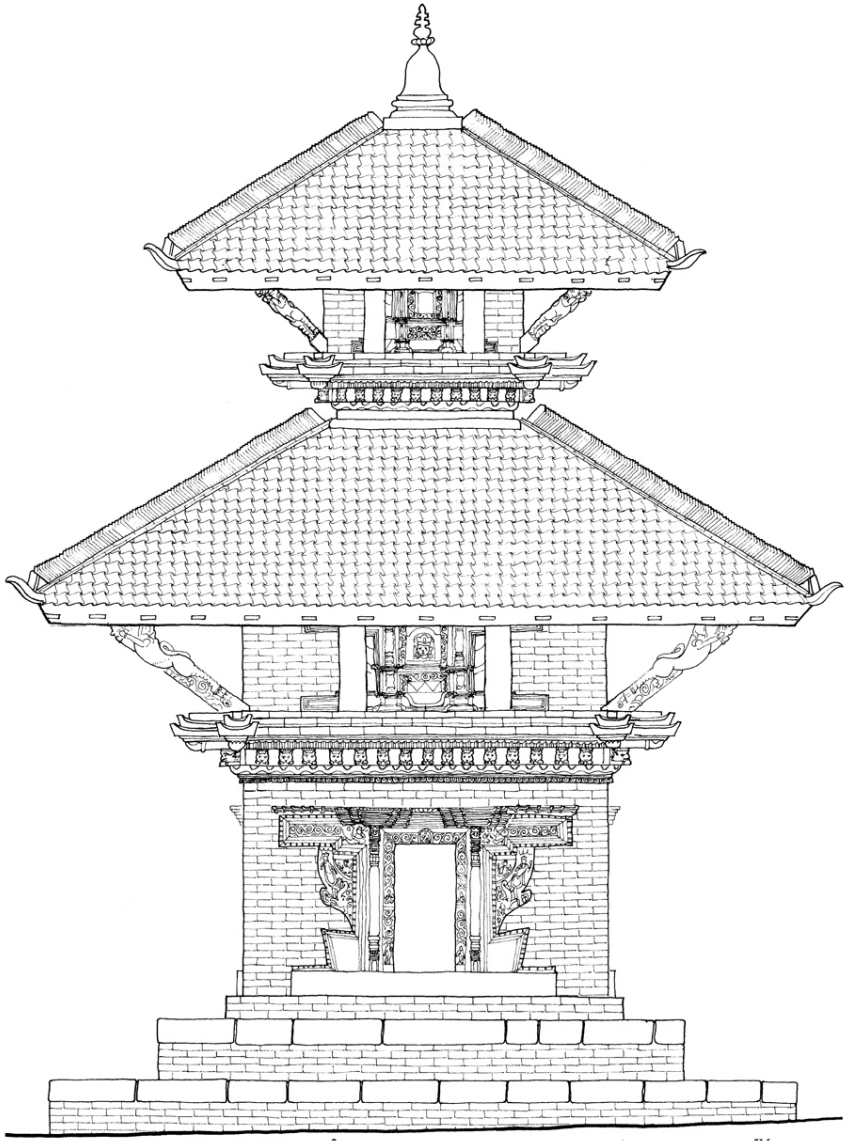

LAKSHMI NARAYAN TEMPLE

Kathmandu Darbar Initiative

A Joint Project Of
Nepal Government's Department Of Archaeology,
Kathmandu Metropolitan City
And
Kathmandu Valley Preservation Trust

FINAL REPORT

Rohit K. Ranjitkar * Lumanti Joshi
Kathmandu Valley Preservation Trust
August, 2007

The Kathmandu Valley Preservation Trust is proud to announce the successful completion of the restoration of the Lakshmi Narayan Temple, one of the projects of "Kathmandu Darbar Initiative" on July 2007. On behalf of the Trust, we would like thank all the generous supports, without whose cooperation the project would not have been possible.

With generous support from
U.S. Ambassador's Fund for Cultural Preservation, US Embassy, Kathmandu,
Kathmandu Valley Preservation Trust (U.S.A.)

Implemented by
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Incooperation with
Nepal Government, Department of Archaeology (DoA) and
Kathmandu Metropolitan City (KMC)

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Research
Kathmandu Valley Preservation Trust's Technical Team

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Mr. Prem Prasad Bhattarai, Representative of Ministry of Finance,
Mr. Kiran Dhungana, Representative of Ministry of Culture, Tourism and Civil Aviation
and
Mr. Kashinath Tamot, Researcher, Nepal Research Center.

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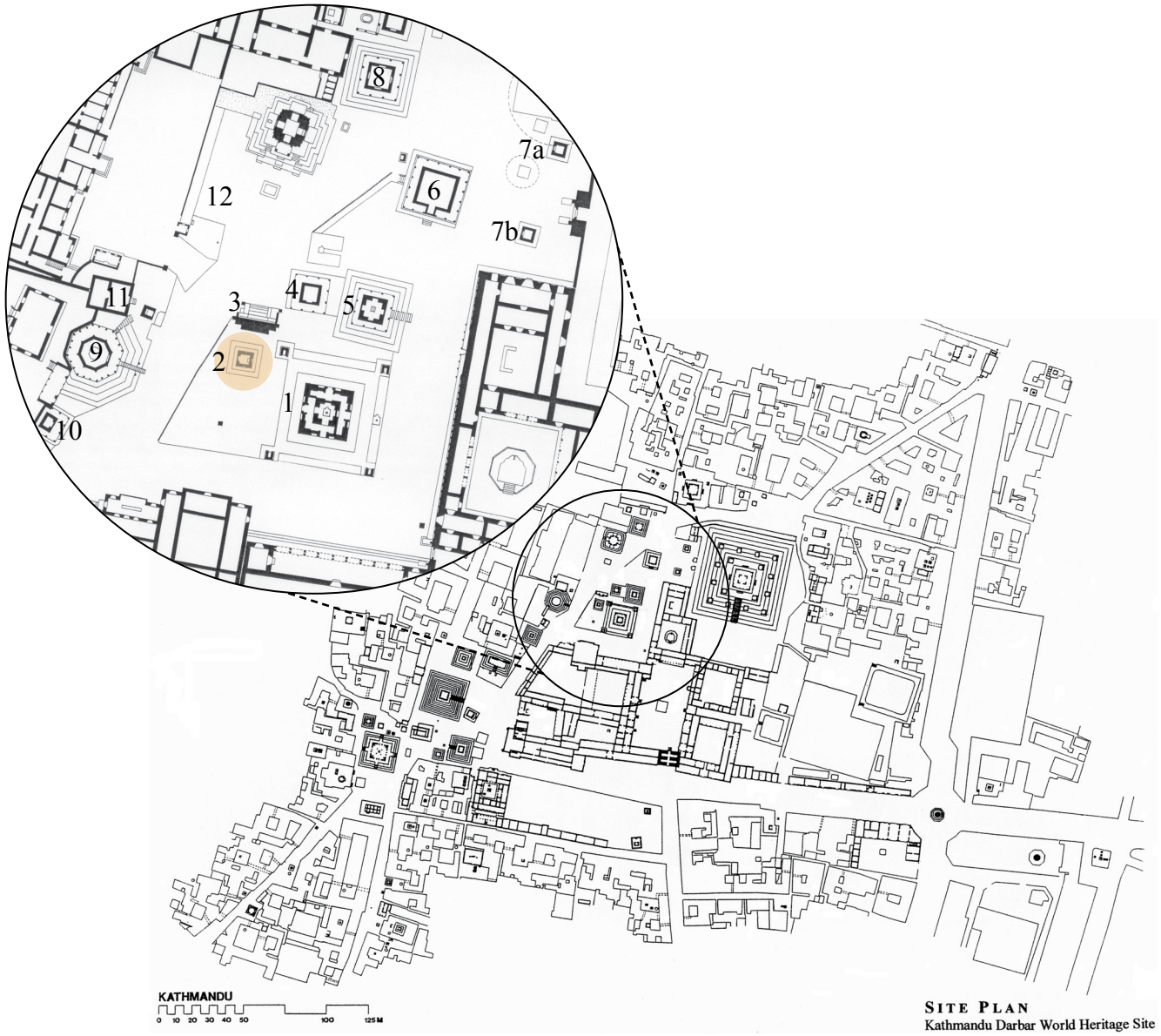


Kathmandu Darbar Initiative

Completed projects

1. Jagannath Temple (1563)
Restoration completed in 2004

2. Lakshmi Narayan Temple (18th c.)
Restoration completed in 2007

3. Kal Bhairav (17th c.)
Restoration completed in 2005

4. Indrapur Temple (1674)
Restoration completed in 2002

5. Narayan Temple (16th c.)
Restoration completed in 2003

6. Kageswar Mahadev Temple (1711)
Restoration completed in 2005

7a. Mahadev Temple I (17th c.)
Restoration completed in 2007

7b. Mahadev Temple II (17th c.)
Restoration completed in 2007

8. Mahavishnu Temple (17th c.)
Restoration completed in 2002

Target Projects

9. Bansagopal Temple (1649)
Documentation completed in 2002 and seeking funds for restoration.

10. Saraswati Temple (16th c.)
Documentation completed in 2002

11. Drum House (19th c.)
Documentation completed in 2002

12. Lost Historical Palace Wing (19th c.)
This wing was totally damaged during the 1934 earthquake and was never rebuilt.

left: Site plan showing the focus temples in Kathmandu Darbar Square, which are part of Kathmandu Darbar Initiative.

left: Lakshmi Narayan Temple, 2004. The original configuration of the temple was completely lost. When the Trust started its documentation, the roof structure was in a dilapidated state. The rafters were of inappropriate length and 50% of the roof tiles were lost, thus, allowing the rainwater to penetrate into the structure. The cement plaster had damaged exposing the corroded brick work. *Photo by: Lumanti Joshi, August 2004.*

right: Lakshmi Narayan Temple, 2007. The entire structure was recreated with the help historical photographs. After a detail study of elements from similar temples of the same time period, carving details such as the doors, windows and the cornices were carved. *Photo by: Lumanti Joshi, August 2007.*

INTRODUCTION

Restoration of Lakshmi Narayan temple has given back the Kathmandu Darbar Square a significant temple to accentuate the environmental quality of the historically and culturally significant square and complete the historical ensemble. With more than 5 temples in the historic precinct outside the Kathmandu's historic Royal Palace restored since 2000 by the Trust, it was all the more necessary to restore this 18th century diminutive temple.

The design of the temple was altered to a great extent after the Great earthquake of 1934. Originally, it was a finely proportioned pagoda style temple (refer to page 4 and 6 for the pre earthquake photograph). It cannot be confirmed whether the reconstruction after 1934 was prompted by it complete collapse or was just a hasty and insensitive attempt to repair a partially damaged temple.

The temple is totally reconstructed, not a single original element was incorporated. Even the original proportion of the roof and the configuration of the superstructure were changed during this haphazard reconstruction.

The temple was in ruinous state when KVPT initiated the documentation in 2004. Much of its existing fabric had disintegrated. The roof had succumbed to the monsoon rains with water penetration through the damaged roof tiles and members into the structure. In addition to this, the timber roof member were of insufficient size and had inferior joinery, thus further reinforcing the steady dilapidation of the structure. The brick masonry had dilapidated under the non historic bricks and cement plaster. The structure, which in advanced state of disrepair, would have been severely damaged, without the Trust's timely effort to save the temple.

The initative to restore the temple to its historical state under the banner "Kathmandu Darbar Initiative" was successful after the Trust was able to secure funds from the U.S. Ambassador's Fund for Cultural Preservation, 2005

top: Principal Image in the sactum. No inscription is avialable to determine the original date of the image. *Photo by: Lumanti Joshi, August, 2007*

PROJECT FRAMEWORK

Prior to the "Kathmandu Darbar Initiative" project conceived by the Trust, most of the temples standing at the entrance of Hanuman Dhoka Royal Palace were in a bad state of repair. While various international and large scale restoration projects had been developed and executed for Darbar Squares in Patan and Bhaktapur, the historically and culturally significant square of Kathmandu has been largely ignored. Thus, this model effort initiated by the Trust to restore the monuments in the historic precinct of Kathmandu's historic royal palace was developed to fill this gap.

Kathmandu Valley Preservation Trust, an internationally recognized organization working in the field of conservation since 1990, was uniquely position to launch this noble project. Since its establishment 17 years ago and prior to Kathmandu Darbar Initiative Project, the Trust has rescued more than two dozen architecturally important yet threatened monuments in the valley.

Under the flagship of "Kathmandu Darbar Initiative", the Trust has restored eight temple structures in Kathmandu Darbar World Heritage site including the recently refurbished Mahadev and Lakshmi Narayan temples. Originally, the project comprised of three key temples, which are Jagannath, Narayan and Indrapur temples, all at the center of the square. The principal funding was provided by the prestigious the Robert W. Wilson fund for Conserving our Heritage under the auspises of the World Monuments Fund (USA). Project was the first of it's kind in the history of conservation in the country with major corporate houses of the country which includes Soaltee Hotel LTD, Surya Enterprises, Surya Tobacco Co., Nepal Lever Ltd and Standard Chartered Bank Nepal, joined the rally to conserve these monuments of historical and artistic significance, to match the funds from the World Monuments Fund.

New donors, such as US Ambassador's Fund for Cultural Preservation,Nepal Investment Bank, Mr. and Mrs. Prithivi Bahadur Pande, German Development Service, emerged to support this ambitious multi year scheme, as we progressed with the project, thus, enabling the trust to restore more than half a dozen temples in the square itself. Restoration of Lakshmi Narayan temple along with Mahadev temples, flanking the West gate of Taleju temple was made possible with generous support from US Ambassador's Fund for Cultural Preservation, 2005.

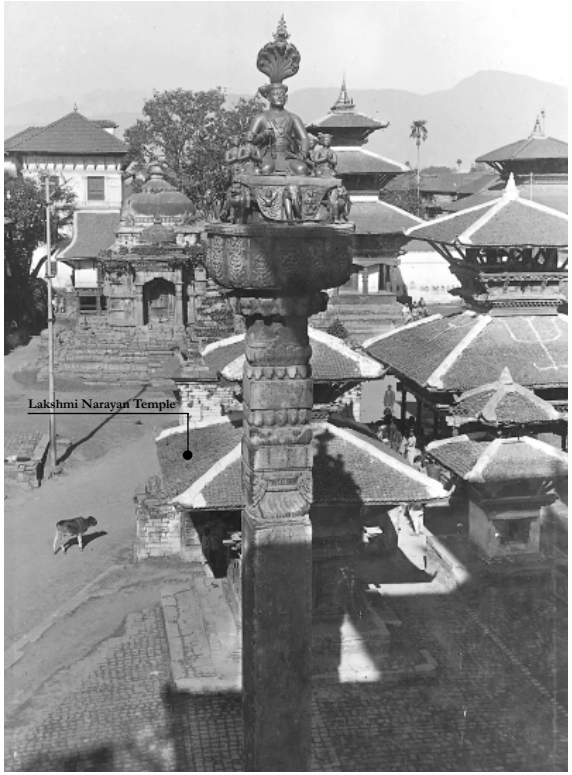
The project framework emcompasses both public outreach activities and critical training of the local professionals in project management, public relations, preservation advocacy and the state of the art conservation technology. The project was implemented under the full direction and continious supervision of the technical team of the Trust. It was executed in collaboration with the Department of Archaelogy and Kathmandu Metropolitan City.

