

TECHNICAL REPORT

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“Conservation of the Shunet el-Zebib, Abydos”

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***“Conservation of King Khasekhemwy’s Funerary Monument at Abydos”  
Technical Report on 2012 Fieldwork***

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**Introduction**

The 2012 fieldwork of the Institute of Fine Arts, New York University, at the funerary cult enclosure of king Khasekhemwy at Abydos, the Shunet el-Zebib, was made possible by support from the Egyptian Antiquities Conservation (EAC) grant program of the American Research Center in Egypt (ARCE). On-site work took place 20 January – 25 March, 2012.

The 2012 fieldwork included architectural conservation, architectural documentation, and archaeological excavation components. It resulted in significant material progress in the stabilization of the Shuneh and at the same time represented the continuation of a long-term program of work at the monument. The earlier stages of the program were funded primarily by ARCE’s Egyptian Antiquities Project (EAP). After an initial documentation and condition assessment phase, the implementation of needed conservation measures commenced in 2004 and included three field seasons (spring 2004, fall 2004 – spring 2005, fall 2005 – spring 2006). After a hiatus with the end of EAP funding, work resumed in 2009, with support from ARCE’s Antiquities Endowment Fund, the World Monuments Fund, and Egypt’s Supreme Council of Antiquities. The 2010 field season represented the first within the framework of a major grant from ARCE’s Egyptian Antiquities Conservation (EAC) program. The 2011 field season was foreshortened due to the unrest in Egypt in January – February 2011 and consequently did not include the planned architectural conservation components. Full-scale work resumed with the 2012 season.

**Architectural Conservation at the Shunet el-Zebib, 2012**

The main focus and achievement of the architectural stabilization program at the Shunet el-Zebib in 2012 was the completion of basic stabilization interventions on the middle section of the east wall of the main enclosure, a large-scale initiative begun in 2009 and continued in the project’s 2010 field season. As previously reported to ARCE, this area was heavily damaged as a consequence of the excavations of August Mariette in the middle of the 19<sup>th</sup> Century and represented perhaps the single greatest challenge in the conservation program at the Shuneh. Although the exact location of his sondages is not made clear in the published report on his work at Abydos,<sup>1</sup> it appears both from

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<sup>1</sup> Auguste Mariette, *Abydos. Description des fouilles exécutées sur l’emplacement de cette ville*, Volume 2 (1880), pp. 46-49. Imprimerie Nationale, Paris.

comments made by Ayrton,<sup>2</sup> who worked in the Shuneh on behalf of the Egypt Exploration Society, and from the results of the excavations of the IFA project, that Mariette excavated over a huge area of the eastern part of the interior of the Shuneh. The largest and most ill-considered individual sondage was situated immediately adjacent to the interior side of the east wall of the main enclosure. It appears to have been around 80m in length (Figure 1), running parallel to the wall, perhaps 8-10m wide, and to have been excavated down into sterile basal sands well below the level of the base of the adjacent wall. The sondage was not backfilled at the end of Mariette's work, and the natural compacted sand deposits on which the wall was built gradually slumped into the sondage, leaving the wall base unsupported on the interior side. The lower courses of mudbrick masonry then collapsed, commencing a cascading series of localized collapses that, over time, moved up the wall. The combination of the exposure of the sand deposits under the wall and the overhanging masonry above invited burrowing animals, primarily foxes, which excavated extensive networks of tunnels that further undermined the wall. As additional and more detailed information about the condition of the wall was acquired through excavation in 2009 and 2010, the alarming extent of the damage from the fox burrows, as well as the full severity of the overall structural instabilities affecting the wall, became evident, making completion of the stabilization of the east wall of the main enclosure the project's highest conservation priority.

That the east wall of the main enclosure was threatened by very serious structural instabilities was recognized in the project's original condition assessment survey in 2000. Temporary sand bag buttresses were constructed in 2001, to lessen the risk of catastrophic structural failures until a permanent stabilization solution could be developed. The first stabilization interventions focused on sections of the wall accessible between these buttresses. As stabilization efforts progressed, portions of the buttresses were removed, and work proceeded to the sections of wall previously hidden behind the buttresses. At the end of the 2010 season, parts of three buttresses still remained in place against the wall (Figure 2).

The large-scale 2012 work concentrated on sections of the wall adjacent to or between those where structural stabilization measures were undertaken in the 2009 and 2010 seasons. These correspond to excavation units Operations 15, 21, 35, and 162 (Figures 1 and 3). In addition, work was completed on the upper parts of the areas of new stabilizing masonry added in 2009 and 2010 that had been left unfinished, so that they could be more easily integrated into the overall comprehensive treatment of the wall.

The basic stabilization method followed in 2012 was the same as was employed in earlier seasons. The first step involved the controlled archaeological excavation of the area immediately adjacent to the wall, which allowed for full definition of the condition of the wall base, in addition to the basic stratigraphic and archaeological situation. In practical terms, excavation focused on the definition of the slope of the slumped eastern side of Mariette's sondage, which was frequently found to be covered in fallen bricks and brick debris from the localized masonry collapses that occurred following Mariette's work.

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<sup>2</sup> E. R. Ayrton, C. T. Currelly, and A. E. P. Weigall, *Abydos, Part III*, Egypt Exploration Fund Memoir 25 (1904), p. 1. Egypt Exploration Fund, London.

Excavation was stopped at a level of, on average, approximately 1.5m below the wall base. Once the boundary between Mariette's sondage and the natural sand deposits (locally termed *gebel*) on which the wall had been built was defined and the fallen bricks documented and removed, the sterile sand was then cut back to near the existing masonry of the wall. The deposits in the bottom of the excavation were leveled, wetted with water, and compacted. On this a foundation was constructed in new mudbrick masonry that serves two functions: (i) to buttress and stabilize the sand under the wall and at the same time (ii) to create a solid platform on which additional new masonry could be constructed to support the surviving original masonry. The foundation, which is intended to be entirely below grade and thus not visible in the finished treatment, extends some distance to the local west outside the original plane of the wall. Each masonry course in the foundation was stepped back approximately half a brick-length (approximately 13 cm) from the line of the course below it, such that in section the western side of the foundation has a slope of approximately 45 degrees. The top of the below-grade foundation corresponds to the level of the base of the wall, i.e., the underside of the base course of original masonry. The first course of above-grade new masonry built on the foundation followed the original plane of the interior face of the wall and was on average set back slightly more than half a brick-length from the edge of the top course of the foundation, to differentiate it from the foundation below. All above-grade new masonry is inside the original footprint of the wall.

Although the basic stabilization solution was the same in all four areas, Operations 15, 21, 25, and 162, there were particular circumstances or challenges in each. In Operation 15 after removal of the remains of the 2001 sand bag buttress (Figure 4), excavation defined the slumped edge of Mariette's sondage and exposed the dramatically undercut lower part of the wall (Figure 5). This area was identified as being of the greatest concern during the initial condition assessment survey in 2000, as a large masonry mass was detached by a series of deep structural cracks and was in active rotation away from the wall. In 2012 once the brick debris had been documented and was removed from the side of Mariette's trench (Figure 6) and the sterile sand deposits cut back to near the wall (Figure 7), the foundation was constructed (Figure 8). A layer of geo-textile was put down on top of the foundation that provides horizontal stabilization and also allows the new masonry constructed above to be structurally bonded with the adjacent construction to the north and south done in earlier seasons (Figure 9). New masonry to support the separated mass was constructed first, to create a safer setting for further work (Figure 10). Deep animal burrows on both the north and south sides of the separated mass were cleaned and documented. The northern burrow was the larger of the two by far and penetrated nearly through the wall, with a side tunnel opening to the south behind the base of the separated masonry mass (Figures 11-13). The combination of the animal burrow at the base of this mass and the large cracks at its top created an extremely dangerous situation in which virtually nothing was holding the mass in place on the wall. Once the burrows had been filled with new masonry (Figure 14), work could proceed in Operation 15, with new supporting masonry gradually stepped back to meet the original fabric of the wall near the top and integrated into the overall stabilization treatment of the interior side of the wall (Figures 15-17).

