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MARINA EL-ALAMEIN POLISH-EGYPTIAN RESTORATION MISSION: CONSERVATION WORK IN 2008

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with

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Abstract: Current conservation work, covering clearing under archaeological supervision, architectural inventory and study of the remains, conservation, restoration and anastylosis of architectural elements and decoration (columns, bench) where applicable, was carried out on houses H1 and H2, the southern portico of the main town square and a bath to the south of this square. The archaeological section includes a more detailed discussion of the glass finds.

Keywords: Marina el-Alamein, conservation, stone architecture, Hellenistic and Roman Egypt, archaeology, Roman glass

Being unable to fill the officially approved program for work in the 2008 season owing to shortages of workers and building materials, as well as to circumstances beyond the mission's control, the conservation team concentrated on carrying out a substantially reduced plan covering houses H1 and H2, and the southern portico of the main town square, ensconced between two complexes of baths, that is, complex no. 3 uncovered earlier to the north and no. 4 excavated by a team from the Supreme Council of Antiquities for the ARCE-EAP Marina el-Alamein Site Presentation

project in 2006 and 2007. The latter structure had been inventoried by the mission last year and now protection and partial reconstruction measures were undertaken at the request of the SCA to save the relics of hypocausts, walls with remains of *tubulaturae* and marble revetment.

Building conservation was limited to what could be done with materials bought by the mission from extra budgetary resources; difficulties in the provision of appropriate materials by the responsible party on the Egyptian side made more extensive work impossible.

RESEARCH, BUILDING, CONSERVATION AND RECONSTRUCTION IN THE 2008 SEASON

Preparatory work included further clearing of houses H1 and H2, the southern baths (no. 4) and the area of the wall bench in the southern portico of the main town square. Some of this clearing was simply maintenance cleaning designed to restore the state from the previous season. In other cases, it was practically a salvage excavation, especially of the southern baths (excavated in 2007 by an SCA team headed by site director Abdel Latif el-Wakil), where the intervening winter season had damaged considerably the remains of hypocausts and wall marble revetment with *tubulaturae* in rooms 6 and 7. Room 4 with its fairly well preserved inner portico could have constituted a basilica *discoptera* type of architectural arrangement with shaded porticoes surrounding an open central

area. Since much of the second type of clearing concerns previously undisturbed archaeological deposits yielding rich archaeological assemblages, the work was done as usual under strict archaeological supervision (see below). Archaeologists are also responsible for the testing that is occasionally needed in the various features in order to clarify building phases essential for proper building conservation and reconstruction.

Conservation and reconstruction methods applied in Marina el-Alamein have remained unchanged over the years (Medeksza 1996; 1997; 1998; 1999; 2000; 2001; 2002; 2003; 2007; 2010; Medeksza *et alii* 2004; 2005). Progressive wall erosion in the form of crumbling joints, powdered stone and water infiltration of the wall

Team

Dates of work: 4 April–3 June 2008 (actual building work 13 April–25 May 2008)

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SCA representatives: Boutros Dioskoros (Marina Site Director), Ahmed Musa (Director for Conservation Affairs), Husain Nur El Din Husain (SCA Inspector)

Architects: Dr. Rafał Czerner (Wrocław University of Technology), Wiesław Grzegorek and Małgorzata Krawczyk-Szczerbińska (both freelance)

Restorers (stone and sculpture): Piotr Zambrzycki (Inter-Academy Institute of Conservation and Restoration of Works of Art), also acting as photographer, Joanna Lis (National Museum in Warsaw)

Archaeologist: Dr. Grażyna Bąkowska (University of Rzeszów)

Glass expert: Renata Kucharczyk (PCMA)

Pottery expert: Dr. Grzegorz Majcherek (PCMA)

Acknowledgments

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structure entails continuous maintenance jointing and wall rebuilding, including introduction of new courses on top. Especially the wall tops need to be consolidated and properly protected.

For practical and protective reasons, the mortar used is lime mortar mixed with a small share of white cement (regularly six parts sand to three parts lime and no more than one part white cement).¹

The sub-standard quality of mortar used in building conservation works (resulting from lack of permission to use a concrete mixer for mixing mortars) continues to pose a serious problem. Improper proportions and potential contamination are reflected in the changing coloring of joints and wall tops, as well as patches of spot salt efflorescence and unwanted superficial cracking because of excess cement added contrary to mission recommendations.

The stone used for patching and filling in losses of ancient substances is original ancient building material recovered from the rubble. New stone is used sporadically for specific architectural features.

Technical and aesthetic reasons continue to stand in the way of immediate preservation of surviving wall render and painted wall plaster. Unable to institute proper technical facilities without considerable financial expenditures, the mission protects the perishable mud mortar from being washed out from wall joints by capping them with lime and lime-cement mortars. Other protective substances, which could be used in these instances, are extremely expensive. Architectural

features, like bases, column drums, capitals and fragments, cornices and decorated niches etc. are completed most often in new stone. Shortages in quality stone for reconstruction purposes have limited in recent years the amount of work done by stone restorers in this respect.

[SM]

BUILDING-CONSERVATION WORK IN HOUSE H1

The southwestern part of the enclosure wall, encompassing the south and west walls of Room 27, which are at the same time the outer walls of the house [*Fig. 1*], continued to be reconstructed, building up now on the foundations and lower courses laid already in 2006 and 2007 — three courses in the south and five in the west (using blocks 0.30 m wide). By the same, the corner of the house has finally been raised high enough to become visible in the surrounding area [*Fig. 2*].

The reconstruction of the foundation of the northeastern corner proceeded in preparation for the restoration in the future of the north wall, which was presumably the main house facade. Both the northern and eastern facades have been recognized in the record, and only this corner had been lost during the original building works in 1986 when the site was discovered. The building technology of the foundations was also clear, consisting of a broken-stone wall in mud mortar laid in a narrow trench [*Fig. 3*] and the space between the stones and trench wall (approx. 0.15 m) packed with mud (possibly also mud-brick) and

¹ The use of white cement in the mortar to counter the poor quality of locally available lime has already been presented in detail in earlier reports for the SCA and in published reports in *PAM*, starting from 1995. The ancient building method applied in Marina cannot be reinstated due to the impermanence of the mud and mud-lime mortars and sub-plaster ground made also of clay, that was used in Marina.

