



MAHADEV TEMPLES

KATHMANDU DARBAR INITIATIVE

A JOINT PROJECT OF
NEPAL GOVERNMENT 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 Mahadev Temples, the projects under the banner “Kathmandu Darbar Initiative” on July 2007. On behalf of the Trust, we would like to thank all the generous support, 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

Kathmandu Valley Preservation Trust (KVPT Nepal)

In cooperation with

Nepal Government, Department of Archaeology (DoA) and
Kathmandu Metropolitan City (KMC)

Conservation Architect

Dr. Rohit Kumar Ranjitkar

Documentation and Implementation Team

Dr. Rohit Kumar Ranjitkar, Sushil Rajbhandari, Raju Roka, Lumanti Joshi, Badri Juwal, Rajan Shrestha, Bishnu Chulyadha and Dinesh Tamang.

Research

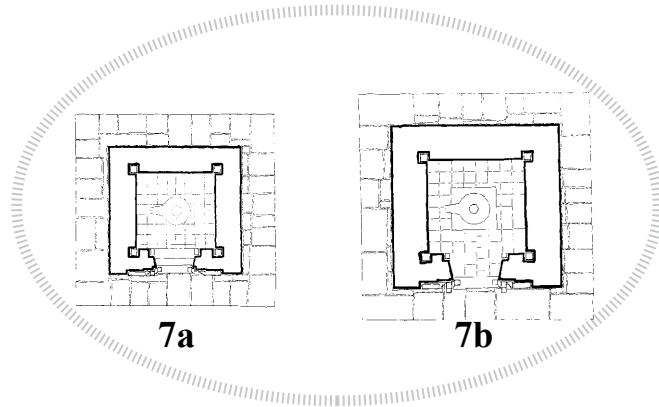
Kathmandu Valley Preservation Trust's Technical Team

Special Thanks to

H.E. Mr. James F. Moriarty, Former US Ambassador to Nepal
Mr. Robert Hudson, Director, The American Center, Kathmandu,
Mr. Ramesh Archarya, Grant Officer's Representative, The American Center, Kathmandu,
Mr. Kosh Prasad Archarya, Director General, DoA,
Mr. Rajesh Mathema, Project Coordinator, DoA,
Mr. Tej Ratna Tamrakar, Chief, Hanuman Dhoka Palace,
Mr. Suraj Shakya, Chief, Hanuman Dhoka Conservation Site Office,
Mr. Chandra Gopal Pradhan, Ward Secretary,
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.

**Table of Contents:**

Introduction.....	4
Project Framework.....	5
Historical Significance.....	7
Documentation and Restoration of Temples.....	7
Other Relevant Activities.....	11
Annotated Drawings.....	12
Chronology of Work.....	20
Documentation of Existing and Restored Conditions.....	24
Photographic Documentation of the Restoration in Progress.....	36
Implementation Schedule.....	47
Summary of Expenditure.....	49



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

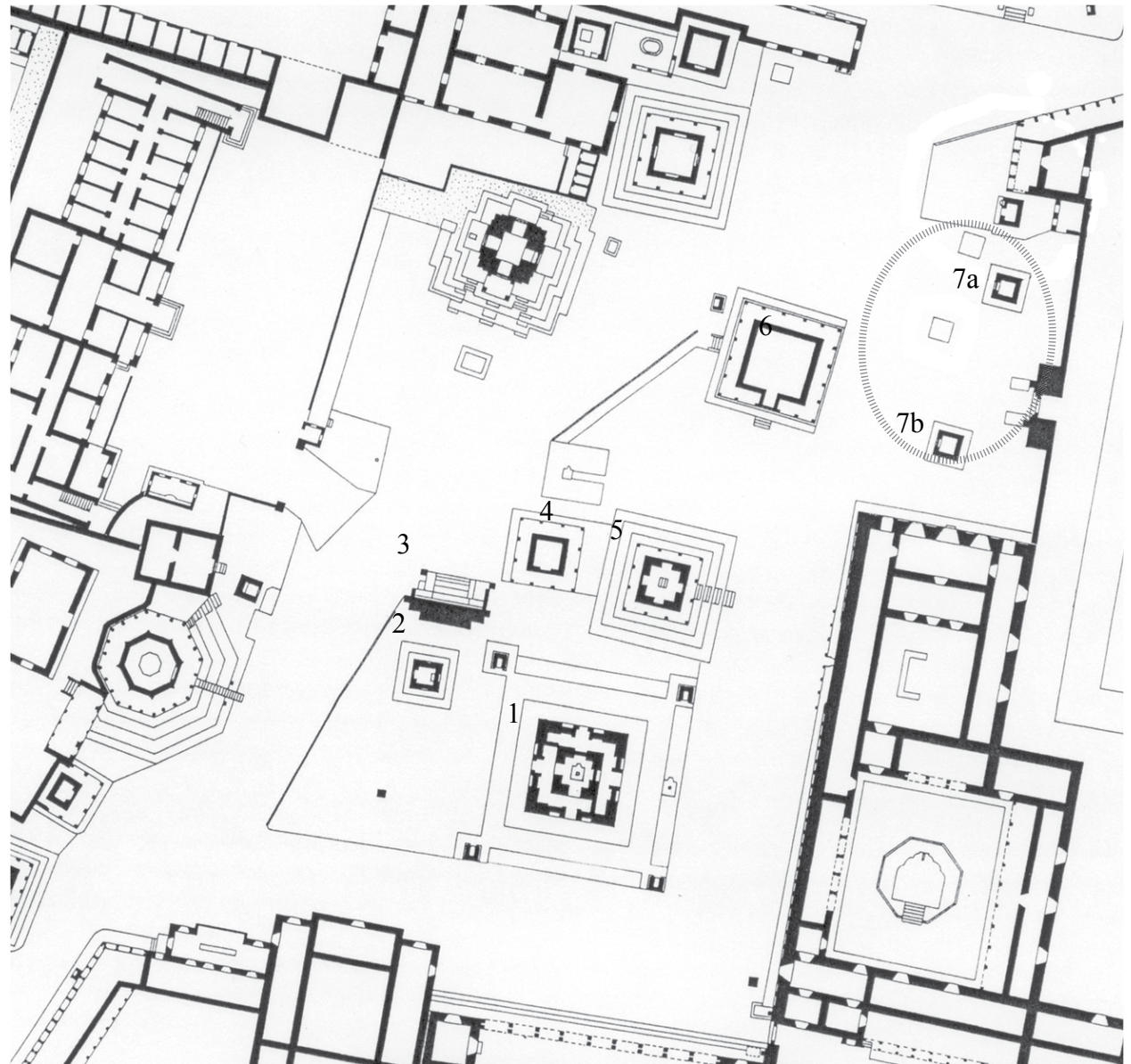
7b. Mahadev Temple II (17th c.)

Restoration completed in 2007

8. Mahavishnu Temple (17th c.)

Restoration completed in 2002

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





left: The Mahadev Temple I as it stood in December 2006. The roof structures were in poor state and in urgent need of repair. *Photo by :Lumanti Joshi.*



right: The restored Mahadev Temple I. The entire roof structure was refurbished. *Photo by: Lumanti Joshi, July 2007.*



left: The Mahadev Temple II as it stood prior to the restoration. *Photo by: Lumanti Joshi, December 2006*



right: Mahadev Temple II after restoration. During restoration the uneven settlement of the east facade was corrected and the roof structures were also reconstructed. *Photo by: Lumanti Joshi, July 2007.*

INTRODUCTION

Restoration of a pair of pagoda temples flanking Singh Dhoka, the western entrance of the Taleju Temple at Kathmandu Darbar Square was completed in July 2007. These 17th century structures have been constructed as a part of the entrance.¹ The temples, which symbolize the guardian deities of the entrance make significant components of the historic ensemble. With these restored, the entire culturally and architecturally important ensemble of the Kathmandu Darbar Square is complete. With central focus on Singha Dhoka, they help in creating a frame for the gate and thus, accentuate its historic and artistic value.

The temples still retain their original configuration with many of their original details intact. These fine examples of traditional temple architecture were in rather dilapidated condition with urgent need of proper restoration program. Before KVPT initiated the restoration in February 2006, their structural conditions were very poor even though their appearance looked respectable.

The entire structure of the Mahadev Temple II was leaning towards east. In both structures, the timber members including the rafters, planking, purlins and wall plates etc. had deteriorated considerably. Many of their significant carved details were lost. Poor construction and improper joinery of the timber members had led to seepage of water through them and thus, adversely affecting the integrity of the structure. The entire timber members of the roof needed to be refurbished. Wall structures were in dilapidated state with mortar joints disintegrating and bricks sprawling out.

The US Ambassador's Fund for Cultural Preservation, 2005 generously supported the complete restoration of these diminutive but important temples along with restoration of Lakshmi Narayan Temple, whose reconstruction to its original configuration was recently done by the Trust. Additional funds were made available by the Kathmandu Valley Preservation Trust (USA).

¹ Gautam Bajra Bajracharya, "Hanuman Dhoka Rajdarbar", published by Nepal and Asian Studies institution, T.U. 1977, page no.82-83.



above: The main entrance to the Mahadev Temple II with the principal image of Shiva in the background. *Photo by: Raju Roka, March 2004*

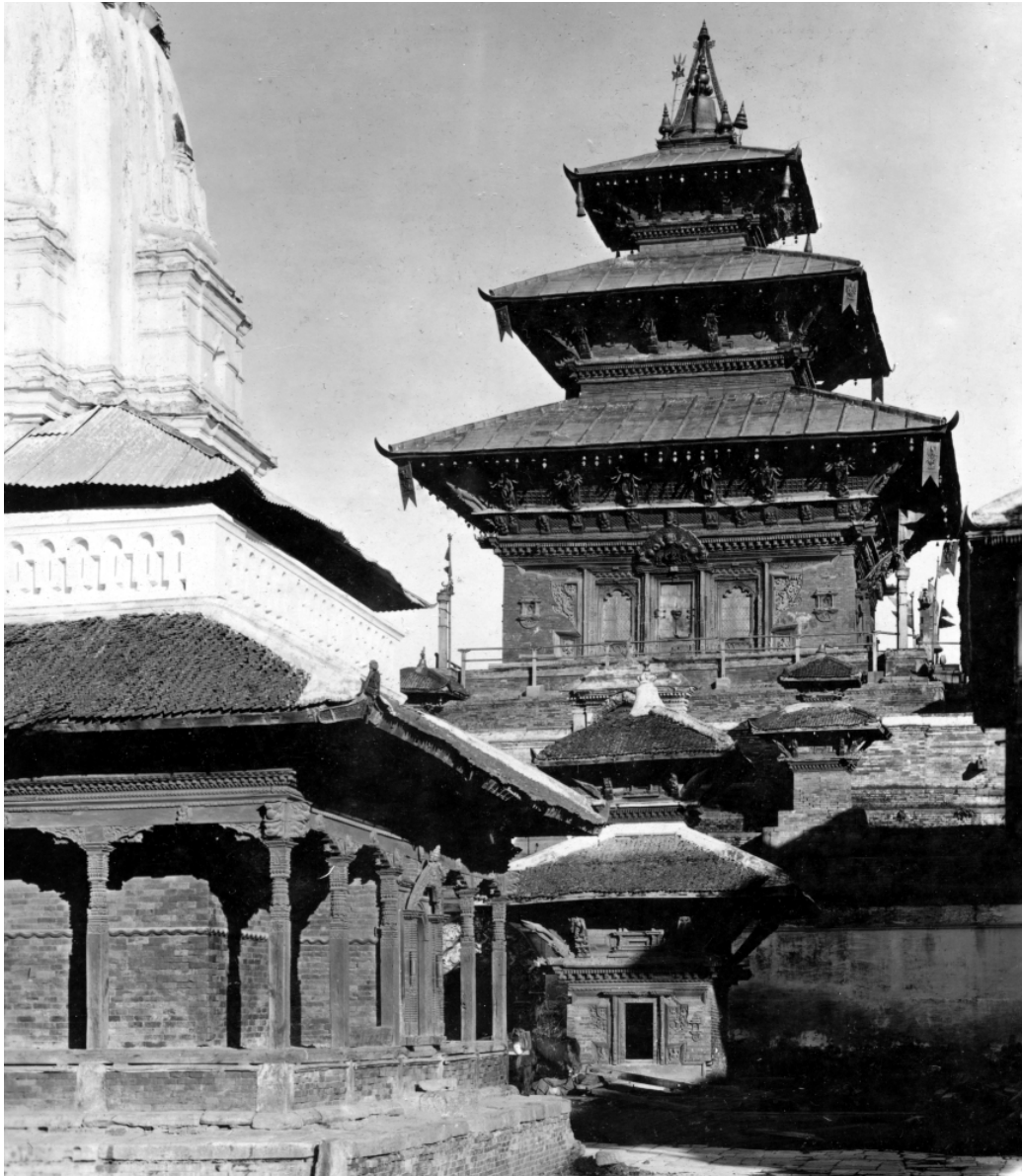
PROJECT FRAMEWORK

Mahadev Temples at Kathmandu Darbar Square, a UNESCO World Heritage Site, were restored as a significant component of the Kathmandu Valley Preservation Trust's "**Kathmandu Darbar Initiative (KDI)**" project. It is the first campaign to be funded by the Nepalese Corporate Houses, lead by Mr. Prabhakar SJB Rana, rallying for the restoration of temples at the Royal Square. Under this banner, five architectural monuments at the entrance of the Hanuman Dhoka Royal Palace complex have been restored from period of 2002-2006.