HISTORICAL BACKGROUND

No historical document or any kind of inscription could be found regarding the establishment of the Lakshmi Narayan Temple, thus it's origin could not be determined. However, it has been mentioned in the inventory of the monuments in "Kathmandu Darbar Square in need of restoration" by John Sanday (1970) and "Kathmandu Valley-The preservation of Physical Environment and Cultural Heritage Protective Inventory " by Carl Prusha (1975) as a **18th** century temple.

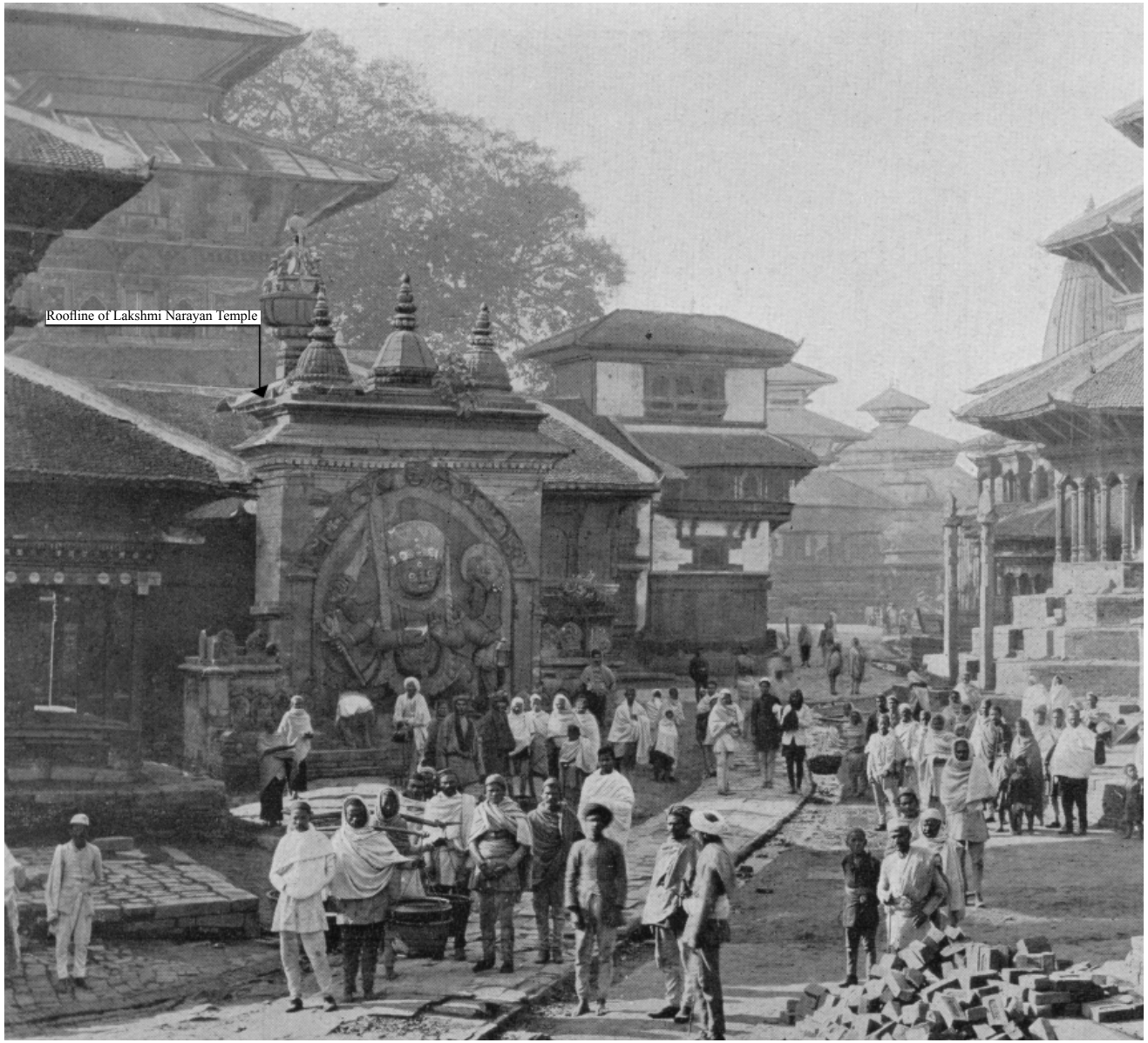
We have a few of the historical pre-1934 photographs which illustrate the original configuration of the Temple. One of the oldest picture available to us is a 1898's photo of the Square taken by Dr. Kurt Boeck (refer to Page 6). He was German photographer who received permission to visit Nepal, then known to the western world as " that wonderland, of which even the name is hardly known to us" in 1898.[1] In this, we can comprehend the original roofline of the temple, standing behind the colossal image of Kal Bhairav. However the overall form of the temple cannot the determined from this photograph.

We know from historical documents, chronicles and inscriptions available in the Valley that many temples of various forms were build in memory of deceased loved ones in Malla period. According to Mr. Kashinath Tamot, temples dedicated to a divine couples such as Uma Maheshwor, Radha Krishna or in this case Lakshmi Narayan are usually consecrated by the Malla rulers in the name of their wives or consorts. The octagonal temple west of Jagannath temple is an appropriate example of this type of endowment to the Square. This structure dedicated to Krishna with his consorts Rukmini and Satyabhama was built by Pratap Malla in 1647/48 A.D. in commemoration of his two departed wives. Likewise, this temple, which houses an image of Lakshmi Narayan in Ardhananeswar form (half male and the other half depicted as



top: This early 1920s photograph shows original 18th century configuration of the Lakshmi Narayan Temple (behind the Pratap Malla pillar which is in the foreground). Note the doorways at the southern and western facades. This assisted us in determining the fact that temple originally had four doors, while documenting the proposed concept. The existing one had only one entry with only stone thresholds remaining of the original on all sides. *Photo courtesy: Manju Rana.*

1 Dr. Kurt Boeck, "Durch Indein ins verschlossene land Nepal", published by Leipzing: Ferdinand Hirt and Sohn, 1903



left: This historic photograph by Dr. Kurt Boeck was taken during his visit to Nepal in 1898. Here, we can notice the roofline of the Temple behind the open shrine of Kal Bhairav. The building adjacent to the temple and behind the colossal image was enclosed within a boundary wall. This structure as well as the wall no longer exist.

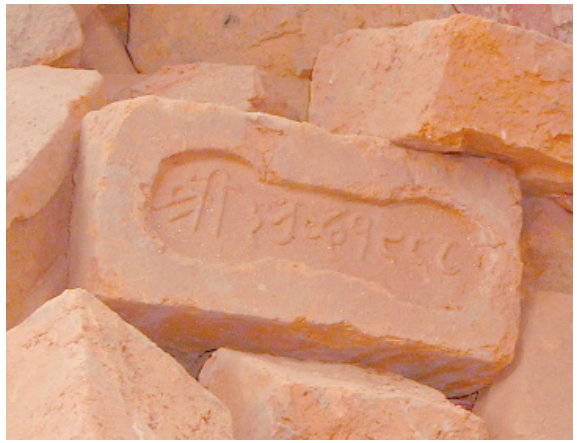
female), could have been build by one of the Malla kings in early 18th century in memory of his deceased wife. During the later 18th century of the Malla rule, not many monuments were built in the square as the city of Kathmandu saw the struggle for power among the Malla rulers of Kathmandu till the conquest of the Gorkha king in 1768 A.D. [3] But due to the lack of documentary evidence (manuscripts, local records and inscriptions) it is very hard to establish the exact date of its construction.

Photographic documentations from the early 20 century and post-1934 give a glimse of its transition from a well proportioned double tiered temple to an insignificant, unsightly plastered structure with ill proportioned roofs. In the early 1920 photo (refer to page no. 4), the shah period building is already lost, but the Lakshmi Narayan Temple still retains its original configuration. Photgraph from the " Kathmandu Valley--The preservation of Physical Environment and Cultural Heritage Protective Inventory" taken in 1960s (26 years after the earthquake) shows the temple with the drastically altered form. The massive earthquake of 1934 must have severely damaged the original structure and was completely rebuilt without incorporating its original elements.

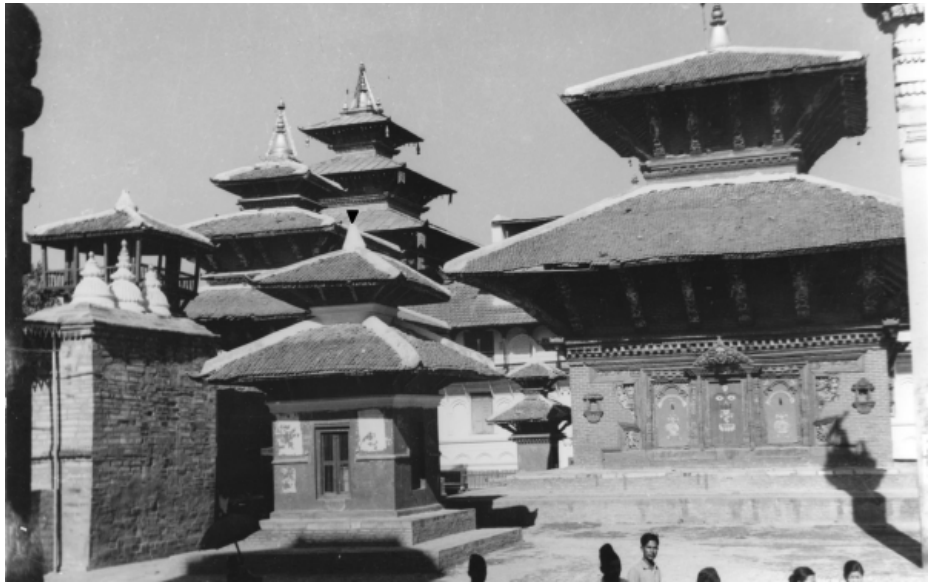
When the structure was dismantled in 2006 during the restoration, bricks inscribed with the name of Juddha Shamshere Rana and a date (1940/41 A.D.) were discovered. This information sheds light on the fact that the temple was reconstructed nearly seven years after its collapse in the catastrophic event. The earthquake measuring 8.5 in Ricter scale was extremely destructive, damaging more than 2000 monuments in the valley and killing 1500 people. Rana, the then Prime Minister of the country executed an extensive repair and restoration works of the monuments of the valley which were damaged. Since the scale of damage was massive, many of the structures were haphazrdly rebuilt regardless of its original design as in the case of Lakshmi Narayan Temple.

The Kathmandu Valley Inventory also mentions that the temple was renovated in 1958 but does not say what was basically done. It was the period when many temples in the Valley were "beautified" to celebrate the coronation of King Mahendra. No work has been done to restore the temple since, leading to its steady disintegration.

3 Dr. Dilli R. Regmi, "Medieval Nepal", published 1933, page no.



top: While dismantling the dilapidated brick masonary, the bricks inscribed with the name of the then Rana Prime Minister and the date of reconstruction, B.S. 1998 (1940/41 A.D.) were discovered. Considering this date, it can be said that temple was reconstructed only seven years after its collapse in the 1934 earthquake. *Photo by Lumanti Joshi, December 2006.*



top left: The Lakshmi Narayan Temple (in foreground) in its pre-1934 configuration. Note that the building next to the temple and the enclosing wall, which was described in the previous page, is already completely lost before 1934. The photo was taken in 1920 A.D. *Photograph courtesy: Manju Rana*

top right: The configuration was drastically changed with shorter roof line during the 1936 reconstruction. Photo taken in 1960 A.D. *Photograph courtesy: Bahadur Photo Studio.*

left: The temple in 2005 with Jagannath temple being restored (in background). *Photograph by: Lumanti Joshi, July 2005.*

CONSERVATION ISSUES AND STRATEGIES

Restoration of historic monuments in the Kathmandu raises several arguements regarding the question of historic material retention, authenticity and more importantly on the justification of replacement or carving of lost elements. Lakshmi Narayan Temple is no different than others in terms of these challenges.

Very little of its existing fabric is original. Apart from the stone threshold from doors and the principal image, rest of the structure is dated from later reconstruction and repairs. As already mentioned in the previous chapter, the drastic alteration of the original structure (as seen in the photograph from 1920s) was triggered by its destruction during the 1934 earthquake. This is also proved by the discovery of the 1940/41 dated bricks. The post earthquake rebuilding greatly simplified the original configuration. With the 18th century structure completely lost, we had to evaluate whether the existing 20th century reconstruction is worthy of enough to be conserved.

Restoration Design Question- Should the 20th century reconstruction be retained?

Our approach to the question involved analysis of the structure as a whole and depended on various larger considerations in the local context. The hasty and haphazard reconstruction after 1934 earthquake had consequently produced a much diminutive and reduced version of the 18th century construction minus the carving details. The quality of design and the materials used during the 1940/41 rebuilding had to to more with a building overseer rather than the traditional craftsmen without considering the original elements and style, thus, does not merit to be conserved.

In addition to this, the 20th century building failed to convince us of its restorability because

* Primarily, because the existing structure lacked the richness and the artistic value of the original. And leaving it as it stood would seem not right with most temples adjacent to it already restored.

*The roof composition and also the entire structure are of poor quality, architecturally as well as constructionwise. The ill proportioned roof members with inferior joints aggravated the seepage of the

annual monsoon into the building structure, thus, subsequently damaging it. Retention of this structure would mean further decay of the building.

* The cluster of temples, including the Lakshmi Narayan Temple, standing at the entrance of the Hanuman Dhoka has been a snapshot of the country's architectural heritage since it was opened to the foreigners some 56 years ago. Restoring the temple to its original configuration would be complementary to the environmental and aesthetic quality of the historic square as a whole.

Moreover, we had the skillful craftsmen to recreate the lost elements. Recarving the missing details would mean generating work for the craftsmen, thus, continuing the living traditions of the valley. Commisioning new carvings while restoring the monuments of the Valley had always been controversial. In this case, the religious, aesthetic, philosophical and human considerations outweighed the prevailing international preservation principles, which advocates freezing of a monuments in time.

Thus, total reconstruction of the temple was conceived as the prime objective of the project.

