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Eastern Jarash Project: 2022 Final Report

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EASTERN JARASH PROJECT

2022 FINAL REPORT



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I. Framework of the project, objectives & first results

Dr. Julie Bonn eric

As part of a research program on the evolution of northern Jordan in the early Islamic period, the establishment of a new archaeological project at Jerash aims 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 by the emergence of a new power.

Created in 2022, the Eastern Jarash Project (EJP) was able to carry out a field campaign in the spring and three post-excavation missions (recording objects, studying ceramics, and architectural analysis). The results, already important and promising, were presented at a conference (15th ICHAJ), in a blog paper in the *Carnets de l'Ifpo*, and in an article submitted to volume 14 of the *Studies in the History and Archaeology of Jordan*. This campaign was the first phase of the study of a large building (min. 650 m²) with a central courtyard, which had already been partially excavated by a team from the Department of Antiquities (DoA) and never got studied nor published. Located near the *cardo*, both city's commercial heart and its main traffic axis, this building could have been the house of an important merchant. It is the only example of this house's type discovered in Jarash, which is mainly known for its spectacle and cult buildings. Domestic occupation is almost unknown in Jarash from the Hellenistic to the Umayyad period and has never been the subject of a major study program. The presence of material in place under the building's collapse makes it a particularly interesting case study. Built partly over monumental vaults on the hillside and composed of two storeys, it could eventually be the subject of a onward restoration program and provide visitors with information on the daily life of the city's inhabitants, an aspect still imperceptible on the site.

Prior to the planning of the 2022 campaign, various visits were made with the members of the local office of the DoA in Jarash, in particular with Mohamad Altoom. They allowed us to better define the excavation strategy. Originally, two targeted sectors were located, one to the south of the church known as the Propylaea, and the other on the highest area between the two northern and southern *decumani* (see the proposal send to the DoA on January 18, 2022). The church of the Propylaea was almost entirely cleared in the 1920s and 1930s (CROWFOOT 1935, 1938) but the Umayyad levels were not documented. In the 2000s, an Italian team excavated some preserved areas, especially south of the building. They suggested that the abandonment of the church would

have occurred following the series of earthquakes in the 7th century, not after the one of 749 (BRIZZI *et al.* 2010: 356-358). Partial remains have led archaeologists to hypothesize an artisanal production of stucco or plaster, but they remain very cautious. Following the earthquake of 749, the area was abandoned. It seemed interesting to verify the artisanal nature of this sector. The second sector would have made it possible to begin new excavation in the southern part of this area. It appeared that this area was the highest one probably due to the backfilling that occurred over the time period of the clearing of the cardo where all sediments were dumped. Two other areas were to be surveyed and studied architecturally, without excavation:

- a large building with a central courtyard excavated by the DoA in 2001,
- a small building interpreted as a small mosque.

Nevertheless, following the visits, it seemed more relevant to concentrate the excavation and architectural study on the building excavated by the DoA in 2001. Indeed, this large building with a courtyard framed by at least three wings of rooms, with a complex phasing, was partially excavated during one campaign, but never published. No report was available and the archives have not yet been found. The choice was made to devote the first campaign to the study of this building for several reasons:

- This edifice had the advantage of being visibly a Byzantine building occupied during the Umayyad period, with an earlier occupation, allowing the area to be studied over a long period of time.
- Its location near the cardo and its unique plan in Jerash also made it a singular object of study.
- The fact that the entire building had not been excavated allowed the stratigraphy to be documented through new test pits to provide scientific documentation.
- Although partially excavated and appearing on the general site map, no interpretation of this building was available, despite its particular plan.

In the absence of documentation from the previous excavation, archives, and publications, it seemed pointless to undertake new excavations in the area without understanding and documenting the building's architectural plan first. The project on the "small mosque" was postponed since the area was used as a bloc's parking and the crane of the DoA was not working and needed expensive repairs. The 2022 campaign was therefore devoted to the study of the building designated as building A, which will be the main focus of the first program. It was followed by a post-campaign of objects' registration and preliminary study of the pottery, and by an architectural study campaign.

The excavation and study campaign were funded by the French Institut for the Near East (Ifpo), the CNRS (special founding "Appel d'offre Jordanie" and research unit Ciham UMR 5648), and the Cultural Service of the French Embassy. We would like to express here our gratitude to these institutions.

The 2022 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.

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

Jarash in early Islam: state-of-the-art and general questions

The location of Jarash in a fertile area, at the crossroads of trade routes, its proximity to centers of power such as Damascus and Mecca, as well as the exceptional conditions of preservation of the site and the number of archaeological studies, make it an exemplary case study of this transitional period characterized by the development of the region in the early days of Islam, and then by its progressive marginalization.

The dawn of Islam has long been considered the origin of the decline of Near Eastern cities, in particular Jarash. Nevertheless, archaeologists have highlighted, since the 1980s, a very dense occupation of this city during the Umayyad period, until the earthquake that destroyed most of the city in 749 (BARGHOUTI 1982; CLARK *et al.* 1986; GAWLIKOWSKI 1986; OSTRASZ 1989; PIEROBON 1984; WALMSLEY 1986; ZAYADINE 1989). Many discoveries were indeed made by expeditions focusing generally on the Roman period, in particular in the framework of the Jerash Archaeological Project (1981-1988) which brought together six international teams. Then three

missions carried out excavations with the specific aim of studying the Umayyad levels: the Islamic Jarash Project (2002-2012, dir. Alan Walmsley), the Danish-German Jerash North-west Quarter Project (2011-2016, dir. Achim Lichtenberger and Rubina Raja), the Late Antique Jerash Project (2015-2017, dir. Louise Blanke). In contrast to earlier hypotheses, these works offer the portrait of an economically flourishing, densely populated, Umayyad city, with numerous artisanal centers, and an important souk where the population was probably predominantly Christian.



Fig. I.2. Location of Jarash and other Umayyad settlements in Jordan (after M. Rivoal & H. David-Cuny, 2022).

Many archaeological excavations showed the economic transformations brought about by the Arabic conquest, with the development of monumental and polarized artisanal workshops (BESSARD & BONNÉRIC 2013). These workshops, grouped together by specialty, were built inside abandoned temples or spectacle monuments, on the outskirts of the city. The ceramic industry is of particular importance in Jarash (BARGHOUTI 1982: 225-226; SCHAEFER 1986: 419-421). Several

pottery kilns were thus discovered in the northern part of the city - five in or around the northern theater (SCHAEFER 1986; FALKNER 1986) and seven at or near the sanctuary of Artemis (KRAELING 1938: 133, 284; SCHAEFER 1986; PIEROBON 1986). South of the city, sixteen dyeing workshops have been uncovered in the northern *carveres* of the hippodrome: while some date back to the Byzantine period, these workshops were largely developed in the Umayyad period but were abandoned following the earthquake of 749 that led to the collapse of superstructures (final publication in preparation; BESSARD & BONNÉRIC 2013; BESSARD, BONNÉRIC & CALLOT 2012). A lime kiln may also have been discovered near the Temple of Artemis (SCHAEFER 1986: 421) and the existence of a workshop is assumed west of the *cardo* (BRIZZI *et al.* 2010: 358). Commercial activity was also intense in the center of the city as evidenced by the development of a souk at the intersection of the *cardo* and the south *decumanus*. During the Umayyad period, stores encroached on the ancient porticoes of these two main streets (SIMPSON 2008; WALMSLEY *et al.* 2008: 118-121, BALDONI 2019).

Fifteen churches have been discovered in Jerash (CRAWFOOT 1938; MICHEL 1990, 2001), and many of them remained active at least until the 749's earthquake, such as the so-called Church of Marianos (GAWLIKOWSKI & MUSA 1986), east of the hippodrome. Others, such as the so-called Church of the Propylaea, east of the *cardo*, which reoccupies part of the monumental path leading to the temple of Artemis from the river (CRAWFOOT 1935; CRAWFOOT 1938: 227; BRIZZI *et al.* 2010), have been reused with secular functions. The town's main mosque, the Congregational Mosque, has been fully excavated and studied (WALMSLEY & DAMGAARD 2005; WALMSLEY 2018). It follows a classical plan with a hypostyle prayer hall, a central mihrab, and a courtyard lined with porticoes. The builders did not decide to transform an earlier church into a mosque but to establish the latter in the heart of the city, at the corner of the *cardo* and the south *decumanus*. It was built on a Roman and Byzantine bath, almost a century after the conquest of the region, around 725-735. Another mosque has been identified east of the *cardo*, south of the north *decumanus*, and dated to the Umayyad period (NAGHAWI 1982; ZAYADINE 1986: 18-19), but this identification remains to be proven (see below).

The city was still densely populated in the Umayyad period, as evidenced by the discovery of a large residential area to the southwest of the city, extending from the western boundary of the mosque to the Byzantine rampart, the western boundary of the city (RATTENBORG & BLANKE 2017: 319-323), probably on either side of the western part of the southern *decumanus*, since a two-storey house was discovered to the north of this axis (GAWLIKOWSKI 1986). The Abbasid period, on the other hand, remains very poorly documented and the maintenance of a relatively important occupation has only recently come to light. The residential area west of the

Great Mosque was occupied until the late 9th or early 10th century (RATTENBORG & BLANKE 2017) and the mosque itself was not abandoned until the 13th century (WALMSLEY 2018). The southwestern quarter exhibits dense, structured urbanism still in the Abbasid period (BLANKE 2018). The decline of the city has often been linked to the earthquake of 749 and the shift of the empire's capital from Damascus to Baghdad, but this decline is likely progressive and more gradual. Focusing on the Abbasid period in Jerash as a priority, and not as a secondary one, will be a way to better understand the regional trajectories that probably led, in the long run, to the marginalization of the city and to its economic and demographic decline.

The geography of the western half of the city as it can currently be reconstructed for the Umayyad period thus includes a periphery housing craft workshops reoccupying abandoned monumental Roman buildings and a large domestic area west of *cardo*. The intersection of the *cardo* and the south *decumanus* forms what is probably the economic and political heart of the city where the great mosque and the souk are located. The occupation of the eastern half of the city is however almost unknown. Some occasional discoveries demonstrate an occupation in the Umayyad period at least up to the so-called Eastern baths (LEPAON, TURSHAN & WEBER-KARYOTAKIS 2018). But was this a one-time occupation, a domestic area, or an area of craft production? What was the eastern boundary of the city?

Understanding Jarash in the early Islamic period now requires working east of the *cardo maximus*, the main axis dividing the city in two from north to south. The western part of the city has been the most excavated because the monumental remains of the temples and churches were visible there at the time of the rediscovery of the site at the beginning of the 20th century. The eastern part has been little explored because it was reoccupied in the modern period and is now very densely urbanized. A whole part of the city is therefore almost unknown to us, except for a monumental bathing complex, called the Eastern Baths, and a few churches. Only a strip along the eastern side of the *cardo* is still free of construction and is included in the protected archaeological zone. It has been barely explored. It is fundamental to determine the urban extension of Jarash in the Umayyad period in order to determine whether the city really developed or not, but also to identify the nature of this occupation in order to understand the economic function and the political role of the city. This project is therefore at the heart of central issues in current historical research on the beginnings of Islam and will contribute to documenting a region that is rarely mentioned in written sources.

The Eastern Jarash Project will focus on a large area (ca. 400 m N/S and max. 100 m E/W) bounded on the west by the Roman *cardo*, which constitutes one of the main

traffic axes of the city in Umayyad times, on the south and north by the decumani, and on the east by the Chrysorhoas River (fig. 1). Italian excavations (2002-2009) attest to a well-preserved Umayyad occupation probably characterized by commercial and artisanal facilities. In addition, DoA excavations have uncovered a large building, likely a Byzantine building transformed in the Umayyad period, which has been unpublished and poorly documented and whose function remains unclear. A reoccupied Roman portico corner, possibly from the Umayyad period, has also been interpreted as a neighborhood mosque by a DoA architect but very sketchily published.



Fig. I.3. Map of the main buildings in Jarash in 2015 on an orthophoto produced by RGJC and depicting in pink the study area of the Eastern Jarash Project (G. Pontitcelli, 2022). To the north is building A, previously excavated by the DoA and studied in 2022 by the EJP.

The two main objectives will be to determine the nature of the occupation of this area and its chronology. Identifying the commercial, artisanal, communal, or residential function of the targeted area is important to better understand the organization of the city and will provide an essential indication of the extension of the Umayyad city. What does the evolution of this sector

look like during the Late Antiquity and the early Islamic periods? Was there an evolution in relation to the Roman city? Was the sector still occupied after the earthquake of 749, which theoretically marked the decline of the city?

Synthesis of the first results

The different activities carried out in the framework of the Eastern Jarash Project in 2022 allowed us to partially understand the organization and chronology of building A. We will first present an overview of the operations, then described building A at the moment of its collapse and finally establish a preliminary phasing.

OVERVIEW OF THE OPERATIONS

Numerous visits were carried out on the site before and after the fieldwork campaign, but the main operations were the fieldwork campaign, a study campaign to work on the objects and the pottery, and a campaign dedicated to the study of the architecture.

The first campaign of the EJP took place from March 14 to April 14, 2022, with a team composed of three archaeologists (Tareq Awwad, Julie Bonn eric, Ahmad Thaher), an architect (Emmanuelle Devaux), two representatives of the Antiquities Authority (Mohamad Altoom then Mahmoud Al Kharabshe), nine excavation technicians (Ata Abu Rijl, Hamzeh Abas, Issa Abdallah, Jaafar Ettoum, Murad Abu Ayeshe, Mustafa Otoum, Omar Almanasreh, Younis Makableh, Younis Taha) and one intendant (Ghazi Hijazi). It was followed by a study campaign focusing on the recording of objects by a trainee (Capucine Etienne) from June 15 to July 16 and a preliminary study of the ceramic by a pottery specialist (Raffaella Pappalardo) from August 1 to 12. The pottery pictures of the diagnostic sherds were done by Abdalkareem Al-Hebasha. The last campaign carried out was an architectural study by two architects (arch. Emmanuelle Devaux and arch. St ephanie Cunin) and an architect trainee (Arthur Moumneh) from July 9 to August 13.

The aim of this first year, focusing on building A was:

- document the previous excavations in the absence of archives and publications,
- carry out new soundings in virgin areas to provide lost stratigraphical information and complete the plan of the building,
- provide a first interpretation of the function and chronology of the building.

During the fieldwork campaign, the entire area excavated by the DoA was cleared during the first week to allow for its survey and study. Three excavation sectors were opened in the eastern part of the building, at the level of the peripheral wings that had been essentially excavated by the

previous team. The objective was to understand the stratigraphy of this sector, to characterize the occupation, and to complete the plan of the building. The three sectors were located:

- in the northeast corner (area 1), including room R1,
- in one of the southern rooms of the eastern wing (room R4),
- in the southeast corner, including room R5.

Each archaeological level (SU), structure (ST), and wall (W) was documented, numbered, and described in a database (Filemaker). The enumeration of the level, structure, and wall is continuous (from W1 to ST78) and the type is only characterized by the SU/ST/W. The significant sections were drawn. Detailed and general pictures were done in JPEG and RAW, with a continuous numeration. The metadata was registered for each picture on an Excel file. We had the chance to get aerial drone pictures for documentary films:

- one first set of pictures was realized at the very beginning of the excavation, on March, 21 by Wendel Nooren,
- the second one by Adriano Morabito.

Both authorized us to use the picture for publications, with the copyright Terra Incognita s.r.l. for the second one.

Overall, the sanitary state of the site is not bad, given that it has not been the object of any protection measures since it was cleared. When needed, bags of earth were placed as a preventive measure against newly unearthed walls and sections during the excavation (mainly in the northeastern corner and room R1). The earthen floors were covered with geotextile and soil in rooms R4 and R5. Props were placed in room R2, previously excavated by the DoA in 2001 to avoid the fall of some parts of the walls. In addition, the DoA carried out after the campaign a small intervention in the eastern part of wall W5 (room R4) which had a slight fruiting towards the south.

The architectural study consisted of drawing the structures discovered during the campaign, drawing a part of the structures previously excavated, mapping the ground plan of building A, doing two architectural sections (N/S, E/W) of the whole area, analyzing the building techniques, and suggesting numerous graphic restitutions of the building. The stone-by-stone plan of the building should be completed next year but the ground plan is completed. The plan and the soundings were located in a local system because we did not have the topographic coordinates of the points visible on the site. There were not available at the DoA but we are in contact with teams

that used to work at Jarash and we should be able to integrate very soon the plan in the Jordanian reference system.

The first scientific results of this campaign relate to the understanding of the building at the time of the earthquake in 749 C.E. but also the chronology of the occupation with the definition of 6 occupation phases of the area.



Fig. I.4. Building A at the beginning of the campaign, before excavation and cleaning.



Fig. I.5. Aerial view of building A during the excavation.

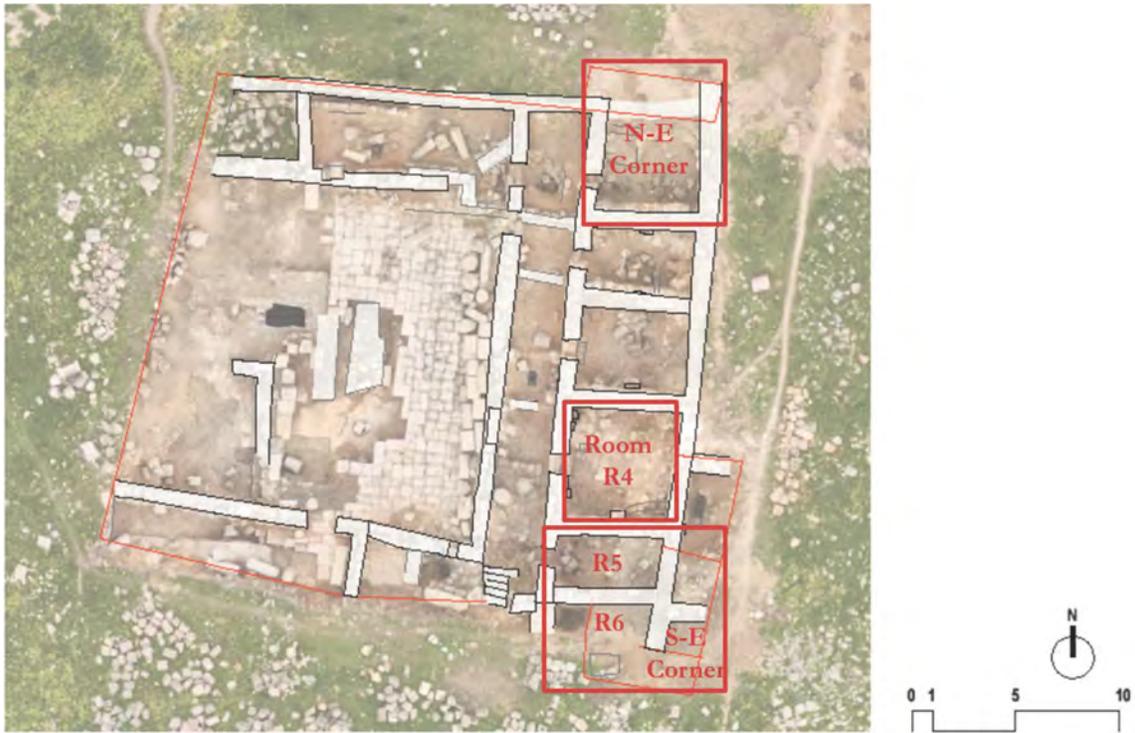


Fig. I.6. Localization of the excavation areas opened in 2022.

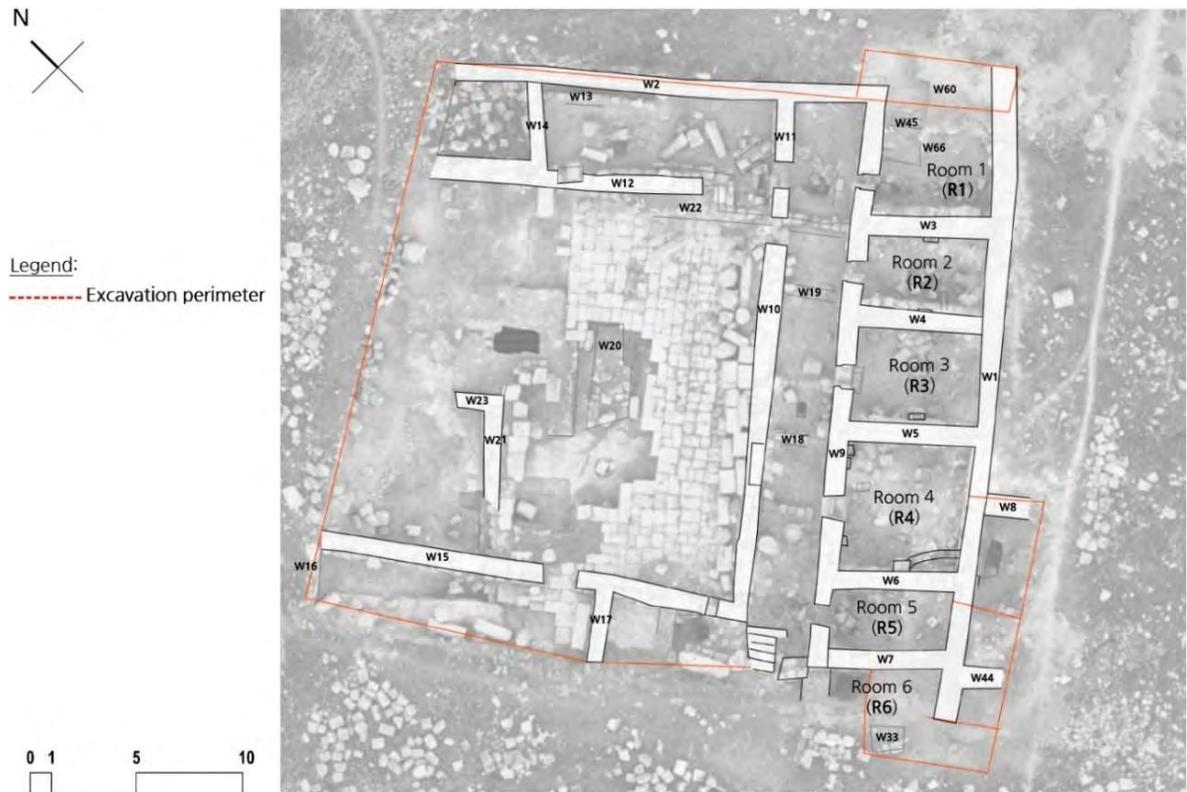


Fig. I.7. First draft of the ground plan with rooms' and walls' numbers.