Kathmandu Valley Preservation Trust, with its track record of restoration of more than 2 dozens of monuments in Patan and Kathmandu since its establishment in 1990, was a crucial catalyst to initiate KDI, a very ambitious project. The Trust as the only organisation in Nepal working for historic preservation undertook the responsibility to fundraise and implement the project.

US Ambassador's Fund for Cultural Preservation 2005 was awarded to KVPT to restore these temples along with Lakshmi Narayan Temple under KDI in Kathmandu Darbar Square. This is the third consecutive year that the Trust has won the fund for restoration from the US Embassy, Kathmandu. The Trust has successfully completed restoration of Kal Bhairav and Kageswar Mahadev Temple in 2005 and 2006 respectively with support from prestigious US Ambassador's Fund.

The restoration of this outstanding historic shrine was undertaken in a project framework including both public outreach activities and critical training of local manpower in project management, public relations, preservation advocacy and the state of the art conservation technology. Given the country's location in high risk seismic zone, the development of sensitive and effective strengthening measures for retrofitting of the structure was also a vital component of the project. The implementation of the project was executed by the core staff of the Trust, in close association with Department of Archaeology, Kathmandu Metropolitan City and a steering committee which included representatives from community and the government.



left: This photograph taken sometime in early 1920's shows the Mahadev Temple II at the center with Kageswar Mahadev and Talegu Temples in foreground and background respectively. Comparing this with the existing condition, we can observe that its original configuration has not changed much. *Photo courtesy: From the collection of Manju Rana.*

HISTORICAL SIGNIFICANCE

Even though no stone inscription could be found in the temples about the date of their consecration, they have been mentioned in some publications. In the book “ Hanumandhoka Raj Darbar” (page no 83), the writer Gautam Bajra Bajracharya states that the temples were established as the part of the Singh Dhoka itself which is constructed during the reign of Pratap Malla (1641-1674 AD). And the “Kathmandu Valley-The preservation of Physical Environment and Cultural Heritage Protective Inventory” attributes the temples as 17th century.

We can say that these structures date back to the time when the entrance was consecrated in 17th century. The triumphant king, Pratap Malla brought back two huge stone lions as a victory trophy after conquering Bhaktapur in 1663 AD. He established them as the guardian figures of Taleju's western gate thus, marked an important event in the history of Kathmandu. It is most probable that these two temple structures were constructed during the same time frame.

The principle deity from Changu Narayan Temple, located atop a hill north of Bhaktapur, is brought into the Hanumandhoka through this very entry and the Khadga Jatra during the Dashain is also initiated from here. Twice every year Changu Narayan comes to Talegu Temple to pay homage to the Malla Tutelary deity, during this time, the Goddess Kumari visits the Taleju Temple and is worshipped on the plinth of the Mahadev Temple II. The entrance is used during various religious activities, thus, is of immense cultural and historical significance. With their history linked to the Singh Dhoka, the temples were built to accentuate the historic and artistic significance of the entrance.

DOCUMENTATION AND RESTORATION OF THE TEMPLES

Documentation

Prior to the beginning of actual work on site, the existing conditions of the structures were thoroughly documented in the form of detail drawings. This has always been a significant part of the Trust's continuous documentation of historic monuments which serves as the reference for future projects. The documented existing conditions is necessary to propose recommendations for restoration.

Based on the site investigation and the measurements taken, comprehensive ink drawings were prepared by the technical team of the Trust. These were drawn in 1:20 scale for both the temples, which include: 1) Existing Ground Floor Plans, 2) Existing First Floor Plan, 3) Principal West Elevation and 4) Existing West East Sections. In addition to these, digital photographs of the elements were also taken to record the extent and causes of its decay.

With the help of available information, drawings with proposed recommendations were drawn, also in 1:20 scale. They are as follows 1) Proposed Principal West Elevations and 2) Proposed West East Sections. Since there would not be much alteration in the Plan of the structures, their proposed conditions were not drawn.

Restoration

It is evident from a historical pre-1934 photograph available to us that not much has altered in the original configuration of the structures. They still preserve their original carvings, however, some of the elements such as the lion heads, the cornice details from the doors and the windows are either damaged or lost. The primary concern in these cases was the refurbishment of roof structures, which were inadequate, allowing monsoon rains to penetrate through them and leading to the gradual deterioration of the structures as a whole. Moreover, the east wall of Mahadev Temple II had settled, thus the entire temple had tilted by 4". It was necessary to correct the tilt to prevent the further settlement of the structure.

Plinth level

The brick work at the plinth had damaged and was in urgent need of replacement. Even the stone aprons were missing at the top. It was reconstructed with traditional *dachi appa* set in mud mortar. In most of the historic temples in the valley, the gap between the plinth wall and the foundation of the main wall is filled with compacted mud. Due to their own specific physical property, they act quite differently during an earthquake causing the settlement of structure and ultimately its collapse. The gap has thus been filled with the same materials (bricks and mud mortar) to ensure the entire core has the same mechanical properties, therefore creating a homogenous behaviour in an seismic movement.



left and above: The struts are from lower roof Mahadev II and upper roof Mahadev I respectively. These are fine examples of Malla period craftsmanship. *Photo by: Lumanti Joshi, May 2007.*



Wall Structure

In case of Mahadev Temple I, we had thought of repairing only the damaged areas of the wall. But when the damaged sections were dismantled, we found that the walls were greatly damaged. Therefore, the wall was completely reconstructed using traditional bricks (*dachi apa* and *ma apa*) in mud mortar. at the lower level. The upper level had been constructed with locally available “Chinese” bricks in cement mortar, this too was reconstructed.

For Mahadev Temple II, initially we attempted to raise the settled area using a jack hammer at the cornice level, after dismantling only a few layers of bricks. We were aiming to preserve historic material as much as possible. However, this proved to be infeasible because of the heavy load of the massive walls above. Thus, we had to dismantle the upper level and also the east facade along with a section of south and north elevations at the lower level to adjust the distorted area of the cornice. To support the heavy load of the wall above, timber posts were incorporated below the cornice level at the three facades. The wall structure was reconstructed with *dachi appa*, *ma appa* and mud mortar, concealing the posts. The wall at the upper level too was reconstructed.

Roof Structure

When we conducted the site investigation prior to the initiation of the restoration, we had assumed that 50% of the timber would be reusable. In traditional construction of the lower roof, the rafters should rest on the wall plate encircling the upper level wall and in the case of upper roof, the corner rafters should be in connection with the post supporting the pinnacle. But as the mud bed and roof tiles were removed, we found that length of majority of the members was insufficient and had also damaged due to moisture seepage.

Thus, the lower roofs were completely reconstructed using new *Sal* (*Shorea Robusta*) timber members. And the some of the reusable members were incorporated during reconstruction of upper roofs. As in the case of all the Trust’s project, a damp proof membrane or tarfelt was introduce between the planking and the mud bed. This technique was first used in the UNESCO funded Hanuman Dhoka Restoration Project.

above: When the mud bed and roof tiles from the upper roof of II were removed, we found that the length of the majority of the members was insufficient and had also damaged due to moisture seepage.
Photo by: Lumanti Joshi, April 2007.

Carved Details

Many carved details such as the colonnettes in the windows and their bases were lost. Likewise, the cornice details, for example, the lion heads in both the temples were severely damaged by termites. In the upper level, the dental pattern in the cornice had been replaced with bricks. To complete the entire configuration of the carvings in the temples, we had to replicate them on the basis of the existing adjacent examples.

Continuous settlement of the bird droppings and dust have damaged the struts, especially at the lower ends. A planking was introduced behind all the struts in both levels to prevent further decay of the struts' fabric.

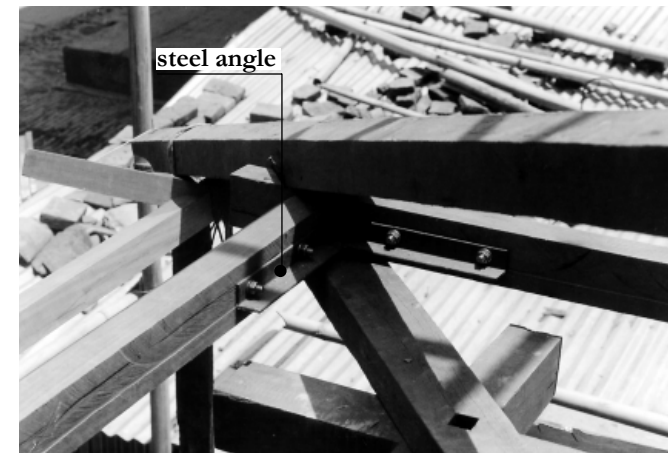
Seismic Strengthening

Given the fact that Nepal lies in a highly earthquake prone zone, seismic strengthening methodology was developed for the projects under Kathmandu Darbar Initiative, which were also applied during the restoration of the temples.

For the following reasons, seismic strengthening is needed for these structures:

- a) To protect from earthquake disaster.
- b) In the event of an earthquake, heritage preservation work will be given the least priority. It is natural to give higher importance to the medical and relief works.
- c) There is a 90% chance of losing the monuments indefinitely because it may not be restored or re-constructed after the disaster. For example, many great temples like Bhai Degal in Patan and Lapang Dyo Temple in bhaltapur were never restored after the 1934 earthquake and were, thus, lost for ever.
- d) At the same time, we lose 100 years of carved timber elements that we may never be able to replicate.

To prevent the breakage of the timber at the joints of the projecting corner pieces because of the load from the terracotta pieces and also from the corner struts, a metal cross piece connectors was screwed on top of it. The terracotta pieces rest above there by concealing its presence. A steel bracing



above: Replicated dental detail installed with other original cornice elements. *Photo by: Lumanti Joshi, April 2007.*

below: On the steel angle, nuts and bolts are used at the joint of the purlin, tying them together acting as one unit in the event of a seismic movement. *Photo by: Raju Roka, April 2007*



(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. Likewise, similar steel angle, screwed with steel nuts and bolts, was used at the joint of the purlins at the corner, thus, tying them together and acting as one unit in the event of a seismic movement.

OTHER RELEVANT ACTIVITIES

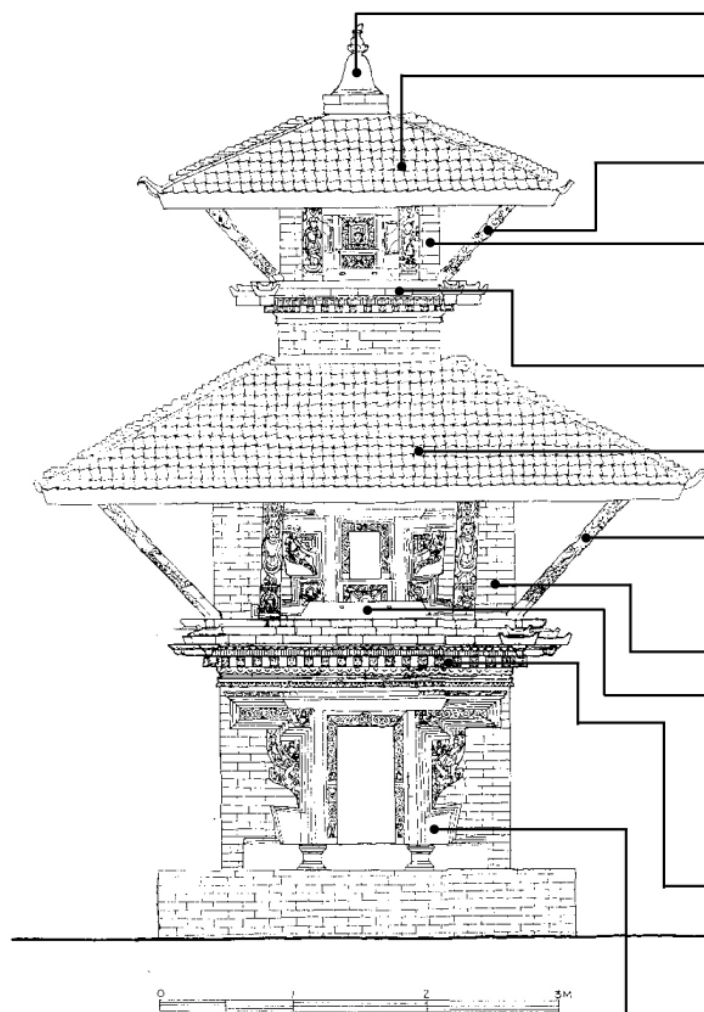
While the projects were in progress, the fund-raising of the Trust rose to an exciting new level last year with the launch of the International Campaign for the Restoration of the Patan Royal Palace Complex at Clarence House in London. The Complex defines one side of a rich medieval square which is the most important example of 17th century town planning that survives in Nepal. Backing on largely abandoned palace gardens the complex is the single most important-and threatened-historical complex in the country, and perhaps in South Asia.

