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Eastern Jarash Project: 2023 Final Report

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EASTERN JARASH PROJECT

2023 FINAL REPORT



Edited by **Dr. Julie Bonnéric**

23/07/2024

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I. The Eastern Jarash Project's 2023 Campaign: Objectives & First results

Dr. Julie Bonnéric

The Eastern Jarash Project (EJP) was created in 2022 in the framework of a larger research program led by Julie Bonnéric at the Ifpo about the evolution of northern Jordan in the early Islamic period. This aimed to better understand the evolution of this ancient city from Late Antiquity to the end of the Abbasid period and to study the religious, social and economic transformations brought about after the Arab conquests through the emergence of a new power (for a state-of-the-art about Umayyad Jarash see the 2022 report, p. 6-10). The two first campaigns, in 2022 and 2023, focused on a building, building A or the House of the Hearts, located near the *cardo*, between the northern and the southern *Decumani*. This building had been partially excavated by the Department of Antiquities (DoA) during one campaign in 2001, but it was necessary to carry out a study and new excavations in order to identify it as a large urban residency which was probably built during the Byzantine period and occupied, with various modifications, up until the earthquake of 749 CE. Earlier and later phases of occupation of the area, not related to the building, were also identified.

The area of excavation was chosen in an attempt to identify the function of this building (about the choice of the study area see the 2022 report, p. 3-6) which may indicate the eastern limit of the city during the Umayyad period. The fact that the excavation of the Propylaeum church, north of building A, may have revealed a lime workshop (BRIZZI *et al.* 2010: 356-358) suggested that this was an artisanal area. In the Umayyad period, most of the workshops appear to have been on the periphery of the city so it seemed of interest to verify the artisanal function of the area as this could reveal the Umayyad city's eastern limit. However, it was more important to understand the building excavated in 2001 before opening any new excavations because this building seemed to be Byzantine and Umayyad but had not been published nor documented. This is why the first campaign focused on this building, which appears to link the area to a domestic function more than an artisanal one, suggesting the limit of the city was further to the east. This campaign revealed the potential of this building for understanding the evolution of domestic habits from the Byzantine to Umayyad periods as these may be studied thanks to the conservation of daily objects in context, under collapsed walls, as they were at the time of the earthquake in 749 CE. This is

why the EJP's first program focused on this building from 2022 and will hopefully continue to do so until 2025 at least.

1.1. Overview of the operations

The year 2023 enabled us to carry out a second excavation campaign, followed by different post-excavation operations. The results of the excavation and studies will be detailed in the present report, except for the results of the pottery study which is in progress (see the synthesis of the first results).

1.1.1. The field campaign

The second campaign took place from April 30 to May 25, 2023, with a team composed of four archaeologists (Abdelkareem Alhebeshan, Tareq Awwad, Julie Bonnéric and Ahmad Thaher), two architects (Emmanuelle Devaux and Etienne Coppé), two representatives of the Department of Antiquities (Eqbal Hamzat and Nawal Shawashreh) and eleven workers (Yarub Aatoom, Murad Abu Ayesh, Mohammad Abughazaleh, Ata Abu Rijl, Hani Abu Said, Naser Alsalman, Ja'far Etoom, Ali Katoom, Anas Mashaikha, Mohammad Obaidat and Ishaq Sayyaleh). Field training was organized for two young independent Jordanian archaeologists (Esraa Alatoom and Ayya Alshanawani), two young archaeologists from the Department of Museums of Kuwait (Seif Albutiban and Ahmad Althawadi) and one French student from the University of Poitiers (Solène Mathieu).

In the northeast corner, the excavation continued in **area 1** under the responsibility of Tareq Awwad with the assistance of Ayya Alshanawani. This work focused on sounding 3 to understand the relation between wall W60—the northern wall of room R1—and wall W1—the eastern wall of building A and room R1—and also to characterize the occupation north of room R1 better and understand if the building ran further north or if the room R1 was in its northeast corner. There was some disagreement between the area supervisor and the director of the excavation over the interpretation of the results. Both interpretations are detailed here, in the synthesis of the first results and in the area 1 report (see chapt. II).

A new excavation area, numbered **area 3**, was opened to the west of the excavation area. This was a large trench (19m E/W by 5m N/S) that was divided into four new soundings (numbered 1 to 4) which were excavated under the supervision of A. Alhebeshan with the assistance of E. Alatoom. The aim of this trench was to relate the excavated area to a store adjoining the eastern portico of the cardo—which had already been excavated—to determine

whether the courtyard building was open towards the stores of the suq or even connected to the store.

In the southwestern part of the excavation area, numbered **area 5**, three soundings were carried out (numbered 1 to 3) under the supervision of J. Bonnéric working with S. Albutiban, A. Althawadi and S. Mathieu. The aim of these soundings was to study the final modifications that had been made to the courtyard before the 749 CE earthquake and to complete the sequence of the area's occupation before the construction of building A. Getting dating elements from the layer just under the courtyard pavement was also a way of dating the building's construction. The excavation was also completed by the observation of the previous excavation that had been carried out in the area.

To the southeast of the building, a new area, numbered **area 4**, was opened further to the south in an attempt to delimit the southern limit of the building. The excavation of room R5, in **area 2**, was completed. These two areas were excavated under the supervision of Ahmad Thaher over 3 weeks, instead of 4.

The architects in the team drew all of the structures and walls which were discovered during the campaign and continued to draw the remains which had been excavated in 2001 by the DoA. The stone-by-stone plan should be completed in 2024.

1.1.2. The coordinate system issue

During the Eastern Jarash Project's first campaign in 2022, a local topographical coordinate system—which was independent from the Jordanian national system—was created by Arch. E. Devaux because we did not have the coordinates of the reference points used in Jarash by the DoA. In December 2022, Massimo Brizzi, the director of the Italian Archaeological Mission in Jerash kindly provided us with updated coordinates for various topographical reference points in Jerash that he had measured using differential GPS. Three of them were close to our working area.

During the 2023 field campaign, E. Devaux tried to use these three visible points to re-measure all of the points in our local system with a total station to transform the local system so as to include it in the Jordanian coordinate system and obtain altitudes which are comparable with those of other areas in the Jerash archaeological complex. However, the new coordinates provided by the Italian mission were a combination of data measured with differential GPS in 2022 and data from 1982. Due to this E. Devaux has not yet been able to recalibrate the entire EJP system, but she was able to manually recalculate the altitudes of our reference stations (table 1) for the level

measurements in relation to the measurements taken with the differential GPS. The topographical problem should be solved before the 2024 campaign.

Point ID	X in local system 2022	X in absolute system 2023
S1	99.297	602.30
S2	100.087	603.08
S3	98.524	601.52
S4	98.970	601.97
S5	96.368	599.36

Table I.1. The altitudes of the topographical stations in the local system (2022) and the Jordanian system (2023).

I.1.3. The post-excavation operations

Thanks to the DoA renewing their loan for the 2022 discoveries and issuing a loan for the 2023 discoveries, it was possible to start the study and conservation of the artifacts that were stored at the Ifpo. The **painted coating fragments** discovered in 2022 were studied from the end of May to the end of June 2023 by Solène Mathieu, an undergraduate student from the University of Poitiers. From mi-June to mi-August 2023, during her internship at the Ifpo, Clothilde Le Gallou, a Master's student at the École Pratiques des Hautes Études (EPHE, Paris), registered the **objects** discovered in 2022 and 2023 in the EJP database (see chapt. IX) and completed an initial analysis of the **column elements** which had been reused in the site (see chapt. VIII). The study of the **faunal remains** was completed by Dr. Hervé Monchot in August 2023 (see chapt. VI). All the remains from campaigns 2022-2023 were sorted, identified and quantified. The study of the **pottery** discovered in 2023 started with the sorting, classification and quantification of the pottery sherds, then the registration, drawing and pictures of the diagnostic ones from August 6 to September 14, 2023. This was carried out by A. Alhebeshan in collaboration with Raffaella Pappalardo. Finally, Dr. Fatma Marii started the restoration of the metal objects discovered in 2022 and 2023 in September 2023 by working on the most urgent interventions and cleaning the most important pieces (see chapt. X).

1.2. Synthesis of the first results

The work undertaken in 2023, in the field and after the campaign, led to a better understanding of the layers that preceded the construction of building A and the organization and history of this building. However, it was not possible to achieve one of the objectives planned during the 2023 campaign—the study of the small mosque—because it was not possible to hire a crane with the available budget.

1.2.1. The history of the area before the construction of building A

At the end of the 2022 campaign, 6 phases of occupation were suggested. Even though later structures—such as ST124 in area 4—had also been discovered, the 2023 campaign focused not only on the occupation phases of building A but also on earlier phases.

In area 5, which corresponds to the southern wing of the building, the area which was excavated in 2001 was cleaned and architectural descriptions were made to understand the evolution of the Byzantine building during the Umayyad period. This work was also accompanied by three small test pits (see chapt. III).

In particular, these test pits revealed an earlier tank that was cut into the rock. The results of this are still being analyzed. A mosaic pavement (fig. I.6) which had already been excavated by the previous team was re-cleaned and appeared to be related to the last phase of reorganization of the building, probably during the Umayyad period, after new separation walls had been built.

The **first phase** of the area's occupation is still the stone quarry which cannot be dated.

The **second phase** saw the construction of a tank inside the rock-cut of the quarry, in the southern part of the area. The lower layers filling the tank have not been excavated yet. This should be done next year to provide at least one *ante quem terminus*. Two parallel walls are built on the bedrock north of the tank, but these are located in an area which was excavated down to the bedrock by the DoA in 2001 so there is no stratigraphic relation between these and the tank making it difficult to link them to a specific phase. They could have been built during the second phase, but also the third phase. However, as they are located under the pavement, they are anterior to the fourth phase.

The **third phase** is related to the filling of the tank and the construction of what may have been a plastered floor (148). However, as the area is covered by the later courtyard pavement, it is difficult to know if this irregular layer is a floor by excavating its surroundings. Still in area 5, but more to the south, on the other side of wall W15, the last layer of sounding S3 may be the base of a floor, since its level is quite similar to that of plaster floor 148. It may also be related to the

colonnade that was discovered at the foot of the southern baulk. Three bases were indeed seen after the cleaning of the area but the layers above them had already been excavated in 2001. Although the western one (ST175) is a little bit larger, the eastern (ST173) and middle ones (ST174) have the same diameter. These bases are aligned with the bilobed column ST172. Unfortunately, it is difficult to excavate against and under these bases so we do not have a lot of information about them. This could testify to a Roman colonnade, maybe for a street perpendicular to the cardo.

The **fourth phase** is marked by the construction of the building A. In the few layers still preserved under the pavement that we were able to excavate (136, 138, 139, 141, 149 and 156), the pottery is characteristic of the early Byzantine period.

The **fifth phase** shows major changes in the organization of the building, in particular the construction of two rooms (R8 and R9) on the southern limit of the building and maybe the adjunction of one room (R7) to the southwest. This was probably contemporary with the closing of the northern and eastern porticoes with walls to change them into rooms, reducing the size of the courtyard but increasing the living area. It is not possible to date this phase precisely yet, but it was before the 749 CE earthquake and could date to the Umayyad period. The preparation layers (110, 111, 117 and 118) for the mosaic pavements (109 and 116) which were built during this phase in room R8 could have provided some interesting information because the lower ones (111 and 118) are full of sherds, but these layers were removed during the previous excavation in 2001. Excavating further south could help to answer this question.

The **sixth phase** is a phase of abandonment and scattered reoccupation of the area, following the 749 CE earthquake. After the destruction of the building, inhabitants may have collected stones, in particular in the courtyard as, unlike the built part of the building, it would not have been entirely covered by the huge stone collapse. Some new constructions occurred, in particular in the northeast and southeast areas, as attested by walls W33, W67 and W124 and floor 125.

The **seventh phase** is probably a very later occupation (Ottoman or Modern?) attested by a corner (W45 and W66) and an ashy layer related to it (41) that was mainly removed by the 2001 excavation.

1.2.2. The plan of building A

The excavation carried out in 2023 modified our understanding of the layout of building A, in particular by extending its limit to the south and west and the revelation of new rooms.



Fig. I.1. Plan of Building A or the 'House of Hearts' at the of the 2023 campaign.

I.2.2.1. The extension of building A

In its excavated state, the surface area of the building appears to be more than 750 m². It is more than 30 m long on its E/W axe and is composed of at least one additional room to the south and most probably more rooms if the width of the building was constant. To the west, the courtyard is larger than shown by the DoA excavation, but its western limit is unknown. To the north, the excavation confirmed the extension of room R1 to the north with another room, but the limit of the room has not yet been reached.

To the south, the 2023 campaign showed that the building continued southwards with the excavation of area 4, to the southeast of the excavation zone (see report IV). This extended the building more than 11 m to the south. The eastern wall of the eastern wing (wall W1) runs to the south and draws a corner with the E/W wall W123 discovered in 2023. From this last wall, a N/S wall (W114) extends the building further south, with a slight reduction in the width of the building

because it was built more to the west than wall W1. Although W1 and W123 are clearly linked and were built together, W114 may have been built against W123. If so, it may have been built in a second phase of the building's construction and could represent an extension of the building to the south through the addition of new room(s).

To the west, the limit of the building is not yet clear because it is covered by a huge layer of collapsed stones (fig. I.7). However, we started to remove the collapsed layer at the eastern extremity (sounding 4) of the trench dug in area 3 (see report V). Even though the floor of the courtyard has not been completely cleaned, there does not appear to be a wall here so the courtyard limit would have extended at least 4 m more to the west. No traces of a western portico or a western wing are visible yet but, in any case, the western limit of the building is further west than the visible western limit of the courtyard.

To the north, the excavation in sounding 3 in area 1 confirmed that the building continues to the north with the prolongation of wall W1 and the discovery of the N/S wall W145, which is parallel to W1. Two blocks which are visible on the northern extremity of the upper remaining course of wall W1 are larger than other blocks in the wall and correspond to a misalignment of the wall to the northwest. These two elements could suggest that the northern extension of the wall was built in a different period to the rest of wall W1. However, the lower courses seem similar to the rest of the wall and are linked to the E/W wall W60, the northern wall of room R1. This question must be more deeply analyzed in the future. It should be noted that the area north of room R1 was subject to debate. One hypothesis is that this was an area which was anterior to the construction of building A and another hypothesis postulates that it was in fact contemporary to this construction. The director of the excavation and the area supervisor discussed the interpretation of sounding 3 by email but could not agree on this, so both theories are presented in this report. The hypothesis of T. Awwad is detailed in his report, the content of which has not been modified (see report II), and the hypothesis of J. Bonnéric is detailed below.

I.2.2.1. The question of the northwest area's phasing

As excavation work needs to be continued to verify both hypotheses formulated in this report, it is not possible for now—with the stratigraphy, architecture and building techniques—to be sure that wall W60 predates building A and that layers 144 and 150 are anterior to the Umayyad period. On the contrary, layers 144 and 150 are very similar in composition to the collapses excavated in rooms R4 and R5 (see report 2022 and report 2023) as they contain large-module stones and mortar patches with a yellowish-red hue. Layer 150 is described by the excavator as a “huge dump mixed with the collapse”, probably because it is collapsed material from the upper

floor of building A, like layer 25 in room R4 and layer 62 in room R5. This would explain the huge quantity of large stones, pottery, bones and other objects discovered in both these layers. The study of the pottery confirmed that these layers do not predate the Umayyad period since most of the material is Umayyad or even late Umayyad (figs. I.2, I.3, I.5). This means that there is therefore no reason to think that they are anything other than the results of the earthquake that destroyed building A in 749 CE. It is highly probable that layer 140, which covers collapse 144, is also a collapsed part of building A, i.e. a consequence of the earthquake. The excavator distinguishes both layers 140 (considered as phase 3) and 144 (considered as phase 2) only by the quantity of material discovered. Even layer 135 (considered as phase 3) could be the remains from a collapsed building. This would explain the presence of mortar. It should be noted that no floor or phase of abandonment was noticed by the excavator between layers 140 and 144 so it is difficult to imagine that they were not part of the same phase.



Fig. I.2. Some of the diagnostic sherds from layer 150.



Fig. I.3. Some of the diagnostic sherds from layer 144.

According to the uncovered part of the stratigraphy, the walls W60 and W1 might be the remains of a building earlier than building A, even though collapse layers (140, 144 and 150) show pottery from the Umayyad period. Indeed, the base of the walls and related floors have not been

reached yet. However, wall W60 shows the same characteristics as type B walls (see report 2022, p. 91-92) with small stones used between quite irregular courses of roughly cut limestone. This type appears for instance in walls W3 and W5 which are clearly part of building A since they are linked to wall W1. Wall W60 was still standing when the 749 CE earthquake occurred since the collapse layers 140, 144 and 155 were discovered against its northern facing. So, there is nothing to make us think that wall W60 was not part of building A. However, it is more difficult to answer this question for wall W1 so nothing can be considered certain yet. The part discovered in the northern extremities, in sounding 3, is not aligned with the rest of wall W1. However, this wall is very strangely built, with differences in its thickness, orientation and building techniques. Furthermore, the upper stones, drawn on the plan, are very large blocks that differ from the other masonry observed for building A. However, the courses under these three blocks seem very similar to other walls in building A, in particular type B walls. Therefore, it cannot be defined yet if the part of wall W1 discovered in sounding 3 was built at the same time as the rest of building A or before. However, there is evidence that it was still standing when the 749 CE earthquake occurred that resulted in its collapse.

I.2.2.3. The internal organization of building A

Regarding the internal layout of the building, a new organization was discovered with two new rooms, one in the northeastern corner and one in the southeast corner, and one new door to the outside which was discovered to the south. The inside of the rooms was not excavated this year as our strategy is to only excavate rooms after their extension is known, to have a better chance of studying any artifacts in context and to avoid losing information. In area 1, the deep 1 m wide excavation between the northern limit of sounding 3 and room R1's northern wall (W60) is a good example of the fact that using this sounding technique in a site with large-sized collapsed stones' and artifacts in context makes the interpretation more difficult.

A new room was found north of room R1. Its northern extension is unknown and the eastern wall (W1) appears only over 1.10 m. Wall 145, discovered in the western baulk of the sounding 3 in area 1 was excavated over 1.40 m. Its relation to wall W60 is not visible because the sediments against the northern facing of wall W60 were not removed as this would have destabilized the later corner and wall W67. It is impossible to prove that wall W145 is the western wall of the room but this is possible. If so, this northern room could be 4.90 m wide from E/W.

A new room (numbered R7) was discovered adjoining R6 to the south. It is not exactly aligned to the east wing but is built slightly to the west. It seems to have been built against the southern wall of room R6 (W123), maybe in the last phase of the building's occupation. Only the

eastern wall of this room was discovered, it appears that this is at least 3.90 m long from N/S. It is impossible to estimate its E/W dimension.

Room R6 seems to be much larger than expected. It is also larger than the other rooms in the eastern wing. It is probably 10.80 m long N/S and it may be 4.90 m wide E/W, like the southern rooms of the wing, or even wider if wall W9 does not continue to the south. A 1.1 m door gives access to this room from the outside. It is built approximately in the middle of the eastern wall of the room (W1).

1.2.3. The function of building A

To understand the building's function, different operations were planned: a trench dug between the suq and building A, the re-excitation of the southwestern corner of the area and the excavation of room R5. There was a promising discovery north of room R1 that suggested a kitchen on the upper story. The 2023 campaign also revealed the reduction of the courtyard area and the construction of more rooms during the last phase of the building's occupation, probably during the Umayyad period. Unfortunately, the western trench (area 3) has not yet answered the question of the building's relation to the suq. In the absence of any remains or structures preserved on the ground floor (69) of room R5, a beaten earth floor which was excavated in 2023, it was not possible to identify the function of the lower story. However, the upper story was probably a storage room as suggested by the storage jars discovered in 2022 in the collapsed part of the room. The cauldron (fig. I.4) discovered on floor 69 in 2022 does not suggest that the room was a kitchen: even though it shows traces of soot, no fireplace or ashes have been discovered in the room, or at least not in the half that was not excavated in 2001. This would suggest a second use for the artifact. It was restored in 2023 and appears to be a cauldron in copper alloy that was 24 cm high and 40 cm in diameter. It was equipped with a horizontal iron frame under the rim and two vertical iron handles. Each iron handle was fixed to the pot by a triangular lead holder. The cauldron, even though it is very well preserved, was damaged by the collapsed stones. It was not possible to reattach the frame and the handles.



Fig. I.4. The copper alloy pot discovered on the floor of room R5 in 2022 under the 749 CE collapse: at the time of its discovery (left), during its restoration (middle) and after the restoration (right).

1.2.3.1. A kitchen on the upper story?

A kitchen may have been located on the upper floor of the room north of room R1 which is part of building A and which collapsed after the 749 CE earthquake (see above). Inside some particularly ashy and carbonaceous layers (140, 144 and 150) of large-block collapsed walls (see report II) a large number (927) of faunal bones and a huge quantity of pottery sherds, mostly cooking pots (fig. I.5), were discovered. The combination of animal bones, culinary pottery and ashes led to this room being identified as a kitchen, but this needs to be checked. The discovery of these artifacts and sediment inside the collapse, and not under it, suggest that the kitchen was on the upper level, not on the ground floor. As the sounding was only 6.90 m by 2.52 m, this interpretation needs to be confirmed. The species represented in the faunal corpus of these layers include goats, chickens, camels, gazelles and pigs (see chapt. VI). It should be noted that a figurine's head, which to our knowledge is unique, was also discovered in layer 150 (fig. IX.1): it is a small, carved and inlaid black granite (?) stone head (EJP23-A-001) which is well sculpted with meticulous details. It is 33 cm high and 19 cm wide. Square incisions form the hair and there is the inclusion of bones for the eyes. An oval hollow forms a prominent mouth.



Fig. I.5. Pottery sherds, in particular from cooking pots, discovered north of room R1, in the destruction layer (144) of a possible kitchen area.

1.2.3.2. The reduction of the size of the courtyard and the increase in the number of rooms

The cleaning of the southwestern part of the area excavated by the DoA in 2001 revealed that the courtyard size was reduced by the construction of two rooms on its southern limit. Only the length (E/W) of these two rooms is known, not their width (N/S). The wall W15, the northern wall of rooms R8 and R9, and W17 that separates them, were both built on the courtyard floor (pavement to the east and leveling layer to the west). In the western room R8, a mosaic floor was built on the leveling layer of the courtyard and the bedrock of the southern portico, most probably at the same time as the walls (fig. I.6). This mosaic pavement is preserved on two different levels,

upper to the south and lower to the north. It seems that it was used for long enough to be restored with a yellow compact mortar. Unfortunately, this area was excavated in 2001 and the artifacts that may have been preserved on the floor by the collapse of the walls were removed, so it is impossible to identify its function for now. The southern part has not been excavated yet. The situation is the same for room R9. The northern portico also seems to have been reorganized into rooms with the construction of walls W12 and W14 but the rooms here do not seem to eat into the courtyard itself. This area was excavated in 2001 by the DoA, however, it should be cleaned again and studied further.



Fig. I.6. The mosaic pavement (116) built with large (2.5 × 2.5 cm) white tesserae against the late wall W15 which reduces the size of the courtyard to the southwest.

I.2.3.3. The question of the building's relationship with the suq

Building A was built a few meters from the cardo which was equipped with a portico, which opened onto stores in Roman times, most of which were reused during the Umayyad period. A store was cleared between the cardo and building A, probably by the DoA in the 1970s, but maybe in 2001. The trench in area 3 aimed to determine whether the courtyard building opened towards the stores or even connected to the store. Indeed, it is possible that this building was a merchant's house, or a kind of caravanserai, as indicated by its proximity to the cardo and its stores (fig. I.8), its surface area, the identification of rooms and the presence of a story. However, the

excavation of the trench could not be completed due to the huge quantity of large blocks which needed to be removed (fig. I.7), so for the moment it is not possible to say if the two structures were separated by a wall or a street, or even joined together.



Fig. I.7. The trench opened in area 4, between a portico shop and the courtyard, and the collapse following the 749 CE earthquake.



Fig. I.8. Architectural section between the Roman cardo and building A showing the area in between that was not excavated in 2001.

I.3. Valorization

In 2023, a research paper was published on an academic blog, the 2022 report was completed and shared online and an article was submitted to SHAJ.

- J. Bonnéric, T. Awwad, E. Devaux, R. Pappalardo, A. Thaher, “A large courtyard building from the Byzantine and Umayyad periods in front of the Nymphaeum in Jarash (Jordan). First results of the Eastern Jarash Project”, *Studies in the History and Archaeology of Jordan*, 13, to be published.
- J. Bonnéric, “Eastern Jarash Project. Results of the first campaign (2022)”, *Les Carnets de l’Ifpo. La recherche en train de se faire à l’Institut français du Proche-Orient*, 8 mai 2023. [Online] <https://ifpo.hypotheses.org/12200>
- J. Bonnéric, T. Awwad, S. Cunin, E. Devaux, A. Daher, A. Moumneh, R. Pappalardo, *Eastern Jarash Project: 2022 Final Report*, Institut français du Proche-Orient, 2023. [Online] <https://shs.hal.science/halshs-04174903>

Different visits were organized on the site, with archaeologists, diplomats, students, etc. On April 3, 2023, a presentation was done to potential sponsors from French companies such as Orange, Veolia, etc. It was organized by the French Embassy at the Ambassador residency.

I.4. Training

The EJP excavation campaign and studies were also used to support a number of different training programs.

- Two young Jordanian graduates were trained in scientific excavation and recording methods during the 4-week campaign.

- A French undergraduate student from the University of Poitiers (Solène Mathieu) as well as two young Kuwaiti archaeologist employees (Saif Albutiban and Ahmad Althawadi), from the Department of Antiquities of Kuwait, underwent field training during two weeks.

- Three professional Jordanian archaeologists continued their professional training with report writing (Abdelkareem Alhebshan, Tareq Awwad and Ahmad Dhaher).

- During the post-excavation phase, a young Jordanian graduate was trained in the restoration of metal objects by the conservator.

- Two French students (Clothilde Le Gallou and Solène Mathieu) carried out an internship at the Ifpo and worked on the artifacts discovered by the EJP.

- One of them also started a Master's thesis in September 2023 on the painted coatings discovered by the EJP.

1.5. Budget

The excavation and study campaign was funded by the French Institute of the Near East (Ifpo), the Cultural Service of the French Embassy and the CNRS (special funding “Appel d’offre Jordanie” and research unit Ciham UMR 5648). We would like to express our gratitude to these institutions.

The EJP also benefited from the Ifpo’s accommodation, car, topographic and photographic equipment and petrol. Two architects and the project manager were also Ifpo employees. Some of the precision equipment was donated.

As the initial budget for 2023 was insufficient, the campaign was reduced from six to four weeks. However, an additional budget received during the year enabled us to carry out certain studies and restoration work.

Institution	Montant
French Institute of the Near East	9,007.59 €
CNRS research unit - CIHAM	2,500.00 €
Cultural Service of the French Embassy	7,000.00 €
CNRS « Appel d’offre Jordanie »	4,000.00 €
TOTAL	22,507.59 €

Table I.2. Summary table of the funding sources for 2023.

Type of expenditure	Amount in euros
11 excavators	5,851.44 €
3 area supervisors	5,832 €
2 assistant archaeologists	1,166.40 €
1 pottery specialist	1,605.60 €
1 archaeozoologist	1,000 €
1 metal conservator	2,508.75 €
1 architect's travel costs	672.95 €
Insurances	312.85 €
Equipment	75.17 €
Food	622.08 €
DoA permit, administrative fees, representative fees	2,695.68 €
Copy-editing	164.67 €
Total	22,507.59 €

Table I.3. Summary table of 2023 expenses.

I.6. Program for 2024

In 2024, our aim is to carry out a 5-week campaign and also finalize the study of the painted coatings and the ceramics from the 2022-2023 campaigns, carry out the study of the glass and metal objects, and complete these with physicochemical analyses, and study the bone objects discovered in 2023. While the 2022 and 2023 campaigns provided an opportunity to draw up a stone-by-stone plan of the building and to propose a preliminary chronology and hypothesis for the building's function, many questions remain and will require further excavations and studies. The surface area to be excavated to understand this building is significant and understanding the areas previously excavated by the DoA team is, in the almost absence of archives, also an important issue. The next campaign will still focus on Building A and its surroundings, following three lines of research. We also hope to be able to study the building which has been interpreted as a mosque.

I.6.1. Axis 1. The chronology of building A and the earlier and later structures

The chronology of Building A and the history of this area's occupation is still unclear and requires more excavation, architectural study and object study. In particular, the challenge is now to understand whether this building was constructed in Byzantine times and also to what extent its layout and function were modified in different periods. The southern part of the courtyard in

particular—with its colonnade that is prior to the construction of the courtyard’s pavement and many structures which were built later than the construction of this pavement—will offer information about the phasing. Therefore, excavation will continue from the southeast corner towards the west (J. Bonnéric and W. Jaradat). The architectural study of the remains excavated in 2001 by the DoA will continue to be completed with the phasing of each visible wall, in particular in the northern and western portico which were also redeveloped with the construction of new walls. The study of the columns during the last campaign also showed some inconsistencies in the size and location of the columns between the colonnade of the three visible porticoes, suggesting different phases of construction that need to be determined more precisely. Furthermore, the remains excavated in area 5 suggest that earlier buildings may have been uncovered and could provide information on settlement in these periods. Quarry dating is also important, as only one intramural quarry is known to exist in Jerash.

1.6.2. Axis 2. The function of building A and the nature of the area’s occupation

The function of this very large building could have been both domestic and economic. The form of the courtyard house was still present in the Umayyad period, as shown by Apolline Vernet’s thesis work. However, this layout has not been found elsewhere in Jerash, where housing has often been studied peripherally. The preservation of the remains in context, thanks to the 749 CE earthquake, is invaluable as it facilitates the identification of the function of the building’s various spaces. Thus, hypotheses can already be envisaged for a possible stable on the first floor in room R4, a storage space on the first floor above room R5 and a domestic space on the floor above room R4. A kitchen area may have been discovered (to the north of R1) and excavation should continue there, as well as in the rooms in the southern part of the building. Artifacts enabling these identifications probably remain sealed beneath the collapsed upper parts of the building. Therefore, to identify the function of the building it is necessary to extend the excavations and study the material found in them in detail. The methodology applied was to only begin excavating rooms once their layout could be read on the surface, in order to excavate them in full and gain an overall view of the assemblages. In 2024, the objective will be to excavate the room north of room R1 (L. Mouawad) and the southern room R7 (W. Jaradat) to identify their function. To understand the link between Building A and the cardo, the excavation of the western trench (area 3) will be completed (A. Alhebeshan).

Near building A, on the other side of the Propylaea church, work is planned on the question of the ‘small mosque’. This identification needs to be verified using a stone-by-stone survey (E. Coppé) of this previously excavated building and a study of its layout, as the presence

of a small mosque close to a residential and commercial area is particularly interesting. It raises the question of its users and the density of the network of neighborhood mosques in the Umayyad period, etc. Although the discovery has been very summarily published and the religious nature of the building has not yet been demonstrated, the attribution of ‘small mosque’ has been systematically reused by researchers on the Islamic period. However, some doubts remain (SEIGNE 1997, p. 76). Aïda Naghawi assumed that a reused conch placed in an interspace had been used as a mihrab. The secondary use is clear and the shape could correspond to that of a mihrab. Nevertheless, the wall is not oriented towards the qibla like that of the Great Mosque, but instead follows the orientation of the Roman portico without any modifications. Moreover, the conch does not appear to be located in the center of the space, although it seems that nothing prevented it from being centralized. Access to the building, which could be an argument in favor of this identification, has not yet been clearly identified. A very cursory survey was carried out in 1981 (NAGHAWI 1982, p.21), followed by a ground plan (SEIGNE 1997, fig. 2), but only a stone-by-stone survey and a precise study will enable us to determine the nature of this reoccupation.

1.6.3. Axis 3. Daily life

The state of preservation of the artifacts in context offers an exceptional opportunity to study the daily life of the inhabitants of Jerash in the Umayyad period. The earthquake froze these objects in time while they were still in use. Combining the typological study of the objects with that of the fauna (H. Monchot), the analysis of archaeobotanical residues (H. Medina) and the analysis of organic residues will provide very important information on diet, production methods and consumption patterns. This, of course, will be completed by the study of trade. Gaspard Pagès (CNRS, ArScAn, Ifpo delegation) will complete the study of metal objects and the analyses (SEM-EDS, LA-ICP-MS) of iron objects. Esra Ootom will complete the study of the glass with J. Bonnéric.

1.7. Acknowledgments

We would like to thank the institution that funded the project in 2023:

- the French Institute of the Near East, and more particularly Dr. Myriam Catusse, her director, Dr. Pauline Koetchet, the director of the Department of Arabic, Medieval and Modern Studies (DEAMM), and Dr. Carole Roche-Haway, director of the Department of History and Archaeology of Antiquity (DAHA),
- the Scac of the French Embassy in Jordan, and in particular its Cultural Counselor Gilles Roulland,
- the CNRS,
- the CIHAM.

