

**Wiesław Grzegorek, Rafał Czerner,
Stanisław Medeksza, Małgorzata
Mrozek, Piotr Zambrzycki,
Małgorzata Krawczyk, Grażyna
Bąkowska**

**Marina El-Alamein: Preservation and
Conservation in 2005**

Polish Archaeology in the Mediterranean 17, 99-115

2007

Artykuł został opracowany do udostępnienia w internecie przez Muzeum Historii Polski w ramach prac podejmowanych na rzecz zapewnienia otwartego, powszechnego i trwałego dostępu do polskiego dorobku naukowego i kulturalnego. Artykuł jest umieszczony w kolekcji cyfrowej bazhum.muzhp.pl, gromadzącej zawartość polskich czasopism humanistycznych i społecznych.

Tekst jest udostępniony do wykorzystania w ramach
dozwolonego użytku.

MARINA EL-ALAMEIN

PRESERVATION AND CONSERVATION IN 2005

Stanisław Medeksza

with

Rafał Czerner, Grażyna Bąkowska, Małgorzata Mrozek, Piotr Zambrzycki,
Wiesław Grzegorek and Małgorzata Krawczyk

The Polish-Egyptian Preservation Mission carried out the eleventh season of work at the site of Marina el-Alamein from April 13 to May 30, 2005.¹

The work program in 2005 was focused on the ruins of housing from the Graeco-Roman period: H1, H2 and H21c, situated in the northern part of the ancient town, and on tombs T6 and T12 in the western end of the town's necropolis (Fig. 1). Due to circumstances beyond the mission's control, the pace of the conservation and restoration work had to be adjusted to available means and building materials leftover from the previous seasons. Even so, the effects of the season's work cannot be said to be insubstantial.

1 The team included Prof. Dr. Stanisław Medeksza, Director; Dr. Rafał Czerner, architect, deputy director; Mr. Wiesław Grzegorek and Ms Małgorzata Krawczyk, architects; Dr. Grażyna Bąkowska, archaeologist; Mr. Piotr Zambrzycki, stone and sculpture conservator; and Ms Małgorzata Mrozek, geologist. Ms Renata Kucharczyk and Dr. Grzegorz Majcherek, archaeologists, participated in the work intermittently. The Egyptian side was represented by Mr. Mahmud Yasin, Director of the Marina el-Alamein Site, and Inspector Mr. Mustafa Younis Minazea, both of whom were of immeasurable assistance throughout the season.