In order to raise awareness of this important new initiative H.R.H The Prince of Wales hosted a fund-raising luncheon attended by international and Nepalese supporters of the Trust. Prince Charles received an overview of KVPT's projects prior to the launch of the Project "Restoration of Patan Royal Palace Complex." This important event was in response to the Trust's dedication and years of work in the field of preservation in Nepal, "Kathmandu Darbar Initiative" in particular.

above: Erich Theophile, Executive Director of KVPT standing next to the Prince of Wales at the luncheon at Clarence House, London, where the International Campaign for the Restoration of the Patan Royal Palace. This is the next project of the Trust after KDI. *Photo courtesy: Wire image.com.*

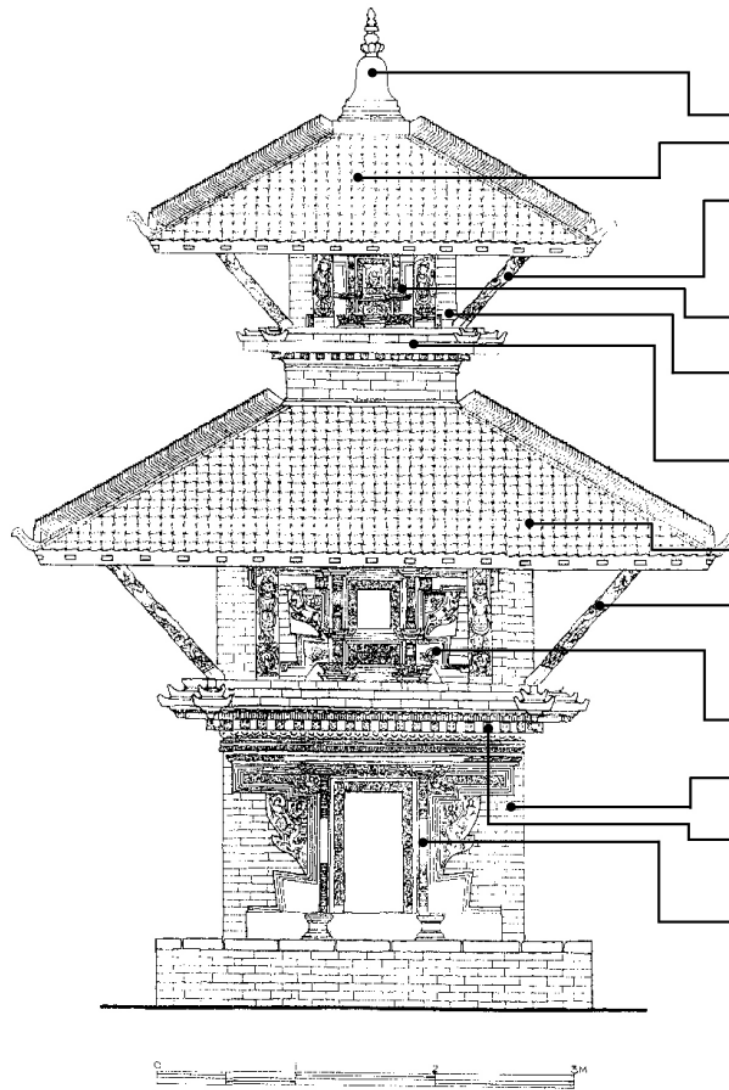
ANNOTATED DRAWINGS: MAHADEV TEMPLE I

Principal Elevation: Existing Conditions (documentated in July 2005)



MAHADEV TEMPLE-I

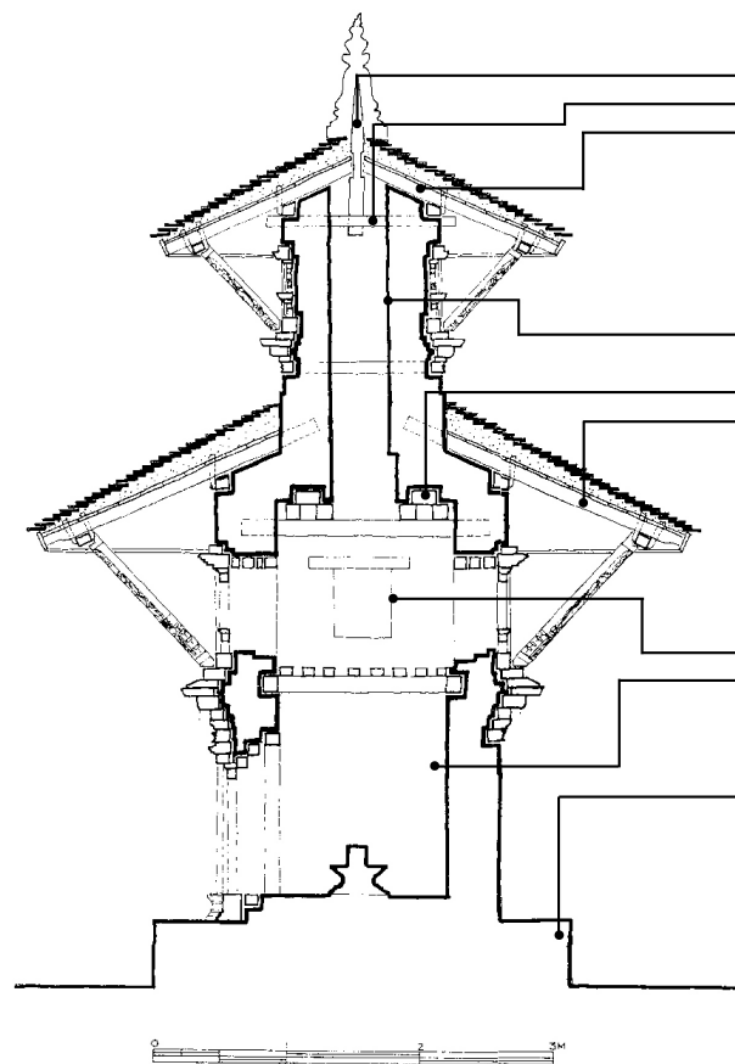
- **Pinnacle:** Made with copper and the upper portion of the pinnacle is damaged. Base is constructed with bricks instead of traditional timber base.
- **Roof tiles:** Tiles are not stable and have fallen off at many places, specially at roof ends. All the corner tiles are missing. Mud bed is visible at the edges. There is excessive amount of vegetation growth on the roof. Ridge tiles are loosely stacked and about 50% of them are lost.
- **Roof struts:** Probably original to the structure and have been painted with layers of red wash. Thus, the carvings are not very clear. A plain strut is used on the east side.
- **Wall Structure:** constructed with local chinese bricks in cement mortar. The upper two layers below the wall plates are loose and no mortar remains in between. Area below the cornice is plastered with lime surkhi.
Windows: All four on four sides are probably original to the structure and are redwashed with details highlighted using yellow paint. Details are not clear under the several layers of paint. However the details are not that elaborate. In all windows, *kulan* and *kulan than* are lost.
- **Cornice:** The upper layer of the cornice detail (*khichwa*) is lost and has been replaced with plain timber member. Except for this, all the other layers are painted with red color. Terracotta *lahkha* has been replaced with timber ones. Terracotta cornice details are loose at the joints.
- **Roof tiles:** Tiles are intact on all sides with vegetation growth on all sides. Corner tile at the north west corner is missing. Ridge tiles are loosely stacked and about 70% are lost. Tiles on south east, north west and south east ridges are displaced.
- **Roof struts:** All redwashed except for two plain struts on east sides. Details are highlighted with yellow color and have worn out completely. The struts can be divided into 3 distinct layers, first a layer of foliage, under this a principal figure standing on a lotus pedestal and at the lower portion depicts small figurines on the carving symbolizing mountains. Major cracks have formed at the areas where they are connected to the purlins.
- **Wall structure:** Constructed with *dachi appa* on mud mortar and has been redwashed. Joints are painted with yellow color. Walls on all sides are bulging out, is more prominent on north east corner. Upper 3 layers of bricks below the wall plates are loose. Wall below the cornice was reconstructed in 2001 using *dachi appa* in lime *surkhi* mortar. The joints have been roughly pointed with *surkhi*. Lower 6 layers on the East and South sides are severely damaged.
- **Windows:** All four on four sides are probably original to the structure and are redwashed with details highlighted using yellow paint. Details are not clear under the several layers of paint. However the details are not that elaborate. In all windows, *kulan* and *kulan than* are lost.
- **Cornice:** The timber cornice details show signs of termite attack. Details have been redwashed. Large cracks have developed on south side. 15% of the lion heads have been affected by termite attack. On east side, one of the lion heads are replaced with brick. Terracotta details are loose at the joints, some have completely worn out. Terracotta details along with the *lhakha* are all lost. The lowest cornice detail have worn out and settlement has occurred.
- **Door:** Is probably original to the structure. Details have worn out and some of the details such as the *kulan than* are missing. The tympanum is lost. Large cracks have developed on the frames. The door frame has been red-washed. The stone threshold is intact but does not belong to this door.



Principal Elevation: Proposed Recommendations

- **Pinnacle:** Existing pinnacle to be cleaned and reinstalled. Its base will be constructed of brick masonry.
- **Roof tiles:** Tiles to be salvaged and cleaned for reinstallation. Damaged ones will be replaced. Water proofing membrane (multiplast) to be introduced between the mud layer and planking.
- **Roof struts:** Unsightly redwash from the struts to be removed with mild detergent and water. The missing and damaged details to be recarved with reference to the existing ones. 15mm thick planking to be attached to all the struts to protect them from bird dropping. Stainless steel bars to be installed on the back side damaged struts for reinforcement.
- **Windows:** Layers of redwash to be removed using mild detergent and water. Missing details such as the *kulan*, *kulan than* to be recarved.
- **Wall fabric:** The external layer of brick will be replaced with traditional *dachi appa* laid on yellow mud mortar. The historic configuration will be maintained. Walls to be tied with timber ties at the corners above the lintels.
- **Cornice:** Damaged parts of the timber cornice will be refabricated based on the existing one. Terracotta cornice layers will be relaid in yellow mud mortar, replacing the damaged ones. Terracotta *lhakah* to be installed stainless steel cross reinforcement.
- **Roof tiles:** Tiles to be salvaged and cleaned for reinstallation. Damaged ones will be replaced. Water proofing membrane (multiplast) to be introduced between the mud layer and planking.
- **Roof struts:** Unsightly redwash from the struts to be removed with mild detergent and water. The missing and damaged details to be recarved with reference to the existing ones. 15mm thick planking to be attached to all the struts to protect them from bird dropping. Stainless steel bars to be installed on the back side damaged struts for reinforcement.
- **Windows:** Layers of redwash to be removed using mild detergent and water. Missing details such as the *kulan*, *kulan than* to be recarved.
- **Wall fabric:** The external layer of brick will be replaced with traditional *dachi appa* laid on yellow mud mortar. The historic configuration will be maintained.
- **Cornice:** Damaged parts of the timber cornice will be refabricated based on the existing one. Terracotta cornice layers will be relaid in yellow mud mortar, replacing the damaged ones. Terracotta *lhakah* to be installed stainless steel cross reinforcement.
- **Door:** Thorough cleaning and removal of red paint to be done. Missing details such as the door shutters, *kulan than* and *kvata* will be refabricated and installed. Stone threshold is to be maintained.

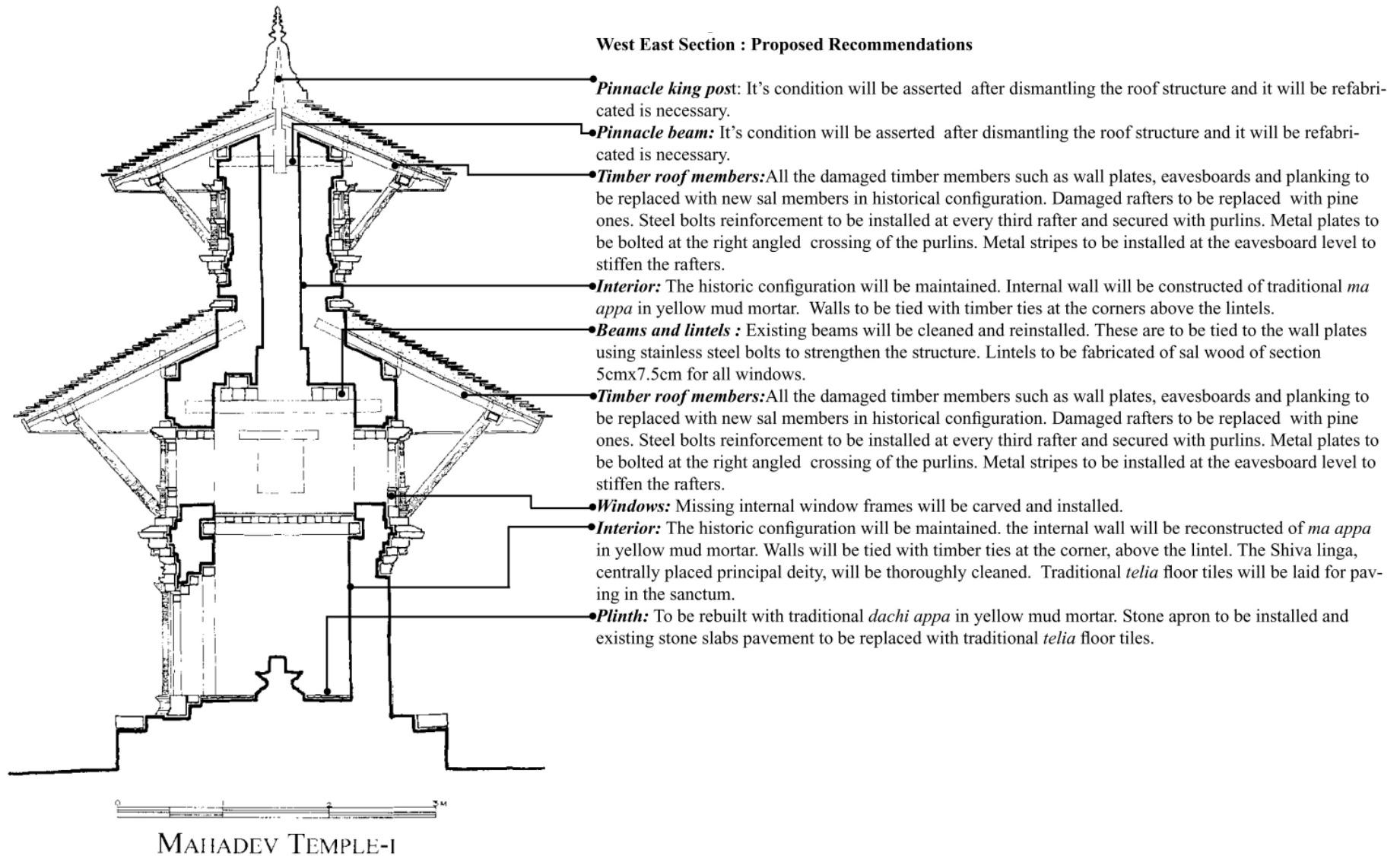
MAHADEV TEMPLE-I



West East Section: Existing Conditions (documentated in July 2005)

