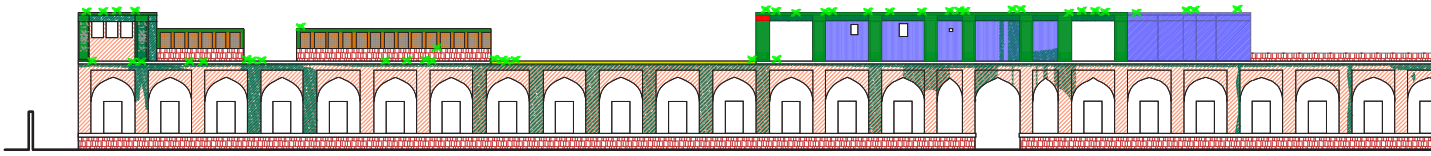
- The Shaikpet Sarai complex, though architecturally significant, has undergone substantial changes over time, particularly due to repairs carried out in the 20th century using incompatible modern materials. These interventions have not only altered the structure's historic character but also accelerated its physical deterioration.
- One of the most affected areas is the western façade, where inappropriate alterations led to the loss of intricate lime stucco detailing. Corridors and internal surfaces were similarly modified with cement-based repairs that changed the original arch profiles, floor levels, and dimensions of door openings and niches. Water seepage and flaking of plaster layers were evident in multiple rooms.
- The roof at the first terrace level is constructed in two levels with a difference of 450 mm. This cement concrete roof, added in the 20th century, drains the rainwater from the eastern side. However, no provision of waterspouts causes direct overflow from the roof onto the eastern facade, causing heavy algae deposition and surface deterioration.
- The first floor consists of ten room bays divided by partition walls in the central portion, with two rooms at the either end. These areas display signs of deterioration, including loss of lime stucco details at columns, brackets, beams, and the inverted ceiling of chajja. Flaking plaster layers exposed the stone masonry in several places. Additionally, new infill walls added between columns on the western side have altered the original appearance of the structure and covered the original moulding details at beams and columns. Lattice screens in the corner rooms were also found to be damaged and broken at places. The parapet wall, originally embellished with lime stucco mouldings and lattice screens, is mostly missing, except for a small surviving section at the northern end. The southern portion of the parapet was also found missing. Several chajja stones are also missing on the northern side.
- The second terrace level is overgrown with vegetation and the lime concrete surface is visibly damaged.
- Another significant alteration was the lowering of the plinth on the western side of the serai during 20th century repairs. This intervention has exposed the foundation and altered both the original appearance and accessibility of the structure.
- The low-lying area on the northwest side of the Serai, believed to have once housed a Baoli (stepwell), was excavated; however, no physical remains of the Baoli were revealed during the process.



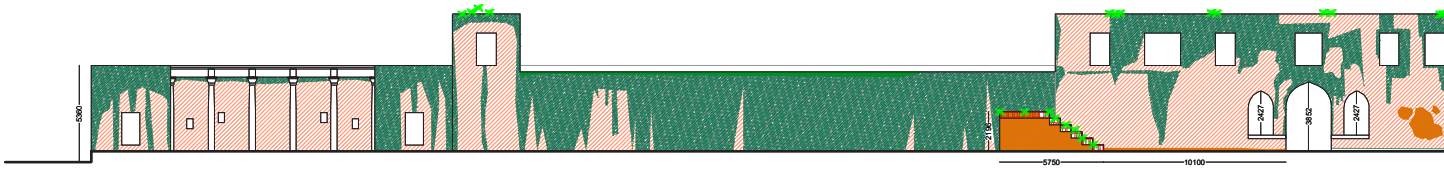
West Elevation



East Elevation



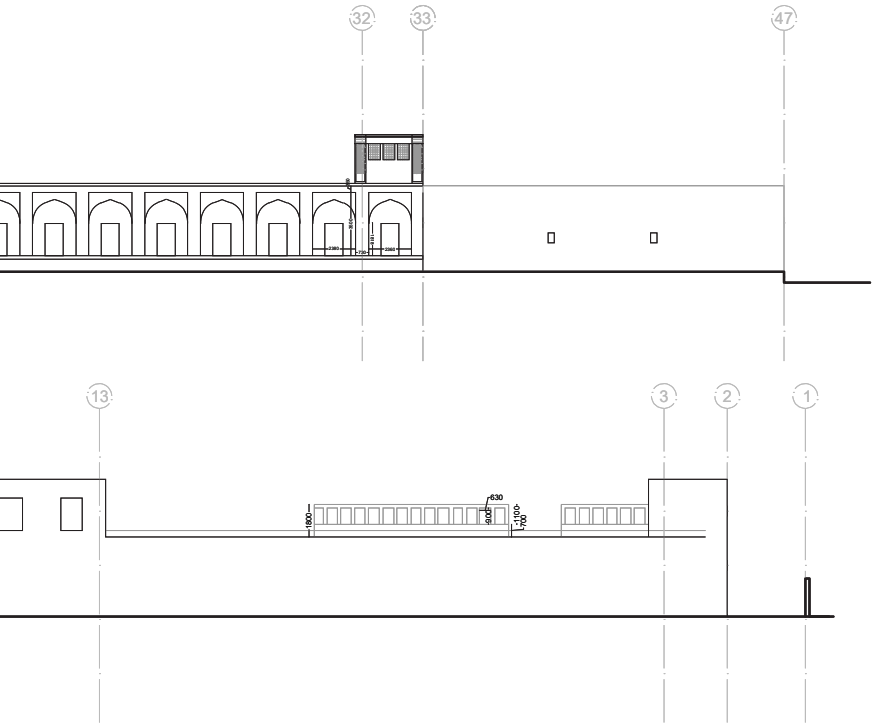
West Elevation - Condition Assessment

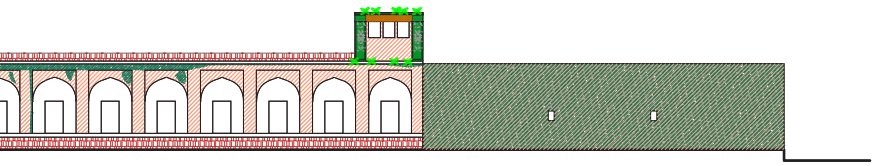


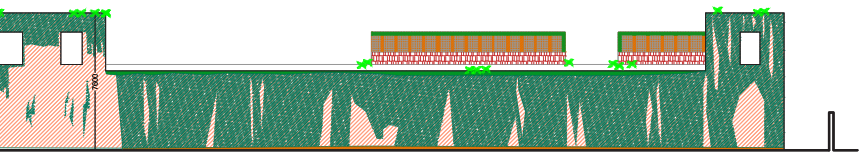
East Elevation - - Condition Assessment

West Elevation - 20th century cement plaster, uneven arch profiles Black Crust, flaking of plaster layer , deteriorated plaster layer, water seepage, missing lime stucco details, missing chajja stone, missing and damaged parapet

East Elevation







– Black Crust, flaking of platelayer , deteriorated plaster layer, water seepage

LEGEND:

DEFECTS IN BUILDING / PLASTERED SURFACES

- CRACKS IN THE PLASTER
- DECAYED PLASTER
- FLAKING OF FINISHING LAYER
- INTERVENTION
- MISSING MASONRY
- NEW PLASTER
- EXPOSED MASONRY
- CEMENT PLASTER

DECORATIVE PLASTERWORK

- DECAYED PROFILES
- MISSING/ BROKEN PATTERNS

WATER PROBLEMS

- WATER SEEPAGE
- WATER RISE

SURFACE DEPOSITS

- ALGAE
- BLACK CRUST
- GRAFFITI
- LIME WASH
- DEPOSITS
- VEGETATION

Scale 5000mm

0 2500mm 10000mm

N

Replastering the arches of the facade with traditional lime plaster after removing the 20th century cement plaster

Reinstating the arched facade of the Sarai to ensure uniformity in level, size, and shape

Taking cue from the existing ornamentation on site, missing lime stucco work was restored by skilled craftspeople

EXTERNAL SURFACE

ACTION TAKEN:

- 20th century cement plaster layer, up to 6-8 inches thick, was carefully removed from the external and corridor surfaces of the 31 arched bays.
- Arch profiles of varying shapes and sizes were meticulously consolidated to ensure uniformity in level, size, and profile.
- Skilled craftspeople re-plastered the external and corridor surfaces with traditional lime mortar, adhering to a standard shape and size for arch profiles, door openings, and niches on either side of the door.
- Plain plaster surfaces and arch mouldings were finely finished with 1mm thin layer of lime putty mixed with organic additives.
- Restoration of ornamental panels, featuring three distinct designs, was undertaken by skilled masons and craftspeople. Missing ornamental panels on the ground floor were reinstated based on surviving evidence of the first floor, particularly focusing on the 10 central bays and 2 bays at the either end.
- In cases where arches were highly altered with cement plaster, were refinished with traditional lime plaster with simple arch moulding details reminiscent of those seen on similar Qutb Shahi structures.
- Ornamental details across the surfaces were carefully finished with a 1 mm thin layer of lime putty mixed with organic additives. Metal angles were strategically installed at the door opening level to securely fix the wooden doors in place.