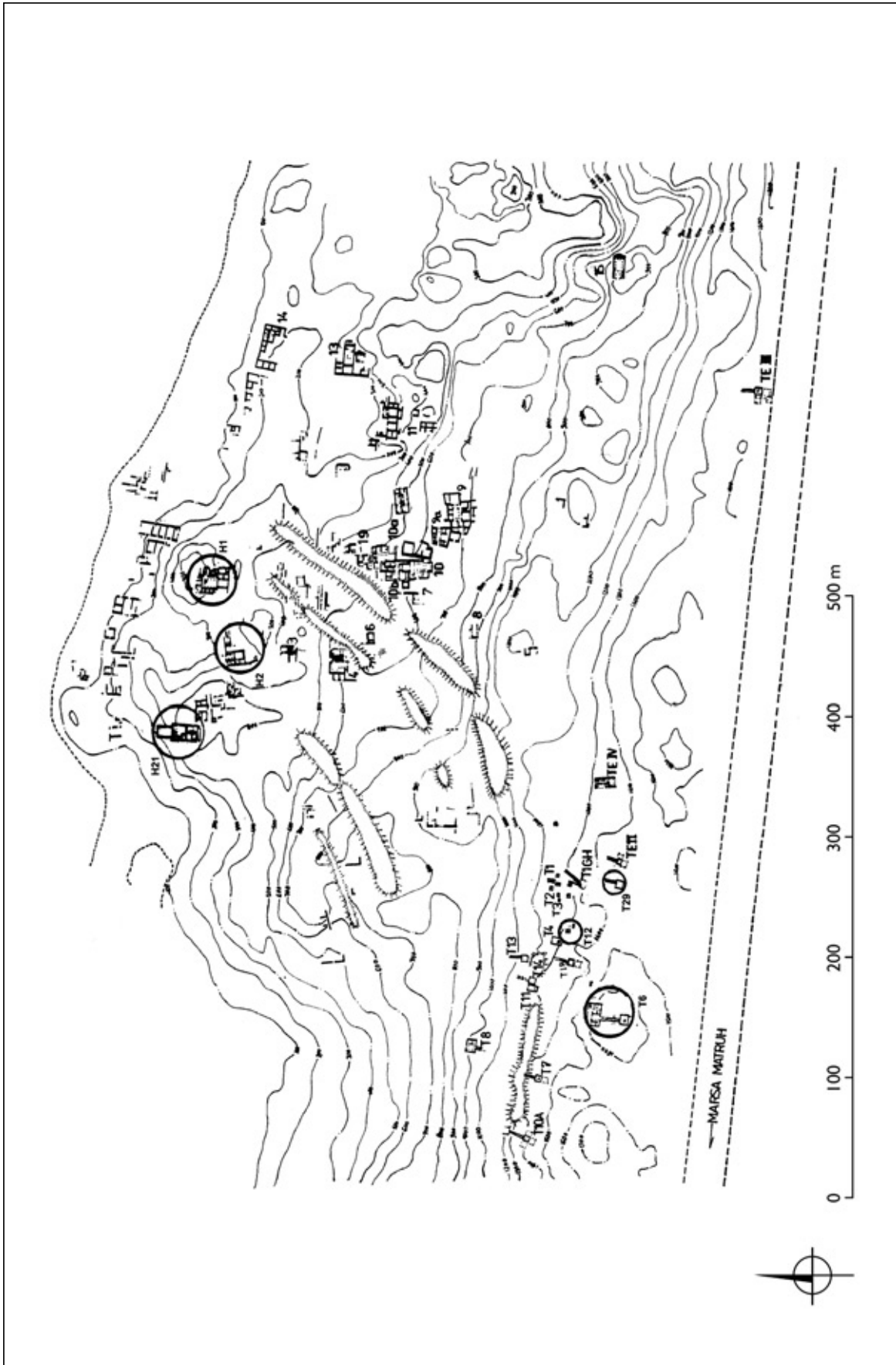


Fig. 1. Situation plan of the ancient town indicating areas of work by the Polish-Egyptian Preservation Mission
(Polish Archaeological Mission archives)

BUILDING, CONSERVATION AND RECONSTRUCTION

It is important to reiterate, concerning the method used on site, that standing repairs of the masonry are a must to prevent progressive deterioration of the walls. Lime mortar is used, mixed with small quantities of white cement for strength (6 parts sand to 3 parts lime and no more than 1 part white cement). The cement is indispensable to compensate for the very poor quality of the lime available in Marina.²

The uneven quality of mortar is another conservation issue. Traditional manual mixing of mortar with shovels straight on the ground carries with it the risk of ever-changing proportions, additionally compromised by the salinity of the local sand which is mixed in inadvertently. In the effect, the same coloring of the joints and tops of walls cannot be sustained. Moreover, spots of heavy salt efflorescence erupt locally on the faces, as well as tops of walls. Too much cement mixed in, as often happens despite strict recommendations and supervision, results in surface cracking.

Lastly, the proper technical and material support for restoring the surviving but damaged plasterwork on the walls is still lacking. Due to the instability and impermanence of the primer coat of mud plaster used by the ancient builders, the preservation process requires costly investment, primarily in conservation materials.

HOUSE H1

The ruins of House H1 have been prepared for conservation and partial reconstruction

for the past two seasons. Rubble and secondary deposits, including vegetation, have been removed, and the vaulting of the cisterns under the courtyard protected. Architectural documentation work, in preparation for the building works to start next year, was completed this season, including fundamental revisions of the earlier documentation [*Fig. 2*]³ (indeed, more research needs to be done in order to understand the internal chronological stratification of the building).

The building has suffered evidently from earthquakes and ground movement caused by other geological factors, resulting in a considerable distortion of the architectural appearance. Much subsidence of the original stone pavements is in evidence, especially in the courtyard (north portico of the peristyle) and in the area of rooms 4, 5, and 10 [*Fig. 3*]. Only the vaulting of the cistern under the floor in room 3 seems to be at the original level, but it has a deep E-W fissure that is pushing apart room 13 and basin 9. The perimeter wall also proved to be very poorly preserved, even missing entirely in places (especially in the eastern part of the house, in the vicinity of rooms 15, 14, 22, 13, 24). Room 6 appears to have been a projection, extending west, beyond the rectangular body of the house.

