

# RECONSTRUCTION OF THANTHU DURBAR, BHAKTAPUR: A CASE STUDY

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## Abstract

Thanthu Durbar in Bhaktapur Durbar Square Complex is believed to have been a part of the historic Thanthu Durbar, which means "Upper Palace" in Nepal Bhasha, indicating its position on higher ground relative to the main palace complex. Historically, it served as the Safaai Addha (Cleaning Department) in 2004 B.S. and was later repurposed as the municipal office of Bhaktapur Municipality. Bhaktapur Municipality has undertaken the reconstruction of historic Rana style building dating back to the Malla period. This paper presents a research project focused on employing archaeological and architectural studies through indigenous construction techniques. The methodology involved comprehensive site surveys, documentation, archaeological excavation, and consultations with conservation architects, historians, and archaeologists. This paper highlights the ongoing reconstruction process of building in architectural style of the Malla period in accordance with the research and excavation study results and its adherence to traditional construction techniques. The reconstruction of the building serves as a significant step towards safeguarding Nepal's architectural heritage and promoting sustainable approaches to heritage preservation. The reconstruction project aims to reconstruct the durbar to its Malla period design regarding archaeological research and structurally safeguarding the building. The findings from this research project contribute to the broader understanding of heritage reconstruction practices in Nepal and provide insights into the preservation of cultural heritage in seismic-prone regions. The reconstruction of the durbar of heritage site serves as a significant step towards safeguarding Nepal's architectural heritage and promoting sustainable approaches to heritage preservation.

**Keywords:** Thanthu, Bhaktapur, Archaeology, Reconstruction, Traditional technology

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## 1. Introduction

Thanthu Durbar is located to the east of Taleju Bhawani and Mulchowk, and to the northeast of the Durbar Square Complex, in Ward No. 3 of Bhaktapur Municipality. Historically, it is considered part of the larger palace complex and was used as the office building of Bhaktapur Municipality until the devastating Gorkha Earthquake of April 2015. The earthquake caused severe damage to the structure, rendering it unusable. As a result, the municipal office was relocated to new premises in Ward No. 2, Byasi Tole of Bhaktapur Municipality. According to archaeologists and historians, this site is referred to as

Thanthu Layeku (Durbar), literally meaning Upper Palace in Nepal Bhasha. The name signifies its location in the upper part of the Durbar Square complex, highlighting both its geographical elevation and its importance within the historical urban fabric of Bhaktapur.

Thanthu Durbar was constructed by King Jita Mitra Malla in the early 17th century, around 1795 B.S. It was said the Thanthu Durbar was whole complex of fifty five windows palace and previous office building of Bhaktapur municipality. One of the part of the complex served as the office building of the Cleaning Department (Safaai Adda) in 2004 B.S. Later, this building was purposed as the office building of Bhaktapur Municipality. However, following the devastating earthquake of April 2072 B.S., the building was damaged and Bhaktapur municipality is embarked on a reconstruction of the palace as it stands on heritage site,

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<https://doi.org/10.3126/jscce.v13i1.89512>

is now in construction phase. There is a stone water spout to the east of the square, located across the road, which holds historical significance. A stone inscription affixed to the western wall of the water conduit states that Thanthu Durbar was built by King Jita Mitra Malla. According to the inscription, the Durbar was constructed in 1735 B.S., and featured a large garden, a porch, and the water conduit, situated adjacent to Durbar. Over time, the original garden has been largely overtaken by office buildings, and now only a small section remains to the north of the Municipality office. Historical texts, such as *Thyasaphu*, also reference the expansive garden of Thanthu Durbar, reinforcing the grandeur of the original palace complex. The Thanthu Durbar complex appears to have covered a significant area, said that the complex may have included the foundation of the 55 Windows Palace. Bhaktapur municipality is embarked on a restoration endeavor, with the objective of reinstating the temple's original form, harkening back to the period preceding 1934 A.D. The primary focus of this research is to study a reconstruction methodology that leverages indigenous construction techniques, all while safeguarding the building architectural essence.