20th century cement layer was removed from the arcade, and the corridor surfaces were repaired by correcting the arch profiles and ensuring uniformity in level, size and profile

2023

2024

The plinth protection was carefully relaid at its original level with the correct slope, and missing stones at the parapet level were reinstated to match the original evidence

PARAPET

ACTION TAKEN:

- Approximately 40 missing chajja stones on the northern side of the western façade, each measuring 1.5 meters in length and 0.45 m width, were painstakingly hand-chiselled and installed by the skilled masons to match the existing stones, ensuring a seamless integration with the structure.
- A 450 mm thick parapet wall, made of stone masonry, was constructed in the area where a large portion of the chajja was missing, serving as a counterweight to support the chajjas.

Missing chajja stones were reinstated using hand-chiseled stones to match the existing stone

PLINTH PROTECTION

ACTION TAKEN:

- The existing lower pathway, 2.5 meters wide, which exposed the plinth walls on the western side of the serai structure, was carefully removed.
- The 100 mm thick rough grey granite stones that were used to finish this pathway were carefully stacked for reuse. The exposed plinth masonry walls were repointed with traditional lime mortar.
- The area was then filled to a height of 770 mm to match and align with the level of the pathway and the dressed plinth stone of the Serai. This adjustment was made to correct the plinth levels, ensuring they matched the ground levels while concealing the exposed plinth walls. The infill portion was well compacted, and the 100 mm thick PCC was laid at the proposed level.
- The width of the pathway was increased by 500 mm to cover the existing toe wall. The new pathway, approximately 3 meters wide and aligned with the dressed plinth stone level, was finished by reusing the same 4-inch thick, rough grey granite stones. Additionally, 200 x 200 mm rough granite edging stones were used for the edges.
- Beyond the Serai, towards the south, the pathway was extended with a ramp that connects seamlessly to the plinth on the eastern side, ensuring universal accessibility.
- This ramp also acts as plinth protection for the stable.

2023

Stone steps installed to provide access to the first floor level

2024

(Clockwise from left) Skilled stone masons prepared hand-chiseled stone blocks for reinstatement at the parapet level and for the staircase; The plinth protection was carefully relaid at original levels in an appropriate slope; Stone craftspeople painstakingly installed a 1.8-meter-wide staircase with 6-inch-thick hand-dressed granite steps to provide access to the terrace/first floor level of the Sarai

STAIRCASE

ACTION TAKEN:

- To facilitate access to the eastern part of the complex, a C-shaped set of three steps, crafted from hand-chiselled granite stones, was meticulously installed by the skilled craftspeople at the central bay of the Serai.
- To provide access to the first-floor level of the structure, a straight flight staircase, 1.8 meters wide, featuring 6-inch-thick steps made of hand-dressed granite stones, was meticulously constructed on the eastern side.
- Over 90 stones were painstakingly hand-dressed by skilled stone craftspeople, for the installation of this staircase, ensuring both functionality and seamless integration in the historic setting.

The main facade of Stable: Before Conservation

The interior of the stable before conservation, featuring high hand-chiseled granite stone columns

Algae deposition from water seepage has severely damaged the external facade of the stable

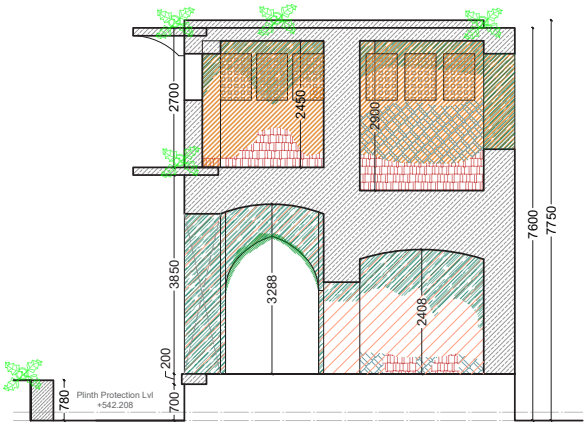
STABLE

Adjacent to the Serai's southern end is a structure referred to as 'Stable'. This structure is characterized by the sole surviving stucco panel on the interior surface, showcasing a cypress tree along with decorative brackets.

Rectangular in plan, the structure covers an area of 20 X 8.5 m. The central hall opens onto the eastern side and boasts a series of six 4.5-meter-high, hand-dressed granite stone columns arranged in two rows. On either side of the central hall are linear rooms with openings facing east.

CONDITION BEFORE CONSERVATION

- The 20th century repairs, carried out with modern materials, significantly altered the original appearance of the structure, particularly on the western façade of the stable.
- The intricate lime stucco details have been lost due to inappropriate alterations, leading to deterioration. Only a small portion of the design panel and bracket ornamentation survived on the north side inside the structure.
- Water seepage, flaking of plaster layer, altered levels were observed before conservation.
- The cement concrete roof, added in the 20th century drained the rainwater from the western side.
- No provision of waterspouts caused direct overflow from the roof onto the western facade, leading to algae deposition and deterioration of the western facade.



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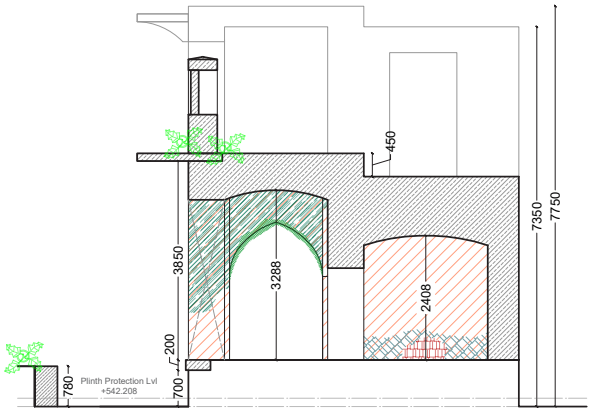

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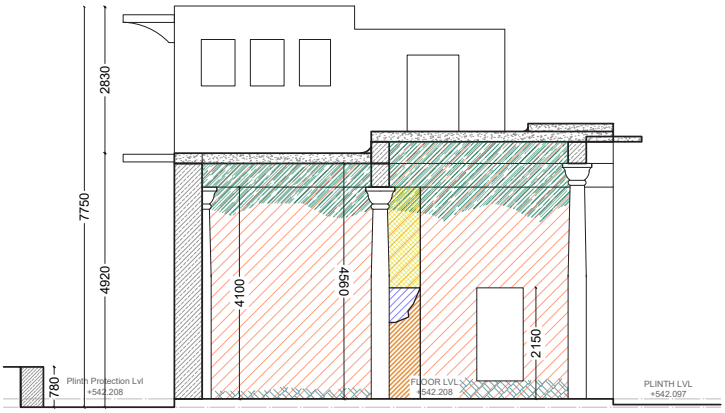

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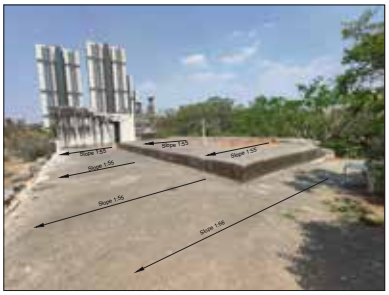
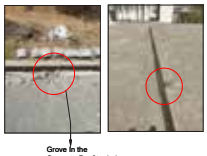
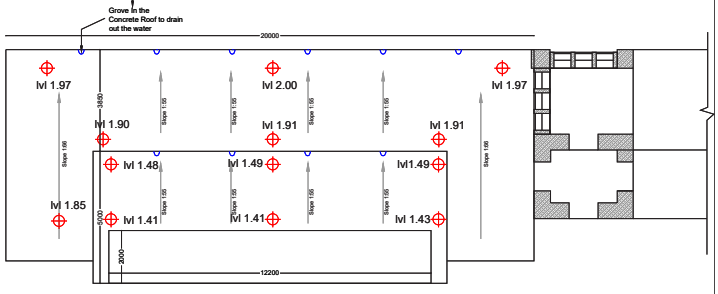
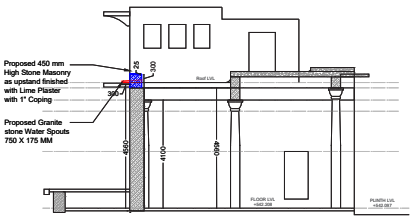