The 2023 fieldwork campaign was conducted in close collaboration with the DoA and in particular with the local office in Jerash. We would like to thank our colleagues from the Department, in particular Pr. Fadi Balaawi, Aktham Oweidi, Dr. Muhammad Shalabi and Mohammad Altoom.

We would like to thank Dr. Massimo Brizzi for sharing the coordinates of the survey he carried out in Jerash in December 2022.

We are grateful to Dr. Ian Simpson for identifying pictures related to the DoA excavations in 2001 when he worked on the archives stored in the DoA Office in Jerash.

The project also benefited from the assistance of the Ifpo administrative team, in particular Leïla El Jechi and Christophe Dessoude. We thank them for their assistance.

II. Excavations northeast of Building A (Area 1, Sounding 3)

Tareq Awwad, with the assistance of Ayya Al-Shanawani

During the second season of the Eastern Jerash Project in 2023, an excavation was carried out in Sounding 3, located north of room R1, in the northeastern corner of the previously excavated area. The new sounding extends north of wall W60 over an area measuring 6.90 m E/W and 2.52 m N/S (fig. II.1).

The aim of continuing the excavation in this area was to understand the external stratigraphic sequence of Building A as well as to understand the limits of room R1 to the north and the east (walls W60 and W1).

Three phases were identified in this area, the third phase and the second phase are related to collapses, dumps and random fills. As for the first phase, it is associated with an occupation phase, closely related to wall W60¹.



Fig. II.1. Sounding 3, the area north of room R1 at the beginning of the excavations.

¹ One of the challenges was that to the north of wall W60 a backfill related to this wall was identified. A clear line, that appeared during this season, separated it. The only difference between these two deposits was the compaction of the sediment, the sediment of the collapse in the middle of the square was much softer.

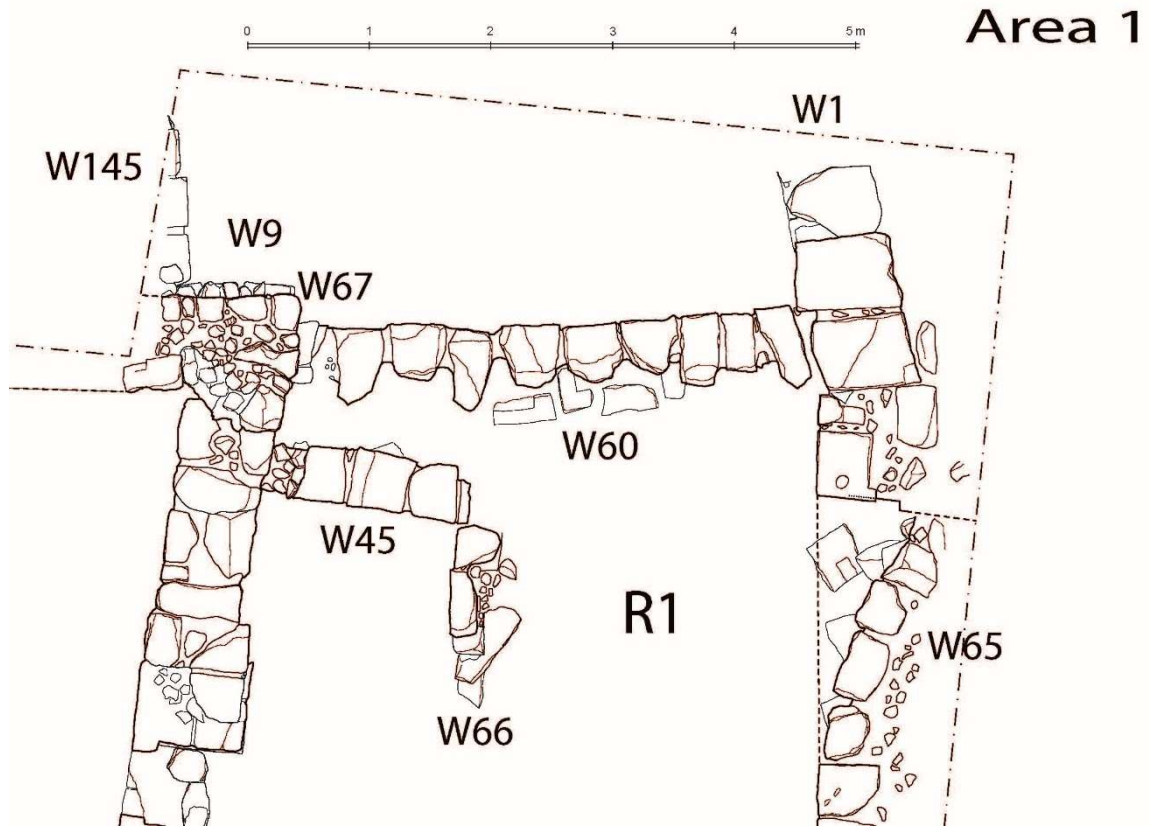


Fig. II.2. Plan of the sounding 3 in area 1 at the end of the 2023 campaign.

II.1. Phase 1. An Ancient Wall W145.

At the western limit of sounding 3, the eastern face of wall W145 appears in the baulk (figs. II.2, II.3). This wall shows 4 courses of carved limestone with a north-south orientation, stretching over a length of 1.50 m and a height of 1.12 m, and with a top level of 601.74 m and a visible bottom level of 599.44 m. The maximum visible stone module is 0.46 m in length and 0.38 m in height. Moreover, the base of the wall has not yet been reached.

It is clear that this wall was built from random reused stones and blocks, and for this reason they are different in type and size; some blocks used to be part of a wall and others used to belong to a cornice.

Several contexts (58, 105, 121, 144 and 150), related to the second and third phases, were excavated near wall W145 thus making the latter anterior to all of these deposits. We should note that both layer 144 and collapse 150 lay directly against the wall. Since the base of wall W145 has not been reached we still cannot establish its relation to other walls within the general plan of the building. Further excavations need to be conducted in the area to establish a clear connection

between wall W145 and the rest of the building's architecture, specifically in the eastern wing. Its eastern face is not aligned with wall W9, the western wall of the eastern wing.



Fig. II.3. Wall W145.

II.2. Phase 2. The Earlier Deposits.

Below cut 127 and collapse 140, deposit 144 was found, between wall 145 to the west (fig. II.4), collapse 140 to the east, wall W60 to the south and L.O.E to the north. It measures 3.10 m E/W and 1.63 m N/S, and has a top level of 600.08 m and a bottom level of 599.25 m.

What differentiates this context from collapse 140 is the high frequency of material in it. Deposit 144 included a lot of material such as pottery, bones, mosaic, metal, glass, tile, marble, ceramic building material (CBM) and large carved blocks (fig. II.5) with a maximum module of 0.70 x 0.45 x 0.30 m. In addition, it included lime flecks, patches of mortar, random stones, as well as charcoal that gives this layer a gray color. We are still uncertain about the function of this deposit, located at the edge of building A. It could be a collapse, a dump or a landfill used to level the area outside building A.



Fig. II.4. Deposit 144.



Fig. II.5. Carved block from deposit 144.

Located below deposit 144, deposit 150 has a yellowish-red hue and is very similar in composition to deposit 144. However, its compact sediment includes ash and charcoal, with an extremely high quantity of pottery, a few objects and large blocks with a maximum module of 0.70 x 0.45 x 0.30 m, giving the impression of a huge dump mixed with the collapse (fig. II.6).

It spreads between wall W145 to the west, layer 155 to the east, wall W60 to the south and L.O.E to the north. It measures 3.50 m E/W and 1.63 m N/S and has a top level of 599.57 m and a bottom level of 599.25 m.



Fig. II.6. Deposit 150.

It is clear that this phase consists of fills and collapses. Therefore, we are certain that there is a part of an ancient building that was destroyed before the Umayyad period² which was different to building A and that wall W60 is older than building A³. As for the dump, perhaps the end of the ancient building was located north of wall W60, this would explain the large amount of material in layers 144 and 150.

² The materials and pottery need to be dated.

³ Note from the scientific editor of the final report: there is another interpretation of the remains that suggests that W60 is not anterior to building A (see the introduction to the final report) and that layers 144 and 150 are the result of the collapse of building A after the earthquake that occurred in 749 CE. See the introduction of the present report.

II.3. Phase 3.

Layer 103 is a loose to compact reddish-brown sediment composed of silt and charcoal (fig. II.7). It was uncovered under layer 58⁴, above layers 122 and 105. It accumulates between wall W01 to the east, wall W60 to the south, L.O.E. to the north and measures 4.00 m E/W and 1.70 m N/S. The top level is at 601.13 m and the bottom level is at 600.83 m.



Fig. II.7. Layer 103, view from the east.

Below layers 58 and 103 in the NW part of sounding 3, layer 105 was unearthed. It measures 2.40 m E/W by 1.72 m N/S, with a top level of 601.23 m and a bottom level of 600.96 m. It is a gray burnt layer with black patches composed of ash including pottery, bones and glass, etc. (fig. II.8). This deposit can probably be interpreted as a dump located at the edge of building A.

⁴ This layer was excavated during the 2022 season.



Fig. II.8. Layer 105, view from the southeast.

Below layers 105 and 103, and above layer 135, layer 122 is another reddish-brown deposit that extends in the middle of the sounding over 2.40 m E/W and 1.72 m N/S, with a top level of 600.94 m and a bottom level of 600.60 m. This layer looks like a natural deposit composed of ash and includes a small amount of material such as pottery and bone (fig. II.9).



Fig. II.9. Layer 122.

At the northwest corner of sounding 3, cut 127 and fill 121 were created by the collapsed blocks. Fill 121 was very soft and composed of large blocks, pottery and pebbles (fig. II.10). In this deposit, we note a soft residue around the blocks mixed with the rest of the sediment (top level of 600.99 m and a bottom level of 600.56 m). This soft residue is due to the erosion of the limestone blocks. Pit 127 has a trapezoidal top plan and measures 1.25 m N/S by 1.10-0.80 m E/W (fig. II.10). In addition, it was located against wall W145 to the west, L.O.E to the north and collapse 135 to the east. It had a top level of 601.13 m and a bottom level of 600.54 m.



Fig. II.10. Fill 121 on the left and cut 127 on the right.

Below layer 122, layer 135 was discovered (fig. II.11) which is a soft, light yellowish-brown layer that interfaces with collapse 140 and the collapse appears inside it. Furthermore, it contains a low frequency of material however this includes pottery, bone, mortar and pieces of painted plaster that probably originated from the collapsed walls (fig. II.11). This context covers the whole surface of the excavated area and is truncated by pit 127 in its western corner. Its location is between cut 127 to the west, wall W1 to the east, wall W60 to the south and L.O.E to the north, it measures 5.20 m E/W by 1.36 m N/S, with a top level of 600.78 m and a bottom level of 600.41 m.



Fig. II.11. Layer 135 on the left and plaster in it on the right.

Below layer 135, collapse 140 was unearthed (fig. II.12). Collapse 140 was different in terms of color from layer 135, as it was yellowish-white and included more mortar, as well as a higher quantity of stones, the shape of which were more carved. This collapse layer was spread between layer 135 to the west, wall W1 to the east, wall W60 to the south and L.O.E to the north. It measured 5.20 m E/W and 1.63 m N/S, with a top level of 600.78 m and a bottom level of 599.69 m.

This phase is composed of collapse and deposits. In addition, layer 105 was thrown there as rubbish after the destruction occurred. It is likely that, in this phase, this collapse north of room R1 occurred in the same period as collapse 59 (top level of 98.46 m and bottom level of 97.15 m).



Fig. II.12. Collapse 140.

The 2023 excavation season changed many of the assumptions made during the previous season concerning the external part of room R1 in sounding 3. It raised new questions about the use of this area and the connection of some of the walls to each other within the general plan.

Up until the end of the 2022 excavation season, we were certain that neither of the two walls W01 and W60 belonged to the main building A. Instead, we assumed that both walls might have been added at a later stage in the Umayyad period either as retaining walls, because they belonged to another building or for other unclear reasons. Furthermore, the stones and blocks were reused because they were different from the rest of the walls, noticeable in wall W1. It was

evident that the stones were extracted from monuments which pre-date the Umayyad period. However, through the stratigraphic sequence, it was ascertained that walls W1 and W60 were older than building A considering that the phase 2 deposits abutted onto both walls. Until both walls are completely cleared and unearthened, we can say that walls W1 and W60 predate the Umayyad period and the second phase⁵.

Wall W1, which intersects with wall W60 from the east, also predates the construction of building A, especially as it is linked to wall W60 (as previously mentioned in the 2022 report). However, the type of construction differs, as it was built with stones that appear to be part of the foundations of the building. Moreover, small stones were also used to fill the gaps between the blocks (fig. II.13).



Fig. II13. Wall W1 on the right shows the shape of its construction with blocks of different modules and the use of smaller stones as filling. It also shows the connection between walls W01 and W60.

⁵ Note from the scientific editor of the report: for a different interpretation of the phasing, see the general introduction of the present report.

As for wall W145, we need to excavate the area further to find its connection to the architecture surrounding it, as we do not know if it connects with the western wall of room R1 or with the wall adjacent to room R1 from the west.

In conclusion, it is necessary to expand excavations in this area to find an explanation for the different dumps surrounding it. Was this area a former landfill? Is it the edge of building A?

III. The southern wing of building A and the earlier phases: report on the excavation of area 5

Dr. Julie Bonnéric

with the participation of Saif Albutiban, Ahmad Althawadi & Solène Mathieu

Area 5 consists of the southern part of the area excavated by the DoA in 2001, corresponding to part of the courtyard and the rooms built in the last phase of occupation on this courtyard. The objective of this campaign in area 5 was to study the structures unearthed by the DoA team in 2001 and excavate layers which preceded the construction of building A. Although a general study of the previously excavated building began in 2022, the study still needed to be completed with the description and drawing of the limits of the courtyard that had been rebuilt and also show earlier occupation. Furthermore, even though a general phasing was done in 2022 after preliminary observations this only shows that the last phase of occupation of building A was Umayyad, its construction during the Byzantine period was only hypothesized based on the relative chronology, the building techniques and the reuse of Roman architectural elements. This meant that it was therefore very important to excavate layers under building A to find dating elements.

Three soundings were dug in area 5. Sounding 1 (1.20 x 1.08 m) is located between wall W15 and the bedrock steps and aimed to excavate the layers prior to the late rebuilding (phase 5). It was excavated by S. Mathieu. Sounding 2 (2.30 N/S x 2.30 E/W m, then 0.90 N/S x 100 E/W m to the east) is located in a gap in the courtyard pavement, north of wall W15 and at the foot of W21's eastern facing. It aimed to excavate earlier layers than those linked to the construction of building A. It was excavated by S. Albutiban and A. Althawadi under the supervision of J. Bonnéric. Sounding 3 (2.20 m E/W x 1 m N/S) is located south of wall W15, west of W17, at the foot of base ST175 to the south and continues until the bedrock steps to the west. It was excavated by J. Bonnéric.

III.1. Phase 1. The stone quarry

As already noticed during the 2022 campaign, the first signs of occupation of the area around building A are rock cuts related to a stone quarry. These are impossible to date and it will only be possible to say which periods are earlier when phase 2 is dated.

III.2. Phase 2. The tank

The cuts in the bedrock were reused in at least one location. In area 5, a tank was built reusing a rock cut as one of the tank's faces (fig. III.1). This tank is located in the middle of the southern part of the courtyard but it was clearly not in use during the occupation of building A, as attested by the many layers that filled and covered it. It has not been entirely excavated yet. The northern part was excavated by the DoA in 2001 and only the baulk was straightened to be studied and drawn. Only the upper layers filling the tank have been excavated so far (in sounding 2) and the excavation of the tank needs to be completed next year. It is also covered by the later wall W21.



Fig. III.1. The tank and the layers that filled and covered it, as well as the courtyard pavement, view from the north.

In the actual state of knowledge, the tank is at least 2.30 m long E/W and 2.20 m wide N/S. The tank's bottom and northern side are made from the bedrock. The eastern face is mainly built with rubble but it is not yet completely visible. The southern and western sides have not been uncovered yet. In its actual state of preservation it is 0.48 m deep. A small sounding dug by the 2001 team at the foot of wall W21's western facing shows that the northern wall of the tank continues to the west. It was covered with a coating that is well preserved on its eastern side to a height of 36 cm (fig. III.2). The coating is yellowish, with lime nodules but no charcoal. It is c. 1.5 cm thick. It is difficult to ascertain if the bottom was ever coated since the coating may have

disappeared, but no fragments have been discovered. The bottom is quite flat, with a slight slope from east to west (level to the east: 598.88 m, to the west: 598.83 m).



Fig. III.2. The eastern facing of the tank and its coating, view from the west.

A small cavity (23 cm diameter) is located not very far from the tank and could be related to artisanal activities such as a press (?). It will be located in 2024 on the site plan.

III.3. Phase 3. Unidentified occupation of the area

Around five layers filled or covered the tank after the end of its use, before the addition of a thick layer of plaster (148) that could be a floor but that is very uneven. The layers visible in the section inside the tank, under layer 148, were not excavated and the limits between them were not always very clear, as shown by the drawing of the section. This is why they were not numbered. The lower layer is the thickest (c. 35 cm thick) and it was probably used to plug the tank when it was not in use. Indeed, it is almost as high as the tank's eastern side. It seems to be a compact grayish layer containing pottery sherds. It is covered by what seems to be another layer but the limit between them is only visible in the eastern part of the section. This is a yellowish-grayish sediment with lime nodules that seems to be c. 15 cm thick and to go over the edges of the tank (this needs to be checked during the next excavation). Then, another layer covers the whole surface of the tank from west to east: it is gray, with gravel and lime nodules. Between this layer and the lower layers there is a 4-10 cm brown layer which is visible over c. 95 cm in the eastern part of the section, as well as a very thin layer of lime or plaster (2 cm thick) over c. 45 cm in the middle of the section. Because the drum of a column is located almost against the section, the limit between the lower layer and the gray layer is not clear. Although it is probable that the lower layer is a

deposit to plug the tank, it is not yet possible to understand the other layers (dump, occupation or abandonment?).

A thick layer (148) seems to seal the area. It is a homogenous loose white layer, composed of plaster or lime and small pebbles. The surface has been revealed but it has not been excavated yet. According to the section, it is between 6 and 26 cm thick. There is a clear slope from the east to the west (top level to the east: 599.76 m, top level to the west: 599.58 m). It covers the eastern part of the excavated area (1.5 m E/W by 2.30 m N/S). In the western part, layer 149 is against 148 and seems to continue on from it. This layer is composed of very loose black sediment containing small stones, ashes, charcoal, lime nodules and sherds. This layer is probably too loose to be a levelling deposit and more extensive excavation is needed to understand its function. Layers 148, 149 and 156 were not excavated but only cleaned on the surface.



Fig. III.3. Layers 148, 149 and 156 were not excavated, zenithal view.

In sounding 3, the deeper layer that appeared is characterized by large flattened blocks and small stones (fig. III.4). It is flat but irregular. There is almost no sediment between them, at least on the visible surface. It has not been excavated nor numbered. It is almost at the same altitude (599.69 m) as the plaster layer 148 in sounding 2 and both could be related to a phase of occupation of the area. It is unclear whether the two stones visible under the colon base ST175 are built on this layer or not.



Fig. III.4. The last layer of sounding 3 with flattened large and small stones, under layer 147 and probably related to plaster layer 148, view from the east.

III.4. Phase 4. Construction of building A

In this area, the construction of building A is characterized by a partially paved courtyard which is bordered to the south by a colonnade, which was probably part of a portico similar to the eastern portico. This colonnade seems to be earlier than the construction of building A because the pavement of the courtyard comes up against the column's base ST175 (fig. III.4). The earlier columns were probably reused as the limit of the courtyard.

The eastern part of the courtyard was paved, but its western limits are not yet clear. This was excavated by the DoA team in 2001 and it is difficult to know whether the missing parts were removed during the excavation, were removed before the earthquake or after it, or never existed. In the northwestern part of the courtyard the bedrock was used as a floor. In the southwestern part of the courtyard, the dip in the bedrock was filled with deposits to level the area. Here, it seems that the floor was covered with gypsum or a plaster layer. This was not noticed last year but was seen this year thanks to better brushing of the area. In the southwestern part of the courtyard, the DoA had mainly excavated the deposits but it was possible to excavate these this year in sounding 1 which aimed to excavate the layers under the mosaic without destroying it. The area

between the slabs of the room to the south and W15's capital was excavated more deeply in 2001, probably because the mosaic floor was not preserved here.

Under the mosaic pavement (116) and its two construction layers (117 and 118), which were both built in the later phase (5), appeared two layers numbered 136 and 139 (fig. III.5). The first one was a thick layer of powdery yellowish-gray sediment with small stones (between 5-19 cm), ashes, charcoal, lime nodules, many pottery sherds, bones, mosaic tesserae and glass fragments. In particular, a fragmentary bone bracelet (EJP23-A-12) was discovered in it. It was c. 30 cm deep (top level: 599.94). Under it, layer 139 is mainly composed of clayey red sediment which is compact when humid and then powdery when dry. It is heterogeneous with the presence of a green clay sediment. The limit between 136 and 139 is sometimes unclear because they can be mixed. There are sometimes red or green sediments similar to 139 in a general matrix similar to 136, in particular in the northern part of the sounding. This was at least 50 cm deep. The bottom of this layer has not been reached yet and excavation stopped at level 599.39 m. According to the stratigraphic disposition of both layers, and the fact that they mix at their northern interface, both may be deposits which were used at the same time to level the area. This deposit may be linked to the construction of wall W15, it could have provided a flat surface equivalent to the level of the pavement to the south, or later, to build wall W15. This is difficult to determine and the excavation of the remaining layers north of the wall W15, in the western part of the courtyard, may answer this question.



Fig. III.5. Deposits in sounding 1 to level the floor of the southwestern part of the courtyard with the bedrock floor: 136 is above 139, view from the east.

Regarding the pavement, the excavation showed the following building techniques: a levelling deposit (138 to the north, 147 to the south) and filling pebbles (141). It seems that the builders levelled the area first. In sounding 2, layer 138 covered the whole excavated area, on top of plaster layer 148 (floor?) and layer 149 that were uneven (fig. III.6). In sounding 3, layer 147 also covers the whole area, it lies under wedging stones and the pavement and comes up against the stones under the base ST175. This is the layer at which the previous excavation team stopped. The levelling deposit is a homogenous yellowish-gray sediment which is quite compact and contains stones, charcoal and numerous sherds (fig. III.6). Its surface is flat (top level of 138 to the north: 599.90 m; top level of 147 to the south: 599.96). It is between 15 cm and 40 cm thick.



Fig. III.6. Levelling deposit prior to the building of the pavement: to the left, layer 147 in sounding 3 (view from the west); to the right, layer 138 in sounding 2 (view from the east).

The slabs of the pavement are cut architectural blocks and, for this reason, they have unequal dimensions. Because of the difference in thickness between each slab, stones were used to fill the gap between the levelling layer (138 and 147) and the bottom of the pavement. This layer (141 in sounding 2 and already removed by previous excavation in sounding 3) is mainly composed of pebbles in a homogeneous and compact dark reddish sediment (fig. III.7). It is absent between the pavement's thicker stones and the levelling deposit 138.



Fig. III.7. Stone layer for wedging the uneven stone pavement: detail in sounding 3, on top of levelling layer 147, view from the south.

Slabs were probably removed by the DoA, in particular in sounding 2 and 3, to excavate under the building. An argument in favor of an original pavement running across the whole area is that the two upper layers (128 and 134) in sounding 2 comes on the pavement levelling layer (138) and against the slabs and the wedging layer (141), meaning that if they are archaeological layers the end of the pavement was not very well prepared. This is why we think that it is likely that the pavement was complete and was removed either by the excavators or after the earthquake, however there is no formal or clear evidence that 128 is unrelated to the earthquake.

III.5. Phase 5. Modification of building A

In area 5, the original shape of building A was modified during phase 4 with the construction of two E/W aligned rooms (R8 to the west and R9 to the east) which reduced the surface of the courtyard to the south. The northern part of the room was built on the courtyard while the southern part, which has not yet been excavated, was probably built on the portico. The western one (R8) is partially paved with mosaic while the eastern one reused the courtyard pavement as the floor. These rooms are related to a second building phase since the rooms' walls (walls W15 and W17) were built on the courtyard floor. The southern rooms of the original building A are unknown yet and need to be excavated, so it is difficult to understand these rooms that were built in a later, probably Umayyad, phase.

To the west, room R8 is 11.20 m long and at least 3.20 m wide. It is accessible through one door, located in the northeast corner. In this area, the pavement is used as the floor, also on the level of the door. The room is closed by walls W16 to the west, W15 to the north and W17 to the east, this last wall is shared with room R9. Walls W15 and W16 are not linked since both come up against a column (ST176) while W15 and W17 are linked. Both are built in double facing with stone filling and small wedging stones to regulate the courses. The northern wall (W15) is E/W orientated and is built on the courtyard floor, a paved floor to the east and an earthen floor to the west. It is 14.4 m long in total (rooms R8-R9) and 0.68 m wide. The length corresponding to R9 is 2.5 m. It is preserved up to 0.90 m high and 2 courses, but in its western part it is 1.10 m high over 3 courses. It should be noted that there is a threshold composed of 4 blocks in the western part of the wall. This was probably the reused remains of an earlier construction since the threshold is higher than the floor level and there is already a door to the west, on the level of the floor. However, it is surprising that the threshold's blocks were reused in their original layout. Two capitals, maybe three, have also been reused in the wall. One of them was recut and used as a rough stone. The two others are Corinthian capitals which are still complete. One is still in the wall while the other one has fallen, probably after the excavation in 2001. The one that is still in place is turned over and lies over the southern facing of the wall. The eastern wall (W17) is N/S orientated and is built on the courtyard pavement. It is 0.68 m wide and visible over a length of 3 m, the southern part of the wall goes into the baulk. It is preserved over 0.90 m high and 2 courses. The western wall (W16) of the room may be contemporaneous with walls W15 and W17. It may have been built between the column that is at the intersection of W15 and W16 and a wall or another column to the south, which has not yet been excavated. W16 is N/S orientated and is built in courses levelled with small stones and irregular blocks. It is visible over a length of 2 m. Its width is still unknown since its western facing has not been uncovered. It is visible over a height of 1.50 m and 4 courses. An archive picture confirms that the column drum in the southwest corner of the building fell down from wall W16. It is not yet possible to know if there is another drum or a base in the wall or if it was placed vertically in the masonry of the wall. The mosaic pavement lies against it and it was impossible to see if the bottom course is the last one, as for wall W15, or if it goes deeper. Due to the presence of the column and the building technique used, it seems that it is a later wall, like W15 and W17.

The floor of room R8 seems to have been a mix of mosaic and stone pavements. The eastern part was paved reusing stone slabs from the courtyard, probably over 2.30 m N/S x 3.90 m E/W. This is most probably missing over 1.25 m N/S x 2.25 m E/S, where the sounding 3 was carried out. The western part of the room had a white mosaic floor from which

two parts (109 and 116) are preserved (fig. III.8). However, this area was excavated in 2001 and, in the absence of documentation and archives, a lot of information has been lost. For instance, in the areas where the excavator dug up the room's floor, we do not know if this was a mosaic floor, a stone floor or an earthen floor. It is possible to suggest that the original surface of the courtyard pavement was reused and that the earthen floor of the courtyard was covered with mosaic pavement. However, even though this is quite possible, it cannot be ascertained. According to this hypothesis, the room would have been paved with mosaics over a length of 7.20 m and with stone slabs over 4 m.



Fig. III.8. The mosaic pavement: the northern one (116, on the left, view from the east) is lower because it was built on the level of the pavement while the southern one (109, on the right, view from the northeast) was built on bedrock higher than the pavement.

The two mosaic pavements are similar and their only difference is their altitude. The southern one (109) is higher (top level: 600.70 m) since it is built on the bedrock at the limit of a cut related to the quarry (phase 1). The northern one (116) is lower (top level: 600.24 m) since it is built on a levelling layer that fills the cut of the quarry. The tesserae are large (2.5 x 2.5 cm), roughly made and white. Both mosaics have a similar building technique: the tesserae are placed on a thin layer (c. 3 cm) of gray ashy mortar (numbered 110 for the southern pavement and 117 for the northern one) on a thick powdery yellowish-gray layer (between c. 15-50 cm) which is full of sherds (111 for the southern pavement and 118). The northern pavement (116) is slightly convex, probably because it was not built on bedrock but on earth filling (136, see phase 4). Regarding the southern one, it should be noted that a very compact yellow sediment, visible in the section in the continuity of the tesserae and of exactly the same thickness (c. 2 cm), seems to have been used to repair the mosaic by filling in gap between the tesserae. It was not numbered because it was only visible in the section. To the east of ST115, the organization of the floor is not clear in the section. A yellow layer appeared in the section at the same altitude as mosaic pavement 109 and could be a floor filling the gap in the mosaic pavement like the yellow layer between the mosaic pavement and the capitals. It is 10 cm thick (top level: 600.68 m). It seems to be built on two leveling layers

(151 and 152) that remained on the bedrock, at the foot of the southern section. They were preserved over 30 cm north of the baulk. It was not possible to be sure whether these layers are contemporary to phase 5, they may be related to an earlier phase. The division into two layers is not easy to ascertain but a kind of line was visible in the baulk. Both are compact reddish-brown layers with lime nodules, small stones and pottery sherds. Layer 151 is 14 cm thick (top level: 600.60 m). Below, layer 152 is between 3-28 cm thick (top level: 600.48 m, bottom level: 600.16 m) and lies on the irregular bedrock.

Because nothing had been put at the limit between the original archaeological layers and the backfilling done by the team that excavated in 2001, except for a plastic tarp on the tesserae, we isolated the materiel when we were not sure whether a layer was original or not. This is why number 119 was given to sediment on the sublayer of the mosaic (111) as we were not sure if it was backfilling or layer 111. It was similar in composition and full of sherds, but this was also the case for the backfilling.

Even though the tesserae had partially disappeared, the mosaic pavement 109 was built between wall W16 and the turned capital, as indicated by layer 111 which comes up against the capital and the wall facing. The mosaic pavement 116 was built at the same moment as wall W15. It seems to have been built against it but the old excavation removed the layers under the mosaic, in contact with the wall, so it is difficult to be sure. The first course of the wall was clearly built on the levelling layer 136, so the mosaic pavement was either later than wall W15 or built at the same time. There is currently no reason to think that it was not built at the same time as the floor of room R8. Pavement 109 is similar, leading us to consider that it was built during the same period. Therefore, we will consider that it was built in the same phase as room R8 when the wall and mosaic floor were added.

One upside down Ionic capital is located c. 2 m south of wall W15 (fig. III.10). It is characterized by the volutes and the egg-and-dart modeling of the Ionic style. It seems similar in style (and dimensions?) to the capitals of the northern part of the cardo, after the north decumanus. The drum diameter is 65 cm and the abacus is 71 cm long. It could have been used as a column base. It was placed on a stone massif (ST115) which was built on the bedrock so that the capital's abacus would have been on the same level as the floor. The massif was made of two large blocks (c. 50 x 25 cm) with a mortar filling, small stones and sherds. The upper part of the massif is flat so that the capital could be placed on it. The capital was probably turned for better stability, as the abacus is larger than the drum. Between the volutes and the large block there are some pebbles.

Because the visibility of room R8 is very limited, it is impossible to be sure of the function of the structure.



Fig. III.10. The structure ST115 consisted of an upside down Ionic capital on a stone massif, maybe a support for a column, view from the north.

III.6. Phase 6. Earthquake and abandonment

In this area, the last phase is an abandonment phase which started with the 749 CE earthquake. It is characterized by collapse layers. Because the area has already been excavated, these layers mainly appear in the southern baulk (fig. III.9). Layer 107 is a thick layer (c. 0.90 m high) of large and middle-size stones in a loose reddish-brown sediment with gravel, pebbles and large stone blocks. It follows a slope to the east which corresponds to the middle part of the courtyard (top level max.: 602.10 m, top level min: 601.45 m). It was covered by a top soil layer (top level max.: 602.20 m, top level min: 601.56 m). Two other collapse layers were found in the baulk, at its western extremity. The first one (108) is located under 107. This is a yellowish compact sediment without any blocks, just small stones. It is quite similar to the layers of the upper floor that collapsed in room R4. It seems less pulverulent and more compact, probably because there is no wall or mosaic mortar. It is c. 25 cm thick (top level: 601.20 m). It comes up against and on the capitals of ST115. Under 108 and laying on the mosaic pavement 109, layer 106 is also a collapse layer, with more pebbles. It is 28 cm thick (top level: 600.96 m) and is only visible over 1.42 m west to ST115. Because of the collapsed drum, it was not possible to see if it runs up to wall W16.

In area 5, only a small sub-rectangular area (1 m N/S by 2.10 m E/W) of collapsed layer was left unexcavated by the DoA team in 2001 (fig. III.11). This was located on the courtyard pavement, against W15's north facing. This was removed so that we could draw wall W15. It revealed one collapse layer (137) of brown sediment with large, medium and small-sized blocks, sherds, bones and mosaic tesserae. It was almost 0.90 m high (top level: 600.85 m, bottom level: 600 m). The absence of compact yellowish layers here makes sense since the courtyard was not covered by a roof or an upper story.



