



*Figure 1: Rest during the reconstruction of the entry porch.*

# Architectural Restoration and Seismic Strengthening of Gönpa Gang

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**Project Report, First Year – July to September 2023**

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## Introduction

This report documents the progress of the restoration work at Gönpa Gang in the third quarter of this calendar year. During the period from July to September, our team executed a range of measures in different parts of the building. We continued to strengthen the foundation as well as the restoration of the southern part of the building, and the Entry Hall was reconstructed up to the roof. For these works, we hired additional carpenters and other laborers.

## Preparatory Works

This section covers the purchase of materials and the interactions with the village community to discussing the progress of the work.

### Purchase of Materials

As per the previous report we continued purchases of required material such as wood and further tools and equipment as needed by the carpenters. In addition, the supply of materials and tools was continued from Pokhara, including items for the accommodation and food for the workers.

Stone slates were collected from the area surrounding of the monastery. We also cut some special local small trees that are needed for the wooden joints for seasoning for next year.

We also started to purchase materials for the new roof and for the plastering of the walls, such as sand and peculiar type of mud from Upper Mustang. We also purchased grass from the villagers for the adobe mud bricks and perma (a kind of shrub used for the stick layer in the lower part of the parapet). The latter was supplied from the Gheling village, as it is not found locally.



Figure 2: Weighing a bundle of dry grass purchased from the villagers to mix with mud for the adobe bricks.

*Figure 3: Unloading the shrub wood (perma) for the parapet walls near the footbridge leading to the temple.*

### Community Meetings

In September, the team members organized the meeting with the community regarding the ongoing work at southern wing of the Gönpa. We needed to discuss the potential movement of the smaller clay and papier mâché statues from the painted room to be able to restore this room fully. After consultation, the small statues were shifted from the painted room of southern part to the already restored southeastern room to allow the restoration of the painted room. The two large clay sculptures seated on a large clay pedestal also in the painted room had to remain in place, as they were too fragile to be moved. In the meeting, we also discussed the preservation of the painted walls of this room. The villagers agreed and moved the statues to a safe place.

Later that month another meeting took place to discuss the inauguration program planned for October 6 and to organize it.



*Figure 4: While the small states were shifted these two larger ones remained in place.*

During this quarter the villagers stopped to come to the site daily to oversee the work. This was decided in a meeting among the villagers themselves. Instead we organised an inspection of the site by a larger group of villagers.

## Restoration Works

The main works of this quarter were the continuation of the restoration of the Entry Hall with its front porch. We also continued to restore of the southern part of Gönpa, facing considerable challenges in the area of the room containing fragments of 18<sup>th</sup> century murals. Another challenging work was the conservation of the northwest corner wall, which was deemed to be in critical condition, it thus was largely reconstructed. Further, work on the foundation around the entire building was continued.

### Entry Hall

The first half of the first floor of the restoration of the Entry Hall was finished in the previous quarter, while the second half was restored this quarter.

The new wooden columns and their capitals were assembled, reusing the old decorated wooden elements. The columns were placed on the solid stone foundation made earlier. They were then joined with the original capitals through connections prepared in advance. Equally the beam placed topping the porch at this level were prepared to be joined. This way the wooden construction of the porch on the ground floor was reassembled. The following images document different stages of this process.



*Figure 5: Placing the front column on the bed stone with a projection connecting it to it.*



*Figure 6: Checking the placement of the new columns with small wooden connectors.*



Figure 7: Connecting the old capital base to the new column.



Figure 8: The old capital members placed on the new column aligned with the wall.



Figure 9: Arranging the positioning of the central beam as per measurements.



Figure 10: Connecting the members of the front gate beam.

Once the front gate beam was set up, the second level floor was completed by first carefully placing the joists onto the beams and into previous suspension holes in the walls. Then the old wood splits were screwed onto them. In this way, all the wooden members were gradually assembled to prepare for the mud flooring and wooden flooring planks on top of mud floor with wooden batten.

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Figure 11: Arranging the old joist at Entry Hall with given measurement.



Figure 12: Screwing the old wood splits to show the old looks at Entry Hall.



Figure 13: Adding a mud layer on top of a special fabric to build the floor of the upper storey.



Figure 14: Completing the mud layer towards the front of the building.

The first-floor superstructure was then reconstructed in the same way reaching roof level. Also the wooden planking for the roof was finished in this quarter.