In Operation 21 the most significant challenge was the degree of undercutting and the separation of large overhanging masses of unstable masonry, although none was as large as that in Operation 15. These had been held in place since 2001 by one of the large sand bag buttresses (Figure 18), but this was removed in 2012 so that the permanent stabilization could proceed. With removal of the sand bag buttress, it became immediately apparent that temporary support would be required to allow excavation to proceed safely, as a number of areas of masonry were in danger of immediate collapse (Figure 19). The largest, central masonry mass was stabilized by an improvised shoring of scaffolding and wooden planks (Figure 20). Areas of almost completely detached masonry on either side of the shoring that could not reasonably be stabilized were removed (Figures 21, 22), which allowed excavation to proceed. Once the sterile sand deposits that marked the edge of Mariette's sondage were defined on both the north and south side of the shoring (Figure 23), it was taken down. During and after this process additional sections of detached masonry that could not reasonably be saved and that, in addition, created dangerous working conditions, were removed (Figures 24, 25). The area under the shoring was then excavated to the same level as the adjacent areas, and the edge of Mariette's sondage was defined across the full width of the unit (Figure 26). Once this had been documented, the sterile *gebel* sand deposit was cut back close to the existing wall base (Figure 27) and the sand in the bottom of the excavation wetted and compacted, preparatory to the construction of the below-grade foundation (Figure 28). Once the foundation was completed in Operation 21 (Figure 29), the new masonry constructed above grade filled in the deep concavity present in the original masonry of the wall and gradually was stepped back with each new course to meet the existing face of the wall just below the top (Figures 30, 31). As can be seen in Figure 31, the wall top had been capped in a previous season.

The situation in Operation 35 was similar to that in Operation 15 and did not involve temporary shoring/bracing or the removal of significant sections of unstable masonry. The state of the area at the start of work is shown in Figure 32 and after removal of the sand bag buttress in Figure 33. After excavation and preparation of the area for construction (Figure 34), the foundation was built up to the level of the original wall base (Figure 35). A number of large animal burrows running under the wall were cleaned and filled with new masonry (Figures 36, 37), after which construction continued above grade, within the original plane of the wall (Figure 38). The new construction in Operation 35 was keyed into that in Operation 169 to the local north, and Operation 106 to the local south, where the upper parts of the new masonry had been deliberately left unfinished in the 2010 season (Figures 39, 40), in order to facilitate integration into the overall comprehensive treatment of the wall, as seen at the close of work in 2012 (Figure 41).

Excavation in Operation 162 showed that the undermining of the wall there was not as severe as to the north, although still significant (Figures 42, 43). It seems likely that Mariette's sondage may not have been as deep in this area, perhaps out of concern for the stability of the section of wall near the east corner gateway, which stands to near its original height. The same basic approach to stabilization was taken, with the basal sand cut back to near the existing line of the wall, wetted, and compacted (Figure 44), creating a base for the construction of a supporting foundation (Figure 45). Given that the

undermining of the wall base and the size of the concavities in the lower part of the wall were not as severe as was the case to the north, the size of the foundation needed to support the new masonry was reduced from that in adjacent areas. Where the required volume of new above-grade masonry was less, the foundation was reduced as well, stepped back closer to the original wall plane (as visible in the center in Figures 45, 46). Animal burrows and other holes were cleaned and filled with new masonry as work proceeded up the wall (Figure 46).

In addition to the stabilization of the wall base in Operation 162, work in 2012 included the infilling of a very large void (Figures 42, 47) that may have been, in origin, the false start for a monastic cell. Once excavation determined no significant cultural features were present in the void, including any traces of finished surfaces such as plasters, it was filled with new masonry as part of the broader stabilization of the wall in Operation 162 (Figure 48).

A massive insect nest was attached to the underside of the overhanging masonry at the top of the void (Figure 47). The insect responsible is likely to have been a variety of *Chalicodoma sicula*, a type of bee native to Egypt and north Africa that builds mud nests. Although this bee has not been observed at Abydos during the course of the conservation work at the Shuneh, it has been documented as responsible for similar mud nests at other sites in Upper Egypt.<sup>3</sup> In completing the stabilization infill in the void, how to deal with this nest was an important question. One other even larger such nest had been encountered in a previous season in Operation 120, a monastic cell void in the exterior side of the west wall of the main enclosure. In that case, most of the nest was removed by hammer and chisel, required by the concrete-like hardness of the nest material, when the void was infilled. The earlier experience suggested the time and intense effort necessary to remove the nest are not strictly necessary in the stabilization of the void. In the case of Operation 162, a series of earth anchors were driven into the fabric of the nest and the original masonry to which it was attached (Figures 49, 50). Once secure, the earth anchors were attached to a layer of geotextile embedded in mortar between brick courses in the new masonry, which acts to help secure the new construction to the main mass of the original wall. A small area at the top of the void was left unfilled due to reasons of time at the end of the 2012 season (Figure 51); it will be completed when work resumes in a future season.

Because the void in Operation 162 was not a completed monastic cell, even if it represents an abandoned start for one, a somewhat different approach was taken in its stabilization than in features definitely determined to have been cells. With those, the new masonry was given a concave profile, to leave a visual marker of the presence of the cultural feature, the cell, and the void into which it evolved over time. In Operation 162, however, the masonry infill was not concave (Figure 51), following instead the approximate plane of the existing wall, in keeping with the method followed for smaller holes of primarily non-cultural origin and the majority of other interventions at the Shuneh.

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<sup>3</sup> Zaky Iskander, "Bees in the Temple of Edfu and Their Control," *Annales du Service des Antiquités de l'Égypte* 58 (1964), pp. 187-196.

The approach taken in Operation 162 is to be contrasted with the situation in Operation 106, situated just to the local north between Operations 162 and 35 and excavated in 2009. In 106 two large voids in the wall were created by the ancient digging into the wall of a monastic cell and an ancillary chamber in late antiquity and the subsequent collapse of masonry above these spaces. The stabilization of this area was started in 2010, which saw the construction of a below-grade foundation and the first, the infilling of the cell voids proper. Here, the finished exterior of the new construction shows two large concavities that do not affect the stability of the wall but that represent visual indicators of the presence of significant cultural features, the same approach taken with monastic cells elsewhere in the monument. Figure 52 shows the stabilization work at a preliminary stage at the close of the 2010 field season, with the upper part of the filled cell void and the lower part of the concavity in the finished wall face, while Figure 53 illustrates the area in 2012, after the new masonry has reached the surviving wall top but before Operation 106 has been integrated into a broader treatment. The lighter color of the lower courses of brick masonry in Figure 53, the portion constructed in 2010, is due to the moisture content of the new mortar in 2012. The color difference was observed in 2013 to have lessened to the point of negligibility.

In addition to the large-scale work on the east wall, additional smaller-scale repairs were made on its tall southern section (Figure 42). A number of holes on the interior side of the wall were filled, most of which were the result of the activity of the burrowing Oriental Hornet (*Vespa orientalis*). The position of each hole was recorded, and each was photographed prior to any modification (Figure 54). After initial documentation, the holes were cleaned of debris that often included the remains of paper hornet nests and then photographed again (Figure 55), after which they were filled with new stabilizing masonry (Figure 56). A deep, heavily eroded crack in the top of the wall was also repaired in 2012 (Figures 57-61). The overall state of the tall southern section of the wall at the close of work in 2012 is shown in Figure 62.