The archaeological and architectural study allows us to make preliminary hypotheses concerning the shape of building A; a central courtyard or U-shape building, at the time of the earthquake of 749 A.D., in the 3rd occupation phase of the area (see below). Although only the eastern wing has been excavated during the campaign 2022, the entire western part has nevertheless been documented at length as a first step. The eastern wing and its portico were built on two longitudinal vaults, along the hillside, to form a platform compensating for the natural slope. The vault under the east wing was at least 3 m high. In the absence of a survey at the base or foundation of the walls, it is not yet known whether the vault was built to support building A or whether it was erected earlier. An earlier phase of occupation cannot be excluded.

When it was destroyed by the earthquake, the building was larger than 650 m² and organized around a **courtyard** (min. 240 m²) paved at least on its eastern part. Courtyards served as a functional place in the Umayyad period. The previous excavation probably removed the Umayyad structures that might have been added. It will then be necessary to continue excavation to the west to check the transformation of the courtyard during the Umayyad period. The existing slabs are probably recuperated blocks from other buildings, re-cut and sawn, notably an element of a cornice. This practice is characteristic of the Byzantine period. A hydraulic sawmill from the 6th century was found nearby, on the other side of the *cardo*, restored and published by the MAFJ (SEIGNES & MORIN 2007). The slabs are of medium and large modules. They are aligned and seem organized on two rows of blocks with longer transverse blocks, at least in the eastern part. The slabs' width varies, probably because it is not based on a flat and homogenous structure, but it is c. 20-30 cm on average. The surface of the pavement is irregular, in its current state, with altitudes varying from 96.70 m to 97.40 m, probably because some areas subsided. To the east, the preserved slabs seem placed on the bedrock but in the southwest part of the courtyard, an upper leveling layer of pebbles and a lower one of soil were used to even the surface that supports the slabs. The bedrock of the western part may have been used as a circulation surface since it was already cut and leveled by an earlier quarry (1st phase of the area, see below). However, the bedrock, to the west, is irregular (between 96.80 and 97.15) and does not seem very strong. It is difficult to consider it as a circulation level and it seems more probable that it was covered by a stone pavement, as in the eastern part of the courtyard. The floor of the courtyard was probably the only floor accessible after the earthquake and the stones may have been partially retrieved. In the courtyard, two cavities are carved in the bedrock. The western and larger one is a concave cavity. It is 1.90 m long to the south and 2.10 m to the north and 0.80 m large to the west and 0.92 to the east. It is c. 1.85 m deep. The opening measures 1.95 m E/W on 0.902 m N/S. The second one,

in the southeast of the courtyard, is only one visible through its circular and small opening with a 0.58 m diameter. The cavity is larger at the base, but it is impossible to determine its dimensions and shape. It is at least 2.5 m deep. Both were cleared by the previous team and we have no stratigraphical information about them. The larger cavity is probably not related to building A but we cannot know if it was backfilled for the construction of the pavement or if it was reused as a cellar.

The edifice may have been a U-shaped building or a central courtyard building. The courtyard was indeed bordered by a **portico** on at least three sides, to the east, north, and south. The western part has not been excavated at all and the existence of a portico and a fourth wing cannot be excluded yet. To the east, and probably to the north and south, the wings were accessible from the portico, and possibly from the outside. The space between the columns was filled, at a later period that cannot be exactly determined yet, by double-facing low walls of two to three courses (W12 for the northern portico, W10 for the eastern portico, and W15 for the southern portico). The columns are still visible in the northern portico while only the bases are preserved in the eastern portico. In the eastern portico, the columns are 2-2.25 m away from each other.

The portico was excavated only by the previous DoA team and not in 2022. So, we have very little information about it. According to the remains currently visible, it was paved with stone slabs, only preserved in the southern part of the eastern portico. The eastern portico was divided by at least three low E/W walls (W18, W19, and W22). The southern portico is divided by at least two N/S walls (W16 and W17) and the eastern portico by at least one wall (W14 and W11's phasing being unclear). It should be noticed that contrary to the eastern portico, the northern portico does not seem to give access to a wing of rooms. Wall W2, the northern wall of the building, shows no openings to the northern wing, and its western part has not been excavated yet. The southern wall of the southern portico has not been unearthed till present time. Many column drums are stored on the courtyard pavement, along the eastern portico. No information about their origin is available yet. The comparison between their diameter and the base diameter could help to determine if they originated from the portico.

During the 2022 campaign, the excavation focused on the **eastern wing** of the building. In the northeastern and southeastern areas, expected to be the northeastern and southeastern corners of the building, it appeared that the eastern wall (W1) of building A was extending under the baulk, to the north, and to the south. To the north, an E/W wall (W60) is perpendicular to the eastern wall W1. It cannot be ignored that the north wall (W60) corresponds to a late subdivision of the room into two spaces, as the link with the east (W1) and west (W9) walls is not yet proven.

To the south, wall W1 extends under the baulk and it is impossible to know yet if the southern room visible (R6) is the southern one or not. The eastern wing was composed of at least six rooms, probably seven, of various sizes, all openings leading out on the portico. According to our current knowledge of the site, the rooms were numbered from the north to the south, room R1 is 4.50 m E/W to the north but 5 m E/X to the south, (4.70 x 4.62 m) and currently 4.50 m N/S, room R2 is 5 m E/W on 3 m N/S, room R3 is 5.10 m E/W on 4 m N/S, room R4 is 5.30 m E/W to the north but 4.90 m E/W to the south on 5.35 m N/S, room R5 is 4.95 E/W on 2.60 m N/S, room R6 is 4.95 E/W and more than 2.60 m N/S since its southern wall is unknown yet. Each room is open on the portico by doors around 0.80-0.85 m width except in room R1. In the last room, the western door is smaller than the others with a width of 0.55 m. There is also a door in the eastern wall, larger than the other (2.20 m). This is the only door to the east known for now. The walls show two building techniques, that do not seem related to two different phases (see Cunin & Devaux's report, p. 89-106): a masonry of regular courses with large squared blocks and a masonry of large courses of squared blocks mixed with thin courses of small rubble stones. Our first intuition was that each technique would be related to a building phase. However, the same wall can have different construction techniques on each of its facings (for instance W9) and walls with different techniques can be linked (for instance W1 and W6). Two possibilities can be considered: either the masons were using two techniques at the same time, or the facing of some walls was entirely rebuilt. In the case of the second possibility, regular courses would be earlier since they are most frequent while the use of thin courses of rubble would come later. Two walls, perpendicular to the eastern wall W1, are located in what seems to be outside of the building. If the northern one (W8) is clearly built against the eastern facing of W1, the southern one (W44) could be linked to W1. Between these two walls, appears a kind of stone pavement that may also be the upper part of a third vault. So, it is unclear yet if we are outside of the building or if there are other rooms to the east. The wall W1 is also unclear: it seems to be built in one step but its outline and its width are irregular. To the north, the wall is 1.05 m thick but it is only 0.90 m large in its center and 0.98 m to the south. Its southern part is parallel to the western wall of the eastern wing (W9) but not its northern part, the largest, which is slightly more orientated to the west. No cesura in the wall but the shift of orientation is located at the level of the eastern door of room R1, the only door of the eastern wall. This door is different, larger, and better built. There is also another shift in the orientation in the middle of the wall, between the corners with walls W3 and W5 where the inner (western) facing is going toward the west while the outer (eastern) facing is in line with the orientation of the southern part.

According to the discoveries made in rooms R4 and R5, a **storey** can be restored: it was supported by longitudinal vaults, resting on pillars or corbelled imposts that are still partially visible. It is not possible to understand yet why rooms show pillars and other imposts. The collapse layers (SU26, 27, 39, 52 in room R4) of the storey included numerous rough stone tesserae (white, brown, and red) and painted coating fragments suggesting that the walls of the upper storey were protected and decorated with painted plaster while the floor was adorned by a mosaic pavement, at least at the level of room R4. The walls of the upper storey were uncoated and its floor is made of beaten earth, at least in rooms R4 (SU56) and R5 (SU69). The storey was probably accessible through a flight of stairs still visible in the southeastern corner of the portico. It was excavated by the previous team. It currently consists of 5 steps and measures 1.80 m. At its base, it is 1.70 m large but 1.10 large at its summit. The steps are 0.35 m deep.

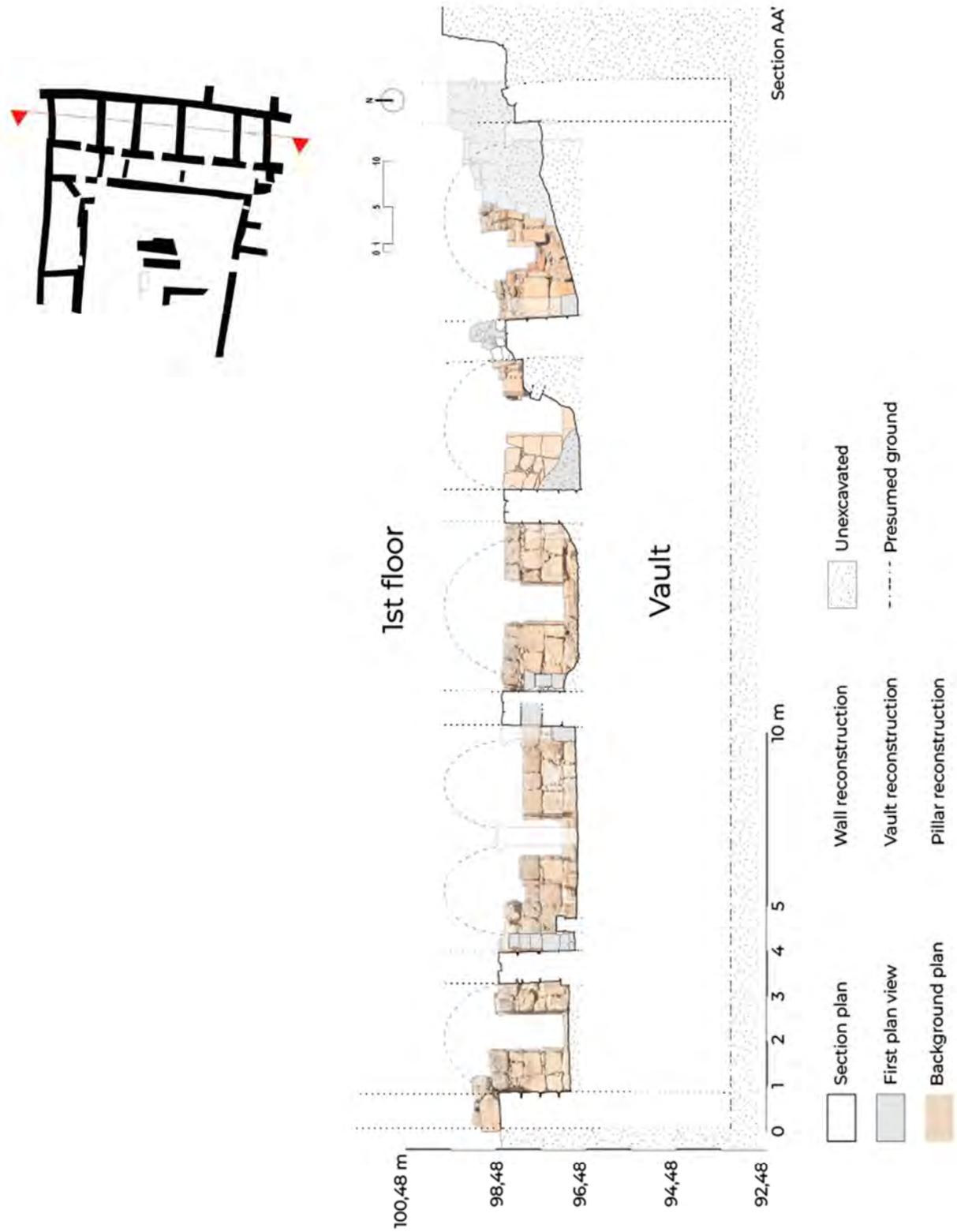


Fig. I.8. N/S architectural section of the eastern wing, with restitution of the vault and its floor (arch. Emmanuelle Devaux and Arthur Moumneh).

The architecture of the rooms and the artifacts discovered allow us to put forward some preliminary interpretations regarding the **function of the rooms** before the building collapsed. According to the discoveries of the southeastern rooms of the wing, we note a clear difference in function between the upper level and the ground level. To the north, the function of room R1 excavated at the northeast of the building, is completely unknown because the entire collapse (SU53; SU59) has not yet been dismantled. Room R4, one of the largest rooms in the east wing of building A, was probably a barn, while the upper storey seems to correspond to the domestic part of the building. Most of the rooms were previously excavated but the excavation of a N/S baulk, remaining in the eastern part of the room, sheds light on some significant discoveries. On the ground level, two structures were built on the earthen floor: a pottery basin bowl is set in stone masonry (ST77, 1.60 N/S x 1.35 m E/W) at the northeast corner of the room, while a two-course wall (2 m long) was placed between the eastern wall and the southern pillar in the southeast corner of the room, parallel to the southern wall (ST78). The first structure can be interpreted as a drinking trough and the second as a feeding trough. A sediment (SU55) strongly resembling burnt dung was found at the foot of the basin and should be analyzed.



Fig. I.9. Complete bowl (Jerash Light Grey Handmade Ware) placed in a stone massif at the northeast corner of room R4.

In room R5, the lower part of the collapsed storey (SU62) was previously excavated by the DoA only in its western part and the eastern part revealed an assemblage of sixteen complete or nearly complete ceramic vessels, mainly storage jars and amphorae, and one JLGHW (Jerash Light Grey Handmade Ware) molded bowl. They were probably stored upstairs. The near absence of tesserae and the types of ceramics present suggest that room R5 was topped by a storage room. A copper pot was discovered on the earthen floor (SU69) of the ground level, in the southwestern part of the room. It seems entirely preserved and shows broken iron handles and an iron ring. It seems preserved in place, wedged under the collapse of the storey. Discovered on the last days of excavation, it was removed, along with its container, before the whole extent of the floor was excavated. It would have been preferable to excavate the entire room before moving this

exceptionally well-preserved object but we were afraid that, if it stay in the sounding, it could be damaged or looted. It was not possible yet to identify the function of the room on the ground level until further excavations take place.

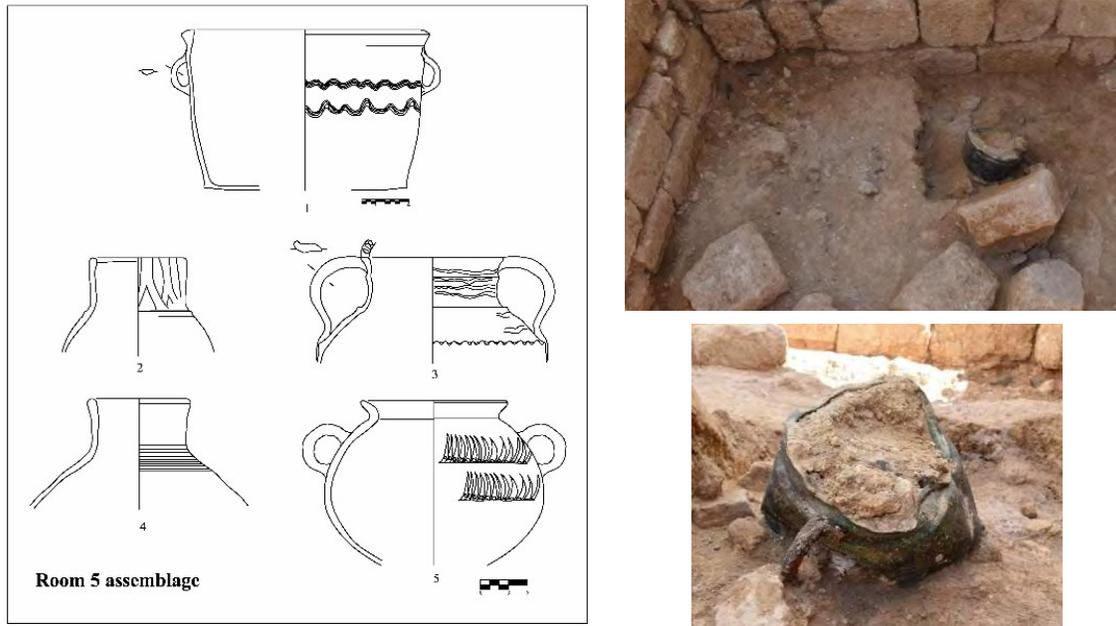


Fig. I.10. To the left, part of the pottery assemblage discovered in the collapse of the lower storey of room R5, and to the right, a copper pot with iron handles and an iron ring discovered under this collapsed storey, on the ground floor.

Building A gives us a great opportunity to study the daily life of Jarash’s inhabitants in the Umayyad period as well as the evolution of living spaces and customs between the Byzantine and Umayyad periods. This was most probably a residential building, and the collapsed walls sealed the structures and objects in context at the time of the 749 A.D. earthquake. It might be possible, after further excavations, to understand the function of the different rooms in this building which seems characteristic of the mutation of the 7th and beginning of the 8th centuries in an urban context. The evolution of building A seems to be quite similar to the evolution of the “Maison aux consoles”, excavated in Apamea (BALTY 1997), which also had a portico that had been sealed by walls located in between its columns. It also shows the presence of stables on the ground level and the presence of living spaces on the upper level (VERNET 2018). Due to its size and organization, building A differs from the other houses which have been excavated in Jerash on the southern decumanus (GAWLIKOWSKI 1986), in the southwest of the city (BLANKE 2021), and in its northwestern part.

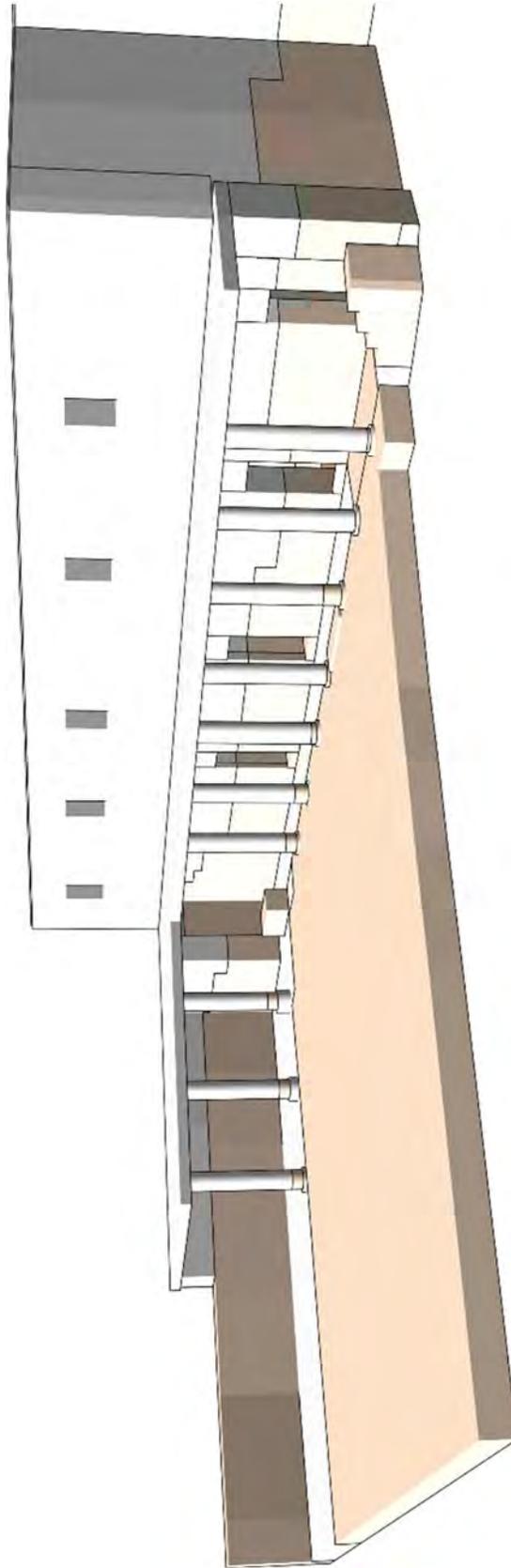


Fig. I.13. First proposal for a 3D restitution of building A in its last phase of occupation, prior to the earthquake of 749, work in progress (Arthur Moumneh).