DOCUMENTATION PROCESS AND RECREATING THE TEMPLE

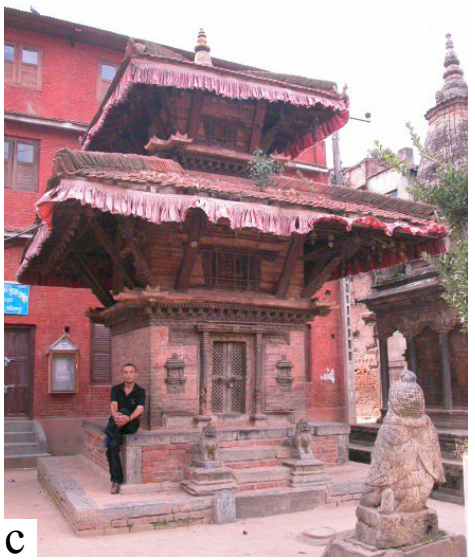
The preliminary phase of documentation was to prepare drawings, extensively recording the existing conditions of the temple. This has always been a significant part of the Trust's continuous documentation of historic monuments. Following 1:20 scaled drawings detail drawings were prepared in ink to document the temple as it existed.

1. Ground Floor Plan: Existing Conditions
2. First Floor Plan: Existing Conditions
3. Principle West Elevation: Existing Conditions
4. West East Section: Existing Conditions

Drawings were based on the site inspection and measurements taken at the site. In addition to these, the temple was thoroughly documented in form of digital photographs. These provided valuable information about the extent snd causes of decay of the structure.


a


b


c


d

top (from left to right): a. Narayan Temple, Patan Darbar Square, Patan; b. Sulima Ratneswar Temple, Sulima Tole, Patan; c. Narayan Temple, Ikhalakhu, Patan and d. Lakshmi Narayan Temple, Patuko, Patan.

The technical team of the Trust scouted around Kathmandu and Patan, studying and documenting the proportions of the elements of various temple, whose configurations are similar to Lakshmi Narayan Temple. Based on this thorough research, the temple of Lakshmi Narayan, Kathmandu Darbar Square was proposed. This also includes the proposed carving details and developing iconography for the temple, which was further supported with the consultation with historian, Mr. Kashinath Tamot.

Photos by: a. Rajan Shrestha, August 2005, b. Raju Roka, March, 2000, c. Lumanti Joshi, Septemper, 2005, d. Raku Roka, May 2004.

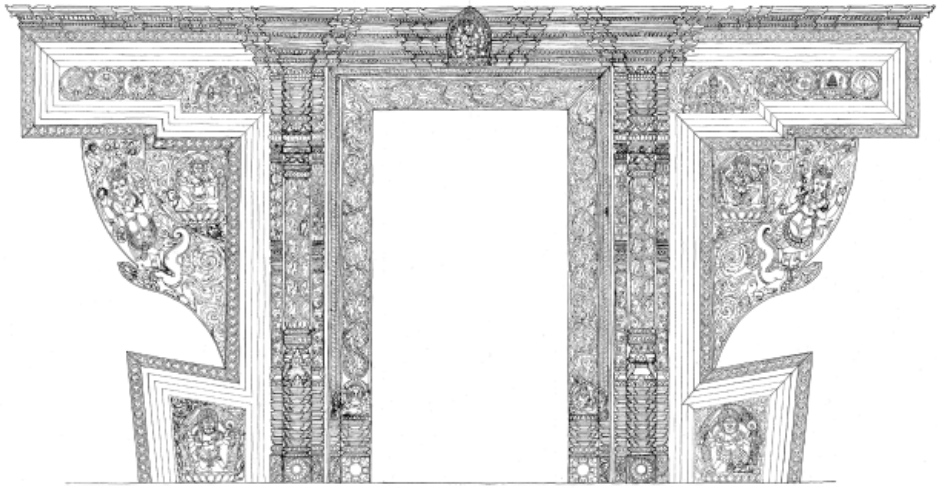
Having analyzed that the 20th century construction was not worthy of restoration and opted for reconstruction of the entire building, the next issue was to develop the proportions of the proposed structure. Apart from the few historical photographic records, no documentary evidence existed from the original structure. We knew from our 16 years of experience of restoring and documenting pagoda structures that the proportions of the temples of the alike built are more or less the similar, and only the details tended to vary. Thus, the technical team of the Trust scouted around Patan and Kathmandu studying similar comparables. Taking these as reference, design of the temple was conceived. The Sulima Ratneswar temple, for example, though from earlier period than Lakshmi Narayan Temple, has similarity in their construction and even the scale of the masonry structure is the same.

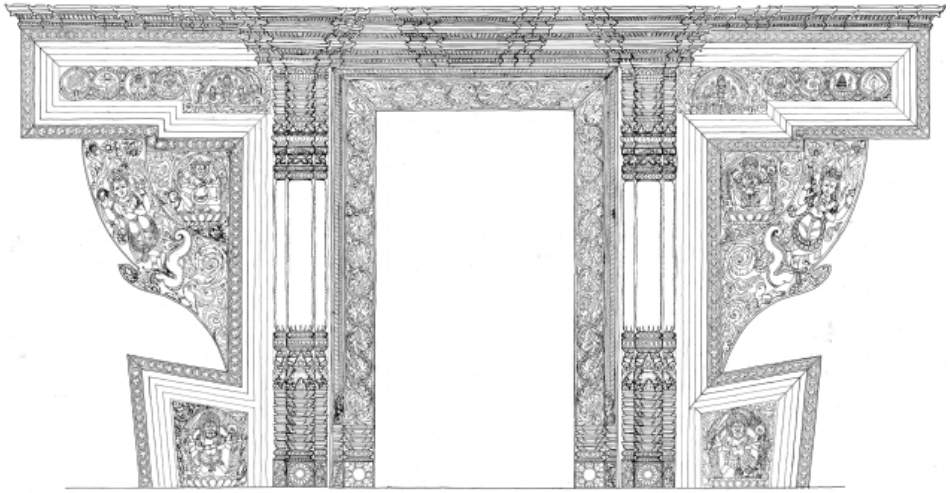
Likewise, to be more precise in our assumption of its original height, a comparative analysis of the historic photo and the photograph of the temple in existing condition was done. Both the pictures illustrate the temple with two different configurations in two different periods in history. We adjusted the others temples in background to same proportion to attain the close to exact configuration of the temple as compared to the original. The elevation proposed for the reconstruction was, thus, prepared with relative exacitude based on the historic visual records.

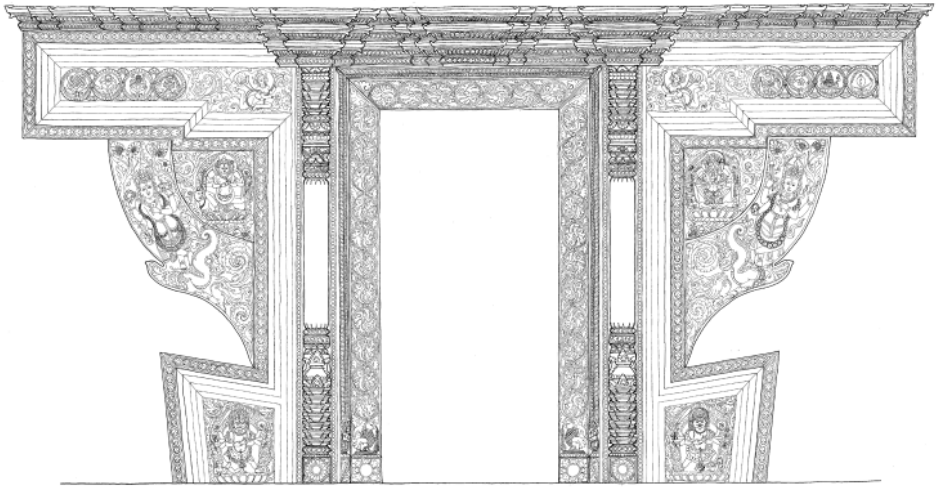
Based on the above analysis and comparative studies, 1:20 scaled comprehensive drawings of the ground floor and first floor plans, principal west elevation and west-east section were prepared for the proposed reconstruction. All the drawings produced are drafted on tracing paper with ink. These are included with this report for further reference.

top: A trench was excavated at the east section of the plinth to evaluate the condition of the foundation. The area below the plinth still had the original ma appa bricks. Thus, the 1940/41. *Photo by Lumanti Joshi, Octuber 2005.*

top: A comparison between the historical form and the existing structure was done with the help of this photograph, in order to determine the overall configuration of the temple. Other surrounding temples were adjusted to almost similar proportions in both the pictures. In this manner, the actual height of the temple was figured out.







from top left in clockwise direction: The preliminary drawings prepared for the door ways were very ornate with combinations of various traditional motifs and patterns. In the second phase, it was modified with less details. Further refinement of the drawings for proposed doors were done, which used much simpler details. In addition to this, the iconographical images incorporated are reinforced with religious ideologies regarding the arrangement and position of the deitites.
Drawings by: Lumanti Joshi and Rajan Shrestha, November 2005.

RECAPTURING THE LOST ELEMENTS

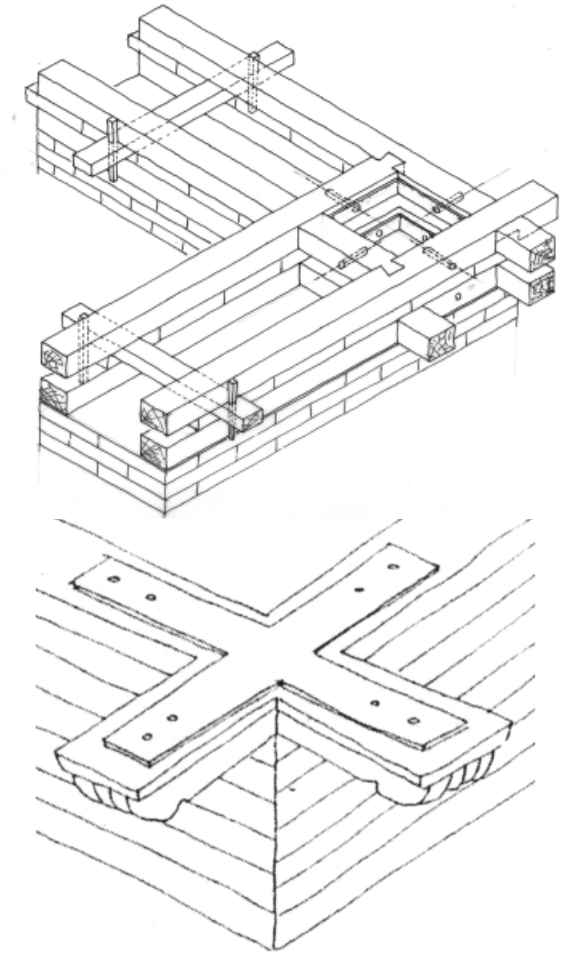
With all the original elements of the temple, the team was presented with the daunting task of determining what had existed originally in terms of details. In other project under the Kathmandu Darbar Initiative, namely the restoration of Kal Bhairav, we had good quality photo documentation of the pre-earthquake configuration, with most detail clearly comprehendable, thus, recreating the lost details was not complicated. But in this case, no such backing of visual records were available to be used as a base. Even from the enlargements, the iconography as well as the other details of the carved elements were not clear.

The carving the lost decorative elements such as the doors and windows merited special consideration. Since the entire structure was being reconstructed, leaving the door and windows plain, without any carving would be too harsh and bare on the new patina of the temple. In addition to this, we had several similar temples dotting the corners and junctions in the valley, taking references from these would be appropriate. The design challenge, thus, had us looking for comparables, our most practised approach to the design question. Narayan temple at Patan Darbar Square and Lakshmi Narayan Temple at Patuko, both in Patan were used as our model for designing the elements.

However, we could perceive from the historical photodocumentation was that the temple originally had four doors on four facades and recreating them would mean an indepth study of the iconography used in a Vaishnav temple. Several weeks of surveying about 15 temples of similar configuration had us realise that there was no exact comparable from which to copy. We instead borrowed individual solutions from different historical examples to solve the design problem. Mr. Kashi Nath Tamot, a noted art historian in the country provided us with varied combinations of iconographical details traditionally used in the details of the temple fenestrations.

the aim of the first round of design was to produce a full scaled line drawing of one of the doors to serve as the basis for the actual carving. To determine the overall shape of the door, we relied on the historical pictures (the number of bricks on the lower levels could be counted to determine the height which would be more or less closer to the original). A mock up of the door was put up at temple itself to tally the proportions of the door with the structure and thus, to finalize the drawings.

top to bottom: At first, the basic frame work of the window is prepared. Then, rough outline of the details are are carved with reference to the drawings. The carvings are further refined by the Master carver himself for the final product. *Photos by: Raju Roka, October-December, 2006*



top : Steel bracing between the inner and outer walls acts as a ring beam.

bottom: The cross metal piece tying two corners of the timber cornices prevents them from breaking under the heavy load of the terracotta pieces.

Indra Kaji Silpakar, one of the best woodcarvers in Nepal, was given the commision of carving doors and windows based on these drawings. He has the long experienc of working in the German funded restoration projects in Bhaktapur and has previously worked with the Trust in another of its ambitious projects to carved the lost tympanum of the Sulima Temple in Patan. His work for this has been praised by local and international conservation experts alike.

RECONSTRUCTION OF THE TEMPLE

Reconstruction of the temple merited over the retention of the 20th century fabric, which has been dicussed in previous chapters. The project focussed not only on the "visible" restoration of the monument but also on its structural strenthening by introducing new techniques. This has always been a key component of all the Trust's previous projects. Nepal, being in the earthquake prone zone, the seismic strengthening measures would be extremely beneficial for the longevity of the monuments.

A mat foundation was created between the foundation walls. This was constructed with the same materials as the walls that is traditional bricks in mud mortar so that the mat will ensure joint movements of the walls and prevent the uneven settlements during a seismic motion. Apart from these, various measures were integrated during the reconstruction for seismic strengthening of the structure during an event of earthquake as the weakest points in the traditional structures occur at the joints. Strengthening with concealed modern materials, while maintaining historic configuration is desirable in terms of both preservation and seismic issues.

The corner decorative timber cornices (lah-kah in Newari) just below the corner struts bear heavy terracotta corner pices. Since the timber corner pieces are half notched, their section is insufficeint to bear the heavy load. This often leads to broken corners creating a weak joint which may fail under the load of the strut. So, to prevent this, a metal cross piece was screwed on top of the lah-kah. the terracotta pieces rest above there by concealing its presence. Another of the seismic strengthening measures incorporated during the reconstruction is steel bracing (L-sections), which were introduced at the joints between the outer and inner wall plates at all levels. This will help the existing wall plates to act as a ring beam in the event of seismic movement.

The restoring the Lakshmi Narayan Temple to its original state, thus, was a multi-faceted project with complex combination of incorporating new modern techniques with traditional time honoured materals and methods.