Generally, during the restoration old wooden members were reused whenever they were in good condition.

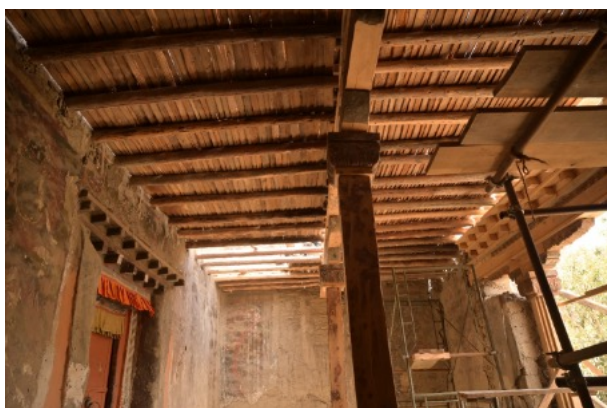


Figure 15: View of the Entry Hall after placing old wood splits on the joists.



Figure 16: Maintaining the level for the wooden ties on the wall before the top floor joists were placed.

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Figure 17: Leveling for the wooden plate to place the central beam.



Figure 18: Assembling the central wooden structure at the level above the Entry Hall.



Figure 19: Placing the joist according to their shape and sizes.



Figure 20: View from the front while placing the joists on the level above the Entry Hall.



Figure 21: Zoom view of wooden structural members of the first floor.



Figure 22: Assembling the wooden member at front of the first floor.



*Figure 23: Placing the joist between the central beam and the porch area.*



*Figure 24: Planking on roof above the Entry Hall.*

Finally, a temporary roof was installed for protection during the winter. The balcony above the entry porch still needs to be finished once its final design is decided.



*Figure 25: Placing the wooden members with circle design along the top of the wall to support the parapet.*

The design of the balcony has been discussed several times among team members. In any case, its design will retain a similar appearance to the previous balcony. Also the final roof construction still needs to be decided on.

Inside the Entry Hall, stone slates were used for flooring. These stones were collected from the near riverside, chiseled to the needed shape and size, and laid on floor.





Figure 26: Three images showing the laying of the stone slates on the floor of the Entry Hall.



Figure 27: Laying the stone slate floor in the entrance area of the Entry Hall.

## Southern Structure

In the southern part of the Gönpa are two rooms of different floor levels. Of these the southwest room was without decoration and has been reconstructed from the ground

floor up. Last quarter it had been finished up to the first-floor level, including the planking. This quarter it was finished up to the planking at roof level.



*Figure 28: The structural wooden members for the roofing of the southwestern room prepared for assemblage.*



*Figure 29: Leveling the wooden ties in the eastern section of the southwestern room.*

On the ground floor, the southeastern structure has many supports, a considerable part of them in problematic condition, and on the floor above there are several rooms including one with murals from the eighteenth century. The restoration, thus, needed to be planned around the painted room. Accordingly, the ground floor supports of this section needed to be dismantled and rebuilt section by section. First the easternmost area of this section, the northeastern corner, was demolished, and partially rebuilt in the previous quarter.

This quarter the restoration moved to the space underneath the painted room. First, we prepared the foundations; a large bed stone with a joint for the post were placed to support the new beams. The original beams needed to be replaced by new ones due to their poor condition. We faced many challenges while changing wooden members under the painted walls, but succeeded in changing the entire wooden structure under the partition walls on the first floor. Then, a new flooring with minimum thickness of mud was constructed. Some of the original wooden members could be retained to be reused in the upper floor. Wall plates and a wall tie were installed on the upper level for seismic strengthening. The new stonewall in the southeast corner was continued to be constructed and tied to the old walls by wooden plates and wall-ties.

The following images document the replacing of the entire support structure underneath the painted room as well as the reconstruction of this room up to roof level.



Figure 30: Repairing the old wall in front of the southern building with wooden ties.



Figure 31: Constructing the new wall in the southeast corner and repairing the older walls.



Figure 32: Laying the wooden ties to tie to connect the old and new stone walls.



Figure 33: View of the painted room after removing its floor and before dismantling.



*Figure 34: Installing supports for the wooden members installed before dismantling the ground floor support.*



*Figure 35: Dismantling the roof above the painted room in progress.*



Figure 36: Taking the levels with laser before dismantling the wooden structure.