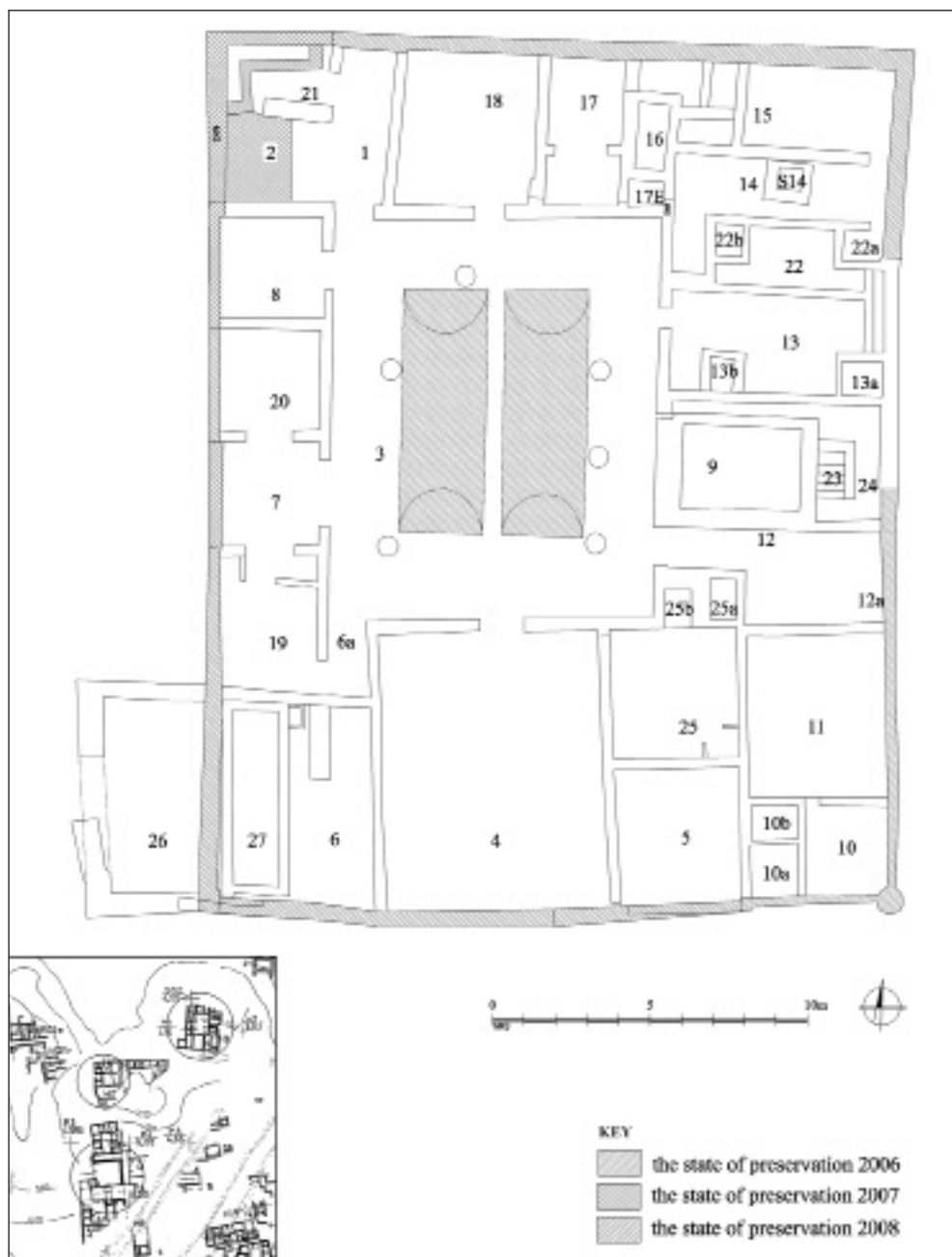


Fig. 1. Plan of house H1 showing stages of preservation works; inset, localization of the house on the town plan (Drawing M. Krawczyk-Szczerbińska; updated plan PCMA archives)



Fig. 2. House 1, southwestern corner before (top) and after conservation in 2008, view from the northwest (Photo P. Zambrzycki)

covered on top also with a layer of clay approx. 0.05 m thick. Courses of stone blocks, placed transversely to the line of the foundation, were raised on top of this until the level of the wall footing had been reached. The walls themselves were constructed of stone blocks 0.30 m thick laid lengthwise to the line of the wall.

The foundation of the northeastern corner was rebuilt of broken stone but bonded in lime-cement mortar (not mud mortar as originally) to a height of 0.30 m and on top of this two courses of transversely laid stone blocks were introduced [Fig. 4]. At the western end of the reconstructed section of the north



Fig. 3. Foundation of the northeastern corner of House 1 after clearing for conservation, view from the west (Photo P. Zambrzycki)



Fig. 4. House 1, northeastern corner after restoration in 2008, view from the northeast (Photo P. Zambrzycki)

foundation wall, a damaged section of a northward-emptying sewage canal cutting through it to drain rainfall from the courtyard was reconstructed.

[RC]

CONSERVATION IN HOUSE H2

Since 2005 inventorying and conservation have been carried out on the remains of house H2, which lies between the H21 complex to the northwest and house H1 to the east. This season rooms 14a (part of the portico courtyard) and partly 16 were cleared of drifted sand. Building-conservation work could not be completed, however, for a variety of internal and external reasons.

[SM]

BUILDING-CONSERVATION WORK IN THE SOUTH PORTICO OF THE MAIN TOWN SQUARE

The architecture of the southern portico of the main town square (forum) started being conserved in 2006 and was continued on a broader scale in 2007 [Fig. 5].² The work included the stone benches, beginning with the section in the portico exedra in the center of the south wall and encompassing the part by the south wall to the west of this exedra. Three columns of the southern row of the portico, located at the extreme west, were raised, two to full height and the third to mid-height. The engaged column at the extreme west end of the northern row of columns in the portico facade was also reconstructed in its lower part (Medeksza 2010: 88–91, Fig. 7).

The present work started with an anastylosis of the original elements from the collapsed back wall of the portico east of the exedra in the center. The reconstruction proceeded concurrently with the conservation of the broken stone bench by the wall, which had to be dismantled for the purpose.³ The raising of the third column of the southern row, which commenced in the previous season, was now completed and the corner southeastern column of the portico ending the south wall on the east was also erected. The bottom parts of a few other columns in this row of the portico were also restored partly with new elements, the process being regulated by availability of preserved shaft drums. Once the conservation of bench elements was completed, the benches were put back in place.⁴ The surviving parts of the exedra reveals and the wall of the portico next to them were completed and preserved in place.

