Figure 1: The so-called VIP room after removing the roof and replacing the joists.

Seismic Strengthening and Restoration of Lo Gekhar

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Project Report, Second Year, Fourth Quarter – July to September 2022

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Report Overview

Restoration work continued throughout the entire quarter with few interruptions due to material shortages and holidays. The focus of the work moved from the temple area to the caretaker's area associated with the temple. The latter was a patchwork of rooms many of them in extremely poor condition. Many of the original wooden members needed to be replaced due to their condition or poor quality, and because the roofs of all rooms needed to be brought to the same level.

Restoration Measures

Throughout the period, the work was led by Sonam Dorjee Gurung who stayed on site most of the time. For the temple area, only finishing works needed to be undertaken, while much of the monastic quarters were restored extensively.

The new frames for the stone panels in the Upper Temple and the panel rooms could not be made, as a sufficiently skilled carpenter could not be found on short notice.

Purchase of Material

Given the amount of material used for the restoration of the temple itself, considerably more than originally foreseen, materials had to be purchased throughout the period, which at times turned out to be extremely challenging. Delays with getting the required material in the quality required led to a slower pace of the work than expected.

Upper Sanctum

In July and August all temple spaces on the upper level, including the Upper Sanctum, were plastered. This work was done by a specialist local craftsman from Lo Monthang using plaster clay sourced from his home area. In preparation to the plastering the walls had to be scratched and uneven and loose areas had to patched (Figure 2, Figure 3). Then plaster was applied to all areas and smoothened (Figure 4). The rooms still need to be painted.

Figure 2: The Upper sanctum with the walls patched and scratched to hold the new plaster.

Figure 3: Detail of the patching and scratching to support the new plaster.

Panel Rooms

Equally, the upper panel rooms, rooms U04 and U05, have been plastered late June to August (Figure 5), again after an extensive preparation of the existing walls as recorded in the previous report. Also here the construction of the frames for the panels awaits a skilful carpenter.

Caretaker's Quarters, Lower Floor

In the second half of June, the restoration work on the caretaker's quarters started with taking the roof off. As reported earlier, for the safety of the workers, the dismantling was planned in two phases: firstly, the east side with the VIP room, the atrium and the deity rooms and secondly the kitchen, the former Avalokiteśvara temple and the toilet. This also provided a safe passage for the workers while moving back and forth with brushwood, joists and other debris that was moved to the west side of the mansion.

Figure 4: The upper sanctum after plastering with the stone panels stored on its floor.

Figure 5: View from the one plastered panel room to the other.

While digging the roof layer until the joists, it exposed the two feet thick mud layer that had been piled on the roof over the years to prevent seepage. This layer has added a tremendous amount of weight to the walls and the main beams. The mud bricks below some of the main beams had been squashed and cracks had developed. Once exposed the entire roof layer was removed to make way for the floor underneath, which also was removed as much as needed for reconstruction.

The reconstruction retained the original floor plans as planned. To reduce stress, the main beams were placed on slates to distribute the weight inside wall horizontally. Further, the rammed earth walls with cracks were reinforced by the installation by the installation of horizontal slates as well.

During the dismantling of the caretaker's side of the roofs and removal of old beams and joists, it became clear that parts of mud brick walls had to be taken down due to lack of stability. Some mud bricks had been severely crushed due to the immense weight of the roof which required complete replacement. Pulverised mud bricks were replaced by new ones.

The old round joists on the ground floor were restored to their original form by replacing the damaged ones with salvaged ones from the upper floor. The base was strengthened by reducing the gaps between the joists with the addition of new round ones.

Figure 6: View of the main entry before restoration.

Figure 7: Left side wall before restoration, showing the stress cracks and poor foundation for the mud bricks.

Figure 8: Left side wall after rebuilding during the restoration.

Main Entry (L06)

The entry to the caretaker's mansion had to be reinforced to support the superstructure above (Figure 6).

The walls below the main beam had severe stress cracks which were reinforced by introducing slates and replacing the cracked sections with new mud brick walls (Figure 8, Figure 7).

The door to the storage on the left was straightened and was packed from inside to accommodate the visitor's toilet. The vertical columns of the entry door were replaced

Figure 9: The main entry after the restoration of the walls with the top of the original door reused.

Figure 10: Rough concrete plaster applied to the lower parts of the walls of the new visitor's toilet.

Figure 11: Iron rod mesh used in the new toilet.

with longer ones to increase the door's height for convenient access to visitors and pilgrims. Other door parts were retained and restored to their original form (Figure 9).

