

ARCHITECTURAL CONSERVATION RED MONASTERY SPRING 2017

THE TOWER

AMERICAN RESEARCH CENTER IN EGYPT



TECHNICAL REPORT

DR. NICHOLAS WARNER

5 Sharia Sheikh al-Marsafy, Zamalek, Cairo M: 0100 575 9835 E: njwarner@aucegypt.edu

FOREWORD

The spring season of the architectural conservation project at the Red Monastery commenced on 10 April 2017 and was completed on 04 May 2017. The project was directed by Dr. Nicholas Warner and implemented by Mahmud al-Taiyyib. Inspector Marawan Mutasim ‘Abd al-Fattah and Inspector ‘Ali Ata Mohamed [conservation] from the Sohag Taftish of the Ministry of Antiquities supervised the work. Mr. ‘Ali Zaghloul [Chief Inspector], Mr. Saad Osman [Director of Islamic and Coptic Antiquities, Sohag Inspectorate], Mr. Essam Rushdi [Director of Conservation, Islamic and Coptic Antiquities, Sohag Inspectorate] and Mr. Nur ed-Din Mustafa Ahmed [Director, Foreign Missions in Sohag] provided monitoring. The work was carried out in accordance with the Permanent Committee approval of January 2017. The following report concerns the interventions that took place with respect to the Tower, the only area worked on during the spring campaign. The history and architecture of the Tower was described in the report on the Spring 2016 Campaign and is therefore not repeated here. This season concludes the architectural conservation of the tower, although it is expected that it will be an important part of the presentation of the site to visitors in the future.

CONTENTS

1	EXTERIOR	
1.1	Removal of concrete	03
1.2	Treatment of areas of damaged brickwork	04
1.3	Movement joints between tower and south wall of church	07
1.4	Pointing of major architectural features	08
2	INTERIOR	
2.1	Ground floor	12
2.2	The entrance area	16
2.3	The staircase	18
2.4	First floor	20
3	DISPLAY OF ARCHAEOLOGICAL MATERIAL	
3.1	Presentation of limestone fragments	24
3.2	New vitrines	24
4	RECOMMENDATIONS	28

1 EXTERIOR

1.1 Removal of concrete

Reinforced concrete beams (40cm wide x 60cm deep) were installed parallel to the east wall of the tower and south wall of the church in the 1980s. These were cast over a 40cm deep x 60cm wide mass concrete base. On the east side of the tower, the RC beam was removed manually, leaving the mass concrete in situ. Beside the south wall of the church only the section of the reinforced beam that was protruding above ground level was removed. On the south wall of the church at its west end, a reinforced concrete trough, dating to the period when a house abutted the church in this corner, was also removed. The voids left after the removal of the concrete were backfilled with clean sand.



Removal of reinforced concrete from southeast corner junction of tower and church (top) and condition of south wall after removal of concrete (bottom)



Reinforced concrete on southwest corner of church before (top) and after removal (bottom)

1.2 Treatment of areas of damaged brickwork

The removal of the reinforced concrete beam revealed significant areas of damaged brickwork on the east face of the tower and south wall of the church to the east of the tower. These areas required selective brick replacement and re-pointing. On the west wall of the tower, additional re-pointing of defective mortar joints was carried out to complete the work carried out in November 2016. On the south wall of the church to the east of the tower, another area of brickwork at low level that had been badly damaged by water infiltration and the installation of the concrete beam was cut out and replaced with new brickwork laid in lime mortar with recessed pointing. All brick replacements were carried out using low temperature fired 'baladi' bricks (21 x 7 x 10.5cm). On the south wall of the church to the west of the tower, another area of low level brickwork previously damaged by water and crudely patched was cut out and replaced with new brickwork laid in lime mortar with recessed pointing.