Excavations of the perimeter wall, in the northwestern corner of the house in particular (but also in the area of rooms 24, 14, 15 and 16), revealed remains of earlier

2 This issue has been discussed at length in reports published annually in *Polish Archaeology in the Mediterranean*. It should also be kept in mind that it is inadvisable to use ancient building techniques in the restoration work at Marina el-Alamein, this being largely due to the impermanence of building materials, such as mud and lime-mud mortars and the primer coats under plaster, also composed of mud.

3 E. Łużyniecka, "Dom perystylowy w Marina el Alamein", *Architectus* 1-2 (3-4) (1998), 28-37; cf. also W.A. Daszewski, "Témoignage de l'urbanisation de la côte...", *BSFE* 132 (1995), 19-21, Fig. 8.

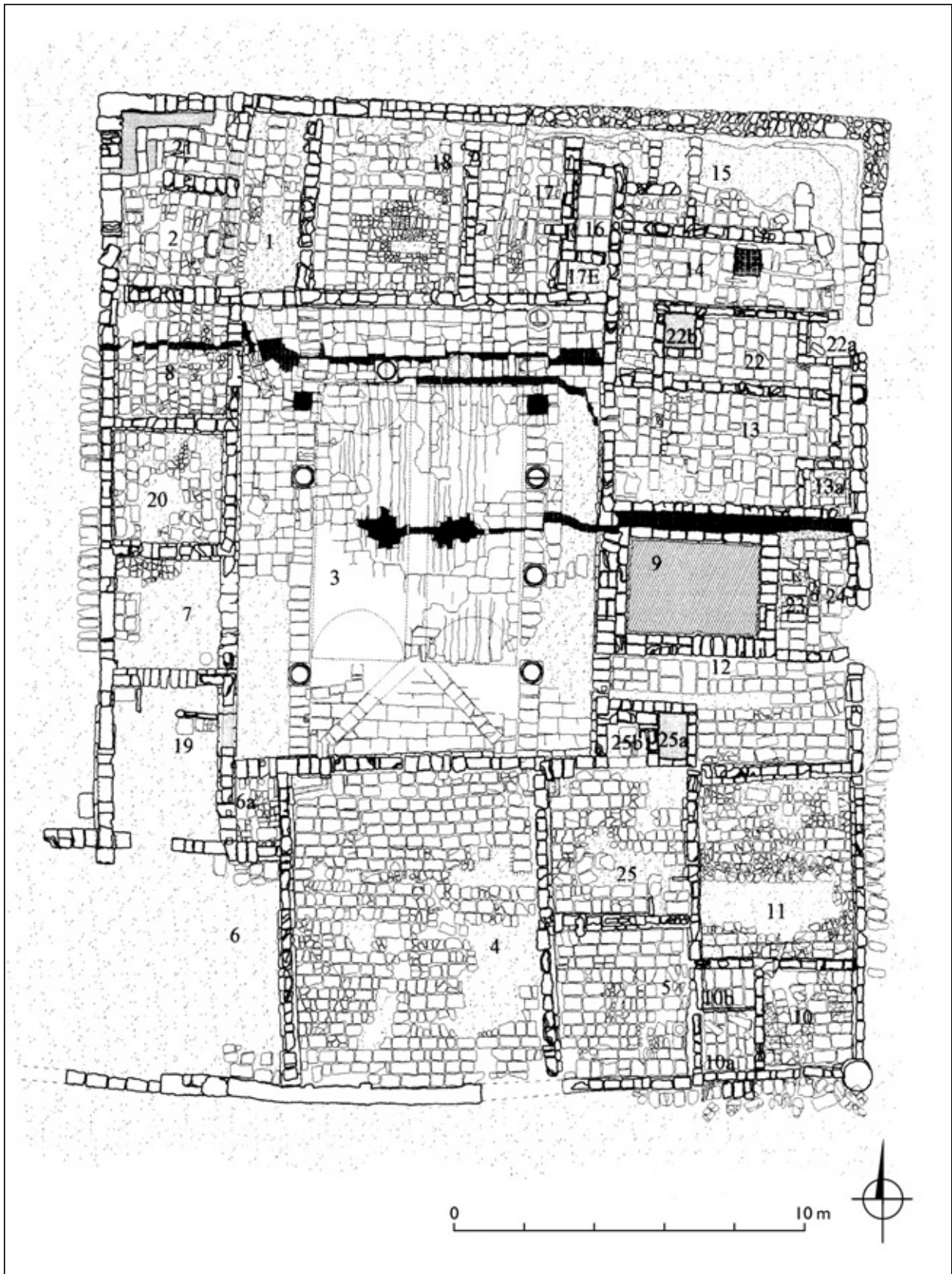


Fig. 2. Plan of house H1
(Inventory drawing R. Czerner and M. Krawczyk)



Fig. 3. House H1. View from the south, before (top) and after the season (Photo S. Medeksza)

structures at a depth of c. 0.60-0.80 m below the pavement. It is too early to date the preceding architecture, but the phase that will be preserved and restored has been dated based on ceramic evidence to the 4th-5th century AD.⁴

HOUSE H2

House H2 is situated in the northern part of the ancient town between the complexes of H21 and H1, just a short distance to the north of the baths and town square. The house had been explored by Egyptian archaeologists during excavations in 1989/1990, when eight rooms were cleared, including the courtyard with the elements of a column with Ionic capital. Upon analysis, the column was found to be complete (11 drums of the shaft, plus base and capital, giving a total height of 3.10 m; capital diameter 0.34 m); also, the location of the house, directly on the route of a potential tourist pathway, predestines it for restoration.