The collapsed wall in the eastern end of the portico was cleared under archaeological supervision, particular elements marked and the original arrangement reconstructed [Figs 6, 7]. Two building phases were recognized in the process. The western section of the wall, which was 3.49 m long, was erected first, followed by the section further away from the exedra, only 0.95 m long, built to adjoin the southeastern corner column of the portico. This narrower section of the wall must have once contained a slab, possibly decorated or inscribed, set into a carelessly cut niche on the back, that is, southern,

² The first conservation interventions date back to 2001 (Daszewski 2002: 81–86, Fig. 10) and 2004 when artist restorer Małgorzata Ujma preserved the plaster in the central exedra of the portico.

³ The preserved stone benches were conserved by artist restorer Joanna Lis, the missing sections were restored by artist restorer Piotr Zambrzycki.

⁴ Original elements of the benches were reconstructed in place by Piotr Zambrzycki.

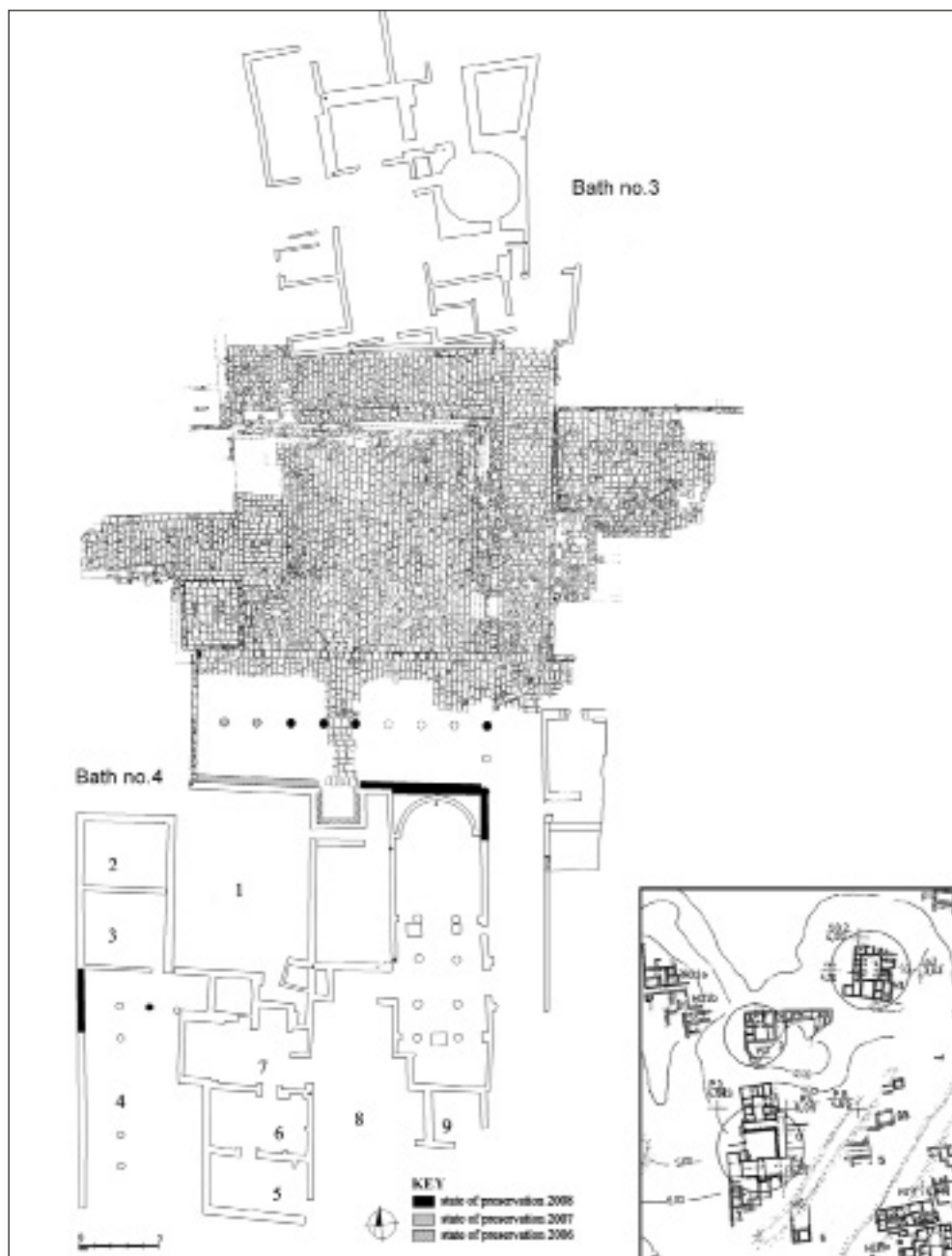


Fig. 5. Plan of the main town square and bath complexes: no. 3 to the north and no. 4 to the south (Plan M. Krawczyk-Szczerbińska, after J. Dobrowolski, A. Błaszczuk, updated, PCMA archives)



Fig. 6. Back wall of the south portico in the main town square, state before preservation with arranged elements of the collapsed columns (top) and close-up of the eastern end of this wall and the bench during clearing of debris (Photos P. Zambrzycki)

side of the wall. The building of the civic basilica in the next phase presumably led to this slab being removed. At this time the gap between the two sections of wall was completed and raised higher than the part which previously held the slab. The wall face was plastered at least twice, relics of both coats being preserved *in situ*. The older coating still bears evidence of the outlines of panel decoration (at a height of about 1.64–1.86 m originally), composed of a double horizontal band, part of a circle and radiating lines.

The relics were studied and restored in position, the arrangement reconstructed in the course of raising this section of the portico back wall [Fig. 8]. Original elements were replaced in position with only sporadic additions of blocks that

came from the collapsed wall but could not be placed surely in the original bond.

The section of wall at the east end of the south back wall of the portico was already in the earliest phase (with the niche for a slab in the back side) attached to the southeastern corner column of the portico. It must have blocked a part of the portico which could have been initially open also to the south. The three lower drums of this column had been preserved standing (height approx. 1.18 m) and the column was now raised to full height, that is, eight drums were added and a pseudo-Ionian capital on top. The standing lower section of the shaft was leaning out excessively to the east, but no effort was made to straighten it in order not to damage the well preserved plastering on the shaft and base. The restored drums



Fig. 7. Back wall of the south portico in the main town square after clearing of rubble and sand (Photo P. Zambrzycki)

starting from the fourth up were placed in their proper position.

The bottom parts of reveals and some of the blocks in the upper parts of the adjoining walls were heavily eroded and required patching and even replacement in two cases. The reveals themselves were partly restored and two courses were added for height, reconstructing the original profiling of the jambs.