Area of replacement brickwork on south wall of church to east of tower during (top) and after (bottom) intervention



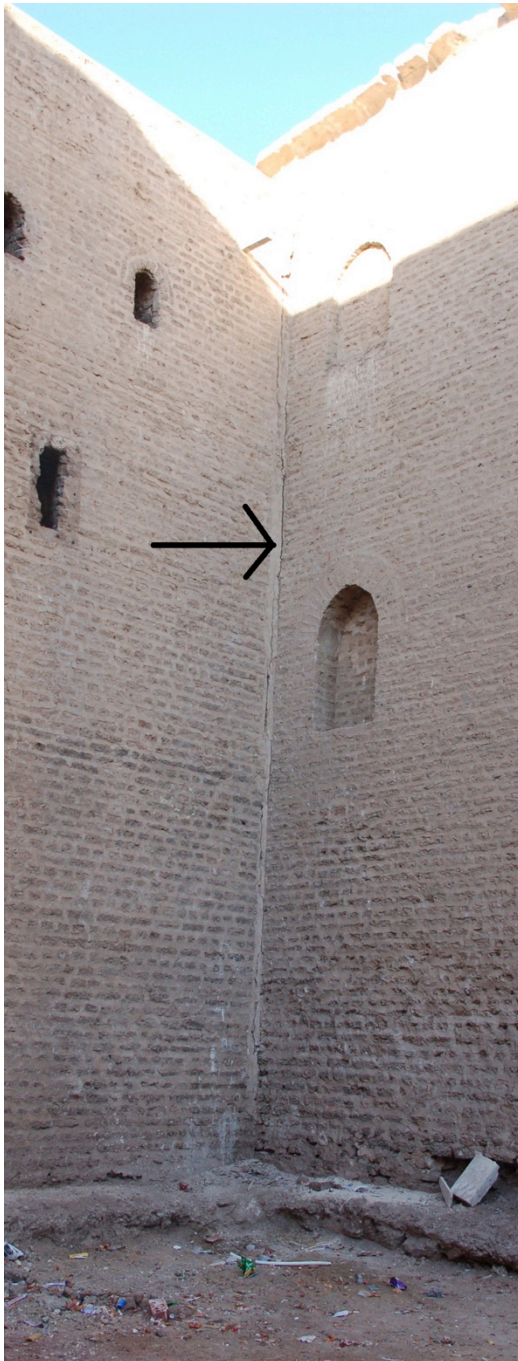
Area of damaged brickwork on south wall of church to west of tower after removal of defective fill



Area of damaged brickwork on south wall of church to west of tower during (top) and after (bottom) replacement and pointing

1.3 Movement joints between tower and south wall of the church

A full height timber scaffold was installed at the junctions of the walls of the tower with the south wall of the church. The gaps between the two structures, on both the east and west sides of the tower, of a width varying between 2 cm and 20 cm, had previously been filled with cement and plaster and were cracked in a very irregular way. Accordingly, and to make it visually clearer that the church and the tower are entirely separate constructions with no bond between them, the filling of the gap was raked out and re-filled with brick set in lime mortar and plastered with lime mortar. The face of the new fill is 5cm back from the face of the brickwork of the tower.



Junction of tower with south wall of church (east side) before (left) and after (right) treatment. The same treatment was applied to the junction on the west side

1.4 Pointing of major architectural features

Stonework:

The cemented joints of the limestone corners of the tower were cleaned and all joints were repointed using a lime / sand mortar. New pointing was recessed from the face of the existing stonework. Some sections of the stonework surround to the main door that had not been previously treated were also completed using the same technique.



Pointing of stone quoins in progress



Southeast corner of tower before (left) and after (right) repointing with lime mortar. The same treatment was applied to the southwest corner

Brickwork:

The cemented joints of the brick pointed arch above the door were cleaned and re-pointed using a mortar composed of sand, lime, and fly ash.



Pointing of brick arch over entrance door in progress



Main entrance to tower before (left) and after (right) treatment

At the request of the Conservation Department, the pointing of the brick arch inside the entrance area of the tower was also replaced using mortar made of sand, lime, and fly ash.



Brick arch inside entrance area of tower before (top) and after (bottom) treatment

2 INTERIOR

2.1 Ground floor

Southeast room:

The existing cement and gypsum plaster layers covering the upper sections of the room, including the window embrasures and barrel vault, were manually removed back to the original brickwork. The lower sections of the wall that had already been re-plastered with lime plaster in 2016 were keyed. The entire room was then re-plastered with a plaster whose composition (and sample) had been approved on site in 2016 by Mr. Essam Rushdi, Director of Conservation, Sohag. When completed, this room was visited and approved by Mr. Rushdi, Mr. Saad Osman, and Mr. Ali Zaghloul. The approved sample contains 4 buckets of finely sieved sand, 2 buckets of lime, and 250 ml of Addibond 65 to improve adhesion. The surface of the walls was also coated with a dilute solution of Addibond 65 prior to plastering.