PRELIMINARY PHASING OF THE AREA

The observation of the remains uncovered by the DoA team allows us to put forward hypotheses, which will have to be verified by excavations, on the chronology of the occupation of building A and its surrounding area. In the current state of the study and excavation, six phases appear, still to be dated.

Phase 1. In the western part of the courtyard, which was not paved or where the pavement was not preserved, the natural rock outcrops. Traces of extraction show that the area was once a stone quarry. This is the oldest phase that could be demonstrated. It could be Hellenistic or Roman. It is difficult to establish a chronological relationship between the cavity and the quarry but it may be contemporary.

Phase 2. The evidence of the second phase is very scattered. Two walls and one column's base are earlier to the pavement of building A. The base is partially visible at the level of the southern baulk, in a section excavated by the previous team. A slab from the courtyard pavement lies against the latter, attesting to the building's anteriority in relation to the courtyard building. Other bases could be aligned with the visible one, but this needs to be confirmed. It could therefore be the colonnade of a street or building portico, but one must be careful. This phase could be Roman, but no dating element has yet been brought to light yet. Like in phase 1, it is difficult to have an indication of the relationship between the walls and the base.

Phase 3. This corresponds to the construction of the large courtyard building A. Because it was mainly excavated by the previous team, we do not have yet any dating elements in stratigraphy. However, Roman architectural elements (capitals, bases, drums) were reused in the construction. The paving of the courtyard seems characteristic of the Byzantine period: the slabs were recuperated blocks, re-cut, and sawn. A hydraulic sawmill from the 6th century was found nearby, on the other side of the cardo, restored and published by the MAFJ (Seignes & Morin 2007).

Phase 4. Building A underwent modifications, notably with the subdivision of the portico. These modifications appear in the already excavated and undocumented part and cannot be dated for the moment. They are probably related to the last phase of the use of building A during the Umayyad period. The new excavation uncovered artifacts from the Umayyad period, in particular, pottery (see Pappalardo's report, p. 76-83) in layers anterior to the earthquake that can be dated from 749.

Phase 5. After the earthquake of 749, the area was subject to punctual reconstruction. Unfortunately, most of the walls and related occupation layers were dismantled by the previous team and interpretation is almost impossible. It was not dated yet but could be Abbasid or later. These new walls seem to link portions of earlier walls that were still standing. It appears in the northeastern area where a corner (W67) has been built to connect walls W9, the west wall of the eastern wing, and W2, the north wall of the northern portico. Both walls were probably partially destroyed by the earthquake. The parts that are up to the collapse layers are only 1.10 m long for W9 and 1.20 m for W2. A new construction, different from building A destroyed by the earthquake, was probably built by reusing parts of the walls of building A still standing.

Phase 6. The area was then scarcely occupied in a period that could not be yet defined (Ottoman? Modern?). It is attested in the northeastern area by a fireplace (41) located between two more recent walls: the northern wall W45 is preserved for 1.80 m and the eastern wall W66 for 1.10 m. The structure was badly destroyed by previous excavations and not documented. Dating back to the same phase, or the previous one (phase 5) is a double-facing wall discovered in the southeastern area (W33, 1.5 m long).



Fig. I.14. Later occupation of the northeastern area of building A, after the earthquake of 749: to the left, the corner W67 between walls W9 and W2 (phase 5), and to the right, the ashy layer (41) of a fireplace at the foot of two walls.

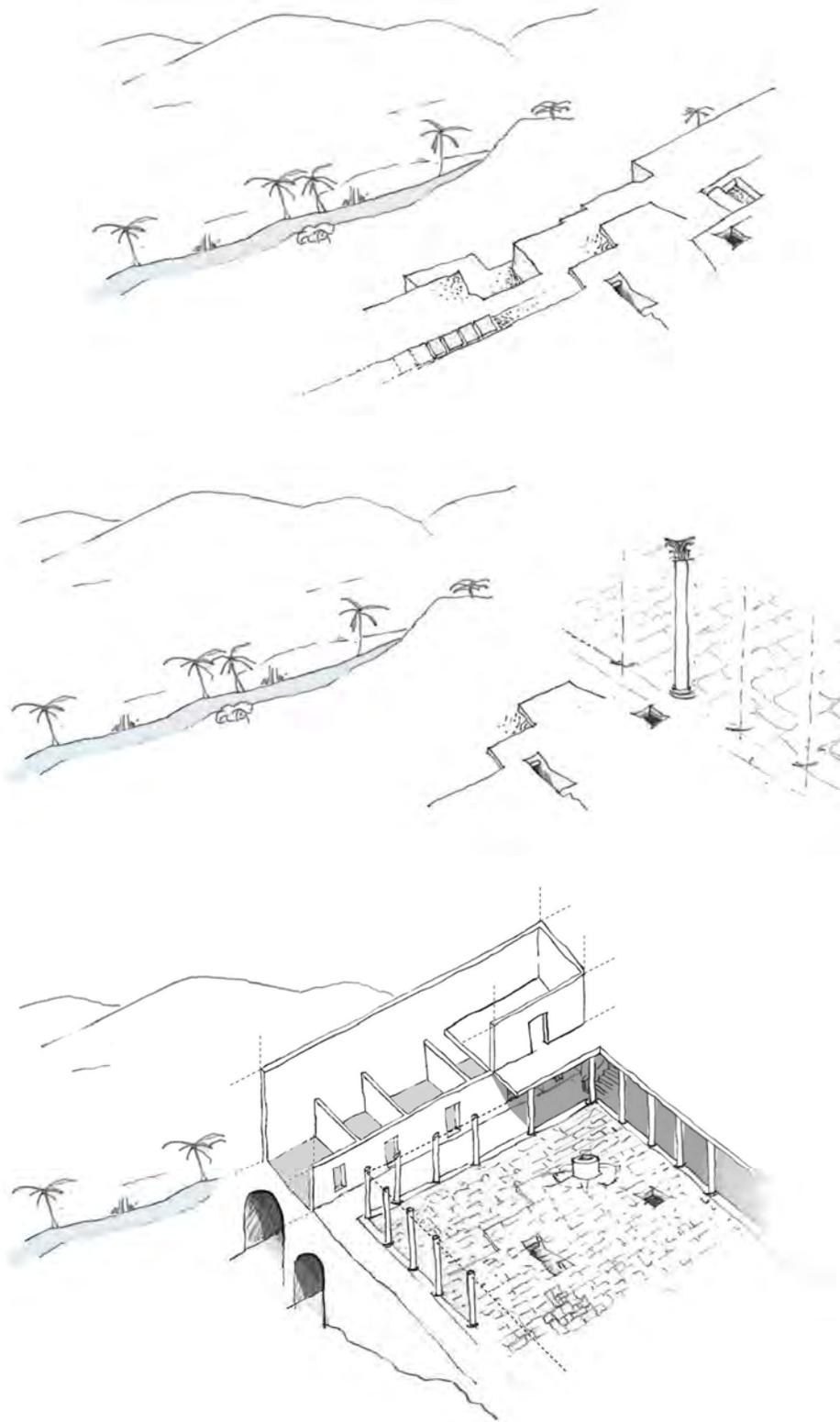


Fig. I.15. Tentative restitutions for phase 1 (quarry), phase 2 (colonnade?), and phase 3 (courtyard building A) drawn by arch. Stéphanie Cunin.

Valorization

In 2022, the EJP has conducted several site visits during and after the campaign. These visits were done:

- for colleagues in the frame of the 15th ICHAJ, for the Yarmouk University (University president Pr. Islam Masad and Pr. Hani Hayajneh), for the Jordan University (Pr. Oliver Pilz), for the GPIA (former and current directors: Dr. Brita Jansen and Dr. Katherina Schmidt),
- for a large audience, for instance in the frame of the Francophone week
- for French delegations from the French Embassy, the French Senate, the French parliament
- for journalists,
- for French President Emmanuel Macron.

DIFFUSION

The EJP had a deep interest in diffusing information. A lecture was given at an international conference in Jordan. The present report is not a preliminary report but gives all the data currently available. It will be made available online on the platform (HAL-SHS). An article is being written, as well as a blog paper.

Lecture

The director of the project gave a lecture during the *15th International Conference of History and Archaeology of Jordan (ICHAJ)* that took place from 2-5 August 2022 in Irbil (Jordan), at Yarmouk University:

- J. Bonnéric, “First results of the new Eastern Jarash Project”, *15th ICHAJ*, August 3, 2022, Yarmouk University (Jordan).



Publications

The present report will be diffused online on the open archive portal HAL SHS (<https://shs.hal.science/>).

A blog paper synthesizing the first results of the campaign was published on the academic blog of Ifpo on the platform Hypothèses.org. An Arabic translation will also 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*, <https://ifpo.hypotheses.org/12200>, 08/05/2023. [En ligne sur hypotheses.org]

An article was be submitted for the publication of the 15th volume of the *Studies in the History and Archaeology of Jordan*:

- 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”, *SHAJ 15*, submitted.

The goal of the EJP is to produce comprehensive annual reports to facilitate the final publication of results on a quinquennial basis. A synthesis in the form of an article will be published every year in *ADAJ* or *SHAJ*, in order to offer the first interpretations to the scientific community, and the reports, exhaustive, will be put online so that the elements which justify these hypotheses are quickly accessible. After five years of excavation, a final publication will gather all the information, complete the studies of the material, harmonize all the data, and provide an updated synthesis. The EJP also aims to make the databases and archives of each quinquennial available online, after processing by an archivist, once the publication is completed to avoid the accumulation of unorganized and undocumented archives.

A journalist, P. Garaud, visited the site and interviewed the team to publish an article in the French newspaper *Le Télégraphe* published on June, 13th, 2022. Thanks to the visit of President Macron, Jarash was mentioned in many newspapers such as:

- *Arab news*: <https://www.arabnews.fr/node/327961/france>;
- *Ammon news*: <https://en.ammonnews.net/article/62480>
- *Paris Match* <https://www.parismatch.com/actu/politique/site-archeologie-et-visite-royale-pour-emmanuel-macron-220215>
- *L’Express*: <https://www.lexpress.fr/societe/macron-rattrape-par-le-mondial-sur-un-site-archeologique-en-jordanie-RBFCROOFQ5G5PN4HMXUQ7KVM5Y/>
- *Le Point*: https://www.lepoint.fr/societe/macron-rattrape-par-le-mondial-sur-un-site-archeologique-en-jordanie-21-12-2022-2502483_23.php;
- *La Croix*: <https://www.la-croix.com/Macron-rattrape-Mondial-site-archeologique-Jordanie-2022-12-21-1301247547>

- *20 Minutes*: <https://www.20minutes.fr/monde/4016018-20221222-emmanuel-macron-rattrape-actualite-coupe-monde-football-site-archeologique-jordanie>;
- *La Provence*: <https://www.laprovence.com/article/france-monde/83971648027505/macron-rattrape-par-le-mondial-sur-un-site-archeologique-en-jordanie>;
- *Al Bawaba*: <https://www.albawaba.com/node/macron-celebrates-birthday-jerash-1503107>

FORMATION

In 2022, the EJP has enabled the training of three students, one of them being already a graduated architect doing a specialization in heritage:

- Capucine Étienne, student at the Sorbonne Nouvelle, recorded and photographed the objects of the 1st campaign (internship: June 15 to July 16, 2022),

- Stéphanie Cunin, architect DPLG in specialization at the School of Architecture of Chaillot, began the constructive and structural study of building A (internship: from June 3 to August 7, 2022),

- Arthur Moumneh, student at the Grenoble School of Architecture, participated in the architectural survey and architectural sections of building A and its 3D restitution (internship: from June 9 to August 13, 2022).

In 2021, one student was trained as well:

- Giacomo Ponticelli, doctoral student at the Universität Bonn, elaborated first work for the implementation of a GIS (Erasmus+ internship: September 6 to November 6, 2021).

One of the goals of EJP regarding the training is to offer Jordanian students and Jordanian archaeologists a deep training in excavation methods, and eventually other specialties of archaeology. In Jordan in particular, there is a real gap in field training and methods of excavation following the stratigraphy. In 2022, notably because of the Covid pandemic, student participation in the campaign could not be organized but in 2023, we will try to trained 2 students and 2 employees of the Department on the field for the whole duration of the campaign. This training will be supervised by Tareq Awwad, who participated in the first campaign and carried out a training course in excavation and stratigraphy for DoA employees at Ifpo. An Arab and English speaker, a specialist in methodology and public archaeology, he will be in charge of an excavation sector in which he will train students and DoA employees. This training will be completed by the intervention of various specialists, in particular architects. A French student will also do a

internship during the next fieldwork campaign and participate in the object's registration and photography.

Budget

The Eastern Jarash Project was funded by French institutions. It also benefited from the logistic support of Ifpo: provision of car, topographical material, informatic equipment, and human resources (provision of one archaeologist, one architect, one intendent during the whole campaign and administrative team). The DoA also furnished some equipment in Jerash.

The financial resources for 2022 were the following:

CNRS fund for archaeological projects in Jordan (“Appel d’offre Jordanie”)	4 500€
French Institut for the Near East	4 465,69€
Cooperation and Cultural Action Service of the French Embassy in Jordan	4 000€
Research unit CIHAM (UMR5648, CNRS)	2 500€
TOTAL	15 465,69€

The expenditures were the following:

Expenses	JOD	€
Excavation permit	2 650,000 JOD	3 315,15 €
2 area supervisors	3 024,000 JOD	3 783,02 €
Pottery specialist		1 068,67 €
9 excavation technicians	4 245,000 JOD	5 310,50 €
11 insurances	171,650 JOD	214,73 €
Excavation material		276,80 €
Excavation material	576,500 JOD	646,14 €
Meals	260,000 JOD	325,26 €
Gas	420,000 JOD	525,42 €
TOTAL		15 465,69 €

2023 Programming

While the 2022 campaign provided an opportunity to develop a preliminary plan and chronology, as well as to hypothesize about the function of the building, many questions remain and require further development in term of excavation, documentation and artifact study. The area to be excavated in order to understand this building is significant and understanding the areas previously excavated by the DoA team is, in the absence of archival records, an important issue. The operations are planned to follow a program in three axes: 1. Chronology of building A and the earlier and later structures, 2. Function of building A and nature of the occupation of the area, 3. Daily life.

Axis 1. Chronology of building A and the earlier and later structures

The study of building A and the structures that preceded is decisive for understanding the chronology of the area, probably from the Roman period, and even earlier, to beyond the Abbasid period at least. An accurate stratigraphic and architectural study will allow the history of this part of the city to be traced over the long term. The chronology of building A is still uncertain, and must involve various specialists. The challenge is to understand whether this building was built in the Byzantine period and to what extent its plan and function were modified. The Roman dwelling is almost unknown in Jerash, and the Hellenistic period is hardly visible. The remains of the southern part of the courtyard in particular, suggest that earlier buildings could be found (phases 1-2) and provide information on the settlement during these periods. The dating of the quarries is also important, as only one intramural quarry is attested in Jerash.

Concerning the Islamic period, this sector offers a well-stratified chronology that could help to sharpen the pottery typology for Umayyad and Abbasid periods. In general, it is still difficult to differentiate the productions of the Abbasid period from those of the Umayyad period. The fact that Abbasid artifacts are dated from the Umayyad period led to an underestimation of the Abbasid occupation in Jordan. The Jerash finds offer exceptional assemblages to characterize these ceramics, but they have not yet all been published and a reference typo-chronology has yet to be produced (Rasson-Seigne & Seigne 1989, 2019; Uscatescu 2001; Pappalardo 2019; Lichtenberger & Rubina 2019). The selected excavation sectors could be the basis for a typo-chronological clarification since the 2022 study showed that the ensembles under the earthquake collapse were Umayyad. The collapse is thus an important chronological marker, dated to 749. The presence of any occupation above this collapse is also crucial to better characterize the Abbasid productions. Raffaella Pappalardo (Università di Napoli Federico II, STORIA) has already begun to establish a reference typo-chronology and a well-stratified and well-documented excavation will

allow her to finalize this fundamental typology in order to better date the sites of northern Jordan and perhaps re-evaluate the evolution of the region in the Abbasid period. She will work with Abdelkareem Alhebashan that plan to do a PhD thesis on this precise subject.

Axis 2. Function of building A and nature of the occupation of the area

The function of this very large building could be both domestic and economic. The plan of house with courtyard is still present in the Umayyad period, as Apolline Vernet's thesis work has shown. However, the type of large courtyard building similar to the Apamea residence houses was never attested in Jerash, where domestic buildings were often studied in a peripheral manner. The preservation of the remains in context, due to the earthquake of 749, is valuable since it facilitates the identification of the function of the different spaces. Thus, following the 2022 campaign, on spaces that had already been partially excavated, hypotheses can already be envisaged with a possible stable on the ground level, in room R4, a storage space on the upper level above room R5, as well as a residential space above room R4. Further excavation is promising as it is highly likely that material, allowing for additional identifications, will be sealed under the collapsed upper parts of the building. In order to understand the function of the building, it is, therefore, necessary to extend the excavation and study the material carefully. The objective is to establish a strategy for the type of rooms to be explored. It will be first necessary to work on rooms in the south and north wings, to find out if these wings had different functions if they were also composed of a storey, etc. To the west, the existence of a fourth wing must be determined. The western part of the courtyard, not excavated by the previous team, will document the use of the courtyard and the porticoes.

To understand the function of building A and the area surrounding it, it will be necessary to excavate nearby. This includes determining whether it was bordered by a street to the east. A study of the topography of the area might reveal other such buildings aligned along the *cardo*. In any case, this is what a pedestrian survey suggests with, it seems, regular depressions that could correspond to the central courtyards of this type of building. A trench will also be opened in 2023 to understand the link between building A and the *cardo*. The *cardo* had a portico, opening onto stores in Roman times. A store was already roughly cleared between the *cardo* and building A. A trench from this store, which will be turned back and surveyed in particular to understand its chronology, and then the extension of the excavation of the western part of building A, will make it possible to determine whether the courtyard building is open towards the shops, or even connected to the shops.

Near building A, on the other side of the church of the Propylaea, it is planned to work on the question of the “small mosque”. It is necessary to verify this identification, thanks to a stone-by-stone survey of this already excavated building and to the study of the plan, because the presence of a small mosque near a residential and commercial area is particularly interesting. It raises the question of its use, 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 really been demonstrated, the attribution of neighborhood mosque is systematically reused by researchers on the Islamic period. However, doubts remain (Seigne 1997: 76). Aida Naghawi assumed that a replaced conch placed in an intercolumn was 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 follows the orientation of the Roman portico, without any arrangement. The conch does not appear to be located in the center of the space, although it seems that nothing prevented it from being centralized. The access to the building, which could constitute an argument, has not been well identified. A very summary survey was carried out in 1981 (Naghawi 1982: 21), followed by a ground plan (Seigne 1997: fig. 2), but only a stone-by-stone survey and a precise study will make it possible to determine the nature of this reoccupation. Depending on the possibility to use the crane of the DoA, this building may be surveyed in 2023, after the removal of the many blocks that recover it since it was used as a block parking.

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 has indeed “frozen” the objects in time while they were still in use. Combining the typological study of the objects with that of the fauna, with the analyses of archaeobotanical residues, and with the analyses of organic residues allows us to provide very important information on the diet, the modes of production, and the consumption patterns. Building A offers a great opportunity to discover the structures and objects of each room as it was used at the moment of the earthquakes and then to undertake social archaeology of a residential building from Byzantine to Umayyad period.

The artifacts discovered in 2022 were already recorded in a database and most of it photographed. The study of the pottery will continue in 2023. After the 2023 campaign, the fauna will also be studied by Dr. H. Monchot and the archaeobotanical remains will begin to be processed by Dr. H. Medina. Dr. F. Marii will consolidate the metal objects after the end of the

campaign. We also would like to analyze the organic residues in the metal basin to identify what was cooked in it, and probably the content of other objects to reconstitute the diet of the inhabitants.

In 2023, the objectives are the following, depending on the funding:

- Opening of a trench between building A and the cardo,
- Continuation of the excavations in the northeast corner and extension to the north and west
- Completion of the excavations in the southeast corner and extension to the south
- Opening of a new excavation area in the southwest
- Completing the documentation of the 2001 excavation
- Removal of the blocks parked on the “small mosque”, survey and study (depending of the possibility to use the DoA crane)
- Cataloguing and documentation of the artifacts
- Pottery study and training of a student
- Restoration of the metal objects
- Study of the fauna
- Flotation and study of the paleobotanical remains

Valorization

The article about the 2022 campaign will be submitted to SHAJ, the 2022 report will be diffused online and a synthesis of the campaign was submitted for the academic blog *Les Carnets de l'Ifpo*.

The report from the campaign 2023 will also be put online and an article about this last campaign submitted to ADAJ.

Conservation

Like in 2022, the walls and structures at risk will be consolidated before the end of the campaign and the sensitive floors or structures will be covered with geotextile and backfilled or covered. A conservation plan for the building will also be proposed to the DoA when the building will be excavated enough to offer the opportunity to restore it.

II. Excavations at northeastern corner of the Building A (Area 1, Sounding 3)

Tareq Awwad

Even though the eastern and northern wings of building A were almost completely excavated by the Department of Antiquities (DoA), the location of the northeastern corner of building A (fig. II.1), located in front of the Roman Nymphaeum, east to the *cardo*, was still unearthed. The aim of the excavation in area 1 was to locate and characterize this specific corner to better understand the architecture of building A, and to discover the limits of room R1. Furthermore, this sounding was implemented to collect data about the stratigraphy of the area, inside and outside the building, since no documentation from the previous excavators was available. Sounding 3 (6.65 m E/W and 4.70 m N/S) in area 1, in the northern section of Room R1, was identified as part of the Eastern Jarash Project 2022 excavation. The purpose of this sounding was to determine the stratigraphy, phases, and structural constraints in this area of the building.