Fig. III.11. The collapse layer 137 on the courtyard pavement, against the northern facing of wall W15, the only remaining collapsed material from the 749 CE earthquake in area 5 which was not excavated in 2001. Before excavation on the left (view from north-east), after excavation on the right (view from the north).

In the absence of enough pictures from the 2001 excavation, it is not easy to know whether the top layers (128 and 134) in sounding 2 are archaeological layers or not (fig. III.12). No plastic or modern elements have been found in these layers and they are visible on a picture dating from the end of the 2001 excavation. Therefore, we consider that they are archaeological layers and that the archaeologists did not remove the courtyard's stone pavement. However, they lie on layer 138, the levelling layer of the pavement. This suggests that these deposits are related to the earthquake and that the pavement was missing at the time the earthquake occurred. However, it cannot be excluded that the stone slabs were collected after the abandonment of the ruined house as the courtyard would not have been buried under a thick layer of wall stones, stories or roof debris since it was a large open-air area. Some archival pictures confirm that, at the moment of the previous excavation, the pavement in the middle of the courtyard was covered by only a relatively thin layer of earth (c. 30 cm²) and a few stones. The two remaining layers could be related to the collapse caused by the earthquake and sedimentation following the abandonment. Layer 128 is a brown sediment containing small and medium size stones. It is more or less 20 cm thick (top level: 600.26 m). It is quite possible that the upper part of this layer was removed in 2001 to level the layer with the surrounding pavement. Below 128, layer 134 is a more compact reddish-brown sediment, with stones that are smaller than those in 128. It is c. 10 cm thick and quite flat (top

level: 599.98 m). Both of these layers cover the whole surface area which was excavated. Layer 134 comes up against the wedging pebbles (148) and the pavement's slabs and lays on top of the levelling layer 138.



Fig. III.12. The upper layers of sounding 2: layer 128 (to the left, view from the west) above layer 134 (to the right, view from the south).

IV. Excavations in the southeastern corner of building A (Area 4, Soundings C, D and E)

Ahmad Dhaher

The aim of this excavation season was to understand the extension of building A on the southeastern side as well as to finish the excavation in room R5 (sounding C) to understand the use of the building's southeastern rooms and to gain a better understanding of the structural building techniques. Two new soundings were started to the south of sounding A to establish the extension in that direction: sounding E (7.3 m N-S and 3.5 m E-W) is located south of sounding A, and sounding D (4.5 m N-S and 3.7 m E-W) is south of sounding E.

IV.1. Phase 1: main settlement phase

In room R5, directly under a collapse layer (SU62), an earth floor numbered SU69 (top level 601.07 m) appeared. It contains a fine brown sediment, including very small pieces of gravel, covered with small yellow patches of mortar from the collapse (fig. IV.1). It was placed on the vault summit. It is probably similar to the earth floor found in R4 (see the 2022 report) but in room R5 the floor has not been excavated.

All of the walls (W1, W114 and W123) from this phase were built using the same technique, they are all double-faced walls built with dressed and semi-dressed stones. As some of the stones were reused, some of them have different structural elements and different sizes as well. The mortar is mainly earth mortar, except in some parts where lime has been applied. Small stones were sometimes used to level the courses. All of the walls were probably covered with plaster but this has disappeared over time.



Fig. IV.1. The earthen floor SU69 in room R5, view from the west.

In soundings D and E, the walls delimit two other rooms in building A: room R6 (where the northern wall was already visible) and room R7. Room R6 appears to be 5 m long (E/W) and has a door that opens to the exterior. Room R7 is located south of room R6 but its eastern wall (W114) is not in the continuity of the eastern wall (W1) of the eastern wing (rooms R1 to R6) but instead is located more to the west. The southern limit of room R7 was not excavated.

The eastern wall of room R6, the N-S orientated wall W1, is the main eastern wall of building A. Its southern part was uncovered in sounding E, but only the upper two courses are visible so far. In sounding E, the uncovered length of this wall is 6.8 m. Its width is 0.85 to 0.95 m. It seems to have had a door opening which was 1.1 m wide. It is connected to wall W123.

Rooms R6 and R7 are separated by wall W123. Only a small part of this E-W wall was uncovered, located in between sounding D and sounding E. It is linked to wall W1 and built with the same technique. Its elevation is 599.68 m. Its visible length is 2.2 m and its width is around 0.7 m. It was exposed only on the surface.

Perpendicular to W123, the S-N wall W114 probably belongs to building A (figs. IV.2-4). It is the eastern wall of a room that has not been excavated yet. Only two courses of the wall were exposed. It is a double-faced wall with earth mortar and small stones in between. Most of the face

stones are dressed. This wall is connected to W123 but it is not linked (figs. IV.2, IV.4). Its length is 4.1 m, the width is 0.75 m. Its stones are around 0.60 to 0.30 m in size. Its elevation is 599.69 m. This wall continues toward the south, which probably means that building A extends further in that direction.

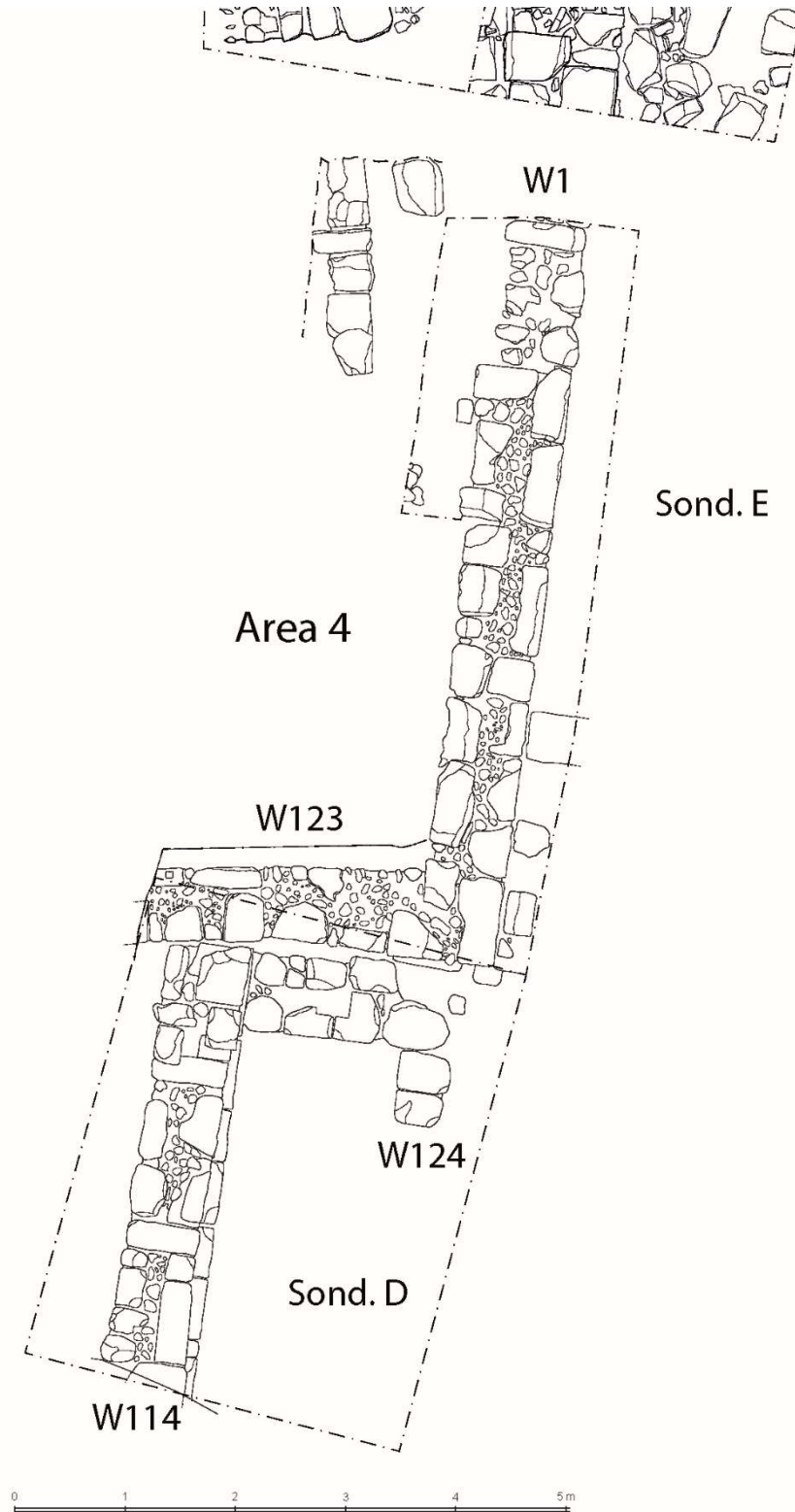


Fig. IV.2. Plan of the area 4 at the end of the excavation.



Fig. IV.3. Sounding E and the southern corner of room R6 with the linked walls W1 and W123, a door in W1, as well as SU133, SU131, SU132, SU143 and later W130.



Fig. IV.4. Sounding D and the corner between W114 and W123, as well as SU113, SU125, SU126 and W124 in the outside corner.

IV.2. Phase 2: collapse of the building in 749 CE?

The building A was destroyed as attested by two collapse layers discovered in room R5 (SU62). According to the Umayyad pottery discovered in the collapse layers, we can guess that the destruction was related to the earthquake that took place in 749 CE and destroyed a large part of the Umayyad city.

The excavation of layer SU62 began in 2022 and was finished during this campaign. This layer shows a variety of colors: mainly yellowish, but also reddish and orangish. It is also composed of stone of all sizes. The density of artifacts in this layer was very high, especially the pottery. In addition to the pottery, there was also a lot of metal and colored plaster. An oil lamp has been discovered in this layer with a cross decoration on it. This layer was excavated over 2.60 x 2.20 m. It most probably covered all of room R5, but half of it disappeared during the previous team's excavation of the western part of the room.

In rooms R6 and R7, the collapsed layers have not been reached yet.

IV.3. Phase 3: abandonment phase after the 749 CE earthquake

After the 749 CE earthquake, the area was abandoned as attested by layers accumulated on top of the collapsed layers. Only one of these layers might be anthropic (SU143) while others are probably related to natural causes (SU132 and SU126). SU143 (top level: 599.54 m) is an ashy gray layer which might be similar to SU43. It is located west of W1 in sounding E. SU132 (top level: 599.4 m) is a reddish layer of earth located east of W1 in sounding E, outside of building A. It is probably a natural filling layer. SU126 (top level: 599.25 m) is a light reddish sediment located in the southeastern part of the sounding D, just east of W114. It probably goes underneath the later floor SU125. None of these layers have been excavated

IV.4. Phase 4: a post-earthquake occupation

Some structures were built after the 749 CE earthquake and a phase of abandonment. This phase of later occupation is defined by a small part of an E-W orientated wall (W124) built against earlier walls W123 and W114, outside of building A (sounding D). It is located at a high level (599.48 m) compared with the rest of the structural walls of building A and is related to floor SU125. It is built with a double facing with small filling stones in the middle. It has only one course of stones left. Its length is 1.8 m and its width is 0.8 m. The stone size is between 0.30 to 0.70 m. Two stones heading N-S are probably related to it. The pottery needs to be studied to date the structure.

Floor SU125 (top level: 599.23) is also related to this wall (fig. IV.5). It is a compact light pale brown, mixed with a lot of gravel and it comes flat against W124, covering a small part of the sounding (c. 1.6 x 2 m). This floor has not been excavated either.



Fig. IV.5. Floor SU125 against W124.

IV.5. Phase 5: Modern phase

In this phase, several stratigraphic units have accumulated in sounding D (SU112, SU113) and in sounding E (SU129, SU131 and SU133) as well as W130.

SU113, SU131 and SU133 are probably filling from the previous excavation which were deposited here, as they all contain plaster fragments in them. SU133 (top level: 600.04 m) has not been excavated. It is a light pale brownish color, very loose and it contains some gravel and small stones as well. SU113 and SU131 are equivalent and cover most of soundings D and E. They are orangey light brown, with medium compaction. The top level of these layers was 600.01 m and 599.63 m for SU131 and 599.58 m and 599.31 m for SU113. Both layers are between 0.10 m to 0.40 m thick. They contain pottery and small and large stones. W130 (top level: 600.31 m) seems to be a modern low wall from the previous excavation. It has been made among the removal of the stones visible on all the surface surrounding the site. It is a one-row and one-course wall, which is around 2.00 m long and around 0.40 m wide.

SU112 and SU129 are top soil that is a dark brownish color that gets lighter after the removal of the surface layer. They both contain modern materials as well as pottery sherds. They cover the whole of the soundings and are around 0.25 m thick (top level: 600.33 m).

As it has been mentioned before, the aim during this fieldwork season in soundings D and E was to evaluate the extension of building A in the southeastern area of this building (the non-excavated part) and to gain a better idea about what happened to the site.

We can now say that the end of wall W1 has been found as it appears in the southern part of sounding E, however, building A might still run further toward the south. W114 might have been built more to the west to avoid the slope and to match the shape of the hill. It would be interesting in the future seasons to carry out a sounding to the south and to the west of sounding D to gain a better understanding of the inside of this building, what it might have been used for and to clarify if W114 belongs to building A or not.

We can state that another settlement took place after the site was mostly covered as W124 and the floor SU125 show. However, the function of this structure is not clear as it is just one course of a small wall that needs to be dated.

V. The western trench between building A and the suq: excavations in area 3

Abdelkareem Alhebeshan

In Area 3, the main objective was to study the relationship between the walls that run alongside the cardo, which were thought to be a shop, and building A. For instance, was there a street between the suq and building A or instead direct access? A test sounding was planned to detect the extension of the walls and, if necessary, a trench. In the beginning it was thought that there was a room in this area similar to the shops on the cardo, but after digging it turned out that the northern wall extends more towards the east. To locate the eastern limit of this room and the western limit of building A, the excavation was extended to the east, where 4 soundings were made. The three western ones measure 5 x 5 m but the eastern one is 5 N/S x 2.8-3.9 E/W m. The soundings of area 3 were numbered from 1 to 4, from west to east. Between soundings 1 and 2, a baulk was first left and then removed after its southern section was drawn. The soundings 1-4 cover a total area that is 20 m long by 5 m wide and is characterized by a slope from the west to the east. A huge stone collapse covers the whole area 3. Because it was not possible to bring a winch into this area this year, the excavation of the collapse was not completed and we have only very slight visibility of the phase earlier than the earthquake phase. Only a few structures appeared and it is not possible to relate them to each other yet. For now, the excavation has revealed three phases.

V.1. Phase 1. The shop and building A's courtyard

The earliest phase visible so far in area 3 is related to an elongated room (fig. V.1), which was already partially excavated (in 2001 by the DoA team?) and is most probably a shop. The room is more than 3.50 m long and 3.60 m wide. To the west, it opens on to the cardo's portico through a door that is 2.30 m wide. The northern and southern walls, which are E/W orientated, were already visible in their western part. The eastern part of the northern wall (W101) was excavated in soundings 1 and 2 while the southern wall (W158) is located outside of the excavation area. Wall W101 (fig. V.2) is 6.5 m long and 50 cm wide. It is visible over a height of 0.23 to 0.50 m and 1-2 courses. The southern wall (W158) is parallel to W101 but only visible over a length of 3.60 m and a width of 0.65 m. It is currently visible over 1-2 courses. The northern wall W101, and probably the southern wall W158, are built in double-facing with a stone filling. In sounding 2 a wall (W177)

that is perpendicular to W101 and N/S orientated appeared. Only two blocks are visible for the moment. It is not clear yet if W101 and W177 are linked or not.

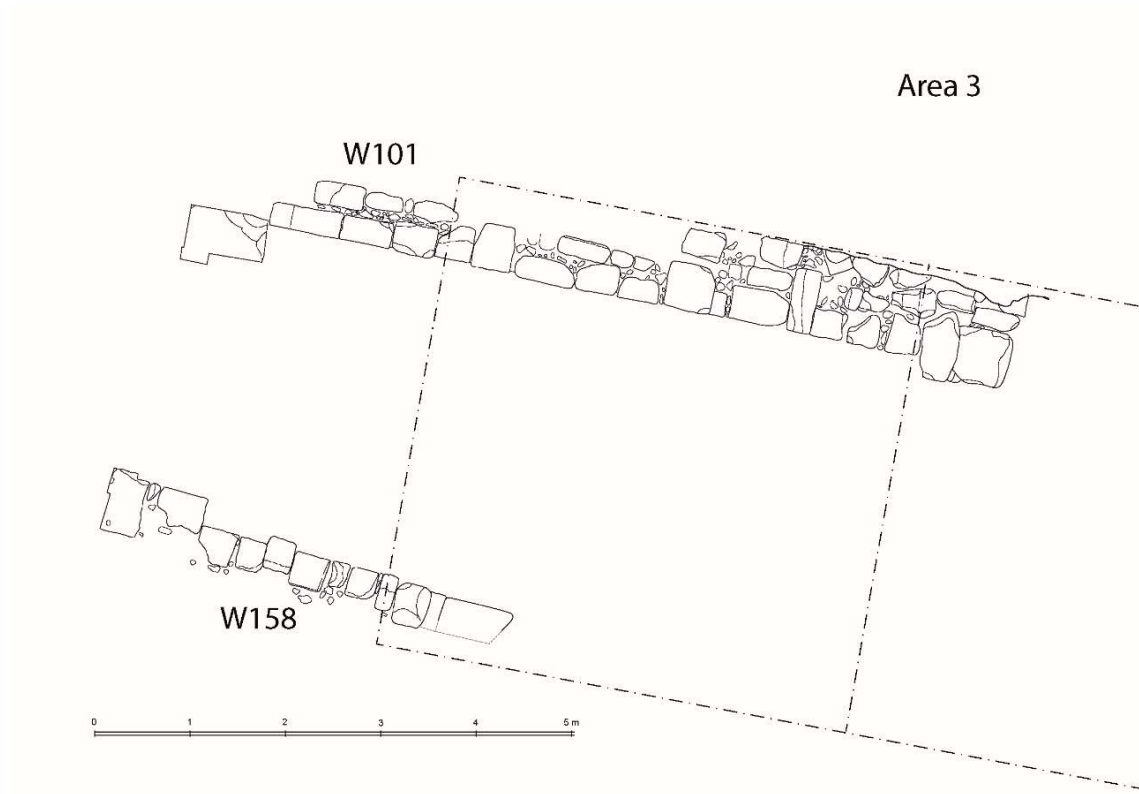


Fig. V.1. Plan of the room.



Fig. V.2. Wall W101, the northern wall of the shop and the collapse 102 in the western part of the sounding, view from the south.

In sounding 4, part of the collapse 102 was removed but the floor of the courtyard has not been reached yet. A few centimeters of sediment were left in place to be removed during the next campaign (end of the excavation at level 600.32 m and top level of the courtyard 600.2 m). There was not enough time to excavate this floor properly. However, it is clear from the flatness of the layers that the whole area of sounding 4 corresponded to the courtyard. No wall enclosing the courtyard is visible yet. The shape of the collapse has not revealed any walls yet and the excavation needs to be completed next year to find the western limit of the courtyard. From the last campaign, it is clear that the courtyard is a least 20 m long from west to east.

The walls of the western room and the courtyard are all located directly under collapse 102. It is not possible yet to know if they were built at the same time but it seems that their last occupation was contemporaneous and preceded the earthquake.

V.2. Phase 2. The collapse of the area's walls

The second phase is characterized by a huge collapse which was most probably related to an earthquake (fig. V.3). The pottery has still to confirm this but, according to the 2022 results, it is most probable that the 749 CE earthquake destroyed area 3. The collapse layer 102 covers the whole excavated area 3 (20 x 5 m). It mainly contains large and medium carved stones in light brown sediment, which are probably related to the collapse of walls. Column capitals, drums and bases appeared in the layer, as well as rubble stones. Many finds were also found such as pottery sherds, iron nails, coins and one juglet (fig. V.4). This layer slopes towards the east (top level max to the west: 604.17 m and top level min to the east: 601.26 and bottom level max to the west 603.92 m and min to the east 600.64 m). The slope is related to the fact that the circulation level is higher in the western part (i.e. the cardo) and lower in the eastern part (i.e. the courtyard). The absence of walls in the courtyard also explains that the collapse is thinner in the eastern part of the excavation area. These stones may have been collected in this area after the earthquake occurred in 749 CE.



Fig. V.3. The area 3 at the end of the excavation, view from the east with collapse 102.



Fig. V.4. Abbasid juglet? Found in context 102.

V.3. Phase 3. The abandonment of the area

The collapse 102 was covered by a topsoil layer (SU100) that contained plant roots and plastic and, in addition, carved stones and some architectural elements were also found. The sediment is loose and dark gray to light gray (fig. V.5). The depth of this layer ranges from 40 cm to 70 cm (top level max.: 604.62 m and bottom level min.: 601.26 m). This layer also contains many pottery sherds, mosaic tesserae, shards of glass and slag. This layer is the result of recent sedimentation and rubbish, and could also be the filling thrown here during the excavation of the building by the DoA. It follows the slope of the collapse 102.



Fig. V. 5. Top soil (cxt 100) at the beginning of excavation in sounding 1, view from the east.

To conclude, we were not able to observe the relationship between building A and this western room. It could have been a shop since it opens onto the cardo's portico, it is elongated and perpendicular to the cardo and it is aligned with other buildings with similar doors. However, it is much longer than the shops known in the southern part of the cardo or north to the Nymphaeum. So, it cannot be excluded yet that this room is a kind of entrance corridor for building A. However, this would imply a huge difference in level between the courtyard and the rooms that surrounded it and the entrance level.

VI. The EJP Project's faunal remains (2022-2023)

Dr. Hervé Monchot

The EJP project's first two excavation seasons delivered 2,220 faunal remains: 424 in 2022 and 1,796 in 2023. These remains were distributed in 37 stratigraphical units, all along the stratigraphic and spatial sequences, and they belong to 15 species, mainly domestic mammals (Tab VI. 1). Out of all of the material, we were able to identify 1,465 remains specifically and anatomically and there were 735 indeterminate fragments (33.1%).

Generally, bones recovered during archaeological excavations have various origins (Lyman, 1994; Monchot 2016): (1) A natural origin independent of human activities. This is the case, especially for intrusive animals such as rodents and carnivores which die in situ through illness or accidents (fire, floods or collapse of structures, etc). These animals are often commensal to human activities. (2) An anthropogenic origin. The bones represent food waste found either in situ (i.e. in an oven or on an occupation floor) or in dump areas. Bones may also come from domestic animals which died naturally, due to illness or by accident, and were removed without being consumed. These may have been buried or simply thrown away. The bones of the corpus are generally well-preserved and show few signs of weathering (Behrensmeyer 1978; Todisco & Monchot, 2008). However, they are very fragmented, e.g. the long bones, vertebrae and skulls. This fragmentation is due to ante-depositional processes (e.g. butchery and cooking techniques etc.) and post-depositional processes (e.g. trampling, collapse, sediment compaction and excavation techniques etc.).

Faunal remains are found in different types of archaeological sediments, but they mainly belong to levels of abandonment or post-earthquake collapse (Tab. VI.1). Numerous remains (N= 927, i.e., 41.7% of the total faunal remains) were found in a collapse layer north of room R1 (SU 140, 144 and 150), probably from the upper floor of the room. The archaeozoological procedure used follows that described in Monchot (2016).

Context type	CXT	TOT	CAP	BT	SC	EQU	CAM	GAZ	CL	CARN	ROD	GG	AL	AV	FIS	CRU	SHELL	SH	MH	LH	IND
Collapse layer in room R4 = earthquake	24	5	4	1																	
Abandonment after the earthquake	32	5	2																		3
Modern deposit	35	29	17	2								1								3	6
Modern deposit	36	85	48									8									29
Collapse of upper floor, room R4	39	5	5																		
Late fireplace	41	3	1						1		1										
Abandonment after the earthquake	42	7	4									1									2
Midden or dump from a fireplace, after the earthquake	43	2	2																		
Dump after the collapse	46	3	3																		
---	48	6	2																	1	3
Late occupation, after the collapse	49	81	62		2							5					2				10
Abandonment after the earthquake	51	3	3																		
Collapse of upper floor, room R4	52	42	8									4		2							28
Burnt manure on floor room R4 (stable)	55	1	1																		
Earthen floor room R4	56	28	7									2									19
Late occupation, after the collapse	58	133	73		1	1						12					5			2	39
Collapse (probably earthquake), room R1	59	61	34		2					1		2			1		1				20
Accumulation deposit after the earthquake	61	16	10									1									5
Collapse of upper floor, room R5	62	12	4											1			1				6
Deposit after the earthquake	103	100	35		2							12					1		2	4	44
Deposit after the earthquake	105	168	102								1	13					20			1	31
Filling in a pit dug in the earthquake collapse	121	80	38									16		1	1		1				23
Deposit after the earthquake	122	71	28	1	5			1				3			1					1	31
Collapse layer or backfilling layer from 2001 excavation in the gap of the courtyard pavement	128	14	7									1								1	5
Deposit from previous excavation	131	26	19	2	1							2		1	1						
Layer to build the pavement in the courtyard	134	18	6		1							1									10
Collapse layer north of room R1	135	6	3																		3
Leveling layer under the mosaic pavement and inside the quarry cut	136	46	21	1	2										1	5				1	15

Collapse layer on the courtyard pavement	137	60	30	4	1							3									22
Filling to level the construction of the pavement	138	65	20	5	5							8								5	22
Layer under 136	139	40	19		1							1		2	2						15
Collapse layer north of room R1, probably from the upper floor of the room.	140	31	12									1					3				15
Layer to build the courtyard's pavement	141	14	3		1																10
--	142	16	6																		10
Collapse layer north of room R1, probably from the upper floor of the room.	144	758	331	4	2		3	1				170	1		1		4			13	228
Filling to level the construction of the pavement	147	42	3		4							4		2					1		28
Collapse layer north of room R1, probably from the upper floor of the room.	150	138	88									14					18				18
TOT		2220	1061	20	30	1	3	2	1	1	2	285	1	7	8	7	56	1	2	32	700

Tab. VI.1. List of species from the EJP in number of identified specimens (NISP) according to the different archaeological contexts [A= Area; SD = sounding; R= room; CXT= US] [CAP = caprine, sheep/goat (*Ovis aries*/*Capra hircus*); BT = cattle (*Bos taurus*); SC = pig (*Sus scrofa domesticus*); EQU: equids; CAM = camel (*Camelus dromedarius*); GAZ = gazelle (*Gazella sp.*); CL = dog (*Canis lupus familiaris*); CARN = small carnivore; ROD = rodent; GG = chicken (*Gallus gallus f. domestica*); AL = partridge (*Alectoris sp.*); AV = Aves sp.; FIS = fishes; CRU = crustacean; SH = small-sized herbivore; MH = medium-sized herbivore; LH = large sized-herbidore; and IND = indeterminate].

VI.1 Species List

VI.1. 1. Caprine. sheep/goat (*Ovis aries/Capra hircus*) [NISP= 1061]

Sheep and goats were distinguished using morphometrical criteria (Salvagno and Albarella, 2017, and numerous references therein). However, despite the extensive literature, specific separation is not always easy, a large majority of the criteria are not 100% reliable and the very diagnostic elements, such as horncores or coxae, are generally poorly preserved. Sheep and goat remains were placed in a combined sheep/goat category, i.e., caprine.

The caprine (sheep/goat) largely dominates the bone assemblage (73.9.5% of the identified specimens).

Apart from the small bones (i.e., phalanges, carpal and tarsal), no bones (i.e., skulls, long bone, vertebrae or ribs) are complete, making specific identification difficult. Table VI.2 shows the skeletal profile of the caprine where all the anatomical elements are present.

It is difficult to calculate the minimum number of individuals present in this assemblage because they belong to several stratigraphic units with very different taphonomic origins. We did not observe any bones in connection. which suggests that these remains correspond to leftovers or even the remains of primary butchery which were thrown out or abandoned on the site during occupation phases. The majority of individual bones belong to young individuals or adults, e.g. to individuals at their maximum weight (age according to Payne, 1973).

The presence of cutmarks on 14 bones, 13 of which belong to caprine [i.e., cervical vertebra, sacrum, distal humerus, scapula (x2), rib (x3), coxal, distal femur, diaphysis of a tibia, distal metatarsal and distal metapodial] and one to a chicken (distal tibiotarsus), confirms the anthropogenic nature of these remains (Binford, 1981; Lyman, 1987; Monchot, 1996).

The predominance of the caprine is not surprising given the importance of these animals in the diet of the inhabitants of the Levant. In Jerash, they were the main source of meat, and also of milk and wool. Goats, and to a lesser extent sheep, were particularly valuable because they produced milk for part of the year. The reason for preferring goats to sheep is clear: sheep have about half the annual milk yield of goats and they lactate for about three months, while goats can be milked for up to five months (Palmer, 1998). This meant that fresh milk was only available in the first half of the year, but it also quickly soured in the heat.

Bone elements	TOTAL SU				SU 140-144-155				
	Right	Left	Indet	Total	Right	Left	Indet	Total	MNI
Skull	1	1	27	29			12	12	2
Mandible	4	1	6	11	1		4	5	1
Teeth	7	18	11	36	2	3	1	6	--
Hyoid			3	3			2	2	2
Cervical vertebrae			20	20			11	11	1
Lumbar vertebrae			34	34			24	24	2
Thoracic vertebrae			29	29			12	12	1
Caudal vertebrae			3	3					
Vertebrae indeterminate			12	12			2	2	--
Sacrum			6	6			6	6	1
Sternum			1	1			1	1	1
Rib			277	277			120	120	--
Scapula	7	12	32	51	2	7	13	22	5
Humerus	10	14	9	33	5	6	5	16	5
Radio-ulna		1	5	6					
Radius	7	5	4	16	5	1	2	8	3
Ulna	4	1	4	9					
Carpal	2	1	2	5	2	1		3	1
Metacarpal	5	3	3	11	4	1		5	3
Coxal	9	12	16	37	7	8	7	22	5
Femur	4	11	18	33	1	5	9	15	2
Patella			1	1			1	1	1
Tibia	8	9	25	42	2	2	16	20	2
Tarsal	9	5	1	15	5	3		8	3
Metatarsal		4	4	8		2	1	3	2
Metapodial			10	10			3	3	1
Phalanx 1			12	12			5	5	2
Phalanx 2			7	7			3	3	1
Phalanx 3			1	1			1	1	1
Long bone			303	303			95	95	--
Total	77	98	886	1061	36	39	356	431	5

Tab. VI.2. Skeletal representation of caprine in NISP (Number of Identified Specimens) all archaeological combined and MNI (Minimum Number of Individuals).

VI.1.2. Cattle (*Bos taurus*) [NISP= 20]

Twenty bone remains belonging to cattle have been identified:

- one tibia proximal shaft and one radius shaft in SU 35;
- one left femur distal shaft in SU 137;
- two long bone shafts in SU 24 and in SU 137;

- two horncore fragments in SU 131;
- one mandible fragment in SU 138;
- one upper right D3 in SU 122 belonging to a juvenile;
- one lower left D3 in SU 136 belonging to a juvenile;
- three fragments of a lumbar vertebra in SU 138 and in SU 137 (x2);
- one axis fragment in SU 144;
- two fragments of cervical vertebra in SU 144;
- three first phalanx in SU 144 and SU 138 (x2);
- one second phalanx in SU 138.

Cattle seem to have been consumed in building A. Nevertheless, its presence is marginal compared to caprine and this could be explained by its demanding ecological requirements (e.g., water and pasture). It is easily replaced by camels in harsh environments.

VI.1.3. Pig (*Sus scrofa domesticus*) [NISP= 30]

Thirty bone remains belonging to pigs have been identified:

- in SU 49 one cervical vertebra and one scapula fragment;
- in SU 58 one right calcaneus;
- in SU 59 one left distal humerus and one upper incisor;
- one skull fragment in SU 131;
- one occipital condyle and one fragment of a lower molar in SU 103;
- in SU 147 one skull fragment, one right astragalus and two fragments of mandible with milk teeth belonging to a piglet of 2-4 months;
- in SU 122 one fragment of an upper incisor, two fragments of a proximal ulna, one second phalanx just fused and one unfused metapodial 2-5 in distal;
- one left maxillary with P1P2 in SU 134;
- one proximal end of a left metacarpal 4 in SU 139;
- one skull fragment and one proximal right metapodial 2-5 in SU 136;
- in SU 137 one fused proximal right tibia;
- in SU 141 one mandible right fragment with D4 belonging to a piglet;

- in SU 144 one mandible right fragment with CP1P2P3P4 belonging to an adult and one right proximal diaphysis of a tibia;
- in SU 138 an unfused first phalanx, an ulna diaphysis fragment, a left proximal diaphysis of a tibia, a left condyle of a mandible and one right mandible fragment with D3D4M1 belonging to a piglet of 2-4 months (age according to Horard-Herbin, 1997).