With regard to the wall bench, once the slab seating and lion-paw supports were conserved (see below), they were rebuilt in position. The one missing seat (second counting west from the exedra) was reconstructed. Two of the supports, which were the most eroded, were also replaced. Fortunately, all of the supports had been found in place, leaving no doubt as to

their position. The seating had also been discovered *in situ* and the arrangement was followed strictly in the reconstruction. Since the pavement in the portico has been disturbed, the benches are not horizontal but follow the irregularities, that is, depressions and rises in the floor level.

All of the said rebuilding and restoration was carried out using a sand, lime and cement (parts 3:2:1) mortar.

[RC]

COLUMN ANASTYLOSIS

A number of columns in the southern portico of the main town square and the portico of the baths (no. 4) underwent the process of anastylosis.

The double portico on the south side of the main town square had been erected



Fig. 8. South portico of the main town square with the back bench, after restoration in 2008
(Photo P. Zambrzycki)

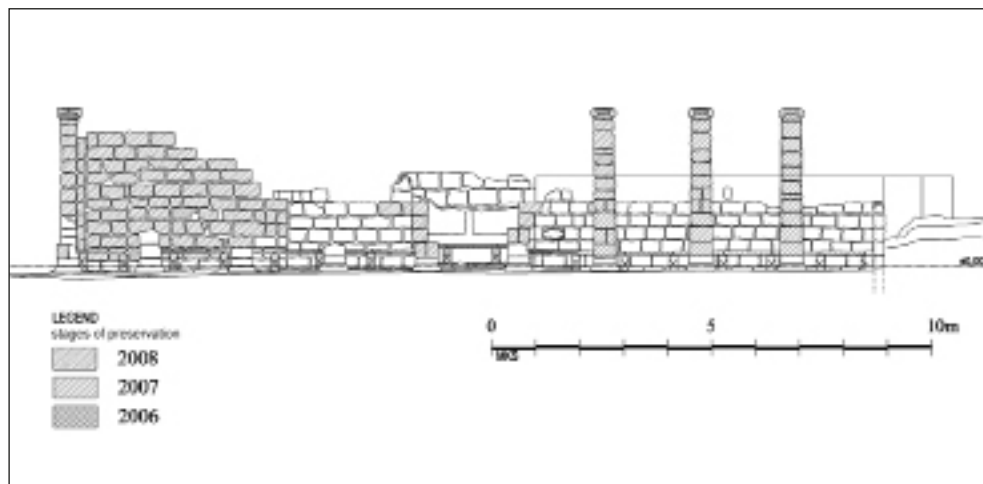


Fig. 9. *Anastylosis of the columns and back wall in the south portico of the main town square*
(Drawing M. Krawczyk-Szczerbińska)



Fig. 10. *Columns of the south portico restored, view from the northwest*
(Photo P. Zambrzycki)

in the pseudo-Ionian order common in the Marina el-Alamein region [Figs 9, 10]. Column height, according to a study by the discoverer Wiktor A. Daszewski, was about 3.60 m (Daszewski 2005: 86; 2007: 88–90), composed as a rule of a base, eight to nine drums from 0.28 m to 0.35 m high, and a capital in a style resembling the Ionian order. A soft limestone was used for these pieces of the architectural order. The bottom drums were usually made up of two half-drums joined vertically. The bottom drums were 0.50 m in diameter, the upper ones 0.43 m. The columns were all coated with lime mortar render and plaster with relief fluting.

The third column from the west in the southern row, partly erected during the previous season, was now raised another five drums (each 0.28–0.32 m high) and a flat drum (0.11 m), topped by a pseudo-Ionian capital, taken from the rubble filling the portico and now conserved and restored.⁵ A single drum was erected on the base of the next column (height 0.51 m above the stylobate) in preparation for further work. None of the other columns in the portico could be reconstructed either fully or to a substantial height for lack of preserved constituent elements. In order, however, to clear the area of the portico and clarify its layout, some of these columns were reconstructed to the height of from one to four drums above the base. In a number of cases more than one drum was preserved in place. Those directly on top of the bases were in most cases the most eroded and degraded, and had to be replaced or completed with new elements. The reconstructed drums were cut from limestone as halves, following in this the

ancient procedure for the lower parts of column shafts. Usually only one half of the lowermost drums needed replacement. The bases were all original, preserved in good condition and requiring only consolidation and strengthening of the substructure. Four drums (about a third of the height, that is, 1.51 m) of the easternmost column in the middle row were thus put together to await anastylosis, as were two drums (0.78 m in height) of the easternmost column in the northern front row (fifth counting from the corner).

Since only the bottom parts of columns, that is, bases and lowermost drums have been found, the broken elements, even though they have been preserved, had to be replaced with new, reconstructed elements. The upper parts of the columns were reconstructed of mostly original elements preserved in fair condition, as follows:

South portico of the main town square

– column third from the west: upper parts from other columns in this portico, moved here to protect them and enable their display;

– fourth column base from west: first drum composed of two new halves placed on top of the base;

– easternmost column in southern row: four original drums up to a third of the column's height;

– easternmost column in the northern row in the facade: two drums preserved *in situ* in mortar.

Bath portico

– middle column in northern row: base with one drum in situ, now topped with three well preserved drums.

A lime-cement mortar was used for joining the drums (3 parts sand : 2 parts

⁵ Conservation carried out by Piotr Zambrzycki.

lime : 1 part cement), the cement being CMB Sinai class 35 white cement.

Drums were mounted with the aid of wooden wedges. Surfaces were first cleaned and soaked with water; then elements were positioned in place and plumbed, after which a thick elastic mortar was poured into the joints and voids and tamped down with wooden paddles until the space was filled completely. Joint surfaces were recessed 3–4 mm from the drum surface and were left unsmoothed (matt coloring after partial hardening of the substance). Preserved fragments of ancient plaster were attached with a lime-cement mortar of liquid consistency, made from finely sifted sand of 0.5 mm fraction.

The higher parts of columns were mounted with the aid of steel pipe scaffolding (frames 106 x 200 cm) and a Japanese-produced VITAL chain winch with one-ton capacity.

[RC, WG]

BUILDING-CONSERVATION WORK IN THE INNER PORTICO OF THE SOUTHERN BATH

A large part of a bath installation to the south of trenches excavated by the Polish Archaeological Mission directed by W. A. Daszewski (2007: 76–83, Figs 1, 8) was dug by Egyptian archaeologists in 2006–2007, during two seasons when the PCMA archaeological mission was can-



*Fig. 11. General view of the south bath portico (unit no. 4) before conservation
(Photo P. Zambrzycki)*

celled due to formal obstacles. Once the digging had stopped, the Polish–Egyptian Preservation Mission embarked on a preservation of the remains in keeping with its long-term program and work objectives.