Fig. II.1. The eastern wing of building A, before 2022 excavation, view from the south.

The excavation began following the clearing of sounding 3 (fig. II.2), particularly the northern portion of area 1. The upper part is probably a modern dump originating from the rubble from the previous excavation undertaken in 2001. The exterior of the building was excavated and a sounding of 6.65 m E/W and 0.80-0.65 m N/S was implemented near the outer face of northern wall (W2). Additionally, sounding 3 was set up in the northern portion of room R1 since different phases and contexts were visible in section 1 in the middle of room R1. The southern part of room R1 was previously excavated and the only remaining archaeological contexts were located along the northern wall and the eastern wall.

At the end of this season, 5 phases and the limits of room R1 were unearthed. Furthermore, the limits of room R1 were revealed and the northern and eastern walls were exposed, as well as the entrance to room R1 to the east. Room R1 is 4.70 m E/W and 4.62 m S/N long. It is not clear yet if the northeastern corner was discovered or if the eastern wing of the building is extending to the north.

Five different phases were identified in the E/W sloping section of sounding 3 (fig. II.3, see section 2).



Fig. II.2. Northern part of building A, area 1, as well as sounding 3, before excavation, view from the west.



Fig. II.3. Baulk from previous excavation, before cleaning, view from the southeast.

Phase 1: Northern limit of Room R1.

The excavation of the northeastern corner, unearthed during the previous excavation by the DoA, did not reach the circulation floor of room R1 but probably its northern limit, corresponding to wall W60 (fig. II.21). The latter wall does not correspond to the extension of W2 to the east but is, in fact, a completely other built wall that follows the same E/W axis. Even though W1 and W60 form the eastern corner of room R1, both do not constitute the eastern edge of the whole building since wall W1 still extends further east. Room R1 is almost square-shaped (4.70 x 4.62 m). It is one of the largest rooms of the eastern wings of the building, and just a bit smaller than room R4. At one phase, this room possessed two doors, a small one (0.55 m) in its western wall (W9) and a larger one (2.20 m) in its eastern wall (W1). It is still too early to hypothesize over the original phase of the building since the connection between W1 and W60 and not yet been established with the western wall of the room (W9) and the link with the eastern wall (W1) still needs to be confirmed.



Fig. II.21: Zenithal view from the sounding 3 in area 1 and room 1 to the right, at the end of the excavation

Under collapse layer (59), northern wall (W60) of room R1 was unearthed. E/W oriented, it was excavated over 4.12 in length (fig. II.16) and 0.45 in width. It is preserved over 1.43 to 1.55 m in height (top level: 98.49 m to 96.95 m) and five courses of carved limestones were visible. The fifth one was unstable and preserved only in the southern part of the wall. The stones were numbered and then dismantled. The shape of the fifth and fourth courses are different from the three lower courses; the module of the blocks is larger and the faces are roughly carved. However, they are connected to each other by the same reddish mortar. The stones of the upper course are larger than the lower ones: the stones of the upper course are 0.70 x 0.50 x 0.45 m, of the middle course 0.45 x 0.40 m, and of the lower course 0.20 x 0.12 m.



Fig. II.16. Northern wall (W60) of room R1.

Furthermore, W60 seems to be linked with W1 in the east corner through a huge block (0.50 x 0.70 m) that seems to be imbedded inside wall W1 (fig. II.17). Nevertheless, it is unknown if they have the same foundation since the area was not excavated till the circulation level. The western part of wall W60 extends under W67 and reaches wall W9 as evidenced by a stone of W60 going below W67. In its current state, it is impossible to know if W60 and W9 were linked or not.



Fig. II.17-18. To the left: huge stone that linked wall W60 to wall W1; to the right: door features with a stone with a jamb rabbet and what could be a socket.

In addition, in the northeast corner of sounding 3 the northern extension of wall W1 appeared (fig. II.19). Wall W1 was excavated on an extent of 2.15 m N/S. It is between 0.60-0.96-1.20 m wide. The wall was excavated on a high of 6 courses in the southern part and 3 courses in the northern part (top level 97.13-98.37 m). In the northern doorjamb, the lower internal course of the northern wall is missing and sediment was discovered under the second course. A large door (2.20 m) is located in the middle of wall W1. A door jamb rabbet is preserved on the outer facing of the wall (fig. II.18). At its foot was preserved what is probably a circular stone socket (0.07 x 0.10 m) for the door (45) (fig. II.18). It is not certain if the threshold of the door could be deeper or at floor level since it is covered by the door rabbet. Finally, this wall extends north, under the baulk of sounding 3 and it is not possible yet to know where the northeastern corner of the building is located.



Fig. II.19: Wall W1 continuing to the north and door of building A. W65 that was later added to condemn the passage.

It should be noted that walls W60 and W1 present different types of construction (fig. II.19). The southern portion of W1 is built in larger and better cut stones than W60. It is difficult to know if this difference is related to different stages of construction. The southern portion foundation has not been fully excavated yet. Even if the two walls seem to be linked by

one stone, it should not be excluded that W60 is later than W1 and was linked with the addition of the door jamb. This area needs to be further excavated in order to provide more answers.



Fig. II.20: Inside room 1, view from the southwest, with wall W1 and its door in the background, and wall W66 to the left.

Phase 2: Destruction of building A.

Abutting on walls W60 and W1, two layers of collapsed walls (53 and 59) were uncovered. These layers are different in composition but equivalent when it comes to phasing. They both constitute the collapsed of walls W1 and W60 resulting from the 749's earthquake. Both layers were completely excavated. The upper layer (SU53) is located against W60 from the south. It is E/W 1.70 m long, N/S 0.70- 0.90 m wide and 0.13 – 0.40 m thick (level: 98.59-97.49 m). It is a compact to loose yellowish red deposit that includes large carved limestone blocks, pottery, and various objects (fig. 14).

Under layer 53, layer 59 is an extension of layer 53. It extends over 1.40 m E/W, 1.00-0.70 N/S. It is 1.50 m thick (top level of 98.46 to 97.15). It is composed of large roughly cut limestone blocks collapsed from wall W60, sediment, and mortar fragments (fig. II.15). The module of the stones is between 0.68 x 0.50 x 0.19 m to 0.44 x 0.40 x 0.15 m. The deposit between the stones is yellowish-red. This collapse lies against the southern face of wall W60.

Phase 3: The later corner.

Upper than the collapse layers were discovered the corner of two walls (W67), at the northwest of sounding 3. The eastern wall is 1.10 m long, 0.90 m wide and N/S orientated while the northern wall is 1.20 m long, 0.75 m wide and E/W orientated. The corner of W67 is 0.85 m high (top level: 99.39-98.52 m) (fig. II.13). The corner (W67) was built above layer 49 and layer 58 at the north and northeast. The eastern wall is built above W9, the western wall of the eastern wing of building A and the northern wall on W60, the northern wall of building A. It was built of two courses of semi-dressed limestone with chinking stones between them that were added to the earlier walls, probably partially collapsed. In addition, it was clear that corner W67 was built against and above wall W9. The fact that the corner was built above W60, SU59, and SU58 shows that it is not a part of the original building composed of walls W9 and W2. The eastern wall of the corner is also going more to the north than what seems to be the northern end of wall W9. It was probably built to link walls W60, W2, and W9 after the destruction of the supposed corner of building A. It is probably the corner of a new construction, built on building A and reusing some part of the wall that was still up.



Fig. II.13: Wall W67 on top of layers 49 and 58 and wall W60 (view from the east).

On the collapse SU53 were discovered two layers, SU49 and SU58. Both layers 49 and 58 were mixed alternately in the western part of sounding 3 in an unusual way, and then re-appeared at different levels and under the wall W67. Perhaps the reason for the mixing of these two layers (49, 58) was the existence of the huge stones inside layer 46, which affected the deposition of those two layers. Below layer 46, at the northwest of sounding 3, was discovered the layer 49 (fig. II.12). It was composed of pottery, charcoal, and stones and they looked like remnants of human occupation.

North of sounding 3, the layer 58 was found below layer 49 and against walls W60 and W67 from the north. It covers a length of 6.65 m E/W and 1.40-0.90 m S/N (width 0.98- 0.53- NA m, and level of 98.64 to NA m). It is composed of silt, cobbles, stones, and a lot of pottery. Its compaction is compact to loose, and its color is yellowish brown. However, the excavation of the northeastern part of this layer has ground to a stop and is not yet complete too. In addition, this layer also reappeared on a different level and under wall W67.



Fig. II.12. Layer 49 in sounding 3.

Above layers 49 and 58, against wall W67 and below layers 36 and 40, one layer (SU46) covers almost all the area of the sounding 3 (6.65 m E/W, 4.70 m S/N). It is circa 0.40 m thick (top level: 98.90 to 98.10 m with a slope from the west to the east). It is a compact to loose reddish-brown layer composed of deposits, cobbles, and huge stones (fig. II.11) and was probably a dump layer with a lot of stones at the N-W of sounding 3. Those stones probably came from wall W67. It would explain why it was thicker and higher in the northeast of sounding 3, close to wall W67.



Fig. II.11: Dump layer 46 in sounding 3: to the west, the stone could have collapsed from the corner of W67.

During the excavation, and after reaching wall 60 north of room R1, different contexts started appearing internal and external sides of the wall. The excavation stopped north of the sounding 3 at a certain point in order to focus on the contexts inside room R1. So, we did not finish to excavate the layers 46 and 58. The link between the corner W67 and fills is not clear. The nature of this fill remains unknown. It was mixed contrary to the laws of stratification, perhaps because of the collapsed stones that may have mixed them. Furthermore, two carved stones should be noticed on the west of section 2 inside layer 58 without any connection to the contexts (fig. II.13).

Phase 4: The Late Occupation.

During phase 4, the area is occupied by a settlement built over the collapse of the Umayyad building. Most of the remains were removed by previous excavators but some features were identified during the new excavation; a fireplace (41) between two walls (W45 and W66) in the NW corner, patches of plaster surface (40) in some areas and a wall (W65) built on top of some collapse layers at the same location of the earlier entrance to room R1.

In a later phase, still not dated, a structure was built from which only the corner of two walls (W45 and W66) remains. It is built against wall W9.

The northern wall of this structure, wall W45, measures 1.80 m long and 0.45 m wide, with an E/W orientation (fig. II.8). This wall is preserved over 1.14 m height (top level: 98.90; base level: 97.71 m) and two courses of roughly cut limestones (modules: c. 0.45 x 0.45 x 0.30 m). The base of the wall reaches the top level of layer 53. Furthermore, wall W45 was built on top of a base of randomly set cobbles that have been laid above the collapse (layer 59). Additionally, wall W45 is built against the eastern facing of wall W9 and is linked to wall W66.



Fig. II.8: Corner between walls W45 to the right and W66 to the left, view from the northeast.

The N-E orientated wall W66 is the eastern wall of this structure. It measures 1.10 m long, is 0.32 m wide and preserved over 1.10 m high (top level: 98.62-97.77 m). It was discovered in the

southern limit of sounding 3. It consists of one course of stones (modules: c. 0.32 x 0.27 x 0.34 m). This wall is also built of roughly cut limestones above the 4 large stones of the collapse layer (SU59) and a random course of cobbles (see section 3), in the same technique as wall W45.

Inside the structure, or the room that walls W66 and W45 are forming, a fireplace, or a similar structure, was discovered. A burned layer (SU41) abuts against the southern facing of wall W45 and the western facing of wall W66 and covers wall W9 (fig. II.9) up to the base of the lower course of walls W45 and W66. Layer 41 is composed of ash, pottery, and small bricks from a tannur and is probably related to a fireplace. The dimension of the layer is 2.00 m E/W and 1.10-0.40 m N/S, with a height of 0.13-0.20 m (level: 95.81-95.55 m). Its color is dark grayish and its compaction is very loose.



Fig. II.9: Burnt layer (41) in sounding 3

The placement of some stones which look like steps, under layer 41 in room R1 northwest corner, as well as the concave shape of the layer (it doesn't have a number yet), might suggest the presence of a cellar below walls W66 and W45. This area needs more excavation.

North of wall W45, layer 61 was not distinguished initially and was dug up by chance (its materials were separated from the rest at a later stage, but there are no photos of it). An accumulation deposit was found abutting the northern base of wall W45 on a length of 1.20 m

built over one to two courses of semi-dressed limestone, is blocking and condemning the original door of room R1 and reaches the top level of the collapse deposit. It is very common to witness a re-use of the same architectural elements during two distinct occupation phases. If the case applies here, then we can safely say that the top part of wall W65 is the new narrower access point, door and threshold, leading to room R1.



Fig. II.10: Door 65, the original door of wall W1, in the eastern wall of building A.

Phase 5: The Later Occupation.

Under a very recent dump located in the northeastern part of sounding 3 (No context number) and the topsoil, three layers, probably related to a modern occupation phase, were discovered. It was probably a dump from the previous excavation campaigns composed of mixed deposits and pottery, as well as modern materials, such as plastic. The 3 layers are mixed and unclear.

Upper layer 28 covered the entirety of sounding 3 (fig. II.4). It is a grayish-brown compact to loose layer, composed of cobbles, pottery, mixed deposits, and modern objects (length: E/W 6.65, S/N 4.70, width: 0.38 m, alt. 99.77 to 98.42 m).



Fig. II.4. Layer 28 in sounding 3.

Under layer 28, wall W34 was discovered, built on top of layer 36 and wall W66. This simple wall was built of one limestone course of different sized blocks (fig. II.5), ranging from large to small, which were arranged in a straight row with an E/W orientation (dimension of 1.70 x 0.70-0.10 x 0.45 m, and level of 99.53 to 99.12 m). Four stones were set to form a double facing wall while the other medium to small seven blocks formed a simple stone lining. Furthermore, it had no base or foundation. However, the function of this wall and its connection to its surroundings is unclear; it might belong to a modern occupation phase or the stones could have been placed by previous excavators to delimit their digging area.

In the south and against W34, layer 35 was discovered, on an extension of 2.20 m E/W, 1.10 m N/S, and a width of 0.40 m (level: 97.59 to 97.19 m). This layer is probably an extension of layer 28. However, it is composed of dark grayish brown sandy compact to loose sediment and includes a few of pottery and cobbles, as well as modern objects (fig. 5). Layer 35 was distinguished from layer 28 because there is no real connection between them. They are separated by walls W45 and W34.



Fig. II.5: Wall W34 and layer 35 in sounding 3.

Moreover, below layer 35 and wall W34, compact to loose grayish-brown layer 36 was found (fig. II.6). This layer is the extension of layer 28; same composition but with more pottery and cobbles to the east corner of sounding 3. It covered the entirety of sounding 3 (E/W 6.65 m, N/S 4.70 m, width 0.38 m, and level 99.50 to 98.12 m).

The materials of the stratum phase and their mixed composition indicate that they correspond to a modern period, which included plastic materials and glass shards from broken bottles. All these layers were truncated from the South by the previous excavations.



Fig. II.6: Layer 36, from the section, we note how layer 36 is the extension of layer 28, located above it.

Recommendations

To understand the succession of layers within the phase (2) and the relation between walls W60 and W9, opening of a new sounding to the west of sounding 3 is recommended. Additionally, the excavation, north of W60, has to be completed, in order to account for the stratigraphic sequence. Finally, a square to the northwest and northeast of sounding 3 has to be implemented to determine the building's continuity, especially given that W1 seem to extend below the layers. We also need to work more to understand the connection between W60, northern part of W1, and the southern part of W1.

III. Room R4 of the building A: a stable from the Umayyad period?

Dr. Julie Bonnéric

Building A, located in front of the nymphaeum east to the cardo, is characterized by an alignment of rooms on its eastern side, that draw a wing opening on the courtyard, through a portico. This area was extensively excavated in 2000 by a team of the DoA. However, the study was not completed and the area, as the whole building, was not published nor documented. To complete the documentation and to understand the dating as well as the function of the eastern part of the building, an excavation was undertaken inside room R4 (fig. I.7), located in the middle of the eastern wing, since a third of it was not excavated yet. A large baulk (0.95 m wide on the top and 2.30 m wide at the base; 4.9 m long) from the previous sounding remains on the eastern side of the room (fig. III.2). This is a baulk between two soundings (fig. I.7) considering that the southeastern corner of the room has already been excavated (fig. III.1). It was first cleaned to understand and draw the section, then excavated to reach the circulation floor(s) that was excavated by the previous mission in the western part and not visible anymore. Against wall W9, to the north of the R9's door, a small sub-rectangular area (c. 1.40 x 1.50 m) was also not dug by the previous team and was then excavated (fig. III.2). The excavation of room R4 of building A took place from the 19th of March to the 7th of April 2022.



Fig III.1. Room R4 before excavation, view from the northeast (to the left) and baulk from the 2001 excavations after surface cleaning (to the right).



Fig. III.2. Bank from the 2001 excavations, remaining in room R4, after surface cleaning (to the left) and before drawing (to the right).

Room R4 (5.35 m N/S and 5.30 m E/W to the north but 4.90 m E/W to the south) is one of the largest rooms of the eastern wing of building A (fig. III.3). It is delimited to the east by wall W1, probably the eastern wall of the building, and to the west by wall W9 that is the western wall of the eastern wing. To the north, wall W5 separates room R4 from room R3 and to the south wall W6 from room R5 (see Thaher's report). The room is built over a huge vault, located under the eastern wing, and created a platform to counterbalance the slope (see introduction). Thanks to an opening built at the summit of the vault, it was possible to measure the current height of the vault that was at least 3 m deep from this opening. The walls were built in regular courses of well-cut stones reusing some architectural elements such as a lintel used as a threshold and two drums of column. Like all other rooms of the eastern wing, the room was open to the west by a door (1.15 m large). An earth floor was covered the vault surface and then two structures were placed on the floor that may be interpreted as a food trough and a drinking trough but it is very hypothetical. This main phase of occupation of the room is Umayyad, according to the pottery (see Pappalardo's report, p. 76-83). It ended with the earthquake of 749 A.D. since the collapsed walls lay directly on the floor. The discovery of numerous fragments of painted coating and mosaic

tesserae in this collapse was interpreted as the destruction of an upper storey, supported by a transversal N/S arch on pillars still preserved and that would have been accessible from a stair located south of the eastern portico. Room R4 could have been a stable, while the upper storey could have been the domestic part of the building, but the opening of the room from the inside of the building made the idea very hypothetical. Two phases were highlighted by the excavation, the occupation of the room during the Umayyad period (phase 1), probably as a stable, and the destruction of the room (phase 2), most probably caused by the earthquake that occurred in 749. In the absence of sounding implemented at the base or foundation of the room's walls, we cannot yet say if the vault was built to support building A or if it was earlier construction that was part of another building (see Synthesis of the first campaign). An earlier phase of occupation cannot be excluded.

Phase 1. A stable from the Umayyad period?

The earlier phase revealed by excavations corresponds to the occupation of the building. The floor has unfortunately been removed by previous excavators and no documentation about it is available. The structures that may have been discovered in the western part of the corner are also unknown, as well as the objects related to the occupation. However, the parts that remained to excavate revealed important features to reconstruct the history of the room.



Fig. III.3. Zenital view of room 4 at the end of the 2022 excavations.

THE EARTHEN FLOOR

Floor (SU56) of room R4 is an earthen floor (fig. III.4); it is compact, yellow to brown on the surface, with thin charcoal fragments, sometimes small lime nodules, numerous small sherds, small bones fragments and few coins. It is quite horizontal with few centimetres of difference in level where some areas are deeper than others and that could be explained by the weight of the collapsed stones (top level max. 96.46 m; top level min. 96.40 m). Three flat stones (top level 96.50-96.46 m) were also placed in the middle of the room, aligned perpendicularly to eastern wall W1 and against it, and levelled with the floor. Few tesserae were on the surface but were probably pushed here from the upper layers (SU27 and 52).

Because the building is built on a vault, it was necessary to level the whole surface of the room to build a floor, the summit of the vault being approximately located in the middle of the room. The lower part of the vault, corresponding to the eastern and western walls (W1, W9), was not reached during this campaign, so the way to fill these areas is not absolutely clear yet. The remains of previous excavation however suggest that the depth between the level of the floor and the deeper parts of the vault was filled by medium-sized stones and large blocks and an accumulation of sediments.



Fig. III.4. Earthen floor 56 consisting of numerous soils beaten on the vault's summit, view from the west.

Under all these sediments, and appearing occasionally in other parts of the vault's surface previously excavated, was revealed a plaster-like layer directly on the stones of the vault. It is composed of a powdery white plaster with frequent gravels. Its surface is pinkish and compact. It seems to cover the vault surface since it is directly laying on the stones of the vault and it seems irregular, but it cannot be excluded as a previous floor that belonged to an earlier construction.

THE STRUCTURES

The two structures (ST77-78) discovered in room R4, that could be a food trough and a drinking trough, were both built over floor 56. Two layers (SU54-55) are related to their use.