Except for a few mainly Byzantine sites, pigs have never been found abundantly in Jordan, but they have sometimes been found during Islamic periods (Horwitz & Studer, 2005; Bouchaud *et al.*, 2018). This presence is most often attributed to a Christian community, the presence of which is attested in Jerash by churches. It does not seem that the pig played the role of a staple food. Pigs may have been exploited at times of high demand to supplement seasonal variations in goat meat supplies or simply to add variety to people's diet. In fact, unlike goats and cattle, pigs do not provide secondary products and are raised solely for meat.

VI.1.4. *The Arabian camel (Camelus dromedarius)* [NISP= 3]

Three camel remains, all found in SU144, have been identified: a fragment of a left scaphoid, a fragment of a left proximal end of a metacarpal and a second uncomplete phalanx the measurements of which are:

- greatest length= 67.2 mm;
- breadth of the proximal end= 32.5mm;
- depth of the proximal end = 26.5 mm;
- smallest diaphysis= 28.4 mm.

Camel was widely consumed during Antiquity and the Middle Ages in the Arabian Peninsula (Monchot 2014 and references therein), however it is not possible to tell if camel was eaten in building A.

VI.1.5. *Equid (Equus sp.)* [NISP= 1]

Only an upper cheek tooth (occlusal length= 26.3 mm, occlusal breadth= 27.4 mm) was found in US 58. Distinguishing between equine species (horses, donkeys and their hybrids) is not easy in the absence of complete remains (e.g., Hanot *et al.*, 2017; Hanot & Bochaton, 2018). As in the case of the camel, it is not possible to tell if the equid was eaten.

VI.1.6. *Gazelle (Gazella sp.)* [NISP= 2]

This was the only species belonging to wild mammal fauna discovered in building A. The gazelle was identified by a distal end of a metapodial (SU 122) and a fused proximal end of phalanx

1 (US 144). The paucity of material makes it impossible to specify the species, indeed several species of gazelle are present in this region of Jordan (Harrison & Bates, 1991).

VI.1.7. Dog (*Canis lupus familiaris*) [NISP= 2]

Only a complete first phalanx (SU 41) attests to a dog's presence on the site. The dog is considered a commensal species.

VI.1.8. Small Carnivore [NISP= 1]

A fragment of femur shaft belonging to a small carnivore (cat/fox size) was found in SU59.

VI.1.9. Rat (*Rattus sp.*) [NISP= 2]

Two remains attest to the presence of a rat, a femur (SU 41) and a skull (SU 105). The rat, the species of which cannot be specified in this case, is considered to be commensal of human activities.

VI.1.10. Chicken (*Gallus gallus f. domestica*) [NISP= 285]

Chicken is the second most consumed species in Jerash. It has been found in many stratigraphic units (Tab. VI.1). The anatomical representation of this gallinaceous essentially shows the presence of elements associated with limbs, wings and thighs, while the cranial elements, the small bones, i.e., the phalanges or even those of the axial skeleton are rare or even absent. Several reasons can be cited to explain this skeletal profile, such as the non-systematic sieving of sediments or even post-depositional taphonomic processes (e.g. trampling or weathering) making the most fragile bones such as the sternum or the sacrum even more vulnerable, without forgetting of course safe human activities with a selection of giblets. We nevertheless observe an overabundance of tarsometatarsus which is difficult to explain at this stage of the analysis.

ELEMENTS	TOTAL SU				SU 140-144-155				
	Left	Right	Indet.	Total	Left	Right	Indet.	Total	MNI
HEAD									
Skull			3	3			2	2	1
AXIAL SKELETAL									
Sternum			7	7			5	5	2
Synsacrum			4	4			3	3	3
Pygostyle			1	1				1	1
Rib			10	10			8	8	--
Pelvis (acetabulum)			7	7			4	4	2
WING									
Scapula	3	5	1	9	2	3	1	6	3
Coracoid	5	10		15	3	5		8	5
Humerus	12	12	4	28	10	9	3	22	9

Radius	2	6	1	9	2	4		6	4
Ulna	9	11	4	24	8	8	1	17	8
Carpometacarpus	1	6	1	8	1	4		5	4
LEG									
Femur	21	19	3	43	10	11		21	6
Tibiotarsus	26	20	13	59	12	15	9	36	13
Tarsometatarsus	36	15	5	56	26	11	3	40	22
EXTREMITIES									
Phalange			1	1				1	1

Tab. VI.3. Chicken bone skeletal profile in Jerash (EJP, building A) in Number of Identifiable Specimens (Indet. = indeterminate) for the total SU and for SU 140-144-150 combined.

No eggshells were found but we can note the presence of five roosters attested by the presence of a spur on the tarsometatarsus (hens do not have this), hens due to the presence of medullary bones (De Cupere *et al.*, 2005) and a few juveniles.

VI.1.11. Partridge (*Alectoris sp.*) [NISP= 1]

A small phasianid remain has been attributed to the partridge, a species which was widely present and hunted in Jordan in ancient times. The remain found in SU 144 was a left tarsometatarsus which is smaller than that of a chicken: GL= 43.5 mm; Bp = 8.0 mm; SC = 3.3 mm; and Bd= 8.2 m.

VI.1.12. The fish [NISP= 8]

Several remains of fish have been discovered, their specific identification will be made soon, but we can already confirm the presence of catfish (*Clarias sp.*). Catfish are often mentioned in faunal lists from the Middle East (Van Neer *et al.*, 2004).

VI.1.13. The crustacean [NISP= 7]

Crustacean remains (chelicera) which can be attributed to freshwater crab (cf. *Potamon potamios*), due to their size, have been identified in SU 136 (N= 5) and 139 (N=2). Crustacean remains have been found in Dharrah (Bouchaud *et al.*, 2018) and in the military camp of Lejjun where, with 181 remains, they made up a non-negligible secondary food resource for the Roman soldiers (Topleyn, 1994). Like the catfish, the freshwater crab highlights the presence of water in a river, lake or swamp in the surrounding area.

VI.1.14. The shells [NISP= 56]

Some shells are present but, as for the fish, their specific identification will be made later. These are essentially freshwater bivalves and fragments of mother-of-pearl.

VI.2. Close-up: The case of SU 140-144-150

These stratigraphic units were found in a collapsed layer north of room R1, probably the remains of the upper floor of the room, and provide a small homogeneous assemblage composed of 927 remains. This assemblage is largely dominated by consumed domestic species, caprine and chicken (Tab. VI.1).

- Chicken is well represented and all these bones belong to a minimum of 22 individuals—MNI estimated from the tarsometatarsus (Tab. VI.3). Among these individuals, there are at least two roosters.
- Caprines are represented by 331 bones belonging to a minimum of 5 individuals. The anatomical representation is shown in table VI.2. It is difficult for the moment to draw conclusions about the origin of these remains and in particular to know whether specific butchery quarters existed.
- Beside these species, one Arabian camel is represented by three bones, one gazelle is represented by one piece of remains and one pig is represented by two bones.

The continuation of the excavation of this room appears essential in order to better understand the origin of this bone assemblage and also to better understand the status of this room which was strongly impacted by the earthquake. Do the bones come from the upstairs floor (i.e., they were contemporary to the building's occupation and were abandoned on the living floor) which could have been used as a kitchen as suggested by the pottery which has been found or were they present in the room on the ground floor?

VI.3. Preliminary conclusions

The bone assemblage is dominated by the domestic goat/beef/pig triad where goat meat (sheep/goat) was widely consumed, followed to a lesser degree by cattle and pig. This site differs slightly from the regional pattern observed for various sites in the Near East during the Roman period (Tab. VI.4). This difference could be explained by the fact that we are at the start of excavations or by the functional nature of the building.

	N° of sites	Average (NRD)	Cattle	Caprines	Pig
Urban sites	21	877	21.6 ± 13.6	72.8 ± 13.8	5.6 ± 7.8
Other sites (rural sites)	19	487	26.7 ± 17.6	66.6 ± 21.8	6.7 ± 9.2
Military sites	4	1413	10.3 ± 15.7	84.3 ± 15.9	5.4 ± 5.3
<i>Mansio. Samra</i>	--	902	9.5	82.8	7.7
<i>EJP. Jerash</i>	--	1111	1.8	95.5	2.7

Tab. VI.4. Statistical distribution of the domestic triad within various assemblages of the Near East during the Roman period (data from King, 1999: Fig. 15. Table J; Samra Mansio, Monchot, 2022).

Although the Umayyad period is well represented archaeologically in Transjordan, it is much rarer archaeozoologically. Indeed, archaeological sites which present a long stratigraphic sequence in Jordan (e.g., Samra, Petra and Dharih) most often present levels from the 6-8th century CE where it is sometimes difficult to distinguish Byzantine from Umayyad occupations. The excavation of this large domestic building from the EJP excavation therefore appears essential for better understanding the lifestyle, namely the meat diet of Jerash's inhabitants during the Umayyad period.

The excavation of this building also offers a huge opportunity for better documenting the consequences of the 749 CE earthquake. Regarding the remains of domestic animals, it is important to point out that several of them found themselves crushed by the collapse of walls across Jordan during this event; this is the case for at least five donkeys and one cow which were crushed *in situ* probably during this earthquake in Dharih (Monchot *et al.*, submitted). Such a situation has already been observed in Pella (Köhler-Rollefson, 1989).

VI.4. Metric evaluation

The good preservation of animal bones from the site provided an opportunity for gathering relatively numerous bone measurements, although the broad age range posed problems in the evaluation of these data. All the measurements and abbreviations used are according to Driesch's standard (Driesch von den, 1976). Measurements were taken using a caliper rule and are expressed in millimeters.

The measurements present in the different tables are defined as follows: GL= greatest length and greatest length of the lateral half (astragalus); GM= greatest length of the medial half (astragalus); Bp= greatest breadth of the proximal end; Bd= greatest breadth of the distal end; BL= breadth of the lateral half (astragalus); BM= breadth of the medial half (astragalus); Btro= greatest breadth of the distal trochlea (humerus); Htro= greatest depth of the distal trochlea (humerus); Dp= greatest depth of the proximal end; Dd= greatest depth of the distal end; SD= smallest breadth of the diaphysis; SC= smallest breadth of the corpus; Bb= basal breadth (coracoid); BF= breadth of the basal articular surface (coracoid); Did= diagonal of the distal end (carpometacarpus); GLP= greatest length the glenoid process (scapula); LG= length of the glenoid cavity (scapula); BG= breadth of the glenoid cavity (scapula); SLC= smallest length of the neck of the scapula; ASG = shortest distance from the base of the spine to the edge of the glenoid cavity (scapula).

VI.4.1. Caprine measurements

GL	Bp	Dp	SD	Bd	Dd
PHALANX 1					
45.8	14.2	17.8	11.3	13.0	12.1
40.7	15.5	16.6	12.4	14.1	12.2
39.0	13.7	15.6	10.1	12.0	10.3
39.5	13.7	17.1	11.1	13.2	12.2
40.8	13.2	16.1	10.8	12.0	11.2
42.6	13.7	18.5	12.1	13.3	10.2
PHALANX 2					
21.8	14.6	14.2	11.8	11.7	13.6
25.8	12.1	12.0	10.1	12.0	10.3
26.6	14.9	15.6	11.6	12.1	13.4
24.8	12.1	12.3	9.7	9.6	10.9
26.1	13.1	12.9	0.8	10.8	11.6
GL	BL	GM	BM	BP	Bd
TALUS					
29.1	15.1	26.5	15.0	17.8	18.3
32.8	18.8	31.3	19.5	22.4	22.1
28.9	15.0	26.6	15.5	17.5	17.8
GL	GB			Btro	Htro
CALCANEUM					
56.1	21.0			30.4	20.0
58.3	24.4			31.5	20.2
				34.3	21.9
Bp	Dp	Bd	Dd		
RADIUS					
33.9	18.1	--	--		
33.4	17.5	--	--		
33.8	15.7	--	--		
--	--	30.0	20.8		
--	--	32.9	22.0		
--	--	36.8	24.0		
METACARPAL					
27.9	17.5	--	--		
25.0	17.4	--	--		
25.3	18.1	--	--		
25.0	19.1	--	--		
26.1	20.2	--	--		
26.2	18.3	--	--		
29.0	19.4	--	--		
29.1	19.5	--	--		
METATARSAL					
20.2	20.3	--	--		
20.0	19.2	--	--		
22.0	20.3	--	--		
20.6	21.7	--	--		
METAPODIAL					
--	--	26.3	17.7		
--	--	25.3	17.8		

Tab. VI.5. Caprine bone measurements.

GLP	LG	BG	SLC	ASG
39.2	32.1	20.2	24.1	31.0
33.0	25.1	27.1	22.2	25.1
37.1	33.1	26.9	25.3	26.1
37.9	30.0	24.6	--	--
41.3	32.5	26.7	23.8	23.0
40.6	31.4	24.0	25.1	25.0
35.0	29.0	22.9	--	--

Tab. VI.6. Caprine scapula measurements.

VI.4.2. Cattle measurements

	GL	Bp	Dp	SD	Bd	Dd
Phalanx 1	--	--	--	--	26.1	20.5
Phalanx 1	60.5	29.8	31.6	24.4	26.8	20.5
Phalanx 2	41.6	28.3	29.6	24.2	29.9	27.4

Tab. VI.7. Cattle phalanx measurements.

VI.4.3. Chicken measurements

GL	Lm	Bp	Dp	SC	Bd	Dd
89.6	86.3	15.6	11.5	5.2	10.3	10.8
98.3	95.1	17.5	12.7	5.9	10.0	10.2
101.1	97.9	17.8	13.5	5.6	10.3	11.2
103.6	100.5	19.0	13.6	6.0	10.2	11.0
131.6	127.1	23.2	16.9	7.2	12.5	14.5
102.3	99.0	15.6	12.2	5.7	9.7	10.3
107.3	102.8	21.8	14.5	6.6	12.0	12.3
95.2	91.5	16.7	11.9	5.6	9.1	10.3
92.7	88.8	15.6	11.6	5.3	9.0	10.0
107.6	103.8	18.3	13.2	5.5	10.3	10.8
--	--	--	--	--	9.6	10.5
--	--	--	--	--	11.3	11.7
--	--	--	--	--	12.3	12.9
--	--	--	--	--	11.4	10.9
--	--	--	--	--	10.2	10.8
--	--	17.8	12.8	--	--	--
--	--	--	--	--	10.9	11.0
--	--	--	--	--	11.1	12.5
--	--	--	--	--	10.5	11.0
--	--	--	--	--	10.4	11.2
--	--	--	--	--	9.6	9.9
--	--	--	--	--	9.5	9.7
--	--	18.4	13.5	--	--	--
--	--	18.4	12.4	--	--	--

Tab. VI.8. Chicken tibiotarsus measurements.

GL	Bp	SC	Bd
69.5	11.6	5.6	12.0
72.4	12.2	5.9	12.2
64.7	11.6	5.9	11.9
72.9	11.2	5.5	11.9
64.2	11.7	5.3	11.8
65.8	12.6	5.8	11.1
70.0	12.3	5.3	12.1
66.1	11.5	5.1	10.9
62.5	11.5	5.9	11.0
65.0	11.4	5.6	10.9
67.6	13.0	5.9	12.0
68.7	11.2	5.7	11.4
71.9	12.5	6.0	13.2
72.3	11.3	5.4	11.5
76.7	12.3	5.8	11.9
65.5	12.0	6.0	11.2
70.4	11.5	5.6	12.0
71.3	11.6	5.7	11.8
65.9	11.4	5.4	11.0
--	--	5.9	13.9
--	--	6.0	12.0
--	--	--	14.0
--	11.2	--	--
--	11.5	--	--
--	11.3	--	--
--	11.9	5.7	--
65.8	11.6	5.3	--
--	12.7	8.8	--
--	--	6.1	14.1
--	--	5.8	12.9
--	--	5.9	13.0
--	12.3	6.1	--

Tab. VI.9. Chicken tarsometatarsus measurements.

GL	Bb	BF
CORACOID		
48.7	12.6	10.9
50.5	13.3	10.8
52.8	14.7	12.2
48.3	13.2	10.9
59.6	15.0	12.8
47.9	11.9	10.9
57.3	--	--
GL	Bp	Did
CARPOMETACARPUS		
36.9	10.8	7.3
33.5	10.6	6.2
35.0	10.6	6.5
35.0	11.2	7.4

Tab. VI.10. Chicken coracoid and carpometacarpus measurements.

GL	Bp	SC	Bd
65.8	18.8	6.8	14.4
70.3	19.4	6.8	14.5
67.1	18.0	6.5	13.9
69.4	18.6	6.4	14.1
62.3	16.3	5.9	12.2
61.8	16.9	6.0	12.3
72.1	19.5	5.9	15.1
--	--	--	12.3
--	20.1	--	--
--	17.8	--	--
--	17.5	--	--
--	--	--	12.7

Tab. VI.11. Chicken humerus measurements.

Bp	Dp	Bd	Dd
-	--	14.1	11.5
-	--	13.9	11.8
-	--	14.5	12.0
-	--	12.0	10.5
-	--	15.0	12.2
-	--	13.9	11.5
-	--	15.0	12.2
-	--	14.8	12.6
-	--	13.6	10.9
15.9	10.9	--	--
14.0	9.4	--	--
14.4	9.3	--	--
14.1	10.2	--	--
15.4	10.4	--	--
17.2	11.6	--	--
14.7	9.4	--	--
14.0	9.2	--	--
14.4	9.5	--	--
14.0	8.9	--	--

Tab. VI.12. Chicken femur measurements.

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VII. The Painted Coating Study: the First Phase

Solène Mathieu

This report primarily aims to present and outline the initial stages of the study of the painted plasters discovered at the site of Jerash within the house known as the House of Hearts which was excavated by the Ifpo Amman under the direction of Julie Bonnéric, lead archaeologist, during the 2022 campaign. The presentation will begin with a brief historical overview of the study conditions. It will then discuss the method adopted for the study and the constraints that were encountered. In conclusion, it will suggest the initial hypotheses that can be formulated based on the observation of this archaeological material.

The painted plasters under study were unearthed in a collapsed position inside layers of collapsed wall and upper floor which were discovered on the ground floor of the house, in rooms R4 and R5. Room R4 was interpreted as a stable due to the uncovering of sediment similar to burnt manure, a terracotta basin interpreted as a water trough embedded in stone masonry and a low wall closing off a feeding trough next to which holes were drilled for tethering animals. Room R5 revealed a large number of storage jars and collapsed amphorae from the upper floor, but the discovery of a sole copper pot beneath the collapse of the upper floor currently means it is not possible to propose any hypothesis about this space. The painted fragments were studied a year after their collection. In between, they were placed in preventive conservation at the site of the French Institute of the Near East in Amman. So, for a year, they were stored in plastic crates, shielded from light and the majority of them were kept in craft paper envelopes to protect them from moisture. This report will present the results of the first study even though it needs to be completed with new pictures.

VII.1. Study methodology.

During this study, various software programs were used to successfully conduct initial observations. The post-excavation inventory (see annex VII.2) and final inventory (see annex VII.3) were recorded using Excel. FileMaker Pro software was employed to generate a synthesis of the visual analysis of the mortars (annex VII.3), while Adobe Photoshop was used to convert photos from RAW format to JPG format for easier processing.

Initially, the plasters were examined in their post-excavation packaging. Some of them had been stored in plastic zip-lock bags. Other plasters were put in craft envelopes, placed in plastic

crates and stored by context number. Unfortunately, while this type of packaging helped protect them from moisture, it did not adequately safeguard them or maintain them under optimal conditions. Indeed, it quickly became apparent that storing them in this manner resulted in damage due to the friction of the mortars against the painted surfaces. Fragments preserved in plastic bags began to develop mold traces on the painted portion, however, this did not hinder the analysis of the decoration. After these observations, it was decided to contact the Jordanian Department of Antiquities to inquire about their protocol regarding the conservation and packaging of this type of archaeological material. Unfortunately, they did not have any specific protocols to follow regarding the treatment of this material. Therefore, it was decided to apply the methodology generally used and explained by Madame Mathilde Carrive during a seminar that I attended during my Bachelor's degree at the University of Poitiers. However, certain material and spatial constraints compelled us to modify, simplify and revise this general methodology, which is typically applied for painted plaster fragments under optimal excavation and discovery conditions.

The sampling method applied for the plasters was the stratigraphic sampling of fragments from the upper floor discovered in a collapsed position, deposited in fifteen different stratigraphic layers, likely due to successive collapse phases in the lower rooms. This method allowed the preservation of field data to study the distribution of plasters and investigate the collapse. The packaging of this material in the field was done with the available resources, without the possibility of adhering to best practice recommendations (BOISLÈVE 2016), using craft paper envelopes.

In the second stage of the study, the fragments were laid out on work tables and recorded in an Excel© file (annex VII.3). In this file, they were counted by stratigraphic unit and by envelope, based on color, and the number of fragments and the thickness of the preserved mortar were specified. This data processing campaign facilitated the post-excavation inventory for recording this material and determining the number of fragments collected during the campaign (annex VII.2). Once the plasters were inventoried, sampling was carried out according to the context of the fragments that retained the most layers of mortar to create a database and inventory (see annex VII.1). In this database, created with FileMaker© (see annex VII.1), the decision was made to include the context, the year of the campaign during which the fragments were discovered and to provide a description and macroscopic study of the supports.

In a third step, the pieces of plaster were spread out on large tables protected by newspaper to shield them from moisture and prevent further damage (fig. VI.1). This arrangement had the advantage of facilitating their study. The plasters were initially sorted by context, before being

aligned and classified by colors or decorations to gain better visibility of the decorative groups and the chromatic range.



Fig. VII.1. Fragments arranged for study and awaiting reconditioning.

Finally, the pieces of plaster which were considered remarkable due to their polychromy and/or decoration were photographed to preserve an image of their appearance and potentially facilitate the reconstruction of patterns (fig. VII.2). The mortars were also photographed to make it possible to study the number of visible layers, color, granulometry and composition.

The next step should have been to repackage the pieces of plaster in suitable crates to store them. Unfortunately, the DoA has not yet completed the construction of a new storage space for archaeological material and the completion date is currently unknown. Furthermore, it is also unclear whether a conservation protocol for painted plasters will be published before the end of the storage construction.

VII.2. Description

VII.2.1. Painted coatings

Following the inventory, it was observed that 86% of the sampled fragments do not exhibit any decoration. Among these monochromatic fragments, the largest corpora are those that are white in color—more than 500 fragments—or orange—more than 600 fragments. All fragments vary

in size and thickness; however, due to the quantity of fragments found, it was not deemed relevant to measure them individually to determine the minimum and maximum size among all available stratigraphic contexts for the 2023 campaign.

The study of the plasters revealed that monochromatic fragments were predominant in all contexts. They are mainly white or orange (62% of the corpus). However, a wide range of colors was observed, ranging from white to dark red, black, gray, to pale purple and fluorescent orange (fig. VII.2).

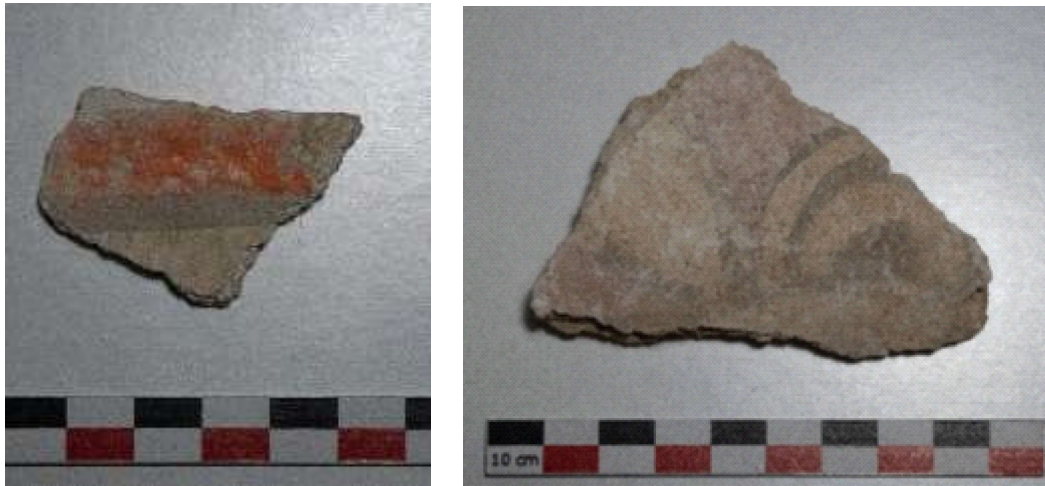


Fig. VII.2. Polychrome and decorated fragments (contexts 26 and 27).

The polychrome fragments can be adorned with two to four different colors, although only 25 fragments consist of more than three colors. It is noteworthy that polychrome fragments often feature a decoration characterized by parallel bands that overlap, typically composed of three parallel lines with variable widths ranging from 1 to 3 cm. At the top, there is a thin gray band, followed by a dark red band in the middle flanked at the top and bottom by two thin fluorescent orange bands. This decoration ends at the bottom with a thin gray band that may continue as a gray wavy line on a white background. However, this type of decoration represents only 4% of all fragments studied this year, 66 fragments in total. The decoration can also feature semi-circular shapes. This type of decoration is often executed on a white background and the circular lines are usually gray with violet or red inside them (fig. VII.3). However, these geometrically shaped decorations are rare among the fragments in our possession. Out of the 44 fragments of this type,

17 fragments show a purple color. These decorated and polychrome fragments represent only 14% of the corpus discovered in 2022 and recorded in 2023.



Fig. VII.3. Fragment with red decoration on a white background discovered in context 26.

Another decoration with horizontal bands has been observed; these few elements were found in the collapse of room R5 (fig. VII.4). Found only in context 62, they are different to the rest of the corpus due to the high granularity of their pigments and their decoration which does not seem to be as carefully applied as on other fragments. Also, their pale yellow and caramel colors with coarser, grainy and beige horizontal bands are very distinctive.



Fig. VII.4. Painted coating fragments found in context 62.

VII.2.2. Mortars

It has also been observed that the mortar is quite homogeneous among the US, except for in context 62, which presents fragments of a mortar that is different in terms of granulometry, color and composition (fig. VII.5). This means it is legitimate to consider that the fragments discovered in this US correspond to a different construction phase. However, another explanation could be that they originate from another room in the house, such as room R5 instead of R4, where the decoration may have been different.



Fig. VII.5. On the left, the type of mortar in context 25 and, on the right, the mortar that was only discovered in context 62.

It should also be noted that, in context 52, certain fragments do not show any coating (fig. VII.6). They have no pigment and a particularly compact appearance. It could be hypothesized that these are stucco elements.



Fig. VII.6. Fragments of mortar without any traces of painted plaster were found in stratigraphic layer 52.

VII.3. Hypotheses, analysis and results

Due to the conservation state of the fragments and the lack of data related to the 2001 excavation of rooms R4 and R5, it is likely to be impossible to reconstruct the decoration. However, in a second phase of study (in 2024) it will be possible to attempt to reconstruct part of

the decoration and formulate hypotheses regarding the placement of the fragments within the dwelling.

In total, based on surface area calculations, the painted plasters collected represent an area of approximately 3.40 m² when laid out on a table. This may seem very little but some of the decoration is most probably missing. High fragmentation could also bias the results. The fragments were likely to have been part of the decoration of one or several rooms on the upper floor, as the lower parts were often dedicated to service areas (VERNET 2018). Therefore, it can be assumed that this decor with a varied chromatic range is homogeneous across the studied stratigraphic layers. Nevertheless, through its homogeneity, we can observe a certain pattern in the decoration.

The upper part of the walls may have been adorned with molding (fig. VII.7). Indeed, certain fragments have rounded edges. They are made from a terracotta element in a mortar layer, following the stucco technique. These fragments feature a decoration composed of bands that can be dark red in the upper part, gray and fluorescent orange or dark red, gray and white. It is possible to reconstruct part of the decoration thanks to certain fragments that preserve two registers of motifs and their intact molded edges, suggesting that these fragments were located in the highest part of the elevation. Indeed, some present horizontal bands of colors in the upper part and in the lower part a gray decoration on a white background imitating waves which is flanked in the upper and lower parts by a gray horizontal band.

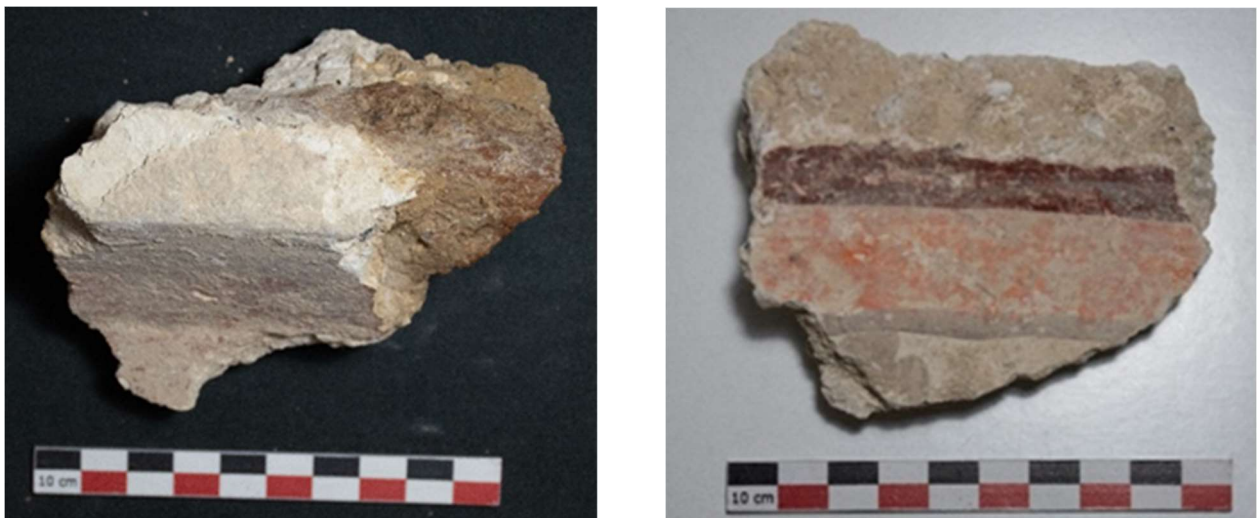


Fig. VII.7. On the left, a molded fragment with a terracotta element (stucco?) from context 26; on the right, a decorated fragment with parallel bands and wave line from context 52.

It would be interesting to conduct chemical analyses on the pigments, especially on the fluorescent orange pigment which has never been observed in the region in any historical period. Knowing its composition would help us to understand this color which is uncommon even within

the context of the Near East in the medieval period. The examples of painted plasters from Qusayr ‘Amra, which are still visible today, also show reddish colors but not this shade of orange. Therefore, it is of interest to investigate whether this plaster has always been fluorescent or if it became fluorescent over time. This question is particularly justified as this color is particularly sensitive to handling, the slightest touch damages it.



Fig. VII.8. Fluorescent orange fragments found in context 62.

In conclusion, we can hypothesize that these painted plasters adorned the upper level of the building, which based on its stratigraphic position collapsed into the lower level. Evidence of a residence with at least one floor is supported by the discovery of the remains of a staircase which is still visible in the southeast corner of the portico and the remains of a mosaic floor in the collapse of room R4. The observation of the painted plasters shows a predominance of white but also the significant use of colors. The colors are mostly monochromatic but they also sometimes follow a decoration pattern of parallel polychrome bands and, more rarely, merlon or semi-circular decorations. This preliminary study is incomplete but allows us to understand this material which has rarely been studied for this period in the region, even though it is essential for understanding the daily life of the inhabitants and the evolution of artistic tastes in domestic habitats between the Byzantine and Umayyad periods. It will be necessary to catalogue the plasters, by groups of decorations, in order to identify the different decoration campaigns or the different painted ornaments in the house. This step is also essential for better understanding the architectural organization of the upper level. Physical-chemical analyses of the plasters should also be considered to determine the chemical composition of the pigments and their origins by identifying trace elements.

Annex VII.1 – Mortar analysis and description sheets

1 15 Total (Non triés) Enregistrements

Afficher tout Nouvel enregistrement Supprimer l'enregistrement Rechercher Trier Partager

Modèle : fiche mortier_Jerash en... Format affichage : Prévisualisation

Fiche mortier - Enduits peints Jérash

Campagne de Fouille : EJP22 Date : 14/06/2023 n°US : 52

Description 2 couches de mortiers superposées précèdent la pose de la couche peinte. La couche la plus extérieure à l'enduit est plus grise, entre cette couche grise et la couche d'enduit se trouve une deuxième couche de mortier blanche.