Southeast vault after removal of gypsum plaster (left) and re-plastering with lime in progress (right)

Southwest room:

Treatment was applied as in the southeast room. Note that the removal of gypsum plaster from the barrel vault over this room revealed the presence of a circular ceramic pipe embedded in the structure and a square opening in the centre that was covered with a stone slab. These enigmatic archaeological features were left open to view after the re-plastering was completed.

Northeast room:

Treatment was applied as in the southeast room. Only a part of the west wall of this room had been previously plastered with lime, so almost the entire surface of the room was re-plastered. The two existing niches in the north wall of the room were fitted with new showcases made from steel angle frames with painted timber facings to house archaeological finds from the clearance of the tower in 2016 [see 3.2 below].



Vault of southeast room after re-plastering



Vault of southwest room after re-plastering showing openings to first floor (photo: M. Kacicnik)



General view of southwest room after works (photo: M. Kacicnik)



Interior of northeast room after re-plastering showing new showcases

Passages:

Treatment was applied as in the southeast room. The dome under the staircase landing had been previously treated in 2016 with a gypsum plaster, and this was removed prior to re-plastering with new lime plaster.



Dome in passage under landing during (left) and after (right) treatment



East-west passage after works looking to west (left, photo: M. Kacicnik) and to east (right) with stainless steel edging to limestone step

Finishing works:

A stainless steel angle was added to the top of the step in front of the showcase to improve its visibility and thus reduce the risk of tripping. All the timber doors in the tower were given a coat of linseed oil and 'navda rumi'. Three timber doors at ground level, and two on the first floor, had new steel throw-bolts installed to an improved design, with a better closing detail.



Example of new steel door bolt to improved design

All steel windows and handrails inside the tower (with the exception of the handrail and deck in the southwest room on the ground floor and door bolts) were painted with a beige matt finish [Jotun number: S2010-Y3OR]. This colour was chosen to be the closest match to the color of the lime plaster after drying, at the request of the Conservation Department.

2.2 The entrance area

The entrance area had already been re-plastered (after the complete removal of cement and gypsum layers) in 2016 up to the height of the balcony. This plaster was retained, and the remainder of the space treated in accordance with the approved sample. A special note should be made of the large arch on the north side of the entrance area that was built by the Comité in 1909-1912 using a hollow terracotta type of brick. This material is extremely brittle, so it was decided not to hack off the cement render that covered it in order to avoid unnecessary damage to the structure itself. Only the outer gypsum layer was carefully removed by hand prior to re-plastering, and cracks were packed with potsherds in lime mortar as required.



View of arch and balcony above entrance area looking up after treatment



General view of entrance area looking east before (left) and after (right) treatment



General view of entrance area looking west before (left) and after (right) treatment



View of entrance area balcony and arch before (left) and after (right) treatment

2.3 The staircase

The first flight of the staircase was replaced with new limestone treads during the conservation works of 2016. This season, the remainder of the stone treads of the staircase, dating to the 1980s, were cleaned of encrustations of cement and gypsum and repointed using a lime mortar. One flight of the staircase had been filled in to either side with fired bricks set in gypsum. These were removed and solid limestone fills were substituted.

The gypsum plaster layer was entirely removed from the walls and vaults of the staircase. The cement layer beneath was only selectively removed, however, so as not to compromise the structural integrity of the vaults. This cement layer has now effectively become part of the structure of the staircase, and it was decided that its complete removal would have caused more damage than good. The surfaces were then re-plastered using the same lime plaster used elsewhere in the tower, as described above.

During the removal of the plaster layer, one interesting archaeological feature was exposed under the window into the well from the balcony landing. This was a limestone column base (30 x 30 x 20 cm high) that was re-used upside down to provide a solid sill for the opening into the well, no doubt intended to serve as a stand for buckets of water drawn from the well.