As was mentioned above in reference to the individual work areas, the new construction in Operations 15, 21, 35, and 162 was keyed into adjacent sections of new masonry constructed in 2009 and 2010, and the unfinished upper parts of those were completed as part of the 2012 work, resulting in a visually integrated stabilization treatment for the entire low middle part of the east wall of the main enclosure. The condition of the wall in 1999, prior to any conservation interventions (Figure 63), may be compared to its state at the end of the 2010 season (Figure 2) and at the completion of work in 2012 (Figures 64-66).

In the views of the east wall of the main enclosure in 2012 in Figures 64-66, a distinct horizontal line is visible just above ground level. This is the top of the masonry foundation that is intended to be below-grade at the completion of work at the monument. In a future season, the area adjacent to the wall will be leveled with sand such that nothing of the foundation will remain above grade. Only masonry within the original footprint of the wall will be visible.

Although very substantial progress was made in the stabilization of the east wall of the main enclosure in 2012, additional work remains to be done in future seasons. Parts of the tall section at the south end of the wall remain to be stabilized, work that will include:

- i) buttressing on the north side (building on the 2012 work in Operation 106,
- ii) stabilization of holes and cracks, particularly in the top part of the wall, where some holes extend completely through the wall,
- iii) buttressing on the south side, as part of the comprehensive treatment of the east corner gateway,
- iv) capping,
- v) completion of the stabilization of the north end of the wall, as part of the comprehensive treatment of the north corner gateway.

Large-scale stabilization of the highly threatened middle part of the east wall of the main enclosure has now been completed. The threat to the continued survival of the east wall posed by the combination of condition problems encountered here was the most serious of any yet identified at the monument. The completion of basic work here represents a significant achievement and a significant advance toward the overall stabilization of the enclosure.

Architectural stabilization was started in 2012 on the south gateway area of the main enclosure. In the 2005-2006 field season, the remains of a small late antique room (Operation 136, Locus 10) in the existing wall top on the local west side of the gateway was excavated and documented (shown in 2012 in Figure 67). The room, created during the occupation of the monument by an early Christian (“Coptic”) monastic community, had originally been cut into the wall when this was preserved to much nearer its original height. The room appears to be the only feature relating to the monastic occupation to have been cut into the south main wall. It had originally been finished in white lime plaster, but almost none of this was preserved in situ. Only a few small patches remained in place on the sides of the room. A few loose fragments of plaster with red line decoration were found during the 2005-2006 excavation of the contents of the room, indicating the room may have been extensively decorated, but no other original features survived. The void created by the room may have contributed to the large-scale collapse of the upper part of the wall on the west side of the south gateway.

The first stage of the comprehensive stabilization of the gateway consisted of the addition of new masonry to the wall top west of the gateway, which included filling the room void with new masonry. This followed the method developed in earlier seasons for the treatment of late antique rooms: a separation layer of compacted fine sieved sand was put down under and around the new masonry in-fill (Figures 68-70), such that new construction did not touch any of the original surfaces of the room. Once the new construction reached a level above the preserved edges of the room, it was integrated into the broader construction on the wall top (Figure 71). The room faced local south, and, as in other monastic spaces, the infill was given a concave exterior profile, such that a visual reference exists in the exterior (south) side of the new construction to the presence of this significant cultural feature (Figure 72). Approximately 2.5 vertical meters of new

masonry was added overall to the south main wall west of the gateway in 2012 (Figures 72, 73). In a future season substantial additional construction will be required, such that the gateway opening will be roofed and new masonry built above it to support the tall vertical wall end on the opposite side of the gateway. The overall treatment will be similar to that of the west gateway.

Also preparatory to the comprehensive stabilization of the south gateway in the main enclosure, the project's architectural documentation team documented the existing condition of the gateway opening with detailed plans, elevations, and section drawings. During this process, large cracks were noted on both sides of the opening, running through the wall parallel to the opening, approximately 50cm behind the existing sides of the gateway (Figures 74, 75). At present the nature of these cracks is not completely certain. They may represent an artifact of construction, as though the wall core was built first leaving a wider opening for the gateway that was narrowed to its present width when the roughly built core was covered with the finishing masonry veneer identified everywhere the original faces of the walls are preserved. The cracks may represent a slight gap between the wall core built first and the veneer added at a later stage of construction. Further analysis of the gateway will be required to determine whether these cracks represent significant areas of structural instability that will need treatment.

One other area was the focus of work for the architectural documentation team, namely, the north corner gateway. The gateway opening through the main wall had been documented in previous seasons, but the documentation of the gateway chamber, defined by an L-shaped wall built into the corner of the main enclosure, remained incomplete. Detailed plans, sections, and elevation drawings were made in 2012, and the documentation of this area was completed, making it ready for continued construction in a future season as part of the comprehensive stabilization treatment of the north corner gateway.

One additional aspect of the architectural conservation program in 2012 should be noted. After extensive observations of its appearance under a range of lighting conditions and consultations between Senior Preservation Architect Anthony Crosby and the project Associate Director, the mud wash that had been applied to some areas of new construction in the earlier stages of the conservation program (2004-2006) was judged not to have been a successful treatment. The wash was an attempt to address concerns about color differences between new bricks used in the early seasons of the conservation program and the original masonry of the monument. The new bricks tended to be yellower and somewhat more reflective than the originals, which resulted in the areas of interventions being visually prominent in an undesirable way. The mud wash did come closer to the color profile of the original bricks, however, its application had unintended visual consequences. It had significantly greater reflectivity than both the original bricks and the unwashed new bricks. In addition, the wash obscured the visual effect created by mortar joints, which break the uniformity of the wall surface. Observation over a number of years determined that the color differences between the new and old bricks lessened with time, as the new bricks became coated with dust and were "aged" by sun and wind, resulting in a final appearance superior to that achieved with the mud wash. Removal of

the wash in some areas was begun in 2010, and this effort was continued in the 2012 season. The method involves opening the joints between bricks with a chisel and hammer and scraping the exposed brick faces with a wire bristle brush. Work in 2012 focused on the infill of the large notch, WII 65, in the top of the west wall of the main enclosure, near the southwest corner, which had been constructed in 2004-2005 (Figure 76), as well as a number of infills in the north wall, including that of the large notch in the middle of the wall filled in 2004, NII27 (Figures 77, 78).

### **Excavations at the Shunet el-Zebib, 2012**

Excavation in the Shunet el-Zebib (Figure 1) was undertaken in two main areas: (i) the perimeter corridor between the east and south gateways, and (ii) along the exterior side of the southeast perimeter wall. In addition, (iii) limited excavations were undertaken along the interior side of the east wall of the main enclosure, in conjunction with the architectural stabilization work done there this season.

(i) The perimeter corridor between the east corner and south gateways was excavated as Operations 177, 161, 163, 165, 133, and 132. Operations 161, 163, and 165 were previously opened in the Expedition's 2010 field season, Operations 132 and 133 in the 2005-2006 field season, and Operation 177 in the 2011 field season.

Previous work in the perimeter corridor had reached nearly the level of the original Dynasty 2 floor. In the 2012 field season the floor of the corridor was cleaned (Figure 79), and a number of pits cut into the floor were detected, concentrated in the eastern half of the corridor (Figure 80). Some of these pits appear to be ancient features, containing the remains of decayed wooden coffins and disarticulated human remains, while others appear to be more recent and probably are the result of early excavations at the Shuneh.

Examination of the stratigraphy shown in the profiles of these pits revealed that the "floor" of the corridor actually consists of two separate stratigraphic units (Figure 81). A lower, earlier, one appears to have been a mud working surface, in which a number of mud and plaster mixing pits were created at the time of the construction of the monument. This surface is associated stratigraphically with the application of the whitewash on both the main and perimeter walls, as the whitewash was observed to have run off the lower part of the wall and onto this surface. This lower surface was later covered by a thick deposit consisting of mud, brick debris, and broken ceramics, in places more than 50cm deep, which covered the lower part of the original whitewashed plaster finish on the adjacent walls. Since the lower surface appears to be quite uneven, perhaps following the contours of the original desert surface as it existed prior to the construction of the enclosure, the thick secondary deposit covering it may have been intended to level the corridor and to create a final, relatively even floor level.