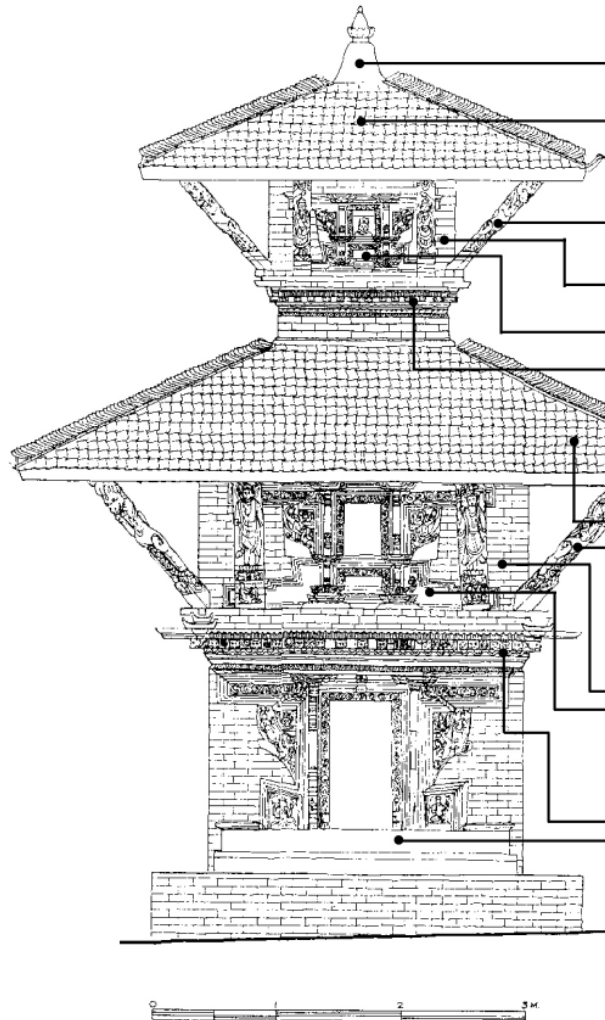
- **Pinnacle king post:** It has been damaged due to wet rot.
- **Pinnacle beam:** It has been damaged due to wet rot.
- **Timber roof members:** Roof structure was totally refurbished in 2001. Plankings show major damages caused by wet rot. In the east side, the lower portions of the planking have completely disintegrated exposing the roof tiles from below. Rafters are of 7.5 cm x 10 cm section. They have been affected by wet rot, the damage is more prominent at the south, east and north sides. Eavesboards are not of traditional section and have warped. They have been nailed on the rafters and at some places eavesboards are not in contact with the rafters. Wall plates are intact. Purlins are of small size and have not been properly joined. They are affected by damp.
- **Interior:** The wall fabric at this level is in fair condition and has been constructed with *dachi appa* in mud mortar. There is no opening on all sides for the windows, similar to blind windows.
- **Beams:** The beams are in fair condition but some of them show fine cracks.
- **Timber roof members:** Planking has been hapazardly placed. Almost all of them are damaged by wet rot. Some of them (on the east and north sides) are severely damaged exposing the mud layer from below. Rafters show effects of dampness but are fairly intact. However, some of the rafters are damaged around the eavesbosrd level. The sizes of rafters are not according to the traditional configuration as the roof was reconstructed in 2001. Timber peg are missing. Eavesboards are not of traditional configuration and have deteriorated on all sides. They are nailed on the rafters. Eavesboard are not properly joined at the corners. Purlins are in fair condition but there are no sufficient projection at the joints. Wall plates are worn out with large cracks on them. These are red washed.
- **Windows:** The internal window frames are missing in all windows.
- **Interior:** Is constructed traditional *dachi appa* in mud mortar. The lower portions of the wall in the sanctum are damaged because of the rising damp. Timber joists are intact. These of 10cmx13cm section are in structurally fair condition. Tolia tiles have been used for paving the sactum. These have worn out completely. Stone Shiva Linga, the principal deity is centrally placed in the sanctum.
- **Plinth:** The single level plinth is constructed with *dachi appa* in lime *surkhi* mortar and has been red washed. The bricks on the lower level are damaged from the rising damp. It has been paved with large stone slab, which were added to the structure during repair of the temple in 2001.

MAHADEV TEMPLE-I



ANNOTATED DRAWINGS: MAHADEV TEMPLE II

Principal Elevation: Existing Conditions (documentated in July 2005)



MAHADEV TEMPLE-II

Whole structure is off the plumbline and the tilt is more severe in the upper level.

• **Pinnacle:** It is a terracotta pinnacle with a gilded top, probably replaced during 1934 repair. The pinnacle is broken on the west side and does not have a proper base.

• **Roof tiles:** Roof tiles are almost intact however the ones at the edges are loose and mud bed exposed Ridge tiles are loosely stacked and 50% of these are lost. Corner tile missing in NS corner.

• **Roof struts:** All struts (total 12 in no.) are redwashed, detailed highlighted with yellow color. Each depicts various deities with one of their arms raised to reach the upper layer of foliage of the strut. The struts are in fair condition. The struts are not original to the structure as seen from the inferior quality of their carvings. Back sides of all the struts are damaged by bird dropping.

• **Wall structure:** The structure is leaning towards east. Wall constructed of *dachi appa* in *surkhi* mortar. Upper two layers of bricks are loose (no mortar visible) and have displaced from their positions. The gaps between the joints are prominently visible. The wall was previously redwashed and yellow paint used to paint false joints, this have faded considerably. Large cracks have developed at the upper levels. Area below the cornice is plastered with lime *surkhi* and has been redwashed. The pinnacle beam is protruding outside the wall fabric and is visible on the facade.

• **Windows:** Four on each sides. Probably original to the structure, has been redwashed and details highlighted with yellow paint. All details have worn out but have been painted over. *Kulan than* are missing on the north and east facades.

• **Cornice detail:** Details on all sides have worn out and is redwashed and highlighted with yellow paint. The lowest timber detail is the most worn out one. Terracotta cornice bricks are loose at the joint and some of them are missing in the east and north sides. Corner terracotta bricks or *lha kah* missing from SE, NE and NW corners.

• **Roof tiles:** Intact on all sides but there is vegetation growth at the edges. The roof tiles are intact and are in fair condition. Ridge tiles are loosely stacked and some of these are have displaced at the NE corner. Corner tile at the NW corner is lost and others are intact.

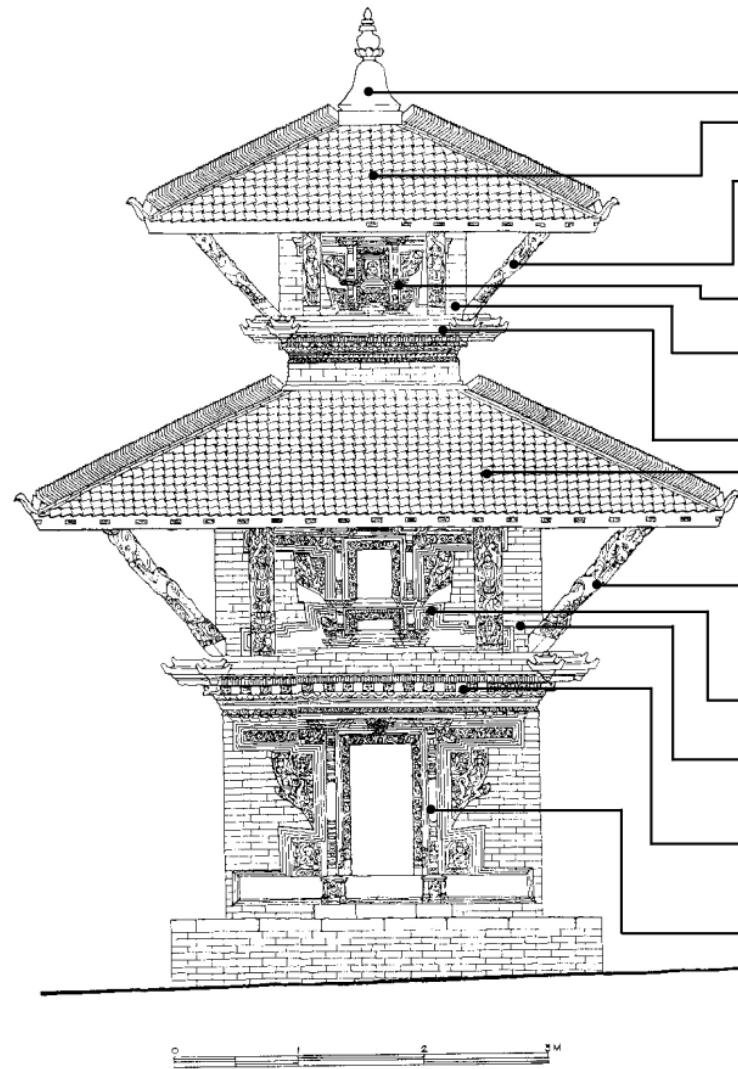
• **Roof struts:** Probably original to the structure. Corner struts are intact. Almost all of the arms of the figurines are missing. The struts have three layers of carved details first the foliage, then a main figure on lotus pedestal and finally a scene. Some features erotic figures and some have common people on them. Large gaps and cracks have developed on some of them. A new strut has replaced the original (depth of the carving is less than other).

• **Wall structure:** Wall is tilted towards east. First five layers of bricks below the wallplates are loose and sprawling out. Constructed with *dachi appa* in yellow mud mortar. No pointing is left on the joints. Has been redwashed. Bricks below the cornice level have worn out on the east side, lower 8 layers on south and north sides. 50% of these are damaged. At the level below the cornice, joints are pointed with lime *surkhi* mortar.

• **Windows:** Intact on all sides except for kulan from east side. All are redwashed and details have been highlighted with yellow color. These windows are probably original to the structure.

• **Cornice details:** These are in poor condition, redwashed on all sides and details highlighted with yellow paint. Joints of the terracotta layers are loose. *Lha Kah* at S/E and N/E corners are lost. One of these are missing on the south and northside. Timber cornice details are undulating with large cracks on the details. More than 50% of the lion heads are damaged by insect bore holes (5 on south side have bore holes, 3 on east facade are lost & 6 have bore holes, on the north side, 2 are lost & 3 have severe bore holes and on the west facade 3 lionheads are missing and 3 have damaged).

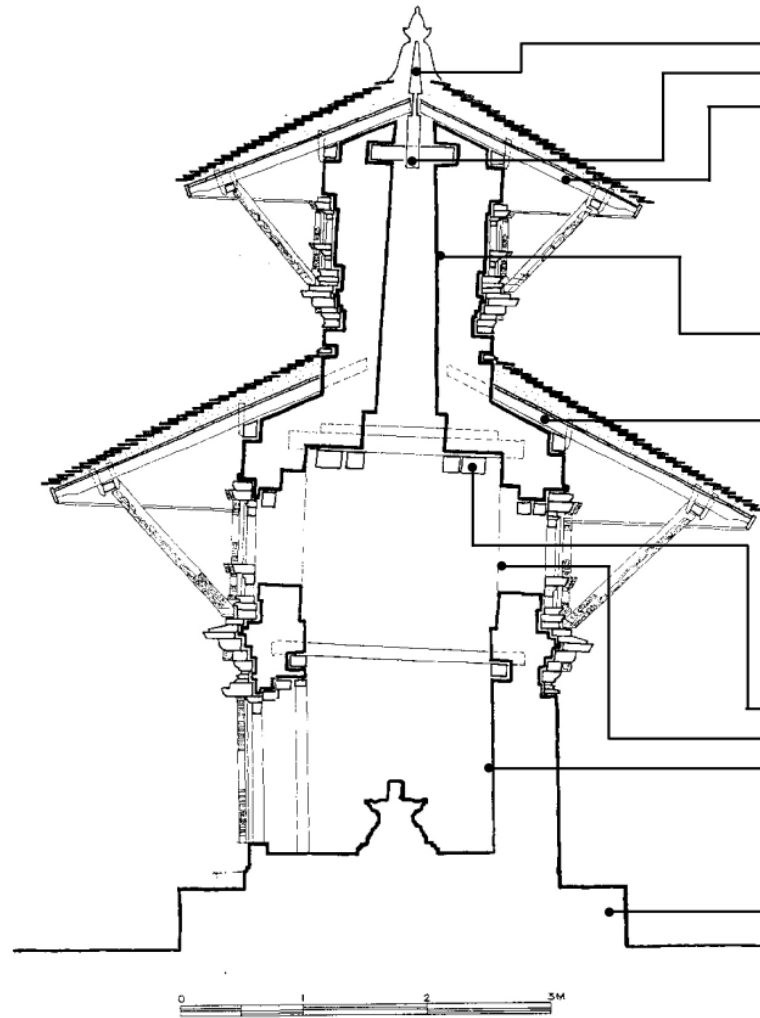
• **Doorway:** It is probably original to the structure. It is on the west facade and has lost some of its details like *kulan*, *toran*. Details have worn out. It depicts Ganesh and Kumar on the lower portion. The door shutters are missing.