1	2	
Type <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type2 <input type="checkbox"/> pulvérulent <input checked="" type="checkbox"/> friable <input type="checkbox"/> compact	Type3 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input type="checkbox"/> compact
Couleurs <input checked="" type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur2 <input type="checkbox"/> gris <input type="checkbox"/> ocre <input checked="" type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur <input type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron
Composition <input checked="" type="checkbox"/> charbons <input checked="" type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition2 <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input type="checkbox"/> chaux <input type="checkbox"/> TCA
Granulométrie <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input checked="" type="checkbox"/> Moyenne	Granulométrie2 <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulo3 <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne

Relation stratigraphique 1 est sous 2, 2 est sous la couche peinte

Observations Sur certains fragments, il est possible d'observer ce qui pourrait être les résidus d'une 3e couche de mortier, terreuse, marron. La couche grise est principalement composée de charbons et de nodules de chaux, sa granulométrie plus grossière que la 2e couche est sûrement due à la présence aux gravillons que l'on peut observer. Dans cette couche, a été mis au jour un très grand nombre de fragments d'enduits, avec une majorité de blanc. Certains présentent des décors en bandes hori, qui peuvent être bi ou trichromes. Certains fragments semblent moulurés et présentent un décor en bandes rouge, gris et orange avec parfois un début décor gris sur fond blanc en vague, mais un très grand nombre de fragments unicolore.

2 15 Total (Non triés) Enregistrements

Afficher tout Nouvel enregistrement Supprimer l'enregistrement Rechercher Trier Partager

Modèle : fiche mortier_Jerash en... Format affichage : Prévisualisation

Fiche mortier - Enduits peints Jérash

Campagne de Fouille : EJP 2022 Date : 14/06/2023 n°US : 27

Description 3 couches de mortiers visibles avant la couche peinte.

1	2	3
Type <input type="checkbox"/> pulvérulent <input checked="" type="checkbox"/> friable <input type="checkbox"/> compact	Type2 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type3 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact
Couleurs <input type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input checked="" type="checkbox"/> marron	Couleur2 <input checked="" type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur <input type="checkbox"/> gris <input type="checkbox"/> ocre <input checked="" type="checkbox"/> blanc <input type="checkbox"/> marron
Composition <input type="checkbox"/> charbons <input checked="" type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input checked="" type="checkbox"/> sable <input type="checkbox"/> végétale <input type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition2 <input checked="" type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input type="checkbox"/> sable <input checked="" type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input checked="" type="checkbox"/> sable <input type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA
Granulométrie <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input checked="" type="checkbox"/> Moyenne	Granulométrie2 <input type="checkbox"/> Fine <input checked="" type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulo3 <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne

Relation stratigraphique 1 est sous 2, 2 est sous 3 et 3 est sous la couche peinte

Observations La couche 1 est très friable, et a dans la majeure partie des cas disparu. La couche 2 grise, contenant du charbon est plus grossière et des négatifs de végétaux sont visible, cette couche précède la 3e, et on peut trouver à l'intérieur des fragments de TCA qui part endroits marquent une séparation entre la couche 2 médiane de mortier et la couche 3. De nombreux fragments hétérogènes ont été découverts, majoritairement unichrome, mais certains peuvent être noir et rouge en décors de bandes, blanc et gris avec décors en vague ou en bandes avec du orange fluo.

15 Total (Non triés) Enregistrements

Modèle : fiche mortier_Jerash en... Format affichage : Prévisualisation

Fiche mortier - Enduits peints Jérash

Campagne de Fouille EJP_2022 Date 14/06/2023 n°US 62

Description 2 couches visibles

1	2	
Type <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type2 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type3 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input type="checkbox"/> compact
Couleurs <input checked="" type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur2 <input type="checkbox"/> gris <input type="checkbox"/> ocre <input checked="" type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur <input type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron
Composition <input checked="" type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input type="checkbox"/> sable <input checked="" type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition2 <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input checked="" type="checkbox"/> TCA	Composition <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input type="checkbox"/> chaux <input type="checkbox"/> TCA
Granulométrie <input type="checkbox"/> Fine <input checked="" type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulométrie2 <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulo3 <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne

Relation stratigraphique 1 est sous 2, 2 est sous la couche peinte

Observations Dans cette couche US a été trouvé des fragments de couleurs homogènes certains présentant des bords mais de décors en comparaison avec l'US 52 & 27. Dans les fragments avec les bords on observe la présence de fragments de TCA ou de de gros cailloux. Dans cette couche, le mortier découvert semble similaire à celui découvert dans les US précédentes. Des fragments avec un décor en bandes est également observable, les bandes verticales beige sur un fond qui est aujourd'hui caramel, motif unique que l'on ne retrouve pas dans les autres US (autre façon de décoration? reprise décor?)

15 Total (Non triés) Enregistrements

Modèle : fiche mortier_Jerash en... Format affichage : Prévisualisation

Fiche mortier - Enduits peints Jérash

Campagne de Fouille EJP_2022 Date 14/06/2023 n°US 28

Description US dans laquelle un seul fragment a été mis au jour, il présente une légère mouluration en son sommet, de couleur blanche unichrome.

1	2	3
Type <input type="checkbox"/> pulvérulent <input checked="" type="checkbox"/> friable <input type="checkbox"/> compact	Type2 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type3 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact
Couleurs <input type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input checked="" type="checkbox"/> marron	Couleur2 <input checked="" type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur <input type="checkbox"/> gris <input type="checkbox"/> ocre <input checked="" type="checkbox"/> blanc <input type="checkbox"/> marron
Composition <input type="checkbox"/> charbons <input checked="" type="checkbox"/> terre <input checked="" type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input checked="" type="checkbox"/> sable <input type="checkbox"/> végétale <input type="checkbox"/> chaux <input checked="" type="checkbox"/> TCA	Composition2 <input checked="" type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA
Granulométrie <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulométrie2 <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input checked="" type="checkbox"/> Moyenne	Granulo3 <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne

Relation stratigraphique 1 sous 2, 2 sur 1 & sous 3, 3 sur 2 & sous la couche peinte

Observations dans la couche 1, on peut observer du sable, de la chaux, des graviers et de petits fragments de TCA et de petits négatifs d'éléments organiques (végétaux) disparus. la couche 2 présente d'importants nodules de chaux, des charbons et sa granulométrie n'a été apprécié qu'à partir de l'observation des bords du fragments, donc elle peut ne pas refléter de manière objective la réalité.

5 15 Total (Non triés) Enregistrements

Afficher tout Nouvel enregistrement Supprimer l'enregistrement Rechercher Trier Partager

Modèle : fiche mortier_Jerash en... Format affichage : Prévisualisation

Fiche mortier Définir la police du texte, des rubriques ou des objets texte.

Campagne de Fouille EJP_2022 Date 14/06/2023 n°US OUT

Description Fragments trouvés hors tout contextes archéologiques, conservés et ramassés en raison de la similarité des décors et couleurs déjà mis au jour. Beaucoup de fragments unicolores blancs, rouge ou orange, et quelques uns présentent décors en bandes rouge, gris et orange et parfois un décor en spirale gris et orange, les 2 motifs sont toujours sur fond blanc. Un des fragments présentent une mouluration en son sommet, avec un décor en bande orange dans la partie supé et rouge dans la partie infé du fragment. 3 épaisseurs de mortiers lient l'enduit peint.

1	2	3
Type <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type2 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type3 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact
Couleurs <input type="checkbox"/> gris <input checked="" type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur2 <input checked="" type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur <input type="checkbox"/> gris <input type="checkbox"/> ocre <input checked="" type="checkbox"/> blanc <input type="checkbox"/> marron
Composition <input type="checkbox"/> charbons <input checked="" type="checkbox"/> terre <input checked="" type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input checked="" type="checkbox"/> sable <input type="checkbox"/> végétale <input type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition2 <input checked="" type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA
Granulométrie <input type="checkbox"/> Fine <input checked="" type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulométrie2 <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input checked="" type="checkbox"/> Moyenne	Granulo3 <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne

Relation stratigraphique 1 sous 2, 2 sur 1 & sous 3 ; 3 sur 2 & sous la couche peinte

Observations Dans cette couche on observe une 1ere couche de mortier pas encore vue jusque là avec une couche 1 majoritairement composé de cailloux, de la couleur jaune du sable et d'un peu de terre. Cette couche semble parfois passé sous la couche 2 car au-dessus de cette couche est observable une couche de mortier grise, avec des nodules de chaux, du charbons(similaire à la couche 2).

6 15 Total (Non triés) Enregistrements

Afficher tout Nouvel enregistrement Supprimer l'enregistrement Rechercher Trier Partager

Modèle : fiche mortier_Jerash en... Format affichage : Prévisualisation

Fiche mortier - Enduits peints Jérash

Campagne de Fouille EJP_2022 Date 15/06/2023 n°US 26

Description fragments présentes en majorité 2 couches de mortiers mais il est parfois possible d'observer une 3e couche peu conservée sur quelques fragments.

1	2	3
Type <input checked="" type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input type="checkbox"/> compact	Type2 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type3 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact
Couleurs <input type="checkbox"/> gris <input checked="" type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur2 <input checked="" type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur <input type="checkbox"/> gris <input type="checkbox"/> ocre <input checked="" type="checkbox"/> blanc <input type="checkbox"/> marron
Composition <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input checked="" type="checkbox"/> sable <input type="checkbox"/> végétale <input type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition2 <input checked="" type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition <input checked="" type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA
Granulométrie <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulométrie2 <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input checked="" type="checkbox"/> Moyenne	Granulo3 <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne

Relation stratigraphique 1 est la sableuse sous 2, 2 est sur 1 et sous 3; 3 est sur 2 et sous la couche peinte

Observations dans cette couche a été découvert de nombreux fragments d'éléments moulurés et la majorité présente des fragments de TCA juste avant la couche de mortier de chaux. Un des fragment présente néanmoins une composition différente, il n'est composé que d'une très fine couche de mortier gris et une couche de mortier de chaux avant que l'enduit peint ne soit posé, le reste ressemble à un bout de rocher.

15 Total (Non triés) Enregistrements

Modèle : fiche mortier_Jerash en... Format affichage : Prévisualisation

Fiche mortier - Enduits peints Jérash

Campagne de Fouille : EJP_2022 Date : 15/06/2023 n°US : 25

Description : en moyenne 2 couches de mortier, mais certains fragments conservent les traces d'une troisième couche antérieure

1	2	3
Type <input checked="" type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input type="checkbox"/> compact	Type2 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type3 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact
Couleurs <input type="checkbox"/> gris <input checked="" type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur2 <input checked="" type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur <input type="checkbox"/> gris <input type="checkbox"/> ocre <input checked="" type="checkbox"/> blanc <input type="checkbox"/> marron
Composition <input type="checkbox"/> charbons <input checked="" type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input checked="" type="checkbox"/> sable <input checked="" type="checkbox"/> végétale <input type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition2 <input checked="" type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input type="checkbox"/> sable <input checked="" type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input checked="" type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA
Granulométrie <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulométrie2 <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulo3 <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne

Relation stratigraphique : 1 est sous 2 ; 2 sur 1 et sous 3 ; 3 sur 2 et sous la couche peinte

Observations : Cette US ne contient que peu de fragments, la majorité sont unichromes, quelques fragments orange fluo et de décor en bande violet pâle. au revers, on peut de la couche de mortier 2 on peut observer des traces en négatifs de végétaux. Sur 4 des fragments retrouvés, on peut constater des tâches noires, qui ne semblent pas être de la peinture mais plutôt quelque chose qui s'est déposé postérieurement.

15 Total (Non triés) Enregistrements

Modèle : fiche mortier_Jerash en... Format affichage : Prévisualisation

Fiche mortier - Enduits peints Jérash

Campagne de Fouille : EJP_2022 Date : 15/06/2023 n°US : 25,26

Description : 2 couches de mortiers conservés

1	2	
Type <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type2 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type3 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input type="checkbox"/> compact
Couleurs <input checked="" type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur2 <input type="checkbox"/> gris <input type="checkbox"/> ocre <input checked="" type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur <input type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron
Composition <input checked="" type="checkbox"/> charbons <input type="checkbox"/> terre <input checked="" type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input checked="" type="checkbox"/> TCA	Composition2 <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA
Granulométrie <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input checked="" type="checkbox"/> Moyenne	Granulométrie2 <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulo3 <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne

Relation stratigraphique : 1 sous 2 ; 2 sur 1 & sous la couche peinte

Observations : Dans cette couche a été quelques fragments, beaucoup unichromes et d'autres oranges fluo. certain sont anguleux ou mouluré comme déjà observé avec des fragments de TCA entrela couche 1 et 2. les mêmes couleurs rouge , blanc , beige sont observable même si aucun décor n'est visible.

15 Total (Non triés) Enregistrements

Modèle : fiche mortier_Jerash en... Format affichage : Prévisualisation

Fiche mortier - Enduits peints Jérash

Campagne de Fouille : EJP_2022 Date : 15/06/2023 n°US : 49

Description : US composé que de 3 fragments d'enduits peints, sur 2 d'entre eux on observe 1 seule couche de mortier et sur le 3e on observe pas de mortier la peinture jaune semble avoir été posé à même le rocher(?) est-ce un élément peint pariétal ? plafond ?

1	2	
Type <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type2 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type3 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input type="checkbox"/> compact
Couleurs <input type="checkbox"/> gris <input type="checkbox"/> ocre <input checked="" type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur2 <input checked="" type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur <input type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron
Composition <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input type="checkbox"/> sable <input checked="" type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition2 <input type="checkbox"/> charbons <input type="checkbox"/> terre <input checked="" type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input type="checkbox"/> chaux <input type="checkbox"/> TCA
Granulométrie <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulométrie2 <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulo3 <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne

Relation stratigraphique : 1 sous couche peinte

Observations : Certains fragments comme celui peint sur un cailloux plat peuvent poser pb dans l'identification de l'espace où se trouvait le fragment : pariétale, plafond, sol...?

15 Total (Non triés) Enregistrements

Modèle : fiche mortier Faites glisser pour activer un autre enregistrement. Prévisualisation

Fiche mortier - Enduits peints Jérash

Campagne de Fouille : EJP_2022 Date : 15/06/2023 n°US : 39

Description : Chaque fragments ne présentent qu'une couche de mortier, mais 2 en présentent une de couleur, granulo et composition différente.

1	2	
Type <input checked="" type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type2 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type3 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input type="checkbox"/> compact
Couleurs <input type="checkbox"/> gris <input type="checkbox"/> ocre <input checked="" type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur2 <input checked="" type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur <input type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron
Composition <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition2 <input checked="" type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input type="checkbox"/> chaux <input type="checkbox"/> TCA
Granulométrie <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulométrie2 <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulo3 <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne

Relation stratigraphique : 2 sous 1 ; 1 sous couche peinte

Observations : la couche grise n'est présente que pour 2 fragments sur laquelle on va retrouver une très fine couche de chaux blanche mais très mal conservé tout comme la couche peinte orange à peine visible. Cette couche de chaux semble par sa composition très différente des autres.

11 15 Total (Non triés) Enregistrements

Afficher tout Nouvel enregistrement Supprimer l'enregistrement Rechercher Trier Partager

Modèle : fiche mortier_Jerash en... Format affichage : Prévisualisation

Fiche mortier - Enduits peints Jérash

Campagne de Fouille : EJP_2022 Date : 15/06/2023 n°US : 43

Description : Seule 3 fragments ont été découverts dans cette couche, 2 couches de mortiers visibles.

1	2	
Type <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type2 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type3 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input type="checkbox"/> compact
Couleurs <input checked="" type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur2 <input type="checkbox"/> gris <input type="checkbox"/> ocre <input checked="" type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur <input type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron
Composition <input checked="" type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input checked="" type="checkbox"/> végétale <input type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition2 <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input checked="" type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input type="checkbox"/> chaux <input type="checkbox"/> TCA
Granulométrie <input type="checkbox"/> Fine <input checked="" type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulométrie2 <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulo3 <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne

Relation stratigraphique : 1 sous 2 ; 2 sur 1 et sous la couche peinte

Observations : les deux couches de mortiers présentent des traces de végétaux, dans la couche grise : les inclusions de charbons sont présent en grande quantité. la couche est la moins bien conservées mais ne permet pas d'avoir une entière visibilité de la couche 2 qui n'a été observé qu'à partir des bords des fragments.

12 15 Total (Non triés) Enregistrements

Afficher tout Nouvel enregistrement Supprimer l'enregistrement Rechercher Trier Partager

Modèle : fiche mortier_Jerash en... Format affichage : Prévisualisation

Fiche mortier - Enduits peints Jérash

Campagne de Fouille : EJP_2022 Date : 15/06/2023 n°US : 12

Description : 4 fragments étudiés, 2 conservent 2 couches de mortiers et 2 n'en conservent qu'une.

1	2	
Type <input checked="" type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type2 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact	Type3 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input type="checkbox"/> compact
Couleurs <input checked="" type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur2 <input type="checkbox"/> gris <input type="checkbox"/> ocre <input checked="" type="checkbox"/> blanc <input type="checkbox"/> marron	Couleur <input type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron
Composition <input checked="" type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input type="checkbox"/> sable <input checked="" type="checkbox"/> végétale <input type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition2 <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input checked="" type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA	Composition <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input type="checkbox"/> chaux <input type="checkbox"/> TCA
Granulométrie <input type="checkbox"/> Fine <input checked="" type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulométrie2 <input checked="" type="checkbox"/> Fine <input checked="" type="checkbox"/> Grossière <input type="checkbox"/> Moyenne	Granulo3 <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne

Relation stratigraphique : 1 sous 2 ; 2 sur 1 et sous la couche peinte

Observations : 2 des fragments étudiés présentent une composition semblables à ceux de l'US 43 grise avec des inclusions de charbons, et de végétaux, avec une couche de chaux plus aérée, mais sans inclusions visibles à l'œil nu et analysé qu'à partir des bords du fragments. a contrario, 1 des 2 autres présentent 2 couches : 1 grise compacte avec inclusion de charbon et chaux plus fines et une couche blanche de chaux fine. le dernier fragment ne présente qu'une couche 2 plutôt grossière et donc similaire aux 2 précédents fragments.

13 15 Total (Non triés) Enregistrements

Afficher tout Nouvel enregistrement Supprimer l'enregistrement Rechercher Trier Partager

Modèle : fiche mortier_Jerash en... Format affichage : Prévisualisation

Activer le modèle indiqué dans le fichier.

Fiche mortier - Enduits peints Jérash

Campagne de Fouille EJP_2022 Date 15/06/2022 n°US 58

Description analyse faite à partir de 3 fragments choisis pour l'état de conservation des couches de mortiers visibles au nombre de 2.

<p>1</p> <p>Type <input type="checkbox"/> pulvérulent <input checked="" type="checkbox"/> friable <input type="checkbox"/> compact</p> <p>Couleurs <input checked="" type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron</p> <p>Composition <input checked="" type="checkbox"/> charbons <input type="checkbox"/> terre <input checked="" type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input type="checkbox"/> sable <input checked="" type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA</p> <p>Granulométrie <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne</p>	<p>2</p> <p>Type2 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact</p> <p>Couleur2 <input type="checkbox"/> gris <input type="checkbox"/> ocre <input checked="" type="checkbox"/> blanc <input type="checkbox"/> marron</p> <p>Composition2 <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input type="checkbox"/> sable <input checked="" type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA</p> <p>Granulométrie2 <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne</p>	<p></p> <p>Type3 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input type="checkbox"/> compact</p> <p>Couleur <input type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron</p> <p>Composition <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input type="checkbox"/> chaux <input type="checkbox"/> TCA</p> <p>Granulo3 <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne</p>
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Relation stratigraphique 1 sous 2 ; 2 sur 1 & sous couche peinte

Observations les 2 couches de mortier présentent des traces en négatifs d'usage de végétaux dans les mortiers. la couche grise est pour la 1ere fois friable. la couche 2 est conservée sur sa quasi totalité ce qui n'est pas le cas la couche grise, il est donc possible d'avoir une bonne visibilité de la couche 2. Cette US n'a mis au jour principalement que des fragments unicolore blanc et seulement 2 sont décorés d'une bande rouge horizontale sur fond blanc.

14 15 Total (Non triés) Enregistrements

Afficher tout Nouvel enregistrement Supprimer l'enregistrement Rechercher Trier Partager

Modèle : fiche mortier_Jerash en... Format affichage : Prévisualisation

Activer le modèle indiqué dans le fichier.

Fiche mortier - Enduits peints Jérash

Campagne de Fouille EJP_2022 Date 15/06/2023 n°US 46

Description 3 fragments, 1 seule couche

<p>1</p> <p>Type <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input checked="" type="checkbox"/> compact</p> <p>Couleurs <input type="checkbox"/> gris <input type="checkbox"/> ocre <input checked="" type="checkbox"/> blanc <input type="checkbox"/> marron</p> <p>Composition <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input checked="" type="checkbox"/> graviers <input checked="" type="checkbox"/> sable <input checked="" type="checkbox"/> végétale <input checked="" type="checkbox"/> chaux <input type="checkbox"/> TCA</p> <p>Granulométrie <input checked="" type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne</p>	<p></p> <p>Type2 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input type="checkbox"/> compact</p> <p>Couleur2 <input type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron</p> <p>Composition2 <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input type="checkbox"/> chaux <input type="checkbox"/> TCA</p> <p>Granulométrie2 <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne</p>	<p></p> <p>Type3 <input type="checkbox"/> pulvérulent <input type="checkbox"/> friable <input type="checkbox"/> compact</p> <p>Couleur <input type="checkbox"/> gris <input type="checkbox"/> ocre <input type="checkbox"/> blanc <input type="checkbox"/> marron</p> <p>Composition <input type="checkbox"/> charbons <input type="checkbox"/> terre <input type="checkbox"/> cailloux <input type="checkbox"/> graviers <input type="checkbox"/> sable <input type="checkbox"/> végétale <input type="checkbox"/> chaux <input type="checkbox"/> TCA</p> <p>Granulo3 <input type="checkbox"/> Fine <input type="checkbox"/> Grossière <input type="checkbox"/> Moyenne</p>
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Relation stratigraphique 1 sous la couche peinte

Observations Dans cette US, 3 fragments de couleurs et de mortiers similaire avec de le mortier des traces négatifs de végétaux

15 Total (Non triés) Enregistrements

Modèle : fiche mortier_Jerash en... Format affichage : Prévisualisation

Fiche mortier - Enduits peints Jérash

Campagne de Fouille : EJP_2022 Date : 15/06/2023 n°US : 48

Description : 3 fragments de mortiers trouvés dans cet US mais seulement 2 couches de mortiers.

1 2

Type pulvérulent friable compact Type2 pulvérulent friable compact Type3 pulvérulent friable compact

Couleurs gris ocre blanc marron Couleur2 gris ocre blanc marron Couleur gris ocre blanc marron

Composition charbons terre cailloux graviers sable végétale chaux TCA Composition2 charbons terre cailloux graviers sable végétale chaux TCA Composition charbons terre cailloux graviers sable végétale chaux TCA

Granulométrie X Fine Grossière Moyenne Granulométrie2 X Fine Grossière Moyenne Granulo3 Fine Grossière Moyenne

Relation stratigraphique : 1 sous 2 ; 2 sur 1 et sous la couche peinte

Observations : les fragments étudiés ne présentent pas de traces d'enduits, possible que fragments d'enduits, mais 2 couches de mortiers dans une composition similaire à tous ceux déjà analysés. La couche 2 n'a été analysée qu'après observation des bords de fragments, car n'est pas visible entièrement en raison de la couche 1 qui vient se placer au-dessus.

Annex VII.2 - Post-excavation inventory

A	B	C	D	E	F	G	H	I	J
Échelle	Zone	Salle	N° case	n°US	N° de fragment	Couleur	motif	Remarques	Composition des couches
E.P.22	A		31	12	4 rose, ocre jau				2 1grs. granulo grossière, charbons, chaux, micro-graviers, infé, compact, pulvér. ; 1blanche, granulo fine, compacte, chaux
E.P.22	A		31	25	6 blanc, rouge, gris violet	bandes sur fond blanc			3 1maron, terreux, chaux, compact, granulo gr. infé ; 1gris, compacte tris, granulo fine, charbon, chaux, médiane ; 1blanche, tris compacte, chaux, granulo fine
E.P.22	A		31	25	9 ocre laite, orange				2 1gris, infé, compacte, chaux, granulo fine
E.P.22	A		31	25	4 noir				1 1blanche, tris compacte, chaux, granulo fine
E.P.22	A		31	25	5 blanc, ocre jaune				2 1gris, infé, granulo fine, compacte, chaux, charbons ; 1blanche, compacte, granulo fine, chaux
E.P.22	A		31	25	1 orange fluo, gris, blanc	trait fin gris			1 1blanche, granulo fine, compacte, charbon, chaux
E.P.22	A		31	25	1 impossible à délimiter	trait rouge peut être			2 1gris, granulo fine, compacte, charbon, chaux, lutite ou ocre ? ; 1blanche, granulo fine, compacte, chaux
E.P.22	A		31	25	3 rouge, orange				2 1gris, compacte, granulo moyen, charbon, chaux, cailloux, graver ; 1blanche, compacte, granulo fine, chaux
E.P.22	A		31	25	4 beige, orange, rouge foncé, gris diloré de demi cercle gris et bandes rouge et orange				2 1gris, infé, granulo fine, compacte, charbon, chaux ; 1blanche, compacte, granulo fine, chaux
E.P.22	A		31	25	62 rouge foncé, beige, gris, orange bande et spirales				2 1gris, granulo fine, compacte, charbon, chaux ; 1blanche, compacte, granulo fine, chaux
E.P.22	A		31	25	2 blanc, beige, rouge	spirales			2 1gris, granulo fine, compacte, charbon, cailloux et graviers, chaux ; 1blanche, compacte, granulo fine, blanche, chaux
E.P.22	A		31	25	4 beige, gris, orange, rouge fluo	bandes et cercles			3 1maron granulo gr. compacte, hoch vigoureux, graver ; 1gris compacte, graver, charbons, granulo fine, chaux ; 1blanche, chaux, granulo fine, compacte
E.P.22	A		31	25	3 blanc, gris, violet	vagues			2 1gris, granulo fine, compacte, charbon, chaux ; 1blanche, compacte, granulo fine
E.P.22	A		31	25	16 blanc, rouge foncé, orange fluo, bande et cercles				3 1terreux, couleur sable, granulo gr. pulvérisable, chaux ; graver infé ; 1gris, charbon, granulo fine, compacte ; 1blanche, granulo fine, compacte, chaux
E.P.22	A		31	25	12 orange fluo, gris, beige, violet, b.bande et demi cercle				3 1terreux, maron, sable, pulvérisable, granulo gr. graviers, cailloux, infé ; 1gris, charbon, compacte, granulo fine, compacte, chaux
E.P.22	A		31	25	10 blanc, gris, violet, rouge foncé	bandes violettes, rouge et gris et motifs géo			2 1gris, granulo fine, compacte, charbon, chaux ; 1blanche, compacte, granulo fine
E.P.22	A		31	25	10 noir, ocre	bande			2 1gris, granulo fine, compacte, charbon, chaux ; 1blanche, compacte, granulo fine
E.P.22	A		31	25	75 orange, noir, blanc, rouge f. oi	bande			3 1terreux, maron, granulo fine, pulv. infé ; 1gris, compacte, granulo fine, charbon, chaux ; 1blanche, granulo fine, chaux
E.P.22	A		31	25	16 blanc, gris, orange fluo, rouge f. bande				2 1gris, granulo fine, compacte, charbon, chaux ; 1blanche, compacte, granulo fine, chaux
E.P.22	A		31	25	80 rouge, orange, noir, blanc				2 1gris, infé, compacte, granulo fine, charbon, charbon ; 1blanche, compacte, granulo fine, chaux
E.P.22	A.89	Room 4	29	27	1 blanc	avec une ligne orange			2 couches préc. conservées une saboteuse fine granulométrie et la couche de chaux fine granulométrie avec inclusion charbon de bois et petits graviers
E.P.22	A.4	Room 4	29	27	13 blanc	trait gris, rouge et motifs anguleux noir, certains fragments conservent 3 couches			2 couches : 1orange avec une granulométrie orange avec inclusion de graviers ; charbons de bois, nodules de chaux ; sur laquelle se pose une blanche avec granulométrie fine
E.P.22	A.202	Room 4	29	27	1 blanc	decolor rouge foncé	1avec bord incurvé		1terreux, maron, sable, pulvérisable, granulo gr. graviers, cailloux, infé ; 1gris, charbon, compacte, granulo fine, compacte, chaux
E.P.22	A.200	Room 4	29	27	1 blanc	trait fin gris, "violet" et rouge			3 couches : 1terreux, maron, friable avec inclusion micro-graviers, 2e orange conservé sur 3cm épaisseur et 3e blanche sur 0,8 épaisseur pas d'inclusion visible
E.P.22	A	Room 4	29	27	44 blanc, gris	10 noir et orange			2 couches préc. visibles : 1gris, 1,5 cm épaisseur, granulo fine avec inclusion et 1blanche épaisseur varie entre 0,7 à 2 cm épaisseur granulo fine avec nodules inclus
E.P.22	A	Room 4	29	27	44 blanc, gris	trait gris, rouge et motifs anguleux noir	0 fragment avec un angle droit		2 couches : 1gris granulo grossière avec inclus charbons de bois, graver sur 3cm max épaisseur ; 1blanche granulo fine, 0,3 cm moy épaisseur
E.P.22	A	Room 4	29	27	5 blanc, rouge foncé	trait et géométrique ?	1 fragment avec un angle droit		3 1gris avec charbon bois, granulo fine conservé sur 1 seul fragment sur 0,3cm épaisseur ; 2orange avec inclus chaux granulo fine emv 2,3cm épa ; 3blanche inclus gra
E.P.22	A.204	Room 4	29	27	2 ocre orange et orange	bande			2 1orange avec inclusion charbon, 0,4 à 1,4 épa max
E.P.22	A	Room 4	29	27	21 rouge foncé		0 fragment incurvé		1 1gastagranu grossière, 1,7 épa max ; 1blanche granulo fine, 0,3 à 0,8cm épa max
E.P.22	A.201	Room 4	29	27	8 blanc et gris	vague			1 1blanche, granulo fine, 0 inclus, 0,8 à 1,1 cm épa max
E.P.22	A	Room 4	29	27	3 gris, blanc, rouge fluo, rouge	vague			2 1gris, granulo grossière, inclus charbons, 0,2 à 0,4 cm épa max ; 2blanche granulo fine, 0 inclus, 0,4 à 0,8 épa max
E.P.22	A.89	Room 4	29	27	1 blanc, gris et rouge foncé	bandes horizon			1 beige, 0,7 à 1 cm épa max ; granulo fine
E.P.22	A.203	Room 4	29	27	2 ocre orange et orange				1 1blanche, granulo fine, inclus micro-graviers, 0,5 à 3cm épa max
E.P.22	A	Room 4	29	27	70 blanc		70		1 1blanche, granulo fine, 0,4 à 1,5 cm conservé, chaux
E.P.22	A	Room 4	29	27	10 noir et orange	bandes			2 1gris, granulo grossière, inclus graviers, nodules de chaux et sable, entre 0,4 et 1cm épa ; 1blanche entre 0,3 et 1,2 épa max
E.P.22	A	Room 4	29	27	12 orange				2 1gris, granulo grossière inclus de graviers, nodules de chaux et mortier genre béton, 1cm épa max ; 1blanche, granulo fine, inclus graver, 0,7 à 1,1 épa max
E.P.22	A	Room 4	29	27	83 orange				1 1blanche, granulo fine, chaux, graver, 2,26cm épa
E.P.22	A	Room 4	29	27	2 ocre orange et orange	bande			1 1blanche et orange, granulo fine, 0,2 à 0,8cm épa
E.P.22	A	Room 4	29	27	22 blanc		1 fragment courbé et en angle		2 1gris, granulo fine, peu observable ; 1blanche, granulo fine, chaux ; 1,4 à 3 cm épa
E.P.22	A	Room 4	29	27	N2 beige				3 1orange, granulo fine, avec graver, nodules de chaux, 15-50cm max épa ; 1gris, granulo grossière, 0,2 à 2mm ; 1blanche, granulo fine, 0,4 à 0,8 épa max
E.P.22	A.1	Room 4	29	28	N2 beige				fragment conservé 3 couches préparées une rose comme la godoune, fine granulométrie peu d'inclusion, une ocre sans fine granulométrie peu d'inclusion de gra
E.P.22	A	Room 4	29	28	3 blanc				2 1blanche, infé, compacte, granulo fine, graver ; 1blanche, granulo fine, pulvé, dessus se place fendou, 0 inclusion, chaux ?
E.P.22	A	Room 4	29	28	4 orange				1blanche, granulo gr. graviers, chaux, compacte
E.P.22	A	Room 4	29	28	2 rouge				2 1gris, tris compacte, graver, chaux, pulvé, charbons, infé, granulo moy ; 1blanche, granulo fine, chaux
E.P.22	A	Room 4	29	28	3 orange				2 1gris, tris compacte, charbons, graver, infé, granulo gr ; 1blanche, granulo fine, micro-graviers, chaux
E.P.22	A	Room 4	29	28	4 orange				1 1blanche, compacte, granulo fine, chaux
E.P.22	A	Room 4	29	28	3 blanc				2 1gris compacte, granulo fine, chaux, graver, infé ; 1blanche, compacte, granulo fine, chaux
E.P.22	A	Room 4	29	28	2 ocre jaune				1 1blanche compacte, granulo fine, graver (moy), chaux
E.P.22	A	Room 4	29	28	1 laune				1 1gris, tris compacte, genre de roche, pas de granulo, pas de chaux, pas d'inclusions
E.P.22	A.4	Room 4	29	28	36 orange et noir				0 Chaux avec inclusion de graver, couche picturale directement posé sur la couche intermédiaire
E.P.22	A	Room 4	30	52	35 gris, blanc, orange				2 1gris, granulo grossière, graver, charbons, max 5cm épaisseur ; 1blanche granulo fine, chaux, graver, entre 0,5-1,5 épaisseur max
E.P.22	A.82	Room 4	30	52	19 beige, rouge foncé, violet, gris	bandes hori et verti			2 1gris, inférieure, granulo fine, charbons de bois, 15 cm épa max ; 1blanche, chaux granulo fine, supé, 0,4 à 0,5cm épa
E.P.22	A.82	Room 4	30	52	32 beige, orange, rouge, caramel	bandes rouge et grises sur fond beige			2 1gris, infé, granulo gr. charbon, 0,5 à 1,5 épa max ; 1blanche, chaux, 0,5 à 1 cm épa max granulo fine, pas inclus ou nodules
E.P.22	A	Room 4	30	52	44 beige, rouge				3 1terreux, maron, sable, friable, max conservé 0,3 ; 1gris, compacte, conservé sur 0,5-1,3 épa max ; 1blanche, chaux, conservé entre 0,4 et 1 cm épa max, pas d'inclus
E.P.22	A	Room 4	30	52	12 blanc, blanc, gris				1 fragment avec angle
E.P.22	A	Room 4	30	52	300 blanc				2 1gris, infé, granulo fine, compacte, charbons ; 1blanche, compacte, granulo fine, chaux
E.P.22	A	Room 4	30	52	12 orange, noir	bande			2 1gris, infé, granulo fine, compacte, charbons ; 1blanche, compacte, granulo fine, chaux
E.P.22	A	Room 4	30	52	3 beige, orange	bande			1 1blanche, chaux, granulo fine
E.P.22	A	Room 4	30	52	4 blanc, gris, rouge foncé, orange motif géo ?				1 1blanche, chaux, granulo fine
E.P.22	A	Room 4	30	52	1 blanc, gris, rouge foncé, orange bande et cercle orange				2 1gris, granulo fine, charbon, graver ; 1blanche, chaux
E.P.22	A	Room 4	30	52	1 rouge, beige	bande rose			2 1gris, infé, granulo fine, compacte, charbons ; 1blanche, granulo fine, compacte, chaux
E.P.22	A	Room 4	30	52	4 orange fluo, rouge, gris				2 1gris, infé, granulo fine, compacte, charbons ; 1blanche, compacte, granulo fine, chaux
E.P.22	A	Room 4	30	52	7 rouge, gris, orange, noir				2 1gris, compacte, granulo fine, charbon, chaux ; 1blanche, compacte, granulo fine, chaux
E.P.22	A	Room 4	30	52	2 blanc, noir, rouge				2 1gris, infé, granulo fine, compacte, micro-inclus, charbons, graver ; 1blanche, granulo fine, compacte, chaux
E.P.22	A	Room 4	30	52	12 blanc, gris				2 1gris, compacte, granulo fine, infé, charbons, chaux pulvé ; 1blanche, compacte, pulvé, graver, chaux, granulo fine
E.P.22	A	Room 4	30	52	1 orange, beige	bande beige			2 1gris, infé, granulo fine, compacte, granulo fine, chaux ; 1blanche, compacte, granulo fine, chaux
E.P.22	A	Room 4	30	62	38 laune, orange				3 1infé, granulo fine, sable, compacte ; 1gris, compacte, charbon, granulo fine ; 1blanche, compacte, granulo fine
E.P.22	A	Room 4	30	62	22 orange, beige, gris	bande grises sur fond caramel			2 1gris, infé, granulo fine, compacte, charbons ; 1blanche, compacte, granulo fine, chaux
E.P.22	A	Room 4	30	62	17 blanc, orange, gris, noir	bande grises sur fond caramel			2 1gris, inférieure, granulo fine, infé, charbons, chaux pulvé ; 1blanche, compacte ; 1blanche, granulo fine, chaux
E.P.22	A	Room 4	30	62	16 blanc, orange, gris, maron	bandes grises sur fond blanc			2 1gris, granulo fine, infé, charbon, compacte ; 1blanche, granulo fine, chaux
E.P.22	A	Room 4	30	62	2 beige, gris, orange, noir				2 1gris, infé, granulo fine, compacte, charbon, chaux ; 1blanche, compacte, granulo fine, chaux
E.P.22	A	Room 4	30	62	1 orange, gris	une fine bande grise sur fond orange	angleux		2 1gris, infé, granulo fine, compacte, charbon, compacte ; 1blanche, granulo fine, compacte, chaux
E.P.22	A	Room 4	30	62	16 blanc, ocre jaune	bande			2 1orange, granulo fine, infé, compacte, charbons ; 1blanche, compacte, granulo fine, chaux
E.P.22	A	Room 4	30	OUT	16 orange				1 1blanche, granulo grossière, graver ; 1maron, gris, granulo fine, charbon ; 1blanche, chaux
E.P.22	A	Room 4	30	OUT	16 orange				1 1blanche, granulo fine, chaux, graver
E.P.22	A	Room 4	30	OUT	16 orange				2 1gris, granulo fine, compacte, charbon ; 1blanche, granulo fine, chaux
E.P.22	A	Room 4	30	OUT	1 beige, orange, gris, rouge foncé	bande			2 1gris, granulo fine, compacte, charbon, granulo fine ; 1blanche, granulo fine, compacte, chaux
E.P.22	A	Room 4	30	OUT	1 rouge foncé, orange, beige	bande			2 1gris, granulo fine, compacte, charbon, granulo fine ; 1blanche, granulo fine, compacte, chaux
E.P.22	A	Room 4	30	OUT	1 rouge foncé, gris, blanc	bande			2 1gris, granulo fine, compacte, charbon, granulo fine ; 1blanche, granulo fine, compacte, chaux
E.P.22	A	Room 4	30	OUT	1 orange fluo, rouge foncé	bande rouge			2 1gris, granulo fine, compacte, charbon, granulo fine ; 1blanche, granulo fine, compacte, chaux
E.P.22	A	Room 4	30	OUT	1 beige, orange fluo, gris	1 cercle orange fluo encadré d'un cercle gris sur fond beige			2 1gris, infé, compacte, granulo fine, charbons ; 1compacte, granulo fine, blanche, chaux ; 1blanche, granulo fine, compacte, chaux