Examination of the stratigraphic deposits immediately above the Dynasty 2 floor shows that within a short time of the original period of use of the monument, the floor had become covered by sand, which continued to accumulate, due to the direction of

prevailing northerly winds, which dropped their sand load on the leeward side of the south wall of the main enclosure, filling both the southern perimeter corridor and enveloping much of the south perimeter wall. Near the bottom of this sand deposit in the corridor are multiple lenses of water-deposited material that are the result of the erosion by rain of the original finishes of whitewash and plaster from the wall above (Figure 82). These lenses are virtually continuous along the base of the main enclosure wall, although they were much more fugitive along the base of the perimeter wall. Work in the 2010 and 2011 field seasons demonstrated that the south perimeter corridor continued to fill with wind-deposited sand, mixed with mudbrick debris from the gradual erosion of the adjacent walls, until the level of sand stabilized at approximately five meters above the Dynasty 2 floor level.

The sand that filled the south perimeter corridor protected the original whitewashed plaster finishes and niching of the façade of the main enclosure, as well as the plain whitewashed plaster finish of the interior side of the perimeter wall. On both walls the original finish is preserved to a higher level in the south corridor than in any other part of the monument.

Excavation of the south perimeter corridor revealed that an extensive series of ancient graffiti, including depictions of boats, had been incised into the plaster on the interior side of the south perimeter wall. The graffiti were documented in 2012 (Figures 83, 84). The date range of the graffiti is not certain, although given the likelihood that the south corridor was filled with sand relatively quickly after the construction of the monument, it seems probable that they are pharaonic and possibly quite close in time to the reign of Khasekhemwy. Some of the boats are shown with very high prows and sterns, a characteristic feature of predynastic boat depictions, while other forms, without the high ends, show a number of parallel oars descending from the boat (Figures 85, 86), also seen in early representations of boats. Uncertain also at present is whether the entire tableau was a single composition or is, rather, a palimpsest of overlapping individual graffiti.

Previous excavations in the south perimeter corridor were undertaken by Auguste Mariette in the mid-19<sup>th</sup> Century and by E. R. Ayrton, working on behalf of the Egypt Exploration Fund, in 1902-3. In the report on his exploratory work at the Shuneh, Mariette mentions encountering in the south perimeter corridor a significant assemblage of material, including numbers of both votive stelae depicting women adoring Osiris *nb msw* “Lord of Births” and infant burials in ceramic coffins. Virtually no similar material was found by the Expedition’s excavations in the corridor, however a large spoil heap outside the southeast corner of the perimeter enclosure, partly excavated in 1997 and more extensively in 2012, appears likely to have been produced by Mariette’s excavation and to have been dumped there after removal from the south corridor (see below).

The southern end of the east perimeter corridor, including the east corner gateway through the main enclosure, was excavated as Operations 177 and 161 (Figure 87). A portion of a unit from 1997, Operation 12, covering the corresponding gateway through the perimeter wall, was re-opened. The stratigraphic situation in the corridor corresponds generally to that in the nearby south corridor, with an original working surface associated

with construction features like mixing basins (Figure 88), covered by a fill of brick debris and mud, to form a finished floor at a higher level. This final, upper floor surface has been more heavily eroded than in the south corridor. Just south of the gateway, an extensive deposit of ash, burned animal bone, and broken pottery was found at the Dynasty 2 floor level (Figure 89). The ceramic forms represented appear to be Early Dynastic, and the deposit may relate to the ritual activities performed at the monument. This association may be supported by the proximity of the interior chapel building, just a few meters away through the gateway.

Excavation in both the gateway in the main enclosure and that in the perimeter enclosure (Figure 90) revealed that both had been heavily disturbed at some time in the past. In the gateway in the perimeter wall, a large pit had been cut through several courses of mudbrick masonry that underlay the gateway opening (Figure 91). It appears that in this area the first few courses of the wall were laid continuously, and the opening of the gateway was only defined with the fourth or fifth course. Thereafter, the top of the brick under the opening served as a floor for the gateway. In the perimeter corridor a trench was found to have been, at some point in the past, perhaps by Ayrton, cut down through the Dynasty 2 floor deposits between the perimeter and main walls. The trench provided an informative section through the floor of the corridor.

The configuration of the east corner gateway through the main enclosure wall is elaborate, with a small room, or gateway chamber, built into the thickness of the wall (Figure 92). The stratigraphic situation of and history of activity in the gateway are, at present, complex and rather difficult to understand clearly. Most importantly, nothing of the original floor level of the gateway appears to be preserved. The entire gateway appears to have been dug out to well below the level of the base of the wall, though when this may have occurred and for what reason are unclear. After this pitting episode, the area filled in primarily with deposits of compacted sand and brick erosion. The walls on both the north and south sides of the gateway opening were badly undercut by this pitting, with the result that a considerable volume of brick masonry collapsed, creating large concavities (Figure 93). Lines of loosely dry-laid bricks and brick pieces in the east and west sides of the gateway, where the chamber opens onto the corridor and the interior of the enclosure, may be evidence for a secondary use of the space, though they could represent retaining walls during early excavation, as well. Additional work will be required in a future season to further define the history of activity in the gateway.

(ii) Excavation along the exterior side of the south perimeter wall was undertaken in seven excavation units, Operations 38, 39, 164, 176, 190, 191, 192, and 193 (Figures 1, 94). Operations 38 and 39 were previously excavated in the Expedition's 2001-2002 field season. Work in Operation 164 was begun in 2010 and continued in 2011, while Operation 176 was opened in 2011. Operations 190, 191, and 193 were opened as new units in 2012.

At the start of excavation along the exterior side of the south perimeter wall in 2010 a huge sand dune stood against the wall, the result of the same sand deposition process on the leeward side of the south walls of the Shuneh as that which filled the south perimeter

corridor. Excavation in 2010 and 2011 in the upper part of the sand dune found a number of small fragments of a once-large limestone stela or relief blocks of king Horemheb of Dynasty 18 and a few painted votive stelae of post-New Kingdom date. At the premature close of work in 2011, a number of Middle Kingdom burials had been identified, and excavation in 2012 completed work on these, in addition to exploring the broader pattern of Middle Kingdom activity on the south side of the Shuneh.

The Middle Kingdom burials excavated in 2012 were of two basic types, (a) in wooden coffins and (b) with the body wrapped in a mat (Figure 95). Both “coffin” burials and “mat” burials had been placed in pits dug into the sand dune. In some instances the pits reached or cut into the Dynasty 2 floor at the base of the dune. One of the burials in a coffin, that of an adolescent female (Figure 96), was unusual in that it appears to have been intact, with a rich set of grave goods (Figure 97), which included two “clappers” carved from hippopotamus ivory, three alabaster cosmetic vessels, a scarab with the name and title of a well known treasury official of early Dynasty 13, one Senebsumai, which provides a *terminus post quem* for the burial.

In addition to burials in pits, four mudbrick-lined tomb shafts of typical Middle Kingdom type were also identified on the south exterior of the Shuneh, in Operations 164, 192, and 193 (Figure 98). Construction of the shafts cut through the Dynasty 2 floor deposits and down into the natural *gebel*-substrate below. The interiors of the shafts were not excavated in 2012.

At the bottom of the dune excavation revealed the original exterior floor level of the Shuneh. The “floor” actually is comprised, as in the south perimeter corridor, of at least three distinct strata: (1) a lower working surface with a number of *mahmara*-features visible that relate to the construction of the monument (Figure 99); this was covered by (2) a thick deposit containing possibly thousands of ceramic beer jars and beer jar fragments (Figure 100), as well as seal impressions, ash and charcoal, bovine crania (Figure 101), and mudbricks; this was in turn capped by (3) a top final mud surface. The final mud surface (3) is quite eroded and is only now preserved in isolated patches.