Principal Elevation: Proposed Recommendations

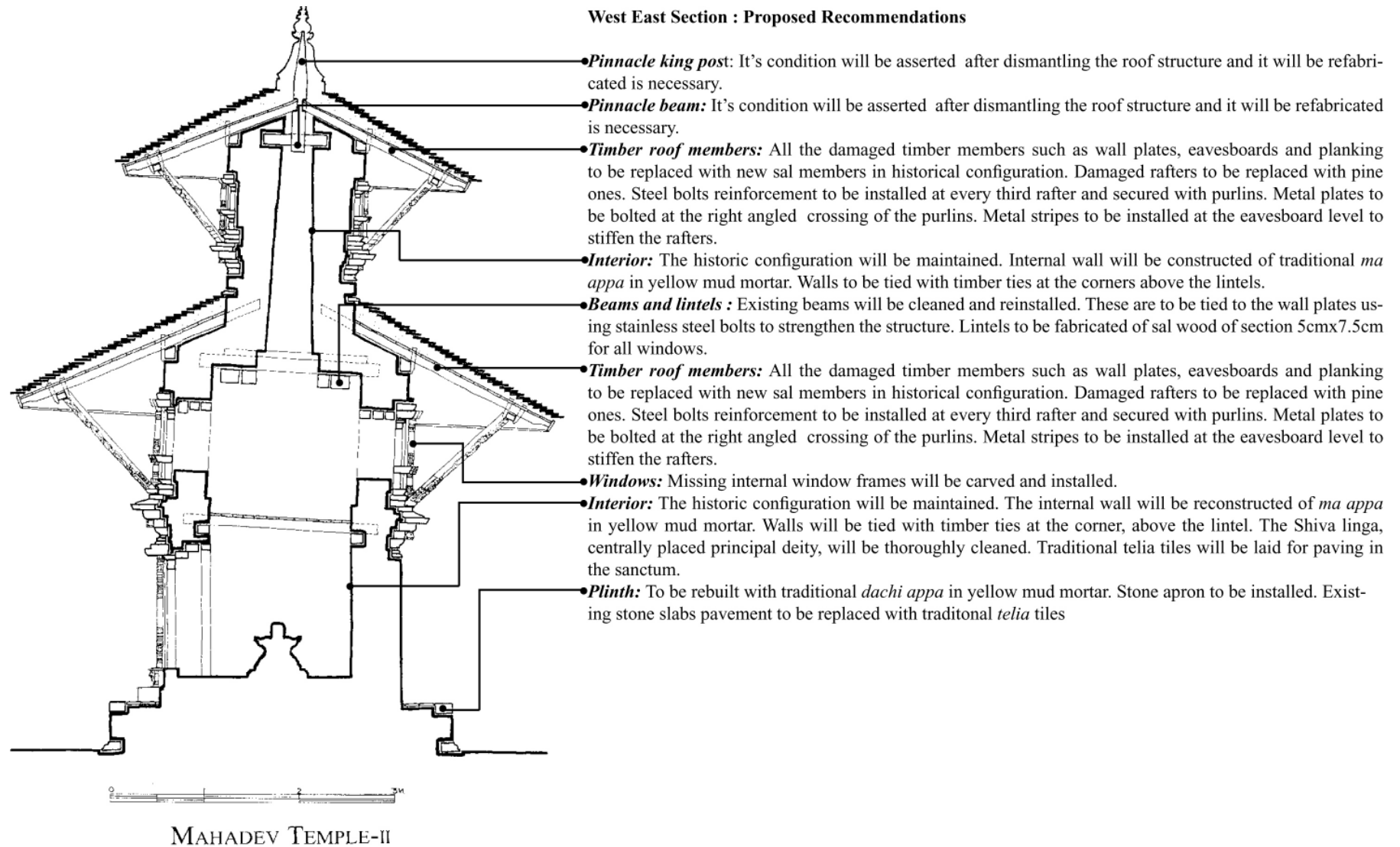
- **Pinnacle:** Existing copper pinnacle will be cleaned and reinstalled with new brick base.
- **Roof tiles:** Tiles to be salvaged and cleaned for reinstallation. Damaged ones will be replaced. Water proofing membrane (multiplast) to be introduced between the mud layer and planking.
- **Roof struts:** Unsightly redwash from the struts to be removed with mild detergent and water. The missing and damaged details to be recarved with reference to the existing ones. 15mm thick planking to be attached to all the struts to protect them from bird dropping. Stainless steel bars to be installed on the back side damaged struts for reinforcement.
- **Windows:** Layers of redwash to be removed using mild detergent and water. Missing details such as the *kulan*, *kulan than* to be recarved.
- **Wall fabric:** The structural tilt will be corrected by partly dismantling the temple and rebuilding it using traditional *dachi appa* laid on yellow mud mortar for external facade. The historic configuration will be maintained. Walls to be tied with timber ties at the corners above the lintels.
- **Cornice:** Damaged parts of the timber cornice will be refabricated based on the existing one. Terracotta cornice layers will be relaid in yellow mud mortar, replacing the damaged ones. Terracotta *lhakah* to be installed stainless steel cross reinforcement.
- **Roof tiles:** Tiles to be salvaged and cleaned for reinstallation. Damaged ones will be replaced. Water proofing membrane (multiplast) to be introduced between the mud layer and planking.
- **Roof struts:** Unsightly redwash from the struts to be removed with mild detergent and water. The missing and damaged details to be recarved with reference to the existing ones. 15mm thick planking to be attached to all the struts to protect them from bird dropping. Stainless steel bars to be installed on the back side damaged struts for reinforcement.
- **Windows:** Layers of redwash to be removed using mild detergent and water. Missing details such as the *kulan*, *kulan than* to be recarved.
- **Wall fabric:** The structural tilt will be corrected by partly dismantling the temple and rebuilding it using traditional *dachi appa* laid on yellow mud mortar for external facade. The historic configuration will be maintained. Walls to be tied with timber ties at the corners above the lintels.
- **Cornice:** Damaged parts of the timber cornice will be refabricated based on the existing one. Terracotta cornice layers will be relaid in yellow mud mortar, replacing the damaged ones. Terracotta *lhakah* to be installed stainless steel cross reinforcement.
- **Door:** Thorough cleaning and removal of red paint to be done. Missing details such as the door shutters, *kulan than* and *dkvata* will be refabricated and installed. Stone threshold is to be maintained.

MAHADEV TEMPLE-II

West East Section: Existing Conditions (Documentated in July 2005)

- **Pinnacle king post:** Its condition is not possible to examine before the dismantling the roof structure.
- **Pinnacle beam:** Its condition is not possible to examine before the dismantling the roof structure.
- **Timber roof members:** Water seepage through the places where the tiles have dislodged (like at the edges of roof line, have damaged due to wet rot. All the rafters are redwashed, are intact. But some are affected by damp penetration. Rafters are not in historic configuration and timber pegs (*chukul*) placed in every alternate rafter. About 30 % of them are not reusable. Purlins are in fair condition. They are redwashed and flower details painted with yellow color. It was probably done for coronation of King Birendra in 1975. Eavesboards are not in historical configuration and have been nailed to the rafters. All of them have warped, damaged due to dampness. The joints between two eavesboards are not properly executed. Wall plates where the rafters rest on the wall are of smaller section than traditionally proportioned.
- **Interior:** The interior wall fabric at this level is in fair condition and has been constructed with *dachi appa* in mud mortar. There is no opening on all sides for the windows, similar to blind windows. The internal wall structure tapers upwards.
- **Timber roof members:** Planking show effect of dampness and appears to be damaged from wet rot. Gaps are not tight between them. Rafters are not in historic configuration. They have been redwashed and do not show signs of wet rot. They are in good condition but with wide spacing between them. Traditional timber pegs are missing at most rafters. Purlin is not of historic configuration (Size 7.5cmx10cm). Have warped at the areas where they meets the struts. The joints between the purlins are not proper. These too have been red washed and flower details painted with yellow color. Wall plates are intact on all sides and have been redwashed. The joints between them are not proper i.e. the overlapping between the wall plates is not sufficient. In the east side, it is bulging out and have cracked. Eavesboards are nailed on the rafters, have completely worn out specially at south side where a portion of it is lost. The joints between them are not properly done.
- **Beams:** Timber beams appears structurally sound. Joists, of 10cmx10cm section, are in fair condition.
- **Windows:** The internal window frames are missing in all windows.
- **Interior:** The whole wall structure is leaning towards east. Ground floor walls are constructed with mixed bricks (60% common bricks and 40% *dachi appa*) in mud mortar. The lower portions of the walls have damaged in several places from rising dampness and have been patched with mud plaster. Telia tiles have been used for paving the sanctum. These have worn out completely. Stone Shiva Linga, the principal deity is centrally placed in the sanctum.
- **Plinth:** Constructed with *dachi appa* in lime *surkhi* and is in good condition. This was reconstructed in 2001 and have been redwashed. Stone threshold intact but does not have base for *kulan than* of the door way

MAHADEV TEMPLE-II



CHRONOLOGY OF WORKS

MAHADEV TEMPLE II

2006

January to June

- Initiation of the carving of the lost door pillar and *kulan*.

2007

February

- Carving of cornice details such as lion heads and *astamangals*.
- Fencing surrounding the temple and scaffolding erected.
- Dismantling of roofs and damaged wall upto the cornice level to readjust the tilted portion of the temple. And the struts, windows and other reusable timber members were stored.
- Replacement of damaged bricks with dachi appa in the area below the cornice.
- Cleaning of unsightly red color from the cornice with the help of soft brush and mild detergent.
- Cleaning of site.

March

- Cleaning of red color from the windows and struts with soft brush and mild detergent.
- Preparation of timber structural members as such as the wall plates, beams, rafters, purlins, plank-ing, eavesboards.
- Lifting the tilted cornice in the east facade and its readjustment was done using jack hammer.
- Adjustment of cleaned window at the lower level.
- Rebuilding of wall with *ma appa*, *dachi appa* set in mud mortar.
- Cleaning of site.

April

- Carving of missing details of windows.
- Installation of wall plates, rafters, purlins, beams to support the upper walls and eavesboards in the lower level.
- Construction of upper level wall and installation of cleaned cornice details and windows. During the process, damaged details were replaced.
- Installation of wall plates, rafters, purlins and eavesboards in the upper level.
- Fixing of planking on rafters of both the roof levels.
- Cleaning of *jhingati*, the traditional roof tiles.
- Site clearing.

May

- Carving of missing window details.
- Preparation of apron stone.
- Laying of *jhingati* on the mud bed over the tarfelt on both the roof levels.
- Installation of new pinnacle.
- Installation of recarved door and window details.
- Carving of door panels.
- Site cleaning.

June

- Dismantling of fence and scaffolding.
- Replacing the damaged bricks in the plinth.
- Laying of apron stones.
- Laying of floor tiles on the plinth and sanctum.
- Fixing the carved door panels in their position.
- Site clearance.

MAHADEV TEMPLE I

2007

April

- Fencing surrounding the temple and scaffolding erected.
- Carving of missing window details, damaged cornice and lost corner strut.
- Preparation of timber structural members as such as the wall plates, beams, rafters, purlins, plank-ing, eavesboards.
- Dismantling of the roofs and the upper wall structure. The struts, windows and other reusable timber members were stored.
- Cleaning of red color from carved details using mild detergent and soft brush.
- Replacement of damaged bricks in the lower level with *dachi appa* in yellow mud mortar.

May

- Carving of missing window details, damaged cornice and lost corner strut.
- Installation of struts, wall plates, rafters, purlins, beams to support the upper walls and eavesboards in the lower level.
- Construction of upper wall structure after installation of cleaned cornice details and windows at the upper level.
- Installation of wall plates, rafters, purlins and eavesboards in the upper level.
- Preparation of apron stone.
- Site cleaning.

June

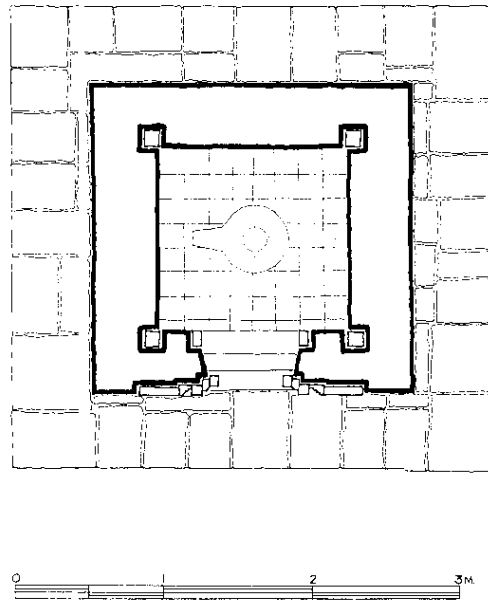
- Installation of struts, wall plates, rafters, purlins, planking and eavesboards in the upper level.
- Preparation of apron stone.
- Installation of planking on both the roof structures.