Figure 1. Thanthu Durbar

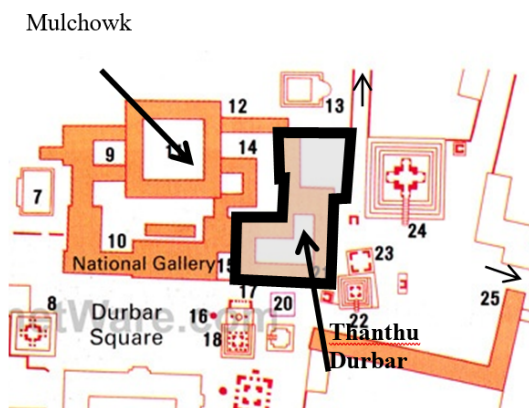


Figure 2. Location map

## 2. Methodology

The approach employed for the reconstruction of the Thanthu Durbar encompassed a range of methods, including thorough detailed documentation, on-site surveys, comprehensive photography, archaeology excavation, and extensive consultations with experts such as conservation architects, historians, and authorized entities. The archaeology excavation in collaboration with Department of Archaeology and Bhaktapur Municipality involved an in-depth examination of reconstruction endeavors undertaken for detail study and survey. The reconstruction project was executed by the heritage section of the Bhaktapur municipality. The heritage section's involvement commenced in the project's documentation, site survey, proposal designs, archaeology excavation and site supervision. Furthermore, the process of excavation yielded valuable authentic evidence that played a crucial role in formulating the final proposal for the reconstruction. The overall traditional reconstruction approach unfolded in various stages, and these steps were meticulously scrutinized and ultimately summarized in the conclusion. In summary, the reconstruction strategy encompassed a multi-faceted approach, combining scholarly research, practical consultations, technical expertise, and the engagement of local stakeholders, all contributing to the reconstruction of palace.

## 3. History

There is a stone water spout to the east of the square (at present across the road). A stone inscription attached to western wall of the conduit mentions that Thanthu Durbar was constructed by king Jita Mitra Malla. The inscription also describes that the Thanthu Durbar was constructed with a big garden, porch and water conduit in 1735 B.S. adjacent to the present old building of municipality. The offices cover most of the garden and only a small part of the garden is in existence in the north of the Bhaktapur Municipality office. *Thyasaphu*, the old book also describes about big garden of Thanthu Durbar. The durbar complex seems to have covered an extensive area as the Basantapur Durbar (now Shree Padma High School) and extended up to the then Tripura Durbar area (now Vidhyarthi Niketan school). It is said to have the foundation of 55 windows palace and the old office building of Bhaktapur Municipality might have adjoined each other.

Historically the records of renovation works:

- Thanthu Layeku was completely damaged the earthquake of Bhadra 12, 1891 B.S. It is said that the building was reconstructed with pair statues of lions of Silu Mahadev Temple standing at east of Durbar.
- The durbar was built in Malla style and collapsed during

the earthquake of Magh 2, 1990 B.S. and reconstructed by Rana regime.

- The building was already white painted with European style windows based on Oldfield's painting of 1934 B.S. (before the earthquake of 1990 B.S. i.e. 56 years ago).
- It is said that the upper two storey of building were destroyed in earthquake of Magh 2, 1990 and renovated with C.G.I. sheet roofing that can be seen at photographs before earthquake 2015.
- The Fig. 4 also represents the Thanthu Layekur may have 4 to 5 in storey. The facades of Thanthu Layeku have been (lime) plastered with white painted. It seems that the door and windows from Malla period have been used in the building as per the sketch.

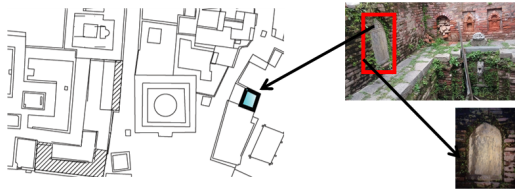


Figure 3. Inscription in Dhunge Dhara at eastern part of Thanthu Durbar

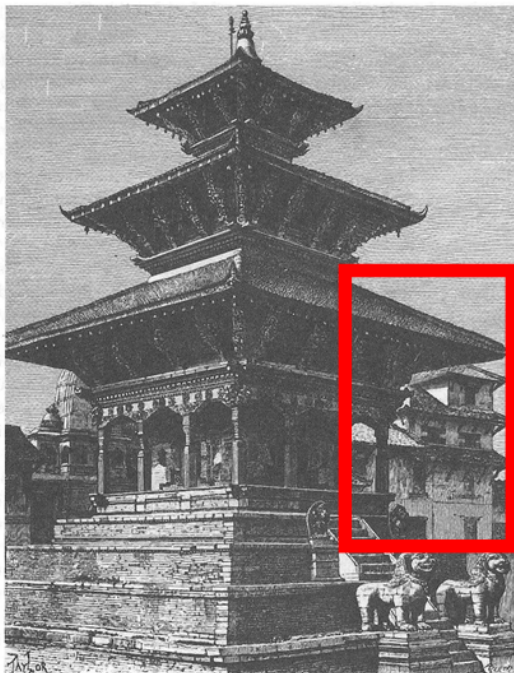


Figure 4. Sketch by Taylor behind the Lapan Dega (Hari-shankar mandir)