In the northwestern corner of room R4, structure ST77 is composed of a large pottery basin held by stones (fig. III.6): the basin is placed, strictly in the corner, against eastern wall W1 and northern wall W5, and one stone was placed in the south, and another to the west to hold it. Small stones and sherds were wedged between the sides of the basin and the stones and walls to keep it in place (fig. III.6). Even broken, the basin is nevertheless complete. At the time of discovery, it was 0.54-0.60 m diam. and c. 0.40 m deep (level of the base 96.51 m; top level of the lip 96.92 m). The basin is a type of Umayyad basin in black fabric with two handles and combed waves decoration under a triangular rim probably produced in Jarash, the Jarash Light Grey Handmade Ware (see Pappalardo's report, p. 76-83). The stone structure is between 37-45 cm high (level of southern stone 96.78 m; level of western stone 96.84 m) and square-shaped measuring 1.60 N/S x 1.35 E/W m. At the foot of the western side of structure ST77, a layer of preserved manure was also found. It measures 1.58 m E/W and 1 m N/S (fig. III.6). Its extension to the west is unknown since it was excavated by the previous team. The layer is 0.14 m thick (top level 96.43 m; bottom level 96.49 m). It comes against the western side of the structure ST77 and wall W5 and lies on floor 56. This layer (SU55) is characterized by light brown sediment very thin, loose, soft, and almost without inclusion. Its texture is symptomatic of the manure and it would indicate that animals would have used this room, in particular the basin, maybe as a water trough.



Fig. III.6. The basin in a stone structure (ST77) in the northeastern corner of room R4: a water trough?



Fig. III.7. Room R5 with burned manure (SU55) at the foot of structure ST77, and another layer that could be manure (SU54) at the foot of ST78, on earthen floor 56.

In the southeast corner of room R4, structure ST78 is composed of a low wall that closes an area of c. 0.5 m wide between it and southern wall W6 (fig. III.7). The wall, 2 m long and 0.3 m wide, is built by a simple row of large rubble stones. It is preserved over two courses. It abuts the eastern wall W1 and the southern pillar (ST?). Holes in the wall could have been pierced to place wooden equipment for a trough. Rope holes to tether animals. Holes were also pierced in the corners of the southern pillar to tie animals using ropes (fig. III.7). Along the structure, a layer of loose granular brown sediment with small gravel was preserved. Its texture is different from the manure deposit (SU54).

THE WALLS

Wall W5 is the northern wall of room R4. It is 5.3 m long, 0.85 m wide, and preserved over 4 courses. Wall W6 (fig.) is the southern wall. It is 4.90 m long and 0.80 m wide and is currently preserved over 5 courses. Wall W1 is the eastern wall of room R4 and of the eastern wing of the building. It is 26 m long in total. Its length in room R4 is 5.30 m and 0.7 m wide to the north and 0.85 m to the south. Its base was not reached during excavation and floor 56 was not removed. Wall W9 is the western wall of room R4 and of the eastern wing. It is 24.5 m long in total and its width varies between 0.70 m and 0.45 m.

Northern wall W5 and eastern wall W1 are linked and built in the same way, with double facing of well-cut stones and rubble stone fill. No plaster mortar was found in the filling nor the joints between the stone facings since they are well-cut and the courses are very regular. The small rubble stones of the fill were probably linked with earth mortar. Southern wall W6 and the internal facing of western wall W9 are not linked but are built in the same technique, slightly different from W1 and W5: in double facing with fill and small stones to regulate the courses. The stones of the facing are well-cut or roughly cut and smaller rubble stones were set in between the courses to fill the irregularities between the large blocks. A course of large rough blocs is visible at the base of the western part of southern wall W6 and was probably located under the floor level. In the northern part of western wall W9 two column drums were reused.

The upper storey of the room, evidenced by the collapsed layers 26, 27, 39, and 52 (see below), was supported by a N/S orientated arch located in the middle of the room. The two pillars of the arch are preserved in the middle of walls W5 and W6. Northern pillar ST72 is located in the centre of wall W5 (1.95 m from the eastern corner and 2.28 m from the western corner). Built with well-cut stones, it is 0.45 m wide and 0.70 m large. It is preserved over 2 courses, the lower one is based on the vault. The second course is formed by one large block embedded in wall W5. Southern pillar ST71 is built in well-cut stones in the centre of wall W6. It is 0.30 m wide and 0.50 m large. It is preserved over 5 courses and based on the vault summit. Only one block, from the second course, is linked to the wall, the other blocks are simply abutting against the wall, without any mortar to hold them together.

Three niches were built in room R4. Two are placed in the northern wall at 1.80 M from each other. The western one is 48 cm high, 40 cm wide and 48 cm deep. The eastern one is 50 cm high and wide. The filling was not removed but it is at least 30 cm deep. In the eastern wall, one niche is 40 cm wide. The upper course is not preserved but a high of 52 cm is suggested by the high of the course. It was probably c. 40 cm deep.

Phase 2. The destruction of the building during the 749's earthquake

The whole area of the room that was not excavated was covered by a huge collapse of the upper part of the building, which can be divided into different layers. Two parts could be distinguished: the collapse of the walls on the top and the collapse of the floor and the wall coating of the upper storey on the bottom. According to the process of destruction of the storeyed buildings and to the nature of the sediments, it appears that the floor of the storey and a part of its wall coating collapsed at first, then the upper part of the walls followed. The pottery discovered under the collapse is dated to the Umayyad period, the collapse layers can be related to the earthquake that took place in 749 A.D.

SUB-PHASE 2.1. THE REMAINS OF AN UPPER STOREY

The floor of room R4 was first covered by a thick layer of compact sediments containing frequent fragments of painted coating and mosaic tesserae, and only a few cut stones were discovered. During the excavation, they were divided into different contexts (SU26, 27, 39, 52) according to their aspect but they all constitute one collapse; the collapse of different parts of the floor of the upper storey and the wall coating. These are not flat layers but were found on irregular levels, mixed together. The upper layer, SU26, is a homogenous compact yellow sediment with small stones, mortar, coating fragments, and tesserae. It is around 70 cm thick (top level 97.19 m; bottom level 96.50 m). Under it, to the south of the room, on an extend of 1.80 m N/S, SU27 is also a compact sediment but brown, powdery, and heterogenous, with reddish patches and more small stones. It is almost 70 cm thick against the southern pillar (ST71) and narrows down to 25 cm thick in the middle of the room, with an irregular slope from the south to the north (top level 97.30 m; bottom level 96.46 m). On the northern side of the room, SU52 is another collapse layer originating from the upper part of the building, very similar to SU26 but with more tesserae. It is around 30 cm thick with a slight slope from the north to the south (top level 96.84 m; bottom level 96.43 m). It extends from the northern wall on 2.30 m N/S and the end of this layer comes against the extremity of SU27. The sub-rectangular area (c. 1.40 x 1.50 m) not excavated by the previous team was also composed of a thick yellow compact layer (SU39; top level 97.22 m) with some well-cut blocks. This layer may be equivalent to SU26 in the eastern part of the room.

The difference between each layer is not caused by differences in phasing but in composition. It was noted that the mosaic tesserae were more numerous at the bottom of the collapse, near the floor but were clearly not related to the latter. The mosaic pavement that was covering the upper storey probably collapsed first, directly on the floor of the ground storey. The nature of the sediments, very compact and yellowish, is similar in nature to the ones of room R4

floor. It could be part of the levelling layers that composed the floor of the upper storey, over which a mosaic pavement was set.

In this layer, a merlon was discovered, almost at floor level, that probably fell down from an architectural decoration. It is built with a plaster base and rectangular fragments of baked bricks.

SUB-PHASE 2.2. THE DESTRUCTION OF THE UPPER PART OF THE WALLS

Another type of collapse was discovered on the thick compact layer, corresponding to the destruction of the upper part of the wall and composed of two layers. The main collapse is the bottom one, SU25 which is composed of the large cut stones of the wall facings as well as the smaller stones of the inner filling mix with compact brown sediment and gravel. It contained also painted coating fragments. It is 1 m high (top level 98.09 m; bottom level 97.09 m) and extends on the whole excavated area and was probably recovering the whole room. It is covered by a loose red layer with a lot of gravel as well as small and medium size stones (SU24; top level 98.47 m; bottom level 98.06 m). The stones of the wall facings are scarce.

In the collapse, three stones were covered with a white coating (1 cm thick) with the negative of thin vegetal inclusion. One stone was engraved with a large X on its entire face. Each branch is around 45 cm long. Another one with a Christian cross in one corner. Each branch is 18 cm long but one is 3 cm thick and the other 2 cm thick. Some stones also could have been part of thresholds that were reused to build the walls.



Fig. III.8. Coated stones discovered in the walls' collapse inside room 4.



Fig. III.9. Carved stones discovered in the walls' collapse inside room 4.

To correlate between the aims of this season and the time limitation, smaller soundings have been also undertaken inside sounding 4. The first one, sounding 4A (2.60 E/W × 4 N/S m), is located on the eastern side of the main sounding. The second one, sounding 4B (2.90 E/W x 2.20 N/S m), was a subdivision inside sounding 4A located in the southeastern corner of sounding 4. The third one, sounding 4C (2 x 2 m), was located in the northwestern corner of sounding 4 which leads to corresponding to room R5.

The excavation of this area was not completed during 2022 campaign but it revealed at least 5 phases of occupation: (1) an Umayyad phase, previous to (2) the building collapse probably in 749, followed by (3) an abandonment, (4) a later phase and (5) a Modern phase.

Phase 1: main settlement phase

The earlier phase of building A discovered during this campaign in the area is the last phase of use of this building. It may be its main phase of occupation but that should be confirmed by future excavations. During this phase, two rooms are adjoining, in the southern part of the eastern wing of the building. A floor (SU69) was identified in room R5. All the walls (W1, W6, W7, W44, W70) from this phase have been built using the same technique; they are all double-faced walls built with dressed and semi-dressed stones. Some stones were reused from different structural elements and show various sizes. The mortar is mainly earth mortar, except in some parts where lime was used. In some walls, small stones were used to level the courses (see in this report “Repertory of construction techniques”).

An earth floor SU69 (top level: 96.77 m) was unearthed in room R5 directly under the collapse layer SU62. But as the time of the project was limited, the removal of the whole SU62 was not possible and only a small part of the floor has been uncovered yet (E/W1.20 N/S 0.90 m), where a copper pot was discovered (object number EJP22-A-65) in the southwestern corner of sounding 4C, approximatively in the middle of the southern part of the room. It was discovered in the last days of the campaign, during the excavation of collapse SU62. The decision was made to excavate around it to be able to remove it as a block to avoid looting and this is why the earthen floor of room R5 was only reached in this part of the sounding. It seems that the copper pot was set on the floor when the collapse happened. One of the stones fell on it and it got bent. It may have allowed sediment to go beneath the pot. The copper pot has been removed with its filing, to be analyzed. The earthen floor was a fine brown compact sediment, probably very similar to the earthen floor found in R4 (see in this report). It was not excavated. In the part of the room

excavated by the DoA, it appears that this floor is built on top of the N/S vault that supports the eastern wing of the building.



Fig. IV.3. Copper pot (number EJP22-A-065) laying on floor SU69 of room R5.

N/S orientated wall W1 is the main eastern wall of building A and the eastern wall of the eastern wing. Part of it was uncovered in sounding 4. In soundings 4A and 4B, only the upper course was uncovered while in sounding 4C four courses were uncovered. This last sounding corresponds to room R5. In this room, the lowest course of the wall W1 has not been uncovered yet. In this sounding, the uncovered length of this wall was 6.2 m but its total length is 26 m. Its width is 0.85-0.95 m. It is connected to walls W6, W7, and W70 and directly linked to wall W44. Contrary to what was expected, this wall extends to the south.

E/W wall W6 was already exposed during the earlier DoA excavation. It forms the northern wall of room R5 and a common wall between rooms R4 and R5. It is connected with but not linked to wall W1. Four courses of this wall are still standing. Dressed and semi-dressed stones were used, with chinking and small stones included in between to level the courses. The length of the wall is 4.95 m and its width 0.80 m.

E/W wall W7 was partially excavated before. It forms the southern wall of room R5 and a common wall between rooms R5 and R6. The exposed part has five preserved courses, but the

uncovered part from this sounding show four courses in the middle and three in the eastern part where it got connected with wall W1. It is not linked to wall W1. Its length is 4.90 m with a width of 0.80 m.

Only the eastern edge of E/W wall W70 was uncovered (section 5). It is the southern wall of room R6, connected to wall W1 without being likened to the latter. It was probably built in the same technique as wall W7.

The E/W wall W44 forms to the outside of building A. Only one course was exposed and stands almost at the same level as wall W7. It is a double-faced wall with earth mortar and small stones in between the blocks. Most of the stone faces are dressed. It is the only wall that seemed to be connected to wall W1. Its length is 1.70 m with a width of 0.90 m.

Phase 2: collapse of the building in 749?

Building A was destroyed as attested by two layers of collapse discovered in rooms R5 (SU50) and R6 (SU62), as in other areas (see report J. Bonnéric and T. Awwad). According to the Umayyad pottery (see pottery report) discovered in the collapse layers (SU62), we can suppose that the destruction is related to the earthquake that took place in 749 and destroyed a large part of the Umayyad city.

In room R5, only a small part of SU50 has been excavated. It was a very yellowish loose layer. It included a lot of wall coating fragments, many of them colored, and very few artifacts. Its composition and location suggest that this layer is related to the collapse of the wall coating. Its exact thickness and surface area are unknown as it was not been fully excavated yet. It was excavated around 0.30 m thick on a surface of 1.20 x 0.15 m. The eastern edge of it was exposed on the western side of sounding 4B but the rest is still running below the southwestern part of sounding 4, inside room R6. It is very similar to SU62 in room R5, as they share similar colors, textures, and inclusions of plaster fragments. Both are located under the same layer SU42.

Above SU50, another collapse layer was excavated, SU62. It is a heterogeneous layer mixed of stones, that probably collapsed from surrounding walls, and mixed-colored sediment, mainly yellowish, but also reddish and orangish. The stones are of various sizes. This stratigraphic unit was higher in the middle and sloped down towards the edges near the walls. This hill shape is probably related to the collapse of the walls and the floor of the upper storey that mainly fell in the middle of the room. The frequency of artifacts in this layer was very high, especially when it comes to pottery. Their positioning in the layer suggests that it probably fell from the upper storey at the time of collapse. That room probably was used as a kitchen or a kind of storage room. From the preliminary analysis at the site, most of the pottery from this layer seems to be from the early

Islamic period. In addition to the pottery, there was also a lot of metal, colored plaster, and some kind of carbonized material which might be carbonized leather. This layer was excavated on c. 2.60 x 2.60 m. It was most probably covering all of room R5, but half of it disappeared during the excavation of the western part of the room by the previous team.



Fig. IV.4. First collapsed layer SU62 inside room R5.

Phase 3: abandonment phase after the 749's earthquake

After the 749's earthquake, the area was abandoned as attested by the 6 accumulation layers related to the collapse. Only one of these layers is anthropic (SU43) while others are probably related to natural causes (SU37, SU31, SU32, SU51 and SU42).

SU51 is the first deposit covering the collapse of the earthquake. It covers most of sounding 4A. It is a mixed dark brownish layer with frequent yellowish patches. It includes different-sized stones including structural wall stones, that have collapsed before or at the same time as the deposition of the layer. The yellowish patches in it might have occurred from the decomposition of plaster or mortar fragments that later got mixed with sediment. This layer was not fully excavated since the aim was to check the extension of wall W1. A small part of this layer was excavated in sounding 4B. As wall W1 appeared with its collapsed blocks next to it, from the eastern side, the decision was to stop the excavation at this level and move to excavate other parts of the sounding; we note that the sediment got more yellowish at this level. This layer may still be extending further below the excavated level. The presence of this yellowish color in the deposit might have been the result of the decomposition of plaster and mortar fragments that were trapped under the sediment of the layer above. To be on the safe side, the layer got a new stratigraphic unit number SU68, since it was not fully excavated. The frequency of the artifacts was also low in

layer SU51. The dimensions of this layer were around 3 x 1.5 m (top level 98.69 m). It is also located under SU42. After its removal in sounding 4B, the rest of wall W1 was uncovered.



Fig. IV.5. Walls W1 and W44 and layer SU51 partially excavated and the upper part of the collapse, located in the external part of the building at the eastern side of building A.

SU42 was a compact reddish layer with brownish patches. It seems to be covering most of sounding 4 except the southeastern part of the sounding. It was found in sounding 4A and 4C (see section 6) and we can suppose that it is also running inside room R6. Stones of all size were found inside the layer; it is probable that these stones belong to the phase of the collapse of the building since the main layer of collapsed blocks is just situated on top of it, which makes it a filling deposit. It is a very thick layer (around 0.5 m in sounding 4C) that thins down towards sounding 4A (around 0.10-0.15 m). The frequency of artifacts is very low as well. It is located under SU43, SU37, SU32 and SU31, and above SU51 and SU62. It covers walls W1 and W76. Only a small part of SU42 appears in the drawing of section (section 6).



Fig IV.6. General view of the reddish compact layer (SU42) covering the upper part of the collapse, before excavation in room 5.

SU37 was located in the southwest part of sounding 4 (2.30 x 1.5 m, top level 98.59m). Only a small part of its eastern side was excavated. It is a compact light orangish brown layer with occasional artifacts.

SU32 covers the highest level of the collapse on almost all the eastern part of sounding 4, which means almost all of sounding 4A (3 x 1.5 m, thickness: 30-40 cm; top level 98.49 m). It is a brownish loose layer with reddish patches. It covers wall W44 and SU42 and SU43.

The SU31 is a filling deposit as well, located mainly in the northwestern part of sounding 4, and all of sounding 4C above the non-excavated part of room R5. This thick layer (c. 0.40-0.50 cm) is a loose dark brownish layer with reddish patches. It included some stones of all sizes and a low frequency of artifacts. It was covering walls W7 and W1 as well as SU42.

Only one stratigraphic unit, SU43, was caused by human actions. It is located in the southwestern part of sounding 4 in room R6. Only a very small part of it was excavated, just the eastern edge of it, and is apparent in the western side of sounding 4A. It is a dark grayish, very loose ashy layer with frequent pebbles and cobbles. It is more than 35 cm thick (top level: 98.14 m) but as the baulk of sounding 4 ended at the same line with wall W1, its exact thickness is not clear. It might be still going deeper. This stratigraphic unit might have been a midden or a landfill to dump the ash from a fireplace or a taboon, but its exact function cannot be provided, for the time

being, since it has not been fully excavated. It has a low frequency of artifacts in the excavated part. It is located under SU38, SU37, SU32, and SU31 and above SU42.

Phase 4: late occupation

Some structures were built after the earthquake of 749 and the abandonment phase of the building. This phase of later occupation is defined by the remnants of an E/W orientated wall (W33). It is located at a higher level than the rest of the structural walls of building A and over layer SU30. It is built in double facing with small filling stones in the middle. It is preserved on one course of stones. Its length is 1.5 m with a width of 1 m. The stone size is between 0.30 to 0.50 m. No floor related to it was discovered.

The dating, Abbasid, Ottoman, or later is impossible, for the moment, since the pottery was not studied yet. It is also possible that it is a modern structure where stones were organized and set properly during the previous excavation.

Phase 5: Modern abandonment

In this phase, the whole sounding 4 is covered by the topsoil (SU29). This compact very dark brown layer is mixed with modern materials, in particular plastic. It has different thicknesses from one part to the other, from a few centimeters to around 30 cm. It includes small and medium-sized stones. The frequency of artifacts is low. It covers three different stratigraphic units (SU30, SU31, and SU32). SU30 could also be a modern layer, but it is not clear as no plastic or modern materials were found in it. It could also be a dump from the previous excavation at the site. Under it, SU38 appeared to be running in a straight line with wall W7. It has been cut through SU31. It may be the result of the sounding limits of the previous excavation where they were probably trying to find the extension of wall W7. However, SU38 was not excavated in this season so a definite interpretation will not be possible for the moment.

Conclusion

As it has been mentioned before, the aim of implementing sounding 4 during this fieldwork season was to evaluate the extension of building A in the southeastern area of this building (the non-excavated part) and to have a better idea about the different phases of the site and date them.

Wall W1 is still extending toward the south in the southern section of sounding 4A and 4B, it appeared that the building probably extended further toward the south beyond room R6. Wall W44 shows that the building is extending toward the east as well on the outside since it was built against the eastern external facing of wall W1. It would be interesting in the future seasons

to have a sounding to the east of sounding 4 as well as to the south. To the east to have a better understanding of the outside of this building and what it might have been used for, and the southern sounding to know the exact limits from that side.

It also appeared that the building had more than one storey. The ground level might have been used for less important activities, as suggested by the material found. The earthen floor in room R5 could be related to a barn. In its first phase of occupation, the upper storey was probably more related to domestic activity, as it has been noted from the amount of pottery and other materials mixed with the collapse (SU62) fallen from the room above R5. Most of this pottery belongs to the early Islamic period, which makes a lot of sense if this collapse was caused by the earthquake that happened in Jarash by the end of the Umayyad period. After the earthquake, the building got abandoned and then got covered by natural reasons with several layers of sediments. A small area got used probably as a midden at some point. Then another settlement took place after the site was mostly covered as it is shown in wall W33. However, the function of the structure that it belongs to was not clear as its just one course of a small part of a wall, which could belong to the Ottoman or some other later periods

V. Eastern Jarash Project: pottery overview (campaign 2022)

Dr. Raffaella Pappalardo

During the 10 days of study season, 16 different contexts excavated during the 2022 season of the Eastern Jarash Project were processed and 484 diagnostic sherds have been identified, 23 of which are complete or almost complete vessels. In this perspective, the identification and sorting work is not completed so far, even though it was still possible to make some remarks about the analyzed contexts. In accord with the available time, we chose to focus on the layers from rooms R4 and R5 related to the main collapse and the layers located under it. The aim was to be able to confirm that this collapse was related to the earthquake of the year 749.