The architectural relics were measured and inventoried in 2007 (Medeksza 2010) [Fig. 11]. This season, a distribution plan of blocks was completed in preparation for clearing the tumble from the portico. Particular elements of columns, cornices and walls were assigned to their original positions. The area started being cleared for a conservation and preservation project. The proportions of size of portico elements, particularly the pseudo-Ionian columns, were also determined and reconstructed. The capitals had a base diameter of 0.39 m; the shafts above the base measured 0.44 m

across and the column height was equal to seven such diameters, that is, 3.08 m. They were not very slender. Typically for Marina, the entablatures had wooden architraves (no stone beams have ever been recorded) and no friezes, and they were topped by an Ionian dentil cornice.

The cleaning and conservation–preservation program started from the north-western corner of the portico [Fig. 12]. The positioning of columns in this part was determined as composed of three columns along the north wall. Two building phases were distinguished. Conservation objectives called for protecting the crest of the west wall in its northern half. The three most eroded blocks from the topmost preserved course were replaced and two more courses added in the northern



Fig. 12. Northwestern corner of unit no. 4 of the south bath portico after clearing in 2008
(Photo P. Zambrzycki)

section, consisting of five original blocks found nearby. Three of the column drums from the northwestern corner column of the portico were also rebuilt in position.

[RC]

CONSERVATION OF STONE

ARCHITECTURAL FEATURES

FROM THE MAIN TOWN SQUARE

Conservation objectives assume protection of the ancient substance and reconstruction of the original arrangement of the architecture of the main town square in keeping with the program for displaying the town's architecture while following set principles of conservation.

The stone elements of the bench along the back wall of the south portico were found to be in extremely poor condition. Factors, such as erosive climatic conditions, earthquake-related mechanical percussion and the technical parameters of the stone used for making these elements all contributed to the damage of the surface rock structure. The limestone is characterized by low hardness and extreme porosity, coupled with a laminar inner structure. The outer surface is made of hard, occasionally thick patina, which leads to the weakened parts being either washed out or tending to crack. Humid conditions of deposition increased the tendency for rapid surfacing of mineral salts, a process which leads to powdering and peeling of the stone surface. The seating slabs were also heavily cracked and broken, presumably as a result of the cataclysmic earthquake which destroyed the town. It is viable that some intentional damage of the architectural features of the peristyle square occurred already after this part of the town had been abandoned by its inhabitants.

Once standard documentation procedures for the benches along the south and east wall of the portico had been completed, the area was cleared of underlying fill, recovering from the rubble fragments of the stone seating slabs and uncovering the bench supports in their original position (two of the supports had been displaced by movements of the substructure). Fragments of seating slabs were fixed together with an adhesive mass based on KEMAPOXY 150 epoxy resin of CMB Egypt manufacture, using stainless steel rods (10 x 250 mm). Minor losses around the cracks were filled with mineral putty produced by Keim, matching the background in color and texture.

Two of the bench supports turned out to be damaged to such an extent that they could not be presumed to serve their structural function. Copies of these elements were made in new material (Heluan limestone). One seating slab was reconstructed from stone found out of archaeological context.

The next stage was the mounting of the benches in their original position. A lime-cement mortar was used for the purpose, jointing being made only at the point of contact with the paving of the portico. The gap between the bench supports and seating and the backing wall was left unfilled, mainly because of the distance from the wall (5–8 cm) as a result of displacement related to substructure movement. This solution also avoided rainfall from gathering on top of the seating slabs. It has also proved its effectiveness on the parts of the benching conserved in the previous season in the southwestern part of the portico.

Conservation and reconstruction also concerned the reveals of the entrance to

the exedra in the southern portico of the main town square. These were now rebuilt to a height of approximately 1.80 m. The washed out parts of the lower frame were patched with stone demonstrating similar characteristics as the original material.

The last stage of conservation of architectural features was a partial coloristic unification (limited to the reconstructed fragment) with paint containing mineral pigments.

[PZ, JL]

ARCHAEOLOGICAL SUPERVISION

Archaeological supervision was connected strictly with conservation activities undertaken in particular architectural features.

HOUSE H1

The rebuilding of the northeastern corner of the outer enclosure wall required cleaning of the foundation, which had been cleared already in part along rooms 14, 15, 16 and 17. The section of the north wall cleared and reconstructed this year, extending from the actual northeastern corner to the channel in Room 17, measured 10.34 m. The east wall was cleared over a distance of 7.13 m, from the corner to Room 22.

The northern section consists of nothing but the foundation (0.66 m wide) made of small irregular stones. Courses of limestone blocks had been placed. Whole and fragmentary mud bricks, as well as just clay, seem to have been packed into the space between the stones and trench wall on both sides. This was either reinforcement or remains of another building phase. Mud was also used for the mortar. Potsherds intrusive in the foundation wall structure have dated the origins of this architecture to the turn of the 1st century BC.

The channel in Room 17 (0.20 m wide, 0.30 m high) runs through the center of the room, presumably draining water from the courtyard and emptying it some-

where outside the house. The fill inside the channel contained potsherds, small oil lamp fragments, glass shards, animal bones. In a later phase of the building the channel was blocked with a stone built into the outer wall.

The paving in Room 17 is missing flagstones for a distance of approximately 0.65 m alongside the north outer wall. The distance between the foundation and the pavement in Room 17 is 0.97 m, in Room 16 from 1.31 m to 1.65 m, in Room 15, 1.48 m. The fill here consisted of pure sand with small quantities of potsherds, glass, animal bones, as well as four corroded bronze coins. Testing under the pavement will have to wait until the next season when the outer wall will have been rebuilt. A dark compact layer of earth can be treated as the building level of these foundations. It contained a small pottery vessel [*Fig. 16*], a glass bead, glass fragments and potsherds.

The foundation of the wall between Rooms 17 and 16 with the staircase to the upper floors of the house does not reach the outer house wall. It could be from a different building phase. The wall in Room 16 stood on a foundation of small-size broken stone connected with the outer wall. The paving in the unit with the staircase was missing in a section 1.06 m to 2.00 m wide next to the outer wall, suggesting the presence of a passage leading to the steps.

The foundation of the west wall of Room 15 was constructed of three big stone blocks (height 0.95 m) erected on top of small stones and mud brick. The connection with the outer house wall is unclear due to heavy destruction in this part of the building. The room was 2.53 m by 4.83 m in size.