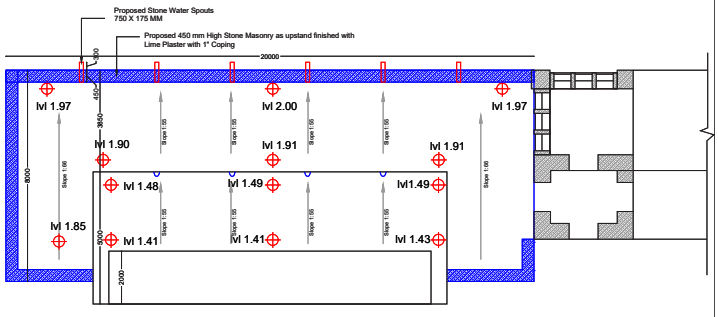




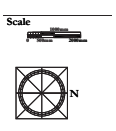
Existing Roof Plan - Camel Stable



Proposed Section - Camel Stable



Proposed Roof Plan - Camel Stable



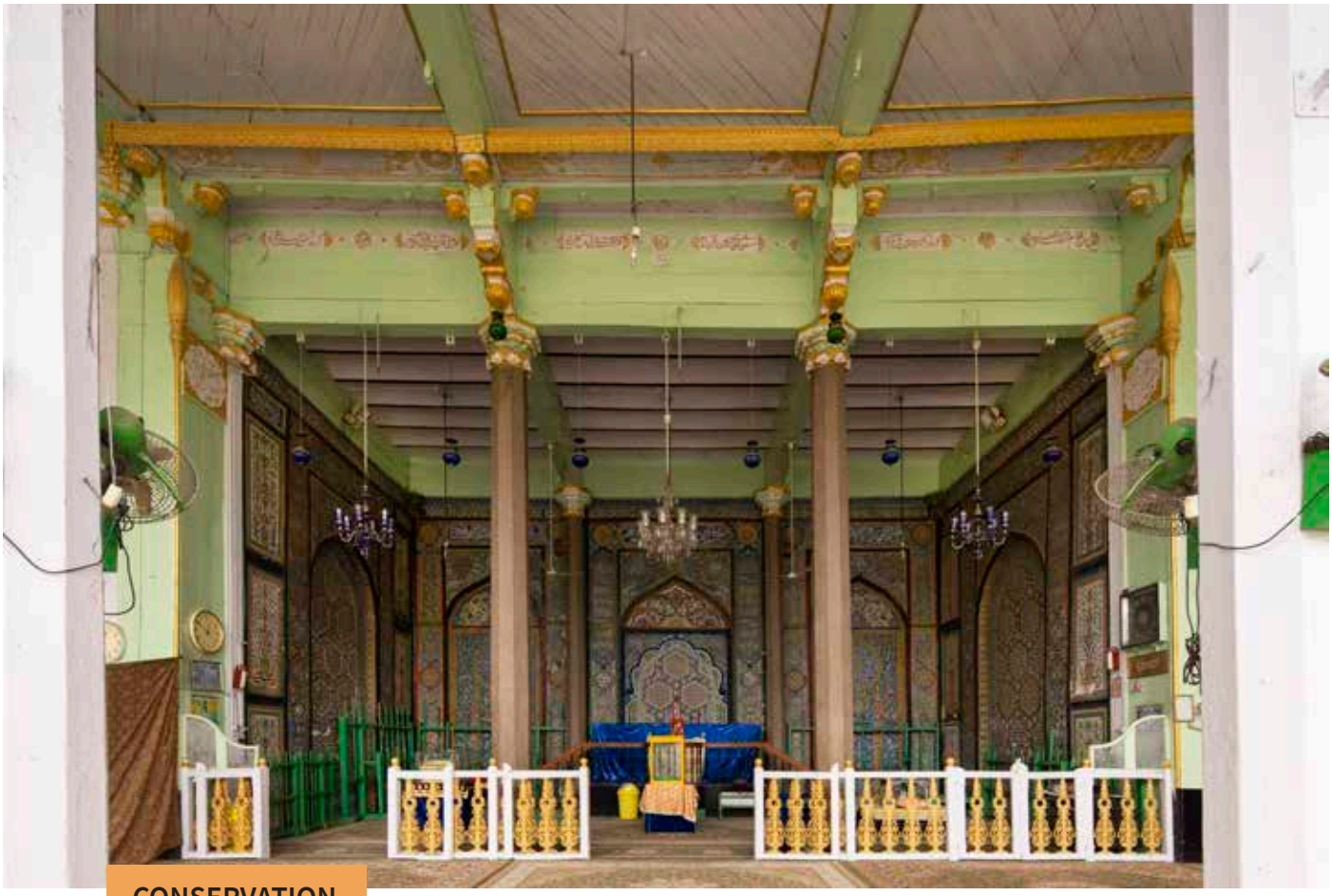
EXTERNAL AND ROOF REPAIRS

ACTION TAKEN:

- 20th century cement plaster was carefully dismantled from external surfaces, which were then replastered with traditional lime mortar.
- Rainwater from the stable's roof flowed directly onto the western wall, causing deterioration. The existing concrete roof has a slope of 1:55 and includes niches to drain rainwater. To prevent further deterioration of the western facade, seven 450 mm high upstands with waterspouts were installed at the locations of the existing niches on the western side. These upstands divert rainwater away from the monument's roof, safeguarding the external facades, particularly on the western side.
- During the excavation for the proposed performance area, a series of steps—possibly serving as approach steps to the stable —were unearthed. These steps were meticulously documented with levels, sizes, and extent.

NEXT STEPS:

- Internal plain plaster repairs will be undertaken in the rooms of the serai.
- Ornamental panel detail at the internal surface of the stable will be reinstated, taking cue from the sole surviving detail. The plain plaster repairs will also be carried out.
- Doors will be installed for the rooms of the Serai on the ground floor, as per the approved design.
- The western parapet of the Serai, featuring an ornamental lime stucco lattice screen, will be repaired as per the existing evidence.
- On the first floor of the Serai, works will include repairs to incomplete masonry walls, restoration of plain and ornamental lime plaster, and necessary roof repairs.
- At the stable, plinth protection will be installed according to the original levels, approved specifications and design.



CONSERVATION

29. Naqqarkhana
at Badshahi Ashoorkhana

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The Badshahi Ashoorkhana, one of the finest Qutb Shahi-era monument, was constructed in CE 1592–93 during the reign of Sultan Muhammad Quli Qutb Shah, the founder of Hyderabad. It was subsequently expanded by Sultan Abdullah Qutb Shah in CE 1596–97, and further extended during the Asaf Jahi period in CE 1796.

A striking feature of the Ashoorkhana is its western wall, whhich showcases a breathtaking display of glazed tiled panels, the only known example of such work seen in the Deccan. These tiles feature inscriptions from Quranic verses, the royal seal of Abdullah Qutb Shah, and various motifs like alams, pomegranates, figs, geometric patterns, and floral designs. The monument stands as a testament to the unmatched craftsmanship of its time.

Also standing opposite to the Ashoorkhana is a Naqqarkhana, likely a later addition to the complex. Traditionally used to welcome dignitaries with the sound of drums, the Naqqarkhana is a two-storeyed structure comprising of a timber framework supported by random rubble stone masonry walls. Although historically significant, the building is currently in a dilapidated state and has remained unused since more than a decade.

The complex is currently under the custodianship of the Department of Heritage Telangana, Government of Telangana. The conservation project has been initiated with the support of the Hyderabad Metropolitan Development Authority (HMDA) and is being executed by the Aga Khan Cultural Services Forum (AKCSF).

The project primarily focuses on the preservation of two significant structures within the complex: the Ashoorkhana (excluding its tilework, which is not part of the current scope) and the Naqqarkhana. In addition, landscape improvements will be carried out to enhance the central open space of the site.

Before commencement of conservation works the building was in a highly vulnerable state, Buried under piles of garbage, overgrown vegetation, and accumulated debris. The damage was extensive, with a large section of the first-floor roof partly collapsed.

Conservation efforts at the Ashoorkhana are centred on stabilising and restoring its deteriorating timber roof and structural framework. Due to the critical condition of these elements, temporary supports were installed in 2020 by the Aga Khan Trust for Culture (AKTC) to prevent further damage.

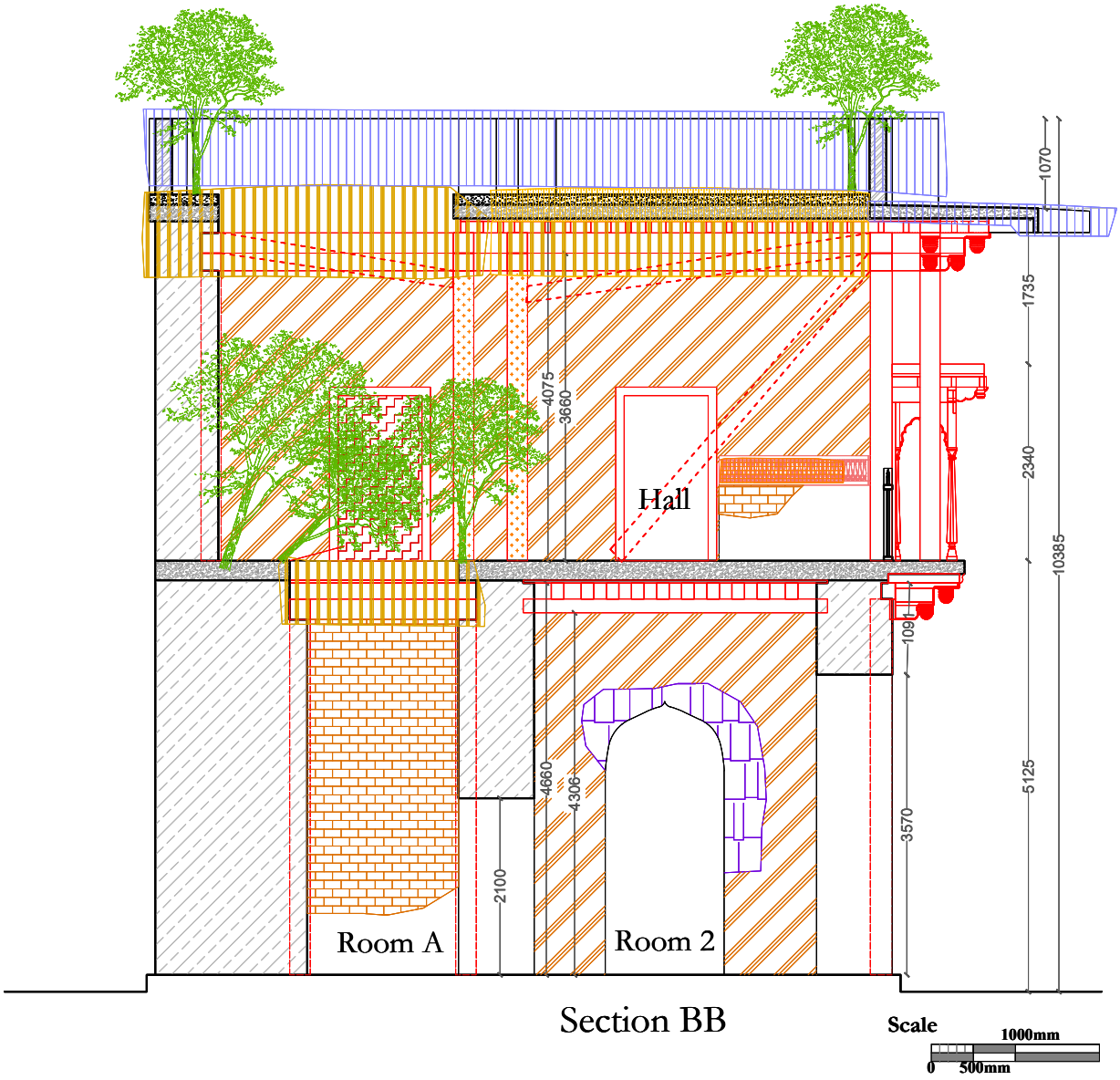
The Naqqrkhana is currently in a severely neglected state, partially collapsed, overgrown with vegetation, and filled with debris. The conservation effort aims to rehabilitate the Naqqarkhana by introducing reversible steel frameworks for structural support. The principal (west) façade owing to the carved timber bracket, eaves and mouldings hold significant architectural value and will be preserved.