OTHER RELEVANT ACTIVITIES

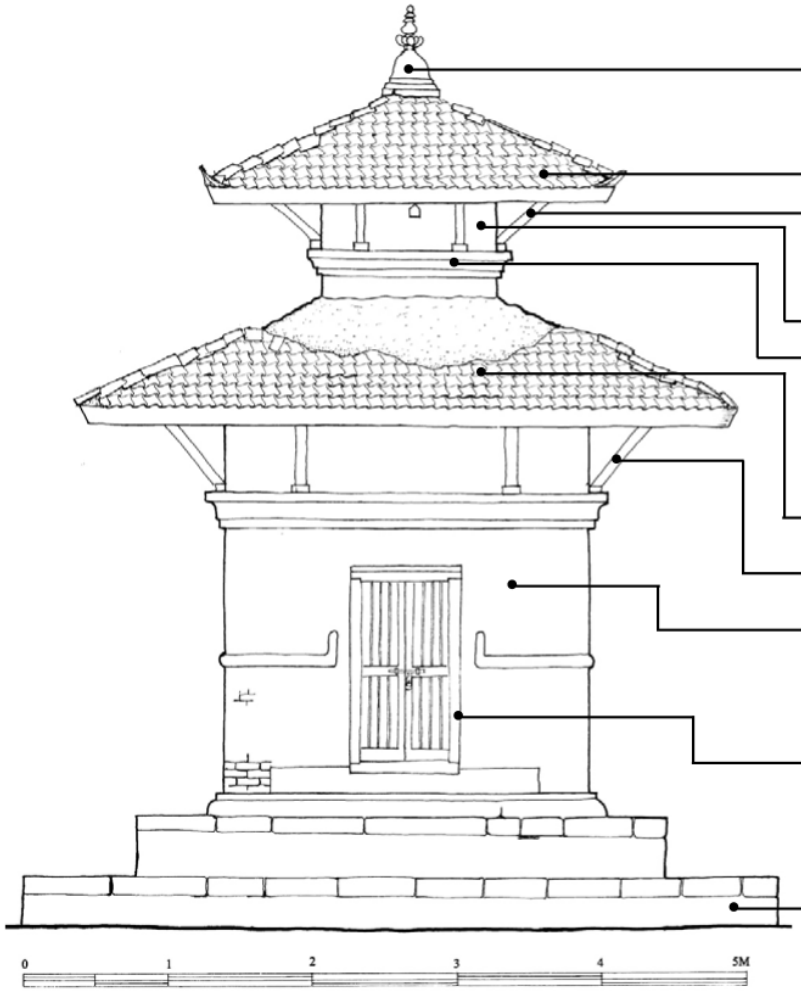
Training activities

A German student, Maike Voekel, specializing in conservation of wood completed her three months intensive training program during the project period. She is currently studying in "Conservation of Timber" from University of Potsdam, Germany. During her stay at KVPT, she investigated the humidity bearing property of Sal wood, which is extensively used for carving details and other timber structural members in historic buildings. Based on this study, she conducted shorts tests to propose a most considerate impregnation material to be used on the wood, which reduced the speed of decay of the weathered wood. Her work regarding this will be very beneficial in the Trust's forthcoming project "The Restoration of Patan Palace Complex.

Public Awareness:

The complete restoration of the monument has preserved cultural heritage and fuelled awareness among the local community. Restoration of several monuments in the valley illustrates the growing awareness of the community regarding conservation of culturally and architecturally significant structures. While the restoration was progressing, people with diverse backgrounds, students of architecture dropped in just to observe the work being done. In addition to this, the interaction with the general populace has been a learning experience for the team of the Trust.

ANNOTATED DRAWINGS

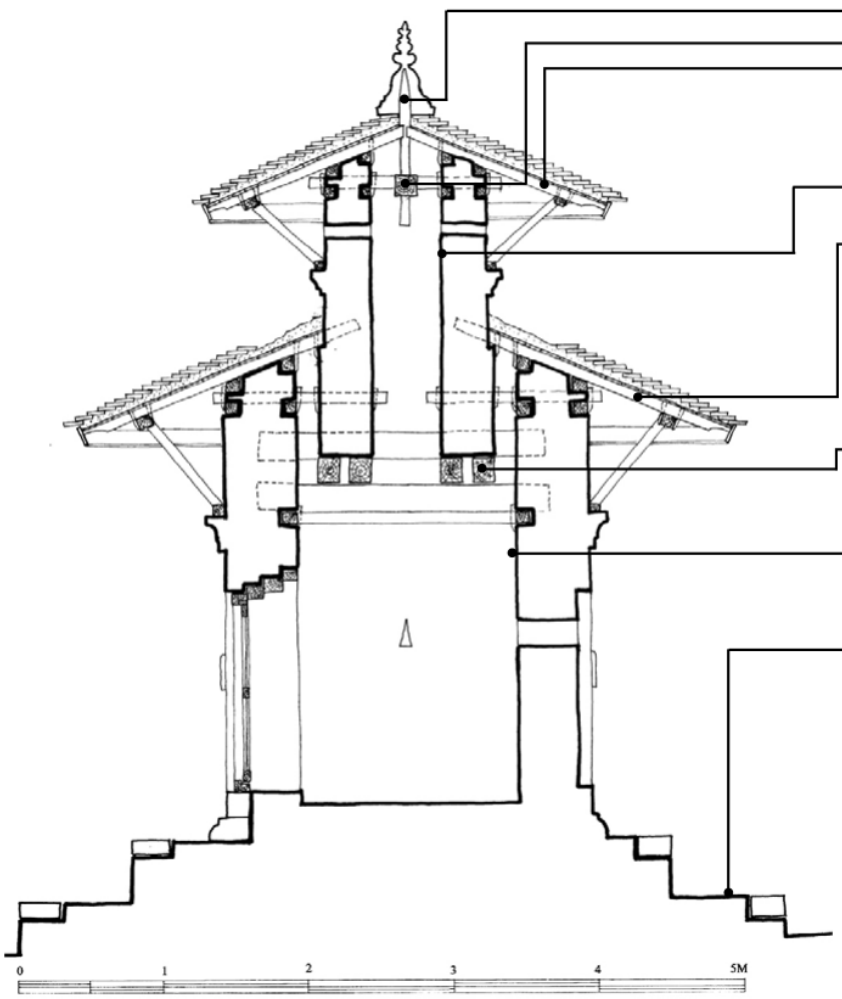


West Elevation: Existing Conditions and Construction History (documented in July 2005)

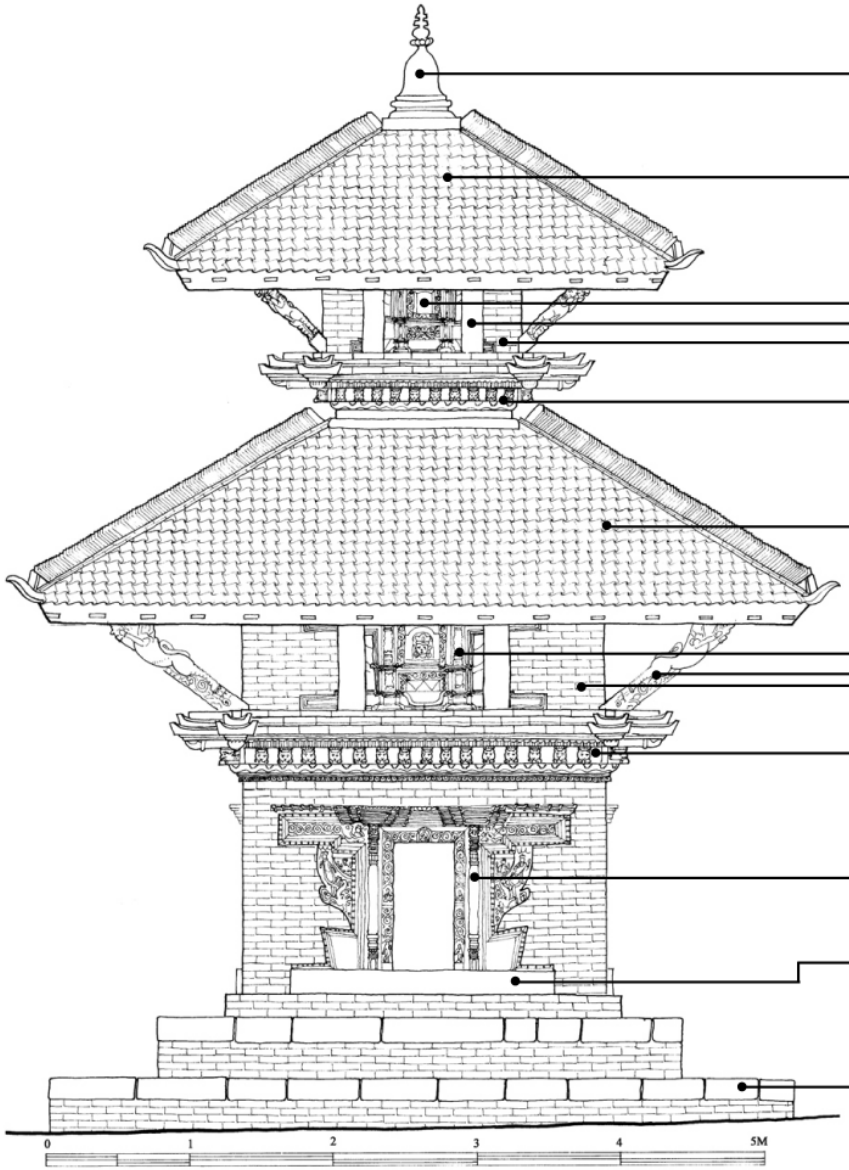
All components are from post 1934 earthquake reconstruction. The overall configuration of the temple has been drastically altered and roof structure reduced. The temple was renovated in 1958 (Kathmandu Valley Inventory Vol 2, Published by UNESCO 1975)

- ***Pinnacle:*** Made of copper and does not have a proper base for the pinnacle. Probably not original to the structure, placed during 1936 reconstruction.
- ***Roof tiles***: It is in rather poor condition. Several roof tiles at the edges have fallen off on all sides, exposing the mud bed. No ridge tiles remains. Corner tiles on NE ans SW are broken and NW ans SE are lost.
- ***Roof struts***: All corner struts and others are plain (total 12 in number) and are in fair condition. All are of smaller sections than what should be historically. However, the upper inverted portions of these are affected by bird droppings.
- ***Wall structure:*** Constructed with large bricks in yellow mud mortar. Has been lime plastered and red washed with small blind niches on all four sides. Though it is not in historic configuration, brick work is in fair condition and plaster work intact.
- ***Cornice:*** Layers of traditional timber cornice has been replaced with lime plastered detail. Constructed of lime *surkhi* and white washed, even covering the lower portion of the wall.
- ***Roof tiles:*** Is in very poor condition. Many of the tiles at the upper level displaced and lost from their positions, exposing the mud bed. The corners and ridge tiles are lost.
- ***Roof Struts:*** Struts on all side are plain (total 12 in number) which were probably change during 1936 reconstruction. Are in fair condition.
- ***Wall Structure:*** Constructed with 5cm thick brick on yellow mud mortar. Windows are missing and the upper wall portion (above the cornice detail) has been plastered and painted with brown enamel. Cracks have developed in the area where pegs from the wall plates meet the wall. Traditional timber cornice has been replaced with brick and *bajra* or *lime surkhi* construction and has been white washed. The *bajra* is broken at corners exposing the bricks. A plastered layer with *nagol* was added to the wall structure. Wall is plasterd with lime *surkhi* and brick pattern engraved in this plaster. However the plaster is damaged at many places, like lower portions on east, north and south facades and more severely at the north west corner of the wall, exposing the bricks.
- ***Doorway:*** All of the four original carved doors are lost and replaced with a plain door, probably during 1936 reconstruction. The door frames do not have any carvings. Other openings are blocked with brick walls and are plasters. Each has a hole which in *Newar*i is known as *Nasa Powa.*
- ***Plinth:*** Constructed with common bricks and the joints have been cement pointed, is in fair condition. Plinth apron stones are intact.

West-East Section: Existing Conditions and Construction History



- ***Pinnacle king post:*** It is completely damaged by wet rot.
- ***Pinnacle beam :*** It is completely damaged by wet rot.
- ***Timber roof members:*** Planking severely damaged at the wall plate level where the water penetrates. Rafters of size 7.5 cmx10 cm. Almost all of them (total 28 in number) are affected by dampness from above. Wall plates too are damaged by the water seepage and are of unhistoric section 5 cm in height. Eavesboards are nailed and have warped.
- ***Interior wall fabric***: Constructed with exposed common brick in mud mortar. The brick have worn out.
- ***Timber roof members:*** Planking is damaged on all sides due to damp penetration. Rafters of 7.5 cm x10 cm (total 35 in number) have been hazardly spaced and have been affected by wet rot. Timber pegs to stablize the rafters are not properly placed and at some places they are missing. Purlins are in fair condition but have not been properly joined. Wall plates are not of traditional configuration, is of small section with only 5 cm height. Eavesboard on all side have warped, the one at the south side has deformed and have detached from the rafters making mud sprawl off the roof.
- ***Beams:*** Beams are in good condition and are painted with black color. These are probably original to the structure which has been reused during the reconstruction.
- ***Interior:*** Constructed with exposed common brick in mud mortar. The brick have worn out. All the original door windows are lost. The main door is on the west facade and is made of simple timber frames & panels. The doors are replaced with niches, each has a small *nasa powa.* The interior floor of the sanctum is paved with stone slabs, in cement mortar and is in fair condition. A stone sculpture of Lakshmi Narayan in Ardhanariswar form.
- ***Plinth paving:*** Paved with bricks-on-edges which are no longer levelled, in poor condition. The stone aprons are in good condition



Principal West Elevation: Proposed Recommendations:

Pinnacle: Existing pinnacle to be cleaned and reinstalled. The base for the pinnacle will be made of timber base with metal covering.

Roof tiles: To be rebuilt with salvaged tiles in historic configuration. Damaged ones will be replaced.

Windows: All four windows to be fabricated as the historic ones are lost. For this, various similar temple structured will be studied and on the basis of this window details will be proposed.

Roof struts: Corner struts to be recarved with reference to similar structures. However, other struts to be plain.

Wall fabric: Existing one to be dismantled and to be rebuilt with traditional *dachhi appa* bricks in yellow mud mortar. Wall height to be raised to match configuration in historic photographs.

Cornice: All timber details to be refabricated based on similar temple structures. Terracotta *lah kah* to be installed with stainless steel cross reinforcement.

Roof tiles: To be rebuilt with salvaged tiles in historic configuration. Damaged ones will be replaced.

Windows: All four windows to be fabricated as the historic ones are lost. For this, various similar temple structured will be studied and on the basis of this window details will be proposed.