A ground analysis of the vicinity of this house reveals that it was entered directly from a latitudinal street running along its northern side [Fig. 4]. The entrance presumably led into a courtyard (1), with no intervening vestibule. There was only one centrally positioned column in this courtyard that was closed on the north and south by square pilasters (still bearing traces of black-painted plaster), one of the latter also serving as a water drain. This waterproofed pipe inside the pilaster joined a channel running northward under the pavement of the courtyard and emptying into a small cistern. A well with square head, connected with this cistern, survives in the northeastern corner of the courtyard. The northern part of the courtyard could have been roofed; if this

were the case, a kind of rectangular vestibule would have existed, opening full width onto the courtyard. The line of symmetry passes through the courtyard and main hall (2) of the house longitudinally.

The hall has not been cleared completely as yet, but the architectural evidence points to a history of rebuilding. The original walls appear to have been made of a single row of blocks 0.26 m wide (corresponding to an ancient royal cubit). At some point, perhaps following a quake, the walls were strengthened on the inside with a second set of walls made in the broken-stone technique. The varied bondwork, as well as vagaries of layout are proof of an agglutinative form of development, which is generally characteristic of the house architecture in Marina. In the case of H2, rooms 3, 4, 5, and 6 clearly

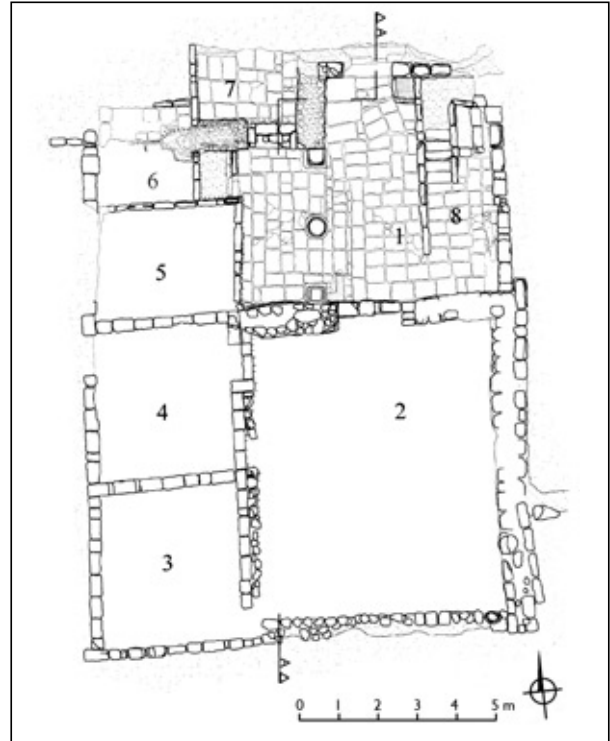


Fig. 4. Plan of house H2
(Drawing M. Krawczyk)

⁴ Dr. G. Majcherek kindly identified the pottery and coins from the site.