Finally, the floor of the entrance area was levelled, and a flat stone pavement was made for easy maintenance, the paving only happened in September.

Visitor's Toilet (L08)

The room to the left of the entrance was formerly used by the caretaker to store various materials. This room will now accommodate a toilet for the visitors.

In this room, the floor was levelled, and stone soling work was done. Then a mesh of iron rods was placed (Figure 11) and finally the floor of the room was plastered with concrete. Also, the lower parts of the walls were covered with a rough plaster using chicken mesh as support to properly attach the plaster to the wall (Figure 10).

Plumbing and tile work will be done next year.

Storage Room (L07)

The room to the right of the entrance has been used as a storage in the recent past and will retain this function. The damaged round joists in this room were replaced with better preserved ones from salvage. The main beam was reinforced with wall plates.

Atrium (L09)

The wooden construction of the atrium has been taken down completely (Figure 12) and rebuilt with new wooden joists (Figure 13).

The overall height of the lower floor atrium was incredibly low (Figure 14), therefore it was planned to increase its height by lowering its floor level to that of the entrance area. Thus, the stone pavement was removed, and the floor was dug to that level, which unearthed piles of animal waste that had accumulated there over the time. The atrium had previously been used as shed for horses and to shelter the horse of the local pilgrims and visitors.

Figure 12: The atrium in the process of dismanteling.

Figure 13: The atrium in the process of reconstruction.

Figure 14: East side of the lower atrium with its short columns before restoration.

Figure 15: The east side of the lower atrium with double capitals and longer columns after restoration.

The now too short and damaged columns and capitals were replaced with stronger salvaged ones (Figure 15). Similarly, the main beams were replaced with new round ones. The floor was paved with flat stones locally sourced from Marpha.

Also the old staircase was removed to avoid the narrow passage leading to the VIP room on the upper floor. The new staircase will be set up from the main entry leading towards the upper floor kitchen in the coming year. It will be built out of wood.

Storage (L10)

This room, on the temple side of the atrium and underneath the VIP room, was formerly used by the caretaker to store firewood (Figure 16). This space had to be repurposed as

a lobby for the pilgrims and visitors and as a place to sleep for the local pilgrims during the many religious events that take place on the monastery premises.

Figure 16: The former storage room underneath the VIP room seen from above during restoration.

The wall underneath the main beam had stress cracks which were reinforced by installing stone slates inside the wall. The damaged columns and capitals were replaced. The joists had earlier been placed at considerable distances, which were reduced overall by the addition of several new joists (compare Figure 17 with Figure 18).

Figure 17: View into the storage room with new joists introduced.

Figure 18: The storage room after restoration and plastering.

Visitor's Kitchen (L11)

This room, previously referred to as storage and little used, in the planning stage has been repurposed as a kitchen for pilgrims and visitors which will be using the lower atrium. When surveying the architecture, it turned out that this room had a hollow space underneath. This space was now filled with rubble to create a solid and strong floor, while its wooden parts, joists and round sticks laid between them were removed. The floor level of this room was also lowered to increase the room height and level it with the atrium in front of it.

The columns, beams and joists in this room were replaced with new ones sourced locally. The walls were patched, and the floor was paved with flat stones for easy maintenance. Further, the small opening on the east side was replaced by a proper window.

Figure 19: The future visitor's kitchen before the restoration.

Figure 20: The future visitor's kitchen during filling of its floor.

Figure 21: Introduction of the window for the visitor's kitchen.

Figure 22: The plastered kitchen with the new window.

Kitchen Storage (L12)

This room referred to as storage (L12) in the proposal has been repurposed to serve as a storage for the visitor's kitchen. Like for the kitchen room itself, there was formerly a room underneath this space (**Error! Reference source not found.**) which was opened and filled to form a solid floor. A partition wall was constructed in this lower space to evenly distribute the pressure sideways (**Error! Reference source not found.**).

A new stone wall needed to be constructed to support one of the toilet walls on the floor above. Earlier, this wall rested on the joists only, resulting in enormous pressure on them. The tiny old window opening was replaced with a new one for more daylight to enter the room.

Figure 23: Surveying the space underneath the storage room.

Figure 24: The storage room during restoration.

Caretaker's Quarters, Upper Floor

In the upper floors most of the wooden members were replaced due to their poor condition. Instead of the original round joists square ones were used. Further, on the upper floor, too, the room hight was increased in most cases, now to bring the ceiling levels of all rooms to the same height.