Roof struts: Corner struts to be recarved with reference to structures of similar proportions. However, other struts to be plain.

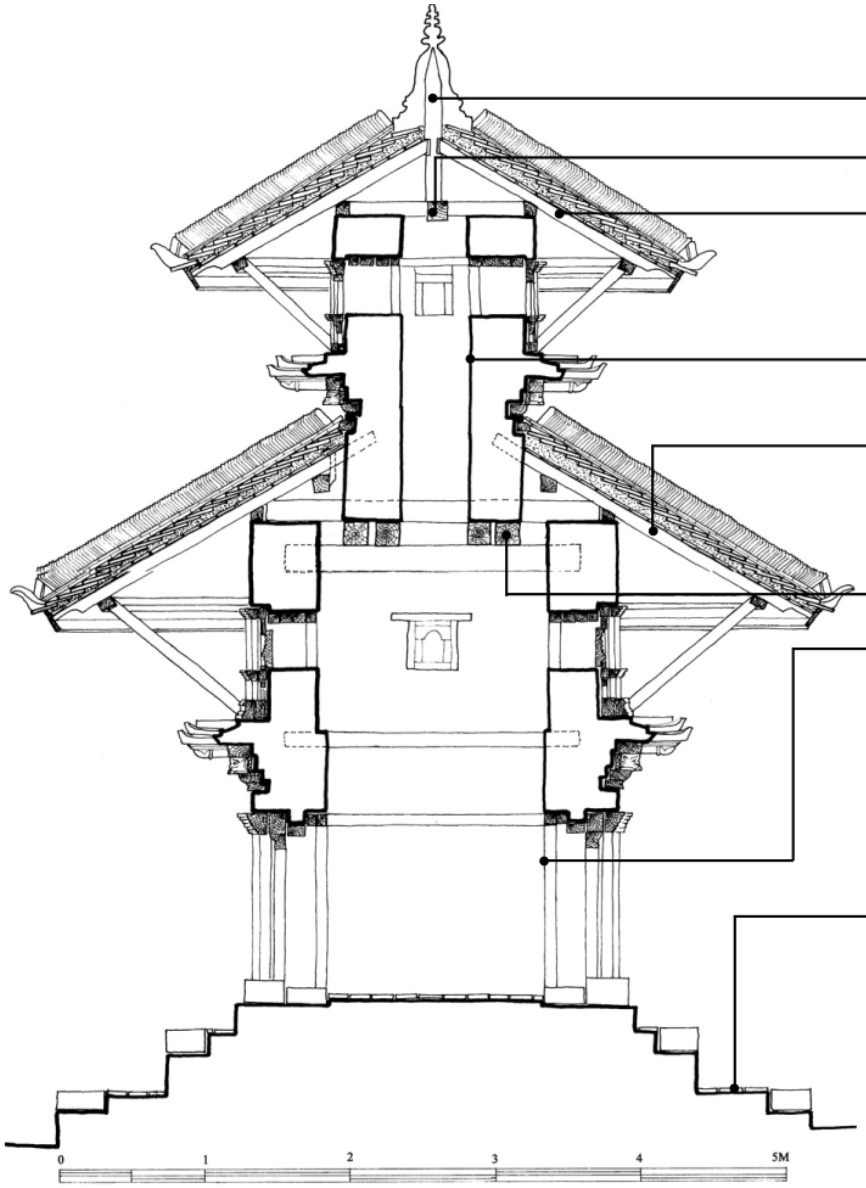
Wall fabric: Existing one to be dismantled and to be rebuilt with traditional *dachi appa* bricks in yellow mud mortar. Wall height to be raised to match configuration in historic photographs.

Cornice: All timber details to be refabricated based on similar temple structures. Terracotta *lah kah* to be installed with stainless steel cross reinforcement.

Doors: The proportion of the doors on all sides to be deduced as per the historical photographs. Doors to be recarved on the basis of this and the study of temple structure dedicated to Laxmi Narayan of similar proportions .

Stone threshold: No work required.

Plinth: To be rebuilt with traditional *dachi appa* in yellow mud mortar retaining the existing plinth height. The existing stone aprons to be redresssed and reinstalled.



West East Section: Proposed Recommendations

- ***Pinnacle king post:*** It's condition will be asserted after dismantling the structure and it is to be refabricated if required.
- ***Pinnacle beam:*** It's condition will be asserted after dismantling the structure and it is to be refabricated if required.
- ***Timber roof members:*** All the timber members, such as wall plates, eavesboards and planking to be replaced with new sal members in historical configuration. The rafters to be replaced with pine ones. Steel bolts reinforcement to be installed at every third rafter and secured to new pine purlins. Metal plates to be fabricated and and to be installed at the eavesboard level to stiffen the rafters to the eaves board.
- ***Interior:*** Interior wall fabric to be constructed with traditional *ma appa* in yellow mud mortar. Walls to be tied with timber ties at the corners above the lintels. Lintels to be fabricated of sal wood with section 5cmx7.5cm for all windows.
- ***Timber roof members:*** All the timber members, such as wall plates, eavesboards and planking to be replaced with new sal members in historical configuration. The rafters to be replaced with pine ones. Steel bolts reinforcement to be installed at every third rafter and secured to new pine purlins. Metal plates to be fabricated and and to be installed at the eavesboard level to stiffen the rafters to the eaves board. .
- ***Beams:*** Existing beams to be cleaned and reinstalled. These are to be tied to the wall plates using stainless bolts to strengthen the structure.
- ***Interior:*** Wall height to be raised to match configuration in historic photographs. Walls to be tied with timber ties at the corners above the lintels. Lintels to be fabricated of sal wood with section 5cmx7.5cm for all windows. The interior wall of the sanctum to be constructed with traditional *ma appa* in yellow mud mortar. Image of Laxmi Narayan with it's base is to be cleaned and reinstalled in the sanctum. Floor in the sanctum to be paved with traditional *telia* tiles on sand base.
- ***Plinth paving:*** The brick-on-edges paving on the plinth to be replaced with traditional *telia* tiles on sand base.

CHRONOLOGY OF WORK

2005
September-December

•Research for the determining the actual configuration of the
•Temple and for its carved details. This was conducted with assistance of historian Kashinath Tamot.
•Preparation of 1:1 drawings of the doors and window based on the research.

2006
January-June

•Initiation of carving of the door in the workshop with reference to the drawings prepared.

July-October

•Continuation of door carving in the workshop.
•Excavation of a small section foundation to assess it's condition.

November

•Initiation of carving of the window (for lower level) with reference to the drawing prepared.
•Carving of corner struts for lower roof on the basis of the ones at Mahadev temple in-situ.
•The fence around site was erected and the temple was scaffolded.
Stone carvers prepare stone for plinth apron.

December

•Demolition of existing temple.
•Continuation in carving of window for lower level.
•Continuation of carving of corner struts for lower roof .
•Excavation of the foundation for preparing the base for reconstruction.
•Construction of the foundation with ma appa in mud mortar.
•The existing 3 stone thresholds and an additional new one prepared for the base of doors.
•Cleaning of site.

2007
January

•Continuation of carving of corner struts for lower roof .
•Completion of foundation and wall built with dachi appa and ma appa in mud mortar upto the door threshold level.
•Dressed stone threshold for the doors installed.
•Carved door brought to site from the workshop and installed on the stone threshold. The interior framework for the doors were also fixed.
•Construction of wall with dachi appa and ma appa. upto the cornice level.
•Carving of the cornice details, such as lion heads and astamangal for lower level, with reference to Mahadev temple by another group of craftsmen in-situ.
•Preparation of structural timber members such as wall plates, joists, rafters, purlins and eavesboards for lower roof structure.
• Cleaning of site.

February

•Completion of carving of the cornice details, such as lion heads and astamangal for lowel level.
•Preparation of structural timber members such as wall plates, joists, rafters, purlins and eavesboards for lower roof structure.
•Completion of Windows for lower level.
•Initiation of carving of the upper level windows at site itself.
•Installation of cornice details.
•Installation of joists.
•Installation of carved window at the lower level.
• Cleaning of site.

March

•Carving of corner struts for upper roof.
•Carving of cornice details for upper level.
•Continuation of carving of the upper level windows.
•Construction of wall of dachi appa around the installed windows.
•Installation of beams to support the upper walls.
•Installation of structural timber members including wall plates, rafters, purlins and eavesboards.
•Fixing of planking on the rafters.
•Preparation of structural timber members such as wall plates, joists, rafters, purlins and eavesboards for upper roof structure.
• Cleaning of site.

April

•Construction of upper level wall before installing the cornice.
•Installation of cornice details at the upper level.
•Construction of wall in dachi and ma appa above the installed cornice.
•Installation of carved window at the upper level.
•Construction of wall around the windows.
•Installation of structural timber members including wall plates, rafters, purlins and eavesboards.
• Cleaning of site.

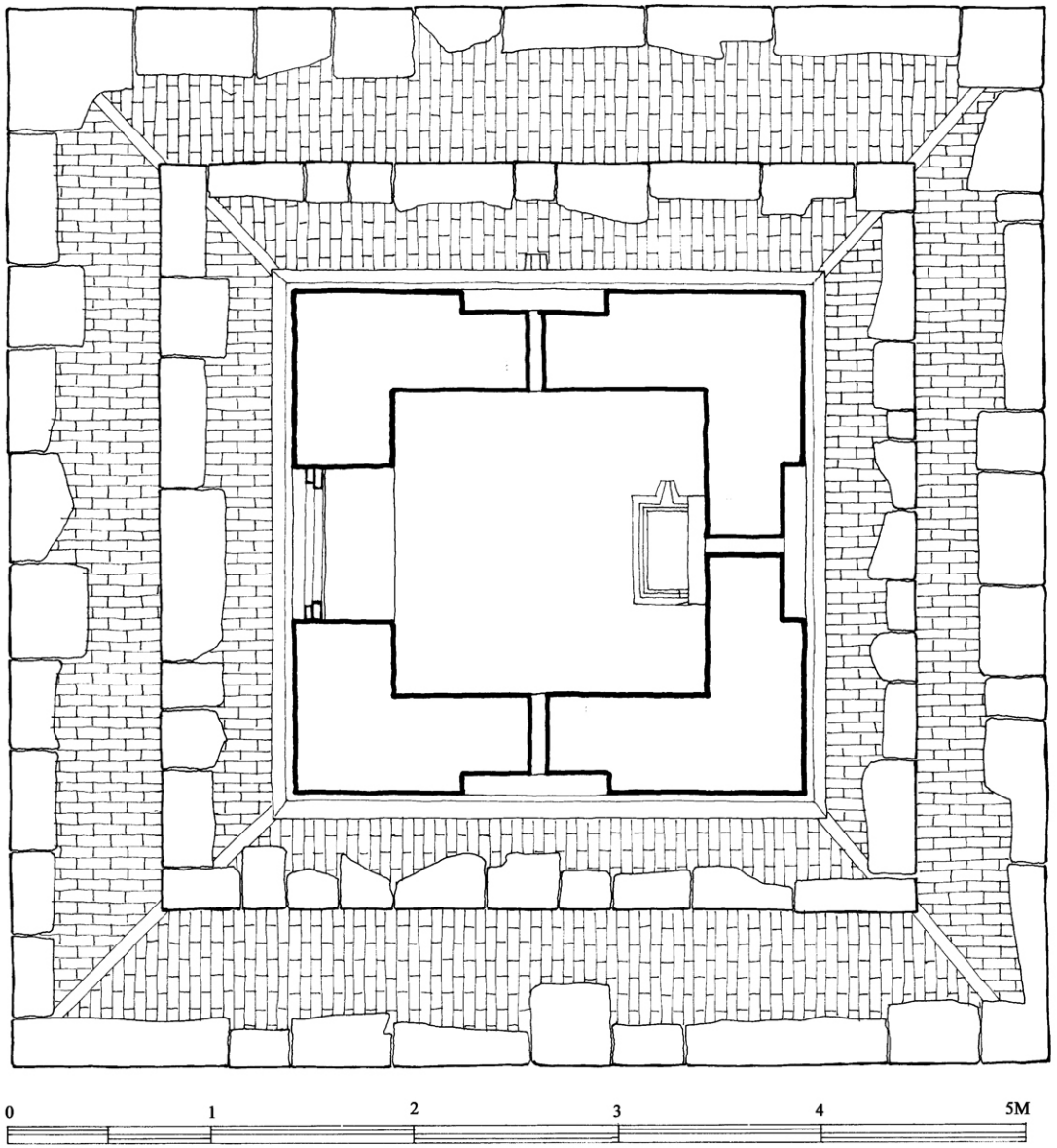
May

•Structural members of the upper roof installed.
•Fixing of planking on the rafters.
•Installation of damp proof membrane or tarfelt over the the planking on lower and upper roofs.
•Jhingati laid on yellow mud bed on both the roofs.
•Carving of door shutters for all four doors.
• Cleaning of site.

June

•Continuation of carving of the door shutters.
•Dismantling of scaffolding.
•Construction of plinth wall.
•Laying the apron stones on the plinth.
•Floor tiles laid on the plinth and in the sanctum after construction of platform for the principle image.
•Fixing the door shutters in their respective places.
•Site clearing.