- Cleaning of red color from door using mild detergent and soft brush.
- Laying of *jhingati* on mud bed over damp proofing course.
- Carving of door panels.
- Rebuilding of plinth and installation of apron stone.
- Fence and scaffolding taken off.
- Site clearing.

July

- Installation of carved missing details in the windows.
- Installation of door panels.
- Site clearance.

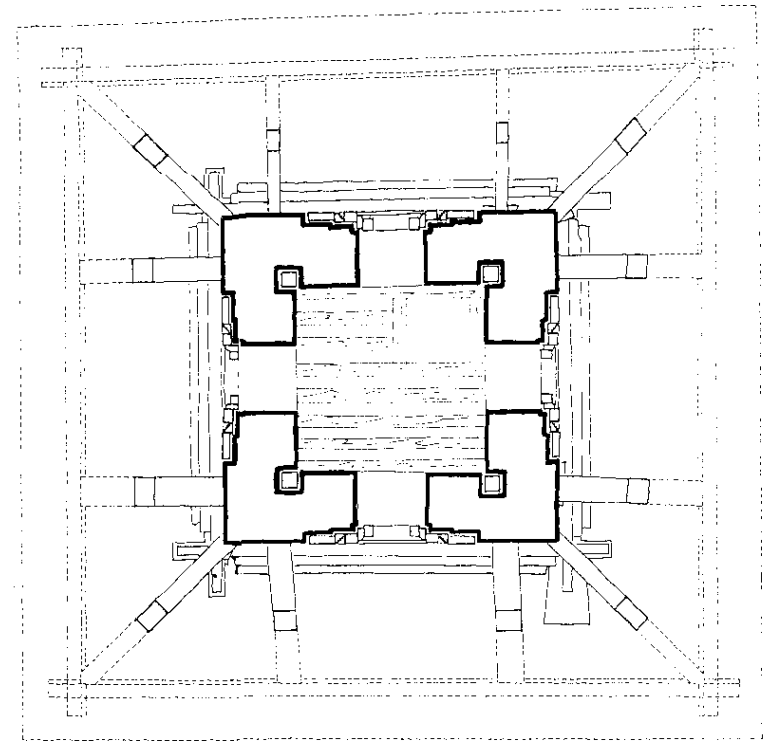
DOCUMENTATION OF PROPOSED AND EXISTING CONDITIONS- MAHADEV TEMPLE I



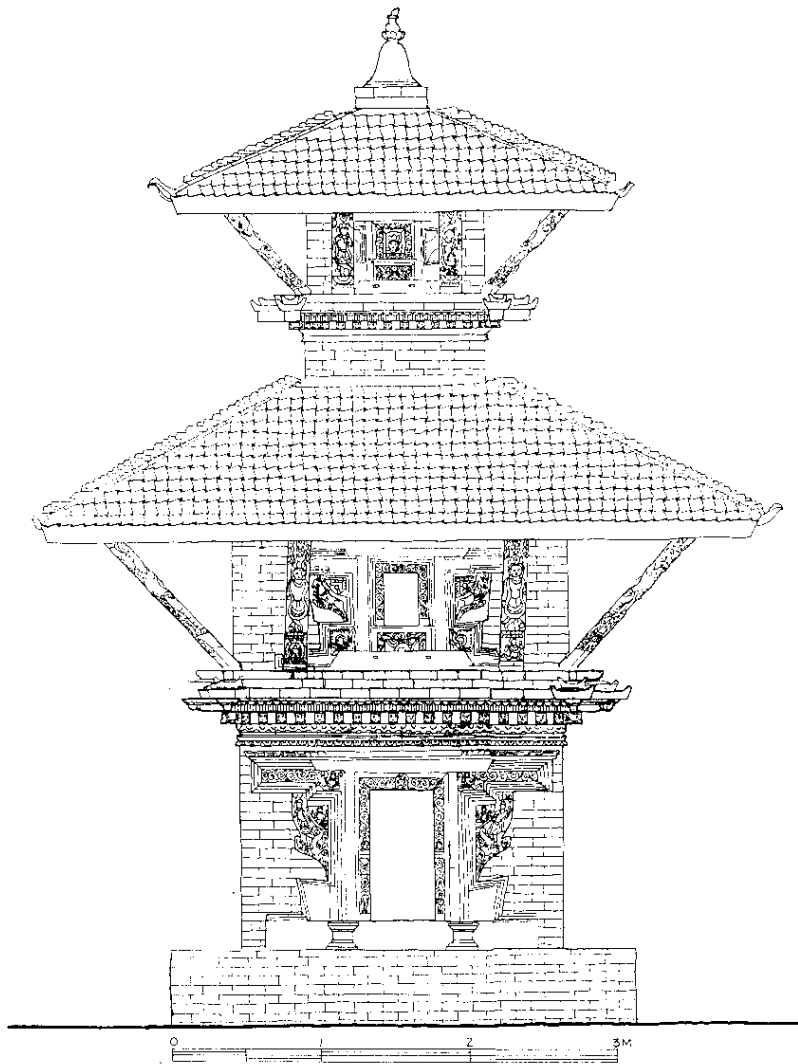
MAHADEV TEMPLE I

KATHMANDU DARBAR INITIATIVE

GROUND FLOOR PLAN: EXISTING CONDITIONS



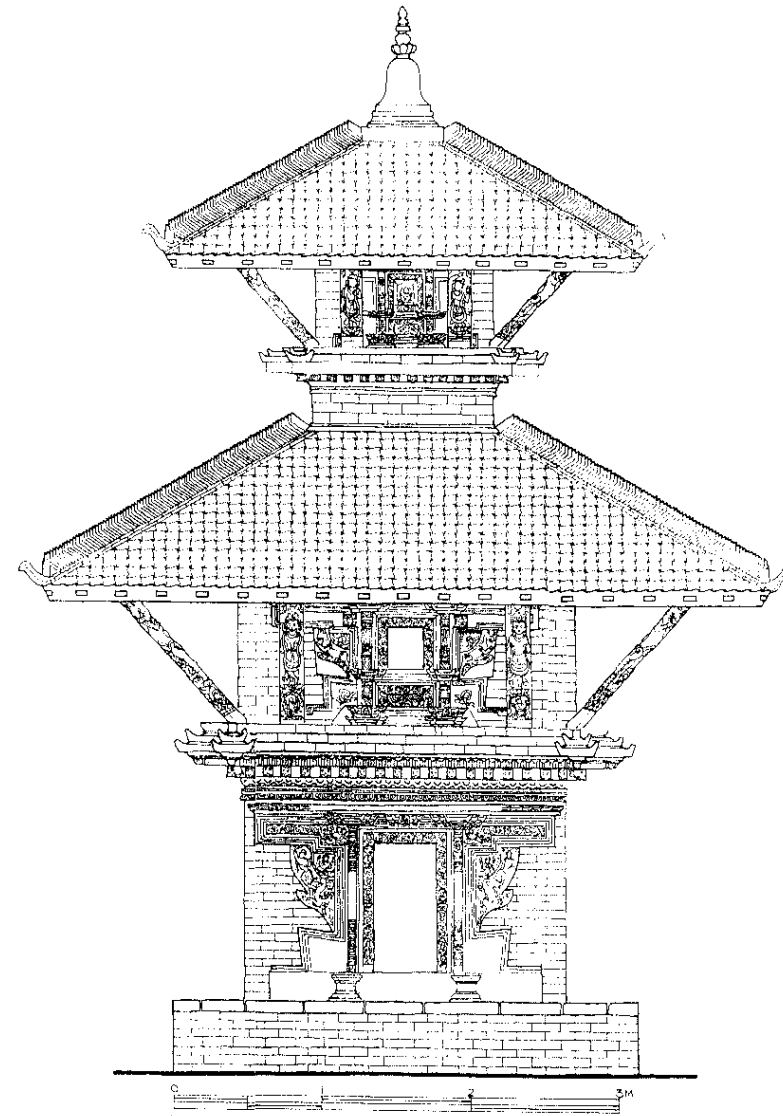
MAHADEV TEMPLE I
KATHMANDU DARBAR INITIATIVE
FIRST FLOOR PLAN: EXISTING CONDITIONS



MAHADEV TEMPLE I

KATHMANDU DARBAR INITIATIVE

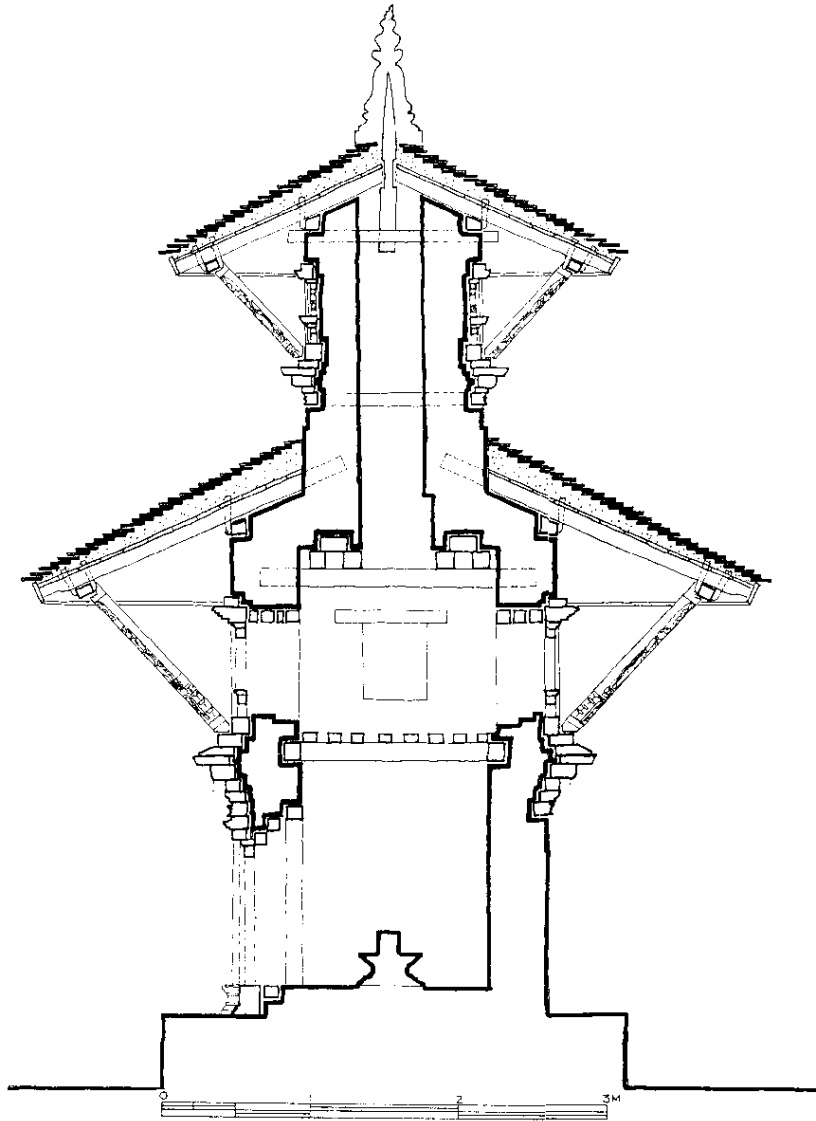
PRINCIPAL ELEVATION: EXISTING CONDITIONS



MAHADEV TEMPLE I

KATHMANDU DARBAR INITIATIVE

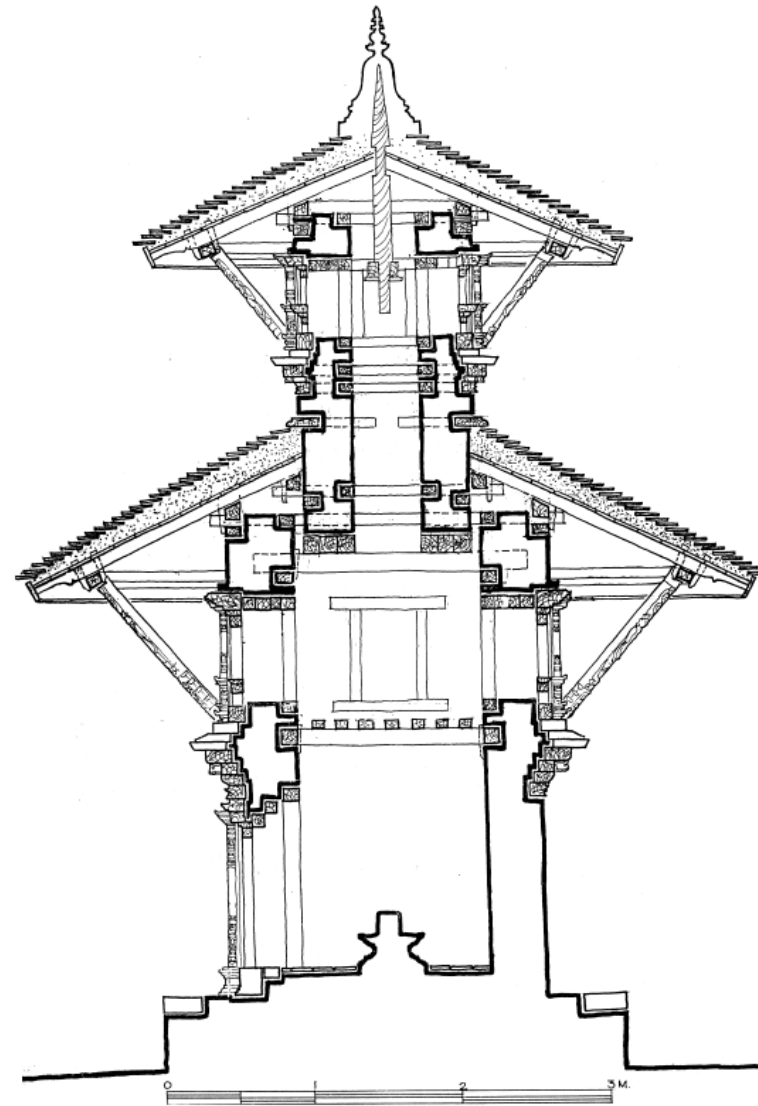
PRINCIPAL ELEVATION: PROPOSED CONDITIONS