Room R5 (SU62-42)

The most interesting contexts, in terms of preservation of the vessels, are identified as SU62-42 discovered in room R5 of building A. In this context, at least 16 complete and almost complete vessels have been identified. The bulk of the assemblage is made up of closed shapes like storage jars and amphorae.

The only open shape is a big handmade basin (Room R5, Vessel 3) in Jerash Light Grey Handmade Ware (JLGHW) (Fig. V.1.1). This type of basin is very well attested in every context in Jerash starting from the Byzantine period until the late Umayyad and even the early Abbasid period. The type was locally produced and it usually shows many different sizes (small, medium, large, and very large) with the same technical and decorative features (USCATESCU 1996: Group XXXVI, 145). According to the size and the rim type, the grey basin found in Room R5 can be dated back to the mid-8th century (PIEROBON 1984: fig. D6; USCATESCU 1996: figura 110 n. 781; WALMSLEY 1995: fig. 8,8).

Another important vessel is a Red Painted Orange Ware (RPOW) jar which is nearly intact but needs some restoration work (Room R5, Vessel 1) (Fig. V.1.2). The jar shows a straight neck with an indistinctive rounded rim, an ovoid body, and an omphalos-shaped base. The outer surface is very finely slipped and the decoration pattern is composed of wavy lines, spiral, and stylized tree red painted lines. RPOW is attested in Jerash and in other sites of the region in the 749 earthquake destruction levels and later in the early Abbasid contexts (WALMSLEY 1995: 661; PAPPALARDO forthcoming).

Room R5 vessel 2 is a Jerash Light Grey Ware jug, with a carinated body and external rounded rim (Fig. V.1.3). The body is decorated with irregular white painted lines. The fabric is a deep grey with a very dark red core and tiny occasional lime inclusions. This type is very common in Jerash in the late Umayyad destruction levels in the “non-reduction” versions as well (WALMSLEY 1986: fig. 2 n. 2; FALKNER 1986: fig. 21 n. 10; GAWLIKOWSKI 1986: Pl. XI).

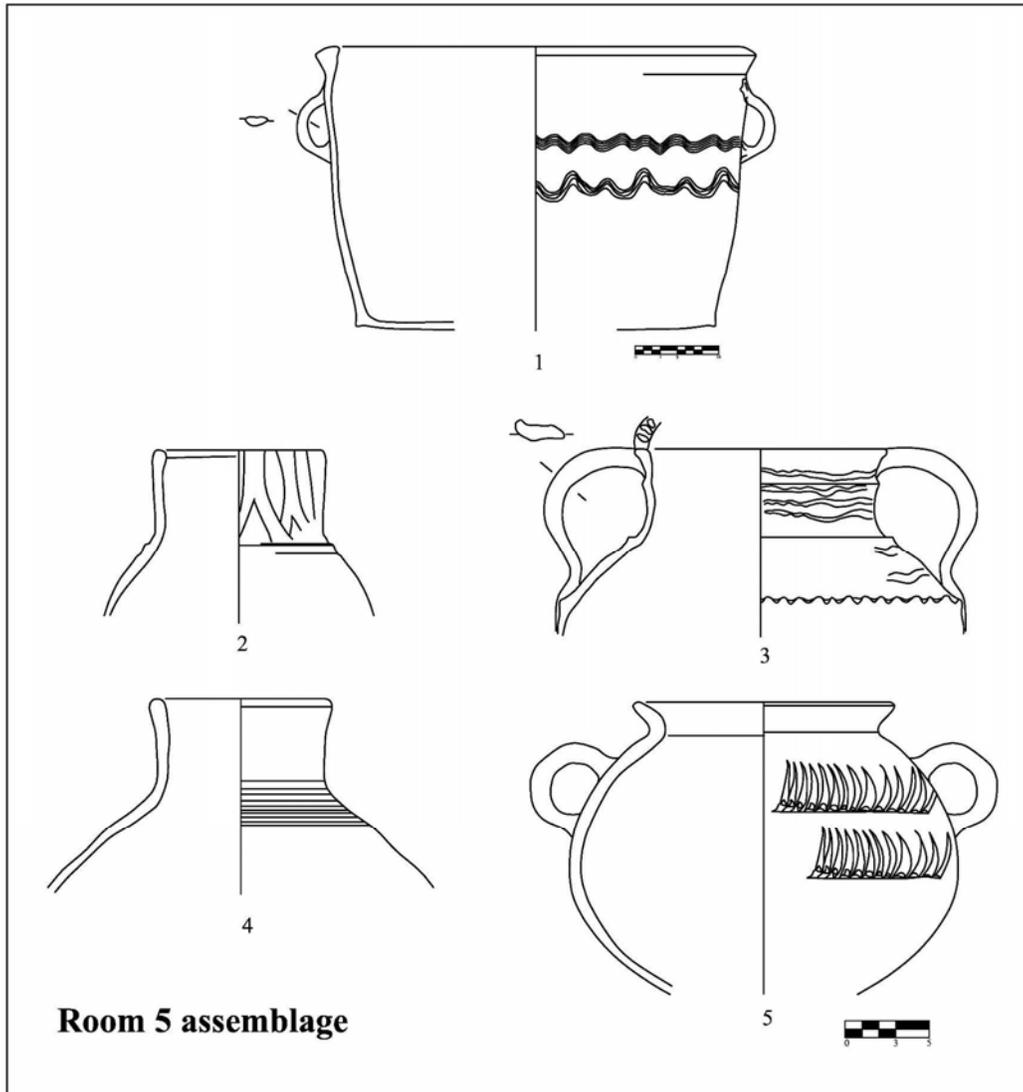


Fig. V.1. Pottery assemblage discovered in room R5, in the collapse of the upper storey (SU62).

Room R5 vessels 4 and 5 (Fig. V.1.4) are two jars with fabric which can be recognized as Pale Ware (PAPPALARDO forthcoming). The ware is very peculiar for the fabric color (10 YR 8/4) and is characterized by a soapy and flaky surface as shown by vessel 5. In other contexts, in Jerash,

this ware is attested in sealed early Abbasid contexts and less often associated with late Umayyad types (PAPPALARDO forthcoming).

Vessel 6 jar shows a very bad fired fabric as well, with flaky surface and irregular color (Fig. V.1.5). The jar has a globular body with flared rounded rim, vertical ear shaped handles on the upper part of the body with rouletted decoration. It has to be underlined that vessels 7, 10 and 11 show the same bad firing fabric as well, with flaky, fragile, and even soapy surfaces. This “peculiarity” was already observed in other contexts in Jerash’s southwestern district well dated to the early Abbasid period (PAPPALARDO 2019: 219-223; PAPPALARDO forthcoming).

Even though the presence of some transitional/early Abbasid ware (like ROPW and PW), it is more likely that room R5 context is related to a building collapse during the earthquake of 749, due to the complete lack of early Abbasid ceramic markers. More research in the area will clarify this aspect and shed light on the transitional phase from the late Umayyad to the early Abbasid period.

Room R4

Room R4 contexts (SU 25-26-27-39-42- 56) have revealed 65 diagnostic sherds, but, conversely, from room R5, the ceramic assemblage shows a high level of fragmentation. The most outstanding discovery was a complete Light Grey Handmade Ware (JLGHW) basin placed in the northwestern corner of the room held by stones and most likely used as a water trough (fig.V.2). This “second life purpose” for this type of vessel is not uncommon, for example, similar basins were reused in the Propylaea church containing marble dust (BRIZZI *et al.* 2010: 358).

The basin found in room R4 shows a very dark grey fabric (2.5 YR 4/1) with tiny and very few lime inclusions. The diameter is quite big, measuring 60 cm. The body is slightly flared with thickened rim, flat base, and two ear-shaped handles. The decoration pattern is composed of one band of applied studs and three sequences of wavy incised combed lines. The inner and outer surface is completely characterized by air bubbles due to the bad firing process demonstrating the coarse manufacture of these kinds of vessel. This type of basin can be well dated to the late Umayyad period (PIEROBON 1980: Fig. D6; USCATESCU 1996: figura 110 n., 781; WALMSLEY 1995: fig. 8,8).

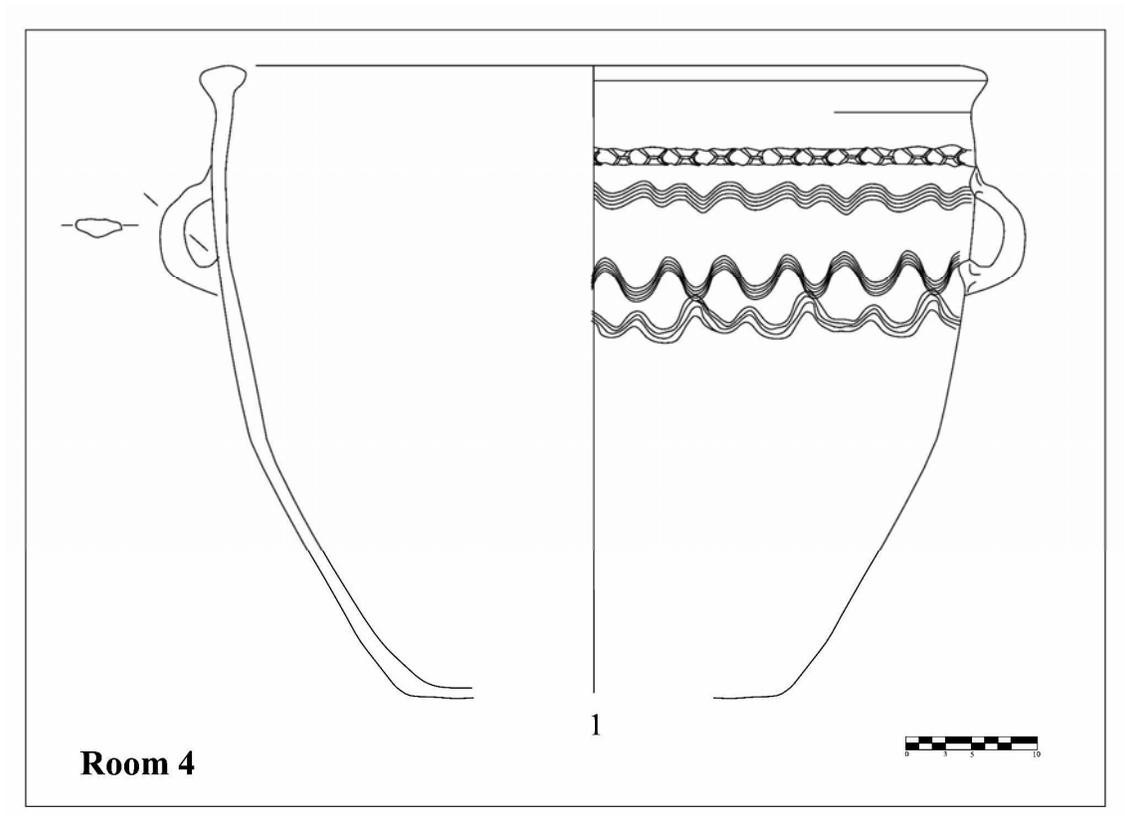


Fig. V.2. JLGHW basin discovered in the northeast corner of room R4.

Area 1, Sounding 4, (SU 40-41-46-49-53-58-61)

During the study season, some selected contexts from Area 1 were also processed, more specifically from the SU 40, 41, 46, 49, 53, 58 and 61. At least 3.393 sherds were processed and 372 diagnostic vessels were identified.

It has to be noted that the ceramic overview from these contexts roughly seems completely different from the assemblage shown before. The diagnostic vessels are more fragmentary with a low percentage of residual sherds (few roman sherds, one sherd of Nabatean painted bowl, and one sherd of Black Gloss Ware). Due to the feature of the ceramic assemblage, it could be a big pottery dump area, as already observed in many excavation areas in Jerash (PAPPALARDO 2019: 224; PAPPALARDO forthcoming; BLANKE *et al.* 2022: 598; BLANKE *et al.* forthcoming). The ceramic assemblage retrieved in these contexts is mainly composed of JORW, JLGW, JLGHW, Jerash bowls.

The type Jerash Orange-Red Ware (JORW) consists of different types of:

- bowls (fig. V.3.1-2; comparisons: USCATESCU 1996: fig. 67, n.12, Group XI, n. YY; fig. 68 n. 338, Group XII-XIII)
- cups (fig. V.3.3-4; comparisons: PAPPALARDO 2019: fig. 5.10 n. 4; KEHBERG 2009: 507 n. 17; USCATESCU 1996: Group XIII, 11C; WALMSLEY *et al.* 2008: fig. 24,1)
- jars (fig. V.3.5-7; Comparisons: USCATESCU 1996: Group XXXIV, fig. 85; KEHBERG 2009: 10; WALMSLEY *et al.* 2008: fig. 24 n. 12; SMITH *et al.* 1992: pl. 114,1)
- bowl/casserole.

Indeed, the JORW is very well attested in the cooking variation with the characteristic type of bowl/casserole with a flared body and everted grooved/folded rim which seems to have been used for both preparation or serving dishes and cooking food (fig. V.3.8: PAPPALARDO 2019, fig. 5.10 n. 1-3; LICHTENBERGER *et al.* 2015: 36; PIEROBON 1986: fig. 10 n.4; USCATESCU 1996: Group XVII, form 3d; KEHRBERG 2009: 507, fig. 9). Another type is the casserole with a curved body and cut rim along with the related lid with cut rim (fig. V.3.9-11; Comparisons: USCATESCU 1996: fig. 73 n. 387; PIEROBON 1986, fig. 10 n. 7; KEHBERG 2009: fig. 9; SMITH *et al.* 1992, pl. 108.7; VRIEZEN 2015: fig. XII.23,12).

The Jerash Light Grey Ware (JLGW) assemblage is mostly composed of large flared body bowls/basins with tapered or flared, grooved rims (fig. V.4.1-2; Comparisons: PAPPALARDO 2019: Fig. 5.11; USCATESCU 1996: Group XV, Fig. 72; LICHTENBERGER *et al.* 2015: 40,109, 111; PIEROBON 1984: Fig. E, 12-13-14). In the same JLGW are also some amphorae most often attested with squared rim and ridge neck (fig. V.4.3; Comparisons: LICHTENBERGER *et al.* 2015: 42, 123,128,29; PIEROBON 1984: Fig. E n. 10; PIEROBON 1986: fig. 10,8).

The handmade basins are quite represented in the assemblage as well, with Jerash Light-Grey Handmade Ware (JLGHW) sometimes tending to a brownish-grey hue. Two types can be recognized according to the rim shaping, the first shows a ribbon-shaped rim decorated with digital impression; the rims of the second type could be “hammerhead” shaped sometimes with a small ridge underlining the joint with body wall (Fig. V.4. 4-5; Comparisons: PAPPALARDO 2019: fig. 5.13; USCATESCU 1996: Group XXXVI, Form 2c, Form 4b). The decoration is always incised with combed wavy lines, fingerprints, or rouletted decorations.

Three different types of Jerash Bowls complete the assemblage corresponding specifically to Uscatescu JB 1B, 1C, 7A 26A (fig. V.5; Comparisons: USCATESCU 2019).

According to the comparisons, the overview of the ceramics retrieved from the SU 40, 41, 46, 49, 53, 58, and 61 corresponds to a homogeneous assemblage well dated to the mid-late 6th c. to mid. 7th c.

Looking only at the assemblage, it would have been possible to carefully argue that this dumping event might be related to the cleaning of damaged houses or shops after the earthquakes of the 658/59 or 679 as already noticed in other excavation areas of Jerash with the same type of ceramic assemblage (PAPPALARDO forthcoming 2). However, the stratigraphy does not authorize such a hypothesis (see Awwad's report, p. 38-55).

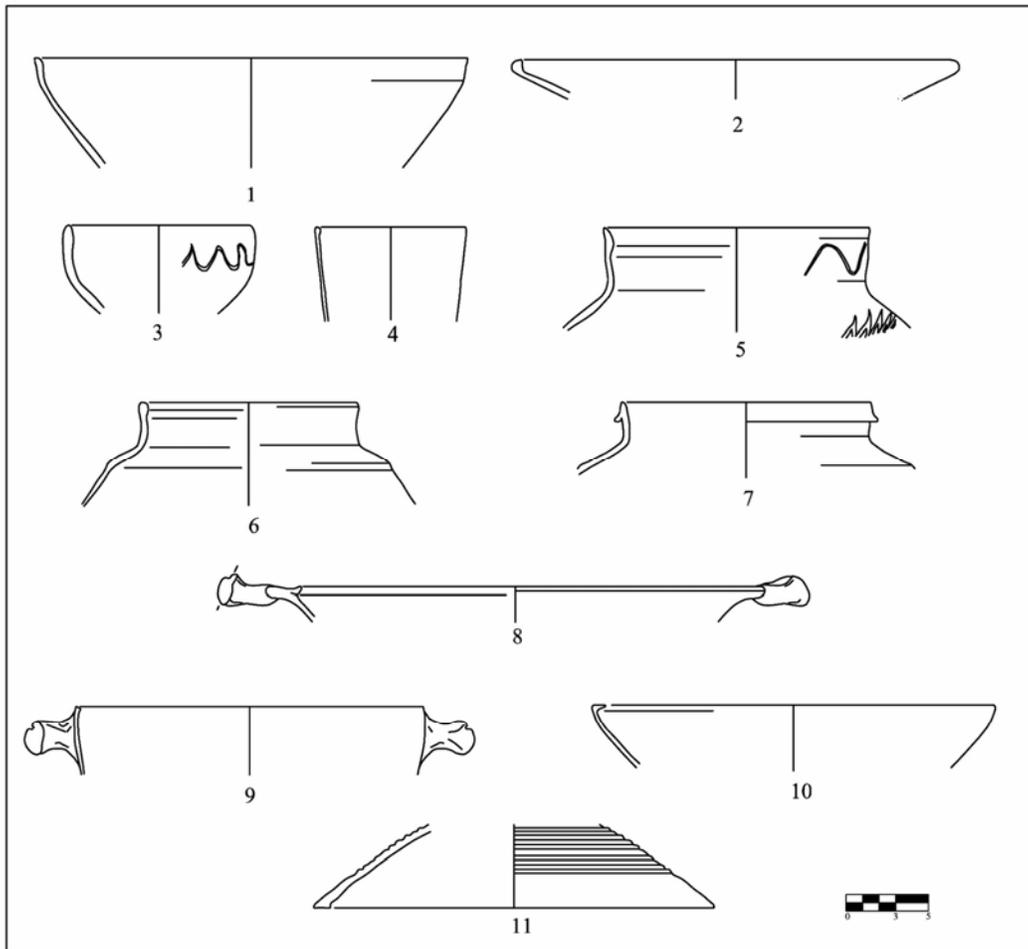


Fig. V.3. Jerash Orange-Red Ware Assemblage from Area 1 Sounding 4

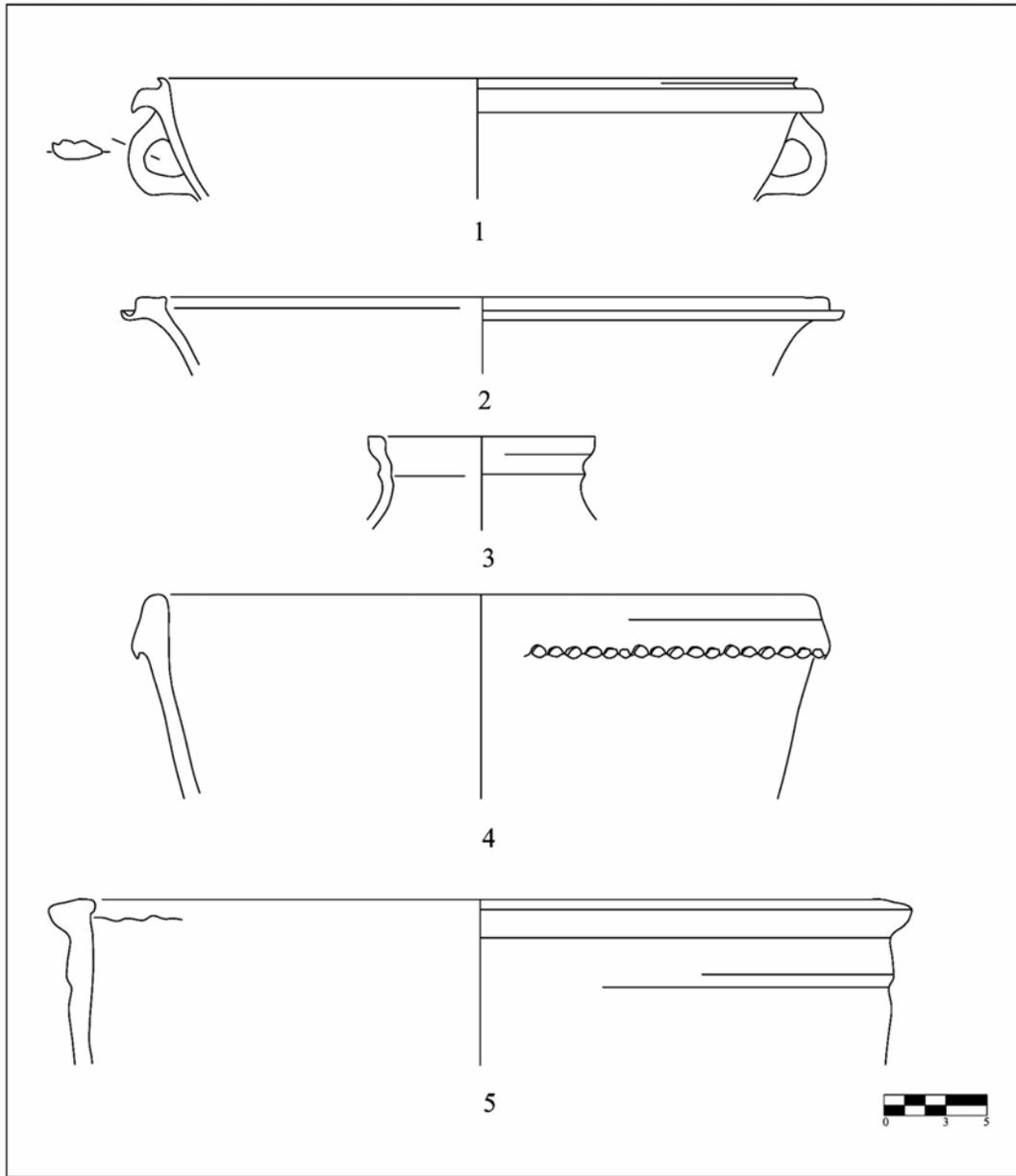


Fig. V.4. Jerash Light Grey Ware and Jerash Light Grey Handmade Ware Assemblage from Area 1 Sounding 4