The ceramic rich deposit (2) is similar to that seen in the south corridor and also to what was observed in the southern end of the interior of the enclosure in the Expedition’s 2010 field season. Beer jars, the predominant ceramic form in the deposit, are a common type of offering pottery, and the large number of this vessel type found in the southern end and south exterior of the enclosure may relate to the presence of the chapel in the southern part of the interior of the main enclosure. The chapel, last excavated during the Expedition’s 2001 field season, was a major focus of cultic activity at the monument during the reign of Khasekhemwy. It seems likely that the beer jars, seal impressions, and bovine crania are the by-products of the performance of cult in and around the chapel. They have not been found in quantity in the northern part of the interior of the enclosure nor on the north, east, or west exterior sides. Some of the beer jars have been found to contain the remains of white plaster like that used in the final white finish of the walls of the monument, and it seems certain that some of the vessels were used in the construction

process. Nevertheless, it is possible that they were brought to the site for use in cultic practice and that they only secondarily were used for other purposes.

At the southeast exterior corner of the perimeter wall, an entirely different type of deposit was encountered. As was mentioned above, Mariette worked in the south perimeter corridor, and it appears that a huge spoil heap from Mariette's excavations is situated just outside the perimeter wall at the corner. The northern edge of this spoil heap was excavated by a team led by David O'Connor in 1997. The 2012 work focused on the southern part, which covered parts of excavation units Operations 190 and 191. The middle of the spoil heap remains unexcavated immediately to the north of these units. The excavated part of the deposit was found to contain many small painted limestone votive stelae of post-New Kingdom date (Figures 102, 103), most depicting one or two individuals before Osiris, as well as large numbers of ceramic offering trays (Figure 104) and many fragments of ceramic and unfired mud coffins that once contained the burials of infants (Figure 105). The broken and scattered remains of infants were also found. In addition, the remains of two poorly preserved wooden statues, one of a seated goddess and another of a seated Osiris, were found, as well as a roughly carved, uninscribed limestone naos. The original concentration of votive material around the southeast exterior corner of the main wall is evidence that considerable religious importance was placed on this part of the monument in post-New Kingdom times.

(iii) Excavation along the interior side of the east wall of the main enclosure was undertaken in four units, Operations 15, 21, 35, and 162. Operations 15, 21, and 36 were opened originally in 2001 to prepare emplacements for large sand bag buttresses that were erected against the interior side of the wall as a temporary stabilization measure. The buttresses were removed in 2012 as part of the Expedition's architectural conservation program (see above), and the area under each was more completely excavated than was the case in 2001. The basic archaeological situation in all these units is the same and is discussed above in relation to the architectural stabilization measures implemented in 2012.

#### **Appendix – Members of the 2012 Field Team:**

Dr. Matthew Adams, Expedition Associate Director/Field Director

Kay Barnett – architectural illustration

Christina Chavez – surveyor

Jerrie Clarke – senior archaeological collections manager

Anthony Crosby – senior preservation architect

Shanna Diederichs – architectural illustration

Doha Fathy – archaeological collections manager

Dr. Donna Glowacki – architectural illustration

Mark Gonzales - surveyor

Walter Gusciora – photographer

Dr. Salima Ikram – consulting archaeologist

Mária Iván – artifact illustration  
Hiroko Kariya – senior archaeological conservator  
Somer Kearney – assistant to the photographers  
Traci Lucero – architectural conservator  
Gregory Maka – photographer  
Alexander Makovics – surveyor  
Dr. Michelle Marlar – Assistant Field Director  
Diane Nelson – digital assets manager  
Tara Prakash – archaeologist  
Shubhra Raje – preservation architect  
Patrick Salland – archaeologist  
Lucy Skinner – archaeological conservator  
Dr. Deborah Vischak – archaeologist  
Magdalena Włodarska – archaeologist  
Jo Anne Young – architectural illustration

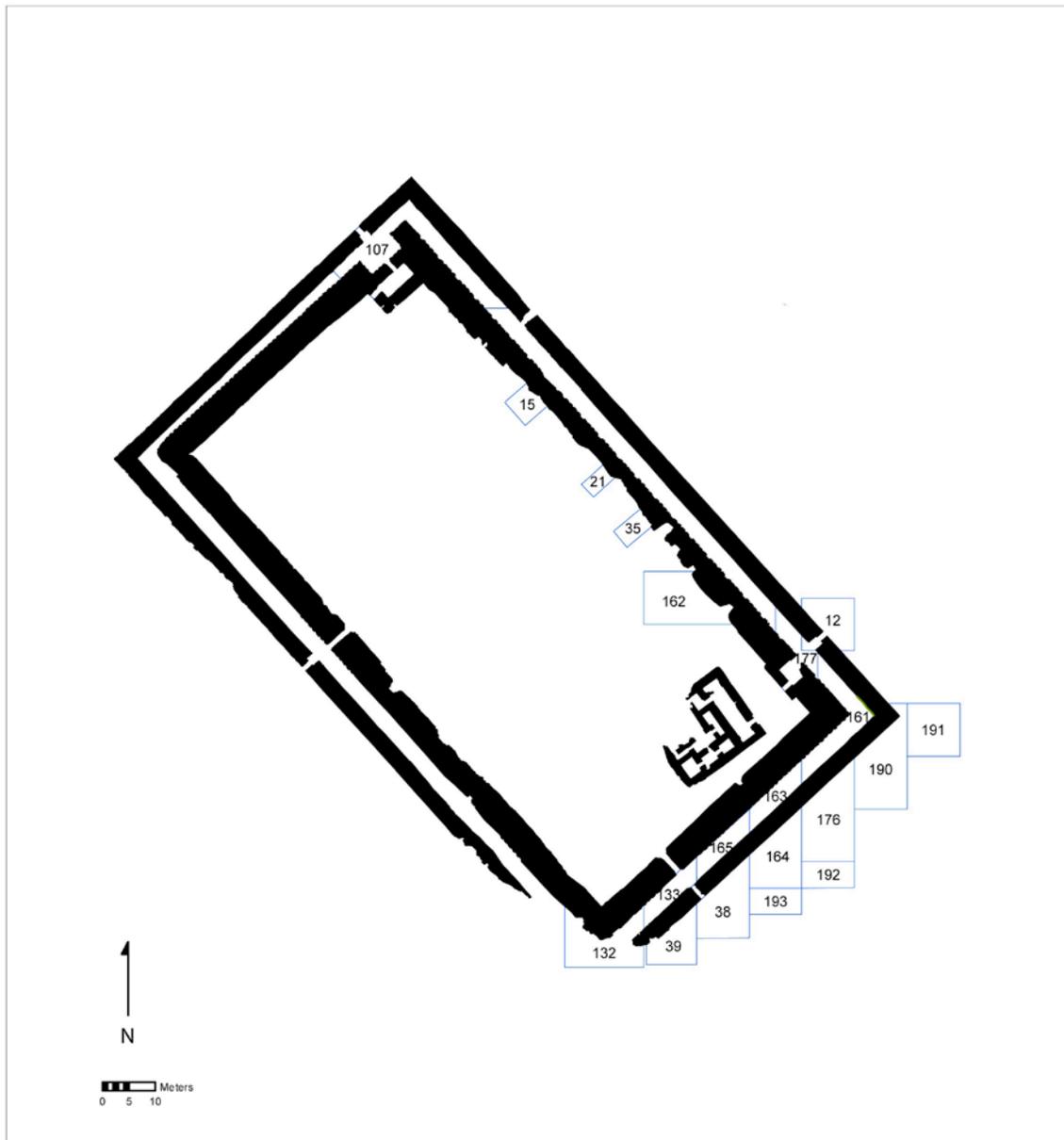


Figure 1 – Plan of the Shunet el-Zebib showing 2012 excavation units.