## 4. Reconstruction Strategy for the Thanthu Durbar

### 4.1. Study and Documentation of Existing Structure

The existing structure of Thanthu Durbar was measured and documented before commencing on the reconstruction process. The four-storied load-bearing building stood in the main square of Bhaktapur city, characterized by a lime-plastered façade. It comprised two courtyards: the primary entrance courtyard with enclosed bays, and a secondary courtyard formed by a single longitudinal bay. The main entry is accessed from the west. The building features wooden windows, lime-plastered pilasters, decorative cornices on the façade, and a roof covered with jhingati (traditional Newari roofing tiles). The detail survey and documentation was carried through measurements and photographs of existing building.

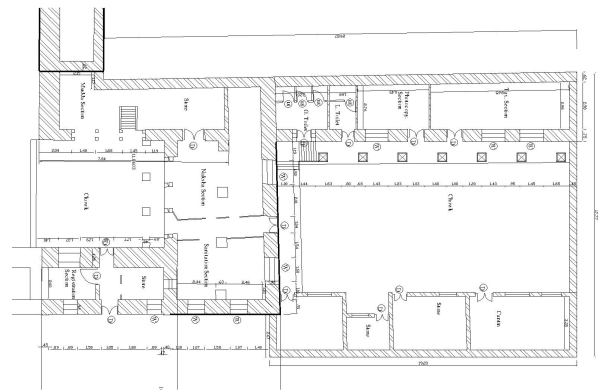


Figure 5. Documentation of building



Figure 6. Building damaged by earthquake

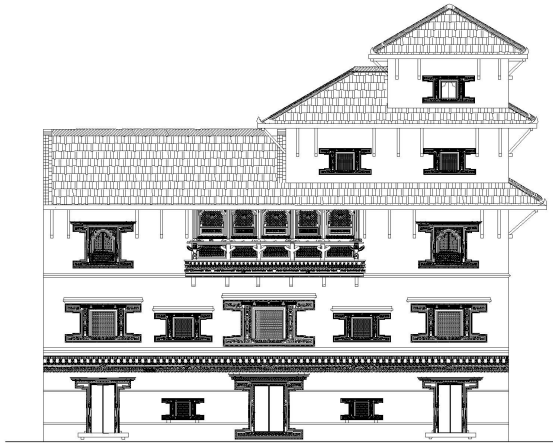


Figure 7. East elevation

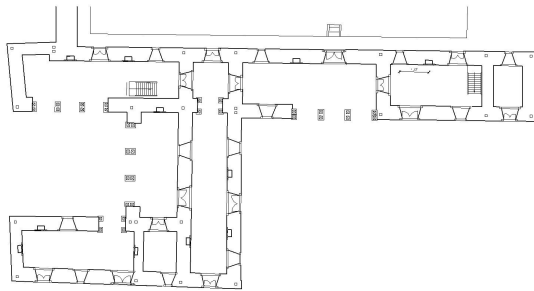


Figure 8. Ground floor plan

## 4.2. Proposal

The reconstruction proposals were prepared following the detailed documentation of the building. The drawings and design were developed in the Malla architectural style, taking into consideration the Fifty-Five Windows Palace, which is connected to the southern side of Thanthu Durbar. The proposals were based on the research of Prof. Dr. Purushwottam Lochan Shrestha, which indicates that the Fifty-Five Windows Palace and Thanthu Durbar were originally adjoining structures built by King Jita Mitra Malla. Accordingly, the design was prepared to harmonize with the adjoining palace, giving the impression of a single unified structure in the Malla architectural style. The storey of the building was referenced from historical illustrations of the building as Figure 4 in "Voyage to Nepal".



Figure 9. Footprint found during excavation



Figure 10. Parts of pottery found during excavation



Figure 11. Artifacts and brick found during excavation

## 4.3. Archaeological Excavation

The existing structure of Thanthu Durbar was measured and documented before reconstruction began. Detailed documentation including precise measurements and photographic records was carried out by the technical



Figure 12. Pit excavation for foundation study 01



Figure 14. Pit excavation for foundation study 03



Figure 13. Pit excavation for foundation study 02



Figure 15. Pit excavation for foundation study 04

team from the heritage section. After this process, the existing building was demolished, and excavation work was initiated through the collaboration of Bhaktapur Municipality and the Department of Archaeology. This significant heritage project demonstrates a thorough reconstruction process, supported by careful documentation and strong collaboration between local authorities and archaeological experts. The team of archaeologists began excavating the foundation by creating pits at various corners

of the building to study the underlying masonry layers. The primary objective was to determine the approximate age of the structure through the collection of foundation samples and fragments of mud pottery, soil condition, depth of foundation and layout of footprint. Detailed documentation of the foundation was carried out, along with a thorough study of its condition. The proposed drawings were revised based on the actual footprint and evidences revealed during the excavation process.