Annex VII.3 – Final inventory

Campagne	N°US	Nombre de fragment	Couleurs	beige	ocre	blanc	gris	orange	rouge	rougef	orange fluo	caramel	noir	blanc,violet	blanc_gris	blanc_noir	blanc,caramel	blanc orange
EJP2022	12	4						4										
	25	29			21	14		1	1		1			2	1			1
	25,26	15			2	1		5		4	1							
	26	216				46		89		59	3		6	1	6		5	5
	27	507			27	106		176		18	4		2	8	4	6		
	28	1				1												
	39	20				3		16	2									
	43	2				3												
	46	3				3												
	48	3				3												
	49	5				3												
	52	338			21	337		389	21	22	2	4	6	2	10	2	7	3
	58	14				12												
	62	268			212	35	2					20			9			
	OUT	34				6		17		4								
	Total	1459																
		Total %																

blanc,rouge	rouge,noir	ocre, gris	caramel_gris	blanc_gris,noir	blanc_gris,violet	ocre,rouge	rouge_gris	rouge,orange	blanc, rouge,noir	blanc_gris, orange	blanc_gris,rougef	blanc,rougef,orange
	1											2
18	6				8		2	8		5	15	4
4	6				3	3	0	2	1	0	9	5
5	7			1	6	2	0	2	1	1	12	4
									2			
		13	22								1	
											2	

blanc, gris,orangef	blanc_gris,orangef,violet	blanc,rouge,gris,orangefluo	Total
			4
			45
			13
		1	6
7			293
			398
			1
			21
			3
			3
			3
			3
4	1	8	880
			14
			314
1		2	34
			2029

VIII. First analysis of the column elements in building A

Clothilde Le Gallou

Building A is organized around a courtyard framed by a portico on at least its northern, eastern and southern side. This portico is supported by three colonnades. However, for different reasons, it is difficult to read the original layout of the columns and the general development of the colonnades. The 2022 excavation campaign in building A has already revealed the reuse of architectural elements from columns in the masonry and column elements that were still in place, making it possible to identify the boundaries of a colonnade surrounding the building's central courtyard on at least three sides: east, north and south. The southern colonnade predates building A, it was possibly from the Roman period as evidenced by the base of a column (175) that predates the paving of the building in an area already uncovered during the DoA team's excavation campaign in 2001 and noticed in 2022. Two other bases (173 and 174) which are aligned with 175 were also revealed during the 2023 campaign and also predate the paving. After the initial construction of the colonnades, the spaces between the columns of the colonnade were later filled in by double-faced walls with two or three courses: wall W12 for the north portico, W10 for the east portico and W15 for the south portico. Roman architectural elements such as capitals, bases and shafts were also reused in the elevations of building A. Finally, the 2001 team stored several column shafts on the pavement of the central courtyard alongside the central portico, against wall W10, without any information about their context of discovery or provenance.

The aim of this study is to identify and describe the column elements that are still in place, in a collapsed position or reused as part of the masonry of the domestic building. This will enable us to consider the structures that may have existed at the time, as well as the rationale for reusing and adapting existing elements for new constructions.

The method used for this study was the survey and cataloguing of column elements still in place or that had been moved. Elements still in place were recorded in the structure database (using FileMaker) and assigned a structure number (table 1), while 'floating' elements, ones which were either moved, not associated with any other element in place or reused in the masonries, were catalogued and numbered in a separate table (table. 2). While onsite, we observed, wrote a description (nature of the element, dimensions, type of stone and presence of inscriptions, marks or tools marks) and a quick indication of the location of the elements, and then through comparison with archival photographs from the 2001 excavations we were able to identify some

of the original locations and layouts for the fallen columns. A tacheometer was used to pinpoint the location of the elements in place, enabling us to determine the general axes of the colonnades.

No	nature	diameter (cm)	height (cm)	shape	localisation	inscription	remarks
159	drum	62	77	circular	out of the excavation perimeter		on a base
160	base	61	15	circular	north-west end of the wall W12		bretture marks
161	capital	64	46	circular	wall W12		ionic capital inverted at base, brettures marks
162	drum	57	132	circular	wall W12		
163	drums	65	110	circular	wall W12	inverted "P"	2 drums on top of each other
164	base	56	37	circular	east end of wall W12		
165	drum		224	bi-lobed	north-east corner of the courtyard		oblique inclination of the drum, supported on a circular moulded base
166	base	43	46	circular	wall W10		moulded decoration
167	base	43	46	circular	wall W10		moulded decoration
168	base	43	38	circular	wall W10		moulded decoration
169	base	43	19	circular	adjoining base 168, seems to have slipped from its original position		moulded decoration, supported on a circular moulded base
170	drum	37	37	circular	wall W10		
171	base	43	47	circular	wall W10		moulded decoration
172	drum	63	127	bi-lobed	south-east corner of the courtyard		straight vertical line running the full height, with notches on either side.
173	base	47	32	circular	south of the perimeter between wall W17 and the stairs		moulded decoration
174	drum	49	32	circular	adjoining wall W17		central notch on the inside
175	base	73	31	circular	south of the excavation perimeter, under the paving		moulded decoration, brettures marks
176	drum	65	160	circular	at the corner of walls W15 and W16		

Table VIII.1. List of structures in place.

No	nature	diameter (cm)	height (cm)	shape	localisation	inscription	remarks
1	drum	66	127	circular	displaced column, collapse of struc.161, south of north colonnade		notches in the outer part
2	base	61	33	octogonal	adjoining wall W2		
3	drum	67	183	bilobed	north-east corner, collapse of struc. 165.		collapse in place, breaks in the lower part
4	drum	69	73	bilobed	displaced column (east part of the courtyard)		collapse in place, breaks in the upper part, linked to drum 3
5	drum	44	57	circular	est part of east colonnade, adjoining struc. 169		inner part of the drum is hollowed out, with a circular perforation along the top
6	drum	63	212	bilobed	south colonnade		collapse in place, notches dug in the outer part
7	drum	56	40	circular	north of north colonnade		collapse in place
8	capital	64	45	circular	south colonnade		ionic capital turned over at the base, late displacement of the element
9	capital	64	49	circular	displaced column (east part of the courtyard)		ionic capital turned over
10	capital	62	46	circular	displaced column (east part of the courtyard)		ionic capital turned over
11	drum	/	135	circular	south colonnade	latin inscription	positioned on the bedrock, against the paving
12	drum		52	150	circular	south colonnade	
13	drum	61	182	circular	south colonnade, adjoining the west part of wall W17		lying in a horizontal position
14	drum	43	157	circular	south colonnade		collapse in place, maybe adjoining to struc. 12
15	base	62	88	circular	south colonnade, adjoining drum 14		
16	capital	70	49	circular	east of wall W10		capital upside down to become a base, probably displaced
17	corinthian capital	48	57	circular	south colonnade		returned to become a base
18	drum	62	66	circular	displaced column (east part of the courtyard)		
19	drum	92	63	circular	displaced column (east part of the courtyard)		notches
20	drum	63	108	circular	displaced column (east part of the courtyard)		notches in the outer part
21	drum	43	125	circular	displaced column (east part of the courtyard)		notches in the outer part
22	drum	63	73	circular	displaced column (east part of the courtyard)		notches in the outer part
23	drum	60	91	circular	displaced column (east part of the courtyard)		
24	drum	66	90	circular	displaced column (east part of the courtyard)		notches in the outer part
25	drum	50	117	circular	displaced column (east part of the courtyard)		column with integrated base, flared end
26	drum	44	146	circular	displaced column (east part of the courtyard)		full-height drum break
27	drum	63	90	circular	displaced column (east part of the courtyard)		notches in the inner part
28	drum	51	108	circular	displaced column (east part of the courtyard)		central notches in the inner part
29	drum	63	94	circular	displaced column (east part of the courtyard)		
30	drum	39	64	circular	displaced column (east part of the courtyard)		
31	bilobed capital	56	52	circular	north of north colonnade		capital crowning a two-lobed column, probably displaced
32	drum	42	105	circular	north of north colonnade		
33	capital	63	53	circular	middle of the courtyard, south of north colonnade		probably moved, capital turned into a base
34	drum/base	35	45	circular	adjoining wall W15		no. 17 and struc. 176)
35	drum	65	76	circular	central courtyard, north of south colonnade		
36	corinthian capital	64	68	circular	east of wall W10		probably moved, capital turned into a base
37	base	44	44	circular	east of wall W10, adjoining struc. 166		column with integrated base, flared end
38	bilobed capital			re-cut element	south of north colonnade, integrated into wall W12		of the wall W12
39	drum	/	200				
40	drum	/	98				
41	base	45	53	octogonal	octogonal base, broken, semi-circular shape		
42	base	50	50	octogonal	octogonal base, collapse of wall W18		

Table VIII.2. List of floating column elements.

VIII.1. Description of the columns

Several column elements were identified in building A, including sixteen bases, thirty-six shaft drums and eight capitals, five of which were Ionic (8, 9, 10, 161 and 33), two Corinthian (17 and 36) and one which had a two-lobed re-cut shape (38). Several types of columns are present on the site with no predominant style. Four are circular drums with a thin diameter and bases with a slightly flared foot (14, 26, 32 and 37), twenty-six are circular columns with smooth shafts, which are thicker in diameter, and many have notches on the outside or inside of the drum (1, 5, 7, 12, 13, 18, 19, 20, 22, 23, 24, 25, 27, 28, 29, 39, 40, 159, 160, 162, 163, 164, 170, 174, 176 and 177), and five are smooth and bilobed (or heart-shaped) (3, 4, 6, 165 and 172). Two simple circular bases (with no decoration) were uncovered (160 and 164), as well as three octagonal bases with worked molded decoration (2, 41 and 42) and seven circular bases with molded decoration (166, 167, 168, 169, 171, 173 and 175). Although none of the column shafts are decorated, at least ten column shafts have indentations on the outer or inner surfaces, a single letter was found on one column shaft in the north colonnade (an inverted 'P' on the top of the lower drums of column 163) and a complete Latin inscription was found on another column shaft in the south colonnade (11). The diameters of the column bases range from 43 cm to 73 cm (five out of ten bases have a diameter of 43 cm), with a height of between 15 cm and 46 cm. The diameters of the column drums range from 37 cm to 67 cm (average diameter 62.2 cm), with a height of between 32 cm and 224 cm. Finally, the capitals have a diameter between 48 cm and 64 cm and a height between 45 cm and 57 cm. On some drums, there are manufacturing marks, such as traces of brettures (8, 160, 161, 175 and 177) and picks (1), as well as indications of nesting or installation, such as notches in the center of the inner part of the column or on the outer rim (1, 3, 6, 19, 20, 21, 22, 24, 27, 28, 172 and 174).

These surveys made it possible to identify several functions or positions for the column elements within building A. We can distinguish two uses for these architectural elements: column elements which were used as vertical supports (still in place or in a collapsed position) and a reuse of the drums, capitals and bases in the walls and masonry as consolidation elements. Most of the columns were moved from their original position on the site during the first archaeological mission, so their original function and position is therefore unknown.

As well as identifying the development and potential phases of the colonnade, we will look at the origin of the blocks reused in the masonry and the elements that were moved by studying their shape, style and orientation, as well as the inscriptions, marks and tool marks on the stone. These elements will enable us to determine a potential correlation between the columns in the surrounding buildings, whether they are still in place or dismantled, and also the original context

of the elements that were moved to the eastern part of the central courtyard (column car park) by the previous team.



Fig. VIII.1. Orthophoto of building A with column numbers: red = structures in place, green = floating structures.

VIII.2. Columns that fit the colonnade layout

VIII.2.1. The columns in place

While the drums of the columns in the north portico are still visible, only the bases are still in place for the east portico. These elements indicate that the columns were 2 m to 2.25 m apart on each of the three axes. A colonnade to the south, which may have been replaced during the construction of building A, still has its bases, against which the paving of building A was built. Elements of the three colonnades (north, east and south) are still in place, so that the axis of the colonnade can be identified. It appears that there has been a slight shift in the alignment of the north colonnade. The base of column 159, located outside the excavation perimeter, appears to be part of the alignment of the northern colonnade at its western end but was not included in wall W12 when it was built later. This column is of average dimensions when compared with the other elements studied and appears to be supported on a first drum. The base of column 160 is 15 cm high and 61 cm in diameter and is included in wall W12. It shows traces of chipping, which could be a clue to its origin. The column shafts that are in place are laid on the paving without a base or are installed on overturned capitals, which have been used to replace bases.

Column bases 166, 167, 168, 169, 170 and 171 still appear to be in place and form the east colonnade. 169 appears to have recently slipped from its original position, which would have been next to 168, in line with the eastern colonnade. The fact that the bases 168 and 169 were placed side by side must mean that at least one of them has moved from its original position, but their axis in the colonnade appears to have remained the same. The bases all seem to have belonged to a similar phase of construction and manufacture, as indicated by their dimensions—all are 43 cm in diameter and vary in height from 19 cm (visible) to 46 cm—and their decoration—all have a molded decoration. Base 170 supports a column drum with a smaller diameter (37 cm) which may have been moved to the base at a later date. All these column bases were placed on top of the courtyard pavement. The east colonnade also appears to have housed two double-lobed columns at the northeast and southeast ends, but their position on the paving and the fact that they are made from the same type of stone indicate a link with the east axis. Elements 165 and 172 are two-lobed drums in their original position, which probably linked the three axes.

The southern alignment of the colonnade consists of three existing column elements which are known to have been installed on the pavement: the circular column base 173 with molded decorations, the circular column base 174 with a notch in the center of the inner part and the circular base 175 with molded decorations.

VIII.2.2. *Collapsed and displaced columns*

Several column elements are off-center from the axis of the colonnade or are still in place following a collapse. The elements that collapsed, probably during the earthquake of 749 CE, may indicate the continued presence of the colonnade, or at least part of it, during the last phases of use of building A.

The collapsed parts (numbered 3 and 4) of column 165 allow us to appreciate the height that the two-lobed columns could have reached, that is to say at least 4.80 meters high. The position of the surviving drum 165 raises questions, as it is offset from the alignment of the north colonnade, whereas it is well integrated into the east colonnade. It should be located at the corner between the north and east colonnades, as this would justify its two-lobed shape. However, as its installation on top of or against the paving could not be proven before the area was excavated, we can assume that column 165 was moved from its original position and integrated into wall W10, along with the molded circular base on which it now rests. The two-lobed capital 31 may be the capital of column 165, just as the capital 38 seems to belong to the same type. The capital 31 may have been cut in order to be integrated into the structure of wall W12 (now collapsed). However, wall W12 needs to be excavated to confirm this.

The association of the two fragments of the collapsed drums of column 165 is based on the breakage at the ends of the two elements and their position. Collapse no. 3, which is probably in place, is located on the pavement of the central courtyard. The breakage of the upper part of fragment no. 4 corresponds to the breakage of the lower part of drum no. 3, however the latter was moved against wall W10 like other column drums. The condition of collapsed columns 3 and 4 are less deteriorated than that of column 165, which was left in the open air and whose stonework is generally more deteriorated.

Column drum number 5 seems to fit into the phase of column bases 166 to 171, as they are similar in diameter (43 cm). This raises the question of the chronology of construction of the elements; if drum no. 5 was moved in order to reinforce the masonry, this would mean that the low wall was built when the portico no longer existed. But drum no. 5 may also have been moved by the first excavation team to become, as part of a deliberate replacement for a specific function, a consolidation element between wall W10 and a wall marking the northern corner of wall W9. In addition, drum no. 5 appears to have been hollowed out on the inside and perforated in various places around the outside of the drum, for unknown reasons. The drums of collapsed barrels show similar perforation changes, particularly in the area of the cardo.

A capital, of the same type as no. 38, belonging to the collapse of 165 and cut (or broken) was found in a floating context, in the center of the space between walls W12 and W13, numbered no. 31. This structure, which in the case of the above-mentioned capital seems to be associated with a two-lobed column (in this case, column 165, which is still in place), could be of the crowning two-lobed columns type. We could therefore hypothesize the existence of another two-lobed column in the northwest corner that could be attached to this solitary capital, or that this capital has been moved but was originally attached to the two-lobed column 172 marking the southeast angle of the colonnade, which has no known capital.

Lastly, there is a type of column base that is present at least three times on the site (and is probably also present in the collapse in the western part of the site); it is octagonal in shape with a molded decoration. These bases are not grouped in a single area but instead are scattered in several places; 2 is located in the northern part next to wall W2, one (of which only a semi-circular part remains) is located in the eastern part opposite room R2, and base 41 numbered no. 42, was probably formerly part of the masonry of W18 and has now collapsed to the north of the wall. The position of this type of base in the chronology of the site remains to be determined, as no other associated elements (drums or capitals) have been uncovered on the site.

Drum 11, which is still standing, is located in the southern section and features a Latin inscription (already translated and studied by P.-L. Gatier) which runs the full height of the remaining drum as well as a single letter that is inscribed on the base.

Drums 12 and 14 could have belonged to the same column, a type that tapers towards the top, since their diameters correspond to 52 cm and 43 cm respectively.

VIII.2.3. Hypotheses about the colonnade and its different phases

The different types of columns found on the site indicate different shapes and diameters, that should be related to their location and could correspond to different phases of construction. The columns that we can attribute to the first phase of construction are generally finer in appearance, with a smaller diameter of between 43 cm and 44 cm, and are supported by a slender base with a flared foot. They are therefore naturally set against the paving of the central courtyard and probably date from a contemporary phase. The columns of the second type have a wider overall appearance and, where they are still in place, are laid directly on the paving (or on an unknown level in the case of the northern colonnade, as this area has not been excavated yet). The bases that might be associated with the second type of drum (due to their similar diameter) are laid directly on the paving and are present on all three axes of the colonnade.

Despite their different types, it seems that these columns may have existed at the same time. The bases of the columns and the columns still standing, most without bases, are aligned with columns of different morphologies. The position of the columns and their distance from each other makes it possible to identify at least three colonnades, which would justify the existence of only two double-lobed columns (still in place today). Despite the different types of elements and morphologies it is possible that the colonnade existed simultaneously. The south colonnade probably predates the paving against which it is set, and the east colonnade is perpendicular to the south colonnade. However, it is possible that a double colonnade existed in the southern part of the site. This other axis could have been articulated between structures 176 and 177, but not on the same axes as the southern and eastern colonnades.

In addition, two architectural circulation systems may have been put into place on the level of the southern colonnade; a square of four pillars seems to have existed at the same time in both the southeast and southwest corners created by structures 172, 173 and 177 for one and 176, 17 and 8 for the other, respectively.

VIII.3. Masonry replacements

VIII.3.1. The layout of the architectural elements

The architectural elements placed in the later masonry have a new layout that does not seem to follow any particular logic. Column 176, consisting of two 65 cm diameter superimposed drums, was already in place in the southwestern part of the excavation area and probably predates the construction of walls W15 and W16. Therefore, builders would have had to adapt to this original architectural formation and probably diverted the column from its original function so that it became an integral part of the masonry creating the corner of the two walls. The blocks and backfill forming the wall would therefore have been installed around the column, although the latter would have prevented any form of chaining.

In several cases, the capitals in our study were found to be reused and, if this was the case, turned over to become bases. Capital 17, of Corinthian order, had been turned over and reused in the lower part of the facing of wall W15. The abacus of the column was placed directly on the floor and the element is surrounded by rubble. Ionic capital 8 has also probably been diverted from its original function. It is located at the end of the southern part of the excavated area, near the southwest corner. This capital has also been turned upside down and appears to be part of later masonry for which no information is available yet. In other cases, the capitals still in place on the site have been turned over and probably reused as column bases. This dynamic of reuse demonstrates the skill of the new builders to adapt to the elements already in place and use them

for different purposes than those associated with their original function. This is the case for capital 161 in the northern alignment and capital 17 in the southern part, that are of Ionic and Corinthian orders, respectively. Both have been turned over so that they can be used as column bases, the abacus being used as a flat support to provide a strong base for the entire elevation.

In addition, archive photographs from the 2001 excavation enable us to identify the planes on which the columns fell before they were moved (to the eastern part of the courtyard in the case of most of the drums). We can see that at least two of the columns had an inverted Ionic capital as a base, which supported at least two large diameter drums (around 65 cm).



Fig VIII.2. Archive photograph from the 2001 excavation (DoA): view of two fallen columns.

VIII.3.2. A consolidation element for later masonry

Several masonry elements give evidence of the practice of reuse on the site. These capitals, drums and bases were reused as they were, turned upside down or cut to fit into new constructions. Based on the nature and techniques used in the various masonry constructions, there were probably several phases. In addition to the moved parts that have already been mentioned, circular elements were used in the masonry of at least two walls in the building. In wall W2, at least two circular elements which could be considered to be column drums, with a diameter of 49 cm, are perfectly integrated into the masonry of the wall in a horizontal position, whereas the elements which have been moved to be used as masonry consolidation pieces, like columns 176 and 165, were left in a vertical position. The second use of horizontally positioned columns is in the lower

part of wall W9 (room R4). There are at least three circular elements in this masonry, which have a diameter of 48 cm.



Fig. VIII.3. Drums used inside the masonry of wall W2.

VIII.4. Hypotheses concerning the origin of the columns that are still in place or have been moved

The origin of the columns remains uncertain, but similar Ionic columns have been found in the colonnade of the cardo. The drums of the cardo have a diameter of 65 to 66 cm, which corresponds to a diameter similar to certain types of columns in building A. In addition, some of the drums also have notches on the outside and inside. It can also be seen that the drums of the cardo columns that are still standing have a similar appearance to column 165, with erosion of the stone, which could suggest that the building's column had been left in the open air for a long time. The collapsed Corinthian capitals on the cardo are similar in diameter to the Corinthian capitals in building A, between 45 cm and 48 cm. The columns still standing in the basilica (basilica of the Propylaea) to the north of building A have a diameter between 50 cm and 51 cm, as do some of the drums in building A. The use of Roman architectural elements is well documented for churches from the Byzantine period.

So, the two main types of drum and capital found in building A are also found in the surrounding sites. This could indicate the origin of the reused parts, parts that were manufactured contemporarily or that the styles of the columns in the adjacent buildings were copied. However, it seems more likely that this indicates the reuse of Roman architectural and ornamental elements, mainly from temples and show buildings.

Neither the molded bases nor the octagonal bases have equivalents of a similar diameter. However, octagonal column elements can be found notably in the cathedral sector (in the colonnade installed on the staircase leading to the lower level of the cathedral) and in the area around the Temple of Artemis (elements not in place), indicating that this technique was mastered at the Jerash site.

Finally, this study of the colonnade, albeit partial, has enabled us to envisage the ancient architectural practices of a potential coexistence of colonnades of different appearances and styles within the same colonnade and at the same time. The general structure of the building raises questions about the axes of the colonnade and seems to suggest that architectural alterations must have been carried out at one point in time. The logic of the southern axis of the colonnade is also a likely indication of the building's potential development to the south, beyond the open area that is currently visible.

IX. General data about the objects discovered by the EJP during the 2022 & 2023 campaigns in building A

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In July 2023, the artefacts from the 2022 and 2023 campaigns of the Eastern Jarash Project (EJP) discovered in building A were inventoried and given an initial description before each artefact category was studied by specialists. After an initial stage in which the objects were wrapped in envelopes, directly on site during the respective excavations, the artefacts were inventoried on a campaign-by-campaign basis. The objects were recorded in a FileMaker database indicating various significant elements such as the sector, stratigraphic unit, type of object, materials, measurements and a general description, and each object was also given a number (EJP22-A- sequence number or EJP23-A- sequence number). The letter 'A', as in 'building A', is used to distinguish an object's number from the picture numbers. All the objects were systematically photographed for documentation purposes and will be more carefully photographed during their study. Five of the objects from the two campaigns were drawn by an archaeological draughtswoman: the stone head of a statuette found in 2023, two complete or almost-complete oil lamps from the 2022 and 2023 campaigns and two carved bone objects. Some metal objects from the two campaigns were restored for conservation reasons or with a view to more detailed study (see chapt. X).

A significant concentration of glass was uncovered during the two campaigns on the site. Fragments of the same kind found in the same layer were grouped together under the same object number during the inventory, so as to give us a MNI corpus. Metal objects were separated according to their material for each layer, but when the same material was found in the same layer, these objects were classified under an identical number. Ceramics were studied separately (see Alhebashan & Pappalardo's report).

The object inventory has enabled us to classify the objects which were found by material and establish percentages of individual objects and material. In 2022, a total of 240 objects were unearthed from the excavation. 75% of the total were glass MNI fragments, and 24.6% were metal and 0.4% unidentified material. Out of the metal objects (not MNI), 61% were made of iron, 32.2% of copper alloys (Cu-alloy) and 6.8% of other materials (lead or unidentified metals). In 2023, 42.7% of all objects were made of glass and 52.8% of all objects were made of metal. Within the metal sub-category, 57.4% of the objects were made of iron, 40.4% of copper alloys and 2.1%

of lead (1 object). Finally, 2.2% of the total were carved bone objects and 1.1% were carved stone objects.

There was a marked increase in the number of metal objects discovered during the 2023 excavation, which could indicate a high concentration of glass in certain areas of the site.

IX.1. 2022 campaign

The 2022 excavation campaign in building A in Jerash identified a high concentration of objects. The first thing that stands out is the large quantity of glass tableware fragments (180 MNI vessels listed). There was a wide range of colors and thicknesses (including green to blue and some examples of black glass, and very fine to relatively thick paste (0.4 to 25 mm). The fragments found also enabled us to identify different morphologies, thanks to the diameters and shapes of the feet of the vases or bowls, the more or less open rim and the height of the necks.

Some characteristic decorative elements have also been identified: the most common is the addition of thin strips of glass in relief placed at regular intervals and a second, rarer motif is the addition of an ornamental serpentine motif—in relief and in bluish glass paste—to the body of the vase, as on EJP22-A-014.