MAHADEV TEMPLE I

KATHMANDU DARBAR INITIATIVE

WEST-EAST SECTION: EXISTING CONDITIONS

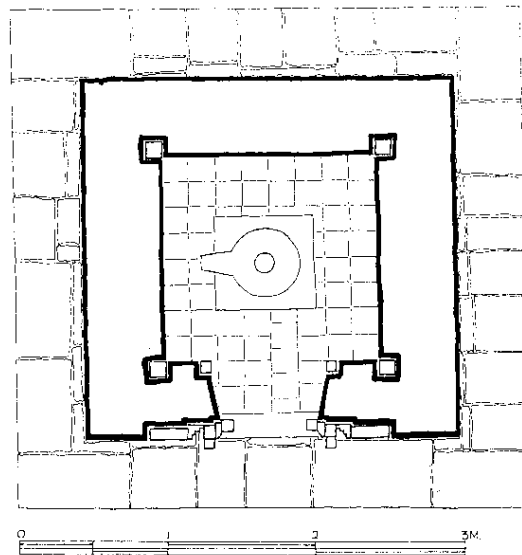


MAHADEV TEMPLE I

KATHMANDU DARBAR INITIATIVE

WEST-EAST SECTION: PROPOSED CONDITIONS

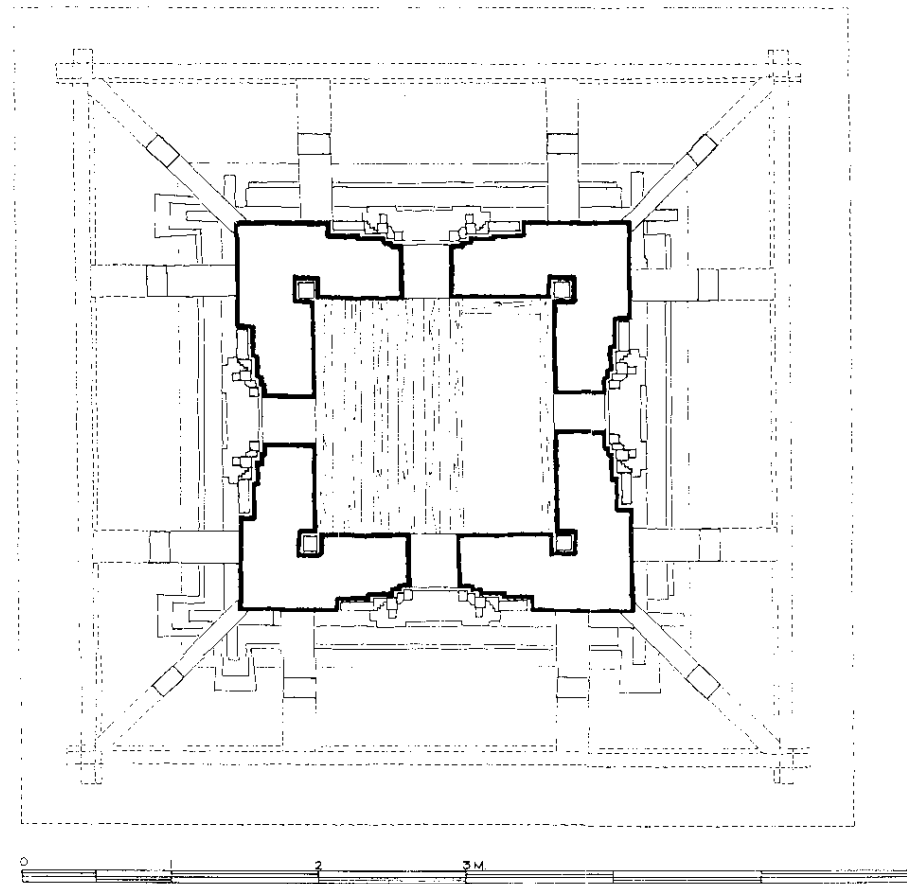
DOCUMENTATION OF PROPOSED AND EXISTING CONDITIONS- MAHADEV TEMPLE II



MAHADEV TEMPLE II

KATHMANDU DARBAR INITIATIVE

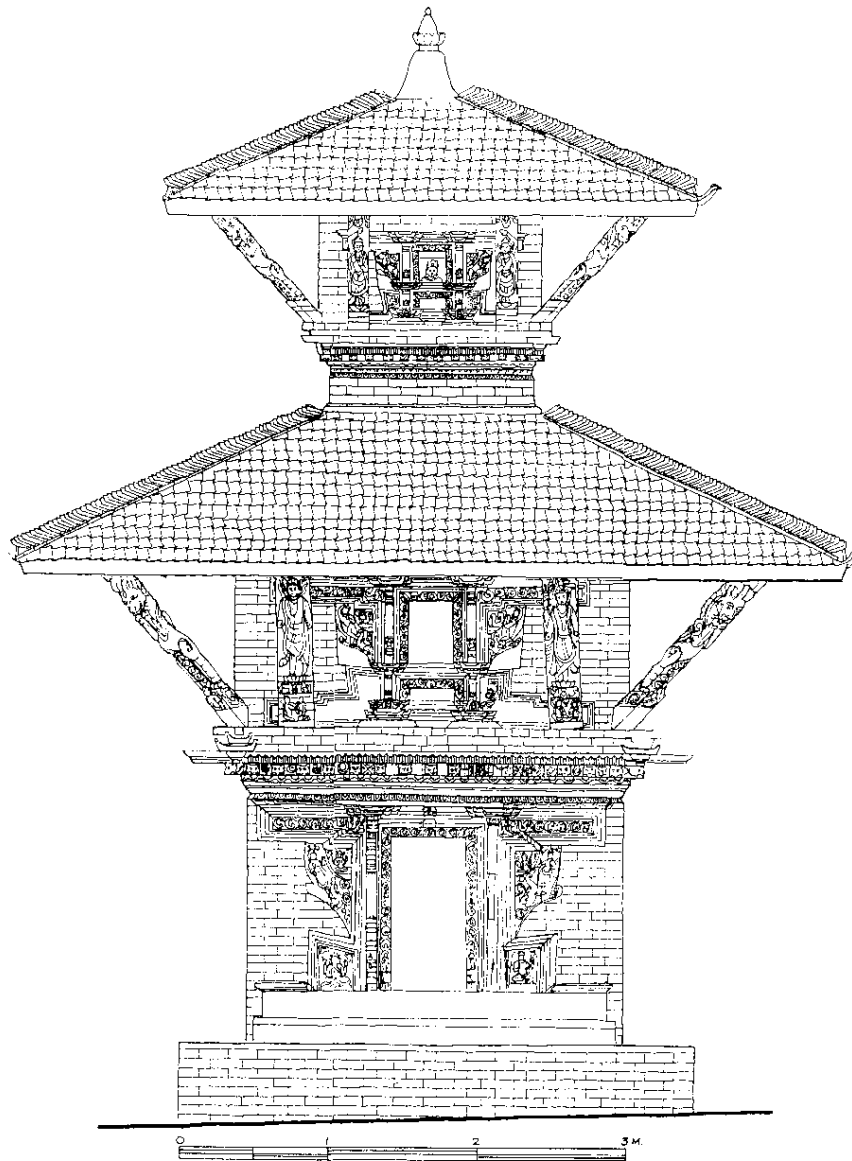
GROUND FLOOR PLAN: EXISTING CONDITIONS



MAHADEV TEMPLE II

KATHMANDU DARBAR INITIATIVE

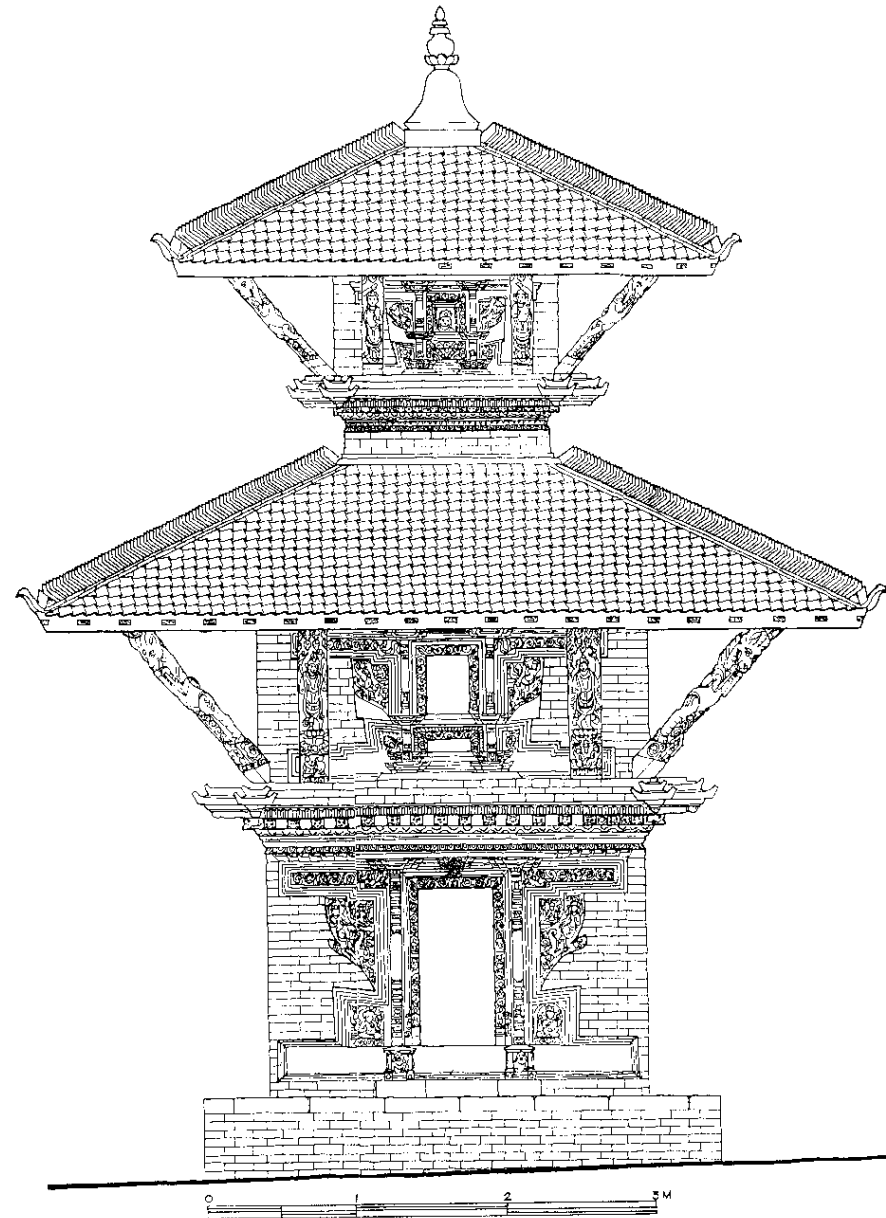
FIRST FLOOR PLAN: EXISTING CONDITIONS



MAHADEV TEMPLE II

KATHMANDU DARBAR INITIATIVE

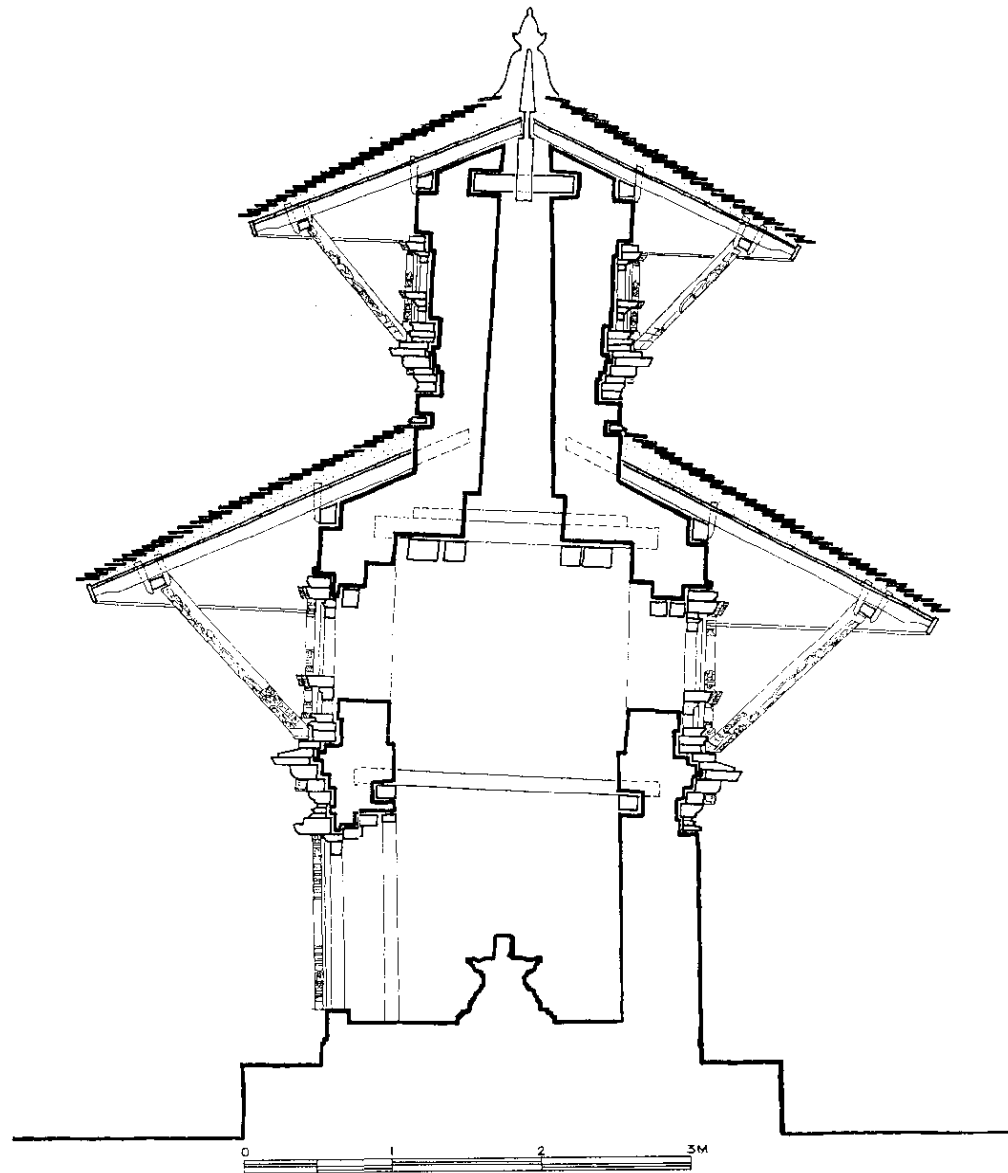
WEST ELEVATION: EXISTING CONDITIONS



MAHADEV TEMPLE II

KATHMANDU DARBAR INITIATIVE

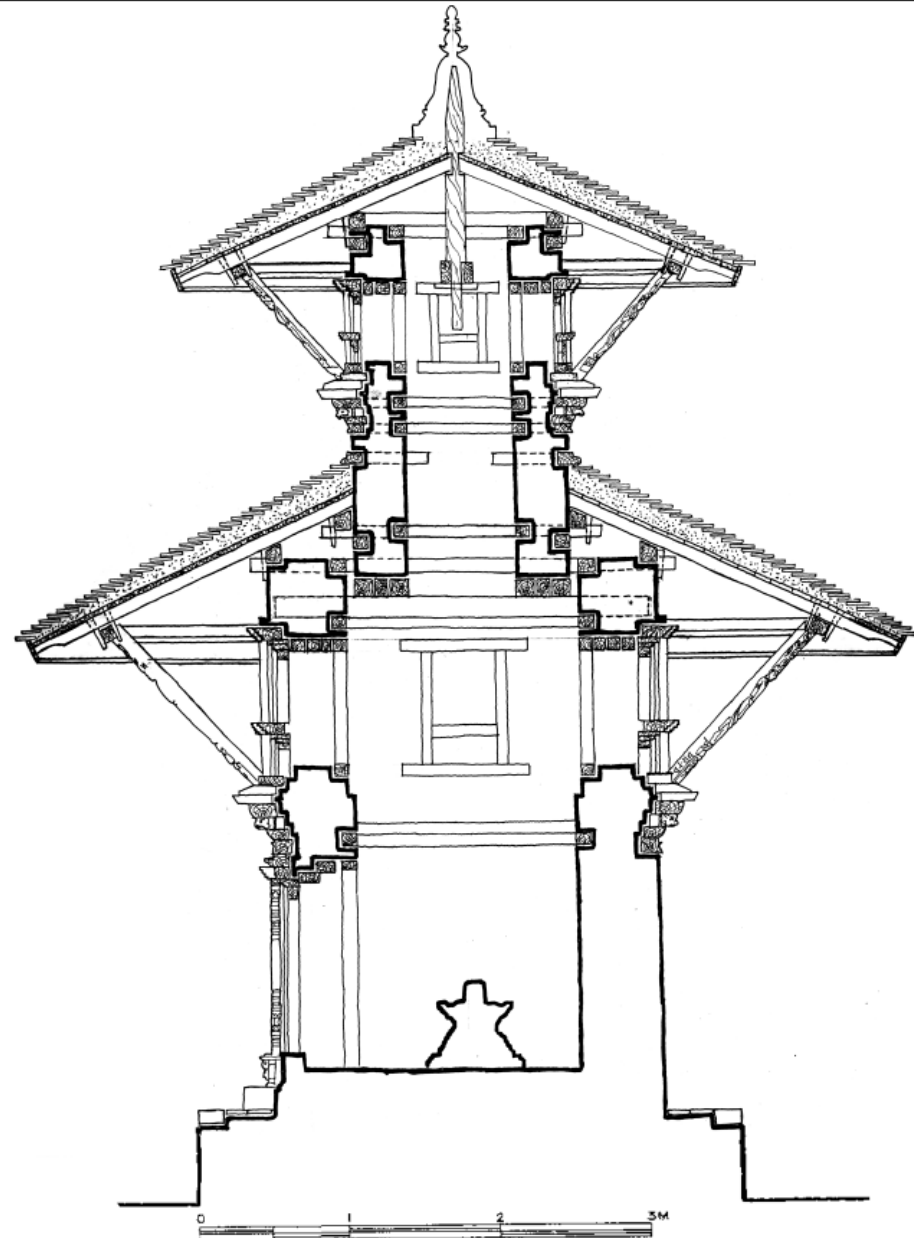
WEST ELEVATION: PROPOSED CONDITIONS



MAHADEV TEMPLE II

KATHMANDU DARBAR INITIATIVE

WEST-EAST SECTION: EXISTING CONDITIONS



MAHADEV TEMPLE II

KATHMANDU DARBAR INITIATIVE

WEST-EAST SECTION: PROPOSED CONDITIONS

PHOTOGRAPHIC DOCUMENTATION OF RESTORATION-MAHADEV TEMPLE I



above: Mahadev Temple I, as it stood in 2006, prior to the initiation of restoration. *Photo by: Lumanti Joshi, December 2006.*



right above: The upper wall was constructed of locally available machine made bricks in cement mortar. Even the rafters were of insufficient length and had deteriorated considerably, thus could not be reused. *Photo by: Lumanti Joshi, December 2006.*



right below: The missing lion heads and the area with the astamangal were replaced with brick bats. *Photo by: Lumanti Joshi, December 2006.*



above: The upper level of the temple in the process of being dismantled. *Photo by: Lumanti Joshi, April 2007.*



above right: The struts from both the levels were carefully brought down from their respective places, numbered and stored. The red unsightly color was removed with the help of soft brush and mild detergent, before installation. *Photo by: Lumanti Joshi, April 2007.*



above: The carpenters installing timber roof structure in the lower level. *Photo by: Lumanti Joshi, May 2007.*

left above: A group of carpenters who had previously worked with the Trust were employed for reconstruction of roof structure. *Photo by: Lumanti Joshi, April, 2007.*

left below: The damaged and lost elements of the cornice were recarved with reference to existing ones. *Photo by: Lumanti Joshi, May, 2006.*





above: The lower wall being reconstructed. Damaged bricks were replaced with *dachi appa* set in yellow mud mortar. Photo by: Lumanti Joshi, April 2007.



right above: The mud being prepared to be used as mortar in the walls. Photo by: Lumanti Joshi, April, 2007.

left below: Since the plinth was constructed with locally available “Chinese” brick, it was reconstructed using *dachi appa*. Photo by: Lumanti Joshi, June, 2006.





above: The masons laying traditional roof tiles on the lower roof. *Photo by: Lumanti Joshi, June 2007.*

left above: Old roof tiles were reused. They were thoroughly cleaned dry with brush before being washed with mild detergent. *Photo by: Lumanti Joshi, April, 2007.*



left below: The ridge tiles being drilled to be tied together with a wire prior to installation, thus, avoiding their displacement from respective positions. The first row of tiles at the eaves board are also drilled to be nailed on the plank to avoid dislodging. *Photo by: Lumanti Joshi, May, 2006.*



above: Battens being fixed on the roof structure to hold the mud in its position. Water proofing membrane was introduced between the planking and mud bed. Over this the traditional tiles are laid. *Photo by: Lumanti Joshi, May 2007.*

MAHADEV TEMPLE II



above: Mahadev Temple II as seen from the terrace of Kageswar Mahadev Temple. *Photo by: Raju Roka, May 2006.*

right above: New and old placed details together. *Photo by: Lumanti Joshi, Dec 2006.*

right below: The terracotta corner pieces were lost and the timber details were badly damaged. *Photo by: Lumanti Joshi, December, 2006.*