Figure 16. Pit excavation for foundation study 05



Figure 18. Foundation brick works

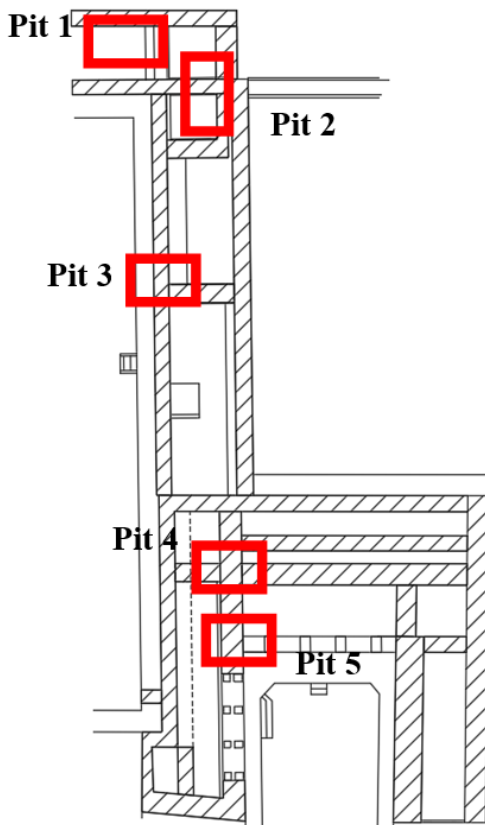


Figure 17. Locations of pit excavation for foundation study



Figure 19. layout of post on base stone



Figure 20. Opening installation with wooden joineries

#### 4.4. Reconstruction Process

A user committee group, together with the Thanthu Durbar Reconstruction Planning Section and in collaboration with Bhaktapur Municipality, was established to initiate the reconstruction project. This collaborative approach has proven sustainable, helping preserve

traditional construction techniques while benefiting both the local community and the municipality. It not only creates employment opportunities for local residents but also ensures high-quality workmanship and minimizes



Figure 21. Horizontal sill and lintel band installation



Figure 23. Traditional door lock system (Khaga)



Figure 22. Horizontal sill and lintel band tie up



Figure 24. Wooden joists laying in first floor



Figure 25. Ongoing reconstruction upto first level

delays related to transportation. The structural analysis of the building was carried out by Khwopa Engineering

College to ensure its resilience against earthquakes. Based on this analysis, the drawings were revised, particularly regarding wall thickness, foundation depth, and the spacing

of the colonnade. The foundation was excavated up to a depth of 6' from the ground level until stone soling was encountered. Initially, a stone was laid on the foundation to prevent water seepage. The mud mortar was used for reconstruction to preserve the traditional use of material. The maa-apaa bricks were assessed for their strength and used in the internal walls, while dachhi-apaa bricks were applied on the outer façade with mud mortar. These bricks were laid in a header and stretcher pattern in alternating layers to enhance the foundation's stability. A trench plan was devised for the precise placement of walls, with widths of 900mm. Corner timber posts were erected at all corners of the load-bearing walls and secured with Lakashi, forming a chauka structure, to reinforce the load-bearing structure. These posts transferred the weight of the superstructure to the ground. Horizontal sill and lintel bands, tie members were installed to distribute structural loads and help bind the wall system together. These bands were connected to the openings and the corner timber posts, enhancing the overall strength of the building and contributing to a more resilient frame structure. The Traditional timber joineries like Geramo san (Dove tail) and бага chhinah san (Half lap) were used to extend timber members and connect different parts. To protect them from decay, all timber members were coated with bitumen. The base stone (Tepu lhon) was laid for the wooden posts (tham) on the ground floor. Wooden beams (nila) were then placed over the posts to support the structural load. The carved wooden doors and windows were installed after the corresponding wall sections had been completed. Niches (gwakhan), inspired by those in the Fifty-Five Windows Palace, were incorporated on the inner side of the walls to enhance the traditional architectural character. The wooden cornices were continued in alignment with the adjoining palace, maintaining visual and structural harmony. Wooden joists were laid to form the floor level above. To date, one story has been completed, and installation of the openings on the first floor is in progress. Throughout the construction process, the technical team from Khwopa Engineering College and the Heritage Section of Bhaktapur Municipality has been diligently supervising the building.