The foundation of the east wall in the section cleared this year was found to be in better condition. Flush with Rooms 14 and partly 15, large stone blocks have survived, standing on top of small-sized broken stone. There were two channels in Room 14, one by the north wall, the other by the south wall. The northern channel starts 0.57 m from the well. Its depth is 0.90 m, its width is somewhere between 0.33 m and 0.55 m, but it is too damaged for more precise determination. Traces of mortar and large quantities of pottery were found inside it, the nature of the pots supporting its identification as a latrine. The fill also contained animal bones, small shells, and a fragment of a bronze netting needle. Assuming it was indeed a latrine, its nearness to the well comes as a surprise, requiring further study. It would thus make for two latrines in the house, the other one being located in the northwestern corner (reconstructed in the 2007 season). The other channel in Room 14 lies 0.70 m south of the latrine. Its depth is 0.41 m, its width 0.40 m. It is also not connected with the well and presumably leads into the courtyard.

House H1 was rebuilt repeatedly, but two phases are in evidence foremost: from the 2nd–3rd century and from the 4th–5th century, both supported not only by architectural studies, but also by expert examination of pottery and glass.

Compact earth found outside the house wall, level with the wall footing, could be the original building level for the outer enclosure wall. It yielded two bronze coins, unfortunately too corroded for identification and dating, together with the standard set of potsherds and glass fragments.

HOUSE H2

Clearing of the courtyard (unit 14) and Room 16 was continued; work also started in Room 17. The walls in this house are preserved to a height of 0.40–0.50 m. The courtyard after rebuilding in a later phase was subdivided into Rooms 14a and 14b. Both units preserve evidence of stylobates under columns, running parallel to the east and west walls. Initially, it had measured approximately 7 m by 7 m. The later partition walls were haphazard with little care given apparently to the regularity of the sub-units thus created. The northwestern part of the courtyard cleared this year contained a small unit, 2.35–2.15 m wide and 3.15 m long. Concealed under drifted sand in this section was a hearth (1.60 m by 0.90 m in size) constructed of stones, mud bricks and tamped clay. Two fragments of a small limestone column were found by the north wall (Dia. 0.20 m and 0.26 m, H. 0.25 m and 0.51 m respectively). Traces of such a small column having been mortared to the floor were discovered in Room 17. The hearth lay some 0.05–0.10 m above the paving in the room. Contextual finds included frying pans and other pottery and small glass fragments. The assemblage from clearing the actual pavement consisted of potsherds, four heavily corroded small bronze coins, copper-alloy nail fragment and copper-alloy earring [*Fig. 16*].

The north wall of the courtyard appears to have contained a double door, later blocked with stones. The wings of the doors were each 0.67 m wide, the wall between the two openings being 0.70 m thick.

Room 16 was found to be irregular in plan (3.48 m by 1.20–1.40 m). A small unit was distinguished in the western end (1.53 m by 1.20 m), where a hearth was found, made up of a few small stones and surrounded by burned ground. Contextual finds included pottery, glass, small shells, half of a bone pin, piece of bronze and large quantities of bone. A small ceramic bowl from the end of the 4th and beginning of the 5th century was found on the pavement by the wall of the sub-unit. This could indicate an *ante quem* date for the rebuilding, which would have included the sub-units in the courtyard.

SOUTH PORTICO

IN THE MAIN TOWN SQUARE

Additional clearing of this feature, which was excavated in 2004–2005 by the archaeological mission directed by Wiktor Andrzej Daszewski (Daszewski 2005: 86–92; 2007: 76–90), concerned the wall bench which was now prepared for conservation and restoration.

The area between the apse of the civic basilica and the back wall of the portico was also cleared, the work being connected strictly with the mission's conservation program. The next course of blocks from the portico was observed under the big blocks of the apse wall. They bore evidence of burning on the side from the basilica. A shallow niche, 0.65 m wide and 0.09–0.10 m deep, was also noted on the south side of this portico back wall. Clearing of the tumbled blocks of the portico wall uncovered a small hearth, fragmentary pottery and ashes. The rubble of the

portico lay on a layer of compacted sand 0.20 m thick, superimposed on a layer of burning 0.06 m above the pavement and a layer of thick, dark, silty soil 0.02 m above the pavement.

Clearing of the four benches in the east end of the portico revealed the distance between supports to be between 0.64 m and 0.98 m, the length of the seating slabs between 1.04 m and 1.21 m, the thickness of supports 0.16–0.18 m. Traces of burned wood, pottery, half of an oil lamp, small glass fragments, pieces of marble tiles, animal bones, small shells and a bronze nail fragment were discovered in the layer of compacted sand under the benches.

More clearing work was carried out west of the apse of the civic basilica, between it and the wall of the portico. The wall of the apse has been preserved to a height of 1.25–1.20 m, below it is the foundation, 0.66 m high, and stones reinforcing the foundation. Between the stones there is evidence of mortar with fragments of burned wood. The fill, reaching 0.35 m below the level of the floor in the portico, could not be dated by the assemblage. The layer of debris, 0.60–0.80 m thick, contained pottery, chunks of mortar and brick. Compact sand, starting approximately 0.10–0.15 m below the apse foundation and going down 0.70 m also yielded non-diagnostic pottery and mortar.

NORTH PORTICO

IN THE MAIN TOWN SQUARE

Poorly preserved remains of four benches counting from the east were cleared. The distance between bench supports measured 0.90–1.10 m; the supports were 0.16–0.19 m thick (the third one is missing), their height was 0.35 m. The assemblage from the fill included small fragments of pottery, glass and a fragment of iron nail.

PORTICO IN THE SOUTHWESTERN PART OF THE SOUTHERN BATHS AND UNIT 4
Excavations carried out by the SCA for the ARCE–EAP site presentation project uncovered this feature, which upon SCA request was now subjected to conservation. The west wall of the portico located in this part of the structure was rebuilt, requiring clearing work to be done in the immediate vicinity. The wall was constructed of big blocks of stone. The northern part of the portico cleared this season was 8.04 m wide at this point. The north wall, 2.70 m from the eastern end, was pierced with a doorway, which measured 0.97 m in width.