above: The roof structure being dismantled. *Photo by: Raju Roka, February 2007.*



right above: Top correct the tilt in the East facade, it had to be dismantled along with a section of the South and North faces. *Photo by: Lumanti Joshi, February 2007.*



right below: The unsightly red paint from the carved elements were removed using soft brush and mild detergent. *Photo by: Lumanti Joshi, March 2007.*



above: Construction of lower level wall being completed after correcting the settlement.
Photo by: Badri Juwal, March 2007.

left above: Reconstruction of lower roof structure. *Photo by: Lumanti Joshi, April 2007.*

right below: Iron plates being installed at the eavesboard. *Photo by: Lumanti Joshi, April 2007.*



above: Temple under scaffolding and work in progress. *Photo by: Lumanti Joshi, April 2007.*



right above: The walls being reconstructed using *dachi appa* in yellow mud mortar. *Photo by: Raju Roka, February 2007.*



right below: Because of the poor condition of the brick work in plinth, it had to be replaced. *Photo by: Lumanti Joshi, June 2007.*



above: Completed Mahadev II as seen from north west. *Photo by: Badri Juwal, June 2007.*

left above: The lost carved elements were replicated based on the existing adjacent ones. *Photo by: Lumanti Joshi, April 2007.*

right below: The new pinnacle being installed. The existing pinnacle was constructed with terracotta and was not original *Photo by: Lumanti Joshi, May 2007.*

Implementation Schedule

Mahadev Temples

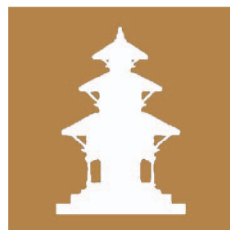
S.No	Description of Works	2006	2007						
		Jan-Jun	Jan	Feb	Mar	Apr	May	Jun	Jul
1	Carving of lost details								
2	Fencing and erection of scaffolding								
3	Dismantling of roofs and upper wall structure								
4	Correction of tilted section								
5	Rebuilding of lower veneer wall								
6	Cleaning off the red color from the details								
7	Preparation of timber structural roof members as wall plates purlins, rafters and planking								
8	Installation of timber structural members in the lower level								
9	Installation of cornice details								
10	Reconstruction of upper level wall								
11	Installation of timber structural members in the upper level								
12	Cleaning of roof tiles								
13	Laying of Jhingati on mud over tarfelt								
14	Preparation of apron stone								
15	Installation of recarved details of doors and windows								
16	Carving of door panels								
17	Removal of fence and dismantling of scaffolding								
18	Replacement of damaged bricks in the plinth								
19	Laying of apron stones								
20	Laying of stone slabs in the sanctum and on the plinth								
21	Fixing the door panels								
22	Site Clearence								

Note: Mahadev Temple I  Mahadev Temple II 

Sept. 14, 2007

S. No.	Description	Amount	
		NRs.	US\$
1	Office Supplies	19,769.00	276.62
2	Communication	34,500.00	482.75
3	Local Conveyance	16,259.00	227.51
4	Reprographics	1,061.00	14.85
5	Photography	2,170.00	30.36
6	Documentation	160,875.00	2,251.10
7	Fundraising	12,531.00	175.34
8	Construction Matereals	637,622.00	8,922.16
9	Timber	431,140.00	6,032.88
10	Tradesmen	568,142.00	7,949.93
11	Implementation Team	275,242.00	3,851.42
12	Local Consultants	45,000.00	629.68
13	Meeting Allowance	3,000.00	41.98
14	Miscellaneous	26,572.00	371.82
15	Bank Charges	3,472.17	48.59
	TOTAL EXPENDITURE	2,237,355.17	\$ 31,307.01

Funding Provided by	Amount	
	NRs.	US\$
U.S. Ambassador's Fund for Cultural Preservation 05, Ktm	2,186,400.21	30,594.00
Nirmala Tuladhar	2,000.00	27.99
Bank Interest	21,814.47	305.25
KVPT USA	27,140.49	379.77
	2,237,355.17	\$ 31,307.01



© 2013 THE KATHMANDU VALLEY PRESERVATION TRUST

KVPT – UNITED STATES

36 West 25th Street - 17th Floor
New York, New York 10010, USA

TEL: +1 212 727 0074

EMAIL: susannah@kvptnepal.org

KVPT-NEPAL

P.O.Box 13349
Kathmandu, Nepal

TEL: +977 1 55 46 055

EMAIL: info@kvptnepal.org

kvptnepal.org