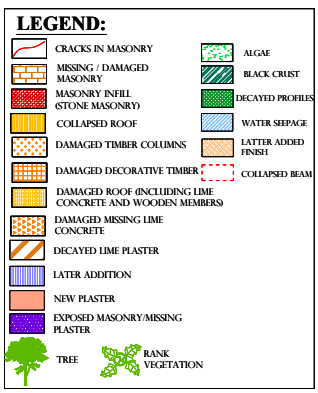
Work at Naqqarkhana initially commenced in October 2023, but was subsequently halted due to delay in approval of the proposed steel structure and paucity of funds. However, with the drawings for the steel structure now approved, it is anticipated that the work will resume in latter half of 2025.

CONSERVATION OF NAQQARKHANA

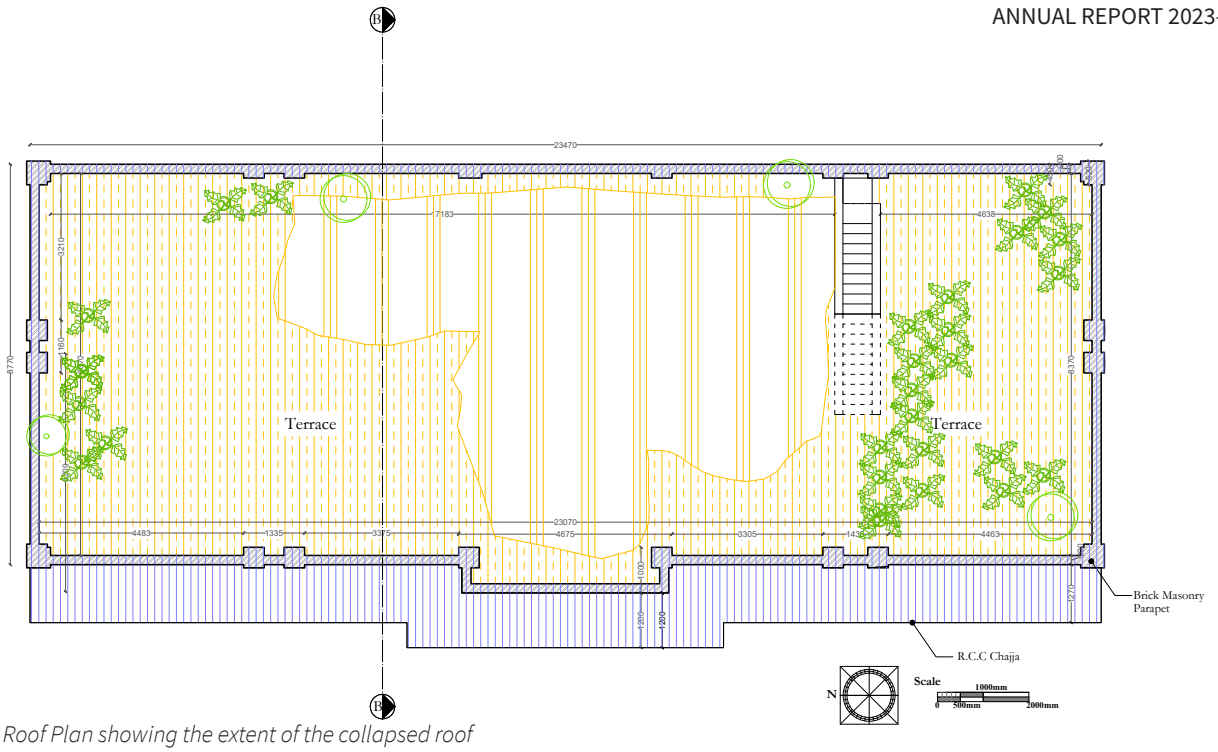
PREPARATORY WORKS

- The first step taken was to clear the accumulated debris and overgrown vegetation to make the structure accessible for inspection and future conservation efforts.
- A detailed architectural documentation and condition assessment was carried out to determine the structural stability and to prepare an informed proposal for the steel framework being added to the building.
- Partially collapsed and damaged timber beams at the first-floor level were supported with props to ensure safe working conditions, while also preventing any damage to the ornamental timber elements on the historic west façade.





Condition Assessment of the building was carried out before commencement of works



Roof Plan showing the extent of the collapsed roof

TERRACE

A large portion of the roof had collapsed, with several trees embedded inside the historic lime concrete. Additionally, the eave on the principal(east) façade at the terrace level had been extended using RCC, and a brick masonry parapet had been added on all four sides. Later additions and the extensive vegetation growth have accelerated the deterioration of the structure by adding extra dead load and damaging the historic roof.

ACTION TAKEN:

- The later added brick parapet and RCC chajja were carefully dismantled to reduce the excessive dead load on the structure and to help restore the building's original architectural character.
- The lime concrete and brickwork of the dilapidated roof were meticulously dismantled,, ensuring no damage is made to the historic fabric.
- After dismantling the slab, deeply embedded tree roots trees were carefully removed. This was followed by the dismantling of damaged and decayed timber beams, planks and rafters.

Roots of trees were deeply embedded in the roof, which were carefully removed and the damaged wooden members were carefully dismantled

FIRST FLOOR

The first floor is characterized by a spacious central hall with a timber structure, flanked by rooms at both ends. Several timbers beams in the central hall have collapsed, and the timber elements of the principal facade are significantly damaged. Additionally, trees with large girth have taken root within the stone masonry, contributing to further structural distress.

ACTION TAKEN:

- Collapsed columns and beams have been carefully removed, while members attached to the principal façade have been supported and retained.
- Damaged lime concrete on the wall projection on west side has been carefully dismantled, and the area has been cleared of all loose debris.
- The central hall features a platform for drum playing, constructed in brick masonry and timber. The seat is in a dilapidated condition - the brick walls are damaged and have partially collapsed and most of the wooden planks are missing. There are three wooden balustrades, out of which one has lost all its vertical members, other two are fairly in good condition. All the three members have been carefully removed and stored away to safeguard them from any damage during the ongoing conservation work. The brick wall structure has also been documented thoroughly with the aid of photos and measured drawings.
- Trees of varying girth have been removed to prevent damage.

Collapsed beams were carefully removed and temporary supports were provided to damaged beams to secure the structure to facilitate conservation works