No inventaire	sector	US	Objet	height (mm)	thickness (mm)	width (mm)	diameter (mm)	Description
EJP22-A-059	Building A, Room 2, Wall W1	48	Glass container	12-12-25-	1-1-1-	15-29-29		3 glass fragments. Fine, light blue paste.
EJP22-A-060	Building A, Room 4	52	Glass container	18-15-22-12	2-3-1-1	43-21-18-9		4 glass fragments, white glass paste
EJP22-A-061	Area 1, Sounding 3	49	Glass container	18-24	5-5-	31-23		2 glass fragments, whitish/silver paste. rounded edges.
EJP22-A-062	Area 1, Sounding 3	49	Glass container	30	1	41		1 glass fragment. beige/pink paste. fine, slightly concave paste. several layers of paste.
EJP22-A-063	Area 1, Sounding 3	49	Glass container	28-12-	2-1,5	31-13		2 glass fragments, light blue paste with white coating, including 1 yeast fragment,
EJP22-A-064	Area 1, Sounding 3	49	Glass container					14 fragments, thin white and silver paste.
EJP22-A-066	Area 1, Sounding 3	49	Glass container	16	1	20		1 glass fragment, fine silver paste, covered with a thin white layer.
EJP22-A-067	Area 1, Sounding 3	49	Glass container	18	2	19		fragment in thick, light blue glass paste. slightly concave shape.
EJP22-A-068	Area 1, Sounding 3	49	Glass container	13	0,3	21		glass fragment. fine white transparent paste.
EJP22-A-069	Area 2, Sounding 4, Building A	32	Glass container	18-16	3-1-	48-27		2 glass fragments, light blue paste.
EJP22-A-070	Area 2, Sounding 4	32	Glass container	17-17	15-10-	22-18		2 glass fragments. light blue paste. cylindrical fragments.
EJP22-A-071	Area 1, Sounding 3	36	Glass container	22	1,2	34		Glass fragment. Light blue paste with a thin white coating.
EJP22-A-072	Area 1, Sounding 3	36	Glass container	19-14	3-3,5	53-15	10	2 glass fragments. thick blue paste. including 1 fragment of the end of a handle, hollow cylindrical shape.
EJP22-A-073	Area 1, Sounding 3	36	Glass container	26-12,3-13	1,3-2-12	3		3 glass fragments. greenish paste
EJP22-A-074	Area 1, Sounding 3	36	Glass container	14	4	42		1 fragment from the foot of a bowl. greenish glass paste.
EJP22-A-075	Room 4	39	Glass container	24-13	0,5-0,5	28-32		2 glass fragments. transparent paste.
EJP22-A-076	Room 4	39	Glass container	17	1,2	16		Glass fragment, fine paste, light blue, thin white coating.
EJP22-A-077	Building A, Room 4	39	Glass container	26	15	26		glass fragment. very thick bluish paste.
EJP22-A-078	Area 2, Sounding 4	24	Glass container	19	3	18		glass fragment, thick, light blue glass paste. one rounded edge.
EJP22-A-079	Area 2, Sounding 4	24	Glass container	12-17-	2,2-1	25-31		2 fragments of fine, light-blue pate de verre, manufacturing streaks on reverse, 1 fragment of yeast,
EJP22-A-080	Area 2, Sounding 4	24	Glass container		3,5			2 thick, bluish glass fragments. 1 concave fragment.
EJP22-A-081	Area 2, Sounding 4	24	Glass container	11	1,3	29		1 fragment of yeast. light blue paste covered with a white layer,
EJP22-A-082	Area 2, Sounding 4	24	Glass container	22	1,3	31		1 glass fragment. Black paste, slightly concave shape.
EJP22-A-083	Area 2, Sounding 4	24	Glass container		1,3			2 fragments in verre. silver/blue paste. including 1 fragment of yeast.
EJP22-A-084	Area 1, Sounding 3	out of context	Glass container				39	fragments of a vase. fine, light-blue glass paste. foot of bowl intact.
EJP22-A-085	Area 1, Sounding 3	out of context	Glass container	26	10	26		1 glass foot fragment, thick blue/silver paste. thin cylindrical foot.
EJP22-A-086	Area 1, Sounding 1	32	Glass container	100	1,7	23		fragment in bluish glass paste.
EJP22-A-087	Area 2, Sounding 1	32	Glass container		1			2 glass fragments. Light blue paste. 1 fragment is decorated with a thin band in blue paste relief.
EJP22-A-088	Area 2, Sounding 1	32	Glass container					3 fragments of a vase. 1 fragment of the foot and 2 concave fragments of the body (including 1 fragment with fine paste and 1 fragment with thick paste), light blue glass paste
EJP22-A-089	Area 1, Sounding 3	59	Glass container	14	3	58		fragment en verre, pate bleue claire. Fragment de levre ou embouchure.
EJP22-A-090	Area 1, Sounding 3	59	Glass container	39	1	36		1 fragment, thin, light blue glass paste. slightly concave shape.
EJP22-A-091	Area 1, Sounding 3	59	Glass container	14	7	24		fragment of glass foot or lever. light blue paste.
EJP22-A-092	Area 1, Sounding 3	59	Glass container	26			39	glass drinking vase base. translucent green/blue paste. complete vessel base and fragment showing the shape of the body.
EJP22-A-093	Area 1, Sounding 3	59	Glass container	24	0,4	39		1 fragment of foot. thick greenish paste.
EJP22-A-094	Area 1, Sounding 3	59	Glass container	29	3,5	31		fragment of yeast. blue glass paste. thick paste.
EJP22-A-095	Area 1, Sounding 4	59	Glass container	18	1	22		1 glass fragment. Fine, light blue paste. slightly concave shape.
EJP22-A-096	Area 1, Sounding 3	59	Glass container	19	0,8	27		fragment in silvered glass. fine paste. banded decoration in silvered glass paste, in relief, at regular intervals.
EJP22-A-097	Area 1, Sounding 3	59	Glass container					5 glass fragments. fine light blue paste. including 3 yeast fragments.
EJP22-A-098	Area 1, Sounding 3	59	Glass container		1			3 glass fragments, bluish fnem paste. 1 fragment of yeast.
EJP22-A-099	Area 1, Sounding 3	59	Glass container	19	0,9	24		glass fragment. light blue/silver fine paste.
EJP22-A-100	Area 1, Sounding 3	59	Glass container	21	1	36		glass fragment. fine transparent paste, slightly bluish.
EJP22-A-101	Area 1, Sounding 3	59	Glass container	8,5	0,7	20		1 glass fragment. fine white/silver paste.
EJP22-A-102	Area 1, Sounding 3	59	Glass container	20-9-	1-1-	32-20		2 glass fragments. greenish paste.
EJP22-A-103	Area 1, Sounding 3	59	Glass container	29-23		47-24		2 glass fragments. Fine light blue paste. 1 fragment of yeast. 1 fragment of belly with neck.
EJP22-A-104	Area 2, Sounding 4, Building A	24	Glass container		0,5			4 fragments. very fine, transparent glass paste.
EJP22-A-105	Area 2, sounding 4	42	Glass container	16	0,4	16		glass fragment, fine paste, transparent, light blue highlights.
EJP22-A-106	Area 2, Sounding 4	42	Glass container	16	0,8	41		1 glass fragment. Fine, transparent paste with light blue highlights.
EJP22-A-107	Area 2, Sounding 4	42	Glass container	14	7	22		1 fragment of greenish pate de verre base/foot.
EJP22-A-108	Area 2, Sounding 4	42	Glass container	27	3	41		fragment of the foot of a vase, thick blue glass paste with thin white coating.
EJP22-A-109	Area 2, Sounding 4	42	Glass container	23	1	24		fragment of yeast, bluish/silver glass paste.
EJP22-A-110	Area 2, Sounding 4, Building A	42	Glass container	15	1,5	25		fragment of yeast. fine, light blue glass paste.
EJP22-A-111	Area 2, Sounding 4	24	Glass container	16	5	34		1 fragment in black glass. rounded edges.
EJP22-A-112	Area 1, Sounding 3	28	Glass container	17	1	30		glass fragment, fine orange paste.
EJP22-A-113	Area 1, Sounding 3	28	Glass container	21	1,5	17		1 fragment of glass object. bluish glass paste.
EJP22-A-114	Area 1, Sounding 3	28	Glass container	13	1	12		1 glass fragment. fine white paste.
EJP22-A-115	Area 1, Sounding 3	28	Glass container	16	3,3	44		fragment of a vase foot, rounded edges, white/silver glass paste.
EJP22-A-116	Area 1, Sounding 3	28	Glass container		1			2 bluish fine glass fragments. bottom fragment and neck fragment.
EJP22-A-117	Room 4	52	Glass container	31	19	27		1 fragment of black glass paste (3mm thick) on thick mortar.
EJP22-A-118	Room 4	52	Glass container	14	0,8	25		1 fragment of verre. silver/blue paste.
EJP22-A-119	Building A, Room 4	52	Glass container					1 glass fragment. fine paste, silver/white. fragment of yeast.
EJP22-A-120	Room 4	52	Glass container	9	5,5	1		bluish glass paste. square, thick shape, slightly rounded edge. mosaic tessera?
EJP22-A-121	Room 4	52	Glass container	18	3	34		1 fragment of black glass. slight decoration on the lip due to pressure on the rim contour.
EJP22-A-122	Room 2	48	Glass container	25	2		41	Fragment of the foot of a vase. Fine, light green glass paste.
EJP22-A-123	Room 2	48	Glass container		1,2			3 glass fragment. fine light green paste, overlaid with beige and decorated with thin bands of white paste at regular intervals.
EJP22-A-124	Room 2	48	Unknown	34	5,2	27		1 fragment, thick paste
EJP22-A-125	Room 2	48	Glass container	19	3	21		thick, blue glass fragment.
EJP22-A-126	Room 2	48	Unknown		0,8			2 glass fragments. fine, transparent, slightly bluish paste.
EJP22-A-127	Room 2	48	Glass container	19	2	28		1 glass fragment, fine black paste. traces of charcoal.

EJP22-A-128	Room 2	48	Glass container			0,2		2 glass fragments. very fine, transparent paste.
EJP22-A-129	Building A, Room 2	48	Glass container		20	3	20	glass fragment, thick black paste.
EJP22-A-130	Area 1, Sounding 3	49	Glass container	22,5		22	33,5	1 fragment in thick, black/dark blue glass
EJP22-A-131	Room 4	26	Glass container					3 fragment of green translucent glass covered with orange painted decoration, beige background and brown decoration edges.
EJP22-A-132	Area 1, Sounding 3	58	Glass container			1,5		5 fragments in fine silver/blue glass paste.
EJP22-A-133	Area 1, Sounding 3	58	Glass container	19		1,3	34	1 fragment of yeast. fine glass paste, silvered.
EJP22-A-134	Area 1 Sounding 3	58	Glass container					3 fragments of silver/white glass, including two thin edges.
EJP22-A-135	Area 1, Sounding 3	58	Glass container	1718		1	32	41 2 fragments of a glass bowl. Fine blue paste. 1 fragment of the foot, 1 fragment of the mouthpiece.
EJP22-A-136	Area 1, Sounding 3	58	Glass container	22		5	32	edge fragment in brown/grey glass with silver inclusions
EJP22-A-137	Area 1, Sounding 3	58	Glass container	25		11	27	Fragment of a white/silver glass lip. convex shape of the border paste. hemmed inside.
EJP22-A-138	Area 1, Sounding 3	58	Glass container	20		5	23	fragment of vase lip, silvered glass.
EJP22-A-139	Area 1, Sounding 3	58	Glass container	14		3	27	1 fragment in white/pearly glass; lip with everted rim.
EJP22-A-140	Area 1 Sounding 3	58	Glass container	8		4	14	fragment of yeast. light blue transparent glass paste with thin white coating.
EJP22-A-141	Area 1, Sounding 3	58	Glass container	16-15	2-2-		32-20	2 fragments of white silvered glass paste. 1 fragment of yeast.
EJP22-A-142	Area 1, sounding 3	58	Glass container					2 fragments of glass object. white/silver glass paste.
EJP22-A-143	Area 1, Sounding 3	49	Glass container	28		1	16	glass, light blue paste.
EJP22-A-144	Area 1, Sounding 3	49	Glass container	22		3	37	1 foot fragment. thick silver/white glass paste.
EJP22-A-145	Area 1, Sounding 3	49	Glass container	30		14	31	1 glass fragment. very thick black glass paste.
EJP22-A-146	Area 1, Sounding 3	49	Glass container	21		11	39	1 fragment of a vase foot. thick black/green glass paste.
EJP22-A-147	Area 1, Sounding 3	49	Glass container	14		0,8	44	glass fragments. Fine light blue paste.
EJP22-A-148	Area 1, Sounding 3	49	Glass container	18		5	23	glass fragment, thick greenish paste, concave shape.
EJP22-A-149	Area 1, Sounding 3	49	Glass container	10,5		1,3	27	1 glass fragment. silver paste.
EJP22-A-150	Area 1, Sounding 3	49	Glass container	15		4	39	Thick, bluish glass vase mouthpiece.
EJP22-A-151	Area 2, Sounding 4	29	Glass container			1		7 glass fragments. bluish paste. 1 fragment of yeast. 2 fragments with bluish paste decoration, serpentine in relief (6mm thick).
EJP22-A-152	Area 2, Sounding 4	29	Glass container					4 fragment of glass object. Translucent paste with added white. 4 concave fragments including one fragment of yeast.
EJP22-A-153	Area 2, Sounding 4	29	Glass container	57		1,5	60	1 fragment in translucent pate de verre glass with added white. Paste added to the center of the fragment, forming a protuberance. Clear cut on one side.
EJP22-A-154	Area 2, Sounding 4	29	Glass container	23-19	1-1-		46-18	2 glass fragments, fine paste, white.
EJP22-A-155	Area 2, sounding 4	29	Glass container					2 glass fragments with light blue paste. one fragment with black glass paste, one fragment with fine translucent/silver paste with relief decoration, with fine grey stripes.
EJP22-A-156	Area 2, sounding 4	29	Glass container			6,5		3 glass fragments. thick, chalky blue glass paste.
EJP22-A-157	Area 2, Sounding 4	29	Glass container					3 fragments of black glass. 1 fragment has relief decoration.
EJP22-A-158	Area 1, Sounding 3	53	Glass container	15		1	29	1 fragment of yeast. fine, black glass paste.
EJP22-A-159	Area 1, Sounding 3	53	Glass container	25		4	57	1 foot fragment. thick blue paste.
EJP22-A-160	Area 1, Sounding 3	53	Glass container	22		2,5	19	1 glass fragment. thick bluish paste.
EJP22-A-161	Building A, Room 4	56	Glass container					4 glass fragments. Fine, light green paste. 1 fragment of yeast.
EJP22-A-162	Room 4	56	Glass container			0,8		3 glass fragments. fine transparent paste.
EJP22-A-163	Room 4	52	Glass container	19		0,5	31	1 glass fragment, thin transparent paste, slightly light blue.
EJP22-A-164	Room 4	52	Glass container			0,2		3 fine glass fragments, silver-plated.
EJP22-A-165	Room 4	52	Glass container	11		1	24	1 glass fragment. light blue translucent paste. slightly concave shape.
EJP22-A-166	Room 4	52	Glass container	11		1	9	1 fragment, fine glass paste, greenish, covered with a thin white layer.
EJP22-A-167	Building A, Room 4	52	Glass container			1		2 glass fragments. silver paste covered with a thin white layer.
EJP22-A-168	Room 4	25	Glass container	10		0,3	13	1 glass fragment. fine, white paste.
EJP22-A-169	Room 4	25	Glass container	16		0,8	26	1 glass fragment. thin transparent paste, covered with a thin white layer.
EJP22-A-170	Room 4	25	Glass container	19,5		0,5	20,5	Glass fragment. Fine, slightly opaque transparent paste.
EJP22-A-171	Building A, Room 4	25	Glass container					1 fragment in blue/green glass paste, covered with a thin white layer. Fine paste, very slightly concave shape.
EJP22-A-172	Room 4	26	Glass container	9		0,5	21	1 fragment en pate de verre bleutee/ argentee.
EJP22-A-173	Room 4	26	Glass container	11		1	17	fragment of foot or lip. white glass paste.
EJP22-A-174	Building A, Room 4	26	Glass container	9		1	30	11 fragment of yeast and fragment of handle, fine light blue paste.
EJP22-A-175	Area 2, Sounding 4	32	Glass container	31-20	0,5-0,8		26-18	2 glass fragments. Fine light blue paste.
EJP22-A-176	Sounding 3	46	Glass container	29-30-34	1,5-3-1		19-10-15-	3 glass fragments. 2 thick bluish paste fragments, including one yeast fragment. 1 thin light blue paste fragment.
EJP22-A-177	Area 1, Sounding 3	40	Glass container	21		1	33	1 glass fragment. Very fine, transparent paste.
EJP22-A-178	Area 2, Sounding 4, Building A, Room 5	62	Glass container	11		5	32	1 glass fragment. thick, light blue paste. fragment of yeast.
EJP22-A-180	Building A, Room 4	27	Glass container	72		3	69	glass fragment. fine, light green paste
EJP22-A-184	Area 1, Sounding 3	44	Glass container					5 glass fragments. light blue paste covered with a thin white layer. 1 lip fragment. 2 fragments with fine glass bands in relief.
EJP22-A-185	Area 1, Sounding 3	49	Glass container	13		3,5	31	Fragment of yeast. White/silver paste.

Table IX.1. List of the glass discovered during the 2022 campaign.

A total of 59 metal objects were also inventoried. One of the metal objects from the 2022 excavation that attracted particular attention was a large, complete copper-alloy pot (EJP22-A-065) that was discovered in the middle of the west part of room R5 (this was already mentioned in the 2022 excavation report). It was later restored (see chapt. X).

A total of 14 copper-alloy coins were also uncovered, bearing no inscriptions or decoration, and varying in size and state of preservation. Twelve coins were found in the southeast excavation zone (ten in room R4) and only two in the northeast zone. All the coins had an average diameter of 10 mm, except for one which had a diameter of 31 mm (EJP22-A-238). The rest of the metal objects consisted of nails of various sizes (complete, fragmented or bent), arrowheads and hooks.

No inventaire	sector	US	Objet	materials	height (mm)	thickness (mm)	width (mm)	diameter (mm)	Description
EJP22-A-065	Building A, Room 5	62	pot	Cu-alloy	170240			400	big pot made of both Cu-alloy and few iron.
EJP22-A-179	Area 2, Sounding 4, Building A, Room 5	62	Nail	Iron		10	101	22	1 iron nail broken two fragments. weight=
EJP22-A-181	Area 2, sounding 4, Building A Room 5	62		Iron				23	6 fragments of broken iron objects with wood remains?
EJP22-A-182	Area 2, Sounding 4, Building A, Room 5	62		Iron or lead					10s fragments of lead object and 1 iron nail.
EJP22-A-183	Area 2, Sounding 4, Building A	62		Iron	96	154,5	28		11 fragments of broken iron objects/
EJP22-A-186	Area 2; Sounding 4	unknown 43 ?	Coin	Cu-alloy				2,8	13 piece de monnaie:
EJP22-A-187	Building A, Room 4	56	Coin	Cu-alloy				3	9 1 very small Cu_alloy coin.
EJP22-A-188	Area 2, Sounding 4, building A		unknown	Cu-alloy	61	1,2	12		one fragment of Cu-alloy bended object.
EJP22-A-189	Area1 Sounding 3	36	Nail	Iron				42	8 1 fragment of iron nail with no head
EJP22-A-190	Building A, Room 4	56	Unknown	Iron				7 29	1 fragment of iron object
EJP22-A-191	Area 2, sounding 4, Building A	24	arrowhead	Iron	16	6	55		1 fragment of iron arrowhead.
EJP22-A-192	Area 1, Sounding 3	61	Nail	Iron	8	16	31		1 fragment of iron nail
EJP22-A-193	Buldin A, Room 4	48	Nail	Iron				58	9 1 fragment of iron bended nail with no head.
EJP22-A-194	Area 1, Sounding 3	59		Iron					.4 fragments of iron objects (3 nails, 1 arrowhead)
EJP22-A-195	Area 1, Sounding 3	53	Nail	Iron	12	15	75		1 fragment of iron nail.
EJP22-A-196	Area 1, Sounding 3	53	Nail	Iron				39	18 1 small complete iron nail.
EJP22-A-197	Bulding A, Room 4	52	Unknown	Iron	74	1,5	13		1 fragment of iron object
EJP22-A-198	Building A, Room 4	52	Unknown	Iron	44			9	1 fragment of iron object.
EJP22-A-199	Area 1, Sounding 3	46	Nail	Iron	9			62	17 1 fragment of iron nail.
EJP22-A-200	Area 1, Sounding 3	49	Unknown	Iron				11 38	1 fragment of bended iron nail with no head.
EJP22-A-201	Area 1, Sounding 3	49	Unknown	Cu-alloy	7	1	214		1 fragment of Cu-alloy bracelet?
EJP22-A-203	Area 1, Sounding 3	49	Nail	Iron			4611	375749	14 fragments of iron nails with no heads.
EJP22-A-204	Area 1, Sounding 3	49	Unknown	Lead			17	31	1 fragment that could be lead metal or stone.
EJP22-A-205	Area 1, Sounding 3	58	Nail	Iron				26	23 1 fragment of iron object.
EJP22-A-206	Area 1, Sounding 3	58	nail	Iron	7	4	29		1 fragment of iron nail with no head.
EJP22-A-207	Area 1, Sounding 3	58	hook	Iron	41	9	40		1 fragment of a bended iron object.
EJP22-A-208	Area 1, Sounding 3	58	Unknown	Iron	9	5	44		1 fragment of irregular shape of iron nail.
EJP22-A-209	Area 1, Sounding 3	46	Nail	Iron				39	14 1 small iron nail.
EJP22-A-210	Area 1, Sounding 3	46	Unknown	Cu-alloy	42	1	26		1 fragment of flat Cu-alloy object.
EJP22-A-211	Area 1, Sounding 3	46	Nail	Iron	9			92	19 1 iron nail
EJP22-A-212	Area 1, Sounding 3	46	Nail	Iron	9	10	60		1 iron nail with no head.
EJP22-A-213	Area 1, Sounding 3	46	Unknown	metal					2 fragments of metal (maybe carbonized material).
EJP22-A-214	Area 1, Sounding 3	46	Unknown	lead, slag or stone	20	12	35		3 fragments of unknown material(lead? slag? stone?)
EJP22-A-215	Area 2, Sounding 4	32	Unknown	Iron	21		9	73	1 fragment of arrow head.
EJP22-A-216	Area 2, Sounding 4, Building A	32	Unknown	Iron or slag	44	10	52		1 fragment of iron object or slag.
EJP22-A-217	Area 2, Sounding 4	32	Unknown	Iron	2923	59	5952		3 fragments of iron object (2 big and 1 tiny).
EJP22-A-218	Area 1, Sounding 3.	49	Unknown	Iron	24		5	76	1 fragment of arrow head/
EJP22-A-219	Area 1, Sounding 3	49	Nail	Iron			7	57	1 fragment of bended iron nail with no head.
EJP22-A-220	Area 1, Sounding 3	49	Unknown	Iron	5	3	37		1 fragment of iron bended thin nail with no head.
EJP22-A-221	Area 1, Sounding 3	49	Unknown	Iron	9	6	48		1 fragment of bended iron nail with no head.
EJP22-A-222	Area 1, Sounding 3	49	Nail	Iron	15	26	48		1 fragment of bended iron nail with head.
EJP22-A-223	Area 1, Sounding 3	49	Unknown	Slag or metal	76	27	90		1 fragment of metal object or slag.
EJP22-A-224	Area 1, Sounding 3	out of context	Unknown	Cu-alloy			5	50	2 fragments of Cu-alloy bracelet.
EJP22-A-225	area 1, sounding 3	out of context	Unknown	Iron	4	2	27		1 fragment of iron nail.
EJP22-A-226	Area 1, Sounding 3	out of context	Nail	Iron	6		25		12 1 small iron nail.
EJP22-A-227	Aea 1; Sounding 3	out of context	Unknown	Iron	10	12	37		1 small broken iron nail.
EJP22-A-228	Area 1, Sounding 3	53	Nail	Iron	7		45		19 1 small iron nail bended. .
EJP22-A-229	area 2, Sounding 4	43/45	Coin	Cu-alloy		3,2		15	1 medium size thick Cu-alloy coin
EJP22-A-230	Bulding A. Room 4	56	Coin	Cu-alloy		1		9,5	1 very small Cu-alloy coin
EJP22-A-231	room 4	56	Coin	Cu-alloy		3	10		10 1 very small and thick Cu-alloy coin
EJP22-A-232	Room 4	56	Coin	Cu-alloy		1,3		10	1 very small and thick Cu-alloy coin
EJP22-A-233	Room 4	56	Coin	Cu-alloy		3		7	1 very tiny and thick Cu-alloy coin
EJP22-A-234	Room 4	56	Coin	Cu-alloy		1,2		12	1 medium size, thick Cu-alloy coin
EJP22-A-235	Room 4	56	Coin	Cu-alloy		1		12	1 medium size, thin coin of Cu-alloy coin.
EJP22-A-236	Room 4	56	Coin	Cu-alloy		1,3			no coin in the envelopp
EJP22-A-237	Room 4	56	Coin	Cu-alloy		3		8	1 tiny Cu-alloy coin
EJP22-A-238	Area 1, Sounding 3	59	Coin	Cu-alloy		1		31	1 big Cu-alloy coin
EJP22-A-239	Area 1, Sounding 3	59	Coin	Cu-alloy					broken tiny fragments of Cu-alloy coin
EJP22-A-240	building A, Room 4	out of context	Coin	Cu-alloy			1	11	1 medium and thick Cu-alloy coin

Table IX.2. List of the metal discovered during the 2022 campaign.

IX.2. 2023 campaign

The 2023 excavation campaign of the Eastern Jarash Project (EJP) in building A in Jerash uncovered fewer objects than in 2022, a total of 89, but more ceramics. However, some interesting items were uncovered and have been, or will be, the subject of further study.

One item (EJP23-A-001) is particularly noteworthy because of its rarity. The stratigraphy could date the object to the Umayyad period, although no similar item is known that could serve as a basis for comparison. So, no function (spiritual, decorative or simply functional) can be attached to it. This is the head of a statuette carved in the round in stone (probably in granite) with remarkable precision (fig. IX.1).

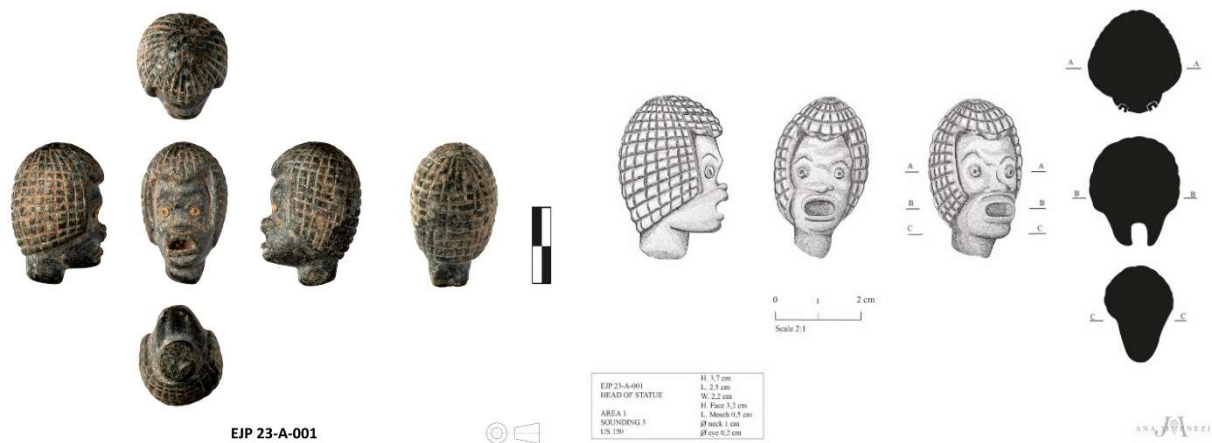


Fig. IX.1. EJP23-A-001. Drawings and photos by A.-B. Jimenez Iglesias.

The hair is an important feature of the object, as is the particularly large mouth, which seems to have been the subject of particular attention during the statuette's manufacture. The eyes, for their part, have been created by adding external elements (probably bone carved into small spheres) to give relief to the whole.

There are also two carved bone elements: one is semi-circular and could be a fragment of a bracelet (EJP23-A-012) in carved and polished bone. The bracelet (fig. IX.2) is the result of precise craftsmanship, with a thickness of 1.2 mm and deep, parallel striations, while the other object has an elongated shape with a circular section and could be a kohl stick (EJP23-A-010) (fig. IX.3).

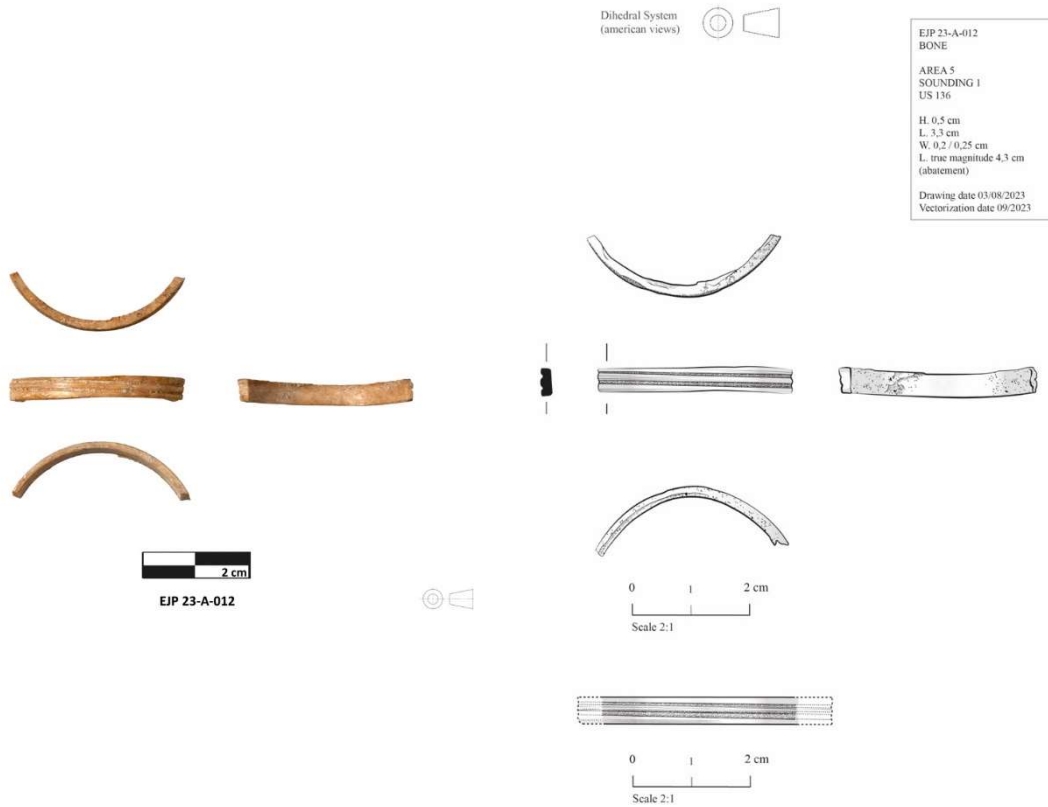


Fig. IX.2. Bracelet fragment EJP23-A-012. Drawings & photos by A.-B. Jimenez Iglesias.

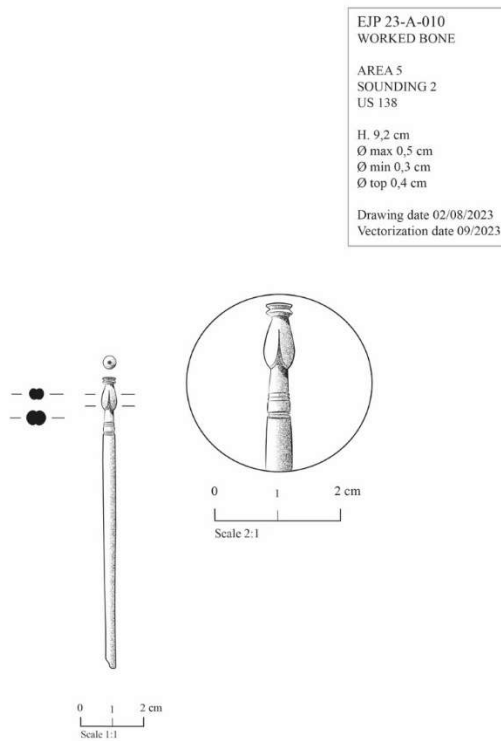


Fig. IX.3. Kobl stick EJP23-A-010. Drawings by A.-B. Jimenez Iglesias.

The campaign also discovered 13 copper-alloy coins of various sizes (from very small to large sizes). These coins, unearthed in sectors 1,3 and 5, had no inscriptions or decoration.

A significant proportion of metal items were also discovered (table 3), with the majority being iron or copper alloy nails of varying sizes and with varying degrees of wear, characterized by a twisting of the overall shape or the absence of certain parts of the object. Fragments of a copper-alloy pot (EJP23-A-058), probably of large size, were also discovered in sector 3 of the building. Other metal items (iron or copper alloy) were found, probably architectural consolidation elements such as nails, but their precise function could not be identified.