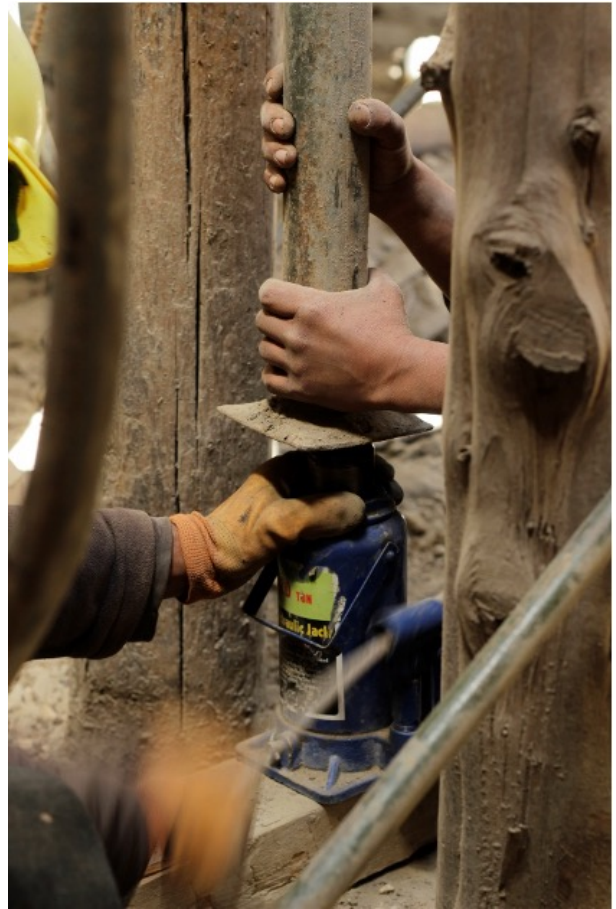


Figure 37: Adding additional support posts to hold up the walls on the upper floor.



Figure 38: Replacing the old joist with new one maintaining the level.



Figure 39: Placing new joist as needed underneath the partition wall.

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Figure 40: Placing the joist under the first floor column and partition wall.



Figure 41: Supports installed to preserve the painted partition wall above during reconstruction.



Figure 42: Inserting the new beam to replace old one through a hole in the wall.



Figure 43: The ground floor level with half of the wooden structure already replaced.



Figure 44: Gradually progressing from the ground floor to the first floor.



Figure 45: Planking on top of the joists after the placement of the joist in the painted room.



Figure 46: Reassembling the old wooden structure after repair.



Figure 47: Constructing the stair to access the ground floor of southern part of Gönpa.



Figure 48: View of the newly constructed stone wall in the southeastern corner.

## Foundation

During this quarter the strengthening of the foundation of the building was continued. After the construction of projecting stone walls we added a thick layer of mud to create a slope towards the drainage. Then we added the locally available stone slates on top of the mud layer to prevent water to enter the foundation. For the same purpose, we also laid mud between the foundation wall and the drainage. We also plan to cover this section with stone slates.

The following images document some of these works.



*Figure 49: Covering the foundation support wall and the ground in front of it with mud.*



*Figure 50: Laying the stone slates upon a thick layer of mud covering the foundation support wall.*





*Figure 51: The foundation wall after laying the stone slate upon the mud layer.*

We also constructed the buttress stone wall at southwest corner to consolidate the corner wall. It had weak and loose wall at that corner.



*Figure 52: The mud layered between newly constructed stonewall and the drainage maintaining a slope.*



*Figure 53: A higher corner buttress to consolidate a corner on the west side of the Gönpa.*



*Figure 54: Section of the foundation wall on the south side after finishing the layer of mud and stone slate.*



*Figure 55: A big stone found while digging the foundation and drainage.*

As can be seen in Figure 55, our team also faced difficulties while digging for the foundation and drainage.

As part of the work, we also started to prepare the foundation for mani-wall sections that needed to be destroyed to enable the restoration. Its removal was permitted by the villagers under the condition that we reconstruct it once the work is finished.



*Figure 56: Digging the drainage and foundation for mani-wall on the north side of the monument.*

## Repair of Northwest Corner Wall

The stonewall in the northwest corner of the temple bulged as it was filled with loose stones. On the ground floor of this corner are some of the most important paintings of the temple including a depiction of the founder of the monument. It thus was deemed important to repair this section comprehensively without damaging the murals on the inside. Our team prepared the repair of this wall carefully to be prepared for potential issues.