The blocks in the portico wall lay on a layer of clean sand and approximately 0.20 m below that, a layer of ashes. The

northwestern corner held evidence of an oven, measuring 0.84 m by 0.89 m, 0.40 m high, built of stones, baked brick, mud brick and clay directly on the pavement. Traces of murals could be seen on the wall behind the oven in the corner. A hearth was found just west of the oven, a patch of gray earth surrounded by small stones, approx. 1 m by 1.20 m in diameter [Fig. 13]. About 2.30 m from the west wall of the portico a row of stone blocks 0.34 m wide formed a small sub-unit, 1.53–1.20 m in size. Another big hearth stood in the northeastern corner [Fig. 14]; it was constructed of stones, mud brick and baked brick, all bonded with clay. It was approx. 1.10 m in diameter, about 0.60 m in height. Another hearth, constructed in a similar manner, approximately 1.00 m in diameter



Fig. 13. Oven in the northwestern corner of unit 4 of the south bath portico
(Photo P. Zambrzycki)

and 0.40 m in height, was found west of the previous one, immediately by the doorway.

The assemblage from this architectural feature included pottery sherds, glass fragments, including window panes, fragments of bricks, burned bones, small shells, marble tile pieces, painted wall plaster fragments and a piece of big iron nail and two pieces of a bronze needle.

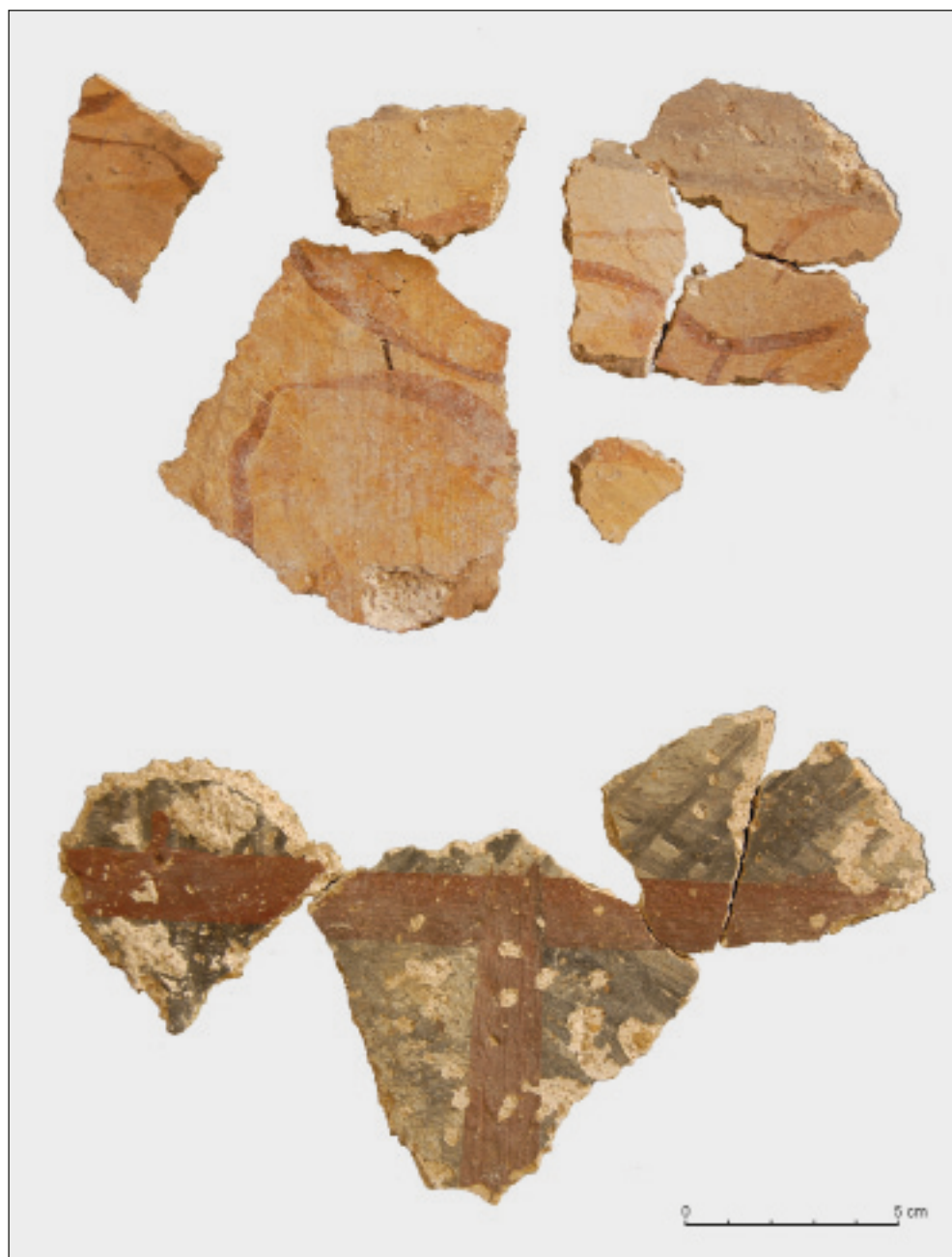
The north portico had three rows of columns. These were plain without fluting on the surface, similarly as in the apsed chamber. Stone paving slabs were preserved in the courtyard. The stylobates under the columns were 0.50 m wide. The north portico was 2 m wide. The first column in the row was 1.80 m from the west wall (bottom base diameter 0.60 m, preserved height 0.90 m). The next (preserved height 0.89 m) was 1.20 m from the third

(preserved height 0.54 m), which was in turn 1.10 m from the fourth and last, standing just 0.06 m away from the east wall. This part of the portico must have undergone modification at a later date. At a distance of 2.05 m from the north wall, the portico narrows by approximately 1.70 m. On the other, eastern side, there is a water basin. Next to the paving in the eastern end of the portico, 0.27 m from the south wall, there is a stone-covered channel running east-west, which could have passed through the east portico wall where there is one of the bath chambers. It appears to be in use simultaneously with the oven and hearths, which date to the 4th–5th century.

A small test trench checking the height of the stylobate foundation was excavated between the first and second column



*Fig. 14. Oven in the northeastern corner of unit 4 of the south bath portico
(Photo P. Zambrzycki)*



*Fig. 15. Plaster fragments representing the first (top) and third phases of wall decoration
(Photo P. Zambrzycki)*

in the first row. The western side of the stylobate bore traces of red wavy lines. The next floor appeared at a depth of 0.70–0.60 m; the foundation of the stylobate rested upon it. Large quantities of pottery, mainly amphorae of rather early date, and plaster fragments including painted ones, burned bones and a bronze hook were found in the fill.

There is evidence for three stages of wall painting in the portico, the decoration

appearing on successive coats of plaster. The first one was white (1); the second was painted with marbling decoration in brown on a cream ground (2); this was followed by another coat of plaster with dark gray lines and a fragment of red band on a light gray ground (3), then a white coat again (4), then light gray with a dark gray ornament on it (5). The last coat was white again (6) [Fig. 15].