Figure 2 – State of the interior side of the east wall of the main enclosure at the close of the 2010 field season. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 3 – General view of work in progress in 2012 on the interior side of the east wall of the main enclosure. Anthony Crosby, Matthew Adams, and Michael Jones confer in the foreground. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 4 – Remains of the sand bag buttress in Operation 15 constructed in 2001 as a temporary emergency stabilization measure. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 5 – Brickfall from the collapse of the interior side of the Shuneh east main wall is visible on the side of Mariette's sondage in Operation 15. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 6 – Operation 15, with collapsed brick removed from the side of Mariette’s sondage. The yellow sand under the wall is the natural sterile *gebel* sand on which the monument was built. Photo by Greg Maka for the Institute of Fine Arts, NYU.

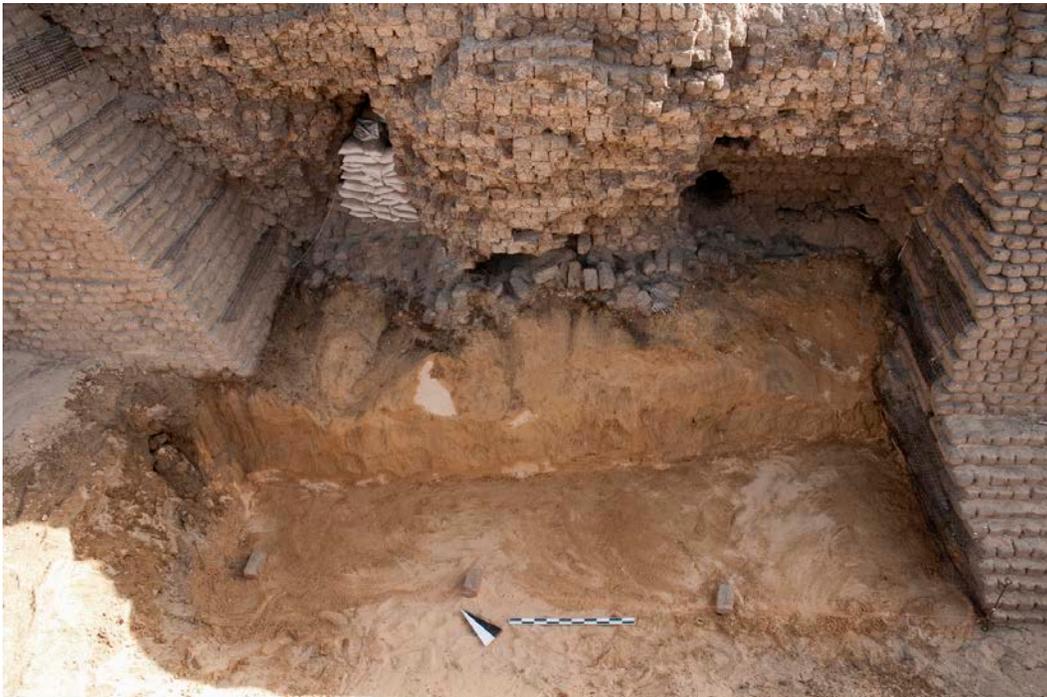


Figure 7 – After the completion of the archaeological excavation and documentation of the area adjacent to the wall, the natural *gebel* sand was cut back to near the base of the existing original masonry. For temporary stability the sand water was applied to the sand. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 8 – The brick foundation in Operation 15 that serves to stabilize the sand under the original wall and as a platform for the construction of new masonry to support the surviving original fabric of the wall above. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 9 – At the top of the foundation, a layer of geo-textile was put down that both provides horizontal stabilization and permits the new masonry built on the foundation to be structurally bonded with construction north (left) and south (right) from earlier seasons. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 10 – The large central area of overhanging masonry, part of a mass detached by cracks and in active rotation away from the wall, was stabilized first for safety. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 11 – A large animal burrow existed on the north side of the detached masonry mass in Operation 15. Once the detached mass had been stabilized by the new construction at right, work could proceed with the hole. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 12 – Preservation architect Shubhra Rajee, right, and conservator Traci Lucero document the large animal burrows in Operation 15. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 13 – The largest animal burrow in Operation 15, after cleaning. One branch penetrated nearly completely through the wall east-west, while a side branch penetrated several meters toward the south behind the mass of masonry that was detached from the wall by cracks. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 14 – The largest of the animal burrows in Operation 15, filled with new masonry. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 15 – After the animal burrows were stabilized, construction continued in Operation 15, with new masonry gradually stepped back to meet the existing coursing of the new construction done in previous seasons north and south. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 16 – With height, new construction in Operation 15 also stepped back to meet the original fabric of the wall near its existing top. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 17 – Operation 15 at the close of the 2012 season. The discernibility of the boundary at left between construction done in previous seasons and that from 2012 will lessen over time. The visible top of the foundation, near ground level, will be covered by sand and not visible at the close of the conservation program at the Shuneh. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 18 – Remains of the sand bag buttress constructed in 2001 in Operation 21. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 19 – During removal of the sand bag buttress, significant areas of unstable overhanging masonry were identified. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 20 – Temporary shoring supporting unstable areas of masonry during work in Operation 21. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 21 – Preservation architect Anthony Crosby defining structural cracks separating unstable areas of masonry from the main mass of the wall in Operation 21. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 22 – Anthony Crosby removing unstable masonry in Operation 21.  
Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 23 – Once dangerous areas of masonry were removed in Operation 21, excavation to define the edge of Mariette's sondage could proceed.  
Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 24 – Preservation architect Anthony Crosby and senior mason Nabil Fahmy el-Seman remove dangerously unstable masonry in Operation 21. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 25 – Removing dangerously unstable masonry in Operation 21 after disassembly of the temporary shoring. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 26 – Natural *gebel* sand under the base of the east wall of the main enclosure, as left by Mariette's sondage. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 27 – The sterile *gebel* sand under the east wall of the main enclosure in Operation 21, after it was cut back in preparation for the construction of the new brick foundation platform. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 28 – Leveling the floor of the excavation in Operation 21 along the interior side of the east wall of the main enclosure. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 29 – The completed foundation platform in Operation 21. The foundation buttresses the remaining basal sands under the wall and provides a stable base on which new masonry can be constructed to support the original wall above. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 30 – New construction on the foundation platform in Operation 21 supports the original fabric of the wall. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 31 – Completed stabilization work in Operation 21. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 32 – Operation 35 at the start of work in 2012, showing the remains of the sand bag buttress constructed in 2001. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 33 – Operation 35, after removal of the sand bag buttress. Photo by Greg Maka for the Institute of Fine Arts, NYU.