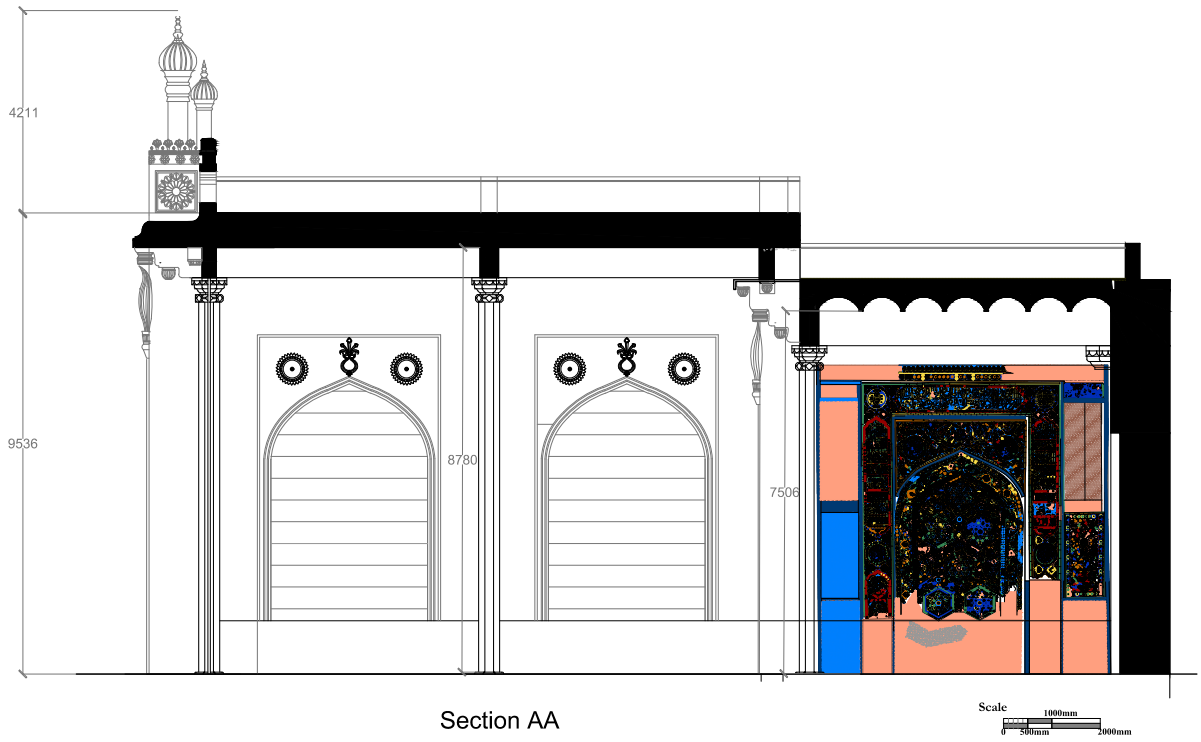
GROUND FLOOR

The ground floor consists of three central arched bays, flanked by low-height rooms on either side. A large portion of the central roof had collapsed, much of the plaster was missing or damaged,and at rooms at the rear side were in a dilapidated condition.

ACTION TAKEN:

- The rear wall of the ground floor features three arches, which might have served as a gateway to the complex historically. Over time, these arches were filled with earth and blocked using random rubble stone masonry. Additionally, portions of the arches were also damaged.
- Partially collapsed or dislodged portions of the stone masonry infill were carefully dismantled, and the masonry was meticulously consolidated. Missing stones in the arch profiles were also reinstated restore its original profile.
- Two collapsed partition walls at the rear, constructed in stone masonry, were reconstructed matching the historic profile.
- Upon dismantling the damaged plaster layers from the ground floor walls, it was understood that lime mortar was missing from the stone masonry joints. Repointing of all the wall surfaces was carried out.
- Further investigation also revealed decayed and sagging wooden beans embedded in the wall.
- These members were carefully removed and replaced with 600 mm-900 mm long granite stone beams, ensuring long term preservation

Partly collapsed stone masonry wall is reconstructed to restore the original layout of the building



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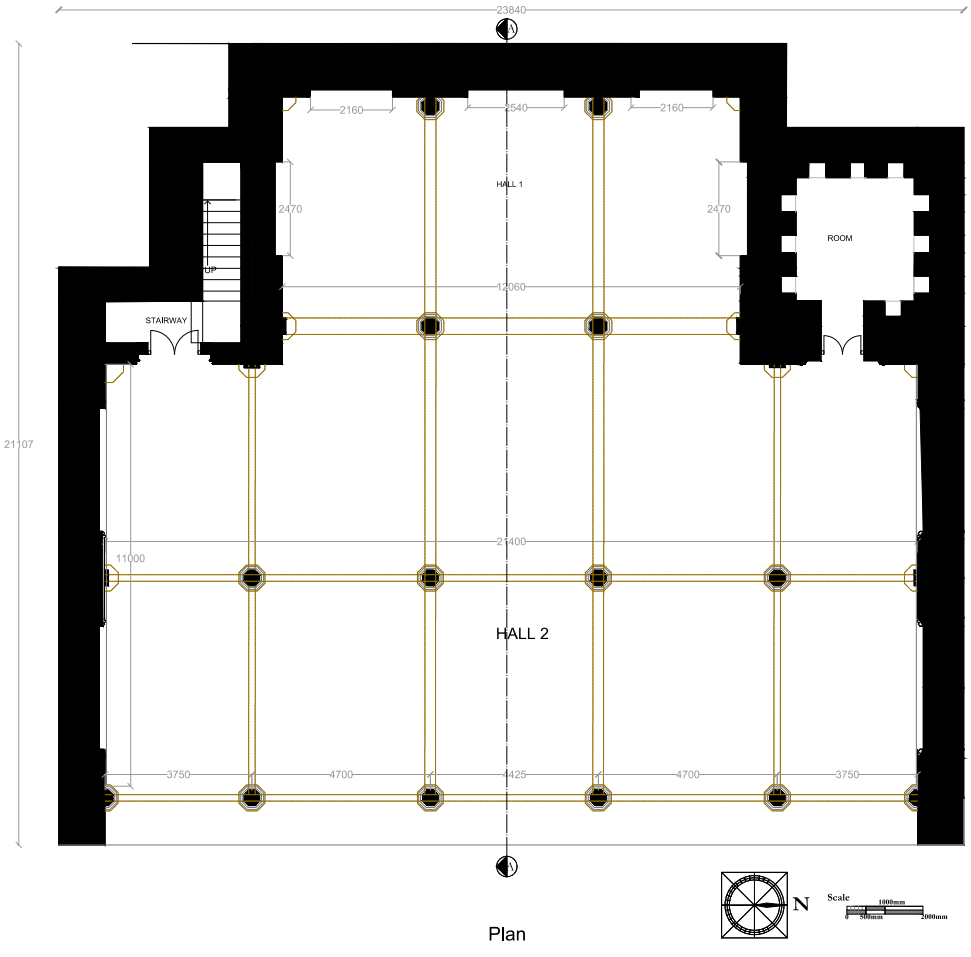

Plan

CONSERVATION OF BADSHAHI ASHOORKHANA

PREPARATORY WORKS

Preparatory works are currently underway at Ashurkhana to define a well-informed conservation methodology for the project and to safeguard the structure in best way possible during restoration of the roof.

ACTION TAKEN:

- Detailed architectural documentation and condition assessment drawing have been prepared after a thorough survey of the building.
- A proposal for installation of a temporary roof over the terrace is being prepared. This temporary steel structure will protect the building from external elements during the process of roof restoration.
- Trials were carried out to understand appropriate techniquesfor removing the incompatible 20th century paint layers from the historic timber members without causing damage.
- Minor repair works were undertaken on the terrace during the monsoon of 2024 to temporarily arrest the seepage of rainwater and minimize further deterioration.

Temporary steel supports installed to transfer load away from the Timber column

Deteriorating timber capital

Deteriorated timber rafters and planks in the stairway, due to water ingress from the roof

NEXT STEPS:

- The primary focus of upcoming work at the Ashoorkhana will be the repair of timber roof. Before the dismantling of existing cement concrete begins, a temporary protective roof will be installed to safeguard the structure from weather and potential damage.
- The later added RCC roof will be carefully dismantled, followed by a detailed inspection and assessment of timber members of the roof. Based on the assessment, the repair, restoration and replacement of deteriorated timber members of the roof will be carried out using appropriate material and conservation techniques.
- Dismantling the partly collapsed roof of the ground floor of the Naqqarkhana, including timber members, brick on edge and lime concrete.
- Erection of the steel structure on both the floors of the Naqqarkhana, as per approved design, followed by installation stone slabs and laying of lime concrete on both the floors.
- Repair of timber members in the principal (west) façade.
- Providing an appropriate plinth protection to the Naqqarkhana.

Old Assembly, Hyderabad

Built by the sixth Nizam of Hyderabad, Mahbub Ali Khan, the Old Assembly Building is one of the most imposing civic structures in the city. Completed in 1913, it was initially used as a Town Hall before later serving as the Assembly Hall. The building reflects the fusion of the Persian and the Rajasthani architectural styles.