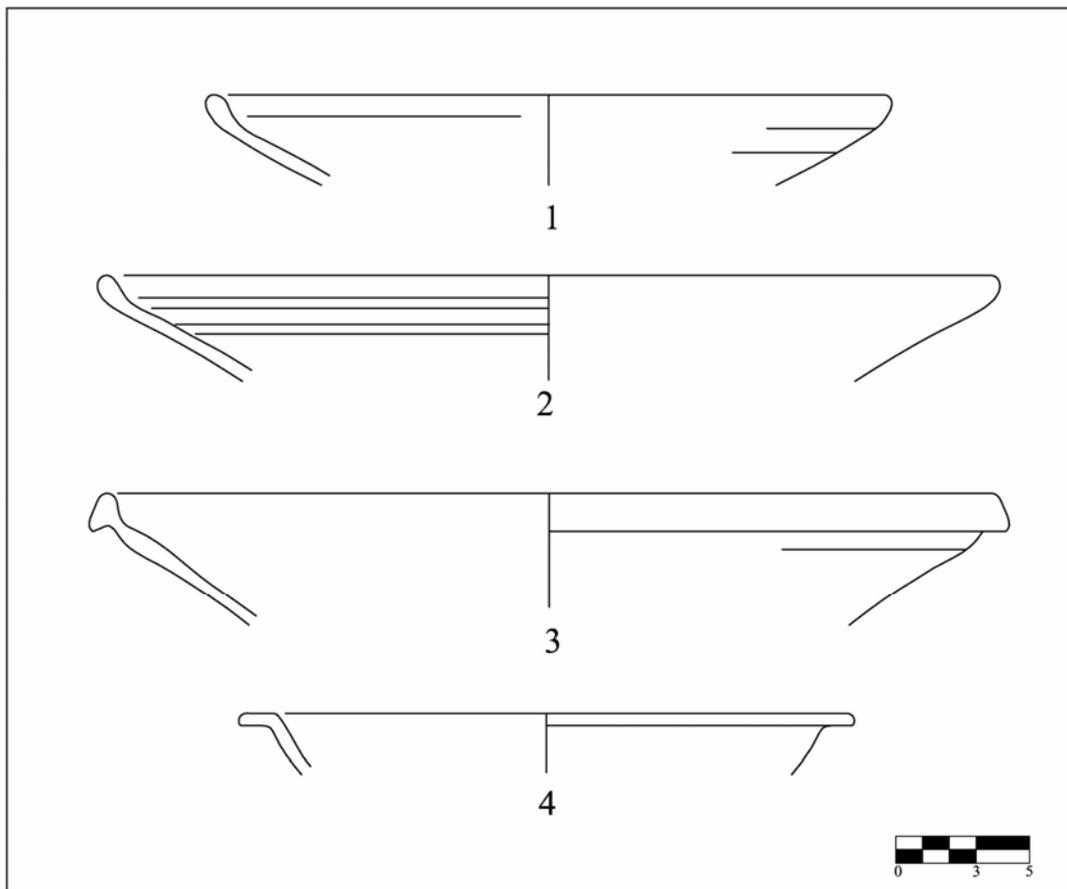


Fig. V.5. Jerash Bowls Assemblage from Area 1 Sounding 4

Point ID	X	Y	Z
SDoA	942.724	1062.889	125.708
S0	966.673	914.937	104.128
S1	977.888	938.928	99.297
S2	997.535	956.146	100.087
S3	1010.257	940.153	98.524
S4	995.571	925.739	98.970
S5	991.971	937.799	96.368



Fig. VI.1. The 5 points (S1-S5) of the local system.

Documentation

PRODUCTION OF THE GENERAL SITE PLAN

The first step in the documentation process was therefore the creation of a general plan of the building using the total station. This plan allows us to have an overall view of the building

under study and to obtain the external and internal dimensions, as well as to number the spaces, rooms, walls, etc. necessary for recording the archaeological and architectural data.

PRODUCTION OF DETAILED SURVEYS OF EXCAVATED AREAS

As seen above, no general or detailed plan of this building was available. After a meticulous cleaning of the whole site, it was, therefore, necessary to start a detailed “stone by stone” survey of all the walls previously uncovered, as well as those discovered during the current excavation campaign (Fig. VI.2). Technically, the points were surveyed with the total station then printed out, and then used as a background for a manual pencil drawing which is then scanned and vectorized for the final rendering. These detailed plans allow for a detailed study, on the one hand, of the construction techniques and, on the other hand, of the stratigraphic (and therefore chronological) relationships between built elements.

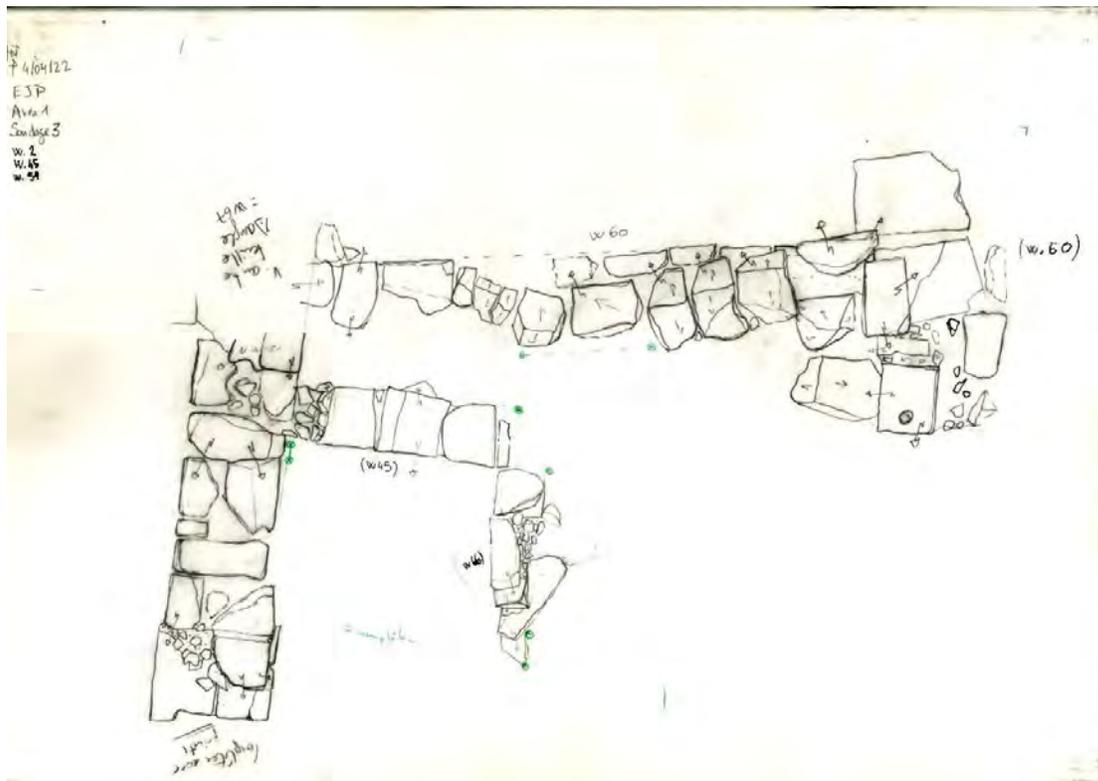


Fig. VI.2. Example of a “stone by stone” design made during the 2022 campaign.

PRODUCTION OF LARGE ARCHITECTURAL SECTIONS

In addition to the plan drawing, it was also necessary to make sections of the building studied to understand the elevations. In the case of building A, this production is interesting on two levels. Firstly, on the scale of the building, it is built on a series of supporting vaults that are

not visible in the plan, which can only be seen by making a section (AA' North/South). Secondly, on the scale of the building's environment, since it is situated between the cardo and the wadi and for a better understanding of its functioning, it is necessary to understand how it fits in with these external elements using a section (BB' East/West).

These sections were carried out in several steps. First, a topographic survey was carried out to obtain the series of points making up the section. Then, after printing, manual additions were made in the field. Finally, these documents were scanned and vectorized. It should be noted that in the case of section (AA'), a graphic complement was added for the projected parts thanks to the application of the corresponding photos in the background.

RESTITUTION PROPOSALS

In order to go further in the architectural study and the understanding of the functioning of building A, restitutions were proposed. These proposals are based on the study of the building in its current state, as well as on the elements and evidence found during the excavations. The following are essentially restituted: the supporting vaults, which are only partially visible but still in place, and the upper level, of which evidenced the start of a staircase, the presence of mosaic tesserae in the remains of the collapse that fills room R4, and which surely correspond to elements of the upper level, and the discovery of an assemblage of complete pottery in the collapse of room R5. It should be noted that in the restitution proposals, a colorimetric difference is applied to identify the built parts still in place on the site (beige) and those restituted (white) (Fig. VI.3, Fig. VI.4).

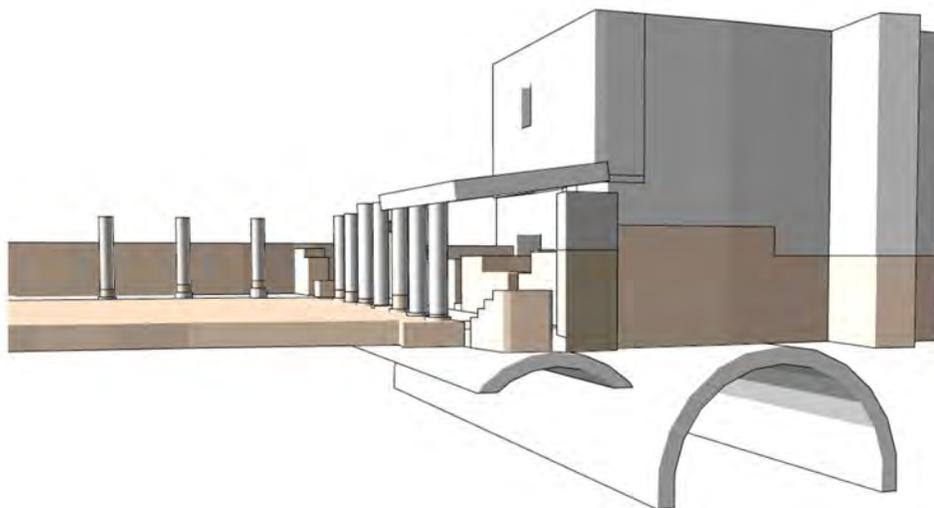


Fig. VI.3: Partial restitution of the retaining vaults

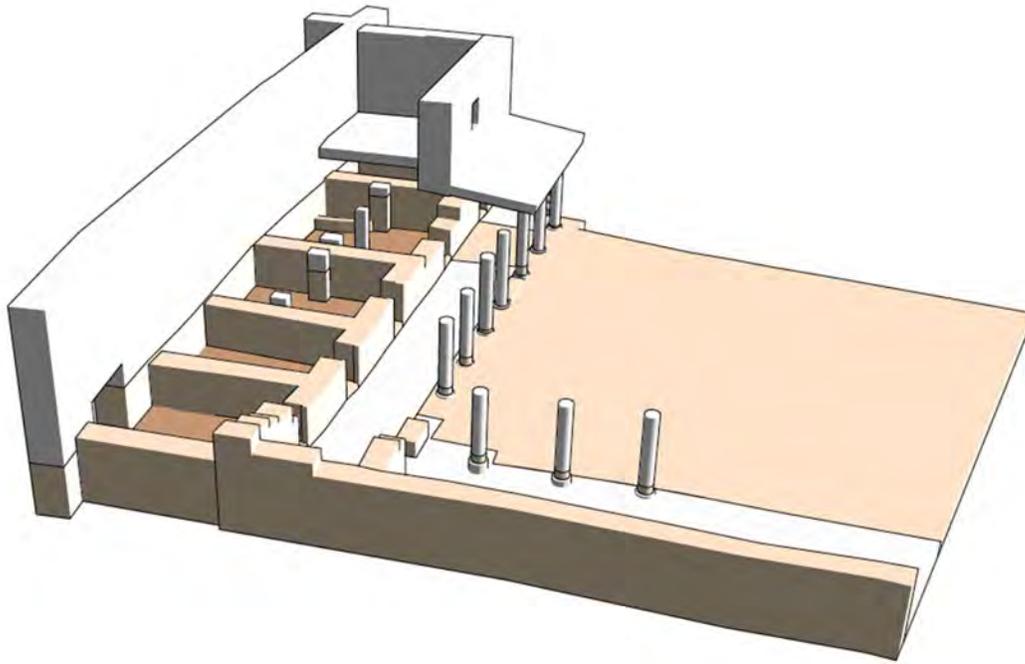


Fig. VI.4: Partial restitution of the building and the portico

Conclusion

During the future field mission in spring 2023, a number of tasks will need to be completed. First of all, it will be necessary to calibrate, at least in altitude, our topographic reference system thanks to the points surveyed with differential GPS by the Italian archaeological mission. Ideally, if we obtain these points, we will be able to work in the Jordanian coordinate system in 2023. Then, additional stone-by-stone drawing work will also have to be carried out in order to finish covering the whole of the previously excavated building. It would also be desirable that at the end of the campaign, and before resealing, overall photogrammetry be carried out. As part of these additional drawings, it will be interesting to pay particular attention to the column shafts, bases, and capitals present on the site and to produce a small inventory of them. Finally, as was the case in 2022, props will be required to secure the site and the newly cleared walls. Attention will need to be paid to reduce the visual impact compared to what was achieved in 2022.

VII. Repertory of construction techniques

Arch. Stéphanie Cunin & Arch. Emmanuelle Devaux

This inventory is a working document that will evolve as the Eastern Jarash Project (EJP) research on building A progresses. It lists the architectural observations made during the survey campaign carried out in July 2022 following the excavations carried out in April 2022. It is illustrated by first graphic interpretations.

Building A is situated to the east of the *cardo* at the level of the Roman Nymphaeum. From the *cardo*, an irregular slope made up of excavated material leads to a courtyard (N/S 15 m wide and at least E/W 15 m long). The western limit of the courtyard remains to be defined by excavation. The courtyard is bordered on the east, north, and south by a portico. The start of a staircase links the south wing and the east wing. The east wing distributes five juxtaposed rooms along a north-south axis. These rooms are about 5 m deep with various widths. The presence of rope holes and troughs indicates the use of the rooms as storage and/or stables. In the present state of excavation, we consider that building A comprises the courtyard, the portico, and the five adjacent rooms (fig. VII.1).



Fig. VII.1. Functional distribution of building A

The walls

GENERAL STRUCTURE OF THE MASONRY

The masonry of the walls has a classical structure consisting of two external faces made of stone blocks and an inner blocking made of mixed earth and stones (Fig. VII.2). The external faces are carefully fitted, while the tail of the blocks in the thickness of the wall is left unspaced. On some walls (W9, W2), column drums are used as cross ties to reinforce the masonry. In room R5, the lower part of the masonry has a protruding block (Fig. VII.3). The thickness of the walls of Building A varies between 75 and 100 cm.



Fig. VII.2. Example of masonry implementation (wall W3)

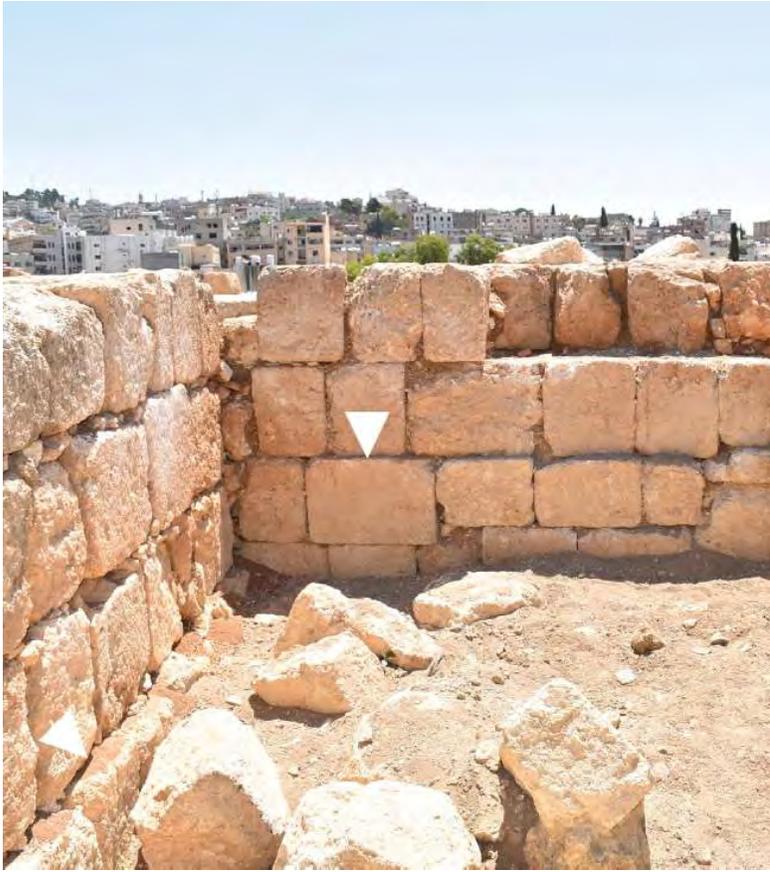


Fig. VII.3. Protruding block in the eastern and northern walls (W1, W6) of room R5

TWO TYPES OF MASONRY

The elevations of the walls uncovered during the excavations reveals two types of masonry (Fig. VII.4). Type A shows a pattern of large blocks of different widths arranged in regular courses 50 cm high (Fig. VII.5). Type B shows a mixed pattern of large stone blocks and isolated wedge stones or stones arranged in rows.



Fig. VII.4. Distribution of wall types

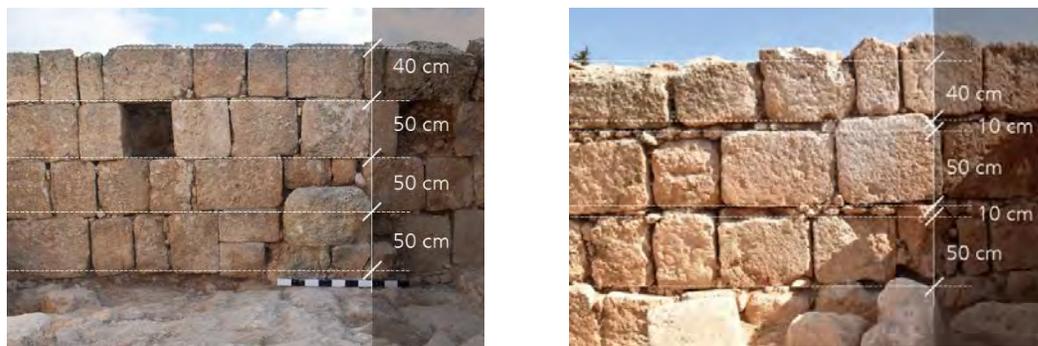


Fig. VII.5. Wall type A (to the left) and type B (to the right).

MORTAR AND PLASTER

The stone blocks are filled with earth mortar containing frequent shards of clay (bricks, pottery) (Fig. VII.6). The only evidence of the use of lime mortar can be seen on the north elevation of wall W3. On visual observation, the mortar reveals fragments of pottery, tile, charcoal, and fragments of eggshell (Al Mukhtar *et al.* 2008) known to be used in the production of lime (Fig. VII.7).