## **5. Findings and Analysis**

The reconstruction of Thanthu Durbar goes beyond restoring its original structure; it also revives traditional earthquake-resistant construction techniques. Indigenous construction methods in Nepal have historically proven resilient, helping safeguard structures such as five-storied temples, the Fifty-Five Windows Palace, and various maths during major earthquakes. The reconstruction process employs historic materials, including maa-apaa bricks, jhingati tiles, wood, mud, carved elements, and structural components such as columns, beams, openings, and struts, to

preserve and enhance the historic character of the building. The project also reintroduces traditional techniques for strengthening both the foundation and the superstructure, using horizontal beams (lakashi), timber posts (tham), and traditional joinery. These timber reinforcements provide a degree of ductility to the structure and increase its load-bearing capacity, enhancing the overall resilience of the Durbar while maintaining its authentic architectural integrity. For the reconstruction of heritage structures in Bhaktapur Municipality, mud was used as the primary binding material. High-quality mud was selected based on laboratory tests conducted on samples from three different locations like Jhaukhel, Nalinchowk, and Sipadol, to ensure optimal bonding efficiency in the structure. As result of soil test, Jhaukhel soil was preferred as its binding strength was effective. The reconstruction process has also emphasized the preservation of traditional skills by engaging local artisans and has revived community participation through the active involvement of the user community group.

## **6. Issues and Challenges**

In terms of community involvement in construction projects, as per national regulations, one strategy involves dividing the project into phases, each with an annual budget limit of Rs.1 crore. The project's reconstruction expenses, as determined by the user committee, amount up to 87 lakh rupees, exclusive of a 13% value-added tax (VAT). However, this approach has its challenges, particularly the potential for project delays as one must wait for the next year's budget allocation. To successfully implement this method, meticulous planning for each phase is essential to remain within the allocated budget. Nevertheless, due to the budget constraint of 1 crore, construction projects often extend beyond the intended timeframe, and this can be attributed to a shortage of skilled workers with expertise in wood, woodworking along with brick and stone working skilled workmanship. Thus user committee was collaborate with the Thanthu Durbar Reconstruction Planning to assure the budget not to delay in reconstruction process. Moreover, obtaining heavy woods like sal, which are not readily available, requires expensive imports from the Terai region and also the lack of qualitative mud also the problem to stand the building in traditional technology and methodology Community driven approach in construction projects, national regulations often require dividing projects into phases, each with an annual budget limit of Rs. 1 crore. For the Thanthu Durbar reconstruction, the user committee can determined the project in one phase expenses to be up to Rs. 87 lakh, excluding a 13% value-added tax (VAT). However, this phased approach presents challenges, particularly the risk of delays if one must wait for the next year's budget allocation. Despite careful planning, budget constraints of Rs. 1 crore often result in construction extending beyond

the intended timeframe. This delay is further compounded by a shortage of skilled labor, including artisans specialized in woodworking, brickwork, and stone masonry. To address this, the user committee collaborated closely with the Thanthu Durbar Reconstruction Planning Section to ensure the reconstruction process stayed on schedule. Additionally, sourcing quality construction materials poses challenges. Heavy timber, such as sal, is not readily available locally and must often be imported at high cost from the Terai region. Similarly, obtaining high-quality mud, essential for traditional construction techniques, remains difficult, yet it is crucial to ensure the building's structural integrity using traditional methods and materials as the construction is ongoing.

## 7. Conclusion

Heritage and cultural values form an essential part of society. People interact with both tangible and intangible heritage in their daily lives, making its preservation and conservation through traditional technologies and methodologies vital to passing historic values from one generation to the next. Community-led reconstruction of heritage sites, through active local involvement, not only strengthens traditional construction techniques but also instills a sense of pride and ownership among the residents. The reconstruction of Thanthu Durbar in Bhaktapur Durbar Square exemplifies a comprehensive and meticulous approach to preserving Nepal's architectural heritage while integrating earthquake-resilient construction methods. The reconstruction strategy included thorough documentation, expert consultations, archaeological excavation, structural analysis, and active community participation. Traditional construction methods were adhered to, using materials such as mud, wood, and bricks, while innovative solutions—such as timber reinforcements and traditional joinery—were incorporated to enhance structural resilience. The ongoing reconstruction will continue to maintain the historic authenticity of the structure while upholding these traditional and resilient construction practices.

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