*Fig. 5. House H2. View from the south, before (top) and after the season
(Photo S. Medeksza)*

belong to the last phase in the occupation of the building, having floors c. 0.80 m higher than the rest of the rooms and partly overlying an earlier room (7). It is possible that these rooms remained in use when the rest of the house was already in ruins.

The overall plan of the house recalls other, previously researched buildings from Marina. Three functional elements are grouped in blocks: the house entrance, staircase and latrine. Room 8, separated from the courtyard by a wall of regular stone blocks, contains a staircase and latrine under the stairs, and is preceded by a small rectangular vestibule.

In 2005, all the walls surrounding the courtyard were consolidated [Fig. 5]. New jointing was carried out and the missing plaster completed. The broken-stone walls had the tops protected with the regular lime-cement mortar used by the mission.

The column was raised to a height of 1.20 m and will be completed next year.

HOUSE 21

The commemorative monument in room 2, which had been restored to the top of the parapet walls in previous seasons, now underwent an anastylosis of the upper, decorative parts. Three of the four small columns, which together with the engaged pilasters had formed the portico, were re-erected on the platform measuring 4.00 by 2.20 m. Originally, each of the columns had consisted of four drums, the three bottom ones being 0.53 m high, the last one on top 0.45 m high; the diameter of these drums ran from 0.31 m at the bottom to 0.29 m at the top. One of the drums with preserved polychromy composed of a floral ornament, which underwent conservation in the 2000 and 2001 seasons, is intended for display in the local site museum. The other surviving



Fig. 6. Commemorative monument from House 21, after restoration work in 2005 (Photo S. Medeksza)

elements – five drums, a base and a capital, both 0.28 m – high were strengthened and completed with limestone of similar properties as the original.⁵ The small columns were raised using some new stone elements (four drums, three blocks from the pilaster, three bases and column capital⁶), the two columns on the south were raised to their full height, the third to the height of one drum above the base. A sizable section of the back wall of this commemorative portico and one of the engaged pilasters, 0.30 m to the side, was also reconstructed, but the surviving capital still waits to be put into place [Fig. 6]. The full height of the restored columns is 2.56 m. Further work on the back wall and pilasters, using surviving elements of the cornice, is planned for the coming season.

HYPOGEUM T6

Restoration work on the mausoleum of Hypogeum Tomb T6, discovered by the Polish Archaeological Mission in 1988-1998, continued with a further reconstruction of the columns of the front portico. In previous seasons these columns had been raised and restored to no more than 135 cm in height. Having some shaft drums from the upper parts of these columns (as suggested by the smaller diameter) and remains of a capital, it was possible this year to reconstruct the two columns framing the entrance to their full height of 3.25 m [Fig. 7].⁷ The lateral pillars with engaged columns were also raised by two blocks in the case of the eastern one and a single block in the case of the western one. Both the height and span of the portico are now clearly visible.



Fig. 7. *Hypogeum-Mausoleum T6, façade of the mausoleum after restoration work in 2005*
(Photo S. Medeksza)

5 The restorer responsible for this procedure in this, as well as the previous season was Piotr Zambrzycki.

6 Reconstructed by Piotr Zambrzycki, based on surviving fragments of such a capital and comparative research

7 Column height according to a reconstruction by W.A. Daszewski, based on his personal communication in April 2005.

PILLAR TOMB T12⁸

The tomb, which was discovered in 1994 by the Polish Archaeological Mission,⁹ was cleared again in 2004 in preparation for the restoration project. This season, the eroded stone blocks in the three upper courses of the base on the west and south were replaced with new blocks. The original fill consisting of small rocks mixed with clay and sand was removed from the core of the substructure and in its place larger stone blocks in lime-cement mortar were introduced. Four of the limestone slabs (52x26x20 cm each) covering the loculi comprised within the base were replaced. Also, the lowermost course of the pillar was reconstructed in new

stone. A trial mounting of particular layers based on a project design prepared originally by J. Dobrowolski and updated by W. Grzegorek, permitted missing elements to be replaced with new ones made in old and new stone. The pillar was verified as measuring 0.91 by 0.91 m, with each course being 0.34 m high [Fig. 8].