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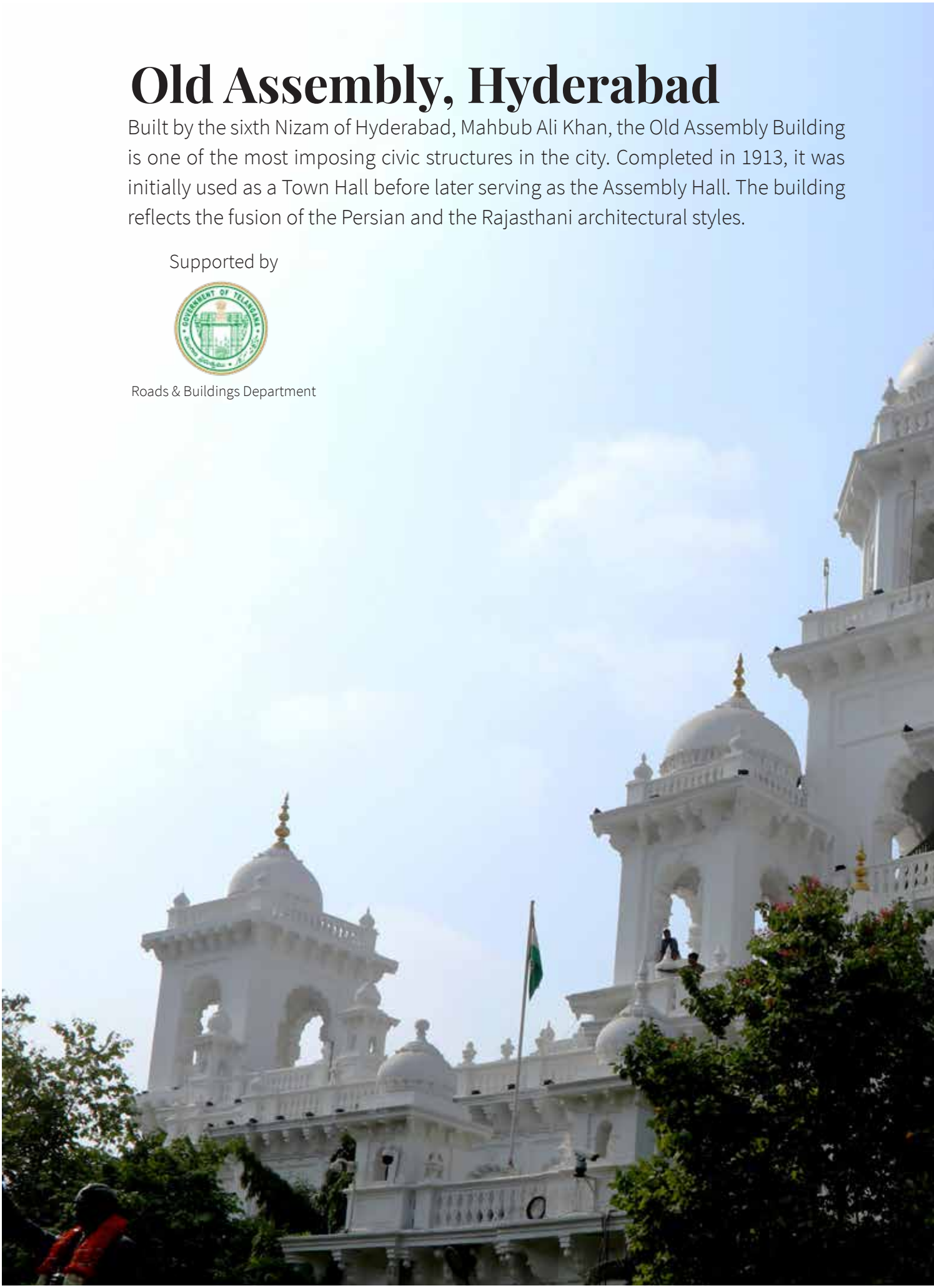

CONSERVATION

30. Old Assembly, Hyderabad

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The Old Assembly, an Indo-Saracenic architectural landmark, was built in the early 20th century under the patronage of Nizam Mahbub Ali Khan to commemorate his silver jubilee. This historic building served as the Andhra Pradesh State Assembly until 2008. Over the years, the structure underwent significant alterations, including extensions to its north and south facades using Reinforced Cement Concrete (RCC) and the introduction of balconies within the main hall.

These incompatible additions, combined with a prolonged lack of maintenance, led to considerable deterioration of the building. A critical issue was the severe water seepage that compromised the integrity of the roof, eventually rendering the Old Assembly unusable.

In 2024, the Government of Telangana entrusted the Aga Khan Trust for Culture(AKTC) with the conservation of the Old Assembly building, with the goal of re-purposing it as the State Council. Prior to AKTC's involvement, the original project estimate was over 50 crores and included demolishing the main hall's jack arch slab to replace it with a concrete deck. AKTC has since adopted a comprehensive approach that preserves the building's structural integrity and historical authenticity while reducing the project cost to less than a third of the initial estimate.

View of the Main Hall after dismantling of later added asbestos ceiling, revealing the historic jack arch ceiling

MAIN HALL

The heart of the Old Assembly, its grand double-height Main Hall, stands as a testament to its rich historical and architectural legacy. Following the completion of conservation works, it is intended to serve as the venue for sessions of the Legislative Council. The hall has an elongated plan and is divided in two levels, with the first floor comprising of a balcony running along the periphery. All four walls are embellished with a series of richly ornamented arches and Corinthian columns with intricately carved capitals. The ceiling consist of jacks arches in bricks, exposed after dismantling of the existing hazardous asbestos false ceiling.

Over time, the original lime stucco details and historic surface finishes had been obscured beneath multiple layers of modern paint. In addition, the insertion of non-original brick infill and partitions had significantly altered the hall's original layout and spatial integrity.

ACTION TAKEN:

- The primary aim was to remove the multiple layers of later added paint in order to determine the condition of the original built fabric. Emulsion paint was manually scraped off from an area of 1000 square meters of plain plaster surface. Ornamental details had been coated with golden enamel paint, which was removed after meticulous effort and application of multiple coats of paint remover.
- Upon removal of paint, several small repairs—previously executed in cement mortar or not matching the original design—were revealed. Extensive repairs of ornamental stucco were undertaken by master craftspeople using traditional lime mortar to restore the original grandeur of the hall.
- For long-term preservation, the exposed jack arch ceiling was plastered with traditional lime mortar, and anti-rust treatment was applied to the exposed ISMB sections.
- No remnants of the original false ceiling were found during the assessment. Therefore, a design for the false ceiling was developed, inspired from the existing ornamental motifs in the building. Care was taken to ensure that the false ceiling would integrate seamlessly with the hall's original appearance and the builder's architectural intent.
- The false ceiling was fixed using the existing clamps in the jack arch ceiling which is as per the original detail found at site, ensuring that the original construction techniques and details are retained.
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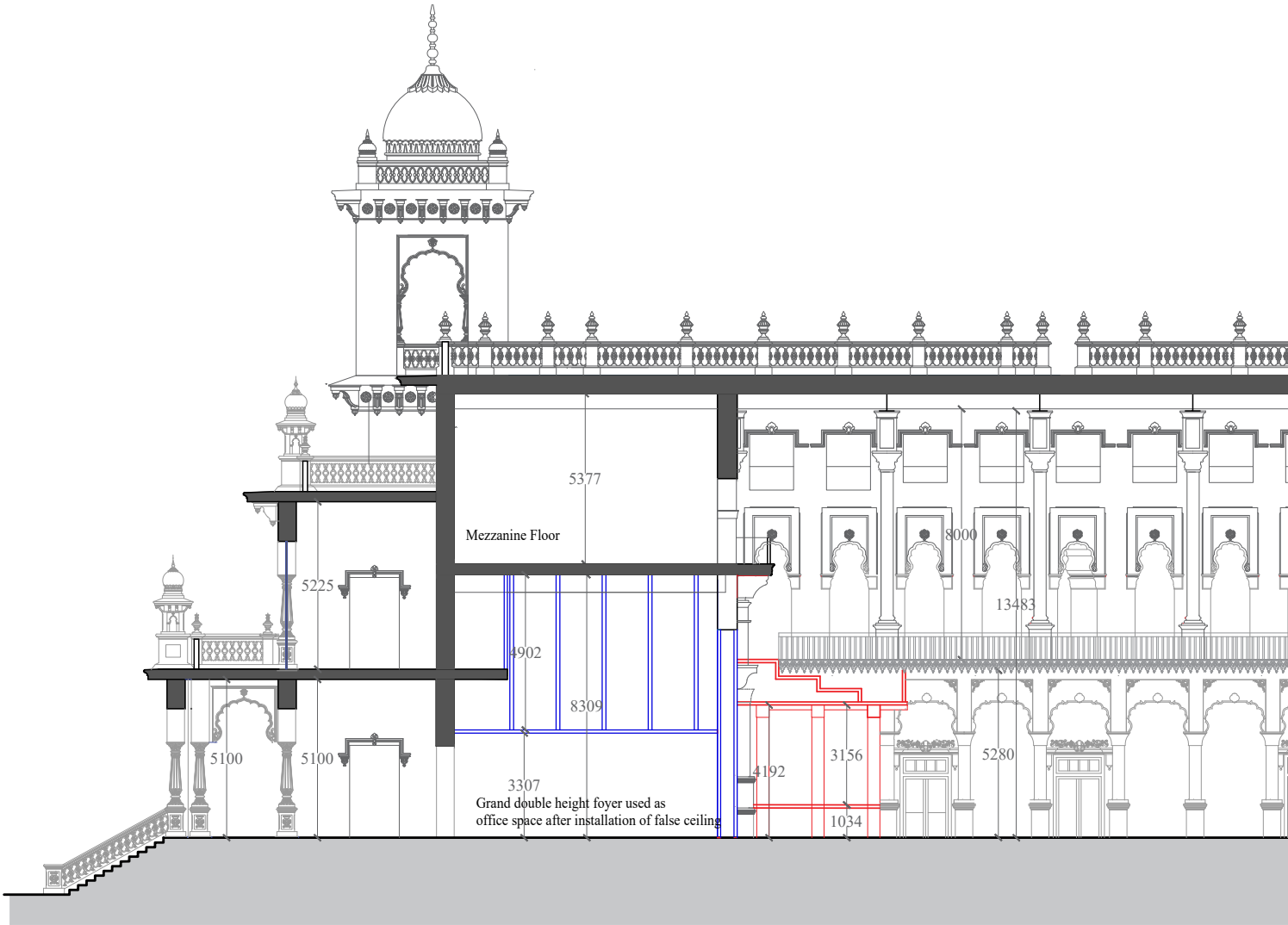
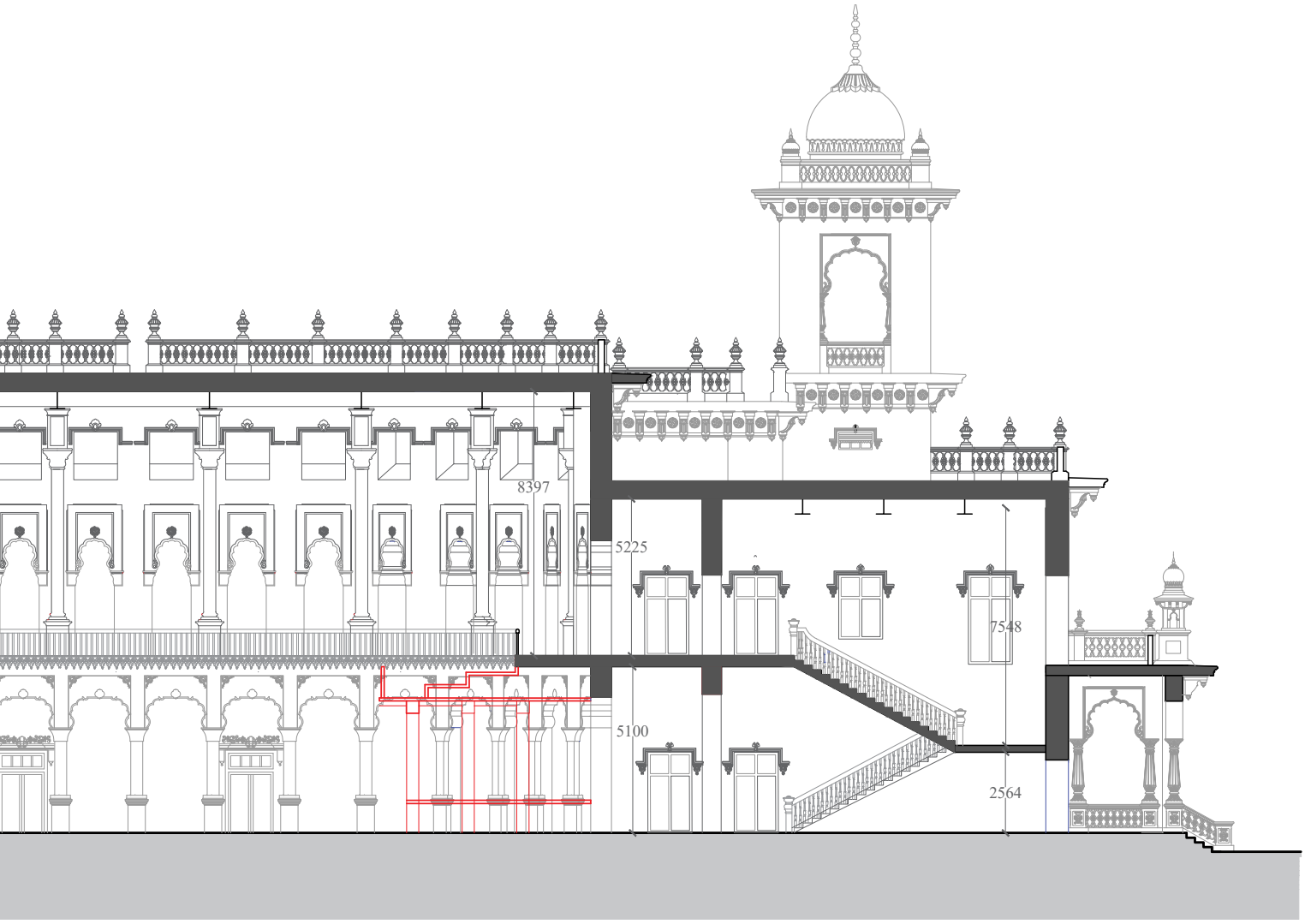
'later added golden enamel paint obscuring the original stucco patterns has been carefully cleaned to reveal the original details.