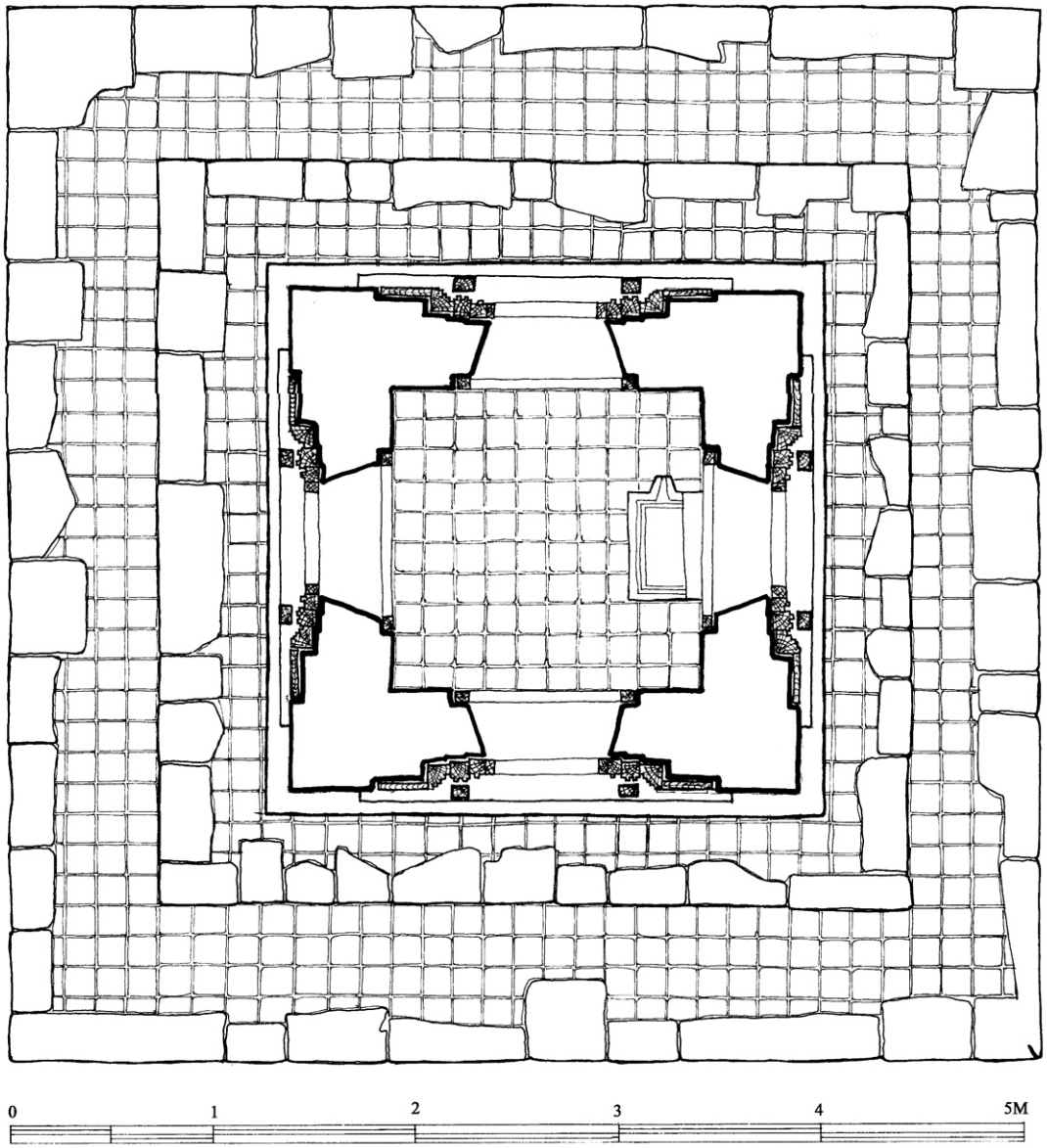
DOCUMENTATION OF PROPOSED AND EXISTING CONDITIONS



LAKSHMI NARAYAN TEMPLE

KATHMANDU DARBAR INITIATIVE

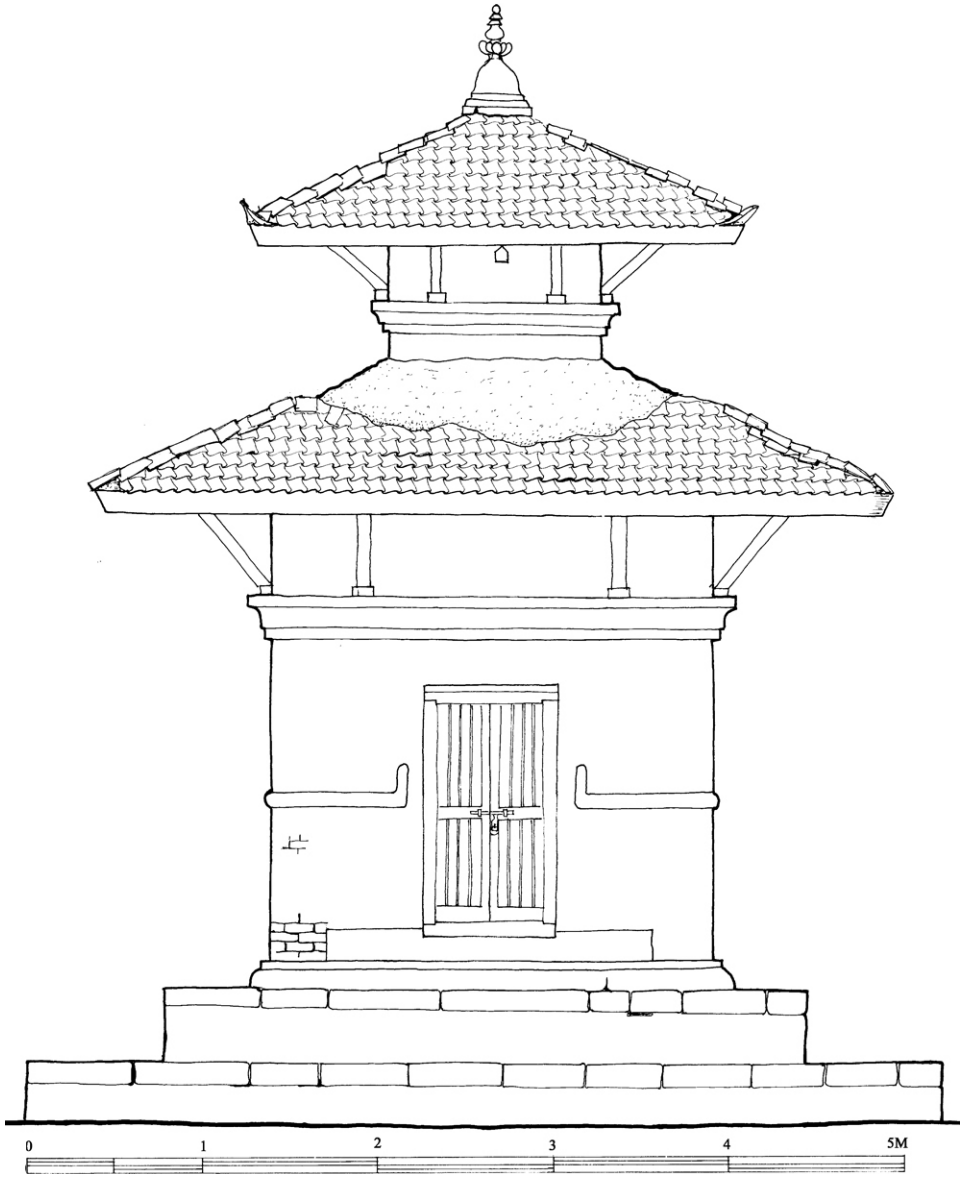
GROUND FLOOR PLAN: EXISTING CONDITIONS



LAKSHMI NARAYAN TEMPLE

KATHMANDU DARBAR INITIATIVE

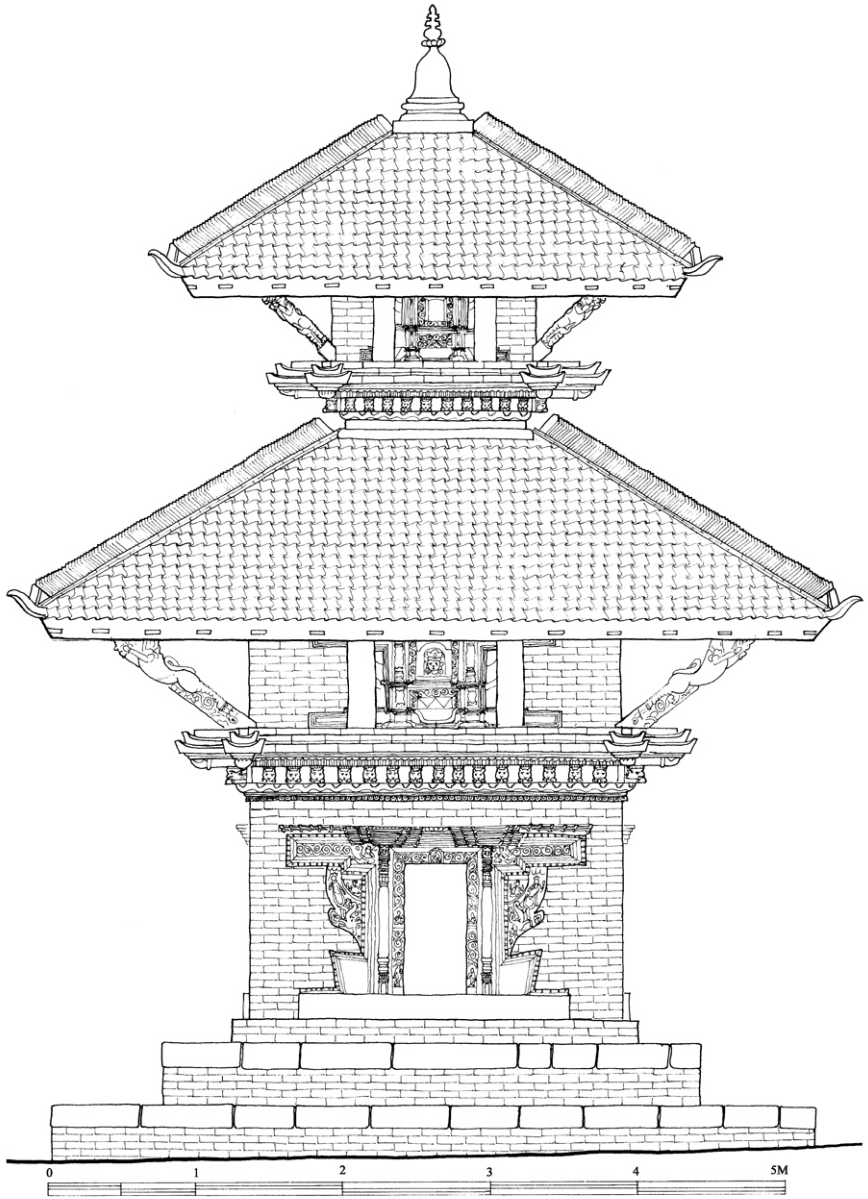
GROUND FLOOR PLAN: PROPOSED CONDITIONS



LAKSHMI NARAYAN TEMPLE

KATHMANDU DARBAR INITIATIVE

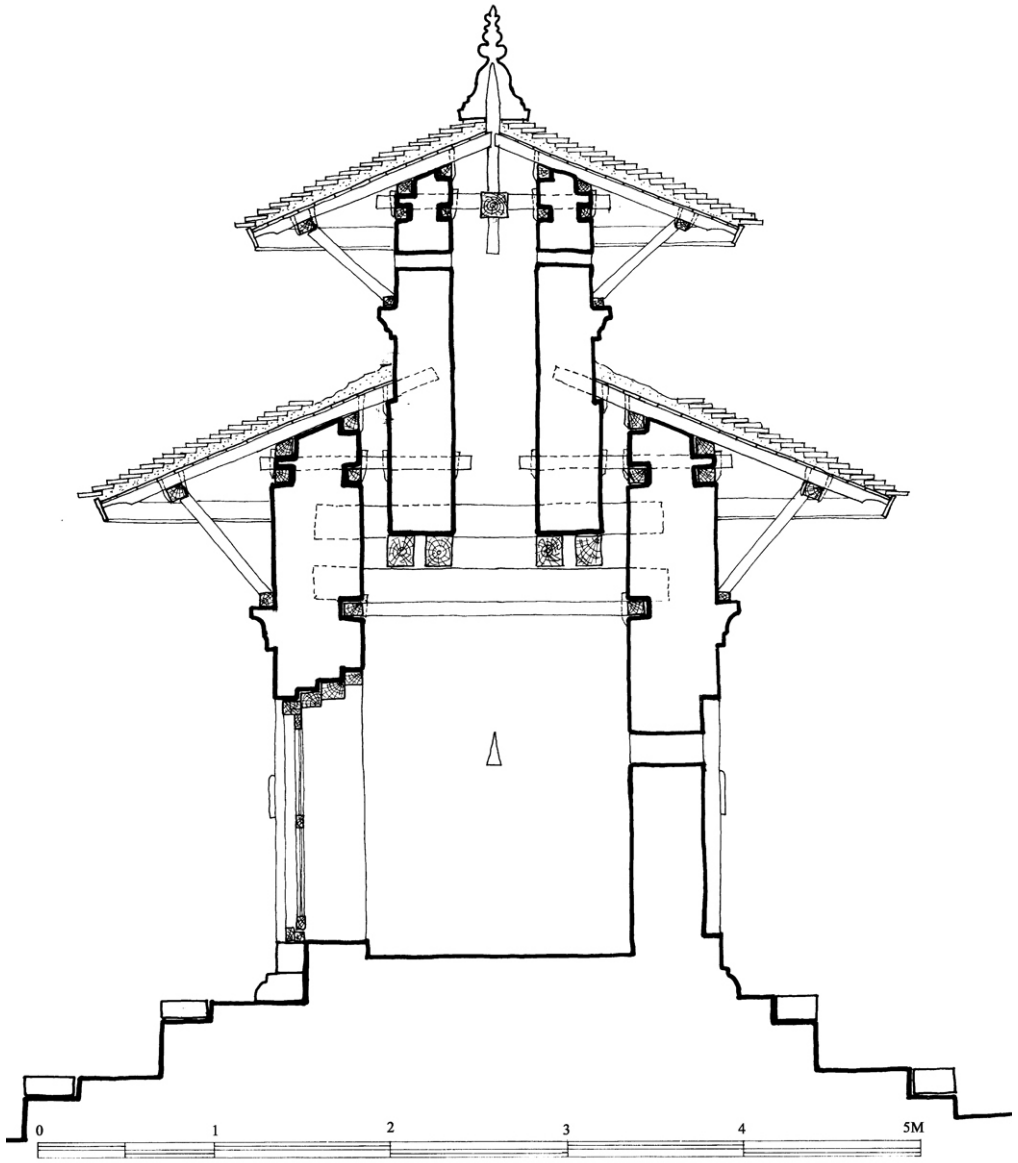
PRINCIPAL WEST ELEVATION: EXISTING CONDITIONS