Eight courses of the pillar shaft were raised [Fig. 9]. Next year, the remaining three courses will be erected, plus the two-course capital and the course on top of the capital, which is the base under a limestone sculpture of Horus in falcon form, discovered during the earlier excavations, restored and kept in storage at the site.

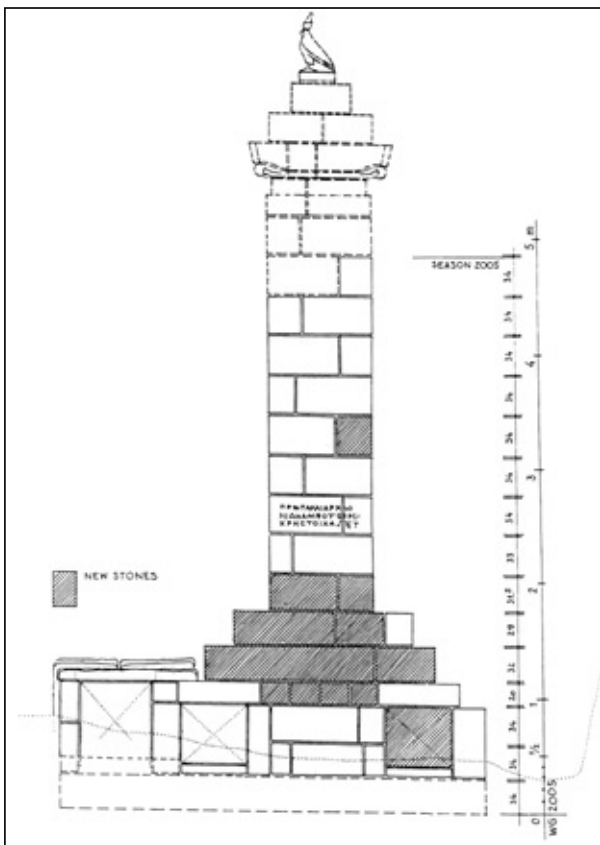


Fig. 8. Building-conservation work on tomb T12 in 2005 (Design W. Grzegorek, original drawing J. Dobrowolski)



Fig. 9. Pillar tomb T12, state after reconstruction in the 2005 season (Photo S. Medeksza)

8 Report contributed by W. Grzegorek.

9 Cf. W.A. Daszewski, *PAM VI, Reports 1994* (1995), 31-32.

During this work, an inscription was discovered on the blocks of the third course on the eastern face of the pillar, which had so far not been lifted (cf. *Fig. 8*). The text, read by Adam Łajtar of Warsaw University, is a typical funerary inscription for a married couple buried together in this tomb: “*Prota and Archonides, both good ones, farewell*”.¹⁰

TOMB T29

The tomb was located accidentally during the digging of foundations for the site museum in 2001 (the museum was built in another location eventually) and was explored in 2002 by the Polish Archaeological Mission.¹¹ In 2003, a reinforced concrete ring was prepared around the

courtyard shaft in an effort to strengthen the sides. Now the walls above this ring were built up, two courses in the better preserved northern and eastern walls, four in the much more extensively damaged southern and western walls. Ancient blocks were used for the purpose, measuring on average 60x30x30 cm (lower courses) and 60x26x30 cm (upper and narrower courses). The top of this casing wall comprises original blocks with bevelled top (45° angle of cutting), seven of which were preserved, including two corner blocks. The missing elements were cut in new stone. The top of the western wall of the staircase was also cleared in preparation for protecting the access to this tomb. This work will be continued in the coming season.

CONSERVATION WORK ON STONE ARCHITECTURAL DECORATION ELEMENTS¹²

The program calls for protection of the ancient substance, reconstruction of the original form of selected elements (determined by the needs of future display) and testing of specialist materials for use in the future. Objects for treatment were chosen from structures both in the town and the necropolis, including some which were a continuation of earlier activities, e.g. the base of a pilaster and capital in pseudo-Corinthian style typical of Marina, from the commemorative monument in H21, which were replicated in Heluan limestone, based on comparative analysis of surviving fragments and executed using traditional techniques [*Fig. 10*].