[GB]

GLASS FINDS

Cleaning work carried out in houses H1 and H2 yielded only a few glass finds. The recorded material represents well-known types of free-blown vessels characteristic of the 4th–5th century AD, previously attested in these two houses. They include undecorated, deep, thin-walled bowls with inward-folded, looped rims [Fig. 17:1–3]; bottles with a thickened base and a single

trail, slightly flattened to ensure a stable base, added around the basal edge [Fig. 17:4] and conical lamps, the most common shape of vessels attested in these two houses last season (Kucharczyk 2010: 116–117, 122–125, Figs 1:16, 6, 7:1–4). The latter are represented by a body wall topped with an S-shaped, cracked-off, unworked rim [Fig. 17:5–6]. All the vessels



Fig. 16. Selection of small finds from the excavations (from top): copper-alloy earring from H2 (see page 122); bronze coin (surface find) and miniature clay vessel (see page 121) (Photo P. Zambrzycki)

are fragmentary and badly preserved. Advanced black weathering, iridescence and flaking off surface did not allow either for a proper reading of the color or for a determination of wall thickness. In addition, also a few shards of cylinder-blown flat window

glass, 2 mm thick, were found. Parallels to this material come from recent excavations at the Kom el-Dikka site in Alexandria (Kucharczyk 2006; 2010a).

The limited glass material obtained during cleaning work in the bath portico

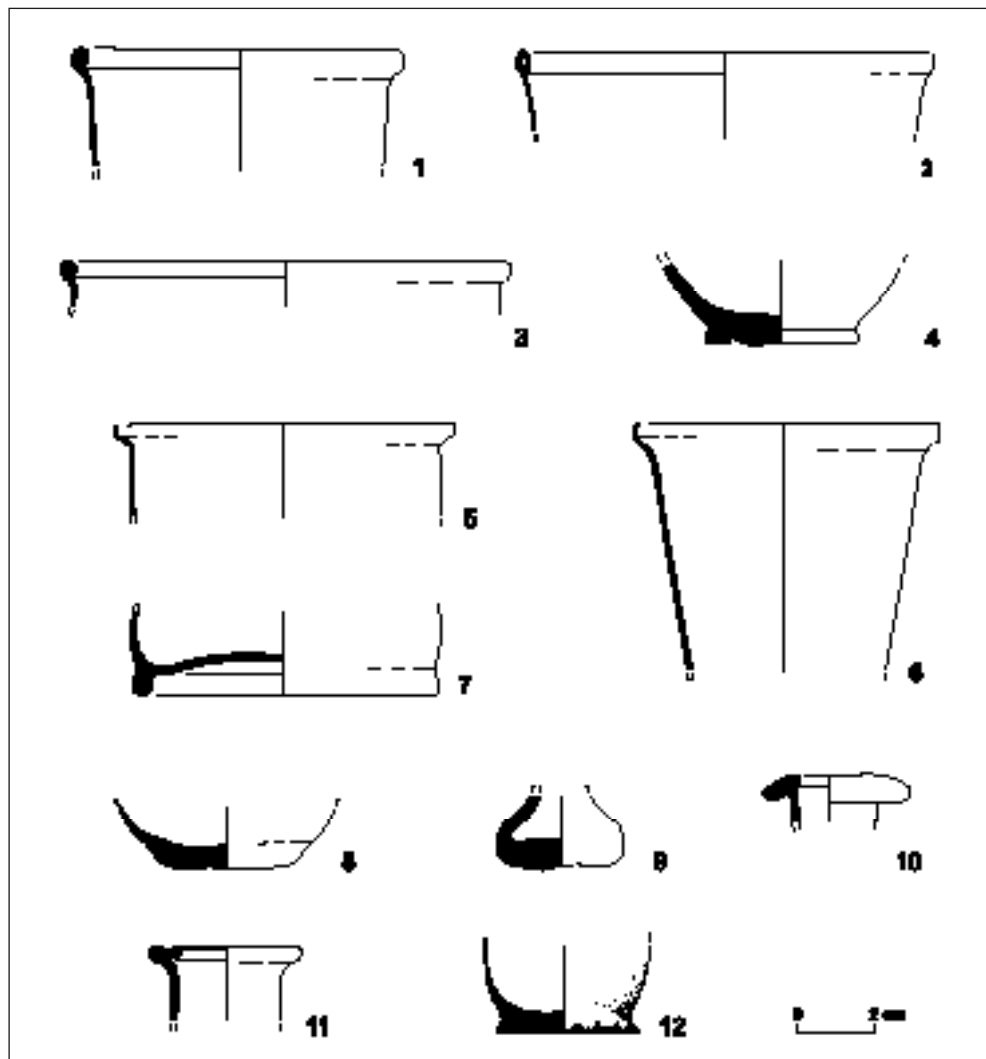


Fig. 17. Glass finds
(Drawing R. Kucharczyk, digitizing K. Juszczak)

located south of the main town square is for the most part of Early Roman date. Fragments of vessels made of colorless glass with a yellowish tinge include the base of a large bottle with a single applied trail around the edge [*Fig. 17:7*] and carefully made flat, thickened base with pontil scar and flaring walls. It belongs to a beaker or a cup apparently with cracked-off rim [*Fig. 17:8*].

Of special interest are fragments of flat windowpanes found in layers associated with the brick-made furnace, which was located in the northwestern corner of the portico. However, it is not to be excluded that they originated either from the bath proper or from the shop adjoining the portico on the north. The panes were apparently executed in the cylinder method. The original color is impossible to define owing to their state of preservation. The collected fragments show signs of heavy, black weathering and flaking off iridescence. However, there is no

additional evidence regarding the size and shape of the windowpanes, but presumably they came from rectangular or square panes, 2 mm thick. A few fragments preserve the original, cut edges. Also of great interest in these fragments is the fact, that they exhibit traces of adhesive mortar and a layer of glue (in the form of shades at the edges) which suggest that they had been affixed to a wood or stucco frame.

Surface sharding around the working area produced very few glass finds. They include fragments of a thin-walled indented beaker and two types of unguentaria, all of them attributed to the Early Roman period [*Fig. 17:9–10*]. The third type is represented by a neck with a wide folded-in rim, flattened on top. Such specimens are associated with the 4th–5th century [*Fig. 17:11*]. Yet another toilet specimen: thick and flat base with 22 irregularly spaced projections forming the base ring is dated to the 4th century [*Fig. 17:12*].

[RK]

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