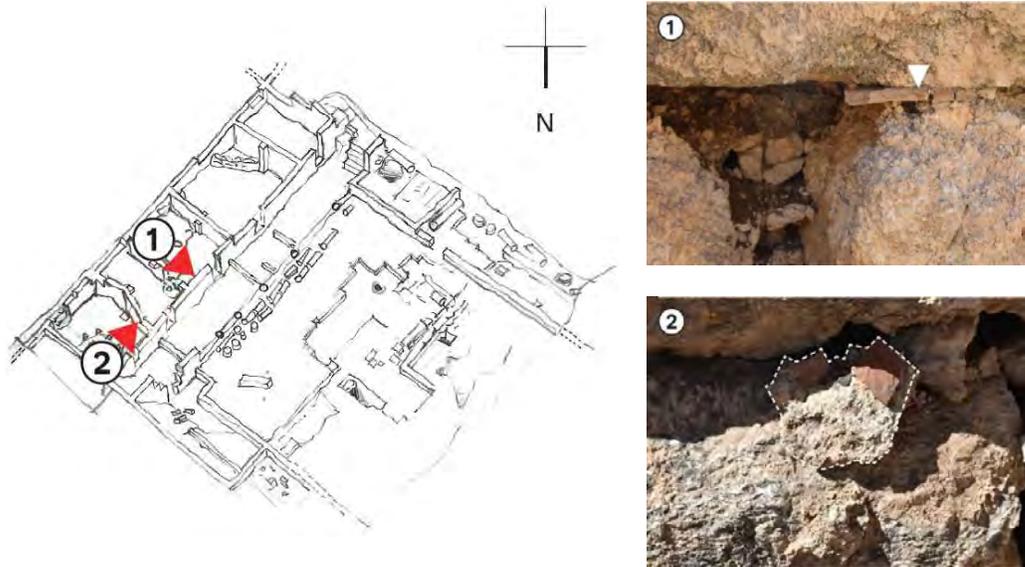


Fig. VII.6. Location of visible mortars (to the left); earthen mortar with pieces of ceramic sherds in wall W9 (to the up-right); lime mortar with ceramic pieces on the surface, tiles, coal and egg shells wall W3 (to the bottom-right).



Fig. VII.7. Mortar details of samples from the wall W3

In room R4 (Fig. VII.8), the northeastern niche excavated in 2022 shows on its western inner face the remains of a white plaster which appears to have been applied to straighten the walls of the niche. In the collapse layer in room R5 (Fig. VII.8), the excavations uncovered fragments of smoothed lime plaster showing traces of yellow and red ochre paint. The backside of these fragments, traces of charcoal are visible, as well as negative traces of a plant (?) that were probably part of the composition of the plaster or the undercoat.

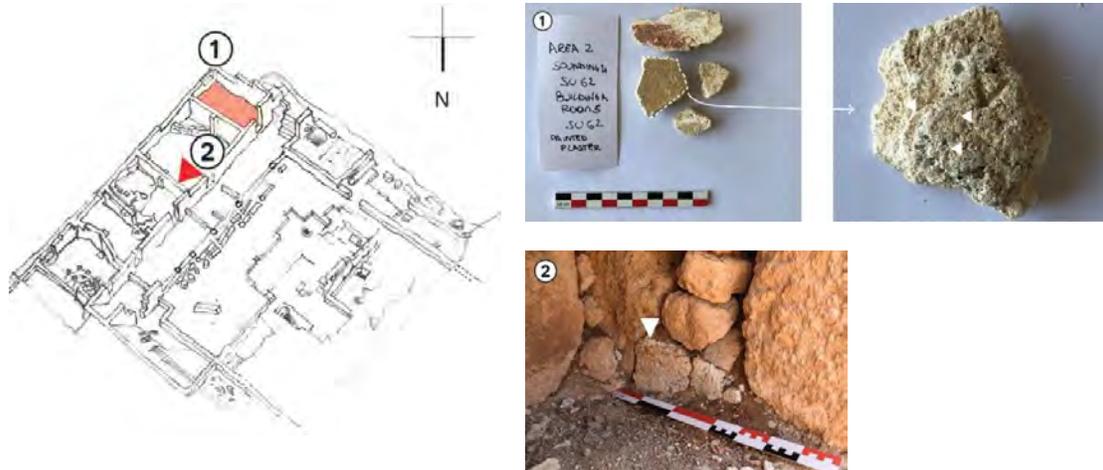
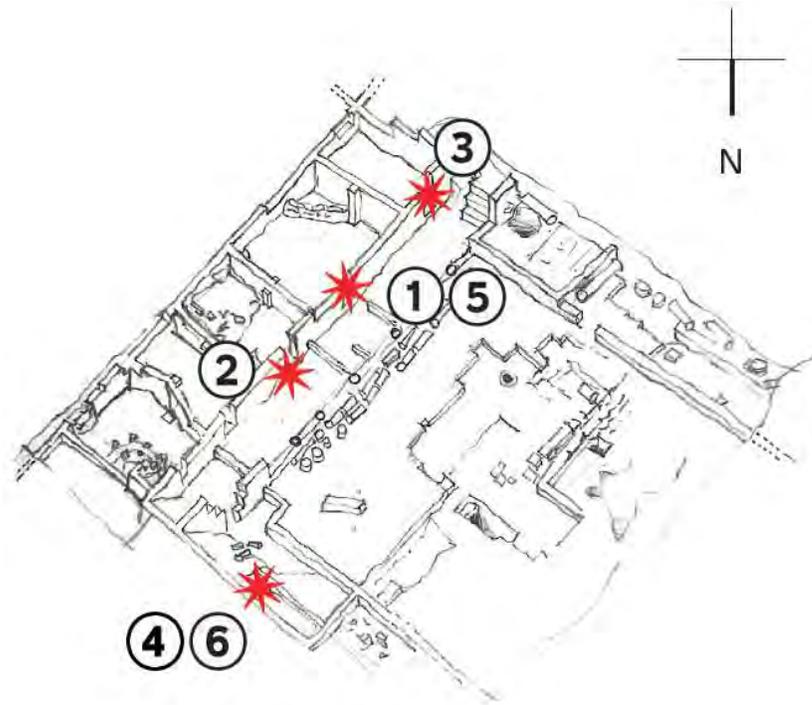


Fig. VII.8. Location of visible plasters (to the left), fragments of smoothed and painted lime plaster and reverse side of the plaster fragment (to the up-right); lime plaster in place in the northern niche of the room R4 (to the bottom-right).

RE-USES

It is difficult to know whether the large blocks used in the majority of the masonry of building A are reused blocks. Nevertheless, the identifiable re-used architectural elements are abundant (Fig. VII.9) and can be classified into three categories: entablature elements, column elements, and masonry modules. Entablature elements were reused for the thresholds in rooms R4 and R3, therefore it is easy to imagine linear cornices cut into blocks to form a monolithic threshold with modenature. The drums of columns, which were easily identifiable on the elevations, were used to chain the masonry. Other elements were also reused, particularly in mixed masonry with cobbled courses. Brick modules were often used as spacers between the stone blocks, or terracotta fragments were used as a mixture in the mortar.



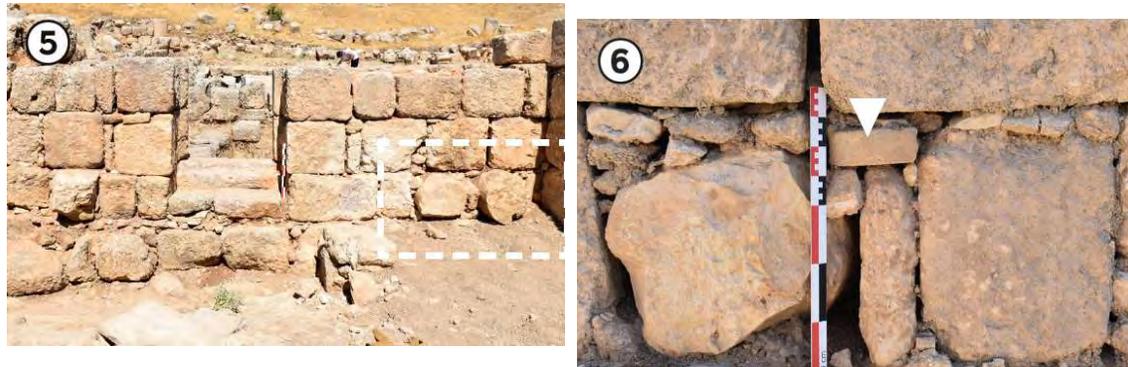


Fig. VII.9. Visible re-uses: 1) Cornice reused as a threshold in wall W9 (room R4); 2) Cornice reused as a threshold of room R3's door, in wall W9; 3) Cornice (?) reused in the masonry pattern of wall W6 (room R5); 4) Bonding column reused as masonry ties wall W2; 5) Bonding column in wall W9 (room R4); 6) Terracotta brick from a hypocaust pile reused as a seat adjustment element wall W2.

TOOL MARKS

The faces of the masonry blocks have relatively heterogeneous aspects due to the state of climatic erosion suffered, but also due to the technique and the tools used for cutting (Fig. VII.10). The northern elevation of wall W5 is composed of modules between 40 and 50 cm high and between 30 and 60 cm wide. Various tool marks are particularly visible on this elevation (Fig. VII.11). One can differentiate between the external faces that were cut with a pickaxe or a straight cutter and the characteristic “sheaf” marks that show the trajectory of the tools. The distinction between the peripheral chiselling and the dressed face is possible on some blocks of the first and second courses. The eastern elevation of wall W1 shows the thickening of its base over two courses (Fig. VII.12). In line with wall W6, two blocks are superimposed, the facing of which is larger than the blocks observed in the rest of the excavation. They contain visible tool marks that can be attributed to the barley grain hammer (serrated). The hammer seems to have been used for a biased percussion. On the western elevation of wall W9, two blocks can be seen which also contain traces of a barley grain hammer but this time probably used in vertical percussion (Fig. VII.10).

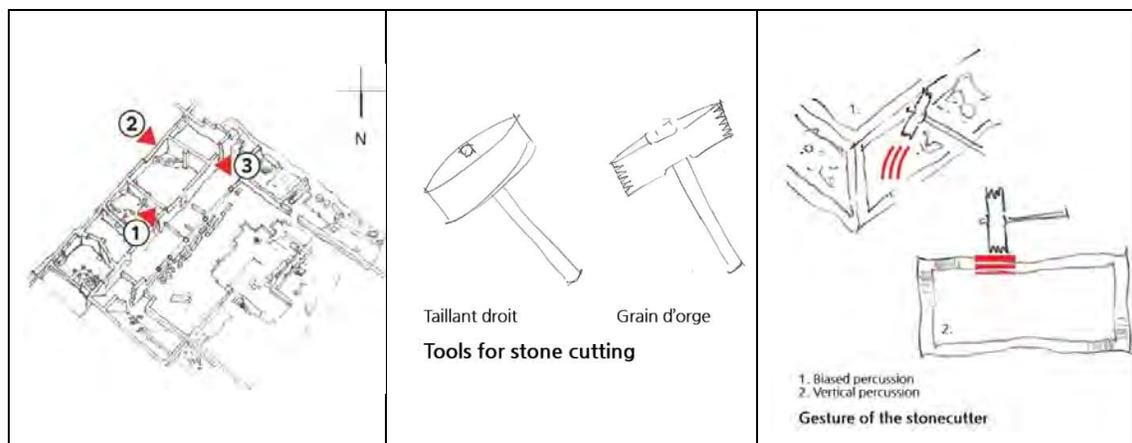


Fig. VII.10. Location of visible tool marks (to the left); Tools for stones cutting (in the middle); Gesture of the stonecutter (to the right).



Fig. VII.11. Different techniques on wall W5 (room R3): a. Facings erected with a pickaxe, b. Facings erected with a straight edge, c. Peripheral chiselling.

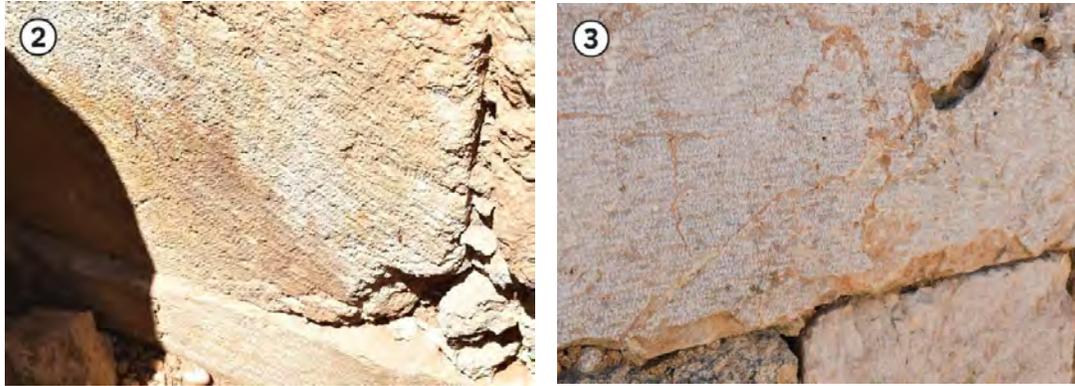


Fig. VII.12. Wall W9 (room R5): the “*marteau grain d’orge*” (serrated) used in biased percussion (to the left) and in vertical percussion (to the right).

THE PILLARS AND ARCH STARTS

In rooms R4, R3, R2 and R1, an intermediate arch relieves the span between walls W1 and W9 to support the roof or the floor of a possible upper level. The arches are supported either by pillars whose blocks are set against or into the walls or by brackets half embedded in the masonry (Fig. I.8). In rooms R4 and R3, the two pillars and the base of the arches are visible (Fig. VII.13). In room R2, two carved corbels taken from the masonry face each other and support the first keystones of the arch (Fig. VII.14). In room R1, a block on the floor suggests, by its median position in the room, the start of a pillar supporting an arch by analogy with rooms R3 and R4. Only the upper surface of this block is visible at floor level. A precise survey of the curvature of the still-existing bedplates would make it possible to trace the layout and determine the type of arch used (broken, low, semi-circular?). On the eastern facing of wall W1 in line with wall W6 (between rooms R4 and R5), a corbelled block raises questions. It could be a reused block or the base (similar to room R2 corbels blocks) of an E/W arch in a room adjacent to the building, or even an outside passage.



Fig. VII.13. East and west elevation of the south pillar of room R4.

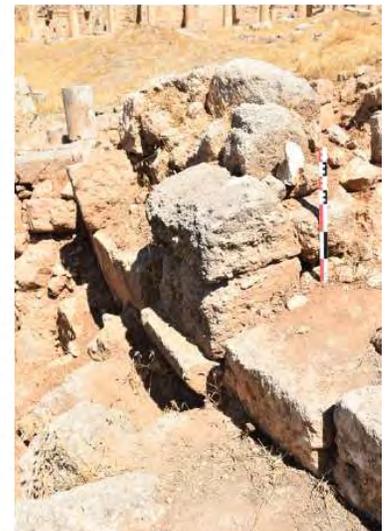


Fig. VII.14. First starting blocks of the arch in room R2.

THE OPENINGS

The masonry voids of the access doors to the adjacent rooms are set over two courses (Fig. VII.15); a groove cut (door rabbet) into the outer facing block and the threshold indicates the presence of a door or wicket door type closing device (Fig. VII.15). The thresholds are made up of one or two solid stone blocks, sometimes reused. The thresholds of rooms R3 and R4 were created by a cornice modenature. Circular sockets allow the hinge of the swing door to pivot. In room R4, two sockets (Fig. VII.15) on either side of the masonry cavity indicate a double door leaf with a main door leaf and a secondary leaf (Fig. VII.16). In fact, a cavity in the third part of the threshold suggests the presence of a vertical door block (lock type). The access bay to room R1 possesses the remnants of a blockage on its interior side. On the portico side, there are two narrower courses of vertical blocks, as if the width of the opening had been reduced. The third course has stones arranged in a field as if to create a wider gap in the upper part of the opening. In wall W1 of room R1, a masonry void, which width may correspond to a gate, contains a block with a rebate. The position of the rebate assumes that the exterior is to the east. The upper surface of the two threshold blocks on either side of the opening have a cavity. In the collapse cone still in place in room R3, one can observe cut blocks with a re-entrant angle of the rebate type. It is possible that these are openings in the east wall on the ground level or that they are reused blocks embedded in the masonry. The presence of a void in the masonry at the top of the staircase linking the south and east galleries suggests that the system of rooms in the enfilade could be repeated at an intermediate level.



Fig. VII.15. To the left, elevation of the access bay in room R4; in the middle, the door rabbet in room R4; to the right, door sockets.

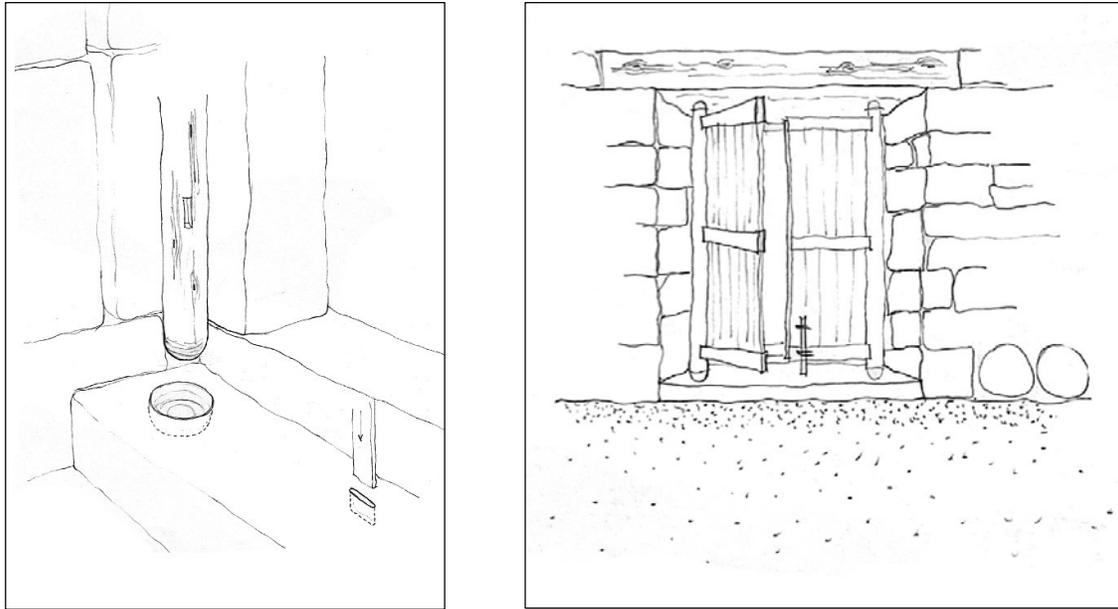


Fig. VII.16. To the left, door details: stone threshold with a doorsocket, a pivot of a wooden door leaf, and the cavity for door block (?); to the right, hypothesis for the return of a two-leaf closing mechanism

The floors

THE NATURAL SUBSTRATE, A ROCKY OUTCROP

The western half of the courtyard floor is composed of a rocky outcrop where various traces of exploitation and domestic installations (cavity, cistern) are visible (Fig. VII.17). The soil of the Jerash region is made up of sedimentary deposits from the Cretaceous era (ABABSA 2013). The town is built on layers of various nature (sandstone, limestone, marl, clayey sand) which overlap and are outcropping in many places. On the ground of the courtyard of building A, more or less regular orthogonal cuts and pockets reveal the surface exploitation of the rock. Outcrops of this type provided a local and cheap material from the earliest buildings of the 7th/6th centuries BC until the city was abandoned. The quality of the quarried rock varies considerably (SEIGNE 2000). It is conceivable that it was the poor quality of the rock or the central position of the quarry in the town that led to the abandonment of quarrying at this location as the town expanded.



Fig. VII.17. Courtyard of building A and western part using the substratum: 1) rocky outcrop, 2) traces of exploitation - quarry (?).

THE COURTYARD PAVING

The rock in the western part of the courtyard was probably the circulation level. The other eastern half of the courtyard is covered with limestone paving. The stone slabs are orthogonal blocks of different sizes. The way they fit together and the alignment of the joints in a north-south direction indicate the direction of the workers' progress (Fig. VII.18). The slabs have an average thickness of 20 cm.



Fig. VII.18. Location of the three paved areas and hypothesis on the direction or phase of laying.

FLOOR COMPOSITION OF THE GROUND STOREY (ROOM R4)

The structures in place allow us to reconstruct the configuration of the ground and show how building A fits into the natural slope of the wadi. Two retaining vaults, one under the five adjacent rooms and the other under the east wing of the portico, make up for the required level created by the artificial terrace built over the old quarry (Fig. VII.19). A superposition of layers of different nature levels the ground on the extrados of the vaults. At the level of the vault joints, where the leveling layers are the thickest, an inverted dry-stone wall was built at the base to support the wall and doorway of room R4 (Fig. VII.20). The sample section taken from the floor shows a

3-layer composition (4): a layer of clay, a layer of gravel/sand, and a layer of ochre tile mortar (Fig. VII.21). This type of covering, with its smooth appearance, constituted a relatively impermeable layer facilitating the maintenance of the stables.



Fig. VII.19. Support by retaining vault (room R4).



Fig. VII.20. Levelling made of pebbles (room R4).





Fig. VII.21. Coating with clay; gravel, sand; rammed earth (room R4).

FLOOR COMPOSITION OF THE UPPER STOREY

Given the number of tesserae found in the collapse of the upper level in room R4 (Fig. VII.22), it is highly plausible that the upper floors were covered, at least in part, with mosaics.



Fig. VII.22. Brown and white tesserae (to the left) and lime mortar on the reverse side of the tesserae (to the right).

The roofing system

THE TILES

Fragments of Tegule can be seen in various places on the area. The 2022 excavations have so far not documented any demolition layers of roofing. Consequently, these fragments are not usable as they cannot be linked to stratigraphic units or identified as possible reuses. One tile was nevertheless found in the excavated units of room R5 (to be confirmed).

RAINWATER DOWNPIPES

In room R5, an incomplete terracotta element was found in stratigraphic unit 62. These cylinders fit together vertically to form a downpipe.

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