Longitudinal s

Later Adde
and R.C

During architectural documentation, it was determined that the balconies on the main hall's shorter sides were later additions. These additions compromise the hall's original layout and obstructs the highly ornate arched surfaces, thereby altering both its grandeur and the original builder's intent. To illustrate and facilitate the restoration of the hall's original grandeur, 3D visualizations depicting its historic layout were prepared for stakeholder review and consideration



ection across the main hall

Scale
1000mm
0 500mm 2000mm

ed Brick walls
.C Columns

Later Added
False ceiling

Proposed view of the main showcasing it's grandeur after dismantling of later added R.C.C structure

- The false ceiling's typical section consists of a Sal wood framework clamped to the jack arch ceiling, to which plywood was fixed. This is further ornamented with circular floral medallions. To ensure the false ceiling does not overpower the hall's original ornamentation, a monochromatic (white) finish was applied.
- The cantilevered balcony on the first floor features cast iron railing with a wooden handrail. These were also coated with multiple layers of enamel paint, while the hand rail was covered with a hard layer of putty. Hundreds of working days were devoted to carefully remove these layers without damaging the underlying original material.

(Top) Exposed jack arches have been carefully plastered with traditional lime mortar for long-term preservation; (Bottom) Damage ornamental lime stucco details restored by master craftspeople

2023

2024

Laying lime brick jelly concrete on the main hall terrace to adequate slope, after dismantling of later added cement concrete

TERRACE

The building's terrace is divided into three distinct levels: the roof of the Main Hall forms the highest point, with two lower terraces located which are 3 metres and 1.5 metres lower. All terraces are edged with ornamental parapets and feature projecting eaves (chajjas) supported by decorative brackets.

One of the major challenges at the terrace level was the significant water seepage, caused by the addition of cement concrete layers, ineffective later-applied waterproofing membranes, and a compromised rainwater drainage system due to the construction of RCC structure abutting the historic building. Architectural and decorative elements such as parapets, chajjas, brackets, medallions, and mouldings also suffered extensive damage. These were further obscured by multiple layers of non-original paint, which diminished the depth and intricacy of their ornamentation.

ACTION TAKEN:

- The foremost priority was to safeguard the terrace from rainwater during the conservation process. A temporary roofing system was installed, consisting of steel columns and trusses, covered with GI profile sheets.
- The later-added waterproofing membrane and 3"-4" thick cement concrete layers were carefully dismantled to ensure no damage is caused to the historic jack arch slabs.
- Upon removal of these layers, several cracks wider than 100 mm were discovered. These have been since grouted using a traditional admixture composed of organic additives. The cumulative length of cracks addressed was more than 100 meters.
- Furthermore, for additional protection, grouting was carried out throughout the surface of the terrace by making a grid of 1 meter by 1 meter.
- The dismantling of cement concrete revealed that the roof was originally finished with multiple layers of terracotta tiles. Many of these were either missing or partially damaged due to bonding with the later-added concrete. To reinstate the original roof composition, over 750 customized tiles were prepared to match the historic design and reinstalled.
- A comprehensive drainage analysis was conducted, and new rainwater spouts were introduced. Where additional spouts could not be added, existing drain holes were widened to improve water discharge.
- A 4-inch thick lime concrete layer, matching the original

Damaged and missing terracotta tiles on the main hall terrace have been carefully restored

Finishing of the roof with a mixture organic materials

Forty three ornamental flower pots have been reinstated, replacing the 20th century additions in cement mortar

Chajjas(eaves) and the circular pendants on them were carefully repaired by master craftspeople

composition, was relaid over the tile surface with a consistent slope to ensure effective drainage. Khurras (sloped channels) were prepared at all required discharge points for improved rainwater flow.

- Architectural and decorative elements at the terrace level of the Main Hall were also restored. The process began with careful cleaning to remove later paint layers, followed by a detailed condition assessment.
- The parapet of main hall terrace is decorated with 750 mm high ornamental flower pots. Many had significantly deteriorated due to incompatible cement mortar repairs. A total of 43 of these flower pots were reconstructed in brick masonry and further plastered with lime mortar. To prevent corrosion and ensure long-term preservation, the central iron rods were replaced with stainless steel pipes.
- The parapet also features an ornate balustrade and an intricate 9 inch wide moulding. Damaged portions were restored using traditional lime mortar by skilled craftspeople employing hand tools.
- Significant damage was also observed on the chajjas (eaves) and their supporting brackets. In many cases, corrosion of internal mild steel angles had caused sections to collapse. Over 30 meters of chajja were reconstructed in brick, and damaged portions of the brackets, including their suspended circular pendants, were reinstated. Exposed steel components received anti-rust treatment.
- Several decorative floral medallions located between the brackets, along with mouldings of varying widths, were also meticulously restored by master craftspeople using traditional lime mortar techniques.

ENTRANCE PORCH AT NORTH

The main entrance porch, located at the principal (north) façade of the building, has a rectangular plan with a jack arch ceiling and a height of 6.5 meters. It is characterised with ornamental columns, cusped arches and decorative arch crown.

As part of the previous repairs, the original jack arch ceiling was covered with a metal false ceiling, likely installed to obstruct the damaged plaster falling from the ceiling. As observed in other parts of the building, all the plain and ornamental surfaces had been covered with multiple paint layers, disfiguring the ornamentation.

ACTION TAKEN:

- The metal false ceiling was carefully dismantled ensuring no damage to the underlying jack arch ceiling. On inspection it was understood that the plaster had decayed and large portion was on the verge of collapse. These damaged sections were cautiously dismantled.
- It was established that the ceiling plaster was damaged due to water seepage from the terrace. Thus, plastering of jack arch ceiling was undertaken only after relaying the lime concrete on the terrace and ensuring that all sources of seepage were eliminated.
- The cornice moulding below the ceiling is 1 foot wide and was damaged at multiple portions. These portions were skillfully reinstated by master craftspeople using traditional lime mortar.
- Cleaning of the paint layers revealed significant deterioration on the capitals and bases of the ornate columns. These elements were meticulously restored using hand-ground lime mortar.
- Other ornamental details and plain plaster were also restored using lime mortar, matching the original design and finish.