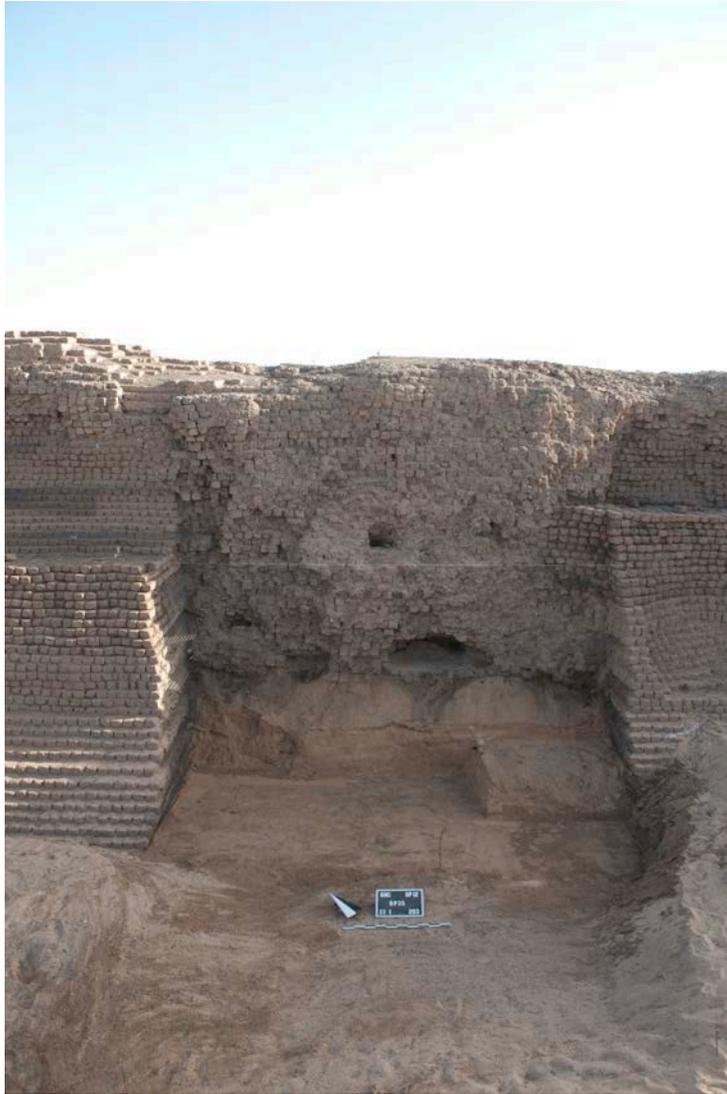


Figure 34 – Operation 35, after cutting back and compaction of the natural *gebel* sand in preparation for the construction of the below-grade foundation. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 35 – Operation 35, after construction of the below-grade foundation. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 36 – A large animal burrow at the base of the wall in Operation 35, after cleaning. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 37 – The animal burrow in Operation 35 shown in Figure 36, after infilling with new masonry. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 38 – After the animal burrows at the base of the wall in Operation 35 were filled with new masonry, construction continued above grade. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 39 – New construction in Operation 35 was keyed into that of Operations 169, to the north (left in this photo), and Operation 106 to the south (far right). Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 40 – Construction of the upper part of the stabilization masonry in Operation 169, the lower part having been built in 2010, and in Operation 35 were completed in tandem. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 41 – The new masonry in Operation 35 at the close of work in 2012, integrated into the comprehensive treatment of the interior side of the wall. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 42 – The interior side of the tall section of the east wall of the main enclosure prior to any conservation intervention. Operation 162 was located along the base of the wall at lower left. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 43 – Excavation along the base of the east wall, interior side, in Operation 162. The undermining here was not as severe as to the north. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 44 – Preparation of the *gebel* sand at the base of the wall in Operation 162 for construction of the foundation. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 45 – The completed foundation in Operation 162. Because the undermining at the base of the wall was less severe than to the north, and the concavities requiring infilling smaller, the foundation was not as deep nor as massive as in nearby areas. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 46 – Work in progress in Operation 162. The taller area of new masonry at left is in Operation 106. The large concavity at right, which may have been the “start” of a never constructed monastic cell, is seen before cleaning. Photo by Greg Maka for the Institute of Fine Arts, NYU.

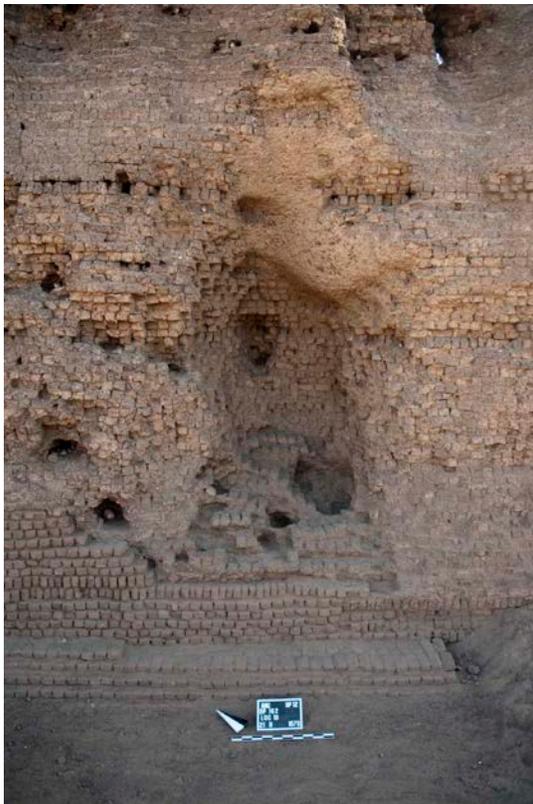


Figure 47 – Detail of large void in interior side of the tall section at the southern end of the east wall of the main enclosure, after excavation and cleaning prior to stabilization. A massive mud insect nest is visible at the top of the void. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 48 – The large concavity in the interior side of the east wall of the main enclosure in Operation 162 with stabilization in progress. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 49 – Preservation architect Anthony Crosby drilling a hole into the mud brick wall at the top of the large concavity in the wall in Operation 162. The loop of a stainless steel cable attached to an earth anchor driven into a drilled hole can be seen protruding from the nest in the foreground. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 50 – Anthony Crosby and senior mason Nabil Fahmy el-Seman installing earth anchors. Crosby is shown driving an anchor into a drill hole using a sledge and a steel rod. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 51 - The stabilized void in the tall southern section of the east wall of the main enclosure at the close of work in 2012. The small area at the top will be completed in a future season. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 52 – Stabilization work in Operation 106, a set of late antique monastic rooms, at the close of the 2010 field season. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 53 – Operation 106 after the completion of basic stabilization in 2012. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 54 – One of the smaller holes in the tall southern section of the east wall of the main enclosure, before intervention. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 55 – The same hole as in Figure 54, after cleaning preparatory to infilling. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 56 – The hole shown in Figures 54 and 55, after it was filled with new mudbrick masonry. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 57 – Scaffolding in place adjacent to the tall southern section of the east wall of the main enclosure. The person in the blue shirt and cap on the wall top is senior mason Nabil Fahmy el-Seman, working on the large crack illustrated below in Figures 58-61. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 58 – A large and deeply eroded crack in the top of the east wall of the main enclosure, just north of the east corner gateway, before treatment. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 59 – The area shown in Figure 58, after cleaning preparatory to stabilization. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 60 – Senior mason Nabil Fahmy el-Seman, right, at work on the stabilization of the crack shown in Figures 58 and 59, above. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 61 – The crack shown in Figures 58-60, after stabilization with new masonry. The flat top of the infill will eventually be incorporated into a general capping of the wall top in a future season, which will eliminate the visual abruptness of the top of the infill. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 62 – The tall southern section of the east wall of the main enclosure at the end of the 2012 field season. Compare against the view in Figure 42, above. Additional work remains to be done on the upper part of this section, particularly the left, northern half. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 63 – General view of the interior side of the east wall of the main enclosure in 1999, prior to any conservation intervention. Photo by Matthew Adams for the Institute of Fine Arts, NYU.