Stone conservation activities also covered elements of Tomb T12, where building-conservation work has commenced. In keeping with the principle of preserving as

much of the original substance as possible, the cracked covering slab of the southern loculus was repaired. Since the stone itself was in good condition, an adhesive mass based on ARALDITE epoxy resins and reinforcing rods of stainless steel were used to put the two parts together.

Similar treatment was applied to the seats of benches in the South Portico of the Town Square. Surviving fragments were consolidated and the original appearance reconstructed in part. Stone replacements for missing elements were introduced based on a comparative analysis of surviving parts [*Fig. 11*]. The work will be continued in the coming season, once the remaining deposits under the benches are excavated.

A research program to study methods of conservation for architectural elements

10 For the Greek text and discussion, cf. A. Łajtar, "Four inscriptions from Marina el-Alamein", *JJP* XXXV (2005), 106-108.

11 Cf. *PAM XIV, Reports 2002* (2003), 51-56.

12 Report contributed by P. Zambrzycki.



Fig. 10. Capitals from the commemorative monument in H21, after treatment (left) and reconstruction (right) in 2005 (Photo S. Medeksza)



Fig. 11. Stone seat in the South Stoa of the main square, after conservation work in 2005 (Photo P. Zambrzycki)

based on new materials was initiated in 2005. A major cause of on-site damage is the impact of an erosive seaside climate on faulty stone material of local origin. Substantial daily and seasonal variations in humidity and temperature levels result in granular disintegration, intensified at the absorption line. The process could have been escalated by the considerable salinity of the cement binder used so far, hence attempts to replace it with slaked lime. In chemical terms, slaked lime is also the better material because it corresponds to the stone used for the building blocks.

The object chosen for the research program was the lower drum of a column from room 1 in H21; tests included reinforcing and protecting the surface of the stone through a re-profiling with appropriate mineral mortars. The structure was reinforced with a solution of dispersive lime, which was introduced by drop injection. Upon seasoning in stable conditions, the surface was covered with lime plaster containing quartz sand filler (1 part lime to 1.5 parts sand) [Fig. 12]. The material used was dispersed lime KALKINIEKTION by Kalk-Kontor-Germany. Actual conservation



Fig. 12. Drum of a limestone column from H21, before (top left), during (right) and after trial conservation in 2005 (Photo P. Zambrzycki)

work was preceded by tests under controlled conditions. Should the need arise, the porosity of the said mortar can be increased,

in an effort to achieve WTA-system plaster (that is, renovation plaster highly resistant to ground salinity).

ARCHAEOLOGICAL CONTROL¹³

All the archaeological work conducted in the course of the season was strictly in preparation for building-conservation works in particular objects. The present report summarizes the most important findings.

HOUSE H 1

Clearing work traced the perimeter walls of the building, revealing that the north-eastern, northwestern and southwestern outer corners of the structure had been robbed out already in antiquity. The foundations proved to be made of small irregular stones. In a number of places, stone slabs (c. 0.50 x 0.20 x 0.18 m) had been placed under the foundation and perpendicular to the wall. These slabs may have served to stabilize the wall foundation.

The ceramic evidence from layers corresponding to the plundering was dated to the 4th-5th century AD. Elsewhere in the structure, layers of the 4th-5th century yielded lamp fragments, bronze coins (including one of Constantius II, AD 348-361), bronze and iron nails, glass fragments and bone pins. These finds were associated with fireplaces built of large stones, and deposits of animal bones and shells. Surface layers from this area yielded a substantial quantity of World War II bullets, as well as metal food cans and a glass bottle.

Work in the southwestern corner of the house led to the clearing of rooms 19, 6 and 6a [cf. *Fig. 2*]. Plaster fragments from Room 6 bear decoration in the form of two bands,

red and cream, and plant motifs. Associated coin finds point to the 4th century (Constantius II) [*Fig. 13*] as the last phase of use. In room 4, a painted cornice fragment was found immured in the north wall by the doorway. Assorted finds from various parts of the house include bronze coins, glass fragments, bone pins, various beads, pottery, bronze and iron nails, marble tiles, the foot of a larger marble statue, as well as organic deposits associated with traces of burning (animal bones, shells). A well (0.78 x 0.64 m) was explored in room 14. Small niches in the east and west walls permitted inspection right down to the water level (water appeared at a depth of 4.20 m below ground surface). Finds from the well dated the last phase of use (presumably as a rubbish dump) to the 4th-5th century. The objects included pottery, some heavily corroded bronze coins, a bronze ring, two bronze needles, an iron knife, bronze and iron nails, a bone pin, fragments of lamps and large stone vessels.