NEXT STEPS:

- With the cleaning and restoration of the Main Hall completed, the next phase of work will focus on the application of final finishes to the wall surfaces, doors and window openings, and the railing of the cantilevered balcony.
- A polyurethane waterproofing layer will be applied across all terrace levels to ensure long-term protection. Restoration of plain and ornamental elements, including the chhatris, will also be undertaken as part of the terrace works.
- At the entrance porch, restoration of plain and ornamental surfaces has been completed at the internal surfaces, and application of the final finish is currently in progress. The next steps will focus on the external restoration of architectural elements such as parapets, chhatris, chajjas, brackets, and other decorative features.
- Further planned work includes:
  - Cleaning of plain and ornamental plastered surfaces in the corridors and ancillary rooms.
  - Application of anti-rust treatment to all exposed mild steel sections.
  - Restoration of ornamental and plastered surfaces in the corridors and ancillary rooms on both floors.
  - Restoration of ornamental and plastered surfaces on all four façades of the building.
  - Lowering the earth level around the building to its original level and providing appropriate plinth protection.

Public Agencies - 2022

Government of Telangana

- Mr. Jayesh Ranjan, IAS, Special Chief Secretary to Government of Telangana & CEO, Industry & Investment Cell in CMO, SPEED, Sports & YAT&C
- Ms. Vikas Raj, IAS, Special Chief Secretary to Government of Telangana TR & B Department
- Mr. Arvind Kumar, IAS, Special Chief Secretary to Government of Telangana, Revenue (Disaster Management) Department
- Ms. A Vani Prasad, IAS, Principal Secretary to Government of Andhra Pradesh, Labour, Factories, Boilers & Insurance Medical Services Department
- Mr. M. Dana Kishore, IAS, Principal Secretary to Government of Telangana, Labour Employment, Training and Factories Department
- Ms. Shailaja Ramaiyer, IAS, Principal Secretary to Government of Telangana, Endowments and (Handlooms, Textiles & Handicrafts), I & C Department
- Mr. Sandeep Kumar Sultania, IAS, Principal Secretary to Government of Telangana, Finance Department
- Mr. K.S. Sreenivasa Raju, IAS (Retd.), Principal Secretary to Chief Minister, Govt of Telangana
- Ms. Smita Sabharwal, IAS, Member Secretary, TG Finance commission
- Mr. Ilambarithi K, IAS, Secretary to Government of Telangana, Metropolitan Area & Urban Development Dept (HMDA limits)
- Mr. Sarfaraz Ahmad, IAS, Metropolitan Commissioner, Hyderabad Metropolitan Development Authority (HMDA)
- Ms. Bharati Hollikeri, IAS, Director of Census Operations (DCO) / Director of Citizen Registration (DCR), Telangana, Government of India
- Ms. Hari Chandana Dasari, IAS, Collector and District Magistrate, Hyderabad
- Ms. Korra Lakshmi, IAS, Managing Director, Telangana State Warehousing Corporation
- Mr. Anuraag Jayanti, IAS, Zonal Commissioner, GHMC, Khairtabad
- Ms. Valluru Kranthi, IAS, Managing Director, Telangana Tourism Development Corporation Ltd
- Mr. Kota Sreevatsa, IAS, Joint Commissioner, HMDA
- Mr. N. Prakash Reddy, IPS, D.I.G CISF, Ex MD Telangana Tourism Development Corporation Ltd

Department of Heritage Telangana:

- Mr. B. Narayana, Deputy Director (Retd), Engineering
- Mr. N. Narsingh, Deputy Director, Engineering
- Dr. D. Ramulu Nayak - Deputy Director, Technical
- Dr. P. Nagaraju - Deputy Director, Museums
- Ms. Madhavi, Assistant Director
- Ms. D. Ganga Devi - Assistant Director, Technical, State Museum
- Ms. D. Bujji, Assistant Director, Porcelain, Textiles, Archaeology, Bronze Artifacts and Mahbubnagar Museum
- Mr. B. Malu Nayak -Assistant Director, Museums
- Mr. N. Sagar - Assistant Director, Manuscripts and Karimnagar Museum
- Ms. V. Naga Lakshmi - Assistant Director Technical, Mahboob Nagar, Department of Heritage Telangana
- Mr. A Raju, Office Superintendent
- Ms. Sunitha Rathod, Legal Officer, Department of Heritage Telangana
- Mr. K. Charan Babu, Site Supervisor, Engineering
- Mr. Ch. Subhash, Senior Caretaker, Qutb Shahi Heritage Park
- Mr. Junaid, Site Supervisor, Qutb Shahi Heritage Park

Quli Qutb Shahi Urban Development Authority (QQSUDA)

- Mr. Shankar Lal, Secretary
- Ms. Archana Reddy, Secretary
- Mr. Yella Reddy, Secretary

- Ms. V Ramadevi, Secretary
- Mr. Guruveera, In charge Secretary
- Ms. M. Lalitha, Assistant Director of Horticulture
- Ms. S. Venkateshwara Rao, General Supervisor

Telangana Tourism Development Corporation(TGTDC)

- Mr. Boinapally Manohar (Retd.), Managing Director
- Mr. Shankar Reddy, Executive Director Projects
- Mr. Venkata Ramana, Chief Engineer
- Ms. Saritha Galla, Superintending Engineer
- Mr. Samiuddin, Superintending Engineer
- Mr. K Ajay Executive Engineer
- Mr. Ch. Parshavedi, Deputy Executive Engineer
- Mr. Damodar Reddy, Deputy Executive Engineer
- Mr. Ramprasad, Asst. Executive Engineer
- Mr. Ajay, Asst. Executive Engineer
- Ms. Aliya, Architect

National Institute of Urban Management-NIUM

- Mr. Anand Tandon, Ex - CEO
- Dr. Rajini Devarajan, Ex – Head, Heritage Department
- Ms. Uma Gayatri, Ex – Program Manager
- Ms. Nitya Kendry, Senior Conservation Architect

Hyderabad Metropolitan Development Authority (HMDA)

- Mr. BLN Reddy , Chief Engineer (Retd.)
- Mr. B Ravinder, Chief Engineer
- Mr. Ch. Param Jyothi, Chief General Manager
- Mr. T Dhanmohan Singh , Executive Engineer
- Mr. K Abhilash, Dy Executive Engineer
- Ms. Lavanya, Dy Executive Engineer
- Mr. Shravan, Dy Executive Engineer

Roads & Buildings Department, Telangana

- Ms. I Ganapathi Reddy Chief Engineer (Retd) (Buildings & Highway)
- Mr. Rajeshwar Reddy, Chief Engineer (Buildings)
- Ms. Vishwa Kumar, Superintending Engineer (Projects Circle)
- Mr. Narsing Rao, Superintending Engineer (Head Quarter Circle)
- Mr. Mohd Hafeezuddin, I/c Superintending Engineer (Head Quarter Circle)
- Mr. Manohar Babu, Executive Engineer, Assembly Division
- Ms. Shanker Bai, Dy Executive Engineer, Assembly Division
- Mr. Sami-ur Rehman, Asst Executive Engineer, Assembly Division
- Ms. Sashi Priya, Asst Executive Engineer, Assembly Division

Telangana Assembly

- Dr. V Narsimha Charyulu, Secretary, Telangana Legislature
- Mr. Upendar Reddy, Deputy Secretary, Telangana Legislature
- Mr. Sudhakar, Asst. Secretary, Telangana Legislature

Aga Khan Development Network

- Mr. Ratish Nanda, CEO
- Mr. Rajpal Singh, Chief Engineer
- Ms. Archana S Akhtar, Programmes Director, Design & Outreach
- Mr. Somak Ghosh, Finance & Office Director
- Mr. KP Singh, Chief Horticulturist
- Mr. Yoshowant Purohit, Project Director-Hyderabad
- Mr. K. Ganesh Reddy, Manager Operations
- Mr. Faneendra Nath, Project Engineer
- Ms. Poojan Kumar, Project Architect
- Mr. Saif Siddiqui, Project Architect
- Ms. Natasha Khaitan, Conservation Architect
- Ms. Aditi Deshpande, Conservation Architect
- Mr. Sandeep Raj, Conservation Engineer
- Mr. Arshad Jamil, Site Engineer
- Ms. Lipi Bharadwaj, Program Officer, Design & Documentation
- Mr. Umang Kochhar, Research Assistant
- Ms. Asma Afreen, Horticulturist
- Mr. Venkatesh Dandigi, Admin Officer
- Mr. Raghavender Goud, Finance Officer
- Mr. P Bhaskar Rao, Finance Officer
- Mr. Ramesh Singh, Field Supervisor
- Mr. Vinod Kumar, Field Supervisor
- Mr. M. Rajesh, Office Chauffeur

Principal Consultants

- Shaheer Associates, Landscape Consultants
- Mr. Sajjad Shahid, Advisor
- Studio Lotus, Architects, Qutb Shahi Interpretation Center(QSIC)
- Prof. Kolluru V.L Subramaniam, Founder Head, Dept of Civil Engineering, IIT Hyderbad - Consultant, QSIC structure
- Mr. Shafeeq Rehman Mohajir, Legal Consultant, Brainstorm Legal Advocates
- Ms. Mahdieh Khajehpiri, Consultant (Research)
- Ms. Poornima Balakrishnan, Consultant (Conservation Architect)

All photographs in the report have been taken by the AKTC project team.