

**Dakhleh Oasis Project**  
**Columbia University**  
**Excavations at Amheida 2005**  
**Architectural Conservation Works**

**1 Proposal for the reconstruction of the Roman House**

**PRESENT CONDITION**

The Roman house occupies a site within the main urban area of the site. Excavations in 2004-2005 have revealed the presence of a significant number of wall paintings within the main domed room of the house that require protection. In 2005, a temporary shelter was built over this space. The total surface area of the house is 15 metres x 15 metres, and it is of a standard pattern (another example sits adjacent in the same block). The rooms of the house are arranged around a central courtyard with a staircase leading to the roof. There appears to be no second storey from archaeological evidence.

**PROPOSED ACTION**

It is proposed to reconstruct as much as possible of the mud brick superstructure of the house as possible, without threatening the stability of the surviving structure. This will require the installation of new acacia or olive wood lintels over door lintels, and new brickwork following the original brick dimensions of 8 x 34 x 17cm for the structural walls and 7 x 32 x 26cm for the vaults. New bricks, matching the dimensions of the original Roman bricks but without the inclusion of straw (to avoid termite infestation), will be used in the reconstruction. Existing bonding patterns will also be replicated in the new brickwork. The new bricks themselves, however, will be made of a different colour to the bricks used at the site of Amheida which are reddish, in order to make a clear distinction between the original construction and the new construction. The work will be executed in two phases over two seasons:

Phase One: install timber lintels and consolidate all walls to the height of springing of arches. Construct flat roof on timber structure with palm-rib and tafl in room to east of main room.

Phase Two: construction of barrel vaults and dome over main room. If the latter is impossible due to the fragility of the surviving brickwork, a lightweight timber roof with palm-rib and tafl covering will be installed instead.

Plan showing areas of consolidation and vaulting

**2 Proposal for the reconstruction of the pyramid at Amheida**

The pyramid of Amheida is constructed entirely out of mud brick and mud mortar, and is of the Roman period. It shares the same external characteristics and size as other pyramids in the area (notably at Bir al-Shagala in Mut): a square base or podium of approximately seven square metres, from which rises the

triangular section of the structure. This has a relatively steep angle of inclination of approximately sixty degrees. Internally, the Bir al-Shagala pyramids have vaulted rooms within them (above and below ground level) that are decorated with wall-paintings on mud plaster. It is not known at present what the substructure of the Amheida pyramid contains, but it is likely that there are chambers beneath it (the superstructure appears to be solid).

Context photograph

## PRESENT CONDITION

The pyramid stands on a low hill on the eastern edge of the site, and is surrounded by the remains of a cluster of mud brick buildings, as yet unexcavated. These are most likely the remnants of a surrounding necropolis. The podium of the pyramid is a square of seven metres, and parts of the structure survive to a height of approximately eight metres. The best-preserved faces of the podium and pyramid are those on the east, south and north sides. There has been significant wind erosion on the north side, and major areas of brickwork in lower areas (particularly in the corners) have been removed by robbers, causing further masonry collapse. The south-east corner of the pyramid itself is well preserved at high level. The remains of the west side of the structure are in a seriously unstable condition, either due to the undermining activities of robbers or subsidence caused by the structural failure of internal chambers. There is the real possibility of the collapse of this section of the building in the near future. The building has already been surveyed and recorded through photogrammetry in its present state.

Plan of pyramid in context

Photos of all sides at small scale

## PROPOSED ACTION

It is proposed to consolidate and reconstruct the pyramid to its full height if possible. The latter can only be undertaken, however, after the nature and condition of the substructure have been fully assessed. If the condition is unstable, the intervention will be limited to the consolidation of the eastern half of the structure, and the partial consolidation of the western side at a lower level. New bricks, matching the dimensions of the original Roman bricks but without the inclusion of straw (to avoid termite infestation), will be used in the reconstruction (8.5 x 17.5 x 35cm). Existing bonding patterns will also be replicated in the new brickwork. The new bricks themselves, however, will be made of a different colour to the bricks used at the site of Amheida which are reddish, in order to make a clear distinction between the original construction and the new construction.

The following suggested programme is to carry out the work in a minimum of two, and probably three, seasons.

Phase 1: To prevent any further destabilisation during clearance work of the eastern half of the pyramid requires the immediate consolidation of the north-east and south-east corners to a width of at least 1.2m. This should permit the safe excavation of these two robbed out corners to establish the limits of the internal consolidation required, which should be the next priority. Only when the eastern half of the pyramid has been fully consolidated to the full height of the original podium should further dismantling and excavation be carried out on the western side. This phase will be executed under the joint supervision of the architect and the archaeological team.

Phase 2: In order to permit archaeological investigation of the area at the base of the pyramid on its western side to proceed without risk, it will be necessary to dismantle first the unstable elements of the structure to a safe height. This will be done under the supervision of the archaeological team. Mud bricks from dismantled areas will be kept for re-use in the consolidation of inner areas of the structure in lower areas. Only when the entrance to and nature of the sub-structure of the pyramid have been determined can the podium be consolidated on the western side to its full height.

Phase 3: This phase of work is entirely dependent on archaeological findings of previous seasons, and a consensus view on whether a full reconstruction is desirable. Missing sections of the pyramid above the podium will be completed in new mud brick following the original angle of inclination. The work will be carried out from four timber scaffolding stages of decreasing size. The pyramid will be capped with a hard stone (granite or basalt) pyramidion on three masonry courses of the same stone. The choice of stone is dictated by its resistance to weathering. On the north side of the podium, it is proposed to build a 'sacrificial' mud brick wall 35cm thick immediately adjacent to the face of the podium in order to protect it from the wind erosion that is so severe in this area. This wall should be plastered with mud mortar, but it is not proposed to plaster any other surfaces of the structure although the pyramid was almost certainly rendered with a white lime mortar after it was originally constructed.

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