Visitor Room with Attached Bathroom (U07 & U08)

Of these two rooms above the main entrance U07 formerly housed a shrine of protective deities as well as the arhat stone panels, while U08 simply served as access to this room. U07 was also used by the caretaker and guests to stay in. With the arhat panels and the shrine moved, U07 was planned to become a guest room while U08 is being converted into an attached bathroom that can also be used for guests of the VIP room (Figure 25).

The repurposing of the rooms necessitated the shift of the entrance from the corner of the area to the middle (Figure 26).

Figure 23: View of the rooms above the main entrance.

Figure 24: The door on the right was closed and a new one constructed on the left, close to the entrance to the VIP room.

The area of the bathroom was walled, and a new entrance created (Figure 27, Figure 28). For the future bathroom a small vent was constructed for natural light and to provide sufficient ventilation. A square frame was constructed on the floor and then filled with clay before covering it with floorboards.

Figure 25: Construction of the new bathroom.

Figure 26: The wall separating the bathroom finished.

Upper Atrium (U09)

On the upper floor, the parapets around the atrium were removed, as they added immense weight resting on the beam and joists underneath. All the old columns, beams

and joists were replaced with new square ones. Finally, the opening of the atrium was covered by a lantern supported by a wooden frame.

Figure 27: Construction of the upper part of the atrium.

Figure 28: The atrium finished with a lantern covering its opening.

VIP Room (U10)

In the room that has mainly been used to accommodate VIP guests—hence it's name—the damaged round beam and the joists were completely replaced with square ones, while the carved and painted columns and capitals were reused (Figure 1). The low door was replaced with a larger one.

As usual, a frame was constructed to support the floorboards and filled with clay. The clay was levelled and then floorboards were installed to complete the floor.

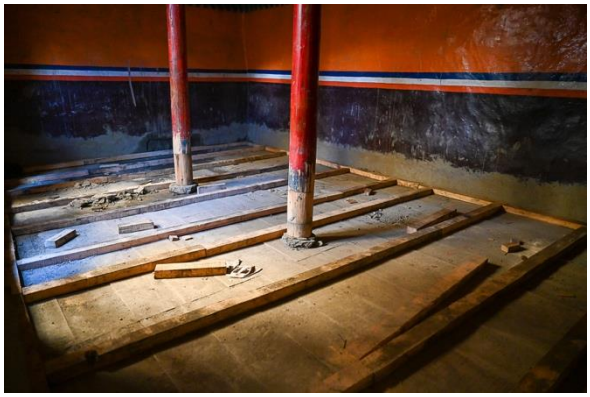

Figure 29: The installation of wooden frames in the VIP room to support the floorboards.

Figure 30: The frames were filled with clay as a fire precaution.

Caretaker's Kitchen (U12)

The dismantling of the roofs on the caretaker's kitchen side resumed after the front section was completed. The beam, column and joists were not reusable. So, they needed to be replaced by new ones. Accordingly, the old wooden structure was redone

with new square beams and joists. A new window with two panels now replaces the damaged old one. The mud floor has also been replaced with a wooden floor which was installed on a frame filled with clay.

Figure 31: The caretaker's kitchen before restoration.

Figure 32: The caretaker's kitchen in the process of dismantling.

Figure 33: The caretaker's kitchen during restoration with the new window installed.

Figure 34: The caretaker's kitchen after restoration.

As proposed, the kitchen will have a sink indoors with the drainage running through the storage room next to the kitchen.

Storage Room (U13)

The storage room next to the caretaker's kitchen has also been completely redone. The cracked walls were repaired, and some parts of the wall were completely rebuilt with new mud bricks. The mud floor was also replaced by a wooden one.

Guest Room (U14)

This more spacious room is frequently used to accommodate local pilgrims and tourists for dining as well as an accommodation. Also during our restoration work, the room was being used as dormitory for visitors as well as some of our workers.

Due to their weight, the raised mud brick platforms along the walls on which the mattresses were placed were removed. The old columns, beams and joists have been replaced with new square ones. The walls on the entry side, which did not reach up to the ceiling level, were increased in height with mud bricks, and an entrance was built in the middle of the wall. These walls now support beams and joists (Figure 35).

Figure 35: Restoration of the guest room with the higher walls flanking the entrance and the installation of the new beams.

The large skylight has been reduced in size to retain more indoor heat during the chilly days. It has been built on a mud brick parapet with wooden frames and transparent poly sheet.

Figure 36: Installation of the wooden floor in the visitor room.

Figure 37: The visitor room with the wooden floor installed.

The mud floor was replaced by a wooden one. To enable this, channels had to be dug into the mud floor to accommodate the wooden frames (Figure 36). The gaps were compacted well before finishing the floor with thick floorboards (Figure 37).