Figure 64 – General view of the interior side of the east wall of the main enclosure at the close of work in 2012. The stabilization of the highly threatened low middle part of the wall has been completed. The top of the below-grade foundation, visible here and in Figures 65 and 66, are not intended to remain visible and will be covered by sand at the completion of the conservation program. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 65 – General view of the interior side of the middle part of the east wall of the main enclosure after the completion of basic stabilization in 2012. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 66 – General view of the interior side of the east wall of the main enclosure at the end of the 2012 field season. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 67 – Remains of a late antique room in the top of the south wall of the main enclosure, west of the south gateway. It was excavated and documented in 2005-2006. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 68 – As in other late antique rooms at the Shuneh, before infilling, a layer of fine sieved sand was put down, wetted, and compacted to separate the new masonry from the surviving original features. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 69 – Beginning the infilling of the room shown in Figures 65 and 66, above. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 70 – The infilling of the remains of the late antique room in the top of the south wall in progress. As new courses of masonry were added, a space was left around the edges of the room into which sand was poured, to create a separation layer to protect surviving features of the room. In the foreground, new masonry is being added to the wall top as part of the broader stabilization work on the wall. The opening of the south gateway is at far left. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 71 – General view of the stabilization work in progress on the south wall of the main enclosure. The south gateway opening is at left. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 72 – General view of the exterior side of the south wall of the main enclosure, west of the south gateway, at the close of work in 2012. Note the position of the late antique room, marked by a shallow concavity in the new construction, right of center. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 73 – General view of the interior side of the south wall of the main enclosure, at the close of work in 2012. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 74 – The south gateway through the main, inner enclosure wall, seen from the interior side. Note the cracks marked by the arrows. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 75 – Members of the architectural illustration team documenting a crack on the west side of the south gateway in the main enclosure, Kay Barnett, left, and Shanna Diederichs, right, assisted by Dr. Donna Glowacki, below in the background. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 76 – This photo illustrates the undesirable reflectivity of the mud wash applied to the new masonry infill of the large notch (WII 65) in the top of the west wall of the main enclosure, near the southwest corner. The wash was removed in 2012. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 77 – General view of the interior side of the north wall of the main enclosure. The too reflective mud wash applied to a number of hole infills in previous seasons created an undesirable visual effect, where the infills are too prominent. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 78 – Workers are here shown on the interior side of the north wall of the main enclosure, removing mud wash from the new masonry of hole infills and opening joints in the large notch infill NII 27, at left. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 79 – The south perimeter corridor, at the level of the finished Dynasty 2 floor. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 80 – Dynasty 2 floor of the south perimeter corridor, eastern half, showing later pits cut through the floor. The interior of the southeast corner of the perimeter enclosure wall is at lower left. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 81 – Detail of the profile of a pit in the floor of the south perimeter corridor, showing the stratigraphy, with a lower working surface covered by the deposit of brick debris and ceramics that underlay the final floor level. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 82 – Lenses of plaster wash eroded from the south wall of the main enclosure. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 83 – The boat graffiti in the south corridor were documented in 2012. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 84 – Architectural illustrator JoAnne Young, right, and artist Mária Iván tracing the graffiti in the south corridor. The designs were traced directly onto clear acetate film applied to the wall over the graffiti. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 85 – Detail of one boat image, this one with oars. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 86 – The boat image shown above, traced onto acetate. The boat's hull, rowing oars, and steering oar, at far right, are clearly indicated. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 87 – The excavated portion of the east corridor between the main inner, right, and outer perimeter, left, walls. Excavation defined the finished Dynasty 2 floor. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 88 – The oval shape of a large *mahmara*, or mixing basin, marked by bricks and hard mud plaster edges, is just visible eroding out of the mud Dynasty 2 floor of the east corridor. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 89 – The ash and burned bone deposit found just south of the east corner gateway in the east corridor. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 90 – General view of the east corner gateway after excavation in 2012, seen from outside the perimeter wall, looking southwest. The opening in the foreground is that in the perimeter wall, with the main enclosure in the background. An old trench cut through the floor of the corridor between the two gateways. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 91 – Detail of the east corner gateway in the perimeter enclosure. A pit has been dug completely through the brick masonry that originally made up the floor of the gateway. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 92 – General view of the east corner gateway, after excavation in 2012, seen from inside the main enclosure looking northeast. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 93 – A large concavity exists in the south side wall of the east corner gateway chamber in the main enclosure. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 94 – General view of the excavation area on the exterior of the south perimeter wall of the Shuneh. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 95 – Two burials of the Middle Kingdom on the south exterior of the Shunet el-Zebib. The burial on the right is in a wooden box coffin and that on the left in a mat made of sticks woven together with cordage. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 96 – Burial in a wooden box coffin of an adolescent female of Dynasty 13. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 97 – Assemblage of grave goods accompanying the adolescent female burial shown in Figure 96, above. Photo by Walter Gusciora for the Institute of Fine Arts, NYU.



Figure 98 – Brick lined tomb shafts of Middle Kingdom type on the south exterior of the Shuneh. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 99 – Remains of the early working surface on the south exterior side of the Shuneh, with parts of two *mahmara*-features. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 100 – Deposit of beer jars on the south exterior of the Shuneh. This deposit covered an earlier working surface. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 101 – Bovine crania in the matrix of the Dynasty 2 floor on the south exterior of the Shuneh. Photo by Greg Maka for the Institute of Fine Arts, NYU.



Figure 102 – Stela found in Mariette's spoil heap at the southeast corner of the Shuneh. Photo by Walter Gusciora for the Institute of Fine Arts, NYU.



Figure 103 – Stela found in Mariette's spoil heap at the southeast corner of the Shuneh. Photo by Walter Gusciora for the Institute of Fine Arts, NYU.



Figure 104 – Ceramic offering trays found in the spoil heap at the southeast corner of the Shuneh from Mariette’s excavations in the south perimeter corridor. Photo by Greg Maka for the Institute of Fine Arts, NYU.

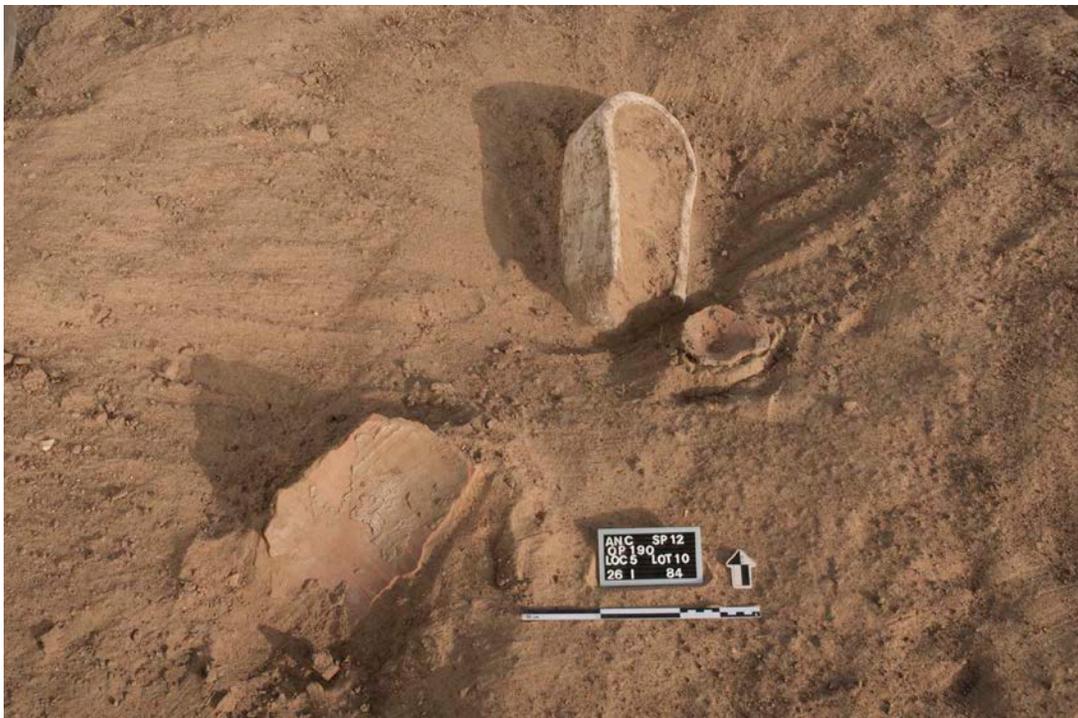


Figure 105 – At upper right is an unfired mud infant coffin found in Mariette’s spoil heap at the southeast corner of the Shuneh. Photo by Greg Maka for the Institute of Fine Arts, NYU.