LAKSHMI NARAYAN TEMPLE

KATHMANDU DARBAR INITIATIVE

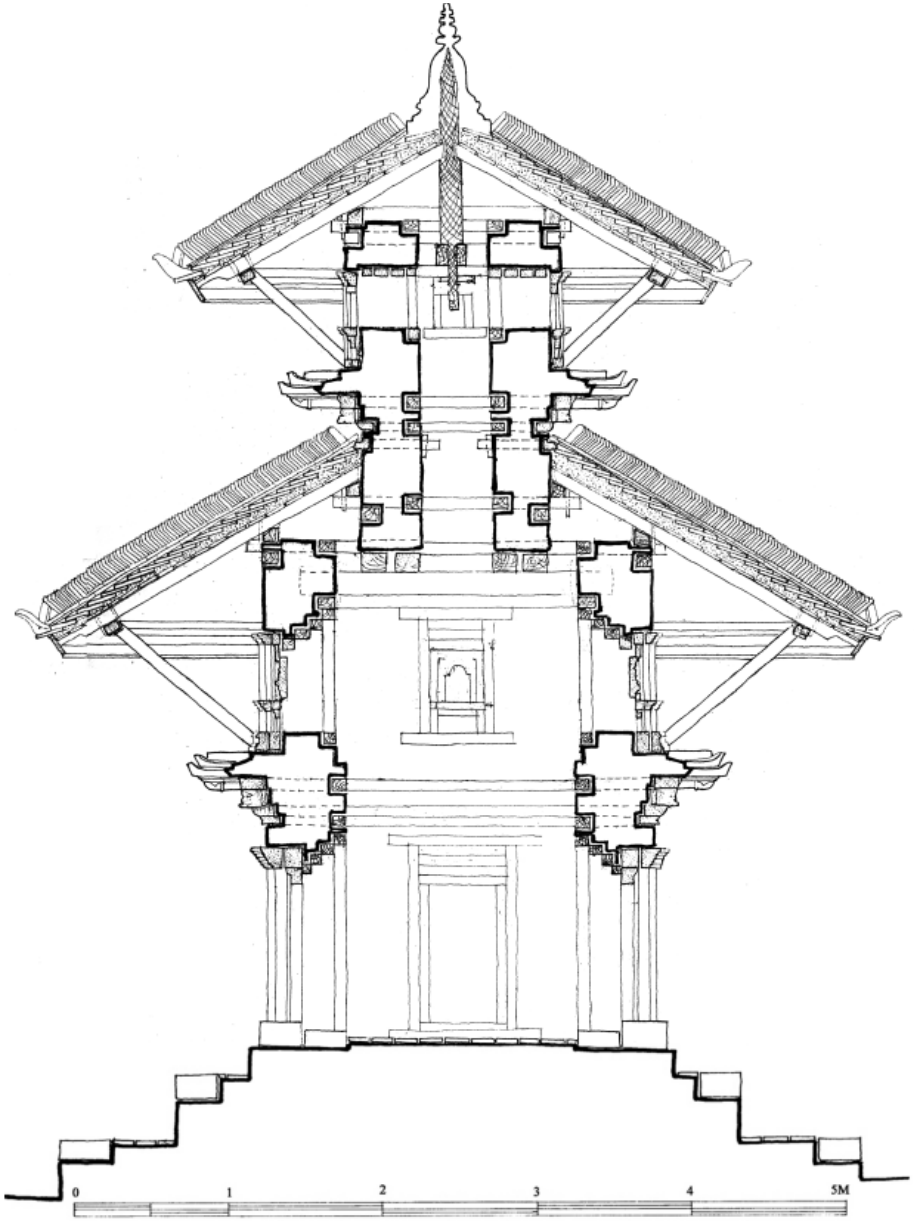
PRINCIPAL WEST ELEVATION: PROPOSED CONDITIONS