No inventaire	sector	US	object	materials	height (mm)	thickness (mm)	width (mm)	diamter (mm)	weight (mm)	description
EJP23-A-002	Area 5, Sounding 1	152	Coin	Cu-alloy		1		15	1,5	1 small coin with blue oxydation
EJP23-A-003	Area 5, Sounding 3	out of context	Coin	Cu-alloy		1,2		28	3,91	1 half of big Cu-alloy coin.
EJP23-A-004	Area 3, Sounding 2	102	Coin	Cu-alloy		1,7		33	8,64	1 big Cu-alloy coin
EJP23-A-005	Area 1, Sounding 3	58	Coin	cu-alloy	19	5			1,18	1 thin coin of Cu-alloy.
EJP23-A-006	Area 5, Sounding 2	148	Coin	Cu-alloy		1		19	1,41	1 small thin Cu-alloy coin.
EJP23-A-007	Area 5, Sounding 1	136	Coin	Cu-alloy		1,2-0,3-0,5-3-2-0,3		9-9-8-9-11-10	4,98	6 small Cu-alloy coins, 1 is broken, 2 very thin like sheet.
EJP23-A-008	Area 1, Sounding 3	36	Coin	Cu-alloy		1		13	0,95	1 small Cu-alloy coin.
EJP23-A-009	Area 1, Sounding 3	103	Coin	Cu-alloy		1,3		11	1,05	1 very small Cu-alloy coin.
EJP23-A-013	Area 1, Sounding 3	103	Nail	Iron			46-13	25-15	28,22	3 fragments of thick iron nail.
EJP23-A-014	Area 1, Sounding 3	144	Nail	Iron			40-45-47	24-21-8	20,47	1 iron nail.
EJP23-A-026	Area 1, Sounding 5	36	Nail	Iron		6,7	34	17	9,06	1 iron nail with two small fragments.
EJP23-A-027	Area 1, Sounding 3	122	Nail	Cu-alloy		3	16		1	1 piece of metal could be Cu-alloy.
EJP23-A-028	Area 1, Sounding 3	105	hook	Iron					16,98	fragment of an iron hook.
EJP23-A-029	Area 1, Sounding 3	122	Stem	Cu-alloy		0,8	132		7,18	1 Cu-alloy thin bended rod.
EJP23-A-030	Area 1, Sounding 3	144	Stem	Cu-alloy		2	119		3,87	Cu-alloy thin bended rod.
EJP23-A-031	Area 1, Sounding 3	144	Architectural	Lead	50	6,3	43		36,01	1 lead handle (or a lamp?).
EJP23-A-032	Area 3, Sounding 3	Top Soil	Tool	Iron			25	7	5,35	fragment of modern metal ? cylindrical shape.
EJP23-A-034	Area 1, Sounding 3	144	Nail	Iron		12	53		9,33	1 iron nail with no head
EJP23-A-037	Area 1, Sounding 3	103	Unknown	Cu-alloy	16	0,7-0,5	35-19		1,84	2 Cu-alloy sheet fragments.
EJP23-A-039	Area 1, Sounding 3	144	bell	Cu-alloy	42			36	58,39	Compleat Cu-alloy bell
EJP23-A-042	Area 1, Sounding 3	109	Unknown	Cu-alloy					62,57	fragments of Cu-alloy and unknown objects.
EJP23-A-054	Area 1, Sounding 3	150	Unknown	Cu-alloy		3	23		1,2	One Cu-alloy stick.
EJP23-A-058	Area 3, Sounding 2	102	pot	cu-alloy		7			540,01	Over 50 fragments of thin Cu-alloy pot
EJP23-A-059	Area 1, Sounding 3	103	Unknown	Cu-alloy					8,16	2 fragments of Cu-alloy objects.
EJP23-A-060		unknown	Unknown	Cu-alloy			31-41		3,16- 16,43	2 fragments Cu-alloy. thin and semi-cicular shape.
EJP23-A-061	Area 3, Sounding 1	102	pipe	iron		1	28	8	2,89	1 fragment of iron small pipe? cylindrical shape.
EJP23-A-062	Area 1, Sounding 3	144	Unknown	Cu-alloy	2-2-		44-32		1,46- 1,89	2 fragments of Cu-alloy objects.
EJP23-A-063	Area 1, Sounding 3	121	Nail	Iron	8	12	43		7,26	1 iron nail.
EJP23-A-065	Area 1, Sounding 3	122	Nail	Iron		10	53		12,06	1 iron nail.
EJP23-A-066	Area 1, Sounding 3	144	Nail	Iron		10	37		13,8	2 fragments of iron nail.
EJP23-A-067	Area 1, Sounding 3	144	Nail	Iron		8	46		5,33	1 iron thin iron nail with no head.

EJP23-A-068	Area 1, Sounding 3	105	Nail	Iron		8	50		1 iron nail?
EJP23-A-069	Area 1, Sounding 3	105	Unknown	Iron		13	76	6,64	1 fragment of an unknown iron object. elongated, flat shape, rounded end
EJP23-A-070	Area 1, Sounding 3	144	Nail	Iron		11	44	44,96	1 fragment of iron nail with no head.
EJP23-A-071	Area 1, sounding 3	103	Nail	Iron		10	25	4,14	Fragment of an iron object (head of nail ?)
EJP23-A-072	Area 1, Sounding 3	109	Nail	Iron	12-6-		86-28	4,09	2 fragments of iron nails, one big and the other thin, bended with no head.
EJP23-A-073	Area 1,Sounding 3	150	Nail	Iron		12	119	38,57	1 big iron nail.
EJP23-A-074	Area 1,Sounding 3	150	Nail	Iron		8-8-	56-48	50,34	2 bended iron nails. one with no head.
EJP23-A-075	Area 1, Sounding 3	150	Nail	Iron		15-14-11	60-65-37	10,62- 4,86	3 iron nails with no head.
EJP23-A-076	Area 1, sounding 3	150	Unknown	Iron				24,07- 18,60- 6	fragments of iron unknown objects.
EJP23-A-077	Area 1, sounding 3	103	Nail	Iron		9	37	83, 97	1 iron bended nail with no head.
EJP23-A-078	Area 1, Sounding 3	103	Unknown	Iron				7,51	5 fragments of iron objects.
EJP23-A-079		unknown	Nail	iron		8	51	116,72	same context as EJP23-A-060.
EJP23-A-080		unknown	Nail	Iron		13	42	9,02	2 fragments of one nail.
EJP23-A-081	Area 1, Sounding 3	144	Nail	Iron				14,27	1 fragment of an iron nail.
EJP23-A-084	Area 3, Sounding 2	102	Nail	Iron		8	55	112,35	6 fragments of iron objects: 2 nails with no head and one nails head.
EJP23-A-089	Area 1, Sounding 3	122	Nail	Iron		7	47	8,68	1 iron nail with no head.
								5,28	

Table IX.3. List of the metal fragments and objects discovered during the 2023 campaign.

Finally, most of the objects found were shards of glass cups, bowls and vases, indicating that this type of container was used extensively on the site (table 4). There is a wide range of types of glass of different thicknesses and colors, suggesting the existence of a vast economy, if not of glass production then of glass use in different food consumption contexts.

No inventaire	sector	US	object	height (mm)	thickness (mm)	width (mm)	diameter (mm)	description
EJP23-A-015	Area 1, Sounding 3	144	Glass container		12-1,2	18-34	10	3 glass fragments, including 1 made of fine white paste with traces of charcoal; and two fragments of light blue glass handles. The handle is cylindrical and rounded at the end.
EJP23-A-016	Area 1, Sounding 3	140	Glass container	15,5	0,7	47		1 glass fragment. Fine, light-blue paste with a thin white coating on the inside. Concave shape.
EJP23-A-017	Sounding 3, Area 1	103	Glass container	32	1,3	49		glass fragment. Thick, light green glass paste. Rounded, domed shape in the center of the fragment.
EJP23-A-018	Area 5, Sounding 2	151	Glass container		1-1,2			3 fragments of translucent light-blue fine glass paste, including 1 fragment of a lip with a straight mouth. 3 fragments in white/silver glass paste.
EJP23-A-019	Area 1, Sounding 3	58	Glass container				44	8 glass fragments. 1 fragment of a complete vase foot, circular shape with rounded edges. Fine light blue paste. 5 fragments of a body, concave shape, fine light blue paste. 1 fragment in fine light green paste. 1 fragment in thick, light-blue paste.
EJP23-A-020	Area 5, Sounding 3	147	Glass container		1			Dozens of glass fragments. Fine, black glass paste. Including 2 fragments of lip with flared mouth. 1 fragment decorated with a thick band of black glass paste. 1 fragment with fine white paste.
EJP23-A-021	Area 1, Sounding 3	103	Glass container		1-3-1,2			3 fragments of a vase in fine light green paste, including two fragments of lips with straight mouth and 1 fragment of a domed base. 1 fragment of a thick light blue paste base. 4 white/silver paste fragments, including 1 lip fragment with handle end.
EJP23-A-022	Area 1, Sounding 3	36	Glass container		11-0,7-1,2-1			6 glass fragments: 1 fragment in very thick blue paste, 1 fragment in fine concave light blue glass paste, 1 fragment in fine black paste, 3 fragments in fine white paste.
EJP23-A-023	Area 1, Sounding 3	121	Glass container				41	19 glass fragments: 3 foot fragments, circular shape, rounded edges, white and dark blue paste. 5 lip fragments, straight mouth with fine white paste. 10 fragments in fine white paste. 1 fragment in very thick blue paste.
EJP23-A-024	Area 3, Sounding 1	102	Glass container		4,2			4 fragments of a glass vase. Thick, light-blue paste. 1 fragment of mouthpiece, 1 fragment of foot with rounded rim, 1 fragment of cylindrical handle.
EJP23-A-025		out of context	Glass container	34	17	52		fragment in very thick, black glass paste.
EJP23-A-033	Area 5, Sounding 2	134	Glass container		1			Glass fragments. Fine, light blue paste. 1 fragment of lip with right mouthpiece
EJP23-A-035	Area 5, Sounding 1	139	Glass container	9-25-14-4-18	1	26-27-10-10-15		5 glass fragments. Fine, white glass paste. 1 lip fragment, right mouthpiece.
EJP23-A-036		?	Glass container	31	5		36	2 fragments of the same glass bowl foot. Circular shape, rounded edges.
EJP23-A-038	Area 1, Sounding 3	105	Glass container		4,2-0,5			6 glass fragments. 2 of which are thick, light blue glass with 1 lip fragment. 4 fragments of fine, white glass paste, including 1 lip fragment with slightly flared mouthpiece.
EJP23-A-040	Area 4, Sounding D	113	Glass container	39	12-0,8		10	8 glass fragments. 1 fragment of handle in dark blue paste, cylindrical shape rounded at the end, worked body shape. 7 fragments of fine translucent light blue glass covered with a thin white layer. 1 lip fragment, right mouth.

EJP23-A-041	Area 1, Sounding 3	122	Glass container		6-1,7-5			6 glass fragments. 2 fragments from the foot of a bowl, thick greenish paste. 3 fragments in fine white paste. 1 fragment in thick, light-blue paste; slightly serpentine, worked shape.
EJP23-A-043	Area 1, Sounding 3	122	Glass container		0,8-0,5-1			9 glass fragments. Fine white or light blue paste. 1 lip fragment, fine mouthpiece, straight.
EJP23-A-044	Area 1, Sounding 3	140	Glass container		25-21,3-5,2-4			8 glass fragments. 4 black glass fragments including one very thick fragment. 4 blue glass fragments with thin white coating, including 1 foot fragment with semicircular shape and rounded edges, 1 fragment with concave shape, 1 neck fragment and slightly flared mouthpiece. 1 foot fragment with rounded rim.
EJP23-A-045	Area 4, Sounding E	131	Glass container				47	11 glass fragments. 3 thick beige/pink paste fragments. 8 fragments in light blue paste, including 1 fragment of a circular bowl foot with rounded edges.
EJP23-A-046	Area 1, Sounding 3	105	Glass container		4-4-2-3		45	16 glass bowl fragments. Light blue paste, medium thickness. 1 complete bowl foot, circular shape with rounded edges, 2 foot fragments with rounded edges, 4 lip fragments, 2 with thick, slightly flared mouthpieces and 2 with thin, straight mouthpieces.
EJP23-A-047	Area 1, Sounding 3	105	Glass container		1,5-6-1-1,8			20 glass fragments. Fine white/beige paste. One fragment of a handle, thin, elongated, raised shape. A fragment with a circular hole in the center (for a foot or handle fitting). 1 fragment of lip, mouth slightly widened.
EJP23-A-048	Area 1, Sounding 3	105	Glass container		6-6-9-	30-24-28		3 glass fragments. Including 1 fragment in thick black glass paste with a slightly concave shape. 1 fragment in thick blue/grey paste. 1 black avleolated fragment.
EJP23-A-049	Southern courtyard	128	Glass container			1		8 small glass fragments. Very fine paste, translucent light blue. Concave fragments.
EJP23-A-050	Area 1, Sounding 3	58	Glass container	15	3-3-1,5-2-2	27-36-20-49-36		5 glass fragments, including a fragment of a bowl foot in light blue paste with rounded edges. 1 fragment in thick, black glass paste. 1 fragment of a lip in thin, light-blue paste, with a splayed mouth. 2 fragments in white paste, including 1 fragment of a lip with a straight mouth and 1 fragment with a slight protuberance in the center. width= 27-36-20-49-36
EJP23-A-051	Area 5, Sounding 1	136	Glass container		4-2-1,3-0,2-4,5			22 small glass fragments. 4 lip fragments in white/beige paste, with slightly splayed mouth. 1 fragment in thin black glass. 4 fragments in very thin transparent glass. 1 thick transparent glass fragment with three thin parallel stripes.
EJP23-A-052	Sounding 2	138	Glass container		3-2-			10 glass fragments. Blue paste covered with a thin black layer, including two lip fragments with straight mouthpiece.
EJP23-A-053	Sounding 2	138	Glass container		1,3-8-2,8			19 glass fragments. Fine, light-blue paste.
EJP23-A-055	Area 2, Sounding 5	103	Glass container		6-3-		43	10 Glass fragments. Including 3 fragments of cup feet, thick, light blue glass paste. 1 mouthpiece fragment.
EJP23-A-056	Area 1, Sounding 3	150	Glass container		1-9-			Fragments of glass bowls. Light blue paste covered with a thin white layer. Medium thickness. 8 thin white glass fragments, including one lip fragment with straight mouth. 10 fragments of feet and bottoms, including 2 complete feet. Circular shape with rounded edges. 2 fragments of handle, cylindrical shape, solid, with rounded extremity.
EJP23-A-057	Area 1, Sounding 3	144	Glass container					Fragments of glass bowls. 9 fragments in very fine white paste, including one fragment with a fine white band in relief. 2 fragments of feet with rounded edges, with thick paste. 4 fragments of hollow cylindrical necks. 13 fragments of lip with straight or everted rim. 2 fragments of handle, solid cylindrical shape, rounded end. 2 small black glass fragments, thick paste.
EJP23-A-064	Area 1, Sounding 3	150	Glass container	18-15		0,7	22-18	2 fragments of fine white glass. 1 fragment of lip with right mouth.
EJP23-A-082	Area 3, sounding 2	102	Glass container			7	87	Fragment of glass pot handle. Fine light blue glass paste.
EJP23-A-083	Area 3, Sounding 2	102	Glass container		2,5-1,8	56-41		2 fragments of lips vase. Thin green and blue paste.
EJP23-A-085	Area 1, Sounding 3	105	Glass container					fragments of a glass container with part of the body, handle, foot and lip. Paster thin and blue.
EJP23-A-086	Area 1, Sounding 3	105	Glass container					2 fragments of glass container with dark/dark green paste. part of the body and the foot.
EJP23-A-087	Area 1, Sounding 3	105	Glass container					fragments of the same type of glass container: blue and middle thickness paste.
EJP23-A-088	Area 1, Sounding 3	105	Glass container					5 fragments of foots and one fragment of lip and one of handle. fragments of glass container. thin glass paste, blue with white coating. 1 fragment of a foot with semi-circular shape.

Table IX.4. List of the glass discovered during the 2023 campaign.

X. Conserving the Metal Objects Discovered by the Eastern Jarash Project

Dr. Fatma Marii

Almost 125 metal objects were excavated during the French Field Excavation Campaigns in 2022 and 2023 carried out by the Eastern Jarash Project (EJP) at the Jerash Archaeological Site. This collection was loaned by the DoA to the EJP and brought to the Institut Français du Proche-Orient (Ifpo) in Amman for the registration and conservation processes. The purpose of conserving and restoring the metal collection was not only to define these objects and to preserve part of them from further deterioration in the long term, but also to assist the archaeologists and curators in selecting objects for displaying in museum galleries or storing in storage.

The conservation treatments started on Sunday September 3 and continued until Sunday October 1 2023 (although this work was interrupted between September 10 and 14). The last day was used to wrap and pack the metal objects to ensure they would be in a safe environment.

The conservation work took place on the first floor of Ifpo, where all the required facilities for conservation work were provided. We were fortunate to have sufficient space, natural light and air circulation where the conservation work was carried out. The facilities and staff at the Ifpo were also truly appreciated.

Team Personnel: Dr. Fatma Marii (Main conservator), Eman Abu Sarees (Assistant).



Fig. X.1. The place at the Ifpo prepared for the conservation work.

Preparation Work

In July 2023, the metal objects from the EJP project were assessed for their materials and condition based on their appearance. Then, a plan for their conservation and restoration was proposed to prepare a working space at Ifpo and the required furniture, tools and materials for this work.

The objects in this collection are from two archaeological campaigns, 2022 and 2023, and they were classified as shown in Appendix 1.

From this list, some objects were selected based on the archaeological study priorities or because their deteriorated condition meant that fast intervention was needed (Appendix 2). The objects chosen for conservation were treated according to their materials, with the aim of managing the conservation of each type. Each group was treated separately with its set of materials and tools. The four main groups were:

- a big copper pot with iron and lead elements;
- objects made of copper alloy metals;
- objects made of iron metal;
- other non-metal materials (stone and bone) registered by mistake as metal objects.

Before starting any treatment, the first step was the documentation of the objects that were going to be conserved; this included photographing and registering all the attached information for each object. At the same time, the recording contained all the conservation processes for these objects to document the materials, methods used, the date of conservation for each object and the photograph after the treatment.

Conservation Processes:

The conservation treatments applied for the selected metal objects were as follows:

- Examination: by eye, with magnifying glasses and a magnet to check if there was iron metal in the objects.
- Cleaning the dirt and corrosion layers away from each object with mechanical (dry) cleaning using brushes and different tools with no liquids, and if this was not enough, then using chemical (wet) cleaning with liquids including ethanol, acetone, distilled water and formic acid if needed.

- Gluing the broken fragments of the same object if the joins between these fragments were found, as long as this was possible (some joins were not glued; the reasons will be explained below). Paraloid B72 was applied as an adhesive to these broken fragments, but sometimes UHU was used as well (as it dries faster); nevertheless, both adhesives are reversible.
- Packing the objects in suitable bags and archival materials to prevent further corrosion. Fragile objects were wrapped with acid-free tissue for additional protection from the surrounding environmental factors (such as humidity and dust), making it safer to handle and transport them. Each Tupperware packing also had a bag of silica gel added to absorb the extra humidity in these packages.

X.1. Big Pot EJP22-A-065

The diameter of the excavated big, copper-alloy pot is around 40 cm, and the maximum height is 24 cm. The shape of the pot, discovered under collapsed walls, is not regular due to the stones and debris that have fallen on it. As a result, it has folds and cracks in the rim, sides and base.

This pot was documented and then examined with a magnet to ensure no iron metal was present in the object. It was associated with a frame for the pot's rim, identified as an iron frame.



Fig. X.2. The shape of the pot when received for conservation treatment.

The treatment of this pot took several steps:

1. Cleaning the dirt inside the pot was like a mini-excavation as the sand from inside was sifted to look for small or tiny objects. The pot contained stones, mortar pieces, painted plaster, pottery, glass, shells, tiles and bone beside the debris.



Fig. X.3. Cleaning the debris inside the pot and the significant finds from the pot.

2. Cleaning the corrosion layer from inside the pot to prepare samples for analysis of the residues of this pot that could uncover its previous uses. This cleaning used only medical scalpels (mechanical cleaning).



Fig. X.4. Preparing samples from the residues and corrosion.

3. Cleaning the soot from the outside surface of the pot. This cleaning aimed only to remove the soot that had left traces all over the pot's surface; therefore, the cleaning did not go into deeper layers. Brushes, wooden sticks, dental tools, sponges and a solution of Formic Acid with distilled water were used to clean it. Interestingly, after this cleaning it became clear that the soot had protected the metal surface from corrosion. Once the soot layer was removed, it revealed the metal surface, which is unusual for archaeological metals. Meanwhile, the pot's surface on the

inside, the rim and the surface under the pot's lead holders and iron frame all had corrosion layers. This exciting phenomenon deserves to be researched and analyzed in the future.



Fig. X.5. Cleaning the soot layer from the pot's outside surface.

4. Chemical cleaning using Ethanol (alcohol) for all the pot's surfaces and then brushing to rinse it from any traces of dust, corrosion residues or other chemical materials.



Fig. X.6. The big pot after final cleaning.

5. Joining the other fragments/objects to complete this pot. Both objects with the numbers EJP22-A-182 and EJP22-A-183 are fragments that belong to the big pot number EJP22-A-065. The object numbered EJP22-A-183 contains eleven iron frame fragments and two handles, most of which have been joined with the iron frame fragment left on the pot. One of these iron fragments was glued to the iron frame on the pot using UHU as a reversible adhesive. Paraloid B-

72 was used first, but it was not strong enough for the iron frame. Furthermore, it was found that the object numbered EJP-A-182 also belonged to this pot: a triangle lead object with a thick iron nail head, which is one of the two holders on the pot attached to the pot's iron handles.



Fig. X.7. Gluing the joining fragments to the big pot.

6. Later, the pot was left to dry before the final photos were taken and it was prepared for packing. Restoring this big pot requires discussion and further research. It is clear that the iron frame and handles are part of the pot and that the handle holders are made of lead metal while the pot is made from a thin layer of copper alloy that has been squashed due to heavy stones falling on it during the earthquake. As a result, gluing these heavy metals (lead and iron) to the thin copper alloy will not be enough to hold them together. The pot will need to be sufficiently supported in one place to strengthen it before it will be possible for these heavy metals to be glued or joined onto it.



Fig. X.8. The final photo of the pot with the other objects belonging to it.

7. Packing the big pot into a separate polyethylene Tupperware box, using polyethylene sheets as cushions and wrapping the pot with acid-free tissue. The fragments that belong to this big pot were packed within the same Tupperware box in separate bags. The lead metal of both holders flaked very easily into small fragments so they were wrapped in acid-free tissue to preserve them.



Fig. X.9. The big pot wrapped with acid-free tissue in the Tupperware box.

X.2. Copper-alloy metal objects

Eleven copper-alloy metal objects from the EJP project were treated. It was attested that they were made from copper-alloy metal because they were not attracted to a magnet and they had greenish layers that were considered to show evidence of copper corrosion.

The cleaning of these objects started with mechanical cleaning using different brushes (soft ones and toothbrushes) and wooden sticks. After this, they were cleaned with dental tools and a scalpel for any hard corrosion layers. A fiberglass brush was also used to clean some of the hard corrosion layers on the metal objects.

For the corrosion or salt layers that were hard to remove with mechanical cleaning, chemical cleaning was applied using Formic Acid solution (Formic Acid and distilled water (1:5)). This solution was applied to these objects by spot cleaning in areas with problematic corrosion or salt spots. A cotton swab was used on the hard spots to soften them, as this could make removing them by scalpel easier.

After cleaning the object, it was soaked in Ethanol (alcohol) for a few minutes and then brushed with a toothbrush to remove any residues from any cleaning materials or dust.



Fig. X.10. EJP22-A-245: this copper-alloy object was soaked in Ethanol after it was cleaned.



Fig. X.11. EJP23-A-031: copper-alloy lamp handle before and after cleaning.



Fig. X.12. EJP23-A-039: copper alloy bell before and after cleaning.

Some copper alloy objects were severely corroded; the bronze disease affecting the metal could have corroded all of the metal material. In this case, the corrosion keeps the object's shape; therefore, there is no point in cleaning these corroded objects. Even cleaning that only aims to remove dust can cause objects in this situation to break up into small flakes.

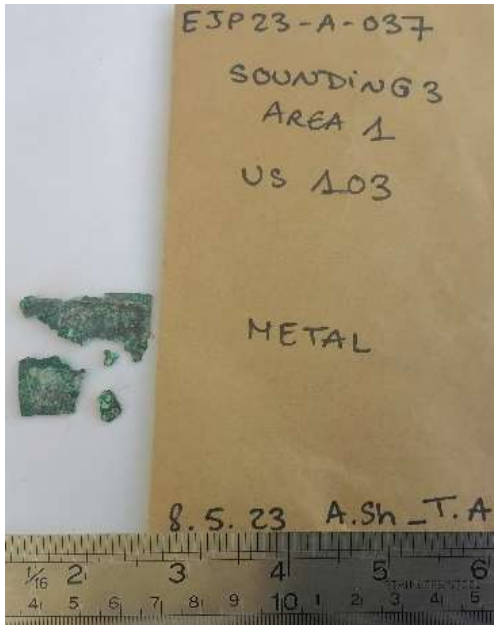


Fig. X.13. EJP23-A-037: two flat sheets corroded from the inside of the metal.



Fig. X.14. EJP22-A-224: two objects, one was cleaned but one was corroded from the inside.

Some copper alloy objects were broken during the cleaning process or were already broken into fragments. When these fragments were joined, they were glued together using UHU as a reversible adhesive. The exception was EJP23-A-062's long copper-alloy pin, as the broken part had a very thin surface. UHU was added to the fractured surfaces as a sheet until it dried and then the superglue (irreversible glue) was added to make the broken fragments more stable. This means that irreversible glue was added to the surfaces of the reversible glue.

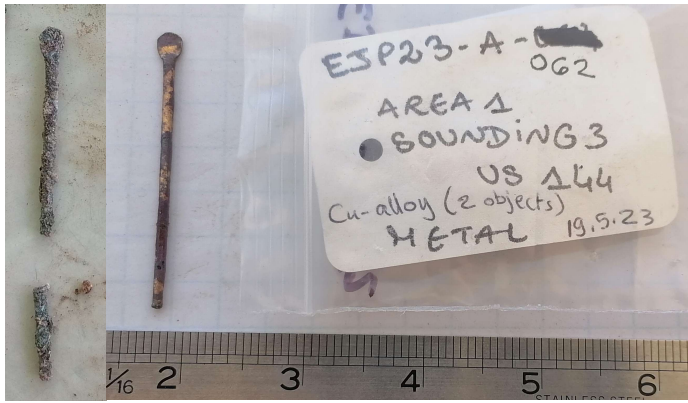


Fig. X.15. EJP23-A-062: this copper alloy pin was glued using UHU and super glue.

EJP23-A-058 is a small bowl, its diameter is around 25 cm and its height is around 10 cm. It is broken into more than 50 fragments. It is made of copper alloy with a fragile metal; some of the broken fragments are bent due to them having been buried under heavy stones. Looking for joins between these fragments took a long time and it may still be possible to find other bondings with more time. During this project, it appeared that these fragments originated from only one bowl, as the rim is complete. The big fragments were glued using UHU as a reversible glue to find out the shape of this bowl.



Fig. X.16. EJP23-A-058: fragments before and after the fragments were joined.



Fig. X.17. Fragments of the copper alloy bowl temporarily joined together using a sand support.

X.3. Iron metal objects

All eight objects in this list were attracted to a magnet that was used to prove that these metal objects contained iron metal.

The cleaning of these iron objects started with mechanical cleaning using a brush (soft brushes and toothbrushes) to remove all the dust, soil and delicate layers of iron rust. Later, metal dental tools were used to remove the hard iron rust and the dirt attached to the rust. A manual electronic drill was used for the hard parts of the rust and, in some cases, a scalpel was also used.

The complicated layers of rust and dirt were softened by applying Ethanol to soften and remove them. These objects were soaked in Ethanol for a few minutes and then brushed to remove any dirt or rust dust residues during the final cleaning process.

Cleaning iron objects took more time than expected, as the iron rusting and dirt attached to them were very hard, like crystal salts.

Object number EJP22-A-243 is a hollow iron object which is split into five pieces; the inside surface has wood remains. Therefore, no chemicals were added during the conservation process and this object has been wrapped with acid-free tissue to preserve the wood.



Fig. X.18. EJP22-A-243: an iron object with wooden remains wrapped with acid-free tissue for packing.

Some of the iron nails in this collection flaked during the cleaning process. Therefore, after the object was cleaned, the loose flakes were glued back to the object using UHU as a reversible adhesive. Examples of these objects are numbers EJP22-A-181 and EJP22-A-241. EJP-A-179, an iron nail, was found broken and was then glued by applying UHU.



Fig. X.19. EJP-A-179: on the left, this broken iron nail before conservation work and on the right, after it had been glued together.



Fig. X.20. EJP-A-241: iron object before and during cleaning when some flakes came off and after treatment, all glued back together.

X.4. Objects made from other materials:

The five objects in this group were registered as metal during the archaeological excavations since they appeared similar to metals. All of these objects were covered with layers of dirt and soil before conservation work. During this conservation project, they were not attracted to a magnet. After they were cleaned, it appeared that they were not metals and were in fact different types of stone, except one, which was a carbonized bone fragment.

The conservation treatment started for all of them with mechanical cleaning using soft brushes and wooden sticks. Once it was known that the object was only stone (mainly basalt), it was possible to carry out chemical cleaning using distilled water and Ethanol was applied to the objects with brushes for further cleaning.

After the dust was cleaned from EJP22-A-213 it appeared that this was in fact two fragments of a broken carbonized bone. They were cleaned using Ethanol and then they were glued together using UHU.



Fig. X.21. EJP22-A-213: two fragments of carbonized bone

X.5. Final Stages

After all of these objects had been worked on, each one was photographed for after-treatment photos from as many sides as possible.

Then, each object was packed in separate Ziploc bags. Tiny holes were made in these bags to prevent sweating occurring inside these bags at a later date. Also, all of the related information about each object was written with a waterproof pen on the bags.

Sensitive objects (i.e. ones which were fragile or badly corroded) were wrapped with acid-free tissue to separate them from outside factors that could increase their deterioration.

After counting and double-checking the objects, the iron objects were packed in one Tupperware box and the copper alloy objects in another. This is because iron objects are heavy and the copper alloy ones are delicate, so it was necessary to separate them to avoid breaking the fragile objects. In both Tupperware boxes, silica gel bags were added to prevent extra humidity inside the box.

The objects that were packed with acid-free tissue due to their sensitivity are:

- EJP22-A-243 (iron object with wood remains);
- EJP22-A-224 (fragile copper alloy objects);

- EJP23-A-062 (fragile copper alloy objects).

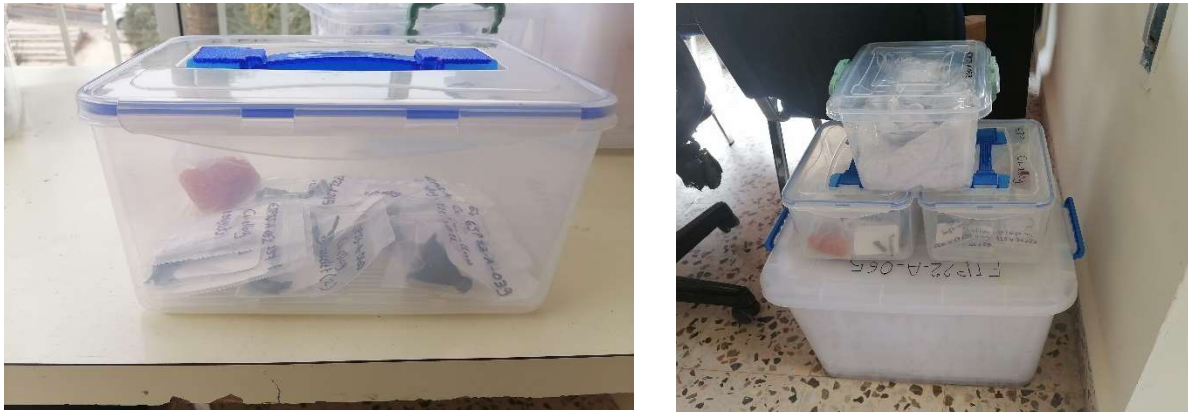


Fig. X.22. Tupperware box showing the objects and the silica gel bag inside it. All of the conserved objects are stored in five Tupperware boxes: one for iron objects, one for copper alloy objects, one for EJP23-A-085 and the big one for the big pot, EJP-A-065.

X.5. Recommendations

Archaeologists, curators and conservators should discuss EJP22-A-065 to decide on the big pot's required final storage place and shape to complete the restoration process. This pot deserves further research and display, as it is one of a kind.

To continue gluing the fragments of the small bowl EJP23-A-058 together, it will be necessary to support it with a special mounting to hold the bent fragments, as this will facilitate joining them together.

All the metal objects should be stored in a suitable environment. The temperature should be between 20°C and 25°C and the relative humidity should be between 45% and 50%.

The objects should be packed in separate Ziploc bags.

The metals wrapped in acid-free tissue are fragile and should be handled cautiously.

Bags of silica gel, which is orange in color, have been placed in all of the Tupperware boxes. If this material becomes green, it means that it is full of water and needs to be dehydrated. This can be done by heating the silica gel; all the water will evaporate and then the silica gel can be reused.

Lead metals should never be packed in organic packaging (i.e. paper bags or cardboard boxes).