Meriting special attention is a bone medallion decorated with the bust of a goddess holding a scepter topped with a star and with seven stars surrounding the head [*Fig. 14*]. Traces of polychromy indicate that the mantle had been red.

The much damaged room 21 had a water-proofed channel running by the northern (section 2.65 m long) and western (section 1.66 m long) walls. The channel was 0.40 m wide and about 0.22 m deep. The fill yielded, apart from large quantities of pottery, burned fragments of round wooden

13 Text contributed by G. Bąkowska.



Fig. 13. Coin of Constantius II, obverse and reversen (Photo W. Grzegorek)



Fig. 14. Bone medallion from H21 (Photo W. Grzegorek)

beams, 3 cm in diameter, originating perhaps from the latrine construction. In the northeastern corner of the room, a big block of stone with sockets for mounting the wooden seating was found straddling the channel.

The developed network of under-pavement channels in this house is noteworthy and merits further study in the context of the function of the structure. Obviously, the rooms in the eastern part of the house were of a domestic character, while those in the western end of the building served official purposes. The house went through a number of rebuilding stages, before suffering final destruction sometime in the 5th century.

HOUSE H 2

Clearing work in the courtyard uncovered traces of painted plaster in the debris, mostly in the northern part. These fragments were black (possibly the lower parts of the walls, as suggested by the plaster surviving on one of the pilasters), although some red plaster was also recovered. The decoration is characteristic of the structural style with a wider strip of green c. 1.50 cm wide between two thin red lines, presumably forming rectangular panels. The pottery from the courtyard has been dated provisionally to the 2nd-3rd century AD. At least two phases of rebuilding could be observed in the courtyard.

GEOLOGICAL RESEARCH¹⁴

Continued geological research concerned the documentation of stone objects (began in 2004) and focused on freshly excavated finds, especially from house H1 (marble foot, bead, but mostly marble revetment tiles). Some objects found earlier in H 9 were analyzed, as well as some marble tiles found immured in the walls. The stone was identified in each case.

A separate research issue concerned building mortars. The following kinds of mortar were identified: pure lime mortar, lime mortar with aggregate; lime-gypsum mortar, gypsum mortar, hydraulic mortar and lime mortar with charcoal. Lime mortar has a medium porosity and is very soft in places. In a few places (room 13 of H1), a fine mineral aggregate was added

to the mortar. Lime-gypsum mortar, very durable thanks to the presence of gypsum crystals, was identified in the northern part of the house. It is superposed with lime mortar in places. Gray lime mortar was used to fill in missing parts of stone. Pure gypsum mortar (crystals up to 2 cm in size) was found in rooms 20 and 8 and in the upper parts of the east wall in room 18. Hydraulic mortar can be found wherever waterproofing was required: in channels and pools. Gray lime mortar with charcoal was found to correspond to the later phases of occupation of the house. More research on the mortar can provide a tool for differentiating successive stages in the architectural development of the house.

¹⁴ Report contributed by M. Mrozek.

PROGRESS REPORT

The effort of six seasons of preservation and conservation work on the ensemble of houses H 10, 10a, 10b, 19, and 9, now joined into one area, has clarified to a considerable extent the functioning of a large part of the ancient town. This residential district of ancient Marina, very complete and homogeneous, can very soon be ready for access by visitors, following a tourist itinerary that will lead along the ancient streets, proceeding from houses H 21, 2 and 1 to the

complex H 9, 10, 19, and passing by the main town square and the adjacent public buildings, like the baths and basilica. These ruins should also undergo basic conservation. The central square, being a very picturesque monument, can easily become a very interesting part of the tourist visit. It needs conservation intervention, however, including conservation of the inside structures of the portico, such as benches, portico walls and lower parts of columns.