LAKSHMI NARAYAN TEMPLE

KATHMANDU DARBAR INITIATIVE

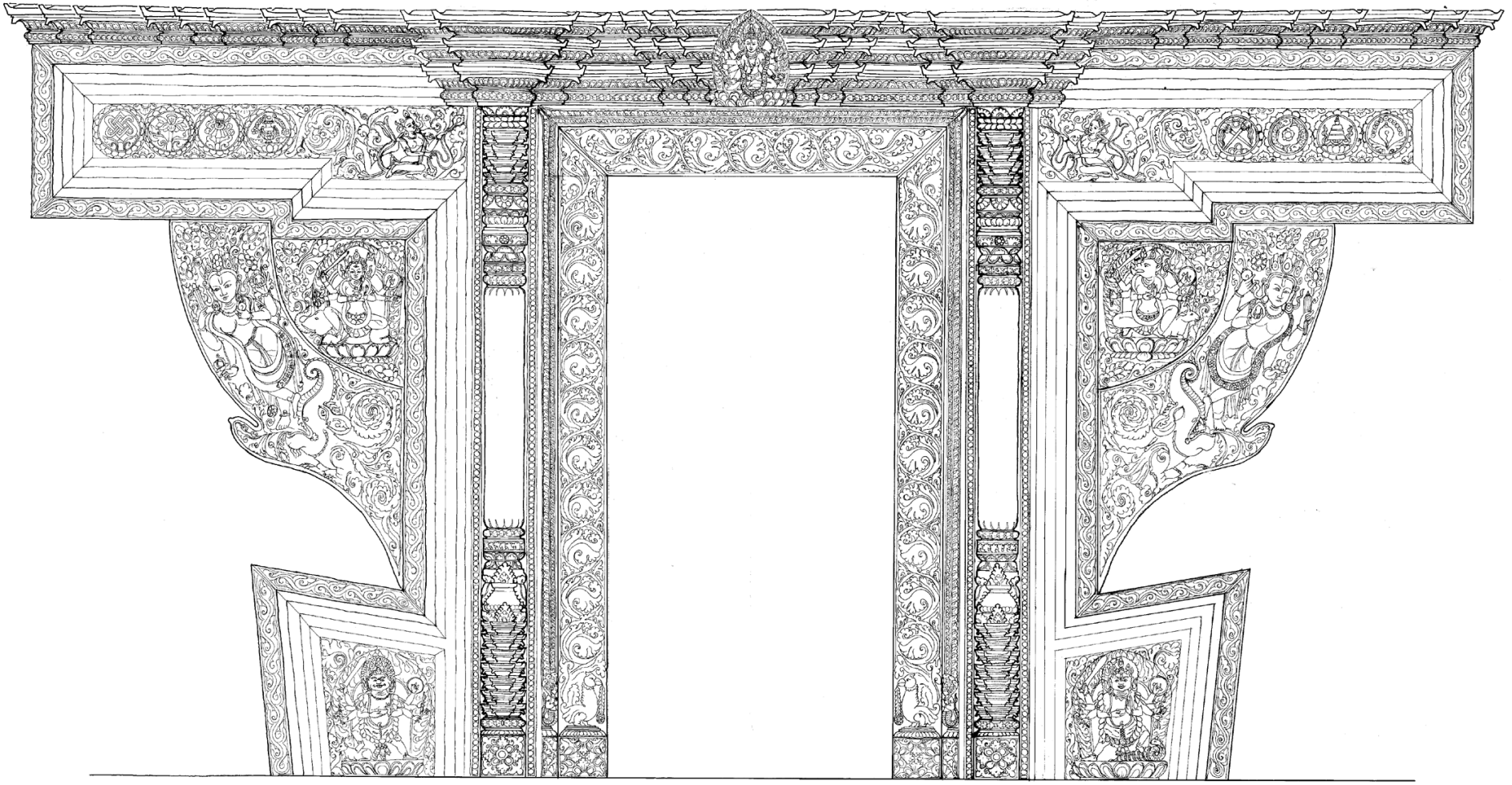
WEST-EAST SECTION: EXISTING CONDITIONS



LAKSHMI NARAYAN TEMPLE

KATHMANDU DARBAR INITIATIVE

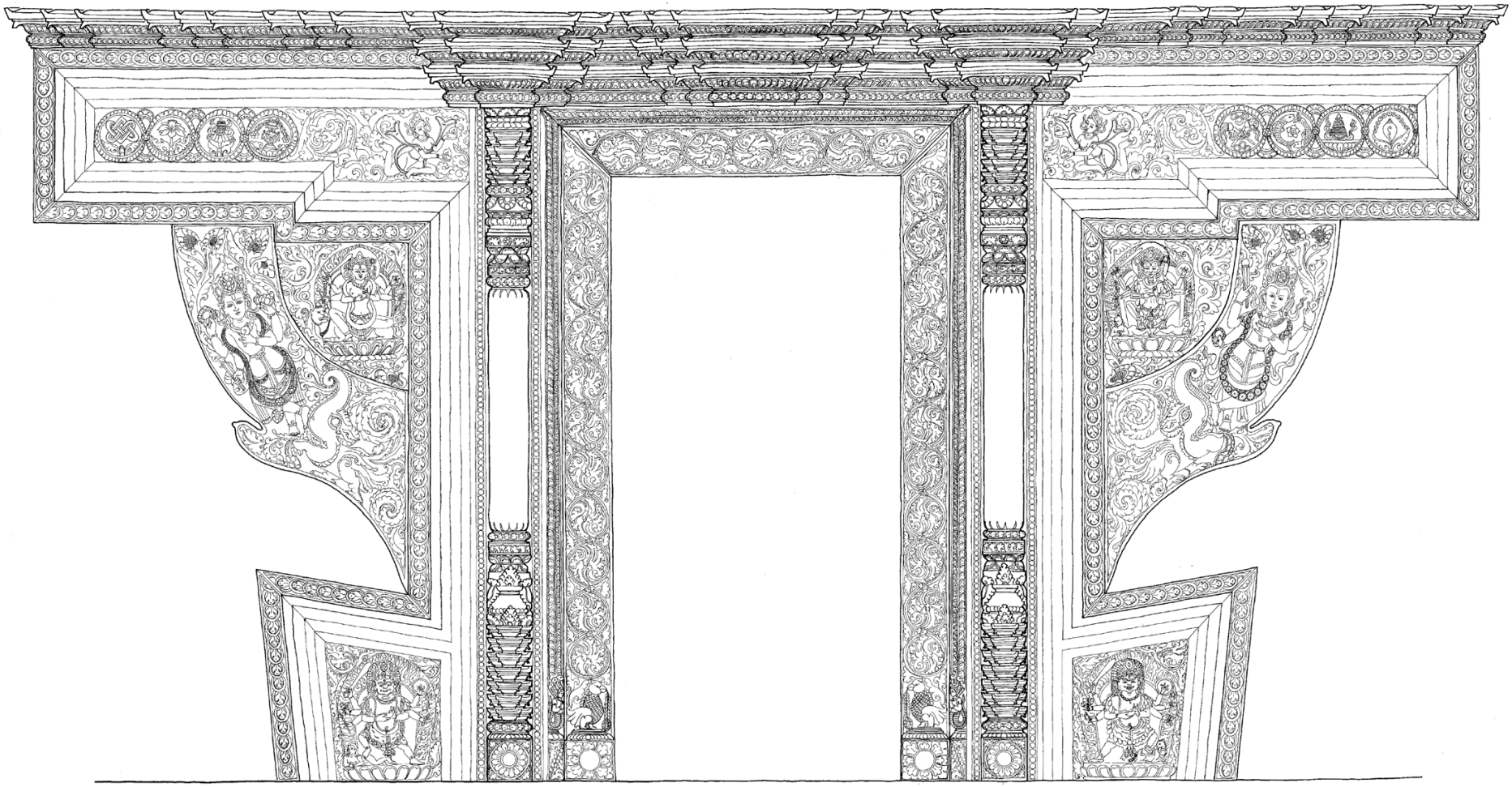
WEST-EAST SECTION: PROPOSED CONDITIONS



LAKSHMI NARAYAN TEMPLE

KATHMANDU DARBAR INITIATIVE

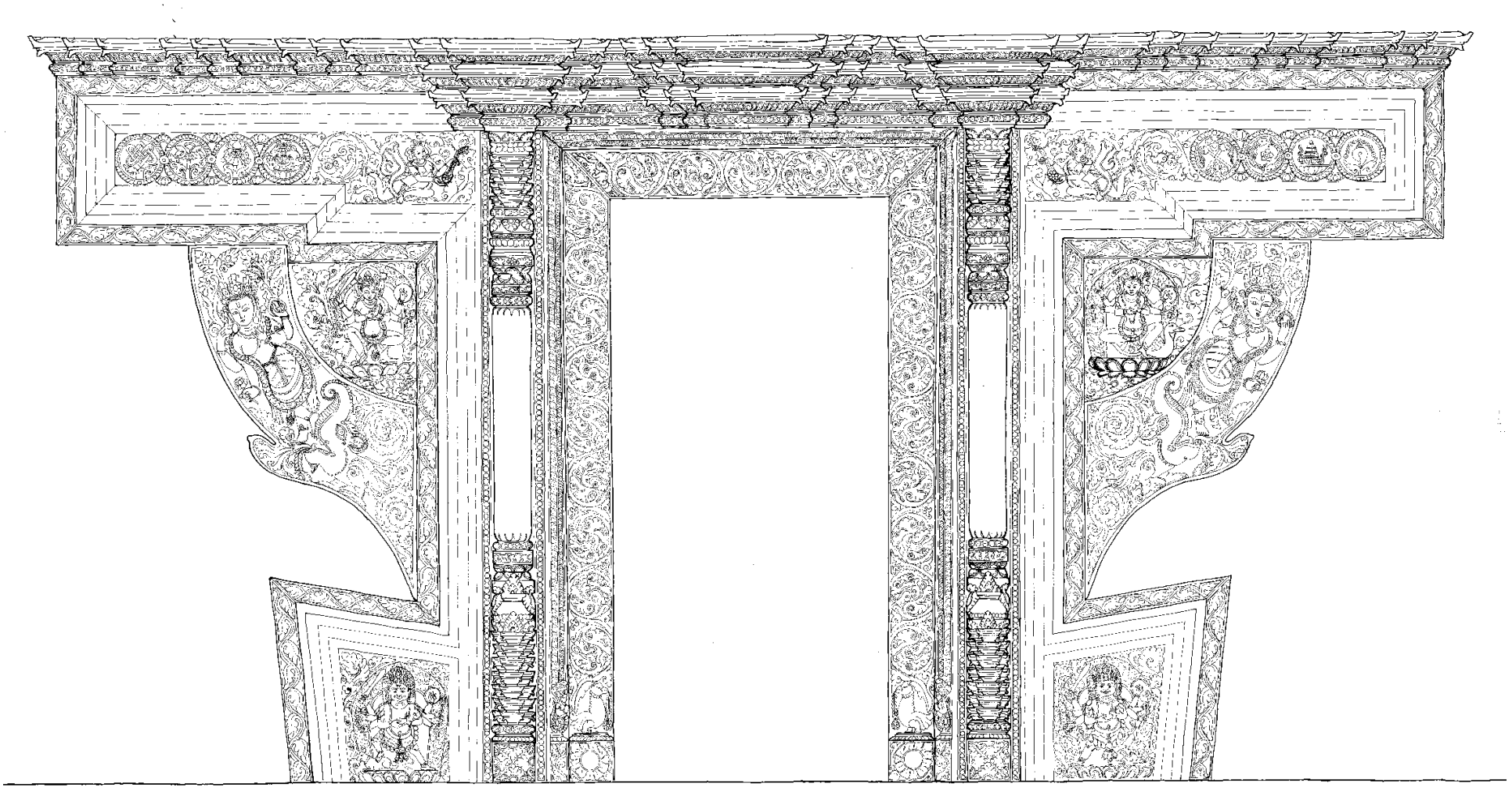
DETAIL OF WEST DOOR



Lakshmi narayan Temple

Kathmandu darbar Initiative

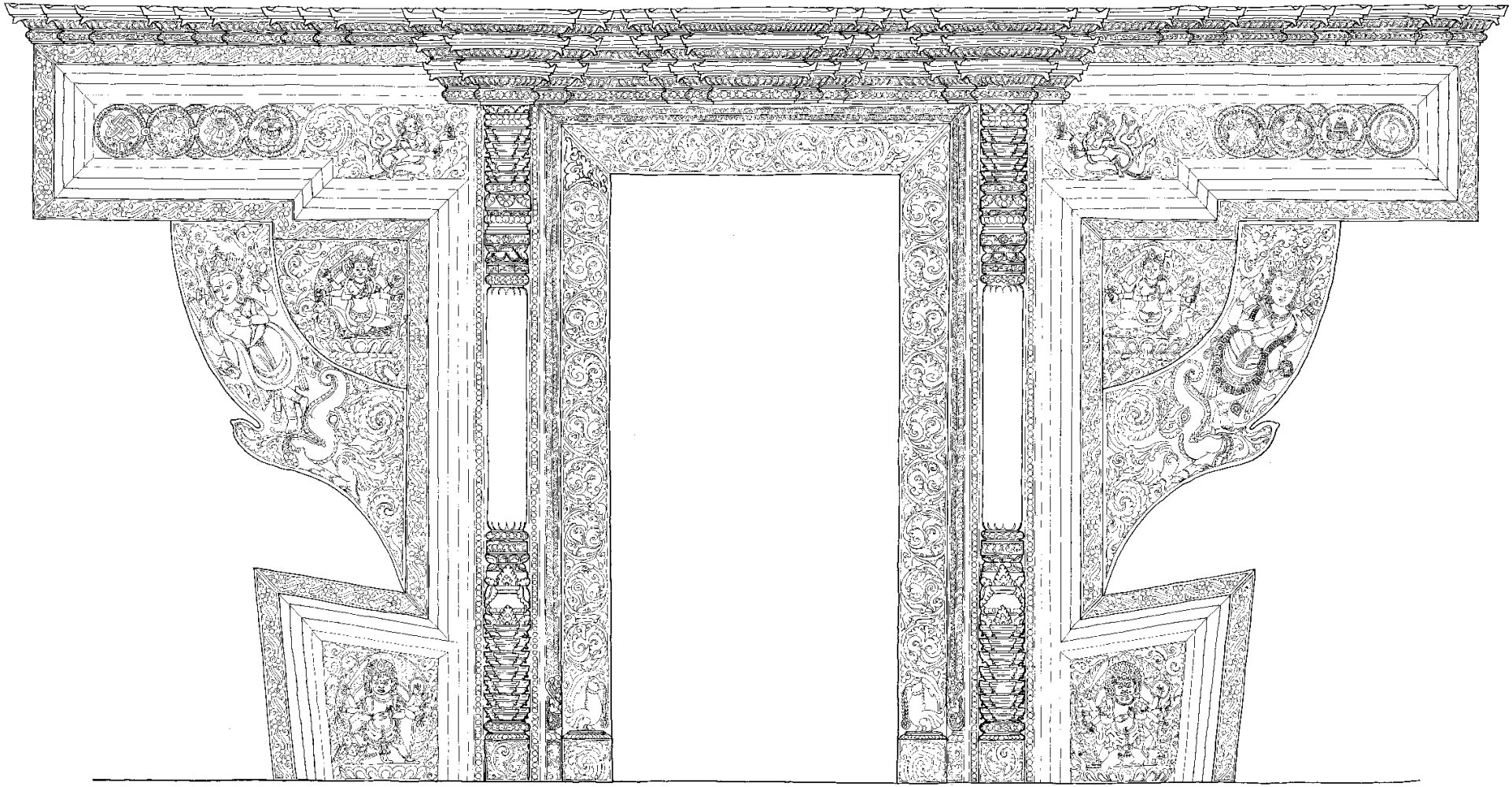
Detail of North Door



Lakshmi narayan Temple

Kathmandu darbar Initiative

Detail of East Door

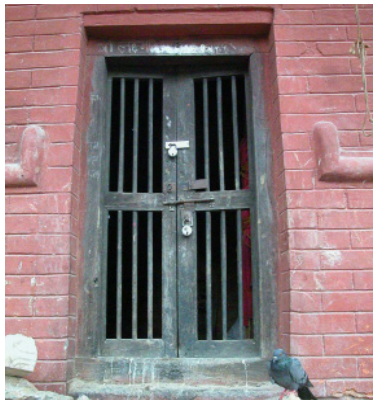


Lakshmi narayan Temple

Kathmandu darbar Initiative

Detail of South Door

PHOTOGRAPHIC DOCUMENTATION OF RESTORATION



top left: The preliminary work began with excavation of a section of the foundation. *Photo by Lumanti Joshi, July 2005.*
top right: During 1941 A.D. reconstruction, elaborately carved doors on all sides were replaced with this simple framed opening on west side. Openings for the doors on the other sides were blocked with brick walls *Photo by Lumanti Joshi, July 2005.*
bottom: Brick work was completely damaged under the lime surkhi plaster. The bricks used after the 1934 earthquake were larger than the traditionally used dachi appa. *Photograph by: Raju Roka, July 2005.*
right: Lakshmi Narayan Temple, as it stood in August 2004, before the restoration work began. *Photo by: Lumanti Joshi, August 2004.*

top: The base of the main structure was excavated upto 5' in deptht and a solid raft like base with brick masonary was created for seismic purpose. *Photo by Lumanti Joshi, July 2005.*

bottom: Prior to the actual construction of the superstructure, all the timber members such as the joists, wall plates, rafters and planking were prepared in situ with reference to the drawings prepared. *Photo by: Lumanti Joshi, December 2006.*

left: Lakshmi Narayan Temple under scaffolding. *Photo by: Raju Roka, August 2004.*

top: Master Carver Indra Kaji Silpakar and Rajan Shrestha discussing iconographical details of the drawings for the doors before the execution of the carving. His suggestions were valuable and were incorporated while finalizing the attributes and features of the figures. *Photo by: Badri Juwal, January 2006*

bottom: A 1:1 mock up drawing of door was put up on site in order to verify its proportion compared to the one in the historical photograph. *Photo by: Badri Juwal, January 2006.*

right: Since the existing structure was in dilapidated state and virtually, non of the pre 1934 earthquake elements survived in the super structure, excepting for the main beams, it was dismantled. *Photo by: Lumanti Joshi, December 2006*

top left: Craftsmen at work. Various elements of the doors were carved seperately in the workshop taking the drawings as a basis. *Photo by Badri Juwal, April 2006*

Top right: The components are fitted together with the help of traditional Newari joinery. *Photo by: Badri Juwal, December 2006*.

left: An unfinished frame of a door being checked for open joints and any errors in execution before commencing with the detail carving . *Photo by: Badri Juwal, May 2006*.

top: Door for East facade. In the left side of the door, the quarter round medallion has the images of the mother goddesses Maheswari on her vehicle the bull and the bottom door panel has her counterpart Ruru Bhairav. Similarly in the right, the quarter round medallion has Bramhayeni on her vehicle the goose and the bottom door panel has her counterpart Asitanga Bhairav. The door brackets are carved with Keshav and Vasudev, different forms of Vishnu in the left and rigth respectively. *Photo by: Raju Roka, September, 2006*.

bottom: Door for South facade. In the left, the quarter round medallion is carved with Vaishnavi on her vehicle Garud and the bottom door panel has her counterpart Krodha Bhairav. In the right, the quarter round medallion is carved with Kaumari on the peacock and the bottom door panel has her counterpart Canda Bhairav. The door brackets are carved with Govinda and Sankarshan, two of the eight forms of Vishnu in the left and right respectively. *Photo by: Raju Roka, September 2006*.

top: Door for West facade. The quarter round medallion in the left has the image of the mother goddesse Indrayeni on her vehicle the elephant and Kapilasha Bhairav below it. In the left is Barahi on her vehicle the goat and below it in bottom door panel has her counterpart Unmantta Bhairav. The door brackets are carved with Trivikram and Pradyumna, different forms of Vishnu in the left and right respectively. *Photo by: Raju Roka, September 2006*.

bottom: Door for North facade. Here the quarter round medallion in the left is carved with Mahalakshmi on her vehicle the lion and Samhara Bhairav below. The right side has Camunda on a pair of human figures in the quarter round medallion and bottom door panel has Bhishana Bhairav. The door brackets are carved with Hrishikesha and Annirudha, two of the eight forms of Vishnu in the left and right respectively. *Photo by: Raju Roka, September 2006*.

top: After the final finishing of the doors were complete in the workshop, these were installed on all four sides with their internal support frames.
bottom left: Indra Kaji and his team of craftsmen readjusting the installed door.
Both photos by: Lumanti Joshi, January 2007.
bottom right: Not a single example of the cornice detail remained from the original structure. Craftsmen recreated these elements like these lion heads shown in the photo on the basis of the similar pieces from the Mahadev Temples, standing outside the Taleju Temple's west entrance, KDS. *Photo by: Raju Roka, February 2007*
right: Reconstruction of lower level in the process being complete after the installation carving details and construction of brick walls. *Photo by : Lumanti Joshi, March 2007.*

top: The corner struts from the Mahadev Temple I, where the restoration work had simultanously began, were used as a base for recarving the ones for this temple. *Photo by: Lumanti Joshi, November 2006.*
bottom: Brick wall being raised following the installation of the carved windows with their internal frames at the lower level. *Photo by: Lumanti Joshi, February 2007.*
left: Work in Progress. While the craftsmen are working on the carving of window for the upper level, rafters on the lower level and the cornice on the upper level were being installed. *Photo by: Lumanti Joshi, April 2007.*

top: When the carving of the corner struts were complete, these were tried out in their respective positions for their precise size. Sometimes carpenters had to make minor correction for readjusting them. *Photo by: Lumanti Joshi, April 2007.*
bottom: The door leaves being carved with lattice detail. The craftsmen paste 1:1 drawing of the lattice on the shutters themselves to be used as base for the carving. *Photo by: Lumanti Joshi, May 2007.*
right: As the rafters were being positioned on the upper level, the work on the lower level roof was also ongoing with nailing of planking on the rafters and laying of waterproofing membrane. *Photo by : Lumanti Joshi, May 2007.*

top left: The plinth was constructed with traditional dachi appa brick in mud yellow mortar. Dressed stone apron encircles the plinth on top and is paved with traditional telia tiles. *Photo by: Lumanti Joshi, June 2007.*

top right: Traditional roofing tile being laid on the first floor roof. For securing the tiles in their respective place, every tile at the eaves board level is nailed. *Photo by: Lumanti Joshi, May 2007.*

bottom: The walls after certain period of construction developed salt efflorescence on the surface. Our experience with other temples demostrated that drying cleaning using hard brush was the most appropriate solution for this problem. *Photo by: Lumanti Joshi, June 2007.*

left: Lakshmi Narayan Temple after restoration in August 2007. *Photo by: Lumanti Joshi, June 2007.*

right: When the carving of the corner struts were complete, these were tried out in their respective positions for their precise size. Sometimes carpenters had to make minor correction for readjusting them. *Photo by: Lumanti Joshi, June 2007.*

IMPLEMENTATION SCHEDULE

S No.	Description of works	2005	2006												2007					
		Sept-Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1	Research and Documentation																			
2	Carving of doors																			
3	Exacavation of foundation for assessment																			
4	Carving of windows																			
5	Carving of cornice details																			
6	Erection of fence and scaffolding																			
7	Dismantling of existing structure																			
8	Construction of the stable base for the foundation																			
9	Preparation and dressing of stone threshold																			
10	Preparation of timber structural members for both roofs																			
11	Carving of corner struts																			
12	Installation of stone threshold																			
13	Installation of carved doors																			
14	Construction of lower level wall																			
15	Installation of cornice details at lower level																			

S No.	Description of works	2005	2006												2007					
		Sept-Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
16	Installation of joists, wall plates, beams on lower roof																			
17	Installation of timber roof members such as rafters, struts, planking, purlins and eavesboard at the lower roof																			
18	Fixing of tarfelt and planking on lower roof																			
19	Construction of upper level wall																			
20	Installation of cornice details at upper level																			
21	Installation of windows at upper level																			
22	Installation of timber roof members such as rafters, struts, planking, purlins and eavesboard , pinnacle beams at the upper roof																			
23	Fixing of tarfelt and planking on upper roof																			
24	Laying of jhingati on mud bed for both the roofs																			
25	Construction of plinth and laying of apron stones																			
26	Laying of floor tiles on the plinth and in the sactum																			
27	Carving and fitting of door shutters																			
28	Site clearence																			

Lakshmi Narayan Temple

Kathmandu Darbar Initiative

09.14.2007

EXPENDITURE DETAILS

No.	Description	Expenditure	
I	**Restoration and construction**	**NRs.**	**USD**
1	Bamboo scaffolding	31,200.00	436.58
2	Scaffolding labor and strings	27,463.00	384.29
3	Dismantling of roof structure, masonry structure and plinth structure	30,333.00	424.45
4	Cleaning of site and storing of reusable materials	46,050.00	644.37
5	Plinth construction in ma appa (including foundation)	206,981.00	2,896.26
6	Veneer brick facing for plinth	16,515.00	231.09
7	Plinth stone	23,975.00	335.48
8	Masonry wall construction	128,817.00	1,802.52
9	Veneer brick facing for wall structure	78,575.00	1,099.49
10	Carving of decorative members (carved doors, carved windows)	600,000.00	8,395.72
11	Carving of cornice details	435,593.00	6,095.19
12	Timber work for structural members	335,606.00	4,696.09
13	Eavesboard	33,168.00	464.12
14	Planking on roof	157,537.00	2,204.39
15	Water proofing membrane between planking and mud bed	27,300.00	382.01
16	Roof tiles (*jhingati*) on mud bed	63,882.00	893.89
17	Ridge tiles	7,450.00	104.25
18	Metal strips on eaves boards	9,500.00	132.93
19	Corner metal plates on eaves board	20,020.00	280.14
20	Siltrate for water proofing on ridge tiles	5,000.00	69.96
21	Conservation chemical treatment in mud (anti vegetal treatment)	7,500.00	104.95
22	Pinnacle making	15,750.00	220.39
23	Ceramic tile flooring on plinth	23,500.00	328.83
24	Seismic strengthening	37,333.00	522.40
25	Ceramic tile flooring inside the sanctum	3,175.00	44.43
26	Site clearence during restoration	36,775.00	514.59
	Sub total	**2,408,998.00**	**33,708.78**
II	Infrastructure	53,199.09	744.41
III	Planning and documentation	280,719.00	3,928.06
IV	Local overhead and office supplies	331,462.00	4,638.10
	Total	**3,074,378.09**	**43,019.35**

INCOME

		Income	
		In Nrs.	**In USD**
1	U.S. Ambassador's Fund for Cultural Preservation 05, Ktm	3,037,262.50	42,500.00
2	Bank Interest	15,193.93	212.61
3	KVPT USA	21,921.66	306.75
	Total	**3,074,378.09**	**43,019.35**

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