Modern limestone treads of staircase during (left) and after (right) repairs



Limestone column base re-used as a sill for the window into the well at balcony level

2.4 First floor

In the southwest room, cement and gypsum plaster layers were removed from the walls and the exposed brickwork re-plastered with the same lime plaster used on the ground floor. Owing to the strength of the cement render applied, however, it was not removed from all locations to avoid extreme damage to the underlying brick masonry. This was the case in the two domed spaces and vaulted passage on the southeast side of the tower that are constructed from bricks that are set in a silt mortar. The removal of the cement render would have caused serious damage to the fragile original construction, so only the gypsum layer was carefully removed by hand and the surfaces re-plastered with the same lime plaster used elsewhere in the tower. Prior to plastering, all major defects and cracks in the underlying brickwork were consolidated with new brickwork set in lime mortar.



Repairs to cracks in northeast domed room during works (left)



Repairs to cracks in northeast domed room during works (left) and the same area after re-plastering (right)



Windows and niches in southeast room before (top) and after (bottom) re-plastering



Views of first floor corridor looking east before works (left), after removal of gypsum plaster layer (center, and upon completion of re-plastering (right)



View of entrances to first floor rooms after treatment



General view of southwest room before (left) and after (right) works



General view of southwest room looking north after works

3 DISPLAY OF ARCHAEOLOGICAL MATERIAL

3.1 Presentation of limestone fragments

One carved limestone pilaster capital was added to the display in the lapidarium. This was mounted on a new stainless steel bracket beside other carved pieces found in the tower.



Pilaster capital on new mounting in lapidarium (top right)

3.2 New vitrines

More objects discovered during works in the tower in 2016 were put on public display in two new vitrines in the northeast room of the tower. These complement the existing vitrine in the east passage. The vitrines were provided with bilingual English and Arabic labels, and the objects were numbered. A separate numbered photographic catalog was given to the Inspectorate for their records.

Vitrine 1 contains a selection of ceramics, most of which date to the late nineteenth / early twentieth century, together with a metal knife from the same period. This probably dates to the nineteenth century, as does a metal knife. These were found on the roof of the tower. Also on display is an interlocking section of ceramic pipe used in the original hydraulic system of the tower. This was found under the first flight of the staircase and probably dates to the late thirteenth century when it is likely that the tower was built in its present form.



Metal knife found on the roof of the tower now on display in Vitrine 1



Ceramic finds from the roof of the tower now on display in Vitrine 1



Interlocking section of ceramic pipe used in the hydraulic system of the tower now on display in Vitrine 1

Vitrine 2 contains two fragments of a manuscript referring to religious events in the Coptic calendar written on paper in *naskh* script. The fragments were cleaned with 70% solution ethyl alcohol and conserved by Mr. 'Ali Ata Mohamed from the Sohag Conservation Department prior to display in archival plastic sleeves.



Recto and verso of a manuscript leaf written in *naskh* from the roof of the tower now on display in Vitrine 2 before (top) and after (bottom) cleaning



Vitrines 1 (top) and 2 (bottom) in the northeast room of the tower

4 RECOMMENDATIONS

The tower is a structure that was seriously damaged in its recent history by inappropriate restoration using concrete and cement, as well as by inappropriate re-use involving water. It has been rescued from potential collapse by a series of structural interventions carried out in 2016. It is to be expected that, after a period of twenty years in which water soaked the ground below the foundations, some settlement of the structure is likely to continue in the foreseeable future as the building regains stability. This may result in further minor cracks appearing in the structure. This is not a cause for alarm, but regular monitoring should take place to see what happens in the future.

Monitoring should also include the level of bird infestation in the entrance area of the tower, as it may still be necessary to install an anti-bird mesh screen across the large open arch above the south portal to reduce further the area that is easily accessible to birds. Prior to this, the underside and face of the arch inside the nave should be cleaned of cement and repointed with lime mortar.

It is also recommended that visitor information panels be installed as soon as possible within the tower in order to encourage its re-use as a visitor center for individuals or small groups. A trial arrangement was made in the southeast room to suggest how this room might appear after the installation of visitor panels.



View of trial installation of visitor panels in southeast room