Retreat Room (U15)

This room used to house the Avalokiteśvara stone panels. The room used to receive little daylight from an inadequately constructed skylight made of mud bricks and covered with a chicken mesh along with pieces of corrugated fibre sheets. Since the panels of this room have been relocated to the room on the temple side this room will serve as a retreat room in future.

The west side of the wall had cracks at several sections, some of which were see through. These cracked sections were demolished and rebuilt with new mud bricks and reinforced with horizontal wooden boards. The damaged round beams, joists and columns were completely replaced with new square ones. A new skylight replaced the old one, and now enough natural light can enter the room. Again, the skylight was constructed as a square wooden frame covered by a poly sheet.

Figure 38: The restored reatreat room with skylight and its original window linking this room with the guest room in front of it.

The mud floor was levelled, and channels were dug to accommodate the wooden frames to which the floorboards were nailed. Similarly, the low door was replaced by a new larger one for safe and convenient access for visitors and the caretaker himself.

Toilet (U17)

The door to the toilet was replaced with new larger one. The old concrete floor was demolished to inspect the joists underneath and to accommodate the drainage pipes. Some of the joists had decayed and needed to be replaced with strong ones. New ceiling boards were installed on the joists and then the floor was remade in concrete with iron rod reinforcements underneath.

Figure 39: View of the passage to the temple with the higher walls to the guest room on the left and the door that will provide access to the roof to the right.

The toilet walls will covered with chicken mesh before plastering and tile work. A water pipeline will run through the walls and install a water tap. The storage area outside of the toilet will have a wash basin with flat stone floor for easy maintenance.

Passage to Temple

The passage leading to the temple courtyard has also been redone with flat stone pavement on the mud floor. The steps were also repaired with placement of new wide flat stones. Likewise, for safe and convenient mobility, the low clearance door was also replaced with a new one providing more height (Figure 41).

Since it is planned to roof the courtyard in front of the upper sanctum a small room between the passage and the VIP room—U11 on the planning document—will provide access to the roof in future.

Art Historical Research

The survey of the Sanctum's murals in August 2021 and the full documentation of the stone panels of all upper temples in April 2022 resulted in a framework for a fairly clear picture about the history of the monument as it is preserved today. Thereby the period between the third quarter of the 17th century to the third quarter of the 18th century appear to have been most active. Much of the preserved decoration can be attributed

to different building phases within this period. While the succession of the different phases is clear, some of the key dates remain hypothetical so far.

A summary of what is known of the temples history so far has been presented by Christian Luczanits in Kathmandu at a lecture series of the Social Science Baha, and is available on YouTube (https://www.youtube.com/watch?v=LcPuVoskboc).[1]

Accounting

After a meeting discussing the accounting of the project it became clear that procedures must be improved, both with the recording of purchases and bookkeeping. For this purpose, the project has engaged Lopsang Dorjee Lama to revise past record keeping.

Evaluation

Overall, the project proceeded well, but at a slow pace. The delays are due to a combination of the nature and needs of the work itself and external circumstances. The latter include the difficulties in finding skilled carpenters, retaining local workforce and organisational issue due to monsoon interruptions.

While the project work was ongoing, the local government under the leadership of Raju Bista started the construction of a large concrete structure in front of the temple building. During this work, also the stairs leading up to the monument were prepared by digging a large trench into the ground, disrupting at least one of the springs the site is known for (). It is noteworthy that this work is being undertaken against the wishes of the villagers of Marang, who expressed their opinion in a letter to the Department of Archaeology, Government of Nepal. Unfortunately, there is no record that the Department of Archaeology has reacted to this letter in any way.

On the other hand, while working on site, Sonam Dorjee has reported criticism of the project by some villagers, because of its adherence to the original layout and structure and its reusage of salvaged material. In other words, there are clearly different strands of expectations that must be negotiated, and it appears practically impossible to please all parties involved.

This situation is the result of the absence of any authoritative body that needs to be consulted before making such changes to the site, that is the absence of a committee that includes members from outside the community. In this regard the project has

[1] Unfortunately, the slides shown during this lecture are not included in this recording.

failed. Further, this season's work revealed that personnel issues are more severe than expected, both internationally and locally.

Figure 40: View from the walking path leading up to the monastery; the trench in the foreground prepares the concrete stairway, while the new concrete construction is seen in the background behind the white building.

Going Forward

Now that the construction season is finished, we have started an evaluation of the procedures and discussions on how to improve all aspects of the work in future. These include the issues mentioned in the evaluation above. As this work is still in progress it is not yet reported here. The coming month will be spent with those evaluations and the planning for next year's campaign.