First, we shored the bulging wall with wooden members and constructed an extra 16" wall up to halfway. Then the old wall was dismantled from the roof to the floor level of the first floor, and from there the outer section of the wall was carefully removed, leaving the inner layer of the original stone wall with the murals. Finally, the wall was reconstructed from bottom up and tied to the old wall sections. The following images document the different stages of this process.



Figure 57: Vie of the northwest corner with the wall cracked and bulging.



Figure 58: First the wall was shored up to prepare the dismantling from the top.

Figure 59: Then a scaffolding was erected and, after opening a section of the roof, the wall was dismantled from the top.



Figure 60: An extra wall was constructed in front of the problematic wall as support.



Figure 61: Investigating the condition of old wall by the site architect to decide on for further steps.



Figure 62: Supporting a large stone from the original wall that can serve as connector between the old and new walls.



Figure 63: Construction of the new wall along the lower section of the wall and connecting it with the old one.



Figure 64: View of area during the reconstruction of the wall.



Figure 65: The wall reconstructed to the level of the first floor, where a wall-tie was inserted.

## Wall Repairs

Sections of the monasteries' wall had cracks that needed to be fixed. These were filled with stone, mud and/or wooden ties as appropriate. We also strengthened the partition wall, with paintings by tying it to the adjacent wall. The following images show some examples of such works.



*Figure 66: These images show repair work in different areas of the temple using different techniques as required.*



*Figure 67: View from top during the repair of a stone wall showing wooden members to connect the repair to the original wall.*

## Programme Indicators

Activity and output table for second quarter of Gonpa Gang project		
Activity	Output	Status
Mobilization	Update work plan and schedule	90%
On Site structural investigation and design update	Revised the plans and structure details as per site	75%
Construction work	Construction work will continue up to mid of October	85%
Construction supervision	Till to end of construction work	90%

## Challenges

Wind was a regular challenge during the work, not only on the roof but in all open spaces around the site.

In terms of construction, one of the biggest challenges was the replacement of the old joists underneath the partition wall that has old painting on it. This wall was constructed on top of a beam, and we could only replace three joists a day.

Mid-August there was heavy rainfall which continued into September, which affected the work on site. The rainfall also resulted in the temporary loss of electricity. Together with the necessary cleaning work after the rainfall, a considerable amount of construction time was lost.

During the rainy season we also had problems with the drinking water which was sources from a small side river. During this time we had to carry our drinking water from the village to the site. Therefore, labor had to be used to supply the drinking water to the site.

Transporting materials from Chhuksang village was another challenge, especially for heavy materials. However, we managed to get the materials to the site in time.





Figure 68: Rain damage to an exposed section of a wall which was repaired later on.



Figure 69: Plastic sheets and plywood used to prevent water affecting the wall paintings on the floor underneath.



Figure 70: Collecting the rainwater in big bowls to avoid water on the floor.

### Evaluation

Overall, the work at Gönpa Gang goes well. In terms of management, Sabin Shrestha and Santosh Gurung run the work on site well. Thus, most of the work planned for this year could be done.

That all delicate parts of the building restored so far could be repaired without incident is a major success of his year's work. The experience gained in the southern part of the building provides a good foundation to tackle the major structural issues inside the Main Temple next year. As we will retain most of the labor, a good team has formed for next year's work.

A major worry was the extended periods several restoration areas remained exposed in an area of heavy winds and monsoon rains. As the workers stay on site, damages resulting from these events could be avoided. However, a tighter work schedule for times when the roof is removed would be desirable.

Timely reporting has increasingly become an issue and has been worst this quarter. It seems that the more we demand timely reports the less likely are we able to get them. We hope the movement of the project equipment from Lo Gekhar to Gönpa Gang will bring reporting on track again.

### Going Forward

Work at the site has been brought to an end by mid-October, in time for the Dasain holidays. The materials and tools are safely stored at the site and Santosh Gurung regularly monitors it over the winter. Sabin Shrestha will go back to the site for planning in December. Next year, work will begin in early March.

Over the winter decisions need to be made about the repair of major structural faults within the main hall, the final design of the balcony and its roof, and the roofing of the structure overall.

We will also be working on making the images of this year's work available in online galleries.